BIOLOGICAL ABSTRACTS

A COMPREHENSIVE ABSTRACTING *and* INDEXING JOURNAL *of the* WORLD'S LITERATURE *in* THEORETICAL *and* APPLIED BIOLOGY, EXCLUSIVE *of* CLINICAL MEDICINE

UNIVERSITY LIBRARY
Date 1932
ALABAMA

Published (Beginning with the Literature of 1926) Under the Auspices of the

UNION OF AMERICAN BIOLOGICAL SOCIETIES

With the Cooperation of Biologists Generally

CONTENTS FOR JANUARY 1932

General Biology	*
Biography, History and Bibliography	1- 14
Evolution	14- 24
Cytology	25- 31
Genetics	*
Biometry	*
Ecology	32- 66
Phytopathology	67- 133
Plant Physiology, Biochemistry, and Biophysics	*
Animal Physiology, Biochemistry, and Biophysics	
General	134- 152
Colloids, Permeability, Osmosis, etc.	153- 180
Enzymes and Catalysts	181- 209
Electrolytes and Ions	210- 269
Light and Heat	270- 294
Electricity, X-Ray, Radium	295- 322
Oxidation and Reduction.	*
Methods and Apparatus.	323- 394
Blood and Body Fluids.	*
Nutrition, Diet, Vitamines, General Metabolism, Growth	395- 660
Digestive System and Secretions	661- 711
Respiration	712- 723
Endocrinology	724- 883
Kidney, Urine, External Secretions	*
Reproduction and Lactation	884- 962
Reactions of the Organism as a Whole	963- 977
Sense Organs	978- 998
Nervous System	999-1032
Motor Apparatus	1033-1093
Vascular System	1094-1141
Pharmacology	1142-1259
Animal Pathology	
General	*
Morbid Anatomy	*
Functional	1260-1313
Lower Animals	1314-1371
Immunology	
Bacterial and General	1372-1655
Parasitological	1656-1664
Parasitology (Animal)	1665-1742
Filterable Viruses (Animal), Bacteriophage, etc.	1743-1783
Bacteriology and Other Microbiology	
Medical	1784-1793
Public Health	1794-1803
Food and Industrial	1804-1815
Dairy	1816-1826
Soil	1827-1831
Bacteriology (General)	1832-1841
Economic Entomology	
General	P. 196
Fruits	1842-1852
Cereal, Forage, and other Field Crops	*
Truck and Greenhouse Crops	1853-1865
Stored Products	1866-1873
Forest and Shade Trees.	1874-1878
Insects Affecting Animals	1879-1887
Inspection and Regulation	*
Biological Control	*
Insecticides and Apparatus	1888-1899
Apiculture	1900-1907
Sericulture	*
Economic Ornithology	*
Animal Production	1908-1926
Agronomy	*
Horticulture	1927-1936
Forestry	1937-1961
Pharmacognosy and Pharmaceutical Botany	*
Systematic Botany	
Algae	1962-1994
Fungi	1995-2029
Bryophyta	2030-2042
Pteridophyta	2043-2052
Spermatophyta	2053-2116
Morphology and Anatomy of Vascular Plants	2117-2152
Paleobotany	2153-2175
Paleozoology (General)	2176-2195
Vertebrate Anatomy, Histology and Physical Anthropology	2196-2310
Embryology (Animal)	
Vertebrate	2311-2340
Invertebrate	*
Systematic Zoology	
Protozoa	2341-2355
Porifera	2356-2366
Coelenterata and Ctenophora	*
Platyhelminthes and Mesozoa	2367-2375
Nemathelminthes and Nematomorpha	2376-2389
Acanthocephala	*
Sipunculoidea	*
Nemertea	*
Rotatoria, Gastrotricha, and Chaetognatha	2391-2395
Annelida	2396-2410
Brachiopoda, Bryozoa, Phoronidea	2411-2415
Echinodermata	*
Mollusca	2416-2486
Myriopoda, Onychophora.	*
Crustacea	2487-2510
Entomology (General)	P. 280
Acarina	*
Arachnida (except Acarina)	*
Coleoptera	2511-2564
Diptera	2565-2598
Hemiptera and Homoptera	2599-2606
Hymenoptera	2607-2669
Macrolepidoptera	2670-2704
Microlepidoptera	2705-2716
Neuropteroids	2717-2728
Orthopteroidea	2729-2740
Smaller Orders of Insecta	2741-2756
Fossil Insecta	2757-2759
Prochordata	*
Cyclostomata, Elasmobranchii, Pisces	2760-2800
Amphibia, Reptilia	2801-2815
Aves	2816-2916
Mammalia	2917-3000
General	*

* Not represented in this issue.

Publication Office: 1500 Greenmount Ave., Baltimore, Md.
Editorial and Executive Office: University of Pennsylvania, Philadelphia, Pennsylvania, U. S. A.

Entered as second-class matter Dec. 23, 1926, at the Post Office at Menasha, Wisconsin, under Act of Aug. 24, 1912.
Application has been made to transfer to Baltimore, Maryland.
Published six times a year.

FOR EDITORIAL AND SUBSCRIPTION NOTICES, SEE THIRD COVER PAGE

Explanatory

Typography for Taxonomy.—A special typography has been adopted for new species and other new taxonomic units in both the abstracts and the indexes. This has been done in large part to facilitate reference work; in part, however, it has been done to conserve space by making it unnecessary in the majority of cases to employ the oft-recurring "n. sp.," "n. var.," "n. gen.," or other explanatory abbreviations or phrases. Briefly, the procedure is as follows:

For *new species,* varieties, etc., the specific varietal, etc., name of the binomial, trinomial, etc., is printed in bold-faced type; *e.g., Euglena* **reticulata**; *Keratella serrulata* var. **curvicornis.** (NOTE: In the event a new species, variety, etc., is illustrated, an asterisk (*) is affixed to the specific, varietal, etc., name.)

New generic names appear in all bold-faced capital letters and usually without designation of rank; *e.g.,* **CARIDINIDES.** Other new super-specific group names likewise are printed in all bold-faced capital letters, but to prevent confusion (especially between subgeneric and generic names), these are accompanied by a statement of the rank assigned by authors to the new groups.

Where *new names* and *new combinations* are included in the abstracts and indexes the specific name usually appears in bold-faced type followed by the old combination in parentheses and in italic type; *e.g., Diadasia* **chilensis** (*Anthophora chilensis* Spinola). This procedure is used in response to a demand to give such changes typographic prominence. When for any reason the synonym cannot be given, appropriate explanatory abbreviations (n. n., n. comb., etc.) are employed, thus preventing any possible confusion with new species.

New synonyms are preceded by an equality sign and placed in parentheses; the name under which the synonym is sunk precedes. *E.g., Coreopsis delphinifolia* Lam. (= *C. discolor* Link).

AMERICAN JOURNAL OF BOTANY

Devoted to All Branches of Botanical Science

Established 1914. Monthly, except August and September. Official Publication of the Botanical Society of America.

Subscription, $7 a year for complete volumes (January to December). Parts of volumes at the single number rate. Volumes 1-18 complete (as available), $146. Single numbers, $1.00 each, post free. Prices of odd volumes on request. Foreign postage: 40 cents.

ECOLOGY

Devoted to All Forms of Life in Relation to Environment

Established 1920. Quarterly. Official Publication of the Ecological Society of America. Subscription, $4 a year for complete volumes (January to December). Parts of volumes at the single number rate. Back volumes, as available, $5 each.

Single number, $1.25, post free. Foreign postage: 20 cents.

GENETICS

A Periodical Record of Investigations Bearing on Heredity and Variation

Established 1916. Bimonthly.

Subscription, $6 a year for complete volumes (January to December). Parts of volumes at the single number rate. Single numbers, $1.25, post free. Back volumes, as available, $7.00 each. Foreign postage: 50 cents.

BROOKLYN BOTANIC GARDEN MEMOIRS

Volume I: 33 contributions by various authors on genetics, pathology, mycology, physiology, ecology, plant geography, and systematic botany. Price $3.50, plus postage.

Volume II: The vegetation of Long Island. Part I. The vegetation of Montauk, etc. By Norman Taylor. Pub. 1923. 108 pp. Price $1.00.

Volume III: The vegetation of Mt. Desert Island, Maine, and its environment. By Barrington Moore and Norman Taylor. 151 pages, 27 text figures, vegetation map in colors. June 10, 1927. Price, $1.60. ***Orders should be placed with***

THE SECRETARY, BROOKLYN BOTANIC GARDEN

1000 WASHINGTON AVE., BROOKLYN, N. Y., U. S. A.

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 — JANUARY, 1932 — Entries 1-3000 — NUMBER 1

BIOGRAPHY, HISTORY, AND BIBLIOGRAPHY

CARROLL W. DODGE, *Editor*

See also in this issue Entries 16, 23, 151, 1473, 1670, 1794, 1802, 1938, 2102, 2112, 2195, 2245, 2562, 2767)

1. **BARBOSA SUEIRO, M. B. Notas históricas sôbre a vivissecção humana.** *Arquivo Anat. e Antrop.* 13(1/2): 273-285. 1929 (1930).—Referring to the antipathy to vivisection felt by many people including Shakespeare, Richard Wagner, Mark Twain and Bernard Shaw, the author points out the important part which this method played in the discovery of the circulation of the blood by Harvey. Tradition includes Herophilus and Erasistratus among those who practised human vivisection. In the Middle Ages the influence of Catholicism and the scientific dictation of Galen hampered the progress of anatomy. The history of anatomical reform from Mondinus to Vesalius is discussed, mentioning Berengario da Carpi among those alleged to have dissected living human beings. This is regarded as unproven, although the difficulties of dissection may have tempted anatomists into culpable practices. In this connection the author recalls the gruesome collection of cadavers by Fallopius, Sylvius, Fault, Boyer and others. He does not accept the view of St. Paul that it is proper to make physiological experiments on living criminals, mentioning in this connection the popular legends and the celebrated reply of Genettes to Bonaparte. He discusses also the history of voluntary vivisection, including the cases described by Hector Chaussier and those of Vesalius and Las-.—*M. B. Barbosa Sueiro* (*transl. by G. W. Corner*).

2. **BUDDENBROCK, W. von. Bilder aus der Geschichte der biologischen Grundprobleme.** 158p. 8 portraits. Gebrüder Borntraeger: Berlin, 1930. Pr. 5S M.—The history of biology is here treated in 4 main divisions as follows: origin of life (spontaneous generation, fertilization problem, embryogenesis); organization of life (cell doctrine, problem of organic fitness); position of organisms in nature (the energy principle and life, chemistry and life); and the maintenance of life and organic evolution (heredity, origin of species). Portraits of O. Hertwig, v. Baer, Roux, Buetschli, Weismann, Mendel, C. Darwin, and Haeckel are included.—*A. M. Chickering.*

3. **CHITTENDEN, RUSSELL H. The development of physiological chemistry in the United States.** (American Chemical Soc. Monograph Ser. No. 54) 427p. Chemical Catalog Co., Inc.: New York, 1930. Pr. $6.00.—"The attempt has been made to show by explicit statements of actual experimental accomplishments, at different times and in different places, by many workers and groups of workers, something of the progress which has been made in this country during the past half century in the field of Physiological Chemistry." The book is "an exposition of the growth and development of Physiological Chemistry in this country" and no attempt is made at a critical analysis of the accomplishments recorded. The earlier chapters, dealing with Physiological Chemistry at the time when Chittenden himself was an outstanding figure, are essentially autobiographical. The later chapters take the development of special lines of study and give a [illegible] most of the investi-

[illegible] lava field (malpais) was still too warm [illegible] vegetation. In 1827 Burkart reported [illegible] over the "malpais," and in 1846 210p. Portrait. 21 fig. Oxford Univ. Press: New York, 1930. Pr. $6.00.—This book is a history of the controverted theories of preformation and epigenesis. The author calls this extensive "essay" an attempt to give "the complete story of the Preformation Doctrine." The book is divided into 8 chapters—2 on the history of our knowledge of spermatozoa, 3 on the rise, development, and fall of the preformation doctrine, 1 on epigenesis, 1 covering early theories of fertilization and development, and 1 in retrospect of the entire field. Thus the author has traced not only the theories of preformation but those on epigenesis as far as the modern physiological idea of predeterminism. The material has been gleaned from the known works and published writings from 1600 on, with especial attention to Leeuwenhoek, and with nearly 300 original papers listed in the literature consulted. The illustrations, which have not been reproduced before, are from the original (now classic) speculative writings. By illuminating our sometimes "fatal preoccupation with philosophy," the book demonstrates "one conclusion before all others," that the most difficult of all human tasks is to "observe natural phenomena faithfully" and without surmises and inventions. The book fills an old need by covering thoroughly these fundamental biological philosophies, and incidentally it settles many questions of priority decisively by direct reference to original sources.—*F. W. Appel.*

5. **CONN, H. J. The history of staining.** *Stain Tech.* 5(1): 3-12. 1930.—This is the 4th paper of a series on the history of staining, deals with the introduction of anilin dyes into histology, and the important procedures employing these dyes proposed during the last 4 decades of the 19th century.—*Author* (*courtesy Wistar Bibl. Serv.*)

6. **DRACHMAN, JULIAN M. Studies in the literature of natural science.** 487p. 3 portraits, 1 pl. Macmillan Co.: New York, 1930. Pr. $4.00.—This is said to be the first book criticizing scientific writings as literature. The author limits himself to 19th century English works on natural science, though he touches outside these limits where so doing is illuminating. The book is divided into 4 parts; the first 3, chiefly concerned with the evolutionary theory, constitute a history of its development, giving the effects and tracing the gestation of various contributory ideas. Charles Darwin's works occupy chief place, but those of Hutton, Lyell, Murchison, Linnaeus, Buffon, Erasmus Darwin, Lamarck, Cuvier, Hugh Miller, Spencer, Wallace, Huxley, and others are discussed. The last part is a study of less cataclysmic writings. Taking the writer's aim as the basis for classification the following groups are discussed: the great synthesists, the popularizers of science, essayists and journalists, and astronomists who raised the question of life on other planets. The discussions are not as closely confined to men of the 19th century. Some of those named are Aristotle, Bacon, Comte, Drummond, Fiske, Faraday, Tyndall, the Gosse brothers, Agassiz, Izaak Walton, W. H. Hudson, W[illegible] and Brewster.—*attachments.*

London B 218(454): 171-182. 1 pl. 1930.—Attention is directed to the close correlation between "factors" in environment and "characters" of population. "Fac-

stock [1854-1930]. *Ent. News* 41(8): 227-279. 1930.—An account of the life and work of this American naturalist, emeritus professor of nature study at Cornell University, wood engraver and author.

8. **GREGORY, WILLIAM K. Memorial of Bashford Dean. Article 1 of: The Bashford Dean Memorial Volume: Archaic fishes. Edited by EUGENE WILLIS GUDGER.** 42p. Portraits. American Museum of Natural History: New York, 1930.—An account of Dean's life and works, showing the development of his 2 lifelong interests,—fossil and recent ichthyology, and arms and armor. He was curator of the latter in the Metropolitan Mus. of Art. As founder, curator and later honorary curator of the Department of Ichthyology in the Amer. Mus. Nat. Hist., he continued the work of J. S. Newberry on Devonian fishes, his studies culminating in a far reaching contribution to the problem and evolution of the paired appendages of vertebrates; the Devonian shark *Cladoselache newberryi* bringing weighty evidence in support of the Thacher-Balfour fin-fold theory of the origin of the paired fins. His studies of the archaic survivors of the sharks and ganoids resulted in the accumulation of a great series of beautifully executed plates of the development of these forms, many of which, unpublished at the time of his death, will appear in forthcoming parts of the Dean Memorial Volume. The department of Ichthyology in the American Museum is still keeping up, as a card catalogue, Dean's great Bibliography of Fishes, the 3 published volumes of which contain some 20,000 references to scientific books and papers dealing with fish life. Together with his text book, Fishes Living and Fossil, this work exemplifies Dean's high ideal of service to students and to other scientists.—*G. LaMonte.*

9. **HOFFMANN, ADOLF. Entomologen-Adressbuch.** [Address book of entomologists.] 3rd ed. 400p. Adolf Hoffmann: Wien, 1930. Pr. $3.

10. **HOWARD, L. O. The rise of applied entomology in the United States.** *Agric. History* 3(3): 131-139. 1929.—At the 12th annual meeting of the Agricultural History Soc., in Washington, 1929, this brief history of economic entomology in this country was given. An extraordinary increase in public appreciation has occurred, especially during the past 30 yrs. Some account is given of early workers, and some generalizations are made as to recent occurrences and the present outlook.—*L. O. Howard.*

11. **MacCALLAN, A. F. Mediaeval ophthalmology in Mesopotamia.** *Brit. Jour. Ophthalmol.* 14(10): 596-610. 1930.—Account of a treatise, the earliest existing systematic text-book of ophthalmology, by Abu Zaid Hunain ibn Is-Haq el Ibadi [809-877].

12. **MAJOR, RALPH H. The history of taking the blood pressure.** *Ann. Med. Hist.* 2(1): 47-55. 14 fig. 1930.—Stephen Hales recorded his first observations on blood pressure in 1733. These were reports of experiments performed in 1708 on the crural arteries of dogs. About 6 yrs. later he took the blood pressure of 2 horses and a fallow doe. He also measured the pressure of rising sap in trees. Jean-Léonard-Marie Poiseuille in 1828 described a hemodynameter which was an improvement over the apparatus used by Hales for measuring blood pressure. Carl Ludwig in 1847 measured blood pressure and recorded it on a kymograph. The first accurate determination of human blood pressure was made by Faivre in 1856. Karl Vierordt in 1855 introduced the method of indirect measurement of blood pressure by measuring the counterpressure necessary to obliterate the pulsation in the artery; his apparatus is the direct ancestor of the present day sphygmograph. Marey somewhat later invented a sphygmomanometer which was clumsy but moderately accurate. Von Basch, in 1880, invented the first accurate and practical sphygmomanometer. In 1896 Riva-Ricci made a sphygmomanometer quite similar to the one in present use.—*N. M. Boyd.*

13. **MELLISH-WILSON, MAUD H. The writing of medical papers.** [3rd ed.] 184p. W. B. Saunders Co.: Philadelphia, 1929. Pr. $1.50.

14. **SHAW, DAPHNE. (Compiled by.) A catalogue of British scientific and technical books.** 3rd ed. 734p. Sold by A. & F. Denny, 163A Strand, W. C. for the British Science Guild, 6 John St., Adelphi, W. C. 2, London, 1930. Pr. 20s.

EVOLUTION

(See also in this issue Entries 45, 1052, 2215, 2293, 2630, 2807, 2926, 2962, 2968, 2980)

15. **COSTANTIN, J. Une importante application du Lamarckisme à l'agriculture tropicale. (Examen critique du Lamarckisme.)** *Arch. Mus. Hist. Nat.* [*Paris*] 6: 63-73. 1930.—It has been demonstrated by nearly 50 yrs. of agriculture that mountain climate gives plants resistance. This principle has been used economically with sugar cane in Java. The practice of using cuttings from high altitudes is an application of Lamarckian factors. It has been used in America in dealing with the mosaic disease of sugar cane, and it has been of service in connection with the potato, with *Hevea brasiliensis*, and with coffee. The rôle of Lamarckian factors in plant evolution is regarded as established, regardless of other factors concerned. It makes possible an explanation in genetic terms of changes of sex brought about by environment. The theory is closely connected with the work done in America on the effects of radium and x-rays on the germ plasm.—*From abst. by J. Costantin (transl. by P. Weatherwax).*

16. **DUDYCHA, GEORGE J. LeConte's Epitome of Evolution.** *Ohio Jour. Sci.* 31(2): 107-114. 1931.—LeConte in his "Evolution" (1887) says: "Evolution is (1) continuous progressive change, (2) according to certain laws, (3) and by means of resident forces." By "progressive change," he apparently means improvement in adaptation to environment accompanied by an increase in complexity. Of LeConte's 3 laws—differentiation, progress of the whole, and cyclical movement—only the [illegible] as he himself admits, is of any significance. The [illegible] forces of which he speaks are, God, Divine Will [illegible]. Thus after a [illegible] interprets [illegible] in the direction of greater complexity [illegible] differentiation due to a Vital Force. This is not new, for Heraclitus pointed out the significance of change; the idea of complexity we find in Lamarck, Darwin and the Neo-Darwinians; differentiation was emphasized by Spencer, and Vital Force or God is a concept which [illegible] in the history of evolutionary thought as a [illegible]. Thus LeConte's contribution rests in the fact that he epitomized the major ideas concerning evolution which were presented by thinkers before the 20th century. LeConte significantly marks the close of a long period in the history of evolutionary thought.—*G. J. Dudycha.*

17. **GRUENBERG, BENJAMIN C. The story of evolution. Facts and theories on the development of life.** 473p. D. Van Nostrand Co., Inc.: New York, 1930. Pr. $4.00.

18. **[illegible]NSTONE, JAS. Emergent evolution.** *Nature* [*London*] 127(3193): 55. 1931.—The concept of "emergence" by which primary units (e.g., atoms of O and H), combined into units of a higher order (e.g., molecules of water), display new, "emergent" properties (e.g., "liquidity") not revealed by them prior to their occurrence in that particular configuration, is criticized. The author asks for a dispassionate analysis of such concepts as "emergence."

19. **JOLLOS, VICTOR. Gerichtete Mutationen und ihre Bedeutung für das Evolutionsproblem. Erwiderung auf L. Plates "Bemerkungen zu den Jollos' schen Orthomutationen von Drosophila."** *Biol. Zentralbl.* 51(3): 137-140. 1931.

ECOLOGY

W. C. ALLEE, *Editor*, Animal

GEO. D. FULLER, *Editor*, Plant

CHANCEY JUDAY, *Editor*, Plankton

(See also in this issue Entries [GENERAL and ANIMAL ECOLOGY]: (Light) 271, 971, 973, 980, 988, 989, 995, 1225, 1849, 2340, 2596, 2621, 2702; (pH) 241, 250, 1886, 2354; (Salinity) 230, 234, 250, 252, 2792; (Humidity) 286, 516, 1874; (Temperature) 285, 291, 412, 573, 576, 716, 933, 967, 1042, 1097, 1102, 1137, 1868, 1885, 1900, 2581; (Humidity and temperature) 272, 1733, 1846, 1877, 1913; (Climate) 1676, 1730, 2194, 2649, 2783; (Respiration) 417, 716, 2764; (Altitude) 491, 1257, 1858, 2848; (Dispersal and migration) 1848, 2442, 2473, 2697, 2783, 2803, 2816, 2818, 2877, 2913, 2984; (Distribution and zoogeography) 1695, 1696, 1331, 1739, 1845, 1881, 1884, 1913, 2342, 2345, 2359, 2361, 2362, 2364, 2391, 2415, 2431, 2450, 2501, 2553, 2630, 2673, 2683, 2721, 2779, 2875, 2972, 2991; (Sleep and hibernation) 412, 583, 977, 1002, 1004, 1011, 1858, 1905, 2412, 2966; (Periodicity) 419, 574, 577, 587, 738, 815, 977, 1096, 1243, 1704, 2394; (Reproduction) 913, 924, 953, 1096, 2301, 2341; (Food) 953, 954, 1885, 2301, 2539, 2556, 2571, 2702; (Adaptation) 1904, 1913, 2281, 2389, 2490, 2666, 2762, 2975, 2981; (Mimicry) 2580, 2595; (Commensalism) 2820; (Methods) 364, 381, 2366; (Protozoa) 613, 1569; (Rotifera) 2395; (Bryozoa) 2411, 2412; (Crustacea) 1009, 2498; (Insecta) 1849, 1862, 1863, 1864, 1867, 1877, 1878, 1900, 1904, 1905, 2539, 2596, 2598, 2618, 2620, 2628, 2641, 2650, 2715, 2722; (Nemathelminthes) 2386; (Mollusca) 2473, 2479; (Pisces) 1690, 2762, 2792; (Reptilia) 2806, 2807; (Aves) 2823, 2846, 2869, 2892; (Mammalia) 2969, 2973, 2974. [PLANT ECOLOGY]: (Roots, ecology of) 78, 2131; (Salt-marshes) 1804; (Bacteria of Black Sea) 1830; (Grazing by deer) 1940; (Seed distribution) 1943; (Wind influence) 1945; (Forests of Germany) 1948; (Dune vegetation) 1951, 1955; (Acclimatization) 1954; (Sequoia gigantea, ecology of) 1959; (Higher fungi, ecology of) 2002; (Cup-fungi, ecology of) 2016; (Lichens of New Zealand) 2028; (Mosses, ecology of) 2038; (Australia, vegetation of) 2098; (Larix, distribution of) 2101; (Hedera, distribution of) 2101; (Cornus, distribution of) 2101; (Esthonia, vegetation of) 2104; (Chile, vegetation of) 2106; (Kashmir, vegetation of) 2112; (Limnanthemum, ecology of) 2117; (Cleistogamous flowers) 2127; (Abscission) 2133; (Mycorhiza) 2140; (Hydathodes) 2144; (Geologic climates) 2170)

GENERAL

32. **BRUNKER, J. P., and A. W. STELFOX, with an introduction by C. B. MOFFAT. Phenological report for 1930.** *Irish Nat. Jour.* 3(7): 138-146; (8): 171-175, 1931.—Data are compiled from many sources on flowering time of wild and garden plants; leafing of trees and arrival of birds in spring; the song first heard after winter silence; the time for cutting of crops; time of appearance of plant diseases, of frogspawn and of ripening of wild raspberries; insects first seen; and the time of departure of summer migrants and arrival of winter migrants.

33. **COLEMAN, EDITH. Pollination of some West Australian orchids.** *Victorian Nat.* 46(10): 203-206. 1930.—The belief that the ichneumon fly, *Lissopimpla semipunctata*, is responsible for the pollination of *Cryptostylis ovata* R. Br. is confirmed by the observations of B. T. Goodby in West Australia. Observations on *Caladenia barbarossae* in the same State indicate that a small bee or fly is concerned in its pollination. Are the ♂ insects attracted to the flowers by scent or by fancied resemblance to ♀♀ of their kind? In flowers of *Diuris pedunculata* are frequently found Halictus bees, *Halfiops lanarius*, which appear to be stupefied.

34. **GADOW, HANS (with an editorial note by PHILIP LAKE and a prefatory note by A. C. SEWARD). Jorullo. The history of the volcano of Jorullo and the reclamation of the devastated district by animals and plants.** 100p. Map. Portrait. 2 fig. Cambridge Univ. Press: London, 1930. Pr. 7s. 6d.—Jorullo stands in an amphitheatre among the foothills of the great southern slope of the Mexican plateau. In 1759 a series of volcanic eruptions occurred which completely destroyed all vegetation over an area of 26 sq. miles and covered thickly with volcanic ash a much larger area. Five volcanic cones were developed, the largest being some 820 ft. high with a circular crater. These cones were breached on their southwest sides and from them poured masses of lava in 4 or 5 distinct flows, covering 3.5 sq. miles with molten rock. Humboldt in 1803 found an ash covered plain (playa) well covered with masses of *Salvia*, *Corypha pumos*, and *Alnus jorullensis*, but the lava field (malpais) was still too warm to support any vegetation. In 1827 Burkart reported vegetation advancing over the "malpais," and in 1846 Schleiden reported much of the "malpais" still bare but the remainder with low mimosa and quava trees. In 1886 Leclerg found the vegetation on the "malpais" quite luxuriant with the quava scrub confined to an area near the crater; thus the vegetation had reclaimed the lost ground within 90 yrs. in a region with about 68 cm. of annual rainfall. Gadow reports the increase in size of trees and of the luxuriance of the flora after the lapse of a half century. All except the "malpais" is under cultivation. Notes are given on the development of *Copernicus pumos*, and of sp. of *Loranthus*, *Ficus*, and *Opuntia*. In the devastated plain of the Jorullo 33 sp. of Reptilia and Amphibia were found, only 6 on the center of the "malpais" and only 2 on top of the volcano. An annotated list of these animals is given with a general discussion of the Amphibia and Reptilia of the surrounding province of Michoacan.—*G. D. Fuller.*

35. **RAUP, H. M. The pollenization of Habenaria obtusata.** *Rhodora* 32(376): 88-89. 1 fig. 1930.—Pollination is due to mosquitoes, which carry pollinia.—*S. F. Blake.*

36. **STEINECKE, FR. Die Nekrozönosen des Zehlaubruches. Studie über die Entwicklung des Hochmoors an Hand der fossilen Mikroorganismen.** *Schriften Phys.-Ökon. Ges. Königsberg i. Pr.* 66(1): 193-214. 1929.—Analyses of the micro-fossils, consisting of 20 algae, 30 rhizopods, and some rotifers and arthropods from borings of this the largest high moor of north Germany, are compared with recent biocenoses. On this basis, the high moor in question is believed to have arisen in Atlantic time by the submersion of a mixed forest.—*F. Steinecke (transl.).*

37. **ANONYMOUS. The relation of the fauna and flora of the British Isles to those of North America.** *Nature [London]* 127(3204): 501-502. 1931.—Report of a discussion.

ANIMAL

38. **HORA, SUNDER LAL. Ecology, bionomics and evolution of the torrential fauna, with special reference to the organs of attachment.** *Phil. Trans. Roy. Soc. London B* 218(454): 171-182. 4 pl., 22 fig. 1930.—Attention is directed to the close correlation between "factors" in environment and "characters" of population. "Fac-

" are treated under (1) the physical conditions (rate low of current, the high % of O in the water, shalness and low temp.) that influence the ecological ribution of the torrential fauna and (2) the biological ors such as food and protection from enemies. Habiin a torrent are classified and discussed. In studying bionomics of the torrential fauna attention has been nly directed to the insects and the vertebrates. ong insects the torrent-inhabiting forms are dised with special reference to their organs of attachıt which are specially modified to withstand the ning currents. In fishes attachment to the substratum ffected either by the formation of a sucker or more n by means of a reduction of the pressure on the tral aspect by various devices. Evolutionary series w gradual modifications induced by environmental ors. The brook-inhabiting tadpoles are classified into ological associations, and their chief characteristics are ussed. The probable mode of evolution of the funnelped mouth of the *Megalophrys* tadpoles is indicated. lealing with the physics of the mechanism of attachıt, it is indicated that the resistance has been diished by a reduction in size, by assuming streamforms, by smoothing of the surface at a certain ocity, and by roughening the surface at a different ocity. The mechanical devices for fixation are sticky etions, vacuum-producing devices, "seizing" devices, hooking devices. Numerous instances of parallel lution are cited, and it is suggested that community habitat has led to structural convergence. Congence implies resemblances "which result from indeident functional adaptation to similar ends." Attenı is also directed to "divergent" evolution (Annane) and to the causes that produce it. It has been posed by certain workers (e.g., Hubault) that the rential fauna is of glacial origin, but evidence shows t this fauna has colonized the torrents by means of tep-by-step migration from lower levels. The causes this migration are studied and the part played by nge of function is indicated with the help of several mples. No attempt has been made to study the ses of variations or the mode of their transmission, t an effort has been made to show, from a purely logical point of view, how animals become adapted their surroundings.—*S. L. Hora.*

PLANT

39. **ANDERSEN, SVEND. Danske Vegetationslleder. [The vegetation of Denmark.]** *Flora og Fauna openhagen]* 1929(3): 73-77. 1929.—Descriptions of the untry around the bay of Sejrö, Denmark, and a list of aracteristic sp.

40. **BØRGESEN, F. Fra en Rejse i Indien 1927-28. rom a journey in India.] (With English Abstract.)** *t. Tidsskr. [Copenhagen]* 41(2): 113-153. 14 fig. 1930.—r Dwarka and Tuticorin are given local floras and ological spectra of growth-forms, accompanied by hyotherm-curves. The strand flora of Tuticorin is comred with other sand-floras whose spectra are also ven.—*Ove Paulsen.*

41. **FULLER, MARY. An excursion to Barrington ops, August, 1928.** *Australian Nat.* 7(8): 156-163. 2 fig. 29.—The little-known plateau of Barrington Tops, evation 4000-5000 ft., is an isolated spur of the Great ividing Range, composed of granitic rock, with baltic intrusions, much dissected by streams, and occued by numerous swamps. The climate, reflected in the ora, is subalpine, with the snow-grass, *Poa caespitosa,* e most characteristic feature. The pink tinge of the oors in summer is due to *Stylidium graminifolium.* round orchids are extremely abundant. The hillocks, vered by open *Eucalyptus* forest, have only a scanty idergrowth of *Acacia* and *Hakea,* but in sheltered rges is a luxuriant vegetation, with *Aspidium aculeam* replacing the snow-grass; and on the treeless tracts eat patches of *Juncus, Gahnia,* and *Sphagnum* are minant. The *Fagus* forest and abundant *Dicksonia antctica* are Tasmanian elements, reflecting the similarity of the 2 climates. The snow-grass comes no lower than 3000 ft., and is replaced on the flats by *Xerotes* and xerophitic shrubs; a rain-forest jungle of tall eucalypts and *Syncarpia* sp. with the abundant lianas fills the Allyn Valley. Many of the conspicuous ferns, orchids, etc., are enumerated. The abundant lichen flora of the summit included the Tasmanian *Nephroma antarctica* and *N. cellulosum,* not hitherto recorded from New So. Wales.—*H. K. Svenson.*

42. **GATES, F. C. Heat and the flowering of Utricularia resupinata.** *Ecology* 10(3): 353-354. 1929.—A combination of low water level and high temp. are the necessary conditions for this plant to flower. *U. resupinata* has flowered but twice since 1915 in the Douglas Lake (Michigan, U. S. A.) region.

43. **GOOD, R. D'O. Plant distribution.** *Nature [London]* 127(3204): 484. 1931.—This preliminary note states the thesis that each sp. has, as one of its specific characters, a "range of tolerance" to external conditions,—a character subject to variation and change just as morphological characters are. An external change, being a "movement of conditions," "must result in sp. movement because dispersal, which is potentially in all directions, will be effective only in those directions which will maintain the spatial correlation between the sp. and the conditions within its range of tolerance."

44. **GYÖRFFY, ISTVÁN. Phytophaenologia Szegediensis anni 1929. Szeged 1929. évi növényphaenologiâja. VII. közlemény.** *Acta Litt. ac Scient. R. Univ. Hung. Francisco-Josephinae. Sect. A.* 1(3): 296-299. 1930.—Consists chiefly of a phenological table of 92 spp. of plants.

45. **HAYATA, BUNZO. Succession in the vegetation of Mt. Fuji and the formulation of a new theory, the succession theory, in opposition to the natural selection theory.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1867-1868. 1926(1928).—Successional changes in forests on Mt. Fuji are described briefly. Some formations, as those dominated by white fir (*Abies veitchii*), are short lived, and seem to die a "natural" death. It is concluded that natural selection has nothing to do with plant succession; that plant succession, and the extinction of sp. in evolution, are controlled by an "innermost factor, which acts like a man holding the leading-strings of dancing puppets, from back of the scene where nothing but physiographical or biotic factors seem to act their parts in the play."

46. **HU, H. H. A preliminary survey of the forest flora of southeastern China.** *Proc. 3rd Pan-Pacific Sci. Congress. Tokyo* 2: 1904-1905. 1926(1928).—Abstract.

47. **JAHN, REINHOLD. Pollenanalytische Untersuchungen an Hochmooren des Thüringer Waldes.** *Forstwiss. Centralbl.* 52(19): 761-774; (20): 810-818. 6 fig. 1930.—Pollen counts at various depths in several peat profiles showed spruce and hazel predominating in the lowest layers (155-350 cm. deep), followed by a rapid increase of beech. Toward the surface the beech pollen is less abundant and spruce and pine again predominate. Oak and linden pollen is more abundant at the lower levels than above. Pollen grains of *Abies, Picea, Pinus, Fagus, Alnus, Betula, Quercus, Tilia, Ulmus, Carpinus, Salix,* and *Corylus* were found in all samples, but not at all levels in each sample. The pollen studies indicate that the moors originated in the Atlantic period, probably around 4000 B. C. As in other German moors, there is a maximum of birch and hazel pollen at depths of 100-50 cm., coinciding with a more complete decomposition of the peat moss. This indicates an opening up of the stand following human settlement in the vicinity. The transition from beech to the spruce type now predominating may be due partly to climatic change, but principally to the influence of forestry measures.—*W. N. Sparhawk.*

48. **KORIBA, KWAN, and ZENTARO TASHIRO. On the vegetation of Sakurajima after the eruption of 1914.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1898-1899. 1926(1928).—Abstract.

49. **LAWSON, A. ANSTRUTHER. The origin of endemism in the angiosperm flora of Australia.** *Proc.*

Linn. Soc. N. S. Wales 55(4): 371-380. 2 pl. 1930.—The Australian flora is characterized by the number, abundance, and predominance of *Eucalyptus* sp.; by the striking and varied xerophily of the flora, widely diverse families (Myrtaceae, Leguminosae, Proteaceae, Compositae, Orchidaceae, Epacridaceae, Rutaceae, Casuarineae, et al.) having undergone modifications, often convergent, such as reduced leaf surface, heavy cutinization, etc.; and by the presence of many endemic types, especially in the Myrtaceae, Leguminosae, Proteaceae, Orchidaceae, Epacridaceae, Rutaceae, Goodeniaceae, Casuarineae, et al. Some 70% of the sp. and 30% of the genera are endemic; in Western Australia, 85% of the sp. Studies of microsporogenesis and pollen viability in Proteaceae and Myrtaceae show a high % with abortive seed, sterile pollen, abortive pollen grains, and species sterility. It is concluded that the majority, if not all, of the endemic sp. of these 2 families are of hybrid origin.

50. **McDOUGALL, W. B. Plant Ecology.** 2nd ed. 338p. 120 engravings. Lea & Febiger: Philadelphia, 1931. Pr. $4.00.

51. **MARKUS, E. Die Grenzverschiebung des Waldes und des Moores in Alatskivi.** *Acta et Comment. Univ. Tartuensis (Dorpatensis) A. Math. Phys. Med.* 19(3): 1-157. 10 fig. 1929.—The changing limits of 2 bio-communities constitute a succession. The shifting boundaries between forests and bogs at Alatskivi, in Esthonia, near Tartu, are discussed. A community (Naturkomplexe) is a complex of phenomena and objects connected causally and existing on a certain portion of the earth's surface. In each community, quadrats of 100 sq. m. are taken and the plants are listed according to layers, with degree of covering (according to the Swedish method) and a detailed description of the soil conditions. Many (26) communities and so-called resting communities are described. The shifting of the boundaries of these communities and the resulting successional phenomena are considered. Quite a new terminology is presented, many of the terms being synonymous with other more familiar ones.—*C. Regel.*

52. **MØLHOLM HANSEN, H. Livsform og Alder. [Growth-form and age.]** *Bot. Tidsskr.* [*Copenhagen*] 40: 193-203. 1928.—The biological spectrum (Raunkiaer's) of a systematic plant-group, by means of statistics of both palaeobotanic and recent material, is used to determine the relative age of the group. The rule is that of 2 groups the older has the greatest % of Phanerophytes (P %) and the smallest % of Hemicryptophytes (H %), whereas in the younger group the reverse is the case. The distribution of life-forms on different soils is also examined, and the following 2 rules are stated: (1) The individual life-form is associated with definite soil conditions; and (2) A life-form not characteristic of the climate of the region where it exists will here be found in greatest numbers on that soil which is most like the soil of the regions characterized by the said life-form. Changes in the hypsometric curves of the earth's surface are a cause of innovations in the world of organisms during the epochs.—*K. Gram.*

53. **OSBORN, T. G. B. On regeneration problems in arid Australia.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1913-1914. 1926(1928).—Climatic and edaphic influences in this region are briefly sketched. There are 3 vegetation types: annuals or ephemerals; trees and tall shrubs; and dwarf shrubs, such as *Atriplex* and *Kochia*. Grazing animals, chiefly domestic, have a serious effect, especially on the dwarf shrubs. Various regressive phases are to be noted, culminating in bare soil.

54. **PATER, B. Über den Standort der Tollkirsche, Atropa belladonna L.** *Heil- und Gewürz-Pflanzen* 13(2): 72-79. 1930.—*Atropa* occurred only in beech forests, where wood had been cut. In woods, in which the beech (*Fagus sylvatica*) is not dominant, *Atropa* does not occur. This was true not only in the woodlands, in the vicinity of Klausenburg, but also in the distant woods of Transylvania, and the mountainous region of Czechoslovakia.—*Author's summary (transl. by C. C. Plitt).*

55. **PIROTTA, PIETRO ROMUALDO. Sulla sviluppo degli studi di ecologia agraria. [Development of studies of agrarian ecology.]** *Mem. R. Accad. Italia Cl. Sci. Fis. Mat. e Nat., Biol.* 1(1): 5-7. 1930.

56. **RANT, A. De Javaansche gebergteflora als bewijs van een vroegere verbinding van Java met het vasteland van Azië. [Mountain flora of Java as evidence of a former connection of Java with the continent of Asia.]** *Natuurk. Tijdschr. Nederlandsch.-Indie* 89(3): 441-468. 1 pl. 1929.—Java, Borneo, and Sumatra are connected with the continent of Asia by an under-sea bank. If the level of the sea were to fall 50 m., this connection of dry land would be established. The former connection of these islands with the continent of Asia was already raised on zoogeographical data. The great similarity of the mountain flora of Java with that of the Asiatic continent gives strong support to this theory. About 60 sp. of dicotyledonous Javanese mountain plants are enumerated which are also found on the Asiatic continent; for about 70 dicotyledonous genera it is shown that closely related sp. of the same genus are to be found in Asia. Furthermore some cases of parasitism and symbiosis of autochthonic Javanese mountain plants are closely related to the parasitism of Asiatic forms (Balanophora; the endotrophic mycorhiza of the Ericaceae; *Exobasidium* on Ericaceae; *Rhytisma* on *Acer*). The transfer of mountain plants from one island to another can only be done by birds or bats; although some cases of endozoic dispersion over shorter distances are known, it is very improbable that it holds good for the mountain plants from one island to another. The transfer through lower regions is improbable, since an investigation of 17 sp. of mountain plants, which were transplanted to the lowland, showed that they very often became sterile and weak. The migration was probably effected during the Pleistocene; the sea-level fell sufficiently and the lower temp. made a transfer in the lower plains possible.—*C. Coster.*

57. **RAUP, H. M. The distribution and affinities of the vegetation of the Athabasca-Great Slave Lake region.** *Rhodora* 32(382): 187-208. 37 fig. 1930.—The geology and glaciation are discussed with principal features of vegetation and affinities of the flora. The most striking feature is the absence of many common sp. of the Canadian forest.—*S. F. Blake.*

58. **SWINGLE, WALTER T. The origin of the flora of eastern Asia, a reservoir of useful plants.** *Proc. 3rd Pan-Pacific Sci. Congress. Tokyo* 2: 1902-1903. 1926 (1928).—It is only in South China and Indo-China that the plants of the temperate and tropical zones can mingle freely. These favored regions have a marvelously rich flora wherein northern and southern plants grow side by side. Recurring famines have forced starving populations to explore to the uttermost the food resources of the local flora. Thus we see here the greatest array of food, medicinal, industrial, and ornamental plants to be found in any similar area.

59. **TAKENOUCHI, MAKOTO. On the influence of volcanic activity upon the vegetation of Mt. Tarumai.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1890-1898. Map. 1926(1928).—On Mt. Tarumai (Japan) and vicinity a younger and an older type of vegetation are differentiated by the presence or absence of the destructive effects of volcanic action. Three altitudinal zones of vegetation are distinguished: montane forest, shrub region, and bare region. The vegetation of Mt. Tarumai is now unstable. Eventually it will probably become fixed from the lower to the upper region, attaining at last the condition of Mt. Fuppushinupuri, the summit of which is covered with shrub communities. Remarkable effects of erosion on the vegetation of Mt. Tarumai were also observed.—*From author's summary.*

60. **TAYLOR, GRIFFITH. Agricultural regions in Australia.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1657-1662. Map. 1926(1928).—Various ecological regions of Australia are very briefly described, with notes on their agricultural utilization.

61. **TERAZAKI, WATARU. Plant successions in self-**

regenerating forests in various regions of Japan. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1887-1889. 1926(1928).—Abstract.

62. **TURESSON, GØTE.** The selective effect of climate upon the plant species. *Hereditas* 14(2): 99-152. 25 fig. 1930.—A large number of plants representing different types of 31 sp., collected in different climatic regions, have been transplanted as single spaced plants in experimental fields in southern Sweden; 61 transplant series have been obtained and besides these seed has been harvested from isolated plants, giving 57 seedling generations. Total plant height before fructification and earliness have been chosen to trace the effect of the climate of the following climatic regions: a southern region including central and southern Europe; a northern region, represented by the districts of northern Sweden; a western maritime region, the Faero Islands; and an eastern region, the Altai and East Altai districts. In the 25 aestival sp. the types from the north combine earliness with moderate height, while the southern types are late with great height. The types from the west maritime region combine low growth with lateness, while the eastern types are very early with great height. The alpine types are genotypically lower and earlier than the lowland types. Forms from the extreme north or from alpine regions, when transplanted to southern Sweden, flower earlier and grow taller than in their original habitat; conversely material from the south decreases in height and flowers later than in the wild. These facts do not influence the comparison of the different types, grown together under uniform conditions. In spring plants such as *Caltha palustris*, earliness decreases towards the north; the south German types are earlier than the south Swedish. Still farther to the north, however, earlier types reappear as seen in the Luleaa series from northern Sweden. Problems of climatic differentiation and "acclimatization" in agriculture and forestry are discussed.—*H. Wexelsen.*

63. **WENT, F. A. F. C.** The Pacific Ocean as a boundary of the distribution of the Podostemonaceae. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1906-1911. 1926. (1928).—Structure and adaptation are discussed in this family, the sp. of which are distributed in tropical waterfalls and rapids from America eastward to Indo-China and Java. Their origin is considered monophyletic. Their distribution indicates a former land connection between So. America, Africa, India, and Ceylon. The Pacific Ocean has apparently been a barrier to their further eastward extension.

64. **ANONYMOUS.** Dix ans d'observations de météorologie forestière en Algérie. *Bull. Stat. Rech. Forest. Nord de l'Afrique* 1(8): 275-330. 1926.—Monthly, quarterly, and annual records of mean, minimum, and maximum temp., mean humidity, mean precipitation, and mean number of days of rain, snow, freezing, frost, hail, rainstorm, sirocco, and wind-storm for 1915-1924 are summarized for 12 stations representing 5 principal forest types: *Quercus suber* at 300-1270 m., *Pinus halepensis* at 850-1530 m., *Quercus ilex* at 1250-1650 m., *Cedrus atlantica* at 1050-1650 m., and *Juniperus phoenicea* at 60 m.—*J. Kittredge, Jr.*

65. **ANONYMOUS.** Forests, climate, erosion, and inundations. *Nature [London]* 127(3205): 524-525. 1931.—A review of recent literature on the relationship between forests and climate.

PLANKTON

66. **NAUMANN, EINAR.** Die Eisenorganismen. Einige Grundlinien der limnologischen Fragestellung. [Iron organisms; their relation to limnology.] *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 24(1/2): 81-96. 1930.—A review dealing with definition of iron organisms, methods of demonstrating their presence, their distribution in fresh water, ocean and swamp ore, and manganese organisms.—*E. Naumann (transl. by R. A. Muttkowski).*

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*

W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 386, 1516, 1808, 1850, 1875, 1891, 1956, 2012, 2021, 2022, 2126, 2143, 2144, 2386, 2387, 2543, 2569, 2604, 2609)

DISEASES CAUSED BY FUNGI

67. **CARTWRIGHT, K. St. G.** A decay of Sitka spruce timber, caused by Trametes serialis, Fr. A cultural study of the fungus. *Great Britain. Dept. Sci. & Indust. Res., Forest Products Res. Bull.* 4. 26p., 6 pl. 1930.—*T. serialis* is a cause of brown pocket rot in Sitka spruce, its action being almost entirely confined to cellulose destruction No signs of discoloration can be observed in many cases. Hyphae may be present the full length of any blocks up to 6 inches long after a period of 4 months, and many of these blocks showed no visible sign of decay; if longer samples had been employed this distance from the visible sign of the rot probably would have been far exceeded. The mode of entry in experimental blocks appears to be usually at the cut ends, though the fungus is capable of entering through the sides. The hyphae grow in the first instance longitudinally through the tracheids. On reaching an area containing the optimum moisture requirements they start to penetrate, probably by means of enzymes secreted at the tips of the actively-growing hyphae. Pits for the most part appear to be ignored, and the hyphae may penetrate through many walls in a straight line at right angles to the length of the tracheids. They may send off branches at intervals, which in turn may penetrate any of the walls both of the tracheids and of the pits. This activity appears principally confined to the medallion type of hyphae. Under optimum conditions the hyphae may be found in masses, but often a few fine isolated strands may run the length of a tracheid, then with more favorable conditions may form a 2nd rot pocket isolated from the 1st by what is apparently sound wood. Brittleness is thought to be caused at an early stage after infection, and if the wood, appearing quite normal when taken from a log, shows any signs of brittleness or discoloration, it is to be regarded with suspicion, especially as the fungus is capable of retaining its vitality and remaining dormant for considerable periods under air-dry conditions.—*From author's summary.*

68. **CHENEY, GWENDOLYN M.** "Black-heart" of apricots in Victoria. *Australian Jour. Exp. Biol. and Med. Sci.* 7(1/2): 91-100. 4 pl., 5 fig. 1930.—A species of *Verticillium* was isolated from a disease of apricot trees in Victoria, characterized by wilting of the leaves and subsequent death of successive branches. The fungus in artificial culture produced small, hyaline conidia at the tips of verticillate branches, dark microsclerotia, and structures resembling chlamydospores. In the host tissues the mycelium was found in the younger wood vessels, the hyphae passing from one vessel to another through the pits. Characteristic is the production of a brown, gummy substance in the older vessels. Young trees were inoculated by introducing mycelium into the branches but no symptoms of disease resulted. Inoculation of the roots (2 trees) with a spore suspension produced symptoms in 6-8 weeks. Sections taken from a branch of a tree showing symptoms produced in this manner gave a growth of *Verticillium* in culture. Prolonged culture of the fungus on artificial media pro-

r.—This is a metaphysical study for which drawn from the border sciences, both natu- nistic. The presuppositions are that both acquisitional qualities are hereditary. The quisition passes from the soma to the germ logical, prehistoric, and historic studies are ace and time to show the doctrine of volution." The book is an idealistic study d future emergences rather than a material- hich seeks an explanation of the superior the inferior simplicity so that the sphere is explained by the sphere of bios; this in ics and chemistry. Such names as Bergson, in, Bouvier, Cuenot, Briffault, Teilhard, lbiet, Koken, Hanotaux, Gagnebin, etc., drawn in this work designate it as a sample ary French thought. It forms with a pre- e on the general problem of "transformism" Cours et Conferences, No. Dec. 15, 1926– and a volume to follow (Les Epoques de an integrating study in the field of phi- *I. Muyskens.*

EY, ARTHUR WARD. The problems of 5p. Macmillan Co.: New York, 1931. Pr. uthor approaches the problems of evolu- standpoint of the effects of the environ- ndividual and the race, though disclaiming bias. Attention is centered on the nature species. The species, since it is composed , is the product of definite interacting nvironment. Taxonomically it is a mental of a line of evolution. Phylogenetically it nly the individuals extant at a given time, succession of generations before it loses he species is sharply limited in space, but e. Species are genetically diversified and diverse environments with resulting modi- lividuals and the evolution of geographical sponses in individuals to environmental part of the problem of evolution. Change emanates from all phases of the environ- m the heritage, but whatever its source, nges invariably concern both heritage and There is no reason either to suppose that istments to fluctuating environments must haracters of the species, or that they may so fixed. Since chromosomes and genes s active in controlling the functions of the t its life, there is every reason to believe also the capacity for increase or decrease s as a result of the degree of activity de- m. The evolutionary theories of selection, tion, and parallel induction are reviewed usion reached that: given variation, it is elective and isolating factors contribute to of species into geographic races which are es. Hybridization may play a part in the f existing characters also. But when we at- nt for the origin of variations we can only ons or to individual response to environ- ling line between which is not clear. Evo- lative change is evident in nature in fossil dividual responses. The close parallel be- tive responses in individuals and the adap- in species suggests that adaptation in spe- lly haphazard at the outset, that it does lly upon random mutations, but that it is lasticity of the living substance. The in- ts an adequate environment as well as the organic foundations for its development. Heritage, internal environment and the physical and organic factors of the external environment are all operative in shaping the course of the development of the individual. To say that heritage is the source of all evolutionary change in living things is a recognition of the control it has wrested from the environment, and of the degree of self-[illegible] it has attained, but at the same time it is a failure to give recognition to the part environment continues to play. Adjustment is the price of existence. The results in evolution must necessarily be slow, but this is clearly the direction which investigations in the future must take. The tendency of heritage is not toward change.—*C. A. Kofoid.*

22. MacBRIDE, E. W.; with communication by C. O. BARTRUM. Embryology and evolution. *Nature* [*London*] 127(3193): 55-56. 1931.—Polemic.

23. OSBORN, HENRY FAIRFIELD. From the Greeks to Darwin: the development of the evolution idea through twenty-four centuries. 2nd ed. xvi+398p. Chas. Scribner's Sons: New York & London, 1929. Pr. $2.50.—This edition, revised and extended to embrace recent work, has involved a complete restudy of the entire 24-century period of evolutionary thought; many new lines have been traced in the lineage of ideas, previously undiscovered anticipations of Darwinism have been unearthed, and the work of certain authors has been more fully and critically examined. Additional proofs are included, that the evolutionary idea is in itself a product of 24 centuries of evolution. The volume purports to be a history of ideas and only to a small extent a history of personalities. The subject matter is discussed under the following chapter headings: The anticipation and interpretation of Nature, in which the author surveys the subject and its background in science and philosophy; Among the Greeks; The evolution idea among the theologians and natural philosophers; The evolutionists of the eighteenth century; From Lamarck to St. Hilaire, Goethe and Naudin; Darwin; and a final chapter entitled: Retrospect. A 12-page bibliography and a 20-page index are included.

24. PAUL, A. Zum Problem der menschlichen Metamorphose. 74p. Otto Hillman; Leipzig, 1928.—With a strong Lamarckian bias this short volume defends the thesis that, from a primitively homogeneous race of mankind, climatic conditions have brought about and are maintaining the racial characteristics as we see them today. Exposure to the sun's rays is the chief factor in race formation, and this is modified chiefly by humidity and the effect of oceans and inland seas. Africa and its negro population is first discussed, then the more complex conditions of Europe are analysed, the Mediterranean, the North Sea, the Alps, the Gulf Stream being given their respective race-forming values. Culture, religion, and language share with physical characters a subordination to and dependence upon climatic-atmospheric conditions. The influence of physical heredity is considered but is relegated to the background. Two apparent obstacles to the theory, the melting pot of America and the widely distributed Jewish race, are given considerable attention. While in neither case has there been sufficient time for very evident changes to have occurred, the author yet argues that careful observation does disclose some changes in Jews, both cultural and physical, towards the human types in whose midst they may have settled; and the further assertion is made that already the American Indian physiognomy may be detected in certain "Mayflower" Americans.—*C. G. Hartman.*

CYTOLOGY

R. E. CLELAND, *Editor,* Plant
C. E. McCLUNG, *Editor,* Animal

(See also in this issue Entries 177, 212, 217, 218, 229, 287, 301, 303, 309, 794, 919, 921, 1974, 2000, 2015, 202 2135, 2137, 2141, 2149, 2285)

ANIMAL

25. **AREY, LESLIE B. New diagrams illustrating the transformation period of the human spermatid, as prepared by the late Professor Bowen.** *Anat. Rec.* 47(1): 31-38. 11 fig. 1930.—A series of 11 semidiagrammatic drawings prepared by R. H. Bowen as a text-book figure to illustrate the cytological changes taking place during the formation of a mature human spermatozoon. As far as possible, these illustrations are based on facts established for man; they are further supplemented, with appropriate discrimination, by data from other mammals. Accompanying the diagrams are some miscellaneous explanatory notes.—*Author (courtesy Wistar Bibl. Serv.)*

26. **FAULKNER, G. H. The early prophases of the first oocyte division as seen in life, in Obelia geniculata.** *Quart. Jour. Microscop. Sci.* 73(2): 225-242. 23 fig. 1929.—The nucleolus of the resting oocyte represents a condensed chromatic spireme, hence it is identical with the total chromosomal contents of the nucleus. During the early growth phases, the nucleolus elongates and fragments. Each fragment has been identified as a pair of homologous chromosomes indistinguishably united; later each of these bivalent elements divides, and the individual chromosomes are thus separated. The two components of the largest bivalent element are unequal in size, and probably represent an *XY* pair. The chromosomes can be counted either at the bivalent or at the univalent phase, the numbers being 17 and 34, respectively. At a still later stage the chromosomes fragment into numerous small globules, which become evenly distributed over the nucleus. The whole account is based on observations on living oocytes.—*Author's summary.*

27. **HUETTNER, ALFRED F. The spermatogenesis of Drosophila melanogaster.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(3/4): 615-637. 51 fig. 1930.—The difficulties encountered in studying the spermatogenesis of *D. melanogaster* in regard to pseudo-chromatic inclusions in the nucleus and cytoplasm have been eliminated by the Feulgen nuclear reaction and other special cytologic methods. From the early growth period of the primary spermatocyte to the leptotene stage, the chromatin is indistinguishable because of diffusion. The larger nucleolus present in the primary spermatocyte, and other nuclear inclusions which stain black with hematoxylin, have nothing to do with the chromosomes. A definite leptotene stage is present, but there is no polarization of threads. Synapsis is incomplete, abortive and of brief duration. Meiotic divisions are typical. The 1st judging by the behavior of the lagging sex chromosomes is reductional. Interkinesis is very brief. The *XY* pair is never as closely apposed as the components of the autosomal tetrads. Conclusions derived from this investigation substantiate the genetic evidence that there is no crossing-over of factors in the ♂ of *Drosophila melanogaster.—Author's summary.*

28. **KOLMER, W., und W. FLEISCHMANN. Beobachtungen an den Speicheldrüsen von Chironomusarten. Konsistenz der Kernbestandteile. Verhalten bei Vitalfärbung.** *Protoplasma* 4(3): 358-366. 1 fig. 1928.—When the salivary cells of *Chironomus* are compressed under the coverslip, the nucleolus is cut through like a f by the firm chromatin fibers. Only exceptionally vacuome and chondriome stain with the same bas dyes; occasionally the secretion and nucleus a stained. Acid dyes are not taken up.—*J. Q. Plou*

29. **ROHDENBURG, G. L. The effect of the i secretions upon the division energy of paramoecia** *Cancer Res.* 14(4): 509-515. 1930.—The action of rious endocrines upon the division energy of para was found to vary—spleen, liver, thymus, suprare testes stimulating; thyroxin, insulin, pituitary an thyroid inhibiting; and ovary having no influe

30. **TURNER, JOHN P. Division and conjuga Euplotes patella Ehrenberg with special reference nuclear phenomena.** *Univ. California Publ. Zool.* 193-258. 12 pl. 1930.—During division the old cy remains unchanged. Feeding continues through process and commences in the posterior daughte fission is complete. All cirri and the neuromote of the anal cirri are replaced de novo. A do organization band passes through the C-shaped nucleus from each tip to the middle, where the unite and disappear immediately before maer contraction, which precedes fission. These ba cause colloidal phase reversal. During divisi micronucleus 8 rod-shaped chromosomes appea dosome is present. During conjugation, all t ganelles and the neuromotor fibers of the anal replaced de novo. The micronucleus undergoe liminary division and 2 maturation divisions, f nuclei. Of these, 6 degenerate while 2 undergo maturation division forming the 2 pronuclei an tional degenerating nuclei. The first maturation involves a complicated series of changes inclu formation of about 32 chromomeres. No metaph of chromomeres occurs, 16 passing to each pole. tion occurs in the second maturation divisio 8 chromosomes appear, unite in pairs and later 4 chromosomes passing to each pole. The wander nucleus breaks out of the left anterior margin parent body and migrates into the apposed co In each pronucleus 4 chromosomes are seen. As jugants separate, the amphinucleus divides twic ing 8 chromosomes each time, forming 4 grand nuclei, one of which condenses as the new micr one undergoes a characteristic enlargement and formation and is the new macronuclear anlage. T 2 eventually degenerate. The new macronucleu fuses with a reconstituted portion of the old one the new macronucleus. Epidemics of conjugation cultures have shown as many as 75% of the orga nearly the same stage of the process.—*J. P. Tu*

31. **WEDEKIND, GEORG. Zytologische suchungen an Barrouxia schneideri (Gamete Befruchtung, und Sporogonie) zugleich ein Bei Reduktionsproblem. (Coccidienuntersuchungen tological studies on B. schneideri (gamete f fertilization, and sporogonia) also a contributi reduction problem. (Studies on Coccidia I.)]** *Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikro Anat.* 5(4): 505-595. 4 pl., 8 fig. 1927.

duced a saltant, which differed from the normal form in the absence of microsclerotia.—*From author's summary.*

69. FALCK, RICHARD. Neue Mitteilungen über die Rotfäule. [New data on the red rot.] *Mitteil. Forstwirtsch. u. Forstwiss.* 1(4): 525-566. 12 fig., 4 pl. 1930.—The so-called red rot of spruce includes the rot (*Agaricus melleus*) of the root-stock, and the stem rot (*Polyporus annosus* (=*Trametes radiciperda*)). Both occur in the forest as pure saprophytes on dead wood and leaf litter, semi-parasites on the practically dead heartwood of living trees, and as true parasites on the cambium and outer sapwood. The stem rot seldom attacks healthy trees, but usually follows after the tree has been weakened by the root rot. In the forests that were studied, the 2 diseases caused a volume loss of 10.2-28.5% and a loss in timber value of 2.6-21.2%. Loss from stem rot can be reduced by maintaining the soil in a healthy state; by keeping down other diseases and pests; by selecting resistant strains of spruce, and by not letting trees, suppressed in youth, become the dominant ones of the older stand as a result of thinning. There is also some prospect that spread of the rot above the root collar can be checked by injecting chemicals into the base of the trees. Attempts to eradicate the 2 fungi are not recommended, because they are valuable agents in breaking down the dead wood and leaf litter, thus keeping the soil healthy.—*W. N. Sparhawk.*

70. KOCH, L. W. Spur blight of raspberries in Ontario caused by Didymella applanata. *Phytopath.* 21(3): 247-287. 11 fig. 1931.—Spur blight is almost universal, occurring in North America, Europe, and Australia. It is becoming more prevalent in the Niagara peninsula (No. Amer.). In Europe damage caused by spur blight is reported to be extensive, especially in Germany and Switzerland. In America it appears to cause considerable damage in the U. S. A. and Canada. In the summer the most striking symptoms are purplish brown discolorations on the canes and similar lesions on the leaves and buds. Diseased canes turn light gray in color during the winter following infection. Perithecia become increasingly conspicuous on the lesions during the winter and spring. In America spur blight has been attributed to *Mycosphaerella rubina*, and in Europe a similar disease is considered to be caused by *Didymella applanata*. Mature perithecia collected in Ontario and some from the original material from which *M. rubina* was described were sectioned, the 2 being identical with paraphyses present in both. Cultures, natural infections, inoculations, and reisolations indicate the 2 species are identical. A description of the perithecial and pycnidial stages of *D. applanata* and the results of isolations from each stage are given. Perithecia belonging to *D. applanata* developed on canes inoculated with cultures originating from ascospores of the same species. The canes, prior to the formation of perithecia of *D. applanata* developed pycnidia belonging to a *Phoma* sp., which is the imperfect form. The *Coniothyrium*, at times found associated and reported genetically associated with *D. applanata*, is the imperfect stage of *Leptosphaeria coniothyrium*. The growth rates of the *Phoma* stage on 8 different nutritive media at various constant temp. are stated, growth occurring within the range 2-28° C. Perithecia of *D. applanata* discharged their ascospores in 1929 from May 7–July 7, rain being a prerequisite. Pycnospores of *Phoma* sp. were discharged at intervals along with the ascospores. Infection resulted from the inoculation of both uninjured and injured canes with ascospore suspensions of *D. applanata*. Various portions of the plant, including fruit spurs, tips of canes, and developing buds, proved to be susceptible. Leaves were also inoculated with ascospore suspensions of *D. applanata* and pycnospore suspensions of *Phoma* sp., and symptoms appeared on both injured and uninjured leaves. 22 varieties of red and black raspberries were found to be more or less susceptible. All regions of the host cortex except the cork were freely penetrated by the mycelium. The host produces no visible barrier to withstand invasion. Perithecia of *D. applanata* were observed on the surface of bud scales in the spring. A 3-5-40 Bordeaux mixture, to which was added 2 lb. of whale-oil soap, was employed in attempting to control spur blight. Over a period of 2 yr. an average control of 80.4% was obtained with a single application.—*Author's summary.*

71. LIESE, I. Beobachtungen über Stamm- und Stockfäulen unserer Waldbäume. *Zeitschr. Forst- u. Jagdw.* 62(7/8): 579-591. 5 pl. 1930.—In living pines the principal fungous decay is due to *Trametes pini*. The 3 less well known but destructive diseases [*Polyporus schweinitzii* (=*P. sistotremoides*), *Sparassis crispa* (=*S. ramosa*) and *Merulius silvester*] are described, with especial emphasis on the character of injury which they induce. *P. annosus* (=*T. radiciperda*) has never been found as a cause of stump rot. Likewise *Lentinus squamosus* (the cause of pure heart rot of impregnated sills) could not be associated with attacks on green pine stumps. A canker recently discovered near the base of an oak tree in a private forest near Königswusterhausen was found to be associated with *Stereum rugosum*, which starts life as a saprophyte, but becomes parasitic with age and availability of host material. It attacks the stem through wounds, preferably through broken branch stubs.—*J. Roeser, Jr.*

72. PRIODE, C. N. Observaciones adicionales sobre la enfermedad Pokkah-bong de la caña de azucar en Cuba. [Pokkah-bong disease of sugar cane in Cuba.] [In Spanish and English.] *Memoria Conf. An. Asoc. Tec. Azucar Cuba* 3: 106-114. 6 fig.; English 98-106. 6 fig. 1929.—The symptoms of this disease, which is caused by *Fusarium* sp., are very characteristic and not easily confused with other cane diseases once they are known.

73. RAVAZ, L. La fumagine. *Progrès Agric. et Vitic.* 94(41): 341-343. 1 col. pl. 1930.—Note on sooty mold of grape (*Fumago vagans*), with control.

74. RHOADS, A. S. Bark-rot [fungous] of orange trees. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Rept.* 14(17): 169. 1930. [Mimeographed.]

75. ROEPKE, W. Verdere gegevens omtrent de iepenziekte en den iepenspintkever. [New facts about the elm disease and the elm bark beetle.] *Tijdschr. Plantenziekten* 36(9): 232-237. 2 pl. 1930.—Field observations showed that *Graphium ulmi* is present in the dead bark of elm trees. Coremia are often found in the pupa chambers. The beetles coming out of the bark are easily infected. Near scars of feeding places of young beetles symptoms of the disease could be observed. Control of the elm disease depends on control of the beetles. This can be done by cutting all trees which are already attacked and by preventing the attack of healthy trees.—*H. L. G. de Bruyn.*

76. SMITH, RALPH E. The life history of Sclerotinia sclerotiorum with reference to the green rot of apricots. *Phytopath.* 21(4): 407-423. 6 fig. 1931.—The "green rot" disease of apricots and almonds, an infection of young fruits through adherent, dried calyces, occurs in a very sporadic manner in central California. The usual cause of the disease is *S. sclerotiorum*. *Botrytis cinerea* is commonly associated with affected material. Moist-chamber tests of blossoms of apricot and other fruits, as well as those of many annual plants, from many places in central California, showed that from about February 15–June 15 *S. sclerotiorum* was universally present on vegetation. This was true during 2 seasons (1929 and 1930) when no green rot appeared, when no development of *S. sclerotiorum* (save in minor instances) on surface-growing plants was observed, and in situations where the vegetative growth of this fungus was extremely unlikely. No evidence was found to suggest that *S. sclerotiorum* possesses a conidial stage of *Botrytis* or any other type. It would appear that the aerial distribution of this fungus is much more general than has hitherto been suspected.—*From author's summary.*

77. THOMAS, K. M. A new paddy disease in Madras. *Madras Agric. Jour.* 19(1): 34-36. 1 pl. 1931.—A preliminary report of a disease affecting the 2nd season crop

beetle, *Empoasca mali, E. flavescens, Cicadula 6-notata, Rhopalosiphum persicae,* and *Microsiphum solanifolii,* when transferred from yellows-infected plants of *E. canadensis* and caged on healthy peach trees, failed to transmit any symptoms of disease to the peaches. More than 100 mechanical inoculations into peach shoots and green fruits, made with a hypodermic needle and a fresh undiluted extract from yellows-infected plants of *E. canadensis,* gave entirely negative results. Transmission of rosette from plum to peach and sand cherry by infected buds was 100% effective. The results of mechanical transmission experiments with the causal agent of rosette from sand cherries to *E. canadensis* were entirely negative. Attempts to transmit the causal agent of rosette from sand cherries to *E. canadensis* by the green peach aphid (*R. persicae*), the black peach aphid (*Aphis persicae-niger*), the melon aphid (*A. gossypii*), the common mealy bug (*Pseudococcus citri*), and the tarnished plant bug (*Lygus pratensis*) all proved negative. Bud transmission of the causal agent of rosette from sand cherries to plums was 100% effective. Aster yellows of *E. canadensis* is a disease distinct from rosette of peach, plum, and sand cherry.—*Author's summary.*

NON-PARASITIC DISEASES AND TERATOLOGY (INCLUDING DISEASES OF UNKNOWN CAUSE)

91. DÖRING, HERMANN. Zur Kenntnis der Knöllchensucht. *Angewandte Bot.* 11(3): 246-267. 2 fig. 1929.—A study of the abnormality of potatoes sometimes referred to as "tubers but no tops" is presented, beginning with a discussion of the various explanations of this phenomenon. Development of tubers from the mother tubers has been induced by means of chemical treatment. These newly formed tubers may be sessile on the mother tuber, on short stolons, or sometimes on stems above the ground. Of the various chemicals tried, chinolin (quinoline distilled from tar oil) used at a strength of 1% gave the most marked development of tubers, the fraction distilling above 250° C. being the most effective. The treatments were made by inserting a glass tube 10 cm. long and 6 mm. bore into the middle of a tuber for a depth of 15 mm., removing the core and then reinserting into the tuber, after which it was filled with the solution of the chemical to be tested. The tests were carried out in a dark cellar at 18° C., with the tubers in boxes filled with a moist mixture of washed peat moss and quartz sand. Marked differences in response to the treatments were shown by different varieties of tubers, and the most marked development of new tubers was obtained when the test tubers were the nearest the beginning of their rest period; hence, late varieties gave a better response than early ones.—*F. D. Heald.*

92. FALCONER, ALLAN. Fog in relation to glasshouses. *Gard. Chron. [London]* 89(2301): 84. 1 fig. 1931.—Comments on the injurious effect in industrial areas of fog on vegetation, due to toxic substances and to interference with light.

93. LIERNUR, A. G. M. Bijdrage tot de kennis der heksenbezems [Witches' brooms.] *Tijdschr. Plantenziekten* 36(9): 229-231. 1 fig. 1930.—A description is given of a large, round witches' broom of elm found in Tilburg. Next to this type with small short conical branches on which normal branches again develop, there exists another round type with conical thickened branches, from which long branches develop with abnormal internodes (nest type).—*H. L. G. de Bruyn.*

94. RIETSEMA, J. Weinig bekende ziekten in kers, pruim en perzik. [Little known diseases of cherry, prune and peach trees.] *Tijdschr. Plantenziekten* 36(11): 261-269. 4 pl. 1930.—The occurrence of cherry, prune, and peach trees with abnormal leaves is noted and the malformations of the leaves are described in detail. The disease is called vitrose and the possibility of its being a virus disease is considered. Another disease mentioned is mottling of the leaves, which might be a form of mosaic. Prune trees with vitrose are not certifiable.—*H. L. G. de Bruyn.*

95. ZELLER, S. M. A witches' broom [prob. virus] of ocean spray (Holodiscus discolor Max.). *Phytopath.* 20 (10): 851. 1930.—Abstract.

DISEASE RESISTANCE AND PARASITISM

96. BRESSMAN, E. N. Rye infected with bunt of wheat. *Phytopath.* 21(4): 437-440. 2 fig. 1931.—At Corvallis, Oregon, only *Tilletia tritici* p. f. 9 was able to affect rye and then only Oregon selection no. 1 and Rosen rye. Similar results were obtained at Pendleton, Oregon. No dwarfing of the bunted heads was observed. In cases where floret sterility was present, bunt balls were found in practically all florets. The infection of rye was typical to that produced on wheat by the same organism.—*W. A. Whitney.*

97. DICKINSON, LAWRENCE S. The effect of air temperature on the pathogenicity of Rhizoctonia solani parasitizing grasses on putting-green turf. *Phytopath.* 20(8): 597-608. 3 fig. 1930.—The optimum temp. range for the growth of the short mycelia from sclerotia is 64-68° F., and the required duration of temp. within the range is variable. If the optimum temp. is reached from a lower temp., the air must remain nearly constant for 8-10 hr. to permit growth of sclerotia. The mycelia will appear in 30-60 min. after cooling to the optimum temp. The development of the fungus to the point of becoming actively parasitic is concurrent with a rise in air temp. Virulence appears to require a rather rapid rise from 64-68° F. to 80-85° F. Parasitism commences at about 73° F. and ceases at 90° F. If the air temp. falls below 62° F. the mycelia on the sclerotia are destroyed. No relation could be determined between the humidity records as made and the appearance of large brown patch. Likewise, rainfall and the amount of sunshine failed to show any degree of correlation. From laboratory experiments, 20° C. appears to be too cool for vigorous mycelial development; mycelial development is retarded by a rise in air temp. to 35° C. Chilling appears to be essential for growth of sclerotia if the air is warmer than 35° C., and mycelial growth in all cases was weak at the time of the 1st observations and could be destroyed very easily by attrition or a fungicide. In pot experiments, the growth of sclerotia was hastened and increased if the sclerotia were cooled to the optimum range for 45 min.; 60% of all sclerotia that were chilled showed short mycelial growth at the end of the chilling period; no sclerotia kept at a constant temp. showed mycelial growth at a corresponding time. Moisture is favorable to growth but not of vital significance. Sclerotia grow better and the mycelial development is greater when they are in contact with soil than when they are on grass.—*W. A. Whitney.*

98. KÖHLER, E. Die Züchtung krebsfester Kartoffelsorten. [Breeding of potatoes resistant to wart disease.] *Züchter* 1(1): 16-20. 3 fig. 1929.—An immune variety is said to be immune under all environments, and no differential strains of the pathogen have been observed. The chief contribution is the outline of a method for testing resistance to wart, especially in the greenhouse.—*F. V. Owen.*

99. McDONALD, J. Notes on physiologic forms of wheat stem rust in Kenya and their bearing on wheat breeding. Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria Papers Agric. Sect. p. 242-244. 1929.—A popular summary of principles and methods employed.—*W. A. Whitney.*

100. MARCHAL, ÉMILE. Le facteur météorologique dans l'évolution des maladies cryptogamiques. [The meteorological factor in the development of fungous diseases.] *Rev. Gén. Hort. [Paris]* 8(86): 1402-1404. 1930.

101. ROEDER. Zur Frage der Kienzopfverbreitung. [Distribution of Peridermium pini.] *Zeitschr. Forst- u. Jagdw.* 62(4): 241-242. 1930.—In the pine stands in the forest range of Runkel on the Lahn, infection in young, otherwise healthy, stands occurs as the result of injury to the bark by rubbing and whipping branches. Practically no further infection could be identified following 2 thinning operations. Older stands (60-80 yrs.) are

almost entirely clean. On the other hand, the disease is heavy in a 25 to 27-yr.-old stand started from seed of undesirable origin which has produced a stand of characteristically short, wide-spreading "wolf" trees. Infections, which are numerous, can be definitely traced to bark injuries, being favored also by the succulent texture of the bark of the rapidly growing trees. A relation between predisposition to infection and source or racial strains is indicated.—*J. Roeser, Jr.*

102. SNELL, K. Die Entwicklung der deutschen Kartoffelzüchtung in den letzten fünf Jahren. *Züchter* 1(7): 224. 1929.—The German Registration Commission has designated several potato varieties as identical, the number recognized being reduced to 137. The chief interest in connection with the development of new varieties has been a yellow-fleshed potato resistant to wart.—*F. V. Owen.*

103. STRAIB, W. Die Bewertung und Bedeutung künstlicher Rostinfektionsversuche für die Pflanzenzüchtung, mit besonderer Berücksichtigung des Gelbrostes. *Züchter* 1(7): 217-223. 1929.—Temp. was found to be one of the most important factors in infection by *Puccinia glumarum*. In a controlled experiment with temp. held at 20-22° C. there were a few susceptible varieties of wheat, but most were resistant; at 8-12° all varieties were susceptible and most of them were severely infected; at 14-16° C. there was a distinct separation between susceptible and resistant varieties, with the majority of varieties susceptible. This effect of temp. in greenhouse studies was corroborated by field results. Without knowledge of proper temp. control a variety of wheat may be as likely to appear susceptible as resistant. The development of *P. graminis* was also found to be affected by temp., but not nearly so markedly as *P. glumarum*. Brown rust of wheat and crown rust of oats were not affected materially by temp.—*F. V. Owen.*

104. TAUBENHAUS, J. J., WALTER N. EZEKIEL, and J. P. LUSK. Preliminary studies on the effect of flooding on Phymatotrichum root-rot. *Amer. Jour. Bot.* 18(2): 95-101. 1931.—Root-rot (*P. omnivorum*) is extremely uncommon in bottom lands, in soils apparently favorable for the development of the disease, even in regions in which the disease is prevalent in the adjoining fields. Root-rot was introduced into a creek bottom by the artificial inoculation of cotton plants, and reappeared in the year following the inoculation. In a laboratory experiment, strands of *P. omnivorum* on naturally-infected cotton roots were inactivated by submergence in saturated soil for more than 3 days; while with parallel series, at the same temp. but stored in moist air, the fungus was still viable after 2 weeks and still able to infect normal cotton plants. Flooding experiments in the field, during 3 seasons and continuing for as long as 120 days, failed to produce significant changes in the survival of root-rot or to eliminate roots of root-rot carriers from the soil. The survival of root-rot in these experiments is explained as due to possible lack of deep penetration of the water, and to the possible presence of sclerotia which are able to survive long periods of immersion.—*Authors' summary.*

105. THOMAS, K. M. A practical method of estimating disease resistance in crop plants. *Madras Agric. Jour.* 19(1): 16-23. 1931.—The author presents a method, successfully employed, for determining the disease resistance of paddy varieties to blast, of sugar cane to mosaic, and of ground nuts to wilt. With modifications the method promises to be useful for other diseases. It consists essentially in (1) growing varieties and strains under natural conditions and under identical environment, (2) providing identical exposure of all varieties to infection and natural development of the disease, (3) growing a sufficiently large number of individuals to obviate errors, (4) close study of an equal number of individuals in a variety and a correct estimation of disease incidence, and (5) evaluation of the extent of disease and the loss due to it among the several varieties under trial.

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, AND SPRAYING)

107. BODNÁR, J., und ALEXANDER TERÉNYI. Biochemie der Brandkrankheiten der Getreidearten. II. Biophysikalische und biochemische Untersuchungen über die Kupferadsorption der Weizensteinbrandsporen (Tilletia tritici (Bjerek.) Winter). *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 186(4/6): 157-182. 4 fig. 1930.—Cu from $CuSO_4$, $Cu(C_2H_4O_2)_2$, and $CuSO_4(NH_3)_4$ solutions is absorbed by the spores in the relative and absolute ratio of 1:2:3; that from solutions of the first 2 salts being held in the walls as albuminate and phosphate while the $Cu(NH_3)_4$ ion penetrates into the protoplast, which it kills. Recovery of germinating ability occurs after treatment with $CuSO_4$ or $Cu(C_2H_4O_2)_2$ solutions if the spores are sown upon moist earth or gelatine which absorb the Cu from them or if they are washed with 0.5% HCl and sown upon 0.1% $Ca(NO_3)_2$ solution. Difficulty in removing the Cu from the spore walls increases with increase in concentration of the salt and in time of treating. Treatment for 15 min. is effective in inhibiting germination if 0.5% Cu is absorbed by the spores, for 24 hr. if 0.3% is absorbed. The inhibiting effect of dilute solutions of $CuSO_4$ was observed only when the proportion of spores to Cu present was such that 0.5% or more copper would be absorbed by the spores. Neither $ZnSO_4$ nor NaCl increased the amount of Cu absorbed or the inhibiting effect.—*J. W. Sinden.*

108. BROADFOOT, W. C. Preliminary experiments on the control of cereal rusts by Kolo dust. *Phytopath.* 21(4): 347-372. 1931.—Experiments to control cereal rusts by Kolo dust were carried out at Morris, Crookston, and St. Paul, Minnesota, in 1927, using the varieties of wheat which are extensively grown in Minnesota, such as Marquis and Ruby (bread wheats) and Mindum (a durum wheat). There were over 2,000 plots in the entire experiment at these 3 stations. The data from the Marquis plots dusted 3 times show as high as 80.2% reduction in the amount of stem rust; 57.1% increase in yield; and 13.7% increase in weight per bushel, as well as an increase in the grade of wheat when compared with that of control plots. The most effective dusting schedules for 3 applications, from the standpoint of timeliness of application, was one made at flowering time followed by a second 6 days later and a third 4 days after the second, or one made at flowering time followed by a second after 8 days and a third 4 days later. The 15- and 30-lb. rates (per acre) were essentially as effective as the 45- and 60-lb. rates. The data from the Marquis plots dusted twice with Kolo dust show as high as 50.3% decrease in stem rust, 39.7% increase in yields and 10.8% increase in weight per bushel, as well as an increase in grade. The most effective schedule for 2 applications was one dusting at flowering time and the second 6 or 8 days later. The 15- and 30-lb. rates were nearly as effective as the 45- and 60-lb. rates. For practical purposes 2 applications were almost as effective as 3, and the 15-lb. rate was nearly as effective as the 60-lb. rate. Although there was no significant evidence of stem rust control with 1 application of Kolo dust, the treated plots frequently yielded slightly more, and graded slightly higher than the control plots. When Marquis wheat plots were dusted with Kolo dust at the 30-, 45-, and 60-lb. rates at 3-, 5-, 7-, 9-, and 11-day intervals, starting at flowering time, the upper limit for length of time lapsing between applications was found to be 9 days. In Marquis wheat plots dusted with Kolo dust at the 60-lb. rate before, during, and subsequent to flowering time, there was no evidence of injury to setting of seed. Where Kolo dust was applied broadcast to the soil between the rows of Marquis or Mindum at flowering time, in amounts ranging from 30-1,920 lb. per acre, there was no observable control of stem rust, no increase in yield, weight per bushel, or grade of wheat. Ruby wheat dusted 7 times with Kolo dust at the 60-lb. rate at 5-day intervals yielded 26.7% more wheat than control plants. This increase in yield, as well as an increased weight per bushel and grade, was ascribed to the marked decrease in the amount of orange leaf rust, since there

was very little stem rust in the Ruby plots. The protein content of wheat from the non-dusted plants was found to be slightly higher than that of the dusted plants, being 15.16 and 14.80%, respectively.—*From author's summary.*

109. DETWILER, S. B. The white pine blister rust situation. *Jour. Forest.* 29(2): 181-185. 1931.—White pine blister rust is now established on at least ¾ of the area of the commercial 5-needled pine forests of the U. S. A. Mature stands as well as young trees of western white pine will be destroyed rapidly if *Ribes* spp. remain in the forests. To be effective, eradication must be done early, before infection, which takes about 3 yr. to become evident, has taken place.—*P. C. Wakeley.*

110. DILLON-WESTON, W. A. R. Ineffective nature of iodine dust as a fungicide against Tilletia caries. *Phytopath.* 20(9): 753-755. 1930.—Treatment of artificially inoculated Little Joss wheat with 1.5, 3, and 5% iodine dust, at the rate of 2 oz. to the bushel, with untreated and copper-carbonate treated lots as checks, showed iodine dust to be of no value as a fungicide for *T. caries.*—*W. A. Whitney.*

111. FOSTER, J. R. Witch broom control. Progress report. *Proc. Agric. Soc. Trinidad & Tobago* 30(7): 259-260. 1930.—A general decrease of brooms in coco plantings in all the affected areas is noted.

112. GOODWIN, W., H. MARTIN, and E. S. SALMON. The fungicidal properties of certain spray-fluids. 7. *Jour. Agric. Sci.* 20(3): 489-497. 1930.—The fungicidal properties of solutions containing S in polysulphide form—Na-, K-, Ca- and Ba-polysulphides—were tested by application to the conidial stage of *Sphaerotheca humuli* growing upon young hop leaves in the greenhouse. 4 samples of Na polysulphide solutions, 2 prepared in the laboratory and 2 commercial products, were examined. When applied with 1% soft soap as a spreader, solutions containing 0.5% polysulphide S proved fungicidal. With 0.5% gelatine as the spreader, fungicidal strength did not begin to be attained until the concentration of polysulphide S reached 0.11%. The results suggest that the nature of the spreader may influence the fungicidal properties of polysulphide S. 2 samples of K polysulphide solutions prepared in the laboratory had an action similar to that of Na polysulphide solutions when applied at the same concentration of spreader and polysulphide S. 4 samples of Ca polysulphide solutions including one commercial lime sulphur proved almost or quite fungicidal at concentrations of 0.11% polysulphide S when applied with 0.5% gelatine. 2 laboratory-prepared Ba polysulphide solutions proved almost or quite fungicidal at a content of 0.11% polysulphide S when applied with 0.5% gelatine. Solutions of Ca polysulphide which differed widely in the relative amounts of total and thiosulphate S behaved as fungicides in accordance with the polysulphide S content only. The fungicidal efficiency of the polysulphide S was shown to be independent of the base with which it is combined. The results confirm the view that the polysulphide S content is a measure of the fungicidal power of spray-fluids of the polysulphide class.—*Authors' summary.*

113. HUS, P. Proeven met verschillende middelen tegen appelschurft (Fusicladium dendriticum). [Experiments with different fungicides for apple scab.] *Tijdschr. Plantenziekten* 36(12): 286-288. 1930.—Good results were obtained with 4 applications of 2.5% lime-sulphur and by dusting with kolotex and kolodust.—*H. L. G. de Bruyn.*

114. JOCHEMS, S. C. J. Verslag van een proef om door middel van sterilisatie met stoom zaadbedden vrij van slijmziekte te maken. [Steam sterilization of tobacco nursery beds against bacterial wilt.] *Vlugschr. Deli Proefstat. Medan* 48. 1-6. 1 fig. 1930.—On some tobacco estates in Deli (Sumatra) seedbeds of tobacco are attacked by wilt (*Bacterium solanacearum*). In order to get seedlings free from disease the beds were heated with low pressure steam by the box and grid method. A plant was designed to make sterilization feasible on a commercial scale, one estate laying out about 10,000 seedbeds. Sterilization was applied for 45 min.; minimum depth of sterilization was 30 cm.; temp. reached 90° C. Comparisons were made between plants from diseased beds, from beds from soil free from disease, and plants from sterilized beds. The latter gave results as good as beds from disease-free soil; the growth on sterilized beds was often better and especially more even.—*J. Kuijper.*

115. LIESE, J. Neue Wege zur Bekämpfung des Kienzopfs (Peridermium pini). *Zeitschr. Forst- u. Jagdw.* 62(1): 47-48. 1930.—In the Chorin provenance plantations, artificial aecidiospore inoculations were successful only when the inoculated tree showed symptoms of "Kienzopf." The results indicate a variable individual susceptibility and an inheritance of a disposition to contract the disease. It is desirable to avoid all badly diseased stands when seed is collected, in fact, the taking of cones from diseased trees should be prohibited.—*J. Roeser, Jr.*

116. McCALLAN, S. E. A. Studies on fungicides. II. Testing protective fungicides in the laboratory. *Cornell Univ. Agric. Exp. Sta. Mem.* 128. 8-24. 2 fig. 1930.—Details are given of a method of evaluating the relative toxicity of protective fungicides which consists in the determination of the inhibition of germination of fungus spores placed on glass slides coated with the fungicide and incubated in moist chambers. The necessity for controlled and standardized conditions and the method of application of the fungicide and recording of results are discussed in detail.—*S. E. A. McCallan.*

117. McCALLAN, S. E. A. Studies on fungicides. III. The solvent action of spore excretions and other agencies on protective copper fungicides. *Cornell Univ. Agric. Exp. Sta. Mem.* 128. 25-79. 4 fig. 1930.—The toxicity of $CuSO_4$ solutions to conidia of *Sclerotinia americana* as measured by inhibition of germination was positively correlated with total Cu content and negatively with number of spores. Increasing the volume of solution containing a definite amount of Cu and spores diminishes its toxicity because of longer diffusion path, while increase of spore age increases the toxicity. These conidia, 5-10 days old, at a concentration of 1000 per 0.05 cc. of $CuSO_4$ solution are sensitive to 0.02 mg. Cu per liter, hence were used to detect toxic Cu in solution. $Ca(OH)_2$ and $CaSO_4$ cease to be toxic at 0.1 and 0.7 gr. per liter resp. $CaCO_3$ was non-toxic. In relation to atmospheric agencies it was found that no toxic Cu came into solution in distilled water standing on glass surfaces coated with Bordeaux mixture or copper-lime dust. Forced aeration for 5-9 days of the standing water resulted in only slightly toxic filtrates. The substitution of rain water together with aeration produced slightly more toxic filtrates, but rain water does not allow as good germination as distilled. Atmospheric agencies are therefore believed to be relatively unimportant. The filtrates from water in which *Sclerotinia* spores had germinated when placed on Bordeaux mixture or copper-lime dust invariably rendered the filtrate from the resulting suspension toxic, thus demonstrating a solvent excretion by the spores. Controls were non-toxic. Bordeaux mixture placed in collodion sacs which in turn were placed in distilled water did not give a diffusible copper, as the external water was non-toxic when the sacs were removed. If, however, spores were placed in the water in the presence of the Bordeaux-containing sacs, they did not germinate, thus indicating their solvent action. Spores placed at varying distances from a drop of dried Bordeaux mixture and connected therewith by a film of water were entirely inhibited from germinating up to 7.5 mm., beyond which point germination gradually increased. It is concluded that spore excretions are the chief agency in liberating Cu from insoluble copper protectants.—*S. E. A. McCallan.*

118. NEWHALL, A. G. Control of root-knot nematode in greenhouses. *Ohio Agric. Exp. Sta. Bull.* 451. 60p. 12 fig. 1930.—The thermal death point of root-knot nematodes in loam soil was found to be 118° F., with a 20-min. exposure. At the same time very little activity

relative humidity; constant humidity; ... the principal lines in the emission spec... ments; relative stimulation of the 3 co... transmission of radiation by various neutra... glasses; values of "L C"; and conversion of ... scales.—*W. A. Whitney.*

142. **KRUMMACHER, OTTO. Grundriss d... logie.** 3rd ed. 179p. 29 fig. Georg Thieme: Lei...

143. **LAMB, F. W. An introduction to hu... perimental physiology.** 335p. 59 fig. Longmans, G... Co.: New York, 1930.

144. **LECHERS, E. Lehrbuch der Physik für Me... ner, Biologen und Physiologen.** 6th ed., ed. by E... MEYER and SCHWEIDLER. 469p. 525 fig. B. Teubner: Leipzig, 1930. Pr. 18 M.

145. **LYLE, H. WILLOUGHBY, and DAVID de SOUZA. Manual of physiology.** 3rd ed. 820p. 3 pl. Oxford University Press: New York, 1930. Pr. 16s.

146. **PARSONS, T. R. The materials of life. A general presentation of biochemistry.** 288p. 8 fig. W. W. Norton & Co.: New York, 1930. Pr. $3.—This is a simplified account of the fundamentals of biochemistry. Its 14 chapters discuss the values of biochemistry and its scope; the chemical nature of the living substance; the sugars, starches, and fats; the chemical constituents of food materials; the caloric energies of foods; the basal metabolism of the human machine and the methods of determining it; the living fire, a discussion of the respiratory quotient, the extra energy used in various occupations by men and women, the yield in calories of various foods, the calories produced in different animals per unit of weight and surface, and the requirement in calories per day by boys and girls 1-18 yrs. old; wear and tear; digestion and indigestion; the chemistry of muscular contraction; the chemistry of respiration; the vitamins; the biochemistry of the endocrine system; and the cycle in nature of substances involved in the living substances or organisms.—*C. A. Kofoid.*

147. **PRYDE, JOHN. Recent advances in biochemistry.** (The Recent Advances Series.) 3rd ed. 394p. 42 fig. J. and A. Churchill: London, 1930. Pr. 12s. 6d.

148. **PUGLIESE, ANGELO. Fisiologia.** 2nd ed. 768p. 291 fig. Ulrico Hoepli, Milan, 1930. Pr. 50 L.—The subdivisions of the subject are treated in the following order: the general phenomena of life, foods and alimentation, digestion and absorption, intestinal digestion, blood and lymph circulation, respiration, secretory and excretory functions, the physiology of reproduction and growth, animal heat, the physiology of movement, animal mechanics, the general physiology of the nervous ... the physiology of the central nervous system, ... nomic nervous system, the sensory functions, ... chemical bases of the animal body. The book ... from the standpoint of mammalian, and espe... man, physiology. Some chapters have been ...ised and others entirely rewritten.—*C. A.*

... **GAETANO. Fisico-chimica biologica.** ... fig. Unione Tipografico-Editrice Tori... 1931. Pr. 25 L.—This compendium of ...art 1 treats of physico-chemical phe... bodies; the field of biophysics, energy ...ter and its constitution, solutions, the ...sure, electrolytic disassociation, mea... conductivity, ionic equilibrium, H... ...hod its measurement, diffusion, ad... ...of liquids, the colloids with refer... ...the and ultramicroscopic properties, ...solumd classification, hydrophilic and ...ductionstitution and isoelectric point ...meabi...inations with acids and bases, ...viscosit, catalyzers and organized and ...tation o... and putrefaction, and O re... ...lation, th...smotic pressure, cellular per... ...of urine ...tivity of cells and tissues. ...bacteria and...ension, velocity of sedimen... ...in biology.—...f the blood and its regu... ...n of ions, the biophysics ...

150. **VOGE... liquids, the biophysics of ...der Zucker und ...rinciple of Le Chatelier** Berlin, 1931. RM.

151. **WEST, ...RED GEORG. Tabellen ...vey of American ...** 663p. Julius Springer: ...the National Reseai... 126.

... Co., Inc.: New Yor...ditor). **Annual sur...** research in the U. S. 629p. Published for ... reported in a series o... Chemical Catalog ... man familiar with the ...gress of chemical ... graphical references are gr... the yr. 1930 is ... information. Among the tich written by a ... fermentation, foods, phar...xtensive biblio... ...inal sources of ... *C. J. West.*

152. **WINTON, F. R., and ... chapter on the physiology of ... LYTHGOE). Human physiology** ...SS (with a ...s, by R. J. ... London, 1930. Pr. 15s. Churchill:

ANIMAL PHYSIOLOGY

COLLOIDS, SURFACE TENSION, ADSORPTION, VISCOSITY, PERMEABILITY, OSM...

D. I. HITCHCOCK, *Editor*

(See also in this issue Entries 201, 211, 212, 213, 217, 218, 223, 231, 232, 237, 245, 247, 254, 264, 26 887, 972, 981, 1044, 1045, 1046, 1084, 1093, 1292)

153. **ABITZ, W., O... GERNGROSS, und K. HERRMANN. Zur röntgenographischen Strukturerforschung des Gelatinemicells. [The x-ray structure of the gelatine micelle.]** *Naturwiss.* 18(34): 754-755. 1 fig. 1931.

154. **ADAIR, G. S. The thermodynamic analysis of the observed osmotic pressures of protein salts in solutions of finite concentration.** *Proc. Roy. Soc. [London] A* 126(800): 16-24. 1929.—The partial osmotic pressure of the protein ions was determined in hemoglobin solutions. The results obtained by the new and more general method used agree within 1-6% with provisional values previously reported. This is important in making allowance for the effect of the unequal distribution of diffusible ions in systems of the type employed.—*R. L. Nugent.*

155. **ADOLPH, EDWARD F. The water exchanges of frogs with and without skin.** *Amer. Jour. Physiol.* 96(3): 569-586. 1931.—The initial rates at which water was taken up or given off by frogs from which the skin had been removed were proportional to th... tion of NaCl in the medium. When gelatin wa... each concentration of NaCl, much less water ... or more water was lost by the skinless frogs. ... greater rate of osmosis due to gelatin than to ... accounted for by the rapid exchange of salt but ... gelatin between tissues and medium. The influenc... anesthesia, pithing, and addition of gelatin to the med... were evaluated upon both skinless and intact frogs. ... skinless frog and the pithed intact frog are under cer... ...ain conditions ideal osmometers. By comparing the rates ... of exchange which are due to osmotic pressure alone with ... the actual rates of exchange of normal intact frogs, ... those forces residing in the skin which ordinarily oppose ... the attraction of water by the osmotic pressure of the ... body fluids are evaluated.—*Author's summary.*

156. **ADOLPH, EDWARD F. Osmosis into frog skin, and the effects of isolation, of orientation, and of the blood's circulation.** *Amer. Jour. Physiol.* 96(3): 587-597.

1931.—Freshly isolated frog skin initially gains or loses water in proportion to the square root of the time elapsed after its immersion. In solutions of NaCl to which it is fully exposed, the gain or loss is linearly related to the concentration of the salt in the solution. If exposed only on its outer surface, the skin taken from pithed frogs likewise gains or loses in linear relation to the concentration of NaCl in the medium, at rates at least ½ of those found in the pithed intact frog. This fact refers the initial exchanges of water by the intact frog to the skin itself. Chlorides are exchanged by isolated skin at rapid rates which are in linear relation to the concentration of NaCl in the medium. The rate of the circulation bore no measurable relation to the concentration of the fluid being transported by it. In a few experiments in which the circulation was stopped altogether, the rates of osmosis into or out of intact frogs were the same as for normal intact frogs.—*Author's summary.*

157. **ADOLPH, EDWARD F. The initial rates of swelling of isolated muscle and their relation to the osmotic exchanges within the frog.** *Amer. Jour. Physiol.* 96(3): 598-612. 1931.—Gastrocnemii and upper-leg muscles were placed in various solutions of NaCl and gelatin. The initial exchanges of water were measured by frequent weighings, and occurred in proportion to the surface area of the muscle and to the square root of the duration of immersion. Osmosis at different concentrations of NaCl was linearly related to the concentration except in extreme dilutions, where osmosis was exceptionally rapid. When gelatin was present at any concentration of NaCl, the rate of osmosis inward was much reduced. The rates were slightly different at each concentration from those for skinless frogs. From the data for the initial rates of osmosis into each frog tissue that has been studied, osmotic constants was calculated, and the concentrations at which no exchanges of water occur are compared. The initial rates of diffusion of chloride into some of the same tissues are likewise compared by calculating diffusion coefficients. By means of numerical relations, the relative distributions of water among various tissues can be estimated from the initial rates of osmosis manifested upon immersion of these tissues in a common medium. The forces attracting and holding water in tissues are under certain conditions proportional to these initial rates of osmosis.—*Author's summary.*

158. **AMSON, KLAUS. Worauf beruht die irreziproke Permeabilität der Froschhaut?** *Pflüger's Arch. Ges. Physiol.* 225(4): 467-481. 4 fig. 1930.—The resting current of the skin of the frog is not connected with its one-way permeability since, while the electromotive forces fall off rapidly after the removal of the skin from the body, the one-way diffusion of methylene blue is maintained for a long time. Impermeability of the skin in the non-physiological direction may be found in a skin in which the E.M.F. has sunk to zero. The passage of an electrical current across a skin separating a pure Ringer solution from one containing methylene blue is without influence on the permeability with either direction of the current, even though high potentials are used. Influences which are liable to cause irreversible damage to the vital processes can make the skin permeable from without to methylene blue but still leave a definite difference between permeability in the physiological and the non-physiological direction. Among such may be mentioned heating to 45°; the action of chloroform, ether, alcohol, and NaF; and also spontaneous death. Putrefactive bacteria bring about a complete elimination of the one-way effect. It is suggested that one-way permeability is due to special structural arrangements which can be considerably damaged by killing agents but that only a destruction of the skin structures can bring about a complete elimination of the one-way permeability.—*D. J. Lloyd.*

159. **ANSELMINO, KARL JULIUS, und ELISABETH HOENIG. Weitere Untersuchungen über Permeabilität und Narkose.** *Pflüger's Arch. Ges. Physiol.* 225(1): 56-68. 2 fig. 1930.—Permeability in red blood corpuscles is checked by the addition of narcotics of the alcohol and urethane series. Their influence on the entrance of glycerin was studied by the hemolysis, and on the entrance of erythrite, pentoses, and hexoses by the hematocrite method. Since our knowledge of the structure of the blood corpuscle membrane allows one to separate different permeability mechanisms for the entrance of different substances, an attempt was made to analyze this checking of permeability observed in narcosis. With substances which enter through the pores of the blood corpuscle and whose permeation velocity becomes narcotized, it is assumed that retardation depends on the narrowing of the pore diameter by a layer adsorbed to the pore wall. In a 2nd class of substances whose velocity of permeation is slowed by narcosis, permeation is associated with chemical changes in the membrane structure or with additions to the membrane by adsorption. For an explanation of this process, the adsorption theory of narcosis, which formerly had been applied only to inner cell structures, is applied also to outer cell structures. In this way a broad contact is produced between the permeability and the adsorption theories of narcosis.—*Authors' summary (transl. by D. Ludwig).*

160. **CARO, L. de, e M. LAPORTA. Sul variare della tensione superficiale delle soluzioni proteiche in funzione del pH. [Effect of pH on surface tension of protein solutions.]** *Arch. di Sci. Biol.* 14(3): 264-292. 10 fig. 1930.—Gelatin, serum- and egg-albumin, in diluted or concentrated solutions, depress critically the surface tension of water at their isoelectric point, as pointed out by Bottazzi and collaborators. Changes of tensioactive power of the soluble proteins with pH are due essentially to unknown molecular changes. The molecular wt. of serumalbumin, as determined from static surface tension values, is 66,167. The monomolecular specific tensioactive power of serumalbumin, viz. tensioactive power at isoelectric point, was equal to 37.5×10^{-15} dyne/cm.—*A. Jappelli.*

161. **CHAPMAN, O. W., and J. H. BUCHANAN. The properties of starch with relation to time of formation of starch gels.** *Iowa State Coll. Jour. Sci.* 4(4): 441-450. 1930.—There is a fall-back in viscosity of starch pastes after the maximum value has been reached, and the gels formed from the paste exhibit syneresis, due to a rearrangement of gel aggregates which liberates some of the water enclosed by the original structure. Starch pastes of low concentration do not form as firmly bound gel aggregates as those of higher concentrations, and so are less viscous, and since their movement is less hampered, there is a greater degree of syneresis. Syneresis may be prevented or retarded by the addition of certain salts, due to the formation of firmer gel structures, which do not readily enter into rearrangements permitting the expression of water.—*Authors' summary.*

162. **COCA, ARTHUR F. On the dialyzability of proteins.** *Jour. Immunol.* 19(4): 405-410. 1930.—All of the 3 proteins of egg white studied are shown, with the use of specific antisera, to be dialysable through parchment, collodion, and animal membranes. A little less than 1% of the protein passed through the membrane in 5 days.—*A. F. Coca.*

163. **Du NOÜY, P. LECOMPTE. Équilibres superficiels des solutions colloidales.** 228p. 95 fig. Masson & Cie: Paris, 1929. Pr. 32 F.—This book is a French translation of the American edition, to which have been added results obtained since 1926. Full descriptions are given of the author's well known tensiometer for liquid-gas surfaces and of the later modification of the apparatus for liquid-liquid interfaces. Other chapters deal with the variations with time of the surface tensions of solutions of sodium oleate, serum, ovalbumin, etc. One chapter deals with the influence of these solutions on the crystallization of NaCl. The last 2 chapters deal with the colloidal explanation of solutions of proteins, serum, and plasma, and speculations regarding the forces at work in the formation of living cells. The book has a well-chosen bibliography and useful indices.—*E. F. Burton.*

164. **FISCHER, MARTIN H. The constitution of living matter.** *Trans. Kentucky Acad. Sci.* 3: 47-61, 2 fig. 1927/

the speed of the reaction rising with increase of length of the glycine chain. The α-naphthalenesulpho- derivative of hexaglycyl-glycine was split more slowly than the simple polypeptide. The same was true of the phenylisocyanate derivative of *dl*-norleucyl-*dl*-leucyl-glycine and glycyl-*dl*-norvalyl-*dl*-norvaline as compared with the corresponding free tripeptides. Erepsin at pH 7.8 attacked triglycyl-glycine and tetraglycyl-glycine but not the higher peptides; at pH 8.4 its action was somewhat more pronounced and extended to pentaglycyl-glycine. Trypsin-kinase at pH 7.8 attacked the halogenacyl compounds of the glycine polypeptides but not the corresponding simple polypeptides.—*E. McCoy.*

182. **ABDERHALDEN, EMIL, und FRITZ REICH. Weitere vergleichende Studien über den Einfluss von n-Alkali, Erepsin und Trypsin-Kinase auf polypeptidartige Verbindungen, an deren Aufbau β-Aminoisovaleriansäure beteiligt ist.** *Fermentforschung* 12(1): 20-41. 1930.—Erepsin extensively attacked several of the substances tested but trypsin left them unchanged with the exception of β-aminoisovaleryl-*dl*-leucyl-glycyl-*dl*-leucine and *dl*-leucyl-β-aminoisovaleryl-*dl*-leucyl-glycine. The corresponding halogenacyl compounds also resisted attack. It appeared that in all cases the β-aminoisovalerianic acid hindered the action of the amino- or carboxy-polypeptidase. It is possible that too much "foreign building stone" in the structure of the polypeptide resulted in a marked decrease in the affinity of the ferment for the substrate, or that the combination of the ferment and substrate was itself so stable that the existing pH did not suffice to bring about hydrolysis. *N*-alkali was extremely effective in bringing about hydrolysis of all but *dl*-leucyl-β-aminoisovalerianic acid.—*E. McCoy.*

183. **ABDERHALDEN, EMIL, und OTTO ZUMSTEIN. Über das Verhalten von Prolin enthaltenden Polypeptiden gegenüber dem Erepsin- und dem Trypsin-Kinase-Komplex.** *Fermentforschung* 12(1): 1-19. 1930.—Of the various dipeptides tested only glycyl-proline was attacked by erepsin; none were hydrolyzed by trypsin. Trypsin hydrolyzed *dl*-α-bromisocapronyl-*l*-proline but not *dl*-α-brompropionyl-*l*-proline nor *dl*-α-hydroxycapronyl-*l*-proline amide.—*E. McCoy.*

184. **BEST, C. H., and E. W. McHENRY. The inactivation of histamine.** *Jour. Physiol.* 70(4): 349-372. 1930.—The properties of the histamine-inactivating material under investigation are those characteristic of enzymes, and the name histaminase is suggested for the system or substance which is responsible for this loss of the physiological activity of histamine. In the dog, kidney and intestine are the richest sources of the enzyme; the histamine concentration in the lungs is not so high as that in certain other tissues. The histamine-histaminase reaction is inhibited by lack of O and by small amounts of cyanide. Under certain conditions the decrease in the iminazole content of the solutions was roughly parallel to the loss of histamine. This finding suggests that histaminase produces a rupture of the iminazole ring in the histamine molecule. A short study of the action of formaldehyde on histamine revealed certain differences in the mechanism of action of the aldehyde and of histaminase. Perfusion experiments were carried out using kidneys, liver, heart and hind limbs of the dog. The results showed that the isolated kidneys inactivate histamine much more rapidly than the other tissues investigated.

185. **CLEMENTI, A. Sulla costante presenza della fosfoglicerasi nel succo enterico secreto da ansa intestinale alla Vella. [Constant presence of glycerylphosphatase in the enteric fluid from Vella's fistula.]** *Boll. Soc. Ital. Biol. Sperim.* 3(9): 1267-1268. 1928.

186. **CLEMENTI, A. Sulle condizioni in cui si manifesta l'attività antibatterica e antitossica della bile. I. Rallentamento della fermentazione lattica in presenza di sali biliari. [Conditions for the manifestation of the antibacterial and antitoxic activity of bile. I. Effect of bile salts on lactic fermentation.]** *Arch. di Sci. Biol.* 13(1/2): 211-220. 1929.—Bile salts retarded lactic fermentation and inhibited the conversion of caseinogen into casein. The decrease in pH, giving a strong acid reaction with litmus, precipitated bile salts and so indirectly retarded lactic fermentation.—*A. Jappelli.*

187. **CLEMENTI, A., e P. PRAMPOLINI. La concentrazione Idrogenionica optimum per l'attività enzimatica dell'asparaginasi animale. [Optimum pH for asparaginase.]** *Arch. di Sci. Biol.* 13(3-4): 443-465. 1929.—The pH most suitable for asparaginase from chicken's liver was 7.20-7.60, i.e., near the pH of tissues and blood, where the action of this enzyme usually occurs.—*A. Jappelli.*

188. **FLOREY, H. The relative amounts of lysozyme present in the tissues of some mammals.** *British Jour. Exp. Path.* 11: 251-261. 1930.—Titrations for lysozyme were given of various tissues of cat, rabbit, guinea-pig, rat, dog and man. Cat's tissues, with the exception of salivary gland, were extremely poor in lysozyme. The tissues of the guinea-pig were quite rich in the enzyme but the tears and saliva were almost completely free of it. The same applied to the rat. Rib cartilage was not specially rich in lysozyme. In general the spleen, kidneys, and lungs were richly supplied. In all spp., the content of extract of skeletal muscle in lysozyme was small or undetectable. Growing tissue did not seem to be specially well endowed with it for the testis had a low content. Brain had a very low content. Lymph gland had a moderate amount in all spp. Some results supported the idea of lysozyme being primarily an antibacterial agent; others were difficult to interpret on this basis.—*J. Bland.*

189. **FOSSE, R., et A. BRUNEL. Sur le ferment producteur d'acide allantoïque par hydration de l'allantoïne. Sa présence dans le règne animal.** *Compt. Rend. Acad. Sci.* 188(16): 1067-1069. 1929.—The enzyme which transforms allantoin into allantoic acid acts only when either Ca or $(NH_4)_2CO_3$ is present in the system. This enzyme is found in animal tissues (fishes, crustacea, echinoderms) and plants (*Soja, Phaseolus*).—*E. S. G. Barron.*

190. **KITAGAWA, MATSUNOSUKE.—On the signification of some auxosubstances in the urease reaction.** *Jour. Biochem.* 9(2): 347-352. 1928.—The urease free from the auxosubstance never lost its activity if the inhibitor was removed from the system. The presence of the inhibitor from any source caused a diminution of activity by the formation of an inactive complex. If, in such cases, the auxosubstances were added, they combined with the inhibitor in undissociable form to set free the urease in active form or to prevent the formation of an inactive complex. The urease activity was therefore determined by the relative amounts of auxosubstances and inhibitors in the reaction system.—*E. S. G. Barron.*

191. **LOHMANN, KARL. Über das Koferment der Milchsäurebildung des Muskels. [The co-enzyme of lactic acid formation in muscle.]** *Naturwissenschaften* 19(8): 180. 1931.—Comment on earlier work.

192. **LUNDSGAARD, EINAR. Die Monojodessigsäurewirkung auf die enzymatische Kohlenhydratspaltung.** *Biochem. Zeitschr.* 220(1/3): 1-7. 1930.—The Na salt of iodo-acetic acid in concentrations down to 1000 prevented alcoholic fermentation by yeast and by preparations of zymase. No formation of hexosephosphates was observed in the experiments with yeast or zymase. Invertase, ptyalin and catalase were not affected.—*E. Lundsgaard.*

193. **LUNDSGAARD, EINAR. Über die Einwirkung der Monojodessigsäure auf den Spaltungs- und Oxydationsstoffwechsel.** *Biochem. Zeitschr.* 220(1/3): 8-18. 1930.—By treating yeast with iodo-acetic acid it was possible under definite conditions to reduce the fermentation to a minimum without affecting the respiration. Frogs were injected subcutaneously with the material in such a way that the formation of lactic acid was eliminated while the oxygen consumption remained normal.—*E. Lundsgaard.*

194. **MATTHES, K. The action of blood on acetylcholine.** *Jour. Physiol.* 70(4): 338-348. 1930.—To obtain a quantitative estimate of the rate of destruction of acetyl-

choline by blood or tissue extracts, the action was allowed to proceed for a definite time, and then brought to an end by the method used by Galehr and Plattner [1928]. The results indicated that the destruction of acetylcholine by blood is due to the action of an esterase, which is specifically inhibited by eserine, even in extreme dilutions, and also by fluorides.

195. MELLANBY, JOHN. Prothrombase—its preparation and properties. *Proc. Roy. Soc.* [*London*] *B* 107 (751): 271-285. 1930.—Prothrombase may be prepared from oxalated mammalian plasma by (a) precipitation at a reaction of pH 5.3, of the globulin complex from the plasma with 10 volumes of water; (b) extraction of the prothrombase from this complex by a dilute solution of calcium bicarbonate; and (c) precipitation of the prothrombase from the calcium bicarbonate solution by the addition of acid to a reaction of pH 5.3. The yield of prothrombase is about 40 mgrm. from 100 cc. of plasma. 1 mgrm. of the average prothrombase preparation when converted into thrombase coagulates 100 cc. of oxalate plasma in 20 sec. This fact in conjunction with the above explains the rapid coagulation of plasma when kinase (injured tissue) enters the blood stream. Prothrombase is a white amorphous powder which gives the characteristic reactions of acid meta protein. It is insoluble in water but freely soluble in dilute alkali. It is not dialysable through a collodion membrane, nor is it destroyed when an aqueous solution of it is heated to 100° C. for 5 min.; this latter procedure, however, diminished the rate at which it is converted into thrombase. Prothrombase may be activated by the addition to it of thrombokinase, but the rate of generation of thrombase is greatly accelerated by the presence of small quantities of Ca. The rate of activation is slow at the beginning of the reaction, but proceeds with a rapidly increasing velocity. The velocity of activation is modified by the reaction of the solution and by temp. Sr, Ba or Mg may replace Ca in the activation of prothrombase by thrombokinase. Sr is as effective as Ca in the activation process, but the efficiency of Ba or Mg is very small. With Ba or Mg, activation proceeds at a rate only slightly greater than that produced by thrombokinase alone.—*Author's summary.*

196. NAKAJIMA, KENZO. Refutation of the Schütz law and its analogous equations in the kinetics of enzymes. *Jour. Fac. Agric. Hokkaido Imp. Univ.* 28(3): 329-358. 1930.—From a critical study of many papers on the velocity of enzymatic reactions, where the so-called Schütz law has been considered valid, the author concludes that the Schütz equation can only be applied to the results obtained with dilute peptic solutions. The same criticism is made of the theoretical explanation of Arrhenius in support of the "Schütz law" and of Northrop's theory.—*E. S. G. Barron.*

197. PAGE, R. O., and A. W. PAGE. Action of trypsin on the properties of collagen. *Indust. & Eng. Chem.* 22(5): 545-547. 1 fig. 1930.—Limed and bated hide pieces were plumped in acid or alkali and then neutralised. Such treatment did not alter the rate of solution of collagen by trypsin, but the trypsin acted on the remaining collagen to reduce its plumping, to lighten the colour and increase the mellowness of the leather produced from it, and to lessen its power of combining with vegetable tanning materials.—*R. O. Page.*

198. ROSENTHAL, OTTO. Die Vergärbarkeit verschiedener Zuckerarten durch Rattenleber. Ihre Abhängigkeit vom Ernährungszustand des Versuchstiers und von jahreszeitlichen Einflüssen. (Untersuchungen über Milchsäuregärung von Warmblütergeweben. III.) *Biochem. Zeitschr.* 277(4/6): 354-384. 1930.—Glycogen, sucrose, maltose, galactose, mannose, glucose, fructose, hexose-diphosphoric acid ester, hexose-monophosphoric acid ester, glycerinaldehyde, and dioxyacetone were studied. Only fructose and the 2 trioses were actively fermented. With mannose fermentation was barely perceptible, and no faster than with glucose. All the others were nearly or quite unaffected. Fructose and the trioses were actively fermented only if the animals had been fed, and even such livers varied considerably. In summer a considerable number of livers fermented dihydroxyacetone and a smaller number, fructose. In winter the power to ferment fructose and dihydroxyacetone was no greater in livers of fasting than in those of fed animals. Seasonal changes were less marked in fermentation of glycerinaldehyde, and it is probable that individual differences were due to differing amounts of a ferment-activator. Neither seasonal nor nutritional state was important in the dismutation of methylglyoxal, which was fermented four times faster than fructose or glycerinaldehyde.—*M. E. Collett.*

199. SCHÄFFNER, A. Enzyme und ihre Bedeutung zur Konstitutionsermittlung von Naturstoffen. *Fortschr. Chemie, Physik u. Physikal. Chemie, A* 20(7): 1-58. 1930.—Due to the work of Willstätter, Euler, their followers and others the knowledge of enzymes has been developed so that the use of enzymes in the analysis of natural substances is receiving recognition. This monograph is intended to give a summary of the results obtained in this direction and to point out further possibilities in the solution of problems of organic structure-analysis. The principles of enzymic methods and the purification of enzymes are presented. The specificity of enzyme action and thereby the usefulness of enzymes as reagents for certain groups or linkings are discussed, especially the enzymic breaking down of carbohydrates and proteins. The use of enzymes in the solution of structural problems of protein chemistry has led to distinct advances. The action of all proteolytic enzymes, however differently they may appear to act, is limited to hydrolysis of the peptide linking. The fractional breaking down of simple proteins, made possible by uniform enzyme preparations, permits of the examination of definite intermediate products of proteolysis. The enzymic splitting of nucleic acids made possible the recent discovery and identification by P. A. Levene as *d*-ribose of the sugar components of animal nucleic acid. The possibility of placing into distinct groups by the enzymic method the physiologically active compounds of unknown structure is pointed out.—*A. Schäffner* (*transl. by W. E. Thrun*).

200. SCHÖNFELD-REINER, R. Vergleichende Untersuchungen über die Spaltbarkeit von Peptonen und Polypeptiden durch die Fermente der Pankreasdrüse. *Fermentforschung* 12(1): 67-127. 6 fig. 1930.—Experiments were made upon the splitting of di- and tripeptides and peptone with fresh macerate of pancreas and with dried preparations from the soluble and insoluble portions of the macerate after acid coagulation, according to the method of Fodor. By kinetic measurements it was shown that the fresh macerate gives a linear curve in peptone splitting, whereas the precipitated macerate and the acid filtrate give parabolic curves. The acid coagulum (insoluble portion) is the enzyme-bearer for the splitting of the dipeptides and dipeptide complex of peptone. The filtrate (soluble portion) acts exclusively on the tripeptides and peptone. Later after autolysis, apparently autocatalytic, this soluble portion goes over to dipeptide splitting. On theoretical grounds therefore the conception that separate enzymes exist for each action is challenged.—*E. McCoy.*

201. SHERMAN, H. C., M. E. CALDWELL, and MILDRED ADAMS. Enzyme purification: further experiments with pancreatic amylase. *Jour. Biol. Chem.* 88(1): 295-304. 1930.—The new method for purification of pancreatic amylase involves adsorption by alumina gel and subsequent precipitation by alcohol and ether and yields dry solid preparations. The H-ion activities of the solutions at the different steps in the process had a decided influence upon the results obtained and were controlled and made reproducible by the presence of 0.01 M phosphate. It was found feasible, in testing the reaction of the aqueous glycerol and alcohol solutions sometimes used, to make electrometric measurements with the H electrode and saturated calomel cell. Solutions at pH 5.2 to 6.0, favored the adsorption of the amylase by alumina gel, and slightly alkaline solutions, about pH 7.3, favored the extraction of the amylase from the alumina gel by

which it had been adsorbed. This is in accord with the view that pancreatic amylase was of amphoteric nature. It was found possible to make use of glycerol in the early stages of the purification where it prevented or decreased the loss of activity of the amylase in solution and to omit its use in the later stages, after the adsorption, where it interfered with the precipitation of dry solid preparations. The active amylase could be effectively separated from glycerol by adsorption, but not by dialysis. The yields of purified pancreatic amylase obtained by this method were larger, and these enzyme preparations were slightly more active, than those obtained by the Sherman-Schlesinger method.—*Authors' summary.*

202. **[STEPPUN, O. A., and A. M. TIMOFEEVA.]** СТЕППУН, О. А., и А. М. ТИМОФЕЕВА. О причинах быстрого падения каталазного числа в растворах крови. **[Causes of the rapid fall of catalase index in blood solutions.]** [German summary.] Труды Научного Химико-фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 5-12. 1926.—The rapid destruction of catalase from dilute blood solutions was not due to their destruction by blood proteases as Bach and Subkowa assumed. Blood solutions contain antitrypsin which inhibited proteolysis completely; and at dilution of one part of blood to 1000 of water that process was completely inhibited. The addition of trypsin did not bring about catalase activity in blood solutions; nor did the treatment of serum with chloroform (which increased serum autolysis), have any effect. In suspensions of blood corpuscles (the bearers of catalase in the blood) in physiological salt solution there occurred after the primary disappearance of catalase a regeneration of the catalase effect.—*Authors' summary (transl.).*

203. **[STEPPUN, O., and KSENIIA UTKINA-LIUBOVTSOVA.]** СТЕППУН, О., и КСЕНИЯ УТКИНА-ЛЮБОВЦОВА. Попытки установления животной уреазы. **[Experiments as to the existence of animal urease.]** [German summary.] Труды Научного Химико-фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow.*]) 13: 13-20. 1926.—The similarity in the distribution of enzymes in the plant and animal kingdoms suggested the question as to the existence of an animal urease. From investigations directed toward the detection of urease in cases of acidosis in diabetes or in fasting and also in cases in which acids are neutralized by ammonia, the author concluded that the normal liver of a rabbit, horse and dog contains minute quantities of urease; that urease could be more conveniently detected in the acid extract of the liver than in the ordinary expressed juice; that there were some grounds for believing that these small quantities of urease were derived from plants taken as food; and that the enzyme appeared to have no physiological significance, since in acidosis no mobilization for neutralizing the acids could be observed.—*Authors' summary (transl.).*

204. **[STEPPUN, O., and L. UTKIN-LIUBOVTSOV.]** СТЕППУН, О., и Л. УТКИН-ЛЮБОВЦОВ. О влиянии иода на аутолиз органов. **[The effect of iodine on the autolysis of organs.]** [German summary.] Труды Научного Химико-фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 26-34. 1926.—In an earlier paper, the authors showed that yeast autolysis was increased by small quantities of iodine and inhibited by higher concentrations, and that the increased autolysis could not be ascribed to the inhibition of the activity of an antiprotease in Jobling's terminology, i.e., the saturation of the double bonds of unsaturated fatty acids. In this paper it is shown that the autolysis of organs is similarly promoted by small quantities of iodine and inhibited by larger quantities. This iodine effect appears to be specific for autolysis. The existence in the autolysate of only 1 pepsinase (in Rona's terminology) is questioned and the existence also of a cellular tryptase is assumed.—*Authors' summary (transl.).*

205. **[STEPPUN, O., and K. UTKINA-LIUBOVTSOVA.]** СТЕППУН, О., и К. УТКИНА-ЛЮБОВЦОВА. К вопросу о протеолитических ферментах печени. **[The proteolytic enzymes of the liver.]** [German summary.] Труды Научного Химико-фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 35-46. 1926.—On theoretical grounds the existence of a typical tryptase in the organ cells is postulated. The detection of such a tryptase directly in the autolysate is difficult. Indirect methods of detection must be employed, such as a brief autolysis, in various buffer solutions, of an aging autolysate. Experiments were carried out to determine whether the autolytic capacity and the casein hydrolizing capacity of aged autolysate varied concurrently in various buffer solutions and during various periods of time. With 2 buffer solutions (pH 3 and pH 7 respectively) the following conclusions were obtained: (1) During the progress of autolysis the cleavage of the organism's own protein, and of casein, were not altered in the same way, in neutral (pH 7) and in acid pH 3.8. In the acid medium, proteolysis decreased regularly, while in neutral medium the decrease was abrupt, and almost invariably a phase of increased lysis was observed. This indicated that there is at least more than 1 ferment present.—*From authors' summary.*

206. **TAKETOMI, N. Studies on the velocity of inversion of sucrose (part 1).** Original: *Jour. Soc. Chem. Ind., Japan* 32: 890-895. 1929. Abridgement: *Mem. Fac. Sci. & Engineer., Waseda Univ., Tokyo* No. 7. 134-137. 1930.—Effects of pH and of neutral salts were considered.—*From abridgement.*

207. **TAKETOMI, N. Studies on the velocity of inversion of sucrose (part 3). Inversion by Kôji-invertase.** Original: *Jour. Soc. Chem. Ind., Japan* 33. 791-796. 1930. Abridgement: *Mem. Fac. Sci. & Engineer., Waseda Univ., Tokyo* 7. 141-143. 1 fig. 1930.

208. **[UTKIN-LIUBOVTSOV, L. M.]** УТКИН-ЛЮБОВЦОВ, Л. М. Исследования над протеазами печени. **[Investigations on proteases of the liver.]** [German summary.] Труды Научного Химико-фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 47-62. 1926.—Attempts were made to reenforce by direct experiments the indirect observations of the existence of various cell proteases [see also this issue Entry 204], and to determine the optimal conditions for their actions. Casein was used as a substrate; filtrates of the proteins of autolysates of organs coagulated at the isoelectric point were used as the enzyme solutions. When a finely ground organ was suspended in distilled water and placed in a buffer solution of pH 4.7-5.0, most of the protein was precipitated. The precipitate was removed by filtration. The enzyme was partitioned between precipitate and liquid, but sufficient for study remained in the liquid. When the filtrate was allowed to act as casein, 2 optima, at pH 5.2-5.4 and pH 3.0-3.4, were found; the minimum between them might perhaps correspond to the isoelectric zone of the casein. On edestin, its maximum activity was at pH 4.0; near pH 7, cleavage of edestin fell off sharply. The alkaline limit of action on casein was pH 7.5. The precipitate, treated with acetone, split casein in alkaline solution, the limit of activity in the alkaline was pH 7.5-7.6. It was concluded that there are, in liver, 3 proteolytic enzymes, acting on casein. In autolysis of the liver all 3 apparently played a rôle, and the curve showing the relation of autolysis to acidity is the resultant of their activity and of a series of other factors, among which the degree of dissociation of the liver protein is the most important.—*From author's summary.*

209. **ZAYKOWSKY, J., und P. ALEKSEJEFF. Die Katalase der Milch. I. Die Bestimmung der Milchkatalase mit $KMnO_4$-Titration.** *Fermentforschung* 12(1): 55-66. 1930.—The catalase of milk can be determined comparatively rapidly, conveniently, and with great accuracy by $KMnO_4$ titration. The method is: To 2 cc. of fresh milk add 98 cc. of water, 5 cc. of 0.3% H_2O_2; mix well and

leave 30 min. at room temp. At the same time prepare a control test using cooked milk. After 30 min. add to each mixture 5 cc. of 10% H_2SO_4 and titrate with 0.1 N $KMnO_4$. The difference between the reading for the fresh and cooked samples indicates the catalase content of the former and may be expressed as cc. $KMnO_4$, mgm. H_2O_2, or preferably as the catalase number of the milk in mgm. of O_2 per 10 cc. of milk.—*E. McCoy.*

ANIMAL PHYSIOLOGY

ELECTROLYTES AND IONS

G. E. CULLEN, *Editor*

(See also in this issue Entries 179, 259, 297, 315, 360, 407, 540, 592, 675, 703, 772, 972, 973, 990, 1054, 1151, 1199, 1214, 1232, 1248, 1834, 1886)

210. **ADAMS, DOROTHY R., and PHYLLIS TOOKEY KERRIDGE. A note on the hydrogen ion concentration of the vitreous in eyes affected by naphthalene.** *Brit. Jour. Ophthalmol.* 14(8): 397-401. 1930.—Estimations of the pH of the vitreous of 1 or of both eyes were made on a series of 16 rabbits which had been dosed previously with naphthalene, and on 3 normals. The values for the pH of the vitreous from 3 normals and 13 naphthalinised rabbits were within the same range (7.20 and 7.48; av. for normals 7.28; av. for others 7.31). Samples of vitreous from each of a pair of eyes showed remarkably close agreement in pH; the range in pH of the vitreous at 18° C. is very close to that of blood at 38° C., although for a strict comparison the pH of vitreous would have to be determined at 38° C. In the remaining 3 naphthalinised animals values of 6.99, 7.66, and 7.99 were obtained without any obvious causative factor. The pH of the vitreous does not appear to change at any moment after the administration of naphthalene in such a way as to account for the development of cataract; neither is it affected by other intra-ocular changes such as retinal oedema or atrophy.

211. **AHLGREN, GUNNAR. Über die Einwirkung von Kohlensäure, Bikarbonat und H-Ionenkonzentration auf überlebende Organe und ihre Beeinflussbarkeit durch Pharmaka. Ein Beitrag zur Frage der Zusammensetzung der Serumsalzlösung.** *Skand. Arch. Physiol.* 59(1/2): 1-24. 11 fig. 1930.—In preventing pH changes in perfusion fluids, the author recommends (after Michaelis) the saturation of the serum salt solution with CO_2-O_2 mixtures. A nomogram showing the relation of pH to $NaHCO_3$ and CO_2 tension in (phosphate free) Tyrode solution has been constructed. By means of a $NaHCO_3$-CO_2 buffer system the pH of the serum salt solution as well as the intracellular pH is regulated in a physiological manner. The unique position of CO_2 as a pH regulator is emphasized. The effect of displacing the pH by changes in the $NaHCO_3$-CO_2 system in the serum salt solution was studied on rabbit intestines (according to Magnus), on rabbit hearts (with a modified Langendorff preparation), and on frog hearts (according to Amsler). On the rabbit intestines increase of bicarbonate at constant pCO_2 tension (44 mm. Hg) raises the tonus temporarily, increases the frequency, increases the regularity of contraction, and enlarges the amplitude. By varying the pCO_2 and keeping the bicarbonate constant corresponding effects can be noted. Occasionally one notices that an increase in pCO_2 (with lower pH) has a stimulating effect. Regular and strong movement is possible and independent of the relatively wide variation (certainly beyond physiological limits) in bicarbonate concentration, pCO_2, and pH. The effects of drugs on movements can, however, be modified. The stimulating action of acetylcholin on intestinal movements seems to be greater at pH 7.1 than at pH 7.7. The inhibition of adrenalin seems to be unchanged. Rabbit heart of pH 7.7 (1.1% $NaHCO_3$ and 10 mm. pCO_2) was affected positively inotropically when compared at pH 7.1 (pCO_2 34 mm.). The frog heart at pH 7.8 (0.1% $NaHCO_3$ and 7 mm. pCO_2) was affected positively inotropically, but occasionally negatively chronotropically, when compared at pH 7.1 (35 mm. pCO_2).—*Author's summary (transl. by W. E. Thrun).*

212. **ALBACH, WALTER. Zellenphysiologische Untersuchungen über vitale Protoplasmafärbung.** *Protoplasma* 5: 412-443. 1929.—The addition of K, Na, Ca, Mg, Al, and La greatly hasten the staining of living protoplasm by eosin, but in proportion to the acidity of the solution. Previous treatment in the salts causes no change in subsequent staining.—*W. Seifriz.*

213. **ANDO, KUNIO. Über die Hofmeistersche Ionenreihe bei der Aussalzung der hydrophilen Kolloide.** *Nagoya Jour. Med. Sci.* 2(2): 110-123. 1 fig. 1927.—These series are equally valid for the salting out of hemoglobin and egg white, either with or without careful control of pH, except in the presence of certain buffer salts (acetate, citrate, tartrate). The effect of valency is also unmistakably shown and is more pronounced as the pH is further from the isoelectric point, particularly in the acid range. The salting out of hydrophile colloids is due to simultaneous discharge and dehydration of micelles. There is a maximum susceptibility to alcohol at the isoelectric point because the charge on the micelles opposes the effect of alcohol, but not that of salts. There is a sharp increase in susceptibility to salts on both sides of the isoelectric point. Care must be used in determining the lyotropic position of bi- or poly-valent ions, because these have not only a dehydrating, but also a strong discharging effect.—*Author's summary (transl. by S. C. Brooks.)*

214. **BAUDISCH, O., und H. v. EULER. Experimentelle Beiträge zur Kenntnis der Phthalinreaktion gewisser Mineralwässer.** *Biochem. Zeitschr.* 212(1/3): 149-157. 1929.—Samples of a mineral water (Maffersdorf) from fissures in granitite were found to be "active," i.e., to give positive peroxidase and phenolphthalein reactions. Since only solutions of divalent Fe salts give these reactions, the Fe in these waters is divalent.—*D. W. Auchinachie.*

215. **BEHAL, ALOIS. Vylučování vápníku u zdravých zvířat po perorálním a intravenosním podávání některých solí hořčíku. [The excretion of Ca in healthy animals following the peroral and intravenous administration of some Mg salts.]** *Biol. Spisy Vysoké Školy Zvěrolékařské Brno (Publ. Biol. École Vétérinaires Brno)* 7: (75)-(86). 1928.—The metabolism of Ca in rabbits after peroral and intravenous administration of equimolar solutions of $MgSO_4$, $MgCl_2$, and $Mg(OH)_2$ was studied. $MgSO_4$ administered per os causes an increase of Ca excretion in urine and in feces. $MgCl_2$ causes a decrease of Ca excreted in feces and if the same time an enormous increase of Ca in urine. $Mg(OH)_2$ administration per os is followed by small decrease of Ca in feces and by a masked decrease in urine. $MgSO_4$ administered intravenously causes no change in the excretion of Ca in feces, and only a slight decrease in the content of urine. $MgCl_2$ administered intravenously causes a great increase of Ca in both urine and in feces, but $Mg(OH)_2$ causes a decrease in both feces and urine.—*Author's English summary (condensed).*

216. **BENEDICENTI, A., e G. B. BONINO. Attività ionica nei sistemi proteici. [Ion effect in protein systems.]** *Arch. di Sci. Biol.* 14(3): 293-326. 12 fig. 1930.—The study of the exact interrelations between proteins and electrolytes is not possible by ordinary methods, because the activity coefficients of the ions are not yet known. It is better to study the changes of potential

energy of ions brought about by the proteins.—*A. Jappelli.*

217. **BIALASZEWICZ, K. Recherches sur la répartition des électrolytes dans le protoplasme des cellules ovulaires.** *Protoplasma* 6(1): 1-50. 3 fig. 1929.—The ash of eggs from the several animal spp. studied are distinguished in general by their high concentration of K. The quantity of Na, Ca, and Mg is considerably less. The % of Cl is not proportional to the total of mineral bases. The metals of the alkali earths, particularly Ca, are the most variable components of the ash. The electrolytes are distributed in a very characteristic manner between the dispersed phase and the dispersion medium. The components of the ash are not bound to the same extent. The greater part of the alkali metals occurs in the ooplasm in the form of diffusible compounds.—*W. Seifriz.*

218. **BOERNER-PATZELT, DORA, und ALFRED PISCHINGER. Das Verhalten der Strukturen quergestreifter Muskelfasern gegenüber Säuren.** *Protoplasma* 5: 55-85. 1 pl., 1 fig. 1928-1929.—The swelling minimum of insect and frog muscle is at pH 5.2. Nuclear chromatin is flocculated at pH 4.—*W. Seifriz.*

219. **BOINOT, G. Le rôle du calcium en biologie et en thérapeutique. [The rôle of calcium in biology and therapeutics.]** Expansion Scientifique Française: Paris, 1930. Pr. 20 F.

220. **BORSOOK, HENRY, and DOUGLAS A. MacFADYEN. The effect of isoelectric amino acids on the pH of a phosphate buffer solution. A contribution in support of the "Zwitter ion" hypothesis.** *Jour. Gen. Physiol.* 13(5): 509-527. 1930.—The relative merits of the classical conception and of the Zwitter Ion conception of the dissociation of amphoteric electrolytes are discussed, and the following data are presented which confirm the Zwitter Ion hypothesis of Bjerrum, and which are not in accord with the classical view. Amino acids in the isoelectric form resemble strong electrolytes in that they contribute to the ionic strength of the solution. The dielectric constants of aqueous solutions of amino acids, like those of solutions of strong electrolytes greater than 0.02 N., are considerably greater than that of pure water. The magnitude of the dissociation constants of substituted acetic acids and of glycine, are more easily accounted for with the Zwitter Ion than with the classical conception.—*Authors' summary.*

221. **BRITTON, H. T. S. Hydrogen ion.** xiv + 515pp. D. Van Nostrand Co., John Wiley & Sons: New York, 1929.

222. **BROWN, DAVID, and ARNOLD WOODMANSEY. Excretion of the constituent ions of sulphur water.** *Lancet* 216(5520): 1244-1246. 1929.—A carefully conducted series of 4 experiments on 3 subjects in their usual health showed that drinking S water increases metabolism; stimulates the body ferments; causes a retention of Na; increases S metabolism by 50%; and causes a 70% skin excretion of Ca, Mg, Na, and K.—*D. J. Healy.*

223. **CHANOZ, M. Electrolyse des dissolutions de sulfate de cuivre cloisonnées par une membrane animale. Phénomènes observés au niveau de la cloison organique. Résultats expérimentaux.** *Compt. Rend. Soc. Biol.* 98(1): 42-44. 1928.—Diminution of current due to the increasing resistance of the membrane, polarisation, evolution of gas, and deposits on the membrane appeared progressively. The membrane appeared to be a non-uniform conductor, as the deposits were uneven. The origin of the gas is discussed, and the importance of the H and OH ions is stressed. The dilute solutions were most satisfactory.

224. **CHODAT, FERNAND. Importance de la nature des tampons protidiques dans l'activité des ferments solubles.** *Compt. Rend. Séances Soc. Phys. Hist. Nat. Genève* 47(1): 35-40. 1930.—Hitherto, various salt mixtures (phthalates, borates, phosphates, etc.) have been used invariably in in vitro experiments with controlled pH. To reproduce more closely the state of affairs in tissue, the use of protein buffers is suggested. The effect of pH on O evolution from H_2O_2 by catalase was followed in experiments in which (1) 1% gelatin, and (2) 1% commercial peptone (Siegfried) was present in the 1½% H_2O_2 solutions [500 cc. 2% gelatin was mixed with 500 cc. of 3% H_2O_2 at pH 7]. With peptone, the O evolution curve (cc. of O evolved in 8 min. per 25 cc. H_2O_2 substrate at varying pH values) was of the same type as when salt buffers are used; with gelatin buffer, the curves were anomalous, a sharp depression of apparent catalase activity being found around pH 4.4-4.5. This is thought to be due to adsorption of the catalase by the gelatine at the isoelectric point (pH 4.7) of the latter.

225. **COMEL, M. Variazione del pH delle soluzioni equilibrattici per azione del potere regolatore dei tessuti. [Variations of the pH values of buffer solutions as determined by the buffer power of tissues.]** *Atti R. Accad. Naz. Lincei Cl. Sci. Fis. Mat. e Nat.* 7(9): 772-778. 4 fig. 1928.—Tissue broth obtained by hashing muscles or liver of frogs, suspended in phosphate buffer solutions at different pH values exerted on them a considerable buffer action, changing the pH of the phosphate solutions (increasing it if the solutions were more acid than the tissue broth, decreasing it if the pH of the solutions was higher than that of tissues). The buffer action of the tissues is greater than that of M/30 phosphate buffer solutions and is different at different pH values.—*M. Comel.*

226. **COMEL, M. Sul potere equilibratore reciproco di due soluzioni regolatrici di fosfati. [The reciprocal buffer action of two phosphate buffer solutions.]** *Atti R. Accad. Naz. Lincei Cl. Sci. Fis. Mat. e Nat.* 7(11): 947-951. The buffer power of a M/30 phosphate solution at pH = 7.4 is higher than that of M/30 phosphate solutions with lower pH values, the difference of buffer power varying as the difference of pH values of the 2 solutions. These results as compared with similar ones obtained with tissue broth instead of the solution at pH = 7.4, lead to a discussion of the means by which the tissues exert their buffer action; systems of carbonates-carbonic acid, phosphates-phosphoric acid, and proteinate-acid protein come probably into play.—*M. Comel.*

227. **CURTIS, GEORGE M., and G. A. PACHECO. Experimental hypochloremia.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 874-876. 1929.—Perfusion of distilled water through the peritoneal cavity at the rate of 500 cc. per hr. resulted in a pronounced lowering of blood chlorides. During perfusion there was continuous secretion of urine even to a moderate diuresis. CO_2 combining power of the plasma changed but little; non-protein N and urea of the blood decreased slightly. Muscular twitchings and convulsions developed; spasmodic contractions of the diaphragm took place. Death often occurred after prolonged perfusion.—*N. M. Payne.*

228. **DRZEWINA, ANNA, et GEORGES BOHN. Action de l'étain sur les oeufs et les larves d'oursin.** *Arch. Anat. Microsc.* 25: 576-586. 4 fig. 1929.—Sn was antagonistic to Ag. Eggs in Sn-Ag mixtures lived longer than in either metal alone. Sn in water caused sea urchin eggs (*Strongylocentrotus lividus*) to segment and exovate within 20-30 min. Eggs were divided farther than the 4 cell stage. Gastrulae could live a long time in Sn water, but never developed into normal plutei. Plutei placed in Sn water lost their arms, but when placed in normal sea water were able to regenerate new ones.—*N. M. Payne.*

229. **EPHRUSSI, BORIS, et LOUIS RAPKINE. Action des différents sels sur le Spirostomum.** *Protoplasma* 5: 35-40. 1928-1929.—*S. ambiguum* exists in 2 forms. One is exteremely rare and is characterized by a filamentous structure similar to that of *Stentor;* the other is alveolar. The filamentous structure is very unstable and is readily transformed into the alveolar form by a number of agents (pressure, temp., etc.). $CaCl_2$ greatly augments the instability of the system. $MgCl_2$ does not alter the condition apparently. KCl increases stability. $MnCl_2$ has the same effect as $CaCl_2$ but to a greater degree. When injected, $CaCl_2$, $BaCl_2$, and $MgCl_2$ cause severe disruption;

NaCl and KCl produce little change except slight liquefaction. Injected HCl causes local coagulation. Ether produces liquefaction.—*W. Seifriz.*

230. FINLEY, HAROLD EUGENE. Toleration of fresh water protozoa to increased salinity. *Ecology* 11(2): 337-347. 1 pl., 1 fig. 1930.—Fifty spp. of protozoa, in mixed cultures, were studied for toleration of natural and artificial sea water in various concentrations. Three methods were used: direct transfer, recovery from cysts, and gradually increased salinity. There was marked variation in toleration even in closely related forms. The % tolerated was usually greater when gradually increased than in direct transfers. Four sp. lived when transferred directly to sea water: *Bodo uncinatus* (Kent) Klebs, *Colpoda aspera* Kahl, *Pleuromonas jaculans* Perty, and *Uronema marina* Duj. The first 2 were also recovered from 100% artificial sea water inoculated with unsterilized hay. Excystment did not take place in greater salinity than that tolerated in direct transfer of active individuals. Presence of debris and scum in transfers increased % of salt tolerated. *Amoeba verrucosa* Ehrbg. was the only form which lost its contractile vacuole in high salinity. The rate of pulsations became slower in other forms as the salinity increased. Visibility of motor organelles increased with higher salinities. A method of chloride determination adapted to the experiments is also described.—*G. Alexander.*

231. GELLHORN, E. SCN-contracture in skeletal muscle. Further studies in permeability of muscle. *Amer. Jour. Physiol.* 96(1): 203-213. 1931.—If a Ringer's solution, containing NaSCN in a concentration which is below the threshold for direct contracture, is allowed to bathe the frog sartorius muscle for a definite time, and is then replaced by Ringer's solution, a contracture takes place which is called indirect contracture because of its occurrence in pure Ringer's solution. This indirect contracture can be obtained also by application of other SCN salts such as $Ca(SCN)_2$ and NH_4SCN. This and the observed low value of the isometric tension show that the indirect contracture is a SCN-contracture. The strength of the indirect SCN-contracture depends chiefly upon the composition of the 2nd solution which is substituted for SCN-Ringer's solution. It is much greater in NaCl than in Ringer's solution, and by the addition of small amounts of Ca, Sr, or Mg or still lower concentrations of heavy metals such as Cu, Co, and Fe, indirect contracture can be suppressed completely. It increases with decreasing osmotic pressure and increasing pH. It is favored by stimulation of the muscle with condensor discharges. The assumption that the strength of indirect contracture is determined by the velocity with which NaSCN leaves the muscle cell and therefore by the permeability of the muscle easily explains these facts because ions increase and decrease indirect contracture in the same sense as they influence permeability. There is but 1 exception: $BaCl_2$ if added to the 2nd solution increases the strength of indirect contracture.—*Author's summary.*

232. GELLHORN, E. Further experiments on direct and indirect SCN-contracture. The dependence of ion antagonism on permeability. *Amer. Jour. Physiol.* 96 (2): 477-483. 1931.—The strength of the indirect SCN-contracture depends very much upon the time during which the solution containing NaSCN is in contact with the muscle. The indirect contracture is also influenced by changing the composition of the solution containing NaSCN. But in general alterations in the 2nd solution for which the NaSCN solution is exchanged influence the muscle more profoundly. There is a remarkable quantitative difference in the susceptibility of muscle to the same ions which seems to be the expression of a more general rule: Ion effects depend to great extent upon the permeability of the cell. There is a close parallelism between KCl-contracture and direct SCN-contracture with respect to the influence of ions, but with the exception that Ba acts upon the KCl-contracture as the other alkali earths do, while it has just the opposite effect upon both direct and indirect NaSCN-contracture. The direct and the indirect SCN-contracture in the tissues of vertebrates can be used to demonstrate the laws of permeability.—*Author's summary.*

233. GOYENA, JUAN RAÚL. El cloro en la regulación del equilibrio ácido-base. [Chloride and acid base equilibrium.] *Semana Med.* 35(1816): 1162-1165. 1928.—Intravenous injection of NaCl solution (50 parts per 1000) produce a marked diminution of the reserve alkalinity in the blood of dogs and hyperchloruremia, while its administration through the mouth (5 parts per 50 parts H_2O) produces a slight increase in the reserve alkalinity of the blood and hypochloruremia.—*V. G. Lava.*

234. HAYASHI, TEIJIRO. The changes in sea water and their influences upon marine animals. II. The influences of natural salts upon the germ cells of sea-urchin. [With Japanese summary.] *Trans. Sapporo Nat. Hist. Soc.* 11(2): 101-113. 2 fig. 1930.—The influence of chlorides of Na, K, Ca, and Mg upon germ cells of *Strongylocentrotus nudus* was examined. The unfertilized sea-urchin eggs did not form the parthenogenetic membrane in the isotonic solutions of these neutral salts. In the isotonic solutions of chlorides of Na, K, and Mg the unfertilized eggs kept their susceptibility to fertilization more than 12 hrs. The toxic order of these salts for the unfertilized sea-urchin eggs is as follows; Ca, Mg, K, Na. The fertilization membrane is permeable to the cations and accordingly the fertilized eggs are more susceptible to these cations than the unfertilized eggs. There is an antagonism among neutral salts against the toxic actions upon the eggs.—*Author's summary.*

235. HEINSHEIMER, S. Über den Einfluss der Azidose und der Alkalose auf das weisse Blutbild. *Frankfurter Zeitschr. Path.* 40(1/3): 277-287. 1930.—Experiments on 17 rabbits and 2 human subjects are tabulated. Marked acidosis of the blood could be produced by inhalation of CO_2, and intravenous injection of weak HCl, and glutamic and fumaric acids. Marked alkalosis was also produced by intravenous injection of soda. Inhalation of CO_2 reduced the pH of the blood in human subjects from 7.37 to 7.25-7.29; in the rabbit, from 7.32 to 7.06, and acid injection from 7.28 to 6.07-6.42. Soda injection raised it from 7.32 to 8.52. These disturbances of the acid-base equilibrium produced changes in the peripheral blood picture, acidosis producing an increase in myelocytes, alkalosis in lymphocytes. These changes are attributed to effects of different kinds on the sympathetic and parasympathetic systems, respectively. The absolute leukocyte values were not affected by disturbance of the acid-base equilibrium of the blood.—*Author summary (transl.).*

236. HELFF, O. M. Toxic and antagonistic properties of Na, K, Mg and Ca ions on duration of life of Cambarus clarkii. *Proc. Soc. Exp. Biol. & Med.* 26(9): 797-798. 1929.—Preliminary paper.

237. HENSAY, JOSEFINE. Der Einfluss verschiedener Puffergemische auf die Löslichkeit von Eiweisskörpern des lebensfrischen, ermüdeten, absterbenden und starren Muskels. *Pflüger's Arch. Ges. Physiol.* 224(1): 44-61. 1930.—Solubility of muscle proteins was greater in K than in Na solutions. It was greater in phosphate than in acetate. In all buffer mixtures the point of least solubility was pH 5. Increase in concentration in both phosphate and acetate mixtures was proportional to the absolute amount of muscle protein going into solution. Denaturation of protein occurs in extraction. In acetate mixture at pH 4 there was a sudden increase in protein solubility; in phosphate solution a decrease. This same point of change in solubility holds also for fatigued muscle. In muscle after death rigor and chloroform rigor the proteins show the same decrease in solubility in phosphate solutions, but do not show a change in solubility or show a decrease in acetate mixtures. Muscle after treatment with liquid air showed no point of solubility at pH 4 in acetate mixtures, but showed a decrease in buffer mixtures.—*From author summary (transl.).*

238. HESS, OLGA T. The effects of pure solutions of sodium, potassium, and calcium chlorides on the oxygen

consumption of Planaria dorotocephala. *Physiol. Zool.* 3(1): 9-47. 2 fig. 1930.—Changes of O consumption of *P. dorotocephala* were determined by the Winkler method and with Barcroft differential manometer in distilled water and in pure salt solutions of varying concentrations. Temp. and pH were kept constant. Respiration in distilled water remains normal until death changes begin, and shows a slight tendency toward depression during the first few hrs. of exposure; duration of life is dependent on how frequently the medium is renewed. In 0.1 M, 0.04 M, and 0.02 M NaCl the respiration after a period of muscular activity approaches the normal level and rises again with beginning disintegration. In KCl solutions (0.04 M-0.004 M) O consumption rises and continues to increase during paralysis. *P. dorotocephala* can live over a mo. in 0.02 M-0.002 M $CaCl_2$, in high concentrations a decrease in respiration was followed by a return to normal with every renewal of the medium. A slight difference in the rate of body wt. loss was observed in $CaCl_2$ as compared to well water. The high tolerance to $CaCl_2$ may be due to a high proportion of this salt in natural environment of the worms. The upper limit of the osmotic range for the 3 salts used decreases in the order $CaCl_2$, NaCl, KCl, which corresponds to the ratio of these cations in natural waters: 49: 3: 1.—*Author (courtesy Wistar Bibl. Serv.)*.

239. **HÖBER, RUDOLPH. Über die Bindung des Kaliums im Muskel. Erwiderung auf die VII. Mitteilung von Neuschlosz: Über die Bedeutung der Kaliumionen für den Muskeltonus.** *Pflüger's Arch. Ges. Physiol.* 221(4): 478-485. 1929.—A repetition of Neuschlosz's latest experiments on the leaching of K ion from frog muscles failed to confirm his view that the repeated use of small quantities of solvent (Raab's technique) leads to erroneous results. Agitation aids extraction from [*Rana*] *temporia* muscles, but lessens it in the case of more active *esculenta*, which produces more acid. Increase of acid diffusion lessens the destructive effect of acid accumulation on the membranes retarding diffusion of K^+. Increased alkalinity of the medium decreases the K^+ extraction, which at pH 8.2-8.57 is increased by agitation and fine division of (*esculenta*) muscle. There is no evidence for the binding of K in non-diffusible form by muscle proteins.—*F. F. Heyroth.*

240. **JENDRASSIK, L., und A. CZIKE. Zum Chemismus der vegetativen Reizung. Weitere Versuche über die angebliche Rolle von Ionen.** *Biochem. Zeitschr.* 193(4/6): 285-299. 1928.—The authors compared the actions of (1) pilocarpine and K and (2) adrenaline and Ca on a variety of isolated plain muscles. The change from Tyrode's fluid lacking KCl to normal Tyrode's fluid always inhibits plain muscle, whereas pilocarpine causes excitation. In many cases Ca excess and adrenaline produce opposing effects. These results are contrary to the theory of Zondek that there is a regular parallel between the actions of pilocarpine and K, and between those of adrenaline and Ca.—*A. J. Clark.*

241. **JOHNSON, WILLIS HUGH. The reactions of Paramecium to solutions of known hydrogen ion concentration.** *Biol. Bull. Marine Biol. Lab.* [*Woods Hole*] 57(4): 199-224. 1929.—The pH was determined by the colorimetric method but checked with a Youden's potentiometer. Both organic and inorganic acids were used to acidify water from several sources. Only paramecia (*P. caudatum*) from alkaline cultures responded positively to acidified solutions in these experiments. Such paramecia react positively at all pH values lower than their culture to pH 5.0 inclusive when the H-ion concentration is produced by inorganic acids, in all waters used except one. The organic acids elicit similar responses except that tannic and pyrogallic acids are toxic in the lower ranges studied. Paramecia react to acidified water from which all carbonates have been removed indicating that they react to the H ions and not to CO_2. The nature of their reaction is the same upon coming into contact with strong acids (more acid than pH 5.0) and upon coming into contact with culture medium after they are already in the acid solution (less acid than pH 5.0). Paramecia are not able to live in concentrations lower than pH 5.0. This indicates that their behavior in reacting to acids is protective.—*W. H. Johnson.*

242. **JUNKER, HERMANN. Die Wirkung extremer Potenzverdünnungen auf Organismen.** *Pflüger's Arch. Ges. Physiol.* 219(5/6): 647-672. 21 fig. 1928.—Renewed investigations were made of the effects of dilutions ranging from $1:10^1$ to $1:10^{27}$ of the most varied substances viz., cocaine, Na-desoxycholate, nonylic acid, octyl alcohol, K-oleate, HCl, acetic acid, urea, $MgSO_4$, $CuSO_4$, and rubio (a vitamin preparation) on the rate of multiplication of *Paramecium* and other biological objects. No limiting value was found within the series of dilutions studied and it is almost certain that biological effects occur even in higher dilutions than $1:10^{27}$. Expressed graphically the results give curves of a very definite and uniform type for all the substances investigated (a deep, broad minimum at about $1:10^{13}$, a rather less marked minimum at about $1:10^{24}$, and a downward kink at $1:10^{27}$). Up to a concentration of about $1:10^{27}$ irregularities appear in the curves owing to the specific effects of the substances within this part of the range, but in the higher dilutions these irregularities cease and the curves for all the substances tested are similar, i.e., non-specific. Two or more such series working simultaneously act independently of one another. This result can also be deduced from Kolisko's data for wheat.—*H. Junker (transl. by H. Sandon).*

243. **KOLTHOFF, I. M. The confusion in the expression of the so-called "hydrogen ion concentration" of a solution and a review of Brönsted's conception of acidity and basicity.** *Rec. Trav. Chim. Pays-Bas et Belgique* 49(4): 401-414. 1930.—The terminology of the expression of the acidity of a solution should be rationalized. It is proposed to define (H^+) and pH by their actual significance and to express the corresponding values of the activity and activity exponent by (aH^+) and *pa*H. Values derived on the basis of Sörensen's original work should be indicated by the Sörensen value (sH^+) and the Sörensen exponent *ps*H. The acidity of an aqueous solution should be expressed by the hydronium ion and not by the H ion concentration, because no free protons occur to any measurable extent. Some consequences of Brönsted's conception of acidity and basicity have been given.—*I. M. Kolthoff.*

244. **KOLTHOFF, I. M., und J. J. VLEESCHOEWER. Eine Vervollständigung der Reihe Pufferlösungen im alkalischen Gebiet.** *Biochem. Zeitschr.* 189(1/3): 191-193. 1927.—Measurements of buffer solutions were made with the quinhydrone electrode standardized against an H^+ electrode. Proportions of a buffer of 0.1 M Na_2HPO_4 and 0.1 N NaOH are given for making buffer solutions of pH 11-12 in steps of a 0.2 pH. Proportions of 0.05 M Na_2CO_3 and $Na_2B_4O_7$ to make solutions of pH 9.2-11 are given, and also directions for making buffer solutions from 0.1 M KH_2PO_4 and .05 M $Na_2B_4O_7$ to produce solutions of pH 6.0-9.2.—*N. M. Payne.*

245. **KONDO, KINSUKE, and TSUNETOMO HYASHI. The influence of salts on the iso-electric behavior of the protein.** *Bull. Chem. Soc. Japan* 3(6): 146-151. 1928.—Metallic chlorides added to solutions of rice glutelin in an acetate buffer, shift in the direction of increased acidity the pH at which the protein shows its minimum degree of ionisation. On account of their ionising effect small concentrations of metallic cations diminish the amount of protein precipitated at its true iso-electric point; in larger concentration the cation increases the amount of protein precipitated by forming an insoluble complex; while in the highest concentration precipitation is again diminished owing to the formation of soluble complexes. The magnitude of these effects is determined by both the valency and the nature of the cation employed.—*T. R. Parsons.*

246. **M'CALLUM, J. W., and H. E. MAGEE. The influence of bicarbonate and phosphate on the movements of surviving intestine.** *Quart. Jour. Exp. Physiol.* 20(1): 20-28. 1930.

247. **MAINZER, FRITZ, und T. CH. SHEN. Die**

Gleichgewichte zwischen CO_2 und Phosphatlosungen. (Ein Beitrag zur Theorie der CO_2-Bindungskurve.) *Biochem. Zeitschr.* 215(1/3): 137-151. 1929.—In studying the equilibrium between CO_2 and solutions of phosphates, a comparison was made between phosphate solutions of equal concentration under conditions of varied pH, as well as between solutions in which the relationship between primary and secondary phosphates was constant but which had a varied phosphate concentration. A variable change of volume % CO_2 at different CO_2 tensions is found with a variable pH. The change with phosphate concentration is less pronounced. The results obtained are comparable to those obtained earlier when the CO_2 binding capacity of urine was investigated. The effect which the dilution of blood, or the addition of strong and weak acids, has upon its CO_2 binding capacity and the relationship of hydremia to acidosis is discussed.—*J. M. Johlin.*

248. MANKIN, WINIFRED R. Estimation of total chloride in tissue. *Med. Jour. Australia* 2(11): 358-367. 1 fig. 1929.—About 1 gm. of tissue is weighed by difference in a corked glass test tube. It is digested with 5 cc. of HNO_3 in the presence of excess 0.01 N $AgNO_3$ on a water bath. When digestion is complete and the volume of solution has been evaporated to about 3 cc., 6 cc. of distilled water and 3 drops of ferric alum are added. The excess $AgNO_3$ is then titrated with 0.01 N thiocyanate. A duplicate which is not titrated to completion is stood beside the above to facilitate observation of the end point. The chloride content of egg white is usually higher than that of egg yolk from the same egg. The content varies considerably in whites of eggs laid by different hens. The same applied in the case of yolks. Using the figures obtained for chloride concentration, it has been calculated that it is possible for 4.03% of the intensity of a beam of homogeneous x-rays to be absorbed while travelling through an egg.—*W. R. Mankin.*

249. MANKIN, WINIFRED R. Concerning the source of calcium required by the developing chick embryo. *Med. Jour. Australia* 2(26): 916-919. 1929.—A method dealing with the accurate estimation of Ca in tissue is described. The Ca content of the yolks of unincubated eggs is about 0.10% and that of egg white about 0.01%, so that the total Ca content of an unincubated egg approximates 23 mgm. The Ca content of a newly hatched chick is about 105 mgm. The average water content of yolk is 49%. The average water content of white is 89%. The average water content of a 4-day embryo is 95%. The average water content of a newly hatched chick is 69%. The presence of Ca in the yolk of the incubated and developing egg in concentration similar to and greater than that of the non-incubating egg is indicated, as is also the presence of Ca and P in the allantoic fluid.—*Author's summary.*

250. MAST, S. O. Effect of salts, hydrogen-ion concentration, and pure water on length of life in Amoeba proteus. *Physiol. Zool.* 4(1): 58-71. 1931.—*Amoeba proteus* functions normally in chemically pure water, and some specimens live in it 16 days without food. If salt is added, length of life is prolonged a few days. The relative effect of different salts depends upon the concentration. In N/1000 solutions the order of the length of life is $Na > Mg > Ca > K > NH_4$, but in stronger solutions it is greater for Ca than for Na salts. There is very little difference in the effect on the length of life of the following anions: SO_4, NO_3, Cl, PO_4. The anion $C_2H_3O_2$ is relatively more toxic than the others mentioned. Length of life in strong solutions is much greater for mixed salts than for single salts. *A. proteus* lives several days in solutions in which the pH ranges from 4 to 8, and there is no marked difference in the length of life over this range. There is probably a double optimum, one at about pH 6.8 and another at about pH 4.8. Beyond pH 4 and 8 the length of life decreases very rapidly. The effect of pH depends upon the salt concentration. The stronger the salt solution, the more acid the optimum and the less the effect of the H ions. Fission is not specifically dependent upon the composition of the solution in which the amoebae live. It occurs in pure water and in solutions of various chemicals.—*Author (courtesy Wistar Bibl. Serv.).*

251. MAUME, L., et J. DULAC. Variation du pouvoir antitoxique en fonction de l'ionisation. *Compt. Rend. Acad. Sci. [Paris]* 184(20): 1194-1196. 1927.—Previous studies have shown that the minimum toxicity of a mixture of 2 salts (NaCl and $CaCl_2$) is, within certain limits, dependent on their proportions and not affected by concordant change in concentration. In this new series of experiments, it is shown that as the value of K (the concentration constant) increases from 1, toxicity becomes manifest; as K becomes less than 1, toxicity decreases. The effect seems due to ionization changes.

252. MERKER, E. Birgt die Gebundenheit von gewissen Seetieren an eine bestimmte Salzdichte des Wohnwassers ein Atmungsproblem? *Zool. Jahrb. Abt. Allgem. Zool. u. Physiol.* 44(4): 483-522. 1 fig. 1928.—*Neomysis vulgaris* can live only a few days in fresh water. During the survival period the animals make violent movements of the gills that suggest that death is due to an interference with respiration. Aeration of the fresh water with pure O does not prolong the survival period, so that the respiratory difficulty appears to be concerned with the elimination of CO_2. When in fresh water the animals are killed by a smaller rise of temp. than when in their natural habitat of brackish water of 0.5% salt concentration. In 1 unconfirmed experiment the animals failed to survive in a solution of common salt of this concentration. In 10% salt solution they become opaque and immobile in 15 min., but many of them recover on being replaced in brackish water. The temporary changes of salt concentration occurring in a tidal estuary probably do not harm the animals, but the need of a certain concentration of salt for the normal respiratory process is a factor that limits their migration into fresh water.—*T. R. Parsons.*

253. MICHAELIS, L. Diethylbarbiturate buffer. *Jour. Biol. Chem.* 87(1): 33-35. 1930.—Veronal is recommended as a buffer covering a range from pH 6.8 to pH 9.6. It replaces not only the borate buffer which is undesirable in many cases but also duplicates a part of the phosphate buffer range, especially around the physiologically important pH 7.4.—*Author's summary.*

254. MILLER, EDGAR GRIM, JR. The effect of bicarbonate ions on the swelling of gelatin. *Biochem. Jour.* 23(5): 876-879. 1 fig. 1929.—The effect of varying bicarbonate concentration and pH on gelatin swelling was studied over a limited range and found to be of the same order of magnitude as the corresponding effect of the chloride ion.—*E. B. Carmichael.*

255. MISSKE, BRUNO. Über die Wirkung der Kationenverschiebung in der Ringerlösung auf den peripheren Nerven. *Biochem. Zeitschr.* 219(4/6): 320-329. 1930.—The author devised a coördinate system of three axes, on which he plotted varying concentrations of KCl, $CaCl_2$, and NaCl. In all cases the resulting solution was isotonic, but in some cases lacked or was low in Ca, in others was low in Na or K. Paralysis of a nerve was brought about more quickly by high KCl values than by corresponding increases in $CaCl_2$, which were unable to reverse the effects of high KCl completely. High NaCl produced a characteristic sudden change in the nerve. There is both synergy and antagonism between the 3 ions. The total effect of the solution is due to all 3. There is antagonism not only between K and Ca, but also between Na and K and between Na and Ca.—*N. M. Payne.*

256. MISSKE, BRUNO. Über die Wirkung der Kationenverschiebung in der Ringerlösung auf die quergestreifte Muskulatur. *Biochem. Zeitschr.* 219(4/6): 330-334. 1930.—The author devised a diagram with coordinates in 3 axes. From this diagram he calculated varying concentrations of $CaCl_2$ and NaCl that would keep the solution isotonic but unbalanced. On striated muscle K and Ca are not as much antagonistic as synergic. Na may act as a synergist to K and Ca, and also an antagonist. High K did not increase muscle contraction; in fact, a solution of 75% NaCl and 25% $CaCl_2$ produced

a muscle contraction like that attributed to high K.—*N. M. Payne.*

257. **ONGARO, DANTE. La concentrazione idrogenionica nell' uovo del filugello. [The pH of the silk-worm's egg.]** *Atti R. Ist. Veneto Sci. Lettere Arti* 88(7): 715-724. 1928-1929.—The pH of the sap of silk-worm eggs as measured with a quinhydrone electrode increases in the 1st period of the experiment depending on the reactions between the sap and the quinhydrone. After a few min. the pH is stabilized. During the incubation of the eggs the pH increases from 6.70 to 6.86.—*M. Tirelli.*

258. **PAGE, IRVINE H. The toxicity of monovalent and divalent cations for sea urchin eggs.** *Biol. Bull. Marine Biol. Lab.* [*Woods Hole*] 57(6): 449-457. 5 fig. 1929.—The toxicity of the following cations, used as chlorides, for the *Arbacia* egg was: $Li > Na > Ca$, $Mg > K > Rb > Cs$. It has been suggested that the term "toxicity" is applied to a miscellany of the most heterogeneous reactants in protoplasm; hence as an entity its prediction and formulation in our present state of knowledge are not probable.—*I. H. Page.*

259. **PASTEELS, J. Essai d'analyse de la physiologie de l'oeuf de pholade (Barnea candida). Effets des solutions salines non balancées. Note préliminaire.** *Acad. Roy. Belgique Bull. Cl. Sci.* 15(5): 421-448. 1 pl., 6 fig. 1929.—The use of unbalanced saline solutions is an efficient method of analysis of the physiology of the fertilized egg. Not only does the unfertilized egg, except for rare monasters, refuse to undergo parthenogenesis, but the fertilized egg shows no acceleration in any process, neither in karyokinesis, nor in cytokinesis. All that one is successful in doing is to impede one or another mechanism, and thus institute an abnormal situation favorable for analysis. The fertilization of the egg of *Pholas* is accompanied by no perceptible cortical alterations or transitory contraction. An artificial swelling of the membrane can be produced by Ca^{++} and Na^{+} ions, depending upon the stage. This is due to a cortical cytolysis, for which Ca^{++} and Na^{+} are synergetic, while K^{+} and especially Mg^{++} are antagonistic. The properties of the cortex appear slightly different than those of the endoplasm: The permeability and the resistance of the cortex are variable with the stage. The sensitivity of the cytolytic ions increases with the entrance of the unfertilized egg upon maturation, and still more with fertilization. Before segmentation, the constitution of the cortex is further altered. Fertilization is largely tributary to the saline constitution of the center. Na^{+} and Ca^{++} ions are indispensable. Centers rich in Ca^{++} and Mg^{++} and diluted sea water produce a depolarization of the movements of maturation in slightly different degrees in unfertilized and fertilized eggs. Unbalanced solutions impede the migration of the pronuclei and thus permit the verification that the center producing the diplosome rests in the ♂ pronucleus. Under the same conditions, a sufficient delay produces a ♀ oocenter, incapable of becoming dicentric. The more precocious arrest of cytokinesis in certain blastomeres in relation to their cellular volume is small; the hindrance of the mitotic mechanism by ionic unbalance is more rapid.—*Author's summary (transl. by P. L. Risley).*

260. **PETERS, JOHN P. Acid-base equilibrium and salt and water exchange.** *Yale Jour. Biol. & Med.* 2(3): 183-221. 8 fig. 1930.—A comprehensive discussion of theory.

261. **POPOW, N. A., und A. A. KUDRJAWZEW. Zur Frage der Lebensdauer der einzelnen Teile des Froschherzens in Flüssigkeiten von verschiedener Ionenzusammensetzung.** *Arch. Exp. Pathol. u. Pharmakol.* 147(4/6): 331-338. 1 fig. 1930.—In normal Ringer's fluid the bulbus arteriosus had the longest life, i.e., it maintained its characteristic rhythm for the greatest length of time after removal from the frog. In fluids without Ca the sinus venosus remained alive the longest. Ca appeared to have more effect on the heterotropic automatism of the heart than on the nomotropic automatism.—*N. M. Payne.*

262. **SALVESEN, H. A. Die Serumchloride und die Neutralitätsregulierung.** *Zeitschr. Klin. Med.* 109(3/4): 102-311. 1928. *Also in: Norsk. Mag. Laegevidensk.* 88 (11/12): 1124-1130. 1927.—In clinical cases of uremic acidosis organic acids are retained in the blood. Chloride ion disappears from the serum and the corresponding amount of base is available for neutralizing this additional acid. The same is true in diabetic acidosis. Greatly reduced chloride is considered a bad symptom in nephritis.—*R. S. Anderson.*

263. **SATO, JUNITI. Nouvelles recherches biologiques sur le manganèse.** *Arch. Internat. Pharmacodyn. et Thérap.* 36(1): 49-72. 1929.—A comparative study of the toxicity of bi- and tri-valent Mn compounds was made by determining the effects of intravenous dosages in rabbits. The compounds were injected as 1% solutions in isotonic NaCl. Bivalent Mn produces symptoms in dosages of 3 mgm. per kgm.; 7-10 mgm. per kgm. is fatal. Trivalent Mn produces symptoms in dosages of 7 mgm. per kgm., intoxication with 15-20 mgm. per kgm., and death occurs 10 or more hrs. after dosages of 25 mgm. per kgm. The depressant effect of bivalent Mn on the blood pressure is 6 times greater than that of trivalent compounds. The respiration is stimulated with small dosages up to a maximum. Beyond this maximum depression occurs. Mn probably acts as a catalyser of oxidations. The gas exchange following the subcutaneous injection of $MnCl_2$ is altered in proportion to the dosage administered. The O_2 utilized and CO_2 output is increased with dosages of 2 mgm. per kgm. The increase in O_2 intake increased 3.9% at the ½ hr. and 7.6% after 5 hrs. The CO_2 output increased 21.8% at the ½ hr. and 2.5% after 5 hrs. Dosages of 10 mgm. per kgm. decrease both the O_2 intake and CO_2 output. The degree of change was approximately 30%. The depressant effect was evident after 30 min., became maximal at the 5th hr., but was evident at the 8th hr. The toxic effect of Mn on metabolism is comparable to that of Fe.—*O. W. Barlow.*

264. **SCHILOW, NIKOLAI. Notiz über den vermutlichen Chemismus der physiologischen Wirkung hypertonischer Lösungen.** *Biochem. Zeitschr.* 200(1/6): 145-148. 1928.—Arterio-sclerosis, antagonism between mono- and di-valent cations, effects of hypertonic solutions not containing Ca^{++} or Mg^{++} ions, and vaso-motor activity, are ultimately due to changes in capillary-electric potential between the inner surface of the blood vessels and the circulating blood. In combating acidosis by the injection of extra buffer salts attention should be paid to possible effects of the accompanying changes in the concentration of the various anions. Adsorption of HCO_3' to the surface of the blood vessels after excessive injection of $NaHCO_3$ may lead to deposition of $CaCO_3$ and so constitute the primary chemical change in sclerosis. Injection of hypertonic solutions causes great variations in the cholesterol content of the blood, which may rise to 1.5 times its normal value.—*T. R. Parsons.*

265. **SEN, KSHITISH CHANDRA. Electrolyte antagonism with inorganic suspensions and the equilibrium between sodium and calcium ions in biological systems.** *Allahabad Univ. Studies* 3: 101-118. 1927.—By choosing suitable mixtures, antagonism in certain salts can be shown in nearly all colloids. The contention of Clowes (that the physical structure of protoplasm which regulates the intake of foodstuffs and the output of waste products is analogous to that of the reversible emulsion systems) is therefore justified from a consideration of the physical factors operating in the growth and activity of cell life.—*H. I. Corey.*

266. **[SCHRÖDER, V. N.] ШРЕДЕР, В. Н. Влияние электролитов на пограничную разность потенциалов у Euglena ehrenbergii. [Influence of electrolytes upon the difference of potential of the cell wall in Euglena ehrenbergii.]** Труды Второго Съезда Зоологов, Анатомов и Гистологов СССР. (Proc. 2nd Congr. Zool. Anat. and Histol. of USSR.): 167-168. 1927.—Reactions to stimulation as well as to electrolytes of various concentrations were studied. Normal cells move

to the anode in the electric field. Overcharging is deleterious. Acids slow down the movement, which reaches a maximum in a basic medium. NaCl and $CaCl_2$ lower the charge in high concentrations and decrease motility. The cataphoretic speed of movement of a living cell in the electric field is believed to be the function of the difference in potential.—*O. Gankin.*

267. **SIMON, I. Sulla proprietà che hanno alcuni anioni di abbassare la viscosità dell'acqua e del siero di sangue in vitro, e del sangue nell'animale vivente. [Lowering of the viscosity of water and blood serum by anions.]** *Arch. di Farmacol. Sper. e Sci.* 50(3): 64-66. 1929.—Cl′, Br′, and I′ lower the viscosity of distilled water, and depress in vitro and in vivo the viscosity of blood. The salicylic anion has the same power.—*A. Jappelli.*

268. **THORNTON, ROSS C. B., and HARRY L. LEAVITT. Locke's vs. Tyrode's for perfusion of segments of intestine.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 811-813. 1929.—Although there are individual differences in segments, as a rule those immersed in Locke's solution maintained at a higher level and for a longer period of time than do those in Tyrode's solution.

269. **WERNICKE, RAÚL, und FERDINAND MODERN. Die oligodynamische Wirkung des Silbers.** *Biochem. Zeitschr.* 214(1/3): 187-197. 2 fig. 1929.—From 9 experiments it is concluded that distilled water which has taken on oligodynamic activity through direct contact with metallic Ag contains 0.000,05 mgm. of this metal per cc. in solution, in the ionic state. This activated water loses its activity completely if subjected to long-continued electrolysis, during which deposit of the dissolved silver may be observed at the cathode. From this, with researches earlier reported, it is concluded that the activation of distilled water results from the formation of an ionized solution. The germicidal property of Ag and Cu solutions also are observed in an atmosphere of H_2 without O_2, which indicates a poisonous effect from the metallic ion. The presence of O is necessary only for the oligodynamic activation through contact with metals, since it permits solution of the latter.

ANIMAL PHYSIOLOGY

LIGHT AND HEAT

E. NEWTON HARVEY, *Editor*

(See also in this issue Entries 296, 407, 417, 515, 600, 603, 606, 616, 651, 716, 923, 973, 980, 988, 1042, 1047, 1075, 1114, 1129, 1137, 1384, 1403, 1467, 1477, 1483, 1570, 1641, 1900)

270. **BACHEM, A. The ultra-violet transparency of the various layers of human skin.** *Amer. Jour. Physiol.* 91(1): 58-64. 1 pl., 1 fig. 1929.—The exponential law of absorption does not hold accurately for various thicknesses of sections on account of reflection, scattering, and fluorescence (under certain conditions). The skin cannot be considered as consisting of a series of layers with identical absorption. The various layers show pronounced absorption differences. A comparison of the absorption curves of the various skin layers suggests that the antirachitic effect is produced in the stratum corneum or granulosum and that the erythema originates in the stratum germinativum or corium.—*Author's summary.*

271. **BARKER, W. F. Some effects of light.** *S. African Jour. Sci.* 27: 23-38. 1930.—An address reviewing the principles of photochemistry, with application to photography, vision, and photosynthesis.

272. **BODENHEIMER, F. S. Über die Temperaturabhängigkeiten von Insekten. III. Die Beziehungen der Vorzugstemperatur zur Luftfeuchtigkeit der Umgebung.** *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13(4): 740-747. 1931.—Varying humidities of the air (0-100%) in the temp. cage did not influence the preferred temp. of *Calathus fuscipes, Adesmia clathrata,* and *Zophosis punctata.* Maintenance for a long preliminary period in various humidities called forth a distinct shift in the preferred temp. which occurred in various directions according to the extreme degrees of moisture. Since with increasing age the preferred temp. shifted, it seems reasonable to attribute the phenomena of a preferred temp. in cold-blooded animals to the viscosity of the plasma or the water equilibrium of the tissue or of the whole body.

273. **BROUWER, E. Harmonische analyse van temperatuurcurven. [Analysis of time-temperature curves by means of harmonic functions.]** *Nederlandsch Tijdschr. Geneesk.* 72(43): 5319-5342. 5 fig. 1928.—It is proposed to represent the daily fluctuations of the body temp. by means of a trigonometric series:

$$\eta = A_0 + R_1 \operatorname{Sin}(S_1 + 15\chi) + R_2 \operatorname{Sin}(S_2 + 30\chi) + R_3 \operatorname{Sin}(S_3 + 45\chi).$$

In this equation η is the temp., χ the time reckoned in hrs., and A_0, R, S, are constants. The analysis of several time-temp. curves of normal persons, published by Jürgens, Jaeger, and Völker, shows that the time-temp. curve is composed of 2 components, each of which has approximately the form of a sinusoide. The fluctuation represented by one of the components depends upon well known influences: eating, sleep, muscular exercise, intellectual work, etc. The fluctuation represented by the other component curve seems to depend upon factors as yet unknown. The amount of the fluctuation is probably of the order of magnitude of 0.5°C. The maximum of the fluctuation lies approximately at 16 hr.—*J. W. Langelaan.*

274. **CARPENTER, C. M., and R. A. BOAK. The effect of heat produced by an ultra-high frequency oscillator on experimental syphilis in rabbits.** *Amer. Jour. Syphilis* 14(3): 346-365. 7 pl. 1930.—An apparatus and method for heating animals with short radio waves are described. Of 25 rabbits infected intratesticularly with *Treponema pallidum* and heated as described, 21 failed to develop chancres when treatments were begun 4, 5, and 7 days after injection. Of these 21, 5 developed nodules in their testes during the treatments, but by intensifying the exposures the lesions disappeared. One treated rabbit developed a chancre, while the testes of a 2nd became enlarged, edematous, and indurated. By increasing the duration and number of heatings they became normal. One rabbit died from overheating and 1 from an intercurrent infection. Of 20 control rabbits, 18 similarly infected developed the typical lesions of experimental syphilis; 2 died 3 days after injection from peritonitis.—*Authors' conclusions.*

275. **CRINIS, MAX de. Über die Photoaktivität des nervösen Gewebes.** *Jour. Psychol. u. Neurol.* 37(1/3): 450-457. 4 fig. 1928.—If removed from the cadaver as quickly as possible, the human brain has the ability, after 8 hrs. irradiation with sunlight, to blacken a photographic plate which is exposed to it for 40 hrs. The same result is obtained after 1½ hrs. irradiation with the Kromayer or quartzlamp. The white matter is more active than the cortex. Medullated peripheral nerve may be distinguished from non-medullated sympathetic nerve by its greater photoactivity, which is dependent upon the presence of definite substances (doubtless lipoids) which may be extracted with ether and chloroform. After extraction with ether and chloroform the brain loses its photoactivity. Lecithin is one of the most photoactive substances of the brain lipoids; before irradiation it will blacken the photographic plate and is particularly active after irradiation with sunlight or the quartzlamp. Cholesterin is not rendered photoactive by the same

period of irradiation which renders the brain so. The photoactivity of the brain is destroyed by fixing in formol. The ability of the sun's rays to render organic matter photoactive differs at different times of the yr. In autumn a decrease in the photoactivity of brain tissue was observed. The photoactive effect is not conditioned by a particular wave length, but is probably brought about by a particular form of active O which is formed by oxidation processes through the disintegration of inactive (passive) O molecules.—*Author's summary (transl. by H. F. Blum).*

276. **GENTNER, WOLFGANG, und KURT SCHWERIN. Über den Zeitfaktor der Strahlungsreaktion des Eiweisses.** *Strahlentherapie* 37(4): 788-794. 5 fig. 1930.—Fractionated albumin solutions were irradiated with ultraviolet light from a quartz Hg vapor lamp. The course of the resulting reaction was followed by counting the number of albumin particles in Brownian motion. For an intensity range of 1 to 1400, a single time factor smaller than 1 was found, i.e., the course of the reaction is given by the equation: $I\,T^{0.904}$ = const. The relation of this albumin reaction to biological effects of irradiation is discussed.—*W. Gentner (transl. by W. C. Boyd).*

277. **GESENIUS, HEINRICH. Über die Gurwitschstrahlung menschlichen Blutes und ihre Bedeutung für die Carcinomdiagnostik.** *Biochem. Zeitschr.* 226(4/6): 257-272. 2 fig. 1930.—The method of Gurwitsch and Salkind, using yeast cells as detectors, was applied to the bloods of 145 persons, healthy and diseased. The blood of 30 healthy persons invariably restricted respiration (radiation effect) by 14.3-100%. Of 33 carcinomatous bloods, only 1 restricted respiration by more than 4%; a slight acceleration up to 4% (limits of error ± 2.5%) was apparent in some cases. Results similar to those obtained in carcinoma were reached in 14 cases of disease characterized by severe anemia (pernicious anemia, leukemia, sepsis, lymphogranulomatosis). In 68 miscellaneous cases various radiation effects were obtained, % of inhibition of respiration, on the whole, running lower than those in health. In 52 experiments, using as indicator the fermentation of the juice of macerated yeast cells, results were obtained comparable with but less constant than those obtained from the respiration of whole yeast cells.

278. **HAUSSER, K. W. Einfluss der Wellenlänge in der Strahlenbiologie.** *Strahlentherapie* 28(1): 25-39. 1928.—With a special apparatus to produce homogeneous rays, it was found that erythema production begins in the ultraviolet region near 300mμ, rises suddenly to a maximum at about 297mμ, then falls sharply to a minimum at about 280mμ, again rises to a 2nd maximum at about 250mμ, after which it seems to fall, although this could not be determined. A qualitative difference in erythema exists according to exciting wavelengths; the shorter the waves the faster the rise and fall in time of erythema and pigmentation. With shorter wavelength, much larger doses can be given without bleb formation. The absorption maximum of light by the skin is at about 280mμ and a 2nd maximum of permeability occurs at about 250mμ. The relative intensity for lines 297mμ and 366mμ were 45: 248. The absorption coefficient between 297mμ and 366mμ is at 4: 1, while the difference in erythema action is 1000: 1, for which no explanation can be offered.—*P. M. Suski.*

279. **KOLLATH, W. Gewebsatmung und strahlende Energie. Über eine Methode, an vitalangefärbten überlebenden Zellen antagonistische Wirkungen kurz- und langwelliger Strahlen auf die Oxydations-Reduktions-Potentiale der Zellen zu demonstrieren.** *Strahlentherapie* 35(3): 444-488. 9 fig. 1930.—When fresh epithelial cells from pigeons stained with methylene blue are exposed to light of long wave lengths, the methylene blue is reduced, and will remain reduced unless the cells are exposed to blue or ultra-violet light. In pigeons suffering from beri-beri the methylene blue is not reduced by the long wave lengths. Cells from starved pigeons show a greater reducing power.—*W. Kollath (transl. by F. Bernheim).*

280. **KUČERA, CYRILL. O vlivu ozařování rtuťovou lampou (ultrafialovými paprsky) na vývoi mladých zvířat a jeho posouzení z hlediska zootechnického. [The influence of ultra violet radiation from a quartz mercury lamp upon the growth of young animals and its zootechnical significance.]** *Biol. Spisy Vysoké Školy Zvěrolékařské Brno. (Publ. Biol. Ecole Vétérinaire Brno)* 7: (195-225). 1928.—The radiation of eggs by means of the Hg quartz lamp (unfiltered lights) has usually a favorable influence upon the number of chickens. Radiation of young rabbits sometimes favored the increase in wt. of individuals and sometimes hindered it. Radiation of guinea pigs showed the largest increase in wt. for the lightest animals. Overdosage with u. v. radiation only had a relative bearing, that is, in regard to the stage of development and the wt. of the chicken in the 2nd period (30-60 day old), which was later improved by the further growth of the animals. Radiation does not change the blood picture. It is concluded that the radiation of young animals cannot be properly judged from the point of view of their development, since the favorable influence which was observed is mostly on weak individuals and is directly injurious from the breeder's point of view. Therefore, radiation seems to influence the development of the skeleton and regulates general development.—*O. Glasser.*

281. **KUNTZEN, H., und W. VOGEL. Histologische Untersuchungen über die Wirkung chirurgischer Diathermieströme.** *Arch. Klin. Chir.* 164: 39-57. 8 fig. (1 col.) 1931.—The action of the diathermy current on the liver of rabbits and dogs was comparable to its action elsewhere in the body. A section of the liver was excised from 1 lobe with the coagulation current and at a considerable distance an incision made with the "Schmelzschnitt." Some animals were killed 0, 3, 6, 12, 24, 48, 72 hrs., 7, 12 days, 5 wks., or 4 or 7½ mo. thereafter; others were injected with 10 cc. colloidal India ink by way of the portal vein, then killed. A broad area of the surrounding tissue undergoes immediate heat necrosis. After a few days' attempt at demarcation, a further area undergoes necrobiosis. This area initiated connective tissue proliferation at the periphery which binds it to the healthy tissue; the sequester is thus encapsulated but not sloughed, and resorption within the connective tissue capsule occurs in the course of months. Hemostasis occurs by shriveling and occlusion of the vessel walls; thrombi occurred only in the necrotic area. There was no selective deep action of the current on the blood vessels beyond the area of necrotic tissue. Secondary hemorrhages did not occur because the sequester acts as a tampon. The difference between the coagulation and the "Schmelzschnitt" current lies in the fact that the latter incision does not char and form a scab and the primary necrosis is minimal. The immediate changes and the reaction of the tissue are similar to the coagulation current. The secondary zone of necrosis in the "Schmelzschnitt" incision is surprisingly large and the primary union with sutures therefore appears unreliable.

282. **LEPESCHKIN, W. W. The thermic effect of death and hemolysis.** *Amer. Jour. Physiol.* 95(2): 473-480. 1930.—Experiments made on red blood corpuscles confirmed former experiments on the thermic effect of death, determined on yeast cells. The hemolysis or the coagulation of protoplasm of red corpuscles is accompanied by the production of heat to the amount of 2.1-2.4 calories per gm. of dry substance of corpuscles. The death of red corpuscles as well as that of yeast cells is therefore an exothermic process. This confirms the supposition that death is accompanied by the decomposition of some very unstable chemical compounds. In the case of red corpuscles, they are probably the compounds of hemoglobin with sterins and phosphatids. As the molecular wt. of hemoglobin is not less than 16,600, the decomposition of the molecule of its unstable chemical compounds forming the protoplasm of red corpuscles is accompanied by the production of at least $2 \times 16{,}600 = 33{,}200$ calories. This thermic effect is greater than that

produced by the destruction of the molecule of some explosive substances.—*Author's summary.*

283. **LIPPAY, FRANZ. Über Wirkungen des Lichtes auf den quergestreiften Muskel. IV. Versuche mit ultraviolettem Licht an nichtsensibilisierten Kaltblütermuskeln.** *Pflüger's Arch. Ges. Physiol.* 226(4/5): 473-480. 5 fig. 1931.—Frog muscle was exposed to ultraviolet light (250-400 mμ) from a quartz lamp. Heating effects were prevented by using flowing saline 3 cm. thick above the muscle. Exposure for 30 min. produced a contracture. The effects became evident in 1-2 min., and some after-effects were observed even after the light was removed. Contractures could be induced in denervated muscle, in muscle paralysed by immersion in 0.2% KCl or in 6% cane sugar solutions but not in dead muscle. The contracture is irreversible and is accompanied by diminution of excitability, which is completely lost when the degree of contraction is much below that of maximal tetanus. The condition is similar to the contracture induced by visible light rays on sensitised muscle.—*H. C. Bazett.*

284. **MEINERI, PIER-ANGELO. Contributo allo studio delle differenze reazionali e fisiologiche della cute umana normale nei suoi vari territori. [The reactional and physiological differences of the normal human skin in its different regions.]** *Arch. Ital. Dermatol., Sifilogr. e Venereol.* 3(1): 15-24. 1927.—Histological examination of strips of skin from the back and legs irradiated with ultra-violet rays has shown, 24 hrs. after irradiation, a reactivity of various degrees manifested chiefly by a lymphocytic infiltration on the back while the infiltration on the legs consists of polynuclear neutrophils. The leucocyte count of the blood taken from the zone of the skin irradiated by u.-v. rays, 24 hrs. after irradiation, shows an augmentation of the lymphocytes in the skin of the back and, on the other hand, an augmentation of the polynuclear neutrophils in the skin of the legs. The serum extracted from the skin of the back by means of plaster of cantharides contains a larger quantity of albumin than the serum extracted in the same way from the skin of one of the legs (in average a difference of 1%). This indicates that the skin in its different parts has different properties and tendencies, probably related to the needs of each region.—*Author's summary (transl. by B. J. Luyet).*

285. **MILLER, D. F. Determining the effects of change in temperature upon the locomotor movements of fly larvae.** *Jour. Exp. Zool.* 52(2): 293-313. 3 fig. 1928.—Temperature is an important factor in the behavior of insects. Apparatus was devised and constructed to control all important factors and to measure their effects. The material used was a pure culture of the blowfly, *Lucilia sericata* Meigen, reared from a single original ♀ and inbred for a number of generations before tests were made. The experimental work was divided into 2 divisions: observational, with results based upon averages obtained from data collected by timing with a stop-watch the movements of the larvae through the apparatus at different temp.; and graphic, made by the operation of a kymograph drum by individual maggots. The results obtained from the 1st method are expressed by curves and tables and those of the 2nd are self-recorded. The 2nd method fully substantiates and explains the 1st. There is a very intimate relation between temp. and rate of locomotion; change of temp. does not affect the height of contractions, except at very high and very low temp.; at all degrees the rate of contraction varied directly as the temp.; and within normal limits, the rate of locomotion depends upon the temp.—*Author (courtesy Wistar Bibl. Serv.).*

286. **MIURA, UNICHI. The effect of variations in relative humidity upon skin temperature and sense of comfort.** *Amer. Jour. Hyg.* 13(2): 432-459. 1931.—Studies on 5 subjects (including the investigator) show that the skin temp. of the forehead and over the carotid of a man, normally clothed and sitting in still air, tends to vary directly with the relative humidity of the air at 60°-80° F., although the variation is small. The rate of variation is larger at 70° and 80° F. than at 61-62° F. The variation for a difference of 50% in relative humidity observed with the 5 subjects averages 0.3° C. on the forehead and 0.2° C. over the carotid at 70° F. dry bulb temp., 0.2° C. on the forehead and 0.1° C. over the carotid at 61-62° F. dry bulb temp. The sense of warmth tends to vary with the relative humidity at dry bulb temp. at 60-80° F.; and the rate of variation increases with a rise in the dry bulb temp. This relationship coincides with the effect of humidity upon skin temp. A difference of 50% in relative humidity is evidently perceptible for ordinary persons at dry bulb temp. of 70-80° F. under conditions stated above. A difference of 20% in relative humidity at 70° F. and a difference of 50% at 61-62° F. are probably beyond the power of perception. The effect of relative humidity upon the sense of warmth is in accordance with the effective temp. concept for dry bulb temp. at 60-80° F. The magnitude of the effect obtained on the average for the 5 subjects was somewhat less than would have been expected from Yaglou's thermometric chart. A difference of 50% relative humidity corresponded in its effect upon the sense of warmth with a difference of 1.7° F. in dry bulb temp. at 61-62° F. at a constant relative humidity, and to a difference of 4.0° F. at 70° F. The rates calculated from Yaglou's thermometric chart are 2.5° F. at 61° F., and 4.6° F. at 70° F. on the average for different humidities. Relative humidities of 70% and above cause an uncomfortable feeling of wetness at 70° F.

287. **PUJIULA, JAIME. Discusión sobre los rayos mitogenéticos de Gurwitsch. [The mitogenetic rays of Gurwitsch.]** *Brotéria Sér. Bot.* 24(1): (5-13). 3 fig. 1930.—The mitogenetic rays cannot be the immediate cause of mitosis, since mitosis takes place in a specialized and localized manner in tissue presumably uniformly exposed to the rays. Examples are given. The hormone theory of Haberlandt is favored.—*W. G. Boyd.*

288. **SCHALL, LUTZ. Untersuchungen über den Ablauf des Lichterythems.** *Strahlentherapie* 28(1): 164-167. 3 fig. 1929.—The course of the erythema reaction produced by ultra-violet light upon the skin of 300 persons was investigated by means of an "erythemameter," which consists of various scales of reddening and takes into account the natural color of the skin. In spite of precautions taken in the determination of the course of the erythema reaction, wide variations existed in different individuals under the application of identical doses, and the qualitative and quantitative course of the reaction was different in each individual, but certain types of reaction could be collected in groups. There is usually a rapid increase of the skin reaction to a maximum, which occurs in 60% of the cases between the 5th and 9th hr. after treatment. In most cases a definite wave form of the reaction could be observed. The latent period was 1-7 hrs. with an average of 2 hrs. Investigations of the threshold value of the dose, of the effect of subdivided doses, of the increase of reddening with increasing the dosage, etc., complete the report.—*O. Glasser.*

289. **SCHMIDT-LABAUME, F., und E. UHLMANN. Über den Einfluss des Luftdrucks auf die Erythem- und Pigmentbildung der Haut.** *Strahlentherapie* 38(1): 54-57. 1 fig. 1930.—With a Kromyer quartz lamp and a chamber constructed to give 20 cm. Hg negative pressure and 8 cm. Hg positive pressure, the exposure of skin of a number of persons shows that the erythema and pigmentation under positive pressure is weaker and that under negative pressure is stronger than under normal pressure.—*P. M. Suski.*

290. **SCHMUTZLER, ERICH. Der Temperaturkoeffizient des Sauerstoffverbrauchs überlebender Organe.** *Pflüger's Arch. Ges. Physiol.* 226(2): 294-304. 2 fig. 1930.—The hind limb of a dog was perfused with defibrinated blood and the O consumption was determined by gas analysis. The limb was cooled or warmed by varying the temp. of the inflowing blood and by local cooling

of the limb. Temp. was measured in the muscle of the limb with a fine Hg thermometer (Zondek's pattern) and also in the rectum. O consumption was unchanged even after several hrs. if the temp. was constant. O usage showed a linear relationship to temp., a fall of 1° decreasing the amount used by 3%. Studies of the O usage of nucleated red cells (goose) gave similar results; in this case the O consumption was reduced 4% by a fall of 1°.—*H. C. Bazett.*

291. SEIWELL, H. R. Influence of temperature on the rate of beating of the heart of cladocerans. *Jour. Exp. Zool.* 57(2): 331-346. 1930.—Various specimens of the fresh-water cladoceran, *Simocephalus exspinosus*, were subjected to a wide range of controlled temp. to study the influence of temp. on the rate of heart beat. A very definite general correlation between temp. and heart beat prevailed: the higher the temp., the faster the heart. The rule of correlation is not simple; in many of the experiments there were breaks in the continuity of change of rate, these breaks for the different animals not appearing at any particular point on the temp. scale. For the group of animals examined, the diversity in rate of heart beat is widest at high temp. The heart-frequency temp. coefficients for 10° intervals steadily decrease toward the higher scale of temp. Straight-line fittings to the individual log-frequency temp. graphs indicate one or more changes in the rate of acceleration of heart beat over the temp. scale. These changes, or "critical points," were not very narrowly localized. The log-frequency temp. plotting of the average frequencies for all animals showing greatest regularity of response could be fitted by 2 straight lines, the break or "critical temp." occurring in the neighborhood of 13°. From the above plotted data a tentative computation of the critical thermal increment, μ, of the Arrhenius equation, for each line gave a value of 19,700 calories for the temp. range of 4° to 13° and 7289 calories for the temp. range above 13° C.—*Author (courtesy Wistar Bibl. Serv.).*

292. SHEARD, CHARLES, and GEORGE M. HIGGINS. The influence of irradiation by air-cooled quartz-mercury arcs on the incubation of eggs. *Jour. Exp. Zool.* 57(2): 205-222. 5 fig. 1930.—The average daily loss of wt. for each hen's egg without irradiation by quartz-Hg arcs is about 0.35 gm. under normal incubation and about 0.20 gm. under conditions of abnormal incubation caused by excessive humidity. The average daily loss of wt. is increased by irradiation. The period of incubation is shortened in about 25% of irradiated eggs under normal incubation. Incomplete closure of the body cavity is the general rule in unphysiological incubation without irradiation. The use of quartz-Hg arcs tends to produce more nearly normal development in this respect. The shell and its membrane transmit ultraviolet to about 300 mμ; the membrane of the eggshell, to about 270 mμ. The stimulating action of irradiation by quartz-Hg arcs may be due to absorption of u.-v. energy or the absorption of ionized gases produced by such arcs. With the eggshell removed, but with membrane intact, the aperture being closed with quartz or glass, irradiation occurring daily for 30 sec., normal development of embryos occurred under glass cover-slips, whereas marked modifications were produced by such irradiation through quartz. In general, irradiation of eggs with air-cooled quartz-Hg arcs tends to increase the rate of metabolism of incubating eggs, and u.-v. irradiation is an accessory in maintaining normal metabolism and development of incubating embryos.—*Authors (courtesy Wistar Bibl. Serv.).*

293. SIEBERT, WERNER W. Die mitogenetische Strahlung des Blutes und des Harns gesunder und kranker Menschen. *Biochem. Zeitschr.* 226(4-6): 253-256. 1930.—Mitogenetic studies were made of the blood and urine of 130 persons, both normal and diseased. In both classes the behavior of the blood and urine was, in the main, parallel. Both blood and urine of healthy persons emitted mitogenetic rays. The suspension of radiation from the blood of patients with certain diseases (malignant tumors, severe anemias, leukemias, and febrile diseases), previously described by Gurwitsch and Salkind, was confirmed.

294. TAKAHASHI, TOKUE. The transmission of ultra-violet rays through animal tissues. I. II. *Brit. Jour. Actinotherapy* 5(3): 69-72. 4 fig.; (4): 101-103. 4 fig. 1930.—Spectral photographs show that the living skins of rabbits, thicker than 0.1 mm., practically do not transmit rays of wavelengths shorter than 2,900 A.U.; when thicker than 1 mm. little is transmitted shorter than 3,650 A.U. Fascia transmit relatively more u. v. rays than skin. The ratio of intensities of transmitted and incident u. v. rays is generally very minute; in the living skins of rabbits thicker than 0.25 mm. it is less than 1/1900-1/48000, depending on the wave-lengths of the incident u. v. rays. The transmission through living skins of rabbits is as meagre as when they are removed from the animal bodies. Removed white human skins transmit more u. v. rays, compared with those of rabbits. When, however, they are thicker than 1 mm. they hardly transmit more than ratios 1/1000-1/20000, depending on the wave-lengths of the incident light. The shortest wave-length transmitted in the experiments was 3,130 A.U. Changes of transmission of the rays during the course of experiments were traced to variations of blood circulation. One of the factors controlling the transmission of the rays through living skins is the condition of blood circulation. Evidence shows u. v. rays incident on skin can reach circulating blood in rabbits. A comparison of the transmission of u. v. rays through skins in the bloodless and the congested states leads to an estimation of absorption of the rays within circulating blood of rabbits. With skin 0.25 mm. thick, the absorption of the rays in circulating blood was not more than 1/1900-1/50,000 parts of the incident rays as the wave-length decreases from 3650-3025 A.U. The amount of the rays which reach circulating blood decreases markedly as the wave-lengths become shorter.—*Author's summary.*

ANIMAL PHYSIOLOGY

ELECTRICITY, X-RAY, RADIUM

(See also in this issue Entries 248, 323, 331, 346, 352, 365, 408, 979, 1078, 1134, 1140, 1403, 2340)

295. BACHEM, A. The resistance of various tissues for various electric currents. *Arch. Phys. Therapy, X-Ray, Rad.* 11(8): 391-394. 1930.—Experiments under 3 different conditions (in vivo; with organs left in position, immediately after the dog had been killed; with organs removed, kept on ice 1 night, then brought back to nearly room temp.) were made on liver, spleen, muscle, shaved skin, subdermal fat, inflated and collapsed lungs, bone, and blood of a dog, the organs being exposed to direct current (0-6V, 0-1 MA), alternating current (0-6V, 0-1 MA, produced by an automatic commutator, about 20 periods per sec.), and high frequency current (0-200 MA, 20-40 V. eff., 1000-2000 V. peak). The same organs were taken from fresh bodies and exposed to the same 3 kinds of currents. Resistance depended very strongly on the current used; it was smallest for high frequency, medium for low frequency, and greatest for direct current. In the case of direct current it increased rapidly in the beginning and slowly later on. In most cases there was a tendency toward an increase of resistance from life to death; the resistance was still higher after the tissue was kept on ice for a day, an exception being the skin. From these experiments one notes that skin resistance was comparatively low for high frequency, and very high toward direct current; the resistance of high frequency current was the same for dry and moistened skin. Bone resistance depended very pronouncedly upon the specimens observed; it was small for the porous bone

of the skull (calvarium) and high for the solid bone of the tibia.

296. BAGG, HALSEY J., and C. ROBERT HALTER. Experimental studies on tissue reaction to radiation using a segment of a growing mouse tail as a biological indicator. *Amer. Jour. Roentgenol.* 24(6): 640-647. 5 fig. 1930.—A 5-7 mm. segment of the tail of a young mouse (9-12 cu. mm. of tissue) can be used to advantage as a measure of the biological effects of irradiation. The degree of irradiation effect may be measured in terms of epilation disturbance, in retardation in the growth of the tail, or in the spontaneous amputation reaction.—*Authors' conclusions.*

297. CRILE, GEORGE W., MARIA TELKES, and AMY F. ROWLAND. An experimental investigation of the physical nature of death. *Proc. Amer. Philosoph. Soc.* 68(2): 69-81; 8 fig. 1929.—Experimental evidence is cited to show that (1) in animals and plants, an electric potential exists which disappears on death. Increased potential, brought about by inserting an electrode into a living amoeba, made it more active; lowering the potential rendered it less active, until it finally died and broke up. It is inferred that the organic molecules bound together in the animal organism are maintained thus by electric force. Also a living apple showed a definite potential. (2) Insomnia produces a progressive loss of potential, ending in death. (3) At death the p. d. drops to zero. It is concluded that it is the charge on the films of cells which gives the organism its adaptive property. Life is a potential maintained and varied adaptively with environmental conditions, the p. d. being maintained by chemical activity, mainly oxidation. In unicellular organisms, life is an adaptively changing p. d. between the cytoplasm, nucleus and medium, in higher organisms between the brain and other tissues, especially the liver. Death is the absence of difference of potential—final equilibrium.—*A. J. M. Honeyman.*

298. DUBOST, JEAN. Les bases physiques de la radiothérapie. 104p. 50 fig. Gauthier-Villars: Paris, 1928. Pr. 10 fr.—The progress made in electrical apparatus during the last 10 yrs., permitting the therapeutic utilization of more and more penetrating x-rays, with voltages up to 200,000, has made it necessary to reconsider the physical side of the problem, and, along several lines, to develop new technique. This the author has attempted to do. After reviewing some ideas of electricity and general physics, he investigates those properties of x-rays, hard and soft, which have a direct bearing on radiotherapy, omitting everything which has no direct connection with therapy. He pays particular attention to filtration and of ionometric measurements.—*J. Dubost (transl. by E. H. Quimby).*

299. ELLINGER, PH., und E. GRUHN. Über biologische Röntgenstrahlenwirkung. IV. Über die Verstärkung der Röntgenstrahlenwirkung durch Sekundärstrahlung. *Strahlentherapie* 38(1): 58-97. 3 fig. 1930.—The blackening of a photographic emulsion by secondary rays increases with the hardness of the primary rays and with the atom number of secondary rays. This latter increase is not linear, maxima occur, which are displaced with decreasing wave-length toward elements of lesser atom number. In filtration experiment with Al foil it was shown that the effect of secondary rays on photographic plates is due to secondary rays of high penetrability, and indeed probably to fluorescent rays of various series. *Bacillus prodigiosus* cultures begin to be injured by dose of over 500 r, and are killed relatively faster as the dose increases at between 1000 and 3000 r, although a certain % survives doses of over 15,000 r. By using secondary rays with higher atom number, cultures may be rapidly killed with smaller doses of primary rays; in fact, complete sterilization may be made with about 300 r. With primary rays of various wave-lengths, medium wave-length (100 KV) have the greatest lethal efficiency. With the use of secondary rays, the killing effect increases with increase in wave-length of primary rays (the dose of the primary remaining the same). Bactericidal action of pure primary radiation depends to a slight degree on the ray density; with the same dosage, greater effect is obtained by rays of lesser than of greater density. When using the secondary rays the density of the primary rays is of no importance. The bactericidal action of secondary rays increases with the atom number of the secondary rays, forming characteristic maxima and minima, the positions of which depend on wave-lengths of primary radiation. Bactericidally active rays have very little penetrability, and are almost entirely absorbed by a layer of air 4-5 mm. thick. The more active the rays, the less their penetrability. Bactericidally active secondary rays which are produced by hard primary rays have higher penetrability than those which are produced by softer primary rays. It is concluded that the bactericidal activity of röntgen rays is primarily due to photo-electrons of 1st and 2nd order, and is distinctly retained even when the secondary rays are thinned down to 1%.—*Authors' summary (transl. by P. M. Suski).*

300. FUKASE, SHUICHI. Experimentelle Untersuchungen über die Wirkung der Röntgenstrahlen auf die Callusbildung. *Virchow's Arch. Path. Anat. u. Physiol.* 277(1): 69-92. 19 fig. 1930.—Both fibulae were subcutaneously broken in 84 young rabbits, and the lesions on one side in each case irradiated with heavy, medium or light x-ray doses on 4 successive days. The subjects were examined microscopically, roentgenologically, and with the naked eye, at 8-hr. intervals up to 48 hrs., then at various daily intervals up to 7 wks. In the heavy dose series (10 rabbits, dose 32 H—1600 r) up to 3 wks. bone-formation was completely suspended, its place being taken by a compact, peculiarly shaped connective tissue with cells resembling bone cells. After 3 wks., in the previously poorly vascularized connective tissue, vessels began to form, around which new bone formation proceeded vigorously. Healing was more rapid on the non-irradiated than on the irradiated side of the same animal. Irradiation with moderate x-ray doses (60 rabbits, dose 8 H—400 r) also decreased the amount of callus formation; yet it produced earlier healing on the irradiated than on the non-irradiated side, recognizable in x-ray pictures by earlier onset of calcification and earlier replacement of the previous callus. Macroscopically the results of medium irradiation were recognizable through the lower vasculanity and greater calcification of the bony cicatrix on the irradiated side. Microscopically it was evident that the original traumatic inflammation during wound healing was less, the granulation cells assuming spindle forms earlier under irradiation and fibrilla formation beginning earlier. Vascular new formation was more limited on the irradiated side, the mass of the preliminary bony trabeculae lessened in extent, though the structure of the individual trabeculae is not altered. The bony cicatrix produced after the destruction of the superfluous bony trabeculae was earlier completed. The new-formed bone had a broader periosteal covering on the irradiated than on the non-irradiated side. The periosteum did not present the ordinary bundle appearance, but formed an irregular fibrous fabric composed of interlacing connective tissue fibrillae with infrequent nuclei. This change was characteristic for the irradiated lesions. Since after x-ray irradiation the cells concerned in ossification are transformed into connective tissue cells, which after a latent period of several weeks may again become ossified, the conclusion seems justified that the capacity for bone-formation is present in all connective-tissue cells. The roentgenologic findings are described in an earlier paper.—*Author's summary (transl.).*

301. GLOCKER, R., H. LANGENDORFF, und M. LANGENDORFF. Zur Frage der "spezifischen" Wirkung der Kathodenstrahlen auf die Zelle. *Naturwissenschaften* 19(11): 251. 1931.—Axolotl larvae, irradiated with a dose of 100,000 r, using a high tension tube which yields a dose of 500,000 r in 12 min., showed the same abnormal mitoses as were reported by Politzer and Pauli (see this issue Entry 309) as resulting from cathode rays. This

is not in accord with Politzer and Pauli's views as to the specificity of the effects of cathode rays.

302. **HUBERT, R. Der Einfluss der Röntgenstrahlen auf die energieliefernden Reaktionen des wachsenden Gewebes.** *Pflüger's Arch. Ges. Physiol.* 223(3): 333-350. 1929.—The glycolysis of growing and not-growing tissue of chicken embryos was determined by Warburg's manometric method in order to study the effect of previous roentgen irradiation upon it. The glycolysis was by far more radiosensitive than other energy-providing reactions which were examined. The radiosensitivity of glycolysis was compared with that of growth itself, finding that the ability to grow is damaged earlier by x-rays than glycolysis. Glycolysis retardation can, therefore, not be the cause of damage to the growth.—*O. Glasser.*

303. **LANGENDORF, H., und M. [LANGENDORF]. Strahlenbiologische Untersuchungen an den Keimzellen des Seeigels.** *Strahlentherapie* 40(1): 97-110. 9 fig. 1931.—The action of 50, 100, 200, 300, and 400 r units of x-rays on the sperm and eggs of *Psammechinus miliaris* was tested in 4 series: (1) sperm was irradiated and allowed to fertilize normal eggs; (2) eggs were irradiated and fertilized by normal sperm; (3) eggs and sperm irradiated before fertilization; (4) eggs were irradiated after fertilization. The number of injured larvae increased with increase in the dose, the curve in each series resembling the exponential. Comparison of 1, 2, and 3 showed that the sperm was more sensitive than the egg. The curve in 4 was dependent on the time between fertilization and irradiation, for the phase of nuclear division influenced the degree of injury decidedly. By irradiating at 5-min. intervals after fertilization, the sensitivity of the stages of mitosis was found to be greatest shortly after fertilization, decreasing to a minimum during the metaphase, and beginning to increase again with the anaphase.

304. **MAISIN, J., et E. PICARD. Essai de radiosensibilisation des tissus normaux et des tumeurs. Etude expérimentale.** *Rev. Belge Sci. Méd.* 2(4): 328-335. 3 fig. 1930.—Of 2 groups each of 5 tumor-bearing mice, 1 was intravenously injected twice a wk. for 6 wks. with a colloidal uranium-thorium-ionium mixture; both groups received during the 2nd wk. of injections 3 irradiations of 1500 r. each, or 4500 r. in all. In the uninjected mice the development of the tumor was temporarily checked by irradiation, but afterward resumed, generally increasing then until death. In the injected mice the tumors were generally resorbed inside of 3 wks. without prejudice to the health of the animal.

305. **MARTENSTEIN, H., und M. JUON. Ist die "Grenzstrahlentherapie" nach Bucky vollkommen ungefährlich?** *Strahlentherapie* 26(1): 177-188. 1 fig. 1927.—Small areas of human skin were irradiated with Grenz rays at 5, 6, 7, 8, 9 and 10 K. V. eff., 10 M.A. and 8 cm. focal skin distance with the dose of 10 X (skin unit dose according to Kienboeck). 24 hrs. afterwards, a weak erythema reaction was observed, which became more intense in the next 24 hrs. Formation of pigment was observed after 1 week. The latent period of the erythema was considerably shortened when higher doses (up to 60 X) were used. Histological examination of the radiated skin areas showed considerable damage, even to the deeper parts of the cutis. An erythema dose applied through a filter of epidermis of a mouse produced similar reactions to the application of the unfiltered radiation, with a difference only in the latent period of the erythema.—*O. Glasser.*

306. **MEYER, HEINZ-THEODOR. Über Härtung von Grenzstrahlen durch Luft.** *Strahlentherapie* 38(4): 778-784. 1930.—When grenz ray tubes with Lindemann glass windows are used, the hardening of the rays by increasing the focal distance is greater for higher voltages than for lower. For the latter this air-hardening is so insignificant that in practice one can count on quality remaining the same as long as the voltage is constant. Since the quality of the rays is very dependent on the thickness of the Lindemann glass window, every tube must be calibrated at different voltages by determining the half value thickness for the rays in Al or cellophane. The same holds for the determination of dosage curves in relation to the focal distance. On account of the coating of the Lindemann window with tungsten and the resulting change in transmission of radiation, it is desirable in practice to repeat this standardization from time to time (perhaps every 100 hrs. of operating time) in order to avoid errors in dosage.—*Author's summary (transl. by E. H. Quimby).*

307. **MEYER, J., et J. SAIDMAN. Les rayons X ultramous.** *Bull. Soc. Française Dermatol. et Syphiligr.* 1929 (9): 1251-1254. 1929.—The limit of the x-rays ordinarily used in therapeutics is a little below 1 Å, the longer waves being stopped by the glass. To obtain softer rays it was necessary, while lowering the tension of the tube, to provide it with a window of lower atomic weight. Until recently the softest rays available were the grenz rays (so called because the limit of 3 Å was regarded as the ultimate in therapeutics) of the Bucky tube. About 2 yrs. ago a still softer ray, 4-8 Å in length, was obtained by the use of a tube with a cellophane window devised by Dauvillier and Saidman. Bucky had at first believed that his Grenz rays did not reach the vascular tissue of the corium, and hence could be used without danger of dermatitis; but the investigations of Saidman and R. Cahen showed that half the energy penetrates to a depth of 2 mm. and that the cutaneous vessels are affected. The new 4-8 Å rays are almost entirely absorbed by the epidermis; a layer 34μ deep absorbs half the energy, and the authors estimate that below 1/3 mm. depth hardly 1/100 of the energy remains. The cutaneous vessels, therefore, are not affected, and there is no resultant x-ray dermatitis. A heavy dose may provoke an erythema comparable to that produced by u. v. rays, but slower in progress. These ultra-soft 4-8 Å rays have given "interesting results" in eczema, in varicose ulcer, and dermatites produced by trichophyta, streptococci, and staphylococci. The authors give a schematized comparative summary of the biologic properties and therapeutic results of ultra-soft rays, Grenz rays, ordinary x-rays, and ultraviolet.

308. **MUTSCHELLER, A. Quantum energy of x-rays: a new method of measuring it.** *Radiology* 15(4): 460-470. 2 fig. 1930.—A new method is given for measuring the quantum energy in ergs of x-ray radiation produced at various voltages, and a method of testing dosimeters, i.e., ionization chambers used for intensity measurement, for their dependence or non-dependence on wave lengths. It is pointed out how the clinical aspect of radiation therapy can be simplified by the application of the quantum principle, and that in all probability the clinical effects of x-ray radiation parallel the quantum energy and the total number of the quanta, rather than the total ionization effect. It is suggested that clinical radiation data, and especially quality measurements, be made and recorded in terms of quanta energy or ergs.—*From author's summary.*

309. **PAULI, W. E., und G. POLITZER. Über die Wirkung von Kathodenstrahlen auf die Ruhezellen und auf Karyokinesen von Salamandra maculosa.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 8(3): 404-424. 17 fig. 1929.—Shortly after radiation of the cornea of larvae of *S. maculosa* with cathode rays, 3 groups of changes appear: necrotic changes of the resting cells, similar to the effect of other agents which act only on the superficial layers, and therefore not characteristic for the cathode rays; karyokinetic changes produced by the x-rays, when the cathode rays are stopped by the window and within the tissue; and karyokinetic changes characteristic for the cathode rays, i.e., cells in which the chromosomes are clumped together, and in which there are fine threads stainable with hematoxylin. The authors conclude that cathode rays, recently used therapeutically, need to be investigated further. Differences in the effects of weakly filtered radium preparations and of x-rays are due to the effect of the β rays, which are similar to the cathode rays, and like them probably produce characteristic effects. The common opinion that x-rays act on the tissue by the

secondary β or electron rays released in the tissue is untrue, since the cell changes which are characteristic of cathode rays do not appear in the x-rayed cornea.—*O. Glasser* (*from abstr. by W. E. Pauli*).

310. **PAUSDORF, HANS, und W. NELL. Die Blutdruckschwankungen nach Röntgenbestrahlungen und ihre klinische Bedeutung.** *Strahlentherapie* 38(1): 40-53. 1930.—The blood pressure fluctuation directly following x-ray exposure is to be distinguished from the blood pressure fall which appears after 24-48 hrs.: while the former takes place entirely without regularity, the latter shows a distinctly undulating course, and on intensive exposure repeats itself between the 25th and the 35th day and again between the 50th and the 70th day after irradiation. This fall in blood pressure is not caused by the influence of x-rays on the adrenals, but is an expression of general reaction caused by cell decay and the increase of irritability of vasomotor apparatus evoked by x-rays, as pointed out by Lazarews. It takes an undulatory course exactly like that of x-ray erythema. As an expression of general reaction it is important for prognosis, giving of general therapy and for determining time for re-irradiation.—*Authors' summary* (*transl. by P. M. Suski*).

311. **POHLE, ERNST A., GORTON RITCHIE, and CECIL S. WRIGHT. Studies of the effect of roentgen rays on the healing of wounds. I. The behavior of skin wounds in rats under pre- or post-operative irradiation.** *Radiology* 16(4): 445-460. 20 fig. 1931.—White rats (80) were exposed to 2 qualities of x-rays (100 K. V., 2.0 mm. Al; 140 K. V., 0.25 mm. Cu.+1 mm. Al) preceding or following incisions in the skin. In the 1st group, half of each wound extended into previously irradiated skin; the other half remained in unexposed tissue. In the 2nd group, half of each incision was irradiated following the cutting and the other half was protected. Seven days following the cutting and also after complete healing, the animals were killed and the skin prepared for examination. Irradiation with 1,000 r given in one sitting, of either quality of x-rays, as defined above, from 1 to 30 days before the incision, did not influence the healing process perceptibly. Irradiation with 1,000 r in 1 sitting, with either quality of x-rays, as defined above, immediately, 24 hrs. and 48 hrs. respectively after the incisions, retarded the healing process, particularly in the 24 hr. group, but did not interfere with the final formation of a smooth scar.—*Authors' summary.*

312. **POLITZER, G. Ueber den Einfluss der Roentgenstrahlen auf die embryonale Linse.** *Wien. Med. Wochenschr.* 79(17): 551-555. 2 fig. 1929.—The larvae of urodela were given doses higher than 8 H of x-rays filtered through 1 mm. of Al. After 3 months the lens swelled and burst its capsule, and the swollen lens fibers entered the eye chamber. The remaining portion was absorbed in the 4th month. Abnormal karyokinesis appeared in the lens epithelium shortly after radiation; these cell divisions lead to the destruction of all the dividing cells. Greater defects in the lens epithelium appear later. Only after large sections of the lens epithelium have been destroyed is the lens capsule torn and the lens destroyed. Evidently the lens epithelium plays the important rôle of protecting the lens from swelling. Other causes of lens swelling (increase of permeability of radiated membranes—in this case the lens epithelium—) are discussed, as is the present status of the effect of radiation on the human lens.—*G. Politzer* (*transl. by. Otto Glasser*).

313. **RAJEWSKY, BORIS, und GERHARD GABRIEL. Untersuchungen an sehr weichen Röentgenstrahlen (sogenannten Grenzstrahlen).** *Strahlentherapie* 30(2): 308-333. 11 fig. 1928.—This paper upholds the thesis that Bucky's soft x-rays have no special properties not explainable by absorption coefficients. From 8 KV. to 12 KV. the rays have a continuous increase in transmission through biological specimens. Observations on erythema show that the very soft rays which are absorbed in the surface layers chiefly affect the capillaries.—*H. Kahler.*

314. **SAITO, K. On the influence of radium upon the blood.** [In Japanese with English summary, p. 45.] *Jour. Oriental Med.* 14(5): 1931.—Rabbits (no. not stated) were irradiated for 1 hr. each with 100, 50, 20 and 10 mgm. Ra and examined 24, 48, 72 and 120 hrs. afterward. Weight and general condition showed no change. Erythrocytes and blood pigment were markedly decreased, in proportion to the quantity of irradiation, at 24 and 48 hrs. but began to increase at 72 hrs. and returned to normal in 120 hrs. Leucocytes increased at 24-48 hrs., then suddenly fell below average, generally returning to normal in 120 hrs., the changes bearing no fixed relation to quantity of irradiation.

315. **SCHAAL, G., M. A. GRUSCHETZKAJA, und E. J. ZWILICHOWSKAJA. Beitrag zur biologischen Wirkung der Röntgenstrahlen. (Wirkung der Röntgenstrahlen auf die Elektrolyte Kalium und Kalzium im Blutserum des Menschen.)** *Strahlentherapie* 40(1): 111-124. 1931.—K-Ca determinations (54) were made on 20 patients before and 24 hrs. after irradiation with varying doses of x-rays and, in some, before and after each series of irradiations. A shift in the K/Ca quotient occurred which appeared to be dependent on the interval between irradiation and examination; during the first few days after irradiation it favored K, later Ca. Apparently clinical phenomena (x-ray intoxication, early reaction, variations in leucocyte count, analgesic action) might be explained by this shift in the K/Ca quotient.

316. **SCHLIEPHAKE, ERWIN. Über die Möglichkeit gesundheitlicher Schädigungen durch elektrische Wellen.** *Gesundheits-Ingenieur* 52(46): 798-800. 1929.—In a receiving circuit inductively coupled to a short wave transmitter small animals are rapidly killed in the intense electric field between the plates of the receiving circuit condenser. Contact with the plates of the condenser results in sparking which causes a cutaneous burn. This is less injurious than a deep burn due to excessive radiation which may result in internal necrosis. Due to the large heat capacity of the human body there is small danger of overheating near a short wave transmitter of 100 watts since only a small fraction of the radiant energy is received by the body and converted into heat.—*A. Hemingway.*

317. **SICILIANO, L., e C. BANCI-BUONAMICI. Studi sul midollo osseo sotto l'azione dei raggi X. [The bone marrow under the action of x-rays.]** *Arch. Radiol.* 6(6): 1108-1136. 2 pl. (col.) 1930.—Of 19 rabbits a single limb or only the ears were irradiated in some, the rest of the body being protected; in others a single limb was protected, the rest of the body being irradiated. Doses of 5, 9, or 19 H, were given once or repeatedly with intervals of several days. Besides the modifications produced in the bone marrow under the direct influence of the x-rays, the bone marrow not irradiated showed degenerative modifications in histologic structure and in the medullary elements. The megacaryocytes showed important nuclear alterations; the % of immature erythrocytes was perceptibly increased, and the reds were increased in comparison to the whites; the polymorphonuclears were in general reduced in number except when the doses were very small. When the circulation of the irradiated limb was interrupted during irradiation, the results both to the irradiated bone marrow and that at a distance were reduced, probably because of the smaller quantity of toxic products put into circulation.

318. **SPEAR, F. G. The delayed lethal effect of radium on tissue cultures in vitro. Comparison of continuous and spaced radiation.** *Proc. Roy. Soc.* [*London*] *B* 108(756): 190-195. 1931.—Cultures of the 8-9 day choroid or sclerotic of fowl embryos were subjected to continuous (6 hr.) or to discontinuous (1 hr. per day on 6 consecutive days) irradiation (γ rays) from 300 mgm. radium (as sulphate) at 0.5 cm. distance. To test effects, sub-cultures were made every 48 hrs. after irradiation. In both cases, manifestation of the lethal effect was delayed. The 18 cultures given continuous irradiation survived to the 4th-8th explantation after irradiation, the average being 6.1 subcultivations; those given discontinuous irradiation (20

cultures) also survived to the 4th-8th, the average being 6.0; the difference seems not significant.

319. **VECCHI, GIUSEPPE.** Esperimenti di iniezioni endovenose di polvere di carbone e di bleu trypan carichi di Radon in ratti con tumori. [Intravenous administration of coal dust and trypan blue loaded with radon to rats with tumors.] *Arch. Sci. Med.* 54(12): 844-850. 1 fig. 1930.—In the majority of cases the tumor did not develop or regressed when developed.—*M. Comel.*

320. **VECCHI, GIUSEPPE, e SERGIO TENEFF.** Alterazioni morfologiche del sangue di ratti trattati con iniezioni endovenose di Radon. [Morphological alterations of blood in rats treated with intravenous administration of radon.] *Arch. Sci. Med.* 54(12): 851-860. 3 fig. 1930.—A noticeable diminution of erythrocytes and leucocytes was observed.—*M. Comel.*

321. **WALTERS, O. M., B. J. ANSON, and A. C. IVY.** The effect of x-rays on the thyroid and parathyroid glands. *Radiology* 16(1): 52-58. 7 fig. 1931.—Four experiments each using 2 dogs were made: (1) 3 series of irradiations (a series consisted of 4 doses of 385 r units at 7-14 day intervals) with 4 mos. between the 1st two and 1 mo. between 2nd two, the animals observed 9 mos.; (2) 1 series, thyroid examined 4 mos. later; (3) 2 series, 3 mos. apart, one thyroid removed 2 mos. later, the other 4 mos. later; (4) 3 series, 1 mo. between first two, 3 mos. between second two; 1 thyroid removed between 2nd and 3rd series. The thyroid was hyperplastic in 4 dogs in experiments 1, 2, and 4 and the capsule somewhat thickened in 2 dogs in which the skin was burned. Definite hyperplasia occurred in the parathyroids; in those dogs in which some mos. elapsed after treatment an increase in connective tissue was found. In spite of the hyperplasia a gradual, slight decrease occurred in blood Ca.

322. **WINTZ, HERMANN.** Strahlenschäden an Hoden, Eierstock und Frucht. *Monatsschr. Geburtsh. u. Gynäkol.* 78(6): 428-449. 1928.—A review of the effects of x-rays on the testes, ovary and embryo. Effects on the testes comprise 3 groups: (1) degeneration of spermatogonia; (2) depopulation of seminal canal; and (3) destruction of interstitial cells. Groups 1 and 2 are capable of repair. The clinical result in group 3 is the same as in operative castration. Radiosensitivity of the interstitial cells is not safely known. Accumulations of small doses play an important rôle. A 34% erythema completely destroys ovulation and internal secretions of the ovary, and a condition similar to menopause develops. Temporary sterilization can be produced by 28% erythema. More reliable data are necessary to show definitely the effects of direct or especially indirect radiation on the human embryo. Malformations have been observed in several cases.—*K. W. Buchwald.*

ANIMAL PHYSIOLOGY

BIOCHEMICAL, BIOPHYSICAL AND PHYSIOLOGICAL METHODS AND APPARATUS

C. H. FISKE, *Editor,* Biochemical and Biophysical

S. E. POND, *Editor,* Physiological

(See also in this issue Entries 195, 199, 201, 211, 243, 244, 248, 249, 288, 353, 367, 403, 404, 433, 460, 551, 554, 624, 639, 647, 683, 719, 722, 747, 780, 822, 910, 935, 936, 1043, 1099, 1100, 1112, 1121, 1128, 1197, 1248, 1310, 1397, 1832, 1891, 2226, 2316)

BIOCHEMICAL AND BIOPHYSICAL

323. **ALLEN, ALEXANDER J.** A new model radium emanation plant. *Jour. Cancer Res.* 14(3) 461-465. 3 fig. 1930.—The parts which are subjected to strains are made of heavy pyrex glass. The apparatus is compact and comparatively inexpensive, and is so designed that the radon can be easily, efficiently, and quickly purified and forced into the radon tubes. By using a 2 stage Hg diffusion pump in connection with a Megavac oil pump the apparatus can be thoroughly evacuated within a few hrs. and concentrated radon taken off.—*From author's summary.*

324. **BECCARI, EMILIO.** La specificità della reazione diazoica per la ricerca della bilirubina. [Specificity of the diazo-reaction for determination of bilirubin.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 671-674. 1930.—Many substances contained in serum give a positive diazo reaction, which is therefore not specific for bilirubin. Oxidative reactions are preferable.—*M. Comel.*

325. **BEHR, LETHA DAVIES, J. W. PALMER, and H. T. CLARKE.** The estimation of bromides in biological material. *Jour. Biol. Chem.* 88(1): 131-135. 1930.

326. **CHERBULIEZ, EMILE, und STEFAN ANSBACHER.** Beitrag zur Bestimmung von Kupfer in Organen. *Virchow's Arch. Path. Anat. u. Physiol.* 278(2): 365-371. 1930.—The authors describe a method by which amounts of Cu down to 1γ (0.001 mgm.) may be simply determined with exactitude, to 0.5γ. They call attention to the frequency of increase of Cu content of the liver in hepatic cirrhosis, and show a table of Cu values running from 0.6 mgm. to 9.9. mgm. per kgm. fresh organ weight for 9 non-cirrhotic livers and from 2.9 to 85.6 mgm. for 13 cirrhotic livers.

327. **CIAMBELLOTTI, E.** Determinazioni degli alcali fissi di riserva nel sangue dei dermopatici secondo il metodo di van Slyke e Cullen. [Determinations of fixed reserve alkali in the blood by the Van Slyke and Cullen method.] *Boll. Soc. Ital. Biol. Sperim.* 3(6): 743-744. 1928.

328. **CIACCIO, C.** Azione della cromizzazione sui lipidi. I. Ricerche microisto-chimiche. [Micro-histochemical studies on the effects of chromium compounds on lipids.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 697-700. 1930.—The esters of glycerol and cholesterol give negative results with Ciaccio's method after treatment with $K_2Cr_2O_7$. Lecithin and linoleic acids give positive result only if freshly prepared.—*M. Comel.*

329. **CIACCIO, C.** Azione della cromizzazione sui lipidi. II. Ricerche chimiche. [Chemical studies on the effects of $K_2Cr_2O_7$ on lipids.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 701-704. 1930.—With Ciaccio's method olein is completely removed by solvents after treatment with $K_2Cr_2O_7$. The phospholipids are rendered completely or almost completely insoluble; no evidence of splitting was noted following $K_2Cr_2O_7$ treatment.—*M. Comel.*

330. **FØLLING, A.** Methods for the determination of total fixed base, sodium and potassium in urine. *Skand. Arch. Physiol.* 61(1/3): 27-31. 1931.—Micromethods for the determination of total base and for Na and K in urine are described. The total base and the combined Na and K are determined by a benzidine method; the Na is determined separately through an urano-zinc-sodium compound, and the K found by difference.—*Author's summary.*

331. **FOSBINDER, RUSSELL J.** A vacuum tube potentiometer for the determination of the true E.M.F. of a high resistance cell. *Jour. Cancer Res.* 14(4): 523. 1930.—Abstract.

332. **FOSBINDER, RUSSELL J., and JANETTA SCHOONOVER.** An improved method of measuring glass electrode potentials. *Jour. Biol. Chem.* 88(2) 605-614. 5 fig. 1930.—A single tube (UX-222 screen grid) direct current amplifier, capable of measuring the true e.m.f. of a high resistance cell with an accuracy of 0.0001 V. is described. The grid has a precision variable bias, which may be so adjusted that at "balance" no current flows through the cell. Results obtained with a series of phosphate buffers indicate that the glass and

hydrogen electrodes are comparable in accuracy. A description is given of a constant temperature cell with which the pH of 0.05 cc. of fluid may be accurately determined.—*R. J. Fosbinder.*

333. FUJITA, AKIJI, und KOTARO OKAMOTO. Manometrische Messungsmethode des Blutzuckers. *Biochem. Zeitschr.* 225(4/6): 368-385. 2 fig. 1930.—First the total reduction is determined, and then the residual reduction after yeast fermentation. The true fermentable sugar is the difference between the two results. This method depends upon the quantitative formation of N from K-ferricyanide. Added glucose was quantitatively recovered. The values secured corresponded well with those obtained by the Hagedorn-Jensen method. The influence of other reducing substances than glucose is somewhat less by our method. Anticoagulants such as citrates and oxalates when used in ordinary quantities cause no trouble. A fresh pure culture of yeast is used for the determination of the residual reduction. By the addition of yeast (50 mgm. of dry substance to 1 cc. of blood at 30° C. for 30 min.) the blood sugar was completely removed. Thorough washing of the yeast is emphasized, and it is well to shake the yeast 1 hr. in a thermostat at 30° C. to avoid the production of reducing substances from the yeast itself. When the largest quantity of creatin, creatinine and uric acid which can be found in pathological blood is added and the true fermentable sugar is determined, the results are not vitiated.—*Authors' summary (transl. by E. G. Schmidt).*

334. GANASSINI, DOMENICO. Reazione cromatica della glicerina coi tiosolfati alcalini. [Chromatic reaction of glycerol with alkaline thiosulphates.] *Arch. Ist. Biochim. Ital.* 2(2): 239-242. 1930.—$Na_2S_2O_3$ added (as powder) to glycerol is dissolved with small heat production and gives a perfectly clear and colorless solution. If this solution is heated to boiling, it develops a sky-blue color which deepens to indigo-blue. The coloration is very unstable, and quickly disappears if the solution is cooled, giving a green and then a reddish color. When the boiling is prolonged the color becomes reddish brown. By the blue color reaction it is possible to detect the presence of glycerol as well as of thiosulphate.—*M. Comel.*

335. GOLDNER, M. Biologische Tests zum Nachweis thyreoiden Verhaltens-insbesondere die Acetonitrilreaktion. *Zeitschr. Klin. Med.* 114(4/5): 456-465. 1930.—The Hunt acetonitrile reaction is characteristic, but not specific, for thyroxin, thyreoglobulin, and the blood of hyperthyroid cases. In healthy individuals the results are negative. The reaction is brought about not directly by the thyroid substances but indirectly by secondary changes in the composition of the blood. The reaction is negative with urine, cerebrospinal fluid, and exudates.—*Author's summary (transl. by P. A. Katzman).*

336. HADEN, RUSSELL L. The technic of determination of the relative mass, the individual cell volume, and the volume index of the erythrocytes of man. *Jour. Lab. & Clin. Med.* 15(8): 736-746. 1930.—Experiments are reported to determine the best method of estimating the volume relationship between the red corpuscles and plasma of men. An accurate determination of this relationship necessitates the employment of an isotonic anticoagulant and sufficient power and time of centrifugation to completely separate the cells from the plasma. A 1.4% solution of Na oxalate is isotonic with human blood. Centrifugation for 1 hr. at 2500 r.p.m. with radius of 10 cm. will completely separate erythrocytes from plasma. The relative mass of the erythrocytes is best determined by centrifuging in such a way, 10 c.c. of blood to which 2 c.c. of 1.4% Na oxalate has been added. The average red cell content of the blood of young men is 46 c.c. per 100 c.c. of blood, and of young women 41 c.c. Illustrative examples are given for the calculation of the volume index and the average individual cell volume.

337. HAMMARSTEN, GRETA. Determination of ammonia in urine by extraction. *Skand. Arch. Physiol.* 61(1/3): 49-63. 3 fig. 1931.—Errors due to the presence of CO_2 and the decomposition of nitrogenous substances into NH_3 are avoided by a rocking method of ammonia extraction with ethyl ether. The ammonia is determined by titration. The accuracy of the method has been checked against synthetic urines and the Ljungdahl method.—*R. C. Herrin.*

338. HOFFMAN, H. A. A simplified method for white blood cell counts that is applicable to field conditions. *Jour. Lab. & Clin. Med.* 15(8): 756-759. 1930.

339. IWATSURU, R., M. MORIMOTO, und M. TAMURA. Über eine exakte Mikromethode zur Bestimmung der gesamten Fett- und Lipoidmenge im Blute. I. *Biochem. Zeitschr.* 224(4/6): 437-447. 1930.—A modification of Bang's method.

340. JENDRASSIK, L., und P. PETRÁS. Biochemische Gravimetriemethoden. II. Gewichtsanalytische Bestimmung des Kaliums an der Torsionswaage. *Biochem. Zeitschr.* 226(4/6): 381-386. 1 fig. 1930.—A simple method is described for the determination of K in urine or solutions of similar K-content by weighing the Cobalt-nitrite precipitate on a spring torsion balance.—*Authors' summary (transl. by P. A. Katzman).*

341. KOCH, KÄTE. Bestimmung der Phosphatid-P_2O_5 für kleine Mengen Serum unter Benutzung der gravimetrischen Strychnin-Molybdän-Methode. [Determination of the phosphatid P_2O_5 for small amounts of serum by the gravimetric strychnin-molybdenum method.] *Biochem. Zeitschr.* 227(4/6): 334-339. 1930.

342. KOHLRAUSCH, W. Methodik zur quantitativen Bestimmung der Körperstoffe in vivo. *Arbeitsphysiologie* 2(1): 23-45. 1 fig. 1929.—The basal metabolism of 4 dogs was measured by the Douglas method, using either a mask or a canula. The protein content of the bodies was determined after killing. A constant relationship between the 2/3 power of the protein content and the basal metabolism was found, viz., 2.3 calories per min. per 1000 sq. cm. The glycogen was assumed as 0.5% of the body weight, and water as 67.5%, confirmed by analysis. The volumes of the animals both living and dead were determined by a pneumatic chamber. The soluble salts were assumed to be 0.8% of the body fluids. The weight of the fat and ash (insoluble salts of bone) together equals the difference between the whole body weight and the sum of the weights of protein, water, glycogen, and soluble salts. The volume of fat and ash together equals the difference between the total volume of the body and the sum of the volumes of protein, glycogen, water, and soluble salts. The specific gravities of fat and ash are known. From the weight of fat and ash, the volume of fat and ash, and their specific gravities, 4 equations with 4 unknowns are derivable, and the solutions of these give the weights of fat and ash respectively. A set of values for 4 dogs derived by calculation from the basal metabolism, the volumes, the body weights, and assumed percentages for water, glycogen, and soluble salts agree well with values derived by analysis of the cadavers.—*T. M. Carpenter.*

343. LAUDAT, M. Chlore plasmatique et chlore globulaire. [Estimation of chloride in the plasma and corpuscles.] *Compt. Rend. Soc. Biol.* 99(37): 1820-1822. 1928.

344. MAZZA, F. P., e A. ROSSI. Un micrometodo per la determinazione del potassio con particolare riguardo ai liquidi biologici. [A micro method for determination of potassium.] *Arch. Sci. Biol.* 13(3/4): 466-472. 1929.—From the serum or other organic liquid (1 cc.), placed in a centrifuge tube, K is precipitated with sodium cobalt-nitrite, and the tube centrifuged. The supernatant fluid is removed, the precipitate is washed with $NaNO_3$ and again centrifuged three times. Now $NaHCO_3$ is added, the mixture heated under gentle agitation, then cooled, mixed with permanganate and titrated with ferrous sulphate. The method is simple, rapid, and easy, not even micro-burettes being required.—*A. Jappelli.*

345. MICHAELIS, OSCAR. Die Brauchbarkeit der histochemischen Methoden des Goldnachweises. *Biochem. Zeitschr.* 225(4/6): 478-488. 1930.—Organs of 2 rabbits treated with organic or inorganic Au preparations were fixed in various ways and examined according to

the methods of Christeller and Borchardt.—Fixation in a mixture of $SnCl_2$ and formalin (Christeller) offers no advantage over ordinary formalin fixation. In the modification herein presented, alcohol fixation gives the same result. The Christeller $SnCl_2$ test does not give good Au ppts. with the org. Au preparation (Lopion). The Christeller modification (acidification with HNO_3) gives better results but is technically deficient (brittleness, sediments). Likewise the Borchardt $AgNO_3$ method is not always satisfactory. Both methods are modified: In the Christeller procedure HCl is substituted for HNO_3 to acidify the $SnCl_2$. Thus interfering sediments are avoided and with any material or fixation, black ppts. are obtained, insol. in conc. acids, readily sol. in aqua regia. The same results are obtained with the Borchardt method modified by use of higher temp. for Au pptn. and high concn. of HNO_3 to dissolve interfering Ag ppts. The modified methods are equivalent and certain. —*Author's summary (transl. by W. A. Peabody).*

346. MOPPETT, WARNFORD. The construction of an experimental x-ray tube to furnish the homogeneous K radiations of uranium. *Jour. Cancer Res. Committee Univ. Sydney* 2(3): 147-152. 4 fig. 1930.—Constructional details are given of a demountable experimental tube giving a maximum output of homogeneous K radiations.

347. MUND, W. Remarques sur une méthode de mesure de la pression osmotique. *Ann. Soc. Sci. Bruxelles Sér. B. Sci. Phys. et Nat.* 49(4): 257-260. 1929.—A critical discussion of a simple apparatus for measuring osmotic pressure suggested by W. Nernst.—*D. J. Healy.*

348. NERI, ANTONINO. Ulteriori modificazioni all'apparecchio di Folin per la determinazione dell'urea nel sangue. [A further modified Folin's apparatus for the determination of blood urea.] *Biochim. e Terapia Sperim.* 17(9): 379-387. 4 fig. 1930.—Description of a somewhat modified Folin's apparatus for determining blood urea.—*M. Comel.*

349. NOTO, GAETANO GIOVANNI. Sul metodo di Goria per la determinazione del rapporto globulino-proteinico del liquido cefalo-rachideo. [On Goria's method for determination of the globulin-protein ratio of cerebro-spinal fluid.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 770-773. 1930.

350. OKEY, RUTH. A micro method for the estimation of cholesterol by oxidation of the digitonide. *Jour. Biol. Chem.* 88(1): 367-379. 1930.—A micro procedure for the determination of free and total cholesterol by oxidation of the digitonide with silver chromate-sulfuric acid and subsequent titration of the excess dichromate with thiosulfate is described. Cholesterol is altered by the ordinary saponification procedures in such a way that it is no longer quantitatively precipitated by digitonin. A study of the conditions under which a synthetically prepared ester of cholesterol may be saponified with minimal alteration in the cholesterol has been made and a special procedure for saponification of blood and tissue extracts which conforms to these conditions has been evolved. Attention is called to the fact that, because of this decomposition of cholesterol during saponification, many estimations of cholesterol by precipitation as digitonide from unsaponifiable matter have given inaccurate results.—*Author's summary.*

351. ORIAS, O. Dosaje de la hemoglobina sanguínea. Exámen de los métodos de Sahli-Leitz, Hellige, Newcomer y Bürker. [Estimation of hemoglobin in blood.] *Rev. Soc. Argentina Biol.* 6(5/6): 363-384. 1930.—Critical study of methods using Van Slyke's gasometric as standard. The Sahli-Leitz and the Hellige methods give accurate values after calibrating the pipettes when Hb concentration is within the usual limits; when low Hb values are found 2 or 3 times the usual quantity of blood should be used as the error increases with low Hb concentration.—Newcomer's method is practical and accurate, with Hb values between 9 and 15% the mean probable error lies between 0.39 and 1.69%, rarely as much as 3%. Bürker's method gave figures in close agreement with Van Slyke's. It would be convenient to give figures always in gm. of Hb, if an arbitrary standard is used the value of 100% should be given in gm. Hb.—*J. T. Lewis.*

352. PACKARD, CHARLES. A nomogram for calculating x-ray dosage. *Jour. Cancer Res.* 14(4): 502-508. 1930.

353. PARKER, HENRY C. New indicating equipment for industrial pH measurements. *Indus. & Eng. Chem.* 20(7): 676-680. 4 fig. 1928.—Three new potentiometers are described which are suitable for making industrial H-ion measurements. Two of these have scales which are direct-reading in pH. The technic required for making measurements with industrial types of quinhydrone and H-electrodes is described. The limitations regarding the use of the quinhydrone electrode and the relative suitability of H-ion and conductivity measurements are discussed.—(*Courtesy Industrial and Engineering Chemistry.*)

354. POE, CHARLES F., and DOROTHEA KLEMME. Reducing equivalents for some rare sugars as determined by colorimetric methods. *Jour. Biol. Chem.* 87(1): 7-12. 1930.—The reducing equivalents were determined for the more common sugars with the recently proposed colorimetric methods (Folin new, Folin-Wu new, Benedict's 2nd modification, Kingsbury). Reducing equivalents were also determined for a number of rare sugars with these newer methods and the older colorimetric methods. The rare sugars were d-arabinose, cellobiose, fucose, glucoheptose, β-d-glucose, glucosamine, rhamnose.—*C. F. Poe.*

355. RIMINGTON, CLAUDE. A method for the determination of sulphur in wool and similar materials. *Chem. and Ind.* 49(10): 139T-140T. 1930.—A rapid and convenient method for the determination of total S in materials such as wool and hair is described.—*Author's summary.*

356. SABBATANI, L. Come si possono sperimentare farmacologicamente dei colloidi instabilissimi. [How to submit to experiment very unstable colloids.] *Biochim. e Terapia Sperim.* 15(4): 150-155. 1928.

357. SCHWARZ, WOLFGANG, und HEINRICH TIGLER. Das Otoaudion. Ein physikalisches Gerät zur exakten Gehörscharfenmessung. [The otoaudion. A physical apparatus for the exact measurement of the acuteness of hearing.] *Beitr. Anat. Ohres, Nase u. Halses* 28 (1): 77-95. 10 fig. 1930.

358. SJOLLEMA, B., und A. EMMERIE. Zur Trennung und Bestimmung von Blutbestandteilen unter Benutzung selektiver Adsorption. *Biochem. Zeitschr.* 204 (4/6): 275-285. 1929.—A carbon prepared from sugar, potassium silicate, and potassium carbonate adsorbed, in the presence of acetic acid, thiasine, glutathione, creatinine and uric acid, leaving in solution glucose and the hexose phosphates. A second adsorbent, the aluminum hydroxide D of Willstäter and Kraut, removed only glutathione, hexose-monophosphates and some hexose-diphosphate. In conjunction with S, N and reduction determinations, the adsorbents thus make possible the separate estimation of several of these constituents in blood filtrates.—*M. H. Power.*

359. SKINNER, J. T., and W. H. PETERSON. The determination of manganese in animal materials. *Jour. Biol. Chem.* 88(1): 347-351. 1930.—The periodate method has been adapted to the determination of the small quantities of Mn (as little as 0.01 mgm.) found in animal tissue without the necessity of taking a large and unwieldy sample. Good recoveries of added Mn were obtained.—*Authors' summary.*

360. SUNDERMAN, F. WILLIAM. A sixty cycle conductivity assembly for biological fluids. *Jour. Biol. Chem.* 88(1): 61-66. 1 fig. 1930.

361. VASSILIOW, B. A. Bestimmung der Frische von Fleisch mittels des Viskosimeters. [Determination of the freshness of meat by means of the viscosimeter.] *Zeitschr. Fleisch. u. Milchhyg.* 40(17): 357-363. 3 fig. 1930.

362. WOOD, FRANCIS CARTER. The detection of small quantities of lead in the tissues. *Jour. Cancer Res.* 14(3): 476-485. 4 fig. 1930.—The technique described was used by Marmé in 1865 and refined by Jolibois and

Bossuet in 1925. With this technique Pb was invariably found in all the organs, the blood and the tumors of 60-100 gm. rats which had received an intravenous injection of 1 mgm. Pb, either in the form of the Blair Bell colloid, the Ullmann colloidal phosphate or organic preparations of Pb of various types.

363. **WRIGHT, ALMROTH E. On some new methods, devices, and apparatus for the routine and the research laboratory.** *Lancet* 1(5340): 4-7. 8 fig. 1926.—A cell for counting blood cells is made by ringing an ordinary cover slip with vaseline. Methods of procuring blood for cell counts and of making blood counts are briefly described. Hanging-drop culture cells were used also for study of leukocyte movements. Methods of making permanent records of blood and bacterial counts are described. A simplified method for measuring the phagocytic power of the blood is given. A method for determining coagulation time of the blood is discussed.

364. **WÜST, JOSEPH. Ein empfindlicher Thermoregulator mit bequemer Einstellbarkeit auf vershiedene Temperaturen.** *Biochem. Zeitschr.* 224(4/6): 415-419. 1 fig. 1930.—A new type of thermoregulator is described. It can be filled easily and set quickly to any desired temperature between $-50°$ and $+50°$ or between 12° and 140°. Its sensitivity for long runs is $\pm 0.01°$. Some information and some directions regarding the use of thermoregulators are included.—*Author's summary (transl. by W. E. Thrun).*

365. **WYCKOFF, RALPH W. G., and J. B. LAGSDIN. A simple self-rectifying gas x-ray tube.** *Radiology* 15 (1): 42-48. 4 fig. 1930.—This tube was originally developed because of the need in some biological experiments for a constant and more intense source than is given by the commercially available x-ray tubes.

PHYSIOLOGICAL

366. **BARTH, KARL. Zur Perkussion.** *Zeitschr. Kreislauffors ch.* 22(4): 122-127. 1 fig. 1930.—The author describes a percussogram and thorax meter.

367. **BINET, LÉON, et HENRY CARDOT. Sur la survie de la tête isolée des poissons, avec ou sans perfusion.** *Jour. Physiol. et Pathol. Gén.* 27(2): 250-256. 1 fig. 1929.—The authors extended the study carried out by Kouliabko on fresh water ganoids, teleosts, and lampreys to the marine teleost, *Gobius*, with modifications in technic. The body was cut off directly behind a tight ligature encircling it just behind the pectoral fins. These fins were removed, the branchiae laid bare, and the aorta cannulated. Perfusion was started, the ligature cut, and the preparation bathed in running sea water. Isolated heads not perfused did not survive. Those perfused with sea water or half sea water did not survive. Perfusion with Ringers pH 7.4 containing $MgCl_2$ and NaH_2PO_4 survived 20 min. Adding glucose to this lengthened survival to 30 min. Urea in place of glucose had no favorable effect, but adding urea to the glucose-Ringer's gave the longest survivals, 1½ hrs. in 1 case. During glucose-Ringer or urea-glucose-Ringer perfusions respiration had considerable amplitude and showed normal phases and normal movements of the structures involved. The authors conclude that they were able to confirm Kouliabko's finding that perfusion methods are applicable to fish, and that glucose and probably urea have favorable effects.—*A. L. Hintze.*

368. **BOEHM, G., und K. F. SCHOTZKY. Das Röntgendiagramm der Muskelkontraktion. [The x-ray diagram of muscle contraction.]** *Naturwissenschaften* 18(13): 282. 3 fig. 1930.—A note.

369. **COMANDON, J. La micro-cinématographie. [Cinemicrography.]** *Protoplasma* 6: 627-632. 3 fig. 1929. A brief account is given of the author's work in taking moving pictures of blood with Spirochetes and Trypanosomes.—*W. Seifriz.*

370. **DEKKING, H. M. Zur Photographie der Hornhautoberfläche. [Photography of the corneal surface.]** *Graefe's Arch. Ophthalmol.* 124(4): 708-730. 30 fig. 1930.

371. **DEMUTH, FRITZ. Praktikum der Züchtung von Warmblütergewebe in vitro.** 116p. 49 fig. R. Müller & Steinicke: Munchen, 1929. Pr. 6M.—The technique of this laboratory book is based for the most part on the work of Carrel and A. Fischer, and covers the usual methods of obtaining blood plasma from the chicken and mammals together with the usual procedures of preparing plasma and various saline media. The technique of ordinary coverglass preparations and the Carrel flask method are taken up in considerable detail. There are short sections devoted to photo-micrography, to the measurements of growth, to chemical determinations, micro-manipulations, and so forth. There are many useful suggestions regarding instruments, solutions, and histological methods.—*W. H. Lewis.*

372. **FIROR, W. M. Experiments in cross circulation.** *Amer. Jour. Physiol.* 96(1): 146-152. 2 pl. 1931.—This paper describes the technic for crossing the circulating bloods of dogs by means of carotid-jugular anastomoses. The results of 40 experiments are given. In 2 instances the exchange of blood was maintained for 6½ days. The effects of cross-circulation upon the pulse rate, respiratory rate, temp., blood pressure, blood chemistry, and red blood cells were studied. Three sets of experiments closely related to the crossed carotid-jugular anastomoses are reported.—*Author's summary.*

373. **FLEISCH, ALFRED. Der Pulszeitschreiber; ein Apparat zur Aufzeichnung der zeitlichen Pulsintervalle als Ordinate. [The sphygmograph, an instrument for recording the time-pulse intervals as ordinates.]** *Zeitschr. Ges. Exp. Med.* 72(3/4): 384-400. 8 fig. 1930.—The mechanical principles of the new mechanism are described. It is reported accurate, measuring time intervals with an error of $\pm$ 0.004 second.

374. **FUCHS, HANS J. Einfaches Tierbrett.** *Zeitschr. f. Immunitätsforsch. u. Exp. Therap.* 65(5/6): 515-516. 1930.—A simple animal board is described.—*N. W. Larkum.*

375. **GIBBS, O. S. An artificial heart.** *Jour. Pharmacol. & Exp. Therapeut.* 38(2): 197-215. 5 fig. 1930.—Two rubber bellows with suitable inlet and outlet valves are inclosed in a brass box which contains warm water. The filling of the bellows with blood activates switches which cause the opening of an electric valve connected to a source of water pressure. The pressure squeezes and thus empties the bellows, when this occurs the valve is released and the water surrounding the bellows allowed to drain away. The slight suction thus obtained is utilized to fill the bellows which are connected with suitable cannulae to the auricles, to the pulmonary artery and to the systemic aorta. Owing to the small capacity of the instrument (20 cc.) it can be used directly without extra blood. Cats so treated may live for two to three hours. Drug reactions are shown and attention is drawn to the fact that the instrument is another step in the analysis of circulatory problems including that of shock.—*O. S. Gibbs.*

376. **GOWER, WALTER E., and JOHN van de ERVE, Sr. An apparatus for the slow intra-arterial injection of M/6 sodium carbonate solution as an anticoagulant in blood pressure experiments by means of compressed air.** *Jour. Lab. & Clin. Med.* 15(10): 1028-1031. 4 fig. 1930.

377. **HOCHREIN, MAX. Zur Kritik der Pneumotachographen.** *Pflüger's Arch. Ges. Physiol.* 224(5): 545-553. 3 fig. 1930.—A comparison of his own apparatus with that of Fleisch.

378. **HÜHNE, THILO. Neue Wege zu einem besseren Catgut.** *Arch. Klin. Chir.* 164(Festschr.): 131-180. 12 fig. 1931.—Cathode rays will sterilize thin catgut, but quickly affect its tensile strength. Catgut treated with a disinfecting hardener (mixture of malachite green and methyl violet) and a drying oil swelled less in tissues than silk, making very firm sutures. Catgut so treated (Blauöl-catgut) exerts no chemical irritation on tissue and remains permanently disinfected.

379. **JACOBSOHN, IRENE. Eine neue Vorrichtung zur Färbung von Ausstrichpräparaten. [A new device for coloring smear preparations.]** *Zentralbl. Bakt. Abt. I. Orig.* 118(1/2): 110-111. 1 fig. 1930.

380. KALK, HEINZ. Erfahrungen mit der Laparoskopie. (Zugleich mit Beschreibung eines neuen Instrumentes.) *Zeitschr. Klin. Med.* 111(3/4): 303-348. 4 fig. 1929.—Kalk describes the technic of laparoskopie with the direct examination of the abdominal viscera by means of an instrument similar in character to the ordinary straight cystoscope. His special instrument is described.—*C. H. Greene.*

381. KARRER, S., and G. B. ESTABROOK. Thermocouple for measuring internal body temperatures of animals. *Jour. Maryland Acad. Sci.* 1(3): 129-147. 10 fig. 1930.—A thermocouple, consisting of fine iron and constantan wires and mounted inside a hypodermic needle so that the electrical circuit is insulated from the steel needle, is described. Details of a method of constructing such thermocouples are given.—*S. Karrer.*

382. KORTSCHAGIN, M., und M. LEWITOW. Über die Anwendung von Natriumsulfit als Abfangsmittel von Acetaldehyd in überlebenden tierischen Geweben und im überlebenden Herzen. *Biochem. Zeitschr.* 224 (1/3): 63-68. 1930.—Sodium bisulphite, added to a solution of Na_2SO_3, may be used to remove acetaldehyde from surviving tissues and the surviving heart. As compared with calcium bisulphite the sodium bisulphite has the advantage of giving higher yields of acetaldehyde from the surviving heart.—*Authors' summary (transl. by W. E. Thrun).*

383. KOSAKAÉ, JIRO. Meine Methode zur vollständigen Vernichtung der Hypophyse beim Kaninchen mittels Tamponade an der Sella turcica nach dem Hypophysenstich. [A method of complete extirpation of the hypophysis in the rabbit by means of tamponing the sella turcica after the hypophyseal incision.] *Japanese Jour. Obstetr. and Gynecol.* 13(1): 31-40. 1930.

384. LAQUA, K. Experimentelle Untersuchungen über die vollkommene äussere Pankreasdauerfistel. *Bruns' Beitr. Klin. Chir.* 150(3): 507-516. 4 fig. 1930.—The most certain method for applying complete external pancreatic fistula in the dog includes elimination of the duodenum. While continued deprivation of the duodenal juice and bile does not endanger life, complete loss of pancreatic secretion regularly leads to an early death, the actual cause of which, according to Walters-Bollman, is loss of acids and chlorides from the blood and the great increase in blood urea.—*Author's summary (transl. by W. A. Peabody).*

385. LONDON, E. S. Vereinfachtes, erleichtertes und zuverlässig ausgestaltetes Angiostomieverfahren. *Zeitschr Ges. Exp. Med.* 72(3/4): 522-536. 46 fig. 1930.—Description of procedure in the 3-canula operation on the portal, hepatic and renal veins, angiostomy of the venae pancreatico-duodenalis, of the V. lumbalo-suprarenalis and of the vena lienalis.

386. RANKER, EMERY R. Apparatus and method for obtaining sterile filtrates of biological fluids. *Phytopathology* 20(7): 569-573. 2 fig. 1930.—This apparatus consists of a Chamberland-Pasteur B filter connected to the T-shape side arm of the glass tube enclosing a W Berkefeld filter through which a second filtration is accomplished. The sterile filtrate thus continues through the system and is collected in a flask of convenient size. Details of the construction are given.—*W. A. Whitney.*

387. ROESE, H. F. Methoden zum Studien der Physiologie und Pharmakologie des künstlich durchbluteten Säugetierdarmes. *Pflüger's Arch. Ges. Physiol.* 226(2): 171-183. 2 fig. 1930.—Four methods are described for use in dogs, using dog's blood as perfusion fluid. (1) Simple perfusion, using hydrostatic pressure, of an excised strip of intestine causing marked fluctuations in vascular tonus, severe damage to intestinal epithelium, and massive transudation into lumen of bowel, prevent any useful application. (2) Using a denervated heart-lung-intestine preparation with perfusion the flow remains constant and transudation is avoided if perfusion pressure is kept low but intestinal epithelium is damaged severely. (3) By transplantation of the intestine into carotid-jugular circulation of another dog, using Payr's tubes so as to render defibrination unnecessary, intestinal epithelium is also damaged, showing that the toxic agency is not absence of a hormone from blood or a product of defibrination. (4) An innervated heart-lung-intestine preparation damaged the epithelium less than any of the other methods, indicating that the celiac plexus exerts a tonic influence upon intestinal capillaries. The applicability and limitations of each method are discussed.—*C. F. Schmidt.*

388. SPINELLI, ANTONIO. Sopra una sostanza ipertermizzante contenuta nel lievito di birra. (Proposta di un metodo per stabilire ipertermia negli animali da esperimento.) [A hyperthermy-producing substance of beer yeast—a proposed method for producing hyperthermy in laboratory animals.] *Biochim. e Terapia Sperim.* 17(10): 397-401. 1930.—To obtain a notable and constant hyperthermy, the use of filtered autolysates of fresh beer yeast, intravenously administered, may be adopted.—*M. Comel.*

389. TEITEL-BERNARD, A. Eine einfache Vorrichtung zur optischen Blutdruckregistrierung bei vertikaler Papierbewegung. [A simple device for the optical registering of blood pressure through upward movement of paper.] *Pflüger's Arch. Ges. Physiol.* 220(1/6): 653-654. 2 fig. 1928.

390. THARALDSEN, C. E., L. J. BOYD, and D. ANCHEL. A storage tube for plasma and embryo juice. *Science* 71(1852): 667-668. 1 fig. 1930.—A tube with double plug insuring sterility without flaming, thus removing the risk of raising the temp. and hastening clotting.

391. TOMASCHEK, R., und H. LOEBELL. Über die Rekonstruktion der Kehlkopfbewegungen nach den Angaben des Gutzmannschen Laryngographen. *Beitr. Anat. Ohres, Nase u. Halses* 28(5/6): 404-421. 9 fig. 1931.—Gutzmann's laryngograph is practical only for slow movements of not too great amplitude. A method of calculation is given by which this can be overcome.

392. TRENDELENBURG, FERDINAND. Über Herztonverstärkung. *Zeitschr. Kreislaufforsch.* 20(14): 436-444. 3 pl., 4 fig. 1928.—An adaptation of the high frequency condenser microphone for studying heart tones is described and its use suggested. Accuracy in frequency and relative amplitude are obtained.—*H. M. Krueger.*

393. WEIL, ARTHUR, und DANIEL M. LIPSCHÜTZ. Die Vereinheitlichung des hämolytischen Index. *Pflüger's Arch. Ges. Physiol.* 226(2): 239-242. 1930.—A method for the quantitative measurement of other types of hemolysis by comparison with that produced by standard sapotoxin solutions.—*M. H. Jacobs.*

394. ZWARENSTEIN, H., and B. McMANUS. A double myograph. *Trans. Roy. Soc. So. Africa* 19(1): 23-25. 2 fig. 1930.—A double myograph for the simultaneous recording of the contractions of 2 gastrocnemii in situ in the frog is described. An experiment on the effect of blood-supply on the development of fatigue, illustrating the use of the instrument, is described.—*Authors' summary.*

ANIMAL PHYSIOLOGY

NUTRITION, DIET, VITAMINS, GENERAL METABOLISM, GROWTH

J. R. MURLIN, *Editor*

H. A. MATTILL, *Associate Editor*

E. F. ADOLPH and R. G. SINCLAIR, *Assistant Editors*

(See also in this issue Entries 134, 155, 156, 157, 198, 215, 222, 238, 259, 263, 279, 290, 682, 696, 697, 752, 755, 758, 786, 792, 818, 827, 829, 834, 840, 842, 855, 859, 864, 866, 883, 886, 896, 907, 911, 918, 919, 932, 953, 954, 959, 1001, 1022, 1031, 1042, 1055, 1056, 1067, 1071, 1072, 1073, 1074, 1077, 1079, 1083, 1085, 1086, 1104, 1135, 1155, 1178, 1206, 1216, 1227, 1256, 1260, 1328, 1384, 1606, 1798, 1824, 1885, 1914, 1915, 1921, 1925, 2301, 2334, 2356, 2760.)

NUTRITION AND DIET

395. **SIHVONEN, KERTTU.** Zur Kenntnis des Nährwertes von Abfällen bei der Konservenfabrikation von Schweinefleisch. *Skand. Arch. Physiol.* 59(5/6): 231-242. 1930.—Skin and bones of pork were first analyzed. The skin gave 60.2% dry substance, 29.1% protein, 25% fat, 6.1% ash and 3518 calories per kgm. In 3 lots of bones the dry substance varied from 5.9% to 16.4%, the protein from 1.6% to 2.6%, the fat from 3.4% to 13.5%, the ash from 0.3% to 0.6%, and the calories from 406 to 1362. Next the skin, in soup and separately, was fed to 2 human subjects, and the feces analyzed, both after a pork-skin meal and after a meal without the pork-skin. The average total resorption for the 2 subjects was 97.5%, dry substance 96.6%, protein 94.9%, fat 98.7% and ash 96.6%, indicating that pork-skin is very suitable for human consumption.

396. **SUPPLEE, G. C., O. D. DOW, G. E. FLANIGAN, and O. J. KAHLENBERG.** A comparative study of liquid and dry milk as anemia-producing diets. *Jour. Nutrition* 2(5): 451-469. 1 pl., 14 fig. 1930.—Nutritional anemia in rats was produced by feeding natural fluid milk, milk boiled 2 min., and reconstituted spray process milk powder. Reconstituted dry milk, having the same Cu content as the milk from which it was prepared but with increased Fe content resulting from contact with drying cylinders, prevented the development of "milk anemia." It also improved anemic conditions resulting from a natural milk diet, as shown by physical condition, blood count, and hemoglobin content. Where the Fe content of the reconstituted milk was 4 times that of normal milk, a normal hemoglobin and blood count was maintained. Milk dried on iron cylinders apparently acquires measurable anti-anemic properties.—*E. L. Batchelder.*

397. **SUZUKI, BUNSUKE, and UZO NISHIMOTO.** The kephalins of soy bean. *Proc. Imp. Acad.* [*Tokyo*] 6(7): 262-265. 1930.—Details of a chemical investigation are given. Two β kephalins, linoleo-stearo-β-kephalin and linoleno-stearo-β-kephalin, were isolated.

398. **VISCO, S.** Osservazioni sullo sviluppo di ratti alimentati con frumenti duri e di ratti alimentati con frumenti teneri. Relazione tra peso iniziale dell'animale e valore nutritivo dell'alimento. I e II. [Influence of various kinds of wheat upon growth of rats. Relation between initial weight of the animals and nutritive value of food. I and II.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 198-204. 3 fig.; 204-209. 1930.—No difference in the nutritive value was observed between the hard and the soft wheat. During development of the animal the nutritive value of a given food may be greater or less, according to the degree of development of the animal itself.—*M. Comel.*

399. **WETZEL, GEORG.** Wachstum und Widerstandsfähigkeit der Ratte bei pflanzlicher und bei tierischer Nahrung. *Zeitschr. Ges. Anat. Abt. I.* 92(6): 802-826. 5 fig. 1930.—Studies on rats (apparently about 100) lead to the conclusion that flesh food produces a more rapid growth, a livelier condition, an earlier sexual development, greater resistance to certain noxious influences, and a stronger development of the lymphoid tissue in the intestine, than does vegetable food.

400. **WILLI, HEINRICH.** Vegetabile Rohkost und animalische Kost im Selbstversuch. *Deutsches Arch. Klin. Med.* 168(3/4): 156-175. 1930.—A raw vegetable diet, rich in calories and very poor in NaCl, which was used rigorously for 10 weeks proved unsatisfactory. A diet rich in protein which was mainly animal, taken for 14 days, was equally poor. The body weight fell during the raw diet 2750 gm., rose during the animal diet 1600 gm. The blood-pressure fell during the raw diet from 122/65 mm. Hg to 90/45 mm. Hg. On the animal diet it showed no great variations. During raw diet there was a temporary hypochromic anemia, leucocytes increased somewhat and a monocytosis of 15% appeared. During protein diet no important hematological changes were noticed. Balance experiments showed that the absorption from the intestine was incomparably better with the protein-rich diet than with the raw diet: but at the same time the intermediary metabolism rose, the formation and renal-excretion of waste increased. Basal metabolism showed no abnormal variations. The mineral balance was positive during the diet low in salt, despite considerable loss in the stools. The Cl requirement was met with a very small allowance, avoiding hypochloremic symptoms. When a large amount of NaCl was fed, it was not excreted at once, as it is by the child, but in 4 days. K fed in large amounts was not stored, but excreted. Acid-base studies showed a relation between the pH and the excretion of organic acids. With the raw diet the urine was strongly alkaline, the excretion of organic acids rose notably, especially when the system was overloaded with K acetate. Fanconi's conception, that the increased excretion of organic acids under great excess of bases is a reserve mechanism similar to that of NH_3 under acid conditions, is supported by these observations. The excretion of organic acids follows the N excretion, as Brock observed, only with a mixed diet, when pH varies between 6 and 7. As soon as pH becomes alkaline, the N curve and the organic acid curve separate widely. The NH_3 and acid coefficients then behave reciprocally. The chemical composition of the blood shows a remarkable constancy with each kind of diet.—*Author's summary (transl. by M. H. Keith).*

ENERGY METABOLISM

401. **ALWALL, NILS, and AXEL HÖJER.** The influence of lemon juice on the tissue respiration of normal and scorbutic guinea-pigs. II. *Skand. Arch. Physiol.* 59(3/4): 89-91. 1930.—The retarding effect of inactivated lemon juice on the tissue respiration by experiments with Thunberg's methylene-blue method (Höjer) is due to a precipitate formed during the autoclaving. The fact that the intensifying effect of the raw juice remains even after its inactivation, if only the precipitate is removed, makes it probable that this intensifying effect is not an antiscorbutic one. Instead it is probably to be regarded as a "donator" effect.—*Authors' summary.*

402. **APPEL, K. E., and C. B. FARR.** The specific dynamic action of protein in relation to mental disease. *Jour. Nervous and Ment. Dis.* 70(1): 43-50. 1929.—In 28 cases—26 with miscellaneous psychoses and neuroses—basal metabolism tests and estimations of the specific dynamic action of protein were made. A subnormal specific dynamic action was found in 5 patients, 1 of early uncomplicated dementia precox, the rest with toxic or nutritional factors. Other cases of dementia

precox and of nutritional disturbance showed normal reactions. Fischer has reported characteristic disturbances of metabolism (specific dynamic action) in schizophrenia; others have found similar changes in endocrine and nutritional disorders. Our findings, while inconclusive, do not stress nutritional disorders.—*From authors' summary and conclusions.*

403. BENNET-CLARK, T. A. A method of investigating gas exchanges of living tissues. *Nature [London]* 125(3152): 492-493. 1 fig. 1930.—The principle of the method is as follows: a gas mixture circulates in a closed system over the material under investigation, and through a solution of $Ba(OH)_2$. Since CO_2 is absorbed, there is a reduction in volume of the gas mixture due to the absorption of O by the tissue. This causes the level of liquid to rise in a manometer placed between the closed respiration system and another closed volume of air (the compensator). The liquid is an electrolyte, and when it rises a short distance (about 1 mm.), it makes contact with an electrode from which O begins to be evolved; further decrease in volume of the system due to absorption of O is thus prevented by this automatic electrolytic addition of O which takes place at the same rate as that at which O is absorbed by the tissue. This rate is measured by measuring the current used in the course of the electrolysis by either finding the volume of H or weight of Ag simultaneously set free. The rate of CO_2 emission of the tissue is found by observing the change in electrical resistance of the Ba $(OH)_2$ solution, which rapidly increases owing to the conversion of the hydroxide into insoluble $BaCO_3$.

404. BRUEN, CURTIS. Chart for the computation of Harris-Benedict standards of basal metabolism. *New England Jour. Med.* 202(11): 531-532. 1930.

405. CHAMBERS, WILLIAM H., and GRAHAM LUSK. Animal calorimetry. Thirty-ninth paper. Specific dynamic action in the normal and phlorhizinized dog. *Jour. Biol. Chem.* 85(2). 611-626. 1930.—In the dog the specific dynamic action of glycine, as measured by its calorigenic action, is dependent on the amount administered and is independent of the size of the animal which has received the glycine. Glutamic acid given to the normal or diabetic dog exerts no specific dynamic action. Fat given in small quantity to the normal dog shows a slight specific dynamic effect and may show none in the diabetic dog. The specific dynamic action of meat appears to be the same in the normal as in the diabetic dog. Just as in the case of a fasting dog, which in running maintains the reaction glycogen-lactic acid-glycogen at the expense of fat which is oxidized, so the fuel which is necessary to drive certain of the cleavage products of protein into glucose in diabetes may be fat. The fuel needed for this purpose wholly or in part constitutes the extra heat of the specific dynamic action of protein. This analysis accords with the ideas of Aubel, of Meyerhof, and of Adams.—*Authors' summary.*

406. CHIATELLINO, A. Il ricambio gassoso della ghiandola tiroide. [Gaseous exchange of the thyroid.] *Arch. di Sci. Biol.* 14(1): 11-25. 1 fig. 1929.—During morphine-chloral narcosis, blood supply to the thyroid is smaller than in curarised dogs, the consumption of O by the gland is lowered, but the CO_2 output is raised. Among all organs, of which O consumption by blood gas analysis was determined, thyroid appears to have a more active gaseous exchange and a much greater blood supply.—*A. Jappelli.*

407. COBET, R., und T. v. HAEBLER. Über den Einfluss der Kohlensäuregasbäder auf den Menschen. *Zeitschr. Klin. Med.* 112(1/2): 134-149. 1 fig. 1929.—In cold CO_2 baths the blood flow through the skin was increased. There was not enough CO_2 absorbed by the dry skin to influence the gas metabolism significantly. In gas baths at 38-50° C. there was hyperemia of the skin, and a remarkable increase in sweat secretion. The internal temperature of the body could therefore either rise or fall, depending on the length of time the body was immersed in CO_2. The O consumption was increased only a little, and sometimes even decreased. A warm CO_2 gas bath was really a special form of sweat bath. Damp, sweating skin could absorb more CO_2 than dry skin. The respiratory quotient rose during the bath; after the bath it gradually fell to normal. Alveolar CO_2 tension was generally increased; it never decreased. The CO_2 absorbed by the skin of the whole body surface was about 100-150 cc. per min. CO_2 stimulated the respiratory center, thus increasing respiratory rate and total volume.

408. COMEL, M. Azione dell'acqua termale sul ricambio gassoso dei tessuti. [Action of thermal water on gaseous metabolism of the tissues.] *Biochim. e Terap. Sperim.* 16(12): 621-627. 1929.—The author used reduction of m-dinitrobenzene as an indicator of tissue metabolism. The thermal water he used was slightly radioactive and had a pH of 7.5. Frog muscle was used as the experimental material. Thermal water decreased tissue metabolism.

409. CONKLIN, CLAIRE J., and J. F. McCLENDON. The basal metabolic rate in relation to the menstrual cycle. *Arch. Internal Med.* 45(1): 125-135. 1930.—About 1000 determinations of basal metabolic rates of women were made and then a selection was made of 10 individuals who showed a very regular respiratory rhythm. On each of these a basal metabolic rate was done once a day for a month or more. The daily variations are plotted together with the menstrual history, and then the determinations are divided into those during the menstrual period and the intermenstrual period, which was divided into 3 equal parts, post-menstrual, inter-menstrual and pre-menstrual. The rates were averaged for each period and the probable errors calculated. There is considerable variation in individual cases but averages of the 4 groups were made and there was a rise from the post-menstrual to the pre-menstrual of 1.28 cal. per sq. m. per hr. The probable error was 0.199—in other words, the rise in metabolic rate was more than 6 times the probable error. It was shown by Frank that the ovarian hormone in the blood rises during this period of rise in basal metabolic rate.—*J. F. McClendon.*

410. EISMAYER, G., und H. QUINCKE. Sauerstoffverbrauch, Kohlensäure- und Milchsäureabgabe des Herzens bei verschiedener Arbeit. III. Mitteilung (Stoffwechseluntersuchungen am Kaltblüterherzen). *Zeitschr. Biol.* 89(6): 523-535. 4 fig. 1930.—Strongly auxotonic work increases the O consumption of the frog's heart. A more rapid rate increases it proportionally to the work of a single beat. In protracted experiments the O consumption sharply decreases before the heart becomes hypodynamic. The addition of sugar restores it to the former level. With slight variations the CO_2 liberation runs parallel, with a respiratory quotient of 0.5 to 0.9. During aerobic work lactic acid appears in the fluid. More lactic acid appears during work with low pressures than with higher pressures of filling. More lactic acid appears under anaerobic conditions. Oxygen consumption furnishes no indication of the efficiency of work of the heart.—*G. Eismayer (transl. by R. C. Corley).*

411. EISMAYER, GOTTFRIED, und HERMANN QUINCKE. Ueber den Einfluss des Sauerstoffangebotes und des Insulins auf den Gaswechsel des Herzens. (Stoffwechseluntersuchungen am Kaltblüterherzen. IV. Mitteilung). *Zeitschr. Biol.* 90(1): 57-62. 1 fig. 1930.—By previously described methods the O-consumption of the frog heart was found to be the same whether the nutrient solution contained 8 or 16 vol. % of O. Below 8 vol. % it falls at first slowly, then always more rapidly, without the mechanical work of the heart being impaired. Addition of insulin in small amounts to the nutrient solution does not affect the working-power and the O-consumption. Larger amounts of insulin lead to a reduction of O-consumption, and to an increase of the respiratory quotient. The working-power of the heart was reduced. The change in metabolism precedes the injury of the working-power.—*G. Eismayer (transl. by R. H. M'Gonigle).*

412. FLEISCHMANN, WALTER. Beiträge zur Physiologie der Gewebsatmung nach Untersuchungen an Win-

terschläfern. *Pflüger's Arch. Ges. Physiol.* 222(4): 541-547. 1 fig. 1929.—The study of liver tissues from hibernating animals, according to the method of Warburg, shows that O-consumption is entirely dependent upon temperature and equally whether the tissue is from a hibernating or a waking animal. This dependence on temperature obtains for tissues of hibernating and also other mammals. The brown fat tissue, in contrast to the white, shows pronounced O-consumption. *W. Fleischmann (transl. by H. S. Hopkins).*

413. FRAPS, M. Studies on respiration and glycolysis in Planaria. I. Methods and certain basic factors in respiration. *Physiol. Zool.* 3(2): 242-270. 10 fig. 1930.—The manometric method of Warburg has been modified for the measurement of respiratory and glycolytic metabolism in Planaria. Improvements and modifications of apparatus include the use of sloping manometer gauges, complete immersion of entire gas volumes in the constant-temperature bath, the elimination of barometric fluctuations, and the use of readily interchangeable chambers. Concentrations of artificial media based on the salt content of spring waters are given for Planaria sp. The Ca : K ratio is relatively high. Relatively high concentrations of $NaHCO_3$ exert an initial depression on the rate of O consumption. This effect is of short duration (ca. two hours for 0.01M $NaHCO_3$), and is followed by an increase in the rate of O consumption slightly above that found in bicarbonate-free solutions. The rate of O consumption in atmospheres containing from 0.9 to 97 vols. % O has been measured. Oxygen tensions below ca. 15 vols. % act to limit the rate of O consumption. The present paper is considered preliminary to others which will follow on the quantitative measurement of energy exchange reactions in several forms of lower organisms.—*Author (courtesy Wistar Bibl. Serv.).*

414. FRASER, A. C., and B. P. WIESNER. Variations of the rest metabolism of the rat in relation to the sex cycle. *Proc. Roy. Soc. Edinburgh* 50(1): 1-7. 1929-30.—The CO_2 output of resting female rats at 37°C. varied from 9 to 24 mgm. per min. per kgm. The highest output nearly always occurred from 12 to 24 hrs. after full estrus, as indicated by complete cornification, while low points fell between the estrous stages. CO_2 output for ovariectomized rats ranged from 6 to 8 mgm. and was raised only slightly by injection of ovarian or placental extracts which produced full cornification. The increase in metabolism is therefore not ascribed to a delayed effect of estrin, but may be due to some other substance produced at the time of rupture of the follicles.—*M. Dann.*

415. FREW, J. G. H. Studies in the metabolism of insect metamorphosis. *British Jour. Exp. Biol.* 6(3): 205-218. 7 fig. 1929.—Respiratory quotient is very low (frequently below 0.6) during the pupal period. It is probable therefore that all glucose is not used up in respiration but is used in the building-up of imaginal tissue substance. Synthesis of glucose continues throughout the pupal period, but while during the earlier part glucose is derived from protein, in latter part it may be derived from fat. The respiration curve shows a gradual fall during the early pupal stage and a gradual rise during the latter. No sex difference could be detected.—*F. A. E. Crew.*

416. GIAJA, J. Les substitutions alimentaires dans le métabolisme de sommet. [French résumé] Глас (*Glas Srpska Kraljevska Akademija.*) 1926(122): 57-60. 1926.—The question of the influence of the food on summit metabolism is submitted. Will this be proportional to the value of the food, or the available reserve which the organism disposes of, or will its value vary as the basal metabolism? Some experiments favor this second possibility. Particularly in starvation one sees the summit metabolism increase at the moment the fats have disappeared, and the protein consumption increases. The specific dynamic action therefore makes itself felt equally in the summit metabolism.—*J. Giaja (transl. by R. H. M'Gonigle).*

417. GIAJA, J., et S. GELINEO. L'hypothermie et la thermogenèse. *Arch. Internat. Physiol.* 32(3): 237-250. 1930.—Rats were placed in metal boxes, which were chilled by a freezing mixture, and, at the temperature desired, were placed in a respiratory chamber; 5 experiments are reported. As long as the body temperature of the rat, reduced by external cold, is above 20°, O consumption is raised, comparably with its maximum consumption defined by peak metabolism. It is only when the temperature has fallen below about 20° that consumption decreases and thermic accommodation is overcome. While the temperature of the rat is falling under the influence of external cold, its O consumption does not noticeably vary, so long as hypothermia does not reach the limit which has been indicated. When the rat in hypothermia "a frigore" is suddenly placed at its ordinary thermic neutrality (about 30°), its O consumption diminishes during the re-warming, i.e., its consumption is higher by the degree that its hypothermia is lower than the indicated limit. Its temperature having again become normal, consumption in general still remains higher than it was before the exposure of the animal to cold. Hypothermia alone, without the influence of external cold, while augmenting calorification, cannot make it reach the maximal value which is attained in peak metabolism. These facts, with others already known, argue in favor of a stimulating action of hypothermia on heat production. Lowering of the temperature of the homeothermic animal, while stimulating thermogenesis, at the same time, according to biologic law, depresses its heat-producing apparatus. Thus thermogenesis of the homeothermic animal in hypothermia at any given moment is the result of the conflict of 3 factors, which are: external cold, internal cold and the lowered temperature of the heat-producing apparatus, the first 2 having a stimulating action, the last a depressing action on heat-production.—*Authors' summary (transl.).*

418. HILL, A. V. The rôle of oxidation in maintaining the dynamic equilibria of life. 24p. Oxford University Press: New York, 1929. Pr. 35c.—All changes associated with life involve a decrease in the free energy and an increase in the entropy of the physico-chemical system in which they occur. The free energy of the combination of O with foodstuffs renders the activities of life possible. While the above statements seem certain in the case of the animal cell, a more precise description of the rôle of oxidation is not known except in the case of the muscle cell; here the anaerobic breakdown supplies the energy of contraction, while oxidation provides the means by which the chemical reactions of contraction are reversed. The extra oxidation which follows muscular activity is the oxidation of some carbohydrate in the muscle which supplies the heat necessary for the recovery reaction: lactate + heat $\rightleftarrows$ glycogen. This is prevented by O-want, or even if O is present, by a trace of cyanide. With other organs and cells, this carbohydrate-lactic acid mechanism does not generally obtain. In the case of the non-medullated nerve of the Maia, measurements of the action potentials and injury potentials in presence of O and N show that oxidation is concerned in the maintenance of the potential difference across the boundary of the cell, i.e., in the recharging of the battery without which the nerve cannot transmit its impulses. This conclusion is verified by observations on the heat production or O consumed after nerve activity. H. finds a linear relation between the "resting heat rate" after any stage of stimulation and the total amount of heat liberated by stimuli applied to the muscle, and since the amount of energy liberated in an anaerobic stimulation measures the amount of lactic acid produced, which, in turn, is proportional to the degree of O-lack of the tissue involved, he concludes that there is a linear relation between this O-lack and the rate of some chemical breakdown or disintegration and that, in some way, O inhibits chemical disintegration. The process of lactic acid formation or of increasing O-want leads ultimately to the same state of chemical disintegration as does activity induced by stimulation.—*V. G. Lava.*

419. **HITCHCOCK, F. A., and FRANCES R. WARDWELL.** Cyclic variations in the basal metabolic rate of women. *Jour. Nutrition* 2(2): 203-215. 1 fig. 1929.—Experiments on 20 women, using the Benedict-Roth-Collins apparatus with kymograph attached, showed a strong tendency toward lower metabolic rate during the menstrual period and a 2nd low point about the middle of the intermenstrual period. A seasonal variation was observed showing the lowest metabolic rate in winter or spring and the highest in summer or autumn.—*E. L. Batchelder.*

420. **JORES, A.** Perspiratio insensibilis. I. *Zeitschr. Ges. Exp. Med.* 71(1/2): 170-185. 2 fig. 1930.—The bed-balance apparatus and method of estimating insensible perspiration described by Benedict were used in these studies. The parallelism between basal metabolism and insensible perspiration was complete, during rise and fall of basal metabolism, in exercise and in fever. The average absolute value of loss of water through the skin is about 200 gm. in 24 hrs. per square meter of body surface. In the night an increase of insensible perspiration took place, apparently paralleling depth of sleep.

421. **KLEIBER, M.** Wie und mit welcher Genauigkeit kann man die Schwankungen der Respirationsintensität ohne Tracheotomie oder Mundstück bestimmen. *Pflüger's Arch. Ges. Physiol.* 220(1/6): 599-605. 1 fig. 1928.—A formula is given allowing the calculation of the intensity of the respiratory exchange from the analysis of gas samples taken from an open-air circuit respiration apparatus.—*M. Kleiber.*

422. **KOMMERELL, BURKHARD.** Über den Einfluss von Schilddrüsendarreichung auf den Eiweiss und Fettstoffwechsel. *Biochem. Zeitschr.* 208(1/3): 112-126. 8 fig. 1929.—Experiments were made on fasting dogs with and without thyroid feeding. The gaseous metabolism was determined by the Douglas bag method. A modification of the Haldane gas analysis apparatus is presented. The N balance showed that the N loss in starvation was increased twofold under thyroid administration. The increase in basal metabolism amounted to 30%. Of this increase 31.3% was due to protein combustion and 68.7% to fat combustion.—*B. Kommerell (transl. by W. S. Root).*

423. **LEVINE, S. Z., and ELEANOR MARPLES.** The insensible perspiration in infancy and in childhood. III. Basal metabolism and basal insensible perspiration of the normal infant: a statistical study of reliability and of correlation. *Amer. Jour. Dis. Children* 40(2): 269-284. 1930.—A statistical study was made of the published data responsible for the standards at present available for the basal metabolism and basal insensible perspiration of normal infants. A similar statistical and experimental study was also made of the correlation between the 2 variables in simultaneous calorimetric measurements as well as in independent measurements with the respiration chamber and balance, respectively. The results verify, by statistical methods, the validity of the tentative standards recently proposed for the basal insensible perspiration of normal infants and indicate that they compare favorably in reliability with the generally accepted standards for the basal metabolism of these subjects. The evidence, statistical and experimental, also establishes a high positive correlation between the physiologic mechanisms of heat production and insensible perspiration in the human subject, whether measured simultaneously in the respiration chamber or independently with the balance and respiration chamber. Evidence of correlation between the 2 variables in independent measurements is thus far limited to infants and adults. The demonstration of causal relationship in infants between the 2 mechanisms was utilized to extend to these subjects the method proposed by Benedict and Root for predicting the probable metabolism of adults from their insensible perspiration measured with a balance. This method gave satisfactory results in the small number of infants thus far studied. The latter included several subjects with an abnormal respiratory exchange. The proposed method of prediction is at present limited to infants studied under basal conditions, but it is probably applicable to other than basal conditions so long as visible perspiration is not present and in the absence of derangement of the water metabolism. In the authors' clinic [Dept. of Pediatrics, Cornell University Medical College, N. Y.] this method is now being used for estimating the basal metabolism of infants, and it is recommended for clinical purposes.—*Authors' summary and conclusions.*

424. **MEYER, FRITZ.** Die spezifisch-dynamische Wirkung des Fleisches beim mit Schilddrüse behandelten Tier. (Zugleich ein Beitrag zur Theorie der spezifisch-dynamischen Wirkung.) *Biochem. Zeitschr.* 208(1/3): 127-150. 4 fig. 1929.—The specific dynamic action of a determined amount of meat before and after thyroidin administration was determined on dogs. After one thyroidin dose, which alone raised the metabolism 47%, the specific dynamic production of heat from 500 gms. of meat fell from 67 to 24 calories. After 70% effect from thyroidin the S.D.A. was only 10 cal. It is assumed that the transformation of the food material, of which the S.D.A. is an expression, gives way under thyroid action to direct combustion of the food fed. With this view, the findings of Pahon and Abelin, who report a diminution of glycogen especially in the liver, are in good agreement.—*F. Meyer (transl. by R. G. Turner).*

425. **MITCHELL, H. H.** The significance of surface area determination. *Jour. Nutrition* 2(5): 437-442. 1930.—The surface areas of chickens and rats are found to vary considerably with changes in the position of the body trunk and its appendages. The author believes that the heat produced per sq. m. of body surface possesses no absolute meaning but may still be highly useful for comparative purposes, especially between animals of the same species, if the measurement is made by exactly the same method in all cases.—*E. L. Batchelder.*

426. **MITCHELL, H. H.** The surface area of single comb white Leghorn chickens. *Jour. Nutrition* 2(5): 443-449. 1930.—A detailed description of the method used in determining surface area is given and the following prediction formula calculated from the data is presented: $S = 8.19\ W^{.705}$. This is a distinct improvement over the Meeh formula and was not improved by introducing a factor defining nutritive condition. Separate equations for males and females could not be derived from the present data but there are indications that sex is a determining factor.—*E. L. Batchelder.*

427. **MONTMOLLIN, CLAUDE DE.** Contribution à l'étude du métabolisme de base et de l'action dynamique spécifique des protéines. *Schweiz. Med. Wochenschr.* 59(36): 917-920; (38): 961-964. 1929.—Increased B.M.R. was found in hyperthyroidism, diabetes, hypophyseal cases; organo-vegetative cases, no definite conclusion; nephritis, mostly normal; lymphogranuloma, increase; cutaneous affections, normal. Specific dynamic action was normal in 16 cases of colloid goiter, 2 cases after thyroidectomy, 3 mild diabetics, 2 convalescent nephritics, 7 cutaneous affections; it was low in 7 toxic goiters, 1 thyroidectomy (toxic), 4 severe diabetics, 1 mild diabetic, 1 convalescent nephritic, 1 case of adiposity, 1 of acromegaly, 1 lymphogranuloma, 1 uremia, 1 lymphogranuloma treated by x-ray; it was increased in 1 colloid goiter under the influence of synthetic thyroxin, 2 thyroid ligations, 6 nephritic cases; it was without any regularity in 1 hypophyseal tumor case and 7 cases of organo-vegetative disturbances. In general, the specific dynamic action of proteins is increased in cases with low B.M.R. and lowered with high initial B.M.R.—*H. J. John.*

428. **OBRESHKOVE, VASIL.** Oxygen consumption in the developmental stages of a Cladoceran. *Physiol. Zool.* 3(2): 271-282. 1930.—This paper deals with the rate of O consumption of *Simocephalus exspinosus* in 5 stages of development. The rate of gaseous metabolism as determined by the rate of O consumption is compared with the 1st-instar young, size considered. If the rate of O consumption of the 1st-instar young, as determined by a modified Thunberg microrespirometer, be represented

by 100%, then for the 3rd-instar young the rate becomes 96.4%; for the 1st-brood mothers, 52.1%; for the 3rd-brood mothers, 50.8%; and for the 5th-brood mothers, 41.8%. In the 9th-brood mothers a further decrease in the gaseous metabolism of the individuals is indicated by their rate of CO_2 production, which was found to be 44.3% of that of the 5th-brood mothers, determined colorimetrically. It is concluded that senescence in this species is progressive and that it is primarily a decrease in the rate of dynamic processes of the individuals.—*Author (courtesy Wistar Bibl. Serv.).*

429. PERONI, ACHILLE. Ricerche sul metabolismo basale e sul valore energetico degli alimenti nelle regioni artiche. *Boll. Soc. Ital. Biol. Sperim.* 5(2): 225-226. 1930.—From 7 individuals whose basal metabolism was studied during a trip in the Arctic regions, in 6 a moderate decrease was observed. The value remained however in physiologic limits. When fat diet was consumed, an increase of basal metabolism was observed together with an increase of the respiratory quotient to 0.86: an explanation of this rise is wanting.—*M. Comel.*

430. PLASS, E. D., and WAYNE A. YOAKAM. Basal metabolism studies in normal pregnant women with normal and pathologic thyroid glands. *Amer. Jour. Obstet. & Gynecol.* 18(4): 556-568. 2 fig. 1929.—Basal metabolic rates were determined at short intervals upon 72 women during pregnancy and after delivery. In 48 women showing normal thyroid activity (a maximum rate of not more than plus 20%), the metabolic rate increased approximately 10%, on the average, in the latter half of gestation, probably due to the added increment of fetal metabolism. When the thyroid was abnormal, 24 cases, the basal rate rose to higher levels, the pregnancy aggravating hyperthyroid tendencies. In patients with goiters, the prophylactic administration of small doses of I generally prevented further enlargement and occasionally led to a reduction in size. Such I administration to the pregnant woman effectively prevented enlargement of the fetal thyroid even when the mother had a considerable goiter.—*E. D. Plass.*

431. POMMERENKE, W. T., H. F. HANEY, and W. J. MEEK. The energy metabolism of pregnant rabbits. *Amer. Jour. Physiol.* 93(1): 249-257. 1930.—During pregnancy in the rabbit there is a progressive increase in energy metabolism; on a basis of weight, from a normal of 2.61 calories per Kgm. per hr. to 3.19 in the last 5 days of the gestation period; and on a basis of surface area, from 32.73 to 41.50 calories per sq. m. per hr. The total metabolism is not markedly changed at birth; that is, the total heat production of the mother just before parturition is about equal to that of the mother and young combined just after parturition. If the fetus be considered as a separate organism and its surface area plus that of the mother be used in computing the metabolism, no increase in rate is evident during pregnancy. During the early post-partum period the metabolism of the rabbit, both per unit of weight and per unit of surface area, is considerably above normal.—*Authors' summary.*

432. REINWEIN, HELMUTH. Studien über den Mechanismus der spez.-dynamischen Eiweisswirkung. *Deutsches Arch. Klin. Med.* 160(5/6): 278-299. 1928.—The Warburg method was employed to investigate the specific dynamic increase in metabolism in very thin sections of tissue saturated with O. Ammonia, ammonium salts, and amines increase oxidation in surviving hepatic tissue more than do OH ions alone. Increase of O consumption occurs. Deamination seems to be the primary process. However, increased O consumption depends upon the amino acid residue. Histidin splits off much ammonia in the surviving tissue, causing no increase of oxidation, though increasing metabolism in dogs.—*B. Bickel.*

433. SCHADOW, HERMANN. Grundumsatz und spezifisch-dynamische Wirkung bei gesunden Säuglingen im Vergleich mit den Befunden bei Erwachsenen und älteren Kindern. *Jahrb. Kinderheilk.* 126(1/2): 50-74. 1929.—A simple metabolic apparatus is described in detail. Its limits of error are between 3 and 5%. Basal metabolism is somewhat higher than for adults or older children. It may be that part of this difference is due to the movement of very young children even when they are at rest. Specific-dynamic action of protein given as buttermilk was 13.7 and 15.7% on children fed artificial diet and only 8.5% with children on human milk.

434. SCHAFERSTEIN, S. J. Zur Charakteristik der Oxydationsprozesse bei Säuglingen. *Arch. Kinderheilk.* 89(3): 191-201. 1930.—The respiratory quotient of normal infants during the course of a day varies between 0.8 and 1.0. In acute disturbances of digestion and intoxications the respiratory quotient rose. There was often a clear parallelism between rise in the O/N quotient and development of clinical symptoms. The quotient returns to normal faster than the symptoms abate. Acute disease increased the quotient. Compensated forms of glandular tuberculosis had the same values for the O/N quotient.

435. SCHENK, PAUL, und KARL CRAEMER. Der Einfluss schwerer körperlicher Arbeit auf den menschlichen Stoffwechsel. *Arbeitsphysiologie* 2(2): 163-186. 1929.—The blood and urine of contestants of the Amsterdam Olympic were investigated with respect to several organic and inorganic constituents. The largest lactic acid excretion in the urine was by a sprinter (400 m. in 47 3/5 sec.) and was higher even than after a Marathon race of 2 hours and 50 min. With weight lifting the excretion was slight and the level in the blood little affected. Considerably larger accumulation was found in the blood and urine of wrestlers and boxers. The phosphoric acid in the urine rose after 10 min. boxing from 0.1 to 0.27 mgms %. The sulphuric acid content was greatest after a Marathon run and after 5 hrs. street bicycling contest. The C: N quotient rose during a Marathon run from 1.25 to 1.905. The fat content of urines before contest was about 1 mgm. per 100 c.c. and rose after the contests 20 to 25 mgm. per 100 c.c. of urine.—*T. M. Carpenter.*

436. SCHESTEDT, HANS. Zur Frage der Eignung des Knippingschen Apparates zur Gasstoffwechseluntersuchung. [The fitness of Knipping's apparatus for study of gaseous metabolism.] *Zeitschr. Ges. Exp. Med.* 71 (1/2): 298-302. 1 fig. 1930.—Criticism of the Knipping apparatus and suggestion of an improvement.

437. SCHLUMM, F., und H. J. BRECHMANN. Über die spezifisch-dynamische Wirkung der Leber. *Deutsches Arch. Klin. Med.* 166(5/6): 362-369. 1930.—The specific-dynamic effect of meat and liver (and in some cases, of other organs, such as thymus) was studied in 45 series of experiments on 15 metabolically normal persons. Meat gave values corresponding fairly well with those found by earlier investigators, calves' liver gave values 40% to 50% lower. Ox liver in only 2 cases gave a higher value than did meat (muscle) with like N values. Liver preparations gave values consistently corresponding to the N content. Thymus gave no consistent results. —*From authors' summary (transl.).*

438. SZARKA, A. Der Einfluss des Ovarialzyklus auf den Grundstoffwechsel der Ratte. *Pflüger's Arch. Ges. Physiol.* 222(5/6): 690-698. 1 fig. 1929.—The basal metabolism of rats during the proestrus and estrus was about 25% of that in the meta- and diestrus. There is a rhythm in metabolism which parallels changes in the ovary. The highest value obtained for ♀ rats was equal to the average ♂ value, which was 798.5 Cal. per 24 hr. and sq. m. of body surface.

439. TOPPER, ANNE, and HANNAH MULIER. Basal metabolism of children of abnormal body weight. I. Basal metabolism of overweight children. *Jour. Amer. Med. Assoc.* 92(23): 1903-1907. 1929.—The basal metabolism of overweight but otherwise normal children is usually normal, with a tendency to be high. There is an increased basal metabolic rate in a certain percentage of overweight children which may be partly accounted for on a basis of continued overfeeding. There may be some association between the prepuberty period and an increased basal metabolic rate. The increase in growth,

increased activity of the endocrine glands and awakening of sexual life, all may influence the basal metabolism of the child. There may be a temporary dysfunction of the thyroid gland at this period manifested by no other sign than an increased basal metabolic rate. If there is an association between prepuberty and an increased basal metabolic rate, the fact that this period occurs somewhat earlier in girls than in boys might account for the greater proportion of girls in this series who showed a marked increase in basal metabolism at this age period. Further studies in individual cases during this important age period are necessary.—*Authors' conclusions.*

440. WANG, CHI CHE, and JEAN E. HAWKS. Recent advancement in the study of basal metabolism in health and disease. *Jour. Amer. Dietetic Assoc.* 5(3): 184-197. 1929.—A review.

441. WANG, CHI CHE, JEAN E. HAWKS, BERNICE HUDDLESTUN, AGNES A. WOOD, and EDITH A. SMITH. The influence of high and low protein diet on the basal metabolism and the chemistry of blood and urine in normal women. *Jour. Nutrition* 3(1): 79-98. 1930.—Six normal women (17-36 years old) received for 5 weeks a diet of 2 gms. protein per Kgm. and sufficient carbohydrate and fat to make 40 calories per Kgm. body weight. The protein was then decreased until a level of 0.6 gm. per kgm. was reached at a constant caloric value of 40. This diet was maintained 4 wks. After a month's interval, a 2 wks. period was carried out on a freely chosen normal diet. No marked difference in the basal metabolic rate was observed during the 3 periods. Non-protein N, urea, and creatine of the blood increased in the high protein period. Uric acid, creatinine, and Ca did not change. Sugar increased slightly and blood lactic acid markedly in the low protein period. Creatinine remained constant throughout while total urinary N, urea, NH_3, uric acid, and creatine varied directly with the protein intake. Total urinary acidity varied with the protein intake while urinary lactic acid remained constant. No difference was found in blood pressure.—*E. L. Batchelder.*

442. WARBURG, OTTO, und FRITZ KUBOWITZ. Stoffwechsel wachsender Zellen (Fibroblasten, Herz, Chorion). *Biochem. Zeitschr.* 189(1/3): 242-248. 1 fig. 1927.—In fibroblasts the metabolism is greatest in fresh cultures. It drops constantly to the 3rd or 4th transplantation and then is uniform to the 3000th transplantation. Chorion histologically is of simple structure, is very thin, and is readily observed in a physiological state.—*H. J. John.*

443. WHITEHORN, J. C., HELGE LUNDHOLM, and G. E. GARDNER. The metabolic rate in emotional moods induced by suggestion in hypnosis. *Amer. Jour. Psychiatry* 9(4): 661-666. 1930.—That anxiety increases metabolic rate, whereas moods of elation, irritability and depression do not, was observed in O-consumption experiments on a normal subject during hypnotically induced moods and appropriate control periods.—*J. C. Whitehorn.*

444. WU, HSIEN, and TUNG-TOU CHEN. Basal metabolism of omnivorous and vegetarian rats. *Chinese Jour. Physiol.* 3(3): 315-324. 1929.—The basal metabolism of 95 vegetarian and 96 omnivorous rats between the age of 5 and 9 mos. have been determined. The basal metabolism of the vegetarian rats is slightly lower than that of the omnivorous rats.—*Authors' summary.*

WATER BALANCE

445. ADLERSBERG, D., und A. PERUTZ. Experimentelle Untersuchungen über den Wasserhaushalt der Haut mittelst der Quaddelprobe. 1. Resorptionsbedingungen der intrakutanen Kochsalzquaddel. *Arch. Exp. Path. u. Pharmakol.* 151(1/2): 101-105. 1930.—In rabbits the absorption of intradermal NaCl deposits depends on age and the condition of the skin. Also, the region of the injections had some effect, e.g., a drop placed in the skin of the forehead was more quickly absorbed than when placed in the back of the same animal. Before beginning experiments the animal and its body regions should be standardized. Food rich in salt accelerates absorption.—*H. Graf.*

446. BAAR, HEINRICH, und HANS BENEDICT. Über die Quaddelzeit im Kindesalter und ihre Beziehungen zum Wasserhaushalte. *Zeitschr. Kinderheilk.* 49(5): 551-571. 2 fig. 1930.—Study of the disappearance time (QuZ) in 72 healthy children and about 200 with various diseases shows that: The QuZ in the new-born is very short and subject to great individual variation; a rise, first rapid, then slow, follows the 2nd month of life. A shortened QuZ occurred, almost always in manifest and latent tetany, in severe cases of icterus, in 1 case of marked obesity, and in the pasty type of exudative diathesis (but normal QuZ in thin subjects with exudative diathesis). No regular changes in QuZ were observed in febrile diseases. Scarlatina showed a very marked shortening, serum and nirvanol exanthemata a distinct shortening, and measles a moderate shortening, of the QuZ. Oral administration of $NaHCO_3$ and NaCl produced a shortening, orally given NH_4Cl and Ca a lengthening, of the QuZ. Warm applications, but not mustard erythema, shortened the QuZ. The QuZ seems to be determined in the first place by the capacity of the connective tissue substance for swelling; the actual water content seems to be of decisive importance only in cases of high-grade edema in which the elevation disappears almost immediately.

447. BOSCH, OSKAR. Über Ursache und Verlauf kurzfristiger und tagesperiodischer Schwankungen im Wasserhaushalt des Säuglings. *Zeitschr. Kinderheilk.* 49(4): 361-374. 5 fig. 1930.—Several series of observations were made on 64 infants in the Berlin orphan asylum. The questions studied were whether the daily rhythm of excretion is caused by times of administering food, muscular movements, etc., or is a true endogenous periodicity, independent of external stimuli; and, if the latter, what factors are responsible for the usual rhythm of greatest urinary output in the afternoon, decrease in the night and increased flow in the morning. Experiments in feeding showed that each meal stimulates secretion, but that the degree of stimulation varies according to the phase of the daily rhythm in which the effects are felt: an additional meal is more stimulating to urinary secretion if the stimulus becomes effective within the regular daily period of high secretion; omission of a meal reduces secretion more if the inhibition becomes effective within the regular daily period of reduced excretion. Change in the hours of sleeping and waking had no material effect on the urinary rhythm. Increased bodily exercise produced an increase in total urine output, but no change in the daily rhythm. Comparison of highly concentrated and watery diets in their effects on urinary output showed that a relatively low metabolic activity favors water excretion, while heightened metabolism makes greater demands on the water economy and lowers excretion. All these external influences, while they have an effect on the water economy, are insufficient to explain the daily rhythm.

448. JANKOWSKY, W. Die Bedeutung des Pankreas für den Wasserhaushalt. *Fortschr. Med.* 44(11): 540-542. 1926.—The insular portion of the pancreas influences water retention whereas the non-insular part favors water excretion. The lessened insulogenic function in diabetes causes increase in water output which results at first in an increased water intake, later an emaciation if the water balance is negative for a longer time. The over-function of the insular portion through over-dosage of exogenous insulin leads to lowering of urine output and finally to edema. The author states that the increase of water output is not secondary to sugar excretion but depends on the lessened insulogenic function. The pancreas, therefore, even in the normal, is closely bound up with the intermediary water metabolism. In a depancreatized animal (experimental diabetes), we have lessened water output, because here not only the insulogenic but also the rest of the gland which stimulates excretion is removed. Insulin injection reduces

water output and causes also water retention up to the point of edema.—*H. J. John.*

449. ROSE, WILLIAM B., CHARLES J. STUCKY, LAFAYETTE B. MENDEL, and GEORGE R. COWGILL. The relation between anorexia, anhydremia and gastric atony in dogs deprived of water. *Amer. Jour. Physiol.* 96(1): 132-138. 1931.—Dogs in good nutritive state were fed an artificial ration complete in every known respect. Their appetite for this diet was excellent; repeated gastric tracings showed vigorous hunger contractions, good tonus variations and rhythm. Blood analyses revealed normal values for sugar, hemoglobin, total solids and chlorides. The animals were then deprived of water and the relationships between appetite, anhydremia and gastric motility studied. Five experiments were performed with 4 dogs. A moderate increase in blood concentration, an increase in hemoglobin value of less than 20%, was associated with a definite decrease in the motor activity of the empty stomach and partial or complete loss of appetite. A greater increase in blood concentration resulted in gastric atony in every case. In 1 instance, when characteristic hunger contractions were absent but some tonus changes persisted, the animal ate all food offered; in the other cases, however, where atony of the stomach was recorded, there was a complete loss of appetite. Since anhydremia is a systemic disturbance it is suggested that other organs, particularly muscles, may fail to function with optimum efficiency in the presence of a moderate degree of anhydremia.

450. WÖHLBIER, WERNER. Die Bedeutung des Wassers für das Wachstum der Tiere. *Tierernährung* 2(6): 530-542. 1931.—The animal begins its development after fertilization of the egg with a considerable relative increment of water, possibly amounting to 97%. This quantity is chiefly bound colloidally to protein, which may aid intensive cell-division. Now the percentage increment of substance is higher than is reached again during the whole life; for soon the rate of growth decreases; this may be caused by a diminishing ability of the protein to swell. Gradually growth becomes more and more insignificant, finally coming to a stop when the protein contains about 77% of water, the usual content of the adult animal. The high rate of fixation of water in the growing animal, in connection with the high total metabolism, requires nutriment very abundant in water for the young animal. On the other hand, an influence is exercised upon the formation of the organs by the high rates of their water metabolism.—*Author's summary.*

PROTEIN METABOLISM

451. [BACH, A., and D. MIKHLIN.] БАХ, А., и Д. МИХЛИН. Ферментативное превращение ксантина и гипоксантина в мочевую кислоту без участия посторонних акцепторов водорода. [Enzymic transformation of xanthine and hypoxanthine into uric acid without the cooperation of foreign H-acceptors.] [German summary.] *Jour. Biol. et Méd. Exp.* [*Moscow*] 7(18): 385-392. 1927.—Using the milk enzyme purified by Sbarsky and Michlin (identical with the Schardinger enzyme), the authors succeeded in transforming xanthine and hypoxanthine into uric acid without the cooperation of a foreign hydrogen acceptor. The presence of free O is thus entirely unnecessary, since the reaction can be carried out under strictly anaerobic conditions. The nature and the nomenclature of the oxidizing-reducing enzyme is discussed.—*Authors' summary (transl.).*

452. BERGMANN, MAX. Zur Kenntnis der Eiweissbausteine und ihrer enzymatischen Umwandlungen. *Naturwissenschaften* 18(20/21): 465-468. 1930.—Acyl amino acids are easily racemized under the catalytic influence of acetic anhydride. This is explained by the enolization of the α carbon atom. By means of substitution (acylating, chloracetylating) and other structural changes (converting the open chain amino acids into 5-atom hydantoin or azlactone rings) the amino acids are catalyzed for dehydration, that is for conversion into amino-acryl acids and subsequently into α ketoacids, for which process it has been possible to determine the intermediate steps. Conversely, the amino acids may again be built up from α ketoacids and ammonia derivatives followed by hydration. As hydrogen donators saturated amino acids may function by giving up their hydrogen to the unsaturated. The described model experiments give a picture of fundamental mechanism of the activating processes which enzymes effect in their substrate in protein synthesis and hydrolysis.—*M. Bergmann (transl. by W. E. Thrun).*

453. BONATI, G. Il comportamento del glutatione nei cani prima e dopo la tonsillectomia. [Behavior of glutathione in dogs before and after tonsillectomy.] *Ateneo Parmense* 2(5): 435-444. 1930.—The glutathione content of the tonsils (69-112 mgm. per 100 gm. tissue) and of the blood before and after tonsillectomy was determined for 7 dogs. After tonsillectomy there was a diminution of the blood glutathione by about 1/5, lasting 3-5 days; then an increase above normal, lasting 10-15 days; finally a return to stability at the preoperative level. Bonati attributes the various perturbations in glutathione content to the operative hemorrhage. The results, he believes, deny to the tonsil any important function in glutathione metabolism.

454. BORNSTEIN, A., und R. PANKTE. Cyansäure als Zwischenprodukt des Aminosäurestoffwechsels. *Biochem. Zeitschr.* 225(4/6): 330-335. 1930.—In 10 experiments dogs injected continuously with intravenous doses of Na cyanide showed slightly toxic symptoms. The ammonia content of the blood remained unchanged. After similar injections of amino acids (glycocoll, alanin, asparagine) there occurred a greater rise in the blood ammonia, which proves that the above mentioned amino acids form no cyanic acid as intermediate products in their deamination. After very great doses of cyanide there occurs, as a result of violent convulsions, ammonia formation in the blood.—*Authors' conclusions (transl. by O. D. Abbott).*

455. BÜTTNER, H. E. Untersuchungen über den Schwefelstoffwechsel. *Zeitschr. Ges. Exp. Med.* 72(3/4): 337-364. 1930.—This study is an inquiry into the soundness of the commonly accepted principles of S metabolism, namely: 1. There is an endogenous and an exogenous S metabolism. The amount of the inorganic sulphate excreted is determined chiefly by protein intake. 2. Neutral S is independent of diet, for it is somewhat diminished on a high-protein regimen; hence it appears to originate from endogenous metabolism. 3. The esters of sulphuric acid are formed largely by the intestinal putrefaction of aromatic protein bodies. Experiments with egg and asparagus diet on 37 healthy persons (54 experimental days) showed that neutral S may be produced by increased protein in the diet. Hence, though neutral S is mainly endogenous, it may be influenced by food. The excretion of neutral S was found high in 29 diabetics (65 experimental days) as compared with the normal; but while in normal persons on increase of cystin in the diet the sulphate S: neutral S ratio remained about the same, in diabetics there was a relative and often an absolute decrease after increased cystin administration. Phlorhizin administration in 4 rats produced increased neutral S excretion. Cyanide intoxication in 2 rabbits increased the total S excretion, which continued after the day of poisoning, even though the animal ate less, and which must therefore be endogenous. The sulphate S as well as the neutral S was increased, showing that sulphate S may likewise be formed in endogenous metabolism. While endogenous and exogenous S metabolism are in the main distinct, these experiments show that in many cases what affects the one affects also the other. This implies considerable modification of the principles outlined above.

456. CHOLOPOFF, A. D. Herkunft und Verteilung des Blutammoniaks nach Untersuchungen an angiostomierten Hunden. *Pflüger's Arch. Ges. Physiol.* 218 (5/6): 670-676. 1928.—There are 3 places of ammonia

formation: the chief place is the cecum and appendix, where ammonia is produced by micro-organisms, the 2nd place of importance is the kidney and the 3rd the intestine during digestion. The liver retains ammonia that has been excreted into the portal vein, but the liver itself produces no export ammonia.

457. **DAMAS, L. Revue de chimie biologique. Le glutathion.** *Bull. Sci. Pharmacol.* 37(8/9): 501-507. 1930.—Review of the chemistry and physiology of glutathione, with bibliography.

458. **EDLBACHER, S. Die Strukturchemie der Aminosäuren und Eiweisskörper.** 188p. Franz Deuticke: Leipzig, 1927. Pr. 12 M.—This book is a brief compilation of information up to the date of publication, concerning the chemistry of amino acids and proteins. Because of rather limited size an exhaustive presentation is not attempted, discussion of physical characteristics and constants being largely omitted. The author emphasizes, rather, questions bearing on the determination of structure from the point of view of organic chemistry. The subject matter is divided into 3 sections treating respectively the free amino acids, anhydrides and polypeptids and, lastly, natural proteins. It furnishes a very satisfactory outline of the organic chemistry of these bodies.—*J. C. Andrews.*

459. **EDLBACHER, S., und J. KRAUS. (Mitwirkung von N. SCHEURICH.) Zur Kenntnis des intermediären Stoffwechsels des Histidins. II.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 191(5/6): 225-242. 1 fig. 1930.—As yet histidinase has been found only in extracts of the liver. It is not the same as arginase. Histidine is broken down to 2 molecules of ammonia, one of glutamic acid and probably one of formic acid. The reaction proceeds by way of intermediates as yet unknown, possibly through pyrollidon carboxylic acid as a precursor of glutamic acid. The enzyme has decided specificity, attacking only the naturally occurring optical isomer, but not imidazole, imidazole-lactic acid, imidazole-ethylamine, methylhistidine, and probably not carnosine and the methyl ester of histidine. Since no reaction occurs on the optically active carbon atom, it seems evident that the naturally occurring l-histidine and d-glutamic acid belong to the same stereochemical group.—*R. C. Corley.*

460. **FRISCO, ANGELO di. Sur le métabolisme de l'azote. V. Sur l'élimination éventuelle de NH_3 par voie cutanée et pulmonaire chez les rats à jeun recevant des sels ammoniacaux. VI. Déterminations comparatives par les méthodes de Kjeldahl et de Dumas de l'azote total des tissus et des liquides organiques dans différentes conditions expérimentales.** *Arch. Internat. Physiol.* 33(1): 98-102; (2): 137-141. 1930.—V. Rats were placed each within an apparatus so constructed that urine and feces dropped through a wire net for collection, while the expired air was withdrawn across a titrated solution of H_2SO_4 for analysis; 2 rats were fed NH_4 salts, while 4 rats were starved to death. All showed considerable, though varying, N deficits in the organism at death, deficits not accounted for by the fecal and urinary N excretion. At the same time the amounts of NH_3 found in the expired air (to which urinary decomposition may have contributed) was insignificant. These results fail to sustain Tigerstedt's suggestion that the deficit of N in the urine and feces of animals fed NH_4 salts may be explained by pulmonary elimination of NH_3. VI. This study was undertaken to determine whether the N deficit unaccounted for by urine and feces might be merely N which cannot be determined by the Kjeldahl method. The Dumas method gave higher values than the Kjeldahl—2.78% and 10.1% more for the tissue pap of 2 rats dead of starvation, 8.62% and 12.5% higher for that of 2 rats with ligated bladder, 8.82% for that of a normal rat. The urines of 3 rats dead of starvation gave respectively 7.3%, 6.23% and 5.63% more N by the Dumas than by the Kjeldahl method. The differences between the 2 methods used on tissue pap, then, were practically the same in the rats dead of starvation as in those dying of ligated bladder, while the difference between the methods as used on urines was not sufficient to explain N deficit of 35-50%. The N deficit, therefore, cannot be explained by inadequacy of the Kjeldahl method.

461. **HOPKINS, F. GOWLAND. Denaturation of proteins by urea and related substances.** *Nature [London]* 126(3175): 383-384. 1930.

462. **KAUFFMANN, FR., und E. MISLOWITZER. Über den fermentativen Abbau des Histidins.** *Biochem. Zeitschr.* 226(4/6): 325-337. 1930.—The cleavage of ammonia from histidine by means of pulp and glycerin extracts of liver of guinea pigs, rabbits, dogs and cats was investigated. In 40 experiments the ammonia formation was explained by the action of a desamidase. In 3 experiments the ammonia N value was plainly higher than the 33.3%, namely 37.2, 38.3 and 38.7%. This excess is however so small that this anomaly can give no information as to the action of specific ferments. We are therefore not in a position, from our work, to decide as to the presence of the histidase of Edlbacher.—*Authors' summary (transl. by E. G. Schmidt).*

463. **KISCH, BRUNO. Harnstoffuntersuchungen bei Selachiern.** *Biochem. Zeitschr.* 225(1/3): 197-207. 1930.—The urea was determined in various species and a number of specimens of selachians, including 12 of *Torpedo ocellata* (6 ♂ and 6 ♀), 5 of *T. marmorata* (3 ♂, 2 ♀), 6 of *Scyllium canicula* (2 ♂, 4♀), 2 of *S. stellare* (1 ♂, 1 ♀), 6 of *Mustelus laevis* (4 ♂, 2 ♀), 2 of *Raja asterias* (1 ♂, 1 ♀), 2 species of *Trygon*, 1 specimen of each, 2 specimens of *Squatina angelus* and 1 of *Sphyrna zygaena*. Studies were made of blood, urine, cerebrospinal fluid, perilymph and endolymph from the organ of hearing, ventricular fluid, pericardial and perivisceral fluids, bile, cardiac muscle, body muscle, electric organ and spleen, under the influence of hunger, loss of blood, suffocation, removal of the liver and removal of the interrenal organ.

464. **KOPLOWITZ, E. Wechselbeziehungen zwischen Kreatin- und Kohlehydratstoffwechsel. IV. Einfluss subcutaner Insulininjektionen auf den Kreatinin- und Kreatinspiegel des Blutes.** *Zeitschr. Klin. Med.* 113 (5/6): 605-610. 3 fig. 1930.—In addition to the fall in blood sugar a decrease in the creatine level of venous whole blood occurs after subcutaneous injection of 40 units of insulin into diabetics. In most cases the subsequent rise in the bloodsugar curve was accompanied by a parallel increase in the creatine. Changes in the creatine level of the same type and magnitude occurred in normal subjects only when evident hypoglycemic symptoms were present. The observed variations in plasma creatine lie within the limits of experimental error. The same is true of creatinine in plasma and whole blood.—*E. Koplowitz (transl. by H. Zwarenstein).*

465. **KOTSCHNEFF, NINA. Weitere Untersuchungen über das Verhalten verschiedener Eiweissabbauprodukte im Intermediärgebiet nach Versuchen an angiostomierten Hunden.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 635-641. 1928.—The intestinal wall allows not only simple amino acids but also very complex amino acid compounds to pass through. In starvation the passage of amino acid N and polypeptid N from the blood into various organs and to the blood from organs can be accurately determined. Polypeptid N in fasting dogs comes chiefly from the spleen. During the period of digestion polypeptids are synthesized not only in the liver (.62 mgm. %), spleen (.5 mgm. %), intestine (.42 mgm. %), and muscle (.14 mgm. %), but also in the kidney.

466. **LOMBROSO, UGO, et SALVATOR di FRISCO. Sur le métabolisme de l'azote. IV. Sur le contenu total en azote de l'organisme des rats à écoulement urinaire empêché. III. Influence de la constitution chimique des protéines sur l'élimination de l'azote en forme non justifiée.** *Arch. Internat. Physiol.* 33(1): 92-97; (2): 109-136. 1930.—IV. In 22 rats urinary flow was blocked by ligature of the bladder or of the renal vessels or by nephrectomy; 16 survived 44-73 hrs. and 6 survived 96-240 hrs. The latter group presented diarrhea and incessant vomiting, which eliminated a large amount of N, thus resembling rats dead of hunger except that the N was elimi-

nated in smaller quantities. In the rats dead with the greatest loss of weight (up to 30%) and after a long survival, the percentage of N was higher than in those dying earlier and with less loss in weight, but never so high as in animals dead of starvation, and only slightly higher than in normal animals. The results indicate: (1) that it is not possible to modify greatly the N constant in albino rats; (2) that after arrest of urinary excretion the animals do not tend to accumulate all the N metabolized. This suggests that an important fraction of the total N may escape from the organism under some as yet undefined form. III. The fact that as much as 50% of the N of the NH_3 salts administered to rats may fail to appear in the urine and feces recalls the further fact that in fasting rats the urine and feces fail to account for all the N from the protein destroyed in the wasting tissues, this deficit also being sometimes as high as 50%. This raised the question whether the escape of N from the organism by unknown channels is dependent on the form of protein in which it occurs. Experiments on 12 rats showed that the N fed in casein, egg albumin, gelatin and meat was in various degree incompletely accounted for in the excreta. The authors conclude that the study of N metabolism cannot ignore the factor of possible elimination of large amounts of N under a form and by a route as yet not defined.

467. **LUCKE, HANS. Beiträge zur Physiologie und Pathologie des menschlichen Harnsäurestoffwechsels. VI. Mitteilung. Der Harnsäuregehalt der Galle in der Norm und bei Erkrankungen der Gallenwege.** *Zeitschr. Ges. Exp. Med.* 72(5/6): 753-759. 1930.—Colorimetrically determined according to the principle of Folin and Wu, uric acid was found in normal duodenal (number of cases not stated) bile in concentrations of about 2 mgm., but in values inferior to those of the blood. The bile of the gall-bladder is richer in uric acid, but, since it is a thickened secretion, these values cannot be averaged. In severe inflammatory diseases of the bile-ducts the uric acid content of the duodenal bile sometimes was observed to exceed the blood values, since an enterogenous is therein added to an enterotropic value.

468. **LYON, EDOUARD E. The effect of diet on the blood chemistry and the longevity of the double nephrectomized dog.** In: Northwestern Univ. Med. School Dedication Ward Memorial—Alexander McKinlock Memorial Campus, Chicago, June 15, 16, 17, 1927. 169-174pp. The Lakeside Press, R. R. Donnelley and Sons Co.: Chicago, 1927. $1.00.—Removal of both kidneys resulted in the development of a condition simulating that seen in patients with latent or asthenic uremia. There was a gradual loss of strength with anorexia, vomiting, diarrhea, and occasionally salivation, increasing stupor, coma and finally death. Edema and convulsions were not observed. The average length of life following the removal of both kidneys from dogs on a meat diet was 105.6 hrs. and from dogs on a bread, milk and lactose diet was 147.5 hrs. The latter diet, therefore, prolongs life after double nephrectomy. In the animals kept on this diet it was found that following removal of both kidneys the urea N and non-protein N content of the blood did not rise so rapidly.—*Author's summary.*

469. **MENDEL, LAFAYETTE B. [With T. B. OSBORNE.] The nutritive value of the wheat kernel and its milling products.** *Leopoldina* 4: 72-115. 1929.—The quantity of protein furnished by the entire wheat kernel which is necessary for continued maintenance of adult rats is greater than that required when proteins of milk or of various other food products are fed. For normal growth of the young this difference is much more pronounced. The "crude protein" of the commercial embryo is superior to that of the entire kernel or of the endosperm in maintaining adults. For satisfying the needs of growing rats the embryo proteins are somewhat more efficient than are those of the entire kernel and much more efficient than are those of the endosperm. The "crude protein" of commercial bran if eaten in sufficient quantity is somewhat superior to that of commercial embryo and decidedly superior to that of the endosperm in promoting the growth of young rats. For maintaining adults the proteins of the endosperm are adequate; they are inadequate for growth. Additions of meat, milk, or eggs to wheat flour so greatly enhance the value of the protein for growth that a great economy in consumption of protein results. Under the ordinary human dietary conditions the proteins of wheat are advantageously employed. Commercial wheat embryo is rich in the water-soluble vitamin. Commercial bran and flour contain much less of this important food factor. The pure embryo carefully separated from all the other parts of the seed and used as the sole source of vitamin suffices to maintain young rats, but fails to promote their growth, even when supplied in quantities equal to the amount of pure embryo contained in such quantities of the commercial embryo as were sufficient to promote full normal growth. Wheat kernels from which the embryo has been carefully removed are still rich in water-soluble vitamin. Rats fed for 1 year from the time of weaning on diets containing 92% of wheat or 50% of commercial wheat embryo reached full maturity without giving any evidence that wheat contains a toxic substance. The relation of these experiments to the problems raised by modern milling methods and the degree to which it is desirable to mill flour for general use have been discussed.—*Author's summary.*

470. **MOCHNATSCH, W. O. Bildungsstätte und Schicksal des Kreatins und Kreatinins nach der Angiostomiemethode.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 655-660. 1928.—During a fast period creatin is synthesized in the stomach, liver and kidneys, but during digestion it is formed only in the liver. The creatin formed passes into the general circulation and is taken out of the blood by various organs. The intestinal wall retains large quantities of creatin. Creatinin is produced from creatin.

471. **NEGRI, FERDINANDO. Nuovi contributi allo studio del problema delle vitamine. Le costanti chimico-fisiche del siero e del plasma sanguigno, il tasso glicemico, l'azoto, il carbonio, la creatina e la creatinina del siero di sangue e delle urine negli animali alimentati esclusivamente con carne autoclavata, od integrata con lievito di birra. [Physico-chemical constants of blood serum and plasma, the glucose, N, C, creatin and creatinine contents of blood serum and urine in animals fed exclusively on autoclaved meat or with addition of beer yeast.]** *Biochim. e Terapia Sperim.* 17(11): 445-460. 10 fig. 1930.—If dogs are fed an exclusive diet of autoclaved meat their survival does not exceed 2 mos. Rectal temperature decreases, and a remarkable hypothermy follows in the last week of life. An acidosis is produced, with decrease of pH of serum and alkali reserve. The refractive index of serum shows a constant and progressive diminution. A diminution of the C content of blood is accompanied by an increase of C in urine. The blood glucose content after an initial increase shows a rapid and remarkable diminution. The creatine and creatinine contents of urine are considerably increased. When to the meat diet beer yeast was added, a dog showed indefinite survival in good condition of health and body temperature. No acidosis followed, while the refractive index, C, and creatine contents of serum showed, after an initial stage, normal values. Hyperglycemia was observed. The creatinine content of urine was increased, but not so much as in dogs treated with meat alone. An abnormal production of organic acids is thought to develop in autoclaved meat, with acidosis following its administration. The yeast is thought to modify cellular oxidations.—*M. Comel.*

472. **NISHIMURA, KIKUGORO. Halogen benzene in animal bodies.** *Acta Scholae Med. Univ. Imp. Kioto* 12 (1): 73-78. 1929.—The influence of halogen benzene and cystine on the sulphur metabolism of rabbits was studied. Bromobenzene, chlorobenzene and iodobenzene were administered orally to different groups of rabbits (both fed and fasted), in dosages of 5 gm. daily for 5 successive days. The total urinary excretion of bromo-, chloro- and iodophenylmercapturic acid was subsequently determined quantitatively. The authors confirm other investigators who have shown that bromobenzene, chlorobenzene and

iodobenzene are excreted in the urine as p-bromophenyl-, p-chlorophenyl-, and p-iodophenylmercapturic acids respectively. The urinary excretion of mercapturic acid was significantly greater after the simultaneous administration of cystine and the halogen benzenes than after similar dosages of the benzenes alone.—*O. W. Barlow.*

473. PAPPALARDO, G. Sulla composizione chimica della caseina autoclavata in ambiente alcaline. [Chemical constitution of casein kept in autoclave in alkaline medium.] *Bol. Soc. Biol. Sperim.* 5(2): 29-32. 1930.—When casein is kept at 120° C. in alkaline medium changes are produced in its chemical constitution. One of the most remarkable is that the phosphoric acid, organically bound in the casein, is separated therefrom and changed to inorganic phosphoric acid. 20% of arginin and 30% of cystin are transformed into lower products. A fraction of NH_3 is set free, and the total N is therefore diminished.—*M. Comel.*

474. PARNAS, J. K. Über die Ammoniakbildung im Muskel und ihren Zusammenhang mit Funktion und Zustandsänderung. VI. Der Zusammenhang der Ammoniakbildung mit der Umwandlung des Adeninnucleotids zu Inosinsäure. *Biochem. Zeitschr.* 206(1/3): 16-38. 1929.—The author describes methods for the determination of amino purin and oxypurin as well as amino purin nucleotide and oxypurin nucleotide in small amounts of muscle tissue. By these methods he determined the amount of the nucleotides of adenine and hypoxanthine as well as adenine and hypoxanthine itself in frog muscle. In fresh muscle, in which traumatic ammonia formation was prevented, the purin bases were found for the most part as free nucleotide. Only about 4% of the amino purin N was present as pure nucleinic acid, free amino purin bases and nucleosides being practically absent because practically all the amino purin N was present as guanine nucleinic acid. Of the purin N present in fresh muscle of winter frogs 82% had adenine nuclei, 18% hypoxanthine nuclei. In summer frogs the corresponding values were 89 and 11%. The guanine nuclei represented only about 1.4% of the purin N. When the muscle was destroyed by mechanical means, a procedure which led to traumatic ammonia formation, the greater part of the adenine nucleotides were changed into inosinic acid. Within a few minutes after the muscle was triturated, the muscle brei contained only 23% of purin N in the form of adenine nuclei as against 77% as hypoxanthine nuclei of the nucleotides. In winter the deaminization of the adenine nucleotide is equivalent to the traumatic ammonia formation. In summer it is not possible to prove that this process is the only source of the ammonia formation. When frogs' muscle is fatigued under anaerobic conditions through stimulation of nerves the change of adenine into hypoxanthine is equivalent to the ammonia formation and appears to be the one source of this substance. When frogs' muscle works without fatigue, having an adequate supply of O, the conversion of adenine to hypoxanthine lags behind the amount of ammonia formed.—*B. Kramer.*

475. PARSONS, HELEN T. Urea concentrations in the blood of the rat in relation to pregnancy and lactation on diets containing varying concentrations of protein. *Jour. Biol. Chem.* 88(1): 311-330. 1930.—Striking fluctuations were observed in the urea concentration in the blood of rats subjected to varying conditions in respect to reduction of kidney tissue, concentration of dietary protein, and the burdens of reproduction. The highest concentration of urea, 191 mgm. per 100 cc. of blood, occurred in a lactating rat with one kidney, on a high casein ration. The increased food intake of the lactating females accounts only in part for the extreme values observed. A definite influence of the act of suckling itself on the concentration of urea during fasting has been demonstrated in the blood of intact rats as well as those with only one kidney, when the ration consumed previous to the fast was rich in casein, liver, or egg albumin, or contained only moderate amounts of protein. Inasmuch as the increases in the concentration of urea in the blood of the lactating rat following the suckling of the young seem not to be closely correlated with the amount of milk, it is possible that they result from an emotional response to the act of suckling itself rather than from the formation of milk in the mammary gland. An occasional slight increase in the urea concentration occurred following the taking of the blood sample without nursing, and may be related to the effect on blood urea shown by others to result from manipulation of the experimental animal. However, the increases in urea in the blood of rats following nursing were demonstrated to be of unmistakably greater magnitude than those resulting from the blood sampling itself.—*Author's summary.*

476. PASQUALINO, GUGLIELMO. Sur le métabolisme de l'azote. VII. Influence comparée des hydrates de carbone et des graisses sur l'utilisation de l'azote. *Arch. Internat. Physiol.* 33(2): 185-195. 1930.—Administration of different proteins (egg albumin, casein, gelatin) with either carbohydrates or fats to albino rats in 12 experiments resulted in no appreciable difference either in the utilization of the proteins or in the weight of the animal, except that once carbohydrate exercised a favorable influence on the utilization of gelatin; but it was impossible to obtain this result a 2nd time. In the case of gelatin also the use of carbohydrates produced a closer correlation between N administered and N excreted; this was not so in the case of the other proteins. The experiments as a whole showed neither a favorable action from carbohydrates on N metabolism (as the majority of authors maintain for different animals) nor a particularly favorable action from fats in the case of albino rats (as Maignon asserts).

477. PLATTNER, F., und H. HINTNER. Die Spaltung von Acetylcholin durch Organextrakte und Körperflüssigkeiten. *Pflüger's Arch. Ges. Physiol.* 225(1): 19-25. 1930.—In view of the importance of acetylcholin to the vegetative mechanism of the whole, and of the fact that it is rather rapidly hydrolyzed in the animal organism, the effect of various organic extracts on the stability of acetylcholin was studied. Extracts of liver, pancreas, brain, suprarenals, musculature of the small intestine, spleen, uterus, salivary glands, blood-vessels, thymus, iris, lungs, cardiac muscle, skeletal muscle, thyroid, peripheral nerve and kidneys saponified acetylcholin; so did cerebrospinal fluid, bile and aqueous humor. Saliva, cow's milk and human urine were inactive. The saponification is a fermentative process, which can be intensified by long-continued heating to 56°. The action of liver, pancreas, salivary gland, cardiac muscle, muscle of the small intestine, and thyroid was completely or strongly inhibited by quinin; atoxyl had a weakly inhibiting effect on all except thyroid. NaF suspended the action of hepatic, pancreatic and cardiac extracts; physostigmin suspended the action of these and also of aqueous humor and extracts of small intestine, iris, salivary glands, thyroid, brain, lungs, spleen, kidneys, suprarenals, skeletal muscle and thymus.

478. RABINOWITSCH, S. J. Der Ursprung und das Schicksal der Harnsäure und die Nucleinsäureresorption beim Hund nach der Angiostomiemethode. *Pflüger's Arch. Ges. Physiol.* 219(3/4): 402-406. 1928.—From the intestine nucleic acid is absorbed mainly in the form of nucleotides. After starvation, and normally, uric acid is produced in the various organs and therefore, with the exceptions of the blood of the hepatic and renal veins, venous blood contains more uric acid than arterial blood.—*S. J. Rabinowitsch (transl. by A. Spohn).*

479. SCHENCK, E. G. v. Über eine "Genealogie" der Eiweissstoffe. *Naturwissenschaften* 18(39): 824-828. 1 fig. 1930.—Biochemistry has devoted scarcely any attention to the dynamics of biological sequence in the cell, the phenomena of development, of senescence, of pathological degeneration, of nuclear distribution, etc. The investigation of this sequence would lead to a genealogy of the proteins in order to answer the question as to whether there was a transformation of individual structural substances (Baustoffe) during life corresponding to a transformation of form. The investigations on

the development of basic proteins in mature fish testicles (A. Kossel et al.) and the variations of globins in the aged and diseased have shown that alterations occur in the distribution of the amino acids and appear in orderly fashion in these proteins. The content of arginine rises during development and falls during senescence, inversely to the content of lysine and histidine probably; of the monoamino acids nothing is known as yet. As measured by their arginine content the proteins of young and immature cells possess a higher potential energy and a greater activity with reference to other amino acid complexes. Because the former draws the latter to itself, there follows during life a permanent loss of activity to the point of loss of solution-tension.—*E. G. v. Schenck (transl. by E. G. Young).*

480. SLONAKER, JAMES ROLLIN. Effect of different per cents of protein in the diet. I. Growth. II. Spontaneous activity. *Amer. Jour. Physiol.* 96(3): 547-556; 557-561. 1931.—I. Results of feeding 5 different percentages of protein (10-26%) in an otherwise well-balanced diet to 90 pairs of rats indicate that when best growth is considered the amount of protein in the diet should be slightly in excess of 14%. A deviation of 4% less or greater produced no serious results. In addition, as the per cents of protein increase beyond the optimum, there was a progressive retardation in growth. Indications are that similar results would obtain if the per cent of protein were reduced progressively below the optimum.—II. Groups of young ♀ rats (I, II, III, IV, V) were fed on diets containing 10, 14, 18, 22, and 24% protein respectively and the following results were found. (1) The number of days intervening from the time they were placed in revolving cages until spontaneous running began was least in the group receiving the lowest % and in general increased as the protein content became richer. (2) The order of magnitude of the different groups for the 1st few wks. of activity, from the highest to the lowest, was III, II, I, V, and IV. (3) The total distance run, from greatest to least, was group III, 2795 miles; II, 2735; V, 2683; I, 2622; and IV, 2546. (4) If allowance be made for activity lost incident to reproduction the order, from greatest to least, was group II, 4133 miles; III, 4097; I, 3803; IV, 3197; and V, 3110. (5) A diet containing between 14 and 18% protein is best suited to the albino rat for maximal spontaneous running.—*Author's summaries.*

481. STEPPUHN, O., und A. SMIRNOWA. Über die Beeinflussung des Eiweissumsatzes einzelner Organgewebe durch Schilddrüsenstoffe. *Biochem. Zeitschr.* 224 (1/3): 83-90. 1930.—The thyroid substance was either introduced dry into the alimentary canal by a feeding tube or injected subcutaneously into rabbits. The rabbits were bled and the liver, muscle, heart and brain examined for autolysis at pH 3.4, 7.4 and in water at 37°-38°; 4, with 5 controls, were studied after 48-hr. autolysis, and 3, with 2 controls, after 24 hrs. The conclusions are: In the determination of the autolytic intensity of individual tissue complexes in which thyroid has been removed or added in different ranges of acidity, it can be demonstrated how the increased or decreased nitrogen metabolism is distributed to the various organic tissues. The change in the nitrogen can be traced or followed in each separate organ. In a given case it could be shown that in the liver and cardiac muscle pulp especially, autolysis is diminished, while skeletal muscle protein is less affected and brain not at all. By these investigations a "biochemical injury" of the cardiac muscle proteins by thyroid toxicosis is established which can be connected with the well known phenomena of the functional cardiac injury in exophthalmic goiter. —*Authors' summary (transl. by V. G. Heller).*

482. TAKAHASHI, MASAO. The fate of hippuric acid in the chicken organism. *Jour. Biochem.* 10(3): 457-61. 1929.—Almost 90% of the hippuric acid fed to chickens was recovered unchanged in the urine, while 10% was excreted in the form of benzoic acid. Perfusion of chicken kidney and allowing mixtures of various chicken organs to stand with sodium hippurate solutions indicated that a large amount of the hippuric acid was split to benzoic acid and glycocoll by the kidney, but not so much by the liver or muscles.—*H. C. Koser.*

483. TERROINE, ÉMILE F., R. BONNET, R. CHOTIN, et GILBERTE MOUROT. Le rôle des sels ammoniacaux organiques, des albumines déficientes et des albumines efficaces dans la couverture de la dépense azotée endogène spécifique. *Arch. Internat. Physiol.* 33(1): 60-85. 1930.—Experiments were made on 6 pigs, 2 experiments for each class of dietary supplement. When a diet adequate in glucides, mineral substances and vitamins was supplemented by an NH_4 salt, by gelatin or by egg white, retention of N was observed. The addition of either NH_4 salt or of gelatin to the diet did not modify the excretion of total S, but the addition of egg albumin decreased the loss of total S as well as of N. Hence protein metabolism appears to be not indissolubly connected with total S metabolism; and, since the NH_4 salts act in this respect just like gelatin, there is no reason for denying to the former the rôle of protector against N deficit which is accorded to deficient protein substances. Creatinine excretion was unaffected by NH_4 salts, gelatin or egg albumin. Excretion of neutral S was unaffected by ingestion of NH_4 citrate or gelatin but increased by ingestion of egg albumin—another reason for not separating NH_4 salts from proteins in their effect on N metabolism. The excretion of creatinine and of neutral S was consistently and completely independent of the variations in N balance (even when the latter expresses only endogenous metabolism); creatinine and neutral S, then, are the indicators of distinct processes, and cannot be regarded as representatives of endogenous N metabolism.

CARBOHYDRATE METABOLISM

484. ALBERTONI, PIETRO. Sulle sedi di trasformazione degli idrati di carbonio nell'organismo animale. [On the seats of transformation of the carbohydrates in the animal organism.] *Rend. Sess. R. Accad. Sci. Ist. Bologna Cl. Sci. Fis.* 32: 148-150. 1927-1928(1928).—Glucose (20 gm. in 80 to 100 gm. H_2O) was introduced by stomach tube into rabbits which had not been fed for 24 hrs. At the end of 1 hr., the rabbits were killed, and liver and muscle samples were excised. The CO_2 production and O consumption of these tissues were compared with those of the same tissues excised simultaneously from control rabbits. The CO_2 output and O intake of liver tissue from the glucose-fed animals were higher than for the controls. The respiratory exchange of muscle tissues was unchanged. The writer concludes (1) that after a 20-hr. fast, the quantities of glucose fed are rapidly absorbed, held by the liver, and do not circulate; consequently, the respiratory exchange of muscle is not affected; (2) a given substance will differ in its effect upon tissue respiration according to whether it is placed merely in contact with the tissue or introduced by absorption from the alimentary tract.—*M. J. Lepore.*

485. ALTHAUSEN, T. L., LEWIS GUNTHER, JOHN B. LAGEN, and WILLIAM J. KERR. Modification of the dextrose tolerance test as an index of metabolic activity of the liver. *Arch. Internal Med.* 46(3): 482-493. 1930.—A method was devised consisting of the administration of insulin, dextrose and water followed by observation of the blood-sugar level over a period of 3 hrs. The advantages claimed are simplicity, harmlessness, reliability in individual cases as well as disease groups, independence of biliary obstruction, etc.

486. BICKENBACH, W., und P. JUNKERSDORF. Tierexperimentelle Untersuchungen über den Einfluss unphysiologischer Ernährung auf die Organzusammensetzung und das Stoffwechselgeschehen. *Arch. Exp. Path. u. Pharmakol.* 132(3/4): 129-144. 1928.—Four dogs were fasted 11 days and then given a pure fat diet for 2 to 5 days. Within 2 to 5 hrs. after fat ingestion a marked hypoglycemia occurred, followed by a sharp increase in blood sugar after a similar length of time. Total N in the urine was lowered, and NH_3 excretion was increased, during the fat-ingestion period. At the end of

this period glycogen and fat were determined in the heart, liver, and muscle tissue, and both moist and dry weights were obtained for a number of organs. Low glycogen and high fat content of the liver led to the conclusion that the changes observed in blood sugar were due to the interference of fatty infiltration with the glycogen-storing and blood sugar regulating function of the liver.—*M. Dann.*

487. **BLÖCH, JOSEPH. Über Beziehungen im intermediären Eiweiss- und Kohlenhydratstoffwechsel. I. II. III.** *Zeitschr. Ges. Exp. Med.* 74(3/4): 439-448; 449-453; 454-457. 1930.—I. In degenerative diseases of the liver with definite alimentary galactosuria, glycocoll administered simultaneously with galactose caused a diminished excretion of the latter. This effect is not caused by extrahepatic factors (decrease or delay of absorption, change of the renal threshold), but is the expression of an increased assimilation of galactose in the liver. The furtherance of the assimilation of galactose by glycocoll is connected with the glycogenetic activity of the latter. II. Alanine administered together with galactose to the glycogen poor liver with injured parenchyma was able to improve the assimilation of galactose. The presentation of sugar forming material to the glycogen greedy liver, at the same time with galactose, caused a better fixation and consequent assimilation of the latter. III. Asparagine also improved the assimilation of galactose by the injured liver.—*R. C. Corley.*

488. **BOLLMAN, JESSE L., and FRANK C. MANN. The physiology of the liver. XIX. The utilization of fructose following complete removal of the liver.** *Amer. Jour. Physiol.* 96(3): 683-695. 1931.—The injection of fructose into animals following complete hepatectomy is followed by a rise in the glucose content of the blood, and symptoms of hypoglycemia are prevented. If the stomach and intestines also are removed with the liver, conversion of fructose to glucose does not take place and the animal succumbs to hypoglycemia unless glucose is administered. Removal of the other abdominal viscera does not affect this conversion. In animals with intact livers but from which the stomach and intestines are removed, the process of converting fructose to glucose apparently is possible. Fructose is not utilized directly in the absence of the liver but is converted to glucose. The conversion of fructose to glucose may be accomplished in the intestines or in the liver but not to any appreciable extent in the other tissues of the body.—*Authors' summary.*

489. **CHIANELLO, CARLO. La simpatectomia della vena porta in rapporto alla funzione glicogenica ed alle modificazioni istologiche del fegato. [Sympathectomy of the vena porta in relation to the glycogenic function and the histologic changes in the liver.]** *Ann. Ital. Chir.* 9(4): 343-355. 3 fig. 1930.—In 24-72 hrs. after sympathectomy in 12 dogs (6 surgical, 6 chemical operations, the latter with phenol), Chianello found marked hyperglycemia, sometimes more than double the initial value. This hyperglycemia cannot be attributed to the narcotic used (morphine) for non-sympathectomized controls showed no rise in blood sugar after morphine narcotization. A slight hypoglycemia followed the hyperglycemia. The histologic changes in the liver comprised, in the early days, a slight congestion of the portal branches, the capillaries and the central vein, and a marked permanent dilatation of the capillaries, pyknosis of the cells and disturbance of the normal radiating arrangement of the cellular columns of Remak, lymphocytic infiltration, especially noticeable around the vessels of the portal spaces and the central veins, and progressive hypertrophy and hyperplasia of the perilobular connective tissue.

490. **DWORKIN, S., Z. M. BACQ, and D. B. DILL. The effect of regional sympathectomy upon muscle glycogen.** *Amer. Jour. Physiol.* 96(2): 308-310. 1931.—Preliminary determinations on 8 guinea pigs and 3 cats showed a fairly even distribution of glycogen between muscles of symmetrical and fore and hind limbs. Unilateral sympathectomy was done on 8 guinea pigs, 2 rabbits and 2 cats, and bilateral sympathectomy of either the fore or the hind limbs of 6 guinea pigs, 2 rabbits and 4 cats. The sympathectomized muscles in either case usually but not always gave a lower glycogen percentage, but the difference was seldom marked.

491. **FERRALORO, G. Ricerche sul ricambio degli idrati di carbonio in alta montagna. [Carbohydrate metabolism on high mountains.]** *Arch. di Sci. Biol.* 13 (1/2): 109-126. 3 fig. 1929.—Remaining at high altitudes increased blood sugar, probably owing to several factors, among them low barometric pressure, sun rays, hyperadrenalinemia. The assimilation threshold for glucose, as found by Aggazzotti, is higher. Perhaps this can be referred to a lowered permeability of the kidney, caused by hyperglycemia.—*A. Jappelli.*

492. **FISHBERG, ELLA H., and B. T. DOLIN. The intermediate metabolism of foreign sugars.** *Arch. Internal Med.* 46(2): 321-332. 1930.—A method is given for the separate determination of xylose and galactose in the presence of dextrose in 0.2 cc. of blood. The reducing nonfermentable fraction of the blood is remarkably constant in normal human beings, amounting to about 28 ± 5 mgm. %, while in uremia, diabetes, nephritis and lactation this is increased. Galactose and xylose introduced directly into the blood stream of rabbits disappear at a rate proportional to the actual concentration of the sugar in the blood in accordance with the law governing the velocity of a monomolecular equation. It is thus possible to calculate the nonfermentable reducing substance in the blood at any time, since the logarithm of the concentration of the sugar at any moment is proportional to the time after injection. Xylose disappears much more slowly from the blood stream of rabbits suffering from uranium nephritis and more quickly from rabbits made diabetic by phlorhizin. Galactose disappears more slowly from the blood stream of rabbits suffering from uranium nephritis and from the blood of those gradually poisoned by P. In human beings, galactose disappears more slowly from the blood of patients with nephritis and diabetes.—*Authors' summary.*

493. **HABS, HERBERT. Über das Verhalten der Kohlenhydratreserven bei vermindertem Luftdruck.** *Zeitschr. Ges. Exp. Med.* 72(3/4): 537-538. 1930.—The carbohydrate reserves of 18 rats from 3 litters and 10 white mice from a single litter were tested, 9 rats being kept several wks. at 470 mm. air pressure, and 5 mice for 36 days at 450 mm. The muscle glycogen, and still more the liver glycogen, were greatly decreased as compared with the controls.

494. **HOFFMANN, AUGUSTE, und ERNST WERTHEIMER. Stoffwechselregulationen. VII. Glykogenansatz beim künstlich gereizten entnervten Muskel.** *Pflüger's Arch. Ges. Physiol.* 216: 337-340. 1927.—Denervated muscle can deposit glycogen either in very small amounts or not at all (VI. Paper). A glycogen deposition in denervated muscle can be obtained by longer electrical stimulation. This artificially brought about glycogen synthesis is not nearly as large as that in the innervated control muscle. Glycogen synthesis in the muscle which leads to storage in the muscle glycogen depots is considered to be a reaction inseparably bound up with decomposition reactions.—*Authors' summary (transl. by G. T. Lewis).*

495. **KITASATO, TORAO. Weitere Synthesen von α Ketosäuren der Kohlenhydratreihe. α Keto-d-galaktonsäure oder d-Tagaturonsäure sowie α Keto-maltobionsäure oder d-Glucosido-d-fructuronsäure. [Synthesis of α keto acids of the carbohydrate series. α keto-d-galactonic or d-tagatronic acid, and α keto-maltobionic or d-glucosido-d-fructuronic acid.]** *Biochem. Zeitschr.* 207 (1/3): 217-229. 1929.

496. **OBRASZOW, G. D., M. N. KALLINIKOWA, und E. T. MINKER-BOGDANOWA. Zur Physiologie des intermediären Stoffwechsels bei Zuckerbelastung.** *Zeitschr. Ges. Exp. Med.* 72(5/6): 710-716. 8 fig. 1930.—The details of the experiments on which the following conclusions are based were published in Russian. This study concerns relations between sugar and fat, sugar and cholesterol, sugar and water, sugar and lipase, and

sugar and rest-N of the blood, with some control experiments. The subjects were normal or almost normal children, aged 8-14 yrs., number unspecified. In most cases a decrease in neutral fat, cholesterol, and amylase paralleled the hyperglycemia; there were also changes in lipase and rest-N. Besides the foregoing, most frequent, form of reaction, there were cases in which the other constituents of the blood were not changed when the sugar increased. The water content of the blood did not change under the sugar test. It seems probable that in this decrease in blood cholesterol, the organism makes use of a mechanism for regulating osmotic pressure and water in hyperglycemia. Rubner's law of isodynamy of nutritive substances apparently holds good also for the change in blood constituents after the sugar test.

497. OCHOA, SEVERO. Über den Tätigkeitsstoffwechsel kohlenhydratarmer Kaltblütermuskeln. *Biochem. Zeitschr.* 227(1/3): 116-134. 1930.—The carbohydrate metabolism of muscles of frogs rendered poor in carbohydrate by insulin was compared with the tensions produced in O and N. The K_{mo}-value of Semimembranosi is about 480. From this value and the carbohydrate utilization during resting respiration, it is seen that the tension work produced in muscles rendered almost carbohydrate-free by insulin can no longer be completely covered by the oxidation of carbohydrate. Under anaerobic conditions the lactic acid formed in the same case corresponds to the carbohydrate still present (considered 0.05 to 0.1%). But the K_{mL}-value is considerably too high. In this case the phosphagen splitting is relatively greater; it does not, however, provide any certain evidence that the amount of energy not accounted for by the lactic acid splitting is derived from the splitting of phosphagen. Nor could this be shown in a preparation in which, after exhausting the carbohydrate by slow anaerobic stimulation, the phosphagen was resynthesized in O, and then, in a second period in N, the production of tension, the phosphagen decomposition, and the lactic acid formation were determined.—*Author's summary (transl. by F. F. Heyroth).*

498. POPPER, HANS, und OSKAR WOZASEK. Zur Kenntnis des Glykogengehaltes der Leichenleber. *Virchow's Arch. Path. Anat. u. Physiol.* 279(3): 819-868. 4 fig. (2 col.) 1931.—The total carbohydrate content of the liver of human cadaver was determined on 177 persons according to the colorimetric method devised by Dische and Popper with indol and H_2SO_4 and the glycogen histologically according to Best. The comparison of both methods gave an approximate agreement between the total carbohydrate content and the detectable amounts histologically so far as the kernel glycogen was concerned. The liminal value at which the amount of glycogen was readily demonstrated in the histological picture lies at about ½% total carbohydrate. With persons dying suddenly without a preceding wasting sickness a total carbohydrate content of 1.56-6.17% was found with the exception of the separately discussed cases and considerable amounts of glycogen were recognized histologically. After a death struggle in a wasting sickness 0.24-1.53% was found. Accordingly there was little or nothing histologically. With persons who during a wasting sickness died suddenly, an intermediate value was found. Relations between the total carbohydrate content, the histological picture and different pathological changes of the liver, as well as the functional condition of the whole organism were studied and consideration was given also to the different forms of glycogen deposits. The findings on 22 cirrhotic livers of persons who died slowly showed values of 0.38-0.94%, therefore of approximately normal amounts. In proportion perhaps more glycogen was found histologically. The findings of 17 diabetics showed chemically 1.19-8.50%, essentially higher values than in deaths from chronic sickness, equally as much and perhaps more than the cases of acute death. Histologically glycogen was identified most abundantly. The findings of 26 kidneys showed values of 0.28-1.64%. Of these 13 were taken from diabetics and showed perhaps a higher content than the others. In 11 metastatic livers of different original growths 0.28-1.45% total carbohydrate was found, histologically no glycogen. A relation of the content of the liver to the manner of death was lacking. The studies are being continued particularly as regards diabetes mellitus and also with simultaneous direct determination of glycogen.—*Authors' summary (transl. by K. W. Buchwald).*

499. RALLI, ELAINE P., ATTILIO CANZANELLI, and DAVID RAPPORT. The respiratory quotient of proteins in pancreatic diabetes. *Amer. Jour. Physiol.* 96(2): 331-342. 1931.—According to a theoretical calculation, based on the assumption that the sugar deriving from protein was not oxidized, the respiratory quotient (R.Q.) of muscle protein in complete diabetes should be 0.73, of gelatin 0.65, and of casein 0.78. In depancreatized dogs [number not stated], given sufficient protein so that it could be assumed that the R.Q. of the animal was a function of the R.Q. of the administered protein, the authors found, after meat, a quotient of 0.72, av. starvation R.Q. being 0.71. They regard this as evidence validating the Minkowski ratio, and as opposed to (1), the theory that in pancreatic diabetes the primary defect is not the failure of the sugar oxidizing mechanism; (2) the theory that fatty acids are convertible to sugar. After administering gelatin, the av. R.Q. was 0.69, which the authors feel reasonably confirms their calculation for this protein. After casein, however, the quotient was consistently lower (0.70) than was expected from the theory. They cannot explain this discrepancy.—*Authors' summary.*

500. RIABUSCHINSKY, N. P. Zur Frage über die Beziehung zwischen der Milchsäure im Blut und der Ermüdung. *Pflüger's Arch. Ges. Physiol.* 226(1): 79-85. 1930.—Static work was performed by subjects until they were fatigued, the lactic acid in blood from the elbow vein being determined before and after the work. The "static work" was of two types: holding a weighted barrow and clasping a dynamometer. Only small increases in lactic acid were found during or after the work period, which lasted for 12 min. or less. The conclusions are drawn that (1) static work carried out even to complete fatigue does not itself cause an increase in lactic acid; (2) the formation and accumulation of lactic acid in muscles is not related to fatigue. A temporary stasis (10 min. or less) of the blood of the arm in a resting individual caused only a very small increase in the lactic acid of the blood.—*D. W. Wilson.*

501. SATO, KAORU, KOSAKU UEDA, und TOSHIO KUROKAWA. Über das Schicksal des infundierten Zuckers mit besonderer Berücksichtigung der Zuckeraufnahmefähigkeit der Gewebezellen. VI. Mitteilung. Verhalten des Laktazidogens, der Milchsäure und des Inosits im Muskel nach Zuckerzufuhr. *Tohoku Jour. Exp. Med.* 14(4): 335-340. 1929.—In looking for the fate of intravenously injected fructose which disappears from blood, muscle lactacidogen, lactic acid and inosite were examined. None of these substances changed appreciably in quantity.—*L. Irving.*

502. SCHIFF, E., et al. Stoffwechseluntersuchungen über den Kreislaufshock. I. Blutzuckerregulation und Insulinwirkung. [E. SCHIFF, H. ELIASBERG, und A. MAZZEO.] II. Das Säurebasengleichgewicht. [E. SCHIFF, W. BAYER, und M. FUKUYAMA.] *Jahrb. Kinderheilk.* 128(3/4): 209-222. 7 fig.; 223-227. 3 fig. 1930.—I. This paper is based on an unspecified number of experiments on cats and dogs. Administration of dextrose to dogs after fasting and after peptone shock showed similar blood-sugar curves, which indicate that shock hyperglycemia is analogous to asphyxia hyperglycemia. Dogs were intravenously injected with insulin after 24-hrs. fasting and after peptone shock, the controls receiving insulin alone. In the controls hyperglycemia immediately set in; in the shocked animals, hyperglycemia preceded hypoglycemia; so long as the blood-pressure was sinking, the sugar content of the blood was rising, and with rise in the blood pressure the insulin hypoglycemia appeared, indicating that during

acute decrease of the amount of circulating blood, intestinal resorption was disturbed. In connection with pathologic study of clinical cases, these results indicate the probable cause of so-called intolerance of food in severe nutritional disturbances as an abnormal distribution of blood, giving an insufficient O supply to the digestive organs; also, that in circulatory shock there is, in addition to disturbed resorption, a disturbance of intermediary carbohydrate metabolism.—II. Peptone shock was induced in 4 dogs, and the blood pH, HCO_3, Cl, lactic acid, protein, total acid and total base determined before and after. The shock acidosis was found characterized by increased Cl, thereby resembling experimental anoxemia and toxicosis. The authors conclude that toxic acidosis is an anoxemic acidosis conditioned by circulatory shock.

503. SOLARINO, G. Sull'azione inibente dei polisaccaridi (amidi, inulina) sulla iperglicemia da glucosio. [Inhibiting power of polysaccharides on glucose hyperglycaemia.] *Arch. di Sci. Biol.* 13(1/2): 31-38. 1929.—Soluble starch from rice and wheat, administered to a fasting dog, caused slight hyperglycemia. Inulin produced also hyperglycemia, though less constantly, perhaps because of its slower hydrolysis in the stomach. If rice or wheat starch, also inulin, be administered after glucose, they prevent glucose hyperglycemia and glycosuria, perhaps through an increased internal secretion of the pancreas.—*A. Jappelli.*

504. USUELLI, FILIPPO. Stärkeaufnahme und Glykogenbildung der Panseninfusorien. *Wissensch. Arch. Landw. Abt. B. Tierernähr. u. Tierzucht* 3(1): 4-19. 1930.—In order to clarify the carbohydrate metabolism of sheep the dissolving of starch granules and glycogen formation in paunch infusoria were investigated, partly by addition of starch to paunch contents kept in a thermostat and partly by placing starch directly in the sheep's paunch. On an ordinary diet 16 hrs. after a feeding there are still to be found residues of the ingested starch in 3.25% of all infusoria in the paunch and glycogen deposition in 4.3%. After placing starch in the paunch or addition of it to paunch contents in the thermostat, the taking up of starch increases to a maximum in 4 hrs. and the glycogen formation in 6 hrs. In the paunch itself the disappearance of starch and glycogen formation were detectable in 76% of all infusoria after feeding corn starch. When starch (rice) was added to paunch contents in the thermostat, it likewise was taken up by the Infusoria and in 60% of the cases glycogen formation was found. Corn starch was taken by 54.35%, potato starch by 21.2% and wheat starch by only 12.9% of the Infusoria. Differences in the size of the starch grains can explain this difference in behavior of the Infusoria toward the several types of starch. Rice starch has the smallest grains and wheat and potato starch the largest. On separate administration of large and small grains of the same kind of starch, the large grains were 10% utilized and the small 50%. Experiments with mixtures of 2 or 3 types of starch grains showed that the size of the grains determined the behavior toward rice and wheat starch. By feeding sheep with different amounts of starch it was further shown that the taking up of the starch increased with the amount fed to a maximum. This is particularly apparent from the figures for the starch grains in the paunch contents both in and outside of Infusoria and from the ratio between them.—*Author's summary (transl. by G. T. Lewis).*

505. VERZÁR, F., und A. von KÚTHY. Die Erschöpfung der Insulinbildung durch Kohlehydratüberlastung. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 606-612. 2 fig. 1930.—A series of experiments was carried out on 8 dogs for 4-20 weeks. The excessive administration of sugar daily for several weeks leads to the establishment of a condition, lasting about a week, in which there is mild glycosuria and hyperglycemia and a prolongation of the alimentary hyperglycemia curve. This indicates an exhaustion of insulin production as a result of the previously excessive demand for it. In so far as the investigations go, the results show that this form of experimental glycosuria is quickly recovered from and is entirely innocent in character. These findings are in harmony with the clinical experience that when the internal secretion of insulin has become exhausted, as in many cases of diabetes mellitus, it may recover either by restriction of diet or by administration of insulin.—*J. J. R. Macleod.*

506. VISSCHER, MAURICE B., and ARTHUR G. MULDER. The carbohydrate metabolism of the heart. *Amer. Jour. Physiol.* 94(3): 630-640. 2 fig. 1930.—It is found that hearts worked in the heart-lung preparation for periods up to 6 hrs. contain the same quantities of glycogen as are found in normal, unworked hearts. The mean value for a series of worked hearts does not vary significantly from the mean of normal hearts. It is improbable that work in the isolated heart-lung causes an appreciable lowering of heart glycogen. It is found that the free reducing substance in the heart muscle diminishes coincidently with the reducing substance in the blood supplying the heart of the heart-lung preparation. The free reducing substance in the heart may diminish to such a figure that it is probably nearly a zero value as far as glucose is concerned, while the glycogen content remains at a value similar to values obtained in unworked hearts. Comparison of the O consumption with the glucose utilization of the heart-lung preparation shows that in no instance does the heart-lung preparation, under the conditions of the authors' experiments, use heart glycogen or blood glucose for more than 60% of its metabolism, and in some instances these carbohydrates form less than 25% of the fuel. There is a rough agreement between carbohydrate burning as observed by the authors, and as others have calculated it from the respiratory quotient. All the carbohydrate in the system at the beginning of an experiment would not account for the total metabolism of the heart-lung over a period of 5 hrs.—*Authors' summary.*

507. WERTHEIMER, ERNST. Stoffwechselregulationen. XI. Mitteilung. Über die Sonderstellung der Eizelle im Stoffverbrauch. *Pflüger's Arch. Ges. Physiol.* 221(1/2): 119-138. 1929.—In the early months of the year the female frog has half of the total glycogen storage in the eggs, some 5 times as much as in the liver. In all possible changes in which the rest of the organism gives up practically all of its glycogen (heart, liver, muscles) (strychnin poisoning, adrenalin, heat and anoxybiosis) the eggs retain their glycogen. However, eggs cut out of the body present a marked glycogen loss.—*E. Wertheimer (transl. by H. J. John).*

508. ZUCKERKANDL, FRITZ, und LUISE MESSINER-KLEBERMASS. Über die Einwirkung von Tierkohle auf Glucose in Gegenwart dehydrierender Zwischenkörper. *Biochem. Zeitschr.* 226(4/6): 395-400. 1930.—Glucose alone, when warmed with animal charcoal, does not disappear, but does disappear on addition of para-phenylene diamine or other aromatic amines. Under these conditions a difficultly soluble condensation product is formed which is adsorbed by the charcoal. In a similar manner, glucose is acted upon by amino acids in presence of animal charcoal. In both cases, amino-groups are changed into imino-groups which have a dehydrating effect on glucose. The claim is made that under physiological conditions in the animal organism, quinone or imine-forming groups affect the glucose molecule. This reaction is the first leading to the break-up of glucose in the animal.—*Authors' summary (transl. by W. N. Berg).*

FAT METABOLISM

509. BLOOR, W. R., RUTH OKEY, and GEORGE W. CORNER. The relation of the lipids to physiological activity. I. The changes in the lipid content of the corpus luteum of the sow. *Jour. Biol. Chem.* 86(1): 291-306. 1 fig. 1930.—The percentage content of phospholipid of the corpus luteum of the sow has been found to vary markedly with the activity of the gland, being 2 to 3 times as high during the period of activity (previous to estrus and during pregnancy) as at the time of forma-

tion or after retrogression. Free cholesterol increases also up to and during the period of active functioning but to a much smaller extent. Cholesterol esters vary inversely with the activity of the gland, a high content being characteristic of the degenerated organ. These results support the hypothesis that the phospholipid content of this tissue is a function of its physiological activity. The relation of free cholesterol to activity is less clear, but appears to be similar to phospholipid. Cholesterol esters on the contrary seem to be related to inactivity or retrogression.—*Authors' summary.*

510. CANTONI, OSCAR. Ricerche sul preparato epato-pancreatico sopravvivente. *Biochim. e Terapia Sperim.* 17(8): 325-343. 1 fig. 1930.—In the surviving liver-pancreas preparation an artificial blood circulation was maintained by means of a heart-lungs preparation. The animals (dogs) were either kept fasting on the day before experiment, or they had an abundant fatty meal; in the second case the blood was drawn when lipemia had developed. In the fasting dogs the amount of fatty acids does not show variations during the whole experiment; it decreases, on the contrary, in animals showing lipemia. Qualitative variations follow in both series of animals: the melting and solidification points of the fatty acids decrease, whereby their I number is increased: a desaturation process has occurred. The blood cholesterol decreases in fasting dogs as well as in those showing lipemia. The O content of the blood is very high in the blood going to the liver and in that coming from it: on the contrary the CO_2 content is low, the respiratory quotient being accordingly less than 1. The blood urea content steadily increases during the experiment, in fasting as in lipemic animals.—*M. Comel.*

511. GIANNOTTI, DAVIDE. La determinazione del grasso nel latte col metodo acidobutirrometrico Gerber senza centrifugazione. [The determination of fat content of milk by Gerber's butyric acidimetry without centrifugation.] *Riv. Zootecnia [Firenze]* 7(8): 332-336. 1930.

512. LOMBROSO, UGO, e S. DI FRISCO. Sul metabolismo dei lipidi. Terza serie. I. Può la costante lipoidea del fagato modificarsi? Profonda diminuzione degli acidi grassi del fegato di cani dopo ingestioni di forti dosi di saccarosio. *Boll. Soc. Ital. Biol. Sperim.* 5(3): 433-435. 1930.—The average fatty acid content of liver of dogs fed with mixed diet is 2.76 gm. %. This content shows a marked diminution when the dogs are fed with great amounts of saccharose, whereas an enormous increase of glycogen content takes place. The authors think that probably the diminution of fatty acid content is apparent, and due to water absorption by the glycogen, with resulting increase of weight of the liver.—*M. Comel.*

513. LOMBROSO, UGO, e S. DI FRISCO. Sul metabolismo dei lipidi. Terza serie. II. Formazione in vitro di grasso nel fegato di cane con elevato contenuto di glicogeno. *Boll. Soc. Ital. Biol. Sperim.* 5(3): 436-438. 1930.—Liver tissue broth of dogs with very high glycogen contents, obtained through feeding great amounts of saccharose, autolysed in presence of NaF, shows a gradually increased fat content, which may reach double and treble values as compared with the initial ones.—*M. Comel.*

514. SOBOTKA, HARRY. Über Umesterungen im Lipoidstoffwechsel. *Naturwissenschaften* 18(27): 619-620. 1930.—The lipids most significant in animal metabolism can be converted into each other by trans-esterifications. The absence of fat and the abundance of cholesterol-esters and lecithin in a case of Nieman-Pick's splenohepato-megaly are probably due to deficiency of the enzymatic apparatus governing these trans-esterifications.—*H. Sobotka.*

515. ZUMMO, C. Influenza della temperatura sull'indice di iodio dei grassi di ratti albini. *Boll. Soc. Ital. Biol. Sperim.* 5(3): 450-452. 1930.—Albino rats are able to form different kinds of fat from the same nutritive material (carbohydrates). Variations of the temperature are followed by variations of the neutral fats formed, the iodine number being found to be less in animals kept at 30° than in those kept at 0° C.—*M. Comel.*

MINERAL METABOLISM

516. ADOLPH, EDWARD F. Living water. *Quart. Rev. Biol.* 5(1): 51-67. 10 fig. 1930.—A review of some factors concerned in the turnover and the content of water in living organisms as wholes. The chief experiments described are on frogs and man; what is known in a comparable way on other species of animals and plants is mentioned, with emphasis on the relationships to osmotic pressure or vapor pressure of the environment. Some of the graphs and tables represent experiments hitherto unpublished. The bibliography has 68 titles.—*E. F. Adolph.*

517. BERTRAND, GABRIEL, et Y. BEAUZEMONT. Sur les variations de la teneur en zinc des animaux avec l'âge: influence de régime lacté. *Bull. Soc. Chim. France.* 47/48(7): 756-758. 1930.—Milk, which is poor in Fe, Mn, Cu, etc., as well as in Zn, cannot meet for long the growth needs of a mammal. Soon the requirements must be met by a diet richer in metals. In the various species this point coincides with the natural time of weaning. This fact should be applied in human nutrition and a rational diet planned for the newborn.—*Authors' conclusions (transl. by M. Fay).*

518. BISHOP, W. B. S. The occurrence and possible importance of the metallic elements in biological material. *Jour. Cancer Research Com. Univ. Sydney* 1(4): 242-253. 1930.—A critical review of the literature, with bibliography.

519. BISHOP, WILFRID B. S. The occurrence of lead in the egg of the domestic hen. Part 2. *Med. Jour. Australia* 1(4): 96-99. 1929.—All eggs examined, from widespread districts, have been found to contain amounts of Pb ranging from 0.036 mgm. to 0.29 mgm. per whole yolk. The concentrations of Pb in wet shell, wet yolk, and white were also measured. An emu egg obtained in the natural state, had in 100 gm. of wet material 0.02 mgm. Pb for embryo, 0.75 mgm. for yolk, 0.025 mgm. for white, and 0.74 mgm. for shell. Pb in many eggs from the same fowl was determined for 3 fowls from different districts, and was found to vary within narrow limits. A fowl laying eggs containing a mean value of 0.12 mgm. of Pb per egg, had Pb in its tissues as follows: Leg muscle, 0.21 mgm. per 100 gm. of wet material; breast muscle, 0.19; femur, 0.94; complete brain, 0.17; blood, less than 0.005; ovaries, 0.52. Preliminary experiments indicate that the Pb is extractable from the yolks, and is capable of fractional distillation under reduced pressure, and also that it is precipitated with the $CdCl_2$ precipitate in the preparation of pure lecithin.—*W. B. S. Bishop.*

520. BOKELMANN, O., und A. BOCK. Untersuchungen über den Kalkstoffwechsel in der Gestationszeit und seine Beziehungen zu den neutralitätsregulierenden Funktionen. *Zeitschr. Geburtsh. u. Gynäkol.* 96(2): 332-346. 1929.—In a large number of pregnancies, the urine and its Ca content were measured daily during the latter part of gestation up to parturition. The urine output curve was invariably lowered toward the end of the term; on the day of parturition it rose. Following this a more or less marked calcuria appeared, which is remarkable, in view of the simultaneous Ca loss in milk and lochia. The lowering of the blood Ca level, observed by other authors at birth, has been regarded as an expression of a sudden change of the metabolism. The additional idea is expressed that the pregnant woman protects herself doubly against these Ca losses first, by the heightening of the excitability of the breathing center, and second, thru the more ready production of ammonia.—*O. Bokelmann (transl. by H. J. John).*

521. CARPENTIER, G. Cuivre, acide urique, créatinine et travail musculaire. *Jour. Méd. Paris* 49(29): 613-615. 1929.—Rapid and intense muscular work for ½ hr. reduces the net elimination of uric acid in urine and augments the creatinine and creatine content of muscle. For any one subject it appeared that the product of the one times the other was a constant. Copper in a soluble form (acetate or sulphate) intensifies these phenomena through a catalytic action on oxidation.

For practical use in sports a dose of several centigrams is administered. Hypotheses and possible chemical reactions are considered.—*G. Carpentier (transl. by O. W. Barlow).*

522. **CARPENTIER, G. L'infiniment petit minéral et son action biologique. Le cobalt dans les eaux minérales** *Jour. Méd.* [*Paris*] 49(34): 715-717. 1929.—Traces of both Co and Cu are contained in certain natural waters. It is commonly believed that these minerals have a catalytic action on oxidation, reinforcing it. The bicarbonate of the waters has a reinforcing action on oxidation. —*G. Carpentier (transl. by O. W. Barlow).*

523. **CARPENTIER, G. La présence de traces infinitésimales de cuivre dans les eaux minérales. Eaux de Saint Nectaire (Puy de Dôme, France). Son rôle biologique.** *Presse Therm. et Climat.* 70(1): 37-43. 1929. —The renal and hepatic actions of water from the above source are not reputed to be due to the minute quantities of Cu which are present. This metal has a catalytic action on oxidations, thus resulting in a number of reactions which tend to detoxify the organism. Cu produces a diminution of the uric acid and augments the creatinine contents of the urine. Removed from the spring, however, the Cu was lost by precipitation. The author made a short chemical study of these properties of Cu and determined in addition the Cu content of the water.—*O. W. Barlow.*

524. **CLARK, H. W., and GEORGE O. ADAMS. Iodine in water, food and urine.** *Amer. Jour. Publ. Health.* 19(8): 898-900. 1929.—I content of water was less important than that of food in supplying I to the average individual. A method for determining I in urine is given, which would recover 75% of KI added to urine to an amount of 0.02 mgm. The authors concluded that since I in water furnishes a very small amount of the total I metabolized, the addition of I to drinking water is inadvisable.

525. **CLEMENTI, A. Carattere ureotelico del metabolismo azotato dei cheloni.** [Nitrogenous metabolism of turtles.] *Arch. di Sci. Biol.* 14(2): 171-181. 1929.—The urine of *Testudo* and *Emys* contains nearly as much urea as that of *Bufo*. Ammonia administration by mouth to *Testudo* and *Emys* caused a marked increase in the urea excreted in urine, contrary to what occurs in birds, the metabolism of which is uricothelic, i.e., the end-product is uric acid. These results show that nitrogenous metabolism of turtles, unlike that of other reptilians, is ureothelic, at least partially; in fact, not only urea is present in the urine, but administration of ammonia increases urea output. This exceptional nitrogenous metabolism can be explained by the fact that turtles are phylogenetically very close to the amphibians, involving related biochemical characters (ureothelic metabolism, arginase present in the liver).—*A. Jappelli.*

526. **COURTNEY, ANGELIA M., and ALAN BROWN. Calcium and phosphorus metabolism in some older children on mixed diet including a large or a small quantity of milk.** *Arch. Dis. Childhood* 5(25): 17-22. 1930.—Two boys and 2 girls were fed mixed diets including a large quantity of milk, and 2 other boys and 2 other girls a corresponding diet containing very little milk. Food, urine and feces were collected quantitatively for 4-day periods and analyses were made for fat, Ca, Mg and P to determine the excretion and retention of these constituents. The low milk diets, even with inclusion of eggs and vegetables, were found to provide far too little Ca and P for the necessary retention of these elements. The results were found to fall into 2 distinct groups for each kind of diet. In 1 group on each Ca and P level the excretion of Ca and P, except urinary P, on the low intake, was much less than in the other on the same diet and the retention correspondingly better. The large urinary excretion of P in group 3 is difficult to explain. These observations afford evidence that children on the same diet and apparently in equally good condition can on occasion differ so materially in their metabolic processes that 1 may lose through the feces far larger amounts of Ca and P than the other even to the point of suffering a serious loss to the body when the intake of these elements is low.—*Authors' summary.*

527. **COURTNEY, ANGELIA M. Some studies on calcium and phosphorus concentration in the small and large intestines of children.** *Arch. Dis. Childhood* 5(25): 23-27. 1930.—The results here reported indicate that there was greater excretion or less absorption of Ca than of P in the large intestine in all the children studied. It also appears probable that the Ca concentration in the large intestine was due in considerable proportion to Ca not bound to P. In children with abnormal intestinal conditions there was much less difference between the contents of the large and of the small intestine in both Ca and P concentration than in those without intestinal symptoms.—*Author's summary.*

528. **CUTHBERTSON, DAVID P. The influence of prolonged muscular rest on metabolism.** *Biochem. Jour.* 23(6): 1328-1345. 4 fig. 1929.—During prolonged rest there is a rise in the excretion of S, N, P and Ca for a varying period and then a gradual decline. The rise in the excretion of S is in inorganic sulphate while the rise in N is in urea. The maxima and minima percentage day to day variations in the O consumption gradually decrease from ± 14% to ± 1.2%.—*E. B. Carmichael.*

529. **DILLELA, GILBERTO G. Chimica physiologica da pelle.** *Rev. Med.-Cir. Brasil.* 37(10): 435-441. 1929.—A review of recent work on the subject with special reference to metabolic changes in the skin.

530. **EFIMOFF, W. W., und K. S. SAMITSCHKINA. Zur Biochemie der Ermüdung. Einwirkung der Gewerbearbeit und der Erholung auf die Alkalireserve und den Gehalt an Phosphor im Blut nach Untersuchungen an Spinnerinnen.** *Arbeitsphysiologie* 2(4): 341-346. 1929.—Women, 20 to 40 years of age, worked at spinning either 10 hrs. continuously, or 2 shifts of 5 hrs. each with a 6 hr. rest period between, or 6 hrs. on alternate days. Blood samples were taken before and after the working day. In the 10-hr. group of 7, all but 2 who slept 2½ to 3 hrs. in the rest period showed after the work a lowering in the alkaline reserve from 8.2 to 14.6%, and an increase in the inorganic P from 5.7 to 46.3% of the prework levels. Similarly, in all but 1 of 10 on the 6-hr. day, the alkaline reserve was lowered by work 4.0 to 19.8%, and the inorganic P was increased 6.7 to 79.1% of the prework values. There was no correlation between the lowering of the alkaline reserve and the increase in the inorganic P. A study of recovery in 3 subjects from whom samples were taken at 0, 30, 60 and 90 min. after work period showed that the return to normal was slow and was not complete in 1½ hrs. All the women gave subnormal alkaline reserve values at the beginning of the day, indicating a chronic fatigue that was ascribed to unfavorable conditions of living.—*T. M. Carpenter.*

531. **EIMER, KARL, und WERNER VOIGT. Rohkoststudien. I. Der Einfluss der Rohkost auf den Wasser- und Kochsalzhaushalt des Gesunden.** *Zeitschr. Ges. Exp. Med.* 69(5/6): 679-701. 1930.—At the beginning of the raw diet period the 2 healthy subjects suffered considerable loss of weight (loss of water almost exclusively, due apparently to low NaCl content of food), after which the body weight remained constant. The raw diet furnished only about 2 gm. NaCl daily, as against about 13.5 gm. in a standard mixed diet. During the raw diet period the NaCl excretion in the urine sank to a minimum (about 0.5 gm. daily). The raw diet seemed to be admirably adapted to sparing the kidneys.—*From authors' summary (transl.).*

532. **GOERNER, ALFRED. The effect of colloidal and crystalloidal metallic compounds in nutritional anemia of the rat.** *Jour. Lab. and Clin. Med.* 15(2): 119-121. 1929.—White rats (number not stated) were rendered anemic by a diet of powdered milk and distilled water. To this diet solutions of metallic compounds were then added. It was found that salts of Mn as well as of Cu are capable of increasing the hemoglobin of anemic animals when these salts are added to Fe salts. Pure Fe salts in solution have not the same pronounced effect.

Salts of Zn and Al when added to Fe salts fail to elicit any marked hemoglobin increase. Colloidal solutions of Mn and Cu in the presence of colloidal solutions of Fe have not this hemoglobin-producing power when administered in comparable quantities, nor have the former the power of preventing the reduction of hemoglobin when the animals are placed on a diet capable of producing severe anemia.—*Author's summary.*

533. **GOSS, HAROLD, and CARL L. A. SCHMIDT. Calcium and phosphorus metabolism in rats during pregnancy and lactation and the influence of the reaction of the diet thereon.** *Jour. Biol. Chem.* 86(1): 417-432. 9 fig. 1930.—Calcium and P balances in the rat were carried out through continuous periods of rest, pregnancy, and lactation. During 27 completed pregnancy periods, on the various diets, only 4 failed to show a positive balance of Ca and only 3 failed to store P. In most cases the positive balance was in excess of that estimated to be contained in the young at birth. In 17 lactation periods, all showed a negative balance of Ca and all but one a loss of P. The losses for full sized litters were as great as 20% of the entire body content of these elements in the mother. Within the range of acidity employed, no significant difference could be found between the diets, except that the 2nd litters from the rats on the diet containing $NaHCO_3$ were not nourished by the mother, due to failure to lactate. Young rats from mothers which had been maintained on acid alkali were kept for some time on these respective diets. No difference in storage of Ca and P was noted. Females reared on a vitamin E-free diet stored Ca and P during the period of pregnancy in which resorption of the fetus took place.—*Authors' summary.*

534. **HAMILTON, BENGT, and MARGARET MORIARTY. Factors influencing the excretion of calcium.** *Amer. Jour. Dis. Children* 36(3): 450-462. 2 fig. 1928.—The normal variations in the excretion of Ca in the stools of breast-fed infants were studied. The Ca excretion was influenced chiefly by the intake of fixed base and, to a lesser degree, by the intake of Ca. Since total fixed base is closely related to the buffer content of the milk, it is suggested that the latter is the controlling factor in the excretion of Ca. In support of this view it is found that the addition of alkali to the milk increases the excretion while the addition of acid decreases it.—*L. A. Maynard.*

535. **HAYASHI, HIROKICHI. Untersuchungen über Cetacea. XXIX. Über Alkalien und alkalische Erden in verschiedenen Horngeweben. Ein Beitrag zur Frage der Keratinisation.** *Japanese Jour. Med. Sci. Trans. II. Biochem.* 1(2): 137-149. 1927.—The skin from the head and the tail, mucous membrane from the first stomach and the beard of whales were analysed for fat, N and ash. Sodium, K, Ca and Mg were determined in the ash, and it was concluded that the presence of a large proportion of the last 2 elements is related to the process of keratinization. The ratio of alkalis to alkaline earths in serum of whales is 20 : 1 while in the beard it is 1: 1.—*D. B. Dill.*

536. **HENDERSON, JOHN McASKILL, and FRANCIS CHARLES KELLY. The influence of certain dietary supplements in relation to the calcium requirements of growing African natives. II.** *Jour. Hyg.* 29(4): 429-438. 1930.—Of 5 experimental subjects—growing East African native boys—4 had definitely negative Ca balances on the diet in use at the Nairobi Prison, while the 5th was merely in Ca equilibrium. The diet in question was found low in Ca (0.32 gm. Ca per day). These negative Ca balances became positive on the addition of Ca as milk, or in a mineral mixture, with or without cod-liver oil. Cod-liver oil alone was not effective in bringing about any appreciable reduction of a negative balance. 0.43 grm. Ca daily was the maintenance requirement for the subjects under experiment; this figure is practically the same as that found by Sherman for white races. On giving additional Ca in a mineral mixture it was found that after the maintenance requirement had been satisfied, as much as 50% of any excess might be retained. The Ca of milk, on the other hand, was found to be utilized more efficiently; the corresponding retention figure being over 70%. The influence of the various supplements on growth is briefly discussed.—*Authors' summary and conclusions.*

537. **HENDERSON, JOHN McASKILL, and FRANCIS CHARLES KELLY. A note of the influence of the addition of certain supplements to the diets of African natives. III.** *Jour. Hyg.* 29(4): 439-442. 1 fig. 1930.—Both control and experimental groups showed increases in weight during the early part of the experiment. The 2nd group, when minerals and cod-liver oil were added to the diet, showed definitely greater increases of weight, and a falling off when these were withdrawn. Cod-liver oil added to a basal diet did not result in positive Ca balances when the subjects had previously had negative balances. Mineral and cod-liver oil added together, or milk added to the basal diet, did produce positive Ca balances.

538. **HESSE, ERICH. Aufnahme und Ansatz von Kalk-Phosphor bei normalen und rachitischen Tieren.** *Arch. Exp. Path. u. Pharmakol.* 147(1/3): 173-192. 1929.—To determine the amounts of Ca and P compounds absorbed, dogs were fed; after 24 hours the dogs were killed, the esophagus and small intestine were tied off and their contents analyzed. From Ca malonate or a mixture of this with sodium phosphate about ⅓ of the Ca and ½ of the P were absorbed. If the Ca was given in a gum emulsion the absorbed fraction was raised to 75%. From a phosphatid-containing emulsion about half the Ca malonate was taken up. The phosphatid disappeared quantitatively from the gastrointestinal tract in 8 hrs. Strange to say the soluble gluconate and calipot, which is a mixture of Ca citrate and Ca glycerophosphate, were absorbed no better than the insoluble Ca malonate. To determine the retention, normal and rachitic rats were fed with Ca salts over longer periods and then analyzed in toto. Such animals, as well as those receiving vitamin before being made rachitic, stored about 10% of the ingested Ca.—*E. Hesse (transl. by C. S. Robinson).*

539. **HUFFMAN, C. F., C. S. ROBINSON, O. B. WINTER, and R. E. LARSON. The effect of low calcium, high magnesium diets on growth and metabolism of calves.** *Jour. Nutrition* 2(5): 471-483. 2 pl. 1930.—Magnesium phosphate when fed to calves on low Ca diets produced no apparent harmful effect. $MgCO_3$ added to a diet low in Ca but adequate in P caused immediate improvement in general condition and in Ca and P utilization of a calf, which persisted until after the $MgCO_3$ had been again withdrawn. Improved Ca and P balances were also induced by addition of $MgCO_3$ to the diet of 3 cows. Either carbonate or phosphate increases the storage of Mg.—*E. L. Batchelder.*

540. **ISEKI, TOSHINORI. Über das Verhalten der anorganischen Bestandteile bei der Bebrütung des Hühnereies.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 188 (3/5): 189-192. 1930.—In a late stage of incubation the Ca content of the egg proper increased; that of the shell decreased. Thus the shell furnished some building material for the embryo. In the early stages of incubation the alkali metals, sulphates and chlorides were present in greater quantity in the egg white than in the yolk. On the 7th day of incubation the alkalis of the yolk suddenly increased and at the same time the chlorides and sulphates also increased; they decreased, however, in the egg white. The alkalis passed through the yolk sac into the yolk in mobile form. From the yolk they were taken up by the embryo.

541. **JARVIS, NORMAN DONALD, RAY WILLIAM CLOUGH, and ERNEST DUNBAR CLARK. Iodine content of the Pacific coast salmon.** *Univ. Washington Publ. in Fisheries* 1(6): 109-140. 1926.—131 samples of canned and fresh salmon were analyzed for I. The I content of canners' salt was also determined. The I content of canned salmon is compared with that of such foods as butter, milk, meat, vegetables and cereals, showing that canned salmon contains much more I than any of these

products. Charts are given showing the relative I content of the different species and variation by district within the species, as illustrated by the king or chinook salmon. Different parts of the same fish vary in I content, the parts of the flesh richest in fat apparently having the most I. The milt and roe are especially rich in I.—*Authors' summary.*

542. KAPLANSKI, S., und N. TOLKATSCHEWSKAIA. Über die Wirkung der Säuren und Alkalien auf den Mineralstoffgehalt der Gewebe und des Blutes. II. *Zeitschr. Ges. Exp. Med.* 69(5/6): 748-757. 1930.—In 8 rabbits 10 cc. of a 10% $NaHCO_3$ solution was injected intravenously. An hour later the mineral content of the blood had returned to normal, but the mineral content of the skin had altered significantly, the cations being increased, the Cl decreased. Long-continued introduction of alkali by mouth (1 rabbit) produced in both blood and skin an increase in cations and still more in Cl, constituting a displacement of the cation-anion equilibrium to the acid side. Intravenous and peroral introduction of acid (10% NaH_2PO_4 solution) also produced an increase in the Cl of the skin, with a constant percentage of Na, K and Ca.—*Authors' summary (transl.).*

543. KORIAKINA, A. F., E. B. KOSSOWSKAJA, und A. N. KRESTOWNIKOFF. Über die Schwankungen des Chloridgehaltes im Blut, Harn und Schweiss bei Muskeltätigkeit. I. Mitteilung. *Arbeitsphysiologie* 2(6): 461-473. 1930.—The concentration of chlorides in the blood, urine and sweat was determined before and after the following contests: 144 km. bicycle ride, 13.5 km. race, 28 km. race, 3 km. race (women), football playing, and 45-60 min. work on a bicycle ergometer. There was a rise in blood chloride shortly after beginning work or after the conclusion of a short period of activity. A fall occurred after activity of longer duration. In the urine, the chloride rises at the beginning of work, but subsequently falls. The magnitude of the fall in blood and urine chlorides is in direct relation to the intensity and duration of the activity; the longer and greater the intensity of work, the greater the decline. Chlorides appear in the sweat as a rule; though with a low level of chlorides in the blood, no chlorides appeared in the sweat.—*T. M. Carpenter.*

544. KRANTZ, JOHN C. JR. The use of sodium malate combinations as a dietary substitute for sodium chloride. *Ann. Internal Med.* 3(8): 826-834. 1930.—A mixture of sodium malate 85.5%, sodium citrate 9%, ammonium citrate 5% and manganese bromide 0.5% was found to possess a saline taste practically identical with that of sodium chloride. The metabolism of this mixture was studied when administered to dogs and man. The anions were found to be metabolized, the essential influence upon ingestion was a change in the acid-base equilibrium of the urine. Upon the ingestion of 4 gm. daily the urine changed from pH 6 to pH 7. The mixture is recommended for use in the salt-restricted diets prescribed in nephritis, hypertension and edema.—*J. C. Krantz, Jr.*

545. LANG, THEODOR. Die Gefahr der Demineralisation und Transmineralisation unserer Nahrungsmittel. *Schweiz. Med. Wochenschr.* 60(10): 219-223. 1930.—The author determined the Na, K, Ca, and P content of white cabbage, red beets, peas, carrots, tomatoes, and cauliflower. The Na: K ratio of these fresh vegetables ranged from 1: 0.34 for cabbage to 1: 34 for cauliflower. The Na: Ca ratio for peas was 1: 0.61; for white cabbage 1: 1.58. Cooking produced a large loss of K; the loss of Ca was not great. The manner of preparing and cooking potatoes determined their salt loss, and also their basic and acid equivalents. Potatoes cooked in salty water lost a great deal of K; potatoes unpared and cooked in a little water retained most of their minerals.

546. LINTZEL, W. Zur Frage des Eisenstoffwechsels. Nachtrag zur IV. Mitteilung. Ueber das Harneisen. *Zeitschr. Biol.* 89(4): 350-352. 1929.—By the method of Henriques and Roland for the determination of Fe in urine, other substances oxidizable by titanic trichloride which, in treating the previously ashed solution with strong oxidizing agents, remain behind are titrated with and estimated as Fe. The urine Fe values found by Henriques and Roland are thus too high. By the use of absolutely Fe-free reagents whose preparation has been described, no red coloration of the solution from urine ash is seen with KCNS. On the basis of the sensitivity this reaction yields, less than 0.02 mgm. Fe per l. was present in the urine of the ♂ subject.—*W. Lintzel (transl. by H. H. Riecker).*

547. LINTZEL, WOLFGANG. Zur Frage des Eisenstoffwechsels. V. Mitteilung: Ueber den Eisenbedarf des Menschen. *Zeitschr. Biol.* 89(4): 342-349. 1929.—A new, rapid and practical method for the estimation of the Fe content of the feces is described by which the feces are collected in a 2 l. porcelain dish, triturated with H_2O and put through a porcelain filter. Aliquot portions of the residue are pipetted off and ashed and the Fe is determined colorimetrically with NH_4CNS. In the case of a ♂ subject, fed an Fe-poor diet consisting mainly of rice, egg-white and butter, the Fe content of the food was regulated at 0.9 mgm. to maintain the balance of Fe intake and Fe output. A greater elimination of the end products of Fe metabolism was therefore not present. Also in the case of an intake of 63.8 mgm. Fe daily an approximate balance of intake and output was brought about after a period of retention. The Fe demand of the adult is estimated to be less than 0.9 mgm. per day if special conditions such as pregnancy, training, and residence in high climates are excluded.—*W. Lintzel (transl. by H. H. Riecker).*

548. LOHMANN, K. Über das Vorkommen und den Umsatz von Pyrophosphat in Zellen. II. Mitteilung: Die Menge der leicht hydrolysierbaren P-Verbindung in tierischen und pflanzlichen Zellen. *Biochem. Zeitschr.* 203 (1/6): 164-171. 1928.—The amount of pyrophosphate was determined in striated muscles and other organs of vertebrates and invertebrates, in yeasts, and in the roots of certain plants. The muscles contain 0.5 to 1.0 mgm. P_2O_5; bakers' and brewers' yeasts 1.6 to 1.8 mgm. P_2O_5 per gm. In the tissues of frogs and rabbits the amount of P_2O_5 varied from 0.1 to 0.4 mgm. per gram moist weight. The pyrophosphate in roots of peas amounted to about 10% of the total acid phosphates.—*M. C. Sewell.*

549. MACY, ICIE G., HELEN A. HUNSCHER, SYLVIA SCHIMMEL McCOSH, and BETTY NIMS. Metabolism of women during the reproductive cycle. III. Calcium, phosphorus, and nitrogen utilization in lactation before and after supplementing the usual home diets with cod liver oil and yeast. *Jour. Biol. Chem.* 86(1): 59-74. 1930. —Ca, P, and N balances were determined on 3 nursing mothers before and after supplementing their customary home diets with cod liver oil and yeast. Daily feedings of 15 gm. of cod liver oil and 10 gm. of yeast over a period of 2 mos. when the milk flow persisted at its highest rate stimulated better Ca and P utilization in all cases. During the experimental period the Ca and P assimilation was greatly improved. The decrease of fecal excretion of both Ca and P, absolutely and relatively, during the experimental period illustrates a marked alteration in metabolism and accounts for a greater assimilation of these elements. The N metabolism was inappreciably altered during the interval of observation. These lactating women experienced a more economical utilization of their available food constituents and a greater feeling of well being after the addition of cod liver oil and yeast to their home diets.—*Authors' summary.*

550. MAURER, E., und H. DUCRUE. Zur Kenntnis des Jods als biogenes Element. XIX. Mitteilung. Der Jodgehalt im normalen tierischen Organismus. *Biochem. Zeitschr.* 217(1/3): 227-230. 1930.—The I content of the thyroid was no indicator of the I content either of the organism as a whole or of particular organs. The I content of most of the organs of normal rabbits is shown in tabular form.

551. MAZZOCCO, P. El iodo en el aire, rocío, suelo y agua de Salta. [Iodine content of air, dew, soil and

water of Salta.] *Rev. Soc. Argent. Biol.* 5(5/6): 440-462. 2 fig.; El iodo en los alimentos de Salta. [Iodine content of food in Salta.] *Rev. Soc. Argent. Biol.* 5(5/6): 463-471; MAZZOCCO, P., y C. ARIAS-ARANDA. Contenido en iodo de las tiroides de ovinos de Salta y litoral. [Iodine in sheep thyroids in Salta and on the seacoast.] *Rev. Soc. Argent. Biol.* 5(5/6): 472-485; Metabolismo del iodo y profilaxis del bocio en Salta. [Iodine metabolism and goiter prevention in Salta.] *Rev. Soc. Argent. Biol.* 5(5/6): 486-497. 1929.—Numerous analyses of I content in air, soil, water, food, thyroids, etc., were made in Salta (a goiter district) and in Buenos Aires (a non-goiter district). In Salta the I content was generally much smaller than in Buenos Aires; wherever the percentage of goiter was highest, the I content was lowest. The food intake of more than 400 persons in Salta was studied and the I intake was determined; it was found to be between 22 and 26 micrograms per day. The foods preferred are maize and meat, both poor in I. These facts justify goiter prophylaxis by I administration.—*J. T. Lewis.*

552. MORACZEWSKI, W. von, und W. SKOWRÓNSKI. Wasserausscheidung des Kaninchens bei Hafer- und Rübennahrung. *Zeitschr. Ges. Exp. Med.* 69(1/2): 86-93. 1929.—The number of rabbits used is not stated. Some were on a fat-rich diet (70 gm. oats = 200 calories, daily) and the others on a fat-poor diet (400 gm. fresh turnips = 120 calories, daily). This amount of turnips contains about 340 gm. water; the oat-fed rabbits received 300 cc. water daily additional, introduced directly into the stomach by a catheter. This water was retained in part, or, if the diet contained salt, altogether. The oat diet by itself tended to cause anuria, while the introduction of 300 cc. water caused renal shock. The water retention increased as the amount of water given with the oats increased. An addition to the oat diet of the mineral salts present in turnips caused a decrease in the water excretion. Dried turnips or carrots given with enough water to supply the deficiency produced no water retention such as was observed from the oat diet. Pituitrin injection caused a marked water retention in the rabbit on the turnip diet, but had no such effect when given with the oat diet; thyroid extract, however, given with the turnip diet produced a much more abundant diuresis than when given with the oat diet. Insulin is a diuretic with the turnip diet; with the oat diet it tends to urinary retention. Euphyllin produces an important increase in urinary excretion with turnip diet; with oat diet it increases NaCl excretion, but not that of water.

553. MUTTKOWSKI, R. A. Insect nutrition and metabolism. *Ann. Ent. Soc. America* 22: 552-554. 1929.—Corrections to Uvarov's Insect Nutrition and Metabolism (1928). Uvarov misquotes the author on the rôles of arsenic and lead, attributing functions directly opposite to those given in the original paper (1923).—*R. A. Muttkowski.*

554. REMINGTON, ROE E., and H. E. SHIVER. Iron, copper and manganese content of some common vegetable foods. *Jour. Assoc. Offic. Agric. Chem.* 13(1): 129-132. 1930.—Data are presented for the Fe, Mn, and Cu content of a number of samples of 18 kinds of vegetables used as food. The methods of analysis were checked on known quantities of the element sought. The results are discussed in the light of previously published data, and from the standpoint of the value of these vegetables in nutrition. When compared with root and fruit vegetables, the green leafy vegetables were found to be outstanding as sources of Fe, Mn, and Cu.—*Authors' summary.*

555. ROMINGER, E., IMRE BERGER, und HUGO MEYER. Klinisch-experimentelle Untersuchungen über die Beziehungen zwischen Wasser- und Kochsalzumsatz beim gesunden Säugling. *Zeitschr. Kinderheilk.* 48 (1): 43-66. 1929.—Investigations were done on infants 1 to 5 mos. old. To a definite basic diet 2 to 5 gm. of NaCl per day were added. It was found that regularly a part of this was retained by the body and after discontinuing this dose it was gradually excreted. Occasionally the salt caused retention of water, but there was no relationship between the quantity of retained water and the quantity of NaCl, and sometimes the retention of NaCl was without water retention. These experiments add further proof to the view previously expressed by the authors that water and salt in the organism of the infant have little relation to each other. —*E. Rominger* (*transl. by H. J. John*).

556. SAGARA, JUN-ISCHIRO. Über die Bildung der Hexon- und Purinbasen bei der Entwicklung des Hühnereies. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 178(4/6): 298-301. 1928.—Chick embryos of 14 days incubation were macerated into a paste from which the fat was subsequently removed with ether. Extraction of purine bases was accomplished according to the method of Stendel. The developing chicks showed a marked increase of free hexone bases, especially arginin and lysin, the latter in excess. A neo-formation of purine bases was noted.—*N. A. Michels.*

557. SCHARRER, K., und J. SCHWAIBOLD. Zur Kenntnis des Jods als biogenes Element. XVIII. Mitteilung. Über die Art der Bindung des Jods in der Milch. *Biochem. Zeitschr.* 207 (4/6): 332-340. 1929.—Milk as a rule contains I but only a small proportion of this element is bound in the inorganic form. The albumin, fat and sugar of milk are relatively deficient in I. The protein binds a small and variable quantity. The fat contains generally either no I or a negligible quantity. This relation varies little following the administration of iodized albuminates. Can such compounds be retained or be excreted in the milk? Following the administration of massive doses of NaI, a noticeable and comparable rise in the I content of the milk occurs. Subsequent to feeding iodized fatty acids, the major portion of the I appears in the milk as glycerides.—*O. W. Barlow.*

558. SCHULTZ, ROBERT V. A study of certain effects in the rat produced by diets deficient in mineral salts. *Yale Jour. Biol. & Med.* 2(2): 115-122. 1929.—A group of 12 ♀ albino rats were kept for 40 days, starting from weaning, at or near stationary body weight by feeding a diet deficient in mineral salts; a similar group of 10 were killed at weaning; a 3rd group of 10 were fed an adequate diet for 40 days from weaning, during which time the weights tripled; the treatment of 2 other groups of 10 each was suggested by developments to be described. The bones of the low-salt group were markedly fragile, the fat-free bone ash contents were low, and the bone-moisture contents were high, like those of infantile bones. The body and tail lengths were markedly stunted in this group, the erythrocyte count was remarkably high, and the spleen small. To determine if the latter conditions resulted from specific deficiency or from the incidental stunting, 10 ♀ rats were maintained at about stationary weight by underfeeding. The spleens in the underfed animals were reduced in size as compared with the normal rats, but were about 1½ times heavier than those of the low-salt group. To determine whether splenectomy would influence the polycythemia produced by a low-salt diet, 10 ♀ rats were splenectomized and fed salt-poor food, with slight effect on the numbers of erythrocytes. This increase in red cells did not occur in the underfed rats.

559. SCHWARZ, L. Einfluss der Ernährung auf die Eisenspeicherung der Leber und Milz der weissen Maus. (Beitrag zum Eisenstoffwechsel.) *Virchow's Arch. Pathol. Anat. u. Physiol.* 269(3): 638-662. 5 fig. 1928.—Fe fed was deposited only in the liver cells, none in the stellate cells. Histological and chemical analyses gave parallel values, and a threshold value for diffuse and granular deposit was obtained. The degree of storage depended upon both the kind of diet and the condition of the cell. The liver cells of undernourished animals stored more Fe than those of meat fed animals, thus confirming findings of older investigators. Feeding of reduced Fe gave no deposit in the stellate cells. The spleen served as a secondary deposit for Fe fed.—*H. H. Riecker.*

560. SCHWARZ, L. Zur Frage der Eisenspeicherung und des Eisenstoffwechsels. *Verhandl. Deutschen Ges. Innere Med. Kongress* 40: 604-609. 1 fig. 1928.—Chemical and histological examinations indicate that mice on a high-protein diet store less Fe (in the liver) and eliminate more than those maintained on a starvation or low-protein diet.—*G. W. Pucher.*

561. SPEED, KELLOGG, and DEAN L. RIDER. Experimental healing of bone after parathyroidectomy. *Arch. Surg.* 21(4): 679-692. 7 fig. 1930.—A study of serum Ca alone in dogs shows merely the height of the Ca in the stream of balance; it does not give any indication as to the direction of its flow, whether into excretory channels or into the bones. On 4 parathyroidectomized dogs in which tetany was controlled by the use of Ca lactate and thyroid extract, determinations of the Ca content of the excreta were made. The lack of calcification of the bones after experimental fracture, in conjunction with the low blood Ca, led to the inference that the Ca stream was directed away from the bones after parathyroidectomy, and that parathyroidectomy, either through this change of the Ca stream or through some still undiscovered factor, delays the healing of fractures.—*Authors' conclusions.*

562. STRAUB, JOHANN. Über die Verbreitung des Kropfes in Ungarn und dessen Zusammenhang mit dem Jodgehalt der Trinkwässer. *Zeitschr. Hyg. u. Infektionskrankh.* 111(4): 472-479. 1930.—So far as the school population is concerned, the Hungarian basin, comprising the greater part of the country, is goiter-free; but goiter occurs locally in Transdanubia and Upper Hungary (in 11.5 to 59.3% of school children). The drinking water of the goiter-free basin, derived from artesian wells and deep springs, has a large percentage of I (av. 76.8 γ per liter). The water in the goitrous regions, where derived from surface sources, is invariably poor in I (0-2.1 γ per liter); where derived from artesian wells and deep springs is poorer in I than that in goiter-free plain. But there is no difference between the I content of the drinking water (except from some artesian wells) of the goitrous and goiter-free localities in Upper Hungary and Transdanubia. The artesian wells and deep springs are generally characterized by alkalinity (Na_2CO_3 or $NaHCO_3$), the I content varying more or less with the alkali content. Straub remarks that the fact of the coincidence of goiter-free spots with I-poor water does not necessarily contradict the theory of the causation of goiter by I insufficiency; for in these localities the I needs of the population may be supplied by the food.

563. STURM, ALEXANDER. Beiträge zur Kenntnis des Jodstoffwechsels. 3. Mitteilung. Der Jodstoffwechsel des schilddrüsenlosen Hundes. *Deutsches Arch. Klin. Med.* 161(3/4): 129-142. 1 fig. 1928.—Following removal of the thyroid, the I content of the blood sinks to about half of its original value. In the thyroidectomized state the blood still contains I and the level is more susceptible to exogenous influences than in the normal animal. This was demonstrated by I metabolism experiments on 9 thyroidectomized and on 8 normal dogs.—*A. Sturm (transl. by E. M. MacKay).*

564. STURM, ALEXANDER, und BRUNO BUCHHOLZ. Beiträge zur Kenntnis des Jodstoffwechsels. V. Mitteilung. Jodverteilung im menschlichen und tierischen Organismus in ihrer Beziehung zur Schilddrüse. *Deutsches Arch. Klin. Med.* 161 (3/4): 227-247. 5 fig. 1928.—The I content of the weighed organs of 7 men, 11 dogs and 5 guinea pigs was determined. All organs examined contained I. One half to $\frac{2}{3}$ of the total body I is contained in the musculature, and $\frac{1}{3}$ to 1/10 in the thyroid. Nearly all endocrine organs have a higher I concentration than the other body tissues. The I content of a tissue is dependent on the time of year. Chronic diseases cause shifts in the tissue I. After thyroidectomy there is an extraordinary decrease in the I content of the endocrine glands but not of the body tissues in general. It is concluded that the endocrine I is dependent upon and regulated by the thyroid while the I of other tissues is practically independent of thyroid influence.—*A. Sturm (transl. by E. M. MacKay).*

565. TAKATA, RYOHEI. An undertaking on the utilization of microörganisms for human food materials. VII. Nitrogenous bases in the mycelium of Aspergillus oryzae. *Jour. Soc. Chem. Ind. Japan Suppl. Binding* 172B. 1929.—An abstract.

566. TOXOPÉUS, M. A. B. Die Verteilung des Broms im Organismus. *Arch. Exp. Path. u. Pharmakol.* 149 (5/6): 263-273. 1 fig. 1930.—NaBr, administered by mouth to 7 dogs, was found to be stored most abundantly in the muscles (37%), next in the skin (16%) and the blood (9%). This represents a very different distribution from that of normally or extranormally introduced chlorid.—*Author's summary (transl.).*

567. VICKERY, HUBERT BRADFORD, and RICHARD J. BLOCK. The basic amino acids of wool. *Jour. Biol. Chem.* 86(1): 107-111. 1930.—The basic amino acids have been isolated from the protein of sheep wool by the modified silver precipitation method. The keratin of the hair of this species yielded 0.66% of histidine, 7.8% of arginine, and 2.3% of lysine and is closely comparable to that of human hair with respect to the yields of these bases.—*Authors' summary.*

568. WAGNER, HANS. Goisern: Über Jodgehalt der Luft als klimatologisch wirksames Agens. [The I content of the air of Goisern and vicinity as a climatologic agent.] *Wiener Med. Wochenschr.* 79(34): 1084-1093. 2 maps. 1929.—Analyses of the air collected at various altitudes and in various localities in the Salzburg Alps near Goisern, Austria, were made, and the correlation of goiter incidence with I content of the air is discussed.

569. WEISER, STEFAN, und ARTHUR ZAITSCHEK. Jodstoffwechselversuch an milchenden Ziegen. *Biochem. Zeitschr.* 217(4/6): 359-364. 1930.—Two healthy lactating goats were fed a diet of KI, hay, fodder, clover, and some grain. In one 42% of the I fed was retained, 31% in the other; I excretion in the feces was 6% in one case, 3% in the other; excretion in the urine was 34% and 36% respectively; excretion in the milk 18% and 30%. A N balance determination was made at the same time as the I determination. One goat having a slightly negative N balance of 0.57 gm. showed greater I retention than a goat with a positive N balance of 0.03 gm. Control goats fed no KI in the food excreted less I in milk than those fed KI.

570. WENDT, GEORG von. Zur Biologie des Jods. Beobachtungen über die Einwirkung einer schwach jodierten Mineralsalzmischung auf die Produktion und den Gesundheitszustand der Milchtiere. *Med. Welt* 3 (41): 1490-1493. 1929.—An outbreak of calf goiter accompanied by tendency to sterility and "Umrind" of cows in eastern and central Finland in 1923 afforded opportunity to test the food value of a weakly iodized mixture of mineral salts containing a readily soluble phosphate. The plan comprised observation of milk yield, butter yield, consumption of food and physical condition of, on an average, 422 cows on 6 estates during a preliminary period of 3 yrs., a $\frac{1}{2}$ yr. transition period during which the iodized salt mixture was introduced into the diet, and finally 3 experimental yrs. The result was almost total disappearance of goiter and reduction in the incidence of "Umrind." The average annual milk production, which was 2725 liters per cow for the preliminary 3 yr. period, rose to 3120 liters per cow for the research period. The average annual butter production, which was 104.1 kgm. per cow for the preliminary 3 yr. period, rose to 120.7 kgm. per cow for the research period. The author remarks that the research should be continued over a longer period to give decisive results.

571. WILHELMJ, CHARLES M., and WALTER M. BOOTHBY. The effect of the daily administration of iodine on the calorigenic action of single intravenous injections of thyroxine. *Amer. Jour. Physiol.* 92(3): 568-573. 1 fig. 1930.—The experiments were performed on a ♀ dog on which bilateral oöphorectomy had been performed 2 yrs. previously and accustomed for 2 yrs.

to experimental procedures. A series of 13 to 15 tests was carried out each experimental day; the average results represented the day's metabolism. In 3 control experiments 10 mgm. of thyroxine were given for 190 hrs. without I; in 2 experiments I was given before and after the administration of thyroxine. The daily oral administration of I for 17 and 22 days before and for 8 days after a single intravenous injection of 10 mgm. of thyroxine did not influence the calorigenic action of thyroxine. Following the injection of thyroxine the basal heat production rose rapidly and reached its maximal height in from 22 to 70 hrs.; following this there was a progressive decrease in heat production which reached the original basal level in about 8 days. In the 3 control experiments in which I was not given the extra heat production averaged 300 calories; in 2 experiments in which I was given the average was 311 calories. The response of the same animal to repeated single injections of 10 mgm. of thyroxine was constant; the average extra heat production in 5 experiments amounted to 304 calories, and the maximal and minimal values obtained were within ± 8% of this average. The daily oral administration of I was without appreciable influence on the basal level of heat production.—*Authors' summary.*

572. **WYMAN, EDWIN T., PHILIP DRINKER, and KATHERINE H. MACKENZIE. Antirachitic value of winter sunlight in the latitude of 42° 21′ (Boston).** *Amer. Jour. Dis. Children* 39(5): 969-979. 10 fig. 1930.—Observations made during the winters of 1927-1928 and 1928-1929 on the effect of winter sunlight through Celoglass on the prevention and cure of rickets. Fifteen babies with acute rickets, in an especially constructed solarium covered with Celoglass were subjects. The infants exposed during the months of November, December, January and February became deeply tanned. Those treated after March 1, however, became tanned more quickly. In the majority of cases, beginning within 2 weeks of exposure, there was a sustained rise in the P/Ca ratio. Deposition of Ca, as shown by the roentgenograms, could be seen following exposure after the 2nd week in all cases, with calcification continuing to increase throughout the period of observation. It seems justifiable to conclude that infants and children with rickets can be cured by sunshine in Boston by exposing them during the months of November, December, January February and March to sunshine transmitted through Celoglass.—*E. T. Wyman.*

GROWTH

573. **BAHRS, ALICE M. The effect of refrigeration upon the growth-promoting power of rabbit tissues for planarian worms.** *Physiol. Zool.* 2(4): 491-494. 1 fig. 1930.—Refrigeration at −1° to 0° C. for from 1 week to 1 mo. has been found to reduce the growth-promoting power of rabbit liver, heart, and skeletal muscle when fed to planarian worms. It was also found that refrigeration at 1° to 5° C. reduced the growth-promoting power of liver more rapidly than refrigeration at −1° to 0° C. In contrast to the results upon liver, heart, and skeletal muscle, refrigeration of rabbit lung at −1° to 0° C. for from 1 week to 1 mo. was found to have practically no deleterious effect upon the growth-promoting power of this tissue.—*Author (courtesy Wistar Bibl. Serv.).*

574. **BAKWIN, HARRY, and RUTH MORRIS BAKWIN. Seasonal variation in the weight loss of newborns.** *Amer. Jour. Obstet. & Gynecol.* 18(6): 863-867. 1929.—A seasonal variation was noted in the weight loss and in the incidence of fever in newborn infants kept in a nursery at Bellevue Hospital. The infants lose considerably more during the winter than during the summer and have fever more often. No correlation was found between the weight loss during the first 4 days of life and the nursery temp., humidity, effective temp. or wet bulb depression.—*Authors' summary and conclusions.*

575. **BERG, CLARENCE P., WILLIAM C. ROSE, and CARL S. MARVEL. Tryptophane and growth. 3. 3-indolepropionic acid and 3-indolepyruvic acid as supplementing agents in diets deficient in tryptophane.** *Jour. Biol. Chem.* 85(1): 219-231. 1929.—3-Indolepropionic acid and 3-indolepyruvic acid were fed to rats upon tryptophane-deficient diets to determine whether they are capable of serving in place of the amino acid for purposes of growth. The results indicate that 3-indolepropionic acid is entirely unable to meet the requirements of the organism in place of tryptophane. But the addition to the tryptophane-deficient diet of 3-indolepyruvic acid leads to an immediate resumption of growth at a rate quite comparable to that induced by the equivalent quantity of tryptophane.—*Authors' summary.*

576. **BODINE, JOSEPH HALL. Factors influencing the rate of respiratory metabolism of a developing egg (Orthoptera).** *Physiol. Zool.* 2(4): 459-482. 14 fig. 1930.—The rates of gaseous exchange (largely O consumption) of developing eggs of grasshoppers were determined under normal and experimental temperatures, etc. Determinations were carried out on single eggs from the time of laying till hatched. Changes in the weight and water content of the eggs were also followed. Cyclic or rhythmic changes in rates of O consumption and development were found in eggs, apparently independent of environmental temperatures. Differential rates of O consumption and development at constant temperature occur during the development of eggs of *Melanoplus differentialis.* Environmental history is an important factor in determining the rate of O consumption and development.—*J. H. Bodine.*

577. **CALVERT, PHILIP P. Different rates of growth among animals with special reference to the Odonata.** *Proc. Amer. Philosoph. Soc.* 68(3): 227-274. 5 fig. 1929.—Two species of Odonata, *Nannothemis bella* and *Anax junius* were reared from egg to adult. Their growth, food supply and transformation are described and illustrated by tables and graphs. *N. bella* (3 individuals) reached the maximum larval length of 9.25-9.65 mm. in 674-1037 days (add 18 days for the embryonic period); no correlations in size, length of larval life or number of ecdyses appear. *A. junius* (1 individual) attained its maximum larval length of 44 mm. in 322-328 days (341 days from time of oviposition). Although the room temp. in which the larvae were kept was never lower than 10° C., all of them showed a halt in growth in winter. Growth in length occurs between moults in *N. bella,* in various Heteropterous, Coleopterous, Lepidopterous and Dipterous larvae and hence is continuous, as in non-Insectan Arthropods and many other Metazoa. In *Anax junius* and in most heterometabolic insects it occurs chiefly at the ecdyses and is therefore discontinuous. Temporary fluctuations in length occur in representatives of both sorts of insects as the result of ingestion and egestion. Moults are not absolute indicators of biologic age. The growth factors announced by Brooks, Dyar, Przibram and Megusar and Brody are compared and the Brooks-Przibram ratio given for each instar of the 10 species of Odonata which have thus far been reared from egg to adult. Nine of these species grew at a more rapid rate than this ratio demands. No relation between length of life and final size has been detected among the Odonata. *Anax junius,* in common with some other insect larvae, departs from the general rule that the percentile rate of growth is greatest in early age. The idea of a theoretical rate of growth may have some advantage as a standard from which to estimate the deviations of a given individual.—*P. P. Calvert.*

578. **DEMPSTER, W. T. The growth of larvae of Ambystoma maculatum under natural conditions.** *Biol. Bull. Marine Biol. Lab.* [*Woods Hole*] 58(2): 182-192. 1930.—Growth in weight of embryonic and larval *Ambystoma maculatum* from the time that eggs are deposited to the period of metamorphosis may be expressed as a single sigmoid curve. The length curve, except for a short period before hatching when the embryonic axis is curved, is likewise sigmoid. The *Ambystoma* population of a pond is quite homogeneous, the specimens metamorphosing at approximately the same time. Under

natural conditions the relation between weight and length from year to year seems to be constant during the stages before feeding. Later the relationships are variable because of feeding differences. Growth to the time of food ingestion is associated with imbibition of water. Later growth to the time of emergence of the salamanders is correlated with a process in which the percentage of water content decreases. During this period the inorganic constituents gradually increase.—*Author's summary.*

579. **ERNST, MAX. Der aseptische Gewebszerfall. Anatomische und experimentelle Untersuchungen unter Einbeziehung des Parabioseverfahrens. [Aseptic tissue-disintegration. Anatomical and experimental investigation by application of the parabiosis-method.]** *Deutsche Zeitschr. Chir.* 221(1/2): 74-92. 1929.—Normal cell breakdown, as it occurs from the instant of fertilization of the egg-cell until death, exerts no appreciable influence on the body. Investigations on over 1000 vertebrate embryos, and parabiosis experiments, gave no support to the assumption that disintegration products exert a growth-promoting influence on cells and tissues. Any increase of cell disintegration in the organism leads to abnormal flushing of protein disintegration products in the circulation, where they invoke an antigen-antibody reaction. The action on the body as a whole varies. After moderately increased cell disintegration, there are found microscopically hyalin deposits and multiplication of cells of the reticulo-endothelial system. If, however, very great quantities of these products suddenly enter the body, death follows promptly. Microscopically no changes are found, as the time is too short for their development. Death of a parabiotic animal results from protein disintegration products arising from normal cell breakdown of the paired animal; these lead to slowly progressive poisoning.—*M. Ernst (transl. by W. Browning).*

580. **GRAY, J. The kinetics of growth.** *British Jour. Exp. Biol.* 6(3): 248-274. 7 fig. 1929.—After discussing the validity of growth formulae, the author deals with the laws of unorganized growth as exemplified by unicellular organisms (e.g., cultures of bacteria and of yeast). As long as the external environment is maintained at a satisfactory and constant level, each cell of a homogeneous population multiplies at a rate which is constant within definable limits; there is no indication that the powers of growth are declining with the age of the culture. The essential features exhibited by a growing culture of bacteria are also seen in metazoon cells grown *in vitro,* although the requisite conditions for growth are more specific, one of these being the concentration of embryonic extract present in the medium. In the growth of a metazoon body the conditions are extremely complex. It is difficult to express the growth rate of the whole organism in terms of rational units, since the units which compose the body form a very heterogeneous system in which the rate of growth of one organ is dependent on that of others. It is therefore improbable that the behavior of such a system should conform to that of a simple chemical system.—*F. A. E. Crew.*

581. **HAMMETT, FREDERICK S., and DOROTHY WALL SMITH. The influence of sulfhydryl and sulfoxide on gross regeneration in the hermit crab (Pagurus longicarpus).** *Protoplasma* 13: 261-267. 1931.—The right front claw of hermit crabs was removed and thereafter allowed to regenerate in cultures of pure fresh sea-water, sea-water plus *p*-thiocresol, cresol, di-phenyl sulfoxide, and sodium benzene sulfonate. The sulfhydryl group accelerated regeneration and differentiation as compared with the growth taking place in the control cultures containing sea-water alone, or sea-water plus an equivalent amount of cresol. Sulfoxide retarded regeneration and differentiation as compared with the growth occurring in sea-water and in sea-water plus sulfonate controls. It is concluded that the chemical equilibrium regulative of growth by increase in cell number is a determinant of regeneration rate as it is in all other types of cell multiplication so far studied.—*F. S. Hammett.*

582. **HAMMETT, FREDERICK S. The proliferative reaction of the skin to sulfhydryl and its biological significance.** *Protoplasma* 13: 331-347. 1931.—The midscapular region of mice was rubbed with benzyl mercaptan in mineral oil and in alcohol. This surface application of the sulfhydryl group caused a marked proliferation of the epithelium and of the connective tissue of the corium. This resulted in an enhancement of differentiation so that the skin of the mouse took on a complexity of structure analogous to that of the higher animal man. In some cases the proliferation of epithelium predominated, in others the connective tissue. These differences are obviously constitutionally determined and have their analogs in humans, some of whom develop epithelial overgrowths or carcinomas while others develop connective tissue malignancies or sarcomas. In cases where the sulfhydryl action was accompanied by alcohol irritation there occurred overgrowths, both upwards and downwards.—*F. S. Hammett.*

583. **KOTSOVSKY, D. La signification du sommeil et de la croissance pour la biologie de la vieillesse.** *Riv. Biologia [Milano]* II(3/4): 360-364. 1929.—The author presents 3 series of observations during 6 mo. on the growth and the duration of sleep of 5 dogs from the same litter and believes that there is a definite relation between the processes of growth and sleep. He believes that the higher centers of psychic activity are responsible for the onset of old age and not the various endocrine glands.—*D. Kotsovsky (transl. by S. Thayer).*

584. **KRONTOWSKI, A. A. Quantitative Untersuchungen über die Wirkung des Diphtherietoxins auf das Wachstum und den Stoffwechsel der Gewebskulturen.** *Zentralbl. Bakt. Abt. I. Orig.* 117(6): 328-343. 7 fig. 1930.—Each of 2 cultures of chick embryo heart were divided and ½ of each placed in a medium containing diphtheria toxin (1: 100,000 and 1: 1,000,000 respectively) while the other ½ of each was placed on ordinary medium as a control. Measurements of growth showed a distinct inhibitory effect exercised by the toxin. Tissues grown in a lower (solid) layer of medium in 6 Carrel flasks had diphtheria toxin in the same dilutions introduced in the upper (fluid) layer in 4 of the flasks; a similar quantitative inhibition of growth was observed in the 4 flasks containing toxin. A culture the growth of which had been completely stopped by the 4-day action of diphtheria toxin was restored, by repeated passage to normal media, to a growth equal to that of the control, showing that the injury inflicted by diphtheria toxin is reversible. The metabolism of the toxin-treated cultures showed marked inhibition of sugar consumption and lactic acid formation as compared with normal metabolism.—*Based on author's summary (transl.).*

585. **LEUPOLD, ERNST. Der Einfluss des örtlichen Stoffwechsels auf die reaktiven Vorgänge bei der Wundheilung und Regeneration.** *Beitr. Path. Anat. u. Allg. Path.* 81(1): 45-100. 11 fig. 1928.—A small wound was made in the skin of the white mouse between the shoulder blades. Inorganic and organic substances concerned in metabolism were injected in the neighborhood of the wound, to study the question of relationship between the cellular reaction in regenerative processes of wound repair and local metabolic changes. These were demonstrated. The inorganic salts, especially the ions, act as a stimuli which produce growth. Among the cations the Na ion is especially active; with the anions, it is important whether there is a strong or a weak acidity. A typical growth of epithelial cells appears at a p_H of 8 to 10. There is an increase in connective tissue proliferation in anisoionic and anisotonic solutions. Proteins, glycogen and dextrose apparently are effective only in connection with acids. During regeneration and following the injection of fatty tissues, there are growths of glands resembling lactating breast tissue. From the endothelium of the tissue spaces there are structures developed resembling endotheliomata or

cylindromata. These also develop as the result of changed metabolism.—*E. Leupold (transl. by R. H. Major)*.

586. MORGAN, EDWARD J. Xanthine oxidase in the avian embryo. *Biochem. Jour.* 24(2): 410-414. 1930.—The kidney of the embryo chick contained xanthine oxidase on the 15th day and the pancreas contained it on the 19th day. The liver did not contain it until the 21st day.—*E. B. Carmichael.*

587. NYLIN, GUSTAV. Periodical variations in growth, standard metabolism and oxygen capacity of the blood in children. *Acta Med. Scandinavian Suppl.* 31: 1-207. 1929.—The author has investigated the growth of 809 children from Spånga elementary schools and 1,094 children from elementary schools in Spånga and Stockholm during the months of January, March, May, September, November and again in January. The children were measured and weighed totally stripped. For the purpose a special measuring apparatus was constructed. The error of measurement was calculated statistically by repeated determinations on the same individual in a group of children; this was found in an individual measurement to be ± 1.7 mm. Each child was measured at almost exactly the same hour and by the same examiner. The height varies during different times of the day. Measured during the first 4 hrs. after rising in the morning the height diminishes by 2 mm. during the 1st hour, 4 mm. during the 2nd and by 1 mm. during the 3rd hour; during the 4th hour no diminution was in evidence. Simultaneously with measuring the height of the children their weights were taken. On 8 quite healthy and normally developed children at the age of 6 years, standard metabolism tests were carried out every day at 8 o'clock in the morning during the months of July, September, November, January, March, May and July on an empty stomach. The O consumption was determined during 15 min. by a Krogh's respirometer, the results of the last 10 min. only being used for calculations. During the test period each child was measured and tested for height, weight, hemoglobin, temperature and pulse frequency. Two groups of boys were selected with body heights of 120-140 cm. and irradiated every other day by means of 2 Jesionek lamps and 4 Soolux lamps. The first group comprised 23 boys, irradiated from November 11 till January 20 inclusive, and the second group, 22 boys, irradiated January 23–March 20 inclusive. In total each group was irradiated about 7 hours. Heights and weights were taken of all the children on 3 occasions, in November, January and March. This was done on exactly the same minute on all occasions and for each child 3 readings of the body height were taken on each occasion. The investigations show that during a calendar year there is a marked periodicity in increase of both height and weight, which presents similarities, (a) within various age-groups, (b) for elementary school children, both boys and girls, (c) for both the investigation years 1926-1927 and 1928-1929, both in Stockholm and at Spånga. As a rule, height-increases show one minimum in September-November and another in January-March, one maximum in March-May and another in November-January. During the summer, height-increase is somewhat pronounced. Weight-increase shows two minima coincident with the two maxima in height-increase, and two maxima coincident with the two minima in height-increase. Weight-increase is slight from May-August, rising gradually during the following months to a maximum in September-November, as mentioned above. Weight-increase was more strongly marked during the summer of 1928 than during the summer of the previous year. Reckoned in periods of 4 mos., thus January-May, May-September, and September-January, it is shown that height-increase is greatest during the first 4 mos. of the year, decreases during the next period of 4 mos.—the intermediate period—to decrease further to a minimum during the last 4 mos. of the year. Apart from this exogenous periodicity in both height-increase and weight-increase which thus generally appears in certain fixed months of the year, there is an endogenous periodicity in that a great increase in height or weight in one period is always followed by a slight increase in height or weight in the following period, as is indicated by the fact that the correlation coefficient between the increase in the successive periods is negative. The experimental investigation as to the influence of light on growth showed that light baths stimulate height-increase during the period when irradiation is being given, but retard the weight-increase. In the case of the 8 pre-school children, standard metabolism shows a periodicity during the year, intimately connected with height-increase, so that during the maxima in height-increases, particularly during November-January, there is a maximum in standard metabolism. The somewhat great height-increase during March-May is not followed by an increase in standard metabolism, but this follows later, i.e., during May-July, during which period height-increase is also strongly marked. During both the minimum periods of height-increase, namely September-November and January-March, standard metabolism shows a minimum. The O capacity of the blood shows a variation during the year, so that a minimum presents itself in the 8 preschool children in January. From January it increases during the following mos. to a maximum at the end of May. In the case of 6 school children, the O capacity of the blood shows a similar variation during the year, in that a minimum appears in February, increasing successively during the following mos. to a maximum in August.—*G. Nylin.*

588. PARKES, A. S. Note on the growth of young mice suckled by rats. *Ann. Appl. Biol.* 16(1): 171-173. 1929.—"Normal growth in mice is inversely proportional to the number suckling the mother. When receiving unlimited food (when suckling a rat) the growth is so rapid that the bones cannot support the body."—*R. E. Stanton.*

589. REITER, HANS. Untersuchungen über elektive Ernährung und Wachstum. *Med. Klin.* 25(7): 267-269. 1929.—In rat experiments the author shows that by addition of liver (Hepatopson) prepared by drying in a vacuum, or testicle substance prepared in a like manner, to a control diet deficient in vitamin A, marked improvement in growth took place. Testicle substance was effective only in males. Addition of 2 gm. of Hepatopson quickly cured the eye disease and produced a gain in weight.—*R. G. Turner.*

590. ROBB, R. CUMMING. On the nature of hereditary size limitations. I. Body growth in giant and pigmy rabbits. *British Jour. Exp. Biol.* 6(3): 293-310. 6 fig. 1929.—The Flemish is the largest, the Polish the smallest, breed of rabbits. At birth the former are twice as large as the latter. This cannot be explained by differences in length of gestation (31 and 30 days respectively) and it may be assumed that a factor (or factors) exists which depresses the rate of growth of the small race, or accelerates that of the large. The specific growth rate from birth to onset of puberty is identical in the 2 breeds, but at 4 mos. the Polish and hybrids show a retardation of growth. The lesser size of the Polish can be ascribed to the action of 2 factors, one operating in utero, the other at a more advanced age. Flemish × Polish hybrids (either way) are at birth almost as large as purebred Flemish; in their adult size they are intermediate. But their growth curve does not lie midway between those of the parents. Prior to its inflection at the 4th mo. of post-natal life it is similar in magnitude to that of the Flemish; thereafter the rapid retardation resembles that of the Polish. Further, the values of the 2 velocity constants in the hybrids are not both intermediate, one of them being practically identical with the value of the Polish. This would indicate a segregation of unit characters. There occur 2 deviations of observed values from the theoretical, the 1st associated with birth, the 2nd with an endocrine reorganization involving thymus, testes, and adrenal cortex. These 2 retardations divide the growth curves into 3 cycles. In the light of this observa-

tion, the assumption of autocatalyzed master reactions is superfluous.—*F. A. E. Crew.*

591. ROBB, R. CUMMING. On the nature of hereditary size limitation. II. The growth of parts in relation to the whole. *British Jour. Exp. Biol.* 6(4): 311-324. 1929.—The relative weights of pituitary, thyroid, thymus and adrenals in the rabbit throughout post-natal life may be expressed by the equation $y=ax^k+c$. In giant and pigmy rabbits, the ultimate proportions of body parts are not the same, but at any given body weight corresponding tissues in the 2 groups tend to exhibit an identical relation to total body mass. The adrenals and testes of Polish rabbits are relatively much larger than those of Flemish. But in each case the growth of the adrenal approximates to a constant power function of body weight. Moreover, in these 2 groups and in their hybrids, the growth of the testes adheres to a simple association with adrenal weight which is identical for each. These data suggest that in a growing organism the magnitude of any part tends to be a specific function of the total body mass or of some portion so related to the whole. These correlations may be explained by surmising that each tissue is in equilibrium with the internal milieu with regard to the distribution of nutrient growth essentials; that in each case the equilibrium point would tend to remain constant; and that the relative enlargement of each tissue is limited by the excess of the equilibrium value over the katabolic expenditure. According to the above hypothesis of organ growth, the equation $y=ax^k+c$ may possess a physical significance. Eight types of growth relationships may thus exist, differing because of the apparent inactivity of one or more constants in this equation.—*Author's summary.*

592. ROMANOFF, ALEXIS L., and ANASTASIA J. ROMANOFF. Changes in pH of albumen and yolk in the course of embryonic development under natural and artificial incubation. *Biol. Bull. Marine Biol. Lab.* 57 (5): 300-306. 3 fig. 1929.—In the course of embryonic development the pH values of albumen of the hen's egg rapidly change towards alkalinity and back during the 1st week of incubation, reaching the highest point of alkalinity at about 48 hrs. For the rest of the incubation period it gradually moves towards neutrality. The pH of egg yolk gradually changes throughout the incubation period from acid to alkaline, with a sudden temporary drop at the 16th day.—*Authors' summary.*

593. SCHLEISSNER, FELIX. Somatogramme. [Body growth.] *Monatsschr. Kinderheilk.* 43(5): 484-493. 1929.—This is a method for the graphic representation of the height-weight ratio at different age levels. As a basis for the graph, the von Pirquet tables of growth are used, the figures for age, weight, and height being placed in parallel, vertical columns. The figures for an individual are then connected by straight lines, and the resulting curves for the different age levels often show a remarkable parallelism. By this means it can be shown that the curves plotted from children of the poorer classes (as for example, those in orphan homes) fall considerably below the average, whereas those from patients in private practice are above. It seems quite possible that a definite prediction as to ultimate growth in body length can be made even as early as 2 years of age, provided the child's growth has not been influenced by illness or endocrine disturbance.—*T. C. Hempelmann.*

594. SCHMALHAUSEN, I. Die Bestimmung des spezifischen Wachstumsertrages als vergleichende Untersuchungsmethode. [Determination of specific growth rate.] *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 115(4/5): 678-692. 1 fig. 1929.—By specific growth rate is meant the total increase during a certain period of time or during the whole period of growth. The value of the specific growth rate is independent of the size of the initial mass of an organism. Within each growth period the specific growth rate of an organism appears as a simple logarithmic function of time and can very easily be calculated according to the following formula: $u=k\ln(t^2/t^1)$ where k indicates the size of the growth constant. In different vertebrates the specific growth rate has approximately the same value, becoming as high as 20 or 25 in the larger animals while in the smaller animals it appears to be only about half that. The initial and final size of an organism stand in a simple relation to the specific growth rate which is expressed very exactly for any desired period of time by the following formula: $v=mc^k$. The final size appears therefore as an exponential function of the specific growth rate and is directly proportional to the initial mass.—*Author's summary (transl. by J. L. Lush).*

595. SMITH, ARTHUR H., and WILLIAM E. ANDERSON. Lactation vs. improved growth in stock albino rats. *Science* 70(1804): 98-99. 1929.—Beginning rather uniformly in the 5th generation, failure in lactation was observed in rats given a ration consisting of whole ground wheat 2/3, dried whole milk 1/3, $CaCO_3$ and NaCl each 1% of the weight of the wheat, lettuce and dried yeast. This diet is satisfactory for growth after weaning.—*A. H. Smith.*

596. STEFKO, W. H. Zur Lehre über den dystrophischen Infantilismus. *Zeitschr. Ges. Anat. Abt. II. Zeitschr. Konstitutionsl.* 14(5): 610-624. 8 fig. 1929.—By "dystrophic infantilism" the author means delayed puberty associated with retarded growth and poor physical development. It is found most frequently in those Russian provinces where famine was most widespread. In 1927 it was observed in about 25% of 2300 young people between 14 and 17 years old; at the time of writing the proportion was 8 to 14%. Anthropometric data are tabulated for 20 infantile dystrophies; the histologic findings in the sexual and endocrine glands in 2 necropsies are reported on persons 19 and 21 years old respectively. No mature spermatozoa were present. Hypoplasia of the thyroid and medullary tissue of the suprarenals was characteristic. According to Stefko's view, dystrophic infantilism is the result of unfavorable and insufficient nutrition acting on a congenitally deficient constitution of the sexual glands; the sexual inferiority, however, might never have become apparent if not brought to light by the unfavorable external conditions.

597. VIVARIO, R., et J. LECLOUX. Sur la formation de "glutathion" au cours de la croissance. *Arch. Internat. Physiol.* 32(1): 1-14. 1930.—Previous researches of other authors have shown that in the fertilized hen's egg glutathione is at its maximum while the cells are multiplying without differentiation. The object of the present research was to trace the origin of glutathione, which might ultimately throw some light on cancer metabolism. No glutathione was discovered in dry peas; hydration of the peas induced formation of glutathione, which in about 4-6 hrs. reached a level that was maintained to the end of the experiments (48 hrs.); heat (38°) hastened its formation. The process went on more rapidly and a greater quantity of glutathione was found if pea flour rather than whole peas was used, apparently because the water was more quickly absorbed. The authors conclude that the formation of glutathione, under the influence of the penetration of water into the seed, is one of the factors of germination.

598. ZABINSKI, J. The growth of blackbeetles and of cockroaches on artificial and on incomplete diets. I. *British Jour. Exp. Biol.* 6(4): 360-386. 1 pl. 10 fig. 1929.—The normal development of blackbeetle lasts about 12 mos., that of the cockroach about 12 weeks. The animals were given different diets to examine the effect of variation of nitrogenous matter in different forms upon growth. Three diets were used which varied in their N-constituents, while the N-content of all was identical. All diets were avitaminosed by heating. On a diet containing 15% glycocoll or one containing 20% gelatine, the animals grew normally for a period equalling ⅓ to ½ of the total post-embryonic cycle, after which there began a progressive retardation of growth. The maximum weight was never more than ⅓ the normal. Animals exhibited typical signs of avitaminosis. On a diet containing 18% ovalbumin, initial growth was as rapid. But death followed abruptly before the end of the 4th moult and there were no signs of avitaminosis. Addi-

tion of vitamine B to the above diets gave negative results. Next animals were fed on diets with varying N-content. A diet deficient in N was found to cause a marked retardation of growth, the growth curve showing a slow increase without the abrupt rise and fall as found above. Diets containing protein alone caused death within a short time, without previous increase in weight. A diet containing ammonium sulphate as the sole source of N led to death within 7-10 days. When fed on an exclusively carbohydrate diet, the animals exhibited great resistance and arrested growth. A change to a diet containing N led to a resumption of normal growth, even after a prolonged arrest.—*F. A. E. Crew.*

VITAMINES

599. **ASKEW, F. A., R. B. BOURDILLON, H. M. BRUCE, R. G. C. JENKINS, and T. A. WEBSTER. The distillation of vitamin D.** *Proc. Roy. Soc.* [*London*] *B* 107(748): 76-90. 5 fig. 1930.—A method is described for the partial separation of the irradiation products of ergosterol, by distillation and fractional condensation in a high vacuum. By double distillation, followed by crystallisation from aqueous alcohol, a crystalline product has been obtained, showing high antirachitic power, and a melting point of 113° to 115° C. It is not suggested that these crystals are pure vitamin D. They may consist of an inactive substance contaminated with an extremely active vitamin, or of crystalline vitamin forming mixed crystals with an inactive substance. It is possible, on the other hand, that several antirachitic substances are formed by the irradiation of ergosterol, and that the crystals are a relatively pure specimen of one of these substances. Some evidence is given as to the degree of efficiency of the process of fractional condensation in a high vacuum.—*Authors' summary.*

600. **ASKEW, F. A., R. B. BOURDILLON, H. M. BRUCE, R. G. C. JENKINS, and T. A. WEBSTER. The effects of further irradiation of the radiation products of ergosterol.** *Proc. Roy. Soc.* [*London*] *B* 107(748): 91-100. 3 fig. 1930.—Resins prepared by the irradiation of ergosterol and the subsequent removal of the unchanged ergosterol show absorption maxima near 280mμ. This maximum was previously ascribed to vitamin D. Resins prepared by irradiation with light of wavelength greater than 280 mμ have this maximum considerably increased when re-irradiated with shorter waves only. This increase in absorption is accompanied by a fall in antirachitic activity, thus showing that the substance responsible for the absorption at 280 mμ is not vitamin D. Some of the constituents of these resins have been partially separated: one of these is characterised by its extremely rapid destruction by light of wavelengths shorter than 280 mμ.—*F. A. Askew.*

601. **BATCHELDER, ESTHER LORD. The effect of successive diminutions of vitamin A in the food on the nutrition and vitality of albino rats.** 33p. Dissertation, Columbia Univ.; New York City, 1929.—Systematically graded intakes of vitamin A in the form of whole milk powder were fed to standardized albino rats during 8 weeks. The growth responses were compared with results of other investigations and were used in interpreting measurements of vitamin A in other food materials. Comparable lots of rats were fed vitamin A in the form of butter fat in doses of 0.5, 1.0, 2.0, 4.0, and 8.0% by weight of food ingested, the rest of the diets consisting of whole wheat, skimmed milk powder, table salt and Crisco to make a total of 8% fat. Rate of growth, body weight, reproduction, lactation, longevity, and the vigor of succeeding generations were used in judging the adequacy of the diets. The data illustrate the advantage of coordination of a series of criteria, rather than dependence on any one criterion, in the formation of a comprehensive judgment of nutritional need for and significance of vitamin A.—*E. L. Batchelder.*

602. **BAUER, WALTER, and ALEXANDER MARBLE. Preliminary note on the mode of action of irradiated ergosterol.** *New England Jour. Med.* 201(17): 809-911. 1929.—This was a study of the effect of irradiated ergosterol on the relative rate of restoration of bone trabeculae in the humerus of cats on high Ca diets, the trabeculae having been depleted by a previous low Ca diet free from vitamin D. The much greater increase in the number of trabeculae when irradiated ergosterol was administered is interpreted as indicating increased absorption of Ca from the gastrointestinal tract.—*L. S. Palmer.*

603. **BLUNT, KATHERINE, and RUTH COWAN, (foreword by MORRIS FISHBEIN). Ultraviolet light and vitamin D in nutrition.** 229p. 39 fig. Univ. Chicago Press: Chicago, 1930. Pr. $2.50.—The authors have culled the vitamin D literature for the most authoritative papers, including both laboratory and clinical investigations. They discuss problems of growth as related to skeletal development and review much of the work on Ca and P metabolism, particularly in relation to rickets. No definite conclusions are drawn from the literature. The book is a concise review of the subject for teachers of nutrition, clinicians and laboratory workers.—*R. G. Daggs.*

604. **BOURDILLON, R. B., R. G. C. JENKINS, and T. A. WEBSTER. The absorption spectrum of vitamin D.** *Nature* [*London*] 125(3156): 635. 1930.—Further study has demonstrated the incorrectness of the authors' view (in *Proc. Roy. Soc. B.* 104: 561. 1929. See *B. A.* 4(3): Entry 7658) that the substance in ergosterol, responsible for the high absorption at 280 mμ, is vitamin D. By use of light screens, and by irradiating ergosterol with light of λ greater than 280 mμ, then with that of 280 mμ or less, preparations (1) of high antirachitic potency and low absorptive power (as to light of 280 mμ) and (2) of low antirachitic potency and high absorptive power, were obtained. The intense maximum of absorption at 280 mμ in early stages of irradiation is not due to vitamin D. This agrees with the findings of Reerink and Van Wijk (*Biochem. Jour.* 23: 1294. 1924) and Windaus (*Nachr. Ges. Wiss. Göttingen,* 36-57. 1930).

605. **BROOKS, F. P., ROY F. ABERNETHY, and F. C. VILBRANDT. Preliminary study on the antirachitic properties of shrimp oil.** *Jour. Amer. Chem. Soc.* 52(12): 4940-4943. 1930.—It was found from the analysis of the blood and the bones that shrimp oil has properties akin to cod liver oil, tending to cure the rachitic rats. In the 1st series shrimp oil was as potent as cod liver oil. The 2nd series showed some curative action but less than with cod liver oil, probably due to increasing rancidity of the shrimp oil.—*Authors' summary.*

606. **CASTILLE, et E. RUPPOL. Sur l'activation photochimique de l'ergostérol.** *Bull. Acad. Roy. Méd. Belgique* 9(11): 799-821. 3 fig. 1929.—The ultraviolet absorption was measured by the method of V. Henri. The strong band (2600-3000 Å) is probably due to the ethylene linkages. The spectrum of ergosterol and of its acetate indicates that in the normal state it contains 3 ethylene linkages in conjugated positions united to a benzene ring. The alcoholic groups are close to the benzene ring. The irradiated specimen shows that ethlyene linkages are not joined to the benzene ring. Ergosterol in hexane and alcohol on irradiation undergoes an isomerization, in ether it undergoes isomerization plus oxidation, while in chloroform it undergoes isomerization plus chlorination.—*H. Kahler.*

607. **CHAKRABARTI, SACHINDRA NATH. Investigation on the products obtained by exposing oils and carbohydrates to sunlight in presence of air.** *Allahabad Univ. Studies* (*Sci. Sect.*) 6(2): 227-238. 1930.—It has been shown that if olive, mustard, cocoanut, mahua, castor, til, and linseed oils, butter and some carbohydrates are exposed to sunlight, and air is passed through them, peroxides are formed. These peroxides have been estimated by the amount of I liberated by them from an acid solution of KI. If the oils are only exposed to sunlight and air is not passed through them, the amount of peroxide formed is greatly decreased, due to the smaller amount of air which comes in contact with the oil surface. All these oil-peroxides have the property of oxidizing solutions of glucose when mixed

with them and kept at 40° C. for 18 hrs. The amount of this oxidation is dependent upon the availability of O from the peroxide. From experiments on pigeons with exposed and unexposed oils, Fe and sunlight, we have proved that sunlight is the best preventive for diseases like polyneuritis and beri-beri. Olive oil exposed to sunlight and air comes a close second, whereas Fe and unexposed oils are harmful to these pigeons.—*Author's summary.*

608. **COCCHERI, PIETRO. Influenza della ergosterina irradiata e delle vitamine idrosolubili sullo sviluppo delle larve di Bufo vulgaris. [Action of irradiated ergosterol and of water-soluble vitamins on development of larvae of B. vulgaris.]** *Biochim. e Terapia Sperim.* 17 (9): 372-378. 1 fig. 1930.—Overdoses of irradiated ergosterol were toxic; but were counteracted by administration of water-soluble vitamins.—*M. Comel.*

609. **COMEL, MARCELLO. Ergosterismo in cuccioli allattati dalla madre trattata con dosi eccessive di ergosterolo irradiato. [Ergosterism in puppies nursed by mothers treated with overdoses of irradiated ergosterol.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 738-740. 1930.—Administration of excessive doses of irradiated ergosterol to lactating dogs produces in the puppies the usual histological changes as well as functional symptoms (cachexia).—*M. Comel.*

610. **COMEL, MARCELLO. Ergosterolo e vitamina antirachitica. [Ergosterol and antirachitic vitamin.]** *Arch. Ist. Biochim. Ital.* 2(2): 286-306. 10 fig. 1930.—Irradiated ergosterol, when administered in overdoses to rats, rabbits and dogs, either per os or subcutaneously, while curing rickets, also develops a peculiar toxic syndrome, which varies with different preparations and with individual reactivity, the conditions of which are both equally unknown. The toxic complex of "ergosterism" is characterised by a peculiar atrophy of the parenchyma of the viscera, accompanied by Ca deposition, the former being observed even when non-irradiated ergosterol is administered in overdoses. The toxicity of irradiated ergosterol is an argument against its asserted identity with Vitamin D. Ergosterism may be elicited in human beings and doses much higher than the minimal efficient should be avoided.—*M. Comel.*

611. **COWGILL, GEORGE R., H. A. ROSENBERG, and J. ROGOFF. Studies in the physiology of vitamins. XV. Some observations of the effect of administration of the antineuritic and heat stable factors on the anorexia characteristic of lack of the vitamin B complex.** *Amer. Jour. Physiol.* 96(2): 372-376. 1931.—The anorexia that develops in dogs after about 3 wks.' subsistence on the casein III diet employed in the researches of the laboratory, is an expression of a lack of the antineuritic component of the vitamin B complex.—*Authors' summary.*

612. **DONATH, W. F. Eeen en ander omtrent de voedingswaarde van rijst en mais. [Nutritive value of rice and maize.]** [With English summary.] *Landbouw* 5(12): (1-54). 6 fig. 1929(1930).—This paper discusses the dietary deficiencies of rice and maize and the additions necessary to secure normal growth in rats, and describes the methods of preparing these grains for food, as practiced by the natives of India and Java. To prescribe a balanced diet, food values of locally available food-stuffs must be determined. Cassava, sweet potato, waloe leaves and tempe kedelle are briefly discussed.—*J. van de Erve.*

613. **DRUMMOND, J. C., and E. R. GUNTHER. Vitamin content of marine plankton.** *Nature* [*London*] 126 (3176): 398. 1930.—Vitamin A was found in phytoplankton, absent from zooplankton; vitamin D was absent or doubtfully present in phytoplankton, and present in small amounts (due perhaps to irradiation rather than to feeding on phytoplankton) in zooplankton.

614. **EDDY, WALTER H., E. F. KOHMAN, and NELLIE HALLIDAY. Vitamins in canned foods. VII. Effect of storage on vitamin value of canned spinach.** *Indust. & Eng. Chem.* 21(4): 347. 1929.—Little deterioration of vitamins C, A, or B, occurred in 3 years' storage.

615. **ELLINGER, PHILIPP. Die Beziehungen zwischen antirachitischer Wirksamkeit und Dielektrizitätskonstante von ultraviolett bestrahlten Cholesterinlösungen.** *Arch. Exp. Pathol. u. Pharmakol.* 122: 238-246. 2 fig. 1927.—To study the change of the dielectric constant of various oils or cholesterol during the radiation with ultra-violet light, the author constructed an audion bridge arrangement with special measuring condenser. Radiation was with the Hanau quartz mercury lamp. The dielectric constant of various oils and of cholesterol in alcohol or paraffin was increased by the ultra-violet radiation, but this effect did not occur when oxidation was excluded. Since this is not the case for the formation of vitamin D, these two effects do not seem to have a direct relation.—*O. Glasser.*

616. **FABRE, RENÉ, et HENRI SIMONNET. Étude physique et biologique du stérol dextrogyre isolé de la levure de bière.** *Jour. Pharm. et Chim.* 10(7): 289-291. 1 pl. 1929.—Ultraviolet irradiation of an ether solution of zymosterol for 45 min. in an inert atmosphere at low temperature caused no appreciable modification of the curve. Zymosterol obtained according to the technique of H. Penau and G. Tanret is not entirely devoid of activity after irradiation under the conditions indicated but to obtain the same potency, as verified by radiographic examination, it is necessary to use quantities of sterol at least 100 times greater than those of ergosterol. Some traces of ergosterol, still present in spite of all the care taken in the fractionation and not revealed by the optical test, might be sufficient to explain the biological efficiency of the irradiated zymosterol which we have studied.—*Excerpts* (*transl. by P. D. Strausbaugh*).

617. **FETTER, DOROTHY, and A. J. CARLSON. The vitamin A and D content of some margarines.** *Amer. Jour. Physiol.* 96(2): 257-264. 2 fig. 1931.—As tested for 23 wks. on 42 albino rats (including controls) the animal fat margarine churned in whole milk is equal to butter in vitamin A content. The margarine with cocoanut oil as the fat content is very deficient in vitamin A. As tested for 10 days in the cure of 40 rachitic rats the oleo-oil-lard-milk margarine studied is superior to butter in vitamin D content.

618. **FISCHER, EDOUARD. Sur l'origine des pigments carotinoïdes du foie des crustacés décapodes.** *Compt. Rend. Soc. Biol.* 97(33): 1459-1461. 1927.—The pigments are not synthesized but come from food.

619. **GÁL, G. Die Störung der Resorption bei Mangel an Vitamin B.** *Biochem. Zeitschr.* 225(4/6): 286-294. 1 fig. 1930.—Rats were starved for 24 hrs. and then given the nutriment in question by stomach-tube and Pravaz syringes. After an hr. the animals were killed and the contents of the alimentary canal determined. Data from 41 animals indicated that lack of vitamin B reduced glucose absorption by ¼ and protein absorption by ½; that when vitamin B had been supplied by yeast, absorption was normal. X-ray studies showed that the stomach was evacuated much more slowly in the rats on vitamin-B-free diet. Whether the retarded motility was the cause or the consequence of the lessened absorption was not determined.

620. **GULLAND, JOHN MASSON. The chemical constitution of the carotenoid pigments and the relation of carotene to vitamin-A. A review.** *Chem. & Indust.* 49 (41): 839-847. 2 graphs. 1930.

621. **GUNDERSON, F. L. Vitamin D and the antirachitic activation of foods by irradiation with ultraviolet light.** *Cereal Chem.* 7(5): 449-455. 3 fig. 1930.—A review with bibliography.

622. **HOYLE, JOHN CLIFFORD, and HARRY BUCKLAND. Further observations on the effects of large doses of irradiated ergosterol.** *Biochem. Jour.* 23(3): 558-565. 3 fig. 1929.—Half grown rats weighing 180 gm. consumed an average of 26.4 mgm. of irradiated ergosterol per animal per day for 45 days. This ergosterol was irradiated in an oily solution, and samples irradiated under similar conditions showed a potency of 1600 units per mgm. The effects of this overdosage of irradiated ergosterol were: an immediate loss of about

10% in weight after which they continued at about the same level, and an increase in the volume of urine excreted by 200-300%. Total urinary phosphate and chloride were not affected. The pH of the urine was not changed significantly, being only slightly higher in the experimental group. All the animals survived the experimental period and were then killed. Postmortem findings were: calcium phosphate calculi in the kidney, ureters or bladder of 9 of the 12 experimental animals, and some arteriosclerosis of the aorta in 4 of them.—*R. F. Light.*

623. **HUME, E. M., and I. SMEDLEY-MACLEAN. Some further notes on the relation of carotene to vitamin A.** *Lancet* 218(5554): 290-292. 1930.—The presence or absence of fat from the food of rats, on a diet devoid of vitamin A was not found to be a factor of importance in determining the biological activity of carotene as a source of vitamin A. The use of ethyl oleate as a solvent for carotene is most unsuitable, since the dissolved carotene is rapidly oxidised in it. This solvent has been used by workers who have reported that carotene is inactive as a source of vitamin A and its use would appear to be a sufficient explanation of their finding.—*E. M. Hume.*

624. **HUME, E. M., and H. HENDERSON SMITH. The value of foodstuffs for vitamin A.** *Lancet* 2(5599): 1362-1363. 1930.—In efforts to determine the minimal dose of carotene required to maintain life without promoting growth 2 rats were maintained for 28 days on 20 mgm. and 30 mgm., respectively, daily, of fresh spinach. The 20 mgm. was estimated (by Arnaud's figures) to contain about 0.003 mgm. of carotene. Minimal doses were, for: spinach, 20 mgm. or less; cabbage, more than 20 but less than 80 mgm.; butter, 28 mgm. or less. The number of experimental animals used was too small to be conclusive, but the authors believe that with 3 or 4 animals a difference of 50% in doses can be detected. They suggest that a "biological technique based on maintenance of the rat rather than growth" can be used with fewer animals. Carotene might be used as a standard after determining the chemical and physical constants to be required of the standard carotene.

625. **IRWIN, MARGARET HOUSE, A. E. BRANDT, and P. MABEL NELSON. Applications of statistical method to the data of vitamin feeding experiments.** *Jour. Biol. Chem.* 88(2): 449-470. 1930.—1. The percent effect of measured variables. A statistical study of the data of 929 vitamin A and B feeding tests was made with a view to determining the factors responsible for the variations in the weight gains of the rats used. A comparison of the mean initial weights, days to depletion, final weights, and gains, of rats fed different basal diets free of vitamin A is reported. A similar comparison is given for rats fed different diets free of vitamin B. Correlations between the factors initial weight, total food intake, and gain in weight are given for both vitamin A and B test animals. The percent effect of the measured variables upon the gain in weight was calculated from the partial regression coefficients. The total basal diet ingested was found to be the factor having the greatest influence upon the growth response. 2. How many animals per experimental lot? The factors, initial weight, days on experiment, and total basal diet ingested, were used as the independent variables and total gain as the dependent variable in calculating multiple correlation coefficients and regression equations for 349 vitamin A test rats and 330 vitamin B test rats. Using the standard error of estimate to represent the variability of the animals and the criterion $MD/\sigma_{MD}=3$ as indicative of significance, an estimate of the mean difference in weight gains and number of animals per experimental lot necessary to obtain results of statistical significance in vitamin testing was calculated. Tables of the mean differences and the number of animals per lot to be used in routine vitamin A and B testing in the Iowa State College laboratory are given.—*M. H. Irwin.*

626. **JONES, D. BREESE, J. C. MURPHY, and E. M. NELSON. Biological values of certain types of sea food. II. Vitamins in oysters (Ostrea virginica).** *Indus. & Eng. Chem.* 20(2): 205-210. 1928.—Fresh Chesapeake oysters were ground in a frozen condition to a homogeneous consistency, and preserved in this state throughout the period of experimentation. Experiments with albino rats showed that oysters are a good source of vitamins A, B, and D. Two grams (0.32 gm. on a dry basis) of oysters furnished sufficient vitamin A to cure rats of xerophthalmia. Tests made by the curative method showed that 3.5 gm. (0.56 gm. dry basis) of oysters contained nearly enough vitamin B to supply the needs of young rats. For long-continued normal growth, however, a little more than 5 gm. (0.8 gm. dry basis) was required. Five grams of oysters given to rachitic rats daily for 10 days induced slight calcification of the long bones, comparable in degree with that produced in the same length of time by 4 mgm. of good cod-liver oil. The same daily quantity of oysters induced about half calcification in 15 days and complete calcification of the rachitic metaphyses in 20 days. Oysters were found deficient in the factor required for reproduction and rearing of young. Dehydration at 40° C. under reduced pressure (10 to 15 mm.) was found to inactivate to a great extent vitamins A and B in oysters. —(*Courtesy Industrial & Engineering Chemistry.*)

627. **JONES, D. BREESE, E. M. NELSON, and J. C. MURPHY (with the cooperation of J. P. DEVINE). Biological values of certain types of sea foods. III. Vitamins in clams.** *Indust. & Eng. Chem.* 20(6): 648-652. 1928.—Feeding experiments with albino rats showed that clams are a good source of vitamins A and D. Two species of clams were used, *Venus mercenaria,* commonly known as "hard-shell clams" or "quahaugs," and *Mya arenaria,* commonly called "soft-shell clams." Both species contain little, if any, vitamin B. Soft-shell clams were found to be a somewhat better source of vitamin A. No difference was observed with respect to vitamin D. Five grams daily of soft-shell clams, equivalent to 1 gm. of dry material, are sufficient for the cure and prevention of xerophthalmia. Somewhat more of hard-shell clams is required. Five grams of either species given daily to rachitic rats induced complete calcification in the small bones in 15 days. The rate of calcification was not appreciably influenced by the ash constituents of the clam. Compared with oysters, which are rich in vitamin B, clams are practically devoid of this vitamin. As a source of vitamin A clams are somewhat inferior to oysters, but they have more vitamin D, and are a better source of the factor, or factors, essential for reproduction and rearing of young.—(*Courtesy Industrial & Engineering Chemistry.*)

628. **KAWAI, K. Pharmakognostische Studien über den Lebertran des Japanischen Dorsches ("Tara"). [Pharmacognostic studies of the liver oil of the Japanese haddock.]** *Jour. Pharmaceut. Soc. Japan* 49(7): Japanese orig., 708-729; German summary, 108-109. 1929. —In the present Japanese Pharmacopoeia (Pharm. Jap. IV), *Gadus macrocephalus* Tilesius and *Pollachius Brandti* Jordan & Snyder are specified as sources of liver oil. In comparison with the former, an oil prepared from the livers of the "Sukesodara" or "Suketo" (scientific name in doubt) is by far the stronger. There are great differences in the vitamin A content of the oil, depending on the time of the year of the catch. The oil from male or female fish at the time of breeding is most efficient, the livers at that time showing the smallest amount of oil. The rat-growth method and the colorimetric test for vitamin A agreed well with each other.—*Author's summary (transl. by C. C. Plitt).*

629. **KOHMAN, E. F., W. H. EDDY, and NELLIE HALLIDAY. Vitamins in canned foods. VI. Strawberries.** *Indust. & Eng. Chem.* 20(2): 202-204. 1928.—Strawberries are a rich source of vitamin C, similar to tomatoes in this respect. The daily feeding required for protection against scurvy and normal growth of the guinea pig is between 2 and 3 gm. Commercially canned

strawberries considerably over a year after canning have a vitamin C content similar to that of raw strawberries. Since strawberries contain considerable O, it is indicated that the exhaust plays an important part in making it possible to can them with no apparent loss in vitamin C. Strawberries are not highly endowed with vitamin A, being only 1/40 as rich in it as tomatoes. Strawberries are about ¼ as rich in vitamin B as tomatoes.—*Authors' conclusions.*

630. **KOHMAN, E. F., W. H. EDDY, and CELIA ZALL. Vitamins in canned foods. IX. Tomato products.** *Indust. & Eng. Chem.* 22(9): 1015-1017. 1930.—A review of previous work upon the vitamin content of tomatoes shows that the results vary largely with the methods of treatment. This study contrasts the vitamin content of whole tomatoes canned by the usual commercial process with that of tomato pulp and juice, prepared by methods analogous to those in trade use. Vitamin A retained its potency after concentration under vacuum for periods of 20 min., 2½ hrs., or 4 hrs., and after heating in open vessels, but filtration with celite to remove the pulp destroyed this vitamin. Vitamin B was likewise destroyed by this filtration; heating to 155° F. in open buckets also destroyed it. Vitamin C was destroyed partially or completely by beating air into the juice as in the commercial preparation of tomato pulp. The high antiscorbutic potency of the canned whole tomatoes was in contrast to the other preparations. If the material was heated while air was bubbled in, destruction of Vitamin C did not take place, suggesting that steam acts as a protective envelope.—*M. Fay.*

631. **KOLLATH, WERNER. Biologische Bedeutung wasserlöslicher, pflanzlicher Phosphatide; ihre Wirkung auf das Wachstum von Bakterien und höheren Organismen und ihre Beziehungen zum Vitaminproblem.** *Jahresber. 101, Schlesisch. Ges. Vaterländ. Cultur. Med. Sekt.* Pt. 2. 1928: 42-52. 1929; also in *Med. Klinik* 24 (20): 778-781. 1928.—Water-soluble plant phosphatides obtained by extracting sterilized plant substances hastened the appearance of certain growth forms in diphtheria bacillae. These phosphatides may also be necessary for the formation of "Riesenwachstum" by influenza bacillae. In pigeons on a deficient diet resulting in beriberi, the administration of these phosphatide extracts greatly extended the time before the appearance of the symptoms although these were not prevented. In mice the extracts appeared to increase the storage of fat and P and acted as a growth promoting substance.—*C. M. Conrad.*

632. **MARCO, R. de. Sulla possibilità di rilevare i primi sintomi di scorbuto sperimentale e di seguirne l'evoluzione nella cavia. [Possibility of observing the first symptoms of experimental scurvy and their development in guinea pig.].** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 712-715. 1930.

633. **McCARRISON, R. The influence of irrigation on the nutritive value of rice.** *Indian Jour. Med. Res.* 15(4): 915-920. 1928.—Rats were fed a basic diet to which was added 1 gm. of whole rice raised under irrigation or 1 gm. of whole rice raised on dry land. The increase in body weight was markedly better in the group on the dry crop rice, though the food consumption was about the same. The author suggests that the difference is due to vitamin B content. Since beri-beri is prevalent in the northeast coast of the Madras Presidency where irrigation is used and is rare on the west coast where the dry crop method is employed, the suggestion seems logical.—*M. Fay.*

634. **MELLANBY, MAY. Periodontal disease in dogs (experimental gingivitis and "pyorrhoea").** *Proc. Roy. Soc. Med.* 23(11): 1503-1510. 4 fig. 1930.—Periodontal disease was produced or prevented in 30 or more experiments on dogs. Vitamin A deficiency is largely responsible for the overgrowth and abnormality of the periodontal epithelium and the corium. Vitamin D deficiency is responsible for defects in the hard periodontal tissues (alveolar bone, lamina dura, etc.). A deficiency of vitamins A and D during early life is of much greater significance than the same deficiency after the periodontal tissues are developed. Thus a defective diet during growth followed by a complete diet in maturity is more likely to lead to periodontal disease than a complete diet during development and a defective one during maturity. This may account for the presence of periodontal abnormalities in a human mouth where there is little or no caries, a condition which would be explained by the consumption of a diet poor in vitamin A but rich in D during development and eruption of the permanent teeth, but containing a liberal supply of both vitamins in later life. The addition of fat-soluble vitamin D to a diet checks the onset of dental caries even when the structure of the teeth is poor. In the experiments here discussed (a) injury to the gingival margin tends to induce local periodontal disease; (b) where tartar and dirt accumulate, periodontal disease is usually more emphasized, but which is cause and which effect it is impossible to say. Both tartar and periodontal disease are possibly produced by the same dietetic defects. The fact that two dietetic deficiencies may be concerned in the etiology of this disease, namely, deficiencies of vitamins A and D, seems to throw light on one of the controversies as to whether the pathological changes of the soft tissues precede the bony changes or vice versa. It is probable that either may occur first on the above hypothesis, although, as a practical fact of dietetics in England, a deficiency of A usually involves also a deficiency of D and vice versa.

635. **MORGAN, AGNES FAY, and ANNA FIELD. Vitamins in dried fruits. 2. The effect of drying and of sulfur dioxide upon the vitamin A content of fruits.** *Jour. Biol. Chem.* 88(1): 9-25. 1930.—The vitamin A content of frozen fresh and variously dried samples of peaches, prunes, and apricots was determined by uniform biological technique. The sulfured dehydrated fruit in all cases appeared to retain the largest proportion of the vitamin, but this retention was not directly related to the amount of SO_2 in the fruit. Of the unsulfured fruit, the sun-dried specimens of prunes and peaches showed better retention of vitamin A than did the corresponding unsulfured dehydrated products. Lye dipping of the dried prunes seemed to exert no effect upon vitamin A retention. The amount of destruction of vitamin A produced by comparable methods of preservation varied widely in the 3 fruits. The vitamin A of peaches seems little affected by any of the drying processes, 86-100% being retained in all cases. The vitamin A of prunes is more labile, 24-91% being retained, and that of apricots still more easily affected, only 16-51% of the fresh fruit value being present in the dried preparations. However, the dried apricots which had lost the greatest proportions of their fresh fruit vitamin A content were still absolutely richer in this vitamin than the best of the peach and prune products. Differences in amounts and kinds of oxidative catalysts present in the fruits are thought to account for these variations. Storage of both sulfured and unsulfured apricots and prunes at 0° for more than a year brought about no detectable loss of vitamin A content. The vitamin A content of 2 varieties of yellow peaches, of prunes, and of apricots is shown to be relatively large, that of the apricots comparing favorably with the best figures reported for spinach, egg yolk, or butter. The peaches and prunes had less vitamin A than the apricots but as much or more than tomatoes, bananas, or lettuce.—*Authors' summary.*

636. **NARAYANAN, B. T., and J. C. DRUMMOND. The concentration of vitamin B_2.** *Biochem. Jour.* 24(1): 19-26. 4 fig. 1930.—Fuller's earth absorbs vitamin B_2, at a pH of 0.05-0.10, but the absorbed active factor is difficult to remove. "Norite" is not an efficient absorbent. The active factor is insoluble in 70% alcohol. Vitamin B_2 is not destroyed by H_2O_2.—*E. B. Carmichael.*

637. **NELSON, E. M., and JOHN RUEL MANNING. Vitamins A and D in fish oils.** *Indust. & Eng. Chem.* 22(12): 1361-1363. 1930.—Tuna and sardine oils were

found to be as good as, or better than, cod-liver oil in vitamin D potency. Menhaden and salmon oils are also important potential sources of this vitamin. Salmon oil proved to be as potent in vitamin A as the poorer grades of cod-liver oil used for medicinal purposes. These results are important commercially because they point the way towards a potential domestic source of vitamin-bearing fish oils, whereas at present the United States is forced to import about 90% of the cod-liver oil used in animal feeding.—*Authors (courtesy Indust. & Eng. Chem.).*

638. **NEVER, HENRY E., und BERNHARD MASSURY. Avitaminose und Verdauungsorgane. III. Mitteilung.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 582-590. 3 fig. 1930.—In a dog with duodenal and ileac fistulae and in a dog with jejunal and ileac fistulae, on vitamin-free diet, there was slight disturbance in absorption when the diet contained no fat, considerable disturbance when fat was added to the diet.—*From authors' summary (transl.).*

639. **NORRIS, EARL R., and ANNA E. CHURCH. A study of the antimony trichloride color reaction for vitamin A. 2. The dilution curve of cod liver oil with antimony trichloride reagent.** *Jour. Biol. Chem.* 87(1): 139-146. 1930.—A few of the various types of dilution curves which may be obtained with $SbCl_3$ and fish liver oils are shown. There is apparently no uniformity in type of dilution curve with various oils, and consequently it is impossible to make any comparison as to the vitamin A potency of the oil when the color produced is not a linear function of the amount of oil used. If the color produced with any oil were a linear function of the vitamin present and therefore of the amount of oil used it would coincide with the tangent to the dilution curve at the origin. The relative potency of vitamin A as shown by feeding experiments checks very closely with the relative color values of the tangent to the curve at the origin.—*Authors' summary.*

640. **NORRIS, L. C., G. F. HEUSER, and H. S. WILGUS, JR. Is the chief value of milk for feeding poultry due to the presence of a new vitamin?** *Poultry Sci.* 9(2): 133-140. 4 pl. 1930.—White Leghorn chicks were fed a ration consisting of yellow corn meal—64.5 parts, flour wheat middlings—20.0 parts, casein—11.0 parts, steamed bone meal—3.0 parts, cod liver oil—1.0 part, and salt 0.5 part. The ration contained 20.61% protein. The chicks were in 3 lots, 30 chicks in each. The rations of lots A and B were supplemented with a "milk vitamin concentrate" prepared by removing from milk the fat, casein, lactalbumin, nearly all the insoluble Ca phosphate and the greater part of the milk sugar, then concentrating the liquid remaining to the consistency of thick molasses. The ration of lot A was supplemented with 7.14% of this concentrate, and lot B received 2.68% of the concentrate. Lot C served as a control. The experiment was of 12 weeks duration. The rate of growth was greatest for lot A; least for lot C; while that of lot B was intermediate. Lot C developed an unusual paralysis, no lameness developed in lot A, and two cases occurred in lot B. "It is suggested, therefore, that milk contains a hitherto unrecognized factor, vitamin in nature, which is essential for the prevention of a peculiar type of paralysis in poultry involving the legs and feet, and which is indirectly growth promoting. The probability that the effects obtained from this factor have previously been credited to vitamin B is also suggested."—*A. D. Holmes.*

641. **OLCOVICH, H. S., and H. A. MATTILL. Carotene from lettuce and its relation to vitamin A.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 240-241. 1930.

642. **SANFILIPPO, GIUSEPPE. Nuove osservazioni sul beriberi aviario. Sulla scissione della sindrome polineuritica dalla gastroenterica. [Further studies in beriberi of birds. Differentiation of the polyneuritic from the gastro-intestinal symptoms.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 35-38. 1930.—When pumpkin seeds are added to polished rice, pigeons suffering from beriberi show an amelioration of the gastro-intestinal symptoms, and their survival is prolonged but the polyneuritis is unchanged. As complement to a rice diet pumpkin seeds are not as effective as those of sunflower.—*M. Comel.*

643. **SANFILIPPO, GIUSEPPE. Influenza dell'età e della stagione sulla resistenza dei colombi al beriberi. [Influence of age and season on the resistance of pigeons to beriberi.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 492-497. 1930.—On a diet of rice and pumpkin seeds young pigeons show less resistance to beriberi than adult ones. Pumpkin seeds are a complete food for pigeons and beriberi develops when the relation between pumpkin seeds and hulled rice is 1:3.—*M. Comel.*

644. **SCHEUNERT, A., und E. WAGNER. Ueber die Beeinflussung des Vitamingehaltes einiger Nahrungsmittel bei der Verwendung von Drucktöpfen.** *"Hauswirtschaft in Wiss. u. Praxis" Mitteilungsbl. Versuchsstelle Hauswirtschaft Reichsverb. Hausfrauenver., Leipzig* 1(3): 1-8. 1928.—When 3 atmospheres of pressure are used in a small pressure cooker a slight but distinct destruction of vitamin A in vegetables takes place, but there is practically no destruction at lower pressures. Vitamin B behaved similarly whereas vitamin C underwent considerable destruction.—*From abst. by A. Scheunert (transl. by W. C. Russell).*

645. **SCHIEBLICH, MARTIN. Weitere Untersuchungen über die Bildung von Vitamin B. durch Bakterien. Das Vitamin-B-Bildungsvermögen von Bac. mycoides Flügge und Bac. mycoides ruber Matzuschita.** *Biochem. Zeitschr.* 225(1/3): 212-215. 1 fig. 1930.—Bac. mycoides (Flügge) possesses only slight Vitamin-B-forming capacity, being even less potent than Bac. mesentericus (Flügge) Lehm. et Neum. On the contrary, Bac. mycoides ruber Matzuschita shows marked potency although it is not as potent as Bac. vulgatus (Flügge) Migula.—*Author's summary (transl. by H. Levine).*

646. **SEPPILLI, ALESSANDRO. Catamine e beri-beri aviario. [Catamines and avian beri-beri.]** *Zymologica [Bologna]* 5(1): 13-17. 1930.—The author has studied the anti-beri-beri action of milk ferments in experimental avian beri-beri resulting from the Mattei diet (rice and decorticated sunflower seeds) and confirms the hypothesis of Mezzadroli of the existence of vitamine activity (catamine) in these ferments under the given experimental conditions. This may explain their sedative effect on the vegetative nervous system of the intestinal wall.—*A. Seppilli (transl. by P. Hillkowitz).*

647. **SHERMAN, H. C., and H. K. STIEBELING. Quantitative determination of vitamins A and D. II.** *Jour. Biol. Chem.* 88(3): 683-693. 1930.—Under suitable conditions and with the vitamin in question the first dietary deficiency, gain in weight in rats is the best measure for Vitamin A intake, and the degree of calcification the most practical measurement of Vitamin D intake. With young rats which have a considerable body store of these vitamins quantitative comparisons of the Vitamin A content of materials can be satisfactorily made by determining the amounts necessary to produce the same limited gain in weight (3 or 4 gm. per week during a test period from 5 to 8 weeks) in a sufficient number of suitably standardized rats receiving a basal diet free from Vitamin A, but otherwise adequate. Quantitative comparisons of the Vitamin D content may be made by finding the amounts of food (or other materials) necessary to induce a degree of calcification midway between the maximum values obtained by supplying Vitamin D liberally and the minimum values obtained by restricting as completely as possible the Vitamin D in comparable groups of animals. The actual percentage of Ca in the bones of such experimental animals depends on the nutritional history of each animal, its sex, and its age and weight at the beginning of the experiment, as well as on the mineral constituents of the diet and the length of the experimental period.—*H. K. Stiebeling.*

648. **SOLARINO, G. La resistenza globulare nelle avitaminosi. [On the globular resistance in avitaminosis.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 715-721. 1930.—In pigeons and guinea pigs on mixed diet, or when fasting

no variations of the red cell resistance could be established. If the animals were underfed an increase of the secondary maximal and minimal, and of the primary minimal red cell resistance (Prinkman and Van Dam) was observed. A more marked increase followed avitaminosis B and C.—*M. Comel.*

649. **SPRUYT, J. P. Search for a colorimetric method for estimating the silverskin- (anti-beri-beri-vitamin-) percentage of rice.** *Mededeel. Dienst Volksgezondheid Nederlandsch-Indie* 19(1): 46-65. 1930.—The P_2O_5 estimation is no reliable standard for the anti-beri-beri vitamin percentage. A colorimetric method which is being developed and which has been applied to a few rice samples shows indices almost parallel to the animal-test.—*Author's summary.*

650. **STEENBOCK, H., E. B. HART, BLANCHE M. RIISING, C. A. HOPPERT, S. BASHEROV, and G. C. HUMPHREY. Fat-soluble vitamins. 28. The antirachitic value of cow's milk as modified by exposure of the cow to sunlight and to radiations from a quartz mercury vapor lamp.** *Jour. Biol. Chem.* 87(1): 103-126. 1930.—Daily exposure of cows to sunlight or artificially generated ultraviolet radiations has little if any effect on the antirachitic potency of milk. These experiments were carried out with Ayrshire and Holstein cows with coats for the most part unpigmented and with the radiations falling on the head, back, or udders, the latter being almost free from hair. The radiation period in some cases was continued for an hour daily at 20 to 30 inches with Cooper Hewitt or Alpine Sun lamps. Rats were used as the test animals for both prophylactic and curative technique. The results stand in marked contrast to our earlier observations with goats. No improvement in milk or butter fat secretion was observed. The well recognized superior quality of summer-produced milk and butter fat must therefore have its primary origin in other factors than sunlight acting directly upon the cow.—*Authors' summary.*

651. **STEENBOCK, H., E. B. HART, BLANCHE M. RIISING, S. W. F. KLETZIEN, and H. T. SCOTT. Fat-soluble vitamins. 29. Is antirachitic activation induced by ultra-violet radiations a panacea for negative calcium balances?** *Jour. Biol. Chem.* 87(1): 127-137. 2 fig. 1930.—In an experiment in which the utmost precautions were taken to exclude the consumption of activated compounds, it was found that direct exposure of a goat to the radiations of a quartz mercury vapor lamp increased the antirachitic value of its milk very decidedly. This was in direct contrast to our experience with cows. Yet in spite of this the goat ultimately showed a very decided negative Ca balance although originally with the beginning of irradiation a slight improvement in Ca retention resulted. In view of a simultaneous increase in the restlessness of the animal with the incidence of a pronounced negative Ca balance, it appears that the elimination of Ca may be controlled neurologically as well as by the antirachitic factor. Whether or not this is effected directly or through some other mechanism, as for example the parathyroid glands, is not known. Antirachitic activation therefore cannot be considered a panacea for a disturbed Ca metabolism.—*Authors' summary.*

652. **STEENBOCK, H., E. B. HART, FLORA HANNING, and G. C. HUMPHREY. Fat-soluble vitamins. 30. The antirachitic value of cow's milk as modified by the feeding of irradiated yeast.** *Jour. Biol. Chem.* 88 (1): 197-214. 1930.—50 gm. of irradiated yeast fed to cows increased the antirachitic potency of milk. Even 200 gm. of yeast did not lower the milk production nor did it decrease the butter fat content. When the amount of yeast was reduced to 10 gm. daily, a slight effect on the antirachitic potency of the butter fat was still noticeable. This effect was not clearly demonstrable on the milk. 180 gm. of cod liver oil produced results similar to 10 gm. of yeast. It appears that the feeding of a standardized irradiated yeast may be considered as a practical measure for the production of a milk of standard antirachitic potency. It remains to be demonstrated whether irradiated yeast can be effectively used for the same purpose in the human dietary.—*Authors' summary.*

653. **STIEBELING, HAZEL K. Studies of the relation of vitamin D to the deposition of calcium in the bones of experimental animals with special reference to the quantitative determination of vitamin D.** 24p. Dissertation, Columbia University: New York, 1928.—Young white rats reared by mothers receiving a ration consisting essentially of ¾ ground whole wheat and ¼ whole milk powder, were placed when 3 to 4 weeks old on a diet, good in other respects but decidedly deficient in Vitamin D. This diet consisted of fat-soluble-vitamin-free casein, 18 parts; powdered dry yeast 10 parts; Osborne and Mendel salt mixture 4 parts; powdered dry spinach 1 part; NaCl 1 part; and cornstarch 66 parts. From that time until the 56th day (the 80th day of age), comparable groups received graded allowances of Vitamin D (whole summer milk powder) or a definite amount of ultraviolet irradiation. The percentage of Ca in the body (or femur) was, on the average, proportional to the allowance of Vitamin D supplied, within a range of values to which the animal body is sensitive. Averages were based on groups carefully matched at the beginning of the test as to nutritional history, sex, and weight. Extensive data were accumulated indicating that as a measure of the degree of calcification under these conditions, the percentage of Ca (or ash) in the fresh femur may be quite as satisfactory as the percentage of Ca (or ash) in the dried extracted bone, or the ratio of ash to the organic residue of the bone.—*H. K. Stiebeling.*

654. **SURE, BARNETT, DOROTHY J. WALKER, and HARVEY S. THATCHER. Vitamin requirements of nursing young. X. Effect of a deficiency of vitamin B complex and vitamin B on histological changes in liver of nursing young of albino rats.** *Proc. Soc. Exp. Biol. & Med.* 27(8): 862-863. 1930.—Preliminary paper.

655. **VEDDER, EDWARD B. An investigation to determine a satisfactory standard for beri-beri-preventing rices.** *Far East Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 375-408. 2 pl., 1927[1928].

656. **WEATHERBY, LeROY S., and EUGENE W. WATERMAN. Vitamin B content of avocados.** *Indust. & Eng. Chem.* 20(9): 968-970. 1928.—The vitamin B content of avocados was determined by feeding experiments with albino rats. The pulp of fresh food was used and was compared with Fleischmann's dry yeast as standard. It was found that the fresh pulp contained approximately 1/12 the vitamin value of the dry yeast.—(*Courtesy Industrial and Engineering Chemistry.*)

657. **WEITZEL, WILLY. Die Vitamine der Milch und ihr Verhalten chemischen, physikalischen und thermischen Einflüssen gegenüber.** *Münchener Tierärzt. Wochenschr.* 81(9): 104-107. 1930.—A review.—*R. G. Turner.*

658. **WINDAUS, A. Über die Lage der Doppelbindungen im Ergosterin und seinen Umwandlungsprodukten.** *Nachrichten Ges. Wiss. Göttingen Math.-Phys. Kl.* 1929 (3): 169-172. 1929.—The author's hypothesis is, that if multiple unsaturated hydrocarbons are differentiated by their absorption spectra, the one with the largest absorption coefficient, and absorbing in the region of longest wave length, will most likely contain conjugated double bonds. The presence of conjugated double bonds becomes much more probable if the material, in contrast to its isomers, takes up 2 atoms of hydrogen when hydrogenated with alcohol and sodium. Ergosterol has this property. It has been shown by others that a conjugated system of double bonds is able to form an additive product with maleic acid anhydride. Of all the compounds in this group that were investigated, only dehydroergosterol forms an additive product with maleic acid. It is concluded that this compound is the only one that contains a conjugated system, the double bonds of which occur in one ring.—*A. G. Hogan.*

659. **YOUNG, T. C. McCOMBIE. A field study of Lathyrism.** *Indian Jour. Med. Res.* 15(2): 453-479. 4 pl. 1927.—A detailed report of the methods of agriculture and of the products of Rewa State, of the various classes

of people and their food, concludes: "It may tentatively be suggested for experimental verification that lathyrism may be to some extent a deficiency disease which is produced in persons living in a state of nutritional instability, on a diet noticeably lacking in vitamin A, by prolonged ingestion of a legume, matra, the amino acids of whose proteins are unsuitable and perhaps especially harmful, and which is itself deficient in fat-soluble A."—*W. W. Eggleston.*

660. **ANONYMOUS.** The antirachitic vitamin D. *Lancet* 219(5583): 503-504. 1930.—Announcement of a standard by the Medical Research Council.

ANIMAL PHYSIOLOGY

DIGESTIVE SYSTEM AND DIGESTIVE SECRETIONS

A. J. CARLSON, *Editor*

(See also in B. A. 5(11): Entries 26741, 27310, 27311, 27317, 27321, 27565, 27566, 27628, 27686, 27707, 27747, 27790, 27920, 27922, 27935, 27941, 27942, 27943, 27948, 27973, 27984, 28016, and in this issue 185, 186, 200, 246, 448, 449, 451, 465, 619, 638, 743, 768, 807, 882, 1030, 1166, 1300, 2243, 2291, 2497)

661. **ALVAREZ, WALTER C., and KIYOSHI HOSOI, (with the technical assistance of MILDRED FOSTER and E. C. WOOLLEY). Conduction in different parts of the small intestine. I. Distance traversed by a disturbance and rate of travel.** *Amer. Jour. Physiol.* 94(2): 448-458. 4 fig. 1930.—The small intestine of rabbits was stimulated with a faradic tetanizing current and records were obtained of the local contraction and of the disturbance which spread orad and caudad. Make and break faradic and galvanic stimuli produced a local contraction but little or no sign of a traveling disturbance. Interrupted galvanic stimulation produced effects similar to those of alternating faradic stimulation. After faradic stimulation a disturbance traveled orad from 1 to 15 cm. and caudad from 1 to 20 cm. The modal distance orad was 5 cm. and the modal distance caudad was 10 cm. The best conduction was seen in the duodenum. In a few animals a disturbance could be detected 40 or 50 cm. caudad to the point stimulated. Such conduction was rapid and was mediated probably by nerves in the mesentery. The response to electric stimulation of the rabbit's bowel is practically always contraction locally and orad and caudad. Bayliss and Starling's law does not hold true for the rabbit. Occasionally after traveling a short distance as a wave of contraction the disturbance produced by an electric stimulus manifested itself as a wave of relaxation. In the intact bowel the rate of conduction varied from 1 to 13 cm. a sec. with a mode about 2.5 cm. The mean varied from 5 cm. a sec. in the duodenum to 3.8 cm. a sec. in the terminal ileum. In excised bowel the mean rate varied from 7.2 cm. a sec. in the duodenum to 6.0 cm. a sec. in the terminal ileum. In both intact and excised gut the rate caudad was a little faster than the rate orad. Conduction in the wall of the bowel appears to take place by way of nerves which are sluggish like those in lowly forms of life.—*Authors' summary.*

662. **ANOCHIN, P., D. GOLDBERG, und N. SAMARINA. Die Blutversorgung der Speicheldrüse im Zustand der Ruhe und bei gesteigerter Funktion.** *Pflüger's Arch. Ges. Physiol.* 225(4): 463-466. 1 fig. 1930.—Using a specially described method, the authors found the amount of blood flowing through the resting submaxillary gland much less than that stated by earlier authors. The kind of experimental animal used (presumably the dog, since the results are compared with those obtained by Burton Opitz on the dog) is not stated; 7 experiments are tabulated, and the data from a control experiment, indicating that the nature of the narcotic affects the results.

663. **ANOCHIN, P., und B. LISAGOR. Zur Frage von der Bedeutung der Blutversorgung der Drüsen für die Speichelsekretion.** *Pflüger's Arch. Ges. Physiol.* 225(4): 561-566. 1 fig. 1930.—Experiments (of which 5 are reported) were made on a dog with a chronic fistula of the submaxillary gland. The total amount of saliva secreted diminished when the carotid was tied, the amount of total solids remaining the same, and only the watery constituents decreasing. The amount of solids was characteristically different for each physiologic stimulus (food, diluted HCl); apparently there was also a characteristic vascular reflex (dilatation of blood-vessels) for each stimulus.

664. **BABSKY, EUGEN, und MINNA EIDINOWA. Beiträge zum Studium der motorischen Tätigkeit des Dünndarms. II. Mitteilung. Über den Einfluss des Darmdrüsensaftes auf die motorische Funktion des Dünndarms.** *Pflüger's Arch. Ges. Physiol.* 222(5/6): 649-655. 5 fig. 1929.—Intestinal fluid from Thiery-Villa fistulae injected intravenously failed to start intestinal movements unless treated with acid (lactic, hydrochloric or acetic) and neutralized. The results were as varied as those with intestinal extracts reported in a preceding paper.—*C. S. Robinson.*

665. **BABSKY, EUGEN, und MINNA EIDINOWA. Beiträge zum Studium der motorischen Tätigkeit des Dünndarms. III. Mitteilung. Über den Cholineinfluss auf die motorische Funktion des Dünndarms.** *Pflüger's Arch. Ges. Physiol.* 222(5/6): 656-661. 3 fig. 1929.—Intravenous injection of choline in doses of 0.5-30.0 mgm. into decerebrate cats produced in 64% of the cases studied by the methods described in preceding papers a single strong contraction of the intestine followed by a depression of the tonus either to normal or below. In the other cases the response varied from a positive inhibition to a series of powerful contractions. The character of the reaction and the sensitiveness of the intestine to choline injection varied widely in the same experiment. The authors conclude that while choline may have been a constituent of the solutions used in their previous work other substances were present which complicated the results.—*C. S. Robinson.*

666. **BASCH, FELIX, und HANS MAUTNER. Experimentelle Beiträge zur Lehre von der Resorption.** *Arch. Exp. Pathol. u. Pharmakol.* 151(1/2): 76-90. 1930.—In rats gastric absorption and secretion are increased by vagus stimulation. The sympathetic system acts antagonistically. After atropine, epinephrine, ergotamine and their various combinations the stomach always remains fuller than in the controls. For the final effect of absorption increased peristalsis is unfavorable, while in the intestines increased peristalsis and secretion increase absorption. The best absorption was of isotonic in contrast to hypertonic and hypotonic solutions.—*H. Graf.*

667. **BERNARDI, A., e M. ŽANINI. Contributo allo studio dei fermenti contenuti nel ventriglio di pollo e di rondine di mare (Hydrochelidon nigra L.) Nota IV. [The ferment contents of the proventriculus of chicken and the sea swallow, H. nigra.]** *Biochim. e Terapia Sperim.* 17(1): 6-15. 1930.—Amylase which could be extracted with glycerol was present in the mucous membrane of the proventriculus of chickens. Its activity increased first to a maximum; then decreased to a minimum, and increased again to a maximum. An amylase was present also in the mucous membrane of the proventriculus of *H. nigra.* Its activity, after increasing slowly at first, reached a maximum, and then decreased until action ceased. An invertase was present in chicken, but not in the mucous membrane of the proventriculus of *Hydrochelidon.*—*M. Comel.*

668. **BICKEL, ADOLF. Zur Kenntnis der physiolog-**

ischen Wirkungen von Infusen aus Röstprodukten der Zerealien und Zichorienwurzeln auf die Magen-Darm-Funktionen. [Physiologic effects on stomach and bowel of infusions of roasted coffee substitutes.] *Arch. Verdauungs-Krankh.* 46(1,2): 1-13. 1929.—The substitutes for coffee have a slightly stimulating effect on gastric secretion. Some of them increase also the tone of the intestinal muscle. Chicory does not have this effect on the muscle.—*W. C. Alvarez.*

669. **BONIS, A. Magenschleim und Säurebindung. Zugleich ein Beitrag zur Titration mit Indikatoren und zur elektrometrischen Titration des Magensaftes.** *Zeitschr. Klin. Med.* 113(5/6): 611-620. 1930.—The sources of error in the 2 methods of titration are critically discussed. Comparative study of unchanged with sedimented, filtered and dialyzed gastric juice indicated that mucus plays an insignificant part in the neutralization of acid, and that the production of mucus probably merely affords mechanical protection to the gastric mucosa. The available facts suggest an antagonistic regulation of the mucus-acid secretion.

670. **BRENCKMANN, ERNEST. Contribution à l'histophysiologie de la muqueuse gastrique en rapport avec l'élimination de l'HCl. Considérations générales sur le problème de l'ulcère.** 110p. 21 fig. Universitaires de Strasbourg, 1929.—This treatise presents a series of physiological and histological observations of the processes concerned in the mechanism of production of the HCl by the gastric mucosa (dogs) and gives a very brief discussion of the phenomena of duodenal regurgitation. The author attempts also to correlate some experimental procedures (sham-feeding) with the hypersecretion of gastric juice and the latter is considered as a contributing factor in the formation of gastric ulcer. The gastric mucosa is subdivided into 4 parts: (1) The air pocket, (2) The central fundus, (3) A narrow transitional antrofundal zone and (4) The pyloric antrum. The secretory work of the stomach was studied by the method of topographic investigation based on the results of macroscopic and microscopic examination of gastric mucosa. Applying $K_4Fe(CN)_6$ and $FeCl_3$ to the interior surface of the stomach and observing the formation of Prussian blue, Brenckmann reports that the mucosa of the air pocket is characterized by comparatively weak vascularisation, by its thinness and by abundance of connective tissue. This zone does not participate in the secretory process during digestion, but is potentially a secretory zone since under the influence of histamine it becomes involved in the production of HCl. The central fundus is the part of the gastric mucosa which plays the most active rôle in the secretory work of the stomach. In new-born animals this secretory zone is reduced to two patches situated on both sides of the smaller curvature near the antrum. Neither HCl nor pepsin could be demonstrated in the stomach of a full term fetus (guinea-pig) after the injection of histamine into the mother. In the adult animal the surface cells of the fundal mucosa are the most actively involved in the secretory work, the middle cells show much delayed response and the lower cells of the glandular tube remain in a state of permanent rest. The transitional zone is located between the fundal and antral zones (1 to 3 cm. wide) and presents the same histological aspect as the fundal mucosa of the air pocket. The pyloric region is free from parietal cells. The zone of the most typical mucosa of the central fundus is about 2-3 cm. from the antrum. The number of chief cells is greatly augmented in this region and the Prussian blue reaction is uniform and constant. Recently Lim and Ma observed the changes of the mitochondrial apparatus in the cells of the gastric mucosa after feeding or after the injection of histamine and arrived at the following conclusions: The chief cells are filled with pepsin zymogen granules in a state of rest. During the digestion these granules disappear, new ones are formed and finally, if the secretion of pepsin is continued, the cells become free from granules. In proportion to the disappearance of zymogen granules the mitochondria and ergastoplasm appear in the chief cells. It is surmised that the ergastoplasm which appears at the base of the cell serves for the formation of the thread granules. The author's data are in accordance with this statement. One certainly cannot agree with the author's belief that in his experiments the "sham-feeding" was responsible for acute hemorrhagic gastro-duodenitis, atrophy of the glandular cells and extreme vasodilatation of blood vessels. Animals subjected to daily "sham-feedings" live for many years in a condition of perfect health in other laboratories. The author's experiments for the purpose of studying duodenal regurgitation were too crude and as he himself admits they failed for that reason. Duodenal regurgitation is a normal physiological process well established and generally recognized.—*E. B. Boldyreff.*

671. **CHILDREY, JOHN H., WALTER C. ALVAREZ, and FRANK C. MANN. Digestion: efficiency with various foods and under various conditions.** *Arch. Internal Med.* 46(3): 361-374. 1930.—These studies continue and amplify those published by Hosoi, Alvarez and Mann [*Arch. Internal Med.* 41: 112. 1928.] The authors sought to improve intestinal absorption by giving food in a number of portions at intervals, and tried mincing the food and slowing the progress of peristalsis with morphine. They also tested the effect of giving progressively larger amounts of foods. Would the efficiency of digestion fail gradually at a certain point or break suddenly? The amount of residue obtained after the digestion of various foods was studied in 6 dogs, all deprived of the colon. The foods best digested were meat, rice, dextrose and fat in small amounts. These foods might well be used in the treatment of patients with diarrhea, and in the preoperative or postoperative care of patients with serious diseases of the colon, rectum or anus. The combining of certain foods, such as bread and milk and raw egg and milk, improved the digestion of both substances. Lactose, in considerable amounts, proved to be a laxative which interfered not only with the digestion of food eaten the same day but also with the digestion of food eaten the following day. Cheese and lard given one day also interfered with the digestion of food eaten the following day. Meat was better digested when given in lumps than when given finely comminuted. The same was true of Swiss cheese. Raw meat was better digested than cooked meat. Except in case of a few foods, it was difficult to give so much that the efficiency of digestion would fail. The dog usually protected himself by vomiting part of the meal. Raw egg when not mixed with other foods was highly indigestible. Raw cornstarch given alone was almost completely indigestible. The addition of lemon juice to food hurried the progress of residue through the bowel and interfered somewhat with the efficiency of digestion. Orange juice had little effect on digestion. Pie crust did not seem to be much more indigestible than white bread. It was more digestible than Graham bread. Anxiety and excitement influenced adversely the efficiency of digestion. Food when taken in one large amount was better utilized than when taken in several fractions at half-hourly intervals. Apparently each feeding stimulated peristalsis and caused the food to pass too rapidly through the bowel. It had little effect on the digestion of ground cooked meat, given at the same time, but it interfered with the digestion of meat given the next day.

672. **CONTI, FRANCESCO. Contributo al meccanismo dell'iperglicemia alimentare. Influenza dell'innervazione epatica. [The mechanism of alimentary hyperglycemia and the influence on it of denervation of the liver.]** *Policlinico [Sez. Med.]* 37(4): 183-196. 1930.—In 8 dogs the curve of alimentary hyperglycemia was studied before and after the vegetative nervous system had been paralyzed by ergotamine and atropine. The reaction was not uniformly affected by the drugs, but in no case was the hyperglycemic reaction to administration of glucose abolished, as reported by Pollak for rabbits. In 5 dogs in which the blood-sugar curve following ingestion of glucose was taken before and after denervation of the

liver, the curve subsequent to the operation was distinctly lowered and flattened. Conti rejects the hypothesis that this depression of the glycemic curve may be due to changes in the intestinal capillary system retarding the absorption of glucose, because in that case the hyperglycemia, though lower, would be more protracted than under normal conditions, whereas in his experiments the blood sugar returned to normal as promptly in denervated as in normal dogs. The hypothesis that the lowered hyperglycemia might be due to disturbances in intrahepatic circulation tending toward greater fixation of the sugar in the hepatic cell was tested by injection of glucose into a portal root before and after hepatic denervation; in 2 experiments reported, no deviation of the hyperglycemic curve from the normal followed denervation under these conditions. Hence Conti concludes that alimentary hyperglycemia is due in part to a nervous stimulus produced by action of the ingested glucose on the intestinal mucosa; but, since the hyperglycemic response is not abolished, but merely reduced, by denervation of the liver, some other as yet unknown factor must be concerned, possibly hormonal or perhaps direct passage of exogenous sugar into circulation.

673. **CORI, GERTY T. Studies on intestinal absorption. 1. The absorption of lactic acid.** *Jour. Biol. Chem.* 87(1): 13-18. 1930.—Absorption of *dl*-lactic acid (fed as sodium salt) from the intestinal canal of rats was determined 1, 2, 3, and 4 hrs. after feeding the same amount per weight. It was found that the rate of absorption decreased with time and was roughly proportional to the amount of lactic acid present in the intestine. Attention was drawn to the fact that the mechanism of absorption of lactic acid differs from that observed for sugars and amino acids. With these two groups of substances the rate of absorption is within wide limits independent of the amount present in the intestine. Slow evacuation of the stomach can limit the rate of absorption of lactic acid in a certain number of cases. From a solution containing lactic acid plus glucose both substances were absorbed at rates below those observed when pure solutions were fed.—*Author's summary.*

674. **CORI, CARL F., EDWARD L. VILLIAUME, and GERTY T. CORI. Studies on intestinal absorption. 2. The absorption of ethyl alcohol.** *Jour. Biol. Chem.* 87(1): 19-25. 1930.—The rate of absorption of alcohol depends on and is roughly parallel to the amount fed. Up to a 20% solution the concentration has little influence on the rate of absorption. From a 40% solution alcohol is absorbed more slowly than from a 20% solution due to slow evacuation of the stomach. Separate analysis of stomach and intestine shows that the latter contains as a rule only 12 to 56 mgm. of alcohol irrespective of the amount of alcohol fed or absorbed or of the amount of alcohol present in the stomach. This small residual quantity of alcohol which seems to be contained mostly in the intestinal wall disappears very slowly. The fact that the small intestine always contains but this small residual amount indicates that alcohol is absorbed as rapidly as it leaves the stomach. The rate of emptying of the stomach is therefore the determining factor for the rate of absorption of alcohol. Massage of the stomach which accelerates the passage of alcohol into the gut also accelerates the rate of absorption. An upper limit of the rate of absorption in the small intestine cannot be determined because the animal dies of alcohol intoxication before such a limit is reached. Small quantities of alcohol do not accelerate the absorption of glucose from the intestine of rats.—*Authors' summary.*

675. **DANNINGER, RUDOLF, KARL PFRAGNER, und HANS SCHULTES. Über die absolute Reaktion in dem Inhalt der einzelnen Darmabschnitte von Pferd und Rind.** *Pflüger's Arch. Ges. Physiol.* 220(1/6): 430-433. 1928.—The gas-chain method was used in determining the pH of intestinal contents removed from horses and cattle immediately after death in the slaughter-house; duodenum, jejunum, ileum, and cecum were separately studied. In both species the cecal contents were alkaline (horses 8.125, cattle 8.224); the contents of the equine ileum were neutral while those of the bovine ileum and jejunum were still alkaline; and the duodenal contents of both species fluctuated about neutrality with a tendency to be acid.—*F. T. Jung.*

676. **DREWYER, G. E., and A. C. IVY. On the presence of cholecystokinin in the human and rabbit intestine.** *Amer. Jour. Physiol.* 94(2): 285-286. 1 fig. 1930.—A report of the finding of cholecystokinin in the rabbit and human upper intestine.

677. **DUKES, H. H. Recent advances in the physiology of digestion. 1. Introduction; the mouth.** *Jour. Amer. Vet. Assoc.* 30(2): 225-228. 1930.—Review and bibliography, with special reference to domestic animals.

678. **FENG, TEH-PEI, HSIANG-CH'UAN HOU, and R. K. S. LIM. On the mechanism of the inhibition of gastric secretion by fat.** *Chinese Jour. Physiol.* 3(4): 371-379. 1929.—Experiments on dogs are reported, which show that the ingestion of fat causes inhibition of the secretion of completely denervated (auto-transplanted) gastric pouches. This not only indicates that the extrinsic nerves are unessential for inhibition but definitely implies a humoral mechanism. The intravenous injection of thoracic lymph collected after a fat meal does not inhibit gastric secretion, nor does the institution of a lymph fistula, so that the chyle no longer drains into the circulation, affect the course of secretion. Thus fat itself is not the inhibitory agent, nor is the agent transmitted through lymphatic channels.—*Authors' summary.*

679. **FISCHL, E., und R. H. KAHN. Die amylolytische Wirksamkeit des Kaninchenspeichels.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 694-698. 1930.—The oral saliva of 30 rabbits studied in 117 experiments by the methods of Wohlgemuth and Biedermann gave amylolytic values corresponding throughout to those of human oral saliva. Extirpation of the submaxillary and sublingual glands had practically no effect on the amylolytic action, while extirpation of both parotid glands rendered the saliva almost or quite inactive. In 6 starved rabbits the activity of the saliva was markedly increased the 1st day of hunger, with later a slow decrease, but not to entire inactivity as reported by Gayda for the 15th day. The variations in amylolytic activity of rabbit saliva ran parallel with the variations in dry substance content.

680. **GANTT, W. HORSLEY. Salivary secretion and the intake of fluid.** *Amer. Jour. Dis. Children* 37(6): 1125-1127. 1929.—Gantt studied effect of normal and forced fluid intake and of thirst on the parotid and submaxillary secretions when the subject was shown food for 30 sec. and when given food to eat. Parotid secretion decreased in thirst and slightly increased on forced fluid intake. An epileptic fit decreased unconditioned salivary secretion in all cases. Submaxillary secretion decreased in thirst; unconditioned and conditioned reflexes were decreased in thirst.—*M. R. Freeland.*

681. **GARIN, CH., AMIC, ROGER-FROMENT, et DELORME. Sécrétion gastrique déclanchée par la simple introduction du tube d'Einhorn. (Son absence chez un cocaïnomane présentant une anesthésie du voile du palais.)** *Lyon Méd.* 143(19): 580-584. 1929.—The patient had anesthesia of the pharynx. An Einhorn tube was passed without the usual discomfort, and did not produce the usual secretion of gastric juice, while wine caused a normal response. This is further proof that the passage of the tube causes a secretion of gastric juice.—*M. G. Mulinos.*

682. **GROEBBELS, FRANZ. Die Verdauung bei der Hausgans, untersucht mit der Methode der Dauerkanüle.** *Pflüger's Arch. Ges. Physiol.* 224(6): 687-701. 4 fig. 1930.—Permanent cannulas were inserted in the duodenum, pylorus, gizzard and glandular stomach in 14 geese; studies were made on the digestion of oats, barley, maize, potatoes, bread, bran and yellow turnips. (1) Mechanics: The goose has no pyloric reflex; there is no constant relation between the mechanical con-

traction of the muscular stomach and the exit of food. The duration of passage of equivalent amounts, reckoned in dry substance, varies with the consistency of the foodstuff, following the order: grains, potatoes, bread. Parching or grinding oats did not alter the duration of passage. Forced feeding lengthened the passage of food. The grinding sound from the gizzard was always present and frequently repeated after grain feeding (even when food had reached the glandular stomach), sometimes absent and less frequently repeated after bread feeding, generally absent after potato feeding. The presence of a cannula in the gizzard disturbed its mechanical action. Sand and pebbles left the gizzard in large quantities during the first 2-3 hrs. after grain feeding; the amount was variable after bread feeding, the amount during the first 2 hrs. being small; only a small amount left the gizzard at the beginning of the experiment after feeding potato. Fluids passed through both stomachs without delay. (2) Chemistry: In the goose the back-flow of digestive secretions is physiological. Bile flows into the glandular stomach, amylase into the gizzard. The digestion of carbohydrates begins in the gizzard, that of protein in the glandular stomach, and apparently food can be impelled forward and back between the 2 stomachs. There is no regular connection between secretion of bile and pancreatic juice and exit of the food from the gizzard. In like experimental animals and for equivalent amounts of dry substance the amount of secretion follows the order: potatoes, oats, barley, maize, bread. Parching or grinding the oats does not change the amount of secretion; but it is distinctly lowered by forced feeding, considerably lowered after a 4-day fast. The amount of secretion varies according to the amount of food with potatoes and bread, but not with oats. Much gastric juice and bile are secreted after potato feeding, much bile after bread, little gastric juice and much pancreatic juice after yellow turnips.

683. **HANNEMA, L. S. Verlaufsmodifikationen der Diazoreaktion im Blute und deren Bedeutung speziell in Beziehung zur Leberfunktionsprüfung.** *Zeitschr. Klin. Med.* 107(6): 700-715. 1928.—It is found in general that the Rosenthal test with phenoltetrachlorphthalein and the van den Bergh direct reaction go hand in hand. In a doubtful case either will supplement the other. There is a long discussion of the various modifications of the van den Bergh reaction.—*C. H. Greene.*

684. **HOWLAND, RUTH B. The pH of gastric vacuoles.** *Protoplasma* 5: 127-134. 1 fig. 1928-1929.—*Actinosphaerium eichhornii* may enclose in its gastric vacuoles, ciliates (usually hypotrichs), rotifers and nematodes, which remain alive after incorporation. The pH of the vacuole fluid in a newly formed vacuole containing live food is, for a period of 5-10 min., neutral or slightly acid, i.e., 6.6 to 7.0. With decrease in pH, the activity of live prey decreases, until it becomes motionless. The length of time elapsing before this occurs is variable. In the case of ciliates this occupies but a few minutes, while rotifers may live for several hrs. It is possible, therefore, that the acid functions as a killing fluid within the vacuole. The pH of all gastric vacuoles containing food in the process of active digestion is 4.3 ± 0.1. Old vacuoles containing indigestible residuum usually have a pH value of 5.4 to 5.6. More rarely these may register 6.8 to 7.0.—*Author's summary.*

685. **JARNO, LEO. Das Problem der duodenalen Regurgitation.** *Arch. Verdauungs-Krankh.* 45(1/2): 50-56. 1929.—This is mainly a discussion of the possible effects of bile and its constituents in the stomach.—*W. C. Alvarez.*

686. **JENDRASSIK, L., und SZ. DONHOFFER. Über die Calciumaufnahme der Darmmuskulatur während der Adrenalinwirkung.** *Biochem. Zeitschr.* 201(1/3): 199-205. 1928.—The assimilation of Ca by the musculature of the small intestine of the cat, rabbit, guinea-pig, and rat under the action of adrenaline is not regular and can occur without adrenaline when the intestine is paralyzed by other causes. The irregularity of this phenomenon is not an argument for the theory of a vegetative irritation by the ions.—*H. Pribram.*

687. **KATZENSTEIN, MARGARETE. Untersuchungen über Speichellipase.** *Zeitschr. Ges. Exp. Med.* 69(1/2): 179-192. 1 fig. 1929.—A series of studies on salivas sustains the findings of Scheer and his collaborators of a fat-splitting ferment in oral saliva. This lipase has no connection with bacterial effects; it is more abundant in parotid secretion than in the total saliva. It is most effective at pH 7.5-7.7, the physiologic pH of human saliva. This paper is a report of study of the lipase content of salivas in various diseases. In diseases in which the flow of saliva is increased (as in certain cases of stomatitis, abscess of cervical glands, Vincent's angina and Feer's disease or vegetative neurosis of childhood) the lipase content was usually low. In the diseases in which the flow of saliva was reduced (paradentosis, gingivitis, measles, varicella and diabetes mellitus) the concentration of lipase was increased. The lipase-content in scarlatina was variable. Experiments on the dog showed a lipase in the total saliva; no noticeable difference was observed in the pure parotid secretion.—*Author's summary (transl.).*

688. **KOKAS, E. von, und G. von LUDÁNY. Weitere Untersuchungen über die Bewegung der Darmzotten.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 421-428. 1 fig. 1930.—When dogs were fed 2-3 hrs. before the experiment, movements of the villi were visible, often even to the naked eye, on opening the intestine under narcosis. In a hungry animal the movements could be elicited only by artificial stimulus. In a dog which had been fed, when a loop of intestine had been tied off, movements of the villi were discernible only where intestinal contents were present and resorption was going on. Villous movements were observed after detachment of a segment of intestine from the animal, indicating that the lengthening of the villus is not the result of an influx of blood nor probably of a hydrostatic increase of pressure in the central lymph-space; but rather of a local chemical stimulus connected with resorption. After detachment of the mucous membrane from the muscularis mucosae, and thereby from the plexus of Meissner, the movements of the villi ceased, indicating that the center of villous movement is to be sought in Meissner's plexus.

689. **KRICK, M. Remarquable tolérance de l'estomac d'un crocodile.** *Rec. Méd. Vét. Exot. École d'Alfort* 3 (Avril/Juin): 83-84. 1930.—A note demonstrating the tolerance and resistance of the digestive organs of crocodiles.

690. **KUENZEL, WILHELMINE, and T. WINGATE TODD. Studies in the alimentary tract of man. II. Stabilization of gastric reaction patterns.** *Jour. Lab. & Clin. Med.* 14(12): 1165-1174. 1929.—The thesis that intrusion of impulses of central origin complicates the gastric reaction patterns of untrained subjects is subjected to a quantitative analysis. Psychologic factors are responsible for variations in response to particular and constant stimuli. By training the subjects, gastric reaction patterns can be stabilized and the human stomach prepared for experiments of an exact nature comparable to those of the laboratory.—*E. M. Watson.*

691. **LEARMONTH, JAMES R., and J. MARKOWITZ. Studies on the innervation of the large bowel. II. The influence of the lumbar colonic nerves on the distal part of the colon.** *Amer. Jour. Physiol.* 94(3): 501-504. 5 fig. 1930.—A series of experiments on the influence of the lumbar colonic nerve on the distal part of the colon is described. The lumbar colonic nerve exerts a constant inhibitory influence on the musculature of the distal part of the colon. Section of the lumbar colonic nerve invariably leads to an immediate increase in intracolonic pressure. Section of the lumbar colonic nerve may lead to an increase in the amplitude of the contractions of the colon.—*Authors' summary and conclusions.*

692. **LENKEIT, W., und R. HABECK. Zur Bestimmung der Durchgangszeit der Nahrung durch den Verdauungskanal verschiedener Tiere.** *Wissenschaft. Arch. Landwirtsch.* 2(4): 517-522. 1930.—To determine the time of

food passage with omnivores and herbivores the test meal of grain was colored with fuchsin. Controls showed no effect of the dyes on the digestive processes. If the test meal consisted of softer food small quantities of colored, finely ground grain were added to it.—*Authors' conclusions (transl. by C. S. Robinson).*

693. **LEVENE, P. A., and ROBERT T. DILLON. Intestinal nucleotidase.** *Jour. Biol. Chem.* 88(3): 753-769. 1930.—Intestinal nucleotidase (free of nucleosidases) was obtained from the intestinal secretion of dogs by precipitation with acetone. A comparative study was made of the action of this enzyme on a series of phosphoric esters including glycerol phosphate, synthetic and "natural" hexose mono- and diphosphates, nucleotides and nucleic acids. The hydrolyses were made at 30° and a pH of 8.6 to 8.7. Inorganic phosphate measurements were made colorimetrically. Evidence for the existence of a nucleinase, responsible for hydrolyzing polynucleotides only to mononucleotides, was found.—*R. T. Dillon.*

694. **LOEFFLER, L. Leberstudien. IV. Teil. Die Zeichnung der Leberschnittfläche.** *Virchow's Arch. Path. Anat. u. Physiol.* 272(1): 17-30. 6 fig. 1929.—A discussion of the relationship between the structure of the liver lobules in man and the appearance of the cut surface of the liver in various conditions.—*C. H. Greene.*

695. **MANGOLD, ERNST. Die Bedeutung von Steinchen und Sand im Hühnermagen.** *Arch. Geflügelkunde* 1(5): 145-152. 1927.—The importance of stones in the stomachs of grain-eating birds has recently been questioned; some authors consider the possibility of their solution in the gastric juice, some look upon them as having a stimulating action and others account for their presence by assuming that they are accidentally swallowed. The author, after considering all the work from Spallanzani's experiments down to that of himself and his co-workers, concludes that the gizzard stones take the place of teeth and fulfil the important mechanical function of trituration.—*E. Mangold (transl. by R. J. Brocklehurst).*

696. **MANGOLD, ERNST. Handbuch der Ernährung und des Stoffwechsels der landwirtschaftlichen Nutztiere als Grundlagen der Fütterungslehre. Band II. Verdauung und Ausscheidung [Handbook on feeding and metabolism of useful domestic animals as a foundation to the knowledge of animal feeding. Vol. II. Digestion and excretion.]** xi+464 pp. 146 fig. Julius Springer, Berlin. 1929. M. 42 & 45.

697. **MANGOLD, E., und K. HAESLER. Der Einfluss verschiedener Ernährung auf die Grössenverhältnisse des Magendarmkanals bei Säugetieren (nach Versuchen an Ratten).** *Wissensch. Arch. Landw. Abt. B. Tierernähr. u. Tierzucht* 2(3): 279-305. 1 fig. 1930.—There having been observed in swine a distinct, though small, influence of type of ration (non-bulky-animal and bulky-vegetable rations) on the size relations of the digestive tract, a similar study was made on rats. In 9 experiments on 64 animals in groups of 2-3 animals each from the same litter, during growth up to 200 gm., tests were made of the intravenous injection of alanine, glycoll and relative weight, capacity, and length of sections of the digestive tract. Each group received a purely plant, purely animal or mixed normal ration; within these categories the feed for 2 groups was made bulky by addition of cellulose or loam. The differences between groups due to the 9 kinds of feeding were less than for swine. In many cases the impression of distinct difference gained from the general average for different feeding categories was dispelled by comparison of individual groups. The greatest change was a fairly constant increase in weight and volume of large intestine and weight decrease in small intestine. Under animal diet there was distinct volume reduction of cecum and indication of volume increase of small intestine. The absolute length of small intestine was increased by animal diet and reduced by vegetable. In relation to length of body, the lengths of small and large intestine were unaltered and the whole intestine tended to be shorter than normal under both animal and vegetable diets. Males exceeded females in total length as compared with body length. The differences between vegetable-, animal-, and normal-fed rats were themselves so small that within these categories no influence of bulk, to say nothing of different effect of loam and cellulose, appeared.—*Authors' summary (transl. by M. H. Keith).*

698. **MEYER-BISCH, ROBERT. Ueber die Regulation der Pankreassekretion durch das Blut.** *Verhandl. Deutsch. Ges. Inn. Med.* 40(Kongress): 254-258. 1928.—The action of the intravenous injection of alanine, glycocoll and cystine on the composition and speed of outflow of the pancreatic secretion is studied. Hypertonic NaCl solution enhanced the concentration of chloride in the pancreatic secretion out of proportion to the increase in the blood. The N content underwent similar changes. The output of the secretion decreased. $NaHCO_3$ induced regular increase of the chloride content, whereas the amount of the secretion varied in different animals. The injection of alanine, glycocoll and cystine was followed by cessation of the secretion for as long as 50 min. in some experiments. The secretion after the suspension also contained more chloride than the initial secretion. The clinical significance of this study lies in the finding that certain substances which vary quantitatively in blood in connection with food intake, may have definite physiological effects.—*S. Katzenelbogen.*

699. **NEVER, HENRY E. Speiseregime und Sekretionstätigkeit der Verdauungsorgane.** *Pflüger's Arch. Ges. Physiol.* 225(1): 51-55. 4 fig. 1930.—Meat was fed for about 4 wks. to 2 dogs with gastric and duodenal fistulae; then bread and potatoes were fed for 4 wks. At the test mealtimes the digestive juices were collected at the fistulae and quantitatively determined. The different diets had no effect on the secretion of the digestive juices.—*Author's summary (transl.).*

700. **POESCHEL, RUDOLF. Untersuchungen über die Magenfunktion bei magengesunden alten Leuten.** *Zeitschr. Klin. Med.* 113(3/4): 379-388. 1930.—Fractional extraction of gastric contents showed, in 30 old people without gastric disorders (14 ♂♂ and 16 ♀♀), a tendency toward anacidity in the gastric juice (supporting the findings of Seidelin in 1904); the proportion of anacid cases rose with advancing age. The presence of large amounts of mucus suggested a chronic gastritis, though no complaints referable to such a condition were encountered. No difference between the reaction of ♂ and ♀ was apparent. The chemical character of the contents of the fasting stomach (secretion) corresponded in a general way to the results of the reaction. The time of gastric evacuation is quite various in old age, but not shortened. Poeschel concludes that anacidity cannot be diagnostic of gastric cancer in old age.

701. **POPOW, N. A., und A. A. KUDRJAWZEW. Über den Einfluss der Reaktion der Erreger der Speichelabsonderung auf die aktive Reaktion des Speichels.** *Pflüger's Arch. Ges. Physiol.* 224(1): 69-71. 1930.—The pH of saliva of the parotid gland of 2 dogs, after acid or alkali administration, was taken by both a pear-shaped and a U-shaped electrode. With a pear-shaped electrode the average pH of the saliva of the dogs after acid administration (0.5% HCl) was 8.83 and 9.24 respectively; after alkali administration (.10% Na_2CO_3 or .25% NaOH) it was 8.76 and 9.15 respectively. With the U-shaped electrode after acid administration the pH of the saliva was 8.25 in 1 dog and 8.45 in the other; after alkali administration 8.17 and 8.32 respectively.

702. **POPPER, HANS L., und ALFRED SELINGER. Zum Nachweis von Pankreasfermenten in der Galle. Einwirkungen auf Leber, Gallenwege und Pankreas.** *Zeitschr. Klin. Med.* 113(3/4): 389-394. 1930.—In previously published work Popper had shown the presence of diastase in the bile of the gall-bladder in about 20% of cases; when the arrangement of the duct orifices permits, the pancreatic ferment passes direct from the pancreatic duct into the bile-duct and thence into the gall-bladder. Westphal has expressed the opinion that this pancreatic juice produces injurious changes in the biliary passages and in the liver. To settle this question Popper and

Selinger have studied 14 patients in whom cholecystectomy or other operative procedure had produced for a length of time varying from 14 days to 13 months intermingling of pancreatic juice with the bile of the gallbladder. They found no injury to the biliary passages or the liver and no special disposition to acute pancreatitis. They conclude that so-called non-perforating biliary peritonitis must be referred to a cause as yet unknown, and that the mixture of bile and pancreatic juice after cholecystectomy causes no postoperative difficulties.

703. **PRIKLADOWZKY, S., und M. BRESTKIN. Äussere Sekretion der Verdauungsdrüsen und Blutchemismus. I. Mitteilung. Alkalireserve und Chloride im Blut.** *Zeitschr. Ges. Exp. Med.* 64(3/4): 494-505. 8 fig. 1929.—In sham feeding experiments on esophagotomized, gastric-fistula dogs it is shown that gastric secretion is accompanied by increase of the alkali reserve of the arterial plasma, conversely alkaline secretion (pancreas) results in decreased alkali reserve. The changes in normal dogs depend on the food given: lean meat, a sharp increase in alkali reserve returning to near fasting level in 4-5 hrs.; bread, a more prolonged but smaller increase; and fat, an initial decrease followed by a definite increase over the fasting value. Practically always, the blood chloride falls during the height of the increase, and rises during the decrease of the alkali reserve.—*M. H. Power.*

704. **RADEFF, T.** Смилаемостьта на суровата целулоза на зърнинитѣ храни при гжлаба. [The ability of pigeons to digest the crude fiber of cereals.] Годишникъ на Софийския университетъ, Ветеринаромедицински факултетъ (*Jahresber. Univ. Sofia, Vet. Fakultät* 5: 261-270. 1 fig. 1929.—A male and female white pigeon were unable to digest the crude fiber of rye. The crude fiber of wheat was digested to the extent of about 2%, that of barley about 11% and of maize about 10.6%. These experiments show that the functions of the cecum of fowls in the digestion of crude fiber can, in pigeons, be taken over by other sections of the alimentary tract.—*A. Kalojanoff* (*transl. by C. S. Robinson*).

705. **SCHREIBER, BRUNO. Studi sull'assorbimento intestinale nelle Oleturie. [Intestinal absorption in Holothurians.]** *Pubbl. Staz. Zool. Napoli* 10(2): 235-277. 1930.—In vitro studies on the semipermeability of Holothurian intestines show with regard to the nature and cause of this permeability that under certain conditions they are permeable to isotonic glucose solutions. Semipermeability may be considered as a pathological manifestation of the intestine in probable relation to the high temp. to which the animals were subjected while still living. In experiments of long duration, one observes a series of variations in permeability interpretable as a proof of the vitality of the mucosa during the phase of penetration.—*B. Schreiber* (*transl. by J. G. Edwards*).

706. **SHAFFER, PHILIP A., and THEODORE E. FRIEDEMANN. Sugar activation by alkali. I. Formation of lactic and saccharinic acids.** *Jour. Biol. Chem.* 86(1): 345-374. 3 fig. 1930.—Amounts of saccharinic and lactic acids formed from hexoses, pentoses and trioses under influence of varying conc. of KOH are reported. High alkalinity favors high, temp. and high sugar conc. lower, yield of lactic acid. Within limits, yield of lactic acid from glucose appears to be a function of a fraction of sugar in form as a salt. At high alkalinity and low sugar conc. dihydroxy acetone is almost quant. conv. to lactic acid, yield being a function of the triose, calc. for an assumed pK value of 12.80. Concl. alk. and temp. "activate" sugars by salt formation and consequent ionization, and saccharinic acid formation may be regarded as spontaneous rearrangement of unstable sugar ions. Ratio of particular acids formed probably depends upon the proportions of different salts or ions.—*M. R. Freeland.*

707. **TSCHUKITSCHEFF, I. P. Über den Mechanismus der Hungerbewegungen des Magens. II. Der Einfluss humoraler Verdauungsagentien auf die periodische Tätigkeit des Magens.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 769-781. 5 fig. 1930.—Pancreatic secretin, injected into the blood, would always, after 1 or 2 min., stop the gastric hunger contractions. Similar injections of certain amino acids had no effect. Injection of the end-products of digestion of fibrin by gastric juice, or first by gastric juice and later pancreatic and intestinal juice, caused inhibition of hunger movements. Injection of the blood of hungry animals increased hunger contractions. The author believes that the intensity of hunger contractions is a function of protein metabolism.—*W. C. Alvarez.*

708. **VERZÁR, F., und A. KÜTHY. Die Verbindung der gepaarten Gallensäuren mit Fettsäuren und ihre Bedeutung für die Fettresorption. II. Löslichkeit und Diffusibilität.** *Biochem. Zeitschr.* 210(4/6): 265-280. 5 fig. 1929.—In a previous paper it was shown that the alkaline salts of the coupled bile acids—Na taurocholate and Na glycocholate—are able to bring finely dispersed fatty acids into a clear watery solution. Such solutions have two qualities of biological importance. The fatty acids are in such solutions diffusible and are stable above pH 6.2, that is just at the physiological reaction of the small intestine. Since neither trypsin nor the bacterial flora of the intestines decomposes these bile acids, it follows that the coupled bile acids as such may have an influence on the absorption of fatty acids. So it seemed necessary to examine some of the physico-chemical properties of such solutions. On examining the relationship between the respective concentrations of fatty acids and bile acids, it was found that in very dilute solutions perfect clearness could be obtained. Increasing concentration of fatty acids decreases the clearness of the solution. Such solutions cannot be cleared up, even by a very great amount of the bile acids. It is suggested that in low concentrations the existing state is a molecularly dispersed system, whereas at high concentrations we have a polydispersed system. The suggestion is supported also by ultrafiltration and diffusion experiments; according to the latter, in small concentrations (0.06%) all the fatty acids are diffusible, whereas in higher concentration (0.25%) part of them does not diffuse. Also the precipitation experiments show that such solutions are colloidal, the particles possessing negative charges.—*F. Verzár.*

709. **WERENINOW, A., M. und T. WINOGRADOFF, und M. DIAKOW. Die Einwirkung der Infusorien auf die Verdauung der Wiederkäuer.** *Biochem. Zeitschr.* 226(4/6): 387-394. 1930.—Experiments were made on 4 rams. They were starved for 1 wk.; the absence of infusoria from the 1st stomach was ascertained; then for 16 days the animals were fed sterilized food and the feces collected for 9 days. They were then artificially reinfected with infusoria, and, after the lapse of 10 days, the feces were again collected. While the difference in fecal content was not great, cellulose was better digested in the absence of infusoria.

710. **WILSON, ROBERT H. The rate of absorption of cystine from the gastrointestinal tract of the white rat.** *Jour. Biol. Chem.* 87(1): 175-180. 1930.—The rate of absorption of cystine, fed as the Na salt, from the gastrointestinal tract of the rat has been determined. The absorption is at the rate of 30.5 mgm. of cystine per 100 gm. of body weight per hr., a value lower than that of any other amino acid which has been reported. When fed as the hydrochloride, it is absorbed still more slowly, which may be due to decreased solubility of the cystine.—*Author's summary.*

711. **WINOGRADOW, M., T. WINOGRADOWA-FEDOROWA, und A. WERENINOW. Zur Frage nach der Einwirkung der Panseninfusorien auf die Verdauung der Wiederkäuer.** *Zentralbl. Bakt. II. Abt.* 81(8/14): 230-244. 1930.—The average of 2 test periods shows that dry material is about 3.4% less digested in the sterile sheep. This is confirmed by the colorimetric data (3.9%). Cellulose was about 12.8% less digested in the sterile sheep, but N about 4.5% better digested than in the normal sheep. As for the single experimental

period, in the first half there is an especially large negative difference, balanced in large measure in the second half and not beyond the limits of accuracy of the method. It is worthy of mention that the amount of the digestible energy in the 2nd half is the same in the sterile sheep as in the normal. The lowering of the digestibility of the food in the sterile sheep has manifested itself particularly in the 1st half, while in the 2nd half there is no important difference. On the basis of these results it can be stated that if the infusions exert a favorable action on the digestion of the cell tissue, this action cannot be important. We are not inclined to hold this conclusion as decisive since further tests are necessary with attention to the influence of the individuality of the animals.—*Authors' conclusions* (*transl. by G. T. Lewis*).

ANIMAL PHYSIOLOGY

RESPIRATION

ROBERT GESELL, *Editor*

(See also in B. A. 5(11): 27349, 27376, 27598, 27846, 27892, 27975, 28022, 28024, 28033; and in this issue 238, 252, 263, 391, 403, 412, 413, 428, 493, 507, 576, 587, 999, 1002, 1033, 1034, 1121, 1131, 1135, 1178, 1185, 1197, 1232, 1252, 2243, 2292, 2764)

712. **GOLLWITZER-MEIER, KL. Anoxämie und Kreislauf.** *Pflüger's Arch. Ges. Physiol.* 220(3): 434-447. 1928.—A decrease in O partial pressure in inspired air from 160 to 120 mm. produces in the dog only a slight effect on the circulation. When the O pressure falls below 100 mm., significant circulatory phenomena always appear: increase in arterial pressure and increase in frequency, in output per beat and in min. vol. (determined by Fick's method). Notwithstanding the increased minute-volume, the venous pressure does not sink but increases slightly, apparently as a result of increased venous return to the heart. With a decrease in arterial O tension below 40 mm., min.-vol. decreases, usually with a simultaneous increase in frequency and a considerable increase in venous pressure; this is a sign of cardiac insufficiency. It is assumed that circulatory regulation is effected by central anoxemia. Changes in pH in the vasomotor center furnish an important stimulus for circulatory regulation.—*K. Gollwitzer-Meier* (*transl. by D. B. Dill*).

713. **GROLLMAN, ARTHUR. Physiological variations in the cardiac output of man. IX. The effect of breathing carbon dioxide, and of voluntary forced ventilation on the cardiac output of man.** *Amer. Jour. Physiol.* 94 (2): 287-299. 1930.—In 19 experiments on 4 subjects it was found that CO_2 did not affect the circulatory system of normal man until it reached a concentration of about 6% in the inspired air. Higher concentrations caused an increase in the pulse rate, blood pressure, and cardiac output. Forced voluntary ventilation of atmospheric air also caused a moderate increase in the circulatory rate. When CO_2 was added to the inspired air, to avoid any change in the alveolar tension of this gas, practically similar increases were observed. Since, in the last named experiments, only the mechanical effect of hyperventilation was present, the changes observed after natural breathing of CO_2-air mixtures or during forced respiration of air are also attributed to the mechanical aid which violent respiratory efforts exert on the circulation.

714. **GRÜNEBERG, FR., und A. VIETHEN. Die Wirkung von Kohlensäuregasgemischen auf die Atmung des gesunden und kranken Kindes.** *Jahrb. Kinderheilk.* 128(1/2): 65-82. 1 fig. 1930.—About 50 studies were made on the effect of mixtures of CO_2 with air or O on the respiratory center in 31 healthy children aged from 3 wks. to 14 yrs. The mixtures were exactly measured by the Franken apparatus. Mixtures of 0.5%-10% CO_2 with either air or O increased the aeration of the lungs, more decidedly if the CO_2 was given with interruptions than if given continuously. The amount of the increase in respiratory volume was exactly determined for each percentage of CO_2 from 0.5 to 10%; up to 4% the increase in volume was attained through deepened respiration; above that percentage a marked increase in the number of respirations per time unit was observed. Comparison of the action of CO_2 with that of lobelin showed that CO_2 was at least as effective as lobelin, in suitable cases more so; the action of CO_2 began earlier and was more intense. Atropine, cardiazol, coramin, strychnin and caffein showed no effect worthy of mention on respiration.

715. **HAZELHOFF, E. H., und HERMANN JORDAN. Die Regulierung der Atmung bei Insekten und Spinnen.** *Zeitschr. Wissensch. Biol. [Abt. C.] Zeitschr. Vergleich. Physiol.* 5(1): 179-190. 1 fig. 1927.—The observations were made chiefly on *Periplaneta americana*. The animals were fastened to a cork plate in a gas chamber and exposed to different temperatures and gas mixtures. At 28° C., the normal temp., the resting animal shows no movements of the almost completely closed spiracles. When in motion, living animals use only the first thoracic and abdominal pair. The others close completely for an instant at each expiration. Observations under water show that inspiration and expiration occur in all stigmata. Besides the known regulation of respiration, there is a regulation of diffusion. For example, animals die with all the stigmata dilated. When the temperature is increased the stigmata widen. 2 to 3% CO_2 opens the stigmata further. Increased ventilation (pumping movements) appears in the presence of 10 to 15% CO_2. Reduction of O to 5% often causes dyspnea. Experiments in which different gas mixtures are blown through a capillary tube show that each stigma is self-regulated peripherally. In 4 experiments it was shown that CO_2 is the physiological cause of the regulation of diffusion. In 10 kinds of insects and 5 kinds of spiders the same results were obtained. According to the literature, the normal closure of the stigmata is a protection against desiccation. Opening of the stigmata and with it diffusion ventilation is chiefly the result of local stimulation of the spiracles by CO_2.—*H. Kalmus* (*transl. by W. S. Root*).

716. **KRUSIC, IVAN. O tepelné polypnoi u ptáků. [A thermal polypnea in birds.]** *Biol. Spisy. Vysoké Školy Zvěrolékařské Brno* (*Publ. Biol. École Vétérinaires Brno*) 7: 97-102. 1928.—Birds, like many mammals, react to a high surrounding temp. by a thermal polypnea (accelerated respiratory movements). With birds this polypnea is central rather than reflex in origin. It occurs only as a result of a rise in body temp. During thermal polypnea respiratory movements are significantly modified in that rhythm and depth become very variable. Pigeons of all laboratory animals are most sensitive to high temp. while fowls are very resistant. In all the animals experimented upon respiratory movements of the throat were seen resembling those of amphibia and reptilia. The phase of recovery in birds in normal external temp. is accompanied by the same phenomena which Vacek has seen in certain mammals.—*Author's French summary* (*transl. by A. H. Turner*).

717. **SCHNEIDER, EDWARD C. Observations on holding the breath.** *Amer. Jour. Physiol.* 94(2): 464-470. 2 fig. 1930.—Among 318 American aviators (France, 1918-1919) the range of time for breath-holding was 29-128 sec. (mean time 67.8 ± 1.2 sec.). Among the army group of aviators 127 were given the official altitude classification examination. It appeared that the coefficient of correlation of breath-holding with the rate

at which the individual absorbs O was only -0.27 ± 0.06, and with the lowest degree of "O want" it was as small as -0.18 ± 0.06. Such low coefficients as these indicate that O is by no means the primary factor in bringing on the breaking-point in breath-holding. From these and other observations Schneider concludes that for the majority of men the length of time the breath can be held is determined more by psychological than by physiological factors. When, however, the length of time is determined by physiological factors, it is the composition of the blood, its alkaline reserve and its content of CO_2, which are of primary importance; while a lack of O is only a secondary cause in determining the length of the hold.

718. **SOMER, E. DE. Recherches sur les modifications que subit la respiration par des variations cardiaques. Relations cardio-respiratoires.** *Jour. Physiol. et Path. Gén.* 28(2): 311-320. 6 fig. 1930.—Definite arrest of the heart is a cause of respiratory acceleration, and should be included among the sources of abnormal effects in experimental work. An analogous condition is seen when the beat of the heart is weakened temporarily by such agents as intravenous injections of air or hydrochloric acid, stimulation of the vagus, collapse of the lung, and poisoning by chloroform or CO_2. These effects have been studied after section of both vagi, when the respiratory acceleration can no longer be observed, showing that the cardiac influence is not due to an anemia of the respiratory centre.—*W. R. Fearon.*

719. **UNDRITZ, W. The rhinoanemometer.** *Acta Oto-Laryngol.* 14(3/4): 513-524. 5 fig. 1930.—The rhinoanemometer is an apparatus for measuring objectively the quantity of air passing through the nasal cavity at inspiration and at expiration. The capacity of passage of the nose must be numbered among the other physiological tests characterizing the vitality of the organism. Researches concerning the capacity of passage of the nose, before and after being smeared with epinephrine, give a line on the vasomotor state of the organ.

720. **WINKLER, ALEXANDER. The regulation of respiration. The effects of hemorrhage and reinjection, and of the intravenous injection of sodium carbonate and sodium cyanide upon the response of the neuromuscular mechanism.** *Amer. Jour. Physiol.* 94(1): 224-234. 19 fig. 1930.—A series of experiments is described in which are studied the effects of hemorrhage, reinjection, and the injection of Na carbonate and Na cyanide upon the amplitude of contraction of the sartorius muscle of the dog. Both submaximal and supramaximal stimulation of the motor nerve and of the muscle were employed. The simultaneous responses to motor nerve and to direct muscular stimulation in general showed similar variations. Hemorrhage, if large enough, was found to produce a decrease in amplitude, reinjection an increase, the effect being the same whether submaximal or supramaximal stimuli were used. Na carbonate when injected in large quantities was found to produce an increase in the response to submaximal stimuli. Smaller quantities were without effect. The effect of carbonate on the response to supramaximal stimuli was inconstant and, in general, not significant. Moderate injection of cyanide produced an increase in the response to submaximal stimuli, sometimes followed by a decrease. Cyanide in larger quantities produced a decrease in the response to supramaximal stimuli. The effect of lesser quantities was uncertain. Some correlation between changes in pulmonary ventilation and those in muscular activity after cyanide was observed; such a correlation was not found with the other procedures. The relation of these experiments to the previous work of Glazer and Winkler was discussed. The conclusion was reached that the previously studied increase of the reflex response after hemorrhage and decrease after reinjection were probably wholly central in origin; the reflex increase after carbonate probably both central and peripheral, but mainly central; and the reflex increase after cyanide certainly peripheral in part with possibly a central component as well.—*Author's summary.*

721. **WINKLER, ALFONS. Experimentelle Beiträge zur Frage nach Charakter, Art der Akzentuation und Entstehung der Atemgeräusche über Kavernen.** *Wien. Arch. Inn. Med.* 15(3): 463-486. 1928.—From a study of the sounds produced by various alterations and various ways of blowing into a rubber model made of balls and tubes imitating the bronchial tree, conclusions are drawn concerning the pulmonary sounds. For the production of such sounds, a relatively strong stream of air is necessary. Cavities modify the sounds in various ways. Open cavities with elastic walls control the speed and strength of the air current. The air entering the cavity hits the opposite wall and causes vibration, which is regular and has a resonating effect if the wall is smooth inside, of greater amplitude if rough. Open cavities with non-elastic walls do not affect the volume of air passing. The basic respiratory sounds arise in the bronchioles which are connected to cavities, depend on the speed and strength of the air current, and are due partly to direct air currents and partly to vortices at branches. Elastic walls strengthen the sounds. If the opening into respiratory cavities is narrowed, the air current is increased and loud sounds result. A cavity which is not in use can affect the sound as the air crosses its opening. The vibration of the air started by the vocal cords diminishes towards the periphery of the bronchial tree. During expiration the glottis is narrower than at inspiration; the vibration of the air column is thus stronger at expiration. This effect of the glottis depends on its width and the force of respiration. The glottis can act on open but non-respiratory cavities and evoke typical sounds, which are accentuated at expiration. Closed cavities with fixed walls do not participate in the respiratory sounds. The typical cavity sound is loud and deep and of an amphoric character with high metallic overtones. Study of the rubber model shows that the classic cavity sound is produced only by large, open, elastic cavities, with smooth walls, and taking an active part in respiration. The pulmonary sounds are composed primarily of a multitude of single vibrations. The question of transmission of the sounds from various depths of the chest through normal and thickened lung tissue is discussed at length. Only the deeper sounds get through normal air-filled tissue; the higher vibrations are filtered out, the more completely the higher they are. Closed cavities not involved in the respiratory stream can participate in the sounds through being set in vibration by adjacent active tissue; their sound is amphoric. Otherwise, closed cavities are not detectable. The classic sound of open cavities can be heard at the chest wall only when a multiplicity of conditions is fulfilled, but as these conditions also determine the audibility and accentuation of expiration, the classic sound is associated with prolonged and accentuated expiration. This accentuation of cavity sounds is dependent on the glottis and is more marked the more central the cavities, less marked, the more peripheral they are. Conditions can be arranged in which the accentuation occurs on inspiration. The foregoing are only a few of the points made in the paper.—*L. H. Hyman.*

722. **WINTERSTEIN, HANS. Vorrichtung zur künstlichen Atmung unter physiologischen Bedingungen.** *Pflüger's Arch. Ges. Physiol.* 222(3): 409-410. 1929.—The animal is placed in a closed chamber through which only the head protrudes through an air tight rubber collar. A pump produces rhythmically a negative pressure by which physiological inspiration takes place. Expiration follows the return of air to the chamber.—*H. Winterstein (transl. by D. A. McGinty).*

723. **WINTERSTEIN, HANS. Kohlensaüre und Atmungsregulation.** *Pflüger's Arch. Ges. Physiol.* 222(3): 4f1-414. 1 fig. 1929.—With direct introduction of CO_2 into the blood stream, the increase of respiration corresponds fully to the shifting of reaction occasioned by other acids. The statement of Buytendijk that acid injection brings about no hyperventilation and that the blood becomes alkaline during reflex respiratory inhibition is erroneous and obviously due to mistakes in the method.—*H. Winterstein (transl. by D. A. McGinty).*

ANIMAL PHYSIOLOGY

ENDOCRINOLOGY

W. W. SWINGLE, *Editor*

J. J. PFIFFNER, *Associate Editor*

(See also in B. A. 5(10): Entries 23007, 23148, 23189, 23227, 23235, 23236, 23239, 23240, 23246, 23249, 23328, 23339, 23366, 23376, 23379, 23390, 23402, 23420, 23461, 23463, 23523, 23539, 23547, 23657, 23660, 23742, 23777, 24057, 25515, 25519, 25525, 25526, 25529, 25530, 25531, 25533, 25534, 25535, 25537, 25538, 25622; 5(11): 26528, 27511, 27523, 27619, 27632, 27667, 27753, 27755, 27952, 28002, 28014, 28033, 28041, 28076, 28181, 28194, 28319, 29129, 29140, 29212, 29216, 29218, 29219, 29253, 29257; and in this issue 29, 134, 321, 406, 422, 424, 430, 438, 448, 453, 464, 505, 550, 563, 564, 571, 583, 596, 665, 698, 894, 900, 902, 904, 905, 906, 925, 929, 938, 946, 957, 958, 1096, 1105, 1153, 1205, 1210, 1217, 1220, 1238, 1259, 1263, 1294, 1320, 1402, 1533, 1617, 2263, 2321, 2339)

724. **AKEHI, T. Internal secretion of the pancreas and the female genital function. Part I. Histological investigation of the pancreas in pregnancy and puerperium, especially the Langerhans's islands.** *Japanese Jour. Obstetr. & Gynecol.* 13(4): 427-432. 7 fig. 1930.—The subject was studied in an unspecified number of rabbits. Individual experiments are not detailed, but the following conclusions are drawn: The Islands of Langerhans are gradually hypertrophied and proliferated in pregnancy, and a number of newly generated Islands appear. Such phenomena become more marked as pregnancy approaches term. During parturition, the Islands rapidly become atrophied and decrease in number. On the 1st and 2nd days of puerperium the condition of the Islands falls below that of the non-pregnant. The normal condition returns approximately on the 4th day of puerperium. The β cells of the Islands are affected most acutely by pregnancy and puerperium, and the other types show no marked change.

725. **ALLAN, H., F. DICKENS, and E. C. DODDS. Observations on the standardization of the water-soluble, oestrus-producing hormone.** *Jour. Physiol.* 68(4): 348-362. 1930.—The problems of evaluation of vaginal smears, of methods of administration of the oestrus-producing hormone, and of variations in response have been considered. The relationship between the dose of hormone administered and the percentage of rats showing positive oestrus response is shown by curves. By means of these, unknown preparations may be compared with a standard. It was found that injection of single doses gave much less response even though the total number of units was the same as that given in divided doses. If the single dose was administered in oil the response was greater. Oral administration, even in divided doses, was very inefficient. The application of these experiments to the question of standardization is discussed.—*A. M. Woodruff.*

726. **ANSELMINO, KARL JULIUS, und FRIEDRICH HOFFMANN. Nachweis einer glykogenvermindernden Substanz (Schilddrüsenhormon) im Blute von Schwangeren.** *Arch. Gynäkol.* 143(2): 310-318. 1930.—Serum from pregnant women (14), from 2 directly after delivery and during the puerperium, from 2 fetuses, and from an unstated number of nonpregnant women, was injected subcutaneously into ♂ mice (0.5 cc. 5 times at 12-hr. intervals; mice killed on the 4th day). The glycogen content was decreased beginning with serum from the 2nd mo. of pregnancy and continued to decrease until the 2nd day of the puerperium when it began to increase, being almost normal on the 8th day. Fetal blood contained far less of the glycogen-decreasing substance than did the maternal. At the end of pregnancy 2.5 cc. serum produced a 75% decrease in liver glycogen in the mouse. Similar investigations with thyroxin showed that 40-50 γ thyroxin had the same action as 2.5 cc. serum.

727. **ARLOING, FERNAND, A. JOSSERAND, et J. CHARACHON. Cortico-surrénale et cancer expérimental.** *Bull. Acad. Méd. [Paris]* 103(8): 211-214. 1930.—In the course of 1½ yrs. of experiments not detailed, the authors found that the suprarenal cortex of a rabbit injected with substance of white mouse tumor became endowed with the property of retarding or arresting the growth of such tumors. Grafts or glycerinated extracts of such suprarenals in tumor-bearing mice were active if the suprarenal were taken without delay; if, however, the rabbits were not killed promptly, the suprarenal was either ineffective or even promoted the tumor growth. After such delay, the suprarenal cortex became yellow, tripled in thickness, and showed a zone in which there was an enormous development of spongiocytes. These phenomena the authors link up with the discoveries of Sokoloff with regard to the suprarenal cortex of cancerous mice.

728. **ARTUNDO, ARGENTINA, y P. MAZZOCCO. Acción del lóbulo anterior de la hipófisis sobre el metabolismo respiratorio y el glucógeno de la rata blanca. [Effect of anterior pituitary lobe on respiratory metabolism and glycogen of white mice.]** *Rev. Soc. Argentina Biol.* 6(7/8): 391-395. 1930.—Intraperitoneal injection of 3 fresh homologous anterior pituitary lobes suspended in 1 cc. saline caused no uniform variations in basal metabolism, hepatic and muscular glycogen. The glycemia showed a slight tendency to decrease.—*J. T. Lewis.*

729. **ASAKURA, KYUMATSU, and TATSUO SATO. Studies on the detoxicating hormone of the liver (yakriton). 18th report. Prophylactic effect of yakriton against subacute phosphorus poisoning. Rabbit-phosphorus-unit (R.P.U.) of yakriton.** *Tohoku Jour. Exp. Med.* 14(2/3): 180-186. 1929.—"Yakriton" can protect rabbits against subacute P poisoning if injected subcutaneously 20 min. before the toxic dose of P has been administered orally. An emulsion of a kind of ratsbane, "nekoriazu," containing 5% P was used. The effective dose of the "liver hormone" was found to be ½ (R.P.U.) unit only, neither more nor less, with no satisfactory explanation for the curious phenomenon.—*M. I. Smith.*

730. **BALAWENETZ, S. Über die Wirkung der Thymokrinfütterung auf die Hoden weisser Ratten und deren Wachstum.** *Virchow's Arch. Path. Anat. u. Physiol.* 278 (2): 383-390. 4 fig. 1930.—The thymus hormone used was a dry powder prepared from the calf's thymus by the Institute of Experimental Endocrinology in Moscow. It was given for periods up to 4 mos. to 30 white ♂ rats aged from 3 wks. to 6 mos. The dosage was for some rats 0.01-0.08 [unit ?] and for others 0.2-0.6. The lower dosage produced no difference in growth, weight or sexual organs between treated animals and controls, but treated animals were sluggish and depressed so long as thymus was administered. The higher dosage produced no difference in growth, but did cause general disturbance of metabolism, slightly lower weight than that of the controls, general sluggishness, nervous depression, and, in immature rats, delayed sexual development, in the adults, hastened degeneration of the seminiferous tubules. On the other hand, the rats receiving high thymus dosage seemed to show increased resistance to infection and more rapid and cleaner healing of wounds. Details of experiments are not given.

731. **BARTOLI, OTTORINO, e GIULIO TEONI. L'influenza dell'estratto di timo sulla rigenerazione del tessuto muscolare nei mammiferi. [Influence of extract of thymus on the regeneration of muscle tissue in mammals.]** *Sperimentale* 84(4): 213-236. 10 fig. 1930.—Injection of extract of thymus delayed the initial regeneration of striated muscle, which had previously been sectioned. The later stages of the reparative process proceeded at a normal or slightly accelerated rate.—*M. L. Menten.*

732. **BEDARIDA, NINO VITTORIO. Impianti etero-**

loghi di surreni in conigli. [Heterologous suprarenal implants in rabbits.] *Policlinico [Sez. Pratica]* 37(28): 1017-1019. 1930.—In an unspecified number of rabbits triturated suprarenal gland tissue was implanted under the skin of the back, 2-8 implants per animal being made at intervals of 7-14 days in doses of 1.5-20-30 cgm. The rabbits were killed 1-6½ mos. after the 1st operation; no histologic changes were found in arteries or veins.

733. **BELAWENETZ, S. Über die Wirkung der Thyreokrinfütterung auf die Hoden der weissen Ratten.** *Anat. Anzeiger* 65(9/10): 155-161. 5 fig. 1928.—Feeding "thyreokrin" ("hormone of the thyroid") to white rats aged 4 weeks to 8 mos., in doses of 0.005 to 0.05 gm., caused a degeneration of the testicles in both mature and immature subjects, most severe in the latter. In spite of increasing doses the degeneration was followed by a regeneration which appeared earliest in the adults (25-35 days) and later in the immature animals (10 weeks). In the beginning of this regeneration the persisting living spermatogonia, not the Sertoli cells, participated. Animals receiving "thyreokrin" lose their procreative faculty through a failure of the functional capacity of the spermatozoa since coitus was observed. The observation period was too short to determine the duration of the impotence.—*J. B. Youmans.*

734. **BERBLINGER, WALTHER. Die innere Sekretion im Lichte der morphologischen Forschung. (Form und Funktion.)** 30p. Jenaer akademische Reden, Heft 5. Gustav Fischer: Jena, 1928. Pr. 1.80 M.—A brief review of the relationship between morphology and function in glands of internal secretion.—*H. B. van Dyke.*

735. **BEYERMANN. Über pathologische Schlafzustände, insbesondere narkoleptische Anfälle, in ihrem Zusammenhange mit Funktionsstörungen der Hypophyse.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(5): 726-750. 1930.—In 5 cases of narcolepsy (none of which apparently had come to necropsy) the condition was favorably influenced by extract of hypophysis. Beyermann concludes that control of sleep is a function of the hypophysis and that narcoleptic attacks are due to a disturbance of this function.

736. **BORNSTEIN, A. Wirkung der Schilddrüsenexstirpation auf die Adrenalinempfindlichkeit sympathisch innervierter Organe.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 1-4. 1930.—The blood-pressure in the surviving hind extremities of 4 thyroidectomized dogs was compared with that in the extremities of 5 normal dogs, the abdominal aorta and vena cava being left attached to the preparations and perfused with defibrinated blood. Under dosage of 0.2 cc. of 1:1000 epinephrine solution introduced into the aorta, no material difference was observed between the pressure in the extremities of the normal and thyroidectomized dogs.

737. **BOUCKAERT, J. J. Massage of the thyroid gland and rate of denervated heart in the dog.** *Amer. Jour. Physiol.* 95(2): 427-428. 1930.—Bouckaert was unable to produce any marked or consistent increase in the rate of the dog's denervated heart after massage of the thyroid, as reported by Cannon and Smith for the cat.

738. **BRITTON, S. W. Seasonal variations in survival after adrenalectomy.** *Amer. Jour. Physiol.* 94(3): 686-691. 1 fig. 1930.—Of 22 marmots (*Arctomys monax*) adrenalectomized at different seasons, those operated on between April and November (the normal active period) survived for 2-10 days only. Those operated on during the winter months, when normally inactive or dormant, showed no immediate ill effects and might survive in good health for several months, only to succumb to severe adrenal insufficiency at the usual time of awakening in April. The blood sugar, body temperature and heart rate of the marmot were considerably lower during the normal period of dormancy than in summer. There is also a much diminished energy output during hibernation. The intimate relationship of the adrenal glands to metabolism is briefly discussed.

739. **BUTENANDT, ADOLF. Über die Reindarstellung des Follikelhormons aus Schwangerenharn. (Untersuchungen über das weibliche Sexualhormon, 4. Mitteilung.) [The isolation of pure follicular hormone from the urine of pregnant women. (No. 4 of studies on the female sexual hormone.)]** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 191(3/4): 127-139. 1 pl., 3 fig. 1930.

740. **BUTENANDT, ADOLF. Über physikalische und chemische Eigenschaften des krystallisierten Follikelhormons. Untersuchungen über das weibliche Sexualhormon. (5.)** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 191 (3/4): 140-156. 1 pl., 4 fig. 1930.—The pure follicular hormone, characterized by melting point, crystalline form, solubility, optical rotation, ultraviolet absorption spectrum and physiological action, has, according to previous determinations, as its probable formula $C_{18}H_{22}O_2$; this formula needed further confirmation, since the homologous formula $C_{17}H_{20}O_2$ appeared according to former researches not completely excluded, though much less probable. The relations of the O atoms could be verified. One is present as an easily esterifiable hydroxyl group, as could be shown by the preparation of acetyl and benzoyl derivatives; the other O atom is in a carbonyl group, which gives a test with ketone reagents. The hormone therefore has the structure of a hydroxyketone; it is probable that the transformation of the neutral substance into an alkali-soluble form (a reaction that corresponds to that of a lactone) is to be explained by a ready transformation of the carbonyl group into an enol group. The molecule probably contains 3 double bonds. These are saturated by intensive hydrogenation with simultaneous reduction of the keto group. The hydrocarbon $C_{18}H_{30}$ is the foundation for the completely hydrogenated hormone $C_{18}H_{32}O$. It contains 8 fewer H atoms than a saturated paraffin, a fact that can be explained by the presence of either an aromatic nucleus or of 4 hydrogenated rings in the molecule.—*Author's summary (transl. by G. L. Kelly).*

741. **CAMERON, A. T., and F. D. WHITE. Preliminary note on an attempt to concentrate the active principle of the adrenal cortex.** *Trans. Roy. Soc. Canada Sect. V.* 22(2): 145-149. 1928.—An active principle of the adrenal cortex, capable of accelerating growth when fed to young white rats, passes into solution during hydrolysis with N/10 HCl. The action of this compound is antagonised, at least in part, by adrenin. Such antagonism is overcome by simple oxidation. It is doubtful whether ethyl alcohol fractionation affords a real method of concentration, the apparent results being probably due to the adrenin fractionation produced. Methyl alcohol extraction permits concentration. An effective method of removing adrenin without destruction of the active principle of the cortex must next be found. Adrenin, fed to young rats for a period of 18 days or longer, produces definite toxic effect, including marked inhibition of growth.—*From authors' conclusions.*

742. **CANNON, W. B., and Z. M. BACQ (with the assistance of R. M. MOORE). Studies on the conditions of activity in endocrine organs. XXVI. A hormone produced by sympathetic action on smooth muscle.** *Amer. Jour. Physiol.* 96(2): 392-412. 1931.—In a cat with heart denervated, adrenals and liver excluded from action and spinal cord severed in the mid-thoracic region (so as to permit, without anesthesia, painless operations in the hind part), stimulation of the sympathetic supply to the smooth muscle of the tail hairs (and of the blood vessels of the region) causes, for about 2 min., a gradual increase of blood pressure, a gradual increase of heart rate and a gradual increase of salivary secretion. The time relations of the increase and the slow return to the former state are, in each instance, similar to those reported for the denervated heart alone, as a consequence of emotional excitement. If the blood flow into and from the legs and tail is hindered, the phenomenon is much reduced or is delayed until the flow is restored. Since the only tissue known to be affected by sympathetic stimulation at the base of the tail or on the mesenteric arteries is smooth muscle, since the only connection be-

tween the hind part of the animal and the responding denervated organs in the fore part is the blood stream, and since interfering with the stream in the region where smooth muscle is stimulated either markedly depresses or abolishes the response, it is inferred that a substance is given off from smooth muscle into the blood, that it is carried effectively by the blood to distant organs, and that it influences those organs as sympathetic impulses would influence them. Because the properties just mentioned are those of a hormone the authors regard the substance given off by smooth muscle, when affected by sympathetic impulses, as a hormone. The substance arises not only from pilomotor muscles, but also from the smooth muscle of the intestine, and the bladder and uterus. Because the substance is derived from structures under sympathetic control, when they are influenced by sympathetic impulses, they suggest that it be called sympathin. Sympathin is given off from the smooth muscle of the tail and can increase the heart rate after ergotamine has prevented sympathetic impulses from causing erection of the tail hairs. The bearing of these observations on those of Loewi and others on the humoral transmission of nerve impulses, the support which the observations bring to some early views of Elliott, and the possible relations of sympathin and adrenin, are considered in the discussion.—*Authors' summary.*

743. **CARUSI, R. Sulle secrezioni pancreatiche. I. Le secrezioni pancreatiche allo stato normale. II. Le secrezioni pancreatiche dopo l'iniezione d'istamina. III. Le secrezioni pancreatiche dopo l'iniezione di peptone.** [The pancreatic secretions. I. In the normal condition. II. After injection of histamine. III. After injection of peptone.] *Policlinico [Sez. Med.]* 37(2): 90-96; (6): 289-297; (7): 344-352. 1930.—I. In 6 normal dogs the pancreatic secretions were determined in the blood serum and in the urine. Insulin production was estimated indirectly from the glycemic curve. No uniformity in pancreatic secretion was observed nor was there any distinct parallelism between the endocrine secretion (insulin) and the exocrine (digestive ferments). Similar results were obtained on a dog with a pancreatic fistula. II. 5 normal dogs and a pancreatic fistula dog were subcutaneously injected with histamine. The blood sugar increased sharply and progressively. The ferments were slightly augmented. In the pancreatic fistula dog, histamine increased the volume of pancreatic juice from 4 cem. to 12.3 without a corresponding increase in the enzymatic activity of the ferments; there was no parallelism between the activity of the 3 ferments (diastase, lipase and trypsin). No relation was observed between the endocrine secretion and the ferments after histamine. III. Peptone was subcutaneously injected into 4 normal dogs and intravenously into 1; subcutaneously also into a pancreatic fistula dog. A marked and constant rise in blood sugar resulted. The pancreatic ferments were slightly and irregularly affected. Peptone apparently does not stimulate the pancreatic acini. The trend of the 3 series of experiments indicates the mutual independence of the endocrine and exocrine pancreatic secretions, and of the various constituents of the pancreatic juice.

744. **CASTEX, M. R., y M. SCHTEINGART. Acción de los principios activos posthipofilismo basal.** [Pitressin and pitocin on basal metabolism.] *Rev. Soc. Argentina Biol.* 6(4): 231-235. 1930.—The oxytocic principle has the greater effect since an increase of +17 to +23 was observed in the first hour after injection in 12 out of 13 subjects. Of 17 subjects injected with pitressin 9 showed an increase.—*J. T. Lewis.*

745. **CAVAZZI, FRANCESCO. Il sistema glandolare e nuove vedute in medicina.** [Glandular system and new views in medicine.] 39p. Zanichelli: Bologna, 1926.

746. **CENI, CARLO. Proprietà antitiroidea della ghiandole germianli di vertebrati inferiori.** [Antithyroid properties of the gonads of lower vertebrates.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 340-342. 1930.—Extracts of testicle and ovary of lower vertebrates administered either per os or parenterally have a double action, a stimulating one on the sexual functions, and an inhibiting one on the thyroid (these actions were tested on human hyperthyroids).—*M. Comel.*

747. **CLAUBERG, CARL. Der biologische Test für das Corpus luteum Hormon.** *Klin. Wochenschr.* 9(43): 2004-2005. 3 fig. 1930.—In tests upon baby rabbits weighing less than 600 gm. the same quantity of corpus luteum hormone was required to produce proliferation of the cells lining the uterus as with larger animals. Doses of 10 mouse units were given daily for 8 days and produced definite proliferation of the uterine cells. Animals were killed daily and it was found that the normal appearance was exhibited on the 6th day after discontinuing injections. A rabbit unit (K. E.) is proposed which is the quantity of corpus luteum hormone producing a definite change in the uterine cells persisting for 5 days. The desired response is shown by illustrations in the original article.—*C. Clauberg (transl. by J. C. Munch).*

748. **CLAUS, PEARL E. Separation of anterior-lobe substances and study of their individual effects.** *Physiol. Zool.* 4(1): 36-55. 6 pl. 1931.—The technical procedure for separating 2 substances of the anterior lobe of the pituitary is described: one, a crystalline product which is the follicular stimulating factor; the 2nd, a substance which causes luteinization of the follicles. The method consists of extracting the anterior-lobe substance with alcohol containing 2% HCl, purification by use of acetone, ether, and absolute alcohol, and crystallization from glacial acetic acid. An aqueous extract of the crystals causes precocious sexual maturity in immature female and male mice, and stimulates increased follicular development in adult female rats. The crystals in question have not only been obtained from anterior-lobe tissue, but also from the urine of pregnant women, the epididymis of the bull, fish sperm, thyroid gland, and adrenal cortex. Whatever the source, the same physiological properties are manifested. This widespread occurrence opens up the question of whether we may not be dealing with a substance more general in nature than a hormone as ordinarily conceived. This can only be answered through further experiment. With the exception of the crystals, the only other active fraction obtained from the anterior pituitary by the procedure described was the luteinizing substance. This fraction causes the formation of atretic corpora lutea in the ovary, but does not cause precocious sexual maturity. It also stimulates placentomata formation, whereas the crystals do not.—*Author (courtesy Wistar Bibl. Serv.).*

749. **COGNETTI de MARTIIS, LUIGI. Sulla ormoni sessuali e sulla derivazione germinale di quello testicolare.** [Sexual hormones and their derivation from testicular cells.] *Bull. Mus. Zool. e Anat. Comp. Univ. Genova* 9(32): 1-21. 1929.—Cattaneo (1913) first indicated the modifying action of the hormones of various organs on the primordial cells and their derivatives. This action is perhaps correlated with the modifications of various organs. The author conceives a germ-cell origin of the male sex hormones; the phagocytic resorption of sex cells by the Sertoli cells supports this idea. The hormones may originate (a) from the metabolism of the primordial germ cells as they develop and multiply, (b) from phagocytic Sertolian metabolism. The *a* products may be absorbed by the Sertoli cells, but may also function in the resorption of primary spermatogonia which degenerate abundantly in mammalian testes during spermatogenesis. The *b* products would aid in puberty and would stimulate the completion of secondary sexual characters which have been initiated by the stimulating action of other products. A complementary metabolic action of the interstitial cell products on *a* and *b* is not excluded.—*L. Cognetti de Martiis (transl. by R. A. Muttkowski).*

750. **COLE, H. H., and G. H. HART. Sex hormones in the blood serum of mares. II. The sera of mares from**

the 222nd day of pregnancy to the first heat period postpartum. *Amer. Jour. Physiol.* 94(3): 597-603. 2 fig. 1930.—Serum was collected from mares between the 222nd day of pregnancy and the 1st heat period following parturition to study its effect upon the genital system of immature rats. The serum was found to produce an effect upon the genital system until about the time of parturition. A positive vaginal reaction, a weak uterine reaction, and an inhibiting effect upon the ovaries were regularly observed. No reaction was observed from serum taken after parturition.—*Authors' summary.*

751. COLOMBI, CAMILLO. L'azione dell'ormone ipofisario anteriore sul testicolo, con parficolare riguardo alle cellule interstiziali. [Action of the hormone of anterior hypophysis on the testicle, and especially on the interstitial cells.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 726-728. 1930.—Injections of urine of pregnant women were followed in mice by increase of the interstitial cells. —*M. Comel.*

752. COMEL, M. Azione e meccanismo d'azione di dosi eccessive di ergosterolo irradiato sull'insufficenza paratiroidea sperimentale. [Studies on the action of overdoses of irradiated ergosterol on experimental parathyroid insufficiency.] *Arch. Fisiol.* 29(1): 123-144. 1930.—When overdoses of irradiated ergosterol are administered to dogs during a period of time either immediately preceding parathyroidectomy, or following it, the appearance of functional symptoms of the parathyroid insufficiency is prevented, with the exception of a diminished resistance to infections. The latter may however be due as well to the ergosterism itself (intoxication by irradiated ergosterol). Although the administration of overdoses of irradiated ergosterol is followed by a rise in the blood Ca, the hypercalcemia does not persist, in the parathyroidectomised dogs. Hypocalcemia follows, but only a little increase in the amount of serum P is observed, the quotient Ca/P persisting accordingly at values above 1 and nearly normal. The survival of the parathyroidectomised dogs is prolonged indefinitely in those cases (the majority) where infective processes did not occur. After a variable period the serum Ca and P content reverts to normal values. The action of the irradiated ergosterol is explained by a substitutive influence of the function of the parathyroid glands upon tissues, their irritability and permeability. The final return to the norm and indefinite survival are explained by an intervention of aberrant parathyroid tissue, which has undergone hypertrophy in the meantime.—*M. Comel.*

753. COMEL, M. Studi sulla sindrome paratireopriva in cani trattati con stronzio. [Studies on parathyroid deficiency in dogs treated with strontium.] *Arch. Fisiol.* 29(2): 159-180. 1930.—The action of Sr on parathyroid deficiency is demonstrated only if treatment is sufficiently intense as to cause intoxication by Sr. Tetany is prevented or inhibited if already developed. If treatment with Ca "exosiossipropionato" is associated with the treatment with Sr "exosiossipropionato" the Ca cannot substitute for Sr, the action of which is more effective. The other symptoms of parathyroid deficiency, serological as well as functional, are not affected by Sr; yet the survival of the animals is prolonged. The Sr exerts its action by affecting the nervous system, acting probably on the cerebral and cerebellar cortex as well as on the spinal centers. An action on peripheral nerves as well as an action on muscle is possible. In normal dogs treated with Sr, modifications of the parathyroid glands were observed. No direct relation between calcemia and tetany existed in the operated and treated dogs, whereas a relation existed between tetany and Ca/P ratio. It is probable that two distinct periods of parathyroid deficiency exist, the first of acute, the following of subacute or chronic deficiency.—*M. Comel.*

754. COMEL, MARCELLO. Ricerche sulla sindrome paratireopriva. III. Suo decorso negli animali sottoposti a trattamento con stronzio e calcio. [Sr and Ca effect in parathyroid insufficiency.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 729-732. 1930.—Tetany, although it is rendered milder following treatment with Ca "exosiossipropionato," is completely inhibited only if treatment with Sr "exosiossipropionato" is given. This treatment is efficient only when intoxication by Sr is reached. Tetany no longer appeared, but hypocalcemia, hyperphosphatemia and the other symptoms persisted.—*M. Comel.*

755. COMEL, MARCELLO. Studi sulla sindrome paratireopriva. IV. L'azione su di essa dell'ergosterolo irradiato somministrato in dosi eccessive e il suo meccanismo. [Effects of overdosage of irradiated ergosterol on parathyroid deficiency.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 732-734. 1930.—When overdosage of irradiated ergosterol (subcutaneous) has preceded, or immediately followed parathyroidectomy, no tetany ensues, although hypocalcemia is developed. P rises in serum, but never so conspicuously as in nontreated parathyroid deficiency. In a later stage the Ca and P values become normal in serum, while no tetany is developed. A few animals died from septic infections of the skin; a greater number survived indefinitely. The author attributes indefinite survival to a progressive hypertrophy of aberrant parathyroid tissue, whereas ergosterol aids the animal to sustain the first stage of acute deficiency. —*M. Comel.*

756. COMEL, MARCELLO. Modificazioni delle paratiroidi nello stronziamismo sperimentale. [Modifications of parathyroid glands following experimental strontianism.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 735-737. 1930.—Following experimental poisoning with Sr "exosiossipropionato" the parathyroid glands grow in size and show hyperplasia and hyperemia. To such changes a probable hyperfunction is to be attributed. It is explained by an endocrine protective function of parathyroid against Sr poisoning through its Ca regulating or through its detoxicating activity.—*M. Comel.*

757. EHRHARDT, KARL. Eine artefizielle Schwangerschaftsreaktion (A. Z. R.) bei der nichtschwangeren Frau. Beitrag zum Verhalten des Hypophysenvorderlappenhormons im nichtgraviden Organismus und zur Frage der therapeutischen Wertigkeit von Prähormon verglichen mit derjenigen von Schwangerenblut. *Arch. Gynäkol.* 143(2): 446-458. 1930.—In 4 cases of amenorrhea and uterine hypoplasia a blood transfusion from a pregnant donor was made, 3500-7000 mouse units being given. After the transfusion, reaction II-III was present in the blood from 2 to 12 hrs. Later samples showed reaction I or were negative. During the first 24 hrs. the urine gave a positive reaction II-III, the hormone appearing in the urine in about 10 min. and remaining 12-24 hrs.

758. EULER, ULF von. Studien über die Beeinflussung der Gewebsoxydation durch Adrenalin und Insulin mit besonderer Berücksichtigung der Bedeutung der Innervation. *Skand. Arch. Physiol.* 59(3/4): 123-200. 8 fig. 1930.—The influence of epinephrine on muscle respiration was investigated by the manometric respirometer method of Barcroft-Warburg. Epinephrine increases the utilization of O by intact as well as finely divided muscle in concentrations of 10^{-6} to 10^{-14} in agreement with the earlier findings of Ahlgren with the methylene blue method. The increase of oxidation appears only with O concentrations of 2 to 10%, under the given experimental conditions, that is only with a suboptimal supply of O. Epinephrine increases the utilization of O in washed muscle only after addition of glycerophosphates and hexosephosphates among a series of substances investigated. After the addition of lactic acid, epinephrine produces inhibition. As it was first shown that the effect does not occur after denervation of the muscle, it could be shown that section of the rami communicantes supplying the muscle checked it. Section of the motor nerves did not prevent this action. The antagonism of epinephrine and ergotamine could also be shown in respect to muscle respiration. The utilization of O in the system: glycerophosphate-glycerophosphoric acid-redoxase solution (from the white matter of the brain) is not influenced by epinephrine. It

does not increase the utilization of O nor the methylene blue reduction of erythrocytes and leucocytes, neither does it do so in the presence of glycerophosphates or hexosephosphates. A summary of the findings concerning the influence upon tissue oxidation of insulin yields the following: The experiments of Ahlgren with methylene blue, as well as those with the microrespirometer, demonstrating the effect of insulin in increasing the oxidation in the presence of glucose were confirmed in respirometer experiments, as well as by other methods. The negative findings with the same method which have several times been published can most likely be traced to unfavorable experimental conditions. It was shown that the effect of insulin on muscle occurred first with suboptimal O, as exhibited in the present valid experimental conditions of O pressures of from 2 to about 10% O in N. In O pressures of more than 10% the effect of insulin on finely divided muscle could not be shown. As the negative findings in this respect were obtained chiefly with the Warburg method and optimal O supply, they are of no value in proving the absence of insulin effect. The insulin-glucose action gave the same results on intact muscle. The insulin effect could be shown still better on brain tissue. The oxidation increasing effect of insulin is not, as formerly believed, limited to glucose; it is possible also to obtain the same effect with glycerol. The possibility of a transformation of glycerol into glucose by the tissue received no support. The oxidation of glycerol in the presence of insulin appears in many respects to suggest points of comparison with the oxidation of glucose (weakening of the effect after keeping the muscle for 2 hrs. at room temperature, antagonism toward epinephrine). The cessation of action of insulin previously found when muscle is utilized which has been kept for about 2 hrs. at room temperature, could be confirmed. These experiments showed that with freshly cooked muscle juice, as well as with cozymase preparations, the effect of insulin could be reactivated with glucose as well as with glycerol, whereby the first point as to the nature of glykomutin (Ahlgren) has been established. The relations between glykomutin and cozymase are briefly discussed. When muscle is deprived of sympathetic innervation at various times previously (2 days to 2 mos.) the effect of insulin can no longer be obtained. However, motor denervation does not interfere with insulin action. An insulin action could not be proved on erythrocytes or leucocytes. The antagonism of insulin-epinephrine in the presence of glucose could be confirmed, and it could be shown that this antagonism occurs also in the presence of glycerol.—*Author's summary (transl. by G. Bachmann).*

759. FEE, A. R., G. F. MARRIAN, and A. S. PARKES. The significance of the occurrence of oestrin in male urine. *Jour. Physiol.* 67(4): 377-382. 1929.—Small amounts of oestrin can be obtained from male urine. After large doses of oestrin have been added to the circulation in the heart-lung-kidney preparation, small amounts can subsequently be detected in the urine. The hormone disappears very rapidly from the blood in the heart-lung preparation. Disappearance is not due to absorption by the tissues of the lungs and heart but probably results from oxidation as the blood circulates through the lungs. Owing to the fact that large amounts of oestrin can be found in the urine of pregnant women, these results suggest that large amounts of the hormone must be produced during pregnancy.—*C. W. Bellerby.*

760. FERRARI, RODOLFO. Influenza della tiroide sull'edema da perfusione con soluzioni saline. [Action of thyroid gland on the edema from perfusion with salt solutions.] *Arch. Fisiol.* 29(2): 191-202. 1930; also in *Boll. Soc. Ital. Biol. Sperim.* 5(3): 414-416. 1930.—The edema caused in the ear or in the hind leg of rabbits by perfusion with oxygenated Ringer-Locke's solution has a practically constant intensity. After thyroidectomy the edema produced in the same conditions is noticeably greater. The presence of small amounts of thyroxin in the perfusing fluid caused the edema of normal animals to decrease in a remarkable manner. The thyroid gland exerts an action preventing edema; such action is shown to exist also in tissues removed from the organism.—*M. Comel.*

761. FLUHMANN, C. FREDERIC. The induction of the pseudo-pregnancy vaginal reaction in spayed mice by the injection of human blood. *Amer. Jour. Physiol.* 95(2): 422-426. 1 fig. 1930.—The test has been used to examine the blood of over 70 patients. A mucification of the vaginal mucosa of spayed mice has been produced by the injection of blood serum from patients in whom it is known there is a histologic corpus luteum, namely, during pregnancy, early in the puerperium, during the premenstrual stage, and accompanying a corpus luteum cyst. However, since it has also resulted from the injection of blood from men, from 1 woman following a bilateral oöphorectomy and from 4 women past the climacteric, it does not seem justifiable to consider it as a reliable test for the presence of progestin in the blood.

762. FREMERY, P. de, J. FREUD, und ERNST LAQUEUR. Zur Messmethode von männlichem Hormon. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 740-741. 1 fig. 1930.—Based on the growth of the capon's comb, recorded by repeated blue-printing.

763. FREUD, J., S. E. de JONGH, und ERNST LAQUEUR. Über den Einfluss des weiblichen (Sexual-) Hormons, Menformon, auf das Federkleid der Vögel. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 742-768. 25 fig. 1930.—Experiments on about 40 pheasants and chickens, ♂ and ♀, castrated and normal, evidenced a change of plumage in the ♀ direction from the administration of menformon either to normal ♂♂ or to ♂ or ♀ castrates. The ♀ character of the plumage of both sexes of Sebright bantams, as suggested by experiments on a ♂ and a ♀, may be due to the normal presence of menformon in the ♂.

764. GAYET, RENÉ. Le fonctionnement endocrinien du pancréas et sa régulation sans concours du système nerveux. [Endocrine functioning of the pancreas and its regulation without the aid of the nervous system.] 99p. Masson et Cie: Paris, 1928. Pr. 10 fr.

765. GLEY, E. et EDW. CZARNECKI. Modifications des activités du nerf splanchnique après la thyroparathyroidectomie. *Jour. Physiol. et Path. Gén.* 28(2): 342-356. 11 fig. 1930.—In thyro-parathyroidectomised dogs the blood Ca falls rapidly to half the normal value or less. At the same time, the vaso-motor and secreto-motor activities of the splanchnic becomes weaker. With a few animals this loss of nerve excitability is only slight. With all animals examined intravenous injection of 4% $CaCl_2$ restored completely the activity of the nerves. This is ascribed to the rise in blood Ca, which in one experiment was increased from 7 mgm. per 100 cc. to 16.5 mgm. per 100 cc., as the result of injecting 2 gm. of $CaCl_2$.—*W. R. Fearon.*

766. GLEY, E. et EDW. CZARNECKI. Contribution à l'étude des interrelations humorales. III. Nouvelles recherches sur les prétendues relations entre la thyroïde et les surrénales. *Jour. Physiol. et Path. Gén.* 28(2): 357-360. 1930.—The alleged dependence of the adrenal apparatus on the thyro-parathyroid apparatus is explained by the effects of hypocalcemia following parathyroidectomy. Hypocalcemia causes a lowered splanchnic activity (cf. preceding abstract), which has been mistaken for an adrenal deficiency. When this is recognised it can be shown that no hypofunction of the adrenals follows suppression of the thyroid apparatus.—*W. R. Fearon.*

767. GLEY, PIERRE. Sur la préparation de l'hormone du corps jaune. [Methods of preparation of the corpus luteum hormone.] *Jour. Physiol. et Pathol. Gén.* 27(3): 528-540. 1929.

768. GOLDSTEIN, BORIS. Zur Funktionsprüfung des Pankreas. *Arch. Verdauungs-Krankh.* 48(5/6): 304-317. 1930.—The results obtained (in 11 cases with achylia gastrica, 6 with normal acidity and 3 with hyper-acidity) show that the secretory processes in the pancreas are independent of each other. Secretin stimulates the secre-

tion, the vagus the ferment production; the sympathetic system controls both processes. The secretion after acid stimulation is most likely a mixed action of secretin and sympathetic stimulation. In achylia gastrica there is an increased concentration of diastase in duodenal content and especially in the blood. A high ferment concentration in achylia gastrica is not a sign of hyperfunction of the pancreas. It is the result of a change in the factors affecting the gland—the absence of secretin stimulation and probably also the absence of sympathetic stimulation. Insufficiency of pancreatic activity is characterized by a marked decrease of the diastase concentration in the duodenal content.—*K. Reuterskiold.*

769. **GRAFF-PANCSOVA, E. Über den Mechanismus der Thymophysinwirkung, zugleich ein Beitrag zur Verstärkung der Hormonwirkung.** *Arch. Exp. Pathol. u. Pharmakol.* 136(3/4): 158-171. 3 fig. 1928.—Dogs with a bladder fistula were used for these experiments. They received no water nor food for several hrs., then were given by stomach tube 200 cc. water and the urine output for the next 2 hrs. measured. Subsequently they received 200 cc. water plus 0.02 cc. hypophysis extract subcutaneously; 200 cc. water plus 0.5-1.0 cc. thymus extract; or 200 cc. water plus 0.02 hypophysis extract plus 0.5 cc. thymus extract. Thymus or hypophysis extract alone had little effect in lessening the amount of diuresis while the combination decreased it from 3 to 7 times. Novoprotein, Witte-peptone, and muscle extract, likewise, strengthened the anti-diuretic action of posterior pituitary hormone while extracts of mammary gland, placenta, parathyroid, and adrenal had practically no effect. It is concluded that the strengthening of the anti-diuretic action of the hypophysis is due to the protein or protein decomposition products rather than to the extract of any specific organ.—*P. E. Claus.*

770. **GRANT, MADELEINE P. The release of follicular colloid from the thyroid of Necturus maculosus following heteroplastic anterior-pituitary implants.** *Anat. Rec.* 46(3): 205-221. 3 pl. 1930.—Histological studies were made of the thyroid following implantations of the anterior lobe of the anuran pituitary into the peritoneal cavity of 10 mos. old *Necturus* larvae. Control cases showed thyroids with a histological picture characteristic of the inactive gland, with low cuboidal cells, possessing homogeneously staining cytoplasm. The follicular colloid stained strongly acid and appeared highly refractile. The 1st histological evidence of response of the thyroid to anterior-lobe implantation appeared within 12 hrs. and showed extreme vacuolization of the cytoplasm of the cells and intracellular droplets of colloid. From the study of a series of cases fixed at 24-, 48- and 72-hr. intervals, it was evident that the follicles progressively released the stored colloid. At the end of the 3rd day, the majority of the follicles were completely collapsed and empty. The morphological picture throughout these timed series was an abundant intracellular colloid content which first appeared in the form of large, discrete, refractile, colloid droplets and, in the later stages, as an "emulsion" of colloid in cytoplasm. Since the follicles showed progressive release of stored colloid and the correlated morphological pictures showed abundant intracellular colloid content, the thesis of transportation of stored colloid through the follicular cells of the *Necturus* thyroid is presented.—*Author (courtesy Wistar Bibl. Serv.).*

771. **GREENWOOD, A. W., and J. S. S. BLYTH. An experimental analysis of the plumage of the Brown Leghorn fowl.** *Proc. Roy. Soc. Edinburgh* 49(4): 313-355. 4 pl. 1929.—The influence of partial and complete thyroidectomy and the feeding of desiccated thyroid on the plumage of otherwise normal and castrated Brown Leghorn fowls was studied. Hypothyroidism results in a diminution in the amount of melanin and an extension of the red pigment in both sexes, and in a lack of barbule formation coincident with increased fringing. Hyperthyroidism in the ♂ leads to the opposite effect, viz., an increase in the melanin and barbules while the red pigment and fringing tend to disappear. In the ♀ the effect of thyroid feeding is slight. The hypothesis is advanced that the plumage typical of the ♂ is developed independently of the gonads but depends upon a certain level of thyroid activity while that of the female is controlled by the interaction of the thyroids and gonads. The ovaries stimulate the thyroids to greater activity. The plumage of young chicks of both sexes is similar to that of the adult female. This is ascribed to the yolk of the young chick which exercises an influence similar to, but less in degree than, that of the ovary from which it arises. Thyroidectomy was followed by a marked depression in growth rate, but did not affect the age of sexual maturity, the average weight of the eggs, the fertility of the animals, the fertility of the eggs, or the sex ratio of the chicks.—*J. A. Dye.*

772. **GUASSARDO, GUIDO. Variazioni del contenuto in Ca e K nel siero di sangue in seguito all'iniezione di determinati ormoni (ipofisina, tiroxina, paratiroidina, insulina, adrenalina). (Ricerche sperimentali.)** [Variations in blood serum Ca and K following injection of certain hormones.] *Riv. Clin. Pediatr.* 28(10): 841-855. 1930.—Stimulation of the sympathetic by injection of epinephrine or thyroxin produced in 3 dogs a reduction of serum Ca followed by a reduction of K; stimulation of the parasympathetic by parathyroidin, insulin or hypophysin produced a rise in K followed by a rise in Ca. A disturbance of the K: Ca ratio, however, inverted the action of the branches of the vegetative nervous system; thus, in presence of an excess of Ca, stimulation of the vagus did not inhibit but stimulated the heart.

773. **GÜNTZ, EDUARD. Schrumpfnebennieren mit Hodenatrophie. Zugleich ein Beitrag zu Wesen und Bedeutung der Zwischenzellen.** *Frankfurter Zeitschr. Path.* 40(3): 490-500. 1930.—A case of Addison's disease which displayed the clinical picture of a paratyphus was produced by cytotoxic atrophic adrenals. A high degree of atrophy of both testicles was also found in the 28-year-old male. Contrary to other atrophic conditions of the testicle the interstitial cells were much reduced. It is attempted to consider the 2 pathologies as a syndrome. The author concludes that a definite interrelationship, though not of clear and uniform character, exists between the 2 glands, and that only in primary endogenous disease of the adrenal cortex is testicular atrophy observed, as in the case in question. The testicular disease must be a result of the injury to the adrenal cortex and possibly the hypophysis (not microscopically examined) is concerned. Conclusions as to the importance of the interstitial cells can be drawn only in so far as it is evident that they constitute a passive organ of the endocrine system.—*Author's summary (transl. by C. S. Leonard).*

774. **HABERLANDT, L. Über ein Hormon der Herzbewegung. XIII. Mitteilung. Fortgesetzte Froschherzversuche mit dem Herzhormonpräparat.** *Zeitschr. Ges. Exp. Med.* 68(1/4): 185-195. 6 fig. 1929.—An extraordinarily active hormonal preparation has been made which has both a positive chronotropic and bathmotropic action on the ventricle of the isolated frog heart, in dilutions in Ringer's solution as high as 1: 100 million or even 1: 1000 million. The quiescent ventricle could also be started to beat in these dilutions. The refractory period is usually shortened by the substance, or is unaffected; rarely it is lengthened. Time is a factor in these latter effects. It is affirmed that the effects described are not due to epinephrine, histamine or K, as claimed by certain other experimenters.—*M. Dresbach.*

775. **HABERLANDT, L. Über ein Hormon der Herzbewegung. XVII. Versuche an der Magen-Darmmuskulatur des Kalt- und Warmblütters.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 384-388. 4 fig. 1930.—The preparation of cardiac hormone in dilutions of 1: 1000 to 1: 50 promoted movements of isolated frog stomach and of guinea-pig and rat intestine, the effect persisting after atropinization.—*From author's summary (transl.).*

776. **HABERLANDT, L. Über ein Hormon der Herzbewegung. XVIII. Mitteilung. Versuche an Wirbellosen.**

Pflüger's Arch. Ges. Physiol. 225(4): 541-557. 10 fig. 1930.—These experiments were made on the hearts of snails. Isolated hearts of *Helix pomatia,* which had become motionless in Ringer's fluid or in aqueous or alcoholic extract of the foot muscle of the snail, when placed in aqueous or alcoholic extract of snails' hearts, began rhythmic pulsation 2-3 days after their isolation (20 experiments), thereby clearly indicating the existence of a heart-stimulating substance in invertebrates. In 22 experiments a preparation of epinephrine-free and histamine-free cardiac hormone from beef-hearts proved effective on the heart of *H. pomatia,* inducing, accelerating, and strengthening the pulse-beat in dilutions up to $1:10^6$, and thereby furnishing a new illustration of the effect of vertebrate hormonal substance on invertebrates. In 33 experiments on the hearts of *Aplysia limacina, A. depilans* and *A. punctata* the results were even more striking, since *Aplysia* hearts could be made to resume pulsation even after 3 days and by dilutions up to $1:10^{17}$.

777. **HABERLANDT, L. Herzhormon-Untersuchungen bei Wirbellosen. [Heart hormone studies in the invertebrates.]** *Akad. Anz.* 12: (1-5). 1930.—See also preceding abstract.

778. **HAHN, JAR. Über den Einfluss der Schilddrüsenfütterung auf die Metamorphose der Vanessa io und der Tenebrio molitor.** *Zeitschr. Wissensch. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 115(1/2): 336-359. 6 fig. 1929.—Experiments with caterpillars of *Vanessa io* resulted in a retardation of development and a weight increase. Experiments with Tenebrio molitor were negative. These experiments support the opinion of the authors, who deny a positive and specific influence of the thyroid gland on invertebrates.—*H. Pribram.*

779. **HANNAN, JOHN H. Ovarian transplantation.** *Jour. Obstetr. & Gynecol. Brit. Empire* 36(3): 569-575. 1929.—A series of transplants of ovaries from cats and rabbits were made into ovariectomized rabbits. The site chosen for transplantation was between the deep and superficial fascia of the back below the last rib. The whole ovary was transplanted without section. Transplants examined histologically at intervals up to 12 weeks showed progressive retrogression and disappearance of germinal epithelium and follicles and final removal of ovarian tissue. The conclusion drawn is that iso- and hetero-transplantations are not justified as remedial measures in cases of hypo-ovarian endocrine disturbances.—*E. Allen.*

780. **HARINGTON, CHARLES R., and W. T. SALTER. The isolation of l-Thyroxine from the thyroid gland by the action of proteolytic enzymes.** *Biochem. Jour.* 24(2): 456-471. 1930.—A method, which employs pepsin, was described for isolating thyroxine. The thyroxine was levorotatory, and had a specific rotation of $[\alpha]_{5461} - 3.8$ as the sodium salt in 60% alcoholic solution. The digestion product (1.3 mgm. per diem for 6 days of a preparation containing 50% of I) produced an increase in O consumption of 85% in the rat when given orally, while pure *l*-thyroxine had no effect. There was less physiological difference when they were injected subcutaneously. Trypsin did not liberate I from diiodotyrosine within 5 mos. Several methods were described which showed how the early stages of the digestion of thyroid gland by pepsin and trypsin was carried out. The purified digestion product consisted of a mixture of free thyroxine with thyroxine peptides.—*E. B. Carmichael.*

781. **HAUROWITZ, FELIX, und MAX REISS. Versuche zur Biologie und Chemie des Hypophysenvorderlappen-Sexualhormons.** *Naturwiss. Zeitschr. Lotos* 77 (5/12): 255-256. 1929.—An abstract. Methods of purification are briefly indicated. The hormone is split by peptone-splitting enzymes, hence it is probably near the peptones chemically; but it is not salted out by $(NH_4)_2SO_4$ and it passes a semi-permeable membrane. It is probably a peptone with an active prosthetic group. It is not distinguishable from, and may be identical with, the hormone found in the urine of pregnancy.

782. **HEIDRICH, L., E. FELS, und E. MATHIAS. Testikuläres Chorionepitheliom mit Gynäkomastie und mit einigen Schwangerschaftserscheinungen. Gleichzeitig ein Beitrag zur Pathologie der hormonalaktiven Gewächse.** *Bruns' Beitr. Klin. Chir.* 150(3): 349-384. 5 pl. (4 col.), 11 fig. 1930.—Trauma to the left testicle; produced local swelling, painful enlargement of the breasts and profuse secretion of colostrum. The testicular growth on removal presented the structure of a chorionepithelioma of teratoid origin. Metastases had been formed in the abdomen, neck and lungs; the mammary enlargement and secretion continued. At the patient's death, about 10 mos. after the original trauma, the structure of the hypophysis was found to be that of the 7th or 8th month of pregnancy. The metastases were of pure chorionepitheliomatous type. The patient's urine, tested at various intervals before his death, showed the presence of ♀ sexual hormone and of increasing quantities of the hormone of the anterior lobe of the hypophysis (Aschheim-Zondek test for pregnancy).

783. **HERREN, R. YORKE, and H. O. HATERIUS. The relation of ovarian hormones to electro-myographically determined Achilles reflex time.** *Amer. Jour. Physiol.* 96(1): 214-220. 1931.—Determination on 16 ♀ rats through 30 oestrous cycles showed a long Achilles reflex time during the oestrous period and a short Achilles reflex time during the dioestrous period. Determinations on castrates indicated a lengthened Achilles reflex time following injection of extract of follicular fluid and a shortened Achilles reflex time consequent to injections of extract of corpus luteum, whereas controls displayed no significant change. The pregnant animal was characterized by a gradual decrease in Achilles reflex time until the 10th or 11th day of term, at which time a gradual increase in reflex time appeared, culminating in the extremely long reflex time of parturition. Pseudo-pregnant animals showed a gradual decrease in Achilles reflex time corresponding in length to the functional life of the corpora lutea of pregnancy. It is concluded that the sex hormones play a vital part in the interaction of the various neural levels, either through direct influence on nervous tissues of higher levels, or indirectly through other connections with the higher levels.—*Authors' summary.*

784. **HILL, MARGARET, and A. S. PARKES. The relation between the anterior pituitary body and the gonads. Part I. The factors concerned in the formation of the corpus luteum.** *Proc. Roy. Soc.* [*London*] *B* 107 (748): 30-38. 1 pl. 1930.—Extracts containing the gonad-stimulating principle of the anterior pituitary body were prepared from urine of pregnancy by a method similar to those employed by Zondek and Aschheim and by Evans and Simpson. Ovulation was produced freely in non-copulated oestrous rabbits by one intravenous injection of these preparations. It has not so far been possible to correlate the number of follicles ovulating, or even the occurrence of ovulation, with the dosage given. Following ovulation induced by this means corpora lutea develop and function without extraneous assistance; the result being a period of pseudo-pregnant development in the uterus and mammary glands. Pseudo-pregnancy thus induced is of the normal length, and has the usual characteristic features. The fact that corpora lutea develop after ovulation induced without copulation shows that the stimulus to luteinisation of the ruptured follicle is initiated by the actual act of ovulation and not as a delayed effect of copulation.—*Authors' summary.*

785. **HILL, MARGARET, and A. S. PARKES. On the relation between the anterior pituitary body and the gonads. Part II. The induction of ovulation in the anoestrous ferret.** *Proc. Roy. Soc.* [*London*] *B* 107(748): 39-49. 3 pl. 1930.—Ovulation may be induced in the anoestrous ferret by the administration of certain preparations containing the gonad-stimulating substance or substances of the anterior pituitary body. Other preparations, however, resulted in the formation of large cystic follicles or in the coincident growth and partial luteinisation of follicles. In all cases where ovulation occurred,

as well as in many others, the anoestrous accessory organs (uterus, vagina and vulva) underwent the changes typical of oestrus as a result of the ovarian stimulation. Following ovulation, corpora lutea develop and function with or without further administration of extracts. In correlation with this ovarian development, pseudo-pregnant changes take place in the uterus. Owing to failure to induce spermatogenesis in the male, pregnancy was not obtained during anoestrus, though copulation occurred between treated males and treated females. There can be little doubt, however, that the ova from the induced ovulations were fertilisable, and that implantation could have taken place.—*Authors' summary.*

786. HIMWICH, H. E., and F. W. HAYNES. Effects of posterior pituitary extracts on basal metabolism. *Amer. Jour. Physiol.* 96(3): 640-646. 1931.—In 64 experiments on 20 rats the changes in O consumption, CO_2 production and R.Q. after the subcutaneous injection of pituitrin, pitressin, and pitocin, were determined by Haldane's method. The decrease of the metabolic rate by pituitrin is due to pitressin and occurs despite the effect of pitocin, since pitressin markedly diminishes the metabolic rate, while pitocin increases it slightly, but definitely. Such opposing actions may explain some of the inconsistencies in the literature since the different preparations used by various observers may have contained varying amounts of the oxytocic and pressor principles. Moreover, some of the previous workers injected pituitrin peripherally in doses too small to produce definite changes, since in the present experiments effects on metabolic rate were observed only with large doses.—*Authors' summary and conclusions.*

787. HOGBEN, LANCELOT, and CECIL GORDON. Studies on the pituitary. VII. The separate identity of the pressor and melanophore principles. *Jour. Exp. Biol.* 7: 286-292. 1930.—When pituitary extracts are subjected to prolonged action of high concentrations of NaOH, the destruction of the pressor activity is accompanied by an appreciable increase in melanophore activity. This increase is ascribed to the fact that constriction of the vessels by the pressor component normally tends to mask the activity of the melanophore stimulant. It is suggested that the melanophore, pressor and oxytocic activities of pituitary extracts are referable to distinct entities.—*J. M. Robson.*

788. HORIE, KENJI. Experimentelle Untersuchungen über die Funktion der Nebenniere. I. Mitt. Die Nebennierenrinde und der Cholesterinstoffwechsel. [Japanese] *Mańshu Igakkwai Zasshi* 7(6): 1927.—The adrenal cortex plays an important rôle in the cholesterol metabolism of the rabbit. The excess cholesterol is infiltrated and stored in the adrenal cortex, to be utilized when needed.—*O. Mori (courtesy Japanese Jour. Zool.) (transl. by R. A. Muttkowski).*

789. HOUSSAY, B. A., y L. GIUSTI. Funcion sexual, hipófisis e hipotalamo en el sapo. [Sexual functions, pituitary and diencephalic in toads.] *Rev. Soc. Argentina Biol.* 6(2): 146-163. 1930.—Implantation of glandular lobe produces increase in volume and activity of testicles and subsequently increased sexual flexion reflex (not observed in castrates). Testicular implantation does not produce effects. Injection of large doses of testicular extracts produces flexion reflex in castrates. Cauterization of infundibulum produces intense flexion reflex even in castrates and after hypophysectomy. This last operation also produces ovulation and expulsion of ova which is not observed after extirpation of the pituitary or only the glandular lobe. Hypophysectomy or extirpation of glandular lobe when complete do not produce ovulation (rectifying previous communications). Pituitaries of *Bufo arenarum, B. d'orbigny* and *L. ocellatus* are active for these species. Alkaline extracts of mammalian pituitary, exceptionally produce incomplete ovulation in toads.—*J. T. Lewis.*

790. HOUSSAY, B. A., y L. GIUSTI. Funciones de la hipófisis y de la región infundíbulo-tuberiana del sapo Bufo arenarum (Hens.). [Functions of pituitary and infundibulum in Bufo arenarum (Hensel).] *Rev. Soc. Argentina Biol.* 6(3): 206-215. 1930.—Insufficiency of pars intermedia produces paleness, hyperfunction, darkening of the skin. Insufficiency of pars glandularis produces a) testicular atrophy, b) asthenia, convulsions and death, c) hypersensitiveness to insulin, d) attenuation or total absence of pancreatic diabetes, e) sometimes hypoglycemia and diminished hepatic glycogen content, f) arrested development (in other batrachians). Implantation of pars glandularis prevents the appearance or corrects these symptoms and produces opposite ones, besides ovulation and expulsion of ova. Symptoms of infundibular lesion are a) a bronzed epidermic cuticle, b) polyuria, c) reflex sexual flexion of anterior limbs even after hypophysectomy or gonadectomy. Lesion of tuber stimulates the melanophore-dilating secretion of pars intermedia, and the secretion that provokes ovulation; it inhibits the "diabetogenic" secretion.—*J. T. Lewis.*

791. HOWES, N. H. A histological study of the ox pituitary gland after freezing and exposure. *Jour. Exp. Biol.* 7: 253-259. 1930.—A series of cytoplasmic changes, corresponding to alterations in the biological activity and chemical content previously investigated, are observed in ox pituitary glands which have been exposed, after the death of the animal, to different temperatures for varying times. It would appear that freezing causes no alteration in the distribution of biological activity.—*J. M. Robson.*

792. HUG, ENRIQUE L. J. A. Hipófisis y crecimiento. [Hypophysis and growth.] 147p. Tesis, Univ. Nacional Buenos Aires, 1928.—A complete and accurate survey of literature up to date. Personal experiments are reported in detail. The pituitary was removed in 5 series of puppies using litter mates as controls. Careful postmortem microscopical examination of the operated region revealed in some cases remains of glandular tissue, in others removal was complete. In these and in animals with only small portions of gland, growth was retarded, the lag became evident from 1 to 2½ mos. after the operation and was more or less marked. In severe cases the animals had an infantile appearance:—short head; fine hair, short and soft; bone calcification retarded or stopped; persistence of decidual teeth, late appearance of second dentition but without macro- or microscopic lesions. Body temperature was frequently low. Basal metabolism was diminished and atypical, sexual organs under-developed. Atresia and sclerosis occurred in ovaries. The thyroids were usually of normal size but the epithelium was atrophied and the follicles distended with colloid. Marked loss of weight and cachexia were observed. No special sensitiveness to infection or disease was observed. Repeated intraperitoneal injections of fresh pituitary (ox, dog, sheep) and grafting of the pituitary had no effect on these symptoms. In 3 series infundibular lesions were made. Growth was not affected but in one case testicular atrophy was observed. Polyuria is usual in these animals.—*J. T. Lewis.*

793. IHRKE, I. A., and F. D'AMOUR. The influence of testis hormone upon the oestrous cycle in the rat. *Amer. Jour. Physiol.* 96(2): 289-295. 1931.—Daily injections of testis hormone into spayed ♀ rats did not stimulate the cornified vaginal smear of oestrus or have any demonstrable effect. Injection of mixtures of testis hormone and oestrin into spayed ♀♀ was accompanied by the cornified cell smear as long as injections were continued. When injections were stopped the leukocyte (or dioestrous) smear appeared and was permanent. Testis hormone injected daily into normal ♀♀ suppressed the oestrous cycle for the period of the injection. When injections were no longer given the normal cycle expressed by the vaginal smear reappeared. While the cycles were suppressed by testis hormone the oestrous smear could be induced by injection of hypophysis secretion. From this, together with preceding work, the authors conclude: (1) Sex hormones, whether produced by intact gonads or introduced by injection, stimulate the homologous sex characters in the organism but do not influence heterologous characters; (2) sex hormones do not have a direct influence upon either the homologous or heterol-

ogous gonad; (3) the sex stimulating secretion of the hypophysis controls the 2 functions of the gonad—the gametogenetic and endocrine functions; without the presence of this secretion both gonad functions are in abeyance; (4) gonad hormones of either sex act to depress the hypophysis and result in a lessened amount of hypophysis sex stimulating secretion available to the organism.

794. **INGRAM, W. R. Studies of amphibian neoteny. III. The Golgi apparatus of thyroid cells of Rana clamitans in relation to the anterior pituitary.** *Anat. Rec.* 46(3): 233-247. 1 pl. 1930.—Previous work having shown that the function of the anterior pituitary is related to thyroid activity and metamorphosis in *R. clamitans*, a partially neotenous anuran form, observations were extended to the Golgi apparatus of thyroid cells following implantation with adult anterior-lobe tissue. With the onset of greatly increased activity under this influence, the Golgi apparatus becomes large, extensive, and closely related to secretory substances; whereas in normal inactive glands it is very small. The position of the Golgi material varies, but cases of complete reversal in position were very rare, and in such cases no evidence of reversed direction of secretion was found. Since the general gross and histological picture in these metamorphosing amphibians resembles that in exophthalmic goiter in higher forms, the observations are compared with Ludford and Cramer's findings for this disease in mammals, and their relationship to various theories of the mechanism of thyroid secretion is discussed. Anterior-pituitary treatment as described has no effect on the gonads of the animals used in these experiments, hence it is suggested that it is the growth principle of the anterior lobe, apart from the sex-maturity principle, that is the controlling factor for thyroid activity and amphibian metamorphosis.—*Author (courtesy Wistar Bibl. Serv.).*

795. **JACQMIN, LOUIS. L'influence des hormones testiculaires sur la prédisposition au cancer.** *Rev. Belge Sci. Méd.* 1(9): 777-810. 1930.—Believing that the grafted tumor, foreign to the host organism, can scarcely explain why normal, native tissues at a given moment turn lawless and abnormal, Jacqmin has studied the cancer provoked by tar as offering the best parallel to spontaneous human cancer. I. White ♂ mice "castrated before puberty" and non-castrated ♀ controls (exact number not stated) were painted with tar for 2½ mos. Of the castrated mice 13 and of the non-castrated 14 survived the appearance of the 1st papilloma; 11 of the castrated and 13 of the controls survived the appearance of the 1st cancer. In the castrated mice there were 80% of cancers and 44% metastases, against 57% cancers and 14% metastases in the controls. The average survival of the castrates after appearance of cancer was 63 days, against 95 days in the controls. II. In a similar series of mice castrated after puberty, 17 castrates and 15 controls survived the appearance of the 1st papilloma; 14 castrates and 9 controls survived the appearance of the 1st cancer. The cancers appeared, on the average, on the 180th day in the castrates and on the 159th in the controls. The controls lived only 25 days after the appearance of cancer, while the castrates lived 75 days. There were, however, 50% of metastases among the castrates and none among the controls. III. Mice were castrated during the first 4 mos. of tar treatment. All the mice that lived 7 mos. after the beginning of the tar treatment (11 castrates and 12 controls) produced cancers; there were 73% of visceral metastases in the castrates and 33% in the controls. The castrated mice lived, on the average, 68 days after the appearance of cancer; the controls lived 52 days. IV. The vasa deferentia were ligated in another series of mice, and tar treatment begun 6 wks. later. Of the vasectomized mice 39 survived the appearance of the 1st papilloma and 36 the appearance of the 1st cancer; of the controls, 29 and 27 respectively. The vasectomized mice presented more tumors than the controls (78% against 53% at the end of the experiment) and earlier (153 days from the 1st tar treatment in the vasectomized against 168 days in the controls), but no more metastases. The survival after appearance of the 1st cancer was practically the same in vasectomized mice (53 days) and controls (52 days). V. Estas had previously shown that injection of ionium nitrate (which also sterilizes) favors the formation and growth of tar cancer. To determine whether castration and the consequent elimination of the testicular hormone has any effect greater than the mere suppression of spermatogenesis, Jacqmin gave 7 mice each an injection of ionium nitrate; then, some weeks later, castrated them and 4-6 wks. afterward began tar treatment. On the 150th day all presented cancers—a rapidity of result unparalleled in the experience of both Jacqmin and Estas. There were 72% of metastases. As no controls were available, the only basis for comparing with ionium injection not followed by castration is Estas' series, but Jacqmin believes himself justified in concluding that the effect of castration is added to that of ionium.

796. **JEFFRIES, M. E. Hormone production by experimental cryptorchid rat testes as indicated by the seminal vesicle and prostate-cytology tests.** *Anat. Rec.* 48 (1): 131-139. 1 pl. 1931.—A study of the reactions of the rat testis to experimental cryptorchidism, both from the standpoint of spermatogenetic activity and hormone production. Degeneration changes make their appearance in the germinal epithelium 3-5 days after elevation of the testis into the abdomen. It is rapidly progressive, but somewhat variable, and within 2-3 weeks practically all cells of the germinal line may have disappeared, or some tubules may continue to show dividing spermatogonia and perhaps spermatocytes, but spermatozoa are never found. The extensive destruction of germinal epithelium does not modify in any detectable manner the production of the internal secretion or hormone. Indicators of testis hormone, such as the cytology of the prostate gland and seminal vesicle, reported by Moore and coworkers, show these glands to be entirely normal 2 mos. after abdominal elevation of one testis and removal of the opposite one. Since the indicators serve to register hormone absence for periods as short as 3-5 days, it is concluded that hormone secretion by the severely injured testis suffers no interference. It is therefore evident that the function of spermatogenesis is unrelated to hormone secretion in the testis of the rat.—*Author (courtesy Wistar Bibl. Serv.).*

797. **JENSEN, H., und A. M. DeLAWDER. Über die Aktivierung von Insulin. Untersuchungen an kristallisiertem Insulin.** *Biochem. Zeitschr.* 225(1/3): 141-150. 1930.—It was found that neither crystalline insulin nor the commercial preparation "Iletin" could be activated by the addition of serum, enterokinase or yeast press juice. This finding is in contradiction to that of other investigators, who have used rather impure insulin preparations, which may explain the different results obtained. The possibility of slower absorption of insulin with the addition of the above named substances has been discussed. One is not justified, however, in saying that insulin has been activated. The question whether it is possible to activate insulin is still open.—*H. Jensen.*

798. **JUHN, MARY, and L. V. DOMM. The relation of gonadal condition to erythrocyte number in fowls.** *Amer. Jour. Physiol.* 94(3): 656-661. 1 fig. 1930.—The erythrocyte number was determined on 80 brown Leghorns, 40 ♂ and 40 ♀, at intervals from the day after hatching to 16 mos. of age. A definite sex dimorphism in the number of red cells was noted confirming other observations cited. The juvenile and the gonadectomised bird of either sex and the mature ♀ all show a similar erythrocyte number. The number of red cells is significantly higher in the adult ♂, the increase becomes apparent at the time of sexual maturity. Red counts (30) carried out in poulards show that the modifications in the ♂ direction noted after removal of the left ovary can now be extended to include the erythrocyte number which equals that of the adult ♂.—*Authors' summary.*

799. **KARPLUS, I. P., und O. PECZENIK. Über die Beeinflussung der Hypophysentätigkeit durch die Er-**

regung des Hypothalamus. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 654-668. 4 fig. 1930.—Cisterna cerebro-spinal fluid following stimulation of the hypothalamus shows increased oxytocic and melanophore expanding activity. This is regarded as evidence of augmented pituitary secretion. Stimulation of the cervical sympathetic or of the sciatic, the effects of which resemble those produced by stimulation of the hypothalamus, do not affect pituitary secretion. In like manner section of the cervical sympathetics does not abolish the effect of hypothalamus stimulation upon pituitary secretion. It is concluded that the hypothalamus is the seat of the mechanism controlling the rate of liberation of the pituitary hormone into the cerebrospinal fluid.—*Authors' summary (transl. by M. I. Smith).*

800. KOLDA, JAROSLAV. Ústavní studie o rušení adrenalinu. 6.0 významu některých dalších kyselin při chemickém a světelném okysličování adrenalinu. [On destruction of adrenalin. 6. The effects of some acids on the chemical or photo-oxidation of adrenalin.] *Biol. Spisy Vysoké Školy Zvěrolékařské Brno (Publ. Biol. École Vétérinaires Brno)* 7: (135)-(142). 1928.—Adrenalin was dissolved in phosphoric, hypophosphoric, phosphorous, lactic, citric, trichloracetic or sulphuric acid; in all cases the solution had a pH of 4.0. It was also dissolved in a sodium benzoate solution of pH 5.8 or 6.2. Adrenalin was oxidized by H_2O_2 or by ultraviolet or visible rays or a mixture of both rays. H_2O_2 oxidizes adrenalin dissolved in H_2SO_4 at the slowest, adrenalin dissolved in phosphorous acid at the highest rate. Photo-oxidation is slowest in H_2SO_4, fastest in the benzoate solution. Rate of oxidation of ultraviolet and visible rays is about the same, both rays together have a stronger effect.—*Author's German summary (transl. by G. T. Cori).*

801. KORENCHEVSKY, V. The influence of cryptorchidism and of castration on body weight, fat deposition, the sexual and endocrine organs of male rats. *Jour. Path. & Bact.* 33(3): 607-636. 1930.—Experiments were performed on 185 rats. In both-sided cryptorchid rats the deposition of body fat is increased and a considerable atrophy of the penis, prostate, seminal vesicles and thyroids occurs. If only one testis is made cryptorchid and the other left normal, the changes are less constant and much less pronounced. Castration of rats is followed by a decrease of body weight, an increase in fat deposition, a striking atrophy of the penis, prostate and seminal vesicles and a considerable atrophy of the thyroids. The adrenals and the hypophysis are hypertrophied. The analysis of the data obtained shows the presence of sexual hormones, both in seminiferous and in Leydig's cells. A comparison of the weights of the fat and of the organs investigated, in rats belonging to the same litter, does not usually give large variations in the figures obtained, whilst in rats belonging to different litters the variations may be very great.—*V. Korenchevsky.*

802. KORENCHEVSKY, V. Experimental cryptorchidism of pigs. *Jour. Path. & Bact.* 33(3): 683-687. 1 col. pl. 1930.—Two domestic pigs were made cryptorchid and compared with two castrated litter mates. The final weight of the cryptorchid pigs was greater than that of the castrated pigs by 13.2%. The amount of retroperitoneal fat, but not that of subcutaneous fat, was slightly increased in cryptorchid pigs and they were more hairy than the castrates. Histologically in the testes the seminiferous tissue seemed to have disappeared, the Sertoli's cells were normal, whereas the hyperplasia of Leydig's cells was greater than in any other species of animal made cryptorchid.—*V. Korenchevsky.*

803. KOSAKAÉ, JIRO. Beiträge zur Kenntnis der Wehenauslösung. IV. Beiträge zur Gefässwirkung des Placentaextraktes und über die Kombinationswirkung desselben mit einigen anderen Wehenmitteln auf die Gefässe. V. Untersuchungen über die Bewegung des Uterus in situ des Kaninchens mit zerstörter Hypophyse. Schlussbetrachtungen über alle Untersuchungen in Bezug auf die Wehenauslöung. VI. Untersuchungen über den Einfluss der Placenta auf die uteruserregende Kraft des Ventrikelliquors. VII. Untersuchungen über den Einfluss des dem Körper zugeführten Mittels auf die uteruserregende Kraft des Ventrikelliquor des Kaninchens. VIII. Untersuchungen über die Bewegung des Kaninchenuterus in situ nach der Einführung einiger Mittel in den IV. Ventrikel. IX. Untersuchungen über den Einfluss der Placenta auf die vasopressorische und uteruserregende Kraft des Ventrikelliquor und des Serums. *Japanese Jour. Obstetr. and Gynecol.* 13(3): 238-243; 244-256; 257-266; 267-273; 274-290; 291-297. 1930.—[Nos. 1-3 of the series were not published under the series title. They were: I. Ueber die Wirkung von Kombination der Uterusmittel. *Zeitschr. Geburtsh. u. Gynäkol.* 85: II. Ueber die Wirkung von Placentaextrakten auf die Speichelsekretion. *Biochem. Zeitschr.* 130: III. Pharmakologische Untersuchungen über die Wirkung des Placentaextraktes. *Japanese Jour. Obstetr. and Gynecol.* 11: IV. Placenta extract had been found to produce vasodilatation in most vessels of warm- and cold-blooded animals; only in the vessels of the rabbit's ear and kidneys was it a vasoconstrictor. These and other effects (stimulation of the uterus, narrowing of the pupils, increase of lacrimal and salivary secretion, cardiac inhibition and lowering of blood-pressure) indicated that the action of placenta extract is predominantly a stimulation of the parasympathetic. The effect of placenta extract on a rabbit's ear preparation in which the parasympathetic action had been previously excluded by atropin (likewise a vasodilator) was found to be distinctly lowered. Hence placenta extract appears to act on the endings of the parasympathetic nerves. The extract sometimes showed an effect on muscle by hindering the toxic action of $BaCl_2$. No enhanced effect on the vessels of the ear preparation or the toad's leg was to be observed from combination of pituitrin or secacornin with placenta extract. V. The hypophysis was partially removed from 5 sexually mature ♀ rabbits, and 10-25 days later they received intravenous injections of placenta extract, which was likewise given to 4 controls. In 2 out of the 5 operated animals the uterine contractions from placenta extract were greatly weakened. In 8 other ♀ rabbits the hypophysis was almost or quite completely removed, and placenta extract given 2-23 days later; in 4 of these the uterine contractions were practically abolished, and in none of the remainder were the contractions of normal strength or frequency. Kosakaé maintains, consequently, that the corpus luteum and the ovarian hormone have nothing to do with initiating birth; this is caused, he believes, by the action of matured placenta substance at the end of pregnancy on the posterior lobe of the hypophysis, which thereupon initiates uterine contractions. VI. Proceeding on the basis of Herring's hypothesis that the secretion of the posterior lobe of the hypophysis is excreted into the 3rd ventricle, Kosakaé studied the action of the ventricular fluid from non-pregnant, pregnant and puerperal rabbits, untreated and previously treated with placenta extract, preparation of hypophysis posterior lobe, and both combined. He found the uterus-stimulating power different according to the sexual period, strongest in pregnancy, next strongest in puerperium; increased by subcutaneous injection of either placenta extract or hypophysis posterior lobe preparation (still more by both), the increase being most effective in pregnancy. In a hypophysectomized rabbit, despite injection of both placenta extract and pituitrin, the ventricular fluid had no uterus-stimulating power. Kosakaé concludes that the increase of the uterus-stimulating power of the ventricular fluid after injection of placenta extract is due to stimulation of the posterior lobe of the hypophysis; and that the intensification of the action of placenta extract by simultaneous administration of posterior lobe of hypophysis is due mainly to increased activity of that organ, and in some slight degree to the direct infusion of the injected substance into the ventricular fluid. VII. The effect of the ventricular fluid of the rabbit on the surviving excised uterus of the guinea-pig was found to be markedly decreased by previous subcutaneous or intravenous injection of the rabbit with epinephrine or

secacornin, but enhanced by previous injection of pilocarpin. All of these effects are attributed to the action on the posterior lobe of the hypophysis of epinephrine and secacornin; these substances, given simultaneously with placenta extract, likewise inhibit its action. VIII. In this series of experiments the substances investigated were injected into the 4th ventricle of rabbits and the effect on the uterus in situ noted. Preparation of hypophysis posterior lobe (5 rabbits), placenta extract (2 rabbits), the 2 substances combined (3 rabbits), epinephrine (3 rabbits) and pilocarpin (1 rabbit), injected into the ventricle, all had a weaker uterine effect than when intravenously introduced, and their toxicity seemed greater. Pilocarpin displayed no immediate effect, but later regularized the spontaneous contractions. Preparation of posterior lobe of the hypophysis produced somewhat different effects according to the amount of substance and the condition of the uterus. A small amount soon reduced the untreated uterus to immobility, while it caused increase of tonus in the sensitized uterus. A large amount produced transient contractions, which might be preceded by inhibition. This immediate inhibiting effect is attributable to the action on a center of 1 of the substances in the preparation; the later effect tends to establish rhythmic action. Placenta extract, alone and combined with preparation of hypophysis posterior lobe, given intraventricularly, has the same effect as the latter alone. These data indicate that the effect of the so-called uterus-contracting substances, given intracisternally, manifests itself only when the substance affects the uterus itself peripherally. A central action follows these intraventricular injections as a secondary effect of the increased function of the posterior lobe of the hypophysis, raising the activity of the uterus several hrs. later. IX. A mixture of placenta extract and pituitrin was subcutaneously given to 15 normal rabbits (3 cc. in 3 hourly injections to each rabbit); 1 hr. after the last injection ventricular fluid was taken from 13 of them, and 3 hrs. later sera from 12. These fluids and sera were tested by intravenous injection in 6 rabbits. Of the 13 ventricular fluids 10 produced more or less marked increase in uterine movements; so did 10 of the 12 sera; but in no case was there any change in blood-pressure.

804. **KRAUS, E. J. Zur Frage der Funktion fötaler endokriner Organe.** *Beitr. Pathol. Anat. u. Allg. Pathol.* 82(2): 291-306. 4 fig. 1929.—Following a critical analysis of researches by other workers and after a careful study of a case of total congenital thyroid aplasia, the author reaches the following conclusions: The opinion that the fetal endocrines are inactive and that the fetus is dependent solely upon the hormones of the mother is erroneous. The remarkable changes in the pituitary, thymus and adrenals, observed in a case of congenital thyroid aplasia, indicate an intimate relationship between the thyroid and the above-mentioned glands during embryonic life. This relationship must depend upon the interaction of their hormones, necessitating, therefore, endocrine activity. The origin of the striking alterations shown in the endocrine system in such cases can only be explained by accepting function on the part of these glands in the embryo. Certain changes observed in cases of anencephaly can only be explained on the same basis. Evidence of the specific function of a gland is seen by the presence of a specific active substance within the gland (epinephrine in the adrenal, an oestrus producing hormone and the hormone producing the melanophore reaction in the pituitary, insulin in the pancreas, I in the thyroid, etc.). The demonstration of the presence of these hormones within the gland does not necessarily prove that the hormones reach the circulation. A consideration of the findings in the above-mentioned case of thyroid aplasia, also in cases of genital-suprarenal syndromes in the new-born, and the manifestations of isolated cases of congenital acromegaly and Basedow's disease indicate that these hormones reach the circulation during embryonic life. Fetal endocrines are probably supported at first by the maternal endocrines although proof of this is difficult. The changes in this case of congenital thyroid aplasia do not indicate that the maternal endocrine system supplemented the deficient fetal thyroid to an adequate degree. Rather, there is evidence that deficiencies of the maternal endocrines are supplemented by those of the fetus. Hyperplastic changes in the thyroids of the offspring of thyroidectomized dogs, hyperplastic changes in the Islands of Langerhans in the children of diabetic mothers, and the researches of Carlson and Drennan appear to support this point-of-view. "Thyreoprive Zellen" is the name proposed for the chromophobe cells appearing in the anterior lobe of the pituitary in cases of thyroid aplasia. These cells, according to Wegelin, are comparable to the transitional cells of E. J. Kraus.—*H. C. Mack.*

805. **KUNDE, M. M., R. M. OSLUND, and R. KERN. The temporary control of post-operative tetany in thyro-parathyroidectomized dogs by the administration of thyroid hormone.** *Amer. Jour. Physiol.* 96(1): 45-53. 1931.—In approximately 55% of a series of 31 dogs, tetany following thyro-parathyroidectomy was temporarily controlled by experimental hyperthyroidism. The remaining 45% died as in uncontrolled tetany. Experimental hyperthyroidism maintained the serum Ca above the tetany level for 1-3 wks. in 55% of a series of 31 thyro-parathyroidectomized dogs. In all thyro-parathyroidectomized dogs of this series, a further decrease in the serum Ca followed the discontinuance of thyroid ingestion. In the unoperated animals, moderately severe hyperthyroidism, experimentally induced, causes an elevation in the level of the acid soluble P of the blood serum which may reach 100% above normal, with no change in the serum Ca. After thyro-parathyroidectomy, the increased concentration of the blood P persists, or shows a tendency to a still higher elevation with increased severity of the hyperthyroidism, regardless of the decrease in the serum Ca.—*Authors' summary.*

806. **KUNDE, M. M., F. E. D'AMOUR, R. G. GUSTAVSON, and A. J. CARLSON. The effect of estrin administration on the reproductive and blood vascular systems: the thyroid, thymus, hypophysis, adrenals, kidneys, liver and spleen.** *Amer. Jour. Physiol.* 96(3): 677-682. 1931.—In 4 puppies (3 ♀♀ and 1 ♂), 7-9 wks. old at the beginning of the experiment, subcutaneous injections of oestrin over a period of 6-17 wks. caused a diminution of the size of the ovaries, an arrest in the development of the follicles and a relative increase in the amount of ovarian stroma, as compared with 2 controls. Marked hyperplasia of the uterine glands (especially the basal glands) followed oestrin injections but no hemorrhagic discharge from the vagina was observed. The hypophysis of the dog receiving ♀ sex hormone for 17 wks. was smaller than the hypophysis of the control, and measurements indicate a relatively greater decrease in the anterior than in the posterior lobe. Neither gross nor histopathology was observed in the arteries, heart, liver, spleen, thymus or adrenals after 17 wks. of daily doses of ♀ sex hormone.

807. **LA BARRE, JEAN. The rôle of the central nervous system in the control of pancreatic secretion. I. The secretion of insulin during hyperglycemia. II. The external secretion of the pancreas during hyperglycemia.** *Amer. Jour. Physiol.* 94(1): 13-16. 1 fig. 17-21. 1930.—I. The complete technique involved the use of 3 dogs. The head of dog B was kept alive by a double cross-circulation between B's head and the trunk of dog A. The head of B was isolated completely from its trunk except for the 2 pneumogastric nerves. There was then made an anastomosis between the pancreatic vein of dog B and the jugular vein of dog C. Dog C was the test-object for hypernormal insulin-secretion by dog B. With such preparations, the author performed 2 series of experiments. In the 1st series, before establishing a double cross-circulation between dogs A and B, he removed the cerebral hemispheres of the isolated head of B. In a 2nd series of experiments, before establishing the transfusion of the isolated head, he removed not only the cerebral hemispheres but also the thalamic region. The hyperinsulinemia resulting from the transfusion of hypergly-

cemic blood through the isolated head of the dog was not affected by the removal of the cerebral hemispheres but was abolished by the separation of the thalamic region from the remainder of the central nervous system. II. In 2nd series, 3 experiments, a 2nd injection of dextrose given when the effect of the 1st injection had almost disappeared produced a repeated sudden increase of the external pancreatic secretion. The 3rd series, 5 experiments, was a study of the influence of hyperglycemia on the external pancreatic secretion in animals with cerebral hemispheres and thalamus excluded by a retrothalamic section. The conclusion is that the extirpation of the cerebral hemispheres does not modify the increase of the pancreatic-juice flow consequent to hyperglycemia. Extirpation of the thalamus abolishes the response.

808. **LAQUEUR, E., E. DINGEMANSE, and S. KROBER. Crystalline "Menformon."** *Nature [London]* 125 (3142): 90. 1930.—A progress report. A product in the form of macrocrystals (colorless platelets), similar to those reported by Doisy, were obtained.

809. **LEBEDINSKY, N. G. Bekämpfung der Alterserscheinungen durch teilweises Zerreissen und Zerdrücken des Hodengewebes. Versuche an Hunden.** *Biol. Zentralbl.* 50(7): 392-422. 12 fig. 1930.—Four dogs of 10½ to 11½ years of age were pricked through the scrotum with long bent needles and a fraction of the testis torn or crushed. Senile characteristics such as indifference, non-interest in food, weakened sense perceptions, quick fatigue, stiffness of the body and quivering of the hind legs, were markedly relieved. This improved condition, including a partial return of eroticism, has endured for 9 mos. Histological study after 6 mos. on one of the experimental dogs showed a general atrophy in the traumatized area, but an increase of Leydig's cells in the adjacent area. Products of torn tubules cannot reach the outside of the body; hence this method of "rejuvenation" is intrinsically comparable to vasectomy, ligaturing, and other methods of damming the testicular products. But since only a small fraction of the testis is destroyed in the present method, the products can still reach the outside of the body, as the epididymis and vas deferens remain whole.—*From abst. by N. G. Lebedinsky (transl. by R. A. Muttkowski).*

810. **LENTATI, G., e E. ANGLESIO. Le isole del Langerhans in animali castrati. [Islets of Langerhans in castrated animals.]** *Monitore Zool. Ital.* 41(6): 151-155. 1930.—A census of the islets of Langerhans in normal and castrated *Mus musculus*, studied by means of serial sections, shows no numerical change in the islets after total castration of either sex. No structural modifications are found in the islets of the castrates; nor was any correlated growth observed among the exocrine acini. The thyroids in castrates present signs of hypofunction, but the islets are maintained unaltered. —*G. Lentati (transl. by R. A. Muttkowski).*

811. **LENART, GEORG, und CHARLOTTE REIS. Parathormon-eosinophile Untersuchungen bei gesunden Kindern.** *Arch. Kinderheilk.* 92(3/4): 161-169. 1931.—Since variations in the Ca content of the blood are accompanied (not causally) by proportional, though inverse, changes in the eosinophil count, the latter was tested in healthy children and found practical as an index of parathormone sensitivity. In 11 children after subcutaneous injection of 1 unit of parathormone per kgm. body wt., the absolute number and the percentage of eosinophils dropped at the 5th hr. and returned to normal at the 24th in all but 2 infants, in whom it was nomal at 48th hr.

812. **LEWIT, S. G., N. S. BERLAND, und I. A. RYWKIN. Die biologische Kontrolle des Antithyreoidins.** *Zeitschr. Ges. Exp. Med.* 71(3/4): 506-524. 1930.—The authors criticize the reports of previous investigators. They have covered the same ground as Asimoff, using thyreocrin and antithyreocrin, preparations corresponding to thyroidin and antithyroidin, in their effect on the metamorphosis of 120 axolotls. Feeding with a mixture of thyreocrin and antithyreocrin, or with a mixture of thyreocrin and dried ox blood, produced an almost complete arrest of metamorphosis. Neither antithyroidin alone, nor normal blood alone, restrained metamorphosis. The authors regard it as completely proved that antithyreocrin has no specific anti-thyroid action.

813. **LINFORD, H. L'électromyogramme, l'électroneurogramme et l'électromyélogramme de la grenouille surrénalectomisée.** *Jour. Physiol. et Path. Gén.* 28(2): 361-369. 12 fig. 1930.—The post-operative effects, such as loss of spinal reflexes and death, after adrenalectomy in the frog are not characteristic of any particular condition. No difference could be found between the nerve-reactions of an adrenalectomised frog and a control animal in the same state of health.—*W. R. Fearon.*

814. **LORETO, C. Ricerche sulle variazioni del chimismo gastrico dopo paratiroidectomia sperimentale. (Nota preventiva.) [Variations in gastric chemistry after experimental parathyroidectomy.]** *Ann. Ital. Chir.* 9(11): 1169-1176. 1930.—In parathyroidectomized dogs [number not stated], surviving the operation 30-48 hrs., Loreto found slight diminution of the total acidity of the gastric juice taken during survival period, and, in the gastric mucosa immediately after death, hyperemia of an extensive zone of the base of the gastric mucosa and often little zones of submucous hemorrhage.—*Author's summary (transl.).*

815. **LOWE, ESTHER. Seasonal and sexual variation in the thyroid glands of cats.** *Quart. Jour. Microscop. Sci.* 73(4): 577-592. 2 pl. 1930.—A sex difference in the condition of the glands was apparent only during the period October–December when the glands of males contained far more colloid than those of females. Both sexes were producing a small amount of new secretion. During the rest of the year seasonal changes affected both sexes equally. Increased activity took place in January and February, followed in March by a more passive condition. From June–August they were again actively secreting. The glands of pregnant females were more actively secreting than those of non-pregnant females but varied in accordance with the seasonal variation recorded for normal males and females.—*E. Lowe.*

816. **LUKÁCS, J. Geht das Schilddrüsenhormon in die Milch über?** *Arch. Kinderheilk.* 91(1/2): 9-13. 1930.—Earlier experiments had shown that the growth of young white rats was proportionally retarded by experimental hyperthyroidism. Experiments here reported show the effect on suckling rats of thyroid feeding to the mother. Taking as 100% the gain in weight of 4 control litters (31 rats) suckled by normal mothers, 6 litters (51 rats) suckled by mothers fed on thyroid gained 46%-69%. This Lukács regards as evidence that the thyroid hormone produced in the maternal organism is excreted with the milk.

817. **MAC KAY, E. M., and W. S. POLLAND. Compensatory hypertrophy of the adrenal cortex in the rabbit.** *Jour. Path. & Bact.* 34(1): 73-79. 1930.—Removal of one adrenal from 9 ♂ and 9 ♀ rabbits was followed by hypertrophy of the cortex of the remaining gland.—*A. E. Boycott.*

818. **MACLEOD, J. J. R. Some recent experiments with insulin.** *Leopoldina* 4:1-5. 1929.—A description of 2 depancreatized dogs, kept alive and in good condition for 4 years on a diet of meat, pancreas, and sugar, with daily injections of insulin. The carbohydrate balance and energy exchange were carefully followed. The author concludes that pancreatic enzymes are essential to the well-being of the animal, that the power to metabolize carbohydrate may be regained in certain cases, and that sugar may be derived from fatty acids in diabetes. —*T. C. Burnett.*

819. **MAHNERT, A. Die Wirkung von Sexual- und Hypophysenvorderlappenhormon auf die Abderhaldensche Fermentreaktion.** *Monatsschr. Geburtsh. u. Gynäkol.* 85(2/3): 94-97. 1930.—The occurrence of occasional negative Abderhalden reactions in undoubtedly pregnant women suggested that unknown influences, possibly hormones, may sometimes inhibit the working of the reaction. The 1st series consisted of the addition of sexual hormone, or hormone of the anterior lobe of the hypoph-

ysis, to the sera of 10 normal, non-pregnant women; such addition did not enable these sera to split placenta proteins. The next series consisted of experiments on 20 sera from pregnant women, who previously had given positive Abderhalden reactions. Addition of the hormones named clearly weakened the action of sera which had given strongly positive reactions, but had practically no effect on those which gave weakly positive reactions. Mahnert concludes that a physiologic increase of hormones in the blood and urine may account for occasional negative reactions in pregnant patients. The final series consisted of experiments to determine the cause of this inhibiting action of the hormones. Sera or urines from pregnant women were divided, ½ of each specimen having pulverized placenta mixed with it and then centrifuged off, the other ½ left untreated, and both parts injected into ♀ infant mice. The action of the 2 parts was practically the same, indicating that there was no adsorption or binding of the hormones by the placental protein. Hence the inhibition of ferment activity by hormones is to be regarded as an action on the ferment itself and not on the placental substrate.

820. **MARAÑON, G. L'influence sexuelle des glandes endocrines non-genitales. L'action virilisante de la substance cortico-surrenale et de l'hypophyse.** *Rev. Franç. Endocrin.* 8(1): 1-23. 1930.—Hormonal influences on sexual evolution are of two sorts, gonadal and extragonadal. Of the latter there are again 2 kinds, 1 of which seems active for sexuality in both sexes, the other is specific for one or the other sex. Adrenal and hypophysis produce substances of a virilizing type, which seem to be independent of their other hormonal effects.—*B. Cunningham.*

821. **MARFORI, PIO. Sui principi attivi della linfoganglina. [On the active principles of lymphoganglin.]** *Arch. Fisiol.* 28(3): 550-551. 1930.—Against Viale's assertion the author denies that cholin may be the active "hypotensive" principle of lymphoganglin.—*M. Comel.*

822. **MARRIAN, G. F. The chemistry of oestrin. III. An improved method of preparation and the isolation of active crystalline material.** *Biochem. Jour.* 24 (2): 435-445. 1 pl. 1930.—By acidification and ether-extraction of urine from pregnant women 8000 to 40,000 mouse units of oestrin were obtained per litre. These extracts were purified with a loss of 28-40% of the activity. The mouse unit of the purified preparations is about 0.0006 mgm. A crystalline material was obtained from the above preparations which had a potency of about 5 times that of the original.—*E. B. Carmichael.*

823. **MARRIAN, G. F., and A. S. PARKES. The assay of oestrin.** *Jour. Physiol.* 67(4/6): 389-401. 3 fig. 1929.—A discussion of the variable factors affecting the standardization of oestrin is followed by the description of a convenient technic. It consists of 4 injections at 12 hr. intervals.—*T. C. Burnett.*

824. **MASON, JAMES B., J. MARKOWITZ, and FRANK C. MANN. A plethysmographic study of the thyroid gland of the dog.** *Amer. Jour. Physiol.* 94(1): 125-134. 3 fig. 1930.—A method of plethysmography of the thyroid gland is described. The effects of various drugs on the volume of the thyroid gland were studied. The effects of epinephrine, nicotin, nitroglycerin, pilocarpin, acetyl cholin, atropin, pituitrin, rattlesnake venom, thyroid extract, and thyroxin are explicable on a circulatory basis. Strophanthin, KI, and caffein sodium benzoate have little, if any, effect. The effects on volume of the thyroid gland are recorded following stimulation of the vagus and sympathetic nerves in the neck and thorax. These experiments have demonstrated that the vasoconstrictor fibers pass to the thyroid gland by way of the sympathetic nerves. Following stimulation of the homolateral vagus nerve in the thorax, before its juncture with the sympathetic trunk, or following stimulation of the opposite vagosympathetic trunk, there is produced an increase in the volume of the thyroid gland. This was considered to be secondary to increased flow of blood consequent on the concomitant rise in blood pressure. The opportunity often presented itself for studying the reactions of hypertrophied glands to the stimuli mentioned. The results were identical with what occurred in non-goitrous animals. As might be expected, changes in volume were correspondingly greater in large goitrous glands. In several instances the authors' experiments were repeated on animals that had been rendered hyperthyroid by injecting thyroxine, or by feeding desiccated thyroid gland. The results were unaffected.—*Authors' summary.*

825. **MEYTHALER, F., und E. STAHNKE. Die Wirkung des Pankreashormons bei experimenteller Umgehung der physiologischen Leberpassage.** *Arch. Klin. Chir.* 162(Kongressbericht): 272-273. 1930.—The pancreatic hormone was conducted directly into the systemic circulation by anastomosis between the venae pancreaticoduodenales and the right vena renalis in 4 dogs. The fasting blood sugar fell from 85-110 mgm. % to 50-68 mgm. %. Administration of 100 gm. glucose by mouth, which before operation had produced alimentary hyperglycemia of as much as 200 mgm. %, after operation caused only a slight rise. Introduction of insulin directly into the systemic circulation in these experiments, the authors conclude, deprived the liver of the power to stabilize the blood sugar within the physiologic limits of 80-100 mgm. %. Epinephrine produced no hyperglycemia in these dogs.

826. **MINAMIKAWA, K. Experimental investigation of the effect of the nervous system on the function of the genital organs. V. Relation between the maturation of the genitals due to Zondek-Aschheim's hormone of the anterior pituitary lobe and sympathectomy.** *Japanese Jour. Obstetr. and Gynecol.* 13(5): 546-550. 1930.—Preliminary experiments on 16 rabbits confirmed the results of Aschheim and Zondek from injection of urine of pregnant women. Next, unilateral sympathectomy was performed on an unspecified number of young rabbits, and a series of injections of urine (taken during the 7th-8th mo. of human pregnancy) was made at various intervals after the operation; 96 hrs. after the beginning of injections the uterus and ovaries were removed for examination. Both, but particularly the ovaries, were markedly hypertrophied, generally far more so on the operated than on the unoperated side—invariably when the injection was begun in the 2nd wk. after sympathectomy; in this case the number of hemorrhagic follicles and corpora lutea was greater on the operated than on the unoperated side. No such difference was perceptible in the corpora lutea and follicles of the 2 sides when the injections were begun 1 mo. after sympathectomy, and the difference in hypertrophy of the 2 sides was progressively less in cases in which the injections were begun on the 30th-40th day after sympathectomy.

827. **MISSAL, MORRIS E., and MARGARET WOODWELL JOHNSTON. The failure of pituitary substances to influence the basal metabolism or the specific dynamic response to food in a normal subject.** *Jour. Lab. & Clin. Med.* 14(4): 314-321. 1929.—The oral administration of whole pituitary substance (Wilson) for 16 days and the intramuscular injection of antuitrin (Parke-Davis) for 7 days and pituitary solution obstetrical (Wilson) for 11 days were without effect on the basal metabolism or respiratory quotient of an apparently normal man on a constant diet. In experiments in which the increase in metabolism was determined following the ingestion of sucrose or glycine the results were so irregular with regard to time and magnitude of maximal response in the control period as well as following the administration of the various pituitary substances that conclusions regarding the effect of the latter on the specific dynamic action of food are unwarranted.—*J. B. Youmans.*

828. **MIYAGAWA, YONEJI, and KOHEI SAITO. On the biological significance of corpus luteum of ovary. An experimental study on the inner secretion of corpus luteum (corpus luteum hormone).** *Japanese Jour. Exp. Med.* 7(2): 145-156. 1929.—The authors observed changes characteristic of pregnancy in the genitalia and mammary

glands of albino rats and virgin guinea pigs after injections of corpora lutea of pregnancy. Injections of immature placental tissue produced the same results, whereas, the mature placenta, guinea pig embryos, uterine mucosa, ovarian follicular fluid, the interstitial gland of the ovary and the corpus luteum following menstruation were without effect. Injections of corpus luteum of pregnancy, moreover, produced changes in other glands (pituitary, thyroid, adrenals, pancreas) which were identical with those observed in pregnant controls. The authors conclude, therefore, that the substance capable of producing pregnancy changes in the genitalia and mammary glands is formed by the corpus luteum of pregnancy and not by the corpus luteum following menstruation. They call this substance the corpus luteum hormone. It is soluble in alcohol, ether, and water.—*H. C. Mack.*

829. MOORE, CARL R., and L. T. SAMUELS. The action of testis hormone in correcting changes induced in the rat prostate and seminal vesicles by vitamine B deficiency or partial inanition. *Amer. Jour. Physiol.* 96(2): 278-288. 5 fig. 1931.—The testes of 18 ♂ rats kept upon a diet deficient in the antineuritic fraction of vitamin B, or on insufficient diets containing an excess of B, were found to consist of normal seminiferous tubules in active spermatogenesis but the reproductive accessories (prostate gland and seminal vesicles) were castrate in type. In animals with castrate accessories daily injections of either testes hormone (10 rats) or anterior hypophysis hormone from pregnancy urine (4 rats) caused the castrate condition to be replaced by the normal state within 10 days. The authors interpret these findings in terms of a more general theory: Partial starvation induced by diets deficient in vitamin B, or insufficient diets rich in B, leads to a poor nutritive state which affects the hypophysis. Inhibition of hypophysial secretion leads to a lowered amount of the sex stimulating hormone available in the organism. In the absence of this stimulating substance the testes fail to continue their endocrine function and castrate accessories are present. Injections of testis hormone stimulate the accessories directly, whereas injections of hypophysis hormone stimulate the intact testes to secrete their hormone which then acts upon the accessories. There is evidence to show that under the conditions of the experiment the endocrine function of the testis is disturbed, whereas spermatogenetic function continues.

830. MORISHITA, HIDEO. Studies on the detoxicating hormone of the liver (Yakriton). 16th report. Prophylactic effect of Yakriton against ammonium carbonate convulsion. *Tohoku Jour. Exp. Med.* 14(2/3): 167-175. 1929.—Sato showed that "yakriton" detoxicated NH_4Cl when injected into rabbits. The author injected 3.1% solution of $(NH_4)_2CO_3$ intraperitoneally in a dose of 10 cc. per kgm. Rabbits varied greatly in sensitivity. Some showed convulsions within 5 min. and died, whereas others showed no apparent effect following injection of 4 times this dose. Subsequent injections of the same dose showed the same type of response. A dose of 30 units of Yakriton per kgm. subcutaneously prevented the development of convulsions after intraperitoneal injection of $(NH_4)_2CO_3$. Commercial $(NH_4)_2CO_3$ was found to be about 3 times as toxic as NH_4Cl.—*J. C. Munch.*

831. NEWTON, H. F., R. L. ZWEMER, and W. B. CANNON. Studies on the conditions of activity in endocrine organs. XXV. The mystery of emotional acceleration of the denervated heart after exclusion of known humoral accelerators. *Amer. Jour. Physiol.* 96 (2): 377-391. 1931.—Experiments yielding negative evidence are summarized: After complete denervation of the heart and exclusion of all known humoral cardio-accelerator agencies a momentary excitement and struggle will cause, in cats, a slow increase of the cardiac rate, reaching a maximum in about 3 min. and then slowly subsiding. Repeated struggles cause summation of effects on the heart rate. Full anesthesia (with ether, urethane or chloralose) greatly reduces and may abolish the phenomenon, i.e., stimulation of muscles and the sympathetic system under anesthesia does not produce the typical effect on the heart rate. Experiments are described which show that the phenomenon is not due to rise of arterial blood pressure, increase of temp., escape of adrenin from the denervated adrenal medulla or cortex, or from the liver, nor due to substances produced by the pancreas, gastro-intestinal mucosa, semilunar ganglia, pituitary body, gonads, thyroids, parathyroids, or active skeletal muscles. Transection of the thoracic spinal cord in the prepared cat leaves the fore part of the animal with the denervated heart, and the hind part with the denervated adrenal and liver, but with the lower abdominal sympathetic strands still intact. Struggle by the fore part of the animal is without effect; stimulation of the spinal cord in the lumbar region, causing muscular spasm and erection of the tail hairs, is followed by the typical slow rise and fall in the rate of the denervated heart. Obviously a substance is given off into the blood-stream by the hind part of the animal that affects the heart in the fore part. If all parts of the sympathetic system are disconnected from the spinal cord, except short ganglionated strands in the lower thorax, struggle causes the usual cardiac acceleration; but after the remnants of the system are excised, struggle no longer has that effect. This condition may last for many wks.

832. NICE, L. B., O. C. IRWIN, and RUTH M. KRAFT. Coagulation time of the blood of adrenalectomized rats. *Amer. Jour. Physiol.* 96(2): 305-307. 1931.—In 47 normal rats a well defined shortening in the time of coagulation (av. 47%) followed restraint and stimulation. The clotting time of the blood of the adrenalectomized rats after excitement was decreased in 15 determinations, increased in 5, and in 1 case unchanged. The average decrease for the group as a whole was 13%. The authors' results indicate that the adrenal glands are a large factor, but not the only one, responsible for the shortening of the coagulation time of the blood of emotionally excited rats.

833. NISHIMOTO, HIKOE. The change in the urinary constituents caused by the administration or removal of the thyroid gland. *Japanese Jour. Exp. Med.* 7(2): 225-239. 1929.—The author experimented with dogs. Nitrogenous substances, S compounds and certain other salts were determined quantitatively in the urine after administration of thyroid preparation in excessive quantities and after removal of the thyroid gland. Administration of thyroid preparation led to an increase in total N excretion, also a slight increase of ammonia and allantoin as compared with the quantity increase of amino acids, purine bases and uric acid. A marked increase of neutral S as well as Ca was observed. In the case of removal of the thyroid gland, the findings were reverse of those noted above.—*R. G. Turner.*

834. NOTHMANN, MARTIN. Nebenschilddrüsenhormon und Kalkstoffwechsel. *Klin. Wochenschr.* 8(23): 1068-1069. 1929.—Parathyroid extracts, prepared according to the directions of Collip, are yellow and are frequently slightly turbid. Such extracts have shown marked differences in their action when injected into different species of animals. The experiments described in this paper were carried out with a German preparation called Paratotol which is clear and colorless. This preparation elicits an identical reaction when injected into man, dogs, cats or rabbits. The Ca concentration in the blood is elevated to or above normal. The maximum concentration is attained in ½ to 1 hr. The blood Ca drops to its initial value after 3 hrs.—*M. Hanke.*

835. PADOA, EMANUELE. Caratteri legati al sesso nel piumaggio dei polli e inversione sessuale sperimentale. [Sexual characters of feathers in chickens, and experimental sexual inversion.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 86-90. 5 fig. 1930.—Three hens with black feathers from father Valdarno black, and mother Plymouth Rock, with barred feathers, were ovariectomised at the age of 3 mos., and developed masculine characters in feathers, form and disposition, comb, wattles, and spurs. In 1 case typical masculine behavior was

developed. No signs of barred feathers appeared. The form of feathers is due to hormonal factors (metabolic sex differences), whereas the sexual characters are based upon special genetic factors.—*M. Comel.*

836. **PARKES, A. S. On the synergism between oestrin and oxytocin.** *Jour. Physiol.* [*London*] 69(4): 463-472. 1930.—Pituitrin caused abortion or reabsorption in mice in doses of 1 unit or more: oxytocin, however, was practically without effect, even in doses of 5 units. The experimental finding that comparatively small amounts of vasopressin will terminate pregnancy apparently accounts for this discrepancy. It was not possible to cause abortion regularly by a single injection of "water-soluble" oestrin, but 380 units given in a series of injections over 36 hrs. usually produced abortion in 36-48 hrs. Although 260 units given in 13 injections over 12 hrs. failed to produce regular abortion, the administration of 1 or more units of oxytocin immediately after the last injection of oestrin caused almost immediate (1-6 hrs.) evacuation of the uterus. This reaction time is in marked contrast to that required (36-48 hrs.) for abortion following the injection of adequate amounts of oestrin. This result is in keeping with Bourne and Burn's report that oestrin will sensitize the uterus to the oxytocic principle of the posterior pituitary body. Oestrus recurs at varying intervals after induced abortion, but usually before it would have appeared if pregnancy had proceeded to term. The bearing of these results upon theories of the initiation of parturition is discussed.—*Author's summary.*

837. **PANIZZA, B. La determinazione sperimentale del sesso e la sterilità sessuale per via ormonica. [Experimental determination of sex, and hormonal sexual sterility.]** *Arch. di Fisiol.* 28(1): 51-68. 1 fig. 1930.—Homologous grafts of measured quantities of testicular tissue into the peritoneum of the guinea pig, if executed before fecundation, induce a decided predominance of female offspring. If the quantity of testicular tissue so grafted is above a certain value, there follows instead a deficient development of the fetus; probably ovarial lesions are caused, which are frequently followed by abortion, and more frequently, in the guinea pigs so treated, by sterility.—*M. Comel.*

838. **PARTOS, ALEXANDER. Regulation des Kohlehydratstoffwechsels. Ausscheidung des Insulins durch die Nieren und ihre Bedingungen. [Regulation of carbohydrate metabolism.]** *Pflüger's Arch. Ges. Physiol.* 221 (5): 562-570. 1929.—Human and rabbit urines usually contain insulin, but the urine of fasting animals does not. During hyperglycemia urine is free of insulin but it appears when the blood sugar begins to fall. No insulin was found in urine of diabetic patients and pancreatectomized dogs.—*A. Partos* (*transl. by G. T. Cori*).

839. **PENCHARZ, RICHARD I., J. M. D. OLMSTED, and GEORGE GIRAGOSSINTZ. Results of total and partial adrenalectomy and adrenal transplantation in the albino rat.** *Science* 72(1859): 175-176. 1930.—The rat is no exception to the rule that mammals cannot survive adrenalectomy. A very small piece of cortex remaining in situ can keep the animal alive indefinitely. Transplants of cortical material into an ovary have been successful, subsequent removal of this ovary brought on the usual train of insufficiency symptoms and death.—*J. M. D. Olmsted.*

840. **PENCIER, M. T. de, S. SOSKIN, and C. H. BEST. The effect of liver on the blood sugar level and on the sugar excretion of depancreatized dogs.** *Amer. Jour. Physiol.* 94(3): 548-552. 1930.—Ingestion of raw liver failed to lower the blood sugar or sugar excretion in 2 series of experiments on depancreatized dogs, or the blood sugar in a series of experiments on an unspecified number of normal dogs.

841. **PIAZZA, CESARE V. Valutazione biologica dell'attività dell'ormone emopoietico del fegato. [Biologic evaluation of the activity of the hemopoietic hormone of liver.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 455-457. 1930.—When the hemopoietic substance (hormone) isolated by the author from liver is injected intraperitoneally in rabbits, an increase in reticulocytes of the blood follows. This increase is regarded as a biological test for evaluating the activity of the liver hormone.—*M. Comel.*

842. **POPOW, N. A., B. G. IWANOW, und A. A. KUDRJAWCEW. Zur Frage des Einflusses der Entfernung des Grosshirns bei Kücken auf das Wachstum.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 643-647. 3 fig. 1930.—In each of 7 pairs of chickens about 3 weeks old, the cerebrum was removed from 1 chicken; the general growth and growth of the thymus after 21-39 days showed distinct retardation in each of the decerebrate chickens as compared with the unoperated control; the thymus, indeed, was atrophied. Removal of the thymus from each of 5 older chickens also retarded growth as compared with the 5 unoperated controls.

843. **RABINOVITCH, JACOB. Changes in the thyroid gland of the guinea pig following a period of administration of potassium iodide.** *Amer. Jour. Pathol.* 6(1): 71-74. 1930.—Fifteen guinea pigs were fed 0.1 gm. KI daily for 15 days with resulting hyperplasia of the acinar epithelium of the thyroid gland, marked mitotic activity and softening of the colloid. These effects disappeared in the thyroids of those animals which were killed 3, 7 and more days after the last administration of KI.—*S. H. Gray.*

844. **RABINOVITCH, J., and S. H. GRAY. The effect of potassium iodide upon the thyroid gland of underfed guinea pigs.** *Amer. Jour. Pathol.* 6(1): 75-77. 1930.—Guinea pigs when fed KI usually show very definite signs of hyperplasia of the thyroid gland, especially as evidenced by an increased number of mitotic figures. In these experiments, however, it was found that when the animals are underfed, losing from 11% to 26% of their weight in 15 days, the stimulating effect of KI is missing. No hyperplasia occurs.—*S. H. Gray.*

845. **REGNIER, J., D. SANTENOISE, P. VARE, H. VERDIER, et M. VIDACOVITCH. Démonstration physiologique directe de l'existence d'une hormone thyroidienne régulatrice de l'excitabilité des centres psychomoteurs.** *Rev. Franç. Endocrin.* 8(1): 26-65. 1930.—The thyroid has two distinct relations to the nervous system, (1) It produces a substance which acts upon cerebral activity by lowering chronaxie of the psycho-motor centers; (2) on the other hand the production and excretion of this substance is dependent upon the action of the vagus. This substance appears to differ from thyroxine, the secretion and discharge of which is apparently independent of nerve control.—*B. Cunningham.*

846. **REYNOLDS, SAMUEL R. M., and M. H. FRIEDMAN. Studies on the uterus. III. The activity of the uterine fistula in unanesthetized rabbits following coitus and during pseudopregnancy. IV. The response of the uterine fistula of the unanesthetized rabbit to the injection of urine from pregnant women.** *Amer. Jour. Physiol.* 94(3): 696-704. 3 fig.; 705-707. 1930.—III. Female rabbits prior to coitus were seen to exhibit marked or moderate uterine activity. In 2 cases of 12, however, feeble activity preceding coitus was observed. During the 10 hr. period following coitus, and before the time of ovulation, the uterine activity became greatly decreased. The decrease in activity was seen about the 5th to the 8th hr., and was still more pronounced between the 9th to 12th hrs. post coitum. During the period of pseudopregnancy, the uterus remained relatively quiescent until about the 15th to the 20th day, when activity might return. The possible factors responsible for the initiation and maintenance of the quiescent condition of the uterus are considered. IV. The intravenous injection of urine from a pregnant woman into 10 ♀ rabbits regularly decreased the activity of the uterine fistula, while injection of urine from non-pregnant women into 5 ♀ rabbits left the activity of the uterine fistula quite unaltered or slightly increased it.

847. **RICHTER, CURT P., and GEORGE B. WISLOCKI. Anatomical and behavior changes produced in the rat by complete and partial extirpation of the pituitary gland.** *Amer. Jour. Physiol.* 95(2): 481-492. 1930.—The hypophysis was completely removed in 10

adult rats and partially removed in 15 adult animals, leaving intact either parts of the anterior lobe, or parts of both anterior and posterior lobes. The 10 animals with total removal of the glands were very inactive, as was determined by means of records of running activity in revolving drums. Spontaneous activity was not affected by partial removal of the gland. Body-weight and food-intake were definitely decreased by hypophysectomy. Usually they decreased to a low level, at which they remained fairly constant. The 4-day sex cycles were absent in the hypophysectomized animals, present and normal in the animals with only anterior lobe tissue remaining. In 3 animals, with both anterior and posterior lobe tissue present, the sex cycles were markedly disturbed. Permanent polydipsia was produced in a large fraction of the rats with the pituitary gland partially removed, but occurred in only 1 out of 10 animals with the gland totally extirpated. Further evidence has been gained that polydipsia does not depend on the removal of the pituitary gland. The variable and often transient increase in water-intake following complete or partial hypophysectomy is presumably due to the injury of the adjacent brain-stem. The magnitude of the increase is often the same as that characteristic of the increase produced by puncture of the neighboring tuber cinereum, but the increase is transient. Injections of alkaline extract of the pituitary gland following hypophysectomy produce a definite increase in body-weight and food-intake, but have no effect on spontaneous activity or water-intake. In completely hypophysectomized rats, autopsy reveals marked changes in other organs and tissues. The thyroids and adrenals are hypoplastic. The reproductive organs are markedly enlarged. The thymus and the lymph-glands of the entire body are markedly enlarged. There is a pronounced disappearance of body fat. These changes can be obtained in a mild degree, in some instances, after incomplete removal of the pituitary.—*Authors' summary.*

848. SANTENOISE, D., H. VERDIER, et M. VIDACOVITCH. Isolement d'une nouvelle hormone pancréatique, régulatrice de l'activité vagale. [Isolation of a new vagus regulating hormone from the pancreas.] *Rev. Franc. Endocrin.* 8(3): 204-260. 1930.—The authors have separated from pancreatic extract by alcohols and neutral salts two substances, one not at all vagotonic but producing hypoglycemia, the other strongly vagotonic. They conclude therefore that the pancreas secretes 2 hormones, the second of which reacts on the vagus, and which they propose to call vagotonine.—*B. Cunningham.*

849. SATAKE, YASUTARO, and TAIZO KUMAGAI. On diabetes mellitus. *Ann. Rept. of Work* (*Saito Ho-on Kai*) [*Sendai*] No. 4: 56-59. 1927(1929).—A report of work by various investigators. TAKEUCHI has estimated the content of hormone per gm. of pancreas in several animals. In descending order of content, these are: dog, horse, pig, ox, man, and cat. In general, the hormone content for the body weight is greatest for the carnivora and least for the herbivora. KOZUKA found that blood fructose as well as glucose is decreased by the pancreatic hormone. SATO found that the liver glycogen is increased on repeated administration of small doses of the hormone, whereas the glycogen content of skeletal muscle and of lymph from the thoracic duct were always diminished. The glucose content of lymph could not be reduced below the carotid blood level. The hormone augments the difference between blood sugar values for femoral vein and femoral artery; the difference between the values for carotid artery and jugular vein is unchanged. Glucose consumption in the isolated heart is also increased several times by the hormone. SUGAWARA and TADA observed that the simultaneous injection of adrenalin chloride and guanidine hydrochloride into doubly splanchnicotomized dogs gave the same effect on blood sugar that was obtained when the two substances were injected separately.—*F. Hollander.*

850. SCHOUPPÉ, KARL. Beitrag zur hormonalen Beeinflussung des Geschlechtes. *Arch. Wiss. u. Prakt. Tierheilk.* 62(3): 267-270. 1930.—Hens fed with 1 gm. testis every 2-3 days for 3 weeks produced sterile eggs. The temporary sterility can be quickly reversed by administering ovarian hormones. Feeding with ovaries appears to influence sex, since the chicks produced were all ♀. In dogs sex cannot be influenced after conception, even with the feeding of large quantities of hormones.—*K. Schouppé* (*transl. by R. A. Mutthowski*).

851. SCHOUPPÉ, KARL. Beitrag zur Frage des Antagonismus der weiblichen und männlichen Keimdrüsen. *Wiener Tierärztl. Monatsschr.* 17(15): 565-573. 1930.—From the literature it is evident that similar sexual hormones promote, while opposing ones retard formation of gonads. Weise alone observed opposite action from administration of antagonistic hormones. He made his investigations on cattle. If further investigations confirm his findings, therapeutics will be enriched with a new method of treatment, namely, the "hormone stimulant therapy" using antagonistic hormones. By feeding testicular extract to a nymphomaniac mare, the abnormality was corrected. Through feeding testes to a sow, prevention of oestrum, alterations of the uterus such as loss of tone, shrinking of the bands and sterility could be observed.—*K. Schouppé* (*transl. by R. B. Becker*).

852. SCHOUPPÉ, KARL. Beeinflussung der Nymphomanie der Stuten durch Implantation von Hodenstückchen am Halse. *Wiener Tierärztl. Monatsschr.* 15(17): 776-780. 1928.—Through implanting small pieces of testis on both sides of the neck, 4 mares were cured of nymphomania.—*K. Schouppé* (*transl.*).

853. SCHOUPPÉ, KARL. Über einige Verjüngungsversuche nach Voronoff bei Hunden. *Wiener Tierärztl. Monatsschr.* 15(17): 781-788. 4 fig. 1928.—Eight subjects, ♂ and ♀ dogs. The animals became livelier, acquired rich lustrous hair. Impediment of movement disappeared. The sexual urge was renewed. Animals which had become very fat became leaner. A hunting dog was again capable of normal work. Eczemas healed. Cataract from age and deafness was not influenced.—*K. Schouppé* (*transl. by C. S. Leonard*).

854. SEMBRAT, KAZIMIERZ. Influence de la glande thyroide des sélaciens (Scyllium canicula Cuv. et Sc. stellare Gthr.) et des téléostéens (Cyprinus carpio L.) sur la métamorphose des têtards des anoures (Rana temporaria L.) *Compt. Rend. Soc. Biol.* 97(33): 1508-1510. 1927.

855. SHPINER, LEONARD BENJAMIN. Increased metabolism only one factor in the production and maintenance of the hyperglycemia and glycosuria in experimental hyperthyroidism. *Amer. Jour. Physiol.* 92(3): 672-678. 1930.—Large doses of thyroid extract do not produce a hyperglycemia and glycosuria in normal dogs. However, in the series of 6 dogs which have had the major portion of their pancreas removed (19/20) with the factor of safety reduced to a minimum, it was effective in the production of a permanent hyperglycemia and glycosuria (diabetes). The greater hyperpyrexia which accompanies the subcutaneous injection of sodium nucleinate produces a mild hyperglycemia and glycosuria in normal dogs. In the series of 4 partially pancreatectomized dogs sodium nucleinate did not cause as marked and persistent a hyperglycemia and glycosuria as did thyroid feeding. The influence of the thyroid seems to be not solely through its effect on basal metabolism, but possibly through some toxic effect of thyroxin exerted on the islet tissue of the pancreas. In this sense (toxic action of the thyroid hormone), one might speak of an antagonism between the pancreas and the thyroid.—*Author's summary and conclusions.*

856. SIEGMUND, HERMANN. Über die Abhängigkeit des Uterus von den Funktionsphasen des Ovariums. (Tierexperimentelle Untersuchungen.) III. Der Einfluss von Prolan auf die Ovarien und deren Erfolgsorgane. *Arch. Gynäkol.* 142(3): 702-729. 20 fig. 1930.—To investigate whether corpus luteum hormone can be formed in prematurely developed ovaries, the functional behavior of the uterine musculature during development

and functional phases of the ovary has been observed. A difference in reaction is shown by the rat and rabbit uterus. During duration of functional corpora lutea, rabbit uterus suffers a regular intermittent loss of tonus and contractility, not influenced by administration of posterior lobe secretion. This phenomenon is entirely lacking in the rat and there is no antagonism between the posterior lobe of the hypophysis and the corpus luteum in their action on the uterine muscle. The unequal reaction of the uteri of these rodents is unchanged during pregnancy. This difference illustrates the varying reactions of like organs of different mammals to the hormones of similar endocrine glands. Experiments with active corpus luteum extracts show that the difference in reaction of uteri of different mammals at the time of the functioning corpus luteum is not due to a difference in its secretion. In the rat, the sterile horn of the uterus at the end of pregnancy is 2-3 times normal weight while the empty pregnant horn is 20-30 times normal—due to muscular increase which is due to different control of the two horns. The pregnant horn is supplied ovarian hormones in two ways—direct from the chorionic villi and by way of the blood stream. This double supply accounts for the great increase in weight of the pregnant horn. The more deep seated ova thus are caused to act as hormone producing centers in direct liquid connection with the pregnant horn. The biological function of the corpus luteum hormone is due to the young corpus-luteum-like structure. In the rabbit this is clearly related to the functional behavior of the uterine musculature, the development of the uterine endometrium and the proliferation of the mammary parenchyma. In the prematurely developed ovary, corpus luteum and follicular hormones can both be formed but at different stages of developemnt of the organism. Follicular hormone is easily demonstrable in treated ovaries of very young animals while corpus luteum hormone cannot be shown to exist until later. Animals treated with Prolan are not completely matured and the effect quickly disappears. The nearer the animal is to puberty, the more rapidly can the puberty be attained. The gradual development of the organism seems to depend, in an inverse ratio, on the degree of development of the body and the needed amount of the hormone.—*L. Levin.*

857. SMITH, GEORGE VAN S., and O. WATKINS. A biochemical investigation into the function of corpus luteum. A study of blood sugar and non-protein nitrogen changes in rabbits after the administration of corpus luteum. *Amer. Jour. Physiol.* 94(3): 586-596. 1930.—Intraperitoneal injections of the Corner and Allen lipid extract of corpus luteum were given to rabbits (normal non-pregnant, pregnant, lactating and spayed does, and normal bucks) and resulted at certain times in marked physical reactions accompanied by rises in the sugar and non-protein N of the blood. Control experiments demonstrated that these reactions were specific for the active corpus luteum principle of the extracts used. In most cases, non-pregnant doe rabbits, pregnant rabbits after the 4th day of gestation and lactating rabbits after the 6th day postpartum gave no physical or biochemical evidence of responding to the injections. Occasionally, however, marked typical reactions occurred. No correlation could be made between such reactions and the known physiological state of the animals. Normal doe rabbits always react typically to injection any time from 34 hrs. to 4 days after copulation. The ovaries at this time show ruptured follicles. If the animal is spayed after being served the reaction does not follow injection. From 24 hrs. to 6 days after delivery normal does give positive reactions to the injection of corpus luteum. The post-delivery ovaries show no evidence of ruptured follicles and removal of them does not prevent the reaction. Removal of the uterus has no effect upon the response to corpus luteum either in early pregnancy or after delivery. Spayed does and normal bucks rarely show any physical or biochemical changes following intraperitoneal injection of corpus luteum, but if these unreactive animals are first brought under the influence of folliculin, the corpus luteum injection always induces a positive reaction. This finding indicates that the consistent reactions of does after copulation and the occasional reactions of non-pregnant and pregnant does are the result of the normal production of folliculin within the organism. This biochemical evidence confirms the findings of Hisaw and of Allen of an interrelationship between corpus luteum and the oestrus hormone. The behavior of lactating does, however, cannot be explained upon this basis and the possible influence of the sex principle of the anterior pituitary has not been eliminated. The rise in non-protein N is almost entirely accounted for by a rise of urea. Although this points to renal upset, the direct poisoning of the kidneys by lithium urate does not give comparable sugar and urea curves. Intraperitoneal injection of epinephrine, on the other hand, results in both non-protein N and sugar rises practically identical, in magnitude and time relations, to those following a positive corpus luteum reaction. This suggests that the corpus luteum under certain physiological conditions either stimulates the sympathetic nervous system or else has a direct effect upon the organism similar to that of the adrenal medulla. Whether or not the urea rise is a secondary result and possibly due to kidney damage has not yet been ascertained. It seems possible that the biochemical changes following injection of single large doses of corpus luteum extract may be an exaggeration of a normal catabolic action of this gland. This effect would be entirely in keeping with the importance of the corpus luteum for the implantation and nourishment of the ovum.—*Authors' summary.*

858. SMITH, PHILIP E., and E. C. MacDOWELL. An hereditary anterior-pituitary deficiency in the mouse. *Anat. Rec.* 46(3): 249-257. 3 fig. 1930.—A preliminary report is given upon the disabilities in hereditary dwarfism appearing in a strain of silver mice being reared by MacDowell at Cold Spring Harbor. The dwarfism appears abruptly at about the 15th day of life. The dwarfs remain sterile. Thyroids, adrenals, and reproductive organs exhibit, in a lesser degree, the same structural abnormalities as described by one of us in hypophysectomized rats. The posterior lobe of the pituitary appears to be normal; the anterior lobe contains no typical eosinophiles and is largely composed of connective tissue. No definite conclusions have been drawn regarding the presence or absence of basophiles. Chromophobes, though possibly present, are greatly reduced in number. Daily anterior-pituitary implants have been given to 6 dwarfs. These induced a normal rate of general body growth, although the great difference in size between the dwarfs and normals at the beginning of treatment has not been entirely overcome. The implants induce growth of the reproductive organs and bring the thyroids and adrenals to a normal condition. Thirty young sired by a treated dwarf male have been born. The anterior pituitary alone, of the endocrine glands, is not repaired. It is concluded that dwarfism and associated abnormalities appearing in this strain of mice are due to a deficiency of the anterior pituitary, which is inherited in an alternative manner.—*Author (courtesy Wistar Bibl. Serv.).*

859. SODA, G. Follikulin und Oxydation. *Zentralbl. Gynäkol.* 54(4): 215-219. 1930.—Using the oxidation quotient of the urine method of von Helmut Müller, Soda tested the effects of injecting from 10 to 80 rat units of folliculin into normal and castrated female rats. The injections did not cause any noteworthy change in the average oxidation quotient of the urine and it is concluded that folliculin does not produce in these animals any changes in oxidation.—*G. L. Kelly.*

860. STAMM, ERNST. Die Insulinempfindlichkeit des nichtdiabetischen Menschen und ihre Beziehung zum vegetativen Nervensystem. *Arch. Verdauungs-Krankh.* 48(1/2): 104-124. 1930.—In 7 fasting persons with an apparently normal vegetative nervous system 1/15 unit of insulin per kgm. lowered the blood sugar on an average by 25.5 mgm. %; in 5 young persons with a slightly increased tone of the vagus this value was 33.2; in 13

outspokenly vagotonic persons 45.6; in 7 persons with an increased tone of the sympathetic system or slight hyperthyroidism 16.9; in 3 cases of hypothyroidism 47.2 mgm. %.—*Author's summary (transl. by G. T. Cori).*

861. **STEFANO, S. di.** Endocrinologia. 2nd ed. 400p. Unione Tipografico Editrice Torinese: Turin, 1928.

862. **STEINACH, E., und H. KUN.** Die Inkretion der männlichen Keimdrüse und ihre Abhängigkeit vom Vorderlappen-Hormon. Versuche an Infantilen, Eunuchoiden und Senilen. *Akad. Wiss. Wien. Mat. Nat. Kl. Anz.* 65 (1/27): 39-44; 51-58. 1928.—Infantile male rats of 4 to 5 weeks were injected with 0.2-0.3 cc. of water extract of the anterior lobe of cattle. 0.3 cc. corresponded to about ¼ of the anterior lobe substance. In some the testes descended in 6 days. In 10 to 12 days the prostates and seminal vesicles were fully developed and filled with secretion. Coitus took place at this time, 38 to 45 days, whereas normal males do not mate until 95 to 100 days. Five days after injections were stopped libido and potency disappeared, and laparotomies showed considerable decrease in size of the seminal vesicles and prostate. The most striking change in the testes was a great increase in apparent activity and amount of interstitial tissue over that of controls. No mention is made of sperm or of fertility. Eunuchoid rats became anatomically and psychically like normal males after 14 to 21 injections of 0.4-0.6 cc. of the extract. Active spermatozoa occurred in their ejaculates. Cessation of treatment for 2 weeks caused resumption of the eunuchoid condition. Further injections renewed normalcy. Three 19 to 24 mos. old senile bucks became active males after 12 to 18 injections. Microscopic examination showed a great increase in interstitial cells. Cessation of treatment resulted in senility again. It is concluded that embryonic development of the reproductive tract is furthered by the anterior lobe hormone of the mother acting through the stimulated fetal gonadal secretions. At birth a pause occurs until near puberty when the individual's anterior lobe becomes active and stimulates the production of internal secretion by the gonads. Normal sexual function is maintained throughout life by the interaction of the pituitary and gonads. Waning activity of the pituitary causes inactivity of the gonadal secretion and hence senility.—*H. W. Mossman.*

863. **[STEPPUN, O. A., and K. D. SARGIN.]** СТЕППУН, О. А., и К. Д. САРГИН. О действии экстрактов органов на периферический эффект адреналина. **[Modification of the peripheral activity of adrenalin by extracts of various organs.]** [German summary.] Труды Научного Химико-Фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst. [Moscow]*) 13: 63-79. 1926.—Based on the well-known fact that hypophysis extract synergizes the vasoconstrictor action of epinephrine, and from the fact reported by the author that placenta extract reinforces the action of hypophysis extract on surviving uterus, the question of whether placenta extract also influences epinephrine action was investigated. Such an effect was actually obtained. Other organ extracts gave similar but much weaker effects. It is concluded that active placenta substance potentiates hypophysis action, and that hypophysis potentiates epinephrine action. The placenta influences epinephrine action directly or through the hypophysis.—*From authors' summary.*

864. **STSCHEDROWITZKY, S. G., A. S. STSCHEDROWITZKY, und S. A. SELTZER.** Über funktionelle Beeinflussung der Schilddrüse durch einige Nährstoffe. (Experimentelle Untersuchung.) *Zeitschr. Ges. Exp. Med.* 72(5/6): 699-702. 3 fig. 1930.—The results of Sternberg's serum-atropin reaction on 11 dogs (9 normal, 1 thyroidectomized, and 1 with natural struma) given successively mixed (milk, meat, fat), meat, milk and fat diet are given. This dietary series was repeated 7-9 times for each dog, making a total of 82 experiments. The conclusions, so far as justified by the serum-atropin reaction, are that meat diet stimulates, milk diet depresses the thyroid function; fat diet is without effect, and no diet affects the serum-atropin reaction after thyroidectomy.

865. **SWINGLE, W. W., and J. J. PFIFFNER.** Studies on the adrenal cortex. I. The effect of a lipid fraction upon the life-span of adrenalectomized cats. II. An aqueous extract of the adrenal cortex which maintains the life of bilaterally adrenalectomized cats. III. The revival of cats prostrate from adrenal insufficiency with an aqueous extract of the cortex. *Amer. Jour. Physiol.* 96(1): 153-163; 164-179; 180-190. 1931.—I. The survival period of 38 untreated control suprarenalectomized cats was 4-15 days (av. 7.7 days). The survival period of 23 double suprarenalectomized cats treated with a crude lipid fraction of beef suprarenal cortex, obtained by alcoholic-benzene extraction, was 16-60 days (av. 27.8 days). The behavior of the extract-treated animals was normal up to the abrupt appearance of suprarenal insufficiency symptoms a few days before death. The primary object of the study was the conclusive demonstration of the presence of the cortical hormone in the crude lipid fraction. The cortical hormone is stable in ethyl alcohol for a period of at least 2 wks., and the crude lipid fraction when prepared in oil retains its potency for about 3 wks. when kept at 6° C. The active lipid fraction is not epinephrine free. In so far as the authors are aware this is the first conclusive demonstration that the hormone of the suprarenal cortex which is essential for the maintenance of life can be extracted with lipid solvents. II. The effect of various fractions of the crude lipid extract of beef suprarenals was tested on 32 double-suprarenalectomized cats. The acetone-soluble fraction was highly active; all 5 cats tested as long as the extract was continued (30-50 days). It contains the cortical hormone but presents serious difficulties of administration (formation of lumps and sloughs at site of injection). The acetone-insoluble fraction did not prolong the life of the 3 suprarenalectomized cats on which it was used; it seems inactive. Of 5 cats on which the petroleum-ether-soluble fraction was tested, 2, which received the fraction following a single distribution between petroleum-ether and 70% alcohol, survived 22 and 19 days respectively; the 3 others, which received a fraction obtained after 4 distributions, survived 4.8 days, indicating that after 4 distributions the petroleum-ether fraction is inactive. Of 19 suprarenalectomized cats treated with the alcohol-soluble fraction obtained after distribution between petroleum-ether and 70% alcohol, all lived in good health throughout the arbitrarily selected 100-day treatment period and died with symptoms of suprarenal insufficiency on cessation of treatment, except 3 killed at the end of 50 days and 4 which died of pneumonia, generalized infections or fits. Hence this extract contains the "cortical hormone" or hormone of the suprarenal cortex. This aqueous extract is protein-free but not epinephrine free, containing an average of about 0.4% of the epinephrine present in fresh cortical substance. Potent extracts have been prepared from adrenal cortex stored in alcohol at room temp. for periods of 2-3 wks. No deterioration in activity was observed in active fractions stored in alcohol or benzene at 8° C. from 4-6 wks. Active fractions can be safely stored in acetone for several days. The authors' tests indicate that there is no loss of activity in aqueous extracts in 7-14 days when stored at 8° C. without a preservative. III. For use on cats near death from suprarenal insufficiency a potent "cortical extract" practically free from epinephrine was required. A method is described for the preparation of extract containing about 1:2,000,000 suprarenalin and potent enough to restore suprarenalectomized cats repeatedly to normal.

866. **SZARKA, A.** Einfluss des Ovarialzyklus auf die spezifisch-dynamische Wirkung der Nahrungsstoffe. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 620-626. 3 fig. 1930.—The study was made on 3 sexually mature ♀ white rats, 16, 14 and 17 experiments respectively. The food was 60% protein and 40% carbohydrate. The specific-dynamic action varied according to the oestrual cycle; it was highest at the time of the lowest basal metabolism

values, i.e., in meta-oestrus. The lowest specific-dynamic action was 6.5% of the basal metabolism, the highest 35.8%.

867. **SZENT-GYÖRGYI, ALBERT. On the mechanism of biological oxidation and the function of the suprarenal gland.** *Science* 72(1857): 125-126. 1930.—There are 4 specific substances elaborated by the whole suprarenal gland. In the medulla are found epinephrine and a strongly reducing substance. In the cortex are found hexuronic acid and apparently another principle, the existence of which seems established by the recent work of Hartman and his collaborators, of Stewart and Rogoff and by the most recent investigation of Swingle.

868. **TAKAHASHI, SHIRO. Der Einfluss der Präparation der Hinterlappen der Hypophyse auf die Sekretion der Milchdrüse.** [Japanese.] [Effect of preparation of the posterior lobe of the hypophysis on milk secretion.] *Kyoto Igaku Zasshi* 24(5): 495-515. 1927.—After administration the milk in the alveoli and the excretory ducts increased and the smooth muscle fibers of the stroma were contracted.—*O. Mori (courtesy Japanese Jour. Zool.) (transl. by C. W. Turner).*

869. **TOURNADE. Splanchnique et surrénale. La splanchnique est-il nerf adrénalino-sécréteur ou excréteur?** *Bull. Acad. Roy. Méd. Belgique* 9(4): 160-186. 1929.—The hyperadrenalinemia after excitation of the splanchnic can be produced by secretion, excretion or by mechanical injuries to gland during the operation. Popielski thinks that in all former experiments technical errors were made. The adrenal gland however reacts not only on the first excitation of the splanchnic, but also on repeated excitations, where the possibility of mechanical lesions is greatly diminished. The opinion that mere tractions of the nerve can produce some mechanical effect is refuted by the author in experiments on parabiotically connected dogs. The opinion of Pearlman and Vincent, according to which the effect of splanchnic excitation is due to vasomotor changes, cannot be considered correct. Gley and Quinquad propose the excretion theory, as the effect of the splanchnic excitation is of short duration and the gland is quickly exhausted. The author ascertained by his experiments that faradization of the splanchnic lasting a long time causes also a production of adrenaline for a long time. If it is an excretion it must be compensated for by equal secretion. If short excitations are repeated the effect remains the same, as long as the nerve remains intact. It is not therefore a question of quick exhaustion. The splanchnic is therefore a true secretory nerve for the adrenal medulla.—*E. Polák.*

870. **UBANEK, JOSEF. Ueber die Schwangerschaftsveränderungen der Hypophyse und ihren Einfluss auf das Gesichtsfeld.** *Wien. Klin. Wochenschr.* 40(38): 1195-1198. 6 fig. 1927.—40 pregnant women were studied during the last weeks of pregnancy. In no cases did the author find a narrowing of the temporal visual field that exceeded normal physiological limits. In a few cases the visual field for color was slightly narrowed concentrically, but never in the sense of a bitemporal hemianopsia. In certain pre-eclamptic cases a temporal narrowing of the field for blue was noted. The author concludes that normal pregnancy has no direct effect upon the visual field. Other factors which sometimes accompany pregnancy, such as disturbed liver or kidney function, may produce disturbances of light or color sense.—*W. J. Atwell.*

871. **URBACH, ERICH. Endokrin bedingte Haut-, Schleimhaut- und Haarerkrankungen.** *Arch. Dermatol. u. Syph.* 161(3): 492-503. 9 fig. 1930.—Reports of 12 cases (10 ♀, 2 ♂), in all of which falling of the hair, and in most of which eczema, was prominent; 10 of the cases were relieved by ovarian or thyroid preparation, or irradiation of the hypophysis; the 2 others were not treated for lack of a suitable hormone preparation.

872. **VACEK, T. Studie o rušení adrenalinu. 5. Význam kyselin o rûzném stupni dissocice při fotooxydaci adrenalinu. [On destruction of adrenalin. 5. Effect of H-ion concentration and various acids on photooxidation of adrenalin.]** *Biol. Spisy Vysoké Školy Zvěrolékařské Brno (Publ. Biol. École Haut. Études Vét. Brno)* 7(27)-(33). 1928.—Four commercial adrenalin preparations were oxidized by ultraviolet or visible rays. The former oxidize adrenalin at a higher rate. Adrenalin was dissolved in four different acids. The smallest difference between the efficacy of ultraviolet and visible rays was found when adrenalin was dissolved in HCl. The rate of oxidation was not proportional to the degree of dissociation of the acids; it was slowest in lactic acid. When dissolved in the same acid of different normality, oxidation was indirectly proportional to the H-ion concentration of the solution.—*Author's German summary (transl. by G. T. Cori).*

873. **VELHAGEN, KARL, jun. Über die antagonistischen Beziehungen zwischen Hinterlappenhormonen und Insulin.** *Arch. Exp. Path. u. Pharmakol.* 142(3/4): 127-138. 7 fig. 1929.—Most of the experiments were made on rabbits (number not stated). Extracts of the pars neuralis as well as of the pars intermedia, given at intervals of at least a week to the same animals, raised the blood-sugar, and antagonized insulin, showing that this action of the posterior lobe is due to a substance contained in both parts. Large doses of posterior lobe were required; 50 mgm. of pars intermedia or pars neuralis diminished the action of 6 units of insulin in a rabbit weighing 1.9 kgm., but did not completely suppress hypoglycemia. Larger doses of insulin could scarcely be neutralized; 35 units of insulin had a distinct blood-sugar-lowering effect in spite of preliminary administration of 900 mgm. pars neuralis. A "large series" of rabbits treated with "enormous" quantities of posterior lobe extract (as much as 3.19 gm. neuralis tissue in 48 hrs.) exhibited only a transient hyperglycemia, indicating that (contrary to the views of some other investigators) the lack of posterior lobe secretion cannot cause increase in sensitiveness to insulin, and that hypophyseal glycosuria cannot be due to inhibition of insulin action by increased posterior lobe secretion. Injection of 1 cat and 2 dogs (all with pancreatic diabetes) with extract of posterior lobe, altogether 2000 mgm. fresh posterior lobe substance, in hourly amounts of 100 mgm., produced no secondary hypoglycemia. The conclusion is that the secondary fall in blood-sugar observed in normal animals after such injection is the result of increased insulin secretion. Experiments on the isolated uterus of the rat and on decapitated cats indicated that insulin is not an antagonist of the blood-pressure-raising and uterus-stimulating substance of the posterior lobe.

874. **VIALE, G. La función colinogena de la suprarrenal. [Function of secretion of cholin by the suprarenal gland.]** *Rev. Soc. Argentina Biol.* 3(7/8): 725-729. 1927.

875. **VÖGEL, I., und N. MARGOLINA. Über das "Hormon" der spontanen Uteruskontraktionen.** *Arch. Gynäkol.* 135(2): 478-484. 11 fig. 1929.—The isolated rabbit uterus contracting spontaneously in Ringer-Locke solution soon develops tetanus. Normal rhythm is regained with change of solution. The solution in which a strip has developed tetanus cannot stimulate a normal strip to contraction, hence it contains no specific uterine stimulant. Examination of the R-L solution in which the uterine muscle had developed tetanus showed that it was slightly more acid, it contained less glucose, and relatively more Ca than the same normal R-L solution.—*M. I. Smith.*

876. **VOGELER, KARL. Über die Abhängigkeit der Funktion der Schilddrüse vom Lebensalter und von krankhaften Zuständen.** *Arch. Klin. Chir.* 157(Kongressber.): 704-717. 9 fig. 1929.—Normal human thyroids obtained at necropsy were dried and powdered. The minimal amount which would influence the development of tadpoles was determined. The tadpoles were fed on calf's heart, the thyroid powder was added to the water only once and the animals observed for 2 weeks. The material present in the thyroid which influences tadpole development was found to vary with age. The embryonic thyroid at the 6th mo. contained

little of it; then followed a rise until birth, then a fall for 1 mo., then again a rise; between the 1st and 12th year the amount showed little change; between the 12th and 15th year there occurred a marked increase. From then on until the 80th year the amount showed little variation in males. In female thyroids the amount of active material was higher, but at the age of 40 a drop below the male level occurred. After 50 the female thyroid contained again more active material than the male thyroid.—*G. T. Cori.*

877. **WATRIN, J. L'hémocrinie hypophysaire.** *Rev. Franç. Endocrin.* 8(3): 193-203. 6 fig. 1930.—Injections and transplantations show that the anterior pituitary has to do directly with gonadal development, producing precocious development of gonadal accessory structures as well. Transplants increased size, secretion and congestion in thyroid and pituitary.—*B. Cunningham.*

878. **WYMAN, LELAND C., and CAROLINE tum SUDEN. Studies on suprarenal insufficiency. VIII. The blood volume of the rat in suprarenal insufficiency, anaphylactic shock and histamine shock.** *Amer. Jour. Physiol.* 94(3): 579-585. 1930.—In 23 normal rats the % of plasma of the blood was from 51.7 to 60.7, averaging 56.3%. The blood was from 6.6 to 9.6% of the body weight, averaging 7.6%. Following a control blank operation blood volume determinations were within the normal range. In suprarenalectomized rats having autoplastic cortical transplants but no demonstrable chromaffin tissue blood volume determinations were also within the normal range. In suprarenalectomized rats having gross accessory cortical tissue and before the appearance of severe symptoms in those which died later of insufficiency the blood volume showed only normal fluctuations. After severe symptoms of suprarenal insufficiency had appeared or during the final stages of insufficiency there was a reduction in the blood volume, due chiefly to a reduction in plasma. Anaphylactic shock in sensitized rats was accompanied by a reduction in the volume of the blood plasma, the amount of reduction being correlated with the severity of the shock. Histamine poisoning in rats was accompanied by a reduction in plasma volume, the amount of reduction being roughly correlated with size of dose and severity of symptoms, being marked in some instances. It is suggested that inability to maintain capillary tone and normal permeability, probably due to lack of medullary suprarenal secretion, resulting in reduction of plasma volume, is the chief factor in increased susceptibility of suprarenalectomized rats to anaphylactic and histamine shock.—*Authors' summary.*

879. **YAMADA, TATSUYOSHI. Ueber den Einfluss der Exstirpation der Schilddrüse auf die innere Sekretion der Bauchspeicheldrüse.** [Japanese.] *Kumamoto Ikwa Daigaku Zasshi* 3(3): 1927.—Immediately after thyroidectomy the blood sugar in the rabbit decreases slightly. Later it gradually increases. Simultaneously there is a hypertrophy and proliferation of the islets of Langerhans, which indicates an increase in the internal secretion of the pancreas.—*O. Mori (courtesy Japanese Jour. Zool.) (transl. by R. A. Muttkowski).*

880. **ZAMKOFF, A. A. De l'emploi de l'urine de femme enceinte dans le traitement de certains troubles gynécologiques.** *Gynécol. et Obstét.* 21(5): 439-457. 1930.—Zamkoff describes 21 cases of amenorrhea and disturbances of the menopause in which subcutaneous injections of the urine of pregnant women were used because of its high content in hormone of the anterior lobe of the hypophysis, with good effect. To establish the harmlessness of the method, he used such injections on mice, which after treatment compared favorably with the controls.

881. **ZAWADOVSKY, BORIS M. Zur Frage der Wechselbeziehungen zwischen Schilddrüse und Geschlechtsdrüssen bei Hühnern.** *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch., etc.,* 110(1): 149-182. 7 fig. 1927.—The author finds that experimental hyperthyroidism of fowls is followed by depressive change in the function of the sex gland. In roosters there is noticeable shrinkage of the testicles. In hens there is degeneration and malformation of the follicles interfering with egg-laying.—*Author's summary (transl. by R. G. Turner).*

882. **ZUNZ, EDGARD, et JEAN La BARRE. Contributions à l'étude des variations physiologiques de la sécrétion interne du pancréas. VIII. Répercussion de l'activité exocrine du pancréas sur l'insuline-sécrétion.** *Arch. Internat. Physiol.* 33(2): 142-158. 1930.—Dilute HCl (0.5-0.8%) was introduced into the duodenum in 5 adrenalectomized and chloralosed dogs, and physiologic solution into the duodenum in 2 controls. In 3 of the adrenalectomized dogs a copious secretion of pancreatic juice (9.2-16.8 cc.) and a marked fall in blood sugar followed; in the 2 others the pancreatic secretion was 2.5 and 4.5 cc. and the blood sugar rose slightly, as it did in the 2 controls, in which there was no secretion of pancreatic juice. The fact that unless the suprarenal capsules are removed or ligated, introduction of HCl into the intestine (even when followed by profuse secretion of pancreatic juice) is followed by hyperglycemia instead of hypoglycemia, is additional evidence for the compensatory hyperadrenalinemia by which the organism reacts to all increase in blood sugar. To study the action of HCl in the duodenum on secretion of insulin, 12 dogs were arranged in 6 pairs for transfusion; 1 animal in each pair, after receiving weak HCl intraduodenally as above, served as donor of blood from the principal pancreatic vein, which the partner received in the jugular vein. The donors in 2 other (control) pairs received physiologic solution. In 4 of the dogs receiving HCl abundant secretion of pancreatic juice followed; in the recipient partners the blood sugar fell to 20.95-32.73% of its initial value by the end of 3 hrs., while the donors also showed a slight and transient fall in blood sugar. In the other 2 HCl dogs there was little flow of pancreatic juice, and little variation in blood sugar (slight increase in 1 case). Physiologic solution produced no flow of pancreatic juice and no significant change in blood sugar in either donor or recipient. In 3 dogs subjected to double subcardiac vagotomy after chloralose anesthesia and suprarenalectomy, the same correlation between flow of pancreatic juice and fall in blood sugar was observed.

883. **ANONYMOUS. Recent work on insulin.** *Nature [London]* 126(3186): 810-812. 1930.—A review.

ANIMAL PHYSIOLOGY

REPRODUCTION AND LACTATION

OSCAR RIDDLE, *Editor*

(See also in this issue Entries 322, 409, 414, 419, 430, 431, 438, 475, 509, 520, 533, 549, 557, 569, 588, 595, 724, 725, 726, 733, 740, 746, 749, 750, 751, 757, 759, 761, 763, 779, 782, 783, 784, 790, 793, 796, 801, 802, 803, 806, 815, 820, 828, 829, 836, 850, 851, 853, 862, 863, 868, 870, 875, 881, 1118, 1202, 1203, 1205, 1220, 1294, 1412, 1425, 1461, 1466, 1824, 1911, 1920, 1924, 1925, 2204, 2263, 2265, 2267, 2272, 2273, 2275, 2301, 2339, 2341, 2406)

884. **ABE, M. Investigation of placental ferments in various stages of pregnancy. I. Lipase of placenta.** *Japanese Jour. Obstetr. & Gynecol.* 13(3): 301-303. 1930.—The quantity of lipase was determined in 56 fresh human placentas, from the stage of incomplete formation in the 2nd mo. to the 10th mo. The production of lipase was demonstrated at every stage of pregnancy, the quantity not varying widely, but somewhat greater in

the 4th, 5th and 6th mos. The placental lipase demonstrated in these experiments has an intense sensitivity toward atoxyl and cocaine, but is affected very slightly by quinine and strychnine.

885. **ANKEL, W. E. Neuere Untersuchungen über Parthenogenese bei Schmetterlingen.** *Internat. Ent. Zeitschr.* 22(28): 259-264; (29): 265-271; (31): 288-291. 1928.—A general discussion of parthenogenesis in the animal kingdom, referring particularly to natural parthenogenesis and to the Insecta. The occurrence of this phenomenon in the various phyla and its biological significance in the various cases are briefly considered. The literature on parthenogenesis in the Lepidoptera is reviewed in detail, with extensive comment on Seiler's contributions (1923).

886. **ANSELMINO, KARL JULIUS, und FRIEDRICH HOFFMANN. Über den Milchsäureumsatz in der Schwangerschaft und seine Beziehungen zum Kohlehydratstoffwechsel, zur Leber- und Schilddrüsenfunktion und zum Kreislauf. I. Woher stammt die Milchsäureerhöhung im Blut von Schwangeren?** *Arch. Gynaekol.* 142(2): 289-309. 4 fig. 1930.—Injections of lactic acid in varying amounts were given to 6 pregnant and 2 non-pregnant women, and the lactic acid of the blood determined at varying intervals thereafter. The pregnant subjects showed no appreciable difference from the non-pregnant, and consequently no derangement of hepatic function. The increase in muscle lactic acid after muscular exertion was decidedly greater in 15 pregnant than in 7 non-pregnant women. The increase, however, was confined to the muscularly active portion of the body, an indication that the liver of pregnancy not only injects lactic acid into the blood but promptly removes lactic acid produced under physiologic conditions. Similar results were obtained in 2 determinations in the puerperium, 5 determinations on pregnant women under different conditions, and in 2 cases in which determinations were made before and after parturition. The conclusion is that the theory of increased lactic acid output by the liver in pregnancy is erroneous, and that the increase in output is due to the muscle.

887. **ASHBEL, RIVKA. Sulla viscosità delle uova fecondate e non fecondate di ricci di mare (Arbacia pustulosa). [On the viscosity of eggs of sea urchin—Arbacia pustulosa—before and after fertilization.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 70-72. 1930.—Viscosity of eggs of the sea urchin is increased after fertilization. Non-fertilized eggs are much more resistant to dislocations caused by centrifugation. To treatment with CO_2(pH = 5.9 to 5.6) the fertilized eggs, on the contrary, are more resistant, as also when the eggs are placed in a mixture of sea water, CO_2 and propyl alcohol (8 to 12%). In the non-fertilized eggs cytolysis and agglutination are therein observed. KCN does not influence the viscosity of non-fertilized eggs, whereas dislocation takes place in the fecundated eggs. These latter rarely show cytolysis when treated with a mixture of CO_2, alcohol and KCN; the non-fertilized always show it and the cytolysis is followed by agglutination of the pigment granules.—*M. Comel.*

888. **ASHBEL, RIVKA. Sul quoziente respiratorio delle uova fecondate e non fecondate dei ricci di mare —Arbacia putulosa Gray.—[On the respiratory quotient of fertilized and non-fertilized eggs of the sea urchin, A. pustulosa.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 72-74. 1930.—The R. Q. of the sea urchin eggs decreases immediately after fertilization. Average of 18 experiments: R. Q. of non fecundated eggs 1.06, of the fertilized 0.95.—*M. Comel.*

889. **BACQ, Z. M. Impotence of the male rodent after sympathetic denervation of the genital organs.** *Amer. Jour. Physiol.* 96(2): 321-330. 1931.—Bilateral abdominal sympathectomy induced permanent impotence in 2 young rats; the same result was obtained in another after unilateral sympathectomy. Temporary impotence was observed after bilateral abdominal sympathectomy in 2 guinea pigs. Permanent impotence was recorded in another one after removal of the hypogastric nerves and inferior mesenteric ganglion. This difference is due to the regeneration of the preganglionic fibres. Remarkable enlargement of the denervated seminal vesicles was observed in the guinea pig. No atrophy whatsoever could be detected in the testes of the impotent rats. No persistent erection was observed after sympathetic denervation of the internal genital organs. Bacq concludes that the presence of the sympathetic nerve supply to the ♂ genital organs is necessary for ejaculation and consequently for reproduction.—*From author's summary.*

890. **BENAZZI, MARIO. Sull'origine del pigmento nell'utero di Mus musculus. [On the origin of pigment in the uterus of Mus musculus.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 336-338. 1930.—The origin and meaning of the pigment in the mesometrium of uterus of mice do not pertain to pregnancy. The formation of pigment is on the contrary related to the puerperium.—*M. Comel.*

891. **BREMICKER, WERNER. Vergleichende Studien über die Biologie der Vagina.** *Arch. Gynäkol.* 129(3): 807-843. 1926-1927.—The greatest percentage of animals show changes in the vagina on account of intercourse only at the time of heat or shortly thereafter. In a large percentage, the vagina is lined with low cuboidal or flat epithelium, in a smaller number of cases, with cylindrical epithelium. In a certain group of animals (guinea pig, rat, mouse, opossum) there are typical cyclic changes. A fragile epithelium is replaced with a cornified, many-layered epithelium at the time of heat. This again is replaced by the fragile epithelium. In certain groups, after copulation, there is a formation of a membrane closing the vagina, which fixates the sperm. In all animals examined carefully, there is a distinct difference from the human in that the vaginae of the latter are full of bacteria. In these animals there is an entirely different mechanism which protects the genital canal from the passage of bacteria up the vagina. What, in the animal, prevents the bacteria from entering the vagina? Naturally—heat is a much shorter period in animals. The reaction in the vagina of the pig, lamb, guinea pig, and squirrel is alkaline. There is no formation of glycogen. In the vaginal wall small amounts of glucose are found. The vagina of squirrels, guinea pigs, etc., is self cleansing. In some animals (rat, and guinea pig) this is aided by leucocyte infiltration. In these animals, the vaginal mucosa is made up of squamous epithelium. In squirrels, which have cylindrical vaginal epithelium, after injection of germinal fluid into the vagina, one can not find an increase in agglutination. The alkaline vaginal secretion has no bactericidal action, the self cleansing action existing only so long as cylindrical epithelium is intact. In the normal vagina of a mature long tailed monkey, there is a slightly acid reaction, there are numerous vaginal bacilli, grape sugar is present in the same amount as in humans, and glycogen is found in the vaginal wall. It has been impossible to trace phylogenetic developments of the vagina in the animal kingdom, especially in primates.—*J. E. Lackner and S. S. Schochet.*

892. **BÜSING, KARL EDWARD. Die Theorien über das Geschlechtsverhältnis der Geborenen und die Geschlechtsbestimmung beim Menschen.** 64p. Ferdinand Enke: Stuttgart, 1928.—The author believes that statistics have afforded the ground structure for the problem of sex proportion for medical and biologic research. They showed the ratio of 105-106 boys to 100 girls to be normal in the countries studied, at the present time. The chromosome theory and the Siegel hypothesis are not sufficient for an explanation of the boy surplus. The author shows that constitution and hereditary predisposition have an influence. Probably young ova with female tendency are more likely to take up spermatozoa with a large number of chromosomes, and are prone to abort other spermatozoa. Germs with a male tendency may later change to female. As outer influences and constitution may effect the changes, the means of determining sex at will may yet be found. The boy: girl proportion in a population is an index of its strength and health. In-

crease in boys almost always signifies decrease of a nation's vigor, and points to disease, privation, or feebleness.—*B. Bickel.*

893. **CANTAROW, A., THADDEUS L. MONTGOMERY, and W. W. BOLTON. The calcium partition in pregnancy, parturition, and the toxaemias.** *Surg., Gynecol. & Obstetr.* 51(4): 469-475. 1930.—During the course of normal pregnancy (15 patients) and early labor (21 patients) there was a gradual diminution of total serum Ca, a slight increase in diffusible Ca, and a marked decrease in non-diffusible Ca. The ratio of diffusible to non-diffusible Ca increased steadily, reaching a maximum in the 1st stage of labor. In 7 toxemic patients the ratio of diffusible to non-diffusible Ca was subnormal, owing in most cases to an increase in the non-diffusible fraction. This suggests a condition of diminished cell permeability with associated disturbance of tissue functions in these disorders.

894. **CASTILLO, E. B. del, y C. CARDINI. Influencia de la insulina sobre la iniciación de los ciclos estruales en la rata blanca normal. [Insulin and onset of oestrual cycles.]** *Rev. Soc. Argentina Biol.* 6(4): 225-230. 1930.—Daily injection of 0.1 unit in rats (20-23 days old) did not modify time of opening of vagina, appearance of first oestrus and rhythm of cycle as compared with control litter mates.—*J. T. Lewis.*

895. **CASTILLO, E. B. del, y J. CALATRONI. Injerto de ovario en ratas enteras. [Ovarian graft in normal rats.]** *Rev. Soc. Argentina Biol.* 6(5/6): 341-350. 1930.—Intrarenal implantation of ovarian tissues gave 100% "takes" when the recipients were castrated females. In normal females only 41% "took" (7 out of 17); in these no corpora lutea were observed, and only in one case was a ripe follicle seen. Therefore when functioning ovaries exist in the organism it is less easy to graft a third ovary and this last shows signs of diminished activity in those cases in which the graft "takes."—*J. T. Lewis.*

896. **CERNOSVITOV, L. Studien über die Spermaresorption. I. Die Samenresorption bei den Oligochäten.** *Zool. Jahrb. Abt. Anat. u. Ontog. Tiere* 52(3): 487-538. 3 pl. 1930.—A resorption of normal spermatozoa takes place in 78 species belonging to 12 families of the order Oligochaeta (Naididae, Tubificidae, Enchytraeidae, Lumbriculidae, Branchiobdelidae, Lumbricidae, Criodrilidae, Glossoscolecidae, Microchaetidae, Megascolecidae, Acanthodrilidae, and Eudrilidae), from which it may be concluded that this phenomenon is wide-spread, though not invariably present in the order. Some spermatogonia and spermatocytes are destroyed in the early stages of development, by degeneration, decomposition, and phagocytosis. Commonly, complete normal spermatozoa are resorbed by means of ameboid cells (Spermatophages) in the seminal sac or in the body cavity. The spermatozoa may be destroyed either in the cytophore before maturation is complete or after separation from the cytophore. In some cases the spermatozoa are resorbed in the seminal vesicle through the epithelial cells. A part of the spermatozoa are resorbed in species which have a connection indicated between the seminal vesicle and the intestine. In no cases can the spermatozoa resorbed through the different cells and tissues be demonstrated to be pathological, and it can hardly be said that the phenomenon is a simple removal of impotent spermatozoa. In some cases free spermatozoa may degenerate and become absorbed by lymphocytes, or they may degenerate before separation from the cytophore in which case they become absorbed through the plasma.—*L. Černosvitov (transl. by F. W. Appel).*

897. **CHAMBERLAIN, E. NOBLE. Sex differences in the cholesterol content of tissues.** *Jour. Physiol.* 68(3): 259-264. 1929.—Suprarenal glands of non-pregnant ♀ rabbits were found to be much richer in cholesterol than those of ♂♂. During pregnancy this difference disappeared, perhaps because the excess was used up in forming new maternal and fetal tissues. The ovaries were also found very rich in cholesterol. Sex differences in liver, spleen, kidney and brain tissues, and differences between pregnant and non-pregnant ♀♀ in these tissues, were not great enough to be significant.—*P. Popenoe.*

898. **COPELAND, LYNN. Length of gestations in Jersey cows.** *Jour. Dairy Sci.* 13(3): 257-265. 1930.—The average gestation period for the 1075 cases studied was 278.51 days but there appears to be an equal chance of a cow calving any time between the 271st and the 285th day. The age of the dam apparently has no effect on the length of gestation. Bull calves were carried an average of one day longer than heifer calves, 297 bull calves being carried for an average of 279.48 days and the gestations of 282 heifer calves averaging 278.64 days. The data are too scant to draw conclusions relative to twin births but the results compare with those obtained by other investigators in that the gestations of twins are usually several days shorter than the average. Calves resulting from abnormally long gestations seem to have a better chance of living than do those born prematurely. No correlation could be detected between the length of different gestations in the same individual dam. Cows showing one or more short gestations also exhibited other gestations longer than the average and vice versa.—*Author's summary.*

899. **CORINALDESI, F. Asimmetria biochimica e funzionale degli ovari muliebri. [Biochemical and functional asymmetry of the human ovary.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 347-352. 1 fig. 1930.—Physical and chemical asymmetry are shown to exist between right and left ovary. In the menopause the latter shows a more marked atrophy than the right; however, the involutive processes are alternately more intense in the one, then the other. In the resting as in the functional stage metabolic activities are more marked in the right ovary: so is it with the increase in weight and the increase of cholesterol content during activity.—*M. Camel.*

900. **CORNER, GEORGE, W. The hormonal control of lactation. I. Non-effect of the corpus luteum. II. Positive action of extracts of the hypophysis.** *Amer. Jour. Physiol.* 95(1): 43-55. 1930.—The administration to non-pregnant spayed rabbits of corpus luteum extract (progestin) did not cause proliferation of the mammary gland beyond the stage normally attained at puberty. The continuous presence of corpora lutea in the ovaries, during a period equal to that of normal gestation (brought about by experimental means), was equally ineffective in altering the mammary gland. Administration of extracts of whole sheep's hypophysis to spayed virgin rabbits caused proliferation of the mammary gland and simultaneous lactation, producing in 2 weeks a condition scarcely distinguishable from that present at the full term of gestation. Previous preparation by action of the corpus luteum was found not to be necessary to this effect.—*Author's summary.*

901. **CUNNINGHAM, J. T. The influence of lactation on ovulation and oestrus.** *Brit. Med. Jour.* 2(3638): 516-517. 1930.—According to Crew and Mirskaia oestrus and ovulation occur in the mouse within 24 hrs. of parturition, and if no fertilization then takes place there is no second oestrus for an interval of 20 to 25 days, which is the normal duration of lactation. The theoretical explanation proposed is that the stimulus of sucking acts on the anterior lobe of the pituitary, and that the excess of pituitary secretion so produced causes the persistence of the corpora lutea. There is no general correlation between the stimulus of sucking and the suppression of oestrus, as is assumed by the theory of Crew and Mirskaia. This correlation occurs in the mouse and rat, in the ferret, the rabbit, and the Virginian opossum, but it is absent in cow, mare, goat, pig, and frequently, if not always, in the human species. Cunningham believes that the really significant correlation is between the suppression of oestrus and the condition of the newborn young. In those cases where oestrus is inhibited the young are naked, immature and kept for the greater part of the time enclosed in a warm nest in close contact with the mother. In the other cases where oestrus occurs during lactation, as in the cow and the guinea-pig, the young are born covered with hair and able to

run almost at once. This argument is developed at length.

902. **DIERKS, K. Experimentelle Untersuchungen an menschlicher Vaginalschleimhaut.** *Arch. Gynäkol.* 138 (1): 111-130. 9 fig. 1929.—A young ovariectomized girl was given a sufficient quantity of ovarian active substance to produce premenstrual changes in the genital tract. Following the administration of the hormone there was an increase in the thickness of the vaginal mucosa. The increase was not the result of a simple hypertrophy but a hyperplasia of the cells in the basal layer of the epithelium where mitotic cells were seen in the premenstrum. The vaginal epithelium was divided into 3 layers each containing a different type of cell. The author pointed out similar findings in the microphotographs of sections of the vaginas of animals under similar experimental conditions reported by other investigators. All of these sections showed a basal, an intra-epithelial and a cornified layer. The basal layer remained approximately the same thickness throughout the cycle. The intra-epithelial layer of cornification was not clearly seen until after the 4th day following menstruation. The thickness of this layer increased very slowly and it never became more than ¼ the thickness of the basalis. The exact number of cells in each layer was not determined. The cornified layer began to increase in thickness immediately after menstruation and rapidly became many cells thick in the premenstrum. Cyclic changes were noted in the tubes and uterus as well as in the vagina.—*D. D. Baker.*

903. **DUNCAN, F. N. Some observations on the biology of the male Drosophila melanogaster.** *Amer. Naturalist* 64(695): 545-551. 1930.—A vigorous male *Drosophila melanogaster* should produce from 10,000 to 14,000 offspring; a smaller, less vigorous male should produce about 7,500. The average fertile period of males is about 32 days. Following the fertile period is a sterile period which varied in time in the males used from 21 to 34 days. Sperm were observed in the testes of all males after their fertile period was over. Mitotic figures were found in sections of the testes of males after they had come to the period of sterility, showing that sperm were still being formed. Tests were made to find out whether the failure of sperm from old males might not be due to a deficiency of some fluid from the accessory glands. The results indicated that this was not the case. No sperm were found in the sperm receptacles of females that had mated to these males during their sterile period, excepting, of course, the cases of double matings. Therefore, the impotency of the old males must be due to a loss of function in the ejaculatory apparatus.—*Author's summary.*

904. **EICHBAUM, FRANZ. Das Verhalten des arteriellen Blutdruckes im menstruellen Zyklus und seine Abhängigkeit vom vegetativ-hormonalen System. 1. Mitteilung.** *Arch. Gynäkol.* 138(1): 168-173. 1929.—Eichbaum divides his work into two parts: 1. Early changes in blood pressure during menses, paying attention to diastolic blood pressure and pulse amplitude. 2. Dependence of blood pressure on stimulation from vegetative nervous system during the menstrual cycle. (Especially in regard to changes in irritability due to adrenalin.) Examination made 2-3½ hrs. after noon. The author calls those cases positive in which the premenstrual and menstrual blood pressure varies. Negative, those cases in which there are no characteristic changes to be connected with the menstrual cycle. Of 50 cases, 24 were positive and 26 were negative. Most of the positive cases had a premenstrual rise and menstrual fall. Occasionally one gets a menstrual increase in blood pressure. A negative result occurred in 52% of the cases due to hypotonia.—*S. S. Schochet and J. E. Lackner.*

905. **EICHBAUM, FRANZ. Das Verhalten des arteriellen Blutdruckes im menstruellen Zyklus und seine Abhängigkeit vom vegetativ-hormonalen System. II.** *Arch. Gynäkol.* 138(1): 174-186. 4 fig. 1929.—The author attempts to determine whether, during the menstrual cycle, one gets changes of sensitivity to epinephrine as an expression of changes in the vegetative nervous system. During the menstrual state there is a decreased sensitivity to epinephrine. This may be due to ovarial hormonal action with its changes in extra genital organs. The conclusion is that there is no typical picture which shows an increased sympathetic or vagus tone. One can draw no conclusions from these experiments on antagonistic action in the vegetative nervous system. The changes of the epinephrine curve during the extra menstrual phase do not seem to be related to the cyclical ovarial changes. During menstruation there is a decreased irritability to adrenalin; this is a reaction against substances increasing blood pressure and seems to correlate with the decrease in blood pressure during menstruation. Neither changes in blood pressure nor the periodic changes in irritability to adrenalin are characteristic of all mature women.—*S. S. Schochet and J. E. Lackner.*

906. **EMERY, FREDERICK E. Changes in the ovary and oestrus cycle following the removal of one ovary in albino rats.** *Physiol. Zool.* 4(1): 101-110. 1931.—A large number of albino rats have been studied in respect to the oestrous cycle before and after semiovariectomy. In the normal control rats the cornified-cell stage of oestrus averages about 36% of the total oestrous cycle; this compares to a cornified-cell stage of 40 to 60% of the total cycle characteristic of unilaterally ovariectomized rats. The normal rat is rarely in continuous oestrus for more than 5 days, while rats with but one ovary not infrequently remain in heat for 10 or more days in succession. Ovarian cysts were more often present in the surviving ovaries than in ovaries of normal rats. The relationship of these changes to the gonad-stimulating hormone of the anterior pituitary is pointed out.—*Author (courtesy Wistar Bibl. Serv.).*

907. **EUFINGER, HEINRICH. Die Xanthoproteinreaktion im enteiweissten Blut während der Gestationsperiode.** *Arch. Gynäkol.* 143(2): 366-375. 1930.—The xanthoproteic reaction was positive (values higher than 28, highest obtained in 30 normal women in intermenstrual period), twice in 80 pregnant subjects, once in 40 parturient, and 77 times in 175 puerperal; higher during puerperium in 15 subjects in whom 2 tests were made; positive in 5 of 15 subjects with nephropathy, in 5 of 10 with eclampsia, in 6 of 13 with unirradiated carcinoma, and strongly so in 9 of 12 with carcinoma irradiated 1-2 mo. previously. Fractionation of the total xanthoprotein figures makes it seem probable that an increase of the intermediary, aromatic amino acids is to be considered as an expression of the autolytic processes in the uterus during the puerperium.

908. **EVANS, HERBERT M., and OLIVE SWEZY. The uterus ovary relationship and its bearing on the time of ovulation in primates.** *Amer. Jour. Physiol.* 96(3): 628-639. 1931.—A critical review of available evidence indicates that none of the 4 different lines of approach to this subject, the condition of the ovary, the condition of the uterus, the length of pregnancy, or the time of conception, justifies us in assigning ovulation to an invariable period of the menstrual cycle even though the period be broadly defined. In particular the conception of the uterus-ovary relationship given herewith enables one to utilize differently Schroeder's careful histological study of hundreds of endometrial scrapings, and to conclude that ovulation, while more apt to occur in the mid intermenstrum, occurs at all times in the human menstrual cycle.

909. **FEE, A. R., and A. S. PARKES. Studies on ovulation. III. Effect of vaginal anaesthesia on ovulation in the rabbit.** *Jour. Physiol.* 70(4): 385-388. 1930.—Of 8 ♀ rabbits copulating during anesthesia of the vagina and vulva, 7 ovulated in the normal manner. The animals were opened under urethane at 12 hrs. after coitus, and the occurrence or otherwise of ovulation determined by the ordinary ovarian signs. Where ovulation had not taken place at 10 to 12 hrs., observations were made for a further period before killing the animal. It was found that local anesthesia of the vagina and vulva in the rab-

bit does not affect either the copulatory reflex or the occurrence of ovulation after copulation.

910. **FRETWURST, F., und K. OTTO. Die Manoiloffsche Schwangerschaftsreaktion.** *Arch. Gynäkol.* 143(2): 459-464. 1930.—Manoiloff's reaction (M.R.) was positive in 49 of 130 pregnancies, once in 41 subjects in the first 3 mos., 40 times in 66 subjects between the 8th and 10th mo. In 58 healthy, nonpregnant women and 64 healthy men the reaction was negative. In 36 patients with diseases which frequently give a positive reaction in other pregnancy reactions, only 3 reactions were positive, 2 in cardiac insufficiency, 1 in renal atrophy. In 24 cases the reaction was repeated with the same result. The reaction is undoubtedly not due to the alkalescence of the serum nor to the presence of sexual hormones and the authors' assumption that there might be a shift of the protein components to the grossly disperse side could not be proved unequivocally. The reaction apparently is dependent upon the concomitant presence of serum colloids and other, unknown factors.

911. **GARDNER, J. ADDYMAN, and HUGH GAINSBOROUGH. The cholesterol metabolism during pregnancy.** *Lancet* 1(5508): 603-606. 1929.—The authors examined a number of women attending the antenatal clinic at St. George's Hospital who were admitted to the lying-in ward for parturition. Blood specimens were taken at monthly intervals before parturition and once or twice during the period of confinement. The following results were obtained: (1) The free cholesterol of the plasma increases during pregnancy up to a maximum at about the 30th wk.; concurrently the ester cholesterol falls to a minimum at about the same time. (2) From the 30th wk., more or less approximately, the amount of free cholesterol decreases and the ester cholesterol increases till an almost normal ratio of free to ester cholesterol is attained near parturition. (3) The plasma cholesterol values are generally normal in the 1st wk. or 2 of the puerperium. (4) Some cases show a definite total hypercholesterolemia in which the total cholesterol figures run roughly parallel to the free cholesterol values. During pregnancy there is a marked disturbance of the cholesterol metabolism which results in large changes in the ratio of free to ester cholesterol in the plasma, but to less definite changes in the total cholesterol.

912. **GOLDHAMMER, HELENE. Über den Cholesteringehalt normaler und eklamptischer Placenten. [The cholesterol content of normal and eclamptic placentas.]** *Biochem. Zeitschr.* 226(4/6): 401-403. 1930.—The cholesterol content of 10 normal placentas averaged 0.91%, and 10 eclamptic placentas, 0.65% of the dry weight.

913. **HANKINS, FRANK H. Does advancing civilization involve a decline in natural fertility?** *Publ. Amer. Sociol. Soc.* 24(2): 115-122. 1930.—It is important to discover whether any, and if so how much, decline in the birth rate is due to natural causes affecting the fecundity of the population. A significant decline in natural fertility might indicate the onset of genuine racial decay. There are evidences of reduced natural fertility in the increased percentage of sterile unions and of small though unlimited families among the intellectual classes. This lower fertility of the upper classes, as also of urban populations, is explained primarily by the more general use of contraceptives. But it seems to be due in part to reduced reproductive vigor, which in turn may be due to wider dissipation of nervous energies. It would seem that the increasing strains of complex social life, accompanied by the increased necessity of egoistic satisfactions, must reduce the energies available for reproduction. In that case, reduced natural fertility would be in harmony with Herbert Spencer's principle of the opposition of individuation and genesis. The whole subject urgently needs investigation.—*F. H. Hankins.*

914. **HARGITT, GEORGE T. The formation of the sex glands and germ cells of mammals. V. Germ cells in the ovaries of adult, pregnant, and senile albino rats.** *Jour. Morph. & Physiol.* 50(2): 453-473. 2 pl. 1930.—Ovaries of adult albino rats were studied, the following phases being considered: Eleven to 20½ days pregnant, shortly after fertilization, oestrus, not pregnant, young sterile, old, and senile. Some new ova are produced from the germinal epithelium during pregnancy and oestrus, but it is in the ovaries of non-pregnant animals between oestrous periods that the germinal epithelium is most active. There can be no question of the formation of new ova during adult life, for there is a correlation between the activity of the germinal epithelium and the number of oocytes and young follicles present in ovaries. Also one can trace the origin of ova in the surface and follow their transformation and movement into the ovary proper. In some sterile young animals little new formation took place, in others a good deal. In old and senile animals the germinal epithelium continued to be active, especially in producing ingrowing cords of cells, but frequently these were anovular. The germinal epithelium may form different types of cells by ingrowth: ova, follicle cells, and interstitial cells, but the formation of anovular follicles at one period does not prevent a later production of normal ova and follicles. —*Author (courtesy Wistar Bibl. Serv.).*

915. **HASELHORST, G., und K. STROMBERGER. Über den Gasgehalt des Nabelschnurblutes vor und nach der Geburt des Kindes und über den Gasaustausch in der Plazenta. I.** *Zeitschr. Geburtsh. u. Gynäkol.* 98(1): 49-78. 2 fig. 1930.—During the last weeks of pregnancy the O-content of the umbilical-arterial blood is 0.84 vol. % (average of 5 determinations), in the umbilical vein it was 3.97 vol. %. The Co_2-content was 47.03 vol. % and 44.95 vol. %. Immediately after birth, but before respiration the O-content of the arterial blood was 3.40% (23 determinations), in the vein it was 10.14% (22 determinations). The CO_2-content was 46.21% and 40.71%. During parturition the values vary between wide limits. The elevation of the O value during parturition is probably due to the activity of the labor pains and the consequent change in the circulatory relationships which shows up on the maternal as well as on the fetal side. The total O capacity of the fetal blood at the time of parturition was found to be 21.92% (30 determinations). The high value is due to the high hemoglobin content of the fetal blood. The manner of gas interchange in the placenta suggests a dissociation curve.—*Authors' summary (transl. by. C. S. Simkins).*

916. **HASELHORST, G., und A. ALLMELING. Die Gewichtszunahme von Neugeborenen infolge postnataler Transfusion.** *Zeitschr. Geburtsh. u. Gynäkol.* 98(1): 103-104. 1930.—In 120 cases the average increase in weight in the new-born from influx of blood through the uncut umbilical cord was 50.4 gm. in the 1st min. and 97.7 gm. by the 30th min.; or, taking the amount of increase up to and including the 30th minute as 100%, that in the 1st minute was 51%, in the 1st 5 minutes, 79%, in the 1st 10 minutes, 91%, in the 1st 20 minutes, 99%.

917. **HILGENBERG, FRIEDRICH C. Über Beziehungen des Eisengehaltes der menschlichen Plazenta zur Fruchtentwicklung.** *Zeitschr. Geburtsh. u. Gynäkol.* 98(2): 291-299. 1930.—The Fe content of 35 placentae per 100 gms. fresh substance (without reference to the duration of pregnancy) averaged 2.4 mgm.; 14 placentae from male births averaged 2.3 mgm.; 21 from females 2.48 mgm. The average when fetus weighed 530-1500 gms. was 1.97 mgm., in premature cases with infants weighing from 1550-2700 gms., 2.50 mgm., in normal infants of 2800-3500 gms., 2.63 mgm., and in over-due infants of 3550-4800 gms. it was 2.38 mgm. Taking average Fe content of 2.63 mgm. per 100 gm., in placentae of infants of 2800-3500 gm. as normal, then the content in other groups is 25.1, 4.94, and 12.2% less than normal. The Fe content of the placenta increases directly with the progress of pregnancy to full development, then falls.—*W. P. Kennedy.*

918. **JOYET-LAVERGNE, PH. Métabolisme et Sexualité.** *Protoplasma* 7: 448-463. 1 fig. 1929.—The numerous measures used to evaluate basal metabolism in man have shown that there exists a difference in the basal metabolism in relation to sex. The metabolism of the male was, on an average, 6-7% higher than that of the female. This characteristic of sex cannot be traced directly to a

difference in the function of the genital glands or of the hormones of one or the other sex and we cannot consider it as a kind of secondary sexual character. The researches of Riddle and his collaborators upon the metabolism of the pigeon have shown that, for the egg and embryo of that species, the metabolism of the male is higher than that of the female. Several other studies show the same difference of metabolism in favor of the male of other genera: the rat, batrachians, etc. This characteristic of sex is a result of higher respiratory activity in the cells of that sex. The interpretation of the results of Riddle upon embryos permit us to explain the higher respiratory activity of these cells on their more elevated power of oxidation (intracellular rH). The sexual differences in metabolism appear as a manifestation of the first law of cytoplasmic sexualization ("In a species, the cells polarized in the female sense have an inferior rH to those of the cells polarized in the male sense.") and one can suppose that these metabolic differences have as great a generality as the law of which they are one of the consequences.—*L. Moyer.*

919. JOYET-LAVERGNE, PH. L'avitominose B et la sexualisation cytoplasmique. *Protoplasma* 8: 443-466. 1929.—The article is a review of the subject treated especially from the viewpoint that sexualization of the cytoplasm is influenced by such factors as oxidation-reduction potential and the nature and proportion of reserve lipids and fats.—*W. Seifriz.*

920. JOYET-LAVERGNE, PH. L'intersexualité et la sexualisation cytoplasmique. *Rev. Gén. Sci. Pures et Appl.* 41(19): 533-543. 1930.—In animals and plants intersexuality may be produced by the following: Racial crossing, tumors, intoxication, parasitic action, change of surrounding temperature. These factors act by disturbing the metabolism in the organism. In the majority of cases examined the sexual changes effected may be regarded as results of the two laws of cytoplasmic sexualization. The idea of sexual polarization is applicable not only to the germ cells but also to the somatic cells.—*P. Joyet-Lavergne.*

921. JUST, E. E. Initiation of development in Arbacia. IV. Some cortical reactions as criteria for optimum fertilization capacity and their significance for the physiology of development. *Protoplasma* 5: 97-126. 1928-1929.—Eggs of optimum fertilization capacity exhibit high fertilizin content and separate membranes uniformly and rapidly after insemination. Uninseminated, such eggs separate membranes in 5 sec. in tap or distilled water; they form extra-ovates in 30 sec. when exposed to tap or distilled water 3 min. after insemination. All these reactions are associated with the best physiological condition of the egg. Under proper conditions, eggs without jelly fertilize, separating normal membranes. They develop as well as eggs with jelly. The speed of the fertilization-reaction is so great that polyspermy cannot be induced in eggs in optimum condition by an excess of sperm. Nevertheless, the fertilization-reaction may be chemical in nature. These results serve to emphasize anew the leading rôle played by the cortex in the fertilization-reaction. The cortex of the egg is significant in other ways for the physiology of development.—*Author's summary.*

922. KESSLER, ROB. Glykogengehalt von Plazenta und fötaler Leber bei künstlicher Hyperglykämie. Beitrag zur Frage der Glykoregulation zwischen Mutter und Föt. II. *Zeitschr. Geburtsh. u. Gynäkol.* 98(3): 487-495. 1930.—Twenty-three placentas and 17 livers were examined, 10 placentas being from the 3rd to the 8th mos. of pregnancy. A 2nd group of 8 term placentas from normal pregnancy gave an average value of 0.062 gm. %, the lowest content doubtless being at the end of pregnancy. A 3rd group of 8 were from mothers in whom hyperglycemia had been produced by oral or intravenous administration of glucose. It was concluded that: (1) The term placenta has a constant glycogen content of about 0.1 gm. % which is not influenced by alimentary hyperglycemia. (2) The liver of a mature or nearly mature fetus with normal organs contains glycogen up to 3.4 gm. %. (3) In confirmation of earlier observations, glycogen decreases in the placenta during fetal development but shows an increase in the liver. The beginning of this function is in the 4th mo. of pregnancy, the fetal liver from that time assuming control of the fetal carbohydrates in complete independence of the mother.—*Transl. by R. S. Siddall.*

923. KÜSTNER, HEINZ, und RUDOLF BÖRNER. Zur Frage der Höhensonnenbestrahlung der laktierenden Mamma. *Monatsschr. Geburtsh. u. Gynäkol.* 84(4): 275-280. 1930.—Under carefully controlled conditions breasts of lactating women were exposed to sunlight, or radiant lamp rays. The skin became deeply pigmented. Neither total amount nor rapidity of secretion was raised.

924. LeBLANC, T. J. Some aspects of paternity in Sendai, Japan. *Human Biol.* 2(4): 508-522. 1930.—An analysis is presented of births in Sendai, Japan, for 1920 by occupation and age of father. Using population statistics on occupation and age, rates are presented which indicate how much each age group in the various occupational groups, is contributing to the increase in total population. Using all ages, the rates array themselves in descending order as follows: miscellaneous, commercial, officials and professions, agriculture, unoccupied, industrial and communications. If the rate is made specific for age and only includes those fathers of 45 years of age or over, on the assumption that such fathers represent individuals of more than the average fertility, the rates array themselves as follows: miscellaneous, officials and professions, communications, commercial, industry, agriculture and unoccupied. These rates suggest that so-called differential fertility is operating, but the author is unable to advance any evidence indicating whether such a state of affairs is desirable or not.—*T. J. LeBlanc.*

925. LIPSCHÜTZ, A. Die experimentellen Grundlagen der Eierstocksverpflanzung. (Abh. Grenzgeb. inn. Sekretion, Heft 6.) 51p. 9 fig. Rud. Novak & Co.: Budapest & Leipzig, 1930. Pr. 3 M.—This book is essentially a summary, for the clinician, of the knowledge about ovarian transplantation in experimental animals, and to the underlying principles. Auto-, homo- and heterotransplantation are discussed. The first has the greatest chances of success and the last the least. The work of Voronoff and Thorek in the human has not been sufficiently controlled. Temporary effects of transplanted glands may be due to products of autolysis. The gland must take root in order to have a lasting effect as an endocrine organ. Many interesting facts related to the dynamics of the transplantation of the ovary are given and the most recent work of well known investigators in this field is noted. Especially interesting is the account of transplantation of "conserved" ovaries, some of which took successfully even after 16 hrs. out of the body. The author's work with partly desiccated ovaries is mentioned in this connection. The clinician is constantly warned not to expect too much in this kind of work and one gets the impression that the author is very doubtful that any real good can result from homotransplantation in the human. The photographs and microphotographs are very good.—*G. L. Kelly.*

926. MANDRUZZATO, PRIAMO. Sulla genesi della dilatazione degli ureteri in gravidanza. [The cause of dilatation of the ureters in pregnancy.] *Clin. Ostetrica* 32 (10): 601-605. 1 fig. 1930.—A radiogram of the ureters injected with Uroselectan in a woman in the 6th mo. of pregnancy and necropsy on a woman dead at term agree in showing the upper ⅔ of the ureters dilated, the lower ⅓ of normal caliber. The author attributes the dilatation to atony and an obstacle at the level of the innominate line.

927. MARCO, ROCCO DE. Sul significato del liquido fluente dall'utero di cagna nel periodo di calore. [On the meaning of the liquor flowing from the uterus of dogs during rut.] *Arch. Fisiol.* 29(2): 181-190. 4 fig. 1930.—By means of uterine fistulae the liquor flowing from uterus of dogs during rut was obtained; its secretion is increased by pilocarpin administration, whereas in most cases atropin and pituitrin caused it to decrease,

and aloes increased it. The action of eserin was uncertain, and that of saccharose negative. The mechanism of production of the liquor is a secretive one.—*M. Comel.*

928. **MATTICK, E. C. V., and H. S. HALLETT. Studies in lactation. I. Variations in some chemical and physical properties of the milk from individual quarters of a cow.** *Jour. Dairy Res.* 1(1): 37-49. 1929.—A 4-year old cow was fed an almost uniform ration for a whole lactation. The milk from each quarter was extracted separately using aseptic methods. In the first 2 mos. the yield from the 2 hind quarters was double that of the front, but the former decreased more rapidly until both were the same. Titratable acidity decreased in all quarters as lactation advanced, particularly in the rear. The time for rennet coagulation followed inversely; pH increased, the quarters varying independently. Total N and casein N varied at first; later there were no significant differences. Solids other than fat and ash showed slight irregular differences. Butterfat percentage varied inversely as the yield. On the whole the milk from fore quarters was similar, and also that from hind quarters, but there were distinct differences between fore and hind. Occasionally striking peculiarities marked the milk of single quarters. A physiological explanation is needed.—*S. A. Asdell.*

929. **MEYER, ROBERT. Über Funktion des Ovariums insbesondere des Corpus luteum.** *Ber. Ges. Gynäkol. u. Geburtsh.* 13(5): 241-273. 1928.—The persistence of the corpus luteum during pregnancy is of functional significance. Meyer says there is no function of the corpus luteum without ripening of the ovum; no function of the mucosa without corpus luteum. There are many differences of opinion concerning quantity, quality, source, and function of the lipids in the corpus luteum. Fat is present in the smallest quantities and smallest drops when the cells are developing and large, so that one can differentiate between early developing theca and later developing granulosa. The thick lipid drops are present in the corpus luteum of menstruation and in the corpus luteum after pregnancy, or following interruption of pregnancy. One is unable to determine chemically the nature of fats in the tissues. The increase in visible fat at menstruation coincides with histological regeneration through decomposition of cells. The lipid is freed and only then becomes visible. The fat in combination with other substances in the cells functionates in the pregravid and gravid state. Chemical analysis tells us little of the function of the fats. The corpus luteum prevents further ovulation and during pregnancy, for this reason, prevents superfetation. The hormone (folliculin) of humans and of animals causes growth of the uterus and heat. Hartman and Loewe believe that these two changes are caused by two distinct substances. However, growth of uterus may be caused by other substances such as aolan. The hormone causing heat is found in the ovary, corpus luteum, follicle, liquor folliculi, placenta, blood serum, in the menstrual blood; in puerperal women two days post partum, in blood, in placental blood, liquor amnii, in the urine of pregnant women from the 4th month to the first few days post partum. These are merely the sites of the accumulation of the hormone and not its source. Ovarian function is dependent on other organs, influenced by the vitamin intake, by infections, and poisons. The hormone of the anterior portion of the hypophysis is the motor of the sexual function and stimulates the follicular apparatus causing ripening of the follicle, and is trophic but not rhythmic. The ovum controls the rhythm. The hormone of the anterior portion of the hypophysis of both sexes has the identical action in the ovaries. It is the primary hormone and the ovarian hormone is the secondary hormone. In both sexes of the rat, after castration, there are marked changes in the cells of the hypophysis. These changes can be eliminated in the male by hormone from the testicle only, and in the female by the hormone from the ovary only. The action of the hormone of the testicle and ovary on the hypophysis is different and is specific for the sexes. One must warn against the suggestive influence on the patient of ovarian transplantation and hormone injection. Frank and Goldberg hope (however, R. Meyer says this is premature) that by determining the presence of the hormone in the blood, one can determine the time of ovulation, differentiate between the hypo- and hyperhormone action in meno- and metrorrhagias, and determine the sex in questionable cases by the action of the ovarian or the testicular hormone. The hormone is of great value in diagnosing pregnancy. It is of therapeutic value because it improves metabolic processes and sex function. Ovaries that functionate can be stimulated by the hormone. If the cause of sterility lies in the uterus, Zondek hopes to stimulate the endometrium and through it increase the chances for nidation of the ovum. Only the combining of all methods of research will enable us to draw conclusions as to the function of hormones. It is wrong to demand more from the biologists than has been accomplished. One must wait for further research to determine which results can be applied clinically and of what value they are.—*S. S. Schochet and J. E. Lackner.*

930. **MOORE, CARL R. Supplementary observations on mammalian testis activity. I. Vasa-efferentia ligation. II. Atypical scrota.** *Anat. Rec.* 48(1): 105-119. 1 pl., 1 fig. 1931.—An account of ligation of vasa efferentia in the guinea-pig, with examination of testes 6 mos. later, and report of congenital absence of epididymis in adult guinea-pig. In both conditions testes continue normal spermatogenetic activity with production of spermatozoa. This refutes recent contentions of others that closure of vasa efferentia effectively prevents further spermatogenesis. Tubules may undergo temporary involution from pressure atrophy, but upon removal of degenerating masses of spermatozoa through resorption the germinal epithelium is rebuilt and spermatozoa are produced. More than 50% of the seminiferous tubules of an adult guinea-pig with congenital epididymal absence were normal and contained spermatozoa. Two cases of atypical placement of the scrotum to a ventral median position in the abdomen of the rat are described. The testes, though in the saccus vaginalis as in the normal, were not surrounded by the hairless thin skin of the scrotum nor removed from the influences of body temperature, hence full heat-regulatory function of the scrotum was not possible. The testes, though spermatogenetically active, produced spermatozoa in but one small peripheral area 2 tubules in thickness, which is presumably the portion applied against the skin. A subnormal scrotal function was accompanied by subnormal testicular activity. —*Author (courtesy Wistar Bibl. Serv.).*

931. **MORACCI, E. Poliglobulia e leucocitosi asfittica in diverse fasi delle funzioni sessuali. [Asphyxial polyglobulia and leucocytosis during different stages of sexual functions.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 707-711. 1930.—Asphyxial polyglobulia is more marked during sexual rest than during rut. Asphyxial leucocytosis is present only during sexual rest (in dogs).—*M. Comel.*

932. **MORELLI-GUALTIEROTTI, MARIO. Contenuto cellulare del latte umano e sua importanza per lo sviluppo del lattante. [Cellular content of human milk and its importance for the infant's development.]** *Riv. Clin. Pediatr.* 28(7): 574-582. 1930.—The cellular content of the human milk fed to 40 infants consisted of the epithelial cells of the mammary gland and of leukocytes and lymphocytes (which seemed to have conserved their vitality) and of detritus of various kinds and volume. In normal milk the av. number of these elements per cu. mm. was about 5500. The author observed a constant relation between the number of these elements and the growth of the infant fed on the milk, indicating a favorable effect on growth.

933. **MRŠIC, WILHELM. Über die Eireifung bei der Forelle und deren Bedeutung für die übliche Methode der künstlichen Laichgewinnung.** *Arch. Hydrobiol.* 21(4): 649-678. 1930.—Eggs of a rainbow trout, after stripping, were divided into 4 portions, the most posterior (tail) being the 1st, and the most anterior (head), the 4th, in order to determine whether there might be any differ-

ence in ripening, and hence fertility, development, etc. Each of the 4 portions was fertilized with milt from 4 separate males. All of the portions were placed under identical conditions. No differences were noted in the fertility, mortality, weakness or tendency to abnormalities, or in any other respect. The number of "day-degrees" was 1200-1230 to the commencement of hatching, and 1450 to the end.—*From abst. by W. Mršic (transl. by R. H. M'Gonigle).*

934. **NAKAYAMA, S. Autolysis of gastric mucosa of rabbit in pregnancy and puerperium.** *Japanese Jour. Obstetr. and Gynecol.* 13(2): 171-175. 1930.—Experiments in vitro indicated that autolysis of the gastric mucosa in the rabbit is caused perhaps by "cathepsin" or by an autolytic ferment, but not by pepsin, and is most active at pH 2.27-3.94. The autolysis of the white and the red parts of the gastric mucosa was studied in 10 normal non-gravid rabbits, 11 pregnant rabbits, and 10 rabbits in puerperium. Autolysis was more active in the heavier animals, and in the red than in the white portion of the gastric mucosa. Contrary to Laufberger, Nakayama found that activation of autolysis of the gastric mucosa (unlike that of the liver and kidneys) was insignificant in pregnancy. Autolysis of the gastric mucosa, however, was much increased in the puerperium, paralleling the clinical observation that gastric ulcer is aggravated in puerperium.

935. **NISHIZAKI, Sh. Tubal sterilization through uterine cavity. Report 1. Experimental study of electrocoagulation with rabbits.** *Japanese Jour. Obstetr. & Gynecol.* 12(4): 280-284. 1929.—The previous attempts at visual observation of the uterine cavity with an endoscope are briefly reviewed. It is possible to see the uterine mucous membrane as well as the tubal orifice in the uterine cavity in vivo by passing the instrument through the vagina and cervix. By destroying the tubal mucous membrane and muscle at the orifices in the uterus as well as a portion of the interstitial end of the tubes by electrocoagulation, bloodless tubal sterilization becomes possible. The author devised a cystoscope as well as a diathermy apparatus for this purpose. Experimentally on laparotomized rabbits, he passed his electrocoagulating apparatus through an incision in the vaginal ends of the uterine horns, and with a given length of spark for a period of 5 to 7 sec. electrocoagulated the tubo-uterine orifices. Subsequent histological examinations showed the destruction of the tubal mucous membrane as well as muscle and their replacement by scar tissue. Communication between the uterine horns and the uterine cavity is thus destroyed.—*R. Kurzrok.*

936. **NISHIZAKI, Sh. Tubal sterilization through the uterine cavity. Report 2. Morphometric research on the uterine cavity and the course of the intramural segment of the fallopian tube: electrocauterization with the author's instruments on the intramural segment of the fallopian tube of the extirpated uterus and its effect.** *Japanese Jour. Obstetr. & Gynecol.* 12(4): 285-295. 2 pl. 1929.—To carry out tubal sterilization in the human in vivo the author experimented on human extirpated uteri and determined the size, shape and volume of the uterine cavity, as well as the course and length of the intramural segment of the fallopian tube. The course of the latter is upwards, backwards, and outwards. He then performed bloodless tubal sterilization by cicatricial occlusion of the living uterus in situ.—*R. Kurzrok.*

937. **NISHIZAKI, Sh. Skin pigmentation during pregnancy. Experimental study on the way of pigmentation in the skin of pregnant women and the pigmentation degree in toxemia of pregnancy.** *Japanese Jour. Obstetr. & Gynecol.* 12(4): 377-386. 1929.—At the Kyoto university a series of examinations on pregnant women with various types of toxemia were made to determine the degree of cutaneous pigmentation. It was concluded that melanin in pregnancy is due to increased chromatogenous substances in the blood at a time when the tonus of the sympathetic nervous system is markedly increased. There is an acceleration of pigment precipitation. The degree of pigmentation, in a manner, indicates whether an individual is well adapted to pregnancy or not.—*B. Bickel.*

938. **PADOA, EMANUELE. Il piumaggio e gli ornamenti della testa di galline imperfettamente ovariectomizzate. [Plumage and head appendages of hens following imperfect ovariectomy.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 590-593. 1930.—In 3 ovariectomised hens after regeneration of the ovary rests a scission between plumage and comb characters was observed, the former being feminine, the latter becoming a capon comb.—*M. Comel.*

939. **PASCALI, SILVIO. La riserva alcalina nel sangue durante la gestazione. [Blood alkaline reserve during pregnancy.]** *Clin. Ostetrica* 32(9): 537-554. 1930.—Study of 45 cases during all stages of gestation shows that during the first 3 mos. there is a regular and evident though not extreme depression of the alkaline reserve (A. R.) of the blood; that from the 4th to the 8th mos. the A. R. is within normal limits; and that in the 9th mo. the A. R. is almost normal until the onset of labor, when it tends to fall. Pascali attributes the fall during the 1st 3 mos. to the unpreparedness of the organism for the new conditions, necessitating a certain time for the various organs to adapt themselves to the work demanded of them.—*Author's summary (transl.).*

940. **PETERSEN, W. E., L. S. PALMER, and C. H. ECKLES. The synthesis and secretion of milk fat. I. The time of milk and fat secretion.** *Amer. Jour. Physiol.* 90(3): 573-581. 1929.—Six cows were used in studying the time of milk and fat secretion. Comparisons are made of the post-mortem milking with the in-vivo milkings for amounts of milk and fat percentage for all 6 cows and for sugar, ash, and total solids for 2 cows. As either more or nearly as much milk was secured in the post-mortem milkings as in the in-vivo milkings it is concluded that the cow's udder not only can but does contain practically all the milk produced at a milking. The much lower fat content of the post-mortem milking lends support to a hypothesis that milk fat is secreted by a separate mechanism from the one responsible for the secretion of the other ingredients of milk.—*A. H. Frank.*

941. **PETERSEN, W. E., L. S. PALMER, and C. H. ECKLES. The synthesis and secretion of milk fat. II. An analytical study of the fat of the bovine mammary gland.** *Amer. Jour. Physiol.* 90(3): 582-591. 1929.—Glands were studied from cows at various stages of lactation and during the dry period. The dry glands were found to contain much less dry matter and fat than those in milk, indicating a marked atrophy of the gland as lactation ceases. Fat was found to be one of the chief constituents in the lactating gland, comprising on the average 40% of the dry matter. The nature of the fat from lactating glands differs widely from that of the non-lactating gland. The fat of the lactating gland is almost intermediate in character between butterfat and body fat as judged by the 3 constants of fat; the I number, the Reichert-Wollney number and the saponification number. The organic P and cholesterol content of 2 lactating glands were too low to warrant their consideration as related to milk fat. From the data it can be concluded that the fat in the mammary gland of lactating cows is concerned in the synthesis of the milk fat.—*A. H. Frank.*

942. **PETERSEN, W. E., L. S. PALMER, and C. H. ECKLES. The synthesis and secretion of milk fat. III. A study of activity of the perfused surviving gland, with special reference to the fat.** *Amer. Jour. Physiol.* 90(3): 592-599. 1929.—Five mammary glands (cow) were used in a perfusion experiment with various modifications of an isotonic saline solution. Perfusion failed to cause secretion of milk fat calculated to be in the gland. While the fat content of the post-mortem milkings was small, microscopic examination revealed a normal distribution of large and small fat globules. This together with failure to find free fat particles in alveoli is taken as evidence against the hypothesis that the increase in

fat with the progress of milking is due to physical retardation of the fat particles by smallness of the ducts. Perfusing corn oil emulsion through 4 glands failed to cause an increase in the fat content of the resulting secretion. Microscopic sections of glands perfused with colored emulsion showed fairly uniform coloration of the fat cells indicating its capability of being deposited in the fat cells of the gland. Chemical analysis of the extracted fat from 2 glands showed that the volatile fatty acids, as shown by the Reichert-Wollney number, were increased by perfusion to that of practically normal butterfat.—*A. H. Frank.*

943. PICKARD, JAMES N. A preliminary study of some of the factors influencing the duration of pregnancy and litter size in the rabbit. *World's Poultry Congress* 4(Sect. F): 901-909; Résumé sect., 125. 1930.

944. RAAB, ERNST. Über die Rest-N-Fraktion des Scheidensekretes bei Fluor. *Arch. Gynäkol.* 134(3): 519-545. 1928.—The vaginal secretion after fluoride contains 2-7% albumin, and products of protein autolysis. Of the amino acids, tyrosine, histidine, and arginine are found. Tryptophane cannot be demonstrated and the ether-soluble fraction of the xanthoproteic reaction is small. The secretion varies in pH from 4.2 to 6.4, and when acid the autolysis is due to pepsin-like ferments from the dead cells. When alkaline the autolysis is like that of a peptidase, and the enzymes come from leucocytes. Protein digestion by bacteria plays a subordinate rôle. The lactic acid of the secretion is an essential factor for intensive proteolysis. The urea is high and must be considered as a transudate. It is probable that there is a current of fluid through the vaginal epithelium into the vagina.—*M. E. Collett.*

945. RANK, OTTO. The trauma of birth. xv+224p. Kegan Paul, Trench, Trübner & Co.: London; Harcourt, Brace & Co.: New York, 1929. Pr. 15 s.—(See *B.A.* 5 (1): Entry 1058.)

946. ROSSENBECK, H. Wann tritt die Geburt ein? (Tierexperimentelle Studien zur Frage nach den Ursachen des Geburtseintrittes.) *Arch. Gynaekol.* 140(1): 141-180. 1930.—The musculature of the pregnant uterus of the rabbit in different gestational stages was examined pharmacologically and found to be influenced by extracts of the posterior lobe. The contraction of the musculature at different stages in the gestation period forms a characteristic curve by which the time of parturition can be predicted and seems to be an expression of the optimum concentration of the posterior lobe hormone.—*H. Rossenbeck (transl. by C. S. Simkins).*

947. RUNGE, H., M. BAUR, und H. HARTMANN. Zur Physiologie und Pharmakologie des Nabelschnurkreislaufes. I. *Arch. Gynäkol.* 134(3): 626-642. 4 fig. 1928.—The pressure in the umbilical vein is higher than in the systemic veins, but is only one half the pressure in the umbilical artery. The theoretical means of nourishing Wharton's jelly are: (1) Through the amnionic fluid; (2) Through the walls of the large umbilical vessels. The wall of the umbilical artery is impermeable to both colloids and highly soluble dye-stuffs. But since soluble dyes pass through the wall of the umbilical veins in both directions, the rate varying with the pressure, the interchange of soluble substances between the amnionic fluid and umbilical vein is possible.—*S. N. Blackberg.*

948. SCHOEDEL, JOHANNES. Erhaltungswert und Erhaltungsmöglichkeit kleinster Frühgeburten. *Jahrb. Kinderheilk.* 129(3/4): 143-152. 1 fig. 1930.—Schoedel reports 5 cases of premature infants, weighing at birth 800-1000 gm. and measuring 33-38 cm., but living and healthy at 2-18 mos. He has been able to establish the complete normality later in life of many children who at premature birth weighed 1000-1500 gm.

949. SCHOTT, R. G., and W. V. LAMBERT. The normal variability of the sex-ratio in the guinea pig. *Iowa State Coll. Jour. Sci.* 4(3): 343-349. 1930.—The sex-ratio observed in a colony of 2,014 guinea pigs was 49.45 ± 0.23% males. The observed sex-ratio is slightly lower in summer than in winter, but does not vary consistently from month to month. Age of sire, age of dam, size of litter, interval between litters, and sequence of litters had no effect upon the sex ratio. A differential mortality rate between the sexes, from birth to the 15th day, and from 15 days to 30 days, is not supported by these data. No ordinary environmental factor appears to have even a slight specific effect on the sex-ratio in the guinea-pig.—*Authors' summary.*

950. SCHRUMPF, AUGUST. En undersøkelse av kvinners hemoglobinmengde før og efter partus. [An investigation of the hemoglobin content in the blood of pregnant women before and after birth.] *Norsk. Mag. Lægevidensk.* 91(3): 311-322. 1930.—Schrumpf describes earlier investigations which show great differences; a short description of the various methods for quantitative determination of Hb follows, and their reliability is discussed. He then tabulates 1506 Hb analyses carried out at the Krohgstötten hospital, Oslo. The tests were performed with a Hellige hemometer with glass prism, the correcting factor of which as to absolute Hb values has been determined upon control analyses of the O capacity from 2 blood samples. In more than 75% of the total number the Hb concentration before delivery is decreased compared with the normal content (116 analyses upon nurses and ♀ students found to av. 0.142). During delivery the average Hb concentration is reduced from 0.124 ante partum to 0.119 post partum. The reduction was much greater in cases with hemorrhage of more than 100 gm. accompanying birth. More than 60% of the ante partum, more than 65% of the post partum tests and more than 80% of the post partum analyses with hemorrhage show the Hb concentration reduced below the normal minimum 0.130. The reduction of the Hb concentration after delivery seems to be greater for the ages 16-25 yrs. than for the ages 26-35, while the reduction post partum seems to be more distinct for the ages 26-35 when hemorrhage followed the birth. Average Hb concentration ante partum, where no hemorrhage took place is slightly higher than the ante-partum-value for cases with hemorrhage. Schrumpf is inclined to connect the Hb reduction where it is found during pregnancy and birth partly with the increase of plasma, but especially with the loss of Fe to the child. He recommends the treatment with Fe of women before and after birth where their Hb concentration is much reduced. He also suggests that the "Oligosidérémie des enfants" during the first ½ yr. of milk nourishment might be the result of an anemia of the mother.—*Author's summary.*

951. SERGIJEWSKY, M. W., und J. R. BACHROMEJEW. Über die Wirkung des Prostatasekrets auf die Spermatozoen. Einfluss des Reizes der sekretorischen Nerven (Nn. hypogastrici) auf die aktive Reaktion des Prostatasekrets. *Zeitschr. Ges. Exp. Med.* 71(3/4): 303-313. 1930.—Data of 9 experiments are reported. The prostatic secretion of dogs (number not stated) obtained by stimulation of the hypogastric nerves by the method of Mislawsky and Bormann, showed a variable pH. Protracted stimulation of the hypogastric nerves as well as introduction of pilocarpin altered the secretion from its original neutrality (pH 7) to marked acidity (pH 2.5 and even 2). In spite of the great difference in reaction, energetic movement of the spermatozoa was present in all the samples, but in the more acid ones (pH 6-2.8, etc.) the strings of semen showed an early tendency to clump together and the motion therefore gradually ceased. Hence it appears that the activation of the motility of the spermatozoa by the prostatic secretion depends upon a specific substance contained in that secretion. The reaction of the secretion, however, is of great importance for the maintenance of the life of the spermatozoa. The viscosity of the secretion at the beginning of the study amounted to 1.1, and changed very little (1) or not at all during the course of the study.—*Authors' summary (transl.).*

952. SPIEGEL, ARNOLD. Beobachtungen über den Sexualzyklus, die Gravidität und die Geburt bei Javamakaken. (Macaca irus mordax Thomas und Wroughton [cynomolgus L.].) *Arch. Gynäkol.* 142(3): 561-591. 21

fig. 1930.—Observations, covering 12 mos., on the menstrual dates, etc., of 4 Java monkeys, with data on weight changes, etc., in pregnancy of 3, and description of behavior of 1 during and after birth.

953. **STUART, C. A., and A. M. BANTA. Available bacteria and the sex ratio in Moina.** *Physiol. Zool.* 4(1): 72-86. 1931.—The numbers of bacteria available as food for Cladocera in different make-ups and dilutions of manure solution used in culturing these animals were found by counts (employing methods of water analysis) to be exceedingly variable. Hence, in attempting to test the effects of different numbers of bacteria as available food, a filtrate low in bacterial numbers but capable of keeping both introduced bacteria and Cladocera alive was used. To this filtrate in 10-milliliter quantities was added a bacterial suspension in definite amounts: 1, 1/5, 1/10, 1/15, 1/25, 1/50, 1/100, and 0. Young sister *Moina* reared (3 in each container) in such bacterized media produced only female young in the 1 concentration; mostly females, but in some cases also a few males, in the 1/5 concentration, on the average 7% males (70 experiments); and averages of 10, 26, 47, 60, 53, and 44% males in the 1/10, 1/15, 1/25, 1/50, 1/100, and 0 concentrations of bacterized medium, respectively. As sisters were used in each of these experiments and as cultural conditions, other than quantity of available bacteria, were maintained as nearly uniform as possible, quantity of food appears as a factor in control of sex in *Moina macrocopa*. Observations on time of release of young produced indicate that, as in experiments with crowding, low temperature, and treatment with certain drugs, male production is associated with a lowered rate of the mothers' development, but that when this rate of development is excessively lowered (as in the 1/100 and 0 concentrations), male percentage falls off.—*Authors* (*courtesy Wistar Bibl. Serv.*).

954. **STUART, C. A., MAURITA McPHERSON, and H. J. COOPER. Studies on bacteriologically sterile Moina macrocopa and their food requirements.** *Physiol. Zool.* 4(1): 87-100. 1931.—A method is described by which *Moina macrocopa* mothers may be rendered bacteriologically sterile by sufficiently prolonged and repeated washings in autoclaved pond water. Bacteriological methods for testing sterility of washed mothers are discussed in detail. Bacteriologically sterile Cladocera were used in a study of the relative food merits of sterile soluble proteins, protein débris, dead bacterial bodies, and living bacterial cells for *Moina macrocopa*. Young, bacteriologically sterile *Moina* mothers placed in sterilized distilled water and sterilized tap-water died without showing any perceptible growth and without releasing any young. When placed in sterilized pond water, manure infusion, a sterile Berkefeld filtrate of manure infusion, or in sterile bacteriological broth, bacteriologically sterile mothers all showed signs of growth and many released young. In these media growth of the Cladocera could not be prolonged beyond one generation, but the addition of dead bacterial bodies increased their nutritive value slightly. Bacteriologically sterile mothers reared in sterilized manure infusions bacterized with living organisms of *Escherichia* and *Aerobacter* thrived as well or better than sterile-sister mothers in the usual culture medium-manure infusions. All species of bacteria do not serve equally well as food for *Moina* mothers. Many highly pigmented strains of bacteria from the genera *Chromobacterium* and *Serratia* proved exceedingly toxic for Cladocera.—*Authors* (*courtesy Wistar Bibl. Serv.*).

955. **TACHIBANA, T. Pregnancy and autolysis of the ovaries and the uterus.** *Japanese Jour. Obstetr. and Gynecol.* 13(1): 69-72. 2 fig. 1930.—Using an unspecified number of ♀ rabbits, by the method of Rona and Mislowitzer, Tachibana found the autolysis of ovaries and uterus most active at pH 3-4; autolysis of ovaries very slightly decreased in pregnancy and puerperium; autolysis of uterus markedly increased in pregnancy and at the beginning of the puerperium, approaching normal in a few days.

956. **VOGEL, HERBERT. Über den Einfluss der Sexualorgane auf die sportliche Leistung des Mannes im Training. (Vorläufige Mitteilung.)** *Arbeitsphysiologie* 3 (3): 250-253. 2 fig. 1930.—A daily record of the performance of athletes in training showed that the minimum occurred within a few days after a nocturnal emission.—*T. M. Carpenter.*

957. **VOSS, H. H. Zur Frage der extrahormonalen Beziehungen zwischen Gonaden und sekundären Geschlechtsmerkmalen.** *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 122(3): 584-592. 4 fig. 1930.—The evidence from unilateral castrations of male mice and guinea-pigs shows that there is no extrahormonal relationship between the gonads and secondary sexual characteristics.—*C. S. Simkins.*

958. **WEICHERT, CHARLES K. Effect of experimental hyperthyroidism on reproductive processes of female albino rats.** *Physiol. Zool.* 3(4): 461-466. 1930.—Feeding of desiccated thyroid gland to normal and pregnant albino rats had a decided effect on the reproductive processes. Pregnant rats fed 0.25 gm. of desiccated thyroid daily, beginning on the 5th day after conception, either died, resorbed their fetuses, or delivered after a prolonged gestation. If the fetuses were delivered, they were either born dead or died shortly after birth. Another series of pregnant rats fed 0.5 gm. of desiccated thyroid daily, beginning on the 5th day after conception, gave similar results, but the reactions were more severe. Normal rats which had shown regular estrous cycles were fed daily with 0.25 gm. desiccated thyroid. The animals had, on the average, 2.1 regular cycles, after which the vaginal smears presented a typical diestrous picture. The diestrus persisted as long as thyroid feeding was continued. The animals came into estrus, on the average, 6 days after thyroid feeding was discontinued. Study of sections of the ovaries of some of these rats suggests that inhibition of estrus may be due to persistent corpora lutea. The inhibition of estrus, the prolongation of gestation, and the death of the fetus in utero, all suggest that the anterior lobe of the pituitary body may in some way be involved. A thyroid-pituitary-gonadal mechanism is suggested.—*Author* (*courtesy Wistar Bibl. Serv.*).

959. **WILKINSON, P. D., and V. E. NELSON. Diet in relation to reproduction and lactation. III.** *Amer. Jour. Physiol.* 96(1): 139-145. 1931.—[Feeding experiments (number not stated) indicate that] rats grow at a normal rate with 10, 20, 40 and 73.3% of soy bean as the only source of vitamins B and G. Reproduction was normal on the lower levels of soy bean, but on the higher levels the rats were not so prolific as on the lower levels. Satisfactory lactation was not obtained on any level of soy bean investigated. Lung and spleen from hogs and beef thymus did not supplement a 15% level of Virginia soy bean so as to improve lactation appreciably. Hog pancreas and pancreas, brain, and heart from cattle, supplemented the soy bean ration so an improvement in lactation was apparent. Liver from hogs and cattle and hog kidney supplemented the soy bean ration in such a way that very marked improvement in lactation resulted. The young showed a superior rate of growth. The lactating factor was destroyed in liver at 120° C. Ether extract of liver possesses no appreciable lactating properties, but the residue does.—*Authors' summary.*

960. **WILSON, P. T., and H. E. JONES. A study of like-sexed twins. I. The vital statistics and familial data of the sample.** *Human Biol.* 3(1): 107-132. 1931.—In a school enrollment of 75,000, 1051 individual twins were located. This is close to the expected number (on the basis of the frequency of plural births) if allowance is made for the relatively high death rate of twins. The 471 pairs with both members living consisted of 28% ♂♂, 39% ♀♀ and 33% ♂♀. Data from 212 pairs, selected as a sub-sample, were secured by means of a standardized interview with the mothers. Following the method used by Siemens and others, these pairs were classified as 94 identical and 97 fraternal, with 21 "undetermined." The average age of parents at the birth of the twins showed

no difference for the different types of pairs. In comparison with a control group the mothers showed only an average fertility in terms of the number of pregnancies. About ¼ of the fruitful pregnancies resulted in the birth of twins. In relation to length of pregnancy there were indications that identical twins are the more apt to be born "before expected." Interview data concerning fetal membranes failed to give reliable results. The average birth weight of the individual twins was about 6 lbs. There was no reliable difference between identical and fraternal or first and second born; the males weighed more than the females. The fraternals showed slightly more intra-pair differences in birth weight than the identicals; but when these differences were computed in relation to the total weight of each pair the differences became statistically unreliable.—*P. T. Wilson.*

961. **WITKOWSKI, G. J. La génération humaine.** 9th ed. 222p. Malvine: Paris, 1927.

962. **YOCHEM, DONALD E. Spermatozöon life in the female reproductive tract of the guinea pig and rat.** *Biol. Bull. Marine Biol. Lab.* [*Woods Hole, Mass.*] 56 (4): 274-297. 1929.—The author studied the duration of life of spermatozoa in different portions of the female tract of 13 guinea pigs and 14 rats after normal matings. Similar studies were made of the spermatozoa artificially injected into 11 guinea pigs and 6 rats at oestrum and 23 guinea pigs at the interoestrous period. It was found that motile sperm were in the uterine horns and oviducts of guinea pigs 41 hrs. after normal mating, and in rats 17 hrs. after mating. In the cases of insemination during oestrum, motility was maintained for 41½ hrs. in guinea pigs and 12½ hrs. in rats. The duration of life of sperm artificially injected at the interoestrous period was 36 hrs. in guinea pigs. There was thus no physiological difference in the uterus at oestrum and interoestrum which could be detected in the life of the spermatozoa. However, injections of sperm of rats into guinea pigs survived but 4½ hrs. and guinea pig sperm injected into female rats survived but 11 hrs. It thus appears that a foreign uterus has a marked effect upon the destruction of spermatozoa.—*G. Haines (courtesy Exp. Sta. Rec.).*

ANIMAL PHYSIOLOGY

REACTIONS OF THE ORGANISM AS A WHOLE

E. J. LUND, Editor

(See also in B. A. 5(11): Entries 26528, 26608, 26746, 27749, 27778, 27791, 28482, 28814, 29256, 29263, 29268, 29287, 29900; and in this issue 241, 250, 272, 286, 581, 583, 980, 994, 1004, 1009, 1849, 1921, 2341, 2490, 2658, 2659, 2660, 2702, 2893, 2908)

963. **ABRAMSON, ERNST. Über Muskelkraft und technische Fertigkeit während und nach einer Trainingsperiode.** *Arbeitsphysiologie* 2(2): 148-162. 3 fig. 1929.—A number of subjects were trained to muscular work on Johansson's apparatus or to precision work which consisted of threading needles. In one experimental period of about a month, several subjects trained once a day, others twice a day. After stopping the training the falling off of the performance was followed for a year. The muscular skill gained by training fell off at first quickly and later more slowly, and the greater the skill obtained by training, the greater was the falling off. After a year, the subjects were at a common level independent of the level they had reached at the end of the training period. In training, the work should not be continued to exhaustion, if one desires to obtain good results. With precision work, the skill obtained persists longer and remains upon a higher level than the increase of strength. High technical skill cannot be obtained without special aptitude. A person with natural aptitude will acquire a greater skill than one with poorer ability but more training. In order to reach a high degree of muscular performance, training is of more importance than natural ability. The subjective feeling of capacity for work is often misleading.—*T. M. Carpenter.*

964. **BENAZZI, MARIO. Manifestazioni quantitative della rigenerazione negli insetti. [Quantitative data on regeneration in insects.]** *Riv. Biologia* [*Milano*] 11 (5/6): 625-631. 1929.—Investigators have shown that, within certain limits, the velocity of regeneration increases with the size of the lost part. In the larva of the dragonfly, *Aeschna grandis,* the quotient of growth in a regenerating tarsus (comparing the length of the tarsus in the instars prior to and following the removal) is progressively greater if instead of the tarsus alone, the tibia also is removed, or both tibia and femur.—*M. Benazzi (transl. by R. A. Muttkowski).*

965. **BIRD, CHARLES. The effect of maturation upon the pecking instinct of chicks.** *Pedagogical Seminary & Jour. Gen. Psych.* 33(2): 212-233. 1926.—Chicks develop rapidly within the first 18 hrs. after hatching, passing from a stage in which the erect posture is impossible and all overt movements are performed very slowly and with great incoördination to one in which walking is regular and the pecking reactions, though not perfected are more integrated. Measures of pecking show that along with the development proceeding with age there occurs a marked decrease in the errors of missing the grains and a statistically significant increase in the average number of hitting and swallowing reactions. A control group of chicks, which lacked practice when first tested at 30 hrs. of age, was as accurate as another group of equal age which had had a very slight amount of practice. Both of these groups were more accurate than another group which was tested when about 8 hrs. old. It is probable, therefore, that the factor which accounts for the differences in accuracy existing between the 1st and 2nd day chicks is not practice but the physiological development or maturation which proceeds with age. Other measures of objectifying pecking than the 4 which have been generally accepted, such as the type of the first reaction to grains and the average trail in the series on which a swallowing reaction occurred, likewise indicate that chicks 30 hrs. old are superior to the 8 hr. old group. The amount of time required to complete the 25 trials yields no certain differences between newly-hatched and older chicks. There is, however, a moderately high correlation between the time required on the 1st and 2nd days. Maturation is much more effective during the first 2 days than later.—*Author's summary and conclusions.*

966. **BUCHANAN, J. WILLIAM. The nature of disintegration gradients. I. The significance of a gradient in susceptibility to distilled water in Planaria.** *Jour. Exp. Zool.* 57(2): 307-330. 1 fig. 1930.—The disintegration of *P. dorotocephala* in distilled water discloses an anteroposterior gradient in susceptibility. The rate of disintegration in distilled water increases with increase in hydrogen-ion concentrations. Animals in small volumes of distilled water disintegrate more rapidly than do animals in large volumes. Disintegration by high temperature is more rapid in distilled than in tap-water. Previous exposure to distilled water increases the susceptibility to high temperature. During the early period of exposure to distilled water the animals tend to lose weight. Later, the weight increases, and just before disintegration begins the animals are greatly distended. Distilled water does not materially affect the rate of O consumption of the animals during the early period of exposure. At or about the time of distention and the initiation of disintegration the rate of O consumption is distinctly lowered. The evidence indicates that the toxicity of distilled water is due to the excessive imbibition of water by the organism and is independent of its

effect on respiration. This disintegration so closely agrees with and parallels the respiratory gradient as to indicate that both are features of the anteroposterior differential in physiological activity.—*Author* (*courtesy Wistar Bibl. Serv.*).

967. **BUCHANAN, J. WILLIAM. The nature of disintegration gradients. II. The effect of hypertonic solutions on the disintegration of Planaria by high temperatures.** *Jour. Exp. Zool.* 57(3): 455-472. 1930.—By exposing animals to high temperature in tap-water and in Ringer's solution it is shown: That hypertonic solutions prevent the disintegration following death due to high temperature. There is no evidence that such solutions afford any protection against the lethal action of high temp. It is also indicated that the disintegration gradient in tap-water represents an anteroposterior gradient in water appropriation that is not directly dependent on differences in rate of respiration. A mechanism of this type is essentially quantitative in action and provides for a differential in rate of interchange between the several regions and their environment.—*Author* (*courtesy Wistar Bibl. Serv.*).

968. **CHILD, C. M. The physiological gradients.** *Protoplasma* 5: 447-476, 1929.—The article is a review of the work by Child and others.—*W. Seifriz.*

969. **FISCHEL, WERNER. Die tierischen Gedächtnisleistungen.** *Biol. Zentralbl.* 49(5): 291-301. 1929.—A method is suggested for grouping the memory accomplishments of animals so that some conclusion may be reached as to their relative perfection and as to what use different animals can make of impressions from without. A review of the literature dealing with the learning ability of animals is given and the rôle of memory in this is discussed. A distinction is drawn between "Free Memory" and "Controlled Memory," the former operating in the absence of the stimulus, the latter only when it is present. Likewise "Simple Associations" are distinguished from "Compound Associations" by the fact that the first imply choice, while the latter do not. Training may be "Positive" (reward) or "Negative" (punishment or lack of reward) or "Combined" (reward and punishment). According to these definitions: 1. Annelids, Molluscs and Crustacea, with the exception of the Decapoda, are capable of only "Simple Associations" and "Controlled Memory." 2. *Aeschna* larvae, Dytiscidae and Decapoda (?) have "Compound Associations" but are still capable only of "Controlled Memory" and must be trained by the "Combined" method of reward and punishment. 3. Higher insects and probably all vertebrates are capable of "Compound Associations" and may be trained by "Single" methods either positive or negative. 4. There have been as yet no systematic studies on "Free Memory" but it is assumed in Bees, occasionally in Mice, in certain Birds and in Apes. The author believes that it is in this field of "Free Memory" that the best results will be obtained towards the solution of the problems of animal behavior.—*P. H. Yancey.*

970. **HUNTER, WALTER S. The behavior of the white rat on inclined planes.** *Pedagogical Seminary & Jour. Gen. Psych.* 34(2): 299-332. 1927.—When the white rat is placed upon an inclined plane, under the conditions of the present experiment, it responds more often negatively than positively to gravity. This is true just before and after the eyes open, and it is also true of adults that have been blinded. The present experiments throw no light upon the receptor and neural mechanisms involved in the control of this behavior. The distributions of the angles of orientation (θ) followed by the subjects at the various angles of elevation (α) of the plane cover a wide range. These distributions are multimodal, with the fewest responses in the region of α 40°. Young rats often lose their footing and fall, or slide, off the plane when this is elevated at α 45°, 60° and 70°. No change in behavior was demonstrated which could be correlated with the opening of the eyes. Adult blinds, probably because of their superior muscular strength, crept at smaller θ angles than did the young rats. No single measure of central tendency is adequate to represent the behavior at the various values of α because of the character of the distributions and the number of falls from the plane at the high values of α. It has been possible to confirm Crozier's findings, that there is an apparent linear relationship between mean values of θ and the log sin α and between the cosine of mean θ's and sin α. The value of these findings is negligible, in the present experiment, in virtue of the points made above under (6) and in virtue of the different results when median θ is used or when only the first responses are considered. If the distributions presented in this paper for the behavior of a few rats are applicable to rats in general, we can predict that rats tested under the present conditions will be predominantly negative to gravity. We cannot, however, predict a progressive change in θ concomitant with changes in α.—*Author's summary and conclusions.*

971. **MAINX, FELIX. Untersuchungen über den Einfluss von Aussenfaktoren auf die phototaktische Stimmung.** *Arch. Protistenkunde* 68(1): 105-176. 3 fig. 1929.—The author worked with pure cultures of *Synura uvella, Gonium pectorale, Eudorina elegans,* and *Volvox aureus.* He describes the preparation of the cultures and culture methods. Boiled soil solutions were used as food. The cultures were illuminated 12 hrs. daily by artificial light. In the experiments a powerful lamp in a dark room was used as the source of light and the illumination was reduced by moving the light away. The position of the point of reversal of positive and negative phototaxis under this arrangement was used as a measure of the phototactic state. The state changes in the cultures periodically each day. Allowing for this, the displacement of the point of reversal, which is dependent upon the physiological changes occurring with age in the materials of the cultures, may be kept constant for long periods. Sudden change of certain external factors has a real influence upon the position of the point of reversal. An increase in the pH displaces the point of reversal in high intensities of light, as do also a lowering of the pH in the *Volvocales,* a lowering of the surface tension, and certain anesthetics. In case of displacement of the reversal point in low intensities of light, rise or fall of temperature, and in *Synura* a lowering of the pH, are effective. Light is effective only after a considerable period, and previous illumination displaces the reversal point in lower intensities, and previous stay in the dark displaces it in high intensities. Upon continuation of the state-changing influence, there follows after a time a reversion to the original state, no doubt due to internal regulation. Of particular interest is the fact, that each factor that displaces the reversal point in high intensities concurrently lowers the threshold; and conversely, each factor that produces a displacement of the reversal point in low intensities, causes a rise in the threshold. There is also in the first case an extension of the limits of positive phototaxis in both directions, and in the second case a narrowing of its limits. These facts cannot be brought into accord with the acceptance of one photochemical process as the common cause of positive and negative phototactic movements. The author proposes the theory that positive and negative phototaxis depend upon two different chains of reactions that operate independently and antagonistically, and can be influenced independently of each other by internal and external factors. On the basis of the results of his experiments thus far, the author seeks also to apply his theory to phototropism. The entire botanical and zoological literature of the field is treated by the author in his discussion.—*F. Mainx* (*transl. by W. C. Stehr*).

972. **MAST, S. O. Mechanics of locomotion in Amoeba proteus with special reference to the factors involved in attachment to the substratum.** *Protoplasma* 8: 344-377. 3 fig. 1929.—If specimens of *A. proteus* are transferred to chemically pure water they usually assume a radiate form, protoplasmic streaming ceases and they do not attach; but if they are left several hours they attach and move. The processes associated with locomotion are therefore not necessarily dependent upon substances

in solution in the surrounding water. Amoeba in pure water attaches to all kinds of surfaces tested, common glass, pyrex glass, quartz, paraffin. It attaches to common glass more quickly and firmly than to pyrex glass or quartz, but if a trace of salt is added to the water there is practically no difference, although the time required for attachment is enormously reduced. The difference in the effect of common glass, pyrex and quartz is probably due to difference in their solubility. If the surface of the glass is ground or if the solution is slightly agitated the time required for attachment is decreased and the firmness of attachment is increased. Attachment depends upon the physiological conditfon of the amoeba. In some specimens in a given solution the surface is very much more adhesive than in others in the same solution. All the salts tested (17) greatly decrease the time required for attachment and increase the firmness of attachment. All have the same effect but not in the same concentration. The effect of NaCl and KCl increases very gradually from N/20 to a maximum at about N/100, after which it decreases very gradually until about N/1000 is reached and then very rapidly. The effect of $CaCl_2$ increases rapidly from N/20 to about N/60 then slowly to a maximum at about N/200; after which it decreases very slowly until about N/40,000 is reached and then very rapidly. There is very little difference in the effect on attachment of NaCl and KCl in concentrations ranging from N/40 to N/800 and of $CaCl_2$ in concentrations ranging from N/80 to N/40,000. The effect of $CaCl_2$ is considerably less than that of NaCl and KCl in the stronger and much greater in the weaker solutions tested. All 3 salts however have a definite effect in the weakest solution tested, N/100,000. The effect of a mixture of Na, K and Ca salts is approximately equal to the sum of the effect of the 3 salts each in solution by itself in the concentration which it has in the mixture, i.e., the action of these salts is additive, not antagonistic. It therefore differs from the action observed in many other physiological processes. The action of Na_2SO_4 and K_2SO_4 in various concentrations is essentially the same as the action of NaCl and KCl in the same concentrations. The action of Na_2CO_3 and K_2CO_3 is complicated, owing to change in hydrogen-ion concentration produced by hydrolysis. The non-electrolytes lactose and glycerine do not facilitate attachment of Amoeba, but urea which ionizes slightly and is faintly alkaline definitely favors attachment. The optimum pH for attachment in balanced solution appears to be between 6.6 and 7, but there is remarkably little difference over a very wide range, i.e., from pH 4.6 to 8.2. The favorable effect common to salts and urea on attachment of Amoeba must be associated with some common property, probably the electric charge carried by the ion. The difference in the effect of different salts of the same concentration is probably due to diversity in their action on the physiological condition of the amoebae. Salts appear to effect attachment in two ways: (a) by action directly on the surface, probably resulting in a change in the electric charge owing to selective adsorption; (b) by changing internal processes, owing to adsorption and diffusion. Locomotion is dependent upon attachment but the rate of locomotion is largely dependent upon the rate of sol-gel transformation and the difference in the elastic strength of the plasmagel at the two ends and only slightly if at all upon conditions of attachment.—*Author's summary.*

973. NOMURA, EKITARO, and SHINRYO OHFUCHI. Effect of inorganic salts on photic orientation in Allolobophora foetida (Sav.). V. Sodium salts—Na_2SO_4, $NaNO_3$, and NaCl. *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5(3): 467-483. 1930.—The experiments were carried on by submerging the worms in a solution of the single or mixed Na salts. In the ventral nerve cord, $NaNO_3$ and NaCl caused a weakening of positively orienting function, while Na_2SO_4 caused a strengthening at first and then a weakening. In the brain, $NaNO_3$ caused a weakening, NaCl a strengthening, and Na_2SO_4 a strengthening at first and then a weakening, of negatively orienting functioning. In $Na_2SO_4+NaNO_3$, the change in positive orientation tended mainly to follow that of the worms placed in $NaNO_3$, while the change in negative orientation showed a tendency between those occurring in Na_2SO_4 and $NaNO_3$ separately. In Na_2SO_4 +NaCl, the change in positive orientation tended mainly to follow that in NaCl, but the change in negative orientation appeared to follow neither that in Na_2SO_4 nor in NaCl. In $NaNO_3$+NaCl, the change in both orientations tended mainly to follow that in $NaNO_3$. In all the single and mixed solutions, backward crawling appeared to be caused mainly by a relative weakening of forward crawling functioning in the ventral nerve cord. Winding movement might be more or less pronounced.—*Authors' abstract.*

974. PEEBLES, FLORENCE. Some growth-regulating factors in Tubularia. *Physiol. Zool.* 4(1): 1-35. 1931.—Experiments on isolated stems of *Tubularia mesembryanthemum* and *T. crocea* indicate that the extent of growth of new structures is definitely related to metabolic activity of the individual. Removal of the hydranth from the distal end of a stem brings about changes in the entire length, and after successive removal of hydranths they decrease in size. On ligatured stems the first oral hydranth is always larger than the first aboral hydranth, but successive oral and aboral hydranths are usually of equal size. Ligatured stems show rhythm in the rate of development, the first hydranths appearing in 2 days, the 2nd in 1, and the 3rd in 3 days. Hydranth formation on the apical end of isolated stems is determined by the 6th hr. If at the end of this time a short piece is removed from the cut end, it behaves as a part of the long piece, producing a full-sized head. If removed 2-4 hrs. after isolation of the stem, it produces a small hydranth, this behaving like a short piece. Length of the apical primordium in half stems is an expression of the level of the piece rather than of its volume. Growth in length of new hydranth stalks is greater on proximal than on distal pieces. Size is not a safe criterion in determining age of a stem. At the breeding season all stems become physiologically young.—*Author (courtesy Wistar Bibl. Serv.).*

975. WATANABE, YISAMU. On the physiological axial gradients of chaetopod annelids. I. Types of axial gradients examined by onset temperature of heat shortening. *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5: 153-213. 1930.—In chaetopod annelids the onset temp. of initial heat-shortening is different in different parts of the body or body wall and varies in the form of an axial gradient along the axis of body. Among the forms of heat-shortening gradients in chaetopods, there are 4 different types. Two are known respectively as the monopolar and bipolar types or the primary and secondary types of chaetopod gradients, while the others are quite different from these and are termed the 3rd and 4th types, respectively. The 3rd type resembles an inverted image of the bipolar type, that is, the onset temp. is highest at about the middle part decreasing gradually towards both extremities, having one maximum and two minima. In the 4th type, the onset temp. is also highest at about the middle part and gradually decreases towards both ends of the body, but near the posterior end is lower than in the anal segments and increases again at the very end, so that the 4th type is more complex than the other 3, having 2 maxima and 2 minima. The 4 types of heat-shortening gradients were noted and each type was found to be specific and characteristic for each species. Although in general the different groups of chaetopods show characteristic types of gradients, owing to the presence of exceptional cases, the causal connection of different types of gradient with phylogenetic advance of chaetopods cannot be too strongly emphasized until the heat-shortening gradients in embryonic or younger larval stages are examined with respect to possible transformation of the gradient type during growth. The heat-shortening gradient is closely correlated with those of the content of solid constituents and the electrical potential, the 2nd of

which, in turn, is, according to other investigators, related to the metabolic rate.—*Y. Watanabe.*

976. **WERMEL, JULIUS. Über den Einfluss der Regeneration und Überernährung auf die Siphonenlänge bei Ciona intestinalis L. (Ein Beitrag zu Kammerers Experimenten).** *Arch. Entwicklungsmech.* 122(1): 22-47. 4 fig. 1930.—The investigation was intended to solve the discrepancy between the experiments of Mingazzini and Kammerer and those of Fox, but as the later experiments were made on the Murman coast of the Arctic Ocean, the exact conditions of the original experiments were not maintained. Therefore the results did not fully coincide with either Kammerer's experiments (the siphons not growing longer after a single section) or those of Fox (siphons not growing longer under overnutrition). At any rate Kammerer's results were not refuted by those of Fox. The work was performed with more precise methods than those used by the previous authors.—*J. Wermel.*

977. **ZWEIG, HANS. Das Schlafproblem.** *Zentralbl. Ges. Neurol. u. Psychiatr.* 55(7): 353-373. 1930.—A review and summary of recent work on hibernation in animals, periodicity in plants, and sleep as used in the ordinary sense of the word.

ANIMAL PHYSIOLOGY

SENSE ORGANS

(See also in this issue Entries 210, 271, 357, 870, 1021, 1029, 1188, 1189, 1309, 2258, 2320)

978. **BEDNÁR, MARCEL, und OTTO LANGFELDER. Über das intravenöse (hämatogene) Riechen.** *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(10): 1133-1139. 1930.—Certain substances elicit the typical sensation of smell after intravenous administration. After obliterating the sense of smell in the nostrils with paraffin oil, 14 normal subjects and 6 with nasal diseases were tested with neosalvarsan, "camphaquin," and "caseoterpol." Between the beginning of the injection and olfaction there is a latent period corresponding to the time necessary for the injected material to reach the olfactory region by the blood routes. Subjects with anosmia caused by paralysis of the sensory nerves or by atrophy of the mucosa showed no hematogenous olfaction, while it was intact in respiratory anosmia. Hematogenous olfaction occurs by intramucous stimulation of the ends of the olfactory nerve.—*From authors' summary (transl.).*

979. **CHAFFEE, E. L., and EVELYN SUTCLIFFE. The differences in electrical response of the retina of the frog and horned toad according to the position of the electrodes.** *Amer. Jour. Physiol.* 95(1): 250-261. 1930.—The electrical responses from the horned toad's retina are either positive or negative, depending upon the position of the grid electrode. The negative responses are obtained when the grid electrode makes contact with the retina in a band which extends across the eye just above the pecten and blind spot. The negative responses are similar to the positive responses inverted except that the flat region between "on" and "off" effects is always negative. Responses, part positive and part negative, can be obtained on the borders between regions. Oscillations are present on the "on" effects from the positive regions but are less marked than in the responses from the frog's retina, probably because they are more rapid and less easily resolved.

980. **CLARK, LEONARD B. Some factors involved in the reaction of insects to changes in luminous intensity. Shock reactions in Dineutes assimilis.** *Jour. Exp. Zool.* 58(1): 31-41. 1 fig. 1930.—Specimens with the parts of the eye on one side covered, when placed in a beam of light on a suitable background, perform circus movements for a time, after which they go in a straight path diagonally across the beam. A sudden change in intensity of the light causes the insect to turn either toward or from the source of light. This response depends upon light from the background. It is suggested that the elimination of circus movements is due to light adaptation progressing to such an extent that some of the ommatidia of the posterior portion of the eye are no longer stimulated and that the response to change of intensity is due to the change in number of ommatidia stimulated in this portion of the eye.—*Author (courtesy Wistar Bibl. Serv.).*

981. **DUKE-ELDER, W. STEWART. The nature of the vitreous body.** *Brit. Jour Ophthalmol.* 14(Monograph Suppl. IV): 5-72. 1 pl. 1930.—Evidence is brought forward which suggests: 1) that the vitreous body is a hydrophilic, elastic gel; 2) that it is formed upon the basis of special protein constituents elaborated by the surrounding ectoderm, and that the common intra-ocular fluid (which is a dialysate of the capillary blood), percolates these, combining with them physically to form a gel; 3) that the reactions of the vitreous body to changes in its environment and in its internal economy proceed along physico-chemical lines according to the conditions which govern the behavior of gels in general. Inasmuch as the vitreous body is not a tissue but a cell product, its reaction to metabolic or toxic disturbances will be passive. It will respond to alterations in its environment or in its internal economy by changes involving swelling (turgescence) or shrinkage (deturgescence). A state of turgescence will tend to bring about a condition of hypertension in the eye, while a state of deturgescence or liquefaction will tend to bring about a condition of hypotension. One of the 1st results one should expect from disturbances in its economy will be its liquefaction with the separation of part of its colloid basis to form appearances evident clinically as opacities. It may be noted that the zonule has a structure similar to that of the vitreous body: it is a gel and the complex systems of fibers which are apparent on histological examination are, like the "fibers" of the vitreous body, artifacts of fixation.

982. **EBBECKE, U. Über eine neue Nachbildphase, das positive Hellbild.** *Pflüger's Arch. Ges. Physiol.* 221 (1/2): 189-197. 2 fig. 1929.—When the usual after-images from strong stimulation (positive dark image and negative bright image) are no longer producible, after-images appear having reversed relationships: a too extended peripheral "reparation" depresses the excitation of the image more than that of the ground (pure peripheral negative dark image); central compensation for the same through increasing of the image, diminishing of the ground. Illumination now causes compensation to continue, the image increases, appearing brighter than the diminishing ground (centrally produced positive bright image).—*Schaefer (transl. by P. A. Moody).*

983. **EBBECKE, U. Über spontane Nachbildschwankungen und das Verhältnis von Nacherregung und Induktion.** *Pflüger's Arch. Ges. Physiol.* 221(1/2): 198-212. 3 fig. 1929.—Pure negative after-images or those fluctuating between negative and positive are explicable upon the basis of local adaptation. With very weak light stimuli, when only pure negative after-images are observed, a retinal after-excitation, which yields a positive after-image, is not present. Fluctuation between positive and negative after-image is founded on a competition between peripheral after-excitation and central compensation (adaptation). Both disappear at the conclusion of stimulation, though in differing tempo. So now retinal, now central excitation may predominate, a positive after-image changing into a negative; the outcome depends upon length of stimulation, strength, general illumination and individual factors.—*Schaefer (transl. by P. A. Moody).*

984. **ENGELKING, ERNST. "Grund" und "Figur" in ihrer Bedeutung für das Farbensehen der anomalen Trichromaten.** *Albrecht Graefe's Arch. Ophthalmol.* 121(3):

479-496. 1929.—Normal deuteranomalous and protanomalous trichromats were tested with an apparatus in which a small opening within a figure (maltese cross or Latin B) or in the gray background of that figure, exposed to view a portion of an adjustable, rotating sector disk bearing red and green sectors. At the beginning of each experiment background and disk were so adjusted as to present a uniform gray surface to foveal vision. The size of the red, or of the green, sector was then increased until the subject could distinguish in peripheral vision red, or green. The results were expressed in terms of sector degrees, indicating the threshold by which the amount of the one color or of the other must be increased for discrimination. The threshold was found to be higher within the figure than in the surrounding ground. The quotient F/G (F: threshold in figure; G: threshold in ground) always exceeded 1. In anomalous trichromats, especially deuteranomalous, the quotient was considerably higher than normal. In the former the figure interfered with color discrimination more than it did in the normal trichromats and hence form perception would seem to be stronger than color sensitivity in anomalous trichromats. Possible bearing of the results upon Gestalt Psychology is discussed.—*P. A. Moody.*

985. FRIEDMANN, W. L. Eine neue Theorie des Gehörmechanismus. I. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(12): 1468-1471. 1930.—The basic difference between Friedmann's and Helmholtz' theories of sound conduction is that the former ascribes to molecules of dissolved gases (in the fluid of the labyrinth and in the adjacent blood and bone tissue) the principal rôle in the conduction of sound to the ends of the auditory nerves.

986. GRANIT, RAGNAR, et al. Comparative studies on the peripheral and central retina. II. RAGNAR GRANIT, and PHYLLIS HARPER. Synaptic reactions in the eye. III. RAGNAR GRANIT, and WINONA von AMMON. Some aspects of local adaptation. *Amer. Jour. Physiol.* 95(1): 211-228; 229-241. 1930.—II. Using the flicker method as a quantitative measure of the intensity of the visual process the authors studied the influence of size of area stimulated, intensity of stimulus and distance between a number of test patches upon the fusion frequency. Their experiments support the view that the retina demonstrates synaptic reactions of the summative type as is to be expected in an organ which not only contains receptors but is also a "true nervous centre." The experiments indicate the approximate validity of the Ferry-Porter law; $n = a \operatorname{Log} I + b$. It is shown that a similar relation holds for the influence of area on fusion frequency and that, accordingly, the fusion frequency n is a function of both these factors, of the form obtained by combining the formulae referring to area and intensity respectively. The variation of fusion frequency with both intensity and area is greater in the periphery than in the centre. This is more pronounced with regard to area, a fact shown to be in agreement with the anatomical differences between the synaptic structures in these 2 retinal areas. The effect of interaction upon fusion frequency has been shown by the fact that several patches stimulated simultaneously give a higher fusion frequency than when each one is stimulated separately. This increases as the patches are brought closer together although the effect may be maximal when the retinal distance between them is as much as 30μ. The interaction met with is interpreted as summation. Central and peripheral retinal areas show only quantitative differences in summative effects. In central vision full spatial effects may be present without impairing the visual acuity. At sufficiently high intensities the fusion frequency for a single patch becomes equal to that for 4 simultaneously stimulated areas. This is interpreted as being due to occlusion. Large areas give higher liminal values of both fusion frequency and intensity. The relative amount of summation and occlusion with different areas and intensities furnishes a simple and rational explanation of these phenomena. III. The rate of local adaptation has been determined by following the drop in fusion frequency of an intermittent light during 6 sec. With central fixation there is little or no local adaptation demonstrable within the period in question. Passing towards the periphery the effect becomes more marked, and from 4° outwards there is a comparatively large drop in critical frequency during the 1st 3 sec. of fixation. The effect gradually diminishes in amount as the time of stimulation is lengthened. The rate of local adaptation is greater with stimuli of higher intensity. It has been found that the rate of local adaptation is determined primarily by the energy per receptor unit rather than by total energy increased by processes of summation in the synaptic layers of the retina. This was likewise shown to be the case in experiments with red and blue light. A greater total amount of energy, however, seemed capable of causing a retardation of the rate of adaptation assumed to be due to more effective charging of the central structures in the retina. In general the effect of red and blue light upon the rate of adaptation was essentially similar. This indicates that with intensities above the range of the Purkinje effect red and blue light must either stimulate both rods and cones or that there is practically no functional difference between peripheral rods and cones with regard to local adaptation. Neither assumption is in keeping with the concept of a complete functional-structural duplicity of rods and cones. It is shown that the former assumption is preferable to the latter particularly on account of its greater conformity to the main facts underlying the duplicity theory. The 1st rapid decrease in fusion frequency with peripheral fixation is assumed to be a rod effect.—*Authors' summaries.*

987. HAMLIN, H. E. Working mechanisms for the liquid and gaseous intake and output of the Jacobson's organ. *Amer. Jour. Physiol.* 91(1): 201-205. 1929.—Air and liquid may be forced out of the Jacobson's organs of rabbits under anesthesia, when their blood pressure is elevated by the pressor effect of adrenalin, as shown by 35 successful demonstrations [on 6 rabbits]. Drops of liquid (secretion) are drawn into the Jacobson's organs of rabbits when the blood pressure recedes following the disappearance of the effect of the adrenalin [8 demonstrations on 2 rabbits]. The results of this research provide another line of evidence in support of the olfactory hypothesis for Jacobson's organ.—*Author's summary.*

988. HECHT, SELIG. The intensity factor in vision and radiation. *Amer. Naturalist* 64(692): 193-219. 1 fig. 1930.—The problem of intensity recognition is considered in terms of its relation to visual acuity. The visual acuity of man and of certain insects has been shown to vary in a specific manner with the intensity of light. These data are quantitatively explained in terms of the suppositions, first that the percipient elements in the eye vary in threshold, and second that visual acuity is proportional to the number of elements functional in a unit retinal area. It is demonstrated that the same suppositions are also capable of furnishing a detailed description of the capacity for intensity discrimination and recognition possessed by the eye.—*S. Hecht.*

989. HERTZ, MATHILDE. Die Organisation des optischen Feldes bei der Biene, I. *Zeitschr. Vergl. Physiol.* 8(5): 693-748. 11 fig. 1929.—Bees are aware of qualitative contrasts between figures and background. They are able, moreover, to distinguish between such figures as a cross and a circle. This differentiation is made not on the basis of the total areas of the figures, or the rectilinear quality, curvature, size or shape, but on the appearance of the figure as a whole—its peculiarities. It was assumed that if a characteristic shape were "learned" by a bee, then its significance and importance in orientation would be maintained unaltered with the transference of the figure to another position. But it was found that a transposition of the "positive" and "negative" figures resulted in the bees' choosing whatever figure lay in the relative position of the previous "positive" figure.—*D. L. Collins.*

990. LASAREFF, P. Untersuchungen über die Ionen-

theorie der Reizung. X. Mitteilung. Über die Gesetze der Verschmelzung der Empfindungen des Flimmerns beim Dunkel- und Hellsehen. *Pflüger's Arch. Ges. Physiol.* 214 (4): 439-448. 1926.—It is established that proceeding from the general form of the ion theory of stimulation, for minimal frequency of light change which gives a continuous sensation, the following formulae may be developed:

$$(n - n_0)(n^2 + a_2^2)^{\frac{1}{2}} = a_1 k J C_0 / R\ (1 - \gamma e^{-a_3 t}), \quad (a)$$
$$e^{pn} = a_1 k J C_0 / R\ (1 - \gamma e^{-a_3 t}), \quad (b)$$
$$e^{pn}(n^2 + a_2^2)^{\frac{1}{2}} = a_1 k J C_0 / R\ (1 - \gamma e^{-a_3 t}), \quad (c)$$

Formulae (b) and (c) agree well with the data of Schaternikoff and Allen. Formula (b) for the relation between n and J has been found empirically by Allen previously.—*Author's summary (transl. by O. W. Richards).*

991. LORENTE de NÓ, R. Untersuchungen über die Anatomie und die Physiologie des Nervus octavus und des Ohrlabyrinths. Vierter Teil. *Arch. Ohren- Nasen- u. Kehlkopfheilk.* 118(4): 241-284. 25 fig. 1928.—The reactions of the semicircular canals on caloric stimulation are very dependent on the position of the head in space. The author attempts to formulate this relationship through complicated mathematical formulae. All the six eye muscles take part in the nystagmus reaction. The strongest nystagmus usually is derived from stimulation of the horizontal canal. The internal rectus generally shows the greatest amplitude of action in the nystagmus reaction. All his experiments demonstrate that the individual semicircular canals are not associated with individual muscles or muscle groups, but with them all. In head positions, where the horizontal canal is vertical, then the vertical canal gives the strongest nystagmus reaction.—*J. E. Lebensohn.*

992. MÜLLER, ERNST FRIEDRICH, und ERNST DELBANCO. Die Haut, ein Sinnesorgan des vegetativen Nervensystems. [The skin, a sense organ of the vegetative nervous system.] *Dermatol. Wochenschr.* 87(39a): 1348-1352. 1928.

993. OHM, J. Der vestibuläre Drehnystagmus unter verschiedenen Bedingungen. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(8): 970-977. 1930.—Nystagmographic examination of a man in light and dark, with and without ground or convex glasses, the chair being rotated twice in 12-13 sec., showed that nystagmus with open eyes during rotation had an optical and a vestibular component, and that the optic component could be only partially removed by glasses. Nystagmus is purely vestibular only during rotation in the dark under the conditions given; the subsequent nystagmus appearing in the dark or with ground or convex glasses is also purely vestibular. If the curve of the optic and vestibular factors shows the same frequency but greater amplitude than the curves of optic and of vestibular nystagmus, one would deduce that the optic and vestibular stimuli met in the vestibular nucleus, there being merged into a single nystagmus.—*From author's conclusions (transl.).*

994. RIDLEY, F. The intraocular pressure and drainage of the aqueous humour. *British Jour. Exp. Pathol.* 11: 217-240. 1930.—Experiments are described which were performed upon the dead eyes of pigs, sheep and man and on the living eyes of rabbits. These show that both the dead and the normal living cornea are permeable to salts and diffusible substances, and that this permeability is most marked at the site of the filtration angle. The greater permeability of this area is attributed to the absence of Descemets membrane and it is shown that the freely permeable substantia propria of the cornea extends to the root of the iris. The intraocular pressure exerts a constant hydrostatic force, tending to cause a flow of fluid through the cornea into the conjunctival sac. An examination of the fluids bathing the cornea shows that there is no considerable osmotic pressure opposing this flow and that the physical properties of tears are such as to assist it materially. The corneal drainage path is probably the only one by which aqueous is normally and constantly removed. The sclera is not indistensible. Curves of distensibility are described and their significance discussed. The degree of expansion of which the vascular bed of the uvea is capable was measured and its influence upon the intraocular pressure demonstrated.—*J. Bland.*

995. ROBINSON, ESTHER W., and E. G. WEVER. Visual distance perception in the rat. *Univ. California Publ. Physiol.* 7(15): 233-239. 16 fig. 1930.—Rats are able to ascertain visually whether a path is opened or closed at distances of about 18 inches for albinos and 30 in. for pigmented animals. The capacity suffers a breakdown as the illumination is greatly reduced, but the pigmented animals remain superior at all stages. The ability shown seems to be largely independent of the general activity and learning capacity of the animals as revealed by maze performances in complete darkness.—*Authors' summary.*

996. TUTUI, YOSIMITU. Über das Vorkommen und die Bildung der Ehrlichschen Linie. *Arch. Augenheilk.* 103(3/4): 580-596. 5 fig. (col.) 1930.—The author has studied the appearance of the typical Ehrlich line in a series of animals. He finds that it occurs in practically all the animals investigated (rabbits, rats, fish, turtles, chickens, fox, barn owl, doves, canaries, dogs, cats, screech owl). It is absent in the mouse, carp, the ape and in man. In the mouse its absence is apparently due to the fact that the eye is too small for any difference in temperature to exist in the parts of its anterior segment. It is absent in the carp because the aqueous here contains a thread-like substance which prevents the convection currents. The fluorescein, therefore, sinks to the bottom of the anterior chamber without forming a line. The absence in man and in the ape is to be explained by the very low protein content of the aqueous. As a consequence of this the fluorescein particles are too finely divided to form a definite line.—*F. H. Adler.*

997. YOUNG, JOHN Z. The pupillary mechanism of the teleostean fish Uranoscopus scaber. *Proc. Roy. Soc.* [*London*] *B* 107(753): 464-485. 1 fig. 1931.—In this fish there is a well-developed light reflex. On illuminating one eye, the pupil narrows on this side only; there is no true consensual reflex. However, after cutting one optic nerve, bilateral illumination causes constriction in both pupils. Electrical stimulation of the 3rd or 4th spinal roots, or of the sympathetic chain more anteriorly, or of the long or short ciliary nerves causes narrowing of the pupil. Stimulation of the oculomotor nerves causes dilatation of the pupil. After the animal has been killed by removal of the heart and viscera, the pupils become narrowed; they are released from this constriction by cutting the 3rd and 4th spinal roots, or the sympathetic chains anterior to these roots, or by pithing the cord. They are not released by destruction of the medulla oblongata. There is therefore a cilio-spinal centre, responsible for constriction of the pupil. After unilateral section of the 3rd and 4th spinal roots of the living animal the light reflex is no longer manifested on this side, and the eye is more protruded than the control. After section of one oculomotor nerve in the living animal the corresponding pupil narrows more readily and completely than the control. By means of local applications and injections of nicotine it has been shown that there is a synapse of the constrictor fibres in the trigeminal sympathetic ganglion and of the dilatator fibres in the ciliary ganglion. There is thus shown to be in this fish a well-developed nervous mechanism for the control of the pupil, resembling that of mammals in general plan, but with the functions of the "antagonistic" nerves reversed. The pharmacological reactions of the m. sphincter iridis of *Uranoscopus* resemble those of the corresponding mammalian muscle.—*Author's summary.*

998. WUNDER, W. Sinnesphysiologische Untersuchungen über die Nahrungsaufnahme bei verschiedenen Knochenfischarten. Part I. *Congrès Internation. Xe. Zool. à Budapest* 1927. p. 787-789. 1929.—See *Biol. Abstracts.* Vol. 3(1-3): 144. Abs. No. 1560.

ANIMAL PHYSIOLOGY

NERVOUS SYSTEM

ALEXANDER FORBES, *Editor*

(See also in this issue Entries 134, 240, 255, 275, 443, 490, 583, 735, 765, 783, 845, 860, 869, 889, 977, 990, 992, 993, 997, 1035, 1037, 1044, 1045, 1046, 1047, 1049, 1050, 1055, 1058, 1059, 1062, 1064, 1065, 1068, 1078, 1082, 1087, 1094, 1095, 1097, 1107, 1112, 1116, 1122, 1146, 1154, 1168, 1232, 1261, 1295, 1406, 2226, 2228, 2236, 2243, 2247, 2249, 2251, 2255, 2258, 2327, 2329)

999. ARNAUDET, A., LÉON BINET, et H. CARDOT. Survie du centre respiratoire du poisson en fonction de la composition du liquide qui le perfuse. *Jour. Physiol. et Path. Gén.* 28(1): 50-55. 2 fig. 1930.—The activity of the respiratory centre of *Gobius lota* can be maintained from 3 to 5 hours by perfusion with appropriate neutral isotonic solutions. Urea up to 4.5% has a marked action in prolonging survival. The centre is extremely sensitive to variations in pH and osmotic pressure.—*W. R. Fearon.*

1000. ASHFORD, C. A., and E. G. HOLMES. Contributions to the study of brain metabolism. V. Rôle of phosphates in lactic acid production. *Biochem. Jour.* 23(2): 748-759. 1929.—Experiments on chopped rabbit brains in vitro indicate that the formation of lactic acid in brain tissue is principally from glucose, with which the presence of inorganic phosphates has little effect, and only in much smaller amount from glycogen, for which inorganic phosphates are necessary. Considerable lactic acid was liberated from glucose by chopped brain tissue in which phosphates had been completely removed by $CaCl_2$, and there was very slight increase in lactic acid formation when Na_2HPO_4 was added. When inorganic phosphates are precipitated by $CaCl_2$, there is complete inhibition of lactic acid formation from glycogen.—*H. R. Street.*

1001. BAJANDUROW, B. I. Zur Frage über die trophischen Funktionen des Kopfhirnes. Die Wirkung der Schädigung und der Entfernung des Kopfhirnes auf das Wachstum von Vögeln und Säugetieren. *Pflüger's Arch. Ges. Physiol.* 224(6): 779-786. 6 fig. 1930.—In the bird series chicks 2-4 wks. old and doves 4-6 wks. old (number not stated) and in the mammalian series 80 rabbits, 95 guinea-pigs and 25 rats were used. Complete removal of the cerebrum in young birds or bilateral injury in young mammals produced retardation of development, with fall in temperature, infantilism, change in gaseous metabolism (rise of respiratory quotient), decrease in N assimilation, disturbance of energy metabolism, and even complete arrest of development. Removal or injury of only one cerebral hemisphere, in either birds or mammals, had no effect on development. Partial removal or injury of both hemispheres checked growth. The injury to the somatic functions of the organism from removal or injury of the cerebrum indicates that there are in the prosencephalon mechanisms corresponding to the vegetative centers in the diencephalon.—*From author's summary (transl.).*

1002. BERGGREN, STURE, und ERIK MOBERG. Experimentelle Untersuchungen zum Problem des Schlafes. *Acta Psychiatr. et Neurol.* 4(1): 1-46. 11 pl. 1929.—In 24 experiments on cats, using solutions isotonic with the blood, the authors found that injections of small amounts of either $CaCl_2$ (0.26 to 0.62 mgm.) or KCl (0.44 to 0.55 mgm.) into the region of the infundibular and hypothalamic nuclei led to sleep. Control injections of Ringer solution into this region, and of $CaCl_2$ or KCl into other regions of the brain, were without effect.—*N. Kleitman.*

1003. BISHOP, G. H., and PETER HEINBECKER. Differentiation of axon types in visceral nerves by means of the potential record. *Amer. Jour. Physiol.* 94 (1): 170-200. 10 fig. 1930.—By means of the cathode ray oscillograph technique, 4 components of potential can be recognized in certain autonomic nerves. The vagus and the genital branch of the genito-crural contain all 4 components. Other nerves lack certain of these elements. The potentials are termed for convenience the A, B_1, B_2 and C components. Determinations have been made of the properties of the fiber groups which contribute to these potentials. The first 2 groups are similar to each other, the last 2 likewise resemble each other, the major differences in certain properties occurring between the 2nd and 3rd (B_1 and B_2) components. The properties which change more abruptly from the B_1 group to the B_2 are threshold, duration of axon potential response, chronaxie and absolutely refractory period, indicating a lower irritability and a slower activity and recovery in the last 2 groups, as compared to the first 2, in the ratio of at least 4 to 1. Histological cross sections of tested nerves lead to the inference that the first or A potential arises from large myelinated fibers of the type supplying skeletal muscle and peripheral afferent endings, i.e., somatic, motor and sensory. The B_1 potential arises from fibers of the type usually assigned to visceral afferent function, passing through autonomic nerves. The B_2 and C potentials arise from fibers which in certain nerves can be identified as autonomic efferents. Of these 2 groups the B_2 is inferred to contain the small thinly myelinated axons present in the autonomic system, the C the unmyelinated.—*Excerpts from authors' summary.*

1004. BLEICH, OTTO ERNST. Thanatose und Hypnose bei Coleopteren. Experimentelle Untersuchungen. *Zeitschr. Wiss. Biol. Abt. A., Zeitschr. Morphol. u. Ökol. Tiere* 10(1): 1-61. 21 fig. 1928.—The author treats 3 types of akinesia in Coleoptera, under the names thanatosis, catalepsy and mechanohypnosis. Thanatosis, or feigned death, is a reflex, hypertonic reaction which can be experimentally released or prolonged into paralysis by renewed stimulation. The reaction varies with the individual. As a rule the thoracic region must be stimulated, to break thanatosis, and the awakening is usually spontaneous. Chemical and optical stimuli do not interrupt thanatosis. Lowering the temp. lengthens and deepens the state, which has as its essential characteristic a fixed muscular tonus; the reflex irritability is lowered; each species assumes definite positions of the extremities and continues in this state for a characteristic period. Stimulation fatigue occurs only when the stimuli follow at short intervals, but reactivity is retained up to an hr. Reflex fatigue is overcome in many spp. by increasing the stimulus intensity and by changes in kind of stimulus. The thoracic ganglia in beetles play an important rôle in thanatosis. These studies were conducted with *Silpha obscura,* Broscus cephalotes,* Lucanus cervus,* Phyllopertha horticola,* Potosia cuprea,* Byrrhus pilula,* Corymbites aeneus,* Anobium striatum,* Blaps mortisaga,** and *Galeruca tanaceti** which are shown in the positions assumed in thanatosis, and detailed records are also given for many other spp., including some larvae. The studies in catalepsy were based on *Otiorrhynchus atroapterus.* Experimental catalepsy or mechanohypnosis was studied in *Cicindela hybrida,* Calosoma inquisitor,* Carabus granulatus,* Calathus fuscipes,* Poecilus lepidus,* P. punctatus,** etc., as tabulated.

1006. BRÜCKE, E. TH., und K. UMRATH. Über die Aktionsströme des Lymphherzens und seiner Nerven. *Pflüger's Arch. Ges. Physiol.* 224(5): 631-639. 6 fig. 1930. —Electrograms of tetanic action currents were obtained during each systole of the spontaneously beating lymph-heart of the frog, and from the 11th spinal nerve innervating the lymph-heart. In both cases the frequency of the higher peaks, formed by the coalescence of several single impulses, was about 20-30 per sec. The lymph-

heart is therefore not tonically innervated from the spinal cord in A. v. Tschermak's sense, but its spinal center works periodically, like the respiratory center.—*Authors' abstract (transl.).*

1007. BYKOW, K. M., und I. A. ALEXEJEW-BERKMANN. Die Ausbildung bedingter Reflexe auf Harnausscheidung. *Pflüger's Arch. Ges. Physiol.* 224(6): 710-721. 4 fig. 1930.—Experiments were carried out on 2 ♀ dogs, one with a single, the other with a double ureteral fistula. A conditioned reflex was built up by rectal injection of water in a certain room, accompanied by an organ peal of 4 min. The influence of the place and sound clearly increased diuresis, but the reflex was gradually lost when the unconditioned stimulus was not supplied. It was possible to inhibit renal conditioned reflexes, like alimentary conditioned reflexes, and thus to decrease water diuresis. It is concluded that renal activity is under the influence of the cerebral cortex.

1008. CARDOT, H., J. RÉGNIER, D. SANTENOISE, et VIDACOVITCH. Pneumogastrique et appareil thyroïdien. *Compt. Rend. Soc. Biol.* 99(19): 64-66. 1928.—After section of the pneumogastric followed by treatment with eserine, and the same treatment following removal of the superior cervical sympathetic ganglia, the authors conclude that it is the pneumogastric and not the sympathetic which conditions the cortical excitability of the thyroid.

1009. CATE, J. TEN. Beiträge zur Physiologie des Zentralnervensystems der Einsiedlerkrebse. *Arch. Néerland. Phys. Homme et Animaux III C.* 15(2): 242-252. 1930.—Shell-less hermit crabs find new shells mainly by touch, sight helping. Eupagurus bernardus performs a fixed chain of reflex activities in taking possession of a shell. Removing parts shows that touch is the main sense (sight helping) in this behavior and decreases in acuity from the antennae to the posterior legs. The behavior may be typically modified after loss of a receptor. Excisions demonstrate that the cerebral ganglion, assisted by the subesophageal, is dominant. The thoracic and abdominal ganglia subserve local reflexes. The subesophageal ganglion is a coördinating centre for locomotion and other complex actions, such as grasping, clambering, hiding, and death-feigning. It also reinforces the movements of the limbs and abdomen and inhibits the tonus of the abdominal muscles. The cerebral ganglion combines these actions into activities of a higher order, as when the crab finds a new shell.—*E. H. Craigie.*

1010. DIEHL, F. Über die Reizung sensibler Nerven nach Ausschaltung ihres peripheren Feldes. *Pflüger's Arch. Ges. Physiol.* 224(5): 678-686. 1930.—After anesthesia of the cutaneous field to which the sensation produced by stimulation of the cutaneous nerve is referred, the resulting sensation was referred to the margin of the anesthetized zone. The threshold of stimulus remained the same for equal current and condenser charge. Out of 35 experiments (number of subjects not stated) 25 were successful.—*From author's summary (transl.).*

1011. ECONOMO, C. von. Sleep as a problem of localization. *Jour. Nerv. & Ment. Dis.* 71(3): 249-259. 1 fig. 1930.—The author gives reasons for his belief that an area of grey matter limited posteriorly by the upper border of the oculomotor nucleus and extending forward under the lateral wall of the third ventricle towards the head of the caudate nucleus is of primary importance for the normal course of sleep. This "centre" is possibly activated by fatigue substances circulating in the blood stream, the results of its activation being (1) to inhibit the thalamus and cerebral cortex causing "cerebral sleep" and (2) to modify the action of the neighbouring sub-thalamic vegetative centres producing a changed metabolic state, which is normally present in the sleeping state and which he calls "body sleep." He mentions the experiments of Hess who has produced apparently normal sleep in cats by stimulation of the anterior region of the aqueduct and the posterior part of the wall of the third ventricle with very weak electric currents.—*E. A. Linell.*

1012. EUFINGER, H., und ILSE SEE. Das Verhalten des vegetativen Nervensystems in der Schwangerschaft auf Grund der Atropin-orthoclinostatischen Reaktion. *Arch. Gynaekol.* 140(2/3): 285-297. 5 fig. 1930.—Studies on 10 non-pregnant and 44 pregnant women indicate a heightened susceptibility to toxins during pregnancy. The Danielopolu or orthoclinostatic reaction to atropine shows no uniform tendency in respect to tonus of the vegetative nervous system in the 1st 9 lunar months of pregnancy. Along with marked lability goes a tendency to hypertonus in both systems. In the 10th month of pregnancy there is a marked tendency to increased tonus of the sympathetic. After confinement there is a delayed reaction to atropine.—*From authors' summary (transl.).*

1013. EWALD, G. Fortschritte und Wandlungen der psychiatrischen Lokalisationslehre. Erster Teil und zweiter Teil. *Scientia* 47(231-1): 21-30; (214-2): 101-110. 1930.—A historical review is given of the attitude in psychiatry towards the problem of localisation. This question is continually supported from the biological side, while it is mostly opposed on the psychological side. Since the recognition of the rôle of the brain in mental life, which was mainly due to the facts revealed by epidemic encephalitis,—the localisation theory in psychiatry, long repressed, has again gained ground. Further, both embryological and phylogenetic considerations point to the great significance of the thalamus in mental life. Intelligence can now be coordinated mainly with the cerebral cortex, sensation and impulse with the thalamus. The somatic basis of character may be perceived in the functional interaction between thalamus and cortex, both of which undergo the influence of the endocrine system and other agents of the organism as a whole. Temperament is best considered as the quantitative factor in somatic and psychological events, to which, on the bodily side, corresponds bio-tonus. The somatic controlling centres of this bio-tonus lie deeply in the brain-stem. It is shown that such a building-up of personality from the biological point of view agrees well with the psychological "personality typology" after Spranger. The modern theory of localisation is no longer a static-anatomical—but a dynamic-physiological theory of function. Naturally, it has its limitations, but it also has its justification.—*G. Ewald (transl. by J. M. Robson).*

1014. GEHUCHTEN, P. van. La pathologie du système pallido-strié. *Ann. Soc. Sci. Bruxelles Sér. C. Sci. Méd.* 48(3/4): 141-187. 8 pl. 1929.—A general review has been made of the physiology and pathology of the pallido-striate part of the central nervous system including its rôles and conduction pathways in the mechanisms of ordinary motion, of muscle tonus and of inhibition in involuntary movements (trembling, chorea, athetosis, spasm). The theories of physio-pathologic functions of the corpus striatum comprising the ideas of Ramsey, Hunt, Kleist, the Vogts, Foerster, Jacob and others are discussed. From the standpoint of pathology the various syndromes such as the Parkinson phenomenon in its several aspects and manifestations, Sydenham's chorea, Huntington's chorea, the syndrome of DeLuys' body, the athetoses, Little's disease, Wilson's disease and pseudosclerosis are described for the purpose of estimating the present status of investigation in this field. It is concluded that on the whole there is sufficient evidence to assume (1) that the globus pallidus is the center of primitive automatisms (2) that the pallido-striate system is the regulating center for muscular tonus and (3) that it is the regulating center for involuntary movements. More physiological, anatomical and pathological research is needed to elucidate the character of many of these mechanisms which are yet largely hypothetical.—*N. D. C. Lewis.*

1015. HINTNER, H. Über die mikroskopische Beobachtung des Dekrementes einer fortgeleiteten Erregungswelle an geschädigten Muskelfasern. *Pflüger's Arch. Ges. Physiol.* 224(5): 608-618. 5 fig. 1930.—Fresh preparations of the frogs' basihyoid membrane show, under microscopic observation of single fibers, during direct and indirect artificial stimulation, maximal tetanic twitchings.

A decrease of the excitation is to be distinctly noted as it travels along to the ends of severed fibers or fibers in injured tissues. The stronger the stimulus, the farther the wave of excitation travels along the fiber, generally with a gradual decrease, but now and then undergoing local diminution at spots which seem to offer obstacles to its passage. The view of Fischl and Kahn that the muscle fibers of the membrane do not follow the all-or-nothing law rests on fallacious observation. The apparent variation in intensity of motor response of muscle fibers to stimuli of varying strength is due to passive displacement and distortion increasing with increase of the stimulus.—*Author's summary (transl.).*

1016. **HOFF, HANS, und MICHAEL KAMIN. Reizversuche im linken Sulcus interparietalis beim Menschen.** *Zeitschr. Ges. Neurol. u. Psych.* 125(4/5): 693-699. 1930. —A war wound produced a skull deficiency over the sulcus interparietalis. Chilling this region caused a displacement of the visual field to the left, a darkening of the visual field, and finally inability to read or to distinguish colors, all being seen as brownish red. Faradization of the opposite side, and introduction of cold liquid into either ear likewise darkened the visual field. Another patient, with traumatic epilepsy from injury to a similar left cerebral region, responded to chilling of the lesion by displacement of the visual field to the right, darkening, similar confusion of colors, only green correctly identified, and by a feeling of embarrassment in speech; the speech was correct, but retarded. Warming the region caused no such speech disturbance, though there was a left displacement of objects seen and a yellow mist before the eyes. Cold fluid in the left ear produced the sensation of dark mist, but no loss of recognition of colors or of ability to read. Faradization of either side failed to elicit these phenomena. The authors suggest that these data point to a lateral distribution of the functions of this part of the brain, the right sulcus interparietalis preserving the sense of tactile unity of the body, while the left gives a sense of unity to the function of speech.

1017. **HOLMES, ERIC G. Carbohydrates of crab nerve.** *Biochem. Jour.* 23(6): 1182-1186. 1929.—Glycogen may constitute up to 20% of the total solids of *Maia* nerve. "Free carbohydrate" is present in the nerve of *Maia* and *Cancer.*—*E. B. Carmichael.*

1018. **JOHANNES, TH. Über die periphere nervöse Regulation des Wasserhaushalts.** *Pflüger's Arch. Ges. Physiol.* 224(6): 760-769. 3 fig. 1930.—The persons studied (number not stated) were subjected to stimulation of a cutaneous nerve by an alternating current of 2 frequencies while drinking either 1000 cc. water, or 150 cc. 10% NaCl. The threshold of sensitiveness rose during water drinking and fell after the salt intake. Corresponding changes in the curve were observed from other experiments with hypertonic solution, theobromin, etc.—*Author's summary (transl.).*

1019. **KATO, G., T. HAYASHI, M. NAKAYAMA, H. TAMURA, T. OTA, K. KANAI, and S. MATSUYAMA. The studies on the Wedensky effect.** *Japan. Med. World* 9(8): 245-282. 15 fig. 1930.—Narcotising-chamber-experiments were made to determine the point in the narcotised nerve at which the series of subnormal impulses coming from the upper normal part vanishes. The subnormal impulses are extinguished, not by decrement as supposed by Lucas, but at the beginning of the narcotised area, about 3 mm. inside of the upper wall of the narcotising chamber. The second (subnormal) impulse is extinguished on account of the heightened threshold in the relative refractory period due to the first (normal) impulse. This second impulse, although itself vanishing, leaves behind an "after-effect" which lasts long enough to inhibit the third and so on. Thus the Wedensky inhibition is produced.—*G. Kato.*

1020. **KOKAS, E. de. Relation entre les variations de la teneur du sang en calcium chez les lapins et les effets de l'excitation du nerf dépresseur.** *Jour. Physiol. et Path. Gén.* 28(2): 337-341. 6 fig. 1930.—By stimulating the depressor nerve in parathyroidectomised rabbits, before and after 2 cc. intravenous injections of 5% $CaCl_2$, it is shown that the excitability of the nerve depends on the Ca concentration of the blood.—*W. R. Fearon.*

1021. **KROLL, F. W. Elektrotonische Erregbarkeitsveränderungen des optischen Systems.** *Zeitschr. Ges. Neurol. u. Psych.* 125(1): 134-137. 1930.—Modified responses (anelectrotonus and catelectrotonus) were demonstrated with constant electric currents and adequate light stimuli.

1022. **MARTINO, G. Sul potere glicolitico della sostanza cerbrale.** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 92-94. 1930.—Glycolysis by action of cerebral tissue was more efficient for the grey matter than for the white. Glycolysis took place at room temp. (17-22°) but the optimum was at 37-38°C. The rate was greatest in the first 7 hrs. The optimum concentration ratio between aqueous extract and glucose solution was 1: 10. Hydrocyanic acid inhibits glycolysis in concentrations below 0.001 N. Some cations increase, others inhibit glycolysis. All anions inhibit it, the phosphates excepted. Maximum glycolysis was observed at pH = 6.81.—*M. Comel.*

1023. **PASQUALINO, GUGLIELMO. Effetti del raffreddamento sull'eccitabilità muscolare diretta e indiretta negli animali omeotermi. [Effects of cooling on the direct and indirect muscular excitability in homoiotherms.]** *Arch. Fisiol.* 28(3): 443-451. 1930.—Cooling to about 11°C. the hind limb of dogs blocks the transmission of excitation from nerve to muscle, whereas at this temp. conductivity of the nerve, as well as direct muscular excitability, is present.—*M. Comel.*

1024. **PORTMANN, GEORGES. Action de la compression et de la ligature des gros vaisseaux du cou sur les réactions vestibulaires.** *Acta Oto-Laryngol.* 14(1/2): 303-321. 1930.—The study comprises 24 experiments on 4 dogs; they included examination of cardiac pulse, pupils, variation in color of mucosae, oculocardiac reflex and vestibular excitability before any intervention; injection of epinephrine, ergotin, eserin, pilocarpine, atropine, or bellafolin, with rotatory tests; ligature of the right common carotid or of the vertebral arteries; and repetition of the drug and rotation tests for comparison of the results with the former. The conclusions are: Rotatory tests repeatedly performed before and after ligature of the common carotid artery, before and after ligature of the vertebral arteries, before and after ligature and resection of the vertebral arteries, before any operation or after ligature of the left vertebral artery only, or of the 2 vertebral arteries, or both of these 2 arteries and the right common carotid together, produced no sensible modification of nystagmus.

1025. **RENQVIST, Y., und H. KOCH. Periodendauer und Nutzzeit des Wechselstromreizes bei sensiblen und motorischen Schwellen.** *Skand. Arch. Physiol.* 59(5/6): 279-294. 4 fig. 1930.—The action currents in sensory and motor nerves of the forearm were investigated by stimulating their endings with alternating currents of differing frequencies applied for different durations. The higher the frequency of the alternating current the lower the intensity of the action wave. This holds for an application of unlimited duration as well as for a limited one. With a frequency of 157.8 Hertz the action current intensity is at a minimum. It increases with lower frequencies. When the alternating current is applied for limited periods the curve of the intensities obtained in the nerves assumes a paraboloid form. Where the curve becomes approximately straight the term "most effective time" is defined by this point. This time is shorter with the lower frequencies and with 157.8 Hertz is equal to 3 sigma i.e., half the period for the frequency. This time is the same as that obtained when a condenser discharge is used and the same value is obtained when the alternating current is made unidirectional.—*Authors' summary (transl. by H. Woollard).*

1026. **ROSENBERG, HANS, und KAICHIRO KITAYAMA. Untersuchungen über Nervenaktionsströme. IV. Aktionsströme bei natürlicher Erregung (Strychninkrampf).** *Pflüger's Arch. Ges. Physiol.* 223(6): 712-732. 6 fig. 1930.—The authors studied action-currents in nerves and muscles under strychnine poisoning in animals. They

regard 400-600 per sec. as the maximal frequency for muscles and 200-300 per sec. as maximal for the nerves. The reflex latency is within the limit of 0.03 sec. The entire discharge complex of muscles is composed of a series of discharges which in their time relations correspond with those of the nerves. For example the duration of the wave varies from 0.07745 to 0.07125 sec. The intervals lasted from 0.01413 to 0.01361 sec. On the average the frequency consists of 11.3 series per sec. In view of these circumstances one must consider the frequency of the gross periods for nerve and muscle identical. By means of painful cutaneous stimuli of sensory nerve fibers of the sciatic, series of action-currents are demonstrable, the frequency of which series are equal to those of a motor bundle.—*A. P. Friedmann (transl. by J. M. Nielsen).*

1027. **SCHNEIDER, MAX. Ueber den Verlauf des Muskelaktionsstroms bei indirekter Zuckung und beim Eigenreflex.** *Zeitschr. Biol.* 89(6): 499-512. 8 fig. 1930.—N. tibialis and peroneus in man were stimulated by break shocks and the action current of the corresponding muscle groups recorded with string galvanometer and with oscillograph. The two resulting action currents which correspond to the reflexly elicited twitch and to the subsequent proprioceptive response were compared. The latter is more prolonged than the former. The magnitude of the prolongation does not surpass the value determined by Gasser and Erlanger for those nerve fibres concerned in the reflex response in question. It is concluded that the prolongation is solely conditioned by the different speeds of conduction in the various reflex paths employed; that the individual ganglion cells in the C.N.S. discharge synchronously if synchronously excited, but that the volley of impulses becomes more scattered the more peripherally the effector organ lies; and that the synapse plays no part in determining the course of the proprioceptive reflex. The observations of Altberger on the prolongation of the action current during extreme fatigue are confirmed; also the statement of Gasser, Erlanger and Bishop that the most rapidly conducting fibres are also the most excitable.—*M. Schneider (transl. by O. W. Tiegs).*

1028. **SHERIF, M., and E. G. HOLMES. A note on the oxygen consumption of nerve in the presence of glucose and galactose.** *Biochem. Jour.* 24(2): 400-401. 2 fig. 1930.—Both galactose and glucose, in Ringer plus phosphate buffer, prolong the period for which isolated mammalian nerves take up O at a steady rate.—*E. B. Carmichael.*

1029. **THORNVAL, ANDERS. Some experimental observations on the "otolith nystagmus" in pigeons.** [With French summary, p. 336-337.] *Acta Oto-Laryngol.* 14 (1/2): 333-337. 1930.—After plugging the semi-circular canals and then opening the bony canals between the right plugging and the distal extremity of the 2 vertical canals near the vestibule, one can call forth a movement of the head of the pigeon by increasing a little [blowing], whether slowly or rapidly, the pressure of air in the operative cavity. This motion has the character of a nystagmic movement with the slow phase forward and on the operated side, i.e., in the plane of the anterior vertical canal on the operated side; the rapid phase moves in the opposite direction [backward]. Reduction of the air pressure [sucking] in the operative cavity produces no effect, nor variations in the position of the head and body of the pigeon. After the extirpation of the posterior vertical canal with the ampulla, or of all the membranous canals with the ampullae, it seems that this nystagmic movement is the effect of an endolymphatic movement toward the utricle; one cannot explain it as an effect exercised on the ampullae.—*From author's summary (transl.).*

1030. **VEACH, H. O., L. L. SCHWARTZ, and M. WEINSTEIN. Studies on the innervation of smooth muscle V. On the relation of vagal gastric effects to Wedensky inhibition.** *Amer. Jour. Physiol.* 92(2): 453-456. 2 fig. 1930.—In recent experiments on 7 cats we have shown that McSwinney and Wadge (1928) were mistaken in their conclusion that vagal effects on cats' stomachs depend only upon degree of tonus of musculature preceding stimulation, and not on frequency or intensity of stimulation. Our experiments with luminal sodium anesthetic, as used by McSwinney and Wadge, show that on the contrary either a motor effect or an inhibitory reaction is produced depending upon frequency of stimulation, again affirming that vagal effects on the cat's stomach are of the nature of Wedensky inhibition. —*H. R. Street.*

1031. **WINTERSTEIN, HANS. Über Reizungs- und Erregungsstoffwechsel des Nervensystems.** *Pflüger's Arch. Ges. Physiol.* 224(6): 749-759. 2 fig. 1930.—The isolated nerves of frog's legs were used, prepared so that the directly stimulated section was in one respiration chamber while the remainder of the nerve, preserving its continuity, was sealed off in another. The described method showed that in the portion subject to direct electric excitation the gaseous metabolism rose markedly (as much as 80% in the case of the European frog), while in the portion of the nerve which merely conducted the disturbance no distinctly measurable increase in O consumption occurred. Artificial stimulation is thus seen to occasion 2 distinct categories of chemical processes: (1) the physiologic disturbance proceeding from the stimulated spot, and (2) the local process called forth by the electric current at the point of stimulation, which forms artificial products bearing no relation to the normal. This view is supported by observations of other authors. Unlike the gaseous metabolism is the increased sugar consumption produced in the isolated spinal cord of the frog by direct and reflex stimulation. This increase is due to the physiologic propagation of disturbances, and therefore can be only in small degree chargeable to oxidation processes.—*Author's summary (transl.).*

1032. **WRIGHT, SAMSON. Studies of reflex activity in involuntary nervous system. II. Action of ergotamine on vaso-motor reflexes.** *Jour. Physiol.* [*London*] 69(3): 331-347. 12 fig. 1930.—In the vagotomized cat under chloralose anesthesia, ergotamin in small doses prolongs the latent period of the depressor reflex, decreases the rate and extent of the fall of blood pressure and finally abolishes the reflex completely. When central vagus stimulation gives a mixed effect (initial rise followed by a fall or afterfall) ergotamin may convert the response into a pure rise. With larger doses the pressor reflexes are affected. The latent period is prolonged, the rate and extent of the rise of pressure are decreased and finally the reflex is completely abolished. At this stage there is no increased latency of the peripheral vascular mechanism and the vaso-motor "center" can respond strikingly to acute complete anemia. Evidence is offered that the effects described are mainly due to an action on the afferent side of the vaso-motor "center." The pressor sinus caroticus reflex is affected in the same way as artificially produced pressor reactions, and for the same reasons. It is suggested that the results obtained are opposed to the view of direct transmission of the excitation process through the vaso-motor "center." If Sherrington's conception of central excitatory and inhibitory states is adopted, the results may be accounted for by supposing that ergotamin prevents access of these states to the cells of the "center," possibly by modifying the condition of the surface membranes of the cells. —*Author's summary.*

ANIMAL PHYSIOLOGY

MOTOR APPARATUS

W. O. FENN, *Editor*

(See also in this issue Entries 137, 157, 218, 231, 232, 237, 239, 256, 283, 285, 368, 474, 494, 501, 521, 530, 543, 956, 963, 990, 1019, 1023, 1027, 1030, 1127, 1133, 1138, 1202, 1203, 1491, 2226, 2276, 2762)

1033. **ACKERMANN, RUDOLF.** Über den Einfluss des Rudertrainings auf die Lungenventilation, auf das Herz und das Blutbild. I. *Zeitschr. Klin. Med.* 106(3/4): 244-256. 1927.—Seventeen individuals with previous training and 19 training for the first time were studied. Training resulted in a greater increase in chest expansion in the 1st group than in the 2nd. Normal respiratory rate decreased. The resting pulse rate usually decreased but sometimes increased. Orthocardiac diagrams indicated an increase in the size of the heart. The effect on blood pressure was irregular.—*H. M. Krueger.*

1034. **ACKERMANN, RUDOLF, und FRIEDRICH LEBRECHT.** Über den Einfluss des Rudertrainings auf die Lungenventilation, auf das Herz und Blutbild. II. *Zeitschr. Klin. Med.* 107(5): 519-532. 1928.—Experienced and inexperienced rowers were compared before and after a period of training. The former group showed on the whole higher red cell counts before the training and showed in 82% of the subjects an increased hemoglobin value after the exercise. On the other hand 78% of the inexperienced rowers showed a decrease of hemoglobin after the training. In both groups of rowers 58-59% of the subjects showed increased red cell count after the training while the remainder showed a decrease. Among the experienced rowers there were more subjects with white counts greater than 8000. In both groups 66% of the subjects showed a decrease in white count after the training. Differential leucocyte counts were also made and the results are summarized. Significant correlations with the experience of the subject or the circulatory and respiratory changes could not be made.—*W. O. Fenn.*

1035. **AGAZZOTTI, A., e A. DE NIEDERHÄUSERN.** Modificazioni nella rana dell'attivitá lavorativa di un gastrocnemio per lesioni prodotte sull'arto del lato opposto. [Variations of working activity of gastrocnemius in frog following injury of the heterolateral limb.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 638-640. 1930.—The compression of the sciatic nerves due to ligation of one limb is followed by an increased working capacity in the gastrocnemius of the other limb of the frog. A chemical, not a reflex nervous factor, is responsible for this effect, because the increase of activity persisted after cutting the sciatic nerve, and was not present in the limb after ligation of the vessels. An increase of 20% in the glucose content was noted, to which is attributed the increase of working capacity.—*M. Comel.*

1036. **ALTENBURGER, H.** Über den reflektorischen und muskulären Anteil des Aktionsstrombildes bei Dehnung des quergestreiften Muskels. *Pflüger's Arch. Ges. Physiol.* 214(4): 524-531. 4 fig. 1926.—When the gastrocnemius of the frog is suddenly stretched, the sciatic nerve having previously been cut, there occur in the former action currents having a frequency of 60-100 per sec. which are dependent on the excitability of the muscle and are uninfluenced by curare and nerve degeneration. It is therefore assumed that they are caused by direct muscle stimulation. Muscle action currents arise also on passive stretching of human muscle. Their relation to the reflex component of the action current picture and their significance are investigated.—*Author's summary (transl. by O. W. Tiegs).*

1037. **AVELLONE, L.** Sulla funzione dei muscoli paralizzati mediante il taglio dei nervi motori. XIV. Variazioni del contenuto in fosforo, acido lattico, glicogeno. [The function of the muscles paralyzed by section of the motor nerves. XIV. Variations of the content in phosphorus, lactic acid, glycogen.] *Riv. Patol. Speriment.* 2(1): 1-10. 1927.

1038. **BASLER, ADOLF.** Das Gehen und seine Veränderung durch verschiedene Umstände auf Grund experimenteller Untersuchungen. 274p. 114 fig. Gustav Fock: Leipzig; Verlag der Sun Yatsen-Universität: Canton, 1929.—The book is divided into 5 parts, each of which treats of some different phase of walking. Part I deals with the morphology of the locomotor apparatus and the changes in the lower limbs as steps are taken. The rôle of the toes receives particular emphasis. Part II treats of the dynamics of the leg musculature, joints and movements. Part III explains the rôle played by the body other than the legs during the process of walking. Parts IV and V consider the expenditure of energy and the different positions of the body, the balancing mechanism during swift running, climbing steep elevations and carrying heavy burdens. The last part is concerned strictly with the Chinese and describes the form of the feet, and the different types of walking by certain classes in China.—*C. S. Simkins.*

1039. **BASLER, ADOLF.** Experimentelle Untersuchungen über das Tragen mit Hilfe einer über die Schulter gelegten Stange. *Abhand. Med. Fak. Sun-Yatsen Univ. Canton* 1(1): 13-72. 33 fig. 1929.—In carrying loads the Chinese use 3 types of shoulder poles of bamboo or hardwood. Loads are suspended near the ends of the pole, and hang rather low so as to bring the center of gravity below that of the man's body without a load. The "physiological body size," or distance from the shoulder to the ground, is reduced. Methods are described for measuring such changes as those in "body size," position of the center of gravity and other physico-anatomical features. The lateral deviations of the center of gravity associated with carrying a load are greater than those of the man's body not loaded. The mean length of the pace in carrying a load is 1.115 m. With heavier loads the elastic spring of the rod has a lower frequency. The stronger the rod the higher will be its frequency. The bending of the rod during walking is such that the lowering of the center of gravity of the loads so produced is somewhat offset by the elevation of the center of gravity of the body at the same moment. As the pace frequency is timed to the frequency of bending of the rod, there is a quickened pace when a stout rod, necessary for a very heavy load, is used. At the same time a greater speed of walking may result, although with shorter steps. The elastic recoil of structures in the body to the impact of the load and the cushioning effect of the heel are considered, as well as the peculiarities of individual porters. The efficiency in carrying loads by this, as compared with other methods, is probably due to the slight deviations in center of gravity.—*H. S. Hopkins.*

1040. **BAYLISS, L. E., E. BOYLAND, and A. D. RITCHIE.** The adductor mechanism of Pecten. *Proc. Roy. Soc.* [*London*] *B* 106(745): 363-376. 1930.—The slow part of the adductor muscle of *P. magellanicus* on electrical stimulation gives a twitch which is about 100 times as slow as that of frog's skeletal muscle, owing to its high viscosity; large tensions may be developed. In *P. maximus* and *P. opercularis*, separation of the slow and quick muscles usually results in a "contracture" of the former, during which the viscosity is increased, although the tensions developed are relatively small. This is due to reflex excitation from the several nervous connections, and can be partly or completely abolished by direct faradisation of the muscle. In intact animals, it would appear that the muscle contracts tetanically for the most part. The quick muscle gives a rapid twitch on electrical stimulation; fusion of the twitches is not readily obtained, and fatigue is rapid.—*L. E. Bayliss.*

1041. **BERNSTEIN, NIK. Untersuchung der Körperbewegungen und Körperstellungen im Raum mittels Spiegelaufnahmen.** *Arbeitsphysiologie* 3(3): 179-206. 14 fig. 1930.—The moving body is simultaneously photographed directly and from a mirror placed at a definite angle to the optical axis of the camera. The mathematical derivation of the nomograms required for ascertaining the positions of points of the body during movement is given.—*T. M. Carpenter.*

1042. **BINET, L., G. BOURGUIGNON, P. CHAILLEY-BERT, J. GAUTRELET, L. LAPICQUE, J. LEFÈVRE, R. LERICHE, A. POLICARD, A. STROHL, et G. WEISS. Physiologie musculaire. Chaleur animale.** *Traité de Physiologie Normale et Pathologique.* Vol. 8. 742p. 176 illus. Masson et Cie: Paris, 1929. Pr. 110 Fr.—The book includes a general discussion by Lapicque of the physiology of muscle, the mechanics of contraction, muscle energetics, viscosity, excitation, and chronaxie and a chapter by Bourguignon describing the technique of making chronaxie determinations in man and other mammals and the results thereby obtained in normal and pathological conditions. In further chapters Weiss outlines the physical principles of mechanics and of calorimetry while Chailley-Bert discusses the various aspects of fatigue and outlines the mechanism of locomotion in man and quadrupeds as studied by moving pictures. Lefèvre has written 259 pages in a broad and fundamental way on animal heat and bioenergetics, including not only general considerations of energetics and thermodynamics but also the principles of biological calorimetry, basal metabolic rate, the nature of the foodstuffs burned, the regulation of body temperature, the distribution of temperature in the body and the effects of exposure to different temperatures. Further details of temperature regulation are given by Gautrelet writing on the defenses of the body against heat, the mechanism of heat loss and the physiology of fever and by Binet in a discussion of bodily reactions to cold. The book is concluded by shorter articles on bony tissues and ossification by Leriche and Policard and on electric organs and luminous tissues by Strohl. The book serves well as an advanced text or for reference. A considerable number of references to original papers are included.—*W. O. Fenn.*

1043. **BROWN, DUGALD E. S., and FERDINAND J. M. SICHEL. The myogram of the isolated skeletal muscle cell.** *Science.* 72(1853): 17-18. 1 graph. 1930.—Preliminary report on the method and results.

1044. **BUCCIARDI, GIULIO. Ricerche sull'imbibizione del tessuto muscolare. I. La imbibizione e l'eccitabilità muscolare in soluzioni fisiologiche. [Studies on muscle imbibition. I. Imbibition and excitability of muscles in physiological solutions.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 572-574. 1930.—An initial increase of imbibition is accompanied by an increase of excitability; in a second stage a diminution of imbibition as well as of muscular excitability is observed in muscles immersed in physiological solutions.—*M. Comel.*

1045. **BUCCIARDI, GIULIO. Ricerche sull'imbibizione muscolare. II. La imbibizione e la eccitabilità muscolare in soluzioni ipertoniche. [Studies on muscle imbibition. II. Imbibition and excitability of muscles in hypertonic solution.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 574-576. 1930.—Imbibition of muscle follows also in hypertonic solutions, varying with the different solutions and their concentration. Muscular excitability is decreased and disappears in a second stage the more quickly the more concentrated is the solution, the quickness varying also with different solutions.—*M. Comel.*

1046. **BUCCIARDI, GIULIO. Ricerche sulla imbibizione muscolare. III. La imbibizione e l'eccitabilità nel siero di sangue di cavallo, di bue e di cane. [Imbibition and excitability of muscles in horse, ox and dog's blood serum.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 576-578. 1930.—The imbibition of muscles immersed in ox and dog's blood serum is much less than in horse's blood serum; the electrical excitability lasts longer in this serum than in serum of dogs and oxen.—*M. Comel.*

1047. **BUCCIARDI, GIULIO. Ricerche sull'imbibizione muscolare. IV. Influenza della temperatura sulla imbibizione e sull'eccitabilità muscolare. [Influence of temperature on muscular imbibition and excitability.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 579-581. 1930.—Temperatures higher than 28° C. cause a slight diminution of muscular imbibition. Temperatures below that of the room are followed by increased imbibition, the increase being progressively greater even to freezing of the muscle. The muscular excitability is gradually diminished by temperatures higher than 23°, disappearing at 40° C. Cooling (to 2° C.) increases slightly the excitability, which disappears at lower temp.—*M. Comel.*

1048. **BUCCIARDI, GIULIO. Ricerche sull'imbibizione muscolare. V. Importanza dell'urea sull'imbibizione e sulla eccitabilità muscolare. [Action of urea on muscular imbibition and excitability.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 641-643. 1930.—Muscular imbibition is greater for lower concentrations of urea, whereas it decreases for high concentrations. The electric excitability decreases quickly when the concentration of urea is raised.—*M. Comel.*

1049. **BÜTTNER, H. E., und B. HEIMBRECHT. Über den Einfluss des Sympathicus auf den Verkürzungsrückstand des Muskels.** *Pflüger's Arch. Ges. Physiol.* 221 (1/2): 93-103. 9 fig. 1929.—In the frog, after unilateral section of the sympathetic innervation of a leg, electrical stimulation of the same resulted in an increase in contraction remainder (Tiegel's contracture). Through investigations carried out on the isolated muscle it was found that the contraction remainder was distinctly increased after the addition of ammonia or ammonium-lactate in concentrations even as small as those found in sympathetic denervated muscles. The possibility of a relationship between contraction remainder and the NH_3 content of muscle is indicated.—*H. E. Büttner (transl. by H. S. Hopkins).*

1050. **CHARLET, HANS. Fortgesetzte Untersuchungen über den Einfluss des Sympathikus auf den Kontraktionsablauf ermüdeter Skelettmuskeln.** *Zeitschr. Biol.* 90(4): 299, 312. 7 fig. 1930.—For the sake of analyzing the influence of the sympathetic nerves on fatigued muscles a method was worked out to register the isometric twitch of a fatigued muscle photographically. Especial precautions were taken to interpolate the stimulation for the isometric contraction in an uninterrupted series of fatigue contractions without a longer pause than that between the individual fatigue contractions. Stimulating the sympathetic caused the rise of the isometric contraction of the fatigued muscle to become steeper, the time of ascent to be shortened and the height of contraction to be raised. But the whole duration of the contraction was not altered. The same phenomenon was found when analyzing a summed contraction by 2 stimulations in the ascending part of a contraction. The observed facts are an argument in favor of the view that stimulation of the sympathetic nerves causes an acceleration of the process of restitution.—*L. Asher.*

1051. **COLLE, J. Influence de l'excitant et du milieu extérieur sur les propriétés élastiques du muscle de grenouille. [The effect of the means of excitation and of the surrounding medium upon the elastic properties of frog muscle.]** *Arch. Internat. Physiol.* 31(2): 194-213. 5 fig. 1929.—Measurements were made of the tension developed by the sartorius muscle of the frog at different lengths. The length-tension diagrams so obtained were compared under different conditions. For purposes of comparison 3 constants were calculated from the curves for each condition. The constants were (1) the ratio of the area of the diagram W to the product Tl, or W/Tl. (2) the elasticity, E and (3) the maximum percentage shortening of the muscle under zero load. These constants change very little under the influence of temperature. Changes in the concentration of NaCl and the use of submaximal stimulation change the maximum work and the elasticity but leave the shortening unaffected, suggesting merely a change in the number of fibres ex-

cited. Changes in the concentration of $CaCl_2$ modify also the shortening and suggest a change in the nature of the elastic body. Lack of KCl has no effect.—*W. O. Fenn.*

1052. CROIX, PAUL MAGNE de la. La marche quadrupédale du chimpanzé et de l'homme. *Ann. Soc. Cient. Argentina* 110(6): 393-398. 3 fig. 1930.—A study of the gait of baboons and chimpanzees, compared with the movements of humans walking on all fours, shows the human type to be more advanced than that of the baboon but similar to that of the chimpanzee. This points to man's relationships with the latter rather than with the former.

1053. ERNST, E. Bemerkungen zu der Arbeit von Mond und Netter: "Ändert sich die Ionenpermeabilität des Muskels während seiner Tätigkeit?" *Pflüger's Arch. Ges. Physiol.* 226(2): 243. 1930.—A correction and a claim for priority.—*M. H. Jacobs.*

1054. ERNST, E., und L. SCHEFFER. Untersuchungen über Muskelkontraktion. VII. Mitteilung. Die Rolle des Kaliums in der Kontraktion. *Pflüger's Arch. Ges. Physiol.* 220(1/6): 655-671. 1928.—The K content of the frog's gastrocnemius is normally about 1.7% of the dry weight. When the muscle is perfused with Ringer solution for 5-6 hrs. it loses about 6% of its K content; perfusion with K free Ringer causes a loss of about 15%. Direct stimulation of the muscle brings about a K loss of 30-50%. The K loss can be explained by fatigue or by the lactic acid formation or by the increased permeability of the stimulated muscle. The Na content of the muscle increases to a greater extent than its Cl content and it is thus possible that there is a K-Na exchange in the stimulated muscle.—*E. Ernst (transl. by J. M. Robson).*

1055. FISCHER, ERNST. Die Wärmebildung des Skelettmuskels bei indirekter und direkter Reizung, sowie bei der Reflexzuckung. *Pflüger's Arch. Ges. Physiol.* 219(3/4): 514-553. 6 fig. 1928.—Indirect stimulation by maximal single shocks or short tetani produces the same tension as direct excitation. The initial heat liberated is however smaller with the indirect excitation. There is on the average a 6.5% decrease in the isometric quotient H/TL, which represents an increase in the efficiency of setting up tension. There is this smaller heat production in all 3 phases of heat liberation. The aerobic recovery heat is in both cases the same fraction of the initial heat. In doing a given amount of work the heat is less when indirect excitation is used than when direct is employed. With increased loading the heat produced increases to a maximum with both types of excitation. With further stretching the heat produced falls off at low temperatures but at higher temperatures stays at the maximum until the completely isometric loading is reached. In dying muscles and after incomplete curarization the isometric quotient is higher with indirect than direct excitation. Secretin not only impairs tension production but increases the isometric quotient of fresh muscle. Submaximal stimuli give lower quotients than maximal with both direct and indirect stimuli. In a tetanus a lower frequency of stimulation gives a larger tension-time area than a high frequency along with an equal or smaller heat production. By summation of stimuli at an interval of 5-15 σ an increased efficiency of tension production is obtained which may be increased by employing submaximal shocks. The increase in efficiency thus obtained helps to explain why reflex contractions show an isometric quotient 20-25% lower than by direct stimulation of muscle. There is an advantage to the economy of the organism in natural contraction consisting in tetanic summations of contraction.—*E. Fischer (transl. by M. B. Visscher).*

1056. FISCHER, ERNST. The oxygen-consumption of isolated muscles for isotonic and isometric twitches. *Amer. Jour. Physiol.* 96(1): 78-88. 1931.—By means of a differential-volumeter, the increased O consumption of a frog sartorius muscle after stimulation of the nerve by single induction shocks has been observed, for isometric twitches and for isotonic twitches of different loads. Two types of experiments were performed; in the 1st, the excess O consumption was determined for a series of 20-60 stimulations occurring in 1 or 2 min., while in the 2nd type the equilibrium consumption was measured for continuous stimulation with a frequency of 2-6 per min. Isotonic twitches with large loads, where little shortening occurs, have a higher O consumption than isometric twitches, while isotonic twitches with small loads and consequently large shortenings need less O than the isometric twitches. The value of 0.380 for the O consumption per gm. tension and unit of muscle length is in good agreement with the corresponding values of heat measurements. The maximal efficiency observed was 13.8%. From the experiments the conclusion is drawn that the energy liberated in a twitch depends on 2 factors, the length of the fibres during contraction and the work done (Fenn effect).—*Author's summary.*

1057. GARRY, R. C. The factors determining the most effective push or pull which can be exerted by a human being on a straight lever moving in a vertical plane. *Arbeitsphysiologie* 3(4): 330-346. 4 fig. 1930.—A study was made of the forces exerted by 12 males and 3 females in pushing and pulling a 30 inch lever that rotated in a vertical plane. The lever was attached to a 10-inch radius braked wheel connected by a braking belt to a spring balance. The machine was practically isometric and adjustments could be made to set the lever at various angles and to adjust the lever to different heights with respect to the subject. Body weight was the most important factor when a pulling effort was made at levels above the shoulder and when a pushing effort was made at levels below the shoulder. Whatever the magnitude, the effort made by the body was most effective as regards the lever only when applied at right angles to the lever.—*T. M. Carpenter.*

1058. GELFAN, S., and R. W. GERARD. Studies of single muscle fibres. II. A further analysis of the grading mechanism. *Amer. Jour. Physiol.* 95(2): 412-416. 1930.—The response of a single muscle fibre to induction shocks applied by microelectrodes has been studied. As stimulus strength is increased the length of fibre responding and the size of the response similarly increases. This parallelism continues longest when the electrodes are finest and most closely applied to the fibre but even then, after the contraction has spread a distance of about 1 mm., an all-or-nothing response of the entire fibre breaks through with further increase of stimulus intensity. This is in accord with an interpretation of the graded responses that more accurately defines the all-or-nothing phenomenon and which is developed in the text.—*Authors' summary.*

1059. GELFAN, SAMUEL. Studies of single muscle fibres. III. Further evidence of graded responses in single fibres. *Amer. Jour. Physiol.* 96(1): 16-20. 1931.—The intact frog's sartorius gives graded contractions of single fibres in response to graded intensities of stimuli. To evoke submaximal responses in a single fibre that is fresh and uninjured, the microelectrodes must not exceed a certain size, so that the localized stimulation of the single fibre is not too diffuse. Since the response is not independent of the stimulus intensity, upon direct microstimulation, the all-or-none law for the muscle, to that extent, is not valid.—*Author's summary.*

1060. GEMMILL, C., W. BOOTH, J. DETRICK, and H. SCHIEBEL. Muscular training. II. The effect of training on the recovery period following severe muscular exercise. *Amer. Jour. Physiol.* 96(2): 265-277. 1931.—A study was made of the effect on the metabolism, ventilation, respiratory and pulse rates and blood pressure, during the recovery period following severe exercise on a treadmill in 2 subjects before and during a course of training to running. The metabolism, blood pressure, pulse rates and gross and net R.Q. for the recovery period to the standard work did not change during the training. The total ventilation of one subject (W.B.) showed a decrease in amount. For a 2nd subject (C.G.) one result before training was as low as any of the results during training. There was an increased

rate of return to normal in both subjects. The number of respirations in W.B. during the earlier portion of the recovery was less during training than before. In C.G. the rate of return to normal was increased by training. The course of the recovery period can be expressed in terms of the logistic function.—*Authors' summary.*

1061. **GERTZ, HANS. The working power in the 100 metres' race.** *Skand. Arch. Physiol.* 55(1/5): 131-143. 4 fig. 1929.—The working power is deduced from the rate with which the velocity increases during the race. Data were obtained from 3 cases in the literature. The speed attains a maximum at the end of the 3rd second and then decreases. During the period of acceleration for a runner of 75 kgm. the working power is 3 to 5 horse power. At the point of maximum speed it is 8 to 12 horse power, after which it decreases to 6 to 8 horse power.—*W. O. Fenn.*

1062. **GHIRARDI, G. E. La propagazione dell'eccitamento causato da veratrina e nicotina nel sartorio di bufo. [The propagation of the excitation from veratrine and nicotine in the muscle.]** *Arch. di Sci. Biol.* 13(1/2): 185-205. 9 fig. 1929.—Experiments on the toad sartorius (two-portions method). Nicotine and veratrine, applied by dropping in small doses on one part of the muscle, caused an excitation propagated to the other portion. Large doses evoke contracture which is propagated from the affected to the intact portion, wholly with nicotine, partially in the case of veratrine. Thus on the plateau of the veratrine contracture some spontaneous contractions appear as Bottazzi has already demonstrated. Veratrine diffuses so slowly that its presence in the untreated portion can be recognised only when the treated portion has lost all capacity for response. Contracture and spontaneous contractions are two well distinguished phenomena; the first is due to the activity of sarcoplasm, the others to the myofibrils. The results of the author support the dualistic theory of muscular activity, as set forth by Bottazzi.—*A. Jappelli.*

1063. **GOLDNER, MARTIN, HERBERT HERXHEIMER, und RICHARD KOST. Veränderungen im Komplementgehalt des Blutes nach maximaler Muskelarbeit.** *Zeitschr. Klin. Med.* 113(5/6): 553-559. 4 fig. 1930. —The study was undertaken to seek a criterion for "overtraining." The form of test effort chosen was a 1000-m. run, singly and repeated at 24-hr. intervals. The 5 subjects included 2 trained runners, 2 athletes without track training, and 1 person without athletic training. Complement was lowered, as compared with resting complement content, immediately after the effort and for 48 hrs. thereafter, in all the subjects without regard to training condition or previous experience.

1064. **HELLER, ROBERT. Permeabilität und Ermüdung. III. Die Bedeutung der Stromflusszeit für den Verlauf der Ermüdungskurve und den Wendungseffekt.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 194-229. 14 fig. 1930.—An arrangement is described for stimulation with saturation currents and with rhythmic rectangular current impulses of different durations. Continuous contractions can be obtained which are not due to tetany, since when impulses of a longer duration are used twitches are seen. A comparison of the action of rest with that of reversing the stimulating current, with respect to the restoration of the irritability of the muscle, shows that a true reversal effect can be obtained with submaximal stimuli. A muscle is more quickly fatigued by electric impulses of relatively long duration and vice versa. The recovery elicited by reversing the current, i.e., the reversal effect, is less with shorter durations. Accordingly the course and shape of the fatigue curve is dependent upon the duration and the direction of current flow, condition of muscles, the kind of muscle, the kind of stimulation (in air or liquid) and on the length of the experiment. Its fall can be abrupt or gradual. These facts are explained by the assumption that the current causes local fatigue at the cathode, and local recovery at the anode due to the permeability changes in the cell surfaces.—*J. M. Ort.*

1065. **HERZOG, FRANZ. Über die myostatische Innervation antagonistischer Muskeln.** *Deutsche Zeitschr. Nervenheilk.* 96(1/3): 23-42. 1927.—When a healthy finger is released from a flexing or extending weight it first moves in a direction opposite to the pull, then fluctuates a little and comes to rest. Arguments are presented to prove that these movements are due to the physical properties of the tissues and their quick cessation to the myostatic innervation. Tracings of this kind of behavior are given for healthy and diseased subjects. The author's most important conclusion from the analysis of the tracings is that there is a quantitative difference between the effects of the cerebellum and the corpus striatum on muscles of different functions. The former is concerned chiefly with flexors, the latter with extensors.—*H. Woollard.*

1066. **HILL, A. V., and P. S. KUPALOV. The vapour pressure of muscle.** *Proc. Roy. Soc.* [*London*] *B* 106(746): 445-477. 1930.—The increment previously reported in the rate of heat production of a muscle at rest, following stimulation in N, is due to a decrease of vapor pressure resulting from anaerobic activity. It is caused by the slow condensation of water, on its surface, from the Ringer's solution with which the muscle was previously in equilibrium. This change of vapor pressure is directly proportional to the change of osmotic pressure (or of molecular concentration) which causes it. The change of osmotic pressure set up in the fluids of a muscle stimulated anaerobically is nearly proportional to the amount of energy set free. In a frog's sartorius completely fatigued (lactic acid production 0.3%) the increase of osmotic pressure is the same as would be caused by the addition of 0.35% of NaCl to Ringer's solution. The increase of osmotic pressure in the fluids of a stimulated muscle is about 2.8 times as great as would be exerted by the lactate ions produced, if dissolved in the "free" water of the muscle. It is 1.8 times as great as would correspond to the lactate ions together with the creatine liberated by the breakdown of phosphagen. It is appreciably greater than can be accounted for by all the chemical changes at present known, or suspected, to occur in stimulated muscle. When an acid (carbonic) is added artificially to muscle, the increase of osmotic pressure corresponds approximately to the anions formed. The depression of vapor pressure of frog's blood has been measured. Its mean value is that of a 0.725% solution of NaCl. The osmotic pressure of frogs' resting muscles, assumed to be isotonic with blood, can be almost exactly accounted for by assuming the known soluble constituents of muscle to be dissolved in its "free" water. The osmotic pressure of fatigued muscles cannot be so accounted for. Presumably, therefore, some hitherto unrecognised substances are liberated as the result of activity.—*A. V. Hill.*

1067. **KAGAN, E. M., und A. S. BARSTSCHEWSKY. Physiologisch-optimale Arbeitsbedingungen beim Gewichtheben.** *Arbeitsphysiologie* 3(1/2): 120-167. 3 fig. 1930.—The object of the investigation was to determine the optimum conditions with regard to weight, rate of lifting, and height of lift as indicated by the determination of heat output and efficiency during work. Two subjects were used, F, 184 cm., 83.9 kgm., and L, 158 cm., 60.1 kgm. The gaseous exchange was measured by the Benedict apparatus during 5 min. periods of work and 15.4 min. of recovery. The weights were 5, 10, 16, 20, and 26.5 kgm. The lifts varied from 0.5 to 1.5 m. in rise and from the ground to one meter at the start. Four rates were used: 4, 8, 12 and 16 per min. Two hundred and thirty-two combinations out of 240 possible were studied in 2,078 experiments. The most advantageous condition with subject F was the lifting of 20 kgm. from 0.5 at the start to 1.5 m. with the rate of 8 lifts per min. This required an energy expenditure of 20.49 calories per kilogrammeter with an efficiency of 9.5%. For L the optimum condition was 16 kgm. 12 times per min. with a lift from 0.5 m. to 1.5 m., which required an energy expenditure of 22.7 calories per kilogrammeter with an efficiency of 10.3%. A discussion is given of the various factors influencing efficiency, par-

ticularly of the elements of energy expenditure in raising the body itself and in maintenance of body position and balance, with reference to the increase in the groups of muscles involved as the work progressed in severity. The two individuals were of such different build that these various elements did not play the same rôle under all conditions with each of them.—*T. M. Carpenter.*

1068. KANN, SUSANNE. Permeabilität und Ermüdung. V. Ermüdbarkeit und Wendungseffekt bei Reizung mit Induktionsströmen. *Pflüger's Arch. Ges. Physiol.* 225(2/3): 265-297. 9 fig. 1930.—After fatigue of the isolated frog gastrocnemius with a tetanizing current a typical reversal effect can be observed, i.e., recovery can be obtained by reversing the current. The muscle, being polarizable, prevents the "make" in the induction primary from causing much flow in the stimulating circuit. Hence stimulation with only the "break" impulses gives the same fatigue curve as with both make and break acting simultaneously. The value of the reversal effect in both cases decreases with increasing strength of stimuli. Fatigue appears quicker when only make stimuli are used, and therefore the reversal effect is greater for all strengths of stimuli and for both current directions after stimulation by make than by break impulses. This agrees with Heller's previous work on the effect of the time interval of current passage. Fatigue from very short lasting break stimuli is recovered from faster by rest than by an equally long lasting reversal current at the start of an experiment but about equally at the end. For fatigue from make impulses the reversal effect is more powerful than rest towards the end. Recovery from fatigue from rhythmic condenser discharges is more rapid by the reversal effect when the time interval of each current impulse is comparatively long, but if this time interval be made rather short, rest is about equally effective. These phenomena are explained by the assumption that the membrane processes at the cathode are two:—that due directly to the stimulating current and that due to the wave of excitation. Only the latter is also the same at the anode, where the direct effect of the current is antagonistic. With short lasting currents therefore the reversal effect is small and dependent on the strength of the impulse because with this, the intensity of the excitation wave itself changes.—*J. M. Ort.*

1069. KATZENSTEIN, WALTER F. Über die Veränderung der Elastizität des Bindegewebes durch die Ermüdung. *Zeitschr. Ges. Exp. Med.* 74(5/6): 575-585. 1930.—Experiments were carried out to see if fatigue changes the elasticity of connective tissues. This was shown on living animals by excluding all other influences. By means of a cannula the knee joint was punctured and the capacity of the joint was determined by injecting water under uniform pressure. 4 preparatory experiments showed equal capacities on the right and left sides. In 8 regular experiments involving flexion and extension of one of the knees 3000 times, an increased capacity was found on the fatigued side, showing that the elasticity was decreased. Control experiments on 4 dogs fatigued by running on treadmills gave the same results. The size of the joints was shown graphically. The elasticity of connective tissue depends therefore upon the functional ability of the tissue, and is not constant.—*Author's summary (transl. by M. Seham).*

1070. KISSELEFF, M. Die Reaktion des M. quadriceps bei gleichzeitiger Beugung der beiden hinteren Extremitäten der decerebrierten Katze. *Pflüger's Arch. Ges. Physiol.* 225(2/3): 357-363. 2 fig. 1930.—The simultaneous passive extension of both knee-extensors in decerebrate animals produces a greater muscular tension and a greater action current than does extension on only one side. The biological significance of this reaction in the act of standing is discussed.—*Author's summary (transl. by H. R. Street).*

1071. LINDHARD, J., and JENS P. MÖLLER. On the origin of the initial heat in muscular contraction. *Kgl. Danske Videnskab. Selskab. Biol. Meddel.* 8(8): (1-21). 1930.—The authors find theoretical objection to explaining the initial outburst of heat in a muscular contraction as due to the development of tension. It is shown that the sartorius muscle changes its shape even in an isometric contraction. This is due to the tapering shape of the fibres which permits the large end to shorten slightly while the small end is stretched. This change in shape involves a loss of potential energy and hence a production of heat which is believed to be the explanation of the initial outburst of heat. A further loss of potential energy would occur with further shortening and the accompanying heat production is believed to explain the increased excess heat produced when a muscle does work, thus disposing of "the only remnant of the theories of Fenn."—*W. O. Fenn.*

1072. LUNDSGAARD, EINAR. Inwiefern beeinflussen Eiweissstoffe und deren normale Abbauprodukte den Zuckergehalt des Blutes? *Biochem. Zeitschr.* 217(1/3): 125-146. 1930.—The amino-acid hyperglycemia of Pollak and Nord is demonstrated to be a toxic phenomenon only to be produced by parenteral administration of amino acids in very large amounts. Oral administration of amino-acids to rabbits, amino-acids and meat to dogs and meat to humans in large quantities has no influence on the sugar content of the blood.—*E. Lundsgaard.*

1073. LUNDSGAARD, EINAR. Über die Ursache der Aminosäurehyperglykämie. *Biochem. Zeitschr.* 217(1/3): 147-161. 1930.—A hyperglycemia can be produced by NH_4 salts in doses which raise the content of ammonia in the blood to 0.65 mgm. %. When a hyperglycemia is produced by amino-acids the content of ammonia in the blood is somewhat raised but by no means to this level. The amino-acid hyperglycemia seems to run parallel to the amino-acid content of the blood and is not identical with the hyperglycemia produced by NH_4 salts.—*E. Lundsgaard.*

1074. LUNDSGAARD, EINAR. Untersuchungen über Muskelkontraktionen ohne Milchsäurebildung. *Biochem. Zeitschr.* 217(1/3): 162-177. 1 fig. 1930.—Muscles of frogs poisoned with iodo-acetic acid are able to perform a prolonged series of contractions without any formation of lactic acid. When exhausted they become rigid. In muscles working without formation of lactic acid a breakdown of creatine-phosphoric acid much more rapid than in normal muscles takes place. It is suggested that the breaking down of c-ph acid produces the energy for the contractions of the poisoned muscles. Calculations of the energy-output from the chemical changes in normal and poisoned muscles support this view.—*E. Lundsgaard.*

1075. MORAN, T. The frozen state in mammalian muscle. *Proc. Roy. Soc. [London] B* 107(749): 182-187. 1930.—When mammalian muscle is frozen there is a breakdown in the structure of the muscle which is shown by the free fluid which drains away on thawing. Recent work on the freezing of living tissues has shown that the effects of freezing and desiccation are identical. The present work was undertaken to fix the amounts of water frozen out from muscle at different temp. At $-20°$ C. 94-98% of the water in the muscle is present as ice, indicating that the amount of "bound" water is not greater than 6% of the total water in the muscle.—*T. Moran.*

1076. MÜLLER, E. A. Der Einfluss der Kontraktionsgeschwindigkeit auf den Energieverbrauch bei einer statischen Arbeit. *Arbeitsphysiologie* 3(4): 298-308. 6 fig. 1930.—The experiments were made on the flexors of the elbow contracting isometrically against a U shaped steel spring the movements of which were recorded. The energy expenditure of the subject was measured by the Benedict respiration apparatus. By varying the duration of maintenance of tension from 0 to 14 sec., it was found that the energy expenditure per sec. per Kgm. of tension was 2.6 gram calories when 20 kilograms tension was maintained. It was also found that the energy expended in developing the desired tension varied with the duration of the rise of tension when the time varied from 0.3 to 1.5 sec., but at faster rates, there was an increase in energy expenditure. For the conditions of the experiment, the energy expenditure per unit of time in the rise of tension was equal to ½ the energy pro-

duction during the maintenance of the same tension. The optimal time of rise of tension is proportional to the tension attained. The shorter the load arm is with a definite external load, the smaller is the optimal time for rise of tension. The energy expenditure in the rise of tension in the optimal time increases faster than the increase in the distance of the load from the elbow.—*T. M. Carpenter.*

1077. **NISHIMURA, KIKUGORO.** Lactic acid in the muscle of the octopus. *Acta Scholae Med. Univ. Imp. Kioto* 12(1): 83-85. 1929.—Evidence is presented to show that the autolytic production of lactic and phosphoric acids in *Octopus* muscle incubated for 72 hrs. at 37° C. is increased in the presence of carbohydrate (glucose) or $CaCl_2$. Optimum concentrations appear to be 2% of glucose or 0.1% of $CaCl_2$. Lactic acid was isolated by Matsumoto's method and estimated gravimetrically. Neumann's method was used in the estimation of phosphoric acid.—*P. W. Smith.*

1078. **OSTERHOUT, W. J. V., and E. S. HARRIS.** Bioelectrical aspects of the all or none law. *Proc. Soc. Exp. Biol. & Med.* 26(9): 838-842. 1929.—Muscle and nerve fibers respond to a stimulus as though they were in electrical series, the inactive fibres acting as shunts. A formula for determining the potential difference of the stimulated muscle is suggested. Experiments with *Nitella* in which strands of cells were bound together to simulate muscle but permit study of separate strands uphold this view.—*M. B. Garnett.*

1079. **PRYDE, JOHN, and EDWARD THOMAS WATERS.** The nature of the sugar residue in the hexosemonophosphoric acid of muscle. *Biochem. Jour.* 23(3): 573-582. 1929.—The hexosephosphoric acid of normal muscle-press juice from rabbit, goat and donkey is a monophosphoric acid. The diphosphoric acid is only obtained when the fermentative resynthesis using NaF is employed. Evidence on the nature of the sugar residue in hexosemonophosphoric acid was obtained by oxidation to the corresponding hexonic acid by the use of bromine, and the subsequent removal of the phosphoric acid group with 10% H_2SO_4 in a sealed tube at 100°. The pure hexonic acid showed changes in specific rotation when heated similar to those obtained with gluconic acid when similarly treated, from which it is concluded that the aldose of hexosemonophosphoric acid is d-glucose. The Willstätter-Schudel oxidation indicates the presence of 90% aldose in the hexose of the acid, and since after the oxidation the solution still reduced Fehling's solution the presence of a ketose accounting for the remainder of about 10% is indicated.—*McKeen Cattell.*

1080. **RIABUSCHINSKY, N. P.** Einfluss der Darreichung von Phosphaten per os auf die Arbeitsfähigkeit und den Gaswechsel. [The effect of oral administration of phosphate on working capacity and gaseous metabolism.] *Zeitschr. Ges. Exp. Med.* 72(1/2): 20-31. 4 fig. 1930.—The oral administration of supplementary amounts of phosphates to 4 experimental persons raised the capacity for effort in varying degree. The experiments furnished no evidence of a specific lessening of the need for O through the action of phosphate during work.—*From author's summary (transl.).*

1081. **SAMOJLOFF, A.** Über die reflektorische Plastizität des Muskels beim decerebrierten Tier. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 782-789. 3 fig. 1930.—It is shown that the appearance of reflex plasticity in the M. quadriceps of decerebrate cats is dependent in the highest degree upon the condition of the same muscle on the other side. If the M. quadriceps of one leg is fixed in a condition of marked extension, then in the M. quadriceps on the other side no plasticity at all may be produced: if, on the other hand, one M. quadriceps is kept in a condition of strong passive shortening then in the other muscle plasticity appears at once. It is shown that each degree of flexion of one knee corresponds to a definite degree of flexion of the other. But there is, ceteris paribus, a certain angle of flexion which is the same for both extremities.—*Author's summary (transl. by H. R. Street).*

1082. **SCHEMINZKY, FERDINAND, und FRIEDRIKE SCHEMINZKY.** Permeabilität und Ermüdung. II. Ist der Wendungseffekt durch die Reizung neuer Fasern oder durch Grenzflächenänderungen schon erregter Fasern bedingt? *Pflüger's Arch. Ges. Physiol.* 225(2/3): 145-193. 14 fig. 1930.—After fatigue of frog muscle had been produced by a series of rhythmic unidirectional electric currents, recovery could be obtained by a reversal of the current direction in half the time required for recovery by rest alone. If after fatigue has been so produced, the muscle be further stimulated by stronger shocks, the restoration by current reversal may be more than 10 times as speedy as that from rest. The data show that the reversal effect can occur with the stimuli either maximal or submaximal. It is concluded that fatigue is a local effect at the cathode due to a permeability increase. The reversal effect is then the reversal of this increase of permeability when the cathode becomes the anode, i.e., a physical chemical change at surfaces. The significance of the swelling and shrinking due to the water transport of electro-osmosis is also discussed. The fatigue due to a definite current direction, kind of stimuli, current strength and frequency of stimulation is defined as the "relative fatigue." The amount of the total available energy of the muscle that has been used up is called the "absolute fatigue."—*J. M. Ort.*

1083. **SCHUSTER, M.** Biochemisches Kriterium des Arbeitswertes und der konstitutionellen Eigenschaften bei Pferden. 2. Teil: Quantitatives Verhältnis zwischen Milchsäure und anorganischer Phosphorsäure im Zusammenhang mit dem Arbeitswert und der Konstitution. *Zeitschr. Zücht. Reihe B. Tierzücht. u. Züchtungsbiol.* 18(3): 423-432. 1930.—Blood tests taken after fast running offer the best method of judging the working capacity of the organism. Such tests show: (1) there is no correlation between lactic acid and P_2O_5 variation; (2) the amount of increase in lactic acid concentration depends upon speed; (3) P_2O_5 increases after work except in horses in group III, in which it decreases, but is not influenced by the intensity of the work and shows no correlation with the other components.—*Author's summary (transl. by M. E. Collett).*

1084. **SMITH, E. C.** The heat of rigor of mammalian muscle. *Proc. Roy. Soc. [London] B* 107(750): 214-222. 1930.—The heat evolved by normal rabbit's muscle during the process of stiffening in rigor mortis can be attributed entirely to the breakdown of glycogen to lactic acid. In starved animals there is evidence that other reactions contribute to the evolution of heat.—*E. C. Smith.*

1085. **SOLUN, A. S.** Biochemisches Kriterium des Arbeitswertes und der konstitutionellen Eigenschaften bei Pferden. 1 Teil: Quantitative Verhältnisse zwischen Milchsäure, Blutzucker und Alkalireserve im Blute im Zusammenhang mit der Arbeitsleistung beim Pferde. *Zeitschr. Zücht. Reihe B. Tierzücht. u. Züchtungsbiol.* 18(3): 398-422. 1930.—The lactic acid, blood sugar and alkaline reserve vary considerably even in the resting state in horses. It is therefore difficult to ascertain the exact effect of activity, although the differences become clearer with severe exercise. In rapid work lactic acid and blood sugar increase and alkaline reserve decreases: the change is most evident in the case of blood sugar. The best horses show the least change, and with training the amount of change is further diminished.—*Author's conclusions (transl. by M. E. Collett).*

1086. **SNAPPER, I., und A. GRÜNBAUM.** Über den Abbau von Diacetsäure und β-Oxybuttersäure in den Muskeln. *Biochem. Zeitschr.* 201(4/6): 464-472. 1928.—Even after removal of both kidneys diacetic and β-oxybutyric acids disappear rapidly from the blood after intravenous injection. Similarly in perfusions of the hind legs of dogs 45-75% of the added β-oxybutyric acid is broken down without appearing as diacetic acid. Diacetic acid added under similar conditions is broken down (80%) or appears in the tissue as β-oxybutyric acid (20%). In perfusions of calves' tongues 13-40% of the added β-oxybutyric acid is broken down while 29-67% of the added diacetic acid is found in the tissues as β-oxybutyric acid.—*W. O. Fenn.*

1087. UFLAND, I. M. Zur Frage der Untersuchung der Muskelchronaxie beim Menschen. *Pflüger's Arch. Ges. Physiol.* 226(1): 47-57. 1 fig. 1930.—Using on over 800 subjects a technique similar to that employed by Bourguignon, the author confirms Bourguignon's value for the biceps brachii (0.08-0.166), obtains slightly higher figures than Bourguignon for the extensor digitorum communis, for which he confirms Lewy's result (0.4-0.86) for males, which he raises to 1.6 as the upper normal limit for females. An antagonist, flexor digit. comm. prof., varied from values 1.1 to 5 times those of the extensor. Values for women are found to average higher than those for men, those for the right hand often higher than those for the left among both right and left handed subjects. Variations in chronaxie are far smaller than those of rheobase.—*G. P. McCouch.*

1088. WACHHOLDER, KURT, und JOACHIM Freiherr von LEDEBUR. Untersuchungen über "tonische" und "nichttonische" Wirbeltiermuskeln. I. Die Umklammerungshaltung des Frosches und die Schutzhaltung der Schildkröte; ihre spezifische Nachahmung durch muskuläre Acetylcholinwirkung. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 627-642. 1 fig. 1930.—The clasping posture of a frog and the defence posture of a tortoise (drawing the head, extremities and tail back under the shell) are described in detail. Both of them can be imitated in a quite normal manner by the purely muscular action of acetylcholin. This is based upon the fact that acetylcholin has specific selective action in causing a strong protracted contraction only in the clasping muscles or the retractors but not at all or at least considerably less in their antagonists. The same difference exists also for other stimuli, especially for a mechanical stimulus. The finding first brought out by Sommerkamp that the skeletal muscles of a frog in their reaction to acetylcholin can be noticeably differentiated as "tonic" and "non-tonic" is therefore confirmed and at the same time extended to the tortoise. Above all it is shown that the distribution of the "tonic" and "non-tonic" muscles is in no case accidental but highly serviceable in promoting the security of the above mentioned biologically important postures of long duration.—*Authors' summary (transl. by P. S. Kupalov).*

1089. WACHHOLDER, KURT. Untersuchungen über "tonische" und "nicht, tonische" Wirbeltiermuskeln. II. Acetylcholin- und Tiegelsche Contractur in ihren Beziehungen zueinander und zur tetanischen Kontraktionsform. Die Plastizität der beiden Muskelarten. *Pflüger's Arch. Ges. Physiol.* 226(2): 255-273. 12 fig. 1930.—Following Sommerkamp's nomenclature, those muscles or parts of muscles which react to acetylcholin with a strong, long sustained contracture are classed as "tonic." In such muscles Tiegel's contracture is clearly elicited. Only exceptionally is it found in muscles which do not develop contracture with acetylcholin. Both types of contracture are prevented or reduced by atropin and by weak stimulation. Tiegel's contracture is shown to be too great in amplitude to be explained as a local cathodal contraction. Isotonic submaximal twitches and tetani may be increased in amplitude by acetylcholin but maximal tetani are not. Since tetanus and contracture tend to fatigue synchronously, the author inclines to the view that they involve identical contractile elements. He considers "tonic" muscles to be more plastic than other muscles.—*G. P. McCouch.*

1090. WACHHOLDER, KURT. Untersuchungen über "tonische" und "nicht tonische" Wirbeltiermuskeln. III. Verschiedenes Verhalten bei ermüdender Reizung. *Pflüger's Arch. Ges. Physiol.* 226(2): 274-291. 10 fig. 1930.—Employing as a "tonic" muscle the coraco-radialis and as "non-tonic" muscles the deltoid and triceps of the frog, the "tonic" muscle is found more resistant than the "non-tonic" muscle to fatigue, induced by repeated submaximal or maximal induction shocks. On the other hand, strongly supramaximal shocks fatigue the "tonic" muscle more readily than the "non-tonic." The amplitude of the twitches of the fatigued, contractured "tonic muscle" is increased by repeated stretching. This is not the case in the "non-tonic" muscle which shows no contracture.—*G. P. McCouch.*

1091. WESTENRIJK, N. Zur Frage der Veränderungen des Blutes und der Blutzirkulation beim Wettschwimmen. *Zeitschr. Klin. Med.* 106(1/2): 178-182. 1927.—Swimming 100 meters caused an increase in heart rate. Lymphocytes and "Stabkernigen" cells increased in the blood and there was an appearance of young cells. Neutrophiles decreased. Swimming one mile caused an appearance of young cells and myelocytes, an increase in "Stabkernigen" and neutrophiles, and a decrease in lymphocytes. Running for 40 km. is necessary to bring about a similar change in the blood picture.—*H. M. Krueger.*

1092. WINTERSTEIN, HANS. The metabolism of the local excitatory process and of the propagated disturbance in nervous tissues. *Science* 71(1851): 641-643. 1930.—Stimulation of frog nerve and dog-fish spinal cord inside a respiratory chamber was found to cause a distinct increase in O intake; stimulating these tissues outside caused no measurable increase. The author believes that the increase in oxidation is only an artificial result of the electrical stimulation. Increased sugar consumption by stimulated nervous tissue, however, he believes to be a true manifestation of physiological excitation.—*J. M. D. Olmsted.*

1093. WÖHLISCH, EDGAR. Muskelkontraktion, chemische Kontraktur und Totenstarre. [Muscle contraction, chemical contracture, and rigor mortis.] *Naturwiss.* 18 (45): 931-934. 1930.—The author gives a comprehensive presentation of his previously published conception of the mode of action of acids on muscles. Acids in themselves are unable to shorten the muscle fibrils. The so-called acid contracture of muscle is probably due to shortening of the collagen fibrils by acid action. The thermoelastic behavior of muscles in rigor mortis led the author to discard the acid theory of its production. The conception that acid contracture is really a collagen contracture received confirmation in the experiments of P. Weiss on the tail musculature of *Ciona intestinalis,* which, known to be collagen-free, suffers no contracture in acids, but does give a characteristic chloroform contracture.—*E. Wöhlisch (transl. by F. F. Heyroth).*

ANIMAL PHYSIOLOGY

VASCULAR SYSTEM

(See also in this issue Entries 134, 170, 261, 263, 291, 310, 366, 375, 392, 662, 663, 712, 713, 737, 742, 774, 831, 848, 947, 1020, 1033, 1034, 1091, 1148, 1161, 1169, 1175, 1183, 1193, 1214, 1232, 1239, 1248, 1286, 2497)

1094. ALLEN, WILLIAM F. An experimentally produced premature systolic arhythmia (Pulsus bigeminus) in rabbits. II. Secondary factors which do not produce it. *Amer. Jour. Physiol.* 95(1): 190-201. 1930.—Closure of the trachea and inhalation of air with high CO_2 for the same and much longer periods than are represented by the arrest of respiration in insufflation tests have not produced a bigeminal pulse. Apnea following forced artificial respiration has not evoked a bigeminal arhythmia. A bigeminal pulse is readily obtained from benzol insufflation in rabbits having a double pneumothorax and artificial respiration. A bombardment of sudden rises in blood pressure from compression of the aorta or adrenalin has not effected a bigeminal pulse. These rises in pressure were identical or more pronounced and of longer duration than the rise following benzol insufflation. A bigeminal pulse is elicited from benzol insufflation in rabbits in which blood pressure

was prevented from rising—a, by use of an equalizer; b, by ergotamine; c, by sectioning the spinal cord in the middle thoracic region. Asphyxia from occlusion of the trachea causes a more pronounced pulse than insufflation of benzol and there is no arhythmia. Many bigeminal pulse arhythmias have been obtained from benzol insufflation without any preceding alteration of the pulse. The normal reaction of blood pressure to benzol insufflation is not one generally associated with the production of anemia in the brain. Crossed circulation experiments show that there are no substances in the blood of a rabbit having an experimentally produced bigeminal pulse which will call forth a similar arhythmia in a 2nd rabbit. Stimulation of the carotid sinus by mechanically produced rises in blood pressure has not caused a bigeminal arhythmia. A bigeminal arhythmia is easily obtained from benzol insufflation or mechanical stimulation of the nasal septum in rabbits having their carotid sinuses extirpated or the sinuses denervated and ligated above and below. So it appears that asphyxia, mechanical or lack of mechanical stimulation from the arrest of respiration, sudden changes in blood pressure and pulse, brain anemia, secretions or other substances in the blood are not secondary factors for eliciting a bigeminal pulse in the insufflation experiments. If this is true, this arhythmia must be produced by direct nervous influence on the heart. In the insufflation experiments there is no evidence that the carotid sinus functions as an afferent center for producing an arhythmia.—*Author's summary and conclusions.*

1095. **APPELROT, SAMUEL, and A. J. CARLSON. The influence of the vago-sympathetic nerves on the ventriculo-aortic tonus in the turtle.** *Amer. Jour. Physiol.* 95(1): 56-63. 1930.—Independent ventriculo-aortic tonus waves were recorded in the turtle preparation described [from *Emys blandingii*]. The ventriculo-aortic tonus waves are not influenced by stimulation of the vago-sympathetic nerves. Temperature elevation causes an increase of the ventriculo-aortic tonus waves, while cold has the opposite effect. The most favorable temp. for the tonus mechanism is higher than that for the other forms of cardiac rhythm. Co_2 in high concentration stimulates the ventriculo-aortic tonus mechanism. High concentration of O has no effect on the tonus. Adrenalin in concentrations used causes a depression of the tonus mechanism. Ergotamine has no effect.—*Authors' conclusions.*

1096. **APPELROT, SAMUEL. Sex and seasonal variations in excitability of the cardio-inhibitory mechanism of frogs and toads.** *Amer. Jour. Physiol.* 95(1): 242-249. 1930.—Vagal stimulation on the heart in *situ* in 58 toads and 42 frogs showed sex differences in response (more marked and consistent cardiac inhibition in ♀♀). A possible explanation of the occasional occurrence of inhibition in ♂ hearts is suggested in Cheng's finding of ovarian elements among the testicular tissues of normal ♂ frogs. Refractory hearts of 10 ♂ and 10 ♀ frogs could be sensitized to give an inhibition response by pouring over them crude extract of (in order of decreasing effectiveness) heart, liver, brain, skeletal muscle, ovaries or lungs of responsive frogs; control extracts of 5 refractory hearts did not so sensitize other refractory hearts.

1097. **BARCROFT, JOSEPH, and J. J. IZQUIERDO. The relation of temperature to the pulse rate of the frog.** *Jour. Physiol.* 71(2): 145-155. 1931.—The effects of temp. on the excised heart were compared with that on the pulse rate in the intact animal, differences, if any, were observed, and tests were made to determine whether these differences were due to nervous influences. The excised frog's heart studied in winter usually gave a linear relationship between the logarithm of the frequency of the sinus beat and the reciprocal of the absolute temp. between 5° and 20° C. The value of Q_{10} varied in the minority of cases, as the temp. rose the frequency decreased as compared with the above relationship. Most of these cases could be claimed by Crozier as examples of one or other of his patterns, but they did not all conform to the same pattern. In the intact frog in winter the results were irregular. The excised heart of the frog in summer showed a different property. The frequency bore a nearly linear relation to the temp. This was true also of the heart of the intact frog. The relation of the frequency to the temp. was little, if at all, influenced by doses of atropine of the strength which just sufficed to block the vagus. Results confirm those of observers who regard vagus tone as practically absent in the heart of the resting frog.

1098. **BATSON, OSCAR V., and SAMUEL BELLET. The reversal of flow in the cardiac veins.** *Amer. Heart Jour.* 6(2): 206-224. 8 fig. 1930.—The myocardial capillary bed has 3 sets of connecting vessels. Named in the order of their embryological appearance and function these are: the sinusoidal vessels (in which are included the Thebesian veins), the cardiac veins, and the coronary arteries. With the elimination of the arteries as in double coronary occlusion, the mode of irrigation of the capillaries has not been understood. The direction of flow in the cardiac vessels joining the right heart was investigated under conditions simulating double coronary artery occlusion. Particles too large to pass through the lungs were injected into the veins, toward the heart, in [9] anesthetized, heparinized dogs. These particles were uniformly found in the coronary sinus and the coronary veins. Their size was too great, and the arborizing and anastomosing veins were too small to allow for any course of flow other than from right atrium to veins. The sinusoidal vessels (Thebesian veins) were excluded as a possible source of these particles in the veins, although irrigation of the capillaries in part, by them, was not excluded. With a low pressure in the capillary bed (as in cases of double coronary occlusion or as in the authors' experiments), flow in the veins during atrial systole is probably toward the capillary bed, the capillary bed being emptied during the ensuing ventricular systole. In arterial occlusion this would give a flow and ebb circulation for the myocardial capillaries by way of the veins. This irrigation by venous channels may explain the disappearance of pain in angina pectoris, with the inception of complications accompanied by a fall in the coronary artery pressure.—*Authors' summary.*

1099. **BIETER, RAYMOND N., and F. H. SCOTT. Blood pressure and plasma protein determinations in the same frog.** *Amer. Jour. Physiol.* 91(1): 265-274. 1 fig. 1929.—A new method for obtaining values of blood pressure in the intact frog is described. The findings obtained by this method are thought to be within the limits of error since they have been confirmed by blood pressure tracings produced with calibrated Huerthle and Harvard membrane manometers. Normal blood pressure in frogs shows an average blood pressure for *Rana pipiens* equal to 30.5/21.1 mm. Hg, and for *Rana catesbiana*, 32/21.2 mm. Hg. Blood pressure values in frogs show rather marked variations as a result of struggling and excitement, as is the case in mammals and man. Plasma protein percentages obtained by precipitation with trichloracetic acid show for *R. pipiens* an average of 2.71 and for *R. catesbiana* an average of 3.83. Plasma proteins and blood pressures in frogs tend to show some variations, but the variations in a given frog seem to affect both values in the same direction. Fluid drawn into the blood in frogs after hemorrhage appears to be protein-free as in mammals. The findings of Hayman (1927) for general systolic blood pressures in frogs have been confirmed. The averages given here are higher than those of Hayman, however. This, in all probability, is due to the fact that the frogs used by Hayman were anesthetized, or pithed, and prepared surgically for the observations. Such procedures tend to reduce the general blood pressure. There is sufficient diastolic blood pressure in the frog to over-balance the osmotic pressure of the proteins. Using Hayman's figure to determine diastolic glomerular capillary pressure, there is again sufficient blood pressure to over-balance the osmotic pressure of the proteins.—*Authors' summary.*

1100. BLALOCK, ALFRED. Observation upon the blood flow through skeletal muscle by the use of the hot wire anemometer. *Amer. Jour. Physiol.* 95(3): 554-560. 2 fig. 1930.—The alterations in the flow of blood to and from skeletal muscles which were caused by stimulation of the motor nerve have been determined by the use of the hot wire anemometer [on the hind legs of the frog and the gastrocnemius of the dog]. Muscular contraction produced by a single stimulus produces a momentary diminution in arterial inflow and increase in venous outflow. Tetanic contraction is associated with a decrease in arterial inflow as long as the muscle remains contracted and an initial increase in outflow followed by an almost complete cessation of flow. Relaxation of the muscle is followed by a greater flow than existed before the stimulation. If the muscle is stimulated until fatigued, there is an increase in both arterial inflow and venous outflow. Division of the nerve to a muscle greatly increases the flow of blood through it. If sufficiently heavy weights are suspended from the tendon of a muscle, the flow of blood through the muscle almost completely stops. The flow increases when the weights are lifted. Although the vasomotor nerves are responsible for a small part of the alterations in flow produced by stimulation of the nerves to muscles, the major effects are due to the mechanical shortening and lengthening of the muscle fibers. The effects of contraction upon the flow of blood are similar in cardiac and skeletal muscles.—*Author's summary.*

1101. BLUMGART, HERRMAN L., SAMUEL L. GARGILL, and DOROTHY ROURKE GILLIGAN. Studies on the velocity of blood flow. XIII. The circulatory response to thyrotoxicosis. XIV. The circulation in myxedema with a comparison of the velocity of blood flow in myxedema and thyrotoxicosis. XV. The velocity of blood flow and other aspects of the circulation in patients with "primary" and secondary anemia and in two patients with polycythemia vera. *Jour. Clin. Investigation* 9(1): 69-89; 91-106; (4): 679-692. 1930/1931.—XIII. Measurements (27 series) were made in 13 patients with thyrotoxicosis in order to correlate the clinical manifestations with changes in the velocity of blood flow through the lungs, the basal metabolic rate, pulse rate, venous and arterial pressures and vital capacity of the lungs. Measurements made when the basal metabolic rate was elevated were compared with subsequent measurements when the rate was reduced. There was a general but inexact relation between the degree of elevation of the pulse rate and the increase in the basal metabolic rate. No significant deviations from the normal were observed in the venous blood pressure before or after treatment. Diminution in the vital capacity of the lungs was an inconstant finding. With a decrease in the basal metabolic rate, the vital capacity of the lungs tended to increase. The velocity of blood flow was strikingly increased so that the pulmonary circulation time was the fastest yet recorded in man. The increase in velocity of blood flow through the lungs was proportional to the degree of elevation in the basal metabolic rate. This emphasizes the strain under which the heart labors in thyrotoxicosis. In 9 patients with thyrotoxicosis but without circulatory failure, the basal metabolic rate averaged 33% above normal, while the velocity of blood flow through the lungs averaged 83% above the normal. In 4 thyrotoxic patients with similar basal metabolic rates but with cardiovascular disease, the velocity of blood flow was slightly slower. The fact that the latter group of patients experienced dyspnea on slight exertion emphasizes the close interdependence of the circulatory-respiratory-metabolic mechanism. When the basal metabolic rate was lowered by the administration of compound solution of I or by operation, the velocity of blood flow was correspondingly slowed. XIV. Measurements (16 series) were made in 7 patients with myxedema in order to correlate the clinical manifestations with changes in the velocity of blood flow, basal metabolic rate, pulse rate, plasma volume, venous and arterial pressures, respiratory minute volume and vital capacity of the lungs. In each patient measurements when the basal metabolic rate was low were compared with subsequent measurements when the basal metabolic rate had been elevated to normal by appropriate doses of thyroid gland by mouth. The plasma volume per kgm. of body weight was low and tended to increase on administration of thyroid gland. The pulse rate was low and bore a rough relationship to the basal metabolic rate. As the metabolism rose the pulse rate approached normal. The venous pressure was within the limits of normal in all 7 patients. XV. The degree to which increased blood flow compensates for a deficient concentration of hemoglobin was studied in patients with pernicious anemia, with secondary anemia and carcinoma, and with secondary anemia due to causes other than carcinoma. Complete series of measurements (32) of the vital capacity of the lungs, the blood plasma volume, the pulse rate, the arterial and venous blood pressures, and the velocity of blood flow through the lungs and from the arm to the heart were made in 29 subjects. In patients with "primary" anemia or with secondary anemia not due to carcinoma, the velocity of blood flow through the lungs tended to increase in proportion to the degree of anemia. The increased burden on the cardiovascular system is accentuated by exertion and serves to explain the frequent presence of dyspnea in severely anemic patients and also the alleviation of angina pectoris in such patients after improvement in the condition of the blood. The average concentration of hemoglobin was practically the same in patients with anemia due to carcinoma as in patients with pernicious anemia but the velocity of pulmonary blood flow in the former group was relatively slower. This serves to explain why symptoms such as dyspnea, signs of congestive failure, peripheral edema, weakness and cynosis are frequently more pronounced in patients with carcinoma than one would expect on the basis simply of anemia, malnutrition or toxicity. In contrast to the unusually rapid blood flow in patients with anemia, 2 subjects with polycythemia vera showed definite retardation of the blood flow below the average normal; the characteristics of the blood in this condition are the reverse of those present in anemia and the circulatory adjustment is correspondingly altered. In a previous study of the velocity of blood flow and related functions of the circulation in pulmonary emphysema evidence was presented which suggested that the circulation was accelerated to compensate for the defect in "external respiration." In this communication evidence is presented which indicates that, similarly, in patients with anemia, the circulation is accelerated to compensate for failure of the "internal respiration."—*Authors' summaries and conclusions.*

1102. BORCHARDT, W. Die Bedeutung der Gefässreaktionen des peripheren und des Splanchnicusgebietes für den Tropenbewohner. *Arch. Schiffs- u. Tropen-Hyg.* 35(2): 69-73. 1931.—With increased blood supply to peripheral vessels in persons living under tropical conditions the venous blood is light red in color. This is considered due to the diminution in local metabolism caused by exposure to tropical heat. The important question is, where does the increased blood supply come from and by what means is the redistribution accomplished? The author repeated the experiments of others under conditions simulating in so far as heat and moisture were concerned those encountered in a tropical climate. He adopted the method of partial or differential weighing, i.e., the individual was so arranged that variations in the weight of 3 segments of the body could be noted on kymographs. These segments were the head and chest, abdomen and pelvis and finally the lower extremities. Temperature was maintained at 33°-34° C. with a saturation of 90-95% during each experiment. Borchardt found that heat stimuli caused a redistribution of the blood in the sense that it was released from the internal organs and flooded the peripheral areas of head, thorax and extremities. The conclusion is that this readjustment is

caused by a reflex contraction of the vessels of the splanchnic area and represents a protective mechanism, which is physiological in contradistinction to the widely accepted physical conception of heat regulation.—*L. C. Scott.*

1103. BRADBURN, HUBERT B., and ALFRED BLALOCK. The relationship of changes in blood-flow through an extremity to (1) changes in temperature of tissues, (2) differences in oxygen content of the arterial and venous blood, and (3) cardiac output. *Amer. Jour. Physiol.* 91(1): 115-122. 1929.—Changes in temp. in any area of the leg do not bear any constant relationship to alterations of (a) total flow of blood through the entire extremity, or (b) difference in O content of the blood from the femoral artery and vein, or (c) total O consumption of the body, or (d) output of the heart. It is thought that the temp. of any particular area is an index of the flow through that part. Changes in the difference in the O content of blood from the femoral artery and vein indicate alterations in the flow of blood through the leg but the relationship between these changes is not always proportional. In these experiments alterations in the flow of blood through the leg parallel roughly changes in cardiac output but bear no relationship to the small variations in the O consumption of the body.—*Authors' summary.*

1104. CLARK, A. J., C. P. STEWART, and R. GADDIE. The metabolism of the frog's isolated heart. *Proc. Roy. Soc. Edinburgh* 50(3): 297-303. 1929-1930.—The authors measured the respiratory exchange of the isolated frog's heart, and also estimated the carbohydrate and fat content of the hearts and perfusion fluids. The isolated heart of the frog used very little carbohydrate. Even in the presence of serum, glucose and insulin the oxidation of carbohydrate represented less than 20% of the total metabolism and the respiratory quotient was less than 0.9. The perfused frog's heart excreted nitrogenous compounds into the Ringer's fluid and the quantity excreted was sufficient to account for about half the O consumed. There was no evidence for oxidation of fats.—*A. J. Clark.*

1105. CLARK, G. A. The selective vaso-constrictor action of pituitary pressor extract. *Jour. Physiol.* 70(1): 53-59. 1930.—In anesthetized cats injection of the pressor fraction of posterior pituitary extract invariably caused intense pallor of the intestine, the degree of blanching being much greater than that after an injection of adrenalin which produced an equal or even a greater rise in general blood-pressure. This last observation suggested that the redistribution of blood in the body following injection of pitressin might differ from that after adrenalin. An investigation was therefore begun, using the plethysmographic methods described earlier. The majority of experiments were made on cats anesthetized with chloralose, but observations were also made on cats under amytal or urethane anesthesia and on decerebrated cats; both vagi were cut in all cases. Results indicate that pituitary pressor extract (pitressin) given intravenously to cats, anesthetized with chloralose or decerebrated, causes a redistribution of blood in the body so that the intestine contains much less and the muscles contain more; the skin and connective tissues usually contain less, but, if the blood-pressure is greatly increased, may contain more. The increase in volume of muscle (and in skin and connective tissue when it occurs in the latter 2 tissues) is due not to active dilatation by pitressin but to the greater degree of constriction in the intestine together with, in some cases, increased cardiac activity. This increased cardiac activity is probably an indirect effect, produced by improvement in the venous return to the heart.

1106. CSINÁDY, E. v. Sportärztliche Untersuchungen. III. Vergleichende elektrokardiographische Untersuchungen an Sporttreibenden, bei besonderer Berücksichtigung der "Ekg"-Zeitwerte. *Arbeitsphysiologie* 3(7): 579-595. 1 fig. 1930.—Electrocardiograms were made of 54 subjects after 1 hr.'s rest in leads I, II, and III and again in lead II after a functional test of 20 knee bendings. Three groups were studied: 1, controls; 2, mixed group of athletes subdivided into 3 groups according to the intensity of the sport; and 3, swimmers, beginners and trained. The results of the investigations showed that the heart frequency was in general lower with the athletes, and not infrequently lower after the functional test. Not infrequently a saddle formed depression was seen in the T wave. The conduction time was longer in athletes than in subjects who had not participated in sport. This difference was specially significant in the swimmers, in whom frequently the conduction time was even increased after the functional test. The time of the T wave (end of S to end of T) was extraordinarily long with the swimmers. After the functional test, it was always of shorter duration. After a long period of rest, these changes underwent a recurrence during activity. These alterations were first recognized through the use of the functional test. It appears desirable for athletic organizations, as well as for the sake of the athlete himself, that intensive training should be conducted under medical supervision.—*T. M. Carpenter.*

1107. DALE, ALISON S. A reversed action of the chorda tympani on the venous outflow from the submaxillary gland. *Jour. Physiol.* 70(4): 449-454. 1930.—Experiments on cats confirmed the observations of Fröhlich and Loewi that stimulation of the chorda tympani during the action of amyl nitrite may retard the venous outflow from the submaxillary gland (in 12 out of 13 cases here). In 16 experiments lowering of arterial tone by other means (histamine, over-ventilation, etc.), produced the same effect. The diminished venous outflow is accounted for by loss of fluid from the blood to the saliva. The action of amyl nitrite affords no adequate evidence of vaso-constrictor fibres in the chorda tympani.

1108. DALE, ALISON S. The relation between amplitude of contraction and rate of rhythm in the mammalian ventricle. (Including interpretation of the apparent indirect action of the vagus on amplitude of ventricular contraction.) *Jour. Physiol.* 70(4): 455-473. 2 fig. 1930.—The experiments were performed, with 1 exception (cat's heart), on the hearts of rabbits. The drug used in most of the experiments was arecoline, though acetylcholine was occasionally used. Cullis and Tribe's observation, that vago-mimetic drugs diminish the amplitude of contraction of the rabbit's ventricle only when the A.-V. bundle is intact, was confirmed. This action was shown to depend on the fact that the S.-A. nodal rhythm was slowed by the action of the drug, while the idio-ventricular rhythm which obtained after section of the A.-V. bundle was not affected, similar diminutions of amplitude being observed when the rhythm was slowed by other means. A diminution was also obtained in the amplitude of contraction of perfused ventricular strips, stimulated artificially, when the rate of stimulation was diminished. This relation between the amplitude of contraction and the rhythm is ascribed to a form of Bowditch staircase.

1109. DIXON, W. E., and J. C. HOYLE. Studies in pulmonary circulation. III. The action of histamine. *Jour. Physiol.* 70(1): 1-17. 1930.—Illustrative experiments are cited (presumably from a more extensive series), showing that the action of histamine presents great differences in the dog, cat and rabbit; some of these can be explained by gross anatomical differences, but in others the explanation is more difficult, since the same type of structure in different animals responds to histamine differently. Deductions therefore made on the basis of experiments carried out on 1 species do not hold in others. In the dog the venae hepaticae are provided with thick muscular coats and are very sensitive to histamine. This action of histamine by limiting the return of blood to the right heart is responsible for all the pulmonary changes which the authors describe. In the cat and rabbit Mautner and Pick showed that liver obstruction is of little moment. Other views have been expressed by Ganter and Schretzenmayr in opposition to those of Dale and Pick. In the cat the action of histamine on the pulmonary circulation is exactly opposite to that on the dog. Histamine dilates the

coronaries of this animal, while it constricts them in the dog and rabbit. This dilatation accounts for the increased right auricular pressure and the subsequent congestion of the whole pulmonary circulation, including increased blood-flow into the left auricle. Dixon and Hoyle think that, in the later stages of the action, when the right auricular pressure falls, some retardation of blood through hepatic-portal veins occurs which causes this fall of pressure, and in support of this increased portal pressures are shown. In the rabbit, the authors, like other observers, obtained no evidence of damming back of blood in the liver. The right auricular pressure remains raised during the entire action of histamine, in contrast with the dog in which it is lowered throughout, and in the cat in which it is first raised and then lowered. The action of histamine in the rabbit is thus mainly determined by its effect in constricting the pulmonary vessels.

1110. DUBUISSON, M., et A. M. MONNIER. L'electrocardiogramme de Limulus polyphemus étudié au moyen de l'oscillographe cathodique. *Arch. Internat. Physiol.* 33 (3): 282-299. 1 pl. 1931.—In observations on an unspecified number of horseshoe crabs the authors found (contrary to Hoffmann) that the normal electrocardiogram presents striking analogies with that of vertebrates, with no oscillations under normal conditions. It is composed of a definite number of deflexions: rapid QRS (or R) preceding the cardiac contraction and T, slow and synchronous with the contractions. The R wave has a very constant form, whatever the complexity of the T wave, which, on the contrary, is very labile, its amplitude and duration expressing more or less faithfully the mechanical activity of the heart. When the ganglionic nerve has been injured, the myocardial contractions are no longer simultaneous in all the regions of the muscle. In this case, the T wave is polyphasic, comprising a greater number of peaks, the more accentuated the lack of synchronization of the pulsations. Hence it would seem that R and T represent, not respectively the beginning and the end of a single electric manifestation, but 2 manifestations of different origin. R would thus represent an electric manifestation of unknown origin, at the end of which a visible reaction of the myocardium occurs. The monophasic wave T would be an epiphenomenon, a physical repercussion of the visible reactions of the myocardium. The variations in amplitude and sign of the R and T waves between one subject and another or between one position and another of the electrodes were explained by the existence of a dissymmetry of shunt of the 2 cardiac territories situated under the electrodes.

1111. EYSTER, J. A. E., and WALTER J. MEEK. Studies on venous pressure. *Amer. Jour. Physiol.* 95(2): 294-301. 1930.—In 22 experiments on 8 dogs under anesthesia, venous pressure tended to show relatively small and transitory changes under conditions which alter markedly the physical conditions existing in the cardiovascular system. There appear to be compensatory factors present tending to prevent excessive changes and to cause rapid restoration to a normal level. There appears to be little if any direct relation between arterial pressure and the pressures in different parts of the venous system. Inverse changes occur as frequently as direct, and both may be present simultaneously if different parts of the venous system are considered. In general the pressure is more stable and less subject to alteration in the peripheral veins (iliac and jugular) than in the right auricle. There appear to be some factors tending to reduce the extent of change arising at the heart as measured further out in the vascular system. Not infrequently inverse changes may occur in the periphery as compared with the auricular pressure change, but in all cases the result is transitory and rapid readjustment occurs. These results tend to emphasize the fact that the vascular system, particularly the venous part, cannot be reduplicated physically by a simple hydraulic model. Many factors, some unknown and some only partially recognized, modify markedly the comparison to a more or less static system of channels. Two of these factors, the varying response of the heart to varying venous loads and the variable capacity of the vascular bed, would seem to be of essential importance.

1112. FLEISCH, ALFRED. Venomotorenzentrum und Venenreflexe. II. Mitteilung. Blutdruckzügler und Venenreflexe. *Pflüger's Arch. Ges. Physiol.* 226(3): 393-410. 10 fig. 1930.—In a dog or cat a mesenteric vein was separated from its connecting vessels, fixed in such a way that the resistance to flow through it would not be affected by extraneous conditions, and then perfused artificially. The flow through this vein was recorded by the author's differential pressure stromuhr and was found to be altered by reflex changes in the diameter of the vein. Records of flow and of arterial pressure were obtained photographically. Although the vessel was separated from the circulation, inspiration of CO_2 (2% or greater) caused a constriction of the vessel and decreased flow. Rise of pressure in the carotid sinus caused a reflex dilatation and vice-versa. Stimulation of the central end of the vagus gave venodilatation (depressor reflex), of the peripheral end alternating dilatation and constriction, or sometimes a pure dilatation.—*H. C. Bazett.*

1113. GERANDEL, EMILE (translated by L. F. BISHOP). The mechanism of the heart and its anomalies. 266 1p. Baillière, Tindall & Cox: London, 1930. Pr. 45 *s.*

1114. GILSON, A. S., JR., and E. IRVINE-JONES. The effect of repetitive stimulation upon the duration of the electrical response of ventricular muscle. *Amer. Jour. Physiol.* 92(1): 160-164. 2 fig. 1930.—The experiments reported were made on ventricular strips of turtle heart. The strength of stimulation selected was 5 to 10% above threshold at the beginning of the experiment. The chief changes seen in the electrogram as the result of continuous stimulation are a slowing of conduction and a shortening of the R-T interval. The rate of stimulation of the strip determines the rate at which these changes occur. These changes are recovered from more or less completely during resting periods. Treppe may be observed as regards conduction and duration of the sustained electrical response. Treppe is manifested by a shortening of the conduction time and a lengthening of the period of electrical response for a few beats. A short discussion of the effects of temperatures on the treppe of the R-T interval is given.—*G. Bachmann.*

1115. GRANT, R T. Observations on local arterial reactions in the rabbit's ear. *Heart* 15(3): 257-280. 1930. —Observations on 14 rabbits each with 1 ear denervated and 1 ear normal indicated that the arteries of the rabbit's ear respond to increasing degrees of mechanical stimulation of the skin over them by increasingly complex local reactions: (a) A light touch causes transient dilatation; (b) moderate pressure causes constriction of the length of vessel pressed on with dilatation on each side; the constricted portion subsequently dilates before returning to normal; (c) firm pressure causes dilatation of the length of vessel pressed on with constriction on each side and dilatation on each side beyond the constrictions. The constricted portions subsequently dilate before returning to normal, the central dilatation persists for a long time; (d) pricking the skin near an artery causes in the larger arteries dilatation and constriction followed by oscillations in calibre; in the smaller arteries dilatation alone results. These reactions are all independent of the nervous system. Firm pressure on, and pricking of, the skin also cause (1) dilatation of the artery beyond the local reaction, this dilatation being dependent on a local nervous mechanism; (2) dilatation of the minute vessels and local edema. The arterial reaction to pricking is in large part attributable to the action of a histamine-like substance released from the tissues by the injury. The arterial reactions to light touch and moderate pressure and the local response to firm pressure cannot be explained in this way. Histamine applied to the larger arteries causes constriction followed by oscillations in calibre; applied to the smaller arteries it produces dilatation alone; these reactions are independent of the nervous system. Histamine also causes (1) dilatation of the artery be-

yond the local reaction by means of a local nervous mechanism, and (2) dilatation of the minute vessels and local edema. An extract of rabbit's skin was found to contain a histamine-like substance and called forth the same vascular responses as histamine itself. The vascular reaction to injury in the rabbit's ear is essentially the same as that in human skin. Acetylcholine applied to the arteries causes conspicuous local dilatation which is abolished by either local or general administration of atropine; it is independent of the nervous system. Adrenalin applied locally produces intense arterial constriction followed by oscillations in calibre; the oscillations are local in origin. Adrenalin so applied does not produce appreciable arterial dilatation.—*Author's summary and conclusions.*

1116. GRIFFITH, FRED R. Jr., and F. E. EMERY. The vasomotor control of the liver circulation. *Amer. Jour. Physiol.* 95(1): 20-34. 1 fig. 1930.—By the use of a special plethysmograph which permits records to be taken of the volume of the entire liver the following have been established in regard to the vaso-motor control of the hepatic circulation: (1) Stimulation of the post-ganglionic fibers along the hepatoduodenal artery or of the pre-ganglionic fibers of the splanchnic nerve causes constriction of the terminations of the hepatic artery and of the portal vein. (2) Stimulation of the peripheral vagus has no effect on liver volume. (3) The liver constricts during pressor and dilates during depressor reflexes; both reactions are abolished by cutting the postganglionic fibers of the hepatic plexus. (4) The liver constricts powerfully during asphyxia; this is inaugurated through its nerves and reinforced and sustained by the asphyxial secretion of epinephrine. (5) Hemorrhage induces a contraction of liver volume which may be sufficient to sustain the blood pressure; this reaction, too, is abolished by section of the hepatic plexus.—*Authors' summary.*

1117. GROLLMAN, ARTHUR. Physiological variations of the cardiac output in man. X. The effect of variations in the environmental temperature on the pulse rate, blood pressure, oxygen consumption, arterio-venous oxygen difference, and cardiac output of normal individuals. XI. The pulse rate, blood pressure, oxygen consumption, arterio-venous oxygen difference, and cardiac output of man during normal nocturnal sleep. *Amer. Jour. Physiol.* 95(2): 263-273; 274-284. 1930.—X. A study was made of the cardiovascular and metabolic changes occurring in 5 normal human subjects over a temp. range of 0° to 45° C. The pulse rate rises progressively with increasing temp., the changes below room temp. being slight. The blood pressure undergoes a change of only about 10% throughout this range with only slight variations in the pulse pressure. The metabolism declines with increasing temp., to a minimum, at about 30°, after which it again rises slowly. The nature of these changes in the metabolism and their probable causation is discussed. The cardiac output is constant over the temp. range of 0° to about 28°. At temperatures over 28° the cardiac output gradually increases with increasing temp., giving at 45° a value (for the average sized individual) 1.3 liters above the value at normal room temp. These effects of temp. on the cardiac output are explained as being the resultants of 2 diverse phenomena. The constancy of the cardiac output with moderate degrees of cold is analogous to its constancy with slight muscular activity. The increase at higher temp. represents the peripheral dilatation occurring under these conditions. The effect of baths (as compared to air as the environmental medium) and the possible differences to be encountered in pathological cases are also discussed. The bearing of the present results and those obtained on other animals on the theory of the calorigenic function of epinephrine is indicated. XI. The pulse rate, blood pressure, O consumption, and cardiac output of 3 normal, young individuals were determined in the sleeping and waking states throughout the course of the night. If one compares the values of the above-named functions during sleep with those obtained a few min. later, after awakening the subject, one finds that only the pulse rate rises as a result of awakening the subject. This is attributed to the lability of the pulse and its stimulation by the optic and acoustic stimuli which are active when the subject is awake. The sleeping state per se is not associated with a decrease in the blood pressure, O consumption, or cardiac output, as compared to the waking state under completely relaxed conditions at the same hr. of the night. These functions assume sub-basal values (i.e., lower than the minimum values obtained under optimum conditions of rest during the day) after 5 or 6 hrs. of sleep. The observed changes in the cardio-vascular and metabolic functions during sleep are either incidental to the prolonged bodily rest associated with this state or are a manifestation of cyclic changes in the organism of the nature of a diurnal rhythm.—*Author's summaries.*

1118. GROLLMAN, ARTHUR. Physiological variations in the cardiac output of man. XII. The effect of the menstrual cycle on the cardiac output, pulse rate, blood pressure, and oxygen consumption of a normal woman. XIII. The effect of mild muscular exercise on the cardiac output. *Amer. Jour. Physiol.* 96(1): 1-7; 8-15. 1931.—XII. A study was made of the variations of the pulse rate, blood pressure, O consumption, and cardiac output in relation to the catamenial cycle [in a healthy, nulliparous, married woman, aged 28]. No definite menstrual variations in these functions were observed despite the extra precautions taken to attain perfect basal conditions and the avoidance of all known vitiating factors. The pulse rate varied from 48 to 55 during the cycle and showed periodic and regular changes whose significance, however, was minimized. The blood pressure was extremely constant throughout the cycle; O consumption varied from 180 to 214 ccm. per min. but no definite relationship between these variations and the menstrual cycle could be demonstrated. The cardiac output showed a constancy from day to day within 5% of the mean value, which variation was well within the predictable experimental error. It was concluded that variations in the metabolic and cardio-vascular functions bear no simple rhythmic relationship to the catamenial cycle, as has often been maintained. XIII. A study was made of the cardiac output during very mild muscular activity [in a single subject, age and sex not stated]. The cardiac output in such exercise bears no simple relation to the O consumption. Active muscular movements result in a much greater increase of the cardiac output than static or slow movements. This is explained as due to the greater pumping action of the muscles in the former exercises which causes a greater return of venous blood to the heart.—*Author's summaries.*

1119. HABERLANDT, L. Nachtrag zur 18. Herzhormon-Mitteilung. Versuche an Wirbellosen. *Pflüger's Arch. Ges. Physiol.* 226(3): 472. 1930.—Refers to previous results in the light of recent work on the anatomy of the heart of mollusks.—*H. C. Bazett.*

1120. HAMILTON, W. F. Filling of the normal human heart in relation to the cardio-pneumogram and abdominal plethysmogram. *Amer. Jour. Physiol.* 91(2): 712-719. 1930.—Study of the changes produced in the intrathoracic pressure of man by the cardiac movements indicates that during ventricular systole an amount of blood nearly equal to the systolic discharge enters the auricles and that little or no blood flows to the heart during diastole. Some theoretical implications of these findings are discussed.—*Author's summary.*

1121. HAMILTON, W. F., M. C. SPRADLIN, and H. G. SAAM, Jr. The CO_2 of the mixed venous blood of man. *Jour. Physiol.* 70(3): 244-252. 1930.—The contention that the CO_2 tension of re-breathed air equals that of venous blood is re-examined in the light of the recent literature and new evidence cited here. No valid evidence, from either of these sources, can be found that re-breathed air comes to equilibrium with mixed venous blood, and hence doubt is left as to the justification for using any of the indirect applications of the prin-

ciple of Fick in determining the output of the human heart.—*Authors' summary.*

1122. **IZQUIERDO, J. J. The influence of sympathetic stimulation upon intra-auricular block in the mammalian heart.** *Amer. Jour. Physiol.* 91(2): 696-711. 1 fig. 1930.—As intra-auricular block has been found to be relieved by sympathetic stimulation in the cold-blooded heart and by stimulation of the vagus nerve in the mammalian heart, the effects of stimulating the sympathetic nerves upon conduction through mammalian auricular muscle have been investigated. The effects usually associated with right or left sympathetic stimulation have been found to be developed in different hearts in varying degree. Faradic stimulation of the right, left or both sympathetic nerves has no definite effect upon the conduction of the excitation wave through normal or compressed muscle, whether the heart is beating naturally or responding to rhythmic shocks. Atropine must be employed to exclude the effect due to stimulation of vagal fibres accompanying the sympathetic nerves; this drug in the doses employed has no influence upon the effects of sympathetic stimulation. The relief of block already reported as a result of stimulation of the vagus nerve high in the neck, has been duplicated by stimulating the same nerve as it emerges from the skull. The relief of intra-auricular block seen in mammalian hearts after stimulation of the vagus nerve must therefore be, as has already been suggested, a pure vagal effect.—*Author's summary and conclusions.*

1123. **IZQUIERDO, J. J. Influence of the aortic and carotid sinus nerves upon the height and form of the rise of blood-pressure produced by peripheral stimulation of the splanchnic nerve.** *Jour. Physiol.* 70(3): 221-243. 1930.—By stimulating the peripheral end of the splanchnic nerves by a faradic stimulus under similar conditions, first with the 2 sets of aortic and carotid sinus nerves intact and then with these nerves partially or totally eliminated, the following results were obtained: When the aortic and sinus nerves are eliminated the blood-pressure curve is considerably higher and simpler in form than when both sets of nerves are intact. When only the 2 aortic nerves are active the curve is higher and its "dip" less pronounced than when in addition the 2 carotid sinus nerves are in action. When only the 2 carotid sinus nerves are active the height reached by the curve is higher than when in addition the aortic nerves are in action, but its form is not appreciably modified. When a single carotid sinus nerve is left active its effects upon the height and form of the splanchnic pressure curve are often considerable. When both aortic and carotid sinus nerves are active, their joint inhibitory action can be so strong that a stimulation of the splanchnic nerve may fail to give any appreciable rise of blood-pressure. Comparison of the effects observed after elimination of both aortic nerves or both carotid sinus nerves alone, shows that the carotid sinus nerves exert the more important inhibiting effect upon the height of the curve and are the main factors in producing the "dip" in the splanchnic pressure curve. Tying off of both adrenals at the beginning of the experiment or after partial or total suppression of the aortic and carotid sinus nerves does not modify the results in the rabbit, the hare and the dog. But in the cat the "dip" more frequently disappears after the ipsilateral gland is tied off. The 2 variations, namely, in the height and "dip" in the curve, develop simultaneously and in contrary sense, i.e., the gradual attenuation and final disappearance of the "dip" keeps pace with the gradual increase in the height reached by the curve. Therefore, both series of changes are compatible with the view that the curve of the rise of blood-pressure produced by stimulation of the splanchnic nerve consists of 2 superimposed elements, (a) the direct vasopressor effect (vaso-constriction in the splanchnic area), and (b) the indirect vaso-depressor effect (aortic and more especially carotid sinus reflexes) evoked by the rise of blood-pressure.—*Author's conclusions.*

1124. **KATZ, LOUIS N. The rôle played by the ventricular relaxation process in filling the ventricle.** *Amer. Jour. Physiol.* 95(3): 542-553. 3 fig. 1930.—Experiments were made on the isolated turtle ventricle connected to a reservoir, which tended to keep the pressure of the system constant, in order to see what rôle ventricular relaxation played in filling the heart chamber. It was found that during relaxation the pressure within the ventricle dropped below the zero level of the system. The amount of this drop was a direct function of the initial length of the muscle in the range studied. The drop in pressure was not due to an overswing, for when filling was prevented at the onset of relaxation by making relaxation isometric, the pressure drop below the zero level of the system was magnified. Other considerations are discussed which also disprove that it is an artefact. The minimum elastic state of the ventricle can be expressed by a smooth curve, along which the pressure/volume ratios of the relaxed heart fall, regardless of whether the diastolic volume or the diastolic pressure is set. The drop of pressure during relaxation below that set by the reservoir is taken as evidence that the ventricle is drawing in fluid. These experiments are not contradicted by those on skeletal muscle suspended on Hg. The sources of energy for the sucking action are mainly potential stores, created by the contraction process, such as energy of position and of elastic state. The distinction is made between the source of energy for the sucking action and for the flow of fluid. The distinction is shown to be the same as in an aspirating pump. The conclusion is drawn that relaxation is of similar nature to contraction. Both are dependent on some reversible physico-chemical process which alters the elastic state of the muscle between 2 limits, the minimum for the relaxed and the maximum for the contracted heart. Evidence is given to show that the ventricle not only can but does exert a sucking action in the intact mammal.—*Author's summary.*

1125. **KILBORN, LESLIE G. The variability of blood pressure in normal persons.** *China Med. Jour.* 44(6): 533-540. 1930.—Previous observers have reported higher tension in the same subjects when in the U. S. than when in China. Kilborn compared 4 sets of records of the same 51 persons extending over a period of 28 months. He found a range of variation as high as 28 systolic (av. 17) and 30 diastolic and pulse pressures (av. 16), or as great variability as found by others between pressures in the same subject in the U. S. in China. He emphasizes the need for caution before assuming that race, climate or geographical position are the cause of the hypotension reported for China.

1126. **[KONSTANTINOV, B. M.] КОНСТАНТИНОВ, Б. М. О влиянии временного прижатия артерий на отложение трипановой синьки и туши при внутривенозном их введении. [Influence of temporary compression of arteries on the deposit of intravenously injected trypan blue and India ink.]** [French résumé.] Архив Биологических Наук (*Arch. Sci. Biol.*) 30(5/6): 639-650. 1930.—Trypan-blue and India-ink were injected into the auricular vein of rabbits immediately upon removal of the temporary compression of arteries. Vessels chosen for compression were situated in the lower extremities, in the liver and in the spleen. The animals were killed and the organs subjected to anemia, as well as other parts of the body, were microscopically examined. Temporary anemia of these organs resulted in a heightened adsorption of the colloidal dye-substances. After the injection of trypan-blue the diffuse imbibition of the anemic organ was more pronounced, and heightened granular depositions of the dye were found in the reticulo-endothelial system and in the histiocytes. After the injection of India-ink, the author observed only an increase in quantity of the granules deposited in the cells. This is explained by the active post-anemic hyperemia. Attention is called to the fact that temporary compression of the vessels offers many possibilities. In case of certain colloidal substances circulating in the organism—such as toxins, antibodies, etc.—

their fixation is made possible in the organs subjected to temporary anemia.

1127. **KOSTJUKOW, I. I. und S. D. REISELMANN. Änderungen im Elektrokardiogramm nach dosierter körperlicher Arbeit. I.** *Arbeitsphysiologie* 3(5): 415-448. 13 fig. 1930.—Electrocardiograms of porters were taken at rest at the same time each morning 2 hrs. after breakfast. The porters then carried a load of 96 kgm. on their shoulders or back for a stretch of 250 m. in a limited time, dropped the load and reclined. Electrocardiograms were made at once and at intervals of 1, 2 and 3 min. One group consisted of 18 men who were examined only once. Another group consisted of 91 men, 44 of whom performed the same task on 2 separate days, and 47 carried the usual load at the first examination and, at the second, carried the same load until they were fatigued. The most important alterations in the electrocardiograms due to bodily activity were considerable increases in the P and T waves. The changes in these waves were due to altered filling of the heart with blood and the accompanying energetic contractions of the muscle fibers of the myocardium which were caused by increased demands upon the heart brought about by bodily exertion. If one compares the processes occurring in the working heart to the physiological laws, then the heights of the T and P waves are criteria of the functional condition of the heart and the strength of the myocardium. Symptoms of dextrocardia that appear in the electrocardiograms after bodily exertion speak for a weakness of the heart (the left ventricle). In healthy hard working men a significantly well developed T wave is found at rest which indicates the presence of a slightly hypertonic heart and is a sign that the heart is healthy and well adapted to the tasks.—*T. M. Carpenter.*

1128. **LANDIS, EUGENE M. Micro-injection studies of capillary blood pressure in human skin.** *Heart* 15(2): 209-228. 2 fig. 1930.—The micro-injection method for directly determining mean blood pressure in single capillaries has been modified to suit the skin at the base of the human finger nail. Av. blood pressure in the arteriolar limb is 32 mm. Hg, at the end of the loop 20 mm., and in the venous limb 12 mm. The fall of blood pressure does not cease at the junction of the arterioles and capillaries but continues unbroken through the capillary loop. Av. blood pressure in the arteriolar limb is above, and in the venous limb below, the osmotic pressure of the plasma proteins. These direct pressure readings in human capillaries are in agreement with Starling's hypothesis of fluid balance. When the hand is placed at various levels above the suprasternal notch the arteriolar and venous capillary pressures remain almost constant, but with the hand below the suprasternal notch they increase by the increment of hydrostatic pressure. Venous congestion by a pneumatic cuff produces a rapid rise of capillary pressure, which reaches cuff pressure within 15-45 sec. Capillary pressure finally exceeds cuff pressure by 8-14 mm. Hg. Hyperemia of the skin at the base of the nail due to heat is accompanied by a rise of capillary pressure to as much as 60 mm. Hg in the arteriolar limb and to as much as 45 mm. in the venous limb of the capillary. In the histamine flare arteriolar capillary pressure rises to between 32 and 50 mm. Hg, and venous capillary pressure to between 27 and 39 mm. Local cooling of the skin produces first a fall in capillary pressure of 6-11 mm. Hg, and after 5-8 min. a secondary rise of 2-14 mm. above the original normal pressure. When the skin is whealed by freezing, av. capillary pressure rises to 49 mm. Hg in the arteriolar limb and to 32 mm. in the venous limb. In the blister av. arteriolar capillary pressure is 41 mm. Hg, and av. venous capillary pressure 23 mm. Hg. The direct micro-injection method is compared, from the point of view of its accuracy, to direct and indirect methods. The findings are discussed with reference to the mechanism of fluid balance under av. conditions and during hyperemia.—*Author's summary.*

1129. **LEWIS, THOMAS (in successive collaboration with I. HAYNAL, W. KERR, EDWARD STERN, and E. M. LANDIS). Observations upon the reactions of the vessels of the human skin to cold.** *Heart* 15(2): 177-208. 2 fig. 1930.—Experiments (mostly on fingers) extending over 3 yrs. are summarized, showing that a vasodilatation occurs in the skin of the finger after the latter has been immersed in cold water for some time. The reaction usually begins within 5-10 min. of immersion. The vasodilatation continues during immersion, though it varies in its degree, often giving rise to a phasic rise and fall of temp. On withdrawing the finger from water, after the reaction has begun, its temp. rises above that of neighbouring uncooled fingers. This after-effect comes to its maximal point in 15-20 min. and subsides thrice as slowly. The reaction occurs in water at 18 or 15° C. or lower, but is not known at higher temp. In general the lower the temp. the more decided the reaction. The reaction with its after-effect is obtainable unmistakably from fingers and toes, from the ear and some other parts of the face. It can rarely be obtained from the skin of the forearm. Although there is no corresponding rise of temp., vasodilatation in response to cold can be demonstrated in the skin of the forearm by more sensitive methods. The reaction occurs after degeneration of the sympathetic fibers to the skin and after severance of the sensory nerves; but does not occur after degeneration of the sensory nerves has occurred. It is due to a sensory axon nerve reflex. Evidence is given for believing that when the skin is strongly cooled, H-substance is released and awakens this axon reflex. The mechanism described comes into very frequent play in cold weather and has an important function in protecting exposed parts of the skin from excessive cooling and injury. It is suggested that the axon reflex mechanism responding to cold and other stimuli constitutes an important contributory means by which the temp. of exposed parts is normally maintained. Evidence is put forward suggesting that when the sensory nerves to fingers degenerate, the fingers lose their normal blood supply as a consequence, and that this may result, directly or indirectly, in the development of certain so-called trophic lesions.

1130. **LLOYD, WRAY. Experimental heart block in the rabbit.** *Heart* 15(2): 125-127. 1930.—Hearts from 51 rabbits were excised and perfused while still beating and the a.-v. bundle transected anterior to its origin from the a.-v. node. In 2 hearts the ventricle ceased beating; in 3 cases no dissociation followed, and later examination showed that the bundle had not actually been transected; in the remaining 46 cases complete a.-v. dissociation followed section of the bundle stem.

1131. **McDOWALL, R. J. S. The effect of carbon dioxide on the circulation. Part I.** *Jour. Physiol.* 70(3): 301-315. 1930.—Over-ventilation under chloralose has been shown to cause [apparently in cats] 2 effects: dilatation of vessels due to central effect, and the other a constriction of smaller more peripheral vessels due to the effect of washing out CO_2 locally. Either effect may predominate, and the result be a fall, no change, or a rise in blood-pressure. Either abolishes the more peripheral effect. The reaction of the circulation to changes in posture are shown to be profoundly affected by over-ventilation. The evidence suggests that the normal CO_2 of the arterial blood exercises a dilator effect on the more peripheral vessels. Reasons are given which indicate that these results are applicable to normal man. —*Author's summary.*

1132. **PATTEN, BRADLEY M. The changes in circulation following birth.** *Amer. Heart Jour.* 6(2): 192-205. 3 fig. 1930.—Patten concludes that: (1) Current conceptions as to the occurrence at birth of an abrupt rerouting of the blood in the heart and great vessels rest on insufficient evidence. (2) There is increasing reason to believe that the volume of blood circulating through the lungs at the close of fetal life is adequate to care for the respiratory demands of the newborn infant as soon as the lungs are properly ventilated, and that there is no radical circulatory upheaval at the

time of birth. (3) In the neonatal period, with the assumption of respiratory function, the volume and power of the pulmonary circuit gradually increase, bringing about, by the close of the 1st mo., a new functional balance in intracardiac pressure. (4) It is probable that under normal conditions the progressive closure of the ductus arteriosus accelerates the enlargement of the pulmonary vessels following birth, but there are many cases on record where a normal pulmonary circulation has been established without closure of the ductus. (5) With the establishment of the new interatrial equilibrium brought about by increase in pulmonary circulation the foramen ovale falls gradually into disuse. (6) Anatomical obliteration of the foramen ovale follows slowly in the wake of its functional abandonment. Provided the valvula foraminis ovalis competently covers the foramen ovale, failure of the valve completely to fuse to the septum is no functional handicap as long as there is not an intercurrent disturbance elsewhere in the cardiovascular mechanism or in the lungs. This fusion is incomplete, leaving what might be termed a "probe-patency" in about 20% of all adults. Functional incompetence of the valvula by reason of defective development, which should be clearly distinguished from "probe-patency," is as uncommon as other cardiac anomalies. (7) Failure of the ductus arteriosus to close within the normal time range is to be regarded as a symptom rather than a cause of circulatory dysfunction. Instances of the ductus remaining unclosed in the absence of abnormal conditions which force the maintenance of a blood current through it are exceedingly rare. (8) Following the increase in pulmonary circulation and the closure of the fetal blood passages there is a gradual increase in the left ventricular musculature to equal the right at about 3.5 mos., acquires a definite preponderance by the 2nd yr., and its full adult degree of preponderance by about the 7th yr.—*Author's summary.*

1133. PODKAMINSKY, N. A. Beiträge zur pathologischen Arbeitsphysiologie. III. Die Einwirkung der Gewerbearbeit in einer gebeugten Sitzstellung auf die Dimensionen des Herzens. *Arbeitsphysiologie* 3(5): 347-359. 1930.—Measurements of the hearts and lungs of 60 female sewers in a factory in Charkow were made by means of teleröntgenograms at a focus of 2 meters. Blood pressures and pulse rates were also recorded. The workers were accustomed to carry on their tasks in a sitting and bent position. On the average there was found an increase in the minute volume, a certain rise in blood pressure and an enlargement of the transverse diameter at the expense of the dimensions of the left heart. The alterations were characteristic of the group as a whole, but a detailed study of individual cases showed that beside the principal occupational type there were three other types which would explain the varieties of combinations of findings. All comparisons were made with the findings on a group of load carriers studied previously by the same author. The fact that the hearts of women who performed light work in a sitting bent position were enlarged as compared with the hearts of men at severe bodily exertion, speaks for the lack of a so-called work hypertrophy of the heart and for the significance of the effect of occupations upon the size of the heart.—*T. M. Carpenter.*

1134. POLÁK, E. Über den Einfluss radioaktiver Strahlungen auf die automatische Tätigkeit des Froschherzens mit besonderer Rücksicht auf die Wirkung grosser Strahlendosen und auf den Antagonismus der α- und β-Strahlung. *Pflüger's Arch. Ges. Physiol.* 226 (4/5): 659-675. 15 fig. 1931.—H. Zwaardemaker (Erg. Physiol. 1926. 25. 536) has marshaled evidence to show that the importance of K for heart muscle is due largely to its radioactive properties. He has found that an excised heart which has ceased pulsating because of K deficiency will resume beating when subjected to radiation from other sources. The author has repeated these investigations and confirms Zwaardemaker's results. Equimolecular substitution of Rb for K permits normal activity and restores a heart which has stopped in the absence of K. Relatively smaller concentrations of uranyl nitrate are necessary because of its greater radioactivity. Likewise the optimum concentration of radium emanation in Ringer's solution must be still smaller and in addition a new Em-Ca balance must be set up to replace the K-Ca ratio. Other sources of radioactivity behave similarly. Overdosage of K produces a stoppage of contractions which the author ascribes to the effects of high amounts of β-rays. Such poisoning is different from that produced by too much α-radiation. The effects of a K overdose can be neutralized by appropriate α-radiation. Furthermore after poisoning with emanation, the concentration of K necessary to restore pulsations is increased tremendously over the optimum physiological K-concentration. The lethal K-dosage for such irradiated hearts is also greater than for the untreated organ. These results lead the author to conclude that α- and β-radiations have antagonistic effects.—*H. Grundfest.*

1135. PURJESZ, B., E. v. ROSZTOCZY, und E. v. CSINADY. Sportärztliche Untersuchungen. I. Untersuchungen über die Schwankungen der Herzgrösse, der Pulsfrequenz, der Zahl der Atemzüge und des Blutdruckes. *Arbeitsphysiologie* 3(7): 558-563. 1930.—Measurements were made on 54 subjects of the body weight, height, breadth and circumference of thorax, sitting height, body surface, musculature, and various indices. Four groups were studied, a control group consisting of medical students, members of sport associations, and students in military service; a group of soldiers; a group of trained and untrained swimmers, and a group participating in 3 classes of athletics, such as fencing, wrestling and football and rowing. The transverse diameter of the heart was measured and the increase and return to the rest level of the pulse rate, respiration rate and blood pressure after 30 deep knee bendings. The more trained the individuals were, the less was the reaction to the knee bending, and the earlier was the recovery to the rest level. The transverse diameter of the heart increased in proportion to the intensity of the sport, although within narrow limits. Long continued training resulted in a lowering of the frequency of the pulse and respiration.—*T. M. Carpenter.*

1136. STRAUSS, H. Über die Wirkung der Ermüdung auf den normalen und gesteigerten Blutdruck. *Zeitschr. Ges. Physikal. Therap.* 39(4): 203-206. 1930.—In 27 normal persons and 15 with hypertonia the blood-pressure was taken before and for 5 min. after the 1st exertion test, a rapid ascent of 54 steps; then a "fatigue test" was made either by a slow ascent of steps, by a walk, by standing at attention for 20 min., or by some other means of fatigue. Then followed a repetition of the 1st exertion test. In the normal subjects the 1st exertion test was followed by a rise in blood-pressure, which after 2-4 min. sank to the original value. After the fatigue test the blood-pressure rose, but not so high as after the 1st test; the base as well as the peak of the curve was lower than after the 1st test. Weak persons, however, sometimes showed a fall instead of a rise. The hypertonics showed after the 1st exertion test a greater rise than the normals; the blood-pressure fell to its original value after 4-6 min. After the fatigue test there was no fall as in the normal subjects; and after the 2nd exertion test the rise was as high as after the 1st; sometimes there was a secondary rise which made the peak of the 2nd curve higher than the 1st.

1137. TAYLOR, N. B. The relation of temperature to the heart rate of the South African frog (Xenopus dactylethra). *Jour. Physiol.* 71(2): 156-168. 1931.—Observations on the excised heart of the common frog confirm the statement that the sinus rate bears a roughly linear relation to the temp. when the tests are carried out in summer. Since the hearts of English frogs cease to beat at a temp. much higher than 22° C. or lower than 4° C., about 50 hearts of South African frogs were used to ascertain whether the linear form of the temp. frequency curve would be maintained over a wider range. Data were obtained over a range of 35° C. or more, i.e.,

nearly double the range possible with the English species; the heart functions, however, were scarcely normal toward the upper limits of the range. The linear relation of sinus rate to temp. was maintained by the heart of the South African frog up to about 27° C., beyond which was a slight slowing, the cause of which is obscure, followed at about 33° C. by a sudden and great acceleration apparently resulting from a "circus movement." Results indicate that in the intact South African frog there are usually 2 summits on the curve relating the heart rate to the temp. The 1st is at about 12-14° C., the 2nd at about 25° C. The heart of the South African frog is subject to vagal tone at temp. which are neither very high nor very low—a fact which may in part account for the drop in pulse rate between 12 and 16° C.—a phenomenon which is not noticed in the British frog in which vagus tone appears to be absent.

1138. THÖRNER, WALTER. Trainingsversuche an Hunden. I. Der Einfluss der Laufarbeit auf das Herz. *Arbeitsphysiologie* 3(1/2): 1-26. 6 fig. 1930.—Dogs were caused to run daily throughout 3½ and 4½ mos. long periods on a treadmill. They covered 1808 to 3170 kilometers. The performance gradually automatically increased throughout the period of training. Control dogs were studied. The trained dogs lost 6 to 7% of body weight whereas the control dogs gained. The heart shadows became enlarged in all the dogs, but whereas in the control dogs all dimensions were increased, in the trained dogs, the long diameter was increased more than the others. The electrocardiogram showed that the heart frequency was diminished in the trained dogs as compared to the control as 94 to 145. The heart pause was lengthened and the time for the contraction of the auricle plus conduction was less than the ventricular time. The curves showed a decrease with the trained dogs of the auricular wave, increase of the *t* wave and a diminution of the *s* wave. The majority of these signs are recognized as symptoms of vagus stimulation and lead to the assumption of a vagotonic conditioned dilatation with a tendency to eject a greater quantity of blood. All the findings lead to the assumption of a simultaneously existing hypertrophy of the heart muscle which was completely confirmed by autopsy. The trained dogs had heavier hearts in relation to other parts of the body. The hearts of the trained dogs were 0.87% of the body weight as compared with 0.68 in the control dogs. The skeletal musculature of the trained dogs was 39.5% of the body weight as compared to 31.1% in the control dogs. Not only had the heart increased in the work dogs, but in a greater proportion than the skeletal musculature so that the heart-musculature ratio was greater in the trained dogs than in the untrained dogs. The hearts of the trained dogs contained 33.32% fat as compared with 25.22% in the control dogs. All of the findings both clinical and autopsy pointed to a heart increased in size which resulted from an active vagus influence and increase in actual musculature.—*T. M. Carpenter.*

1139. TSO, T. M. The effect of variations in the diastolic filling of the frog's ventricle upon the durations of the refractory period and the mechanical response. *Jour. Physiol.* 68(4): 441-453. 8 fig. 1930.—Pairs of break shocks with varying frequency and intervals were used as stimuli on the isolated ventricle of *Rana temporaria*. There was no detectable change in the absolute refractory period (A.R.P.) and the relative refractory period (R.R.P.) of the isolated frog's ventricle studied by variations in diastolic filling. Variations from 0.01 to 0.07 c.c. respectively were considered. It is now known that the apparent latent period is greater with small filling than with large filling. With consideration of the apparent latent period in the contractile process, there is no detectable change in duration of the mechanical response of ventricle with fillings varying from 0.01 to 0.08 c.c.; but if the latent period be deducted from the measurements obtained, then there is an observable increase in the duration of the contractile process whch is in accordance with the results of other investigators (Segall and Anrep). Here, the angle is indicative of the end of the systolic plateau or contractile process which appears 0.01 sec. after the end of the A.R.P. when moderate fillings are used.—*D. J. Verda.*

1140. WESTENBRINK, H. G. K., et PH. ARONS. Recherches chimiques sur l'automatine. I. *Arch. Néerland. Phys. Homme et Animaux* (*Sér. 3C des Arch. Néerland. Sci. Exactes et Nat.*) 14(3): 394-406. 2 fig. 1929.—Zwaardemaker has stated that the heart whose contraction has stopped by keeping on Ringer solution without K can contract again under the influence of radium emanations. The authors have studied the mechanism of this activation and conclude that it is due to liberation of "automatin." This "automatin" is soluble in water and alcohol; is dialyzable through a collodion membrane; is not destroyed by HCl or nitrous acid (reagents which destroy adrenalin); is not destroyed by boiling NaOH; is not precipitated by $AgNO_3$ (which precipitates histamine) and is not adsorbed by kaolin.—*E. S. G. Barron.*

1141. WIGGERS, CARL J., HAROLD THEISEN, and HARLEY A. WILLIAMS. Further observations on experimental aortic insufficiency. II. Cinematographic studies of changes in ventricular size and in left ventricular discharge. *Jour. Clin. Investigation* 9(2): 215-233. 1 fig. 1930.—The changes in ventricular areas before and after production of an experimental aortic insufficiency were [in a large number of experiments on 10 dogs] studied at constant heart rates, for the purpose of evaluating the percentile regurgitation. Successive photographs of the exposed heart, properly suspended in the pericardium, were taken at intervals of 0.031 sec. by means of a moving picture camera. Each photograph was subsequently projected, its outline drawn and the area measured. The values so obtained were plotted as curves and related to simultaneous records of aortic pressures and anteroposterior movements of the left ventricle. The advantages of the method and the precautions necessary in its employment are analyzed in detail. The curves of outline changes during systole and diastole resemble volume curves in their general characteristics, but do not permit us to draw direct conclusions as to the degree to which the stroke of the left ventricle increases during aortic insufficiency. This is accomplished by applying Skavlem's formula, determining the increase in output and adding this to ½ the output of the 2 ventricles. By taking the left ventricular discharge, so determined, as a base, the percentile increase in stroke volume is easily calculated. The results show that during aortic insufficiency the diastolic size is larger and the left ventricular discharge is increased from 16-58% in different experiments, on an average 36.4%. Factors other than heart rate and size of leak are responsible for the variations. In the discussion it is pointed out (a) that changes in heart size without data concerning the stroke volumes of the left ventricle are of no value in determining the percentile regurgitation, but (b) that the percentile changes in stroke volume of the left ventricle give by inference a fair estimate of the percentile regurgitation. The conclusion is reached that approximately ⅓ of the discharge during systole regurgitates through insufficient valves during diastole.—*Authors' summary.*

PHARMACOLOGY

ERWIN E. NELSON, *Editor*
RALPH G. SMITH, *Assistant Editor*

(See also in this issue Entries 135, 184, 186, 210, 211, 219, 222, 228, 240, 251, 258, 261, 263, 268, 356, 362, 375, 387, 388, 393, 406, 407, 472, 502, 519, 521, 531, 562, 570, 581, 582, 584, 665, 666, 668, 672, 674, 681, 683, 698, 714, 720, 725, 729, 736, 743, 744, 746, 747, 752, 753, 754, 755, 756, 758, 762, 765, 769, 772, 803, 811, 823, 824, 830, 834, 836, 843, 844, 851, 855, 868, 878, 880, 883, 894, 895, 905, 927, 944, 946, 947, 997, 1012, 1048, 1062, 1072, 1073, 1074, 1089, 1094, 1095, 1107, 1108, 1109, 1114, 1115, 1134, 1277, 1444, 1533, 1540, 1545, 1561, 1569, 1620, 1639, 1732, 1735, 1798)

1142. **ABDERHALDEN, EMIL, und SEVERIAN BUADZE. Untersuchungen über die Herkunft des Kreatins bzw. Kreatinins im tierischen Organismus.** *Zeitschr. Ges. Exp. Med.* 65(1/2): 1-26. 1929.—The influence of the intraven. or oral administration of a series of compounds on creatine and creatinine production was noted in dogs and pigeons. The administration of adenine and guanine resulted in a significant increase in the total creatinine; a synthesis of methyl guanidine acetate from these purine bases doubtless occurs. Thyroxin markedly increases the creatine and creatinine output after guanine. The administration of nucleic acids gave an increase in creatine and creatinine, but the activity of the liver and spleen complicate the results noted. The increased output was apparent only and insignificant. Uric acid was not concerned in the production of creatine. The influence of various organs (spleen, liver) on the creatine and creatinine production was noted. These organs can produce creatine from purine bases as well as from nucleic acids. However, exclusive of muscle, the quantities formed by other structures are small. No single organ studied, synthesized creatine from histidine. A significant increase in the total creatinine (creatine and creatinine) was observed following administration of arginine, sarcosin, guanine, adenine, histidine and n-methyl hydantoin. No change was observed after the administration of nucleic acids, uraci or mono-sodium urate.—*O. W. Barlow.*

1143. **BANHAM, GEORGE A., and WM. J. YOUNG. Table of veterinary posology and other information for the use of students and practitioners.** 5th ed. xii + 359p. Baillière, Tindall & Cox: London, 1926.

1144. **BOEDECKER, FR., und H. LUDWIG. Über Noctal und Pernocton. III. Verhalten im Organismus.** *Arch. Exp. Pathol. u. Pharmakol.* 139(5/6): 353-356. 1928.—The acetonyl barbiturie acids, into which noctal and pernocton are first demonstrably converted in the organism, and also the corresponding malonyl-ureido-acetic acids, further products from these hypnotics and from the acetonyl compounds, are practically non-toxic to rabbits in doses of 0.25 to 0.5 gm. per kgm. intraven.—*E. V. Lynn.*

1145. **BOEDECKER, FR., und H. LUDWIG. Über Noctal und Pernocton. IV. Wertbestimmung ähnlicher im Bromallylrest abgewandelter Barbitursäuren.** *Arch. Exp. Pathol. u. Pharmakol.* 139(5/6): 357-360. 1 fig. 1928.—The method used, which gives very uniform results with noctal, consists of determining the time during which carefully selected animals remain lying on their sides when so placed. The γ-bromallyl, the β-chlorallyl, and the β-γ-dibromallyl derivatives of isopropylbarbituric acid, and the di(β-bromallyl) and di(β-chlorallyl) derivatives of barbituric acid were all found to be highly active, thus confirming the supposition that unsaturated halogenated groups are important in synthesis of hypnotics of this class.—*E. V. Lynn.*

1146. **BOEMINGHAUS, H., und M. KOCHMANN. Über quantitative Unterschiede in der Wirkung der Lokalanästhetika auf sensible und motorische Nerven. (Ein Beitrag zur Frage der Leitungsanästhesie.)** *Arch. Exp. Path. u. Pharmakol.* 141(3/4): 237-245. 1929.—The aims of the research were: (1) to study the difference in the sensitiveness of the motor and sensory nerves, and (2) to compare the action of various local anesthetics (cocaine, tropacocaine, tutocaine, psicaine, novocaine, eucaine, stovaine, K_2SO_4, and 2 new preparations, "C 147" and "1112"). Sensory nerve preparations and nerve muscle preparations of the ♂ frog were used; the dose of a given anesthetic which would inhibit a given stimulus in one set of nerves was compared, in 12 and 24-hr. studies, with that which would inhibit the same stimulus in the other set of nerves. The sensory nerve stimuli were inhibited by weaker concentrations than the stimuli to the motor nerves, except in the case of "1112" and stovaine, in which no such difference was to be observed. For given concentration of the various anesthetics differences in the reaction time were observed, cocaine working most rapidly, psicaine most slowly. The difference in time of response between sensory and motor nerves was not great; but in general the motor nerves were paralyzed. Stovaine again constituted an exception, paralyzing the motor before the sensory nerve—an observation from which Santesson had drawn a general conclusion as to the relation of these 2 sets of nerves. —*From authors' summary (transl.).*

1147. **BORNSTEIN, A., und GÜNTHER BUDELMANN. Die Ausscheidung von Alkohol und Äther durch die Niere.** *Arch. Exp. Path. u. Pharmakol.* 150(1/2): 47-69. 1930.—The in situ human kidney excreted alcohol in the urine at about 1½ times the concentration that it occurred in the blood. Therefore, the kidney has the power to concentrate it. The Starling heart-lung kidney preparation also concentrated alcohol easily, as well as ethyl ether, methyl alcohol, and acetone. A part of this concentration is purely physico-chemical since the concentration of alcohol and similar substances is higher in the perfusion fluid that enters the kidney glomerulus than it is in the whole serum. The concentration of alcohol was somewhat less in an artificially perfused kidney than in the perfusion fluid. The greatest dilution occurred in the glomerular filtrate. The results are explained by a modification of Höber's theory of concentration of lipid substances in the tubule epithelium.

1148. **BOYD, LINN J., J. G. BRODY, and D. ANCHEL. Experimental treatment of cardiac arrhythmias.** *Proc. Soc. Exp. Biol. & Med.* 26(7): 570-572. 1929.—Preliminary paper.

1149. **CHANTRIOT. Réactivation du paludisme, valeur diagnostique, test de guérison.** *Paris Méd.* 19(48): 466-473. 1929.—A patient suspected of malarial infection is injected with neosalvarsan, sodium cacodylate, or any one of several other drugs. At the peak of the rise of temp. a blood smear is taken; the malaria plasmodium will be found in most cases of latent infection; 8 illustrative cases are cited.

1150. **CHERAMY, P., et F. LAGARCE. Sur la défécation des liquides d'extraction en toxicologie.** *Jour. Pharm. et Chimie* 12(8): 366. 1930.—A laboratory note.

1151. **CIAMBELLOTTI, E. Studi sulla terapia calcica. IV: L'associazione calcio-adrenalina-atropina e suoi effetti sul cuore. [Calcium therapy. IV: The calcium-epinephrine-atropine association and its effects upon the heart.]** *Boll. Soc. Ital. Biol. Sperim.* 4(6): 772-774. 1929.—When epinephrine or atropine or both were added to Ca no diminution of the Ca effect on the heart was observed.—*E. Ciambellotti (transl. by R. M. Moore).*

1152. **COHN, MAGNUS. Beitrag zur Toxikologie von quecksilberdibenzoesaurem Natrium und Kalium.** *Zeitschr. Ges. Exp. Med.* 71(3/4): 370-377. 3 fig. 1930.—Subc. injections of aqueous sols. in 4 rabbits with the K salt and in 5 rabbits with the Na salt of Hg dibenzoic acid (0.25 gm. and more per kgm.) were fatal within

2½ to 29 hrs.; no marked difference between the 2 salts was perceptible. Of 3 Na salt rabbits subjected to necropsy 2 showed signs of acute nephrosis.—*Author's summary (transl.).*

1153. **CSEPAI, K., und B. FORSTNER. Eine klinische Methode zur Wertbestimmung von Insulinpräparaten.** *Endokrinologie* 3(6): 412-416. 1929.—A normal person's reaction to insulin varies but little in the course of a few days, and it is proposed to use such an individual for insulin assay in preference to lower animals. Tests with standard solutions are run for 3 days, then the solution to be standardised is used, and the blood sugar effects compared. This is a desirable method especially where animals are not available.—*B. Cunningham.*

1154. **DIXON, H. H., and S. W. RANSON. The effect of ammonium chloride on the development of rigidity in experimental local tetanus.** *Jour. Pharmacol. & Exp. Ther.* 38(1): 51-55. 1930.—Large doses of NH_4Cl relieve the rigidity of the extensor muscles caused by tetanus toxin in white rats and prevent the development of contracture or general tetanus if the dose of toxin has been a moderate one. Whether this beneficial effect is due to acidosis or to a specific action of the NH_4 radical was not determined but other substances that cause acidosis were without effect as was also NH_4 acetate. The progress of the experimental tetanus was not affected by such alterations of the serum Ca as could be produced by the administration of fairly large doses of NaFl, neutral sodium phosphate, or $CaCl_2$.—*Authors' summary.*

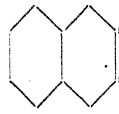
1155. **DUGUID, J. B. The toxicity of vitamin D.** *Lancet* 219(5592): 983-985. 1930.—A review of recent work. Bibliography includes 48 titles.

1156. **EISLER, B., und A. SCHITTENHELM. Über die Wirkung des Thyroxins auf den Blutjodgehalt des Myxödematösen.** *Zeitschr. Ges. Exp. Med.* 68(1/4): 487-492. 3 fig. 1929.—The I content of blood, markedly subnormal in myxedema, was raised by thyroxin, at first to supranormal values, followed by gradual sinking to about normal values despite continued administration of thyroxin. In normal subjects thyroxin, even with continued administration, has no effect on blood I level. In myxedema there is no parallelism between the increase in basal metabolism and blood I provoked by thyroxin; indeed there is the difference that unlike blood I, basal metabolism continues to increase during continued thyroxin administration. Intraven. and oral administration of thyroxin in myxedema have the same effect on blood I.

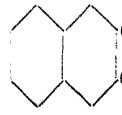
1157. **ENGELHART, E., und O. LOEWI. Fermentative Azetylcholinspaltung im Blut und ihre Hemmung durch Physostigmin.** *Arch. Exp. Pathol. u. Pharmakol.* 150 (1/2): 1-13. 10 fig. 1930.—Physostigmine inhibited the splitting of acetylcholine by whole blood, plasma, erythrocytes, and ghost cells. As dilute solutions as 1: 40 million were active. Other alkaloids, such as morphine and strychnine, did not present this inhibiting property. Physostigmine also acted to inhibit enzymatic splitting of acetylcholine adsorbed on charcoal. Heating to 58° C. did not inactivate the enzyme of human blood, but did that of cows' blood. Dry human blood split acetylcholine at 38° C., but did not at 58° C. Fluorescent light did not injure the acetylcholine-splitting of either fresh or dried human or cows' blood: dry serum, inactivated by heat, prevented the inactivation of fluorescent light on the esterase of yeast extract. The acetylcholine-splitting enzyme proved to be a glycerol-soluble esterase.

1158. **EULER, ULF VON. Zur Kenntnis des Antagonismus zwischen Adrenalin und Ergotamin.** *Arch. Exp. Pathol. und Pharmakol.* 139(5/6): 375-377. 1929.—Ergotamine lowers the body temp. of the febrile and normal rat and rabbit by diminution of chemical heat production and paralysis of the sympathetic part of the heat centers. The rate of oxidation (frog's muscles in small pieces) is increased by small concentrations and diminished by alcoholic or colloidal solutions of ergotamine. Epinephrine, also, speeds oxidation, an effect which is offset by equal doses of ergotamine.—*H. Graf.*

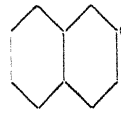
1159. **FENWICK, FLORENCE, and ELIZABETH GILMAN. The use of the antimony-antimony trioxide electrode for determining the dissociation constants of certain local anesthetics and related compounds.** *Jour. Biol. Chem.* 84(2): 605-628. 3 fig. 1929.—Acidity determinations have been made at 25° with the $Sb-Sb_2O_3$ electrode on a series of solutions of 4 new local anesthetics of the naphthalene series (A). Hydrochloride of 2-ethoxy-3-diethylaminopropylnaphthoate



(B). Hydrochloride of 2-ethoxy-3-dibutylaminopropylnaphthoate

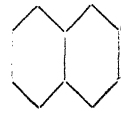


(C). Hydrochloride of diethylaminoethyl-β-naphthoate



; and

(D). Hydrochloride of 2-ethoxy-3-diethylaminoethylnaphthoate



together with procaine, diethylaminoethanol, and aniline hydrochloride. From these sets of values the corresponding basic dissociation constant was computed by an extrapolation involving the Debye-Hückel equation for the activity coefficient of an ion at vanishing concentration. This constant was compared in each case with the apparent dissociation constants calculated for the several dilutions measured. The order of increasing basicity of the 4 related anesthetics proved to be the same as the order of increasing anesthetic efficiency. The relationship between the order of increasing basicity and the chemical structure of the members of the naphthalene series was found to be the same as that discovered for the procaine series by Vliet and Adams. Comparison measurements made with the Sb and H electrodes on solutions of the compounds named and also benzoic acid and *p*-aminobenzoic acid failed to agree; the behavior of the H electrode is shown to be erratic and untrustworthy.—*Authors' summary.*

1160. **FLORKIN, MARCEL. Action de l'adrénaline, de l'atropine et du chlorure de baryum sur la chronaxie de l'intestin terminal isolé de la grenouille. Antagonisme atropine-ésérine. [Effect of epinephrine, atropine, and $BaCl_2$ upon the chronaxie of the distal intestine of the frog. Atropine-eserine antagonism.]** *Compt. Rend. Soc. Biol.* 97(36): 1804-1805. 1927.

1161. **FRIEDMANN, L. Über den Einfluss kleiner Jodkalimengen auf den erhöhten Blutdruck.** *Deutsches Arch. Klin. Med.* 165(3/4): 243-244. 1929.—Doses of 5 cc. of a 2.5% KI solution were administered orally to each of 25 patients (52 doses were given in all), and blood-pressure was taken covering periods of 10 to 20 min. Of the 52 curves 20 showed no effect on the blood-pressure; 14 (mostly cases betraying signs of damaged kidneys) showed rather sharp rises in blood-pressure, ranging from 15 to 55 mm. Hg and averaging about 30 to 40 mm. Hg; while 18 (chiefly cases of relatively benign hypertension, with initial pressure between 170 and 190 mm. Hg and normal urine) showed falls in pressure, beginning ½ hr. after administration of KI and reaching the lowest point (averaging 15 mm. fall) about 1 hr. after dosage.

1162. FUSS, H. Über Störungen des Kohlenhydrathaushalts bei der Narkose. I. Mitteilung. Der Blutmilchsäurespiegel bei der Äthernarkose des Hundes. *Zeitschr. Ges. Exp. Med.* 72(5/6): 313-336. 4 fig. 1930.—The following conclusions are drawn from 29 exps. on an unspecified number of healthy dogs. Under ether drop narcosis a very prompt rise in lactic acid occurred in the dog's blood, and continued to the end of narcosis, even when this lasted for 3 hrs.; after discontinuance of the ether the rise in lactic acid ceased within 1-2 hrs., in many cases being followed by subnormal lactic acid values. Normally there are very slight differences between the blood lactic acid of the femoral vein and the femoral artery; no significant alteration of the difference was observed during narcosis. No material differences were observed during narcosis between the lactic acid content of the portal and the hepatic vein. The blood lactic acid rose more rapidly and to a higher point during ether narcosis and sank more rapidly afterward, than the blood sugar; thus there was no constant ratio between blood lactic acid and blood sugar during narcosis. During inhalation ether narcosis (ether mixed with pure O), however, unlike ether drop narcosis, lactic acid formation in the dog's blood was very limited, even when the narcosis lasted for 3 hrs.; but immediately after discontinuance of the O-ether mixture the blood lactic acid rose to a point comparable to that attained under ether drop narcosis. Several hrs. after end of narcosis (even 24 hrs. after) it frequently was subnormal. In 1 exp. the postnarcotic rise in lactic acid was reduced by continuation of O-inhalation after discontinuance of the ether. Muscular effort produced rise in blood lactic acid only when very strenuous; the rise even then was less than that produced by narcosis, and fell back to normal in ½ hr. Hence it seems unjustified to attribute to restraint and excitement the rise in blood lactic acid accompanying narcosis. It is concluded that the rise of blood lactic acid narcosis is due, not to any local, but to a general, disturbance of lactic acid metabolism; and not to any augmentation of the 1st or anaerobic phase of carbohydrate metabolism (in which the carbohydrate is split up with formation of lactic acid) but to a protraction of the 2nd, or aerobic phase (in which the lactic acid under the influence of O is resynthesized to glycogen). The ether-O inhalation experiments showed that the diminution of oxidation processes is a mere by-occurrence and not an essential feature of the narcosis.

1163. GAISBÖCK, F. Bemerkungen zur Calcium-Miose. *Arch. Exp. Path. u. Pharmakol.* 141(5/6): 379-380. 1929.—Description of phenomena following intraven. injection of $CaCl_2$ (and Ca gluconate) in the rabbit, and the effects produced by various accessory procedures, such as section of the cervical sympathetic and ether, paraldehyde and Mg narcosis.

1164. GARELLO, ALBERTO. Sull'azione farmacologica delle resine colloidali di Incenso, Mirra, Guaiaco. [On the pharmacologic action of the colloidal resins of incense, myrrh and guaiac.] *Atti Soc. Ligustica Sci. e Lett.* 8 (4): 279-290. 1929.—It is easy to prepare from the resins of incense, myrrh or guaiac, colloidal substances which are suitable for pharmacologic study. Myrrh and guaiac are non-toxic, while incense is somewhat toxic. When the latter is applied to the isolated heart it causes arrest in diastole. No action was noted on blood-pressure or on the conductivity of nerves and muscles.—*A. Garello (transl. by H. C. Wood).*

1165. GARELLO, ALBERTO. Sulla tossicatà del decotto acquoso di resina di guaiaco in confronto colla stessa resina colloidale. [The toxicity of the aqueous decoction of the resin of guaiac as compared with the colloidal form.] *Atti Soc. Ligustica Sci. e Lett.* 8(4): 291-297. 1 fig. 1929.—There is a difference in the effects on fermentation, sprouting, heart-action and blood-pressure, between the aqueous sol. of guaiac and the colloidal form, due to a small amount of saponin which is present in the decoction but not in the colloidal resin.—*A. Garello (transl. by H. C. Wood).*

1166. GESSNER, OTTO. Über die Darmwirkung von Rivanol, Yatren und Emetin. *Arch. Schiffs- u. Trop.-Hyg.* 33(5): 277-281. 1929.—The pharmacologic action of "rivanol," emetine and yatren was studied on the isolated intestine of frogs, guinea pigs and rats. Rivanol in weak and medium concentrations caused an increase in the tonus of the frog intestine, in high concentration, irreparable contraction. In intestine of guinea pig and rats rivanol in concentration of 1: 1,000,000 and 1: 100,000 sometimes even in 1: 10,000 increased the tonus considerably. After rivanol of 1: 100,000, 1: 10,000 and especially 1: 1000 a paralyzing action occurred which in contrast to the effect of papaverine and yatren was not reversible. Emetine caused a strong excitation in concentrations of 1: 1,000,000 and 1: 100,000. In concentration of 1: 10,000 and 1: 1000 a reversible paralyzing action on the intestine of the frog was obtained. In guinea pigs and rats the paralyzing action was obtained in concentrations of 1: 100,000 and even 1: 1,000,000. Yatren stimulated in all concentrations up to 1: 100. Paralyzing action was only obtained at 1: 100 or even 1: 20. The Ba reaction of the intestine remained. Often the rat's intestine was not paralyzed by yatren 1: 20 (5%). The paralyzing action of yatren was reversible, demonstrating comparatively low toxicity. The exciting action of yatren can be eliminated by the addition of uzara (uzarin 1: 100,000), which should be used where yatren causes diarrhea. Rivanol is 200 times as poisonous as yatren. Sunlight increases the toxicity of rivanol but not of yatren.—*F. R. Greenbaum.*

1167. GOLD, HARRY, and ARTHUR C. DeGRAFF. Studies on digitalis in ambulatory cardiac patients. II. The elimination of digitalis in man. *Jour. Clin. Investigation* 6(4): 613-626. 1929.—The curve of digitalis elimination, in terms of persistence of action, was successfully studied on 23 patients afflicted with auricular fibrillation. Reduction in heart rate was the index of action employed. It was shown that a certain percentage, and not a fixed amount, of the drug was eliminated daily under the given conditions. The percentage excreted varied with the amount present in the body at any time. In essentials, man does not differ from other animals in the elimination of digitalis.—*M. Dresbach.*

1168. GRODINSKY, MANUEL, and R. RUSSELL BEST. Sacral anesthesia. An experimental and clinical study. *Jour. Urol.* 22(2): 187-212. 2 pl. 1929.—An epidural injection of 20 cc. of novocaine sol. is sufficient to anesthetize the 5th sacral nerve completely and the 4th (sometimes the 3rd) less completely. A 30 cc. injection anesthetizes them completely. A 40 cc. injection anesthetizes the 5th, 4th, and 3rd nerves completely and the 2nd and 1st less completely. In order to anesthetize completely the 1st 2 sacral nerves, it is necessary to use volumes greater than 40 cc. (50 to 75 cc.) or to combine a smaller caudal injection (30 to 40 cc.) with transacral injection of the upper 2 sacral foramina. Since volumes greater than 40 cc. are apt to reach high levels about the cervical cord and medulla, the combined method is preferable where it is necessary to anesthetize the first 2 sacral nerves. In our experience, weaker solutions of novocaine (1% or even less) are almost if not as effective as the stronger solutions (2% or more) and are to be preferred. The presence of excessive perineural fat and connective tissue makes it difficult for aqueous solutions of dye or novocaine to reach the bare nerves and suggests the use of some more penetrating anesthetic solution.—*Authors' conclusions.*

1169. GROSS, R., und J. WADEL. Studien zur Kohletherapie. I. Mitteilung. Veränderungen im Blute bei Tuberkulösen. *Beitr. Klin. Tuberk.* 74(5/6): 613-628. 8 fig. 1930.—The intraven. injection of ¼ to ½ cc. of finely divided carbon in suspension results in an increase of circulating lymphocytes and monocytes in normal man. The same result may be observed in tuberculous individuals if the injection influences the disease favorably. It is presumed that the treatment stimulates the reticuloendothelial system. An initial dose of ¼ cc. is suggested, to be repeated at intervals of 10 to 14 days.—*Authors' summary (transl. by M. I. Smith).*

1170. HAENDEL, MARCEL, und JUAN MALET. Beiträge zur Pharmakologie des retikuloendothelialen Systems. IV. Wirkung verschiedener Faktoren. *Zeitschr. Ges. Exp. Med.* 67(3/4): 315-318. 1929.—In exps. on 12 guinea-pigs, with regard to the India ink storage capacity of the organs of the reticulo-endothelial system, the effect of drugs acting on the parasympathetic system was not very clear; atropine stimulated the reticulo-endothelial system and eserine stimulated it in one case and paralyzed it in another; the neurotropic drugs pantopon and barbituric acid had opposite effects: the first increased and the latter decreased the ink storage; novasurol and neosalvarsan produced an inhibition by poisoning of the reticulo-endothelial system; choleretic drugs stimulated it; glycerin caused a blockade of high degree; and hypertonic glucose solution had no clear effect.

1171. HANZLIK, P. J., and D. A. WOOD. The mechanism of digitalis-emesis in pigeons. *Jour. Pharmacol. & Exp. Therap.* 37(1): 67-100. 1929.—Digitalis emesis in pigeons is entirely prevented by vagotomy, and therefore must have a peripheral origin. Atropine and ergotoxine do not prevent emesis, indicating that the effect is mediated through the afferent vagus fibers and is reflex in nature. The heart, however, is not essential as was supposed by Hatcher and his associates, for typical emesis occurs after recovery from section of all cardiac branches of the vagus nerve. This leaves the abdominal viscera as the site of action of digitalis in producing emesis. Injection into other birds of extracts made from the heart and abdominal organs showed that the highest concentration of digitalis occurs in the liver, pointing to it as the most probable site of action. It is concluded that the emetic action is predominately a vagus reflex mediated through the local irritant action of the digitalis concentrated in the liver, and possibly other abdominal organs.—*McK. Cattell.*

1172. HARMON, PAUL M., and C. M. McFALL. The action of strychnine upon the denervated heart and upon the secretion of adrenin. *Jour. Pharmacol. & Exp. Ther.* 37(2): 131-146. 1929.—Strychnine sulphate, injected intravenously, in doses of 0.15 to 0.3 mgm. per kgm., has little effect upon the denervated heart of the cat. If the heart rate is increased above the average for the denervated heart, strychnine in the above doses has a primary depressant action, as shown by a sharp and brief decrease in the heart rate. With the denervated heart as an indicator no evidence was obtained that strychnine directly increases the output of adrenin. A convulsion or struggle after a strychnine injection usually temporarily increases the output of adrenin but since struggle causes the same effect equally well before the injection this cannot be considered a strychnine effect.—*Authors' summary.*

1173. HASHIMOTO, HIROSHI, und SHICHIZO KATO. Über den Einfluss des Cholins auf Seidenraupen. [Japanese.] *Kumamoto Igaku Kwai Zasshi* 3: 397-402. 1927.—One hundred silkworms (Bombyx Mori L.) were fed with choline throughout the whole life cycle. This was carried out by smearing the mulberry leaves with choline sol. The worms so fed ate the leaves more avidly and their lives were more prolonged than the control animals. Life was extended even into the second generation. The body weight increased significantly in both generations, but the length of body in the second was shorter than in the first.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by E. V. Lynn).*

1174. HAYAMA, TSUNEMICHI. Pharmakologische Reaktionen der Taubenpupille, nebst ihren vergleichenden Studien mit denen der Säugetierpupille. [Japanese.] *Nihon Gankwa Gakkwai Zasshi* 31: 607-619. 1927.—The dilation of the pigeon's pupil after instillation of various drugs was investigated. Tetrodotoxin, atropine, homatropine and cocaine gave only mydriasis; physostigmine and veratrine gave only myosis; while drugs of the digitalis group produced a small myosis which soon gave place to a persistent, intense, mydriasis. Epinephrine, pilocarpine, arecoline, choline, guanidine, quinine, Ba, Ca, K, and Mg had no effect. It is noted that the pigeon's pupil reacts in general more weakly to nerve poisons, more strongly to muscle poisons than does the pupil of mammals.—*Author (courtesy Japanese Jour. Med. Sci. IV Pharmakol.) (transl. by E. V. Lynn).*

1175. HEYMANS, M. C., et M. L. REMOUCHAMPS. Contributions à la pharmacodynamie et à la physiologie du coeur. Action centrale et réflexe de l'adrénaline et de la pression circulatoire sur la fréquence du coeur. *Rec. Mém. Couronnés et Autres Mém. Acad. Roy. Méd. Belgique* 23: 7-33. 31 fig. 1927.—Epinephrine is not a direct stimulant to the cardioinhibitory (vagus) center. Rise in pressure limited to the cephalic blood vessels is capable of slowing the heart through stimulation of the vagus center. Partial anemia or partial asphyxia of the head and rise in pressure within the blood vessels of the trunk sensitize the vagus center to changes in pressure in the cephalic blood vessels. The response of the vagus center to rise in pressure in the cephalic blood vessels is diminished or abolished, through reflexes, by reduction of pressure within the blood vessels of the trunk. Stimulants of the vagus center, such as nicotine, veratrine, lobeline, acetylcholine, slow the heart through a central action, in spite of fall in pressure in the vessels of the trunk. Stimulation of the carotid sinus causes a reflex fall in blood pressure and slowing in heart rate. Removal of the cerebral hemispheres, section of the trigeminal, glosso-pharyngeal, and hypoglossal nerves, do not prevent the bradycardia consequent upon rise in pressure within the cephalic vessels alone. The vagus center still responds to changes in cephalic blood pressure. Rise in pressure limited to the blood vessels of the trunk slows the heart through a vagus reflex. While fall in pressure within the blood vessels of the trunk markedly reduces the response of the vagus center to changes in pressure in the cephalic vessels, fall in pressure in the cephalic vessels, on the contrary, diminishes only very slightly the reflex bradycardia consequent upon rise in pressure in the vessels of the trunk. The regulation of heart rate in accordance with changes in blood pressure (law of Marey) is therefore both cephalic and somatic in origin. The somatic reflex is always the predominant mechanism.—*Authors' abstract (transl. by C. F. Schmidt).*

1176. HOFFMANN, W. H., y VICENTE A. EMBIL. Observaciones sobre unos casos de ciguatera. *Rev. Med. y Cir. Habana* 33(18): 884. 1928.—Poisoning by fish, *Sphyraena picuda* B., was observed in Central and So. America, especially in Cuba and the lands bordering Caribbean sea in 1926. Symptoms observed in 23 cases were: vomiting, diarrhea, abdominal pain, cramp, weakness, small, slow and compressible pulse, and general depression. Several other cases in men and animals are cited. Experiments carried out by feeding it to dogs and cats failed to produce poisoning or intoxication. It is concluded that ciguatera or poisoning by such fishes, in the fresh state, is a definite disease; different from Ichthyotoxismus or poisoning caused by ingestion of decayed fishes; or that produced by venomous fishes.—*F. Garcia.*

1177. HÖGLUND, GUSTAF. Experimentelle Studien über die Wirkung des β-tetrahydronaphtylamins auf das weisse Blutbild von Kaninchen. *Acta Med. Scandinavica* 70(5/6): 571-589. 1929.—Injection of β-tetrahydronaphthylamine in a dose of 0.01 to 0.04 gm. per kgm. produces in rabbits a significant increase of the total white blood corpuscles in blood from veins of the ear, the increase depending upon rise of the neutrophil leucocytes. Even in animals deprived of their central heat-regulation by a complete severance of the nerve trunk, there occurred a similar increase. Arterial leucocytosis was much less marked. Accordingly, it depended, at least in great part, upon a displacement of the neutrophil leucocytes toward the peripheral part of the vascular system.—*Author's summary (transl. by E. V. Lynn).*

1178. HOLTEN, CAI. Additional investigation into the effect of insulin on the respiratory metabolism.

Acta Med. Scandinavica 71(3/4): 285-300. 1929.—The respiratory quotient rises twice as much in normals as in diabetics, the average change being in diabetics from 0.769 to 0.811, in normals from 0.843 to 0.920 (2 hrs. after insulin). In normals the heat production is not changed by insulin, while in diabetics the heat production is to some extent reduced. The explanation of these facts seems to be that in diabetics the quotient in the post-absorptive state and 14-24 hrs. after insulin is higher than that corresponding to the actual catabolic quotient owing to synthesis of fat from carbohydrate. This synthesis ceases after injection of insulin. In normals this synthesis does not take place. The rise of the quotient after insulin therefore is necessarily less in diabetics than in normals. The decrease in heat production after insulin in diabetics is probably connected with the cessation of the synthesis mentioned, as this causes a loss of energy.—*C. Holten.*

1179. **HUNT, REID. Promotion of medicine and pharmacy.** *Science* 72(1855): 49-58. 1930.—Presidential address at the 1930 U. S. Pharmacopeal Convention.

1180. **KARELITZ, SAMUEL, PHILIP COHEN, and SIDNEY D. LEADER. Insulin inactivation by human blood cells and plasma in vitro. Effect of normal and of diabetic blood on insulin action.** *Arch. Internal Med.* 45(4): 546-558. 1930.—The blood plasma of a diabetic child who did not respond properly to insulin inhibited the insulin action in rabbits. The same phenomenon occurred with blood from normal persons, young or old. A greater inhibition was caused by blood cells than by plasma. A still greater inhibition occurred when the cells were laked, which showed that the inhibiting substance is mainly endocellular, and to a less degree in the plasma. Greater inactivation is produced by blood from diabetic patients than results from blood of normal persons. Control experiments showed that this inactivation is not due to dilution, viscosity of the fluid, rate of absorption from under the skin or adsorption by the cells, or the pH of the blood for the period of incubation used in our experiments, not more than 2 hrs., except at pH 6 or lower when the inactivation ceases and at pH 9.2 when it is increased, most likely due to the alkali itself. The inhibition of the action of insulin by blood depends on the quantity of the active principle. That may explain why other authors who have used smaller amounts of blood similarly, obtained negative results. Furthermore, the inactivation may vary with different persons and with the same person at different times, perhaps even at different hrs. of the day, e.g., as related to meals, exercise, etc.—*Authors' summary.*

1181. **KATO, SEIGO. Über die Ausscheidung des intravenös injizierten Urotropins im Harn.** [Japanese.] *Rinsho Igaku* 15: 894-902. 1927.—In exps. with rabbits and men urotropin, intraven., can be found in urine as such 3-5 min. after injection. The excretion is particularly rapid during the 1st hr., the height being reached 20 min. after injection; then it slows down. Four to fifty hrs. after injection no urotropin can be detected in urine. If 5 cc. of 40% sol. are given intraven. to a man, 67-92% of the urotropin can be recovered from the urine in course of 24 hrs. after injection.—*Author (courtesy Japanese Jour. Med. Sci. IV. Pharmacol.) (transl. by B. Siaulis).*

1182. **KENDRICK, J. F. The treatment of hookworm disease with tetrachlorethylene.** *Amer. Jour. Trop. Med.* 9(6): 483-488. 1929.—Fifty-nine prisoners were treated with 3 cc. of tetrachlorethylene, 30 with 2 cc., and 30 with 2.4 cc. of a 3 to 1 mixture of tetrachlorethylene and oil of chenopodium. Subsequently the prisoners were treated until all worms were removed, and the efficiency rates were calculated on the basis of the % of worms recovered by the first treatment. When both hookworm species are considered, the efficiency rate for tetrachlorethylene alone, either in 2 or 3 cc. doses, is higher than for its mixture with chenopodium. Later, no fatalities and only 1 intoxication of significance were observed in a series of approximately 1,500 treatments with 3 cc. of tetrachlorethylene.—*N. R. Stoll.*

1183. **KERTI, F., und F. STENGEL. Über die Einwirkung von kurzfristiger O_2- und CO_2- Atmung auf das rote Blutbild beim Menschen unter normalen und pathologischen Verhältnissen.** *Wiener Arch. Inn. Med.* 16(2/3): 381-393. 1929.—This investigation was carried out on 45 individuals of both sexes and various ages. Besides the normal controls, patients with disturbances of the heart and circulation, diabetes, and diseases of the blood were utilized. The observations on the red blood cells included their number, diameter and hemoglobin contents. Following O inhalation in the 45 cases there was a definite decrease in the erythrocyte count in 16 cases, and an increase in 5 cases. Almost all cases showing a fall in the number of erythrocytes had originally a relatively high erythrocyte count. The hemoglobin contents and diameter of the red cells were little affected. Following CO_2 inhalations, the diameter of the red blood cells was but little affected except in the case of secondary polycythemia in which the microcytes decreased by one-half, and in a case of pernicious anemia in which the macrocytes were tripled in number. There was a definite increase in the number of erythrocytes in the normal cases. The same thing occurred in the case of pernicious anemia, while in 2 cases of secondary polycythemia and in 1 case of hypertension a fall of number occurred. In experiments with O the hemoglobin contents were little subject to change. No interpretation of the findings is offered, particularly since the results are not very uniform.—*G. Bachmann.*

1184. **KOCHMANN, M., und H. LYDING. Wirkung der Lokalanästhetika auf sensible und motorische Nerven in gepufferten Lösungen.** *Arch. Exp. Path. u. Pharmakol.* 141(3/4): 246-247. 1929.

1185. **KOCHMANN, M. Zur Pharmakologie der Expektorantien. Wirkung auf die Flimmerbewegung.** *Arch. Exp. Path. u. Pharmakol.* 150(1/2): 23-38. 1930.—Action of expectorants was tested on the ciliated epithelium of the frogs' pharynx, in vivo and in vitro. Rate of movement of small pieces of cork was measured after application of different drugs and ions. Some active expectorants increased the activity of the frogs' epithelium immediately—to this group belonged NaI, NH_4OH, NH_4Cl, emetine, and ethereal oils. Other active expectorants, such as apomorphine, did not increase the activity of the frogs' epithelium. The frog method cannot, therefore, be used to evaluate the worth of expectorants.

1186. **KOFLER, LUDWIG. Chemische, physikalische und biologische Eigenschaften der Saponine.** *Protoplasma* 7: 106-128. 1929.—A review, with an extensive bibliography.—*W. Seifriz.*

1187. **KOFLER, L., und R. FISCHER. Eine biologische Prüfung der Darmresorption von Kalkpräparaten.** *Arch. Exp. Path. u. Pharmakol.* 149(5/6): 326-335. 1930.—No simple method for testing and comparing the absorption of various Ca preparations has hitherto been known. White mice (number not stated) were given by mouth the Ca preparations to be tested, and after some time, a subc. dose of $MgSO_4$. If the Ca salt was absorbed, a larger dose of $MgSO_4$ was necessary to produce narcosis than in untreated animals; the increase in Mg dosage would be the measure of absorption. All Ca preparations tested were absorbed, with distinct differences between them in order of increasing absorbability they were: Ca glycero-phosphate, Ca lactate, $CaCl_2$, "Ca Sandoz," "kalzan," Ca lactate+saponin and $CaCl_2$+saponin.—*From authors' summary (transl.).*

1188. **KOPPÁNYI, THEODORE. Studies on pupillary reactions in tetrapods. VI. The mode of action of ergotamine.** *Jour. Pharmacol. & Exp. Ther.* 38(1): 101-111. 1930.—The technique of intraocular administration of drugs is described. Ergotamine tartrate instilled into the conjunctival sac, or injected intraocularly, produces maximal constriction of the pupil. This miosis is due to sympathetic paralysis, for faradic stimulation of the cephalic end of the cut cervical sympathetic nerve or the intravenous injection of epinephrine does not cause dilatation of the pupil previously constricted by ergot-

amine. The extreme miosis following ergotamine injection is made possible by sympathetic paralysis which allows the parasympathetic impulses to exert their full action. Ergotamine produces dilatation of the pupil—not constriction—due to sympathetic stimulation in the guinea pig. The fact that ergotamine produces paralysis of the sympathetic end organs in the dilator muscle of the cat's iris is utilized to study the action of cocaine and ephedrine, whose sympathomimetic nature has been questioned. The results indicate that these drugs do have sympathetic affinities.—*Author's summary.*

1189. **KOPPÁNYI, THEODORE. Studies on pupillary reactions in tetrapods. VII. Sympathetic actions of cocaine, procaine and pilocarpine.** *Jour. Pharmacol. & Exp. Ther.* 38(1): 113-119. 1930.—Massive doses of cocaine HCl injected intraocularly produce a dilatation, and then a constriction of the pupil. The pupil constricted by cocaine does not dilate upon faradization of the corresponding cervical sympathetic nerve, or upon the injection of epinephrine. This constriction, therefore, is due to sympathetic paralysis. Procaine HCl, in large doses, injected intraocularly, induces mydriasis which is not followed by miosis. Pilocarpine HCl in very small intraocular doses produces mydriasis and sensitizes the pupil to epinephrine and stimulation of the cervical sympathetic.—*Author's summary.*

1190. **KRISTENSON, ANDERS. Über das Verhalten von Elektro- und Mechanomyogrammen beim muskarin-(azetylcholinchlorhydrat- [sic]) vergifteten Froschherzen.** [Comparison between electrocardiograms and mechanocardiograms of frog hearts poisoned with muscarin.] *Skand. Arch. Physiol.* 54(5/6): 189-248. 11 fig. 1928.—Records were made of electrical and mechanical excursions in frog hearts perfused with muscarin solution to determine whether electrical and mechanical phenomena would be dissociated by muscarin as reported by Trendelenburg and Hoffmann. The dissociation was only apparent, and was obviated by a sensitive registration apparatus and very careful preparation of the heart. No electrogram without mechanogram.—*W. N. Berg.*

1191. **LABES, RICHARD. Über Kurarewirkung der Tellurite am Frosch.** *Arch. Exp. Path. u. Pharmakol.* 141(3/4): 142-147. 1929.—Out of a series of experiments on frogs carried on over several years, 6 are described. Small doses of K_2TeO produced complete paralysis of the hind legs and almost complete paralysis of the forelegs. During the progress of the paralysis of the hinder extremities indirect excitability through the sciatics was lost, while direct muscular excitability and sensibility of the limbs remained. This intoxication was therefore predominantly one of peripheral motor attack. This result was anticipated by previous work in which it was shown that K_2TeO does not attack ferments like salivary diastase until it has been reduced to elementary Te; and that the dehydrases concerned in tissue respiration in guinea-pig muscle were injured while the oxidases were not affected. Since, according to the views of many, the oxidases are most concerned in the respiration of the central nervous system, while the dehydrases are the most important factors in the respiration of most other organs, it was to be expected that K_2TeO intoxication would affect the respiratory processes more in other organs than in the central nervous system.

1192. **LAZAREW, N. W. Über die narkotische Wirkungskraft der Dämpfe der Chlorderivaten des Methans, des Äthans und des Äthylens.** *Arch. Exp. Path. u. Pharmakol.* 141(1/2): 19-24. 1929.—Taking the narcotic strength of $CHCl_3$ as 1, the following values were obtained by experiments on white mice (number not stated): CH_2Cl_2, 0.45; CCl_4, 0.55; CH_2Cl-CH_2Cl, 0.94; CH_3-$CHCl_2$, 0.52.

1193. **LEYKO, EMIL. The action of some heart tonics.** *Jour. Pharmacol. & Exp. Ther.* 38(1): 31-49. 1930.—Investigations have been performed with some new "heart-tonics" on the heart lung preparation, the diminution of the diastolic heart volume at constant output being the criterion of their tonic effect. Cardiazol has no influence on the heart tone. Coramine in small concentrations does not affect the heart-tone, in larger ones, such as 1: 25,000, it causes dilatation of the heart. Hexetone in weak solutions has also no effect on the tone of the isolated heart. In solutions 1: 25,000 it dilates the heart, and this effect like that caused by coramine is not influenced by atropine. As Na salicylate in such doses as are contained in the hexetone solutions only dilates the heart transitorily, the effect of hexetone may be due either to this substance alone or to both together. Cardiazol does not influence the coronary flow, coramine increases it, and hexetone and sodium salicylate diminish it transiently. Ephedrine and ephetonine produce a tonic effect. Their action is a little slower in onset, but more lasting as compared with that of adrenaline. The ratio of the doses of ephedrine and ephetonine to that of adrenaline in bringing about the same tonic effect on the same preparation is approximately 20: 1. Ephedrine and ephetonine like adrenaline increase the coronary flow, the relation of the doses required to produce a similar effect being the same as before.—*Author's summary and conclusions.*

1194. **LIGHT, ARTHUR B., and EDWARD G. TORRANCE. Opium addiction. VIII. The effects of intramuscular and intravenous administration of large doses of morphine to human addicts.** *Arch. Internal Med.* 44 (3): 376-394. 1929.—The pulse and respiration rates, electrocardiogram, blood chemistry and behavior of the addicts was noted following the administration of morphine sulphate by vein (6-9 times habitual dose) and by intramuscular injection (3-6 times habitual dosage). No significant changes were noted. Two patients (following an abstinence period of 48 hrs.) were injected with 11 and 20 grains of morphine by vein. No significant physiological or behavior changes were noticeable during the succeeding hr. Morphine disappears from the blood very rapidly following the injection of such dosages.—*O. W. Barlow.*

1195. **LOEPER, LESURE, et TONNET. L'influence de la thyroidectomie et de la thyroxinisation sur l'équilibre protéique du sérum.** *Progrès Méd.* 1929(33): 1381. 1929.—The authors had previously stressed the frequent rise of blood serum albumin from a normal 60% to 80% and more in Basedow's disease. Of 2 partially thyroidectomized patients ? was cured by the operation; the serum albumin in this case fell from 83% to 66%; the other patient was not improved; his serum albumin rose instead. In a totally thyroidectomized dog the serum albumin fell from 79% to 58%. In a dog of which ⅓ of the thyroid was removed the fall of serum albumin was only from 70% to 67%. The authors conclude that the return of the protein equilibrium to normal is a criterion of amelioration. Thyroxin (1 "mmgr." per day for 15 days) raised the serum albumin in a normal man from 65 to 77%, while leaving the total albumin unaffected. In a totally thyroidectomized dog the serum albumin had fallen to 58%; 1 "mmgr." of thyroxin a day for 15 days raised it to 65%. These results are believed to show the existence of a proteocrasic function in the thyroid gland.

1196. **McGUIRE, JOHNSON. Über Somnifen.** *Zeitschr. Ges. Exp. Med.* 71(3/4): 543-553. 3 fig. 1930.—From experiments on rabbits, cats and dogs (number not stated) and clinical observations, McGuire strongly advises against the use of somnifen for intravenous narcosis in experimental or therapeutic operations, because of its tendency to produce coagulation of the blood.

1197. **MACHT, DAVID I. A simple method of studying respiratory pharmaco-dynamics.** *Jour. Amer. Pharmaceut. Assoc.* 19(1): 7-11. 2 fig. 1930.

1198. **MARTIN, LAY, and JUSTINA H. HILL. I. The effects of mercurochrome and milk protein upon anaphylaxis.** *Bull. Johns Hopkins Hosp.* 46(3): 232-245. 1930.—Guinea-pigs were sensitized to egg albumin. At various intervals during the development of sensitization (taken as two weeks) different groups were injected with a varying number of doses of mercurochrome in-

traven. and milk protein intramuscularly and intraven. Each group was controlled with a similar or larger number of pigs. At the end of 2 weeks all the pigs were given the minimum effective dose which killed the majority of the control pigs. It was found that the agents listed above had the ability to protect a certain proportion of the test animals against death and very frequently against even light to moderate shock. To be effective the last desensitizing dose must not be given more than 24 hrs. before the shocking dose.—*L. Martin.*

1199. MASUDA, ROKUNOSUKE. Experimentelle Studien über die Kalkablagerung in der Haut. *Japanese Jour. Dermatol. and Urol.* 29(5): 423-455. (With German summary p. 33.) 2 pl. 1929.—For the experimental production of Ca deposition, 3 factors are necessary: a) Trauma, which causes a mild degree of degeneration of the muscles and connective tissue, b) Ca excess in the body, c) long duration of factors a) and b). Daily administration of 3 gm. of Ca lactate by mouth, or 2 cc. of a $CaCl_2$, 5%, intraven. for 41-50 days resulted in only a slight increase in the Ca content of the blood serum, and in a definite, constant increase in the Ca content of the skin and muscle tissues in the area which had been traumatized. These deposits were often grossly visible in the subc. tissues and in the fascial sheaths of the muscle layers. In some cases cartilage formation occurred. Following intragluteal injections of salts of heavy metals (Bi, Pb, Cu and Hg) deposits of Ca were frequently found in the liver, kidneys (in the epithelial cells of the convoluted and straight tubules) and in the muscles at the site of injection. The increase in the Ca content of these organs and of the blood serum as well, was not associated with any change in the Ca content of the skin and subc. tissues. No relation was found between the Ca content and the free fatty acid or lipid content of the tissues studied.—*Author's summary (transl. by M. A. Perlstein).*

1200. MATSUMORI, TSUNEO. The effect of adrenaline on the heart of the chick embryo. *Endocrinology* 13(6): 537-548. 1929.—Experiments with chick embryos have shown that adrenaline causes an increase in the frequency and contraction of heart preparations without regard to stage of development. Amount of acceleration varies with the stage of development, being weakest at the 61st to 70th hours of incubation and strongest at the 91st to 100th hours. The effect is always transitory. Heart strip preparations from the apex region react to adrenaline by decrease of frequency and height of contraction. The course of the reaction corresponds to that of heart preparations in general. Ventricular strip preparations are also stimulated by adrenaline. From the 5th to 7th day of incubation, however, a decrease in the frequency and an increase in the contractions is to be observed. With apex preparations a decreased frequency but an increased contraction occurs. The effect of adrenaline on the strip preparations is transitory, lasting at most only a few minutes. By and large, the effect of adrenaline on the embryonic heart is the same as that on the post-embryonic. Certain suggestions are made as to the point of attack of adrenaline.—*Author's conclusions.*

1201. MELVILLE, K. I., und R. L. STEHLE. Novasuroldiurese. *Arch. Exp. Pathol. & Pharmakol.* 123(3/4): 175-185. 1927.—Experiments on unanesthetized dogs with bladder fistula. Intravenous injection of 1 cc. novasurol caused slight primary slowing of urine flow for from 1 hr. 15 mins. to 2 hrs., followed by a marked diuresis lasting 2 hrs. Water and chlorides are chiefly increased; K/Na relationship being diminished: P first diminished, then increased. One experiment with anesthesia gave similar results. No glycosuria appeared at any time. Injection of novasurol into one renal artery, followed later by intravenous injection of grape-sugar solution, showed no marked differences in the compared urines collected from each side. The authors claim therefore that there is no immediate renal effect of novasurol. Either it must be changed into an active form, or its action is extra-renal. The authors incline towards the extra-renal action.—*O. S. Gibbs.*

1202. MESSINI, M. Azione del citrato trisodico sull'utero isolato. *Arch. Internat. Pharmacodynamie et Thérap.* 36(1): 1-16. 1929.—The uterus of the guinea-pig, whether virgin or gravid, reacts to trisodium citrate in proportions of 0.00015—0.00090%, with a marked increase of tonus; and to doses higher than 0.001% with a strong depression. Although it is not possible absolutely to exclude a decalcifying effect, the action is probably due to the anion directly rather than to any power of combining with calcium, admitting that the effect of the sodium, strongly stimulant in small doses and strongly depressant in large, masks the slight depressant action of the citric acid, which is probably a decalcification. The author does not assent to the conclusions of Sugimoto concerning the effects of sodium oxalate—that the primary stimulation and secondary depression of the uterus from increasing doses is due to variations in the amount of Ca subtracted.—*M. Messini (transl. by H. C. Wood).*

1203. MESSINI, M. Azione del glucosio sull'utero isolato. *Arch. Internat. Pharmacody. et Thérap.* 36(1): 17-25. 1929.—Very small doses of glucose, corresponding to that in Locke-Tyrode solution, exert a slightly excitant effect on the contractility of the uterus of the guinea-pig, either virgin or gravid. Large doses (2.45-4.9%) bring about an increase in the contractility of the gravid uterus with a marked increase of tonus. In the virgin uterus the same dose provokes a slight increase of tonus. The diversity of reaction of the pregnant and non-pregnant uterus to glucose, can harmonize the statements of Simonart—that glucose is an indifferent substance for the uterus—and the clinical results of Müller.—*M. Messini (transl. by H. C. Wood).*

1204. MESSINI, MARIANO. Sulla tossicità di alcuni sali di uranile. [Toxicity of certain salts of uranyl.] *Biochim. Terapia Sperim.* 16(4): 120-124. 1 fig. 1929.—The rapidly and slowly fatal dose of the sulphate, acetate and nitrate of uranyl was determined on rabbits, by intravenous injection. With the rapidly lethal dose the animals all died of respiratory failure, with the late fatal dose of glomerular nephritis. The order of toxicity is: sulphate, nitrate, acetate (corresponding to their hydrolytic dissociability). With all salts there is a marked diminution of toxicity with dilute solutions. For the sulphate there is a notable difference between the immediately lethal dose (0.5 to 1.3 mgm.) and the remotely fatal dose (0.00023 mgm.). Phosphates did not exert any demonstrable antidotal effect.—*H. C. Wood.*

1205. MORRELL, J. A., H. H. POWERS, and J. R. VARLEY. A new source of the ovarian follicular hormone. *Endocrinology* 14(1): 28-31. 1930.—The follicular hormone occurs in both amniotic and allantoic fluid of cattle in equal amounts. This is the richest source obtainable from slaughter houses. About 200 units per gallon of fetal fluid is obtained. The preparation is water soluble, non-toxic and has the physiological properties of the follicular hormone. It causes estrus in spayed rats, menstruation in ovariectomized monkeys and hastens sexual maturity as evidenced by the opening of the vaginal orifice.—*J. A. Morrell.*

1206. MOURIQUAND, G., et A. LEULIER. Recherches cliniques l'action antirachitique de l'hélistérine irradiée. *Paris Méd.* 19(44): 409-415. 14 fig. 1929.—The sterols of the edible snail *Helix pomatia* were chosen as the subject of experiment because of the snail's well known ability to repair its broken shell, because its blood contains 3 times as much Ca as human blood, and because the snail's cholesterol is chemically and physically comparable to human cholesterol. Some of this snail cholesterol was purified by successive crystallizations, while other samples of cholesterol containing traces of the associated sterols (called by the authors helisterine) were used without purification. Both were used on rachitic rats (number not stated). In the animal series the purified irradiated cholesterol showed no antirachitic effect; the irradiated helisterine (unpurified cholesterol)

showed a powerful antirachitic action. The irradiated helisterine, used in clinical cases (number not stated), relieved or cured some patients but had little or no effect on others, the latter being cases like those which give negative results with ergosterol and ultraviolet rays.

1207. NATALE, LUIGI DI. La nostra esperienza di terapia del cancro con il piombo colloidale. [Colloidal lead and cancer.] *Minerva Med.* 9(51): 997-1005. 1929.—Colloidal lead in 3 different preparations was used experimentally on 13 rabbits and therapeutically on 10 patients, necropsy being performed on all the animals, and on the clinical cases that ended fatally. No elective action on the cancerous cell was observed; in fact, in one case the lead was observed to be deposited in the sustaining tissues and not in the cancer cells, though injected into the neoplastic tissue. One of the preparations proved highly toxic; none gave any therapeutic effects.

1208. NEWMAN, ROLLO K. The relative rates of excretion in the urine and removal from the blood of lead after injection of colloidal lead and colloidal lead orthophosphate. *Med. Jour. Australia* 1(6): 170-177. 1930. —For several patients receiving colloidal lead injections the average excretion of Pb in feces was 2.91 mgm. and in urine 1.64 mgm. per week. The concentration in the urine averaged 0.33 mgm. per litre, varying from 0.97 mgm. to 0.19 mgm. per litre, figures similar to those recorded by other workers for cases of Pb poisoning. Blood was not present in the urine in any case. Albuminuria was common for 5-8 days after injection. It is believed that the therapeutic action of Pb is quantitative rather than qualitative.—*R. K. Newman.*

1209. NOMA, ARATA, und SHÔICHI SASAI. Über den Einfluss des Opiums auf den Kohlehydratstoffwechsel. [Japanese.] *Okayama Igaku Kwai Zasshi* 39: 1592-1606. 1927.—It was shown experimentally that opium in small doses can suppress alimentary hyperglycemia and glycosuria. In large doses hyperglycemia is produced, as with morphine. Experiments were made on well nourished rabbits utilizing opium, atropine, ergotamine, epinephrine, and insulin with the following results: Tincture of opium subc., 0.5 ccm. per kgm. per day over a 4 day period, produced in many animals a slight hyperglycemia only on the 1st day, while it became ineffective on the following day. Subsequently, the blood sugar rise following both oral and rectal administration of sugar was definitely reduced. Nevertheless, the glycemia following sugar intraven. was increased and prolonged, while the insulin sensitivity of the animals was more or less reduced. The glycogen content of the liver was not always reduced. With from 0.75 to 1 ccm. of tct. of opium a definite hyperglycemia was produced. Subc., atropine had no noticeable effect on the blood sugar, but with gynergen and with atropine and ergotamine combined, slight hypoglycemia was produced. After atropine and gynergen, separately or combined, the hyperglycemia following oral or rectal sugar administration was lower, but higher and more prolonged after intraven. injection of sugar. The insulin sensitivity of animals was likewise reduced. Epinephrine and opium hyperglycemia and primarily antagonizes prolonged in- it appears that opium probably depresses alimentary hyperglycemia and primarily antagonizes prolonged intestinal absorption of sugar rather than accelerating sugar mobilization. Opium in larger dosages actually produces a definite hyperglycemia due probably to an increased epinephrine secretion, comparable to the action of morphine. Therefore it appears that the action of opium in diabetes is associated with a disturbance of carbohydrate metabolism and should be employed with caution.—*Author (courtesy Jap. Jour. Med. Sci. IV) (transl. by. O. W. Barlow).*

1210. OGAWA, MASAYOSHI. Experimentelle Studien über den Wirkungseffekt des Insulins. I. *Folia Pharmacol. Japonica (Breviaria)* 8(3): 2-3. (Orig. in Japanese p. 157-178.) 1930.—The smallest effective dose of insulin in rabbits is 0.005 units per kgm., provided injection is made into the ear vein, carotid- or femoral artery or trachea. The min. eff. dose of insulin subc. or intramusc. is twice as large. The blood sugar begins to fall 10 min. after intraven. injection. After intraarterial injection the fall in blood sugar starts later, after subc. still later and latest after intramuscular injection (after 30 min.). After intraven. or arterial injection the hypoglycemia is of shorter duration than after the other types of injection. Two units per kgm. cause convulsions, irrespective of the mode of application. With larger doses hypoglycemia is more marked but not much more lasting. Convulsions usually occur when the blood sugar is lowest, rarely when it has begun to rise. A slow fall in blood sugar delays the onset of convulsions or even prevents them though the blood sugar may fall to a very low level. After intramuscular injection occasionally no convulsions occur. The minimal lethal and convulsive doses of insulin are practically identical. The effect of insulin is less dependent on the rate of absorption into the blood stream than that of most other drugs. —*Author's summary (transl. by G. T. Cori).*

1211. ORR, J. B., A. CRICHTON, and W. MIDDLETON. A note on the toleration of farm animals for high doses of iodine. *Vet. Rec.* 9(48): 1055-1056. 1929.—Experiments showed that doses of I up to 3 gm. daily for calves, 5 gm. for pigs, and 0.3 gm. for sheep and poultry can be administered over long periods without harmful effects.

1212. OSHIMA, SHIRO. Über den Einfluss der Salvarsaninjektion auf den Calciumgehalt im Blutserum. [Effect of injection of salvarsan on calcium content of blood serum.] (Japanese.) *Hokkaido Igaku Zasshi* 5: 193-202. 1927.—In men with positive Wassermann reactions, Ca was determined by the Clark and Collip modification of the Kramer-Tisdall method; K by the Kramer-Tisdall, and albumin by the Pulfrichs refractometer. The intravenous injection of salvarsan causes, in the 1st hour, a decrease in the Ca content of the serum, which returns to normal in 5 hrs. after the injection. Simultaneously, the K content shows a rising tendency. The Na content remains uninfluenced by the injection. The serum albumin shows a slight increase.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by C. C. Haskell).*

1213. OSTERBERG, ARNOLD E., MYER W. RUBENSTEIN, and WILLIAM H. GOECKERMAN. The absorption of sulphur compounds during treatment by sulphur baths. *Arch. Dermatol. and Syphilol.* 20(2): 158-166. 1929.—Sixteen patients presenting various pathologic conditions of the skin and 2 normal persons were given daily S baths for varying periods of up to 44 days. Blood and urine were analyzed for total S daily or semiweekly in some cases. Marked rise in conc. of S was observed in both fluids. The rise in S was greatest in the type of bath in which SO_2 is evolved.—*E. Smith.*

1214. OSTERMANN, GOTTFRIED. Die Wirkung stark verdünnter Salzlösungen auf den Blutdruck. [The effect of highly dilute salt solutions on blood-pressure.] *Arch. Exp. Path. u. Pharmakol.* 149(5/6): 257-262. 1930.

1215. PARTOS, ALEXANDER. Über die Wirkung des Curare auf den Kohlenhydratstoffwechsel, auf die Harnsekretion und über die Schutzwirkung der Leber dem Gifte gegenüber. *Pflüger's Arch. Ges. Physiol.* 223(1/2): 40-46. 1929.—Examples are cited from a series of experiments on rabbits. In all cases, within a few minutes after administration of curare, a hyperglycemia set in which could be controlled by simultaneous administration of insulin with the curare. Glycosuria was observed in only one case. During the intoxication marked concentration of the blood occurred, but disappeared during recovery; this did not take place if the ureters were ligated. During the intoxication the solids of the urine decreased considerably, but increased notably on the appearance of the first symptom of recovery. Curare impedes the secretory activity by damaging the urinary passages. Recovery of curarized animals in which the ureters had been ligated indicates that the liver is able to exert complete protective activity against curare if the excretion of the poison through the kidneys is prevented.

1216. PATTISON, C. LEE. Treatment of bone tuberculosis by large amounts of vitamins A and D. *Brit. Med.*

Jour. 2(3630): 178-179. 1930.—Preparations containing large amounts of vitamin A and vitamin D were fed to 43 patients with bone tuberculosis and codliver oil was given to 35 patients. About the same proportion of each series made similar progress toward recovery, indicating no more value in the vitamin preparations than in the codliver oil.

1217. **PEISACHOWITSCH, I. M. Kohlenoxyd und inkretorische Drüsen.** *Virchow's Arch. Pathol. Anat. u. Physiol.* 274(1): 223-229. 1929.—CO increases the activity of the suprarenals and also acts on other chromaffin organs. In acute CO poisoning there are histochemical changes in the colloid of the thyroid; in chronic poisoning extensive colloid formation.

1218. **PELLEGRIN, CH. Intoxication de chevaux par la naphtaline.** *Bul. Soc. Sci. Vét. Lyon* 32(3): 96-98. 1929.—Note.

1219. **PLATTNER, F., und H. HINTNER. Zur Frage der Saponinstromatolyse.** *Pflüger's Arch. Ges. Physiol.* 224(2): 293-296. 1930.—Saponins from 8 different manufacturers were used to hemolyze erythrocytes from different species of mammals. Observations on hemolysis were made by Ponder's ultra-microscopic method. All saponins hemolyzed erythrocytes at dilutions of 1: 100. Saponin Sthamer hemolyzed cats' blood and pigs' blood in dilutions of 1: 200; saponin Herniaria hemolyzed cats' blood in dilutions of 1: 1000, oxblood in dilutions of 1: 200 and pigs' blood in dilutions of 1: 400.

1220. **POWERS, H. H., J. R. VARLEY, and J. A. MORRELL. Preliminary note on the assay of the follicular hormone by vaginal administration.** *Endocrinology* 13(4): 395-398. 1929.—The estrus-inducing hormone was prepared in the form of a gelatin pessary for vaginal administration. The check of potency of the gelatin pessaries by injection of water emulsion of these pessaries in white rats showed that no loss in potency occurred in their preparation. The estrous cycle has been induced in spayed albino rats by vaginal administration of the follicular hormone. The ratio between the pessary dose and the subcutaneous dose is probably in the neighborhood of 3 to 1. Menstruation has been induced in spayed monkeys by the vaginal administration of these pessaries. As low as 150 units will induce menstruation in these animals.—*Authors' summary.*

1221. **PŘIBYL, E. K dusikovému metabolismu při experimentálních otravách. II. Subacutní otravy antimonem. (On the nitrogen metabolism in experimental poisoning. 2. Subacute antimony poisoning.)** [English summary.] *Biol. Spisy Vysoké Školy Zvěrolékařské Brno (Publ. Biol. École Haut. Études Vét.)* 6: 261-267. 1927.—In rabbits poisoned by Sb-K-tartrate the level of non protein N and urea N in blood, total non protein, urea and ammonia N in urine were followed. In all cases a rise of non protein and urea N has been found. The excretion of total and urea N in urine of poisoned animals is also very much higher. In Sb poisoning a rise of non protein N is not always due to rise of urea N. The ammonia N quotient in the urine seems to be inversely proportional to the urea N quotient. The increase in N metabolism is in Sb poisoning lower than the increase in As poisoning. Histological examination shows the pathological changes in liver and kidney to be less prominent. No influence of fatty degeneration of liver in urea content in blood and urine has been noticed. *From author's summary.*

1222. **RABBENO, A. Azione farmacologica del pirrolo. [Pharmacological action of pyrrole.]** *Bol. Soc. Med.-Chir. Pavia* 43(4): 439-443. 1929.—Pyrrole causes in the frog a poisoning characterized by a descending type of paralysis and muscular contracture. Locally applied it inactivates muscle, nerve and cutaneous receptors. Perfused through the heart and isolated central nervous system it inactivates them. The process is reversible. In the frog its toxic activity approximates that of a narcotic. The concentration that abolishes the reflexes in the isolated organ is about 1/10 that which stops the heart.—*A. Rabbeno (transl. by J. G. Edwards).*

1223. **RATH, ERICH. Kürbiskerne als Wurmmittel.** *Arch. Exp. Path. u. Pharmakol.* 142(3/4): 157-161. 1929.—The lipids extracted with ether, petroleum ether or alcohol from pumpkin seeds proved highly toxic for earthworms, while the husks and residue of the seeds were quite inactive.

1224. **ROBBINS, B. H. The absorption, distribution and excretion of carbon tetrachloride in dogs under various conditions.** *Jour. Pharmacol. & Exp. Therap.* 37 (2): 203-216. 1929.—The rate of absorption was studied indirectly by the rate of excretion of CCl_4 through the lungs. The thermal conductivity method of gas analysis was used. Rate of absorption was proportional to the size of dose, as shown by animals having an Eck fistula; fat and alcohol increase the rate of absorption. The drug was recovered from most tissues examined,—the bone marrow contained the highest concentration. There was no excretion of carbon tetrachloride in the urine.—*B. H. Robbins.*

1225. **ROFFO, A. H., y F. PILAR. La función heliotrópica de la colesterina. [On the heliotropic property of cholesterol.]** [With English, French and German summaries.] *Bol. Inst. Med. Exp. Estudio Trat. Cancér* 23: (1-9). 1930.—The results obtained complete those communicated before. They ascribe to cholesterol a positive heliotropism, a property in relation to the photoactivation described by others. On the other hand, these results agree with observations referring to the content of cholesterol in the skin, in parts exposed or not exposed to the sun. As a result of the investigation in man, the skin of the abdomen has ¼ as much cholesterol as the face. This phenomenon is observed even in the different parts of the head, where the skin of the nose presents an excess often as high as 100% in relation to the skin of the forehead, protected against the sun by the hat. These results are of interest in precancerous injuries and the hypercholesterolemia in precancerous conditions. Thus a relation may be established between this process and the extraordinary frequency of the localization of cancer on the skin of the face, as compared with the other localizations. Statistics on cancer morbidity show that 92% of the tumors of the face correspond to the parts exposed to the sun, while only 7% concern the skin of the forehead. Of the first group, 61.4% belong to the region of the nose. It is concluded that there is a relation of the heliotropic property of cholesterol to the fixation in the tissues and the production of tumor. —*A. H. Roffo.*

1226. **ROSE, CHARLES L., HAROLD W. COLES, and HELEN E. THOMPSON. Studies in the pharmacology of local anesthetics. III. Comparison of gamma-(2-methyl piperidino)-propyl benzoate hydrochloride with cocaine and procaine on experimental animals.** *Jour. Lab. & Clin. Med.* 15(8): 731-735. 1930.—No. 33, γ-(2-methyl piperidino)-propyl benzoate hydrochloride, has been compared pharmacologically with cocaine and procaine, by intraven. injection into rats and rabbits, subc. injection into mice and rats, and intraperitoneal injection into rats. (Number of animals not stated.) Subcutaneously given, No. 33 appeared less toxic than cocaine but more toxic than procaine. It was active by topical application to mucous membranes as well as by infiltration.

1227. **ROSE, WILLIAM C., and FLORENCE L. CATHERWOOD. Do baking powder residues exert injurious effects upon growth and nutrition?** *Jour. Nutrition* 2(2): 155-169. 6 fig. 1929.—Three baking powders (a Ca acid phosphate, a tartrate, and a mixture of Ca acid phosphate and anhydrous Na aluminum sulfate) were fed to 2 generations of rats. When incorporated in the diet in the proportions ordinarily employed in making bread and in twice these amounts, no detectable toxic or injurious action was found; growth and reproduction were as satisfactory as in control rats; and blood analyses and histological examinations of the kidneys failed to show evidence of injury.—*E. L. Batchelder.*

1228. **ROY, A. C., and K. C. SEN. On the inhibiting action of sucrose on taurocholate, saponin and oleate hemolysis.** *Jour. Indian Chem. Soc.* 6(1): 89-92. 1929.—

A study of the hemolysis of sheep's erythrocytes, both in isotonic saline as well as in isotonic sucrose, shows that sugar has a great inhibiting action on saponin, oleate, and taurocholate hemolysis. In both these solutions oleate has the highest hemolytic power, then comes saponin, and taurocholate has the least hemolytic power of the three.—*E. Ponder.*

1229. **SABATINI, GIUSEPPE. Modificazioni indotte nell'organismo umano da minime dosi di sali dei metalli oligodinamici. [Modifications of human blood by small doses of oligodynamic metals.]** *Policlinico. Sez. Med.* 36(6): 281-291. 1929.—Intravenous injection in fasting human subjects of one of the following solutions: $CuCl_2$, $ZnCl_2$, $HgCl_2$, 1 mg. in 2 cc. dist. H_2O, and 2 cc. dist. H_2O alone as control, gave a rise in R.B.C., leucocytes and blood sugar, except in the control. The red cells return to normal in 24 hours, and the blood sugar in 8 hours.—*J. Pi-Suner.*

1230. **SABATINI, G., e MARCO PAZZI. Modificazioni del tasso glicemico indotte negli individui iperglicemici e glicosurici da minime dosi di sali dei metalli oligodinamici. II. [Modification of the blood-sugar percentage in hyperglycemic and glycosuric persons by very small doses of salts of oligodynamic metals. II.]** *Policlinico. Sez. Med.* 37(7): 338-343. 1930.—Sabatini had previously found that very small doses of salts of oligodynamic metals, introduced into the human [normal] circulation, produced a transitory rise in the white and red blood counts and in the blood sugar (sometimes doubled). In this study 1 mgm. of $HgCl_2$ was given intravenously to 6 hyperglycemic and glycosuric subjects, and 1 mgm. $CuCl_2$ to a 2nd series of 6. In both series the chemicals (particularly the Cu salt), contrary to their action in normal conditions, depressed the hyperglycemia.

1231. **SATO, TAKAFUSA. Über den pathologisch-histologischen Einfluss des Lipiodols auf das Atemorgan und die bakterizide Wirkung desselben.** *Mitteil. All. Path. u. Path. Anat.* [*Sendai*] 5(2): 183-191. 2 pl. 1929.—Culturally lipiodol is sterile but without bactericidal action. Usually lipiodol does not cause a marked histopathological change in the respiratory system but does produce minor interesting changes, which differ in the lungs of dogs and rabbits. Lipiodol when introduced into the lungs is immediately taken up by the epithelium of the bronchial mucous membrane as granules, passing at the same time into the lymph spaces of the walls of larger bronchi, forming clumps. One to 3 days after administration phagocytes with ingested lipiodol appear in the alveoli in large numbers. Lipiodol granules are also seen in the cartilage cells. After 3 days numerous small aggregations of lymphocytes appear in the interstitial substance or in the alveolar walls, becoming more pronounced after 1 week and more so in the lungs of dogs. Three to 4 weeks later the above changes subside, but rather marked edema persists and the epithelial cells already show regeneration. After 47 days lipiodol is in part taken up by macrophages which appear to wander backwards through the air passages and be eliminated from the respiratory system. Furthermore the reaction in general decreases. After 93 days macroscopically no alterations are visible and histologically only the remains of the previous changes in which lipiodol granules are still seen. The changes described correspond with those reported by several authors as occurring in the meninges and spinal fluid after intraspinal lipiodol. —*W. H. Moursund.*

1232. **SCREMIN, LUIGI. Studio sull'antagonismo fra magnesio e farmaci convulsivanti. [The antagonism between Mg and convulsant drugs.]** *Arch. Internat. Pharmacodyn. et Thérap.* 36(1): 73-80. 1929.—In rabbits $MgCl_2$ intraven. prevented the convulsive action of many drugs. This effect is believed to be due to an action on the central nervous system by Mg, as is also the case with Ca.—*P. Popenoe.*

1233. **SHIOYA, NOBUO. Beiträge zur Pharmakologie des ausgeschnittenen Darmes. I. Mitteilung. II. Mitteilung. Über die Wirkungen der verschiedenartigen, an der Serosa- und Schleimhautfläche oder pervascular beigebrachten Medikamente auf das ausgeschnittene Dünndarmstück des Kaninchens.** [Japanese.] *Chosen Igaku Kwai Zasshi* 80: 687-692; 83: 1042-1073. 1927.—I. A method is described for observing effects of application of drugs to isolated segments of intestine on the serous side, on the mucous side, and by way of the mesenteric circulation. II. A study was made of the differences in efficiency of the ordinary intestinal drugs. —*Author* (*courtesy Jap. Jour. Med. Sci. IV*) (*transl. by C. Reynolds*).

1234. **SILVERBERG, MABEL G. The sensitization of the skin to mesotan.** *Arch. Dermatol. & Syphilol.* 21 (2): 166-179. 1930.—A bibliography is given of sensitization of the human skin with substances of known chemical composition by percutaneous or intracutaneous application. It is possible to make a certain number of persons locally and generally hypersensitive to mesotan (methoxymethyl ester of salicylic acid) by either repeated inunctions over a small area of skin with 10%-100% mesotan in olive oil or vaseline, or by rubbing with 100% mesotan, after mechanically irritating the skin.—*S. N. Blackberg.*

1235. **STEDMAN, EDGAR. Studies on the relationship between chemical constitution and physiological action. Part II. The miotic activity of urethanes derived from the isomeric hydroxybenzyldimethylamines.** *Biochem. Jour.* 23(1): 17-24. 1929.—The miotic activities of the methyl urethanes of the hydroxybenzyldimethylamines are in order ortho>para>meta. Conversion of the tertiary N into quaternary ammonium group increases the activity of ortho, diminishes that of meta, and abolishes that of para. The derivatives of choline iodide and of tropine were found inactive in 2% solution, confirming the view that miotics are substituted phenyl, as distinguished from alkyl, esters of carbamic acids. The ethyl and phenyl urethanes were not active.—*E. V. Lynn.*

1236. **STEINER, G., und VIKTOR FISCHL. Experimentelle Untersuchungen zur Pathologie und Therapie der Spirochätenkrankheiten. Über die Wirkung von Goldpräparaten bei experimenteller Recurrens.** *Klin. Wochenschr.* 8(13): 582-585. 1929.—Two new Au preparations were tried in African relapsing fever in mice and rats—solganal (disodium salt of 4-sulfomethylamino, 2-aurothiobenzol, 1-sulfonic acid) and preparation A 69. The chemotherapeutic index of both is higher than that of neosalvarsan and in contrast to previously used Au preparations they are efficiently prophylactic. Of fundamental importance is the fact that both gold combinations in the rat act as "therapia sterilisans magna" and destroy spirochaetes persisting in the central nervous system during the immune period.—*V. Fischl* (*transl. by E. Kellert*).

1237. **STEINMETZER, K., und F. SWOBODA. Experimentelle Untersuchungen über den Einfluss von Narkotica auf die Blutzuckerkonzentration.** *Biochem. Zeitschr.* 198(4/6): 259-267. 1928.—Dogs were fed daily on dog biscuit plus 50 gms. of meat. The normal blood sugar was determined by the Hagedorn-Jensen method. The animals were narcotized with ether, Billroth mixture, morphine, chloral hydrate or hedonal. Samples of blood were drawn at ½ hr. intervals for from 5 to 6 hrs. after the induction of anesthesia. An increase of from 30 to 50% in the normal blood sugar value was obtained following narcosis, and continued after narcosis had terminated. Small doses of chloral hydrate and hedonal which did not produce sleep caused prolonged hyperglycemia. It is concluded that hyperglycemia following narcosis is due to interference with the brain center regulating sugar metabolism.—*J. C. Munch.*

1238. **SÜSSMANN, HEINRICH. Experimentelle Studien mit Parathormone-Collip an weissen Mäusen.** *Zeitschr. Ges. Exp. Med.* 56(5/6): 817-830. 1 fig. 1927.—Analyses of 0.25 cc. samples of serum from normal mice showed this to contain about 20 mgm. Ca per 100 cc. Administration of parathormone, even in doses as large as 10 units per mouse (15 gm.), did not increase the Ca content of the serum nor produce any of the other symptoms of parathyroid overdosage. Mice treated

with parathormone were as susceptible to guanidine intoxication as were mice not so treated but, if the two were mixed before injection, 2 units of parathormone protected against 0.5 gm. guanidine per kgm., otherwise a fatal dose. There was a similar neutralizing action against picrotoxin but not against strychnine.—*I. Greenwald.*

1239. **SUZUKI, TAISUKE. Influence of intravenous administration of peptone upon the frequency of the denervated heart of the cat.** *Tohoku Jour. Exp. Med.* 12(5/6): 571-576. 1929.—Orally urethanized cats with vagi divided, and inferior cervical and stellate ganglia removed bilaterally, were given from 0.2-0.4 gm. per kgm. of Witte's peptone intraven. Acceleration of the cardiac rate immediately occurred, accompanied by fall in blood pressure. In view of these results plus a review of literature it is concluded that both the liberation of adrenaline and a direct action on the heart are concerned.—*O. S. Gibbs.*

1240. **SZILÁRD, ZOLTÁN. Die Wirkung des Natriumhydrokarbonat auf den Magen.** *Deutsches Arch. Med. Klin.* 168(5/6): 368-373. 1930.—The chloride of the gastric contents after administration of $NaHCO_3$ was studied in 44 cases, including normal, subnormal and hypernormal acidity. The Cl excretion in the gastric juice was increased after both oral and intravenous administration of $NaHCO_3$.

1241. **TANAKA, JITSUTARÔ. Über die antagonistische Wirkung des Cholins gegen die Adrenalinglykogenmobilisierung.** [Antagonistic action of cholin to glycogen mobilization by adrenaline.] [Orig. in Japanese.] *Folia Pharmacol. Japonica* 8(4): 281-288. (German summary, *Breviaria*, 6-7). 1929.—Cholin as well as adrenaline, when given subcutaneously to rabbits, raises the blood sugar. When given at the same time, cholin antagonizes the effect of adrenaline on the blood sugar. Therefore it is probable that the mechanisms of cholin and adrenaline hyperglycemia are different.—*Author's summary (transl. by G. T. Cori).*

1242. **TATUM, A. L., and M. H. SEEVERS. Experimental cocaine addiction.** *Jour. Pharmacol. & Exper. Therapeut.* 36(3): 401-410. 1929.—Rabbits, dogs and monkeys, and probably man, become sensitized rather than tolerant to cocaine habitually administered. Dogs exhibit a true cocaine psychosis with marked desire for the drug. Rabbits, unlike dogs, do not eliminate cocaine in the urine even with severe poisoning. The sensitivity acquired in dogs and monkeys persists unabated for at least 10 days. Dogs sensitized to cocaine are hypersensitive to other stimulants (ephedrine) and hyposensitive to depressants (morphine).—*Authors' summary.*

1243. **TERAO, ARATA, and TOMOZÔ TANAKA. Anaesthesia of the water-flea, Moina macrocopa Strauss, in relation to age.** *Jour. Imp. Fish. Inst.* [*Tokyo*] 25(1): 13-14. 1 fig. 1929.—Anesthesia is observed at 27° C. with 1/50 mol. solution of chloretone on monoclonal population of parthenogenetic ♀ of the water-flea reared at a constant temp. of 27° C. A curve which is nearly an ascending parabola and represents time required for anesthetizing the water-flea, plotted against age from hatching to 10 days thereafter, shows 2 drops: with those which are 4-5 and 9-10 days old respectively.—*A. Terao.*

1244. **TSUGE, MOMOTA. On the influence of some diuretics upon the gastric juice.** [In Japanese.] *Nihon Shokwakibyogakkwai Zasshi* 28(1/3): 1-36. 1928.—During diuresis the chlorine content of the blood decreases and the serum albumin increases. Quantity and acidity of the gastric juice diminish during these changes and also during alkalosis, while they increase under the reverse condition. Caffeine sodium benzoate and sodium acetate, which raise alkalinity of the blood, reduce the quantity and acidity of the gastric juice and, consequently, the appetite. The diuretics, euphyllin and novasurol, which lead to acidosis, produce smaller fluctuations in conditions of the gastric juice than those previously named, and so do not disturb the appetite. These actions of diuretics upon the gastric juice and appetite cease with discontinuance of the drug.—*M. Tsuge (transl. by E. V. Lynn).*

1245. **UCHIGAKI, SHUICHI. On the influence of various drugs on the internal pressure of the urinary bladder.** [Japanese.] *Kinki Fujinkwai Gakkwai Zasshi* 10: 1109-1129. 1927.—Laparotomy was performed on rabbits and the bladder was exteriorized. Ringer's solution at 38° C. was poured into the bladder in the proportion of 10 c.c. to every 1000 gm. body weight, the organ being thus moderately distended, and a glass catheter was inserted at the vesico-cervix. The catheter was connected with a manometer, filled with chloroform with a light glass ball afloat on it. To the glass ball a lever of straw was attached, which recorded its movements on a kymograph. By these means the influence of various drugs injected intravenously on the internal pressure of the bladder was observed. The results may be summarized as follows:—Pilocarpine and physostigmine raise the internal pressure. Atropine can lower the pressure raised by these drugs, but when administered alone it shows as a rule no remarkable influence. Adrenaline and nicotine produce a temporary rise of the pressure, and then a fall. Morphine effects in a small dose a rise of pressure but in a large dose only a slight fall. Cocaine, quinine, Ba, strychnine and pituitrine always increase the pressure. Urotropine shows first a temporary fall, then a gradual rise, which lasts about 50 min.—*Author (courtesy Japanese Jour. Med. Sci. IV).*

1246. **UHLMANN, FRITZ. La Percaine (chlorhydrate de la diéthyléthylènediamide de l'acide α-butyloxycincheninique).** *Arch. Intern. Pharmacodyn. et Thér.* 36(3): 263-271. 1929.—In the group of quinine derivatives substances have been found which cause local anesthesia of an intensity and duration unknown hitherto. The most remarkable of these substances is percaine. The limit of activity of percaine on the cornea of the rabbit is 1: 125,000 as compared with 1: 2500 for novocaine, 1: 3000 for tutocaine, 1: 10,000 for cocaine. Percaine 1: 1000 causes anesthesia of the cornea lasting 3 hrs., while with novocaine of equal concentration the anesthesia lasts 20 min., with tutocaine 30 min., and with cocaine 40 min. The toxicity of percaine is about 5 times that of cocaine, its anesthetic power at least 10 times greater. Percaine is readily absorbed by the mucous tissues (frogskin) and by the nerve tissue. In therapeutic concentrations it causes no local secondary effects. It may be combined with epinephrine, such combination often being desirable, because concentrated percaine solutions cause a slight vasodilation. Percaine solutions may be sterilised by boiling. Percaine hydrochloride is readily precipitated from its solutions by alkalis, but is redissolved by a few drops of highly dilute HCl.—*F. Uhlmann.*

1247. **UMEDA, T., and S. SHIBATA. The influence of photodynamic action on the movement of the epithelium of the urinary bladder. (A study in tissue-culture method.)** *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 7(3): 344-351. 3 fig. 1928.—Cultures of urinary bladder epithelium of the frog, *Rana esculenta*, were made by the hanging-drop method, and were grown in both light and darkness. Fluorescent dyes (trypaflavin, eosin A, erythrosin, methylene blue, uranin and florida red) did not retard the growth or movement of tissues grown in the dark, but did of tissues grown in light. Fuchsin and water blue, 2 non-fluorescent dyes, produced no retardation of either growth or movement of tissues grown in light.

1248. **VINCENT, SWALE, and J. H. THOMPSON. Saline injections.** *Jour. Pharmacol. & Exp. Therap.* 36 (1): 107-114. 1929.—Injections of normal saline have considerable effect upon blood pressure. A series of experiments have been performed showing the influence of the quantity injected, rate of injection, temperature of the solution, composition of the solution, and the mean blood pressure. Indications are given of what effects upon the blood pressure may be expected under different conditions, and the importance of control injections is demonstrated.—*Authors' summary.*

1249. WAKABAYASHI, YOSHIAKI. Über den Einfluss der ins Blut eingeführten verschiedenen Substanzen auf die Serumeiweissmenge. [Japanese.] *Osaka Igaku Kwai Zasshi* 26: 2731-2736. 1928.—Serum albumin decreases at once after injections of Eryosan, Kaseosan, normal horse serum, and distilled water, but after 24-48 hrs. has returned to normal. Ten % NaCl, or 5% $CaCl_2$ solutions, cause no perceptible decrease. The increase or decrease of serum albumin corresponds closely with the number of blood corpuscles.—*Author (courtesy Japanese Jour. Med. Sci. IV.). Translated by R. H. M'Gonigle.*

1250. WALBUN, L. E. Metallsalztherapie. Kombination von Metallsalztherapie und Serumtherapie. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 49(6): 538-550. 1927.—The author has shown that, by combined treatment with vaccine and a metallic salt (of manganese), or by treatment with serums and metallic salts, animals, which had received lethal doses of pathogenic bacteria, were saved from death. These results could not be obtained by treatment with serum alone, or vaccine alone, or metallic salts alone. Similar results were obtained with animals which had received lethal doses of tetanus, diphtheria or dysentery toxin. The solution of the metallic salts must be of a concentration which is neither too great nor too small.—*P. G. Heineman.*

1251. YAMAGAMI, MATAO. Über die Einflüsse des Cholesterins auf die Wirkung einiger Pharmaka. [Japanese.] *Chosen Igaku Kwai Zasshi* 83: 1019-1028. 1927.—Since Ransom showed that cholesterol neutralizes the hemolytic action of saponin, many investigators have attacked the question of the detoxicating action of cholesterol. Experiments on the isolated intestine of the rabbit indicate that cholesterol neutralizes the action of saponin, $BaCl_2$ and chloral hydrate.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. C. C. Haskell).*

1252. YANT, W. P., F. A. PATTY, H. H. SCHRENK, and L. B. BERGER. The response of Japanese waltzing mice and canaries to carbon monoxide and to atmospheres deficient in O. *U. S. Bur. Mines Rept. Invest.* 3040. 12p. 1930.—In atmospheres containing below 0.25% CO the sensitivity of waltzing mice (*Mus wagneri rotans*), canaries, and white mice decreases in the order named. Waltzing mice and canaries are about equally sensitive in concentrations from 0.20 to 0.25% and give indications safely in advance of a moderately exercising man. With 0.10 to 0.12%, however, canaries fail to give adequate warning symptoms while waltzing mice give distinct indications in 5 to 10 min. and well in advance of serious harm to man when his activity does not exceed that of walking. Neither canaries nor mice are sufficiently sensitive to atmosphere deficient in O to be of practical use in avoiding harmful exposure of man.—*W. P. Yant.*

1253. YOSHIMATSU, GUNSHI. Ueber das Verhalten der aromatischen Ester gegen Organauszüge. III. Mitteilung. Ueber die Wirkung des Organextraktes auf Benzoesäure- und Salicylsäurephenylester. *Acta Scholae Med. Univ. Imp. Kioto* 11(4): 639-648. 1929.—The benzoic acid ester is more easily hydrolyzed by organ extracts than the salicylic acid ester and the phenol esters are more easily hydrolyzed than the isobutyl, amyl and glycerol esters. The liver and kidneys of the pig contain more esterase than the pancreas, which is able to split the simple as well as the aromatic esters. However, these organs do not contain as much lipase which is necessary for the hydrolysis of higher glycerides. The action of glycerine extracts of mucous membrane of stomach and intestine, of kidneys, pancreas and liver, upon benzoic acid phenyl ester and salicylic acid phenyl ester is tabulated. All organs of the pig hydrolyze benzoic acid phenyl ester, the liver and kidneys being the strongest. The action of the organ extracts upon salicylic acid phenyl ester is much less than upon tributyrin.—*F. R. Greenbaum.*

1254. YOSHIMATSU, GUNSHI. Ueber das Verhalten von Aethyl- und Phenolschwefelsäure gegen Organextrakte. [The behavior of ethyl and phenyl sulphuric acid in organ extracts.] *Acta Scholae Med. Univ. Imp. Kioto* 11(4): 649-660. 1929.—Extracts of mucous membranes of stomach and intestine, kidney, liver and pancreas have no hydrolysing action on these salts, while tributyrin solution, used in the control experiments, was considerably hydrolysed. No organ extract had a hydrolytic action on potassium ethyl sulphate, neutralized potassium ethyl sulphate or potassium phenol sulphate.—*F. R. Greenbaum.*

1255. YOSHIMURO, SHIGEO. Über den Einfluss verschiedener Ionen auf den Blutzucker. [Japanese] *Nagasaki Igaku Kwai Zasshi* 5: 803-814. 1927.—The blood sugar of rabbits is affected as follows by various ions. Mg salts cause a slight increase; Ca, Sr, Ba and Na salts cause a marked increase; K salts produce an irregular action.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by A. J. Clark).*

1256. ZANELLA, B. Il ricambio materiale nella somministrazione degli eteri etilici degli acidi grassi del burro di Chaulmoogra. [Effect of ethyl esters of chaulmoogric acid on metabolism.] *Boll. Soc. Ital. Biol. Sperim.* 2(6): 534-536. 1927.

1257. ZEYNEK, R. Über einige Versuche betreffend die Fähigkeit des Tyrosins, Jod zu binden. *Zeitschr. Ges. Exp. Med.* 68(1/4): 482-486. 1929.—The preparation of di-iodo tyrosine by the action of Na iodate, NaI and HCl on tyrosine has been studied. In mineral acid solution di-iodo tyrosine is decomposed easily by light, which has no effect on the compound in alkaline solutions or in simple aqueous suspension. It is suggested that several sudden and unexpected deaths among mountain climbers may have been due to their previous high intake of I. This would have combined organically and then have been split off by the excessive ultra-violet energy of high altitudes.—*E. W. McHenry.*

1258. ZUCKER, KONRAD. Zur Deutung der Calciumvergiftung am Nervensystem. *Arch. Exp. Path. u. Pharmakol.* 142(1/2): 41-44. 1929.—An experiment on a dog and one on a rabbit are described, apparently as illustrative of a larger series. Zucker concludes that the action of large doses of Ca on the nervous system consists of a paralysis of afferent functions with predilection for the longer routes.

1259. ZUNZ, EDGARD, et JEAN LA BARRE. Contributions à l'étude des variations physiologiques de la sécrétion interne du pancréas. VII. De l'hypoinsulinémie consécutive aux états d'hypoglycémie. *Arch. Inter. Physiol.* 31(2): 162-179. 8 fig. 1929.—Marked hypoglycemia following an injection of insulin or decamethyldiguanidin causes a moderation of insulin secretion. The superior nerve centers react to the hypoglycemia induced either by insulin or hepatectomy by modifying insulin secretion through the medium of the vagus.—*P. Destrée (transl.).*

ANIMAL PATHOLOGY

FUNCTIONAL

(See also in this issue Entries 134, 135, 249, 262, 277, 304, 319, 326, 327, 396, 402, 405, 427, 430, 434, 437, 440, 468, 499, 502, 505, 524, 527, 532, 538, 562, 568, 584, 609, 610, 615, 619, 634, 642, 646, 648, 651, 683, 687, 727, 745, 773, 782, 795, 824, 849, 871, 878, 893, 912, 937, 1014, 1101, 1128, 1136, 1148, 1178, 1180, 1318, 1377, 1400, 1423, 1426, 1430, 1435, 1459, 1513, 1537, 1539, 1585, 1600, 1606, 1622)

1260. **ACHARD, CH., A. GRIGAUT, A. LEBLANC, et MARCEL DAVID. L'équilibre lipoïdique du sérum sanguin dans les maladies aiguës.** *Jour. Physiol. et Pathol. Gen.* 26(3): 415-425. 13 fig. 1928.—In acute febrile diseases the % of unsaturated fatty acids in the serum diminishes. An increase occurs during convalescence. Apparently, in the early stages, when the resistance of the organism is lowered, it loses some of its ability to desaturate the fatty acids.—*C. Achard (transl. by M. Bodansky).*

1261. **AMANTEA, G. Sui limiti della partecipazione corticale ai fenomeni convulsivi dell'epilessia sperimentale. [Limits of the part played by the cortex in experimental epileptic convulsions.]** *Arch. Sci. Biol.* [*Napoli*] 12: 413-420. 1928.

1262. **AULER, H., H. SCHLOTTMANN, W. RUBENOW, P. MEYER, und B. WOLFF. Arbeitsbericht aus dem Alten Ca-Laboratorium.** *Zeitschr. Krebsforsch.* 32 (1/2): 186-198. 1930.—This is a condensed account of a number of unrelated researches on cancer, some of which have already received more extensive publication. It includes an account of anaphylactoid reactions obtained by the injection of cancerous blood into tumors, of the peculiar interrelations of excessive fibrinogen in cancerous exudates with the shielding action of this on complement, of the somewhat inconstant results on sugar production from liver glycogen on the addition of blood plasma, on the production of specific antibodies to tumor cells,—in this they report success,—and on the effects of such antibodies on tumor inhibition. Also it includes an investigation of the source of melanin in the melanotic tumors; an extract of adrenal cortex furnished a ferment which, acting on phenol derivatives, produced a reddening of the solution, apparently by oxidative action. It was hoped that the introduction of this oxidative system might influence the fermentative activities of tumor cells. Evidences to this effect were obtained in the form of necrotic ulceration of (inoculated) tumors, usually with an accompanying severe and often fatal intoxication. Similar effects were observed with oxidative ferments derived from various moulds.—*H. E. Eggers.*

1263. **BAYER, GUSTAVO, e R. von den VELDEN. Trattato clinico di incretologia ed incretoterapia. Traduzione Italiana riveduta GUIDO VERNONI. Parte Generale. [Clinical treatise of endocrinology and organotherapy. Rev. Italian transl.]** 382p. illus. Ist. Sieroter. Milanese: Milan, Italy. 1928.—This is the first volume of Vernoni's 2-vol. Italian translation from the German of Bayer's and von den Velden's treatise on clinical endocrinology. After a historical introduction by Richard Koch, there is an exposition of present-day knowledge of the structure and function of the endocrine tissues by Bayer. This is followed by a general treatment of diagnosis and therapy of endocrine disorders by von den Velden. There has been added a chapter upon the insulin treatment of diabetes and another concerning the treatment of minor degrees of endocrine disturbances by G. Capone. A 2nd vol. dealing with the clinical endocrine maladies is to follow. The work is intended for the practitioner. As a whole the subject is stated simply, accurately and conservatively.—*R. M. Moore.*

1264. **BIENENSTEIN, ERWIN. Zur Kenntnis der Encephalitis post vaccinationem.** *Zeitschr. Kinderheilk.* 49(3): 248-258. 1930.—Animal inoculation (instillation into the eye, intracutaneous and intratesticular injection into rabbits) of the cerebrospinal fluid from 5 patients with postvaccinal encephalitis was uniformly negative in results. Bienenstein is inclined to place postvaccinal encephalitis in the group of para-infectious encephalitides.

1265. **BLOTNER, HARRY. The effect of liver on the blood sugar of diabetic patients.** *Jour. Amer. Diet. Assoc.* 5(2): 102-107. 1929.—Test meals were designed to contain equal quantities of carbohydrate, protein and fat, but one contained raw liver pulp, the other lean beef. Blood sugars were determined before ingestion, and at intervals of 3 hrs. afterward. A very marked drop in the blood sugar was noted in each instance. This was compared to the drop produced by the administration of 13 units of insulin. A case is reported in which the patient was enabled to discontinue 10 units of insulin twice daily by eating liver.—*W. W. Herrmann.*

1266. **BRIEGER, ERNST. Zur Physiologie und Pathologie der Arbeit beim Phthisiker.** *Jahresber. Ver. Schles. Ges. Vaterländ. Cultur: Med. Sect.* Pt. 2. 1928: 141-150. 1929.—Patients with pulmonary tuberculosis performed work on an ergometer and the effect on their O consumption, CO_2 output, and pulse rate was noted. There is no specific change in the energy processes of a tuberculous individual. Even though he has marked debility and lowered vital capacity he can carry on with good efficiency and normal restitution. Such diminution in efficiency and retardation of restitution as he has are common to weak and unskilled individuals. Maintenance of the pulse and respiratory rates indicate capacity for work while over-ventilation, fall in alveolar CO_2 and tachycardia denote the opposite condition. Such disturbances are due essentially to an incongruity between lung ventilation and the circulation and depend upon stasis in the pulmonary circulation.—*C. J. Bucher.*

1267. **BRUYNOGHE, R., et P. VASSILIADIS. La splénectomie dans l'infection du Tr. lewisi.** [Apparently *Compt. Rend. Soc. Biol.* 1929: 1-5. 1929.] *Trav. Inst. Bact. Univ. Louvain* 1927/1928: 5p. [1929].—*Tr. lewisi* is infectious only for rats. Splenectomy makes the dwarf mouse (*Mus minutus*) equally receptive to this infection. —*R. Bruynoghe.*

1268. **BUSCAINO, V. M. Contributo allo studio della patogenesi della "encefalite epidemica" e delle sindromi croniche postencefalitiche. [Pathogenesis and sequelae of sleeping sickness.]** *Riv. Patol. Nerv. e Ment.* 31(2): 116-160. 20 fig. 1926.—The author holds that the localization of the "microörganism" of epidemic encephalitis in the mesencephalon and basal ganglia is due to a lower resistance of those regions, brought about by the penetration, in circulation, of basal organic substances (probably amines) of intestinal origin. This is confirmed by the occurrence of serious lesions of the mesencephalon, produced experimentally in animals intoxicated by pregnancy or by histamines; and by the whole series of studies of experimental toxic syndromes following production of Eck's fistula. All these syndromes have features in common resembling extrapyramidal syndromes, including the postencephalitic. The intestinal origin of the postencephalitic syndrome is supported by a review of the literature and by citation of a case of postencephalitic parkinsonism in which the author found lesions of the intestinal mucosa.—*V. M. Buscaino (transl. by P. Popenoe).*

1269. **CHIRON, V., und S. SCANDURRA. Über Leberzellveränderungen, die mit der Zerstörung organischen Eiweisses zusammenhängen. Bedeutung in der Chirurgie.** *Deutsche Zeitschr. Chir.* 216(1/2): 89-97. 3 fig. 1929.—The authors observed 2 cases with slight liver damage which after abdominal operations developed fatal acute yellow atrophy. They produced slight liver damage experimentally in animals by injecting egg albumin and

by introducing animal tissue intraperitoneally. Abdominal operations in cases with grave functional hepatic disturbance are serious and the liver function should be studied before operation.—*V. Chiron* (*transl. by E. A. Baumgartner*).

1270. **CRISTOL, PAUL. Interprétation des valeurs de la réserve alcaline du plasma sanguin au cours des cétoidoses.** *Arch. Soc. Sci. Med. et Biol. Montpellier* 10 (): 350-352. 1928/1929.—Cristol cites illustrative cases to prove that the apparently normal alkaline reserve sometimes seen in diabetes with high ketonuria is really an artefact due to a poor technique, namely, the decarboxylation of the actyl-acetic acid of the blood by the Van Slyke method.

1271. **CUNEO, GEROLAMO. Studi sulla patogenesi della epilessia. Nota X. Il chimismo dei sali organici ossidabili e l'insufficienza della funzione ossidante del fegato. [Studies on the pathogenesis of epilepsy.]** *Riv. Psichiatria* 17(2): (5-52). 1929.—The author has studied the acidity of the feces, the effect of alkaline therapy, liver function with relation to oxidizable organic salts and the tolerance of the epileptic organism to these salts. The liver is found to have a decreased oxidizing function which allows absorption in the blood of deleterious acid substances in epileptics.—*E. A. Baumgartner.*

1272. **DEVOTO, LUIGI. Sugli esiti lontani di febbri tifoidi. [Remote sequelae to typhoid fever.]** *R. Ist. Lombardo Sci. e Lettere, Rend.* 62(16/20): 920-922. 1930. —Clinical experience over 20 years, with some 3000 typhoid patients, has shown that in later years such patients are very liable to digestive disorders, particularly of chronic character: constipation, appendicitis, colitis, etc.

1273. **DUKE, W. W. Heat and effort sensitiveness; cold sensitiveness: relationship to heat prostration, effort syndrome, asthma, urticaria, dermatoses, noninfectious coryza and infections.** *Arch. Internal Med.* 45(2): 206-240. 10 fig. 1930.—Duke reports a further study of a syndrome of symptoms caused in certain patients by heat and effort sensitiveness and in others by cold sensitiveness. The manifestations of sensitiveness varied in different individuals. In some cases it appeared as heat prostration, in others as effort syndrome, in others as asthma, urticaria, dermatoses or noninfectious coryza. Symptoms complained of by the patients could not be distinguished clinically from those caused by sensitiveness to pollens or foods. The patients, in many instances, gave no evidence of sensitization to material substances either by skin testing or dietary testing. Symptoms could be reproduced, however, by the suitable application of heat or effort or by cold. Strange to relate, in many instances the symptoms could be reproduced by the application of heat to the arm or of cold to the arm distal to a tourniquet around the upper arm which cut off the circulation of blood. In the case of reaction produced in this way, immediate relief could be obtained by the reversal of the application. The simultaneous application of heat to one arm and cold to another in cases of this sort gave rise to no reaction whatever. Duke believes that this type of illness is caused by a disorder in the higher heat regulating mechanism so that the body, instead of reacting normally for the purpose of retaining or losing heat, reacts ineffectively, pervertedly or excessively and in this way produces an illness. Symptoms can involve apparently not only organs such as the skin, nasal or respiratory membranes which are designed to control the rate of heat loss but can involve a given organ such as the brain or heart which if not adequately cooled after activity displays a disordered function. A distinction was made between primary and secondary cases—that is, those in which an adequate pathology could be found to cause a disorder in the heat regulating mechanism and those in which the individual seemed to be in perfect health except for manifestations of sensitiveness to heat or cold. In the latter type of case, the illness frequently followed a febrile disease. He believes that febrile diseases frequently cause a lasting dysfunction in the complicated heat regulating mechanism. The illness may be temporary or permanent and may be mild or excessively serious. In the latter case, it may completely incapacitate a person—in fact, may confine him to bed or to the house for years. Tests proving such a diagnosis can be and should be made objectively. If heat and effort sensitiveness or cold sensitiveness occur in an individual who is also sensitive to pollen, epidermal substances, or a food, the patient is naturally worse than if he is affected by only one of these agents at a time. Treatment by heat and effort avoidance or by cold avoidance and treatment by increasing heat tolerance or cold tolerance through frequent reversal of general applications of heat and cold is advised and in cold sensitive cases usually gives a very gratifying result.—*W. W. Duke.*

1274. **EBINA, TOSHIAKI. Über den Stoffwechsel des Kaninchensarkoms.** *Tohoku Jour. Exp. Med.* 13(5/6): 424-444. 1929.—Metabolism of rabbit sarcoma cells was studied with the improved Warburg technic, in Ringer solution. Observations were made of the tissue respiration and glycolysis of rat kidney, liver and Flexner-Jobling tumor, followed by studies on rabbit liver, kidney, spleen, cerebral cortex, heart muscle and testes. Finally Kato's rabbit sarcoma was studied. Following are the results: Oxygen consumption of rabbit sarcoma cells is normal, i.e., equal to that of normal tissue cells. Anerobic glycolysis of rabbit sarcoma is 25 times as great as that of heart muscle, and 2.5 times that of rabbit spleen. Aerobic glycolysis of rabbit sarcoma is high compared with that of normal tissues. The Meyerhof quotient and the Warburg quotient of rabbit sarcoma are abnormally high.—*T. Ebina* (*transl. by W. N. Berg*).

1275. **FINKELSTEIN, H. Zur Kenntnis des alimentären Fiebers. 3. Mitteilung. Das Harnstofffieber.** *Zeitschr. Kinderheilk.* 49(3): 207-209. 3 fig. 1930.—"Several" clinical observations show that urea (100-150 gm. per kgm.) in protein-free dietary mixtures produces no fever, but addition of protein, even in small amounts, very quickly produces elevation of temperature. This is not, properly speaking, "urea fever," but in part also a protein fever, caused by the fact that the water needed for the protein metabolism has been previously sequestered by the urea dehydration. Urea-rich foods accompanied by very inadequate amounts of fluids produce a fever, even in the absence of protein, which may justly be called a "urea fever." [Paper 1 in this series, by A. ABT, ELSE ASCHENHEIM and H. FINKELSTEIN, "Uber das Eiweissfieber," appeared in *Zeitschr. Kinderheilk.* 49 (1/2): 31-54; Paper 2, by H. FINKELSTEIN and W. JONAS, on "Der N-Stoffwechsel beim Eiweissaureicherungsfieber," ibid., 55-63.]

1276. **FRIESZ, JENÖ, und IMRE HALLAY. Serumlipaseuntersuchungen bei Leberkrankheiten.** *Zeitschr. Klin. Med.* 113(2): 275-280. 1930.—In none of 10 subjects with normal liver and kidneys could quinin-resisting lipase be found in the blood-serum. In each of 4 cases of simple jaundice, 4 cases of salvarsan icterus, 1 case of hepatic gumma and 1 case of hepatic lues, quinin-resisting lipase was invariably found in the blood-serum. In cases in which possibly no acute lesion of the hepatic cells existed, this lipase was sometimes found and sometimes not; thus, it was found in 3 out of 8 cases of cirrhosis of the liver and in 3 out of 7 cases of stasis liver ("Stauungsleber").

1277. **FUNK, ELMER H., and HUSTON ST. CLAIR. Hemochromatosis. Report of a case, with studies of the copper content of the liver.** *Arch. Internal Med.* 45(1): 37-45. 3 fig. 1930.—In a case of hemochromatosis that came to autopsy the Cu content of liver was 140 mgm. per kgm. of fresh tissue or 331.8 mgm. for the entire liver. Cu content of the spleen was less than 1 mgm. The Fe content of the liver for which an accurate determination method was not found was at least 6.2 gm. per kgm. of tissue or 14.7 gm. for the entire organ. The author suggests that Cu from the food is retained in hemochromatosis method of being excreted as it is in normal individuals.

1278. **GAESSLER, E. O. Über das Verhalten von**

Blutmilchsäure, Alkalireserve und Blutzucker bei puerperaler Infektion. *Zeitschr. Ges. Exp. Med.* 72(5/6): 726-752. 3 fig. 1930.—Calculations of average blood lactic acid, alkali reserve and blood sugar for the various stages of puerperal infection, drawn from 49 cases to produce objective outlines of the disease picture.

1279. GILDEMEISTER, E., und HOTORI WATANABE. Zur Bestimmung kleinster Mengen von Diphtherietoxin und Diphtherieantitoxin. *Zentralbl. Bakt. I. Abt. (Orig.)* 117(7/8): 464-470. 2 fig. 1930.—Several series of experiments (about 26 tabulated) on rabbits and guinea-pigs showed that intracorneal injection into the rabbits indicated the presence of amounts of diphtheria toxin at most 1/10 as great as those demonstrated by Paul H. Römer's intracutaneous method. Intracorneal injection of diphtheria toxin produces in the rabbit a severe keratitis with destruction of the corneal epithelium and inflammation of the other eye, the degree of inflammation corresponding to the amount of the injected toxin; injection of extremely small amounts of either diphtheria toxin or antitoxin produces a circumscribed smooth-margined ulcer, demonstrable on the living animal by the fluorescent test, and on the dead animal by the Paul method after enucleation. Similar changes were produced in the rabbit's eye by intracorneal injection of gangrene toxin, but no more marked than the changes produced by it on the guinea-pig's skin. No macroscopically recognizable changes were produced on the rabbit's eye by intracorneal injection of tetanus, botulinus and Shiga toxins.

1280. GOORMAGHTIGH, N. Le foie dans l'anémie pernicieuse. Considérations anatomo-pathologiques. *Bruxelles-Méd.* 9(6): 166-171. 1929.—The cause of pernicious anemia is an infectious or toxic agent acting through intervention of the liver. A preexisting vulnerability of this organ is assumed.—*J. Furth.*

1281. GRUNKE, WILHELM. Akuter Infekt und Fermente. I. Mitteilung: Harndiastase bei akuten Infektionskrankheiten. *Zeitschr. Klin. Med.* 113(5/6): 782-792. 1930.—In a series of about 145 cases of infectious diseases the diastase in the urine was determined by Wohlgemut's method. A regular increase in urinary diastase was observed in typhoid and in facial erysipelas. In diphtheria, scarlatina, tonsillitis and other infectious diseases diastase was increased in about 50% of the cases. In almost all cases a return of diastase to normal was seen in convalescence. The investigations seemed to show a relation between the severity of the case and the height of body temperature on the one hand and the height of the diastase values on the other. Such relation could not be definitely ascertained in the other infectious diseases. The increase of urinary diastase is attributed to a functional disturbance of the pancreas, and, in the cases of facial erysipelas, of the parotid gland. —*From author's summary (transl.).*

1282. HASHIMOTO, TAKASHI, und TAKESHI OHNO. Über Alopecia hyperkeratosis cystica follicularis. (In Japanese, with German summary p. 25-26.) *Japanese Jour. Dermatol. & Urol.* 29(4): 308-317. 3 fig. 1929.—The first patient, a woman 50 years of age, had suffered for a long time from an itching desquamative process of the scalp. The condition growing worse the patient consulted the clinic in June 1927. General examination was negative. There were bald areas on the vertex and in the occipital region of the scalp, the remaining parts showed a diffuse alopecia. The epidermis and the hairs were covered with abundant whitish scales. The openings of the follicles were plugged with comedolike horny material which could be expressed with the fingers. The condition cleared up under ultraviolet radiation and application of an ointment containing phenol and salicylic acid. Biopsy: The epidermis is thin and atrophic. The pigment granules of the basal layer are almost completely absent. The cutis likewise shows some atrophy. The hair follicles are transformed into cysts filled with homogeneous corneous material. The hair and the structure of the sebaceous gland could not be differentiated. Patient 2 was a woman 40 years of age with diffuse alopecia. Scalp and hair were dry. There were no signs of inflammation. The follicular openings were plugged with dark brown horny material, the histologic picture was the same as in case 1. The 3rd patient, a woman 35 years old, presented an identical clinical picture after a salvarsan reaction. A histologic study of this case was not carried out.—*Authors' summary (translated by J. A. Gammel).*

1283. HEDON, L. Le quotient respiratoire et le métabolisme de base dans le diabète pancréatique expérimental. (2me mémoire.) *Arch. Internat. de Physiol.* 27(3/4): 254-303. 3 fig. 1926.—Following a review of the literature on the respiratory quotient in human diabetes and in depancreatized dogs the author gives the results which he has obtained in 14 depancreatized dogs. The tables contain the data from more than 200 experiments. Detailed observations on each animal are given. The following facts were determined in these experiments: 1. The respiratory quotient rarely falls below 0.71 in the completely depancreatized dog. The maximum fall occurred on the 2nd or 3rd day after the onset of the diabetes. 2. The respiratory quotient then rose immediately and returned to the normal value: 0.75 for the fasting state. 3. It rose abruptly to a higher value, up to 0.8, just before death, when the latter was caused by diabetic cachexia after maximum emaciation. The following conclusions are drawn: The study of the respiratory quotient in the depancreatized dog offers no proof in the favor of the formation of glucose at the expense of fat. The quotient slightly below 0.70 found in some cases, especially with approaching coma caused by the sudden withdrawal of insulin after long treatment with this hormone, may be explained by the acidosis. The return of the quotient to nearly normal values may be explained by a relative increase on the part of protein in the total metabolism. The sudden antemortem elevation is very difficult to explain. It cannot be attributed to the phenomenon of "blowing off" since a study of the alkaline reserve eliminates this as a cause. The author compares these quotients with the very high quotients which have sometimes been found in severe diabetes in man. The idea emerges as a working hypothesis, that in the diabetic the power to oxidize glucose has not been lost and that the respiratory quotient is a mean value resulting from the combustion of carbohydrate on one hand and the formation of carbohydrates at the expense of O-poor substance on the other. As this last process diminishes in intensity with approaching death, perhaps as a consequence of the exhaustion of fat reserve, the quotient of the combustion of carbohydrate tends to appear more and more distinctly.—*L. Hedon (transl. by J. B. Youmans).*

1284. HOLLÓS, LUDWIG. Untersuchungen und kritische Bemerkungen über die neue Ikterustheorie von Brugsch. *Deutsche Med. Wochenschr.* 55(47): 1968. 1929. —Chemical tests lead Hollós to conclude: The Brugsch reaction cannot be elicited in a normal skin. It is produced in severe icterus independent of origin and duration of the condition, and not only on the jaundiced skin but in every secretion containing bilirubin (serum, urine, duodenal secretion, chemically pure bilirubin). It is therefore not an iron reaction but a bilirubin reaction. Consequently it throws no light on the local origin of bilirubin and lends no support to the theory of Brugsch. The reaction is not applicable to differential diagnosis.

1285. HUEBER, WALTHER. Beitrag zur Frage der Agranulozytose. *Frankfurter Zeitschr. Path.* 40(2): 312-356. 4 fig. 1930.—From a study of literature and of 2 cases personally observed, Hueber concludes that agranulocytosis is not an independent disease but a symptom-complex in septic infections.

1286. JENSEN, JULIUS. The adrenalin test in hypertension. *Amer. Heart Jour.* 5(6): 763-780. 6 fig. 1930. —It appears from the literature that the response to adrenalin in the patient with hypertension differs from that of the normal person, but the evidence as to the variations in response is contradictory. Under ap-

approximately standard conditions subcutaneous injections of 1 cc. of adrenalin were given to a number of normal persons, patients with hypertension, and others in whom the reaction was thought to throw light on the phenomena observed in hypertension. Persons with normal cardiovascular systems responded with a slow rise and a subsequent slower decrease of pressure. While the height of the excursion was but slightly accentuated after subsequent injections, the time consumed in reaching the maximum height of the pressure was markedly shortened. The cases of hypertension fell into 2 groups which were clinically indistinguishable. In the 1st group no definite change could be ascribed to the 1st injection of adrenalin, while the other cases of marked hypertension responded with a brisk and intense increase of systolic blood pressure. When the test was repeated all the patients with hypertension responded with intense rises of pressure. In cases of early or intermittent hypertension the findings were like those of the former group of advanced hypertension, but less pronounced. Statistically it was found that the ratio of the difference and of the probable error of difference between the standard deviations from the average readings following the 1st and the repeated injections of adrenalin was significant in the 1st group, in those hypertensive patients in whom the response was absent on the 1st injection. The diastolic pressure decreased after all the injections but the time required to return to normal was longer in the patient with hypertension than in the normal person. It was not influenced by repetition of the test. The increase in heart rate and the occurrence of cardiac irregularities were not influenced by the state of hypertension or by repetition of the test. The blood pressure reaction of adrenalin in hypertension did not depend on the level of the blood pressure, the size of the heart, presence or absence of kidney disease, or the level of the blood Ca. No satisfactory explanation could be offered for the absence of response in some individuals with hypertension or for the change in response between 1st and subsequent tests. The clinical adrenalin reaction is not due to peripheral vasoconstriction. In fact a vasodilatation is present which indicates that the systolic rise is of cardiac origin. The intense increase in the patient with hypertension is thought to be related to the general instability of the hypertensive blood pressure. This instability is briefly discussed and considered mathematically.—*Author's summary.*

1287. KAFKA, V. Die Bedeutung der Bestimmung der Eiweissrelation des Liquor cerebrospinalis für die Pathologie der Syphilis. *Dermatol. Wochenschr.* 88(9): 332-335. 2 fig. 1929.—The author calls attention to the need for further study of spinal fluid in syphilis. He reports results obtained by two methods for total protein determination and one each for globulin and albumin. From these he calculated the hydration co-efficient and protein co-efficient. He charts the various findings in normal individuals, syphilis, tabes dorsalis, general paresis, and cerebral syphilis. The protein co-efficient and hydration co-efficient are highest in general paresis. The total protein is highest in cerebral syphilis, in which the total albumin is also highest.—*S. W. Becker.*

1288. KANAI, T., und K. MINAMI. Experimentelle Versuche über die Entstehung der aseptischen und atraumatischen Pleuritis. "Eine Beweisführung für das Wesen der sog. Militärpleuritis und der idiopathischen Pleuritis in Japan." *Zeitschr. Tuberk.* 56(6): 434-444. 1 fig. 1930.—Animals [apparently rabbits: number not stated] were subjected to intravenous injection of various nerve poisons, to various forced motions of the body, to unilateral and total epinephrectomy, to resection of the vagus and splanchnic nerves and to double cervical sympathectomy. The results, the authors believe, furnish a new explanation for the origin of aseptic and atraumatic pleuritis, as the result on the one hand of a disturbance of the neurohormonal correlation produced by artificial crippling of the functions of the locally prevailing vegetative nervous system, and on the other by artificial disturbance of the equilibrium in the distribution of ions in the body fluids, produced by injection of various poisons.

1289. KITAGAWA, KIYOSHI. Über Haematoporphyria congenita Günther. II. und III. *Japanese Jour. Dermatol. & Urol.* 28(8): 771-797. 5 fig.; (9): 851-871. 7 fig. [German summaries 53-54 and 61-62.] 1928.—II. Skin of patients was abnormally oversensitive to sunlight, but hyposensitive to Hg-quartz lamp, so that the kind of rays to be considered as causing porphyrin-sensibilization must be present in the long wave parts of the spectrum. The connection between porphyrin photo-sensibilization and variety of ray was experimentally determined. III. In the photodynamic phenomenon of skin of congenital porphyrin patients there is high grade inflammatory edema of the corium; the epidermis at first is free from injury; blister caused by the insolation appears always in the upper stratum of the corium and is elevated. Rabbit's skin, after the animal is given porphyrin, becomes very hypersensitive to sunlight; after insolation (30 min.) there develops following a certain latent period (12-24 hrs.) severe inflammatory edema of the irradiated skin, and after some weeks atrophy of the skin may follow, even necrosis if the sensibilization is intense. Histologically the epidermis is unaffected, the corium is greatly thickened by severe inflammatory edema. This is in entire accord with the findings observed in the congenital porphyrin patient. The rabbit's skin is also rendered hypersensitive to quartz-lamp light by administering porphyrin, but much more must be injected than for sunlight (usually over .005 gm. per kgm.). Identical skin changes as from sunlight are obtained if the ultraviolet rays of Hg-lamp light are excluded with a glass filter.—*W. Browning.*

1290. KLUMPP, JAMES S. Chemistry as an aid in medical diagnosis. *West Virginia Univ. Bull., Proc. West Virginia Acad. Sci.* 3: 101-104. 1929.—Note.

1291. KRAUT, HEINRICH, und ERWIN BUMM. Ueber das Co-ferment der Glykolyse aus Tumoren. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 177(3/4): 125-142. 1928. The particular enzymic part of the glycolytic process which caused the increased lactic acid formation found by O. Warburg in tumors was studied. The glycolytic coferment, whose presence in tumors had been established by N. Waterman, and by H. v. Euler and K. Myrbäck, was therefore determined for human mammary, rectal and gastric carcinomas, Flexner-Jobling rat carcinomas and Jensen rat sarcomas. The tests were made on washed sections of rat kidney, the glycolysis of which was increased by tumor extracts almost up to the level of the tumors themselves. The quantity of lactic acid produced was determined by Warburg's manometric method. Comparisons were made against extracts of kidney and liver tissues which also contained the coferment but in smaller quantities than did tumors. The coferment extracted from the tumors was concentrated to about 125 times by alcohol precipitation and adsorption on clay; it was tested by finding how the glycolysis of fresh liver and kidney sections was influenced by addition of this purified coferment. This study showed that the coferment was the limiting factor for glycolysis by normal kidney and liver tissue. Carcinomatous tissue differed from the latter by its increased content of coferment.—*H. Kraut (transl. by B. Cohen).*

1292. KYLIN, E. Studien über die Ödemausschwemmung. VI. Mitteilung: Über den colloidosmotischen Druck des Blutserums während der Ödemausschwemmung in einem Fall von Myxödem. *Zeitschr. Klin. Med.* 113(2): 317-320. 1 fig. 1930.—The colloid-osmotic pressure sank from supernormal to subnormal values during thyroid treatment, and basal metabolism rose from −30% to normal (+6%).

1293. LEVINE, B. S. Serologic studies by the precipitation, precipitation-fixation and the cold fixation tests for syphilis. *Jour. Lab. & Clin. Med.* 15(10): 985-993. 1 fig. 1930.—Sera (700) were tested for the presence of antigen combining antibody by the Kahn, Kahn-Wassermann combined, and the Kolmer procedures. About 14.5% (100 sera) were positive by 1 or more of the

methods used. The positive values were subjected to statistico-analytic study. It was pointed out that from a theoretic viewpoint no syphilitic specificity can be claimed for any of the laboratory tests for syphilis now in use. Excerpts of histories are presented to show instances in which the Kahn and the Kolmer tests gave positive results, yet the final diagnosis made no reference to syphilis. The following conclusions are drawn: The results obtained by the cold incubation and the Kahn-Wassermann fixation procedures closely agree. The percentage agreement between the Kahn and Kahn-Wassermann, and the Kahn and Kolmer are identical (67.0%). The Kahn yields negative results in about 25.0% of the cases where antigen combining substance is present. The Kolmer and Kahn-Wassermann differed in only 5.0% of the cases. Averaging the 3 readings of the Kahn precipitates to obtain an interpretation of the results is a mistaken procedure.—*Author's summary and conclusions.*

1294. **McCARTNEY, JAMES LINCOLN. Dementia precox as an endocrinopathy.** *China Med. Jour.* 42(4): 278-285. 1928.—The literature in general supports the contention that endocrinopathy is consistently found in dementia precox cases. Eunuchs (23) examined showed typical dementia precox or schizoid characters; good intelligence and orientation, but distinct changes in the effect. Some retained sexual function but no libido. Of 70 live ♂ dementia precox cases examined, at least 60% were eunuchoid in type, only 5.7% having apparently normal testes, with other signs of endocrine dysfunction. However, a large number functioned sexually. Of 40 live ♀ dementia precox cases, 52.5% showed undoubted ovarian pathology, although some had been pregnant. Pathological examination of 158 ♂ and 24 ♀ dementia precox cadavers showed marked endocrine changes. No normal ovaries and only a small percentage of normal testes were found in these cases. Almost every dementia precox individual gave a history of having had 1 or more of the severe toxemias, and at least ¼ of the cases inherited defective somatoplasm.—*Author's summary.*

1295. **NEGRO, FEDELE. Sulla patogenesi dei crampi funzionali. [The pathogenesis of functional cramps.]** *Minerva Med.* 1(13): 536-542. 1930.—From personal clinical observations, and after consideration of the literature, Negro concludes that functional cramps are the expression of a lesion of the extrapyramidal sympathetic nervous system, located primarily in the corpus striatum, particularly the pallidum and the locus niger or the sympathetic-sensory terminations, communicating by a reflex route with the medullary sympathetic centers and thence with the efferent fibers destined to innervate the sarcoplasm; and that in both cases the mechanism consists of a sarcoplasmatic hypertonicity consequent on these lesions. The psychic elements are secondary. The different aspects (paralytic, tremulous, etc.) under which the functional cramps may present themselves do not invalidate the foregoing hypothesis.—*From author's summary.*

1296. **NIELSEN, OTTO JUL. On oscillations of blood-sugar values within brief periods, and the blood-sugar curves on uniform ingestion of glucose.** *Biochem. Jour.* 22(6): 1490-1498. 2 fig. 1928.

1297. **OKA, MITSUTOMO. Experimentelle Studien über die Störungen der Ösophaguspassage. [Disturbances of the esophagus.].** *Proc. Imp. Acad.* [*Tokyo*] 4(7): 430-432. 1928.

1298. **ORIEL, G. H. Some observations on the biochemistry of asthma.** *Guy's Hosp. Repts.* 79(4): 480-490. 1929.—Asthmatics do not fall into one biochemical type. Those whose cases commence as infantile eczema, or are complicated by other allergic manifestations, show a low blood sugar, positive van den Bergh reaction, decreased sedimentation rate, diminished bicarbonate and high amino-acid in the blood during the active stage. In uncomplicated asthma the blood findings are usually a low blood sugar, negative van den Bergh reaction, decreased sedimentation rate during the attack but increased after, and normal amino-acid. The urine shows various changes in both types. A complex nitrogenous substance of a proteose nature is excreted in the urine in the different forms of allergy, which on reinjection gives positive skin tests in many cases. It is suggested that the asthmatic diathesis consists of biochemical instability in nitrogenous and carbohydrate metabolism and in acid-base balance.—*From author's summary and conclusions.*

1299. **PARADE, G. W., und W. STEPP. Über experimentell erzeugte Myokardschädigungen durch Jodinpininjektion in die Herzkammerwandung des Hundes und die dabei auftretenden Veränderungen im Elektrokardiogramm.** *Zeitschr. Klin. Med.* 113(2): 195-211. 14 fig. 1930.—Injection of iodipin into the region of the ramus descendens of the left coronary artery in 6 dogs was followed by a transient hyperirritability of the ventricle, manifested by a high-grade extrasystole. The decided heightening of the T-wave, observed earlier after injuries in the region of the ramus descendens, did not occur immediately after iodipin injection. The coronary T-wave, generally returning to normal in the course of days or weeks, was a late result of iodipin injection in the region of the ramus descendens. The relation which these observations bear to human cardiac disturbances following sudden coronary block is obvious.

1300. **PERONI, ACHILLE. Rapporti fra faringiti secche e solfocianuro potassico salivare. [Relation between pharyngitis sicca and salivary potassium sulphocyanate.]** *Arch. Ital. Otol., Rinol. e Laringol.* 40(10): 644-650. 1929.—The salivas of 55 patients with various kinds of pharyngitis were examined for KCNS, which was found to vary from 0.0295 to 0.0035 gm. per 100 cc. Of the 55 patients, 23 were affected with pharyngitis sicca; among these the KCNS content varied from 0.0190 to 0.0035, being below 0.006 in 18 of them. The fact that in pharyngitis sicca there is a marked atrophy of the pharyngeal mucosa and also a low KCNS content suggests to the author that this salt may be secreted not alone from the salivary glands, but also, and perhaps chiefly, from the mucous and mixed glands, which are specially abundant in the pharyngeal mucosa.

1301. **QUIGLEY, J. P., and J. L. LINDQUIST. Mechanical interference with the circulation as a factor in traumatic shock.** *Amer. Jour. Physiol.* 94(3): 529-530. 1930.—The abdominal aorta was occluded in 4 experiments until the femoral pulse became imperceptible or very weak (for 15, 85, 115 and 127 min.); the thoracic aorta was occluded for 165 min. with a single ligature and with 2 ligatures for 40, 45 and 110 min., and the thoracic vena cava was occluded until respiration ceased (after 25, 45, or 53 min.), all without shock. Light anesthesia with ether previous to such procedures caused marked disturbance or cessation of respiration. The authors suggest that their experiments differ from those previously reported by others in the absence of 2 complicating factors, ether anesthesia and manipulation of the viscera, abdominal or thoracic. They conclude that in the absence of anesthesia or direct trauma, moderately extensive interference with the circulation (arterial or venous) of large portions of the body does not produce traumatic or surgical shock either during or subsequent to such circulatory obstruction. The species of experimental animal used is not stated.

1302. **RICHTER, MAURICE N., and E. C. MacDOWELL. Studies on leukemia in mice. I. The experimental transmission of leukemia.** *Jour. Exp. Med.* 51 (4): 659-673. 1930.—Lymphatic leukemia has occurred with great frequency in a strain of mice inbred by brother-sister matings since 1921. In addition to typical cases of leukemia are others which, because of the absence of leukemic changes in the blood, correspond to "pseudoleukemia" and others which, by the presence of unusually great enlargement of certain lymph node groups, resemble the "leukosarcomatoses" as observed in man. Examinations of the blood of leukemic mice have shown that leukemic blood pictures are not necessarily early in their appearance, nor are they constant. The blood picture may not, therefore, be used as a

criterion for the separation of the two diseases (leukemia and pseudo-leukemia) but merely indicates different phases of the same condition. Likewise, cases with lesions intermediate between the local growths of "leukosarcomatosis" and the more general lymphatic enlargements of leukemia suggest that these conditions differ only in the distribution of lesions but not in their nature. Lymphatic leukemia occurring spontaneously in this strain may be transmitted to other mice of the same strain, and carried, apparently, for an unlimited number of transfers in animals at an earlier age than that at which leukemia occurs spontaneously. In each of 10 such experiments transmissions were obtained. The lesions produced by inoculation correspond to those of spontaneous cases, in that they consist of growths of abnormal lymphoid cells which infiltrate tissues and organs and often appear in the circulating blood. Only minor differences have occurred, some of which are characteristic of certain experimental lines. After repeated transfers, the disease tends to run a more acute course. Among the cases in which transmissions occurred, are some without leukemic changes in the blood, and many with local growths at the site of inoculation or in certain node groups. The differences in the blood pictures and distribution of lesions (which latter may be influenced to some extent by the method of inoculation) correspond to similar differences which are sometimes observed in the spontaneous cases.—*Authors' summary.*

1303. SALEN, E. B., und T. NYRÉN. Klinische Versuche mit der Glykosefixationsprobe (nach Loewi). Eine Nachprüfung gewisser Resultate der Grazer Schule an klinischem Material. *Acta Med. Scandinavica Nord. Med. Arkiv.* 72(2): 167-220. 1929.—On the basis of extensive animal experimentation, the Graz School of investigators reported in 1925-27 an original theory concerning the pathogenesis of diabetes, to the effect that in addition to insulin there occurs another, and, so far as sugar regulation is concerned, more important hormone-like substance secreted by the liver. This so-called "glykemin" is functionally a direct antagonist of insulin and is of fundamental importance in the occurrence of every hyperglycemia. An increased blood sugar, for example, would be due to a primary hyperglykeminemia with relative insufficiency of insulin, or caused by a primary insulin deficiency with secondary hyperglykeminemia. Were it possible through analysis of the peripheral blood to establish a quantitative insulin-glykemia ratio, this would be of great clinical value in differentiating hyperglycemic conditions into groups, namely, the pancreatogenous (insular) and the non-pancreatogenous (extrainsular) types. Such a method was devised by the Graz investigators, and was followed by the present authors, although in the meantime Loewi has retracted some of his original statements and modified his former conclusions. The material for the present study included normal individuals, diabetics, and persons with hepatic disease. Estimations of basal values (that is, glucose determinations on the plasma after a 12-14-hr. fast) were made, as well as fixation and blood sugar curves after feeding various amounts of glucose per os, and after the administration of adrenalin or insulin. It was found that the basal values of normal human beings showed a considerably greater variation than those of the experimental animals reported by the Graz School, and did not justify any conclusions in differential diagnosis. The same was true of the blood sugar curve after the administration of glucose by mouth, and hence, speaks against the correctness of Loewi's theories. Previous experiments reported by the authors as well as by certain French investigators make it appear possible that there is an element of truth in Loewi's theory, but that the facts are of a much more complicated nature than he assumes.—*T. C. Hempelmann.*

1304. SATKE, O. Über den Hydrothorax bei kardialer Insuffizienz. *Zeitschr. Klin. Med.* 113(2): 212-223. 1930.—In 7 out of 8 normal cases studied the negative pressure was somewhat greater in the right than in the left pleural cavity, which apparently explains the clinically well-known fact that in most cases of cardiac insufficiency the right hydrothorax is greater than the left. The occurrence of right hydrothorax as the sole sign of cardiac insufficiency, of which a case is described, is explained as a result of factors hindering the discharge of the vena azygos, such as pressure from a dilated right-auricle, slight pleural adhesions or other conditions apparently promoted by the negative pressure prevailing in the right pleural cavity.

1305. SAVY, P., et H. THIERS. L'etat du chlore, de l'urée et de la réserve alcaline du liquide céphalorachidien dans les rétentions brightiques et les états acidosiques. Le divorce hemorachidien. *Ann. Méd. [Paris]* 26(2): 131-144. 1929.

1306. SCHMELZER, HANS. Über die aktuelle Blutreaktion bei Glaukomkranken. *Graefe's Arch. Ophthalmol.* 118(1): 1-20. 2 fig. 1927.

1307. SHAW-MACKENZIE, J. A. Blood-tests in the diagnosis and treatment of cancer. *Jour. Trop. Med. and Hyg.* 32(20): 290-293. 1929.—Clinical cases illustrating the author's theory of the decreased action of lipase of serum from cancer patients.

1308. SHORE, R. A., and R. L. ANDREW. Goitre in school-children. The incidence of goitre in school-children in relation to the amount of iodine in soil and water in certain districts of the North Island of New Zealand. 67p., 3 maps. New Zealand Dept. Health & Sci. & Indust. Res.: Wellington, 1929.—The goitre percentages given have been entirely compiled by one worker, so that the "personal error" is the same all through. The analytical work has been done entirely by one worker, so that the "personal error," if any, is again the same all through. The two aspects of the work were done quite independently by the investigators. The field worker did not know the I analysis until the field work was completed, and the chemist did not know the result of the field work until the analytical work was completed. Sufficient samples of soil were taken so that the result would be representative of the district. Similarly, as many school-children as possible were examined in each district. The goitre incidence in school-children is greater in girls than in boys. The percentage incidence in both sexes increases with age to a maximum and then definitely declines. On the figures available, this decline in incidence appears to continue in the years beyond school life at least as far as 19 years of age. The rate of percentage of goitre incidence is increased at or just before the time of puberty. The effect of puberty is more marked in girls than in boys. Generally speaking, where the I content of the soil is high the incidence of goitre is low, and where the former is low the latter is high. There are, however, certain anomalies which at present cannot be satisfactorily accounted for. Further work should be done to solve the problem of these anomalies.—*Authors' summary.*

1309. SONDERMANN, R. Beitrag zur Entstehung, Physiologie und Pathologie des Augendrucks. III. Über die Pathologie des Augendrucks. *Arch. Augenheilk.* 102 (3/4): 453-474. 1930.—[III.] There is a movement of fluid in the anterior chamber which, however, is very slight. The normal content of Schlemm's canal is aqueous. The pressure in Schlemm's canal is somewhat less than in the anterior chamber but higher than in the ciliary veins at their point of exit from the eye. The aqueous leaves the eye through Schlemm's canal and also by way of the capillaries of the anterior surface of the iris. This is brought about in case of Schlemm's canal by filtrative forces whereas the carrying off of aqueous by the capillaries of the iris is due to osmotic forces. The intraocular pressure in inflammations of the anterior segment depends essentially upon the development of the perforating vessels of the sclera in this region, particularly the veins, and also on the conditions of outflow from the anterior chamber. The hypotension of old cyclitic eyes is due to the dilatation of the veins in the anterior portion of the sclera. The capillaries of the normal ciliary body usually show marked constriction of the caliber with increasing age, whereas

other capillaries are usually dilated. In two cases of glaucoma simplex without inflammatory changes the author found well marked degeneration in all the ciliary processes, marked thickening of the pectinate ligaments and relative constriction of Schlemm's canal. These changes may play a definite part in the origin of glaucoma simplex.—*F. H. Adler.*

1310. SPIRO, PAUL. Klinische Untersuchungen über das Calcium-Kalium Gleichgewicht im Organismus. *Zeitschr. Klin. Med.* 110(1): 58-93. 1929.—The determination of Ca was made after Kramer-Tisdal, that of K by a method, which is described. Results: Under normal conditions Ca oscillates between 9.5 and 11.5 mgm. %, K between 17.5 and 22.5 mgm. % in the blood serum, under pathological conditions, the oscillations are not much greater. Potassium augments and Ca decreases in icteric diseases; K increases and Ca diminishes in cardiac and renal decompensation, essential hypertension and non-acidotic diabetes mellitus. Potassium and Ca both increase in acidotic diabetes mellitus, both decrease in pregnancy and with tumors. Potassium alone increases without variation of Ca in vegetative neurosis, gastric and duodenal ulcer, chronic arthritides and arthropathies. The content of K in the corpuscles increases much more than in the serum with cardiac and renal decompensation, essential hypertension, diabetes mellitus, vegetative neurosis, gastric and duodenal ulcer and chronic arthritides. The balance of Ca: K in the blood serum is regulated by mobilisations of the depots; K is partially furnished by the corpuscles.—*F. Bruman.*

1311. STEENBERG, THOMAS. Senkningsreaksjonen ved reumatiske lidelser. [Sedimentation reaction in rheumatic diseases.] [With English summary, p. 657.] *Norsk Mag. Laegevidensk.* 89(7): 643-658. 1928.—The sedimentation velocity of the red corpuscles gives very valuable information in the management of rheumatic diseases. The reaction is of importance for diagnosis as well as for treatment.—*Author's summary.*

1312. TINOZZI, FANCESCO PAOLO. Sulla produzione di tumori con poltiglia di organi di topi affetti da tumori maligni. (Ricerche sperimentale.) [Production of tumors with organ pulp from mice with malignant growths.] *Ann. Ital. Chir.* 7(8): 818-838. 11 fig. 1928.

1313. ZOTTA, G., et E. RADACOVICI. Contribution à l'étude du métabolisme du glucose sanguin dans la trypanosomiase expérimentale. *Arch. Roumaines Path. Exp. et Microbiol.* 2(1): 55-80. 1929.—In guinea pigs experimentally infested with *Trypanosoma brucei*, the progressive decrease in blood sugar found by Schern could not be established; oscillations took place, with a sharp decrease terminally,—a decrease which the authors did not regard as specific for trypanosomiasis.

ANIMAL PATHOLOGY

INFECTIOUS AND OTHER DISEASES OF LOWER ANIMALS

F. S. JONES, *Editor*

R. W. GLASER, *Associate Editor*

(See also in this issue the subsection "Lower Animals" in the sections Immunology and Filterable Viruses; and Entries 570, 1143, 1353, 1449, 1492, 1515, 1546, 1563, 1609, 1626, 1692, 1716, 1737, 1758, 1774, 1802, 1902, 1913, 1995)

1314. BARTLAKOWSKI, JOHANNES. Speiseröhrenerkrankungen bei Affen. [Diseases of the esophagus in monkeys.] *Virchow's Arch. Path. Anat. u. Physiol.* 277(3): 670-672. 1 fig. 1930.—Actinomycosis in 1 *Papio cynocephalus*, nematode infection (*Gongylonema minimum*) in 4 *Macacus rhesus*, phlegmon caused by mixed streptococcus and staphylococcus infection in 1 *Callithrix penicillata*, and waxy degeneration of muscular fibers in 1 chimpanzee and in 1 orang-utan are described.

1315. BEMELMANS, E. Das "Wesen" der Hundestaupe. [The nature of canine distemper.] *Zentralbl. Bakt. I. Abt. Orig.* 118(3/4): 202-206. 1930.—According to the author's view canine distemper must be placed with human influenza and the so-called influenza of horses in a new group of diseases, due to an original invasion by commensal streptococci, which later become transformed into true pathogenic parasites (diplococci).

1316. BODENSTEIN, DIETRICH. Einige Raupenkrankheiten im Mikrophotogramm nebst Bemerkungen dazu. *Internat. Ent. Zeitschr.* 24(6): 57-66. 13 fig. 1930.—Dysentery, muscardine, polyhedral disease and flacherie in caterpillars are described, with a photomicrograph of each and pictures of characteristic symptoms.—*C. Zeimet.*

1317. CARPANO, M. A grave sickness in dogs in Egypt: sickness very similar to rabies. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* P. 285-286. 1929(1930).

1318. CARLSTRÖM, BIRGER. Ueber die Ätiologie und Pathogenese der Kreuzlähme des Pferdes (Haemoglobinaemia paralytica). *Skand. Arch. Physiol.* 61(4/5): 161-224. 1 pl., 7 fig. 1931.—Azoturia usually appears on return to work after a few days' rest. It is characterized by stiffness, lameness or paralysis of the hind leg muscles, excessive sweating, and hemoglobinuria. The etiology is unknown, although innumerable theories have been advanced and are discussed. The author finds that the blood plasma in azoturia is seldom colored and that a spectrum resembling that of hemoglobin is not always present. The osmotic resistance of the erythrocytes is usually normal. In most cases there is an increased amount of hemoglobin in the blood, which depends on increased corpuscular content and not on decrease in blood volume. Hemoglobin and myoglobin can be separated spectroscopically, the latter showing bands similar to hemoglobin but displaced 3-5$\mu\mu$ to the left. This difference in spectra is not a matter of solubility but of chemical constitution. In rabbits, dogs and horses, intravenous injection of muscle juice insufficient in amount to color the plasma, produces hemoglobinuria. If hemoglobin is used, the amount necessary to produce hemoglobinuria is so large that the plasma becomes colored. The author concludes that the reddish color of the urine in azoturia depends on muscle pigment, myoglobin or metamyoglobin. Azoturia is therefore characterized by myoglobinemia and myoglobinuria.—*W. J. Meek.*

1319. CARPANO, M. Hemoprotozoal infections (spirochaetosis and piroplasmosis) of poultry in Egypt. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* P. 187. 1929(1930).

1320. COHRS, PAUL. Beitrag zur Kenntnis der intraperikardialen akzessorischen Schilddrüsen und Epithelkörperchen beim Hund (Canis familiaris). *Berliner Tierärzt. Wochenschr.* 46(40): 683-688. 7 fig. 1930.—In 47.5% of all dogs, accessory thyroid, rarely parathyroid glands, appear within the pericardium in the neighborhood of the large vessels, usually the aorta, and without relation to race, age or sex. Similar localizations were not found in other domestic animals. In dogs, von Kaltenbock found subendocardial thyroid glands in the conus arteriosus. Since they display normal functioning thyroid and parathyroid tissue they merit consideration by experimental research on the functions of the thyroid and parathyroid and also of other organs of internal secretion. Through goitrous disease they acquire pathological significance. The causes which lead to the origin of these glands within the pericardium of dogs, but not in other animals, still require explanation.—*Author's summary (transl. by E. H. Boyer).*

1321. CONN, GEORGE H. Handy poultry disease

manual. 4th ed. 95p. Illus. *Poultry Tribune:* Mount Morris, Illinois, 1930.

1322. **CREECH, G. T. Brucella abortus infection in male bison.** *No. Amer. Vet.* 11(1): 35-36. 1929.

1323. **DERFLINGER, E. R. Control of anthrax in live stock of the Northwest.** *Jour. Amer. Vet. Med. Assoc.* 31(1): 42-56. 1931.—Historical review of methods used.

1324. **DESCOMBEY, P. A. Sur le tétanos et sa pathogénie. I. Formes normales et anormales du tétanos.** *Rec. Méd. Vét.* [*École Alfort*] 105(2): 901-910. 1929.—From an experimental study of abnormal tetanus in guinea pigs and from a review of the literature the author concludes that forms abnormal for horses are normal for guinea pigs, and vice versa.—*P. A. Descombey* (*transl. by C. S. Gibbs*).

1325. **DESCOMBEY, P. A. Sur le tétanos et sa pathogénie. II. Sur les théories pathogéniques du tétanos—Etat actuel de la question. [Tetanus and its pathology. II. Present status of the pathological theories of tetanus.]** *Rec. Méd. Vét.* [*École Alfort*] 106(1): 27-46. 1929.

1326. **DUANY, PUENTE. Un epitelioma glandular en una rana bullfrog. Comunicación previa. Contribución al estudio de los tumores en los batracios. [Glandular epithelioma of a bull frog.]** *Arch. Soc. Estud. Clin.* [*Habana*] 29(4): 186-195. 6 fig. 1929.

1327. **DU TOIT, P. J. Veterinary science and agriculture.** *Nature* [*London*] 126(3179): 505-508. 1930.—Presidential address before Section M of the British Assoc.

1328. **EASTERFIELD, T. H., and J. A. BRUCE. The occurrence of xanthin calculi in New Zealand sheep.** *New Zealand Jour. Sci. & Tech.* 11(6): 357-361. 3 fig. 1930.—Calculi, which, according to chemical tests, would seem to be composed largely or wholly of xanthin, are reported in sheep in a few localities (all on "Moutere loam" soil) in New Zealand. Their occurrence and distribution are believed to be related to mineral deficiency in that soil.

1329. **EASTERFIELD, T. H., T. RIGG, H. O. ASKEW, and J. A. BRUCE. A widespread occurrence of xanthin calculi in sheep.** *Jour. Agric. Sci.* 19(3): 573-585. 5 fig. 1929.—Sheep with xanthin calculi in the kidney pelvis were found in 8 localities in Nelson province. A single calculus from 1 sheep weighed 41 gms.; 63 gms. of xanthin were removed from the 2 kidneys of another sheep. On 1 farm, 8% of the sheep died in 1 season from the trouble. All cases occur on Moutere Hills type of soil, which is very deficient in lime and phosphate; no cases have been reported from farms on which good pastures have been established by attention to this deficiency. A report on the organs of the affected sheep is given.—*T. H. Easterfield.*

1330. **EMMEL, M. W. Peritoneal tumors in the fowl.** *Jour. Amer. Vet. Med. Assoc.* 32(1): 99-102. 1 fig. 1931.—The origin of such tumors in some instances appeared to be in the mesothelium, the egg-yolk no doubt being the exciting factor. In another bird the origin may have been in the subepithelial lymph channels. However the tumors arise, both regions may apparently finally become involved.

1331. **FULTON, J. S. The incidence of swamp fever in Saskatchewan in relation to soil type.** *Jour. Amer. Vet. Med. Assoc.* 30(2): 157-164. 1930.—The observation is made that outbreaks of swamp fever never occur on heavy clay lands, while isolated cases occur on light sand or gradation types between very heavy clay and sandy soil, and frequent cases occur on soil varying from sandy to heavy loam. It is further observed that waters in clay soils are decidedly alkaline from early spring until freeze up, while slough waters in loam areas exhibit rank growth and a change, as the season advances, from alkaline to neutral and to acid, depending on rainfall. It was found that swamp fever cases begin to appear when temp. of the sloughs become suitable for growth of microorganisms and when the pH is 7.0-7.6. Spirochaetes were found in ponds, where there was considerable vegetable growth, whenever the reaction was not far from neutral; they were never found in the decidedly alkaline ponds in the non-swamp-fever area. The author does not suggest spirochaetes as the cause, but deems it pertinent that the presence or absence of "that" capable of producing swamp fever coincides with the reaction of the water determining the presence or absence of spirochaetes. Reference is made to the similarity of spirochaetal jaundice in miners.—*F. Volkmar.*

1332. **GLÄSSER, K. Schweineseuche. [Swine plague.] [In: W. KOLLE und A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen. 3 Aufl. W. KOLLE, R. KRAUS, und P. UHLENHUTH.** Bd. 6, Teil 2, Lief. 27.] P. 835-872. 5 fig. Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin & Wien, 1929.—With a 3-page bibliography.

1333. **GRAHAM, ROBERT, and FRANK THORP, Jr. A laryngotracheitis syndrome in wild goose associated with pneumomycosis.** *Jour. Amer. Vet. Med. Assoc.* 32 (1): 90-94. 3 fig. 1931.—This syndrome proved to be a mycotic pneumonia. The mycosis was not communicated by direct swab of the larynx and trachea or by sterile filtrates prepared from the exudate in the respiratory tract, when administered to healthy chicks 1 mo. old.—*Authors' summary.*

1334. **GUDGER, E. W. A young rainbow trout (Salmo irideus) with a "horn" (the achene of Bidens cernua) on its head.** *Amer. Mus. Novitates* 465: 1-5. 3 fig. 1931.—A young trout (33 mm. long) had what seemed to be a cutaneous horn on its head, with the base enmeshed in fungus. This was found to be an achene of the "stick-tight" caught on the fish's head with one awn imbedded in front and one on each side. A water-mold had grown in the broken skin and had helped anchor the "horn." 2 other cases of like infestation are noted.—*E. W. Gudger.*

1335. **GREEN, R. G., E. W. WADE, and W. KELLY. Experimental tularemia in ring-necked pheasant.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 260-263. 1928.—10 pheasants, inoculated with *Bacterium tularense,* showed no external symptoms of disease; in 1 case the liver of the pheasant, 4 days after injection, produced tularemia when inoculated intramuscularly into a guinea pig; in another case, also inoculated intramuscularly, the organism was infectious to guinea pigs at site of inoculation, 7 days afterward.

1336. **HEELSBERGEN, T. van. "Soor"-ähnliche, durch Geflügelpockenvirus erzeugte Krankheitsbilder bei Hühnern. ["Thrush"-like symptoms in chickens produced by fowl-pox virus.]** *Zentralbl. Bakt. I Abt. Orig.* 120(5/6): 377-378. 2 fig. 1931.—Inoculation with the organism from cases of thrush in fowls ("Soorkrankheit," "schwämmchen") produced distinct pock marks on 3 out of 5 fowls, indicating that many cases of so-called thrush in fowls are due to filterable fowl-pox virus.

1337. **HEITZMANN, OTTO. Zur Frage der Affentuberkulose, im besonderen ihrer Frühdiagnose durch das Röntgenverfahren.** *Centralbl. Bakteriol. I. Abt. Orig.* 114(4/6): 470-482. 9 fig. 1929.

1338. **HOPKIRK, C. S. M., and D. A. GILL. Arthritis in lambs in New Zealand.** *Vet. Rec.* 10(40): 919-923. 1930.—An arthritic condition affecting the limb joints of New Zealand lambs is discussed. The cause is shown to be infection of the joints by an organism of the diphtheroid group. On inoculation into the circulation of sheep it appears to have a predilection for the joints. Reasons are given for believing that infection occurs naturally through docking and castration wounds. Prevention by use of antiseptic methods at time of operation and provision of clean pastures while the wounds heal, is advocated. The organism is very similar to *Bacillus erysipelatis suis* and may perhaps be identical, though swine erysipelas is entirely unknown among pigs in New Zealand. The organism is provisionally named *Corynebacterium* **osteoarthritidis ovis** (p. 923).—*Authors' summary.*

1339. **HOWITT, BEATRICE F. Spontaneous scurvy in monkeys.** *Arch. Path.* 11(4): 574-583. 1931.

1340. **[ЯКІМОV, V. L.] ЯКИМОВ, В. Л. Спирохеты крупного рогатого скота на Северном Кавказе.**

pirochaetes of large horned cattle in North Caucasus.] сский Журнал Тропической Медицины [*Russ. Jour. op. Med.*] 7(2): 98-101. 1929.—The author placed on cow, larvae of *Boophilus annulatus calcaratus,* bred m ♀♀ taken from cattle infected with piroplasma; days later the body temp. rose; 17 days later *Pirosma bigeminum* was found in the blood and 20 days er spirochaetes. The author regards the latter as *irochaeta theileri* Laveran.—*B. Van Rosen.*

1341. **JAFFÉ, RUDOLF.** Anatomie und Pathologie der ontanerkrankungen der kleinen Laboratoriumstiere, aninchen, Meerschweinchen, Ratte, Maus. [Anatomy d pathology of spontaneous diseases of small labotory animals—rabbit, guinea pig, rat, mouse.] 832p. 0 fig. (partly col.) Julius Springer: Berlin, 1931. rice 98 M.

1342. **KITT, THEODOR.** Grundriss der pathologischen natomie für Tierärzte und Studierende der Tiermedin. [Fundamentals of morbid anatomy for veterinaans and students.] 356p. 8 pl. Ferdinand Enke: uttgart, 1931. Price 20 M.

1343. **LADREYT, F.** Sur un odontome cutané chez n Scyllium catulus Cuv. *Bull. Inst. Océanogr.* [*Monaco*] 929(539): 1-4. 1 fig. 1929.

1344. **LAMBERT, W. V., and C. W. KNOX.** On the heritance of resistance to fowl typhoid in chickens. *roc. Iowa Acad. Sci.* 36: 382-383. 1929(1930).—Chicks om parents surviving fowl-typhoid have higher reistance than those from parents not surviving it.—*F. A. tromsten.*

1345. **LEFEBVRE, C. L.** A destructive fungous disase [Beauveria bassiana] of the corn borer. *Phytopath.* 1(1): 124-125. 1931.—Abstract.

1346. **LEUENBERGER, FRITZ.** Die Krankheiten der Bienen. [Diseases of bees.] 4th ed. 72p. 22 fig. H. R. Sauerländer & Co.: Aarau, 1931.

1347. **McKENNEY, FRANK D.** Embryonal nephroma n the chicken: report of two cases. *Amer. Jour. Cancer* 15(1): 122-128. 4 fig. 1931.

1348. **MARTINAGLIA, G.** A note on Salmonella gallinarum infection of ten-day old chicks and adult turkeys. *Jour. So. African Vet. Med. Assoc.* 1(3): 35-36. 1929.

1349. **MARTINAGLIA, G.** Tuberculosis of human origin in the parrot. *Jour. So. African Vet. Med. Assoc.* 1(3): 37-38. 1 fig. 1929.—Inoculation of guinea pigs, fowls and rabbits with an emulsion of facial nodules from a parrot resulted in death of the first from generalized tuberculosis.

1350. **MESSER, LUDWIG.** Untersuchungen über die Giftigkeit des Kochsalzes in Pökellake für Schweine. [Investigations of the toxicity for pigs of NaCl in pickling brine.] 35p. Dissertation. Giessener Studentenhilfe: Giesen, 1929.

1351. **MIYAMOTO, TOSINOBU.** Urocystitis haemorrhagica of native cattle in Formosa. *Far East Assoc Trop. Med. Trans. 7th Cong. Brit. India* 3: 667-685. 4 pl. 1927 [1928].—The hematuria in the native yellow cattle and water-buffaloes differs from the hemoglobinuria seen hitherto in cattle, and also from the hematuria developing from some other cause. Based on a large number of hematuria cases and especially on the morbid anatomy of 56 examples, the author determined that the hematuria originates from hemorrhage of the mucous membrane of the cyst where the pathological changes primarily take place. As a result of this study he concludes that neither spirochaetes nor parasite eggs are etiologically concerned, but does not determine the inciting agent.—*From author's conclusions.*

1352. **MOISE, THEODORE S., and ARTHUR H. SMITH.** Observations on the pathogenesis of pulmonary suppuration in the albino rat. *Proc. Soc. Exp. Biol. & Med.* 26(8): 723-725. 1929.—Preliminary paper.

1353. **MOUQUET, A.** Ostéite hypertrophique rappelant le Goundou chez un Cercocebus aethiops vivant. [Hypertrophic osteitis resembling goundou in a living Cercocebus aethiops.] *Bull. Soc. Path. Exotique* 22(10): 918-922. 1929.

1354. **OPPERMANN, TH.** Lehrbuch der Krankheiten des Schafes. [Handbook of sheep diseases.] 3 Aufl. xii+325p. 111 fig. Schaper: Hannover, 1929. Price 20 RM.

1355. **PAWLOFF, G.** Международнията елементъ въ борбата противъ епизоотиитѣ. [The international element in the control of epizootics.] Годишникъ на Софийския университетъ, Ветеринарно-медицински Факултетъ (*Jahresber. Univ. Sofia Vet.-Med. Fakultät*) 4: 73-88. 1928.

1356. **PAYNE, LOYAL F.** Malformed leg bones in young chickens. *Science* 71(1852): 664. 1930.—The deformity differs from rickets; it affects 1-60% of the young chickens in certain flocks and has become serious in many sections of the U. S. A.

1357. **RAGNOTTI, ERCOLE.** La ipertrofia prostatica nel cane. Contributo a ricerche di istologia patologica comparata. [Hypertrophy of prostate in the dog.] *Arch. Sci. Med.* 54(4): 249-272. 7 fig. 1930.—In adult dogs a process of hyperplasia of the prostate often occurs, which affects the interstitial and glandular tissues (fibromyoma, adenoma or fibromyoadenoma). A neoplastic transformation often occurs in the hyperplastic prostate, and an adenocarcinoma results. A hypothetic endocrine origin of the prostatic hypertrophy is pointed out.—*M. Comel.*

1358. **ROBINSON, E. M.** Botulism in the domesticated animals in South Africa. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria. Papers Vet. Sect.* P. 204-213. 1929(1930).—The literature is reviewed, especially as it affects the study of the disease in So. Africa. Its distribution is very wide and under certain conditions it may cause heavy mortality. Apparently, the C types of *Clostridium botulinum* are alone responsible for these outbreaks, but absence of the A and B types has not been proved.—*From author's conclusions.*

1359. **ROBINSON, E. M., and B. S. PARKIN.** A case of sporotrichosis in the horse. *Jour. So. African Vet. Med. Assoc.* 1(3): 17-24. 5 fig. 1929.—The fungus is identified as *Sporotrichon schencki.* Inoculations with pure cultures (intradermal, subcutaneous, scarified and unscarified skin) all yielded lesions. Morphology and cultural characteristics of the fungus are described, as also the lesions.

1360. **RÖHRS, H. D.** Xerophtalmie beim Waschbären. [Xerophthalmia in the raccoon.] *Deutsche Pelztierzucht.* 1931(6): 149-152. 2 fig. 1931.

1361. **ROUBAUD, E., et C. TOUMANOFF.** Essais d'infection expérimentale de larves de Culicides par quelques champignons entomophytes. *Bull. Soc. Path. Exotique* 23(10): 1025-1027. 1 fig. 1930.—Death was produced by *Beauveria bassiana* infection in 4 out of 5 *Culex pipiens* larvae and in 6 of 12 *Anopheles maculipennis* larvae. *B. globulifera* infection killed 3 of 5 *A. maculipennis* larvae.

1362. **SCHEUBER, J. R.** Black-quarter and allied anaerobic diseases in South Africa. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* P. 197-204. 1929(1930).

1363. **SCHLOTTHAUER, CARL F.** The incidence and types of disease of the thyroid gland of adult horses. *Jour. Amer. Vet. Med. Assoc.* 31(2): 211-218. 6 fig. 1931.—The thyroid glands of 100 horses were studied grossly and microscopically. The data obtained indicate that any gland having a wt. greater than 0.66 gm. for each kgm. of body wt. is abnormal. However, smaller glands may also show pathologic changes. Of 100 thyroid glands studied, 34 were classified as normal, 20 as hyperplastic, 9 as colloid, and 37 as adenomatous. The adenomas were benign papillary, fetal and colloid; none were malignant. Sex apparently is of no significance. The youngest animal having an adenomatous gland was 10 yrs. old. Approximately 40% of horses having adenomatous thyroid glands were in poor general condition, whereas only 17% in the 3 other groups were thus classified. This may indicate that some adenomas impair the health of the horse.—*Author's summary.*

1364. **SCHMIDT, FRITZ.** Rotlauferkrankungen bei Vögeln im Anschluss an Schweinerotlauf und Mäusesep-

tikämie. *Deutsche Tierärztl. Wochenschr.* 39(13): 196-198. 1931.—The author reports 2 epizootics of erysipelas in poultry and other birds at a zoological garden, in which a direct relation was demonstrated with swine erysipelas and with mouse septicemia respectively.

1365. **SIMMS, B. T., C. R. DONHAM, and J. N. SHAW.** Salmon poisoning. *Amer. Jour. Hyg.* 13(2): 363-391. 1931.—Salmon poisoning is a disease of Canidae associated with infestation with the intestinal fluke *Nanophyetus salmincola* Chapin. The flukes reach maturity in 5-7 days after the metacercariae are swallowed by a suitable mammalian host. Eggs hatch in 60-80 days. The snail host is *Goniobasis plicifera* var. *silicula* (Gould). The fish hosts include the species of both salmon and trout occurring in western Oregon. The mammalian hosts include dogs, foxes (both blue and silver black), coyotes, raccoons, bobcats and minks. There is no evidence that this parasite is lethal to the snail host. Fish tolerate very severe infestations. Of the mammalian hosts the Canidae only have developed the disease. The specific cause of salmon poisoning is unknown. The disease has a definite incubation period, followed by typical acute symptoms, and high mortality. Significant pathological lesions are limited to the digestive tube. No satisfactory medicinal treatment has been found. Recovery is followed by a definite immunity. The intraperitoneal injection of mature flukes results in symptoms similar to those produced by eating parasitized fish. Attempts at producing immunity have been unsuccessful.—*Authors' summary.*

1366. **SJOLLEMA, B.** On lambing sickness or milk fever of ewes. *Vet. Rec.* 10(30): 659. 1930.

1367. **SLYPER, E. J.** Über Verletzungen und Erkrankungen der Wirbelsäule und Rippen bei den Cetaceen. [Injuries and diseases of the spine and ribs of cetacea.] *Anat. Anzeiger* 71(7/9): 156-185. 17 fig. 1931.—Descriptions from museum specimens.

1368. **SORDELLI, A., M. PRADO, y J. FERRARI.** Estudio sobre la hemoglobinuria de los bovinos. [Hemoglobinuria of cattle.] *Rev. Soc. Argentina Biol.* 6(9/10): 525-538. 1930.—The disease was produced experimentally with *Bacillus* sp.* (?), which is always found in the liver of animals spontaneously or experimentally infected, frequently associated with *Clostridium welchii* (*B. perfringens*), cocci, etc. In cultures, lenticular colonies* are obtained, with characteristics corresponding to *Bacillus* sp. and resembling those of *Clostridium hemolyticus bovis.*—*J. T. Lewis.*

1369. **TITTSLER, RALPH P.** The sterilization of eggs infected with Salmonella pullorum. *Poultry Sci.* 9(2): 107-110. 1930.—Eggs infected with *S. pullorum* were sterilized by boiling for 5 min.—*R. P. Tittsler.*

1370. **VERATTI, EMILIO, e LUIGI BIANCHI.** Sulla infezione da Leptospira ittero-emorragica nella cavia. [Leptospira icterohaemorrhagiae infection in guinea pigs.] *Boll. Soc. Med.-Chir. Pavia* 44(2): 299-333. 3 fig. 1930.—Secondary infection (with organisms of the paratyphoid group) in *Leptospira* infection never produced the sudden aggravation of symptoms described by Sanarelli and Perger; sometimes the 2nd invading organism had no effect on the course of the spirochaetal infection, or again the new infection would supplant the old, and produce death without appearance of leptospiral symptoms, only the other bacteria being present in the organs at necropsy.

1371. **WHITE, GEORGE C., ROBERT E. JOHNSON, LEO F. RETTGER, and JAMES G. McALPINE.** Bovine infectious abortion. Increased productivity of an abortion-free dairy herd. *Jour. Dairy Sci.* 11(5): 359-374. 1928.

ANIMAL IMMUNOLOGY

GENERAL AND BACTERIAL

S. BAYNE-JONES, *Editor*

(See also in this issue Entries 162, 186, 188, 584, 1126, 1198, 1250, 1262, 1365, 1530, 1609, 1743, 1744, 1746, 1754, 1763, 1772, 1798, 1837, 2306)

GENERAL

1372. **ABADJIEFF, BORIS.** Ueber antigene Eigenschaften von Gehirnlipoiden. [Antigenic characteristics of brain lipoids.] *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 54(5/6): 507-517. 1928.

1373. **ADELSBERGER, LUCIE.** Anaphylaxie und Atopie. III. Anaphylaxieversuche mit Atopenen. *Zeitschr. Hyg. u. Infektionskr.* 111(4): 577-599. 1930.—Most of the specific excitants of clinical allergy (atopens, coca) are of weak anaphylactogenic power in guinea pigs,—many of them possessing no anaphylactic properties. Horse-dander anaphylaxis is not identical with horse-serum anaphylaxis, presumably due to different partial antigenicities.—*W. H. Manwaring.*

1374. **ADELSBERGER, LUCIE, und WERNER ULRICH.** Zur Kenntnis des Pferdeschuppenallergens. [Horse dander allergen.] *Zeitschr. Hyg. u. Infektionskr.* 111(4): 600-617. 1930.—The allergically active constituent of horse dander extract is precipitated by alcohol. It may be isolated by the method used by Toenniessen to isolate polysaccharides from bacterial cell walls. The solutions LA2 and LW2, which are very active on skins of hypersensitive persons, contain protein. There was no parallel between the action of dander extract solutions on human hypersensitive skin and anaphylactic effects in laboratory animals, which is contrary to Coca's findings. Solution LW3 contained only traces of protein, but produced anaphylactic reactions in animals.—*Authors' summary (transl. by W. N. Berg).*

1375. **AMARAL, AFRANIO do.** The anti-snake-bite campaign in Texas and in the subtropical United States. *Bull. Antivenin Inst. America* 1(3): 77-85. 1 map. 1927.—A review of snake bites as observed throughout the U. S. A., especially in its subtropical sections, July, 1926, to June, 1927. An analysis is made of 150 cases of snake poisoning reported in Texas for that period, showing that of 67 cases in which antivenin was not applied, 23 died, the death rate being 34.3%; while of 83 cases in which antivenin was injected, only 5 died (including 3 children), the death rate being 6%.—*A. do Amaral.*

1376. **AMARAL, AFRANIO do.** Specific antivenin to combat scorpionism and arachnidism. *Bull. Antivenin Inst. America* 2(3): 69-71. 1928.—A review of the method of preparation of antivenins against both scorpions (particularly *Tityus bahiensis*) and spiders (*Lycosa raptoria* and *Ctenus nigriventer*).—*A. do Amaral.*

1377. **AMOROSI, OSVALDO.** Rapporti fra [illegible]afilassi ed ulcera gastrica. (Ricerche sperimentali.) [Relations between anaphylaxis and gastric ulcer.] *Ann. Ital. Chir.* 9(10): 949-975. 1930.—Anaphylactic shock was induced in 9 rabbits and 7 dogs and the antipeptic and antirennin indexes of the blood were determined at various times thereafter. While there was no change in blood antiferments immediately after production of shock, 12 hrs. afterward there was a marked fall in both antipeptic and antirennin indexes. It is concluded that anaphylaxis may be instrumental in producing gastric ulcer, through both the vascular changes and the fall in blood antipeptic and antirennin indexes.

1378. **ANAN, SHINJI.** Über die Schwankung des Kalk- und Kaliumspiegels im Blute bei der Serumanaphylaxie sowie bei dem Histamin- und Peptonshock. [In Japanese.] *Nagasaki Igaku Kwai Zasshi* 5: 751-762. 1927.—In the blood of guinea pigs the Ca level rises distinctly in serum anaphylaxis and rises in the same

way during histamine or peptone shock. This rise in calcium is seen to a less extent in rabbits. As far as these observations go, it may be concluded that anaphylaxis and peptone or histamine shock fall within the same category.—*J. M. Watt.*

1379. ANDO, K., and H. NISHIMURA. On the heat stability of the diphtheria toxin. *Jour. Immunol.* 19 (5): 465-471. 1930.—The heat sensitiveness of diphtheria toxin depends on its own pH; the more acidified the toxin, the more heat-stable it is. It is practically destroyed by heating to 80-90° C. for 30 min., but not completely even by boiling for 30 min. When acidified to pH 2.0 prior to boiling, about 1/1000-1/700 of its original toxicity remained after boiling for 30 min. Accordingly, the property of heat sensitiveness accepted hitherto as such must not be considered as a general characteristic of bacterial exotoxins.—*Authors' conclusions.*

1380. ANDO, K. Studies on the "toxins" of hemolytic streptococci. VII. Observations on the titration of scarlet fever toxin. *Jour. Immunol.* 20(1): 1-16. 1931.—Dick toxin, usually stable, deteriorates under some unknown conditions. Dried toxin may retain full potency for a long time. The nucleoprotein content of Dick toxin should be determined in addition to the skin test units, as the nucleoprotein causes confusing results. A dried purified toxin, free from nucleoprotein, is recommended as a standard toxin. A qualitative difference between various toxins exists; this indicates the need for further comparisons of the potency and antigenic activity of various toxins before adoption of an international standard.—*L. A. Barnes.*

1381. ANDREWES, C. H. The immunological relationships of fowl tumors with different histological structure. *Jour. Path. & Bact.* 34(1): 92-107. 1930.—6 fowls bearing the slowly growing fibrosarcoma MH1 were found to have in their serum neutralizing properties active against filtrates of Rous sarcoma No. 1, which is histologically distinct from it. These sera would also neutralize filtrates of fowl endothelioma MH2. Similar neutralizing properties were found in the serum of only 2 of 38 supposedly normal fowls. Birds bearing Rous sarcomata or MH2 endotheliomata may develop some neutralizing antibodies against the Rous virus in their sera, but the appearance of the neutralizing properties is far from constant. The suggestion is made that the active agents of the Rous spindle-celled sarcoma, the MH1 fibrosarcoma and MH2 endothelioma may have some antigen in common. It has not so far been found possible, with the sera active against the Rous virus, to neutralize the virus of the histologically very similar Fujinami fowl sarcoma.—*C. H. Andrewes.*

1382. ARCHIPOW, K. S., und A. J. RABATJUSCHKOW. Der Tetanusantitoxingehalt des normalen Pferdeserums und seine Einwirkung auf die Immunisierung mit Starrkrampfantigen. *Zentralbl. Bakt. I. Abt. Orig.* 118(7/8): 425-429. 1930.—Tetanus antitoxin in exceedingly small amounts was found in the serum of 16 normal horses investigated; these normal sera, given not later than 24 hrs. after intraperitoneal injection of tetanus toxin, protected guinea pigs against local tetanus. No parallel was found between the capacity of a horse serum to form tetanus antitoxin and its capacity to form diphtheria antitoxin.

1383. ARONSOHN, HANS GERHARD. Ueber Untergruppen der Blutgrupp[illegible] A des Menschen. *Zeitschr. Immunitätsforsch.* 64(5/6): 418-440. 1929.—The author confirms the investigations of Landsteiner and collaborators as to the determination of the subgroups of group A by the aid of special human sera. Agglutinin α^1 was found in 11 instances and agglutinin α^2 but once in 69 sera of group AB. Lysins differentiating the 2 subgroups could not be demonstrated, nor could the author differentiate the 2 sorts of cells by use of immune agglutinins.—*P. Levine.*

1384. ARRIGONI, R. Valore complementare nel siero di sangue di bambini in rapporto alle irradiazioni ultraviolette e alla somministrazione di alimenti irradiati. [Complement value of blood serum of infants in relation to ultraviolet irradiation and administration of irradiated foods.] *Riv. Clin. Pediatr.* 28(8): 670-687. 1930.—Gains in complement value of serum and in general conditions were observed in 8 infants under ultraviolet irradiation, in 4 fed irradiated rice water, and in 1 fed irradiated cereal, as compared with that of an unspecified number of non-irradiated infants.

1385. ARTHUS, MAURICE. Les anavenins. Destruction de la toxicité des venins par le formol. *Jour. Physiol. et Path. Gén.* 28(3): 529-543. 1930.—When incubated at 38° C. with 1% formaldehyde, the toxicity of cobra venom is progressively destroyed, as shown by loss of paralytic, proteotoxic and anticoagulant properties. In 0.1% venom solutions, a flocculation is seen after addition of formaldehyde; this may be prevented partly by addition of glycine, and completely by gelatine or by glycerol. Formaldehyde has similar actions on other snake venoms.—*W. R. Fearon.*

1386. ARTHUS, M. Les anavenins. 2 Mémoire. Immunisation par les anavenins. *Jour. Physiol. et Path. Gén.* 28(4): 773-788. 1930.—After formaldehyde treatment, snake venoms, notably cobra venom, are rendered harmless, and at the same time capable of conferring some immunity on the inoculated animal (rabbit). The term "anavenin" is applied to these detoxicated venins, and it is shown that their antigenic effect is not due to traces of unchanged venin as an impurity.—*W. R. Fearon.*

1387. ARTHUS, M. Les anavenins. 3. Mémoire. Anaphylaxie engendrée par les anavenins. *Jour. Physiol. et Path. Gén.* 28(4): 800-815. 1930.—Anavenins are capable of sensitizing animals so that they react anaphylactically to the original venin and to other physiologically related venins.—*W. R. Fearon.*

1388. ASCIONE, GUGLIELMO. Influenza delle sostanze proteiche sulla produzione di anticorpi. I. [Action of proteins on antibody formation.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1038-1041. 1930.—Serum albumin of ox, injected into rabbits after injection of typhoid or staphylococcus vaccine, exerts no influence on specific agglutinin production. Injection of ox serum globulin is followed by diminished production of antityphoid agglutinins, while formation antistaphylococcic agglutinins is greatly increased.—*M. Comel.*

1389. ASCIONE, GUGLIELMO. Influenza delle sostanze proteiche sulla produzione di anticorpi. II. [Action of proteins on antibody formation.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1042-1045. 1930.—No marked variations in agglutinin content of serum occurred in rabbits into which, together with paratyphoid, a vaccine, milk albumin or ox serum globulin were injected. On the contrary, a marked increase of agglutinins followed administration of serum albumin.—*M. Comel.*

1390. ASHBY, W. R. O agglutinins in enterica carriers. *Jour. Path. & Bact.* 34(1): 109-110. 1930.—The agglutinin titers of seven typhoid carriers for H and O suspensions are recorded.—*A. E. Boycott.*

1391. ASSIS, A. de. Ueber die Shiga-Toxoide und ihre Verwendung in der Herstellung antitoxischer Dysenteriesera. [Shiga Toxoide and its use in preparation of antitoxic dysentery sera.] *Zeitschr. Immunitätsforsch.* 64(1/2): 49-60. 1 fig. 1929.

1392. BAAR, HEINRICH, und HANS BENEDICT. Zur percutanen Immunisierung mit der Löwensteinschen Diphtherieschutzsalbe. *Zeitschr. Kinderheilk.* 50(2): 195-211. 1930.—Since production of tetanic antitoxin in horses can be increased by local inflammation at point of injection, this action was tested with Löwenstein's diphtheria ointment. 4 groups of 6 guinea pigs each were used, the shaved skin of the 1st being irritated with mustard oil, of the 2nd with turpentine, the 3rd was not irritated, the 4th was used as control. The ointment was applied twice at an interval of 14 days. The skin irritated with mustard oil showed immunity to intracutaneous and subcutaneous injection of diphtheria toxin. The other guinea pigs showed no immunity. Clinical experiments with 110 children gave 62.27% — Schick reactions before using a mustard plaster (instead of oil); with hyperemia, 80.2% — reactions were obtained.

The diphtheria morbidity curve in the hospital was favorably influenced by percutaneous prophylaxis. ¼ of the children were Schick + after 2 yrs., but in most cases a single percutaneous application rendered them again Schick-negative.

1393. BANZHAF, EDWIN J., and A. J. KLEIN. A practical method for concentrating chill free pneumococcus antibodies from sera without use of salt precipitations. *Proc. Soc. Exp. Biol. & Med.* 28(3): 276-278. 1930.

1394. BANZHAF, EDWIN J., and THEODORE J. CURPHEY. A modified method for the production of antipneumococcus serum in horses. *Proc. Soc. Exp. Biol. & Med.* 28(3): 279-280. 1930.

1395. BAUTZ, TH., und CH. AMIRASLANOW. Ueber die Hautinfektion und Hautimmunität bei Milzbrand. [Skin infection and skin immunity in anthrax.] *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 56(1/2): 1-6. 1928.

1396. BARBEY, EDMOND. L'amygdale palatine et le système réticulo-endothelial. *Acta Oto-Laryngol.* 15 (2/4): 210-222. 1931.—The author repeatedly injected various pigments into the ear veins of 6 rabbits (india ink into 2, lithium carmine into 2, electrargol into 1, trypan blue into 1), and killed them 6-224 hrs. after the last injection. The usual localization of pigments was obtained for the liver, spleen and lymphatic ganglia. The tonsils of the rabbit treated with trypan blue showed a few colored cells; those of 1 of the 2 treated with lithium carmine, a very few colored cells; the others were clearly negative or doubtful. Since vital staining shows up reticulo-endothelial cells, it is concluded that the tonsils of rabbits contain some, but very few, reticulo-endothelial elements, which therefore under normal conditions play an altogether secondary rôle.

1397. BARNES, M. F. The Drummond pipetting machine. *Jour. Amer. Vet. Med. Assoc.* 31(2): 240-241. 1 fig. 1931.—This machine was found satisfactory in serum-test work.

1398. BENEDEK, T. Über immunobiologische Vorgänge bei der Schizosaccharomykose (Spalthefemykose). [Immunobiological processes in schizosaccharomycosis (fission yeast mycosis).] *Acta Dermato-Venereol.* 9(1): 76-97. 1928.

1399. BENJAMINS, C. E., et B. S. VERMEULEN. Recherches sur les substances sensibilisantes qui provoquent le rhume des foins, au moyen de la méthode de Dale. *Acta Oto-Laryngol.* 15(2/4): 121-141. 1931.—Of 57 guinea pigs sensitized by intraperitoneal injection of pollen extract of 7 grasses, 36 gave a positive reaction by the Dale method, the ratio of number tested to number of positive results being for the various grasses: rye (*Secale cereale*), 15: 13; creeping soft grass (*Holcus mollis*), 9: 2; red fescue (*Festuca rubra*), 4: 3; crested dogstail (*Cynosurus cristatus*), 2: 1; meadow foxtail (*Alopecurus pratensis*), 8: 6; timothy (*Phleum pratense*), 4: 2; cocksfoot (*Dactylis glomerata*), 15: 9. The sensitization was specific for each of the species tested. Rye pollen contains a more specific, very active, histamine-like substance which produced contractions of smooth muscle in 44 of 51 guinea pigs on a grass-free diet and in 36 of 41 on a grass diet. Food allergy by ingestion of grasses was established: of 33 guinea pigs on a hay diet, 15 gave a positive reaction to pollen extract of 1 or several grasses, while of 51 kept on a grass-free diet, none reacted positively.

1400. BERGEL, S. Über pathologische Lipoidbildung bei der experimentellen Syphilis und ihre Beziehung zur Wassermannschen Reaktion. *Arch. Dermatol. u. Syph.* 161(1): 220-231. 4 fig. 1930.—The author previously demonstrated that the spirochaete cell membrane consists essentially of a lipoid, which chemotactically produces a lymphocytic reaction, which in turn by its lipolitic power brings about a disintegration of spirochaete. He sought then to answer experimentally the question as to whether one can detect in syphilitic tissue, pathological lipoid formation playing a rôle in the Wassermann reaction. He had previously produced a positive Wassermann by injections of nonspecific lipoid. Rabbit syphilomas in various stages were now studied by the usual methods for staining fat and lipoid, and pieces of the same tissues were treated by Levaditi's method to establish the relationship between spirochaetal content and lipoid formation. In areas of induration of the testicle tunica there were found in the connective tissue cells, in the so-called histiocytic elements, and very strikingly in the walls of the lymph- and blood-vessels, granules and droplets stained red with sudan (intra- and sometimes extracellularly) in the same tissues favored by the spirochaetes, as shown by the Levaditi preparations. These pathological lipoids act as antigen and produce a walling off and penetration by lymphocytes, in the wake of which comes a gradual dissolution and disappearance of lipoidal substances. Also the biological rule advanced by the author was confirmed that lipoids of exogenous and endogenous origin produce a lipolytic lymphocyte reaction, by which the antigen is destroyed. It seems reasonable to consider that a sort of toxic action of the spirochaete is responsible for production of the lipoid formed in approximately the same locations. The author does not believe that reticulo-endothelial cells are originators of antibodies against the spirochaete, but that they are merely containers and breeding places for the spirochaetes. The active defense reaction begins only after lymphocytic infiltration has set in. Results also elucidate the question, as to whether this lipoid formation has a relation to the Wassermann reaction. Using serum of testicular lesions rich in lymphocytes, the author obtained in rabbits a positive Wassermann reaction with luetic fetal liver and with cholesterinized beef-heart extract. He believes that the "reagins," antilipoids in the local products of disease, are produced by lipolytic lymphocytes which appear as a reaction against lipoidal antigens, and are thence poured into the blood. In accord with this are the facts that in man also, a positive Wassermann can be demonstrated in serum from primary lesions and from regional lymph glands, as well as in serous cavity fluid, in joint fluid and in cerebrospinal fluid of sphilitics even when the reaction is still negative in the blood. From these investigations the cycle seems to be: Syphilis spirochaetes, lipoidal metabolic disturbance, chemotactic lymphocyte infiltration, antilipoid formation, and positive Wassermann reaction. It is apparent that the latter is constructed from 2 components: (1) antibody against spirochaetal lipoid, in which the amboceptor-like lipase arising from the lymphocytes combines with spirochaetal lipoid and is activated by complement contained in the body fluids, and (2) antisubstances against the pathological lipoid, which likewise are formed from lymphocytic reaction products. Lymphocyte lipase also acts almost specifically on 2 lipoids, as the author demonstrated in the hemagglutination and hemolysis of 2 different kinds of erythrocyte lipoids.—*From author's summary (transl. by H. E. Meleney).*

1401. BLACHER, W. Ein kasuistischer Beitrag zur Aktivierungshypothese der postvakzinalen Erkrankungen (Vakzination und Tuberkulose). [A casuistic contribution to the activation hypothesis of postvaccinal diseases (vaccination and tuberculosis).] *Jahrb. Kinderheilk.* 130 (3/4): 201-209. 1931.

1402. BLANCHARD, E. W. An experimental study of the opsonins of the blood. I. Effect of bilateral adrenalectomy. *Physiol. Zool.* 4(2): 302-315. 1931.—Cats were operated upon by the same individual, and the 2 adrenal glands were removed separately. They completely recovered from the 1st operation before the 2nd gland was removed. Operated animals were bled at frequent intervals and the opsonic activity of the blood was determined. Serial dilutions of experimental and of normal serum were made. Collodion particles were used as "antigen." Cat leukocytes were obtained by intraperitoneal injection of 0.9% NaCl and subsequent withdrawal of peritoneal exudate. These cells were washed and suspended in isotonic NaCl. 1/10 cc. each of serum or its dilution, of collodion suspension and of

leukocytes were mixed in small tubes corked and agitated slowly for 15 min. After spreading and staining, the opsonic activity in terms of % of phagocytic cells was determined. Results show clearly that the opsonin content of the blood begins to drop about 2 days after removal of the 2nd adrenal gland. The experimental cats lived, on the average, about 7 days, and during the terminal stages of adrenal deficiency the drop in opsonic activity was very marked. Double-nephrectomized cats, showing symptoms similar to those of adrenal insufficiency, were bled, and their blood showed no change in opsonic activity, even at the terminal stage.—*Author (courtesy Wistar Bibl. Serv.).*

1403. BLANCHARD, E. W. An experimental study of the opsonins of the blood. II. Effect of irradiation with ultraviolet and with x-rays. *Physiol. Zool.* 4(2): 316-323. 1931.—Normal cat serum, after being separated from the cells, was divided into 2 parts: (1) was irradiated with ultraviolet or x-rays; (2) served as control. A Hanovia mercury-arc lamp was used as source of ultraviolet; a Coolidge tube, running at 65 kilovolts at 6-7 milliamperes, as source of x-rays. The serum was exposed 10 in. from the ultraviolet lamp and 12 in. from the target of the x-ray tube. The temp. factor was controlled in all experiments. Accurate serial dilutions of the sera were made, and the opsonic activity of the experimental and control sera was determined by the method previously outlined. Exposures of various times were made. The opsonin is almost completely inactivated by a 30-min. exposure to ultraviolet or by a 45-min. exposure to x-rays. Shorter exposures markedly decrease the opsonic activity of the blood serum.—*Author (courtesy Wistar Bibl. Serv.).*

1404. BLOCH, BRUNO, und A. STEINER-WOURLISCH. Die Sensibilisierung des Meerschweinchens gegen Primeln. *Arch. Dermatol. u. Syph.* 162(2): 349-378. 9 fig. (2 col.) 1930.—By 1 or more cutaneous applications (or by intracutaneous, and slightly by intracardial injections) of the concentrated ether extract of primroses, it was possible to sensitize 41 of 43 guinea pigs against the dilute (1-5%) extract antigen of primroses, which did not affect a normal animal. This allergy was expressed as an inflammatory reaction of the skin, appearing first as a very acute, vesicular eczema that later took a more chronic course. The incubation time to appearance of allergic reaction was 2 hrs. to 1 day, the reaction usually lasting 2-6 or more days. The allergy extended over the entire body; focal reactions were also seen. It was possible to sensitize with the extract against primin, the pure crystallized extract from primroses, and vice versa. Attempts to transfer the allergy to other guinea pigs or to rabbits were negative in the 10 instances tried. Negative also were attempts to desensitize by repeated cutaneous application of concentrated extracts.—*From authors' summary (transl.).*

1405. BLUMENTHAL, G., und E. NASSAU. Zur Diphtherieimmunisierung mit der Schutzsalbe von Löwenstein. *Zeitschr. Kinderheilk.* 50(6): 742-747. 1931.—3 applications of 1 tube (3 cc.) each were made on the shaved skin of each of 5 rabbits at 14- and 7-day intervals; on the 49th day the titer in all animals (1 died intercurrently) was less than 1/100 antitoxin units. 2 applications were given 157 children with a 10-12-day interval. The favorable clinical course (1 child, attacked 5 days after 1st inunction and not attributable to unsuccessful treatment) was contrary to the outcome of the Schick test (35%+) and determination of antitoxin in the blood. With 1 exception, attributable to other causes, no rise in antitoxin was found in 29 children, even when a certain antitoxin titer was present before treatment. When epidemiological observation is inadequate, biological reactions should also be tested to determine immunological results with antidiphtheritic substances.

1406. BOGENDÖRFER, L. Üder den Einfluss des Zentralnervensystems auf Immunitätsvorgänge. III. Beziehungen des Sympathikus zum Zustandekommen der Agglutination. [Influence of the central nervous system on immunity processes. Relation of the sympathetic system to production of agglutinins.] *Arch. Exp. Path. u. Pharmakol.* 133(1/2): 107-110. 1928.

1407. BORGHI, BRUNO. Effetti dell'iniezione di leucociti omologhi ed eterologhi negli animali. [Effects of injection of homologous and heterologous leucocytes.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 396-399. 1930.—Homologous leucocytes were injected into rabbits after staining by neutral red; they disappeared from the blood stream after 1 hr. and were to be found thereafter only in lungs and spleen. A destruction of leucocytes in the tissues is suggested. Leucocytosis rarely followed in injected animals; more frequently a modification of the leucocyte ratio was observed. In the bone marrow an increase of leucocytes and megacaryocytes was observed. Pulp hypertrophy was shown by the spleen. When heterologous leucocytes were injected (rabbit blood to mice) the same effects were observed as with homologous leucocytes, with more marked histological modifications; stimulation of the reticulo-endothelial system was followed by a myeloid proliferation of reticulohistiocytes.—*M. Comel.*

1408. BORGHI, BRUNO. Modificazioni umorali consecutive all'iniezione di leucociti. [Humoral modifications following injection of leucocytes.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 399-400. 1930.—When serum of a rabbit treated previously with injections of leucocytes is injected into the ear lobe of a non-treated rabbit, at this point a greater quantity of leucocytes is attracted than when normal serum is injected. The same result was observed after injecting rabbit serum into the testicle of guinea pig.—*M. Comel.*

1409. BOSSA, G. Ricerche sperimentali sulla reazione emoclasica del d'Amato nelle infezioni tifoidi e nell' infezione melitense. [Experimental studies on d'Amato's hemoclastic reaction in typhoid and undulant fevers.] *Rif. Med.* 45(7): 211-220. 1929.—When rabbits are sensitized to *Bacillus typhi, B. paratyphi* or *B. melitensis*, injection of homologous vaccine at a dosage of 10-40 milliards per kgm. wt. induces a typical hemoclastic shock. When the dosage is kept below these amounts, no shock follows, even in sensitized animals. When the dosage is above these amounts, the reaction may be induced also in non-sensitized rabbits. It does not appear when the agglutinant power of the serum for the bacteria by which the sensitization is produced has reached rather high values (1: 700-800). The specificity is an absolute one for *B. typhi, B. paratyphi* and *B. melitensis;* but animals sensitized to *B. paratyphi A* react as well also to *B. paratyphi B,* and vice versa.—*M. Comel.*

1410. BRANDT, ROBERT. Zur Standardisierung der Mastixreaktion. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 65(3/4): 221-239. 1930.—Through variation in the concentration of mastic and the degree of alkalinization and by a process of double preparation, an attempt was made to endow the mastic reaction with a high degree of exactness. That this was accomplished is shown by the results of comparative tests on fluids from a single source and by comparisons with gold curves. The details of preparation and use of the "standardized mastic reaction" are given.—*N. W. Larkum.*

1411. BROWN J. C., and H. C. BROWN. Further observations upon electric charge in its relation to haemolysis and phagocytosis. *British Jour. Exp. Path.* 11: 305-310. 1930.—The amount of complement fixed by sensitized bacteria is shown to depend on the concentration of NaCl present. It was thought that an inhibition of serum hemolysis should be obtained in vivo by administering salts with polyvalent anions along with a hemolytic serum, but when trisodium citrate was used there was no evidence of such inhibition. This is probably due to the rapidity with which the citrate is converted into carbonate and eliminated. On the other hand, potassium ferrocyanide, which inhibits serum hemolysis in vitro, also exerts a protective action in vivo when administered to mice together with a dose of hemolytic serum. This salt also markedly interferes with phagocytosis of bacteria; its action is shown not to be due to a destructive effect either on hemolytic ambo-

ceptor or on phagocytes. It is considered that all the effects described are dependent on the relative electrical charges of the reacting components.—*J. Bland.*

1412. **BUADZE, SEVERIAN.** Über das Wesen der Abderhaldenschen Reaktion. *Fermentforschung* 9(3/4): 362-374. 1928.—This research was undertaken to ascertain to what extent the Abderhalden reaction is to be regarded as a complement fixation reaction in the Bordet-Gengou sense. Applying the method adopted, no support was obtained in any of the cases investigated, for acceptance of the complement fixation theory. The opinion expressed by the older authors on the amboceptor nature of the substances concerned in, and the importance of complement for, the Abderhalden reaction, cannot, therefore, be accepted.—*Author's summary (transl. by R. T. Hewlett).*

1413. **BUNNEY, WILLIAM EDWARD.** A new diluent for diphtheria toxin in the Schick test. *Jour. Immunol.* 20(1): 71-84. 1931.—A 2% solution of peptone (Difco-"Proteose"), containing 0.85% NaCl, adjusted to pH 8.4, autoclaved and made to contain 0.5% phenol was found to maintain the toxicity of certain diphtheria toxins diluted to ¼ M.L.D. per cc., under ordinary conditions for periods long enough to permit warranting no loss of toxicity in 2 months. Schick tests done with toxin so diluted gave satisfactory results in children whether or not they had received toxin-antitoxin 6 months previously, and in adults who had not received toxin-antitoxin.—*W. E. Bunney.*

1414. **BURNET, F. M.** Shwartzman's phenomenon of local skin reactivity to bacterial products. *Jour. Path. & Bact.* 34(1): 45-60. 1 pl. 1930.—The effective substance is common to widely different species of bacteria.—*A. E. Boycott.*

1415. **CASTOLDI, FRANCO, e ANNIBALE MACCHI.** La vaccinazione antitubercolare col B.C.G. per via orale. Ricerche sperimentali nei conigli e nelle cavie. [Experimental oral antituberculer vaccination by BCG in guinea pigs and rabbits.] *Arch. Ist. Biochim. Ital.* 2(2): 307-340. 10 fig. 1930.—Following oral vaccination by BCG, health and development were normal as compared to controls. Processes of tissue reaction are determined in the lymph glands. Experimental infection by Calmette's method provoked death in vaccinated as well as in control animals, those vaccinated, however, showing greater resistance. When inoculated through eyes or mouth, alterations were more circumscribed and limited, and reactive processes more intense in vaccinated than in control animals; the latter showed more acute and generalized symptoms. When inoculated through the peritoneum, no difference was evident between vaccinated and non-vaccinated animals.—*M. Comel.*

1416. **CEREDI, A., e A. SERVICI.** Sul potere battericida verso il bacillo tifico di sieri normali e durante lo stabilirsi dell'immunità. [Bactericidal power against typhoid bacilli of normal sera and of sera during development of immunity.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 361-368. 1930.—A demonstration is offered of the existence of normal bacteriolysins in serum, and their intervention as necessary factors in the bactericidal power of fresh serum. During development of immunity by means of antityphoid vaccination, a stage of diminution of bactericidal power is followed by its specific increase.—*M. Comel.*

1417. **CHUAN, FAN, and C. E. LIM.** Titration of diphtheria toxin and antitoxin on hamsters. *Proc. Soc. Exp. Biol. & Med.* 28(3): 226-228. 1930.—Experiments are reported which demonstrate that hamsters (*Cricetulus griseus*) may be used. This is of importance in countries (e.g., China) where guinea pigs are difficult to obtain.

1418. **CIAMBELLOTTI, E.** Dell'allergia cutanea antitubercolare: a proposito di un caso di tubercolosi miliare con efflorescenze cutanee a tipo di tuberculide papulonecrotica. [Cutaneous antituberculous allergy: a case of miliary tuberculosis with cutaneous efflorescence of the papulonecrotic type.] *Gior. Ital. Derm. e Sifil.* 71 (2): 390-417. 1930.—No tubercule bacilli were found in a cutaneous tuberculid. The author infers that the bacilli had been destroyed and that the skin disease was due to the effect of the death rather than of the life of the microörganism. Since in the anaphylactoid forms, as in allergy, antigen (as the author shows) is disintegrated, it follows that allergy is not so much hypersensitivity as heightened defense against microörganisms and toxins.—*Author's summary (transl.).*

1419. **CITELLI, SALVATORE.** Sui risultati attuali della mia cura nei tumori maligni umani (con presentazione di 5 infermi.) VI. [Results of treatment of malignant tumors.] *Atti Accad. Gioenia Sci. Nat. Catania* 15(Mem. 2): 1-6. 1927.—The author states that by intravenous injection of autogenous vaccines the great majority of patients make a remarkable improvement and sometimes are cured unless treatment has started too late. He presented to the Academy 5 patients treated by him. 2 were cured cases of endothelial sarcoma,—one of 4 and the other of 9 months. 2 were of a sarcoma which had recently disappeared as a result of treatment and another of a carcinoma which had disappeared 4 months previously. Other cases treated by himself and by others are discussed. From the data at hand he believes his method superior to others.—*S. Citelli (transl. by P. Hillkowitz).*

1420. **CLEMENTI, A., e F. CONDORELLI.** Nuove proprietà biochimiche dei pigmenti biliari. III. Potere agglutinante della bile sugli stromi degli eritrociti emolizzati. [Agglutinating power of bile on the stroma of hemolyzed erythrocytes.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 748-750. 1930.—Bile exerted an agglutinating action on the hemolyzed erythrocytes of some animals, but varied according to species and individuals.—*M. Comel.*

1421. **COHEN, MILTON B., E. E. ECKER, J. R. BREITBART, and J. A. RUDOLPH.** The rate of absorption of ragweed pollen material from the nose. *Jour. Immunol.* 18(6): 419-425. 1930.—A Prausnitz-Küstner reaction was performed with serum of a patient highly sensitive to ragweed, on 50 non-atopic subjects and 12 patients with asthma, hay fever, or vasomotor rhinitis, 9 of whom gave skin reactions by scratch tests. The patients were not naturally sensitive to ragweed. 24 hrs. later pollen was blown into both nostrils of non-atopic and atopic subjects and sites of injections observed for appearance of redness or wheal formation. The absorption time of the non-atopic subjects was 14-31 min., while that of the 9 sensitive subjects giving a skin reaction showed a marked delay, ranging from 47 min. to no reaction after 2 hrs. The other 3 with negative skin tests reacted like the non-atopics.—*Authors' summary.*

1422. **COLLIS, W. R. F., and A. G. WATKINS.** The immunology of scarlet fever: an unusual case. *Arch. Dis. Childhood* 5(30): 441-443. 1930.—The patient gave a negative Dick reaction when on the point of succumbing to an infection with scarlatinal streptococci, thus furnishing additional evidence that scarlatina is not a simple toxin-antitoxin phenomenon. The authors regard the Dick test merely as an indication of the presence of antitoxin in the patient's serum, and not as a guide to general immunity to scarlatinal streptococci.

1423. **CONIGLIO, GIUSEPPE.** Sull'ulcera gastrica anafilattica. [Anaphylactic gastric ulcer.] *Riv. Patol. Sperim.* 5(2/3): 178-186. 7 fig. 1930.—By experimental anaphylaxis in animals injected with fresh serum, a gastric ulcer may be induced; development is completed in 15 days, natural regression following.—*M. Comel.*

1424. **CORNBLEET, THEODORE, and R. E. MONTGOMERY.** Self-sterilization powers of the skin. *Arch. Dermatol. & Syphilol.* 23(5): 908-919. 1931.—Experiments partially described indicate that yeast cells are removed from the surface of the skin at an almost uniform rate that varies little from one area to another as long as the surface epithelium is normally dry and intact. The nail beds and areas immediately surrounding the nails are less efficient at sterilizing themselves than are other areas. Keratotic areas are no more efficient at removing

yeasts and staphylococci from their surfaces than are normal areas. Moist areas suffer a depression in sterilizing powers. Areas with denuded epithelium are not so efficient in removing yeasts and staphylococci as intact ones. Previous exposures of the intact skin to ultraviolet do not enhance its destructive powers against yeasts and staphylococci. Areas superficially infected with yeast, such as those of perléche, are barely capable of destroying yeasts. The unaffected areas symmetrical to those superficially infected are distinctly lower in sterilizing powers against yeasts than the normal areas, although higher than the affected ones. Persons susceptible to infections with yeast vary in yeast-sterilizing rates from time to time, and this variation appears to be somewhat periodic. Areas occupied by psoriatic lesions suffer from a loss of sterilizing powers as compared with uninvolved areas on the same individuals. Psoriatic lesions bared of scales free themselves of surface yeasts and staphylococci more quickly than do such lesions with scales.—*From authors' summary.*

1425. **DEBENEDETTI, E., e C. CURRADO. Delle spermoagglutinine. Aspetto morfologico della spermoagglutinazione. [Morphological aspects of spermoagglutination.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 303-306. 1930.—The spermatozoa of guinea pigs, rabbits, sheep and dogs show a spontaneous agglutination which is apt to interfere with the spermoagglutination test. It was impossible to differentiate with certainty the morphological aspects of spontaneous and true agglutination. The pseudoagglutination was inhibited by adding to the suspension a solution of bile or taurocholate; it was then possible to demonstrate the specificity of serum spermoagglutinins.—*M. Comel.*

1426. **DELAFIELD, M. E. Changes in the blood sugar and blood phosphorus in rabbits following the injection of suspensions of Bact. aertrycke.** *Jour. Path. & Bact.* 34(2): 177-194. 1931.—Intravenous injections, into rabbits, of dead suspensions of *Bact. aertrycke* cause a hyperglycemia followed within 24 hrs. by a hypoglycemia. Inorganic blood P lessens in amount during hyperglycemia and increases during the hypoglycemic phase. Organic acid-soluble P also tends to increase during hyperglycemia. The same type of chemical response is found on injection of bacterial filtrate, alcohol-extracted organisms, acetone-extracted organisms or organisms treated by steaming or autoclaving. Diphtheria toxin produces no significant change in blood sugar or P within 24 hrs.—*M. E. Delafield.*

1427. **DEL CARPIO, I. La distribuzione dei gruppi sanguigni nella provincia della Spezia. [Blood group distribution in the La Spezia District.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 26-29. 1930.—The distribution was studied, following Jansky's classification.—*M. Comel.*

1428. **DUBOIS, CHARLES, et NOEL SOLLIER. Premiers résultats de la vaccination préventive de l'homme contre la fièvre ondulante.** *Ann. Inst. Pasteur [Paris]* 45(5): 596-612. 1930.—Of 111 persons exposed to, but vaccinated against, Malta fever, none has contracted the disease in about 3-8 months; 2 of 36 non-vaccinated persons have.

1429. **DUJARRIC de la RIVIÈRE, [R.] Floculation des sérums en présence de mélanges antigènes-teintures de résines: suivi d'une étude physiologique d'un extrait d'amanite phalloïde. [Flocculation of sera in presence of mixtures of antigens and resin tinctures: followed by a physiological study of Amanita phalloides.]** 83p. Le Francois: Paris, 1929. Price 35 fr.

1430. **[DUKHOVNAĬA, A. ĬA.] ДУХОВНАЯ, А. Я. К вопросу о значении изоагглютинационных групп при туберкулезе. [Isoagglutinating groups in tuberculosis.]** [With French summary.] Вопросы Туберкулеза [*Voprosy Tuberkuleza*] 7(10): 1231-1233. 1929.—The author investigated 771 patients. Tuberculosis affected those of all 4 blood groups; however, the 1st and 4th showed a certain predisposition for the persistent forms of tubercule bacillus. The blood groups do not vary during the pulmonary process, nor during specific therapy. Exudative cases are encountered more frequently in the 1st and 4th groups, which also show a greater tendency towards hemoptysis.—*B. Van Rosen.*

1431. **EBERT, B. P., und L. H. PERETZ. Zur Frage der Serodiagnose der Lungenseuche. [Sero-diagnosis of contagious diseases of the lungs.]** *Zeitschr. Immunitätsforsch.* 58(1/2): 123-129. 1928.

1432. **EHRLICH, S. PAUL. A case report of severe snake-bite poisoning.** *Bull. Antivenin Inst. America* 2: (3): 65-66. 1928.—Severe symptoms originated by a *Crotalus atrox* bite and causing much discomfort were counteracted by application of 4 doses of antivenin, supplemented with various physical and chemical therapeutic means.—*A. do Amaral.*

1433. **FAIRBROTHER, R. W., and W. J. T. MORGAN. Further observations on the immunization of the horse with the poliomyelitis virus.** *British Jour. Exp. Path.* 11: 298-305. 1930.—2 horses were given courses of intravenous and intramuscular injections of filtrates containing poliomyelitis virus. Samples of serum collected at various times were tested for antiviral properties by neutralization test, using *Macacus rhesus* as test animal. The responses of the 2 horses differed considerably. In one, a serum with definite antiviral properties was produced; in the other no such properties were found in any of the serum samples tested.—*J. Bland.*

1434. **FAIRBROTHER, R. W., and W. G. SCOTT BROWN. The action of the serum of normal individuals on the virus of poliomyelitis.** *Lancet* 219(5591): 895-896. 1930.—As a result of experiments on *Macacus rhesus* monkeys and on man the author concludes that immunity to poliomyelitis virus, as indicated by the presence of antiviral bodies in the serum, is frequently present in normal people who have been in contact with definite cases of the disease without developing it. Results here recorded support Aycock's view that the observed immunity of adults to poliomyelitis is most probably due to "sub-clinical" infections.

1435. **FERRARO, F. Potere isoagglutinante del latte umano e reazione di Candido. [Iso-agglutinating power of human milk and Candido's reaction.]** *Riv. Clin. Pediatr.* 28(2): 123-133. 1930.—Candido claimed to have discovered that milk from a syphilitic woman would agglutinate erythrocytes from a normal, but not from a syphilitic, person; also that milk from a normal woman would not agglutinate erythrocytes from either normals or syphilitics. Using the hanging-drop method and centrifuged milk of 25 healthy and 16 syphilitic women, the author found that milk of a given woman agglutinates precisely the same erythrocytes that the same woman's serum would agglutinate; that is, iso-agglutination by milk follows the laws of blood groups. Candido's results are attributed to error in technique.

1436. **FILIPPIS, V. de, e C. SCAGLIONI. Sistema reticolo-istiocitario e produzione di anticorpi. [The reticulo-histocytic system and production of antibodies.]** *Atenco Parmense.* 2(5): 457-463. 1930.—Injection of Pb acetate into rabbits previously or subsequently inoculated with typhoid produced a serum capable, even in dilution of 1: 3200 (as against 1: 400 for controls), of strongly agglutinating typhoid bacilli. The opsonic index of the serum of rabbits treated with Pb acetate was 1.2, taking the opsonic index of untreated controls as 1.

1437. **FITZGERALD, J. G., and D. T. FRASER. Human immunity to diphtheria.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 111-115. 1930.—The diphtheria antitoxin content of the blood of mothers and their newborn infants was studied. Generally, the content of the newborn was less than that of the mother. Studies on the natural diphtheria antitoxin content of the blood of various adults showed constant values over a year or more.

1438. **FRANTA, KARL. Zur Auswahl der Impftiere bei der Gewinnung von Hammelblutlysinen von Kaninchen. [Selection of animals for production of rabbit anti-sheep amboceptor.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 335-349. 1930.—Since not all rabbits are equally good amboceptor producers, an attempt was made to increase the number of good reactors by

selection of animals. The anlage of immune hemolysin production is inherited and selective breeding can produce a good line. The normal hemolysin titer of inactivated serum from a given rabbit is no indication of a high immune hemolysin in that animal.—*N. W. Larkum.*

1439. **FUNK, ELMER H., and F. M. HUNTOON.** Biochemical studies of bacterial derivatives. XI. Skin reactions in man with human tubercle bacillus protein MA-100. Preliminary report. *Jour. Immunol.* 19(2): 237-253. 1930.—A comparison was made of the skin reactions produced by a tuberculin "O.T." and by a human tubercle bacillus protein MA-100. It was found that: A skin reaction to protein MA-100 occurs in the majority of adults tested, and in slightly greater incidence than that produced by tuberculin "O.T." The type of reaction is that seen with tuberculin "O.T." but it is apt to be less intense and more transitory. A dosage of 0.0005 mgm. was adopted. As judged by reactions in tuberculous individuals and tuberculous animals, the protein is as specific as tuberculin "O.T." Disagreeable or dangerous reactions are less apt to occur with the protein. Incidence of reactions found were: (a) In known tuberculous cases 94.1% with protein; 90.6% with tuberculin "O.T." (b) In clinically tuberculous cases with negative sputa, protein gave 92.9%; tuberculin "O.T." 91.2%. (c) In clinically non-tuberculous cases, protein gave 81%; tuberculin "O.T." 71.5%. On the basis of the work to date, it may be said that as a diagnostic agent, protein MA-100 is as good as, and possibly better than, tuberculin "O.T.," especially in view of the fact that it is a pure substance as compared with the very complex composition of tuberculin "O.T."—*Authors' conclusions.*

1440. **FURUHATA, TANEMOTO.** The distribution of blood groups of the Japanese. III. *Japan Med. World.* 8(11): 287-291. 1928—The Japanese have a unique blood group distribution; it is like that of Hungarians of Mongol origin, natives from Hunan province and some tribes of Formosa. Analysis of the author's statistics shows that mixture with Koreans has influenced their blood group distribution. He suggests that W. Kruse's racial point method may be most convenient for showing blood group distribution. Races differing much in racial points may have the same ancestors; and, however near the race points of some races are, they may by no means be of the same origin.—*Cora M. Downs.*

1441. **FUTAGI, YASUO.** Improvement of the prophylactic immunization against scarlet fever by means of anatoxin after Ramon's method. *Jour. Immunol.* 19(5): 451-456. 1930.—As a result of immunization experiments on children in the Dairen primary schools, the author recommends use of anatoxin for prevention of scarlatina. The material may be prepared by treating toxin with 0.4% formalin at 40° C. for 60 days or at 45° for 30 days. Such anatoxins produce comparatively slight reactions and retain sufficient antigenic power.—*L. A. Barnes.*

1442. **GARDNER, RAYMOND E., and ROSCOE R. HYDE.** Immunity to transplantable rat tumors. *Amer. Jour. Hyg.* 13(3): 649-684. 1931.—Preliminary treatment of a susceptible strain of rats with fresh sterile whole blood from the normal chicken proved effective in producing resistance to a transplantable spindle cell sarcoma. Complete inhibition of grafts was produced in 86% of the treated animals, as compared with 19% negative in controls. In grafts that developed, marked retardation was observed. Similar treatment of a susceptible strain of rats proved effective against a medullary carcinoma of high proliferative vigor, as shown by failure of grafts to develop in 39% of treated animals, while controls all gave positive takes. Considerable restraint of growth in positive cases was produced by treatment. In a susceptible rat, treatment with non-hemolyzed, heat-devitalized whole blood from the normal chicken proved effective, but to a much less extent than fresh normal chicken blood, in producing resistance to sarcoma in 77% of animals treated, as compared with 50% negative in controls. Treatment of a susceptible strain of rats with non-hemolyzed, heat-devitalized, whole chicken blood produced slight immunity to carcinoma. Complete inhibition of grafts resulted in only 6.6% of treated animals, with slight retardation in those developing tumors, while controls developed in 100% of cases. A susceptible strain of rats treated with whole, dried blood from the normal chicken, collected and desiccated under sterile conditions, was not refractory to implantation of sarcoma and carcinoma. Feeding of fresh, whole blood daily to susceptible strains produced no resistance to implantations of sarcoma and carcinoma. Preliminary treatment of a susceptible strain with blood-free chick embryo skin was somewhat effective in producing resistance to sarcoma, as shown by 63% failing to develop in the experimental group as compared to 49% in controls. However, no immunity to carcinoma was produced by the treatment. A susceptible strain of rats treated with vaccine virus proved resistant to sarcoma. The immunity prevented the taking of the grafts in 75% of the treated animals, as compared to 14% negative in controls. Growth of those that developed was restrained. In susceptible strains negative results were obtained with vaccine virus against carcinoma. Vaccine virus could not be recovered either from sarcoma or carcinoma (after direct injection) after 9, 11, 12, 13 and 14 days by the usual animal inoculations made before and after subjecting the material to cataphoresis. Susceptible rats, proved refractory by unsuccessful inoculation of sarcoma, were resistant in 46% of cases on subsequent implantation of carcinoma, controls always developing in 100% of cases. No evidence of local immunity could be determined by intracerebral implantation of carcinoma, since it failed to grow in the brain of rats already proved immune by subcutaneous implantation. No increase in susceptibility of rats naturally refractory to subcutaneous implantations of sarcoma could be noted after brain implantation. Treatment of a susceptible strain of rats with rapidly dried carcinomatous tissue failed to produce resistance to subsequent implantation of the same tumor.—*Authors' summary.*

1443. **GELLI, GIUSEPPE, e GIANCARLO TAROZZI.** Il comportamento della isoagglutinazione umana nella malattia da siero. [Isoagglutination in man during serum disease.] *Biochim. e Terapia Sperim.* 17(10): 419-427. 1930.—In children with diphtheria treated by therapeutic serum and suffering from serum disease, the isoagglutinin content of the blood diminished during anaphylaxis, but came back to normal values afterwards.—*M. Comel.*

1444. **GITHENS, THOMAS S., and LEWIS W. BUTZ.** Venoms of North American snakes and their relationship. *Bull. Antivenin Inst. America* 2(4): 100-104. 1929.—Experiments were made on the venoms of 6 nearctic rattlesnakes (*Crotalus adamanteus, atrox, exsul, horridus, mitchellii* and *oreganus*), the 2 moccasins (*Ankistrodon mokasen* and *piscivorus*), the neotropical rattler (*C. terrificus*) and the Fer de lance (*Bothrops atrox*), with the following results: The venoms of the 6 North American rattlesnakes studied contain identical or almost identical toxic principles. The toxic principles of the copperhead and moccasin are almost or quite identical, but differ to some extent from those of the rattlesnakes. The venoms of *Crotalus terrificus* and of *Bothrops atrox* contain principles differing entirely from those of the nearctic rattlesnakes as regards antigenic properties. Rattlesnake venoms contain, in addition to their acutely toxic principles, other components which bind antibodies, but are not acutely toxic to pigeons.—*A. do Amaral.*

1445. **GIUSEPPE, ARMUZZI.** Fenomeni allergici nell' infezione da streptobacillo di Ducrey. [Allergic phenomena in infections by Ducrey's streptobacillus.] *Boll. Ist. Sieroterap. Milanese* 7(8/9): 511-517. 1928.—The diagnostic intradermal reaction with Nicolle streptobacillus vaccine (Dmelcos) or with the pus from a venereal bubo is definitely specific, both during the course of the venereal ulcer or its complications and in the chronic progressive type of long duration (in one case 40 years);

hence, the diagnostic value of the reaction and its practical application. At the same time the importance of the skin is seen as an essential factor in the allergic reaction as tried out by the author in various portions of the skin and mucous membranes. Experiments conducted to locate a humoral immunizing factor in attempts to transmit a passive hypersensitivity from man to man and from man to animals were negative, as were also the results in vitro.—*Author's summary (transl. by P. Hillkowitz).*

1446. **GLENNY, A. T., and M. LLEWELLYN-JONES. The importance of the in vitro in vivo ratio of diphtheria antitoxin.** *Jour. Path. & Bact.* 34(1): 110-111. 1930.

1447. **GLENNY, A. T., and M. BARR. The precipitation of diphtheria toxoid by potash alum.** *Jour. Path. & Bact.* 34(2): 131-138. 1931.—Precipitates produced by addition of different quantities of alum to diphtheria toxoid were examined with respect to specific antigen content and relative purity, expressed in terms of Lf units per mgm. of nitrogen. The amount of alum required to effect maximum precipitation of antigen is not the same for toxoids produced from different types of media. The amount of specific material precipitated varies with quantity of alum in relation to volume of a given toxoid, irrespective of dilution or method of addition.—*A. T. Glenny.*

1448. **GLENNY, A. T., and M. LLEWELLYN-JONES. The intracutaneous method of testing diphtheria toxin and antitoxin.** *Jour. Path. & Bact.* 34(2): 143-156. 1931. —A detailed description of the method is given. Evidence shows the advantage of intracutaneous over subcutaneous testing in regard to economy of animals, accuracy and rapidity. By this method it is possible to determine the presence of as little as 1/50,000 unit of antitoxin in 0.1 cc. of serum.—*A. T. Glenny.*

1449. **GLENNY, A. T., M. LLEWELLYN-JONES, and J. H. MASON. The intracutaneous method of testing the toxins and antitoxins of the "gas gangrene" organisms.** *Jour. Path. & Bact.* 34(2): 201-211. 1931.—Descriptions are given of the reactions produced by intracutaneous injection into guinea pigs of the toxins of *B. welchii*, vibrion septique, *B. oedematiens*, "lamb dysentery bacillus" and *B. histolyticus*. Results of intracutaneous titrations of the various antitoxins are compared with results obtained by other methods of test, and show that all 5 antitoxins can be titrated with reasonable accuracy.—*A. T. Glenny.*

1450. **GLENNY, A. T., G. BUTTLE, and M. STEVENS. Rate of disappearance of diphtheria toxoid into rabbits and guinea-pigs.** *Jour. Path. & Bact.* 34(2): 267-275. 1931.—The rate of elimination of toxoid injected into animals was studied by 3 methods: (1) Blocking of immunity in guinea pigs injected with toxoid by injecting antitoxin at various intervals afterwards; (2) measuring the toxoid in the blood of rabbits after an injection; (3) injecting a neutralizing dose of antitoxin after the toxoid, and estimating the excess antitoxin in the blood. All 3 methods show that toxoid is eliminated or destroyed very rapidly, some 10-30% only remaining at the end of 24 hrs. Toxoid precipitated by alum is retained, in part, near the site of injection and therefore acts as a more prolonged stimulus than plain toxoid, hence its increased antigenic efficiency. Other precipitating agents, e.g., $Ce(NO_3)_3$, $ZnSO_4$ and $CaCl_2$, act in a similar manner.—*A. T. Glenny.*

1451. **GOLDSWORTHY, N. E., and H. FLOREY. Some properties of mucus, with special reference to its antibacterial functions.** *British Jour. Exp. Path.* 11(3): 192-208. 1930.—The inhibitory, lytic and bactericidal powers of alimentary mucus, tears and nasal secretions were studied on 4 organisms, 2 especially sensitive to lysozyme, 1 moderately sensitive, and 1 completely resistant. The bulk of the experiments were performed on cats. Cat's tears are entirely devoid of lytic properties; saliva, on the contrary, contains a considerable amount of lysozyme, but it cannot be detected in mucus from the stomach or colon, though a small amount, as compared with other animals, can be demonstrated in saline extracts of dried mucosa. Dog's tears, saliva and nasal mucus have marked lytic properties, and detectable amounts of lysozyme are present in mucous membranes and washings,—much more in the colon than in stomach mucosa. Rabbits have marked lytic powers in both washings and extracts of mucosa; the colon was much more active than the stomach, and the small intestine fell midway between; the saliva was much less active than colon extract. Guinea pigs reverse the relationship; the stomach is more potent than the intestine. Goats showed complete absence of lysozyme in saliva at a dilution of 1/10. Colon washings showed a trace of lysis; tears were quite active.—*J. Bland.*

1452. **GOODNER, KENNETH. Incidence of blood groups among the Maya Indians of Yucatan.** *Jour. Immunol.* 18(6): 433-435. 1930.—223 pure Mayas and 202 people of mixed Maya and Spanish blood were grouped. A high percentage incidence of Group O was found, in the case of the Mayas amounting to 97.7%. This points to the racial purity and antiquity of the Maya stock.—*Author's summary.*

1453. **GOODNER, KENNETH. Experiments on the concentration of antipneumococcic and antimeningococcic horse sera.** *Jour. Immunol.* 19(5): 473-484. 1930.—Description of some of the properties of the "antibody euglobulin" of these sera, together with a simple procedure for its concentration.—*K. Goodner.*

1454. **GORDON, J. The relationship between complement and opsonin. Experiments with Congo red.** *Jour. Immunol.* 19(3): 303-305. 1930.—Congo red and similar dyes prevent the bactericidal and hemolytic (complement) activities of normal serum. A serum whose complement has been inactivated by certain concentrations of congo red is still able to exert its opsonic activity.—*Author's summary.*

1455. **GORI, PIO. Emolisi e ambocettori emolitici (di un loro particolare rapporto in alcune condizioni di immunizzazione). [Hemolysins and hemolytic amboceptors (particularly with reference to some phases of immunization).]** *Lo Sperimentale* 84(4): 237-256. 1930.—The serum of a rabbit which can hemolyze pigeon erythrocytes, loses this power after the rabbit has been immunized against pigeon blood. Serum of a rabbit with no hemolytic power for pigeon erythrocytes manifests such hemolytic power during the first stage of immunization, but loses it later during immunization when the antibody content becomes high. These observations parallel similar phenomena showing loss of the bactericidal power of serum following vaccinal treatment with *B. typhosus.*—*M. L. Menten.*

1456. **GRABOW, C., und F. PLAUT. Experimentelle Untersuchungen zur Frage der Antikörperbildung im Liquorraum. [Experimental investigations of antibody formation in the cerebrospinal fluid.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 54(3/4): 335-354. 1928.

1457. **GREENFIELD, GREGOR. Experimentelle Untersuchungen über gruppenspezifische Antigene und Antikörper.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 56(1/2): 107-129. 1928.—Several normal human sera were found which contained group-specific complement-deviating antibodies for human erythrocytes, reactions also given with lipoids extracted from these erythrocytes. The same group-specific isoantibodies are demonstrable in normal human saliva. Group-specific antibodies for human erythrocytes and for human myocardial emulsions are demonstrable in normal beef serum, and can be produced experimentally in rabbits.—*Author's summary (transl. by W. H. Manwaring).*

1458. **GRINNELL, FRANCIS B. A study of the comparative value of rough and smooth strains of B. typhosus in the preparation of typhoid vaccines.** *Jour. Immunol.* 19(5): 457-464. 1930.—The customary course of prophylaxis with a vaccine made from a rough (R) strain of *B. typhosus* "Rawlins" produces little or no increase in bactericidal power of blood. A similar course of treatment with a vaccine made from a smooth (S), virulent strain of *B. typhosus* causes a considerable increase in bactericidal antibodies. In so far as the bactericidal

test is an index of individual resistance, typhoid vaccine in which R strains are employed are valueless for prophylaxis. Vaccination with R strains leads to production of agglutinins for virulent strains, with no increase in bactericidal power of blood. Agglutination is therefore not an adequate test of the resistance of the individual.—*Author's conclusions.*

1459. GROB, MAX. Über die Beziehungen der Isoagglutination zum Icterus neonatorum. *Zeitschr. Kinderheilk.* 50(6): 726-741. 1931.—Blood group relations were obtained on 100 newborn with jaundice and on their mothers, to determine in how far phenomena of isoagglutination entered into the genesis of icterus neonatorum (I.N.). The % of the blood groups between mothers and children and between boys and girls was about the same. A certain increase in group I and decrease in IV were observed and related to jaundice, but differences lay within the limit of error. Homospecific pregnancies were found in 52% and heterospecific in 48%. No predominance of heterospecificity could be found in I.N. Agglutinophil reactions were found in only ⅓ (32%) of the cases. These agglutinations could not be regarded as the sole or principal cause of I.N., but a direct proportionality between reactions and severity of disease indicated their importance. Milk of 100 mothers of jaundiced children was examined for agglutinins, and blood cells of children for agglutination with mother's milk, to determine in how far isoagglutination of infantile blood cells by resorbed milk concerned the genesis of I.N. In 84% the milk contained agglutinin; the other 16% were principally of group II. In 67% the same agglutinins appeared in milk and in maternal serum. In 5 cases in group IV, not all the expected agglutinins (α and β) were found; usually β was absent. In 12%, the so-called X-group of milk contained agglutinins against group IV and against homospecific blood cells. Infantile blood cells were agglutinated by mother's milk in 33% of the cases; 22% of these showed agglutinophil blood group correlations, so that in only 11% did the properties of the milk give a + agglutination in contrast to serum. Milk agglutination appeared to have no influence on degree of jaundice. With reference to possible milk agglutination in blood of jaundiced infants, signs of isoagglutination could not be found in ½ the cases, so that it plays no primary rôle.—*From author's summary (transl.).*

1460. GROS, ERNST. Die serologische Elternschaftsdiagnose nach Zangemeister. *Zeitschr. Geburtsh. u. Gynäkol.* 99(3): 387-394. 1931.—In 60 unmixed sera, only 18 showed the same clearness after warming; in 34, there was a decrease in clearness of about 11%; in 8, the reaction was irregular. Refrigeration did not appear to affect it; when bacterial impurities were present, clearness increased 50-100%. All sera were obtained on a fasting stomach. In 70 sera from mother-child and mother-unrelated child (10 cc. mother : 1 cc. child), mother-child showed an average decrease of 17% (5-35%) and mother-unrelated child, 12% (0-25%); in 10 instances, clearness was greater in mother-unrelated child than in mother-child. Of the 60 curves, positive in Zangemeister's sense, only 19 varied more than 10%; 18 lay between 5 and 10%; 23, below 5%. No practical use could be made of the reaction. In 15 instances of father-child and father-unrelated child (10 cc. father; 1 cc. child), decrease in clearness averaged 19% (10-25%) and 9% (2-18%), respectively. In 15 instances the serum of a parturient woman was tested with that of the child's father and that of another man. The decrease in clearness was 25% (15-30%) and 14% (0-19%), respectively. The father-child and father-mother tests might prove useful. In both these, greatest decrease in clearness occurred during the 1st hr., probably owing to "individually specific" antibodies in the mother's (and child's) blood caused by immunization from the sperm protein after conception; this would also explain the negative outcome of mother-child tests. When 10 cc. child's and 1 cc. father's blood were used, decrease in clearness averaged 15% (6-23%) father-child and varied between 0 and 12% with child and another man. This may prove a refinement of Zangemeister's method.

1461. GRÜNWALD, BERNHARD. Die Beeinflussung der Isoagglutininmengen durch Schwangerschaft, durch Entzündung und durch Röntgenbestrahlung. *Zeitschr. Rassenphysiol.* 3(2): 71-93. 1930.—The author reports that the isoagglutinin titer in cases of group O, but not in group A, is considerably increased after abortions, and during puerperium isoagglutinins of low titer were demonstrated in blood from the umbilical cord. In all cases of homospecific pregnancy an increased titer was observed during the period of recovery from acute or chronic inflammatory genetical conditions. Roentgen radiation had no effect on the isoagglutinin titer.—*P. Levine.*

1462. GRZYBOWSKI, MÁRJAN. Die Allergie der Haut bei der Syphilis. *Acta Dermato-Venereol.* 11(1): 55-69. 1930.—In 110 cases all tests employed led to the following conclusions: The manner in which the skin reacts to a foreign albumin can hardly be used as final basis for division into anergic and allergic lues; everything points to the existence of an allergy to foreign albumin in lues; cutireaction tests with albumin preparations are subject to the laws of anaphylaxis; for that reason, prognostic conclusions on the further course of lues cannot be drawn from such tests; Busson's luetin frequently gives an unspecific reaction. The author was unable to discover that lues of the 3rd degree should give stronger positive reactions. It is possible that there exists an anergy against tuberculin in the florid stages of lues.

1463. GUNDEL, M. Rassenbiologische Untersuchungen an der Schleswig-Holsteinischen Bevölkerung. Blutgruppen und Krankheiten. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 56(1/2): 60-76. 1928.—The author finds that in dementia praecox, psychoses and in late lues, group B is more frequent than in the general population; while in epileptic, senile, and arteriosclerotic dementia, there are normal or even slightly lower values of B. While no satisfactory explanation is as yet available, the author cites the fact that it is more difficult to change the Wassermann reaction from positive to negative in luetics of groups B and AB than in those of groups O and A.—*Author's summary (transl. by P. Levine).*

1464. HACH, IW., und V. MELNYK. Studien über Gewebeinfektion und Gewebeimmunität. [Studies on tissue infection and tissue immunity.] *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 54(3/4): 269-284. 1 fig. 1928.

1465. HALLAUER, C. Zur Isolierung der gruppenspezifischen Antigene menschlicher Erythrozyten. [Isolation of specific antigen groups of human erythrocytes.] *Schweizerische Med. Wochenschr.* 59(6): 121-122. 1929.

1466. HAMBURGER, CHR. Ueber den Isoagglutiningehalt des Retroplazentarblutes. *Zeitschr. Rassenphysiol.* 3(2): 66-70. 1930.—The author confirms the observation of Hirszfeld and Zborowsky, and of Lidberg, that the agglutinins in the retroplacental blood in cases of heterospecific pregnancy are considerably diminished. He shows that the diminution is not merely a dilution effect; but believes it to be due to the presence in the liquor amnii of group-specific inhibiting substances derived from the offspring.—*P. Levine.*

1467. HAUSMANN, W., und A. FISCHER. Über Lichtwirkung auf Tuberkulin. *Strahlentherapie* 40(4): 750-756. 2 fig. 1931.—Old tuberculin in dilutions of 1 : 1000 and 1 : 500, after irradiation in 0.4 cm. layer with a quartz mercury lamp at 20 cm., was inactive in intracutaneous test on tuberculous patients; stronger concentrations were partially inactivated. Albumin-free tuberculin similarly treated showed some inactivation at 1 : 10. Inactivation continued after interposition of a glass plate which allowed waves to pass only to $\lambda = 307\mu\mu$ and weakened those from $\lambda = 322\mu\mu$. While inactive in skin tests, the irradiated old tuberculin often called forth focal and general reactions, i.e., when irradiated it lost its toxicity for the skin. Guinea pigs injected with ir-

radiated old tuberculin, reduced in water bath to 1:5 and 1:10, showed neither cutaneous reaction nor died.

1468. HAZEN, ELIZABETH LEE. The relation of the bacterial precipitin reaction to the Ramon flocculation phenomenon. *Jour. Immunol.* 19(4): 393-403. 1930.—Flocculation in mixtures of filtrate of *Corynebacterium diphtheriae* with antitoxin is not limited by the agglutination types serving for toxin production. Precipitation in mixtures of toxic filtrate with agglutinating serum is restricted to agglutination types. Removal of bacterial antibody from antitoxic serum by absorption of serum with bacterial extracts does not prevent subsequent flocculation of serum with toxic filtrate, whereas agglutinating serum treated in the same manner no longer precipitates with toxic filtrate. The Ramon reaction is probably due to interaction between toxin and antitoxin rather than between bacterial precipitinogen and precipitin.—*E. L. Hazen.*

1469. HEIMANN, F., und J. STEINFELD. Über das Verhalten der Hirnlipoide und ihrer Antisera. [The behavior of the brain lipoids and their antisera.] *Zeitschr. Immunitätsforsch.* 58(1/2): 181-192. 1928.

1470. HEIMBECK, J. Sur la vaccination préventive de la tuberculose par injection sous-cutanée de BCG chez les élèves infirmières de l'hôpital Ulleval, à Oslo (Norvège). *Presse Méd.* 37(86): 1391. 1929.—Of 34 unvaccinated student nurses, 14 (41.2%) contracted more or less serious forms of tuberculosis. Of 136 vaccinated, 3 (2.2%) presented slight signs of pleurisy. Vaccination caused no undesirable results.

1471. HEKTOEN, LUDVIG, and WILLIAM H. WELKER. Is ferratin precipitinogenic? *Proc. Soc. Exp. Biol. & Med.* 28(3): 293-294. 1930.—Ferratin, by many regarded as probably a nucleoprotein, was prepared with care to eliminate blood proteins. It possessed at most only a comparatively slight precipitinogenic power, the resulting precipitins in some cases reacting also with other ferratins than the one used as antigen. The question whether ferratin is a species-specific antigen has not been definitely settled.

1472. HELLMAN, T., und G. WHITE. Das Verhalten des lymphatischen Gewebes während eines Immunisierungsprozesses. *Virchow's Arch. Path. u. Physiol.* 278 (2): 221-257. 1930.—Investigations on 23 rabbits (in 4 groups, according to age and time of experiment) to determine the rôle of lymphatic tissue during active immunization with *Bacillus paratyphosus B*, had the following results: The spleen was most affected. It grew larger, due to heavy proliferation of secondary nodules and of white and red pulp. The remaining lymphatic tissue was much less affected. The pharyngeal tonsils showed a tendency to enlarge. In the lymph nodes and especially in the lymphatic tissue of the intestine, the only thing noticeable was the absence of occasional areas of involution. One may conclude, especially from the findings in the spleen, that the lymphatic tissues were in a very hyperactive state. Above all, the reticular portion was in an active condition as shown by extraordinary development of the secondary nodules, which were increased both in size and number. The task of the reticulo-endothelial system during immunization appears to be partly to act defensively, and partly to produce antibodies. As Hellman has long claimed, these results might be accomplished in large part by the secondary nodules.—*Authors' summary (transl. by A. Hoyt).*

1473. HESCH, MICHAEL. Deutsches Schrifttum über die Blutballung. [German literature on blood agglutination.] *Zeitschr. Rassenphysiol.* 2(4): 184-186. 1930.

1474. HERIVAUX, A., et R. RAHOERSON. Les groupes sanguins chez les Malgaches de l'Emyrne. *Bull. Soc. Path. Exotique.* 24(3): 247-250. 1931.—The authors classified 273 bloods of Madagascans (their AB, A, B and O groups correspond, respectively, to the I, II, III and IV of Moss). Of 61 identifications from the "andriana" or nobles, 18% belonged to group AB, 31.66% to group A, 16.66% to group B, and 35% to group O; the biochemical index was 1.42. Of 112 identifications from the "hova" or common people, 23.21% belonged to group AB, 26.78% to group A, 25.89% to group B, and 24.10% to group O; the biochemical index was 1.01. Of 100 identifications from the "mainty" or blacks, 5% belonged to group AB, 30% to group A, 23% to group B, and 42% to group O; the biochemical index was 1.25. The comparative frequency of the AB group among both the "andriana" and the "hova" (as opposed to the "mainty") is doubtless explained by their common origin.

1475. HERZ, OSCAR. Das weisse Blutbild bei der Pockenschutzimpfung. (Entgegnung auf die Arbeit von Eckstein und Brinitzer, Zschr. f. Kdhk. 49, 3.) *Zeitschr. Kinderheilk.* 50(2): 224-230. 1930.—Comparison of the hemograms of a number of infants showed that the leukocytes behave typically in the first vaccination, the shift to the left being proportional to mildness of clinical source. After a short rise, the leukocytes tend to fall. The differential hemogram shows 3 phases—a brief primary rise in leukocytes, a drop in lymphocytes, and then a continuously rising lymphocytosis. The granulocytes behave opposite to the lymphocytes; the monocytes rise. Considered absolutely, the lymphocytic recovery phase appears very much later than when considered relatively. No increase in plasma cells could be found. Since this study was comparative, the author believes the alterations in the hemogram to be a specific result of vaccination.—*From author's summary (transl.).*

1476. HIGUCHI, S. Über die für die menschlichen Blutgruppen spezifischen Immunkörper und deren Antigene. *Fukuoka Acta Med.* 21(10): Japanese, 2019-2055; German summary, 98-99. 1928.—The author obtained group-specific immune agglutinins for human blood by injecting rabbits with blood cells or stroma of groups A and B. Stromas derived from old coagula, washed 10 times, very seldom possess the property of inducing group-specific or species-specific agglutinins. However, addition of serum of group AB to the stroma prepared as mentioned, renders the mixture antigenic, but only species-specific antibodies are produced. The author also reports experiments made on the relationship of human A and the Forssman antigen.—*P. Levine.*

1477. HILL, L., M. GREENWOOD, and W. W. C. TOPLEY. On the effect of ultra-violet irradiation upon the resistance of mice exposed to Pasteurella infection. *British Jour. Exp. Path.* 11(3): 182-190. 1930.—An experiment was done on a large scale, involving use of more than 1000 mice, to test whether, in animals exposed under approximately normal conditions, irradiation conferred any immunity from fatal infection. To a herd of more than 100 mice infected with *Pasteurella*, 3 normal and 3 irradiated mice were added daily from May 15 to December 31, 1929, when the experiment was terminated. The irradiated mice were exposed for 48 hrs., at a distance of 4 ft., to the rays from a frosted vitreosil tubular mercury vapour lamp, screened by a sheet of glass permeable to ultraviolet up to 2850 AU, but not to shorter rays; along either side was a row of incandescent lamps sufficient to balance the blue light and to produce colors equivalent to those of sunlight. A fan was kept running to keep the cages cool and the mice were not shaved. From the vital statistics of the experiment, it is clear that irradiation conferred no advantage on the treated animals in respect of the hazards to which they were exposed.—*J. Bland.*

1478. HOEN, E., und L. TSCHERTKOW. Ueber bazilläre Immunität bei Diphtherie. *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 320-323. 1931.—Of 15 guinea pigs, each subcutaneously inoculated 5 times with immunizing doses of killed diphtheria bacilli, 3 (with 2 controls), 20 days after the last inoculation, were subcutaneously injected with twice the lethal dose of living diphtheria bacillus freed from toxin; 23 days after the last inoculation 5 vaccinated guinea pigs (with 2 controls) received each a lethal dose (300 million) of living detoxicated bacilli; and 3 vaccinated guinea pigs (with 1 control) received successive sublethal doses (5-100 million). In no case did vaccinated guinea pigs manifest greater immunity than controls.

1479. HOEN, E., L. TSCHERTKOW, und W. ZIPP. Antieiweiss- und antitoxische Präzipitine. [Anti-albumin and antitoxic precipitins.] *Zeitschr. Immunitätsforsch.* 58(1/2): 143-158. 1928.

1480. HOLMAN, W. L. Fatigue and infection. *Ann. Internal Med.* 3(3): 259-266. 1929.—A general consideration of the question of cellular fatigue and the multiplicity of causes for it, is here correlated with conditions favoring bacterial infections. Fatigue can be induced by underwork as well as by overwork, by faulty nutrition and by many other factors, and is the basis of much of what is referred to as lowered resistance. The failure in functional reserves to meet such emergencies as infections is the important suggestion in this paper, and that fatigue is the warning of such failure and rest the cure.—*W. L. Holman.*

1481. HOLSCHER, F. Untersuchungen über den Blutgruppentiter bei fortgeschrittener Tuberkulose. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 193-203. 1930.—Blood groupings with normal serum groups O, A and B showed that the largest proportion had a titer of 1/128. Sera of the same groups from patients with tuberculosis gave a titer of 1/32 for the same percentage of sera. The anti-A titers were higher than the anti-B. Although no evidence is yet available it may be found that the titer of isoagglutinating sera has prognostic value in tuberculosis.—*N. W. Larkum.*

1482. HORRALL, O. H., and G. EARLE WAKERLIN. Experimental syphilis in rabbits. II. A comparative study of the Kahn and Wassermann reactions. *Arch. Dermatol. & Syphilol.* 23(5): 856-862. 1931.—Paired Kahn and Wassermann tests (317) were performed on 44 rabbits over a period of 10 mos.; in 14 instances comparison of results of the 2 reactions was impossible because of anticomplementary action of the sera in the Wassermann tests. Results indicate that as the Wassermann shows a high % of false positiveness and a definite proportion of anticomplementary reactions, the Kahn test is decidedly superior as a diagnostic agent in experimental syphilis in rabbits.

1483. HUNTEMÜLLER, O. Die Wirkung der Lichtstrahlen auf die natürlichen Abwehrkräfte (Alexine) im Blutserum. 1. U.V. Strahlenwirkung. *Strahlentherapie* 35(3): 489-500. 1930.—The studies were made with the micromethod devised by the author for exact measurement of free complement. 2 quartz Hg lamps (Hanau) were placed 1 m. from the subjects and determinations made before and at definite intervals after radiation. The amount of complement shows a more or less graded increase following radiation. The stimulus acts directly on the skin capillaries and their endothelium or its sympathetic nerves and exerts a secondary, indirect action through destruction products of epidermis cells (erythema forming) on the formation of complement in the organism. It is concluded that the action of ultraviolet on the body is in no small measure dependent on the increase and rapid regenerative ability of natural complement, although the action on the nervous system must also be considered.—*O. Huntemüller (transl. by H. S. Mayerson).*

1484. [ЯSKOL'KO, S. M., and S. S. PANKOVA.] ЯСКОЛЬКО, С. М., и С. С. ПАНКОВА. Серодиагностика сифилиса по методу Sormani и инструкция. **[Serodiagnosis of syphilis by Sormani's method.]** [With German summary.] Венерология и Дерматология [*Venerol. i Dermatol.*] 1929(11): 59-63. 1929.—The authors tried to determine whether the capacity of antigen to bind complement would increase with increase in dose; whether there is a definite relation between intensity of reaction and decreasing amounts of antigen, and whether the method is to be preferred to the standard Wassermann. Having performed 924 experiments with this method they conclude: Though there are only negligible differences between the methods, the Sormani is not preferable, for every serum must be treated in 6 test-tubes and with only 1 antigen, whereas according to the standard Wassermann, serum is tested in 4 tubes only, and with 3 different antigens. Capacity of antigen to bind complement does not increase so often, nor in all cases, with increase of dose. There is no strict correlation between intensity of reaction and quantity of the extract with which it is performed.—*B. Van Rosen.*

1485. [IZABOLINSKIĬ, M. P., and V. I. GITOVICH.] ИЗАБОЛИНСКИЙ, М. П., и В. И. ГИТОВИЧ. Экспериментальные данные по изучению свойств дифтерийных анатоксинов. **[Data obtained from experimental study of the properties of diphtheria anatoxins.]** [German summary.] Микробиологический Журнал, Бактериологический Институт им. Пастера (*Jour. Microbiol., Inst. Bact. Pasteur*) 10(2/3): 206-210. 1930.—Immunization with anatoxin and total-anatoxin was tried on 125 guinea pigs, both fresh and 1-2-yr.-old anatoxins being used. Guinea pigs immunized with anatoxin displayed a high degree of insusceptibility towards either diphtherial toxins or pure cultures of diphtherial bacilli. The latter sometimes provoked cutaneous irritations, which, however, were easily cured by application of specific antivirus. For immunization, anatoxin-total, recommended by Ramon, proved in no way superior to toxoid. On the contrary, it was less acceptable in practice, since it caused many unpleasant local skin irritations. Single injection of 5 cc. of anatoxin often sufficed to produce a high degree of immunity against both toxoids and pure cultures. Guinea pigs immunized with anatoxin preserved this immunity for 2½ yrs. and survived 300 lethal doses or 5 cc. of virulent culture. Moreover, this immunity was transmitted to the 2nd generation. Some of the young guinea pigs born of immunized mothers withstood as many as 50 lethal doses of toxin. The authors admit that this hereditary immunity is still subject to further research.

1486. JADASSOHN, JOSEF. The importance of immune biologic processes in the morphology of skin lesions. *Arch. Dermatol. & Syphilol.* 21(3): 355-368. 1930.

1487. JADASSOHN, WERNER, und JUI-WU MU. Über die Immunbiologie der Haut beim Rotlauf (Erysipeloid). *Arch. Dermatol. u. Syph.* 162(1): 210-216. 6 col. fig. 1930.—Intracutaneous infection of rabbits with erysipeloid bacilli leads to reddening, central necrosis, and more or less pronounced infiltration, attaining the size of the palm. Intracutaneous reinfection with these bacilli leads to a less extensive reaction but more pronounced infiltration (formation of a nodule). Intracutaneous injection of a suspension of bacilli (erysipeloidin) heated to 70°, into normal rabbits, produced only a very transient, minimal reaction; the toxin is thus thermolabile. Erysipeloidin injected into previously infected rabbits caused a cutaneous reaction corresponding to the reinfection reaction. There is thus a thermostabile factor which corresponds to diphtheria anatoxin. The immunobiological relations of the disease are analogous to the results obtained in other infectious diseases.—*From authors' summary (transl.).*

1488. JETTMAR, H. M. Beiträge sur Serologie des Yak- und Rinderblutes. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 65(3/4): 288-311. 1930.—3 groups were demonstrated in cows: aO, 26%; oA, 46%; and oO, 28%. In yaks, group aO was missing. Regularly occurring heteroagglutination of yak blood by cow serum was not demonstrable, but cow sera of the 1st group were found, which agglomerated yak and "hajnyk" corpuscles. Normal cow isoagglutinin worked slowly, being at a maximum in 12 hrs.; it was non-resistant to heat. Immune isoagglutinin was easily produced and very active.—*N. W. Larkum.*

1489. JIMENEZ, MARIA E. Sobre la existencia de una substancia especifica hidrocarbonada en B. perfringens. [A specific carbohydrate in B. perfringens.] *Rev. Soc. Argentina Biol.* 6(9/10): 571-572. 1930.—A precipitinogen can be isolated from *B. perfringens*, having the following chemical properties: with sodium alcohol acetate it gives a white gelatinous precipitate which precipitates intensely with specific sera. It gives a + Molisch test; a — biuret test; does not reduce Fehling's reagent but

does so after hydrolysis; contains N and resists boiling. It is therefore a nitrogenated carbohydrate.—*J. T. Lewis.*

1490. JOHANSSON, SVEN. I blodtransfusionsfrågan. (Summarisk redogörelse för 221 blodtransfusionsfall.) [Summary of 221 cases of blood transfusion.] *Hygiea [Stockholm]* 91(6): 209-239. 1929.—The author summarizes the results of his study on the risks of blood transfusion following satisfactory serological tests as showing among 313 transfusions 1 instance where the blood transfusion may have contributed to the fatal result, and 3 instances of temporary injury (2 showing rapid recovery, and 1 persisting for some time).—*Author's summary (transl. by G. I. Steffen).*

1491. JOKL, ERNST. Über Beeinflussung der immunbiologischen Normalstruktur des menschlichen Serums durch Körperarbeit. Das Verhalten der hämolytischen Kraft des aktiven Serums sowie des Normalhammelblutamboceptors im inaktivierten Serum. *Zeitschr. Ges. Neurol. u. Psychiatr.* 129(3/4): 460-471. 1930.—The investigations were carried out on 22 handball players, including both highly trained and very little trained men. Blood samples were taken before and after games. The hemolytic power of active serum was influenced but little by muscular activity, while, generally, the hemolytic normal amboceptor was distinctly increased. The observed phenomena are classified with the "emergency function of the sympathico-adrenal system (Cannon)."—*R. Koch.*

1492. KAMADA, KEIHO. Zur Diagnose und Bakteriologie der Banginfektion. *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 364-376. 1931.—Comparative agglutination studies on the Bang bacillus, *B. typhi, B. paratyphi B,* and *B. dysenteriae* Shiga or Flexner, using 200 sera from parturients and gravidae (last stages). Sera from women advanced in pregnancy produced agglutination of Bang bacilli in a significant number of cases; but these sera also very frequently agglutinated other bacteria. Therefore (also because the sera frequently gave negative complement-binding reaction with *B. abortus*), the agglutination would appear to be non-specific (not produced by antigen-antibody reaction). It was very easy to produce strains of *B. abortus* divergent culturally, microscopically and serologically; but the virulence and immunizing action of these altered strains for guinea pigs, rats and white mice was unchanged. Immunity against infection was not attainable, but the fever following subcutaneous or intraperitoneal infection in guinea pigs could be prevented by immunization with suspensions of killed bacteria. Most of the artificially altered strains showed a tendency, after several passages in vitro, to revert to the original strain; reversion was frequent also in the bodies of infected animals. No infection of the fetus by the mother occurred in guinea pigs infected during the latter half of pregnancy, and no excretion of Bang bacilli in the milk was observed.

1493. KANDIBA, L., et E. SADOVSKY. Contribution à l'étude de l'antivirus; immunisation locale du poulain vis-à-vis du streptocoque. *Ann. Inst. Pasteur* 43 (12): 1637-1644. 1929.—Local as well as general immunity against streptococci is bound within strict quantitative limits. Experimental demonstration accordingly requires optimum qualitative conditions of test. Local immunization of cats and young horses allows innocuous injection into the organism of large quantities of living streptococci. The main active principle of Besredka's antivirus is a toxoid of the streptococcus toxin, possessing an easily manifested specific local immunizing power. The streptococcus toxoid is endowed with this property in a much higher degree than the non-specific proteins. The fresh toxin of streptococci has a capacity to aggravate the streptococcic infection. Therefore, the antivirus of Besredka is a specific toxoid. —*L. Kandiba.*

1494. KANDIBA, L., et E. SADOVSKI. Contribution à l'étude des toxines streptococciques. *Compt. Rend. Soc. Biol.* 100: 495-496. 1929.—By the bacteriotropic method of Neufeld it is comparatively easy to detect leukotoxic substances in the toxin of streptococci. The leukotoxic, as well as hemolytic, substances of the streptococcic toxin are present in young cultures only. They are extremely labile in respect to filtration, centrifugalization, thermic conditions and laboratory keeping qualities. The virulent streptococci do not possess in the same degree the power of leukotoxin production; this power nevertheless is connected with streptococcic virulence.—*L. Kandiba.*

1496. [KANDYBA, L. L., and I. ÏA. SADOVSKIĬ.] КАНДЫБА, Л. Л., и И. Я. САДОВСКИЙ. Стрептококковый токсин и антивирус. [Streptococcic toxin and antivirus.] Микробиологический Журнал Бактериологического Института имени Пастера (*Jour. Microbiol. Inst. Bact. Pasteur [Leningrad]*) 8(3): 221-233. [English summary.] 1929.—From experiments on local immunization of cats with streptococci, it is concluded that: the main active principle of Besredka's antivirus is a specific toxoid. Test on cats gave clear evidence of its immunizing power. Under certain conditions, the non-specific proteins and their derivatives possess the property to raise the resistance of the tissues against streptococci. This resistance in some cases is higher than that obtained by the action of specific streptococcic antigens.—*Authors' summary.*

1497. [KARETNIKOVA, V., and O. PODVYSOTSKAÏA.] КАРЕТНИКОВА, В., и О. ПОДВЫСОЦКАЯ. О туберкулезном антивирусе. [Tuberculosis antivirus.] [With French summary.] Вопросы Туберкулеза [*Voprosy Tuberkuleza*] 7(7): 778-780. 1929.—Old culture *Bacillus tuberculosis*, human type, was sown on 4% glycerin water containing large slices of potato (200 gm. per liter), and held for 4-6 weeks at 37° C.; then filtered through a Chamberland candle. Subcutaneous and intravenous injections of 2 cc. of filtrate into rabbits and guinea pigs provoked no reaction. Applied externally in lupus, antivirus caused improvement in 10 cases.—*B. Van Rosen.*

1498. KAWAMURA, H. Experimentelle Untersuchungen über Misch- und Sekundärinfektion. I. Ueber den Einfluss einer experimentellen Rekurrensinfektion auf eine Infektion mit andersartigen Rekurrensspirochäten oder mit Trypanosomen. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 59-78. 1931.—In mice infected with 2 different strains of relapsing fever spirochaetes, an alternating effect occurred, consisting of temporary exacerbation of one infection and temporary repression of the other, followed by reversal of the relations. This alternation was apparently not due to antagonism of the organisms, for great numbers of both frequently coexisted in the blood of a doubly infected mouse, and both persisted in the brain without regard to alternation of crises. In mice simultaneously or successively infected with relapsing fever spirochaetes and with nagana trypanosomes, a distinct prolongation of life (even in splenectomized or "blocked" mice) was observed as regards nagana infection. This effect on trypanosomiasis occurred only in the acute stage of relapsing fever. In mice infected in the last stages of relapsing fever, nagana ran its course as in normal mice; and if the relapsing fever was checked by treatment with solganal, its protective action ceased and the trypanosomiasis led to death within a few days. Inoculation of serum or transplantation of organs of mice or guinea pigs with relapsing fever, into nagana-infected mice, had no effect on the course of the trypanosomiasis. Since in mice infected with relapsing fever and nagana the trypanosomes from time to time invading the blood showed characteristics of recurrent strains, it must be assumed that the temporary repression and the resultant faltering course of nagana in doubly infected mice is caused by a non-specific heightening of the defensive reactions of the organism, called forth by relapsing fever and directed against the trypanosomes.—*Author's summary (transl.).*

1499. KEMP, TAGE. On the degree of agglutinability (sensitivity) of the blood corpuscles opposite isoagglutinins in human fetuses. *Acta Path. et Microbiol. Scandinavica Suppl.* 5: 62-63. 1930.

1500. **KERRIN, J. C. Studies on the haemolysin produced by atoxic strains of B. tetani.** *British Jour. Exp. Path.* 11(3): 153-157. 1930.—Atoxic strains of *B. tetani* secrete as powerful a hemolysin as do toxic strains. Normal serum and cholesterin exert a powerful antagonistic effect against tetanolysin, while lecithin has no antihemolytic power. The antihemolytic effect of normal serum is out of all proportion to its cholesterin content.—*J. Bland.*

1501. **KISSIN, D., und L. BRONSTEIN. Zur Frage der Bildung der Anatoxine. [Formation of anatoxins.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 56(1/2): 11-23. 1928.

1502. **KISSIN, D., und L. BRONSTEIN. Zur Frage der Bildung der Anatoxine. II. Ueber das Verhältnis des Amino-Stickstoffs in Diphtherietoxinen und -Anatoxinen.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 210-212. 1930.—Diphtheria toxin and anatoxin contain amino N. The slow change of toxin into anatoxin, which after months is still incomplete, is occasioned by a binding of 1 of the 2 NH_2 groups, which loses the properties of free NH_2. This is hastened by use of formaldehyde.—*N. W. Larkum.*

1503. **KLAUDER, JOSEPH V. (with the assistance of ANNA M. RULE, and BERNARD MADDEN). The humoral aspects of immunity to syphilis: with particular reference to the rôle of lipoids and the question of producing positive Wassermann reactions in rabbits.** *Arch. Dermatol. & Syphilol.* 23(5): 884-893. 1931.—To determine the spirochaeticidal action of the serum of syphilitic patients, 9 syphilitic rabbits were given intravenous, intramuscular, intraperitoneal and intratesticular injections of fresh pooled sera from syphilitic patients in various stages of the disease, but without therapeutic effects. Alcoholic extract of normal rabbit testicle and alcoholic extract of syphilitic rabbit testicle were separately injected into 4 normal rabbits; 1: 10 saline solution of hog serum was injected into 2 normal rabbits, and the same solution + a 6% suspension of cholesterol was injected into 2 other normal rabbits. The Wassermann reaction (Kolmer's technique) was, and remained, negative. These animals were then successfully inoculated with syphilis, and infection in no way differed from that in controls. Positive Wassermann reactions were obtained only when the rabbits had developed active syphilomas. These negative results do not support the theory of the presence of a lipoid antibody in the Wassermann reaction. The technique employed is of importance; it is asserted that investigators who report production of positive Wassermanns in rabbits by preliminary treatment such as that described do not mention the technique used.

1504. **KLUJEWA, N. G. Ueber den Einfluss der Galle auf die Agglutinabilität von atypischen Paratyphusbakterien.** *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 34-40. 1931.—Of 46 cultures of intestinal bacteria, 20 were non-agglutinable strains, 14 spontaneously agglutinable, and 6 weakly agglutinable (not over 1: 100). Culture through 5 generations on filtered, sterile ox bile produced in some cases a distinct change in agglutinability. Some non-agglutinable and some spontaneously agglutinable strains were unchanged; in other cases, spontaneous agglutinability might appear in 1 generation, to disappear in the next. In many cases, however, agglutinability of non-agglutinable strains was unmistakably produced by culture on bile, and that of weakly agglutinable strains was distinctly raised, permitting their serologic differentiation.

1505. **KNOEPFELMACHER, WILHELM, und DRAGA STÖHR. Anwendung des "Koktoimmunogens" aus Pockenvakzine am Menschen. [Use in human cases of coctoimmunogen from smallpox vaccine.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 56(1/2): 83-87. 1928.

1506. **KOLLER, S. Statistische Untersuchungen zur Theorie der Blutgruppen und zu ihrer Anwendung vor Gericht.** *Zeitschr. Rassenphysiol.* 3(3/4): 121-183. 1931.—This paper deals with several questions, but more particularly with the heredity of blood groups from a mathematical point of view. The author finds no relationship between blood groups and length of life. He discusses the hypothesis of Hirszfeld, that where father and mother belong to different blood groups (heterospecific pregnancy), offspring will more frequently inherit the maternal blood properties. He analyzes such families from material of several investigators and concludes that, on the whole, results do not deviate much from expectation according to the theory of heredity of blood groups. Discrepancies observed in the material of some workers are, he believes, due either to selection, illegitimacy, or faulty technique (examination of infants before blood group properties are fully developed, use of sera too weak in agglutinins). The author finds no difference in wt. of newborn from hetero- versus homospecific pregnancies. Hereditary properties in general, which could be used for paternity exclusion, and the heredity of factors M and N of Landsteiner and Levine, are discussed, and he finds, in agreement with Wiener, that, taking into consideration the 4 agglutinogens, A, B, M and N, exclusions can be made in about 33% of all cases. He mentions also the possible use of subgroups of group A (the heredity of which was studied by Landsteiner, Levine and Thomsen), and other hereditary properties, such as the occipital whorl.—*P. Levine.*

1507. **KOŁODZIEJSKA, Z., und W. HALBER. Untersuchungen über die chemische Natur der Krebsantigene.** *Biochem. Zeitschr.* 225(4/6): 464-477. 1930.—The substances in cancers that react to sera of pregnant women and of patients with cancer are in the fatty acid fraction. They are either fatty acids or are dissolved or bound by them.—*Authors' summary (transl. by J. Furth).*

1508. **KÖNIG, WILLY. Studien zur unspezifischen Reiztherapie. VI. Über Transfusionsfieber nach unspezifischer Vorbehandlung des Blutspenders.** *Arch. Exp. Path. u. Pharmakol.* 134(1/2): 44-48. 1928.—Blood of rabbits previously treated with "Caseosan" was injected into normal rabbits. By plotting the temp. reactions of the 129 recipients, a biphasic curve was obtained; the peaks were due to injection of blood 1 day and 21 days after treatment with foreign protein. Degree of reaction depended as much on recipient as on donor.—*G. H. Robinson.*

1509. **KRAUS, R., und N. LOVACS. Ueber die experimentellen Grundlagen eines neuen Schutzimpfverfahrens gegen Cholera mittels Toxoide. [The experimental bases of a new vaccination method against cholera by means of toxoid.]** *Wiener Klin. Wochenschr.* 41(10): 337-338. 1928.

1510. **KUIPERS, F. C. Bijdrage tot de pathogenesis van de rattebeetziekte. [Pathogenesis of rat-bite fever.]** *Nederlandsch Tijdschr. Geneesk.* 73(11): 1346-1358. 1929.—The author examined the changes in distribution of white blood cells in a case of rat-bite fever. Because of the regularly returning anacritical rise in number of eosinophilic leucocytes, the critical fall and postcritical rise and the "calendar type" of the weekly attacks of fever, an attempt is made to explain the phenomena as a hyper-allergic reaction of the sensitized body against the *Spirillum* toxin. The qualities of local infiltration, its rapid appearance and disappearance, the violet-blue color, absence of suppuration, and occasionally occurring strictly localized necrosis with steep edges, all point to a reaction caused by supersensitiveness of the cutaneous vascular apparatus,—contraction of the small arteries coupled with expansion of the arterioles, the arterial and venous capillaries causing prestasis and eventually stasis. Disappearance of the local infiltration would thus be caused by local desensitization. The phenomena of exanthem, alternating muscular pains, absence of swollen spleen, curiously bloated face during attack, perhaps also the fever (anaphylactic fever), all can be explained more easily when regarded as hyperallergic rather than inflammation symptoms. Thus, here, one and the same toxin causes the same allergic reaction with people of varying constitutions (analogous with asthma epidemy of Frugoni, nickel eczema, ascaris asthma); the calen-

dar type occurs also with exudative diathesis (Assmann, Quincke, Thost), with some forms of angina with exanthem (Edel) and with empyema tuberculosa (author's observation). In analogy with these diseases which show a continual production of toxine, the author concludes that the periodical attacks are not caused by a cyclic change of *Spirillum minus*, but by the allergic reaction of the sensitized patient on the constantly produced *Spirillum* toxin.—*J. W. Langelaan.*

1511. **LABERNADIE, V. G. F. Les méthodes de Vernes en général et la syphilimétrie en particulier.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 524-527. 1927[1928].

1512. **LABERNADIE, V. G. F. La réaction de Bordet Wassermann sans étuve. [The Bordet-Wassermann reaction without the incubator.]** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 527-530. 1 fig. 1927 [1928].—Note, with discussion.

1513. **LAMBIN, P., et A. LETO. Sur la présence d'hématies semi-lunaires au cours de l'anémie pernicieuse.** *Rev. Belge Sci. Méd.* 2(3): 246-248. 1930.—Erythrocytes deformed by an enormous eccentric vacuole into a crescent were observed in 6 cases of pernicious anemia. These crescentic cells, which are to be distinguished from the falciform cells of "sickle-cell anemia," increased temporarily during liver treatment, reaching their maximum at the climax of the reticulocytic crisis or a little afterward, indicating that the bone-marrow was shedding abnormal cells before beginning to function normally.

1514. **LANTERI, GIOVANNI. Sul valore di una reazione di flocculazione alla formalina, nel liquido cerebrospinale di neuro-luetici. [Value of a flocculation reaction to formol in the cerebrospinal fluid in neurosyphilis.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 498-499. 1930.—Positive responses were obtained with cerebrospinal fluid in neurosyphilis.—*M. Comel.*

1515. **LAUDA, E., und E. FLAUM. Studien über die Beziehungen der Milz zur Resistenz der Ratten gegen die infektiöse Anämie.** *Zeitschr. Ges. Exp. Med.* 73(3/4): 293-314. 1930.—Parabiosis was produced in 9 pairs of rats; 15 rats were superinfected to make sure of the presence of Bartonellas. One pair was discarded; of the remaining 8 pairs, 1 parabiont in each was splenectomized, and 14 days later, the other partner. In 6 of 8 cases, the single spleen sufficed to protect both parabionts from *Bartonella* anemia, as shown by blood counts and smears. Hence the authors conclude that the protective action of the spleen is not intracellularly but humorally exerted.

1516. **LE BOURDELLÈS, et P. SÉDALLIAN (préface par PAUL COURMONT). Précis d'immunologie. (Collection Testut.)** 920p. 4 col. pl., 20 fig. Gaston Doin et Cie: Paris, 1930. Price 95 fr.—This is one of a series of volumes on medical subjects edited under the direction of E. Forgue. The authors have made 3 chief divisions: general immunology, in which the general principles, theories and applications of immunity are discussed; specific immunity in infectious diseases; and, finally, the immunity processes of plants and animals. The subject is discussed largely from the viewpoint of general medicine. Technical problems are not considered in detail.—*L. C. Havens.*

1517. **LEDERMANN, K. G. Die Hodentuberkulinreaktion beim Meerschweinchen.** *Beitr. Klin. Tuberk. u. Spezif. Tuberk. Forsch.* 69(2): 265-272. 1928.—In agreement with observations by Long, the testes of tuberculous animals were found very sensitive to tuberculin. The sensitiveness is specific; its development sometimes precedes, sometimes follows, development of skin sensitiveness.—*L. Dienes.*

1518. **LEVINE, B. S. Theoretical considerations in connection with a cold incubation complement fixation test.** *Amer. Jour. Syph.* 15: 225-230. 1931.—Precipitation of the antigenic complex from colloidal suspension in serum is essential to complement fixation. Separation or conglomeration of the complexes as sensitized entities is firmer and more complete, though slower, at 8-10° C., due to the fact that phase augmentation and concomitant sensitization of antigen complex are reversible processes, more pronounced at 37.5° than at 8-10°. Since the antigen complex is not a specific immuno-chemical entity, it causes complement to be fixed in non-syphilitic sera as well. However, in the majority of syphilitic sera, the reaction-curves as a rule extend farther along the abscissa, and their crests are higher than in reaction curves of all other sera. Therefore, the general reaction can be conveniently divided into levels. The lower the reaction level, the greater the number, and the more varied the type, of sera that respond to the influence of the so-called antigenic reagent. By raising the level, a number of sera can be excluded. Theoretically, it would appear that diligent search might disclose a reaction level at which only syphilitic sera would be involved. However, since the intensity of any serum reaction is determined not only by type of immuno-reacting substances in the serum, but by concentration and by serum factors influencing dispersion as well, selection of a level at which all syphilitic, and at the same time only syphilitic, sera could be made to react is unattainable with present insufficient knowledge.—*B. S. Levine.*

1519. **LEVINSON, L. B., und E. E. GOLUBEWA. Ueber die Bedeutung des retikuloendothelialen Apparates bei Infektionskrankheiten. V. Die Rolle des retikuloendothelialen Apparates bei der Ausbildung der Immunität gegenüber Tetanus.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 204-212. 1930.—The reticulo-endothelial system takes no part in production of immunity against tetanus in white mice nor is the immunity increased by splenectomy. The method of immunizing was found to materially affect the results.—*N. W. Larkum.*

1520. **LISGUNOWA, A. W. Über die Natur der Immunität beim Rückfallfieber. IV. [Nature of immunity in relapsing fever. IV.]** *Zeitschr. Immunitätsforsch.* 58 (1/2): 93-98. 1928.

1521. **LLOYD, R. B. Some clinical aspects of the Wassermann test. Experience in Calcutta.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 517-523. 1927[1928].

1522. **LÖFFLER, ERNST, und FRITZ SCHWEINBURG. Zur Theorie der Immunität bei Lyssa.** *Virchow's Arch. Path. Anat. u. Physiol.* 279(1): 181-192. 1930.—In experiments on 44 guinea pigs and 41 rabbits the authors failed to produce immunity by intracerebral inoculation. They conclude that antibodies immunizing the brain after successful intramuscular, subcutaneous or intraperitoneal inoculation are produced in other organs than the brain.

1523. **LONGO, V., e D. MILARDI. La reazione di chiarificazione di Meinicke (M. K. R.) nel liquido cefalorachidiano. [Meinicke clearing reaction in the spinal fluid.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 386-390. 1930.—In all cases studied results with this test agreed with the Wassermann reaction.—*M. Comel.*

1524. **LUMIÈRE, AUGUSTE, et ANNA MALESPINE. Contribution à l'étude de l'anaphylaxie.** *Bull. Acad. Méd.* [*Paris*] 103(21): 560-566. 1930.—Flocculation and precipitation are held to be the causes of anaphylaxis.

1525. **MALLICK, S. M. K., and M. L. AHUJA. Incidence of Brucella agglutinins in an average unselected Indian population.** *Indian Jour. Med. Res.* 18(3): 983-985. 1931.—The sera of 487 cases (healthy and febrile) were tested for *Brucella* agglutinins by Widal reaction. Both groups in certain percentages showed the presence of *Brucella* agglutinins.—*Authors' summary.*

1526. **MALLICK, S. M. K., and M. G. COOMBES. A short note on the agglutinogenetic powers of the "rough" and "smooth" variants of B. typhosus and their mutual immunological relationship. Pt. 2.** *Indian Jour. Med. Res.* 18(1): 143-148. 1930.—2 prophylactic vaccines were prepared, one from each variant. Another vaccine containing both variants in equal parts was also prepared. 3 batches of guinea pigs were immunized with each vaccine, the 1st receiving the smooth, the 2nd the

rough, and the 3rd the mixed. The immunity in each batch to infection by either variant was tested, demonstrating different immunological properties for the 2 variants.

1527. **MANWARING, W. H.** Renaissance of pre-Ehrlich immunology. *Jour. Immunol.* 19(2): 155-163. 1930.—Summarizing his experimental data on parenteral denaturization of alien proteins, the author concludes that there is convincing evidence that many injected antigens undergo chemical "hybridizations," or become semi-permanently "symbiotic" with animal tissues, the terms, of course, being used metaphorically. Some of these antigen-tissue "hybrids" have properties simulating those of specific "antibodies."—*W. H. Manwaring.*

1528. **MANWARING, W. H.** Biochemical relativity. *Science* 72(1854): 23-27. 1930.—Non-technical presentation of the basic postulate of post-Ehrlich immunology; a dynamic rather than a static specificity for tissue proteins, with environmental-protein hybrids the probable source of specific antibodies.—*W. H. Manwaring.*

1529. **MARRAS, ANTONIO.** L'enzimoreazione nello lepra. [Enzyme reaction in leprosy.] *Arch. Biol.* 5(6): 3-14. 1928.—The author reviews the theory of this reaction as enunciated by Sivori, viz., determination of quantity of immune bodies elaborated by the organism in defense against the morbific agent, as revealed by mixing patient's serum with specific antigen in presence of "ningestrin." Results were as follows: Tests were made on 29 cases, of which 5 were of tubercular type, 12 mixed, and 10 anesthetic and incipient. In the tubercular type and in 6 cases of mixed leprosy with tubercular form predominating, the reaction was constantly +. It was partial in the other 6 mixed cases; and partial in 8, − in 1 and + in 1 of the 10 anesthetic cases. Degree of + reaction varies directly with gravity of symptoms and inversely with duration of illness. The author recommends this reaction as of value in early diagnosis.—*A. Marras (transl. by P. Hillkowitz).*

1530. **MARTIN, LAY, and JUSTINA H. HILL.** Development of skin sensitization in guinea-pigs in response to intradermal injection of bacteria. *Bull. Johns Hopkins Hosp.* 46(3): 246-253. 1930.—Guinea pigs injected intradermally with emulsions of whole bacteria, both alive and dead (pneumococcus type I, *Streptococcus hemolyticus* and *Staphylococcus aureus* 209), developed skin sensitization to the same antigen within 48 hrs. So far as ascertained, this is the first time that this observation has been made. The skin sensitization remained for at least a month, but by that time had diminished. The strongest sensitization was developed about 10 days after primary inoculation.—*L. Martin.*

1531. **MASCHMANN, E., und E. KÜSTER.** Über die Gewinnung und Reinigung von Tuberkulin. *Zeitschr. Tuberk.* 59(4): 225-229. 1931.—Human type tubercle bacilli grown on Sauton's protein-free nutritive solution gave a tuberculin containing the specific agent, proteins of various molecular wts., and large amounts of carbohydrates. Purification (dialysis, acidification, adsorption on kaolin, solution in weak NH_3) gave a preparation 21 times as effective as the original; it showed all biuret and ninhydrin reactions, sometimes the Millon, but not the tryptophan or Molisch. The carbohydrate (glycogen), proteins precipitating at acid pH and those responsible for the Millon and tryptophan reactions are not essential to specific action.

1532. **MAXWELL, JAMES.** The intradermal tuberculin test. *Lancet* 219(5580): 289-291. 1930.—A standard method of performing the test is described, using 0.1 cc. of 1: 1000 dilution of Koch's Old Tuberculin, together with a control injection. The reaction is considered positive only when swelling occurs; erythema alone is insufficient. A positive result was obtained in 92% of the cases of proved tuberculosis tested, whereas positive reactions occurred in only 31% of the apparently non-tuberculous controls. A similar proportion of positive results was obtained in a series of cases of lymphadenoma. —*J. Maxwell.*

1533. **MAZZEO, MARIO.** Adrenalina e fenomeni immunitari. [Adrenalin and phenomena of immunity.] *Riforma Med.* 44(33): 1039-1042. 1928.—A group of rabbits was vaccinated against typhoid and examined for agglutination power. A 2nd group was vaccinated against typhoid and injected with 0.1% adrenalin. No difference in agglutination power was found, nor were precipitin or bacteriotropin influenced by adrenalin. The hemolitic power was increased by injection of ox blood corpuscles, but remained constant when the animals were treated with adrenalin.—*M. Goldstein.*

1534. **MAZZEO, MARIO.** Neutralizzazione della tossina dissenterica mediante la colesterina. [Neutralization of dysentery toxin by cholesterin.] *Riforma Med.* 44 (46): 1487-1491. 1928.—The author made 2 series of experiments as to the antitoxic power of cholesterin. Into rabbits of the 1st series, treated with cholesterin Merck, he injected dysentery toxin in different concentrations. They showed a modic neutralization of dysentery toxin. The 2nd series received an injection of ether-saturated solution of cholesterin Merck mixed with dysentery toxin in same proportion; these showed complete neutralization of the toxin.—*M. Goldstein.*

1535. **MELLI, GUIDO.** Osservazioni e ricerche sull' ipersensibilità con particolare riguardo all'asma bronchiale. [Hypersensitivity, with particular reference to bronchial asthma.] *Riforma Med.* 44(20): 582-586. 1928. —An important factor in bronchial asthma is the entrance of the anaphylactogen into the mucosa. Probably the so-called alimentary asthma is an asthma of inhalation. The author shows the importance of the entrance of anaphylactogen for setting in action the anaphylactic shock. He concludes that bronchial asthma is to be referred to the entrance of anaphylactogen into the bronchial mucosa. There is no doubt that in certain cases the entrance route differs, but in these cases also the bronchial mucosa has an important rôle in the asthmatic attack.—*M. Goldstein.*

1536. **MEYER, KURT, und HANS LOEWENTHAL.** Untersuchungen über Antikörperbildung in Gewebekulturen. [Investigations of antibody formation in tissue cultures.] *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 54(5/6): 409-419. 1928.

1537. **MICHALOWSKY, ERNST-HEINRICH.** Tuberkulinempfindlichkeit tuberkulöser Meerschweinchen bei saurer Kost. *Zeitschr. Tuberk.* 59(5): 321-323. 1931.—After preliminary experiments on acid reaction in guinea pigs, an unstated number were inoculated with an emulsion of tubercle bacilli and at the end of 3 wks. ½ were placed on an acid diet of oats, oat flakes, and wheat bran, the others being kept on rape and hay. After 3 days, they were given intracutaneously 0.1 cc. of a 1: 5 solution of old tuberculin. The reaction was read in 48 hrs. and the animals were bled to determine the alkali reserve. A total of 34 results was obtained: 8 animals with acid reaction between 38.5-54.8 volume % showed greater reactions than 11 between 32.8-38-5 vol. %; 8 animals between 26.2-30.9 vol. % averaged greater reactions than the 11 weakly acid; 2 animals were alkalotic and showed slight reaction; and 5, extremely acidotic (18.5-25.2 vol. %), showed little reaction.

1538. **MILONE, SEBASTIANO.** La difesa del tessuto di granulazione contro l'infezione carbonchiosa in animali a digiuno, in avitaminosi e trattati con bleu trypan. [The defense by granulation tissue against anthrax infection in fasting animals, and in animals during avitaminosis and following trypan blue treatment.] *Arch. Sci. Med.* 54(9): 615-620. 1930.—Fasting, avitaminosis and blocking of the reticulo-endothelial system do not decrease the capacity of granulation tissue for protecting guinea pigs against anthrax infection.—*M. Comel.*

1539. **MISSORICI, A. PIAZZA.** Su una speciale reazione di diagnostica per i tumori maligni umani. [A special diagnostic reaction for human malignant tumors.] *Minerva Med.* 1(5): 165-167. 1930.—The author gives further experiences with the diagnostic reaction for cancer announced by Citelli and himself in 1928. It consists of a "hemoclastic crisis" produced by intravenous injection of small quantities of neoplastic vaccine. He

low reports positive results in 17 of 18 cancer cases (making altogether 46 cancer cases, with 91.3% positive results) and negative results in both of 2 controls (negative, 94% to date; total number of controls not stated).

1540. **MIZUNUMA, MASAHISA. On the group-specific lipoidophile antibody contained in the human sera of blood type O.** *Japanese Jour. Exp. Med.* 7(3): 341-361. 1929.—Type O (I) human serum contains an antibody which exhibits a specific complement fixation with alcoholic extract of Type A (II) or AB (IV) human blood corpuscles, and which differs from lipoidophil antibodies such as those of Wassermann or Forssman. The antigen for this antibody is contained in blood corpuscles of sheep and in organs of guinea pigs. The properties of the antibody cannot be distinguished from those of α-agglutinins. The possibility of a false positive Wassermann may be expected as a result of a reaction between A antigen and the author's antibody, although precipitation tests with these substances were not uniform.—*L. A. Barnes.*

1541. **MIZUNUMA, MASAHISA. The influence of the different resistance in the haemolysis of the ox red blood corpuscles on the result of the Wassermann reaction.** *Japanese Jour. Exp. Med.* 7(3): 363-377. 1929.—The susceptibility of ox erythrocytes to serum hemolysis differs according to individual characteristics, and is dependent on affinity of cells for hemolysin. This may cause serious errors in Wassermann reactions. Erythrocytes from healthy oxen are usually satisfactory, but those from animals with trypanosomiasis or other blood diseases are unsuitable.—*L. A. Barnes.*

1542. **MODERN, F., y RAÚL WERNICKE. Contribución al estudio del precipitado toxina-antitoxina diftérica. [Diphtheria toxin-antitoxin precipitation.]** *Rev. Soc. Argentina Biol.* 6(4): 241-250. 1930.—The toxin-antitoxin precipitate is completely soluble at pH 3.6; with less acidity it is incompletely soluble. If acidity is maintained, the toxin and antitoxin are dissociated, a maximum of antitoxin being recovered at pH 3.2-3.6, optimum temp. being 10-15° C. In some cases the ratio, antitoxin units: protein, has been 18 times that of the original serum.—*J. T. Lewis.*

1543. **MORELLI, ELISA. Sul passaggio di alcuni anticorpi normali dalla madre al feto. [Passage of normal antibodies from mother to embryo.]** *Sperimentale* 84 (5/6): 431-441. 1930.—The bactericidal power of guinea pig blood against cholera vibrios was increased in pregnancy but was not transmitted to the fetus. The hemolytic power of the blood of rabbits for pigeon erythrocytes was lessened during pregnancy and was lacking in newborn rabbits. The lack of such normal antibodies in fetus blood apparently was not related to deficiencies in activity of complement.—*Maud L. Menten.*

1544. **MOSES, ARTHUR. Do soro antidysenterico—Technica de preparo e dosagem. [Anti-dysentery serum, technique of preparation and dosage.]** *Ann. Acad. Brasileira Sci. [Rio de Janeiro]* 1(2): 72-75. 1929.—A review.

1545. **MOTOMURA, G. Über die Eigenschaften des Giftes von Trimeresurus mucrosquamatus (Cantor) in Formosa und von Trimeresurus flavoviridis (Hallowell) in Ryukyu, mit vergleichenden immunologischen Untersuchungen.** *Taiwan Igakki Zazzhi [Jour. Med. Assoc. Formosa]* 309: 85-87. 1930.—No essential differences were discovered between the venoms of these snakes. Both are hemotoxic, and have great resistance to acid and but little to alkali. *T. flavoviridis* toxin is more heat-resistant and produces hemolysis without an activator. Untreated immune serum (neurotoxin) neutralizes a double lethal dose of both varieties; heated sera neutralize only a single lethal dose of each variety.—*E. C. Faust.*

1546. **MUELLER, J. HOWARD. The effect of alexin in virus-antivirus mixtures.** *Jour. Immunol.* 20(1): 17-23. 1931.—Immune sera prepared by injection of Rous chicken sarcoma material into ducks, geese and rabbits showed neutralizing properties against filtrates of the tumor. This effect was enhanced by incubation with fresh guinea pig serum, itself without effect.—*J. H. Mueller.*

1547. **MUNOYERRO, J. A. ALONSO. Nuestros primeros ensayos sobre vacunación tuberculosa con BCG en 757 casos. [Our first attempts in vaccination against tuberculosis with BCG in 757 cases.]** *Med. Ibera* 13 (591): 301-311. 1929.

1548. **MUTERMILCH, S., et E. SALAMON. Sur la vaccination du lapin et du cobaye contre le tétanos cérébral.** *Ann. Inst. Pasteur [Paris]* 45(1): 85-101. 1930.—Subcutaneous or intraperitoneal vaccination of animals with tetanus anatoxin caused formation of tetanus antitoxin in the general circulation; the cerebrospinal fluid of the animals thus treated never contained antitoxin. Intrameningeal vaccination caused formation of antitoxin in the general circulation as well as in the cerebrospinal fluid. Actively or passively vaccinated guinea-pigs (subcutaneously or intraperitoneally) often resisted tetanus toxin inoculation into the brain; on the contrary, rabbits, in the majority of cases, appeared sensitive to this inoculation. Meningeally inoculated animals regularly appeared refractory to tetanus toxin inoculation into the brain. The presence of tetanus antitoxin in the cerebrospinal fluid is a condition "sine qua non" of the resistance of the neural axis of vaccinated animals. In meningeally vaccinated animals, this antitoxin is present in the fluid owing to its local formation, while in those vaccinated subcutaneously or intraperitoneally, antitoxin enters passively from the blood into the fluid, owing to a breaking down of the vasculomeningeal barrier, produced by injection into the brain of bouillon carrying tetanus toxin.—*Authors' summary (transl.).*

1549. **NAI, DINO D. On the nature of the thermoprecipitins.** *Jour. Immunol.* 19(3): 255-258. 1930.—The author concludes that small-flaking agglutinogens, thermostable precipitinogens, "residue antigens," and protein-free carbohydrate (specific soluble substance) may represent a single class of antigens. Their serologic reactions are parallel and their common characteristic is heat-stability.—*L. C. Havens.*

1550. **NEILL, JAMES M., LURLINE V. RICHARDSON, WILLIAM L. FLEMING, JOHN Y. SUGG, and EMIDIO L. GASPARI. Antidiphtheria group-agglutinin in the antisera of laboratory immunized animals.** *Amer. Jour. Hyg.* 13(2): 499-515. 1931.—The investigation dealt with a group-specific antibody recognizable by agglutination of a "degraded" strain of diphtheria bacilli. Group-agglutinin was present in antisera of laboratory animals immunized with bacterial vaccines of different strains of diphtheria bacilli or of some diphtheroids; it was likewise produced by immunization with soluble bacterial material containing no formed cells. Antisera of laboratory immunized animals were studied to establish facts useful in interpretation of antidiphtheria antibodies in human sera. The most important facts were that group-agglutinin is immunologically specific to the diphtheria-diphtheroid group and that it represents antidiphtheria antibodies of a sort differing from antitoxin antibody. Presence of group-agglutinin in serum can be considered to depend on previous immunization with diphtheria bacilli or with serologically related diphtheroids. Because of the broader immunological range of group-specific rather than "type"- or "strain-specific" serological reactions, and because of its apparent quantitative suitability for tests of sera of low antibody content, the group-agglutinin test appears well fitted for examination of human sera for antidiphtheria antibodies other than antitoxin.—*Authors' summary.*

1551. **NEILL, JAMES M., WILLIAM L. FLEMING, and LURLINE V. RICHARDSON. Antidiphtheria group-agglutinin in the sera of adult people.** *Amer. Jour. Hyg.* 13(2): 516-531. 1931.—Sera of adults were tested for presence of the antidiphtheria group-agglutinin reported by Neill, Richardson, Fleming, Sugg, and Gaspari (see this issue, entry 1550). Of 1,030 adults who had received no diphtheria immunization other than that afforded by the usual naturally-occurring contacts, a large pro-

portion agglutinated the P diphtheria strain. As might be expected, the % of agglutinators varied with dilution of serum: 24% gave definite agglutination at 1:10 dilution; 8.6%, at 1:50 or higher. In tests of a smaller group (267) with low dilutions, 76% agglutinated the diphtheria strain at 1:2. Results showed that large numbers of adults possess diphtheria antibodies of the antibacterial type, like those found in antisera of laboratory animals immunized with diphtheric material. While there is no knowledge of actual immunization of those of the test group, 2 other persons immunized under known conditions with diphtheric material (1 with vaccine; the other with formolized filtrate) were found to produce the agglutinin. Other facts in support of the immunological nature of antidiphtheria agglutinin in human serum were that it is heat-stable (55° C.) and that it can be specifically removed from serum by absorption with suspensions of diphtheria bacilli.—*Authors' summary.*

1552. NEILL, JAMES M., WILLIAM L. FLEMING, and EMIDIO L. GASPARI. Individual persons with high levels of antidiphtheria group-agglutinin. *Amer. Jour. Hyg.* 13(2): 532-543. 1931.—A group of 5 adults with an unusual amount of the antibacterial type (group-agglutinin) of diphtheria immunity were studied over a period of 30 mo. to 4 yrs. In most instances, those with a high level of group-agglutinin in the 1st test, maintained this high level throughout the study. When considered as a group instead of as individuals, adults with an unusual degree of antibacterial immunity also had unusual degrees of the other types of diphtheria immunity, as shown by the high average antitoxin content of the sera and by the greater tendency to give diphtheria-hypersensitive skin reactions. Those maintaining a level of antibacterial immunity higher than that of the usual adult may do so not because of greater contact with the bacteria, but because of an inherent capacity to respond to antigenic stimuli that would be insufficient for the ordinary person.—*From authors' summary.*

1553. NELIS, P. Apparition et durée de l'intradermoréaction tuberculinique chez le cobaye adulte après ingestion de bacilles biliés de Calmette et Guérin (BCG). [Appearance and duration of intradermal tuberculin reaction in adult guinea pigs after ingestion of BCG.] *Compt. Rend. Soc. Biol.* 97(33): 1453-1454. 1927.

1554. NICHOLAS, E., et K. KATRANDJIEFF. Sur la diagnose des viandes et notamment des viandes cuites, par les sérums précipitants. *Recueil Méd. Vét. École Alfort* 105(8): 449-462: 1929.—Precipitinogens are prepared by extracting raw meats with water or saline. Cooked meat is extracted with N/10 NaOH and then neutralized with HCl. Precipitin serum prepared in rabbits by injection of coagulated protein precipitates, both unheated and heated protein, while precipitins produced with uncoagulated protein react with the corresponding unheated protein, but they do not precipitate the protein after it has been coagulated, either by heat or by alcohol.—*L. C. Havens.*

1555. NIGG, CLARA. A study of the blood group distribution among polynesians. *Jour. Immunol.* 19(2): 93-98. 1930.

1556. NIKOLAEFF, N. M., und L. L. GOLDBERG. Über Verhütung des experimentellen anaphylaktischen Shocks. III. *Zeitschr. Ges. Exp. Med.* 73(3/4): 475-480. 1930.—These experiments were based on the theory that anaphylactic shock can be prevented by depressing the adsorptive capacity of the reticulo-endothelial cells. Of 15 guinea pigs, all were sensitized; 4 received injections of Congo red (3 intraperitoneally, 1 subcutaneously); 3, subcutaneous injections of quinin hydrochlorid; 3, intraperitoneal injections of trypan blue; and 5 were kept as controls; all were then given 2nd antigen injections. Congo red and trypan blue either prevented or lightened shock; the quinin in 10% concentration intensified shock, and 1% or lower strength, weakened it. It is concluded that anaphylaxis depends on energetic adsorption of protein split-products by the erythrocytes, which thereby become more readily subject to phagocytosis; and on a lowered capacity of the reticulo-endothelial system to render harmless the antigen adsorbed by the erythrocytes.

1557. NIÑO, FLAVIO. Ensayos de inmunización anticriptocócica en los animales de laboratorio. [Cryptococcus-immunization of laboratory animals.] *Quinta Reunión Soc. Argentina Patol. Reg.* 1: 156-171. 13 fig. 1930. By inoculating increasing doses of killed and living cultures of *Cryptococcus psicrofilicus* Niño 1929 into laboratory animals, a clear-cut immunization against this microorganism was obtained. On the contrary, no specific protection followed either serum treatment or serum prevention of the experimental disease.—*A. de Assis.*

1558. NISHIO, MASAO. Über das Wesen des Reagins der Wassermann Reaktion und die Unentbehrlichkeit der Elektrolyten für die Sachs-Georgische Reaktion. *Sei-I-Kwai Med. Jour.* 47(2): Japanese 10-39: German summary, 2-3. 1928.—The author used cerebrospinal fluids from syphilitics and non-syphilitics and a reagin isolated from syphilitic sera. His results oppose the views of Hartly (1925) in that the reacting substances are lipoids and the salt content has a great influence on the Sachs-Georgi reaction. Without the presence of these salts the reaction does not occur.—*K. R. Collins.*

1559. OHAMA, S. Experimental studies on phagocytosis by neutrophile leucocytes. Taiwan Igakki Zasshi. [*Jour. Med. Assoc. Formosa*] 309. 82. 1930.—The phagocytic action of neutrophilic leucocytes, for dead staphylococci in a guinea pig was most pronounced 30 min. after injection. Arneth's types 2 and 3 were most conspicuous in this process. 2 hrs. after injection the number of neutrophiles reached their maximum and the action became greatly reduced.—*E. C. Faust.*

1560. OHSHIRO, S. Studies on the diagnostic value of the agglutination test. Comparison of quantity of agglutinins of Japanese in Formosa with that of Formosan Chinese. *Taiwan Igakkai Zasshi.* [*Jour. Med. Assoc. Formosa*] 306. 49. 1930.—In 624 cases studied, specific agglutinins were found to be much higher in Formosan Chinese than in Japanese, while the reverse was true in the non-specific agglutinins.—*E. C. Faust.*

1561. OHYA, K. Über die Wirkung einiger Aldehyde und Benzolderivate auf Gifte und Agglutinine pflanzlicher Herkunft und auf Schlangengift. *Zeitschr. Immunitätsforsch.* 64(3/4): 270-285. 1929.—Formaldehyde (HCOH) affects ricin at 36° to the extent that mice survive 600 m.l.d. Local necrotic action remains with the larger doses. With increase in HCOH concentration, detoxication proceeds more rapidly. Under similar conditions *o*-hydroxy benzaldehyde and phenol have no effect on ricin. Mice could be immunized with ricin toxoid, degree of immunity depending on number of toxoid injections. The eye-irritant action of ricin in rabbits was also destroyed by HCOH, but only weak local immunity could be produced by toxoid. The agglutinative function of ricin is more resistant to HCOH action than is the toxic function. The agglutinin was unaffected by *o*-hydroxy benzaldehyde and phenol, while partial or complete destruction was obtained by HCOH. The non-toxic agglutinin from bean seed is destroyed by HCOH, but not by *o*-hydroxy benzaldehyde or phenol; that of potato tubers is affected by phenol as well, but not by *o*-hydroxy benzaldehyde. The venom of the Habu snake was detoxicated by HCOH, furfural, *o*-hydroxy benzaldehyde, Na salicylate, Na benzoate, and phenol. The immunity produced by HCOH toxoid was low and depended on concentration of venom solution used in preparation. Furfural toxoid produced a higher degree of immunity.—*L. W. Butz.*

1562. OHYA, K. Zur Frage der Atoxizität und des immunisierenden Effektes von Tetanusanatoxin. *Zeitschr. Immunitätsforsch.* 64(3/4): 286-293. 1929.—Mice received 2 separate injections of varying amounts of anatoxin. After 3 weeks, the antitoxin content of the blood was determined by mixing blood samples with fresh precipitated toxin, incubating for ½ hr., and injecting. In general, mice receiving the most anatoxin had the highest antitoxin content, but there was con-

siderable individual variation. On testing immunized mice it was found that degree of immunity was directly related to antitoxin content. On the average, mice showed high immunity after anatoxin treatment. This may have been due to the high toxicity of the tetanus toxin used in preparing the anatoxin.—*L. W. Butz.*

1563. **OMODEI SATE, CESARE. Sul fenomeno dell'anacoresi. VIII. L'anachoresi nei virus filtrabili. [Studies on anachoresis. VIII. Anachoresis and filterable viruses.]** *Biochim. e Terapia Sperim.* 17(8): 344-361. 1930.—Anachoresis is shown also in infections by filterable viruses. In guinea pigs infected by foot-and-mouth disease virus, if injected subcutaneously with BCG, the filterable virus is found present in the subcutaneous tuberculous nodules at 12 hrs. to 7 days. This 1st stage of anachoresis is followed by the extinction of the virus; after the 7th day it is no longer present in the nodules. These experiments corroborate those previously made with other filterable viruses.—*M. Comel.*

1564. **OTTO, R., und G. BLUMENTHAL. Weitere tierexperimentelle Beiträge zur aktiven Immunisierung gegen Diphtherie.** *Zeitschr. Hyg. u. Infektionskr.* 111(3): 380-386. 1930.—2 formol-toxoids made from a potent diphtheria toxin possessed good immunizing qualities. Guinea pigs immunized with 3 subcutaneous doses of 1 cc. gave a high antitoxin titer and were protected against many lethal doses of toxin. 10 animals treated by Löwenstein's method showed a low antitoxin titer and practically no immunity against toxin.—*Authors' summary (transl. by A. F. Reith).*

1565. **OTTO, R., und K. IWANOFF. Anaphylaktischer Reaktionskörper und Präzipitin. [Anaphylactic reaction bodies and precipitin.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 54(5/6): 496-506. 1928.

1566. **PASCHEN, E. Über Verwendung einer mit neuer Methode hergestellten Trockenvaccine zur Virulenzprüfung, bzw. als Dauerkontrollmuster von Vaccine.** *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 397-400. 1927.—Dried vaccine lymph can be prepared and used as a permanent standard for testing the potency of vaccine virus.—*L. C. Havens.*

1567. **PETTERSSON, ALFRED. Ueber das Verhalten der Lysine zu den Lösungsmitteln für Lipoide. [Relation of lysins to the solvents of lipoids.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 54(3/4): 292-302. 1928.

1568. **PHILLIPS, G. E. The blood groups of the Maori.** *Human Biol.* 3(2): 282-287. 1931.—200 individuals selected at random from 8 Maori tribes of New Zealand were classified into the 4 blood groups of Moss by means of known sera collected from whites. Results were as follows: Group 4, 47.5%; 3, 1%; 2, 39.5%; 1, 12%. All members of Group 1 and 1 of the 2 members of Group 2 belonged to the Arawa tribe. Certain of these individuals were characterized by the fairer skins and reddish tinted hair of the aboriginal Maoriri stock of New Zealand. Since agglutinogen B is a dominant Mendelian characteristic, it is impossible for Group 1 to be larger than 3, and consequently it is suggested that the pure Maori race does not contain the B-b agglutination system and that this system has been introduced into the blood of certain individuals by miscegenation with aboriginal Maoriri stock.—*G. E. Phillips.*

1569. **PHILPOTT, CHARLES H. Effect of toxins and venoms on Protozoa.** *Jour. Exp. Zool.* 56(2): 167-184. 1930.—Under the conditions used, botulinus tetanus and ricin toxins had no effect on *Paramecium caudatum;* venom of 8 snakes was found, however, to be highly toxic for paramecia. From a study of the effect of *Crotalus atrox* venom on 11 species of protozoa, it appears that some are more susceptible to the fatal action of venom than others. The agent lethal to protozoa is thermolabile and neutralized by *Crotalus* antivenin. Paramecia were used as test animals in titrating the potency of venoms. Repeated titrations, in which paramecia were used as test animals, showed small variation in results for each venom. In these titrations the minimal lethal dose is defined as the smallest amount of venom per cc. of medium per animal required to kill paramecia within 24 hrs. Paramecia were also used in titrating the potency of *Crotalus* antivenin, but the titer thus obtained did not correspond to that obtained when warm-blooded animals were used. The agent responsible for the lethal action of venoms on paramecia is not the same in all venoms. In *Crotalus* venoms the agent seems to correspond to hemorrhagin; in *Cobra* venom, to neurotoxin, according to Noguchi's classification of the toxic constituents of venoms.—*C. H. Philpott.*

1570. **PINCUSSEN, LUDWIG. Das Verhalten der Blutphagozyten von bestrahlten Meerschweinchen.** *Strahlentherapie* 39(1): 103-108. 1930.—Guinea pigs were irradiated with a quartz lamp for 15 and 30 min.; with a Vitalux lamp for 30 min., or for 2 periods of 30 min. each, at a 1 hr. interval; or, for 30 min. with a Vitalux lamp for which the invisible light and the shorter-waved visible light as far as the green had been eliminated. There was a rise in rectal temp. in all,—slight with the quartz light, pronounced with Vitalux. Smears were made before, and 1 and 2 hrs. after, irradiation, for phagocytosis. After standing 1 hr. at 37° no increase in phagocytosis was observed from irradiation with the quartz light, but a 33-100% increase with the Vitalux. After removal of the warm rays from the Vitalux lamp, 30 min. irradiation had no effect; irradiation with heat but not light rays had the same effect as with heat and visible light. Thus, it is warmth which promotes phagocytosis.

1571. **PODESTÀ, G. B. La deviazione del complemento nella infezione blenorragica. [Deviation of complement in gonorrhea.]** *Riforma Med.* 44(3): 51-54. 1928.—The author examined 125 cases of gonorrhea, using different antigens (gonargin, artigon, gonococcus emulsion), and found (by deviation of complement) in the gonorrheic organism specific antibodies, mostly between the 20th and 70th days of the disease, and especially in severe and in complicated cases. Uncertain results are to be found in latent infections.—*M. Goldstein.*

1572. **PONZI, ETTORE. Sulla presenza delle isoagglutinine nel colostro. [Isoagglutinins in colostrum.]** *Riv. Ostetr. e Ginec. Prat.* 11(12): 19-25. 1929.—The same isoagglutinins are found in colostrum as in blood serum, and the 4 groups behave in the same way. Many phenomena of pseudo-agglutination complicate the study.—*E. Ponzi (transl. by P. Popenoe).*

1573. **PONZI, E. Contributo agli studi sui gruppi sanguigni. [Blood groups.]** *Ateneo Parmense* 2(6): 584-602. 1930.—Results of 1220 determinations of blood groups in Parma, Italy, give a biochemical index of 3.7 for the Province. In the study of 220 newborn infants and their parents, no exception to Bernstein's hereditary formula was noted, nor was confirmation furnished of Hirszfeld's hypothesis of a greater fetal development in homospecific pregnancy. No relation was found between icterus neonatorum and blood group or between diminution in wt. during the 1st days of life and serologic difference between mother and child. The author believes that no absolute value can be assigned to the results of Kemp, who found agglutinogens regularly present by the end of the 3rd month of fetal life.—*Author's summary (transl.).*

1574. **POUSMA, R. H. Report of four cases of rattlesnake bite.** *Bull. Antivenin Inst. America.* 2(3): 61-63. 1928.—Record of poisonings by rattlesnake bites (probably *Crotalus atrox),* showing antivenin to be the best means of treatment.—*A. do Amaral.*

1575. **PRÁŠEK, E., und M. PRICA. Komplementbindung bei Rhinosclerom.** *Acta Oto-Laryngol.* 13(1): 73-82. 1928.—Specific complement fixation was obtained with sera of patients with rhinoscleroma, against an antigen consisting of extracts of *B. rhinoscleromatis.*—*K. Goodner.*

1576. **PRIESTLEY, F. W. The intermediate zone phenomenon encountered in certain Br. abortus agglutinating sera.** *Jour. Path. & Bact.* 34(1): 81-89. 1930.—This inhibition zone, originally described by Seddon, is bounded on either side by serum dilutions which show complete

agglutination. A certain amount of evidence is brought in support of Detre's contention that the 2 zones of agglutination are due to different types of agglutinin. It is shown that filtration and decrease in salt content cause a widening of the zone, while increase in saline causes its removal. There is indirect evidence that the zone is due to an insufficient reduction of potential on the bacteria.—*F. W. Priestley.*

1577. **PRIVY COUNCIL MEDICAL RESEARCH COUNCIL, GREAT BRITAIN.** A system of bacteriology in relation to medicine. Vol. VI. Immunity. 538p. H. M. Stationary Office: London, 1931.—This volume covers the following: Bacteria in relation to disease, by **H. B. MAITLAND, and W. M. SCOTT**; Natural immunity, by **J. C. G. LEDINGHAM**; The production of active immunity to bacterial and virus infections of man and animals, by **J. C. G. LEDINGHAM, and H. L. SCHÜTZE**; Active immunization with toxin, by **A. T. GLENNY**; The physiological action of some toxins, by **J. W. TREVAN**; General properties of antigens and antibodies, by **C. H. BROWNING**; with a section by **R. MUIR**; The effect of physical and chemical agencies on the properties of antigens and antibodies, by **P. HARTLEY**; Bacterial action, by **R. MUIR**; with a section by **C. H. BROWNING**; Haemolytic action, by **R. MUIR**; with sections by **C. H. BROWNING, and by S. P. BEDSON**; Complement, by **C. H. BROWNING**; Opsonic action; tropins, by **R. MUIR**; Agglutination, by **J. A. ARKWRIGHT**; The precipitation reaction, by **H. R. DEAN**; Antiferments and defensive ferments, by **C. H. BROWNING**; Anaphylaxis and related phenomena, by **W. M. SCOTT**; The bearing of colloidal chemistry upon some immunity reactions, by **DOROTHY B. STEABBEN**; and Chemotherapy, by **C. H. BROWNING.**

1578. **PUTKONEN, TAUNO.** Über die Blutgruppenspezifizität des Fruchtwassers. [Blood group specificity of amniotic fluid.] *Acta Path. et Microbiol. Scandinavica Suppl.* 5: 64-65. 1930.

1579. [**RAEVSKIĬ, A. S., and ĬA. E. BRAUL.**] РАЕВСКИЙ, А. С., и Я. Е. БРАУЛ. К серологии проказы. [Serology of leprosy.] Вестник Микробиологии и Эпидемиологии (*Rev. Microbiol. et Épidémiol.*) 5(3): 139-142; French summary, 231. 1926.

1580. **RAMON, G., et ROBERT DEBRÉ.** Sur la teneur en antitoxine spécifique du sérum des sujets vaccinés par l'anatoxine diphtérique. *Ann. Inst. Pasteur* [*Paris*] 45(3): 326-336. 1930.—Of 105 sera of children vaccinated 1, 2, 3 and 4 yrs. previously, 95 had an antitoxic power of more than 0.1 unit; of these, 43 had an antitoxic power greater than 1. Among the sera of children vaccinated 3 and 4 yrs. previously, 95% had a protective amount of antitoxin; 89% of those vaccinated 2 yrs., and 82% of those vaccinated 1 yr. previously, displayed protective amounts of antitoxin, indicating that immunity produced by anatoxin is not temporary.

1581. **RAMSDELL, SUSAN GRIFFITH.** The reaction of the human skin to normal and immune guinea pig serum. *Jour. Immunol.* 19(2): 217-221. 1930.—The human skin reacts rather regularly, with the immediate type of reaction, to normal guinea pig serum at dilution 1: 10, and to a lesser degree at 1: 50. Usually, after this reaction, the skin becomes normal in appearance in 2-24 hrs. When an anti-human serum at dilution 1: 10 is injected, the immediate reaction is not always greater than that due to normal serum. But a difference is made more evident by using higher dilutions of sera, indicating a specific antigen-antibody response. A further difference in reactions is seen in the persistence of that to the immune serum, with induration and inflammation for 24 hrs. The degree of reaction, with both sera, is only slightly reduced by heating the sera for 10 min. at 50°C. —*Author's summary.*

1582. **RAMSDELL, SUSAN GRIFFITH.** The transfer of the skin-reacting antibody in human serum to guinea pig skin. *Jour. Immunol.* 19(5): 411-416. 1930.—A specific reaction in the guinea pig skin may be obtained with fair regularity, where the test-antigen can be used in a considerable concentration, on transfer of the serum of asthmatic subjects to the animal skin. The sera of hay-fever, urticarial, and eczematous patients only occasionally transfer this reaction. This failure is ascribed to a relatively low antibody content in such sera and to the limitations of the technic used.—*Author's summary.*

1583. **REICHEL, H. J.** Die Müller-Ballungs-Reaktion im Liquor. *Zentralbl. Bakt. I. Abt. Orig.* 116(4/5): 347-349. 1930.—In the cerebrospinal fluids of 250 non-syphilitic cases the specificity of the Müller conglobation reaction was tested against the Wassermann, the 2 agreeing in 95.6% of cases. Used in 250 lumbar punctures on syphilitic cases, the tests agreed in 91.6% of cases. The Wassermann alone was positive in 4.8%; the Müller alone, in 3.2%.

1584. **REICHEL, H. J.** Die Meinicke-Klärungsreaktion auf Syphilis. *Zentralbl. Bakt. I. Abt. Orig.* 116(4/5): 349-352. 1930.—Tested on 412 sera from non-syphilitics, the Meinicke clarification reaction gave 3.4% positive reactions. On 588 sera from known syphilitics, the Meinicke clarification test gave a higher number (383, or 65.1%) of positive results than the Wassermann (188, or 31.99%) or the Meinicke clouding reaction (317, or 53.84%), and nearly as high as the Müller conglobation reaction (393, or 66.84%). The exceptionally large number of negative results is attributed to the fact that many of the cases had already been long under treatment.

1585. **RIEHM, W.** Über experimentelle anaphylaktische Keratokonjunktivitis am Kaninchenauge, zugleich ein Beitrag zur Auffassung über die Ätiologie der skrofulösen Augenentzündung. [Experimental anaphylactic keratoconjunctivitis in the rabbit eye, as well as a contribution to the etiology of scrofulous eye inflammation.] *Arch. Augenheilk.* 99(3): 438-500. 16 fig. 1928.

1586. **RITOSSA, PIO, e ALBERTO OBERHOLTZER.** Ricerche sperimentali sui sieri leucolitici. [Studies on leucolytic sera.] *Riv. Patol. Sperim.* 5(4/5): 290-305. 1930.—Repeated injections of human and guinea pig leucocytes provoked in rabbits the appearance in serum of substances having a lytic action towards leucocytes of the inoculated species and, in smaller degree, towards leucocytes of other species. This activity may be determined in vitro. Serum of treated rabbits injected into guinea pigs provoked destruction of leucocytes and leucopenia. A toxic action, often lethal, followed when guinea pigs were injected with serum sensitized to guinea pig leucocytes.—*M. Comel.*

1587. **ROSENAU, M. J., and H. B. ANDERVONT.** Vaccinia: susceptibility of mice and immunologic studies. *Amer. Jour. Hyg.* 13(3): 728-740. 1931.—Attempts to vaccinate mice on the skin of the abdomen were apparently unsuccessful. Virus was found within the skin for at least 6 days after vaccination, but this was possibly survival, and not necessarily successful vaccination. The fact that lesions of the smallpox papule and vesicle are mainly confined to the epithelial layer, suggested that possibly the extremely thin layer over the mouse's abdomen might not supply material for pronounced vesiculation. Experiments (15) were performed, in which 86 mice were vaccinated on the pads of the feet where the epidermis is thick; 59 showed typical "takes" visible to the naked eye. Vaccination on the thick epidermis near the root of the tail also produced vesicles, confirming the view that thickness of epithelial layer is responsible for visible reaction. Mice vaccinated (apparently unsuccessfully) on the abdominal skin were subsequently immune to pad vaccination, clearly indicating that infection had taken place, even when no visible evidence of skin reaction could be discerned. In another series it was demonstrated for the 1st time that mice are susceptible to vaccinia by inoculating virus into the brain; this was true, however, only for an especially virulent strain. The virus was carried through 28 mouse-brain passages extending over 6 mo. and it was shown that vaccine virus was responsible for the symptoms observed, by cross immunity tests with rabbit neurovaccine and calf dermovaccine. Brains of mice, after intracranial inoculation of vaccine virus,

failed to reveal lesions described as characteristic of vaccinal encephalitis.

1588. ROSENBLÜTH, ALEXANDER. Zur Diphtherieprophylaxe mittels der Schutzsalbe nach E. Löwenstein. *Zeitschr. Kinderheilk.* 50(6): 775-780. 1931.—Of 290 boys 11-18 yrs. old, 148 were Schick-negative, 142 positive. 3 inunctions with Löwenstein's ointment were made at 14-day intervals in 120 positives; of these 43 (36%) were negative, 77 (64%) positive 50 days after the 1st and 22 days after the 3rd inunction; of 108, 35 (32.5%) were negative and 73 (67.5%) positive 6 mo. after the 1st and 5 mo. after the 3rd inunction.

1589. RUBINO, M. C. Untersuchungen zur Verwendung formolfixierter Hammelblutkörperchen in der Serodiagnostik. *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 378-384. 1931.—The author succeeded in producing fixation of sheep erythrocytes by formalin so that their histologic characters were unaltered, but they were non-hemolyzable either by distilled water or by specific amboceptor in presence of complement. These fixed erythrocytes preserved their antigenic properties and produced hemolysins and agglutinins in rabbits. They retained the capacity (but in less degree than in normal erythrocytes) to absorb specific amboceptor; addition of active human serum was productive of marked rise in absorptive capacity toward specific amboceptor. Treatment of active human serum by these fixed erythrocytes resulted in absorption of normal amboceptor and inactivation of complement, a process in which the relative proportion of concentration of serum and of suspension of formalin-fixed corpuscles plays a rôle; the amount of normal amboceptor is also significant. Sensitized, formalinized sheep erythrocytes have a greater absorptive capacity toward complement than the non-sensitized.—*Author's summary (transl.).*

1590. SAITO, TAISHIN. Über die Verwertbarkeit der Kahnschen Reaktion für die Serumdiagnostik der experimentellen Kaninchensyphilis. *Zeitschr. Hyg. u. Infektionskr.* 110(4): 603-617. 18 fig. 1929.—The Kahn reaction has little sensitiveness to non-specific inhibiting substances in rabbit serum as compared with complement fixation. The Kahn test furnishes distinctly negative reactions with normal rabbit serum, with extremely rare exceptions, and gives clearly positive reactions with serum from rabbits inoculated with luetic material; it apparently offers a reliable means for recognition and observation of experimental rabbit syphilis.—*P. G Heineman.*

1591. SAVINO, ENRIQUE. Manera de seleccionar a los animales durante la immunización con toxina diftérica. [Selection of horses for diphtheria antitoxin production.] *Rev. Soc. Argentina Biol.* 6(7/8): 482-490. 1930.—Final titers of more than 200 units per cc. were considered high. Of 116 horses 61% gave high titers. Animals giving titers of only 50-100 units per cc. after injection of 75-100 cc. should be eliminated. This proceeding reduces the final low titers to 6%.—*J. T. Lewis.*

1592. SAVINO, ENRIQUE. Aplicación del cálculo de probabilidades al estudio de la inmunización de caballos inyectados con toxina diftérica. [Distribution of titers in horses immunized with diphtheria toxin.] *Rev. Soc. Argentina Biol.* 6(7/8): 491-495. 1930.—Applying the probability calculus to the antitoxin titers of sera from 146 immunized horses, it was found that in animals with 100-350 or with 550-800 units per cc., the distribution curve is above the calculated value; it is below for animals with 0-100 or 350-550 units per cc.—*J. T. Lewis.*

1593. SAVINO, ENRIQUE. Distribución de los valores de los caballos inmunizados con toxina tetánica. Probability calculus applied to tetanus immunization in horses.] *Rev. Soc. Argentina Biol.* 6(9/10): 587-592. 1930.—The distribution of values curve as found in 131 horses does not correspond to the calculated curve. High values are greater than those calculated and low values fall below the calculated curve.—*J. T. Lewis.*

1594. SCHILLING, CLAUS. Pathologisch-histologische Studien in Bezug auf den Calmetteschen Tuberkelbacillus (B. C. G.). *Virchow's Arch. Path. Anat. u. Physiol.* 278 (2): 462-476. 14 fig. 1930.—Of 21 guinea pigs, 15 received intravenous or intracardiac injections of suspensions of BCG; and 11 of the latter were killed 7-69 days after infection. The lungs showed macroscopically recognizable tubercles in which bacilli multiplied and formed homogeneous clumps, with formation of pigment. While these tubercles showed a tendency to shrivel and disappear, and the bacilli in later stages ceased to be acid-fast, the author believes that BCG cannot be called avirulent, since the bacilli multiply in the organism and produce pathologic changes, including slight necrosis. The remaining 4 BCG-infected guinea pigs, together with the 6 controls, received intravenous injections of virulent tubercle bacilli, and were killed 7-29 days later. Within this time no multiplication of superinfecting bacilli and no formation of typical tubercles was observed, but at most a somewhat focal inflammation of the pulmonary supporting tissue with progressive involvement of the alveolar epithelium (interstitial pneumonia). Therefore is is believed that a considerable antigenic action against subsequent virulent infection, within the period of 29 days, cannot be denied to BCG.

1595. SCHIMANKO, J. Die biologischen Grundlagen der Behandlung der Hauttuberkulose. *Arch. Dermatol. u. Syph.* 162(2): 442-449. 1930.—The various phases of cutaneous tuberculosis parallel the varying degrees of cutaneous sensitization. The disease is an allergic reaction of the highly sensitized skin, as is shown by a much higher percentage of Pirquet positives in 650 cases of cutaneous, than in 371 cases of pulmonary tuberculosis. The degree of allergic reaction is indicative of the extent of the disease or recovery therefrom.

1596. SCHLOSSBERGER, H. Über den gegenwärtigen Stand der Blutgruppenforschung. *Reichs-Gesundheitsbl.* 4(13): 283-288. 1929.—A survey of the development and results of blood-group investigations and their application to clinical and forensic medicine and to anthropology.—*H. Schlossberger (transl.).*

1597. SCHMIDT, ADAM. Blutgruppenbestimmungen an der Batschkaer Bevölkerung. [Studies on blood groups among the Batschka people (Jugoslavia).] *Zeitschr. Rassenphysiol.* 3(3): 57-66. 1930.

1598. SCHMIDT, S. Toxines et antitoxines: constitution et mode d'union. *Ann. Inst. Pasteur [Paris]* 45(3): 337-372. 1930.—A review of the theory.

1599. SCHÖBL, OTTO, BUNSHIRO TANABE, and ISAO MIYAO. Preventive immunization against treponematous infections and experiments which indicate the possibility of antitreponematous immunization. *Philippine Jour. Sci.* 42(2): 219-237. 1930.—Vaccination of monkeys by subcutaneous injection with killed frambesia treponemas was followed by rapid development of immunity to yaws, of long duration. This immunity also prevented development of the specific lesion following syphilitic infection, but did not prevent penetration of the treponemas into the regional lymph nodes.—*L. C. Havens.*

1600. SCHRADER, G. Untersuchungen zur Frage der Blutgruppenänderung. *Zeitschr. Rassenphysiol.* 3(3/4): 108-116. 1931.—Repeated examination of 142 patients subjected to non-specific therapy (malaria, gonococcus vaccine) gave no evidence for assuming a change of blood group. In 3 of 64 cases there was a considerable increase of agglutinin content when examined at intervals of 3-12 wks.—*P. Levine.*

1601. SCHÜTZE, W. Über Intrakutanreaktionen bei Fällen von Syphilis und Nichtsyphilis mit Spirotest und Rückenmarksflüssigkeit. [Intracutaneous reactions in syphilitic and non-syphilitic cases with spirotest and cerebrospinal fluid.] *Dermatol. Wochenschr.* 90(14): 485-488. 1930.—Spirotest (said to consist of killed spirochaetes of syphilis in physiologic saline with 0.5% phenol) was tried on 124 cases, of which 26 were syphilitic, and cerebrospinal fluid on 116 cases, of which 72 were syphilitic. Neither test gave reliable results.

1602. SELLERS, T. F., and JANIE F. MORRIS. The comminution of blood clots for cultures. *Amer. Jour.*

Publ. Health. 20(2): 195-196. 1930.—Whole blood sent for examination by agglutination tests for typhoid, typhus, undulant fever, tularemia, etc., after removal of serum, is comminuted by forcing through a sterilized Luer syringe into the medium.

1603. **SELTER, H. Die bisherigen Ergebnisse der Tuberkulose-Immunisierungsversuche an Meerschweinchen.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66 (3/4): 351-366. 1930.—On the basis of relatively few guinea pig experiments it is claimed that successful immunization against tuberculosis can be obtained by injections of organisms having a weakened virulence. Such strains produce a local infection either at site of inoculation or in regional lymph nodes. They do not result in generalized infection. Avirulent or killed organisms give only increased resistance and serve only to prolong the life of the individual against succeeding infection. With strains of reduced virulence the immunity begins only when the local lesion commences to heal.—*N. W. Larkum.*

1604. **LANGE, BRUNO. Die bisherigen Ergebnisse der Tuberkulose-Immunisierungsversuche an Meerschweinchen.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66 (3/4): 367-376. 1930.—A reply to Selter's contribution, in which the author takes exception to Selter's conclusions on the ground that no control of the number of living organisms is made. He denies the validity of Selter's conclusions throughout. [See Entry 1603.]—*N. W. Larkum.*

1605. **SELTER, H. Schlussbemerkung zu der Erwiderung Langes.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 377-379. 1930.—The author defends his position on tuberculosis immunization in reply to Lange. [See Entry 1604.]—*N. W. Larkum.*

1606. **SERENI, ENRICO. Ricerche sulla anafilassi. VIII. A proposito di anafilassi e avitaminosi. [Anaphylaxis and avitaminosis.]** *Riv. Patol. Sperim.* 5(2/3): 252-257. 1930.—Animals kept on avitaminosis diet show more intense anaphylactic shock than those on normal diet. Avitaminosis increases the sensitivity to the agent causing anaphylaxis; delayed production of antibodies may also be involved.—*M. Comel.*

1607. **SIERAKOWSKI, S., und MELZAK. Einfluss der verschiedenen pH auf das Ergebnis der Sachs-Georgi Reaktion.** *Zentralbl. Bakt. I. Abt. Orig.* 118(5/6): 366-373. 1930.—The Sachs-Georgi reaction is strongest with antigens at pH 5.8-7, serum pH remaining unchanged. Negative sera become positive at pH 5; positive sera become negative at pH 9. Best results were obtained by diluting Sachs-Georgi antigen in 0.85% NaCl, mixed with N/5 sodium acetate in a 25:1 ratio; weak antigen, diluted as above, gives results similar to a strong standard antigen. Serum pH fluctuated between 7.2 and 8.2. No parallel exists between serum pH and results of the reaction.—*Authors' summary (transl. by A. L. Brody).*

1608. **SILBER, L. A., und S. I. NIKOLSKAJA. Weitere Untersuchungen über die Thermostabilität der Antikörper.** *Zeitschr. Immunitätsforsch.* 64(1/2): 167-172. 1929.—Saturation of immune sera with saccharose increases the thermostability of the antibodies to a remarkable extent. While a number of agglutinating sera (anti-typhoid, anti-paratyphoid, anti-cholera) lost their agglutinative activity entirely after exposure for 1 hr. to 75° C., the same sera when saturated with saccharose showed no appreciable loss of agglutinins after heating for 1 hr. at 80° and 90°. There was, however, a marked reduction of titer after heating for 10 min. at 100°. A similar increase in thermostability of hemolysins (and perhaps antitoxins) under high saccharose concentration could be demonstrated in the respective immune sera. The authors attribute the action of sugar to its capacity to prevent coagulation and denaturation of serum proteins.—*C. W. Jungeblut.*

1609. **SILVEIRA, G. FLEURY da, e J. M. GOMES. A reacção de Kahn na lepra. [Kahn reaction in leprosy.]** *São Paulo Med.* 3(4): (3-7). 1929.—Kahn's reaction lends itself admirably to the diagnosis of syphilis in leprous individuals, giving positive results in a minimum percentage of cases in contrast to the Wassermann reaction which frequently gives positive results when syphilis is not present.

1610. **SMITH, J., and A. M. FRASER. Agglutination reactions in relation to Sonne dysentery.** *Jour. Hyg.* 30(2): 216-220. 1930.—A study of the agglutinin content of the sera of individuals who had had Sonne dysentery showed that in the majority, specific agglutinins were produced. In a series of agglutination tests with sera from 138 normal individuals, 24% gave a positive reaction at dilution 1:50 or greater.—*Authors' summary.*

1611. **SONNENSCHEIN, CURT. Komplementkonservierung durch Kochsalz und Borsäure.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 330-334. 1930.—Determinations of the amount of complement in 631 sera kept for 28 days in borate and NaCl were made. At 4-8° complement was undiminished and at room temp. the titer was only slightly lowered.—*N. W. Larkum.*

1612. **SORDELLI, A., y J. FERRARI. Algunas propiedades de suero antimicrobiano contra B. perfringens. [Properties of B. perfringens anti-serum.]** *Rev. Soc. Argentina Biol.* 6(9/10): 513-518. 1930.—By intravenous injection of *B. perfringens* into horses, a specific serum is obtained having precipitating, agglutinating and complement-fixing properties. By dilution in saline saturated with CO_2 a precipitate is obtained, containing almost all the precipitin and agglutinin but only ½ the complement-fixing antibody. The precipitinogen is not destroyed by boiling, is insoluble in saline and does not fix complement. The edema fluid of infected animals contains the precipitinogen and gives a precipitate with the serum. This may be used as a rapid and simple diagnostic test.—*J. T. Lewis.*

1613. **SORDELLI, A., y J. FERRARI. Los anticuerpos contenidos en el suero anticarbuncloso. [Antibodies in antianthrax serum.]** *Rev. Soc. Argentina Biol.* 6(9/10): 519-524. 1930.—4 types of serum were prepared by subcutaneous or intravenous injection of virulent and avirulent strains of *B. anthracis.* They were fractioned by precipitation with saline saturated with CO_2. Sera obtained by intravenous injection are agglutinating and precipitating, both properties being found in the precipitate. Those obtained by subcutaneous injection do not have these properties. All sera have complement-fixing power, especially when prepared by subcutaneous injection and without relation to virulence of strain. This property is found in the soluble fraction.—*J. T. Lewis.*

1614. **STERN, R. Die Rolle der Dehydration bei der Komplementbindung (Wassermann-Reaktion). [Rôle of dehydration in complement fixation.]** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 66(3/4): 379-380. 1930.—Polemic note on the work of Reiner.

1615. **STONE, KENNETH. A study of yeasts by the complement-fixation test.** *Lancet* 219(5585): 577-579. 1930.—By using a saline washing of the yeast as antigen the complement-fixation test can be applied in identification of various members of the yeast and sporothrix groups. Specimens of thrush (*Oidium albicans*), obtained from 10 successive cases, gave identical results. By the complement-fixation test, all belong to 1 serological type. Specimens of yeasts obtained from other sources were studied, and are shown to fall into 5 types. The sporothrices of Beurmann and Schenck appear to be identical, and quite distinct from yeasts so far studied. The sporothrices of Gougerot and Jeanselm appear to be identical with black yeasts obtained from other sources.—*Author's conclusions.*

1616. **STRASSMANN, G. Ist die Blutgruppenuntersuchung im Alimentenprozess verwendbar?** *Med. Welt.* 3(9): 321-322. 1929.—The alleged changes in blood groups in diseases are due to errors in technique. The author criticizes the courts for their refusal to render decisions based on blood group examination. This has in the meantime been revoked, and the author has shown that there is no longer justification in doubting the applicability of blood group determination in cases of disputed paternity.—*G. Strassmann (transl. by P. Levine).*

1617. STSCHEDROWITZKY, S. G., A. M. KORABELNIKOW, und E. K. LOPATIN. Die Rolle der Milz in der aktiven Immunität. *Zeitschr. Ges. Exp. Med.* 73(5/6): 625-630. 1930.—Immunizing doses of typhoid vaccine were given to 10 splenectomized rabbits—to 5 immediately after operation, and to 5 at 2, 4 and 6 months afterward. In 4 of the 5 immediately immunized, the agglutination titer rose to 6000-9000 instead of the usual 4000-5000 (seen also in 2 rabbits immunized after laparotomy), remaining at this height for 3-4 mo., and then falling to 2000-2500, the titer shown by the 5 later immunized experimental rabbits. Thyroidectomy in 4 splenectomized rabbits produced a considerable fall in agglutination titer. Castration in 4 splenectomized rabbits scarcely influenced the agglutination titer, but splenectomy in 6 castrated rabbits produced marked rise in agglutination titer. Splenectomy after thyroidectomy was fatal in rabbits. The authors conclude that the spleen has endocrine functions.

1618. SUZUKI, S. Über die Steigerung der Wa-R. beim Kaninchen durch die Injektion der embryonalen Blutkörperchen oder der menschlichen Blutkörperchen von AB-Typus. *Japanese Jour. Dermatol. & Urol.* 30(5): Japanese. 428-442; German summary, 51. 1930.—Rabbit serum which had previously given a negative Wassermann reaction could be rendered distinctly positive by injection of embryonic blood corpuscles, rabbit or human, but not by human adult corpuscles, except of the AB type. This indicates the presence of a common factor in embryonic and adult blood corpuscles of AB type.—*From author's summary (transl.).*

1619. TALLO, F. Influenza della dieta epatica (dieta di Whipple) sui poteri immunitarii dell'organismo. Ricerche sperimentali. [Influence of Whipple's liver diet on the immunity processes.] *Riv. Patol. Sperim.* 5(4/5): 359-370. 1930.—In guinea pigs and rabbits fed with fresh liver added to an ordinary diet, an increase of immunity activity, both natural (phagocytosis, opsonic power) and induced (agglutinins, bacteriolysin), develops if the animals are vaccinated with typhoid bacilli. The immunity activity is increased, after an initial diminution, in animals repeatedly bled. The presence in the liver of a substance affecting immunity through its action on the hemopoietic system is suggested.—*M. Comel.*

1620. TAYLOR, K. P. A. Apparent cure of purpura hemorrhagica by bothropic antivenin. *Bull. Antivenin Inst. America* 3(2): 42-43. 1929.—The efficacy of bothropic antivenin *Bothrops atrox* was demonstrated in stopping hemorrhages of a patient with purpura to whom other treatments such as normal horse serum, $CaCl_2$ and ergotin had been unsuccessfully applied.—*A. do Amaral.*

1621. TERRELL, EDWARD E. Changes in humoral immunity occurring during the early stages of experimental pneumococcus infection. *Proc. Soc. Exp. Biol. & Med.* 27(5): 353-354. 1930.

1622. THEILHABER, A. Der Einfluss der Einverleibung lebender tierischer Organteile auf die Körperkonstitution und Krankheitsdisposition. *Arch. Frauenk.* 16(4): 295-307. 1931.—Implantation of endocrine organs into 131 cancerous patients brought improvement: the tumor reduced in size; hemorrhages, discharges and pain often regressed; metastases were reduced and sometimes they and the primary tumor disappeared. The glands were taken from young pigs treated a few days previously by injection of an emulsion of spleen, liver, thyroid, and thymus from a freshly killed rabbit. The spleen, thymus, thyroid, some of the liver, and a piece of the femur were implanted subcutaneously into the thigh or abdomen. The febrile reaction hastened healing. In an unstated number of tuberculous patients, also in 34 with diseases of the central nervous system, 4 with arthritis deformans, 1 with severe Bürger's disease, 4 of 5 with inoperable sarcoma, 1 with Hodgkin's disease, and 1 with severe pyosalpinx, improvement occurred after implantation. These results, the author believes, indicate that implantation increases the local, general active, passive, specific, and non-specific immunity.

1623. THOMSEN, O. Der Wert der Blutgruppenbestimmung in Vaterschaftssachen, wo die Gruppe der Mutter unbekannt ist. *Zeitschr. Rassenphysiol.* 3(3/4): 103-107. 1931.—The author considers the incidence of the 3 possible outcomes of serological paternity diagnosis in cases where the blood group of the mother is unknown, viz., (1) the man could be the father of the child, no matter what the group of the mother, (2) the man could not be the father of the child under any circumstances, and (3) the question could not be decided without a knowledge of the blood group of the mother. On the basis of the Landsteiner groups O, A, B, and AB, the following incidence is obtained: 62.50%, 2.58% and 34.92%, respectively, where 2.58% represents those cases in which an O father could not give rise to an AB child, and an AB father could not give rise to an O child.—*P. Levine.*

1624. TIEGS, E. Über Platanenhaare. (I. Mitteilung). Kleine Mitteil. *Mitglieder Ver. Wasser-, Boden-, u. Lufthygiene* 6(7/10): 193-198. 3 pl., 2 fig. 1930.—The author found that there are especially sensitive individuals who are injured by the branching hairs of plane tree leaves. This injury exhibits its manifestations partially in the respiratory apparatus and partially in the eyes.—*Author's conclusions (transl. by W. W. Herrmann).*

1625. TRAUM, E., und E. WITEBSKY. Zur Bedeutung von Untergruppen bei der Bluttransfusion. *Chirurg.* 1(20): 930-932. 1929.—The authors describe a blood of group AB, the serum of which acts on some cells of group A. They believe that the occurrence of atypical agglutinins of this sort may explain a number of post transfusion reactions.—*P. Levine.*

1626. VAGHI, LORENZO. Sul fenomeno dell'anacoresi. VII. Riduzione della mortalità nell'afta sperimentale della cavia mediante l'anacoresi. [Studies on anachoresis. VII. Mortality reduction by anachoresis in the guinea pigs experimentally infected by foot-and-mouth disease.] *Biochim. e Terapia Sperim.* 17(7): 295-309. 1930.—In experimental foot-and-mouth disease in guinea pigs anachoresis due to subcutaneous injections of BCG exerts a favorable action on the infective process. Its generalisation is not prevented; but the mortality shows a noticeable decrease (33% fatal cases) in treated as compared with the non-treated animals (73% fatal cases).—*M. Comel.*

1627. VERGE, JEAN. Une nouvelle méthode de tuberculination: l'intradermo-tuberculination. Seconde. *Rev. Gén. Méd. Vét.* 40(469): 1-6. 1931.—The technique of the test is described and results of different methods are compared. The intradermal test is convenient, and it is concluded to be the best method for routine practice.—*J. Verge (transl. by L. C. Havens).*

1628. VIOLA, DOMENICO. I gruppi sanguigni come fattore etno-antropologico. Contributo alla distribuizione regionale dei gruppi sanguigni in Italia. [Blood groups as ethno-anthropological factors. Regional distribution of blood groups in Italy.] *Boll. Soc. Med.-Chir. Pavia* 42(5): 897-921. 1928.—Examination of the blood groups of 1000 Italians from various regions showed great differences in racial index, which begins with 3.6 in northern Italy and decreases to 1.6 in Sicily. Dividing Italy into 3 parts, the index corresponds to 3.6 for northern Italy, 3.6 for central Italy and 3 for southern Italy. There is an evident analogy between blood group index and distribution of races in Italy. While the Eurafrican type is more concentrated in the South and in the islands, northern Italy belongs to the Eurasian type which reaches down partly to central Italy. The blood group being the most complex constitutional factor of the individual, it is to be considered of the greatest importance for study of anthropological differences in man.—*M. Goldstein.*

1629. WAALER, GEORG H. M. To nye blodtyper. Referat og egne undersøkelser. [Two new types of blood.] *Norsk Mag. Laegevidensk* 9(5): 511-518. 1930.—The studies of Thomsen and co-workers on the subgroups of group A are described. The author examined 28 families in which one or both parents belonged to

group A or AB; he believes that his results lend support to Thomsen's view on the heredity of the blood groups. —*P. Levine.*

1630. **WALL, SVEN.** Communication respecting some experiments which support the theory that, under certain circumstances, a subcutaneous injection of killed tubercle bacilli can increase the power of resistance of the animals treated to a subsequent infection with tubercle bacilli. *Acta Pathol. et Microbiol. Scandinavica Suppl.* 5: 24-29. 1930.

1631. **WEIL, A. J.** Zur Kenntnis der Antigenstruktur von Organlipoiden. [The antigen structure of the organ lipoids.] *Zeitschr. Immunitätsforsch.* 58(1/2): 172-180. 1928.

1632. **WEIL, ARTHUR, and DANIEL M. LIPSCHUTZ.** The standardization of the hemolytic index. *Proc. Soc. Exp. Biol. & Med.* 27(9): 1055-1056. 1930.—Preliminary paper.

1633. **WEINERT, HANS.** Blutgruppenuntersuchungen an Menschenaffen. [Investigation of blood groups in anthropoid apes.] *Kosmos [Stuttgart]* 26(11): 375-378. 2 fig. 1929.—The author briefly reviews the work of Landsteiner and Miller who showed that the human blood groups are present also in the cells of chimpanzees, orang-outangs and gibbons, and reports on a few observations of his own.—*P. Levine.*

1634. **WELIKANOW, I. M., und E. N. TOLSTUCHINA.** Zur Erforschung der Immunität gegen die Mikroben des malignen Oedems. *Zentralbl. Bakt. I. Abt. Orig.* 120 (1/2): 78-83. 1931.—The authors cultivated vibrion septique under conditions preserving high virulence and, by addition of formalin, transformed the culture into a harmless vaccine with good antigenic properties. Immunization of guinea pigs or rabbits with this vaccine produced an active immunity against 2-5 lethal doses of a 1-3-day culture. Serum of these animals at 1: 10 dilution neutralized in vitro 1-10 lethal doses of culture. Immunization of 2 horses with the formalinized vaccine produced a marked immunizing reaction. Serum of such horses at 1: 1000 dilution neutralized 1-10 lethal doses of a 1-3-day culture of vibrion septique; this serum possesses marked therapeutic properties.—*Authors' summary (transl.).*

1635. **WELLISCH, SIEGMUND.** Das Blutgruppenproblem vor Gericht. *Zeitschr. Rassenphysiol.* 2(4): 172-178. 1930.—The author, accepting the Bernstein theory, considers the 4 Landsteiner blood groups from a genetic point of view and thus has 6 types, OO, AO, AA, BO, BB, and AB. Should it be possible to distinguish serologically homozygous and heterozygous individuals in groups A and B, the scope of the forensic application of the blood groups would be considerably enhanced.—*P. Levine.*

1636. **WENT, STEPHEN.** Molecular movement, viscosity and agglutination. *Jour. Immunol.* 19(4): 347-356. 1930.—Brownian motion ceases with sufficient increase in viscosity of dispersing medium. Spontaneous flocculation may occur. The absolute temp. of the medium and the dimension of the bacterial surface are influencing factors. High viscosity may hinder specific agglutination by preventing adsorption of immune bodies. —*J. H. Black.*

1637. **WESTENRIJK, N.** Eine Methode zur Phagozytosebestimmung der Tuberkelbazillen mit den Phagozyten des tuberkulösen Menschen in vitro. *Zeitschr. Tuberk.* 57(6): 393-397. 1930.—The method described was tried on laboratory dogs and on 10 human patients. The author finds that the more severe the disease, the smaller the % of active phagocytes, provided strains of equal toxicity are used, for the more toxic bacilli inhibit phagocytosis.

1638. **WHITE, P. BRUCE.** Notes on organisms serologically related to S. enteriditis Gärtner. I. The Dublin and Tokyo types of Salmonella. *Jour. Hyg.* 29(4): 443-445. 1930.—The somatic antigen of the Dublin type is identical with that of *S. enteriditis;* when enteriditis serum is saturated with the Dublin type, or Dublin serum with the enteriditis type, there remains in each case a definite residue of flagellar agglutinins for homologous organisms. The Tokyo type is a typical diphasic form; its somatic antigens, as well as the flagellar antigens of its specific phase, are identical with those of enteriditis. The non-specific phase, while reacting little or not at all to flagellar agglutinins of Gärtner sera, is vigorously clumped by the non-specific phase antisera of paratyphosus B, aertycke Newport, and other diphasic types. —*Hester A. Austin.*

1639. **WIECHMANN, ERNST, und FRITZ KOCH.** Hat "Bayer 205" einen Einfluss auf den anaphylaktischen Shock? *Arch. Exp. Path. u. Pharmakol.* 132(1/2): 118-121. 1928.—Guinea pigs sensitized with horse serum, were reinjected with serum mixed with "Bayer 205" or received "Bayer 205" shortly before or after reinjection of serum. No effect on the resulting anaphylactic shock was observed.—*G. H. Robinson.*

1640. **WILLIAMS, A. WINKELRIED.** Leprosy: treatment by means of a special vaccine. *Arch. Dermatol. & Syphilol.* 22(1): 109-114. 1930.—Reports of 2 cases and brief notes on 3 others in which an autogenous vaccine appeared to produce recovery or improvement.

1641. **WORINGER, PIERRE.** Die Wirkung des Sonnenlichtes auf die immunisatorische Funktion der Haut. *Strahlentherapie* 39(3): 493-499. 1931.—Clinical experiments were made on children in the incubation period of chickenpox and measles, and on infants bilaterally vaccinated, one half of the body being exposed to ultraviolet, the other half covered with black cloth. In those with chickenpox and measles the exanthema appeared earlier and was more florid on the irradiated side (in measles the action was not observed when the skin was darkly pigmented by daily exposure to sun). Irradiation also accelerated and intensified the vaccination reaction. In no case was erythema produced. Light thus accelerated and intensified the specific defense reaction.

1642. **YAMAMOTO, HIROYUKI.** Immunologische Untersuchungen der organspezifischen und zytotoxischen Eigenschaften des Antiserums der Leukozyten des Kaninchens. *Japanese Jour. Exp. Med.* 15(3/4): 324-332. 1930.—Polynuclear leucocyte antiserum was prepared from rabbits by Spät's method; mononuclear leucocyte antiserum, by Besredka's method; and Eosinophile leucocyte antiserum, by the author's method. Antisera to muscle, liver, kidney, spleen and intestine were prepared from rabbits, which were bled from the carotid artery and before death were injected with physiologic saline. The organs were then washed free of blood. The precipitin reaction was used. Results showed that the leucocytes of rabbits possess strict specificity, and every type of leucocyte can be identified by the method. Polynuclear leucotoxin seems to possess a characteristic damaging influence on polynuclear leucocytes.—*P. G. Heineman.*

1643. **YOSHIDA, S.** Immunitätsforschung der Spirochaetenkrankheiten. I. Lokale Immunität bei der Syphilis. II. III. Ueber die lokale passive Immunität der Rattenbisskrankheit beim Kaninchen. IV. Über die Superinfektion bei der Rattenbisskrankheit der Kaninchen. [In Japanese, with German summaries.] *Acta Dermatol.* 16(2): 169-193. 7 fig.; (3): 255-272. 5 fig.; (4): 343-358. 3 fig.; (6): 540-551. 1930.—I. Local immunity which becomes established before general, is of primary importance in the study of experimental syphilis. At various periods after inoculation of the right scrotal skin with syphilis, and appearance of local lesions, rabbits were treated with salvarsan. About 1 month after treatment they were reinoculated with the same amount of syphilitic virus and by the same method, on the right and left scrotum. In rabbits treated a long time after the 1st inoculation, a high-grade immunity against syphilis had been established and no reinfection occurred; also, the inflammatory reaction was much slighter on the right scrotum, where the 1st inoculation had produced a chancre, than on the left side, which had no local lesion. In rabbits treated relatively early after the 1st inoculation, reinfection took place, because the immunity produced was yet weak, but in this case

also the chancre was smaller on the right side than on the left and the incubation time was longer. II. Serum from a rabbit that had had syphilis was used to immunize a healthy rabbit, while a control rabbit was injected with serum from a healthy rabbit. Both were then inoculated with syphilis. The inflammation and size of primary lesion proved smaller and the incubation period longer in the immunized rabbit. III. Serum from a rabbit which had had rat-bite fever was subcutaneously injected on 1 side of the back of a healthy rabbit; serum from a normal rabbit, on the other side. Rat-bite spirochaetes were then introduced into both inoculation sites. The author reports a certain local protective action. IV. Method of inoculation has no great effect on production of immunity, but size of dose is important: a large dose produces early immunity, a small dose late. Immunity against rat-bite fever in rabbits begins to form as early as 1 wk. after inoculation, and becomes high grade in 17-18 days, after which the rabbit cannot be superinfected.—*From author's summaries (transl.).*

1644. **ZINGALE, MICHELE.** Sul meccanismo della malarioterapia nella paralisi progressiva. [Mechanism of malaria therapy in general paralysis.] *Gior. Ital. Derm. e Sifil.* 71(5): 1733-1741. 1930.—The author reviews and rejects the various other theories offered to explain the mechanism of malaria therapy in general paralysis, and offers the theory that malaria furnishes a non-specific stimulus to histogenic immune processes in specifically injured nerve cells.

LOWER ANIMALS

1645. **BERGEON, P. (Préface de E. LECONTE.)** La peste bovine au Tonkin et la vaccination antipestique. État actuel de la question. 35p. *Service Zootech. et Epizooties Tonkin* [Unnumbered series]. 1930.—Bovine plague has caused the loss of thousands of valuable cattle, buffaloes and other animals in Tonkin and Indo-China during past yrs. Efforts to check its spread by segregation, slaughter of infected animals, and passive immunization with blood of animals recovering from the disease have been unsuccessful. The method of protection known as "sero-infection," based on injection of a mixture of immune blood and blood containing the virus, has not been an effective control method, because many animals were killed by the treatment and new foci were established. Since 1928, the veterinary service of Tonkin, working in conjunction with the Pasteur Institute of Nhatrang, has applied the vaccination method of Kakisaki, Nakanischi and Ozumi. Results have been extraordinarily beneficial, vaccinated animals resisting artificial and natural infection. Well controlled tests showed that the method produces an immunity lasting a yr. and that by it the spread of the disease can be checked. The vaccine is made from a pulp of the liver, spleen, tonsils, thymus, thyroid, and lungs of an infected animal, which is killed on the 8th day of the disease, and these organs removed. During the process of hashing and grinding, the organs are kept in water containing 5% phenol. The syrupy liquid obtained after straining the pulp is treated with 8% formalin, held at 25-30°C. for 24 hrs. and then in the ice-box. The virus, as well as bacteria, is killed; the vaccine is, therefore, a virus killed by phenol and formalin. 1 injection is given for immunization. Details on method of preparation, mode of administration and practical suggestions on procedures for control of bovine plague are given.—*S. Bayne-Jones.*

1646. **BIELY, J., C. E. SAWYER, C. M. HAMILTON, W. T. JOHNSON, and E. M. DICKINSON.** Accuracy of three cooperating laboratories in detecting pullorum disease by the agglutination test. *Jour. Amer. Vet. Med. Assoc.* 32(1): 19-36. 1 pl., 1 fig. 1931.—15 negative (−) and 15 positive (+) reacting fowls were procured at random by each laboratory and all survivers were bled 4 times at 4-week intervals, for testing. 3 blood samples were drawn from each at every bleeding and tested at 3 laboratories (British Columbia, Washington, Oregon), each applying its own technique. A total of 1041 blood samples was tested and a diagnosis made for each: 531 +, 8 suspicious and 502 −, or a disagreement of 0.77% of the 1041 diagnoses. The disagreements were from − or + to suspicious and not from − to +, or the reverse, 1 fowl changed from − to +, but none changed from + to −. Postmortems of the 46 + reacting fowls definitely established *S. pullora* infection in 44 (95.65%), and characteristic lesions in the other 2 indicated a probable 100% *S. pullora* infection. Postmortems of the 44 fowls never giving a + reaction were 100% −, as determined bacteriologically and by absence of *S. pullora* lesions. All 3 laboratories were in absolute accord in the 342 test diagnoses of the 15 + and 15 − reacting fowls of laboratory 3, and postmortems established the + fowls as infected and the − fowls as not infected, as determined by gross and bacteriological examinations.—*Authors' summary.*

1647. **EDGINGTON, B. H., and ALVIN BROERMAN.** A comparison of the intradermal and agglutination tests for pullorum disease, based on demonstrating the infection in the hatch from reactors. *Jour. Amer. Vet. Med. Assoc.* 31(2): 219-224. 1931.—Hens in the group reacting to the agglutination test but not to the intradermal test, transmitted *Salmonella pullorum* infection in each of 10 hatches. If the flock had been divided on the basis of the intradermal test only, these hens would have remained in the negative group and would have been a source of disseminating pullorum disease. The hens reacting to the intradermal test but not to the agglutination test failed to transmit infection to chicks during the hatching period.—*From authors' conclusions.*

1648. **GWATKIN, RONALD.** Brucella abortus agglutinins in the blood of sows slaughtered in Toronto. *Cornell Vet.* 21(1): 77-80. 1931.—Of the 267 sera examined with both antigens, 45 showed agglutination at 1 or more dilutions. 3 samples gave complete agglutination at 1:25 dilution in both antigens. 2 were negative in bovine and complete at 1:25 in the porcine antigen. 2 samples gave complete agglutination at 1:25 in the former, and partial in the latter, antigen. 17 samples showed a partial reaction at 1:25 dilution with both antigens. 12 were partial at 1:25 with bovine antigen and negative with porcine. 1 was negative in bovine and partial at 1:25 in porcine antigen. Antigen prepared from the bovine strain appeared in general to be more readily agglutinable than the porcine strain used. In testing cattle with antigen of this density, agglutination at 1:25 must be considered as due to normal agglutinins. At times, such a reaction may indicate an infected animal, but if taken into consideration in routine work many animals are recorded as suspicious, to be later classified as negative. If the same basis is accepted for swine blood, the majority of these reactions may be ruled out, leaving 1 partial and 2 complete reactions at 1:100 and 4 complete reactions at 1:50.—*Author's conclusions.*

1649. **JOHNSON, E. P.** Results of experiments with the use of pigeon-pox virus as cutaneous vaccine against fowl-pox. *Jour. Amer. Vet. Med. Assoc.* 32(1): 81-86. 2 fig. 1931.—Vaccine prepared from scabs of infected pigeons was applied to the breasts of 74 pullets after removing several feathers; 8-10 days later, 72 birds had perfect "takes" as did the remaining 2 when revaccinated. Doyle's method proved unsuccessful. No ill effects on the birds resulted, nor was any decrease in egg-production noted, following vaccination.

1650. **KALOJANOFF, A.** Интрадермалната туберкулинна реакция и нейното приложение като методъ за диагнозирване въ борбата съ туберкулозата по домашнитѣ животни въ България. [The intradermal tuberculin test and its application in the campaign against bovine tuberculosis in Bulgaria.] Годишникъ на Софийския Университетъ, Ветеринарномедицински факултетъ (*Jahresber. Univ. Sofia, Vet. Med. Fakult.*) 6: 283-314. 1930.—Examination of 1,902 cattle and buffaloes gave the following results: Cattle which were + by the subcutaneous test, were 80% +,

12-15% doubtful and 5-8% — by the intradermal test. Those — by the subcutaneous, were 3% +, 3.4% doubtful, and 93-95% — by the intradermal test. Those + by the intradermal, were 75% +, 10-15% doubtful, and 10-15% — by the subcutaneous test. Those — by the intradermal were 3% +, 4-5% doubtful, and 92-93% — by the subcutaneous test. Postmortems showed the subcutaneous test to be about 10% more reliable than the intradermal test.—*A. Kalojanoff (transl. by A. L. Brody).*

1651. MIESSNER, H., und R. BERGE. Schnellagglutinatonsmethoden zur Erkennung der Pulloruminfektion beim Huhn. *Deutsche Tierärztl. Wochenschr.* 38(26): 401-406. 4 fig. 1930.—The fresh blood method recommended requires 1 drop of blood from comb or cockle, placed on a clean slide and mixed with 1 drop of antigen by the blood-removing instrument. Antigen consists of a thick suspension of a strongly agglutinating strain of *Bact. pullorum* in saline. When the agglutination is positive a marked flocculation occurs in a few min. The method can be carried out on the spot, thus making possible immediate separation of infected from uninfected birds. The method should be used by qualified veterinarians only and laboratories should issue the antigens only to them.—*H. Miessner (transl. by W. E. Thrun).*

1652. MITCHELL, CHAS. A., and F. A. HUMPHREYS. Studies in Brucella melitensis (abortus) infection of cattle. *Cornell Vet.* 21(1): 57-67. 1931.—In a positive-reacting herd of 16 animals, 12 were proved to excrete *Br. melitensis (abortus)* from 1 or more quarters of their udders—2 animals had 1, 3 had 2, 5 had 3, and 2 had 4 quarters infected. In each case milk from the infected udder reacted to agglutination or to complement fixation tests,—usually to both. In each case where agglutinins and complement-fixing substances were absent, guinea pig inoculation was negative. In several instances the milk reacted to both tests but organisms were not demonstrated. Guinea pigs having in their blood on the first bleeding only 1 of the 2 antibodies, with 1 exception, presented complement-fixing substances first, agglutinins appearing later.—*From authors' summary.*

1653. MORCOS, Z. Avian pox immunization. *Veterinary Record* 11(17): 463-465. 6 fig. 1931.—1/500 formalized pigeon virus emulsion equivalent in opacity to 1/1000 $BaSO_4$ solution, is protective to both fowls and pigeons. The blood of an infected bird is infective. The bird pox virus is not pathogenic to guinea pigs or white rats on intradermal inoculation; sparrows fed on the virus show no apparent lesions. Doves contract pigeon pox and the dove virus does not protect pigeons, but is infective.—*Author's summary.*

1654. [OBUKHOVSKIĬ, B. I., and A. N. PASHKOVSKIĬ.] ОБУХОВСКИЙ, Б. И., и А. Н. ПАШКОВСКИЙ. Вакцинация телят против туберкулеза по методу Calmett'a-Guérin'a. **[Vaccination of calves with BCG.]** [With French summary.] Вопросы Туберкулеза [*Voprosy Tuberkuleza*] 7(7): 773-778. 1929.—BCG vaccine injected subcutaneously provoked brief hyperthermia, and an infiltration at site of injection, which soon healed; animals remained well. Emulsion from these infiltrates was injected into guinea pigs, but caused no tubercular infection. 7-8½ mo. after vaccination, 13 vaccinated calves and 4 controls were infected intravenously. Controls died; vaccinated calves remained alive, but on autopsy showed tuberculous lesions; emulsion from these lesions killed guinea pigs. Thus, vaccination prevented death, but not tuberculosis. A 2nd group of experiments aimed to determine the appearance of immunity and its duration. Calves were infected 3 months after vaccination; tuberculous processes in vaccinated calves were less grave than in controls. The 3rd group of experiments was intended to establish the immunity of vaccinated calves against infection by contact; apparently contact conditions were insufficient, since neither controls nor vaccinated calves became infected. From the last group, 1 control and 4 vaccinated calves were infected intravenously with a double dose of virus (10 mg.). The control and 1 vaccinated animal died. In all, of 12 controls, 5 died; of 22 vaccinated, 1.—*B. Van Rosen.*

1655. SUNDBERG, RAGNAR. Virulensmätningar av 4 olika abortbacill-stammar med användning av marsvinsympning och upprepade bestämningar av de ympade marsvinens agglutininhalt. [Measurements of the virulence of 4 strains of abortus bacilli used in inoculating guinea pigs, and repeated determinations of the agglutinin percentages in the latter.] [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(4): 97-102. 1931.—When injecting equal quantities of infective material of the same antigen strength into guinea pigs, it is possible, guided by regular determinations of the agglutination % in the treated animals, to obtain an idea of the comparative virulence of the strains, the rule found being that the strain regularly giving highest agglutination values should be considered most virulent.—*Author's summary.*

ANIMAL IMMUNOLOGY

PARASITOLOGICAL

W. H. TALIAFERRO, *Editor*

(See also in this issue Entries 1365, 1498, 1516, 1541, 1569, 1676, 1679, 1723, 1735)

1656. GAC, P. le. La réaction de Targowla dans la trypanosomiase humaine. *Bull. Soc. Path. Exotique* 23 (5): 530-532. 1930.—The etiologic and clinical analogies between general paralysis and the 2nd period of sleeping-sickness led the author to try Targowla's reaction in 9 cases of human trypanosomiasis, 4 of the early 2nd period, 3 of the late 2nd period, and 2 of the 3rd. All cases of the 3rd and of the late 2nd periods and 2 cases of the early 2nd gave strongly positive reactions; 1 case was negative and 1 weakly positive. He regards the results as prognostic, a negative result being favorable, while a strongly positive reaction remaining unchanged after treatment indicates a fatal termination.

1657. [IAKIMOV, V. L.] ЯКИМОВ, В. Л. К вопросу об иммунитете при пироплазмозах крупного рогатого скота. **[Immunity in piroplasmosis of large horned cattle.]** Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(4): 289-299. 1929.—The author conducted numerous immunization tests with cows, against *Babesiella bovis*. Past infection does not prevent reinfection, nor could any hereditary immunity be observed in calves born of mothers once affected. There is a possibility of natural immunity, for of 100 cows brought from regions free of the disease and placed in surroundings where it was endemic, 25 remained free from infection. Immunization with trypan blue plus virulent blood, as well as with ichthargan and with arrhenal, creates an immunity lasting not over 1 yr. Immunization with trypan blue alone creates no immunity, but may lessen the intensity of infection. On the whole, the author thinks that no permanent and definite immunity against piroplasmosis can be achieved.—*B. Van Rosen.*

1658. LOTZE, HARALD. Die künstliche Proteosomainfektion der Vögel. Ein Beitrag zur Frage der Immunität und Immunisierung bei Vogelmalaria. II. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 107-113. 1931.—From experiments on birds the author concludes that passive immunization methods confer no immunity in malaria, but that active immunization provides a certain degree of immunity. Especially favorable results were obtained by immunization with plasmodia of reduced virulence, which, though they produced only a local infection, had

as powerful an immunizing action as normal parasites. These studies indicate that *Proteosoma praecox* is able to produce toxins and that infection with avian malaria may take place through food.—*Author's summary (transl.).*

1659. RADOSAVLJEVIC, A. Versuche zum Nachweis von Antikörpern bei Malaria. *Arch. Schiffs- u. Tropen-Hyg.* 34(12): 629-643. 1930.—The antigen used for complement fixation was an alcoholic extract of dried blood containing the 3 types of human parasites; this was controlled with a similar extract of uninfected blood. In complement fixation the author made 354 tests on 102 (60 samples of serum were anticomplementary) individuals. Working with patients having injection malaria, he concludes that specific complement-fixing antibodies occur in malaria, that they cannot be demonstrated before the 5th rigor, that they are still present 10-30 days after spontaneous cessation of fever, and that successful treatment with quinine, plasmochin and stovarsal is followed by disappearance of antibodies, although no more rapidly than after spontaneous cure. As a result of serum treatment of 26 infected persons, with serum taken from cases having undergone spontaneous cure, he believes that such serum is antitoxic and contains an antiparoxysmal property. Experiments are cited indicating that under certain conditions the serum from spontaneously cured cases can prevent infection when mixed with virulent blood; from this it is concluded that antiparasitic properties arise in the serum during malaria.—*W. H. Taliaferro.*

1660. REGENDANZ, P. Ueber das Fehlen trypanozider Stoffe im Liquor cerebrospinalis des Menschen. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 89-93. 1931.—Simultaneous injection into 28 mice of trypanosome containing blood and cerebrospinal fluid gave no evidence of the presence in the latter of trypanocidal antibodies. While human serum in doses of 0.1-0.2 cc. has been shown to have a distinct trypanocidal effect on mice, 8 mice infected with *Trypanosoma brucei* and *T. rhodesiense* were not affected by 20-100 times as much cerebrospinal fluid. The author explains the absence of trypanocidal antibodies in the cerebrospinal fluid by the well-known fact that the blood-cerebrospinal fluid barrier is permeable to blood but not to the fluid.

1661. SICÉ, A. Recherches sur le pouvoir floculant du sérum des trypanosomés. (Note complémentaire.) [The flocculating power of serum from trypanosomiasis patients.] *Bull. Soc. Path. Exotique* 23(5): 459-460. 1930.

1662. ZDRODOWSKI, P., et B. WOSKRESSENSKI. Essai du sérodiagnostic et de l'analyse sérologique de la leishmaniose viscérale humaine et canine au moyen de la réaction de la fixation de l'alexine. *Bull. Soc. Path. Exotique* 23(10): 1028-1043. 1930.—The authors regularly obtained complement fixation in presence of corresponding antigen in sera from human and canine leishmaniases, with a special method described. Human kala-azar sera originating in Azerbaidjan regularly gave a strongly positive reaction with *Leishmania donovani* and a negative or faintly positive reaction with *L. tropica*. Serum from Azerbaidjan dogs affected with visceral leishmaniasis, however, gave a very positive reaction with *L. tropica* and either a distinctly positive or a completely negative reaction with *L. donovani*. These cross reactions thus indicate that here, at least, *L. donovani* and *L. canis* are distinct species or varieties. The authors remark, however, that the pathologic and the serologic properties of parasites are not always parallel.

1663. ZDRODOWSKI, P. Sur la sérologie comparée du groupe de Leishmanies d'origine humaine et canine. *Bull. Soc. Path. Exotique* 24(1): 37-41. 1931.—The authors had previously shown that human kala-azar antisera differentiate clearly between *Leishmania donovani* and *L. tropica*. Hence it appeared that the receptor apparatus of *L. donovani* and *L. tropica* are clearly differentiated and "monovalent." Dogs infected with *Leishmania* gave 2 different types of reaction: 1 group gave complement fixation with *L. tropica* and was therefore regarded as infected with a species at least related. A 2nd group gave a polyvalent serum, reacting positively with both *L. donovani* and *L. tropica;* this infection was ascribed to *L. canis*, strain CI. No dogs, however, have as yet given a specific reaction with *L. donovani* alone. The authors report obtaining from a dog with visceral leishmaniasis, a serum which fixed complement with *L. donovani* and *L. canis* CI, but not with *L. tropica*—a reaction identical with that of kala-azar sera. They conclude that *L. donovani* and *L. tropica* represent 2 distinct or standard types of human leishmanias, differentiated by their serologic receptor apparatus; but that the name *L. canis* embraces 3 serologic types, 1 entirely identical with that of *L. donovani* (type D), 1 analogous with that of *L. tropica* (type T), and a polyvalent type (DT) giving positive reactions with both *L. donovani* and *L. tropica*. They incline to the belief that the canine parasites, type D and type T, are to be identified with their respective prototypes, *L. donovani* and *L. tropica;* but that type DT (which they have carried through successive transfer cultures for 1 yr. and believe to be an unmixed strain) is entitled to be regarded as *L. canis* sui generis.

1664. ZIMMERMANN, GERHART. Ueber die trypanozide Wirkung des menschlichen Serums im Tierversuch und in vitro. *Zentralbl. Bakt. I. Abt. Orig.* 120 (7/8): 422-440. 1931.—The direct trypanocidal action of human serum, demonstrated in vitro by Yorke, Adams and Murgatroyd, was confirmed in 5 experiments. The hypothesis of Rosenthal and his collaborators, based on experiments with mice previously given several doses of human serum, of the indirect action of human serum on trypanosomes, was refuted by new animal experiments in which trypanosome infection was inhibited immediately after administration of human serum, but later became active, showing that the trypanocidal action was exerted by human serum and not by antibodies formed in response to the stimulus of the serum. The trypanocidal action of serum from cases of jaundice and hepatic disease was found not to be entirely destroyed, but merely reduced. This is evidence against Yorke's theory of the possibility of human infection with trypanosomes ordinarily non-pathogenic for man, through destruction of the trypanocidal power of the blood by these diseases.

PARASITOLOGY (ANIMAL)

R. W. HEGNER, *Editor*

W. W. CORT and F. M. ROOT, *Associate Editors*

(See also in this issue Entries 369, 379, 504, 1149, 1182, 1224, 1313, 1314, 1319, 1321, 1327, 1340, 1365, 1498, 1541, 1657, 1658, 1661, 1662, 1663, 1797, 1881, 1884, 1913, 2347, 2348, 2349, 2350, 2352, 2355, 2367, 2369, 2371, 2372, 2373, 2375, 2377, 2378, 2379, 2380, 2383, 2388, 2389, 2500, 2640, 2974)

1665. ACKERT, JAMES E. Recent developments in the importance and control of the intestinal roundworm Ascaridia lineata (Schneider) of chickens. *World's Poultry Congress* 4(Sect. C): 494-500; Résumé sect., 62. 2 pl., 1 fig. 1930.

1666. ALLEN, ENA. A. Culture methods, encystment and excystment of Councilmania dissimilis Kofoid, in culture. *Arch. Internal Med.* 41(4): 574-578. 1 fig. 1928.—Locke's-egg-blood and other media were successful. In L.-E.-albumen, with 48-hr. transplants, *C. dissimilis* survived indefinitely, while *Endamoeba dysenteriae* soon died out. Under certain conditions *C. dissimilis* encysted in L. E. B. culture while *E. dysenteriae* did not. *C. dissimilis* cysts from cultures and stools excysted in

culture. Cultural forms show the structure described for the species.—*C. Lucas.*

1667. **BEVAN, LL. E. W., and D. A. LAWRENCE. A note on the internal parasites of sheep in S. Rhodesia.** *Vet. Jour.* 86(6): 199-200. 1930.—List with notes.

1668. **BREINDL, V. Über einen interessanten Flagellatenbefund im Blute der Malariakranken.** *Centralbl. Bakt. 1 Abt. Orig.* 111(6/8): 406-408. 4 fig. 1929.—With carefully checked Giemsa stain and distilled water, a small flagellate was found in the blood of troops returning from the tropics and suffering from malaria. The organism resembles *Bodo* morphologically, and measures 5.9μ × 3.4μ. There are 2 flagella, the anterior 10-12μ, the posterior 22-36μ in length.—*D. Koch.*

1669. **CALDWELL, FRED C., ELFREDA L. CALDWELL, and GORDON E. DAVIS. Some aspects of the epidemiology of infestation with Trichuris and Ascaris as revealed in a study at the hospitals for the insane and the home for mentally defective children in the State of Alabama.** *Amer. Jour. Hyg.* 11(3): 619-651. 5 fig. 1930.—A survey in 1927 demonstrated that in these institutions, as compared with the state as a whole, infestation with *Trichuris* was startlingly high, infestation with *Ascaris* far exceeded the normal, and infestation with hookworm exceeded expectations from statistical analysis. Correlation of infestations with varying lengths of residence indicated that the vast majority of patients became infested with *Trichuris* and *Ascaris* after admission to the hospital, and that infestations with hookworm increased unless modified by treatment. Infestations increased also with succeeding periods of residence. Infestations with *Trichuris* and *Ascaris* were essentially of "dooryard" origin from pollution of the soil. Spread is dependent on the character and habits of the patient and his opportunity to come in contact with the polluted soil, which in turn is dependent on his activity and the size of the yard.—*From authors' summary.*

1670. **CELLI, ANGELO. Die Malaria in ihrer Bedeutung für die Geschichte Roms und der römischen Campagna. Eine Kulturhistorische Studie.** viii+118p., 1 map. Georg Thieme: Leipzig, 1929.—This is an abridged German edition of a much more extensive study in Italian published posthumously in 1925 (*Mem. R. Accad. Lincei Cl. Sci. Fis., Ser. 6* 1(3): 73-467). It aims to show that there has been throughout the past 25 centuries in the Roman Campagna a rhythmic periodicity in the increase and decline of malaria, entirely due to natural causes. Except for the 18th and 19th centuries, the author's arguments are entirely taken from historical sources. Periods when malaria was on the decrease coincided with agricultural prosperity and a dense population in the Campagna. The history of the Campagna was independent from that of the city of Rome, where malaria was always very mild. There appear to have been 4 main waves of severe malaria, each lasting 2-4 centuries and separated by shorter or longer periods when the disease was mild, although it never died out completely. During the earliest, or pre-Roman period, malaria was apparently mild. In order to collect drinking water, the Etrusci had carried out extensive draining in Latium, which may have contributed to sanitate the country. It is impossible to decide when and how malaria was first introduced into the country. After the founding of Rome and during the first centuries of the Roman Republic, malaria became very severe and the population of the Campagna dwindled away. The worship of a special fever goddess, Dea febris, can be traced to the earliest times and persisted in Rome until 300 A. D. With the rise of Imperial Rome malaria was on the decline and the Campagna became once more densely populated. In late Imperial times, however (5th to 7th centuries A. D.), it flared up again, but in early Mediaeval times it decreased once more, especially during the 8th century. A particularly severe and protracted malarial period covered the later Middle Ages (10th-13th centuries), when the unhealthful condition of the Campagna became notorious and many prominent people died of fever. Malaria became again attenuated during the Renaissance (14th-16th centuries), but during the Modern Period it blazed out anew. The word "malaria" first entered the records in 1793. At present the disease is declining in the Campagna; but whether owing to a natural dying down or partly or wholly to hygienic measures by man, the author hesitates to affirm.—*J. Bequaert.*

1671. **COUTELEN, F. Contribution aux essais de culture in vitro d'embryons de filaires.** *Bull. Soc. Path. Exotique* 21(4): 316-322. 1928.—The embryos, or microfilariae, of *Icosiella neglecta* (Diesing 1851) found in the blood stream of *Rana esculenta* and *R. temporaria* survived in the hypotonic medium of Ponselle for 12-15 days at 18° C. An increase in length of the larva was not accompanied by any observable alteration in internal structure.—*J. H. Sandground.*

1672. **CRAIG, J. F. Blackhead or infectious enterohepatitis in turkeys.** *World's Poultry Congress* 4(Sect. C): 468-471: résumé sect. 58. 1930.—This is the most common and serious contagious disease of turkeys in Great Britain and Ireland, and has a wide distribution. The author gives a general account of this protozoan disease (*Histomonas meleagris*) and its prevention.

1673. **DORMANNS, ERNST A. Weiterer Beitrag zum Acarinenparasitismus der Affenlunge. [Acariasis of the simian lung.]** *Virchow's Arch. Path. Anat. u. Physiol.* 278(2): 477-480. 4 fig. 1930.—Acariasis in the lungs of a ♀ Macacus (sp. not indicated) led to extensive cavern-formation.

1674. **ESSEX, HIRAM E., and JESSE L. BOLLMAN. Parasitic cirrhosis of the liver in a cat infected with Opisthorchis pseudofelineus and Metorchis complexus.** *Amer. Jour. Trop. Med.* 10(1): 65-70. 4 fig. 1930.—A Persian house cat suffering from an obscure disease was emaciated and markedly jaundiced. Its abdomen was much distended due to large quantities of ascitic fluid in the peritoneal cavity. Paracentesis was performed twice; the 1st time 1,500 cc. of ascitic fluid were removed, and a week later 750 cc. At necropsy the entire liver was firm, hard, greatly enlarged, and weighed 200 gm. The superficial biliary tracts contained sexually mature specimens of *M. complexus* and *O. pseudofelineus.* The liver revealed extensive necrosis of the hepatic cells and extensive hyperplasia of the entire biliary duct system, which suggests a specific cause associated with parasitic infection, probably the intestinal absorption of hepatotoxic agents. Probably uncooked fish was the source of the infestation.—*H. E. Essex.*

1675. **ESQUIER, G. Étude d'un réservoir de virus paludéen dans la région du Kroubs (Départemente de Constantine).** *Arch. Inst. Pasteur Algérie* 7(2): 181-183. 1 map. 1929.—The region studied presents a high splenic index and a high degree of splenic hypertrophy. The valuation of the splenometric index shows still better the intensity of malaria; seldom have such large numbers been found in Algeria. It is concluded that the region considered is very heavily infected with malaria.—*C. Dawley.*

1676. **FAIRLEY, N. HAMILTON, and F. JASUDASAN. Studies in Schistosoma spindale. Part I. The infective rate, seasonal incidence and source of supply of infected molluscs.** *Indian Med. Res. Mem.* 17: pp. 1-10. 2 pl. 1930.—Owing to the group nature of the biological tests for bilharzia, any species of mollusc harbouring bilharzia cercariae and possessing a mammalian definitive host may be used for antigen manufacture. In selecting material for this purpose the livers must be fresh and heavily infected with mature cercariae. Snails (*Planorbis exustus*) were examined (236,354) from 1922 to 1925; 4,738 harbored cercariae of *S. spindale,* the infective rate averaging 20 per 1,000. A definite seasonal incidence was demonstrated; the lowest infective rates were observed during the monsoon months from June to Sept., the highest in the cool period from Nov. to March. Egyptian figures were graphed for comparison, and a similar seasonal variation was demonstrated. The infective rate was higher than in India and averaged 180 per 1,000. The optimum time for collecting infected

molluscs for antigen manufacture in both Western India and Egypt is during the cool weather. In making snail surveys the seasonal factor should receive consideration. —*Authors' summary.*

1677. **FAIRLEY, N. HAMILTON, and F. JASUDASAN. Studies in Schistosoma spindale. Part II. The definitive hosts of S. spindale with special reference to alimentary infection in ruminants.** *Indian Med. Res. Mem.* 17: pp. 11-15. 1930.—Many animals (251) were examined for schistosomiasis. Both goats and cattle harboured *S. spindale,* and the previous suggestion that the water buffalo would be found an important definitive host of this parasite was confirmed. Owing to the peculiar anatomical and physiological differences in the stomach of these ruminants, alimentary infection is regarded as more important than in other mammals. The alkaline or neutral reaction of the contents of the rumen, reticulum and omasum must predispose to gastric invasion not only by prolonging the life of the cercariae but also by increasing the area of mucosa available for invasion. Cercarial invasion via the upper alimentary tract appears to be the usual mode of infestation in goats. Goats were successfully infected with cercariae in drinking water pipetted into the buccal cavity and by direct introduction into the rumen by means of a stomach tube. The effect of achlorhydria and subacidity of the gastric contents in predisposing to alimentary infection in man is briefly discussed.—*Authors' summary.*

1678. **FANTHAM, H. B. Some parasitic protozoa found in South Africa.** British Assoc. Advanc. Sci. Rept. 97th meeting [South Africa] 335-336. 1929(1930).—Abstract.

1679. **FELDMANN, I. Bemerkungen zu der VII. Mitteilung von R. Doerr und G. W. Schmidt: "Studien über den Mechanismus der Trichinelleninfektion."** *Zentralbl. Bakt. Abt. I. Orig.* 117(7/8): 498-499. 1930.—The rare occurrence of Trichinella infection in ducks, doves and chickens (which are not immune as shown by experimental infection) may be due to the greater acidity of the intestinal content of birds, which promotes more rapid elimination of the parasites from the intestine, and thus reduces the chances of penetration of the bird intestinal wall as compared with that of mammals.

1680. **FINZI, BRUNO. Parassitismo di Mermis in un' operaia di Camponotus herculeanus L. [Mermis parasitizing a worker of C. herculeanus.]** *Boll. Soc. Ent. Ital.* 62(7): 133-135. 1 fig. 1930.—A *C. herculeanus,** parasitized by *Mermis* in Italy, was abnormal in having a reduced thorax and an enlarged abdomen.

1681. **FRANCAVIGLIA, M. CONDORELLI. La diffusione dell'ascaridiosi in talune località della provincia di Catanzaro. [Distribution of ascariasis in certain localities in the province of Catanzaro, Italy.]** *Atti Accad. Gioenia Sci. Nat. Catania* 15(Mem. 1): 1-5. 1927.

1682. **FRANCHINI, GIUSEPPE. Su un caso di coccidiosi umana di "Isospora hominis" Rivolta. [Coccidiosis in man, due to I. hominis.]** *Arch. Ital. Sci. Med. Coloniale* 8(6): 305-311. 6 fig. 1927.—One of the few cases of this coccidium reported from Italy. Infection from a cat is suspected.—*P. Popenoe.*

1683. **GALLI-VALERIO, B. La méningo-encéphalomyélite des lapins à coccidiase et le problème de l'étiologie des encéphalites.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 65(3/4): 325-330. 1930.—In certain instances rabbits infected with coccidia developed an encephalitis, proved by histological examination, which was not transmissible. The author believes this to be due to a toxin, and thinks that in numerous other infections toxins are produced which result in typical encephalitis. —*N. W. Larkum.*

1684. **GARIN, CH., S. DOUBROW, et H. MOUNIER. Quelques particularités dans l'évolution de l'ankylostomose.** *Compt. Rend. Soc. Biol.* 98(1): 44-45. 1928.—Brief observations on egg counting technique; correlation of symptoms with degree of infection; and various blood modifications during hookworm disease.

1685. **HALL, MAURICE C. The wide field of veterinary parasitology.** *Jour. Parasitol.* 16(4): 175-184. 1930.—As a field of medical zoology, parasitology may call for a knowledge of taxonomy, morphology, life histories, pathology, pharmacology, therapeutics, prophylaxis of parasitisms, agricultural procedures, physics, chemistry, physiology, entomology and related zoological sciences, French, German and Latin, a sound knowledge of English grammar, familiarity with bibliographic methods, sound training in laboratory technic, a knowledge of professional ethics, and a capacity for hard and dirty work. Graduate students show a lack of information in regard to research methods, modes of experimental attack, need for adequate checks, and as to what may be safely concluded from given data. Graduate schools should direct work, rather than assign problems and allow the student to sink or swim alone. The Code of Ethics of the Helminthological Society of Washington is published as an appendix to the paper.—*M. C. Hall.*

1686. **HEGNER, ROBERT. Endolimax amoebae in the vagina of Rhesus monkeys.** *Jour. Parasitol.* 16(2): 91-92. 1 fig. 1929.—The amoebae were indistinguishable morphologically from *E. nana.* In only 1 out of 24 examinations was the presence correlated with demonstration of *Endolimax* in feces.

1687. **HERRMANN, OTTO, und A. MALININA. Über die Dauer der Inkubation bei Malaria.** *Arch. Schiffs- u. Trop.-Hyg.* 32(10): 506-510. 1928.—A long incubation period as causing the first spring cases is considered unproved. A part of them may be relapses after prophylactic quinine, most of them relapses the first attacks of which remained unobserved.—*A. de Buck.*

1688. **HOEPPLI, R., und P. REGENDANZ. Beiträge zur Pathogenese und Histopathologie der Trypanosomeninfektionen der Tiere. II. Histologischer Teil. Gewebsveränderungen bei Trypanosomeninfektionen der Tiere, by R. HOEPPLI.** *Arch. Schiffs- u. Tropen-Hyg.* 34(2): 67-99. 11 fig. 1930.—The nature of pathologic changes in 37 experimental animals (apes, dogs, cats, guinea pigs, rabbits and hamsters) did not depend on the species of trypanosome but on the duration of infection and to some degree on the species of experimental animal; e.g., in apes inflammatory changes of the myocardium were observed rather frequently, but not in cats and dogs. The most notable histologic changes were myocarditis and pericarditis (with infiltration of numerous trypanosomes into the foci of inflammation) and degeneration of the lens, iridocyclitis and conjunctivitis (with infiltration of trypanosomes into the subconjunctival tissue, the ciliary body, and the iris). In the spleen and lymph-nodes the lymphocytes were gradually replaced by plasma cells, with infiltration of numerous macrophages. In the brain rapidly fatal infections produced degeneration of the ganglion cells. Liver and lungs showed numerous macrophages; only 4 times were rather advanced parenchymatous degenerations found and small necrotic liver spots. The epithelium of the urinary tubules was frequently injured, but the glomeruli were usually unchanged. The cells predominating in the inflammatory changes of the organs were small round ones and macrophages, accompanied by a few plasma cells and polymorphonuclear leukocytes. In addition to the heart muscle and the eye, cellular infiltration was found in the periportal tissue of the liver, in the meninges, in the choroid plexus of the lateral ventricle, in the interstitial tissues of the testicles and kidneys, in the striped musculature, and in the corium. Trypanosomes were found in the blood-vessels in sectional preparations of almost all organs.—*Authors' summary (transl.).*

1689. **HUNTER, GEORGE W. III, and WANDA S. HUNTER. Further experimental studies on the bass tapeworm Proteocephalus ambloplitis (Leidy).** *Rept. Biol. Surv. Erie-Niagara System in Suppl. 18th Ann. Rept. New York State Conserv. Dept.* 1928: 198-207. 2 pl. 1929.—Experimental evidence adds *Cyclops vulgaris* and *Eucyclops agilis* (Copepoda) to the list of 1st intermediate hosts; *Ambloplitis rupestris, Perca flavescens* and *Fundulus diaphanus* as 2nd intermediate hosts;

and *Micropterus dolomieu* as a definitive host. The paper also includes a record of examinations made on *Stizostedion vitreum, S. canadense griseum, Esox lucius* and *Lota maculosa* for the plerocercoid of *Diphyllobothrium latum*.—*G. W. Hunter, III.*

1690. **HUNTER, GEORGE W. III., and WANDA SANBORN HUNTER. Studies on the parasites of fishes of the Lake Champlain Watershed.** New York State Conserv. Dept. Suppl. to 19th Ann. Rept. p. 241-260. 5 fig. 1929(1930).—Experiments on the 1st intermediate host of the bass tapeworm, *Proteocephalus ambloplitis* (Leidy) showed that periods of freezing or desiccation destroy the copepods. Unsuccessful experiments to infect Cladocera with eggs of *P. ambloplitis* indicated the desirability of utilizing Cladocera as food for young bass in controlling the tapeworm. Copepods from bass nests during their breeding season showed 25% higher infection with *P. ambloplitis* procercoids than at other times. Infection data are cited for adult bass from the Lake Champlain watershed. Ecological data are presented on the infection of the Adirondack frostfish (*Prosopium quadrilaterale*), smelt (*Osmerus mordax*), northern pike (*Esox lucius*), yellow perch (*Perca flavescens*), scaled ling (*Amia calva*) and bill fish (*Lepisosteus osseus*). Metacercariae (*Neascus bulboglossa*) were found in 2 new hosts, young northern pike (*E. lucius*) and horned dace (*Semotilus atromaculatus*).—*G. W. Hunter, III.*

1691. **ITAGAKI, SHIRO. The nature of the parasitic nodules in the caecal wall of fowls and the development of Heterakis vesicularis.** *World's Poultry Congress* 4 (Sect. C): 481-483; résumé sect. 60. 1930.—Of 620 fowls examined, 80 had helminthic nodules in the caecal wall, each containing one or more heterakid worms in various stages of development. No difference in the larval worms was noticed between those in the nodules of the caecum and of the small intestine. Both larval worms may be identical. Probably some of the larvae of *Ascaridia perspicillum* become embedded in the muscular wall of the small intestine, where they produce nodules, while others enter the caecum and produce similar nodules in the submucosa. Experiments to study *H. vesicularis* development in these regions are reported.

1692. **JAHNEL, F., und A. PENTSCHEW. Ueber "Infektionen" von Vögeln mit Rekurrensspirochäten und Säugetiertrypanosomen.** *Centralbl. Bakt. Abt. I. Orig.* 115 (3/4): 167-168. 1929.—Relapsing fever spirochaetes from mice were inoculated into the pectoral muscle of canaries. They appeared in the canary blood about 1 hr. later and were present for about a day. Trypanosome infections from mammal to bird disappeared even more rapidly.

1693. **KLEIN, B., R. LOPATIZKI, und P. SOLITERMAN. Beiträge über den Erreger der experimentellen perniziösen Anämie.** *Arch. Schiffs- u. Tropen-Hyg.* 34 (5): 274-282. 1930.—The rat Bartonella was successfully implanted in guinea pigs and rabbits by peritoneal inoculation of infected liver. Simultaneous subcutaneous injection of a typhoid culture apparently broke down the host resistance so that the Bartonellae could be found in the erythrocytes after 2-4 days. Only the guinea pig experiments are here described. The course of infection was symptomless. The strain of Bartonellae survived 23 pasages from guinea pig to guinea pig (3 mo.). In 8 out of 11 splenectomized guinea pigs not inoculated with rat Bartonellae infection with identical Bartonellae was demonstrated, in 1 case with a transitory blood phenomenon of pernicious type. The Bartonellae originating in guinea pigs attested their identity with murine Bartonellae by infecting rats and mice, producing in the latter outspoken or fatal anemia. In 2 cases of human anemia a Bartonella-like picture was found.

1694. **KOPPERI, A. J. Untersuchungen über die ciliaten Infusorien im Coecum des Pferdes.** *Ann. Soc. Zool.-Bot. Fennicae Vanamo* 8: 34-47. 6 fig. 1929.—In Finland, masses of ciliates were found in every cecum of 25 horses. Of the 15 well established non-pathogenic spp. previously known, the following 12 were found: *Bütschlia postciliata, Didesmis quadrata, D. ovalis, Blepharoprosthium pireum, Blepharosphaera intestinalis, Paraisotricha colpoidea, P. truncata, P. ovalis, Blepharocorys uncinata, B. jubata, B. equi,* and *Cycloposthium bipalmatum.* The 3 absent were: *Blepharocodon appendiculatus, Paraisotricha oblonga* and *Blepharocorys valvata. B. equi,* described hitherto only from California, proved the commonest of its genus in Finland. Encystment was observed in *P. colpoidea* and *C. bipalmatum.*—*A. J. Kopperi (transl. by M. C. Marsh).*

1695. **KORKE, V. T. Observations on the correlation between the incidence of filarial infection in the human host and in the insect carrier in relation to terrain. Part V.** *Indian Jour. Med. Res.* 18(1): 319-331. 1 map. 1930.—An investigation into filariasis in the provinces of Bihar and Orissa. *Culex fatigans* is the domestic mosquito in these areas. A list of the other spp. of mosquitoes found is given. A map shows the division of the provinces into belts and type areas.—*S. Ribeiro.*

1696. **KORKE, V. T. Observations on the characters of filarial endemic areas in Bihar and Orissa. Part VI.** *Indian Jour. Med. Res.* 18(1): 333-336. 1930.—The author deals with prevention and points out the physical and biological factors responsible in an intense endemic area of filariasis, such as nature of the land and the presence of the insect carrier (in this case *Culex fatigans*).—*S. Ribeiro.*

1697. **LAIGRET, J. Onchocercose humaine et éléphantiasis au Soudan français.** *Bull. Soc. Path. Exotique* 22(6): 499-506. 4 pl. 1929.—Infection with *Onchocerca volvulus* in certain regions of the Sudan is as high as in Equatorial Africa. The area covered extends as far north as the pre-desert zone of the Sahel. Here onchocerciasis occurs with cutaneous manifestations of xerodermy and a very pronounced pseudo-ichthyosis due to constant passage of larvae through the skin. To this dermatosis there may be added, as to the healthy skin, ordinary lesions of a dermo-epidermitis, which has led to the appellation, improper in the author's opinion, filarial itch or prurigo. In the absence of *Filaria bancrofti,* there appears to be in the Sudan, as in the Congo and other regions of Africa, a close relationship between *O. volvulus* and tropical elephantiasis. Early slightly developed elephantiasis is always accompanied by the microfilariae of *O. volvulus,* demonstrated by the finding of cysts, by puncture of ganglia and by skin sections of elephantiasic tissues. This frequence of *O. volvulus,* the tenacious character of certain manifestations of this parasitism, its reverberation on general economy which is still poorly known, present from the viewpoint of the military questions that deserve study.—*J. H. Sandground.*

1698. **LEASURE, E. E. Anaplasmosis in Kansas.** *Cornell Vet.* 20(3): 304-306. 1930.

1699. **LEHMANN, JOACHIM. Über Hirncysticercen.** *Frankfurter Zeitschr. Path.* 38(3): 439-449. 7 fig. 1929.—Necropsy findings in a case of multilocular *Cysticercus cellulosae* are discussed. The patient had suffered from epileptiform attacks. Numerous cysts, partly sterile, partly viable, were found in the cerebral cortex, in the subcortical layers, and in the 4th ventricle.

1700. **LÓPEZ-NEYRA, CARLOS RODRIGUEZ. Primer caso de parasitismo por el Stephanurus dentatus en Europa. [First case of parasitism in Europe with S. dentatus.]** *Mem. R. Soc. Españ. Hist. Nat.* 15(1): 241-245. 1929.—This constitutes the 1st authentic report of this nematode parasite in Europe. The worms, 6 ♂ and 4 ♀, were obtained from a renal cyst of a pig raised in Granada. Discrepancies in existing descriptions of the parasite have led to an enumeration and comparison of its important morphological characters.—*M. A. Tubangui.*

1701. **[MAGNITSKIĬ, V. I.] МАГНИТСКИЙ, В. И. Очерк проведения противомалярийных мероприятий в Западной Бухаре в 1922-1925 гг. [A sketch of the anti-malaria campaigns in Western Bokhara (Central Asia) in 1922-1925.]** Доклады Академии Наук СССР. (*Compt. Rend. Acad. Sci. URSS. A*) 1927(11): 169-174. 1927.

1702. **MAPLESTONE, P. A. A simple method of**

preserving faeces containing hookworm eggs. *Indian Jour. Med. Res.* 16(3): 675-682. 1 pl. 1929.—The method described is for transportation of human feces to a central laboratory by post. Specimens are secured in the usual small tins. Then 4 cc. of feces are measured into small cylindrical containers of fairly stiff writing paper; these cylinders, fashioned over an appropriate syringe barrel or similarly shaped piece of wood, are about 15 mm. diam. × 21 mm. deep. After filling they are dropped into bottles of 27 cc. capacity, with inside neck diam. of 18 mm.; 20 cc. of 2% antiformin is added, and the corks tied on. Bottles are shipped in boxes. At the laboratory, the paper, now free, is removed from a bottle, the contents well shaken, and 6 cc. of the mixture (equivalent of 1 cc. of feces with 5 cc. of antiformin) transferred to a Lane tube for centrifuging. If positive for ova, the balance in the bottle (equivalent of 3 cc. of feces with 15 cc. of antiformin) is transferred to a dilution tube, N/10 NaOH added to make 45 cc. of mixture, and submitted to routine dilution count. Detailed experiments indicate that there is little if any loss of hookworm ova by either method of examination, even at incubator temp. within 18 days. The author emphasizes transference of the original sample to the antiformin bottle on the day of collection.—*N. R. Stoll.*

1703. **MARÍN, RAFAEL ANGEL. Studies on schistosomiasis (S. mansoni) in Porto Rico.** *Porto Rico Rev. Publ. Health and Trop. Med.* 3(10): 397-402. 4 fig. 1928.—Cercariae of 4 kinds have been so far obtained from *Planorbis guadeloupensis,* the intermediate host of *Schistosoma mansoni* in Porto Rico. P. R. Cercaria I is that of *S. mansoni.* P. R. Cercaria II is a fork-tailed one with a pair of eye-spots and a tail at a distinct angle with the body. P. R. Cercaria III is an echinostome without a collar of spines; small fish are probably its 2nd intermediate host. P. R. Cercaria IV is an echinostome with a tail broader than the body, a condition apparently unknown among echinostome cercariae. Evidence suggests that P. R. Cercariae III and IV have not been previously identified though the adult trematodes may be known.—*From author's summary.*

1704. **MATHESON, D. C. Avian coccidiosis.** *World's Poultry Congress* 4(Sect. C): 439-444; résumé sect., 55. 1930.—Coccidiosis occurred in 7.5% of 1,426 fowls (including chickens) examined during 16 yrs. Examination of the feces of 1,094 fowls surviving from flocks affected with coccidiosis as chickens showed 5.7% to be carriers of coccidia. While an occasional outbreak in Great Britain may occur in Jan. or Feb., the disease is more common in Mar., the number of outbreaks rising steadily thereafter until a maximum is reached in June; a steady decline then until Oct. is followed by a rise again. Preventive and control measures are suggested.

1705. **MATTES, O. Bau und Verhalten der Entwicklungsstadien von Fasciola hepatica im Zwischenwirt Limnaea truncatula an Hand von Präparaten, die durch künstliche Infektion gewonnen wurden. [Structure and relationships of the developmental stages of F. hepatica in the intermediate host L. truncatula, based on preparations from experimental infestations.]** *Zool. Anzeiger, Suppl. Bd. (Verhandl. Deutsch. Zool. Ges. E. V. 1929)* 4: 266. 1929.

1706. **MAYER, MARTIN. Neuere Ergebnisse von Kultur- und Tierversuchen mit Leishmanien.** *Arch. Schiffs- u. Tropen-Hyg.* 33(Beih. 3): 94-97. 2 fig. 1929.—The Chinese hamster was less suitable for experiments with Oriental boil than with kala-azar. Only 1 strain of the former from Palestine produced severe local phenomena and in 3 cases general infection also.

1707. **MAYER, MARTIN, und JYOTIS CHANDRA RAY. Züchtung und Differential-diagnose verschiedener Leishmanien (Kalaazar, Orientbeule und brasilianische Leishmaniose) auf festen Nährböden.** *Arch. Schiffs- u. Tropen-Hyg.* 32(6): 277-287. 19 fig. 1928.—Culture on horse blood agar plates by Noller's technique (agar 30 gm., glucose 20 gm., weakly alkaline Leibig's broth 1000 cc.) gave characteristic growth differentiation between kala-azar, various strains of Oriental boil and Brazilian leishmaniasis. *Leishmania donovani* formed small thick colonies without spreading. *L. tropica* from Palestine grew upward with wide parallel runners which never ramified. *L. tropica,* 2 strains from Turkestan, showed primarily very marked outgrowths as ramifying nets: one a rank growth, the other very delicate. *L. tropica* var. *americana* from Brazil grew meagerly without branching, but showed rapid surface growth. Both wet preparations from surface growth and dry smears showed characteristic forms of all parasites.—*D. Koch.*

1708. **MOMMA, KENJI. Notes on modes of rat infestation with Hepaticola hepatica.** *Ann. Trop. Med. and Parasitol.* 24(1): 109-113. 1930.—*H. hepatica* is the most common nematode parasite in the liver of the house rat. Infestation is 57.2%, with a rate lowest in summer, increasing through autumn and winter until the maximum in the succeeding spring. No eggs were found in the intestines of 29 infected rats. Eggs dried for about 1 mo. or passed through the intestinal tract of the cat or the fly do not lose their power of development. The writer believes that the fly is the chief disseminator of the eggs.

1709. **NAPIER, L. EVERARD, and G. N. SEN. An investigation to decide the most suitable dilutions for the performance of the antimony test for kala-azar.** *Indian Jour. Med. Res.* 17(4): 1139-1151. 1930.—Experiments with different dilutions of both serum and antimony compound were tried to find which combination gave the most specific results. Four groups of 25 patients each were selected; the 1st 2 groups consisted of patients in whom a definite diagnosis had been made by the aldehyde test, 25 kala-azar patients and 25 controls; the other 2 groups consisted of cases in which the aldehyde test gave an indeterminate result; of these again 25 were kala-azar patients and 25 culturally proved not to be kala-azar. The most satisfactory results were obtained by the addition of 25% serum to either 4, 2, 1, or 0.5% ureastibamine. By adding this strength of serum to 1% antimony compound, the readings in the series were 58 correct, 7 incorrect, and 35 doubtful. Almost the same mixture of antimony compound and serum can be obtained by adding 2 drops (0.125 cc.) of serum to 1 cc. of 0.5% ureastibamine; this, a more practical method, is suggested for the clinical application of the test. Preliminary clinical trial gave satisfactory results.

1710. **NOTO-SOEDIRO, R. Paragonimus westermani (Kerbert) bij een kat. [P. westermani in a native cat.]** *Nederlandsch-Indische Bladen Diergeneeskunde* 42(3): 278-280. 1930.

1711. **[OGANOV, L. I.] ОГАНОВ, Л. И. Малярия в Скопинском уезде и меры борьбы с ней. (Contribution à l'étude du Paludisme dans l'ouezd de Scopine, Gouvernement de Riazan.)** [In Russian, with French summary, p. 69.] *Russian Jour. Trop. Med.* 6(1): 15-32. 1928.—The author captured, in western Scopine, *Anopheles maculipennis* Mg., *A. bifurcatus* L., *Aedes excrucians, A. dorsalis* and *Culex pipiens.* Blood from 7,241 individuals showed 1,346 infections with *Plasmodium vivax,* 195 with *P. praecox* and 43 mixed infections (*vivax*+*praecox*). *P. vivax* infection is autochthonous and that of *P. praecox* imported.—*Author's summary (transl.).*

1712. **OKA, ASAJIRO. Sur la présence de la Dinobdella ferox en Formose. [D. ferox in Formosa.]** *Proc. Imp. Acad. [Tokyo]* 5(5): 210-212. 2 fig. 1929.—Reported as taken from the larynx of man and the nares of a buffalo. Notes on external morphology are given.—*J. P. Moore.*

1713. **PENKACKI, C. Recherches sur les vers parasites dans l'intestin du chien.** *Bull. Internat. Acad. Polonaise Sci. et Let. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II)* 1929(3/6): 215-227. 1929.—In 2 yrs. 400 dogs were examined at Varsovi. *Echinochasmus perfoliatus* was found in 4.5%, *Alaria alata* in 1.5%, *Diphyllobothrium latum* in 1%, *Taenia pisiformis* in 4%, *T. hydatigena* in 7.25%, *Echinococcus granulosus* in 7%, *Mesocestoides lineatus* in 7.75%, *Dipylidium* sp. in 51%, *Uncinaria stenocephalus*

in 37.5%, *Toxocara canis* in 9.75%, and *Toxascaris lenina* in 15%. The interrelations and the amount of parasitism in individual hosts is given, 5 spp. in a host being once reported. A summary table of previous reports of intestinal parasites of dogs is included. A brief statement of the hatching of the eggs of *D. latum* and of the comparative morphology of the ascarids is included. No attempt at specific identification of *Dipylidium* is made but the author believes that *D. caninum* predominates.—*G. F. Otto.*

1714. **PETER, F. M. Die Bekämpfung der Bilharzia in Ägypten. [The campaign against bilharzia in Egypt.]** *Arch. Schiffs- u. Tropen-Hyg.* 33(Beih. 3): 153-164. 1929.

1715. **PHISALIX, M. Les hémogrégarines du Bufo agua Latr. (syn. Bufo marinus L.).** *Bull. Soc. Path. Exotique* 23(4): 372-377. 1930.—In 20 toads of the Brazilian *B. agua* Latr. were found filaria embryos, young macrogametocytes of an as yet unidentified coccidium, and 4 hemogregarines, including 3 already described and *Haemogregarina aguai* (p. 375). The stages of all spp. are described.

1716. **PILLERS, NOËL A. W. Notes on parasites in 1929.** *Vet. Rec.* 10(21): 448-450. 1930.—A list of 47 parasites of rat, mice, fish, rabbit and 8 domestic animals includes 1 fungus, 5 protozoa, 2 trematodes, 11 cestodes, 8 nematodes, 9 acarines, 1 linguatulid and 10 insects.

1717. **PIROT. Nécatorose chez les matelots indigènes du recrutement indochinois, embarqués sur un bâtiment des forces navales en Extrême-Orient. [Necator infection of the native seamen of the Indo-China recruitment.]** *Arch. Méd. et Pharm. Navales* 119(2): 284-292. 1929.—*N. americanus* was found in 68-78% of recruits examined.

1718. **PORTER, ANNIE. Some South African larval flukes.** British Assoc. Advanc. Sci. Rept. 97th meeting [South Africa] 337. 1929(1930).—Abstract.

1719. **PORTER, ANNIE. Some remarks on the hookworm problem in South Africa.** British Assoc. Advanc. Sci. Rept. 97th meeting [South Africa] 337-338. 1929 (1930).—Abstract.

1720. **PURVIS, J. B. Further parasites of domestic animals in Malaya.** *Vet. Rec.* [*London*] 10(32): 750. 1930.—A list.

1721. **RATCLIFFE, HERBERT L. The relations of Endamoeba muris and Chilomastix bettencourti to the diet and intestinal conditions of rats.** *Jour. Parasitol.* 16(2): 75-80. 1929.—Ten rats infected with each organism were fed experimental diets, and 5 infected with each were kept on stock diet as controls. Observations at 25-day intervals showed that infections with both *E. muris* and *C. bettencourti* in rats on a diet which promoted a predominance of aciduric bacteria were light, the numbers being about the same as for *Trichomonas parva* in rats on this diet. When a diet promoting the growth of Gram-negative bacteria was fed, both organisms increased in numbers. A diet which increased the proteolytic anaerobes and decreased both the Gram-negative and Gram-positive aerobes, caused both protozoa to decrease in numbers, but no case was negative for either organism. Infections in control animals on the stock diet did not vary appreciably. *E. muris* and *C. bettencourti* are thus somewhat similar to *T. parva* in relation to the intestinal bacteria of rats. Definite variation in numbers appeared with 2 high protein diets but neither species was greatly affected.—*Author's summary.*

1722. **REGENDANZ, P. Über die Ansammlung von Trypanosomen in den Flüssigkeiten der Körperhöhlen und ihre Bedeutung für das Entstehen von Gewebsveränderungen. (Nach experimentellen Untersuchungen.)** *Arch. Schiffs- u. Tropen-Hyg.* 33(Beih. 3): 97-101. 1929.—The effects of *Trypanosoma gambiense, T. rhodesiense, T. brucei,* and *T. equiperdum* were studied on rats, hamsters, rabbits, cats, dogs and monkeys. The tissue changes included epicarditis, myocarditis, conjunctivitis and iritis, always accompanied by edema of the affected tissue. The path of the trypanosomes was traced from the bloodstream into the other fluid and tissues. Toxins from the parasites probably disturb the local circulation, producing a weak diapedesis, in the wake of which the trypanosomes penetrate surrounding tissues. Details and number of experiments are given in Hoeppli's paper, *Ibid.,* 101-113.

1723. **REGENDANZ, P. Der Verlauf der Infektion mit Schizotrypanum cruzi (Chagas) bei jungen Ratten und über die Unempfänglichkeit erwachsener Ratten für Schizotrypanum.** *Zentralbl. Bakt. Abt. I. Orig.* 116(4/5): 256-264. 1930.—The Chagas' disease organism, *S cruzi,* was injected into 25 young rats aged 2-30 days, and into an unspecified number of old rats. No infection was ever produced in an adult; the younger the rat, the more susceptible and the longer and more intense the infection. The incubation period was 7-13 days. Parasites were not demonstrable in the blood after 7-8 weeks, no matter what the age or how severe the infection. Infections ended fatally in 6 (25%) of the young rats; in the others the parasites disappeared from the blood and the infection apparently came to an end. The course and outcome in rats corresponds generally with the acute form of human Chagas' disease; there are points of similarity also in the immunity of adult rats and of adult human beings or older children. The serum of adult rats afforded mice no protection against schizotrypanum infection. Neither castration nor implantation of testicles, nor yet splenectomy, affected immunity or susceptibility.

1724. **REITLER, RUDOLF. Über eine Varietät des Quartanaparasiten.** *Arch. Schiffs- u. Tropen-Hyg.* 33(2): 93-95. 1 fig. 1929.—A peculiar type of *Plasmodium malariae* was found in 3 Arab children of Upper Galilee. The rings show a marked development of chromatin in the form of granules throughout the parasite; trophozoites are band-like, but differ from the usual bandforms of quartan; the schizont pigment is finer than usual for quartan but coarser than for *P. vivax;* schizonts divide into 10-12 merozoites; infected corpuscles stain less easily than normal, but are not increased in size; there are no Maurer's or Schüffner's dots.—*W. H. Taliaferro.*

1725. **RILEY, W. A., and R. O. CHRISTENSON. Guide to the study of animal parasites.** 126p. 33 fig. McGraw Hill Book Co.: New York, 1930. Pr. $1.50.—A laboratory manual written from the viewpoint of the teaching parasitologist for use by students with a background of general zoology. The text covers the parasitic protozoa and helminths with brief references to the annulata and arthropoda. The appendix contains useful directions for the collection and technical preparation of material as well as a bibliography and a list of sources of materials.—*L. M. Dickerson.*

1726. **ROBERTSON, ANDREW. Note on a trypanosome morphologically similar to Trypanosoma cruzi Chagas, 1909, found in an opossum, Didelphis marsupialis, captured at Tela, Honduras, Central America.** United Fruit Co., Med. Dept. 18th Ann. Rept. pp. 293-310. 2 pl., 6 fig. 1929.—The trypanosomes in the blood were morphologically similar to *T. cruzi* except that in some the nucleus was rather nearer the anterior or flagellar end of the body. Developmental stages were found in the heart muscle. *Cimex rotundatus,* the local bedbug, was successfully infected by feeding on the opossum; it was still infected 3 mo. later. A guinea pig, successfully inoculated with opossum blood, showed blood forms identical with those from the opossum; the infection was transient (2-2½ weeks). A guinea pig inoculated with the infected dejecta of *Cimex* developed an infection in the peripheral blood 1 mo. later. The organism, isolated in culture on Wenyon's modification of Noguchi's blood agar medium, showed forms corresponding closely to those in culture of a known strain of *T. cruzi.* A guinea pig showed trypanosomes in its blood 1 mo. after inoculation with the cultural forms; the infection also proved transient (21 days). Tela, Honduras, is some 2,000 miles from what has hitherto been regarded as the endemic zone of this form of trypanosomiasis.—*Author's summary.*

1727. **ROSS, RONALD. The amount of malaria de-**

pends on the numbers of the carriers. 14p. John Murray: London, 1929. Price 2s. 6d.

1728. **RUGE, REINHOLD. Ein neues und ein altes Problem der Malariaforschung.** *Arch. Schiffs- u. Tropen-Hyg.* 32(6): 287-291. 1928.—The author considers the gametocyte freeness of strains of inoculation malaria, and the parthenogenetic theory of relapse, to be contradicted by recent results and experiences.—*A. de Buck.*

1729. **SASSUCHIN, D. H. Zur Frage über die Parasiten der Protozoen. Parasiten von Nyctotherus ovalis Leidy.** *Arch. Protistenk.* 64(1/2): 61-70. 2 pl., 3 fig. 1928.—Approximately 20% of the *N. ovalis* in the gut of *Periplaneta orientalis* were found to be infected. Descriptions of the 2 parasites are based on observations of moist-chamber cultures, micro-chemical reactions, and permanent preparations stained in toto and in sections by several methods. No specific names are assigned. One form is considered similar to the *Sphaerita* in certain amoebas and the other bacterium-like.—*L. M. Dickerson.*

1730. **SCHAPIRO, LOUIS, and W. W. CORT. A study of the relation of the dry season to the level of helminth infestation in a Panama village.** *Amer. Jour. Hyg.* 12(3): 699-708. 1930.—Examinations by the dilution egg count method were undertaken in Dolega, where the rainfall is over 100 in. a yr. and the yards densely shaded. A preliminary examination of 213 out of a population of 539 showed a very heavy hookworm infestation of the type found in the Panama uplands, a rather low Ascaris count, and one of the heaviest Trichuris infestations ever recorded by the egg-counting method. Two series of counts of 100 individuals were made about 2 mo. after the end of both the rainy and the dry seasons. The close correspondence of these check counts indicated that the egg-counting technic used was uniform throughout the time of the studies. A comparison of the ave. count of the post-rainy season with that of the post-dry season showed an increase for hookworm, Ascaris and Trichuris, entirely due to great increases in a very small number of cases (5 for hookworm and 2 each for Ascaris and Trichuris). No reduction in infestation level occurred for any of the 3 worms over the 4 mo. of the dry season. To what extent this is due to reinfection during the dry season or to persistence over this period of worms already present cannot be determined.—*Authors' summary.*

1731. **SINTON, J. A., and H. W. MULLIGAN. The staining of malarial parasites in blood smears by the iron-haematoxylin method.** *Indian Jour. Med. Res.* 17 (4): 1329-1332. 1930.—By use of acid fixatives (Carnoy, Gilson), the erythrocytes were dehemoglobinized; with the iron thus removed, the erythrocytes remained almost completely unstained and did not obscure the parasites.

1732. **SIOE, KWA TJAON. Strongyloidosis and its treatment with gentian violet.** *Far East. Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 200-204. 1927. [1928].—Gentian violet tablets administered per os killed *Strongyloides* within a short time. Gentian violet probably acts directly on the worms; in vitro it has no more effect than other drugs against the larvae.

1733. **SPINDLER, L. A. A study of the temperature and moisture requirements in the development of the eggs of the dog trichurid (Trichuris vulpis).** *Jour. Parasitol.* 16(1): 41-46. 1929. Eggs of *T. vulpis* developed and became embryonated in 12-15 days at 37° C. Development at 30° C. was nearly as rapid, the majority of the eggs being embryonated in 16 days. Development of eggs at 22° C. was much slower, 77% being embryonated in 35 days. When dried on cover glasses and incubated in an atmosphere 57% saturated, at an ave. of 22° C., 97% of the eggs died in 8 days. At 47% saturation at 30° C., 96% died in the same time. At 77% saturation at 22° C., 100% died in 12 days. On slides exposed to the air of the laboratory, 93% of the eggs were dead in 15 days. In a saturated atmosphere at 30° C., eggs failed to develop and died in 12 days. The majority of the eggs under similar conditions at 22° died in a short time, although 24% lived and became embryonated in 38 days. On wet soil in a saturated atmosphere at 22 and 30°, the eggs apparently developed normally, whereas 98% on dry soil at 30° died in 29 days. At 22°, 29% were alive on the 29th day, withstanding conditions of dryness at 22° C. that are fatal at 30° C. Comparison with similar experiments on the eggs of the dog ascarid (*Toxocara canis*) showed, as in the case of the human forms, that *Trichuris* eggs require more moisture for development than those of *Ascaris*.—*Author's summary.*

1734. **STEPHENS, J. W. W. The distribution of blackwater fever in North America.** *Ann. Trop. Med. & Parasitol.* 23(4): 451-479. 2 maps. 1929.—A tabulation of published records.

1735. **STERLING, OKUNIEWSKI, et ROSNOWSKI. Contribution à l'étude de l'épidémiologie et de la clinique de la trichinose.** *Jour. Physiol. et Path. Gén.* 28(2): 387-390. 1930.—Blood examination is valuable in distinguishing trichinosis from painful muscular affections. Eosinophilia, when other parasites are absent, is significant although it does not necessarily show the intensity of the infection. Faecal examination for parasites, cutaneous and serological reactions are of little value. Thymol (10%) in castor oil was given in doses of 4 gm. per diem with good results. An attack of trichinosis confers no immunity.—*W. R. Fearon.*

1736. **STEUDEL, EMIL. Der gegenwärtige Stand der Schlafkrankheitsbekämpfung in Afrika. [Present status of the campaign against sleeping-sickness in Africa.]** *Arch. Schiffs- u. Tropen-Hyg.* 33(Beih. 3): 113-129. 2 maps. 1929.

1737. **STROH, G. Zur Distomatose beim Wild. (Reh, Gemse, Hase, Rot- und Damwild.)** *Münchener Tierärztl. Wochenschr.* 81(31): 385-389. 1 pl. 1930.—Records and morbid anatomy of distomatosis in species of *Cervus, Antilope,* and *Lepus.*

1738. **TAYLOR, E. L. Stomach worms in sheep.** *Jour. Ministry Agric. [London]* 36(1): 31-38. 1 pl. 1929.—A general statement of the nature of infection of sheep by *Haemonchus contortus** and *Ostertagia circumcincta** and of the principal methods of control.

1739. **TAYLOR, E. LEONARD. Gapes (syngamiasis)—the relation of wild birds to the disease in chicks.** *World's Poultry Congress* 4(Sect. C): 433-438; résumé sect. 54. 1930.—Starlings and rooks frequently carry gapeworms morphologically indistinguishable from *Syngamus trachea* of chicks. Cross infection can be brought about, but experiments suggest that the strains are different, and that a comparatively large dose of starling gapeworms is required to produce chick infection. Gapeworms cannot increase in the body of the host. The succession of generations is slow so that the sudden appearance of a severe outbreak of gapes is improbable. Severe outbreaks must be gradually built up through accumulation of infection on the ground. Recent work suggests that the earthworm acts as a facultative intermediate host, the larvae becoming encysted in its muscular tissue; hence it may possibly act as a collecting reservoir, and in time accumulate enough larvae to constitute an infective dose for the chick. A single *Syngamus* cannot establish itself in the trachea, and the only successful parasites are pairs of ♂ and ♀ in copula. The rate of intake of infective larvae is therefore of some importance, since both ♂ and ♀ larvae must reach the air passages at about the same time. Probably wild bird carriers have not the importance at first suggested in causing losses.—*Author's résumé.*

1740. **TUBANGUI, MARCOS A., and SIXTO A. FRANCISCO. The presence in human stools of the eggs of á trematode parasitic in fish.** *Jour. Philippine Islands Med. Assoc.* 10(1): 31-33. 1 fig. 1930.—Stool examinations of students and others at the Univ. of the Philippines revealed trematode ova representing cases of spurious parasitism due to the consumption of fish (*Pristipoma hasta* Bloch) infested with the fluke *Metadena ovata,* the eggs of which were passed unharmed with the feces.—*M. A. Tubangui.*

1741. **WRIGHT, W. REES.** Occurrence of Cepedea in frogs. *Nature [London]* 125(3141): 52. 1930.—In *Rana temporaria* from England.

1742. **YAKIMOFF, W. L.** Zur Frage über den Parasitismus der Süsswasserfische. III. Chlamydophrys bei einer kleinen Plötze (Rutilus rutilus). *Arch. Protistenk.* 67(1): 215-218. 1 fig. 1929.—An unidentified species was found in liver and spleen.

FILTERABLE VIRUSES, BACTERIOPHAGE, ETC.

GEO. H. SMITH, *Editor*

(See also in this issue the subsection "Infectious Chloroses" in the section Phytopathology; and Entries 386, 1336, 1381, 1434, 1497, 1505, 1546, 1563, 1566, 1587, 1626, 1645, 1653, 1800, 1838)

GENERAL

1743. **BURKE, A. W., and N. C. DAVIS.** Notes on laboratory infections with yellow fever. *Amer. Jour. Trop. Med.* 10(6): 419-426. 1930.—A description of 4 cases of yellow fever among Americans in Bahia, Brazil, at least 3 undoubtedly laboratory infections. Besides clinical details, a discussion is given of the probable mode of infection, virus involved, and probable effects from use of immune serum.—*W. H. Taliaferro.*

1744. **BURNET, F. M.** Bacteriophage activity and the antigenic structure of bacteria. *Jour. Path. & Bact.* 33(3): 647-664. 1930.—Lysis by bacteriophage is preceded by the specific adsorption of the lytic agent on some protein of the bacterial surface, which is apparently related to the heat-stable antigen of the bacterium. It is shown that the simple conception that the point of attack of the bacteriophage and the heat-stable antigen constituents are identical, is not always true. In the complicated Salmonella group it becomes necessary to assume that while the phenomena of development of bacteriophage resistance and serological variation are probably intimately related, the process involves a complicated mechanism of splitting off of fractions and exposure of other portions to the action of suitable agents —a combination of mutation by loss and unmasking of hidden constituents. Experiments are recorded on *B. sanguinarium,* Flexner dysentery bacilli and *Staphylococcus albus.*—*H. S. W.*

1745. **BUSSON, B.** Experimentelle Studien über das Lyssa-Virus. *Zentralbl. Bakt. I. Abt. Orig.* 113(3/4): 290-301. 1929.—Since in some fatal cases of "paralytic accident" following Pasteur treatment fixed virus has been found in the brain, the virus is considered by the author to have been the cause. The experiments of Quast, in which after subcutaneous injection of the virus it was demonstrated in the brain of the healthy animals, are regarded as non-conclusive because the animals were killed too soon; had they lived longer, the virus might have disappeared. Account should be taken of the period of incubation in rabies. If it is long, this need not be due to small dosage or abnormally low virulence of the particular strain. Thus, in several rabbits inoculated with street virus, the brain injected into guinea pigs always killed them in 5-6 days; yet for the submaxillary and parotid glands, the corresponding times were 12-92 days, and in one of the latter cases reinoculation of the guinea pig's brain into another animal produced rabies with correspondingly long incubation. However, this is not the rule. Possibly some of the gland strains contain the virus in a different stage of development from the brain strain.—*C. Prausnitz.*

1746. **BUSSON, B.** Der Einfluss des Aethers und anderer Entfettungsmittel auf das Virus fixe und seine Pathogenität. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 65(5/6): 465-472. 1930.—Use of di- or trichlorethylene in preparation of fixed virus is recommended. These substances, although having certain objections, are preferable to ether, since they are not explosive or inflammable; objections are easily overcome. —*N. W. Larkum.*

1747. **CHABAL, L.** Conjonctivite infectieuse de Parinaud et fièvre exanthématique méditerranéenne. *Bull. Soc. Path. Exotique* 24(2): 76-80. 1931.—In 6 cases which the author classed as Parinaud's conjunctivitis, there was either a definite history of tick bite or opportunity for its occurrence; in 4 of these cases there was an accompanying more or less general eruption. The author was bitten by a tick, with following Mediterranean exanthematic fever and accompanying conjunctivitis. In an 8th case, characteristic eruption, fever and conjunctivitis were present; this patient owned many dogs. It is concluded that ticks carry the infection of Parinaud's conjunctivitis, and that it may appear as the initial symptom of Mediterranean exanthematic fever and is to be regarded as a local reaction to inoculation.

1748. **CUNNINGHAM, J., M. J. NICHOLAS, and B. N. LAHIRI.** Rabies and anti-rabic treatment. The action of ether on the rabies virus. *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 531-536. 1 pl., 1 fig. 1927 [1928].—Different strains of the virus appeared to vary considerably in resistance to ether. If the ether method of attenuating the virus for therapeutic purposes is generally adopted, this factor requires careful consideration.

1749. **DAVIS, NELSON C.** Estudos sobre febre amarella. O effeito do calor e do frio sobre o desenvolvimento da infectividade nos Aedes aegypti. [Yellow fever studies. Effect of heat and cold on the progress of infectivity of A. aegypti.] *Brasil-Med.* 45(4): 77-78. 1931.—Preliminary results.

1750. **DOOREN de JONG, L. E. den.** Studien über Bakteriophagie. I. Ueber Bac. megatherium und den darin anwesenden Bakteriophagen. II. Fortsetzung der Untersuchungen über den Megatherium-Bakteriophagen. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 1-15, 15-23. 8 fig. 1931.—I. Careful pasteurization of a strain of *B. megatherium* produced a non-spore bearing, "mutilated," defective form, which (No. 899) was capable of producing both normal and labile "flatter" colonies. The filtrate of a labile culture had a strong lytic action on another defective *B. megatherium* strain (No. 337). The lytic principle proved to be reinoculable in series, and thereby identical with d'Herelle's bacteriophage. However, since the lytic filtrate could be obtained from a culture heated to 100° C. for 5 min., the possibility of a latent infection appeared to be excluded; the only reasonable explanation of the origin of the bacteriophage appeared to be its production by a bacterial cell which had come from one of the spores surviving pasteurization. The facts that the bacteriophage had been obtained from only 1 strain (No. 899) and was active against only 1 other strain (No. 337), called for a more extended study of the sensitivity of the defective strains. II. Of the "defectives" of 18 *B. megatherium* strains, 10 showed no lytic effect with the bacteriophage of strain 899; a given quantity of the filtrate produced on various smears of a sensitive "defective," varying numbers of concave, pellucid plaques of different dimensions. Cultivation of the insensitive "defectives" on 10% peptone agar elicited marked sensitiveness in most of them, including No. 899, thus demonstrating the possibility of variation in this respect among "defectives" of the same strain. Spore-bearing as well as "defective" derivatives of No. 899, however, contained active bacteriophage, and by this simplified method active filtrates were obtained from Nos. 333 and 897. The lysins from Nos. 899 and 333 appeared to contain 2 bacteriophages: No. 1 formed pellucid plaques of normal type; No. 2, plaques each of which contained a little colony in the center and which were therefore called "point plaques." The lysins of Nos. 333 and 897, especially the latter, appeared to

affect even fewer defective strains than the lysin of No. 899. The facts that (1) various defective derivatives of the same megatherium strain present very different sensitivity toward a single bacteriophage, and that (2) a single defective strain evinces very different degrees of sensitivity toward 3 different bacteriophages, indicate that lysis (and therefore plaque formation) can occur only when the sensitivity of the defective strain and the activity of the lysin are adapted to each other. Lack of lysis does not prove the absence of bacteriophage. Most cases of pseudobacteriophagy described in the literature, and Sohngen's hetero-bacteriolysis, must apparently be reckoned as true bacteriophagy. The number of pellucid plaques produced by a given filtrate is never an absolute measure of the number of bacteriophage bodies present. This study shows that the production of bacteriophage is in all probability a general property of *B. megatherium*.

1751. GROTH, A. Sind Varizellen auf Versuchstiere übertragbar? *Zentralbl. Bakt. I. Abt. Orig.* 118(1/2): 1-6. 1 fig. 1930.—Intracorneal injection of rabbits with contents of chickenpox pustules produced characteristic vesicles which were not produced by injection of material not containing specific varicella incitant.

1752. HAAGEN, E. Weitere Untersuchungen über das Verhalten des Variola-Vakzinevirus und des Herpesvirus in der Gewebekultur. *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 304-310. 3 fig. 1931.—The author cultivated smallpox vaccine virus for over 2 yrs., through more than 100 testicular tissue passages, with distinct increase in virulence. Renal tissue also was well suited for protracted cultivation of the virus; typical Guarnieri inclusion bodies were seen in renal cultures of smallpox virus. Herpes virus (2 strains) maintained its keratotropic characteristics unchanged through 50-60 passages, but gradually lost its encephalotrophic properties.

1753. HODER, FRIEDRICH. Ein Agens, welches auf die Bakteriophagenvermehrung fördernd wirkt. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 162-165. 1931.—The author presents 8 experiments from which he concludes that substances exist in human and animal sera (and apparently also in certain bacterial species) which promote bacteriophagic action. Boiling for 5 min. does not destroy the substances, which he surmises are of vitamin-like or ferment-like character.

1754. IYENGAR, K. R. K., and W. A. BEER. Studies in the value of etherized sheep vaccine in the prophylactic treatment of rabies. Pt. 1. The effect of ether on "fixed virus" in infected brains of sheep. *Indian Jour. Med. Res.* 18(1): 1-4. 1930.—Resistance to ether of fixed virus in use at the Pasteur Institute, Coonoor, was tested by immersion of infected brains of sheep in the fluid, with the following results: (1) when the brain is cut into large pieces, 84-hr. immersion has no effect; (2) when cut into fine pieces and then suspended in ether, there is attenuation after 72 hrs. and death after 96 hrs.; (3) addition of 1% carbolic acid to 72-hr. ether brain and subsequent incubation at 37°C. for 24 hrs., kills the fixed virus.—*Authors' summary.*

1755. LEVADITI, C. Les ultravirus provocateurs des ectodermoses neurotropes. *Ann. Inst. Pasteur [Paris]* 45(6): 673-705. 23 fig. 1930.—The author uses the term "neurotropic ectodermatoses" to designate infectious diseases of the nervous system (like lethargic encephalitis, experimental herpes, poliomyelitis and rabies) produced by ultraviruses with elective affinities for tissues derived from the ectoderm, particularly its invaginated part, the neuraxis and its dependencies. The different neurotropic viruses have different affinities for various parts of the nervous system—the neurons, the astrocytes, the microglia and the oligodendroglia. Demyelinization may result from an ultravirus having an affinity for microglia (in which case the trouble is inflammatory and lipolytic) or from a disturbance of the lipoid metabolism of the oligodendroglia (in which case the oligodendrocytes merely retain and accumulate the lipoid products of their own metabolism).

1756. LÖTE, JOSEF v. Ueber einen Fall von rückfallender Tollwut (Lyssa recurrens) bei Kaninchen. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 86-89. 1931.—A rabbit (A) subdurally inoculated with brain substance from another rabbit which had died of typical rabies showed 2 temp. crises within 30 days. It survived inoculation for 210 days, meanwhile furnishing, on the 48th and 206th days after inoculation, pieces from the 2 parietal lobes for inoculation of 2 other rabbits, and dying in convulsions soon after the 2nd trepanation. The rabbit inoculated on the 48th day (B) died 18 days afterward of typical rabies. The one inoculated on the 206th day (C) died on the 114th day afterward, of characteristic rabies, the disease running a chronic course. A rabbit (D) inoculated immediately after the death of the original subject succumbed 140 days afterward to typical rabies, after running a very irregular temp. A rabbit inoculated with brain substance from rabbit B lived for 306 days, running an irregular temp., and died of scabies; Negri bodies were not found.

1757. MAZZETTI, GIUSEPPE. Osservazioni su di un ceppo di batteriofago isolato dalle acque luride di Siena. [Observations on a bacteriophage isolated from gutter waters in Siena.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 605-609. 1930.—A bacteriophage was isolated, which produced in vitro, both in liquid and in solid culture media, the phenomenon of Twort-d'Herelle.—*M. Comel.*

1758. MITCHELL, D. T. Rabies in Burma. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* P. 284-285. 1929(1930).

1759. OERSKOV, J. Nachweis und in vitro-Züchtung einiger vermutlich saprophytärer "Virusstämme." *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 310-317. 2 fig. 1931.—Of this filtrable virus, living in close symbiosis with a motile, gram-negative, rod-shaped bacterium, 6 strains were isolated, 5 from milk and 1 from rabbit skin. The host bacterium was never found free from the virus. The virus formed characteristic, isolated, bacteria-free colonies if the substrate contained saccharose or raffinose and the host bacteria grew near by; it grew on saccharose agar in the neighborhood of bacteria killed by heat. By the Burri India ink method the virus appeared to be about ½ as large as is *B. pertussis*, and of ovoid coccus form. Reproduction seemed to be by transverse division. The cocci are not stainable with ordinary bacterial stains, but by other means can be rendered visible as tiny points of color. Their invisibility in uncolored preparations and in the dark field is apparently due to the fact that their index of refraction is about that of water. The virus withstands 1 hr. at 60°; the host bacterium, 50° for ½ hr.

1760. ØRSKOV, J., und K. A. JENSEN. Zur "Virusform" des Tuberkelbazillus. *Zeitschr. Tuberk.* 57(6): 398-404. 1 fig. 1930.—Of 70 guinea pigs inoculated with filtered material from 48 tuberculous patients only 1 died, 4 months later, from generalized tuberculosis.—*Authors' summary (transl. by W. Fornet).*

1761. PULCHER, CLAUDIO. Sull'adsorbimento del virus del sarcoma dei polli da parte dell'emoglobina. [Adsorption by hemoglobin of the virus of chicken sarcoma.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 888-891. 1930.—Electropositive, unlike electronegative, hemoglobin adsorbed much of the virus from the suspension fluid. The author concludes that the oncogenic virus of chicken sarcoma possesses a negative electric charge. —*M. Comel.*

1762. REMLINGER, P., et J. BAILLY. Unicité ou pluralité du virus rabique. [Unity or plurality of the virus of rabies.] *Ann. Inst. Pasteur [Paris]* 45(3): 376-385. 1930.

1763. SCHAEFER, WERNER. Über Herpesencephalitis bei Mäusen. (Zugleich ein Beitrag zur Frage der Erregerpersistenz im Zentralnervensystem.) *Zeitschr. Hyg. u. Infektionskr.* 111(4): 536-541. 2 fig. 1930.—A chronic herpetic encephalitis was produced in mice; 45 of 60 intracranially injected mice died, the majority on the 3rd and 4th days. Following intra-peritoneal vaccination, 32 of 40 died, the majority on the 6th to the 8th days. Surviving mice were killed 2, 4 and 10 weeks afterward. Inoculation of rabbits failed to show an inac-

tive persistence of herpes virus in the brain of mice.—*W. F. Jacobs.*

1764. **STEWART, FRED W., and C. P. RHOADS.** Lesions in nasal mucous membranes of monkeys with acute poliomyelitis. *Proc. Soc. Exp. Biol. & Med.* 26 (8): 664-665. 1929.—Preliminary paper.

1765. **TARANTELLI, EUGENIO.** Sulla presenza di elementi filtrabili (ultravirus) del b. di Koch nella tubercolosi cutanea e nel lupus eritematoso. [Presence of filterable elements (ultravirus) of the tubercle bacillus in cutaneous tuberculosis and lupus erythematosus.] *Arch. Ital. Dermatol., Sifil. e Venereol.* 6(1): 79-99. 1930.—Filtrates of skin tissue from 1 case of tuberculosis verrucosa and 6 cases of lupus vulgaris were inoculated into 14 guinea pigs; their ganglia and spleen were used to inoculate 7 guinea pigs, while 2 others were inoculated with spleen and ganglia of the 7; of these, 6 (4 directly inoculated and 2 of the 1st passage) died without appreciable cause in 10 days to 3 mos.; the others were killed in 1½-8 mos. Filtrate from the skin of 2 lupus erythematosus patients was inoculated into 4 guinea pigs; their spleen and ganglia were inoculated into 2 others, the spleen and ganglia of which were used to inoculate 1 guinea pig; of these 1 died; the other 6 were killed in 1½-6 mos. The clinical and histologic pictures were not distinguishable from those seen in normal animals; bacteriologic findings and tuberculin reactions were negative; 2 of 16 Besredka reactions and 1 of 17 Vernes resorcin reactions were positive. Results are inconclusive as to existence of ultravirus in cutaneous tissues affected with tuberculosis.

1766. **TARANTELLI, EUGENIO.** Ricerche su cavie non inoculate con filtrato di organi tbc. [Studies on guinea pigs not inoculated with filtrate of tuberculous organs.] *Arch. Ital. Dermatol., Sifil. e Venereol.* 6(5): 437-441. 1931.—In 8 of 15 supposedly normal guinea pigs, macroscopic changes were found in ganglia and spleen like those seen in pigs inoculated with tuberculous filtrates, with hypertrophy of peribronchial ganglia, splenic follicular hyperplasia and slight stimulation of the splenic reticulo-endothelial system, and presence of lymphocyte foci in the distal part of the lungs and agglomerations of well-preserved lymphocytes around the vessels and bronchi.

1767. **TEVELI, ZOLTÁN.** Die bazilläre Diagnose des Typhus abdominalis mittels Bakteriophagen. *Jahrb. Kinderheilk.* 130(1/2): 113-116. 1930.—Drops of Sonnenschein's bacteriophage were added to agar plate cultures of 11 old and 24 new strains of *Bacillus typhi*, as well as to cultures of 72 related strains. 3 strains of *B. typhi* and all the 72 related strains resisted the action of the bacteriophage, even when its virulence was increased by culture. Sonnenschein's diagnostic typhoid bacteriophage is thus specific and will identify typhoid bacilli, but is without effect on some 8% of strains. A strain giving a negative result should be examined further.

1768. **TWORT, FREDERICK WILLIAM.** Filter-passing transmissible bacteriolytic agents (bacteriophage). *Lancet* 219(5594): 1064-1067. 1930.—A restatement of the author's opinions, with no experimental work given.

1769. **VOSS, J. A.** Twort d'Herelle's phenomenon. *Acta Path. et Microbiol. Scandinavica Suppl.* 5: 49-52. 1 fig. 1930.—Observations are recorded, which seem to indicate that the Twort and d'Herelle phenomena are fundamentally identical and that the differences are due to the virulence of the bacteriophage and the resistance of the bacterium.

1770. **ANONYMOUS.** African conference of the yellow fever (Dakar, April 1928). 299p. 3 pl. L. Fournier: Paris, 1929. Price 42 fr.

LOWER ANIMALS

1771. **ARMSTRONG, CHARLES, G. W. McCOY, and SARA E. BRANHAM.** Filterability of the infective agent of psittacosis in birds. [*U. S.*] *Public Health Repts.* 45 (14): 725-726. 1930.—Organ emulsions of a parakeet sick from inoculation with organ emulsion of a parrot regarded as responsible for human infection, and emulsions of feces of a parrot also considered responsible for human infection, filtered through Berkefeld N filters and injected into parakeets, were as infectious as unfiltered emulsions.

1772. **DOYLE, T. M.** Fowl pox. *Eleventh Internat. Vet. Congress.* 3: 675-688. 1930(1931).—Agents other than the specific virus do not produce lesions clinically indistinguishable from those of fowl-pox. There is no evidence that bacteria alone can produce typical false membranes in fowls, although they may be of secondary importance. Although a filter-passing virus, that of fowl-pox passes through porcelain filters with difficulty. Infection almost invariably results from direct contact in cage experiments, but when healthy and infected fowls were placed in separate cages, facing each other, but a distance of 18 inches apart, infection did not occur. Neither did infection result when cages were placed in direct contact, but with the birds separated by a finely perforated metal sheet. The natural method of propagation is probably through wound infection. Apparently, "recovered" birds do not act as carriers. The viruses of fowl-pox and pigeon-pox are immunologically indistinguishable, yet they are in some respects, probably as a result of species adaptation, sharply differentiated. Cross immunity tests proved that fowl-pox does not immunize against cow-pox, nor vice versa. Dead virus confers no protection; if modified or attenuated by either physical or chemical means, it gives such inconstant results as to be of little practical value. Circumstances may sometimes justify use of live virus, but it is often followed by severe constitutional disturbance, and results obtained are in general too unreliable to justify it. Fowls inoculated with pigeon-pox virus are solidly immunized against severe natural infection, and partially protected against artificial infection with fowl-pox virus. Immunity is established about the 14th day after inoculation. The vaccine gives rise to no disturbances, and when employed in conjunction with hygienic measures, it should bring about a rapid and marked reduction in incidence of the disease.—*T. M. Doyle.*

1773. **DU TOIT, P. J.** Rabies in South Africa. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* P. 272-284. 1929(1930).—Since 1916 a number of human cases have been observed, which, clinically, appeared to be typical rabies. Recently 2 further cases occurred in boys who had been bitten by a yellow mongoose (*Cynictus penicillata*). Rabies was also diagnosed in yellow mongoose caught on the veld. Cases are recorded of a dog and an ox which contracted rabies, apparently from bites by infected yellow mongoose. Rabies has further been diagnosed in a genet cat (*Genetta felina*); and cases are recorded in man after being bitten or scratched by this animal. There is no evidence to show that other wild animals in So. Africa harbor rabies. The infected area appears to stretch from the eastern Transvaal to Bechuanaland (Vryburg) in the west and to the northern Cape (De Aar) in the south. The most remarkable feature about the disease in So. Africa is that it has not spread among dogs. The question arises as to whether it is true rabies. Apparently the infection has become somewhat modified during its sojourn in the wild carnivores. The origin of the present infection is unknown, neither is it certain how long the disease has been present; its control presents unusual difficulties. Eradication of the yellow mongoose and genet cat is practically impossible; but their numbers should be reduced. In the infected areas the number of dogs should also be restricted.—*From author's summary.*

1774. **GORI, PIO.** Ricerche sul virus dell'affezione difterto-vaiuolosa del piccione. [Virus of diphtheria-pox in pigeons.] *Lo Sperimentale* 84(2/3): 91-97. 2 pl. 1930.—In pigeons with avian diphtheria, scarification of skin provokes cutaneous manifestations of fowl-pox. Inoculation of pigeons with material from diphtheritic lesions produced fowl-pox, and vice versa. The authors believe that the virus of avian diphtheria and of fowl-pox is a

single entity, producing different types of lesions depending on the tissue affected.—*Maud L. Menten.*

1775. GREEN, R. G. Epizootic encephalitis of foxes. II. General consideration of fur-range epizootics. *Amer. Jour. Hyg.* 13(1): 201-223. 1931.—From a study of conditions on fur ranges in Wisconsin, where foxes are bred in captivity and where epizootic encephalitis has been present since 1923, it appears that fox encephalitis, with a slow rate of spread, may be present endemically among foxes in pens. When groups are run together in fur ranges, the disease increases to a violent epizootic. Any large group of apparently healthy foxes from an enzootic focus appears to develop an epizootic, indicating that carriers are common. The epizootic may appear in 4-6 days after common exposure and reach a peak in 2-3 wks. Mortality in foxes less than 10 mos. old is about 2½ times greater than that in foxes over 1½ yrs. old. Mortality in young foxes appears to average 12.5% of the population when based on known losses; it becomes 18.5% when approximated to include mutilated and missing foxes. The corresponding mortality for adult foxes is 3.5 and 8.5%, respectively. Individual ranch group mortalities as high as 40% of the group population occur. In several groups studied, having common ancestors, susceptibility appeared uniform. Significant variations in mortality of whole range groups and of ranch groups in the same range epizootic occur. Apparently, rapid variations in virulence occur.

1776. JACOTOT, H. Sur la teneur en virus de quelques tissus des veaux atteints de peste bovine expérimentale. *Bull. Soc. Path. Exotique* 24(1): 21-26. 1931.—Of about 17 tissues studied, with specimens from 1-6 animals for each tissue (including blood, spleen, lymphatic glands, tonsils, lungs, liver, kidneys, thymus, and various mucosae), the mucosa of the abomasum was found richest in virulent units.

1777. JACOTOT, H. L'infection pestique qui entraîne l'avortement peut-elle être propagée par le foetus et par la femelle qui l'a expulsé? *Bull. Soc. Path. Exotique* 24(2): 74-76. 1931.—In 2 of 17 cases of abortion from bovine plague (rinderpest), blood from the fetus proved clearly infectious; in 1 of 3 cases, the genital excreta of cows which had aborted conveyed infection.

1778. McBRYDE, C. N., W. B. NILES, and C. G. COLE. Experiments to determine the effect of sodium hydroxid and calcium hydroxid on the virus of hog cholera. *Jour. Amer. Vet. Med. Assoc.* 32(1): 87-89. 1931.—Tests showed that 3% NaOH plus 2% milk of lime is effective in destroying hog cholera virus in virulent blood within 15 min.

1779. McKINLEY, EARL B. The filterable viruses. *Scientific Monthly* 32(5): 398-403. 1931.—A review of the enlarging field of filterable viruses.

1780. METTAM, R. W. M. Contagious pleuro-pneumonia of goats in East Africa. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* P. 173-178. 1929(1930).—Contagious pleuro-pneumonia of goats is a specific caprine disease which ravages native and imported breeds annually, with a mortality of 60-100%. There appears to be a periodic variation in the potency of the virus. The disease may be acute or chronic and, especially in the chronic form, is frequently accompanied by a troublesome enteritis. The disease is due to a filter-passing virus which is present in lung lesions and in pleural effusions of acute cases. It has been successfully reproduced by intrabronchial insufflation, by intrapulmonary inoculation, and by contact with natural, acute cases. The disease causes highest mortality during the wet season. Both native and imported breeds are very susceptible. Recovery confers no immunity; relapses are very common. —*From author's summary.*

1781. POOL, W. A., A. BROWNLEE, and D. R. WILSON. The etiology of "louping-ill." *Jour. Comp. Path. & Therap.* 43(4): 253-290. 1930.—"Louping-ill" was produced experimentally in sheep and pigs. No evidence was found of a bacterial etiology. Infection does not occur from contact. An infective agent is present in certain tissues of affected sheep. At some stages this agent is probably constantly present in the central nervous system, and usually, but not constantly, in the mesenteric and popliteal lymph glands and spleen. It is usually present in the blood at some stage, but may be absent throughout. It was not demonstrated in cerebrospinal fluid, aqueous humor, bone marrow, liver, or skin. Infection was produced by intracerebral, intraspinal, intrasciatic, intra-ocular, intravenous and subcutaneous inoculation, and by supra-ocular instillation. It was not produced by intramuscular, intradermal, or endermic inoculation, by intranasal instillation, or by oral administration. Filtration experiments have not been completed; most of the experiments now reported yielded negative results. The infective agent is viable in 50% glycerol for at least 82 days. It resisted exposure for 3 hrs. at 20° C. to 1% phenol, 0.005% NaOH, and 0.001% $CuSO_4$. It resisted exposure for 1 min. at 60°, and was destroyed at 5 min. The study has not shown animals other than sheep or pigs to be susceptible.—*Authors' conclusions.*

1782. RICE, JOHN P. Avian diphtheritic enteritis and swine fever. *Vet. Jour. [London]* 87(1): 39-42. 2 fig. 1931.—The author believes that he has experimentally passed the avian virus to pigs, producing a typical swine fever. Such evolution is capable of explanation on the ground that the viruses are merely variants of a parent type, which have adapted themselves to certain species of animals, differences in tissue composition determining the differences in lesions produced.

1783. WALKER, J. Pleuro-pneumonia contagiosa bovum. Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect. P. 123-144. 1929 (1930).—A review of this disease, with bibliography.

BACTERIOLOGY AND OTHER MICROBIOLOGY

MEDICAL

JAMES S. SIMMONS, *Editor*

(See also in this issue Entries 269, 274, 584, 1349, 1358, 1370, 1487, 1492, 1510, 1594, 1693, 1760, 1765, 1766, 1767, 1770, 1795, 1835, 2018)

1784. AARS, CHARLES G. Piedra. *Arch. Dermatol. & Syphilol.* 22(3): 401-409. 9 fig. 1930.—A description of piedra is given, based on 60 cases observed in Dutch Guiana. The condition is frequently met with in Paramaribo; it occurs in men more often than in women. The fungus is not a true ectothrix; in many cases, the cuticle of the hair was damaged by the parasite. In the dark nodules, perithecia are present, with asci containing 8 fusiform spores; probably, the perithecia are not provided with orifices. Pycnidia could not be observed. The ascospores consist of 1 cell and are provided with 2 (seldom 3) filiform ends. Cultures of the type, Rabello-Horta, never those of Juhel-Rénoy, were obtained. In hanging drop cultures, the fusiform spores never give rise to mycelium. Very old cultures show chlamydospore formation. Infection by bathing in river water could not be proved. The disease involves only the shaft of the hair. Pathogenicity is slight. The fungus probably belongs to the Perisporiaceae. In the cases observed, there is a great resemblance to Brazilian and Paraguayan piedra.—*Author's comment & conclusions.*

1785. CASTELLANI, ALDO. A mannitol fermenting

Monilia. *Proc. Soc. Exp. Biol. & Med.* 26(7): 544-545. 1929.—*Monilia* mannitofermentans (p. 545) is described from sputum obtained in chronic bronchitis.

1786. **ECKSTEIN, A. Epidemische Meningitis serosa.** *Zeitschr. Kinderheilk.* 50(5): 564-595. 11 fig., 1 map. 1931.—Between May and Nov., 13 cases (2 in sisters, 2 in children in same class) were observed in Düsseldorf; all children recovered. In 1 case, inoculation of a monkey with cerebrospinal fluid from a girl with a recurrence induced the disease. Inoculation from 2 other cases was unsuccessful. In so far as it is not a disease entity, the author would group epidemic meningitis serosa with meningeal encephalitis.

1787. **GARCÍA, CAMILO LÓPEZ. Diagnóstico bacteriológico precoz de la difteria por médio de cultivos. II. [Early diagnosis of diphtheria by cultures.]** *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 383-390. 1 pl. 1930.—Pergola's medium was found to afford the earliest cultural diagnosis of diphtheria from suspected patients, colonies showing a well marked characterization in 18-20 hrs. By early observation of cultures, 100% of positive results was reached for cases of true diphtheria, while negative results were mainly obtained from carriers. The method proved to be quite unreliable for detecting healthy carriers.—*Author's conclusions (transl. by A. de Assis).*

1788. **[ĬARYSHEVA, K.]** ЯРЫШЕВА, К. О поверхностной трихофитии гладкой кожи. **[Superficial trichophytosis.]** [With English summary.] Одесский Медицинский Журнал *(Odessaer Med. Zeitschr.)* 4(8/10): 505-521. 3 fig. 1929.—The author describes in detail 4 cases; 3 of them had hair and nails also affected. Microscopic investigation revealed *Trichophyton megalosporon ectotrix.* In one case, where nails and scalp were intact, hematogenic origin is possible. In the other 3, the origin is difficult to determine.—*B. Van Rosen.*

1789. **MAFFEI, LUIGI. Nuova specie di Cephalosporium causa di una cheratomicosi dell'uomo. [A new species of Cephalosporium causing keratomycosis in man.]** *Atti. Ist. Bot. "Giovanni Briosi" e Lab. Crittogam. Italiano Univ. Pavia* 1: 183-198. 9 fig. 1929(1930).—At the hospital in Parma, Serra isolated from the eye of a 35-yr.-old farmer, a *Cephalosporium* which caused keratomycosis. It is the first time any species of this genus has been found in ocular mycoses. As a tribute to the discoverer, the organism is here named *C.* **serrae.** —*L. Maffei (transl. by P. Hillkowitz).*

1790. **MEYER, KURT, und EDMUND MAYER. Kolbenkranzbildung um tote Tuberkelbacillen als Reaktion des Wirtsorganismus. Ein Beitrag zur Genese der Actinomycesformen.** *Zeitschr. Hyg. u. Infektionskr.* 108(1): 38-53. 6 col. fig. 1927.—"Ray fungus" forms with clubbed filaments can be produced in rabbits by injection of killed tubercle bacilli. Since the bacteria are dead, these must be a product of the host, rather than a stage in the life-cycle of the bacterium. Analogous responses occur to various irritants, such as actinomyces, actinobacilli, other acid-fast bacilli, staphylococci, and even to inorganic substances (tellurium). The club forms produced in actinomycosis are therefore to be explained as host reaction products.—*Authors' summary (transl. by R. C. Whitman).*

1791. **OERSKOV, J., und K. A. POULSEN. Das häufige Vorkommen von Streptokokken im menschlichen Rachen, die bei Wachstum auf der Oberfläche fester, Saccharose (oder Raffinose) enthaltender Substrate exzessiv Polysaccharid produzieren. (Vorläufige Mitteilung.) [The frequent occurrence in the human mouth of streptococci which produce excess of polysaccharid when grown on the surface of solid media containing saccharose or raffinose. (Preliminary communication.)]** *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 125-127. 1931.

1792. **REWBRIDGE, ALLAN G., CARROLL W. DODGE, and THEODORE T. AYERS. A case of meningitis due to Endomyces capsulatus (new species).** *Amer. Jour. Path.* 5(4): 349-364. 3 pl. 1929.—Clinical record and necropsy report of a case of meningitis due to *E.* **capsulatus.** Morphological and cultural characteristics are given. The organism is pathogenic for white mice but not for rabbits or guinea pigs. In this instance, the patient also had pulmonary tuberculosis with several intestinal ulcerations. However, in 2 subcutaneous abscesses and in the meninges, only this endomycete was found.—*W. W. Herrmann.*

1793. **SOSA, HECTOR. Diagnóstico del chancro blando por cultivos. Caracteres y propiedades del B. Ducrey. [Diagnosis of soft chancre in culture. Characteristics and properties of B. Ducreyii.]** *Rev. Soc. Argentina Biol.* 6(9/10): 667-677. 1930.—In blood-agar tubes typical colonies are formed in the condensation fluid. The best culture medium is defibrinated rabbit blood diluted 1: 5 in saline; preparations should be made for diagnostic purposes at 12-24 hrs.—*J. T. Lewis.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

PUBLIC HEALTH

I. S. FALK, *Editor*

(See also in this issue Entries 299, 1308, 1463, 1670, 1675, 1701, 1707, 1787, 1822, 2018)

1794. **AGRAMONTE, ARISTIDES. The scourge of yellow fever: its past and present.** *Sci. Monthly* 31 (6): 524-530. 1930.—A review of the history of yellow fever epidemics, and of the means of its transmission. The author concludes that it originated in West Africa, and was brought to America by the slave trade.

1795. **BERDE, K. von. Die regionären Eigenheiten und die epidemiologischen Verhältnisse der Dermatophytonflora in Ungarn. [Regional peculiarities and epidemiological relations of dermatophytes in Hungary.]** *Arch. Dermatol. u. Syph.* 162(3): 777-781. 1931.

1796. **DELLEPINE, G. Sul potere antisettico dell'ossijodo-piridon-acetato di sodio (Uroselectan). [Antiseptic power of Uroselectan.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 822-824. 1930.—Solutions (4, 6, and 8%) were markedly antiseptic to *Bacterium coli* cultures.—*M. Comel.*

1797. **GILL, CLIFFORD ALLCHIN. The genesis of epidemics.** xxvi+550p. 10 maps. Baillière, Tindall and Cox: London, 1928. Pr. 21s.—This volume constitutes a thoughtful and absorbing approach to a study of the genesis of epidemics. It is nominally a monograph on the author's "quatum" theory; in reality it is an approximation to a re-formulation of the essential variables (and their inter-relations) in the causation and cessation of epidemics of malaria, influenza and plague. The essential matter in the analysis is that the infection and immunity phases of epidemic disease each involve at least several important variables. The quantitative aspect is largely undeveloped in this treatise, for the same reason that commonly applies,—lack of precise data. There is a modicum of quantitative information upon each of several variables; but there is almost no precise knowledge on the functional relations or inter-relations of the several variables.—*I. S. Falk.*

1798. **HASLAM, J. F. C. Recent advances in preventive medicine. With a chapter on the vitamins by S. J. COWELL. (Recent Advances Series.)** 328p. 6 pl. P. Blakiston's Sons & Co.: Philadelphia, 1930.

1799. **KIRK, J. BALFOUR. Hints on equipment and health for intending residents in the tropics.** 2nd ed. 128p. Baillière, Tindall and Cox: London, 1931. Price 3s. 6d.

1800. **PHILIP, CORNELIUS B. Possibility of mechanical transmission by insects in experimental yellow fever.** *Ann. Trop. Med. & Parasitol.* 24(4): 493-501. 1930.—

Negative results were reported in 3 attempts to transmit yellow fever to monkeys by interrupted feeding of 39 to at least 100 *Aedes aegypti* mosquitoes, and in 1 effort involving bed-bugs in the larval, nymphal, and adult stages. 3 infections (2 fatal) were produced by injection of lice (*Pediculus* sp.) taken from infected monkeys, but tests by biting were not accomplished. The improbability of mechanical transfer of the virus by regurgitation during interrupted feeding of these insects is discussed and the conclusion is reached that yellow fever epidemics are not aggravated by mechanical transfer through intermittent feeding of such insects.—*C. B. Philip.*

1801. **RAJU, V. GOVINDA.** Bacterial efficiency of mechanical gravity filters. *Indian Jour. Med. Res. Calcutta* 14(3): 707-712. 1927.—Study of the relation of the bacterial count in influent to the count in effluent water in 24 gravity filters, of 3 different types, over a period of 2 yrs. It was found that in over 75% of the tests the ratio of bacteria in feed water to filtered water was 10: 1.—*B. H. Robbins.*

1802. **SIMPSON, WALTER M.** Recent developments in tularemia, Francis' disease. *Jour. Lab. & Clin. Med.* 15(4): 311-322. 2 fig. 1930.—Tularemia, until recently regarded as confined to the U. S. A. and rarely reported in man, has recently been found to be world-wide. It is identical with Ohara's disease in Japan, and appears to be widespread in Russia; 800 proved cases have been recognized in the U. S. A. Among the animal hosts discovered, besides rabbits, are European water rats or voles (*Arvicola amphibius*), in Russia; meadow mice (*Microtus californicus aestuarinus*), in Contra Costa County, California; sheep (*Ovis aries*) and muskrats (*Ondatra zibethica*), in Montana; opossums (*Didelphis virginiana*), in Florida; woodchucks or ground hogs (*Marmota flaviventer*) in Ohio and Arkansas; and quails or bobwhites (*Colinus virginianus*). Among the insect hosts are deer flies (*Chrysops discalis*), rabbit ticks (*Hemaphysalis leporis-palustris*), wood-ticks (*Dermacentor andersoni* Stiles, *D. occidentalis* Newman), and another tick thought to be *D. variabilis*. The author reports 11 new cases.

1803. **TRAWIŃSKI, A.** Études sur la vitalité des bacilles pathogènes du groupe coli-typhique dans l'eau de mer. *Bull. Inst. Oceanogr.* [*Monaco*] 1929(542): 1-5. 1929.—The viability of organisms inoculated into water taken from the "open sea" and into sewage contaminated sea water was as follows (the 1st figure refers to viability in uncontaminated sea water; the 2nd, to sewage contaminated water): *B. paratyphosus B*, 12-12 days; *B. paratyphosus* Breslau, 21-7 days; *B. paratyphosus* Gaustedt, 16-16 days; Gaertner bacillus, 23-5 days; *B. paratyphosus A*, 18-6 days; *B. typhosus*, 16-3 days; *B. dysenteriae* Shiga, 12-30 hours.—*N. M. Erb.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

FOOD AND INDUSTRIAL

E. B. FRED, *Editor*

(See also in this issue Entries 192, 361, 1369)

1804. **BAAS-BECKING, L. G. M.** Historical notes on salt and salt manufacture. *Scientific Monthly.* 32(5): 434-446. 4 fig. 1931.—Very ancient methods of salt manufacture are still in use. Manufacture by boiling is described in Chinese documents dating to 2200-2500 B. C. The red color common in salt marshes, in salt, and in brines, is discussed. It may be due to iron oxid; (possibly) metallic Na; pink, red, or purple bacteria; red yeasts; flagellates (*Dunaliella salina*, etc.); and, probably, blue green algae (*Aphanocapsa*). Purification methods are discussed, and particularly the rôle of the "clearer-worm," *Artemia salina*. Brine, salt-marsh, and salt-works biota are world-wide in distribution. *A. salina*, in Arabian lakes, is eaten by the natives; it has probably been used in the purification of salt since very early times.

1805. [**BAKHTIN, V. S.**] БАХТИН, В. С. Грибные вредители книг. [**Fungi harmful to books.**] Дневник Всесоюзного Съезда Ботаников, Ленинград (*Jour. All-Russ. Congr. Bot., Leningrad*) 1928: 169-170. 1928.—Abstract. A list of fungi found attacking books of a Russian public library is given; 50 are different spp. of *Stachybotrys*. Methods for preservation of the books are given.—*G. A. Lebedeff.*

1806. **CORBET, A. S.** A preliminary study of the bacteriology of Hevea latex. *Rubber Res. Inst. Malaya Quart. Jour.* 2(3): 139-155. 1930.—Microorganisms isolated from the latex of *Hevea brasiliensis* are described. Of these, *Bacillus pandora* and *Micrococcus* **epimetheus** (p. 148) are of interest in that both produce acid in latex and the latter is also responsible for gas formation. The bearing of these organisms on the process of natural coagulation is discussed. *Micrococcus* **chersonesia** (p. 150) is dimorphic, occurring in 2 colony forms associated with differences in morphology. 3 species produce yellow pigments with latex, but as the colored substances are soluble in water they are largely removed during the preparation process. The following are also described: *Gaffkya* **verneti** (p. 143); *Micrococcus* **eatoni** (p. 145), *M.* **ridleyi** (p. 146); *Alcaligenes* **denieri** (p. 152); and *Torula* **heveae** (p. 153).

1807. **IRISH, J. H., and M. A. JOSLYN.** The viability of yeast. The effect of freezing storage in grape juice. *Fruit Products Jour. & Amer. Vinegar Indust.* 8(12): 11. 1929.—Up to 18 weeks, freezing storage apparently does not affect the viability of yeast in grape juice.—*J. A. Kennedy.*

1808. **LAKOWITZ.** Der Teepilz und der Teekwass. *Ber. Westpreuss. Bot. Zool. Verein.* (*Jubiläum*) 50: 77-84. 1928.—The "tea fungus" is a symbiotic association of *Schizosaccharomyces pombe* and *Bacterium xylinum*. Other yeasts, e.g., *Saccharomycodes ludwigii*, *S. exiguus*, and *S. apiculatus*, are also present. With this fungous community a beverage ("teekwass") can be obtained by addition of sugar and a little lemon juice to ordinary tea infusion. It is very refreshing and contains, aside from aromatic substances, acetic and lactic acids. It is very effective against constipation. The fungus, which develops rapidly in culture, has been kept for 2 yrs. On account of the acids formed, metal containers should not be used. The fungus was introduced from the Far East.—*Lakowitz* (*transl. by F. Weiss*).

1809. **SELIBER, G.** Die Wirkung verschiedener Toluolmengen auf die Vergärung von Zucker durch frische und getrocknete Hefe. *Biochem. Zeitschr.* 224 (1/3): 202-210. 1930.—Over 30 series of experiments indicate that toluol (2-40%) has no special influence on retardation of fermentation by living yeast. Living yeasts show in the presence of toluol an intensity of 10-50% in comparison to the same yeast without toluol; a more marked effect is obtained by trituration with toluol. Dry yeast is more sensitive to toluol, especially after long continued fermentation; only in severely dried yeasts a slight difference can be noted between yeast action with or without toluol.—*G. G. De Bord.*

1810. **SIMON, ERNST.** Ueber das zymatische System und die Wirkungen der Essigbakterien. *Biochem. Zeitschr.* 224(4/6): 253-291. 1930.—Using resting cells and acetone-dry preparations of 2 organisms of the *Acetobacter* group, *Bact. pasteurianum* and *Acetobacter suboxydans*, the author finds that the enzyme system of the acetic acid bacteria includes carboxylase, ketone-aldehyde mutase, phosphatase, and glycolase. Glucose yields alcohol and CO_2; hexose diphosphate yields methyl glyoxal; methyl glyoxal yields l-lactic acid; pyruvic acid yields CO_2 and acetaldehyde; acetaldehyde yields

alcohol and acetic acid in equimolecular proportions under anaerobic conditions. Under aerobic conditions but little alcohol is formed. Alcohol yields acetic acid under aerobic conditions.

1811. **TAKETOMI, N., and S. HANAMURA. The cause of the low yield of alcohol in the fermentation of Formosan cane molasses. (1st report.)** Original: *Jour. Soc. Chem. Ind. Japan* 30: 390-395. 1927; Abridgement: *Mem. Fac. Sci. & Engineer. Waseda Univ., Tokyo* 7: 129. 1930.—Usually, alcohol yields of 80-83% of the theoretical have been obtained. Addition of 0.1 gm. ammonium sulphate or phosphate per 100 cc. of liquid to be fermented, increased the alcohol yield to 97-98% of the theoretical. NH_4 salts are thought to function as a food for the yeast, N probably being insufficient in the molasses.—*From abridgement.*

1812. **THAYSEN, A. C., and L. D. GALLOWAY. The microbiology of starch and sugars.** 336p. 3 fig. Oxford University Press; Humphrey Milford: London, 1930. Price $8.50.—This is a complementary volume to Thaysen and Bunker's "Microbiology of cellulose, hemicelluloses, pectin and gums," the 2 volumes giving a review of the microbiology of the carbohydrates. It is written from the point of view of the research worker, and, in addition to compiling existing knowledge, points out new paths for investigation. Pt. I considers the constitution and biochemical properties of starch, glycogen and inulin; their microbiological hydrolysis; hydrolysis of tetra-, tri-, and disaccharides; and hydrolysis of glucosides. Pt. II. takes up fermentation of monoses; dehydrogenation of hexoses resulting in production of gluconic, saccharic, succinic, fumaric, oxalic and citric acids; aerobic dehydrogenation of hexoses resulting in formation of acetic and formic acids, acetylmethylcarbinol, and 2:3 butyleneglycol; facultative anaerobic dehydrogenation of hexoses resulting in acetic acid, formic acid, ethyl alcohol, acetylmethylcarbinol and 2:3 butyleneglycol; facultative anaerobic dehydrogenation of hexoses involving formation of lactic acid as an essential decomposition product by: (1) The *Bact. coli commune* and *Bact. lactis aerogenes* groups, (2) the lactic acid bacteria, and (3) the propionic acid bacteria; the obligatory anaerobic dehydrogenation of hexoses; and fermentation of pentoses. Pt. III covers the synthetic activities of microorganisms and the mucus fermentations. Pt. IV considers the microbiology of cereals and cereal products; of grain and its milling products—bran and flour; of starch-containing sizing materials and adhesives; microbiology of baking; and diseases of bread. Pt. V considers the microbiology of sugar-cane and sugar-beet, and their raw juices; of cane juice and beet juice in manufacture; and the microbiological deterioration of sugar in storage. The subjects are covered completely, both as regards organisms and biochemical processes. The working theory adopted in Pt. II for grouping the various microbiological fermentations is that of Kluyver and Donker, based on Wieland's theory of the chemistry of respiration. About 800 references and an author and subject index are included.—*M. W. Jennison.*

1813. **WERKMAN, C. H., R. M. HIXON, E. I. FULMER, and C. H. RAYBURN. The production of propionic acid from pentoses by Propionibacterium pentosaceum.** *Proc. Iowa Acad. Sci.* 36: 111-112. 1929(1931).—Both propionic and acetic acids are produced from xylose and arabinose.—*H. S. Conard.*

1814. **WILLAMAN, J. J., and Z. I. KERTESZ. The enzymic clarification of grape juice.** *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 178: 1-15. 1931.—The objectionable turbidity of grape juice, due to colloids, can not be removed by ordinary filtration methods. A new method, here described, is applicable to grape juice and other fruit and vegetable juices. Molds grown on appropriate media produce an enzyme which converts most of the pectin of grape juice into other soluble substances. A portion of the pectin comes down as a flocculent precipitate which occludes other suspended matter. By simple filtration this precipitate is removed, leaving a brilliantly clear juice. Production of the enzyme from *Penicillium glaucum* and practical use of the process is described in detail.—*J. J. Willaman and Z. I. Kertesz.*

1815. **WINDISCH, FRITZ. Über den Gärungs-Vorgang auf dem Bottich.** *Wochenschr. Brauerei* 46(38): 379-388. 1929.—Several 10-liter vats were inoculated with the same quantities of yeast, 2 races being used. Each day, for 8 days, a vat was withdrawn and determinations were made of pH, amount of substrate fermented, and distribution of cells deposited and in suspension. With both races, the number of cells in suspension reached a marked maximum on the 4th day, rapidly decreasing thereafter. The number of cells sedimented increased gradually throughout fermentation. The sedimented yeast consistently showed greater reproductive and fermentative action than the suspended cells. These findings are not in harmony with the accepted views on bottom fermentation.—*E. I. Fulmer.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

DAIRY

L. A. ROGERS, *Editor*

(See also in this issue Entries 209, 1812)

1816. **BONDIOLI, M. A propos des caractères d'un coque cromogène isolé de la croûte d'un fromage "grana" de Reggio. [Characters of a cromogenic coccus isolated from the crust of a Reggio dry cheese.]** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(3): 79. 1931.—The organism isolated is provisionally named *Micrococcus* fascettii.

1817. **BREW, JAMES D. Heat sterilization in milk control.** *Agric. Engineering* 12(1): 20-23. 3 fig. 1931.—Use of the term sterilization as applied to dairy utensils and the relation of time and temp. to the thermal death points of bacteria are discussed, and suggestions for the proper cleaning of dairy equipment are given.—*J. D. Brew.*

1818. **BURR, A., K. J. DETMER, W. GRIMMER, F. LÖHNIS, O. RAHN, F. TRENDTEL, und H. WEIGMANN. Butter, Käse, Milchpräparate und Nebenprodukte. [Butter, cheese, milk products and by-products.] [In: WALTER GRIMMER, HERMANN WEIGMANN, und WILLIBALD WINKLER. Handbuch der Milchwirtschaft. Bd. II. Teil 2.]** x+470p. Illus. Julius Springer: Wien, 1931.

1819. **CHRISTIAN, M. I. Thermophilic bacteria in milk.** *Nature [London]* 127(3206): 558. 1931.—It appears that the stable vegetative form of the bacteria, which has been found to dissociate from the sporulating form, bears an inhibiting factor which is heat-labile. It seems that the significance of heating lies in the destruction of this factor.

1820. **FABIAN, E. W. Use of high temperature to pasteurize ice cream mix.** *Canadian Dairy & Ice Cream Jour.* 10(7): 21. 1931.—4 trials, testing the viability of strains of *Escherichia* and *Aerobacter* when heated in ice cream, showed that 155° F. is necessary to kill all cultures. Tests with individual ingredients proved that separately they had no protective action on the cultures.

1821. **JOHNS, C. K. A modified methylene blue reduction test.** *Ann. Rept. Internat. Assoc. Dairy & Milk Inspect.* 19: 272-282. 1930.—Modifications are: (a) preliminary incubation at 12.8° C. for 18 hrs., and (b) mixing contents of tubes not decolorized in 6 hrs. when subsequently incubated at blood heat. Both modifications shorten the reduction time, while mixing also reduces variations between duplicate tubes. The chief advantages are greater convenience, improved accuracy

on high grade milks, and closer correlation with keeping quality. In a study of 145 samples by the ordinary and modified reduction tests, the latter proved best suited to ranking a series of samples in order of keeping quality.—*Author's summary.*

1822. McDOWELL, F. H. Treatment and disposal of dairy waste waters. *New Zealand Dept. Sci. & Indust. Res. Bull.* 27: 1-36. 1931.—A critical review of the problem and methods of disposal of dairy waste waters from the manufacture of dairy products, with observations by the writer and a literature list.

1823. MACY, H. Quantitative changes in the microflora of butter during storage. *Jour. Dairy Sci.* 13(3): 266-272. 1930.—From a study of 483 samples of commercial salted and 123 of unsalted butter before and after storage at various temp. and periods of time, it was found that salt retards multiplication of molds, yeasts and bacteria. The author concludes that the ratio of increase is higher in unsalted than in salted butter, while the opposite is true for the ratio of decrease. It was also found that salt content has a decided effect on quantitative changes in the microflora during storage, but that this is not in proportion to amount of salt present.—*D. B. Shutt.*

1824. RENNES, M. Examen et analyse du lait, physique, chimique, biologique. 118p. Published by the author: 29 rue Mademoiselle, Versailles, 1930. Price 12 fr.

1825. VIRTANEN, ARTTURI I., und H. KARSTRÖM. Über die Milchsäuregärung. V. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 174(1/2): 1-27. 3 fig. 1928.—Dried preparations of *B. casei* ε cause lactic acid fermentation of glucose independently of living cells. Although toluol causes complete disappearance of living cells in 1.5 hrs., fermentation continues for over 20 hrs. In absence of antiseptics, 100 million normal living cells ferment 2.7 mg. glucose, whereas only 0.1 mg. glucose is fermented by the same number of dried cells. Dried preparations of *Strep. lactis* and *B. delbrückii* become practically inert in presence of toluol. The effect of pH on the fermenting action of living and dried bacteria (*B. casei* ε) is shown in a graph; living cells have a lower limit of ± 2.3, which rises gradually to an optimum of 6.2, and then gradually drops to 9.4; dried cells have a lower limit of 4.7, which rises sharply to 5.8-6.1, and then sharply drops to 7.0. Thus, the less active the preparation the more sensitive it becomes to pH changes. The optimum PO_4 concentration for living cells is 0.14 M; for dried cells it is 0.5 M. To extract cozymase, 6-8 gm. of dried preparation are thoroughly mixed in a mortar, previously warmed to 45°, with 200 cc. of distilled water and then centrifuged. The operation is repeated thrice. Sometimes a more active cozymase is obtained by extracting with a 0.25 M phosphate solution. By determining the glucose, lactic acid and phosphoric acid at intervals, it was found that fermentation takes place in 2 phases: in the 1st phase, 50% of the glucose disappears, the combination of phosphate is very marked, but the lactic acid formation is minimal; in the 2nd phase, lactic acid formation is strong, the remainder of the glucose disappears and the phosphate is again gradually set free. Although there thus appears to be a stage of hexosephosphate combination followed by a 2nd stage in which the hexose-phosphate decomposes with formation of lactic acid, the process is nevertheless very complicated. Living *B. casei* ε form upwards of 90% lactic acid from glucose, but at the end of the reaction only 50% of the glucose can be accounted for as lactic acid. No more than the normal small quantities of volatile aliphatic acids, acetic acid and succinic acid are formed. Possibly part of the sugar is converted into a non-reducing hexosephosphate compound. It was shown that lactic acid is not destroyed by oxidation. Washed, dried preparations of *B. casei* ε can not be activated by insulin. A slight inhibitory effect was sometimes noted on lactic acid fermentation by insulin. Although lactic acid bacteria contain a substance which lowers blood-sugar, no relationship could be found between insulin and cozymase.—*F. A. Rotondaro.*

1826. WALKER-TISDALE, C. W., THEODORE R. ROBINSON, and W. E. WOODNUTT. The practice of soft cheesemaking. A guide to the manufacture of soft cheese and to the preparation of cream for market. 5th rev. ed. 116p. 8 fig. George Allen & Unwin, Ltd.: London, 1930.

BACTERIOLOGY AND OTHER MICROBIOLOGY

SOIL

H. J. CONN, *Editor*

(See also in this issue Entries 118, 1949)

1827. CRANSTON, J. A., and B. LLOYD. Experiments on bacterial denitrification. *Jour. Roy. Tech. Coll. Glasgow* 2(2): 301-315. 6 fig. 1930.—Denitrification caused by a marine bacillus in a broth containing 0.25% KNO_3 was studied. The gas evolved was pure N. After an initial lag period, the rate of gas production decreased exponentially according to the equation: $V=2.8(1-e^{-1.38t})$, where V is the volume of gas produced in cc., and t is the time in hrs. In a nitrite-free medium, the organism produced a decrease in alkalinity from pH 8.8 to 8.0 in 2 days, and a subsequent increase to 8.8 after 20 days; in a nitrite broth, the pH changed from 8.8 to 8.5, with a subsequent change to 8.9 after denitrification began. Raising the temp. caused an increase in rate of denitrification, the rate being more than trebled when the temp. was raised from 26.5 to 31.9°C. When both nitrite and methylene blue were available, the former was reduced in preference to the latter.—*Authors' abstract.*

1828. DIXON, DOROTHY. The micro-organisms of the tertiary red sands near Melbourne, Victoria. *Australian Jour. Exp. Biol. & Med. Sci.* 7(4): 161-169. 1930.—Variations in numbers of microorganisms were influenced by changes in soil moisture and temp. in both the sandy and clay soils. Minimum counts were observed during cold and dry periods; maxima seemed to occur after rain, when the temp. was high enough. During 1929 the influence of the rise in temp. can be seen best, on account of the soil being constantly moist. Clay soil supported a greater number of soil fungi than sandy soil. After cultivation, the sandy soil showed a decrease in numbers of organisms; in the clay soil the reverse was the case. Of the genera isolated, 13 were common to both areas. Uncultivated soil showed fewer Phycomycetes but a greater number of species of *Penicillium, Aspergillus,* and *Trichoderma.*—*Author's summary.*

1829. LLOYD, B. Bacterial denitrification: an historical and critical survey. *Jour. Roy. Tech. Coll. Glasgow* 2(3): 530-550. 1931.—A historical and critical survey of bacterial denitrification is given under the following headings: mechanism, rate, conditions affecting it, and denitrifying species recorded in the literature. A detailed bibliography is appended.—*Author's summary.*

1830. [RAVICH-SHCHERBO, IŪ.] Равич-Щербо,Ю. К вопросу о бактериал'ной пленке в Черном море по гипотезе проф. Егунова. **(The problem of a thin bacterial layer in the Black Sea according to the hypothesis of Prof. Egunov.)** [With English summary.] Труды Севастопольской Биологической Станции Академии Наук СССР. (*Trav. Sta. Biol. Sébastopol*) 2: 127-141. 1930.—In a sea water aquarium with decayed organisms, a thin bacterial layer was observed at a depth of 50 cm. Chemical and microbiological tests

revealed the presence of great quantities of H_2S and a complete absence of O_2 under the bacterial zone. Above the bacterial layer great quantities of O_2 and the complete absence of H_2S were observed. *Thiobacillus thioparus* in the bacterial layer was found responsible for oxidation of H_2S. This explains the absence of H_2S above the bacterial layer, a phenomenon similar to that observed by Eganov in the Black Sea to a depth of 175-200 m.—*S. A. Corson.*

1831. SELIM, M. Nitrogen-fixing bacteria in soils. *Zentralbl. Bakt. II. Abt.* 83(15/22): 311-325. 1931.—N-fixing bacteria of 13 types were isolated from soils. The amount of N fixed in 100 cc. of glucose soil extract by different strains of each type were: *B. aerogenes,* 1.12-2.25 mgm.; *B. cloacae,* 0.99-1.56 mgm.; *B. radiobacter,* 0.42-0.75 mgm.; an *Alkaligenes* type, 0.58-0.61 mgm.; *Bact. lactis innocuum,* 0.61-0.64 mgm.; *Bact. prodigiosum,* 0.88 mgm.; *B. malabarensis,* 0.58-1.68 mgm.; *B. megatherium,* 2.41 mgm.; *B. saccharobutyricus,* 2.30 mgm.; *Azotobacter,* 1.75-2.07 mgm. Other strains of *B. cloacae, B. radiobacter* and *B. megatherium,* and also strains of *Bact. turcosum, Bact. punctatum* and *Micrococcus sulfureus,* were unable to fix N in glucose soil extract, but brought about a small fixation when sterile soil was added to the medium. Addition of soil to the medium also resulted in an increased fixation of N by most of the other organisms. The first 6 organisms appear to belong to a wide group of intergrading forms and many of them produced identical, slimy, raised colonies on mannite soil extract agar. Several of the bacteria partially or completely lost the ability to assimilate N during several months' growth on mannite soil extract agar. Cultivation in sterile soil for a few months had no influence on the N-fixing power of the bacteria studied. The N fixed by several of the pure cultures grown in association was determined. The highest fixation was obtained by a mixed culture of *Azotobacter* and *B. saccharobutyricus.* A number of soils of different origin, 2 ignited soils, certain Fe compounds and aluminium hydroxide exerted a small favorable effect on N fixation by *B. aerogenes* in glucose soil extract. Several strains of *B. radiobacter* produced a loss of N in the tests.—*M. Selim.*

GENERAL BACTERIOLOGY

R. E. BUCHANAN, *Editor*

(See also in this issue Entries 363, 369, 386, 645, 1338, 1397, 1489, 1636, 1638, 1750, 1767, 1791, 1793, 1801, 1804, 1806, 1812, 1819, 1827, 1829, 1830, 2144)

1832. BOYD, ELDON M., and GUILFORD B. REED. Gas-metal electrode potentials in sterile culture media for bacteria. *Canadian Jour. Res.* 4(1): 54-68. 1931.—The work of French and Kahlenberg on gas-metal electrode potentials suggested that the potentials obtained at inert metal electrodes immersed in growing cultures of bacteria, and generally regarded as an oxidation-reduction phenomenon, might be of a similar type. This was tested by passing air, H, N and CO_2 through sterile beef broth and observing the potentials developed at Pt, Au, and Hg electrodes. It is shown that air causes a rise in potential at all 3 electrodes; H causes a marked fall in potential at the Pt and a slight change at the Au and Hg electrodes; N and CO_2 cause little or no change in the potential at the 3 electrodes. These changes are in agreement with French and Kahlenberg's results, except in the case of the Hg electrode, which is shown to react chemically with the broth.—*Authors' abstract.*

1833. CHURCHMAN, JOHN W. Non-toxic dyes and dye-resistant bacteria. *Stain Technol.* 6(2): 57-63. 7 fig. 1931.—Exposure of 3 typical organisms—*Serratia marcescens (Bacillus prodigiosus), Bacillus anthracis,* and *Staphylococcus aureus*—to a saturated aqueous solution of neutral red (5.6% National Aniline certified) for 24 hrs. failed to kill them, and *Serratia* survived 9 days' exposure. All 3 survived 21 days' exposure to 2% neutral red, and *B. anthracis,* 30 days. All 3 survived 24 hrs.' exposure to saturated aqueous Bismarck brown (Grübler) and *B. anthracis,* 40 days. *Serratia* (as a Gram-negative organism) was tested for degree of resistance to gentian violet. The bacteriostatic titer of gentian violet in agar for the organism is about 1: 900. *Serratia* survived 4 hrs.' exposure to 1: 2000 dilution, and would probably be unaffected by much stronger solutions. Vigorous growth of the organism was obtained after 26½ mo. at 1: 15,000 dilution, and after 16 months at a higher concentration (1 drop of 1% dye to 3 cc. bacterial suspension). With acid fuchsin, transplants from tubes containing 2 cc. bacterial suspension and 4 drops of 2% aqueous dye solution showed vigorous growth after 46 mo. exposure. Bactericidal action of both gentian violet and acid fuchsin is greatly increased by a slight rise in temp.—*Author (courtesy Wistar Bibl. Serv.).*

1834. FOREMAN, F. W., and G. S. GRAHAM SMITH. The control of reaction in cultures and enzymic digests. *Dept. Sci. & Indust. Res.* [*Great Brit.*] *Food Invest Spec. Rept.* 32: 1-27. 1928.—Data from 2 experiments previously published are the basis of a detailed discussion of the relations between fluctuations in pH and those in titrable acidity. Phosphates and creatinine were responsible for most of the buffering observed in meat extract between pH 9.0 and 4.0. The curves obtained were compared with $[H^+]$ curves for phosphate solutions of the same strength. The $[H^+]$ curve for the phosphate showed that successive unit increments of acid produce increasingly greater increments of increase in actual $[H^+]$ along the whole course of the changes from the all-salt to the all-acid stages and, on comparing with the pH curve, that $[H^+]$ is stabilized best where the ratio of salt to acid is highest and where the steepness of the pH curve shows the stabilization of pH to be nearly at its lowest. This observation led to a consideration and replotting of Sorensen's phosphate data and Walpole's curves for acetic acid-acetate mixtures. On comparing the pH and $[H^+]$ curves it is seen that in the early region, viz., that near the all-salt end, the steeper the pH curve the greater the resistance to change of $[H^+]$; while in the later region the steeper the pH curve the less the resistance to change of $[H^+]$. Further, at any 2 points on the early and late portions of the pH curve, where the slopes are the same and consequently the "buffering" capacities of the 2 solutions equal, there is a very great difference in capacities of the solutions to resist change of $[H^+]$. To avoid confusion, it seems desirable to use another term in reference to resistance to change of $[H^+]$. Having regard to the depressing action of the salt on the dissociation of the free acid illustrated in the "% dissociated" curves, the term "depressor effect" is employed. The authors suggest that media be stabilized against increase in $[H^+]$ by choosing a depressor salt whose maximum effect is at, or slightly to the alkaline side of, the desired reaction. The data of Van Slyke and Zacharias on the action of urease in urea solutions containing phosphate mixtures are reinterpreted according to this concept. It is concluded that there is sufficient justification for the view that the effects of salts on the activities of enzymes and bacteria in media should be considered from the standpoint of how these salts affect the absolute $[H^+]$ and $[OH^-]$, as well as from the standpoint of how they affect pH. In construction of artificial media these 2 standpoints involve 2 different ways of employing salts. —*A. G. Benton.*

1835. HAASE, W. Unsere Erfahrungen mit der Hohnschen Kultur. *Bruns' Beitr. Klin. Chir.* 151(2): 318-325. 1930.—Positive Hohn cultures were obtained in

45 of more than 500 specimens from clinical material; in 31 (14 from urine, 10 from abscesses, 5 from sputa, 1 from ascites, and 1 from prostatic secretion) tubercle bacilli could not be found in smears with Ziehl-Neelsen stain; 2 cultures were negative (1 pus, 1 urine), but with smears positive (perhaps acid-fast saprophytes, perhaps dead bacilli); 3 cultures were positive, with negative animal inoculations; 9, negative, with positive animal inoculations. The cultures were positive after an average of 21 days (frequently in 5 days); no attempt was made to diagnose questionable colonies early; cultures negative at 50 days were so designated. By a special method it was possible to stain the Hohn cultures for photographing.

1836. **HURIET, J. Observations sur les bactéries du groupe "subtilis-mesentericus-megatherium."** 20p. Pharmacie Huriet: Nancy, 1929.

1837. **KRISTENSEN, MARTIN. Klassifikation dänischer und anderer Brucellastämme.** *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 179-196. 1931.—Agglutination and agglutination-absorption experiments [apparently on nearly 50 strains] showed no type distinction between strains of *Brucella abortus, Br. melitensis,* and the Danish swine type. The methyl-violet-thionin test and that based on H_2S formation appeared to give a good basis for classification of the group. By both these tests all Danish cattle and human strains gave the reactions described as characteristic for the bovine type. Danish swine strains by methyl-violet-thionin test showed closest relations with the American swine type, from which, however, they differed through lack of H_2S formation, etc.—*Author's summary (transl.).*

1838. **LOGHEM, J. J. van, en A. VEDDER. Een nieuwe type of een door den bacteriophaag versterkte eigenschap? [New bacterial type or intensified bacteriophagic property?]** *Nederlandsch Tijdschr. Hyg. Microbiol. en Serol.* 4(4): 251-254. 1930.

1839. **NYRÉN, TEOFILIP. Über die Einwirkung von Lipoidlösungen auf das Wachstum säurefester Bacillen.** *Beitr. Klin. Tuberk.* 73(2): 238-250. 1929.—The acid-fast strains studied included (I) true tubercle bacilli of warm-blooded animals (human, bovine, bovine Vallée, and BCG); (II) tubercle bacilli of cold-blooded animals (Friedmann's turtle tubercle bacilli, blind-worm tubercle bacilli); (III) saprophytes (water and timothy bacilli, etc). The lipoids studied were human, bovine, swine, vegetable and egg lecithins, and cholesterin from human brain. Of the 5 lecithins, all (but particularly, egg lecithin), in Much's cell-disperse solution, promoted growth of the strains of warm-blooded tubercle bacilli used. Cholesterin does not promote growth of these bacilli; whether it inhibits their growth is not established. Growth of cold-blooded tubercle bacilli and saprophytes is not inhibited by lecithins, except human lecithin which hinders growth of several saprophytes. Cholesterin is strongly inhibitory or fatal to growth of this group of acid-fasts. Addition of peptone to the 4% water-agar employed does not promote growth of the warm-blooded tubercle bacilli, but strongly promotes growth of the other acid-fasts. The acid-fast bacilli tested grow on lipoid media with strongly granulated forms, as shown by carbol-fuchsin staining. On many of these media acid-fast bacilli lose their acid-fastness. Cold-blooded tubercle bacilli grow on peptone media with strongly granulated forms. On the contrary, saprophytes (except 1 strain) grew on peptone as homogeneous rods.

1840. **PLOTZ, HARRY, et JEAN GELOSO. Relations entre la croissance des microorganismes anaérobies et le potentiel du milieu de culture.** *Ann. Inst. Pasteur [Paris]* 45(5): 613-640. 3 fig. 1930.—Measurements of potential, chiefly by the electrometric method, were made on the medium in which various anaerobes were grown. A new technique was used, which permits measurement of potentials in vacuo. During bacterial growth the potential varied, finally attaining a fixed value corresponding to $rH_2=5.5$. This value was independent of the original potential indicated by the electrode, of the method used to render the medium anaerobic, and of the species of bacterium grown. The potential of the non-inoculated bouillon was followed and gave the potential limit of glucides, $rH_2=7.5$ at 37°. Potential curves analogous to those observed with cultures were obtained by use of a liberal quantity of platinum black in the bouillon; this was interpreted as signifying that the bacteria, like the platinum, acted as a catalyzer. A rapid growth of bacteria could be obtained in the medium studied only when the potential lay between $rH_2=0$ and $rH_2=14$.—*Authors' summary (transl.).*

1841. **SCHUBERT, JOH. Der Deltoidspatel. Ein technischer Beitrag. [The deltoid spatula.]** *Zentralbl. Bakt. I. Abt. Orig.* 117(7/8): 551-552. 1930.—Adapted for very delicate work in transplanting colonies.

ECONOMIC ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Assistant Editor*

(See also in this issue Entries (History) 10; (Spermatogenesis) 27; (Pollination) 33, 35; (Plant disease vectors) 82, 90, 126; (Ecology) 32, 257, 272; (Physiology) 218, 285, 1004, 1173; (Metabolism) 415, 576; (Rate of growth) 577, 598; (Reproduction) 903; (Regeneration) 964; (Sense organs) 980, 989; (Veterinary) 1327; (Diseases) 1345, 1346, 1361; (Animal disease vectors) 1695, 1696, 1708, 1711, 1727, 1747, 1749, 1800, 1802; (Parasites) 1716, 1725, 1726, 1729, 2014, 2348, 2355; (Forestry) 1956)

ECONOMIC ENTOMOLOGY

FRUITS

W. A. ROSS, *Editor*

(See also in this issue Entries 1857, 1888, 1895, 1897, 1898, 2601, 2707, 2714, 2715, 2716)

1842. **BARRITT, N. W. A new spray for scale-insects on citrus in Egypt.** *Bull. Ent. Res. [London]* 20(1): 44. 1929.—The author has modified the composition of the resin wash used previously, so as to remove the substances injurious to foliage. The modified wash is made as follows: 1 part resin is dissolved in 3 parts castor

oil; this solution is stirred into 50 parts of water, containing 1 part of .880 ammonia. Spraying may take place at any time between March and October.

1843. **DANIEL, DERRILL M. Biology and control of the blackberry leaf-miner.** *New York State Agric. Exp. Sta. [Geneva] Tech. Bull.* 133: 38p. 1 pl., 5 fig. 1928.—The blackberry leaf-miner (*Metallus rubi* Forbes) is probably a limiting factor in the culture of blackberries in western New York. Injury results from the feeding of the larvae which mine between the surfaces of the leaf. In certain yrs. 60-70% of the leaf surface in a field may be destroyed. Heavy infestations for successive yrs., weaken the plants causing poorly developed fruits of inferior flavor. Experiments were conducted to determine the effect of various insecticides on the eggs, larvae, and the adults. The larvae were found the most susceptible. 4% oil sprays of the highly refined white oil emulsion type gave 18-86% kill. Of the 2 oils tested, Volck averaged 54% control and Medina summer emulsion 39%. The organic insecticide, Derrisol, at a dilution of 1 to 200, averaged 69% control. Experimental evidence is not considered sufficient to make recommendations at present. A Canadian species (*M. bethunei* MacGillivray) has been synonymized with *M. rubi* Forbes. Considering the degree of infestation and actual damage sustained, the blackberry is the preferred host, although dewberries often suffer injury.—*Author's abstract.*

1844. **DEKHTIAREV, N. S. Notes on the scarabaeid beetles attacking vines in Ukraine.** *Bull. Ent. Res. [London]* 20(1): 95-98. 2 pl., 2 fig. 1929.—The most favorable areas for cultivating grapes in Ukraine are the sands of the lower reaches of the Dnieper, the shore of the Black Sea, the Kherson-Odessa districts, and along the Sea of Asov. The appearance of the larvae of various scarabaeid beetles, especially *Polyphylla fullo** L. has been a great obstacle to the exploitation of these barren spaces. The larvae in the soil average about 10-12 to the sq. m. and they often completely destroy the newly planted vines in 1 summer. Among natural enemies are mentioned an asilid fly, *Satanas gigas**, a tachinid fly, *Microphthalma disjuncta* Wied., and hedgehogs, *Erinaceus roumanicus* Barret-Ham. The most active predator of *Polyphylla* is the mole, *Talpa europea brauneri* Satun. Measures of control are discussed, as hand collection of the adult beetles and of the larvae, mechanical obstructions, poison baits, CS_2 applied to the soil by injectors, and paradichlorobenzene (PDB). An effective dose for the larvae is 7 gms. of PDB to 4 sq. ft., at a depth of 2-3 inches, the holes made 2 feet apart in both directions with a vine in the center of each square. Oviposition by *S. gigas* is described and illustrated, also the eggs, larvae, and pupae.

1845. **DUSTAN, ALAN G. Notes on the distribution of the cyclamen mite Tarsonemus pallidus Banks.** *Ann. Rept. Quebec Soc. Protect. Plants* 21: 48-53. 1928-1929 (1929).—This mite has been found causing serious injury to strawberries, stunting the growth of the plants, wrinkling the leaves and preventing the formation of runners and fruit. It is present in Ontario, British Columbia, New Brunswick and Quebec.—*E. H. Dusham.*

1846. **FAES, H. Influence des conditions climatériques sur le développement des insectes et champignons parasites des cultures.** *Rev. Vit.* 72(1875): 461-465. 1930.—The propagation of *Phylloxera vastatrix* is favored by hot dry summers which desiccate the surface soil and induce swarming of the young. In the vineyards of central Europe a marked increase of mildew (*Peronospora viticola*) may be expected in wet yrs., especially if a humid atmosphere prevails during the period when the vines are making the most rapid growth. The danger is considerably lessened if the mean temp. remains rather low, and is exaggerated if the temp. is high, especially if sunlight is intermittent. In dry hot years only slight injury may be feared from the vine worm (*Cochlys ambiguella*) especially if the heat and drought coincide with the oviposition and hatching of the young larvae (end of May to the first of June, and end of July to the first of August). In humid years the larvae cause much damage especially if blossoming is unduly prolonged. *Coniothyrium diplodiella* causes particular damage when hail storms strike the vineyards in July and August. Later the danger is less, as a high sugar content in the grape restricts the abundant development of fungous mycelium. Vineyards on low-lying land suffer most.—*H. Faes (transl. by J. M. Armstrong).*

1847. **PÉREZ, MODESTO QUILIS. Biologia del calcidido Leptomastidea abnormis (Girault) parásito del Pseudococcus citri Risso. [Biology of the chalcid L. abnormis, a parasite of P. citri.]** *Mem. R. Soc. Españ. Hist. Nat.* 15(1): 73-80. 4 fig. 1929.—*L. abnormis* described almost simultaneously in 1916 by Garcia Mercet and by Girault under the respective names of *Leptomastidea aurantiaca* and *Paraleptomastix abnormis,* was again described by Timberlake in 1918 as a new sp. of *Tanaomastix.* Since the generic characters were laid down by Garcia Mercet under the name *Leptomastidea* and the specific characters, as defined by Girault, have been accepted, the species in question is settled as *Leptomastidea abnormis,* synonym, *Tanaomastix.* In connection with the biology of this parasite a description of the adult is given, as a clarification of the synonymy, to which some American writers apparently still adhere. The parthenogenetic reproduction of *Leptomastidea,* especially during Oct.-Nov., is pointed out and the characteristic position of the larva with its head always near the anal end of its host (*Pseudococcus citri*) is described. The number of eggs of a single ♀ average between 200-300 under normal conditions. One half of the egg production is taken as a base for an estimate of ♀♀ during one season to give an approximate idea of the total reproduction during the life of the insect in one season, in order to emphasize the economic importance of this parasite, as an effective agent in the biological control of *Pseudococcus citri.—C. Zeimet.*

1848. **PETHERBRIDGE, F. R. The common green capsid bug.** *Jour. Ministry Agric.* 35(12): 1133-1140. 2 pl., 3 fig. 1929.—This bug, *Lygus pabulinus,* has become a serious pest of currants, gooseberries, strawberries, potatoes, and dahlias, and is also present on apples, pears, plums, cherries, peaches, and a large number of cultivated plants and weeds. Characters are given for distinguishing it from the apple capsid bug (*Plesiocoris rugicollis*) which causes similar damage on currants and apples. There are 2 generations per annum. Eggs are laid in the fall in woody plants such as currants, gooseberries, apples, and roses; in the spring there is usually migration to herbaceous hosts, where summer eggs are laid; the 2nd generation returns to the woody host to lay their winter eggs. In the 1st generation, a secondary migration from strawberries to other herbaceous hosts takes place. Details are given of the damage done to the important host plants and of the habits of the bug in its various stages. Control measures are given.—*Author's summary.*

1849. **RIPLEY, L. B., and G. A. HEPBURN. Olfactory and visual reactions of the Natal fruit-fly, Pterandrus rosa (Ksh.), as applied to control.** *So. African Jour. Sci.* 26: 449-458. 1929.—Mally bait, a sweetened arsenate of lead, does not control the Natal fruit-fly, *Pterandrus rosa* (Ksh.), because of climatic conditions. Experiments are being made with olfactory attractants and obscurants, and with different intensities and colors of light. About 150 volatile substances were tested, such as alcohols, esters, acids, and mixtures of these substances. Attractants and obscurants were tested by (1) trapping in the orchards with baited containers, (2) trapping in the insectary, (3) intensive trapping in small cages under conditions of controlled light, and (4) with a special olfactometer. Pollard bait, oil of cloves, and linalyl acetate are strong attractants. Oil of peppermint is the strongest repellent known. The fly responds to lights of different intensities, but can not distinguish colors, i.e., red, green, and violet.—*C. O. Eddy.*

1850. **ROSELLA, ET. Le dépérissement des abricotiers à Roquevaire. [Decay of apricot trees at Roquevaire.]** *Prog. Agric. et Vit.* 92: 427-430. 1929.—For some years apricot trees have died one by one as though

stricken by "apoplexy." Affected trees near Roquevaire showed unmistakable signs of invasion by *Capnodis tenebrionis* and the author believes that this insect has been chiefly responsible for the death of the trees. He suggests that steps should be taken to control *Capnodis* by destroying all dead wood and trees; by collecting the adults, especially early in the morning when they are sluggish; and by treating the infested trees with paradichlorobenzene. The dosages recommended are 21 to 28 gms. for 2-5 yr. old trees, 31 gms. for older trees, and 14 gms. for younger trees.—*K. S. Markley.*

1851. SCHOEVERS, T. A. C. Appelwantsen en hunne bestrijding. [Apple bugs and their control.] *Tijdschr. Plantenziekten* 36(4): 75-83. 1 pl. 1930.—Lately two bugs, *Plesiocoris rugicollis* Fall and *Lygus pabulinus* L. attacking apples in England, have been found in Holland especially in the district near Hoorn. Their life history, habits and control are discussed.

1852. STANILAND, L. N., and C. L. WALTON. Tar distillate washes as a control for apple capsid bug: Field experiments 1929. *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 101-114. 10 pl. [1930].—The tests were made with the high boiling neutral fractions of tar distillates as prepared by Tutin at the Long Ashton Experiment Station. In numerous tests this material at 10% strength, applied in December, January, or February, controlled capsid bugs on apples very effectively and on currants moderately well. At 6% strength it gave effective control of all "caterpillars" present in the egg stage at the time of application to apples, plums, and black currants.—*W. H. Chandler.*

ECONOMIC ENTOMOLOGY

TRUCK AND GREENHOUSE CROPS

J. E. GRAF, *Editor*

(See also in this issue Entries 1848, 2554, 2662, 2751)

1853. BARNES, H. F. The chrysanthemum midge (Diarthronomyia hypogaea F. Lw.). *Entmologist* [*London*] 61(777): 36-38. 1 pl. 1928.—Brief descriptions of egg, larva, galls, and damage to chrysanthemums, caused by the chrysanthemum midge. Control measures are also given for this pest only recently introduced into England.

1854. BECKWITH, CHARLES S. Control of the blunt-nosed leafhopper. Proc. 60th Ann. Conv. Amer. Cranberry Growers' Assoc. p. 16-21. Aug. 1929.—The blunt-nosed leafhopper (*Euscelis striatulus* Fall.), the vector of cranberry false blossom, is a single brooded insect. In New Jersey the eggs hatch May 30 to June 13, nymphs mature June 23 to August 1, and adults persist throughout September. The greatest number of adults is present about August 1. Eggs are laid in the stem of the cranberry plant. Submerging the bog after most of the leafhoppers have hatched is a recommended control measure, although experiments indicate that spraying with certain pyrethrum-soap or pyrethrum-oil mixtures gives beneficial results. Some notes are given on other leafhoppers present on New Jersey cranberry bogs.—*C. S. Beckwith.*

1855. BONGINI, V. Parassiti di stagione. [Seasonal parasites.] *Boll. Lab. Sper. Fitopatol.* 7(1): 7-10. 1 fig. 1930.—The drying up of flowering plants of Cyclamen persicum cultivated in hothouses owing to the destructive action of the larvae of *Othiorrhynchus sulcatus* Fab. on the roots and tubers is described as showing the partiality of this Curculio for garden plants. Various control methods are given.—*V. Bongini* (*transl. by C. Zeimet*).

1856. BRANDT, E. Gemüseschädlinge unter den Fliegen, Mücken, Käfern, u. a. Insekten. [Insect pests of vegetables.] *Das Aquarium* 1930(April): 63-64. 1930. —Brief notes on numerous species.

1857. CORY, ERNEST N., and P. D. SANDERS. Soil treatment for control of the Japanese beetle. *Jour. Econ. Ent.* 22(3): 556-562. 1929.—A campaign of soil treatment with CS_2 emulsion was conducted during 1927-1928 in a large scale experiment on suppression of the Japanese beetle, *Popillia japonica* Newman. Details are given on dosage, methods of application, and the cost of the treatment. Apparently the natural rate of increase of the beetle was reduced by destroying the grubs.—*W. E. Fleming.*

1858. DOUGLASS, J. R. Hibernation of the convergent lady beetle, Hippodamia convergens Guer., on a mountain peak in New Mexico. *Jour. Econ. Ent.* 23 (1): 288. 1930.—Accumulations of dead beetles were observed at an altitude of 9,462 ft. Many beetles were able to pass the winter at that elevation. Another coccinellid, the Mexican bean beetle, failed to survive the winter there.

1859. DRAKE, C. J., H. M. HARRIS, and R. M. JONES. Concerning onion maggots in Iowa. *Trans. Iowa State Hort. Soc.* 64: 378-385. 17 pl. 1929[1930].—Twelve spp. of flies, 5 of them European, and the others probably indigenous to America, have been reared from onions. As the modes of life and the larval habits of these flies are diverse, some being primary and others secondary invaders, an attempt was made to study the method of egg-laying and the larval habits of each sp. in the field and laboratory. The larvae of the imported onion fly, *Hylemyia antiqua*, the seed corn fly, the lesser bulb flies, the black onion fly, the barred winged onion fly (*Caetopsis aenea*) and, to a very limited extent, the other ortalids, are important primary onion pests. The stratiomyids and certain of the syrphids and ortalids are largely secondary invaders. However, all 12 spp. will breed in decaying or infested onions and in rotting piles of culls and refuse about the onion field; culls, scullions, refuse and remnants of the crop often become important breeding centers for the flies during the fall and spring.

1860. EDWARDS, W. H. Pimento scale in Manchester. *Jour. Jamaica Agric. Soc.* 35(3): 119-123. 1931.—A study of the white fly, *Aleurodicus pimentae*, a pest of the pimento, convinces the author that this insect can be controlled in an effective and lasting manner only by improving the conditions under which the host is grown. The entomophagous fungus, *Aschersonia aleyrodis*, helps to keep *A. pimentae* under control.

1861. GRANDI, GUIDO. Hypopta caestrum Hbn. *Boll. Lab. Ent. Ist. Sup. Agrario Bologna* 3: 221-245. 1 pl., 9 fig. 1930.—*Hypopta caestrum** was observed damaging asparagus. Its life history and possible methods of control are discussed. There are descriptions and figures of the adult, egg, mature larva, and chrysalis.

1862. ISELY, D. The biology of the bean leaf-beetle. [Cerotoma trifurcata Forst.] *Arkansas Agric. Exp. Sta. Bull.* 248. 20p. 10 fig. 1930.—The bean leaf-beetle is the most destructive insect attacking the vegetative parts of beans, cowpeas, and soybeans in Arkansas. The adult beetle attacks its hosts above the ground; the larva feeds upon the roots and nodules. The larval damage is greatest on light sandy soils. The total minimum time required to pass the successive stages from the egg to the sexually mature adult is 26 days. Temp. is the most important factor affecting the rate of development. The average duration of the immature stages is, at 21° C.: egg 13.6 days, larva 16.6 days, prepupa 7.3 days, pupa 10 days; at 30° C.: egg 7 days, larva 8.8 days, prepupa 3.9 days, pupa 5 days. The preoviposition period of non-hibernating beetles varies from 5 to 22 days, with an average of less than 9 days. The average number of eggs secured from each ♀ was 257.7, and the maximum 904. Eggs were deposited only by beetles which had fed

upon host plants in the seedling stage during the first few days of their adult life. It is possible that the number of generations occurring during a season is dependent on the availability of seedling hosts at the time of emergence of adults from the soil. Winter is passed in the adult stage. Beetles were reared through 3 generations.—*D. Isely.*

1863. **KALANDADZE, L. [The rape leaf beetle (Entomoscelis adonidis Pall.) in the vegetable gardens of Tiflis.]** [Text in Georgian; summaries in Russian and German.] *Bull. Inst. Exp. Agric. Georgia [Tiflis]* 1929 (2): 53-58. 2 pl. 1929.—*E. adonidis,* hitherto not reported in Georgia, causes considerable injury to Cruciferae, due to attacks both by larvae and by the beetles. Cress is usually entirely consumed. *E. adonidis* f. *spuria* Jacob. comprises 96-98% of the individuals observed, the parent species being rare. There are at least 3 generations per year. Larvae occur in late March, and pupate after 3 weeks. Beetles appear after 12-14 days pupation, i.e., early in May. Larvae of the 2nd generation appear in the middle of May. Mode of overwintering is not known. Spraying with Paris green or some other arsenate is recommended; use of a 3-5% solution of pyrethrum powder gives good results.

1864. **LANGMAN, A. E. B. The control of woolly Aphis** *Gard. Chron.* [*London*] 88(2295): 519-520. 2 fig. 1930.—Carbon disulphide injected into soil at base of apple trees was a cheap and satisfactory control for the woolly aphis, *Schizoneura lanigera.* About 3 lbs. 2 oz. was sufficient to treat 60 trees. Four injections were made at each tree at distances varying from 12 to 20 inches from the base of the tree.—*J. E. Graf.*

1865. **WILSON, J. W. Cicadas severely damaging Asparagus plumosus.** *Florida Ent.* 14(3): 41-44. 1930.—The injury is caused by the nymphal cicada feeding on the root of the plant. Although this cicada is generally distributed over Florida, they have been reported as doing serious damage only in the vicinity of Jupiter. Very little is known of the life history and habits of this species. Control measures have been started, the result of which will be reported later.

ECONOMIC ENTOMOLOGY

STORED PRODUCTS

R. T. COTTON, *Editor*

(See also in this issue Entries 655, 2126, 2539)

1866. **COTTON, R. T., and R. C. ROARK. Ethylene oxide as a fumigant.** *Indust. & Eng. Chem.* 20(8): 805. 1928.—A dosage of 1 lb. per 1000 cu. ft. of space for 20 hrs. proved to be 100% lethal to specimens of the clothes moth, *Tineola biselliella;* the carpet beetles, *Attagenus piceus* and *Anthrenus vorax;* the rice weevil, *Sitophilus oryza;* the Indian meal moth, *Plodia interpunctella;* the saw-toothed grain beetle, *Oryzaephilus surinamensis;* the red-legged ham beetle, *Necrobia rufipes,* and the flour beetle, *Tribolium confusum.* For commercial fumigation work it is recommended that the fumigant be used at the rate of 2 lbs. per 1000 cu. ft. of space.

1867. **GREMPE, P. MAX. Können Insekten Metalle durchfressen?** *Ent. Rundschau* 48(6): 65-67. 1931.—A discussion of records of insects eating through metal.

1868. **HILL, G. F. Notes on Plodia interpunctella (Indian meal moth).** *Jour. Council Sci. & Indus. Res. Commonwealth Australia* 1(6): 330-340. 1928.—The Indian meal moth has two broods in Melbourne, Australia. The adult moths begin to emerge in Oct. in unheated buildings, reach their greatest abundance during Dec. and Jan. and disappear in Apr. The incubation period of the egg varies with the temp.; at 60-95° F. they hatch in 1-14 days. Temp. above 93° F. is unfavorable for the development of the egg, and 100° F. is always fatal. The development period from oviposition to emergence as a moth varied from 32 to 305 days with an average of 73 days.—*R. T. Cotton.*

1869. **HOYT, L. F. Further fumigation tests with ethylene dichloride carbon tetrachloride mixture.** *Indust. & Eng. Chem.* 20(9): 931-932. 2 fig. 1928.—A 3:1 ethylene dichloride-carbon tetrachloride mixture, used at the rate of 14 lbs. per 1000 cu. ft., at 75° F., was effective against *Tribolium confusum, Plodia interpunctella,* and the webbing clothes moth. The fumigant had no deleterious effect on the baking qualities of wheat or flour, or upon the germination of wheat, oats, beans, peanuts, clover, etc. Various food products fumigated with the mixture gave off the fumigant so as to be edible in from 7 to 8 days.—*H. H. Schwardt.*

1870. **ILLINGWORTH, J. F. Pineapple cannery waste and its insect problems.** *Proc. Hawaiian Ent. Soc.* 7(3): 462-465. 1931.—Because of the attraction of pineapple waste for Nitidulidae it is dried, and sold as cattle food. At one cannery *Musca domestica* was breeding in waste scum on a pond in huge numbers, but was controlled with arsenicals. Factory problems are discussed.

1871. **KRETZMANN. Vom Messingkäfer. (Niptus hololeucus Falderm.)** *Aus. der Heimat* 43(10): 317. 1930.—Account of damage by this species to clothing and household goods in Germany.

1872. **MINAEFF, M. G., and J. H. WRIGHT. Moth-proofing.** *Indust. & Eng. Chem.* 21(12): 1187-1195. 4 fig. 1929.—Animal fibers treated with different chemicals were exposed to clothes moth larvae (*Tineola biselliella* and *Tinea pellionella*) and to the black carpet beetle larvae (*Attagenus piceus*). The methods of testing moth-proofing agents are discussed. Four classes of chemicals have been investigated: thiourea, nitrogenous compounds in general, alkaloids, and fluorides.—*M. G. Minaeff.*

1873. **NAKAYAMA, SHONOSUKE. Biological studies of the granary weevil, Calandra granaria L.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1211-1220. 1926 (1928).—The granary weevil was introduced into Japan proper in 1923 with rice shipped from California. In the vicinity of Yokohama this insect passes the winter in the adult, larval and pupal stages; oviposition begins in April and it is possible to rear 3 or 4 broods a year. Brief notes are given on its biology and on the usual control measures advocated.—*R. T. Cotton.*

ECONOMIC ENTOMOLOGY

FOREST AND SHADE TREES

J. M. SWAINE, *Editor*

(See also in this issue Entries 75, 1956, 2524)

1874. **BORCHERS, FRIEDRICH, und EDUARD MAY. Erfahrungen bei der Arsenbekämpfung des Kiefernspanners in biologischer und technischer Hinsicht.** *Forstwiss. Centralbl.* 52(16): 657-679; (17): 697-714; (18): 744-757. 18 fig. 1930.—Caterpillars of the pine looper, *Bupalus piniarius,* require a fair degree of atmospheric humidity for normal feeding; hence poison applied during dry periods may not be effective. Young caterpillars

are killed by smaller doses than old ones, and can not go as long without eating. Improved models of motor dusters are satisfactory for applying the poison. The most accurate method of testing the results of control measures is by collecting and weighing the droppings, and correlating these with temp. and humidity records. Many caterpillars survive the effects of the As, but form undersized pupae which, in turn, develop into deformed or infertile adults. The caterpillars which survive are likely to be attacked by parasites. Contact poisons are less satisfactory than As because their effect is not cumulative nor persistent beyond the larval stage. —*W. N. Sparhawk.*

1875. FELT, E. P., and S. W. BROMLEY. Shade tree problems. *Florists Exchange* 75(3): 27; (4): 33, 45. 1930.—Insect activities, the restriction of feeding areas, atmospheric and soil dryness, gas mains, paved streets and abnormal air circulation are problems common to city shade tree culture. If trees become defoliated from any cause, it is important to feed, water and spray them liberally. Certain insect pests, such as borers, tend especially to attack weak or defoliated trees; hence, the practice of keeping the trees vigorous is a means of preventing attack. Annual care is most satisfactory. Descriptions of and control methods for the following insect pests are given: hickory bark beetle, two-lined chestnut borer, elm, birch and hemlock borers, *Prionus*, oak leaf rollers, European pine shoot moth, Norway maple leaf stalk borer, birch leaf miner, oak and hackberry gall insects, spruce gall aphid, and a spittle insect of the Scotch pine.—*C. G. Bowers.*

1876. MARCU, O. Contributiuni la oecologia unor distrugatori ai pădurilov Bucovinci. [Ecology of some injurious forest insects of Bucovina, Rumania.] *Communic. Congress Natural. România, Cluj,* 1928: p. 327-336. 1928.—The biological associations of the bark-beetles are described. These insects are found on all species of coniferous trees, young and old, and the associations vary according to the health of the trees. In the healthy trees, are found spp. characteristic of the upper portions, which are restricted to tops and the branches; with an increase of the diseased condition, they descend to the lower parts, which can best be seen on fallen material. In this region, there is 1 generation of *Ips acuminatus*, and 2 of *Xyloterus lineatus*. Through anatomical studies of the ♀ genitalia it can be stated that the ♀♀ of *Pityokteines spinidens* also have a 2nd brood.—*O. Marcu (transl. by S. A. Graham).*

1877. MIDDLETON, WILLIAM. Factors influencing the activity of shade-tree insects and the utilization of these in control work. *Trans. 4th Internat. Congress Ent., Ithaca, N. Y., 1928.* 2: 374-381. 1929.—Insect infestations of shade trees present serious and complex problems. Two types of data have been accumulated, one on life histories and the other relating to insect behavior. The abundance of certain bark beetles is closely correlated with rainfall. Choice trees may be protected to a considerable degree through copious applications of water during dry periods. In the case of pine bark beetles, temp., probably in connection with humidity, is important. The disappearance of plant lice during hot dry weather has often been noted. This may be due to a normal change or alternation of host plant, determined in part by meteorological conditions. Fertilizer applications to boxwood to enable the plants to outgrow injury by the leaf miner and develop more resistance to a disease (*Macrophoma*) may be followed by winter injury, such as splitting of the bark on the trunks and large limbs. Insect attacks on trees are fewer and less serious when the trees are growing under optimum conditions. Defoliation is conducive to borer attack. Fire is also a forerunner of insect attack. The elm borer (*Saperda tridentata*) and others are especially injurious to trees growing under adverse conditions. In many cases, severe borer injury follows a sudden and extensive change in the environment of the tree, as by the clearing of adjacent land with its resultant elimination of normal shade and great reduction in the water supply during the growing season. Recently transplanted trees are very subject to attack by borers. The special behavior of insects has a material bearing upon infestation. The metallic wood borers (Buprestids) and the locust borer (*Cyllene robiniae*) are all sun-loving insects, most likely to be prevalent and injurious in open growths and in situations where the moisture supply is scanty. The probabilities of insect infestation are indicated by the abundance of wintering eggs, as in the case of the white-marked tussock moth or the occurrence of the pest in numbers in leaf mines, as in the case of certain oak leaf miners. There is also the field of insect attraction, suggested by the appearance of large numbers of Buprestids at the burning of a 750,000 barrel tank of oil in California.—*E. P. Felt.*

1878. SIMPSON, L. J. The biology of Canadian bark-beetles. The seasonal history of Dendroctonus simplex Lec. *Canadian Ent.* 61(12): 274-279. 1929.—This species is abundant in dying larch throughout the larch areas of eastern Canada. It may become also a serious enemy to trees weakened by the sawfly, and through other causes. The number of broods per season depends on climatic conditions and degree of infestation. From larch logs moderately infested there were produced only 1 set of egg tunnels and 1 brood of eggs from the parent adults in 1 season; while from logs placed in the same location under the same conditions, but very heavily infested with adults, there were obtained 2, and sometimes 3, sets of egg tunnels in a season.—*L. J. Simpson.*

ECONOMIC ENTOMOLOGY

INSECTS AFFECTING ANIMALS

F. C. BISHOPP, *Editor*

(See also in this issue Entries 1701, 1711, 1749, 1870, 2598, 2744, 2752, 2755, 2756, 2974)

1879. CARBALLO POU, MARIANO. La sarna en el hombre y los animales. [Mange in man and animals.] *An. Escuela Vet. Uruguay* 1(7/8): 279-285. 6 fig. 1929.—Accounts of mange have appeared since 1300. Details of the principal genera of acarids are given and their host distribution studied. Sarcoptic mange of the horse was transmitted to thousands of cavalry soldiers during the great European war. Mention is made of *Demodex folliculorum* as the cause of mange upon the dog and its possible rôle in the transmission of leprosy and cancer. Mention is also made of other kinds of mange and of the sheep mange (Psoroptic mange) in Uruguay, which causes annual losses of 2,500,000 pesos. Various recommendations for combating this plague are given.—*M. Carballo Pou (transl. by J. L. Webb).*

1880. FLETCHER, T. BAINBRIGGE, and S. K. SEN. A veterinary entomology for India, part XI. *Jour. Central Bur. Animal Husb. & Dairying in India* 4(1): 1-5. 3 pl. (1 col.). 1930.—A brief account is given of habits and injury of the Oestridae or botflies, with a key to Indian spp.

1881. GATER, B. A. R., and P. D. RAJAMONEY. A summary of records of Anopheline breeding-places in Malaya. Bull. Inst. Med. Res. Fed. Malay States No. 2. 33p. 1929.—The writers present in tabular form the preference of breeding places of Anopheline mosquitoes in restricted areas of Malaya as shown by 20,318 collections of larvae, and the identification of 126,176 individual specimens. Great adaptability to a variety of habitats is noted, with but few spp. showing definite selection of breeding conditions. The most favored places are pools, slowly flowing streams, swamps, drains and

rice fields. Places of secondary importance are cavities in plants, footprints, broken jars, watering tanks and wells.—*R. O. Christenson.*

1882. GAUT, R. C., and C. L. WALTON. The ox warble flies and their control; with special reference to recent experiments in Worcestershire. *Jour. British Dairy Farmers' Assoc.* 42: 16-28. 1930.—After a brief review of the life history of *Hypoderma lineata* and *H. bovis* and of the literature, the authors detail their experiments of 1929 with various proprietary and non-proprietary dressing materials of which the derris-soap-wash (standardized derris root, 1 lb., soft soap ¼ lb., water 1 gal.) proved to be a reliable and relatively inexpensive remedy. Treatment at 28-day intervals is recommended.

1883. GIBSON, ARTHUR. Insect and other external parasites of poultry in Canada. *World's Poultry Congress* 4(Sect. C): 347-351; résumé sect. 44. 1930.—The parasitic mites, ticks, biting lice, fleas, black flies, mosquitoes, and non-parasitic insects which cause serious losses among poultry in Canada, are briefly described and information is supplied as to methods of control found effective against the more important parasites.—*Author's summary.*

1884. IYENGAR, M. O. T. Jungle in relation to malaria in Bengal. *Indian Jour. Med. Res.* 18(1): 259-266. 1930.—In the province of Bengal, jungles are not connected with malaria and actually form a protection against the breeding of harmful spp. of *Anopheles.* These jungle areas are of 3 types: (1) hill jungle; (2) submontane jungle; and (3) mangrove jungle. The spp. of *Anopheles* occurring in each area are as follows: (1) *aitkenii, annandalei, gigas* var. *simlensis,* and *lindesayi* (harmless spp.); (2) *aitkenii, aitkenii* var. *insulaeflorum, annandalei, barbirostris* and *leucosphyrus* (harmless spp. breeding inside the jungle); *culicifacies, fuliginosus, jamesi, jeyporensis, karwari, maculatus, maculipalpis, majidi, minimus, philippinensis, sinensis,* and *vagus* (malaria transmitting spp. breeding outside the jungle or in open areas); and (3) *barbirostris, fuliginosus, ludlowi, sinensis, subpictus, vagus,* and *varuna* (malaria transmitting spp. breeding within cleared and protected areas).—*S. Ribeiro.*

1885. KEMPER, HEINRICH. Beiträge zur Biologie der Bettwanze (Cimex lectularius L.) I. Über den Einfluss des Nahrungsmangels. *Zeitschr. Wiss. Biol. Abt. A. Morph. u. Ökol. Tiere* 19(1): 160-183. 4 fig. 1930.—The ability to withstand starvation depends on temp., stage of development, and on the constitution of the individual. Under similar conditions young unfed larvae die of starvation first, and adult ♂♂ last. Total lack of food stops larva development and egg laying of adults. Two kinds of partial lack of food are noted: (1) the animal is allowed a full meal at long intervals; (2) partial meals are allowed at shorter intervals. The 1st type results in slow development and a reduced number of eggs per given time interval, while the 2nd type may stop growth and oviposition. The adults must usually take food at least once before they are sexually mature. Insufficient food prolongs life. Even long periods of hunger have no visible influence on the life of individuals which are later allowed to feed normally.—*H. Kemper (from transl. by W. C. Cook).*

1886. MacGREGOR, MALCOLM E. The significance of the pH in the development of mosquito larvae. *Parasitology* 21(1/2): 132-157. 1 fig. 1929.—Previous work had shown that pH of natural waters was correlated with the presence of particular mosquito larvae. Changing the pH of the normal environment affects adversely the development of the larvae. Under bacteriologically sterile conditions this was no longer true. Consequently the acid or alkaline reaction of the medium, within ordinary limits, had no direct effect on larval development. Nevertheless, pH indicated the associations of chemical and biological factors in the breeding-places upon which development of the larvae depended. A new technique is described for the production of a high percentage of successful cultures of *Aedes argenteus* under bacteriologically sterile conditions. The "phase of suspended development" was found to be due to the temporary or complete disappearance of micro-organisms necessary in conversion of the organic materials of the environment to a suitable larval diet.—*From author's abstract.*

1887. TAYLOR, E. L. Liponyssus sylviarum injuring poultry in this country. *Parasitology* 22(3): 313. 1930.—An outbreak in Dorchester, England, was controlled by applying dressings of nicotine sulphate and paraffin to the poultry perches.

ECONOMIC ENTOMOLOGY

INSECTICIDES AND APPARATUS

C. H. RICHARDSON, *Editor*

(See also in this issue Entries 118, 1223, 1842, 1843, 1844, 1849, 1850, 1851, 1852, 1854, 1857, 1859, 1866, 1869, 1870, 1872, 1874)

1888. BARNES, J. W. Sampling apples in the orchard for the determination of arsenical spray residue. *Indust. & Eng. Chem.* 21(2): 172-174. 1929.—Individual analyses of 300 apples from 4 trees showed for individual apples ranges in arsenical residue of from 0.001 to 0.031 grain As per apple, the mean being 0.011. The ratios for weight were from 0.004 grain to 0.095 grain As per lb. of fruit, with a mean of 0.031 grain. The range in area was from 0.05 grain to 1.30 grains per 1000 sq. in. of area of fruit, the mean being 0.43 grain. A formula is given for calculating the area of an apple from its weight which yields results differing not over 5% from the best mechanical measurements. A statistical study of the data indicates that, in order to obtain a result with a probable error of 5% in the value for mean arsenical residue per lb. of fruit, it is necessary to analyze a sample of approximately 50 apples picked at random.—*Author's summary.*

1889. HALLER, H. L., and F. B. LA FORGE. Rotenone. XII. Some new derivatives of rotenol. *Jour. Amer. Chem. Soc.* 53(6): 2271-2275. 1931.—Chemical studies (oxidation, reduction, etc.) are reported.

1890. HAYNES, RACHEL. Detecting oil in twigs. *Stain Tech.* 5(1): 29. 1930.—A technique, developed during an investigation of the penetration of oil into dormant twigs, is as follows: 1) Cut sections of the twigs on the hand microtome about 20 μ thick, cutting the sections dry in order that the oil will not be displaced by water any more than can be helped. 2) The sections are transferred directly to a saturated solution of sudan IV in equal parts of 70% alcohol and acetone and are stained for 1 min. 3) Wash briefly in water. 4) Transfer to a solution of methylene blue (Unna's polychrome methylene blue, 1 part; water 9 parts) and stain 1 min. or until the tissue is faintly blue. 5) Wash in water, place the sections on a slide, remove the excess water with a blotter or filter-paper, and mount in glycerin.—*Author (courtesy Wistar Bibl. Serv.).*

1891. HOLLAND, E. B., and G. M. GILLIGAN. Electrolytic apparatus for the determination of copper in insecticides and fungicides. *Indust. & Eng. Chem.* 20(5): 533. 1928.—This home-made apparatus for the quantitative determination of Cu in insecticides and fungicides is an improvement over the older types. A figure of the board and wiring diagram is given. Current is supplied by 6 Edison alkaline storage cells arranged to give about 2.4 volts d. c. at about 45 amps. The batteries are charged by a G. E. Tungar rectifier. One-half amp. per electroplating unit deposits 0.15 to 0.20 gm. Cu per hr. Agitation in the electroplating units is obtained by passing compressed air through them. The electrodes are described.—*C. H. Richardson.*

1892. KELSALL, A. Some new insecticide-fungicide combinations. *Trans. 4th Internat. Congress Ent., Ithaca 1928.* 2: 1-3. 1929.—Lime sulphur solutions were precipitated with zinc sulphate, iron sulphate and aluminum sulphate solutions, respectively. The resulting mixtures were tested alone, with nicotine, and with arsenicals. The mixtures with $ZnSO_4$ and with iron sulphate were unsatisfactory. Those with aluminum sulphate showed decided promise, owing to a lessening of foliage injury.—*E. L. Griffin.*

1893. McDONNELL, C. C., and J. J. T. GRAHAM. Deterioration of soap-nicotine preparations. II. *Indust. & Eng. Chem.* 21(1): 70-73. 1929.—Soap-nicotine preparations ordinarily found on the market decrease in nicotine content on storage. Hard soda soaps lose nicotine more rapidly on exposure to the air than potash soaps. However, soft soda soaps and potash (soft) soaps lose it at about the same rate. Excess of alkali or fat in the soaps has no appreciable influence on the rate of loss of nicotine. The loss of nicotine from soap-nicotine preparations made with drying oils (fish oils, cottonseed oil, linseed oil) and packed so that air is not excluded is due mainly to oxidation, the nicotine with part of the fatty acids of the soap being converted into an insoluble condensation product of indefinite composition. The loss of nicotine from soap-nicotine preparations made with non-drying oils (oleic red oil, stearic acid) and stored without air being excluded is due to volatilization of nicotine, no insoluble condensation product being formed. Both hard and soft soaps, whether made from drying or non-drying oils, when packed so that they were completely protected from the air, suffered no loss in nicotine content during two years of storage.—*Authors' summary.*

1894. NELSON, O. A. Vapor pressure of fumigants. I. Methyl, ethyl, isopropyl, and secondary butyl chloroacetates. II. Methyl, ethyl, n-propyl, isopropyl, n-butyl, secondary butyl, and isobutyl formates. *Indust. & Eng. Chem.* 20(12): 1380-1384. 1928.—The vapor pressure for methyl, ethyl, isopropyl, secondary butyl chloroacetates, methyl, ethyl, n-propyl, isopropyl, n-butyl, secondary butyl, and isobutyl formates was determined and the weight of these materials that will vaporize into a 1000 liter or 1000 cu. ft. chamber at certain temperatures is given.—*W. S. Abbott.*

1895. QUAYLE, H. J. Developments in the fumigation of citrus trees. *Trans. 4th Internat. Congress Ent., Ithaca, N. Y.* 1928. 2: 155-161. 1929.—This brief review of the development of HCN fumigation for citrus trees takes up the different types of materials and methods that have been used in the U. S. A. and other countries. Brief reference is made to certain other materials that have been found unsatisfactory and to the question of local tolerance of certain spp. of scale insects to HCN.—*W. S. Abbott.*

1896. ROARK, R. C. Pyrethrum and soap, a chemically incompatible mixture. *Jour. Econ. Ent.* 23(2): 460-462. 1930.—The insecticidal action of Pyrethrum (*Chrysanthemum cinerariaefolium* Trev.) is due to two esters, pyrethrins I and II. These esters are decomposed by aqueous alkali. Pyrethrum flowers or extracts thereof are, therefore, incompatible with soap which hydrolyzes in the water. Pyrethrum is also incompatible with lime-sulphur solution, hydrated lime and other alkaline materials.—*R. C. Roark.*

1897. ROBINSON, R. H., D. F. FISHER, and ANTHONY SPULER. The western cooperative oil spray project (1929). *Science* 71(1843): 440-441. 1930. Quick-breaking emulsions cause severe injury to trees if applied from the time that the buds first show green until the cluster buds separate. Stable emulsions are less likely to cause injury and give equally good insect control. Highly refined oils used in combination with lead arsenate gave improved insect control; the oil has a definite ovicidal value and at the same time increases the larvicidal value of the lead arsenate. Toxicity of oil was found to increase with viscosity within the range 50 to 150 seconds Saybolt. Injury to plants was found to increase with viscosity above 70 seconds S., depending largely upon the number of spray applications. The carbohydrate metabolism of leaves and vegetative spurs of apple trees may be adversely affected by oil sprays. Serious foliage and fruit injury occurred when oil sprays were applied on apple trees carrying unoxidated sulphur deposits. The use of oil sprays late in the summer while heavy deposits of lead arsenate remain on the fruit or the use of heavy oils in combination with lead arsenate was found to complicate seriously the removal of the arsenical spray residues.—*D. F. Fisher.*

1898. STANILAND, L. N., and C. L. WALTON. The Long Ashton tar-distillate wash: Field experiments, 1929. *Jour. Min. Agric. [Gr. Britain]* 36(6): 517-523. 2 pl.; Part II. (9): 828-835. 3 pl. 1929.—Further trials in several fruit sections of England, with this tar-distillate spray confirmed and strengthened results secured during the preceding year in the control of the apple capsid bug (*Plesiocoris rugicollis*). When used at a concentration of 10% during the dormant season the Long Ashton wash gave better control of that insect in the egg stage, as measured by the amount of leaf and fruitlet markings, and by the % by weight and numbers of marked and clean, mature fruits, than either of the 2 proprietary washes known as the modified form of the Long Ashton wash and the so called "standard" tar-distillate wash. The currant capsid bugs (*P. rugicollis* and *Lygus pabulinus*), and caterpillars on apples, plums, and black currants were also more effectively controlled in the egg stages by the new wash than by the proprietary brands. The Long Ashton wash is recommended for use on apples and currants at 10% strength during Dec., Jan., or Mar., where capsid bugs are present, and at 6% strength where those pests are absent. For the control of caterpillars and aphids on plums, a 6% strength is advised.—*O. C. Boyd.*

1899. WILCOXON, FRANK, and ALBERT HARTZELL. Some factors affecting the efficiency of contact insecticides. I. Surface forces as related to wetting and tracheal penetration. *Contr. Boyce Thompson Inst.* 3(1): 1-12. 5 fig. 1931.—Preliminary observations indicate that many spray solutions wet poorly unless a suitable spreading agent is present. Aqueous spray solutions did not penetrate the tracheal system of the larvae of the common tomato worm (*Phlegethontius quinquemaculata*) without a spreading agent. Soaps were the best spreading agents among a number tested. Even with the use of soap as a spreader, the solutions did not penetrate the tracheal system of a freshly killed larva, indicating that respiratory movements or at least vital activity are necessary for penetration to take place. The capillary forces involved as indicated by angle of contact within the tracheae can not alone account for penetration. The toxicity to *Aphis rumicis* of nicotine solutions which contain no spreader (calcium caseinate, Penetrol, and sodium oleate) followed the same order as the spreading coefficients of these solutions.—*F. Wilcoxon and A. Hartzell.*

ECONOMIC ENTOMOLOGY

APICULTURE

E. F. PHILLIPS, *Editor*

(See also in this issue Entries 989, 1346)

1900. BETTS, ANNIE D. The ingestion of syrup by the honey bee. *Bee World* 11(8): 85-90. 1930.—The largest average load of sucrose solution observed was 66.6 cmm.; largest individual load, 90 mgm. (70 cmm.). High temp. has more influence than high sugar concentration in increasing size of load. The law of increase

of rate of ingestion with temp. is linear between 10° and 30° C., for given concentration. The rate, at constant temp., varies little with concentration up to 50-60%; above this it falls off rapidly probably owing to the natural rate of pharynx-contraction being overruled by viscous resistance. The maximum weight of sugar per unit time is ingested from a 56-60% solution if the bees can spread apart the trophi while feeding; if not, the optimum concentration will be lower (probably about 50%). Wasps can ingest as fast as, or faster than bees, but take smaller loads.—*A. D. Betts.*

1901. **BORCHERT, A. Ueber die Nosemainfektion der Honigbiene unter besonderer Berücksichtigung der Nosemaseuche.** *Arch. Bienenkunde* 11(1): 1-40. 1930.—The infection of an individual bee by *Nosema apis* is to be clearly distinguished from the infection of the entire colony by *Nosema* parasites. As the individual bee infected by *N. apis* is always sick in the sense of pathological anatomy, we designate the condition in all cases as *Nosema* disease. So far as the colony is concerned in case of infection by *N. apis* we recognize a distinction, whether the colony as such is evidently injured by the parasite, or whether it shows no indication of injury. Where a colony invaded by the parasite appears healthy and strong, we speak of a *Nosema*-attack; in spite of the presence of large numbers of parasite-bearers, the colony proceeds with its work with undiminished vigor. In *Nosema*-attack the number of parasite carriers tends to decrease during the spring and summer, but only in exceptional cases does it entirely vanish. Where there is no such symbiontism but where the entire colony is perceptibly affected and is infested throughout by *Nosema* parasites, we speak of a *Nosema*-epidemic. In spite of the best environment (nectar-yield, weather, temp.) and the bestowal of good care by the beekeeper, the colony either does not develop well or becomes noticeably weaker. In a *Nosema* epidemic the number of parasite-carriers within the colony has a decisive influence upon the fate of the colony. The primary effect of an outbreak of *Nosema*-disease is a deterioration of the functions within the colony. A bee-colony is continually exposed to the most varied possibilities of injury which cause sickness in the brood or bees: intestinal disorders in uninfected situations, poisoning, unfavorable climatic conditions, nectar yield and temp. relationships; poor care from the bee-keeper, especially faulty food; unfavorable location of the apiary, and insufficient shelter for the colonies. The *Nosema* parasite, which may be expected in any place, and which may easily reach any colony, displays only a few sources of injury to the colony. If the functions within the colony weaken, particularly if its inherent resistance and regulatory forces have suffered, the parasite can enter and gain ascendency.—*Author's conclusion (transl. by G. E. King).*

1902. **BURNSIDE, C. E. Sterilizing diseased combs. Growth of Bacillus larvae inhibited by formaldehyde in treated brood remains.** *Glean. Bee Cult.* 58(8): 502-505. 1930.—Formaldehyde does not readily evaporate from the cells after use in treating American foulbrood combs. Growth of *Bac. larvae* in culture is retarded or prevented by formaldehyde that remains in the dead brood. Washing was found to be effective in removing such formaldehyde before preparing cultures.—*C. E. Burnside.*

1903. **MARÉCHAL, P. Sur un nid d'abeilles retournées à l'état sauvage.** *Bull. Soc. Sci. Seine-et-Oise 2 Ser.* 10: 19-23. 1 pl. photo. 1929.—A description of a comb attached to a shrub and arranged somewhat like a small horizontal honeycomb, with reflections on and comparisons with analogous variations in construction in the case of *Golistes* and *Epeira.—P. Maréchal (transl. by A. C. Hodson).*

1904. **MIKHAILOFF, A. S. A summary of what we know about long-tongued bees.** *Amer. Bee Jour.* 70(11): 532-533. Portrait. 1930.—The length of the tongue of all known honeybees is not suited to pollination of red clover. The Caucasian bees have longer tongues than any other race, but the length may decrease considerably with acclimatization and hybridization. All honeybees visit and pollinate red clover, some less, some more, but the southern races do it better than the northern ones. True red clover bees probably do not exist. It is not proven, however, that such bees cannot be produced. —*From author's conclusions.*

1905. **MILUM, V. G. Wintering and production records.** *Amer. Bee Jour.* 70(10): 475-477. 1 fig. 1930.—Records taken from bee colonies wintering with various types of protection show an average production double that of colonies without packing and undivided. For colonies wintered with heavy packing, the average increase was 74 lbs. of extracted honey—a 45% increase. Six divided colonies averaged 44 lbs.; 13 additional in packing cases gave an average of 29.5 lbs.; 4 in double-walled, 27 lbs., and 9 in Celotex, 12 lbs. In regions of a short summer honeyflow and when spring conditions are favorable, package bees are best installed at the beginning of the fruit blooming period in spite of the fact that spring feeding may be necessary in cold, wet seasons.

1906. **MOSOLEVSKY, GREGORY. Abkhasia and the Abkhasian bee.** *Amer. Bee Jour.* 71(3): 120-121. 1 fig. 1931.—The Abkhasian bee is the most popular among Russian bee keepers because of its activity, strength, endurance, productivity, and peacefulness.

1907. **PADDOCK, F. B. The bee moths.** *Jour. Econ. Ent.* 23(2): 422-428. 1930.—This is a review of the systematic history, distribution, life history, food habits, with natural and artificial control methods of *Galleria mellonella* L. and *Achoria grisella* Hub.—*F. B. Paddock.*

ANIMAL PRODUCTION

G. BOHSTEDT, *Editor,* General

M. A. JULL, *Associate Editor,* Poultry

(See also in this issue Entries 248, 280, 292, 425, 426, 450, 511, 519, 567, 569, 570, 640, 650, 652, 657, 677, 696, 697, 763, 771, 898, 928, 940, 941, 942, 943, 965, 1085, 1211, 1321, 1350, 1356, 1371, 1818, 2918, 2941, 2977, 2978, 2984, 2991, 2992)

1908. **ARCHIBALD, J. G. Calf meal studies. I. Laboratory experiments in the improvement of physical condition. II. Feeding experiments with cooked and uncooked meal.** *Jour. Dairy Sci.* 11(2): 119-135. 1928.—Cooking reasonably fine calf meals, although it changes their physical condition, by increasing the dispersion of the solids, does not seem to have any favorable effect on growth. Very fine grinding of calf meals for feeding was impracticable, hence its effect as compared with cooking has not been measured. Digestibility of a calf meal is not significantly affected by cooking.—*Author's conclusions.*

1909. **BARKER, ALDRED F. (illustrated with photographs taken by ROBERT J. STORDY). Prospective development of Peru as a sheep-breeding and wool-growing country.** 174p. Portrait, 93 fig. Privately published, Univ. of Leeds, England, 1927.—The evident object of this book is to encourage sheep production in Peru. Many suggestions are offered as to possible means of improving the industry. The book includes a survey of Peru and other sheep producing countries of S. America. It has the view-point of both manufacturer and producer, and reveals a research worker's insight into the sheep and wool industry. The country is discussed as to possible suitability for sheep production. The native sheep, imported breeds and their crosses are

discussed in relation to their adaptability to the country and usefulness in the sheep and wool trade. One chapter deals with the Alpaca, Llama, Vicuna and their crosses. Many illustrations and charts are included which help to visualize the country and its sheep industry. The appendix contains a discussion of methods of measuring wool to determine diameter of fiber. Tables illustrate the characteristics of wool of different breeds and crosses of sheep.—*F. S. Hultz.*

1910. BÜNGER, H., H. LAMPRECHT, P. GLET, und P. BLÖCKER. Teil I. Fütterungsversuche mit Saflorkuchen an Milchkühen. *Tierernährung* [*Leipzig*] 1(4): 408-420. 1930.—The 2 kinds of safflower cake fed in the experiment described here differ greatly in composition. The high % safflower cakes have a protein content very nearly like that of cracked soybeans, while the low % cakes contain only a little more digestible protein than palmnut cakes and cocoanut cakes. The storage value of the low % safflower cakes is quite low as a result of their high content of hulls, and amounts to only about ½ that of other oil cakes. The feeding of these cakes can be considered only when the price is low, corresponding with the low total nutritive value. The concentrate mixtures with safflower cakes were less readily eaten than the control feeds. No injuries to health were observed as a result of feeding safflower cakes. The safflower cakes distinctly lower the percentage of fat in the milk according to the results of these experiments. The safflower cakes are not complete substitutes for sunflower cakes, since the latter do not have this unfavorable influence.—*Authors' summary (transl. by M. H. Keith).*

1911. COPELAND, LYNN. Effect of heat (oestrum) on butterfat percentage and milk yield. *Jour. Dairy Sci.* 12(6): 464-468. 1 fig. 1929.—On the basis of 2025 recent Register of Merit records, involving 23,000 supervisions, it is concluded that the effect of oestrum on milk yield and butterfat percentage is slight. The difference exhibited seems with most cows to be toward a small decline in milk flow and an equally limited increase in butterfat percentage during the period of heat. Individual cows may show variation in the opposite direction or no variation at all. No compensating increase could be noted in the milk production just prior to the heat period.—*Author's summary.*

1912. DUVAUCHELLE, R. Note sur la caroube. *Bull. Direct. Gén. Agric. Com. et Colon* [*Tunis*] 33(136): 43-49. 1929.—Carob pulp is a valuable feeding-stuff because of its sugar content. The seeds are rich in protein but are not utilized by stock unless ground. Carob supplemented with peanut meal may be substituted for oats or barley. Its value is not realized in Tunis because it has been fed under poor conditions. Two tables give physical and chemical composition of whole beans and pulp alone of grafted and non-grafted carobs.—*J. Cooper.*

1913. GONZALEZ, B. M. Experience in the Philippines with the introduction of pure breed animals to improve the common stock. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1142-1150. 1926(1928).—Reviewing attempts during the last 20 yrs. to improve Philippine domestic animals by the introduction, for breeding, of animals from other countries, the author points out that when the breeds concerned are from temperate countries, such as the U.S.A. and Australia, the results of efforts in the Philippines to improve the live stock of the country through importation of foreign breeds has met with little success. When the breeds imported are from tropical countries, such as India and China, the introductions have proved successful. Animals from these countries, however, are not markedly superior to the native stock, and hence the resulting improvement, while obvious, is not outstanding. The principal cause of failure of improved pure breeds of live stock in the Philippines is the presence of such highly infectious diseases as surra, strangles, rinderpest, foot and mouth disease, hog cholera, kidney worms, chicken pox, and fowl cholera, and the relative abundance of parasites, principally helminths. Fundamental to this are the weather conditions prevailing, high temp. and abundant moisture which favor the rapid multiplication of the parasites. Animals from tropical countries are more or less resistant to such diseases through yrs. of adaptation. Another important cause is the fact that conditions of life in the Philippines have not yet made the intensive care of animals a necessity. The domestic animals of the country are raised under natural conditions, and with a minimum of interference and control of man. Under such conditions, the health of imported improved animals, efficient as producers, but delicate in the extreme and bred to be dependent on man for food and protection from unfavorable features of the environment, including inclement weather and enemies, cannot but suffer. As the economic status of the country changes from the extensive plan to the more intensive to accommodate the fast growing population, the methods of husbandry will change so as to include adequate protection to productive live stock. It should then be possible to raise improved breeds with better prospects of success. The conviction is forced upon one, however, that the ultimate solution of the live stock problems of the Philippines will depend in large measure on the development of superior breeds particularly adapted to the country through genetic methods, borrowing physical merits from the breeds of temperate countries and judiciously forming mosaics with the hardy characteristics existing in Oriental animals. Bodily transplantations of breeds from any region cannot be considered as conducive to success.—*From author's summary.*

1914. HAAG, J. R., J. S. JONES, I. R. JONES, and P. M. BRANDT. The physiological effect of rations restricted principally or solely to the alfalfa plant. I. The calcium, phosphorus and nitrogen metabolism of dairy cattle. *Jour. Dairy Sci.* 12(6): 445-455. 1929.—A series of metabolism studies is reported in which the N, Ca, and P balances of dairy cattle were determined for 12 ten-day periods, during which the daily milk yields varied from 9 to 18 kgm. The rations fed consisted of alfalfa hay with and without supplements of starch, linseed oil meal, or di-sodium phosphate. Cows in the early lactation period were usually in positive Ca balance; in negative N balance when the hay contained less than 2.0% N; and always in negative P balance when only alfalfa hay was fed. Feeding di-sodium phosphate changed the negative P balances to slightly positive balances. A general discussion of some of the factors which may be involved in rations restricted principally or solely to alfalfa is presented.—*Authors' summary.*

1915. HINARD, GUSTAVE. Traitement des déchets de poisson et utilisation des sous-produits. I. Les poudres de poisson. *Rev. Trav. Office Pêches Maritimes* [*Paris*] 2(4): 413-441. 1929.—Due to the increasing value of fish-wastes, the interested industries ought to have information upon the composition, character and theoretical principles involved in the various processes of treatment. Hence, studies were made upon fish meals intended for fowl and cattle food; the initial products, their comparative value and conditions favourable to preservation and spoilage; processes of manufacture, such as drying, oil extraction, cooking, etc. (apparatus not described in detail); characteristics requisite for the meal, and for stock foods, their average composition, and some indication as to methods of use in agriculture and stock-raising. This work is based on French industries.—*G. Hinard (transl. by R. H. M'Gonigle).*

1916. ISAACHSEN, H., og OLA ULVESLI. Rotfrugtbladenes kemiske sammensætning, fordøielighet og melkeproduksjonsværdi. [The chemical composition, digestibility, and milk production value of leaves of root crops.] *Fôringsforsøkene Norges Landbrukshøiskole* 24: 1-31. 1929.—A large number of both leaves and roots of rutabagas and other root crops was analyzed, also turnip leaves before and after ensiling. The av. feeding value for milk production for the 3 trials was 1.6 kgm. sand-free dry matter, or 1.4 kgm. organic matter, equalling 1 feed unit. The value is thus lower than that of roots, of which 1.1 kgm. dry matter, or about 1.03 kgm. organic

matter, equal 1 feed unit. The effect of leaves on animals is not as favorable as roots. Leaves have a laxative effect, and have a large amount of oxalic acid. The digestion coeffs. of leaves, as determined with sheep, were as follows: Dry matter 85, organic matter 91, crude protein 79, true protein 73, fat 65, N-free extract 93, fiber 86.—*From authors' summary.*

1917. **JESPERSEN, JOHS. 3die beretning om de af Forsögslaboratoriet og De samvirkende danske Andels-Svineslagterier foranstaltede fodringsforsög med svin. I: Forsög med proteinrige kraftfodermidler som erstatning for skummet melk. II: Forsög med tapiokamel + proteinrige kraftfodermidler som erstatning for korn. [Third report on feeding-experiments with swine. I: Experiments with protein-rich, concentrated food as substitute for skimmed milk. II: Experiments with tapioca-meal plus protein-rich, concentrated food as substitute for grain.]** *132nd Beretn. Forsögslab.* [*Copenhagen*] p. 6-131. 1929.—When fattening pigs of a live weight of 20 to 100 kgm. a daily increase in weight of 600 to 700 gm. is considered satisfactory. This is not achieved by feeding exclusively with maize or with ground barley, wheat, rye, etc., and potatoes, as these feeding stuffs contain too little protein. The feedstuffs rich in protein which might be considered are, however, of a widely different utility. Experiments have shown that skim milk is a high protein feed particularly well suited for pigs. It contains protein of a high biological value, besides readily digestible mineral matter in favorable proportions. A mixture of dried blood containing 78% crude protein and meat- and bonemeal with 35% crude protein as milk substitute also gives a good increase in weight, namely 500 to 600 gm. daily, but the bacon is inferior in quality to the bacon of pigs which have been given skim milk. About 10 kgm. of this mixture was added to each 100 kgm. of grain. Peanut cake, soybean meal and sunflowerseed cake in so great quantities that the protein content of the ration was the same as when skim milk was added, i.e., about 100 gm. digestible protein per feed unit, gave a very slight daily increase in weight (378 to 473 gm.). These rations, furthermore, yield very soft bacon and the pigs are easily attacked by rickets. The experiments were made on 600 pigs.—*J. Jespersen.*

1918. **MARCQ, J. Essai de jugement des reproducteurs bovins par une methode physiozootechnique.** *Bull. Acad. Vét. France* 2(Nov.): 331-335. 1929.—It is to be presumed that correlations existing between the percentage of fat in the blood of the ♀ and the richness of her milk will exist between the % of fat in the blood of the ♂ and his power to transmit aptitude for butter-fat production to his progeny. Observations on a limited number of ♀♀ indicate that this correlation actually exists between the blood and the milk of the ♀ and attempts are being made to determine the reproductive value of the ♂♂ by the same method.—*J. Marcq* (*transl. by J. L. Lush*).

1919. **MEETZ, A., und A. EICHSTÄDT. Teil II. Die Einwirkung von Saflorkuchen auf die Beschaffenheit der Milch und des Butterfettes.** *Tierernährung* 1(4): 421-425. 1930.—In 2 experimental series the safflower cake showed no marked influence on the composition of the milk. The individual values showed only very slight variations. The chemical and physical constants of the butterfat were scarcely changed by the feeding of the safflower cake.—*Authors' summary* (*transl. by M. H. Keith*).

1920. **MÜLLER-LENHARTZ, und von WENDT. Die höchste Milchleistung. Anweisungen für die Praxis auf Grund physiologischer Studien.** (Abhandlungen aus dem Gebiete der Tierhaltung, Heft 5.) 3rd ed. 102p., 10 fig. Paul Parey: Berlin, 1930.—Preparation for lactation is of prime importance because reserves are necessary during growth and maximum performance of the mammary glands. Nutrition must be in accord with the varying efficiency of the digestive tract during the sexual cycle. In almost all cases, mineral supplements (as well as iodine) are necessary for high milking cows. During the preparation of the animals for lactation and during their maximum production the supply of the fat-soluble vitamins usually needs to be supplemented. Unbalanced concentrates should not be used. With the higher milk yields sufficient legumes (hay, forage) should be furnished to increase the biological value of the feed proteins proportionately. Milking the 2 halves of the udder in succession tends to aid the animal during maximum production and leads to increased production in many high yielding animals. Above all, attention must be called to the important significance of good pasture and a long grazing season. The better the pasture and the longer good pasture is available the less the need for supplementary measures, and the better and more adequate the reserves.—*Müller-Lenhartz* (*transl. by A. H. Kuhlman*).

1921. **NEWCOMB, CLIVE. Salt licks.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 450-452. 1927[1928].—Note on analyses of 7 authenticated salt licks, seeming to indicate that NaCl, other Na salts, Ca or Fe salts are not what the animals frequenting them seek. Iodine may have a relation, but in some cases the ordinary soil of a region had a higher I content than the salt lick.

1922. **RODILLON, J. Le Clapier modele: races, viande, fourrure, soie. [The Rabbit Farm: races, food, fur, silk.]** 232p. illus. S. Bornemann: Paris, 1929, 15 fr.—A book for the practical breeder, discussing the varieties of rabbits and their points for judging; breeding, housing, feeding, hygiene; diseases; the principal products; meat and its preparation for market; fur, its preparation and classification; silk (wool); by-products.—*S. A. Asdell.*

1923. **SCHLABACH. Eine neue Ausnutzung von Sumpfgelände und stagnierenden Gewässern. [A new economic use for swamp lands and stagnant waters.]** *Mitteil. Ver. Förderung Moorkultur Deutschen Reiche* 48(10): 181-182. 1930.—Note on the raising of the coypu (*Myocaster coypus*), for the production of nutria fur.

1924. **SCHTSCHJEKIN, V. Zur Frage der besten Methoden der Probe und Paarung der Stuten.** *Zeitschr. Zücht. Reihe B. Tierzücht. u. Züchtungsbiol.* 18(3): 447-454. 1930.—A mating on the 2nd day of the heat period has noticeable advantages over a mating on the 1st day. Mating within the ovulation cycle does not give a high percentage of pregnancy. Since the possibility of pregnancy grows less in succeeding heat periods, the mares must be served repeatedly in each period until the end of the heat season to give a high percentage of pregnancy (70%). A service on the 1st day with a repeated service on the 5th day gives better results than a single service on the 1st day. However, the result of a single service on the 2nd day of the heat period is entirely analogous. The system of repeated services within the same ovulation cycle leads to waste of the sexual powers of the stallion, therefore this system cannot be recommended if many mares are to be mated to the same stallion. There is good reason for using this system of a single service on the 2nd day of heat if the mare should not become pregnant with a single service in the course of a series of heat cycles.—*Author's summary* (*transl. by A. E. Brandt*).

1925. **THERIAULT, J. E. La composition moyenne du lait de la vache canadienne.** *Sci. Agric.* 10(11): 759-760. 1930.—These figures are the result of 71 analyses made of Canadian cow milk at different times of the year from June 1929 up to the date of writing. The analyses were so distributed as to cover as equally as possible different stages of lactation and different kinds of feeding, pasturing, and shelter. The averages are believed to represent very well the average composition of the milk of the French Canadian cow. Compared with other dairy races the Canadian cow is in 3rd position, that is to say, comes immediately after the Jersey and the Guernsey.—*Author's summary* (*transl. by J. L. Lush*).

1926. **TORNOW, ELIZABETH. Über die Bestimmung der "Säure Reserve" in Silofutterextrakten durch elektrometrische Titration.** *Prakt. Blätter* 5(4): 79-84. 1927.—

The "acid-reserve" or buffer value of silage extracts depends principally on the ratio of free to bound or unionized acid. In general as the value of the ratio increases the pH decreases. Tables are given showing the amount of free and bound acetic and butyric acids and of lactic acid in 10 cc. of the extracts.—*C. M. Conrad.*

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 58, 92, 635, 1875, 2066, 2134)

1927. **ABJORNSON, EBERHARD. Ornamental dwarf fruit trees. How to grow and train them in the home garden.** 65p. 25 fig. A. T. De La Mare Company, Inc.: New York, 1929.

1928. **CORREVON, HENRI. The sempervivums—Les Joubarbes, III. [The modern sempervivums.]** *Nation. Hort. Mag.* [*Washington, D. C.*] 9(3): 116-134. 3 fig. 1930.

1929. **FAIRCHILD, DAVID. The Gold Coast jasmin.** *Nation. Hort. Mag.* [*Washington, D. C.*] 9(3): 113-115. 1 fig. 1930.—*Jasminum dichotomum* is well suited for cultivation in the limestone region of southern Florida. It probably requires cross-pollination for seed production.—*C. G. Bowers.*

1930. **HIBBARD, R. P. The physiological effect of ethylene gas upon celery, tomatoes, and certain fruits.** *Michigan Agric. Exp. Sta. Tech. Bull.* 104: 30p. 6 fig. 1930—Studies of the effects of ethylene on color change, growth modification, and chemical change during the blanching process, lead to the general conclusion that for blanching celery ethylene is of little practical importance under Michigan conditions. The optimum temp. range for effective blanching with ethylene was very narrow and too high for use of the gas in the field in late autumn. Celery under boards increased nearly 75% in length of heart leaves during blanching, as compared with little change in the ethylene-treated lot. In ethylene-blanched celery there was less total sugar in the heart and inner stalks than in control plants, a condition apparently due to accelerated respiration and to lack of an extensive carbohydrate reserve. Comparable studies with tomatoes, bananas, oranges, and apples are reviewed. In green ripe tomatoes, ethylene materially shortened the time required for coloration, but the sugar content was much lower than in vine-ripened fruits. Between detached tomatoes ripened in ethylene and in air there was no significant difference in total sugars. Ethylene hastened the yellowing of bananas, even when very green fruit was gassed, and also stimulated the reduction of starch and other reserves but had no beneficial effect on ultimate quality. In oranges, coloration was stimulated with little or no effect on chemical composition. McIntosh apples subjected to ethylene were not reddened, but the green ground color was changed to yellow, and the author suggests that ethylene has no apparent influence on anthocyanin pigments.—*J. W. Wellington* (*courtesy Exp. Sta. Rec.*).

1931. **KAKIZAKI, YŌITI. A new variety, Kuri, of squash.** [In Japanese.] *Agric. & Hort.* 5: 64-67. 1 fig. 1930.—The squash varieties cultivated in Japan belong mostly to *Cucurbita moschata.* In recent years, in the Saitama district (adjoining Tokyo), the cultivation of a new variety, Kuri, which originated from the variety Delicious and belongs to *C. maxima*, has become more extensive, and the product is very favorably received in Tokyo markets. The author describes this variety and discusses the problem of its further improvement.—*Y. Kakizaki.*

1932. **[LAZAREVSKIĬ, M. A.] ЛАЗАРЕВСКИЙ, М. А. Изюмные сорта винограда. [Raisin varieties of grapes.]** [English summary.] Записки Государственного Никитского Опытного Ботанического Сада (*Jour. Gov. Bot Gard., Nikita, Yalta, Crimea*) 12(4): 255-281. 8 fig. 1930. —This paper contains an ampelographic description of all the seedless grape varieties occurring in the grape growing regions of U. S. S. R.—Crimea, Transcaucasia and Central Asia. Besides the varieties which have a world distribution: Sultanina, Sultana and Currant, the Soviet Union possesses a series of very valuable varieties of seedless grapes of which the berries differ sharply in shape, and show colors ranging from green, through yellow-golden, rose, red-purple, to black.—*From author's summary.*

1933. **MILLER, JULIAN C. A study of some factors affecting seed-stalk development in cabbage.** *New York (Cornell) Agric. Exp. Sta. Bull.* 488: 46p. 20 fig. 1929.—With mature cabbage, studies were made as follows: Effect of temp., of a rest period, of etherization, and length of day. The most effective method of hastening seeding tried was storing the mature plants for 2 months at about 40° F., and then growing them at temp. averaging 70° F. With young cabbage plants, studies were made as to the effects of temp., of date of planting, of size of plants and of length of day on premature seeding. A relatively low temp. during the early stages of growth had a marked effect on seed-stalk development. Chemical studies of the young plants showed no definite relation between the composition at the stage of growth when these were sampled and subsequent behavior. In mature plants there appeared to be a positive relation between the accumulation of elaborated foods in the meristematic region and seed-stalk development.—*J. C. Miller.*

1934. **SCOTT, L. B. Propagation of roses by budding in the canes.** *Florists' Exchange* 74(13): 25, 26. 1930.—A new method of rose propagation is described. The canes, after being budded, are treated as hardwood cuttings.—*C. G. Bowers.*

1935. **STEFFEN, ALEXANDER. Unsere Gartenlilien.** [Our garden lilies.] 67p. Verlag "Gärtenschönheit": Berlin, 1929.

1936. **WILSON, E. H. Hedges and how to plant them.** *Horticulture* [*Boston*] 8(10): 241-243. 2 fig. 1930.

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 47, 58, 61, 64, 65, 67, 69, 109, 115, 125, 2089, 2126, 2143)

1937. **BERTOG, HERMANN. Beispiel einer örtlichen Ertragstafel für Kiefer.** *Deutsche Forstzeitg.* 46(15): 365-370. 1931.—Data are presented on the actual yields during 30 yrs. from a 517-ha. Scotch pine forest. The yields from thinnings averaged 23.3% larger than given in Schwappach's yield table, and the average diam. of the trees at any given age was 4-6 cm. larger, although there were fewer trees.—*W. N. Sparhawk.*

1938. **BRUTTINI, ARTURO. Dictionnaire de sylviculture en cinq langues. (Encyclopédie Économique de Sylviculture Vol. 4.)** 384p. Portrait. Paul Lechevalier: Paris, 1930.—Definitions in French of 4600 terms, with German, English, Spanish and Italian equivalents.—*W. N. Sparhawk.*

1939. **CHIRITA, CONSTANTIN D. Untersuchungen über den Nährstoffgehalt der Waldhumusauflagen unter Berücksichtigung der mineralischen Unterlage und Betrachtungen über ihre Bedeutung für die Ertragsfähig-**

keit der Waldböden. *Forstwiss. Centralbl.* 53(13/14): 468-478, 499-513. 3 fig. 1931.—Samples of humus and mineral soil under beech and spruce in 12 localities were analyzed by the electro-ultrafiltration method (as used by Köttgen and Diehl) to determine the total content of bases and of CaO, K_2O, and P_2O_5, and their rate of solution. The various soils differed greatly in these respects, but in general there was a fairly close correlation between the base content of the mineral soil and of the overlying humus. The humus contained a larger quantity of soluble bases, particularly CaO, than the mineral soil. No relationship could be established between the productivity of the soils and their content of plant foods.—*W. N. Sparhawk.*

1940. CLEPPER, HENRY E. The deer problem in the forests of Pennsylvania. *Pennsylvania Dept. Forests & Waters Bull.* 50: 5-45. Map, 17 fig. 1931.—During the last 40 years deer, which had become scarce in Pennsylvania, have increased to some 800,000 head, or about 3 times the optimum carrying capacity of the forests. In many localities they have destroyed the undergrowth, including mountain laurel and rhododendron, effectively prevented natural forest reproduction, and even destroyed extensive plantations of various hardwood and conifer species. The birch-beech-maple type appears to furnish the most food per acre and to suffer the least damage. The overpopulation of deer has led to a deterioration in the size and vigor of the deer and has also, by destroying their food and cover, greatly reduced the small-game population. Suggested remedies include reduction in size of the herd, shooting of does so as to bring them into better balance with the bucks, and more even distribution of the deer throughout the forested portions of the State.—*W. N. Sparhawk.*

1941. FABRICIUS, L. Forstliche Versuche. X. Die Samenkeimung von Sorbus aucuparia L. *Forstwiss. Centralbl.* 53(12): 413-418. 1931.—Seeds of mountain ash are widely distributed by birds. Naturally, they germinate very slowly. Attempts to hasten germination by soaking in various solutions, including some similar to those in birds' digestive tracts, were all failures. Other tests showed that either dry or fresh seed exposed to frost over winter germinated fairly well in the spring, provided it was kept in the dark. Although of no commercial importance, this tree has some silvicultural value and also affords food for certain mammals and birds.—*W. N. Sparhawk.*

1942. FABRICIUS, L. Forstliche Versuche. XI. Pflanzenauslese im Saatbeet. *Forstwiss. Centralbl.* 53(13): 449-457. 5 fig. 1931.—In 1922, 2000 of the largest (average weight 9.31 gm.) and 2000 of the smallest (average weight 1.98 gm.) 2-yr.-old pines in a nursery bed were transplanted in test plots, and in the spring of 1925 those surviving were planted in the field. At the end of 1927 the average height of the large (A) trees was 106 cm. and of the small (B) trees 79 cm., although the growth of the A trees was relatively more retarded for 2-3 yrs. after planting, because of unavoidable injuries to their larger root systems. However, 13.3% of the B trees were taller than the average A trees, and 13.3% of the A's were shorter than the average B's. At the end of 1930, the average heights of A's and B's were 217 and 185 cm., respectively. The tallest 40% of the B's grew as fast from 1927 to 1930 as the tallest 40% of the A's, but the other 60% of the B's fell farther behind the corresponding A's. This indicates that about 40% of the smaller plants are smaller because of accidental external conditions and will do as well as the larger plants after planting out. The small size of the remaining 60% is due in part to inherited characteristics. Except for the extremely small and weak seedlings (usually about 10% of the total number), it is not advisable to discard the smaller plants, since the chances are at least even that they will make as good trees as the large ones. Tests on a smaller scale with 1- and 2-yr. spruce seedlings indicated that in transplanting 1-yr. spruce only the very smallest should be thrown out, but a somewhat larger proportion with 2-yr. seedlings. Results with larch indicate that a large part of the smaller plants should be discarded, although it may not be possible to select the right ones until planting out, when they are 4-5 yrs. old.—*W. N. Sparhawk.*

1943. FISCHER, KARL R. Wie gehen Hähersaaten vor sich, und welche forstliche Bedeutung kommt ihnen zu? *Deutsche Forstzeitg.* 46(21): 519-522. 1931.—Jays are largely responsible for spreading acorns and beechnuts at considerable distances from the parent trees. This may be of considerable importance in the introduction of oak and beech into conifer forests.—*W. N. Sparhawk.*

1944. FRAHNE, CURT. Gedanken zur Technik und Wirtschaftlichkeit der Kiefernverjüngung im Privatwalde. [Methods and economic practicability of reproducing pine in private forests.] *Deutsche Forstzeitg.* 46(30): 731-734. 1931.

1945. GEIGER, RUDOLF, und HANS AMANN. Forstmeteorologische Messungen in einem Eichenbestand. *Forstwiss. Centralbl.* 53(10): 341-351. 5 fig. 1931.—Measurements are given of the average wind velocity and the periods without wind, below, in and above the crowns of oak forest, both pure and underplanted with beech.—*W. N. Sparhawk.*

1946. HOHENADL, W. Alte und neue Verfahren von Bestandsberechnungen. *Forstwiss. Centralbl.* 53(11/12): 381-392, 434-446. 2 fig. 1931.—The old methods of computing volumes and values of stands by the use of volume tables and form factors or by use of sample stems of average basal area are not sufficiently accurate for scientific purposes. Both lead to onesided errors that cannot be corrected by statistical methods unless a large number of sample trees are measured. A new method is explained, which uses only 2 sample trees chosen by statistical methods (average diam. of all trees in the stand, ± the standard deviation).—*W. N. Sparhawk.*

1947. HOLLSTEIN, W. Bodentypus und Waldtypus auf Küstendünen. *Forstwiss. Centralbl.* 53(8): 286-301. 2 fig. 1931.—The coastal dunes near Danzig, which have been in process of formation for 8,000 to 10,000 yrs., exhibit a variety of soil types, depending on age, and a corresponding variety of soil flora. Both soil flora and forest composition are influenced by the presence or absence of an A_1 soil horizon of decomposed humus.—*W. N. Sparhawk.*

1948. KOSSENAKIS, GEORG. Skizze des griechischen Waldes. *Forstwiss. Centralbl.* 53(1): 31-39. 1931.—Because of the mountainous character of the country, all of the forest should be considered protection forest. There are 5 forest zones: (1) Zone of evergreen oaks and laurel, characterized also by a large number of chaparral species. The most valuable tree is *Pinus halepensis*. Forest fires do much damage in this zone. (2) Chestnut zone, containing also numerous other species of hardwoods and several conifers; (3) beech zone, associated with various hardwoods and with *Abies cephalonica* and *Pinus laricio* towards its upper limits; (4) fir zone, consisting of *A. cephalonica* and other conifers; and (5) alpine zone, with stunted shrubby species.—*W. N. Sparhawk.*

1949. LANG, RICHARD. Echte und unechte Krümelung und Gare. *Forstwiss. Centralbl.* 53(9/11): 309-324, 351-367, 393-403. 1931.—Lang points out the differences between Krümelung, which is the aggregation of fine clay particles into grains the size of fine sand, resulting from physical and chemical action of K, Na, Mg, and especially Ca salts; mechanical loosening of the soil by cultivation and by the roots of vegetation, which produces large pores that do not last over several yrs.; and mellowness (Gare), which results from the action of living organisms in the soil, chiefly bacteria, fungi, earthworms, etc., and also from the decomposition of leaf litter and the protective effect of legumes such as lupine. This develops a more porous soil than mere Krümelung, and thereby favors the growth of trees. At least for the less exacting species, such as pines, the porosity of the soil, because of its relation to water capacity and water, air, and CO_2 circulation, is more important than the supply of assimilable N. The beneficial effect of lupine

under pine and spruce is due more to its preventing the soil from drying than to its accumulation of N.—*W. N. Sparhawk.*

1950. LÜHDORF, ARNIM. Die Bedeutung des Handels mit aussereuropäischen Harthölzern (unter besonderer Berücksichtigung der Stellung Hamburgs). 87p. Published by the author: Giessen, 1931.—This is a general review of the hardwood resources and commerce of Asia, Australia, Africa and America, with special emphasis on the tropical hardwoods. Hamburg is still the most important market for foreign hardwoods in continental Europe, although it has a smaller share of the trade than before the war. Germany will always need to import hardwoods, and will have to get them mostly from the tropics.—*W. N. Sparhawk.*

1951. MIRA, FRANCISCO. Las dunas de Guardamar. [The dunes of Guardamar.] *España Forest.* 14(158/159): 81-83; (160): 113-115; (161/162): 146-147. 1929; 15 (165): 12-14. Illus. 1930.—These dunes, covering 846 ha. near the mouth of Rio Segura in Alicante province, Spain, have been advancing 4 meters a year along a 16-km. front, thus ruining about 6 ha. of fertile land annually. Their movement has been checked by use of brush and other barriers, sowing of beach grass and other cover crops, and planting of *Pinus pinea, P. halepensis,* and *P. maritima,* and on an experimental scale *Casuarina, Juniperus* spp., eucalypts, etc. All of these are grown in nurseries among the dunes. Firebreaks 15 m. wide are covered with the succulent *Mesembryanthemum crassifolium.*—*W. N. Sparhawk.*

1952. MOROSOW, G. F. Die Lehre vom Walde. [Translated from the Russian by Selma and Hans Ruoff and Buchholz.] xxxii+375p. Portrait. 63 fig. J. Neumann: Neudamm, 1928, Pr. 21 m.—This work deals with the biology and silvical characteristics of forest trees, of forest stands, and of forest types. Bibliography (7 pp.) of Russian and German literature.—*W. N. Sparhawk.*

1953. PERRY, GEORGE SARGENT. Forestry in Sweden and adjacent lands from the viewpoint of an American forester. 276p. Map. 15 fig. Pub. by Author: Pennsylvania State Forest School, Mount Alto, Pennsylvania, 1929.—This book describes the historical, legal, and economic aspects of the development of Swedish forestry, and emphasizes particularly the methods and policies of silviculture and forest management. Chapters are devoted to description of the forest regions and tree species, natural regeneration, artificial regeneration, thinnings and improvement cuttings, land drainage, afforestation of heath and dune lands, forest regulation and working plans, and forest administration.—*W. N. Sparhawk.*

1954. PIANI, GIOVANNI. Sull'acclimatazione di alcune specie forestali esotiche in Cirenaica. [Acclimatization of exotic trees in Cyrenaica.] 19p. 8 pl. Ist. Agric. Coloniale Ital.: Firenze, 1930.—For forest planting in Cirenaica the better native spp. should generally be used, especially *Pinus halepensis, Cupressus sempervirens* var. *horizontalis, Quercus ilex, Tamarix articulata, Ceratonia siliqua,* and *Olea europea.* In some places, especially on the plateau, exotic species may be preferred for ornament and shade, windbreaks and roadside planting. Many spp. have been tried out, though for only a few yrs. in most instances. Among the more successful are several eucalypts (*E. gomphocephala* and *E. rostrata* are best), acacias (*Albizzia* and *Acacia* spp.), *Casuarina* spp., *Parkinsonia aculeata, Melia azedarach, Cupressus pyramidalis,* and *C. macrocarpa* (or *C. lambertiana*), and as secondary species *Eleagnus* spp. and *Phytolacca dioica.* Most of these grow faster than the native trees. Several others still under observation will probably do well. A large number (listed) have failed so far, but some might do better under different conditions.—*W. N. Sparhawk.*

1955. QUEVEDO, MIGUEL A. de. La estación forestal del puerto de Vera Cruz y sus enseñanzas. [The forest station of the port of Vera Cruz.] *Mexico Forest.* 7(12): 247-254. 1929; 8(4): 51-66; (9): 215-223; (10): 227-239. Illus. 1930.—Control of dunes in connection with development of the port is described. Fixation of the sand was undertaken in 1908 under the direction of French experts and was completed in 1913, using chiefly *Arundo donax, Ipomoea pes-caprae* and *Acacia cornigera.* The plantations were neglected during the revolutions and the World War and were destroyed by grazing. Work has since been resumed. In 1908 there were very few trees in Vera Cruz, but so many have been planted that it will soon be one of the best wooded cities of Mexico. *Casuarina cunninghamiana, C. stricta, Tamarix plumosa,* and *Acacia lebbek* have done best; eucalypts and pines did not thrive.—*W. N. Sparhawk.*

1956. ROHMEDER, E. Anbaufläche und Gefährdungen der Strobe im bayerischen Staatswald. *Forstwiss. Centralbl.* 53(9): 325-339. 2 maps. 1931.—In 1926 *Pinus strobus* occupied 1934 ha. or 0.23% of the State forest area in Bavaria. Stands over 60 yrs. old comprised 1.6% of the total; and 31-60 yrs., 21.7%. The pine suffers from many enemies. Deer are especially destructive to young saplings, on which they rub their antlers. Blister rust had attacked 1677 ha. in 1926; the stand on 620 ha. was severely damaged. Even more destructive is the fungus *Agaricus melleus,* which had severely damaged the stand on 1121 ha. out of the 1794 ha. on which it was found. No means of combating this fungus is known, but there are several ways to control blister rust. White pine is relatively free from snow breakage at low altitudes, but is badly damaged above 600-750 m. Scale insects, weevils, mice, woodpeckers, and drought cause more or less damage locally.—*W. N. Sparhawk.*

1957. SCHMIDT, WERNER. Unsere Kenntnis vom Forstsaatgut. 256p. 54 fig. Der Deutsche Forstwirt: Berlin, 1930.—This is a comprehensive review of present knowledge regarding determination of quality of seed, seed collection and storage, seed testing and control.—*W. N. Sparhawk.*

1958. SCHWARZ, HANS. Die für den Anbau in Mitteleuropa bedeutungsvolleren Hickoryarten. *Forstwiss. Centralbl.* 53(13): 461-467. 1931.—The following hickories should do well on suitable sites in central Europe: *Carya alba, C. glabra, C. laciniosa, C. ovata,* and *C. cordiformis.* They should be grown in mixture with other hardwoods (oak, ash, beech, etc.) or possibly in pure coppice stands on a 40-60 yr. rotation. Thinning should commence at about 30 yrs. and be repeated at frequent intervals.—*W. N. Sparhawk.*

1959. STEWART, GEORGE W. Big trees of the giant forest, Sequoia National Park in the Sierra Nevada of California, their life story from the blossom onward. 104p. Illus. A. M. Robertson: San Francisco, 1930.—The vitality of these trees and their ability to recover from severe injury are especially noteworthy and account for their great age. Their only really serious enemy is fire.—*W. N. Sparhawk.*

1960. VOIGT. Erziehung von Qualitätskiefern mit niedrigen Kulturkosten. *Deutsche Forstzeitg.* 46(17): 417-419. 1931.—A burn was successfully restocked by broadcasting a mixture of pine, spruce and larch seed (11 kgm. per ha.) and then driving a band of sheep over the area for several days when the ground was slightly damp. The sheep ate the competing vegetation and trampled the seed into the ground.—*W. N. Sparhawk.*

1961. WITTICH. Ueber das Wachstum von Vollumbruchkulturen auf physiologisch gesunden Böden. *Deutsche Forstzeitg.* 46(20): 491-494. 3 fig. 1931.—Pine planted on fully cultivated sandy diluvial soil grew much more rapidly for 10-12 yrs. than that planted by the usual furrow method, but as soon as the stand closed it lost its advantage. The rapid early growth was due to the absence of competition of grass and weeds rather than to any improvement in quality of the soil. Cultivation of physiologically unhealthy soil might improve it so the effect on tree growth would be more lasting.—*W. N. Sparhawk.*

ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 36, 40, 1804, 2167, 2170, 2181)

1962. **ANACHIN, J. K. Über einige neue Chlamydomonas-Arten.** *Arch. Protistenk.* 73(1): 131-136. 4 fig. 1931.—*Chlamydomonas* **oblonga*** (p. 131); *C.* **insignis*** (p. 133); *C.* **skujae** (p. 134); *C.* **vulgaris*** (p. 135); *C.* **brevicauda*** (p. 136). All are from vicinity of Kharkow. Comparative notes are given for *C. mucosa* (Korschikoff) Pascher. —*L. E. Noland.*

1963. **BACHRACH, EUDOXIE, et DENISE PILLET. Etude des cendres des diatomées sans carapace. [Ash of diatoms without frustule.]** *Bull. Histol. Appl. Phys. et Path.* 8(2): 33-37. 2 fig. 1931.—Diatoms experimentally deprived of frustule live and reproduce with a very changed form for years. Microincineration shows a mass of calcium in and some granules arranged about the nucleus. A calcium band outlines the cell and at both poles small masses indicate the position of the valves.—*J. G. Sinclair.*

1964. **CAPT, LUCILE. The morphology and life history of Antithamnion.** *Publ. Puget Sound Biol. Sta.* 7: 369-389. 37 fig. 1930.—Working with *A. pacificum*, *A. occidentale* and *A. defectum* the author secured quite a close series in the development of the cystocarp. The tetrasporangia are formed in groups of 2 or 3 as in *A. uncinatum*. *A. defectum* may be distinguished from *A. occidentale* by the manner in which the gland cells are formed. The branching is quite variable and leads to doubt of the value of *A. uncinatum* S. & G. and *A. pygmaceum* S. & G.—*T. C. Frye.*

1965. **CHOLNOKY, B. A Pennatae csoport kovamoszatainak ivaros szaporodâsa. [Sexual propagation of the Pennatae of Diatomeae.]** [In Hungarian, with German summary.] *Bot. Közlemények* 27(5/6): 81-102. 1930.—A comprehensive discussion of the results of recent investigations.—*C. Schermann.*

1966. **DU RIETZ, G. EINAR. Three species of marine algae new for the Swedish part of the Baltic.** *Bot. Notiser* 1930(5): 360-367. 1930.—The southeast corner of Södertörn, south of Stockholm, with free exposure to one of the deepest basins of the Baltic, has been little studied in respect to the algal flora. As a preliminary report of investigations in this region in 1929-1930 the author notes *Desmotrichum balticum* Kütz., a species known from Finland and the western coast of Sweden and probably common in the Swedish part of the Baltic, but hitherto overlooked. The plurilocular sporangia show transitions between the intercalary and typically lateral types (represented by *D. balticum* Reinke and *D. scopulorum* Reinke respectively), but the immersed broadly conical type was most common. The varying forms in the Baltic (except Reinke's original *D. scopulorum*) are maintained as *D. balticum*, but the specific value even of *D. scopulorum* is questioned. *Leathesia difformis* (L.) Aresch. appeared in a small form (always less than 1 cm. diam.) near Nynäshamn, previously found on the Swedish coast only west of Öresund. It is probably restricted to this area and is associated with the unusual maritime lichens, *Lecania aipospila* (Wahlenb.) Th. Fr. and *Caloplaca thallincola* (Wedd.) Dr. To what extent these associations are due to hydrographical conditions must be decided by further study. *Scytosiphon lomentarius* (Lyngb.) J. Ag. is abundant in several localities in the uppermost *Fucus-Pylaiella* belt on strongly exposed shores. It has probably been overlooked due to the fact that fruiting occurs only in the spring. The specimens were slender and may be referred to f. *fistulosa* Reinke (=f. *cylindrica* Setchell & Gardner). Articulate forms were also found.—*H. K. Svenson.*

1967. **FRÉMY, PIERRE. Les Myxophycées de Madagascar.** *Ann. Cryptogamie Exotique* 3(4): 200-230. 9 col. pl. 1930.—Contains biological notes and a systematic list of species of which 14 are new to Madagascar, 2 spp. and 1 var. new to Equatorial Africa, 13 new to Africa, and *Entophysalis* **perrieri*** (p. 207). Key to spp. of *Entophysalis* is given.

1968. **FRYE, T. C. Splitting of the leaf of Nereocystis.** *Publ. Puget Sound Biol. Sta.* 7: 413-416. 5 fig. 1930.—The writer believes that the nearest relative of *Nereocystis* is *Pelagophycus*, and finds some reason for such a belief in the first few splittings of the original blade of *Nereocystis*.—*T. C. Frye.*

1969. **FRYE, T. C. Union of gametes in Scytosiphon.** *Publ. Puget Sound Biol. Sta.* 7: 416. 1930.—A report of the finding of union of gametes as stated by Kuckuck. —*T. C. Frye.*

1970. **GEITLER, LOTHAR. Ein grünes Filarplasmodium und andere neue Protisten.** *Arch. Protistenk.* 69(3): 615-636. 1 pl., 15 fig. 1930.—The following new genera and species are described from a marine culture from Canary Islands: **CHLORARACHNION,** with *C.* reptans* nov. gen., n. sp. (p. 616) a green filarplasmodium; **SARCINOCHRYSIS** with *S.* **marina*** nov. gen., n. sp. (p. 627) of Chrysophyceae; **PLATYCHRYSIS,** with *P.* **pigra*** nov. gen., n. sp. (Isochrysidaceae) (p. 631) a Chrysomonad; **RHODOSORUS,** with *R.* **marinus*** nov. gen., n. sp. (p. 633) a Red Alga.—*G. M. Robertson.*

1971. **GEITLER, LOTHAR. Rhodostichus n. gen.** *Arch. Protistenk.* 73(2): 305-310. 4 fig. 1931.—**RHODOSTICHUS expansus*** Geitler & Pascher (p. 305, 310) was found in brooks in Carinthia in July 1930. Though similar to purple bacteria the author concludes that it is a blue green alga. It has purple red color, cells 0.6×3 μ in parallel rows 50 μ long, tightly packed pyramid-wise, each cell and filament encapsulated in jelly. Reproduction is by transverse division only. Preliminary tests indicate the pigment to be phycoerythrin. —*L. E. Noland.*

1972. **GOEBEL, K. Die Deutung der Characeen-Antheridien. Ein Versuch.** *Flora* 24(4): 491-498. 3 fig. 1930.—Sections of groups of gametangia of *Chara* in various stages of development showed that the entire group of oogonia and antheridia are developed from a structure comparable to a leaf. Oogonia are differentiations of single leaflets, and the so-called "antheridia" are derived each from 8 fused leaflets. Antheridial filaments are the ultimate branches of these leaflets. Neither the "antheridium" nor the antheridial filaments can be homologised with the antheridium of the moss, but the antheridial filament can readily be compared with series of unicellular antheridia of the algae.—*F. Drouet.*

1973. **GRAN, H. H., and E. C. ANGST. Plankton diatoms of Puget Sound.** *Publ. Puget Sound Biol. Sta.* 7: 417-516. 95 fig. 1931.—Descriptions of the species of diatoms found in the general region in the plankton of the ocean. All the species and varieties are illustrated, and most of the illustrations are original. There are keys to and descriptions of the genera and species. Thirty-two genera are reported, and 95 species and varieties, including *Thalassiosira* **aestivalis** Gran* (p. 436), *T.* **pacifica** (p. 437), *Coscinodiscus* **angstii** Gran* (p. 443) and var. **granulomarginata*** (p. 444), *C. centralis* var. **pacifica*** (p. 446), *C.* **wailesii*** (p. 448), *Chaetoceros* **approximatus*** (p. 476), *C.* **crucifer** Gran* (p. 484), *Tropidoneis antarctica* var. **polyplasta*** (p. 501), and *Nitzschia closterium* var. **recta*** (p. 503).—*T. C. Frye.*

1974. **GROSS, ILSE. Beiträge zur Entwicklungsgeschichte der Protophyten. VII. Entwicklungsgeschichte, Phasenwechsel und Sexualität bei der Gattung Ulothrix.** *Arch. Protistenk.* 73(2): 206-234. 20 fig. 1931.—*Ulothrix zonata* and *U. oscillarina* were cultivated under artificial light on Mainx' Volvox agar at 8-10° C. In *U. zonata* higher temp. induced fragmentation of the filaments, brought about by the growth of long processes from the ends of occasional cells in the filaments. Leaving the filaments too long on a plate without renewal of nutrients induced the growth of long branching hypha-

like processes from certain cells, and even causing branching of the filaments in some cases; freezing, drying or flooding with fresh nutrient solution induced zoospore formation. Cell-division, zoospore formation and copulation are described in some detail. The reduction division occurs when the zygote germinates. Gametes from the same filament will not copulate with each other; *U. zonata* is accordingly dioecious. Three types of filaments exist: those producing zoospores only; those producing gametes only; and those producing both. Since each of these may be either ♂ or ♀, there are in reality 6 different kinds of filaments in the species.—*L. E. Noland.*

1975. **GROVES, JAMES. On the antheridium of Chara zeylanica Willd.** *Jour. Bot.* 69(1820): 97-98. 1 fig. 1931.—In all specimens examined from various parts of the world, antheridia with 4 lozenge-shaped shields were found.—*A. L. Grant.*

1976. **HAGEMANN, E. Beitrag zur geographischen Verbreitung der Algen in der Umgebung von Hannover.** *Jahresber. Naturhist. Ges. Hannover*, 1924/25-1928/29. 75: 40-80. Map. 1930.—An extensive list of Myxophyceae, Flagellatae, Heterokontae, Dinoflagellatae, Bacillariophyta, and Chlorophyceae, and a few Rhodophyceae and Charophyta, with local habitats.

1977. **HUSTED, LADLEY. Cell wall of Vaucheria geminata.** *Bot. Gaz.* 91(2): 219. 1931.—The "inner layer" of the empty cell wall (the protoplast having flowed out through a cut end) gave no reaction with the cellulose reagents (iodine KI and 70% H_2SO_4), but the end at the cut gave a faint cellulose test. The author suggests that the cell wall is of 3 layers: outer, of pectic compounds; middle, of cellulose; and innermost, extremely thin, of "pectose substances or of cellulose heavily impregnated with pectose."

1978. **KÖRNER, O. Über Anheftungsstellen von Algen auf den Schalen von Wasserschnecken. [Attachment of algae on the shells of water snails.]** *Ber. Senckenberg. Naturf. Ges.* [*Natur u. Mus.*] 61(2): 70-71. 1 fig. 1931.—*Enteromorpha* on the apex of *Limnaea stagnalis; Cladophora* on the umbo of *Planorbis* and on the apex of *Physa acuta.*

1979. **KUCKUCK, PAUL. Fragmente einer Monographie der Phaeosporeen. Edited, after the death of the author, by WILHELM NIENBURG.** *Wiss. Meeresuntersuch. Komm. Untersuch. Deutsch. Meere in Kiel u. Biol. Anst. Helgoland. Abt. Helgoland* 17(4): iv & 93p. 155 fig. 1929.—This paper is a collection of figures and notes assembled by Kuckuck in anticipation of a monograph of the Phaeosporales, organized for publication after his death by WILHELM NIENBURG. The primary division is made into **HAPLOSTICHALES** and **POLYSTICHALES**, in the latter group the primary cell row becoming subdivided by longitudinal cell walls. Fourteen families are offered in the first sub-order: *Ectocarpaceae, *Choristocarpaceae, Cutleriaceae, *Elachistaceae, *Corynophlaeaceae, *Myrionemaceae, *Mesogloeaceae, *Myriogloeaceae, *Myriocladiaceae, *Acrotrichaceae, *Spermatochnaceae, *Desmarestiaceae, *Sporochnaceae and *Splachnidiaceae, while in the Polystichales 12 families are included, but studies of representatives were not available for this paper: Stictyosiphonaceae, Chnoosporaceae, Asperococcaceae, Litosiphonaceae, Scytosiphonaceae, Punctariaceae, Sorantheraceae, Dictyosiphonaceae, Tilopteridaceae, Sphacelariaceae, Laminariaceae, Notheiaceae. The families marked with asterisks are described in the introductory section in some detail. The second part of the work is the detailed presentation of notes and drawings left by Kuckuck. The Ectocarpaceae are omitted. *Choristocarpus* of the Choristocarpaceae is described with propagulae and unilocular sporangia and zoospores, which were germinated in culture to plantlets which developed reproductive organs. *Discosporangium* Falk. is redescribed without original data. *Cutleria* Grev. is extensively discussed in its relation to peculiarities of life history, and original results of cultures presented. *Zanardinia* Nardo is described. **PHILIPPIA** (p. 19) (Elachistaceae) is described in detail based on *P.* **australis*** (*Elachista australis* J. Ag.) (p. 19). Details of structure and reproduction are given for 5 species of *Elachista*, including *E.* **neglecta*** (24), from the Adriatic. The structure of *Halothrix, Giraudia* and *Symphoricoccus* incl. *S.* **stellaris** (*Elachista stellaris* Aresch.) (p. 34) is described in detail and illustrated, and a few notes given on *Leptonema.* In the Corynophlaeaceae *Myriactis* is described in detail in several species, including *M.* **stellulata*** (*Elachista stellulata* Griff.) (p. 35), and *M.* **arabica*** (*Phacophila arabica* Kg.) (p. 39), *M.* **cystophorae*** (*Corynophlaea cystophorae* J. Ag.) (p. 40); *Corynophlaea* is described in structure and reproduction in 2 sp., incl. *C.* **crispa*** (*Leathesia crispa* Harv.) (p. 42); *Leathesia* and *Microcoryne* are described and illustrated. In the Mesogloeaceae *Eudesme* is described in 3 species, *Castagnea* is kept distinct and 8 species described, incl. *C.* **filum*** (*Mesogloea filum* Harv.) (p. 50), *C.* **vermicularis*** (*Bactrophora vermicularis* J. Ag.) (p. 51), *C.* **crassa** (*Mesogloea crassa* Sur.) (p. 52), and *C.* **posidoniae** (*Liebmannia posidoniae* Menegh.) (p. 52). *Mesogloea* incl. *M.* **reticulata** (*Liebmannia r.* B.) (p. 56) is described on the basis of 3 species (*Cladosiphon* in 2 species) as to structure and reproduction. *Chordaria* is described upon 3 species, including *C.* **chordaria*** (*Cladosiphon chordaria* Harv.) (p. 60) and *C.* **andersonii** (*Mesogloea andersonii* Farl.) (p. 61). **MYRIOGLOEACEAE** (p. 62) is offered as a new family based on **MYRIOGLOEA** Kck. (p. 63), with *Myriogloea* **sciurus** (*Myriocladia s.* Harv.) (p. 63), *Myriogloea* **chorda** (*Myriocladia c.* J. Ag.) (p. 63), and *Chordaria capensis* Kuetz. and *Mesogloea andersonii* Farlow provisionally referred to this genus though the actual transfer is not made. **MYRIOCLADIACEAE** (p. 63) is offered, based on the genus *Myriocladia,* of which the structure of 3 species is described, including *M. ekmani* (Aresch.) Kyl. **ACROTRICHACEAE** (p. 65) is offered based on *Acrothrix.* In the Spermatochnaceae *Spermatochnus* and *Stilophora* receive brief mention. The structure and reproduction of *Nemacystus* **decipiens** (*Cladosiphon d.* Suring.) (p. 68) is given at some length, and **STILOPSIS** (p. 70) n. gen., is offered based on *S.* **lejolisii*** (*Stilophora lejolisii* Thuret) (p. 70) but not defined by description. In Sporochnaceae, *Nereia* is described at length in morphogenesis and reproduction. In Splachnidiaceae *Splachnidium* is described at length. Of families Stictyosiphonaceae to Sorantheraceae incl., only a collection of illustrations was left, but these are reproduced. In Dictyosiphonaceae *Coilodesme* is described in detail in 3 species. Of the remaining families only illustrations of structure are given.—*Wm. Randolph Taylor.*

1980. **LUCAS, A. H. S. The marine algae hitherto recorded from north-east Australia.** *Rept. Great Barrier Reef Committee* 3: 47-57. 1931.—This list of Queensland algae is based upon both old and new records, and includes about 180 spp., with locality data.

1981. **MIGULA, W. Über einige japanische Characeen.** *Hedwigia* 70(3/4): 211-215. 1 fig. 1930.—An annotated list of species, with descriptions, including: *Nitella polyglochin* **f. japonica*** (p. 213), *N.* **dimorpha*** (p. 213), both Shihoku.

1982. **MOORE, CAROLINE S., and LAURA B. MOORE. Some desmids of the San Juan Islands.** *Publ. Puget Sound Biol. Sta.* 7: 289-336. 232 fig. 1930.—During the summer of 1929, 153 species belonging to 20 genera were found. These are figured, and keys are given for convenience in determining them.—*T. C. Frye.*

1983. **PASCHER, A. Beiträge zur allgemeinen Zellehre. I. Doppelzellige Flagellaten und Parallelentwicklungen zwischen Flagellaten und Algenschwärmern.** *Arch. Protistenk.* 68(2): 261-304. 21 fig. 1929.—First of a series dealing with multiplicity of cell forms. **DIDYMOCHRYSIS** based on *D.* **paradoxa*** (p. 262, 303), a Chrysomonad from fresh-water of Bohemia, resembles two *Ochromonas* cells joined laterally, with 2 pairs of flagella, 2 vacuolar systems, 2 chromatophores, and 2 anterior end zones, but a single nucleus. Other doubled forms are discussed, with theories of origin. A close parallelism of structure exists between certain of these

flagellates and certain algal swarm-spores, suggesting their close relationship.—*G. M. Robertson.*

1984. PASCHER, A. Eine neue braune Fadenalge des Süsswassers (Chrysophycee). *Arch. Protistenk.* 73(1): 60-72. 1 pl., 9 fig. 1931.—*Apistonema* **pyrenigerum*** (p. 71), a new filamentous form of Chrysophyceae, from Franzensbad, Bohemia, was found in a bed of *Cylindrospermum* growing near a spring-fed waterfall and moistened by the spray. The alga forms crooked filaments growing out from a basal mass of cells. Filament formation is marked in some groups, nearly absent in others. Two yellowish-brown chromatophores, provided with a pyrenoid, are present in each cell. Leucosin spherules or granules are present. Stages in the formation of swarm spores were observed, but the spores themselves were not seen. Stoppered cysts, characteristic of Chrysophyceae, were seen. The species is compared with *Apistonema commutatum* Pascher 1925 and a diagnosis is given of the genus and the two species.—*L. E. Noland.*

1985. SETCHELL, WILLIAM ALBERT. Hong Kong seaweeds, I. *Hong Kong Naturalist* 2(1): 39-60. 9 fig. 1931.—Directions for collecting and preserving are followed by general notes on various local spp.

1986. SHANNON, E. L., and L. C. ALTMANN. Growth in Codium mucronatum. *Publ. Puget Sound Biol. Sta.* 7: 391-392. 2 fig. 1930.—On the whole most of the growth takes place in the upper region. Growth farther down is unequal, some parts elongating much more than others.—*T. C. Frye.*

1987. SKVORTZOW, B. W. Notes on Ceylon diatoms. I. *Ceylon Jour. Sci. Sect. A, Bot., Ann. Roy. Bot. Gard. Peradeniya* 11(3): 251-260. 3 pl. 1930.—An annotated list of 99 spp., dimensions being given of each and brief descriptive notes of many. *Cerataulus thermalis* v. *sinensis* f. **ceylonica*** (p. 252); *Eunotia formica* v. **ceylonica*** (p. 253); *E.* **ceylonica*** (p. 253); *E. c.* var. **bigibba*** (p. 253); *E. frickei* v. **ceylonica*** (p. 253); *E.* **alstonii*** (p. 253); *Neidium affine* v. *genuina* f. **ceylonica*** (p. 254); *N. kozlowi* v. **ceylonica*** (p. 254); *Navicula pelliculosa* v. **ceylonica*** (p. 254); *N. digito-radiata* f. **ceylonica*** (p. 255); *N.* **ceylonica*** (p. 255); *N. perrotettii* f. **ceylonica*** (p. 255); *Stauroneis phoenicenteron* v. **ceylonica*** (p. 256); *Pinnularia divergens* v. *genuina* f. **ceylonica*** (p. 256); *P. subcapitata* v. **ceylonica*** (p. 256); *P. microstauron α eu-microstauron* v. *capitata* f. **ceylonica*** (p. 256); *P. m. β brebissonii* vars. **ceylonica*** and **recta*** (p. 256); *P. cardinaliculus* v. **ceylonica*** (p. 257); *Frustulia vulgaris* v. *asiatica* f. **ceylonica*** (p. 257); *F.* **ceylonica*** (p. 257); *Cymbella ventricosa* v. *laevis* f. **maxima*** (p. 258); *C. aequalis* v. *florentina* f. **ceylonica*** (p. 258); *Amphora turgida* v. **ceylonica*** (p. 258); *Surirella* **alstonii*** (p. 258); *S.* **ceylonica*** (p. 259).

1988. SKVORTZOW, B. W. Diatoms from Dalai-Nor Lake, eastern Mongolia. *Philippine Jour. Sci.* 41(1): 31-37. 2 pl. 1930.—Measurements are given for 61 forms, or spp., of which 25 forms are illustrated. *Scoliopleura* **pavlovi*** (p. 34); *Amphora ovalis* v. *pediculus* f. **mongolica*** (p. 34); *Surirella ovata* v. *ovata* fs. **mongolica*** and **curta*** (p. 36). Types in author's coll.

1989. SKVORTZOW, B. W. Alpine diatoms from Fukien Province, South China. *Philippine Jour. Sci.* 41 (1): 39-49. 3 pl. 1930.—Data from a collection made at Kuliang, Fukien, at 2400 ft. altitude. Measurements are given of 89 forms, or species, and illustrations of 31 forms. *Eunotia mayor* v. **asiatica*** (p. 40), Foochow and Hanka Lake, Primorsk Province, S.S.S.R.; *E. clever* v. **sinica*** (p. 40); *Achnanthes* **fukiensis*** (p. 41), *A. inflata* v. **sinica*** (p. 41); *Neidium kozlowi* v. **ceylonica*** (p. 41), Foochow and Ceylon; *Diploneis finnica* f. **sinica*** (p. 42); *Navicula* **fukiensis*** (p. 42), *N. lambda* v. **recta*** (p. 42), *N.* **chinensis*** (p. 42); *Pinnularia mesolepta* v. *angusta* f. **sinica*** (p. 43), *P. montana* v. **sinica*** (p. 42), *P.* **chinensis*** (p. 43); *Frustulia vulgaris* v. **constricta*** (p. 44); *Gomphonema puiggarianum* v. **sinica*** (p. 44), *G. sphaerophorum* v. **asiatica*** (p. 45); *Cymbella signata* v. **chinensis*** (p. 46); *Epithemia hyndmannii* v. **chinensis*** (p. 46); *Surirella* **fukiensis*** (p. 47), *S. saxonica* v. **sinica*** (p. 47). Types in author's coll.

1990. STOCKMANS, F. Contribution à l'étude de Gloeotaenium loitlesbergerianum Hansg. *Bull. Soc. Roy. Bot. Belgique* 62(2): 101-104. 4 fig. 1930.—This species of the Protococcaceae forms 2- and 4-celled colonies divided and capped by black bands which the author believes are not caused by gelatinization of the next to the outer layer of the wall, but by the presence of calcium carbonate in that portion of the wall, as indicated by microchemical tests.—*D. Doubt.*

1991. TANDY, G. Sundry observations on Caulerpa. *Proc. Linn. Soc. London No. 142.* 35: 1929/30(1931).—Abstract.

1992. VLK, WLADIMIR. Über die Struktur der Heterokontengeisseln. *Beih. Bot. Centralbl. 1 Abt.* 48 (1/2): 214-220. 15 fig. 1931.—Stained preparations (Löffler's method, as modified by Körner and Fischer) of *Botrydiopsis arhiza* and *Heterococcus* sp. show that the longer flagellum is a typical bilaterally ciliate "Flimmergeissel" and the shorter is a non-ciliated, simple, "Peitschengeissel," usually prolonged into a very slender terminal portion as in the Chrysophyceae. This indicates that the affinities of the Heterocontae are with the Chrysophyceae rather than with the Chlorophyceae.

1993. WANG, CHU-CHIA. Notes on some sub-aerial Myxophyceae of Nanking. *Nation. Central Univ. Sci. Repts.* [*Nanking*] *Ser. B.* 1(1): 59-64. 1 pl. 1930.—Annotated list of 17 forms.

1994. WANG, CHU-CHIA. The genera of freshwater algae in Nanking and Soochow. *Peking Soc. Nat. Hist. Bull.* 5(3): 27-32. 1931.—A preliminary list of genera found in China: 55 genera of Isokontae, 2 Heterokontae, 2 Chrysophyceae, 20 Bacillariales, 1 Cryptophyceae, 3 Dinophyceae, 4 Euglenineae, 1 Rhodophyceae, 31 Myxophyceae, and 2 Charales.

FUNGI

C. L. SHEAR, *Editor*

EDITH K. CASH, *Associate Editor*

(See also in this issue Entries 41, 67, 68, 70, 76, 104, 107, 1359, 1429, 1615, 1784, 1785, 1789, 1792, 1795, 1805, 1806, 1808, 1828, 1841, 1860, 1966, 2112)

FUNGI

1995. BROCQ-ROUSSEU. Sur le développement du cryptocoque de la lymphangite épizootique. *Bull. Acad. Vét. France* 3(3): 150-153. 1930.—Previous experimental work is discussed, the author concluding from his own microscopical work that *Cryptococcus farciminosus* is not reproduced by budding. He points out that earlier descriptions are due to an illusion caused by adhesion of 2 elements of unequal thickness, kept in place by fixation, and massive staining not permitting clear vision of details. In his numerous observations, the author has never seen a single budding *Cryptococcus;* in those that appear to be such, there is no continuity of the enveloping membranes of parent and daughter cells. The free forms of Henry were observed from mere points to fully developed cryptococci, thus presenting the full development of the parasite. The author believes the *Cryptococcus* to be a flattened form which, in the preparations, is never seen from the poles. 2 methods of cryptogenesis are presented as possible: (1) reproduction such as that of *Plasmopara viticola,* which emits motile zoospores which lose their mobility and develop a membrane, or (2) reproduction by means of spores as in *Mycoderma immitis.*

1996. **CLEMENTS, F. C., and C. L. SHEAR.** The Genera of Fungi. i-iv, +496p., 58 pl. The H. W. Wilson Co.: New York, 1931. Pr. $8.00.—This is a revised and much enlarged illustrated edition of Clement's The Genera of Fungi. The book introduction (19 pages) discusses the various criteria used and principles of classification and nomenclature. This is followed by dichotomous keys to the classes, orders, families and genera of the fungi described previous to 1929 so far as they could be located. Myxomycetes and bacteria have been omitted. Following the keys is a list of types and synonyms in which each genus either treated as valid or as a synonym is assigned a type species, the attempt being made to select a type species which is fairly well known and representative of the genus as at present generally applied. Citation of the place of publication and of location in Saccardo's Sylloge Fungorum or other taxonomic work is given. A bibliography covering 18 pages gives most of the important taxonomic works on the fungi, especially the more recent. This is followed by a glossary of 30 pages. The following new genera are proposed by Clements, their type species being the species mentioned. Endomycetaceae: **OLEINIS,** *O.* lateralis (v. Tiegh.) Clem. (p. 245). Gymnoascaceae: **MYRILLIUM,** *M.* myriosporus (Rostr.) Clem. (p. 246). Eurotiaceae: **CAROTHECIS,** *C.* palearum (Richon) Clem. (p. 247). Hypocreaceae: **PROLISEA,** *P.* exiguella (Nyl.) Clem. (p. 282); **PRONECTRIA,** *P.* lichenicola (Ces.) Clem. (p. 282); **PERICOCCIS,** *P.* leptogicola (C. & M.) Clem. (p. 283). Lophiostomaceae: **BYSSOLOPHIS,** *B.* byssiseda (Flag. & Chen.) Clem. (p. 286). Verrucariaceae: **LICHENYLLIUM** [also indicated as in Collemaceae], *L.* lojkanum (Hue) Clem. (p. 287). Microthyriaceae: **MICROTHYRIS,** *M.* maculans (Zopf) Clem. (p. 302); **TRYBLIS,** *T.* arnoldi (Rehm) Clem. (p. 312). Collemaceae: **COLLEMIS,** *C.* rupestris (L.) Clem. (p. 316). Phomaceae: **PHOMYCES,** *P.* meliolicola (Speg.) Clem. (p. 359); **DARLUCIS,** *D.* longiseta (Henn.) Clem. (p. 364); **DIPLODINIS,** *D.* rostrupi (Vestg.) Clem. (p. 364). The following new names are proposed by Clements: Endomycetaceae: **ENDYLIUM** (*Magnusiomyces* Zand.) (p. 245). Saccharomycetaceae: **ISOMYCES** (*Debaryomyces* Kloeck.) (p. 245); **THELIS** (*Hanseniospora* Zikes) (p. 246); **ZONOSPORIS** (*Schwanniomyces* Kloeck.) (p. 246). Eurotiaceae: **PHAEIDIUM** (*Laaseomyces* Ruhl) (p. 248). Perisporiaceae: **DICHAETIS** (*Wentiomyces* Koord.) (p. 250). Capnodiaceae: **CHAETOBOTRYS** (*Kusanobotrys* Henn.) (p. 253); **CHAETYLLIS** (*Raciborskiomyces* Siem.) (p. 253); **DYSRHYNCHIS** (*Henningsomyces* Sacc.) (p. 253); **CHAETOMERIS** (*Treubiomyces* Hoehn.) (p. 254). Sphaeriaceae: **CERILLUM** (*Colletomanginia* Har. & Pat.) (p. 262). Dothideaceae: **DIDOTHIS** (*Uleodothis* T. & S.) (p. 291); **DOTHOPHAEIS** (*Englerodothis* T. & S.) (p. 291). Tuberculariaceae: **CHAETOSIRA** (*Wiesneriomyces* Koord.) (p. 403). Tuberculariaceae: **CYLOMYCES** (*Listeromyces* Penz. and Sacc.) (p. 404).—*C. L. Shear.*

1997. **DIETEL, P. Unterklasse: Hemibasidii (Ustilaginales und Uredinales).** In: **A. ENGLER und K. PRANTL. Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten insbesondere den Nutzflanzen.** 2nd ed., edited by **A. ENGLER.** Bd. 6, Abt.: **Eumycetes (Fungi), Klasse: Basidiomycetes,** by **P. CLAUSSEN.** vii+98p. 80 fig. Wilhelm Engelmann: Leipzig, 1928.—The work follows the plan of the 1st edition, including discussions of all genera recognized as valid by the authors, with illustrations of many of the spp. The following new combinations of names of rusts are found: *Bubakia* **stratosa** (Cke.) (p. 48), *B.* **glochidii** (Syd.) (p. 48), *B.* **brideliae** (Koord.) (p. 48), *Cerotelium* **malvicolum** (Speg.) (p. 57), *C.* **butleri** (Syd.) (p. 57), *Trachyspora* **wurthii** (Ed. Fisch.) (p. 57), *Spirechina* **cundinamarcensis** (Mayor) (p. 60), *S.* **variabilis** (Mayor) (p. 60), *S.* **chinensis** Diet. (p. 60), *Prospodium* **von gunteni** (Mayor) (=*Puccinia*) (p. 65), *Nyssopsora* **cedrelae** (Hori) (p. 70), *Haploravenelia* **arizonica** (Ell. & Tracy) (p. 72), *H.* **minima** (Cke.) (p. 72). *H.* **pygmaea** (Lagerh. & Diet.) (p. 72), *H.* **ornata** (Syd.) (p. 72), *H.* **appendiculata** (Lagerh. & Diet.) (p. 72), *H.* **natalensis** (Syd. & Evans) (p. 72), and *Eriosporangium* **aecidiiforme** (Thum.) (p. 79).—*E. K. Cash.*

1998. **DODGE, CARROLL W.** The higher Plectascales. *Ann. Mycologici* 27(3/4): 145-184. 2 pl., 2 fig. 1929.—A taxonomic treatment of the 2 families, Trichocomaceae and the Elaphomycetaceae, which constitute the so-called higher Plectascales. The Elaphomycetaceae include the genera *Mesophellia* (5 spp.) and *Elaphomyces* (24 spp.). *Elaphomyces* **verrucosus** (p. 171); *E. asperulus* v. **rugosus** (*E. rugosus* Fries) (p. 178). **MESOPHELLIEAE** (p. 152) is a new tribe. Keys to the spp. are presented together with a complete description of each sp. and lists of material examined.—*J. A. Stevenson.*

1999. **DOIDGE, E. M., and H. SYDOW.** The South African species of the Meliolineae. *Bothalia* 2(2): 424-472. 1928.—Distribution of Meliolineae in So. Africa corresponds to that of the indigenous timber forests. The geographical range of the species is coincident with that of the host plants. The family Meliolineae is revised with the genus *Appendiculella* reunited with *Irene*, and *Irenopsis* with *Meliola*. A key to the genera is followed by a description of each. *Irene* and *Meliola* have keys to the spp. with descriptions of 13 new spp. and 1 new combination. The descriptive formulae are those used by Beeli and revised by Stevens. *Irene* **nuxiae** Syd. (p. 433; 463), on *Nuxia floribunda* Benth. and *N. tomentosa* Sond., N. Transvaal; *Meliola* **scolopiae** Doidge (p. 437; 467), on *Scolopia zeyheri* Warb, Transvaal; *M.* **brachyodonta** Syd. (p. 442; 464), on *Rhus tomentosa*, Transvaal; *M.* **allophyllii** Doidge (p. 443; 463), on *Allophyllus erosus* Radkl., Cape Province; *M.* **behniae** Syd. (p. 444; 464), on *Behnia reticulata* F. Dedrichs, N. Transvaal; *M.* **azimae** Doidge (p. 450; 464), on *Azima tetracantha*, Cape Province; *M.* **indigoferae** Syd. (p. 451; 466), on *Indigofera natalensis* and *Baphia racemosa*, Natal and Durban; *M.* **buxicola** Doidge (p. 452; 465), on *Buxus macowani* Olio, East London; *M.* **cnestidis** Doidge (p. 453; 465), on *Cnestis natalensis*, Cape Province and Natal; *M.* **doidgeae** Syd. (p. 457; 465), on *Sapindus oblongifolius* Sond., Transvaal; *M.* **dactylipoda** Syd. (p. 460; 463), on *Cryptocarya woodii* Engl. and *C. liebertiana*, Duncairn and Rhodesia; *M.* **goniomae** Doidge (*Amazonia g.* Doidge) (p. 461), on *Gonioma kamassi* E. Mey., Transvaal; *M.* **osyridis** Doidge (p. 462; 466), on *Osyris compressa* A. DC. and *Rhoiocarpus capensis* A. DC.; *M.* **littoralis** Syd. (p. 462; 466), on *Burchellia capensis, Gardenia rothmannia, G. globosa, Grumilea capensis, G. cymosa, Keetia transvaalensis, Pavetta bowkeri, Plectronia ciliata, P. spinosa* and *P.* spp. Transvaal. Latin description of the new spp. is followed by a host index by families, a host index by genera and an alphabetical index of genera and spp. Types are in the National Herbarium.—*L. Angst.*

2000. **DOWDING, E. SILVER.** The sexuality of the normal, giant, and dwarf spores of Pleurage anserina (Ces.) Kuntze. *Ann. Bot.* [*London*] 45(177): 1-14. 1 pl. 10 fig. 1931.—*P. anserina* is one of the Pyrenomycetes which normally has 4 spores in each ascus. In addition to normal spores, the asci occasionally produce giant spores or dwarf spores. Usually a giant spore replaces 2 normal spores, but sometimes 2 giant spores occur in the same ascus and replace 3 normal spores. The dwarf spores occur in the asci only in pairs, and each pair replaces a single normal spore. The spores germinate freely and the mycelium grows vigorously on sterilized horse-dung. A mycelium derived from a single normal spore fruits readily. Normal spores are binucleate and bisexual. A mycelium derived from a single giant spore fruits readily. Giant spores are bisexual. When a giant spore replaces 2 normal spores, it probably contains 4 nuclei. A mycelium derived from a single dwarf spore remains sterile. Mating experiments have shown that the mycelia derived from individual dwarf spores fall into 2 groups which may be called (+) and (−). When 2 (+) mycelia or 2 (−) mycelia are paired, no perithecia are produced; but when a (+) mycelium and a (−)

mycelium are paired, abundant perithecia are developed in a band where the 2 mycelia have come into contact. A dwarf spore is uninucleate and unisexual. When 2 monosporous mycelia, each derived from a member of a pair of dwarf spores, are paired, they fruit readily when they come into contact with one another (one exception to this rule observed). Usually, in each pair of dwarf spores one spore is of 1 sex, (+), and the other is of the opposite sex, (−).—*Author's summary.*

2001. **FAULL, J. H. The morphology, biology, and phylogeny of the Pucciniastreae.** *Proc. Internat. Congress Plant Sci., Ithaca, New York, 1926.* 2: 1735-1745. 1929.—Cultural and morphological studies were made by the author and several of his students on 24 spp. of the Pucciniastreae, distributed among the 8 known genera of this sub-family. Complete life cycles were worked out for 13 of them, of which the following were made for the first time: *Milesina marginalis* Faull and Watson, *M. Kriegeriana* Magn., *M. polypodophila* (Bell) Faull, and *Uredinopsis Atkinsonii* Magn. Several hitherto unreported stages are recorded: Stages O, I of *Pucciniastrum epilobii* (Pers.) Otth. on *Abies balsamea;* O, I of *Hyalopsora aspidiotus* (Peck) Magn. on *A. balsamea;* O, I of *Milesina kriegeriana* Magn. on *A. balsamea;* II, III of *M. kriegeriana* on *Aspidium spinulosum* in America; O, I of *M. marginalis* Faull and Watson on *Abies balsamea;* III of *M. marginalis* on *Aspidium marginale;* O, I, II, III of *M. polypodophila* (Bell) Faull., on *Abies balsamea* and *Polypodium vulgare;* O, I, II, III of *Uredinopsis atkinsonii* Magn. on *Abies balsamea* and *Asplenium felix-femina.* The spermogonia are morphologically distinctive for the genera and to some extent for individual spp. The time periods between inoculation and emergence of the peridermia are a means of distinguishing between certain closely allied spp.—for example, 15-20 days for *Pucciniastrum abieti-chamaenerii* and 23-32 days for *P. epilobii.* All uredinia possess a peridium. The uredospores bud off singly from a basal cell and are not catenulate. The teliospores of all spp. are produced in relation to the epidermis. In *Uredinopsis* they form a loose crust under the epidermis and are not scattered throughout the mesophyll. The results of 69 sets of culture experiments are presented, a large number of which are new. Phylogenetically the Pucciniastreae are regarded as primitive rusts, with the white-spored forms near the base of the evolutionary complex, and such genera as *Calyptospora* and *Melampsoridium* among the more recent.—*J. H. Faull.*

2002. **GILBERT, E. J. La mycologie sur le terrain: méthodes, buts, résultats.** 183p., Librairie E. Le Francois: Paris, 1928.—A plea for the application of ecology to the study of the higher fungi. Fungus habitats are analyzed with reference to the various factors affecting them. Edaphic factors regarded as important are the physical and chemical nature of the soil, the effect of the amount of humus present and its source, and the yearly and seasonal supply of moisture and its relation to evaporation. Climatic factors considered are heat, wind, rain, seasons, light and local climates with their variations. While these are all treated much as in the ecology of the higher plants, special reference is made throughout to the fungus flora. Major topographic influences, such as latitude and altitude, are regarded as of comparatively subordinate importance so far as the fungi are concerned, their greatest influence being an indirect one due to their marked effect on the phanerogamic vegetation. In proof of this is cited the marked similarity often noted between the fungus floras of regions widely separated geographically. Biotic factors influence not only parasites and such pseudosaprophytes as wood rotting forms and mycorrhizal fungi, but saprophytes also. Changes due to succession of higher plants in a given area are reflected in the succession of fungi. Lists of fungi characteristic of various ecological formations, e.g., of coniferous and of various types of deciduous forests, are given. The ecological amplitude is defined as the range of all variables within which active life is possible for any fungus species. The more factors concerned, the narrower the limits will be. On basis of preceding considerations a tentative ecological classification of fungi is presented, as follows: I. Saprophytes: A. humicoles (1. humicoles proper, 2. fimicoles), B. terrestres (1. hypogaei, 2. epigaei), C. epixyles; II. Pseudoparasites: 1. wound parasites, 2. mycorrhizal fungi, 3. facultative root parasites; III. Parasites: 1. obligate root parasites, 2. true parasites. The location where a fungus is growing (station) is, then, not a mere geographic locality but a unified habitat and must be clearly defined as such in field notes, which should give full details as to regularity and time of appearance, abundance and areal restriction as well as the details of habit and mycelial characters. The species itself must be an abstraction centering about a norm, the specific type, but permitting considerable variation within limits difficult to define. Failure to realize this has caused many ecological variations to be described incorrectly as species.—*G. W. Martin.*

2003. **HORNE, A. S., and S. N. DAS GUPTA. Studies in the genera Cytosporina, Phomopsis, and Diaporthe. 1. On the occurrence of an "ever-saltating" strain in Diaporthe.** *Ann. Bot.* [*London*] 43(171): 417-435. 7 fig. 1929.—*D. perniciosa* isolated from apples gave rise to an "ever-saltating" strain. The saltation was cyclic. Temp. influenced saltation only indirectly, as it influenced growth rate. The influence of nutritive conditions on saltation "seemed to be correlated not with the nature of the constituents themselves, but with the altered acidity of the medium."—*J. A. Small.*

2004. **HRUBY, JOHANN. Beiträge zur Pilzflora Mährens und Schlesiens.** [Concluded.] *Hedwigia* 70 (3/4): 234-260; (5): 261-352. 22 fig. 1930.—An annotated list. Agaricaceae: *Amanita rubescens* f. **elegantius** (p. 239), *Clitocybe* **chrysophylla*** (p. 243), *C. flaccida* v. **arenaria** (p. 245), *C.* **subpellucida** (p. 248), *Collybia asema* f. **asemoides*** (p. 249), *C.* **petrakii*** (p. 252), *C.* **podperae** (p. 252), *C.* **pseudodotiophora** (p. 252), *C.* **pseudolacerata** (p. 253), *C.* **similis*** (p. 253), *Dermocybe cinnabarina* f. **plana** (p. 259), *Flammula* **paludosa** (p. 263), *Gomphidius* **imbricatus*** (p. 266), *Hebeloma* **pudica*** (p. 268), *H.* **punctatiforme** (p. 268), *H.* **elegans** (p. 270), *H.* **nucicolor*** (p. 270), *Inocybe carpta* f. **major** (p. 276), *I.* **castanopsis** (p. 276), *I.* **cinnabarina** (p. 276), *I. geophylla* f. **alba** (p. 278), *I.* **laevispora*** (p. 278), *I.* **moravica*** (p. 279), *I.* **similis*** (p. 280), *I.* **tristis*** (p. 280), *I.* **velenovskyi*** (p. 281), and *I. v.* f. **incrassata*** (p. 281), *Marasmius alliaceus* f. **major** (p. 293), *M. caryophylleus* f. **elongatus** (p. 294), *Naucoria* **pseudannulata*** (p. 306), *N.* **setipes*** (p. 307), *Omphalia* **serotina*** (p. 312), *Phlegmacium* **fallens** (p. 317), *P.* **pseudomarginata** (p. 321), *P.* **pseudosepticus** (p. 323), *Stropharia coronilla* f. **subcoronilla** (p. 335), *Telamonia ionides* f. **grisea** (p. 341), *T.* **sphagnicolum** (p. 343), *Calvatia caelata* f. **exigua** (p. 346), *Lycoperdon furfuraceum* f. **sulphureum** (p. 347), *L. gemmatum* v. **sessile** (p. 347), *L. papillatum* f. **salinum** (p. 348), and *Bovista plumbea* v. **flavescens** (p. 350).

2005. **ITO, SEIYA. On some new ascigerous stages of the species of Helminthosporium parasitic on cereals.** *Proc. Imp. Acad.* [*Tokyo*] 6(8): 352-355. 1930.—*Ophiobolus* **setariae** (Saw.) Ito et Kuribayashi (*Helminthosporium s.* Saw.) (p. 352); *Pyrenophora* **graminea** Rabh.) Ito et Kurib. (*H. gramineum* Rabh.) (p. 353); *P.* **japonica** Ito et Kurib. (p. 353), on *Hordeum sativum* Jess. (common and naked barley); *P.* **avenae** (Eidam) Ito et Kurib. (*H. avenae* Eid.) (p. 354). All the perfect stages above were obtained in culture, not in the field. Analytical keys are given separating these and the other ascigerous stages of *Helminthosporium* earlier described by Ito and by Drechsler. In agreement with Nishikado (1928), who divided *Helminthosporium* into the 2 subgenera *Fuso-Helminthosporium* and *Cylindro-Helminthosporium,* based on the morphology, and the mode of germination of the conidia, the author recognizes distinctions between the corresponding perfect stages,

and proposes the genus **DRECHSLERA** for the spp. referred by Nishikado to his subgen. *Cylindro-Helminthosporium*, thus replacing the name, *Cylindro-Helminthosporium*, deemed improper and too long. *Drechslera* **arundinis** (*H. a.* Lev.), *D.* **catenaria** (*H. catenarium* Drechs.), *D.* **gigantea** (*H. giganteum* Heald and Wolf), *D.* **tritici-vulgaris** (*H. t.* Nish.). The conidial stages of *Pyrenophora graminea, P. teres, P. japonica, P. avenae, P. bromi,* and *P. tritici-repentis,* are also referred to *Drechslera.* (All p. 355).

2006. KALLENBACH, FRANZ. Die Röhrlinge (Boletaceae). In: *Die Pilze Mitteleuropas* 1(10): 61-68. 3 pl. (2 col.) 1930.—*Boletus porphyrosporus** Fr. and *Boletinus cavipes** (ex Opat.) Kalchbr. are treated; synonymy, diagnoses, detailed description, ecology, distribution, and literature are given.

2007. KARLING, J. S. Studies in the Chytridiales IV. A further study of Diplophlyctis intestina (Schenk) Schroeter. *Amer. Jour. Bot.* 17(8): 770-778. 6 pl. 1930.—The zoospores of *D. intestina* germinate shortly after coming to rest by the formation of a fine penetration tube which, after passing through host cell wall, differentiates very soon into a rhizoidal and globular portion. The latter part develops into the zoosporangium. The apophysis develops somewhat subsequently between the incipient zoosporangium and the point of origin of the rhizoids. Zoospores may germinate readily in situ. They may thus form zoosporangia and resting spores inside of the old sporangium. The typical zoosporangium has 1 neck, but under certain conditions as many as 8 may develop.—*J. S. Karling.*

2008. LOUNSBURY, JAMES A. Investigations on the nature of Protoachlya paradoxa Coker. *Trans. Wisconsin Acad. Sci. Arts & Lett.* 25: 215-225. 2 fig. 1930.—In the interest of testing the generic characters of *Protoachlya paradoxa,* a large number of clones of this fungus were developed under many different conditions. No treatment which permitted typical zoospore formation and discharge showed any influence on the disposition of the zoospores after their escape. Sex organ formation, hitherto reported not to yield to the usual stimuli for oogonial and antheridial development, was obtained by growing the clones well out of contact with the air. Some observations on anaerobic tolerance are reported.—*J. A. Lounsbury.*

2009. MOREAU, FERNAND, et MME. FERNAND MOREAU. Contribution à l'étude des Russules de la région de Besse (Puy-de-Dôme). *Bull. Soc. Mycol. France* 45(1): 96-102. 1929.—A diagnosis is given of the following specimens comparing and identifying them whenever possible to spp. already described and named: *Russula lepida* Fries, *R. cyanoxantha* Fr., *R. romelli* R. Maire, *R. nitida* Fr., *R. mustelina* Q., *R. olivacea* Fr., *R. xcrempelina* Fr., *R. integra* Fr., *R. citrina* Q., *R. sanguinea* Fr., *R. nauseosa.* Fr.—*C. Perrault.*

2010. MURASHKINSKII, K. E., et M. K. ZILING. Fungi nonnulli novi asiatici. Труды Сибирского Института Сельского Хозяйства (*Trans. Siberian Inst. Agr. and For., Omsk*) 8(1/5): 25-27. 5 fig. 1927.—*Thecaphora* **orobi** Ziling (p. 25), Altai Mts., Mongolia; *Entyloma* **primulae** Murashk. (p. 27), Altai Mts.; *Diplodina* **pedicularidicola** Murashk. (p. 25), Siberia; *Septoria* **chamaerhodis*** Murashk. (p. 26), Altai Mts.; *S.* **hedysari*** Murashk. (p. 26), Siberia; *Rhabdospora* **scutellariae** Murashk. (p. 26), Altai Mts.; **DOTHIDEODIPLODIA** Murashk. (Pachystromaceae Dothideales v. H.) (p. 27), based on *D.* **agropyri*** Murashk. (p. 27), Siberia.

2011. NANNIZZI, ARTURO. Contribuzione allo studio della flora micologica della Provincia Jonica [Italy]. *Atti R. Accad. Fisiocrit. Siena* 3(2/4): 337-356. 20 fig. 1928.—Annotated list with hosts, of Uredinales (5); Ascomycetes (32), including *Anthostomella* **maritima*** (p. 340) on *Urginea maritima, Sphaerella* **agostinii*** (p. 340) on *Crithmum maritimum, Eriosphaeria* **dumetorum*** (p. 341) on *Rosmarinus officinalis;* Fungi Imperfecti (80), including *Phyllosticta* **ibotae*** (p. 344), on *Ligustrum ibota, Phoma debeauxi* f. **scapicola** (p. 344) on *Statice limonium* var. *serotina, Phoma* **fimbriata*** (p. 345) on *Inula crithmoides, P. herbarum* f. **loti-cretici** (p. 345) on *Lotus creticus, P.* **schini-molli*** (p. 346) on *Schinus molle, Macrophoma* **leptopoda*** (p. 346) on *Nicotiana glauca, Diplodia* **dorycnea*** (p. 347) on *Dorycnium hirsutum, D.* **smilacella*** (p. 348) on *Smilax aspera, Diplodina* **odontitis*** (p. 348) on *Odontites lutea, Ascochytella* **vaginarum*** (p. 349) on *Pinus halepensis, Hendersonia* **cyperi-aegyptiaci*** (p. 349) on *Cyperus aegyptiacus, Stagonospora* **schoeni*** (p. 349) on *Schoenus nigricans, Camarosporium* **gnidii*** (p. 350) on *Daphne gnidium, C.* **obtusum*** (p. 350) on *Statice limonium, C.* **psammae*** (p. 351) on *Psamma arenaria, Rhabdospora rubiae* var. **amerospora** (p. 353) on *Rubia peregrina, Phaeoseptoria* **rubiae*** (p. 353) on *Rubia peregrina, Cryptosporium* **lunatum*** (p. 353) on *Pinus halepensis, Pestalozzia* **ventricosa*** (p. 354) on *Lonicera implexa, Macrosporium* **phoenicis*** (p. 356) on *Phoenix reclinata.*

2012. NISIKADO, YOSIKAZU. Studies on the Helminthosporium diseases of Gramineae in Japan. *Ber. Ohara. Inst. Landw. Forsch. Japan* 4(1): 111-126. 9 pl. 1929; Original publication, in Japanese, in: *"Tokubetu-Hokoku" Ohara Inst. Agric. Res.,* pp. 1-14, pp. 1-384. Dec., 1928.—This paper includes investigations of 24 spp. of *Helminthosporium* parasitic on 8 spp. of cereals and 18 spp. of wild grasses. Seven types of symptoms are used in classification: leaf stripe, leaf or eye spot, net blotch, foot rot, sooty heads, and black knots. Identification of spp. is based on inoculation tests and host range. *Helminthosporium* is divided into 2 subgenera, **EU-HELMINTHOSPORIUM** (p. 123) and **CYLINDRO-HELMINTHOSPORIUM** (p. 125). A key to the spp. is given. *Pyrenophora* (or *Pleospora*) and *Ophiobolus* (or *Ophiochaeta*) are known as the ascigerous stages of *Helminthosporium.* The author adds to the known list *Ophiobolus kusanoi* Nisikado on *Eragrostis major.* The ascigerous stage in all known spp. of *Eu-Helminthosporium* falls in genus *Ophiobolus; Cylindro-Helminthosporium* has perfect stages of the *Pyrenophora* type. Temp. limitations of conidial germination and growth and pH concentration ranges are used in distinguishing spp. The *Helminthosporium* spp. attacking cereals include *H. oryzae* Breda de Haan causing sesame leaf spot of rice, *H. gramineum* Rab. causing stripe disease of barley, *H. teres* Sacc. causing net blotch of barley, *H. sativum* P. K. & B. causing spot blotch of barley, and foot rot of wheat, *H. tritici-vulgaris* Nisikado causing yellow spot of wheat, *H. avenae* Eidam causing leaf blight of oats, *H. maydis* Nisikado and Miyake causing leaf spot of maize, *H. setariae* Sawada causing leaf spot of millet, *H.* **panici-miliacei*** (p. 120) causing leaf blight of millet, and *H.* **yamadai*** (p. 120) causing leaf spot of millet. *Helminthosporium* spp. attacking grasses include *H. tritici-repentis* Diedicke on *Agropyrum semicostatum, H. arundinis* Lev. on *Arundo donax, H. catenarium* Drechs. on *Beckmannia erucaeformis, H.* **brizae*** (p. 121) on *Briza minor, H.* **coicis*** (p. 121) on *Coix lacryma jobi, H. nodulosum* (B. et C.) Sacc. on *Eleusine indica, H.* **miyakei*** (p. 122) on *Eragrostis pilosa, H. kusanoi* Nisikado on *Eragrostis major, H. leersii* Atkinson on *Leersia hexandra, H. leptochloae* Nisikado and Miyake on *Leptochloa chinensis, H. monoceras* Drechs. on *Panicum crus-galli, H. ravenelii* Curtis on *Sporobolus elongatus,* and *H.* **zizaniae*** (p. 122) on *Zizania latifolia.*—*W. W. Mackie.*

2013. PETRAK, F., und R. CIFERRI. Fungi dominicani. *Ann. Mycologici* [*Berlin*] 28(5/6): 377-420. 1930.—An annotated list, including: *Asterina* **dipholidis** (p. 378), on living leaves of *Dipholis angustifolia, A.* **mappiae** (p. 379), on those of *Mappia racemosa; Echidnodes* **asterinearum** (p. 381), on the mycelial felts of an *Asterina* on leaves of *Eugenia* sp.; *Hypomyces* **ekmanii** (p. 382), on deformed fruit bodies, probably of a discomycete, type apparently in Ciferri coll.; *Hysterostomella sabalicola* Tracy et Earle, described in detail; *Lembosia* **domingensis** (p. 385), on *Exostema elegans; Meliola* **caseariae** (p. 386), on *Casearia silvestris; M.* **dendropemonis** (p. 387), on *Dendropemon parvifolius; Microthyriella* **byrsonimae** (p. 388), on *Brysonima crassifolia; Mycosphaerella* **chrysobalanicola** (p. 389), on *Chrysobalanus icaco; M.*

danaeae (p. 390), on fronds of *Danaea nodosa; M.* erechthitidina (p. 391), on *Erechthites hieraciifolia; M.* tournefortiae (p. 392), on *Tournefortia hirsutissima; Phyllachora* dominicana (p. 393), on *Coccoloba flavescens; P.* dubia (p. 394), on ? *Casearia* sp.; *P.* ekmaniana (p. 395), on *Neptunia pubescens; P.* notabilis (p. 396), on *Stigmatophyllum* sp.; *P.* paralabatiae (p. 397), on *Paralabatia juertesii; Phyllachora semilunata* (Chard.) Pet., described; *Schiffnerula* domingensis (p. 400), on *Sida linifolia; Trematosphaeria* clypeotecta (p. 401), on bare wood; *Allantophomopsis* peregrina (p. 402), on *Alchornea latifolia; Asteromella* atronitens (p. 403), on *Guettarda* sp.; *A.* coccothrinacis (p. 404), on *Coccothrinax argentea; A.* gratissima (p. 405), on *Persea gratissima; A.* microsticta (p. 406), on *Desmodium tortuosum; A.* gregariella (p. 406), on *Passiflora* sp.; *Botryodiplodia* peperomiae (p. 407), on *Peperomia maculata; B.* thespesiae (p. 408), on *Thespesia populnea;* **CIFERRIELLA** Pet., with *C.* domingensis Pet. (p. 409), on *Vitex umbrosa; Dothiorella* alchorneae (p 410), on *Alchornea latifolia; D.* dominicana (p. 411), on *Mangifera indica; Phomopsis* caricae-papayae (p. 412), on *Carica papaya; P.* caryotae-urentis (p. 413), from dry stems of *Caryota urens; P.* pisicola (p. 414), on *Pisum sativum; Phyllosticta* xanthosomatis (p. 415), on *Xanthosoma jacquinii; Phyllostictina* mecranii (p. 416), on *Mecranium amygdalinum; Septoria* ciferriana Pet. (p. 417), on *Sideroxylon foetidissimum; S.* tabebuiae (p. 418) on *Tabebuia berteroana; Cercospora* plucheae (p. 419), on *Pluchea odorata.*

2014. POISSON, RAYMOND. Contribution à la connaissance des Laboulbéniales parasites des insectes hémiptères hydrocorises, Paracoreomyces thaxteri, gen. nov. sp. nov., Laboulbéniale parasite de Stenocorixa protrusa Horv. *Compt. Rend. Acad. Sci.* **188**(11): 824-826. 1 fig. 1929.—Reports a form similar to the genus *Coreomyces.* **PARACOREOMYCES** (p. 826) **thaxteri*** (p. 826) on *Stenocoriza protrusa* Horv. from Africa.

2015. SASS, JOHN E. The cytological basis for homothallism and heterothallism in the Agaricaceae. *Amer. Jour. Bot.* 16(9): 663-701. 4 pl., 6 fig. 1929.—The common 4-spored forms of *Coprinus ephemerus* and *Galera tenera* are diploid and heterothallic. Karyogamy occurs in the basidium; in *C. ephemerus* mating reactions of monosporous mycelia indicate 2 sex classes. In these 2 spp. and in *Naucoria semiorbicularis, Hygrophorus borealis* var. *subborealis, Collybia cirrhata* and *Stropharia umbonatescens,* there occur forms with 2-spored basidia. The following forms are described: *Coprinus ephemerus* f. **bisporus** (p. 669), *Galera tenera* f. **bispora** (p. 682), *Naucoria semiorbicularis* f. **bispora** (p. 680). These are diploid and normally homothallic. Karyogamy and 2 nuclear divisions occur in the basidia and each spore may receive 2 nuclei. Occasional spores produce mycelia with permanently uninucleate cells. These primary mycelia react as haplonts, producing clamp-bearing mycelia, which in the case of *C. ephemerus* f. *bisporus* produce fruit bodies in culture. Mating reactions of the aberrant haplonts suggest the possibility of many "sex classes," of which only a few combinations react. The aberrant haplonts are the result of occasional spores receiving but 1 nucleus.—*J. E. Sass.*

2016. SEAVER, FRED JAY. The North American cup-fungi. (Operculates.) 284p. 46 pl. (2 col.). 15 fig. Publ. by author: New York, 1928.—The present work is a monographic revision of the "section" Operculates (comprising Pezizaceae and Elvellaceae) of the Pezizales. An introductory chapter presents the general features of the group: its phylogeny, morphology, life history, ecology, etc., considerable emphasis being laid on the manner of dehiscence of the ascus, the correlation of the operculate and inoperculate character with their morphological characters, and the position of the ascostome. The author points out that the genera with eccentric ascostome generally have large, fusoid, usually striate spores, and are typically tropical. Numerous keys are provided, leading from the order Pezizales down to the species. Each family, tribe, genus, and species is described. For each species, synonymy, type locality, and distribution is given, and illustrations, if any exist, are cited. Pezizaceae; *Sphaerospora* perplexa (p. 45), New York; *S.* monilifera (*Peziza m.* Berk. & Curt) (p. 47); *Sphaerosoma* hesperium* (*Ruhlandiella hesperia* Setchell) (p. 51); *Boudiera* echinulata* (*Sphaerosoma echinulatum* Seaver) (p. 52); *Lamprospora* macrantha (*L. crec'hqueraultii* var. *m.* Boud.) (p. 63); *L.* brevispinosa (p. 63), New Jersey; *L.* wisconsinensis (*Barlaea laeterubra* Rehm, not *Peziza laetirubra* Cke.) (p. 69); *L.* exasperata (*Peziza e.* Berk. & Curt.) (p. 75); *Pithya* lacunosa* (*Barlaea l.* Ellis & Ev.) (p. 77); *Pithya suecia* (De Bary) Fuckel is an inoperculate; *Ascobolus* americanus (*Ascobolus leveillei a.* Cooke & Ellis) (p. 85); *A.* striisporus (*Chlorosplenium striisporum* Ellis & Dearn.) (p. 90); *A.* epimyces (*Chlorosplenium e.* Cke.) (p. 91); *Saccobolus* portoricensis (p. 94), Porto Rico; *S.* globuliferellus (p. 95), New York City; *Aleuria* cestrica (*Peziza c.* Ellis & Ev.) (p. 98); *Aleurina* atrovinosa* (*Peziza a.* Cooke) (p. 101); *Melastiza* asperrima (*Lachnea a.* Ellis & Ev.;=*L. barbata* Massee, not *L. barbata* (Kze.) Gill.) (p. 104); *M.* pennsylvanica (p. 104), Pennsylvania; *Psilopezia* hydrophila (*Peziza h.* Peck) (p. 106); *P.* deligata (*Bulgaria d.* Peck;=*Peziza leucobasis* Peck) (p. 107); *Ascophanus* gallinaceus (*Peziza* gallinacea Peck) (p. 118); *Humarina* axillaris (*Peziza a.* Nees) (p. 124); *H.* ithacaensis (*Humaria i.* Rehm) (p. 124); *H.* pallens (*Ascophanus p.* Boud.) (p. 124); *H.* clausa (*Humaria c.* Clem.) (p. 125); *H.* testacea (*Peziza t.* Moug.) (p. 125); *H.* orthotricha (*Peziza o.* Cooke & Ellis) (p 127); *H.* clementsii (*Humaria phycophila* Clements, not Oudem.) (p. 127); *H.* rubens (*Humaria r.* Boud.) (p. 127); *H.* convexula (*Peziza c.* Pers.) (p. 128); *H.* lilacina (p. 128), New York; *H.* leucoloma (*Octospora l.* Hedw.) (p. 129); *H.* araneosa (*P. rubra* Peck) (p. 130); *H.* semiimmersa (*Peziza s.* Karst.) (p. 130); *H.* ochroleuca (*Humaria o.* Clements) (p. 131); *H.* rufa (*Peziza r.* Pers) (p. 131); *H.* wisconsinensis (*Humaria w.* Rehm) (p. 132); *H.* nectrioides (p. 132), North Dakota, collected on old cabbage stems, associated with *Pseudombrophila deerata* (Karst.) Seaver; *H.* deligata (*Peziza d.* Peck) (p. 132); *H.* glumarum (*Peziza g.* Desm.) (p. 133); *H.* peckii (*Humaria p.* House) (p. 133); *H.* phyllogena (*Humaria p.* Seaver) (p. 134); *H.* tetraspora (*Ascobolus tetrasporus* Fuckel) (p. 134); *H.* permuda (*Peziza fusispora* var. *p.* Cke.) (p. 134); *H.* ollaris (*Peziza o.* Fries) (p. 135); *H.* aggregata (*Peziza a.* Berk. & Br.) (p. 136); *H.* fusispora (*Peziza f.* Berk.) (p. 136); *H.* coccinea (*Ascobolus coccineus* Crouan) (p. 137); *H.* cookeina (*Humaria c.* Seaver) (p. 137); *H.* gerardi (*Peziza g.* Cke.) (p. 138); *H.* purpurea (p. 138), Colorado, on damp soil; *H.* hepatica (*Peziza h.* Batsch) (p. 139); *H.* trachyderma (*Peziza t.* Ellis & Ev.) (p. 139); *H. olivatra* (Ellis & Holw.) Sacc. is an inoperculate species and therefore excluded from *Humarina; Pseudombrophila* deerrata (*Peziza d.* Karst.) (p. 141); *Streptotheca* crouani (*Ascobolus c.* Renny) (p. 142); *S.* woolhopensis* (*Ryparobius w.* Renny) (p. 143); *S.* obscura* (p. 143), New York; *Sepultaria* pellita (*Peziza p.* Cooke & Peck) (p. 152); *Pseudopithyella* minuscula (*Sarcoscypha m.* Boud. & Torrend) (p. 153); *Patella* piliseta (*Pelodiscus pilisetus* Clem.) (p. 160); *P.* cubensis (*Peziza c.* Berk & Curt.) (p. 160); *P.* umbrorum (*P. umbrorum* Fr.) (p. 161); *P.* lusatiae (*Peziza l.* Cooke) (p. 162); *P.* miniata (*Pelodiscus miniatus* Clem.) (p. 162); *P.* albocincta (*Peziza a.* Berk. & Curt.) (p. 163); *P.* ovilla (*Peziza o.* Peck) (p. 163); *P.* hetieri (*Neottiella h.* Boud.) (p. 164); *P.* ricciophila* (p. 165), Texas, apparently growing on living thallus of *Riccia nigrella; P.* punicea (*Sepultaria p.* Clem.) (p. 165); *P.* gilva (*Peziza g.* Boud.) (p. 166); *P.* sequoiae (*Peziza s.* Phill.) (p. 167); *P.* melaloma* (*Peziza m.* Alb. & Schw.) (p. 167); *P.* crucipila (*Peziza c.* Cooke & Phill.) (p. 168); *P.* theleboloides (*Peziza t.* Alb. & Schw.) (p. 170); *P.* coprinaria (*Peziza c.* Cooke) (p. 171); *P.* maculosa (*Peziza m.* Phill.) (p. 172); *P.* pulcherrima (*Ascobolus pulcherrimus* Crouan) (p. 172); *P.* raripila (*Ascobolus raripilus* Phill.) (p. 173); *P.* fimetaria (p. 173), New York; *P.* paludosa (*Ciliaria p.* Boud.) (p. 174); *P.* tuberculata (p. 174), New York; *P.* gregaria* (*Humaria g.* Rehm) (p. 176); *P.* irregularis

(*Scutellinia i.* Clem.) (p. 177); *P.* **abundans** (*Peziza a.* Karst.) (p. 177); *P.* **albospadicea** (*Peziza a.* Grev.) (p. 178); *P.* **pygmaea** (*Sepultaria p.* Clem.) (p. 179); *Phillipsia* **gigantea*** (p. 183), Jamaica; *P.* **dochmia** (*Peziza d.* Berk. & Curt.) (p. 184); *Scodellina* **auricula** (*Elvela a.* Schaeff.) (p. 185); *S.* **grandis** (*Peziza g.* Pers.) (p. 186); *Plectania* **floccosa*** (*Peziza f.* Schw.) (p. 192); *P.* **occidentalis*** (*Peziza o.* Schw.) (p 193); *P.* **hiemalis*** (*Microstoma hiemale* Nees & Bernst.) (p. 193); *Bulgaria* **melastoma** (*Peziza m.* Sow.) (p. 197); *Paxina* **macropus** (*Phleboscyphus m.* Clem.) (p. 203); *P.* **platypodia** (*Cyathipodia p.* Boud.) (p. 203); *P.* **barlae** (*Acetabula b.* Boud.) (p 205); *P.* **hispida** (*Elvela h.* Schaeff.) (p. 205); *P.* **subclavipes** (*Peziza s.* Phill. & Ellis) (p. 206); *P.* **dupainii** (*Acetabula d.* Boud.) (p. 207); *P.* **corium** (*Peziza c.* Weberb.) (p. 208); *P.* **nigrella** (p. 208), Colorado; *P.* **semitosta*** (*Peziza s.* Berk. & Curt.) (p. 209); *P.* **fuscicarpa*** (*Peziza f.* Ger.) (p. 210); *P.* **olivacea** (*Phleboscyphus olivaceus* Clem.) (p. 211); *Geopyxis* **bronca** (*Peziza b.* Peck) (p. 213); *G. nebulosa* (Cke.) Sacc. is referred to the genus *Ciboria; Peziza* **melaleuca** (*Discina m.* Bres.) (p. 225); *P.* **melaleucoides** (p. 225), Colorado; *P.* **concentrica** (p. 228), California; *P.* **fimeti** (*Humaria f.* Fuckel) (p. 232). Elvelaceae: **DURANDIOMYCES** (p. 242), somewhat resembling a *Sparassis*, type *D.* **phillipsii*** (*Gyromitra p.* Massee) (p. 242); *Elvela* **umbraculiformis*** (p. 251), California; *E.* **underwoodii*** (*Gyromitra brunnea* Underw.) (p. 254); index to genera and species is given.

2017. SOLHEIM, WILHELM GERHARD. Morphological studies of the genus Cercospora. *Illinois Biol. Monogr.* 12(1): 1-84. 4 pl.. 1929.—The author proposes to do away with color as a primary taxonomic character in the classification of the Hyphomycetes. The families Moniliaceae and Dematiaceae are therefore united, and *Cercosporella* and *Cercosporina* added to *Cercospora. Didymaria* is emended so as to include all forms having clavate conidia born on conidiophores of the Cercospora type, as represented in the type species. A group of characters has been selected which is tentatively proposed as a basis for classifying the genus *Cercospora.* Included are *C.* **carotae** (*C. apii* Fres. var. *carotae* Pass.) (p. 43), *C.* **pastinacina** (*Cercosporella pastinacae* Karst.) (p. 45), *Cercospora* **lobeliaecola** (*Cercospora effusa* (B. & C.) Ell., in part) (p. 64), *Didymaria* **effusa,** (*Cladosporium effusum* B. & C.) (p. 65). A host index for *Cercospora* and *Didymaria* spp. is appended.—*W. G. Solheim.*

2018. SPRING, DOROTHY. A comparison of seven strains of organisms causing human blastomycosis. *Jour. Infect. Dis.* 44(3): 169-185. 5 fig. 1929.—Six strains were similar in their morphology in test-tube and hanging drop, but the 7th approached *Scopulariopsis* and was far less pathogenic for animals. The mouse and rat were the most susceptible; generalization rarely occurred except in mice. Crystal violet, brilliant green and gentian violet had strongest inhibiting power in culture in the order named; concentrations of 1:10,000 were frequently necessary to inhibit absolutely. Four commercial brands of gentian violet had equal powers as inhibiting agents. Intra-testicular inoculation of pus has no advantage diagnostically over culture in test-tubes. Six strains were comparatively resistant to 42°C, contrasting with the majority of dermatophytic fungi, which are generally susceptible.—*F. D. Weidman.*

2019. STEVENS, F. L. Parasitic fungi of British Guiana, Trinidad and Costa Rica. *Ann. Mycologici.* 28 (5/6): 364-371. 1 fig. 1930.—An annotated list of 3 Phycomycetes, 2 Basidiomycetes, 12 Ascomycetes, and 21 Fungi Imperfecti. Ascomycetes: *Schizothyrium bambusellum* var. **magnum** (p. 364), British Guiana, on *Bambusa;* **ANTENNELLOPSIS** Mendoza (p. 365), similar to *Antennella* and *Antennellina,* type *A.* **mangiferae** Mendoza (p. 365), British Guiana, on *Mangifera indica;* **SCORIADOPSIS** Mendoza (p. 365), closely associated with a *Meliola,* and resembling *Scorias,* based on *S.* **miconiae** (p. 365), Br. Guiana, on *Miconia* sp.; **PARASCORIAS** Mendoza (p. 366), resembling *Scorias,* type *P.* **byrsonimae** Mendoza (p. 366), Br. Guiana, on *Byrsonima* sp.; **DORATOSPORA** Mendoza (p. 366), near *Parodiopsis milioloides* (Wint.) Arn., type *D.* **guianensis** Mendoza (p. 366), Br. Guiana, on *Alchornea cordata; Guignardia* **ingae** (p. 367), Costa Rica, on *Inga* sp.; *Physalospora* **quadraspora*** Stevens and Solheim (p. 367), Costa Rica, on *Commelina* sp. Fungi Imperfecti: *Phyllosticta pithecolobii* var. **machaerii** Stevens and Solheim (p. 368), Trinidad, on *Machaerium* sp.; *Harknessia* **mauritiae** (p. 369), Br. Guiana, on *Mauritia;* **BECCOPYCNIDIUM** (p. 369), near *Sphaerographium* and *Cornularia,* type *B.* **palmicolum** (p. 369), Br. Guiana, on Palmae; *Colletotrichum* **toluiferae** Stevens and Solheim (p. 370), Trinidad, on *Toluifera* sp.; *C.* **catenulatum** (p. 370), Br. Guiana, on *Agave angustifolia marginata; Tuberculariа* **nigra** (p. 371), Br. Guiana, on *Eupatorium* sp.

2020. SYDOW, H. Novae fungorum species. XX. *Ann. Mycologici* 28(5/6): 432-447. 1930.—**SORATAEA** (p. 432), Uredinales, probably related to *Blastospora* and perhaps to *Maravalia,* based on *S.* **amiciae** (p. 432), II and III, on *Amicia lobbiana* Benth, Bolivia; *Uncinula* **peruviana** (p. 433), on *Tecoma grandiceps,* Peru; **XENOSTIGME** (p. 434-435), Ascomycetes [apparently incertae sedis] based on *X.* **trichophila** (p. 434), on *Luehea divaricata* Mart., Paraguay; **PACHYSACCA** (p. 435) [Dothideales ?] resembling *Oligostroma,* based on *P.* **eucalypti** (p. 435), on *Eucalyptus rostrata* Schlecht., So. Australia; *Phomachora* **eucalypti** (p. 437), the imperfect stage of *Pachysacca eucalypti* (p. 437); *Dasyscypha* **trichophila** (p. 438), on *Olearia moschata* Hook. f., New Zealand; **POLYDISCINA** (p. 439), Discomycetes, [incertae sedis ?], based on *P.* **boliviana** (p. 439), on Combretaceae, probably *Terminalia* or *Buchenavia,* Bolivia; *Phlyctaeniella* **cryptica** (p. 441), parasitic in the perithecia of an undetermined Ascomycete on *Eucalyptus obliqua* L'Herit., So. Australia; *Oothecium* **consimile** (p. 443), on *Trema guineensis,* Sierra Leone; *Colletotrichum* **atriplicinum** (p. 444), on *Atriplex patulus,* Germany; *Cercospora* **polymera** (p. 445), on *Cremastus (Bignonia) sceptrum,* Brazil; and *Cercospora* **protensa** (p. 446), on *Amorphophallus campanulatus,* Philippine Islands.

2021. VALKANOV, ALEXANDER. Protistenstudien. 5. Hyphochytrium hydrodictii, ein neuer Algenpilz. *Arch. Protistenkunde* 67(1): 122-127. 11 fig. 1929.—*Hyphochytrium* **hydrodictii***, parasitic only in young cells of *Hydrodictyon reticulatum* near Sofia. Development of sporangium precedes that of mycelia. Method of sporulation was not observed, but is considered to be via a terminal split.—*G. M. Robertson.*

2022. VERWOERD, LEN, and B. J. DIPPENAAR. Descriptions of some new species of South African fungi and of species not previously recorded from South Africa. *So. African Jour. Sci. 27:* 326-330. 1930.—*Puccinia phyllocladiae* Cke., I and III, on *Asparagus sarmentosa; Cercospora* **oliniae** (p. 326), on *Olinia cymosa; Septoria* **knowltoniae** (p. 327), Gordon Bay (Cape Province), on *Knowltonia vesicatoria; Cladosporium* **baccae** (p. 327), on ripe grapes, causing a berry rot; *Diplodia* **monsteraе** (p. 327), on *Monstera deliciosa; Pestalotia* **watsoniae** (p. 327), on *Watsonia rosea* var. *alba; Coccochora* **lebeckiae** (p. 328), on *Lebeckia candolleana,* this being first record of *C.* from So. Africa; *Puccinia polycampta* Sydow, I, II, III, on *Anthericum hispidum,* I being described for the first time; *Pleospora dianthi* de Not., on *Dianthus caryophyllinus,* new for So. Africa, and considered to be the ascigerous stage of *Septoria dianthi,* Desm.; *Mycosphaerella pinodes* (Berk. and Blox.) Stone, on *Pisum sativum,* associated with *Ascochyta,* believed to be the first record of *M. p.* from South Africa. Types are apparently in the herb. of the senior author, and n. spp. from Stellenbosch, Cape Province, unless otherwise stated.

2023. WESTON, WILLIAM H., Jr. Observations on Loramyces, an undescribed aquatic Ascomycete. *Mycologia* [*New York*] 21(2): 55-76. 2 pl. 1929.—A previously undescribed perithecial ascomycete found growing on softened culms of *Juncus militaris* Bigelow submerged from a few inches to 3 ft. in fresh water ponds on Nashawena and Naushan Islands, Massachusetts, is described.

The morphology, reproduction and peculiarities in structure, discharge, distribution, attachment and germination of the spores in their conformity to the aquatic form of life are considered. The fungus is distinctive and is established as a new genus **LORAMYCES** (p. 72) (Sphaeriaceae) and species *L. juncicola* (p. 72).—*E. M. Mrak.*

2024. **WILENCZYK, A. Formation des asques dans les cultures de Trichophyton.** [**Ascus production in Trichophyton cultures.**] *Compt. Rend. Soc. Biol.* 98(1): 70. 1 fig. 1928.—Asci contained 4 rose-colored spores.

MYXOMYCETES

2025. **HOWARD, FRANK L. The life history of Physarum polycephalum.** *Amer. Jour. Bot.* 18(2): 116-133. 8 pl., 1 fig. 1931.—At germination the nucleus of the spore divides once mitotically. Each daughter cell, after a quiescent period following emergence from the spore case, puts out an anterior flagellum and becomes first an amoeboid swarmcell and then changes shortly to a comma-shaped rotating one. Motile swarmcells function as isogametes which fuse posteriorly in pairs to form zygotes. It is believed that after nuclear fusion and division of the fusion nucleus the plasmodial stage is initiated, although a complete series of steps is lacking. The macroscopic plasmodium is mycophagous. It may be slowly dried and the resulting sclerotium reactivated by placing it under moist aerobic conditions. The plasmodium is transformed into sporangia only at night, the process requiring about 12 hrs. for completion. The change of the open plasmodium to a continuous verrucose layer, subsequent segmentation of this layer and formation of knobs, followed by vertical pillars and a successively dichotomously lobing sporangial head, are followed in detail. Capillitium formation is by secretion and not by protoplasmic disintegration and it is completed before mitotic division. The capillitium is at first badhamoid and then becomes differentiated into lime-filled nodes and limeless internodes. Nuclei of 2 types may be distinguished: larger, lightly stained ones which undergo mitotic division, and smaller, densely stained ones which disintegrate. Cytokinesis occurs concurrently with the mitotic nuclear division preceding spore formation. A single nuclear division, requiring about 30 min. for completion, takes place. Following final cleavage of the protoplasm into uniformly hexagonal, uninucleate masses, a continuous intersporal membrane is formed in the furrows. This membrane splits to form the spore walls. After splitting, the walls pull apart and the spores become spherical. During this pulling apart, irregularities become visible on the adjoining surfaces which develop into the minute spinules on the mature spore wall.—*F. A. Gilbert.*

LICHENES

2026. **ANDERS, JOS. Erklärungen zu den Icones von F. Arnold.** *Beih. Bot. Centralbl. Abt. 2.* 45(3): 541-562. 1929.—In connection with his extensive lichen exsiccati, Arnold issued (in 1859-1899, under the title "Icones") photographs of critical spp. and forms of *Cladonia.* The nomenclature used in labeling many of these illustrations is scarcely possible to understand without the aid of his "Lichenologische Fragmente," publications now very difficult to obtain. The author here presents new explanations for the "Icones" Nos. 1263-1356, 1412-1463, 1484-1496, 1636-1643, and 1674-1684, giving the synonymy according to modern *Cladonia* studies. Finally, the spp. and forms are arranged in order so as to reveal the systematic relationships more clearly.—*B. B. Higgins.*

2027. **CHOISY, M. La morphologie du genre Cladonia, Lichen discomycite.** *Bull. Soc. Mycol. France* 45: 184-188. 1929.—A response to Prof. Moreau, opposing the conception of podetia as soredial structures and maintaining Wainio's idea of regarding them as stipes.—*M. Choisy* (*transl. by F. A. Wolf*).

2028. **DU RIETZ, G. EINAR. The discovery of an Arctic element in the lichen-flora of New Zealand and its plant-geographical consequences.** *Rept. Australasian Assoc. Advanc. Sci.* 19: 628-635. 1928 (1929).—During the author's visit to New Zealand in 1926-27, a great number of lichens identical with or at least very nearly related to Arctic spp. were found in the high mountains. Some of these (e.g., *Alectoria nigricans*) are found nowhere else in the Southern Hemisphere; others (e.g., *Cornicularia aculeata*), are found also in the Magellanic region; and in some (e.g., *Cetraria islandica*) this Magellanic distribution area is connected with the Boreal one by a series of localities along the Andes. On the other hand, lichens are known which have a distribution-area connecting New Zealand with the Magellanic region by a series of localities in the Antarctic (e.g., *Usnea antarctica*). Thus it appears very probable that the road along the Andes and across the Antarctic may have been used in the tertiary period by the Arctic lichens now found in both So. America and in New Zealand, but not in the mountains of the Malayan region.—*G. E. Du Rietz.*

2029. **MOREAU. Les lichens. Morphologie, Biologie, Systématique. Vol. III. Encyclopédie Biologique.** [**Lichens. Morphology, Biology and Taxonomy. Vol. III.**] 148p. 2 pl., 65 fig. Paul Lechevalier: Paris, 1929. Pr. 30 fr.

BRYOPHYTA

A. LEROY ANDREWS, *Editor*

(See also in this issue Entries 2112, 2155, 2159, 2171, 2172)

2030. **AMANN, J. L'hygrothermie du climat, facteur déterminant la répartition des espèces atlantiques.** *Rev. Bryol.* 2(3/4): 126-133. 1929(1930).—Asserts that the distribution of the so-called "Atlantic species" of mosses in Switzerland agrees generally with the occurrence of areas climatically most favorable, i.e., those with a combination of high annual precipitation and relatively high winter temp. coupled with a moderate summer temp. A formula is suggested to express numerically this favorable combination of conditions.—*A. Le Roy Andrews.*

2031. **ARMITAGE, ELEONORA. Report of the meeting of the British Bryological Society.** *Bryologist* 34(1): 5-7. 1931.—Among species of mosses and hepatics collected in Mid Perth, Scotland, there are several not previously recorded for the region.—*A. M. Taylor.*

2032. **BARTRAM, EDWIN B. Additional Costa Rican mosses II.** *Jour. Washington Acad. Sci.* 21(13): 288-294. 1 pl. 1931.—Annotated list of mosses: Dicranaceae (3); Pottiaceae (5), including *Leptodontium* **orcutti*** (p. 289), *Leptodontium filescens* v. **denticulatum*** (p. 290); Bryaceae (4), including *Brachymenium* **filescens*** (p. 292); Eustichiaceae (1); Bartramiaceae (2); Hookeriaceae (1); Brachytheciaceae (1); Fabroniaceae (1); Plagiotheciaceae (2); Sematophyllaceae (3), including *Acanthocladium* **costaricense*** Dix. & Bartr. (p. 294); and Hypnaceae (1).

2033. **BLAGG, BETTY. Additional notes on Iowa mosses.** *Proc. Iowa Acad. Sci.* 36: 137-139. 1929(1931).—Reports 13 spp. from one spot on a roadside bank. Nine species new to the State are reported.—*H. S. Conard.*

2034. **CAVANAGH, LUCY M. Notes on Iowa mosses. I.** *Proc. Iowa Acad. Sci.* 36: 133-135. 1929(1931).—Reports 15 species and 1 var. new to the State, with notes on unusual fruiting specimens.—*H. S. Conard.*

2035. **DIXON, H. M. New genera of Asiatic mosses.** *Jour. Bot.* 69(817): 1-7. 1 pl. 1931.—**MICROTHECIELLA** (Erpodiaceae) (p. 1), genotype *M.* **kerrii*** (p 1), Siam; **SCLEROHYPNUM** (Fontinalaceae?) (p. 2), genotype *S. riparium** (p. 3), Malay Peninsula; **HYDROCRYPHAEA** (Cryphaeaceae) (p. 3), genotype *H.* **wardii*** (p. 4), Assam; **ISOCLADIELLA** (Plagiotheciaceae) (p.

5), genotype *I.* **phyllogonioides*** (p. 5), Ceylon; **ORTHOTHECIADELPHUS** (Entodontaceae) (p. 6), genotype *O.* **ovicarpus*** (p. 6), Himalaya Mts.; **NANOTHECIUM** Dix. & P. de la Varde (Entodontaceae) (p. 7), genotype *N.* **foreaui*** Dix. & P. de la Varde (p. 7), Travancore.—*A. L. Grant.*

2036. GROUT, A. J. Moss flora of North America north of Mexico. Vol. 3. Part 2. p. 63-114. 15 pl. Published by the author: 1 Vine St., New Brighton, Staten Island, New York City, 1931.—The following appear: *Leptodictyum trichopodium* v. *curvipes* f. **simulans*** (p. 68), Idaho; *Amblystegium varium* f. **laxum*** (p. 70), Long Island (type), Indiana; *A. varium* v. **lancifolium*** (p. 71), Florida (type), N. Carolina, Texas, Louisiana; *Hygroamblystegium orthocladon* f. **brevinerve** (p. 74), N. Carolina, Pennsylvania, Iowa (type); *H. fluviatile* v. **ovatum*** (p. 74), Pennsylvania; *Cratoneuron* **papillosum*** (p. 78), Montana; *Campylium hispidulum* v. **cordatum*** (p. 80), N. Carolina; *C. polygamum* v. **fluitans*** (p. 84), California; *Scleropodium apocladum* v. **obtusum** (p. 91); *Hygrohypnum closteri* f. **serrulatum** (p. 92); *Calliergon cordifolium* f. **intermedium** (p. 96); *Calliergidium pseudostramineum* v. **hoveyi*** (p. 101), Greenland; *Drepanocladus aduncus* v. *polycarpus* f. **uncus** (p. 111), type Allenn's Mosses Cascade Mts. no. 136, in New York Bot. Gard.; *Amblystegium juratzkanum* v. **giganteum** (*A. serpens* var. *g.* Grout) (p. 69); *A. varium* v. **parvulum** (*A. serpens radicale p.* Aust.) (p. 70); *Leskea* **montanae** (*Amblystegium m.* Bryhn) (p. 75); *Campylium polygamum* v. **minus** (*Hypnum p.* var. *m.* Schimp.) (p. 83); *C. p.* var. **longinerve** (*H. p. l.* R. & C.) (p. 84); *Hygrohypnum palustre* v. **ehlei** (*Amblystegium e.* Arnell) (p. 88); *H.* **norvegicum** (*Limnobium n.* Br. & Sch.) (p. 92); *H.* **novae-caesareae** (*Hypnum n.-c.* Aust.) (p. 94); *Calliergon giganteum* v. **cyclophyllotum** (*Hypnum c.* Holzinger) (p. 97); *C. sarmentosum* v. **beringianum** (*Hypnum s.* var. *b.* Card. & Thér.) (p. 98); *Calliergidium pseudostramineum* v. **plesistramineum** (*Hypnum plesistramineum* Ren.) (p. 101); *Calliergonella* **schreberi** (*Hypnum s.* Willd.) (p. 103); *Drepanocladus revolvens* v. **miquelonensis** (*Hypnum scorpioides miquelonense* Ren.) (p. 107); *Hypnum sinuolatum* Kindb. and *H. subsecundum* Kindb., synonyms of *Campylium chrysophyllum* (Brid.) Bryhn; *H. decursivulum* C. M. & Kindb., syn. of *Campylium radicale* (P. B.) Grout; *H. krausei* C. Muell., syn. of *Hygrohypnum alpestre* (Sw., Hedw.) Loeske; *Calliergon subgiganteum* Kindb., a syn. for *C. richardsoni* (Mitt.) Kindb.; *Hypnum hyperboreum* Bryhn is merely a starved alpine form of *Calliergon sarmentosum* (Walenb.) Kindb. Attention is called to the development of a long excurrent costa in aquatic forms of *Hygroamblystegium, Cratoneuron* and *Drepanocladus* as parallel developments due to a similar habitat. Attention is further called to the fact that this development is more frequent in habitats where lime is abundant. —*A. J. Grout.*

2037. HERZOG, TH. Hepaticae Philippinenses a cl. C. J. Baker lectae. *Ann. Bryologici* **4**: 79-94. 4 fig. 1931.—An annotated list: *Hymenophytum malaccense; Plagiochila* **radians** (p. 80); the probable invalidity of the section *Cucullatae* of *Plagiochila* is commented on; *Lepidozia* **biloba*** (p. 83); *Blepharostoma setigerum,* hitherto known only from Java; *Psiloclada clandestina,* new for the Philippines; *Trichocolea* **fragillima** (p. 84); *Archilejeunea serricalyx,* new for Philippines; *Ptychanthus* **bidentatus** ♀ (p. 85); *Thysananthus* **furcatus*** ♀ (p. 87); *T.* **aculeatus*** (p. 89); *Caudalejeunea* **bakeri*** (p. 90); *Drepanolejeunea riddleana,* new for Philippines; *D. dactylophora* v. **submuricata** (p. 92); *D. bakeri* Herzog, diagnosis emended on discovery of a fertile plant; *Leptolejeunea spathulifolia* St., emended; *Leptocolea karstenii* v. **cristulata** (p. 94).

2038. LUISIER, A. Les mousses de l'Archipel de Madère et en général des îles Atlantiques. *Brotéria, Sér. Bot.* **24**(1): 18-47; (2); 66-96; (3): 119-140; 4 fig. [Contd. from 23(3): 145. 1927. *Cf. Biol. Absts.* 4(3): 9516. 1930. To be contd.] 1930.—Continues the annotated list of species and secondary forms, including genera from *Campylopus* to *Orthotrichum* inclusive. New are *Campylopus* **dixoni*** (p. 20), *Fissidens* **barretoi** Dix. & Luis. (p. 42), *Grimmia* **winteri** (*Schistidium canariense* Winter) (p. 127), *G. trichophylla* ssp. **azorica** (*G. a.* Ren. & Card.) (p. 129). *Campylopus polytrichoides* v. **flavescens** f. **epilosa** (p. 25) also appears to be new.—*A. LeRoy Andrews.*

2039. MENGE, FRIEDRICH. Die Entwicklung der Keimpflanzen von Marchantia polymorpha L. und Plagiochasma rupestre (Forster) Stephani. *Flora* **24**(4): 423-478. 5 pl., 7 fig. 1930.—I. *Marchantia polymorpha.* Spores are easily germinated on agar with nutrient salts. The speed of development is largely dependent on the age of the spore, temp., light intensity, concentration of nutrient salts. The growth processes of individual examples were followed. The short protonema gives rise to a cell-plate which after a 2-angled apical cell cuts off 5 to 7 segments which may continue to divide. The apical sinus moves along in the region of the apical cell or its segments, and the thallus may become many-layered before the apical notch is formed. After 3 or 4 weeks the thallus forks. Tissue differentiation even after 30 days is very slight; formation of air chambers occurs later. II. *Plagiochasma rupestre.* The spores germinate easily on agar and on a silica-jelly base with nutrient salts, in about 11 days after sowing. The few-celled germ-tube develops toward the light. By quadrant divisions the apical cell forms a germ disc which lies perpendicular to the direction of the germ-tube and of the light rays. In one of the quadrants a 2-angled apical cell is formed, which cuts off a maximum of 3 or 4 segments alternately to the right and left which divide further. The germling from the germ-disc stage on is a cell-body. Perpendicular observations from above afford in many cases no adequate view of the developmental courses, so that this method of observation has had limited success. The apical cell cuts off one or more segments above and below. These secondary apical cells appear to become formed at a stage in which the primary apical cell is longitudinally divided. Already in the very young thallus the air chambers appear in the form of intercellular clefts which appear in part regularly along the oldest walls and which very soon, because they are always flat, escape attention. They do not attain the height of differentiation of the air chambers of the mature thallus.—*J. W. Gillespie.*

2040. PEARSON, W. H. Notes on a collection of Hepaticae from Jamaica. *Ann. Bryologici* **4**: 95-112. 2 pl. 1931.—Material collected by F. O. Bower in 1909, at an alt. of 4000-5000 ft., was studied. Among the 26 spp. listed are: *Jubula piligera* v. **jamaicensis*** (p. 96), the 1st record for *Jubula* from the West Indies; *Trachylejeunea* **jamaicensis*** (p. 98); *Ceratolejeunea* **mollis*** (p. 99); *Taxilejeunea* **langiana*** (p. 102); *Radula* **jamaicensis*** (p. 103); *Cephaloziella* **secundifolia*** (p. 106); *Cephalozia* **densa*** (p. 108); *Plagiochila* **cinchoniensis*** (p. 110); *Aplozia* **boweri*** (p. 111). Lengthy notes are given on *Platylejeunea* **vincentina*** (Gottsche) Spr., *Trichocolea tomentosa* (Sw.), and *Lophocolea coadunata** (Sw.).

2041. STEERE, WILLIAM CAMPBELL. Notes on the mosses of southern Michigan. *Bryologist* **34**(1): 1-5. 1931.—The list contains 18 spp. not before recorded for the state.—*A. M. Taylor.*

2042. THOMPSON, A. New Vice-County records for North Country mosses. *Jour. Bot.* [*London*] **69**(822): 162-164. 1931.—24 species and varieties are recorded.—*A. L. Grant.*

PTERIDOPHYTA

C. A. WEATHERBY, *Editor*

(See also in this issue Entries 41, 2055, 2056, 2057, 2061, 2095, 2097, 2099, 2103, 2104, 2106, 2107, 2109, 2111, 2112, 2114, 2145)

2043. **ANDERSON, W. A. Jr. A list of Tennessee ferns.** *Amer. Fern Jour.* 20(4): 143-150. 1930(1931); 21 (1): 11-21; (2): 64-71. 1931.—An annotated list, with citation of specimens, of the species and varieties known to occur in the state.—*C. A. Weatherby.*

2044. **CHRISTENSEN, CARL. Fougères nouvelles ou peu connues de Madagascar récoltées par H. Humbert en 1924.** *Arch. Botanique* 2(Bull. Mens. 12): 209-216. 1928. —An annotated list of 18 forms including *Hymenophyllum* **humbertii** (p. 209), *Hemitelia* **humbertiana** (p. 210), *Asplenium pachysorum* f. **simplex** (p. 211), *Blechnum* **ivohibense** (p. 211), *Doryopteris* **latiloba** (p. 213), *Polypodium myosuroides* Sw. (p. 214), notes, *P.* **excaudatum** (*P. decorum* var. *e.* Bonaparte) (p. 215), *P.* **humbertii** (p. 215), *Aneimia* **madagascariensis** (p. 216).

2045. **CLARK, JOSEPHINE F. Ferns of the Red River country, Maine.** *Rhodora* 32(379): 133-136. 1930.—List of species collected, including *Botrychium lanceolatum* (Gmel.) Ångstroem and *Woodsia alpina* (Bolton) S. F. Gray, both new to Maine.—*S. F. Blake.*

2046. **COPELAND, E. B. Pteridophytes collected for the Arnold Arboretum on Vanikoro, Santa Cruz Islands, by S. F. Kajewski.** *Jour. Arnold Arboretum* 12(1): 46-49. 1931.—Thirty-two numbers of Pteridophytes were collected on Vanikoro Island, including: *Cyathea* **veitchii** (*Alsophila v.* Baker) (p. 46), *Oleandra* **angusta** (p. 47), *Lindsaya* **kajewskii** (p. 47), *Lycopodium* **kajewskii** and *L.* **vanikorense** (p. 48).—*A. Rehder.*

2047. **FERNALD, M. L. Some varieties of the amphigean species of Osmunda.** *Rhodora* 32(376): 71-76. 1930. (*Contrib. Gray Herb.* 87(5)).—*Osmunda cinnamomea* vars. **typica** (p. 75) (eastern N. Amer.) and **asiatica** (p. 75) (Amur. (type) to Japan). *O. regalis* is represented in eastern N. Amer. by var. *spectabilis* (Willd.) Gray; *O. claytoniana* in the Himalayas by var. *vestita* (Wall.) Milde. The Brazilian record of *O. claytoniana* is expunged. The form of *O. cinnamomea* in tropical and subtropical eastern Amer. is var. *imbricata* (Kunze) Milde.—*S. F. Blake.*

2048. **JACKSON, R. T. An exceptionally large Onoclea sensibilis.** *Rhodora* 32(383): 225-226. 1930.—Records a sterile frond 51¼ inches long, the blade being 19½ in. long. In a note, the editors record a frond 65¾ in. long.—*S. F. Blake.*

2049. **[MEIER, K. I.] МЕЙЕР, К. И. Развитие спорангия в Psilotum triquetrum Sw. [Development of the sporangium in P. triquetrum.]** [French résumé.] *Bull. Soc. Nat. Moscou, Sect. Biol.* (Бюллетень Московского Общества Испытателей Природы, Отд. Биол.) 37(1/2): 52-64. 16 fig. 1928.

2050. **PICKETT, F. L. Notes on xerophytic ferns.** *Amer. Fern Jour.* 21(2): 49-57. 1931.—A summary of the author's work on the life histories of xerophytic ferns. The prothallia are extremely resistant to drought; 5% of one culture were alive after 5 years of complete desiccation in the laboratory. If the cells in any portion of a prothallium survive, they will grow and produce one or more new prothallia when given favorable conditions. Available evidence indicates that laboratory experiments give an accurate idea of what happens in nature. Spore dispersal in *Cheilanthes gracillima* is described.—*C. A. Weatherby.*

2051. **RUIZ de AZUA, J. Equisetos de la provincia de Alava.** *Bol. R. Soc. Españ. Hist. Nat.* 31(3): 201-210. 10 fig. 1931.—Descriptive list of 23 forms of *Equisetum,* with especial notes on the anatomical characters of *E. arvense* var. *pseudo-silvaticum* and *E. pratense.*—*C. A. Weatherby.*

2052. **SYLVÉN, N. Dryopteris robertiana (Hoffm.) C. Chr. funnen i Västergötland. [D. robertiana in Västergötland, Sweden.]** *Bot. Notiser* 1930(5): 409. 1930.—Specimens found by the author at Kinnekulle in 1911 are the only record for this part of Sweden.—*H. K. Svenson.*

SPERMATOPHYTA

FRANCIS W. PENNELL, *Editor*

(See also in this issue Entries, 37, 39, 41, 43, 49, 56, 63, 84, 85, 86, 2123, 2129, 2135, 2149, 2152)

GENERAL

2053. **SCHELLENBERG, G. Beiträge zu einem phylogenetischen System der Blütenpflanzen.** *Beibl. Vierteljahrschr. Naturforsch. Ges. Zürich* 73(15): 358-381. 1928. —A theoretical paper. It is suggested that tristichous foliation might be looked upon as primitive, as it is easily derived from the foliation resulting from growth with a trigonous initial cell. As ancestral characters are strongly retained in the fertile region, flowers with trimerous cycles should be considered primitive, i.e., the Ranales (incl. Piperales) and the Monocotyledones. Spiral arrangement of floral organs would be a progressive development due to torsions in the initial region; but this would have been soon abandoned as it does not lead to zygomorphy and adaption to restricted orders of insects. Entomogamy is thought primitive, at least in angiosperms, as anemogany needs special adaption of the stigma, the tip of the megasporophyll, and as such adaptions must be progressive. Monochlamydeae cannot be primitive, as suggested in the systems of Engler and of Wettstein, because they are anemogamous, because their ovary is syncarpous, because they show a great variety of reductions in the ovary (e.g., sterile locules, few or but 1 ovule, often fewer ovules than carpels), and because in many forms the ovary is inferior. The Coniferales cannot be the ancestors of angiosperms, for when the evolution of the latter began, the former were already an ancient group and because it is very unlikely that "giant forms" like conifers should be able to give rise to a quite novel group. Bennettitales also cannot be the ancestors, for their ovary has become "syncarpous" by the bracts whilst the megasporophylls are highly reduced, and in angiosperms the very megasporophylls build up the ovary. Caytoniales roll up their megasporophylls from the tip, angiosperms from the midrib. Evidently the ancestors of angiosperms are not known; they were very likely small herbaceous plants hardly preserved as fossils. From such points of view monocotyledons with their primitive venation, axes without secondary growth, and tristichous foliation throughout can be looked upon as the first angiosperms (and among them the Alismataceae), from which the Ranales would derive as the most primitive group of dicotyledons.—*G. Schellenberg.*

ANGIOSPERMAE (MIXED)

2054. **CHIOVENDA, E. La collezione botanica di S. A. R. il Duca degli Abruzzi alla sorgente dell'Uebi Scebeli. [The botanical collection made by the Duke of the Abruzzi at the source of the Webi Shebeli, Abyssinia.]** *Nuovo Giorn. Bot. Ital.* 36(3): 360-371. 1929.—The trees, grasses and Leguminosae typical of the region are listed, with notes. The presence of the following shows extended distribution: *Delphinium ruspolii, Polygala mat-*

teiana, Cienfuegosia ellenbeckii, Pistacia lentiscus var. **falcatula** (nomen nudum), *Indigofera garckeana, Rubus scioanus, Pimpinella volkensii, Anthriscus keniensis, Vernonia antinoriana, Galinsoga parviflora, Artemisia afra, Berkheya spekeana, Sideroxylon oxyacantha, Sweertia centianifolia, Ipomoea chrysosperma, Micromeria ellenbeckii, Otostegia modesta, Euphorbia glochidiata, Barbeya oleoides* and *Lagarosiphon steudneri*. The following are new to science: *Crotalaria* **hypargyrea** (p. 363); *Trifolium* **basileianum**, *Terminalia* **basilei**, *Combretum* **sublancifolium**, *Cucumis* **lævigatus**, *Pimpinella* **arussorum**, (all on p. 364); *Peucedanum* **mattirolii**, *Vernonia* **heterocarpa**, *Artemisia afra* v. **arussorum**, *Lobelia* **scebelii**, (all on p. 365); *Jasminum* **basilei**, *Sweertia* **mattirolii**, *S.* **tischeri**, **SABAUDIELLA** (Hildebrandtieae), with *S.* **aloysii** as type, (all on p. 366); *Ipomoea obscura* v. **aurea**, *Discopodium penninervium* v. **magnifolia**, *Thunbergia paulitschkeana* v. **lanceolata**, *Barleria* **subinermis**, *B.* **tischeriana**, *B.* **pannosa**, (all on p. 367); *Justicia* **leucoclada**, *Premna* **neurophylla**, *Coleus* **microtrichus**, (all p. 368); *Salvia* **macrorrhiza**, *Lasiocorys stachydiformis* vars. **argentata** and **scioana**, *L. abyssinica* v. **brachycalyx**, *Tinnaea* **somalensis** Gürke, (all on p. 369); *Euphorbia* **impressa**, *Barbeya oleoides* v. **arussorum**, *Kniphofia* **aloysii-sabaudii**, *Chlorophytum* **ducis-aprutii**, (all p. 370); *Commelina* **phaeochaeta**, *Latipes senegalensis* v. **tuberculatus**, *Sporobolus* **pseudobiflora**, *Ioannegria* **brizoides**, (all on p. 371).

2055. **MAKINO, TOMITARÔ. A contribution to the knowledge of the flora of Japan.** (Continuation and to be contd.) *Jour. Japanese Bot.* 3(12): 45-48. 1926.—*Sasa* **okudana** (p. 45); *S.* **hidaensis** (p. 46); *Rubus* **pseudosieboldii** (*R. buergeri* var. *p-s.* Makino) (p. 46); *Celastrus* **stephanotii-folius** (*C. articulatus* var. *s.* Makino) (p. 46); *Microlepia marginata* v. **bipinnata** (p. 47); *Dryopteris* **obtusissima** (*Nephrodium erythrosorum* var. *obtusum* Makino) (p. 47); *Hydrocotyle* **japoaica** [sic] (p. 47); *Gagea* **nipponensis** (p. 48).

2056. **MAKINO, TOMITARÔ. A contribution to the knowledge of the flora of Japan.** (Continuation and to be contd.) *Jour. Japanese Bot.* 6(7): 9-16. 1929.—Annotated list of species, including: *Orobanche* **japonensis** (p. 9), host *Artemisia vulgaris* var. *indica; Quercus phyllireoides* v. **subcrispa** (p. 10); *Zingiber mioga* v. **variegatum** (p. 10); *Chrysanthemum indicum* v. **albescens** (p. 10); *Dryopteris* **abbreviatipinna** (*D. gracilescens* ssp. *glanduligera* v. *abbreviata* Kodama) (p. 10); *Athyrium viridifrons* f. **okuboanum** (*A. o.* Makino) (p. 10); *Crataegus* **rikuchuensis** (*Sorbus r.* Makino) (p. 11); *Cytherea* **speciosa** (*Calypso s.* Schlecht.) (p. 11); *Hydrangea macrophylla* (Thunb.) DC. ssp. **serrata** (Thunb.) Makino n. comb. (p. 11); *H. m.* ssp. *serrata* vars. **thunbergii** (*H. t.* Sieb.) (with subvars. **typica** and **oamacha**), **amoena** (p. 11) and **alboglobosa** (p. 12); *Sasa* **cernua** (p. 12); *S.* **nakii** (p. 13); *S.* **membranacea** Makino & Uchida (p. 14); *S.* **yahikoensis** (p. 14); **SASAELLA** (p. 15), erected for *Sasaella* **ramosa, hannoensis, hisauchii, hidaensis, tanzawana, okadana, suwekoana, matsushimensis, agrestis, komiyamana**, n. combs. for (*Sasa ramosa, hannoensis, hisauchii, hidaensis, tanzawana, okadana, suwekoana, matsushimensis, agrestis, komiyamana* Mak.) (p. 15); *Sasaella* **sasakiana** Mak. & Uchida (p. 15); *S.* **iwatekensis** Mak. & Uch. (p. 15); **YADAKEYA** (p. 16) with *Y.* **japonica** (*Arundinaria j.* Sieb. & Zucc.) (p. 16); *Y.* **owatarii** (*Arundinaria o.* Mak.) (p. 16). (To be contd.)

2057. **MAKINO, TOMITARÔ. A contribution to the knowledge of the flora of Japan.** (Continuation and to be contd.) *Jour. Japanese Bot.* **6**(9): 21-24; (10): 25-28. 1929.—*Sasa* **oshidensis** Mak. & Uchida (p. 21); *S.* **takizawana** Mak. & Uchida (p. 22); *S.* **rotundissima** Mak. & Uchida (p. 22); *S.* **megalophylla** Mak. & Uchida (p. 23); *S.* **nikkoensis** (p. 23); *S. spiculosa* v. **subpubescens** Mak. & Uchida (p. 24); *S.* **pubiculmis** (p. 25); *S.* **asagishiana** Mak. & Uchida (p. 26); *Castanea crenata* v. **sakyacephala** (p. 26); *Ophioglossum* **littorale** (p. 27); *Aeginetia* **sekimotoana** (p. 27) on roots of *Carex gifuensis* Franch.; *Hosiea* **japonica** (*Natsiatum japonicum* Mak.) (p. 28).

2058. **MILDBRAED, J. Plantae Tessmannianae peruvianae. VII.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(93): 225-248. 1928.—The author records 20 spp. (14 new) belonging to 5 genera of the Lauraceae; 3 n. spp. of *Iryanthera* (*Myristicaceae*); 7 spp. (4 new) belonging to 5 genera of the Orchidaceae; and 10 n. spp. belonging to 3 genera of the Meliaceae. *Lauraceae* (named by O. C. SCHMIDT): *Aniba* **gigantifolia** (p. 225), *A.* **tessmannii** (p. 226), *Endlicheria* **tessmannii** (p. 227), *Nectandra* **breapariensis** (p. 227), *N.* **capanahuënsis** (p. 228), *N.* **tessmannii** (p. 229), *N.* **marañonensis** (p. 229), *N.* **yarinensis** (p. 230), *Ocotea* **minutiflora** (p. 231), *O.* **dielsiana** (p. 232), *O.* **magnifica** (p. 233), *O.* **tessmannii** (p. 233), *O.* **ucayalensis** (p. 234), *Pleurothyrium* **maximum** (p. 235), Myristicaceae (by F. R. MARKGRAF): *Iryanthera* **sessilis** (p. 236), *I.* **tessmannii** (p. 236), *I.* **trigona** (p. 237). Orchidaceae (by R. MANSFELD): *Neobartlettia* **lobulata** (p. 237), *Stelis* **tessmannii** (p. 238), *Stelis* **santiagoensis** (p. 239), *Epidendrum* **tessmannii** (p. 239), *E.* **apaganum** (p. 240), *Rodriguezia batemanii* v. **speciosa** (p. 240). Meliaceae (by H. HARMS): *Ruagea* **tessmannii** (p. 241), *R.* **microsepala** (p. 242), *Guarea* **guentheri** (p. 243), *G.* **depauperata** (p. 243), *G.* **eriorhachis** (p. 244), *G.* **carapoides** (p. 245), *Trichilia* **gigantophylla** (p. 246), *T.* **eurysepala** (p. 246), *T.* **solitudinis** (p. 247), *T.* **iquitosensis** (p. 248). All are from eastern Peru.—*A. M. Johnson.*

2059. **STAPF, O. Plants from the Royal Botanic Gardens, Kew, and other botanical establishments and private gardens.** *Curtis's Bot. Mag.* 153(1): Tab. 9162-9172. 1927(1929).—Hand colored plates and descriptions are given for the following, in every case by O. Stapf unless otherwise specified. × *Crinodonna corsii** Ragioneri; *Picea omorika** Bolle, from Balkan Peninsula; *Eustephia* **pamiana*** (Tab. 9164), from Argentina; *Rhododendron haematodes** Franchet, from China; *Primula vulgaris* subsp. *heterochroma** Smith & Forrest, from Orient; *Carduncellus multifidus** Coss. & Dur., from North Africa, with a key to related species and genera; *Corokia macrocarpa** Kirk, from Chatham Island; × *Salvia* **superba*** (Tab. 9169), hybrid of *S. sylvestris* L. and *S. villicaulis* Borbas; *Epidendrum* **pumilum*** Rolfe, from Costa Rica; *Cotoneaster glaucophylla* f. **serotina*** (*C. s.* Hutchinson) (Tab. 9171), from China; *Acacia extensa** Lindl., from Australia.

2060. **STAPF, O. Plants from the Royal Botanic Gardens, Kew, and other botanical establishments and private gardens.** *Curtis's Bot. Mag.* 153(4): Tab. 9195-9204. 1927(1930).—Hand-colored plates are given, with descriptions by O. Stapf unless otherwise stated, of: *Rhododendron griersonianum** Balf. & Forrest, from China; *Primula cawdoriana** F. Kingdon Ward, from Tibet; *Cornus paucinervis** Hance, from China; *Phalaenopsis violacea** Hort. Bogor. ex H. Witte, from Malaya, by V. S. SUMMERHAYES; *Ranunculus ficaria grandiflorus** Schultz, from Mediterranean Basin, by W. B. TURRILL; *Rheum palmatum* ssp. **dissectum*** with f. **rubriflora** nom. nud. (tab. 9200), from Tibet; *Abies faberi** and *A. forrestii** Craib and *Rhododendron hedyosmum** Balf., from China; *Columnea microphylla** Klotzsch & Hanst., from Costa Rica, by T. A. SPRAGUE and *Ephedra procera** Fisch. & Meyer, from the Orient.

2061. **VVEDENSKY, M. POPOV, A. THELLUNG, M. KULTIASSOV, and M. ILJIN. Schedae ad herbarium florae Asiae Mediae ab Universitate Asiae Mediae editum. Fasc. XIV-XX.** [Chiefly in French.] Труды Средне-Азиатского Государственного Университета, Сер. VIII b. Бот. (*Acta Univ. Asiae Mediae* [*Tashkent*], Ser. VIII. b. Bot.) Fasc. 3. 1-120. 1928.—In this work there is a separate authorship for the account of each of 175 spp. These accounts include synonymy, distribution, and critical remarks on taxonomy. *Eremurus* **regelii** Vved., n. n. (*E. spectabilis* v. *marginatus* O. Fedtsch.) (p. 3); *Allium caspium* v. **baissunense** Vved. (*A. b.* Lipsky) (p. 6); *A.* **ophiophyllum** Vved. (p. 8); *A. scrobiculatum* Vved., emended description; *Polygonatum severtzovii* Rgl. (=*P. haussknechtii* Bornm. & Sint.); *Astragalus bossu-*

ensis M. Popov (p. 20); *A.* **chionanthus** M. Popov (p. 21); keys are provided for various groups of spp. of *Astragalus; A.* **subspinescens** (p. 21); *Astragalus,* section *Cytisodes,* emended diagnosis; section *Cytisodes,* subsect. **MACROPETALUM** M. Popov (p. 23), to include *Astragalus macropetalus* Schrenk and *A. xipholobus* M. Pop.; section *Cytisodes,* subsect. **EUCYTISODES** M. Popov (p. 23), to include *A. cytisoides* Bge. and *A. dolichocarpus* M. Pop.; *A.* **lipskyanus** M. Popov (p. 24); *A. nobilis* Bge (=*A. neo-fedtschenkoanus* Bazil.); *Astragalus,* section *Laguropsis,* subsect. **MICROCYSTIS** M. Popov (p. 27), to include *A. nobilis* and other spp.; *A. pamiralaicus* Lipsky, emended description; *A.* **pseudonobilis** M. Popov (p. 30); *A. rubromarginatus* v. **oeroilanicus** (*A. o.* M. Pop.) (p. 31); *A. r.* var. *o.* f. **confertus** (*A. o.* var. *c.* M. Pop.) (p. 31); *A. severtzovii* v. **orbiculatus** M. Popov (p. 32); *Astragalus,* sect. **ALBERTOREGELIA** M. Popov (p. 35), to include *A. tschimganicus* and *A. albertoregelia; A. variegatus* v. *typicus* M. Popov (p. 38); *A. v.* var. **koksuensis** M. Popov (p. 38); *A.* **xipholobus** M. Popov (p. 39); *A. zeravschanicus* Lipsky (=*A. marguzaricus* Lipsky); *A.* **babatagi** M. Popov (p. 41); *A.* **densus** M. Popov (p. 42) (not formally described); *A. bucharicus* Rgl., emended description; *A. commixtus* v. **abbreviatus** M. Popov (p. 44); *A. stenocystis* Bge. and *A. aschuturi* B. Fedtsch. are removed from the synonymy of *A. cyrtobasis* Bge.; *A. excedens* M. Pop. & M. Kult., emended description; *A. filicaulis* ssp. **rytilobus** M. Popov (*A. r.* Bge.) (p. 48); *A. leiosemius* M. Popov (*A. lasiosemius* var. *leiosemius* Lipsky) (p. 50); *A. managildensis* B. Fedtsch., emended description; *A. megalomerus* v. **typicus** M. Popov (p. 52); *A. m.* var. **simplicifolius** M. Popov (p. 52); *A.* **xanthomeloides** Eug. Kor. & M. Popov (p. 57); *Amaranthus blitoides,* recorded as new to Asia; *Zygophyllum* **dielsianum** M. Popov (p. 75); *Viola* **alaica** Vvedensky n. sp. (=*V. turkestanica* var. *rupestris* Komar.) (p. 79); *Morina kokanica* Rgl., emended description; *Spergularia diandra* v. **leiosperma** M. Popov (*Lepigonum salsugineum* var. *leiospermum* Bge.) (p. 95); *Silene noctiflora* v. **dolichopetala** M. Popov (*Melandryum noctiflorum* var. *dolichopetalum* Zapal.) (p. 98); *S. ovalifolia* M. Popov (*Melandryum ovalifolium* Rgl. & Schmalh.) (p. 99), emended description; *S. trajectorum* v. **typica** M. Popov (p. 100); *S. t.* var. **schischkinii** M. Popov (p. 99); *S. t.* var. **pseudotenuis** M. Popov (*S. p.* Schisch.) (p. 100); *Pyrethrum* **santoanum** H. Krasch., M. Pop., & Vved. (*Chrysanthemum* **santoanum** K., P. & V.) (p. 102); *Cousinia* **glauciifolia** M. Kultiassov (p. 103); *C.* **pseudaffinis** (p. 105) with vars. typica (p. 105) and **bucharica** (p. 105), all by M. Kult.; *C.* **rosea** M. Kult. (p. 105); *C.* **syrdarjensis** M. Kult. (p. 106); *Jurinea* **grumosa** M. Iljin (p. 107); *Jurinea lasiopoda* f. **integrifolia** Iljin (p. 108); *Centaurea* **lasiopoda** M. Popov & M. Kultiassov (p. 110); *C.* **vvedenskyi** M. Popov (p. 111); *Astragalus* **neo-lipskyanus** M. Popov (*A. lipskyanus* M. Popov, not Freyn) (p. 113). All forms are from Turkestan. Keys are given to certain groups of spp.

MONOCOTYLEDONES

2062. BECHERER, A. Zur Nomenklatur zweier Gramineen. *Rep. Spec. Nov. Reg. Veg.* 26(7/15): 231-232. 1929.—The name *Oplismenus undulatifolius* (Ard.) was first adequately published by Roemer and Schultes (1817) and not in 1812 by Palisot de Beauvois (nomen nudum). But *Hierochloe odorata* (L.) Pal. was validly published by Palisot in 1812.

2063. FLAKSBERGER, C. Eutriticum verschiedener Länder in Herbarien und Kollektionen von Deutschland, Österreich, Frankreich, Dänemark und Schweden. *Rep. Spec. Nov. Reg. Veg.* 27(734/740; paper 14): 167-178. 1929; (741/750; paper 24): 241-253. 1930.—Notes are given on the collections from various regions of the earth, Abyssinia, Egypt, Libyan Desert, etc., covering all the continents. For each region there are notes on the chief collectors, species represented, and especially on variations within the species. The following are new: *Triticum thaoudar* vars. **reuteri** and **balansae** (without locality), and from Asia Minor vars. **bornmülleri, haussknechtii,** and presumably **fuscum** Zhuk. (all p. 174); *T. aegilopoides* f. **breviata** (p. 242), Greece; *T. a.* var. **pseudo-boeoticum** (p. 243), Serbia; *T.* **monococcum** v. **hohensteinii** (p. 249), Germany. Of the 5000 specimens of wheat examined, approximately 3700 are without data as to natural origin. Field specimens seem in general to have been collected with a view to peculiar forms; those planted in gardens have as a rule little data on geographic origin, since they have been raised from a purely systematic viewpoint. In Körnicke's Handbuch many vars. of wheat are based on color of the spike. Here great confusion occurs, since it is almost impossible to identify colors which fade in age, and which moreover appear differently to various observers. Some of the described color varieties themselves have varying color forms, and a biochemical analysis of the pigments would seem to be the only method for clear-cut differentiation. Additional new varieties based on garden material are: *T. polonicum* vars. **heidelbergi** (p. 252) and **gracile** (p. 252); *T. dicoccum* v. **subliguliforme** (p. 252) (coll. Schulz); *T. turgidum* v. **sublinnaeanum** and v. **false-jodurum** (p. 252).—*H. K. Svenson.*

2064. GUILLAUMIN, A. Les "Phalaenopsis" hybrids issus de "P. amabilis." *Arch. Mus. Hist. Nat.* [*Paris*] 4: 33-36. 2 col. pl. 1929.—Enumeration of hybrids with consideration to combined characteristics of parents from a genetical viewpoint.—*A. Guillaumin* (*transl.*).

2065. SMITH, C. A. Scilla lanceaefolia of the flora Capensis. *Kew Bull. Misc. Inform.* 1930(6): 241-252. 1930.—Introductory remarks showing confused state of synonymy arising from transferring *Lachenalia lanceaefolia* Jacq. to *Drimia lanceaefolia* by Gawler. *Scilla* **guttata** (*S. lanceaefolia* Baker) (p. 243); *S.* **doratophylla** (*S. lanceolata* Baker non Viviani) (p. 245); *S.* **ovalifolia** (*Drimia o.* Schrad.) (p. 245); *S.* **cicatricosa** (*S. lanceaefolia* Wood non Baker) (p. 246); *S. livida* Baker (=*Lachenalia lanceaefolia* Red.); *S. maculata* Schrank, with full original description; *S.* **inquinata** (p. 248), Transvaal; *S.* **climacocarpha** (p. 249), Orange Free State; *S.* **apertiflora** (*Drimia a.* Baker =*S. lorata* Baker) (p. 250); *S. ensifolia* (Ecklon) Britten (=*S. ludwigii* Baker). Several new identifications are given for specimens previously referred to *"S. lanceaefolia"* in literature. —*C. A. Smith.*

2066. STOUT, A. B. [Notes on Hemerocallis species.] *Addisonia* 14(2): 17-32. 8 col. pl. 1929.—Contains botanical descriptions and discussions of horticultural uses with colored plates of 8 daylilies: *Hemerocallis flava* L., *H. minor* Mill., *H. thunbergii* Baker, *H. fulva* clon **maculata** (*H. f.* var. *maculata* Baroni) (p. 23), *H. aurantiaca* Baker, *H. dumortierii* Morren, *H. middendorffii* Traut. & Mey., and *H.* **multiflora** (p. 31), China.—*A. B. Stout.*

2067. STRANSKI, Iv. T. Triticum monococcum and T. dicoccum in Bulgaria. [In Bulgarian with German translation.] *Bull. Soc. Bot. Bulgarie* 3: 171-276. 1929.—This is a study of the distribution, varieties, quality of seed, and culture of *T. monococcum* and *T. dicoccum.* Of the wild-growing *T. monococcum* the author describes the following varieties of the subspecies *aegilopoides: boeoticum* Boiss., *zuccariori* Flaksb., **bulgaricum** (p. 202; 255). Of the cultivated *T. monococcum* in Bulgaria are known varieties: *hornemanni* Clem., *laetissimum* Körn., *flavescens* Körn., *eredvianum* Zhuk. (with a new form **punctata** (p. 210; 260), *tauricum* Drosd., *symphaeropolitanum* Drosd. (with new forms **parallelicum** and **patulum** Stranski (both p. 218; 261)), *vulgare* Körn., *atriaristatum* Flaksb., *nigricultum* Flaksb., and **sofianum** (p. 208; 258) (with forms **densiuscula** and **laxiuscula** (both p. 209; 259)). There are fewer forms of *T. dicoccum* Schrank in Bulgaria, namely: var. *farrum* Bayle-Barelle (forma *volgense* Flaksb. and forma *tatarica* Stol.) and *rufum* Schübler (forma *maturatum* Flaksb.). —*I. Kovachevsky.*

2068. SUMMERHAYES, V. S., and C. E. HUBBARD. A supplement to the grasses of the Fiji Islands. *Kew Bull. Misc. Inform.* 1930(6): 252-265. 1930.—Enu-

merates 63 grasses collected by J. D. Tothill in Fiji, including: *Ischaemum* **vitiense** (p. 264); *Eriochloa* **procera** (*E. ramosa* O. Ktze.) (p. 256); *Paspalum orbiculare* v. **cartilagineum** (*P. c.* Presl) (p. 257); and *Setaria* **pallidifusca** (*S. glauca* Summerh. & Hubb. not Beauv.) (p. 259).—*A. D. Cotton.*

2069. SVENSON, H. K. Monographic studies in the genus Eleocharis. *Rhodora* 31(367): 121-135; (368): 152-163; (369): 167-191; (370): 199-219; (371) 224-242. 4 pl. 1929.—(*Contrib. Gray Herb. 86.*) A brief review of the classification of *Eleocharis* is followed by a conspectus of the 11 series recognized, only the first 5 of which are included in this paper. The species of each series are treated separately, with keys, descriptions, synonymy, citation of exsiccatae, critical notes, lists of doubtful species, and discussion of geographical distribution. Altogether 56 species are fully treated, and about half as many more mentioned among the doubtful species. The achenes of nearly all the species are illustrated and there are habit drawings of many. *Eleocharis equisetoides* (Ell.) Torr., ranging from Massachusetts to Florida and Texas, is separated from *E. interstincta* (Vahl) R. & S. of Texas, the West Indies, and southward. The name *E. parvula* (R. & S.) Link is adopted for *Scirpus nanus* Spreng. The following are new: *E.* **philippinensis*** (p. 155), Luzon; *E.* **plicarhachis*** (*Scirpus p.* Griseb.) (p. 158); *E. pauciflora* v. **suksdorfiana** (*E. s.* Beauv.) (p. 174), var. **bernardina** (*Scirpus bernardinus* Munz & Johnston) (p. 174); *E.* **leptos*** (*Isolepis leptos* Steud.) (p. 176), var. **coloradoensis** (*Scirpus coloradoensis* Britton) (p. 176), var. **johnstonii** (p. 177), California; *E.* **boliviana*** Palla (p. 179), Bolivia; *E. acicularis* (L.) R. & S. var. **typica** (p. 184), f. **inundata** (p. 186), "the common submersed form", f. **fluitans** (*E. acicularis* b. *fluitans* Doell) (p. 186), f. **rigidula** (*Scirpus acicularis* var. *rigidula* Reichb.) (p. 187), f. **triangularis** (*Heleocharis triangularis* Reinsch) (p. 187), var. **submersa** (*Scirpus acicularis β submersa* Hj. Nilss.) (p. 188), var. **longiseta** (p. 189), eastern Asia, var. **occidentalis** (p. 190), western United States and northern Mexico, var. **gracilescens** (p. 191), Tennessee, Oklahoma, California; ***E. lindheimeri** (*E. acicularis* var. *lindheimeri* C. B. Clarke) (p. 199); *E.* **brachycarpa*** (p. 200) Mexico; *E.* **bella*** (*E. acicularis* var. *bella* Piper) (p. 201); *E.* **reverchonii*** (p. 203) western Texas; *E.* **nervata*** (p. 204) Mexico; *E.* **stenocarpa*** (p. 205) Colombia, Venezuela; *E. engelmanni* forma **detonsa** (*E. e.* var. *detonsa* Gray) (p. 208), var. **monticola** (*E. monticola* Fernald) (p. 209), var. *monticola* forma **leviseta** (*E. monticola* var. *leviseta* Fernald) (p. 210); *E. obtusa* var. **peasei** (p. 217) Quebec to New Hampshire; var. **ellipsoidalis** Fernald (p. 218) Massachusetts to Virginia; *E.* **galapagensis** (p. 233) Chatham I., Galapagos, *E.* **alveolata** (p. 241) Cuba, Brazil.—*S. F. Blake.*

DICOTYLEDONES

2070. BECKER, W. Euphrasia tatarica Fischer var. coquoziana var. nov. *Rep. Spec. Nov. Reg. Veg.* 24(4/13): 203-204. 1927.—This variety (p. 203) is described from Switzerland. The partially glabrous form is termed f. **glabrescens**, the wholly glabrous form is described as f. **glabra** (p. 204), Italy.

2071. BLAKE, S. F. A. A new Polygala from Colombia and Bolivia. *Proc. Biol. Soc. Washington* 43: 5-6. 1930.—*Polygala* **macerrima** (p. 5), type from Colombia.

2072. DAHLSTEDT, H. Über einige orientalische Taraxacum-Arten. *Acta Horti Bergiani* 9: 1-56. 15 fig. 1 col. pl. 1929.—Most of the following new species were grown in the botanical garden at Upsala, from seeds collected by G. Samuelsson in Greece. Extensive herbarium material from Sweden, Germany and Austria was also examined. In the group *Scariosa* Hand.-Mazzetti emend. Dahlst.: *T.* **apollinis*** (p. 4), *T.* **graecum*** (p. 6), *T.* **delphicum*** (p. 9), *T.* **hellenicum*** (p. 11), *T.* **aleppicum*** (p. 14), Greece and Asia Minor; *T.* **scolopendrinum*** (p. 19), and *T.* **sintenisii*** (p. 21), Mesopotamia. The group *Erythrocarpa* Hand.-Mazzetti emend. Dahlst. is divided into: *Euerythrocarpa* Dahlst., containing *T. calocephalum** Hand.-Maz. emend. Dahlst. and *T.* **poliochlorum*** (p. 26); and *Erythrosperma* Dahlst., containing *T.* **parnassicum*** (p. 29) and *T.* **gracilens*** (p. 30). Of uncertain position is *T.* **lobulatum*** Bornm. & Dahlst. (p. 32), Persia and Turkestan. Unless otherwise stated, the locality is Greece. The text figures contain illustrations of leaves; the colored plate has 53 fig. showing involucres, single flowers, and achenes.

2073. DINTER, K. Index der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannt gewordenen Pflanzenarten. *Rep. Spec. Nov. Reg. Veg.* 23(18/25): 363-371. 1927. 24(14/21): 302-304; (22/25): 366-368. 1928. 25(4/6): 49-51; (14/22): 209-210. 1928.—Entries 2384-2708, including: *Stachys* **karasmontana** (p. 365) [nomen nudum]; *Stapelia* **ausana** Dtr. & Brgr. (p. 365); *Striga* **chloroleuca** Dtr. [nomen subnudum] (p. 367); *Talinum* **crispatulum** (p. 369); 24(14/21): *Tripteris* **integrifolia** (p. 303); *Tryphostemma* **harmsianum** (p. 304); 24 (22/25): *Utricularia* **monophylla** (p. 367); *Vangueria* **lateritia** (p. 367). 25(4/6) covers entries 2638-2677; 25 (14/22) covers entries 2678-2708. Where not otherwise indicated, the above names would appear to be published by a brief German comment.

2074. FRIES, ROB. E. Zwei neue Anonaceen. *Rep. Spec. Nov. Reg. Veg.* 24(14/21): 246-248. 1928.—*Uvaria* **caroti-afzelii** [sic] (p. 246), Madagascar; *U.* **buchtienii** (p. 247), Bolivia.

2075. HANDEL-MAZZETTI, H. A revision of the Chinese species of Lysimachia, with a new system of the whole genus. *Notes Roy. Bot. Gard. Edinburgh* 16 (77): 51-122. 1928.—A reevaluation of the whole genus on the primary basis of floral structure leading to the consideration of the genus as the most primitive of the Primulaceae. A key to the 83 Chinese species is followed by a systematic enumeration of all (147) the species with critical notes particularly of those in China. The species are grouped in 5 subgenera: *Idiophyton* (1 sp.), *Eulysimachia* (including *Steironema*) (90 spp.), *Palladia* (46 spp.), *Naumburgia* (1 sp.), and *Lysimachiopsis* (9 spp.). The following appear: *L.* **solanoides** (p. 70); *L.* **grandiflora** (*L. ramosa* var. *g.* Franch.) (p. 71); *L.* **pseudotrichopoda** (p. 71); *L.* **cordifolia** (p. 76); *L.* **stellarioides** (p. 78); *L.* **membranacea** (*Steironema membranaceum* Greene) (p. 80); *L.* **greeneana** (*Steironema pumilum* Greene not Lys.) (p. 80); *L.* **validula** (*Steironema validulum* Greene) (p. 80); *L.* **longipedicellata** (*Steironema longipedicellatum* Lun.) (p. 80); *L.* **lunellii** (*Steironema l.* Greene) (p. 80); *L.* **verticillata** (*Steironema verticillatum* Greene) (p. 80); *L.* **graminea** (*Steironema gramineum* Greene) (p. 80); *L.* **tengyuehensis** (p. 82); *L.* **phyllocephala** (p. 83); *L.* **fistulosa** (p. 84); *L. deltoidea* v. **brunelloides** (*L. b.* Pax et Hffm.) (p. 88); *L.* **gymnocephala** (p. 95); *L.* **patungensis** (p. 97); *L.* **crista-galli** Pamp. (p. 98); *L.* **robusta** (p. 116); *L.* **tsarongensis** (p. 117). The paper ends with 3 excluded species belonging to other genera.—*F. C. Gates.*

2076. HICKEL, R., et A. CAMUS. Fagacées. In: **H. LECOMTE et F. GAGNEPAIN.** *Flore Gén. Indo-Chine* 5(9): 937-1028. 7 pl. 1929.—Three genera are recognized: *Quercus* (38 spp.), *Pasania* (72 spp.) and *Castanopsis* (47 spp.). Keys to genera and species are given. The following appear: *Quercus* **camusae** Trelease (*Q. geminata* Hick. and Camus, not Small) (p. 957), *Q.* **dilacerata** (p. 960), *Q. lindleyana* v. **longipetiolata** (p. 972), *Pasania* **bassacensis*** (p. 984), *P.* **fordiana** (*Quercus f.* Hemsl.) (p. 1003), *P. fissa* v. **tunkinensis** (*Quercus tunkinensis* Drake) (p. 1005), *Castanopsis clarkei* v. **pseudindica** (*C. p.* Hick. and Camus) (p. 1019) and *C. ceratacantha* v. **semiserrata** (*C. s.* Hick. and Camus) (p. 1020).—*E. D. Merrill.*

2077. MATHIAS, MILDRED E. Studies in the Umbelliferae. II. *Ann. Missouri Bot. Gard.* 16(4): 393-398. 1 pl. 1929.—**NEOPARRYA** (p. 393) with *N.* **lithophila*** (p. 393), New Mexico; *Eryngium* **wolffii** (p. 395), Mexico; *Pimpinella saxifraga* ssp. *nigra* (Mill.) Gaud., introduced into Washington and new to N. Amer.—*M. E. Mathias.*

2078. MELCHIOR, H. Die Gentianen des Colle d'Olen

(Monte Rosa-Gebiet) [Italy]. *Rep. Spec. Nov. Reg. Veg.* 24(14/21): 309-316. 1 fig. 1928.—The topography and character of the underlying rocks are briefly described. The previously known species of the region are: *Gentiana tenella* Rottb., *G. bavarica* v. *subacaulis* Schleich., *G. brachyphylla* Vill., *G. verna* vars. *vulgaris* L. and *elongata* Haenke, and *G. ramosa* Hegtschw. Three additional species (*G. kochiana* Perr. & Song., *G. terglouensis* Hacq. var. *schleicheri* Vacc., known previously only from a few stations in the Wallis Alps, Switzerland, and *G. nivalis*) are reported, also the hybrid* *G. bavarica* var. *subacaulis* × *brachyphylla*, previously not described. Geographic distribution and synonymy and a bibliography are included.

2079. **MUNZ, PHILIP A., and C. LEO HITCHCOCK. A study of the genus Clarkia, with special reference to its relationship to Godetia.** *Bull. Torrey Bot. Club* 56 (4): 181-197. 1929.—*Godetia* is maintained as a genus distinct from, and more primitive than, *Clarkia*. A table shows the characters of *Godetia* and the 3 subgenera of *Clarkia: Phaeostoma* Spach (lowered from generic rank), *Euclarkia*, and the most highly developed member, *Eucharidium*. Seven species of *Clarkia* are keyed and described, synonymy discussed, and specimens cited. *Clarkia rhomboidea* f. **virgata** (*C. v.* Greene) is proposed. —*N. C. Fassett.*

2080. **[PITTIER, H.] Contribuciones para la flora de Venezuela. Geraniales.** *Trab. Mus. Comerc. Venezuela* No. 7. 293-356. 1930.—Keys are given to families, and to Venezuelan genera and spp. The systematic list includes references to original publication, citation of type localities, and other distributional records. Local names are given in some cases. Oxalidaceae: *Oxalis rhombifolia* v. **pubescens** (p. 310); *O.* **avilensis** (p. 310); *O.* **meridensis** (p. 311); *O.* **glandulosa** (*O. pubescens* var. *g.* Knuth) (p. 311); *O.* **jahnii** (p. 312); *O.* **nodulosa** (p. 313). All new forms are from Venezuela.

2081. **POELLNITZ, KARL von. Zur Kenntnis der Gattung Anacampseros L. III.** *Rep. Spec. Nov. Reg. Veg.* 28(751/755, paper 5): 27-32. 1930.—Material studied was primarily from the Albany Mus., Bolus Herb., and National Herb. of Pretoria. There is specimen citation for 15 known species. *A.* **bremekampii** (p. 29), Cape of Good Hope; *A.* **alta** (p. 30), and *A.* **herreana** (p. 30), Namaqualand; *A.* **avasmontana** (p. 31). A key to the 17 species of subgenus *Avonia* is provided.—*H. K. Svenson.*

2082. **RECHINGER, K. H. fil. Beiträge zur Kenntnis von Rumex Sekt. Lapathum.** *Rep. Spec. Nov. Reg. Veg.* 26(7/15): 177. 1929.—*R.* **aquitanicus** (p. 177), Pyrenees, France.

2083. **ST. JOHN, HAROLD. Calluna vulgaris, a recent adventive on Sable Island, Nova Scotia.** *Jour. Bot.* 67(11): 306-307. 1929.—*Calluna vulgaris,* mistakenly reported to have been collected on Sable Island in 1899, proves rather to be a recent introduction on the island.

2084. **SANDWITH, N. Y. Contributions to the flora of tropical America: I. New and less-known species of Schlegelia.** *Kew Bull. Misc. Inform.* 1930(5): 210-215. 1930.—*Schlegelia* **ramizii** (p. 211), which had been published without a description as *Citharexylum ramizii* Glaziou; *S.* **darienensis** (p. 212), Colombia; *S.* **scandens** (*Citharexylum s.* Briquet et Spruce) (p. 214). An emended description is given of *S. spruceana* K. Schum. —*N. Y. Sandwith.*

2085. **SCHWANTES, G. Zur Systematik der Mesembrianthemen.** *Zeitschr. Sukkulentenk.* 2(10): 173-176; (11): 177-189. 1926.—The author divides the genus *Mesembryanthemum* into the following new genera: **STOMATIUM,** with subg. **EU-STOMATIUM** (p. 175) and **CHASMATOPHYLLUM** (p. 176), and the following: *S.* **agninum** (*M. a.* Haw.), *S.* **mustellinum** (*M. m.* S. D.), *S.* **suaveolens** (*M. suaveolens* ms. Schwantes sp. nov.), *S.* **ermininum** (*M. e.* Haw.), *S.* **musculinum** (*M. m.* Haw.) (p. 176); **FAUCARIA** (p. 176), with *F.* **tigrina** (*M. tigrinum* Haw.), *F.* **tuberculosa** (*M. tuberculosum* Rolfe), *F.* **felina** (*M. felinum* Hill), *F.* **lupina** (*M. lupinum* Haw.), *F.* **bosscheana** (*M. bosscheanum* Berger) (all p. 177); **ALOINOPSIS** (p. 177), with *A.* **aloides** (*M. a.* Haw.), *A.* **vittata** (*M. vittatum* N. E. Br.), *A.* **cibdela** (*M. cibdelum* N. B. Br.), *A.* **albinota** (*M. albinotum* Haw.), *A.* **albipuncta** (*M. albipunctum* Haw.), *A.* **transvaalensis** (*M. transvaalense* Rolfe), *A.* **rubrolineata** (*M. rubrolineatum* N. E. Br.), *A.* **rosulata** (*M. rosulatum* Kensit) (all p. 178); **TITANOPSIS,** with *T.* **calcarea** (*M. calcareum* Marl.) and *T.* **schwantesii** (*M. s.* Dtr.), (p. 178); **DIPLOSOMA,** with *D.* **retroversum** (*M. r.* Kensit) (p. 179); **BERGERANTHUS** (p. 179), subg. **EU-BERGERANTHUS** (p. 180) with *B.* **scapigerus** (*M. scapigerum* Haw.), *B.* **multiceps** (*M. m.* Haw.), *B.* **vespertinus** (*M. vespertinum* Berger), *B.* **ignavus** (*M. ignavum* ms. n. sp.), *B.* **rehneltianus** (*M. rehneltianum* Berger), subgenus **HEREROA,** with *B.* **puttkamerianus** (*M. puttkamerianum* Dtr. et Brgr.), *B.* **derenbergianus** (*M. derenbergianum* Dtr.), *B.* **montis-moltkei** (*M. m.* Dtr.), *B.* **granulatus** (*M. granulatum* N. E. Br.), *B.* **carinans** (*M. c.* Haw.), subg. **RHOMBOPHYLLUM** with *B.* **rhomboideus** (*M. rhomboideum* S.-D.), subg. **CARRUANTHUS** with *B.* **caninus** (*M. caninum* Haw.), *B.* **cookii** (*M. c.* L. Bolus), *B.* **albidus** (*M. albidum* L.) (all p. 180); **MITROPHYLLUM** (p. 181), sug. **EU-MITROPHYLLUM** with *M.* **mitratum** (*Mesembrianthemum m.* Marloth), *M.* **proximum** (*Mes. p.* N. E. Br.), *M.* **dissitum** (*Mes. d.* N. E. Br.), *M.* **cognatum** (*Mes. c.* N. E. Br.), subg. **MONILARIA** with *M.* **moniliforme** (*Mes. m.* Thunb.), *M.* **pisiforme** (*Mes. p.* Haw.), *M.* **clivorum** (*Mes. c.* N. E. Br.), *M.* **chrysoleucum** (*Mes. c.* Schltr.), (p. 182); **JUTTADINTERIA** (p. 182) subg. **EU-JUTTADINTERIA** with *J.* **suavissima** (*M. suavissimum* Dtr.), *J.* **simpsonii** (*M. s.* Dtr.), *J.* **deserticola** (*M. deserticolum* Marl.), *J.* **kovisimontana** (*M. kovismontanum* Dtr.), *J.* **ausensis** (*M. ausense* Bolus), (p. 183), subgenus **DRACOPHILUS** (p. 183) with *J.* **delaetiana** (*M. delaetianum* Dtr.), *J.* **montis-draconis** (*M. m.-d.* Dtr.), *J.* **tugwelliae** (*M. t.* L. Bolus), subg. **NAMIBIA** with *J.* **cinerea** (*M. cinereum* Marl.), *J.* **pomonae** (*M. p.* Dtr.), (p. 184); **DINTERANTHUS** (p. 184), with *D.* **margaretae** (*M. m.* Schw.), *D.* **microspermus** (*M. microspermum* Dtr. & Derenb. ms.), *D.* **pole-evansii** (*M. p.-e.* N. E. Br.), *D.* **inexpectatus** (*M. inexpectatum* Dtr. ms.), (p. 184); **CORPUSCULARIA,** with *C.* **lehmannii** (*M. l.* Eckl. & Zeyher), (p. 186), *C.* **taylorii** (*M. t.* N. E. Br.), *C.* **cymbiformis** (*M. cymbiforme*), *C.* **dolomiticum** [sic] (*M. d.* Dtr.), *C.* **quarziticum** [sic] (*M. q.* Dtr.), *C.* **molle** [sic] (*M. m.* Ait), *C.* **thunbergii** (*M. t.* Haw.); **RUSCHIA** (p. 186) with *R.* **perfoliata** (*M. perfoliatum* Mill.), *R.* **uncinata** (*M. uncinatum* Mill.), *R.* **uncinella** (*M. uncinellum* Haw.), *R.* **rupicola** (*M. rupicolum* Engl.), *R.* **odontocalyx** (*M. o.* Schl. & Diels), *R.* **vulvaria** (*M. v.* Dtr.), *R.* **axthelmiana** (*M. axthelmianum* Dtr.), *R.* **approximata** (*M. approximatum* L. Bolus), *R.* **crassa** (*M. crassum*), *R.* **grisea** (*M. griseum* L. Bolus), *R.* **griquensis** (*M. g.* L. Bolus), *R.* **caninotata** (*M. caninotatum* L. Bolus), *R.* **unidens** (*M. u.* Haw.), *R.* **semidentata** (*M. semidentatum* S.-D.), *R.* **integra** (*M. integrum* L. Bolus), *R.* **indurata** (*M. induratum* L. Bolus), *R.* **steingröveri** (*M. s.* Pax) (all p. 187); **TRICHODIADEMA** (p. 187), with *T.* **stelligerum** (*M. s.* Haw.), *T.* **stellatum** (*M. s.* Mill.), *T.* **densum** (*M. d.* Haw.), *T.* **intonsum** (*M. i.* Haw.), *T.* **setuliferum** (*M. s.* N. E. Br.), *T.* **bulbosum** (*M. b.* Haw.), *T.* **barbatum** (*M. b.* L.), *T.* **mirabile** (*M. m.* N. E. Br.), (all p. 188); **PSAMMOPHORA** (p. 188) with *P.* **nissenii** (*M. n.* Dtr.), *P.* **modesta** (*M. m.* Dtr. et Brgr.), (p. 189); **EBERLANZIA,** with *E.* **spinosa** (*M. spinosum* L.), *E.* **hospitalis** (*M. hospitale* Dtr.), *E.* **micrantha** (*M. spinosum* v. *micranthum* Pax), *E.* **cradokensis** (*M. cradokense* O. Ktze.), *E.* **mucronifera** (*M.* mucroniferum Haw.), *E.* **clausa** (*M. clausum* Dtr.), *E.* **sedoides** (*M. s.* Dtr. et Brgr.), (all p. 189).

2086. **SCHWANTES, G. Neue Mesembriaceen VI.** *Monatsschr. Deutschen Kakteen-Ges.* 2(3/4): 64-69. 2 fig. 1930.—*Ruschia* **meyerae*** (p. 64), *R.* **nobilis** (p. 65), *R.* **nelii** (p. 66) [no locality given], *R.* **robusta** (p. 66), *R.* **amoena*** (p. 66); all from Namaland except as stated. A classified list of subgenera (with their sections) of *Ruschia* is given.

2087. **SKOTTSBERG, C. On some arborescent species of Lobelia from tropical Asia.** *Acta Horti Gothoburgen-*

sis 4: 1-26. 4 pl., 7 fig. 1929.—Six species of *Lobelia*, *L.* **leschenaultiana*** (*Rapuntium leschenaultianum* Presl). (p. 4), *L. nicotianaefolia** Heyne, *L. n.* var. **macrostemon*** (p. 13), *L.* **philippinensis*** (p. 13), *L. trichandra** Wight, *L.* **doniana*** (p. 19), and *L. pyramidalis** Wallich, all of southeastern Asia except *L. philippinensis*, are described and their relationships discussed in detail. The Hawaiian Lobeliaceae are considered to show closer relationship to the southeastern Asiatic forms than to the American ones. A bibliography is given.—*Roxana S. Ferris.*

2088. [SOSNOVSKIĬ, D. I.] СОСНОВСКИЙ, Д. И. Критический обзор рода **Psephellus.** [Critical review of the genus Psephellus. (Abstract.)] Дневник Всесоюзного Съезда Ботаников, Ленинград, 1928 [*Proc. All-Russ. Congr. Botanists, Leningrad, 1928*] 1928: 128. 1928.—Report of study on the genus *Psephellus.*

2089. **STANDLEY, PAUL C. A new Brosimum from Panama, with notes on the generic names Brosimum and Ferola.** *Tropical Woods* 17: 8-11. 1929.—*Brosimum* **caloxylon** (p. 11). There are two distinct groups of *Brosimum* spp.: those with whitish or yellowish wood and those with red wood. Although the name *Ferolia* Aubl. was given to the genus 13 years ahead of *Brosimum* Swartz, both can be kept if the 2 groups prove to be distinct genera.—*W. N. Sparhawk.*

2090. **STEARN, W. T. Plants new or noteworthy. Vinca major var. oxyloba.** *Gard. Chron.* [*London*] 88 (2295): 516. 1930.—New variety from cultivation in England.

2091. **STEENIS, C. G. G. J. van. Malayan Bignoniaceae, their taxonomy, origin and geographical distribution.** *Rec. Trav. Bot. Néerl.* 24(4): 787-1049. 16 fig., 2 maps. 1927.—The taxonomical part of this paper opens with a key for the genera and the subgenera of this family, followed by a practical key for the genera of Malaya, the Philippines, New Guinea, Australia and New Caledonia, wild as well as cultivated. Emended Latin diagnoses are given of some genera and subgenera; the others are described in English. A key of the species is added to each genus, and all species have been described with indications on their geographical distribution. Latin diagnoses are given of the following species and varieties: *Nyctocalos brunfelsiaeflorus** Teysm. & Binnend., emended description; *N. cuspidatum* v. **oblongum** (p. 815), Philippines; *Arrabidaea* **magnifica** Sprague, mss. (p. 830), Colombia; *Pandorea* **baileyana*** (*Tecoma b.* Maiden & Baker), (p. 849); *P.* **poincillantha*** (*Bignonia p.* Zipp.), with var. **fragrans** (p. 858), New Guinea; *Tecomanthe* **amboinensis*** (*Tecoma a.* Blume), (p. 890); *T.* **ternatensis*** (p. 893), Ternate; *T.* **hillii*** (*Tecoma h.* F.v.M.), (p. 894); *T. venusta** ssp. **parviflora** (p. 897), New Guinea; *Deplanchea* **novocaledonica*** (p. 914), New Caledonia; *D. tetraphylla* var. **novoguineensis** (p. 917), New Guinea; *D.* **sessilifolia*** Viellard (p. 918), New Caledonia; *D.* **glabra*** (*Diplanthera g.* v. Sts.); *D.* **hirsuta*** (*Diplanthera h.* Bailey); *D.* **bancana*** (*Diplanthera b.* Scheffer), with var. **glabra*** (p. 923), Malay Peninsula and Sumatra; *D.* **tubulosa*** (p. 926), New Guinea; *Dolichandrone* subgen. **CORIACEAE** (p. 931) and **MEMBRANACEAE** (p. 936); *Stereospermum suaveolens* f. **verticillata** (p. 950), Java; *Radermachera* **sorsogonensis** Elmer mss. (p. 973), Philippines; *R. fenicis* var. **acuminata** (p. 980), Philippines and Celebes; *R.* **punctata** Elmer mss. (p. 982), Philippines; *R.* **fragrans** (*R. elmeri* var. *f.* Elmer) (p. 996); *Haplophragma* **macroloba** (*Spathodea m.* Miq.). The author emphasizes the fact that the Australian spp. of *Dolichandrone* (subg. *Coriaceae*) are separated from the other species (subg. *Membranaceae*). A scheme of the phylogenetic relations within the genus *Tecomanthe* H. Bn. is made, based upon the structure of the ovary, together with the habitus and the geographical distribution. There are striking indications that within *Tecomanthe* parallelly developed montane and alpine species can be distinguished. The affinities with the Neo-tropical Bignoniaceae make it probable that the Malayan Bignoniaceae have originated from Neo-tropical ones and have been part of a Tertiary flora. An hypothesis is made about the routes along which these tropical genera have migrated. The Bignoniaceae point to the same genetic-phytogeographical relations as do many other families. The author is opposed to Willis' age and area-theory, especially because one is generally unable to distinguish at first sight the difference between a progressive and a relic-endemic. The geographical distribution of the Malayan Bignoniaceae may be explained by Weber's line, though some of them existed in Malaya before this line represented a real barrier for biological distribution. On a number of maps is shown the geographical distribution of *Nyctocalos* T. et B., *Oroxylum indicum* (L.) Vent., *Pandorea* (Endl.) Spach, *Tecomanthe* H. Bn., *Neosepicea viticoides* Diels, *Hausmannia jucunda* F.v.M., *Deplanchea* Vieill., *Dolichandrone* (Fenzl) Seem., *Radermachera* Zoll., and *Haplophragma* P. Dop., and a scheme of phylogenetic relations of Bignoniaceae in recent and earlier times.—*M. J. Sirks.*

2092. **TISCHER, A. Corpuscularia perdiantha Tisch. spec. nov.** *Monatsschr. Deutschen Kakteen-Ges.* 2(1): 20-21. 1 fig. 1930.—*C.* **perdiantha*** (p. 20), Namaqualand.

2093. **TOLMATCHEW, A. Papaver nudicaule L. und einige verwandte asiatische Papaver-Formen.** *Svensk Bot. Tidskr.* 24(1): 33-43. 4 fig. 1930.—The author gives an emended description of *P. nudicaule* ssp. *commune** Turcz., which he regards as the type of *P. nudicaule* L.; *P. rubro-aurantiacum* ssp. **typicum*** (*P. nudicaule* ssp. *rubro-aurantiacum* var. *t.* Fedde) (p. 38), ssp. **setosum** (p. 39), Transbaikalia, while ssp. *langeanum* Lundström from Greenland is considered a distinct species; *P.* **tenellum*** (Korshinsky in sched.) A. Tolm. (p. 40), Siberia; *P. nivale,** redescribed.

2094. **WIMMER, F. E. Studien zu einer Monographie der Lobellioïdeen (Lobelioïdeae IV).** *Rep. Spec. Nov. Reg. Veg.* 26(1/6): 1-20. 2 pl. 1929.—The following spp. are added: *Heterotoma* **endlichii*** (p. 1) and *Lobelia* **schmitzii*** (p. 2), Mexico; *L.* **hosseusii*** (p. 2), Siam; *L.* **paradoxa*** (p. 2), Philippines; *L.* **thorelii*** (p. 3), Indo-China; *L.* **bollii*** (p. 3), Texas; *L. puberula* v. **mineolana** (p. 4), Texas; *Rhizocephalum* **gracile*** (p. 4), Peru; *Clermontia* **rockiana** (p. 4), Hawaii; *Centropogon* **longipetiolatus** (p. 5), Peru; *C.* **rimbachii*** (p. 5), Ecuador; *C.* **roraimanus*** (p. 6), Brazil; *C.* **scabellus*** (p. 6), Colombia; *C.* **psilandrus** (p. 7), and *C. subandinus* v. **ventricosus*** (p. 8), Ecuador; *C.* **tessmannii*** (p. 8), Peru; *C.* **rex*** (p. 8), *C.* **cinnabarinus*** (p. 9), *C.* **ozotrichus*** (p. 10) and *C.* **polytrichus** (p. 11), Colombia; *C.* **weddellii*** (p. 11) and *Siphocampylus* **nobilis*** (p. 12), Peru; *S.* **bogotensis** (p. 12), Colombia; *S.* **puberulus*** (p. 13), Bolivia; *S.* **ravidus*** (p. 13), *S.* **schultzeanus*** (p. 14), *S.* **hypsophilus*** (p. 14), *S.* **megalanthus** v. **orthosepalus** (p. 15), and *S.* **lecomtei** (p. 15), Colombia; *S. imbricatus* v. **casarettoi** (p. 16), Brazil; *S.* **krauseanus*** (p. 16) and *S.* **albus*** (p. 17), Peru; *S.* **trianae*** (p. 17), Colombia; *S. retrorsus* (Willd.) Vatke, redescribed, with vars. **asper** (*S. a.* Benth.), (p. 18), **semiasper** (p. 19), Colombia, and **eximius** (*S. e.* Planch), (p. 19).

FLORISTICS AND PLANT DISTRIBUTION

2095. **ARWIDSSON, TH. Floran inom Sonfjällets national park.** *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* No. 12. 1-37. 1 map. 1930.—This Swedish national park is situated in the province Härjedalenl. It has an area of 27 myriare, an altitudinal variation of about 900 meters. The flora of vascular plants comprises (including 22 Pteridophyta and 3 Gymnospermae), 250 spp. in 51 families.—*T. Arwidsson.*

2096. **BIASIONI, L. Nuove osservazioni sulle piante avventizie di Trento e dintorni. [Observations on the adventitious plants of Trento, Italy, and vicinity.]** *Studi Trentini Sci. Nat.* 10(3): 218-226. 1929.—An annotated list of about 137 forms, with habitat records. Rubiaceae: *Asperula arvensis* f. **simplex** (p. 221). Compositae: *Anthemis arvensis* v. **subunicephala** (p. 221). Labiatae: *Galeopsis ladanum* v. **brevipila** (p. 224). Euphorbiaceae: *Mercurialis annua* f. **pygmaea** (p. 225).

2097. **CLELAND, J. B., and J. M. BLACK. Plants of the Encounter Bay district.** *S. Australian Nat.* 10(3): 37-40. 1929.—An annotated supplementary list compris-

ing Filicales (1), Lycopodiaceae (1), and many spermatophytes of various families.

2098. CLELAND, J. BURTON. Notes on the botany of central Australia. Parts 1 & II. *S. Australian Nat.* 11(1): 1-4. 1 pl. 1929; (2): 21-23. 1 pl. 1930.—This is a report on an expedition to the McDonnell Ranges and vicinity in August, 1929. Three botanical areas are treated: the plains and broad valley; the foothills, mountains, and gorges; the watercourses and their pools. There are notes on numerous species met with in each area.

2099. CRATTY, R. I. Iowa plant notes, II. *Proc. Iowa Acad. Sci.* 33: 125-128. 1926[1927].—Reports 47 species of angiosperms and pteridophytes as new to or rare in Iowa—*H. S. Conard.*

2100. CZERNIAKOWSKA-REINECKE, E. Letzte Neuheiten über die Flora Turkmenistans und Nordpersiens. *Rep. Spec. Nov. Reg. Veg.* 27(741/750; paper 28): 262-287. 1930.—A summary of the latest discoveries in the mountainous region of northern Persia, chiefly in the Kopet-dagh and Chorassan Mts. Notes are given on collections other than that of the author, especially the large one of E. Tscherniakowska now at Leningrad. There are extensive notes on 73 spp. (19 new to the region) in 56 genera, together with an itinerary from 1916 to 1927, and bibliography of the author's work on the region. *Merendera* **jolantae** (p. 264), North Turcoman; *Gagea capillifolia* Vved. (in "Flora von Turkmenistan"); *Corydalis* **chionophila** (p. 268), *Moriera* **gracilis** (p. 269), *M.* **transhyrcana** (p. 270), *Stellera* **turcomanica** (p. 273), and *Acantholimon* **blandum** (p. 275), Turcoman; *A.* **raddeanum** (p. 276), Persia; *Paracaryum* **gracile** (p. 277), *Lagochilus* **balchanicus** (p. 278), *Salvia* **semilanata** (p. 278), and *Veronica* **khorassanica** (p. 280), Turcoman; *Pterocephalus* **khorassanicus** (p. 281), Persia; *Centaurea* **iljini** (p. 285), Turcoman; *Taraxacum serotinum* v. **chorassanum** Dahlstedt (p. 286), Persia.—*H. K. Svenson.*

2101. DIELS, LUDWIG, und G. SAMUELSSON. Larix Miller. *Die Pflanzenareale* 2(7): 59-75. 9 maps. G. Fischer: Jena, 1930.—Distribution of the following is discussed, and indicated on maps: the species of *Larix* (by C. H. OSTENFELD and C. SYRACH-LARSEN), maps 62-64; of *Hedera* (by L. LÄMMERMAYR), maps 65-68; of *Cornus* § *Arctocrania* (by C. REGEL), map 69; and of the European Gesneraceae (by A HAYEK), map 70.

2102. DRUCE, G. CLARIDGE. The flora of West Ross [Scotland]. With introductory sketches of the topography and climate and also biographical notices of those who have contributed to the flora since 1778. *Bot. Soc. & Exchange Club British Isles* [*Supplement*] 8(5): v-112. 1 pl. 1929.—The plants reported are classified as to habitat. The annotated list comprises 809 spp.

2103. GARDNER, CHARLES A. Enumeratio plantarum Australiae occidentalis. A systematic census of the plants occurring in Western Australia. *Jour. Dept. Agric. W. Australia* 7(1): p. i-v+1-34. 1930.—This 1st installment lists the plants by scientific names from Pteridophyta, to Dicotyledoneae Proteaceae; 3 other parts are to follow. Each specific name is followed by the authority with reference. Synonyms are included.

2104. GRÖNTVED, JOHS. Die Flora der Insel Runö. *Svensk Bot. Tidskr.* 23(4): 399-460. 2 maps. 8 fig. 1929. —This Esthonian island, comprising 11 square kilometers in the midst of the Riga Gulf, has an insular climate although influenced by the near Russian continent. The eastern half has a fine pine wood (*Pinus silvestris*) on old dunes, the western half being low, partly cultivated, partly hay-meadows and grazing-grounds. A complete list of species is given with notes concerning localities, occurrence, etc.; there are 470 spp. of phanerogams and 9 of vascular cryptogams. Some interesting species, e.g., *Ophioglossum vulgatum, Calla palustris, Sorbus suecica* and *Crambe maritima* are discussed.—*J. Gröntved.*

2105. HANDEL-MAZZETTI, HEINRICH. Bearbeitung der von E. Zugmayer in Tibet gesammelten Phanerogamen. *Österreich. Bot. Zeitschr.* 79(1): 30-39. 1930.—An annotated list of Spermatophyta, including *Aster* **glandulosus** (*A. flaccidus* var. *g.* Keissl.) (p. 35).

2106. JOHNSTON, IVAN M. I. Papers on the flora of northern Chile: 1. The coastal flora of the departments of Chañaral and Taltal; 2. The flora of the nitrate coast; 3. Undescribed species from the Cordilleras of Atacama. II. Some undescribed species from Peru. *Contrib. Gray Herb. Harvard Univ.* No. 85. 1-180. 2 pl. (1 map.) 1929.—(I.I.) The coasts of Chañaral and Taltal are characterized by the large number of endemic spp. and the sharp contrast of mesophytic and xerophytic associations. The rainfall averages 11 mm. per year, but in the belt of altitude between 300 and 800 m. on the slopes facing the ocean, and in the valleys extending inland from the ocean, the low rainfall is compensated by a moist ocean fog which gives these areas high humidity and a moist soil. The fog belt has a luxuriant spring vegetation, of which *Cereus spinibarbis, C. coquimbanus,* and *Euphorbia lactiflua,* xerophytes able to persist through the fogless summer, are characteristic. In the moist season these plants are frequently covered with fruticose and foliose lichens, and may support the epiphyte, *Tillandsia geissei.* Below the fog belt there is a xerophytic flora, with narrow and usually thickened foliage. Above the fog belt there is usually an arid scrub composed largely of *Echinocactus,* then a zone of hardy deep-rooted xerophytes extending to about 1000 m. altitude, above which no plants survive. The area is a southern extension of the Loma zone, which is well developed in Peru. Most of the plants are southern in affinity, although some are closely related to Mediterranean or to Californian species. Of the 394 spp. and varieties, 145 are endemic, 4 endemic genera (*Werdermannia,* Cruciferae; *Domeykoa,* Umbelliferae; *Gypothamnium* and *Oxyphyllum,* Compositae) are recorded. Based on the author's collections and on those of Philippi and others, an annotated and descriptive list of the spp. and varieties is given. Polypodiaceae: *Asplenium fragile* v. **lomense*** Weatherby (p. 13); *Polypodium* (Sect. *Goniophlebium*) **espinosae*** Weatherby (p. 15), with a key to distinguish it from related species. Dioscoreaceae: *Dioscorea* **cylindrostachya** (p. 25). Iridaceae: *Tigridia* **philippiana** (p. 26). Orchidaceae: *Bipinnula* **taltalensis** (p. 27); *B.* **fimbriata** (*Chloraea f.* Poepp). Chenopodiaceae: *Atriplex* **taltalensis** (p. 30); *A.* **clivicola** (p. 31) with var. **lopholepis** (p. 31). Amarantaceae: *Alternanthera* **junciflora** (*Telanthera j.* Remy) (p. 32). Aizoaceae: *Tetragonia* **tenella** (p. 34). Portulacaceae: *Calandrinia* **sitiens** (p. 35); *C.* **cephalophora** (p. 35); *C.* **taltalensis** (p. 37); *C.* **lamprosperma** (p. 37); *Portulaca* **philippii** (p. 39). Caryophyllaceae: *Spergularia* **arbuscula** (*Paronychia a.* Gray) (p. 40); *S.* **stenocarpa** (*Arenaria s.* Ph.) (p. 41); *S.* **cremnophila** (p. 41). Cruciferae: *Menonvillea parviflora* v. **aptera** (*M. a.* Ph.) (p. 44); *Werdermannia* **anethifolia** (*Nasturtium anethifolium* Ph.) (p. 45). Leguminosae: *Astragalus* **vasticola** (*Phaca atacamensis* Ph.) (p. 51); *A.* **paposanus** (p. 51); *A.* **melanogonatus** (p. 52); *Adesmia* **gracillima** (p. 54); *A.* **viscidissima** (p. 55); *A.* **diaziana** (p. 56). Linaceae: *Linum* **cremnophilum** (p. 62). Euphorbiaceae: *Chiropetalum* **cremnophilum** (p. 64). Malvaceae: *Palaua* **concinna** (*Sida c.* Ph.) (p. 67); *Cristaria* **leucantha** (p. 68); *C.* **diaziana** (p. 69); *C.* **fuentesiana** (p. 70); *C.* **thinophila** (p. 71); *C.* **paposana** (p. 73); *C.* **intonsa** (p. 74); *C.* **formosula** (p. 74); *C. diversifolia* f. **parvula** (*C. p.* Ph.) (p. 76). Guttiferae: *Hypericum* **paposanum** (*H. dichotomum* Ph. not Lam.) (p. 76). Frankeniaceae: *Frankenia chilensis* v. **aspera** (*F. a.* Ph.) (p. 77). Umbelliferae: *Bowlesia* **paposana** (p. 86); *Domeykoa* **perennis** (p. 88). Nolanaceae: *Nolana* **lepidophylla** (*Osteocarpus lepidophyllus* Ph.) (p. 103); *N.* **stenophylla** (p. 103); *Periloba* **longifolia** (*Alona l.* Lindl.) (p. 104); *P.* **baccata** (*Alona b.* Lindl., =*S*[*orema*] *linearis* Miers, =*N*[*olana*] *carrerae* Ph.) (p. 105); *P.* **pterosperma** (*N. p.* Ph.) (p. 105); *P.* **parviflora** (*S. p.* Ph.) (p. 105); *Periloba* **sessiliflora** (*Nolana s.* Ph.) (p. 105); *P.* **stans** (*Nolana s.* Ph.) (p. 105); *Bargemontia* **glauca** (p. 105); *B.* **clavata** (*Dolia c.* Miers) (p. 106); *B.* **sphaerophylla** (*Alona s.* Ph.) (p. 107); *B.* **crassulifolia** (*Nolana c.*

Poepp.) (p. 107); *B.* eremobia (*Dolia e.* Ph.) (p. 107); *B.* albescens (*D. a.* Ph.) (p. 108); *B.* micrantha (*Alona m.* Ph.) (p. 108); *B.* divaricata (*Aplocarya d.* Lindl.) (p. 108); *B.* mollis (*Alona m.* Ph.) (p. 109); *B.* flaccida (*Alona f.* Ph.) (p. 109); *B.* linearifolia (*Nolana l.* Ph.) (p. 109); *B.* tarapacana (*Dolia t.* Ph.) (p. 110); *B.* aplocaryoides (*Leloutrea a.* Gaud.) (p. 110); *B.* sedifolia (*Nolana s.* Poepp.); *B.* deflexa (p. 110); *B.* deserticola (*Alona d.* Ph.); *B.* foliosa (*Dolia f.* Ph.) (p. 111); *B.* salsoloides (*Dolia s.* Lindl.) (p. 111); *B.* villosa (*Alibrexia v.* Ph.) (p. 112). Solanaceae: *Grabowskia* glauca (*Lycium glaucum* Ph.) (p. 112); *Salpiglossis* cactorum (p. 114). Bignoniaceae: *Argylia* sitiens (p. 118). Compositae: *Stevia hyssopifolia* v. panulensis Robinson (p. 123); *Baccharis* taltalensis (p. 125); *Encelia canescens* v. lanuginosa (p. 126); *Perityle emoryi* v. elata (*Closia e.* Ph.) (p. 127); *Perityle* discoidea (*Closia d.* Ph.) (p. 128); *Centaurea* atacamensis (*C. floccosa* var. *a.* Reiche) (p. 130); *Chuquiraga ulicina* v. incana (*C. i.* Ph.) (p. 131); *Chaetanthera linearis* v. taltalensis (p. 132); *Polyachyrus* virgatus (p. 132); *P.* annuus (p. 134).—(I, 2.) The nitrate coast, lat. 20°-24° S., is more arid than the region discussed above. The temperature range is 10-31° C., average 18.5° C., average rainfall about 2 mm., with many years entirely without rainfall. Sea fogs occur locally along the coast, and the Loma [phytogeographic] formation occurs in interrupted areas, but is less developed than in the Chañaral-Taltal area, the plants being northern extensions of the Paposo flora. 117 spp., nearly all of which also occur to the South in the Chañaral-Taltal area, are reported. An annotated list is given. Liliaceae: *Pasithea caerulea* v. grandiflora (p. 144). Portulacaceae: *Calandrinia* chrysantha (p. 146). Caryophyllaceae: *Spergularia* aberrans (p. 147). Cruciferae: *Mathewsia* collina (p. 148). Tropaeolaceae: *Tropaeolum* leptoceras (p. 150). Malvaceae: *Palaua* inconspicua (p. 151). Nolanaceae: *Nolana* gayana (*Alibrexia g.* Gaud.) (p. 156); *Bargemontia* clivicola (p. 157); *B.* inconspicua (p. 158); *B.* tocopillensis (p. 158); *B.* leptophylla (*Dolia l.* Miers); *B.* alibrexioides (*Velpeaulia a.* Gaud.) (p. 159). Solanaceae: *Schizanthus* fallax (p. 160); *Salpiglossis* brachysiphon (p. 161).—(I, 3.) The following are undescribed species from the Cordilleras of Atacama: *Ephedra* (§ *Pseudobaccatae*) wraithiana (p. 164); *Cardamine* (?) cremnophila (p. 165); *Hexaptera* macrocarpa (p. 166); *Astragalus* valerianensis (p. 166); *Cristaria* glomerulata (p. 167); *Euphrasia* adenonota (p. 168) (Trifidae); *Senecio* pelolepis (p. 169); *S.* tinctolobus (p. 170); *Polyachyrus* rigidus (p. 171); *Pachylaena* rosea (p. 171).—(II.) The following are from Peru: *Linum* parvum (p. 172); *Eremocharis* confinis (p. 173); *E.* triradiata (*Asteriscium t.* Wolff) (p. 174); *E.* dissecta (p. 174); *E.* longiramea (*Asteriscium longirameum* Wolff) (p. 174); *Nolana* plicata (p. 174); *Bargemontia* platyphylla (p. 175); *B.* gracillima (p. 176); *B.* confinis (p. 176); *Cacabus* flavus (p. 177); *Salpiglossis* albiflora (p. 178); *S.* acutiloba (*S. linearis* Johnston not Hook.) (p. 179); *Polyachyrus* mollendoensis (p. 179).

2107. KARPOWICZ, KAROL. Przyczynek do znajomości flory powiatu Nowogródzkiego. [Flora of the district of Nowogródek, Poland.] *Planta Polonica* (*Contrib. Flore Pologne*) 1: 1-102. Map, 4 pl. 1930.—Following an historical résumé of studies of the region, description of topography, etc., the author presents 3 lists: (1) 804 spp. of angiosperms, gymnosperms, and pteridophytes in the district and in the neighboring communes of Minsk, Wilno, and Grodno; (2) a list of 63 angiosperms cultivated in the district; (3) a list of 93 decorative angiosperms and gymnosperms of the district.

2108. LIU, J. C. A list of plant names included in the Cowdry Chihli Flora not recorded in the Index Florae Sinensis and its two supplements. *Jour. North China Branch Roy. Asiatic Soc.* 60: 120-126. 1929.—An alphabetic list of angiosperms from Chihli, China.

2109. LIU, J. C. Important bibliography on the taxonomy of Chinese plants. *Peking Soc. Nat. Hist. Bull.* 4(3): 17-32. 1930.—The principal papers containing descriptions of Chinese plants are cited alphabetically: by author, if books; by title, if periodicals.

2110. MAHONY, KENNETH L. Preliminary reports on the flora of Wisconsin. III. Lobeliaceae, Campanulaceae, Cucurbitaceae. *Trans. Wisconsin Acad. Sci. Arts & Lett.* 24: 357-361. 14 maps. 1929.—Statements of distribution, with a map for each species.

2111. PALMER, ERNEST J. The spontaneous flora of the Arnold Arboretum [Massachusetts]. *Jour. Arnold Arboretum* 11(2): 63-119. 1 pl. 1930.—A systematic list of the Pteridophyta and Spermatophyta observed in the grounds of the Arnold Arboretum preceded by a general description of the Arboretum and of its geological features and an account of the distribution of the spontaneous vegetation of the cultivated area and of the various spots which have remained more or less in their natural condition. The plate represents an aeroplane view of the Arboretum. —*A. Rehder.*

2112. PAMPANINI, RENATO. La flora del Caracorùm. [The Karakoram Range, Kashmir.] *Sped. Italiana de Filippi, Ser.* 2. 10: 3-285. 23 maps, 6 pl., 3 fig. 1930.—A detailed account is given of prior botanical exploration and collection. Maps and discussion give the itinerary of each collector, and lists of the plants added by each to the flora are given. G. Dainelli and O. Marinelli, botanists of the Filippi expedition (1914), collected 165 specimens (fungi (4), Gnetaceae (1)) falling in 92 species (here enumerated). Diagnosis of the 13 spp. and varieties which proved to be new, are re-printed. A detailed journal of collections, showing the site of collections, the altitude and the spp. found at each site, is given. Altitudes varied from 4750 to 5420 meters. The plants found are listed according to the altitude at which collected. A comprehensive annotated list of the plants known from the region (including those reported by earlier collectors as well as those found by Dainelli & Marinelli) is given, and includes: Eumycetes (5), Lichenes (2), Musci (3), Pteridophyta (5), Equisetaceae (2), Gymnospermae (9), Angiospermae (756). A table shows the number of genera, spp., subspp., varieties and forms in each family. The distribution of the spp. in the region is treated in great detail. Tables show the distribution of the 109 Tibetan and 87 Pamiric spp. in the region. The altitudinal relationship of the spp. in eastern and western Karakoram is treated. The range of altitude occupied by the various spp. is indicated in a table. The 39 Arctic spp., the 37 southern spp., the 112 Eurasian, the 16 Occidental, the 11 Oriental, the 58 Mediterranean, the 95 Central Asian, comprising the Karakoram flora, are tabulated as to distribution within the region. Endemism is rare in the region. The plants are again listed, the upper altitudinal limit of each being given. The bibliography lists 121 papers on the botany of Karakoram. New for Karakoram were: *Astragalus arnoldii** Hemsl. et Pears, *Atropis distans* v. *convoluta* f. *glaberrima* (Hack.) Pamp., *Braya tibetica* Hook. f. et Thoms., *Crepis gracilipes* Hook. f., *Danthonia cachemiriana* Jaub. et Spach., *Festuca valesiaca* Schleich., *Pleurogyne thomsonii* C. B. Clarke, *Poa pratensis* v. *alpigena* Blytt, *Ranunculus similis* Hemsl., *Saussurea aster** Hemsl., *S. thoroldii** Hemsl., *Astragalus zacharensis, Gagea perspica* and *Oxytropis malloryana.* The following combinations are given: *Atropis distans* v. *convoluta* f. glaberrima (*A. convoluta* var. *g.* Hackel ap. Keissler (p. 77); *A.* thomsonii (*Glyceria t.* Stapf, ap. Hooker) (p. 77); *Polygonum alatum* v. *nepalense* f. scabridum (*P. n.* var. *s.* Meissn.) (p. 98), *Clematis orientalis* v. tenuifolia (*C. t.* Royle) (p. 110); *Draba cachemirica* v. pulvinaris (*D. alpina* var. *p.* Henrard) (p. 123); *Waldheimia* vestita (*Allardia v.* Hook. f. et Thoms.) (p. 208); *Ligularia arnicoides* v. frigida (*Senecio a.* var. frigidus (Schultz-Bip.) (Hook. f.) (p. 215); *Cirsium arvense* v. negletum (*Cnicus arvensis* v. *neglecta* (Fisch.) Klatt) (p. 221); *Chrysanthemum* pamiricum (*Pyrethrum p.* O. Fedtsch.) (p. 205).

2113. PRAEGER, R. LLOYD. Phanerogamia and Cryptogamia vascularia. Supplement to "Irish Topographical Botany," 1906-1928. *Proc. Roy. Irish Acad.* 39B(1): 57-78. 1929.—Using the standard for species and

subspecies adopted in "Irish Topographical Botany," and extending it to recent additions to the flora, we find the number of new plants (native or naturalized) added to the flora of Ireland in 1913-28 to be 30. This excludes a number of segregates in such genera as *Rosa, Leontodon, Thymus,* etc. Among these 30 species are *Mentha requienii* Benth. and *Spiranthes stricta** Nelson (colored plate), previously considered as *S. romanzoffiana,* which now disappears from the Irish flora. *Arctostaphylos alpina, Erica stricta,* and *Selaginella kraussiana* are doubtful members. The report contains extensions of range, refindings and confirmation of 8 species, addition of 6 hybrids, withdrawal of 7 species, and new records arranged under county divisions, with references to publications.

2114. **SKOTTSBERG, C. Notes on some recent collections made in the Islands of Juan Fernandez.** *Acta Horti Gothoburgensis* 4: 155-171. 2 pl., 3 fig. 1929.—The four collections made by Bürger, Tenz, Bock and Looser, respectively, reported upon, supplement an earlier paper by the author on the flora of Juan Fernandez. Among the ferns and angiosperms noted is **YUNQUEA** (Compositae) (p. 163), type *Y.* **tenzii*** (p. 163), related to *Centaurodendron,* another endemic. These, with all the native flora, are in danger of extermination before sufficient data concerning them have been gathered.—*Roxana S. Ferris.*

2115. **STANDLEY, PAUL C. A second supplement of the flora of the Barro Colorado Island, Panama.** *Jour. Arnold Arboretum* 11(2): 119-129. 1930.—An enumeration of 63 species recently observed, including: *Odontocarya* **truncata** (p. 121), *Protium* **salvozae** (p. 122), *Saurauia* **zetekiana** (p. 124), *Eugenia* **banghamii** (p. 125), *E.* **melanosticta** (p. 126), *Markea* **panamensis** (p. 127), and *Petastoma* **breviflorum** (p. 128).—*A. Rehder.*

2116. **ANONYMOUS. Report on a second tour of the Botanical Section in the Province of Surat [Siam].** *The Record (The Jour. of the Bd. Commercial Development) [Bangkok]* 32: 316-321. 1 pl. 1929.—Itinerary, with notes on the flora.

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in B. A. 5(8/9): 19262, 19296, 19356, 19360, 19364, 21075, 21097, 21176, 21232, 21347; 5(10): 22696, 22702, 22709, 22830, 22883, 22900, 24296, 24304, 24547, 24566, 24792, 24884, 24919, 24973, 25041, 25196, 25274, 25332, 25361, 25369, 25375; 5(11): 26566, 26647, 26664, 26676, 26682, 26684, 26685, 26687, 26692, 26792, 26803, 26868, 26934, 26935, 27007, 27008, 27141, 27166, 27167, 27450, 29011, 29025, 29064, 29092; and in this issue 920, 2162)

2117. **ALMEIDA, J. F. R. d'. On the shoot morphology of Limnanthemum.** *Jour. Indian Bot. Soc.* 7(1): 1-11. 6 fig. 1928.—There are 2 Indian spp. *L. cristatum* Griseb. has a short rhizome, bearing leaves without branches in their axils, and with blades floating on the surface of the water. There is a gradual transition from these complete leaves to membranous scales, which bear long branches (stolons) in their axils. At the end of the stolon is a terminal inflorescence (corymb with a very short axis) and a floating leaf with a short petiole. In the axil of this leaf an "abbreviated stem" develops, bearing scale leaves with new stolons in their axils, and a few adventitious roots. *L. indicum* Thwaites is believed to bear long-petioled leaves while young, and the abbreviated stems formed at the end of the stolons bear one or more small floating leaves. Pieces of *L. cristatum* leaves can produce new plants. Repeated branching of *Limnanthemum* by means of stolons is an effective means of vegetative reproduction, of covering the water with leaf mosaics, and of checking the growth of competitors. The *Limnanthemum* habit is regarded as intermediate between the *Nymphaea* type, which is rooted in the mud, and the floating type, which has roots hanging freely in the water.—*W. Dudgeon.*

2118. **AVERY, GEORGE S. Jr. Comparative anatomy and morphology of embryos and seedlings of maize, oats, and wheat.** *Bot. Gaz.* 89(1): 1-39. 68 fig. 1930.—The scutellum in maize, oats, and wheat is the cotyledon. The "ventral scale" of the cotyledon, when present, may be interpreted as its ligule. The epiblast, when present, cannot be considered a rudimentary cotyledon; it probably has little morphological significance. These interpretations hold also for other grasses examined, including barley, rye, and rice. The coleoptile is homologous with a foliage leaf, and is the 2nd leaf of the plant, the leaf distal to it being the 3rd leaf of the plant. In maize and oat seedlings, the elongated structure between the cotyledon and the coleoptile is the first internode of the axis. The term "mesocotyl" as applied to this structure is meaningless, it being in no sense the middle portion of the cotyledon. In wheat, the corresponding structure, although not elongated, is likewise the 1st internode of the axis. This holds true for other Gramineae that develop similarly to maize, such as oats and rice, and those that develop like wheat, such as barley and rye. The principal elongating structure in the young wheat axis is the 2nd internode. It is always sheathed by the coleoptile. There is no hypocotyledonary region of "transition" in the grasses. The transition is confined to stem structure. It starts and takes place largely in the vascular plate at the 1st node, and in the 1st internode. The transition continues in the 2nd internode and to some degree even in the 3rd and 4th internodes. The 3 morphological types of grass seedlings distinguished by Van Tieghem are fundamentally 1 type, appearing differently upon development because of the difference in location of the meristematic region in the 1st internode. These differences often show in the mature embryo, before germination begins. The similarity of vascular skeletons of so-called seedling types is pointed out.—*G. S. Avery, Jr.*

2119. **ARBER, AGNES. Studies in the Gramineae. IX. 1. The nodal plexus. 2. Amphivasal bundles.** *Ann. Bot. [London]* 44(175): 593-620. 13 fig. 1930.—The 1st part of this paper relates to the origin and history of the plexus of more or less horizontal bundles which characterizes the nodes of Grasses, and to the vascular relations of the adventitious roots and lateral buds occurring at the nodes. Neither the bud-strands nor the root-strands can be held to be responsible for the inception of the nodal plexus. Nor can Bugnon's statement that the horizontal bundles in the node are formed by an abrupt change of direction of the longitudinal leaf-traces be accepted as a generalization, though it is no doubt true in individual cases. It is concluded that the formation of the horizontal strands is due to a recrudescence of meristematic activity, affecting the ground-tissue between the bundles. The origin of the plexus may thus be such that it is open to description as cauline. But this activity of the ground tissue may coincide with activity affecting the flanks of the intrafascicular cambium region in the vertical bundles, by means of which connections are established between the new horizontal strands and the pre-existing vertical leaf-traces. This cell-division in connection with the leaf-traces may be so closely contemporaneous with the initiation of the horizontal strands that the plexus may be described as originating through branching of the leaf-traces. Incidentally, the irregular relation of the vascular supply of the bud to that of the parent axis is discussed.—In the 2nd part of the paper the amphivasal bundles of Grasses are considered in comparison with those of *Acorus,* and the conclusion is reached that they represent, as a rule, a special modification of single collateral bundles, and that the statements which have been made as to their

general origin by bundle fusions are not warranted.—*A. Arber.*

2120. BRANDT, W. Über Entstehung und Funktion der Öldrüsen bei Labiaten und Compositen. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y.*, 1926 2: 1362-1368. 12 fig. 1929.—In the Compositae the gland arises by the growth of a protoderm cell beyond the adjoining cells, a longitudinal division, and the transverse division, several times, of the 2 daughter cells. The young gland at this time presents an erect flattened somewhat heart-shaped structure, consisting of 6-8 cells covered with cuticle. The cells are rich in protoplasmic content, have well formed nuclei, and distinct walls. Before the formation of oil, the cell walls become indistinct and the nuclei disorganize. With the disappearance of the cell walls, the protoplasts may form one uniform mass, or remain separate. Only after the beginning of this disorganization does oil-formation start, and the more oil is produced, the greater the disorganization. The disorganization of cells begins mostly in the upper pair, and only occasionally in the lower groups. Cutinized membranes are permeable to water, but not to oil. Cutinization, therefore, permits the entrance of elaiogenous substances into the gland, but prevents the return of the oil into the tissue of the leaf. In the Labiatae, the glands develop by the projection of a protoderm cell and its division twice transversely. The outermost cell of this 3-celled trichome swells and becomes spherical or ellipsoidal. It may remain undivided, but usually it divides into 4, 8, or 12 cells by anticlinal divisions. The little head thus formed is rich in protoplasm and its cells have well defined walls and nuclei. The cuticle which covers it enlarges, forming a fold that runs completely around the head. As soon as this fold is completed, the cells composing the head disorganize, cell walls and nuclei disappearing. Oil formation begins with cell disorganization. The fold stretches out, and the oil reservoir thus formed is much larger than the cellular head. The cutinized lamella behaves here as in the oil glands of the Compositae, and oil is prevented from flowing back into the tissues. The author finds that the oil glands have nothing to do with the function of the leaf, and concludes that the oil is an excretion.—*C. C. Plitt.*

2121. CAPARARO, ELENA. Brevi note sopra gli idioblasti oleiferi nel frutto di Melia azedarach L. [Oil bearing idioblasts in the fruit of the China tree, M. azedarach.] *Natura [Milano]* 19(4): 167-171. 1928.—In the ovary numerous yellowish masses of idioblasts are seen in the carpel mesophyll. These idioblasts present in the ovary of the unopened and opened flower become progressively elongated while maintaining their characteristic yellowish color. In the mature fruit they are long, thin and pointed, sometimes irregularly bifurcated. The cell membrane is very thin. The average number of these cells in the just opened flower is 18; just after fall of the petals, 52; 10 days later, 65, which latter number is maintained. The idioblasts are believed to arise from the relatively undifferentiated mesophyll cells. They are detectable in the earliest stages of ovarian development (before ovules are formed) by their large size. In the adult state these cells contain fats, oils, and resins. Stained with Sudan III, they are colored orange red and the outlines of probable oil-producing centers are revealed. The pulp of the fresh fruit boiled first with water and then treated with tincture of henna shows numerous dispersed oily drops having a distinct vinous color. Aqueous solution of iodine does not color them but an alcoholic solution gives them an iodine tint. The mature fruit yields a fatty oil used in soaps, paints and medicines.—*J. G. Edwards (from abst. by E. Capararo).*

2122. CASELLA, DOMENICO. I cerchi legnosi nel genere Salix. [Growth rings in Salix.] *Ann. Tecnica Agraria* 1/2(5): 513-515. 2 pl. 1929.—Observations on stems of *Salix alba, S. purpurea, S. babylonica, S. nigricans* and *S. fragilis* from various regions of southern Italy show distinct and well marked annual rings, with the elements composing them uniformly distributed in all species.—*H. D. Hill.*

2123. DAMIANI, AIMÉE. Recherches anatomiques sur les feuilles de Vonitra et le Piassava de Madagascar. *Ann. Mus. Colonial Marseille* 7(2): (1-28.) 7 fig. 1929.—Differences in structure are less marked in terminal than in basal regions. The 4 known spp. of *Vonitra* may be distinguished by the anatomical structure of their leaves. *V. thouarsiana* shows meristeles regularly oval in cross section, the sheath enclosing 5 fibrovascular strands; an absence of subepidermal sclerenchyma; polyhedral and slightly elongated parenchyma cells; a small cavity in the fibers of the sheath; meristele wider than long; meristele of the ligule with only 1 fibrovascular strand. *V. utilis* shows meristeles more regularly and closely oval at the tip and less rounded at the base, the sheath enclosing 3 fibrovascular strands (in seedlings, the meristeles of the larger veins are in contact with upper epidermis, this reversed in older plants); an absence of subepidermal sclerenchyma; polyhedral and nearly isodiametric parenchyma cells; a large cavity in the fibers of the sheath; meristele longer than wide; meristele of the ligule with at least 3 fibrovascular strands. *V. crinita* shows meristeles rather pear-shaped with larger edge against lower epidermis, the sheath enclosing 10 fibrovascular strands; lower part of meristele with group of strands exclusively woody. *V. louvoubensis* shows meristeles very long with the 2 lateral edges nearly parallel, a convex tip and angular base, the sheath enclosing at least 20 fibrovascular strands; lower part of meristele as in *V. crinita* but separated at tip of meristele by several small fibrovascular strands (in seedlings the meristeles of the larger veins are in contact with upper epidermis, this is reversed in older plants). Differences between *V. thouarsiana* and *V. utilis* are of interest because similar characteristics mark the fibers of the piassava of commerce.—*H. D. Hill.*

2124. FRANCINI, E. Fenomeni di aposporia somatica, di aposporia goniale e di embrionia avventizia in "Ochna multiflora." Nota preliminare. [Somatic apospory, gonial apospory and adventitious embryony in O. multiflora. Preliminary note.] *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 7(1): 92-95. 1928.—*O. multiflora* may show somatic apospory and is thus the 3rd authentic example of this phenomenon. Gonial apospory, of the type of *Antennaria alpina,* may also occur and is more frequent than somatic apospory. The history of cells differentiated from the archesporium shows conditions intermediate between those in *Hieracium aurantiacum* and those in *Artemisia nitida.* The ♀ gametophyte remains in uninucleate stage a long time, finally attaining the 8-nucleate stage. There appears to be a tendency toward polyembryony.—*H. D. Hill.*

2125. GEORGESCU, CONST. Blattstellungsstudien an Echinocactus gibbosus. *Biologia Generalis* 3(1/2): 95-104. 1 pl. 1927.—An attempt to explain the question of leaf arrangement in the Cacti. The species here studied is especially suitable because at the apex of the stem the young leaf rudiments are readily observed. The superimposed bunches of leaves grow in straight rows along the ridges of the stem. A linear series shows that the phyllotaxy varies widely. The leaves are arranged symmetrically around the straight axis, or form longer or shorter spirals, or are arranged irregularly. An analysis of individual cases demonstrates that the deviation from the normal type of the dicotyledons is due to an intercalation of new and active sectors at the growing apex. This can be seen externally. Such phenomena have been known only in teratological cases. Their relationship to external factors, especially light, is assumed, but the necessary experimental evidence is lacking.—*M. Steiner (transl. by W. Steckbeck).*

2126. GRAFE, V. Die Textilien. Chemische Technologie der Zellulose. 2 Halbband des II Bandes von Handbuch der organischen Warenkunde. 770p. 597 fig. C. E. Pöschel: Stuttgart, 1928. Pr. 47.50 M.—This volume brings together comprehensive information on materials, their source, testing, technical handling, and production, and citations of literature on these sub-

jects. It includes the following: (1) O. RICHTER. **Anatomie und Mikrochemie der Textil- und Papierfasern aus dem Pflanzenreiche.** pp. 1-136. Characters valuable in the identification of hairs from seeds and from ferns (*Gossypium, Eriodendron, Asclepias, Calotropis, Osmunda, Abotium*); of bast and wood fibers (or similar elements); and of artificial silk fibers are discussed and figured. Microscopical structure and microchemical peculiarities useful in determining ancient and modern papers (or record-keeping materials) are also described and figured.—(2) G. von LINNERT, Die pflanzlichen und tierischen Textilien. pp. 137-388. After a brief historical résumé of the earliest use of textiles by man there is given a comprehensive survey of materials used today and their composition. Their general handling and treatment in spinning and weaving is discussed and illustrated in detail. The materials treated are not only fibers from seeds, stems, leaves, and fruits, but also animal wool, hair, tendons (for cordage), and silks, as well as mineral fibers and manufactured fibers such as artificial silks, showing their distinctive cross sections (magnified), and paper yarn.—(3) BRUNO POSSANNER von EHRENTHAL. Das Papier. pp. 389-492. The important characteristics of materials used in paper making,—wood fibers (representing $\frac{3}{4}$ of the total), cereal straw, grasses, and rags,—are discussed. The technical processes of preparing and processing the materials in making different kinds of paper, sizing, coloring, and testing them for purposes of identification or for evaluation of properties are described in considerable detail. Statistics of relative production are given.—(4) A. von FIETZ. Die Hölzer und ihre Bearbeitung. pp. 493-612. Following a discussion of the cellular structure of woody tissues, there are presented the importance of wood as a material, methods of harvesting, sawing and finishing, and data on its consumption. The characteristics of sapwood and heartwood, including chemical composition, color, luster, odor, taste, cleavability, weight, hardness, density, flexibility, and elasticity, are discussed. The treatment of wood to prevent deterioration, its relative natural durability against fungi and insects, and the anatomy of woody tissues, including their microscopical investigation, are also discussed for specific elements in monocots, conifers, and hardwoods. A description of the properties and structure of over 60 commercial woods, illustrated by numerous photomicrographs, is included.—(5) J. von NUSSBAUM. Chemische Verarbeitung der Zellulose. pp. 617-689. Cellulose produced by the soda, sulphate, and sulphite processes and the views concerning physical and chemical characteristics of cellulose, cellulose hydrate, hydrocellulose, oxycellulose, cellulose esters including nitrocellulose, its derivatives and their study, as well as those of cellulose acetate and cellulose ether, are discussed.—(6) V. von GRAFE. Pflanzengummi, Pflanzenschleime, Hemizellulosen. pp. 691-731. The occurrence and characteristics of a considerable number of these compounds together with their commercial significance are discussed. An author-subject index is appended.—*E. Gerry.*

2127. GORCZYŃSKI, TADEUSZ. Badania histo-cytologiczne nad kwiatami kleistogamicznemi u Lamium amplexicaule, Oxalis acetosella i Viola odorata. (Recherches histo-cytologiques sur les fleurs cléistogames chez Lamium amplexicaule, Oxalis acetosella et Viola odorata.) [Polish, with French résumé.] *Acta Soc. Bot. Poloniae* 6(3): 248-295. 3 pl., 28 fig. 1929.—It is stated that in cleistogamous flowers mechanical tissues tend to disappear from the walls of anthers. These tissues are directly penetrated by pollen tubes. Cleistogamic flowers, especially those of *Viola*, form secretory tissues that facilitate the growth of pollen tubes toward the stigma. During pollen development there appear a certain number of anomalies that end in anther degeneration. Embryos in these plants appear as a result of fertilization of the egg (contrary to Winkler's supposition for *Viola*). Cleistogamous flowers commonly degenerate.—*F. X. Skupienski (transl. by C. Perrault).*

2128. HÄRDTL, HEINRICH. Regenerationen am Laubblatt unter dem Einfluss der Schwerkraft. *Beitr. Biol. Pflanzen* 17(2): 160-199. 15 fig. 1929.—This is a study of the anatomical and histological changes appearing in petioles and leaf blades following the resection of relative portions of each. Resection is made during the earlier stages of growth and the differences between wounded and normal organs are observed 3-4 months later. In all experiments more or less regeneration of lost parts took place, depending upon the age of the organ and its relative capacity for response to stimuli. Through the formation of new tissue, enlargement of cells already present, and thickening of cell walls, the injured petiole attains nearly the size of the normal petiole. The changes are also qualitative with respect to the development of the highest degree of firmness necessary. More extensive investigation is necessary to ascertain the cause of a definite manner of reaction to resection. It is concluded that "gravity determines throughout these experiments in specific regeneration the anatomical-morphological form of the petiole and midrib."—*P. D. Strausbaugh.*

2129. HAYATA, BUNZÔ. Ueber die systematische Anatomie der Gattung Sasa Mk. et Shib. [In Japanese.] *Bot. Mag. [Tôkyô].* 43: 23-48. 1929.—The separation of the species of *Sasa* is hardly possible unless roots, stems, leaves, flowers, and fruits are at hand. This is rarely the case, and the author has undertaken to provide a means of identification in anatomy. The structure of the leaf and root of *S. borealis, S. paniculata, S. nipponica, S. albo-marginata,* and *Shibatea kumasasa* is described and illustrated in much detail. A means of separating these species is found in leaf structure. *Shibatea* is characterized by the complete lack of siliceous cells in the upper epidermis. Both *S. paniculata* and *S. borealis* lack prickly hairs on the upper epidermis; the lower epidermis of the former has such hairs but rarely whereas in the latter it is covered by them except in stomatal regions. *S. nipponica* possesses many siliceous cells in the upper epidermis; *S. albo-marginata* has almost none. —*Courtesy Japanese Jour. Bot. (transl. by J. M. Haber).*

2130. HEIDENHAIN, MARTIN. Ein vorläufiger Bericht über die Spaltungsgesetze der Blätter. Beitrag XIV zur synthetischen Morphologie. *Zeitschr. Anat. u. Entwicklungsgesch.* 90(2): 153-177. 14 fig. 1929.—Since the parts of the plant body, like the blades of leaves, are more easily studied than similar parts of animals, the author turned from zoological to botanical material in his continued attempts to discover the processes and principles of "synthetic morphology." After many years he comes to the conclusion that the true nature of the development of such animal structures as the division of the tracheal system in lungs, etc., is more easily understood by a study of compounding and dichotomous dissection so common in leaves. Various systems of dichotomy are considered and detailed studies are given of the leaves of *Juglans regia, Nigella sativa, Delphinium ajacis, Koelreuteria paniculata, Aquilegia vulgaris, Thalictrum aquilegifolium, Fagus silvatica,* and *Adiantum scutatum.* Since the segmentation-laws of leaves are found to be in harmony with the segmentation processes of various similar animal organs, it is evident that the same principles are involved in both systems.—*J. H. Schaffner.*

2131. HENRICI, M. Structure of the cortex of grass roots in the arid regions of South Africa. *Sci. Bull. Union S. Africa Dept. Agric.* 85. 12p. 3 fig. 1929.—Studies were made at Armoedsvlake, Bechuanaland, and Ermelo. Rainfall at Armoedsvlake is about 18 in., and soil moisture 4-12%. At other stations rainfall is 30-40 in. Soil at all 3 stations is deficient in phosphorus. Two types of roots occur at Armoedsvlake: corky with abundant fine rootlets, and less branched ones with a loose removable outer cortex. Rhizomes are absent in this area. The corky root contains large vessels surrounded by hard sclerenchyma. Cortex is about $\frac{1}{5}$ the diameter of the root. Small rootlets without cork function in place of root hairs. In the 2nd type the central cylinder occupies 1/10-1/4 the diameter of the root. There is less sclerenchyma, and the young roots, at first normal in appear-

ance, develop a thick cortex. Intercellular spaces appear in the center of the cortex and rapidly increase, leaving septa connecting the central cylinder with the brown exodermal layers which bear permanent root hairs. The whole spongy development takes place in a few days. Two types with loose cortex appear. One with a cortical cambium close to the endodermis, which has the power to reform the spongy layer in rainy seasons. The other lacks the cortical cambium and does not form a second loose cortex but a close corky layer instead. The loose cortex type of structure is interpreted as, probably an adaptation for water retention, although it shows a tendency to be present more frequently in one genus than another. It is not believed to be an oxygen adaptation, at least not in most cases.—*J. E. Cribbs.*

2132. **[MAGITT, M., and E. MAGITT.]** МАГИТТ, М., и Е. МАГИТТ. Этюды по анатомии хлопчатника. II: Палисадная паренхима в листке хлопчатника. **[Studies on the anatomy of the cotton plant. II. Palisade parenchyma of the leaf.]** [German summary.] Журнал Русского Ботанического Общества (*Jour. Soc. Bot. Russie*) 14(2): 191-198. 5 fig. 1929.—Leaves of American cotton are of unusual type and contain an upper palisade layer and a spongy parenchyma several cells deep. Leaves of Old World cotton have an upper and a lower (isolateral) palisade tissue, the spongy parenchyma being reduced to a very few layers of cells; the lower palisade layer is somewhat reduced. Leaves of hybrids of the American with the Old World cotton have only a single palisade layer. Cotyledons of the 2 types of cotton have only a single upper palisade layer. Plants growing in the greenhouse have a greatly reduced lower palisade layer, the extent of development being dependent on the amount of shade; the lower palisade layer is sometimes lacking. Leaves of *Gossypium stocksii, G. sturtii,* and *Althaea rosea* have an isolatral palisade structure. Those of *Abutilon avicennae* and *Ingenhousia* are of the usual type. *Hibiscus cannabinus,* like the cotton plant, is divided into 2 groups: with isolateral structure (in Egypt and Java), and with a single palisade layer (Persia). The thickness of the leaf, of the upper palisade layer, and of the lower palisade layer if present, is given for 4 principal types.—*Authors' summary (transl.).*

2133. **MÜHLDORF, A. Detasarea fructelor la Cupuliferae. [Abscission of the fruits of the Cupuliferae.]** [French summary.] *Bul. Fac. Stiinte Cernauti* 3(1/2): 38-58. 1 pl. 1929.—This paper reports the results of the author's studies of fruit abscission and fruit stalks in *Corylus avellana* L., *Castanea sativa* Mill., *Quercus robur* L., and *Fagus silvatica* L. The abscission of the achene is effected by the development of an abscission layer at the base between the achene and the cupule. The cells of this parenchymatous layer are loosened by the transformation of their walls into a pectocellulose mucilage, and simultaneously the increasing turgescence of these cells causes the rupture of the vascular strands. The abscission of the fruit-stalk takes place in three stages: (1) formation of a separating tissue associated with a cicatricial differentiation at the peduncular base, (2) breaking apart of the separating cells, and (3) cicatrization of the peduncular pod and the formation of the cicatricial periderm. These 3 stages are described in detail.—*P. D. Strausbaugh.*

2134. **MURAVIEVA, E. P. Morphologische und anatomische Unterschiede der Brassica und Sinapissamen.** [Russian, German summary.] *Ann. Essais Semences* 6(2): 129-141. 1928.—Author studied the morphological differences between *Brassica oleracea capitata, B. napus rapifera, B. campestris, Sinapis pincea,* and *S. arvensis,* dealing especially with seed coat structure, form, structure and hair production of the seed lobes and cotyledons.—*W. Crocker.*

2135. **NEWMAN, I. V. The life history of Doryanthes excelsa. Part II. The gametophytes, seed production, chromosome number and general conclusion.** *Proc. Linn. Soc. N. S. Wales* 54(4): 411-435. 3 pl., 26 fig. 1929.—The polarity and function of the nuclei in pollen grain and embryosac is determined by cytoplasmic vacuolation during the division of the microspore nucleus and after the 1st division of the megaspore nucleus. The tip of the pollen tube is continually shut off by cellulosic plugs. The egg and synergids form a filiform apparatus; polar fusion is before pollination, usually at the base of the sac; the insignificant antipodals in an antipodal pocket show slight multiplication. The "conducting tissue" of the style is not continuous with a "placenta" as such. Fertilisation and triple fusion are inferred from the presence of pollen tubes in the micropyle, normal embryo and endosperm of a known type, nucleolar appearances and chromosome counts. The chromosome number is $n=22$, $2n=44$, $3n=66$ (endosperm). The embryo is not quite Lilium-type, has lateral plumule and terminal cotyledon. The copious endosperm is a "basal apparatus" type, and retained. *D. excelsa* is concluded to be primitive among the Agavoideae group and in the family.—*I. V. Newman.*

2136. **NICOLAS, G. Remarques sur l'épiderme des feuilles de quelques Galium.** *Bull. Soc. Hist. Nat. Toulouse* 58(1): 45-46. 1929.—Epidermal cells resembling those found by Netolitzky in the lower epidermis of *G. boreale* L., *G. cruciata* Scop., *G. pedemontanum* All., *G. rotundifolium* L., and *G. rubioides* L., and regarded by him as secretory cells, were found in 11 other spp. of Galium. The "secretion" included in these cells is of uncertain chemical character, most probably a phytosterine or a related substance.

2137. **NOGUCHI, YAKICHI. Zur Kenntnis der Befruchtung und Kornbildung bei der Reispflanze.** *Japanese Jour. Bot.* 4(4): 385-403. 34 fig. 1929.—Material was fixed at frequent intervals following controlled pollinations. The pollen grain germinates immediately after reaching the stigma, and fertilization occurs 12 hours later. The synergids have started to disorganize and the polar nuclei are fusing before fertilization. The synergids disappear 24 hours after pollination; the antipodals persist for 4 days. Double fertilization occurs; 1 sperm unites with 1 of the fusing polar nuclei. The embryo and endosperm develop much as in other cereals. The embryo begins to differentiate in 4 days; the first starch is visible in the endosperm in 7 days. Some grains 7 days old will germinate, but the percentage of germination increases and the time required for germination decreases as the caryopsis nears maturity. The rates of development of the parts of the grain are shown in tables.—*P. Weatherwax.*

2138. **NYI, TSU-KIANG. Observations on the sex differentiation and flower anatomy of Firmiana simplex Wight (Firmiana platanifolia Scott and Endl., Sterculia platanifolia L. f.).** *Contrib. Biol. Lab. Sci. Soc. China* 5(3): 1-16. 9 pl. 1929.—A general study of the flowers of the Japanese varnish tree was made. Both staminate and carpellate flowers appear bisporangiate because the non-functioning organs are hardly reduced. In the staminate flower the embryo sac may reach the 7-nucleate stage before abortion. In the carpellate flowers microspores are well developed in the stamens but never germinate. All the flowers found were functionally monosporangiate. In the staminate flower the integuments and funiculus begin disintegration long before the ♀ gametophyte; the secondary sexual states of the sporophyte are thus inhibited before those of the gametophyte. The vascular supply of the functionless members is meagerly developed. The carpel is open at the beginning but the slit is soon sealed by the growth and fusion of cells on either side of the slit.—*J. H. Schaffner.*

2139. **ORECHOWA, T. A. Ueber die Technik zur Vorbereitung anatomischer Schnitte der Samen von Cuscuta. [Description of the technic for the preparation of anatomical sections of seeds of various Cuscutas.]** [Russian, German summary.] *Ann. Essais Semences* 6(2): 142-145. 1928.

2140. **PITTMAN, H. A. Note on the morphology and endotrophic mycorrhiza of Rhizanthella gardneri, Rogers, and certain other Western Australian orchids.** *Jour. Roy. Soc. Western Australia* 15: 71-79. 3 pl. 1928/1929.—*R.*

gardneri has its vegetative portions,—a rhizome bearing scales—entirely subterranean; it is devoid of chlorophyll except that a little color (purplish) may develop in the bracts and flowers. The mycorrhizal fungus, which somewhat resembles *Rhizoctonia* in mycelial characters, occurs in the outer cortical cells, and hyphae pass to the soil through epidermal hairs. Attempts to culture the mycorrhiza were unsuccessful. The underground stem of *Caladenia* spp. has a structure much like a root. An endodermis is present. Short anatomical notes are given on *Pterostylis turfosa, Prasophyllum fimbria, Diuris longifolia, Lyperanthus nigricans, Thelymitra crinita,* and *T. longifolia.*

2141. **RITTER, GEO. J. Composition and structure of the cell wall of wood.** *Indust. & Eng. Chem.* 20(9): 941-945. 17 fig. 1928.—By using sections of sufficiently small dimensions, the lignin of 3 species has been found to be divided approximately equally between the middle lamella and the remainder of the cell wall. The middle lamella lignin is more soluble in alcohol than the cell wall lignin. The optical phenomenon when bordered pits are observed between Nicol prisms is explained on the basis of the chain-like arrangement of the cellulosic material in the cell wall. When lignified and delignified wood fibers are treated with swelling reagents, the fiber walls thicken both outwardly and inwardly. The general angular cross-section area of lignified fibers is unaltered, but that of delignified fibers is changed to a circular form in which the circumference is limited by the outer layer fibrils oriented at 90° to the fiber's axis. The cell wall of wood fibers is composed of several layers which can be separated by chemical means. The layers in the cell wall of wood fibers can be separated into fibrils by chemical means. The fibrils in the outer layer extend at approximately right angles to the fiber's axis; in the remaining layers, from 0 to 30° thereto.—*Courtesy Indust. & Eng. Chem.*

2142. **SAKISAKA, M. On the number of chloroplasts in the guard cells of seed plants.** *Bot. Mag.* [*Tôkyô*] 43(505): 46-48. 1929.—[In Japanese.] The stomata of a leaf blade move simultaneously and the author therefore studied the number of chloroplasts in the guard cells which play an important rôle in the mechanism of the movement. He found relatively uniform numbers of chloroplasts in each species growing under the same conditions, but no numerical relation between related plants. An ecological study should be made.—*T. Matsumoto.*

2143. **SCARTH, G. W. The structure of wood and its penetrability.** *Paper Trade Jour.* 1928(April): (1-6). 1928.

2144. **SCHERFFEL, ALADÁR. A Lathraea squamaria L. hydathodjai és epiphyticus bacteriuma: Mycobacterium lathraeae mihi. [The hydathodes of L. squamaria, and their epiphytic bacterium, M. lathraeae.]** [German summary.] *Math. es Természet. Értesitö (Math. u. Naturw. Anz. Ungarischen Akad. Wiss.)* 45: 346-368. 3 fig. 1928.—The author describes minutely the scales of this parasitic plant, and the peculiar glands occurring on them. A large central cell functions as a water reservoir and this with adjacent cells has a bellows-like relation which regulates the pressure and volume of liquid in the cell. These glands function as hydathodes to excrete the excess water which the haustoria of the parasite draw as both elaborated and crude sap from the host. This large volume of fluid passing through the body of the parasite takes the place of a transpiration stream in terrestrial plants. The parasite metabolizes the nutritive elements of the sap removed from the host and stores excess food as starch in its scales. This transformation of sap sugar to stored starch reduces the concentration of the sap stream and hence a renewed or facilitated withdrawal of sap from the host occurs. Old scales of the parasite become less active in the elimination of water from the hydathodes due to accumulation of plugs of coagulated material in the gland pores. Much nutritive material escapes unused by the parasite and the gland cells then filled with nutritive sap derived from the host become harbors for a bacterium. This organism, *Mycobacterium* **lathraeae,** is regarded as a commensal epiphyte. The morphology and reproductive structures of this bacterium are fully described and its relationship to the other mycobacteria, e.g., *B. tuberculosis* and *B. leprae.* The umbel-like habit of branching of the chains of bacterial threads also seems to indicate a relationship with *Cladothrix* and *Leptothrix* and hence possibly a connection with Actinomyces.—*H. H. M. Bowman.*

2145. **SINGH, T. C. N. A note on the presence of a sporangium on the indusium of Cheilanthes albo-marginata.** *Jour. Indian Bot. Soc.* 8(3): 207. 1 pl. 1929.—The sporangium was normal.—*W. Dudgeon.*

2146. **SOLEREDER, HANS, und FRITZ JURGEN MEYER. Systematische Anatomie der Monokotyledonen. [Systematic anatomy of monocotyledons.]** *Heft* 4. 176p. 65 fig. Gebrüder Borntraeger: Berlin, 1929.

2147. **SOUÈGES, RENÉ. Embryogénie des Légumineuses. Les derniers stades du développement de l'embryon chez le Trifolium minus Rehl. [Final stages in embryogeny of T. minus.]** *Compt. Rend. Acad. Sci. [Paris]* 184(20): 1196-1198. 1 fig. 1927.

2148. **STEHLI, G., und E. KOLUMBE. Die Botanische Mikrotechnik. Ein Leitfaden der botanisch-mikroskopischen Arbeitsmethoden, zugleich eine Einführung in die Pflanzenanatomie. Part XII of: Handbuch der mikroskopischen Technik.** 75 p. 96 fig. Franckh'sche Verlagshandlung: Stuttgart, 1929. Pr. 3. 60 M.—This little book, intended for beginners, is a brief introduction to botanical microtechnique, with a study of the cell and tissues. The technique includes directions for making preparations of living material and material which needs no imbedding. There are formulae for fixing agents and stains, directions for imbedding in paraffin, celloidin and in a combination of paraffin and celloidin, and some hints on the use of the microtome. The second part presents a series of forms from the algae to the higher plants and an introduction to some phases of anatomy.—*C. J. Chamberlain.*

2149. **SVENSSON, HARRY G. Zytologische-embryologische Solanazeenstudien. I. Über die Samenentwicklung von Hyoscyamus niger L.** *Svensk Bot. Tidskr.* 20(3): 420-434. 6 fig. 1926.—The ovule has 1 massive integument. An 8-nucleate embryosac of the usual type develops from the innermost of 4 megaspores; the antipodals soon degenerate. Haploid chromosome number is 18. Double fertilization evidently occurs. At the 1st division of the primary endosperm nucleus a wall divides the sac into 2 compartments: in the smaller, micropylar one several free nuclei are usually formed, after which cellular tissue develops; sometimes there is no free-nuclear stage. In the other compartment free nuclei become numerous in the parietal cytoplasm and cellular endosperm later develops in the usual manner. Rarely the whole endosperm is cellular from the start. The endosperm development of *Hyoscyamus* stands between that of *Schizanthus* (free-nuclear) and that of *Datura* and *Nicotiana* (cellular). Diversity in endosperm development does not indicate lack of homogeneity in the Solanaceae.—*L. W. Sharp.*

2150. **TATEISHI, SHINKICHI. Embryologische Studien an der Gattung Chrysanthemum.** *Japanese Jour. Bot.* 4(4): 317-326. 2 pl., 6 fig. 1929.—The paper deals with the origin and development of the embryosac of several species of *Chrysanthemum,* principally *C. morifolium* var. *sinense.* Two complete tetrads are often formed in a single nucellus, and, occasionally, 2 embryosacs are developed. As many as 6 embryosac mother cells were noted. In 13 of the 15 spp. more than 1 embryosac mother cell occurs rather frequently. The antipodals present considerable variety in form and number (2-11), the form varying from the usual shape to a much inflated condition in the antipodal nearest the chalaza. The multinucleate condition is frequent in all the antipodals.—*C. J. Chamberlain.*

2151. **TIWARY, N. K. Further observations on the seeds and seedlings of Eugenia jambolana Lamk.** *Jour.*

Indian Bot. Soc. 8(1): 82-85. 2 fig. 1929.—Hundreds of seeds and seedlings were examined over a period of 8 years. One seedling bore 1 massive cotyledon, without trace of a 2nd. The plumule of another seedling had penetrated one cotyledon, while the radicle had penetrated the other.—*W. Dudgeon.*

2152. **UFER, MAX.** Die Unterscheidung von Rot- und Schafschwingel. [Distinction between red and sheep's fescue grass.] *Fortschr. Landw.* 2(24): 798-806. 5 fig. 1927.—Leaf cross sections furnish the chief basis for distinction, though it is not determined how far the variability of the species complicates this. From one habitat, 3 types, known as the *Festuca rubra, F. ovina* and *F. ovina-sulcata* types, were determined. Transition forms between the *ovina* type and the *ovina-sulcata* type occur, but the *rubra* type is nearly isolated. Sections must be made from the central part of leaves corresponding in position.—*From author's abstract (transl. by H. D. Hill).*

PALEOBOTANY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 36, 2178, 2179, 2181, 2185, 2189, 2190, 2193)

2153. **BERRY, EDWARD W.** A Bothrodendron from Bolivia. *Jour. Washington Acad. Sci.* 21(13): 295-298. 2 fig. 1931.—The material observed was not sufficient to warrant giving a specific name. Very similar to *Cyclostigma kiltorkense* Haughton of Europe, and *Cyclostigma australe* Feistmantel of Australia. Probably of Up. Devonian.

2154. **CARPENTIER, ALFRED.** Divers modes de conservation des plantes Wealdiennes. [Various methods of fossilization of Wealden plants.] *Ann. Soc. Sci. Bruxelles* 49(2/3): 144-146. 1929.

2155. **CHENEY, L. S.** Wisconsin fossil mosses. *Bryologist* 33(5): 66-68. 1930.—Several species have been identified from brown peat layers in a bog near Solon Springs and from the "Wisconsin forest bed" along Lake Michigan. Both beds are probably of late preglacial or early post-glacial origin.—*A. M. Taylor.*

2156. **COATES, HENRY.** Note on Carboniferous fossils from Dollar. *Trans. and Proc. Perthshire Soc. Nat. Sci.* 9(1): 30-31. 1 pl. 1929/30(1931).—The ferns *Mariopteris nervosa** and *M. muricata**, and the echinoderm *Cidaris* sp.*, new to Perthshire.

2157. **DUERDEN, H.** On the preparation of cellulose films of fossil plants. *Ann. Botany* 45(178): 376-378. 1931.—A modification of Walton's method (1928) of sectioning fossil plants contained in petrifactions. A plasticiser (castor oil, triacetin, or benzyl abietate) is added to the cellulose acetate or cellulose nitrate solution, to avoid "puckering" of the sections due to unequal drying. Among other plasticisers and films, pyroxylin dissolved in equal parts of alcohol and ether, plus 5% castor oil, gives good results.

2158. **[FOMICHEV, V. D.]** ФОМИЧЕВ, В. Д. Предварительный отчет о геолого-разведочных работах в Кемеровском районе Кузнецкого бассейна в 1928 г. (Район дд. Мазуровой и Ишановой.) **[Preliminary report on the geological prospecting works of 1928 in the Kemerov region of Kuznetsk Basin. (Region of Mazurova and Ishanova villages.)]** [English summary.] Известия Главного Геолого-Разведочного Управления (*Bull. Geol. & Prospecting Service, USSR.*) 49(3): 53-73. 2 pl., 1 fig. 1930.—Plant impressions of the Gondwana type are reported from throughout the prospected series. Occurrence of a fossil tree trunk of the type of *Mesopitys tschihatcheffi, Cordaites equalis, Neuroganganopteris cardiopteroides,* and a fauna of pelecypods are noted.

2159. **GROUT, A. J.** A fossil form of Drepanocladus fluitans Jeanbernati (Ren.) Grout. *Bryologist* 33(3): 33. 1930.—A well preserved specimen from Kansan drift of Iowa, or from a pocket in earlier but closely related deposits about 15 ft. below the surface.—*A. M. Taylor.*

2160. **HEARD, ALBERT, and JOHN FREDERICK JONES.** A new plant (Thallomia), showing structure, from the Downtonian Rocks of Llandovery, Carmarthenshire. *Ann. and Mag. Nat. Hist.* 7(42): 580. 1931.—**THALLOMIA,** type *T.* **llandyfriensis,** L. Downtonian, probably above Up. Ludlow.

2161. **HÖEG, OVE ARBO.** A psilophyte in South Africa. *Kgl. Norske Vidensk. Selsk. Forhandl.* 3(paper 24): 92-94. 1 fig. 1930(1931).—**DUTOITIA** (p. 92) (affinity *Psilophytales*), with *D.* **pulchra*** (p. 93), in blue clayish shale exposed along the road from Knysna to Port Elizabeth, belonging, in all probability, to the Lower or Middle Devonian.

2162. **HOLDEN, H. S.** Some wound reactions in Ankyropteris corrugata. *Proc. Linnean Soc. London* 142. 65-66. 1929/30(1931).—Abstract.

2163. **LEDOUX-MARCELLE, HUBERTE.** Sur les flores du Dévonien de la Belgique. II. Pinakodendron corneti Ledoux-Marcelle, nov. sp. *Bull. Soc. Belge Géol. Paléont. et Hydr.* 40(2): 101-106. 1 pl. 1931.—*P.* **corneti*** (p. 104), Coblenzian, with discussion of the validity of the genus.

2164. **LOUBIÈRE, A.** Observations sur l'Odontopteris obtusa de Brongniart. *Bull. Soc. Bot. France* 76(9/10): 1080-1082. 1929.—Figure 3, plate 78, of Brongniart's Histoire des végétaux fossiles is a correct interpretation of the type, in contradiction to Zeiller who claimed that the figure more nearly represents *O. lingulata* Goepp. This latter species is neuropteroid. Zeiller's revised figure is also neuropteroid and is not a true reproduction of Brongniart's original.—*C. A. Arnold.*

2165. **LOUBIÈRE, A.** Sur les graines et les feuilles stipales associées à l'Odontopteris obtusa Brongn. dans le terrain carbonifère de Carmaux. *Rev. Gén. Bot. [Paris]* 42(498): 321-326. 1 fig. 1930.—Radially symmetrical seeds, *Odontopterocarpus* **oblongus*** (p. 323), and cyclopteroid appendages, *Cyclopteris* **blayei*** (p. 325), were found in association with pinnae of *Odontopteris obtusa** from the L. Stephanian of Carmaux. The pteridospermous nature of the genus *Odontopteris* is affirmed.—*C. A. Arnold.*

2166. **PETRASCHECK, W.** Kohlengeologie der Österreichischen Teilstaaten. II. Teil. pp. 273-484. 12 pl. *Kattowitzer Buchdruckerei u. Verlags-Sp. Ak. Katowice,* 1926/29.—Detailed description of the following coal districts: The outer Alpine basin in Austria (Tertiary), the Alpine coal in Austria and Italy (Carboniferous, Triassic, Jurassic, and Cretaceous), the Dinaric Mountains in Yugo-Slavia and Italy (Tertiary), the coal district of Ostrau-Karwin-Krakau in Poland and Czechoslovakia (Carboniferous), the brown coal of Bohemia and Little Poland (Tertiary). The description is based on numerous investigations and reviews of the newest mining results. In all the coal regions the stratigraphy, tectonics, character of the coal, and index fossils are discussed. Many new fossil finds are thus noted. The dependence of the character of the coal on geological and biological factors was investigated in each region. The book ends with a large, comprehensive bibliography of the geology of coal in the old Austrian Empire.—*W. Petrascheck (transl. by B. F. Howell).*

2167. **POTONIÉ, R., und H. HELLMERS.** Zur Entstehung der Gerinnungskörper (der sogenannten Algen) der Bogheadkohlen und- schiefer. **[Formation of concretions (so-called algae) in boghead coal and slate.]** *Jahrb. Preuss. Geol. Landesanst Berlin* 48: 152-157. 4 fig. 1927(1928).

2168. **PRINCIPI, P.** Florula quaternaria di Magliano de'Marsi sull'orlo della conca fucense. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 13(3): 211-212. 1931.—Leaf imprints in lacustrine deposits of

argillaceous sand or sandy clay intercalated in conglomerate, outcropping near Magliano de' Marsi, Italy, include: *Carpinus betulus, Corylus avellana, Alnus glutinosa, Alnus* sp., *Fagus sylvatica, Quercus robur, Q. cerris, Castanea sativa, Salix alba, Ulmus campestris, Acer pseudoplatanus,* and *Rhamnus* cfr. *frangula.* They indicate that the flora is Quaternary.

2169. SCOTT, H. H. Tasmanian Cycadophyta. *Papers and Proc. Roy. Soc. Tasmania* 1930: 90-93. 3 pl. 1931.—*Cycadites* **dowlingi*** (p. 90), from Launceston Tertiary Basin; regarded as intercalates from the Mesozoic strata. The 6 cotypes include stem, bud, and cone.

2170. SEWARD, A. C. Plant life through the ages. A geological and botanical retrospect. 601p. 140 fig. including 9 reconstructions of ancient landscapes drawn by Edward Vulliamy. Macmillan Co.: New York, 1931. Pr. $10.—This book is intended primarily for readers possessing no botanical or geological knowledge: the author avoids unnecessary technical terms and explains such as are essential. Certain parts of the book, e.g., tables of distribution of plants over the world, the bibliography and references to original sources, are included for the benefit of students. The aim has been to cater for both types of reader, the layman who has a general interest in geological and botanical history and the student of botany and geology. The first 6 chapters deal with the earth's crust and the nature of the evidence on which geologists base their reconstructions of past scenes. After a short account of the preservation of plants as fossils and a concise description of the various groups and families of plants, the author traces the history of the plant-world from the time of the oldest rocks which contain recognizable remains of plants to the present day. An attempt is made to correlate successive stages in the evolution of floras with the corresponding climatic and physical environment in which the plants lived. Chapter 7 is devoted to the earliest records of plant life in the preCambrian. The author maintains a conservative attitude toward the so-called Algonkian calcareous algae described by Walcott and others and is inclined to consider them as concretionary instead of organic. He is less conservative toward the hypothesis that seaweeds became terrestrial plants by emergence of the sea floor, although he does not commit himself definitely. Chapter 8 is devoted to the Cambrian, Ordovician, and Silurian periods and is mainly geological although it includes a brief but satisfactory account of living and extinct algae. Cryptozoon is regarded as probably inorganic in nature and the author advocates the use of the term Protophyceae for fossil remains that appear to be indubitable algae but whose systematic position is problematic. Chapter 9 is devoted to the Devonian period and since this time marks the presence of land plants in any considerable number and variety, considerable space is devoted to a discussion of the Devonian terrestrial plants, particularly the group known as the Psilophytales. Chapter 10 is primarily a geological summary of the Carboniferous and Permian periods and includes an extended discussion of the age of the late Paleozoic glaciation. In Chapter 11 the earlier Carboniferous plants receive consideration and Chapter 12 gives a similar summary of the later Carboniferous and Permian plants, including a discussion of the provincial floras of the later Paleozoic, particularly the so-called *Glossopteris* flora, with interesting speculations on the geography, climate and correlation of the fossiliferous beds. Chapter 13 is devoted to the Triassic. The author rather overemphasizes the floral contrast between the Paleozoic and Mesozoic and the desert character of Triassic environments. He accepts the form genus *Sagenopteris* as the probable foliage of the Caytoniales, thinks *Thinnfeldia* may be a pteridosperm and mentions the genus *Fraxinopsis* from the late Triassic of Argentina as a possible dicotyledon. Chapter 14 is devoted to the Jurassic and includes a discussion of the supposed primitive order Caytoniales. In connection with a supposed dicotyledonous leaf from the Rhaetic of east Greenland, attention is called to similar remains from the Stonesfield slate of England. Chapter 15 is devoted to the Cretaceous, the new era of the gradual dominance of flowering plants, and the floras of the Wealden and Arctic Cretaceous are singled out for special emphasis. Chapter 16 summarizes the more general features of Tertiary floras, their distribution and climatic significance. Chapter 17 is a brief summary of Quaternary plants and their environments. The last Chapter is devoted to a general summary of the book with especial reference to the evolution of structural features, flowering plants, extinct arctic floras and climates of the past, followed by an exceedingly useful bibliography.—*E. W. Berry.*

2171. SZEPESFALVI, JÁNOS. További adatok az Alföld fosszilis flórájához. [Further contributions to the fossil flora of the Great Hungarian Plain.] [Hungarian and German text.] *Magyar Bot. Lapok.* 29: 4-13. 1930.—Treats the flora of a fossil peat, mainly consisting of the mosses *Scorpidium* and *Drepanocladus,* similar to the recent swamp flora of north Europe.—*C. Schermann.*

2172. WILLIAMS, R. S. Pleistocene mosses from Minneapolis, Minnesota. *Bryologist* 33(3): 33-36. 1 pl. 1930.—Descriptions of: *Calliergon giganteum** (Schimp.) Kindb., *Drepanocladus* **minnesotensis*** (p. 33), and **NEOCALLIERGON** (p. 34), with *N.* **integrifolium*** (p. 36).—*A. M. Taylor.*

2173. [ZALESSKIĬ, M. D.] ЗАЛЕССКИЙ, М. Д. О присутствии в Верхоянском хребте нижнепермских осадков. **[The presence of Lower Permian sediments in the Verkhoyansk ridge.]** Известия Академии Наук СССР. Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Phys.-Math.*) 1930(3): 217-222. 2 pl. 1930.—*Noeggerathiopsis theodori** Tchirkova (p. 219); *N. tchirkovae** (p. 220); *N. scalprata** (p. 221); all from Siberia.

2174. [ZALESSKIĬ, M. D.] ЗАЛЕССКИЙ, М. Д. Новые нижнекаменноугольные растения с восточного склона Урала. **[New Lower Carboniferous plants from the eastern slope of the Urals.]** Известия Академии Наук СССР. Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Phys.-Math.*) 1930(3): 223-228. 2 pl. 1930.—**MICHEEVIA** (p. 224), near *Lepidodendron,* erected for *M.* **uralica*** (p. 224); *M.* **rimnensis*** (p. 225); and *M.* **pulchella*** (p. 225). *Helenia* **inopinata*** (p. 226); **RIMNOCLADON** (p. 227), resembling *Barrandeina,* erected for *R.* **minutum*** (p. 227).

2175. [ZALESSKIĬ, M. D.] ЗАЛЕССКИЙ, М. Д. О двух новых ископаемых растениях из нижнекаменноугольных отложений Донецкого бассейна. **[Two new fossil plants from the Lower Carboniferous deposits of the Donetz Basin.]** Известия Академии Наук СССР. Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Phys.-Math.*) 1930(3): 229-234. 1 pl. 1930.—*Sigillaria* **tchirkovaeana*** (p. 230); **DEMETRIA** (p. 232), near *Lepidodendron,* erected for *D.* **amadoca*** (p. 232).

PALEOZOOLOGY

(Abstracts of general papers only. Abstracts of systematic and morphological papers are grouped with those of a similar nature treating of living animals.)

B. F. HOWELL, *Editor*

JOHN R. SANDIDGE AND GLEN L. JEPSEN, *Associate Editors*

(See also in this issue Entries (Unclassified) 6, 8, 36; (Protozoa) 2345; (Porifera) 2365; (Brachiopoda) 2413, 2426, 2478; (Bryozoa) 2414; (Echinodermata) 2156; (Mollusca) 2158, 2413, 2416, 2418, 2420, 2425, 2426, 2427, 2432, 2433, 2434, 2437, 2438, 2440, 2441, 2442, 2445, 2446, 2451, 2452, 2453, 2454, 2456, 2457, 2458, 2459, 2461, 2462, 2463, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2475, 2476, 2477, 2478, 2480, 2481, 2482, 2483, 2484, 2485, 2486; (Myriopoda) 2801; (Crustacea) 2458, 2462, 2489, 2495, 2505, 2506; (Insecta) 2628, 2673, 2697, 2757, 2758, 2759, 2801; (Pisces) 2789; (Amphibia) 2801, 2802; (Reptilia) 2801, 2802, 2805, 2812, 2813, 2814; (Aves) 2830, 2845, 2858, 2862; (Mammalia) 2299, 2920, 2930, 2932, 2934, 2937, 2939, 2947, 2948, 2949, 2951, 2955, 2956, 2967, 2968, 2970, 2979, 2983, 2985, 2988, 2989, 2995)

2176. ASSELBERGHS, E. Note sur la faune marine du Gedinnien de l'Ardenne. *Acad. Roy. Belgique. Bull. Cl. Sci.* 15(10): 756-760. 1929.—This stage should be considered, from the paleontological point of view, as autonomous, belonging at the base of the Devonian.—*E. Asselberghs (transl. by B. F. Howell).*

2177. DÉLÉPINE, G. La faune marine du houiller du Limbourg Néerlandais. *Compt. Rend. Congrès Avanc. Études Strat. Carbonifère, Heerlen,* 1927. 235-240. 1928.—Records from this Carboniferous region in Holland the brachiopods *Chonetes, Orbiculoidea nitida, Lingula mytiloides, L. parallela, L. credneri,* and *L. squamiformis;* the lamellibranchs *Posidoniella laevis, P. minor, Pterinopecten papyraceus, Posidonomya corrugata, Nucula oblonga, Nuculana attenuata, Ctenodonta undulata, Edmondia arcuata, Modiola,* and *Solenomya primaeva;* the goniatites *Eumorphoceras bisulcatum, Nuculoceras nuculum, Homoceras subglobosum* (?), *Reticuloceras reticulatum, R. inconstans, Gastrioceras cancellatum, G. crenulatum, G. listeri, G. circumnodosum* (?), *G.* sp., *Dimorphoceras* sp., *Homoceratoides divaricatum, Anthracoceras arcuatilobatum,* and *A. aegiranum;* the crustacean *Bellinurus;* the fishes *Coelacanthus elegans, C. mucronatus, Elonichthys aitkeni,* and *Platysomus parvulus.*—*D. J. MacNeil.*

2178. EDSON, FANNY CARTER. Pre-Mississippian sediments in central Kansas. *Bull. Amer. Assoc. Petrol. Geol.* 13(5): 441-458. 1 fig. 1928.—Records from this area the plant spores *Sporangites huronense;* the sponges *Callopora* and *Batostoma fertile;* fragmentary graptolites; annelids including *Distacodus* sp., *Prioniodus* sp., *Lumbriconereites* ? and *Polygnathus* sp.; the coral *Chaetetes* sp.; the bryozoans *Rhinidictya paupera, R. mutabilus, Arthroclema* sp., and *A. striatum;* the brachiopods *Rhynchotrema* sp. and *Orthis meedsi* ?; the pelecypod *Ctenodonta;* the gastropods *Bucania elliptica* ? and *Hormotoma gracilis;* the ostracod *Bythocypris* sp.; and unidentified fish remains.—*D. J. MacNeil.*

2179. FOURMARIER, P. Quelques compléments à l'étude de la stratigraphie du terrain houiller de la Belgique. *Compt. Rend. Congrès Avanc. Études Strat. Carbonifère, Heerlen.* 1927. 241-257. 1 pl. 1928.—Records from this Carboniferous district in Belgium many plant remains, including those of *Stigmaria* and *Neuropteris gigantea;* the brachiopods *Lingula mytiloides, Productus carbonarius, Chonetes languessiana, Orbiculoidea nitida,* and *Discina;* the pelecypods *Anthracomya williamsoni, Sanguinolites, Aviculopecten papyraceus, Pecten, Posidoniella laevis, Edmondia* sp., *Posidonomia* sp., *Nucula* sp., *Carbonicola,* and *Naiadites;* a gastropod, *Loxonema* sp.; cephalopods, including *Gastrioceras carbonarium;* and fishes.—*D. J. MacNeil.*

2180. GUILLAUME, LOUIS. Observations sur les horizons à Céphalopodes du Bathonien moyen dans la région de Caen (Calvados). *Compt. Rend. Somm. Séanc. Soc. Géol. France* 1929(12): 173-175. 1929.—Records from these Jurassic beds of France sponges, echinoderms, bryozoans, brachiopods, including *Eudesia cardium, Dictyothyris michaelensis, Zeilleria cadomensis, Rhynchonella boueti,* and *R. moutieri,* pelecypods, gastropods, and cephalopods including *Oppelia fusca, O. aspidoides, Oecotraustes serrigerus, Perisphinctes auriger us,* and *Hecticoceras retrocostatum.*—*D. J. MacNeil.*

2181. HANNA, G. DALLAS. The Monterey shale of California at its type locality with a summary of its fauna and flora. *Bull. Amer. Assoc. Petrol. Geol.* 12(10): 969-983. 3 pl. 1928.—Records unidentified plants and many diatoms from this Miocene formation, including *Rhabdonema biquadratum*, Orthoneis splendida*, Rutilaria epsilon*, Navicula ornata*,* and *N. abundans**; the radiolarians *Distephanus regularis*, D. ornamentus*, Mesocena hexagona*, Dictyocha fibula*, Lithomitra lineata*, Petalospyris* sp.*, *Eucyrtidium montiparum*, Stylodicta accrescens*,* and *Geodites* sp.; the foraminiferans *Bulimina ovata*, Nonion incisa*,* and *Uvigerina californica**; the mollusks *Arca obispoana, Pecten peckhami, Macoma congesta, Venericardia montereyana, Ficus kernianum* and *Marcia oregonensis;* and many scales and bones of unidentified fishes; and a small whale, *Balaenoptera ryani.*—*D. J. MacNeil.*

2182. HEDSTRÖM, HERMAN. Mobergella versus Discinella; Paterella versus Scapha & Archaeophiala (some questions on nomenclature). *Sveriges Geol. Undersökning. Årsbok* 23(paper 7): 1-8. 1 fig. 1929.—*Mobergella* (type *M. holsti* (Mbg.)) is maintained for the north European Cambrian form, and *Discinella* (type *D. micans* (Bill.)) for the North American form. **PATERELLA,** n. n. for (*Scapha* Hedström, preoc.,= *Archaeophiala* Koken and Perner) (p. 7), Ordovician; *Paterella* **antiquissima** (Markl.), n. comb. (=*Archaeophiala suecica* Koken) (p. 7). **BARRELLA** (p. 5) is proposed as a new genus (no affinities given). All are considered to be patelline gastropods.

2183. HERITSCH, FRANZ. Faunen aus dem Silur der Ostalpen. *Abhandl. Geol. Bundesanst.* 23(2): 1-183. 8 pl. 19 fig. 1929.—Describes 14 faunas from the Silurian of various localities in the eastern Alps, and discusses their stratigraphic relationships. The following spp. are described and discussed: the corals *Heliolites decipiens*, Favosites forbesi* v. *nitidula, F. f.* v. *niticula*, F. fidelis* v. *clavata*, F. tachlowitzensis*, Pachypora lonsdalei, Striatopora*, Allynea perfecta*, Lindstroemia* aff. *laevis, Petraia* aff. *laevis,* and *P.* aff. *semistriata;* the tubularian *Cladrodictyum regulare;* the graptolites, *Diplograptus* sp., *Monograptus* sp., *M. colonus, M. priodon*, Rastrites approximatus,* and *Scyphochrinus excavatus**; crinoids and worms; the bryozoans *Hallopora taramellii, Prasopora fistuliporoides,* and *Fenestella carnica;* the echinoderm *Corylocrinus carnicus**; the brachiopods *Daya navicula*, Spirigera canaliculata, S.* aff. *fugitiva*, S.* **heimoi*** (p. 34), *S. obovata*, S. obolina*, S. sphaerula*, S. subcompressa*, S.* (?) *fugitiva* v. *depressa*, Orthis* cf. *capitata*, O. myrmido*, O. alata*, O. actoniae*, O. dal piazi, O. elegantala*, O. ellipsoides, O. intercostata, O.* cf. *menapiae*, O. noctilio*, O. porcata*, O. protensa*, O. redux*, O. retrorsistria, O. rustica*, O. sowerbyana*,*

O. thraivensis, O. vespertilio*, O. calligramma* v. *subplicata*, O. testudinaria*, Strophomena* cf. *corrugatella*, S. expansa*, S. grandis*, S.* **heimoi*** (p. 112), *S. siluriana*, S. fugax*, S. comitans, Retzia bohemica, R. umbra, Retzia* sp.*, *Pentamerus pelagicus, P. ambigena, Rhynchonella serva, R. harpyia*, R. salteri, R. sappho*, Meristella ypsilon*, Leptaena* sp., *Porambonites intercedens* v. *filosa**; the lamellibranchs **CARDIOLOPSIS,** n. gen. (p. 46), type *Cardiolopsis* **alpina*** Stache M S (p. 47); *C. alpina* v. **bifasciata*** Stache M S (p. 47); *C. a.* var. **beneaurita*** Stache M S (p. 47); *C. a.* var. **punctata*** Stache M S (p. 47); *C. a.* var. **typica*** Stache M S (p. 48); *Dualina plicata*, D. comitans, D.* aff. *cardiopsis*, D. secunda*, D. consobrina*, D. fidelis*, D. novella*, D. longuiscula*, D. marginata*, D. sedens*, D. s.* var. *lipoldi*, Cardiola signata*, C. vicina, C. selecta*, C. persignata*, C. migrans*, C. kokiana*, C. inaequeaurita*, C. gibbosa*, C.* cf. *gibbosa*, C. faba*, C.* aff. *producta*, C. constrastans*, C. cometa*, C. coma*, C. carnica*, C.* aff. *insolita*, C. fortis*, C. amplians*, C. colonus*, C. fluctuans*, C. bohemica*, C. interrupta, C. haueri*, Gloria decurcata*, G. discrepans*, G. bohemica*, G. imperficiens*, G. fibrosa*, Lunulicardium* cf. *volitans*, L. amabile*, L. longiusculum*, L. accuminatum*, L. sulciferum*, L. confertissimum*, L. perplectens*, L. rostrum*, L. elevatum*, Amita aspirans*, A. accedens*, Conocardium intercostatum, Conocardium* sp.*, *Amita cardiopsis*, Leptynoconcha bohemica*, Paracardium eremita**; the gastropods *Platyceras nitidum*, P. otiosum*, P. praepriscum*, P.* aff. *simulans*, Bellerophon (Sphaerocyclus?)* sp.*, *B. fritschi*, B. novaki*, B. plebejus*, B. rotunda*, Pleurotomaria ambigena*, P. consolans*, P. migrans* v. *aptyche*, P. leptoconcha*, P. cytherea*, P. regulosa*, Murchisonia fugitiva*, M. pacifica*, M. tenera*, Murchisonia* sp.?, *Lytospira subuloidea*, Umbospira nigricans*, Clisospira veneta*, Naticopsis* (?) *plicatula*, Spirina tubicina*, Helcionopsis carinthiaca*, Palaeoscuria calyptrata*, Turbonitella* (?) *pusilla*, Orthonychia* sp., *Holopella trochlaeta*, Loxonema propinquum**; the conularid, *Tentaculites* sp.*; the pteropods *Orthotheca columnaris*, Hyolithes* spp.*, and *H. striatulus;* the cephalopods *Cyrtoceras* sp.*, *C. circumflexum*, C. cycloideum*, C. imbelle*, Trochoceras carinthiacum*, Barrandeoceras* cf. *sacheri*, B.* sp.*, *Orthoceras* cf. *conviva*, O. transiens*, O.* cf. *praevalens*, O. alticola*, O. striatopunctatum, O.* cf. *bacchus*, O.* aff. *electum*, O.* cf. *agassizi*, O. cuneus*, O. alternans*, O. conoideum*, O. dorulites*, O.* aff. *carminatum*, O. subannulare*, O. confraternum*, O. novellum*, O. semisecans*, O. carinatum*, O. amoenum*, O.* aff. *amoenum*, O.* cf. *lunaticum*, O.* cf. *pauper*, O.* aff. *inchoatum* (?)*, *O. littorale*, O. severum*, O. pleurotomum*, O.* aff. *pleurotomum*, O. subannulare*, O.* aff. *extenuatum*, O. firmum*, O.* cf. *firmum*, O.* cf. *perlongum*, O. potens*, O. tiro*, O. truncatum*, O. acus*, O.* cf. *praecox*, O. venustulum*, O. accuarium*, O. arion*, O. currens*, O.* cf. *currens*, O.* cf. *germanum*, O. michelini, O. migrans*,* and *Orthoceras* spp.*; the cirripede *Plumulites* sp.*; ostracods, including *Primitia* sp.; the trilobites *Harpes bucco*, H.* sp.?, *Encrinurus beaumonti* v. *novaki*, Prionopeltis striatus* v. *incisa, Cyphaspis burmeisteri*, Dalmania socialis* v. *proaeva*, Ampyx rouaulti*, Bumastus bouchardi*, Scutellum radiatum*, S. nuntium*, S.* sp.*, *Phacops* sp.*, *Cheirurus quenstedti*, C. hawlei*, C.* sp.*, *Sphaerexochus mirus*, Acidaspis mira*, Arethusina haueri*, Arethusina* sp., and *Phacopidella grimburgi*.—D. J. MacNeil.*

2184. HERITSCH, FRANZ. Faunistische Beziehungen des eβ von Böhmen zum eα der Alpen. *Vêstník Stát. Geol. Ústavu Ceskoslov. Republ.* 4(4/5): 139-144. 1928.—Evidence is given that the genera of eβ of Bohemia had appeared in the chalk facies of the eα of the Alps.—*F. Heritsch (transl.).*

2185. HILLS, EDWIN S. The geology and paleontology of the Cathedral Range and the Blue Hills, in North-Western Gippsland. *Proc. Roy. Soc. Victoria* 41(2): 176-201. 1 map. 1 pl. 2 fig. 1929.—Records the anthozoan *Cladopora* sp., the asterozoan *Taeniaster* (?) sp. nov. aff. *spinosus,* the brachiopods *Orthis testudinaria, Chonetes* sp., cf. *Coelospira* sp., the pteropod *Coleolus* cf. *aciculum,* and the cephalopod, *Orthoceras* sp., from the Silurian. The ostracods, *Bothriolepis* **gippslandiensis*** (p. 195); the Dipnoi (Ctenodontidae) **EOCTENODUS microsoma*** (p. 193) and *Holonema* cf. *rugosum,* and some fragmental plant remains from the Upper Devonian of southeastern Australia.—*D. J. MacNeil.*

2186. JONES, W. F., and W. L. WHITEHEAD. Cretaceous-Eocene unconformity of Venezuela. *Bull. Amer. Assoc. Petrol. Geol.* 13(6): 617-625. 2 maps. 1 pl. 1929.—Asserts that there exists in this part of Venezuela a brackish and fresh water fauna and flora of Eocene age; and records the brachiopod *Productus,* the bryozoan *Fenestrella,* and a gastropod of the family Euomphalidae from the adjacent Carboniferous limestones.—*D. J. MacNeil.*

2187. LANQUINE, ANTONIN. Le lias et le jurassique des chaines provencales. Recherches stratigraphiques et paléontologiques. I. Le lias et le jurassique inférieur. *Bull. Serv. Carte Géol. France et Topogr. Souterr.* [*Paris*] 173: 1-385. 20 pl., 16 fig. 1929.—This paper deals with the stratigraphy and paleontology of the Bajocian and Oxfordian of the mountainous country extending from south of Digne to the Mediterranean and from west of Marseilles and Aix to the lower valley of the Var. A preface treats the geomorphologic and tectonic features. There is a bibliography of the Provençal Jurassic, and one for the preface. Local stratigraphic observations with paleontologic lists are presented. More than 800 Liassic and lower Jurassic spp. were studied. All from marine deposits. The Lias is represented entirely by deposits of the neritic zone. The lower divisions have their best representation in the eastern Varoise. The Sinemurian is found only close about Castellane and Aix. The middle and upper Lias is absent throughout the eastern Varoise. The lower Jurassic is represented by formations of the neritic zone, zoogenic in origin, in the eastern regions, and by formations of the bathyal zone in the western region, the intermediate regions present, particularly in the Mediterranean portions, bathyal formations interfingering below and above with neritic deposits.—*A. Lanquine (transl. by J. W. Monahan).*

2188. MATĚJKA, ALOIS. Geologické Studie z Okolí Ružomberka na Slovensku. [Geological explorations in the vicinity of Ružomberok, Slovakia.] *Sborník Státního Geol. Ústavu Ceskoslovenské Republ.* (French résumé.) 7: 529-575. 8 pl. 2 fig. 1927.—Lists from Slovakia: from the Cretaceous Carnian and Norian 4 brachiopods, 6 pelecypods, and 1 gastropod; from the Ladinian dolomite 1 foraminiferan, 3 echinoids, 1 crinoid, 1 brachiopod, 2 pelecypods, and 1 gastropod; from the Paleogene foraminiferans, radiolarians, 11 echinoids, 2 crinoids, 1 scaphopod, 3 chaetopod worms, 3 brachiopods, 4 pelecypods, and 2 eucrustaceans.—*F. Anderegg.*

2189. PALMER, R. H. Geology of Southern Oaxaca, Mexico. *Jour. Geol.* 36(8): 718-734. Map. 1928.—Remarks that the Lower Jurassic and Upper Pleistocene of this Mexican region have an abundant, well-preserved, flora, and that the Turonian Cretaceous carries the lamellibranchs *Apricardia* and *Radiolites* and Foraminifera.—*D. J. MacNeil.*

2190. REESIDE, JOHN B. Jr. Triassic-Jurassic "Red Beds" of the Rocky mountain region: a discussion. *Jour. Geol.* 37(1): 47-63. 1 fig. 1929.—States that in this Triassic and Jurassic region there are vertebrate and fresh-water invertebrate remains, including the pelecypods *Unio* (Jurassic) and *Daonella* (Triassic), dinosaur tracks, and indeterminate plant fragments.—*D. J. MacNeil.*

2191. SCHINDEWOLF, O. H. Die Liegendgrenze des Karbons im Lichte biostratigraphischer Kritik. *Compte Rend. Congrès Avanc. Études Strat. Carbonifère, Heerlen, 1927.* 651-661. 1928.—Since the racial development of different groups of organisms is not synchronized, the boundary between geologic systems should be drawn at various horizons depending on which groups of fossils are taken as a criterion. The author proposes to give the decisive rôle in each case to that class of

animals which was at the time most vigorous, and preferably one which can be used for minute zoning. Accordingly the cephalopods are relied upon to establish the Devono-Carboniferous boundary, which falls at the top of the *Gattendorfia* beds.—*O. H. Schindewolf (transl. by C. O. Dunbar).*

2192. **SUJKOWSKI, ZB. O utworach jurajskich, kredowych i czwartorzędowych okolic Wolbromia. [The Jurassic, the Cretaceous, and the Quaternary in the neighborhood of Wolbrom.]** (French résumé.) *Sprawozdania Polskiego Inst. Geol. (Bull. Serv. Geol. Pologne)* 3(3/4): 382-433. pl. 14 & 15. 1 fig. 1926.—Records many fossils from this part of Poland. From the Jurassic, brachiopods, cephalopods, echinoids, and crinoids; and from the Cretaceous, sponges, worms, crinoids, echinoids, a bryozoan, brachiopods, pelecypods, cephalopods, gastropods, and fishes. Among these fossils are the sponge *Siphonia*, the echinoderms *Apiocrinus, Discoidea minima, Echinoconus ellipticus, Micraster cortestudinarium, Offaster pilula,* and *Ananchytes corculum,* the pelecypod *Inoceramus libiatus,* and the cephalopods *Acanthoceras rhotomagense, Schloenbachia coupei, Baculites baculoides, Scaphites aequalis, Actinocamax westfalicus, A. granulatus, A. verus, A. quadratus, Belemnitella mucronata, B. m.* var. *junior, Pachydiscus oldhami, P. egertoni,* and *P. stanislavopolitanus.* Bibliography.—*D. J. MacNeil.*

2193. **VANDERPOOL, H. C. A preliminary study of the Trinity Group in southwestern Arkansas, southeastern Oklahoma, and northern Texas.** *Bull. Amer. Assoc. Petrol. Geol.* 12(11): 1069-1094. 5 fig. 1928.—Foraminifera occur sparingly; ostracods are plentiful, including the undescribed "new species" *Bairdia dorsoventrus, Bythocypris rotundus, Cytheridea trinitiensis* and *Paracypris weatherfordensis;* and pelecypods, gastropods and the stonewort, *Chara,* are also present in this Lower Cretaceous formation.—*D. J. MacNeil.*

2194. **VAUFREY, RAYMOND. Le Paléolithique italien.** *Arch. Inst. Paléontol. humaine. Mem.* 3. 196p. 7 pl. 54 fig. [Masson et Cie: Paris]. 1928.—Traces of Early Paleolithic, Middle Paleolithic, and Late Paleolithic man are found in Italy. Early Paleolithic Acheulean implements occur at Venosa, formed apparently during the early part of the last interglacial epoch; and Chellean artifacts have been found at Capri that were probably made at about the beginning of that epoch, the true mammoth being at this place strangely associated with the hippopotamus and Merck's rhinoceros. Cultural evidences of the existence of Mousterian man are present in the Roman Campagna, and a Neanderthal cranium has recently been discovered there. The fauna found accompanying the Mousterian flints in Italy differs from place to place: at Grimaldi and in southern Italy there have been unearthed the bones of warm climate species, in the intermediate region Merck's rhinoceros alone survived from the ancient fauna, whereas north of the Po are found the remains of a cold climate fauna. It seems that during the Mousterian a cold climate fauna gradually penetrated the Italian peninsula; and in the Late Paleolithic this fauna was fully established in the peninsula, with the reindeer at Grimaldi, the glutton, the varying hare, and the snowy owl in the Riviera, and the mammoth, rhinoceros, asses, and the great auk in the Otranto country. The only Late Paleolithic culture represented is an Aurignacian one, here denominated the Grimaldian, with its type bed the upper one of the Grotto of Grimaldi. In Sicily there is no trace of a Mousterian culture, man having apparently not reached that island until very late in the Paleolithic. If there was a Sicilian-Tunisian isthmus in existence during the rest of Paleolithic time (a comparison of the African and Sicilian faunas indicates that there was none) it had not been invaded by man. The culture found in Sicily is an impoverished Grimaldian one. The Campignian of Italy forms an amalgam of other cultures. The memoir ends with a summary of prehistoric research in Italy, a bibliography of 205 titles, and a bibliographic index; and charts show the subdivisions of the Paleolithic and of the Campignian.—*R. Vaufrey (transl. by B. F. Howell).*

2195. **WHITNEY, FRANCIS LUTHER. Bibliography and index of North American Mesozoic Invertebrata.** *Bulls. Amer. Paleontol.* 12(48): 46-494. 1928.—This work is supplementary to C. B. Boyle's similar bibliography of 1893. In Part I a list of authors, with citation of their papers, is given. In Part II the genera and species described between 1892 and 1922 are listed alphabetically and the references to the literature are given. In a few special cases species that have not been actually published, but have been figured or otherwise referred to in the literature, are included. No attempt has been made to emend any of the generic and specific names.

VERTEBRATE ANATOMY, HISTOLOGY, AND PHYSICAL ANTHROPOLOGY

Editors

WAYNE J. ATWELL, *Endocrine Glands, Genito-Urinary System;* ELIZABETH C. CROSBY, *Neurology;* ROBERT S. CUNNINGHAM, *Hematology, Adenoid Tissue, Reticulo-endothelium;* CHESTER H. HEUSER, *Technique;* DAVENPORT HOOKER, *Experimental Anatomy and Regeneration;* PETER OKKELBERG, *Gross Anatomy (except Primate);* WILLIAM L. STRAUS, JR., *Physical Anthropology;* WALTER E. SULLIVAN, *Bones, Muscles, Joints, Fasciae*

STACY R. GUILD, *Advisory Editor*

(See also in this issue Entries 24, 284, 300, 317, 320, 328, 329, 338, 369, 371, 379, 425, 585, 590, 591, 594, 596, 670, 690, 694, 731, 732, 733, 734, 770, 779, 810, 815, 824, 842, 858, 891, 899, 902, 926, 930, 932, 936, 960, 981, 991, 996, 1098, 1107, 1132, 1138, 1396, 1407, 1440, 1452, 1474, 1555, 1560, 1568, 1596, 1597, 1628, 1633, 1635, 2130, 2311, 2315, 2317, 2320, 2321, 2322, 2324, 2327, 2328, 2336, 2760, 2764, 2807, 2842, 2850, 2926, 2937, 2940, 2968, 2979, 2985, 2993, 3000)

EXPERIMENTAL ANATOMY AND REGENERATION

2196. **AUCHÉ, JEAN. De la néo-formation des ganglions lymphatiques.** *Rev. Chir.* 49(10): 350-376. 12 fig. 1930.—In 20 guinea-pigs the axillary region was cleared of lymph-nodes; in 15 of these new lymph-nodes identical in structure, situation and relations with those previously excised were formed from connective and adipose tissue. By analogy and from study of material from operation the author believes that similar regeneration occurs in man.

2197. **BARBIERI, DELFINO. Ricerche sugli innesti di midollo osseo. [Grafts of bone marrow.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 250-253. 1 fig. 1930.—Bone marrow, implanted in kidney (rabbit), gives rise to calcifying bone tissue about it. Whether the proliferated elements originate only from the grafted tissue or also from kidney elements is undecided.—*M. Comel.*

2198. **DOGLIOTTI, G. C. Modificazioni del midollo osseo giallo nella inanizione: il significato delle cellule sierose di Bizzozzero. [Changes in yellow bone marrow after long fasting: the meaning of Bizzozzero's serous cells.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 124-126. 1930.—Discusses relations and differences existing between the fat cells, the so-called serous cells, and the reticulum cells of the bone marrow of rabbits.—*M. Comel.*

2199. **MOMIGLIANO, LEVI G. Neoformazione sperimentale di cartilagine secondaria nella cavia e nel pulcino. [Experimental neoformation of secondary cartilage in guinea pig and chicken.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 117-119. 1930.—Following mechanical stimulation a neoformation of cartilage was observed in the bones of the limbs.—*M. Comel.*

2200. **MOORE, ROBERT A., and LOUIS M. HELLMAN. The effect of unilateral nephrectomy on the senile atrophy of the kidney in the white rat.** *Jour. Exp. Med.* 51(1): 51-57. 1930.—The total number of glomerular units decreases in senility in the white rat. This decrease is associated with an increase in average diam. and a greater variation in size of the remaining glomeruli. Unilateral nephrectomy during adult life has no effect on these senile changes.—*Authors' conclusions.*

2201. **PAUNZ, LUDWIG. Dauerversuch über die Ersetzung der Arteria renalis durch künstlich hervorgerufene Netzanastomosen. [Protracted observation on replacement of the renal artery by artificially produced omental anastomosis.]** *Zeitschr. Ges. Exp. Med.* 71(3/4): 321-322. 1930.

2202. **PAUNZ, LUDWIG. Eine neue Methode der Autotransplantation der Niere.** *Zeitschr. Ges. Exp. Med.* 71(5/6): 688-689. 1930.

2203. **POLACCO, EZIO. Sugli innesti auto ed omoplastici di periostio di animali adulti. [Autoplastic and homoplastic grafts of periosteum of adult animals.]** *Arch. Ital. Chir.* 26(2): 231-234. 1930.—In adult rabbits, the presence and necrosis of bone is not necessary for the successful grafting of periosteum, or for the development of new bone and cartilage.

2204. **ROLLET, JACQUES. Recherches histologiques sur les greffes testiculaires chez les mammifères (Rat blanc).** *Compt. Rend. Acad. Sci.* [*Paris*] 184(13): 839-841. 1927.

2205. **SUPINO, FELICE. Casi di rigenerazione di arti in Axolotl. [Regeneration of joints in axolotl.]** *R. Ist. Lombardo Sci. e Lettere, Rend.* 62(6/10): 196-198. 1 fig. 1929.

2206. **WILLIAMS, STEPHEN C. Regeneration of peripheral nerves in Amphibia studied with the aid of a vital stain.** *Jour. Exp. Zool.* 57(1): 145-181. 4 pl. 1930.—Application of 1% methylene-blue solution to the punctured surface of the tail fin of amphibian larvae stains the axis cylinders of living nerves. Beaded filaments and tapered points constitute the nerve endings. General cutaneous and lateral-line nerves in *Rana sylvatica* and *Hyla crucifer* at room temp. invariably showed degeneration following section. Regeneration was studied in 61 cases. Axones entering the degenerated sheath beyond the lesion show an average growth rate of 8.5 μ per hour; those failing to enter grow only 2.95 μ per hour. The observations do not support the view that sectioned peripheral nerves in Amphibia may heal by first intention.—*Author* (*courtesy Wistar Bibl. Serv.*).

2207. **ZAJEWLOSCHIN, M. N., und J. CH. KOCH. Über die Regeneration des elastischen Knorpels.** *Arch. Klin. Chir.* 161(1/2): 157-171. 10 fig. 1930.—In each of 11 rabbits, an incision was made into the cartilage of one ear; a piece of cartilage about 0.5 by 1 cm. removed from the other. Tissues were removed for study at intervals from 7 days to 12 mos. after operation. Both degenerative (beginning immediately after the infliction of the trauma) and regenerative (beginning about a month after the injury) changes occurred. The perichondrium is the important factor in regeneration. At the beginning of regeneration the cartilage had no elastic fibers; but assumed a more typical aspect later.

GROSS ANATOMY (EXCEPT PRIMATES)

2208. **ARTEMENKO, B. A. Über die morphologische Bedeutung des M. transversus costarum.** *Anat. Anz.* 68(11/14): 248-255. 5 fig. 1929.—After studying the origins and relations of the M. transversus costarum. M. obliq. abdom. externus and M. rectus abdominis of *Phoca hispida caspica, Meles meles, Canis familiaris, Erinaceus europaeus, Pteropus edulis, Oryctolagus cuniculus, Lepus europaeus,* and *Gazella subgutturosa,* the author concludes that the M. transversus costarum is independent of the M. rectus abdominis and represents the cranial portion of M. oblig. abdom. externus.—*R. R. Best.*

2209. **BARGE, J. A. J. Zur Morphologie der Lippe. 1. Über Lippenbildung bei den Reptilien.** *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 82: 694-719. 21 fig. 1927.—Reptiles possess lips, of the type found in mammals, in which the labial and gingival structures are separated by a vestibulum oris. The development of the lips, however, varies greatly in degree. Crocodilia and Chelonia have no true lips. A raised edge of mucous membrane covering the teeth, without a vestibulum oris, is found in the upper jaw of *Varanus chlorostigma, V. salvator, V. elegans, V. bivittatus, Tejus ameiva, Pseudopus apus, Euprepes ernesti, E. sebae, Lygosoma cyanurum, Anguis fragilis, A. punctatus,* and in both jaws of the Geckonidae. A broad shelf, without the groove characteristic of a vestibulum oris, is lateral to the teeth of *Tupinambis.* Many reptiles possess what may be termed a pseudovestibulum oris, a deep groove between the row of teeth and the edge of the mouth, but no gingival tissue covers the surface of the jaw. This condition is found in upper and lower jaws of *Hatteria punctata,* and many Agamidae. A pseudovestibulum may be found in association with a true vestibulum oris. This occurs in the lower jaw of *Hatteria punctata, Calotes jubatus, Bronchocoela jubata, Draco lineatus, D. fimbriatus, D. viridis, Uromastix azureus, Agama colonorum;* in the upper jaw of *Draco volans;* and in both jaws of the Chamaeleonidae. A true vestibulum oris, without a pseudovestibulum, is found in the lower jaw of *Varanus chlorostigma, V. elegans, V. salvator, V. bivittatus, Tejus ameiva, T. murinus, Euprepes ernesti, E. sebae, Bothrops alternatus;* both jaws of *Scincus* sp., *S. multifasciatus, Polychrus marmoratus, Iguana sapidissima, Tropidonotus natrix, Python* sp. Development of a vestibulum oris and true lips is usually associated with the presence of numerous labial glands. It is suggested that a relationship exists between the evolution of the 2 sets of structures. Probably the mammalian lip is a further development of the reptilian lip.—*L. E. Griffin.*

2210. **BÖKER, HANS. Flugvermögen und Kropf bei Opisthocomus cristatus und Stringops habroptilus.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 1, Gegenbaur's Morph. Jahrb.* 63(2): 152-207. 33 fig. 1929.—The paper deals with the mode of flight in parrots and the relation of a bird's flying ability to its feeding habits and to the structure of the crop. The practical loss of ability to fly in *Stringops* and the peculiar mode of flight in *Opisthocomus* are intimately related to the peculiarities of the large crops in these birds. A study of an anatomical series and of the development of *Opisthocomus* leads to the conclusion that this relation must have become effective step by step in the phylogenetic history until the extremes found in *Opisthocomus* and *Stringops* were produced. The mode of flight in *Opisthocomus* is very primitive and without elevating powers or endurance. Gliding probably is never attempted. *Stringops* practically has lost all ability to fly and is becoming a walking bird. All other parrots are flyers of differing lifting powers, endurance, and versatility. In *Opisthocomus,* feeding on the hard leaves of certain plants, a strong musculature and a hard epithelium developed in the crop. The full crop disturbed the body equilibrium and reduced the flying and gliding power. The balance was partly restored by the crop moving towards the sternum and here it disturbed the development of the crista sterni and the breast musculature, thus reducing the lifting power of the wings. *Stringops* descended from good flyers but a group handicapped by a short tail and a large crop. They were compelled to seek their food on the ground and this led to the neglect of flying and to the development of walking habits. In this group the breast musculature did not have to counteract the disturbance caused by a caudal migration of the crop. The facts presented show that life conditions

and habits call forth characteristic changes in anatomical structure so far as the reaction capacity of the organism permits. This results in a structural struggle or readjustment which in turn induces changes in life habits. The important acquired anatomical changes become inheritable and fixed. Direct causation is the most important factor in species transformation; inner factors—orthogenetic—add their part. Mutations play an entirely subordinate rôle. If the structural changes are favorable the species continues but if they lead to unfavorable consequences, selection may annihilate the whole group. —*H. F. Nachtrieb.*

2211. **DABELOW, A. Über Korrelationen in der phylogenetischen Entwicklung der Schädelform. I. Die Beziehungen zwischen Rumpf und Schädelform.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 1. Gegenbaur's Morph. Jahrb.* 63(2): 1-49. 27 fig. 1929.—The form of the skull appears to depend upon more factors than does any other part of the skeleton. The object of these studies is to examine the material from various sources and with the aid of new contributions determine the limitations and correlations of the several factors suggested as affecting the changes of the skull. The first part deals mainly with the limitation of the applicability of Weidenreich's correlation between the base of the skull and body position. According to this correlation the base of the skull becomes lordosic when the vertebral column approaches the skull from above and it becomes kyphosic in the reverse condition. The details of sagittal sections through the head and trunk, including the brain and spinal cord, of *Phocoena* show that the above correlation undoubtedly exists here. A comparison with primordial crania indicates that the posterior section of the "neural skull" remains stationary while the visceral portion moves upward and with it the forebrain and the portions of the base of the skull in front of the sella turcica. The related changes can be determined objectively only, when in mammals, the bending of the neural tube between the atlas and foramen magnum is brought into the same position in all the forms compared since this is the only bend that remains unaffected by all the changes in structure. This method makes clear that the portion of the base behind the sella turcica, the larger part of the clivus, always has approximately the same position relative to the spinal cord and body axis. Only the portion of the skull in front of this changes and mostly in connection with shiftings of the visceral skeleton. Erecting or depressing the body, kyphosis or lordosis of the cervical vertebrae, will not of itself necessarily produce the characteristics noted first. Lordosis of the base is not always conditioned by a certain position of the body. It is independent of body position in the marsupials and those animals beneath them in the system. This type of base lordosis can not be adjusted or converted into a kyphosis through the erection of the body, for the kangaroo and the decidedly erect owls possess a "skull-base-lordosis." A bend like that of the embryos and fetuses of other mammals would so hide the mouth opening between the trunk and the head that the embryonic marsupial could not attach itself to the nipple in the marsupium. This attachment is made possible by an upward, dorsal bend of the visceral portion. Since lordosis of the base below the marsupials generally is independent of the body position it probably is conditioned by the more primitive form of the brain. The degree of base kyphosis does not depend upon the degree of body erectness. The slightly erect *Semnopithecus* has a distinct kyphosis while the more decidedly erect kangaroos and the birds have retained a lordosis. The erection of the skull base (in cases of horizontal palates) also is not parallel with the degree of erection. In animals moving horizontally it can ascend more decidedly than in more erect animals (baboon, gibbon). Finally, in horizontally placed animals it may decrease forward in some (*Mycetes*) and in others drop forward decidedly (baboon). The shiftings in the region of the cranium, when the neck flexures of the neural tube are taken into account as above, can be made particularly evident in a comparison of the position of the corpus callosum and the pons; furthermore, in the changes in the size of an angle whose vertex in a sagittal section is at the deepest point of the pons and whose sides are formed by connecting this point with the highest point of the curve of the corpus callosum and a point in the middle of the medulla at the anterior border of the atlas. The posterior side retains its position in reference to the medulla while the anterior shifts in relation to the body position.—*H. F. Nachtrieb (from summary).*

2212. **DOMBROWSKI, BRONISLAW. Der Suspensorialapparat der Ichthyopsiden.** *Zeitschr. Ges. Anat. Abt. I. Zeitschr. Anat. u. Entwicklungsgesch.* 82(6): 643-656. 9 fig. 1927.—The suspensorium of the Ichthyopsida presents 2 types:—"Autostyle" type in which the quadrate (or the corresponding part of the palato-quadratum) serves as a suspensorium in the author's Gnathotheria and Teleostomata (Holocephali, Dipnoi, Amphibia, Notidanidae), animals with "intensive" jaw function and a terminal mouth. "Hyostyle" type in which the "hyomandibulare" serves as a suspensorium in the author's Pneumatotheria and Hypostomata (sharks, Chondrostei), animals with well developed respiratory apparatus and a corresponding weak structure of the maxillary apparatus. Teleostei belong to type 2 but must be considered separately. Both types are built on the same plan, possessing an "epi-element" that is connected with the skull by 3 processes. They differ in function and structure. The jaw suspensorium functions as a support and usually has all 3 processes and its cover-bones fused with the skull. The hyoidal suspensorium, affected by energetic movement, loses most of its medial connection with the skull and retains either both or only one of the lateral processes and its cover-bones do not fuse with those of the skull. The Selachii have the simplest hyostyle suspensorium. That of the Holostei-Teleostei is close to this in structure. That of the Chondrostei can be derived from that of some of the Selachii and that of *Protopterus* may be considered as a changed or complicated form of that of the Chondrostei or Holostei-Teleostei. The noted peculiarities of the suspensorial apparatus may be divided into those of phylogenetic and those of functional significance. Only a very small number of the characters have a phylogenetic significance, most of them are distinctly of a functional nature. The Gnathotheria and Pneumatotheria in general, corresponding to the Pisces and Tetrapoda, are functional, not phylogenetic groups. The Teleostomata almost coincide with the Teleostomi and the Hypostomata with the Plagiostomi. The anatomical characteristics of the great systematic groups of animals have a distinctly functional character. This may not always be apparent because these "tectonic" characters become obscured by later phylogenetic and probably also functional impositions.—*H. F. Nachtrieb.*

2213. **FAVILLI, N. Il musculo diaframma nei ruminanti domestici. [The muscles of the diaphragm in domestic ruminants.]** 27p. Orsolini-Prosperi Tip.: Pisa, 1928.

2214. **JACOBSHAGEN, E. Zur Kenntnis und Charakterisierung des Rumpfdarmbaues der Lungenfische.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 1. Gegenbaur's Morph. Jahrb.* 63(2): 292-313. 3 fig. 1929.—The author considers the observations made by various investigators on Dipnoi, Amphibia, Selachii, Myxinoids and Petromyzontes. He found that in the Dipnoi the arteria and vena intestinalis dorsalis and ventralis spread within the tunica intermuscularis of the "spiral gut." The circulatory area of the arteria and vena intra-intestinalis lies predominantly in the tela submucosa. In the gut wall of *Protopterus* the veins of the tunica intermuscularis and of the tela submucosa anastomose through many delicate veins in the inner circular musculature. In the gut wall of *Protopterus* an intra-epithelial capillary network was also discovered lying in a plane below the middle of the epithelium. The meshes are elongated cranio-caudally. The capillaries are in delicate tubes of a colloidal tissue placed at regular intervals and are connected with the connective tissue of the basal membrane. The lymphoid organ is connected with the

outer walls of the blood vessels. The author thinks of it as an organ of the walls of the capillaries and veins. It is found in other vertebrates. In *Petromyzon* and *Ceratodus* it arises ontogenetically as a lymphoid organ of the vena subintestinalis. The conclusion is reached that the "trunk-gut" of the Dipnoi shows a close relationship to that of the selachians but not to that of the amphibians. Of course not all the relations can be given phylogenetic significance. A sharper distinction must be made between the analogous and the homologous, which will not only make clearer the phylogenetic position of the Dipnoi but will also explain the dynamic construction of the gut of the lung-fishes.—*H. F. Nachtrieb.*

2215. **SERRANO, J. A. Estudos de osteologia. I. Sobre a constituição vertebral do craneo. [The vertebral theory of the head.]** *Arquivo Anat. e Antrop.* [*Lisboa*] 12(3): 375-427. 1929.—A re-publication of this article, published in *Medicina Contemporanea* in 1883.

2216. **TRETJAKOFF, D. Die schleimknorpeligen Bestandteile im Kopfskelett von Ammocoetes.** *Zeitschr. Wiss. Zool.* 133(3/4): 470-516. 9 fig. 1929.—The author deals with the following topics as related to cyclostomes: (1) their phylogenetic origin; (2) the mucoid cartilages; (3) the head muscles and their innervation; (4) bone and teeth; (5) the rostral portion of the head; (6) the hypophysis. The objective of the paper is the determination of the phylogenetic position of the lamprey and related forms. The conclusion is reached that the so-called mucoid cartilage (Schleimknorpel) is not a form of cartilage but a degenerate variety of reticular tissue and that it is not transformed into hyalin cartilage in the adult, which arises de novo from the blastema outside of the mucoid tissue. The head muscles of ammocoetes are derived from 2 sources, namely, from the anterior end of the parietal region and from the visceral region. From the former the M. supraocularis and M. subocularis arise and are innervated by the 2nd spino-occipital nerve, while from the latter 10 muscles are derived, all innervated by branches of the trigeminal nerve. The section on bone and teeth is largely a discussion of the observations of Stensiö, the author, and others on the bone structures in cephalaspids and related forms. There is no trace of bone structure in the lamprey larva or adult. The conclusion is reached that the cartilaginous skeleton of the rostral portion of the head of the lamprey is composed of specifically differentiated portions of the premandibular visceral arches 1 and 3. It seems probable that the unpaired cartilages apicalis and copularis and the paired spinosa and supra-apicalis and the mucoid structures have no phylogenetic significance but are new acquisitions which have appeared in connection with the sucking activities of the animal. The parolfactory gland of the lamprey, in addition to the parietal organ, is an example of the hormonization of an organ which originally functioned as a sense organ. The hypophysis of the ammocoetes is undoubtedly an endocrine organ but between the follicular cells there are spindleshaped cells which may be sense cells. It appears probable that the hypophysis originally was a taste organ. Recent researches on Ostracoderms and their supposed relations to cyclostomes are discussed.—*From abstr. by H. F. Nachtrieb.*

NEUROLOGY

2217. **ABE, TATSUNDO. Ueber die schilfblattartigen Zellen.** [In Japanese.] *Shinkei Zasshi* 27(8): 1927.—These cells are a new kind of nerve cell which appear like reed leaves with toluidin blue stain. They appear larger with Bielschowski's stain and one can see lines of fibrils coursing in them. In man, one finds the cells in a particular zone in the rhinencephalon. They occur in ape, rabbit, dog, *Gorilla* and *Anthropopithecus*. The "reed-leaf-shaped" cells occur, in man as well as in the animals named, among the normal pyramidal cells in Brodmann's 5th zone. Average size of the cells in the toluidin blue stain is length 50-80μ, breadth 6-10μ; in the Bielschowsky stain, length 50-120μ, breadth 6-15μ. In man, the cells appear to become longer and to stain more deeply with age. The cells are believed on the one hand to be related to the perception of smell and on the other to have a motor function.—*O. Mori* (*courtesy Japanese Jour. Zool.*) (*transl. by H. A. Davenport*).

2218. **BALDI, F. Studi istologici sulle fibre del centro ovale nell'uomo. [Histology of the fibers of the human centrum ovale.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 619-622. 1930.—The nerve fibers of the centrum ovale differ widely in size and shape; they show constantly the Schmidt-Lantermann's incisions. A slender sheath surrounds the fibers. Collaterals were not observed.—*M. Comel.*

2219. **BOEKE, J. Some remarks on the papers by H. J. Wilkinson on the innervation of striped-muscle fibers.** *Jour. Comp. Neurol.* 51(2): 299-309. 4 fig. 1930.—The periterminal network, described by the author in motor endplates and sensory corpuscles, is not an artefact due to prolonged fixation in formol, as is supposed by Wilkinson, but a real protoplasmic structure. It has been described by a number of authors, and not only by Boeke, as is maintained by Wilkinson, and it is found not only after fixation in formol, but with other methods too—even in living tissue. The description given by Wilkinson of preparations made by the author concerning the sympathetic innervation of striped-muscle fibers is erroneous and not according to facts.—*Author* (*courtesy Wistar Bibl. Serv.*).

2220. **CAPONNETTO, A. Anomalie nel comportamento dei nervi nelli regione palmare dell'uomo. [Anomalies of behavior of nerves in the palmar region of the human hand.]** *Monitore Zool. Ital.* 41(7): 180-183. 1 fig. 1930.—Unusual anastomoses of parts of the ulnar nerve in a woman of 82.—*P. Popenoe.*

2221. **CASTRO, FERNANDO de. Sobre la fina anatomia de los ganglios simpaticos, vertebrales y paravertebrales de los simios. [Fine anatomy of sympathetic, vertebral and paravertebral ganglia in apes.]** *Arch. Neurobiol.* 7(1): 38-46. 3 fig. 1927.

2222. **DEFRISE, ALDO. Ricerche anatomo-topografiche e microscopiche sui vasi linfatici dei nervi. [The lymphatic vessels of the nerves.]** *Arch. Gen. Neurol., Psichiatr. e Psicoanal.* 11(1): 102-117. 2 fig. 1930.—Study of newborn infants and dogs indicated that the lymphatic capillary rate of the peripheral nerves originates from a closed system, not in connection with the interlamellary spaces of the perineurium which acts as a barrier. The efferent epineural lymphatic vessels after a brief course debouch into deep lymphatic vessels. No very long efferent collectors follow the course of the epineurium.

2223. **DURWARD, ARCHIBALD. The cell masses in the forebrain of Sphenodon punctatum.** *Jour. Anat.* 65 (1): 8-44. 22 fig. 1930.—The cerebral cortex is composed of 3 clearly definable sheets, a medial hippocampal cortex, a lateral pyriform cortex, and between these the general cortex. A densely staining clump of cells as a rule forms the lateral boundary of the general cortex. The pyriform cortex presents laterally a flattened area of marked constancy but of obscure causation. The relationship of pyriform cortex laterally to the hypopallium varies; caudally the 2 sheets meet at the angulus dorso-lateralis while rostrally the pyriform cortex lies superficially in the brain wall and is separated from the ependyma by the meeting of the general cortex and the hypopallium. The brain wall shows some increase in thickness where the general cortex and the hypopallium meet. The septum shows, in its pre-foraminal part, 2 distinct nuclear masses which have been termed nucleus septi medialis (which is also ventral) and nucleus septi lateralis (also dorsal). The lateral nucleus does not extend as far rostrally as the medial and is composed of distinctly large cells. The sulcus septostriaticus is said to lie not opposite the interval between the septum dorsally and the olfacto-striatum ventrally, but rather opposite the medial small-celled septal nucleus. Caudally in the septum other specialized masses are described, viz., the nucleus of the diagonal band and the nucleus of the posterior pallial commissure. The ventro-lateral segment of the hemisphere in *Sphenodon*

is not at all similar in the appearance of its cell masses to such forms as the alligator and the turtle. The hypopallium is divisible into anterior and posterior parts, the former meeting the general cortex laterally and the latter the pyriform cortex. There is no sharp line of demarcation between these 2 components of the hypopallium within the cell mass itself, but towards the poles of the hemisphere they present quite different appearances due to dissimilar cell grouping. The somatic striatum and olfacto-striatum are related to the lateral and medial forebrain bundles respectively. Their distinction in cell preparations depends almost entirely on differences in cell grouping, variations in cell size being of little assistance. A palaeostriatal cortex has been described consisting of those nuclear masses which are arranged about the ventro-lateral aspect of the palaeostriatum as a cortical covering; the tuberculum olfactorium and the nucleus of the lateral olfactory tract are the chief masses so related, though towards the caudal pole of the hemisphere the nucleus of the diagonal band and the amygdaloid nuclei have a somewhat similar relationship to the palaeostriatum. Two habenular nuclei are described and named rostral and caudal. These appear without any doubt to correspond to the medial and lateral nuclei of other forms, but the author can detect no evidence of a medio-lateral relationship between them. The majority of cell masses in the thalamus and hypothalamus are well-defined, circumscribed masses. —*From author's summary.*

2224. **ECONOMO, C. von. Some new methods for studying brains of exceptional people (encephalometry and braincasts).** *Jour. Nerv. & Ment. Dis.* 72(2): 125-134. 1930.

2225. **GEORGIEWSKI, I. W. Zur Frage über die vielkernigen sympathischen Nervenzellen.** *Anat. Anz.* 70 (13/17): 286-287. 1930.

2226. **HINTNER, H. Zur Methodik des Nachweises einer plurisegmentalen Innervation der einzelnen Muskelfasern.** *Pfluger's Arch. Ges. Physiol.* 224(1): 140-143. 1930.

2227. **HUBER, G. CARL, and ELIZABETH C. CROSBY. The nuclei and fiber paths of the avian diencephalon, with consideration of telencephalic and certain mesencephalic centers and connections.** *Jour. Comp. Neurol.* 48(1): 1-225. 19 pl. 1929.—This investigation is based on a study of 45 series of avian brains including cross and sagittal series of the brains of sparrow, dove, chicken, duck, and parrakeet, supplemented by certain frontal series. The fiber paths were studied in both $AgNO_3$ and Weigert preparations. The cell material was stained in toluidin blue following the special mercury-trichloracetic-alcohol fixative of Huber. The olfactory bulbs, while developed typically in duck, chicken and dove, are very small and somewhat atypical in layer arrangement in the parrakeet and are represented by a single very small bulb in the sparrow. The basal centers of the ventromedial forebrain wall are divisible into the prepyriform area of Rose, the nucleus olfactorius anterior, the nucleus accumbens and the septal or parolfactory area, which throughout part of its extent may be subdivided into secondary nuclei. All of these centers are poorly developed in comparison with the corresponding areas in reptiles and mammals, although the degree of difference varies with the bird considered, the centers being larger in those avian forms having more highly developed olfactory systems. The basal centers of the lateral forebrain wall reach a very high degree of development in the birds studied. The striatal portions (aside from the amygdaloid complex) are divided into a paleostriatum, an ektostriatum, a neostriatum, a hyperstriatum, a nucleus intercalatus hyperstriati, and a hyperstriatum accessorium, and several of these may be subdivided further. These divisions extend in broad bands across the hemisphere wall, overlying each other from the ventral to near the dorsal surface in the order named. The amygdaloid complex, as represented in the archistriatum, is situated in the caudal, basal part of the hemisphere, is quite well developed, and has associated with it a nucleus taeniae. Nucleus basalis is a secondary olfactory center (and also indirectly a trigeminal center) lying in close approximation to the paleostriatal and neostriatal areas. The cortical areas are, on the whole, relatively poorly developed in the forms studied, particularly in the parrakeet and the sparrow. They are represented in the sparrow by a small hippocampal region (pars dorsomedialis hippocampi of reptiles), the entorhinal area of Rose (pars dorsalis hippocampi of reptiles), an area adjacent to this latter termed the area paraentorhinalis, and a thin corticoid layer thickened somewhat in various regions into true cortex, which occupies the more superficial portions of the dorsal and dorsolateral hemisphere walls and, at various levels, is in intimate relation with the underlying hyperstriatal areas. A differentiated telencephalic periventricular gray borders a part of the ventricular wall. The preoptic area shows the usual relations. The diencephalic regions consist of the typical epithalamic, thalamic, and hypothalamic centers. The epithalamus is small in the birds studied, particularly in the sparrow and parrakeet. Thirty-odd thalamic nuclei were identified, among which may be mentioned the nucleus dorsomedialis anterior, the nucleus dorsolateralis anterior, the nucleus dorsolateralis posterior, the nucleus rotundus, the nucleus postrotundus, the nucleus subrotundus, the nucleus ovoidalis, the nucleus intercalatus, the lateral geniculate nucleus and the nucleus tractus habenulo-peduncularis. The hypothalamus also falls into a relatively large number of nuclear groups, comparable in part to those found in mammals. Tectal and certain pretectal and subtectal centers are prominent, among which are the pretectal, subpretectal, and spiriform nuclei, the nucleus mesencephalicus lateralis pars dorsalis (inferior colliculus), and the nucleus isthmi, including its several subdivisions. The fiber connections of the regions are described in great detail. Very small olfactory tracts connect the olfactory bulb with the nucleus olfactorius anterior, the prepyriform area, and the nucleus basalis and swing caudalward as small fascicles into the tractus fronto-archistriaticus et neostriaticus. Secondary connections for the ventromedial hemisphere wall with the hippocampus are provided through the septo-cortical and cortico-septal tracts, with the amygdaloid complex through the ramus basalis frontalis of the septo-mesencephalic system and with the hypothalamus and more caudal centers through the medial forebrain bundle. The nucleus basalis discharges through the tractus fronto-archistriaticus et neostriaticus, which bundle carries in addition a small number of lateral olfactory tract fibers and interconnections between the frontal portions of the neostriatum and the archistriatal and neostriatal regions in the caudal part of the hemisphere. The striatal regions are in relation with diencephalic and certain mesencephalic centers through the highly developed lateral forebrain bundle. The typical dorsal and ventral peduncles of this bundle, with their various subdivisions, are evident. The quintofrontal tract of Wallenberg, a partly crossed bundle from the chief sensory nucleus of the trigeminal to the lateral basal regions of the hemisphere, is demonstrable in the series. A well developed system of association bundles interconnects the various striatal areas. The components of the anterior commissure are well developed and the tractus occipito-mesencephalicus et bulbaris from the archistriatum and the caudal part of the neostriatum can be followed to the mesencephalon and bulb. A pallial commissure connects the cortical regions of the medial and dorsomedial hemisphere wall and the so-called septo-mesencephalic tract with its 3 major subdivisions—to the amygdaloid complex (ramus basalis frontalis), to the dorsal part of the diencephalon and tectum (ramus basalis dorsalis), and to hypothalamic and mesencephalic regions (ramus basalis caudalis)—is present. It is considered a part of the fornix longus system. Also from the basal part of the hemisphere the tractus infundibuli can be followed to its crossing in the retro-infundibular decussation. The various components of the stria medullaris were identified, particularly in the dove, and in the latter bird the very well

developed habenulo-peduncular system was plotted and described. The paper contains an account of the highly developed optic and the well developed supraoptic systems and discusses the numerous tecto-thalamic and thalamo-tectal tracts which interconnect the dorsal thalamic centers with the pretectal and tectal areas. Other tectal connections—such as the tecto-bulbar systems, the tecto-pretectal bundles, the posterior commissure and the isthmo-tectal tracts—were considered. A review of the ascending pathways from bulbar centers is included. In addition to these major fiber groups there are descriptions of many less prominent connections. A table of the various nuclear groups with their fiber connections summarizes the results. The communication closes with a brief discussion of certain neurological problems.—*Huber and Crosby.*

2228. **SANDERS, ESTHER BLICK. A consideration of certain bulbar, midbrain, and cerebellar centers and fiber tracts in birds.** *Jour. Comp. Neurol.* 49(1): 155-222. 14 fig. 1929.—The observations are based on the same series employed in the study of the avian diencephalon by Huber and Crosby ('29; see preceding entry). The eye muscle nuclei in birds are large and well differentiated. The oculomotor nuclear group is subdivided into a dorsolateral, a dorsomedial, a ventromedial and an accessory nucleus. Root fibers arise from all these nuclei, homolateral from most of them but contralateral, and perhaps homolateral as well, from the ventromedial nucleus. The cephalic end of the trochlear nucleus is not clearly delimitable from the dorsolateral oculomotor nucleus. Its root fibers follow the usual course. The abducens nuclear group consists of a major nucleus and a more ventral accessory nucleus, as described by Terni and others. The secondary connections of the eye muscle nuclei are rich and varied. Fibers connect the oculomotor nuclei with the nucleus mesencephalicus lateralis pars dorsalis, the pretectal and subpretectal nuclei, and the optic tectum. The nucleus isthmo-opticus sends fibers particularly to the accessory oculomotor (Edinger-Westphal) nucleus. Tectal fibers enter the dorsal surface of the trochlear nucleus. A fiber bundle connects the nucleus ectomamillaris and the oculomotor centers. The dorsolateral and dorsomedial oculomotor centers receive posterior commissure fibers. The medial longitudinal fasciculus interconnects the eye muscle nuclei and these nuclei receive (partly after decussation) fibers of the cerebello-motorius system. A superior olivary peduncle can be traced to the abducens nucleus. A chief sensory nucleus, a nucleus of the descending root, a nucleus of the mesencephalic root, and 2 motor nuclei—a dorsal and a ventral—represent the centers of the trigeminal nerve. Contralateral and homolateral trigeminomesencephalic tracts connect the first 2 centers with the tectum and crossed and uncrossed trigeminocerebellar paths relate them to the cerebellum, while internuclear fibers put them into synaptic relation with adjoining motor centers. The chief sensory nucleus gives rise to the quinto-frontal tract. The motor trigeminal centers receive cerebello-motorius fibers. The visceral sensory area at the place of entrance of the facial visceral sensory root consists of a very inconspicuous nuclear mass medial and slightly dorsal to the abducens nucleus. Two motor nuclei of the facial—a dorsal and a ventral—are present in the sparrow. The vestibular centers, which are particularly highly developed in birds, are represented by a large dorsolateral vestibular nucleus, subdivisible into smaller groups and regarded as representing an increase in the efferent vestibular centers in these forms, by an inferior and a superior vestibular nucleus, comparable to the similarly named mammalian vestibular centers, by a dorsomedial vestibular center, probably representative of the medial vestibular nucleus of mammals, and by a nucleus tangentialis. All of the centers receive vestibular root fibers. Internuclear fibers connect the tangential nucleus with the ventrolateral vestibular nucleus and with the vestibular centers of the opposite side and similar fibers pass from the ventrolateral to the dorsolateral vestibular nucleus and to the cerebellum. The superior vestibular nucleus is connected with the cerebellar nuclei. Emphasis is placed on the peculiar relations of certain neurons of the dorsolateral vestibular nucleus which are so oriented that their dendrites are in relation on the one side with afferent cerebellar tracts and vestibular root fibers and on the other side with efferent cerebellar tracts. The ventromedial vestibular nucleus—and possibly the dorsolateral as well (through the cerebello-motorius system)—sends fibers to the medial longitudinal fasciculus. The cochlear nuclei consist of a nucleus angularis, a nucleus magnocellularis, and a nucleus laminaris, all of which receive cochlear root fibers. A superior olivary nucleus is present. The secondary connections agree with those generally given for reptiles and birds, consisting largely of bundles which cross as arcuate fibers to enter the lateral lemniscus. A peduncle of the superior olivary nucleus and a cochleo-cerebellar tract are described. With the small development of gustatory sensibility in birds, the glossopharyngeal portion of the fasciculus solitarius is small. A dorsal visceral sensory area receiving root fibers of this and the vagus nerve is demonstrable at their level of entrance; between the hypoglossal nucleus and the dorsal efferent nucleus of the vagus a ventromedial visceral sensory area is present. Many root fibers of these nerves, particularly of the vagus, swing caudalward, forming a large postvagal portion of the fasciculus solitarius, concerned presumably with carrying general visceral sensibility. The dorsal efferent nucleus of the vagus is divisible in the sparrow into 3 nuclear groups, each with special cytologic characters. A ventral motor nucleus of the vagus is present. The author believes that part of the motor fibers of this nerve arise from the nucleus intermedius, which is thought to give rise, also, to root fibers of the hypoglossal. The ventral hypoglossal nucleus is figured and reticular nuclei, comparable to those found in certain other higher vertebrates, are described. A well developed inferior olivary nucleus is present. The paper also contains an account of the cerebellar nuclei (following the terminology of Cajal) and a résumé of the main cerebellar connections. —*Huber and Crosby.*

2229. **JANSEN, J. Contribution to the innervation of the diaphragm of the goat.** Dissertation, University of Utrecht: Utrecht, 1930.—The diaphragm of the goat is innervated exclusively by the Nn. phrenici (C_5 and C_6). The sympathetic innervation takes origin from the cervical sympathetic (ganglion colli superius, ganglion stellatum). When the sympathetic nerves are cut through on 1 side, the diaphragm on that side partly loses its tonus. Sixty-five days after the section of the sympathetic nerves, the author could find no appreciable changes in the microscopic structure of the muscle fibers of the diaphragm.—*J. W. Langelaan.*

2230. **KADANOFF, DIMITRI. Über die Nerven in der äusseren Wurzelscheide der Haare des Menschen.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 6(5): 631-636. 2 fig. 1928.—Nerve endings inside of the membrana vitrea of the hair follicles of lips, chin, and eyelids (cilia) of man are described. They are not found in all, but only on the larger follicles and are fewer in man than in other mammals. Among the cells of the outer root sheath the fibers either form touch-discs, i.e., fine, sickle-shaped, fibrillar nets, or terminate in free endings. The touch-discs are fewer and much smaller than those of the sinus hairs of animals. A single nerve fiber forms several which lie at different levels in the sheath adjacent to touch cells of Merkle, i.e., clear oval ones which, so numerous in other mammals, are scarce in man. Whether the free endings and the touch-discs belong to independent nerve fibers is not known.—*W. F. Windle.*

2231. **KANZLER, R. Eine Modifikation der Darstellung der Hortegaschen Gliazellen für Formalinmaterial. [Modification of Hortega's method for glia cells for formalin material.]** *Zeitschr. Ges. Neurol. u. Psychiatr.* 122(3/4): 416-419. 2 fig. 1929.

2232. **KOLDA, J. Příspěvek k anatomii břišního sympatiku u koně. [The abdominal sympathetic nervous system of the horse.]** *Biol. Spisy Vysoké Školy Zvěrolé-*

kařské Brno (*Publ. Biol. École Vétérinaires*) 6: (153)-(239). 5 pl., 9 fig. 1927.—Fourteen specimens were studied; in at least 10 cases every structure was prepared on both sides. The lumbar part of the sympathetic trunk of the horse is characterized by an irregular distribution of the ganglionic tissue, after the branching off of the thoracic and lumbar splanchnic nerves, i.e., at the level of the 18th thoracic and 1st lumbar vertebrae, and the 4th and 5th lumbar vertebrae, there is little ganglionic tissue, irregularly distributed in greater or smaller isles. Relatively very little ganglionic tissue is to be found where the posterior branches of the lumbar splanchnic nerve are given off, i.e., at the level of the 2nd and 3rd lumbar vertebrae and in the sacral region at the end of the 5th and at the level of the 6th lumbar vertebrae; in these parts the sympathetic trunk is penetrated by a broad and often coherent ganglionic mass. In horses it was possible to distinguish on new preparations the rami communicantes albi et grisei. While the gray rami communicantes lead to every lumbar spinal nerve, the white ones may be observed macroscopically up to and including the 4th lumbar spinal nerve, whereas the 5th and 6th have only gray rami communicantes. The gray branches, as in the thoracic region, are connected with the appropriate segmental ganglia. The white branches enter the sympathetic trunk in the central part of the thorax close to the ganglia; at the level of the last thoracic vertebra and especially at the level of the first 2 or 3 lumbar vertebrae each white ramus entering the sympathetic trunk runs posteriorly to the level of the following segmental spinal ganglion. The gray rami extend from the dorsal surface of the sympathetic trunk or from its median margin; the white enter the lateral margin. Their superficial bundle often can be traced directly over the sympathetic trunk into its peripheral branches and particularly into the lumbar splanchnics. The peripheral branches of the sympathetic trunk, which enter the abdominal ganglia, are the thoracic and lumbar splanchnic nerves. Of the former, the largest is the greater splanchnic nerve, which arises with its 1st root from the 6th, 7th or 8th thoracic ganglion and receives further branches from the other ganglia except the 2 or 3 last. It enters the semilunar ganglion of the respective side. The 1st lesser splanchnic nerve is the last independent branch from the 15th to 17th thoracic ganglia to the greater splanchnic nerve. The 2nd lesser splanchnic nerve has an independent course, extends posteriorly and also enters into the semilunar ganglion of the respective side. In 5 cases on the left and in 4 cases on the right side a direct branch of the 2nd lesser splanchnic nerve enters the renal plexus; in the other cases its superficial bundle was followed into the roots of the renal branches above the lateral brim of the semilunar ganglion. N. splanchnicus imus arises at the level of the last thoracic or 1st lumbar vertebra; on the left side it enters the 1st renali-aortic ganglion, and on the right side the semilunar ganglion, which there probably unites with the above mentioned ganglion. In the course of the Nn. splanchnicus maior, minor secundus et imus more or less well developed ganglia are present where they pierce the diaphragm: they are the ganglia nervi splanchnici. By histological methods the author has proved that these masses are not accessory adrenal glands. The characteristic position of these ganglia in the place where the nerves pierce the diaphragm justifies the following explanation of their origin. The ganglionic cells which wandered along the splanchnic nerve from the peripheral ganglia were stopped by the diaphragm and formed the ganglia nervi splanchnici. The lumbar splanchnic nerves show numerous variations. In general there are 3 on each side. The best developed on the right side is usually the 2nd, on the left side the 3rd. They adhere to the abdominal aorta and therefore run on the right side between the abdominal aorta and posterior abdominal vein. In the mare they are especially developed posteriorly. The 1st enters either the 2nd renali-aortic ganglion or the marginal collateral from the aortic plexus, not far from the above mentioned ganglion. It is generally the smallest. The 2nd enters partly the anterior spermatic ganglion and partly the median sperm. ganglion. The 3rd rarely enters the latter, more frequently it enters the branch connecting this ganglion and the posterior sperm. ganglion. The ventral trunk of the vagus innervates principally the stomach and sends only a small part of its filaments in the direction of celiac plexus. The dorsal trunk participates relatively little in the innervation of the stomach. The largest part of it enters the plexus solaris, whence it may be followed in the colic tract to the liver and to the arteries of the small intestine. Into the right semilunar ganglion always enter the stronger bundles of the vagus, while into the left semilunar ganglion weaker bundles could be traced sometimes. Plexuses, which enlace the branches of the celiac artery, are formed by nerves especially from the left semilunar ganglion. These nerves arise from the anterior enlargement of this ganglion; this enlargement is probably homologous to the celiac ganglion of man. Both ganglia participate equally in the innervation of the small intestine. The large intestine and the cecum receive their nerves mainly from the right semilunar ganglion. These branches centralize at first in a typical formation, the colic tract, consisting in horses of the following parts: The pars prima of the colic trunk, which runs from the posterior mesenteric ganglia along the posterior mesenteric vein, giving small branches to the small colon and passing into the genu tractus colici. Branches enter it principally from the right, in a lesser measure from the left semilunar ganglion, and also large branches of the vagus. From it extend nerves, forming the plexus on the A. colica dorsalis. Afterwards it passes into the pars transversa tractus colici, which receives further branches from the right semilunar ganglion. Nerves from it go into the plexus ileocaecocolicus, directly or with the aid of the ansa tractus colici; this encloses the ileocaecocolic vein and partly enters into the plexus of the small intestine. Into the adrenal gland come nerves from the ganglion of the great splanchnic nerve, from the lateral margin of the semilunar ganglion, from the ventral surface of this ganglion along the A. suprarenalis perforans and from the plexus of the kidney. Also, the direct branch of the 2nd lesser splanchnic nerve enters the kidney nerves, mainly from the lateral margin of the semilunar ganglion of the same side. These nerves form the plexus of the kidney, in which there are 1 or 2 ganglia, giving branches into the anterior and median parts of the kidney. The posterior parts receive their nerves from the 2nd renali-aortic ganglion. From this ganglion a branch always extends in the direction of the adrenal gland. In its course there is the caudal suprarenal ganglion from which small branches may be traced into the renal ganglion, the adrenal gland, the kidney, and the ureter. Usually the abdominal aortic plexus is formed by 3 collaterals. Both marginal collaterals extend from the 2nd renali-aortic ganglion of the same side, receiving the anterior lumbar splanchnic nerves and having an anterior spermatic ganglion on each side. The internal branch enters the posterior mesenteric ganglion and the external branch the median spermatic ganglion of the same side. The central collateral extends from the posterior margin of the interganglionic connection and enters mostly into the right marginal collateral. At the point of union of both collaterals is the median mesenteric ganglion. The 2 posterior mesenteric ganglia are more or less fused together. They send branches to the anterior hemorrhoidal artery, to the left colic artery and form the pars prima of the colic tract. The median spermatic ganglion receives the external branches from the marginal collaterals and a part of the posterior lumbar splanchnic nerves. The posterior spermatic ganglion receives the last lumbar splanchnic nerve, and this either directly or through the branch which connects it with the median spermatic ganglion. From the posterior spermatic ganglion extends the greatest part of the spermatic (resp. utero-ovarian) nerves and, in a posterior direction, one smaller and one larger hypogastric nerve. The position of the sympathetic trunk and the irregularly distributed ganglionic tissue in the lumbar region in horses

finds its homologue in animals and especially in man, where these conditions were particularly studied. The same is true for the white and gray rami communicantes. In the Anthropomorpha and Ungulata the great splanchnic nerve branches off very far anterior in the thorax; in the lowest mammals this nerve is not developed. Immediately posterior to the diaphragm, branches arise from the sympathetic trunk and lead into the solar ganglion. They are homologous to the thoracic splanchnic nerves of higher mammals. The development of thoracic splanchnic nerves is considered, therefore, as a sign of superior organization. Those mammals which have a greater splanchnic nerve have also, in a great majority of cases, the ganglion nervi splanchnici maioris. It is in a characteristic position near the diaphragm and sends branches to the adrenal gland as in horses. Careful research showed direct branches of the small splanchnic nerves into the renal plexus in some animals and man as in horses. The roots of the great splanchnic nerve in reality reach more anteriorly than can be proved by macroscopic dissection, but the posterior limit of the lumbar splanchnic nerve, as ascertained by dissection, is the same, or nearly the same, as that obtained by experimental methods. The final branching of the vagus, in horses, resembles in plan that in other animals and man. The ganglia of the solar plexus vary in number as well as in position. These variations are not dependent upon the kind of animal but appear in individuals of the same kind, especially in man. The abdominal aortic plexus (sensu latu) as described in man and anthropoid apes is similar to that in horses and rabbits with regard to number and position of its ganglia as well as with respect to its interganglionic and peripheral branches.—*Author's English summary.*

2233. **KOLESNIKOW, V. Die Wirkung der Desympathisierung von Arterien mit Alkohol nach Rasumowsky auf die Entwicklung von Kollateralen. (Anatomisch-experimentelle Untersuchung.)** *Vorläufige Mitteilung. Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 89(4): 405-411. 1 fig. 1929.—The author reports 9 experiments on dogs in which he applied, à la Rasumowsky, 80% alcohol to the main artery of the foreleg after the distributing arteries had been variously occluded, and concludes that of the noted empirical methods of influencing the sympathetic nervous system in sympathectomy that of Rasumowsky is the most promising.—*H. F. Nachtrieb.*

2234. **KOLOSSOW, N. G., und G. W. SABUSSOW. Beiträge zum Studium der sympathischen und spinalen Ganglien einiger Reptilien und Vögel. Die Ganglien von Emys europaea L., Anser cinereus L. und Columba livia L.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2. Zeitschr. Mikrosk. Anat. Forsch.* 18(1/2): 5-36. 21 fig. 1929.—The relationship of the ganglia of the sympathetic trunk to the spinal ganglia is considered and the ganglion cells in both the sympathetic and the spinal ganglia are described, particularly in regard to form, number and distribution of processes and internal structure. In the species studied, the cervical sympathetic ganglia are entirely distinct from the spinal ganglia, but the ganglia of the sympathetic trunk, throughout the thoracic and lumbar regions, are so intimately associated with the spinal ganglia that there is some intermingling of sympathetic and spinal ganglion cells. In the turtle, the majority of the sympathetic ganglion cells in the thoracic and lumbar segments are in general pyriform, having a heavy cone-shaped extension from which all the cell processes, usually not exceeding 3 or 4, arise. In some instances 1 or more processes, in addition to those arising from the cone, arise directly from the cell body. The neurofibrillar apparatus exhibits a perinuclear or central and a peripheral plexus. The latter lies somewhat beneath the surface of the cell body, leaving a relatively clear peripheral zone. No anastomosis of neurofibrils was seen. Chondriosomes are present throughout the cytoplasm, but are more abundant in the perinuclear zone than at the periphery. The cervical sympathetic ganglia in the turtle contain ganglion cells of 2 distinct types, viz., (1) cells with a broad oval cell body from 1 side of which several processes arise. These cells have no cone-shaped extension. The neurofibrils in the perinuclear plexus are relatively coarse; those in the peripheral plexus much finer; (2) cells with a rounded cell body and a definite cone-shaped extension. The perinuclear fibrillar plexus is well developed in these cells, but they exhibit no peripheral fibrillar plexus. The spinal ganglion cells in the turtle are essentially unipolar, but some show protoplasmic outgrowths (not regarded as dendrites), some of which extend as far as the wall of the ganglion cell capsule. The spinal ganglion cells contain a relatively heavy neurofibrillar plexus distributed more or less uniformly throughout the cytoplasm. Cells, in form and structure intermediate between spinal and sympathetic ganglion cells, occur in small numbers in the spinal ganglia. Chondriosomes are present throughout the cell body. The sympathetic ganglion cells in the birds studied are essentially multipolar, but the number of processes is relatively small. The neurofibrils are well developed and are rather uniformly distributed throughout the cytoplasm. Those at the periphery are in general finer than those in the deeper parts of the cell body. Chondriosomes are present throughout the cell body. The spinal ganglion cells in birds conform to the usual unipolar type.—*A. Kuntz.*

2235. **KUHLENBECK, HARTWIG. Bemerkungen über den Zwischenhirnbauplan bei Säugetieren, insbesondere beim Menschen.** *Anat. Anz.* 70(6/7): 122-142. 14 fig. 1930.—The sulcus hypothalamicus of Monro of mammals is homologous with the sulcus diencephalicus ventralis of anamniotes. The pars ventralis thalami of anamniotes must therefore correspond in mammals to a part of the actual thalamus dorsal to the sulcus of Monro. Dorsal to that sulcus there exists in mammalian fetuses a groove which, in view of its prominence, presents a very variable relation. It may appear as a hardly significant depression, as a deep sulcus, or as a groove with an overlying ridge (as a double furrow). According to its position in the structural plan, this furrow corresponds absolutely to the sulcus diencephalicus medius of anamniotes. The sulcus diencephalicus medius can be seen even in fully developed human brains in case the massa intermedia is not present. It is claimed that the nucleus dorsalis or anterior and the nucleus medialis belong to the pars dorsalis thalami in man, and the nucleus ventralis and lateralis to the pars ventralis thalami. The relations of a number of the nuclei to these basic divisions are questionable and need further explanation. The structural plan of the human or mammalian 'tweenbrain (diencephalon) is identical with that of the anamniotes. The same connections appear in the 4 zones of Herrick, conceived as basic constituent parts.—*Author's summary (transl. by J. M. Nielsen).*

2236. **KURÉ, KEN, YOSHIO NITTA, MORIMASA TSUJI, KENSAKU SHIRAISHI, und BINJI SUENAGA. Die histologische Darstellung der parasympathischen Fasern in den hinteren Rückenmarkswurzeln der Lumbalsegmente.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 573-585. 4 fig. 1928.—In 2 dogs the posterior roots of the 5th, 6th and 7th lumbar and the 1st and 2nd sacral nerves were severed on one side and the spinal ganglia on the other side. Both sides were atrophied 87 and 95 days respectively after the operation, but the side on which the spinal ganglia were extirpated was more wasted, indicating that after section of the nerve roots the spinal ganglia continue to transmit trophic impulses, and also that, if parasympathetic fibers are really present, they must have in the spinal ganglia a ganglionic center capable of sending out a certain independent impulse after the fibers above the spinal ganglion are severed. Histologic study of the peripheral end of the posterior root of the 7th lumbar nerve in one dog and of the 6th nerve in another (cut in both cases above [central] from the spinal ganglion) showed degeneration of the thick myelinated fibers (with corresponding degeneration and chromatolysis of certain cells in the spinal cord between anterior horn and substantia gelatinosa) while

the thin myelinated fibers were unchanged; hence the fibers appear to be spinal efferent or parasympathetic fibers. Apparently the vasodilatation produced by stimulation of the posterior roots is effected by the trophic and tonic influence of these roots on the voluntary musculature.

2237. **KURÉ, KEN, SHIGEO OKINAKA, KEN KAWAGUZI, und TAKEO SHIBA. Histologische Studien über die extrapyramidalen Bahnen. I. Mitteilung. Über periphere Fortsetzung der extrapyramidalen Bahnen.** [I. Peripheral extension of the extrapyramidal paths.] *Proc. Imp. Acad. [Tokyo]* 6(7): 282-284. 1930.

2238. **KUTOMANOW, P. J. Zur Topographie des N. phrenicus-Stammes in der Brusthöhle.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 86 (1/2): 228-236. 2 fig. 1928.—In 79.5% of 117 bodies studied, the entrance point of the phrenic nerve lay to the sternal side of the sagittal median plane of the thorax (sternopetal)—a little more so among women (81%) than among men (78%). The entrance point of the nerve was to the dorsal side (dorsopetal) in 17% of all cases (19% of men, 15% of women). The median position occurred in only 3.5% of both sexes (4% of women). In the majority of cases both the dorsopetal and the sternopetal site occurred with a narrow thorax. The median situation occurred only with broad thoracic cavities—observations agreeing mainly with Luschka's, as also with regard to relation to the accompanying vessels.

2239. **LANDACRE, F. L. The major and minor sulci of the brain of the sheep.** *Ohio Jour. Sci.* 30(1): 36-49. 2 pl. 1930.—The constant and variable sulci of the hemispheres of the sheep brain are described following the nomenclature of Kreug. In the 50 brains examined, variations were as frequent on 2 hemispheres of the same brain as on the hemispheres of 2 different brains. Each sulcus is described as to position, form, extent, depth, constancy, branches and communication with adjacent sulci. A constant sulcus caudal to the callosum, unnamed in any previous description of the sheep brain, is here called sulcus post-callosus.—*G. S. Hopkins.*

2240. **LAUX, GEORGES. Rapports de la moelle et de ses enveloppes avec les parois osseuses du canal rachidien.** [Relations of the spinal cord and its membranes to the bony walls of the spinal column.] *Ann. Anat. Path. et Anat. Normale Méd. Chir.* 7(5): 629-630. 1930.

2241. **MORUZZI, GIUSEPPE. La rete nervosa diffusa (Golgi) dello strato dei granuli del cervelletto.** [Golgi's rete nervosum diffusum of the stratum granulosum cerebelli.] *Arch. Ital. Anat. e Embriol.* 28(2): 238-252. 1930.—Examinations of sections perpendicular and tangential to the convolutions of the cerebellar cortex of pigs, calves, lambs, and cats, and stained by the methods of Golgi, Cajal and Bielschowsky, show that in the stratum granulosum there is a rete nervosum diffusum as defined by Golgi, which morphologically is not confined to this stratum but presents important connections with the systems of nerve fibers which extend into the molecular stratum through its lower third. In the rete an interlaced complex system of fibers of comparatively large size (1st order) may be distinguished from a rather delicate system of fibrillae (2nd order). Extensive and important communications can be shown between the 1st order system of the rete, the sub- and superganglionic plexuses of Cajal and the pericellular baskets. There are also connections between the rete granulosum, the sub- and superganglionic plexuses, and the baskets by means of a mesh of fibrillae; the baskets are also interconnected by fibers and fibrillae and therefore cannot be regarded solely as terminal formations but are also one of the principal elements of nervous connection between the stratum granulosum and the stratum moleculare. The baskets appear as so-called "terminal brushes" only because incompletely stained or because in the sections they have been cut obliquely.—*Summary (transl.).*

2242. **MOSKOFF, M. Plexus brachialis при домашнитѣ птици.** [P. brachialis in domestic birds.] Годишникъ на Софийския университетъ, Ветеринарно медицински факултетъ (*Jahresber. Univ. Sofia, Vet. Med. Fakultät*) 5: 299-317. 8 fig. 1929.—The brachial plexus of domestic birds is formed of the ventral branches of the following spinal nerves: 13, 14, 15, 16, 17 in chicken; 14, 15, 16, 17 in turkey; 15, 16, 17, 18 in duck; 17, 18, 19, 20 in goose. Thus the sequence of the nerves forming the plexus depends upon length of neck. Formation of the plexus, especially in the goose, occurs rather far away from the vertebral column.—*A. Kalojanoff (transl. by E. W. Count).*

2243. **MUSSGNUG, HANS. Der Anteil des N. phrenicus an der Innervation von Brust- und Bauchorganen beim Hunde.** *Deutsche Zeitschr. Chir.* 227(1/6): 132-144. 1930.—Anastomoses between the phrenic and sympathetic nerves of the dog were described. In 16 dogs the physiological action of the phrenic on the thoracic organs and stomach was examined. This nerve has no effect on the heart but the blood pressure is raised by stimulation of the central end of the severed phrenic (sensory reaction). The tone of the bronchial musculature is not influenced by it. The chief effect on respiration of central stimulation of the severed phrenic nerve is to decrease its rate. The influence of the phrenic on the oesophagus in the presence of phrenic-sympathetic anastomoses was demonstrated experimentally; and the phrenic was found, in this case, to contain motor and sensory fibers to the oesophagus. In the absence of these anastomoses an influence of the phrenic on the oesophagus is not found. One experiment demonstrated the participation of the sympathetic in the innervation of the oesophagus. Stimulation of the peripheral stump of the phrenic caused contractions of the pyloric region of the stomach. —*Summary (transl. by O. W. Tiegs).*

2244. **PAPILIAN, VICTOR, et VASILE DAGHIE. Les nerfs cardiaques thoraciques sous-stellaires.** *Compt. Rend. Soc. Biol.* 98(1): 61. 1928.—A very brief description of newly discovered branches from the inferior cardiac branches in man.

2245. **PETRONIEVICH, BRANISLAV. Kratak pogled na istoriiski razvitak noviie uporedne anatomiie ostrva na sisarskom mozgu.** [Historical note on the new comparative anatomy of the insula of mammals.] [French summary.] *Srpska K. Akad., Prirodnachki i Matematichki Spisi,* Book 20. pp. 1-79. 11 pl. 1930.—Literature on the island of Reil is reviewed historically and critically, and the development of the knowledge of this region is traced.

2246. **PING, C. On the cerebrum of Felis tigris.** *Proc. Zool. Soc. London* 1930(1): 147-159. 13 fig. 1930.—The specimen was from an adult Bengal tiger 182 cm. in body-length. The brain weighed 282.4 gm. and its volume was 254 cc. It was hard even in the fresh condition. The principal structures were more complicated than in the cat's brain. The gyri were indented with short branches of the principal sulci or with small sulci. The lateral sulci were comparatively complicated. The dorsal aspect of the cerebrum looked asymmetrical due to minor variations of the sulci. Most of the sulci were rather wide, especially the great longitudinal fissure. The diagonal fissure was different from those recorded for Felidae. Almost parallel to the olfactory tract and close to the ventral margin of the frontal lobe was a short sulcus, provisionally named "sulcus rostralis." The fissura sublimica of Kukenthal was poorly developed on the medial surface. Some internal structures, which are not conspicuous in the cat's brain, such as nucleus caudatus, capsula interna, putamen and globus pallidus of the nucleus lentiformis, and the involution of the hippocampus into the inferior horn of the lateral ventricle, were definite and significant. The region of the frontal lobe anterior to the cruciate sulcus was steeper than that of *Canis familaris.* The large motor cells in the cortex of the frontal area were conspicuous.—*C. Ping.*

2247. **RIJNBERK, G. van, et L. KAISER. Segmentation métamérique et innervation radiculaire spinale des muscles de la paroi abdominale chez le chien. Recherches expérimentales. 1ère partie: Introduction et muscle droit de l'abdomen.** *Arch. Néerland. Sci. Exactes*

et Nat. Sér. 3 C 14(1): 71-136. 106 fig. 1929.—The attachments and nerve supply of the muscle are given. The muscle is described as composed of a cranial non-segmented part, a middle portion comprising 6 tendinous inscriptions which limit 5 muscular segments, and a caudal portion incompletely divided into 2 parts by a 7th rudimentary inscription. The experimental method used was principally the electro-stimulation of the spinal nerve roots and their peripheral rami innervating the rectus muscle. Observations were made by the naked eye, by photography, by measurement and by graphs. From experimental study of 38 dogs, the authors found: the cranial non-subdivided part was innervated generally by the 4th-6th thoracic nerves; the middle part by the 7th, 9th, 10th, 11th and 13th thoracic nerves, supplying in consecutive cranio-caudal order its 5 segments, while the 8th was distributed to the 1st or 2nd segment or both and the 12th thoracic innervated the 4th or 5th segment or both; the caudal portion was innervated by the 1st and 2nd lumbar nerves, each peripheral nerve had motor branches from but 1 ventral spinal root; even though a segment was supplied by 2 nerves, each of the individual muscle fibers was innervated by but 1 root.—*H. L. Foust.*

2248. RILEY, HENRY ALSOP. The lobules of the mammalian cerebellum and cerebellar nomenclature. *Arch. Neurol. and Psychiatry* 24(2): 227-256. 24 fig. 1930.—A schematic classification is suggested embracing the constituents of the cerebellum and a group of terms applying to them is recommended for the use, not only of the human anatomist, but also of the comparative morphologist, the embryologist and the physiologist.

2249. SIMONETTA, BONO. Sulla presenza di un ganglio nervoso nel ramo linguale del glossofaringeo della pecora. Ricerche embriologiche e comparative sui gangli simpatici del glossofaringeo dell'uomo e di altri mammiferi. [Presence of a ganglion on the lingual branch of the glossopharyngeal nerve in sheep: embryologic and comparative studies of the sympathetic ganglia of the glossopharyngeus in man and other mammals.] *Arch. Ital. Anat. e Embriol.* 28(1): 1-21. 8 fig. 1930.—Studies of 8 sheep fetuses and a bovine fetus, compared with a series of white rat embryos and 2 human fetuses, led to the establishment in ruminants of a large, hitherto undescribed sympathetic ganglion in relation with the lingual branch of the glossopharyngeal; its cells belong to Cajal's Type I. The ganglion develops from cells which have migrated from the petrous ganglion along the trunk of the glossopharyngeal. It seems probable that this ganglion and the other small ganglia, more distal on the glossopharyngeal, produce a secretory action on the small salivary glands scattered over the mucosa of the base of the tongue and the pharynx.

2250. SLAVICH, ERVINO. Confronti fra la morfologia dei neuroni dei vari gangli simpatici e del parasimpatico encefalico. [Morphology of the sympathetic ganglia as compared with those of parasympathic.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 306-309. 1930.—Remarkable morphological differences were noted in the sympathetic ganglia as compared to the ciliary ganglion of ox and horse; their significance is under investigation.—*M. Comel.*

2251. SPIEGEL, E. A. Die Zentren des autonomen Nervensystems (Anatomie, Physiologie und topische Diagnostik). [The centers of the autonomic nervous system.] (Band 54 of "Monographien aus dem Gesamtgebiet der Neurologie und Psychiatrie.") iv+174p. 33 fig. Julius Springer: Berlin, 1931. R.M. 16.80.

2252. SSINELNIKOW, R. Die Herznerven der Vögel. *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 86(5/6): 540-562. 11 fig. 1928.—The observations were made on 156 hearts of the crow, raven, daw, pigeon, chicken, duck and goose. The figures are drawn from preparations of the heart of the goose. The 6 nerve plexuses of the heart described with their location and the region innervated are:—plexus anterior cordis sinister, and dexter, and nerve ring of the bulbus aortae; plexus cardiacus posterior dexter, and sinister; plexus atriorum anterior, and posterior (Pl. sinus Halleri). Author's summary:—The avian heart is innervated by branches of the vagus and the sympathetic. The branches reach the heart along definite paths and at certain points exchange fibers or form special plexuses. Both the vagus and sympathetic are represented in the plexuses and all neighboring plexuses anastomose with each other either directly or indirectly. A region of ganglia is present either at the beginning or in the middle of the plexus. Each plexus and its corresponding field of ganglia are located at a particular region of the heart. Each field of ganglia receives a number of fibers from its plexus and sends out a number of fibers that unite into branchlets which have a definite topographical position and function. In the majority of cases the number of nerve fibers that enter the field of the ganglia is less than the numbers that go out from it.—*H. F. Nachtrieb.*

2253. SSINELNIKOW, R. Das intramurale Nervensystem des Vogelherzens. *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 86(5/6): 563-578. 5 figs. 1928.—(See also preceding entry.) The material consisted of 54 hearts of the pigeon, chicken, duck, goose and turkey. Author's summary:—The auriculoventricular septum of the bird's heart is innervated by the vagus and sympathetic branches that form the 6 extramural nerve plexuses of the heart. The anterior portions of the septum furthermore receive nerves from the ganglia of the nerve ring of the bulbus aortae. The posterior portions of the ventricular septum receive branches directly from the ganglia located on both sides of the sulcus longitudinalis post. The author distinguishes on each side of the partitions of the heart an intramural and an endocardial plexus which anastomose with each other and are derived from common as well as different sources. The plexuses of the septum are always formed by branches from the extramural plexuses and their locations are constant.—*H. F. Nachtrieb.*

2254. TOYOTA, SOSAKU. Beiträge zur Kenntniss der Anatomie des Plexus Tympanicus des Menschen. *Acta Scholae Med. Kioto* 11(1): 7-29. 1928.—The tympanic nerve and its related structures are described in detail from a study of 60 ears of new-born Japanese. The adjoining parts and the origin, course, anastomoses, branches and distribution of the nerve are discussed from an anatomical and biometrical standpoint. Newly named and unnamed connections unite the tympanic nerve with the carotid plexus and neighboring nerves. The ramuli anastomosis caroticopharyngei (in 31 out of 60 cases), connecting the carotid plexus with the pharyngeal ramus of the tympanic nerve, is named for the first time. The ramus caroticopharyngotympanicus (in 6 out of 60 ears) leaves the carotid plexus as 1 fiber and divides into 2 rami. One ramus goes to the pharyngeal branch of the tympanic and the other to the tympanic nerve. Unnamed anastomoses exist between the facial and tympanic nerve and rare branches occasionally unite the tympanic plexus with surrounding nerves.—*A. M. Lassek.*

2255. VEIT, OTTO. Zur Theorie der Entstehung der Nervenbahnen. Ein Versuch. *Anat. Anz.* 62(19/20): 373-378. 1926.—The histogenesis of the nerve fiber is so well worked out that perhaps only the question of the influence of the neurilemmal cell on the outgrowing fiber remains to be solved; however, the study of the origin of nerve tracts has only begun. A review of the literature suggests a working hypothesis as follows: (1) Franz ('23) found that in *Amphioxus* the dendrites and axones of the "giant cells" of the spinal cord run alternately to right and left so that the innervation of the motor ganglion cells on the 2 sides is alternate. He believes this is associated with the swimming motion. He also found that the infundibular tract is crossed anteriorly but uncrossed caudally. He sees a relation between this and the turning reflex when light strikes the animal. This suggests that in the nerve tracts form and function correspond to one another. (2) Burr ('16, '23) found that in *Amblystoma* the extirpation of the olfactory placode and the hemisphere of the same side results in a closing of the interventricular foramen of that side with ependymal

cells and that no regeneration occurs; that, however, removal of the telencephalon alone results in its regeneration as soon as the olfactory fibers grow out; and finally that grafting of a supernumerary placode results in the development of an accessory olfactory nucleus. Detwiler ('19, and later) found a similar relation in *Amblystoma* between the limb bud and the corresponding spinal ganglia. Transplantation to the other side leads to great increase of ganglion cells on that side. Afferent fibers grow first; motor fibers grow only after the descending psychomotor fibers reach their spinal cord level. These 2 pieces of work indicate that the development of sensory fibres is dependent upon the influence of stimuli from the periphery, that of motor fibers upon stimuli from the center. (3) Coghill ('13) found that the ventral nerve roots in *Amblystoma* grow out as collaterals of the descending axones of the motor ganglion cells. With increase of function of the myomere the collaterals become the main fibers. This means that development corresponds to use. (4) There is evidence that nerve impulses are specific, that sensory impulses differ qualitatively from motor, that end organs are also specific in the type of stimulus they can receive. This would account for processes of motor cells eventually attaining connection with muscle cells (all other processes of these cells would degenerate from lack of use). The interrelation of these concepts gives adequate foundation for a theory of the origin, distribution, and relative development of the nerve tracts.—*E. McCrady, Jr.*

2256. VOGEL, KLAUS. Die Beziehungen des Ganglion sphenopalatinum zu den von ihm ausgehenden Nervenstämmen. *Zeitschr. Hals-, Nasen- u. Ohrenheilk.* 25(5): 485-502. 18 fig. 1930.—The N. vidianus leaves the ganglion directly. The N. sphenopalatinus goes only a short way from the ganglion before it is divided into component fibers, some of which run anteriorly, and others laterally, to unite with fibers of the Nn. palatini. The N. palatinus major consists largely of fibers which come from the 2nd branch of the trigeminal, without being interrupted by the ganglion. Only a few fibers arise from the ganglion. About 10-12 nerve trunks pass to the nostrils. One of the largest, the N. nasopalatinus scarpae, supplies the nasal mucous membrane. All nasal nerves, which supply the upper part of the nostrils, the roof of the pharynx and the nasal mucosa, come from the sphenopalatine ganglion. The N. nasopalatinus contains fibers only from this ganglion. From the sphenopalatine ganglion many small nerves supply the fissura orbitalis inferior, and there anastomose with the 1st trigeminal branch. They form several small ganglia on the way to the orbital region. These contain no elements from the 2nd trigeminal branch.

2257. VOGT, MARTHE. Über fokale Besonderheiten der Area occipitalis im cytoarchitektonischen Bilde. *Jour. Psychol. u. Neurol.* 39(4/6): 506-510. 4 pl. 1929.—From a study of the area striata the author concludes that each histological area of the cortex is characterized by features whereby it can be identified but that in addition there are differences within: this whole area affecting thickness of a layer, size of cells, etc., scattered through it. These secondary differences, which have a constant extent and position, are not sufficient to obscure the identification of the area but perhaps are sufficient to afford a basis for diversity of function within that area.—*H. Woollard.*

2258. VOLKMANN, RUEDIGER von. Vergleichende Cytoarchitektonik der Regio occipitalis kleiner Nager und ihre Beziehungen zur Sehleistung. *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 85 (5/8): 561-657. 28 fig. 1928.—In the occipital regions of mouse, rat, dormouse and squirrel, the highest grade of differentiation was found in the squirrel, which coincidently also has the most highly developed optic function among the rodents. In mouse, rat, or dormouse the occipital region consists of 2 uniform fields, the area striata (17) and the area occipitalis (18), both of which are representatives of the 6 layered homotypic isocortex. In the squirrel the lamina IV of field 17 is subdivided into 3 layers as in man. This 3-fold striated cortical area is called "subarea eustriata." The author adopts the theory of Barany and Kleist, that the 3 layers of lamina IV indicate the anatomic representation of binocular vision. Its occurrence in the squirrel and not in the other rodents is coincident with the highly developed ability of this animal to estimate distances. This ability is made possible by stereoscopic vision. Following Kleist's theory the homonymous visual fields of both eyes are projected into the same hemisphere. The light sensation from the homolateral eye is projected into the upper layer of lamina IV, that from the opposite eye into the lower layer, IV c. Phylogenetically, the subarea eustriata arises from the area striata through division of the uniform layer IV into 2 laminae, separated by the stria of Gennari. This conception is contradictory to Brodmann's idea, that the unistriated area is a regressive metamorphosis from the tri-striated lamina. The regio eustriata (18) forms in mouse, rat and dormouse 26% of the regio occipitalis, in squirrel 38%. The increase of the area seems to be a characteristic of animals living in day-light. Also, in the squirrel the ganglion cells of lamina IV are more differentiated than in the other rodents. In the lower forms they are vesicular, round, and contain only scanty cytoplasm. in squirrel they are more polymorph, have well developed dendrites and show an increase in Nissl bodies. The specific density of ganglion cells is in mouse 1044 cells per 1/10 of 1 cu. mm., in rat 653, in dormouse 580, and in squirrel 500. These numbers support Nissl's theory (in contradiction to Brodmann's) that a more highly developed cortex contains fewer cells per unit of volume than a less developed form. The laminae I-IV are considered as a physiologic unit. Expressed in percentage of the total width of the cortex of the area striata they are 48% in mouse, 53% in rat, 54% in dormouse, and 61% in squirrel. The corresponding figures for laminae I-IV in the regio occipitalis are 32%, 40%, 41%, and 50%. All these figures demonstrate the high development of the receptive organ for visual impressions in the squirrel and indicate that a highly organized visual function is reflected in a highly developed visual cortex.—*A. Weil.*

2259. WOLHYNSKI, F. A. Die Herznerven des Kalbes. *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 86(5/6): 579-607. 7 fig. 1928.—The nerves supplying the heart of the calf are arranged in 6 wide-meshed plexuses, 2 anterior, right and left, 2 posterior, right and left, 1 anterior on the atria and 1 on the sinus Halleri. The plexuses in all hearts supply approximately the same areas and consist of a varying number of fibers derived from the 2 vagi and the 2 sympathetic trunks, the largest stems coming from the ganglia stellata. In the coronary sulcus the plexuses lie both above and beneath the vessels and form very fine plexuses around them; all the plexuses are beneath the epicardium and pass to the heart either along the vessels or in spaces between these and the heart surface, anastomoses between the plexuses taking place both before and after they reach the heart. A number of elongated ganglia occur on the atria in the neighborhood of the great vessels and ganglia are found also on the pulmonary veins and on the right and left superior venae cavae. The atrial septum receives fibers from the right posterior plexus and from the plexus of the sinus Halleri; the ventricular septum is supplied from the right anterior plexus.—*F. A. Wolhynski.*

2260. WOLHYNSKI, TH. Innervation des Herzkammer- und Vorhofsseptum des Kalbes. *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 86 (5/6): 608-638. 14 fig. 1928.—The nerve supply of the atrial and ventricular septa is derived from plexuses 1-4, using Worobiew's terminology. The atrial septum has 3 plexuses, 2 subendocardial, right and left, and 1 in the myocardium; these arise from stems 2, 3, 4 and 6 of the extracardial plexus. In the ventricular septum there are 5 plexuses, 2 subendocardial, right and left, and 3 in the myocardium; all of these are constant and definite in position. The atrial septum is richly supplied in

all its parts with ganglionic nodes, similar to those of the atrial walls; in the ventricles, nodes occur at the apices of the papillary muscles and in the His-Tawara bundle. This bundle is connected with the extracardial plexuses by stems belonging to the 2, 3, 4 and 6 plexuses, these stems joining the node, the crus commune and the limbs of the bundle. In all parts of the bundle there is a large number of strong nerve stems, ganglion cells and nodes, and its nerve stems anastomose with the neighboring stems of the plexuses of the septum.—*T. Wolhynski.*

2261. WISCHNEWSKY, A. S. Die Aufbautypen des Ramus descendens nervi hypoglossi. [The structural type of the descending branch of the hypoglossal nerve.] *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 92(3/4): 551-564. 8 fig. 1930.—Based on 70 human and 4 monkey specimens.

GENITO-URINARY SYSTEM

2262. BECHER, HELLMUT. Über Drüsen in kavernösen Räumen, endoepitheliale Drüsen und die Verbreitung des Zylinderepithels im weiblichen Genitalkanal von Tamandua tetradactyla L. (Myrmecophaga). *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschr. Mikrosk.-Anat. Forsch.* 20(1/2): 253-286. 25 fig. 1930.—The uterus of *T. tetradactyla* is simple and pear-shaped. The extended ovaries lie free (not in an ovarian sac) and are attached to the dorsal side of the broad ligament. The short, plump oviducts are provided with an abundantly fimbriated slit-like abdominal opening. The uterus passes into the vagina without distinct macrosopic boundary, so that there is no clearly definable cervical segment, though such a region is to be recognized, on closer examination, by shallow mucosal folds (unlike the smooth mucosa of the body of the uterus), by glands in the mucosa, and by the tendency of the epithelium to form endo-epithelial cell-groups, as well as by its special behavior during pregnancy. In the vagina the mucosal folds are deeper; no such glands are present as in the cervical segment. The vagina unites in the urogenital sinus with the urethra, which lies close to the ventral wall of the vagina. The urogenital sinus extends as a canal 1.5-2 cm. long into the outer genitals, which consist of a short cone with a cleft-like opening. In the inner layers of the uterine muscularis dense networks of veins create, between the entwined muscle fibers, broad lacunae which justify the use of the term "corpus cavernosum uteri." Elastic fibers surround the venous hollow of the corpus cavernosum with a dense web penetrating the muscle bundles. During pregnancy and in pre-estrum the corpus cavernosum is especially pronounced. Since the corpus cavernosum extends into the deep portions of the tunica propria of the mucosa, the uterine glands come into close proximity with the blood-spaces. In many cases the bases of the glands float in the cavernous spaces and large sections of the circumference of the glands are immediately surrounded by blood-spaces. In the cervical segment of the uterus the epithelium tends to form endo-epithelial gland-cell groups which may be regarded as ontogenetic developmental forms of true ecto-epithelial glands. All stages of the transition from simple endo-epithelial gland-buds to endo-ecto-epithelial, many-chambered glandular cysts were observed. The entire length of the vagina down to its junction with the urogenital sinus has a simple columnar epithelium; the sinus, below its junction with the urethra and the vagina, has a many-layered squamous epithelium. In the animals examined a parasite, apparently *Filaria aequalis* Molin, was present in the urinary and genital organs.—*Author's summary (transl.).*

2263. BENAZZI, MARIO. Osservazioni sulla struttura dell'epitelio vaginale di "Mus musculus" in alcune condizioni biologiche. [Structure of the vaginal epithelium of Mus musculus in certain biologic conditions.] *Monitore Zool. Ital.* 41(6): 143-150. 2 pl. 1930.—The author studied the vaginal epithelium of *Mus* in oestrus, after parturition, during and after lactation, before puberty and in prolonged anoestrus in castrated ♀♀. In the first few days after parturition the vaginal epithelium showed the development of the oestral cycle, while in the following days and up to the termination of lactation there was a cessation of the sexual cycles; 20 days after labor and during lactation the vaginal epithelium consisted chiefly of 2 layers of cells. In an adult ♀ 35 days after castration the vaginal epithelium consisted of 2 layers of low, cubical cells while in another ♀ examined 55 days after castration the vaginal epithelium was composed of 4 or 5 layers of cells, the superficial layer showing cells in a state of mucoid degeneration, and the epithelium was infiltrated by leucocytes. This study shows the possible existence of a shortened vaginal cycle in castrated ♀♀ as pointed out by other authors.—*M. Benazzi (transl. by J. DeCarlo).*

2264. BENSLEY, R. R., and ROBERT D. BENSLEY. The structure of the renal corpuscle. *Anat. Rec.* 47(2): 147-175. 5 pl. 1930.—Study of the glomerulus by means of the silver-citrate method of R. D. B., by the kallitype method, and by various modified Bielchowsky methods for the impregnation of connective-tissue fibers shows that the glomerular membrane consists of 3 layers: the glomerular epithelium, consisting of a continuous layer of separate cells, not forming a syncytium, but covering the capillary loops without defect; a structureless basement membrane; a continuous endothelial lining composed of separate non-syncytial cells without defects. The capsule of Bowman is composed also of 3 layers: capsular epithelium, structureless basement membrane, reticular basement membrane. The connective tissue of the glomerulus is small in amount and consists of an investment of reticular (argyrophile) fibers around the entering vessels and thin and sparse fibrous extensions into the lobes of the glomerulus. The appearances which led v. Möllendorff to consider the glomerular epithelium to be a discontinuous investment of branched pericyte-like cells, are due to the presence in the more expanded epithelial cells of cytoplasmic thickenings. These thickenings are not cell processes with free spaces between, but are connected on all sides by thin continuous expansions of cytoplasm making a complete covering for the capillary loops.—*Authors (courtesy Wistar Bibl. Serv.).*

2265. CARLONI, E. Osservazioni intorno alle modificazioni gravidiche della mucosa cervicale, con particolare riguardo alla genesi della decidua. [Modifications of the cervical mucosa in pregnancy, especially as affecting the origin of the decidua.] *Rass. Ostetr. e Ginecol.* 39(6): 323-343; (7): 403-416. 13 pl. 1930.—On the basis of examinations of the cervical mucosae in 42 patients in various stages of pregnancy, Carloni rejects the theory that the decidua can be derived from the connective tissue, and confirms its derivation from epithelial tissues, proliferating intensely under the stimulus of pregnancy.—*From author's summary (transl.).*

2266. FALIN, L., und JUSSIN. Die Riesenzellen des Hodens. *Anat. Anz.* 70(11/12): 246-255. 6 fig. 1930.—The study is based on 55 prs. of testes from white rats which had been subjected to various procedures, as light treatment, thyroid feeding and mechanical and chemical testicular injuries. Testes of depancreatized cocks were also studied. Giant cells appear only in the canals of degenerating testes and are diagnostic of degeneration. All types of cells lining the tubuli contorti take part in their formation. They are most numerous at the height of degeneration and disappear if regeneration supervenes; they have no definite function. Exceptions to this are multinuclear structures arising from Sertoli cells, which are capable of active phagocytosis. Structures shown in a previous work are not called "giant cells" because this designation applies only to the present case. It would be more correct to call such cells "teratocytes" or pseudopolykaryocytes.—*H. W. Kaan.*

2267. GISBERTZ, H. Zur Morphologie der Glykogenablagerung im Vaginalepithel. *Monatsschr. Geburtsh. u. Gynäkol.* 84(1): 24-31. 1930.—The largest glycogen deposits occurred near the nucleus of epithelial cells. As a rule both the basal layer and the spaces between the epithelial cells were glycogen free, but occasionally glycogen deposits were found which probably had passed through the cell walls into the spaces. Where the epithelium was folded rich glycogen deposits occurred between the folds.

No relationship was found between changes in glycogen deposit and the menstrual cycle. At the climacteric, glycogen could no longer be demonstrated in the vaginal epithelium.

2268. **KÜSTERMANN, HANS. Systematische histologische Untersuchungen über die Venen des Uterus.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2. Zeitschr. Mikrosk.-Anat. Forsch.* 20(3/4): 417-432. 3 fig. 1930.—All ages of nulliparae, and primiparae and multiparae from 16 to over 65 yrs., were represented in this study of about 170 uteri. While it was impossible to point out individual specific changes due to pregnancy, and while certain changes following pregnancy paralleled those of advancing age, still it appeared that the veins of uteri which had undergone pregnancy were characterized by a sum-total of factors, including increase in vascular spaces, formation of a thicker intimal pad, excessive production of elastic fibers and amorphous masses in the peripheral layers of the venous walls, and a characteristic degeneration of these structures in old age—a complex never seen in nulliparous uteri.

2269 **LOCKAN, ULRICH. Investigations in the epithelium of the uterus of domestic animals.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2. Zeitschr. Mikrosk.-Anat. Forsch.* 14(1/2): 299-332. 1928.—In all, 188 uteri of cattle, sheep, horses, pigs and dogs were examined, with oviducts of 118. Ciliated epithelium was present in the oviduct save in diseased conditions or when corpora lutea were present. In the uterus the epithelium was generally nonciliated. The methods of preservation of the material are discussed.—*W. H. T. Baillie.*

2270. **MÖLLENDORFF, WILHELM von. Über Deckzellen und Bindegewebe im Glomerulus der menschlichen Niere.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(1): 46-52. 1 fig. 1930.—A discussion of some points in von Möllendorff's "Lehrbuch der Histologie."

2271. **MOSKOFF, MOSKO. Über eine Eigentümlichkeit der Tunica albuginea beim Lammshoden.** *Anat. Anz.* 69(18/19): 415-418. 1 fig. 1930.—Groups of seminiferous tubules found between the layers of the tunica albuginea in lambs' testes, represent a continuation of the tubules of the testis, which have pushed into the tunica. Though rather frequent in lambs (every 7th-8th testis) they were not seen in the testes of adults.—*M. Moskoff (transl. by R. R. Humphrey).*

2272. **STAFFORD, EDWARD STEPHEN. The origin of the blood of the "placental sign."** *Anat. Rec.* 47(1): 43-57. 3 pl. 1930.—The blood vessels of the rat's uterus undergo cyclical changes in arrangement and structure during pregnancy. From the 12th to the 15th days of gestation large blood spaces become intimately related to the endometrial glands and open into their lumina. From the glands blood escapes freely into the uterine lumen and appears eventually in the vagina, constituting the so-called "placental sign." The escape of blood is especially marked at the site of the decidua capsularis reflexa. On the 16th day and afterward there is a marked retrogression in the degree of endometrial vascularity. Similar cyclical changes in the vascularity of the endometrium are found in the gravid uteri of both guinea-pig and rabbit. However, open communications between vessels and endometrial glands have been found only in the rabbit. A placental sign is not described for either of these animals. In the dog and cat communications between uterine vessels and the confines of the border hematomata are seen.—*Author (courtesy Wistar Bibl. Serv.).*

2273. **STIEVE, H. Muskulatur und Bindegewebe in der Wand der menschlichen Gebärmutter ausserhalb und während der Schwangerschaft, während der Geburt und des Wochenbettes: [Musculature and connective tissues in the wall of the human uterus outside of and during pregnancy, during childbirth and confinement.]** *Akademische Verlagsanstalt: Leipzig,* 1929. Pr. 9 M.

2274. **TEHVER, J. Zur Kenntnis der Zellarten des Oberflächenepithels im Legedarm des Haushuhnes.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2. Zeitschr. Mikrosk.-Anat. Forsch.* 22(1/3): 80-89. 5 fig. 1930.—In addition to the earlier known cell types of the surface-epithelium of the oviduct [ciliated cells, cells of the glandular grooves and goblet cells] the author describes 2 additional types, viz.: the finely granular cells, the protoplasm of which is filled with acidophile granules of mitochondrial nature, and the secretory, ciliated cells. The best method to demonstrate all these cells simultaneously is by Kull's mitochondrial stain. The cell types are distributed as follows: infundibulum—ciliated cells, cells of the glandular grooves and goblet cells; albumen-region—ciliated and goblet cells; isthmus—ciliated, goblet and finely granular cells. In the caudal part are also some secretory ciliated cells. Uterus—secretory ciliated cells, goblet and finely granular cells; vagina—ciliated and goblet cells.—*J. Tehver.*

2275. **TINKLEPAUGH, O. L. Occurrence of vaginal plug in a chimpanzee.** *Anat. Rec.* 46(4): 329-332. 1 fig. 1930.—In making daily samples of the vaginal fluid of a mature ♀ chimpanzee, a gelatinous mass similar to the vaginal plug of rodents was repeatedly found during the receptive periods if the ♀ was caged with a mature ♂. It was not present when she was isolated from the ♂. The gelatinous material appeared in the form of granules within 24-36 hrs. after copulation began. In subsequent days of the receptive period it formed a finger-like plug, fairly dense at the cervical end and thinning out into a lining of the vagina as it extended toward the vulva. The mass was clear and practically structureless, except for the presence of sperm throughout and cavities at the cervical end which contained sperm in large numbers. Some of the specimens secured bore an outer layer of epithelial cells and leucocytes from the vaginal wall of the ♀.—*Author (courtesy Wistar. Bibl. Serv.).*

BONES, JOINTS, MUSCLES, FASCIAE

2276. **ANCONA, UMBERTO D'. Disposizione delle miofibrille e della membrana elicoide di Amici nelle fibre muscolari striate. [Disposition of the myofibrillae and of Amici's helicoidal membrane in striped muscle fibers.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 601-604. 1930.—The membrane of Amici has the shape of an helicoidal surface which occupies the whole muscle fiber: it is found in arthropods as well as in vertebrates. The arrangement enables the contraction wave to progress with continuity through the whole of the myofibrillae.—*M. Comel.*

2277. **CAVE, A. J. E. Further observations upon the inferior grooving of the first rib.** *Jour. Anat.* 65(1): 165-169. 1930.

2278. **MÁTYÁS, J. Mikrometrische vergleichend-anatomische Studien an den Knochenröhrchen II, III, IV.** *Acta Litt. Sci. R. Univ. Hung. Francisco-Josephinae Sect. Sci Nat.* 2(2): 142-175. 1926; 2(3): 229-253. 1927; *Act. Litt. Sci. R. Univ. Hung. Francisco-Josephinae Sect. A. Acta Biol.* 1(1): 18-39. 1928.—Contains tables of osteological measurements used as a basis for a previous publication on variation appearing in the same journal. Explanatory notes with respect to their meaning are included. Three sets of tables are given. The first set attempts to determine how the transverse dimensions of a bone vary at the same point for animals of the same and of different species. The second set aims to discover how the transverse measurements of the different bones of the same animal vary. The third set deals with the variation in a single bone (femur) at different levels above and below the mathematical middle. The importance of the measurements is presented in the general part previously published. The following animals were included in the study: *Homo sapiens, Pythecus satyrus, Troglodytes niger, Felis leo, F. pardus, F. domestica, Lynx lynx, Canis lupus, C. familiaris, Equus caballus,* and *Aequus asinus.*

2279. **DEMETER, GYÖRGY, und JENÖ MÁTYÁS. Mikroskopisch vergleichend-anatomische Studien an Röhrenknochen mit besonderer Rücksicht auf die Unterscheidung menschlicher und tierischer Knochen.** *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 87(1/2): 45-99. 15 pl., 22 fig. 1928.—The material consisted of bones of frog, 5 reptiles (no. ser-

pents), 2 birds, 40 mammals, and man. Any 2 of the 41 mammals could be distinguished from each other by the cross sections of the middle of the femur. There is a specific "bone-structure pattern" and within individual orders of mammals there is a certain related "bone-structure pattern." Furthermore, certain orders present some common structural features. The following types were distinguished: The insectivoroid type with radial canals passing out from the marrow cavity and few Haversian systems (osteons). Some rodents and *Ornithorhynchus* have this type. Of the rodents, the Duplicidentata present a divergent type. Within the Carnivora the bone-structure presented 6 additional types, viz.:—*Putorius putorius*, cat, dog, bear, hyena, *Phoca vitulina*. A 9th type is found in the ungulates. Here the structural elements are arranged concentrically. The primates present a 10th type in which the developed bone shows no trace of type 9. This is a special type in which the perimedullary osteon type alone is seen in cross sections. These types may become important for the doctrine of evolution as well as for the classification of animals.—*H. F. Nachtrieb.*

2280. **EGGELING, H. von. Zur Morphologie des Beckenbodens.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 1. Gegenbaur's Morph. Jahrb.* 63(2): 243-259. 10 fig. 1929.—From observations on *Macropus rufus* ♂, *Eumetopias californianus* ♀, *Choloepus didactylus* ♀, *Tapirus americanus* ♀, *Pongo pygmaeus* ♂ and man ♂, the ilio-ischio-pubocaudalis muscle group may vary according to the shape of the ossa innominata, the extent and form of the pelvic cavity, the degree of development of the vertebral column of the tail and the attitude of the animal. The last appears to be the least directive. The conditions in *Macropus*, which usually stands erect and generally progresses on the hind legs, do not differ much from those in mammals which have well developed tails and walk on 4 legs. On the other hand, *Choloepus*, in spite of the upward bend of the pelvic exit and the absence of pressure of the viscera, possesses a firm muscular pelvic floor that is not fundamentally different from that of mammals with a strongly reduced tail and upright body position.—*H. F. Nachtrieb.*

2281. **JAFFE, HENRY L. The structure of bone, with particular reference to its fibrillar nature and the relation of function to internal architecture.** *Arch. Surg.* 19(1): 24-52. 18 fig. 1929.—Review.

2282. **MAIER, OTTO. Zur Frage der Entstehung der Gelenkform (an Hand eines Falles von pseudarthrotischem Kugelgelenke).** *Anat. Anz.* 70(13/17): 278-286. 5 fig. 1930.—A man of 36 suffered a fracture of the humerus through a war wound. The bone formed a remarkably regular ball-and-socket-shaped pseudarthrosis, which Maier regards as evidence that mechanical principles play the chief part in the forming of the joint bodies.

2283. **SIEGERT, F. Das Problem des Metacarpale I und Metatarsale I.** *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 92(2): 213-223. 8 fig. 1930.—Siegert finds that the metacarpal and metatarsal correspond normally and pathologically to the phalanges.

2284. **TANIGUCHI, TORATOSHI. Zur Kenntnis des M. sternalis bei den Japanern, nebst Bemerkungen über dessen häufigeres Vorkommen bei den Anenkephalen.** *Folia Anat. Joponica* 9(1): 1-8. 3 fig. 1930.—The author examined 261 cadavers of Japanese: 204 adults (183 ♂♂ and 21 ♀♀), 50 newborn, and 7 anencephalous fetuses (2 ♂♂ and 5 ♀♀). The m. sternalis occurred in 19 adult ♂♂ (10.4%) and in 3 adult ♀♀ (14%). It was present in 4 out of 50 newborn and in 3 ♀♀ (2 bilateral and 1 unilateral) out of 7 anencephalous monsters (10.8%, 8%, and 43%, respectively). The muscle was found 8 times on both sides, 11 times on the right, and 3 times on the left. The muscle is, therefore, present more frequently in ♀♀ and on the right side. It was found very often in individuals having psychosis (11 out of 22 adults). Comparing these results with those reported for other races, it was concluded that: The m. sternalis is found more frequently among Mongolians and negroes than among Europeans and Filipinos, and more often in Chinese than in Japanese. It apparently occurs more often in individuals having psychosis than in those suffering from other diseases. It is more common in anencephalous than in normal fetuses. There is no difference between Japanese and other races in regard to the frequency of this muscle in anencephalous fetuses.—*Author (courtesy Wistar Bibl. Serv.).*

2285. **TRETJAKOFF, D. Die endochondrale Knochenbildung und die Verkalkung des Knorpels beim Frosch.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 9(1): 83-105. 12 fig. 1929.—The separation in time between calcification and ossification in the frog (*Rana esculenta* var. *ridibunda* Pall.) gives opportunity for detailed study of the cartilage cells and matrix during these processes. The proximal end of the femur was chiefly used but the results were compared with those in other bones. The transformations of the cells, particularly of their chondriome and reticular apparatus, are described and the remnants of these organellae are traced after the destruction of the cells. Calcification of the cartilage of both shaft and epiphysis plays a part in the mechanics of the bone and long precedes, and is independent of, the endochondral ossification which later involves both in a manner comparable to that in higher vertebrates. Consequently, calcification in the latter may also be a mechanical necessity and not merely a preparation for ossification. Endochondral ossification begins only with the entrance of perichondral buds; the cartilage cells, except a few in the epiphysis, degenerate and do not form osteoblasts. Calcification of the matrix appears first as spherules of Ca salts at a little distance from the cells. The process appears to have a certain independence of the life processes of the cells. Nevertheless, in areas in which the cells become calcified, and in these areas only, there is an hypertrophy of the chondriome which precedes the calcification of the cell. In these cases the chondriome next breaks up, the protoplasm transforms into cartilage matrix and calcification begins in it; usually peripherally, near the remains of the chondriome, but occasionally centrally around the degenerating nucleus.—*W. H. Piersol.*

2286. **WEEKS, CARNES. Occasional communications between the synovial sacs of knee and proximal tibiofibular joints.** *Amer. Jour. Surg.* 8(4): 798-800. 3 fig. 1930.—The synovial sacs of the knee and the proximal tibiofibular joints communicate in about 15% of cases. Where no such communication exists the close proximity of the 2 synovia necessitates injury to the popliteal bursa in exarticulation of the fibula. Acute suppurative arthritis of the knee joint may readily follow removal of the head of the fibula in the presence of infection.—*Author's summary.*

2287. **WEISS, OTTO. Über die Anatomie der Übergangswirbel an der Grenze von Lendenwirbelsäule und Kreuzbein und ihre klinische Bedeutung. [The anatomy of transitional vertebrae at the meeting point of the lumbar vertebrae and os sacrum, and its clinical significance.]** *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 92(3/4): 533-550. 8 fig. 1930.—Based on study of 100 röntgenograms from the gynecologic clinic, 413 röntgenograms from the surgical clinic, and 60 anatomical preparations.

2288. **ZAWISCH-OSSENITZ, CARLA. Die basophilen Inseln und andere basophilen Elemente im menschlichen Knochen. II. Besonderer Teil.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2. Zeitschr. Mikrosk.-Anat. Forsch.* 18(3/4): 393-486. 72 fig. 1929.—The basophil islands and other basophil elements are the expression of the varying potency of the periosteum for the formation of pure cartilage or pure bone in (a) early stages of development and (b) in growth zones. They were studied from their origin to their disappearance, in a series of human femora from the 10th fetal week to the end of the first year. The basophil islands occur only in a definite kind of bone, island or mixed bone, which is found only at a definite stage of bone development. They are formed by a heaping up of degenerating periosteal or endosteal

cells, which become basophil. Especially in the deeper bone trabeculae they may be mistaken for remains of cartilage matrix or some other form of cartilage. Between the closely packed cells are also some which merely exerete basophil substance and become basophil encapsuled (pseudocartilage) cells. Later the islands, by the action of adjacent cells (osteocytes), become transformed into true bone substance (molecular transformation), by what may be regarded as a ferment action. Isolated degenerating cells that stain deeply with hematoxylin and are found in chondroid bone are also to be classed among the basophil elements. In finely fibred chondroid they have a strongly refracting capsule and form a transition to pseudocartilage cells, which occur also in coarsely fibred chondroid. Cement, addition and stoppage lines, which are defined, are also basophil elements. Most of these structures are formed from very flat degenerating cells with basophil reaction. —*From author's abstract (transl. by J. P. McMurrich).*

ALIMENTARY SYSTEM

2289. HUBER, JOSEPH. Der Faserverlauf des Periodontiums und seine Entwicklung in Milch- und im bleibenden Gebiss, dargestellt an einem unteren Schneidezahn der Katze. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 90(1): 64-114. 35 fig. 1929.—The authors finds in the real peridontium only collagenous and no elastic fibrils. The dental sac of the temporary and permanent tooth consists of an almost vertical interlacing of meridional and equatorial fibrils. A stratification into strong outer and loose inner layers is already present in the enamel cap stage of the permanent tooth whereas it is seen only after the formation of the hard substances in the temporary tooth. Intersecting the basal fibrillation, radial fibers from the labial and lingual alveolar groove penetrate into the dental sac of the temporary tooth anlage, without, however, reaching the basal membrane of the enamel epithelium. The enamel organ of the permanent tooth is first imbedded in the fiber system of the periodontium of the milk tooth, and is later enclosed from almost all sides by bone lamellae of the linguo-alveolar wall. The basal fibrillation of the dental sac is preserved in this process. Only after the formation of the hard substances before tooth eruption do fan-like radial fibrils from the alveolar opening reach the tooth underneath the enamel border. At the eruption of the teeth, the dental sac is lost gingivally, equatorial fibrils remain in an intralveolar position around the neck of the tooth, meridionally they remain longer around the root. Equatorial fibers are lacking in the erupted tooth. There is a repeated interlacing of the radial fascicles, and a tangential insertion. In the tooth which is closing apically there are still to be found purely meridional fibers running in the same direction as the vessels. At the level of the openings of the alveolar processes interdental radial fascicles stretch from tooth to tooth. A "Ligamentum circulare" in the sense of circular, that is, equatorial stratification of the individual fibers is to be noticed in the young developmental stages of the enamel organ, as well as in the unerupted tooth. But then, the equatorial fibrillation disappears entirely after the eruption of the temporary, as well as of the permanent tooth. A separate nomenclature of the ring-shaped arrangement of radial and radial-meridional fascicles at the level of the openings of the alveolar processes as "Ligamentum circulare," therefore, seems unnecessary and misleading. Subapically, there are radial and radial-meridional fiber lines which are crossed by meridional ones. A double stratification of the peridontium as found in the dental sac is no longer found in the erupted mature tooth. The peridontium is uniformly fibrillated from the inner wall of the alveolar process to the tooth.—*J. Huber (transl.).*

2290. JORDAN, H. E. The pigment content of the liver cells of urodeles. *Anat. Rec.* 48(2): 351-365. 2 pl. 1931.—In *Amphiuma* approximately half of the hepatic parenchyma contains a voluminous content of finely granular brownish pigment. The pigmented cells in sections occur in groups of from 2 or 3 to many, corresponding with transverse or oblique sections of tubules. Appearances suggest a division of function between pigment-handling tubules and the usual type of hepatic tubule. Only a small number of the cells in any section, and in these only a variable number of larger granules, react to the ferrocyanide test for iron. Livers of *Triturus* vary greatly in their content of pigment. When only a small amount occurs, it is confined to macrophages within sinusoids; where much appears, it occurs also in Kupffer cells and certain hepatic cells. The spleen contains many macrophages with ingested erythrocyte fragments converted in part into hemosiderin granules and iron-free pigment granules. These cells pass into the liver sinusoids where, following disruption, they deposit their mixed content. This is phagocytosed by Kupffer cells and then transferred to liver cells. Here it occurs for the most part as minute spherical iron-free granules. Apparently identical granules occur in bile from the gall bladder.—*Author (courtesy Wistar Bibl. Serv.).*

2291. ROGOSINA, MARIE. Beiträge zur Kenntnis des Verdauungskanals der Fische. I. Über den Bau des Epithels im Pylorusabschnitt des Magens von Acipenser ruthenus L. *Jahrb. Morph. u. Mikrosk. Anat. 2. Abt. Zeitschr. Mikrosk.-Anat. Forsch.* 14(3/4): 333-372. 26 fig. 1928.—The epithelial cells of the pyloric region show a basal zone which is granular and a peripheral, or outer zone which is free from secretory granules, the protoplasmic zone. The process of secretion may be divided into 3 stages which are related to these zones. The presecretory granules are formed in the basal zone. These granules are associated with the Golgi apparatus, and their final solution takes place at the juncture of the basal and the protoplasmic zones. This process is similar to that described by Nemiloff for the epithelial cells of the epididymis. Among the epithelial cells in the pyloric region are cells which exhibit deeply staining acidophile granules. These are unicellular glands discharging their products directly into the lumen of the stomach. The staining reactions as well as their large size during the height of their activity indicate that they are related either to the Paneth cells or to the enterochromaffin cells.—*S. P. Miller.*

2292. WHILLIS, J. A note on the muscles of the palate and the superior constrictor. *Jour. Anat.* 65(1): 92-95. 3 fig. 1930.—There seems to be a constant band of muscle fibers passing from the superior constrictor into the palate, said fibers on a level with the ridge of Passavant. The author believes they play an important part in shutting off the naso-pharynx, and should be given the name of palato-pharyngeal sphincter.—*From author's summary.*

PHYSICAL ANTHROPOLOGY

2293. BLACK, DAVIDSON. The lower molar hominid tooth from the Chou Kou Tien Deposit. [In Chinese and English.] *Palaeontologia Sinica [Peking] Ser. D,* 7(1): (1-28). 2 pl., 8 fig. 1927.—Continued research work by the Geological Survey of China, at the Chou Kou Tien Deposit near Peking, has brought to light in recent years the well-known finds of human phyletic significance. The first lower left permanent molar of an immature individual represents the latest yield in the combined efforts of the Survey in cooperation with Peking Union Medical College (1927). From the morphological and metrical investigation comparatively carried on throughout, a combination of hominid and anthropoid characters was evinced which justified the identification of the find as pertaining to the basal Quaternary group of primary hominid forms such as the Trinil, Heidelberg, *Sinanthropus* (sp. *pekinensis* Black and Zdansky). The relationship between the previously recovered 2 teeth from the same site (1920; Zdansky, Bull. Geol. So. China, V(3-4): 279-283. 1927) appears also established. The author, relying on the Central Asiatic origin of primates and man, conceives of a subsequent dispersal of these forms in various directions including the east.—*B. Oetteking.*

2294. BOLK, L. Vergleichende Untersuchungen an

einem Fetus eines Gorillas und eines Schimpansen. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 81(1/2): 1-89. 1927.—The vertex-anus length of ♀ chimpanzee fetus is 24 cm.; ♂ gorilla fetus, 23 cm.; when fully extended chimpanzee is 185 mm., gorilla, 170 mm. Gorilla was still in uterus, the position much like human, the chief difference being in the disposition of the extremities. Skin of gorilla is scarcely pigmented, much resembling Dutch fetus of same age. Pigmentation of chimpanzee was much farther advanced. This animal exhibited a Mongolian spot. Gorilla spine measured 152 mm., that of chimpanzee 162 mm., 6 mo. human fetus 160 mm. As gestation period of anthropomorphs is unknown, parallel developmental stages between human and anthropomorphs cannot be established, though these seemed similar. Young anthropoid apes show more resemblance to man than do adults. They resemble one another in relation of size of cerebral and facial parts of head and in skull contours. The outer ear is higher in the 2 apes and they are more markedly prognathous. Cephalic index of chimpanzee was 83, gorilla 89.9, human fetus 82.7, all brachycephalic. Thus, difference in position of head on neck cannot be attributed to skull type, nor to position of foramen magnum. The foramen magnum of very young anthropoid apes is only slightly farther back than in man. Cranial base index is about the same and the backward displacement of the foramen occurs in postnatal growth. Typical pithecoid position with the cervical spine oblique on longitudinal axis of head and stooping forward of body is indicated in the fetus. Meatus acusticus of the eye balls and orbits is lower in man in accordance with the skull base and points to greater intracranial height and greater brain size. It is more marked in gorilla than in chimpanzee. Front portion of cranial cavity is larger. The salient feature is the snout. Prognathism in most species is the consequence of bending upward of face. This does not occur in primates, where prognathism is produced by forward displacement of the nasal floor and elongation of the jaw. The large snout of gorilla remains subcerebral. The exophthalmus of the human embryo is not as pronounced as in anthropomorphs, though marked in the negro fetus. It is reversed, especially in gorilla, because of the enormous supraorbital ridges. The organs of sense grow rapidly and there may be a discrepancy between growth of orbit and eye-ball. In anthropomorphous apes and the white race, the sides of the orbits grow forward around the eye ball, leaving the Mongolian race behind them, in the fetal stage, in this respect. The facial formation definitely differs, the chimpanzee having numerous wrinkles, while the gorilla is smooth. Lifting of the root of the nose later causes folds and epicanthus to disappear. Where the root of the nose is not lifted the epicanthus persists, as in Japanese. Chimpanzee remains more fetal than gorilla in this respect. Chimpanzee hair is dark brown, curly, implanted in tufts as in negroes, while gorilla has straight, shorter hair. While most of the face is bald, upper and lower lips and chin are bearded in both fetuses. Hair is longer and closer in gorilla, that of body the same as in man for both. Man's skin continues in the fetal state. The author considers the development of man to be based on factors within his organism, not on the effect of his surroundings; upon biologic effects, evident in all primates, but most effective in man. All typically human qualities rest in one common cause, not only the physical, but to an extent the functional, though climate and nutrition have a modifying effect. The process is so slow that much larger mammals are senile at a time when man is not yet adult. The horse doubles its weight in 60 days, man in 180. Dentition is retarded because of the prominent chin. The gradual change can be due only to the function of the endocrine system. The body constitutes a compound of endocrines which may progress individually. The generative and the somatic systems, especially in the ♀, develop at varying pace and some are arrested at an incomplete stage. Retardation may amount to infantile, fetal fixation or to elimination of a morphologic characteristic. "Man's course of morphologic sequence constitutes a purely hormonal phenomenon." Disease or abnormalities of the endocrine organs in man may restore lost characteristics, for instance, hair, cutaneous pigment, etc. Fetalization is the clue for the closer resemblance between younger individuals of man and anthropomorphs. Characteristics commonly called human in the apes are fetal. The adult constitutes an incomplete phase of the primary type. "Man is a sexually adult primate fetus." The author brings racial differences under the head of fetalization, where single characteristics show various degrees of retardation. Denudation, often attributed to man only, already exists in anthropomorphous apes, where hair on head is present in the last fetal stages, while the trunk is still nude. This shows the error in considering loss of body hair as due to outer influences. In man the beard became subject to sex hormones and at last took on the significance of secondary sex feature. In general, the hair of the trunk in gorilla and chimpanzee is implanted cranio-caudally, except in the axillary and inguinal regions. The author does not consider the direction of motion of the body (cranio-caudal) as adequate explanation for the direction of the hair. For the cranio-caudal direction of the hair the oral opening must be considered as the cranial starting point of the currents. This opening was of use to the animal and should be considered as an adaptation. The direction of the hair follows the development of the extremities. Centers of divergence are secondary; they and divergence spirals are due to the same causes. Chimpanzee has large ears, while gorilla, orang and man have small ears. The breadth of the fetal ear of chimpanzee is greater than the length, whereas in the adult length is greater. The chimpanzee ear is more primitive than that of other anthropomorphous apes. The lobe is absent as in all anthropomorphs. The human ear, especially the free lobe, has fetal characteristics. The external sex organs of chimpanzee ♀ were large, those of the gorilla ♂ very small. Sparse light hair was found on the penis and adjacent portions of the scrotum, which had no pronounced sac. The ovaries showed much connective tissue. This points to the low sexual activity of organs of internal secretion in gorilla, which is known to copulate very infrequently. The chimpanzee fetus had large labia majora with slit-shaped vulva; the labia reach around the clitoris, the main portion of which is later exposed. In comparing proportions of the extremities and trunk, the author measured the long bones, to avoid misleading comparisons by inclusion of parts of the hands and feet. In the fairly young human fetus the leg is longer than the arm. At some time in human development this relation must have been reversed, for the anterior extremity is the first to propel itself. This primary relation has been preserved by the anthropomorphs. The longer legs are not specifically human, as they are encountered in other mammals. Difference in length of the extremities increases with growth. The forearm does not grow as intensely as the upper arm in the course of life; the leg, however, though shorter, grows more than the thigh. The proportions in gorilla are the reverse of the human. It must be observed, however, that during the second growth period radius and ulna become markedly bent. The anthropomorph forearm grows less than the upper arm, and the leg more than the thigh. In chimpanzee, it seems, upper arm and thigh grow as much as forearm and leg. In man the fetal arm constitutes 9/10, in the adult 7/10. In man the growth of the lower extremities is more intense, in the anthropomorphs that of the upper. Preponderance of the anterior extremities is an early embryonal feature. The adult anthropomorph shows approximately the same relation between thigh and leg. Both the erect position of man and the requirements for the passage of the large human head through the pelvic opening influence the difference of the lower portion of the pelvis, but the human does not diverge as much from embryonic conditions as do other primates. The bony pelvis seems specialized. It is less differentiated in an ontologic sense. Man's ancestors undoubtedly had

a pelvis like that of the primates, though ontogenic studies have not yielded proofs. The human pelvis has stopped at a younger developmental stage. It is fetal, just as in man's skull. Young simian fetuses, on the other hand, approximate the human. Erect posture alone did not produce the human pelvis. The external genitalia in the ♀ chimpanzee fetus and adult are moved toward the back; in man they are much more ventral. In anthropomorphs the body axis has been stretched in the course of development, as in other mammals, while in man the caudal portion has preserved the embryonal body axis. The more complete extension of the body axis in chimpanzee has resulted in the lower extremities being attached more caudally than in man, which becomes evident in studying the attachment of trochanter major. The anterior extremities are nearer the cranium.—*B. Bickel.*

2295. **BROEK, A. J. P. van den. On the continuance of the increase of stature in Holland.** 687p. Kl. Akademie van Wetensch.; Amsterdam, 1927.

2296. **[CHISTYAKOV, G. A., and V. I. BARU.]** ЧИСТЯКОВ, Г. А., и В. И. БАРУ. К вопросу об оценке упитанности по методу Oeder'a. **[Development of subcutaneous tissue by the Oeder method.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 1: 68-71. 1926.—The authors examined 4023 Ukrainian soldiers from Kharkov, using Oeder's method for evaluation of development of subcutaneous tissue. The average thickness of the tissue was 9.5 mm.—a low figure explainable, no doubt, by the fact that the subjects had been working hard in the fields and were not well nourished. A group measured 2 mos. prior had a slightly greater development of subcutaneous tissue. The authors stress the value of the precision and simplicity of the Oeder method in measuring the subcutaneous tissues.—*From authors' summary.*

2297. **DEHAUT, E. G. Étude sur les homologies du squelette axial humain (vertèbres et occipital).** Inaug.-Diss., Paris. 38p. 12 fig. 1927.

2298. **ERASMO, GEREMIA D.' Avanzi eneolitici della caverna del Cervaro presso Lagonegro. [Neolithic remains in the cavern of Cervaro near Lagonegro.]** *Atti Accad. Sci. Fisiche e Matema.* 17(1): 1-26. 6 pl. 1927.—The skeletal remains found during 1911-12 by De Lorenzo and Di Cicco in an heretofore unknown and unexplored cavern, between Saîerno and Potenza, were studied by the author. They are now in the Institute of Physical Geography of Naples and in the Provincial Museum of Potenza and include a calvarium, fragments of skulls, mandibles and isolated teeth, long bones, a few vertebrae and ribs and a few portions of carpal and tarsal bones, the whole belonging to at least 6 skeletons. The least damaged calvarium might fall, because of its horizontal index, into a variation of the Crô-Magnon type, although in its cephalic index (79) it falls between a brachycephalic and a dolichocephalic type. This renders less probable the hypothesis that it might belong to a Crô-Magnon type, especially since the bones are rather thin and the osseous-muscular prominences are not very marked. The mandible is rather thin, with a well-formed chin. If the calvarium seems to indicate a more recent type, the long bones exclude totally their belonging not only to the Crô-Magnon type, but also to the Neolithic type predominant in France. The principal characteristics of the long bones of the Crô-Magnon type—pilaster index of femur, platycnemia and well developed marking of the humerus—are completely absent. Only 1 fragment of a femur presents a sharp crest of moderate development, not at all, however, like a true pilastric index of femur. The talus and calcaneus existing in this material belong, without a doubt, to a fine type. The study of the bones shows that they represent a recent and advanced type of humanity, and this view is confirmed by the study of the stone objects and ceramics in the cavern.—*G. A. Bica and T. T. Job.*

2299. **ES, IR. L. J. C. van. Voorloopige mededeelingen over een nieuwe vindplaats van den praehistorischen mensch op Java. [Preliminary announcement of a new locality of prehistoric man in Java.]** *Handelingen 4th Nederlandsch-Indisch Natuurwetensch. Congres Weltevreden* 1926. 468-474. 1926.

2300. **[FERSCHT, M. S.]** ФЕРШТ, М. С. Цвет и форма волос и цвет глаз у населения Харьковского округа. **[Color and shape of hair, and eye color in the population of the Kharkov District.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 2: 129-141. 1926.—About 7000 recruits (Ukrainian, Russian, and Jewish) from the Kharkov district were examined as to eye color, color and form of hair. Dark hair prevails: in about 80% of Ukrainians and Russians, and 95% of Jews. Pure blonds are rare, not over .21% in any group. Red is more common, especially among the Jews (.63%). Straight hair is rare, while wavy hair prevails in all classes, especially the Jews, among whom alone tightly curled hair is found (about 1%). Light eyes are found in 66.82% of Russians, 63.00% of Ukrainians, and 37.50% of Jews. When Ukrainians and Russians are classified on the basis of their social levels it is found that dark eyes appear less often among the peasants, more commonly among the working class and most frequently among the intellectuals. The percentages of dark eyes in these classes are respectively 35.06, 38.12, and 41.19 for Ukrainians and 28.34, 34.02, and 36.66 for Russians. Parallel distributions of light and dark complexions are observed, the frequency of dark coloration increasing as one ascends the social scale. As between Ukrainians and Russians the latter are slightly more blond. The class differences so clearly shown in Ukrainians and Russians are not apparent in the Jews, probably because of the ethnic homogeneity of different social groups among them. The correlation between eye and hair color is slight in all groups (less than .2). The various data are summarized in a series of tables.—*C. H. Danforth (from French résumé).*

2301. **[HERSTEIN, F. E.]** ГЕРШТЕЙН, Ф. Е. Возраст появления менструаций и начала половой жизни у работниц г. Харькова в связи с влиянием периода недоедания. **[Age of onset of the menses and of the beginning of sexual life among the female workers of Kharkov, in connection with periods of famine.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 2: 170-181. 1926.—Statistical tables and discussion based on replies of 1764 Ukrainian, 1056 Russian (Great Russia), and 578 Jewish women; all workers in Kharkov and living in the same social environment. The median age for onset of menstruation was found to be 14 yrs., 11 mos. for Ukrainian, 14 yrs., 8 mos. for Russian, and 14 yrs., 1 mo. for Jewish subjects. At 14 yrs., 6 mos., menstruation had appeared in 44% of the Ukrainians, 51% of the White Russians, and 63% of the Jewesses. There is scarcely any correlation between age at onset of menstruation and age of beginning of sexual life. The median age of the latter was 19 yrs., 3 mos. for the White Russians; 19 yrs., 9 mos. for the Ukrainians; and 20 yrs., 10 mos. for Jewesses. The median age of mothers at birth of the 1st child was 20 yrs., 9 mos. for Russians; 21 yrs., 1 mo. for Ukrainians; and 21 yrs., 10 mos. for Jewesses. During the famine years, onset of menstruation was retarded 9 mos. in Ukrainians and 15 mos. in White Russians and Jewesses. In the same period the delay in the beginning of sexual life was 11 mos. for Russians and 13 mos. for Jewesses.—*C. H. Danforth (from French résumé).*

2302. **KLIMEK, STANISŁAW. Studja nad Kranjologja Azji północnej, środkowey i wschodniej. [Craniology of north, central and east Asia.]** [German summary.] *Kosmos* [*Lwow*] 52(3/4): 665-758. 1928.—256 skulls of 9 different recent Mongoloid groups, including 13 Ainu skulls, were studied according to Czekanowski's differential and associative methods. This gave rise to the establishment of 5 racial components which in the order of their enumeration are the following: paleoasiatic, pacific, central asiatic, laponoid, arctic. Their craniologic characteristics are summarized in the German résumé.—*B. Oetteking.*

2303. **LUNDBORG, H. Rassenkunde des Schwedischen Volkes.** viii + 160p. 50 pl. Gustav Fischer: Jena, 1928. Pr. 19 M.

2304. [NIKOLAEV, L. P.] НИКОЛАЕВ, Л. П. Национальные и социальные различия в размерах головы и в некоторых соматоскопических признаках у населения Харьковского округа. **[National and social differences in dimensions of the head and in certain morphologic characters of the population of the Kharkov district.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 2: 5-52. 1926.—Author gives results of anthropometric studies on 7235 conscripts (4502 Ukrainians, 1735 Great Russians and 998 Jews). The Ukrainians and Great Russians are divided into 5 social groups: (1) peasants; (2) unskilled laborers; (3) skilled laborers; (4) semi-professional class whose duties require a certain minimum of education; and (5) professional class embracing those who have an average or superior education. The author concludes that: Horizontal circumference of head increases with rise in social status. Differences according to nationality were also observed, the Great Russians having a larger cephalic circumference than Jews or Ukrainians, but differences according to social status were more pronounced. Moreover students originating from peasant class had a smaller cephalic circumference than students from laboring class. Antero-posterior diam. (glabella-opisthocranian) increases with rise of social group. Transverse diam. shows less difference. Hence cephalic index decreases with rise in social group. Ukrainians have higher index than Great Russians. The index increases among Jews, however, with rise of social rank. Cephalic arc antero-posterior and transverse: the mean values of these are higher among the educated or professional group than among labor group, and higher in the latter than among peasants. Physiognomic height (trichion-gnathion) increases with status of social group but bizygomatic diam. remains about the same. Morphologic height (nasion-gnathion) increases somewhat with status of social group. The frontal part increases with rank of social group. Only slight differences exist in frontal minimum diam. and bigonial diam. but the mandibulo-frontal index is lower in group 5 than in laborers and lower in laborers than in peasants. The Jews have smallest index due to their asthenic build, a characteristic of which is a weak development of lower jaw. Nasal height increases with social status, while breadth is about same in all groups; hence nasal index is lower in group 5 than in group 1. Frontal height shows most significant differences in the social groups. Jews of the professional group differ less in physical characters from general Slav population than they do in the labor group, intermarriage with Ukrainians and Great Russians being more common in professional class than in labor class. The cerebral and respiratory types of Sigaud are more numerous as the social status rises, while muscular and digestive types decrease. Sigaud's types appear unequally in the different national groups. The respiratory type especially is more numerous among Jews than the muscular and digestive. Author regards differences in mean value of dimensions and indices of head according to social status as due to professional selection, according to which each individual tends to choose the profession corresponding best to his physical and intellectual abilities. The unequal distribution of Sigaud's type in the social groups may also be explained by selection.—*C. J. Connolly.*

2305. [NIKOLAEV, L. P., and G. I. CHUCHUKALO.] НИКОЛАЕВ, Л. П., и Г. И. ЧУЧУКАЛО. Национальные и соуиальные различия в физическом типе преступников. **[National and social differences in the physical type of criminals.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 2: 108-128. 1926.—In anthropometric studies on 640 criminals (487 Ukrainians, 104 Great Russians, and 47 of other nationalities), subjects were divided into 2 age groups: 20-25, and above 25. The Ukrainians were further divided into 2 groups according to social origin: peasants, and laborers. Comparisons were made with conscripts. The authors conclude that: There exist national differences in physical type of Ukrainian and Great Russian criminals. As in case of conscripts, the latter have a larger head circumference, and antero-posterior diam. of head, a smaller cephalic and physiognomic index, and a higher facial index than the Ukrainians. Differences in physical characteristics of the social groups are seen among criminals. As among conscripts, laborers have a mean head circumference and antero-posterior head diam. greater than peasants. The latter have a smaller physiognomic height, greater breadth of face, higher cephalic and physiognomic index, lower facial index and a higher mandibulo-frontal index than laborers. The cerebral type of Sigaud is less frequently found among peasants than among criminals of laboring class. Average dimensions of cranial part of head, in criminals do not show any considerable differences from those of conscripts. Hence if any correlation exists between intelligence and head size, the criminals are not intellectually inferior. Between criminals and conscripts of same nationality and same social group, there exists differences in average values of certain dimensions,—criminals are more brachymorph. But the authors do not regard this as evidence of a criminal type as opposed to the normal. Differences are due to selection, the criminal class being recruited among robust individuals who are brachymorph.—*C. J. Connolly.*

2306. **PALMIERI, VINCENZO MARIO. Verteilung der morphologisch-konstitutionnellen Typen unter den geisteskranken Verbrechern.** *Deutsche Zeitschr. Ges. Gerichtl. Med.* 12(6): 592-601. 1928.—In the group of criminal insane studied according to the method of Viola the microsplanchnic (leptosome) type prevails with 69%; the normal (athletic) type follows with 20% and the macrosplanchnic (pyknic) with 6.36%. Studied according to the nature of the crime, the microsplanchnics lead in homicides with 78.6% and progressively diminish in the lesser crimes, as in crimes against property 55.5%, sexual crimes 42.8%. The author also studied the constitutional types, ages, psychopathy, and blood groups in the habitual criminals. In this class as well as in the normal Italian people and the criminal insane, the group O and A are greater than the groups B and AB but in a totally different way. While the groups B and AB are relatively of greater proportion, this greater proportion is especially noted in the homicides and the habitual criminals, while in the crimes against property the relative prevalence of only the group AB is noted.—*V. M. Palmieri (transl. by J. DeCarlo).*

2307. **RAUTMANN, HERMANN. Probleme der klinischen Variationsforschung.** *Zeitschr. Ges. Anat. Abt. 2. Zeitschr. Konstitutionsl.* 13(4/5): 417-449. 4 fig. 1928.—The problem of constitution can be dealt with as a problem of variation. The constitution of a person can be considered only by comparing it with that of other persons; only the average behavior of a person under varied conditions gives an index of his constitution. The concept of the norm (which cannot be abolished) is best defined as "the most frequently found" without biologic evaluation. "Normal" is not necessarily identical with "physiologic" or with "healthy." The norm for a single property generally can be determined only in relation to one or more other properties. That means that norms generally are correlative, and thus the special methods of collective measuring are required for their determination. The frequency of asymmetrical distribution is still not sufficiently recognized. It has not been proven that with larger material the distribution becomes more regular. Collective measuring should be continued on the lines given by Fechner. The asthenic and pyknic types probably represent the ends of a series in the middle of which the athletic type is found. There seems to be a definite relation between body length and chest circumference; tall people generally have a relatively smaller chest circumference. The relation between body length and the measurements of the head is much more complicated. It varies with the complexion and thus seems to depend on race also. The importance

of external physical habitus for clinical medicine is well illustrated by the differences of the heart in pyknic and leptosomic persons. The relations between physical habitus and muscular efficiency are manifold and can by no means be gauged through simple measuring of muscle volume. Indices should be simple and mathematically correct. Symmetry and asymmetry of distribution may vary with age as is the case for body length.—*A. Plaut.*

2308. **SCHWARZ, M. Die Formverhältnisse der Nasenscheidewand bei 84 Zwillingspaaren (53 eineiigen und 31 zweieiigen).** *Arch. Ohren-, Nasen-, u. Kehlkopfheilk.* 119(3/4): 291-300. 4 fig. 1928.—Research carried on during 4 yrs. led to the discovery of great similarity in the form of nasal septa of twins as compared with great variety in other persons even of the same family. The method chiefly employed was anterior rhinoscopy and occasionally x-ray. In 52.8% of the monoövular twins similarities of septum occurred. Of these 41.5% showed a nearly identical condition; in 11.3% the condition in the 2 members of the pair formed a mirror image. Of the diovular twins, similarity of septum occurred in only 9.6%. Among other members of families, similarity was practically non-existent. An insufficient number of these were examined, however. It is concluded that the final form of the septum is predetermined in the anlage unless disturbed during development.—*H. M. Allyn.*

2309. **SIFFRE. La chronologie d'éruption des dents temporaires et des dents permanentes.** *Bull. Soc. Anthrop. Paris* 8(4/6): 251-252. 1927.—A demonstration that these 2 dentitions are formed through eruptions of different natures—chronologically and nominally—in temporary and permanent teeth.—*Siffre (transl.).*

2310. **TAVARES, AMANDIO. Le canal condylien postérieur chez l'homme.** *Compt. Rend. Séances Soc. Biol.* 100: 523. 1928.—The condyloid canal was absent 66 times on the right side, 84 times on the left, and 63 times on both sides in 560 crania examined. One case of duplicity of the canal throughout its whole extent was observed.—*I. D. Hogg.*

VERTEBRATE EMBRYOLOGY

CARL HARTMAN, *Editor*

C. F. DE GARIS, *Associate Editor*

(See also in this issue Entries 22, 248, 249, 292, 312, 371, 442, 556, 578, 582, 804, 837, 914, 961, 1098, 1132, 1200, 1320, 2130, 2206, 2220, 2249, 2284, 2288, 2289, 2294, 2942)

DESCRIPTIVE

2311. **BOENIG, HORST. Studien zur Morphologie und Entwicklungsgeschichte des Pankreas beim Bachneunauge [Lampetra (Petromyzon) planeri]. III. Teil. Die Histologie und Histogenese des Pankreas.** *Jahrb. Morph. u. Mikrosk. Anat. 2. Abt. Zeitschr. Mikrosk. Anat. Forsch.* 17(1/2): 125-184. 39 fig. 1929.—The origin of the pancreatic anlage from the epithelium at the juncture of the fore- and midguts is described. Usually the midgut contributes the anlage although the foregut may do so in some instances. The pancreatic buds are solid and at a very early stage become surrounded by collagenic connective tissue. The protoplasm of the cells derived from the midgut epithelium may be either dense or clear, depending upon their activity. The lumina of these buds become filled with blood and cylindrical cells densely packed with granules. It is impossible at this stage to distinguish between pancreatic and islet cells. During the last half of metamorphosis the epithelium of the ductus choledochus gives rise to pancreatic anlage which corresponds to the ventral pancreas of the higher vertebrates. Capillaries develop at the time of the formation of the epithelial buds. The epithelium of the ductus choledochus gives rise to pancreatic anlage, the buds of which are indistinguishable from those formed from the midgut epithelium. The solid epithelial buds acquire lumina and the epithelium becomes columnar. The pancreatic buds of this newly formed ventral pancreas acquire lumina later. The blood vessels are sparse but continue to increase.—*S. P. Miller.*

2312. **BULSIEWICZ, H. Die Entwicklung der Blutsinus in den Tasthaaren.** *Bull. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. Nat. Sér. B. Sci. Nat. (II).* 1929: 249-261. 2 pl. 1929.—The material consisted of pig embryos 8-35 cm. long. The adult cat and rat were used for comparison of the vascular supply of the "sinushairs" or vibrissæ. The anlagen of the sinushairs appear in very early stages, earlier than those of the ordinary hairs. The special vascular network of the sinushair can not be recognized in the earliest stage of the embryo. The differentiation of the vessels of the nourishing network into an inner and an outer network first appears in embryos 10.4 cm. long. The corpus cavernosum begins to develop immediately after the development of the hair is completed. The artery supplying the hair divides immediately under the hair into a papillary branch, and 2 other branches which form the outer network. From this network 2 arteries, a major and a minor, with the nerves pass to the surface of the hair follicle. The veins of the c. cavernosum arise at the bottom of the follicle. The papilla receives its blood through the papillary artery. In the mature pig there is a well developed annular sinus. The cat and rat present differences in the general form of the sinushairs, and the blood is supplied on 1 side.—*H. F. Nachtrieb.*

2313. **CHIARUGI, GIULIO. Trattato di embriologia con particolare riguardo alla storia dello svillupo dei mammiferi e dell'uomo. Parte Prima. Gli elementi della riproduzione sessuale e la fecondazione. [Treatise of embryology. 1. Elements of sexual reproduction and fecundation.]** 391p. 145 fig. Societá Editrice Libraria: Milan, 1929, pr. 50 L.—The author aims to present the development of the Mammals including Man, so as to give, besides the most recent developments in biology, details in physiology and pathology. The very extensive literature up to and including the year 1927 is reviewed and is completely listed in the index; the most recent developments in the field of heredity and sex-determination are reviewed to awaken the interest of medical students in the study of embryology. A complete table on the reproduction data of the most representative Mammalians, Amphibians, Reptiles and Birds is appended.—*T. T. Job.*

2314. **FLORIAN, J., a O. VOKLER. Vývoj primitivního prouzku, kloakové membrány a allantoidy u cloveka. [Development of the primitive streak, cloacal membrane and allantois in man.]** [German summary.] *Spisy Lékarské Fakulty Masarykovy Univ. Brno. (Publ. Fac. Med. Brno.)* 6(60): 1-24. 4 pl. 1928.—The development of the primitive streak, cloacal membrane and allantois, based on a study of 15 early human embryos (Peters, v. Mollendorf, Fetzer, Strahl-Beneke, etc.), is presented; also appeared in *Zeitschr. Mikrosk.-Anat. Forsch.*—*From German summary* by *A. E. Adams.*

2315. **FREISE, GÜNTHER. Über die Langerhansschen Inseln des Pankreas beim Kaninchen unter besonderer Berücksichtigung ihrer Entwicklung.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschr. Mikrosk. Anat. Forsch.* 17(1/2): 185-228. 12 fig. 1929.—At about the middle of embryonic life there appear in the pancreas, well marked areas of epithelial cells unrelated to the ducts or the remaining pancreatic cells. These are embryonic islets. During the latter part of embryonic life the epithelium of the ducts and the gland gives rise to the islet cells. Usually there is a distinct connective tissue capsule. Transitional stages of epithelium between acinus cells and islet cells were not found. The islet cells are structures sui generis. After castration there was an atrophy

of the islet groups with hypertrophy of the blood capillary systems. Two types of islet cells were not noticed. —*S. P. Miller.*

2316. **GRÄPER, LUDWIG. Die Methodik der stereokinematographischen Untersuchung des lebenden vitalgefärbten Hühnerembryos.** *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 115(3): 523-541. 5 fig. 1929.—This paper contains a description of the method for study of living embryos by means of stereoscopic motion pictures. It includes discussions of the principles of stereoscopic photography and the various pieces of apparatus used. Complete descriptions with figures are given of the latter. Methods of preparation of the embryos for study are also presented. It is a complete outline of the method, and the practical and disadvantageous values are briefly presented.—*P. L. Risley.*

2317. **HOCHSTETTER, FERDINAND. Beiträge zur Entwicklungsgeschichte des menschlichen Gehirns. Band 11, Teil 2: Die Entwicklung des Mittel- und Rautenhirns.** p. 83-206. 25 pl., 21 fig. Franz Deuticke: Wien & Leipzig, 1929. Pr. 42 M.—The present paper forms the final part of the author's study on the developmental history of the human brain. The first portion deals with the development of the outer form of the midbrain under the headings: limits of the midbrain, aqueduct of Sylvius, reduction of the ventricular cavity. The second portion deals with the development of the medulla oblongata, under the headings: form changes in embryos between 27 and 75 mm. in length, disappearance of the sulcus medianus, formation of the subependymal system, the velum medullare, appearance of sulci on the surface of the cerebellum, relation of hemispheres to vermis, development of the choroid plexus of the fourth ventricle, development of the median and lateral apertures, the taenia, modifications of the floor of the fourth ventricle. The observations are based on serial sections from 102 specimens 6-250 mm. in length. The figures and plates are excellent and a page index (for both parts) is given.—*H. H. Donaldson.*

2318. **HOLMDAHL, D. E. Ein rätselhaftes, zirbelähnliches, embryonales Organ im mittleren Teile des Daches des Rhombencephalon.** *Anat. Anzeiger* 65(23/24): 428-433. 4 fig. 1928.—In a 5 mm. cat embryo with 22 somites is a vesicle 70 μ in length between the roof plate of the rhombencephalon and the ectoderm; with the former it is connected by a pedicle and its cells resemble those of the neural tube; its median location and structure suggest a comparison with the parietal organ. Its extreme caudal position in the plane of the otocysts constitutes the singularity of this observation.—*H. von W. Schulte.*

2319. **KRAITSCHEK, GUSTAV, und F. CAPELLER. Der Mensch und seine Entwicklung.** 422p. 24 pl., 243 fig. Walter de Gruyter: Berlin, 1929.

2320. **LAGUESSE, E. Développement de la cornée chez le poulet; rôle du mésostroma; son importance générale; les membranes basales.** *Arch. Anat. Microscop.* 22(2): 216-265. 2 pl. 1926.—The substantia propria of the cornea first appears as an acellular sheet (mesostroma) between the anterior epithelium and the crystalline lens. New exoplasmic lamellae are added to it from the deeper surface of the anterior epithelium. It is thus entirely of mesostromal ecto-ectodermal origin. Mesenchyme cells migrate (beginning at the 5th day) back of the substantia propria to form the posterior epithelium. Mesenchyme cells (7th day) also invade the substantia propria and annex it to the rest of the mesenchyme by modifying its appearance and properties. Two groups of lamellae remain uninvaded, however, the one, posterior, which will become the membrane of Descemet, and the other, anterior, which, united to the primitive basal membrane (after the 10th day), will become the membrane of Bowman. Thus epithelia may play at least the initial rôle in the formation of certain basal membranes, mesenchymatous elements being added secondarily. The mesostroma also gives rise to the vitreous body and the pecten. The idea of the mesostroma should be valuable in explanation of many facts of normal and pathologic development. The mesostroma should be considered as a sort of primitive acellular supporting tissue, a primitive form of the fundamental substance due to the temporary collaboration of the cells of different blastodermic layers or of the first organs which are formed from them.—*P. A. Moody (from author's conclusions).*

2321. **LUBBERHUIZEN, H. W. Die Entwicklung der Hypophysis cerebri beim Schaf.** Dissertation. University of Leiden: Leiden, 1927.

2322. **MERKEL, FR., und ERICH KALLIUS. Die Anatomie des Menschen. Abt. I: Einleitung, allgemeine Gewebelehre, Grundzüge der Entwicklungslehre. [Human anatomy. I. Introduction, general histology, outlines of development.]** 2nd ed. 288p. 295 fig. J. F. Bergmann: München, 1927.

2323. **SZANTROCH, Z. L'histogénèse des ganglions nerveux du coeur. [Histogenesis of nerve ganglia of the heart.]** *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B (II)* [*Zool.*] 1929(8/10): 417-431. 5 pl. 1929.—According to the author's former studies the nervous elements of the digestive tube develop from the same material as its muscle layer, namely the splanchnopleure. Do the nerve ganglia of the heart arise similarly? It was found: (1) Hrs. 80 and 140: the material produced by the splanchnopleure (cardiopleure) gives rise to the ganglia of the sinus venosus and the muscles of its walls, i.e., to the muscles of the venae cavae and pulmonariae. (Ganglea sino-venosa.) (2) Hrs. 100-160: from the same material come the ganglia connected with the muscle wall of the truncus arteriosus (*G. aortico-pulmonalia*). (3) Hrs. 150-240: The outlines of the coronary arteries and accompanying ganglia differentiate from the cardiopleural mass and appear as diverticula on the wall of the base of the aorta (*G. vaso-coronaria*). The outlines of the ganglia move away from the muscle layer as development progresses and finally are fixed in the surrounding connective tissue. There is no visible formation of ganglia in connection with the muscle layer of the ventricles or the auricles proper. If the common origin of these ganglia is taken into account, and their simultaneous differentiation with the wall of the heart vessels, especially of the muscle layer, one must consider them as the nervous mechanism of these vessels and not of the cardiac muscle. Thus the rôle of the sympathetic ganglia would be to act upon the muscles of the heart vessels and cause their contraction or dilation regulating the blood-flow both in the general and the coronary circulation.—*E. W. Count.*

2324. **VERSLUYS, J. J. Bijdrage tot de tweelingenpathologie in verband met de erfelijkheidsleer. [Pathology of twins as related to science of heredity.]** 95p. Eduard Ijdo: London, 1928.—The records of the Women's clinic at the University, Amsterdam and the schools for midwives at Amsterdam and Rotterdam were studied for twin births and especial attention was given to the placenta. The % of twin births was 1.4, with 27% monochorionic. Mothers of bichorionic twins were older than the mothers of monovular twins; 30% were primiparae. Of 313 pairs of twins where the sex was mentioned, 220 were of the same sex, 115 of them boys. Both duplicate and fraternal twins may occur not only in the same mother, but in the same pregnancy. There is no parallel between the number of placentas and the number of chorions. In the majority of cases the monozygotes lie in the same chorion. The aim must be to ascertain how many chorions are found with the placenta. It is proposed to speak of monozygotes and dizygotes, monozygotes being monovular twins with the same idioplasm and dizygotes being bi-ovular twins with different idioplasm. Some anthropologic and pathologic histories of the author's cases are given; the deductions are mainly based on similarity of diseases contracted by twins.—*B. Bickel.*

2325. **WITSCHI, EMIL. Studies on sex differentiation and sex determination in amphibians. I. Development and sexual differentiation of the gonads of Rana sylvatica.** *Jour. Exp. Zool.* 52(2): 235-265. 5 pl., 4 fig.

1928.—In *R. sylvatica* all germ cells derive from the primary gonia which separate from the entoderm and migrate toward their final position near the inner edge of the mesonephros during the larval stages with free external gills and growing gill sacs. Neither in young nor in adult specimens has any formation of secondary germ cells been observed, but undifferentiated gonia were always present. The sexes differentiate during the 4th week. This species shows no hermaphroditic tendencies, but ovaries and testes develop rapidly and directly their typical characters. At the time of metamorphosis (7th-8th week) the sexes are more distinct than in any other species with a short larval period, so far studied. The young gonads of both sexes show a segmentation due to the metameroid arrangement of the rete cords. This gonomery persists more distinctly in the ovary than in the testis. As a consequence of the reduction of the body length and of the position of the liver on the right side, the primordial gonad of this side is shorter than the left one. This asymmetry later persists in the fat-bodies, which are much smaller on the right side than on the left.—*Author (courtesy of Wistar Bibl. Serv.).*

EXPERIMENTAL

2326. CHAMPY, CH., et J. MORITA. Recherches sur les cultures de tissu. Observation sur les cultures de testicule et d'ovaire chez les mammifères, les oiseaux et les batraciens. *Arch. Exp. Zellforsch.* 5(3/4): 308-340. 2 pl., 12 fig. 1928.—The morphology of the various elements was studied in prolonged culture of the gonads of many vertebrates (testes of rabbit, fowl, tortoise and *Triton;* and ovaries of rabbit). Particles vitally stained by neutral red are not identical with the Golgi apparatus (studies chiefly on ovarian epithelium). The "bouisson de cactus" is nothing but a group of epithelial cells proliferated in the depth of plasma (testes of fowl). Testis (and other organs) of *Triton* kept for some time in the laboratory contains some symbiotic microbes which do not hinder but rather favor growth of the culture. Conclusions: Some trace of spermatogenesis occurs in the unopened seminiferous tubule implanted in plasma but never on the surface of the plasma. Cytological characters of the cultured cells are not exactly the same as in the natural state i.e., they regress more or less completely, although they retain some of their original function. The form of the cultured cells depends rather on the condition of medium than on their origin. Thus the essential facts of the de-differentiation affirmed by Champy in 1912 are verified.—*J. Morita.*

2327. DETWILER, S. R. The development of the spinal cord in Amblystoma embryos following unilateral myotomectomy. *Jour. Exp. Zool.* 52(2): 325-349. 26 fig. 1928.—Complete removal of the right 6th, 7th, and 8th somites of *Amblystoma* embryos in the tail-bud stage has no effect upon the proliferation of cells in the spinal cord on the demuscularized side. The volume of the right half of the cord is also as great as the normal left. The results bear out former conclusions that, in *Amblystoma* embryos, the proliferation of cells in the motor areas of the cord is not under the influence of the presence of differentiating or functioning musculature. There is no indication that, after the medullary tube is closed, the surrounding structures have any influence on its morphology. Spinal ganglia segment and differentiate in the complete absence of axial musculature, but in all cases some axial cartilage is present. Segmentation of motor roots takes place in the complete absence of sensory ganglia and adjacent myotomes. The presence of aggregated primary motor-root fibers in the absence of muscle shows that their outgrowth is not dependent upon influences exerted by the differentiation and early contraction of the muscle as implied in Kappers' ('21) analysis of the collateral offshoots from longitudinal motor tracts as observed by Herrick and Coghill ('15) and by Coghill ('24). A discussion of sensory and motor segmentation is given in relation to Lehmann's ('27) findings upon *Pleurodeles.—Author (courtesy Wistar Bibl. Serv.).*

2328. DETWILER, S. R. Further experiments upon the transplantation of embryonic spinal-cord segments. *Jour. Exp. Zool.* 52(2): 351-366. 1928.—When the 2nd, 3rd, and 4th segments of the embryonic spinal cord of *Amblystoma* are replaced by the 4th, 5th, and 6th, there is only a slight hyperplasia (6%) of the cells in the 4th segment. The 5th segment undergoes a hyperplasia of 20%, and the 6th segment a hyperplasia of 25-30%. The failure of the 4th segment to undergo a marked cellular increase, such as occurs in the 5th and 6th, is attributed to the fact that it is substituted for a region which has been shown previously (Detwiler, '25, '28) to possess a greater inherent potentiality for high proliferation than in succeeding segments. The results bear out former indications that, below the 2nd spinal segment, the final production of cells in any given segment from the 3rd to the 9th is not so much limited by local inherent potentialities for development as by the position which it occupies with respect to the spinal cord as a whole.—*Author (courtesy Wistar Bibl. Serv.).*

2329. DETWILER, S. R. Experimental alteration of the direction of growth in amphibian spinal nerves. *Xe. Congrès Internation. Zool. à Budapest,* 1927. Part 1. 557-567. 11 fig. 1929.—The exercising of an attractive force upon spinal nerves by rapidly differentiating tissues of *Amblystoma* embryos was demonstrated in experiments in which the right anterior limb bud was removed and transplanted 1-7 segments caudally or several segments cranially. In both cases, all or some of the normal brachial nerves often grew posteriorly or anteriorly to supply the grafted limb, and where this occurred, typical coordinated muscular movements resulted. Sometimes only nerves caudal to the brachial nerves entered the limb. That such attractive centers operate only for a limited time was evident when limb grafts were made some time after the brachial nerves had been allowed to grow into the region of the excised limb, the grafts in these cases receiving only nerves at their level. Where a regenerant from the normal limb area and a grafted limb posterior to it formed 2 centers of attraction the brachial nerves were redistributed to both, and synchronous movements of homologous muscle groups typically followed. The non-specific nature of such attractive forces was suggested by the posterior extension of brachial nerves toward grafts of eye and nasal placodes caudal to the excised limb. Failure of tail bud grafts to attract spinal nerves is attributed to the early innervation of tail muscles by spinal cord present in the graft. The author postulates 2 sets of forces active in the growth of nerves: one, possibly electrical, influencing the general direction of growth; the other, perhaps chemotactic, accomplishing the union of axones with end-organs.—*B. L. Maclean.*

2330. DÜRKEN, BERNHARD. Grundriss der Entwicklungsmechanik. 208p. 120 fig. Gebr. Bornträger; Berlin, 1929.—A smaller outline of morphologic mechanics, which the author thinks are not sufficiently appreciated by the medical science, except in detached details. (More is contained in his textbook on experimental zoology.) It deals mainly with the biology of fertilization, primary forms, germ preformation, effect of environment, and germinal reactions. In a sense, the basic developmental factors are contained in the nucleus, especially in the chromosomes. They are passed on from generation to generation, but the hypothesis of unchanging chromosomes in the germ plasma is not upheld. The primary foundation of reactions is not a mosaic of discrete parts. Development is epigenesis. The Mendelian hereditary principles may be correlated with results of the morphologic mechanics, which, paradoxically, lead away from mechanistic conceptions to actual organic valuation of the living.—*B. Bickel.*

2331. HUZELLA, TH. Über histologische Gerüstbildung im Vergleich der Organisation der Gewebekultur mit der des Tierkörpers. *Verhandl. Anat. Ges.* 38: 36-48. 8 fig. 1929.—The origin, development, mechanism, histogenetic and organizatory significance of the elastic system of argyrophil reticulated tissue in the body are

discussed in comparison with the vital unit of the embryonal tissue culture. Stretched hair, silk or rubber threads were inserted into the tissue culture; alterations were produced arbitrarily in the structure and cell-communication, and the relations between elastic tension, tissue growth, mechanism of cell-migration, extracellular formation of fibrils were shown. The physiological and developmental significance of the reticulated tissue is discussed.—*T. Huzella.*

2332. **PASQUINI, PASQUALE, e GIUSEPPE REVERBERI. Studi sulla determinazione nello sviluppo degli Anfibi. (Analisi sperimentale degli effetti della centrifugazione sui primi stadi embrionali di Rana esculenta.)** *Boll. Ist. Zool.* [*Roma*] 7: 1-55. 3 pl. 1929.—By centrifuging the eggs of *Rana esculenta* in different stages of development it has been possible to analyze the differential susceptibility of the embryos on basis of resulting abnormalities: defects, supplementary parts, and faulty organ-differentiation. It has been shown that the regions of the embryo which chiefly react to the centrifugal force are the medullary tube, the head and the regions in relation with the blastopore. But the neural tube may or may not be related to supplementary nervous tissue contained in dermal excrescences which are typical in the embryos derived from centrifuged eggs. The described abnormalities are not specific for centrifuging and the mechanism of their origin has been found in the action of this factor on organizing faculties of organ anlage and in changes of physiological equilibria in embryonic cells.—*P. Pasquini.*

2333. **PASQUINI, PASQUALE. A proposito di trapianti embrionali.** *Monitore Zool. Ital.* 40(10): 263-269. 1929. —By means of embryonic transplantation, the fusion of 2 optic vesicles, in *Pleurodeles, Axolotl, Triton, Rana,* is possible, and in several degrees, when the complete optic vesicle is transplanted dorsally, ventrally, caudally, cranially, or externally to the optic vesicle of the host, previously partially removed in the corresponding positions. The equipotentiality of the primary vesicle and the high regulative capacity, are definitely shown by the differentiation of double, partially fused eyes with 2 lenses or with 1 lens only, larger than normal, and derived from the fusion of 2 lens placodes. The fused eyes are then able to regulate and acquire normal dimensions. They show very interesting relations with the nerve centers. Similar conditions have been found by Detwiler (1929) in *Rana fusca.*—*P. Pasquini.*

2334. **RICHARDSON, K. C., and E. S. HORNING. On tethelin as a tissue-culture medium.** *Australian Jour. Exp. Biol. and Med. Sci.* 6(3): 137-142. 5 pl. 1929.—Explants of intestinal epithelium from chick embryos were made in a medium containing tethelin or a mixture of tethelin and chick embryo extract. After 28 hours' incubation the growth and membrane formation in these cultures was compared with that in explants of intestinal epithelium grown in a normal medium of plasma and embryonic extract. A much more extensive proliferation was observed in the cultures containing tethelin and in those without embryonic extract membrane formation was very pronounced, whereas the growth in the control cultures in embryonic extract was scanty and no membranes of epithelium could be detected. These experiments confirm the growth promoting qualities of tethelin in vitro.—*K. C. Richardson.*

2335. **SPIRITO, ALDO. Osservazioni sui processi regolativi in relazione allo sviluppo degli emisferi cerebrali negli embrioni di Anuri. Nota 2. [Regulative processes in relation to the development of the cerebral hemispheres in the embryos of frogs.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 9(9): 797-799. 2 fig. 1929.—In embryos of *Rana esculenta* and *Bufo vulgaris,* at the stage of their development known as caudal button and prosencephalic vesicle, a part of the brain was removed so that a new cerebral wall was obtained without changing the form or position of the remaining wall. The new wall may undergo such changes as to induce the formation of encephalic parts similar to the hemispheres, at the expense of regenerated walls, and so replace those which were biologically predetermined for those parts. It is concluded that some external biologic-mechanical actions can interfere with the development of the cerebral hemispheres.—*Z. Piotrowski and C. Landis.*

2336. **STONE, LEON STANSFIELD. Experiments on the transplantation of placodes of the cranial ganglia in the amphibian embryo. IV. Heterotopic transplantations of the postauditory placodal material upon the head and body of Amblystoma punctatum.** *Jour. Comp. Neurol.* 48(2): 311-330. 14 fig. 1929.—When the postauditory placode (stained in Nile-blue sulphate) was transplanted upon the ventrolateral surface of the body, a ganglion developed from pole of the graft, while at the opposite pole the lateral-line primordium at first became a prominent ectodermal thickening and later gradually disappeared. It never migrated from the site of the transplant. This was due to the fact that it never came under the influence of a migratory lateral-line primordium of the host. When the postauditory placode was rotated 180° on its dorsoventral axis (reversing its anterior and posterior poles) and was transplanted above the optic vesicle in place of the ophthalmic placode, it formed a lateralis ganglion at the proper pole. The nerve fibers issuing from it innervated lateral-line sense organs, and therefore the ganglion gave no indication of assuming the rôle of a general cutaneous for which it was exchanged. The lateral-line primordium of the graft above the optic vesicle lay in the pathway normally followed by the host migratory supra-orbital primordium, and when the latter reached it, and not until then, the primordium of the transplant migrated anteriorly and laid down normal sense organs. Occasionally the primordium of the host followed the one of the graft a short distance, also laying down sense organs, but usually the ganglion-forming pole of the transplant partially blocked the host primordium from further migration. This interference, however, was not sufficient to prevent host and graft primordia from touching each other and producing the migratory effect upon the tissue of the transplant.—*Author (courtesy Wistar Bibl. Serv.).*

2337. **VOGT. Ablenkung der Symmetrie durch halbseitige Beschleunigung der Frühentwicklung. (Nach Versuchen an Rippenmolch- und Axolotlkeimen.) [Deviation of symmetry by one-sided accèleration of early development in urodele embryos.]** *Verhandl. Anat. Ges.* 37: 139-155. 17 fig. 1928.

2338. **VOGT, WALTHER, und EMMY BRUNS. Experimente über das Regulationsvermögen der Blastula von Triton taeniatus und Bombinator pachypus. [Experiments on regulative capacity of the blastula of T. taeniatus and B. pachypus.]** *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 122(3): 667-669. 1930.—A brief summary of results of about 180 experiments, 1928-1929.

2339. **WITSCHI, EMIL. Studies on sex differentiation and sex determination in amphibians. II. Sex reversal in female tadpoles of Rana sylvatica following the application of high temperature.** *Jour. Exp. Zool.* 52(2): 267-291. 5 pl. 1928.—Two groups of tadpoles have been obtained from artificially fertilized eggs. The first one (normal group) was kept at a temp. starting with 16°C. and slowly raised during the first 2 weeks to 20°C. The sexes differentiate at the end of the 3rd week, and the animals metamorphose at the end of the 7th week. This group consists of 100 ♀♀ and 96 ♂♂. The 2nd group was raised under the same conditions up to the 5th week. Then the temp. was raised to 32° (heat group). Under such a condition, the tadpoles grow and metamorphose more slowly than at 20°C. The gonads of the ♂♂ develop normally, while the ovaries of the ♀♀ gradually transform into testes. This is effected by the following successive processes: (1) Disintegration of the germinal epithelium (cortex); (2) excessive growth of the medulla and formation of seminiferous tubules, and, (3) migration of some undifferentiated germ cells (oogonia) into the medulla, where they multiply and thus give rise to the spermatogonia. From this experi-

ment is inferred that in the normal ovary the germinal epithelium inhibits the development of the medulla. Destruction of the germinal epithelium removes this control. The medulla starts to grow and produces seminiferous tubules. Thus the cortex proves to be the seat of the ♀ sex differentiator, while the medulla is the seat of the ♂ sex differentiator.—*Author (courtesy Wistar Bibl. Serv.).*

2340. YAMAMOTO, T. Effects of roentgen rays on the development of the embryo of the hen. *Japan Med. World* 9(2): 45-52. 1929.—Exposure to roentgen rays previous to incubation exerted no influence on the development of the embryo. Weak irradiation in the early stages of incubation had no effect. The resistance to irradiation was lowest in the 32nd hour of incubation and gradually increased to the 241st hour. The injurious effects of irradiation at any stage of embryonic development, in producing death and abnormalities, increased with the "strength" of the rays and the period of exposure. No abnormal post-embryonic effects were observed in the birds which were hatched, reared and allowed to reproduce.—*J. E. Dougherty.*

PROTOZOA

D. H. WENRICH, *Editor*

(See also in 5(11): Entries (Gen. Biol.) 26528; (Physiol.) 27247, 27267, 27270, 27271, 27300, 27302, 27313, 27363; (Pharmacol.) 27916, 27998, 28030; (Pathol.) 28103, 28190, 28206, 28223; (Immunol.) 28253, 28344, 28430, 28431, 28432, 28433, 28434, 28435, 28436, 28437; (Parasitol.) 28439, 28440, 28441, 28449, 28451, 28452, 28453, 28454, 28455, 28456, 28464, 28466, 28469, 28472, 28473, 28475, 28479, 28481, 28490, 28491, 28494, 28496, 28501, 28508, 28510, 28511; (Bacteriol.) 28681, 28686, 28757; (Entomol.) 28812; (Paleozool.) 29103, 29105, 29113, 29115, 29116, 29117, 29987, 29988; (Miscel.) 29177, 29997, 29999. And in this issue (Cytol.) 29, 30, 31; (Ecol.) 36, 1804; (Physiol.) 229, 230, 241, 242, 250, 266, 369, 504, 684, 709, 711, 972; (Pathol.) 1319, 1327, 1340; (Immunol.) 1498, 1541, 1569, 1644, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664; (Parasitol.) 1666, 1668, 1670, 1672, 1675, 1678, 1682, 1683, 1686, 1687, 1688, 1692, 1694, 1698, 1701, 1704, 1706, 1707, 1709, 1711, 1715, 1716, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1731, 1734, 1741, 1742; (Entomol.) 1884, 1901; (Algae) 1962, 1970, 1976, 1983, 1984, 1994; (Paleozool.) 2181, 2188, 2189, 2193)

2341. **BEERS, C. DALE. Some effects of conjugation in the ciliate Didinium nasutum.** *Jour. Exp. Zool.* 58 (1): 455-470. 1930.—A group of lines of *Didinium* was fed inadequately on 9 paramecia per line daily (group B). The group suffered a gradual decline, as shown by decreased fission rate and increased encystment rate, and underwent complete encystment after 72 days with the production of 132 generations. The inadequacy of the diet in group B was demonstrated by culturing in parallel on unlimited food a second group of lines (A) of identical ancestry. This group gave no evidence of decline as generations passed. Conjugation occurred in B after 96 generations. Additional groups of lines were established with the exconjugants and were maintained on the same inadequate diet. Six exconjugant groups outlived the parent non-conjugant group (B) by margins which varied from 36 to 56 generations, and exhibited, following conjugation, an increase in the fission rate and a decrease in the encystment rate. Two groups were not observably affected by conjugation. The results adduced from 6 of the 8 cases indicate that conjugation in *Didinium* may result in increased vitality when the animals are in a state of depression as a result of inadequate cultural conditions.—*Author (courtesy Wistar Bibl. Serv.).*

2342. **BÖHM, A. Die Adriatischen Ceratien (nach dem Materiale der österreichischen Adriaforschung in den Jahren 1911-1914).** [English summary.] *Bot. Arch.* 31 (3/4): 349-385. 3 maps. 34 fig. 1931.—The present publication presents a complete description of the distribution of the Ceratia in the Adriatic Sea. The material originates from the journeys of the research-ship "Najade," from the years 1911-1914. Forty-two spp. (with vars.) are described and figured for the most part. The systematic account includes distributional records and notes on vegetative season, sociological relations, and the range of temp. and salinity. *Ceratium candelabrum* f. **commune** (p. 351); *C. c.* f. **eucandelabrum*** (p. 351); *C. c.* f. **hiemale*** (p. 351); *C. extensum* f. **strictoides** (p. 355); *C. tripos* forms **nobile*, longissimum*** and **patulum*** (all p. 356); *C.* **pulchellum** f. **tenuicorne*** (p. 357); *C. declinatum* f. **orthoceras*** (p. 359); *C. massiliense* f. **elliptiçum*** (p. 363); *C. carriense* f. **eucarriense** (p. 363). The following are recorded as new to the Adriatic: *C. digitatum, C. teres, C. setaceum, C. longirostrum*, C. lunula, C. palmatum,* and *C. pavillardii.* As to the region of distribution of the Ceratia, the Adriatic Sea is divided into 3 parts: (a) the northern shallow sea with depths of 30-40 m., (b) the Pomo basin, situated in the middle (190 m.), and (c) the southern deep sea with more than 1000 m. Through the principal current along the Jugo-Slavia coast as far as Pola, the vegetation mostly shows the Mediterranean character. The following 3 zones for the distribution of the Ceratia have been ascertained: (1) The indigenous Adriatic zone, comprising the northern shallow sea; this zone is independent of the immigration from the Mediterranean Sea. (2) The intermediate zone, comprising the remaining region of the northern and the whole of the middle Adriatic. This zone during the whole year harbors varieties from the Mediterranean Sea which, however, do not endure too low temperatures. (3) The allogenous Mediterranean zone, comprising the southern part of the Adriatic which is characterised by the occurrence of tropical and subtropical forms of migration. The vegetation of these zones is thoroughly treated, with special reference to the vertical occurrence of the spp. and their quantitative relations. Phylogenetic relationships are also discussed.

2343. **BOUNHIOL, J. Sur la pseudo-immortalité des Protozoaires.** *Congrès Internat. Xe Zool. à Budapest 1927.* Part 1: 371-376. 1929.—The literature on the so-called immortality of the Protozoa and the physiological processes of their senescence is reviewed. Their small size, relatively large surface, movements, and the relative vastness of their environments tend to dissipate the degenerating effects of their oxidative processes. Their senescence is thus attenuated.—*C. A. Kofoid.*

2344. **BROWN, GEORG V. E. The morphology of Spironympha, with a description of a new species from Reticulitermes hesperus Banks.** *Jour. Morph. & Physiol.* 51(1): 291-307. 2 pl. 1931.—*Spironympha* is discussed as a valid genus. It was described by Koidzumi ('16); later it was redescribed by the same author as *Microspironympha* ('21). Therefore, according to the rules of nomenclature, it is *Spironympha.* The genus is compared with the related genera: *Spirotrichonympha, Holomastigotes,* and *Microjoenia. Spironympha* is characterized by 4 flagellar bands which are spirally wound around the anterior part of the body; these bands occur only in the anterior end, whereas in *Spirotrichonympha* they extend almost to the posterior end. The parabasals are few in number, and they are attached to the basal granules of the flagellar bands; the anterior end is clear and almost free from cytoplasmic granules; and there are 20-30 anterior flagella which are attached to the base of the centroblepharoplast or to the basal granules of the flagellar bands. An axostyle is present. No centrosome occurs within the nucleus, but the centroblepharoplast has this kinetic function. *Spironympha* **ovalis** is ovoid; the average size is 38μ-44μ. An axostyle is present. The host is *Reticulitermes hesperus* Banks.—*Author (courtesy Wistar Bibl. Serv.).*

2345. **CHAPMAN, FREDERICK.** A report on samples obtained by boring into Michaelmas Reef, about 22 miles N. E. of Cairns, Queensland. *Rept. Great Barrier Reef Committee* 3: 32-42. 2 pl. 1931.—A list of numerous Foraminifera (and a few other animals) found at various depths from 32 to 600 ft.

2346. **KAHL, A.** Urtiere oder Protozoa I: Wimpertiere oder Ciliata (Infusoria). Eine Bearbeitung der freilebenden und ectocommensalen Infusorien der Erde, unter Ausschluss der marinen Tintinnidae. 1. Allgemeiner Teil und Prostomata. In: **FRIEDRICH DAHL.** *Die Tierwelt Deutschlands, etc.* Teil 18. 180p. 25 fig. Gustav Fischer: Jena, 1930.—This is the first part of a monograph that will treat not only the Infusoria of Germany, but those of the entire world. All the categories of the subclass Infusoria Lędermüller emend. (Ciliata Perty) are to be defined and provided with keys. Every species is being illustrated by 1 or more figs. Part I deals with the general morphology and biology of the Infusoria and the systematics of the first tribe of Gymnostomata, the Prostomata. The following new spp. and varieties are described: *Urotricha* **saprophila*** (p. 59), *U.* **discolor*** (p. 59), *Plagiocampa* **metabolica*** (p. 62), *P.* **chaetophorae*** (p. 62), *P. minima** described, *P.* **posticeconica*** (p. 63), *P.* **margaritata*** (p. 63), *P.* **multiseta*** (p. 63), *P.* **marina*** (p. 64), *Platyophrya* **lata*** (p. 65), *Pseudoprorodon* **ellipticus*** (p. 70), *P.* **armatus*** (p. 70), *P.* **halophilus*** (p. 71), *Prorodon* **luteus*** (p. 74), *P.* **nucleolatus*** (p. 74), *P.* **dubius*** (p. 77), *P.* **morgani*** (p. 77), *P.* **moebiusi*** (p. 79), *P.* **mimeticus*** (p. 82), *Lagynophrya* **conifera*** (p. 85), *L.* **halophila*** (p. 85), *Lacrymaria* **urnula*** (p. 90), *Enchelys* **pectinata*** (p. 99), *Chaenea* **sapropelica*** (p. 103), *C.* **robusta*** (p. 103), *C.* **simulans*** (p. 105), *Rhopalophrya* **sulcata*** (p. 109), *Enchelyodon elegans* v. **striatus*** (p. 112), *E.* **sulcatus*** (p. 112), *E.* **fusidens*** (p. 113), *E.* **monilatus*** (p. 113), *Trachelocerca phoenicopterus* v. **margaritata*** (p. 119), *T.* **conifera*** (p. 121), *Didinium* **faurei*** (p. 125), *D. balbianii* v. **nanum*** (p. 126), *D. b.* v. **rostratum** (*D. nasutum r.* Kahl) (p. 126), *D.* **alveolatum*** (p. 126), *Askenasia* **faurei*** (p. 129), *Coleps hirtus* v. **minor*** (p. 134), *Vasicola* **lutea*** (p. 143), **PELATRACTUS** (p. 143) (Metacystidae), with *P.* **lacrymariaeformis*** (p. 144), *Metacystis* **megapterae*** (p. 147), *Spathidium* **ascicola*** (p. 155), *S.* **capitulum*** (p. 155), *S.* **gibbum*** (p. 155), *S.* **lagyniforme*** (p. 155), *S.* **cylindricum*** (p. 156), *S.* **modestum*** (p. 156), *S.* **breve*** (p. 157), *S.* **simulans*** (p. 157), *S.* **lucidum*** (p. 158), *S.* **serpens*** (p. 158), *S.* **luteum*** (p. 159), *S.* **puteolagri*** Baumeister (p. 159), *S.* **cucumis*** Baumeister (p. 159), *S.* **lionotiforme*** (p. 165). Five new genera are described: **MICROREGMA** (p. 102) (Holophryidae); **CHILOPHRYA** (p. 64) (Holophryidae), type *C.* **utahensis*** (*Prorodon u.* Pack) (p. 64); **BALANOPHRYA** (p. 54) (subg. of *Holophrya*), type *H.* (*B.*) *mamillata** Kahl; *Pelatractus*, and **ENCHELYOMORPHA** (p. 140) (Actinobolinidae). The following new combinations are made: *Holophrya* **marina*** (*Urotricha m.* Mansfeld) (p. 47), *H.* **biconica*** (*Urotricha b.* Sauerbrey) (p. 47), *H.* **hexatricha*** (*Urotricha h.* Savi) (p. 49), *H.* (*Balanophrya*) **helenae*** (*Acaryophrya h.* André) (p. 54), *Bursella* **truncata*** (*Holophrya t.* Kahl) (p. 55), *B.* **gargamellae*** (*Holophrya g.* Fauré-Fr.) (p. 55), *Chilophrya* **labiata*** (*Urotricha l.* Edmondson) (p. 64), *Pseudoprorodon* **elongatus*** (*Cranotheridium elongatum* Penard) (p. 71), *P.* **gigas*** (*Spathidium g.* Da Cunha) (p. 72), *Placus* **luciae*** (*Thoracophrya l.* Kahl) (p. 88), *P.* **socialis*** (*Spathidiopsis s.* Fabre-Domergue) (p. 88), *P.* **buddenbrocki*** (*Thoracophrya b.* Sauerbrey) (p. 88), *P.* **ovum*** (*Thoracophrya o.* Kahl) (p. 89), *Lacrymaria* **pupula*** (*Enchelis p.* O. F. Müller) (p. 94). *L.* **vermicularis*** (*Phialina v.* Ehrb.) (p. 95). *Enchelys* **pterotracheae*** (*Syringopharynx p.* Collin) (p. 98), *E.* **pellucida*** (*Balantidion p.* Eberhard) (p. 98), *E.* **curvilata*** (*Holophrya c.* Smith) (p. 99), *E.* **simplex*** (*Lagynus s.* Kahl) (p. 99), *E.* **tarda*** (*Holophrya t.* Quennerstedt) (p. 99), *E.* **vestita*** (*Lagynus vestitus* Kahl) (p. 100), *E.* **mutans*** (*Prorodon m.* Mermod) (p. 100), *E.* **marina*** (*Lacrymaria m.* Meunier) (p. 101), *Microregma* **ponticum*** (*Chaenia pontica* Lepşi) (p. 102), *M.* **audoboni*** (*Enchelys audobonii* Smith) (p. 102), *M.* **binucleatum*** (*Holophrya binucleata* Lepşi) (p. 102), *M.* **heterostoma*** (*Holophrya h.* Beardsley) (p. 102). The genera *Gymnopithus* Kahl and *Micropithus* Kahl are sunk under the genus *Pithothorax* Kahl. *Rhopalophrya* **cirrifera*** (*Lacrymaria c.* Penard) (p. 109), *R.* **striata*** (*Urotricha s.* Penard) (p. 109), *R.* **pilosa*** (*Trachelophyllum pilosum* Penard) (p. 109), *Enchelyodon* **elegans*** (*Spathidium e.* Kahl) (p. 111), *E.* **trilineatus*** (*Lacrymaria trilineata* Penard) (p. 112), *E.* **armatus*** (*Lagynus a.* Kahl) (p. 112), *E.* **mucicola*** (*Lagynus m.* Kahl) (p. 113), *E.* **vorax*** (*Lacrymaria v.* Penard) (p. 113), *E.* **lasius*** (*Lagynus l.* Stokes) (p. 114), *Trachelophyllum* **chilense*** (*Lacrymaria chilensis* Bürger) (p. 115), *Ileonema* **ciliata*** (*Monomastix ciliatus* Roux) (p. 116), *Trachelocerca* **coronata*** (*Holophrya c.* DeMorgan) (p. 117), *T.* **oblonga*** (*Holophrya o.* Maupas) (p. 117), *T.* **maxima*** (*Holophrya m.* Daday) (p. 118), *T.* **laevis*** (*Lagynus l.* Quennerst.) (p. 120), *Didinium balbianii* v. **perrieri*** (*Monodinium p.* Delphy) (p. 125), *Askenasia* **volvox*** (*Halteria v.* Clap. & Lach.) (p. 128), *Askenasia* **stellaris*** (*Lohmanniella s.* Leegaard) (p. 128), *Enchelyomorpha* **vermicularis*** (*Enchelys v.* Smith) (p. 140), *Pelatractus* **grandis*** (*Vasicola g.* Penard) (p. 144), *Metacystis* **annulata*** (*Vasicola a.* Stokes) (p. 145), *Spathidium* **simplex*** (*Legendrea s.* Penard) (p. 153), *S.* **fontinale** (*Trachelophyllum f.* Penard) (p. 157), *S.* **truncatum*** (*Lacrymaria truncata* Stokes) (p. 159), *S.* **falciforme*** (*Trachelophyllum f.* Penard) (p. 163), *Spathidiella* **hyalina*** (*Spathidioides h.* Kahl) (p. 169), *Enchelydium* **clepsiniforme*** (*Lacrymaria clepsiniformis* Penard) (p. 171). The new name **BALANTIDIOIDES** (p. 149) Penard 1930 (here introduced for the first time with Penard's approval) is substituted for *Balantidiopsis* (homonym of *Balantidiopsis* Bütschli), with *B.* **muscicola** (*Balantidiopsis m.* Penard) (p. 149). *Tiarina* **meunieri*** (*Stappersia fusus* Meunier) (p. 137). The following genera in parentheses are dissolved and reduced to synonyms as indicated below; *Trachelocerca* Ehrb. 1840 (=*Lagynus* Quennerstedt 1867), type *T. laevis* (=*L. laevis* Quennerst.); *Placus* Cohn 1866 (=*Thoracophrya* Kahl 1926); *Tiarina* Berg 1880 (=*Stappersia* Meunier 1907); *Balanophrya* Kahl (=*Acaryophrya* André 1915); *Enchelys* Hill 1752 (=*Syringopharynx* Collin 1913); *Ileonema* Stokes 1884 (=*Monomastix* Roux 1901); *Acropisthium* Perty 1852 (=*Dinophrya* Bütschli 1889); *Pithothorax* Kahl 1926 (=*Gymnopithys* Kahl 1926 and *Micropithus* Kahl 1926). New synonyms are given for the following species (synonyms in parentheses; doubtful synonyms indicated by question mark): *Bursella gargamellae* Fauré-Fr. (=*Prorodon morula* Gaj.), *Urotricha farcta* Clap. & Lach. (=*Urotricha minkewickzi* Schout.), *Holophrya gracilis* Penard (=*Urotricha hyalina* Smith ?), *Urotricha armata* Kahl (=*U. platystoma* Stokes ?), *Prorodon teres* Ehrb. (=*P. marinus* Clap. & Lach.) (=*P. limnetis* Stokes), *Pseudoprorodon lieberkühni* Bütschli (=*Spathidium gigas* Da Cunha=*Cranotheridium elongatus* Penard), *Prorodon ovum* Ehrb. (=*P. rigidus* Bürger), *Placus socialis* Fabre-Dom. (=*Thoracophrya marina* Kahl), *P. striatus* Cohn (=*P. sulcatus* Mansfeld), *Lacrymaria cucumis* Penard (=*L. putrina* Kahl), *L. olor* Müller (=*Trachelocerca filiformis* Maskell), *L. pupula* Müller (=*L. coronata* v. *aquaedulcis* Roux=*L. phyalina* Penard=*L. phialina* Sveç ?=*L. elliptica* Bürger=*L. striata* Gulati), *L. coronata* Clap. & Lach. (=*L. caspia* Grimm), *L. vermicularis* Müller-Ehrb. (=*Phialina viridis* Ehrb.-Clap.=*L. phialina* Sveç=*L. metabolica* Bürger?=*L. spiralis* Kahl), *Enchelys pellucida* Eberhard (=*Lagynus faurei* Kahl), *Chaenea vorax* Quennerst. (=*Lagynus elongatus* Maupas), *C. limicola* Lautb. (=*Chaenea similis* Zach.), *Trachelophyllum vestitum* Stokes (=*T. lamella* Blochm.), *T. apiculatum* Perty (=*T. tachyblastum* Stokes), *T. phoenicopterus* Cohn (=*T. fasciolata* Sauerbrey), *T. laevis* Quennerst. (=*Lagynus crassicollis* Maupas=*Lagynus sulcatus* Gruber=*Enchelyodon striatus*

Gourr. & Roes.), *Didinium armatum* Penard (=*D. impressum* Kahl), *Mesodinium pulex* Clap. & Lach. (=*M. pulex* v. *striata* Gourr. & Roes.=*Halteria rubra* Lohm.), *Mesodinium acarus* Stein (=*M. phialinum* Maskell=*M. fimbriatum* Stokes), *Askenasia volvox* Clap. & Lach. (=*Mesodinium recurvum* Kellicott=*Askenasia elegans* Blochm.), *Acropisthium mutabile* Perty (=*Siagonophorus euglenoides* and *loricatus* Eberhard=*Strombidium acuminatum* Stokes=*Dinophrya lieberkühni* Bütschli=*D. cylindrica* Rimsky), *Coleps tesselatus* Kahl (=*Cercaria hirta* Müller?), *Coleps striatus* Smith (=*C. kenti* Bathia=*C. inermis* Perty?), *Actinobolina radians* Stein (=*Belonophrya pelagica* André), *Vasicola ciliata* Tatem (=*Pelamphora bütschlii* Lauth.), *Spathidium cithara* Penard (=*Pelekydion barbatula* Eberhard ?), *Homalozoon vermiculare* Stokes (=*Leptodesmus tenellus* Zach.).—*A. Kahl* (*transl. by L. E. Noland*).

2347. **MORELLE, LEON.** Une myxosporidie nouvelle de la grenouille rousse: Leptotheca ranae nov. sp. *Ann. Soc. Sci. Bruxelles* 49(2/3): 146-148. 1 fig. 1929.—*L. ranae** (p. 146), in the kidney of *Rana temporaria*, Belgium.

2348. **PHISALIX, Mme.** Haemogregarina cenchridis, nov. sp., parasite d'un serpent boïdé, Epicrates cenchris Lin. *Bull. Soc. Path. Exotique* 24(3): 187-190. 1931.—The same parasite, *Haemogregarina* cenchridis (p. 188) was found with cysts, in each of 3 snakes, *Epicrates cenchris* Lin.; on the largest specimen were ticks which also contained cysts with merozoites.

2349. **PHISALIX, Mme.** Les hémogrégarines de Crotalus terrificus, Lam. *Bull. Soc. Path. Exotique* 24(3): 190-194. 1931.—In 3 out of 4 specimens of a Colombian snake, *Crotalus terrificus* Lam., were found a mixed infection with *Haemogregarina* romani (p. 191) in 2 forms (one 19.8μ long and about 8.4μ in diameter, found free in the plasma; the other an immature form found in the erythrocytes), and *H.* capsulata (p. 192) (also found free and in the erythrocytes). The form within the erythrocyte has a transparent capsule.

2350. **STRELKOW, A.** Über die Fauna des Colons beim Zebra. *Zool. Anz.* 94(1/2): 37-54. 7 fig. 1931.—The material of this study, listed below, came from the colon of a zebra (*Equus böhmi*?) shot in Kenya Colony. Oligotrichous Infusoria: *Tripalmaria dogieli* f. zebrae* (p. 38); TRIFASCICULARIA (p. 40), near *Tripalmaria*, erected for *Trifascicularia* cycloposthium* (p. 40); *Triadinium caudatum; T.* elongatum* (p. 42); *T. galea; Cochliatoxum periachtum; Ditoxum* hamulus* (p. 45); *D.* brevinucleatum* (p. 47); *Spirodinium* nanum* (p. 49); *S.* ferrum-equinum* (p. 50). Holotrichous Infusoria: *Bundleia postciliata; Blepharosphaera intestinalis; Blepharocorys curvigula; B. angusta; B. jubata.* Suctoria: *Allantosoma intestinalis.* All the foregoing appear to constitute new host records. The high percentage of new forms suggests a certain specificity of the fauna. There is a noteworthy tendency toward diminution in size of the organisms, in comparison with the fauna of the horse's colon.

2351. **TAYLOR, MONICA.** The nucleus of Amoeba proteus Pallas (Leidy) [=Chaos diffluens (Schaeffer)]. *Nature* [*London*] 126(3170): 167. 1930.—It is pointed out that 2 distinct species have been confused under the name *Amoeba proteus. A. proteus* (Pallas) Leidy and *A. dubia* (Schaeffer). The nucleus of *A. proteus* is redescribed and differentiated from that of *A. dubia.*

2352. **VALKANOV, A.** Beitrag zur Kenntnis der parasitischen Mikrofauna der bulgarischen Tricladen. *Zool. Anzeiger* 93(7/10): 262-263. 1931.—*Trypanoplasma dendrocoeli* Gelei, *Trichodina steinii* Cl. & L., and *Lankesteria arndti* n. sp. (p. 263) [undescribed] are recorded from *Planaria albissima; Balantidium* sp. from *Planaria gonocephala;* and *Lankesteria planariae* (Ming) from *Planaria polychroa* and *Dendrocoelum lacteum.*

2353. **VALKANOV, A.** Eine neue begeisselte Rhizopode. *Zool. Anz.* 94(3/4): 118-119. 1 fig. 1931.—PATEVIA (p. 119) [incertae sedis], related to the Testacea, erected for *P.* bistadialis* (p. 119), Bulgaria.

2354. **WERMEL, JULIUS.** Über die Variabilität der Anurea aculeata v. serrulata Ehrbg. und Arcella vulgaris Ehrbg. in einem Moortümpel. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 24(1/2): 140-146. 1 fig. 1930.—From 2 different regions of a peat marsh, widely differing in acidity, samples of the above mentioned organisms were taken and their dimensions studied. The averages of these measurements differ for specimens taken from various parts of the bog. Tables were made for *Arcella,* showing the correlation between acidity and diameter of the shell, a non-linear dependence of these 2 variables being thus discovered.—*J. Wermel.*

2355. **ZELIFF, C. C.** Polymastix, a flagellate from the Asiatic beetle. *Trans. Amer. Microsc. Soc.* 49(3): 269-272. 1 fig. 1930.—*Polymastix* occurs in large numbers in the intestine of the Asiatic beetle (*Anomala orientalis*) from Connecticut. No axostyle or parabasal body has been found in the specimens and except for the difference in host and locality where found the organisms are very much like *P. melolonthae* and *P. nitidus.* No previous record of *Polymastix* from the larvae of insects in U. S. A. has been found and the presence of bacteria on the body, including the lack of a parabasal body, distinguishes the present forms from *P. bufonis* from California, placed in the genus by Swezy (1915).—*C. C. Zeliff.*

PORIFERA

M. W. DE LAUBENFELS, *Editor*

(See also in 5(11): Entries 29118, 29342, 29997, 29999; and in this issue 2178, 2180, 2192, 2415)

2356. **ARNDT, WALTHER.** Ueber die Zusammensetzung der Spongien. II. *Sitzungsber. Ges. Naturforsch. Freunde Berlin* 1929(8/10): 307-309. 1930.—Note, chiefly as to the arsenic content of *Spongilla lacustris, Ephydatia fluviatilis,* et al.

2357. **BIDDER, G. P.** On the attitude of a hexactinellid at the bottom of the sea, as compared with that assumed in museum jars and monographs. *Proc. Linnean Soc. London* No. 142. 69-71. 1 fig. 1929/30 (1931).—Hexactinellid sponges are known only from dredged specimens since they occur exclusively in deep ocean. It has been assumed they stand upright, but it may be noted they usually have a sharp bend near the point of attachment. They have no hydraulic efficiency because of very open-work structure yet show exhalent and inhalent surfaces. The ocean bottom is known to be usually nearly level and to have steady currents. All these items may be harmonized if we picture these sponges as bending during growth so that their bulk lies parallel to the bottom with the exhalent face down stream. This shape can be accounted for by more rapid growth on the side against which the current impinges, an hypothesis helpful also in explaining certain growth forms of shallow water sponges.—*M. W. de Laubenfels.*

2358. **BURTON, MAURICE.** The Porifera of the Siboga Expedition. III. Calcarea. In: Weber, Max. Siboga-Expeditie No. III (Monogr. VIa²). pp. 1-18. 8 fig. 1930.—*Grantessa* sibogae (p. 4), location 3° 27′ S., 117° 36′ E., 59 M.; *Heteropia striata* v. minor (p. 4), 8° 25′ S., 127° 18′ E.; *Anamixilla* irregularis (p. 6), Bay of Bima. Comparison of *Leucosolenia blanca, L. stipitata,* and *L. lacunosa,* with synonymies and diagnoses.—*M. Burton.*

2359. **GEE, N. GIST.** Some notes on the distribution of Chinese freshwater sponges. *Peking Soc. Nat. Hist. Bull.* 4(4): 27-30. 1930.—The genera treated are *Spongilla, Ephydatia, Trochospongilla, Heteromeyenia,* and *Nudospongilla,* from China and Korea.

2360. **GEE, N. GIST. A contribution toward an alphabetical list of the known fresh-water sponges.** *Peking Soc. Nat. Hist. Bull.* 5(1): 31-52. 1930.—A check list of the species of the world.

2361. **GEE, N. GIST. New records of occurrence of Chinese fresh-water sponges.** *Peking Soc. Nat. Hist. Bull.* 5(3): 45-48. 1931.

2362. **GEE, N. GIST. The Ephydatias from China.** *Hong Kong Naturalist* 1(4): 170-176. 3 fig. 1930.—Descriptive, taxonomic, and distributional notes on 8 forms.

2363. **GEE, N. GIST. Fresh-water sponges from Australia and New Zealand.** *Rec. Australian Mus.* 18 (2): 25-62. 31 fig. 1931.—Full descriptions are presented for 14 sp. in *Spongilla* and *Ephydatia*.

2364. **GEE, N. GIST. Notes on the fresh-water sponges from the Dutch East Indies. II. Descriptions.** *Treubia* 12(1): 67-114. 20 fig. 1930.—*Spongilla alba, S. carteri, S. fragilis* v. *decipiens, S. proliferens, S. sumatrana; Ephydatia bogorensis, E. crateriformis, E. fluviatilis* (?), *E. fortis* v. **vorstmani*** (p. 95); *Trochospongilla latouchiana, T. tunghuensis* v. **javanensis*** (p. 102), Java; *Tubella vesparium; Nudospongilla sarasinorum, N. vasta; Pachydictyum globosum.* Historical statement, habitat, general characteristics, color, structure, spicules, gemmules, location of type, distribution, and remarks for each specimen. In corrigendum are given: *Trochospongilla phillottiana* v. **minima** (facing p. 102), Burma; *T. p.* var. **tunghuensis** (*T. tunghuensis* Gee) (facing p. 102); *T. p.* var. **javanensis** (*T. tunghuensis* v. *javanensis* Gee) (facing p. 102).—*M. C. Old.*

2365. **OPPLIGER, F. Kieselspongien des schweizerischen weissen Jura.** *Abhandl. Schweizer. Palaeontol. Ges.* 46(art. 1.): 1-76. 5. pl., 6 fig. 1926-27(1926).—Lists 18 Hexactinellida, 23 Lithistida, and 1 Monactinellida. Describes *Tremadictyon reticulatum, T. rugatum, T. obliquatus, T.* **irregularis*** (p. 5), *Craticularia paradoxa, C. clathrata, C. parallela, C. cylindrica, C. clavaeformis, C. rollieri, C. cuspidata, C. procumbens, C.* cf. *reticalica, C. rhizoconus, C. propinqua, C. gigas, C. schweiggeri, C. foliata, C. cancellata, C.* **rugata*** (p. 10), *Sporadopyle obliqua, S. pertusa, S. texturata, S. germinata, S. cracoviensis, S. intermedia, S. aperta, S. flabellum, S. ramosa, S. r.* var. *nodosa, S.* cf. *sackii, S.* **botryoides*** (p. 13), *S.* **calyculata*** (p. 13), *S. favrei, S. tenuis, S.* **fascicularis*** (p. 14), *Sphenaulax costata, Verrucocoelia verrucosa, V. gregaria, V. ramosa, V.* sp., *Cypellia rugosa, C. r.* forma *infundibuliformis, C. dolosa, C. verrucosa, C. labiosa, C. multiplex, C. prolifera, C.* cf. *trabeculata, C. aspera, C. grandis, C. inberbis, C.* sp., *Stauroderma lochense, S. explanatum, Discophyma marcoui, D. dolata, D. etalloni, D. laciniata, D. rugatum, D. levigatum, D. pertusianum, D.* **cribratum*** (p. 24), *D.* **callosa*** (p. 24), *D.* **foraminosa*** (p. 25), *D.* sp., *Caesaria articulata, Porocypellia pyriformis, Porospongia fungiformis, P. marginata, P. impressa, P.* **tubiformis*** (p. 27), *P. mammilata, P.* **globosa*** (p. 28), *P.* **linguiformis*** (p. 28), *Cavispongia porata, C. cylindrata, C.* **ovata*** (p. 29), *Pachyteichisma lopas, P. lamellosum, P. gresslyi, P. turbinatum, P. quenstedti, P. striatum, P.* **maeandrina*** (p. 32), *P.* **minor*** (p. 32), *P.* **crassicosta*** (p. 33), *P.* sp., *Trochobolus texatus, T. cylindratus, T. granulosus, T. dentatus, T. salinensis, T.* **tuberosus*** (p. 34), *Phlyctaenium verrucosum, Etalloniella idanensis,* **MEGALODICTYON** (p. 35), based on *M.* **fretreulensis*** (p. 35); *Tretotoechus coniformis, T.* **cavernosa*** (p. 37), *Jerea* **suprajurensis*** (p. 38), *J.* **claviceps*** (p 38), *J.* **strigosa*** (p. 39), *J.* **nodosa*** (p. 40), *Protetraclis* **steinmanni*** (p. 40), *P.* **ficoidea*** (p. 41), *Rhizotetraclis plana, R.* **patella*** (p. 42), *R.* **variabilis*** (p. 43), *Cylindrophyma milleporata, Melonella radiata,* **CHONOPHYMA** (p. 45), based on *C.* **perforata*** (p. 45), *Batotheca ovata, Lecanella complanata, L. jaccardi, Cyphoclonella multiformis, Cnemidiastrum stellatum, C. corallinum, C. radiatum, C. rimulosum, C. pluristellatum, C. striato punctatum, C. calycinum, C. variabile, C. rhizophorum, C.* **linguiformis*** (p. 52), *C.* **expansum*** (p. 52), *Hyalotragos patella, H. patelloides, H. pezizoides, H. radiatum, H.* **geniculatus*** (p. 56), *Hyalospongia rugosa, H. infrajugosum, Pyrgochonia acetabula, P. profunda, Discostroma intricatum, Leiodorella expansa, L. tubata, L.* **foliacea*** (p. 60), *L.* **marginata*** (p. 60), *Epistomella* **plicata*** (p. 61), *Platychonia vagans, P. auriformis, P. semicirculus, P. argoviana, P.* **pruntrutana*** (p. 64), *P. conchiformis*, P.* **sanctae-crucis*** (p. 65), *P. compressa, P. laciniata, P.* **cuspidata*** (p. 66), **SACCOTRAGOS** (p. 66), based on *S.* **acuminata*** (p. 67), *S.* **hemisphaerica*** (p. 68), *S.* **spinosa*** (p. 68), *S.* **involuta*** (p. 68), *S.* **magnus*** (p. 69), *S.* **strigosa*** (p. 69), *S.* **tenuis*** (p. 70), **HYALODERMA*** (p. 70), with *H.* **wettingensis** (*Platychonia w.* Oppl.) (p. 70), and *H.* **porata*** (p. 71), *Microrhizophora tumida, Megalithista foraminosa, M. quenstedti*, Anomorphites* **langi*** (p. 74), *Opetionella* **ovata*** (p. 75), *O.* sp. Bibliography.—*F. Anderegg.*

2366. **SCHRÖDER, KURT. Haltung und Aufzucht von Süsswasserschwämmen.** In: **EMIL ABDERHALDEN'S Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden zur Erforschung der Leistungen des tierischen Organismus.** Teil 2, 2 Hälfte, Heft 4, Lief. 338. pp. 1563-1576. 2 fig. Urban & Schwarzenberg: Berlin, 1930.—Instructions are given for collection and transportation of fresh-water sponges and their larvae. The gemmules may also be collected and easily transported, remaining viable after being dry for 6 to 9 months. 7 species have been reared in aquaria. The specimens must be provided with running water, well supplied with oxygen, and fairly pure,—for example, there must be no noticeable taint of iron. The best temperature is 20 to 25°C. and indirect, rather dim light is most favorable. The aquarium sponges were provided in spring and summer with the plankton haul of a fine meshed net; in fall and winter decaying leaves were provided to support a microbe infusion. Other investigators report various methods for sponge nourishment, some even favoring pure water only. Numerous sorts of insect larvae eat fresh-water sponges and one case of their destruction by ostracods is cited. A method is illustrated for rearing sponges from gemmules on cover slips, so that the small, living sponges may be studied under the microscope.—*M. W. de Laubenfels.*

PLATYHELMINTHES AND MESOZOA

H. W. STUNKARD, *Editor*

(See also in this issue Entries 1365, 1674, 1676, 1689, 1690, 1703, 1705, 1710, 1713, 1716, 1718, 1725, 2352)

2367. **HUNTER, GEORGE W. III. Diplodiscus intermedius, sp. nov., from Rana catesbiana Shaw.** *Jour. Parasitol.* 17(2): 74-79. 1 pl. 1930.—*D.* **intermedius*** (p. 74); generic characters of *Diplodiscus* and *Opisthodiscus,* emended; *D. ranophilus* (Millzner 1924) reduced to synonymy with *D. temperatus* Stafford 1905.—*G. W. Hunter, III.*

2368. **KENK, ROMAN. Euplanaria cretica Meixner, eine Triklade mit eigentümlichem Drüsenorgan.** *Zool. Anz.* 92(9/10): 247-253. 2 fig. 1930.—A description of this sp. from Crete, especially of the taxonomically important characters, and anatomy of the pharynx and the auricular sense organs are given. These are "sensitive spots" similar to those of *Euplanaria gonocephala,* which are described. The copulatory apparatus resembles that of *E. gonocephala,* but has a peculiar hollow adenodactyl arising from the penial bulb.—*R. Kenk.*

2369. **KORKHAUS, R. Mitteilung über Befall von Leberegelschnecken mit Tetracotylelarven und monostomen Cercarien.** *Sitzungsber. Ges. Naturforsch. Freunde Berlin* 1929(8/10): 268-269. 1930.—Eighty of 124 *Limnaea truncatula* and all of *L. peregra* dissected

contained *Tetracotyle* larvae (*T. typica* Dies.)—a somewhat unusual finding; 2 *L. truncatula* contained *Cercaria* and their redia, previously unknown in these mollusks. They are probably *C. monostomi* v. Linst.

2370. **LIN, SHAO-WEN.** A new technique for Planaria. *Peking Soc. Nat. Hist. Bull.* 4(4): 99-101. 1930.—This consists of starving the worms 2 days in fresh water and then feeding a 5 cc. mixture of egg yolk and, for example, India ink. They are then starved again in fresh water for 12-24 hrs., and killed with a solution of 40% formaldehyde, 10 cc., glacial acetic acid, 2 cc., distilled water, 30 cc.; and immediately covered with cover glass. They are fixed in 50%, 70% and 80% alcohol, and stained and mounted as desired.

2371. **NYBELIN, O.** Zwei neue Cestoden aus Bartenwalen. *Zool. Anz.* 78(11/12): 309-314. 6 fig. 1928.—*Priapocephalus* **minor*** (p. 309), in small intestine of *Balaenoptera borealis*, and *Tetrabothrius* **ruudi*** (p. 312), in small intestine of *B. physalus*, both from W. coast of Norway. Types in Naturhist. Mus. Gothenburg.

2372. **PETRUSCHEWSKY, G. K.** Über die Verbreitung der Plerocercoide von Diphyllobothrium latum in den Fischen des Newabucht. (Vorläufige Mitteilung.) *Zool. Anz.* 94(5/8): 139-147. 1 fig. 1931.—The plerocercoid stage of *D. latum** was found in the fishes *Abramis brama*, *Anguilla anguilla*, *Esox lucius*, *Lucioperca lucioperca*, *Perca fluviatilis*, *Acerina cernua*, *Cottus gobio*, *Pygosteus pungitius*, and *Lota lota*, but was not found in 16 other spp. This cestode has become one of the most numerous intestinal parasites of man in N. W. Russia. The specimens found in each sp. are fully described, and their location in the host is given.

2373. **PRICE, EMMETT W.** Redescription of two species of trematode worms from the MacCallum collection, with a note on the family Pronocephalidae. *Proc. U. S. Nation. Mus.* 78(22): 1-10. 2 fig. 1931.—This paper is essentially a revision of the Pronocephalidae. *Pleurogonius* **pomacanthi*** (*Monostomum p.* MacCallum), (p. 2), recorded from the Pisces *Angelichthys ciliaris*, *A. isabelita*, *Pomacanthus arcuatus*, and *P. paru*; *Opisthoporus*, emended diagnosis; *O. aspidonectes** (MacCallum), emended description, recorded from *Amyda ferox* and *A. spinifera*; *Diaschistorchis* Johnston (=*Synechorchis* Barker, *Wilderia* Pratt); *D. pandus* [author?] (=*Synechorchis megas* [author?]); *Hippocrepis* Trav. is removed from the Pronocephalidae and returned to the Notocotylidae (subfam. Notocotylinae); *Astrorchis renicapite* (Leidy) (=*Monostomum sphargidis* MacC.); *Barisomum* Linton (=*Himasomum* Linton) is referred to the Pronocephalidae; this family retains *Pronocephalus* Looss as the type genus in spite of Looss's attempt to designate *Glyphicephalus* as such. An emended diagnosis is given of the family Pronocephalidae (=Opisthoporidae), and a key is given to the 3 subfamilies: Pronocephalinae, type *Pronocephalus*, including also *Diaschistorchis*, *Cricocephalus*, *Pleurogonius*, *Adenogaster*, *Pyelosomum*, *Astrorchis*, *Barisomum*, *Epibathra*, and *Glyphicephalus*; **CHARAXICEPHALINAE** (p. 9), type *Charaxicephalus* Looss, including also *Desmogonius*; and **OPISTHOPORINAE** (p. 10), type *Opisthoporus* Fukui. Keys are given to the genera of the Pronocephalinae and Charaxicephalinae.

2374. **TRAVASSOS, LAURO.** Alguns trematodeos da familia Heterophyidae observados no Brasil. *Ann. Acad. Brasileira Sci.* 1(1): 14-16. 1 pl. 1929.—*Pygidiopsis pindoramensis** and *Maritrema pulchrerrima**, emended descriptions.

2375. **WITENBERG, G.** Beiträge zur Kenntnis des Sinaigebiets. Parasitische Würmer von Puffinus kuhli. In: **BODENHEIMER, FRIEDRICH SIMON, Editor.** *Ergeb. Sinai-Expedition Hebräis. Univ. Jerusalem* 1927. 118-124. 2 fig. 1929.—The following parasitic worms were found in a single specimen: *Stictodora sawakinensis*, **CERCARIOIDES aharonii** (p. 119); *Renicola* **glandoloba*** (p. 119); *Contracoecum* **bodenheimeri*** (p. 122); *Ornithobilharzia intermedia* Odhner. —*G. Witenberg.*

NEMATHELMINTHES AND NEMATOMORPHA

M. C. HALL, *Editor*

B. G. CHITWOOD, *Associate Editor*

(See also in this issue Entries 118, 1665, 1671, 1680, 1697, 1700, 1708, 1713, 1716, 1719, 1725, 1730, 1733, 1738, 1739, 2375, 2974)

2376. **ALLGÉN, CARL.** Über einen merkwürdigen Fall von Hermaphroditismus beim Halichoanolaimus microspiculum Allgén (Nematodes; Chromadoridae; Choanolaiminae). [A noteworthy case of hermaphroditism in H. microspiculum.] *Zool. Anz.* 80(5/6): 139-143. 2 fig. 1929.

2377. **BAYLIS, H. A.** Some parasitic nematodes from the Uluguru and Usambara Mountains, Tanganyika Territory. *Ann. & Mag. Nat. Hist.* 4(22): 372-381. 3 fig. 1929.—Annotated list of parasite, host, and locality. *Oxysomatium* **chamaeleonis*** (p. 375), from *Chamaeleo fischeri matschiei*; *Rhabdias* **bdellophis*** (p. 377), from lung of *Bdellophis vittatus* (first member of genus from a coecilian); and *Procamallanus* **xenopodis*** (p. 378), from *Xenopus muelleri*. *Raillietnema* Trav. is a synonym of *Oxysomatium* Raill. & Henry, 1913; *Oxysomatium* **loveridgei** (*Aplectana l.* Sandg.) (p. 373). Co-types in British Mus. and Mus. Comp. Zool., Cambridge, Massachusetts.—*M. P. Sarles.*

2378. **BAYLIS, H. A.** A species of the nematode genus Hedruris occurring in the trout in New Zealand. *Ann. & Mag. Nat. Hist.* 7(37): 105-114. 4 fig. 1931.—*H.* **spinigera*** (p. 106). Of the 8 species of *Hedruris* hitherto known, only one, *H. orestiae*, has been recorded from fish. Eggs are described and notes given on the life history of the genus.

2379. **BAYLIS, H. A.** Mission Saharienne Augiéras-Draper, 1927-1928. Parasitic nematodes. *Bull. Mus. Nat. Hist. Nat.* 2(1): 117-130. 8 fig. 1930.—This paper deals with a collection of nematodes made by this expedition to the central Sahara and Niger valley. Ascaridae, Anisakinae (4); Heterakidae, Heterakinae (1); Subulurinae (3), including *Numidica* **monodi*** (p. 119), on the Niger, occurring in the ceca of *Numida* sp.; *Numidica*, *Oxynema* and *Subulura*, taxonomic notes. **QUIMPERIIDAE** (p. 125), is proposed to replace Gendre's Quimperinae and to include *Quimperia* Gendre and **GENDRIA** (p. 126), with type *G.* **tilapiae*** (p. 122), Niger, from fish *Tilapia galilaea*. Oxyuridae, Oxyurinae (2), including *Thelandros* **sahariensis*** (p. 126), central Sahara, from intestine of *Uromastix* sp. Cosmocercinae (1); Spiruridae, Spirurinae (1); Physalopterinae (2); Thelaziinae (1). In conclusion a list of references is given. Cotypes will be deposited in Mus. Nat. Hist. Nat., Paris, and in the British Mus.

2380. **BOULENGER, C. L.** Report on a collection of parasitic nematodes, mainly from Egypt. Part V. Filaroidea. *Parasitology* 20(1): 32-55. 51 fig. 1928.—Comprises a list of determinations of unnamed material from the Cairo Medical School with comprehensive descriptions of many previously known forms, including: *Dipetalonema australe* from *Halmaturus* sp.; *Monopetalonema physalarum* from *Ceryle torquata*; *Setaria equina* from horse and mule; *S. cornuta* from *Cephalophus monticola*; *Hamatospiculum quadridens* from *Asio accipitrinus*; *Dicheilonema nodulosum* from *Lanius excubitor*; *Diplotriaena tricuspis* from *Corvus cornix*, *C. umbrinus* and *Varanus niloticus*; *D. obtusa* from *Hirundo savignyi*; *D. pungens* from *Turdus saxatilis*; *D. artemisiana* from *Coracias garrula*; *D. tridens* from *Lanius col-*

lurio; D. monticelliana from *Silvia arundinacea; Squamofilaria coronata* from *Coracias garrula; Lissonema rotundatum* from *Centropus* sp.; *Dracunculus medinensis* from *Putorius communis.*—*J. H. Sandground.*

2381. CHITWOOD, B. G. The structure of the esophagus in the Trichuroidea. *Jour. Parasitol.* 17(1): 35-42. 2 pl., 1 fig. 1930.—The esophagus of *Trichinella spiralis* was studied in cross section as well as in whole mount preparations. It was found that the posterior portion is not a hollow tube running through the center of a series of large cells, the cell body, as is commonly supposed. The esophagus is triradiate throughout its length, and preserves the structure seen in other nematodes. It is never completely surrounded by the cell body in which it is embedded, except at its junction with the intestine. The esophagus of *Trichuris ovis* and *T. vulpis* is more deeply embedded in the cell body and may be completely surrounded by it. The muscular wall is more or less degenerate. The inner, cuticular lining approximates a cylindrical tube in some regions but also shows evidences of its earlier triradiate character. The esophagus is separated from the cell body, in which it lies, by a basal membrane. The origin of the cell body and its function remain uncertain.—*B. G. Chitwood.*

2382. COBB, N. A. Tylenchus alatus n. sp. In: **The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard African Expedition 1926-27.** Vol. 1. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* no. 5.) Part 3. p. 487-489. Harvard University Press: Cambridge, 1930.—*Tylenchus* **alatus** (p. 487), Cinchona, Africa.

2383. IHLE, J. E. W. Ueber die Gattungen Gaigeria R. et H., Eumonodontus R. et H. und Monodontella Y. et M. *Centralbl. Bakt. Abt. I.* (*Orig.*) 115(3/4): 195-196. 1930.—The author believes that the genera *Gaigeria* and *Eumonodontus* cannot be united into one genus since there are distinct differences in the bursae. He points out also that *Eumonodontus* is primarily a parasite of a non-ruminant (*Dicotyles torquatus*) in South America and *Gaigeria* is a parasite of ruminants in the old world. The genus name *Monodontus* is older than *Bunostomum* and should be used for the species *B. trigonocephalum.*

2384. KREIS, HANS A. Die freilebenden marinen Nematoden der Spitzbergen-Expedition von F. Roemer und F. Schaudinn im Jahre 1898. *Mitteil. Zool. Mus. Berlin* 14(1): 133-188. 7 pl. 1928.—*Anticoma* **longicaudata*** (p. 138), *Thoracostoma* with a key to species, including: *T.* (*Pseudocella*) **conicaudatum*** (p. 143); *T.* (*P.*) **filipjevi*** (p. 145); *Nemanema* **recto-resectum*** (p. 147); *Phanodermopsis* **cylindrocaudatum*** (p. 150); **PHANODERMELLA** (p. 150), near *Phanoderma* and *Phanodermopsis,* based on *P.* **longicaudata*** (p. 151); *Enoplus* **medius*** (p. 153); *E.* **sphaericus*** (p. 154); *Enoplolaimus* **abnormis*** (p. 156); **FILIPJEVIA** (p. 158), near *Enoplolaimus* and *Saveljevia,* based on *F.* **macrolabiatus*** (p. 159); *Pelagonema* **tenue*** (p. 161); *P.* **angusticavatum*** (p. 162); **VASCULONEMA** (p. 163), near *Enoplus,* type *V.* **caeruleum** (*Enoplus caeruleus* Eberth.), also *V.* **conicaudatum*** (p. 164); *Paroncholaimus* **arcticus*** (p. 165); *Oncholaimus* **medius*** (p. 171); **CONVEXOLAIMUS** (p. 171), near *Oncholaimus,* based on *C.* **filicaudatus*** (p. 172); **PSEUDODILAIMUS** (p. 172), near *Dilaimus,* type *P.* **pilosus*** (p. 173); *Paracanthonchus* **bipapillatus*** (p. 174); *Paracyatholaimus* **major*** (p. 176); **DENTATONEMA** (p. 177), resembling *Eurystomina* and *Symplocostroma,* based on *D.* **crassum*** (p. 178); *Desmodora* **gracilis*** (p. 180); **FUSONEMA** (p. 181), related to the Enoplidae and the Spilipherini, based on *F.* **multilabiatum*** (p. 182); *Chromadora* **abnormis*** (p. 183); *Araeolaimus* **macrocirculus*** (p. 185); *Diplopeltis* **longisetosa*** (p. 186). Types in Zool. Inst., Basel.

2385. KREIS, HANS A. Die Entwicklung von Actinolaimus tripapillatus (v. Daday). Ein Beitrag zur postembryonalen Entwicklung der freilebenden Nematoden. [The development of A. tripapillatus.] *Zeitschr. Wiss. Biol. Abt. A. Morph. u. Ökol. Tiere* 18(1/2): 322-346. 36 fig. 1930.—*A. tripapillatus* is redescribed and its development discussed in relation to the conditions of its habitat, i.e., pools which dry out in the dry season. For preserving the species, the nema develops a large number of eggs (48-50) in an elongated oviduct; only the reflexed parts of the sex organs are ovaries. The egg is a modified ovary cell, which has at first a row of food-cells. The first division in the egg occurs in the oviduct. The eggs have thick walls. The young agamic nema has a long tail, which disappears when it develops into a ♂. It probably molts 5 times. While molting the nema develops 3 spears.—*H. A. Kreis.*

2386. OUBOTER, M. P. de BRUYN. Tylenchus devastatrix Kühn uit narcis en hyacinth. [T. devastatrix from the daffodil and the hyacinth.] 104p. Dissertation, University of Leiden: Leiden, 1930.—Minute anatomical investigation of the entire adult nema with new methods (modified differentiator of Cobb, etc.). Differences between the two races in the rostral aspect of the head only. An extensive biometric investigation, based on 13-15 measurements each of 400 specimens; also of 200 eggs. Minute statistical calculations. A number of measures in which both races differ. Thus these are "ecological," not "physiological" races. Attempt to give an explanation of the development of such races, not by gradual adaptation, but by selection, taking these races as genotypically different.—*C. J. van der Klaauw.*

2387. RADEMACHER, BERNHARD. Reizphysiologische Beobachtungen an dem Rübennematoden Heterodera schachtii Schmidt. [Physiological observations of the beet-nematode, H. schachtii.] *Wiss. Arch. Landw. Abt. A: Pflanzenbau* 3(5): 750-787. 4 fig. 1930.—The effect of numerous chemical substances upon the encysted larva of this nematode has been the subject of discussion for years. Effective preparations belong particularly to the following groups: (1) Distillation products of organic substances; (2) dyes and their derivatives; (3) unsaturated compounds, especially allyl-compounds; (4) etheric oils; and (5) oxidizing and reducing substances. Most of these preparations have a two-fold effect in that they both activate the cystic contents and exhibit a paralyzing or lethal tendency. This effect has for practical purposes long been held to be the greatest in those substances of which the culmination points lie within the limits of low concentration and near the death-point. Either simultaneous or progressive application of more than one activating substance tends to increase the effect; progressive application alone heightens the effect of negative substances. The effect of an individual substance upon the life-cycle of activated larvae is specific and depends largely upon the earlier treatment of the larvae.—*B. Rademacher* (*transl. by C. A. Hannum*).

2388. SCHWARTZ, BENJAMIN, and JOSEPH E. ALICATA. Species of the nematode genus Strongyloides parasitic in domestic swine. *Jour. Agric. Res.* 40(1): 11-23. 12 fig. 1930.—*S. suis,* of swine, is distinguished from *S. papillosus* of sheep; *S.* **ransomi*** (p. 15), from small intestine of *Sus scrofa domestica,* Maryland, type in U. S. Nation. Mus.—*J. E. Alicata.*

2389. WÜLKER, G. Die Entstehung des Parasitismus bei den Nematoden. *Arch. Schiffs- u. Tropen-Hyg.* 33 (Beih. 3): 188-200. 3 fig. 1929.—The free-living nematodes are possibly more numerous than the parasitic, and are now considered to be the primitive forms. A comparative survey of nematodes and the forms of their parasitism suggests that there is no single origin of the parasitic habit of life; only within single groups can the evolution of infectious processes be traced.

ROTATORIA, GASTROTRICHA, ECHINODERA, AND CHAETOGNATHA

CHARLES H. BLAKE, *Editor*

(See also in B. A. 5(11): Entries 28456, 29990, 29999; and in this issue 36)

2391. **BURFIELD, S. T. Chaetognatha.** *Nat. Hist. Rept. Brit. Mus. (Nat. Hist.) Brit. Antarctic ("Terra Nova") Exp. 1910. Zool.* 7(4): 203-228. 3 map. 1930.—A complete list of all stations where collections were made with the exact location of each; 17,000 specimens were taken belonging to 13 spp. in the genera *Sagitta, Pterosagitta, Eukrohnia,* and *Krohnitta.* Measurements are given showing the general range of characteristics. The distribution of each sp. is discussed and indicated on the maps. The bibliography contains 35 references.

2392. **HAUER, J. Zur Rotatorienfauna Deutschlands (III). I. Einige für Deutschland neue Rattuliden.** *Zool. Anz.* 94(5/8): 173-184. 8 fig. 1931.—The following are new to Germany: *Diurella* **taurocephala*** (p. 173); *D.* **myersi*** (p. 174), Germany and U. S. A.; *D. insignis**; *D. intermedia**; *D. dixon-nuttalli**; *D.* **tenuidens*** (p. 179); *Trichocerca rosea** *Lepadella* **pumilo*** (p. 181); *L.* **voigti*** (p. 182).

2393. **HUTCHINSON, G. EVELYN. New and little known Rotatoria from South Africa.** *Ann. and Mag. Nat. Hist.* 7(42): 561-568. 4 fig. 1931.—*Trichocerca* **chattoni*** (*Rattulus cylindricus* v. *c.* de Beauchamp) (p. 561); *Keratella quadrata valga* (Ehrenberg) is discussed; *K.* **tetracera*** (p. 564), Transvaal; *Monostyla* **stephensae*** (p. 566), Portuguese E. Africa.

2394. **[KALITA, S. R.]** КАЛИТА, С. Р. Материалы к познанию зоопланктона водоема "Старая Кубань" близ г. Краснодара. **[Zooplankton of the "Old Kuban" basin near Krasnodar, North Caucasus.]** [German summary.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3 (1/3): 91-109. Map, 1 pl., 4 fig. 1930.—The greater part of the shore zone of this basin is covered with *Phragmites communis, Vallisneria spiralis, Potamogeton crispus, Myriophyllum* sp., and *Ceratophyllum demersum.* During 2 years' work 48 Rotatoria, 23 Cladocera, and 7 Copepoda were recorded and are here listed. A table shows their seasonal occurrence. There is a periodic fluctuation in abundance, the maximum for most spp. occurring in July and August, and the minimum in Jan. and Feb.; for a few spp. these conditions are reversed. Also a few of the organisms attain the maximum body size in winter, and the minimum in summer. Bibliography.

2395. **[TARNOGRADSKIĬ, D. A.]** ТАРНОГРАДСКИЙ, Д. А. К фауне коловраток Сев. Кавказа из родов **Lecane, Monostyla** и **Colurella. [Rotatorian fauna of North Caucasus (genera Lecane, Monostyla, and Colurella).]** [German summary, including descriptions of new spp.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3(1/3): 111-143. 2 pl. 1930.—The author records 29 spp. from his own collecting, and mentions others found in the region by previous workers. The systematic account includes synonymies, locality records, measurements, and taxonomic discussion. *Lecane ungulata, Monostyla bulla,* and *M. quadridentata* are lowland forms, not found above 200 m. *Colurella adriatica* and *C. colurus* are stenothermal cold-water forms. Most of the spp. are met with among *Sphagnum* and *Chara. Lecane papuana**, new to Europe; *L. doryssa**, new to USSR; *L.* **kluchor*** (p. 122); *Monostyla puriformis**, *M. perpusilla**, and *M. subulata**, new to USSR; *M.* **gwileti*** (p. 129).—*From author's summary.*

ANNELIDA

J. PERCY MOORE, *Editor*

(See also in this issue Entries 896, 975, 1712, 1739, 1949, 2178, 2183, 2188, 2192)

2396. **ANNENKOVA, N. Die Polychaeten in den Sammlungen der Jakutischen Expedition der Akademie der Wissenschaften der USSR.** *Zool. Anz.* 95(5/8): 203-205. 4 fig. 1931.—*Polydora quadrilobata* is recorded from the Laptev Sea, Arctic Ocean; *Nainereis* **jacutica*** (p. 204), Laptev Sea [Nordenskiöld Sea], 24 m. depth, type in Acad. Sci. USSR, Leningrad.

2397. **AUGENER, CH. Limnološka ispitiwanja Balkanskog Poluostrva. 2. Fauna Hirudinea Ohridskog i Prespanskog Jezera. [Limnological studies of the Balkan Peninsula. 2. Hirudinea of Lakes Ochrida and Prespansk.]** *Bull. Acad. Royal Serbe Sci. Arts, Beograde* 137(65): 185-186. 1929.

2398. **AUGENER, H. Die bodensässigen Polychäten nebst einer Hirudinee der Meteor-Fahrt.** *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 279-313. 11 fig. 1931.—Polychaeta: *Harmothoë* **meteorae*** (p. 279), Fernando Po; *H.* **ernesti*** (p. 281), Brazil; descriptive notes on *Nephthys macroura; Steggoa* **magalhaensi** (*Eulalia m.* Kinb.) (p. 284), S. W. Africa; descriptive notes on *Nereis* (*Perinereis*) *bairdi, Syllis* (*Typosyllis*) *brachychaeta, S.* (*T.*) *tigrinoides, S.* (*Ehlersia*) *sexoculata, Eunice frauenfeldi* Gr. (=*E. magellanica* McInt.), *E. siciliensis, E. cariboa* v. *kinbergi* Webst. (=*E. culebra* Treadw., *E. gagzoi* Augen.), *E. mutilata, E. rubra,* and *E. coccinioides; Marphysa* **hentscheli*** (p. 290), Brazil; descriptive notes on *Diopatra cuprea, Epidiopatra hupferiana, Rhamphobrachium agassizi* Ehl. (=*R. chuni* Ehl.), *Onuphis* **dorsalis** (*Diopatra d.* Ehl.) (p. 294); *O. verngreni**, *O. intermedia**, *O. fragilis**, and *Lumbriconereis albidentata**; *L.* **meteorana*** (p. 300), off coast of Angola and S. W. Africa; descriptive notes on *Glycera tessellata; G. capitata* v. **benguellana*** (p. 303), off coast of S. W. Africa; *Glycera lapidum* Quatr. (=*Hamiglycera serrulifera* Ehl.); descriptive notes on *Spiophanes kroeyeri, Prionospio malmgreni, Cirratulus jucundus, Macroclymene monilis,* and two spp.* doubtfully referred to *Nicomache; Owenia fusiformis, Brada villosa, Idanthyrsus pennatus* Peters (=*Pallasia luciae* Roche., *Sabellaria* (*Pallasia*) *johnstoni* McInt.), *Terebellides stroemi, Pista grubei, Streblosoma* sp., *Potamilla* (*Pseudopotamilla*) *reniformis,* and *Chone infundibuliformis.* Hirudinea: descriptive notes on *Helobdella scutifera.* Types in Zool. Mus. Hamburg.

2399. **BALTZER, FRIEDRICH. Zucht- und Versuchsmethoden (Geschlechtsbestimmung) bei Bonellia. Zuchtmethoden bei Thalassema und Echiurus.** In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden der Erforschung der Leistungen des tierischen Organismus.** *Teil 5, Heft 3, Methoden der Meerwasserbiologie. Lief. 278.* p. 431-442. Urban u. Schwarzenberg: Berlin, 1928.—Pr. 6 M.—Methods of keeping, breeding and experimenting with *Bonellia,* especially *B. viridis.* Spawning, rearing of larvae and phenomena in development connected with sex dimorphism and experiments in sex differentiation are discussed in detail; also methods for preservation are demonstrated. There are some notes on rearing of *Thalassema* and *Echiurus.*—*C. R. Boettger.*

2400. **BAYLIFF, WILLIAM H. Notes on the morphology of Cambarincola macrodonta Ellis.** *Bull. Univ. Oklahoma. Proc. Oklahoma Acad. Sci.* 9(456): 60-66. 5 fig. 1929.

2401. ČERNOSVITOV, L. Sur quelques Oligochètes de la région arctique et des Îles Faer-Oer. *Ann. Sci. Nat. Zool.* 14(1): 65-110. 1 pl., 30 fig. 1931.—Enchytraeidae: *Henlea* subg. *Henleanella**, table of measurements and data on 12 spp.; *H.* (*Henleanella*) **nivea*** (p. 73), Greenland; subg. **UDEKEMIANA*** (p. 71), based on *H. arctica* Welch, *H. ventriculosa* Udek, *H.* **groenlandica*** (p. 75), Greenland, *H. tolli* Michaelsen (=*H. parva* Cejka), *H. diverticulata* Cejka, and doubtfully *H.* **simplex** (*Edmondiella s.* Michaelsen) (p. 75), table of specific measurements and data; subg. *Hepatogaster*,* table of measurements and data on 6 spp.; subg. *Henlea*,* table of measurements and data on 12 spp., *H.* (*H.*) *nasuta** Eisen (=*Enchytraeus leptodera* Vejdovsky, *H. hibernica* Southern, *H. fragilis* Friend, *H. fridericoides* Friend); then follows a table of 19 spp. of uncertain genus and subgenus from various parts of the world. *Buchholzia*,* table of measurements and data on 4 spp.; *B. protarum* (Bretscher) (=*Henlea sulcata* Brets., *Buchholzia sarda* Cognetti de Martiis, *H. tabula* Friend). *B. focale* Friend is referred provisionally to *Bryodrilus*. The position of *Buchholzia parva* is also doubtful. *Bryodrilus* **diverticulatus*** (p. 95), Greenland; *B. ehlersi**; *Pachydrilus profugus**, descriptive data, Iceland; *Enchytraeus albidus** Henle (=*E. adriaticus* Vejd., *E. humicultor*), Iceland; *Mesenchytraeus flavus*, descriptive data, Greenland. Lumbricidae. *Allolobophora* **remyi*** (p. 106), Faroe Isl. The bibliography contains 35 references.

2402. ČERNOSVITOV, L. Revision des Lumbricus submontanus Vejdovsky, 1875. *Zool. Anz.* 95(1/2): 59-62. 2 fig. 1931.—*Eisenia* **submontana*** (*Lumbricus submontanus* Vejd.=*E.* (*Allolobophora*) *tigrina* Rosa) redescribed.

2403. ČERNOSVITOV, L. Zur Kenntnis der Oligochaetenfauna des Balkans. II. Die wasserbewohnenden Lumbriciden aus dem Ochridasee. *Zool. Anz.* 95(3/4): 96-102. 7 fig. 1931.—*Eiseniella* **ochridana** (p. 97), Macedonia, with forms **stankovičii*** (p. 98) and **profunda*** (p. 99); *Allolobophora* **lacustris*** (p. 100), Macedonia, and forms **ochridana*** (p. 102) and **st.-naumi*** (p. 102).

2404. CHEN, Y. On some new earthworms from Nanking, China. *Nation. Central Univ. Sci. Repts.* [*Nanking*] *Ser. B.* 1(1): 11-40. 2 pl. 1930.—*Pheretima* **vulgaris*** (p. 12), with var. **agricola*** (p. 18); *P.* **kiangsuensis*** (p. 24); *P.* **obscuritopora*** (p. 28).

2405. DONS, CARL. Zoologiska Notizer IX. *Kgl. Norske Vidensk. Selsk. Forhandl.* 3(paper 2): 3-5. 6 fig. 1930(1931).—**MIROSERPULA** (p. 3), near *Chitinopoma* and *Hyalopomatus*, based on *M.* **inflata*** (p. 3), Hammerfest, Norway. Possibly an arctic form, as the species does not occur in the neighboring district, Tröndelag.

2406. GAVRILOV, KONSTANTIN. Selbstbefruchtung bei Limnodrilus. Vorläufige Mitteilung. *Biol. Zentralbl.* 51(4): 199-206. 1931.—Facultative self-fertilization, after self-impregnation, occurs in *L. udekemianus* Clap. In self-impregnation, the body is bent at the boundary between the X and XI segments, admitting of the sexual act. In *L. hoffmeisteri* Clap. and *L. claparedeianus* Ratzel there is no self-impregnation [Selbstbegattung], but the eggs may develop, in the absence of a second individual, probably indicating a facultative self-fertilization by ejaculation of sperm from the ♂ sex-organs into the cocoon.

2407. HERTER, KONRAD. Fang, Pflege und Zucht der deutschen Süsswasseregel. In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden Abt. IX, Methoden zur Erforschung der Leistungen des tierischen Organismus. Teil 2, 2. Hälfte, Heft 4, Lief. 338. Pp. 1577-1618. 8 fig. Urban & Schwarzenberg: Berlin, 1930.—A list of freshwater leeches occurring in Germany with notes on their ecology. Detailed instructions for collecting, transporting, caring for and breeding in captivity, and notes on diseases are given for each species. A considerable bibliography is appended.—*A. L. Treadwell.*

2408. [MALEVICH, I. I.] МАЛЕВИЧ, И. И. К фауне пресноводных **Oligochaeta** Кавказа. **[Oligochaete fresh-water fauna of the Caucasus.]** [German summary.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3 (1/3): 81-84. 1930.—A list, with locality and date records, of 17 spp. Their known distribution in various water basins of the Caucasus is summarized in a table.—*From author's summary.*

2409. THOMAS, J. ANDRÉ. Sur les pigments vert et brun de Nereis diversicolor O. F. M. *Bull. Soc. Zool. France* 55(2): 97-103. 1930.—In the integument are 2 pigments, brown and green; the former resembles melanins, the latter is dark green, reversible in the presence of some reagents, especially concentrated acids, and is very resistant to organic solvents. It is possibly a transformation product of chlorophyll.—*J. A. Thomas* (*transl. by A. L. Treadwell*).

2410. TREADWELL, AARON L. Three new species of polychaetous annelids from Chesapeake Bay. *Proc. U. S. Nation. Mus.* 79(1): 1-5. 3 fig. 1931.—*Pionosyllis* **manca*** ♀ (p. 1), off Cape Henry, Virginia, and *Myriana* **cirrata*** (p. 2), near mouth of Chesapeake Bay; *Prionospio* **plumosa*** (p. 3). Types in U. S. Nat. Mus.

BRACHIOPODA, BRYOZOA, PHORONIDEA

R. C. OSBURN, *Editor*

(See also in this issue Entries 2177, 2178, 2179, 2180, 2182, 2183, 2185, 2186, 2188, 2192, 2426, 2478)

2411. CANU, F., et R. S. BASSLER. Bryozoaires marins de Tunisie. *Stat. Océanographique de Salammbô, Ann.* 5. 1-91. Map, 13 pl., 1 fig. 1930.—This report is based upon material collected in 1904 by P. Pallary, not only in Tunisia but also in Algeria. Special attention is paid to the correction of false synonymy; also to biological data, such as color variations, habitat, geographical distribution and biological limits, the rôle of adventive organs, reproduction, and habits. The determination of the number of cells in a certain area (1 or 4 sq. mm.) is a new feature. A bibliography and a glossary are given. The systematic account of about 65 spp. and varieties includes synonymies, descriptions, biological and taxonomic notes, and statements of local and general distribution. The new spp. are from Tunisia unless otherwise stated; types are in Mus. d'Hist. Nat. Paris. *Nitscheina* **pulchella** (p. 13); *Rectonychocella* **disjuncta*** (p. 21); *Onychocella antiqua* (Busk), *O. marioni* Jullien, and *O. parisiensis* D'Orb. are removed from the synonymy of *O. angulosa* (Reuss); *O.* **americana** (p. 22), American Jacksonian; *O.* **falunica** (p. 22), French and Egyptian Helvetian; *Eschara andegavensis* Michelin, *Cellepora gracilis* Reuss, *C. minuta* Reuss, and *Membranipora bifoveolata* Heller (which is referred to the genus *Thalamoporella*) are removed from the synonymy of *Calpensia nobilis* (Esper); *Hemiseptella* **africana*** (p. 29); *Schizomavella auriculata* v. **ornata*** (p. 35); *S. a.* var. **inordinata*** (p. 35); *Schizopodrella* **erectorostris*** (p. 38); *S.* **violacea*** (p. 40), Tunisia and Algeria; *S.* **elliptica*** (p. 42); *S.* **grandicella*** (p. 46); Algeria; *Calloporina* **parvicella** (p. 48); *Hippoporina* **simplex*** (p. 49); *Smittina* **baccata*** (p. 51); *S.* **porosa*** (p. 52); *Schizellozoon* **aviculiferum*** (p. 60); *S.* **granulosum*** (p. 62); *Tubucellaria* **cereoides*** (Solander) is distinguished from *T. opuntioides* (Pallas); *T.* **levinseni** (p. 64), S. Africa; *T.* **watersi** (p. 64), Australia; *Adeonella* **calveti** (p. 68); *Hippopodinella* **strophiae*** (p. 72); *Schismopora* **truncatorostris*** (p. 79); *Cellepora boryi* Audouin and *C. hassallii* (Johnston) are removed from the synonymy of *C. costazii* Audouin; *Diastopora* **rugosa*** (p. 86), Algeria; *Frondipora* **gracilis*** (p. 87), Algeria.

2412. GRAVE, BENJAMIN H. The natural history of

Bugula flabellata at Woods Hole, Massachusetts, including the behavior and attachment of the larva. *Jour. Morph. & Physiol.* 49(2): 355-384. 2 pl., 2 fig. 1930.—The breeding season of *B. flabellata* extends from June 10th to Nov. 15th. The young embryos develop in brood pouches (ovicells) and are finally expelled from the colony as swimming embryos. They come from the colonies at dawn or early morning. After a free-swimming period of 4-6 hrs., each larva becomes attached and after a profound metamorphosis which involves the loss of larval organs, it develops into the Bryozoan colony by budding. The larvae at first are positive to light, but become negative before attachment. Their behavior is described in detail and the mode of attachment is explained. After the larva has become attached a period of rapid growth by budding ensues. The rate of growth is given in a table in which it is shown that the first individual of the colony is completed in 2 days and that a new series of buds is formed every 2 days. There are 8-10 individuals after 1 week and over 100 in 2 weeks. In one month the colony is half-grown and becomes sexually mature. A colony becomes senescent in 3 months, when it measures 1½-1¾ inches in diam. Younger colonies hibernate successfully and resume growth in early May, when new polypides are formed.—*Author (courtesy Wistar Bibl. Serv.).*

2413. **[NALIVKIN, D.]** НАЛИВКИН, Д. Семилукские и воронежские слои. **(The Semiluk and the Voroneje beds of the Upper Devonian of Voroneje region.)** [English summary.] Известия Главного Геолого-Разведочного Управления (*Bull. Geol. & Prospecting Service, USSR. [Leningrad]*) 49(1): 53-93. 3. pl. 1930.—The author describes the Semiluki, Petino, and Voroneje beds, lists the large faunas, compares the section with that of Western Europe, and discusses the Devonian paleogeography of the region. A number of previously described forms are figured. From the Similuki beds the following new forms are described: *Productus* **petini*** (p. 71); *Pentamerus* (*Gypidula*) *biplicatus* v. **nana*** (p. 72); *Leiorhynchus* **pavlovi*** Müfke (p. 72), type in Geol. Mus. Univ. Moscow; *Hypothyris cuboides* v. **semilukiana*** (p. 73); *Pugnax* **voroni*** (p. 73); *Atrypa* **uralica*** (p. 74); *Spirifer disjunctus* v. **supradisjunctoidea*** (p. 75); *S.* (*Cyrtospirifer*) **lictor*** (p. 76); *S.* **perlevis** (p. 76); *Bellerophon* **petinensis*** (p. 80); *Trochus* **tanaicus*** (p. 81); *Orthoceras* **asser** (p. 82). From the Voroneje beds: *Cryptonella* **davidsoni*** (p. 78) and *Cyrtoceras* **commodus** (p. 83).

2414. **NEKHOROSHEV, B. P. On certain Palaeozoic Bryozoa in the British Museum (Natural History).** *Geol. Mag.* 67(790): 178-189. 1930.—Examination of Palaeozoic bryozoans in the Brit. Mus. shows some forms to be of cosmopolitan distribution, thus emphasizing the stratigraphic importance of the phylum, stressed by American authors. There is need for microscopic examination, both to establish stratigraphic ranges of species and to establish priority of many names first given by European authors, but commonly overlooked in American paleontology. Until such microscopic study is made, old identifications are of value only in those localities from which types were derived, and will produce uncertainty and confusion if applied to Bryozoa of other localities.—*C. L. Fenton.*

2415. **RAO, H. SRINIVASA. Sponges and Polyzoa of the Indawgyi Lake, Burma.** *Rec. Indian Mus.* 31(4): 269-271. 1929.—In the fauna of the lake sponges and Polyzoa are very poorly represented; only 1 species of sponge and 3 of Polyzoa were found in the marginal zone of the lake. Discussion and distributional notes are given for *Trochospongilla latouchiana* (sponge), and for the polyzoans, *Hislopia lacustris*, *Plumatella tanganyikae*, and *Lophopodella carteri*.—*S. B. Setna.*

MOLLUSCA

H. A. PILSBRY, *Editor*

H. B. BAKER, *Associate Editor*

J. B. REESIDE, *Associate Editor,* Mesozoic and Paleozoic Mollusca

(See also in this issue Entries 1040, 1119, 1365, 1676, 1703, 1705, 1978, 2158, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2188, 2189, 2190, 2192, 2193, 2413, 2489)

2416. **ABEL, OTHENIO. Die Fährten der Strandschnecke Bullia rhodostoma an der Küste Südafrikas und die Kriechspuren aus dem Greifensteiner Sandstein bei Kierling im Wienerwalde.** *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): (75)-(79). 1929(1930).—The author describes the trails of *B.* **rhodostoma** on sandy beaches in Cape Province, and compares them with the trails in the Greifenstein sandstone described under the name of *Phyllochorda*. It is extremely probable that the latter were made by fossil forms of *Bullia*.

2417. **ADENSAMER, WOLFGANG. Wissenschaftliche Ergebnisse der Expedition R. Grauer nach Zentralafrika. Dezember 1909 bis Februar 1911. Mollusca.** *Ann. Naturhist. Mus. Wien* 42: 87-98. 4 fig. 1928.—The expedition to eastern Belgian Congo brought back 31 mollusks, all but 1 (*Melania* (*Potadoma*) **graueri*** (p. 97) of which have since been described from this material. Systematic relationships and measurements are given for all the species.—*M. W. Kamm.*

2418. **ARKELL, W. J. The generic position and phylogeny of some Jurassic Arcidae.** (To be cont.) *Geol. Mag.* 67(793): 297-310. 3 pl., 14 fig. 1930.—The confused nomenclature of *Arca, Cucullaea, Grammatodon, Beushausenia, Parallelodon,* and their synonyms are reviewed, with the conclusion that *Parallelodon* should be accepted as a genus with *Grammatodon* and *Beushausenia* as subgenera. The origin of *Parallelodon* is to be sought in the early Paleozoic, perhaps in the genus *Cypricardites*, thus suggesting closer relationship between the Pteriidae and Taxodonta than commonly is supposed. *Barbatia, Nemodon* and other Cretaceous and Tertiary genera are discussed or illustrated; *Barbatia* seems to be ancestral to *Nemodon* and *Cucullaria*.—*C. L. Fenton.*

2419. **ASHBY, EDWIN. Contributions to the fauna of Rottnest Island [Western Australia]. No. II. Polyplacophora.** *Jour. Roy. Soc. Western Australia* 15: 47-54. 7 fig. 1928/1929.—The author lists 14 forms, including *Notoplax* **rottnestensis*** (p. 47) and *Lepidopleurus* **glauerti*** (p. 50). *Ischnochiton virgatus* Reeve (=*Autochiton v. exaggeratus* Iredale & Hull). A brief revised classification of Polyplacophora is appended.

2420. **ATANASIU, ION S. Études géologiques dans les environs de Tulghes (District Neamțu).** *Anuar. Inst. Geol. Românіei* 13: 373-508. 78 fig. 1928(1929).—Twelve species are recorded from the Aptian (L. Cretaceous) of this district in Rumania. The U. Cretaceous is rich in the gastropods **TRANSILVANELLA** (p. 484), erected for *T.* **abbreviata*** (*Tornatella a.* Philippi) (p. 484), including also *Transilvanella* **lamarcki*** (*Actaeonella l.* Z·ck.) (p. 484).

2421. **BAKER, H. BURRINGTON. Mexican mollusks collected for Dr. Bryant Walker in 1926. Part II.** *Occas. Papers Mus. Zoöl. Univ. Mich.* 220: 1-45. 5 pl. 1930.—Pupillidae: *Pupisoma* **comicolense*** (p. 3). Endodontidae: A key to N. Amer. spp. of *Punctum* is given; *P.* **vitreum*** (p. 9), Texas; *Rotadiscus hermanni* **nivatus** (p. 12); *Radiodiscus* **proameri*** (p. 13). Philomycidae: The anatomy of *Pallifera costaricensis* ssp. **alticola*** (p. 15) and *crosseana* is studied and the possible identity of all the tropical American "species" is discussed. Zonitidae: *Guppya sterkii* **punctum*** (p. 21) and a subgenus of *Mesomphix,* **OMPHALINELLA** (p. 25), tod. *Helix veracruzensis* Pfr. are proposed; a key to the

groups in *Mesomphix* and anatomy of *M. lucubratus, M. bilineatus, M. veracruzensis,* and *M. carinatus* are included; *Pseudovitrea* is made a synonym of *Hawaiia* because dissections of *Helix kawaiensis* (from Hawaiian Isls.) show that it is a form of *H. minuscula;* a key to the species of *Striatura* is given; and the anatomy of *S. meridionalis* (from Mexico and Pennsylvania) and *S. pugetensis* (from Washington) is described. Species of Systrophiidae and of European Limacidae are reported, and the anatomy and synonymy of the palearctic *Deroceras laeve* (+*Agriolimax campestris*) are discussed. Type of *Punctum vitreum* in Acad. Nat. Sci. Philadelphia; other types in Walker coll.—*H. B. Baker.*

2422. **BAKER, H. BURRINGTON. The North American Retinellae.** *Proc. Acad. Nat. Sci. Philadelphia* 82: 193-219. 6 pl. 1930.—An attempt is made to classify the N. Amer. land snails of the genus *Retinella* (Pulmonata, Zonitidae) with the aid of studies of the anatomy of most of the species. In the subgenus *Perpolita,* notes are given on the anatomy of *R. electrina, R. binneyana,* and *R. subhyalina;* in *Glyphyalus,* on that of *R. burringtoni, R. cumberlandiana, R. wheatleyi,* and *R. vanattai;* in **GLYPHYALOIDES** (p. 194), on *R. roemeri* (genotype) and *R. lewisiana;* in *Glyphyalops,* on *R. rhoadsi;* in *Glyphyalinia,* on *R. indentata, R. carolinensis* and *R. cryptomphala;* in **GLYPHOGNOMON** (p. 194), on *R. praecox* and *R. sculptilis* (genotype). *R. binneyana* **occidentalis*** (p. 198), Washington; *R. cumberlandiana* **roanensis*** (p. 203), North Carolina; *R. rhoadsi* **austrina*** (p. 208), *R. cryptomphala* **solida*** (p. 213), *R.* **praecox*** (p. 214), and *R. sculptilis* **subdola*** (p. 217), Tennessee. Types in Acad. Nat. Sci. Philadelphia.—*H. B. Baker.*

2423. **BAKER, H. BURRINGTON. The land snail genus Haplotrema.** *Proc. Acad. Nat. Sci. Philadelphia* 82: 405-425. 3 pl. 1930(1931).—This paper attempts a revision of the genus *Haplotrema,* which constitutes the family Haplotrematidae. In the subg. *Haplotrema* s.s., notes are given on the anatomy of *H. duranti* and ssp. **continentis*** (p. 410), California, type in Acad. Nat. Sci. Philadelphia; in subg. *Geomene,* on that of *H. concavum;* in subg. **ANCOMENA** (p. 406) on *H. keepi, H. alameda,* and *H. minimum* from California, and on *H. vancouverense* (tod. of subgenus) from Washington; in subg. **ANCOTREMA** (p. 406) on *H. sportella* (tod. of subg.) from Washington; in subg. **HAPLOMENA** (p. 406) on *H. paucispira* (tod. of subg.) from Cuba; and in subg. *Zophos,* on *H. concolor* from Porto Rico. Keys to the groups and species are included. On the basis of their anatomy, the Haplotrematidae are thought to be most closely related to the Rhytididae and Streptaxidae.—*H. B. Baker.*

2424. **BARTSCH, PAUL. New and old land shells from the Island of Luzon, Philippines.** *Proc. U. S. Nation. Mus.* 78(5): 1-20. 9 pl. 1930.—This paper deals chiefly with a revision of the subspecies of *Cochlostyla dubiosa* Pfeiffer, *C. submirabilis* Möllendorff, *C. mirabilis* Férussac, and *C. persimilis* Fér. The synonymy of previously described and of some of the new subspecies of species of *Cochlostyla* is cited under each and their known distribution is given. Types of new forms in U. S. Nat. Mus. *Cochlostyla dubiosa* **capulensis*** (p. 5), *C. submirabilis* **banosana*** (p. 6), *C. s.* **majayjayana*** (p. 7), *C. s.* **lucbana*** (p. 7), *C. s.* **tayabasana*** (p. 8), *C. s.* **antimonana*** (p. 8), *C. s.* **daragana*** (p. 9), *C. persimilis* **callipepla*** (p. 13), *C. p.* **pharcida*** (p. 14), *C. p.* **callimorpha*** (p. 15), *C. p.* **podagra*** (p. 15), *C. p.* **acrybia*** (p. 16), *C. p.* **boacana*** (p. 16), *Obba gallinula* **majayjayana*** (p. 17), *Leptopoma* **mcgregori*** (p. 17), *Sulfurina citrinella* **banahaoana*** (p. 18).—*P. Bartsch.*

2425. **BATALLER, J. R., and M. GUERIN. Notes sobre el triàsic de Barcelona i Tarragona.** *Butl. Inst. Catalana Hist. Nat.* 10(6): 81-84. 3 pl. 1930.—Includes an emended description of *Protrachyceras vilanovae** E. Mojs. and figures of *Ceratites guerini* Bataller, *C. catalaunicus* Batal., and *C. almerai* Batal.

2426. **[BOULE, MARCELLIN.] Types du Prodrome de Paléontologie stratigraphique Universelle de d'Orbigny.** [Conclusion.] *Ann. Paléontol.* [*Paris*] 18(4): 97-132. 6 pl. 1929.—Original description, new discussion, and new figures of the following d'Orbigny species of pelecypods: *Lavignon subrugosa*, Leda corallina*, Venus corallina*, Corbula neptuni*, Opis cotteausia*, O. thais*, O. radisensis*, O. rupellensis*, Astarte cotteausia*, A. nysa*, A. eudora*, A. bicostata*, A. papyracea*, A. nicias*, Hippopodium corallinum*, H. cottaldinum*, Cyprina elea*, C. corallina*, C. hersilia*, C. erato*, C. eucharis*, C. bernardina*, Trigonia aculeata*, T. corallina*, T. rupellensis*, T. bicostata*, Lucina athleta*, L. delia*, L. mosae*, L. rupellensis*, L. neptuni*, Corbis cottaldina*, Unicardium callirhoe*, U. subregulare*, Isocardia brevis*, I. rupellensis*, Cardium sublamellosum*, C. semiseptiferum*, Nucula feronia*, Limopsis moreausiana*, Arca janthe*, A. idalia*, A. janias*, A. idmone*, A. janassa*, Myoconcha compressa*, M. auricula*, Mytilus petasus*, M. leda*, M. lagus*, M. lynceus*, M. leilus*, M. lassus*, M. lombricalis*, Lithodomus corallinus*, L. rupellensis*, Lima corallina*, L. rupellensis*, Avicula mimas*, A. mysis*, A. corallina*, Perna corallina*, Pinnigena rugosa*, Pecten subarticulatus*, P. corallinus*, P. nisus*, P. nothus*, P. niso*, P. nireus*, P. nicaeus*, Hinnites ostreiformis*, Plicatula rustica*, Diceras bernardina*,* and *Ostrea clytia**. The pelecypod, *Pulvinites rupellensis** d'Orbigny and the brachiopods, *Terebratula rupellensis** d'Orb. and *T. equestris** d'Orb. are also figured. All of the species are said to be Corallian (NeoJurassic), according to d'Orbigny, and localities are given.—*B. F. Howell.*

2427. **BUCKMAN, S. S. Jurassic Ammonoidea. In Mesozoic paleontology of Blairmore region, Alberta.** *Canada Dept. Mines, Nation. Mus. Bull. Geol. Ser.* 58. 1-27. 1 fig. 3 pl. 1929.—Ammonites of the Macrocephalitidae from the early Up. Jurassic Fernie formation of the southern Rocky Mts. of Canada, including: **PARACEPHALITES** (p. 8), type *P.* **jucundus*** (p. 8), *P.* **glabrescens*** (p. 10); **METACEPHALITES** (p. 11), type *M.* **metastatus*** (p. 11); **MICCOCEPHALITES** (p. 14), type *M.* **miccus*** (p. 15), *M.* **laminatus*** (p. 14), *M.* **concinnus*** (p. 15). Types in Victoria Memorial Mus., Ottawa. Comparative analyses of the characters of these and other macrocephalitid, and even "cadoceratid," genera are given. It is concluded that the Alaskan *Cadoceras grewingki* series does not belong to "Cadoceratidae" but to Macrocephalitidae, being akin to *Miccocephalites.* Geographic distribution of related species is briefly given. Chronology of deposits bearing macrocephalitids, etc., is discussed. It is suggested that the Ferne macrocephalitids are of early Up. Jurassic, Proplanulitan, *Catacephalites,* date.—*C. H. Crickmay.*

2428. **CHAMBERLIN, RALPH V., and ELMER BERRY. Mollusca from the Henry Mountains and some neighboring points in Utah.** *Bull. Univ. Utah.* 21(2): 1-7. 1930.—An annotated list of species, collected chiefly in Sept. 1929, including *Aplexa* **microstriata** (p. 7), and some *Gastrocopta* spp. new to Utah.

2429. **CHAMBERLIN, RALPH V., and ELMER BERRY. A new mollusk of the genus Pupoides from southern Utah.** *Proc. Biol. Soc. Washington* 44: 7-8. 1 fig. 1931.—*Pupoides* **eupleura*** (p. 7), type in Univ. of Utah Zool. Mus.

2430. **COTTON, BERNARD C. Contributions to the fauna of Rottnest Island. no. IV. Western Australian Sepiidae.** *Jour. Roy. Soc. Western Australia* 15: 87-94. 3 pl., 1 fig. 1928/1929.—Fifteen spp. are recorded from various parts of W. Australia, including Rottnest Isl. Five are new: *Solitosepia* **glauerti*** (p. 87); *S.* **hendryae*** (p. 87); *S.* **occidua*** (p. 88); *Decorisepia* **cottesloensis*** (p. 90); *Crumenasepia* **ursulae*** (p. 90). All new forms from W. Australia; types presumably in W. Australian Mus.

2431. **COTTON, BERNARD C. Pelecypoda of the "Flindersian" region, Southern Australia.** *Rec. S. Australian Mus.* 4(2): 223-240. 15 fig. 1930.—This paper is based upon material dredged by Joseph Verco in South and Western Australia. The systematic list of about 84 forms includes distributional and depth records and taxonomic remarks. **PROTONUCULA** (p. 223), resembling *Pronucula,* proposed for *Protonucula* **verconis*** (p. 223), 130-300 fm., W. Australia (type) and S. Australia;

Pronucula **cancellata** (p. 224), 9-62 fm., S. Australia; *P.* **concentrica*** (p. 224), 20 fm., S. Australia; *P.* **flindersi** (p. 225), 300 fm., W. Australia; *Comitileda* **curtior** (p. 226), 72-300 fm., W. Australia; **LAMELLILEDA** (p. 227), near *Poroleda*, erected for *L.* **typica*** (p. 227), 300 fm., W. Australia; *Glycymeris striatularis* **penelevis*** (p. 229), 12 fm., S. Australia; *G. flabellatus* Ten. Woods (=*G. broadfooti* Iredale); *Limopsis vixornata* **occidentalis** (p. 230), 22 fm., W. Australia; *L. tenisoni* **forteradiatus** (p. 231), 35 fm., S. Australia (type) and W. Australia; *L. t.* **tenuiradiatus** (p. 231), 81 fm., S. Australia (type) and W. Australia; *Atrina tasmanica* Ten. Woods (=*A. t.* var. *dumosa* Hedley); *Malleus* **meridianus** (p. 232), S. Australia and W. Australia, type depository not given; *Mimachlamys fumigerator*, new to the Flindersian region; **NOTOCHLAMYS** (p. 233), erected for *N.* **anguineus** (*Chlamys a.* Finlay) (p. 233); *N.* **tasmanicus** (*Pecten t.* Ads & Angas) (p. 234); *Cuspidaria* **levifrons*** (p. 235), 300 fm., W. Australia; *Cuna* **subrotunda*** (p. 235), 62 fm., S. Australia (type) and W. Australia; *Venericardia amabilis* Deshayes (=*Cardita gemulifera* Tate); *V.* **propelutea*** (p. 236), 14 fm., S. Australia; *Condylocardia* **crassidentata** (p. 236), 40-130 fm., S. Australia; *C.* **rectangularis*** (p. 237), 40-200 fm., S. Australia; *C.* **isosceles*** (p. 238), 35-49 fm., S. Australia; *C.* **limaeformis*** (p. 238), 62 fm., S. Australia; *C.* **notoaustralis*** (p. 239), 150-200 fm., S. Australia (type) and Tasmania; **AUSTROTURQUETIA** (p. 239), erected for *A.* **integra** (*Turquetia i.* Hedley) (p. 239); *Corbula* **iredalei*** (p. 239), 20 fm., S. Australia; *C.* **flindersi*** (p. 240), 17 fm., S. Australia. Types in S. Australian Mus. unless otherwise stated.

2432. **COX, L. R. The fossil fauna of the Samana Range and some neighbouring areas: Part VIII. The Mollusca of the Hangu shales.** *Mem. Geol. Surv. India, Palaeont. Indica* 15: 129-222. 6 pl. 1930.—A well preserved molluscan fauna is recorded from the earliest Tertiary horizon (Paleocene), at all rich in fossils, yet discovered in Asia. The stratigraphic position and paleontological evidence as to the age (Landenian or possibly Montian) of the Hangu shales, as well as the broad paleogeographical relations of the fauna, are discussed at length. Genera reported from so low a horizon for the first time include *Strepsidura, Streptochetus,* and *Voluta* s. str. from the Hangu shales; and *"Cassidaria," Cassis, Harpa,* and *Sigaretus* from the Up. Ranikot beds. The long-range species *Lambis goniophora, Mesalia fasciata,* and *Corbula exarata* occur in the Cretaceous-Tertiary transitional beds of India, though not known below the Lutetian of Europe. *Globularia brevispira* and a *Terebellopsis* are reported for the first time from India. Of 63 definitely identified gastropod genera of the Hangu shales or Up. Ranikot beds, only 33 have been found in the Paleocene of northwestern Europe. Gastropoda: *Pirena* **torta*** (p. 144); *Batillaria* **coronata*** ("? *melius* Clavidae") (p. 146); *Campanile* **brookmani*** (p. 149); *Pyrazus* **octogonus*** (p. 150); *Vermetus* **hanguensis*** (p. 151); *Turritella* **daviesi*** (p. 152); *T.* **lahirii*** (p. 153); *T. ranikoti** Vredenburg; *T.* **cf.** *hollandi** Cossmann & Pissarro; *Mesalia fasciata** (Lamarck); *M.* **pagoda*** (p. 160); *Tibia* **samanaensis*** (p. 161); *Lambis* **goniophora*** (*Rostellaria g.* Bellardi) (p. 162); *Rimella* **levis*** (p. 166); *Euspira* **roei*** (p. 169); **AMPULLOSPIRIDAE** (p. 170), n. name for Euspiridae Cossmann; *Globularia* **brevispira** (*Natica b.* Leymerie) (p. 171); *G.* **sulcata*** (p. 172); *Euspirocrommium* **conicum*** (p. 174); *Pachycrommium* **indicum*** (p. 175); *Crommium* **rouaulti*** (*Natica r.* d'Archiac & Haime) (p. 175); *Eocypraea* **cotteri*** (p. 177); *Protocypraea* **kohatica*** (p. 178); *Architectonica* **mainwaringi*** (p. 179); *Streptochetus* **foxi*** (p. 181); *Dolicholatirus* **indicus*** (p. 182); *Hemifusus* **montensis*** (p. 184); *Eovasum* **haimei*** (d'Archiac), emended description; *Murex* (*Phyllonotus*) **wadiae*** (p. 189); *M.* **sandersoni*** (p. 190); *Strepsidura* **tipperi*** (p. 191); *S.* **scobina*** (p. 192); *Turricula* (*Pleurofusia*) **hanguensis*** (p. 193); *T.* (*Ancistrosyrinx*) **hayden*** (p. 195); *Voluta* **vredenburgi*** (p. 196); *Athleta* (*Volutocorbis*) **daviesi*** (p. 198); *A.* (*Volutospina*) **wynnei*** (p. 199); *Lyria* **samanaensis*** (p. 201). Scaphopoda: *Dentalium* **hanguense*** (p. 203). Lamellibranchia; *Cardium inaequiconvexum** Cossmann & Pissarro; *Cardita* **hanguensis*** (p. 206); *Meretrix* **indica*** (p. 207); *Chama oblonga* L. is designated as type of *Trapezium; Trapezium* **daviesi*** (p. 209); *Crassatellites* **exiguus*** (p. 210); *Corbula* **samanaensis*** (p. 211); *C.* (*Bicorbula*) **praeexarata*** (p. 212). Types in Geol. Surv. India. Bibliography of 140 titles.

2433. **DAVIES, JOHN H. Non-marine shells of Upper Carboniferous rocks of North America.** *Proc. and Colls. Wyoming* [*Pennsylvania*] *Hist. and Geol. Soc.* 21: 98-106. 11 fig. 1930.—Representatives of *Anthracomya, Carbonicola,* and *Naiadites* from various localities in the Appalachians are noted and figured, and the author suggests that detailed study of their distribution might aid in correlation of the coal beds.

2434. **[EMEL'ÏANTSEV, TIKHON.]** ЕМЕЛЬЯНЦЕВ, ТИХОН. Артинские головоногия из района Полюдовского Камня на Урале. [**Gastrioceras and Paragastrioceras in the Poliudovsky Stone region, Ural Mts.**] Известия Геологического Комитета, Ленинград (*Bull. Com. Géol.* [*Leningrad*]) 48(8): 145-152. 1 pl., 8 fig. 1929.—A critical study of the following forms, found for the first time in the Artinsk formation in the lower Vishera River region (Cherdynsk Ural), is made: *Orthoceras siphocentralis** Krotow., *Parapronorites urmensis* Tschern., *Paragastrioceras jossae** Verneuil., *P. karpinskii* Fredericks, *P. suessi* Karpinsky, *Gastrioceras fedorovi** Karp., and *Adrianites* **fredericksi*** (p. 150).

2435. **ENDO, RIUJI. The presence of Nybyoceras in south Manchuria.** *Jour. Sci. Lab. Denison Univ.* 25(6/7): 297-299. 1 pl. 1930.—Notes the occurrence of actinoceroid cephalopod *Nybyoceras* Troedsson, in the Up. Chazyan, Wuting formation of Manchuria. The genus, heretofore known only from the Lyckholm (F^1)=Richmond of the Baltic region, has also been found in Lr. Chazyan strata of Oklahoma. *Nybyoceras* **foerstei*** (p. 298), Lr. Ordovician.—*J. Bridge.*

2436. **FELIKSIAK, STANISŁAW. Über riesige Exemplare der Teichmuschel, Anodonta cygnea (L.). [Giant specimens of A. cygnea.]** *Fragmenta Faunistica Mus. Zool. Polonici* 1(6): 135-142. 1 pl. 1930.—A detailed study of 2 specimens of unusual size, from Poland, one (26 cm. long) with 10 annual rings, the other (21.5 cm. long) with 8. Four stages of development are described.

2437. **FINLAY, H. J. Invalid molluscan names. No. 1.** *Trans. & Proc. New Zealand Inst.* 61(1): 37-48. 1930.—*Cucullaea* **whiteavesi** (*C. ponderosa* Whiteaves, not Hutton) (p. 37); *Limopsis* **solicola** (*L. compressus* Dall, not G. & H. Neville) (p. 37); *Lima crassa* Hutton, 1873, is discarded as unidentifiable and as preoccupied by Forbes, 1844; *Salaputium* **aldingensis** (*Crassatella corrugata* Tate, not Adams & Reeve) (p. 38); *Lucina minima* Ten.-Woods, 1876, is preoccupied by Roemer, 1836; *Tellina donaciformis* Deshayes, 1855, is preoccupied by Nyst, 1835; **MARWICKIA** (*Finlaya* Marwick, not Theobald) (p. 38); *Dosinula elegans* Hutton, 1873, is preoccupied by *Callistus elegans* Boheman, 1848; *Lutraria* **porrecta** (*L. elongata* Gray, not Muenster) (p. 39); *Patella aculeata* Reeve, 1855, is preoccupied by Gmelin, 1791; *Diodora* **philippiana** (*Fissurella elongata* Philippi, not M'Coy) (p. 39); *Calliostoma* **dautzenbergi** (*C. hedleyi* Dautzenberg, not Pritchard & Gatliff) (p. 39); *C.* **amazonica** (*C. iheringi* Dall, not Ortmann) (p. 40); *Liotina* **infensa** (*Delphinula crenata* Kiener, not Sowerby) (p. 40); *Brookesena* Finlay (=*Vindex* Powell, not Kaup); *Crepidula* **yokoyamai** (*C. convexa* Yokoyama, not Say) (p. 40); **SULCERATO** (p. 40), type *Erato illota* Tate; *Eratotrivia* Sacco, 1894, replaces *Eratopsis* H. & A., 1880, which is preoccupied by R. L., 1817, and should be used for the European spp.; **BADENIA** (*Powellia* Finlay, not Maskell) (p. 41) is transferred from the Rissoidea to the Melanellidae and placed near *Melanella* and *Eulima; Fusinus* **dampieri** (*Fusus exilis* Menke, not Conrad) (p. 41); *Aeneator* **huttoni** (*Buccinum inflatum* Hutton, not Shaw) (p. 42), emended description; *Neptunaea costatus* Hutton is preoccupied

by *N. costata* Link, and is synonymized with, and replaced by, [*Austrofusus*, gen. ?], *Nassicola* [section ?] *contracta* Finlay; *Siphonalia compacta* Suter is transferred to "this genus" [*Austrofusus* (*Nassicola*) ?]; *Austrofusus* (*Nassicola*) *magnificus* Finlay is transferred to *Austrofusus* s. str.; **ATKINSONELLA** (p. 43), erected for *Buccinum fragile* Ten.-Woods; *Eucominia* **filholi** (*Buccinum veneris* Filhol, not Basterot) (p. 44); *Thais* **demissa** (*Purpura depressa* Martin, not Link) (p. 44); *Columbella* **conella** (*C. coniformis* Martin, not Sowerby) (p. 44); *Volutoconus* **ralphi** (*Voluta conoidea* Tate, not *Bulla conoidea* L.) (p. 44); *Voluta lirata* Johnston is preoccupied by *V. lyrata* Brocchi; *Notopeplum* **saginatum** (p. 45), Tasmania (Janjukian, Neogene), type in author's coll.; *N.* **balcombensis** (p. 46), Victoria, Australia (Balcombian), type in author's coll.; *Phenatoma novae-zelandiae* (Reeve) (=*Pleurotoma plicatella* Hutton); *Bathytoma* **murdochi** (*Pleurotoma nodilirata* Murdoch & Suter, not E. A. Smith) (p. 46); *Gemmula* **thielei** (*Pleurotoma* (*Gemmula*) *fusiformis* Thiele not Sowerby) (p. 47); *Splendrillia* **aoteana** (*Pleurotoma laevis* Hutton, not Bellardi) (p. 47); *Terebra* **vredenburgi** (*T. martini* Vredenburg, not Tesch) (p. 47); *T.* **teschi** (*T. martini* Tesch, not English) (p. 47); **ZEACUMINIA** (p. 47), type *Z.* **tahuia** (*Terebra sulcata* Marshall, not *T. swainsoni* var. *s.* Pease) (p. 47); *T. flexicostata* Suter is transferred to *Pervicacia; Actaeon* **ambiguus** (*Admete* ? *ambigua* Hutton) (= *Actaeon praestitus* Finlay) (p. 48).

2438. FOERSTE, AUGUST F. Three studies of cephalopods. *Denison Univ. Bull. Jour. Sci. Lab.* 24 (10/13): 265-381. 23 pl. 1930.—Pt. I.—A few European cephalopods: Discusses scope of the family Lituitidae and of genera *Ancistroceras* (Ordovician); *Rhynchorthoceras* (Ordov.); *Orthoceras* (Ordov.); *Loxoceras* (Carboniferous); **EIFELOCERAS** (p. 283), type *E.* **kayseri*** (p. 283) (Devonian), Germany; **BREYNIOCERAS** (p. 284), type *Orthoceratites breynii* Martin, (Carboniferous); *Palaeonautilus* (Ordov.); *Cyrtoceras* and *Archiacoceras* (Devonian). Describes and figures species under foregoing genera. Pt. II.—Ordovician cephalopods from north-central states: Discusses genera *Nanno, Suecoceras, Tripteroceras, Westonoceras, Diestoceras, Gonioceras, Lambeoceras,* and *Trocholites*. Describes and figures species, including *Cameroceras*(?) **faberi*** (p. 302), Indiana; *Tripteroceras* **planoconvexum*** (*Orthoceras p.* Hall) (p. 306), *T.* **scofieldi*** (p. 309), Minnesota; *Westonoceras*(?) **minnesotense*** (*Oncoceras m.* Clarke) (p. 312); *Diestoceras* **clarkei*** (for *Poterioceras apertum* Clarke not Whiteaves) (p. 314), Minnesota; *Gonioceras occidentale* v. **homerense*** (for *G. o.* Whitfield not Hall) (p. 317), Illinois; *G.* **kayi*** (p. 319), Iowa; *Lambeoceras* cf. *lambi** (a discussion of Clarke's material assigned to *Tripteroceras l.*); *Trocholites* **faberi*** (p. 323), Kentucky; *Armenoceras* **saxosum*** (p. 325), Manitoba. Pt. III.—American phragmoceroids and gomphoceroids: A restudy of previously named species. Discusses the Silurian genera *Phragmoceras; Tubiferoceras; Gomphoceras;* **STENOGOMPHOCERAS** (p. 367), type *S.* **chadwicki*** (p. 367), Illinois; *Mandaloceras; Hexameroceras; Octameroceras; Eotrimeroceras; Pentameroceras. Septameroceras* is dropped as a synonym of *Hexameroceras*. Describes and figures many species, including *Phragmoceras* **altidorsatum*** (p. 329), and *P.* **auroraense*** (p. 333), Ohio; *P.* **canadense*** (*P. nestor c.* Whiteaves) (p. 336); *P.* **carmani*** (p. 337), Ohio; *P.* **chicagoense*** (p. 339), Illinois; *P.* **colliciare*** (p. 339) and *P.* **cuneiforme*** (p. 342), Ohio; *P.* **hedstroemi** (for *P. ellipticum* Hedström not H. & W.) (p. 344), Sweden; *P.* **hespelerense*** (for *P. nestor canadense* Whiteaves, nontypical part) (p. 345), Ontario; *P.* **hillsboroense*** (p. 345), Ohio; *P.* **ontarioense*** (for *P. parvum* Whiteaves not H & W.) (p. 349), Ontario; *P.* **procerum*** (p. 352), Wisconsin; *P.* **projectum** (*Gomphoceras p.* Newell) (p. 354), *P.* **raymondi*** (p. 354), Wisconsin; *P.* **ruedemanni** (for *P. parvum* Clarke & Ruedemann not H. & W.) (p. 355), New York; *P.* **slocomi*** (p. 356), Wisconsin; *P.* **wilmingtonense*** (p. 359), Ohio; *Tubiferoceras* **labiatum*** (*Phragmoceras l.* Whitfield) (p. 362), *T.*(?) **lineare** (*Gomphoceras l.* Newell) (p. 363), *Gomphoceras* **hector** (*Phragmoceras h.* Billings) (p. 365), *G.* **ruedemanni*** (for *Phragmoceras accola* Ruedemann nontypical part) (p. 365), New York; *G.*(?) **cameroni** (*Phragmoceras c.* Foerste & Savage) (p. 366); *Mandaloceras* **wabashense** (*Gomphoceras wabashensis* Newell) (p. 370); *M.* **scrinium*** (*Gomphoceras s.* Hall) (p. 370); *M.* **marcyae** (*Gomphoceras m.* Winchell & Marcy) (p. 371); *M.* **subgracile*** (*Gomphoceras s.* Billings) (p. 372); *M.* **parvulum** (*Gomphoceras p.* Whiteaves) (p. 373); *Hexameroceras* **septore*** (*Gomphoceras septoris* Hall) (p. 376); *H.* **inflatum** (*Gomphoceras i.* Billings) (p. 381).—*J. B. Reeside, Jr.*

2439. GABRIEL, C. J. Catalogue of the land shells of Victoria. *Proc. Roy. Soc. Victoria* 43(1): 62-88. 2 pl. 1930.—This catalogue records 47 forms of native mollusks, with synonymies, locality records, taxonomic remarks, and type localities. *Bifidaria* **bannertonensis*** (p. 64). *Thersites fodinalis,* new to Victoria. *Rhytida lampra, R. lamproides,* and *R. gawleri,* new to Victoria. *Charopa funerea* (Cox) (=*Endodonta murrayana* v. *submurrayana* Cox & Hedley); *C. sericatula* and *C. diemenensis,* new to Victoria; *C.* **elenescens** (*Flammulina e.* Cox & Hedley) (p. 75); *C.* **erskinensis*** (p. 76); *C.* **gatliffi*** (p. 76); *C.* **tarravillensis*** (p. 77); *C.* **scindocataracta** (p. 77); *C.* **bairnsdalensis*** (p. 78); *Laoma minima,* new to Victoria; *L.* **turbinuloidea*** (p. 81); *L.* **sinistra*** (p. 81). *Microcystis circumcincta,* new to Victoria. All new spp. from Victoria. In addition to the foregoing, 11 spp. naturalized in Victoria are listed, with brief descriptions.

2440. GATLIFF, J. H., and F. A. SINGLETON. On the relationship between "Pecten" asperrimus Lamarck and "Pecten" antiaustralis Tate, with a description of an allied fossil form. *Proc. Roy. Soc. Victoria* 42(2): 71-77. 3 pl. 1930.—*Chlamys asperrimus* **antiaustralis*** (*Pecten antiaustralis* Tate) (p. 71), emended description; *C. a. asperrimus** is recorded as both Recent and fossil; *C. a.* **dennanti*** (p. 73), Werrikooian (Upper Pliocene or Pleistocene ?), Victoria, type in Nat. Mus., Melbourne.

2441. GEORGE, T. NEVILLE. The ontogeny of certain arietidan oxycones. *Geol. Mag.* 67(794): 352-361. 5 fig. 1930.—Oxycones of *Victoriceras victoris** (Dumortier) and *Oxynoticeras oxynotum** (Quenstedt) give evidence of descent from evolute, costate Arietidae, as was supposed by Buckman. Both groups show lipopalingenesis, and both represent distinct stocks which have reached the oxycone stage by different evolutionary stages.—*C. L. Fenton.*

2442. GRABAU, A. W. Terms for the shell-elements in the Holochoanites. *Bull. Geol. Soc. China.* 8(2): 115-123. 1929.—The author accepts Schindewolf's conclusion that *Volborthella* is an orthoceroid type, and not a direct ancestor of the Holochoanites. He suggests a "hypothetical Protochoanite" from which both may have been derived. The structural units of the Holochoanite shell are redefined to exclude terms implying homologies with other forms which may or may not exist. The ontogeny of the Holochoanites is discussed as a basis for phylogenetic conclusions, and the generic name **TEILHARDOCERAS** (p. 121) (Aseoceratidae), is suggested for certain fragmentary Cambrian shells that seem to show the structures he postulates for the primitive ancestral form. The Indian Ocean is suggested as the probable center of radiation for the Holochoanites, the Boreal Sea for the Orthochoanites.

2443. HAAS, F. Über nord- und mittelamerikanische Najaden. *Senckenbergiana* 12(6): 317-330. 1 pl. 1930.—**CONCHODROMUS** (*Dromus* Simpson, not Selby) (p. 317). *Diplidon quadrans* (Lea) (=*D. fontainianus* (Orb.)). *Unio famelicus* Gould, ostensibly from Oregon, is considered an Australian sp., close to or identical with *Hyridella lessoni* (Küster). *Psoronaias plexoideus* Frierson is transferred to the genus *Elliptio,* subg. *Barynaias.* **PSORULA** (p. 319), n. subg. of *Amblema,* type *Quadrula rudis* Simpson; to this subg. are also transferred *Rotundaria quadrata* (Simpson), *R. profunda* (Simp.), *R.*

guatemalensis (Simp.), *R. percompressa* (Martens), *R. usumasintae* (Crosse & Fischer), and *R. salinarum* Haas. Paratypes of *Anodonta cornea** Phil., *A. atrovirens** Phil., and *A. nicaragua** Phil., discovered in the Rouen Mus., are designated as lectotypes; *Anodontites trigonus montezuma* (Lea) (=*Anodonta atrovirens* Phil., *A. cornea* Phil., *A. grandensis* Lea); *Anodontites trapesialis* nicaragua (*Anodonta n.* Phil.=*A. ciconia* Gould), A series of Say's own specimens of 29 Naiades, received from him by the Senckenberg Mus. about 1834, and representing various spp. of Rafinesque, Green, Hildreth, and Barnes, as well as some of his own, are listed, with their most important characters and the locality data. Since Say's original types are lost, neotypes of the following of his spp. are designated: *Anodonta grandis, A. imbecillis, Unio cicatricosus, U. cylindricus, U. verricosus, U. plicata**, *U. heros, U. ovatus, U. subrostratus,* and *U. alatus. Pleurobema cicatricosum* (Say) (=*Unio varicosus* Lea, *U. detectus* Frierson).

2444. HAAS, F. Versuch einer kritischen Sichtung der südamerikanischen Najaden, hauptsächlich an Hand der Sammlung des Senckenberg-Museums. II. *Senckenbergiana* 13(1): 30-52. 9 fig. 1931.—*Diplodon granosus granosus** (Bruguière) (=*Unio psammactinus* Philippi, *U. granuliferus* Dunker, *U. coriaceus* Dunker); *D. g. ellypticus* Spix (=*D. wagnerianus* Simpson, *D. jacksoni* Marshall); *D. g. multistriatus** (Lea) (=*D. minus* Simp., *D. semigranosus* Simp., *Unio firmus* v. *boettgeri* Ihering); *D. paranensis paranensis* (Lea) (=*Unio paraguayanus* Martens); *D. p. funebralis* (Lea) (=*Unio nocturnus* Lea, *U. gratus* Lea, *U. peraeformis* Lea, *U. disculus* Lea, *U. prunoides* Lea, *Diplodon fontainianus* v. *deceptus* Simp., *D. felipponei* Marsh., *D. subquadratus* Marsh., *D. arcuatus* Marsh.); *D. fontainianus** (Orb.) (=*U. rufofuscus* Lea); *Bulloideus* Simp., originally proposed as a section of the subg. *Cyclomya,* is here elevated to the rank of a subgenus, and includes *Diplodon variabilis* (Maton) (=*Unio bulloides* Lea) and *D. solisianus* (Orb.); *Castalia* **stevensi** (*Tetraplodon s.* H. B. Baker) (p. 40); *C. ecarinata** Mousson, redescribed; *Prisodon* Schumacher (=subg. *Hyriana* Simp.); *P. syrmatophorus* **complanatus** (*Hyria complanata* Hupé) (p. 43); *P. obliquus Schum.* (=*Hyria castelnaudi* Hupé, *Unio ortonii* Lea); *Hyria jamauchimensis* F. Baker (=*H. amazonia* Frierson, *H. wheatleyi* Marsh.); *Monocondylaea p. paraguayana* Orb. (=*M. corrientesensis* Orb., *M. pazii* Lea, *M. orbignyana* Doello-Jurado); *M. p. jaspidea** (Hupé) (=*Unio reticulata* Moricand, *Plagiodon rotundatus* Mousson, *Monocondylaea obesa* Ortmann); *M. l. lentiformis* Lea (=*M. feliponci* Marsh.); *M. l.* **hollandi** (*M. h.* Ortm.) (p. 47); *M. l.* **franciscana** (*Unio f.* Moricand) (p. 48); (*M. minuana* Orb. (=*M. parchappii* Orb.); *M. costulata** (Moric.), emended description; *Fossula fossiculifera* **balzani** (*F. b.* Iher.=*F. b. mattogrossensis* Iher.) (p. 49); *F. fossiculifera* **braziliensis** (*F. b.* Iher.) (p. 50); **MARSHALLIELLA** (p. 50), type *M.* **balzani*** (*Plagiodon b.* Iher.) (p. 51).

2445. HEINZ, RUDOLF. Das Inoceramen-Profil der Oberen Kreide Lüneburgs. Mit Anführung der neuen Formen und deren Kennzeichnung. (Beiträge zur Kenntnis der oberkretazischen Inoceramen 1.) *Jahresber. Niedersächs. Geol. Ver.* [*Hannover*] 21: 64-81. 2 pl. 1928.—Exposures of the Up. Cretaceous at Lüneburg (south of Hamburg) furnish an excellent standard section extending from Lr. Cenomanian (Tourtia) to the *Scaphites constrictus* zone of the Senonian (Mucronaten Senon). The sedimentation record is unbroken through the entire thickness of 424.65 meters in this section. *Inoceramus* zones have been established which closely correspond in nearly every case with the generally recognized subdivisions of the Up. Cretaceous in northern Europe. There is a diagrammatic section, showing the exact range of the various species. *Inoceramus inaequivalvis* **falcata** (p. 72); *I. latus* **stümckei** (p. 72); *I.* **stillei*** (p. 72); *I.* **ernesti** (p. 73); *I. humboldti* **zeltbergensis** (p. 74); *I.* **stolleyi** (p. 74); *I. brongniarti* **wysogorskii** (p. 74); *I.* **dankeri** (p. 75); *I.* **gürichi*** (p. 75); *I. undulato-plicatus* **michaeli** (p. 76); *I. undabundus, I. digitatus,* and *I. patootensis* are discussed. Types of the new forms are in Mineralogisch-Geologisc. Staatsinst., Hamburg. Bibliography.—*J. R. Sandidge.*

2446. HERITSCH, FRANZ. Über einige cyrtochoanitische Nautiloideen aus dem Obersilur von Kryszczatek bei Zaleszczyki am Dniester. *Bull. Serv. Géol. Pologne.* 5(3/4): 557-564. 1 pl., 3 fig. 1930.—Description of *Oocerina* **brevis*** (*Cyrtoceras breve* Siemiradzki) and of *Oocerina* **amabilis*** (p. 558).—*F. Heritsch* (*transl.*).

2447. HULL, A. F. BASSET, and JEAN RISBEC. The loricates of the New Caledonian region. (Class Mollusca—order Loricata). II. *Australian Zoologist* 6 (4): 372-386. 1 pl., 41 fig. 1931.—*Parachiton* **lifuensis*** (p. 373), Loyalty Isls. *Loboplax triduena** is redescribed, with detailed anatomical observations, synonymy, distributional records, and taxonomic discussion. Four additional spp. are more briefly noticed.

2448. IREDALE, TOM. Queensland molluscan notes, no. 2. *Mem. Queensland Mus.* 10(1): 75-88. 1 pl. 1930.—**MELAXINAEA** (p. 73), near *Glycymeris,* type *M.* **labyrintha*** (p. 73), 9-12 fms.; *Macalia bruguièri* **refecta** (p. 74); **LEPORIMETIS** (p. 74), type *Tellina spectabilis* Hanley; **PROPHETILORA** (p. 75) (Tellinidae), compared with *Monitilora,* type *P.* **arizela*** (p. 75); **FALLARTEMIS** (p. 75) (Dosinidae), type *F.* **amina*** (p. 75); **SEMELARTEMIS** (p. 76) (Dosinidae), compared with *Semele,* type *S.* **aetha*** (p. 76); **CORALASTELE** (Trochoidae), type *C.* **allanae*** (p. 76); *Cerithium adansonii* Bruguière is named as the type of *Aluco* Link; *Pseudovertagus* **excelsior*** (p. 78), 11 fms.; *Cerithium philippinense* Cossmann (=*C. problema* Iredale); **DARIOCONUS** (p. 79), type *Conus omaria* Brug.; **REGICONUS** (p. 79), type *Conus auratus* Brug.; **LEPORICONUS** (p. 79), type *Conus glans* Brug.; **CLEOBULA** (p. 79), type *Conus figulinus* L.; *Leptoconus ammiralis* **temnes** (p. 80); **VIRROCONUS** (p. 80), type *Conus ebraeus* L.; **FLORACONUS** (p. 80), type *Conus anemone* Lamarck; **CANCELLAPHERA** (p. 80) (Conidae?), type *C.* **amasia*** (p. 80), 9-11 fms.; the type of *Cypraea* must be *C. tigris* L., not *C. mappa* L.; **ARESTORIDES** (p. 82), type *Cypraea argus* L.; **EVENARIA** (p. 82), type *Cypraea asellus* L., including also *C. hirundo* L., *C. punctata* L., and *C. contaminata* Sowerby; **RAVITRONA** (p. 82), type *Cypraea caputserpentis* L., including also *C. helvola* L.; **PALMADUSTA** (p. 82), type *Cypraea clandestina* L., including also *C. lutea* Gronov. and *C. ziczac* L.; **GRATIADUSTA** (p. 82), n. subg. of *Palmadusta,* type *Cypraea pyriformis* Gray, including also *C. xanthodon* Sow., *C. walkeri* Gray, and *C. subviridis* Reeve; **PALANGEROSA** (p. 82), type *Cypraea cylindrica* Born., including also *C. subcylindrica* Sow., and *C. quadrimaculata* Gray; **BASILITRONA** (p. 83), type *Cypraea isabella* L.; **LEPORICYPRAEA** (p. 83), type *Cypraea mappa* L., including also *C. valentia* Perry; **PAULONARIA** (p. 83), type *Cypraea beckii* Gaskoin; **CLEOTRIVIA** (p. 83), type *Cypraea pilula* Kiener; **DOLICHUPIS** (p. 83), type *Cypraea producta* Gaskoin; **MYSTAPONDA** (p. 83), new subg. of *Lyncina,* type *Cypraea vitellus* L.; **MELICERONA** (p. 83), n. subg. of *Erronea,* type *Cypraea listeri* Gray; **BLASICRURA** (p. 84), n. subg. of *Evenaria* [?], type *Cypraea rhinoceros* Sowerby, new to Queensland; **ECLOGLAVENA** (p. 84), n. subg. of *Erronea* [?], type *Cypraea coxeni* Cox.; **PERISSEROSA** (p. 84) (Cypraeidae), type *P.* **brocktoni** (p. 84), based upon a specimen figured by Sowerby in 1880 under the name *Cypraea guttata* Gray, type in coll. of J. R. le Brockton Tomlin. **NIVIGENA** (p. 84) (Cypraeidae), resembling *Stolida,* type *N.* **melwardi*** (p. 84). Amphiperatidae: *Prosimnia* **renovata** ([*Limnia?*] *dentata* Adams & Reeve, preocc.) (p. 85); *P.* **angasi** (*Ovulum a.* Reeve) (p. 85); **PRIONOVOLVA** (p. 85), type *Ovulum breve* Sowerby; **DIMINOVULA** (p. 85), type *D.* **verepunctata** (p. 85), Australia; **PHENACOVOLVA** (p. 85), related to *Prosimnia,* type *Phenacovolva* **nectarea*** (p. 85), 9-12 fms.; *Colus* **boardmani*** (p. 86), 9-11 fms.; *Pleuroploca* **altimasta*** (p. 86); *Cirsotrema* **kelea*** (p. 87), 9-12 fms. New forms from Queensland unless otherwise specified.

2449. IREDALE, TOM. More notes on the marine

Mollusca of New South Wales. *Rec. Australian Mus.* 17(9): 384-407. 4 pl. 1930.—*Pronucula* mayi (p. 384), Tasmania, based upon a figure published by May under the name of *P. decorosa* (*Proc. Roy. Soc. Tasmania*, 1915, p. 81, pl. viii, fig. 42); *Cucullaea* vaga (p. 385), 25-30 fm.; DENTICOSA (p. 385), type *Philobrya cuboides* Verco; the complicated nomenclature of the genus *Laternula* is discussed; PENDALOMA (p. 387), type *Periploma micans* Hedley; OFFADESMA (p. 387), type *Periploma angasi* Crosse & Fischer; FRENAMYA (p. 387), type *Coelodon patulus* Tate; VERTISPHAERA p. 388) (*Verticordiidae*), type *V.* cambrica (p. 387), based upon a specimen figured by Hedley (Rec. Austr. Mus., vi, p. 303, pl. lvi, figs. 38-39, 1907); VERTAMBITUS (p. 388), type *Verticordia vadosa* Hedley; SPINOSIPELLA (p. 388), type *Verticordia ericia* Hedley, SETALIRIS (p. 388), type *Verticordia setosa* Hedley; *S.* accessa (p. 388), PROAGORINA (p. 388), type *Lyonsiella quadrata* Hedley; *Ectorisma granulata* Tate (=*Poromya illevis* Hedley) is revived; QUESTIMYA (p. 389), type *Poromya undosa* Hedley & Petterd; PEXOCODAKIA (p. 389), type *Lucina rugifera* Reeve; EPICODAKIA (p. 389) (*Lucinidae*), type *E.* consettiana ("introduced for *Lucina minima* Ten. Woods") (p. 391); *E.* gunnamatta* (p. 391); SYDLORINA (p. 390) (Lucinidae), type *S.* symbolica (p. 390), based on the species figured by Hedley (Proc. Linn. Soc. N. S. W., xxxix, 1914 (1915), p. 699, pl. lxxix, figs. 25-28) as *Codakia pisidium* Dunker; MONITILORA (p. 390), type *Lucina ramsayi* Smith; WALLUCINA (p. 390), type *Lucina jacksoniensis* Smith.; NEVENULORA (p. 390), type *Lucinida hilaira* Hedley; CAVATIDENS (p. 391) (Lucinidae), type *C.* omissa* (p. 391); BATHYCORBIS (p. 392), type *Chione despecta* Hedley. Thyasiridae: GENAXINUS (p. 392), type *Thyasira albigena* Hedley; PARATHYASIRA (p. 392), type *P.* resupina* (p. 392), 63-75 fm.; *P. r.* neozelanica (p. 393), 110 fm., New Zealand; PROTHYASIRA (p. 393), type *P.* peroniana* (p. 393), 63-75 fm.; *P. peroniana* peregrina (p. 393), New Zealand; *P.* adelaideana* (p. 393), 100 fm., S. Australia; *P.* benthicola (p. 394), 470 fm.; VIRMYSELLA (p. 394), resembling *Mysella*, type *V.* spernax* (p. 394). MERIDOSINIA (p. 394) [Dosinidae?], type *M.* nedigna* (p. 394); *Sunettina* Jousseaume is preoccupied by *Sunettina* Kobelt (=*Solanderina* Dall); SUNEMEROE (p. 395), type *Sunetta adelinae* Angas; *Antigona lamellaris* moderata (p. 395); TIGAMMONA (p. 396), resembling *Antigona*, type *T.* persimilis* (p. 396), New South Wales (type) and Queensland; VEREMOLPA (p. 397), resembling *Antigona*, type *V.* ethica* (p. 397), New South Wales (type) and Queensland; PUNIPAGIA (p. 397), type *Tellina subelliptica* Sowerby; DELTACHION (p. 398), resembling *Donax*, type *Deltachion* virilis* (p. 398), New South Wales (type) and Queensland; PLEBIDONAX (p. 398), type *Donax deltoides* Lamarck; TENTIDONAX (p. 398), type *Donax veruinus* Hedley; *Deltachion* electilis* (p. 399), South Australia; AUSTROMACTRA (p. 400), related to *Mactra*, type *A.* caloundra* (p. 401), Queensland (type) and New South Wales; NANNOMACTRA (p. 400), type *Mactra jacksonensis* Smith; ELECTOMACTRA (p. 400), type *Mactra parkesiana* Hedley; *E.* antecedens* (p. 401), New South Wales (type) and Queensland; DIAPHOROMACTRA (p. 400), type *Hemimactra versicolor* Tate; NOTOSPISULA (p. 400), type *Gnathodon parvum* Petit; *Zenatia victoriae* Pritchard & Gatliff is referred to the genus *Zenatiopsis*; SPONDERVILIA (p. 402), type *Ervilia australis* Angas, AMESODESMA (p. 402) (Amphidesmatidae), type *A.* perfuga* (p. 402); *A.* cuneata (*Amphidesma c.* Lamarck) (p. 402); *A. c.* vanidica (p. 402); VENATOMYA (p. 403), type *Sphaenia elliptica* A. Adams; BENTHOQUETIA (p. 403), type *Turquetia integra* Hedley; *Corbula rosea* [author ?] is designated as the type of *Corbula* Bolten, which is reduced to the synonymy of *Asaphis* Modeer; NOTOCORBULA (p. 404) (Corbulidae), related to *Corbula*, type *N.* vicaria* (p. 404); *N.* hydropica* (p. 405), Queensland; *N.* stolata* (p. 405), Victoria (type) and New South Wales; ANISOCORBULA (p. 404), type *Corbula macgillivrayi* Smith; *Hiatella* Bosc. (=*Saxicava* Bellevue); HIATELLIDAE (=Saxicavidae).

2450. KEVAN, D. K. Report on the molluscan fauna of Duddingston Sanctuary (with supplement). *Scottish Nat.* 1931(187): 15-22; (188): 55-58. 1931.—Forty-four spp. are listed, with notes on local distribution and habitat.

2451. KOBAYASHI, TEIICHI. Ordovician fossils from Korea and South Manchuria. Part II. On the Bantatsu bed of the Ordovician age. *Jap. Jour. Geol. & Geogr. Trans.* 7(3/4): 75-100. Map, 4 pl., 6 fig. 1930.—The author gives an areal map, cross-section, and lithologic description, separating the formation into 4 members, 2 of which are fossiliferous; 30 spp. and 1 variety are listed, 15 of which are also known from the Toufangkou or Machiakou formations. Cephalopoda: *Cycloceras* mantalense* (p. 82); *C.* kawasakii* (p. 84); *Actinoceras* exogastrale* (p. 85). Gastropoda: *Bucania* katoi* (p. 87); *Lophospira morrisi**; *L.* bantatsuense* (p. 88); *L.* konnoi* (p. 88); *L. trochiformis**; *L.* kodairai* (p. 89); *L. acuta** Grabau (=*L. pulchelliformis* Grabau); *L.* subpulchella* (p. 90); *L. gerardi**; *Pagodispira derwiduii**; *P.* sakamotoi* (p. 91), Manchuria; *P.* tetracarina* (p. 92), Korea and Manchuria; *Liospira* kawasakii* (p. 92), *L. barbouri**; *Eotomaria* concava* (p. 93); *Ophiletina* sp.*; *O.* (?) shokoriense* (p. 94); *Ecyliopterus kushanensis**; *Helicotoma* yabei* (p. 95); *H.* tamurai* (p. 95); *Maclurea* tofangoense* (p. 96), Manchuria and Korea; *M.* niuhsintaiense* (p. 97), Manchuria; *M.* kotoi* (p. 97), Manchuria; *Trochonema* ozawai* (p. 98); *T. o.* var. depressa* (p. 99); *Tentaculites* tofangoense* (p. 99), is the only Tentaculite known from the Ordovician on N. China and Korea. Types of *Lophospira konnoi*, *L. bantatsuense*, and *Maclurea tofangoense* in Imperial Univ. Tokyo; not given for others. New forms from Korea unless otherwise stated.

2452. [KRYMHOLZ, G. ЙА.] КРЫМГОЛЬЦ, Г. Я. Верхнеюрские Cylindroteuthinae Тимана, басс. р. Сысолы и Оренбургской губ. [Upper Jurassic Cylindroteuthinae from the Timan, the basin of the Syssola River, and the Province of Orenburg.] [German summary.] Известия Геологического Комитета (*Bull. Com. Géol. [Leningrad]*) 48(7): 103-142. 2 pl. 1929.—The author presents a list of 27 belemnites, with synonyms, descriptions and taxonomic remarks. He follows the classification of A. Naef, except that he assigns the *Belemnites absolutus* group to the genus *Cylindroteuthis*. *Pachyteuthis breviaxis* (Pavlow), which had been proposed to replace *P. abbreviata* (Miller), is retained by the present author for certain of the forms figured by Pavlow. *Cylindroteuthis* tschernyschewi* (p. 110), Callovian; *C.* sarygulensis* (p. 114), and *Pachyteuthis* ingens* (p. 126), Up. Kimmeridgian. There is a bibliography of 64 titles.

2453. KULLING, O. Studier över den kaledoniska fjällkedjans stratigrafi och tektonik inom norra delen av svenska Lappland. [Stratigraphy and tectonics of the Caledonian Mountains in northern Swedish Lapland.] [German summary.] *Geol. Foren. Stockholm, Förhandl.* 52(4): 647-672. 2 maps, 1 pl., 11 fig. 1930 (1931).—*Fordilla troyensis* Barrande, previously known only from N. Amer. and Greenland, is reported from Lr. Cambrian.

2454. LAWS, C. R. New Tertiary Mollusca from New Zealand. No. 1. *Trans. & Proc. New Zealand Inst.* 61(3/4): 547-553. 3 pl. 1930.—*Glycymeris* marshalli* (p. 547) and *Dosinia* (*Raina*) benereparata* (p. 547), Ototaran; *D.* (*R.*) bartrumi* (p. 548), Waitotaran; *Cardium* strangi* (p. 549), Ototaran, type in Univ. of Otago; *Elachorbis* albolapis* (p. 549), Awamoan; *Modelia* nukumaruensis* (p. 550), Pliocene (Castlecliffian and Nukumaruan (type)); *Sinum* marwicki* (p. 551), Awamoan; *Verconella* finlayi* (p. 552), Hutchinsonian. Types in author's coll. unless otherwise stated.

2455. LOVÉN, PER-MAGNUS. Untersuchungen aus dem Öresund. XVI. Beiträge zur Kenntnis der Cyprina islandica L. im. Öresund. *Lunds Univ. Årsskr. Sect. 2. Med. Mat. Naturvetensk.* 26(paper 1): 1-37. Map. 1 pl.,

4 fig. 1929(1930).—A map and description of the area investigated are given. The depth of the water and condition of the bottom at each station where the investigations were carried on, the number (including both dead and living specimens) of *C. islandica* taken, are recorded. Shell dimensions were compared and studied; variations in length and height, and the length-height ratio are given in detail. For several stations graphs are given illustrating these facts. For the southern and northern parts of the Öre Sund statistics relative to medium, dispersion, correlation, and regression were compiled. From data obtained the author endeavored to ascertain the duration of life and growth rate of *C. islandica* with the conclusion that the species is apparently dying out in the southern parts of the area investigated. A detailed, illustrated description of the shape and structure of the shells is included.—*P. M. Lovén.*

2456. McLEARN, F. H. Notes on some Canadian Mesozoic faunas. *Trans. Roy. Soc. Canada, Sect. 4, Geol. Sci.* 24(1): 1-7. 2 pl. 1930.—Of Lr. Middle Jurassic age are *Telocceras* **dowlingi** (p. 2); *T.* **warreni*** (p. 3), and *Stemmatoceras* **palliseri** (p. 3), types in Univ. of Alberta. Of Lr. Jurassic age (Up. Lias): *Dactylioceras* **kanense*** (p. 4); *Harpoceras* **maurelli*** (p. 4); *H.* **alliformense*** (p. 4); as the lectotype of *H. propinquum* (Whiteaves) the author designates figs. 2, 2a only [sic]. Geol. Surv. Canada, Mes. Foss., vol. 1, p. 247, pl. 33 (1884); **FANNINOCERAS** (p. 4), a degenerate harpoceratid, type *F.* **fannini*** (p. 4); *F.* **carlottense** (p. 4); *F.* **kunae*** and v. **latum*** (p. 5); *F.* **lowrii*** (p. 5); *Stephanoceras* **caamoni*** (p. 5); *S.* **yakounense** (p. 5); all from Brit. Columbia. Of late Lr. Cretaceous age: **GASTROPLITES** (p. 6), type *G.* **canadensis** (*Hoplites c.* Whiteaves) (p. 6), Alberta. Types in Nat. Mus. Canada unless otherwise stated.

2457. McLEARN, F. H. A preliminary study of the faunas of the Upper Triassic Schooler Creek formation, Western Peace River, Brit. Columbia. *Trans. Roy. Soc. Canada, Sect. 4, Geol. Sci.* 24(1): 13-17. 1 pl. 1930.—Arctic affinities of the faunas are suggested. **MEGINOCERAS** (p. 16), n. subg. of *Steinmannites*, erected for *S.* **meginae*** (p. 16); **SILENTICERAS** (p. 16), n. subg. of *Daphnites*, erected for *D.* **hatae*** (p. 16); *Protrachyceras* **sikanianus*** (p. 16) and v. **zauwae*** (p. 17); *Isculites* **schooleri*** (p. 17); *Arcestes* ? **selwyni*** (p. 17); **STIKINOCERAS** (p. 17), erected for *S.* **kerri*** (p. 17). Types in Nat. Mus. Canada.

2458. MATSUMOTO, HIKOSHICHIRÔ. On the marine faunae of three fossil zones of the Upper Miocene of Natori District, Province of Rikuzen. *Sci. Rept. Tôhoku Imp. Univ. Geol.* 13(3): 95-109. 2 pl. 1930.—These zones, in descending order, are *Arca amicula* zone, *Balanus bisulcatus* zone, and *Pecten natoriensis* zone. Lists are given of the mollusks, both extinct and living, found in each, with their geographical and stratigraphical distribution. About 50 spp. are included. *Mya* **paternalis*** (p. 98); *Entodesma* **lagoveneris*** (p. 102); *Mactra* **charischema*** (p. 103); *Lutraria* **takadatensis*** (p. 103); *Pecten* **natoriensis*** (p. 104); *P. n.* var. **subovalis*** (p. 105); *P. n.* var. **inequilateralis*** (p. 105); *P.* **plicicostulatus*** (p. 105); *P.* (*Pseudamusium*) **akihoënsis*** Saga (MS.) (p. 106); *Velopecten* **survivans*** (p. 106); *Crepidula* **yokoyamai*** (p. 108). Crustacea: *Balanus flosculus* v. **orientalis*** (p. 108). All new forms from Up. Miocene.

2459. MOORE, E. W. J. Species of the genus Dimorphoceras in the Bowland shales. *Geol. Mag.* [*London*] 67(790): 162-168. 9 fig. 1930.—Determination of spp. of *Dimorphoceras* can be made only from the suture lines of uncrushed specimens. Critical notes and range determination are given for *D. gilbertsoni** and an unnamed variety*, *D. discrepans**, *D. looneyi**, and 2 undetermined species. *Neodimorphoceras* **hawkinsi*** (p. 168). Specimens in Brit. Mus. Nat. Hist.—*C. L. Fenton.*

2460. PEYER, B., und E. KUHN. Die Kopulation von Limax cinereoniger Wolf. *Vierteljahrschr. Naturforsch. Ges. Zürich* 73(3/4): 485-521. 5 pl. 10 fig. 1928.—In the copulation of *L. cinereoniger*, as it occurs in Canton Tessin (Monte San Giorgio) and the western part of this district, the penis is extended to a maximum length of 82 cm. and is firmly wound around the body of the other copulant as has been observed of the snails' bodies. The animal raises itself from the substratum by a triangular plate of slime. Copulation lasts 12-19 hours not counting the introductory courtship of 2 hrs. After the complete eversion of the penis, the sperm mass passes from the vas deferens and with the shortening of the penis to 10 cm. is spread over the partner. The anatomical finding did not differ materially from those of earlier published accounts.—*H. Hoffman* (*transl. by W. Scott*).

2461. PING, CHI. Two new Cretaceous fresh-water gastropods from Mongolia. *Amer. Mus. Novitates* 437. 1-4. 12 fig. 1930.—*Vivipara* **grangeri*** (p. 1), with 3 mutations, and *V.* **fusistoma*** (p. 4), from the Dohoin Usu formation (Cretaceous); types in Mus. Geol. Surv. China.

2462. REED, F. R. COWPER. Faunas triassicas do Brazil. (Triassic faunas from Brasil.) [In Portuguese and English.] *Minist. Agric., Industr. e Comm., Serv. Geol. e Min. Brasil, Monographia* 9. 1-97. 5 pl. 1929.—Fossils collected from the Estrada Nova and Rio do Rasto beds (Middle or Up. Triassic) include over 50 forms, chiefly Lamellibranchiata, most of which are figured and compared with European forms, rather than identified. The following new forms from the State of Paraná are described: *Myophoria* (*Heminajas*) **holdhausi*** (p. 27); *Myophoriopis* **martialis*** (p. 31); *Pseudocorbula* **emerita*** (p. 37); *Isocyprina* **curvata*** (p. 39); *I.* **reducta*** (p. 41); *Pleurophorus* ? **bipleura*** (p. 47); *Thracia* **printina*** (p. 51); *T.* **perversa*** (p. 53); *Cypridina* **roxoensis*** (p. 67); *Pachycardia rugosa* v. **occidentalis*** (p. 71); *Myophoriopis* **braziliensis*** (p. 73).

2463. POWELL, A. W. B. New species of New Zealand Mollusca from shallow-water dredgings. Part 2. *Trans. & Proc. New Zealand Inst.* 61(3/4): 536-546. 2 pl., 10 fig. 1930.—The taxonomy of *Condylocardia* Bernard and *Benthocardiella* Powell is discussed. *Benthocardiella* **obliquata*** (p. 538), 6-10 fms.; *B.* **orbicula*** (p. 538), Recent (6-38 fms.) and Up. Pliocene; *B.* **hamatadens*** (p. 539), 6-10 fms. *Lodderene* **formosa*** (p. 541), 0-10 fms.; *L.* **nana*** (p. 541), 6-10 fms. *Orbitestella* **toreuma*** (p. 542), 6-12 fms., type depository not given. *Scrobs* (*Nannoscrobs*) **rugulosa*** (p. 542), 5-6 fms.; the genus *Nannoscrobs* Finlay is here used subgenerically; *Notosetia* **unicarata*** (p. 543), 5-6 fms.; *Lironoba simplex* Powell is transferred to *Notosetia*; *Rissopsis* **expansa*** (p. 544), 6-10 fms.; type in author's coll. *Eulimella* **larochei*** (p. 544), 6-12 fms.; *Turbonilla* (*Chemnitzia*) **aoteana*** (p. 545), 6-10 fms. Types of new spp. are in Auckland Mus. unless otherwise stated.

2464. PRASHAD, B. Further notes on Indian Ampullariidae (= Pilidae). *Proc. Malac. Soc. London* 19(4): 167-168. 1931.

2465. PRASHAD, B. On some undescribed fresh-water molluscs from various parts of India and Burma. *Rec. Geol. Surv. India* 63(4): 428-433. 1 pl. 1930.—*Vivipara* **hasani** (p. 429), India, "geologically not very old." *Lamellidens* **proctori*** (p. 430), Burma, horizon not determined. Types in Geol. Surv. India. Three other unnamed spp. of *Lamellidens* (1 from Burma, 2 from the Siwalik strata of India) are described and figured.

2466. REESIDE, JOHN B., Jr. Exogyra olisiponensis Sharpe and Exogyra costata Say in the Cretaceous of the western interior. Shorter contributions to general geology, 1928. *U. S. Geol. Surv. Prof. Paper* 154-I. 267-278. 5 pl. 1929.—*Exogyra olisiponensis** Sharpe, reported for the first time from the U. S. A. (southern Utah), as well as the varieties *E. o. duplex**, *E. o.* **oxyntas*** (*E. oxyntas* Coquand) (p. 271), and *E. o.* **forresteri*** (p. 271), are described, with synonymies and taxonomic discussion, from a horizon correlated with the lower Turonian. *E. costata** Say is reported for the first time outside the Atlantic and Gulf Coastal region (in Colorado) from a sandstone horizon in the Pierre shale correlated with the upper Campanian.

2467. REESIDE, JOHN B., Jr., and A. ALLEN WEYMOUTH. Mollusks from the Aspen shale (Cretaceous) of southwestern Wyoming. *Proc. U. S. Nation. Mus.* 78(17): 1-24. 4 pl. 1931.—The tuffaceous Aspen shale has hitherto yielded abundant fish scales, but only *Metoicoceras* sp. and *Lingula* sp. in addition. This paper records 11 pelecypods and 5 ammonites. The fauna indicates an early Turonian age. Types are in the U. S. Nat. Mus. Pelecypods: *Periplomya?* **aspenana*** (p. 7), *Thracia?* **wyomingensis*** (p. 8), *Tancredia?* **lincolniana*** (p. 8), *Aphrodina?* **aspenana*** (p. 9), *Mactra?* **aspenana*** (p. 11). Ammonites: **KANABICERAS** (p. 11), type *Acanthoceras? kanabense* Stanton, *K.* **wyomingense*** (p. 12), *Epengonoceras* **aspenanum*** (p.16), *Acompsoceras* **americanum*** (p. 18). The family Engonoceratidae Hyatt and its constituent genera *Protengonoceras, Engonoceras, Hypengonoceras, Parengonoceras, Metengonoceras, Epengonoceras* are characterized briefly. The genus *Acompsoceras* is also characterized, and the genus *Metoicoceras* and its 14 known species are briefly described.—*J. B. Reeside, Jr.*

2468. RENZ, CARL. Über eine untertriadische Ammonitenfauna von der Kleinasiatischen Insel Chios. *Eclogae Geol. Helvetiae* 21: 154-156. 1928.—Records unnamed species of 22 genera of cephalopods in the cephalopod limestone of Chios believed to indicate an age in the upper part of the Lr. Triassic (Upper Werfenian). The faunal association indicates equivalence to the Lr. Triassic fauna of Kčira in Albania, and shows interesting connections with the Lr. Triassic of central Asia and western America. The genera *Columbites* and *Paranannites* are particularly significant.—*C. Renz (transl. by C. O. Dunbar).*

2469. SARDESON, FREDERICK W. Actinoceras in Minnesota. *Pan. Amer. Geol.* 53(2): 91-104. 1 pl. 1930.—Discusses in detail the external and internal characteristics of the Ordovician cephalopods, *Actinoceras bigsbyi**, *A. tenuifilum, Cameroceras subannulatum, Endoceras proteiforme, Kochoceras tyrrelli* and *Selkirkoceras tyndallense*. The author accounts for the absence of entire shells by assuming that they broke off at the smaller and first-built end while growing longer at the other larger end, which would also explain the very characteristic structures that have grown within the shells; he states that *Endoceras subannulatum*, being a *Suecoceras*, should be called *Cameroceras subannulatum.—D. J. MacNeil.*

2470. SARDESON, FREDERICK W. Cameroceras and its allies. *Pan. Amer. Geol.* 53(3): 175-182. 1 pl. 1930.—The confusion arising from the uncertainty in making *Cameroceras** and *Endoceras* 2 valid genera is discussed; the author maintains that *Endoceras subannulatum* Whitfield, being a *Suecoceras*, belongs to *Cameroceras*, and that *Endoceras annulatum* Hall is possibly the mature shell of *Cameroceras trentonense* Conrad. He points out that in the *Endoceras* species the first separation into a chamber and siphuncle is abrupt, producing a constricted siphuncle, which grows with uniform diameter until it reaches ⅓ the conch's diam., maintaining that proportion in its subsequent expansion. In *Cameroceras subannulatum* (Whitfield) the separation from siphuncle is early and gradual, with a larger siphuncle, that finally reaches ½ the conch's diam.—*D. J. MacNeil.*

2471. SCHENCK, HUBERT G. Cephalopods of the genus Aturia from western North America. *Univ. California Publ. Dept. Geol. Sci. Bull.* 19(19): 435-465. Map, 13 pl., 4 fig. 1931.—The genus has a world-wide distribution and ranges from Up. Cretaceous to Lr. Pliocene; but on the Pacific Coast it is not known above the Temblor (middle Miocene). There are additions to the descriptive terminology, and sexual dimorphism and the importance of ontogenetic stages are emphasized, especially in view of parallelism among adults. It is thought that *Aturia* is a tachygenic genus, and that the organism emerged from the egg-capsule with adult characteristics; it then lived a vagile benthonic life in the sublittoral zone of the sea. *Nautilus aturi* Basterot is established as the type of *Aturia;* the subg. *Sphenaturia* of von Ihering is not considered valid. The account of each of the following West Coast spp. includes synonymy, description, citation of type and type locality, associated fauna, and comparisons: *Aturia* **dickersoni*** (p. 451), Chico (Up. Cretaceous), California; *A. mathewsonii** Gabb; *A. myrlae** (emended from *myrli*) M. A. Hanna; *A. kerniana** Anderson & Hanna; *A. angustata** (Conrad); *A. a.* **grandior*** (p. 462), Oligocene, Washington; *A. a.* **alaskensis*** (p. 463), Up. Oligocene?, Alaska. Types of new forms in Univ. California.

2472. SCHILDER, F. A. Die Cypraeacea des Daniums von Dänemark und Schonen. *Danmarks Geol. Undersøgelse Ser. 4.* 2(3): 1-27. 2 pl. 1928.—The Danian of Faxe (Denmark) and Limhamn (near Malmö, Sweden) yielded *Cypraedia* **separabilis*** (p. 9) with subspecies **minuta** and **maxima** (p. 11); *C.* **ravni*** (p. 11); *Eocypraea* **danica*** Schild, first description of complete shells; *E. bullaria** Schloth; *Vicetia* **faxensis*** (p. 17); **PALAEOCYPRAEA** (p. 17) type *P.* **spirata** (*Cypraeacites spiratus* Schloth.) (p. 19), first description of complete shells; *P.* **suecica*** (p. 22); *Protocypraea globuliformis** Ravn. Keys of casts and shells, and emended descriptions are given; also tables to show variability of size at different localities. This fauna with Cypraeacea is more Cretaceous than Tertiary. The chalk of Limhamn corresponds to the uppermost horizon of Faxe.—*F. A. Schilder.*

2473. SCHILDER, F. A. Beiträge zur Kenntnis der Cypraeacea (Moll. Gastr.). III. *Zool. Anz.* 92(3/4): 67-78. 1 fig. 1930.—A significant correlation between length of shell and number of teeth is found in *Triviella aperta, Lyncina lynx,* and *Monetaria moneta* s. lat., et al. A specimen twice as long has about 1¼ as many teeth as another. The relationship between length and tooth number is: Z[tooth number, zahnzahl] = aL + b, where a and b are constants. The teeth number for the outer and the inner lips bear slightly different relationships to length. Data are given, in tables or graphically, for 25 spp. The author briefly reviews the genus *Triviella*, in which he recognizes 8 spp. *T. ovulata* Lam. (= *T. amaryllis* Schild.); *T.* **phalacra** (p. 72), Cape Colony, type in author's coll.; *T.* **neglecta** (p. 72), locality unknown, type in author's coll. There are notes on distribution and a table for separating the spp. The author also discusses ecological or geographical races of Cypraeidae, including: *Zoila friendii* **vercoi** (p. 74), W. Australia; *Mauritia arabica* **grayana** (p. 75), French Somaliland, Eritrea, and Sumatra, type in author's coll.; *Luria lurida* **oceanica** (p. 76), Ascension and St. Helena, type in Brit. Mus.; *Erosaria albuginosa* **nariaeformis** (p. 76), Costa Rica to Galapagos, type in author's coll.; *E. spurca* **sanctaehelenae** (p. 77), St. Helena and Ascension, type in Brit. Mus.; *Schilderia achitidae* **inopinata** (p. 77), Atlantic Ocean; *Umbilia hesitata* **beddomei** (p. 77), N. So. Wales, type in author's coll.; *Adusta asellus* **latefasciata** (p. 78), Sunda Isls., type in author's coll.

2474. SEURAT, L. G. La petite pintadine du golfe de Gabès. *Bull. Trav. Publiés Stat. Aquicult. et Pêche de Castiglione* 1929(1): 11-28. 4 pl. 3 fig. 1929.—This Red Sea form entered the eastern Mediterranean following the cutting of the Suez Canal; unknown in 1882 in the Gulf of Gabès (Dautzenberg), it is now one of the dominant species. This species, the synonymy of which is rather intricate, bears the name *Meleagrina albina* Lamarck (= *M. occa* Reeve, *M. savignyi* Monts., *M. radiata* Desh. etc.). The shell of the ♀ is proportionally longer than that of the ♂. The *Meleagrina* of the little Syrte sometimes bears pearls; the author has determined that pearls are particularly frequent among mollusks which live in places where the strongest tidal currents, flood and ebb, prevail. The formation of pearls is due principally to the intrusion of extraneous particles such as grains of sand. The author states that he has rarely found pearls of parasitic origin.—*L. G. Seurat (transl. by J. S. Gutsell).*

2475. SHIMIZU, SABURÔ. Notes on two Tithonian species of Perisphinctes from the Torinosu limestone of Koike, Province of Iwaki. *Jap. Jour. Geol. & Geogr. Trans.* 7(2): 45-48. 1 pl. 1930.—*P.* (*Aulacosphinctes*) cf. *steigeri** and *P.* (*Virgatosphinctes*) sp.*, Jurassic.

2476. SHIMIZU, SABURÔ. On some triassic Ammonites from the Sakawa Basin, Province of Tosa in Shikoku. *Jap. Jour. Geol. & Geogr. Trans.* 8(1/2): 13-18. 1 pl. 1930.—Specimens of *Protrachyceras* aff. *archelaus** (Laube); *Paratrachyceras* cf. *hofmanni** (Boeckh); *P.* sp. nov.*?; and *Thisbites* orientalis* (p. 17) are described. All are allied to certain forms from the Mediterranean region, the Himalayas, and Timor.

2477. SPATH, L. F. The fossil fauna of the Samana Range and some neighbouring areas: Part V. The Lower Cretaceous Ammonoidea; with notes on Albian Cephalopoda from Hazara. *Mem. Geol. Surv. India, Palaeont. Indica* 15: 51-66. 2 pl. 1930.—The author discusses 12 forms of Ammonoidea from the Albian of the Samana Range, including *Cleoniceras* daviesi* (p. 53) and *Brancoceras* indicum* (p. 55); also 1 form from the Neocomian of Thal. Several of the forms are listed as new but not specifically named. Hamitidae, emended diagnosis; **METAHAMITES** (p. 57), erected for *Hamites sablieri* d'Orb., is included in the Anisoceratidae; *Lyelliceras* cotteri* (p. 61); **PROLYELLICERAS** (p. 65), erected for *P.* peruvianum (*Acanthoceras prorsocurvatum* Douvillé, not Gerhardt) (p. 65). Types in Geol. Surv. India. Numerous additional Albian Ammonoidea are listed from various localities in India.

2478. THOMAS, H. DIGHTON. An Upper Carboniferous fauna from the Amotape Mountains, northwestern Peru. (Continuation and to be cont.) *Geol. Mag.* 67(795): 394-408. 1 pl. 1930.—The following are described.—Gasteropoda: *Bellerophon* sp.* cf. *crassus* Meek & Worthen; *B.* sp., *Bucanopsis* multiscalpta* (p. 395); *Euphemus carbonarius** (Cox); *Euomphalus* browni* (p. 396); *Pleurotomaria* amotapenis* (p. 398); *P.* sp. Conularida: *Conularia* sp.* aff. *crustula* White. Brachiopoda: *Lingulodiscina?* sera* (p. 400); *Orbiculoidea meekana** (Whitfield); *Chonetes amazonicus** Derby; *C. variolatus** (d'Orb.).—*M. A. Fenton.*

2479. TOMLIN, J. R. le. The land shells of Kaw Tao. *Jour. Siam Soc., Nat. Hist. Suppl.* 8(1): 15-17. 1929.—A list of 12 spp. from this Siamese Isl., with notes on habitat and general distribution. *Sarika* kawtaoensis (p. 15).

2480. TROEDSSON, GUSTAF T. On the Middle and Upper Ordovician faunas of northern Greenland. I. Cephalopods. *Meddelel. om Grønland* 71(Paper 1): 1-157. 65 pl. (in separate issue), 17 fig. 1926.—Report of the Danish Jubilee Exped. to Greenland 1920-23. Résumé of previous geological expeditions to Arctic regions with lists of fossils collected. Cephalopoda, Nautiloidea, are treated with discussion of terminology and classification. Holochoanites: Ten spp. including *Narthecoceras* inflatum* (p. 33); and 5 forms only generically identified. Orthochoanites: Seventeen spp. including *Ephippiorthoceras* modestum* (p. 34); *Dawsonoceras ?* aquilonare* (p. 35); *D. ?* cf. *aquilonare** n. sp. unnamed (p. 36); *Apsidoceras* elegans* (p. 38); *Charactoceras* rotundum* (p. 40); *Plectoceras ?* foerstei* (p. 42); *Lambeoceras* princeps* (p. 46); *L.* nudum* (p. 47); *L.* magnum* (p. 48); *L.* boreum* (p. 40); *L. ?* leve-annulatum* (p. 50); and 3 forms only generically identified. Cyrtochoanites: Thirty-seven spp. and vars. including *Actinoceras tenuifilum* v. clarkei* (p. 54); *A. centrale* v. calhounense* (p. 57); *Leurorthoceras (?)* ruedemanni* (p. 58); *Armenoceras* arcticum* (p. 61); *A. arcticum* v. angusum* (p. 62); *A.* concinnum* (p. 63); *Huronia* arctica (p. 63); **KOCHOCERAS** (p. 65) (Actinoceratidae), type *K.* cuneiforme* (p. 68); *K. c.* var. robustum* (p. 71); *K.* ellipticum* (p. 73); *K. ellipticum* v. minutum* (p. 74); *K.* undulatum* (p. 75); *K.* productum* (p. 75); *K. (?)* vetustum* (p. 76); **CALHOUNOCERAS** (p. 77) (Actinoceratidae), type *C.* candelabrum* (p. 77); *Sactoceras* striatum* (p. 79); *S. (?)* lineatum* (p. 80); **ESKIMOCERAS** (p. 81) (Sactoceratidae), type *E.* boreale* (p. 81); *Gonioceras* holtedahli* (p. 83); *G.* wulffi* (p. 85); *G.* groenlandicum* (p. 86); *G.* cf. *groenlandicum** n. sp., unnamed (p. 89); *G.* angulatum* (p. 89); *Westenoceras* latum* (p. 90); *Maelonoceras (?)* reclinatum* (p. 91); **THULEOCERAS** (p. 93) (Oncoceratidae), type *T.* ornatum* (p. 94); *Cryptogomphoceras* curvatum* (p. 96); *C.* turgidum* (p. 97); *C.* sacculus* (p. 98); *Diestoceras* pyriforme* (p. 100); and 6 forms only generically identified. Nautiloidea incertae sedis: **DANOCERAS** (p. 101) (Aff. *Oncoceras* and *Beloitoceras*), type *D.* ravni* (p. 102); one unnamed species* also placed here. All forms described from Middle and Upper Ordovician strata (undifferentiated) Cape Calhoun series, Cape Calhoun, Greenland. All specimens in the Mineralogical Mus., Univ. of Copenhagen. Seven spp. of Ordovician cephalopods are described from the Baltic region, including *Ormoceras* holmi* (p. 105), Vaginatum limestone, Esthonia and elsewhere; *O.* oelandicum* (p. 105) Upper Red Orthoceras limestone, Island of Oeland, and elsewhere; **NYBYOCERAS** (p. 106) (subg. of *Actinoceras*), type *A.* (*Nybyoceras*) bekkeri* (p. 106), Lyckholm (F-1) Nyby, Esthonia; *Megadiscosorus* balticus* (p. 107); *Cryptogomphoceras* stensioei* (p. 108); Lyckholm (F-1) Esthonia, and elsewhere; and one form not specifically identified. Specimens in the Riksmuseum (Royal Mus. Nat. Hist.), Stockholm. Remainder of paper is a preliminary discussion of the stratigraphy of the Cape Calhoun region, the local succession of the faunal zones, tables showing distribution of species described. The Cape Calhoun series is correlated in the Upper Black River, Trenton and Richmond horizons of N. Amer. Older strata are known and one form, *Protocycloceras lamarcki** (Billings)?, has been identified from them If correct this indicates the Beekmantown age of these lower beds. The bulk of this fauna is of Richmond age. The relationships with the American and Swedish faunas and their paleogeographical significance are discussed. Bibliography of 87 titles. An explanation of the 65 plates concludes the report.—*J. Bridge.*

2481. TRUEMAN, A. E. The Lower Lias (Bucklandi Zone) of Nash Point, Glamorgan. *Proc. Geologists' Assoc.* [*London*] 41(2): 148-159. 2 pl. 2 fig. 1930.—A detailed account of the faunal succession of part of the Lr. Lias (Sinemurian). The following ammonites are described: *Charmasseiceras* simplicicosta* (p. 156), *Arnioceratoides* aptus* (p. 157), *A.* crassus* (p. 157), *Arnioceras* concinnum* (p. 158); holotypes in Brit. Mus. Nat. Hist., London.—*A. E. Trueman.*

2482. WARREN, P. S. Three new ammonites from the Cretaceous of Alberta. *Trans. Roy. Soc. Canada, Sect. 4, Geol. Sci.* 24(1): 21-26. 4 pl. 1930.—*Acanthoceras* albertense* (p. 21), Smoky River and Colorado shales, correlates the basal beds of these formations. *Acanthoscaphites* albertensis* (p. 23), Bearpaw shale; *Prionotropis* borealis* (p. 25), base of Smoky River shales. Types in Univ. of Alberta.

2483. WEIR, JOHN. The geological collection from the south central Sahara made by Mr. Francis R. Rodd. II. Upper Cretaceous fossils. *Quart. Jour. Geol. Soc.* 86 (343): 404-408. 3 pl. 1930.—New localities for the following fossils.—Lamellibranchs: *Exogyra olisiponensis** Sharpe; *E. tamalleni** Pervinquière; *Plicatula ferryi** Coquand. Specimens in the Hunterian Mus., Glasgow Univ.—*M. A. Fenton.*

2484. WEISBORD, NORMAN EDWARD. Miocene Mollusca of northern Colombia. *Bull. Amer. Paleontol.* 14(54): 235-306. 9 pl. 1929.—Describes and figures 75 forms from several Miocene horizons. There are 18 new spp.—*Spondylus* colombiensis* (p. 246), ? *Dermatomya* harrisi* (p. 247), *Chama* corticosaformis* (p. 250), *Cardium* (*Cerastoderma*) brantlyi* (p. 251), *Chione* (*Chione*) bolivarensis* (p. 254), *C.* (*Lirophora*) usiacurina* (p. 255), *Asaphis* delicatus* (p. 257), *Potamides* maracaibensis* (Williston) (p. 270), *P.* (*Pyrazisinus*) bolivarensis* (p. 271), *Strombina* colombiana* (p. 275), *Melongena* colombiana* (p. 275), *Solenosteira* falconensis* (Williston) (p. 277), *Xancus* magdalenensis* (p. 278), *Mitra* colombiana* (p. 279), *Conomitra* carribbeana* (p. 280), *Surcula* nuevagranada* (p. 286), *Drillia* puer-

tocolombiana* (p. 287), *Conus* colombiensis* (289); 7 new subspecies,—*Scapharca grandis* colombiensis* (p. 237), *Glycymeris lloydsmithi* multicostata* (p. 242), *Ostrea messor* colombiensis* (244), *Chione* (*Lirophora*) *latilirata* colombiana* (p. 254), *Metis trinitaria* colombiensis* (p. 256), *Turritella vistana* colombiana* (p. 264), *Bursa crassa* colombiana* (p. 273); 7 new varieties,—*Scapharca grandis* v. cedralensis* (p. 240), *S. chiriquiensis* v. bolivari* (p. 240), *Glycymeris canalis* v. colombiensis* (p. 243), *Crassatellites reevei* v. pleurarostra* (p. 248), *Turritella altilira* v. atlanticensis* (p. 264), *Solenosteira cochlearis* v. magdalenensis* (p. 278), *Cancellaria epistomifera* v. acuticarinata*. *Venericardia* dominica* (*V. scabricostata* Maury not Guppy) (p. 249). Of the fossils recorded, 29 belong to the class Pelecypoda, 1 to Scaphopoda, and 45 to Gastropoda. Types in Paleontological Lab., Cornell Univ.—*N. E. Weisbord.*

2485. YÜ, C. C. The Ordovician Cephalopoda of central China. *Geol. Surv. China, Palaeont. Sinica B* 1(2): 1-101. 9 pl., 7 fig. 1930.—The faunas of Ordovician beds from localities in eastern, western, southeastern, and northern Hupeh are compared. Discovery of *Didymograptus murchisoni* Beck for the first time in Hupeh or neighboring provinces correlates the Neichiashan formation bearing it with the zone characterized by that graptolite in the Brit. Ordovician. Cephalopods are listed from corresponding horizons in northern and southern China, affinities of the Hupeh forms with those of southern China and Europe being noted, as well as lack of affinity with those of N. China and N. Amer. The Hupeh forms are described chiefly from internal structures, as preservation rarely allowed study of surface ornamentation. They include *Cameroceras tenuiseptum* v. ellipticum* (p. 24); *C.* hsiehi* (p. 25); *C.* subtile* (p. 26); *Endoceras* leei* (p. 28); *E.* grabaui* (p. 29); *Vaginoceras* wahlenbergi* (*Endoceras w.* Foord) (p. 30); *V. w.* var. cylindrica* (p. 32); *V.* endocylindricum* (p. 33); *V.* peiyangense* (p. 35); *V.* shui* (p. 37); *V.* chientzekouense* (p. 38); *V.* neichianense* (p. 39); *V.* reedi* (p. 40); *V.* uniforme* (p. 42); *V.* multiplectoseptatum* (p. 44); *V.* giganteum* (p. 45); *Orthoceras* chinense*; *O. c.* v. kuangchiaoense* (p. 48); *O. c.* var. eccentrica* (p. 49); *O. c.* var. equiseptatum* (p. 50); *O.* regulare*; *O. squamatulum**; *O. thyrsus* ?*; *O.* remotum* (p. 55); *O.* rudum* (p. 55); *O.* suni* (p. 56); *O.* elongatum* (p. 57); *O.* densum* (p. 58); *O.* yangtzeense* (p. 59); *O.* ? wongi* (p. 60); *Protocycloceras* deprati*; *Discoceras eurasiaticum**; *Lituites* lii* (p. 65); [*Oncoceras*] (*Meloceras*) *asiaticum**. Types in Geol. Surv. China.

2486. ZÁZVORKA, VLASTISLAV. (Transl. by T. OAKES HIRST.) Revision of the Hyolithi from dγ. *Palaeontographica Bohemiae* 13: 1-22. 3 pl. 1930.—Three genera, 14 spp. and 1 variety are discussed: *Hyolithes* (11 spp., 1 variety), *Bactrotheca* (2 spp.), and *Orthotheca* (1 species). All are from Ordovician dγ1-dγ2. *Hyolithes* hanuši* (p. 13), dγ1, dγ2; *H.* klouček* (p. 14), dγ2; *H.* kolihai* (p. 15), dγ1, dγ2; *H. pauxillus* v. latus* (p. 17), dγ2; *Bactrotheca* nováki (p. 19), dγ2. *Hyolithes* sp.* Novák is a juvenile stage of *Hyolithes pauxillus* Novák. All originals are in the Nat. Mus. Prague. The author does not recognize the subg. *Camerotheca* Matthew as a division of *Hyolithes*.—*V. Zázvorka.*

CRUSTACEA

MARY J. RATHBUN, *Editor*
WALDO L. SCHMITT, *Associate Editor*
CHANCEY JUDAY, C. DWIGHT MARSH, H. A. PILSBRY, CLARENCE R. SHOEMAKER, CHARLES B. WILSON, *Assistant Editors*

(See also in this issue Entries 618, 953, 954, 1009, 2177, 2178, 2183, 2185, 2188, 2193, 2394, 2458, 2462, 2779)

2487. BARNARD, K. H. Diagnosis of new genera and species of Amphipod Crustacea collected during the "Discovery" Investigations, 1925-1927. *Ann. & Mag. Nat. Hist.* 7(40): 425-430. 1931.—This paper is based on a large material of amphipods, collected up to the end of 1927. Lysianassidae: **SHACKLETONIA,** near *Acidostoma* and *Phoxostoma,* type *S.* robusta (p. 425), S. Georgia Isl. and S. Shetlands [Antarctica]; **AUSTRONISIMUS,** near *Onisimus* and *Lysianella,* type *A.* rhinoceros (p. 425), S. Georgia Isl.; **AMBASIOPSIS,** resembles *Metambasia,* type *A.* georgiensis (p. 425), So. Georgia Isl.; **LEPIDEPECREOIDES,** type *L.* xenopus (p. 426), S. Georgia Isl. and S. Shetlands. Ampeliscidae: **BYBLISOIDES,** resembling *Byblis* and *Ampelisca,* type *B.* juxtacornis (p. 426), So. Shetlands Isls.; *Haploops* securiger (p. 426), So. Georgia Isl. Haustoriidae: **HAUSTORIELLA,** type *H.* psammophila (p. 426), So. America. Acanthonotozomatidae: **LABRIPHIMEDIA,** type *L.* vespuccii (p. 427), Falkland Isls. **PAGETINIDAE** n. fam., with **PAGETINA,** type *P.* genarum (p. 427), So. Georgia Isl. Oedicerotidae: **PARAPERIOCULODES,** type *P.* brevimanus (p. 427), So. Georgia Isl. Tironidae: **CACAO,** (p. 427), near *Alexandrella,* type *C.* lacteus (p. 428), off Portuguese W. Africa. Calliopiidae: **CLARENCIA,** type *C.* chelata (p. 428), So. Shetlands. Pleustidae: **AUSTROPLEUSTES,** type *A.* cuspidatus (p. 428), So. Shetlands. Paramphithoidae: **EPIMERIOPSIS,** type *E.* australis (Chilton) n. comb. (p. 428). Photidae: **KUPHOCHEIRA,** near *Haplocheira,* type *K.* setimanus (p. 429), So. Orkneys. **DIDYMOCHELIA** (incertae sedis), type *D.* spongicola (p. 429), So. Georgia Isl. Hyperiidae: **PEGOHYPERIA** (p. 429), type *P.* princeps (p. 430), So.-E. Atlantic. Caprellidae: **DODECASELLA,** type *D.* elegans (p. 430), So. Georgia Isl.; *Cyamus* balaenopterae (p. 430), So. Africa, from *Balaenoptera musculus* and *B. physalus.* This is the first cyamid described from true *Balaenoptera.*

2488. BARNARD, K. H. Crustacea. Part XI. Amphipoda. *Nat. Hist. Rept. Brit. Mus. (Nat. Hist.) Brit. Antarctic ("Terra Nova") Exp. 1910. Zool.* 8(4): 307-454. 63 fig. 1930.—The location of all collecting stations is given and species obtained at each station are listed. Lysianassidae: *Kerguelenia* antarctica* (p. 318), McMurdo Sound, Antarctica; *Hirondellea* Chevr. (=*Tetronychia* [Stephensen ?]); **PARACYCLOCARIS** (p. 321), near *Cyclocaris,* based on *P.* bidens* ♀ (p. 321), New Zealand [=N. Z.]; *Hippomedon* incisus* ♂ (p. 325), N. Z. Stegocephalidae: *Andaniotes* simplex* ♀ (p. 328), N. Z. Ampeliscidae: *Ampelisca* hemicryptops* ♀ (p. 329), Oates Land and McMurdo Sound, Antarctica. Phoxocephalidae: *Phoxocephalus* regium* ♂ (p. 331), N. Z.; *Paraphoxus* pyripes* (p. 332), McMurdo Sound (type) and N. Z.; *Heterophoxus* videns* (p. 334), off Cape Adare (type) and McMurdo Sound, Antarctica; **PROTOPHOXUS** (p. 335), near *Phoxocephalus,* based on *P.* australis* (p. 355), N. Z.; **TRICHOPHOXUS** (p. 336), near *Phoxocephalus,* based on *T.* capillatus* ♂ (p. 336), N. Z. Amphilochidae: **PELTOPES** (p. 337), near *Peltocoxa,* based on *P.* productus* (p. 338), N. Z. Metopidae: *Proboloides* perlatus* (p. 339), off Cape Adare. Stenothoidae: *Stenothoe* ornata* ♂ (p. 341), N. Z. Lafystiidae: Laphystiopsidae is united with this family because of the following intermediate genus: **PROLAPHYSTIUS** (p. 342), based on *P.* isopodops* ♀ (p. 342), McMurdo Sound. Acanthonotozomatidae: *Acanthonotozomella* oatesi* ♀ (p. 346), off Cape Adare; *Iphimediella margueritei* Chevr. (=*Iphimedia microdentata*); *I.* cyclogena* (p. 349), McMurdo Sound (type) and Oates Land; *I.* brevispinosa* (p. 351), and *I.* rigida* ♂ (p. 351), McMurdo Sound; **GNATHIPHIMEDIA** (p. 352), near *Iphimediella,* type *G.* mandibularis* (p. 352), McMurdo Sound (type) and Oates Land; *G.* pacifica* (Stebb.), n. comb. (p. 353); **MAXILLIPHIMEDIA** (p. 355), near *Iphimedia,* based on *M.* longipes* (*Iphimedia l.* Wlkr.) (p. 355),

emended description; **ANCHIPHIMEDIA** (p. 357), based on *A.* **dorsalis*** ♂ (p. 357), McMurdo Sound; **ECHINIPHIMEDIA** (p. 358), erected for *E.* **hodgsoni*** (*Iphimedia h.* Wlkr.) (p. 359); *E.* **scotti*** ♀ (p. 360), McMurdo Sound, and *E.* **nodosa*** (Dana), n. comb. (=*Iphimedia echinata* Walker) (p. 361). Oedicerotidae: *Bathymedon* **neozelanicus** (p. 365), and *Oediceroides* **microcarpus*** ♀ (p. 366), New Zealand. Tironidae: *Syrrhoites* **anaticauda*** ♀ (p. 367), McMurdo Sound. Calliopiidae: *Chosroes incisus** Stebb., first description of ♂; **REGALIA** (p. 370), based on *R.* **fascicularis*** (p. 371), N. Z. Paramphithoidae: *Epimeria macrodonta* **f. similis** (*E. s.* Chevr.) (p. 373); *E.* **inermis*** Wlkr., range extended to west of Falkland Isls.; *E.* **robusta*** (p. 375), and *E.* **puncticulata*** ♀ (p. 376), McMurdo Sound; *Epimeriella* **scabrosa*** ♀ (p. 378), Oates Isl.; *E.* **walkeri*** ♀ (p. 380), McMurdo Sound. Atylidae: *Nototropis* **reductus*** ♀ (p. 382), N. Z. Melphidippidae: *Melphidippa antarctica* Schell., ♂ redescribed. Eusiridae: *Eusirus* **antarcticus*** Thoms., redescr.; *E. perdentatus** Chevr. (=*E. splendidus* Chilton), redescr.; *Eusiropsis riisei** Stebb., additional description. Pontogeneiidae: *Atyloides* **quadridens** ♂ (p. 387), McMurdo Sound. Dexaminidae: *Paradexamine pacifica** (Thoms.) is removed from the synonymy of *P. fissicauda* Chevr. Photidae: *Eurystheus* **distichon*** ♂ (p. 391), off Cape Adare. Jassidae: *Ischyrocerus anguipes* **v. longimanus** (*Wyvillea l.* Hasw.) (p. 393). Hyperiidea: **ARCHAEOSCINIDAE** (=Pygmacidae Wolt., which is nomenclaturally inadmissible), erected for *Archaeoscina* Stebb., *Micromimonectes* Wolt., *Mimonecteola* Wolt., and *Microphasma* Wolt. Mimonectidae (=Eumimonectidae): *Parascina* Stebb. is maintained as a valid genus; *P.* **setosa*** ♂ (p. 395), Antarctic, 67° 23′ S., 177° 59′ W.; *P.* **diomedeae** (*Sphaeromimonectes d.* Wolt.) (p. 397). Lanceolidae, emended diagnosis: *Lanceola clausi* Bov., descr. of variations; **PARALANCEOLA** (p. 398), near *Lanceola*, based on *P.* **anomala*** (p. 398), Antarctic, 71° 41′ S., 166° 47′ W. Vibiliidae (=Cyllopodidae): *Vibilia chuni* Behn. & Wolt., first descr. of ♂*; *Cyllopus magellanicus* Dana (=*Vibilia macropis* Bov., *V. serrata* Stewart); *C. lucasii* Bate (=*C. antarcticus* Spandl). Hyperiidae: *Hyperia fabrei* (M. Edw.), and *H. promontorii* Stebb., new to New Zealand; *H. galba* (Mont.) (=*H. gaudichaudii* Wlkr., *H. antarctica* Spandl); *H. macronyx* Wlkr., emended descr.; *Hyperiella dilatata* Stebb. and *H. antarctica* Bov., additional descr.; *Hyperioides longipes* Chevr., new to New Zealand region; *Hyperoche*, key to spp.; *H.* **capucinus*** ♂ (p. 416), off Cape Adare; *Iulopis* Bov. (=*Euiulopis* Bov.): *I. loveni* Bov., new to New Zealand; *Parathemisto* Boeck, key to species with *Euthemisto* Stebbing treated as subgenus; *P.* (*E.*) *australis** (Stebb.), new to New Zealand. Lycaeidae: *Tryphana malmi* new to New Zealand and the Pacific Ocean; *Lycaea* key to spp.; **THYROPIDAE** (=Parascelidae) (p. 436), the new name being required because *Thyropus* is the oldest genus in the family. Platyscelidae: *Tetrathyrus* **pulchellus*** ♂ (p. 439), N. Z. Caprellidae: *Caprellinoides* **spinosa*** (p. 441), off Cape Adare, and McMurdo Sound; *Aeginoides gaussi** Schell., redescribed. Taxonomic and distibutional notes are given for many previously described spp. Bibliography of 62 references. Appendix I includes unpublished records of 4 spp. collected by the "Discovery" expedition (1901-1904), Appendix II, adds records on 14 spp. collected on the "Nimrod" expedition of 1907-1909.

2489. BEURLEN, K. Vergleichende Stammesgeschichte. Grundlagen, Methoden, Probleme unter besonderer Berücksichtigung der höheren Krebse. *Fortschr. Geol. u. Paläont.* **8(26)**: I-VIII+317-586. 82 fig. 1930.—Part 1 deals with the systematics and evolution of the decapod crustacea. Instead of the usual division of the decapods into 2 suborders, Natantia and Reptantia or Macrura and Brachyura, a division is made involving 4 suborders: Trichelida, Anomocarida, Palinura, and Heterura. The Trichelida includes the divisions Nectochelida (tribes Penaeidea, Stenopidea, Uncinoidea), Proherpochelida (tribe Paranephropsidea (=Erymaidea) containing the n. fam. **STENOCHIRIDAE** (p. 326) erected for *Stenochirus* Oppel.), and Herpochelida (tribe Nephropsidea Alcock=Astacura Borradaile). The suborder Anomocarida includes the divisions: Neotocarida with the single tribe Eucyphidea Ortmann (=Caridea Dana); and Herpocarida with 2 tribes, Thalassinidea containing 6 families including Callianassidae with the n. subfam. **PROTOCALLIANASSINAE** (p. 332) with the genus **PROTOCALLIANASSA** (p. 332) (Up. Cretaceous), and the tribe Paguridea. The 3 divisions (1) **GLYPHEIDEA** (p. 335) (to include tribes **PEMPHICOIDA** (p. 335) and Glypheoida), (2) Eryonidea with the families **TETRACHELIDAE** (p. 339) for *Tetrachela* Reuss, from the "Raibler Schichten," Eryonidae with emended description, and **POLYCHELIDAE** (p. 340) for the living genera *Polycheles* (=*Pentacheles*) and *Willemoesia* and the fossil genera *Palaeopentacheles* v. Knebel and *Palaeopolycheles* v. Knebel from the Up. Malm and *Willemoesioearis* van Straelen from the Up. Dogger, and the division (3) Scyllaridea containing families, **CANCRINIDAE** (p. 342) erected for *Cancrinus* Münster (Up. Jurassic), and Scyllaridae, are placed in the suborder **PALINURA** (p. 334). Finally in the suborder **HETERURA** (p. 343) the following divisions are made: Anomura s. str. (with tribes Galatheidae and Hippidea), and Brachyura which is subdivided into the tribes (a) **DROMIOMORPHA** (p. 346) with the subtribes Dromiacea, Oxyrrhyncha, with **MICROMAIINAE** (p. 349) subfam. of Maiidae, **OCYPODOIDA** (p. 350), and Cancriformia with 4 families including **LOBOCARCINIDAE** (p. 353), (b) **XANTHIMORPHA** (p. 354) (=Brachygnatha Borrad. partim, Brachyrhyncha Borrad. partim) with subtribes **PORTUNOIDEA** (p. 354) containing 2 families **CARCINERETIDAE** (p. 354) for the genus *Carcineretes* Withers (Up. Cretaceous), and Portunidae with 4 subfamilies including **PSAMMOCARCININAE** (p. 355), and subtribe **XANTHOIDEA** (p. 356) (c) Oxystomata with subtribes Gymnopleura containing 2 families including **RANINELLIDAE** (p. 363), and **CALAPPOIDA** (p. 363). A short synopsis of the fossil and recent forms is given. In support of this system it is stated that within the Trichelida, the Penaeidea are the most primitive, and of the Reptantia the Paranephropsidea and Nephropsidea are iterative offshoots. In the Anomocarida the Reptantia Thalassinidea are the most primitive, giving rise to the Paguridea on the one hand, and to the Natantia Eucyphidea on the other. The resemblance between the Natantia Penaeidea and the Eucyphidea is due to convergence. In Palinura, from the primitive Glypheidea, the Eryonidea branch off above Pemphix and Scyllaridea above Glypheidea. Finally in the Brachyura, the Dromiomorpha, which are the most primitive, give rise to a direct descendant, from which the Xanthimorpha and Oxystoma have become differentiated. In the following manner the relationships of the 4 suborders are indicated: The Anomocarida have evolved above the Mecochidae (Glypheidea) and the Heterura above the Pemphicoida of the Palinura, while both the Trichelida and the Palinura have evolved almost from the basic line of development of the decapods. Within these groups the reptantian forms are the most primitive, while the natantian forms are of secondary derivation, with the exception of the Trichelida where the conditions are reversed. As regards this system, Beurlen and Glaessner, have, in a recent publication, combined these 3 suborders into the suborder Heterochelida, which stands in contrast to the Trichelida. Within the Heterochelida a modification is made so that the divisions Anomocarida, Glypheocarida (Glypheidea) and Gastralida (Palinura and Heterura) are distinct. Following this is a short discussion of the origin of the decapods and the evolutionary relationships of the Thorastraca, with the conclusion that the Phyllocarida were the original relatives of the palaeozoic Archaostraca which at the present time have been slightly transformed into the Leptostraca. In the lower Paleozoic the Archaeostraca have given rise to the Pygocephalomorpha (group of *Pygocephalus, Anthrapalaemon*, etc.), and that from

the Pygocephalomorpha the Schizopoda, Dichelopoda, Decapoda, Stomatopoda, and Cumacea have evolved directly. Part 2. An explanation of the evolutionary analysis gives a synopsis of the development of all the crustacea and of all the vertebrates. A comparison of the developmental periods of both groups shows that their development is not a uniformly continuous process, but cyclic and it is in such a manner that the first developmental stage brings out the various characters of directional adaptation. A second period follows in which no new adaptations appear but which are enriched by orthogenetic developments and finally lose potency and die out. The first period is actually short only in comparison with the second. The generalizations concerning this theory are explained by a short discussion of the development of arthropods, and of mollusks (lamellibranchs and cephalopods). All of these show the same characteristic cyclic development. In the development of the genus, family, order, and class, the uniformity of the line of descent corresponds to a certain degree with the developmental periods in the ontogeny of the individuals (youth, maturity, old age, death). Part 3 gives the theoretical discussion of these conclusions. The consideration of the first developmental stage, the explosive period, shows that the basic form and the adaptable line are built up together. Throughout this period the adaptive forms are carried on, while those not adaptive (inadaptive, Kowalewsky) promptly die out with the appearance of the basic type. This explosive developmental state is not the same as the following fixed adaptive period. Much more has been given concerning this primordial stage than of the adaptive period. This view is substantiated in a consideration of the second developmental period in which the existing adaptive structures are augmented by orthogenesis. The legitimacy of mentioning these orthogenetic developmental stages (iterative structures, parallel development, continuous diminution of the evolutionary field, etc.), shows, namely, that the evolutionary potentiality is continuous within the bounds of the type forms and within those of adaptive lineage, and that through a gradual concentration of forms a progressive stabilization of the type is instigated. A last section seeks this information through a more elaborate discussion of problems of ontogeny and phylogeny. It is shown that the 1st developmental period formulates the metakinetic form of ontogeny and that this form of ontogeny does not run in a determinable manner, so that universal physiological reverses of the larvae and immature stages can still produce incomplete organisms, which in an older condition can produce new type forms. This instability and indeterminability of ontogeny during this phase, makes the frequency of structural specialization during these developmental periods understandable. As opposed to this is the 2nd developmental stage which allows a palingenetic outlet of ontogeny. This calls for a progressive determinable form of ontogeny which is inserted gradually as a rigid type. Cenogenesis is only an exceptional case of palingenesis and does not stand in contrast to it.—*K. Beurlen* (*transl. by E. P. Creaser*).

2490. BOROS, LAJOS. Pristicephalus carnuntanus emésztö készülékének anatomiai szövettani vizsgálata. [Anatomy and physiology of P. carnuntanus.] *Acta. Litt. Ac. Sci. R. Univ. Hungaricae Francisco-Josephinae, Sect. A Biol. Sci. Nat. Acta Biol.* 1(2): 127-191. 3 pl. 1929.—This phyllopod swims with its back downward, but when killed with a light charge of electricity and allowed to sink the back assumes the upright position. The habit of swimming back downward is regarded as an adaptation to feeding. The appendages form a canal on the ventral side in which the food is collected and passed forward to the mouth. The structure of the various appendages is discussed as well as the microscopic structure and function of the various parts of the digestive tract.—*C. Juday.*

2491. CAMPAN, F. Contribution à la connaissance des Phyllopodes Notostracés. *Bull. Soc. Zool. France* 54(2): 95-118. 8 pl. 1929.—Observations were made on *Lepidurus apus* from the Toulouse district of France, mainly on growth stages and sexual differences. The species was found from Jan. to May, in temporary ditches filled with flood water and inhabited by *Scirpus palustris* and *Ranunculus fluitans*, among which lived ostracods, copepods and isopods. It feeds on organic débris and, in spite of its large mandibles, seldom eats hard substances. Growth is rapid, with a large number of moults. The interval between moults varies with age, being short in the early stages, and from 8-10 days in animals which are nearly adult. Males are in excess of ♀♀ and reproduction is always, apparently, sexual. The author found no evidence of reproduction by parthenogenesis such as has been reported in the German form of the species. The metanauplius of the Toulouse form is more advanced than that of the German variety, in that it moults into a 2nd stage which has the form and structure of a typical *Apus*. The mandibles of the metanauplius are represented by their palps only. The author describes the changes which take place in the antennae, mandibles, and caudal plate during the first 15 stages of growth. The antennae are well developed biramous appendages for the first 5 stages. Afterwards progressive degeneration sets in, resulting in the reduction of setae and loss of articulation, first in the exopodite and then in the endopodite. The exopodite and endopodite both disappear in the ♀, but a trace of the endopodite persists in the ♂. The mandible shows a progressive loss of the palp, resulting in its final disappearance, and the increasing development of the masticatory plate of the adult mandible, which is formed from the precosca of the metanauplian mandibles. The growth of the telson is proportionately more rapid than the rest of the body. The author has studied the differences between the sexes in detail, and, in addition to the well known difference in the form of the 11th pair of trunk legs, finds smaller sexual differences in size, color, carapace, caudal plate, 2nd antennae, subcoxal endite of the maxillae, and 2nd pair of trunk legs.—*W. M. Tattersall.*

2492. CANDEIAS, ALBERTO. Nota sôbre uma espécie nova de género "Iphinoë" Bate proveniente da costa de Portugal. *Mem. e Estud. Mus. Zool. Univ. Coimbra, Ser. 1* No. 38. 1-8. 1 pl. 1929.—*Iphinoë* **algarbiensis*** ♂ (p. 2), in Plankton.

2493. FLIPSE, H. J. Die Decapoda Brachyura der Siboga-Expedition. VI. Oxyrrhyncha: Parthenopidae. In: **Max Weber. Siboga-Expeditie** 112 (Monogr. 39c²). 96p. 45 fig. E. J. Brill: Leiden, 1930.—In 3 sections, of which the first comprises a short sketch of the external morphology of the Parthenopidae: *Parthenope* **erosa** (*Thyrolambrus erosus* Rathbun) (p. 12). The 2nd section is the systematic discussion: (a) Parthenopinae: *Lambrus* (*Lambrus*) **ornatus*** (p. 22), Makassar, Salawati Java Sea; *L.* (*Platylambrus*) *echinatus* v. **granulosus*** (p 25), Java Sea; *L.* (*Rhinolambrus*) **naso*** (p. 29), east o Dangar Besar; *L.* (*R.*) **armatus*** (p. 30), Salawati Java Sea; *L.* (*R.*) **coronifer*** (p. 33), Salomakiëe (Damar Isl., Timor, Samau-Isl.; *L.* (*R.*) **inconspicuus*** (p. 34) 1° 42′ 5″ S., 130° 47′ 5″ E.; *L.* (*R.*) **latifrons*** (p 35), Bima-Beach; *L.* (*R.*) **sternospinosus*** (p. 36), Ke Id.; *L.* (*Aulacolambrus*) **sibogae*** (p. 40), 4° 25′ 7″ S 130° 3′ 7″ E., and 10° 52′ 4″ W., 123° 1′ 1″ E.; *L.* (*A.* **sulcatus*** (p. 46), Roma Id., Java Sea; *L.* (*Pseudo lambrus*) **hepatoconus*** (p. 49), Sulu Arch., *L.* (*P.*) *hepa toconus* v. **longispinosus*** (p. 51), Sanguisiapo; *L.* (*P. confragosus* v. **bidentatus*** (p. 51), 1° 42′ 5″ S., 130 47′ 5″ E.; *L.* (*P.*) **lobatus*** (p. 53), Paternoster Isl.; *L* (*P.*) **bicornis*** (p. 54), Java Sea; *L.* (*P.*) **tuberculatus** (p. 55), Sulu Arch., *Parthenope* **semicircularis*** (p. 60), B nongka; *Cryptopodia fornicata* v. **queenslandi** (*C. queen landi* Rathbun) (p. 65); *C.* **collifer*** (p. 66), between th Wowoni and Buton Ids.; *C.* **pentagona*** (p. 67), Sal wati; *Heterocrypta* **bivallata*** (p. 69), Sapeh Strai (b) Eumedoninae: *Zebrida* **paucidentata*** (p. 73), Maka sar. The 3rd and concluding section is largely a tabul review of the geographic distribution of the famil An exhaustive list of the known Parthenopidae, wi

complete synonymy and the more important references in literature, concludes the paper.—*H. J. Flipse* (*transl. by W. L. Schmitt*).

2494. **IHLE, J. E. W., und M. E. IHLE-LANDENBERG.** Über einige Tiefsee-Brachyuren der Siboga-Expedition aus der Gruppe der Oxyrhyncha. *Zool. Anz.* 93(5/6): 147-163. 1931.—The authors report on their investigations of the genera *Platymaia, Cyrtomaia,* and *Pleistacantha,* and discuss certain morphological characters of the Oxyrhyncha. *Platymaia wyville-thomsoni* alcocki (*P. a.* Rathbun) (p. 149); *P. turbynei* Stebbing, *P. bartschi* Rathbun, and *P. remifera* Rathbun are regarded as perhaps subspp. of *P. wyville-thomsoni* Miers; *P. wyville-thomsoni* and *P. fimbriata* Rathbun, emended descriptions; *Cyrtomaia smithii* spp. **tenuipedunculata** (p. 152), East Indies; *C. horrida* ssp. **pilosa** ♀ (p. 154), Kei Isls., 204 m.; *C.* **bicornis** ♀ (p. 156), between Timor and Rotti, 390 m.; *C.* **balssi** ♀ (p. 157), East Indies, 798 m.; *Pleistacantha sancti-johannis* ssp. **erecta** ♂ (p. 160), between Timor and Rotti; *P.* **cervicornis** (p. 161), Kei Isls. Distributional and taxonomic notes are given on some previously known spp.

2495. **LÖRENTHEY, E., und K. BEURLEN.** Die fossilen Dekapoden der Länder der Ungarischen Krone. *Geologica Hungarica, Ser. Palaentol.* 1(3): 1-427. 16 pl., 49 fig. 1929.—A short synopsis of the more important members of the Hungarian decapod fauna follows in a systematic sequence the descriptions of the fossil Hungarian decapods. *Hoploparia* **eocenica*** (p. 45) (Nephropsidae). Callianassidae: *Callianassa* **urgoniensis*** (p. 49); *C.* **tuberculata*** (p. 51); *C.* **pseudonilotica*** (p. 53); *C.* **pseudo-fraasi*** (p. 55); *C.* **glabra*** (p. 56); *C.* **craterifera*** (p. 67), Oligocene; *C.* **pseudorákosensis*** (p. 67), Upper Mediterranean. Paguridae: *Pagurites* (*Propagurites*) **hungaricus*** (p. 72), and *P.* **substriatiformis*** (p. 73), Up. Mediterranean. Galatheidae: *Galatheites* **tuberosiformis*** (p. 75), Jurassic; **MUNITHEITES** (p. 78) (subg. of *Galatheites*), *G.* (*M.*) **pálfyi*** (p. 78), Jurassic; Homolodromiidae: *Pithonoton* **laevimarginatum*** (p. 85), *P. etalloni* v. **transsylvanica*** (p. 87), and *P.* **hungaricum*** (p. 88), Jurassic; **CYCLOPROSOPON** (p. 89) (subg. of *Pithonoton*), *P.* (*C.*) **typicum*** (p. 90), Jurassic; *Goniodromites* **dentatus*** (p. 92), Jurassic. Prosoponidae: *Coelopus* **tuberculatus*** (p. 94), Jurassic. Dynomenidae: *Pseudodromilites* **pentagonalis*** (p. 101). Raninidae: **LAEVIRANINA** (p. 105) (subg. of *Ranina*), *R.* (*L.*) **fabianii*** (p. 106); **NOTOPORANINA**, type *N.* **beyrichi** (*Notopus b.* Bittn.) (p. 116); **NOTOPELLA** (p. 119) (monotypic), *N.* **vareolata*** (p. 119). Calappidae: *Calappilia dacica* v. **lyrata*** (p. 128); *Calappa* **praelata*** (p. 132), Up. Mediterranean. Dorippidae: *Dorippe* **margaretha*** (p. 135), Up. Mediterranean. Corystidae: **MICROCORYSTES** (p. 137) (monotypic), *M.* **latifrons*** (p. 137), Up. Mediterranean. Maiidae: *Micromaia* **punctulosa*** (p. 144); **PISOMAIA** (monotypic), *P.* **tuberculata*** (p. 146); *Maia* **biaensis*** (p. 148), and *M.* **hungarica*** (p. 150), Up. Mediterranean. **PERIACANTHIDAE** (p. 151), for the genus *Periacanthus* Bittn. Portunidae: *Portunites* **eocænica*** (p. 165); *P.* **hungarica*** Lörenthey (p. 386) (formerly considered as *Neptunus*); *Portumnus* **tricarinatus*** (p. 167), Up. Mediterranean; *Necronectes* **böckhi** (*Cancer b.* Lörenthey) (p. 168); *Rhachiosoma* n. sp. (p. 170); *Portunus* **rákosensis*** (p. 171), Up. Mediterranean; *Scylla* **stenaspis** (*Neptunus s.* Bittn.) (p. 176), Mediterranean; **COLNEPTUNUS** (p. 179) (subg. of *Neptunus*), *N.* (*C.*) *radobojanus* Bittn., Mediterranean. Xanthidae: *Hepatiscus* **laevis*** (p. 193); *Daira* **eocaenica** (*Phymatocarcinus eocaenicus* Lörenthey) (p. 195); *D.* **speciosa** (*P. speciosus* Reuss) (p. 197), Up. Mediterranean; *Harpactocarcinus punctulatus* v. **piszkeiensis*** (p. 208); *Zozymus* **mediterraneus*** (p. 215). Up. Mediterranean; *Neptocarcinus* **spinosus*** (p. 217). Carcinoplacidae: *Titanocarcinus* **elegans*** (p. 235), **LAEVICARCINUS**, type *L.* **egerensis*** (p. 238); **PARACOELOMA** (p. 243), Oligocene, (subg. of *Coeloma*) type *C.* (*P.*) *rupeliense* Stain., *C.* (*P.*) **egerense*** (p. 244), Oligocene, Ocypodidae: **LÖRENTHEYA** (p. 388) (monotypic), *L.* **carinata*** (p. 388). Except where otherwise given, species are from the Eocene. A synopsis is given of the stratigraphical and geographical distribution of Hungarian fossil decapods and their zoogeographical relationships to faunas of the same epochs outside of Hungary are discussed. Special comment is made on the zoogeographical relationships of the Galatheidae and Prosoponidae of the Malm formation (Up. Jurassic), and of the decapods of the Eocene, Oligocene, and Miocene. Evolutionary relationships of the Thalassinidea, Raninoidea, Oxystomata, Oxyrhyncha, Cyclometopa, and the Catometopa (p. 333), are briefly discussed in order that the interrelationships between the various groups of Brachyura may be considered. This results in the differentiation of 4 diverse groups as follows: (1) Dromiacea, Oxypodidea, Parthenopidae, Cancridae, Portunidae; (2) Raninoidea; (3) Xanthidae, Carcinoplacidae, Pinnotheridae, Gecarcinidae, Grapsidae; and (4) Oxystomata. The relationships between the Brachyura and Macrura in respect to the Anomura are considered with the conclusion that these 4 groups of Brachyura are of independent origin. The general environment and appearance of the Hungarian Tertiary and the adaptations of the decapod fauna within this environmental setting are also discussed. Brief mention is made concerning the problem of colonization of the deep sea by the decapods.—*K. Beurlen* (*transl. by E. P. Creaser*).

2496. **MÉHELY, L. v.** Der wahrhaftige Artcharakter. *Zool. Anz.* 81(7/10): 219-223. 6 fig. 1929.—That the genitalia are the principal specific characteristic is proved by the genus *Hyloniscus* (Isopoda), the species of which can be separated only on basis of the 2nd pair of pleopods of the ♂.—*A. de Buck.*

2497. **MONTEROSSO, B.** Contributo alla conoscenza dei Copepodi parassiti. L'intestino di Peroderma cylindricum Heller. [The intestine of the copepod P. cylindricum.] [With French, English and German summaries.] *Arch. Zool. Ital.* 14(2/4): 169-225. 2 pl. 1930.—In *P. cylindricum* the intestine functions as a kinetic organ for the body fluids and its activity is also connected with the respiratory processes: It incites, in the median segment, rhythmic dilatations which pass along the intestine in a posterior-anterior direction, the coelomic fluid being similarly displaced, while the enteric fluid passes in the opposite direction; after each wave the coelomic fluid takes on a redder color, containing probably a respiratory pigment. The intestinal wall is formed by a layer of epithelial cells and a layer of very fine muscle fibrils placed between 2 structureless membranes. The epithelial cells are sharply differentiated into 2 kinds which show distinct morpho-physiological changes and are derived from a common "initial cell" which is alone capable of division. The cells of the 1st type, originally club-shaped, then spherical with their bases drawn out into a delicate stalk, appear to be the seat of an intracellular digestion; those of the 2nd type are never club-shaped, but have a striated border, which is not present in the first type, and are, apparently, absorbing cells. The epithelial cells are continually destroyed and replaced.—*From author's summary.*

2498. **MONOD, TH.** Zoologische Ergebnisse der Reisen von Dr. Kohl-Larsen nach den subantarktischen Inseln bei Neuseeland und nach Südgeorgien. 6. Tanaidacés et Isopodes sub-antarctiques de la collection Kohl-Larsen du Senckenberg Museum. [In French.] *Senckenbergiana* 13(1): 10-30. 24 fig. 1931.—This account of 2 spp. of Tanaidacea and about 25 spp. of Isopoda includes synonymies, locality data, taxonomic remarks, and host records. Some of these marine forms are recorded from coastal waters, and some are pelagic (from over 100 fms.). *Munna* **neglecta*** (p. 14), South Georgia, Falkland Isls., South Orkneys, and Palmer Arch.

2499. **MOUCHET, S.** Note sur le cycle évolutif des Gnathiidae. *Bull. Soc. Zool. France* 53(6): 392-400. 1928.—By rearing the larvae of *Gnathia* (Pranizae) and causing them to become fixed as external parasites on appropriate fishes, successive stages in the larval life-history can be obtained. There are 3 stages, separated by as many moults, before the sexual adult is developed.

After each moult the *Praniza* is distinctly segmented. The thorax becomes swollen as soon as it parasitizes a fish. The large larvae, known as *Zuphea* by various authors, are the segmented larvae of the 3rd stage in the normal life-history.—*S. Mouchet (transl. by W. M. Tattersall).*

2500. MOUCHET, S. Contribution à l'étude de la digestion chez les Gnathiidae. *Bull. Soc. Zool. France* 53(6): 442-452. 1928.—Pranizae are colored variously according to the host whose blood they absorb. This diversity of color is related to the nature of the pigments contained in the digestive tract. The blood of some fishes, when subjected to the action of the digestive juices of Pranizae, is not altered and the haemoglobin of the blood remains intact and therefore red. Other haemoglobins, on the contrary, are transformed into biliverdine. In other cases the corpuscles are not absorbed by the parasite and the uncolored plasma alone appears in the intestine. In all cases the digestion results in the formation of black pigment.—*S. Mouchet (transl. by W. M. Tattersall).*

2501. NIERSTRASZ, H. F., und J. H. SCHUURMANS STEKHOVEN, Jr. Isopoda genuina. In: **GRIMPE, G., und E. WAGLER.** Die Tierwelt der Nord- u. Ostsee. Lief. 18. Pt. Xe_2. 77p. 85 fig. Akad. Verlagsges.: Leipzig. 1930.—In the introductory pages, the authors discuss morphology, anatomy, reproduction, habits, and distribution, and include a table showing the geographical and vertical distribution of the 81 spp. occurring in the North and Baltic Seas. Keys are given to all groups from suborders to spp. Each sp. is described and figured. Hosts of parasitic species are listed. Bibliography of 46 titles is given. Two additional spp. and table of contents are treated in a supplement. (Ib, Pt. Xe_4. p. 169. 171-172, 1 fig.).

2502. NIERSTRASZ, H. F., und J. H. SCHUURMANS STEKHOVEN, Jr. Anisopoda. In: **GRIMPE, E., und E. WAGLER.** Die Tierwelt der Nord- u. Ostsee. Lief. 18. Pt. Xe_3. 34p. 40 fig. Akad. Verlagsges.: Leipzig, 1930.—Morphology, anatomy, ecology, and zoogeography are discussed in introductory pages. The systematic account includes keys to families, genera, and species, and a description, figure, and statement of geographical and vertical distribution of each of about 32 spp. Bibliography of 25 titles. Table of contents in a supplement. (Ib. Pt. Xe_4, p. 172).

2503. NIERSTRASZ, H. F. Die Isopoden der Siboga-Expedition. III. Isopoda genuina II: Flabellifera. In: **MAX WEBER** Siboga-Expeditie No. 114 (Monogr. 32c): 123-233. 2 pl., 129 fig. 1931.—The author endeavors to list all species of Cymothoidae, Sphaeromidae, and Serolidae from the Indo-Pacific region, with locality records and with references to previous publications. *Livoneca* **dubia*** (p. 138), Dutch E. Indies; *L.* **intermedia*** (p. 141), Java; *Cirolana* **indica*** (p. 149), Dutch E. Indies; *C.* **vanhöffeni*** ♂ (p. 153) and *C.* **stebbingi*** ♂ (p. 154), Celebes; **METACIROLANA** (p. 147) erected for *M.* **japonica** (*Cirolana j.* Hansen) (p. 147) and *M.* **hanseni** (*C. h.* Bonnier) (p. 147); **PARACIROLANA** (p. 147) erected for *P.* **sphaeromiformis** (*Cirolana s.* Hansen) (p. 147); *Corallana* **glabra*** (p. 163), Kei Isls.; *Alcirona* **indica*** (p. 166), Paternoster Isl.; **ORCILANA** (p. 170) (Sphaeromidae), erected for *O.* **hanseni*** (p. 170), New Guinea; *Argathona* **stebbingi*** (p. 172), Obi Major; *Aega* **weberi*** (p. 177), Philippines; *Rocinela* **media*** (p. 185), Dutch E. Indies; *R.* **richardsonae*** ♀ (p. 187), Kei Isls.; *Cilicaeopsis* **laevis*** ♂ (p. 208), Gilolo Passage; *Circeis* **picta*** ♂ (p. 215), Philippines; *Chitonopsis* **hanseni*** (p. 219), Dutch E. Indies.

2504. NIERSTRASZ, H. F., and G. A. BRENDER à BRANDIS. Papers from Dr. Th. Mortensen's Pacific Expedition, 1914-1916. XLVIII. Epicaridea. I. [In German.] *Vidensk. Meddel. Dansk Naturhist. For. København* 87: 1-44. 53 fig. 1929.—Description of a collection of Epicaridea in the Copenhagen Mus. collected largely by Mortensen. Of 30 species, 20 are new; 15 genera are represented, 6 of which are new. The classification of the Epicaridea is very uncertain due to the fact that it is not based upon definite morphological criteria and is rendered more complicated by the great sexual dimorphism. In the present classification the characters of the ♀♀ are used as being less modified than those of the ♂♂. A key is given to the genera. **PLEUROCRYPTINA** (p. 7), near *Pleurocryptella*, type *P.* **indica*** (p. 7), Banda Isls.; **PLEUROCRYPTOSA** (p. 9), near *Pleurocryptella* type *P.* **megacephalon*** (p. 9), Siam Bay; *Aporobopyrus* **johannis*** (p. 10), Coral Bay, St. John, West Indies; *A.* **gracilis*** (p. 11), Senegambia; *Parionella* **decidens*** (p. 13), China Sea; **PARIONINA** (p. 14), type *P.* **pacifica*** (p. 14), on *Galathea* sp., Kiu-Shiu, Japan; *Probopyrus* Giard & Bonnier (=*Palaegyge* G. & B.); *P.* **semperi*** (p. 18), on *Palaemon* sp., Amboina I.; *P. bithynis* v. **gigas** (p. 20), on *Palaemon* sp., Brit. Guiana; *P.* **oviformis*** (p. 22), St. Croix, W. I.; *P.* **dubius*** (p. 24), on *Galathea* sp., Siam Bay; **PROBOPYRINELLA** (p. 25), erected for *P.* **latreuticola** (*Bopyroides l.* Gissler) (p. 26); **PAUPERELLA** (p. 27) (Bopyridae), type *P.* **rotunda*** (p. 27), E. Indies, on *Upogebia hexaceras; Bopyrella* **choprae*** (p. 29), Nicobar, on *Alpheus ventrosus; B.* **mortenseni*** (p. 30), St. Thomas, W. I., on *Hippolysmata wurdemanni; B.* **megatelson*** (p. 31), Siam Bay, on *Alpheus parvirostris; B.* **thomasi*** (p. 32), St. Thomas, W. I., on *Tozeuma carolinense; B.* **richardsonae*** (p. 33), Virgin Isls., on *Alpheus formosus; B.* **lata*** (p. 34), between Saba and St. Thomas, on *Alpheid; B.* **asymmetrica*** (p. 35), Sargasso Sea and Virgin Isls., on *Latreutes ensifer;* **PROSYNSYNELLA** (p. 36), type *P.* **hayi*** (p. 36), Virgin Isls., on *Synalpheus* sp.; *Bopyrina* **choprae*** (p. 39), Siam Bay, on *Harpilius* sp.; *B.* **striata*** (p. 40), California, on *Hippolyte californiensis.—B. Torelli (transl.).*

2505. REED, F. R. COWPER. A review of the British species of the Asaphidae. *Ann. and Mag. Nat. Hist.* 7(41): 441-472. 1931.—Taxonomic studies of 12 British spp. of Asaphinae, 14 of Ogyginae, and 5 Nileidae (?), in all cases where possible based upon type specimens. *Isotelus* **instabilis** (*Asaphus* (*Isotelus*) *i.* Reed) (p. 444); *I.* **girvanensis** (p. 445); *I.* **tyronensis** (p. 445); *Isoteloides* **grayae** (*Asaphus* (*Isotelus*) *g.* Reed) (p. 450). Ogyginae: **NIOBELLA** (p. 462), near *Niobe,* type *N.* **homfrayi** (*Niobe h.* Salter) (p. 463); *N.* **selwynii** (*Asaphus s.* Salter) (p. 463); *Ptychocheilus* **radiatus** (*Asaphus r.* Salter) (p. 465). An emended description is given of *Asaphus marstoni* Salter, which is regarded as probably referable to *Proetus.* Bibliography of 44 references.

2506. RENNIE, JOHN V. L. Some Phacopidae from the Bokkeveld series. *Trans. Roy. Soc. S. Africa* 18(4): 327-360. 2 pl. 1 fig. 1930.—Revision of the Phacopidae (Trilobita) of the Lr. Devonian of So. Africa, with discussion of classification of the family; notes on the validity of F. R. C. Reed's subgenera *Anchiopella, Eocorycephalus,* and *Metacryphaeus;* and emended descriptions of *Acaste* (*Pennaia*) *impressus** and *Typhloniscus baini* Salter* based on new material. **BAINELLA** (p. 344) (Dalmanitinae), type *B.* **bokkeveldensis*** (p. 349); *B.* **gamkaensis*** (p. 353). *Dalmanites* (*Metacryphaeus?*) **ceres** (*Phacops c.* Schwarz) (p. 336); *D.* (*M.*) **caffer** (*Phacops c.* Salter) (p. 336); *Acaste* (*Pennaia*) **impressus** (*Phacops i.* Lake=*Phacops gydouw* Schwarz,=*P. impressus* v. *vicina* Reed) (p. 338); *A.* (*Calmonia*) **callitris** (*P. callitris* Schwarz) (p. 344); *A.* (*C.*) **africana** (*Pennaia a.* Shand) (p. 344).—*J. V. L. Rennie.*

2507. SCHELLENBERG, A. Reports on the Albatross Expedition, 1899-1900. XXII. Reports on the Albatross Expedition, 1904-1905. XXXVI. Die Abyssale und Pelagische Gammariden. *Bull. Mus. Comp. Zoöl. Harvard* 69(9): 193-201. 1 pl. 1929.—Ten species are listed; 2 new forms, **PARANDANIEXIS** (Stegocephalidae), with *P.,* **mirabilis*** (p. 197), and *Rhachotropis palporum* f. **pacifica** (p. 201), both from the S. Pacific Ocean. A key is given to the genera of the Stegocephalidae, and also a list of species of pelagic gammarids.—*M. J. Rathbun.*

2508. SCHIKLEJEW, S. M. Einige neue Arten und Varietäten der Eucopepoda aus den Süsswässern des kaukasischen Naturschutzgebietes und seiner nächsten

Umgebung. *Zool. Anz.* 94(5/8): 185-194. 7 fig. 1931.—*Canthocamptus* aischghoi* (p. 185); *Cyclops fimbriatus* v. anyschghtzara* (p. 188); *C. macrurus* v. caucasicus* ♀ (p. 190). All from North Caucasus.

2509. SCOTT, ANDREW. The copepod parasites of Irish Sea fishes. *Proc. & Trans. Liverpool Biol. Soc.* 43(app. 1): S1-119. 3 pl., 2 fig. 1929.—Seventy species are recorded including: *Taeniacanthus* wilsoni* (p. 84), Irish Sea, on gills of *Raia fullonica; Nemesis* vermi* (p. 96), Firth of Clyde, on gills of *Selache maxima; Lernaeocera* megacephala* (p. 109), Irish Sea, on gills of haddock. New figures of the mouth parts of *Bomolochus soleae** are given. Evidence is furnished that young whiting infested with *Lernaeocera branchialis* are decidedly emaciated but recover if the parasite dies. The larvae of the same species cause swelling and disturbance of the gill filaments of pleuronectids.—*W. M. Tattersall.*

2510. SMIRNOV, SERGIUS. Zur Kenntnis der Copepodengattung Eurytemora Giesbr. *Zool. Anz.* 94(5/8): 194-201. 7 fig. 1931.—The author considers that the so-called first joint of the exopodite of the 5th foot in the ♀ of *Eurytemora* originated from 2 completely fused "Glieder." *Eurytemora* kieferi* (p. 196), Kamchatka. *E. pacifica** Satô, 1913. English translation of original diagnosis given.

ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Assistant Editor*

(See also in this issue Entries (History) 10; (Spermatogenesis) 27; (Pollination) 33, 35; (Plant disease vectors) 82, 90, 126; (Ecology) 32, 257, 272; (Physiology) 218, 285, 1004, 1173; (Metabolism) 415, 576; (Rate of growth) 577, 598; (Reproduction) 903; (Regeneration) 964; (Sense organs) 980, 989; (Veterinary) 1327; (Diseases) 1345, 1346, 1361; (Animal disease vectors) 1695, 1696, 1708, 1711, 1727, 1747, 1749, 1800, 1802; (Parasites) 1716, 1725, 1726, 1729, 2014, 2348, 2355; (Forestry) 1956)

COLEOPTERA

ANDREW J. MUTCHLER, *Editor*

(See also in this issue Entries 1844, 1862, 1873, 1878, 2757)

2511. ANDREWES, H. E. Papers on Oriental Carabidae. XXIV. *Ann. and Mag. Nat. Hist.* 6(36): 656-668. 1930.—A list of new sp. from Sumatra: *Clivina* pfisteri (p. 657); *Tachys* brunniceps (p. 658); *Callistomimus* asper (p. 658), type in British Mus.; *Amblystomus* chalceus (p. 659); *Lesticus* lautus (p. 660), type presumably in author's coll.; *Odacantha* pusilla (p. 661); *Mastax* pygmaea (p. 662), [dep. not definitely stated]; *Catascopus* clarus ♂ (p. 663); *Dolichoctis* polygramma (p. 664); *D.* microdera ♂ (p. 665); *D.* globosa (p. 666), type in Brit. Mus.; *D.* torquata (p. 667), type in Deutsch. Ent. Mus. Unless otherwise stated, types are in author's coll.

2512. ANDREWES, H. E. Fauna Buruana; Coleoptera, Fam. Carabidae. *Treubia, Suppl.* 7(6): 331-347. 1930.—This paper gives an account of the carabid fauna of Buru, descriptions of new spp., and a key to the spp. of *Colpodes* found in Buru. *Colpodes* toxopei (p. 338); *C.* cimmerius (p. 339); *C.* felix (p. 340); *C.* phoenix (p. 340); *C.* acanthodes (p. 341); *C.* chalceus (p. 342); *C.* angustus (p. 343); *Dicranoncus* bicolor (p. 344); *Euplynes* guttatus (p. 344); *Perigona* pygmaea (p. 345); *P.* brunnea (p. 346); *Holcoderus* trichias (p. 346). Types in author's coll.

2513. ARROW, GILBERT J. A revision of the African Coleoptera belonging to the family Languriidae. *Proc. Zool. Soc. London* 1929(1): 1-15. 1 col. pl. 1929.—The genera are characterized, and there is a complete catalog (61 spp.) with localities and citations of original descriptions. There is a key to the spp. of *Penolanguria.* The following are described as new: *Stenolanguria caudata* v. acuta* (p. 2), Uganda; *Caenolanguria* forcipata (p. 2), Tanganyika Terr.; *C.* infoveata (p. 3), Portuguese East Africa; *Ischnolanguria* crassicollis* (p. 3), Sierra Leone; *Anadastus* canaliculatus* (p. 5), N.W. Rhodesia and Nyasaland; *A.* dollmani* (p. 6), N.W. Rhodesia and Uganda; *A.* terminalis* (p. 6), Rhodesia; *A.* ephippiatus* (p. 6), Belgian Congo; *A.* felix* (p. 7), Belgian Congo; *A.* plagiatus* (p. 7) and *A.* rufocinctus* (p. 8), N. W. Rhodesia; *A.* turneri (p. 8), Zululand; *A.* debilis* (p. 8), N. W. Rhodesia and Zambesi; *A.* elytralis* (p. 9), *A.* solidus (p. 9), and *A.* sericeus (p. 10), all 3 Northern Rhodesia; *A.* congoensis* (p. 10), Belgian Congo; *A.* apicicornis (p. 10), Cape Province and S. Rhodesia; *A.* latipennis* (p. 11), Uganda; *A.* subspinosus (p. 11), Belgian Congo; *Microlanguria* natalensis (p. 12), Cape Province, Natal, and Zambesi; *Penolanguria* ovalipennis* (p. 13), S. Africa and Natal. *Phalycladoxena* Kraatz (=*Thalliscllodes* Arrow). Types are in British Mus.—*W. T. M. Forbes.*

2514. BARBER, C. T. Note on the alleged occurrence of fossil eggs at Yenangyaung, Upper Burma. *Rec. Geol. Survey India* 62(4): 454-455. 1930.—Not reptilian eggs, as first supposed, but the deeply embedded calcareous cocoons of a Recent beetle (genus *Ploceaderus*, family Cerambycidae).

2515. BEARE, T. HUDSON. Aphodius lividus Ol. at St. Helena. *Ent. Month. Mag.* 65(784): 209. 1929.

2516. BLAIR, K. G. A note on the synonymy of Stigmodera (Themognatha) fusca Saund. and parvicollis Saund. *Ent. Month. Mag.* 65(784): 201-203. 1929.—The synonymy of various disputed species is stated as follows: *S. fusca* Saund. (=*S. parryi* Hope 1846, p. 210, nec. p. 103); *S. f.* ssp. *pubicollis* Waterh. (=*S. lateritia* Thoms.,=*S. f.* var. *major* Waterh. ♀.=*S. f.* var. *queenslandica* Ob.); *S. parvicollis* Saund. (=*S. picea* Kerr. ♀) —*H. M. Gilkey.*

2517. BRYANT, G. E. New species of African Megalopidae (Col., Phytophaga). *Ann. and Mag. Nat. Hist.* 6(36): 623-638. 10 fig. 1930.—A key to the spp. of *Colobaspis* is given, including *C.* nyassae* (p. 625), Nyasaland; *C.* carinata* (p. 627), Northern Rhodesia; *C.* hargreavesi* (p. 628) and *C.* neavei* (p. 629), Uganda; *C.* dollmani* (p. 630), Northwestern Rhodesia; a key

to the spp. of *Antonaria* is given, including *A.* **coriacea** (p. 633), Uganda; *A.* **nigropunctata*** (p. 634), Uganda and S. Nigeria; *A.* **villosa*** (p. 635), N. W. Rhodesia and Nyasaland; *A.* **ugandensis*** (p. 637), Uganda [type dep. not stated]. Unless otherwise mentioned, types are in British Mus. *A. fulvicornis* is removed from the synonymy of *Leucastea senegalensis*.

2518. BURGEON, L. Description de Graphipterus nouveaux. *Bull. & Ann. Soc. Ent. Belgique* 68(3/5): 114-120. 1928.—*G.* **congoensis** (p. 114), with v. **ghesquierei** (p. 115), *G.* **griseolineatus** (p. 115), and *G.* **ellipticus** (p. 115), all 4 Belgian Congo; *G. sennaariensis* ssp. **bayeri** (p. 116) and *G. obsoletus* ssp. **elgonensis**, Kenya Colony; *G.* **heterus** (p. 117), Mozambique, type in Berlin Mus.; *G.* **horni** (p. 117), Tanganyika; *G.* **bennigseni** (p. 118), S. W. Africa, type in Berlin Mus.; *G.* **duvivieri** (p. 119), Tanganyika, type in Brussels Mus.; *G.* **dymorphus** (p. 119), Belgian Congo. Unless otherwise specified, types are in Belgian Congo Mus.

2519. CAMERON, MALCOLM. Coleoptera. Staphylinidae. Vol. I. In: The Fauna of British India, including Ceylon and Burma. xvii+471. 1 map. 3 pl. 134 fig. Taylor & Francis, London, 1930.—A systematic enumeration, including generic and specific descriptions, distribution, and keys to tribes, subfamilies, genera, and spp. The present volume treats the subfamilies Micropeplinae, Oxytelinae, Oxyporinae, Megapolinae, Steninae, and Euaesthetinae. The following are proposed as new: *Apatetica* **indica*** (p. 29), Bhutan, type in British Mus.; *A.* **intermedia** (p. 30), Burma; *A.* **caeruleipennis*** (p. 32), Assam, type in Brit. Mus.; *A.* **birmana** (p. 33), Upper Burma, type in Brit. Mus.; *Lispinus* **andrewesi** (Fauvel, in litt.) (p. 56), Nilgiri Hills [S. India]; *Eleusis* **nilgiriensis** (p. 77), *E.* **andrewesi*** (p. 79), and *E.* **denticollis*** (Fauvel, in litt.) (p. 80), all 3 Nilgiri Hills; *E.* **beesoni** (p. 81), United Provinces, Brit. India; *E.* **secreta** (p. 87), U. Prov.; *Priochirus* (*Cephalomerus*) **rubiginosus*** (p. 105), Sikkim and Assam; *P.* (*C.*) **andrewesi*** (Fauvel, in litt.) (p. 107), Nilgiri Hills; *P.* (*Plastus*) **crassisornis*** (p. 113), India, type in Brit. Mus.; *P.* (*P.*) **eucerus*** (p. 114), Sikkim; *P.* (*P.*) **taprobanus*** (p. 116), Ceylon; *P.* **birmanus*** (p. 117), Burma, type in Brit. Mus.; *Thoracochirus* **assamensis** (p. 120), Assam; *Phyllodrepa* (*Dropephylla*) **monticola** (p. 137), Chakrata; *P.* (*D.*) **flavipennis** (p. 138), Dehra Dun; *Phloeonomus* **nigritulus** (p. 143), Assam; *P.* **assamensis** (p. 145), Assam; *P.* (*Phloeostiba*) **temporalis** (p. 148); **PARALEASTER** (p. 169) (Oxytelini), related to *Deleaster*, with *P.* **longipennis*** (p. 170), Assam; *Trogophloeus* (*Thinodromus*) **assamensis*** (p. 181), Assam; *T.* (*Th.*) **pubicollis** (p. 182), Assam; *T. siamensis* v. **siwalikensis** (p. 187), Siwaliks; *T.* (*Boopinus*) **chatterjeei** (p. 188), Central Provinces; *T.* (*B.*) **congruus** (p. 188), Central Provs.; *T.* **granulatus** (p. 189), *T.* **laticeps** (p. 190), *T.* **coriaceus** (p. 190), *T.* **flavipennis** (p. 191), and *T.* **palitans** (p. 192), all 5 U. Provs.; *T.* **pusae** (p. 192), Pusa; *T.* **gratus** (p. 193), U. Provs.; *T.* **piceicollis** (p. 193), Central Provs.; *T.* **abnormalis** (p. 194), Almora [Brit. India]; *T.* **ruficornis** (p. 195), Ceylon; *T.* **torrentum** (p. 196), U. Provs.; *T.* **trivialis** (p. 197), Central Provs.; *T.* **vagans** (p. 198), U. Provs.; *T.* **bengalensis** (p. 199), Pusa; *Apocellagria* **tenuicornis** (p. 203), Assam; *Oxytelopsis* **andrewesi*** (p. 207), Nilgiri Hills; *Oxytelus* **aeneotinctus** (p. 215) and *O.* **sordidus** (p. 216), U. Provs.; *O.* (*Tanycraerus*) **almorensis*** ♂ (p. 221), Almora; *O.* (*T.*) **discalis*** (p. 222), U. Provs.; *O.* (*T.*) **dohertyi** (p. 223), Manipur; *O.* (*T.*) **pallidipennis*** (p. 224), U. Provs.; *O.* (*T.*) **nilgiriensis*** ♂ (p. 227), Nilgiri Hills; *O.* (*T.*) **foetidus** (p. 230), U. Provs.; *O.* (*Anotylus*) **birmanus** (p. 240), Burma and Assam; *O.* (*A.*) **opacellus** (p. 243), Pusa; *O.* (*A.*) **andrewesi** (p. 244), Nilgiri Hills; *O.* (*A.*) **masuriensis** (p. 244), Mussoorie and Simla Distrs.; *O.* (*A.*) **occultus*** (p. 245), U. Provs.; *O.* (*A.*) **simlaensis** ♂ (p. 247), Simla; *O.* (*A.*) **pauper** (p. 249), Mussoorie and Ceylon; *O.* (*A.*) **intermedius** (p. 249), Mussoorie; *O.* (*A.*) **pumiloides** (p. 250), Chakrata Distr.; *O.* (*A.*) **kraatzi** (*O. pulcher* Kr. not Grav.) (p. 251); *O.* (*A.*) **laetus*** (p. 252), U. Provs.; *O.* (*A.*) **alternans*** (p. 253), Mussoorie, in fungus; *O.* (*A.*) **rubicundus*** (p. 255), U. Provs., in rotting fruit; *O.* (*A.*) **ruber** (p. 256), Burma; *O.* (*A.*) **rubidus*** (p. 259), U. Provs., in fungus; *O.* (*A.*) **frater** (p. 262), Mussoorie; *Platystethus* **indicus** (p. 267), U. Provs.; *Bledius* **bison** ♂ (p. 273), East India, type in Brit. Mus.; *B. verres* v. **monachus** (Bernh. in litt.) (p. 275), Siwaliks; *B.* (*Pucerus*) **rhinoceros** (p. 277), Assam; *B.* (*P.*) **transversus** ♂ (p. 277), U. Provs.; *B.* **fuscicornis*** (p. 280), Almora; *B.* **indicus** (p. 282), Kumaon; *B.* **birmanus** (p. 283), Burma; *B.* **beesoni** (p. 285), U. Provs.; *Thinobius* **simlaensis** (p. 289), Simla Hills; *Osorius* **birmanus** (p. 301), Burma; *Mimogonus* **andrewesi** (p. 305), Nilgiri Hills; *Holotrochus* **chatterjeei** (p. 308), U. Provs., bred from *Odina wodier*; *Oxyporus* **birmanus** (p. 311) and *O.* **stigmaticus** (p. 311), Burma; *O.* **apicata*** (*O. apicalis* Cam. preocc.) (p. 311); *O.* **cephalotes** (p. 313), *O.* **variegatus** (p. 313), *O.* **dohertyi** (p. 314), and *O.* **nigricornis** (p. 314), all 4 Burma; *Stenus* **tortuosus** ♀ (p. 324), Chakrata Distr.; *S.* **assamensis** ♂ (p. 335), Naga Hills; *S.* **cyaneovirens** ♂ (p. 335), Assam; *S.* **chatterjeei** ♂ (p. 337), Assam; *S.* **aeratus*** ♂ (p. 337) and *S.* **plumbeus** ♀ (p. 339), Chakrata Distr.; *S.* **musicola** (p. 339) and *S.* **morosus** (p. 340), Simla Hills; *S.* **viridescens*** (p. 340) and var. **almorensis** (p. 341), Chakrata Distr.; *S.* **nigripes** ♀ (p. 342), Central Provs.; *S.* **hirsutus** ♂ (p. 342), Siwaliks; *S.* **inconspicuus** ♂ (p. 342), *S.* **peratus*** ♂ (p. 344), and *S.* **simlaensis** (p. 345), all 3 Simla Hills; *S.* **beesoni** ♂ (p. 346), Chakrata Distr.; *S.* **lugubris** ♀ (p. 347), India; *S.* (*Hypostenus*) **rajpurianus*** (p. 353), U. Provs.; *S.* (*H.*) **flavostigma*** (p. 356), Assam; *S.* (*H.*) **sinuatus*** (p. 360), Burma; *S.* (*H.*) **tuberculicollis*** (p. 361), Assam; *S.* (*H.*) **persimilis*** (p. 367), Burma; *S.* (*H.*) **frater** ♂ (p. 370), Chakrata Distr.; *S.* (*Mesostenus*) **masurianus** ♂ (p. 388), U. Provs.; *S.* (*M.*) **obliquenotatus*** (p. 390) and *S.* (*M.*) **chakratianus*** (p. 392), Chakrata Distr.; *S.* (*M.*) **maculifer*** (p. 395), Assam; *S.* (*M.*) **submetallicus*** (p. 400), Chakrata Distr.; *Dianous* **ocellatus*** (p. 430) and *D.* **aeneus*** (p. 442), Assam; *Stenaesthetus* **quadrisulcatus*** (p. 446), Almora; footnote (p. 445) refers all spp. of *Dimerus* Fivri described by Broun from New Zealand to this genus; addenda, with amended keys pp. 451-461; *Eupiestus spinifer* v. **unicolor** (p. 451), Rangirum; *Lispinus* **dipterocarpi** (p. 452), Middle Andamans; *L.* **assamensis** (p. 452), Assam; *Eleusis* **simulans** (p. 452) and *E.* **birmana** (p. 453), Burma; *Priochirus* (*Plastus*) **sikkimensis** (p. 454) and *P.* (*P.*) **gardneri** (p. 454), Bengal; *Geodromicus* **kashmirensis** (p. 455), Kashmir; *G.* **similis** (p. 455), Kashmir; *Oxytelus* (*Anotylus*) **gardneri** (p. 456), Darjeeling, ex *Evodia fraxinifolia*; *Osorius* **gardneri** (p. 456), *O.* **lopchuensis** (p. 457), and *Mimogonus* **niger** (p. 457), all 3 Darjeeling; *Stenus* **almoranus** ♀ (p. 458), Almora; *S.* (*Hypostenus*) **obliteratus** ♀ (p. 458), *S.* (*Mesostenus*) **tenuimargo** (p. 459), *S.* (*M.*) **lopchuensis** ♀ (p. 460), and *S.* (*M.*) **gardneri** (p. 460), all 4 Darjeeling. An index of generic and specific names, arranged alphabetically, with synonyms, concludes the paper.

2520. CARTER, H. J. Revision of Athemistus and Microtragus (fam. Cerambycidae) with notes and descriptions of other Australian Coleoptera. *Proc. Linn. Soc. N. S. W.* 51(4): 492-516. 7 fig. 1926.—There is a preliminary discussion of synonymy in the families Buprestidae and Dryopidae. In the Cerambycidae, a revision is made of the genus *Athemistus*, of which there are 23 spp., 13 new: *A.* **macleayi** (p. 495), Queensland, in Australian Mus.; *A.* **maculatus** (p. 496), *A.* **aborigine** (p. 496), *A.* **harrisoni** (p. 497), *A.* **luciae** (p. 497), and *A.* **punctipennis** (p. 497), all 5 New South Wales, and in Macleay Mus.; *A.* **laevicollis** (p. 498), N. S. W., in Nation. Mus., Melbourne; *A.* **approximatus** (p. 498), Victoria, in Nat. Mus.; *A.* **puncticeps** (p. 499), N. S. W., in Nat. Mus.; *A.* **tricolor** (p. 499), Victoria, in Lea coll.; *A.* **barretti*** (p. 500), N. S. W., in Carter coll.; *A.* **mastersi** (p. 500), Queensland, in Macleay Mus.; table of spp. of *Athemistus; Microtragus*, revision of spp.; *M.* **echinatus** (p. 504) and *M.* **bimaculatus** (p. 505), Queensland, in S. Australian Mus. These **longicorns**

strikingly resemble the phalidurine weevils in habitat, habit, wide distribution, and great variability. *Somatidia* australiae (p. 506), N. S. W., in Nation. Mus.; *Helmis* barretti (p. 506), *H.* cuprea (p. 507), *H.* maculata (p. 507), and *H.* purpurea (p. 508), all 4 N. S. W., and in Carter coll.; *Platydema* nigrosuffusum (p. 509), N. S. W., Carter coll.; *Docalis* elongatus (p. 509), Western Australia; in Macleay Mus.; *Mesomorphus* meridianus (p. 509), S. Australia, in British Mus.; *Ulodes* tuberculatus (p. 510), Queensland, in Queensland Mus.; *Nyctozoilus* macleayi* (p. 511), N. S. W., Macleay Mus.; *N.* nicholsoni (p. 511), N. S. W., Macleay Mus. [since thrown into synonymy]; *Cardiothorax* consimilis* (p. 512), N. S. W., in Carter coll. [since thrown into synonymy]; *Adelium* bassi (p. 512), Bass Straits, in Austr. Mus.; *A.* brevi (p. 513), *Licinoma* planata (p. 513), and *Amarygmus* puteolatus (p. 514), all 3 N. S. W., in Carter coll.; *A. porosus* Blkb. (=*A. regius* Carter); *Chromomoea* varicornis (p. 514), Queensland, in Queensland Mus.; *Tanychilus* aeratus (p. 515), Queensland, in Austr. Mus.; *Hybrenia* substriata (p. 515) and *Ommatophorus* illidgei (p. 516), both Queensland, and in Carter coll.; *O. atripes* v. bicolor (p. 516), N. S. W., in Carter coll.—*H. J. Carter.*

2521. **CHITTENDEN, F. H.** New species of North American weevils of the genus Lixus. *Proc. U. S. Nation. Mus.* 77(18): 1-26. 1 pl. 1930.—*L.* albisetiger (p. 2), Texas, type in Illinois State Nat. Hist. Survey; *L.* aspericollis (p. 3), Kansas; *L.* coloradensis ♀ (p. 4) and *L.* perstriatus (p. 5), Colorado; *L.* acirostris ♀ (p. 6), North Carolina; *L.* ordinatipennis ♀ (p. 7), Louisiana; *L.* quadratipunctatus (p. 8), Colorado; *L. sylvius* v. profundus (p. 9), District of Columbia and Georgia to Missouri and Texas, type in Canadian Nat. Coll.; *L.* crassipunctatus ♂ (p. 9), Arizona, type in Univ. Kansas Mus.; *L.* ivae (p. 10), reared from stems of *Iva ciliata* and *Ambrosia* sp., Louisiana; *L.* dissimilis ♂ (p. 11), Georgia; *L.* tricristatus* (p. 12), ovipositing on *Bidens* sp., Iowa and New York to Arkansas and Alabama; *L.* planicollis ♂ (p. 13), Iowa and Louisiana; *L.* pervestitus* (p. 14), Arizona and New Mexico; *L.* flexipennis ♀ (p. 15) and *L.* buchanani ♀ (p. 16), Iowa; *L.* plucheae (p. 17), Texas, breeding in *Pluchea camphorata; L. fossus* v. ocellatus (p. 18), New York and New Jersey; *L.* capitatus ♂ (p. 19), from *Ambrosia trifida* Maryland; *L.* lodingi* (p. 20), Florida, Alabama, and Louisiana; *L.* regularipennis (p. 21), Illinois and District of Columbia to Louisiana and Alabama; *L.* cleonoides (p. 22), Texas, on *Helenium microcephala; L.* mephitis ♀ (p. 23), South Carolina; *L.* elephantulus ♀ (p. 24), Illinois, type in Illinois State Nat. Hist. Survey. Types, unless otherwise specified, in U. S. Nat. Mus.

2522. **CROS, AUGUSTE.** Notes sur les larves primaires des Meloidae. (3e série.) *Ann. Soc. Ent. France* 98: 193-222. 1929.—The chief distinctive characters of Meloidae larvae are given for the following: *Zonitis bilineata,* the larva of American spp. resembling the palearctic spp. of *Z. praeusta* F. and *Z. immaculata* Ol.; *Hornia minutipennis,* resembling *H. nymphoides* larvae of Morocco and Algeria; *Meloe proscarabaeus,* the larvae observed clinging to the hymenoptera *Cerceris, Halictus,* and *Andrena; Meloe* sp., resembling *proscarabaeus; M.* ? *violaceus,* from Austria; *M. brevicollis,* from S. Germany; *M. variegatus; Pomphopoea sayi,* resembling closely larvae of *Lytta vesicatoria* and of the genera *Lydus* and *Oenas; Zonabris variabilis; Z. 12-punctata* misidentified larva, which belongs to *Z. geminata; Z. geminata;* supplementary note on *M.* sp., near *proscarabaeus,* causing damage to beehives in California.—*A. Cros* (*transl. by C. Zeimet*).

2523. **DEVILLE, J. SAINTE CLAIRE.** Note relative à l'aire de dispersion de la Nebria complanata. *Bull. et Ann. Soc. Ent. Belgique* 70(3/4): 144-145. 1930.—Distributional notes.

2524. **EGGERS, H.** Neue Xyleborus-Arten (Col. Scolytidae) aus Indien. [In German.] *Indian Forest Rec.* (*Entomology Ser. pp. 1-32*) 14(9): 177-208. 1930.—Descriptions are given of 41 new spp. and 3 varieties of Indian *Xyleborus,* viz. lineatus ♀ (p. 177); subnepotulus ♀ (p. 178); mussooriensis (p. 179); sulcatus ♀ (p. 180); lantanae ♀ (p. 180); longidens ♀ (p. 181); terminatus ♀ (p. 182); mesuae ♀ (p. 182); eugeniae (p. 183); resecans ♀ (p. 184); sampsoni ♀ (p. 184); glaber ♀ (p. 185); subsimilis ♀ (p. 186); *mancus* v. formosanus ♀, Formosa (p. 186); pseudocomans ♀ (p. 187); metacomans ♀ (p. 188); rufobrunneus n. n. (*X. similis* Eggers) (p. 189); *r.* var. dihingensis (p. 189); moestus ♀ (p. 189); *riehli* Eichh., ♂ described; brevidentatus ♀, Andamans (p. 190); quadridens ♀, Borneo (p. 191); malloti (p. 192); rudis ♀ (p. 192); ovalicollis ♀ (p. 193); tristis ♀ (p. 194); granulipennis ♀ (p. 194); assamensis ♀ (p. 195); sibsagaricus ♀ (p. 196); dalbergiae ♀ (p. 196); incurvus ♀ (p. 197); *sordicaudulus* v. peguensis ♀ (p. 198); corpulentus (p. 198); mucronatulus ♀ ? (p. 199); birmanus ♀ (p. 200); suturalis ♀ (p. 200); protensus ♀, Java (p. 201); subgranulatus ♀ (p. 202); spinipennis ♀ (p. 202); subspinosus ♀ (p. 203); mus ♀ (p. 203); minutissimus ♀ (p. 204); chrysophylli ♀ (p. 205); distinguendus ♀ (p. 205); pinicola ♀ (p. 206); PSEUDOXYLEBORUS (p. 206), type *P.* beesoni ♀, Burma (p. 207). Types are in British Mus.—*C. F. C. Beeson.*

2525. **FISHER, W. S.** Notes on the rhinotragine beetles of the family Cerambycidae, with descriptions of new species. *Proc. U. S. Nation. Mus.* 77(19): 1-20. 1930.—These beetles are remarkable for their generally abbreviated elytra and for the mimetic resemblance of many of them to other Coleoptera and to Hymenoptera. There are notes on the distribution, taxonomy, and life histories of several previously known forms. *Odontocera* triplaris (p. 3), Colombia, from dead wood of *Triplaris; O.* buscki (p. 4), Panama and Canal Zone; *O.* zeteki (p. 6), Canal Zone; *O.* nevermanni ♂ (p. 8), Costa Rica; *O.* darlingtoni ♀ (p. 9), Colombia, from dead wood of *Triplaris; Acyphoderes* rufofemorata ♀ (p. 12), Bahia, Brazil; *Bromiades* meridionalis ♀ (p. 14), *Phygopoda* manni (p. 15), *Tomopterus* vittipennis ♂ (p. 17), and *T.* similis ♂ (p. 19), all 4 Bolivia. Types in U. S. Nat. Mus.

2526. **FLEUTIAUX, E.** Melasidae nouveaux d'Indochine. *Bull. Soc. Zool. France* 53: 370-373. 1928.—*Dromaeolus* semisericeus (p. 370); *D.* tonkinensis (p. 371); *D.* granosus (p. 371); EPIPLEURUS (p. 372), near *Temnillus* and *Temnus,* erected for *E.* coomani (p. 372); *Entomophthalmus* coomani (p. 372); *Raapia galboides,* also recorded. All from Tonkin.

2527. **FLEUTIAUX, E.** Two new species of Coleoptera from India. [In French.] *Indian Forest Rec.* (*Entomology Ser. pp. 21-22*) 14(6): 153-154. 1930.—Describes *Fornax* carissae ex *Carissa,* and *Cardiophorus* gardneri from larvae found in sand. Types in British Mus.—*C. F. C. Beeson.*

2528. **GARDNER, J. C. M.** Immature Stages of Indian Coleoptera (6). *Indian Forest Rec.* (*Entomology Ser. pp. 1-30*) 14(4): 103-132. 6 pl. 1929.—Differential characters of the larvae of *Calosoma indica, C. beesoni**, and *C. himalayanum** are mentioned. Descriptions are given of larvae of: *Nebria cameroni**; *Diceromerus orientalis**; *Idgia melanura**; *I. flavibuccis**; *Atractocerus reversus**; *Acmaeodera kerremansi* v. *fasciatipennis**; *Schoutedenia apicata**; *Chrysochroa eburnea* v. *albiventris**; *Chrysochroa gratiosa**; *Capnodis miliaris**; *Sphenoptera konbirensis**; *Melanophila coriacea**; *Anthaxia** (generic characters); *Chrysobothris andamana; Belionota prasina**; *Agrilus derrisi**; *A. gardneri**; *Coraebus cingulatus**; *Setenis* (generic characters); *S. cribrifrons**; *S. confusa; S. furva; Derosphaerus* (generic characters); *D. crenipennis**; *Lyprops indicus** (also pupa*); *Falsosessinia sculpticollis** (also pupa); *Oniticellus cinctus* (also egg); *Onitus falcatus.* A characterization, and a key to 11 genera, are given for larvae of the Buprestidae. There is a note on *Serphus gravidator* v. *Partipes**, a parasite of the larva of *Nebria cameroni.*—*J. C. M. Gardner.*

2529. **GARDNER, J. C. M.** Some new Indian Cerambycidae. *Indian Forest Rec.* (*Entomology Ser. pp. 23-33*) 14(7): 155-165. 1 pl. 1930.—Descriptions are given

of the ♀ of *Cyriopalpus wallacei* Pasc., ex *Pentacme suavis* (p. 155), and of the following new spp.: *Perissus* **dalbergiae** ex *Dalbergia sissoo* (p. 155); *Olenecamptus* **anogeissi** ex *Anogeissus latifolia* (p. 156); *Cylindrepomus* **andamanicus**, Andaman Is. (p. 158); *Atimura* **combreti** ex *Combretum decandrum* (p. 158); *Pothyne* **combreti** ex *Combretum decandrum* (p. 160); *P.* **acaciae** ex *Acacia gageana* (p. 160); *P.* **convexifrons** ex *Saccharum spontaneum* (p. 29); *Serixia* **andamanica**, North Andaman, ex *Myristica andamanica* (p. 162); *Glenea* **gahani***, Burma (p. 162); *G.* **plagiata*** (p. 163); *G.* **bifasciata*** (p. 164); *Scytasis* **sericea** Burma (p. 164). Types are in British Mus.—*J. C. M. Gardner.*

2530. **HEYMONS, R., und H. von LENGERKEN (unter Mitwirkung von M. BAYER). Studien über die Lebenserscheinungen der Silphini (Coleopt.) VI. Blitophaga undata Müll. (Buckelstreifiger Rübenaaskäfer).** *Zeitschr. Wiss. Biol. Abt. A, Zeitschr. f. Morph. u. Ökol. Tiere* 18(1/2): 170-188. 5 fig. 1930.—The imago is almost exclusively herbivorous, taking animal food only occasionally. On a pure animal diet the egg production is greatly diminished. The beetles were repeatedly found in nature on grasses and grain-plants, where they climb to a height of 0.75 m. The digestive tract is described. The eggs are laid in small holes in the ground and as in other Siphini there is an embryonic moult. The larvae devour the tips of young grain-plants, such as barley. The number of eggs, the egg-depositing apparatus, the death, hibernation, and development of the egg and embryo, the development of the larva, morphology of the 3 larval stages, pupation, and appearance of the young beetles are described. The larval instars, pupa, and imago are figured.—*R. Heymons (transl. by L. H. Hyman).*

2531. **HUSTACHE, A. Curculionides de la Guadeloupe. Première partie.** In: **Faune Colonies Françaises** 3(3): 165-267. 8 fig. 1929.—This report is based upon a study of 10,000 specimens, collected chiefly by G. Dufau. 124 genera are represented, including 8 new ones, and 314 spp., of which 190 are new. The island is still incompletely explored for Curculionidae. The keys cover tribes, genera, species, and varieties. Previously known spp., as well as new ones, are described. The following are new, with types in Fleutiaux coll., Mus. Paris, and author's coll. *Auletobius* (*Eumetopon*) **guadelupensis*** (p. 178); *Apion* **guadelupense** (p. 179); *A.* **dufaui** (p. 180); *Pandeleteius* **testaceipes** (p. 181); *Diaprepes abbreviatus* v. **guadelupensis** (p. 184), and var. **desideradensis** (p. 184); *Polydrosus* **latitarsis** (p. 185); *P.* **guadelupensis** (p. 186); *Litostylus* Faust (=*Germariella* Champ.); *Exophalmodes* Pierce (=*Exophthalmus* Champ.); *Prepodes* **dufaui** (p. 198); *P. marmoreus* v. **marmoratus** (p. 198); *Promecops* **sinuatocollis** (p. 202); *Hilipus* **carinifrons** (p. 205); *Ozoctenus* **dufaui** (p. 208); **DORYTOMORPHA** (p. 209), type *D.* **tonsa*** (*Euscepes tonsus* Chevr.) (p. 209); *Anchonomorpha* **guadelupense** (p. 211), **PARANCHONUS** (p. 212), somewhat similar to *Anchonus*, type *P.* **verrucosus** (p. 213); *P.* **ovatus*** (p. 214); *P.* **latirostris** (p. 214); **DUFAUIELLA** (p. 215), resembles *Paranchonus*, type *D.* **heterorostris*** (p. 215); *Anchonus* **scrabrosus** (p. 229); *A.* **tuberosus** (p. 230); *A.* **spinosus** (p. 231); *Rhyparonotus* **insularis*** (p. 236); *Ceratopus* **fulvus** (p. 239); *Catiline* **tuberculatus** (p. 240); *C.* **elongatus** (p. 241); *Neochetina* **gaudelupensis** (p. 243); *Phyllotrox* **nigriventris** (p. 245); *P. n.* var. **nigripennis** (p. 245); *P.* **callosipennis** (p. 245); *Udeus* **muticus** (p. 246); *Anthonomus* (*Leptarthrus*) **dufaui** (p. 250); *A.* (*L.*) **spinipennis** (p. 251); *A.* (*Anthonomus*) **flexuosus** (p. 253); *A.* (*A.*) **filicornis** (p. 257), type in author's coll.; *A.* (*A.*) **convexifrons** (p. 257); *A.* (*A.*) **guadelupensis** (p. 258); *A. homunculus* v. **différens** (p. 260); *A.* (*A.*) **bimaculatus** (p. 261); *A.* (*A.*) **squamulatus** (p. 262); *A.* (*A.*) **thyasocnemoidus** (p. 263); *Pseudanthonomus* **sylvaticus** (p. 264); *P.* **bellus** (p. 264); *P.* **seriatus** (p. 265); *P.* **pusillus** (p. 266).

2532. **JEANNEL, R. Bathysciinae nouveaux d' Espagne.** *Butl. Inst. Catalana Hist. Nat.* 10(6): 90-91. 1930.—*Anillochlamys moroderi* spp. **subtruncatus** ♀ (p. 90); *A.* **baguenai** ♂ (p. 91), type in coll. R. Zariquiey; *Speophilus* (s. str.) **españoli** ♀ (p. 91), types in coll. Jeannel and coll. R. Zariquiey. All from Spain.

2533. **KLEINE, R. Bibliographie der Brenthidenliteratur. (Col.).** *Stettiner Ent. Zeitung* 91(2): 195-213. 1930.—A list of works by 103 authors from many publications, dating from 1784 to 1929.

2534. **KROGERUS, ROLF. Studien über Choleva-Arten. 1.** *Notulae Ent.* [*Helsingfors*] 6(1): 1-9. 8 fig. 1926.—Revision of misidentified spp. with descriptions of new spp. and locality corrections. Key is given to ♀♀ and ♂♂. *Choleva* **aquilonia*** (p. 5); *C. a.* var. **brevicollis** (p. 6); *C. sibirica* Jeann. (=*C. pallida* Poppius) is not a *Choleva* but belongs to *Catops.*

2535. **LEVER, R. J. A. W. Notes on nomenclature of some neotropical Chrysomelidae (Coleoptera), with descriptions of two new species.** *Ann. and Mag. Nat. Hist.* 6(36): 668-671. 5 fig. 1930.—*Diabrotica tripunctata* Fabr. (=*D. melanocephala* Fabr. 1798 and *D. m.* 1775 (=*D. vittata*); *Oedionychis* **abercrombyi** (*O. illigeri* Jacoby) (p. 669); *Diabrotica* **rubrimarginata*** (p. 669), type in Brit. Mus., and *Dacirys* **trinidadensis*** (p. 671), type in National coll., both Trinidad, and on *Crotalaria juncea.*

2536. **MAMAJEV, K. Zur Elateriden-Fauna des Kamensky-Bezirkes des sibirischen Gebiets (südwestliches Sibirien, früheres Gouvernement Tomsk).** *Zeitschr. Österr. Ent.-Vereines* 13(6): 64; (7): 71-72. 1928.—A list of 24 spp., based on a collection made in this district, 1925-1927.

2537. **MARCU, O. Ein neuer Beitrag zur Kenntnis der Geschlechtsunterschiede der Stridulationsorgane einiger Curculioniden.** *Zool. Anzeiger* 91(1/4): 75-81. 5 fig. 1930.—Descriptions and figures of these organs in the genera *Lepyrus, Hylobius, Pissodes, Pachytychius,* and *Cryptorrhynchus.*

2538. **MARCU, O. Beitrag zur Kenntnis der Stridulationsorgane von Prionus coriarius L.** *Zool. Anzeiger* 92 (3/4): 65-66. 1 fig. 1930.—In this species the organ is not elytro-metatibial, as supposed, but of a new type, elytro-metafemoral.

2539. **[OBRAZTSOV, N. S.]** ОБРАЗЦОВ, Н. С. К распространению и биологии **Gibbium boieldieui Levr. [Propagation and biology of G. boieldieui.]** Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 22 (1/2): 134-136. 1 fig. 1928.—This sp., hitherto known in Russia only from the Crimea, occurs in Nikolaef (Ukraine). It is found in houses, March to May, in dark rooms, appearing only in darkness or in artificial light. The beetle, in captivity, did not touch wool, leather, cotton, or paper, but preferred as food dried insects, bread, and mould on organic substances, and, less willingly, cheese, skin of sausage, and cork. The copulation period began the middle of April and the copulae lasted from several to 20 minutes. The oviposition was observed at the end of June. The eggs are white, measuring 0.6-0.7 mm. The white larvae, 3-4 mm., are covered with dense stiff hairs. When at rest, or feeding, they lie in a curved position (like Scarabaeidae larvae) and feed on the same substances as the adults. After 3-5 weeks they form white, spheric, silken cocoons, 2-2.5 mm., without the addition of any foreign material. The beetles emerge after 1½-3 weeks and live during the summer without feeding.—*G. Maydell.*

2540. **OHAUS, F. Neue brasilianische Dynastinen. (Col. Lamell.)** *Stettiner Ent. Zeitung* 91(2): 261-265. 3 fig. 1930.—*Brachysiderus* **minicola** (p. 261); *B.* **goyanus** (p. 263) and *B.* **matogrossensis** (p. 264), types in author's coll. A key is supplied for these 3 spp.

2541. **OHAUS, F. Eine neue Plusiotis aus Guatemala. (Col. Lamell. Rutelin.).** *Stettiner Ent. Zeitung* 91(2): 265-266. 1 fig. 1930.—*P.* **pehlkei*** ♂ (p. 265), type in Naturkundemus., Stettin.

2542. **OHTA, YUAI. Byturiden Japans.** *Insecta Matsumurana* 4(3): 100-103. 1 fig. 1930.—A key is given to the Japanese spp., and an annotated list. **TEROBYTURUS** (p. 102) is proposed for *T.* **shibakawai*** (p.

102); *Byturus* oakanus (p. 101); *Terobyturus* japonicus (p. 102); *T.* fallax (p. 103).—*R. Takahashi.*

2543. **PAOLI, GUIDO.** Prime notizie sulla biologia dello Stasiodis parvulus F. (Col. Curcul.) *Boll. Soc. Ent. Ital.* 62(9): 172-174. 1 fig. 1930.—Includes figures of eggs and larva, and description of egg-laying, with list of plants damaged by the adults, in Italy.

2544. **PIC, M.** Pour aider à l'étude du genre Xylobanus Wat. [Col.] *Bull. Soc. Zool. France* 53: 46-50. 1928.—This paper consists chiefly of critical remarks on a previous work [author not named] on *Xylobanus*, published in Over. Tijdschr. Entom., LXX, 1927, pp. 43-72. *X.* borneensis (*X. parallelus* Kleine, not Pic) (p. 47); *X.* kleinei (*X. luzonicus* Kleine, not Pic) (p. 47); *X. ambrensis* v. destrictus (*X. d.* Kleine) (p. 49); *X.* inapicalis (p. 50) and *X.* vicinus (p. 50), Uganda. Types in author's coll. A key is given for 12 spp. of the genus.

2545. **PIC, M.** Observations, rectifications et nouveautés diverses [Col.] *Bull. Soc. Zool. France* 53: 132-134. 1928.—*Indalmus grandis* (Pic) is removed from the synonymy of *I. ephippiatus* Gerst., *Ancylopus lineatus* Pic from that of *Indalmus bivittatus* Puch., and *Ancylopus atricornis* Pic from that of [*A.* ?] *kirbyanus* Latr.; *Cyclotomima* lunulata (p. 133), *Hylophilus* notatipes (p. 133), and *H.* truncaticeps (p. 133), all from Tonkin; *Tokiophilus* reductefasciatus (*Hylophilus r.* Pic) (p. 134).

2546. **PIC, M.** Communications entomologiques. *Bull. Soc. Zool. France* 53: 265-268. 1928.—*Dictyopterus* miniatus (p. 267), Kashmir; *Stenactyla* strangulata (p. 267), *Nemostira* charleufi (p. 267), *Allecula* charleufi (p. 268), and *A.* donckieri (p. 268), all 4 French Congo. Types in author's coll.

2547. **PIC, M.** Nouveaux Coléoptères surtout Tonkinois. *Bull. Soc. Zool. France* 53: 377-379. 1928.—*Tenerus robustus* v. discoidalis (p. 377), Cochin China; *Tonkinius* nitidus (p. 377), Tonkin; *Setenis* sinuatipes ♂ (p. 377), Indo-China; *Aoria* pallidipennis (p. 377), Tonkin; *A.* rufa (p. 378), China; *A.* thibetana (p. 378), Tibet; *Trichochrysea* humeralis (p. 378), *Iphimoides* latus (p. 378), *I.* suturalis (p. 378), *I.* binhanus (p. 378), *Nodostoma* jeanvoinei (p. 379), and *N.* latipenne (p. 379), all 6 Tonkin; *N.* nigripenne (p. 379), China. Types in author's coll.

2548. **PIC, M.** Cryptocephalides du Congo. *Rev. Zool. Bot. Africaines* 18(2): 162-183. 1929.—This report is based upon the collection of the Musée du Congo, where the types of the new forms are deposited. The keys to genera, species, and varieties include, besides the new forms, certain species that are related or difficult to distinguish. Unless otherwise stated, the new forms are from the Belgian Congo. *Anteriscus* superbus (p. 166), Uganda; *A. s.* var. bayeri (p. 166), Uganda; *Melixanthus* signaticeps (p. 167); *M. conradti* var. malelanus (p. 167); *M.* brunneiceps (p. 167); *M.* cephalotes (p. 168); *M.* externevittatus (p. 168); *Anteriscus* lembanus (p. 168); *A. neglectus* v. binotatithorax (p. 169); *A.* punctatus (p. 169); *A.* kasaiensis (p. 170); *A.* atrithorax and var. disjunctus (p. 170); *A.* atrofasciatus (p. 170); *A. a.* var. alberti (p. 171); *A.* rubronotatus (p. 171); *A. schubotzi* v. burgeoni (p. 171); *A.* maynei (p. 172); *A.* basinotatus (p. 172); ? *A.* subcrucifer (p. 172); *Cryptocephalus* cyaneometallicus (p. 176); *C. bilunulatus* v. unilunulatus (p. 176); *C.* semimetallicus (p. 177); *C.* colmanti (p. 177); *C.* preapicalis (p. 178), Brit. E. Africa; *C.* vanderijsti (p. 178); *C. gladiatorius* v. callewaerti and *C. g.* var. concoloripennis (p. 174); *C.* tinantae (p. 178); *C.* trimaculatithorax (p. 179); *C. pantherinus* v. elisabethae (p. 179); *C.* quadri-undulatus and *C. q.-u.* var. inundulatus (p. 180); *C. oblongosignatus* v. subbiobliteratus (p. 180); *C. luteotrilineatus* v. subobliteratus (p. 181); *C.* biquadrimaculatus (p. 181); *C.* albidomaculatus (p. 181); *C.* maculaticeps (p. 181); *C.* maynei (p. 182); *C.* flavoapicalis (p. 182); *C. stanleyi* v. moucheti (p. 176); *C.* diversithorax (p. 182); *C.* charliersi (p. 183); *C. pengalensis* v. plasi (p. 183); *C. p.* var. diversifasciatus (p. 183).

2549. **RIVNAY, EZEKIEL.** Revision of the Rhipiphoridae of North and Central America (Coleoptera). *Mem. Amer. Ent. Soc.* no. 6. 1-68. 4 pl. 1929.—This study attempts to bring this rare and little studied group into better taxonomic order. Keys to the genera and spp. are given and the following are described as new: *Trigonodera* schaefferi* n. n. for *Pelecotomoides nubilus* Schaeffer (p. 18); *Macrosiagon* fernaldum* (p. 26); California, type in U. S. Nation. Mus.; *M. octomaculatum* v. maritimum (p. 33), Alabama, type in American Mus. Natural Hist.; *M. cruentum* v. horni (p. 36) (first described by Horn as *Rhipiphorus cruentum* var.); *M. limbatum* v. pulchrum (p. 38), North Carolina, type in Acad. Natural Sci., Philadelphia; *Rhipiphorus* calopterus* (p. 45), Maine, in Frost coll.; *R.* brevipes* (p. 46), Mexico, in Mus. Comp. Zool.; *R.* neomexicanus* (p. 50), New Mexico, in Acad. Nat. Sci.; *R.* nomiae* (p. 51), Alabama, in U. S. N. M.; *R.* aurantus* (p. 55), Texas, in U. S. N. M.; *R.* mutchleri* (p. 57), Nevada, Amer. Mus. Nat. Hist.; *R.* iridescens (p. 60), Texas, in Amer. Mus. Nat. Hist. Bibliography and index are given.

2550. **SAVIO, AUGUSTE.** Notes d'entomologie chinoise. Longicornes du bas Yang-tsé. Genre Exocentrus. *Bull. Univ. Aurore* 1929. 6p. 1 pl.—*E.* zikaweiensis, Shanghai; *E. curtipennis* v. *savioi* Pic, description and biological notes.—*A. P. Jacot.*

2551. **SAVIO, AUGUSTE.** Notes d'entomologie chinoise. Longicornes du bas Yang-tsé. Genre Linda. *Bull. Univ. Aurore* 18. 32-41. 7 fig. 1929.—Descriptions of *Linda atricornis, L. femorata,* and *L. fraterna.*

2552. **SCHWARZER, BERNHARD.** Spolia Mentawiensia. Longicornia. *Treubia* 12(2): 121-128. 1930.—This paper deals with beetles from the islands of Siberut, Sipora, and N. and S. Pagi of the Mentawi group off the west coast of Sumatra, the insect fauna of which is little known. Types of the new spp. are in the Brit. Mus. Prioninae (1), Cerambycinae (7), Lamiinae (54), including PARABYBE (p. 122), near *Bybe*, based on *P.* subfoveolata (p. 122), Siberut; *Orsidis* pleuralis (p. 123) and *Batocera rubus* v. siporensis (p. 123), Sipora; *Ancanthocacia* punctipennis (p. 124); *Cacia* integricornis (p. 124), Siberut; *C.* subfasciata (p. 124), Sipora; *Micromulciber* sumatrensis (p. 125); *Glenea* dorsalis ♂ (p. 126), *G.* cincticornis (p. 126), and *G.* longitarsis (p. 127), all 4 Siberut; *Nupserha* rufopicea ♂ (p. 127), Batu; *Ossonis* mentawensis ♂ (p. 127), Pageh.

2553. **STROHMEYER, GERHARD.** Systematisches und Zoogeographisches über die Cypholobini (Carab. Anthiinae). Ein Beitrag zur Kenntnis der Fauna des afrikanischen Trockenwaldes. *Mitteil. Zool. Mus. Berlin* 14(2): 287-462. 13 maps, 4 pl., 40 fig. 1928.—This tribe includes the genera *Atractonotus, Eccoptoptera, Netrodera,* and *Cypholoba* with the subg. *Microlestia.* The 121 known spp. are reduced to 18, and 226 geographic races are recognized. *Atractonotus, Netrodera,* and *Microlestia* are not included in the study, being too little known. The phylogenetic treatment is based on the degree of evolution of the elytra, prothorax, and head. There may be distinguished 70 areas of dry woods, each with typical geographic races. An analytical key is given, and a bibliography. The following are from N. Africa, Belgian Congo, equatorial Africa, Rhodesia, Cape of Good Hope, and S. Africa; and type depositories are indicated as follows: H=Hamburg, B=Berlin, M=Methner, S=Stettin. *Cypholoba gracilis* ssp. schirensis* (p. 304) (H); *C. g.* ssp. ngona* (p. 304) (B); *C. g.* ssp. heha* (p. 305) (M); *C. g.* ssp. pangwana* (p. 305) (B); *C. g.* ssp. kiwirana* (p. 306) (B); *C. g.* ssp. njikana* (p. 306) (B); *C. g.* ssp. fipana* (p. 306) (M); *C. g.* ssp. vicina* (p. 307) (H); *C. g.* ssp. kondoana* (p. 307) (H); *C. g.* ssp. bulungwana* (p. 308) (S); *C. g.* ssp. banghaasi* (p. 308) (B); *C. g.* ssp. errata* (p. 308) (B); *C. g.* ssp. bemba* (p. 309) (B); *C. g.* ssp. crampelina* (p. 310) (B); *C. g.* ssp. hemiraphis* (p. 310) (B); *C. g.* ssp. ochthodysma (p. 311) (B); *C. g.*

ssp. guluana* (p. 311) (B); *C. g.* ssp. circuligeroides* (p. 311) (B); *C. g.* ssp. peregrina* (p. 311) (B); *C. g.* ssp. eldamana* (p. 312) (B); *C. g.* ssp. uhligi* (p. 312) (B); *C. g.* ssp. kilimana* (p. 312) (B); *C. g.* ssp. sambarana* (p. 313) (B); *C. g.* ssp. makondana* (p. 314) (B); *C. g.* ssp. simbabyana (p. 315) (B); *C. g.* ssp. seineri (p. 315) (B); *C. g.* ssp. laurentina (p. 316) (B); *C. g.* ssp. damara (p. 316) (B); *C. elegantula* ssp. dysmoeca (p. 317) (B); *C. e.* ssp. heoeca (p. 318) (B); *C. e.* ssp. moschiensis (p. 319) (B); *C. e.* ssp. iringana (p. 319) (S); *C. e.* ssp. obsti (p. 319) (H); *C. chaudoiri* ssp. babyana (p. 321) (B); *C. cailliaudi* ssp. seineriana (p. 324) (B); *C. c.* ssp. teteana (p. 324) (B); *C. c.* ssp. tiesleri (p. 324) (B); *C. c.* ssp. ledouxi (p. 325) (B); *C. c.* ssp. rhodesiana (p. 325) (B); *C. c.* ssp. guruana (p. 327) (H); *C. c.* ssp. zenckei (p. 328) (M); *C. c.* ssp. holtzi (p. 329) (M); *C. c.* ssp. neumanniana (p. 329) (B); *C. c.* ssp. glauningi (p. 329) (B); *C. c.* ssp. saramica (p. 329) (B); *C. c.* ssp. denekana (p. 330) (B); *C. c.* ssp. harrarensis (p. 331) (B); *C. c.* ssp. loitana (p. 333) (B); *C. c.* ssp. silene (p. 333) (B) [without description]; *C. semisuturata* ssp. seruana (p. 337) (B); *C. s.* ssp. gambosana (p. 338) (B); *C. intricata* ssp. bergeri (p. 339) (B); *C. intermedia* ssp. sambesica (p. 339) (B); *C. i.* ssp. forstmanni (p. 340) (H); *C. i.* ssp. dauana (p. 341) (B); *C. graphipteroides* ssp. tiesleriana (p. 344) (B); *C. g.* ssp. tschifumbasica (p. 345) (B); *C. g.* ssp. kigonserana (p. 345) (B); *C. g.* ssp. nyika (p. 345) (B); *C. g.* ssp. rukwana (p. 345) (B); *C. g.* ssp. bembana (p. 346) (B); *C. g.* ssp. oskari (p. 346) (B); *C. g.* ssp. hehana (p. 346) (B); *C. g.* ssp. ufiomina (p. 347) (B); *C. g.* ssp. udschungwana (p. 347) (B); *C. g.* ssp. stuhlmanni (p. 347) (B); *C. g.* ssp. methneri (p. 348) (M); *C. g.* ssp. fischeri (p. 348) (B); *C. g.* ssp. lukuledicola (p. 348) (B); *C. g.* color form semibrunnea (p. 349), Dutch E. Africa (B); *C. g.* ssp. amaculata (p. 348) (B); *C. leucospilota* ssp. kilimatindica (p. 351) (B); *C. l.* ssp. niggmanniana (p. 352) (B); *C. l.* ssp. uhligiana (p. 352) (B); *C. trilunata* ssp. vagans (p. 355) (B); *C. t.* ssp. jaegeri (p. 355) (B); *C. t.* ssp. fossicola (p. 356) (B); *C. t.* ssp. mangatiana (p. 356) (B); *C. t.* ssp. pontina (p. 356) (B); *C. t.* ssp. trefurthiana (p. 356) (B); *C. t.* ssp. insulana (p. 356) (B); *C. t.* ssp. eggeliana (p. 357) (B); *C. t.* ssp. wahehophila (p. 357) (B); *C. t.* ssp. sargarica (p. 358) (M); *C. spathulata* ssp. schröderi (p. 361) (B); *C. s.* ssp. sambara (p. 361) (B); *C. s.* ssp. linelli (p. 362) (B); *C. s.* ssp. wituensis (p. 362) (B); *C. s.* ssp. saganicola (p. 363) (B); *C. s.* ssp. wayuana (p. 363) (B); *C. s.* ssp. djubana (p. 364) (B); *C. mouffleti* ssp. trilineata* (p. 365) (B); *C. tetrastigma* ssp. wituana (p. 367) (B); *Eccoptoptera cupricollis* ssp. meridiana (p. 368) (H); *E. c.* ssp. betheliana (p. 369) (B); *E. c.* ssp. montium (p. 370) (B); *E. c.* ssp. salamensis (p. 370) (B); *E. c.* ssp. goetzei (p. 370) (B); *E. c.* ssp. madibirana (p. 370) (B); *E. c.* ssp. nyika (p. 371) (B); *E. c.* ssp. kigonserana (p. 371) (B); *E. c.* ssp. lukeledina (p. 371) (B); *E. c.* ssp. pufiana (p. 371) (B); *E. c.* ssp. taborana (p. 372) (B); *E. c.* ssp. ukerewensis (p. 372) (B); *E. c.* ssp. eldamae (p. 373) (B); *E. c.* ssp. gallensis (p. 373) (B); *E. c.* ssp. wituana (p. 372) (B); *E. c.* ssp. methneri (p. 373) (M); *E. c.* ssp. viri (p. 373) (B); *E. mutilloides* ssp. selenolepta* (p. 374) (B); *E. m.* ssp. fontium (p. 374) (B); *E. m.* ssp. mela (p. 375) (B); *E. m.* ssp. vinza (p. 375) (B); *E. m.* ssp. kamica (p. 376) (B); *E. m.* ssp. intima (p. 377) (B); *Netrodera* malangana (p. 379) (B).—*G. G. Maydell.*

2554. SWEZEY, O. H. [First observance of the larva of Listroderes apicalis Waterhouse in Hawaii.] *Proc. Hawaiian Ent. Soc.* 7(2): 202. 1929.

2555. TEMPÈRE, G. Présence d' "Hololepta plana" Fuessly (Col. Histeridae) dans la Gironde. *Actes Soc. Linnéenne Bordeaux, Proc.-Verb.* 80: 98-99. 1928.—This beetle, new to the Garonne Basin, is rather common on dead poplars.

2556. TEMPÈRE, G. "Cassida vittata" Villers (Col. "Chrysomelidae") et ses plantes nourricières. *Actes Soc. Linnéenne Bordeaux, Proc.-Verb.* 80: 106-109. 1928.—The author has found this beetle or its larva on *Atriplex hastatum, Spergularia marginata, Juncus bufonius,* and *Spergula arvensis* in France. Most of the individuals on the last 2 plants lacked the pearly band on the elytra. The feeding of the beetle on such different plants as Salsolaceae and Caryophyllaceae is noteworthy.

2557. THÉRY, A. Études sur la Coléoptères Buprestides appartenant aux collections des grands Musées (1re note: British Museum.). *Ann. Soc. Ent. France* 96(3/4): 247-261. 1927.—Contains brief descriptions and synonymic notes.

2558. THÉRY, A. Buprestides de l'Inde. *Bull. et Ann. Soc. Ent. Belgique* 70(5): 149-172. 1930.—*Melanophila picta* ssp. indica (p. 149), type in coll. Inst. Recherches Forest.; *Anthaxia* indicola ♂ (p. 150), type in Mus. Paris; *A.* babaulti (p. 151), type in Mus. Nation. Hist. Nat. [Paris]; *Chrysobothris* gardneri ♂ (p. 152); MAINDRONIA (p. 154), with *M.* crassa (p. 155); *Meliboeus* babaulti (p. 156), type in Mus. Hist. Nat.; *Sambus* gmelinae (p. 157); *Agrilus* dalbergiae (p. 158); *A.* derrisi (p. 160); *A.* cyaneofasciata (p. 161), type in Brit. Mus.; *A.* babaulti (p. 163), type in Mus. Paris; *A.* bicornis (p. 164), type in Brit. Mus.; *A.* cardoni (p. 166); *A.* lestagei ♂ (p. 167); *A.* malloti (p. 168); *Habroloma* gardneri (p. 170); *Trachys* ipomeaea (p. 171).

2559. THÉRY, A. Description d'un Buprestide de Sicile. *Boll. Soc. Ent. Ital.* 62(9): 175-176. 1930.—*Agrilus* verres (p. 175), Sicily, type in author's coll.

2560. THÉRY, ANDRÉ. Le genre Paratrachys Saunders. *Compt. Rend. Assoc. Franç. Avanc. Sci.* 49: 429-432. 1925(1926).—Critical notes on the genus. The author, having examined 144 specimens, concludes that *P. fisheri* is not specifically distinct from *P. kannegieteri,* both being races of the same sp., one from the Philippines, the other from Sumatra. The author restores to validity and claims priority for his *P. bicincta,* which was sunk by Obenberger under *P. bakeri* Obenb.

2561. ULRICH, WERNER. Die Strepsipteren-Männchen als Insekten mit Halteren an Stelle der Vorderflügel. *Zeitschr. Wiss. Biol. Abt. A., Zeitschr. Morph. u. Ökol. Tiere* 17(3): 552-624. 1 pl. 29 fig. 1930.—The anterior wings of the ♂ stylops are flat, striated, body appendages with a characteristic basal and terminal club. On the anterior aspect they resemble the halteres of the Diptera. Laterally they are much deeper than wings and serve as locomotor organs in the narrow sense of the word. They arise in the membranous, lateral impression of the mesothorax in such a manner that the principal movement of the wings is guaranteed an extraordinary flexibility. They cannot be laterally adjacent to the body, nor be inclined, but stand, in a position of rest, horizontal to the body. The movement of the anterior wings is, in contrast to the extensive flexibility of the hind wings, reduced to a simple upward and backward movement, which is executed with enormous difficulty. The front and hind wings can be moved independently. Both wings possess certain muscles independent of one another which are arranged segmentally. The completely different structure of the meso- and metathorax produces different mechanics of wing movement in both thoracic segments. The front wing is to be considered as a flat, sac-shaped outgrowth of the lateral body wall. The central cavity which fills with blood consists of a lumen of the end-knob, a lumen of the basal swelling and a canal extending along the anterior edge. With the exception of the end knob, the lumina are clothed with an epidermis. The dorsal and ventral layers are held together in the posterior, flatly developed wing parts by an epidermal thread-like bridge. A peculiar end club web ("Endkolbengewebe") occurs in the terminal club which forms a wall and apparently is not a true web but a web-like appearance. The anterior wings are consequently, in the physical sense of the word, true halteres which consist of a light axis and a heavy end knob on the free end of the axis. The front wing is richly supplied with sense organs. A multitude of sensory setae occur on the end knob. A great number of cuticular sense organs occur

in the basal enlargement, lying in a dorsal and a ventral sense-cup field. Chordotonal organs are probably present in the basal swelling. The sense organs of the front wings are innervated by a lateral nerve of the mesothoracic ganglion. The mesothoracic wing nerve is stronger than the metathoracic wing nerve arising in the metathoracic ganglion. The front wings are organs of sense and irritation, which for the conditions of flight are of definite significance. On the basis of the foregoing anatomical and physiological study it is deemed proved that the forewings of ♂ Strepsiptera are typical halteres. Halteres are commonly considered as modified insect wings, which in insects have reached a development where they can employ the 1st as well as the 2nd pair of wings.—*W. Ulrich (transl. by W. P. Hayes).*

2562. **WEST, LUTHER S.** A bibliography of the Dryopoidea. *Battle Creek College Bull.* (*Suppl.*) 3(1): 3-12. 1929.

2563. **WILLIAMS, B. S.** Bembidion redtenbacheri Dan. recorded from Carlisle. *Ent. Month. Mag.* 65(786): 261. 1929.—Translation of Prof. Netolitzky's record.

2564. **[ZAITSEV, D. V.]** ЗАЙЦЕВ, Д. В. Матеріяли до фавни жукив-скрипунів (Cerambycidae, Coleoptera) на Харківщині. [Longicorn beetles of the Province of Kharkov.] [German summary.] Всеукраїнська Академія Наук, Труды Фізично-Математичного Відділу (Збірник Праць Зоологічного Музею Ч. 7) (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Mus. Zool. No. 7*) 13(1): 119-137. 1929.—The previously known cerambycid fauna of this area included 90 spp. and 3 vars. The present annotated list contains 94 spp., 1 subsp., and 9 vars., among which 7 spp. are new to the Ukraine.—*From author's summary.*

DIPTERA

E. T. CRESSON, JR., *Editor,* Brachycera

O. A. JOHANNSEN, *Editor,* Nemocera

(See also in this issue Entries 903, 1880, 1884, 1886, 2664, 2715, 2757)

2565. **ALEXANDER, C. P.** New or little-known species of the genus Gnophomyia Osten Sacken from Ecuador and Peru. (Fam. Tipulidae Order Diptera.). *Rev. Chilena de Hist. Nat.* 33: 164-168. 1 pl. 1929.—*G.* (s. str.) molinae* (p. 164) and *G.* (s. str.) porteri* (p. 165), both Ecuador; *G.* (s. str.) kertészianа* (p. 168), Peru. Types in the Alexander coll. Further notes on *G. maestitia** are given.—*C. P. Alexander.*

2566. **BAU, ARMINIUS.** Lipoptena surinamensis und Melophagus ovinus bolivianus, zwei neue Hippobosciden (Diptera, Pupipara). *Stettiner Ent. Zeitung* 91(2): 175-177. 1930.—*L.* surinamensis (p. 175), Dutch Guiana; *M. ovinus* f. bolivianus (p. 176), Bolivia. Types presumably in Hamburg Mus.

2567. **BEQUAERT, J.** Further notes on Stenobasipteron, an African genus of Nemestrinidae. *Rev. Zool. Africaine* 15(3): 356-358. 1927.—Corrections and additions to records published in an earlier paper. A revised key to the 5 described spp. of the genus is given.—*J. Bequaert.*

2568. **BORGMEIER, TH.** Eine neue myrmecophile Apterophora-Art (Dipt. Phoridae). *Zool. Anz.* 89(1/2): 57-62. 4 fig. 1930.—*A.* attophila* (p. 57), Rio de Janeiro and Sao Paulo, Brazil, from nest of *Atta sexdens.*

2569. **BUHR, HERBERT.** Einige Blattminen und Gallen von der Insel Lesina (Hvar) in Dalmatien. *Sitzungsber. u. Abhandl. Naturforsch. Ges. Rostock* 2: 125-148. 1927/29(1930).—An annotated list containing: (Diptera, Agromyzidae) *Phytomyza hellebori* ssp. buhri Hering (p. 128), from *Anemone hortensis* L., and *P.* phillyreae Her. (p. 132), from *Phillyrea media* L.

2570. **CARDAMATIS, J. P.** Les espèces de moustiques en Grèce et tout particulièrement d'Athènes. *Bull. Soc. Path. Exotique* 24(2): 122-131. 4 fig. 1931.—Enumeration of spp. and comparative description of characters, particularly those of *Pyretophorus atheniensis* (Cardamatis, 1930).

2571. **CAVANAUGH, WILLIAM J., and JOSEPHINE E. TILDEN.** Algal food, feeding and case-building habits of the larvae of the midge fly, Tanytarsus dissimilis. *Ecology* [*Brooklyn*] 11(2): 281-287. 3 pl. 1930.—The larva of this midge feeds entirely upon minute forms of algae growing attached to the substratum. The older larvae make their cases of algae, connecting them with a secretion from the salivary glands. The same spp. of algae serve for both food and case making. Pupation takes place in the larval case.—*O. A. Johannsen.*

2572. **COLLIN, J. E.** Some species of the genus Meoneura (Diptera). *Ent. Month. Mag.* 66(791): 82-89. 1 pl. 1930.—A key is presented for identification of the 10 British and 1 French spp. known to the author. Of these the following are new, and all but the first are from England: *M.* exigua* (p. 84), France; *M.* flavifacies* (p. 85); *M.* lamellata* (p. 86); *M.* neottiophila* (p. 87), bred from birds' nests; *M.* bicuspidata* (p. 88); *M.* triangularis* (p. 88); *M.* neglecta* ♂ (p. 88).—*H. M. Gilkey.*

2573. **DAVIES, W. MALDWYN.** Parasitism in relation to pupation in Lucilia sericata Meig. *Nature* [*London*] 125(3160): 779-780. 1930.—Live sheep attacked by larvae of *Lucilia sericata* offer no attraction for ovipositing ♀♀ of its parasite, *Alysia manducator,* and thus the larvae in this environment escape the attacks of the parasite.

2574. **DOLLEY, WILLIAM L. Jr., and HENRY G. HAINES.** An entomological sheep in wolf's clothing. *Sci. Monthly* 31(6): 508-516. 3 fig. 1930.—The cosmopolitan drone fly *Eristalis tenax**, which closely resembles the honey bee, has a record dating back to the Bible. The author describes its life history, quoting details from many workers. It was first noticed in the United States in 1870.

2575. **DUDA, O.** Die Ausbeute der deutschen Chaco-Expedition 1925-26 (Diptera). VI. Sepsidae, VII. Piophilidae, VIII. Cypselidae, IX. Drosophilidae und X. Chloropidae. *Konowia* 8(1): 33-50. 7 fig. 1929.—Two spp. of Sepsidae are recorded, 1 from Bolivia and 1 from Argentina. *Piophila casei* L. is recorded from Bolivia and Argentina. 13 spp. of Cypselidae (=Borboridae) are recorded from Paraguay, Bolivia, and Argentina, including: *Scotophilella* caudata* (p. 35); *Coprophila* setulosa (p. 38); *Archileptocera,* n. subg. PALAEOCEROPTERA (p. 41), with *A.* (*P.*) boliviensis* (p. 39); *Scotophilella* analis* (*S. paramoesta* Duda) (p. 36). The following new spp. of Drosophilidae are described: *Rhinoleucophenga* punctulata (p. 43); *R.* subradiata (p. 45); *R. stigma* v. flaviceps (p. 46); *Leucophenga* conjuncta* (p. 47). There is a key to 4 spp. and 1 var. of *Rhinoleucophenga* and to 4 spp. of *Leucophenga. Scaptomyza graminum* Fall. (=*Parascaptomyza disticha* Duda); *Drosophila nebulosa* Strtvnt. (=*limbata* Will. nec *limbata* v. Ros.).—*C. E. Mickel.*

2576. **EDWARDS, F. W.** New neotropical Nematocerous Diptera. *Ann. and Mag. Nat. Hist.* 7(39): 255-261. 1931.—Types of the following spp. are in the Brit. Mus. *Macrocera* unidens ♂ (p. 255); *Platyura* (*Isoneuromyia*) xanthocera ♀ (p. 256) and *P.* (*Lapyruta* ?) batesi ♀ (p. 256), Para; *Eudicrana* vittata ♀ (p. 257), *E.* claripennis ♀ (p. 258), *Mycomyia* peruviana ♀ (p. 258), *Leiella* zonalis ♀ (p. 259), and *Rhymosia*

pilosa ♀ (p. 259), all 5 Peru; *Plecia* **pictipennis** (p. 260) and *P.* **nitidicollis** (p. 260), Parana; *Dixa* (*Paradixa*) **peruviana** ♂ (p. 266), Peru.

2577. **EDWARDS, F. W. British non-biting midges (Diptera, Chironomidae).** *Trans. Ent. Soc. London* 77 (2): 279-430. 3 pl., 15 fig. 1929.—A synopsis of the British spp., with keys to the genera and species. Most of the species of Walker, originally described under the genus *Chironomus,* have been properly referred to modern genera. In quoting synonymy the author omits the generic name under which the synonym was published. Several generic names are replaced by those of Philippi. The chief characters used in specific diagnosis are described. There are descriptions and discussions, synonymies, and new spp., as follows: *Pentaneura* Phil. (=*Ablabesmyia* Joh., *Isoplastus* Skuse, *Peritaphreuusa* Beck., *Nilotanypus* Kieff.); *P.* **guttipennis** (v.d.W.) n. comb. (p. 289), *P.* **lentiginosa** (Fries) n. comb. (p. 290); *P.* **eximia** ♀* (Verrall i. l.) (p. 290), Great Britain; *P.* **ornata** (Mg.) n. comb. (p. 290), *P.* **maculipennis** (Zett.) n. comb. (p. 290) (=*costalis* Kieff., *subincurvatus* Goet.); *P.* **fusciceps** ♂* (p. 290), Great Britain: *P.* **carnea** (Fab.) n. comb. (p. 291) (=*incurvatus* Goet.); *P.* **hirtimanus** (Kieff.) n. comb. (p. 291); *P.* **northumbrica*** (p. 291), Great Britain; *P.* **nubila** (Mg.) n. comb. (p. 291) (=*dubius* Staeg., nec Mg., *carneus* Goet. nec Fab.); *P.* **pallidula** (Mg.) n. comb. (p. 292) (=*triannulatus* Goet., *quatuorpuncta* K.); *P.* **woodi** ♂ (p. 292), Great Britain; *P.* **melanops** (Mg.) n. comb. (p. 293) (=*Chironomus interseptus* Walk.); *P.* **longimanus** (Staeg.) n. comb. (p. 293) (=*Psectrotanypus longipennis* Goet.); *P.* **viator** (Kieff.) n. comb. (p. 293); *P.* **melanurus** (Mg.) n. comb. (p. 293) (=*fuliginosus* Goet.); *P.* **griseipennis** (v.d.W.) n. comb. (p. 293) (=*murinus* Goet.); *P.* **barbitarsis** (Zett.) n. comb. (p. 293) (=*sordidus* Zett., *expalpans* Wlsk., *maxi* Goet.); *P.* **binotata** (Wied.), *P.* **nigropunctata** (Staeg.), and *P.* **schineri** (Strobl.) n. combs. (p. 294); *P.* **divisa** (*Chironomus d.* Walk.) (p. 294); *P.* **nemorum** (Goet.) and *P.* **falcigera** (Kieff.) (p. 294) n. combs.; *P.* **cingulata** (Walk.) n. comb. (p. 294) (=*flavoscutellatus* Goet.); *P.* **brevitibialis** (Goet.) n. comb. (p. 294); *P.* **longipalpis** (Goet.) (p. 294) n. comb.; *P.* **dubia** (Mg.) n. comb. (p. 295) (=*pusillus* Mg.); *Podonomus* Phil. (=*Ochlus* Ent., *Prosisoplastus* Kieff.); *P.* **peregrinus** ♂* (p. 296), Scotland; *Anatopynia* Joh. (=*Macropelopia* Thien., *Psectrotanypus* Kieff.); *A.* **nebulosa** (Mg.), *A.* **notata** (Mg.), *A.* **punctata** (Fabr.), and *A.* **goetghebueri** (Kieff.), n. combs. (p. 298); *A.* **nugax** (Walk.) n. comb. (p. 298) (=*flavipubens* Goet.); *A.* **varius** (Fabr.) n. comb. (p. 298) (=*brevicalcar* Kieff.); *A.* **trifascipennis** (Zett.) n. comb. (p. 299) (=*longicalcar* Kieff.); *Tanypus* Meigen (=*Pelopia* (Mg.) Hendel, *Protenthes* Joh.); *T. punctipennis* Mg. restored as type of genus; *Psilotanypus* Kieff. is reduced to a subgenus in *Procladius* Skuse; *Procladius choreus* (Mg.) (=*Chironomus incomptus* Walk.); *P. rufovittatus* (v.d.Wulp) (=*albinervis* Kieff.); *P.* **flavifrons*** (p. 302), Ireland; *Protanypus* (Kieff.) Edw. (=*Didiamesa* Kieff.); *Diamesa* Mg. (=*Adiamesa* Kieff., *Psilodiamesa* Kieff., and *Eutanypus* Coq.); *D. culicoides* Heeger (=*tonsa* Hal., *pergens* Walk., and *pertractus* Walk.); *D. incallida** (Walk.) (=*nexilis* Walk.); *D. waltli, D. prolongata, D. latitarsis, D. permacer,* and *D. inscendens,* ♂ hypopygia figured; *D. lacteipennis* Zett. (=*typhon* Hal.); *D.* **campestris** ♂* (p. 307) and *D.* **montium*** (p. 307), both England and Scotland; *Prodiamesa olivacea* (Mg.) (=*scutellata* Mg., *notata* Staeg., *consobrinus* Zett., *nudipes* Zett., *convestitus* Walk., *obditus* Walk., *perpessus* Walk., *praecox* Kieff., and *ichthyobrota* Kieff.); *Eurycnemus crassipes* (Panz.) (=*elegans* Mg., *aestivus* Curt., and *hirtipes* Macq.); *Brillia modesta* Mg. (=*sylvestris* Goet.); *Metriocnemus* v.d.Wulp (=*Thienemannia* Kieff., *Heterotrissocladius* Spärck., *Paraphaenocladius* Tnm.); *M. picipes* Mg. (=*fuscipes* Goet., and *hirtipalpis* Kieff.); *M. fuscipes* Mg. (=*adjunctus* Walk., *alligatus* Walk., *fertus* Walk., *obsistens* Walk., and *auripilus* Goet.); *M. martinii* Tnm. (=*cavicola* Kieff.); *M. hirticollis* Staeg. (=*hirtellus* Goet.); *M.* **tristellus*** (p. 312), England; *M.* **gracei** ♂* (p. 312), England; *M. marcidus* Walk. (=*aestivalis* Goet.); *M.* **grimshawi** ♂* (p. 313), Scotland and Ireland; *M. impensus* Walk. (=*angulatus* Goet.); *M.* **penerasus*** (p. 315), England, Scotland, and Wales; *M.* **cuneatus** ♀* (p. 315), England; *M. stylatus* Kieff. (=*arciger* Kieff.); *M.* **subnudus*** (p. 316), England and Scotland; *M.* **brumalis*** (p. 316), England; *M.* **brevitarsis** ♀ (p. 316), England; *Cricotopus* v.d.W. (=*Isocladius* Kieff.); *C. tricinctus* (Mg.) (=*hyalinus* Kieff.); *C. sylvestris* (Fab.) (=*ornatus* Mg., *marginatus* Macq., *longipalpis* Kieff., and *fusciforceps* Kieff.); *C. tremulus* (L.) (=*pictimanus* Kieff.); *C. pulchripes* Verr. (=*montivagus* Goet.); *C. albiforceps* (Kieff.) (=*bicinctellus* Goet.); *C. bicinctus** (Mg.) (=*atrimanus* Kieff., *fallax* Kieff.); *C.* **trifascia*** (Verrall i. l.) (p. 322), England; *C. festivus* (Mg.) (=*angustus* Goet.); *C. triannulatus* (Macq.) (=*suecicus* Kieff., *triannulatus* Goet.); *C. motitator* (L.) Mg. (=*annulator* Goet.); *C. m.* v. **subcoeruleus** (p. 323), England; *C. intersectus* (Staeg.) (=*incisuratus* Zett.); *C.* **pallidipes** ♀* (p. 324), Wales, England, and Scotland; *C.* **lacuum*** (p. 324), England and Scotland; *C.* **lygropis** ♀ (p. 325) and *C.* **biformis*** (p. 325), England; *C. vitripennis* (Mg.) (=*variabilis* Staeg.); *C. obtexens** v. *inserpens** (Walk.) (=*conversus* Walk., *denotatus* Walk.); *C. obnixus** (Walk.) (=*nigriventris* v.d.W.); *C. dizonias* and *C. flavocinctus,* ♂ hypopygia; *Spaniotoma,* key to subgenera; *S. lucida* (Staeg.) (=*lucens* Zett., *coaequatus* Walk., *nitidicollis* Walk., *obsepiens* Walk., *patibilis* Walk., *pervulsus* Walk., *sagittalis* Kieff., *funebris* Goet.); *S. rufiventris* (Mg.) (=*opplens* Walk., *nudipes* Goet.); *S.* (*Trichocladius*) **skirwithensis** ♂* (p. 329), England; *S.* (*T.*) **foveata*** (p. 330), England and Scotland; *S.* (*T.*) **chalybeata*** (p. 331), England; *S. effusa* and *S. glabricollis,* ♂ hypopygia; *S. obvia* Walk. (=*oppertus* Walk., *extensus* Walk., *carbonarius* Goet. nec Mg.); *S.* (*Psectrocladius*) **platypus*** (p. 333), Scotland and England; *S.* (*P.*) **calcarata** (p. 333), England; *S.* (*P.*) **barbimanus** ♂ (p. 333), England; *S. sordidella* Zett. (=*exspatiens* Walk., *albinervis* v.d.W., *psilopterus* Kieff., *luteolus* Goet.); *S. melaleuca* (Mg.) (=*argentatus* Goet.); *S. perennis** (Mg.) (=*novatus* Walk., *setiger* Kieff., *pentachaetus* Kieff., *polychaetus* Kieff.); *S.* (*Orthocladius*) **dissipata** ♀* (p. 338), England and Scotland; *S. icterica* (Mg.) (=*pertenuis* Walk., *ochraceus* Goet.); *S.* (*O.*) **subvernalis** ♂* (p. 341), *S.* (*O.*) **tuberculata** ♂* (p. 341), *S.* (*O.*) **sima** ♂ (p. 342), *S.* (*O.*) **xanthogyne*** (p. 342), *S.* (*O.*) **nidorum*** ♂ (p. 342), *S.* (*O.*) **feminea*** ♂ (p. 343), and *S.* (*O.*) **illimbata*** (p. 343), all 7 from England; *S. oblidens** Walk. (=*lenzi* Kieff.); *S. rubicunda** (Mg.) (=*incoactus* Walk., *persidens* Walk., *rivinus* Kieff.); *S. frigida** Zett., redefined; *S. suecica, S. pigra, S. excerpta, S. thienemanni, S. frigida,* and *S. apicalis,* ♂ hypopygia; *S.* (*O.*) **gracei** ♂* (p. 346), *S.* (*O.*) **dentiforceps*** (p. 346), and *S.* (*O.*) **tripilata*** (p. 348), all 3 England; *S.* (*O.*) **verralli** ♂* (p. 348), Wales; *S.* (*O.*) **minor** ♂* (Verrall i. l.) (p. 348), *S.* (*O.*) **ilkleyensis** ♂ (p. 349), *S.* (*O.*) **devonica** ♂ (p. 349), and *S.* (*O.*) **flexuella*** ♂ (p. 349), all 4 England; subg. *Eukiefferiella* Tnm. emended; *S. bicolor* Zett. (=*femorata* Staeg., *perexilis* Walk., *Orthocladius nanulus* v.d.W., *Cricotopus albicornis* Goet., *C. albipluma* Kieff.); *S.* (*E.*) **hospita*** (p. 351) and *S.* (*E.*) **calvescens*** (p. 353), England; *S.* (*E.*) **camptophleps*** (p. 353), Wales and England; *S.* (*E.*) **coronata*** ♂ (p. 354), Scotland and Wales, type in Edinburgh Mus.; *S. brevicalcar** and *S. coerulescens**, ♂ hypopygia; *S. hydrophila* (Goet.) (=*longiseta* Tnm.); *S. pusilla* Eat. (=*exiguus* Goet., *hexatomus* Kieff.); *S. minima* (Mg.) (=*punctulatus* Goet.); *S. prolongata* (Kieff.) (=*pentaplastus* Kieff., *punctatellus* Goet., *clavaticornis* Goet.);

land; *S.* (*S.*) **curticosta** ♂* (p. 364), Wales and Scotland; *S.* (*S.*) **angusta*** (p. 364), Wales and England; *S.* (*S.*) **conjuncta*** ♀ (p. 365), England; *S. ephemerae** and *S. scutellata**, ♂ hypopygia; *Corynoneura* (*Thienemanniella*) **flavescens** ♂* (p. 367), England and Ireland; *C.* (*Corynoneura*) **fuscihalter*** ♀ (p. 369), England; *C. scutellata** Winn. (=*innupta* Edw.); *C. carriana* Edw. (=*crassipes* Kieff.); *Clunio marinus* Hal. (=*bicolor* Kieff.); *Thalassomyia* Schin. (=*Scopelodromus* Chevrel. *Galapagomyia* Johnson); *T. frauenfeldi* Schin. (=*pedestris* Woll., *isemerinus* Chevr.); *Pentapedilum flavipes* (Mg.) (=*albipes* Zett., *tenellus* Zett., *albiforceps* Goet., *leucolabis* Kieff.); *P. punctipes* (Wied.) (=*abdominalis* Staeg., *semiviridis* Goet.); *P. tritum* (Walk.) (=*longiseta* Kieff.); *P.* (*Pentapedilum*) **nubens*** (p. 376), England, Scotland, and Ireland; *Pseudochironomus* Mall. (=*Prorietthia* Kieff.); *P. prasinatus* (Staeg.) (=*ploenensis* Kieff.); *Chironomus* Mg., revised, key to subgenera, illustrated with diagrams of thorax; *C. tentans** Fabr. (=*aprilinus* Kieff. nec Mg., *atrofasciatus* Kieff.); *C. pilicornis* Fabr. (=*niveipennis* Fabr. nec Kieff., *niger* Mg., *tristis* Wied., *moerens* Walk., *dolens* Walk.); *C. anthracinus* Zett. (=*bathophilus* Kieff.); *C. plumosus* L. (=*hebescens* Walk.); *C. aprilinus* (Mg.) Goet. (=*salinarius* Kieff.); *C. riparius* (Mg.) Goet. (=*thummi* Kieff.); *C. longipes* Staeg. (=*becquaerti* Goet.); *C. dissidens** Walk. (=*convectus* Walk.); *C. paganus* Mg. (=*latidens* Goet.); *C. xenolabis* Kieff. (=*rousseaui* Goet.); *C. notatus* Mg. (=*heterolabis* Kieff.); *C. pulsus** Walk. (=*fuscicauda* Kieff., *atrovittatus* Kieff.); *C. p.* v. *objectans* (=*dispessus* Walk.); *C. nervosus** Staeg. (=*brevitibialis* Zett. nec Goet., *futilis* Walk., *goetghebueri* Kieff., *falciformis* Kieff.); *C. lobiger** Kieff. (=*miriforceps* Kieff., *brevitibialis* Goet. nec Zett.); *C. camptolabis** Kieff. (=*laminatus* Kieff.); *C. psittacinus* Mg. (=*armillatus* Staeg.); *C. supplicans* Mg. (=*defectus* Kieff., *chlorolobus* Kieff.); *C. biannulatus* Staeg. (=*malacus* Walk., *viridanus* Ruthé); *C. longiforceps* Kieff. (=*lhoneuxi* Goet.); *C. monochromus* (v.d.W.) (=*bacilliger* Kieff.); *C.* **claviforceps** ♂* (p. 389), England; *C. parilis* Walk. (=*irretitus* Walk. ♀, *mucronatus* Goet.); *C.* **digitalis** ♂* (p. 389), England and Scotland; *C. falcatus* Kieff. (=*arcuatus* Goet.); *C. rostratus* Kieff. (=*virtunensis* Goet.); *C. vulneratus* Zett. (=*nigrimanus* Staeg., *longicauda* Goet.); *C.* **nigronitens** ♂* (p. 390), England; *C. pallidivittatus**, *C. tritomus**, and *C. virescens**, ♂ hypopygia; *C. glaucus* Mg. (=*obscuripes* Mg., *pallens* Goet. nec Mg., *annularius* Verr. coll. nec De G.); *C.* (*Glyptotendipes*) **paripes** (p. 392) and *C.* (*G.*) **mancunianus** ♂* (p. 393), England; *C. lepidus* Mg. (=*notabilis* Macq.); *C. impar* Walk. (=*involitans* Walk.); *C. intextus* Walk. (=*coracellus* Kieff.); *C. tendens* Fabr. (=*trichopus* Walk.); *C. gibbus* Fabr. (=*fasciatus* Geoffr.); *C. albimanus* v. *plebeius* Mg. (=*fuscimanus* Kieff.); *C.* (*Paratendipes*) **nudisquama*** (p. 396), England and Ireland; *C. tarsalis* Walk. (=*formosus* Goet.); *C. pedellus** v. *lividus* (=*cinereiventris* Goet.); *C. chloris* Mg. (=*discrepans* Walk.); *C.* (*Microtendipes*) **diffinis** ♂* (p. 397) and *C.* (*M.*) **britteni*** ♂ (p. 399), England; *C. confinis** Mg. (=*zonarius* Walk., *perreptans* Walk., *lentulus* Walk., *obvertens* Walk., *separatus* Walk., *pseudopedellus* Goet.); *C.* (*M.*) **hibernicus** ♂* (p. 399), Ireland; *C. fuscipennis* Mg. (=*pedestris* Mg., *pictipes* Zett., *patens* Walk.); *C. rosenschöldi* Zett. (=*assimilis* Zett.); *C. laetus* Mg. (=*nubilipennis* Mg., *falciger* Kieff.); *C. nubeculosus* Mg. (=*enotatus* Walk., *emarginatum* Kieff.); *C. albicornis* Mg. (=*pullus* Goet.); *C. convictus* Walk. (=*blandus* v.d.W., *nympha* Kieff.); *C.* (*Polypedilum*) **rydalensis** ♂ * (p. 404), England; *C. marmoratus* v.d.W. (=*flexilis* Bause, *clavaticrus* Kieff.); *C.* (*Lauterborniella*) **orophilus*** (p. 405), Wales, Ireland, and England; *C.* (*L.*) **brachylabis** ♂* (p. 406), England; *C. foliicola**, *C. apfelbecki**, *C. prolixitarsis**, ♂ hypopygia; *Tanytarsus*, discussion and key to subgenera; *T. fuscus* (Mg.) (=*tonnoiri* Goet.); *T. brunnipes* (Zett.) (=*appositus* Walk., *intrudens* Walk., *nactus* Walk., *notescens* Walk., *occipiens* Walk., *offectus* Walk., *gmundensis* Egg.); *T. atrofasciatus* Kieff. (=*sexannulatus* Goet.); *T.* (*Micropsectra*) **monticola*** (p. 408), Scotland and England; *T.* (*Lundströmia*) **bituberculatus*** (p. 408) and *T.* (*L.*) **laccophilus** ♂* (p. 409), England; *T. tenuis* (Mg.) (=*affinis* Walk., *perlevis* Walk.); *T. laetipes* Zett. (=*punctipes* Goet. nec Wied.); *T. gregarius** Kieff. (=*lobatifrons* Kieff.); *T.* (*T.*) **reflexens*** (p. 411), Wales, England, and Scotland; *T.* (*T.*) **richmondensis*** (p. 413), England and Wales; *T.* (*T.*) **holochlorus** ♂* (p. 414), England; *T. ejuncidus* Walk. (=*brayi* Goet.); *T. arduennensis** Goet. (=*gotchi* Goet.); *T. signatus* v.d.W. (=*bicinctus* Goet.); *T. pallidicornis* Walk. (=*subaequalis* Goet.); *T. junci* (Mg.) Goet. (=*semivillosus* Goet.); *T.* (*T.*) **samboni** ♂* (p. 416) and *T.* (*T.*) **lactescens** ♂* (p. 416), England; *T.* (*T.*) **excavatus** ♂* (p. 416), England and Wales; *T.* (*T.*) **nemorosus** ♂* (p. 416) and *T.* (*T.*) **glabrescens** ♂* (p. 416), England; *T. mancus* Walk. (=*modicellus* Walk., *nigrovittatus* Goet.); *T. atridorsum** Kieff. (=*olivaceus* Goet.); *T.* (*T.*) **van-der-wulpi** ♂* (Verrall i. l.) (p. 418), England; *T.* (*Stempellina*) **brevis*** (p. 420), Scotland, England, and Ireland; *T.* (*S.*) **flavidulus** (p. 420), England; *T.* (*S.*) **minor*** (p. 420), Wales and England; *T.* (*S.*) **cuneipennis** ♀* (p. 421), England; *T. arduennensis**, *T. photophilus**, *T. verralli**, and *T. saltuum**, ♂ hypopygia. There are several additions and corrections to the author's earlier paper (British biting midges. Trans. Ent. Soc. London, 1926) given in the appendix (p. 425). *Tetraphora* Philippi should replace the generic name *Dasyhelea*. *Tetraphora* **saxicola** (p. 426), England. *Culicoides odibilis* Austen (=*C. winnertzi* Edw., *C. pictipennis* Winn.); *Ceratopogon communis* Mg., redescribed; *Monohelea calcarata* Goet. is referred to *Stilobezzia*. *Stilobezzia* **sharpi** ♂ (p. 427); *Johannsenomyia munda* (Lw.) (=*dentata* Kieff.); *Bezzia spinifera* Goet. is distinct from *B. flavicornis* Staeg.—*O. A. Johannsen*.

2578. GRAHAM-SMITH, G. S. Further observations on the anatomy and function of the proboscis of the blow-fly, Calliphora erythrocephala L. *Parasitology* 22 (1): 47-115. 4 pl. (1 col.), 36 fig. 1930.—Detailed investigations of the anatomy and function of the proboscis, with notes on the modes of feeding and distribution of infection, are given. Flies are able to filter out the larger particles of their liquid food, ingest emulsions produced by scraping surfaces, moistened with saliva or vomit, with their prestomal teeth, or are able to suck up such thick liquids as sputum of faeces containing haemolymph ova without the use of their filtering apparatus or teeth. Pathogens taken into the crop retain their virility for several days, during which time the labella is frequently reinfected. Infection may occur by the vomit, by contact with the oral disc, or by the disposition of faeces. Intradermal infection is brought about by the prestomal teeth moistened with infected vomit.—*M. H. Doner*.

2579. HARDY, G. H. Notes on the identity of described Australian flies of the genus Cerdistus (Asilidae). *Proc. Linnean Soc. New South Wales* 54(2): 80-88. 2 fig. 1929.—Attention is drawn to the probable error made by Macquart in crediting 140 spp. of Diptera to Tasmania, and in applying the view expressed in a previous paper to the genus *Cerdistus;* and several taxonomic changes are suggested. *Cerdistus* **fuscipennis** (*Erax f.* Macq.,=*Erax asiloides* Macq., *Cerdistus constrictus* Hardy) (p. 81); *C.* **maculatus** (*Neoitamus m.* White,=*Machimus forrestii* Dakin & Fordham) (p. 82); *C. margitis* Walk. (=*Asilus nigrinus* Macq., *Cerdistus australis* Ric.); *C. maricus* Walk. (=? *Asilus australis* Macq.); *C. gibbonsi* Ric. (=*Neoitamus vulgatus* var. White); *Rhabdotoitamus* White (p. 83), a color group of *Cerdistus*, is revised with a key to include *Cerdistus* **vittipes** (*Asilus v.* Walker,=*Neoitamus vittipes* Hardy) (p. 84); *C.* **volaticus** (*Rhabdotoitamus v.* White,=? *Asilus varifemoratus* Macq.=*Neoitamus graminis* var. White) (p. 85); *C.* **mistipes** (*Asilus m.* Macq. not Ric., =*Rhabdotoitamus claripes* White) (p. 86); *C.* **cognatus** (*Asilus c.* Macq.,=*Neoitamus neoclaripes* Hardy) (p.

87). A synonymic list of Tasmanian spp. of *Cerdistus* is given and notes on the Gibbons collection of *Cerdistus* in the Australian Mus.—*G. H. Hardy.*

2580. HARDY, G. H. Revisional notes on the tribe Brachyrrhopalini (robber flies), with remarks on habits and mimicry. *Proc. Roy. Soc. Queensland* 41: 59-72. 1929(1930).—Key to genera. *Asilus conopsoides* Fab. is possibly *Codula limbipennis* Macq.; *Brachyrrhopala,* key to species; *Dasypogon nigrinus* Macq. is possibly *Brachyrrhopala quadricincta* Big.; *Brachyrrhopala* **semirufa** (p. 65), Queensland; *Chrysopogon,* key to species; *Opseostlengis insignis* White, type a ♂ not ♀, as recorded. In observations on habits and mimicry it is suggested that some forms may have adapted habits away from the normal of the family, tribe, or genus to which they belong, and if by so doing they have added to their chance of survival, views on mimicry among robber-flies could be more certainly established. The habits of various tribes in Australia are discussed, and the habits of *Erethropogon limbipennis* seem to indicate a good example of possible contrast in so far as it is one of the so-called mimic species, frequents flowering shrubs, and is not known to be predaceous. Moreover its habits and deportment on flowers are like the cerambycid beetle *Hesthesis ?cingulata* with which it occurs.—*G. H. Hardy.*

2581. HARNLY, MORRIS HENRY. A critical temperature for lengthening of the vestigial wings of Drosophila melanogaster with sexually dimorphic effects. *Jour. Exp. Zool.* 56(3): 363-368. 1 fig. 1930.—Six temperatures were used in these experiments extending through a range of 13°, one-degree intervals being used in the critical part of the range. The variation within any incubator was ±0.05°C. Measurements were made of the right wings of the emerging vestigial flies. Over a range of 11° there was no significant lengthening of the wings. An increase of 1° beyond that point caused a marked lengthening of the wings of the ♂ flies. This change in wing length occurred at a temperature of 1° higher for the ♀♀ than for the ♂♂. An increase of 2° beyond the critical point caused additional morphological changes in the ♂ flies.—*Author (courtesy Wistar Bibl. Serv.).*

2582. HENDEL, FRIEDRICH. Trypetidae. In: ERWIN LINDNER—Die Fliegen der palaearktischen Region. No. 16, 17, 18 & 19. pp. 1-221. 17 pl., 79 fig. Schweizerbart'sche Verlagsbuchhandl.: Stuttgart, 1927.—The larval stages of some of these flies are injurious to cultivated fruits, especially in tropical regions. The morphology, larval development, classification, and distribution of the family are discussed, and a list of food plants of the various species is given. There are keys to subfamilies, tribes, genera, subgenera, and species. *Dacus* (*Leptoxyda*) **persicus** (p. 29), Persian Baluchistan [type depository not given]; *Euribia* **manni** (p. 45), Austria, type in Mus. Wien; *E.* **syriaca** ♀ (p. 49), Syria [depository not given]; **ORTALOTRYPETA** (p. 55), type *O.* **idana*** (p. 56) and *O.* **gigas*** (p. 55), China; *Acanthoneura* **pteropleuralis*** (p. 58), Amur; **NEOCERATITIS** (p. 61), type *N.* **asiatica*** (Beck.), n. comb. (p. 61); **AISCHROCRANIA** (p. 70), near *Ceriocera* and *Trypeta,* type *A.* **aldrichi*** ♂ (p. 71), China; *Vidalia* **appendiculata*** (p. 72) and *V.* **cervicornis*** ♂ (p. 73), China; *Rhagoletis* **zernyi*** ♂ (p. 76), Spain [depository not given]; **MELANOEDASPIS** and **DICHOEDASPIS** (p. 83), n. subgenera of *Oedaspis* [types not designated]; *O.* **farinosa*** (p. 84), probably Algeria; *O.* **heringi** (p. 85), Canary Is.; **ACIDIOSTIGMA** n. subg. of *Myiolia,* (p. 101), type *M.* (*A.*) **longipennis*** (p. 103), China [depository not given]; *M.* (*Acidiella*) **amuricola*** (p. 101), Amur, type in Mus. Hamburg; *M.* **angustifrons** ♀ (p. 102), type in Mus. Wien; *M.* **flavonigra*** (p. 102♂, China; *M.* **japonica** (p. 103), Japan, type in Mus. Wien.; *M.* **maculipennis** (p. 104), China; **ANASTREPHOIDES** (p. 105), near *Anastrepha,* type *A.* **gerckei*** (p. 105), Astrakhan, type in Hamburg Mus.; **PARASPHENISCUS** (p. 108), near *Oxyaciura,* type *P.* **debskii*** (Efflt.), n. comb. (p. 108); **CRYPTACIURA** (p. 109), type *C.* **rotundiventris*** (Fall.), n. comb. (p. 109); **PLACACIURA** (p. 110), type *P.* **alacris*** (Loew), n. comb. (p. 111); **OXYACIURA** (p. 111), type *O.* **tibialis*** (Rob.-Desv.), n. comb. (p. 112); *Tephrella* **basalis*** ♀ (p. 113) and *T.* **ibis** ♂ (p. 114), Mongolia [depositories not given]; **URELLIOSOMA** (p. 118), type *U.* **desertorum*** (*Tephritis d.* Efflt.) (p. 118); **CHAETORELLIA** (p. 121), type *C.* **jaceae*** (Rob.-Desv.), n. comb. (p. 121); *C.* **holosericea** ♀ (p. 122), S. Russia; **CHAETOSTOMELLA** (p. 124), type *C.* **onotrophes** (Loew), n. comb. (p. 124); *Terellia* **nigripalpis** ♂ (p. 127), Asia Minor, type in Mus. Wien; **TRICHOTERELLIA** n. subg. of *Terellia* (p. 129), type *T.* (*T.*) **setifera** ♂ (p. 129), Austria [depository not given]; **TRICHOXYPHOSIA** n. subg. of *Xyphosia* (p. 138), type *X.* (*T.*) **laticauda** (Meig.), n. comb. (p. 139); *X. miliaria* v. **punctipennis*** ♂ (p. 140), Russian Turkestan; *Icterica* **cashmerensis** ♂ (p. 141), Kashmir; *Campiglossa* **amurensis*** ♀ (p. 144), Amur; **PAROXYNA** (p. 146), type *P.* **tessellata** (Loew), n. comb. (p. 159); *P.* **difficilis*** (p. 152), Austria and Lapland [depository not given]; *P.* **lederi*** ♂ (p. 153), Mongolia, type in Mus. Wien; *P.* **loewiana*** (p. 154), north and central Europe, and Japan, type in Hamburg Mus.; *P.* **ochracea*** ♀ (p. 156), Astrakhan, type in Hamburg Mus.; *P.* **quadriguttata*** ♀ (p. 158), Transbaikalia, type in Mus. Wien; **GONIOXYNA** (p. 160), type *G.* **magniceps*** ♂ (p. 161), Mongolia, type in Hamburg Mus.; *Actinoptera* **meigeni*** ♂ (p. 163), France, type in Mus. Wien; *A.* **tatarica*** ♀ (p. 163), Mongolia, type in Hamburg Mus.; *Oxyna* **amurensis** (p. 166), Amur, type in Mus. Wien; *Euaresta* **sinensis** ♀ (p. 173), China; **EUARESTELLA** (p. 174), type *E.* **megacephala** (Loew), n. comb. (p. 174); *Tephritis* **cornupuncta*** (p. 185), Austria and Spain [depository not given]; *T.* **crepidis** (p. 186), central Europe and Triest [depository not given]; *T.* **frauenfeldi*** (p. 187), Austria, Roumania, and Albania [depository not given]; *T.* **heliophila*** ♀ (p. 188), Germany and Austria, type in Hamburg Mus.; *T.* **kukunoria*** ♀ (p. 189) and *T.* **mongolica*** ♂ (p. 191), Mongolia, types in Hamburg Mus.; *T.* **oedipus*** n. n. for *Urellia cribrata* Beck (p. 192); *T. valida* Loew (=*T. procera* Loew,=*T. subvalida* Portsch. ♀); *T.* **zernyi*** (p. 197), south and central Europe and N. Africa; **GONIURELLIA** n. subg. of *Trypanea* (p. 199), type *T. augur* Frfld.; *T.* (*G.*) **ensina*** (p. 200), Egypt; **TEPHRITOMYIA** n. subg. of *Acanthiophilus* (p. 202), type *A. lauta* Loew; **PARACANTHELLA** (p. 205), type *P.* **pavonina*** (Portsch.), n. comb. (p. 205); **PARACARPHOTRICHA** (p. 208), near *Ditricha,* type *P.* **alpestris** (Pokorny), n. comb. (p. 209). Unless otherwise stated, types are in U. S. Nation. Mus. An index to subfamilies, tribes, genera, and species with their synonyms, concludes the paper.

2583. HENDEL, FRIEDRICH. Neue oder weniger bekannte Bohrfliegen (Trypetidae) meist aus dem Deutschen Entomologischen Institut Berlin-Dahlem. *Ent. Mitteil.* 17(5): 341-370. 1928.—The following are described: **AETHIOTHEMARA** (p. 354) with *A.* **fallacivena** (Enderl.), n. comb. as type; **CERATITOIDES** (p. 365), type *C.* **nigromaculata** (p. 366), British Uganda; **PRISTACIURA** (p. 366), type *P.* **incisa** (p. 368), Ceylon; **DYSEUARESTA** (p. 368), type *Euaresta adelphica* Hend., including also the spp. *gephyrae, mexicana,* and *melanogastra; D.* **apicalis** (p. 368), Bolivia; **TETREUARESTA** (p. 368), type *Euaresta obscuriventris* Lw., including also the spp. *phthonera, ellipa, myrtis, spectabilis* and the genus *Acinia; Dacus* (*Chaetodacus*) **australis** (p. 341), N. Australia; *D. australis* v. **halterata** (p. 342), Queensland; *D.* (*Zeugodacus*) **quadrifidus** (p. 343), Ceylon; *D.* (*Dacus*) **clinophlebs** (p. 344), E. Africa; *D.* (*D.*) **triangulifer** (p. 344), *D.* (*D.*) **furcatus** (p. 345), *D.* (*D.*) **zimmermanni** (p. 346), and *D.* (*D.*) **rubiginosus** (p. 347), all 4 from Amani, E. Africa; *Coelopacidia* **apicalis** (p. 349), E. Africa, type in author's coll.; *C.* **carinata** (p. 349), E. Africa; *Rioxa* (*Dirioxa*) **testacea** (p. 352), Queensland; *Hexacinia* **stigmatoptera** (p. 353), Philippines, type in the U. S. Nation. Mus.; *Aethiothemara* **trigona** (p. 357), Cameroons, type in author's coll.; *A.* **striata** (p. 357), Uganda; *A.* **graueri** (p. 358), Urwald Moera; *A.* **transiens** (p. 358), Fernando Po,

type in author's coll.; *Acanthoneura* **australina** (p. 359), Queensland; *A. acidiomorpha* (p. 360), New South Wales, type in U. S. Nat. Mus.; *Callistomyia* **horni** (p. 361), W. Australia; *Euphranta* **minor** (p. 362), N. Australia; *E.* **conjuncta** (p. 361), Ceylon; *Strobelia* **ferruginea** (p. 369), Argentina. There are notes on other genera and spp. A key is given to 5 spp. of *Coelopacidia* End., to the 4 genera associated with *Aethiothermara*, and to the 6 spp. of the latter genus. Unless otherwise mentioned, types are in Deutsches Ent. Inst.—*C. E. Mickel.*

2584. JOBLING, B. A revision of the genus Raymondia Frauenfeld (Diptera, Pupipara, Streblidae). *Parasitology* 22(3): 283-301. 10 fig. 1930.—The author discusses the technique of preparing specimens and the general morphology of the genus. A key is given to the 6 spp. and subspp., of which 3 are described as new. The previously known spp. are redescribed and figured, and records of localities and hosts are given. *R.* **planiceps*** ♀ (p. 290), Brit. E. Africa, *R.* **quadriceps*** (p. 295), Brit. Somaliland, and *R. huberi* **setosa*** ♂ (p. 301), Aden, hosts of all 3 spp. being bats. Types in Brit. Mus.

2585. KARL, O. Zweiflügler oder Diptera. III. Muscidae. In: **Friedrich Dahl's Die Tierwelt Deutschlands.** 13: 232pp. 114 fig. Gustav Fischer: Jena, 1928.—The family Muscidae is divided into 6 subfamilies with a key for the German forms. The subfamilies comprise the Muscinae, including the tribes Muscini and Stomoxydini; Phaoniinae including the tribes Phaoniini, Hydrotaeini, and Fanniini; Eginiinae; Mydaeinae including the tribes Azeliini, Mydaeini, and Limophorini; Anthomyinae with the tribes Anthomyini and Fucellini; and Coenosiinae with the tribes Chelisiini and Coenosiini. The author changes the arrangement of genera and species from that of former authors by placing the species of *Pegomyia* with long setaceous antennae under the genus *Pegomyza* Schnb.; the genus *Hylemyia* R.D. contains only the spp. with feathered bristles on the antennae. *Pycnoglossa* Coqu. (=*Pogonomyza* Schnb.); spp. of the genus *Hylemyia* with pubescent antennae are incorporated into the genus *Chortophila* Mcq.; *Opsolasia* Coqu. (=*Lasiomma* Stein.); **CRINURINA** (p. 185), type *C.* **pictiventris** (*Chortophila p.* Zett.) (p. 185). *Adia* R.D. is removed from the *sepia*-group of Meigen in which the only species, *A. oralis* R.D., does not belong. The name *Phorbia* R.D. is used as the genus name for this group. The remaining species of *Chortophila* are distributed among 7 subgenera. Some members of the genus *Mydaea* R.D. have been placed in the genus *Helina* R.D. A systematic and an alphabetical list of genera and spp. concludes the monograph. Other new forms are: **CHORTOPHILINA** n. gen. (p. 203), based on *C.* **fallax*** (Löw.) n. comb.; n. subgenera of *Chortophila* Mcq. are **FLAVENA** (p. 147); **TRICHARIA** (p. 160); **THRIXINA** (p. 165), with *C.* (*T.*) **laricicola*** (p. 169); and **NUDARIA** (p. 171), type *C.* (*N.*) **nigrifrons** (p. 171); *C.* (*N.*) **lineatula** (p. 173); also *C.* (*N.*) **brevicauda** (p. 173); *Hydrotaea* **nidicola** (p. 42); *Fannia* **spinosa** (p. 61); *Pegomyia* **trigonalis*** (p. 140); *Chortophila* (*Egeria*) **trilineata** (p. 152).—*C. Zeimet.*

2586. KRÖBER, O. Die Tabanidengattung Sackenimyia Big. *Zool. Anz.* 90(1/2): 1-12. 6 fig. 1930.—A key to the spp. and references to the literature are given. The treatment of about 10 spp. includes citation of the type, description, and distributional records. *Sackenimyia* **ornata*** ♀ (p. 6), Minas Geraes, Brazil, type in Halle.

2587. LANDROCK, KARL. Revision der Siebert'schen Pilzmückensammlung im Deutschen entomolog. Institut, Berlin-Dahlem (Dipt.). *Stettiner Ent. Zeit.* 91(2): 252-260. 1 pl. 1930.—In addition to brief notes on a number of spp., there are more extended notes on: *Macrocera fascipennis**; *Zelmira ochracea* v. *humeralis**; *Mycomyia circumdata**; *M.* **sieberti*** ♂ (p. 255), E. Baltic; *Neoempheria winnertzi**, ♀ described; *Gnoriste bilineata**; *Leia borealis**; *Exechia nitidicollis*, ♀ described; *Brachypeza obscura*, ♀ described; *Dynatosoma thoracicum* (p. 258), ♀ described.—*K. Landrock (transl. by F. J. Wenninger).*

2588. LINDNER, ERWIN. Über einige ägyptische Strationmyiden (Dipt.). *Bull. Soc. Roy. Ent. d'Egypte* 14(1): 25-29. 3 fig. 1930.—Descriptions of 4 spp., including: *Stratiomyia segnis** f. **deserticolor** (p. 25); *Eulalia xanthopus**, ♀ described for the 1st time; *Nemotelus punctiventris* Beck. (=*Brachystomus aegyptiacus* Lind.); *Aspidacantha atra*, new to the Palaearctic region.

2589. MALLOCH, J. R. Notes on Australian Diptera. XX and XXI. *Proc. Linnean Soc. New S. Wales* 54(4): 283-343. 34 fig.; 408-410. 7 fig. 1929.—Part XX contains notes on Calyptrate Diptera and makes a final contribution on *Rutilia*. *Helina howei*, descriptive notes on ♀; *Hyalomyia* **costalis** ♂ (p. 284), N. S. Wales, reared from *Dysdercus sidae* [type depository not given]; *Amenia* **nigromaculata** ♂ (p. 286), W. Australia, type in coll. of I. M. Mackerras; *Microtropeza*, key to spp., including *M.* **latimana*** ♀ (p. 287), Queensland; *M.* **ochriventris*** ♀ (p. 287), on *Leptospermum*, N. S. Wales, type apparently in Mackerras' coll.; *M.* **flavitarsis** ♂ (p. 288), Tasmania; tribe Cylindromyiini, extent and contents indicated; *Cylindromyia* Meigen (=*Ocypteropsis* Towns.); *Cylindromyia*, emended description; *C. flavifrons*, described; *Prodiaphania* **georgei*** ♂ (p. 292) and *P. testacea* v. **claripennis*** (p. 292), W. Australia; *Rutilia leucosticta* Schiner (=*R. albopicta* Thompson). Macquart's *assimilis* belongs, not to *Rutilia*, but to *Paramphibolia* B. & B., of which it is the genotype. *Rutilia formosa* v. **subvittata** (p. 295), W. Australia. *R. vivipara*, brief description; *R.* **micropalpis** ♀ (p. 298) and *R.* **micans** ♀ (p. 299), New S. Wales. Key for the 13 species of Group II; *R. inornata*, note on ♂; *R. ethoda*, ♀ described; *R.* **dubitata** (p. 303), N. S. Wales; *R. potina*, described; *Rutilia* subgen. *Senostoma*, key to spp.; *R.* (*S.*) **hirticeps** ♂ (p. 305), and *R.* (*S.*) **nigriceps** ♂ (p. 306), N. S. Wales; *R.* (*S.*) **albovirida** ♀ (p. 307), Queensland; *Chrysopasta* **zabrina** (*Rutilia z.* Walker,=*C. versicolor* B. & B.) (p. 307); *Formosia*, key to spp.; *F.* **confusa** (p. 309), S. Australia [type dep. not clear]; *F.* **frontosa** ♂ (p. 310), N. S. W.; *F.* **smaragdina** (p. 312), N. Queensland; *Paramphibolia assimilis**, ♂ described; **CHAETOGASTRINA** (p. 313), similar to *Paramphibolia*, type *C.* **stolida*** ♂ (p. 313), N. S. W.; key distinguishing *Paramphibolia*, *Amphibolia*, and *Chaetogastrina*. The following are illustrated: *R. splendida* ♂, *R. pellucens*, *R. erichsoni* ♂, *R. micans* ♂, *R. regalis* ♂, *R. inornata* ♂, *R. ruficornis*, and *Formosia atribasis*. The author attributes to Dexiini a tribal rank rather than that of a family or subfamily. Tribe Linnaemyiini, key distinguishing *Linnaemyia*, *Chaetophthalmus*, and *Apalpus*; *Linnaemyia bicolor** ♂, described; **APALPUS** (p. 318), near *Peleteria*, type *A.* **dorsalis*** ♀ (p. 318), W. Australia, type in Mackerras' coll.; *Chaetophthalmus brevigaster**, described; **QUADRA** (p. 320), in Tachinini, near *Gonia*, type *Q.* **ornata*** ♀ (p. 320), W. Australia; **ZEBROMYIA** (p. 321), near *Gonia*, type *Z.* **obesa*** ♂ (p. 321), Tasmania; **ARRHENOMYZA** (p. 322), near *Gonia*, type *A.* **conspicua*** ♂ (p. 322), W. Australia; *Froggattimyia*, *Protomeigenia*, and *Gonia*, brief notes; *Chlorotachina* (=*Chlorodexia* Towns.), key to 3 spp., including *C.* **nigrocaerulea*** (p. 324), W. Australia; **MACROCHLORIA** (p. 326), resembling *Calliphora*, type *M.* **calliphorosoma*** (p. 326), N. S. W.; **PHOROCEROSOMA** (p. 327), related to *Madremyia* and *Murdockiana*, type *P.* **setiventris*** ♂ (p. 327), Queensland; **HILLIA** (p. 328), near *Phorocera*, type *H.* **polita*** ♀ (p. 328), N. Australia; discussion of *Phorocera*; *Sturmia elzneri*, described; *Sturmia* R.D. (=*Ugimeigenia* Towns.); *Thrycolyga* Rondani (=*Podotachina* B. & B.,=*Neoscotia* Towns.); *Thrycolyga sorbillans**, brief note; *Actia* **darwini** ♂ (p. 334), N. Australia. Synoptic treatment of the genera of Australian and New Zealand Tachinidae, including *Gymnosoma*, *Calcageria*, *Calcager*, *Dexia*, *Peremptor*, *Nemoraea*, *Demoticus*, *Protohystricia*, and *Gonia*. Notes on New Zealand genera include: **PROTOHYSTRICIA** (p. 341), resembling *Winthemia*, type *P.* **pachyprocta** (*Hystricia p.* Nowicki) (p. 342); *Calcageria* Curran (=*Opso-*

phagus Aldrich). Unless otherwise mentioned, types are in the Australian Mus. Part XXI. Asilidae. The author has examined all the Australian material available in U. S. Nation. Mus. and briefly discusses: *Ommatius chinensis*, O. distinctus**, and *O. queenslandi*; O.* flavicaudus* (p. 409), N. Queensland, type in U. S. Nation. Mus.

2590. **PARENT, O. Les espèces paléarctiques du genre Hercostomus LW.** *Ann. Soc. Ent. France* 96(3/4): 209-231. 1 fig. 1927.—Contains extensive key to ♂♂ and ♀♀ and description of: *H.* **phoebus*** (p. 230), Angora.

2591. **PARENT, O. Description d'un Diptère nouveau.** *Ann. Soc. Ent. France* 96(3/4): 232. 1927.—*Oligochaetus* arrogans from Italy, type in coll. V. Roder.

2592. **ROOK, H. de, and R. SOESILO. Anopheles (Bironella) papuae.** *Mededeel. Dienst Volksgezondheid Nederlandsch-Indië* 19(2): 213-218. 6 fig. 1930.—The larva, ♂ and ♀, is described, the authors stating that it has characters in common with *A. bironelli* and *A. travestitus* Brug and that these 3 *Anopheles* should be considered one group, the *Bironella* group. In 1920 Swellengrebel described the larva of *Stethomyia aitkeni* v. *papuae* from the south-coast of west New Guinea. This larva, it is found, differs from that of *S. aitkeni*, but does possess all the characteristics of the larva found by the authors; accordingly, it is very probable that Swellengrebel dealt with the above-mentioned form. Upon rearing, the larva proved to be an *Anopheles*. The authors propose for it the name *Anopheles* (*Bironella*) papuae (p. 217).

2593. **SCHMIDT, M. Vorkommen von Tipula czizeki de Jong in den Provinzen Brandenburg und Sachsen.** *Zeitschr. Wiss. Insektenbiol.* 25(8/9): 168. 1930.—First record for Germany.

2594. **SÉGUY, E. Description d'un nouveau calliphorine.** *Ann. Soc. Ent. France* 97(1/2): 152. 1928.—*Rhynchomyia* **ursina** ♂ from the Atlantic coast, Sahara.

2595. **STUDY, E. Über einige mimetische Fliegen.** *Zool. Jahrb. Abt. Allgen. Zool. u. Physiol. Tiere* 42(4): 421-427. 2 col. pl. 1926.—Three mimetic robberflies, of the family Asilidae, are figured, each with its dead prey, its model. Two other examples of wasp-mimicry are cited. One n. sp. is described, *Systropus* **studyi*** Enderlein (p. 426), So. China.—*E. Study.*

2596. **TOKUNAGA, MASAAKI. The morphological and biological studies on a new marine cranefly, Limonia (Dicranomyia) monostromia, from Japan.** *Mem. Coll. Agric. Kyoto Imp. Univ.* 10: 93p. 17 pl. 1930.—*L.* **monostromia*** (p. 58) (types in author's coll.) was collected in a biological survey at Seto beach, Wakayama Prefecture, central Japan. The morphology, especially external (mouth parts and head of larva and adult, wing venation, legs, thorax, abdomen, etc.), of this sp. in all stages of development is fully described and figured. Musculature of the larva is also described. Variation of wing venation of both sexes is found in the veins surrounding the median cell. Variation curves of number of teeth in claw, show a sexual difference. Secondary sexual character is distinct in the structure of the last tarsal segment. This cranefly emerges in spring and is evidently single brooded. The relation between the stages of life history and the condition of the food alga, *Monostroma* sp., is shown in a diagram. Diurnal haunts are rock caves on the seashore. Breeding place is rocky shore, where eggs are laid and larvae feed exclusively on *Monostroma* alga in situ. Laboratory experiments on respiratory behavior were carried out. Observations of other habits—feeding, resting, oviposition, emergence, photic behavior, swarming and mating—are reported in detail. The biological relations between the food algae and various natural enemies—*Miniopterus* bat, birds, fish, predaceous insects and mites, parasitic mites, etc.—are shown diagrammatically. The biological complex of seashore insects associated with this cranefly, the tidal rhythm, and daily and spatial change in habitats, are also discussed and diagrammed. An extensive bibliography is appended.—*M. Tokunaga.*

2597. **VIMMER, ANT. Appareil trachéen des larves des Schizophores (Diptères).** *Acad. Tchèque Sci. Bull. Internat. Cl. Sci. Mat. Nat. et Méd.* 27: 545-549. 1 fig. 1926.—This account gives in detail the tracheal "innervation" of various organs (pharynx, esophagus, proventriculus, ventriculus, intestine, rectum, heart, salivary glands, and many others) of many spp. The topography of the tracheary systems in these larvae is described in detail.

2598. **VOGEL, R. Beobachtungen über blutsaugende Zweiflügler im Kanton Tessin [Switzerland].** *Zool. Anz.* 93(1/2): 1-3. 1931.—*Atrichopogon infuscus,* previously known only from Belgium and Austria, was found on the wing of *Stauropus fagi* [Lepidoptera], where it was probably feeding on blood or some secretion. Ecological notes are given on *Anopheles bifurcatus, Culex hortensis, Finlaya geniculata,* and *Phlebotomus papatasi.*

HEMIPTERA AND HOMOPTERA

H. H. KNIGHT, *Editor,* Hemiptera

Z. P. METCALF, *Editor,* Homoptera

(See also in this issue Entries 1848, 1854, 1885, 2758)

HEMIPTERA

2599. **KNIGHT, HARRY H. Rectifications for Blatchley's "Heteroptera" with the description of a new species (Hemiptera).** *Bull. Brooklyn Ent. Soc.* 24(3): 143-154. 1929.—Comparison of types is made and discussion of synonymy of: *Eustictus filicornis* (Walk.); *Labops hirtus* Kngt.; *Barberiella apicalis* Kngt.; *Pilophorus strobicola* Kngt.; *Dicyphus vestitus* Uhl.; *D. gracilentus* Parsh.; and *Sixeonotus insignis* Reut. Complete specimen data are given for 81 spp. of Miridae which are said to be recorded incorrectly by Blatchley. *Sixeonotus* **recurvatus** (p. 153), District of Columbia, type in author's coll.—*H. H. Knight.*

HOMOPTERA

2600. **DeLONG, D. M., and J. P. SLEESMAN. New genera and subgenera from the genus Deltocephalus. A study of the internal male genitalia of the American species and their bearing upon taxonomy.** *Ann. Ent. Soc. Amer.* 22(1): 81-114. 9 pl. 1929.—Genera of Cicadellidae like *Thamnotettix, Euscelis,* and *Lonatura* are more closely related to the different subgenera of *Deltocephalus* than some of the subgenera are to each other; and those subgenera are therefore now treated as genera. **SECOPENNIS** n. subgen. (p. 85) of *Flexamius,* type *Flexamius* (*S.*) *slossoni;* **PALUS** n. subgen. (p. 95) of *Flexamius,* type *Flexamius* (*P.*) *delector,* all spp. occurring in northern habitats on sedges or coarse grasses of freshwater marshes; **ALAPUS** n. gen. (p. 86) near *Flexamius,* type *A.* **fraternus** (p. 86), n. comb.; **LATALUS** n. gen. (p. 87) near *Flexamius,* type *L.* **sayi** (p. 87), n. comb.; *Flexamius* **surculus*** (p. 99), Texas, type in Osborn coll.; *Latalus ocellaris* v. **sobrinus** (p. 100), Alberta; *Polyamius* **aestuarium** (p. 101), North Carolina, in DeLong coll.; *P.* **montanus*** (p. 101), Montana, type in DeLong coll.; *Laevicephalus* **cicatrix*** (p. 102), Alberta; *L.* **orbiculus*** (p. 103), Wyoming, type in Osborn coll.; *L.* **subrutilus*** (p. 103), North Dakota, type in Osborn coll.; *Deltocephalus* **comesus*** (p. 104), Texas, type in DeLong coll. Interrelationships of the various spp. are discussed under their respective genera. —*M. W. Boesel.*

2601. **JANCKE, O. Über eine neue Eriosoma-Art an Birnenwurzeln. (Vorläufige Mitteilung.)** *Zeitschr. Angewandte Ent.* 17(1): 146-155. 10 fig. 1930.—Biological and

morphological observations on this small bright-yellow plant louse found on pear roots, presumably a n. s., *E.* flavum (p. 155).

2602. **LALLEMAND, V.** Nouveaux Cercopides de la Presqu'île Malaise. *Jour. Fed. Malay States Mus.* 16 (1/2): 98-107. 1 fig. 1930.—This paper is based on material in the Federated Malay States Mus. *Eoscarta* [thus in Corrigenda; *Roscarta* on p. 98] punctata (p. 98); *Notoscarta* malayana (p. 99); *Phymatostetha* pahangana (p. 99); *P. semele* v. limbata (p. 100); *Trichoscarta* pendleburyi (p. 100); *T. p.* var. interrupta (p. 100); *Cosmoscarta* diminuta (p. 101); *Leptataspis* selangorensis (p. 101); *L.* hendersoni (p. 102); *L.* ophirina (p. 102); *Homalostethus* humilis (p. 103); *Opistharsostethus* sexpunctatus (p. 103); *O.* tripunctatus (p. 104); *O.* malayanus (p. 105); *Ectemnonotum* apicale (p. 105); *E.* kedahanum (p. 106); *E.* coruscans (p. 106); GYNOPYGOCARTA* [drawing of the protuberances and posterior side of the mesosternum] (p. 106), resembling *Ectemnonotum* and *Gynopygoplax*, type *G.* butleri (*Cosmoscarta b.* Distant) (p. 107).

2603. **LALLEMAND, V.** Quelques espèces et variétés nouvelles de Cercopides exotiques des collections du Musée Zoologique de Hamburg. [In German.] *Folia Zool. et Hydrobiol.* [*Riga*] 2(2): 164-169. 1931.—List of 14 spp., including: *Homalostethus* luzonensis (p. 165), Philippines, *Cosmoscarta fumosa* v. obscura (p. 165), India, and *Aufidus* wagneri (p. 165), Borneo, types of all 3 in Hamburg Mus.; *Triecphora* fortunata (p. 166), Goyaz, type in author's coll.; *T. xanthospila* v. obliterata (p. 166), Cameroons, type in Hamburg Mus.; *T.* nigripes (p. 167), Cabana, Brazil, and *Sphenorhina hebes* v. rubens (p. 167), Peru, both types in author's coll.; *S. rubra* v. obliterata (p. 167), Colombia, type in Hamburg Mus.; *S. pubescens* v. aequatoriana (p. 167), Ecuador, Sta. Inez, type in author's coll.; *S.* cyanescens (p. 167), Colombia, type in Hamburg Mus., *S.* sericea (p. 168), Rio de Janeiro, type in author's coll.

2604. **MONZEN, KOTA.** Studies on some gall producing aphides and their galls. *Saito Ho-On Kai* (*The Saito Gratitude Foundation*) *Monographs No. 1* 80p. 17 pl. 1929.—A survey of the Japanese gall-producing aphids with synonymy, descriptions or re-descriptions, and illustrations of most of the 42 spp. *Schlechtendalia mimifushi** on *Rhus semi-arata; Nurudeopsis rosea** on *Rhus semi-arata; Mansakia miyabei** on *Hamamelis japonica; M.* kagamii* (p. 12), on *H. japonica; M.* gallifoliae* (p. 14), on *H. japonica; Astegopteryx nekoashi** on *Styrax japonica; A. styraci** on *Styrax obassia; Nipponaphis distychii* on *Distylium racemosum; Hamamelistes shirakabae** on *Betula japonica; Astegopteryx* ? sp.* on *Elsholtzia patrini; Eriosoma lanigerum* on *Malus pumila* v. *domestica; E. japonicum** on *Ulmus japonica; Gobaishia japonica** on *Ulmus* sp.; *Tetraneura yezoensis** on *Ulmus japonica; T. akinire** on *Ulmus japonica; Watabura moriokensis** on *Zerkowa serrata; Pemphigus matsumurai** on *Populus maximowiczii; Pemphigus dorocola** on *Populus maximowiczii; Pemphigus niishimae** on *Populus maximowiczii; Prociphilus pourthiacae** on *Pourthiaca villosa; Prociphilus kuwanai** on *Pirus serotina* v. *culta; Prociphilus sasakii** on *Malus pumila* v. *domestica; Prociphilus nidificus** on *Fraxinus shioji; Phyllaphis fagi** on *Fagus silvestri* and *F. japonica; Brevicoryne brassicae** on *Brassica oleracea* v. *capitata; Hyalopterus* albus* (p. 47), on *Ligusticum acutilobum; Cryptosiphum gallarum** on *Artemisia vulgaris* v. *indica* and *A. japonica; Toxoptera piricola** on *Pirus serotina* v. *culta; Pergandeidia siphonella** on *P. s.* var. *culta; Aphis gossypii** on *Cucumis sativus*, etc.; *Myzus japonica** on *Malus pumila* v. *domestica; Aphis* utsugicola* (p. 54), on *Deutzia scabra; Aphis* uwamizusakurae* (p. 56), on *Prunus grayana; Myzus sasakii** on *Prunus serrulata* v. *spontanea; M. higansakurae** on *Prunus subhirtella; M. higansakurae* v. *rarus** on *Prunus serrulata* v. *spontanea; M. sakurae** on *P. s.* var. *spontanea; Aphis fukis** on *Petasites japonicus; M. impatiensae** on *Impatiens textori* and *I. noli-tangere; M. persicae** on *Prunus persicae; Macrosiphum* sumomocola* (p. 70), on *Prunus salicina; Chermes* japonicus* (p. 71), on *Picea jezoensis* v. *hondoensis; Phylloxera vastatrix* on *Vitis vinifera*.—*E. P. Felt.*

2605. **PENDLEBURY, H. M.** Malaysian Cercopidae in the Raffles and Federated Malay States Mus. *Jour. Fed. Malay States Mus.* 16(1/2): 108-118. 1930.—A list of about 90 spp., with records of localities and dates.

2606. **PRUTHI, HEM SINGH.** Studies on Indian Jassidae (Homoptera). Part I.—Introductory and description of some new genera and species. *Mem. Indian Mus.* 11(1): 1-68. 5 pl., 92 fig. 1930.—An historical survey of the family and of the terminology used in the paper are given. 5 new genera, 40 new spp. and 1 new var. are described: *Ulopa* brunneus* (p. 5); MAGNENTIUS (p. 6), type *M.* clavatus* (p. 7); TROCNADELLA (p. 8), type *T.* shillongensis* (p. 9), *T.* punctatus* (p. 10); *Agallia* robustus* (p. 10); *Durgades* mirabilis* (p. 12), *D.* idiocerus* (p. 13); *Symphypyga* maculatus* (p. 15); *Idiocerus* nagpurensis* (p. 17); *Parabolocratus* mandlensis (p. 18); *Bumizana* ruberosa* (p. 20); *Kana* fasciata (p. 22); *Chiasmus* alata* (p. 23); *Leofa* parwala* (p. 26); *Gurawa* minorcephala* (p. 29); BAILEYUS (p. 31), type *B.* brunneus* (p. 31); *Platymetopius* rahmani* (p. 33); *Rhombopsis* viridis* (p. 34); *Drabescus* kempi* (p. 36); *Selenocephalus* brunneus* (p. 37); *Aconura* dindorensis* (p. 38), *A.* tolla* (p. 39); *Arya* rotundus* (p. 40); *Paternus* viridula* (p. 42), *P.* vertica (p. 44); BELLA (p. 44), type *B.* apicalis* (p. 45); BALCLUTHINA (p. 46), type *B.* viridis* (p. 46); *Eugnathodus* indica* (p. 48), *E.* micropterous (p. 50), *E.* ocellatus* (p. 51); *Cicadula* indica* (p. 54), *C. montanus* v. macropterous* (p. 58), *C.* maculata* (p. 58), *C.* bipunctatus* (p. 59), *C.* fletcheri* (p. 60), *C.* indrina* (p. 61); *Thamnotettix* prabha* (p. 62), *T.* veinatus* (p. 63), *T.* chhota* (p. 64), *T.* bicolor* (p. 65); *Orosius* maculatus* (p. 67); *Chiasmus* mustelina* (*Kartwa m.* Dist.) (p. 25); *Eugnathodus* sanguinescens (*Nesosteles s.* Kirk.) (p. 52); *Cicadula* montanus (*Deltocephalus m.* Dist.) (p. 56). Types of all new genera and spp. in the Indian Mus.—*S. Ribeiro.*

HYMENOPTERA

S. A. ROHWER, *Editor*

(See also in this issue Entries 1680, 1903, 2715, 2757)

2607. **ARNOLD, GEORGE.** The Sphegidae of South Africa. Part 9. Ampulex group. Part 10. Chlorion group. Parts 11-14. *Ann. Transvaal Mus.* 12(3): 191-232. 1 pl. 18 fig.; 233-279. 3 pl. (1 col.) 9 fig.; (4): 338-375. 20 fig. 1928. 13(4): 217-319. 62 fig.; 320-380. 1 pl. 42 fig.; 381-418. 1 pl. 49 fig. 1929.—The scope of the work is greater than is indicated in the title, as it is a monograph, dealing with the Sphegidae of the entire Ethiopian region and not only of S. Africa. Part 9.—*Dolichurus* rubripyx ♀ Brauns (in litt.) (p. 194), Cape Province, type in coll. Brauns; *D.* venator* (p. 194). S. Rhodesia, type in Rhodesia Mus.; *D.* kohli ♀ Brauns (in litt.) (p. 196), Cape Province, type in coll. Brauns; *D.* bimaculatus ♂* (p. 196), S. Rhodesia, type in Rhodesia Mus.; *Ampulex cyanura* with races rhodesiana* (p. 207), and monticola ♀* (p. 208), S. Rhodesia, types in Rhodesia Mus.; *A.* arnoldi* Brauns (in litt.) (p. 212), Cape of Good Hope, type in coll. Brauns. Part 10.—*Sceliphron* (*Pelopoeus*) fulvohirtum* (p. 246), S. Rhodesia, type in coll. R. H. R. Stevenson; *Sphex* (*Parapsammophila*) herero* (p. 253), S. W. Africa and S. Rhodesia, type (from Kaross) in S. African Mus.; *S.* (*P.*) consobrinus ♀* (p. 255), Cape Province, type in coll. Brauns; *S.* laticeps ♀* (p. 268), S. W. Africa, type in S. African Mus.; *S.* perin-

gueyi ♀* (p. 269), Cape of Good Hope, type in S. African Mus. Keys are given to spp. of *Dolichurus, Ampulex* and *Sphex* (olim *Ammophila*), of the Ethiopian region. *Ampulex nebulosa* Smith, 1956 (=*A. cribrata* Kohl, 1893); *A. mutilloides* Kohl, 1893 (=*A. sanguinicollis* Brauns, 1899); *A. cyanura* Kohl, 1893 (=*A. capensis* Cameron, 1905 and *A. africana* Cameron, 1905); *Sphex (Parapsammophila) gigantea* Kohl, 1901, is reduced to a variety of *S. ludovici* Smith, 1856. Part 11 deals only with the genus *Chlorion* which is divided by key into 8 subgenera. Key to ♂♂ and ♀♀, and discussion of 49 spp. and varieties, including *C. (Proterosphex) haemorrhoidalis* v. **kobrowi** (p. 367), Transvaal, type in Brauns coll.; *C. (P.)* **neavei*** (p. 370), Nyasaland, type in Brit. Mus.; *C. (P.) stadelmanni* v. **integrum*** (p. 372), Natal, S. Rhodesia, Portuguese E. Africa, type in Stevenson coll.; *C. (P.)* **abyssinicum*** ♂ (p. 372), Abyssinia, type in Brit. Mus. Part 12.—Keys are given to species of all genera. *Nysson* **decipiens*** (p. 225), Zululand and S. Rhodesia; *N.* **minutus** ♂* (p. 227) and *N.* **rhodesiae*** (p. 228), S. Rhodesia; *Arpactus* **umtalicus** ♀* (p. 240), S. Rhodesia and Natal. Types of the 4 preceding spp. in Rhodesia Mus. *Arpactus (Ammatomus)* **gemellus*** (p. 250), S. W. Africa, type in S. African Mus.; *A. (A.)* **pictipes** ♂* (p. 251) and *A. (A.)* **fuscipes** ♀* (p. 253), S. Rhodesia, types in Rhodesia Mus.; *A. (A.)* **stevensoni*** (p. 251), S. Rhodesia, type in coll. Stevenson; *Sphecius* **citrinus** ♀* (p. 257), Cape Province, type in S. African Mus.; *Stizus braunsii* v. **corpulentus*** (p. 270), *S.* **fraterculus*** (p. 272), and *S.* **sipapomae*** (p. 272), S. Rhodesia, type in Rhodesia Mus.; *S. boer* v. **rufipes** (p. 275), *S.* **mitulus*** (p. 275), *S.* **witzenbergensis*** (p. 275), and *S.* **laticaudatus** ♂* (p. 276), Cape Province, type in Brit. Mus.; *S.* **buyssoni** (Brauns in litt.) (p. 277), S. Rhodesia, type in Transvaal Mus.; *S. hoplites* v. **minor*** (p. 286), Cape Province, type in Brit. Mus.; *S.* **proteus*** (p. 287), S. Rhodesia, type in Rhodesia Mus.; *S.* **laticinctus** ♂* (p. 289), Cape Province, type in Brit. Mus.; *S.* **hyperocrus** ♀ (Brauns in litt.) (p. 295), Cape Province, type in Transvaal Mus.; *S.* **mutabilis*** (p. 295), Cape Province, type in Brit. Mus.; *S.* **quadristrigatus** ♀* (p. 297), S. W. Africa, type in Brit. Mus.; *S. dewitzii* v. **hamatus** ♂* (p. 309), S. Rhodesia, type in Rhodesia Mus.; *S.* **ellenbergeri** ♂* (p. 309), Basutoland, type in Mus. Nat. Hist. Nat. Paris; *S.* **scoliaeformis*** (p. 317), and *S.* **pubescens** ♂* (p. 318), S. W. Africa, type in S. African Mus. The following new synonymy is reported: *Arpactus effugiens** Brauns, 1911 (=*A. fugax* Turner 1915); *A. aglaia** Handl., 1895 (=*A. euphrosyne* Handl., 1895); *A. thalia* Handl., 1895 (=*A. transvaalensis* Cameron, 1910); *A. monstrosus** Handl., 1894 (=*A. silverlocki* Turner, 1912); *Stizus braunsii* Handl., 1894 (=*S. pruinosus* Cameron, 1910,=*S. pulchritinctus* Cameron, 1912); *S. cinguliger* Smith, 1856 (=*S. clavicornis* Handl., 1892). Part 13.—Keys are given to species of all genera. *Bembex* **ulula*** (p. 330) and *B.* **stevensoni*** (p. 331), S. Rhodesia, types in Rhodesia Mus.; *B.* **anomalipes** ♂* (p. 334), S. Rhodesia and Belgian Congo, type in coll. Stevenson; *B.* **speciosa*** (p. 337), *B.* **cultrifera*** (p. 339), and *B.* **scaura*** (p. 340), S. Rhodesia, types in Rhodesia Mus.; *B.* **venusta*** (p. 347), S. W. Africa, type in S. African Mus.; *B.* **bequaerti*** (p. 250), with var. **dira** (p. 350), Belgian Congo, types in Congo Mus., Tervueren; *B.* **arnoldi*** Brauns (p. 353), Cape Province, type in Transvaal Mus.; *B. melanopa* r. **litoralis** (p. 356), Cape Province, type in coll. Stevenson; *B. kriechbaumeri* r. **scitula** ♀ (p. 363), S. Rhodesia and S. W. Africa, type in Rhodesia Mus.; *B.* **fraudulenta*** (p. 367), Durban, type in Durban Mus.; *B. liturata* r. **flavopicta** ♂ (p. 370), S. W. Africa, type in Transvaal Mus.; *B.* **harenarum*** Brauns (p. 371), Cape Province, type in Transvaal Mus.; *B.* **albopilosa** ♂* (p. 378), S. W. Africa, type in S. African Mus.; *B.* **junodi** ♂* (p. 379), Portuguese E. Africa, type in Transvaal Mus. The following synonymy is recorded: *Bembex albofasciata* Smith, 1973 (=*B. karschii* Handl., 1893); *B. intermedia* Dahlb., 1845 (=*B. olivata* Dahlb., 1845); *B. ochracea* Handl., 1893 (=*B. opima* Turner, 1917). Part 14.—This part includes the third appendix. *Gastrosericus braunsi* **v. unicolor** ♀ (p. 383), and *G.* **pratensis** ♀* (p. 383), S. Rhodesia, types in Rhodesia Mus.; *G.* **pulchellus** ♀* (p. 383), S. Rhodesia, type in coll. Stevenson; *Tachysphex braunsi* v. **rufopictus** ♂ (p. 385), Cape Province, type in Rhodesia Mus.; *T.* **suavis** ♀ (p. 385), S. Rhodesia, type in Rhodesia Mus.; *T.* **ebeninus*** (p. 385), and *T.* **scabrosus** ♂* (p. 386), S. Rhodesia, types in coll. Stevenson; *T. oberon* v. **mashona** ♀ (p. 387), S. Rhodesia, type in coll. Stevenson; *Tachytes* **midas*** (p. 389), *T.* **lepida*** (p. 389), and *Paranysson* **brevispinosus** ♀, ☿* (p. 391), S. Rhodesia, types in Rhodesia Mus.; *P. oscari* r. **servus** ♂* (p. 392), Liberia, type in Congo Mus.; Tervueren; *P.* **congoensis*** (p. 392), *Notogonidea* **bequaerti** ♀ (p. 394), *N.* **nitens** ♂* (p. 394), and *N.* **egregia** ♂ (p. 395), Belgian Congo, types in Congo Mus., Tervueren; *Palarus handlirschii* r. **occidentalis** (p. 398), S. W. Africa, type in S. African Mus.; *Nitela* **parallela** ☿* (p. 398), S. Rhodesia, type in coll. Stevenson; *N.* **lubutuana** ☿* (p. 399), Belgian Congo, type in Congo Mus., Tervueren; *Miscophus* **modestus** ☿* (p. 401), *M.* **ichneumonoides** ♂* (p. 402), *M.* **infernalis*** (p. 403), *M.* **lugubris** ☿* (p. 404), and *Saliostethus* **rhodesianus*** (p. 404), S. Rhodesia, types in coll. Stevenson; *Psenulus* **luctuosus** ☿* (p. 405), S. Rhodesia, type in Rhodesia Mus.; *Passaloecus braunsi* v. **ferrugineipes** ♀ (p. 406), and *P.* **bequaerti** ☿* (p. 406), Belgian Congo, types in Congo Mus., Tervueren; *Philanthus* **gwaaiensis** ♂* (p. 407), S. Rhodesia, type Rhodesia Mus.; *Thyreopus* **libertinus** ♂* (p. 408), Liberia, type in Congo Mus.; **KAROSSIA** (p. 409), type *K.* **hessei** ☿* (p. 410), S. W. Africa, type in S. African Mus.; *Belomicrus* **funestus** ☿* (p. 411), Cape Province, type in Rhodesia Mus.; *Oxybelus* **bicornutus** ☿* (p. 412), *O.* **hessei*** (p. 413), and *O.* **decipiens** ☿* (p. 415), S. W. Africa, types in S. African Mus.; *Stizus* **ctenopus** ☿* (p. 416), S. Rhodesia, type in coll. Stevenson; *Tachysphex braunsi* v. **boer** (*T. b.* var. **debilis** Arnold) (p. 387).—*G. Arnold.*

2608. ARNOLD, GEORGE. The Sphegidae of South Africa. Part XV (conclusion). *Ann. Transvaal Mus.* 14(2): 135-220. 51 fig. 1931.—*Cerceris*, key to spp. of the Ethiopian region, *C. vigilans* r. *pervigilans* Turner (=*C. fongosi* Brauns, *C. trilineata* Bisch.); *C. natalensis* Sauss. (=*C. morosula* Brauns); *C. kalaharica* Bisch. (=*C. africana* r. *karooensis* Brauns); *C. schultzei* Bisch. (=*C. transvaalicola* Brauns); *C. lichtenburgensis* Brauns is considered a variety of *C. ruficauda* Cam.; *C. varilineata* Cam. is assigned as a variety of *C. emeryana* Grib.; *C. eulalia* Brauns is considered a race of *C. rufiscutis* Cam.; *C. cratocephala* Cam., *C. deceptrix* Brauns, and *C. libitina* Brauns are varieties of *C. iniqua* Kohl; *C. fingo* Brauns ♀ (p. 149) and *C. holconotula* Brauns (p. 150), both Cape Province, first descriptions of previously figured species, types in Brauns coll.; *C. macalanga* ♂, *C. arnoldi* ♂, *C. discrepans* ♂, and *C. pictifacies* ♂, first descriptions of sex; *C. hypocrita*, emend. descr.; *C. ruficauda* **r. barbara** ♀ (p. 152), Brit. E. Africa; *C. macololo* **r. capensis*** (p. 152), and *C. nobilitata* **r. sordidula** ♀ (p. 153), Cape Province; *C. discrepans* **r. perplexa** ♂ (p. 153), S. W. Africa; *C. varicincta* **r. manicana** (p. 154), Southern Rhodesia, type in Rhodesia Mus.; *C.* **bicuspidata*** ♂ (p. 154), S. W. Africa; *C.* **ludibunda** ♂ (p. 155), Orange Free State; *C.* **uncifera*** ♂ (p. 156), Nigeria; *C.* **mutabilis*** ♂ (p. 157), Natal; *C.* **illustris*** (p. 158), So. Rhodesia, types in R. H. R. Stevenson coll.; *C.* **erynnis*** ♀ (p. 159) and *C.* **monticola*** ♀ (p. 160), Nyasaland; *C.* **sumptuosa*** ♀ (p. 160), Pondoland, Cape Province, and Orange Free State; *C.* **dejecta*** ♀ (p. 162), Brit. E. Africa; *C.* **arida*** ♀ (p. 163), N. Nigeria; *C.* **placita*** ♀ (p. 163), Victoria Nyanza; *C.* **arrogans*** ♀ (p. 164), and *C.* **nephthys*** ♀ (p. 165), S. W. Africa; *C.* **inconspicua*** ♀ (p. 166), Nyasaland; *C.* **hamiltoni*** ♀ (p. 167), Brit. E. Africa; *C.* **egena*** ♀ (p. 167), Nyasaland; *C.* **turneri*** (p. 168), *C.* **quadridentata*** ♀ (p. 170), and *C.* **grata*** ♀ (p. 170), S. W. Africa; *C.* **placida*** (p. 171), Nigeria; *C.* **osiris*** (p. 172), *C.* **amatoria*** (p. 173), So. Rhodesia, type in Stevenson coll.; *C.* **ponderosa*** ♀ (p. 174), Brit. E. Africa; *C.* **hausa*** ♀ (p. 174), Nigeria; *C.*

uncta* ♀ (p. 175), Gambia; *C.* **nugax*** ♂ (p. 176), Nigeria; *C.* **horus*** (p. 177), S. W. Africa; *C.* **isis*** (p. 178), So. Rhodesia, type in Rhodesia Mus.; *C.* **ugandensis*** ♀ (p. 179), Uganda; *C.* **vumbui*** (p. 180), So. Rhodesia, type in Rhodesia Mus.; *C. rufiscutis**, emended description; *C. r.* race **decolorata*** (p. 182), Brit. E. Africa; *C. repraesentans**; *C. bicolor** Sm. (=*C. fossor* Sm.) and *C. albifrons* redescribed; *C. kilimandjaroensis**; *C. raptor** redescribed; *C. barbifera** Bisch. (= *C. bagandarum* Turner); *C. andersoni**; *C. yalensis**; *C. yungvei** Cam. (=*C. massaica* Cam.); *C. albigena**; *C. erythroura** redescribed; *C. rigida*, *C. flavifrons*, and *C. tyrannica*, emended descriptions; *C. albolineata**; descriptions of various other species are copied in full. *Mesopalarus* **turneri** ♀ (p. 205), *Ampulex denticollis* r. **rufithorax** ♂ (p. 205), and *Arpactus* **mimicus*** ♂ (p. 206), S. W. Africa; *Bembex regnata* Parker (=*B. speciosa* Arnold); *B. albata* Parker (=*B. albopilosa* Arnold); *B. stadelmanni* Handl. (=*B. opinabilis* Parker); *B. diversipennis* Smith (=*B. refuscata* Parker); *B. d.* var. *johnstoni* Turner (=*B. tenebrosa* Parker), a valid variety; *B. fuscipennis* Lep. (=*B. stevensoni* Parker); *B. intermedia* Dahlb. (=*B. olivata* Dahlb., *B. lacta* Parker). Unless otherwise stated, types are in Brit. Mus.

2609. BAGNALL, RICHARD S. The gall-wasps and their allies in Northumberland and Durham. *Vasculum, Newcastle-on-Tyne* 14: 62-65. 1928.—Refers to previous work on gall-wasps proper and gives lists of parasitic and inquiline cynipids, the total of 120, or about 70% of known Brit. spp., being represented as follows: Parasitic forms, 43; gall causers, 59; inquiline, 18. The inquiline *Synergus evanescens* Mayr., is added to the Brit. fauna.—*R. S. Bagnall.*

2610. BLEDOWSKI, R., und K. KRAINSKA. Über die Entwickelung von Banchus femoralis Thoms. *Jordan & Horn's Verhandl. 3. Internat. Ent.-Kongress., Zürich, 1925* 2: 642-643. 1926.—Abstract of paper presented on the embryology of this species which develops in the larva of *Panolis flammea*. The larvae of the parasite are immune to the bacterial disease of the host.

2611. BLOOD, B. N., and J. P. KRYGER. New genera and species of Trichogrammidae with remarks upon the genus Asynacta (Hym. Trichogr.). *Ent. Meddel.* [*Copenhagen*] 16(4): 203-222. 5 pl. 1928.—**NEOCENTROBIA** (p. 203), type *N.* **hirticornis*** (p. 204); **MONORTHOCHAETA** (p. 205), type *M.* **nigra*** (p. 206); **TRACHOCERA** (p. 208), type *T.* **longicauda*** ♀ (p. 209); **ORTHONEURA** (p. 211), type *O.* **bimaculata*** (p. 211); **DIACLAVA** (p. 214), type *D.* **waterhousei*** ♂ (p. 214); new spp. all from England, types in British Mus. Nat. Hist. Notes are given on *Asynacta exigua*, descr. emended.

2612. BLOOD, B. N., and J. P. KRYGER. A correction. *Ent. Meddel.* [*Copenhagen*] 16(6): 322. 1929.—The following nomenclatorial change is made: **OTHONEURELLA** (for *Orthoneura* Blood & Kryger preocc.). [See preceding entry.]

2613. BRADLEY, J. CHESTER. A revision of the new world species of Trielis a subgenus of Campsomeris (Hymenoptera: Scoliidae). *Trans. Amer. Ent. Soc.* 54(3): 195-214. 1 pl. 4 maps. 1928.—Key is given to the Amer. genera of Scoliidae and to the subg. *Trielis;* a comparative table is given of the ♂ genitalia, also a list of 6 spp., including *C.* (*Trielis*) **flammicoma*** (p. 209), California; type in Cornell Univ.

2614. BRÈTHES, JEAN. Hyménoptères Sud-Américains du Deutsches Entomologisches Institut: Terebrantia. *Ent. Mitteil.* 17(6): 426-428. 1928.—This is a supplement to a previous paper. The description of *Distantella fischeri* from Brazil is concluded. [See B. A. 3(1/3): entry 3853.] *Neomesostenus* **sumariensis** (p. 427) and *Polycyrtus* **guaruja** (p. 428), Brazil. *P. semirufus* Szépl. is recorded from Brazil.—*C. E. Mickel.*

2615. BUGNION, E. Les pièces buccales, le sac infrabuccal et le pharynx des fourmis. *Folia Myrmecologica et Termitologica* 1(2/3): 33-44. 1926; (4/5): 59-71; (6): 73-88; (8/9): 105-134. 45 fig. 1927.—The morphology of the buccal apparatus and pharynx of species of *Oecophylla, Camponotus, Cataglyphis, Dolichoderus, Messor,* and *Paltothyreus* is discussed in detail.

2616. CHEESMAN, L. EVELYN. A contribution towards the insect fauna of French Oceania. Part II. *Ann. & Mag. Nat. Hist.* 1(2): 169-194. 8 fig. 1928.—The present paper is based on part of the St. George collection on Tuamotu, Marquesas, and the Society Isls.: annotated lists of Dermaptera (7), Hymenoptera (19), and Hym. (Parasitica) (20) are given including: Hymenoptera, *Tachysphex* **fanuiensis*** (p. 172), Tuamotu Arch. and Society Isl.; *Oxybelus* **uturoae*** (p. 177), Society Isl.; *Polistes macaensis* ssp. **tahitensis** (p. 180), Tuamotu Arch. and Society Isls.; *Monolexis* **brugirouxi*** ♀ (p. 185) and *Microdus* **tautirae** ♀ (p. 186), Society Isls.; *Barichneumon* **veo** (p. 187), and *Echthromorpha atrata* ssp. **marquisensis** ♀ (p. 189), Marquesas Isl.; **VAKAU** (p. 189), (*Ichneumonidae*), type *V.* **taitensis** (p. 189), Society Isl.; *Limnerium* **christianae** ♀ (p. 191), Society Isl.; *Eremotylus* **moea*** ♀ (p. 193), Marquesas Isl.

2617. CONDE, OTTO. Ostbaltische Tenthredinoidea. *Korrespondenzblatt Naturforscher-Ver., Riga* 59: 67-91. 2 pl. 1927.—An annotated list of 229 spp.

2618. DAVIS, WM. T. Wasps and bees as water-straddlers. *Bull. Brooklyn Ent. Soc.* 21(3): 127. 1926.—*Emphor bombiformis* is reported as alighting directly on the surface of the water of a roadside puddle, to drink; the wasp, *Polistes rubiginosus,* was also seen standing on the water of a ditch; both cases are reported from Virginia.

2619. DUSMET y ALONSO, J. M. Sobre la dificultad que hay en escoger los caracteres preferibles para la clasificación de los himenópteros. [Difficulty encountered in selecting satisfactory characters in classification of Hymenoptera.] *Mem. R. Soc. Españ. Hist. Nat.* 15(1): 173-182. 1929.—Classification of Hymenoptera based upon external morphology alone is frequently misleading since external structures are not infrequently subject to quite a range of variation in direct relation to the topography, climatic conditions, etc., of the country in which the specimens are taken. Spain, owing to its topography and the varied climatic conditions, is an excellent region for noting complicated changes occurring among representatives of the same species of Hymenoptera. Variation in colors among individuals of the same species are described from specimens under the author's observation. Cases of variations are also cited with regard to the position of bristles and hairs, formation of spots, wing venation, size of body, and to the spiniform processes of the tibiae, all of which are apt to mislead in the identification of the respective species. Special cases of variations in morphological details are cited. The author concludes that in the selection of distinctive characters those which occur more constantly in a great number of specimens should be sought rather than characters of a transitory nature.—*C. Zeimet.*

2620. FRIESE, H. Die Bienen, Wespen, Grab- und Goldwespen. In: C. SCHRÖDER. Die Insekten Mitteleuropas insbesondere Deutschlands. Bd. 1: Hymenoptera. I. Teil. Stuttgart. pp. i-vi+1-192. 8 pl. 107 fig. 1926. Pr. 10 M.—This monograph discusses European bees (Apidae) as to distribution, morphological variations, habits, nest building, parasites, place in nature, collection and preservation of specimens, and relationships among living genera; a key to genera is given; 41 genera and 336 spp. are briefly described; a key is given to varieties of *Apis mellifica* L. The true wasps (Vespidae) include Eumeninae, Masarinae, and Vespinae. The morphology, habits, and relationships of the group are followed by a key to the genera, and by brief characterization of 7 genera and 26 spp.; a key is given to subgenera of *Odynerus.* For the fossores the group morphology, bibliographical references, and general habits are followed by key to 5 families; a key is given to genera of Sphegidae; descriptions of 30 genera and 98 spp.; key is given to subgenera of *Crabro;* habits, relationships, and key to genera of Pompilidae; descriptions of 7 genera and 23 spp.; the morphology, habits, parasitism, and relationships of the Sapygidae with 1 genus and 4 spp. described; the

morphology, habits, hosts, and development of the Scoliidae, and key to genera, with descriptions of 3 genera and 5 spp.; the structure, habits, hosts, and key to the genera of Mutillidae, with 3 genera and 6 spp. are described. The group characteristics of the Chrysididae, review of literature, the habits and relationships, are followed by key to genera and descriptions of 8 genera and 19 spp. Many structural peculiarities or habits are figured.—*H. Spencer.*

2621. **GEORGE, LUCIENNE. Sur la biologie de l'Apanteles glomeratus L.** *Bull. Soc. Hist. Nat. Afrique Nord* 19(2): 104-112. 1928.—Two experiments were conducted which showed that in *Apanteles* the ♂♂ use principally the antennae in their search for the ♀♀, and that the ♀♀ use the antennae for finding their hosts. A brief review given of articles by H. Fabre and L. G. Seurat showed that, contrary to Fabre's observation, young *Apanteles* larvae, because of physiological reasons, are unable to thrive in blood outside of the host body. This conclusion was substantiated by the author's personal observation. He also observed an exceptional case of the survival of a parasitized caterpillar which produced an imago. Series of rearings of *Apanteles* were made which showed the occurrence of prolonged life cycles in the proportion of 7% in March, 14.45% in April, 8.2% in June, and 16.8% in Nov. Another series of rearings gave delayed eclosions in the proportion of 9.46% in Aug. and 16.16% in Nov. Individuals which emerged in Aug. because of delayed life cycles were forced to seek other hosts due to the sparsity of the primary host at that time. *Apanteles* were reared from 2 caterpillars of *Macroglossa stellatarum* and 1 of *Abraxas grossulariata.* Parasitic invasion proved more intense in summer than at other times of the year, and temp. accelerated the length of larval and nymphal life. The sex ratio of *Apanteles* in Oct. shows 67% ♂♂, in July 40% ♂♂. Experiments were conducted which showed that copulation did not take place as freely in the shade as under sunlight.—*C. C. Hill.*

2622. **GRANDI, GUIDO. Imenotteri sicofili raccolti dal Prof. F. Silvestri denn' Indocina, nella Cina, nella penisola Malacca e a Formosa. [Hymenoptera collected by F. Silvestri in Indo-China, China, Malacca Peninsula (Straits Settlements) and Formosa.]** *Boll. Lab. Zool. Gen. e Agraria [Portici]* 20: 169-188. 8 fig. 1927.—*Ceratosolen* **effractarius*** (p. 169), Indo-China; *C.* ? *marchali* Mayr., ♀* and ♂* described; *C. jucundus* Grnd., notes on ♂ and ♀; *Blastophaga* **silvestrii*** (p. 179), China; *Eupristina verticillata* Wat., ♂* described; *E. jacobsoni* Grnd., ♀* and ♂* described.

2623. **GRANDI, GUIDO. Un nuovo genere e quattro nuove specie di Imenotteri sicofili di Sumatra. [A new genus and 4 new species of fig-inhabiting Hymenoptera from Sumatra.]** *Bol. Lab. Ent. Ist. Sup. Agrario Bologna* 1: 71-89. 8 fig. 1928.—*Blastophaga* **cristata** ♀* (p. 71); *B.* **coronata** ♀* (p. 75); **DIAZIELLA** (p. 80) (Sycophagini), based on *D.* **bicolor** ♀* (p. 82); *D.* **macroptera** ♀* (p. 86); key is given to the species of Sycophagini.

2624. **HEINRICH, G. Zur Systematik der Ichneumonidae.** *Konowia* 7(3): 199-202. 1928.—The author examined types in the Berlin Zool. Mus. and the Deutsches Ent. Inst. and offers the following synonymy: *Cratichneumon pachymerus* Ratzeb. ♀ (=*Ichneumon septimus* Berth. ♀); *I. caloscelis* Wesm. ♀ (=*Amblyteles decens* Berth. ♀); *Amblyteles glaucatorius* F. ♂ (=*A. praetextus* Berth. ♂); *Platylabus pactor* Wesm. ♂ (=*Dicaelotus septemtrionalis* Berth. ♂); *Pycnocryptus director* Thunb. ♀ (=*Spilocryptus leucopygoides* Strand ♀); *Hoplocryptus fugitivus* Grav. ♀ (=*H. ignalinoensis* Strand ♀); *Triptognathus unidentatus* Berth. ♂ (=*Amblyteles jugorum* Strobl. ♂); *Ichneumon molitorius* Grav. (=*I. melanotis* Holmgr. ♀); *Ichneumon molitorius* v. *melanotis* Holmgr. (=*I. m.* var. *discolor* Berth. ♀); *I. m.* var. **holsaticus** (*I. holsaticus* Tischb. ♀). In most cases there is a discussion of the data on which the above synonymy is based.—*C. E. Mickel.*

2625. **HEINRICH, G. Die Kennzeichen der Ichneumoninen auf ihren arttrennenden Wert. (Hym.).** *Konowia* 7(3): 203-213. 1928.—Certain markings and characters of the Ichneumonidae and their value for the diagnosis of species are discussed. Three groups of characters are considered: (1) Color; (2) sculpture and pubescence; (3) morphological characters. The white markings of the tibia, scutellum, the front, the last abdominal tergites, the "rings" of the antennae, and the lines in front and under the wings, and the yellow, yellowish red, and brown colors are considered, with the conclusion that in many cases these color characters are variable, hence their value as species diagnostic characters is not high. Examples illustrating the variations are given. In the 2nd group such characters as sculpture of the postpetiole, the enclosed area of the propodeum, the felt-like pubescence of the tarsi, and the coxal brushes are considered and shown to be variable in a number of cases. Characters belonging to the 3rd category are listed but dismissed with a brief discussion. It is suggested that an investigation of the genitalia may disclose useful and possibly more constant characters for species diagnosis than the ones now more commonly used. Wing venation is said to have very little value in this connection.—*C. E. Mickel.*

2626. **HELLÉN, WOLTER. Zur Kenntnis der Braconiden (Hym.) Finnlands I. Subfam. Braconinae (part.), Rhogadinae und Spathiinae.** *Acta Soc. Fauna et Flora Fennica* 56(paper 12): 1-59. 1 map. 1924-1927.—A general account of the Finnish representation of the groups cited. There are keys to subfamilies, to the genera of the 3 subfamilies, and to the species of numerous genera, usually these with more than 3 or 4 spp. Braconinae: *Iphiaulax* **borealis** (p. 13), *Coeloides* **stigmaticus** (p. 15), Rhogadinae: *Rhogas medianus* ♂ Thomas, described; *R.* **freyi** ♂ (p. 25), *Aleiodes* **esseni** (p. 29), *A.* **caudalis** ♀ (p. 32), *A.* **ochraceus** (p. 32), *A.* **linearis** ♂ (p. 34), *Clinocentrus* **arcticus** ♀ (p. 42), *Exothecus* **longicornis** ♀ (p. 47). Spathiinae: *Phaenodus* **rugulosus** (p. 53), **PACHYSTIGMUS** (p. 54), based on *P.* **nitidulus** ♂ (p. 55). For each species there are usually given hosts, variability, and Finnish localities.

2627. **HINGSTON, R. W. G. The potter wasp (Rhynchium nitidulum) Part I.** *Jour. Bombay Nat. Hist. Soc.* 32(1): 98-110. 2 pl. 3 fig. 1927.—The formation of cells by *R. nitidulum* is discussed. Cells built of mud are usually 4-5 in number. The wasp lays her egg when the masonry is finished. After storing supplies the mouth of cell is permanently closed by a lid, but the eggs hatch even before the cell is closed. Two days after the lid is sealed the larva has grown into a huge maggot; it pupates 2 weeks after the egg is laid. Emergence takes place on the 26th day. Geometrical principles underlying the masonry are discussed.—*M. Sharif.*

2628. **HUBER, L. L. A taxonomic and ecological review of the North American chalcid-flies of the genus Callimome.** *Proc. U. S. Nation. Mus.* 70(Art. 14): 1-114. 4 pl. 1927.—This paper deals with 112 spp. of Chalcidoidea of which 104 belong to the genus *Callimome* Spinola. Of the 104 spp. treated under *Callimome,* 11 are unrecognized and of the 112 spp. listed as Chalcidoidea 8 were wrongly classified. To accommodate these 8 spp. it has been necessary to transfer 6 to previously described genera and to erect 2 new genera. The following new species of *Callimome,* types of which are in the U. S. Nat. Mus., are described: *Callimome* **aeneoscapum*** (p. 35), Idaho; **aereum** (p. 71), Texas; **alamedensis*** (p. 28), California; **alaskensis*** (p. 31), Alaska; **albitarse*** (p. 80), Kansas; **asteridis*** (p. 43), New Hampshire; **atriplicis*** (p. 44), and **baccharidis*** (p. 46), California; **bicoloratum*** (p. 73) and **capillaceum*** (p. 74), Arizona; **capite*** (p. 32), Washington, D. C.; **castanopsidis*** (p. 64), California; **cinerosum** (p. 84), Texas; **citripes*** (p. 48), Colorado; **coccineum*** (p. 68), Virginia; **coloradensis*** (p. 49), Colorado; **cruentatum*** (p. 50), Connecticut; **dasyneurae*** (p. 56), Ohio; **dubiosum*** (p. 24), Washington, D. C. (?); **duplicatum*** (p. 27), Ohio; **ferrugineipes*** (p. 33), California; **fulvum*** (p. 26), Nebraska; **gahani*** (p. 69), Oregon; **giganticum*** (p. 65), Mexico; **hirsutum*** (p. 74), Arizona; **kinseyi***

(p. 44), **koebeli*** (p. 52), and **longistigmum*** (p. 47), California; **mellipes*** (p. 23), Massachusetts; **minutissimum*** (p. 78), California; **missouriensis*** (p. 42), Missouri; **multicolor*** (p. 51) and **occidentale*** (p. 79), California; **osborni*** (p. 93), Wyoming; **perplexum*** (p. 49), Oregon; **pilularidis*** (p. 45), California; **prunicola*** (p. 91), New Mexico; **rhoditidis*** (p. 34), Massachusetts; **robustum** (p. 72), Florida; **rohweri*** (p. 58), California; **rosae*** (p. 35) and **rubenidis*** (p. 78), Colorado; **scalaris*** (p. 21), Arizona; **solidaginis*** (p. 92), New York; **strobiloides*** (p. 40), Ohio; **sulcatum*** (p. 22), California; **tarsale*** (p. 76) and **tricolor*** (p. 96), Texas; **tubularis** (p. 39), Colorado. *Callimome californicum* v. **subdolum** (p. 85), California; **ALLOTORYMUS** (p. 104) (Callimominae), type *A.* **splendens** (*Syntomaspis s.* Provancher) (p. 105), type in Mus. Depart. Agric. Ottawa, Canada; **PLATYKULA** (p. 106) (Monodontomerinae), type *P.* **albihirta** (*Syntomaspis a.* Ashmead) (p. 106), ♂ described, type in U. S. Nat. Mus. The following are given as new names: *Callimome* **bruesi** (*Torymus sackeni* Brues not *C. sackeni* Ashmead) (p. 19), a fossil species from the Florissant, Colorado, type in Mus. Comp. Zool.; *C.* **fullawayi** (*Syntomaspis coerulea* Fullaway preocc.) (p. 19); *C.* **sativae*** (*Syntomaspis medicaginis* Gahan preocc.) (p. 77). *Callimome lissus, theon, aea, splendidulus, cecidomyiae, ochreatum, pavidum, advenum, thompsoni, longicaudum. pallidipes,* and *abortum* are unrecognized species. Species wrongly classified as *Callimome* (*Syntomaspis* or *Torymus*) are *splendens* and *albihirta* (types of the 2 new genera), and the following: *Dimeromicrus* **howardi** (*Torymus h.* Dalla Torre) (107); *D.* **eucalypti** (*Torymus e.* Ashmead) (p. 107); *D.* **gifuensis** (*Torymus g.* Ashm.) (p. 108); *Diamorus* **axillaris** (*Torymus a.* Ashm. (p. 108); *Microdonsomerus* **anthidii** (*Torymus a.* Ashm.) (p. 108); *Cryptopristrus* **lazuella** (*Syntomaspis l.* Ashm.) (p. 108). With the exception of a few cases previously recognized species are not redescribed. A key is given to all the recognized species of the genus. The genus *Callimome* was erected in 1811 by Spinola. *Misocampus* Latreille, *Torymus* Dalman, and *Syntomaspis* Förster are treated here as synonyms. Species of *Callimome* have a wide range of distribution. This paper includes spp. from all portions of N. Amer., from South Amer., and Japan. On the basis of ecological data and morphological characters the genus is divided into 2 species groups viz., A and B. Species of group A greatly prefer Cynipidae (Hymenoptera) as hosts while those belonging to group B show a preference to Itonidae (Diptera). Five species are reported as wholly or partly phytophagous. It seems safe to assume that species of this genus will be found wherever the host plants of gall making insects abound.—*L. L. Huber.*

2629. ISHII, TEI. Enargopelte ovivora, a new chalcid fly from Japan. *Kontyu* 2(4): 205-208. 1 pl. 1928.—This species, the larva of which feeds on the eggs of a *Lecanium* on *Celtis* at Nagasaki, has a generation a year, hibernating in the pupal stage. The adults appear about the middle of April and lay some 10 eggs under each host. They hatch in about a week, the larvae maturing 20 days later. Descriptions are given of the adult (p. 205), matured larva, and egg. Types in author's coll.—*R. Takahashi.*

2630. KINSEY, ALFRED C. The gall wasp genus Cynips. A study in the origin of species. *Indiana Univ. Studies* 16(84/86): 1-577. 429 fig. 1929.—Ninety-three species, represented by more than 17,000 insects and 54,000 galls, are the basis of this study of the re-defined genus *Cynips.* The nature and origin of species within the genus are discussed, with the suggestion that similar taxonomic studies of other animal and plant groups, interpreted in the light of modern genetics, will provide a sounder basis for an understanding of evolution than has been obtained through the several theories philosophically advanced during the last century. Species are defined as populations with common heredity. Emphasis is placed upon the world populations in this definition. It is maintained that species are more than mental concepts—that species are realities which preserve a morphologic and physiologic identity under varying conditions, over vast areas, and through periods of time that may extend beyond the present geologic epoch. Detailed evidence is presented that most of the present day species of *Cynips* are at least Pliocene in origin. Within these species individuals vary, mutations occur, and Mendelian races develop as they are observed to develop in the laboratory. Forty-two subapterous species, hitherto considered members of exclusively subapterous genera, are recognized as belonging to the same genus as the typically long-winged species of *Cynips.* These provide data on the origin of well-established species through mutation strikingly similar to that observed for subapterous races of *Drosophila* in the laboratory. Several physiologic qualities are shown to be as characteristic of *Cynips* species as their morphologic structures, and of equal stability, particular gall-producing capacities dating back to the differentiation of the subgeneric stocks not later than the Miocene. The importance of the isolation of newly arisen mutant stocks before they may develop into species populations is evidenced by the fact that since the origin of each present-day species of this genus, no new species has ever succeeded in developing from the same stock, in the same geographic area, on the same host. The multiplication of species has been accomplished only when the mutant stocks were isolated in new areas or on new hosts. Five of the 93 spp. appear to be of hybrid origin, developing in the Pleistocene when northern and southern relatives were brought into contact, spreading through the northeastern U. S. A., and into parts of the southern Appalachians where unoccupied territory was available for the isolation of the hybrid populations upon the retreat of the ice sheets. *Cynips* is believed to have originated in southwestern U. S. A., and the geologic and geographic factors controlling the migration over the rest of N. Amer. and into Asia and Europe are discussed at length. The systematic study which provides the data for these conclusions on *Cynips* embodies synonymical bibliographies of each species, comparative descriptions of insects and galls (alternating generations being recognized for 11 spp.), detailed distribution data, data on type material (80 of the 85 existent holotypes having been available for study), records of inquilines and parasites, and biologic and phylogenetic discussions for each species. Appendices include a bibliography, key to described species, check list, and index. The figures include distributional and phylogenetic maps, whole insects, details of insect structures, diagrams of gall structures, and half-tones of the galls. As re-defined the genus includes *Cynips* L. (=*Dryophanta* Förster), *Philonix* Fitch, *Acraspis* Mayr (=*Sphaeroteras* Ashmead), and 3 newly named groups as subgenera. New subgenera: **ANTRON** (p. 180), with *C. echinus* v. *schulthessae* as type; **BESBICUS** (p. 222), with *C. multipunctata conspicua* as type; **ATRUSCA** (p. 276), with *C. dugèsi simulatrix* as type. New species, varieties, and alternating forms: *C. folii* v. **atrifolii*** (p. 134), Denmark, range northern Europe; *C. longiventris* v. **forsiusi*** (p. 147), Finland, northern Europe, type in Univ. Helsingfors; *C. divisa* v. **atridivisa*** (p. 162), Denmark, northern Europe; *C. echinus* v. **vicina*** (p. 196), forms **vicina*** (p. 196) and **incepta*** (p. 198), *C. e.* var. **dumosae*** (p. 199), *C. e.* var. **mista*** (p. 200), *C. e.* var. **schulthessae** (p. 202), forms **schulthessae*** (p. 202) and **atrata*** (p. 204), *C. teres* v. **hildebrandae*** (p. 217), *C. multipunctata* v. **indicta*** (p. 228), *C. m.* var. **conspicua*** (p. 229), *C. maculosa* v. **tritior*** (p. 235), and *C. mirabilis* v. **leachii*** (p. 238), all 11 from California; *C. fulvicollis* v. **rubricosa*** (p. 254), Tennessee, Texas to Tenn.; *C. f.* var. **vorisi*** (p. 255), Kansas, Indiana to Oklahoma; *C. f.* var. **major*** (p. 257), Illinois, Indiana to Kansas; *C. f.* var. **canadensis*** (p. 273), Michigan, northeastern U. S. A. and Appalachian area; *C. dugèsi* v. **simulatrix*** (p. 280), New Mexico and Arizona; *C. d.* var. **pupoides*** (p. 284) and *C. bella* v. **con-**

gesta* (p. 292), Texas; *C. b.* var. **vanescens*** (p. 292), Arizona; *C. centricola* v. **clivorum*** (p. 300), Ohio, So. Appalachians; *C. c.* var. **strians*** (p. 304), Illinois to Arkansas; *C.* **arida*** (p. 313) and *C. mellea* v. **compta*** (p. 322), Texas; *C. m.* var. **anceps*** (p. 323), Texas to Florida; *C. m.* var. **bifurca*** (p. 325), Mississippi to Georgia; *C. m.* var. **litigans*** (p. 327), Alabama, So. Appalachians; *C. m.* var. **concolor*** (p. 329), Florida; *C. m.* var. **crassior*** (p. 335) and *C. m.* var. **albicolens*** (p. 336), Georgia to Indiana; *C.* **conica*** (p. 338) and *C. nubila* v. **russa*** (p. 343), Arizona; *C. villosa* v. **expositor*** (p. 351), Texas; *C. v.* var. **apache*** (p. 352), Arizona; *C. v.* var. **calvescens*** (p. 354), Utah; *C. v.* var. **consocians*** (p. 357), Kansas; *C. gemmula* v. **cruenta*** (p. 360), Georgia to Illinois; *C. g.* var. **fuscata*** (p. 362), Indiana to Kansas; *C. g.* var. **suspecta*** (p. 364), Indiana, northeastern U. S.; *C. pezomachoides* v. **cincturata*** (p. 377), Colorado, type in U. S. Nation. Mus.; *C. p.* var. **ozark*** (p. 378), Missouri, Indiana to Arkansas; *C. p.* var. **wheeleri*** (p. 380), Michigan, northeastern U. S. and Appalachian area; *C. p.* var. **derivatus*** (p. 391), Alabama, Georgia to Indiana; *C. p.* var. **advena*** (p. 409), Tennessee, So. Appalachians; *C. hirta* v. **packorum*** (p. 418), Utah; *C. h.* var. **obtrectans*** (p. 420), Texas, Oklahoma; *C. h.* var. **opima*** (p. 421), Illinois, so. Middle West; *C. h.* var. **scelesta** (p. 422), Michigan, northeastern U. S.; Unless otherwise noted, types are in Kinsey coll. New names: *C. folii* v. **ilicicola*** (*Dryophanta ilicis* Kieffer) (p. 133); *C. longiventris* v. *longiventris* form **substituta*** (*Spathegaster similis* Adler) (p. 144); *C. teres* v. **clavuloides*** (*Dryophanta clavula* Beutenmüller) (p. 215); *C. pezomachoides* v. **echinoides*** (*Acraspis echini* Ashmead) (p. 412); *C. hirta* v. **macrescens*** (*Acraspis macrocarpae* Bassett) (p. 423). *C. folii* v. *folii* f. *folii* Linnaeus (=*Diplolepis quercus* Fourcroy); *C. fulvicollis* v. *fulvicollis* f. *fulvicollis** (Fitch) (=*Philonix nigricollis* Fitch,=*P. niger* Gillette;=*P. gillettei* Bassett).—*A. C. Kinsey.*

2631. KISS von ZILAH, ENDRE. Ichneumonidák a Magyar Nemzeti Múzeum Gyüjteményéből. [Ichneumonidae in the coll. of the Hungarian Nation. Mus.] [With German translation.] *Ann. Hist. Nat. Mus. Nation. Hungarici* **24**: 237-286. 1926.—An annotated list of 291 spp., of which 44 are new to Hungary, and 23 new to science: *Ichneumon elephas* v. **thalhammeri** ♀ (p. 238); *Orotylus* **hungaricus** ♀ (p. 239); *Odinophora occidentalis* v. **rubroatra** (p. 243); Spain; *Lissonota* **hortobágyensis** (p. 245); *L.* **sziládyi** (p. 248); *Agrypon tenuitarsum* v. **rufipes** ♂ (p. 251); *Trophocampa mesozosta* v. **nigrata** ♀ (p. 251); *Pyracmon* **hungaricus** (p. 252); *Polyblastus* **horváthi** ♀ (p. 260); *P. pyramidalis* v. **rufus** ♀ (p. 262); *Erromenus junior* v. **cingulipes** ♂ (p. 264); *E.* **rufescens** ♀ (p. 264); *Perilissus subcinctus* v. **horváthi** ♀ (p. 266); *P.* **chyzeri** ♀ (p. 266); *Trematopygus* **hungaricus** ♀ (p. 267); *Prionopoda stictica* v. **melana** ♀ (p. 271); *Brischkea* **aigneri** ♂ (p. 271), Rumania; *B.* **croatica** ♀ (p. 273), Yugo-Slavia; *Alexeter inconspicuus* v. **rufus** ♂ (p. 278), Rumania; *A. sectator* v. **sibricus** ♂ (p. 280), east Siberia; *Lamachus lophyrorum* v. **nigrescens** (p. 280); *Barytarbes* **csikii** (p. 280); *Mesoleius multicolor* v. **transsylvanicus** ♀ (p. 284), Rumania. Except where otherwise given, types are from Hungary.

2632. KISS von ZILAH, ANDREAS. Zweiter Beitrag zur Kenntnis der ungarischen und siebenbürgischen Ichneumoniden-(Schlupfwespen-) Fauna. *Verhandl. u. Mitteil. Siebenburg. Ver. Naturwiss. Hermannstadt. Wissenschaftl. Teil.* **75/76**: 74-120. 1925-1926[1926].—Additional spp. and vars. are added to the fauna of the regions (total 2393), including *Probolus slaviceki* v. **nigrosternus** ♀ (p. 82); *Caenocryptus dentifer* Thoms., emended description; *Rhyssa* **silbernageli** ♀ (p. 94); *Polysphincta* **silbernageli** ♀ (p. 96); *Glypta rufipes* Bris., ♀ described; *Cryptopimpla* **szilagysagiensis** ♀ (p. 99); *Lissonota insignita* vars. **rufifemur** ♂ (p. 101) and **szeplígeti** ♂ (p. 102); *Xylonomus fasciipennis* v. **habermehli** (p. 102); *X. praecatorius* v. **rufopicta** ♂ (p. 103); *Campoplex nitidulator* v. **obscurus** ♂ (p. 106); *Eriborus perfidus* v. **obscuriventris** ♂ (p. 107); *Eulimneria rufifemur* v. **nigrotibialis** ♂ (p. 107); *Anilastus* **parvulus** ♀ (p. 109); *Mesochorus orbitalis* v. **nigrithorax** ♂ (p. 112); *Exochus* **dioszeghyi** ♂ (p. 117); *E. notatus* v. **nigroscutellatus** ♀ (p. 118).

2633. [KOKUEVA, N. R.] КОКУЕВА, Н. Р. Hymenoptera, собранные В. В. Совинским на берегах озера Байкала в 1902 году. [Hymenoptera collected by V. Sovinskii on the shores of Lake Baikal in 1902.] Труды Комиссии по изучению озера Байкала (*Trav. Comm. Étude lac Bajkal*) **2**: 63-76. 1927.—Annotated list of Tenthredinidae (20 forms including *Athalia* **novittola** (p. 64)), Braconidae (2), Ichneumonidae (15 forms, including *Mesochorus* (s. str.) **postfurcalis** (p. 66), *Sichelia* **korotnevi** (p. 67), *Conoblasta* **nigricoxa** (p. 67), *Cryptus* (*Meringopus*) **sovinskii** (p. 68), *Amblyteles* **affinis** (p. 69), *A.* **carinatus** (p. 69), *A.* **uniguttatus** v. **baicalicus** (p. 70)), Chrysididae (1), Formicidae (1), Scoliidae (1), Pompilidae (3), Crabronidae (7), Vespidae (8, including *Eumenes arbustorum,* v. **baicalensis** (p. 72)), *Apidae* (25, including *Anthrena* **baicalica** (p. 73), *Megachile* **baicalica** (p. 75).

2634. MAIDL, F. Zwei neue indomalayische Notogonidea-Arten. *Treubia* 9(4): 409-410. 4 fig. 1927.—*Notogonidea* **karnyi** ♀* (p. 409) and *N.* **sumatrensis** ♂* (p. 410), Sumatra. Type in Naturhist. Mus. Wien.

2635. MEYER, R. A new species of Sphecodes from the Belgian Congo (Hymenoptera). *Bull. Brooklyn Ent. Soc.* 21(5): 191-192. 1926.—*S.* **bequaerti** ♀ (p. 191), type in Congo Mus., Tervueren.

2636. NOVICKIJ, S. Popis Nového Rodu Eucyrtidů, Vylíhlého Z Pobřežního Náplavu Labského. Generis novi Eucyrtidarum ex Detrito Litorali prope Albim Flumen, in Bohemia Centr. Exclusi Descriptio. *Sborník. Ent. Oddělení Národního Mus. v Praze* [*Bull. Sect. Ent. Mus. Nation., Prague*] 4(28/39): 105-109. 1 pl. 1926.—**PEZAPHYCUS** (p. 105), near *Aphyco* Dalm., type *P.* **obenbergeri*** (p. 105), Bohemia.

2637. NOWICKI, ING. S. Bemerkungen zur Gattung Asecodes Först. (Hym. Chalc. Euloph. Ented. Omphal.). *Konowia* 7(3): 223-230. 4 fig. 1928.—A discussion of the taxonomic status of *Asecodes* with a history of the position assigned it by various authors since its erection in 1856. It was first proposed without referred species, but in 1861 Förster assigned 2 species to it; one of these, *fuscipes* Först., was designated as genotype by Ashmead in 1904. The author has located the types of these 2 species in the Staatsmus. at Vienna and gives new descriptions and figures of both *Asecodes nitens* Först. and *A. fuscipes* Först.—*C. E. Mickel.*

2638. OGLOBLIN, A. A. Nový Druh Rodu Allotropa (Scelionidae, Hymenoptera). A new species of Allotropa (Scelionidae Hymenoptera). *Sborník. Ent. Oddělení Národního Mus. V Praze* [*Bull. Sect. Ent. Mus. Nation., Prague.*] 4(28/39): 145-149. 1 pl. 1926.—*Allotropa* **jacobsoni*** ♂ (p. 114), Bohemia.

2639. PARKER, JOHN BERNARD. A generic revision of the fossorial wasps of the tribes Stizini and Bembicini, with notes and descriptions of new species. *Proc. U. S. Nation. Mus.* 75(5): 1-203. 15 pl. 1929.—*Stizus* **occidentalis*** (p. 9), California, type in U. S. Nat. Mus.; **THERAPON*** (p. 12) (Bembicini), type *T.* **chilensis** (*Stictia c.* Esch.) (p. 12); **TRICHOSTICTIA*** (p. 14) (Bembicini), type *T.* **vulpina** (*Monedula v.* Hdl.) (p. 14); *T.* **brunneri** (p. 15), Peru, type in U. S. Nat. Mus.; **EDITHA*** (p. 17) (Bembicini), type *E.* **magnifica** (*Monedula m.* Perty) (p. 17); *E.* **adonis** (*Monedula a.* Hdl.=*M. stridulans* Strand) (p. 18); *E.* **pulcherrima** (p. 19), Uruguay, type in Carnegie Mus.; **SELMAN*** (p. 20), type *S.* **angustus*** (p. 20), Brazil, type in Carnegie Mus.; *Stictia* **trifasciata*** (p. 24), Paraguay, type in U. S. Nat. Mus.; *S.* **sombrana** (p. 30), Peru, type in Cornell Univ.; *S.* **infracta** (p. 33), Peru, type in U. S. Nat. Mus.; *Stictiella* **spinifera** (*Monedula s.* Mickel=*Stictiella melampous* Parker) (p. 43); *S.* **scitula** (Fox) (=*Stictiella villosa* Parker=*Monedula villosa* Fox); *Steniolia* **elegans** (p. 50), Mexico, type in Massachusetts Agric. Coll.; *S.* **guatemalensis** (*Stictia g.* Rohwer) (p. 53); **RUBRICA*** (p. 53) (Bembicini), type *Rubrica*

gravida (*Moncdula g.* Hdl.) (p. 53); *Bembix* regia* (p. 68), west central Africa; *B.* fucosa* (p. 72), Burma; *B.* loupata* (p. 73), German E. Africa; *B.* residua* (p. 75), China; *B.* recurva* (p. 76), and *B.* levis* (p. 78), west central Africa; *B.* opinabilis* (p. 79), German E. Africa; *B.* tenuifasciata (p. 82), West Africa; *B.* torosa* (p. 84), New Guinea; *B.* quinquespinosa* (p. 86), Philippines, type in U. S. Nat. Mus.; *B.* tenebrosa (p. 90), German E. Africa; *B.* stevensoni* (p. 92), German E. Africa, type in U. S. Nat. Mus.; *B.* refuscata* (p. 94), German E. Africa; *B.* alacris* (p. 99), Africa (?); *B.* aldabra* (p. 99), Aldabra Isl., type in U. S. Nat. Mus.; *B.* seculata* (p. 101), India, type in U. S. Nat. Mus.; *B.* fumida* (p. 105), Japan; *B.* nigrocornuta* (p. 106), India, type in U. S. Nat. Mus.; *B.* miserabilis* (p. 108), Japan, type in Cornell Univ.; *B.* merceti* (*Bembex handlirschi* Mercet) (p. 110); *B.* regnata* (p. 111), German E. Africa; *B.* spatulata* (p. 112), India, type in U. S. Nat. Mus.; *B.* frioensis (p. 116), Colombia, type in U. S. Nat. Mus.; *B.* festiva* (p. 118), Arizona, type in Univ. of Kansas; *B.* gradilis (p. 122), Argentina, type in Cornell Univ.; *B.* liberiensis* (p. 126), Liberia, type in U. S. Nat. Mus.; *B.* albata* (p. 127), German E. Africa; *B.* comantis* (p. 131), Brazil, type in Carnegie Mus.; *B.* flavolatera* (p. 134), Australia; *B.* agrestis* (p. 135), Abyssinia; *B.* bahiae* (p. 138), Argentina, type in U. S. Nat. Mus.; *B.* nubilosa (p. 140), Mexico, type in Massachusetts Agric. Coll.; *B.* luzonensis (p. 141), Luzon Isl.; *B.* nupera (p. 142), Kenya, Africa; *B.* gracilens* (p. 143), German S. W. Africa; *B.* liventis (p. 144), German E. Africa; *B.* hexaspila (p. 145), India (?); *B.* spiritalis (p. 147), Brazil; *B.* longipennis (p. 149), Nyasa, Africa; *B.* laeta* (p. 151), German E. Africa; *B.* bellatrix* (p. 151), Brazil; *B.* generosa* (p. 153), E. Africa; *B.* piraporae (p. 153), Brazil, type in Cornell Univ.; *B.* incognita (p. 154), Asia (?); *Microbembex* bidens* (p. 157), Argentina, type in U. S. Nat. Mus.; *M.* tricosa* (p. 159), Jamaica, type in U. S. Nat. Mus.; *M.* natalis* (p. 162), Brazil, type in U. S. Nat. Mus.; *M.* nasuta* (p. 163), Argentina, type in Cornell Univ.; *M.* equalis* (p. 164), Peru, type in U. S. Nat. Mus.; *Bicyrtes* tricolorata* (p. 171), "America Merid"; *B.* quinquemaculata* (p. 175), Bolivia, type in U. S. Nat. Mus.; *B.* pullata (p. 176), Brazil, type in Carnegie Mus.; *B.* bradleyi* (p. 178), Argentina, type in Cornell Univ.; *B.* pexa (p. 179), Cayenne, Fr. Guiana, type in Carnegie Mus.; *B.* sola (p. 180), Brazil, type in Carnegie Mus. Except where otherwise given, types of new spp. are in Zool. Mus. Berlin. A generic revision of the subfam. Bembicinae with keys for determining the various genera and keys for the several genera of the tribe Bembicini, including only those species mounted specimens of which have been examined by the author. New species described are from various parts of the world, chiefly Africa. The notes include comments on specific characters of recognized species together with emended descriptions of some of these and also data on distribution of the species listed.—*J. B. Parker.*

2640. RABAUD, E., et J. MILLOT. Étude sur Polistes gallicus (Fr.) infesté par Xenos vesparum (Rossi). *Arch. Anat. Microsc.* 25: 280-293. 1 pl., 1 fig. 1929.—Of 22 parasitized wasps collected only 4 were ♂♂. Externally the wasps parasitized by the Stylopidae had larger abdomens than normal. Microscopic study showed a decrease of adipose tissue; a reduction of cells (2-3) in the subepidermal fat layer; the malpighian tubules, genital organs, and digestive tract seemed to float free in the abdominal cavity. The ovarian tubules and ovaries were smaller than normal. The genitalia of the ♂ were scarcely affected by the parasite. There was muscular atrophy in both sexes. In extreme cases of *Xenos vesparum* infestation the wasps were castrated by the parasite.

2641. RAU, PHIL. Field studies in the behavior of the non-social wasps. *Trans. Acad. Sci., St. Louis* 25(9): 319-489. 11 pl. 1928.—A report on observations made on the behavior of 23 spp. of solitary wasps in the vicinity of St. Louis, Missouri, between the years 1917-1923. The following are treated: The life and habits of 2 beetle-hunting wasps, *Cerceris raui, C. bicornuta;* an amputator of spiders' legs, *Pseudagenia mellipes;* the grass-carrier wasp, *Chlorion auripes;* an assortment of twig dwellers, *Diphlebus biparitor, D. tenax, Silaon niger, Solenius interruptus, Stigmus fraternus raui, Hypocrabro stirpicolus;* wasps of the genus *Odynerus* and their nesting habits, *O. conformis, O. pennsylvanicus, O. leucomelas, O. foraminatus, Stenodynerus zendaloides, S. vagus, Odynerus capra;* the patriarchate wasps of the genus *Trypoxylon, T. clavatum, T. albopilosum, T. politum, T. plesium, T. texense;* the nesting habits and prey of the yellow-legged mud-dauber, *Sceliphron caementarium.*—*J. S. Wade.*

2642. RICHARDS, O. W. The species of Notogonia (Hymenoptera, Larridae), occurring in the Mediterranean Basin. *Proc. Zool. Soc. London* 1928(2): 357-363. 1928.—Keys are given to females and to males. *N. pompiliformis* Pz. with synonymy; *N. opalipennis* ♀ Kohl, Algeria; *N. subtessellata* Smith, Mesopotamia; *N. nigrita* Lep., N. Africa; *N. memnonia* Sm., with synonymy, Egypt and Mesopotamia; *N. trivittata* Kby., (type ♀ in Brit. Mus.), Sokotra; *N.* praetermissa (p. 361), France, type in Brit. Mus.; *N. nigricans* Walker, with synonymy, type ♂ from Egypt. Bibliography of 23 references.—*G. E. King.*

2643. SANTSCHI, F. Fourmis de Sumatra, récoltées par Mr. J. B. Corporaal. *Tijdschr. Ent.* 71(1/2): 119-140. 2 fig. 1928.—*Aenictus* spathifer* ♂ (p. 119); *Platythyrea* pulchella ☿ (p. 121); *Pseudoponera amblyops,* descr. of ♂; *Leptogenys* (*Lobopelta*) karawaiewi (= *Euponera* (*Brachyponera*) *luteipes* Mayr var. *arcuata* [Karawaiew?]) (p. 124); *Crematogaster* (*Acrococlia*) corporaali ☿ and ♀ (p. 126); *C.* (*Physocrema*) *inflata* Sm., first descr. of ♀; *C.* (*Orthocrema*) *biroi* v. andelis ☿ (p. 129); *Myrmicaria* (*Heptacondylus*) *arachnoidea* v. adpressipilosa ♀ (p. 130); *Iridomyrmex myrmecordiae* v. mandibularis ♂ (p. 131); *Polyrhachis* (*P.*) *bihamata* v. tonsilis (p. 133); *P.* (*Cyrtomyrma*) *rastellata* vars. corporaali*, pagana* (p. 134), and congener* ☿ (p. 135), *P.* (*Myrmhopla*) *tibialis* vars. completa ☿ (p. 135), nigricornis ☿, pectita ☿, and addax ☿ (p. 136), with key to the varieties; *Leptogenys* (*Lobopelta*) *diminuta fruhstorferi* v. nitidula (*L.* (*L.*) *d. f.* var. *nitida* Karawaiew preocc.); *Polyrhachis* (*Myrmatopa*) *fruhstorferi* v. torta (*P.* (*M.*) *f.* var. *arcuata* Karaw. preocc.); *P.* (*M.*) *schang* v. amboinae (*P.* (*M.*) *s.* var. *gracilior* Karaw. preocc.); *P.* (*Chariomyrma*) karawaiewi (*P.* (*C.*) *convexa* Karaw. preocc.); *P.* (*C.*) verticalis (*P.* (*C.*) *abrupta* Karaw. preocc.); *P.* (*Hedomyrma*) indocilis (*P.* (*H.*) *bicolor* Karaw. preocc.); *P.* (*Myrmhopla*) *acantha* st. romanovi (*P.* (*M.*) *a.* st. *dichroa* Karaw. preocc.); *P.* (*Myrma*) *conops* st. simpla (*P.* (*M.*) *c.* st. *simplex* Karaw. preocc.); *P.* (*M.*) *c.* var. stitzi (*P.* (*M.*) *c.* var. *bismarkensis* Karaw. preocc.); *P.* (*M.*) *sericata* st. pruinosula (*P.* (*M.*) *s.* st. *pruinosa* Karaw. preocc.) (p. 139); *P.* (*M.*) *orsyllus* v. javanensis (*P.* (*M.*) *o.* var. *javana* Karaw. preocc.); *P.* (*M.*) *sculpturata* st. javaniana (*P.* (*M.*) *s.* st. *javana* Stitz preocc.); *P.* (*Cyrtomyrma*) coronata (*P.* (*C.*) *obsidiana* Karaw. preocc.); *P.* (*Myrmothrinax*) *thrinax* v. castanella (*P.* (*M.*) *t.* var. *castanea* Stitz preocc.) (p. 140).

2644. SANTSCHI, F. Description de Formicides éthopiens nouveaux ou peu connus. *Bull. et. Ann. Soc. Ent. Belgique* 70(2): 49-77. 46 fig. 1930.—AETHIOPOPONE* (p. 49), with *A.* rufiventris* (*Sphinctomyrmex r.* Sants.) (p. 49); *A. r.* var. chariensis (*S. r.* var. *c.* Sants.) (p. 50); *Lioponera* similis* ♂ (p. 51), Ivory Coast; *Platythyrea schultzi* v. lata (p. 53), Rhodesia; *Paltothyreus tarsatus* v. striatus (p. 53), Dahomey; *Bothroponera crassa* v. crassior (p. 53), Kenya Colony; *B. crassa* st. *crassior* v. andrieui (p. 54), *Aenictus furculatus* st. andrieui* (p. 56), and *A. luteus* v. moestus* (p. 56), French Sudan; first description is given of ♂ and ♀ *Messor galla* v. *trümpressa* Sants.; *Pheidole speculifera* v. bispecula (p. 58), and *P.* retronitens (p. 59), Belgian Congo; *P. dea* Sants. (=*P. batracorum* Wheeler); *P.*

andrieui* (p. 61), Fr. Sudan; *Crematogaster* (*Acrocoelia*) *lobata* v. pacifica (*C. pacifica* Sants.) (p. 63); first description is given of ♀ and ♂ of *C.* (*A.*) *castanea* st. *busschodtsi* Em.; *C.* (*Oxygine*) *margaritae* v. *breviarmata* For. (=*C. santschii* v. *b.* For.), ♀ described first time; *Monomorium* (*M.*) crawleyi (p. 66), Abyssinia; *M.* (*Lampromyrmex*) *exiguum* st. *mictile* v. sudanicum* (p. 67), Fr. Sudan; *M.* (*L.*) st. vaguum* (p. 68), Belgian Congo; *Technomyrmex moerens* Sants. (=*T. albipes* ssp. *congolensis* Karawaiew); *T. moerens* v. nigricans (p. 69), Belgian Congo; *T.* brevicornis* (p. 71), West Africa; *T.* rusticus* (p. 72), Belgian Congo; *T. mayri* st. nitidulans* (p. 72), Madagascar; *Camponotus* (*Myrmosericus*) *vestitus* v. anthracinus (p. 74), W. Africa, type in Congo Mus.; *C.* (*M.*) *v.* var. lujai (p. 75), Belgian Congo; *C.* (*M.*) *rhamses* v. completus (p. 76), and *C.* (*Paramyrmamblys*) moderatus (p. 76), Abyssinia.

2645. SATO, KAKU. The Chalastogastra of Korea. (No. 1). [To be contd.] *Insecta Matsumurana* [*Sapporo*] 2(4): 178-190. 7 fig. 1928.—Phymatocerinae: TOMOSTETHOPSIS (p. 178), related to *Tomostethus*, type *T.* metallicus (p. 179); *Atomostethus* flavicollaris (p. 179); ZAPHYMATOCERA (p. 180), allied to *Phymatocera* Dahl., type *Z.* typica* (p. 181); APHYMATOCERA (p. 182), allied to *Zaphymatocera*, type *A.* coreana* (p. 182); PHYMATOCERIOLA (p. 183), related to *Phymatocera*, type *P.* suigenensis* (p. 184); APAREOPHORA (p. 185), related to *Pareophora* Konow, type *A.* forsythiae* (p. 185); *A.* coreana (p. 187), Cimbicinae: OKAMOTONIUS (p. 188), related to *Cimbex*, *Cimbicisoma*, and *Trichisoma*, type *O.* kurisuei (p. 189). Types in author's coll.—*R. Takahashi.*

2646. SCHULTHESS, A. von. Contribution to the knowledge of African Masaridae (Vespoidea). *Ann. & Mag. Nat. Hist.* 3(17): 498-511. 5 fig. 1929.—The present article is based on the study of a small collection of vespoids (40 specimens, mainly Masaridae) from Cape Province. Keys are given to the species of *Masariella*, with which *Ceramiellus* Schulth. is seemingly synonymous, and to the species of *Quartinia* and *Quartiniella*. All types are in Brit. Mus. unless otherwise given. *Masariella* (?) turneri ♀* (p. 500); *M.* (?) algerica ♀* (p. 501), type in author's coll.; *M.* (?) testaceopicta ♀* (p. 502). Nigeria; *Quartinia* atra ♀ (p. 505); *Q.* metallescens ♀ (p. 505); *Q.* media ♀ (506); *Q.* vagepunctata ♀ (p. 507); *Q. signata* Brauns in litt. is perhaps identical with what Bradley mentions as *variegata* Brauns, not published; *Q.* scutellimacula (p. 508); QUARTINIELLA (p. 510), conforming with *Quartina*, type *Q.* waterstoni* (p. 510).

2647. SHESTAKOV, A. Species novae Ichneumonidarum subfamiliae Pimplinarum. Русское Энтомологическое Обозрение (*Rev. Russe Ent.*) 21(3/4): 220-224. 1927.—*Ephialtes* zhedenevensis ♀ (p. 220), *Polysphincta* eltshaninovi ♀ (p. 220), *Clistopyga sauberi* v. terebralis (p. 221), *Glypta* jaroslavensis ♀ (p. 221), *G.* animalcula ♀ (p. 222), *G.* pygmaea ♀ (p. 223), *Cryptopimpla* memoranda ♀ (p. 223), and *Calliclisis* patria ♀ (p. 224), all from Jaroslavl, Russia.

2648. SILVESTRI, F. Studi sugli Aphelininae (Hymenoptera: Chalcididae). *Boll. Lab. Zool. Gen. e Agraria* [*Portici*] 20: 35-41. 4 fig. 1927.—DIASPINIPHAGUS (p. 35), near *Prospaltella*, type *D.* similis* (*Prospalta s.* Masi) (p. 36); *D.* kuwanae* (p. 39), Japan.

2649. STÄGER, ROB. Unterirdische "Grabkammern" in einem Nest von Formica pratensis. *Folia Myrmecologica et Termitologica* 1(2/3): 17-21. 2 fig. 1926.—In the high Alps *F. pratensis* carries its dead and other debris to chambers made below the nest, while in other sections the dead were removed outside of the nest. The author concludes that the soil and climate are the factors which determine the disposal of the dead of this species.

2650. STÄGER, ROB. Beiträge zur Biologie von Messor barbarus L., Messor instabilis var. bouvieri Bondroit und Pheidole pallidula Nyl. *Zeitschr. Wiss. Insektenbiol.* 23(3/4): 65-94. 2 fig. 1928.—Formicidae. A treatise on the nesting habits, the collecting of seeds and other foods, warfare, trails and galleries, and their association with other ants and organisms.

2651. STÄGER, ROB. Anergates atratulus Schenck am Mittelmeer. (Hym., Formic.) *Zeitschr. Wiss. Insektenbiol.* 23(5/7): 159-162. 1928.—A preliminary note on this species, heretofore recorded only from central and northern Europe. The specimen was taken in the Italian Riviera di Ponente in the nest of *Messor barbarus;* the nest contained a mixed colony of *Tetramorium caespitum, Anergates atratulus,* and *Platyarthrus hoffmanseggi.*

2652. SZABO-PATAY, J. Trois Orectognathus nouveaux de la collection du Musée National Hongrois. *Ann. Hist. Nat. Mus. Nation. Hungarici* 24: 348-351. 6 fig. 1926.—*O.* horváthi* (p. 348); *O.* birói* (p. 350); *O.* csikii* (p. 350), all New Guinea. All 3 are hermaphrodites.

2653. THOMSEN, MATHIAS. Some observations on the biology and anatomy of a cocoon-making chalcid larva, Euplectrus bicolor Swed. *Videnskab. Meddel. Dansk Naturhist. Foren København* 84: 73-90. 13 fig. 1927.—The 3rd and 4th larval stages of *E. bicolor* are described. Unlike other chalcids before pupating this larva forms a cocoon of loose web, the thread coming out of the anus; the last 4 segments of the body which are much narrowed and form a slender, very movable "tail," are used like an arm in the construction of the cocoon. The pupa is of the usual type in chalcids (pupa obtecta). To determine the origin of the material for the cocoon the anatomy of the larva was investigated. The secretion fills the whole hind-intestine (rectum, colon, and ileum) which, as in other hymenopterous larvae, is not in connection with the mid-intestine; but the secretion is produced in the malpighian tubes of which there are 3, 2 long anterior bands of large cells and a short median, backward projecting unsymmetrical tube. No other hymenopterous larva is known where the cocoon is formed by a secretion from the malpighian tubes. The other organs are briefly described. The author disagrees with Tiegs in his interpretation of some of the organs of another chalcid larva, *Nasonia brevicornis.*—*M. Thomsen.*

2654. UCHIDA, TOICHI. Beitrag zur Kenntnis der japanischen Cimbex- und Agenocimbex-Arten (Hym.). *Insecta Matsumurana* 2(3): 155-162. 3 fig. 1928.—A key is given to the Japanese spp. of *Cimbex; C. femorata* v. ornata* (p. 159), Kurile Isls.; *C. f.* v. coreana (p. 160); Korea; *C. castanea* (p. 160), Honshiu; *C. quadrimaculata* sachalinensis (p. 161), Sakhalin.—*R. Takahashi.*

2655. UCHIDA, TOICHI. Ueber die japanische Ichneumoniden-Gattung Eupalamus Wesm. *Insecta Matsumurana* 2(4): 202-205. 2 fig. 1928.—A key is given to Japanese spp. of the genus; *E.* giganteus* (p. 203), Honshiu; *E.* formosanus* (p. 204), Formosa.—*R. Takahashi.*

2656. ULBRICHT, ALB. Niederrheinische Ichneumoniden. *4th Supplement. Mitteil. Naturwiss. Mus. der Stadt Crefeld, March* 1926: 1-30. 1926.—An extensive list of spp. including: *Ichneumon fabricator* v. varicolor (p. 3); *Gelis* leucurus ♀ (p. 10); *Pimpla* inornata (p. 11); *Glypta genalis* v. rufina (p. 12); *Ophion* ocellaris (p. 14); *Exochilum circumflexum* v. rubropictum (p. 15); *Absyrtus luteus* v. exareolatus (p. 19); *Tryphon signator* v. nigrifacies (p. 22); *Polyblastus varitarsus* v. xanthostomus (p. 22); *P. carbonarius* v. rhenanus (p. 22); *P. pastoralis* v. rufiventris ♀ (p. 23); *P. p.* var. tegularis (p. 23); *P.* hachfeldi ♀ (p. 23); *Grypocentrus* erythrusus (p. 24); *Mesoleptus prosoleucus* v. rufiventris (p. 26); *Ipoctonus atomator* v. melanurus (p. 26); *Barytarbes* ruficornis (p. 27).

2657. VERLAINE, L. La détermination du sexe femelle chez les Hyménoptères sociaux. [Determination of female sex among wasps and bees.] *Naturalistes Belges.* 7(6): 86-95. 1926.

2658. VERLAINE, L. L'instinct et l'intelligence chez les Hyménoptères. IX. La notion du temps. *Bull. et Ann. Soc. Ent. Belgique* 69(4): 115-125. 1929. [See also B. A. 2(3/5): entry 8107; 3(4/6): entries 4799 and 4800.]—A contrivance similar to that used by Tolman and Sams (1925) to demonstrate time discrimination in white rats, was em-

ployed to test the conception of time by wasps. Wasps used in the experiment learned to discriminate between a passage-way in which they had been imprisoned for 30 minutes from one which permitted the leaving of the nest in 4-6 min. Of these 2 passages of equal length it was soon apparent that the first was always avoided by a certain number of individuals. Experiments with labyrinths with apertures of unequal lengths, such as used by White and Tolman, gave less satisfactory results.—*L. Verlaine (transl. by H. Spencer).*

2659. **VERLAINE, L. L'instinct et l'intelligence chez les Hyménoptères. X. La reine des abeilles dispose-t-elle à volonté du sexe de ses oeufs?** *Bull. & Ann. Soc. Ent. Belgique* 69(8/9): 224-238. 1929.—In a previous article the author advanced the hypothesis that fertile queens, with abundant spermatozoa, lay only fertilized eggs which produce workers and queens; that the ♂♂ (drones) all develop from eggs of laying worker-bees. Recent experiments indicate that queens lay eggs of 2 kinds: fertilized and not fertilized; but at the same time in a normal hive, workers also deposit some eggs. The queens of several hives of Italian bees were exchanged with queens from hives of pure black bees. Drones of 2 colors have continued to appear in each hive.—*L. Verlaine (transl. by H. Spencer).*

2660. **VERLAINE, L. L'instinct et l'intelligence chez les Hyménoptères, XI. La construction des cellules hexagonales par les Guêpes et les Abeilles.** *Bull. et Ann. Soc. Entom. Belgique* 69(10/11): 387-417. 3 pl. 3 fig. 1930.—After building a certain number of cylindrical cells, the fundatrix wasp queen constructs hexagonal cells; workers do likewise. *Vespa media* is possibly an exception. *Chartergus chartarinus* Sauss., from the Amazon, places the bases of hexagonal cells upon the flat surface of the last built comb. The same phenomenon obtains in bees to a certain extent but the type of material used by them is not well adapted to this unusual construction. Swarms composed of bees, reared in artificial breeders, which have had no contact with other individuals, live only on condition that they remain on the combs for a maximum period of 24 hrs. These bees succeed in building in a normal way but at first are ignorant of the ultimate destination of the wax secreted by their abdomens. This wax is shed or else permitted to accumulate in large quantities under the abdomen. The placing of cupules containing pollen in the hives has made possible the gathering of wax in 15 day old bees. Some groping is evident in first construction. The hexagonal cell and regularity of construction is the result of work in common, as demonstrated by V. Willem in 1929.—*L. Verlaine (transl. by H. Spencer).*

2661. **VERLAINE, L. Le détermination du sexe mâle chez les Hyménoptères sociaux. [Determination of male sex in social hymenoptera.]** *Naturalistes Belges* 7(7): 103-107. 1926.

2662. **WALL, R. E. A comparative study of a chalcid egg parasite in three species of Plataspidinae.** *Lingnan Sci. Jour.* 6: (3): 231-239. 1928.—An unidentified chalcid egg parasite of *Coptosoma cribrarium* Fabr., was discovered in the field and by insectary rearing was found to parasitize equally well the eggs of *Brachyplatus subaëneus* Westw. and those of another species of *Coptosoma*, all being pentatomids of the subfamily Plataspidinae. The eggs of the 3 host spp., which commonly feed upon the vines of cultivated beans at Canton, vary greatly in size and the individual parasites emerging from them vary in direct proportion. The ratio of size of parasites as expressed by averages of linear measurements is 55:66:81 from *Coptosoma* sp., *Coptosoma cribrarium*, and *Brachyplatus subaëneus* respectively and there is no overlapping in size between the 3 groups. Thus if the parasite develops in *Brachyplatus* eggs instead of *Coptosoma* sp. eggs, for example, it will have about 4 times as great a bulk in the former case as in the latter. Seventy-six % of all egg groups of *Coptosoma cribrarium* collected in the field during July and Aug., and approximately 51% of the total number of eggs were parasitized. Within 24 hrs. after emergence the parasites will oviposit in host eggs if supplied. The life cycle is, therefore, 13-14 days at summer temp. The adult parasites live only about 2 days and deposit a small number of eggs (10-20) in as many host eggs. The host egg may be successfully parasitized at any time during approximately the first ⅔ of its development. It is thought that parthenogenesis occurs in the parasite but this has not been definitely proved. The developmental period of the parasite from egg to adult within the host egg requires 12-13 days in the different hosts at summer temp. Escape from the darkened egg is then effected by the lifting of the operculum just as occurs in hatching. The chalcid parasite has a life cycle of 2 weeks as compared with 7-9 weeks for the hosts. There are probably about 4 host generations annually with overlapping, and 16 parasite generations. It is thought that sufficient host eggs can be found by the parasites during the winter to enable them to continue their development which is very much retarded at this season.—*From author's summary.*

2663. **WATERSTON, JAMES. On the hedycryptine genus. Oneilella, Cam. (Hym., Ichneumonidae).** *Bull. Ent. Res.* [*London*] 18(2): 189-204. 8 fig. 1927.—A synopsis of the spp. of this African genus, which heretofore has remained monotypic, with *Cryptus formosus* Brullé as genotype. The range of the genus is coextensive with the Ethiopian region and possibly the neotropical region and the altitude range from 2000 to 10,000 ft. Hosts include various spp. of the lepidopterous genus *Anaphe*. The author finds that because of the prior use of the generic name *Cryptus* in the Tenthredinidae it is invalid in the Ichneumonidae and, following Bradley, uses Hedycryptinae as the name for the subfamily formerly known as the Cryptinae. The genus is apparently not an entirely natural category, but is formed of species of very similar general facies, and a description of the genus on this basis is given. A paragraph is devoted to genera of similar appearance. *Oneilella* Cameron (=*Ateleonotus* Cameron), type *A. ruficeps* Cameron; *Oneilella* **ruficeps** (*Ateleonotus r.* Cam.); *O.* **alacer** (*Cryptus a.* Tosq.); *O.* **corpulenta** (*C. corpulentus* Tosq.); *O.* **eugenea** (*C. eugeneus* Tosq.); *O.* **fervida** (*C. fervidus* Tosq.); *O.* **vittata** (*C. vittatus* Tosq.); all on p. 191. The following species and race are described as new, the holotype being ♀♀ where that sex is represented (types, with exception noted below, in the Brit. Mus.); *O.* **inclinata*** (p. 194), Natal; *O.* **caudata** (p. 195), Natal, Transvaal; *O.* **angusta** ♀ (p. 195), Natal; *O.* **latifascia*** (p. 196) and *O.* **approximata** (p. 196), Uganda; *O.* **analis** (p. 197), Nigeria; *O.* **dimidiata** ♂ (p. 198), Uganda; *O.* **nigeriensis** ♀ (p. 198), Nigeria, with race **rugulosa** ♀ (p. 198), Congo, type in Mus. Congo Belge; *O.* **contracta** (p. 198), Uganda; *O.* **robusta** ♀ (p. 199), Belgian Congo; *O.* **linearis** ♂ (p. 199), Brit. Sudan; *O.* **brevispicula*** (p. 200), *O.* **subquadrata*** (p. 201), and *O.* **areolata*** (p. 202), Uganda; *O.* **rufopetiolata*** (p. 202), Nyasaland. Keys for the separation of the spp. and a bibliography of 8 titles conclude the paper.—*R. A. Cushman.*

2664. **WHEELER, WILLIAM MORTON. Ants of the Balearic Islands.** *Folia Myrmecol. et Termitol.* [*Berlin*] 1(1): 1-6. 1926.—An annotated list of the ants collected on Majorca, Minorca, and Iviza in 1925. *Solenopsis latro* **fairchildi** ☿ ♀ ♂ (p. 3), Majorca; *Camponotus lateralis* **armouri** ☿ ♀ ♂ (p. 5), Minorca. Additions from the lists of Lomnicki and Menozzi make a total of 26 forms known from these islands. The fauna is Iberian and depauperate, with no endemic species but with 4 endemic subsp. and varieties: *Aphaenogaster testaceopilosa gemella, Crematogaster auberti laestrygon* v. *submaura* and the 2 new forms cited. Two other insects not previously recorded from the islands are: the myrmecophilous cricket, *Myrmecophila ochracea*, Majorca, with a new host, *Lasius niger;* and the leptid dipteron *Vermileo vermileo*, Majorca and Minorca, the larvae of which make funnel-shaped pits in dust or fine sand, and capture ants and other small insects.—*G. C. Wheeler.*

2665. WHEELER, WILLIAM MORTON. Ants collected by Professor F. Silvestri in Indochina. *Boll. Lab. Zool. Gen. e Agraria [Portici]* 20: 83-106. 9 fig. 1927.—Report on 67 spp. (a few from Siam), including: *Centromyrmex feae* Emery, larva described; *Anochetus risi* Forel, ♂ described; *Odontomachus* silvestrii* (p. 85) and v. substriatus (p. 86); *Monomorium* silvestri* (p. 87); *M.* lippulum* (p. 89); *Aneleus* cribriceps* (p. 90); *Oligomyrmex* capreolus* (p. 93); HENDECATELLA (p. 93), subg. of *Oligomyrmex; Aneleus pygmaeus* v. albipes Emery, ♂ described; *Anillomyrma decamera* ssp. continentis (p. 96); *Tetramorium* indosinense* (p. 97); *Dolichoderus feae* v. caligatus (p. 99), Siam; *Acropyga (Rhizomyrma)* silvestrii* (p. 100); *Pseudolasius* silvestrii* (p. 102); *P.* lasioides* (p. 104); *Paratrechina (Nylanderia)* picta* (p. 104).

2666. WHEELER, WILLIAM MORTON. The physiognomy of insects. *Quart. Rev. Biol.* 2(1): 1-36. 42 fig. 1927.—In the ants, the size and shape of the mandibular flexor muscles largely determine the form of the head and face, and functional peculiarities of the mandibles are closely correlated with the character of the flexor muscles. This holds for species and for castes within species. Types of mandibles may be placed in 9 groups: cutting, biting, gnawing, crushing, grappling, clipping, piercing, vestigial, and aberrant. The 1st 4 types are large and powerful, with heads correspondingly developed. The last 5 types are relatively weak, with less powerful muscles and small heads. As extremes in the same species, soldiers and large-headed workers contrast with small-headed ♂♂ with mandibles feebly developed. A similar condition exists among species of beetles, except that here the ♂♂ have the more powerful mandibles. In certain species, conspicuous, frontal convexities are due to the great development of flexor and extensor antennal muscles. Some adaptive structures in the head configuration, such as scrobes, are due to antennae. In ♂ ants having large eyes, the shape of the head is correspondingly modified. This is more conspicuous in certain haustellate insects (Diptera, Lepidoptera, Mecoptera, Heteroptera, etc.). In some of the latter the eyes may form most of the ♂ head. Development of hairs on the gula, mandibles, and clypeus of certain species of ants indigenous to dry regions gives them a "bearded" appearance. Adaptations to non-living environment are found in the elongated head and body of ants living in narrow cavities, and in peculiar modifications ("phragmosis") for closing the burrows. Shape of thorax is largely dependent on development of wing musculature, although development of leg muscles is also important. The abdomen physiognomy is determined more by volume of viscera than by development of segmental musculature.—*R. B. Friend.*

2667. WIEL, P. van der. Een nest van Ponera punctatissima Rog. [A nest of P. punctatissima.] *Ent. Berichten [Amsterdam]* 7(153): 175-176. 1927.—Imagines of this species were taken at Mijdrecht for several successive years, and in Oct. 1925 a nest was found, containing immature stages and workers.

2668. WILDER, MAGEL C. Observations on the ichneumon-fly Epiurus pterophori Ashmead. *Psyche* 34 (6): 227-229. 1 fig. 1927.—Bred in the stalks of *Oenothera lamarckiana,* which were infested with larvae of the moth *Lophoptilus eloisella,* borers in the pith cavity. The larva* of *E. pterophori* is described.

2669. WILKINSON, D. S. On three braconid parasites of the gelechiid moth, Platyedra erebodoxa, Meyr. *Bull. Ent. Res. [London]* 18(4): 391-395. 2 fig. 1928.—*Microbracon* hancocki* (p. 391), Uganda; *Chelonella* ritchiei* (p. 392), Uganda, Tanganyika Territory, with a key to the Ethiopian species of *Chelonus* and *Chelonella; Apanteles diparopsidis* Lyle, critical notes. Types in British Mus.

MACROLEPIDOPTERA

J. McDUNNOUGH, *Editor*

(See also in this issue Entries 885, 2709)

2670. BANDERMANN, FR. Erfolgreiche Zuchten mit amerikanischen Bärenformen [tiger-moths] aus dem Eigelege. *Internat. Ent. Zeitschr.* 23(29): 345-347. 1 fig.; (40): 460-461. 1929.—Specimens of *Arctia caja* v. *americana* Harris were reared by the author, and also *Apantesis virgo** (L.). The eggs of the latter were sent from America on July 29, the 6th molting was completed on Aug. 9th and the 7th not until Oct. 10th.

2671. DOUX, C. le. Beiträge zur Kenntnis der afrikanischen Teracoliden. (Lep. Rhop.) *Mitteil. Zool. Mus. Berlin* 15(1): 3-11. 1 pl. 1929.—*Teracolus lais** Butler is a distinct sp., not the form figured under that name in Seitz. The forms of *T. pallene* are discussed and figured (=*T. infumatus* Btl.). *T. i.* var. *seineri* Str. is *T. achine* Cr. ♀ (types) mixed with *T. pallene* (other specimens). There are other notes on *Teracolus* spp. The following are new: *T.* confusus* (p. 7), Victoria Nyanza; *T. pallene* f. achinoides* (p. 8), British Bechuanaland and German S. W. Africa; *T. pallene* f. meinickei* (p. 8) and *T. p.* f. pallida* (p. 9), German E. Africa; *T. p.* f. simplicoides* (p. 10), Nyassa Lake; *T. amelia hanningtoni* f. nigrescens* (p. 10), Udjiji, German E. Africa. Types are in Zool. Mus., Berlin. *T. achine* f. *gavisa* and *T. daira* f. *nouna* are also figured.—*W. T. M. Forbes.*

2672. HEIN, SIGMUND. Beitrag zur Kenntnis der Macrolepidopteren-Fauna Mährens [Moravia]. *Zeitschr. Österr. Ent.-Vereines* 13(9): 91-92; (10): 96-100; (11): 107-108; (12): 117-120. 1928; 14(1): 11-12; (2): 22-24; (3): 34-36; (4): 44-48; (6): 66-68; (7): 76; (8): 83-84; (9): 89-91; (12): 125-126. 1929.—An extensive list of 596 spp., based on material collected by Dr. M. Kitt in 1917-18 and by the author 1913-1919.

2673. HORMUZAKI, CONSTANTIN. Grundlinien für die Biogeographie und Biogenese der europäischen Makrolepidopteren. Die Entwicklung der europäischen Lepidopterenfauna seit der Tertiärzeit im Lichte der Paläogeographie, Pflanzengeographie und Paläontologie. *Bul. Fac. Stiinte Cernăuți* 3(1/2): 111-159. 1929; 4(1): 3 maps. 50-135. 1930.—In both papers the author states that the European Lepidoptera probably did not migrate after the ice age from Siberia or from western Asia. Taking into consideration the geographical distribution of Lepidoptera, the geological evolution, palaeontology and phytogeography, it is shown that at the end of the Pliocene period Europe and northern Asia were inhabited by a rather homogeneous Lepidoptera fauna of different origins (autochthonous, American, northern, etc.), and that recent spp. were almost entirely developed at that time. The Lepidoptera adapted to temperate zones were destroyed in Siberia by the cold dry climate of the Quaternary, but persisted in some sheltered parts of central and southern Europe and in portions of eastern Asia, as in the Amur-territories, Korea, and Japan. After the ice age Siberia was again populated by hardier Lepidoptera of the temperate zone, from both Europe and eastern Asia. But many delicate spp., called by the author "Sibylla-type," were prevented from penetrating again into Siberia even with its recent continental climate, and are now confined to Europe and to eastern Asia. This discontinuous distribution is evidence of the described evolution. The appearance of new families, genera and species during the geological periods are discussed. The expression "eurytopy" is introduced for a sudden appearing of new spp. in an extended territory. The autochthonous origin of the Mediterranean and alpine fauna and the difference between the latter and the arctic one, and the common origins of the European

and Caucasian fauna, are also explained by the distribution and geological history of Lepidoptera. It is shown, further, that the quaternary fauna of northwestern Africa was tropical (like the recent one south of the Sahara), and that the actual Mediterranean fauna of this region immigrated from Europe. Northern Europe received its fauna after the retrogression of the last glaciation by immigration from the southern parts of central Europe, where, during the ice age, the central-European Lepidoptera remained. The author concludes that there have been no extensive immigrations of Lepidoptera into Europe later than the Tertiary and that the recent European fauna is indigenous.—*C. Hormuzaki.*

2674. **IGEL, LUCIAN.** Drei Neubeschreibungen. *Internat. Ent. Zeitschr.* 22(15): 155. 1928.—*Callosamia angulifera* ab. **aurantiaca**, Frankfurt; *Hyperchiria io* ab. **caeca**; and *Celerio euphorbiae* v. *conspicua* ab. **nigrofasciata**, Anatolia.

2675. **ISHIWATA, S.** Sur la diverticule des conduits génitaux de la larve de Bombyx mori L. (Japanese with French résumé.) *Nogaku Kwai Ho* 301. 547-552. 1 pl. 1927.—The genital duct has a branch at the side of the 8th metameric stigma where the duct curves. This branch, which is attached to a delicate trachea, is minute, and at once disappears. It is a vestige of the genital ducts of the 10th segment.—*Author (courtesy Japanese Jour. Zool.).*

2676. **KAUTZ, HANS.** Gnophos zirbitzensis Pieszczek. *Zeitschr. Österr. Ent.-Vereines* 15(7): 69-70. 1 pl. 1930.—*G.* zirbitzensis (*G. caelibaria z.* Pies).

2677. **KLEMANN, PAUL.** Ein neuer Tagfalterhybrid. *Internat. Ent. Zeitschr.* 23(37/38): 438-442. 1930.—*Pieris* **narapae** (p. 442) (*P. napi* ♂ × *P. rapae* ♀), with f. **flava** (p. 442).

2678. **KRÜGER, RICHARD.** Neubeschreibungen und Berichtigungen. *Internat. Ent. Zeitschr.* 22(24): 229-231. 1928.—*Papilio erlaces* abs. **graphiticus** and **rupestris** (p. 229), Bolivia, types in author's coll.; *Libythina cuvieri* Godt. and *Sephisa daimio* Mats., discussed.

2679. **KRÜGER, R.** Agrias claudina Godt. f. coelestis **m. n. ssp.** *Internat. Ent. Zeitschr.* 22(32): 302. 1928.—From upper R. S. Francisco, type ♂ in author's coll.

2680. **MANNES, H.** Eine Aberration von Spilarctia lubricipeda L. (lutea Hufn.). *Internat. Ent. Zeitschr.* 23(26): 317. 1 fig. 1929.—*S. lubricipeda* ab. **nigrita*** ♀, Germany, type in author's coll.

2681. **MICHAEL, O.** Neue oder wenig bekannte Agriasformen vom Amazonasgebiet. *Ent. Zeitschr.* [*Frankfurt a.M.*] 42(16): 204-206; (17): 214-217. 1928; 42 (19): 254-256; (22): 293-296. 1929.—*A. claudia-biedermanni* ♀ ab. **semitapajonus** (p. 216); *A. c.* ab. ♂ **bella** (p. 255); *A. c.* ab. ♂ **rosae** (p. 255); *A. c.* ab. ♂ **bonita** (p. 255); *A. c.* ab. ♂ **linda** (p. 256); *A. c.* ab. ♂ **nigricirculata** (p. 256), *A. c.-sahlkei* ab. **imitata** (p. 293); *A. c.-biedermanni* ♂ ab. **metamorpho** (p. 295); *A. c.-sardanapulus-moderata* ab. **pseudo-suprema** (p. 295); *A. pericles-mauensis* ab. ♂ **subxanthippus** (p. 296); *A. p.* ♂ ab. **subextrema** (p. 296).

2682. **MÜLLER, LEOPOLD.** Larentia-Aberrationen. *Zeitschr. Österr. Ent.-Vereines* 15(10): 93-95. 1 pl. 1930.—*L. sociata* ab. **effusa*** ♀ (p. 94); *L. spadicearia* ab. **effusa*** ♂ (p. 94); *L. immanata* ab. **alba-effusa*** ♀ (p. 94); *L. i.* ab. **grisea-effusa*** ♀ (p. 94); *L. silaceata* ab. **effusa*** ♂ (p. 94); *L. lugubrata* ab. **effusa*** ♀ (p. 95).

2683. **[OBRAZTSOV, M. S.]** ОБРАЗЦОВ, М. С. До пізнання лускокрильців Побозько-Дніпрянського степу. **[Lepidoptera of the Dnieper-Bug steppe.]** [Chiefly in German.] Всеукраінська Академія Наук, Труды Фізично-Математичного Відділу (Збірник Праць Зоологічного Музею Ч. 7.) (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Mus. Zool. No. 7*) 13(1): 35-40. Map. 1929.—Notes on the distribution of certain mammals, birds, and reptiles in this sharply-defined faunal area are given, and previous work on the Lepidoptera is mentioned. Of 515 recorded forms of Lepidoptera, 180 belong to the Noctuidae. The author lists 62 forms of Macrolepidoptera not previously recorded from this area.

2684. **PROUT, LOUIS B.** New Fijian Geometridae. *Ann. and Mag. Nat. Hist.* 6(36): 690-697. 1930.—*Erythrolophus bipunctatus* **idmon** (p. 690); *Gymnoscelis* **tylocera** ♂ (p. 691), bred from larvae feeding on leaves of *Glochidion; Sauris* **acanthina** ♂ (p. 692); *S.* **priva** ♂ (p. 693); *Scardamia* **eucampta** ♀ (p. 694); *Bulonga* **phillipsi** ♂ (p. 695); *Luxiaria* **sesquilinea** ♂ (p. 695), type in Zool. Mus. Hamburg; *Petelia* **aesyla** ♂ (p. 696). Types in British Mus., unless otherwise stated.

2685. **RAEBEL, H.** Neue Boarmia-Formen. *Internat. Ent. Zeitschr.* 24(8): 103-106. 1 pl. 1930.—*B. crepuscularia* ab. *defessaria** f. **extrema*** (p. 104); *B. luridata** fs. **intermediata*** (p. 104), **variegata*** and **fasciata*** (p. 105). All from upper Silesia.

2686. **REISSER, HANS.** Beschreibung der unbekannten ersten Stände einiger corsischer Geometriden. *Zeitschr. Österr. Ent.-Vereines* 14(1): 3-6; (3): 31-33; (4): 42-44; (8): 79-81. 1929.—First to 4th moltings and pupa of *Ptychopoda obliquaria, Ellopia pinicolaria,* and eggs and larva of *Ptychopoda infirmaria* are described, with notes on rearing.

2687. **REUSS, T.** Die Argyreidae T. Rss., fam. nov. *Internat. Ent. Zeitschr.* 22(14): 145-146. 1928.—**ARGYREIDAE** (p. 146), with Argyreinae as typical subfamily, and to include also Yrameinae; **PROTODRYAS** (*Prodryas* T. Rss. preocc.) (p. 146).

2688. **SCHAWERDA, KARL.** Neue und interessante Formen aus meiner Sammlung. *Zeitschr. Österr. Ent.-Vereines* 14(11): 105-107; (12): 117-120. 1929.—[Macrolepidoptera] *Melitaea parthenie nevadensis* ab. **corythalina** (p. 105); *Eriogaster catax* ab. **auriflua** ♂ (p. 105); *Aporophila lutulenta* ab. (var.) **brunnea** (p. 106); *Episema* (*Derthisa*) *trimacula* ab. **lilascens** (p. 106); *Hadena satura* (*porphyrea* Esp.) ab. **variegata** (p. 107); *Plusia pulchrina* ab. **incipiens** (p. 107); *Acantholipes regularis* v. (ab.?) **hilaris** (p. 117); *Rhynchodontodes ravalis* (gen. *aestivalis?*) ab. **pallida** (p. 118); *Cidaria montanata* ab. **pseudolapponica** (p. 118); *Ematurga atomaria* ab. **kindervateri** (p. 119); [Microlepidoptera] *Zygaena rhadamanthus* ab. **minicolor** (p. 120).

2689. **SCHMIDT, ANTON.** Eine neue europäische Psodos-Art im Vergleich zur coracina-Gruppe und Ps. alpinata Scop. *Internat. Ent. Zeitschr.* 24(3): 25-32. 3 pl., 3 fig. 1930.—*P.* **dioszeghyi*** (p. 25), Transylvania, type in Hungarian Nat. Mus. Extensive comparative notes are given.

2690. **SCHWANWITSCH, B. N.** Studies upon the wing-pattern of Catagramma and related genera of South American nymphalid butterflies. *Trans. Zool. Soc. London* 21(2): 105-286. 5 pl. 18 fig. 1930.—The continuation of a series of studies on this subject, covering the *Catagramma* group, which are arranged in the following order of increasing specialization of pattern: *Lucinia, Perisama, Orophila, Cyclogramma, Callicore, Catagramma.* The pattern is found to be a development of the typical nymphalid pattern (Schwanwitsch, 1924), especially by a basal movement of elements, following the disappearance of the discocellular veins, and simplification by both fusion of elements and the dropping out of elements, with an increase in some, usually 3-5, of the series of ocelli. All the pattern elements are recognizable as belonging to the hypothetical pattern, though finally only 7 of the original 20 components may be present ("oligonome" type). However, 18 out of the 20 components may be found in the group, 15 in Catagramma alone. The principal feature of the wing patterns of *Catagramma* and *Callicore* is that the majority of the pattern components become strongly dislocated toward the wing-base, the stripes called "mediae" (which cross the middle of the wing in the prototype) becoming approximate to the wing-base, and the eyespots coming to lie near the center of the wing. The dislocations eventually lead up to the "meandric" type of pattern, composed of sinuous equidistant components, which are independent, in a sense, of the wing-venation (e.g., *Callicore anna*); and to the formation of 3 concentric rings on the periphery of the wing, by the joining up, via the anal part of the wing, especially, of "medial" and submarginal components. The principal characters of

the wing-pattern of *Catagramma* are (a) the tendency to nigrism, i.e., the broadening of the pattern components, which may culminate in a strong suppression of the ground color, (b) the presence of the "ocello-circuli," elements formed by the fusion of the ocelli with their surrounding circuli and (c) the coalescence of the 2 mediae. *Catagramma* may be divided into 3 sections: *astarte**-type with coalesced mediae, *cyllene** with separate mediae, and *maimuna** with a well-pronounced discal stripe. The principal pattern character of *Callicore* is the "medial hook,"—a separated portion of the first media which does not follow the rest basally, but combines with one of the "circuli" to form one of the two "8's." The other is formed of 2 circuli. The development of the "88" pattern is traced through *Perisama, Orophila,* and *Cyclogramma.* The medial hook occurs also in the *maimuna* pattern in *Catagramma.* The culminations of other principal modifications, which are traced, are *Perisama eminens** and *vaninka**, *Callicore liduina**, and *Catagramma kolyma, sorana, cynosura**, *costa**; *pyracmon**, *hesperis**, *felderi**, *atacama**, *eunomia**, *pitheas**, *lyrophila** and *odilia**. The lines of development, as in other groups discussed previously, may be treated under elimination of components, dislocation, coalescence, alteration in size, etc. Certain pattern components, or their parts, may acquire a red or ochre-yellow coloration, which indicates their approaching disappearance. These areas of change of color are exactly localized. The typical colors of the ground of the Catagrammas are yellow, metallic blue, and white, the blue and the white being localized in a few definite interspaces between or within the prototypical components. Four more general phenomena are dealt with: elasticity of pattern components, interaction between them, their independence of the veins, and their incongruity with the enclosing outline of the wing, whereby certain elements may migrate beyond the wing-edge and be lost. The components may influence each other (a), by a sort of repulsion, or by symmetrical alterations in their various features, or (b), by the fusion or even mutual annihilation of 2 components in contact with each other, or (c) one component may override another and so annihilate it. The discussion is confined in large part to the under sides of the hind wings, most of which are figured.—*W. T. M. Forbes.*

2691. SEITZ, ADALBERT. Die Gross-Schmetterlinge der Erde. *Fauna Palaearctica. Suppl.* 1: pp. 57-91. pl. No. 5 & 6. Alfred Kernen: Stuttgart, 1929-1930.—Continuation and conclusion of the treatment of the palearctic Papilionidae by CHR. BOLLOW. An alphabetic index with place of original publication, of all the spp. listed, concludes the paper.

2692. SEITZ, ADALBERT. Die Gross-Schmetterlinge der Erde. *Fauna Palaearctica. Suppl.* 1: pp. 93-120. pl. No. 7 & 8. Alfred Kernen: Stuttgart, 1930.—The present installment contains the genera and spp. of the family Pieridae by CHR. BOLLOW. The alphabetic index is begun of all the palearctic spp. listed, with data of original descriptions.

2693. SKALA, HUGO. Zur Variabilität der Hinterflügelunterseite von Melitaea didyma F. *Zeitschr. Österr. Ent.-Vereines* 13(9): 85-87. 1928.—Deals chiefly with central European sp. *M. didyma* ab. **inversa** (p. 85); ab.? **mariannae** (p. 85).

2694. STÄTTERMAYER, J. Neue Geometriden-Formen aus Central-Algerien. *Internat. Ent. Zeitschr.* 24 (23): 253-254. 1930.—*Larentia numidiata* abs. **convergaria** ♂ and **costimacularia** ♂ (p. 253); *L. alhambrata* ab. **reductaria** (p. 253); *L. sandosaria* ab. **bellissimaria** (p. 253); *Himera pennaria* ssp. **mauretanaria** and fs. **algiriae** and **montanaria** (p. 253); *Crocallis fuliginosa* ab. **uniformata** (p. 253); and *Hypoplectis henricaria* ab. **fasciataria** (p. 254).

2695. STICHEL, H. Nacharbeiten zur Revision der Riodinidae. (Lep. Rhop.) IV. *Mitteil. Zool. Mus. Berlin* 15(1): 15-26. 1929.—Descriptive notes and records of 50 forms. The following are new, the types being in the Berlin Mus. (B), in author's coll. (S): *Mesosemia loruhama candara* ♀ f. **cinerea** (p. 15), Peru (B); *Ancyluris huascar* spp. **molesta** (p. 16), Ecuador (S); *Rhetus dysonii* ssp. **caligosus** (p. 17), Colombia (S); *Nahida coenoides* f. **trochoides** (p. 17), Ecuador (S); *Isapis agyrtus* ssp. **abydus** (*I. a. sestus* Stz. nec Stich.) (p. 17); *Chamaelimnas briola* f. **insignis** (p. 17), Peru (B); *Crocozona* **insolens** (p. 17), Bolivia (B, S); *Baeotis hisbon* ssp. **simblina** (p. 18), Brazil (S); *Lymnas iarbas* f. **bipuncta** (p. 18), Colombia (B); *Mesene phareus* ssp. **deliciosa** (*M. phareus ineptus* Seitz, not *M. celetes ineptus* Stich.) (p. 18); *M.* **ineptus** (*M. celetes i.* Stich.) (p. 18); *M.* **fissurata** (*M. margaretta eromena* ♂ not ♀ Stz. not Stich.) (p. 18); *M.* **discolor** (*M. margaretta eromena* ♀ not ♂ Stz. not Stich.); *Xenandra agria* f. **agrestis** (p. 19), Brazil (B); *Phaenochitonia pyrsodes* ssp. **eanides** (p. 19), Colombia (B); *Argyrogramma* **praestigiosa** (p. 19), South America (B); *Calydna lusca lusca* f. **fissilis** (p. 20) (S), *C. l.* ssp. **morio** (p. 20) (S); *Emesis* **elegia** (p. 21) (B), and *E.* **heteroclita** (p. 21) (B), all 4 Brazil; *E.* **tristis** (p. 22), Mexico (B); *Ematurgia* **nivosa** (p. 22), Peru (B); *E.* **albovata** (p. 22), Bolivia, 1000 M. (B); *Thisbe irenaea* ssp. **prodiga** (p. 22), Brazil (B); *Orimba pythioides pythioides* f. **amazona** (p. 23), Peru (B); *O.* **preciosa** (p. 23), Brazil (B); *Peplia lamis* ssp. **bahiana** (p. 23), Brazil (B); *Nymphidium caricae caricae* f. **badia** (p. 23), S. America (B); *N. caricae* ssp. **erubescens** (p. 24), Venezuela (B); *N. lisimon* ssp. **attenuatum** (p. 24), Brazil (B); *N.* **corculum** (p. 24), Colombia (B); *N. nealces* ssp. **amoenum** (p. 25), Brazil (B); *N. baeotia* ssp. **robiginosum** (p. 25), Upper Amazon (B); *N.* **albicans** (p. 25), Colombia (B); *N.* **scurrilis** (p. 25), Peru (B); *Stalachtis phlegia* ssp. **coronis** (p. 26), Brazil (S?).—*W. T. M. Forbes.*

2696. SÜFFERT, FRITZ. Zur vergleichenden Analyse der Schmetterlingszeichnung. (Vorläufige Mitteilung.) *Biol. Zentralbl.* 47(7): 385-413. 9 fig. 1927.—The author establishes certain principles of pattern in Lepidoptera. He indicates the transverse banding of the wings and outlines the system of primary symmetry according to which the basal part of the wing is a repetition in mirror-fashion of the arrangement of pattern of the outer side of the wing, with the dividing line running through the middle of the wing. Furthermore, he describes the compound pattern with the special case of spiral formation as a central ocellus. The *nymphalid* pattern forms 2 bands followed by another pair of bands on both sides divided by the disco-cellular vein as the component parts of the primary symmetry indicated above. In the region of the exterior part of the wing extends a row of interneural ocelli enclosed between 2 bands, constituting a phenomenon of local symmetry. The sequence of the pattern is concluded by an antemarginal band. An example of the formation of secondary compound bands is found in *Papilio podalirius.** The author characterizes the principle of a generalized pattern independent from anatomical properties and structural border lines of the wing. A lifelike mimetic underside of the genus *Kallima** is an example of extreme generalized pattern. The exposed part of the wing frequently has a pattern different from the concealed part in the natural position of the insect. Finally, the author discusses the significance of the pattern from the phylogenetic, physiological and morphological angles.—*A. Avinoff.*

2697. VERITY, ROGER. The Asiatic origins of the western palaearctic Rhopalocera exemplified by Melitaea didyma Esp. *Ent. Rec. and Jour. Variation* 41(2): 31-34; (3): 39-43; (4): 63-67; (5): 72-76; (6): 89-91; (7/8): 111-118; (9): 127-132. 1929.—The genus *Melitaea* is considered to have developed from the American *Phyciodes* during the Cretaceous in the then united arctic continent. *M. didyma* is representative of a group centering in eastern Asia, and has no American relatives. It undoubtedly arose in Asia in the period when the arctic continent had become uninhabitable and the genus was driven further south. It is considered that in the warm Eocene, Asia was divided into a group of large and small islands, of which the principal were a Pamir-

Thibetan, a Thian-Shan island, and a more northern Siberian continent, all cut off in western Asia by a sea. Each of these is the origin of an "exerge" or group of races of common origin. Where two exerges come into contact secondarily and merge, races are produced belonging to what Verity calls "synexerges" to distinguish them from the similarly variable races that indicate the approaching differentiation of two races. Synexerges are now most characteristic of the zone from central Spain to the western Alps, where exerges from north and south of the Mediterranean have come into contact secondarily. In the early Miocene, the central Asian region became much cooler and the straits separating the islands tended to disappear, allowing the various exerges to spread and merge. The first release was from the Pamir-Thibetan area, the fauna of which migrated west through north Africa and even reached the Canary Is. Later a series of cooler forms escaped via Asia Minor, Greece, and Tunisia. Finally as the climate became much cooler, the mountain-types came west in association with the moufflon. Detailed parallels are drawn from other spp. and genera, especially from the Parnassiinae. The Thian-Shan and Pamir islands also fused and exchanged exerges, resulting in overlapping doublet-spp.,—sometimes closely related, though with different genitalia, sometimes mere exerges. There are 3 chief exerges in Asia, typified by *didymoides* Ev. in S. E. Siberia, *agar* Obth., in west China and Tibet, and *ala*, in central Asia. There are 3 exerges in Europe; *didyma* (north), *dalmatina-caucasica* (central) and *casta-occidentalis* (south, reaching north to Aragon). The numerous races and forms are discussed in detail, and the following are described as new: *M. ala chitralensis* summer form **chitralipluvia** (p. 43), India; *M. didyma* **rectealpina** (p. 66), Bormio, Rhaetic Alps, the original figure of *alpina* being based on a gray aberration from Constantinople; **superalpina** (p. 66), above Bormio, 2000 M.; **garumna** (p. 72), France; *garumna*, summer f. **postgarumna** (p. 72), Gironde; **pyrenealpina** (p. 73), Gèdre, Hautes-Pyrénées, 1100 M.; **subseilemis** (p. 73), France; **subtarlonia** (p. 74), Italy, 900 M., with a late spring form **praemarsilia** (p. 74); *M. d. georgi* spring form **ignea** (p. 74), and ab. **atrarubra**, Italy; *M. d. marsilia* autumn form **microleopardata** (p. 76), France; *M. d. subpatycosana* summer form **magnaestiva** (p. 76), France; *M. d. tarlonia* f. **atralpina** (p. 89), Valais, high levels; *M. d. t.* f. **ravalpina** (p. 90), Schnalsertal; *M. d. oreithyia* 2nd brood **postoreithyia** (p. 91), Istria; **araratica** (p. 113) race (or 2nd brood) of *meridionalis*, Mt. Ararat; **proteaoccidentis** (p. 117), Morocco; early spring form **cataprotea** (p. 117), Spain, with late spring form **cataoccasus** (p. 118) and summer form **cataminuta** (p. 118); **magnacasta** (p. 128), Persia; ab. **hiberava** (p. 130), Spain; *M. phoebe guevara* Früh (=*aabaca* Vty.); *M. cinxia* **carpetana** (*castiliana* Turati nec Melcón) (p. 132). —*W. T. M. Forbes.*

2698. WAGNER, FRITZ. Selenia bilunaria nov. var. harrisoni und nov. var. garretti. *Zeitschr. Österr. Ent.-Vereines* 13(6): 62-63. 1928.—Both from England.

2699. WARNECKE, G. Weitere neue Macrolepidopteren aus Süd-Arabien. *Internat. Ent. Zeitschr.* 23(33): 389-392. 1 fig. 1929.—[Microlepidoptera] *Cossus* **frater*** (p. 389), and [Macrolepidoptera] *Leucania* (*Hyphilare*) **affinis** ♀ (p. 391).

2700. WARNECKE, G. Einige Bemerkungen zu asiatisch-paläarkt. Schmetterlingsarten der Subfamilie der Hemitheinae (Lep. Geom.). *Internat. Ent. Zeitschr.* 24(10): 132-134. 2 pl. 1930.—This paper is based on study of material in the Zool. Mus., Hamburg. *Aracima muscosa* f. **privata*** (p. 132), Amur; *Thalera fimbrialis* ssp. **major*** (p. 133), Turkestan.

2701. WEHRLI, EUGEN. Ueber einige nordafrikanische Geometriden (Lepid. Heterocera). *Internat. Ent. Zeitschr.* 23(37/38): 429-438. 1930.—A list of little known spp., including: *Pseudoterpna coronillaria* ssp. **algirica** (p. 429), presumably Algeria; *Glossotrophia asellaria* ssp. **taurica** (p. 430), Turkey; *Ptychopoda* **culoti** (p. 434) and *P. oranaria* ssp. **maroccana** (p. 435), Morocco; *P. calunetaria* ssp. **episticta** (p. 436), Algeria and Morocco; *Lomographa trimaculata* vars. **oranaria** and **postrecta** (p. 438), Algeria.

2702. WOJTUSIAK, R. J. Entwicklungsgeschichtliche und psychographische Studien an Mamestra-Raupen. *Bull. Internat. Acad. Polonaise Sci. et Let. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. II* [*Zool.*] 1929(1/2): 1-54. 1 pl., 5 fig. 1929.—There is a detailed description of the eggs and all larval instars of the noctuid moths *M. brassicae* L., *splendens* Hb., and *trifolii* Rott. The eggs differ in size and number of ribs, the larvae in color of head, number of longitudinal stripes and other color markings. The markings change in definite directions during growth. All 3 spp. have both green and brown larval forms. Curves of the growth rate of each sp. are given. In *Mamestra*, the prolegs of the 3rd and 4th abdominal segments are poorly developed at hatching so that locomotion is of the geometrid type. With each successive instar the prolegs are better developed and the gait is correspondingly altered. The absolute speed of progression is faster but is less compared to body length in the later instars. Larval reactions are considered at length, including cleaning reflex, reactions to touch and shaking in various instars, response to light, behavior immediately after hatching and during ecdysis, and relation of light to finding of food.—*L. H. Hyman.*

2703. ZERNY, H. Neue tropische Heteroceren aus dem Naturhistorischen Museum in Wien. *Zeitschr. Österr. Ent.-Vereines* 13(9): 81-84. 1928.—*Pseudophaloë* **xiphydria** ♂ (p. 81), *Eucyane* **phanoptoides** ♂ (p. 82), and *E.* **variabilis** ♂ (p. 83), all from Colombia; *Bharetta* **bidens** ♂ (p. 84), Malay Peninsula.

2704. ZÜLLICH, RUDOLF. Lycaena nevadensis n. sp. *Zeitschr. Österr. Ent.-Vereines* 13(8): 73-75. 1 pl. 1928.—From Spain.

MICROLEPIDOPTERA

CARL HEINRICH, *Editor*

(See also in B. A. 5(11): Entries 28782, 29742, 29987; and in this issue 1861, 1868, 1907, 2669, 2688, 2697, 2699, 2757)

2705. CLARKE, J. F. Entomology. *Rept. Prov. Mus. Nat. Hist.* [*Victoria, B. C.*] 1930: C 14-C 15. 1 pl. 1931.—Includes records of *Eucosma crambitana** and *Telphusa longifasciella**, new to British Columbia, and of *Mompha conturbatella**, new to British Columbia and to North America.

2706. DUFRANE, ABEL. Les Nepticula des saules en Belgique. *Bull. et Ann. Soc. Ent. Belgique* 70(1): 29-32. 1930.—Summary of life-history and distinctive characters are given for *N. salicis, N. vimineticola,* and *N. intimella; N. salicis* ab. **crombrugghella** (p. 30), Vannes, type in the author's coll.—*W. T. M. Forbes.*

2707. FIORI, ATTILIO. Valore sistematico di alcune forme del genere Hyponomeuta Latr. *Boll. Lab. Ent. Ist. Sup. Agrario Bologna* 3: 246-253. 1930.—A study of the characteristics of several hundred specimens of *Hyponomeuta* from broods cultivated on *Evonymus*, hawthorn, apple, and plum, demonstrated the extreme variability in the chromatic characters which had served to distinguish *H. cognatellus, H. padellus,* and *H. malinellus*. The form which lives on *Evonymus* is more homogeneous and fairly well characterized and may be assigned to *H. cognatellus*. The forms on the other 3 plants probably belong to one sp., *H. padellus* L. (=*H. malinellus* Zell.).—*From author's summary.*

2708. JONES, FRANK MORTON. The mating of the

Psychidae (Lepidoptera). *Trans. Amer. Ent. Soc.* 53(4): 293-312. 6 pl., 2 fig. 1927.—The ♂♂ are attracted by scent to the silken bag of a receptive ♀, which hangs head downward within her recently-split pupa-shell. By severe muscular exertion, the ♂ inserts the tip of his abdomen in the narrow opening of the silken bag. The abdomen then becomes enormously lengthened by pneumatic pressure, passing up between the body of the ♀ and the inner wall of her pupa-shell for her entire length. Mating is thus made possible by the extension of the body of the ♂, and not by the protrusion of a thread-like ductus ejaculatorius, as heretofore described, this organ being extrusible only by eversion and to a limited extent. In *Thyridopteryx ephemeraeformis* the numerical proportions of the sexes, the plural matings of the ♂♂, and the behavior of fertilized and unfertilized ♀♀, all indicate that if parthenogenesis occurs in this species, it is exceptional.—*F. M. Jones.*

2709. **McDUNNOUGH, J. The Lepidoptera of the north shore of the Gulf of St. Lawrence.** *Canadian Ent.* 62(5): 107-117. 2 fig. 1930.—A list containing large elements of the Labrador fauna, also typical members of the Canadian and Hudsonian zones. 21 families are represented, including: (Geometridae) *Eupithecia* **bradorata** ♀* (p. 110), Bradore Bay, Quebec; (Eucosmidae) *Dichrorampha dana* v. **bradorensis** (p. 115), Bradore Bay. Types in Canadian Nat. Coll. Genitalia of ♀ *Hemimene bowmanana* are figured for the first time.

2710. **METCALFE, JOHN W. Peronea hastiana L. sheldonana ab. nov.** *Entomologist* [*London*] 61(777): 41. 1928.—Wales, type in author's coll.

2711. **PETERSEN, WILHELM. Die Blattminierer-Gattungen Lithocolletis und Nepticula (Lep.) Teil II. Nepticula Z.** *Stettiner Ent. Zeit.* 91(1): 1-82. 3 pl., 16 fig. 1930.—Mainly a review and reclassification of the palearctic spp. of *Nepticula,* based primarily on genitalic characters. Nearly 100 are described. Material is mostly from Estonia, Germany, Sweden, and England. There is a discussion of the chief variable characters in the genus. The simple uncus, presence of subscaphium, more complete venation, coarse scaling, and cocoon in the mine, are considered primitive. The black head is viewed as a modern specialization, frequently postglacial, and often confined to the ♂. The larva feeds upon woody members of the Rosaceae, Betulaceae, Fagaceae (Cupuliferae), and Salicaceae. Comparisons are made with the similar habits of the genus *Lithocolletis.* The spp. are divided into 11 genitalic types, 3 of which are subdivided; and ♂ genitalia are figured. There are descriptions and discussion of known spp., and of one new variety: *Nepticula betulicola* v. **nanivora** (p. 61), on *Betula pubescens* and *B. nana,* Saxony and Estonia.—*W. T. M. Forbes.*

2712. **PICKENS, A. L. The "coffee-pot" cocoon and the insect that makes it.** *Pan-Pac. Entomol.* 6(2): 63-66. 7 fig. 1929.—Describes the larva*, cocoon*, and spinning method of *Megalopyge crispata,* with notes on imago and oviposition.—*W. T. M. Forbes.*

2713. **PIERCE, F. N. Peronea fissurana Pierce and Metcalfe.** *Entomologist* [*London*] 63(810): 259. 1930.—*P. fissurana* fs. **costimaculana** and **trimaculana.**

2714. **PUPPINI, GIUSEPPE. Contributo alla conoscenza dell'Anarsia lineatella Zeller e appunti sulla Recurvaria nanella Hübn.** *Boll. Lab. Ent. Ist. Sup. Agrario Bologna* 3: 183-220. 2 pl., 18 fig. 1930.—The morphology and life history of *A. lineatella* are studied, with descriptions and figures of adult, egg, and larval stages. It has 2 annual generations in Emilia, Italy, and infests fruit trees (chiefly spp. of *Prunus*). The braconid *Apanteles xanthostigmus* and the chalcid *Paralitomastix variicornis* parasitize this sp. Methods of control are reviewed. *R. nanella** has but one generation. It attacks the flowers of almost all cultivated Rosaceae of the subfamilies Pruneae and Pomeae. Parasites obtained from it were 2 braconids, *Ascogaster annularis* and *A. quadridentatus,* and 1 dipteran, *Phytomiptera nigrina.*

2715. **SERVADEI, ANTONIO. Contributo alla conoscenza delle Hyponomeuta padellus L., cognatellus Hbn. e vigintipunctatus Retz.** *Boll. Lab. Ent. Ist. Sup. Agrario Bologna* 3: 254-301. 8 pl., 19 fig. 1930.—A detailed study of these 3 forms, including descriptions and figures of successive stages in the life history of each, and discussion of habits and habitat. The author confirms Fiori's conclusions that differences in host plant are responsible for the differences noted between the 3 forms, which constitute a single morphological species, *H. padellus.* The following parasites and predators were noted. On the *H. padellus* which lives on the apple: [Hymenoptera] *Herpestomus brunneicornis, Hemiteles areator, Pimpla examinator, P. alternans, Angitia armillata, Mesochorus vitticollis, Chorinaeus tricarinatus, Tetrastichus evonymellae,* and *Habrocytus hyponomeutae;* [Diptera] *Discochaeta hyponomeutae* and *Phorinia aurifrons;* and a dipterous predator, apparently *Sarcophaga affinis.* On the *H. padellus* of hawthorn: [Hymenoptera] *Herpestomus brunneicornis, Angitia armillata,* and *Tetrastichus evonymellae;* [Diptera] *Phorinia aurifrons;* and a dipterous predator (*?Sarcophaga affinis*). On the forms from the plum: *Tetrastichus evonymellae* and *Phorinia aurifrons.* On *H. cognatellus:* [Hymenoptera] *Angitia armillata, Mesochorus semirufus,* and *Ageniaspis fuscicollis;* [Diptera] *Ptychomyia selecta.* On *H. vigintipunctatus:* [Hymenoptera] *Angitia armillata* and [Diptera] *Nemorilla maculosa.* The life histories of the parasites are discussed in connection with their effect on *Hyponomeuta.*

2716. **van EECKE, R. Beschrijving der ontwikkelingsstadia van Thosea asigna. [Description of the immature stages of T. asigna.]** *Zool. Mededeel.* [*Leiden*] 13(3/4): 224-225. 1 fig. 1930.—Description of egg, larva*, pupa, cocoon*, and adult*. It is found on the oil-palm.

NEUROPTEROIDS

F. M. CARPENTER, *Editor*

(See also in this issue Entry 2759)

2717. **BANKS, NATHAN. Some new neotropical neuropteroid insects.** *Psyche* 37(2): 183-191. 1 pl. 1930.—Psocidae: **COMPSOCUS** (p. 183), type *C.* **elegans*** (p. 183), Panama; *Hemipsocus* **pretiosus*** (p. 184), Cuba and Florida; *Thyrsopsocus* **pretiosus*** (p. 185), Panama; *T.* **bellulus*** (p. 185), Honduras. Ephemeridae: *Callibaetis* **completa*** (p. 187), Cuba. Hemerobiidae: *Hemerobius* **cubanus** (p. 187) and *Megalomus* **cubanus*** (p. 188), Cuba. Coniopterygidae: *Coniopteryx* **marginalis** (p. 189), Cuba. Myrmeleonidae: *Myrmeleon* **wrighti*** (p. 189), Cuba; *Austroleon* **garciana** (p. 190), Isle of Pines. Type presumably in Mus. Comp. Zool., Harvard.

2718. **[BARTENEV, A. N.]** БАРТЕНЕВ, А. Н. О палеарктических видах подрода **Cordulegaster Leach.** (Odonata). [Palearctic spp. of the subgenus Cordulegaster.] [German summary.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3(1/3): 1-33. 4 fig. 1930.—A table shows the distribution of the spp. and vars. of the genus *Cordulegaster,* and a key is given to the spp. and vars. of the subgenus. There is a detailed systematic account of the 14 known spp. *C.* **magnificus*** ♀ (p. 8), locality unknown; *C.* **mzymtae*** ♀ (p. 12), Caucasus; *C. insignis* v. **lagodechicus** (p. 14), "Kakketiia." Dimorphism, distribution, and evolutionary tendencies are discussed.

2719. **[BARTENEV, A. N.]** БАРТЕНЕВ, А. Н. Заметка о сборах стрекоз Северо-Кавказской Гидробиологической Станции в 1928 году в Кабарде и

Балкарии. [Odonata collections of the North Caucasus Hydrobiological Station in 1928 in Kabarda and Balkaria.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3 (1/3): 85-86. 1930.—A list of 15 spp., with locality records.

2720. **BLAIR, K. G.** A list of the British Ephemeroptera. *Entomologist* 63(803): 82. 1930.—A check list of 42 spp.

2721. **BYERS, C. FRANCIS.** A contribution to the knowledge of Florida Odonata. *Univ. Florida Publ., Biol. Sci. Ser.* 1(1): 1-327. 7 maps. 11 pl., 12 fig. 1930.—The author lists 119 spp. taken in, or reported from, Florida. Of these he collected 92 species, consisting of 1592 specimens. At least 20 of the 92 spp. have never been recorded from Florida before, and 3 (*Negomphoides ambigua* (Selys), *Dythemis rufinervis* (Burm), and *Lestes tenuatus* Rambur) are new to the U. S. A. Many records, hitherto uncertain, have been authenticated. Complete descriptions and keys are given for 47 genera and 114 spp., ♂♂, ♀♀, and nymphs; 17 spp. were reared from nymphal instars to adult, 7 of these represent new life histories, the nymph never having been known previously. The author divides Florida into 9 major, natural biotic areas, which he characterizes, and attempts to determine the species, both nymph and adult, associated with each area. Detailed ecological observations on habits, habitat and life histories are recorded, with brief geological, physiographical, and climatological data included in order to furnish a background for discussions on zoogeography. The discussions of zoogeography deal with the place of origin, migration routes, present day distribution, and factors influencing distribution of the Odonata as appertaining to Florida, with the conclusion that temp. is the most potent single factor affecting distribution and acts as a barrier to their migration.—*C. F. Byers.*

2722. **IDE, F. P.** Contribution to the biology of Ontario mayflies with descriptions of new species. *Canadian Ent.* 62(9): 204-213. 1 pl.; (10): 218-231. 2 pl. 1930.—Collecting records made at 4 localities which are described for their ecological conditions. Ephemerinae 5 spp., Baetinae 25; *Leptophlebia*, key to and descriptions of nymphs of 5 spp., *L. volitans*, mollis*, guttata*, adoptiva*, and debilis**; *Ephemerella* depressa (p. 212), ♀* and nymph; *Eurycaenis* pallida ♂* (p. 218), type in Roy. Ontario Mus.; descriptions and figures are given of nymphs of *Baetis parvus, B. pygmaeus, Pseucloeon carolina, Centroptilum bellum,* and *Cloeon mendax; Centroptilum* convexum* (p. 222); *Callibaetis americanus,* description of mating habits. Heptageniinae, 15 spp.; *Iron pleuralis,* description of nymph*.

2723. **IWATA, MASATOSHI.** Five new species of trichopterous larvae from Formosa. *Annot. Zool. Japonenses* 11(4): 341-351. 5 fig. 1928.—*Rhyacophila* formosae* (p. 341); *Hydroptila* formosae (p. 343); *Hydropsyche* formosae* (p. 345); *Tinodes* formosae* (p. (347); *Ganonema* formosae* (p. 349).

2724. **KIMMINS, D. E.** Some records of British Trichoptera for 1929. *Entomologist* 63(807): 172-174. 1930.

2725. **LESTAGE, J. A.** Notes sur Tirleya belgica Lest. (Éphéméroptère). Stations nouvelles. *Ann. Biol. Lacustre* 1926(15): 163-167. 1927.

2726. **NAVÁS, LONGIN.** Neuroptères et insectes voisins—Chine et pays environnants. *Notes Ent. Chinoise, Shanghai* 6, 12p. 9 fig. 1930.—Fifteen species recorded, Megaloptera: *Neochauliodes* yunnanensis (p. 1). Mecoptera: *Neopanorpa* dimidiata* (p. 2), *N.* lacunaris* (p. 3), *Leptopanorpa* brisi* (p. 4). Trichoptera: *Macronema* brisi* (p. 5), *Stenopsyche* dentata* (p. 6), *S.* kharbinica* (p. 7) Manchuria, *S.* uncinata* (p. 9) Tonkin, *S.* lobulata* (p. 9) Laos, *S.* hamata* (p. 11) Annam, *S.* cinerea (p. 12); others from Yunnan.—*A. P. Jacot.*

2727. **NAVÁS, LONGIN.** Insectes du Congo Belge. Pts. 4 & 5. *Rev. Zool. et Bot. Africaines* 19(3/4): 305-336. 28 fig. 1930; 20(3): 257-279. 13 fig. 1931.—The present installments continue the list of Belgian Congo insects, numbering 112 spp., including, Pt. 4.—Neuroptera: *Macronemurus* schoutedeni* (p. 305); *Lysmus* collarti ♂* (p. 307); *Micromus* laxus* ♀ (p. 309); *Notiobiella* bella ♀* (p. 309); *Acroberotha vasscana* Nav., gen. and sp. new to Congo. Mecoptera: *Bittacus* elisabethae ♀* (p. 311); *B.* burgeoni ♀* (p. 312). Ephemeroptera: *Atalophlebia* dentifera ? ♂* (p. 314), the genus apparently new to Congo; *Adenophlebia* seydeli ♀* (p. 315); *A.* bequaerti ♀* (p. 316); *A.* collarti* (p. 316); *A.* tortinervis ♂* (p. 317); FULLETA (p. 318), near *Hagenulopsidi,* type *F.* dentata ♂* (p. 318); *Centroptiloides* collarti ♂* (p. 319), genus new to Congo; *Cloeon* areolatum ♀* (p. 320); *C.* pusillum (p. 321); *C.* affine*; *C.* vitreum* (p. 322). Trichoptera: *Dipseudopsis* angustipennis ♀* (p. 324); *D.* wittei* (p. 325); *D.* burgeoni* (p. 326); *Protodipseudopsis* congolana* (p. 326); *Tinodes* ? annulata ♀* (p. 328); *Protomacronema* divisum ♀* (p. 329); *Leptonema* vanderysti ♀* (p. 330); *Macronema capense* v. stigmata ♂* (p. 331); *Leptocerus* connexus ♀* (p. 332); *L.* ituriensis (p. 333); *L.* spinosus* (p. 333); *Pseudoleptocerus* schoutedeni* (p. 334); *Occetis* pangana ♀* (p. 335). Pt. 5.—Neuroptera: *Suphalacsa* microstigma ♀ (p. 258); *Encyoposis* seydeli ♂ (*Helicomitus s.* ♀ Nav.) (p. 259), with first description of the ♂; *E.* walkeri ♀* (p. 260); *Nelees* posterior ♀ (p. 262), FEINA (p. 263) (Myrmeleonidae), near *Feinerus,* type *F.* languida ♀* (p. 264); VESSA (p. 265) (Myrmeleonidae), near *Formicaleo,* type *V.* guttata ♀ (p. 266); *Cymothales* regalis ♀* (p. 266); *Gandulus* overlaeti ♀* (p. 268); *Notiobiella* antennata* (p. 269); *Berotha* sashilana ♀* (p. 269). Ephemeroptera: *Adenophlebia* eatoni ♀ (p. 271); *A.* elegantula ♀* (p. 272); *A.* decorata* (p. 273); *Cloeon* bellum ♀ (p. 274). Trichoptera: *Dipseudopsis* overlaeti* (p. 274); *Polymorphanisus* bisignatus ♀* (p. 276); *Ganonema* annulicorne ♀* (p. 277); *Homilia* vestita ♀* (p. 278).

2728. **NAVÁS, LONGINOS.** Insectos de la Argentina. 5. *Rev. Soc. Ent. Argentina* 2(5): 219-225. 5 fig. 1929.—Locality records for 41 spp., including Myrmeleonidae: *Austroleon stictogaster* v. stigmata* (p. 221). Chrysopidae: *Chrysopa* villica* (p. 222); *Cintameva* anomala* ♀ (p. 233). Baetidae: *Callibaetis* zonatus* (p. 224).

ORTHOPTEROIDEA

A. N. CAUDELL, *Editor*

(See also in this issue Entries 576, 577, 2616, 2664)

2729. **BORELLI, ALFREDO.** Nuova specie australiana di Dermatteri. *Boll. Mus. Zool. ed Anat. Comp. R. Univ. Torino* 40(Paper 36): 1-3. 1 fig. 1925(1926).—*Apachyus* peterseni* ♂ (p. 1), N. S. Wales; type in Mus. Zool. Turin.

2730. **HEBARD, MORGAN.** The Orthoptera of Colorado. *Proc. Acad. Nat. Sci. Philadelphia* 81: 303-425. Map., 1 pl. 1929.—This report is based upon personal examination of the majority of specimens recorded. *Pseudosermyle straminea* (Scudder) (=*P. truncata* Caud., *P. tenuis* Rehn & Hebard); *Acrydium granulatum* K. (=*Tettix incurvatus* Hanc.); *Paratettix toltecus* (Sauss.) (=*P. t. extensis* Morse, *P. t. arizonensis* Hanc., *P. morsei* Hanc., *P. robustus* Hanc.); *Syrbula fuscovittata* Thomas (=*S. acuticornis* Brun., *S. modesta* Brun.); *Orphulella speciosa* (Scudd.) (=*O. decora* McNeill, *O. obliquata* Scudd., *O. picturata* Scudd.); *O. desereta* Scudd. (=*O. salina* Scudd.); *Xanthippus corallipes pantherinus* Scudd. (=*Hippiscus* (*X.*) *maculatus* Scudd.); *X. c. altivolus* Scudd. (=*H.* (*X.*) *pumilus* Scudd.); *Trachyrhachis aspera* Scudd. (=*T. compacta* Brun.); *T. coronata* Scudd. (=*Psinidia borealis* Sauss.); *Mestobregma capito* (Stal) (=*Conozoa melleola*

Scudd.); *M. plattei corrugata* (=*Conozoa picturata* Scudd.); *Trimerotropis fratercula*; T. strenua* McNeill (=*T. montana* McNeill); *T. bruneri* McN. (=*T. praeclara* McN); *T. inconspicua* Brun. (=*T. viriditibalis* Hend.); *T. fontana* Thomas (=*T. juliana* Scudd., *T. ferruginea* McN.); *T. suffusus* Scudd. (=*T. obscura* Scudd., *T. nubila* McN.); *"Spharagemon" humile*; Brachystola magna* (Girard) (=*B. intermedia* Brun.); **EREMIACRIS** (p. 366), separated by key from *Paropomala* and *Prorocorypha*, type *E.* **virgata** (*Paropomala v.* Scudd.) (p. 368); *Campylacantha olivacea vivax* (Scudd.) (=*C. vegana* S. & C.); *Aeoloplus* Scudd. (=*Aeoloplides* Caud.); *Aeoloplus* **chenopodii** (*Pezotettix c.* Brun.) (p. 371); *Hesperotettix curtipennis* Scudd. (=*H. coloradensis* Brun.); *Melanoplus dodgei* **incultus** (*M. i.* Scudd.) (p. 377); *M. d. bohemani* (=*Pezotettix altitudinum* Scudd.); *M. yarrowii* (Thomas) (=*M. olivaceus* Scudd.); *M. gladstoni* Scudd. (=*M. corpulentus* Scudd., *M. bicoloratus* Scudd.); *M. regalis* (Dodge) (=*Aeoloplus crassus* Scudd., *M. picturatus* Brun.); *M. borealis stupefactus* (Scudd.) (=*M. cockerelli* Scudd., *M. sapellanus* Scudd., *M. latifercula* Caud.); *M. bruneri* Scudd. (=*M. defectus* Scudd., *M. dimidipennis* Brun.); *M. arizonae* Scudd. (=*M. palmeri* Scudd., *M. scitus* Scudd., *M. sanguineus* Brun.); *M. complanatipes* r. **canonicus** (*M. canonicus* Scudd.) (p. 397); *Eremopedes scudderi* Ckll. (=*Ateloplus macroscelus* R. & H.); *Anabrus simplex* Hald. (=*A. coloradus* Thomas); *Phrixocnemis neomexicanus* (Scudd.) (=*Udeopsylla vierecki* Rehn, *P. franciscanus* Rehn, *P. socorrensis* Rehn); **DAIHINIODES** (p. 413) (Tettigoniidae) near *Daihinia*, type *Daihiniodes* **hastiferum** (*Phrixocnemis hastiferus* Rehn) (p. 415); *D.* **bellicosum** (*Phrixocnemis bellicosus* Scudd.); *Oecanthus niveus* (DeGeer) (=*O. rileyi* Baker); *O. nigricornis argentinus* Sauss. (=*O. rehni* Baker); *Cycloptilum* **comprehendens*** (p. 421), Colorado (type in Hebard coll.), Texas, Nebraska, and New Mexico.

2731. HEBARD, MORGAN. The Orthoptera of Alberta. *Proc. Acad. Nat. Sci. Philadelphia* 82: 377-403. Map. 1930.—Eighty-two species and races of Orthoptera are now known from Alberta. Fifty spp. occur in Montana which are not known from Alberta, while only 8 boreal spp. occur in the latter that are not known from Montana. Distributional records are given for each species. The list includes 1 Blattidae, 1 Grylloblattidae; [Acrididae], 17 Acridinae, 24 Oedipodinae, 25 Cyrtacanthacrinae; [Tettigoniidae] 2 Phaneropterinae, 3 Decticinae, 1 Stenopelmatinae, 4 Rhaphidophorinae, 4 Gryllidae.

2732. LUCAS, W. J. Notes on British Orthoptera. *Entomologist* 62(799): 265-267. 1929.—Collecting notes on spp. of Dermaptera (3), Blattoidea (5), Grylloidea (3), Locustoidea (5), and Acridoidea (10).

2733. LUCAS, W. J. Notes on British Orthoptera in 1929. *Entomologist* 63(806): 145-147. 1930.—Records of occurrence of 2 Dermaptera, 2 Blattoidea, 2 Grylloidea, 5 Locustoidea, 7 Acridoidea.

2734. LYSAGHT, AVERIL M. Biological notes on a long-horned grasshopper, Caedicia simplex (Walk.). *New Zealand Jour. Sci. & Techn.* 12(5): 296-303. 13 fig. 1931.—Detailed description, including reference to sound, stridulating organs, and eggs. Notes on reproduction, host plants, distribution, and life history are given.

2735. RAMME, WILLY. Revisionen und Neubeschreibungen in der Gattung Pholidoptera Wesm. (Orth., Tettigon.). *Mitteil. Zool. Mus. Berlin* 16(5): 798-821. 1 pl., 9 fig. 1930.—Thirty spp. of the genus are divided into 4 groups, and the phylogeny of the genus is discussed. A systematic account of 15 spp. includes synonymies, descriptive notes, and distributional records. *Pholidoptera* **syriaca*** (=*Thamnotrizon leuthneri* Br. i. litt.) (p. 807), Syria, type in Berlin Mus.; *P. chabrieri* ssp. **festae** (*P. f.* Giglio-Tos) (p. 809); *Pachytrachelurus* G.-T. is synonymized with *Pholidoptera* Wesm., the type of *Pachytrachelurus festae* G.-T. proving to be a deformed ♀ of *Pholidoptera festae* G.-T.; *P.* **anatolica*** (p. 812), Asia Minor [Turkey], type in Vienna Mus.; *P. prasina**, first description of ♀; *P.* **spinigera*** (p. 818), Greece (type, in Berlin Mus.), and Asia Minor; *P.* **krüperi*** (p. 819), Asia Minor, type in Vienna Mus.; *P.* **tauricola*** ♂ (p. 820), Asia Minor, type in Berlin Mus.

2736. RODECK, HUGO G. Unusual numbers of Diapheromera veliei Walsh (Orth.: Phasmidae). *Ent. News* 42(1): 2. 1931.—In Colorado.

2737. SJÖSTEDT, YNGVE. Orthopterentypen im Naturhistorischen Reichsmuseum zu Stockholm. I. Mantidae. *Arkiv Zool.* [*Stockholm*] 21 A(4, No. 32): 1-43. 18 pl. 1930.—This monograph is dedicated to Carl Stål*. *Compsothespis* **occidentalis** ♂* (p. 16), Gold Coast; *Eremiaphila* **voltaensis** ♀* (p. 17), French West Africa; *Humbertiella* **nigrospinosa*** (p. 18), Madras; *Tarachodes* **nubifer** ♂* (p. 19), and *T.* **gigas** ♀* (p. 19), S. W. Africa; *T.* **fuscipennis** ♂* (p. 20), Tanganyika; *T.* **pilosa** ♀ (p. 21), Belgian Congo; *Galepsus* **stramineus** ♂* (p. 22), Fr. W. Africa; *G.* **conspersus** ♂* (p. 22), Madagascar; **MICROBOLBELLA** (p. 23), near *Bolbella*, based on *M.* **nana*** (p. 24), Fr. Guinea, Fr. W. Africa; **COSTARICELLA** (p. 24), near *Thrinaconyx*, based on *C.* **fasciata** ♀* (p. 25), Costa Rica; *Oxyothespis* **acuticeps** ♂* (p. 25), French Congo; *Deroplatys philippinica*, first description of ♀; *Parasphendale* **ståli** ♀* (p. 27), Lake Nyassa and Tanganyika; *Plistospilota validissima*, first description of ♀; **ZULUMANTIS** (p. 28), near *Alalomantis*, based on *Z.* **cochlearis** ♂ (p. 29), Zululand; *Sphodromantis* **elegans** ♀* (p. 29), Fr. W. Africa; *S.* **abessinica** ♂ (p. 30), Abyssinia; **PICTOMANTIS** (p. 30), near *Hierodula*, type *P.* **werneri** ♂* (p. 31), Natal; *Deiphobe* **brevipennis** ♂ (p. 31), India; *Creobroter* **inornatus** ♂* (p. 32), Celebes; *Vates* **biplagiata** ♀* (p. 33), Colombia (type) and Peru. Types in Mus. Stockholm.

2738. SPETT, G. Entwicklung der sekundären Geschlechtsmerkmale in der Ontogenese des Chorthippus parallelus Zett. (Orthoptera). *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 122(3): 593-628. 9 fig. 1930.—The nymph of *C. parallelus* molts 4 times, the 5th stage being the adult. For this study 50 specimens of each stage (25 ♂♂ and 25 ♀♀) were measured. All measurements were treated biometrically. A striking analogy obtains between the development of the secondary sexual characters of this insect and the development of those of a vertebrate. These structures appear gradually with advancing age. They are missing in the 1st instar and are entirely or partly lacking in the 2nd, in the 3rd they are rudimentary, in the 4th they are clearly visible, but reach their maximum development only when the insect becomes an adult. In comparison with previous instars, a disproportional increase in the development of the secondary sexual characteristics occurs. This phenomenon may be explained by assuming an arrest in the development of the one and a developmental stimulus in the other characters of the 2 sexes. Only the external genitalia to which belong the apical abdominal segments are clearly differentiated into ♂ and ♀ at the hatching of the egg. These differences increase with age. In this way the differentiation of the external genitalia is much in advance of the other sexual characters.—*From author's summary (transl. by A. C. Hodson).*

2739. [TARBINSKIĬ, S. P.] ТАРБИНСКИЙ, С. П. К познанию рода Calliptamus Serv. (Orthoptera, Acrididae). [On Calliptamus.] Известия Академии Наук СССР. Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Phys.-Math.*) 1930(2): 177-186. 10 fig. 1930.—A review, mostly in Russian, of the taxonomic history of the genus, with key to the Russian spp. There are descriptions and distributional records for *C. siculus*; C. s. minimus; C.* **tenuicercis*** (p. 183), Caucasus; *C. italicus; C.* **turanicus*** (p. 184), Turkestan; and *C. ictericus**. Types of new spp. in author's coll.

2740. TINDALE, NORMAN B. Mantidae in the Australian Museum. *Rec. Australian Mus.* 17(8): 343-347. 1 fig. 1930.—A list of 18 spp. with collecting data. **RAWARENA** (p. 344) (Iridopteryginae), near *Stenomantis*, type *R.* **paraoxypila*** (p. 345), N. S. Wales.

SMALLER ORDERS OF INSECTA

H. E. EWING, *Editor*

(See also in B. A. 5(11): Entries 28791, 29987, 29990, 29999; and in this issue 2344, 2717)

2741. **BANKS, NATHAN.** On some Psocidae from the Hawaiian Islands. *Proc. Hawaiian Ent. Soc. Years 1929-1930* 7(3): 437-444. 3 pl. 1931.—Lists 16 spp. from Hawaii. *Caecilius* **analis*** (p. 437), on sugar cane; **HAGENIOLA** (p. 438) (Caecilinae), based on *H.* **solitaria*** (p. 438), on cane; *Hemipsocus* is referred to the Caecilinae; *Psocus lanatus* Hagen is a *Hemicaecilius; Ectopsocus* **perkinsi*** (p. 438); *Psylloneura* **williamsi*** (p. 439), on cane; *Echmepteryx* **costalis*** (p. 439); *E.* **marmorata** (p. 439), on *Albizzia; E.* **unicolor** (p. 439); **CYPTOPHANIA** (p. 440), near *Psocinella,* based on *C.* **hirsuta*** (p. 440), on cane. New spp. are all from Oahu Isl. Four other species are illustrated showing wing characters especially and in a few cases eggs.—*O. H. Swezey.*

2742. **BONET, F.** Un nuevo hipogastrúrido cavernicola de España (Collembola). [A new cavernicolous hipogastrurid from Spain.] *Bol. R. Soc. Española Hist. Nat.* [*Madrid*] 30(9): 443-444. 1 fig. 1930.—*Hypogastrura* (*Mesogastrura*) **levantina*** (p. 443), with table of species of this subgenus.—*F. Bonet.*

2743. **BUITENDIJK, A. M.** Naamlijst van Nederlandsche Collembola. [Checklist of Netherland Collembola.] *Zool. Mededeel.* 13(1/2): 53-76. 1930.—A list, with collecting data, containing 1 Poduridae, 3 Hypogastruridae, 4 Achorutidae, 3 Onychiuridae, 13 Isotomidae, 29 Entomobryidae, 4 Tomoceridae, 1 Cyphoderidae, 13 Sminthuridae.

2744. **FERRIS, G. F.** The louse of elephants. Haematomyzus elephantis Piaget (Mallophaga: Haematomyzidae). *Parasitology* 23(1): 112-127. 2 pl. 5 fig. 1931.—A morphological study of this species is presented, together with information concerning its development, and it is concluded that this insect, which has always been regarded as a sucking louse, does not belong to the order Anoplura. It is a form with mandibulate mouth-parts and is transferred provisionally to the Mallophaga, within which order a new sub-order, **RHYNCOPHTHIRINA** (p. 127), is named to contain the single family Haematomyzidae Enderlein which has previously been established for it.—*G. F. Ferris.*

2745. **JORDAN, KARL.** Three new species of Neopsylla (Siphonaptera) from the oriental region. *Novitates Zool.* 36(2): 220-224. 5 fig. 1931.—*N.* **sondaica*** (p. 220), Java, host *Rattus concolor ephippium, N.* **avida*** (p. 221) and *N.* **tricata** ♂* (p. 223), French Indo-China, host *Rattus bowersi.*

2746. **JORDAN, KARL.** Siphonaptera collected by Mr. F. J. Cox in France. *Novitates Zool.* 36(2): 225-229. 4 fig. 1931.—This paper is based on a collection of 12 fleas from France, including *Ctenophthalmus* **arvernus*** (p. 225), host *Apodemus sylvaticus;* **SAPHIOPSYLLA** (p. 227), near *Typhloceras,* type *S.* **nupera*** (p. 227), host *Evotomys* sp., *E. glareolus,* and *Microtus agrestis bailloni.*

2747. **JORDAN, KARL.** Records of fleas from the Austrian Tirol and the Dolomites. *Novitates Zool.* 36 (2): 230-232. 1 fig. 1931.—A list of 15 spp., 10 from the southern Dolomites, including *Saphiopsylla nupera* ssp. **palina** ♀* (p. 231), in mouse nest.

2748. **JORDAN, KARL.** On some fleas collected by Monsieur Heim de Balzac in western Algeria. *Novitates Zool.* 36(2): 233-234. 4 fig. 1931.—*Xenopsylla ramesis* Roths. was collected on *Gerbillus* sp., *Mustela numidica,* and *Meriones pallidus; Ceratophyllus henleyi* ssp. **ornaus*** (p. 233), on *Meriones shawi; Stenoponia tripectinata* Tirab. (=*S. insperata* Weiss).

2749. **MILLS, HARLOW B.** A preliminary survey of the Collembola of Iowa. *Canadian Ent.* 62(9): 200-203. 1930.—Collecting records on 16 spp. of Poduridae, 30 of Entomobryidae, and 13 of Smynthuridae.

2750. **MOULTON, DUDLEY.** The Thysanoptera of Japan: New species, notes, and a list of all known Japanese species. *Annot. Zool. Japonenses* 11(4): 287-337. 10 fig. 1928.—Descriptions of 41 spp. and 2 vars., including: *Chirothrips* **takahashii** ♀* (p. 289), Formosa, on *Sorghum* sp.; *Frankliniella* **formosae*** (p. 291), Formosa (type), Sapporo, ♀ on flowers of *Lagerstroemia indica* and many other plants; *F. j.* form **tricolor** (p. 294), Kyoto, on *Clerodendron tricotomum; Taeniothrips* **canavaliae*** (p. 295), Formosa, on *Canavalia obtusifolia; T.* **eriobotryae** ♀* (p. 297), Nagasaki, on *Eriobotrya japonica; T.* **formosae*** (p. 298) and *T.* **kotoshoi** ♀ (p. 300), Formosa, on *Canavalia obtusifolia; Thrips flavidus* v. **kyotoi** (p. 302), Kyoto, Honshu; *T.* **setosus** ♀ (p. 304), Honshu, from *Aster indicus; Isochaetothrips* **querci** ♀ (p. 306), Formosa, on *Quercus* sp.; *Gynaikothrips* **kuwanai*** (p. 308) and *G.* **liliaceae*** (p. 310), Formosa, on *Smilax* sp.; *G.* **takahashii*** (p. 313), Formosa, on *Ficus retusa; G.* **yuasai** ♀* (p. 315), Formosa; *Haplothrips* (*Karnyothrips*) **fuscipennis** (p. 320), Formosa. A list of the Thysanoptera (94) known from Japan, with references, hosts, and localities, concludes the paper.

2751. **MOULTON, DUDLEY, and JOHN B. STEINWEDEN.** A new Taeniothrips on Gladiolus. *Canadian Ent.* 63(1): 20-21. 1 fig. 1931.—*T.* **gladioli*** (p. 20), Ontario (type in Canadian Nat. Coll.), and also in Ohio.

2752. **PETERS, HAROLD S.** A new louse from domestic chickens (Mallophaga: Philopteridae). *Ent. News* 42(7): 195-199. 2 fig. 1931.—*Lipeurus* **tropicalis*** (p. 195), Bahama Isls. (type, in U. S. Nat. Mus.), Caicos Isls., Venezuela, and Liberia.

2753. **STEWART, M. A.** Notes on North American Ceratophylli (Siphonaptera). *Canadian Ent.* 62(7): 152. 1930.—*Ceratophyllus wagneri* Baker ♂ (=*C. peromysci* Stewart ♀); *Oropsylla fotus* (Jordan) (=*C. citelli* Stewart); *C. labis* Jordan & Rothschild is referred to *Oropsylla; C. abantis* Rothsch. is referred to *Paradoxopsyllus.*

2754. **STEWART, M. A.** New Nearctic Siphonaptera. *Canadian Ent.* 62(8): 175-180. 1 pl. 1930.—*Rhopalopsyllus* **sigmodoni*** (p. 175), Texas, hosts *Sigmodon hispidus* (type), *Canis familiaris,* and *Rattus norvegicus;* **CONORHINOPSYLLA** (p. 178), type *C.* **stanfordi*** (p. 178), New York, host *Sciurus hudsonicus; Neopsylla* **texanus** ♀* (p. 179), Texas, from *Rattus norvegicus.* Types in author's coll.

2755. **SUGIMOTO, MASAATSU.** On some Mallophaga from the Chinese domestic fowls. [In English and Japanese.] *Jour. Jap. Soc. Vet. Sci.* 9(3): 249-255. 2 pl. 1930.—The following are listed: *Degeeriella* **sinensis*** (p. 250), from fowls imported from Wenchow, So. China, to Formosa; *Goniocotes hologaster* Nitsch; *Goniodes dissimilis* Nitsch; *Lipeurus variabilis* Nitsch; and *Neummania pallidum.*

2756. **[TIFLOV, V. E.]** ТИФЛОВ, В. Е. Материалы по изучению фауны блох (Aphaniptera) Саратовской губернии. [The fauna of fleas (Aphaniptera) of the Province of Saratov.] (French résumé on pp. 477-478.) Труды Первого Всесоюзного Противочумного Совещания (*Compt. Rend. Premier Congrès Antipest. URSS, Saratov*) *1927:* 268-275. 2 fig. 1927(1928).—A study of fleas of the Saratov government, which is adjacent to the southwestern plague region, was undertaken for the purpose of comparing them with fleas of the plague region. Fleas of rodents, domestic animals, and man were studied. A complete list of the animals studied and their fleas is given. *Ctenophthalmus* **wagneri*** (p. 272) from nests of *Microtus arvalis.*—*G. A. Lebedeff.*

FOSSIL INSECTA

F. M. CARPENTER, *Editor*

(See also in B. A. 5(11): 29088, 29108, 29269; and in this issue 2801)

2757. **COCKERELL, T. D. A., and NORMA LeVEQUE. The antiquity of insect structures.** *Amer. Naturalist* 65 (699): 351-359. 2 fig. 1931.—The following fossil insects are described from Eocene of the Green River age in western Colorado. Lepidoptera: **CHIONAEMOPSIS** (p. 354), perhaps belonging to Oecophoridae near *Chrysonoma*, based on *C.* **quadrifasciatus*** (p. 355), described from a portion of a wing. This is one of the oldest Lepidoptera known. Homoptera: Fulgoroidea: *Protoliarus* **amabilis*** (p. 355), described from a wing. Hymenoptera: Ichneumonidae: *Tryphon* (sens. lat.) **amasidis*** (p. 356). Diptera: Syrphidae: *Chilosia* **scudderi*** (p. 357). Coleoptera: Elateridae: *Adelocera* **perantiqua*** (p. 359). The writers emphasize the fact that most of these forms are no more primitive than many living forms.

2758. **COCKERELL, T. D. A. Fossil beetle elytra.** *Psyche* 37(2): 176. 1930.—Notes, giving reasons which justify the description and naming of species based on fossil elytra.

2759. **MARTYNOV, A. On some new remarkable Odonata from the Permian of Archangelsk District.** [Russian summary.] Известия Академии Наук СССР. Отделение Математических и Естественных Наук (*Bull. Acad. Sci. URSS, Cl. Sci. Math. et Nat.*) 1931(1): 141-147. 3 fig. 1931.—The author's previous belief, on the evidence of wing venation, that the Anisoptera could not be derived from the Zygoptera, is confirmed by the discovery of the remains of wings of primitive forms, belonging to the stem of Anisoptera, in the Permian of the Archangelsk district. **PERMAESCHNIDAE** (p. 141), new fam. resembling Aeschnidae, based on **PERMAESCHNA** (p. 141), type *P.* **dolloi*** (p. 143); *P.* **proxima*** (p. 145). A new suborder **PROTANISOPTERA** (p. 146) is erected in Anisoptera for these Permaeschnidae. **CALVERTIELLIDAE** (p. 146), new fam. in Protodonata, is erected for *Calvertiella*. The author considers that the Anisoptera arose from the more archaic Palaeodictyoptera, not from Anisozygoptera, Zygoptera, or Protozygoptera.

CYCLOSTOMATA, ELASMOBRANCHII, AND PISCES

BARTON WARREN EVERMANN, *Editor*

H. WALTON CLARK, *Associate Editor*

(See also in this issue Entries 8, 266, 367, 933, 996, 997, 998, 999, 1176, 1334, 1343, 1365, 1690, 1716, 1740, 1742, 2177, 2178, 2179, 2181, 2185, 2192, 2214, 2216, 2291, 2311, 2372, 2373, 2509)

2760. **BHATIA, D. The production of annual zones in the scales of the rainbow trout (Salmo irideus). I.** *Jour. Exp. Zool.* 59(1): 45-60. 1931.—Specimens of rainbow trout when fed uniformly for a year, grew, on the average, at a uniform rate, though there was considerable individual variation in size. The size of the scales and the number of circuli formed increase more rapidly relative to the growth of the fish in early stages, but are proportionate subsequently. The number of circuli on the scales obtained from a particular area depends on the size of the fish, irrespective of its age. Specimens fed uniformly throughout a year do not show "periodic rings" on the scales. All the rings formed correspond to the "summer" type, and the so-called "winter rings" are not formed during winter. A few scales were obtained from 2 specimens which had been fed excessively for 10 months after living on uniform diet for a year, showing a band of abnormally broad rings at the periphery. Two specimens starved for the same period show narrow ring formation at the scale periphery. Width of scale rings does not show any correspondence to seasonal variations in temp. The chief factor concerned in the formation of broad or narrow "summer" and "winter" zones is the abundance or scarcity of food, and not the rise or fall of temp. Under natural conditions, temp. variations may, however, have an indirect effect by causing variations in the production, consumption, or assimilation of food.—*Author (courtesy Wistar Bibl. Serv.).*

2761. **BORODIN, N. A. Some new cichlid fishes from lakes Victoria and Tanganyika, Central Africa.** *Proc. New England Zool. Club* 12: 49-54. 1931.—*Haplochromis* **fasciatus** (p. 49); *H.* **tenuis** (p. 50), Lake Victoria; *Julidochromis* **macrolepis** (p. 51); *Pelmatochromis* **loveridgei** (p. 51), *P.* **tanganyicae** (p. 52), *P.* **xenotilapiaformis** (p. 53); *Tilapia* **nadinae** (p. 54). All from Lake Tanganyika unless otherwise stated; types in Mus. Comp. Zool., Harvard.

2762. **BREDER, C. M. Jr. On the structural specialization of flying fishes from the standpoint of aerodynamics.** *Copeia* 1930(4): 114-121. 3 fig. 1930.—A discussion of the aerodynamics of the Exocoetidae, in which these fishes are compared with structural principles embodied in the modern airplane. Various striking similarities are indicated as well as the reasons for necessary differences.—*C. M. Breder, Jr.*

2763. **BUEN, FERNANDO de. Lebetus Whinter [Winther] 1877, Odondebuenia nov. gen. y Cabotia nov. gen. (Gobiidae de Europa).** *Trab. Inst. Español Oceanogr.* 5. 1-30. 11 fig. 1930.—A key is given to the 3 genera treated; **ODONDEBUENIA** (p. 9), type *O.* **balearica*** (*Eleotris balearicus* Pellegrin & Fage) (p. 10), probably including also *O.?* **pruvoti** (*E.* (*Valenciennea*) *p.* Fage) (p. 14), with key to separate them; **CABOTIA** (p. 17), type *C.* **schmidti*** (p. 17); *Lebetus* Winther is redescribed, with key to separate *L. scorpioides** and *L. orca**. The specimens examined are in the Inst. Español de Oceanografia, from the Balearic Isls. A résumé in French includes keys in French.

2764. **CARTER, G. S., and L. C. BEADLE. The fauna of the swamps of the Paraguayan Chaco in relation to its environment. II. Respiratory adaptations in the fishes.** *Jour. Linn. Soc. London, Zool.* 37(252): 327-368. 5 pl., 5 fig. 1931.—In a previous paper these swamps were shown to be very poor in oxygen. A description is here given of the adaptations by means of which the fishes live in this environment. Eight out of 20 spp. use oxygen of the atmosphere for respiration. Of these *Lepidosiren paradoxa* and *Symbranchus marmoratus* are not here discussed. The remainder belong to the genera *Erythrinus, Hypopomus, Hoplosternum, Callichthys,* and *Ancistrus;* the structure of their accessory respiratory organs is described. Some observations on the physiology of respiration in these fishes are recorded. A comparative account of air-breathing in the fishes is given, and the suggestion is made that the use of air for respiration arose in the fishes primarily as an adaptation to life in a deoxygenated medium and not as an adaptation immediately directed towards migration on to the land.—*G. S. Carter.*

2765. **CHABANAUD, PAUL. Revision du genre Aseraggodes Kaup.** *Zool. Mededeel.* [*Leiden*] 13(3/4): 180-192. 1930.—The author gives a diagnosis of the genus and a key to 15 spp. The systematic list of species includes synonymies and distributional records. *A.* **beau-**

forti (p. 184), Timor Sea; *A.* abnormis (*Achirus a.* Weber & de Beaufort) (p. 192).

2766. COCKERELL, T. D. A. Note on the scales of apogonid fishes. *Copeia* 1930(4): 157. 1930.

2767. CORWIN, GENEVIEVE. A bibliography of the tunas. *Div. Fish & Game California, Fish Bull.* 22: 5-103. 1930.—The publication seeks to include all works prior to the close of 1929 dealing in any way with *Thunnus thynnus, Neothunnus macropterus, Germo alalunga, Euthynnus pelamis,* and *Sarda chiliensis.* There is a bibliography by authors, an index of subjects, and a list of abbreviations used for periodicals cited.

2768. CRAWFORD, D. R. The ayu, Plecoglossus altivelis, of Japan. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 5(3): 15-16. 1930.—A popular account of this anadromous sp. Fishing in Japan is by means of cormorants, nets, and hooks. Attempts to introduce it into the western United States have been unsuccessful.

2769. DUNCKER, GEORG, und ERNA MOHR. Die Fische der Südsee-Expedition der Hamburgischen Wissenschaftlichen Stiftung 1908-1909. 3 Teil. (Acanthopteri sens. ampl., Physoclisti malacopterygii, Physostomi, Plagiostomi.) *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 57-84. 9 fig. 1931.—This part consists of a systematic list of about 178 spp. with records of localities, dates, and length of specimens. In some cases there are also descriptive and taxonomic notes. All records seem to be from New Guinea or the Bismarck Arch. *Apogon thermalis* C. V., emended description; *Pentapus* pleurostictus* (p. 64), Neu Pommern; *Amphiprion percula* recorded as living in symbiosis with an actiniarian; *Tetraroge* albifrons (p. 70), New Guinea; *Balistes senticosus* Richards. and *B. oculatus* Gray are removed from the synonymy of *B. rotundatus* Procé; *Monacanthus* (*Acanthaluteres*) laevicaudatus* (p. 77), New Guinea; *Tetrodon* macrophthalmus* (p. 79), Neu Pommern.

2770. FANG, PING WEN. New and inadequately known Homalopterin loaches of China. With a rearrangement and revision of the generic characters of Gastromyzon, Sinogastromyzon and their related genera. *Contrib. Biol. Lab. Sci. Soc. China Zool. Ser.* 6(4): 25-43. 7 fig. 1930.—*Sinohomaloptera,* formerly a subg. of *Homaloptera,* is raised to generic rank, type *S.* kwangsiensis* (*Homaloptera k.* Fang) (p. 26); critical notes on *Hemimyzon* Regan; *Hemimyzon* sinensis* (*Psilorhynchus s.* Sauvage & Dabry de Thiersant) (p. 30); *Sinogastromyzon* Fang (1930) characters defined and differentiated; *Pseudogastromyzon* raised from subg. of *Hemimyzon* to generic rank, with the type *P.* zebroidus* (*Hemimyzon z.* Nichols) (p. 34); *Gastromyzon* Guenther described; *G.* szechuanensis* (p. 36). A synopsis in key form of the genera is included, and a bibliography appended.

2771. FOWLER, HENRY W. The pound-net fishes of Chincoteague, Virginia. *Fish Culturist* [*Philadelphia*] 10(8): 147-150. 1931.—An annotated list of 47 spp., chiefly marine, with locality and date records, and with some local names.

2772. FOWLER, HENRY W. A collection of freshwater fishes obtained chiefly at Tsinan, China. *Peking Nat. Hist. Bull.* 5(2): 27-31. 1 pl. 1930.—A list of 22 spp. collected by A. P. Jacot, with measurements and locality and date records. *Acanthogobius* jacoti* (p. 29) and *Aboma* tsinanensis* (p. 30), both from Shantung; types in Acad. Nat. Sci. Philadelphia. *Blennius yatabei,* redescribed and new to China (Shantung).

2773. FOWLER, HENRY W. The fishes obtained by the De Schauensee South African Expedition.—1930. *Proc. Acad. Nat. Sci. Philadelphia* 83: 233-249. 5 fig. 1931.—A systematic account of 14 spp. from Bechuanaland Protectorate, 2 from Dar-es-Salaam, 3 from Mombasa, 12 from Port Sudan, and 3 from Suez, with descriptive notes on many of them. *Tilapia* alleni* (p. 238), *T.* deschauenseei* (p. 240), and *Paratilapia* deschauenseei* (p. 244), all from Bechuanaland Protectorate; types in Acad. Nat. Sci. Philadelphia. Blenniidae: ANTENNABLENNIUS (p. 245), n. subg. of *Blennius,* type *B. hypenetes* Klunzinger.

2774. GILTAY, LOUIS. Notes ichthyologiques. *Rev. Zool. et Bot. Africaines* 19(3/4): 393-396. 3 fig. 1930.—*Ansorgia vittata* bistriata* (p. 393) and *Ichthyoborus besse* congolensis* (p. 395), both Belgian Congo; types in Congo Mus., Tervueren.

2776. GUDGER, E. W. Another capture on the New Jersey coast of the basking shark, Cetorhinus maximus. *Science* 72(1866): 341-342. 1930.—It is a northern fish found more frequently off Long Island and the New England coast.—*E. W. Gudger.*

2777. HERRE, ALBERT W. Notes on Philippine sharks, III. The hammer-head sharks, Sphyrnidae. *Copeia* 1930(4): 141-144. 1930.—A systematic account of the 3 Philippine spp. of *Sphyrna,* with key, synonymies, descriptions, and distributional records.

2778. KOUMANS, F. P. Note on a collection of fishes from the Moluccas collected by Dr. F. Kopstein. *Zool. Mededeel.* [*Leiden*] 13(1/2): 1-6. 1930.—Collection records on 23 spp. *Gobius* (*Stenogobius*) *genivittatus* C. & V. (= *G. polyzona* Bleeker), measurements of six specimens.

2779. LEACH, GLEN C. Propagation and distribution of food fishes, fiscal year 1929. [*U. S.*] *Bur. Fisheries Document 1070.* pp. 759-823. 1930.—Transactions for the fiscal year 1929 were somewhat above average, 30,000,000 fish and fish eggs produced in excess of previous years. Aggregate output, 7,060,369,500. A total of 45 spp. disseminated to inland and coastal waters. Important varieties distributed to interior waters: *Salvelinus fontinalis, Salmo shasta, S. lewisi, S. levenensis, S. rooseveltí, Micropterus salmoides, M. dolomieu, Pomoxis annularis, Ambloplites rupestris, Eupomotis gibbosus,* and *Ameiurus nebulosus.* The state hatcheries and forest service were cooperative in a large degree. Spiny lobsters (*Panulirus*) from Key West, Florida, are being established at Galveston, Texas. The customary replenishment from rescue work along the Mississippi was negligible due to the gradual recession of the waters. Reports of individual stations are given.—*J. Piatt.*

2780. MALLOCH, WILLIAM. Some aspects of the herring family. Presidential address. *Trans. and Proc. Perthshire Soc. Nat. Sci.* 9(1): 22-28. 1929/30(1931).—A nontechnical account of the characters, habits, capture, and economic importance of *Clupea sprattus* and *C. harengus,* particularly in or near Perthshire.

2781. MORI, TAMEZO. On the fresh water fishes from the Tumen River, Korea, with descriptions of new species. *Jour. Chosen Nat. Hist. Soc.* 11. 39-49. Map. 1 pl., 1 fig. 1930.—A systematic account of 38 spp., with locality records and descriptive notes. *Brachymystax* tumensis* (p. 42); *Mallotus* elongatus (p. 43); *Leuciscus waleckii* tumensis (p. 44); *Moroco variegatus* septentrionalis (p. 44); *M.* oxyrhynchus* (p. 45); *Gobio gobio* macrocephalus (p. 46); *Cottus* hangiongensis* (p. 48). The fish fauna of the Tumen River resembles that of eastern Siberia, Sakhalin, and Hokkaido.

2782. MYERS, GEORGE SPRAGUE. Ptychidio jordani, an unusual new cyprinoid fish from Formosa. *Copeia* 1930(4): 110-113. 1 pl. 1930.—Cyprinidae: PTYCHIDIO (p. 110), approaching *Semilabeo,* type *P.* jordani* (p. 112), type in Stanford Univ.

2783. NORDGÅRD, O. Notes on fishes. XII & XIII. *Kgl. Norske Vidensk. Selsk. Forhandl.* 3(papers 32 & 38): 128-129; 149-151. 1 fig. 1930(1931).—Occurrence of the following species is reported from the Trondhjem district: *Pterycombus brama, Caranx trachurus, Centrolophus pompilus*,* of which only 3 specimens were hitherto known in Norwegian museums; *Myctophum elongatum,* caught 1930; this rare fish was noted for the first time from Norwegian waters in 1879 and 1880, and is, apparently, one of the rarest visitors on the Norwegian coast; *Alopias vulpes,* of which only 3 specimens were formerly known from Norwegian waters (2 from Bergeb and 1 from Oslo Fjord). During the very dry and warm summer of 1930 several fishes from southern waters wandered northwards, as *Acipenser sturio, Orthagoriscus mola, Lampris guttatus, Trachypterus arcticus, Bothus rhombus,* and *Lepidorhombus whiffjagonis.*

2784. PARR, A. E. A note on the classification of the stomiatoid fishes. *Copeia* 1930(4): 136. 1930.—The author advances further arguments for including the Astronesthidae and the Melanostomiatidae in the suborder Gymnophotodermi, and proposes 2 new suborders: **LEPIDOPHOTODERMI,** to include the Stomiatidae, and **HETEROPHOTODERMI,** to include the Gonostomatidae and the Sternoptychiidae.

2785. PIETSCHMANN, VICTOR. Über eine verkümmerte Fettflosse bei Macrones gulio (Ham. Buch.). [A stunted adipose fin in M. g.] *Zool. Anz.* 90(7/8): 223-224. 3 fig. 1930.

2786. [POPOV, A. M.] ПОПОВ, А. М. **Cyclopteridae (Pisces) Охотского моря по сборам гидрографической экспедиции Восточного океана. [Cyclopteridae of the Sea of Okhotsk collected by the hydrographic expedition to the Pacific Ocean.]** Известия Академии Наук СССР. Отделение Математических и Естественных Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Math. et Nat.*) 1931(1): 85-99. 4 fig. 1931.—This report is based on a collection of 19 specimens in the Zool. Mus. Acad. Sci. USSR. **CYCLOPSIS** (p. 86), near *Cyclopteroides,* is erected for *Cyclopsis* **tentacularis*** (p. 87); *Cyclopteropsis* **bergi*** (p. 90); *Eumicrotremus,* descriptive notes are given for 3 old spp.; *E.* **soldatovi*** (p. 94); key is given to the genera of Cyclopteridae. A detailed table shows body measurements for each specimen examined. Brief diagnoses of the new spp. are given in English also.

2787. REGAN, C. TATE. A new ceratioid fish. *Proc. Linnean Soc. London* 142. 57-58. 1929/30(1931).—*Caulophryne* sp. described, but not specifically named.

2788. RICHMOND, HECTOR A. A coleopterous fish. *Canadian Ent.* 62(8): 184. 1930.—An 18 inch trout was caught in the North Fork of the Ghost River, Alberta, containing in its stomach 27 perfect specimens of 11 spp. of beetles, which are listed.

2789. ROEDEL, H. Fischotolithen aus Paläozängeschieben. *Zeitschr. Geschiebeforsch.* 6(2): 49-77. 1 pl. 1930.—These erratics were derived from the southern Baltic regions, and are now found in Brandenburg, Holstein, Anhalt, and Hannover. They contain the Lower Paleocene "Fauna of Copenhagen." The following new spp. are described on the basis of the otoliths: *Otolithus* (*Arius*) **rotundatus*** (p. 52); *O.* (*Merluccius*) **schmitti*** (p. 54); *O.* (*M.*) **globulosus*** (p. 54); *O.* (*M.*) **latisculptus*** (p. 56); *O.* (*M.*) **nanus*** (p. 57); *O.* (Gadidarum) **insuetus*** (p. 58), *O.* (*Solea*) **solitarius*** (p. 60); *O.* (Berycidarum) **marchicus*** (p. 61); *O.* (B.) **balticus*** (p. 62); *O.* (Percidarum) **holsaticus*** (p. 63); *O.* (P.) **erraticus*** (p. 64); *O.* (P.) **obliquestriatus*** (p. 64); *O.* (P.) **minimus*** (p. 65); *O.* (incertae sedis) **ehrhard-voigti*** (p. 67). Types in author's coll.—*H. Roedel* (*transl. by A. E. Wood*).

2790. SCHMIDT, P. A list of fishes collected in Japan and China by Dr. A. Bunge and N. Grebnitzky. Известия Академии Наук СССР. Отделение Математических и Естественных Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Math. et Nat.*) 1931(1): 101-123. 5 fig. 1931.—A list of 110 spp., including *Ophichthus urolophus**, emended description; *Gymnothorax reticularis**; a young specimen of *Priacanthus hamrur**; and *Cholëa* **bungei*** (p. 119), Korea, type in Zool. Mus. Acad. Sci. USSR. Locality records and synonymies are included.

2791. SCHMIDT, P. A check-list of the fishes of the Riu-Kiu Islands. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 5(4): 2-6. 1930.—A list of 457 spp., compiled from the literature and the author's own collections.

2792. SCHNAKENBECK, W. Ein Dorsch aus dem Süsswasser. *Zool. Anz.* 94(1/2): 17-32. 9 fig. 1931.—The capture of a cusk (*Gadus morrhua*) [sic] in the Elbe, above Hamburg, is reported. The behavior of fishes in fresh and salt-water, and of cases in which fresh-water fishes have appeared in salt-water and vice versa are discussed. External and internal morphological adaptations correlated with the change of habitat of the cusk are described. The morphological changes indicate that the specimen must have wandered into fresh water when very young.—*W. Schnakenbeck* (*transl. by F. LaMonte*).

2793. SCHNAKENBECK, W. Über einige Meeresfische aus Südwestafrika. *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 23-46. 9 fig. 1931.—This is a report on some specimens taken by a fishing steamer operating out of Walvis Bay. The systematic account treats of 22 spp., with descriptive and taxonomic remarks and notes on depths at which the species were taken. Exact localities are not recorded. The following are new to S. Africa: *Dentex macrophthalmus, Trigla lyra**, *T. hirundo,* and *Harriotta* **pinnata*** (p. 40), type in Zool. Staatsinst., Hamburg.

2794. SCHULTZ, LEONARD P. Miscellaneous observations on fishes of Washington. *Copeia* 1930(4): 137-140. 1930.—Notes on distribution and habits of 13 spp. *Icosteus aenigmaticus,* new to Oregon and Washington; *Pomoxis sparoides,* new to Washington.

2795. SMITH, J. L. B. New and little known fish from the south and east coasts of Africa. *Rec. Albany Mus.* [*Grahamstown*] 4(1): 145-160. 1 pl., 3 fig. 1931.—**PRIONOLEPIS** (p. 145) (Grammicolepidae), near *Vesposus,* type *P.* **hewitti*** (p. 145); *Synaptura* **barnardi*** (p. 148); **NEOSCORPIS** (p. 150) (Scorpididae), related to *Scorpis,* erected for *N.* **lithophilus** (G. & T.), n. comb. (p. 151); *Blennius fascigula** Barnard, emended description; *Clinus* **agilis*** (p. 154); *Amblyapistus marleyi* Regan, emended description; *Caracanthus zeylonicus* Day, redescribed and recorded for the first time from S. Africa (Cape Province); *Tropidichthys* **oxylophius*** (p. 159). New spp. from Cape Province; types in Albany Mus.

2796. SOLJAN, TONKO. Brutpflege durch Nestbau bei Crenilabrus quinquemaculatus Risso, einem adriatischen Lippfisch. *Zeitschr. Wiss. Biol. Abt. A, Zeitschr. Morph. u. Ökol. Tiere* 20(1): 132-135. 2 fig. 1930.—On the coast of Jugoslavia this sp.* breeds in March, April, and May. On a sandy bottom in 1-1½ m. of water, the ♂ forms a semilunar mound* of terminal branches of *Cystosira,* covering it with grains of sand and fragments of mollusk shells. The ♂ faces the concave side of the mound, and on this side the mud and sand are washed away, leaving an excavation with a bottom of small stones. The ♀ casts the eggs against the upright, concave wall of *Cystosira;* the ♂ pushes them into the interior and covers them with new material. Other ♂♂ linger about and often take part in the fertilization.

2797. TREWAVAS, ETHELWYNN. A revision of the cichlid fishes of the genus Lethrinops, Regan. *Ann. and Mag. Nat. Hist.* 7(37): 133-152. 5 fig. 1931.—A complete revision of the genus, based on types in the Brit. Mus. Nat. Hist., and in the Zool. Mus., Berlin, and on a collection of fishes from Lake Nyassa made by C. Christy in 1925-26. The genus is redefined. Notes on coloration and secondary sexual characters are given and there is a key to the spp. *L.* **variabilis*** (p. 139); *L.* **lituris** (p. 139); *L.* **brevis** (*Haplochromis b.* Regan) (p. 140); *L.* **trilineata** (p. 141); *L.* **microstoma*** (p. 141); *L.* **parvidens** (p. 141); *L.* **macrophthalmus** (*Haplochromis m.* Regan) (p. 143); *L.* **aurita** (*Haplochromis auritus* Regan=*H. macrochir* Regan) (p. 144); *L.* **longimanus** (p. 145); *L.* **cyrtonotus** (p. 145); *L.* **macracanthus*** (p. 145); *L.* **alta*** (p. 146); *L.* **lunaris** (p. 148); *L.* **oculata** (p. 148); *L.* **furcifer** (p. 149); *L.* **furcicauda** (p. 149); *L.* **christyi** (p. 150); *L.* **laticeps** (p. 150); *L.* **praeorbitalis** (*Haplochromis p.* Regan,=*Lethrinops macrorhynchus* Regan,=*L. fasciatus* Ahl) (p. 151). Previously known spp. are redescribed. Types in Brit. Mus. Nat. Hist.—*E. Trewavas.*

2798. VASILIU, GEORGE D. Beschreibung der Ceylon-Fische aus der Sammlung Plate. (Fauna et Anatomia ceylanica, IV, nr. 11.) *Jenaische Zeitschr. Naturwiss.* 65(2): 319-360. 4 pl. 1931.—This report is based upon a collection of both marine and fresh-water fishes made by L. Plate in 1913-14. It includes about 95 spp. belonging to 43 families. The systematic account includes synonymies, locality data, and taxonomic remarks. *Thalassoma cupido* var. **bipunctatum*** (p. 349), Ceylon. Bibliography.

2799. **WU, HSIEN WEN.** Notes on some fishes collected by the Biological Laboratory, Science Society of China. *Contrib. Biol. Lab. Sci. Soc. China Zool. Ser.* 6(5): 45-57. 5 fig. 1930.—A list of 14 spp. from Szechuan, Hunan, and Hupei, with descriptive notes. *Paracanthobrama* pingi* (p. 48). Kiukiang; *Pseudobagrus* eupogoides* (p. 51) and *P.* chinensis* (p. 53), Szechuan; *Siniperca* roulei* (p. 54), Hunan.

2800. **WU, HSIEN WEN.** On Zoarces tangwangi, a new eelpout from Chinese coast. *Contrib. Biol. Lab. Sci. Soc. China Zool. Ser.* 6(6): 59-63. 1 fig. 1930.—*Z.* tangwangi*, from Foochow.

AMPHIBIA AND REPTILIA

G. K. NOBLE, *Editor,* Amphibia

KARL PATTERSON SCHMIDT, *Editor,* Reptilia

(See also in 5(11): Entries 27912, 28026, 29138, 29148, 29149, 29151, 29158, 29212, 29245, 29246, 29804, 29987, 29999; and in this issue 32, 34, 1137 1375, 1444, 2190, 2209, 2223, 2339, 2683, 2842)

GENERAL

2801. **MOODIE, ROY L.** Vertebrate footprints from the Red-Beds of Texas. II. *Jour. Geol.* 38(6): 548-565. 16 fig. 1930.—This Permian formation in Texas contains many trails of insects and myriapods, as well as borings and numerous ichnites indicating the presence of small branchiosaurian and microsaurian amphibians and reptiles of a varanoid type. The following are listed: Amphibia, Caudata *Erpetopus willistoni;* Microsauria, *Microsauropus acutipes,** *M. clarki, M.* orthodactylus* (p. 557), *M.* parvus* (p. 554); Reptilia, *Varanopus curvidactylus, V. impressus,** *V. palmatus, V.* (?) *elrodi, V.* didactylus* (p. 558); **SOLIDOPUS** (p. 563), type *S.* perissodactylus* (p. 563); *Laoporus* wyldei* (p. 561), *L.* sp. (?)* (p. 561). Reference is made to the Reptilia, *Hoplichnus aquus* Hitchcock and (?) *Hyloidichnus bifurcatus* Gilmore from the Grand Canyon.—*D. J. MacNeil.*

2802. **PIVETEAU, JEAN.** Paléontologie de Madagascar. XIII. Amphibiens et reptiles permiens. [Continuation.] *Ann. Paléont.* 15(4): 77-126. 4 pl. 14 fig. 1926.—[See also B. A. 1(2/3): entry 4097.] A series of growth stages of a reptile identified as *Tangasaurus menelli** is described in detail. *Tangasaurus* is to be associated with a series of forms sometimes grouped as Protorosauria, for which the term Arœoscelia is preferred; this group is a suborder of "saurians," the true lizards to be grouped as suborder Lepidosauria. The "saurians" are compared with cotylosaurs, anomodonts (s. lat.), ichthyosaurs, and rhynchocephalians. *Seymouria* is an amphibian. Saurians and rhynchocephalians differ greatly in the structure of the temporal region, but present close analogies in other respects. A classification of reptiles which takes as a fundamental criterion one character (structure of the temporal region) does not correspond to the actual state of our knowledge. The situation of the pectoral and pelvic girdles shows that the cotylosaurs and anomodonts are not reptiles but constitute an independent group. No satisfactory superordinal classification of the true reptiles can be made. The structure and history of the reptilian shoulder girdle and sternum are discussed. The expressions procoracoid and metacoracoid should be abandoned and the coracoid region treated as a unit structure, regions of which have had a variable history. The sternum is not homologous in the various reptilian groups. Fenestrae in the coracoid and sternum have developed in relation to muscle insertions. The amphibian and reptilian pelvic girdles are compared. Certain fragmentary specimens from the Permian of Madagascar are described. One type, with a short anterior limb and a coiled tail, perhaps prehensile, may pertain to *Datheosaurus.* A second consists of caudal vertebrae superficially resembling *Urocordylus,* etc., but with the chevrons placed intercentrally, hence a reptile of uncertain position. Finally fragmentary remains of a small form already discussed by Boule are described as **COELUROSAURAVUS** with *C.* elivensis* (p. 121); type in Paris Mus. The skull is poorly preserved (? cf. *Scleromochlus*). The vertebrae and limbs resemble those of certain pseudosuchians and dinosaurs. *Aphelosaurus* resembles *Coelurosauravus* as far as known; as do *Pedeticosaurus, Scleromochlus,* and other ornithosuchids. *Compsognathus* and other related dinosaurs present close analogies; *Coelurosauravus* is to be placed in the dinosaurs at the base of the line leading to *Compsognathus,* etc. These forms should be placed in a special group, coelurosaurians, equal in rank with the ornithischians and saurischians among the (heterogeneous) group of the dinosaurs.—*A. S. Romer.*

2803. **[SOBOLEVSKIĬ, N. I.]** СОБОЛЕВСКИЙ, Н. И. Герпетофауна Талыша и Ленкоранской низменности. (The Herpetofauna of the Talysh and of the Lenkoran lowland.) [English summary.] Мемуары Зоологического Отделения Общества Любителей Естествознания, Антропологии и Этнографии (*Mém. Sect. Zool. Soc. Amis des Sci. Nat., d'Anthropol. et d'Ethnographie*) 5: 1-141. 3 maps. 1929.—This report is based upon personal investigations, supplemented by a study of museum collections and of the literature. There are introductory remarks on the topography and climate of this district, which comprises the southeastern part of Transcaucasia. The following biotic areas are differentiated: littoral zone; forests of the lowland and of the mountain foreland; mountain forests (700-1800 m.); upper mountain zone without forests; desert region of Zuvand; and the Mugan steppe. The topography and vegetation of each area are described, and characteristic reptiles and amphibians are mentioned. Study of the centers of dispersal of the 44 local spp. and subspp. indicates that 15 were derived from western Asia, 9 from Europe, 9 from Iran, 2 from Central Asia, while 5 are autochthonous and 4 are of undetermined derivation. A study of the fauna leads the author to recognize a west Asiatic province, including Asia Minor and Cyprus, and extending to Crimea, Caucasus, central Persia, and northern Arabia. A number of subdivisions of this province are described. A historical review of herpetological investigations in the Lenkoran district and an annotated bibliography of 59 titles are given. There is a systematic account of 3 turtles, 21 lizards, 20 snakes, 3 anurans, and 3 salamanders, including synonymies, descriptions, distributional records, and notes on habits and systematics.

REPTILIA

2804. **ABEL, WOLFGANG.** Junge Chamäleons im Terrarium. *Ber. Senckenberg. Naturforsch. Ges.* [*Natur u. Mus.*] 61(1): 35-36. 2 fig. 1931.—Account of birth, early life, and food of *Chamaeleon pumilus**.

2805. **BROOM, R.** On the carnivorous mammal-like reptiles of the family Titanosuchidae. *Ann. Transvaal Mus.* 13(1): 9-36. 1 pl., 24 fig. 1929.—Additional notes on the genera of the family Titanosuchidae from the Karoo beds of S. Africa, with a complete description of the skeleton of *Jonkeria truculenta** v. Hoepen; *J.* vanderbyli* (p. 23); *Jonkeria* cloetei (*Titanosuchus c.* Broom) (p. 25); *J.* crassus* (p. 26); *Jonkeria* sp.* (p. 27) described but not named; **DINOSPHAGEUS** (p. 31), type *D.* haughtoni* (p. 31); **PHONEOSUCHUS** (p. 31), type *P.* angusticeps* (p. 31). Notes are given on *Scapanodon duplessisi* Broom, *Titanosuchus ferox** Owen and *Dinophoneus ingens** Broom. **DINOCYNODON** (p. 33), type *D.* dubius (*Titanosuchus*) *d.* Haughton; **SCULLYA** (p. 34), type *S.* gigas* (p. 34). Notes are

given on *Enobius strubeni* Broom and *Anteosaurus magnificus* Watson; *A.* **minor*** (p. 35). The type of *Jonkeria truculenta* is in the Pretoria Mus., *J. cloetei*, *J.* sp., and most of the other specimens are in the S. African Mus., Capetown, *Anteosaurus magnificus* is in the Brit. Mus.—*G. L. Jepsen.*

2806. **CYRÉN, OTTO. Spanische und portugiesische Maereidechsen.** *Göteborgs Kgl. Vetensk. och Vitterhetssamh. Handl., Ser. B* 1(paper 1): 1-36. 6 pl. 1928 (1930).—This paper is based upon 2 brief collecting trips in 1924 and 1925. Accounts are given of 5 spp. and subspp. of *Lacerta*, with distributional records, extensive notes on morphology, coloration, taxonomy, ecology, and habits. *L.* **estrellensis*** (p. 10), Portugal, type in Gothenburg Mus. The characters of 6 spp. of *Lacerta* are compared in a table, and geographical variation in *L. bocagii** is shown in another table. The author endorses Méhely's division of the wall lizards into "Archaeolacertae" and "Neolacertae." *L. monticola** and *L. estrellensis* are westernmost representatives of the former.

2807. **ESSEX, R. Studies in reptilian degeneration.** *Proc. Zool. Soc. London* 1927(4): 879-945. 7 pl., 86 fig. 1928.—The subject is discussed under 2 heads, 1st anatomy of degeneration and 2nd geographical distribution of the S. African forms considered. The author takes exception to the explanation offered by Duerden that degenerative changes are due to germinal changes and suggests that germinal changes are rather the result of degeneration. He also finds, confirming the observations of Camp, that there is great similarity between extremely degenerate forms and early embryonic stages in such elements as the sternum and scapulo-coracoid and concludes that the so-called degenerate girdle is simply an arrested embryonic stage. The limbs and limb girdles of 3 species of *Chamaesaura* are discussed in some detail and the progressive reduction of the limbs and modification of the pectoral and pelvic girdle is noted in the species *C. aenea, C. anguina,* and *C. macrolepis*. This consideration of the anatomy together with a study of the facts of the geographical distribution of the 3 species, leads to the conclusion that the species represent different evolutionary stages all tending in the same degenerative direction, the more degenerate having passed through the stages represented by the less degenerate. A further study of the limb girdles in the genus *Acontias* revealed considerable variation in the development of the remnants of the parasternum and leads the author to modify an earlier statement concerning the fixity of the degenerative stage of the pectoral girdle in *A. meleagris*. In *Scelotes caffer* the degenerate limbs are extremely small but functional and the pectoral girdle shows little degeneration. The related *S. anguina* is entirely limbless and the pectoral girdle shows marked degeneration. The pelvic girdle is remarkable in that undoubted remnants of the femur are present. The degenerate limb girdles of *Feylinia currorii* also show variation and asymmetry. In the genus *Glauconia* the pelvic girdles of over a 100 specimens were dissected and the conclusion reached that the degenerate organ cannot be regarded as functionless and that the supposed fixity of form of these structures was more apparent than real. Considerable variation was found in the size of the claw and its nearness to the skin, in one adult ♂, actually protruding. The conclusion is reached that the girdle represents a degenerate organ, probably functional, at present in an evolutionary stage tending to further reduction rather than a functionless organ in a fixed stage of degeneration. In the snakes of the genus *Typhlops*, the pelvic vestiges were examined with the view of determining the range of variation in species with a wide geographic range. A study of the girdle of *T. delalandii* revealed little variation within the species but species of different countries have girdle-vestiges varying in the extent of degeneration and the constituent parts of the girdle tend to disappear by small degrees. The section of the paper dealing with geographical distribution is introduced by a short account of the geography and geology of the region. The author believes it is impossible to divide S. Africa into sharply defined zoological areas because of the lack of insurmountable barriers and that where such barriers exist the areas they include have faunas which, "seem to be aggregations of heterogeneous units which have become isolated in these areas." Following the list of species taken on various expeditions covering the entire watershed of the region, the author discusses the distribution of various species of lizards. In the case of the Scincidae and Gerrhosauridae the degenerate members of the groups were found to be limited to the coastal areas. The 3 degenerate members of *Chamaesaura* were also found south of the watershed. In determining, in any given genus, which species is the most primitive and which the most recent, the author points out that the one which possesses the best developed girdle is obviously the most primitive and oldest while that which possesses the most reduced girdle is the newest. Arranging the species of any genus according to the degree of degeneration it was found that the most primitive were found on the mountain tops. Summarizing his data, the author finds the main routes of migration into S. Africa were along the east coast and across Rhodesia to the South-West Protectorate, that degeneration is a gradual process, and that discontinuity is the result of the dying out of intermediate forms.—*S. C. Bishop.*

2808. **GREVE, L. Eine Lederschildkröte an der Nordsee-Küste gestrandet.** *Ber. Senckenberg. Naturforsch. Ges.* [*Natur u. Mus.*] 61(1): 30-33. 1 fig. 1931.—*Dermochelys coriacea**, of rare occurrence in European waters, was stranded on the North Sea coast of Germany.

2809. **HEWITT, JOHN. Descriptions of some African tortoises.** *Ann. Natal. Mus.* 6(3): 461-506. 3 pl., 5 fig. 1931.—*Pelusios sinuatus** (Smith), emended description; *P. nigricans* **castanoides*** (p. 463), Natal, type in Transvaal Mus.; a key is given to the S. African forms of *Pelusios;* the specific status of *Kinixys nogueyi* and *K. spekii* is maintained; *K. belliana* **zombensis*** (p. 469), Nyasaland (type) and Port. E. Africa, type in Albany Mus.; *K. b.* **zuluensis*** (p. 471), Natal, type in Natal Mus.; *K.* **australis*** (p. 477), Transvaal (type) and S. Rhodesia, type in Albany Mus.; *K. darlingi* Blgr., emended description; *K.* **jordani*** (p. 482), N. Rhodesia, type in Albany Mus.; *K.* **youngi*** (p. 486), Nyasaland, type in Albany Mus., *K. lobatsiana** Power, emended description; a key is given to the southern forms of *Kinixys;* **PSEUDOMOPUS** (p. 496), type *P.* **signatus*** (*Homopus s.* Wahlb.) (p. 500), including also *P.* **boulengeri*** (*Homopus b.* Duerden) (p. 497); **NEOTESTUDO** (p. 504), erected for *Testudo angulata* Duméril; a key is given to the genera of S. African tortoises.

2810. **PARKER, H. W. Notes on reptiles and batrachians from Matto Grosso and E. Bolivia.** *Ann. & Mag. Nat. Hist.* 2(7): 96-99. 1 fig. 1928.—The following species are from a coll. in the Brit. Mus., with notes and descriptions: *Helminthophis* **collenettei*** (p. 97), Brazil; *Apostolepis borelli* Peracca is apparently the first record for Bolivia. Salientia: *Hyla spegazzini* Blgr. (=*H. goodfellowi* Procter).

2811. **SAKIA, J. Record of symptoms and treatment of a bite from a Formosan viper (Trimeresurus mucrosquamatus).** *Jour. Bombay Nat. Hist. Soc.* 33(4): 998-999. 1929.

2812. **SWINTON, W. E. Daunophis langi, gen. et sp. n. (Pliocene, Burma).** *Ann. & Mag. Nat. Hist.* 17(99): 342-348. 1 pl., 1 fig. 1926.—**DAUNOPHIS** (p. 343) (Boidae), similar to *Paleryx*, type *D.* **langi*** (p. 344), from oil-shale exposed in a quarry; type in Hunterian Mus., Glasgow Univ.

2813. **SWINTON, WILLIAM ELGIN. On fossil Reptilia from Sokoto Province.** *Geol. Surv. Nigeria, Bull.* 13. 1-56. Map, 15 pl. 1930.—A short review of the few fossil reptiles previously recorded from W. Africa precedes the description of recent finds. **WURNOSAURUS** (p. 15) (Teleosauridae), type *W.* **wilsoni*** (p. 16); **RHABDOGNATHIDAE** (p. 18), erected for **RHABDO-**

GNATHUS (p. 18), type *R.* rarus* (p. 19); **SOKOTOSAURUS** (p. 22) (? Dyrosauridae (sic)), type *S.* nopcsai* (p. 23); *Dyrosaurus* minor* (p. 26); all described from skull fragments of Landenian (Lr. Eocene) age. Additional crocodilian material is figured and compared with several genera, but is not determined. *Mosasaurus* nigeriensis* (p. 40), described from teeth, jaws, vertebrae, and femur, Lr. Danian (Up. Cretaceous). Chelonian bony plates are also described from the latter formation. Types in Brit. Mus. Vertebrae previously described as dinosaurian by Nopcsa are the caudals of crocodiles. No evidence for dinosaurs in Nigeria exists. The Crocodilia are all of Jura-Cretaceous affinities, and their occurrence in the Eocene of Nigeria is further support for Cope's theory of the shifting of the older faunas towards the equator.

2814. WEIGELT, JOHANNES. Über die vermutliche Nahrung von Protorosaurus und über einen körperlich erhaltenen Fruchtstand von Archaeopodocarpus germanicus aut. *Leopoldina* 6: 269-280. 5 pl. 1930.—Seeds (57) of *A. germanicus* were found between the ribs of a specimen of *Protorosaurus speneri* in such a position as to preclude the possibility of the association being postmortal. **GRACILISAURUS** with *G.* ottoi (p. 279), is described, based on part of the skull, several vertebrae, and one extremity, from the copper slates of Mansfeld. —*J. Weigelt (transl. by. A. E. Wood).*

2815. WITTE, GASTON-FR. de. Un serpent nouveau du Congo Belge (Rhinocalamus rodhaini* sp. n.). *Rev. Zool. & Bot. Africaines* 19(1): 1-3. 5 fig. 1930.—Type in Congo Mus.

AVES

LUDLOW GRISCOM, *Editor*

(See also in this issue section Economic Ornithology; and Entries 32, 2227, 2252, 2253, 2683, 2980)

GENERAL

2816. BLOEKER, JACK C. von, et al. From field and study. *Condor* 29(4): 200-207. 1927.—Von Bloeker.—"A strange meeting with a Flicker." (p. 200). A Red-shafted Flicker (*Colaptes cafer collaris*) flying at night, during a rain, alighted on the writer's arm. **L. B. POTTER.** "Correct portraiture of some birds." (p. 200). Comments on portrayal of birds in beginners' manuals. **H. S. SWARTH.**—"The Rufous-necked Sandpiper on St. Paul, Pribilof Islands." (p. 200-201). *Pisobia ruficollis* at Northeast Point, August 27, 1920, first definite record in N. America; "Eversmann Shrike not a North American Bird." (p. 205). A specimen previously reported as *Lanius mollis* taken at sea 260 miles west of Sitka, Alaska, proves to be a young example of *L. borealis.* **LOUIS B. BISHOP.**—"The plumages of certain gulls." (p. 201-202). The pale browns and grays in the 1st and 2nd year individuals of *Larus hyperboreus* (and *L. glaucescens*), due to wear and fading, practically disappear through the winter, leaving the plumage in spring almost white. The gull described as *L. hutchinsii* by Richardson in 1831 is believed to have been one of this regular, faded category. The dark-winged gulls, such as *L. argentatus* and *L. californicus,* show this fading in varying amount. "The status of the Point Barrow gull." (p. 204-205). *Larus barrovianus* is considered a race of *L. hyperboreus,* of smaller size. A table of measurements comparing these with *L. leucopterus* is included. **LAURENCE M. HUEY.**—"Northward migration of Pacific Loons." (p. 202). *Gavia pacifica* at San Roque Bay, Lower California, April 10, 1927; also in April, 1926, seen flying overland toward Pacific Ocean, from head of Gulf of California. "Northernmost breeding station of the Heermann gull on the Pacific Ocean, and other notes from San Roque Island, Lower California." (p. 205-206). *Larus heermanni* nesting in latitude 27° 09′ north. Notes are given on other species observed. **CLINTON G. ABBOTT.**—"Records of two rare migrants in California." (p. 202-203). *Pisobia bairdii;* Eureka, Aug. 20, 1926; *Pluvialis dominica dominica,* Eureka, Sept. 10, 1922. **Mrs. H. J. TAYLOR.**—"The Allen Hummingbirds in Golden Gate Park [San Francisco]." (p. 203). Fourteen nests of *Selasphorus alleni,* on March 26, in various stages. The nuptial flight of the ♂ is described. **JOHN McB. ROBERTSON.**—"Lark Bunting in Orange County, California." (p. 203). *Calamospiza melanocorys* near Stanton, April 10. **M. P. SKINNER.**—"New additions to the Yellowstone Park List of Birds." (p. 203-204). *Squatarola squatarola* Sept. 24-26, 1926; *Tyrannus verticalis* in Upper Geyser Basin, Aug. 30, 1926; *Ixoreus naevius,* Sept. 5, 1926; *Lagopus leucurus,* Quadrant Mountain. **T. T. McCABE.**—"Bird banding near Barkersville, British Columbia." (p. 206-207). Discusses difficulties of landing cone-feeding birds.—*T. I. Storer.*

2817. BONNOT, PAUL, et al. From field and study. *Condor* 30(5): 320-329. 1928.—Paul Bonnot. An outlaw Barn owl. (p. 320). A Barn Owl (*Aluco pratincola*) on Castle Rock off Crescent City, California, had fed extensively on Beal Petrels (*Oceanodroma leucorhoa beali*). **ALFRED M. BAILEY.**—"Early nesting of the Redpoll in Alaska." (p. 320). **MYRTLE S. EDWARDS.**—"Note on a Bush-tit's eye color." (p. 320). **LAURENCE B. POTTER.**—"A Mockingbird in Saskatchewan." (p. 320-321). **JOHN McB. ROBERTSON.**—"Some returns of banded mallards." (p. 321, 1 fig.). In Sept. to Nov., 1927, 4019 individuals of *Anas platyrhynchos* were banded at Moiese, Montana. Returns on 705 (of 738 killed) prior to May 8, 1928, are plotted on the accompanying map. A majority of the birds moved west and southwest, a few slightly north, and individual birds were shot in Nebraska, Missouri, and Louisiana. **DONALD R. DICKEY.**—"A race of Virginia Rail from the Pacific coast." (p. 322). *Rallus virginianus* pacificus, type locality near Corona, Riverside County, California; differs from *R. v. virginiana* in larger size in all measurements. **CAROLINE WELLS.**—"Notes on some birds of western Montana." (p. 322-323). Adds *Ixoreus naevius meruloides* to state list. **CHAS. W. MICHAEL, and ENID MICHAEL.**—"Behavior of Saw-whet Owls in Yosemite Park." (p. 323-324). *Cryptoglaux acadica* nesting in old nest hole of Red-shafted Flicker in old cottonwood shaft in Yosemite Valley; young observed in nest May 12-18, 1926. **ROBERT S. WOODS.**—"An early spring record for the Costa hummingbird." (p. 324). *Calypte costae* at Azusa, California, March 7, 1928. **JOHN W. SUGDEN.**—"A nest site of the western Horned Owl in Utah." (p. 324-325). *Bubo virginianus pallescens* in Moki Cliff dwelling at Augusta Natural Bridge in San Juan County. **LOYE MILLER.**—"Additions to the faunal list of Anacapa Island [California]." (p. 325). Six species. **STUART ROWLEY.**—"Sage thrasher nesting near Victorville, California." (p. 325, 1 fig.) *Oroscoptes montanus.* **Mrs. T. F. JOHNSON.**—"Western Tanager in winter at San Diego [California]." (p. 325-326). *Piranga ludoviciana.* **CLINTON G. ABBOTT.**—"Another Hooded Merganser in San Diego County [California]." (p. 326). **THOMAS T. McCABE, and ELINOR B. McCABE.**—"Migration (?) of the Black-headed Jay." (p. 326-327). Two *Cyanocitta stelleri annectens* banded at Indianpoint Lake were later trapped at Vavenby, about 130 miles south, both localities in Brit. Columbia. **RALPH HOFFMANN.**—"An Oven-bird in Santa Barbara County, California." (p. 327). **RAYMOND B. COWLES.**—"Observation on the food habits of a Desert Sparrow Hawk." (p. 327). *Falco sparverius phalaena* at South Pasadena, Cali-

fornia, took a young Black Phoebe from a nest. **J. A. MUNRO.**—"Cormorants nesting on Bare Island, British Columbia." (p. 327-328). *Phalacrocorax auritus.* **TRACY I. STORER.**—"Further notes on lowland nesting of the western robin in California." (p. 328-329).—*T. I. Storer.*

2818. BRETSCHER, K. Neue Mitteilungen über den Vogelzug in Mitteleuropa. *Vierteljahrsschr. Naturforsch. Ges. Zürich* 74(1/2): 1-49. 8 map. 1929.—In 2 former works the spring migration mainly in Switzerland, Alsace-Lorraine, south Germany and Hungary is discussed. An attempt was made to determine paths of migration, in the various districts. Austria (the old monarchy), was added, and the influx of arrivals at high altitudes could be shown: 72% of the cases were later, 11% were earlier and 7% were coincident at higher elevations. Eight migration maps indicate that the migration, in general, follows rivers, and both slopes of mountain chains, such as the Alps and the Carpathians. —*K. Bretscher (transl. by G. B. Pickwell).*

2819. GANDER, FRANK F., et al. From field and study. *Condor* 29(5): 245-250. 1927.—By Gander.—"The cardinal in San Diego [California]." (p. 245). **ALLAN BROOKS.**—"Breeding of immature hawks." (p. 245-246). Instances of adult hawks, when the mate has been shot, acquiring a new mate in immature plumage are cited for Cooper, Sharp-shinned, Peregrine and Pigeon hawks. The author states that all hawks (except eagles) pass into adult plumage at 1st molt, so the 2nd, immature-plumaged mates must have all been less than 1 year of age. "Can hawks prevent mouse plagues?" (p. 249-250). Comment on abundance of hawks, 120 Buteos in the air at once, near Snelling, California, in 1923. **G. L. FOSTER.**—"A note on the dietary habits of the Barn Owl." (p. 246). Pellets were collected beneath the roost and nest of a pair of *Tyto alba pratincola* at Berkeley, California, over a period of 1½ yrs. From 571 pellets remains of 1780 individual animals were identified, the forms represented in order of abundance being *Microtus* 64%; *Peromyscus* 14%; *Reithrodontomys* 8.6%; *Thomomys* 4.8%; *Sorex* 1.8%; 7 other mammals and the Jerusalem cricket constituted less than 1% each in the total. No striking seasonal difference was found. **LAIDLAW WILLIAMS.** —"California Brown Pelicans nesting at Point Lobos, Monterey County, California." (p. 246-249). **LAURENCE B. POTTER.**—"Freak nesting site of a magpie." (p. 249).—*T. I. Storer.*

2820. HALL, E. RAYMOND, et al. From field and study. *Condor* 29(6): 271-276. 1927.—By Hall. "A commensal relation of the California quail with the California ground squirrel." (p. 271). Seeds of tar weed (*Madia sativa*) shaken out by *Otospermophilus grammurus beecheyi* when feeding upon the seed heads were gathered by *Lophortyx c. californica* at Berkeley, California. "The Barn Owl in its relation to the rodent population at Berkeley, California." (p. 247-275). Food of *Tyto alba pratincola* as determined by examination of 484 regurgitated pellets consisted of 276 *Microtus,* 84 *Thomomys,* 52 *Peromyscus,* 37 *Mus,* 26 *Reithrodontomys,* and scattering other species. The Barn Owl may be a factor in reducing the rodent population along the margin of the hills adjacent to the city. **FRANK F. GANDER.**—"Western Wood Pewees and Dwarf Cowbirds nesting at San Diego, [California]." (p. 271). *Myiochanes richardsonii* nesting in Zool. Society's gardens 1923-1927, and twice have reared young of *Molothrus ater obscurus.* **JOSEPH DIXON.**—"Black bear tries to gnaw into a woodpecker's nest." (p. 271-272). Nest of *Picoides arcticus* in live lodgepole pine in Yosemite National Park. A bear had bitten off slabs of greenwood but did not succeed in getting at the young. **CLINTON G. ABBOTT.** —"Another Man-o-war-bird wanders into Californian waters." (p. 272). *Fregata aquila* off San Diego, June 27. **THOMAS T. McCABE, and ELINOR BOLLES McCABE.**—"Analysis of sexes in a Junco migration." (p. 272-273). At Indianpoint Lake, near Barkerville, Brit. Columbia, 478 ♂♂, 144 ♀♀, and 66 "doubtful" (sex) Shufeldt Juncos were trapped and banded, April 7 to June 15. **ROBERT S. WOODS.**—"Road-runner versus Mockingbird." (p. 273). *Geococcyx californianus* captured a full grown immature *Mimus polyglottos leucopterus* at Azusa, California. **ANNIE M. ALEXANDER.**—"A further chronicle of the passenger pigeon and of methods employed in hunting it." (p. 273). In Franklin Township, Bergen County, N. Jersey, in March, 1838, at least 20,000 *Ectopistes migratorius* were taken in a fortnight within an area 10 miles square by means of a net on the ground. The birds were baited with buckwheat and attracted by decoys. **A. WETMORE.**—"The amount of food consumed by cormorants." (p. 273-274). Captive Florida cormorants in the Nation. Zool. Park at Washington, District of Columbia, receive ¾ to 1 pound of fish 6 days in the week. **H. S. SWARTH.**—"The Rufous-necked Sandpiper in Alaska." (p. 274). Comment on records by A. M. Bailey for *Pisobia ruficollis.* **HAROLD MICHENER.** —"Notes from the three Barkerville [British Columbia] banding stations." (p. 275-276).—*T. I. Storer.*

2821. HARRIS, HARRY. John Ridgway's Drawings for the Bendire plates. *Condor* 29(4): 177-181. 1 fig. 1927.—Account of preparation of plates illustrating eggs of birds for Charles Bendire's "Life histories of North American birds" issued by the Smithsonian Inst. in 1893 and 1895.—*T. I. Storer.*

2822. HEYDER, RICH. Aus der Frühgeschichte der Vogelkunde in der Oberlausitz. Ein Erinnerungsblatt. *Mitteil. Ver. Sächs. Ornithologen* 1(8): 185-207. 1926.—A detailed sketch of ornithological authors, publications, and societies in Ober Lausitz in the early and middle parts of the 19th century. Among the authors mentioned are N. G. Leske, F. P. Brahts, Meyer zu Knonow, J. G. Krezschmar, J. M. Bechstein, and J. G. Neumann. An appendix presents data on the occurrence of rare birds in the region.

2823. HILDEBRANDT, HUGO. Vogelschutzfragen. *Mitteil. Ver. Sächs. Ornithologen* 2(1): 9-16. 1927.—The author gives data on the increase or decrease of certain German birds, in some cases corresponding to changing ecological conditions, but in other cases without visible cause. These circumstances require consideration especially in the conservation of vanishing species.

2824. HOFFMANN, BERNH. Für ein einheitliches deutsches Namenverzeichnis unserer einheimischen Vogelwelt. *Verhandl. Ornithol. Ges. Bayern* 18(3/4): 318-336. 1929.—A plea is made for placing the German ornithological nomenclature on a basis that follows as far as possible the existing scientific one. Each species or form should receive only one scientific name, always to be placed first, but with the German name hitherto used admissible. Those of common genus should in the German have the same generic name. For different genera, different names should be used as far as possible; and finally all members of a "Formenkreis" should bear the same specific German name; a subspecies should be indicated by a special adjective. The author points out many examples of failure to observe this rule, and suggests corrections.—*B. Hoffmann (transl. by E. W. Count).*

2825. HUEY, LAURENCE. The bird life of San Ignacio and pond lagoons on the western coast of lower California. *Condor* 29(5): 239-243. 1927.—The tidal estuaries of the west coast of Lower California constitute 6 groups, alike in lacking in permanent supplies of fresh water from the inland mountains and in being separated from the ocean by sand spits. The marsh floras of the 4 northern groups are almost identical, but that of San Ignacio exhibits semi-tropical character, lacking kelp and salicornia, the sloughs being lined with mangroves (*Rhizophora mangle*), which are also present at Pond Lagoon to the south. A running account of 57 spp. of birds, mostly water birds, observed at these lagoons, April 10-18, is presented.—*T. I. Storer.*

2826. KENISTON, ALLAN. Trapping and banding owls during their migration. *Bull. Northeastern Bird-Banding Assoc.* 3(2): 39-42. 2 pl. 1927.—*Asio flammeus, A. wilsonianus*, Otus a. asio,* and *Nyctea nyctea** on Martha's Vineyard, Massachusetts.

2827. LEACH, FRANK A. Strange features in bird habits. *Condor* 29(5): 233-238. 1927.—A group of 8-10 California woodpeckers (*Balanosphyra formicivora bairdi*) lived as a colony, with headquarters in a particular oak tree, where others of the same species were not permitted to trespass; a nest hole in a nearby pole was worked upon by several members of the group in rotation, incubation of the eggs appeared to be done by several individuals, and even 3 and 4 adults engaged in feeding the resulting brood of young. California Jays have been observed to "cache" food. A domestic hen with a brood was attended by a ♂ Valley Quail. California Towhees exhibited skill in locating and removing pea seeds planted in separate "hills" in a garden. Several species of birds learned quickly to come to a table where food was set out for them at regular times.—*T. I. Storer.*

2828. McCABE, THOMAS T., and ELINOR BOLLES McCABE, et al. From field and study. *Condor* 30(3): 190-193. 1928.—McCabe. "Notes on certain injured birds." A Black-headed Jay (*Cyanocitta stelleri annectens*) with shot injury in shoulder joint survived more than a year in latitude 53°N. in Brit. Columbia; a Great Horned Owl (*Bubo virginianus*) with wing injury survived 5 months. An American Rough-legged Hawk (*Archibuteo lagopus sancti-johannis*) with but a stump of the right leg was shot; the parts of the head and neck ordinarily reached by the lost member were nearly denuded of contour feathers and swarming with lice. **ALEXANDER WETMORE.**—"The Short-tailed Albatross in Oregon." (p. 191). Part of the left tibio-tarsus of *Diomedea albatrus* recovered in an Indian shell mound near Netarts Bay. **H. S. SWARTH.**—"Winter occurrence of Sierra Nevada Rosy Finch and Black Rosy Finch in California." (p. 191). Several *Leucosticte tephrocotis dawsoni* and one of *L. atrata*, Jan. 15, 1904, at Bodie, the latter being the first record of the species in California. **JOHN B. MAY.**—"Occurrence of the Golden-crowned Sparrow in Massachusetts." (p. 191-192). *Zonotrichia coronata* at Bedford, Jan. 26. **LOYE MILLER.**—"The Sahuaro Screech Owl in California." (p. 192). *Otus asio gilmani* at Laguna Dam, Shaver's Well and White Tank, Colorado Desert. The "song" differs from that of *O. a. quercinus* in having 2 tetrads of notes, the 2nd half a tone below the 1st. At the 1st station the birds were in willow thickets, at the 2nd in dense mistletoe on an ironwood tree. **CLINTON G. ABBOTT.**—"American Goshawk in San Diego County, California." (p. 192-193). *Astur atricapillus* at Mesa Grande, Jan. 5. **J. H. RILEY, and A. WETMORE.**—"An erroneous record for the Japanese Pipit in Alaska." (p. 193). Specimen recorded as *Anthus spinoletta japonicus* from St. Paul Isl. determined to be *A. s. rubescens*. **DONALD R. DICKEY, and A. J. van ROSSEM.**—"A new race of the White-throated Swift from Central America." (p. 193). *Aeronautes saxatilis* **nigrior**, type locality, Los Esesmiles, El Salvador. Range, high mountains of El Salvador northwest through Guatemala, at least to Hidalgo, Mexico.—*T. I. Storer.*

2829. MATTINGLEY, ARTHUR H. E. Cormorants in relation to fisheries. *Condor* 29(4): 182-187. 1927.—*Phalacrocorax carbo, P. ater, P. fuscescens, P. varius,* and *Microcarbo melanoleucus* in Australia are currently believed by many fishermen to be the cause of decrease in the supply of food and game fishes. Both fish and cormorants have decreased since settlement of the Commonwealth. Cormorants feed their young on yabbies (crayfish), frogs, shrimps, and young water tortoise, which animals otherwise prey upon the ova and young of fishes. At Lake Wendouree cormorants catch perch but not trout. The average weight of *P. ater* and *P. fuscescens* is between 2½-3 pounds and individuals of these species are believed not to eat more than 1½ pounds of fish daily. Eels and lampreys are eaten but not fry of fishes. Damage to trout fry in ponds by cormorants can be eliminated by screening the hatchery ponds.—*T. I. Storer.*

2830. ROWAN, WILLIAM, et al. From field and study. *Condor* 30(4): 246-256. 1928.—Rowan. "Bears and birds' eggs." (p. 246). Bears reported to hunt duck eggs along lake margins; in northern Alberta evidence of bears having climbed trees containing hawk nests was not common. **WINTON WEYDEMEYER.**—"Some winter records from Montana." (p. 246-247). Notes on 12 spp. supplemental to data in A. A. Saunder's "A distributional list of the birds of Montana." **JOSEPH EWAN.**—"California Black Rail in Los Angeles County." (p. 247). *Creciscus jamaicensis coturniculus* at Playa del Rey, impaled on a barbed wire as if captured by California Shrike. **H. A. ALLARD.**—"Unusual singing of the eastern Chewink." (p. 247-249). Additional notes in the song of *Pipilo erythrophthalmus* at Chapel Hill, N. Carolina; speculates on conscious element in "improvement" of bird song. **S. F. BLAKE.**—"Field notes on certain California birds." (p. 249-250). Miscellaneous notes on 5 spp. **H. C. BRYANT.**—"Summer record of the Cedar Waxwing in Yosemite Valley [California]." (p. 250). *Ampelis cedrorum* early in June, 1927. **MILTON S. RAY.**—"A record set of eggs of the Golden Eagle." (p. 250). Four eggs of *Aquila chrysaëtos;* also set of 6 for *Elanus leucurus* and 5 for *Buteo borealis calurus.* **DON C. MEADOWS.**—"Bird notes from Santa Catalina Island [California]." (p. 250-251). **LAURENCE M. HUEY.**—"A mid-winter Anthony Green Heron." (p. 251). *Butorides virescens anthonyi* at Lakeside, San Diego County, California, Jan. 1. **F. KERMODE.**—"The Lichtenstein Kingbird on Vancouver Island." (p. 251). *Tyrannus melancholicus satrapa* at French's Beach, Renfrew District, Feb. 1923. **THEED PEARSE.**—"The nuptial display of the Buffle-head." (p. 251-252). *Charitonetta albeola* ♂♂ displayed before ♀♀ in 2 different ways: flying weakly a few yards then "sliding" towards the ♀, turning about and jerking the tail; again, laying the body depressed on the water, shooting the head up vertically and bobbing it back and forth several times. **G. L. FOSTER, and GRACE E. FOSTER.**—"Sixth record of Harris Sparrow in California." (p. 252). *Zonotrichia querula* at Berkeley, 1924-25, with one *Z. albicollis* and at least 3 *Junco hyemalis.* **RALPH C. TATE.**—"Rufous Hummingbird in the Oklahoma Panhandle." (p. 252-253). The ♂ *Selasphorus rufus* observed at Kenton, in Aug. and to Sept. 1, 1927. **JACK C. von BLOEKER, and SAMUEL G. HARTER.**—"Reddish Egret on Los Coronados Islands, Mexico." (p. 253). *Dichromanassa rufescens dickeyi,* May 6. **CHAS. T. VORHIES.**—"Band-tailed pigeon nesting in Arizona in September." (p. 253). *Columba fasciata* at Soldier Camp, Santa Catalina Mts., Sept. 9, 1923, building a nest. **J. GRINNELL.**—"Do Willow Downy Woodpeckers ever drill in tree-bark?" (p. 253-254). Woodpecker borings in bark of apple trees in Yosemite Valley, California, were ascribed by Grinnell and Storer to *Dryobates pubescens turati* on the basis of observation. C. W. Michael believes the drilling to be the work of the Red-breasted Sapsucker, never having been able to detect the first-named actually boring. He believes the "Downies" were "looting the honey pots of the Sapsucker." **LOYE MILLER.**—"Generic re-assignment of Morphnus daggetti." (p. 255-256). **WETMOREGYPS** (p. 255), type *Morphnus daggetti* Miller.—*T. I. Storer.*

2831. SAUNDERS, FREDERICK A. Banding results in Maine. *Bull. Northeastern Bird-Banding Assoc.* 2(2): 22-24. 1926.—From a limited number of banding returns, the author tentatively concludes that ♂ warblers remain on the breeding ground throughout the summer, while ♀♀ and young wander off in July. The same adults return the following year. The young seem not to return.

2832. SCHNEIDER, WOLFGANG. Erfahrungen bei der Starenberingung. *Mitteil. Ver. Sächs. Ornithologen* 2(2): 72-80. 1927.—In 7 years the author banded 850 starlings, including 356 adults, in Saxony, with 7% return records. The fact that none were known to carry the bands for more than 3 years indicates a brief span of life. The species appears very susceptible to hunger and storm. Adults captured and banded at the nest invariably deserted eggs or young. There is apparently only one brood per year in this region. Old birds nest in

May and lay 5-8 eggs; birds of the previous year nest in June and lay mostly 3 eggs, sometimes 4 or 5. Two young birds were taken in Spain during their first winter. Fourteen adults and 24 young birds were recaptured in the home locality in the year following. Starlings captured by the author learned to recognize him, and later were more alarmed at the sight of him than of another person.

2833. **STRESEMANN, ERWIN. Die Entwickelung der Begriffe Art, Varietät, Unterart in der Ornithologie.** [The development of the concepts of species, variety and subspecies in ornithology.] *Mitteil. Ver. Sächs. Ornithologen* 2(1): 1-8. 1927.—A review of the concepts of various workers, including Cuvier, Brehm, Gloger, Schlegel, Cassin, Baird, Darwin, Allen, and Kleinschmidt.

2834. **TAVERNER, P. A., et al. From field and Study.** *Condor* 30(2): 157-165. 1928.—Taverner.—"Bears and hawks." In the Peace River district northwest of Belvedere, Alberta, poplar trees containing nests of the large hawks practically all show evidence of having been climbed by [black] bears, suggesting egg-hunting by the latter. **CHARLES W. MICHAEL.**—"The Pileated Woodpecker feeds on berries." (p. 157). *Phloeotomus pileatus picinus* in Yosemite Valley, California, was observed feeding on ripe berries of mountain dogwood, *Cornus nuttali*, by hanging head downward while picking at the berry clusters. **ERNEST D. CLABAUGH.**—"Bird casualties due to automobiles." (p. 157). Between Berkeley and Redding, California, on June 1, 1927, fourteen birds (1 Coot, 2 Red-winged Blackbirds, 1 California Woodpecker and 1 English Sparrow identified), 3 squirrels and 4 jackrabbits were seen along 239 miles of road where killed by automobiles. "Fourth known occurrence of the Harris Sparrow in California." (p. 163-164). *Zonotrichia querula* trapped at Berkeley, Nov. 21, 1927. **LAURENCE M. HUEY.**—"Some bird records from northern Lower California." (p. 158-159). Brief mention of about 19 spp. observed during June and July, 1927. **JACK C. von BLOEKER.**—"Western mockingbird nesting in a mail box." (p. 159). *Mimus polyglottos leucopterus* at San Diego, California. **A. V. WILSON.**—"Condor caught in San Joaquin Valley." (p. 159-160. 1 fig.). *Gymnogyps californianus* southeast of Bakersfield, Kern County, in Sept. 1926; on ground, gorged with food. **CLARENCE COTTAM.**—"White pelicans wintering in northern Utah." (p. 160). Two *Pelecanus erythrorhynchos* on Utah Lake, Dec. 10, 1927; also one *Ardea herodias treganzai*. **J. STUART ROWLEY.**—"Western winter wren found breeding in Tulare County, California." (p. 160-161). *Nannus hiemalis pacificus* at Doyle's Camp, altitude 5000 ft., east of Porterville, California; 3 pairs, breeding in July, 1926. **C. HANNA WILSON.**—"Notes on the dwarf cowbird in southern California." (p. 161-162). *Molothrus ater obscurus* is increasing in the San Bernardino Valley; 100 nests of 12 passerine species, parasitized by cowbirds were examined. Eggs of cowbirds in nests of *Icteria virens longicauda*, about the largest of the host species, were larger than the average. *Empidonax t. traillii, Vireo bellii pusillus*, and *Dendroica aestiva brewsteri* were the species most often parasitized. One nest of *Polioptila plumbea* from the Coachella Valley west of Mecca contained the first cowbird egg from that locality. **DONALD R. DICKEY.**—"A third California record of the Rusty Blackbird." (p. 162). *Euphagus carolinus* on Santa Rosa Isl.; specimen found dead Nov. 6, 1927. **CLINTON G. ABBOTT.**—"Bird notes from San Diego County [California]." (p. 162-163). *Dafila acuta tzitzihoa* breeding at Lake Henshaw (a reservoir); adult ♂ and immature *Accipiter cooperi* paired and breeding; *Xema sabini*, one collected at Point Loma, Sept. 18, 1927; *Lobipes lobatus* feeding in thousands on smooth slick spots on water; *Lophortyx gambelii gambelii* present in Borega Valley; *Asyndesmus lewisi* at Point Loma; *Spizella atrogularis cana* and *Wilsonia pusilla pileolata* at San Diego on Dec. 21, 1927. **HAROLD H. COZENS.**—"Fifth record of Harris Sparrow in California." (p. 164). *Zonotrichia querula* at Encinitas, Dec. 21, 1927. **STANLEY G. JEWETT.**—"The Flammulated Screech Owl in Oregon." (p. 164). *Asio flammeolus* taken at 7000 ft. altitude on Hart Mt., May 25, 1927, adult ♀, not breeding. Moths and ground (Carabid) beetles comprised 94% of the stomach contents. **ALFRED M. BAILEY.**—"Notes on Variations in the White-fronted Goose." (p. 164-165). *Anser albifrons* in California exhibits 2 well marked subspecies, *albifrons* and a larger form, *gambeli*, the Tule Goose, as shown by Swarth and Bryant. Louisiana birds all fall within the size range of *albifrons*. Breeding birds from northwestern Alaska at Wainwright are *albifrons*. The number of rectrices and color of eye ring are not dependable characters for separating the two.—*T. I. Storer.*

2835. **TOWNSEND, CHARLES HASKINS. Old times with the birds: Autobiographical.** *Condor* 29(5): 224-232. 2 fig. 1927.—An outline of the author's experiences in ornithological work, from about 1875 up to the present, in the eastern U. S. A., California, Honduras, on the cruises of the "Corwin" and "Albatross," etc.—*T. I. Storer.*

2836. **TYLER, JOHN G., et al. From field and study.** *Condor* 30(1): 124-129. 1928.—Tyler.—"Can hawks prevent mouse plagues?—A reply." (p. 124-125). Refers to an article [see Entry 2819 in this issue] by A. Brooks regarding abundance of raptorial birds near Snelling in the northern San Joaquin Valley of California in 1923, and a mouse plague in the southern part of the same valley in 1926-27. The concentration in hawk population about Snelling is not general throughout the Valley and a succession of dry seasons in the intervening years reduced the nesting population of raptorial species in the central San Joaquin Valley. The unusual increase in mouse population was favored by planting Sudan grass, Egyptian corn, and barley in the Buena Vista Lake basin, raptorial species were at a minimum, and carnivorous mammals had been reduced by poisoning. **JACK C. von BLOEKER.**—"Fly-catching habits of the Western Tanager." (p. 125-126). *Piranga ludoviciana* catching a cicada in Cuyamaca Mts., San Diego County, California. **ERNEST D. CLABAUGH.**—"Winter roosts of western robins." (p. 126). *Planesticus migratorius propinquus* at Davis, California; maximum estimated number 700, Feb. 11, 1927. **J. GRINNELL.**—"September nesting of the Band-tailed Pigeon." (p. 126-127). *Columba fasciata* in Yosemite Valley, California, Sept. 27, 1927; autumnal nesting of other members of the species was inferred from their behavior. Late nesting believed to be due to time of ripening of acorn crop used by this pigeon for food. **CHARLES W. MICHAEL.**—"Nesting time of Band-tailed Pigeons in Yosemite Valley." (p. 127). Comment on a record by Grinnell [see preceding note] on Sept. nesting. Michael believes that the majority of young birds in the Valley are fledged by the end of Aug. He does not agree with Grinnell's statement that breeding season of birds coincides with period when food is most easily obtained. *Columba fasciata* also feeds on berries of *Rhamnus* and *Arbutus* which ripen at other seasons than the acorns. **STANLEY G. JEWETT.**—"Assistant parentage among birds." (p. 127-128). Russet-backed Thrush (*Hylocichla u. ustulata*) assisted in feeding young of a pair of Western Robins (*Planesticus migratorius propinquus*) near Portland, Oregon; "The Little Green Heron in Oregon." (p. 129). Five circumstantial or sight records for *Butorides virescens anthonyi*, 1917 to 1927. **LEON L. GARDNER.**—"Food of young Horned Owls includes adult Marsh Hawk." (p. 128). Young of *Bubo v. virginianus* fed chiefly on cottontail rabbits, with gophers, field mice and some birds, including a *Circus hudsonius*. The latter species was migrating through the region of the nest (Fort Riley, Kansas) in numbers at the time. **H. H. KIMBALL.**—"An abode of *Otus flammeolus*." (p. 129). In a mountain garage in Saliz Cañon, San Francisco Mts., New Mexico. **JOHN S. MAIN.**—"Whistling of the Wilson Snipe." (p. 128-129). *Gallinago delicata* in southwestern Wisconsin, produced a "winnowing" sound when on a downward course at 45° when flying 400-500 ft. above ground in a wide circular path.—*T. I. Storer.*

2837. **VÄLIKANGAS, ILMARI. Die Vogelberingungen**

in Finnland im Jahre 1926. (In German.) *Ornis Fennica* 4(4): 99-104. 1927.—In this year 1894 birds of 79 spp. were banded. Return records for 27 birds are given.

2838. **WHITTLE, CHARLES L. Purple finch and catbird returning ratios.** *Bull. Northeastern Bird-Banding Assoc.* 3(3): 58-59. 1927.—Records of banded *Carpodacus p. purpureus* in New Hampshire and of *Dumetella carolinensis* in Massachusetts show increasing returning ratios each year with the increasing age of the birds.

2839. **WHITTLE, C. L. Some additional bird weights.** *Bull. Northeastern Bird-Banding Assoc.* 3(3): 70-71. 1927. —Records of 14 spp. of Passeres.

2840. **WHITTLE, CHARLES L. A plea for more bird-weighers.** *Bull. Northeastern Bird-Banding Assoc.* 3(3): 75. 1927.—Certain migrant song sparrows, taken in Massachusetts in early April, weighed between 25 and 27 grams, as compared with a weight of 20 to 22 grams for local breeding birds. The former may be representatives of some northern race of this sp.

SYSTEMATIC

2841. **BANGS, OUTRAM, and JAMES L. PETERS. A collection of birds from Oaxaca.** *Bull. Mus. Comp. Zool. Harvard Coll.* 68(8): 385-404. 1928.—This paper is based on a collection of 128 spp. and subspp. made by W. W. Brown between 15 Feb.–12 Nov., 1927. The localities are, Chivelá, Lagunas, Almoloya, and Tapanatepec, all in Oaxaca. *Colinus virginianus* **thayeri** (p. 386), type from Chivelá; *Sittasomus griseicapillus* **gracileus** (p. 392), type from Chichen Itza, Yucatan; *Xiphorhynchus flavigaster* **tardus** (p. 393) and *Tyrannus crassirostris* **pompalis** (p. 396), types from Hacienda San Rafael, Chihuahua; *Heleodytes zonatus* **impudens** (p. 398), type from Chivelá. Types of new forms are in coll. Mus. Comp. Zool. *Aratinga holochlora* (Scl.) and *Aratinga strenua* (Ridgw.) are regarded as distinct species. *Aratinga canicularis* is divisible into 2 subspp.: *A. c. eburnirostrum* (Less.) ranges in western Mexico from Sinaloa to Guerrero and *A. c. canicularis* (Linn.) on the Pacific coast from the Isthmus of Tehuantepec to western Costa Rica. *Sittace petzii* Wagl. is a synonym of *Psittacus canicularis* Linn. The genera *Aratinga* and *Eupsittula* are merged under the former and older name. *Momotus mexicanus saturatus* Nels. is regarded as identical with *mexicanus* Swains. The range of *Myiodynastes luteiventris swarthi* van Ross. is extended south into Chihuahua. Two forms of *Chiroprion linearis* are recognized, *C. l. linearis* (Bonap.) southern Mexico to Guatemala and *C. l. fastuosa* (Less.) Nicaragua and Costa Rica.—*J. L. Peters.*

2842. **BOAS, J. E. V. Biologisch-anatomische Studien über den Hals der Vögel.** *Kgl. Danske Vidensk. Selsk. Skrifter, Naturvidensk. og Mathem. Afd. 9.* 1(3): 106-222. 23 pl. 20 fig. Andr. Fred. Høst & Son; København, 1929. Pr. 20 Kroner.—The author was led by a monograph by Hans Virchow on the vertebral column of the penguin (1910) to undertake further study in a neglected field. The author is interested in the articulation and flexional powers in the bird neck, hence he considers first its use as a tool, and confines himself to long-necked species. He describes and illustrates the vertebrae in detail, and divides the neck into 3 sections; the supraspinal ligaments in several species are compared as to size, and the musculature is compared in more or less detail for *Larus marinus* (used as the basis for comparison), *Tetrao urogallus, Ardea cinerea, Ciconia alba, Picus viridis, Spheniscus demersus, Graculus carbo, Plotus anhinga, Cygnus musicus, Anser domesticus, Rhynchotus rufescens, Dromaeus, Rhea, Struthio, Haliaëtus albicilla, Syrnium aluco.* There is a short chapter on necks of paleornithes. The author believes, on the evidence afforded by the neck, that the dinosaur group, including *Ornitholestes, Ornithomimus, Struthiomimus,* is the nearest extant fossil relative of the ancestral bird type. The latter preserved also the postpubis, which is lacking in the above-mentioned group. At least the possibility is suggested that the essential neck structure was already present in the bird-like dinosaurs. The modern Crocodilia, though admittedly distantly related, at least have a neck flexion similar to that of section 2 of the bird neck. This similarity is lacking in more distantly related reptiles. A sketch of the history of anatomical study on the bird neck from the point of view adopted by the author is given. There are tables comparing number of vertebrae per neck section in a large number of classified species; tables giving type and degree of possible flexions for all 3 sections of the neck in a somewhat smaller number; and a bibliography.—*E. W. Count.*

2843. **BOETTICHER, HANS von. Kritische Betrachtungen über Anatiden.** *Anz. Ornithol. Ges. Bayern* 2(1): 10-15. 1929.—*Punanetta* **versicolor** (*Anas v.* Vieill.) (p. 10); *Anas punctata* Burch. is also transferred to *Punanetta; Micronetta* Roberts is reduced to a subg. of *Punanetta* Bp.; *Querquedula* should include only *Q. querquedula* (L.), *Q. discors* (L.), and *Q. cyanoptera* (Vieill.); *Nettion georgicum* **flavirostre** (*Anas flavirostris* Vieill.) (p. 11); *N. g.* **oxypterum** (*Anas oxyptera* Meyen) (p. 11); *N. g.* **andium** (*Querquedula a.* Scl. & Salv.) (p. 11); **SIBIRIONETTA** (p. 11), n. subg. of *Nettion,* type *Anas formosa* Georgi; *Anas capensis* Gmel. is transferred to *Virago* Newt.; *Notonetta* Roberts is reduced to a subg. of *Virago;* **AMAZONETTA** (p. 12), type *A.* **brasiliense** [in error for *brasiliensis*] (*Anas brasiliensis* Gmel.) (p. 15), including also *Nettion leucophrys* (Vieill.); *Afranas* Roberts, *Melanas* Roberts, *Polionetta* Oates, and *Horizonetta* Oberh. are regarded as subgenera of *Anas* L.; **SPECULANAS** (p. 14), type *S.* **specularis** (*Anas s.* King) (p. 14); the author is now convinced that *Nyroca* Flem. and *Fuligula* Steph. are distinct.—*H. von Boetticher.*

2844. **BOETTICHER, H. von. Zur Systematik der Kakadus.** *Anz. Ornithol. Ges. Bayern* 2(1): 15-16. 1929.—Discussion of genera of Psittaciformes. In general, the classification of G. M. Matthews (Systema avium australasinarum) is accepted as correct and practical. But the form given by him as *Kakatoe galerita ophthalmica* (Sclater) should not be placed under *Kakatoe galerita* (Leth.); it approximates rather *Kakatoe albo* (Müll.) and *Kakatoe moluccensis* (Gmel.). It is recommended that these 3 forms, because of the crest formation be lumped under a special genus *Plyctolophus* Vieillot, and thus separated from the other species.—*H. von Boetticher (transl. by E. W. Count).*

2845. **BOETTICHER, H. von. Ueber die Verwandtschaft der Eulen mit den Raubvögeln.** *Verhandl. Ornithol. Ges. Bayern.* 18(1/2): 172-176. 1929.—In the dispute as to whether the owl belongs with the Raptores or the Coracornithes, especially to Podargidae, etc., the author takes the middle position that the owl is a very old branch on the avian tree. This branch comes from that of the Coracornithes, but at a very early time, and is low down and close to the origin of the Coracornithes branch; i.e., relatively close to the branching-off of Pelargornithes, to which group belong the Raptores. Hence it is that the owls show chiefly characters of Coracornithes but also some like those of Raptores; i.e., they show more common primitive characters.—*H. von Boetticher (transl. by E. W. Count).*

2846. **BOND, JAMES. The distribution and habits of the birds of the Republic of Haiti.** *Proc. Acad. Nat. Sci. Philadelphia* 80: 483-521. 1928.—This report is based upon 6 months' collecting on the mainland of Haiti and on Gonave and Tortuga Isls. It includes all the resident birds known to occur in the republic, but only those migrants that the author personally encountered. There is a brief description of 12 physiographic areas. The systematic list of 152 forms consists chiefly of notes on distribution, status, and habits. Local names are supplied for most of the birds. Twelve species are listed whose status as residents is doubtful. *Siphonorhis* Sclater (=*Microsiphonorhis* Chapman); *S.* **brewsteri** (*M. b.* Chapman) (p. 501); *Erismatura j. jamaicensis,* first definite record for Hispaniola; *Nesoctites micromegas* **abbotti** (*N. a.* Wetmore) (p. 505); *Dulus dominicus* L. (=*D. nuchalis* Swainson); *Agelaius humeralis* (Vigors)

(=*A. quisqueyensis* [sic] Danforth & Emlen).—*From abst. by C. E. Underdown.*

2847. BOWEN, W. WEDGWOOD. On the genus Nyctiperdix, Roberts: fifth preliminary paper on the birds collected during the Gray African Expedition—1929. *Proc. Acad. Nat. Sci. Philadelphia* 82: 145-148. 2 pl. 1930.—The genus *Nyctiperdix,* containing the 5 spp. *quadricinctus, fasciatus, bicinctus, lichtensteinii,* and *decoratus,* should be recognised on structural characters as being distinct from *Pterocles.* The 2 groups are also distinct in habits and ecology. Photographs of typical habitats are used to illustrate this point. The *Pterocles* group is considered a divergent offshoot from the parent form, which is most nearly represented today by the *Nyctiperdix* group.—*W. W. Bowen.*

2848. BOWEN, W. WEDGWOOD. The relationships and distribution of the bare-throated francolins (Pternistis): sixth preliminary paper on the birds collected during the Gray African Expedition—1929. *Proc. Acad. Nat. Sci. Philadelphia* 82: 149-164. 2 map, 6 fig. 1930.—The 3 species, *afer, cranchii,* and *swainsoni,* are united because they possess a similar type of feather-pattern, their ranges do not overlap and several of the races show affinities to 2 or more of the 3 groups. *P. afer* is the oldest name and 15 subspp. are recognized. *P. rufopictus* is closely related, but is kept separate on account of an apparent overlap in range. *P. leucoscepus,* with several races, is quite distinct and is only dealt with briefly. Keys to spp. and subspp. are followed by brief descriptions (illustrated by text-figs. of feathers and heads of all the forms) and outlines of the ranges are given. Two maps illustrate the distribution and the influence of altitude on the ranges of the various races. *P. afer angolensis* Roberts is a synonym of *P. a. benguellensis* Bocage; *P. a. punctulata* (Gray), which has hitherto been regarded as synonymous with *P. a. cranchii,* is a distinct form inhabiting central Angola.—*W. W. Bowen.*

2849. BOWEN, W. WEDGWOOD. Geographical variation in Cinnyricinclus leucogaster: seventh preliminary paper on the birds collected during the Gray African Expedition—1929. *Proc. Acad. Nat. Sci. Philadelphia* 82: 165-167. 1 fig. 1930.—*C. leucogaster* **friedmanni** (p. 166), Abyssinia, type in U. S. Nat. Mus. *C. l.* **lauragrayae** (p. 166), Kenya Colony, type in Acad. Nat. Sci. Phila. Four subspecies are recognized.—*W. W. Bowen.*

2850. DESSELBERGER, HERMANN. Bewegungsmöglichkeiten und Bewegungshemmungen im Hals der Bucerotiden. *Jour. Ornith.* [*Berlin*] 78(1): 86-106. 5 fig. 1930.—Among birds, it is only in the Bucerotidae that the first 2 vertebrae of the neck, atlas and epistropheus, have completely fused, thus limiting in these joints the possibility of turning the head, which is generally due to the joints connecting condylus occipitalis, atlas and epistropheus. But an examination of the neck in this family (carried out particularly on *Rhytidoceros undulatus*) demonstrates that this limitation in the foremost joints is compensated by a peculiar construction of the joints themselves in relation to the next adjoining vertebrae. For this reason, the Bucerotidae are, on the whole, able to turn the head just as well and as far as other birds. In connection with this study, all possibilities of motion in the necks of birds, especially the restrictions limiting or stopping their motions are discussed. With respect to potential motion, necks of all birds (except Struthios) are constructed according to the same principle. A discussion of the biological value of this construction closes the paper.—*H. Desselberger.*

2851. GRINNELL, JOSEPH. Notes on the systematics of west American birds. II. *Condor* 30(2): 153-156. 1928.—*Phalaenoptilus nuttallii* **dickeyi** (p. 153), type locality, San Ignacio, lat. 27° N., Lower California; *Baelophus inornatus* **transpositus** (p. 154), type locality, Mount Wilson, Los Angeles County, California; *Thryomanes bewickii* **correctus** (p. 154), type locality, Pasadena, Los Angeles County, California. The rock wrens of the southwest are all to be grouped as *Salpinctes o. obsoletus,* save the Guadalupe Isl. form which should be designated as a subspecies *S. o. guadeloupensis. S. o. proximus* by Swarth from San Martin Isl., Lower California, is now considered a synonym of *S. o. obsoletus* which exhibits considerable variation, further complicated by wear after the molt.—*T. I. Storer.*

2852. GRISCOM, LUDLOW. Studies from the Dwight collection of Guatemala birds. 2. *Amer. Mus. Novitates* 414. pp. 1-8. 1930.—A preliminary paper including: *Cerchneis sparveria* **tropicalis** ♂ (p. 1); *C. sparveria* (L.) (=*C. s. guatemalensis* Swann); *Morococcyx erythropygus* **macrourus** (p. 2), *Synallaxis erythrothorax* **pacifica** (p. 3); *Megarhynchus pitangua* **deserticola** (p. 4); *Pitangus sulphuratus* **pallidus** (p. 4). The various "species" of the genus *Polioptila* are discussed, the author coming to the conclusion that all the supposed species boil down to one, *bilineata.* The bird was of S. Amer. origin and pushed northward into Central Amer. and may be defined as follows: *Polioptila bilineata bilineata* (Bonaparte), which includes *P. superciliaris* and *P. s. magna; P. bilineata albiloris* Sclater & Salvin, which includes *P. nigriceps, P. n. restricta* and *P. bairdi,* and *P. bilineata albiventris* Lawrence. *Heleodytes capistratus* **xerophilus** (p. 7). The author states that *H. megalopterus* and *H. nelsoni* are conspecific and that it is doubtful if they are specifically separable from the *zonatus* group.

2853. HARTERT, ERNST. A rush through Tunisia, Algeria, and Marocco, and collecting in the Maroccan Atlas, in 1927. *Novitates Zool.* [*London*] 34(3): 337-371. 2 pl. 13 fig. 1928.—A general account of bird observations, with critically annotated list of some 52 spp. or subspp. of birds, among which are *Apus melba* archeri ♂ (p. 363), Somaliland; *A. melba* **bakeri** (p. 363), Ceylon; *A. affinis* **bannermani** (p. 365), Island of San Thomé and Princes Isl.; types, of *A. m. archeri,* of *A. m. bakeri,* and of *A. affinis bannermani,* in Tring Mus. See also correction *Ibid.* p. 395.

2854. JOHNSEN, SIGURD. Draktskiftet hos lirypen (Lagopus lagopus Lin.) i Norge. [Plumage changes of the willow ptarmigan in Norway.] [English translation p. 66-79.] *Bergens Museums Årbok, Naturvidensk. rekke* 1(paper 1): 1-84. 14 pl. (7 col.) 5 fig. 1929.—Four plumages are distinguished in the ♂,♂ in the ♀, all acquired by moult. Spring plumage of ♂♂ may begin to appear as early as the middle of March, more generally in April, and is retained during the mating season. Summer plumage then appears, giving way to fall plumage in the latter part of July or early in Aug. in paired cocks, somewhat earlier in single birds or those which have lost the chicks. Spring plumage of ♀ is complete in the latter part of May and persists until early in Aug., or middle of July in those which have lost the young, when the autumn plumage appears. The white winter plumage of both sexes, often tinged with a rosy flush, is worn from about the first of Nov. to March (♂) or April (♀). The 14 tail feathers are shed once a year, beginning with outer ones. Two median feathers, by some classed with upper tail coverts, are shed in spring and autumn. In July or early Aug. horny covering of bill and claws are shed.—*O. J. Murie.*

2855. LAUBMANN, A. Die Eisvögel der Deutschen Gran Chaco-Expedition. Ein Beitrag zur Erforschung der Avifauna Südamerikas. *Verhandl. Ornithol. Ges. Bayern* 18(3/4): 193-231, 1 map. 2 fig. 1929.—*Chloroceryle americana* with 7 subspp. is discussed in detail, with key and sketch of relationships; also *C. amazona* and *Streptoceryle torquata* with 3 subspp. Nesting and plumages are described. A classification of the Alcedinidae suggested is: Collective genus *Ceryle* with subgenera: *Ceryle, Megaceryle, Macroceryle, Streptoceryle, Chloroceryle,* and *Amazonis.*—*O. A. Stevens.*

2856. MATHEWS, GREGORY M. Another new book, which necessitates changes in nomenclature. *Austral Avian Record* 5(4): 81-100. 1926.—Attention is called to an obscure work published in 1787, "Index Systematicus Musei Geversiani." The author of the names em-

ployed was F. C. Meuschen, who followed the 12th edition of Linné, 1766. Mathews lists the names applied by Meuschen to birds, pointing out various cases of priority, new combinations, etc.

2857. MATHEWS, GREGORY M. [Two new names.] *Bull. British Ornith. Club* 49(326): 19. 1928.—**NEOLALAGE** (*Pseudolalage* Mathews, not Blyth). *Pagodroma nivea* pealei, "new name for *Procellaria nivea* Peale, United States Expl. Exped. vol. viii, p. 295, 1848." [In *loc. cit.*, under the name of *Procellaria nivea* Gmelin, Peale describes specimens from lat. 64° S., long. 104° W.]

2858. MILLER, ALDEN H. The passerine remains from Rancho La Brea in the paleontological collections of the University of California. *Univ. California Publ. Bull. Dept. Geol. Sci.* 19(1): 1-22. 1 pl. 1929.—A report on the passerine birds preserved as fossils in the Rancho La Brea asphalt beds of California. Ten families are represented by 15 genera, 8 of which are identified as to species. The Horned Lark, Yellow-billed Magpie, Western Crow, Northwest Crow, Cedar Waxwing, Loggerhead Shrike, and a newly described extinct species, *Euphagus* **magnirostris*** (p. 14) or La Brea Blackbird, are known to occur. Remains of a kingbird, jay, chickadee, thrasher, bluebird, and oriole also have been found. Evidence afforded by these fossils indicates that the Rancho La Brea fauna was characteristic of the Lower Sonoran life-zone and that the climate was slightly more humid but no warmer than is the climate of the vicinity today. These birds further serve to indicate that the asphalt deposits are of middle or late Pleistocene age.—*A. H. Miller.*

2859. MURPHY, ROBERT CUSHMAN. Birds collected during the Whitney South Sea expedition. IV. *Amer. Mus. Novitates* 322. 1-5. 1 fig. 1928.—Six forms of Procellariidae are treated. Data are given showing distinctions between *Pterodroma rostrata* (Peale), and *P. parvirostris* (Peale). *Pterodroma* **becki** ♀ (p. 1), lat. 155° E., long. 3° S. Range of *Puffinus lherminieri polynesiae* Murphy (1927) extended into the Tonga Group; new material confirms the distinctness of *P. l. nugax* Mathews (1912). *Fregatta grallaria* **titian** ♀ (p. 4), Rapa Isl., Austral Group, South Pacific. Types in Amer. Mus. Nat. Hist.—*A. H. Norton.*

2860. MURPHY, ROBERT CUSHMAN, and GREGORY M. MATHEWS. Birds collected during the Whitney South Sea Expedition. VII. *Amer. Mus. Novitates* 356. 1-14. 1929.—This paper treats of 8 spp. and 8 subspp. of Zosteropidae; lacking material of *Zosterops flavifrons* (Gmelin), from Tanna Isl. (type locality), material from Efate, which "agrees perfectly" with published descriptions and figure of typical *Z. flavifrons* "are regarded as such" and used as a basis for comparison. *Z. f. macgillivrayi* Sharpe (1900) is regarded as valid; *Z. f.* **brevicaudata** ♂ (p. 3), Malo Isl. *Z. f.* **perplexa** ♂ (p. 3), Ambryn Isl.; *Z. f.* **gauensis** ♂ (p. 5), Gaua Isl., Banks Group; *Z. f.* **majuscula** (p. 5), Aneiteum Isl., *Z. lateralis* (Latham) (1801), *Z. l. flaviceps* Peale (1848), *Z. l. vatensis* Tristram (1879) valid and new material described; *Z. l.* **valuensis** ♀ (p. 10), Valua Isl., Banks Group. The preceding new subspp. are all from islands of the New Hebrides group. *Z.* **samoensis** ♀ (p. 11), Savii Isl., Samoa. **SANFORDIA** (p. 13), type *S.* **lacertosa** ♂ (p. 13), Santa Cruz Isl., Santa Cruz Group. Types in Amer. Mus. Nat. Hist. "Ultimately, the names now applied to the white-eyes of the *flavifrons* group will probably need further revision, for the forms of *Z. flavifrons* seem to be closely akin to *Z. intermedia* of the Celebes Isl."—*A. H. Norton.*

2861. PETERS, JAMES L. An ornithological survey in the Caribbean lowlands of Honduras. *Bull. Mus. Comp. Zool. Harvard* 69(12): 397-478. 1929.—The collection on which this account is based was made by the author, assisted by Edward Bangs of Boston. The region covered was in northern Honduras the chief collecting locality being the Lancetilla Valley near Tela; specimens were also secured at Progreso in the Ulua valley and in extensive fresh water swamps lying between the 2 places. *Odontophorus melanotis* **verecundus** (p. 404), type from Lancetilla, 1100 ft., *Rhynchortyx cinctus* **pudibundus** (p. 405), type from Lancetilla, 1000 ft.; *Automolus ochrolaemus* **amusos** (p. 441), type from Lancetilla, 500 ft.; *Glyphorynchus spirurus* **sublestus** (p. 443), type from Changuinola (Caribbean slope) northwestern Panama; *Tanagra gouldi* **praetermissa** (p. 470), type from Western River, Almirante, Panama. Types in Mus. Comp. Zool. The following are recorded for the first time from Honduras: *Crypturellus boucardi costaricensis, Odontophorus melanotis, Rhynchortyx cinctus, Oreopelia montana, Rostrhamus sociabilis plumbeus, Pulsatrix perspicillata saturata, Electron platyrhynchum minor, Streptoprocne zonaris albicincta, Selenidera spectabilis, Formicarius analis intermedius, Myrmotherula s. schisticolor, Platyrinchus coronatus superciliaris, Tyranniscus vilissimus parvus, Empidonax albigularis australis, Iridoprocne bicolor, Helmitheros vermivorus, Vermivora chrysoptera, Brasileuterus c. culicivorus. Vultur atratus* F. A. A. Meyer, 1794, antedates *V. urubu* Vieillot 1807; *Streptoprocne zonaris bouchellii* Huber is identical with *S. z. albicincta* (Cabanis); *Thamnophilus intermedius* Ridgw. antedates *T. mexicanus* Allen; *Tyrannus superciliosus* Bonap. antedates *Muscicapa texensis* Giraud and the bird becomes *Myiozetetes similis superciliosus.* The form of *Pitangus sulphuratus* of southern Mexico and Central Amer. to western Panama is recognized as a distinct species for which *Saurophagus guatimalensis* Lafr. is resurrected. *Lathria unirufa clara* Ridgw. 1906 is not different from *L. u. castaneotinctus* Hart. 1902. *Heleodytes capistratus castaneus* (Ridgw.) is resurrected as a valid subsp. *Amblycercus holosericeus centralis* Todd is considered synonymous with *A. h. holosericeus* (Licht.). *Trogon caligatus* Gould applies to the bird occurring in northern Colombia, and must replace *T. c. columbianus* (Chapm.); the race occurring from Mexico to Honduras formerly referred to *caligatus* must be called *aganus* (Cabanis & Heine); a brief review of the subspp. of *T. violaceus* is appended. The ranges of the Mexican and Central Amer. races of *Myiarchus tuberculifer* are outlined. *Saltator magnoides* Lafresnaye proves to be the same as the bird hitherto known as *S. m. intermedius* Ridgw. while the bird formerly known as *S. m. magnoides* Lafr. becomes *S. m. gigantodes* Cabanis. Characters and ranges of the Central Amer. races of *S. magnoides* are given.—*J. L. Peters.*

2862. PETRONIEVICS, B. La question du pubis de Archaeornis. [In Serbian, with French résumé.] *Bull. Acad. Royale Serbe Sci. Arts, Belgrade* 131(62): 35-40. 1 pl. 1928.—Examination of the pubis of *Archaeornis* and of *Archaeopteryx* shows that while the pubis of the latter was a distal osseous enlargement corresponding to the distal enlargement of the former, the pubis of *Archaeornis* does not have the median enlargement characteristic of that of *Archaeopteryx.* Consequently, a symphysis of the 2 pubes does not exist as in *Archaeopteryx.* The study was undertaken in reference to a controversy as to whether the 2 are generically distinct. No definite pronouncement is made as to their generic identity or difference.

2863. SCLATER, W. L. [Notes on an African guineafowl and on African and Arabian chats.] *Bull. British Ornith. Club* 49(326): 10-19. 1928.—*Numida mitrata intermedia* is recorded as new to Uganda. The following races of *Oenanthe monticola* are recognized: *O. m. monticola* Vieill., SW. Africa (Namaqualand) to Cape Province and Transvaal; *O. m. atmorii* (Tristram), SW. Africa (Damaraland); *O. m. albipileata* (Bocage), Angola. *Saxicola* **borbonensis** (p. 14), Isl. of Bourbon, Indian Ocean. The following forms of sickle-winged chats are recognized: *Emarginata sinuata* (Sund.), Cape Province to Transvaal; *Karrucincla s. schlegelii* (Wahl.), SW. Africa (Damaraland and Ovampoland); *K. s.* **benguellensis** (p. 15), Angola, type in Brit. Mus.; *K. s.* **namaquensis** (p. 15), SW. Africa (Great Namaqualand), type in Brit. Mus.; *K. s. pollux* (Hartl.), Cape Province. *Myrmecocichla tholloni* **chaboti** (*Oenanthe c.* Meneg. & Berl.,=*Myrmecocichla lynesi* Bann.) (p. 17); *Oenanthe*

b. bottae (Bp.) (=*O. yemenensis* O.-Grant); *O. b.* frenata (*Saxicola f.* Heuglin) (p. 19).

2864. SHULPIN, L. Die Wiederentdeckung von Emberiza jankowskii Tacz. *Jour. Ornithologie* 76(1): 215-222. 1928.—Rediscovery of this species in south Ussuri, with a detailed systematic account and description of the nestlings.—*L. Shulpin.*

2865. SWANN, H. KIRKE. A monograph of the birds of prey (Order Accipitres). Part V. pp. 277-364. 5 pl. (3 col.) Wheldon & Wesley, Ltd.: London, 1926.—This part treats of 24 spp. of *Accipiter,* 1 species each of *Erythrotriorchis, Megatriorchis, Heterospizias,* and *Geranoaëtus,* and 7 spp. of *Buteo,* besides numerous subspp. Common names in various languages, synonymies, distribution, descriptions of plumage, and notes on habits, food, nests, and eggs are given. *Accipiter ovampensis* Gurney (=*A. hilgerti* Erlanger); *A. c. cirrocephalus* (Vieill.) (=*A. c. quaesitandus* Math.); *A. rubricollis* **brachyurus** (*Astur brachyurus* Ramsay) (p. 311); *Accipiter bicolor* **pileatus** (*Falco p.* Temm.) (p. 334); *Buteo japonicus* is considered a distinct species, not a subspecies of *B. buteo,* as treated by Hartert. There are keys to the genera of Buteoninae and to the species of *Buteo,* and colored plates of *Buteo ferox cirtensis, B. v. vulpinus, B. buteo intermedius,* and *B. polyosoma.*

2866. SWANN, H. KIRKE. (Edited by ALEXANDER WETMORE.) A monograph of the birds of prey (Order Accipitres). Part VIII. pp. 429-487. 2 col. pl.; Part IX. pp. v-lxvii. 2 col. pl. Wheldon & Wesley, Ltd.: London, 1930.—Part VIII includes 1 species each of *Buteola, Busarellus, Buteogallus, Harpyhaliaetus, Urubitornis, Harpia, Harpyopsis,* and *Pithecophaga,* 2 spp. each of *Asturina* and *Morphnus,* 3 spp. of *Rupornis,* 4 spp. of *Urubitinga,* and 9 spp. of *Leucopternis,* besides numerous subspp. The treatment of the various forms follows that in previous parts. *Urubitinga urubitinga* **azarae** (p. 453), Argentina, type in Swann coll.; *Leucopternis schistacea* **plumbea** (*L. p.* Salvin) (p. 464); *L. ghiesbreghti* (Du Bus) (=*L. g. costaricensis* W. L. Sclater). There are colored plates of *Heterospizias m. meridionalis* and *Urubitinga u. urubitinga.* Part IX includes a table of contents of vol. 1, an index of generic, specific, subspecific, and common names, errata, and colored plates of *Harpia harpyja* and *Pithecophaga jefferyi.*

2867. WENIG, JAR. Über einige Raritäten der Vogelwelt. *Zool. Anz.* 90(9/12): 285-294. 6 fig. 1930.—The author describes a case of a bony, spurlike outgrowth* on the mandible of a pheasant. He mentions melanistic specimens of *Alauda arvensis** and *Pyrrhula pyrrhula europaea* that were smaller than normal, and specimens of *Tetrao urogallus** and *Phasianus colchicus* whose plumage showed a mixture of ♂ and ♀ characters. In the last mentioned specimen no gonads were found. A specimen of *Corvus frugilegus** with a malformed, prolonged mandible had the usual bare area between eyes and bill, this being evidence that the feathers are not worn off this area by probing in the ground, as some have supposed. A specimen of *Motacilla flava feldegg* is recorded from Bohemia. Most of the other specimens mentioned above are likewise from Bohemia.

LOCAL AND FAUNISTIC

2868. CARPELAN, JARL. Om Buteo l. lagopus förekomst och fortplantning m. m. i Petsamo. [Occurrence and breeding of B. lagopus l. at Petsamo, Finland.] *Ornis Fennica* 4(1): 19-20. 1927.—The Rough-legged Buzzard is distributed throughout the Petsamo district. At least ¾ of them nest in mountain regions and are not often found in larger pine forests, since they feed on small rodents, which are more plentiful and more easily caught in the mountains.

2869. De GROOT, DUDLEY SARGEANT. The California Clapper Rail, its nesting habits, enemies and habitat. *Condor* 29(6): 259-270. 1927.—*Rallus obsoletus* on marshes around San Francisco Bay, formerly very abundant, is now greatly reduced by reason of: (1) Encroachment of civilization and industrial developments on marsh area; (2) hunting, which is illegal; (3) presence of Norway rat (*Rattus norvegicus*) as a permanent resident enemy in all of marsh areas; (4) disabling and death of rails by being trapped in valves of "a small black mussel" introduced some 30 years ago; (5) overcollecting of eggs; (6) attacks by predatory birds. Eggs in 74 observed nests ranged from 5 to 21. Nests are sheltered by *Grindelia cuneifolia* and *Salicornia ambigua;* nesting dates range from March 22 (1906) to July 13 (1926) and a scarcity of nests with eggs from mid-May to mid-June is taken to indicate that 2 broods are reared by many pairs. The possibility of domestication is discussed.—*T. I. Storer.*

2870. DITTMANN, ERICH. Brut des Raubwürgers, Lanius e. excubitor L., auf dem Heller bei Dresden. [Breeding of the great grey shrike near Dresden.] *Mitteil. Ver. Sächs. Ornithologen* 1(8): 210. 1926.

2871. DIXON, JOSEPH. Contribution to the life history of the Alaska Willow Ptarmigan. *Condor* 29 (5): 213-223. 13 fig. 1927.—Observations on the habits of *Lagopus lagopus alascensis* in Mount McKinley National Park, Alaska. Males are in attendance on the ♀♀ when the latter are incubating, though ♂♂ may gather in groups of as many as 25 at times. Six to 12 eggs constitute a set. The ♂ has a "form" near the nest occupied by the ♀. The period of incubation observed in one instance was 24-25 days. Adult ♀♀ utter at least 3 kinds of notes when caring for young. The adults feed on buds and tender leaves of the dwarf willow, taking insects as occasion offers. The stomach of a 4-5 day old chick contained insects wholly, 74% being yellow caterpillars. During the incubation period Short-billed Gulls raid nests. Red foxes capture adult ptarmigan and Black-billed Magpies capture young. Gyrfalcons also prey upon ptarmigan.—*T. I. Storer.*

2872. FERDINAND, King of Bulgaria, with the collaboration of HANS von BOETTICHER. Eine Osterreise an den Victoria-Nyanza und zu den Bergriesen Aequatorial-Afrikas. *Jour. Ornith.* [*Berlin*] 78(Sonderheft): 3-67. 7 pl. 1930.—King Ferdinand presents a narrative of a journey in 1929 through the Mediterranean and Red Seas and the Indian Ocean to Kenya, Uganda, and Tanganyika Territory. It includes notes on many birds as well as some mammals and plants. This narrative is followed by Von Boetticher's report (pp. 24-67) on the birds observed and collected. About 300 forms are listed, with distributional records and some notes on habits and taxonomy.

2873. GROTE, HERMANN. Die ornithologische Fauna der Aralo-kaspischen Steppen. Referat nach der gleichnamigen Arbeit W. Bostanjoglo's. *Verhandl. Ornithol. Ges. Bayern* 18(1/2): 18-43. 1 map. 1928-1929.—Lists 394 spp., of which 279 are local breeders, 43 transients, 25 winter residents, 47 occasional (exceptional) visitants. An especially interesting fact is the occasional breeding here of species otherwise confined to the Arctic; e.g., *Crocethia alba, Calidris ferruginea, Phalaropus fulicarius;* Russian ornithologists consider them as left-overs of an earlier geological period. The various life-zones of the region are roughly described and the specifications of the various bird species are given for the life-zones.—*H. Grote* (*transl. by E. W. Count*).

2874. GÜNTHER, ADOLF. Der Ortolan, Emberiza hortulana L., in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 1(8): 207-208. 1926.—Notes on the gradual spread of this species in Saxony.

2875. HACHISUKA, M. Contributions to the birds of the Philippines. No. 1. *Ornithological Soc. of Japan, Suppl. Publ. No. 13.* 1-137. 3 pl. 1929.—Part I gives a general account of the physical formation and climatic conditions in general of the Philippine Arch. Part II contains the ornithological history of the islands, with a detailed account of the various expeditions of earlier ornithologists and a summary of their more important discoveries. Part III is a bibliography starting from 1845; 233 headings are compiled, with a short review of the contents of each. Part IV is a zoogeographical summary, giving the opinions of former writers. About

a dozen zoogeographical subareas are recognized, while it is concluded that Palawan Calamianes and the Cuyo group belong to Borneo proper. Part V is an index of local names with locations.—*M. Hachisuka.*

2876. HOFFMANN, B. Ornithologisches von einer Reise nach der Schweiz. *Verhandl. Ornithol. Ges. Bayern.* 18 (1/2): 75-107. 1929.—This survey supplies detailed material from observations made during the trip, which extended from July 13 to Aug. 10, 1927, for a more comprehensive study of Swiss avifauna. There are numerous observations on bird notes, especially of those species which are almost never found outside of the Alps. Numerous biological and ecological observations are scattered throughout the essay, including some concerning altitudinal distribution of species.—*B. Hoffmann. (transl. by E. W. Count).*

2877. HORTLING, IVAR. Inwieweit wird Finnland von (hoch) nordischen Wandervögeln durchquert? [To what extent is Finland crossed by (high) northern migrants?] (In German.) *Ornis Fennica* 4(4): 104-113. 1927.—The author shows that Palmén's "submarine-littoral" species cross Finland in large numbers; that his "fluviolittoral" species regularly follow the seacoast; that many species hitherto considered "erratic" regularly cross the interior; and that the whole country is crossed by "migration routes" extending in general from north or east to south or south-west. He considers that many of Palmén's views were based upon insufficient data and require revision in the light of new information. He cites additional records for 17 arctic species of Limicolae, Anatidae, Laridae, and Alcidae to show that on migration they are not restricted to the south coast of Finland, but also regularly cross the interior and follow the Gulf of Bothnia.

2878. HORTLING, IVAR. Ornithologische Studien am Oulujarvi-See [Uleåträsk] im Sommer 1927. *Sonderheft des Ornis Fennica* 198p. Map. 11 pl. 1927/1928.—The author systematically observed and studied the spring and fall migration in the interior of Finland. He describes the nature of the territory observed, tabulates daily observations and weather, gives curves for arrivals, departure, and non-stop passage flights, and summarizes each period of 2 weeks for the sake of perspective. He describes breeding habits and traces out the breeding territories and life-zones on the basis of original observations and upon that of older literature. Foot impressions of birds captured are reproduced. Chief results: Arctic birds go straight across Finland; spring migration is closely correlated with temp. and snow conditions; many species fly over Finland in phalanx; observations are less abundant for the interior than for the sea-coast.—*I. Hortling (transl. by E. Count).*

2879. JEWETT, STANLEY G., and IRA N. GABRIELSON. Birds of the Portland area, Oregon. *Cooper Ornithol. Club Pacific Coast Avifauna* 19. 5-54. 21 fig. 1929.—The area covered by this paper includes the valleys of the Columbia and Willamette Rivers within a 25 mile radius of Portland, but includes no territory on the Washington side of the Columbia. It includes all available records of birds found within this district together with migration and nesting data. A total of 187 spp. are listed, of which 55 are classified as permanent residents, 43 as summer residents, 33 as winter residents, and 56 as transients and casuals. For historical purposes it also contains a list of all spp. of European birds released within the territory, including a considerable number of song birds released between 1889-1895. Of these all save the Ring-necked Pheasant, European Partridge, and the English Sparrow have disappeared.—*I. N. Gabrielson.*

2880. KURODA, NAGAMICHI. On the avifauna of the Riu Kiu Islands. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1039-1040. 1926(1928).—From these islands 281 spp. and subspp. of birds, belonging to 52 families and 194 genera, are known. There are 58 endemic forms. Affinities with Japan are much closer than with Formosa. The Riu Kiu chain is divided into 4 regions. The Shichito Sea separates the Oriental and the Palaearctic elements. The avifauna of the islands depends to some extent on their geological structure.

2881. LINDNER, H. Coleus monedula collaris in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 1(8): 211. 1926.—The first specimen of this eastern subsp. of the Jackdaw to be recorded in northwestern Saxony.

2882. MAYR, ERNST. Zum Vorkommen des Seidenschwanzes, Bombycilla garrulus (L.), in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 1(8): 212. 1926.—The Bohemian Waxwing is present in Saxony nearly every winter, feeding mostly upon mistletoe berries.

2883. MURPHY, ROBERT CUSHMAN, and JAMES P. CHAPIN. A collection of birds from the Azores. *Amer. Mus. Novitates* 384. 23p. 1 pl. 1929.—From April 13, 1927 to Jan. 15, 1928, 35 spp. were collected in the Azores at Fayal, Terceira, Pico, and San Miguel. Frequency distribution curves show the variation and size relationships in 3 geographic races of *Puffinus kuhlii.* First records for the Azores are listed for *Oxyechus v. vociferus* (L.), *Sterna d. dougallii* Montagu, and *Nyctea nyctea* (L.). *Gallinula chloropus* correiana (p. 7) and *Regulus r.* inermis (p. 15) are described. Data are given on numbers observed, plumage, nesting habits, condition of gonads, numbers of eggs, etc.—*W. A. Dreyer.*

2884. NICHOLS, J. T., Editor. The season. LXXIX. February 15 to April 15, 1930. *Bird-Lore* 32(3): 203-218. 1930.—JOHN B. MAY, for the Boston region, reports many sea birds killed by oil along the Massachusetts coast; first record of *Uria troille troille* for Rhode Island; 10,000 eiders at Martha's Vineyard, April 9; the last heath-hen still surviving on this island; and evening grosbeaks common, including 3 birds banded in Michigan. Nichols, for the New York region, reports a flock of 1000 or more cowbirds wintering on Long Island; a turkey vulture at Kingston, New York; and a purple grackle with a white tail appearing for the 7th consecutive year at Flushing, Long Island. JULIAN K. POTTER, for the Philadelphia region, reports 100,000 white-winged scoters off Cape May, New Jersey, April 6; and 100 snow geese in New Jersey, March 9. H. C. OBERHOLSER, for the Washington (D. C.) region, reports American coot and whistling swan wintering on the Potomac River. FRANCIS M. WESTON, for the Pensacola (Florida) region, reports marsh hawks common, but adult ♂♂ extemely rare, and gives migration and nesting data on many other species. ROBERT L. BAIRD, for the Oberlin (Ohio) region, reports 2 blue geese among 4000 Canada geese at Kingsville, Ontario, April 3 and 4; a northern yellowthroat at Wooster, Ohio, March 15; 5000 whistling swans near Toledo, Ohio, March 30. JAMES S. WHITE, for the Chicago region, reports thousands of Lapland longspurs on April 6. THOS. S. ROBERTS, for the Minnesota region, corroborates W. W. Cooke's view that earliest migrants accompany the isotherm of 35° northward, while later far-traveling species respond to established cyclic prompting from within. W. H. BERGTOLD, for the Denver region, reported large numbers of Hepburn's, brown-capped, and gray-crowned rosy finches, and snow buntings wintering in North Park, Colorado; extraordinary numbers of water birds in Colorado during the winter and spring. IRA N. GABRIELSON, for the Portland (Ore.) region reports a tremendous number of birds perishing during an unprecedented Jan. storm; tens of thousands of migrating water-fowl at Tule Lake, California, Feb. 20. AMELIA S. ALLEN, for the San Francisco region, gives many migration and nesting dates.

2885. NICHOLS, J. T. [Editor]. The season. LXXX. April 15 to June 15, 1930. *Bird-Lore* 32(4): 276-293. 1930.—JOHN B. MAY, for the Boston region, reports turkey vultures in Massachusetts and Connecticut, a black vulture in Conn., a fish crow in Mass., and an orange-crowned warbler that wintered in Mass. J. T. Nichols, for the New York region, reports a Wilson's phalarope on Long Island June 17 and 18, and a song sparrow apparently migrating as late as May 23 in New York. JULIAN K. POTTER, for the Philadelphia region, lists 150 spp. seen in New Jersey on May 18.

HARRY C. OBERHOLSER, for the Washington (D. C.) region, gives various migration and nesting data. ROBERT L. BAIRD, for Oberlin (Ohio) region, reports the Black-poll Warbler as late as June 16; the 1st definite breeding of Bewick's wren in that region; and individuals of various species as much more abundant about Toledo than about Oberlin. FRANCIS M. WESTON, for the Pensacola (Florida) region, reports clear weather as having evidently enabled many spring migrants from across the Gulf of Mexico to pass over Pensacola without stopping. JAMES S. WHITE, for the Chicago region, reports a European widgeon, April 15 and 17; a prairie falcon, May 4; the upland plover increasing as a breeder; a nesting colony of Brewer's blackbird. THOS. S. ROBERTS, for the Minnesota region, reports Hudsonian curlew at Lake Pepin, May 30, Barrow's Goldeneye at Cass Lake, May 5-7, ferruginous rough-leg hawk at Lake Pepin, May 20, Hudsonian godwit at Pipestone May 13, and a vast migration of flickers in Minnesota and North Dakota, on April 10. W. H. BERGTOLD, for the Denver region, reports numerous migration data. IRA N. GABRIELSON, for the Portland (Oregon) region, reports thousands of northern phalarope at Astoria, May 14; tree swallows replacing arctic three-toed woodpeckers as nesters in dead pines about Fish Lake in the Crater National Forest. AMELIA S. ALLEN, for the San Francisco region, reports various migration and nesting data.

2886. NICHOLSON, E. M. Supplementary report on the "British Birds" census of heronries. *British Birds* 23(12): 324-337. 1930.—This report, supplementary to one published in 1929, gives statistics on many existing and extinct heronries in England and Wales, with notes on attacks by various species of Falconidae, Corvidae, and Laridae, fertility, mortality, breeding dates, nesting sites, flights, etc.

2887. SAUNDERS, ARETAS A. The summer birds of the northern Adirondack mountains. *Roosevelt Wild Life Bull.* 5(3): 328-500. 1 map., 2 col. pl. 160 fig., with a reprint of a list of 97 "Summer birds of the Adirondacks in Franklin county, New York," by THEODORE ROOSEVELT, Jr., and H. D. MINOT. pp. 501-504. 1929.—Two summers (1925 and 1926) were spent in portions of Essex and Franklin Counties, New York, making field studies of birds; 108 spp. were found, which, with those previously reported, make a total of 121 spp. for the region. These are listed, and described for the use of field students. *Vireosylva philadelphica* is reported apparently for the first time in New York State in summer. *Vermivora peregrina* was observed feeding young. Previous breeding records of this species in this region have been indefinite. Several records of the occurrence of *Dendroica castanea* have been added to those recently published. All of these are sight records, however, no specimens having been taken. Observations on nesting, food of young, and feeding habits of various species have been added. In Franklin County comparisons are made between bird life at present with that of 50 years ago, as reported by Roosevelt and Minot and reprinted in this bulletin. The larger species of water birds, game birds and birds of prey have evidently decreased. Settlement of the region has increased areas of cleared land and second growth, bringing an increase of species that live in such habitats. The spruce partridge, three-toed woodpecker, and Canada jay have decreased or entirely disappeared. Smaller birds of the mature forests are for the main part in about the same abundance as previously, within areas that are still suitable for them. The inter-relations of birds and forests are discussed and reasons given why birds should be considered of equal importance with parasitic insects in keeping harmful insects in check. The figures are chiefly photographs of scenery and vegetation of the region, but also include photographs of some birds and their nests.—*A. A. Saunders.*

2888. [SHIBANOV, N. V.] ШИБАНОВ, Н. В. К орнитологической фауне Русской Лапландии. (The avifauna of Russian Lapland.] (German summary.) Мемуары Зоологического Отделения Общества Любителей Естествознания, Антропологии и Этнографии (*Mém. Sect. Zool. Soc. Amis Sci. Natur. Anthrop. Ethnogr. Moscou, URSS.*) 3. 3-28. 1 pl. 1927.—This report is based upon the collections and notes of S. S. Tchetwerikow's expeditions of 1921 and 1926 to the Hibiner Mts. and the Murman coast. Among the 78 forms mentioned the following are recorded for the first time from Russian Lapland: *Podiceps nigricollis, Erythropus vespertinus, Asio otus, Certhia familiaris,* and *Turdus atrogularis.* Of these, *Certhia familiaris* is possibly a rare breeder in the Hibiner Mts., but the others are probably accidental visitors. *Emberiza aureola,* first found nesting at Lake Imandra in 1914, is not rare there at present. The author also comments on some peculiarities of the molt in the Picidae and on changes in the first primary with age.—*From author's summary.*

2889. SŬLPIN, L. Notes sur les oiseaux d'Altai. *Mus. Zool. Acad. Sci. URSS.* 29: 15-16. 1928.—The route of the author's travelling in the northern and central Altai and brief remarks on the distribution, occurrence, and ecology of the most interesting birds (68 spp.) observed. —*L. Sŭlpin.*

2890. VAUGHAN, J. H. The birds of Zanzibar and Pemba.—Part II. [Concluded.] *Ibis* 6(1): 1-48. 3 pl. 1930.—*Charadrius marginatus tenellus,* nest and eggs*; *Burhinus v. vermiculatus,* nest and eggs*; *Centropus superciliosus intermedius* Someren and *Halcyon senegaloides ranivorus* Meinertz are not considered valid races; *Caprimulgus f. fossii,* nest and eggs*; the type-locality of *Thripias namaquus decipiens* (Sharpe) is "Shimba Hills, behind Mombasa" and not Zanzibar, where the species does not occur; the type-locality of *Argya rubiginosa heuglini* Sharpe probably is the mainland rather than Zanzibar Isl., where the bird does not appear to occur; *Phedina borbonica madagascariensis* Hartl. is recorded from Pemba (Nov.-March) and this constitutes the first record outside of Madagascar; *Urobrachya axillaris zanzibarica* Shelley was described from the mainland opposite Zanzibar and does not appear to occur on the island.—*W. W. Bowen.*

2891. ZIMMERMANN, RUD. Die Lachmöwe, Larus ridibundus L., in Ostsachsen und in der angrenzenden preussischen Oberlausitz. *Mitteil. Ver. Sächs. Ornithologen* 2(2): 41-56. Map, 1 pl. 1927.—The author gives a historical sketch of 24 present and past colonies of this gull. The constitution of numerous artificial ponds during the past few centuries has created favorable conditions for its nesting. The abandonment of various colonies has generally resulted in an increase in the numbers resting in neighboring colonies or in the establishment of new colonies. An extension of the limit of the egging season from April 30 to May 15 is recommended.

2892. ZIMMERMANN, RUD., und RICH. KÖHLER. Ueber das Vorkommen der Weidenmeise, Parus atricapillus salicarius Brehm, in Sachsen und den nord- bezw. nordöstlich angrenzenden Landschaften preussischen Anteiles. *Mitteil. Ver. Sächs. Ornithologen* 2(6): 235-256. Map, 3 pl. 1929.—Detailed records, with a distributional map, show the occurrence of the willow tit in southwestern and northeastern Saxony and in the adjacent parts of Prussian Saxony and Silesia. There are few records for central Saxony and none for northwestern Saxony. The bird's principal habitat is in damp mixed woods, with a thick undergrowth, near ponds or streams. Some of its typical avian associates are listed.

LIFE HISTORY

2893. ALLARD, H. A. The first morning song of some birds of Washington, District of Columbia; its relation to light. *Amer. Naturalist* 64(694): 436-469. 1930.—The first morning calls or songs of 14 birds common in the vicinity of Washington, have been recorded, and plotted in relation to the curves of Civil Twilight and sunrise. The data indicate that all the birds are highly sensitive to the coming day, some species appreciating very low

light intensities with considerable accuracy. Certain analogies are drawn between this behavior of the birds and the migration urge. The opinion is expressed that the exactness of the migratory movements, like the exactness of the timing of the first morning expressions, is in some manner dependent upon the sun.—*H. A. Allard.*

2894. **BREADY, MARCIA BROWNELL. The European starling on his westward way.** 141p. 1 col. pl., 1 fig. The Knickerbocker Press: New York, 1929.—The food habits and economic status of *Sturnus vulgaris* in the U. S. A. and abroad are reviewed. Its songs and calls are represented by musical notation, and comparison is made with the music of other birds and of man. In this respect it is considered "man's equal, in kind, if not in degree." Imitation of other birds' notes is questioned, but it is considered possible that the species, after hearing human music, has adopted certain features of it. The history of avian taxonomy, with particular reference to the starling, is briefly sketched.

2895. **BRECKENRIDGE, W. J. Breeding of Nelson's sparrow (Ammospiza nelsoni) with special reference to Minnesota.** *Univ. Minnesota Mus. Nat. Hist. Occ. Papers* 3. 29-38. 2 pl., 1 col. fig. 1930.—A review of previous records, including 2 from Minnesota. The juvenal plumage is described, and a colored fig. shows adult and juvenal plumages of both Nelson's and Leconte's sparrows. Photographs of adult, nest with eggs and habitat are represented by musical notation, and comparison is

2896. **BROWN, R. H. The food of certain birds of prey.** *British Birds* 23(10): 269-272. 1930.—Notes on food found at the nests or feeding places of the raven, 3 spp. of owls, 5 spp. of hawks, and the common heron in northern England. Various birds and mammals formed the principal food of all except the heron, the young of which disgorged fishes and frogs as well as some small mammals.

2897. **CHANCE, EDGAR. Notes on cuckoos in 1930.** *British Birds* 24(4): 100-102. 1930.—Descriptions of parasitic relations of *Cuculus c. canorus* with *Turdus m. merula*, the hedge sparrow, *Anthus pratensis*, *Saxicola r. rubetra*, *Motacilla alba yarrellii*, *Sylvia u*[*ndata?*] *dartfordiensis*, *Emberiza c. calandra*, and the reed warbler.

2898. **DROST, RUDOLF. Ueber die Wanderungen der Helgoländer Lummen (Uria aalge helgolandica Lönnberg).** *Vogelzug.* 1(1): 21-29. Map. 1930.—This subsp. is found at the Helgoland nesting-site regularly from mid-April to the latter part of July, but only irregularly at other seasons. From return records of banded birds it appears that in Aug. most of the young move north to southern Scandinavia, and by Feb. a few have wandered to Danzig, England, and western France. During the winter the adults do not seem to wander far from Helgoland, though a few have been taken in Denmark and England. They go in flocks of varying size. Perhaps the movements of the guillemots are correlated with those of schools of sprats and herrings. They are also influenced by ice conditions. The oldest bird recovered was at least 7 years old. Most recoveries have resulted from the birds being hunted for their flesh. Some are caught in fish nets.

2899. **SCHÜZ, E. Aus dem Leben des Mauerseglers, Apus apus (L.).** *Vogelzug* 1(2): 67-69. 1930.—Banding records in Germany show that swifts often change mates, though constancy also is common. This species, with 2 young per year, maintains its numerical status as well as tits, which have about 20 young. It seems to have less mortality and a longer period of reproductive activity than the tits. A banded individual was retaken after 10 yrs.

2900. **DROST, RUDOLF. Untersuchungen an beringten Fichtenkreuzschnäbeln (Loxia c. curvirostra L.).** *Vogelzug* 1(2): 69-72. 1930.—Invasions of crossbills occurred on Helgoland during 2 recent summers. In 1927, 96 birds were banded; in 1929, 57. There was 1 return record from Germany, and 1 from Italy. In each year the adults banded were about 22% of the total. Wings were longer in ♂♂ than in ♀♀, and longer in adults than in juveniles. A similar relation was evident in body weights. Bending of the mandible to the left, compared with bending to the right, was in the ratio 145: 100.

2901. **DROST, RUDOLF. Vom Zug der Amsel (Turdus m. merula L.).** *Vogelzug* 1(2): 74-85. 2 map. 1930.—Birds breeding in Denmark and southern Scandinavia migrate (through Helgoland) chiefly in a southwestward direction to France and Spain. The migration of individuals varies considerably in different years, probably on account of the weather. Returns indicate that about a third of the breeders in Germany migrate, the rest being sedentary. It is not only birds of the 1st year that have the migratory instinct. The general direction of migration of German breeders is southwestward, to Belgium, France, and northern Italy. The oldest bird recovered was at least 4½ yrs. old.

2902. **GEYR von SCHWEPPENBURG, H. Zum Zuge von Sylvia curruca.** *Jour. Ornith.* [*Berlin*] 78(1): 49-52. 1930.—In view of the location of its breeding area in Scandinavia, and the course of its migration southeastward to the eastern Mediterranean, *S. curruca* may be considered to have occupied Europe from the east and southeast after the Glacial Period. In the spring it appears regularly on Fair Isle, evidently migrating from the southeast through England and Scotland, then passing on to its summer home in Scandinavia. In the fall the reverse route is followed. *Lanius collurio* has a similar migration route, at least in spring.

2903. **GORDON, AUDREY SETON. Some breeding-habits of the Goosander.** *British Birds* 23(9): 245-247. 1 fig. 1930.—Observation on a nest in a hollow alder tree in Scotland indicates that the eggs were incubated for at least 31 days before hatching about May 15. The young jumped out of the nest without assistance when about 2 days old, and probably would have remained longer if not disturbed.

2904. **GORDON, SETON. Sea birds and seals.** *Proc. Roy. Inst. Great Britain* 26(2): 222-226. 3 fig. 1930.—Abstract. The great grey or Atlantic seal* produces its young in late autumn on remote islands in Great Brit. The young are land animals during their first 4-6 weeks. Gannets* breeding on St. Kilda journey regularly a distance of about 100 miles to the vicinity of Skye to fish. In making a dive from the air, the gannet usually flaps its wings until the last moment before it touches the water, and swallows its catch before emerging. Stormy petrels being nocturnal, often appear in the gloom preceding a storm; hence the superstition that their appearance presages a storm.

2905. **KILGORE, WILLIAM. Breeding of the Connecticut warbler (Oporornis agilis) with special reference to Minnesota.** *Univ. Minnesota Mus. Nat. Hist. Occ. Papers* 3. 15-26. 2 pl. 1930.—A detailed account of the finding of a nest, and a review of all previous records of the breeding of this species, are given, with a bibliography.

2906. **LAUBMANN, A. Beiträge zur Kenntnis des Verlaufes der Handschwingenmauser bei den Alcedinidae III.** *Verhandl. Ornithol. Ges. Bayern* 18(1/2): 158-160. 1929.—Four specimens of *Monachalcyon* (*Caridonax*) *fulgidus* from Sunda taken from March to May show clearly the course of molt in the primaries; it progresses regularly from the proximal to the distal end as in some other kingfishers—*Halcyon* (*Sauropatis*) *chloris* and *H.* (*Entomobia*) *smyrnensis*. The molt of the tail feathers also begins with the innermost pair and extends outwards.—*M. M. Nice.*

2907. **LAW, J. EUGENE. Down-tree progress of Sitta pygmaea.** *Condor* 31(2): 45-51. 9 fig. 1929.—Down-tree progress is by a series of sidling hops or drops, with one foot up-trunk, its grasp transverse to the trunk-axis, the other foot below for support. Adults search for food and bring it to the nest independently. Fecal sacs are usually deposited on some high tree limb. Flies, resembling *Protocalliphora*, have been seen about nests of this species and of chickadees and bluebirds. A young *Sitta* bodily pulled out of a nest hole by one parent

made off to an adjoining tree where it progressed upward mainly by rapid fluttering of the wings.—*T. I. Storer.*

2908. LUYET, BASILE J. Observations on maternal instincts of birds. *Amer Naturalist* 64(694): 476-480. 1930.—Experiments with nesting birds in Switzerland led to the following conclusions: A sudden fright caused a blackbird to abandon its nest and eggs. A warbler, though frightened by a lizard fastened close to its nest, fed its young ones after a delay of 10 minutes. Repeated disturbances during incubation did not discourage a number of birds. The blindness of maternal instinct is shown by the fact that a bird is not affected by differences of size or color in eggs or young, and does not discriminate easily between a true egg and an empty shell. The movements of food-bringing are considered akin to purely mechanical movements. A bird seems not to have a well-developed knowledge of the specification of different kinds of danger.

2909. MEYER, OTTO. Uebersicht über die Brutzeiten der Vögel auf der Insel Vuatom (New Britain). *Jour. Ornith.* [*Berlin*] 78(1): 19-38. 1930.—Reproductive activity is here more dependent on the weather, which is quite variable, than upon food, which is abundant throughout the year. Molt has very little effect on breeding, and the voices of birds do not always give indication of the season. Traveling from one island to another is a negative sign. Stormy weather, either dry or rainy, has a very unfavorable effect upon breeding. Records of many species, as given in several tables, show that some breed more or less constantly throughout the year, some breed during a longer or shorter season, and some have 2 breeding seasons per year. Most species breed twice per year, chiefly in the transition months between the northwest and the southeast trade winds. These observations agree in general with those of Sody in Java and of Snethlage in Brazil. The small number of eggs laid by most species is considered correlated with the uniformity of the temp., which does not incite the birds to any special laying activity.

2910. RITTER, WM. E. Activities of the California woodpecker. *Scientific Monthly* 31(3): 253-257. 1930.—Adaption and maladaption in activities of these birds are discussed. Adaptive: nest-hole making was transferred from oaks to telegraph poles near Grass Valley, California; 70% of the holes were on the north or lee side, most storms here are from the south; 5% were on the south, or stormy side, remainder on east or west side. Hence protection from storms secured in oaks by placing holes on the undersides of branches was here secured by selecting the lee side of poles. Maladaptive: Desiccation cracks in power-line poles were much used for storing acorns. The swelling of the wood by winter rains closes the cracks and crushes the acorns, thus largely defeating the purpose for which nuts are stored.—*W. E. Ritter.*

2911. RYVES, B. H. The breeding-season of 1929 in N. Cornwall. *Ann. & Mag. Nat. Hist.* 5(29): 564-567. 1930.—A survey of climatic conditions and a study of the effect on fecundity and breeding generally. The conclusion is that the output of the larger species of birds has been about normal, but that of many smaller resident species has been about 30% below the average covered by a period of years. A table of clutches for 1929 is given.

2912. SCHUMANN, AD. Kreuzung zwischen Larus ridibundus L. und Larus canus L. *Zool. Garten* [*Leipzig*] 2(7/9): 199-201. 1 fig. 1930.—This hybridization took place in the Sofia zoo between a *L. canus* (probably ♂) at least 22 yrs. old and a *L. ridibundus* (probably ♀) at least about 10 yrs. old. Both egg and young* showed chiefly the characteristics of the latter species.

2913. SCHÜZ, E. Die Verteilung des Herbst-Vogelzugs im Gebiet des Kurischen Haffs. *Naturwissenschaften* 18(20/21): 480-482. 2 fig. 1930.—Fall migration in the region of the Kurische Haff, Prussia and Lithuania takes place on a broad front. The chief lines of flight (shown on map) are: the coast north of Memel, the Kurische Nehrung, and the eastern coast of the Kurische Haff. Aside from the many birds that fly across the Haff from a projecting point on the eastern coast to the Nehrung, the number of those that venture over large bodies of water is quite limited.

2914. SIEWERT, HORST. Bilder aus dem Leben eines Sperberpaares zur Brutzeit. *Jour. Ornith.* [*Berlin*] 78(2): 245-254. 12 pl., 1 fig. 1930.—These studies of a pair of breeding sparrow hawks (*Accipiter nisus*), were made in Germany. The building of the nest lasted 14 days. The eggs were laid at intervals of 2 days, the ♀ beginning to incubate after laying the 2nd and 3rd egg. The markings of the eggs and the size of the clutch are correlated with the maturity of the birds. Oviposition lasts about 3 minutes. During incubation the ♂ feeds the ♀, the transfer of prey taking place at a regular feeding perch, to which the ♀ is summoned by calls. While the ♀ feeds, the ♂ appears at the nest. The eggs are turned about every 20 minutes, usually with the bill, sometimes with the talons. As soon as the laying is finished, the ♀ begins to molt, but not the ♂, which requires its full power of flight for hunting. The illustrations include photographs of the adults in various poses at the nest.—*From author's summary.*

2915. STEINBACHER, GEORG. Entwicklung und Bau der roten Stirnpapillen bei Dunenjungen von Fulica atra. *Jour. Ornith.* [*Berlin*] 78(1): 53-58. 2 pl. 1930.—The red frontal papillae represent a peculiar modification of the nestling down. As the papilla grows, a red lipochrome enters the sheath and the barbs; it has a differentiating effect on the growth of the intermediary cells and so gives rise to these unusual formations.

2916. YOUNG, C. J. A study of the rhinoceros auklet and other birds in British Columbia, 1929. *Rept. Prov. Mus. Nat. Hist.* [*Victoria, B. C.*] 1929: F 16-F 19. 1 pl. 1930.—The author describes the breeding habits of *Cerorhinca monocerata* and *Ptychoramphus aleuticus* on Pine Isl. in Queen Charlotte Sound, and gives notes on various other birds of that general region.

MAMMALIA

GERRIT S. MILLER, *Editor*

REMINGTON KELLOGG, *Associate Editor*

(See also in this issue Entries 898, 994, 1052, 1367, 1633, 1940, 2181, 2194, 2211, 2258, 2262, 2279, 2280, 2293, 2294, 2299, 2683, 2820, 2834, 2904)

2917. ALLEN, GLOVER M. Bovidae from the Asiatic expeditions. *Amer. Mus. Novitates* No. 410. 11p. 1930.—Lists 12 spp. and subspp. of the family obtained in Mongolia and China by the Asiatic Expeditions of the American Museum. *Capricornis sumatraensis* **montinus** (p. 5) is described from the Lichiang range, Yunnan Province, China. Three races of goral are recognized from China, and are regarded as subspp. of *Naemorhedus goral.* For the Mongolian gazelle, Heude's name *hillieriana* is revived as probably designating a valid subsp. of *Gazella subgutturosa.*—*G. M. Allen.*

2918. AMSCHLER, JOH. WOLFG. Gengeographische Studie am Hissarschaf. *Zeitschr. Züchtungskunde* 4(7): 336-341. 2 fig. 1929.—The "Hissar" sheep was discovered in Westpamir (Turkestan) in 1927. Its general characteristics are those of the fat-rumped sheep. Genetically it is noteworthy in that it represents a true prototype, with unusual variability as regards all the known characteristics of the domestic sheep. Withers 65-98 cm., weight 45-200 kg. The coat ranges from actual hair to wool, and from dirty white to brownish black.—*J. W. Amschler* (*transl. by J. A. F. Roberts*).

2919. ANTONIUS, OTTO. Beobachtungen an Rindern in Schönbrunn. I. Die Schari-Büffel. *Zool. Garten* [*Leipzig*] 3(4/8): 145-152. 5 fig. 1930.—A description of two young animals (*Bubalus caffer** subsp.) from French Equatorial Africa is followed by a discussion of variation in African buffaloes and its correlation with habitat. The author considers the possibility of such variation arising through interbreeding of forest types with plains types where their ranges meet.

2920. BLACK, DAVIDSON. Further hominid remains of Lower Quaternary age from the Chou Kou Tien deposit. *Nature* [*Gr. Britain*] 120: 954. 1927; also in *Science* 67(1727): 135-136. 1928.

2921. BRANDES, G. Wie kommt das eben geborene Kängaruh in den Brutbeutel? *Zool. Garten* [*Leipzig*] 3(1/3): 68-69. 1930.—According to an observation reported from Australia, the mother, by constant licking, directed the young one from the cloaca to the pouch along her belly.

2922. BRANDES, G. Die Begattung der Orangs. *Zool. Garten* [*Leipzig*] 3(4/8): 216-217. 1930.—Description of the mating of orangs.

2923. CABRERA, ANGEL. Catálogo descriptivo de los mamíferos de la Guinea española. [Descriptive catalog of the mammals of Spanish Guinea.] *Mem. Soc. Españ. Hist. Nat.* 16(1a): 5-121. 1929.—This is a revised edition of the author's previous list of 1908, enumerating the mammals known today from the Spanish possessions in the Gulf of Guinea, especially Rio Muni and Fernando Po. In all, 135 spp. or subspp. are included, with synonymy, a brief description, and a statement of the range in W. Africa. Various comments on terminology are made, and a few changes in nomenclature: *Hipposideros ruber* **guineensis** (*H. caffer g.* Andersen) (p. 19); *Civettictis civetta* **schwarzi** (*Viverra c. orientalis* Mats., not *V. o.* Hodg.) (p. 36); *C. c.* **congica** (p. 36), Upper Congo; *Enoticus elegantulus elegantulus* (Lecomte) (=*Galago elegantulus tonsor* Dollman); the genus *Mandrillus* is represented by *M. sphinx, M. sylvicola,* and *M. poensis* in the area covered, and the synonymy is revised; *Colobus anthracinus,* of Fernando Po, is regarded as distinct from the continental *C. satanas* Schlegel (=*Stachycolobus municus* Matschie); *Anthropopithecus satyrus* (L.) (=*A. niger* Matschie); *A. tschego* (Duvernoy) (=*A. ochroleucus* Matschie). The introduced *Rattus norvegicus* is known from Fernando Po, but all the available continental specimens of the genus proved to be *R. rattus.* The list is intended as a basis for future work on the mammalian fauna of the area and as a guide for naturalists and others for use in identifying the species.—*G. M. Allen.*

2924. CABRERA, ANGEL. A note on the name of the Javanese gibbon. *Proc. Zool. Soc. London* 1930(1): 257. 1930.—*Simia moloch* Audebert, 1797, has priority over *S. leucisca* Schreber, 1799, and *S. cinerea* Latreille, 1804.

2925. CAMACHO, C. El conejo silvestre. [The wild rabbit.] *Chile Min. Fomento Bol. Dept. Agric.* 1(10/12): 3-12. 1 pl., 3 fig. 1929.—A discussion of the wild rabbit, its injury to the crops and methods of its control by means of traps, poisoned water, and fumigation.

2926. CAUVET, G. Dromadaires à 34 dents et Dromadaires à 36 dents. *Bull. Soc. Hist. Nat. Afrique Nord* 20(9): 247-256. 1 fig. 1929.—The breed of camel common in northern Africa, particularly in Algiers, has a total of 34 teeth, and retains only the 1st and 4th of the original 4 premolars in the lower jaw. The camels of the Sudan and southern Sahara commonly have an additional pair, representing the 3rd lower premolars, making a total of 36 teeth. The presence of the additional pair of premolars, with other slight differences in body form, are believed to parallel the Pleistocene *Camelus siwalensis* of the Siwalik Hills and *C. alutensis* of Aluta, west of Bucharest, and to constitute the Sudan camel a breed separate from the Algerian camel. The latter is, therefore, more advanced in the evolutionary scale. The need for further observations on the supposed uniformity of this character in the Sudan camel is suggested. A few notes on tooth anomalies are given, i.e., a lower jaw with supernumerary canine, and another with supernumerary small premolar.—*G. M. Allen.*

2927. CHAPEL, F. de. Vieux souvenirs au sujet des loups. *Bull. Soc. Nat. Acclimat. France* 77(2): 27-28. 1930.—Records of wolves of the 19th century in southern and central France.

2928. CHAPPELLIER, A. [Acclimatations de rats musqués en Europe.] *Bull. Soc. Nat. Acclimat. France* 77(1): 6-8. 1930.—Abstract.

2929. COLTON, HAROLD S. The activities of pack rats. *Arizona Wild Life* 2(3): 11. 1930.—The longest record made on a spinning wheel extended 155 days. This male rat averaged 5¼ miles per night while the best average of 11 miles a night for 45 days was made by a female.

2930. COOK, HAROLD J. Occurrence of mammoth and giant bison in glacial moraines in the high mountains of Colorado. *Science* 72(1855): 68. 1930.

2931. DECHAMBRE. [L'étude sur le poil de l'Oréamne ou Chèvre des Montagnes Rocheuses.] *Bull. Soc. Nat. Acclimat. France* 77(1): 8-10. 1930.—Abstract.

2932. DETTE, KURT. Halitherium schinzi Kaup im norddeutschen Septarienton. *Zeitschr. Deutsch. Geol. Ges.* 81(10): 539. 1929.—This find, not previously reported from this formation, is an important connection between the Middle Oligocene fauna of N. Germany and that of western Europe.

2933. EHIK, GYULA. Magyarország Földipockai. [The Hungarian species of the genus Pitymys.] *Ann. Hist. Nat. Mus. Nation. Hungarici* 24: 54-80. 1 pl., 3 fig. 1926.—The systematic position and relationships, geographic distribution, and habits of the genus are discussed; remarks on specific characters and a table of cranial measurements are also given. Pagination is that of the English text. *Pitymys subterraneus** **wettsteini** (p. 75); *P. dacius* **hungaricus*** (p. 77). Types are in Hungarian Nat. Mus.

2934. ÉHIK, J. Prodinotherium hungaricum n. g., n. sp., with an appendix by SZALAY, T.: On the geological occurrence of Prodinotherium hungaricum Éhik. [In English, with Hungarian summary.] *Geologica Hungarica Palaeont.* No. 6. 1-24. 4 pl. 1930.—*Dinotherium* **hungaricum** (p. 14), Hungary, Aquitanian; **PRODINOTHERIUM** (p. 14), erected for *P.* hungaricum (*Dinotherium h.* Éhik) (p. 14).

2935. [FLEROV, K. K.] ФЛЕРОВ, К. К. Некоторые новые данные о косулях (Capreolus Frisch) восточной Азии. [New data on the roe deer of eastern Asia.] Доклады Академии Наук СССР, Ленинград, Сер. А. (*Comptes Rend. Acad. Sci. URSS. Leningrad, Sér. A.*) 1929(18): 429-432. Map. 1929.—*Capreolus pygargus pygargus* is found in the Transbaikal and upper Amur regions, east to the Stanovoi Mts. and south almost to Tibet. *C. pygargus bedfordi* ranges from the central and lower Amur regions south to Korea and Shansi. *C. p. melanotis* occurs in central China. The immature, spotted pelage is described.

2936. FRANÇOIS, EDM. Madagascar: Rats. A menace to coffee plants. *Internat. Bull. Plant Protect.* 4(1): 5-6. 1930.

2937. FREUDENBERG, WILHELM. Die ersten Primatenfunde von Bammental bei Mauer a. d. Elsenz aus praeglacialen Neckarkiesen. *Verhandl. Ges. Phys. Anthrop.* 3: 68-82. 2 pl., 1 fig. 1929.—*Postpliopithecus hominoides* is described from a diaphysis of femur as large as *Hylobates* femur but with signs of biped habit, i.e., prominent pilaster, parallel rows of Haversian canals in the distal end, like *Homo,* and a convex facies poplitea, like *Pithecanthropus.* The second fossil is the axillary margin of scapula referred to *Homo heidelbergensis* Schoetensack. It is straight, with a rounded edge like young *Homo neanderthalensis* from Chringsdorf and Krapina, and confirms the descent of the latter from Heidelberg man. The teres region is well developed and the width of the scapula suggests that of a large gorilla.—*W. Freudenberg.*

2938. GARIBI, J. IGNACIO DAVILA. El venado entre los antiguos pobladores de Jalisco. Contribución

a los estudios históricos, etnográficos y folklóricos precolombinos Jalisciense. [The deer among the ancient peoples of Jalisco.] *Mem. y Rev. Soc. Cient. "Antonio Alzate"* 49(7/12): 447-460. 1928.

2939. **GAZIN, CHARLES L.** Tertiary mammalian fauna from the Upper Cuyama drainage basin, California. *Bull. Geol. Soc. America* 41(1): 214. 1930.—Abstract.

2940. **GRANDIDIER, G.** Un nouveau type de mammifère insectivore de Madagascar. *Bull. Acad. Malgache* 11: 85-90. 2 pl. (1 col.), 9 fig. 1928(1929).—**DASOGALE** (p. 85), near *Echinops*, erected for *D.* **fontoynonti*** (p. 85). The skulls of several other members of the Centetidae, with which it is compared, are figured, and its phylogenetic significance is discussed.

2941. **GROTE, H.** Über den gegenwärtigen Stand der Pelztierzucht in Russland. *Zool. Garten* [*Leipzig*] 3 (1/3): 67-68. 1930.—In the last two years a number of government fur-farms have been organized in Russia and Siberia. Seven of the most important ones now contain 738 black foxes, 72 foxes of local races, 258 arctic foxes, 95 sable, and 59 mink. There are also over 2000 arctic foxes in a preserve on the Commander Is. Numbers of muskrats have been introduced into northern Russia and Siberia.

2942. **HARTMAN, CARL G.** The story of the baby opossum. *Nature Mag.* 16(2): 93-96. 10 fig. 1930.—A popular account of the embryology of the opossum*.

2943. **HAYASI, KYO.** A call for the protection of the whale. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1079-1085. 1926(1928).—All kinds of whales living in the waters around Japan are decreasing, not only in number, but also in size. The less valuable species are exploited as the more valuable ones disappear. Charts show the general decline of the Japanese fishery for blue, California gray, humpback, finback, sei, and sperm whales from 1910 to 1924. Protection can be obtained only by international agreement.

2944. **HEINZE.** Erfolgreiche und schnelle Vertilgung von Mäusen. *Forstarchiv* 5(8): 163-164. 1929.—Bacilli in "Mäusekrieg" bait cause the mice to die in their burrows in 10-14 days.—*N. W. Hosley.*

2945. **HENNIG, R.** Die Kenntnis des Eisbären im Mittelalter. *Zool. Garten* [*Leipzig*] 3(1/3): 64-67. 1930.—This species become known to Norwegian voyagers to northern Russia and Greenland about the 10th and 11th centuries. By the 12th and 13th centuries the pelts had become known to Arabian traders in northern Russia. About the same time Marco Polo reported the species from northern Asia.

2946. **HEURN, JHR. W. C. van.** Een inlandsche val voor in het veld levende ratten in de miinahasa. *Landbouw* [*Buitenzorg*] 6(2): 219-221. 1 fig. 1930.—The author describes a rat-trap used by the native farmers on the northern peninsula of Celebes in their dry rice and corn fields.

2947. **HOEPEN, E. C. N. van.** Vrystaatse Fossiele Perde. [Orange Free State fossil horses.] [German summary.] *Paleont. Navorsing Nasion. Mus. Bloemfontein* 2(1): 1-11. 10 fig. 1930.—*Equus* **gigas*** (p. 2), Pleistocene; *E.* **platyconus*** (p. 4), Pleistocene; *E.* **simplex*** (p. 5), Pliocene?; *E.* **simplicissimus*** (p. 6), Pliocene?; **STERROHIPPUS** (p. 6), type *S.* **robustus*** (p. 6), Pliocene; **KRATEROHIPPUS** (p. 7), type *K.* **elongatus*** (p. 8), Pleistocene; **KOLPOHIPPUS** (p. 8), type *K.* **plicatus*** (p. 9), Pliocene? Types apparently in Paleont. Navorsing Mus.—*E. C. N. van Hoepen.*

2948. **HOEPEN, E. C. N. van.** Fossiele Perde van Cornelia, O. V. S. 2. [Fossil horses of the Free State, Union of South Africa.] *Paleont. Navorsing Nasion. Mus. Bloemfontein.* 2(2): 13-24. 22 fig. 1930.—Lower and Upper Pliocene beds recorded for the 1st time in South Africa. *Equus* **louwi*** (p. 19), Pliocene, Cornelia beds; *Hipparion* **steytleri*** (p. 21), Lower Pliocene; **EURYGNATHOHIPPUS** (p. 23), genotype *E.* **cornelianus*** (p. 23), Tertiary beds.—*E. C. N. van Hoepen.*

2949. **HUGUES, CAMILLE, and SYLVAIN GAGNIÈRE.** La Grotte Moustérienne de l'Esquicho-Grapaou. *Bull. Soc. d'Étude Sci. Nat., Nimes* 45: 7-10. 1 fig. 1930.—Bones of *Canis lupus, Equus caballus, Bos taurus, Cervus elaphus, C. tarandus,* and *Capra* sp. are recorded from this cave in Gard, France.

2950. **INUKAI, TETSUO, and KYOJIRO SHIMAKURA.** On Ochotona, a new rodent unrecorded from Hokkaido. [With Japanese summary.] *Trans. Sapporo Nat. Hist. Soc.* 11(2): 115-118. 4 fig. 1930.—No member of this genus was known from Hokkaido until 1928. The sp.* is described but not named. It feeds upon *Rubus palmatus* and young *Laryx kaempferi,* storing these plants in burrows. The damage to larches is serious.

2951. **JACKSON, J. WILFRID.** Note on the animal remains from Garratt Morrissey' Cave. *Univ. Bristol Proc. Spelaeological Soc.* 3(3): 153. 1928(1929).—Rabbit, hare, pig, sheep, reindeer, and large bird, from this cave in Ireland [Pleistocene].

2952. **JEANNIN.** [Les Mammifères du Cameroun.] *Bull. Soc. Nat. Acclimat. France* 77(4): 56-57. 1930.—Abstract.

2953. **JOLEAUD.** [Eléphants nains.] *Bull. Soc. Nat. Acclimat. France* 77(4): 54-57. 1930.—Abstract.

2954. **JOLEAUD.** Le Cerf de Berbérie. *Bull. Soc. Nat. Acclimat. France* 77(6): 86-87. 1930.—This animal [*Cervus elephus barbarus*] is now restricted to the gradually disappearing forests along the boundary of Algeria and Tunisia, but it suffers little direct harm from man.

2955. **JOLY, ROBERT de.** Exploration de l'Aven des Robert. Causse de Blandas (Gard). *Bull. Soc. d'Étude Sci. Nat., Nimes* 45: 11-22. 2 fig. 1930.—Bones of *Homo, Canis vulgaris, Meles taxus,* Capridae, Bovidae, Cervidae, and *Lepus cuniculus* are recorded from this cave in Gard, France. The exact age of the formation is not determined.

2956. **KORMOS, THEODOR.** Amblycoptus oligodon n. g. & n. sp. Eine neue Spitzmaus aus dem ungarischen Pliozän. [In Hungarian and German.] *Ann. Hist. Nat. Mus. Nation. Hungarici* 24: 352-391. 1 pl. 1926.—Soricidae: **AMBLYCOPTINAE** (p. 391), erected for **AMBLYCOPTUS** (p. 352), compared with *Soriculus* and *Neomys,* type *A.* **oligodon*** (p. 353), Hungary, Lower Pliocene, Hipparion fauna, type in Ung. Geolog. Anstalt, Budapest.

2957. **KÜHN, OTHMAR.** Die Robben der Adria. *Zool. Garten* [*Leipzig*] 2(7/9): 194-197. 1930.—Reports, in literature, of the occurrence of seals in the Adriatic are critically reviewed. It is concluded that the monk seal (*Monachus albiventer* Bodd.) exists in the southern Adriatic, but has been, at least since the early 19th century, restricted in distribution there.

2958. **LA DUE, HARRY J.** What do mink eat in the wild? *Amer. Fur Breeder* 3(3): 20. 1930.—Report of contents of dens of 14 litters.

2959. **LEONHARDT, P.** Beobachtungen an Bisamratten. *Aus der Heimat* 43(6): 189. 1930.—Notes on habits of muskrats in Bavaria.

2960. **LIEBERMANN, E.** Beobachtungen bei der Aufzucht junger Eichhörnchen. *Bericht Senckenbergische Naturforsch. Ges.* 60(3): 130-133. 3 fig. 1930.—Gestation in a captive ♀ [evidently *Sciurus vulgaris*] lasted about 4 weeks. The young were born naked. The 1st pubescence appeared in about 2 wks.; the full pelage was developed in 5 wks. The lower incisors emerged on the 22nd and 23rd days; the upper, on the 35th day. The eyes were opened on the 30th day, and the legs supported the body on the 35th day. The young* were nourished entirely by the mother for 8 weeks, and weaned in the 11th wk. They clung to her breast and neck while she moved about and leaped with them. After a separation of 8 wks., there was mutual recognition between mother and young. After the birth of the young the father was not tolerated near the nest.

2961. **LOIR, ADRIEN, et Mme. ADRIEN LOIR.** Le chat, son utilité. 120 pp. 6 pl. Baillière: Paris, [1930], 10 francs.—The volume concerns especially the cat as an important agency in the control of rats, including selection of races especially effective in rat destruction, rearing, feeding, etc.

2962. LONGMAN, HEBER A. The marsupials of Queensland. *Mem. Queensland Mus.* 10(1): 55-64. 1930.—The evolution of Australian marsupials has probably taken place largely within that region. An annotated list of about 90 Queensland forms is given.

2963. MAHNER, ARTHUR. Die Bekämpfung der Feldmäuse. *Nachrichten Schädlingsbekämpfung* 5(3): 152-153. 1 fig. 1930.—Note on the use of poisons in control of the field mouse.

2964. MALBRANT. [Les éléphants du Tchad.] *Bull. Soc. Nat. Acclimat. France* 77(3): 38-40. 1930.—Abstract.

2965. MALBRANT, R. Notes sur les éléphants du Tchad. *Rev. Hist. Nat. le Partie A, Mammifères* 11 (9): 281-283. 1930.

2966. MATHIAS, PAUL. Sur la biologie du hérisson (Erinaceus europaeus L.) *Bull. Soc. Zool. France* 54: 463-466. 1929.—Observations on captive individuals show that this species remains active and eats daily while the outside temperature remains above 8°C. With a temp. between +8°C. and −4°C., it is only intermittently active. With a temp. below −4°C., it begins true hibernation. Even then it awakes if disturbed, but does not stir until the night succeeding when it comes out for food. During periods of intermittent hibernation the monthly loss of weight averages 30 grams. Rubbing the tip of the snout does not cause the animal to roll up, but touching one of the long hairs about the face does. The latter are more sensitive than the quills on the back. When active, the animal breathes irregularly, but averages 20 times per minute; in hibernation, 7 to 8 times per minute. It can surmount vertical obstacles. In jumping off a table, it lands on its back, the quills reducing the shock.

2967. MATTHEW, W. D. Critical observations upon Siwalik mammals (exclusive of Proboscidea). *Bull. Amer. Mus. Nat. Hist.* 56(7): 437-560. 55 figs. 1929.—This fauna of northern India, formerly regarded as Miocene, is divided by the author into Upper Miocene, Pliocene, and Lower Pleistocene, and revised lists are given of the faunas with critical discussion of the status and significance of each group. A preliminary review of the Siwalik collections in the Indian Mus. is followed by a critical revision of the Siwalik carnivores, horses, rhinoceroses, chalicotheres, and giraffes, with notes on the hippopotami and rodents. Many of the types are refigured, along with some new material. The taxonomy of the machaerodonts is dealt with. The correlation and dispersal of the Equidae, the taxonomy, phylogeny, and adaptation of the Chalicotheriidae, the affinities of the Siwalik and related Old World species of rhinoceroses, the taxonomy and phylogeny of the Giraffidae are critically considered with a partial review of the hippopotami and some notes upon the few rodents described from the Siwalik beds. The fauna of the Pondaung Eocene of Burma is partially revised. *Enhydriodon* is thought to be related as much to the badgers as to the otters; *E. campani* of Monte Bamboli is decidedly more primitive than the Indian spp. The South American *Arctotherium* differs widely from *Ursus* in teeth as well as skull, approaching *Indarctos* in dentition; but the North American spp. referred to it are a distinct genus, nearer to *Ursus* in dentition. *Indarctos* includes *"H." punjabiensis* Lydekker, and is nearly related both to *Arctotherium* and *Hyaenarctos, I. lagrelii* of China being more primitive than the Indian and American spp. of the genus. The Indian *Amphicyons,* chiefly from the Gaj fauna (Lower Miocene), compare with those of the Middle Miocene of Europe and North America. The 3 described spp. of *Canis* from the Upper Siwaliks are compared with the modern Indian spp.,—*C. curvipalatus* with *bengalensis, C. cautleyi* with *pallipes,* a 3rd sp. with *Aureus;* they agree with Pleistocene and modern *Canis* in lacking a metaconid on m_2. Two spp. of *Viverra* are re-figured. The nomenclature of the hyenas is corrected, the name *H. sivalensis* being restored to Falconer's original type. *Hyaena* **bosei,** n. n. for *H. sivalensis* Bose, not Falconer (p. 493); *H. felina* Bose is a probable synonym. *Lepthyaena* is probably a synonym of *Palhyaena. Felis brachygnatha* Lyd. is close to *F. arvernensis; Cynaelurus pleistocaenicus* of China is probably a synonym. *Metailurus* Zdansky does not appear to be generically distinct from *Pseudaelurus* and is intermediate between that Miocene genus and the Pleistocene *Felis.* The objections that have been raised to the derivation of the true cats from the *Dinictis-Aeluractis* group of the Oligocene are considered briefly and regarded as unsound. *Aeluropsis* of the Middle Siwalik is a true cat, related to *Nimravus,* and *Sivaelurus* (Lower Siwalik) a more primitive sp. of *Aeluropsis.* The machaerodont cats of the Pliocene and Pleistocene appear to include 3 distinct genera, for which the names *Machaerodus* Kaup, *Megantherеon* Croizet & Jobert, and *Smilodon* Lund are available. The rest of the 35 or 40 generic names applied to the later machaerodonts are unavailable or are synonyms or doubtful subgenera. The two Upper Siwalik spp. are referred to *Megantherеon;* but some of the specimens referred by Lydekker to each of these spp. are in reality true cats (*Felis*). A 3rd sp., from the Middle Siwaliks, is true *Machaerodus* (=*Paramachaerodus* Pilgrim). Among the rhinoceroses the so-called *Aceratherium perimense* (=*Rhinoceros planidens*) and *A. lydekkeri* differ markedly from typical *Aceratherium;* they are related to *Chilotherium* in teeth but differ considerably in skull characters. Spp. from the Lower Siwaliks are referred to *Chilotherium* Ringst., Lower Pliocene of China, rather than to the American genus *Teleoceras. "Teleoceras" blanfordi* and *"Diceratherium" naricum* and *shahbazi* of the Gaj fauna are probably congeneric with *"D." pleuroceros* and *asphaltense,* but certainly not with the true *Teleoceras* and *Diceratherium.* The amynodont rhinoceroses from the Eocene of Burma, placed by Pilgrim in *Metamynodon,* are nearer to *Amynodon* but belong in a distinct genus, **PARAMYNODON** (p. 512), type *P.* cotteri (*Metamynodon c.* Pilgrim) (p. 512). *Chasmotherium birmanicum* of the same fauna is probably distinct from the European genus; *Indolophus* is a distinct genus, probably of the American family (or subfamily) Parisectolophidae. A traguloid jaw is figured but not named. The Chalicotheriidae are reviewed at some length and a provisional revision of the classification made. Of the Indian genera, *Phyllotillon* is close to *Moropus,* but *Schizotherium* of the Gaj, *Macrotherium* of the Lower Siwalik, and *Circotherium* of the Upper Siwalik belong to the brachydont chalicotheriine series. The great "claws" of the chalicotheres are adapted for a limited type of digging, used chiefly perhaps for digging water-holes, or rooting for tubers, etc., but could not be used in the manner of the ground-sloth. Of the horses *Hipparion* is found in the Middle Siwalik and in the upper part of the Lower Siwalik, *Equus* only in the Upper Siwalik. Reasons are given for regarding each genus as of American origin; and their bearing on the correlation of the Siwaliks is discussed. *Rhinoceros sivalensis* (=*R. palaeindicus*) is nearly related to the modern Indian and Javan spp.; *R. platyrhinus* is more distantly related to the African genera but probably retained upper and lower tusks. Among the Giraffidae, *Giraffokeryx* is considered a valid but primitive genus, Pilgrim's very fragmentary types are re-identified, and additional specimens referred. *Giraffa* priscilla (p. 537), from Upper Chinji, is new. The Middle Siwalik sp., *Camelopardalis sivalensis* Falc. & Cautley, referred by Bohlin to *Honanotherium* and by earlier writers to *Giraffa,* is of doubtful status, probably referable to *"Orasius"* of the Pontian; and the generic name **BOHLINIA** (p. 546) is provisionally proposed for it. *Hydaspitherium* and *Helladotherium,* Middle Siwaliks, are probably ♂ and ♀ of the same genus, as are *Sivatherium* and *Indratherium* in the Upper Siwaliks; the reference of various specimens in the Indian and British Mus. collections is revised. *Vishnutherium* and *Bramatherium* (Middle Siwaliks) are indeterminate or doubtfully distinct from the *Hydaspitherium-Helladotherium* group. The Giraffidae are derivable from the palaeomerycine group of the Miocene of Holarctica, but probably not from Protoceratidae. Camelidae are found

only in the Upper Siwalik, and the spp. are true *Camelus* nearly related to the modern Bactrian camel. The hippopotami, chiefly known from the Upper Siwaliks, are nearly related to the spp. of the Lower Pleistocene of Europe. The small primitive pigmy hippopotami of the Mediterranean region have not been recorded from India. The family is descended from the true pigs, not from *Merycopotamus* and the anthracotheres, as has been supposed. The Siwalik rodents are revised, but are too fragmentary to afford valuable data for correlation or phylogeny.—*W. D. Matthew.*

2968. **MATTHEW, W. D. The evolution of the mammals in the Eocene.** *Proc. Zool. Soc. London* 1927(4): 947-985. 16 fig. 1928.—Mammals originated from the theromorph reptiles of the Permian and Triassic. Jurassic mammals were minute, and represented a number of orders, including possible ancestors of higher groups. The order Multituberculata was present which does not belong with the marsupials or monotremes, but represents an independent subclass. Most Cretaceous mammals were marsupials or multituberculates, with a few possible placentals. Recently Cretaceous mammals have been discovered in Mongolia, the remains consisting of skulls of one multituberculate and of several placentals, the latter apparently intermediate between primitive Insectivora and Carnivora. The dentition shows the homology of the paracone and metacone of the molars with the principal cusp of the premolars. The Paleocene mammalian fauna did not contain ancestors of the principal Tertiary and modern orders, but consisted of specialized members of archaic groups that later became extinct. This fauna contained the following groups: the last multituberculates; a few opossum-like marsupials; several families of creodonts (primitive Carnivora); primitive hoofed mammals (Condylarthra, Taligrada, Amblypoda); insectivores; edentate-like mammals (Taeniodonta); semi-Primates (Menotyphla?) and tarsioid Primates; bats. At the beginning of the Eocene a new fauna of obscure origin appeared, which contained the ancestors of most of the groups of later mammals. The following is the composition of the lower Eocene fauna: very rare multituberculates at the beginning; a few opossums; several more or less advanced families of creodonts; surviving primitive hoofed mammals (Condylarthra, Amblypoda); abundant perissodactyls; some artiodactyls; primitive rodents and edentates; surviving taeniodonts; few insectivores; supposed Menotyphla; true lemuroid primates; the problematical group Tillodontia. During the Eocene the perissodactyls underwent specialization along several lines, including those leading to the horses, the rhinoceroses, and the titanotheres. The artiodactyls experienced less development, but were divided broadly into suillines and ruminants, with numerous intermediate groups. The condylarths disappeared early, while the amblypods, following two lines of evolution, developed into large forms. The creodonts, with the exception of one family (Arctocyonidae) that became extinct early, developed along several lines of specialization. These became extinct at the close of the period or somewhat later, except one family (Miacidae), which gave rise to the true Carnivora. The history of the Eocene Insectivora is poorly known, but apparently the ancestors of the moles, shrews and hedgehogs were present. The Primates developed lemur-like forms that may have given rise to the South American monkeys. Rodents remained primitive. The edentates developed a line that may have given rise to the modern pangolins. Eocene notoungulates are represented in the northern hemisphere by a single specimen, but in South America they developed many peculiar groups. The curious tillodonts culminated in large, rodent-like, forms. Opossum-like marsupials continued throughout the period. At the beginning of the Oligocene there was a great faunal change. The last ancient groups became extinct, and the modern orders were definitely established. Among perissodactyls, the horses and rhinoceroses became more advanced, while the titanotheres soon died out. Various artiodactyl lines were distinguished, including the ancestors of many modern groups. Creodonts tended to die out, except for the Miacidae, and the cat family appeared. Oligocene Primates are almost unknown, leaving a gap in the phylogeny of the order. In South America, during the Eocene, the mammals developed entirely independently. The fauna here consisted of peculiar hoofed mammals, edentates, hystricomorph rodents and various marsupials. Mongolia, in the Eocene, contained many North American and European groups of mammals, but others are unaccountably absent. Nothing is known of Australia during the Eocene, but its marsupial fauna presumably had begun to diversify at that time.—*L. S. Russell.*

2969. **MATTHEWS, L. HARRISON. The natural history of the elephant seal with notes on other seals found at South Georgia.** *Discovery Repts. Government Dependencies Falkland Isl.* 1: 233-255. 6 pl. 1929.—An account is given of the life and habits of the elephant seal (*Mirounga leonina*) at S. Georgia, and a bibliography is given. There are notes on the occurrence at S. Georgia and habits of the Weddell seal (*Leptonychotes weddelli*), the crab-eater seal (*Lobodon carcinophagus*), the leopard seal (*Hydrurga leptonyx*), and the fur seal (*Arctocephalus australis*).—*L. H. Matthews.*

2970. **MAXSON, JOHN H. Tertiary mammalian fauna from the Mint Canyon formation of southern California.** *Bull. Geol. Soc. America* 41(1): 214-215. 1930.—Abstract.

2971. **MOHR, ERNA. Der angebliche Schaf-Rind-Bastard ("Schafochse") von Husum.** *Zool. Garten [Leipzig]* 3(1/3): 35-39. 6 fig. 1930.—History and description of the animal*, evidently not a hybrid, but an undersized bull.

2972. **[NAUMOV, N. P.]** НАУМОВ, Н. П. Промысловые млекопитающие Туруханского Края. **[Economically important mammals of the Turukhan region (Siberia).]** Советский Север (*Sovetskii Sever*) 1930 (3): 36-55. Map. 1930.—This region includes both sides of the lower Yenisei River. The paper deals primarily with the geographical and ecological distribution of species, chiefly on the eastern side of the river. *Ursus arctos* is most abundant in the wild taiga, ranging to 73°N. in the western Yenisei region, but not so far north in the eastern Yenisei region, where the forest is mixed with tundra vegetation. *Canis lupus turuchanensis* extends to 75°N., especially in the treeless regions about the upper Kotuja and Kureika Rivers; it abounds where deer and elk are found. *Alopex l. lagopus* breeds on treeless rocky slopes about the Kochechumo, Kotuja, and Kureika Rivers and the Norilsk Lakes south to 68° N. Its migrations extend from the Arctic Ocean south to 64°-65°N. *Vulpes vulpes* is characteristic of the forest and forest-tundra region of the Stony Tunguska River. *Gulo gulo* is usually found in the Thunhus region east of the Yenisei, and reaches the northernmost parts of the tundra. *Mustela zibellina* is found only in the western part of the eastern Yenisei region; it lives in the wild taiga. *Mustela s. sibirica* is common in all the Stony Tunguska River region, ranging north to 67°N. *Arctogale erminea* is common north to the Arctic Ocean, including the deltas of the Lena and Yana Rivers; it is usually found in forest-tundra regions. *Arctogale nivalis* is common in the northern part of the region, reaching the lower Yenisei. *Lutra lutra* is common on the Yenisei, Stony Tunguska, and Nentsheschema Rivers. *Lynx lynx* is found only in the western part of the eastern Yenisei region. *Meles meles* may be found between the Angara and Stony Tunguska Rivers, but is commoner farther south. *Lepus timidus* [misspelled *tinidus*] occurs throughout the region, even reaching the Arctic Ocean. *Sciurus vulgaris calotis* occurs mostly in wild taiga along the Yenisei, Heta, and Kotuja Rivers, up to 72°N. *Eutamias asiaticus* is found in the basins of the Stony Tunguska and Lower Tunguska, ranging farther north along the Yenisei; it is restricted to the forest. *Pteromys volans* is very common in forests, chiefly in the southern part of the region. *Rangifer tarandus sibiricus* occurs throughout the Turukhan region. The distribution of *Alces alces* is meridional rather than latitudinal in char-

acter; it occurs only in the eastern part of the eastern Yenisei region, as far as 71°N. *Moschus moschiferus* is not common, found mostly along the Stony Tunguska, up to 67°N. *Ovis nivicola borealis*? is found mostly in mountainous parts of the forest-tundra region, between the Hantaki and Piasina, the Lower Tunguska and Kureika and Kotuja, also the Heta and Kotuja Rivers.

2973. NEWCOMBE, C. L. An ecological study of the Allegheny cliff rat (Neotoma pennsylvanica Stone). *West Virginia Univ. Bull., Proc. West Virginia Acad. Sci.* 3: 63-70. 1929. (Also in *Jour. Mammalogy* 11(2): 2 pl. 204-211. 1930.)—This study was made in West Virginia, and distributional records for the state are given. Most nests are placed deep in crevices of large rocks on mountain ridges. Midden heaps of sticks, leaves, bark, nutshells, fungi, and other materials are invariably present near the nests. The contents of several such heaps are analyzed. Fungi are usually present in significant numbers and may be stored for winter consumption. Food taken by 2 captives included, in order of preference, nuts, sweet potatoes, apples, grapes, and various vegetables. Water was consumed regularly.

2974. [PARAMONOV, A. A.] ПАРАМОНОВ, А. А. К биологии выхухоли. [Biology of desmans.] Труды по Изучению Заповедников. [Contrib. to the Study of Conservation, Moscow]. No. 9. 3-34. Map, 2 pl., 5 fig. 1928.—In Penza Province, Russia, desmans* live in swamps and lakes. Their burrows are about 6 m. long, beginning beneath the water and rising above the water level. The slope of the burrow varies with the soil, water level, and profile of the shore. Descriptions of ♂♂ and ♀♀ are given. Of ectoparasites, only *Silphopsyllus desmanae*, with larvae and eggs, was found. An unidentified nematode was found in the intestine. There are 2 litters per year, the number of young born being 2-4. Sexual maturity is reached probably in the second year. The species is omnivorous. It does not live long in captivity. Smell and hearing are well developed, but not vision. The proboscis serves as a sensory organ. Musk glands are located in the basal part of the tail.

2975. [PARAMONOV, A. A.] ПАРАМОНОВ, А. А. Некоторые вопросы охраны выхухоли. [The conservation of desmans.] Труды по Изучению Заповедников. [Contrib. to the study of Conservation, Moscow.] No. 9. 35-51. Map. 1928.—The isolated distribution of *Galemys pyrenaica* and *Desmana moschata* shows that desmans cannot be considered flourishing genera. But, viewed biologically, neither are they degenerate, although aquatic specialization makes them unadaptable to other environment. They are destroyed annually in great numbers by fur hunters and by such natural causes as ice, floods, etc. Conservation measures are recommended.

2976. PFIZENMAYER, E. W. Vom Wisent, dem untergehenden Wildrind Europas. *Aus der Heimat.* 43 (9): 268-273. 4 fig. 1930.—The author gives a historical sketch of the three important herds of this species*. Before the World War there were 700 animals under the Czar's protection in the Forest of Bialowies in Lithuania, but they were completely exterminated soon after the war. In 1918 the herd of Prince Plass at Meserczitz in Upper Silesia, which had been started in 1865 with a gift of 4 animals by the Czar, numbered 74. In the chaotic conditions following the war this herd was reduced to a small remnant. In the Kuban district of North Caucasus the Grand Duke Sergius had kept a herd of 600. By 1921 this herd had been reduced by poachers to 50, and by 1926 to 10. In 1928 none could be found, but in April, 1930, there was a trustworthy report of a few survivors in one of the least accessible parts of the district. Latest records show a total of 27 ♂♂ and 32 ♀♀ remaining in zoological gardens and nature preserves.

2977. PRELL, H. Über die Fortpflanzungsbiologie der europäischen Bären. *Zool. Garten (Leipzig]* 3(4/8): 168-172. 1930.—Observations, chiefly on captive animals, indicate that the rutting season of *Ursus arctos* falls principally in May and June; of *Ursus maritimus*, in March and April. The former, however, has a secondary rutting period, chiefly in July and August, which plays no part in the preservation of the species. When fertilization takes place during the first rutting season, a rest period of about 3 months ensues before embryonic development really begins. The time of delivery falls chiefly in December, January, and February, after a gestation period of about 7-8 months. Likewise, *Ursus maritimus* has a secondary rutting season in July, and delivery takes place in November or December. This condition of affairs in the European bears corresponds to that in the badger and the martens (*Martes martes* and *M. foina*).

2978. REINHARDT, H. Zuchterfolg beim Steinmarder. *Pelztierzucht* 5(10): 195-197. 4 fig. 1929.—Observation and experiment showed that stone marten has a gestation period of 9 months. The ♀ builds the nest alone. The two young ones developed slowly. Food was carried to the nest 43 days after birth of the litter, which were breast fed for 6 weeks. They were very helpless, lay flat on their bellies when put on their feet, and were blind for 36 days. At the age of 6 weeks they measured 37 and 36 cm., 10 and 12 cm. of which was tail, and weighed 350 and 340 gm. One was ♂, the other, ♀. First independent motions of climbing were observed at 9 weeks. At 4½ months the ♂ showed the first sex activity. Older animals copulate at the end of June, younger ones in August. The same observation was made in America with pine marten. Rather vicious-looking fights do not indicate that the couples need to be separated; and they do not stand separation well.—*B. Bickel.*

2979. REYNOLDS, SIDNEY H. A monograph on the British Pleistocene Mammalia. Vol. 3, pt. 3. The Giant deer. *Palaeontograph. Soc. [London]* 81(paper 1): 1-62. 2 pl. 31 fig. 1927(1929).—The memoir opens with a historical introduction, the earliest reference dating as far back as 1697. Lists of the localities in the British Isles are given where giant deer (*Cervus giganteus**) remains have been found. Then follow short sections on: (a) the co-occurrence of great numbers of skeletons; (b) the special abundance of the giant deer in Ireland; (c) the cause of the preponderance of the skulls of the ♂; (d) the contemporaneity of the giant deer with man in the British Isles; (e) the probable cause of its extinction; (f) its distribution in time. Its origin, races, and affinities are discussed, and the skeleton described. Particular attention is paid to the antlers, of which 32 examples are figured. Lists of skeletons and antlers in public museums and private possession are given, and the memoir concludes with an extensive bibliography. A short account of the fallow deer (*Cervus dama*) also is given.—*S. H. Reynolds.*

2980. RITCHIE, JAMES. St. Kilda and the significance of some of its animal inhabitants. *Scottish Naturalist* 1930(183): 69-74. 1930.—In connection with the probable early abandonment of this island by its human inhabitants, the author calls attention to its endemic spp., *Apodemus hirtensis, Mus muralis*, and *Troglodytes hirtensis*. These must have developed after the last great glaciation of northern Europe. The domesticated sheep of the island are the most primitive known today. Up to about 1877 the human inhabitants consumed the surplus numbers of *Fulmarus glacialis* for food. They then began to import European food-stuffs regularly. With the consequent increase in the numbers of fulmars, the available nesting-sites on St. Kilda no longer sufficed, and the birds have extended their breeding range to Scotland and England.

2981. RODE, P. Contribution à l'étude du fouissement chez les petits rongeurs. *Bull. Soc. Zool. France* 54: 573-588. 2 fig. 1929.—When placed in outdoor cages, *Microtus arvalis, Mus sylvaticus* (2 subspp.), and *Mus musculus* (gray and white varieties) all behave alike: they dig tunnels in the earth and make nests in them. The work of digging is conditioned by the physical properties of the soil, and by such climatological conditions as temperature and solar radiations. Behaviour is, apparently, independent of morphological characters, domestic varieties

of mice proving to be as good diggers as wild species. Climatological conditions react alike on all the species. Variations in the physical environment produce modifications in the digging.—*From author's summary.*

2982. **RODE, P. Méthode de destruction des Rats par la poudre de Scille.** *Rev. Path. Végét. et Entom. Agric.* 16(9/10): 283-289. 1930.—Mixing 5 gr. powdered scilla to 15 gr. sugar, 150 gr. flour and enough water, makes an efficient baiting and poisonous paste for rats.—*J. Dufrenoy.*

2983. **REVERDIN, L. La faune néolithique de la station de Port-Conty (St-Aubin, Neuchâtel), d'après le matériel recueilli de 1928 à 1930.** *Compt. Rend. Séances Soc. Phys. Nat., Genève* 47(2): 83-86. 1930.—The author presents a list of 5 domestic and 23 feral mammals whose bones were found at this station. In an old Neolithic bed 70% of the individuals were domestic; in a Middle Neolithic bed, 50.8%.

2984. **RUHL, HARRY D., and PARISH S. LOVEJOY. Beaver plantings in Michigan.** *Papers Michigan Acad. Sci. Arts & Let.* 11: 465-469. 1929(1930).—Report of beaver plantings in various streams in Michigan, together with a brief discussion as to the colonies established and the probable success of this enterprise.—*C. F. Jackson.*

2985. **RUSCONI, CARLOS. Sobre un húmero de "Arctotherium" y otro de "Felis" de la formación Pampeana. I. Descripción de un húmero de "Arctotherium." II. Descripción de un húmero de "Felis platensis."** *Anal. Mus. Nacion. Hist. Nat. Buenos Aires* 34: 279-297. 4 pl. 1926-1928[1928].—The author refers a humerus* of *Arcototherium* (Buenos Aires, *Ensenadense* beds, upper Pliocene) to *A. latidens* Bravard. Comparisons are made with the humerus of *A. candiottii, Ursus bonariensis* and other genera of North America; several measurements are given. A humerus of *Felis* from the same beds is referred to *F. platensis* Amegh. and several measurements are given.—*C. Rusconi.*

2986. **ST. LEGER, JANE. A new subspecies of Colomys from Kenya.** *Ann. and Mag. Nat. Hist. Ser. 10* 6(34): 527-528. 1930.—*G. goslingi* **denti** (p. 527); type in British Mus.

2987. **SCHAEFER, HELMUT. Sorex alpinus in der schlesischen Ebene.** *Zool. Anz.* 91(1/4): 66. 1930.—Three recent records, at altitudes of 181-230 m.

2988. **SCHMIDT, H. Ein Skelett von Alces latifrons aus der Gegend von Göttingen.** *Palaeontol. Zeitschr.* 12 (2): 135. 1930.

2989. **SCHMIDTGEN, OTTO. Eine Unterkieferhälfte vom Damhirsch aus dem Mosbacher Sand.** *Notizbl. Ver. Erdkunde Hess. Geol. Landesanst. Darmstadt* 5(12): 114-118. 1 pl. 1930.—After detailed comparison with the teeth of *Cervus elaphus* and recent *C. dama,* this specimen*, new to the Mosbach fauna, is referred to *C. dama.*

2990. **SCHULZE, PAUL. Ueber das Vorkommen von Zwergrindern bei Berlin um 1810 und über eine merkwürdige Eigentümlichkeit mazedonischer Pferde.** *Sitzungsber. u. Abhandl. Naturforsch. Ges. Rostock* 2: 5-8. 1 pl. 1927/29(1930).—Dwarf cattle, of the *Bos longifrons* type, a remnant of which has been discovered in Niederlausitz, were still used as draught animals in Brandenburg about 1810. The small Macedonian horse, which, like the Celtic pony, may be a glacial relict, keeps its tail and head in constant movement to ward off flies.

2991. **SCHUSTER, LUDWIG. Im Kampf gegen die Bisamratte. Ein Kapitel aus der Geschichte der Schädlingsbekämpfung.** *Naturforscher* [*Berlin*] 6(12): 458-462. 1930.—Accounts, based on official data, of the muskrat's distribution in Germany, the damage done by it, and control methods. Breeding permits for muskrats are discouraged.—*L. Schuster (transl. by O. J. Murie).*

2992. **SCHWANGART, F. Stammesgeschichte, Rassenkunde, und Zuchtsystem der Hauskatzen.** 59p. illus. Verlag Heber & Co.: Leipzig, 1929.—In this book the early history of the cat is described from the time of its domestication in ancient Egypt, about 2000 B. C. The geographical distribution and description of different members of the cat family are given, and comparisons made between the wild and domestic forms. Results of different crosses between some of the different types are given, pointing out differences in hair length, skull shape, tail length, and other characters, as well as color differences. The most desirable characters for breeding and the different varieties recognized are discussed. A brief discussion of the genetics of cats is followed by a classification and description of some of the recognized varieties bred by fanciers. The classes described are I. Short-haired: 1. Domestic short-haired cat, 2. Short-haired marbled or blotched, 3. Slender formed cats, 4. Siamese. II. Long-haired (Angora): 1. Persian, 2. German long-haired. A bibliography of nearly 60 titles covering genetics, archeology, geographical distribution, anatomy, etc. is appended.—*O. N. Eaton.*

2993. **SCHWARZ, ERNST. Der fehlende Schneidezahn der Primaten.** *Zool. Anz.* 89(1/2): 36-38. 1 fig. 1930.—In a number of Lemuridae a rudimentary medial incisor*, representing the milk dentition (d I^1), has been found. The two large incisors are I^2 and I^3. Reduction begins medially and proceeds laterally.

2994. **SCHWARZ, ERNST. Das Okapi.** *Zool. Garten* [*Leipzig*] 3(4/8): 154-158. 5 fig. 1930.—An account of the 2 living specimens so far brought to Europe, with a description and photographs of the one surviving in the Antwerp zoo.

2995. **SCOTT, WILLIAM BERRYMAN. Extinction of Pleistocene mammals.** *Bull. Geol. Soc. America* 41 (1): 104-105. 1930.—The view that the presence of Pleistocene spp. of mammals always fixes the date of the beds as definitely Pleistocene is untenable. It is pointed out that many Pleistocene spp. survived the last glacial stage, some of them coming down almost to historic times.—*J. W. Gidley.*

2996. **S[OWERBY], A. de C. The Yunnan serow.** *China Jour.* 13(1): 43. 1930.—Notes on the distribution and character of *Nemorhoedus osborni.*

2997. **SZCZERKOWSKI, K. Die Posener Wisente.** *Zool. Garten* [*Leipzig*] 3(4/8): 153-154. 2 fig. 1930.—This Polish zoological garden contains a pair of wisents. The ♂ is of mixed Caucasus-Baltic ancestry, and the ♀ is from the Baltic region. Single calves were born in 1924 and 1928; one that survived is now on a government reserve in Poland.

2998. **TAKASHIMA, HARUO. Standard Japanese names for the mammals of Japan, 1.** *Trans. Nat. Hist. Soc. Formosa* 20(109): 195-217. 1930.

2999. **THOMAS, OLDFIELD. The mammals of Señor Budin's Patagonian Expedition.** *Ann. and Mag. Nat. Hist. Ser.* 10 4(19): 35-45. 1929.—This study shows that the mammals collected by Alcide d'Orbigny in 1828, and until now supposed to be from S. Patagonia, are from the Lower Rio Negro region. Collection consists of about 250 specimens belonging to 22 spp. One ssp. is new: *Abrothrix hirta* **nubila** (p. 40), Argentina, in British Mus. *Conepatus castaneus* d'Orb. and Gerv. has long been considered a synonym of *C. humboldti* Gray. The author considers the northern and southern forms of skunks distinct subspp. and suggests that the southern form be called *C. castaneus castaneus* d'Orb. and Gerv. (=*C. proteus gaucho* Thos.), and the northern form *C. castaneus proteus* Thos. Original specimens of *Caviella australis* Geoff. & d'Orb. are from Lower Rio Negro, not from extreme southern Patagonia. Therefore what the author called *C. a. nigriana* is the true *C. a. australis.* There is doubt as to whether the far southern form is *C. a. australis,* or is distinct and should be called *C. a. kingi* Benn.—*A. R. Shadle.*

3000. **VILLEGAS, VALENTE. Determination of the age of water buffaloes (Bubalus bubalis Lyd.) by the eruption of temporary and permanent incisors.** *Philippine Agric.* 18(6): 371-378. 1 fig. 1929.—Data were secured from 21 carabaos (Philippine water buffaloes), 13 Indian buffaloes, and 21 Philippine-Indian buffalo grades during a period of about 4½ years. The author found that the first 3 pairs of deciduous incisors erupted within 3 weeks while the 4th pair erupted 4½ months after birth. Replacements took place as follows: 1st pair, 3 years; 2nd pair, 3½ years; 3rd pair, 4 years; and 4th pair, 5 years after birth.—*M. Manresa.*

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 | FEBRUARY, 1932 | NUMBER 2
Entries 3001-6048

GENERAL BIOLOGY

A. H. GRAVES, *Editor,* Plant

C. A. KOFOID, *Editor,* Animal

(See also in B. A. 6(1): Entries 43, 141, 151, 297, 2148, 2343; and in this issue 3106, 3108, 3181, 3223, 3665, 3725, 4608, 5076, 5315, 5593)

GENERAL

3001. **BABCOCK, E. B. Cyto-genetics and the species-concept.** *Amer. Naturalist* 65(696): 5-18. 1931.—Summarizing earlier work bearing on the sp. concept and combining therewith evidence from recent cyto-genetic study, the essentials of the sp. concept are: common structural characteristics which unite certain individual organisms into one group, and a common genetic basis for the group represented by a specific chromosome complex; characteristic features which distinguish such groups from one another, one of these frequently being the chromosome garniture; relative stability combined with variability within the group, this being made possible by high regularity in chromosome distribution, while inherited variations arise from occasional changes in genes and chromosomes; common descent of all individuals of the group from one or more preexisting sp. made possible by the known mechanism of heredity and genetic variation; free intercrossing and high interfertility among the individuals of the group expected in organisms possessing a high degree of genic homology; absence of free intercrossing and usually low fertility if not complete sterility in hybrids between different sp. (with occasional exceptions) resulting from accumulation of genic and chromosomal differences between diverging groups of individuals within a sp.; and subspecific groups, often occupying different geographic areas but connected by intergrading forms, which differ more from one another than do the individuals composing each subgroup, as a result of genetic variability within the sp. plus the influence of environment, isolation, and natural selection. Vavilov holds essentially the same concept when he says "a Linnaean sp. is a separate morpho-physiological system connected in its genesis with a definite environment and area."—*E. B. Babcock.*

3002. **BARTON, OTIS. The bathysphere.** *Bull. New York Zool. Soc.* 33(6): 233-234. Illus. 1930.—Description of a steel sphere which was lowered into the ocean to a depth of 1400 ft. while 2 persons within made observations on near-by marine animals.

3003. **BEEBE, WILLIAM. A quarter mile down in the open sea.** *Bull. New York Zool. Soc.* 33(6): 201-231. Illus. 1930.—Notes on various marine animals observed from within a steel sphere lowered to a depth of 1426 ft. in the Atlantic near Bermuda.

3004. **BEEBE, WILLIAM, and GLORIA HOLLISTER. Log of the bathysphere.** *Bull. New York Zool. Soc.* 33 (6): 249-263. Illus. 1930.—Detailed observations on marine organisms and on penetration of light at various depths (maximum 1426 ft.) during 11 dives in a steel sphere in the Atlantic near Bermuda.

3005. **BLACHLY, CHARLES D. The mechanics of heredity. I.** 18p. A. M. Boles Printing Co.: Oklahoma City, 1929. II. 14p. Enoch Lusk Printing Co.: Oklahoma City, 1930.—This paper attempts to give a comprehensible picture of the origin and mechanics of protoplasm. An organism is considered to be (to a degree) a gigantic molecule because in growth one definitely arranged atomic group determines the arrangement of an adjacent group. An attempt to make a distinction between chemical and physical union in protoplasm is somewhat illogical and confusing. The hypothesis is developed that perhaps life arose out of bilateral right and left handed molecules whose halves under certain conditions separated and, due to the arrangement of the fields of force of the atoms, rebuilt the missing parts so that 2 new bilateral molecules resulted. Through variation these reproducing molecules ("hereditary molecules") reached the complexity of cells and later higher organisms. The gene is considered a reproducing molecule subservient to the "hereditary molecule" of the cell. —*C. D. Blachly.*

3006. **CHAPMAN, FREDERICK. Open-air studies in Australia.** xx+170p. 23 pl. J. M. Dent & Sons: London & Toronto, 1929. Pr. 10s. 6d.—This group of 20 essays introduces the general reader to some scientific facts relating primarily to coastal geology. While based particularly on scientific research in Australia, the explanations and problems included are of universal application and are presented in a popular style. Sample chapter-headings are: Secrets of a sand hill; Devonian marble; Hillside geology; Something about slates; and Buried rivers: their alluvial gold.—*H. Croasdale.*

3007. **COLIN, HENRI. De la matière à la vie.** [2nd ed.] 336p. 43 fig. G. Beauchesne: Paris, 1926.—The introductory section contains a brief historical account of the cell theory, cell division, the structure of protoplasm, and the organology and physiology of the cell. The 2nd chapter is concerned with the chemistry of living matter, the constituent elements, the assimilation of C in photosynthesis, and chemical diastases and catalysers. The 3rd chapter deals with biophysics including osmosis, diffusion, bioenergetics, dissymmetry, and the origin of sugar and of inulin. Chapter 4 is a criticism of transformism, of the inadequacy of the classic factors in evolution, discusses the technique of genetics, the origin of cultured varieties and mutations, and states categorically that the experimental proof of transformism is as yet lacking. The last chapter discusses the relations of life to environment, the evolution of the earth, genesis of life, the progressive desiccation of the globe, and the ultimate extinction of life.—*C. A. Kofoid.*

3008. **CONKLIN, EDWIN G. Contributions of biological research to education.** *School & Soc.* 31(806): 751-753. 1930.—In this address are discussed education as a process of differentiation of the individual; interplay of heredity and environment; significance of fundamental activity in habit formation; uniqueness of the individual and its significance in personal development; conformity to type and its significance in the cultivation of social

unity; non-inheritance of acquired characters and the resulting continuing necessity of education; the duty of education in eugenics as a means of race improvement; and education as the chief hope of human progress.—*C. A. Kofoid.*

3009. **DANSER, B. H.** Over het soortsbegrip in de Plant- en Dierkunde. [Conception of species in botany and zoology.] *Handelingen 4th Nederlandsch-Indisch Natuurwetensch. Congres Weltevreden* 1926: 341-349. 1926.

3010. **GREEN, ETHEL, and ETHEL A. POTTER.** Biology by discovery. (Dent's Modern Science Series.) 369p. 2 pl. 112 fig. J. M. Dent & Sons: London, Toronto, 1930.—This elementary text-book is designed for biology classes in Junior or Senior High Schools.

3011. **GREGORY, HERBERT E.** Types of Pacific Islands. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1663-1673. 1926 (1928).—The oceanic islands of the central Pacific are geologically young and have experienced no great change in position since the Pleistocene or even the early Tertiary. Man's advent into Polynesia is recent. The manner of dispersal of plants, animals, and men is not the same. A knowledge of the evolution and geologic history of Pacific birds is needed, and the conflicting beliefs of botanists regarding the original home of Pacific plants need to be reconciled. The view of De Vries that endemics are local mutants needs proof or disproof. The distribution of plants and of land shells is difficult to explain on the basis of the present distribution of islands. The net effect of cyclonic storms, both as winds and as currents, is to transport northward and eastward.

3012. **HENDY, E. W.** Wild Exmoor through the year. 320p. 25 fig. Jonathan Cape, London, 1930. Pr. 10s. 6d.

3013. **HESCHELER, KARL.** Über die Sicherheit der Voraussage in der vergleichenden Morphologie. *Verhandl. Naturforsch. Ges. Basel* 40(2): 441-451. 1928-1929.—It is attempted to show, by means of examples from comparative anatomy, embryology, and paleontology, that the certainty of prediction is as great in these disciplines as in any exact natural science, but is dependent upon the completeness of the evidential data.—*K. Hescheler* (*transl. by E. L. Rice*).

3014. **KOTSOVSKY, D.** La vieillesse, comme problème fondamentale de la biologie. *Riv. Biologica* [*Milan*] ii(5/6): 632-655. 1929.—Comparative description of the biological conditions of senescence may be presented in the Protista as intoxication by vital products accumulating in culture; in plants as intoxication by the agrosterole accumulated in the soil; and in tissue cultures as intoxication by-products of vital activity accumulated in culture. Where investigation of diverse forms of life is referred back to the primary elements—to the cellular protoplasm—one is impressed by the salient features of resemblance in the origins of senile changes. Senescence is a fundamental problem in general and experimental biology.—*D. Kotsovsky* (*transl. by J. W. MacArthur*).

3015. **MJÖBERG, ERIC** [Transl. from Swedish by ANNA BARWELL]. Forest life and adventures in the Malay Archipelago. 202p. Wm. Morrow: New York; George Allen & Unwin: London, 1930. Pr. 12s. 6d.

3016. **MUFFITT, TREVOR S.** Biological foundations in education. A textbook for teacher training institutions and schools of education. 394p. 40 fig. P. Blakiston's Son & Co.: Philadelphia, 1930. Pr. $2.00.—Part I deals with the general principles of biology such as the nature and origin of life; the cell; growth and heredity of the individual; evolution; and classification. Part II deals with the application of those principles to the development of the child from infancy to late adolescence. The educational problems of play, physiology, behavior, eugenics, birth control, and the fundamentals of study and the physical environment are discussed in the light of modern science. Lists of books for reference are given at the end of each chapter.—*M. Halushka.*

3017. **PETERSEN, JES.** Erde und Mensch. Eine gemeinverständliche kurze Entwicklungsgeschichte der Erde und des Menschen. 185p. Illus. Columbus-Verlag. (Paul Oestergaard): Berlin-Lichterfelde, 1929. Pr. 3.50 M.—Astronomy, geology, paleontology, and national relations are treated. Maps showing climatic zones and population densities are included.—*O. A. Stevens.*

3018. **PYCRAFT, W. P.** Random gleanings from nature's fields. xiv+210p. Hale, Cushman & Flint: Boston, 1930. Pr. $2.50.

3019. **SAPPER, KARL.** Biologie und organische Chemie. In: JULIUS SCHAXEL. Abhandlungen zur theoretischen Biologie. Heft 28. 50p. Gebrüder Borntraeger: Berlin, 1930. Pr. 3.80 M.—The author takes issue with the present practice of presenting organic chemistry as depending upon the same laws as inorganic chemistry. An attempt is made to establish an analogy between organic molecules, particularly stereoisomerism, and life forces. This theory is suggested as a means of bridging the gap between vitalistic and mechanistic concepts of life.—*R. M. Hixon.*

3020. **SCHLIEPER, HANS.** Das Raumjahr. Die Ordnung des lebendigen Stoffes. 360p. Eugen Diederichs: Jena, 1929. Pr. 15.50 M.—This book is based upon the earlier work of Wm. Fliess and postulates the cosmic conditioning of organic forms. It is maintained that there is an invariable conformity of life processes to daily and annual influences. Data from the growth of plants, from vital statistics, from the annulations of the carapace of the armadillo, and the genetics of *Drosophila* are assembled to prove influences of the cosmic divisions of time upon the forms and functions of organisms.—*C. A. Kofoid.*

3021. **SCOTT, GEORGE G.** Laboratory manual of general biology. [Rev. ed. 123p. Thomas Y. Crowell Co. New York, 1930. Pr. $1.—This laboratory guide and quiz-book is revised to accompany the author's "Science of Biology." It covers types of plants and animals and the elements of the various subdivisions of animal biology.—*C. A. Kofoid.*

3022. **SODDY, FREDERICK.** Science and life. xii+229p. E. P. Dutton: New York, 1926.

3023. **STEVENSON-HAMILTON, J.** The low-veld: its wild life and its people. 288p. 16 pl. Cassel & Co.: London, 1929. Pr. 12s. 6d.

3024. **STRONG, RICHARD P.** The African Republic of Liberia. In: The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard African Expedition 1926-27. Vol. 1. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* No. 5) Part 1. p. 1-209. 4 maps, 78 pl., 7 fig. Harvard Univ. Press: Cambridge, 1930.—Part I consists of a general survey of conditions in Liberia, with sections on Agriculture, farm and forest products (p. 116-134); Travel in the interior and care of personnel (p. 140-162); Geology and flora (p. 163-178); Zoology (p. 179-190); Sanitary and medical conditions, and prevailing diseases (p. 198-203). Section IX (p. 116-134), "Agriculture, farm and forest products," gives a summary of crops, economic wild plants, and agricultural practices in the republic. Agriculture is extremely primitive. Crops are: rice, an introduced crop; cassava, 2 varieties of *Manihot utilissima* being found; and *Colocasia,* plantains, Indian corn, beans, peanuts, sweet potatoes, and sugar cane. Kola nuts are collected and exported. Some of the wild fruits used for food are identified. Palm oil, obtained from *Elaeis guineensis,* fiber from *Raphia vinifera,* and rubber (wild and Para rubber) are among the important economic crops and products. Section XI, "Travel in the interior and care of personnel," discusses some of the hygienic precautions to be observed. The flora (Section XII, p. 163-178) is typically West African. It includes a coastal belt known as the Upper Guinea subregion and characterized by heavy rainfall. In many parts the primeval rain forest has given way, through settlement and agriculture, to dense scrub and secondary growth. Notes are given on some of the more striking features of the vegetation. Section XIII, "Zoology," is a general report on some of the main features of the mammalogy, ornithology, herpetology, and entomology. These subjects

are treated more extensively in special reports by other authors in vol. 2. Section XIV, "Sanitary and medical conditions: Prevailing diseases," summarizes briefly the public health conditions in the Republic.

3025. **TALLON. Réserve zoologique et botanique de Camargue. Rapport d'ensemble du 15 mars au ler mai 1929.** [Zoological and botanical reserve of the Camargue, France.] *Bull. Soc. Nat. Acclimat. France* 76(9): 143-149. 1929.—The extreme cold of February, 1929, killed many of the sedentary small birds. A beaver with 5 embryos is recorded. The vegetation was damaged by frost, high wind, and flooding with salt water.

3026. **TURNER, FRANCIS M., THOMAS C. GREGORY, and ISABELLE M. WELCH [editors]. The condensed chemical dictionary.** [2nd ed.] 551 p. Chemical Catalog Co.: New York, 1930.

3027. **WARTHIN, ALFRED SCOTT. The creed of a biologist: a biologic philosophy of life.** 62p. Paul H. Hoeber: New York City; Constable & Co.: London, 1930. Pr. 6s. 6d.

3028. **WHEELER, WILLIAM MORTON. Present tendencies in biological theory.** *Sci. Month.* 28(2): 97-109. 1929.—The historical and philosophical residuum are analysed, with the theoretical and doctrinal cross-currents in the fields of biology, and the indictments brought against them. Every branch of science develops its own vehicles of ideation or theoretical concepts which are neither mutually equivalent nor interchangeable. A horizontal non-subordinating tabulation of the sciences shows their necessary inter-relationships and non-exclusiveness. Organicism is capable of resolving the Historism-Naturalism duality into an "emergent whole" through the inspiration of "investigative love."—*C. T. Reed.*

3029. **WHITEHEAD, A. N. (Transl. from English by A. d'IVÉRY and P. HOLLARD.) La science et le monde moderne.** [Science and the modern world.] 268p. Payot: Paris, 1930. Pr. 25 F.

3030. **WRIGHT, F. J. The new nature study.** 287p. 4 pl. Thornton Butterworth: London, 1929. Pr. 5s.

3031. **ANONYMOUS. Les conférences Nobel.** *Les Prix Nobel [Stockholm]* 1929: 45p. 1 fig. 1930.—Included are addresses made by the 1929 Nobel prize winners, CHRISTIAAN EIJKMAN (medicine) and FREDERICK GOWLAND HOPKINS (physiology).

ANIMAL

3032. **BARROWS, WILLIAM M. Laboratory exercises in zoology.** 103p. 28 fig. World Book Co.: Yonkers, N. Y., 1930. Pr. 48c.—The aims of the book are to help teachers and students to secure living material suitable for an elementary course, and to provide guidance in a series of progressive studies. Part I consists of class exercises on goldfish, including a study of its living cells; simple physiological experiments on various vertebrates; genetics of *Drosophila;* and animal associations. Part II outlines student projects on the collection and care of living material to be used. Original drawings illustrate the apparatus, etc., required.—*P. H. Dederer.*

3033. **BRESSLAU, E., und H. E. ZIEGLER. Zoologisches Wörterbuch.** [Dictionary of zoology.] 3rd. enlarged ed. viii+786p. 575 fig. Gustav Fischer: Jena, 1931. Pr. unbound, 28 M; bound, 30 M.

3034. **FORTUYN, A. B. DROOGLEEVER. Laboratory animals.** *Bull. Dept. Biol. Yenching Univ.* [*Peping*] 1 (2): 33-38. 1930.—See also *Peking Soc. Nat. Hist. Bull.* 4(3): 33-38. 1930.

3035. **HADLEY, ALDEN H. The killing of birds and animals by automobiles.** *Bird-Lore* 32(6): 464. 1930.—During a trip of 900 miles from New York to Indiana, the ff. were found dead on the roadways: 225 birds, 21 rabbits, 22 skunks, 1 woodchuck, 1 chipmunk, and numbers of toads, snakes, and turtles.

3036. **HEILBORN, ADOLF. Aus der Kinderstube der Tiere. Band I: Das Tier im Bild.** [Animal pictures.] 32p. 128 fig. Brehm: Berlin, 1930. Pr. 15 M.

3037. **LAMEERE, AUG. Précis de zoologie.** [Textbook of zoology.] 400p. 358 fig. Gaston Doin et Cie: Paris, 1929. Pr. 60 F.

3038. **LUNA, EMERICO. L'architettura degli organismi animali.** [The architecture of animal organisms.] *Monitore Zool. Ital.* 40(11/12): 409-418. 1930.—The fundamental plan of all animal organisms is segmentation, whether this be in members one following another (metamery) or rayed like the spokes of a wheel (cyclomery). The former probably represents the more advanced evolution, but is continually liable to complete or partial suppression.—*P. Popenoe.*

3039. **LYELL, D. D. Hunting and spoor of African game.** Seeley Service: London; J. B. Lippincott Co.: Philadelphia, 1929. Pr. 1 £. 11s. 6d.

3040. **PERCIVAL, A. BLAYNEY (edited by E. D. CUMING). A game ranger on Safari.** 305p. Map. 24 pl. Nisbet & Co.: London, 1928.—The author draws upon his long experience in East Africa to present detailed accounts of numerous native animals, their habits, distribution, and economic relations. While chief attention is devoted to the game mammals, there are many notes on birds and reptiles, including a chapter on the crocodile. Periodic fluctuations in numbers, migrations of game, and effects of disease and drought are among the topics discussed.

3042. **POCHE, FRANZ. Dr. Stiles' "American referendum" on three propositions in nomenclature.** *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): 273-283. 1929(1930).—The author seriously challenges the fairness of this referendum. He criticizes in detail various points brought out in Stiles's report on the referendum, and maintains that the latter's interpretation of the term "binary nomenclature" is wrong.

3043. **POCHE, FRANZ. Zur Beseitigung von Übelständen in der zoologischen Nomenklatur.** *X^e Congrès Internat. Zool. Budapest* 1927. Part 2: 1534-1558. 1929.—Consistency and stability of nomenclature can not be approximated as long as well-established rules are overthrown without theoretical necessity or practical advantage. Until 1910 there was no difference of opinion as to what was understood by "binomial nomenclature." In 1910, Stiles announced, contrary to his previous standpoint, a new version of this concept according to which even the old polynomial works had a binomial nomenclature. This view has proved as a whole to be untenable. Moreover, this interpretation occasions troublesome changes of names. By the "arbitrary designation of type," introduced into the rules at the Boston Congress, any author can, in genera without original type, designate as the type of *A* a sp. that long since has been removed from the genus *A* and placed in the more recent genus *B*. The name *A* must then be transferred to *B*, and for *A* in the previous sense a new name must be introduced. The elimination procedure, however, forbids such a maneuver, and possesses preponderating theoretical and practical advantages over the arbitrary designation of type as well. A motion on the part of 646 zoologists expresses clearly the validity of the elimination procedure and erects exact rules for its application which make it independent of the changing systematic interpretation. The Internat. Comm. on Nomenclature has reported to the Congress since 1907 only concerning such propositions to which all of its members, present in the Congress, have concurred (principle of liberum veto). Stiles has erected 4 propositions which conflict with the facts. 649 zoologists have demanded the repeal of this liberum veto; among the signers are found advocates of the nomina conservanda as well as those of the most stringent priority.—*F. Poche (transl. by J. E. Lynch).*

3044. **RAMME, W. Tiergrotesken.** 10p. 80 pl. Brehm Verlag: Berlin, 1931. Pr. 9 M.—The plates are illustra-

tions of grotesque forms and features in the animal kingdom. Mammals, fishes, birds, insects, arachnida, reptiles, and amphibia are represented. Many of the illustrations show mimicry clearly, and a question is raised as to whether the spp. are conscious of their grotesqueness, and as to what purpose, if any, is served by the evolutionary development of such forms.

3045. **REED, H. D., and B. P. YOUNG.** Laboratory studies in zoology. 121p. 4 fig. McGraw-Hill Book Co.: New York, 1930. Pr. $1.—This manual begins with a detailed study of a familiar type, the frog, follows with the development of the egg, and proceeds with shorter studies of representatives of the *Protozoa, Coelenterata, Platyhelminthes, Annelida, Mollusca, Arthropoda,* and *Chordata,* concludes with a review of all the phyla, subphyla, and classes of animals.—*C. S. Brimley.*

3046. **SELENKA, E., und R. GOLDSCHMIDT.** Zoologisches Taschenbuch für Studierende. [8th ed. rev. by J. SEILER.] Heft 1: Wirbellose und allgemeine Zoologie. [Manual of zoology for students. I. Invertebrate and general zoology.] 159p. Georg Thieme: Leipzig, 1931. Pr. 7.20M.

3047. **STEMPELL, W.** Repetitorium der allgemeinen Zoologie. [General zoology.] 268p. 249 fig. Gebrüder Borntraeger: Berlin, 1929. Pr. 7.60 M.

3048. **VIGNON, PAUL.** Introduction à la biologie expérimentale. Les êtres organisés. Activités, instincts, structures. *Encyclopédie Biol. VIII.* 731p. 24 pl. (3 col.) 890 fig. Paul Lechevalier: Paris, 1930. Pr. 210 Fr.—Instances are narrated of intelligent or quasi-intelligent behavior in mammals, insects, and protozoa. The industries and inventive instincts of magpies and bower-birds, ants and wasps are described, as well as the use of various objects as tools, e.g., wasps tamp the soil with pebbles; ants sew; an infusorian carries a sprawling diatom as a fender. Specialized organs and instincts are described, e.g., spittle insect, yucca moth, black-fly larva's suckers. An egg-eating snake's saw (vertebral hypophyses penetrating the esophagus) for opening shells is critically examined. Aristotelian idealism is the exclusive viewpoint. In protozoology interpreted by idealism, morphogenesis involves artistic design and utility. Many Foraminifera and Difflugias choose materials for their shells. The neatly arranged platelets in secreted shells have their physico-chemical basis, but even in the crystal nothing is fortuitous. "Physics raises itself in each type of atom to the specific level of that atom. It does the same in the organism." The morphological interrelations between Rhizopods and Flagellates, form changes in Suctoria, modes of fixation in Infusoria, trichocysts, nematocysts, and spontaneous recombination of cell-fragments into organic wholes, illustrate the inherent organ-forming tendency. The gastropod *Xenophora* agglutinates against its mantle edge, for disguise, stones and shells; crabs (*Oxyrhynchus,* etc.) use recurved dorsal spines to hook upon themselves algae and sponges. The instrument and instinct to use it are developed inseparably. Protective resemblances and instincts in Lepidoptera are described. The large discal "eye-spots" of *Caligo* are partly for ornament, though possibly terrifying like those of certain sphingids which are displayed warningly, with appropriate vibrations. The ambuscade of the spider simulating a bird-dropping, the terrifying serpent-like caterpillar of *Panacra* (*Chaerocampa*) *mydon,* protective resemblances in caterpillars, and imitation of flowers by mantids, are depicted. The bizarre growths upon the prothorax of membracids are disguises. "Here caprice competes with utility; and this caprice is not without its special artistry." The climax of the book is the section on leaf-like South American grasshoppers, the Pterochrozas, the elytra of which have curiously notched margins, are marked as if with patches of parasitic fungi and, both in form and color, resemble dry and withered leaves. Other highly colored grasshoppers (*Pycnopalpa*) have leaf-like wings with even contours but blotched with patches like those gnawed out by the elm-leaf beetle. These resemblances, some useful, some merely decorative, are due to the "initiative" (psychic, instinctive, physiological, morphogenic) of the insect, an unexplained internal urge. Mutations and "orthogenetic" series in the wings of *Pterochroza*-like orthoptera, and their phylogenetic changes since the Carboniferous (loss of nervure Cu A_2, present in *Archaeacridites*), and the transformations which the wing muscles of Odonata have undergone, are discussed. The types of Radiolaria are reviewed, examples of art in Protozoa. How the tentacles of Suctoria and the strange metamorphosis of *Sacculina* arose by mutation, the change of the reptile's jaw into the bird's toothless beak, reptilian scale into a feather (eventually a plume of the bird of Paradise), of the pine cone into the types of inflorescence of the higher plants, are described. Leaving physical forces and calculations to followers of Descartes, the Aristotelian constructs his world out of atoms which control their electrons and protons, of organisms which control their atoms. How such organization is effected is an unfathomable mystery. Several indices (biological, philosophical, systematic, bibliographic) are provided.—*J. H. Gerould.*

TECHNIQUE

3049. **AINSLIE, M. A.** Contribution to the discussion on the formation of the microscopical image. *Jour. Roy. Microscop. Soc.* 49: 129-131. 1929.—The Abbé theory does not give adequate explanation of dark-ground illumination. Diffraction spectra do not cease to exist with large cone illumination, hence their disappearance does not weaken the theory. The equivalence theory is not satisfactory since varying the tube length does not equally impair the definition of all details. The 2 theories are not mutually destructive, but neither explains everything.—*M. B. Garnett.*

3050. **CONN, H. J.** Progress in the standardization of stains. *Stain Tech.* 6(1): 1-2. 1931.—This note calls attention to the drawbacks of the frozen-section procedure (lack of permanency of mounts and difficulty of applying double or triple stains) and calls attention to the way these drawbacks have now been overcome.—*Author* (*courtesy Wistar Bibl. Serv.*).

3051. **ELLINGER, PHILLIPP, und AUGUST HIRT.** Eine Methode zur Beobachtung lebender Organe mit stärksten Vergrösserungen im Luminiszenzlicht (Intravitalmikroskopie). *In: Handbuch der biologischen Arbeitsmethoden. Abt. V. Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus. Teil 2. Heft 15. Lief. 341.* Urban & Schwarzenberg: Berlin, 1930.—The difficulties of observing living objects too thick to allow the passage of light through the tissue are such that a new method is here proposed which gives excellent results. Luminescent dyes, fluorescein (Na salt), and trypaflavin in Ringer's solution were used as vital stains which were taken up by the cells and plasma of the blood without injury to the tissues. The paper describes the apparatus for observing the tissues after the dye has been injected. The source of illumination is an arc lamp. There are filters and a cooling bath which allow a band of u. v. of 300-390 mμ to pass through. This light is reflected by a vertical illuminator in a compound microscope down through the objective onto the living tissues, and the fluorescence produced is observed through the microscope in a darkened room. Water immersion lenses of highest magnification are used. The lens is immersed in Ringer's solution kept at proper temp. and flowing. Wherever fluorescein is present a greenish luminescence is produced varying from a brilliant green on the alkaline side toward yellow on the acid side. This dye is taken up in the plasma of the blood and in the cytoplasm of the tissues. Trypaflavin penetrates the nuclei, but does not stain the blood plasma. The progress of the entrance of the dye into the cells can be watched for a number of hrs. without injury to the tissues. Colored plates of the liver and lung of the frog, stained with trypaflavin and observed in lumines-

cent light, show the nuclear elements beautifully. It is necessary to use drawings of the tissues inasmuch as the reflected light is not intense enough to take a picture in less than 1 sec. However, emulsions are being prepared sensitive to the wave length used in these experiments. A theoretical discussion is given of the physical chemical processes involved in the entrance and union of the dyes with the tissue elements.—*S. I. Kornhauser.*

3052. **FISCHER, F. P. Über eine optische Methode zur Darstellung von Gewebsoberflächen.** *Naturwiss. Zeitschr. Lotos* 77(5/12): 86-91. 1929.—A description is given of the method of "reflection-photography," which the author worked out to show the surface of the cornea and its changes in reflection picture. "Reflectography" may also be used with other tissue surfaces because it ignores similarity in the sense of a true image, and in its place uses the adequate surface image—that is the "reflected representation." There is practically no lower limit in resolving power, and the fineness of the image is only dependent on the cross-section size of the pencil of light used. Therefore the minuteness of the object also has no lower limit.—*J. E. Gullberg.*

3053. **FRENCH, R. W. Practical methods for the control of hydrogen-ion concentration in staining procedures—the use of "buffers."** *Stain Tech.* 5(3): 87-90. 1930.—Data are given for the simple preparation of dry chemical mixtures to be used in the easy preparation of buffer solutions for use in the control of stain procedures. Two of these mixtures of special value in practical staining operations are: 4.539 gm. KH_2PO_4, 5.940 gm. $Na_2HPO_4.2H_2O$ (pH=6.8); 7.262 gm. KH_2PO_4, 2.376 gm. $Na_2HPO_4.2H_2O$ (pH=7.4). H-ion control has been found necessary in order to obtain consistent results with the compound blood and tissue stains, such as Wright's and Giemsa preparations. The more general use of a predetermined pH in staining procedures is indicated; several possible methods of application are suggested.—*Author (courtesy Wistar Bibl. Serv.).*

3054. **HAUPT, ARTHUR W. A gelatin fixative for paraffin sections.** *Stain Tech.* 5(3): 97-98. 1930.—As a substitute for Mayer's albumen fixative the writer proposes one prepared as follows: Dissolve 1 gm. of gelatin in 100 cc. of distilled water at 30° C. Then add 2 gm. of phenol crystals and 15 cc. of pure glycerin. Stir well and filter. The original formula calls for 1 cc. of a 2% solution of Na-salicylate instead of the phenol, but phenol is a more satisfactory preservative, especially against the growth of molds. Only the best grade of gelatin should be used, and the temp. should not exceed 30°. Gelatin which dissolves at a higher temp. is not satisfactory. If 1-2 days are required for the gelatin to dissolve, decomposition will probably begin; and if the phenol is added too soon, the undissolved gelatin will turn white and harden.—*Author (courtesy Wistar Bibl. Serv.).*

3055. **HOLMES, W. C., and A. R. PETERSON. The analysis of neutral red and of the pyronins.** *Stain Tech.* 5(3): 91-96. 1930.—Neutral red and the pyronins cannot be evaluated by means of reduction with titanous chloride, and market supplies of the stains contain nitrogenous dye intermediates which render other chemical methods of determining dye content unreliable. Data given in the present paper will enable the analyst to obtain reliable dye-content values with samples of these dyes by means of a convenient spectrophotometric technic.—*Author (courtesy Wistar Bibl. Serv.).*

3056. **KINNEY, ETHEL MAY. A simple method for staining reticulum.** *Arch. Path. & Lab. Med.* 5(2): 283-284. 2 fig. 1928.—The tissue is cut in slices several mm. thick, placed in a 1% solution of Na sulphantimonate for 18 hrs., carried through to paraffin as usual, but not allowed to remain in the clearing agent (cedar oil or xylene) for more than 1-2 hrs. The fixer stains the reticulum a dark brown and other tissue yellow. It is stable in 70% alcohol and is unaffected by subsequent staining with hematoxylin or eosin.—*C. A. Kofoid.*

3057. **KORNHAUSER, S. I. Hematein—its advantages for general laboratory usage.** *Stain Tech.* 5(1): 13-15. 1930.—The advantages of hematein over hematoxylin are that it is easy to prepare, easy to use, and saves time, while it gives equally good results. The writer has been employing for some time a prewar imported hematein, and until within the last few mo. has been unable to locate a satisfactory product of recent manufacture, either domestic or foreign. At the request of the Biological Stain Commission, however, an American manufacturer has at last put on the market a C.P. hematein which gives splendid results. The technic is as follows: Paraffin or celloidin sections of Bouin or Zenker-formol material are run down to water and stained about 5 min. in Mayer's hemalum (0.5 gm. hematein ground up in a glass mortar with 10 cc. 95% alcohol and added to 500 cc. of 5% aqueous solution K alum). Rinse 1-3 sec. in tap-water. Dip 1-3 sec. in eosin B (1 part 0.5% solution in 20% alcohol added to 2 parts distilled water; filtered from time to time). Wash several min. in running water or in several changes of tap-water. Dehydrate and mount; with unattached celloidin sections this may be done by running up to 95% alcohol, spreading on slide, blotting, wetting with absolute alcohol, draining, and mounting in euparal.—*Author (courtesy Wistar Bibl. Serv.).*

3058. **LA CORTE, J. G. Influence of pH dans les colorations par la méthode de Giemsa.** *Compt. Rend. Soc. Biol.* 98: 1579-1580. 1929.—Distilled water for diluting Giemsa staining solution was buffered with enough NaH_2PO_4 to obtain a pH range of 6.6-7.8. For staining, 1 drop of Giemsa solution was added to 1 cc. of the buffer solutions. Blood smears of guinea-pig experimentally infected with *Trypanosoma gambiense* were stained with these solutions 0.5-24 hrs. Optimum staining was obtained with solutions at pH 7.4 for 1 hr. With solutions at pH 6.6, 6.8, and 7.2 a reddish staining was obtained and differentiation was poor. With solutions at pH 7.6 and 7.8 the color was too blue.—*Author (courtesy Wistar Bibl. Serv.).*

3059. **MARTIN, L. C. The theory of the microscope.** *Phys. Soc. [London] Proc.* 43(2): 186-211. 13 fig. 1931.—Purely physical.

3060. **MILLER, E. G. Frozen section technique.** *Jour. Roy. Microsc. Soc.* 50(3): 302-306. 1 fig. 1930.—Author fixes in 40% formaldehyde up to 20 min. and cuts on CO_2 microtome. Slides are coated with 2% solution of "Gold Label" sheet gelatin at 60° C., applied as for making blood smears, and dried on end 15 min. Sections are mounted and pressed flat by cigarette paper method. For general work stain in Ehrlich's hematoxylin + eosin 0.2% aq. sol.; for rapid diagnosis, Hollande-chrome-carmine-iron; for fat, Hollande method + sudan III and mount in glycerin jelly. After vital staining in trypan blue, stain in neutral red 30 sec., wash rapidly in aq. dist. and abs. alcohol. For tubercle bacilli carbol fuchsin at 50° C.—*C. A. Gunns.*

3061. **RACOVITZA, EMILE G. Photothèque à classement vertical. Essai pour trouver une méthode rationelle et pratique de conservation, de manipulation et de classement des collections de clichés et de documents photographiques. [Practical method of storing and classifying collections of slides and photographs.]** *Bul. Soc. Ştiinţe Cluj [Rumania]* 5(Fasc. 3, Part 2): 73-114. 1 pl., 12 fig. 1930.

3062. **RHAMY, B. W. Quick celloidin method for preparing tissues.** *Arch. Path. & Lab. Med.* 5(2): 282. 1928.—The preparation of celloidin sections can be completed in 48 hrs. as follows: fixation in 10% formalin for 10 min.; acetone (20 times volume of tissue) ½-2 hrs., 2 changes; absolute alcohol-acetone-ether equal parts, ½-2 hrs.; thick celloidin 24 hrs. Mount and harden in full strength denatured alcohol.—*C. A. Kofoid.*

3063. **RHEINBERG, JULIUS. The mode of formation of the image in the microscope.** *Jour. Roy. Microsc. Soc.* 49: 132-142. 1929.—The Abbé theory and the Airy theory and its variants do not in any way conflict since the former deals with objects so illuminated as to lack self-luminosity to the maximum extent, and the latter deals with self-luminous objects. A gradual but strictly limited

approach toward self-luminosity is presented by the structural elements of objects according to the way they may be illuminated. All cases can be most conveniently dealt with by the Abbé theory. The chief objections to the Abbé theory are discussed, and suggestions are made to account for the effects of dark-ground illumination held to be at variance with that theory.—*M. B. Garnett.*

3064. **STEARN, ALLEN E., and ESTHER WAGNER STEARN. The mechanism of staining explained on a chemical basis. II. General presentation.** *Stain Tech.* 5(1): 17-24. 1930.—At present the division of the factors influencing staining into those supporting a chemical mechanism or those supporting what is known as "adsorption" mechanism is questioned because the latter term cannot be definitely defined from general usage. In this paper the nature of adsorption is discussed. Data indicating definitely a chemical mechanism are not directly considered; but in many cases often cited by other writers as necessitating a non-chemical mechanism, the validity of such mechanism is questioned.—*Author (courtesy Wistar Bibl. Serv.).*

3065. **TUAN, HUS-CHUAN. Picric acid as a destaining agent for iron alum hematoxylin.** *Stain Tech.* 5(4): 135-138. 1930.—A saturated aqueous solution of picric acid is used to differentiate paraffin sections and smeared pollen mother cells stained in Heidenhain's and Delafield's hematoxylins. The method proceeds as usual, except that the iron alum in the destaining process is replaced by picric acid. Mixtures of picrosulphuric acid and dilute Delafield's hematoxylin and mixtures of picric acid and aqueous hematoxylin have also been tested; the latter yields the better result, but is not so good as the other method described here.—*Author (courtesy Wistar Bibl. Serv.).*

3066. **VOIGT, MAX. Das Mikroskop im Dienste des biologischen Unterrichts. Ein Handbuch für Lehrer aller Schulgattungen, für Schülerübungen und für Liebhaber mikroskopischer Arbeit. Teil C, "Praxis der Naturkunde."** [3rd, fully rev. and enlarged ed.] viii+528p. 1 pl. 184 fig. *Dieterich'sche Verlagsbuchh.: Leipzig, 1929.* Pr. 14 M.—There are sections devoted to the structure of the microscope, to its selection for different purposes, to the uses of its various parts, and to the methods of illumination. Suggestions for equipping the workroom and desk, and also for carrying out the various general techniques required in microscopic anatomy are given. These sections occupy 256p. There follows a series of special techniques dealing with fungi, algae, liverworts, ferns, and flowering plants. Methods for studying the living cell, protoplasmic inclusions, and different plant organs close this part (83p.) In 108p. are directions for the study of Protozoa and various classes of invertebrates and vertebrates, including specialized methods for various tissues and organs. Finally there are directions for drawing, measuring, and photographing microscopic structures. There are bibliographic references and an index.—*C. E. McClung.*

3067. **YASUZUMI, G. Über das Fixierungsmittel. 2. Mitteilung. Diffusionsbeobachtung der Fixierungsmittel in Gelen nach Kohlrausch'scher Widerstandsbeobachtungsmethode.** *Folia Anat. Japonica* 8(2): 173-188. 9 fig. 1930.—Fixation of a cell causes diffusion of the fixing solution. Observations on conditions of diffusion, therefore, are very important in a study of fixing solutions. When the fixing solution used is that of electrolytes, the electric resistance rises together with diffusion in the remaining solution. The conclusions from this study are: With a definite concentration, diffusion of the fixing solution in gels and the exudation of protein, salts, and other things from gels are regular. The loss of substance by fixation with a sublimate solution can be represented by the following equation: $C-R=aT^b$. (C, electric resistance before diffusion; R, electric resistance; T, time (in minutes); a and b are constants.) The exudation curve by which the electrolytes go out of the gels in the upper layer of distilled water can be represented thus: $R=aT^{-b}$. The diffusion phenomena of a saturated picric-acid solution run parallel to the time: $R=a+bT$. The diffusion of a 3.44% solution of $K_2Cr_2O_7$ can be represented by the equation $R=C+T/(a+bT)$. The structure or constitution of any tissue is greatly modified by fixation.—*Author (courtesy Wistar Bibl. Serv.).*

3068. **ANONYMOUS. Lantern slides and film strips of the United States Department of Agriculture.** *U. S. Dept. Agric. Misc. Publ. 72.* 14p. 1930.—Included is a subject list of the lantern slides and film strip series of the Department available, together with information of how loans of the series may be had or purchases made.—*F. G. Harden (courtesy E. S. R.).*

BIOGRAPHY, HISTORY, AND BIBLIOGRAPHY

CARROLL W. DODGE, *Editor*

(See also in this issue Entries 3007, 3061, 3068, 3803, 4433, 4481, 4602, 4698, 4735, 4763, 4803, 4906, 5006, 5046, 5307, 5516, 5591, 5809, 5910, 5923)

3069. **AMBARD, L. La civilisation Européenne moderne. La biologie. [History of modern European biology.]** (*Histoire du Monde,* Vol. 13, Pt. 5.) 116p. E. de Boccard: Paris, 1930. Pr. 25 f.

3070. **B., E. W. Obituary. Bernard Barham Woodward, F. L. S., F. G. S., F. R. M. S. [1853-1930].** *Jour. Roy. Microsc. Soc.* 51(1): 32-33. 1931.—British conchologist.

3071. **BASTIANELLI, G. Commemorazione di Amico Bignami.** *Bull. e Atti R. Accad. Med. Roma* 56(3): 64-68. 1930.—Bignami began as a neurologist, but his most important work was on the etiology and pathology of malaria. It is asserted that he succeeded in producing malaria in man by inoculation through the mosquito 3 yrs. before Ross's final experiments in the inoculating of birds.

3072. **[BATESON, WILLIAM] [R. C. PUNNETT, editor]. Scientific papers of William Bateson. Vol. 1.** viii+452p. 7 pl. **Vol. 2.** viii+503p. 29 pl. University Press: Cambridge, 1928. Pr. $28.50.

3073. **BOTTAZZI, FILIPPO. Commemorazione del socio nazionale Giulio Fano [1856-1929].** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 12(9): 484-488. 1930.—This distinguished Italian physiologist was prof. at Genoa (1884-1894), later at Florence.

3074. **BOUIN, P. Auguste Prenant (1861-1927).** *Arch. Anat. Microscop.* 26(1): 1-42. Portrait. 1930.—A sketch of Prenant's life and a review and bibliography of his work, which lay chiefly in the fields of vertebrate embryology, histology, and cytology.

3075. **BRIERLEY, WM. B. Science of the year—1929. The biological sciences.** *Ann. Register, Rothamsted Exp. Station.* 7p. 1929.

3076. **BRUCH, CARLOS. La obra entomológica del Rev. P. Erich Wasmann. [The entomological work of P. E. Wasmann.]** *Rev. Soc. Ent. Argentina* 2(5): 283-285. Portrait. 1929.—An appreciation of this German entomologist upon the occasion of his 70th birthday.

3077. **C[ABRERA], A. Elogio de Thomas [1859-1929].** *Physis [Buenos Aires]* 10(35): 215-216. 1930.—A tribute to the distinguished British mammalogist, Oldfield Thomas.

3078. **CALVERT, P. P. Dr. George Dimmock [1853-1930].** *Ent. News* 41(8): 280. 1930.

3079. **CALVERT, PHILIP P. Ezra Townsend Cresson. A contribution to the history of entomology in North America. With estimates of Cresson's work on the**

Hymenoptera, by H. T. FERNALD, S. A. ROHWER, L. O. HOWARD, H. L. VIERECK, T. D. A. COCKERELL, and J. C. BRADLEY. *Trans. Amer. Ent. Soc.* 52(Suppl.): i-lxiii. Portrait. 1928.—Cresson was born in Philadelphia, 1838, and died at Swarthmore, Pennsylvania, 1926. He was one of the founders, on February 22, 1859, of the Ent. Soc. of Philadelphia, whose name was changed, in 1867, to that of the American Ent. Soc. After an attempt, unsuccessful on account of financial straits, to act as curator of the society, he became connected with the Franklin Insurance Co. of Philadelphia in 1869 and was secretary thereof from 1878 to 1910. His continued interest in the Ent. Soc. is shown by the facts that he edited its Transactions from 1867 to 1913 and served as treasurer from 1874 to 1924. He was the author of 72 papers on insects, 70 of which deal with the taxonomy of the Hymenoptera and describe 2737 sp. as new. His most important work is the "Synopsis of the families and genera of the Hymenoptera of America north of Mexico together with a catalogue of the described species and bibliography," published in 1887. He formed a collection of 87,775 specimens of this order, representing 3511 sp., which he presented in 1901 to The Amer. Ent. Soc. Many hitherto unpublished letters of Cresson to other entomologists are contained in this biography.—*P. P. Calvert.*

3080. CHAPMAN, FRANK M. Joel Asaph Allen. [1838-1921.] *Jour. Mammalogy* 11(2): 105-117. Portrait. 1930.—Biography of this American mammalogist and ornithologist.

3081. CHMELAŘ, F. Životaí dílo prof. B. Erbena v pěstování rostlin. (K 70. ranozeninám dne 9. března 1931.) [Work of Bohdan Erben in plant culture.] *Věstník Československ. Akad. Zem.* 7(3): 237-238. 1931.—Biographical sketch of Erben on his 70th birthday.

3082. COLOSI, G. L'attività scientifica della stazione zoologica di Napoli durante l'ultimo quinquennio (1925-1929). [Scientific activity of the Naples zoological station 1925-1929.] *L'Universo* 11(12): 1237-1251. 7 fig. 1930.

3083. CUATRECASAS, J. En Romualdo González Fragoso [1862-1928]. *Bul. Inst. Catalana Hist. Nat.* 9 (1/2): 49-51. 1929.—This Spanish botanist, director of the section of Botany of the Museo Nacional in Madrid, worked particularly in mycology. Some of his publications are listed.

3084. DALLAS, E. D. Biografía de Félix Lynch Arribálzaga. *Rev. Soc. Ent. Argentina* 2(1): 5-10. Portrait. 1928.—Note of appreciation of this South American entomologist (1854-1894) upon the occasion of the establishing of a prize in his honor. A list of his 15 publications is given.

3085. DALLAS, E. D. Dr. Juan Brèthes [1871-1928]. *Rev. Soc. Ent. Argentina* 2(2): 103-107. Portrait. 1928.—An appreciation of this French born entomologist of the Mus. Nacional de Hist. Nat., Buenos Aires. He described more than 1100 new sp., and his published works number 220.

3086. DALLAS, E. D. Arturo G. Frers [1900-1925]. *Rev. Soc. Ent. Argentina* 2(5): 289-292. Portrait. 1929.—Appreciation of this entomologist, with a list of his 15 publications.

3087. DAMPIER-WHETHAM, WILLLIAM CECIL DAMPIER. A history of science and its relations with philosophy and religion. 514p. Macmillan Company: New York; University Press: Cambridge, England, 1929. Pr. $4.—Evidently first printed in England in 1929, revised and reprinted in America 1930 and 1931. While primarily a history of scientific thought in the exact sciences and its interaction on religion and philosophy, the contributions of biological thought, especially from the medical fields, are briefly but thoroughly summarized for each epoch. The contributions of biology and allied sciences in the 19th and 20th centuries are much more fully treated, especially the fields of evolution and anthropology. The work concludes with a survey of modern philosophical trends, many of them intimately connected with biological thought.—*C. W. Dodge.*

3088. FORBES, A. C. Augustine Henry: an obituary sketch. *Empire Forestry Jour.* 9(1): 129-131. 1930.—This late prof. of forestry in the Royal College of Science, Dublin, 1857-1930, published numerous papers on botanical as well as forestry subjects.—*A. P. Kelley.*

3089. FREY, R. Irmer Forsius [1892-1930]. *Notulae Entomologicae* [*Helsingfors*] 10(4): 105-106. Portrait. 1930.—Brief note on the death of this Finnish naturalist, forester by profession.

3090. FROGGATT, W. W. John Brazier [1842-1930]. *Australian Nat.* 8(4): 87. 1930.—Author of many papers on conchology, and former conchologist of the Australian Museum.

3091. GAGER, C. STUART. Report on a European trip of the Director. *Brooklyn Bot. Gard. Rec.* 20(1): 1-24. 6 fig. 1931.—This contains historical matter on various botanic and other gardens in Italy, Switzerland, France, and England; references to the 9th Internat. Hort. Congress, London, and the 5th Internat. Bot. Congress, Cambridge (England); and an account of the unveiling of the tablet to Sir Joseph Hooker in St. Mary's Church, Halesworth (his birthplace).—*C. S. Gager.*

3092. GINZBURG, BENJAMIN. The adventure of science. 487p., 8 portraits. Simon and Schuster, New York, 1930. Pr. $5.—This work presents biographies of a score of scientists, of which Aristotle, Harvey, Lamarck, Darwin, Pasteur and Mendel are of especial interest to the biologist. Following the biography is a summary of the scientific work with an attempt to trace its influence on subsequent thought.—*C. W. Dodge.*

3093. GOODEY, T. J. G. de Man (1850-1930). *Jour. Helminthol.* 8(2): 65-68. 1930.—Obituary and bibliography.

3094. GULLAND, G. LOVELL. The circulating fluid. *Edinburgh Med. Jour.* 37(10): 569-581. 1930.—A review of the history of the development of the modern conceptions of the blood, and an outline of the problems remaining for solution.

3095. HANKE, V. Ernst Fuchs [1850-1930]. *Wien. Med. Wochenschr.* 80(49): 1575-1576. Portrait. 1930.—Fuchs was a great anatomical pathologist and teacher, interested especially in the eye, among whose outstanding works were those on sarcoma of the uveal tract, septic endophthalmitis, and sympathetic ophthalmia.

3096. HERVÉ, GEORGES. John Hunter [1728-1793] et ses travaux de génétique. *Bull. Soc. Franç. Hist. Méd.* 24(7/8): 229-238. 1930.—Discusses Hunter's theories on the phenomenon of the free-martin; ♂ secondary sexual characters in the ♀ pheasant; and the relationship of the wolf, jackal, and dog.

3097. HORN, WALTHER. Otto Leonhard (†27. März 1929 in Dresden-Blasewitz)—ein letzter Gruss und ein letzter Dank! *Ent. Blätter* 25(3): 113-118. Portrait. 1929.—An appreciation of this German coleopterist.

3098. ILTIS, HUGO. Charles Naudin. *Der Züchter* 1 (8): 248-250. 1929.

3099. IREDALE, TOM. John Brazier, conchologist [1842-1930]. *Australian Mus. Mag.* 4: 142-143. Portrait. 1930.—Brazier was an experienced collector in Australia and the South Seas, and published a number of papers on Mollusca.

3100. JESPERSEN, P. Dänische ozeanographische Expedition um die Erde 1928-1930. *Naturwiss.* 19(10): 231-233. Map. 1931.—Itinerary.

3101. JURADO, MARTÍN DOELLO. 75° aniversario del natalicio de Florentino Ameghino. [75th anniversary of the birth of F. Ameghino.] *Physis* [*Buenos Aires*] 10(35): 210-213. 1930.—A eulogy.

3102. KANAMARU, T. A history of Japanese conchology (5). [In Japanese.] *The Venus* [*Japan*] 2(4): 185-190. 1931.

3103. K[LOSS], C. B. Herbert Christopher Robinson 1874-1929. *Jour. Fed. Malay States Mus.* 16(1/2): 1-12. 1930.—This British zoologist, formerly Director of Museums, Federated Malay States, specialized in birds and mammals, but also published papers on other

branches of zoölogy and on anthropology. A bibliography of about 150 titles is appended.

3104. KOPPERS, WILHELM. Das Problem der Entstehung der Tierzucht. *Schrift. Ver. Verbreit. Naturwiss. Kenntnisse Wien* 69: 31-68. 1928/1929.—Animal breeding is an expression of the performance of a definite cultural cycle, and is therefore a definite achievement in human history. The home of this nomadic culture originally included the early Samoyedic and the early Turko-Tartaric societies, which indicates that there at least originated the motives and impulses for the domestication of the various farm animals. The dog is perhaps the only exception for, although he is today represented everywhere in primitive society, his dissemination shows such gaps (originally he was not found on the islands of Adaman and Tasmania) that his domestication can not be ascribed to the very early periods. However, breeding the dog did not carry with it such an important change in the social and economic community life as was the case in the utilization of the reindeer and later of the horse in Arctic-Baltic cultural regions. The breeding of cattle occurred in more highly developed, "tertiary," matronymic, society which had its home in the regions of southern and central Asia. In agreement with the findings of the older social history it has been determined that the domestic swine belongs to matronymic society. Breeding the mule is essentially only a substitute for breeding horses. The emergence of nomadic society into conditions of classic culture brought about a period of very advanced development of social and economic division of mankind, the beginning of real feudalism. Thus the investigation of the problem of animal husbandry leads to the actual and authoritative laboratory of the history of human culture.—*W. Koppers* (*transl. by A. H. Kuhlman*).

3105. KORSCHEFSKY, R. Die entomologischen Publikationen von Julius Weise. *Ent. Blätter* 24(4): 175-186. 1928.—A chronological list of the 449 publications, extending from 1872 to 1926, of this specialist on Coccinellidae and Chrysomelidae, who died in 1925, age 81 yrs.—*M. H. Hatch.*

3106. KOULE, LOUIS. Lamarck et l'interprétation de la nature. 245p. Ernest Flammarion: Paris, 1930(?).

3107. K[RAGLIEVICH], L. Santiago Pozzi [1859?-1829]. *Physis* [*Buenos Aires*] 10(35): 213-215. 1930.—A paleontological collector and preparator from Argentina.

3108. LAMEERE, AUG. L'année zoologique. 1.—1927. *Recueil Inst. Zool. Torley-Rousseau* [*Bruxelles*] 1(2): 179-234. 21 fig. 1928.—This is an extensive, critical review of zoological works published in 1927, particularly those dealing with natural history, or matters of phylogenetic and evolutionary interest. The works discussed are arranged by animal groups, from Protozoa to Vertebrata.

3109. LIU, J. C. Important bibliography on the taxonomy of Chinese plants. *Bull. Dept. Biol. Yenching Univ.* [*Peping*] 1(2): 17-32. 1930.—A list of books and serials that deal systematically with descriptions and discussions of Chinese plants.

3110. MORELAND, W. H. The agrarian system of Moslem India. An historical essay with appendices. 296p. W. Heffer & Sons: Cambridge, 1929. Pr. 15s.—Chapter 1 deals with the antecedents of the Moslem Agrarian System and its relation to the Hindu Sacred Law. Succeeding chapters discuss the 13th and 14th centuries, the Sayyid and Afghan Dynasties, the Reign of Akbar, and the 17th century. The body of the work closes with a consideration of Northern India, the Deccan, and Bengal. Extensive appendices explain the technical terms employed, amplify points mentioned in the body of the book, and give the list of authorities cited. —*R. H. True.*

3111. NEUBURGER, MAX. Oldest investigations on origin of dropsy. *Med. Rev. of Rev.* [*New York*] 36 (8): 497-501. 1930.—A review of the experimental work of Richard Lower (1631-91) in investigating the etiology of stasis edema, and of Stephen Hales (1677-1761) on hydremic or cachectic edema.

3112. NEWELL, WILMON. Comments on entomology in the South during the past twenty-five years. *Jour. Econ. Ent.* 22(5): 732-735. 1929.—Accounts of the early boll weevil investigations of W. D. Hunter, H. A. Morgan, and others; of Argentine ant studies by Foster and Biever; and of the whitefly work of Gossard and H. J. Webber are the chief points touched upon. Recent work, especially from the standpoint of entomological organizations, in the South (U. S. A.) is also mentioned.

3113. NITSCHE, J. Josef Franz Berger [1860-1928]. *Zeitschr. Österr. Ent.-Ver.* 14(1): 2-3. Portrait. 1929.—Brief account of the activities of this German entomologist, Principal of one of the public schools for boys of Vienna, and President, since 1916, of the Austrian Ent. Soc.

3114. NITSCHE, J. Robert Zusanek [1895-1929]. *Zeitschr. Österr. Ent.-Ver.* 14(7): 69-70. Portrait. 1929.—This Austrian, a teacher in a public school in Vienna, was specially interested in the Brephidae and contributed to the literature on Lepidoptera through this journal.

3115. O., E. Albert Jesionek. *Brit. Jour. Actinotherapy* 5(7): 152-153. Portrait. 1930.—Albert Jesionek (born 1870) is known as the propounder of the theory that the healing effect of light on the body is due to entrance into the circulation of substances produced by epidermal absorption of light, which are then carried to tuberculous foci by the lymph stream—the most likely substance of this kind being the melanotic pigment.

3116. OCHS, GEORG. Nachruf. [Obituary notice of Hermann Bücking.] *Ent. Blätter* 24(3): 97-98. Portrait. 1928.—This German coleopterist and dye manufacturer died in 1928, aged 73 yrs. His collection of 150 boxes is deposited in the Nat. Hist. Mus. at Mainz. He prepared a supplement of Heyden's "Die Käfer von Nassau und Frankfurt" to be published in this journal.—*M. H. Hatch.*

3117. OLIVER, WADE W. (foreword by THEOBALD SMITH). Stalkers of pestilence. The story of man's ideas of infection. P. B. Hoeber: New York, 1930.

3118. PIGHINI, GIACOMO (preface by GUGLIELMO BILANCIONI). Viaggi ed escursioni scientifiche di Lazzaro Spallanzani (con documenti inediti ed illustrazioni). [Travels and scientific excursions of Spallanzani (with unpublished documents and illustrations).] 441p., frontispiece, 25 fig. L. Cappelli: Bologna, 1929. Pr. 40 L.—This book contains accounts of the travels of this famous Italian naturalist from 1761 to 1792 in central and southern Europe. An account is given also of the Spallanzani Museum in Reggio Emilia. His accounts of the marine life of Italian coasts are reviewed. A bibliography dealing with his life and scientific work contains 82 titles.—*C. A. Kofoid.*

3119. PITFIELD, ROBERT LUCAS. Sir Ronald Ross: the man who flunked and became famous. *Med. Life* 37(5): 246-268. Portrait, 5 pl. 1930.—An account of Ross's early life and the story of his discovery of the malarial plasmodium in the stomach of the ♀ *Anopheles,* with reproduction of the page from his notebook on the day of discovery, Aug. 20, 1897.

3120. POTIER de la VARDE, R. Max Fleischer (1861-1930). *Ann. Cryptogamie Exotique* 3(4): 161-167. *Portrait.* 1930.—An account of the life and work of this Upper Silesian bryologist, with a list of his publications.

3121. PRENDERGAST, J. S. The background of Galen's life and activities and its influence on his achievements. *Proc. Roy. Soc. Med.* 23(8): 1131-1148. 1930.

3122. RAPP, OTTO. Franz Maass†. *Ent. Blätter* 26 (1): 1-4. Portrait. 1930.—This Thüringian coleopterist and railway engineer, b. Oschersleben 1850, resided since 1890 in Erfurt, where he died 1930. A list is given of 65 sp. of Coleoptera taken first by him in Thüringia.—*M. H. Hatch.*

3123. REICHENSPERGER, A. [Erich Wasmann, 1859-1931.] *Zool. Anzeiger* 93(11/12): 336. 1931.—Brief notice of this well-known myrmecologist.

3124. RENKEMA, H. W., and JOHN ARDAGH. Aylmet

Bourke Lambert and his "Description of the genus Pinus." *Jour. Linn. Soc. London, Bot.* 48(324): 439-466. 1930.—A detailed description of the various editions of this work (1803-1842), with lists of contents; also biographical notes on Lambert, a bibliography of his other works, and extracts from his correspondence.

3125. **ROSENFELD, ARTHUR H.** La estación experimental de la industria azucarera de Java. [The sugar experiment station of Java.] *Bol. Unión Panamericana* 64(10): 1054-1068. 1930.—History, organization and administration, personnel, publications, services rendered, and résumé of work done.

3126. **ROWSWELL, BASIL T.** Joseph Sinel [1844-1929]. *Soc. Guernesiaise Rept. and Trans.* 10(4): 369-371. 1931.—A well-known naturalist of the Channel Islands and author of works on the local fauna.

3127. **[RUTHERFORD, ERNEST.]** Address of the president, at the anniversary meeting, December 1, 1930. *Proc. Roy. Soc.* [*London*] *B* 107(752): 348-368. 1931. Also in *Proc. Roy. Soc. A* 130(813): 239-259. 1931.—The address contains brief obituary statements and appreciations of the Earl of Balfour (1848-1930); Edwin Tulley Newton (1840-1930), British palaeontologist; William Diller Matthew, Prof. of Palaeontology (1871-1930), in the Univ. of California; and many other scientists [not biologists]. There is also a review of the research and program of the Royal Society since the World War.

3128. **S., A.** Franz Perneder [1865-1928]. *Zeitschr. Österr. Ent.-Verein.* 13(6): 57-58. 1928.—Obituary of this Austrian entomologist.

3129. **SANCTIS, S. de.** Commemorazione di Giovanni Mingazzini. *Bull. e Atti R. Accad. Med. Roma* 56(6/7): 161-167. 1930.—Mingazzini's great work was devoted to various phases of the pathologic anatomy of the nervous centers. He was born in 1859.

3130. **SANTESSON, C. G.** Carl Tigerstedt (1882-1930). *Skand. Arch. Physiol.* 61(1/3): 20-22. Portrait. 1931.—Of the Univ. of Helsingfors.

3131. **SCHUCHERT, CHARLES.** William Diller Matthew, February 19, 1871–September 24, 1930. *Amer. Jour. Sci.* 20(120): 483-484. 1930.—Matthew was one of the 3 foremost American workers in vertebrate paleontology. The majority of his more than 200 publications deal with Cenozoic mammals. His paper on "Climate and evolution" was especially noteworthy. He had been a member of the staff of the American Museum of Nat. Hist. for 32 yrs., and had held the chair of paleontology at the Univ. of California since 1927.

3132. **SCHW[APPACH].** Dr. phil. et Dr. hon. c. Max Kienitz. *Deutsche Forstztg.* 46(25): 618-619. Portrait. 1931.—This distinguished forestry educator (1849-1931) specialized in physiological studies, including investigations of the significance of source of seed, and the production of turpentine and rosin from German trees.—*W. N. Sparhawk.*

3133. **SERGENT, ÉMILE.** Laënnec, clinicien et médecin. [1781-1831.] *Rev. Gén. Sci. Pures et Appl.* 42(6): 169-177. 1931.—An appreciation of the distinguished French pathologist and anatomist.

3134. **SEURAT, L. G.** Exploration zoologique de l'Algérie, de 1830 à 1930. 708p. illus. Masson et Cie: Paris, 1930.—This historical summary is arranged according to animal groups, with complete bibliography and a list of all zoologists and explorers who have contributed to the knowledge of the fauna of Algeria.—*L. G. Seurat* (*transl. by A. O. Weese*).

3135. **STORCH, T. C. von.** An essay on the history of epilepsy. *Ann. Med. Hist.* 2(6): 614-650. 1930.

3136. **STRELNIKOV, I. D.** The expedition of G. I. Langsdorff to Brazil in 1821-1829. *Proc. 23rd. Internat. Congress Americanists* (*New York*) 1928: 751-759. Portrait. 1930.—The expedition (1821-1829) studied the botany, zoology, ethnography, etc. of Brazil, and apparently made rich collections; but because of the illness and subsequent mental derangement of the leader, most of the records and collections were lost. Itinerary of the expedition is given in part, and the biography of Langsdorff (1774-1852), with a brief account of the parts of his records that are extant.

3137. **THUNBERG, T. Hjalmar Öhrvale (1851-1929).** *Skand. Arch. Physiol.* 61(1/3): 1-19. Portrait. 1931.—Biography of the 2nd occupant of the chair of physiology at Upsala, including bibliography of his most important works.

3138. **TRAUB, HAMILTON.** Tendencies in the development of American horticultural associations, 1800-1850. II. *Nation. Hort. Mag.* [*Washington, D. C.*] 9(3): 134-140. 1930.

3139. **TULLI, A.** Un altro contributo agli studi sulla mummificazione degli antichi Egiziani: analisi chimica de una mummia vaticana. [Mummification of ancient Egyptians; chemical analysis of a Vatican mummy.] *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 9(12): 1111-1114. 1929.—Chemical tests indicate that this mummy had been preserved by styrax and other balsams rather than by inorganic compounds.—*G. A. Bica and T. T. Job.*

3140. **T[URNER], HY. J.** Obituaries: E. A. Atmore (1855-1930); Selwyn Image (1849-1930); G. T. Lyle (1873-1930). *Ent. Rec. Jour. Var.* 42(11): 160. 1930.

3141. **VELICH, ALOIS.** Prof. Dr. Otakar Srdínko život a činy. [Life and work of Otakar Srdínko.] *Věstník Československ. Akad. Zem.* 7(3): 225-236. 8 portraits. 1931.—Biographical sketch and bibliography of this Czechoslovakian histologist and embryologist (1875-1930).

3142. **VIDAL, CHARLES.** Quelques mots sur P. Borel, Médecin du Roi en Languedoc. *Bull. Soc. Franç. Hist. Méd.* 24(5/6): 155-169. 1930.—Pierre Borel (1620-1689) was learned in the natural science of his day, as well as a physician.

3143. **W., D. M. S.** Hans Friedrich Gadow—1855-1928. *Proc. Roy. Soc.* [*London*] *B* 107(750): i-iii. Portrait. 1930.—Born in Germany, Gadow joined the staff of the Zoological Dept., British Mus. (1880), later becoming Strickland Curator of Birds in the Univ. Mus. Zoology, Cambridge [England] and still later lecturer in vertebrate morphology in Cambridge. A disciple of Gegenbaur, he is known chiefly for his studies on the anatomy of birds, the comparative morphology of the vertebral column of the vertebrates, and similar studies.

3144. **W., T. S.** Foramen of Winslow [1669-1760]. *Amer. Jour. Surg.* 11(1): 133. Portrait. 1931.—Jakob Benignus Winslow, a Dane educated in the Netherlands and France, demonstrated the communications of the foramen now bearing his name. He is also an eponym of other organs (Winslow's ligamist and Winslow's stars). He is credited with having been the first to use the term "omentum" in its present sense and also did much to systematize the anatomic knowledge of his day.

3145. **WONG, K. CHIMIN.** The early history of leprosy in China. *China Med. Jour.* 44(8): 737-743. 1930.—Traces the references to leprosy in Chinese literature back to the 6th century B.C., the time of Confucius.

3146. **ZINSSER, HANS.** The award of the Nobel Prize in medicine to Dr. Karl Landsteiner. *Sci. Monthly* 32(1): 93-96. Portrait. 1931.

3147. **ANONYMOUS.** Commémoration du centenaire de la naissance d'Ollier [1830-1901]. *Lyon Méd.* 146(49): 693-732. 2 portraits; (50): 733-757. 1930.—A collection of short papers of appreciation of Leopold Ollier's work, by various authors, with a biography of the life of this noted surgeon, botanist, and embryologist of Montpellier, who was particularly interested in microscopic anatomy.

3148. **ANONYMOUS.** Die Liste der Entomologen die sich bis zum 1. Mai 1930 als Mitglieder der Internationalen Vereinigung der Ipidologen angemeldet haben. [List of entomologists who have enrolled as members of the Internat. Soc. of Ipidologists previous to May 1, 1930.] *Ent. Blätter* 26(2): 92-94. 1930.—54 names and addresses.

3149. **ANONYMOUS.** Waldemar Mordecai Wolff Haffkine, C. I. E. (R. R.) [-1930.] *Science Progr.* [*London*] 25(99): 498-499. 1931.—Attention is called to Haffkine's discovery of vaccines against cholera and plague, in India, in 1893 and 1896, and to his subsequent troubles due to careless preparation, by others, of a quantity of

one of these vaccines. The author pleads for full publicity of the facts to clear Haffkine's reputation from unjust charges based on this incident.

3150. **ANONYMOUS.** Bengt Jönsson 1849-1911. *Kgl. Svenska Vetenskapsakad. Årsbok* 1930: 325-337. Portrait. 1930.—A biographical sketch of the life and activities of this Swedish botanist, with a list of his scientific publications.

3151. **ANONYMOUS.** Julius Kitt [1857-1929]. *Zeitschr. Österr. Ent.-Verein.* 14(8): 77-79. Portrait. 1929.—This Austrian entomologist, a bank official by profession, possessed a collection of about 10,000 butterflies.

3152. **ANONYMOUS.** Thomas Laxton and his successors. *Gard. Chron.* [*London*] 88(2292): 454-456. 1930.—A biography of this English plant breeder, with a list of the horticultural varieties of peas, pears, potatoes, strawberries, apples, plums, raspberries, gooseberries, red currants, black currants, roses, and pelargoniums originated by him or by the firm of Messrs. Laxton Brothers.

3153. **ANONYMOUS.** Adolf Pieszczek [1852-1928]. *Zeitschr. Österr. Ent.-Verein.* 13(11): 101. 1928.—Pieszczek was known for his articles on *Colias myrmidone*.

3154. **ANONYMOUS.** Enrico Sereni [-1931]. *Zool. Anzeiger* 93(11/12): 336. 1931.—Brief notice of this physiologist of the Naples Zool. Station.

3155. **ANONYMOUS.** George Neil Stewart, M.D. *Lancet* 219(5576): 108. 1930.—He was prof. of physiology in Western Reserve Univ. for 9 yrs., then director of the physiological laboratories in Univ. of Chicago. He returned to Western Reserve as prof. of experimental medicine, and director of the H. K. Cushing Laboratory, positions which he held until his death.

3156. **ANONYMOUS.** John Hammond Teacher [1869-1930]. *Glasgow Med. Jour.* 114(6): 285-287. Portrait. 1930.—Teacher's name and work became widely known as the result of his discovery of what, until recent yrs., was the earliest recorded complete human ovum ("Teacher-Bryce ovum No. 1"), his classic description of which he published in collaboration with T. H. Bryce.

3157. **ANONYMOUS.** René Viguier [1881-1931]. *Ann. Cryptogamie Exot.* 3(4): 251. 1930.—Brief note on the death of Viguier, director of the Inst. Bot. and founder of "Archives de Botanique."

EVOLUTION

(See also in this issue Entries 3001, 3005, 3011, 3017, 3038, 3044, 3106, 3108, 3234, 3305, 3326, 3910, 5275, 5853)

3158. **CUNNINGHAM, J. T.** Adaptive evolution, with special reference to metamorphosis and sex-limited characters. *Proc. Linn. Soc. London* 142: 165-186. 1929/30 (1931).—Nothing which has been discovered with regard to genetics and mutation, together with the process of selection, explains the evolution of metamorphosis and recapitulation, and the fact that metamorphosis in structure corresponds to a change of adaptation to external conditions, as in the case of the frog. Still less does the theory of mutation explain the influence of thyroid secretion on metamorphosis and development. There is no evidence of a new mutation dependent on the thyroid gland. In sex-limited characters, like the antlers of stags, absence or inferiority in the ♀ are known to depend on the influence of hormones from the gonads. No mutation having such a relation to the sexual hormones has been observed. All these phenomena can be explained on the hypothesis that the structures concerned are the effect of external stimuli on local growth occurring when the particular hormones were present, and that the gametes have been modified by the tissue-hormones produced by the local growth.—*J. T. Cunningham.*

3159. **HOOTON, ERNEST ALBERT.** Up from the ape. 626p. 28 pl. 58 fig. Macmillan Co.: New York, 1931. Pr. $5.—The book is composed of material used in lectures for an undergraduate class and is written in non-technical language and rather informal vein. Part I (41p.) entitled "Man's relations" gives the characters of mammals and descriptions of various primates, indicating the probable taxonomic and serologic relationships. Part II (161p.) "The primate life cycle," is phylogenetic and deals with the evolution of man, first the paleontological evidence, then that from comparative anatomy, citing various theories of the invertebrate progenitor (segmented worm, *Nemertean, Limulus*). The course of man's evolution is traced in considerable detail through the quadrupeds, especially the anthropoids. Part III (82p.) "The individual life cycle," treats of the reproductive organs, embryology, growth, puberty changes, sex differences and mating. Part IV (105p.) "Fossil ancestors," describes the history of the hominid fossils, their discovery, interpretation and importance. Part V (211p.) is entitled "Contemporary races: what they are; how they developed; their evolutionary meaning." A bibliography of 81 titles is given, with an index of authorities cited, together with an alphabetic subject index.

3160. **KOCH, F.** Ursprung und Verbreitung des Menschengeschlechts. Eine Neubegründung des Darwinismus auf Grund der Polwanderungen und im Anschluss an die Theorie Wegeners. [Origin and distribution of the human race. A new foundation of Darwinism, on the ground of polar migrations in relation to Wegener's theory.] 174p. 14 maps. 42 figs. Gustav Fischer: Jena, 1929. Pr. 13 M.

3161. **MacBRIDE, E. W.** Habit: the driving factor in evolution. *Nature* [*London*] 127(3216): 933-944. 3 fig. 1931.—There are 3 sources of proof of evolution. In wide ranging species the members of which do not wander about much, the species are divisible into local races; but in spp. whose migrants intermingle, races are not formed. If the minute differences between races are the first steps in secular evolution, they demonstrate that habit is the driving force of evolution. The 2nd type of evidence is derivable from fossils especially where the various modifications are found in successive strata in the same series of deposits. As an example the author cites the modifications which have taken place in *Micraster* from *M. cor-bovis** to *M. praecursor**, *M. cortestudinarium**, *M. cor-anguinum**, and the modern *Echinocardium**. The 3rd type of evidence is in the recapitulation of the history of the race seen in the life-history of the individual. The author cites numerous cases of transmission of acquired characteristics, especially of habits, secondarily of characters.

3162. **PHILLIPS, JOHN.** Mortality among plants and its bearing on natural selection. *Nature* [*London*] 127 (3214): 851-852. 1931.—Studies of plant mortality in East Africa indicate that mortality is greatest in flowers, fruits and young regeneration. A study of the principal biological features of 63 more important spp. shows the following factors to be primarily responsible for high mortality: inherent low degree of fertility in flowers and fruit; defeat in competition for pollination; irregular occurrence of flowering and fruiting seasons; low capacity for germules to lie dormant; unsuitable aerial and edaphic conditions; insects and fungi attacking flowers and fruits; birds and mammals feeding on flowers, fruits and seed; mammals browsing on young regeneration; certain strong reactions to habitat factors as light-intensity, soil moisture, etc.

3163. **PYCRAFT, W. P.** Darwinism versus Lamarckism. *Sci. Progr.* 24(95): 441-450. 1930.—Evolution, as the expression of many factors, requires for its interpretation a more intensive study of the adjustment of animals to meet the conditions of their environment. Structural

modifications to suit these conditions are only found where organs concerned are used intensively. That changes of form are responses to continuous and persistent needs and that the size and shape of organs are directly related to their use dynamically are more reasonable interpretations than that they originated through Natural Selection acting on small variations. Natural Selection is the final arbiter of what shall survive of these processes of adjustment to environment. Much can be explained on the assumption that tissues are not mere substances formed afresh in ontogeny, but are so many entities, each moulded in course of its history by conditions of existence to which it has been subjected. The close correlation between structure and function is interpretable on the assumption of the effects of use and disuse, and recognition of the inheritance of acquired characters follows as a consequence.—*P. Kirtisinghe.*

3164. WILLEY, ARTHUR. Lectures on Darwinism. 198p. 1 pl., 5 fig. Richard G. Badger: Boston, 1930. Pr. $2.—This book is chiefly a discussion of adaptation and adaptive processes in their relation to evolution. The excellent treatment of many examples of adaptation is followed by a discussion of natural selection and associated processes. The writer concludes that natural selection accounts for the maintenance of constancy in species rather than for the origin of species, and that "its work is mainly accomplished, both as a factor and as a theory" and "It cannot contribute any more than it has done already to solve the riddle of human life nor to improve the status of wild life."—*A. W. Lindsey.*

CYTOLOGY

R. E. CLELAND, *Editor,* Plant

C. E. McCLUNG, *Editor,* Animal

(See also in this issue Entries 3005, 3236, 3238, 3239, 3241, 3246, 3249, 3250, 3252, 3255, 3256, 3456, 3551, 3555, 3562, 3592, 3595, 3608, 3725, 3980, 4115, 4395, 4573, 5193, 5198, 5344, 5445, 5551, 5597)

PLANT

3165. AVERY, PRISCILLA. Cytological studies of five interspecific hybrids of Crepis leontodontoides. *Univ. California Publ. Agric. Sci.* 6(5): 135-167. 18 fig. 1930.—Hybrids between *Crepis leontodontoides* and species belonging to 3 subgenera were studied cytologically in both somatic and meiotic phases (subgenus *Eucrepis*) F_1 hybrids were made between *C. leontodontoides* (n=5) and *Eucrepis* species *tectorum* (n=4), *parviflora* (n=4) and *capillaris* (n=3), the *Barkhausia* species *marschalli* (n=4), and the *Catonia* species *aurea* (n=5). The chromosomes of the two parental species can be distinguished in somatic figures in all the hybrids, although the distinction is slight in the F_1 *C. leontodontoides-aurea.* The somatic chromosomes of *C. leontodontoides* and *aurea* are of the same morphological types, but those of *aurea* are slightly larger. The chromosomes of *C. tingitana,* a *Catonia* species close to *aurea,* are of the same number and shape as those of *leontodontoides* and *aurea* but are considerably larger. Efforts to secure hybrids between *C. leontodontoides* and *tingitana* were unsuccessful. The satellite disappears from the D-chromosome of *leontodontoides* in the F_1 hybrid with *tectorum, parviflora, capillaris,* and *marschalli,* but is sometimes evident close to the D-chromosome in the F_1 *leontodontoides-aurea.* All the chromosomes can be identified as belonging to one or the other of the parental genoms in F_1 *capillaris-leontodontoides* and F_1 *leontodontoides-tectorum,* owing to the great size difference between the chromosomes of the two complements. In F_1 *leontodontoides-parviflora* and F_1 *leontodontoides-marschalli,* all but one or two of the chromosomes of the species with larger and fewer chromosomes can be identified in the meiotic divisions. The number of bivalents formed in meiosis varied in different pollen mother cells from complete conjugation between the parental chromosomes to its entire absence in all hybrids except the F_1 *leontodontoides-aurea.* In this hybrid, the greater extent and regularity of chromosome conjugation indicate that the morphological similarity of the chromosomes bears some relation to genetic homology. In all other hybrids the pairing is obviously between chromosomes of dissimilar morphology. The variable pairing characteristic of these hybrids may be a reflection of the transformational processes responsible for differentiation of the specific genoms. —*Author's summary.*

3166. BECKER, WŁADYSŁAW A. Wpływ barwników, stosowanych za życia, na charakter kinezy somatycznej. [Influence of vital stains on somatic division.] [With French summary.] *Acta Soc. Bot. Poloniae* 6(3): 214-229. 3 pl. 1929.—*Stratiotes, Hydrocharis,* as well as the germinating seeds of *Nuphar,* grown in solutions of neutral red at 1:150000-1:20000, show no disturbance of the normal course of mitosis. More concentrated solutions of the same dye (1:1000-1:500) likewise have no influence upon the morphological character of mitosis. Onion, grown in the same solutions, uniformly shows mitotic disturbances. The anomalies consist of the union and fusion of metaphase chromosomes into shapeless groups. Following this fusion, the anaphase and the resulting nuclei have a pseudomitotic aspect.—*F. X. Skupiensky (transl. by P. Avery).*

3167. BLAKESLEE, ALBERT F., and RALPH E. CLELAND. Circle formation in Datura and Oenothera. *Proc. Nation. Acad. Sci., U. S. A.* 16(3): 177-183. 1930.—A summary is given of the analysis of chromosomes in *Datura* by means of extra chromosomal types, trisomic ratios, attraction between chromosomes and the formation of circles of 4 to 6 attached chromosomes in hybrids between selected races from nature. Several lines of evidence strongly support the hypothesis that in *Datura* races which induce circle formation in hybrids with a standard line have originated through segmental interchange between non-homologous chromosomes. Segmental interchange is believed also applicable to circle formation in *Oenothera.* The desirability is suggested of establishing a species of *Oenothera* with 7 pairs of chromosomes as a standard and of securing in this species primary, secondary, and tertiary (2n+1) types which might be used as testers for the study of the more complicated species characterized by large circles.—*Authors.*

3168. BURSTRÖM, H. Zytologische Studien innerhalb der Gattung Eremurus. *Acta Horti Bergiani [Upsala]* 9: 293-302. 2 fig. 1929.—In 4 species and 1 hybrid n=7. The chromosomes are of 4 size classes: A, B, C, D. *E. robustus* has 1A, 4B, 1C, 1D; *E. himalaicus,* 5B, 2D; *E. spectabilis,* 3B, 2C, 2D; *E. altaicus,* 1B, 4C, 2D. In *himalaicus* × *robustus* there are 7 gemini (5 large and 2 small) and the meiotic divisions proceed normally. Anaphase II figures show either 5 long, 1 medium long and 1 short chromosome (10 cells) or 5 long and 2 short chromosomes (6 cells). Evidently the C chromosome of *robustus* pairs with a D of *himalaicus,* and the A chromosome of *robustus* is represented by one of the B length in the hybrid. Measurements of B and D chromosomes indicate that the absolute chromosome length of *himalaicus* dominates that of *robustus.* Phylogenetically the chromosomes of *Eremurus* have undergone (1) increase or decrease in size for the whole genom and (2) individual increase or decrease for single chromosomes.—*L. W. Sharp.*

3169. BUSCALIONI, L., e F. BRUNO. Sui rapporti fra amido e lipoidi endoclorofilliani nel corso dell'anno. 2a nota preventiva. [Interrelations between starch and endochlorophyl lipoids in the course of the year.] *Giornale Sci. Nat. Econ. Palermo* 35: 113-136. 1 pl. 1927/28/29 (1930).

3170. CARTER, KATHLEEN M. A contribution to the cytology of the ovule of Orobanche minor. *Jour. Roy. Microsc. Soc.* 48(4): 389-403. 6 pl., 6 fig. 1928.—The embryo sac develops from the innermost of the 4 megaspores. Meiosis is described. In the heterotypic divison 19 bivalents are formed.

3171. CHIARUGI, ALBERTO. Diploidismo con anfimissa e tetraploidismo con apomissa in una medesima specie: "Nigritella nigra" Rehb. [Diploidy with amphimixis, and tetraploidy with apomixis in N. nigra.] *Boll. Soc. Ital. Biol. Sper.* 4: 659-661. 1929.—Careful cytological study of the alpine *Nigritella nigra* shows the life cycle to be normal, and the haploid chromosome number to be 19 for both this species and for *N. rubra*. Afzelius has reported specimens of *N. nigra* from northern Sweden in which he found adventitious embryogeny and a haploid number of more than 30. It is suggested that these were probably tetraploid plants with haploid number 38. The significance of the occurrence of apogamous tetraploids at the extreme boreal limit of a meridional species is discussed, and the polyploidy attributed to environmental influence.—*A. Chiarugi (transl. by H. S. Wolfe).*

3172. CHIARUGI, ALBERTO, e ELEANORA FRANCINI. Apomissia in Ochna serrulata Walp. [Apomixis in O. serrulata.] *Nuovo Gior. Bot. Ital.* 37(1): 1-250. 17 pl., 6 fig. 1930.—With 35 somatic chromosomes, this is the first apomictic pentaploid discovered. Meiosis is most irregular, with chromosomes conjugating in pentavalents, quadrivalents, trivalents or gemini, or remaining unpaired: the last divide twice, and therefore the number of chromosomes in the spores is always greater than the theoretical gametic number. Binucleate microspore mother cells are often found which can give rise, by endoduplication, to gigantic syndiploid gonotoconts. Semiheterotypic divisions may take place with the formation of restitution nuclei and diploid gametes. Sometimes microspore mother cells become sexually inverted, and apomeiotic ♀ gametophytes of the *Antennaria* type are found in the anthers. Further, degeneration of the microspores occurs in various ways. This is a most favorable plant for the study of apomixis, in that it exhibits concurrently many processes of apomictic reproduction previously found in different plants. Megasporogenesis with development of a haploid gametophyte which degenerates is sometimes to be seen. More frequently the megaspore mother cell is transformed directly, without trace of meiosis, by gonial apospory into a diploid ♀ gametophyte of the *Antennaria* type. At other times, following the degeneration of the gonial elements, diploid gametophytes arise from somatic cells by somatic apospory, cf., *Hieracium* and *Artemisia*. Sometimes the differentiation of sporogenous cells in the sporophyte becomes gradually lost, resulting in the final stage, in only an undifferentiated nucellus. On one occasion 8 aposporous gametophytes were found in a single ovule. Very frequently the ♀ gametophytes are lacking in polarity and present a score of different teratological types, which are not only described in the text, but classified in an attempt to treat methodically the teratology of the ♀ haploid generation of the Angiosperms. The endosperm is of the nuclear type and can develop after the initiation of the embryo. The embryo originates by apogamy from the diploid egg cell, but if it degenerates (50% of cases) an embryo is formed directly from cells of the integument by adventitious embryony. This is the first time that both somatic apospory and adventitious embryony have been observed upon the same plant, which moreover also displays interesting transition stages correlating the two processes and recalling the sporophytic proliferation and obliteration of the degenerated gametophyte in the parthenocarpic forms of *Ananassa*. It can therefore be demonstrated in *Ochna* that adventitious embryony is actually the final stage of somatic apospory. Several types of polyembryony are met with and the embryogeny sometimes lacks morphogenetic direction. An interpretation is presented of the various abnormalities observed in the different stages of development, based upon the existence of an excess of vegetative factors which have invaded sexual functioning, active through the agency of hormones. The genetic situation of the plant is discussed. It shows both auto- and allopolyploidy at the same time. The significance of multiple conjugation of the chromosomes is discussed.—*A. Chiarugi (transl. by I. Manton from authors' abstract).*

3173. CLAUSEN, J. Male sterility in Viola orphanidis. *Hereditas* 14(1): 53-72. 33 fig. 1930.—*V. orphanidis* is a species of the *Melanium* section, related to *V. cornuta* and *V. orthoceros*. The last 2 species have the chromosome number $n=11$, and in *V. orphanidis* the somatic numbers 20, 21, 22, were found; as the 20 chromosome plants were pollen sterile, 22 is probably the actual number. The variation in chromosome number was not connected with any visible morphological variation. Male sterile plants were found among all 3 chromosome types, but the 20 chromosome plants were always pollen sterile. The pollen mother cells in the latter are usually not developed as far as heterotypic metaphase; if the meiotic division is carried through, there is no pairing. In the embryo mother cells of the same plants, however, there is complete conjugation of all chromosomes. The pollen sterile plants were segregated out in varying ratios, in all cases less than 25%. Trisomes and irregular conjugation were seen in the plants that segregated out pollen-sterile plants. Both 10 and 11 chromosome gametes are viable, but there is a large deficit of 20 chromosome plants. A final decision as to the cause of the pollen-sterility is not given, but absence of a certain chromosome, lost by trisomic or tetrasomic distribution, is supposed to be the most probable.—*H. Wexelsen.*

3174. CLAUSEN, J. Genetic studies in Polemonium. III. Preliminary account on the cytology of species and species hybrids. *Hereditas* 15(1): 62-66. 6 fig. 1931.—Seven species of *Polemonium* have the somatic chromosome number 18 and regular meiosis, namely, *P. carneum* Gray, *P. coeruleum* L. (with its subspecies *himalayanum* Baker), *filicinum* Greene, *mexicanum* Cerv., *pauciflorum* Wats., *pulcherrimum* Hook., and *reptans* L. All somatic chromosomes except one pair have a median constriction and two have a satellite. In meiosis various configurations are found; chiasmas are usually formed near the end of the chromosomes. Variation within *P. coeruleum* is due to genic segregation and not to chromosome aberrations. Meiosis was studied in the following F_1 species hybrids: *P. reptans* (Lyon race) × *reptans* (Brooklyn race), *P. mexicanum* × *pauciflorum*, *P. filicinum* × *coeruleum*, and *P. pulcherrimum* × *reptans*. Polysomic chromosome groups were formed in meiosis, with various numbers of chromosomes forming mostly open zigzag-shaped chains. 22 F_2 plants from *mexicanum* × *pauciflorum* had $2n=18$; apparently only types with complete chromosome complexes are viable. Although morphologically alike, the chromosomes of the different *Polemonium* species may differ in regard to pairing ability. Translocations and inversions are probably the kind of changes that have been most effective in the chromosome differentiation of this species.—*H. Wexelsen.*

3175. CLAUSEN, J. Viola canina L., a cytologically irregular species. *Hereditas* 15(1): 65-88. 30 fig. 1931.—*Viola canina* is a cytologically irregular species with oscillating chromosome number. The type earlier published as having $n=36$, has proved to have $2n=47$ and a very irregular meiosis, in which the univalents arrange themselves in the equatorial plane resembling bivalents. Several populations were examined which consisted of morphologically typical *Viola canina* plants, but which had a variable chromosome number and a variable degree of meiotic irregularity and fertility. The most regular type had 20 bivalents and 3 fragments, and was very fertile. *V. canina* probably maintains itself as an irregular species by intercrossing between cytologically different types and by outcrosses with *V. riviniana*. A review is given of cases of variation in chromosome number

within one species and of species with oscillating chromosome number.—*H. Wexelsen.*

3176. DARLINGTON, C. D. Ring-formation in Oenothera and other genera. *Jour. Genetics* [*Cambridge*] 20(3): 345-363. 1929.—Ring-formation in *Oenothera,* as in *Tradescantia, Rumex,* etc., is compatible with a parasynaptic interpretation. Synapsis occurs near the ends of chromosomes, resulting, in diakinesis, in an end to end union. The formation of rings or chains on this assumption, however, implies that the parts of any given chromosome have their homologues divided between 2 adjacent chromosomes. The origin of chromosomes thus capable of pairing with 2 others is ascribed to segmental interchange, or the mutual exchange of parts between non-homologous chromosomes. In *Oenothera,* therefore, a continuation of the process actually observed in *Datura* is postulated. The building of large circles, however, would not occur were it not advantageous to the plant. It is suggested that heterozygosis is of widespread advantage, and that the ability to bring more and more heterozygous gene-pairs under the protection of a single set of balanced lethals has assisted the plant, in that increase of heterozygosity has been attained without corresponding increase in sterility. The hypothesis of segmental interchange is discussed in its bearing upon the cytological behavior of species, mutants and hybrids, and the conclusion is reached that segmental interchange is capable of providing a physical basis for this behavior. A brief summary of the situation in *Tradescantia* and *Rhoeo* leads to the hypothesis that parasynapsis and interchange are responsible for ring-formation in these plants also. In an appendix to the paper it is shown that the origin of "half-mutants" may be explained on the basis of segmental interchange.—*R. E. Cleland.*

3177. DELAUNEY, L. N. Kern und Art. Typische Chromosomenformen. *Zeitschr. Wiss. Biol. Abt. E. Planta* 7(1): 100-112. 4 fig. 1929.—Three morphological characteristics of chromosomes are discussed. (1) Kinetic constrictions. These are the points of spindle-fiber attachment, and are sensitive to external forces, as opposed to the rest of the chromosome. Such constrictions are found in different chromosomes at different points, and may even be very close to the end. True terminal attachments, however, are unknown. In any given chromosome the position of the kinetic constriction is definitely fixed. (2) Akinetic constrictions, the rôle of which is entirely unknown. (3) Trabauts or satellitis. The characteristics of these, and their behavior in hybrids is discussed.—*R. E. Cleland.*

3178. EICH[H]ORN, ANDRÉ. Sur la mitose somatique des Pinacées. *Arch. Anat. Microsc.* 25: 489-492. 1 fig. 1929.—Mitotic figures in 7 genera show striking uniformity. Nucleoli diminish in number by fusion but do not contribute to formation of chromosomes. No sign of chromosome splitting appears until metaphase in contrast to the typical prophasic splitting in Angiosperms, constituting possibly a fundamental karyological difference between the 2 sub-divisions of Spermatophytes.—*R. H. Lindsay.*

3179. EICHHORN, ANDRÉ. Sur la notion de prochromosomes et de chromocentres. *Compt. Rend. Soc. Biol. Paris* 104: 854; **Aperçus sur le noyau à l'état quiescent.** *Rev. Gén. Bot.* [*Paris*] 42(500): 449-456. 1930.—Hitherto the terms prochromosomes and chromocenters have been used indifferently to designate the formations for which the latter term alone is proper. Studying comparatively the living cells of plants with small chromosomes, such as the squash, and those with long chromosomes, such as the gymnosperms, it is concluded that nuclei of the first type have, in the resting stage, a homogeneous aspect while those of the second type show structure. In the first type it is possible, however, to distinguish after fixation the small chromosomes all situated against the membrane, and to see that these develop at the beginning of mitosis in such a way that they can be considered as real prochromosomes. In the second type, in both living and fixed cells, the reticulum bears rather large numbers of small granules which function as centers of condensation of the chromatin as the chromosomes are developed. To these constituents, which are found only rarely in angiosperms, it is proposed to apply the term chromocenters. It is further pointed out, contrary to the ideas of Kühn, who for want of a clear definition confuses the two terms and uses them indiscriminately, but in agreement with those of Schiller, that the prochromosomes are never obliterated and do not pass through the thin thread stage characteristic of the nuclei of angiosperms.—*A. Eichhorn* (*transl. by L. W. Sharp*).

3180. EVREINOFF, V. Sur le caryotype du genre Eryobothrya Ldl. *Rev. Gén. Bot.* 42(501): 513-516. 1930.—In *Eryobothrya japonica* Ldl., $n=16$, chromosomes are uniform, small, slender, separate, and satellites absent. These results furnish a basis for cytological comparison of this species with the genera *Photinia* and *Sorbus,* and for a study of the relationships between the three genera.—*Author's summary* (*transl. by R. C. Friesner*).

3181. GEITLER, LOTHAR. Zwei einfache Methoden zur Untersuchung pflanzlicher Chromosomen. *Züchter* 1(8): 243-247. 3 fig. 1929.—To replace the tedious paraffin method, Heitz's modification of Bellings aceto-carmine method is described. The object is first fixed in a mixture of 2 parts alcohol and 1 part glacial acetic acid and then stained with a solution of aceto carmine. Heat is used both in fixing and staining. The aceto carmine is made up to 45% and filtered. If desired the object may be dehydrated with alcohol, cleared with xylol and mounted in Canada Balsam. Or one may use Bêlar's modification of the Flemming-Benda fixative (4 cc. 2% osmic acid, 15 cc. 1% chromic acid and 2-3 drops of acetic acid). The pollen mother cells are crushed on a slide and fixed in this solution twelve hours, then washed in H_2O_2 and stained. For staining, one may use a concentrated safranin solution in water and light green in alcohol. Permanent mounts can be made by both methods.—*F. V. Owen.*

3182. GHIMPU, V. Contribution à l'étude chromosomique des Acacia. *Compt. Rend. Acad. Sci.* [*Paris*] 188(22): 1429-1431. 9 fig. 1929.—Counts in root meristem cells showed 26 chromosomes in *A. cyanophylla, A. dealbata,* and *A. podalyriaefolia.* In *A. arabica, A. nilotica, A. horrida* and *A. farnesiana* some cells showed ± 52, while others in the same root showed ± 104. The author discusses the connection between the tetraploid anomaly and the geographical distribution of the species in which it occurs.

3183. GREGUSS, PÁL. A kétlaki és egylaki növények virágporszeme. [**The pollen of dioecious and of monoecious plants.**] [German summary.] *Math. es Természettudományi Értesitö* (*Math. u. Naturwiss. Anz. Ungarischen Akad. Wiss.*) *Budapest* 44: 378-394. 1927.—More than 1000 pollen grains from each of a number of plants were measured in fresh condition and in concentrated formalin. Of 17 dioecious plants, 9 gave distinctly bimodal curves, 6 gave curves suggesting bimodality, and 2 (*Salix caprea* and *Populus alba*) gave unimodal curves. The author suggests that in these last 2 species the females may be heterogametic. The 12 monoecious plants investigated gave unimodal curves. The pollen of dioecious, anemophilous plants is obviously smaller than that of entomophilous, monoecious plants; 82% of the pollen of dioecious, anemophilous plants and only 45% of the pollen of the monoecious plants was smaller than 33μ.—*H. M. Pearson.*

3184. GUILLIERMOND, A. Quelques remarques sur l'appareil de Golgi et les méthodes employées pour sa différenciation. *Arch. Anat. Microsc.* 25: 493-505. 6 fig. 1929.—The methods of Bensley, Da Fano and Kolatchev were applied to the roots and cotyledons of peas and the root of *Cucurbita.* The first two methods revealed a vacuome agreeing in form and growth changes with that stained supravitally with neutral red. Kolatchev's method gave irregular results. The vacuome is rarely blackened. The chondriome is usually black and vacuome is nega-

tive. The chondriome may be converted into vesicles resembling Bowen's osmiophilic platelets, or into strings of vesicles like the animal Golgi apparatus. Transitions between chondrioconts and vesicles are figured. Sometimes a dense network appears, which may be due to unmasking of lipoprotein complexes of the cytoplasm. It is concluded that animal Golgi apparatus is usually due to impregnation of the vacuome, but may sometimes be an artifact due to alteration of chondriome or cytoplasm by osmic methods which should therefore be avoided.—*R. Palmer.*

3185. **HAGERUP, O. Morphological and cytological studies of Bicornes.** *Dansk Bot. Ark.* 6(1): 1-26. 45 fig. 1928.—The haploid number of chromosomes found in the flower buds of 34 representative species of *Bicornes* (=*Ericales*) form (1) a very good 6 series: 6, 12, 18, 24, 30, 36 and 48; (2) a small 13 series: 13 and 26; and (3) an 8 series: 8 and 16. In the case of 4 pairs of species, the species with the higher number of chromosomes were always the ones growing farther north. The flower buds in the reduction stage were collected in the field on various journeys in the Arctic region and supplemented by collections in Denmark. In most cases the flower buds hibernate at the stage immediately preceding reduction division, thus the development of the flower itself covers 2 of the brief vegetative periods. The carpels possess a hollow style, in which the channel connects the lumen of the ovary with the open air. The pollen tubes grow through this channel without any disorganization of adjacent tissue. The median leaf of the calyx is often placed at the back of the flower, as is usual in other dicotyledons, but sometimes the median leaf of the calyx appears on the fore side of the flower, as in the real "*Lobelia*" diagram. —*W. H. Emig.*

3186. **HÅKANSSON, ARTUR. Zytologische Beobachtungen an S. G. Speltoidheterozygoten beim Weizen.** *Svensk Bot. Tidskr.* 24(1): 44-57. 5 fig. 1930.—Meiosis of some speltoid wheat mutants was studied. Speltoid-heterozygotes of B-type from cultures of Åherman and Nilsson-Ehle had 41 chromosomes, 20 bivalents and 1 univalent, the univalent mostly splitting in the first anaphase. Fragmentation and the forming of a trivalent was observed occasionally.—In a subcompactum plant from the cultures of Åherman the same number of chromosomes was present, but the univalent was always segmented into 2 fragments of very different sizes. Both fragments behaved as independent univalents, splitting in the first anaphase. The smaller fragment, however, was mostly eliminated during the second division. Very seldom the two fragments were united by a thread.—In two heterozygotic types of Åherman's, there was an excess chromosome. This was only about ⅓ the length of an ordinary chromosome, and was always united in the first division with another, forming a trivalent in metaphase and a compound chromosome in the ana- and telophase. The behavior of this chromosome in the second divisions, somatic divisions and in the progeny could not be ascertained.—*A. Håkansson.*

3187. **HÅKANSSON, ARTUR. Zur Cytologie trisomischer Mütanten aus Oenothera Lamarckiana.** *Hereditas* 14(1): 1-32. 6 fig. 1930.—A study of chromosome arrangements in diakinesis and first meiotic metaphase of several trisomics from *Oenothera lamarckiana.* In *lata, dependens, stricta, longepetiolata* of Heribert-Nilssons' cultures, and in *lata, pallescens* and *liquida* of De Vries, there was an open ring of 13 chromosomes and 1 free bivalent. A triple arrangement at the end of the chain was found in some cases. These trisomics, which all segregate *lamarckiana,* are called primary trisomics and are supposed to have originated through non-disjunction of one of the ring chromosomes. The trisomic *curta* has a chain of 11 and 2 bivalents; it does not segregate *lamarckiana,* and has probably arisen through non-disjunction and exchange of one chromosome from *gaudens* to *velans.* In *nitens,* which is also a constant trisomic, there was a chain of 9 and 3 bivalents. In a secondary form from *pulla* the arrangement was a closed ring of 6, 3 bivalents and 1 trivalent. This trisomic had presumably arisen from *pulla* through chromosome exchange. A secondary form of *cana* of De Vries had 14½ chromosomes, viz.: 2 bivalents + an open chain of 11, the half chromosome being at the end of the chain. Every degree of pairing has been found in *lamarckiana* mutants, except no pair. In many trisomics, the chain in metaphase was segmented into shorter chains. Chain and ring chromosomes are arranged in zigzag; alternate chromosomes pass to the same pole in anaphase. The chromosome arrangements in trisomic Oenotheras can be understood if each of the ringforming chromosomes pairs with two different chromosomes. The view that the rings in Oenotheras have arisen through interchange between non-homologous chromosomes is supported.—*H. Wexelsen.*

3188. **HÅKANSSON, ARTUR. Über Chromosomenverkettung in Pisum.** *Hereditas* 15(1): 17-61. 35 fig. 1931.—In Hammarlund's *Pisum* material, the F-line (*A* and *Gp* independent), and the K-line (*A* and *Gp* linked) both have 7 pairs of chromosomes. F × K (F_2) showed half the plants with 7 pairs, and half with a ring of 4 (amphibivalent) and 5 pairs. The double recessive (*aa gpgp*) had 7 pairs. K × double recessive showed an amphibivalent in all plants, whereas F × double recessive showed 7 pairs in all plants. All plants with an amphibivalent had regular zigzag arrangement of the ring chromosomes in 50% of the cases, and other arrangements in 50%. They also showed 50% pollen and ovule sterility. Probably the regular zigzag arrangement leads to fertility, the other arrangements to sterility. All plants with an amphibivalent showed linkage between *A* and *Gp.* On the other hand, plants with 7 pairs were completely fertile, and showed independence between *A* and *Gp.* These results can be explained on the theory of segmental interchange between non-homologous chromosomes. In the F-line, *A* and *Gp* are in different chromosomes. In the K-line, non-homologous chromosomes have undergone interchange, so that *A* and *Gp* lie in the same chromosome, and hence are linked. All plants with a ring of 4 will show linkage between *A* and *Gp* because the same chromosomes and chromosome segments pass together to the poles in all cases where fertility results,—namely, in cases where the regular zigzag arrangement has been attained. Detailed descriptions are given of the cytology of bivalents and amphibivalents.—*R. E. Cleland.*

3189. **HAMMETT, FREDERICK S. Cell division and cell growth in size.** *Protoplasma* 7: 535-540. 1929.—The coefficient of correlation between cell length and percentage mitosis in root-tips of *Zea mays* was found to be high and negative: $r = -0.577 \pm 0.075$. This value with correlated data justifies the generality that cell division and cell size are inversely related. An analysis of the relation brings the conclusion that in an increasing cell population, where increase in cell number and growth in cell size are taking place simultaneously, cell division is the independent and cell size the dependent variable. Other things being equal, the size of the cells is a result of the rate of cell multiplication.—*Author's summary.*

3190. **HEITZ, E. Der bilaterale Bau der Geschlechtschromosomen und Autosomen bei Pellia Fabbroniana, P. epiphylla and einigen anderen Jungermanniaceen.** *Zeitschr. Wiss. Biol. Abt. E. Planta* 5(5): 725-768. 1 pl., 18 fig. 1928.—Both ♂ and ♀ of *Pellia fabbroniana* have 9 chromosomes, of which 1 is very small. The very small chromosome of the ♀ is sharply bent and apparently approximately symmetrical; the corresponding chromosome of the ♂ is somewhat smaller, straight or slightly bent, and strongly asymmetrical. These small chromosomes are therefore to be considered as respectively X and Y (sex chromosomes). The X chromosome is heteropycnotic. Showalter's observation of a large chromosome in the ♀ of *P. neesiana* is confirmed; only part of this chromosome, however, is heteropycnotic. The gametophyte in most strains of *P. epiphylla* has 9 chromosomes; a few diploid races (with 18 chromosomes) were found. Six chromosomes seem to be symmetrical, 1

being smaller than the other 5; 3 are asymmetrical, 2 of these being noticeably long. No trabant is found. One of the longer symmetrical chromosomes is heteropycnotic, save for a small part of one arm; it is considered homologous with the sex chromosomes of *P. fabbroniana*. Certain parts of 4 or 5 other chromosomes are also heteropycnotic; these parts are also thought to be concerned in sex-determination. In diploid races of *P. epiphylla*, two chromosomes are largely heteropycnotic. In *Blasia pusilla*, *Makinoa crispa*, and *Moerckia hibernica* there are 9 chromosomes, including 1 very small. *Androcryphia confluens* has 18, of which 2 are very small; of the larger ones, 8 are symmetrical, 8 asymmetrical. *Aneura pinguis* has 10, of which 4 large and 1 small are symmetrical; the other 5 are large and asymmetrical. The small chromosome in *Plagiochila asplenioides* and in *Trichocolea tomentella* is heteropycnotic.—In mosses, including species of *Polytrichum*, *Pogonatum*, *Catharinea*, *Mnium*, and *Hypnum*, the chromosomes are bilateral and either symmetrical or asymmetrical. One chromosome is always heteropycnotic, except that in polyploid species such as *Catharinea undulata* and *Fissidens adianthoides* 2 or more chromosomes are heteropycnotic. It is held that in mosses, as in hepatics, the heteropycnotic chromosome is a sex chromosome.—*C. E. Allen.*

3191. **HEITZ, E. Heterochromatin, Chromocentren, Chromomeren.** (Vorläufige Mitteilung.) *Ber. Deutsch. Bot. Ges.* 47(4): 274-284. 1 pl. 1929.—Chromocenters were found in the telophase and prophase in meristematic cells of 86 genera of plants belonging to widely different families. They were not found in 21 genera of which a relatively large proportion had large chromosomes. In mature tissues fusion of chromocenters may occur. Chromosomes are composed of sections of heterochromatin and of euchromatin attached end to end. Chromocenters are identical with chromomeres and consist of heterochromatin, the deeply staining component of the chromosomes, but the faintly staining euchromatin is believed to be at least equally important. The number of chromocenters does not invariably correspond to the number of chromosomes since more than one section of heterochromatin, or in *Crocus asturicus* none, may be present in a chromosome.—*J. W. Lesley.*

3192. **HOLLINGSHEAD, LILLIAN. A cytological study of haploid Crepis capillaris plants.** *Univ. California Publ. Agric. Sci.* 6(4): 107-134. 3 pl., 13 fig. 1930.—Five *C. capillaris* haploid plants were found in populations of *C. capillaris-tectorum* F_1 hybrids numbering over 3000 plants. A sixth haploid was one of two plants resulting from a *C. capillaris-C. setosa* cross. They doubtless resulted from the parthenogenetic development of *capillaris* egg cells. The haploids resembled reduced diploids but differed noticeably from diploids in leaf shape and habit of growth. Root tips usually showed the haploid chromosome complex of 3 individually different chromosomes but parts of some root tips in each haploid were diploid and some root tips were wholly diploid. A few parts of most of the plants above ground were also diploid, giving rise to diploid and chimeral heads and branches. The haploid portions of the plants were sterile, but achenes were obtained from diploid parts of one haploid plant. The progeny, presumably completely homozygous, were remarkably uniform in appearance. In meiotic behavior (♂) the haploids were irregular and variable. They resembled other haploids previously described in the occurrence of a random segregation of univalents at the heterotypic division, and of a rare division of all univalents followed by separation of the daughter halves to different poles, or "non-reduction." New or unusual features were (1) the occasional division of univalents at diaphase, (2) the frequent division of univalents but the inclusion of most pairs of daughter halves in the same nucleus, and (3) the omission of the homeotypic division. As a result, microspores of normal chromosome constitution were rarely formed and very little good pollen was produced. In diploid tissue on a haploid plant 3 bivalents were formed in many pollen mother cells but non-conjunction of one or more chromosome pairs was a frequent occurrence. This lack of pairing between presumably completely homologous chromosomes is of great theoretical interest, for it shows that complete homology does not necessarily result in bivalent formation at meiosis.—*Author's summary.*

3193. **HORNE, A. S. Nuclear division in the Plasmodiophorales.** *Ann. Bot.* [*London*] 44(175): 199-230. 3 pl. 1930.—The forms studied were *Spongospora*, *Sorosphaera*, and *Plasmodiophora*. The author divides the nuclear phenomenon into 3 phases. (1) In the somatic phase, there are 4 haploid chromosomes, which at metaphase unite end to end to form a ring around the persistent nucleolus. This band divides into 2 daughter bands, which, as they move toward their respective poles, break up into 4 chromosomes each. (2) In the transitional stage, the nuclei are achromatic and the cytoplasm stains more densely because of numerous chromidia. The author assumes that there occurs a fusion of coenocytic growth forms, and that, following this, nuclei of opposite sex fuse in pairs. (3) The post-transitional phase shows well-developed asters and centrosomes, an inconspicuous nucleolus, and diploid nuclei. Four chromosomes are organized in the neighborhood of each pole and the nucleolus disappears. The 2 groups of chromosomes assemble together, thereby producing the effect of contraction. The next stage observed is diakinesis. There are 4 chromosomes; one, ring-shaped. The heterotypic spindle shows 4 chromosomes. The nucleole reappears in telophase. Except that the nucleole is inconspicuous, the homotypic division resembles the somatic divisions. Sometimes the meiotic divisions are followed by a third mitosis, which immediately precedes spore formation.—*H. J. Sax.*

3194. **KATER, J. McA. Structure of the nucleolus in the root-tip cells of Nicotiana longiflora.** *Univ. California Publ. Bot.* 14(12): 319-322. 1 pl. 1928.—Nucleoli fixed in Karpechenko's solution show a vacuolar portion surrounded by a cortical layer. In this layer, a reticulum is present, continuous with the nuclear reticulum and disappearing when the latter disappears to form the chromosomes. The vacuoles are gradually expelled, giving rise to an "amphinucleolus," which would seem to be a true plasmosome. The vacuoles are less basophilic than the reticulum.—*R. E. Cleland.*

3195. **KATER, J. McA. Morphology and division of Chlamydomonas with reference to the phylogeny of the flagellate neuromotor system.** *Univ. California Publ. Zool.* 33(7): 125-168. 6 pl. 7 fig. 1929.—*C. nasuta* Korschikoff is typical in general morphology of the family Chlamydomonadidae. The pyrenoid is located along the main axis of the body, posterior to the nucleus, and is not a part of the chloroplast. At the onset of mitosis it disappears and is reformed in late telophase by modification of cytoplasmic alveoli, from which it may be deduced that alveoli, apparently structureless, are diphasic systems. The nucleus is shown to be of the metazoan and metaphytan type. Nucleus and nucleolus resemble those of higher organisms. The 8 chromosomes are formed by condensation of the chromatin of the nucleolus and the nuclear reticulum. The nuclear membrane persists until late anaphase, whereafter it disintegrates and the division figure becomes metazoan in type. The neuromotor system consists of two flagella and blepharoplasts, a rhizoplast, and an intranuclear centrosome, the system typical of the Chlamydomonadidae and Volvocidae. In the immobile stage the cell usually divides twice. A period of growth intervenes between the two divisions. The neuromotor system disappears except for the centrosome, and is later regenerated from this organ. The bearing of these facts on the phylogeny of the flagellate neuromotor system is discussed.—*F. M. Scott.*

3196. **KENDALL, JAMES. An aberrant Nicotiana with 91 chromosomes.** *Amer. Jour. Bot.* 18(2): 114-115. 1 pl. 1931.—Among the progeny of the back cross F_1 (*N. rustica* × *N. tabacum*) × *N. tabacum*, there appeared a number of aberrants. One had 78 somatic chromosomes

and was self fertile. Of the offspring grown from seeds of this plant when selfed there was one plant with 36-38 chromosomes in its first meiotic metaphases. Plants grown from seeds set by the latter plant when selfed gave a variable progeny of which one plant was outstanding. This was an aberrant having 91 somatic chromosomes and showing a blend of the morphological features of the 2 spp. involved in its origin. Both of its meiotic divisions were accompanied by marked irregularities and, apparently, polyvalency. Dyads, triads, many unequal tetrads, and some pentads were formed; this led to the formation of a high percentage of abortive pollen (Ca 80%) and viable pollen grains of various sizes. Irregularities were also observed in the mitotic process in the root tips. It was slightly self fertile and its capsules also became swollen when pollinated with *N. langsdorffii* (n=9).—*J. Kendall.*

3197. **KOSTOFF, DONTCHO.** A fertile triple hybrid, Nicotiana tabacum × (Nicotiana sylvestris × Nicotiana rusbyi). A preliminary report. *Amer. Jour. Bot.* 18(2): 112-113. 1 pl. 1931.—Plants of the cross *N. sylvestris* × *N. rusbyi* were self-sterile and showed usually 24 univalent chromosomes in the first meiotic division. They occasionally formed 24 dyad chromosomes as a result of omission of the first meiotic division under certain environmental conditions. The triple hybrids [see title] are evidently formed as a result of a fusion of normal egg cells of *N. tabacum* (n=24) with generative nuclei arising from such dyads. In the progeny of the triple hybrids there were plants intermediate in character as well as some closely resembling one or the other of the parental plants. The former type was fully fertile, formed entirely normal gametes, and had 48 somatic chromosomes; the latter showed irregularities in meiosis, was only partially fertile, and had usually 48+1, or 48+2 somatic chromosomes. This case appears to be the first on record of a fertile triple hybrid composed of complete contributions from the 3 different species combined.—*J. Kendall.*

3198. **KOSTOFF, DONTCHO, and JAMES KENDALL.** Irregular meiosis in Datura ferox caused by Tetranychus telarius. *Genetica* 12(1): 140-144. 5 fig. 1930.—Earlier reported observations on *Lycium halimifolium,* where striking irregularities occurred in the meiotic process as a result of injuries to the anthers by Eriophyid mites infesting the floral buds, have now an analog in *Datura ferox,* which was attacked by another acarinous parasite, *Tetranychus telarius.* In the anthers of affected buds meiotic divisions were accompanied by abnormalities similar to those reported in the case of *Lycium* resulting in pollen grains of three types: (1) smaller than normal and usually abortive; (2) about equal in size to the normal grains and viable; (3) 2, 3 or 4 times larger than the normal grains and viable. The majority of grains in these last two groups were able to germinate on the stigma; the plants derived from such fertilization are now being raised for further researches.—*M. J. Sirks.*

3199. **LESLEY, MARGARET M., and J. W. LESLEY.** The mode of origin and chromosome behaviour in pollen mother cells of a tetraploid seedling tomato. *Jour. Genetics* 22(3): 419-425. 2 pl. 1 fig. 1930.—A tetraploid seedling tomato (2n=48) appeared in the F_1 of a cross between a double trisomic and a diploid (2n=24). In general the plant resembled Winkler's tetraploid bud variant, but no significant difference was found in plastid size in tetraploid and diploid plants. Since the extra chromosomes of the double trisomic parent are absent in the tetraploid it probably originated from doubling the chromosome number after fertilization. Triploids evidently originate from union of diploid and haploid gametes. One triploid plant originated from a diploid gamete formed by reduction of a tetraploid mother cell. In the tetraploid seedling there are 7-12 tetravalents at diakinesis as compared with 1-2 observed by Jørgenson and outstandingly normal reduction observed by Winkler in tetraploid bud variants. Tetraploid, when selfed, sets seeds sparingly; tetraploid × diploid seldom succeeds, and diploid × tetraploid failed entirely. This may be partly due to the fact that reduction is slower in tetraploid than in diploid pollen mother cells. Tetraploid pollen mother cells in simple and double trisomic plants and non-reduction in pollen mother cells have been observed.—*M. M. Lesley.*

3200. **LEWIS, FREDERIC T.** A volumetric study of growth and cell division in two types of epithelium,—the longitudinally prismatic epidermal cells of Tradescantia and the radially prismatic epidermal cells of Cucumis. *Anat. Rec.* 47(1): 59-99. 13 fig. 1930.—Topics discussed on the basis of these measurements include the antithesis of cell growth and cell division: the quasi independence of tissue growth and cell growth: the significance of cell patterns in distinguishing between cell division initiated in the epithelium and in the subepithelial layer: the stimulus to division and the retardation of growth in the vicinity of the stoma, with the local reversal of Minot's law of senescence: stomatal patterns illustrating Graustein's theorem: the derivation of the prismatic epithelial cells in *Tradescantia,* with an average of nine and two-thirds surfaces, from the tetrakaidecahedron: the changes in cell pattern resulting, respectively, from a transverse and a longitudinal division in cells of rectangular hexagonal outline: the special growth of two epithelial cells adjacent to the one which divides, followed by the division of cells thus enlarged: the dependence of cell size upon the rate, and of cell shape upon the planes, of cell division.—*Author (courtesy Wistar Bibl. Serv.).*

3201. **LIETZ, J.** Beiträge zur Zytologie der Gattung Mentha. *Heil- u. Gewürz-Pflanzen* 12(3): 74-86. 2 pl. 1929; (4): 113-130. 1 pl. 1930.—The haploid chromosome numbers of *M. longifolia, M. aquatica, M. verticillata* and *M. arvensis* are 9, 18, 27 and 36 respectively. The development of the microspore and megaspore has been described and abnormalities observed in *M. verticillata* and *M. arvensis.* The abnormalities of the former have led to the conclusion that it is a hybrid between an 18-chromosome and a 36-chromosome species. The status of *M. arvensis* is uncertain, for both the pollen and the embryosac mother cell fail to develop to maturity. In the scheme proposed by Gams, *M. arvensis* is ranked as a pure species. This scheme, in general, is in harmony with the conclusions from cytological studies of Mentha species by the author and his colleagues.—*A. E. Longley.*

3202. **MAEDA, TAKESHIGE, and KAZUO KATO.** Chromosome arrangement. 7. The pollen mother cells of Spinacia oleracea, Mill. and Vicia faba, L. *Mem. Coll. Sci. Kyoto Imp. Univ. Ser. B* 4(3): 327-345. 1 pl., 23 fig. 1929.—The 6 chromosomes assume in meiosis the arrangement of Mayer's floating magnets in 69.7% and 71.1% respectively of cases examined. In each species there is 1 large chromosome and it is a matter of chance whether it or a small one shall be in the centre. In *Vicia* the data refer to points of spindle fiber attachment, the matter being more complex if whole chromosomes are considered. Exceptional cases are regarded as transition stages. The larger chromosomes behave like floats with more magnets than the smaller.—*R. O. Earl.*

3203. **MORINAGA, T.** Interspecific hybridization in Brassica. I. The cytology of F_1 hybrids of B. napella and various other species with 10 chromosomes. *Cytologia [Tokyo]* 1(1): 16-27. 4 pl. 1929.—Hybrids were made between *B. napella* (n=19) and each of the following species: *B. pekinensis* (n=10), *B. rapa* (n=10), *B. chinensis* (n=10), and *B. japonica* (n=10). In all F_1 plants there were 29 somatic chromosomes and at meiosis there were 10 bivalent and 9 univalent chromosomes. The bivalents divide regularly while the lagging univalents are irregularly distributed and some of them may be excluded from the daughter nuclei.—*K. Sax.*

3204. **NAWASCHIN, M.** Ein Fall von Merogonie, infolge Artkreuzung bei Compositen. *Ber. Deutsch. Bot. Ges.* 45: 115-126. 3 fig. 1927.—A natural hybrid was found between *Crepis tectorum* and *C. alpina.* These species belong to very different sections of the genus. All the chromosomes of *tectorum* are morphologically distinguishable from those of *alpina.* The hybrid was

intermediate in plant characters and nearly sterile but gave 3 seedlings from open pollination. One of these contained 2 sets of *tectorum* chromosomes, another 1 set of *tectorum* and 1 of *alpina*, the third 2 sets of *alpina* chromosomes. Only egg cells of the hybrid containing a set of *tectorum* and of *alpina* chromosomes were viable. The plant with 2 *alpina* sets originated from an egg composed of the protoplasm of *tectorum* and a set of *alpina* chromosomes fertilized by a male gamete of *alpina*. This is the first instance of interspecific "merogony" in higher plants. Except that the rosette stage was tuft-like and the organs generally rather smaller, the plant was indistinguishable from *alpina* and fertile but died after setting a few seeds. The nuclei therefore determine all the differences between *alpina* and *tectorum* since the nucleus of *alpina* (even when in the protoplasm of *tectorum*) gave rise to all the *alpina* characters. There is no specificity of cytoplasm in different species of the same genus.—*J. W. Lesley.*

3205. **NEBEL, B. Zur Cytologie von Malus und Vitis.** *Gartenbauwiss.* 1(6): 549-592. 55 fig. 1929.—The basic (diploid) chromosome number of the genus *Malus* is 34. *M. ioensis, fusca, coronaria* and *glaucescens* have 64 (2n). *M. spectabilis* and *"prunifolia"* (Borkh.) probably have the somatic number 51. In *Vitis* the basic number is 38. Two grape varieties (Muscat gigas and Sultanina gigas) have 76. It is contended that the greatest diversity in genetic characteristics exhibited by the apple is in the eastern part of Central Asia, whence the various species have spread east and west.—*A. E. Murneek.*

3206. **NĚMEC, B. The mechanism of mitotic division.** *Proc. Internat. Congress Plant Sciences, Ithaca, N. Y.* 1926. 1: 243-249. Geo. Banta Publishing Co.: Menasha, Wisconsin, 1929.—A general review of the forces at play during cell division, as determined especially by the author's experiments over many years. The movements of cytoplasmic bodies, as well as of the chromosomes and nucleoli, during mitosis, viscosity changes, the nature of the spindle and of the phragmoplast, and the mechanics of cytokinesis are some of the subjects treated.—*O. H. Pearson.*

3207. **NĚMEC, B. Ueber Struktur und Aggregatzustand des Zellkernes.** *Protoplasma* 7: 423-443. 48 fig. 1929.—From observation on living and fixed material of *Zea* and *Cucurbita*, the author concludes that there is a preformed reticulum in the nucleus. Nucleoli are hung on the reticulum. The nucleus has a ductile, elastic membrane. The meshes of the reticulum are filled with a liquid sap. The nucleolus is liquid and is, like the nuclear reticulum, of greater specific gravity than the nuclear sap. These results were obtained by the use of a centrifuge.—*L. Moyer.*

3208. **NOGUCHI, YAKICHI. Cytological studies on a case of pseudogamy in the genus Brassica.** *Proc. Imp. Acad.* [*Tokyo*] 4(10): 617-619. 1 fig. 1928.—In the cross *B. campestris* ♀ × *B. olerocea* ♂ inheritance is found to be maternal. The male nuclei enter the egg apparatus but play no part other than stimulating the development of an embryo.—*D. R. Cameron.*

3209. **OEHLER, E. Cytologische Untersuchungen an Kern- und Steinobstsorten.** *Züchter* 1(1): 25-30. 1929.—A review of sterility relations due to sterile pollen, and of chromosome numbers in varieties of apples, pears and prunes.—*F. V. Owen.*

3210. **OHASHI, HIRO. Cytological study of Oedogonium.** *Bot. Gaz.* 90(2): 177-197. 3 pl., 21 fig. 1930.—In *O. grande* the mitotic process, especially the behavior of chromosomes, shows a remarkable resemblance to that of higher plants. The number of chromosomes is 13, an uneven number. In spermatogenesis all important phases of mitosis in the formation of antheridia and sperms have been traced. In mitosis of the antheridial cell, the figure is oriented along the horizontal axis, while the cell division is to be transverse. This seems to be an unusual condition in cell division and has never been described in *Oedogonium*. Spermatogenesis in the dwarf male of *O. nebraskense* was also followed. There are two types of oogenesis, one with a suffultory cell (*O. nebraskense*) and the other without (*O. americanum*). The behavior of the nucleus in oogenesis in these species is described. Zoospore formation is described in an unknown species. The escape of the zoospore takes only a few minutes. Of the factors which stimulate the formation of zoospores, change of temperature seems to be the most effective.—*From author's summary.*

3211. **PASSMORE, SARA F. Microsporogenesis in the Cucurbitaceae.** *Bot. Gaz.* 90(2): 213-223. 40 fig. 1930.—Microsporogenesis proceeds in like manner in *Cucurbita pepo, C. maxima, Citrullus vulgaris, Luffa cylindrica, Cucumis melo,* and *C. sativus,* except that at diakinesis in the genus *Cucurbita,* in which the nuclei are about four times the size of the nuclei of the other genera, the nucleolus disappears before the nuclear membrane does, and many small, darkly staining bodies appear among the paired chromosomes. In the other genera the nucleolus remains intact until the nuclear membrane disappears and may be present at the multipolar stage of spindle formation. The haploid chromosome number in *Cucurbita pepo* and in *C. maxima* is 20. It is 11 in *Citrullus vulgaris* and in *Luffa cylindrica.* It is 12 in *Cucumis melo,* 7 in *C. sativus.* The chromosomes at anaphase go promptly to the poles in all species except *Cucumis sativus* where there is a tendency to lag on the spindle.—*S. F. Passmore.*

3212. **PETO, F. H. Cytological studies in the genus Agropyron.** *Canadian Jour. Res.* 3(5): 428-448. 2 pl. 1930.—An examination of 18 species of this genus native to Canada, Russia, Siberia and Denmark, reveals a polyploidal series with chromosome (2n) numbers of 14, 21, 28, 34 and 35, 42, 56 and 70, which is attributed to natural hybridization.—*C. E. O'Neal.*

3213. **POLJANSKY, GEORG, und GEORG PETRUSCHEWSKY. Zur Frage über die Struktur der Cyanophyceenzelle.** *Arch. Protistenk.* 67(1): 11-45. 1929.—A review of the literature is followed by an account of the technique employed on the following species: *Oscillatoria tenuis* Ag., *O. splendida* Grev., *Spirulina jenneri* (Stiz.) Geitler, *Tolypothrix tenuis* (Kuetz.) Schmidt, *Gloeotrichia intermedia* (Lemm.) Geitler, and *G. natans* (Hedw.) Rabh. Some of the conclusions of previous investigators are confirmed, others rejected. In general, the author's conclusions are that the cell is differentiated into a central and a peripheral portion, differing from each other in structure and function. The central area is not definitely delimited from the peripheral. The ground substance of the central area is likened to cytoplasm and contains:—(a) chromatic substance in the form of a net-like or sponge-like body stainable with basic dyes and corresponding to nucleoproteid; (b) "metachromatin" granules whose ground substance is "volutin"; and (c) certain products for assimilation, e.g., glycogen. In some species the chromatic substance in division undergoes a primitive mitosis. The peripheral portion, subject of less study, contains the coloring substance, diffused and not held in chromatophores. It also was found to contain the "cyanophycin" granules.—*N. L. Gardner.*

3214. **RICHARD, J. Sur le contenu cellulaire des Fucus.** *Rev. Gén. Bot.* 41(484): 209-212. 1929.—Using living cells, the author investigated successively vacuoles, pheoplasts, "fucosan particles," oil droplets, and "chondriosomes inactive in photosynthesis." All cells, except those of the colorless hairs of the cryptostomata, contain pheoplasts, which are flat, elongated, with somewhat rounded ends and very easily deformed. He rejects, for the "fucosan particles," the designation "phenol precipitates." The oil droplets are morphologically the most variable component. The "chondriosomes inactive in photosynthesis" of Mangenot were not observed by the author in living cells.—*M. Guinochet (transl. by R. C. Friesner).*

3215. **SAX, HALLY JOLIVETTE. Chromosome numbers in Quercus.** *Jour. Arnold Arboretum* 11: 220-223. 1930.—Sixteen American, and 10 Asiatic and European species belonging to the subgenera *Erythrobalanus* and *Lepidobalanus* were studied. The number of chromosomes determined from the divisions in the pollen mother

cells, was 12 or 12 ± 1. No significant difference was found in pollen sterility between species and hybrids.—*A. Rehder.*

3216. **SAX, KARL.** Chromosome structure and the mechanism of crossing over. *Jour. Arnold Arboretum* 11: 193-220. 2 pl. 1930.—Chromosome structure during meiosis was studied in *Secale, Lilium* and an Orthopteran, *Melanoplus femur rubrum*. The structure seems to be essentially the same in plants and animals, except that in the plants examined the chromatids are closely associated and form a spiral chromonema at certain stages of meiosis. The coiling of the chromonema is not a mechanism essential for the preservation of the linear order of the genes, as some investigators have suggested, but is apparently due to differences in the rate of contraction of the chromosome and the chromonema. Due to the close association of the chromatids and the coiling of the chromonema the tetrad nature of the paired chromosomes is not clearly evident until late metaphase, although doubtless each of the homologous chromosomes is divided into chromatids from early prophase. The nodes or chiasmata formed at diplotene represent points where the chromatids exchange partners, so that there is usually an alternate association of homologous and sister chromatids. Between early diplotene and diakinesis the number of chiasmata is reduced, due primarily to breaks in the chiasmata. Such breaks would result in crossing over between two of the four chromatids. A cytological interpretation of crossing over is presented which seems to be in accord with the rigid genetic requirements.—*K. Sax.*

3217. **SAX, KARL.** The origin and relationships of the Pomoideae. *Jour. Arnold Arboretum* 12(1): 3-22. 1 pl. 1931.—The genera *Cotoneaster, Mespilus, Crataegus, Sorbus, Aronia, Photinia, Eriobotyra, Chaenomeles, Cydonia, Malus, Pyrus* and *Amelanchier* all have 17 chromosomes as the basic haploid number. A few species are tetraploids, and triploids are commonly found in *Crataegus* and *Malus*. Many of the genera of Pomoideae are closely related, as indicated by the frequency of generic hybrids. The cytological and genetic evidence suggests that this subfamily originated in Asia from a 17 chromosome ancestor and that various degrees of differentiation now exist among the present genera.—*K. Sax.*

3218. **SAX, KARL, and D. A. KRIBS.** Chromosomes in Caprifoliaceae. *Jour. Arnold Arboretum* 11(3): 147-153. 1 pl. 1930.—The chromosomes of representative species of 8 genera of Caprifoliaceae have been examined and 9 appears to be the basic number of the family, though *Abelia* and *Kolkwitzia* have 16. Polyploidy exists in *Lonicera,* but most species have 9 chromosomes. The species examined of *Viburnum* and *Symphoricarpus* have 9 chromosomes; those of *Sambucus* and *Diervilla,* 18. The length of chromosomes of *Viburnum* and *Sambucus* is 4 and 5 microns; those of *Lonicera* are about ½ and those of *Diervilla, Abelia* and *Kolkwitzia* about ¼ as long. The wood structure is relatively primitive in *Viburnum, Diervilla* and *Kolkwitzia,* intermediate in *Abelia, Symphoricarpus* and *Lonicera* and highly specialized in *Sambucus.* There appears to be no correlation between either chromosome number or size and vascular specialisation.—*A. Rehder.*

3219. **SCHIEMANN, ELIZABETH.** Zytologische Beiträge zur Gattung Aegilops. Chromosomenzahlen und Morphologie. *Ber. Deutsch. Bot. Ges.* 47(3): 164-181, 1 pl., 5 fig. 1929.—New chromosome counts are as follows: $2n=14$ in *A. mutica,* 2 varieties; *A. bicornis; A. sharonensis; A. longissima.* $2n=28$ in *A. variabilis* (7 sibs from 5 varieties); *A. kotschyi* (2 sibs from 5 varieties). Percival's counts of $2n=14$ for *A. squarrosa* and $2n=42$ for *A. crassa* are confirmed. A complete chromosome list is given. Variations in number occur within sections. *Pachystachys* and *Pleionathera,* the former containing species with $n=7$, 14 and 21 chromosomes. In Pleionthera *A. umbellulata* has $n=7$, *A. triaristata* $n=14$ or 21 (2 sibs). The other 6 species in the section have $n=14$. Selfed material of *A. triaristata* was examined cytologically, and classified on the basis of ear characteristics. Six morphological types were found. The length-breadth index of the spike gives a quite unnatural arrangement for these types. On the other hand the spike outline is important. In the author's group A, the spike is suddenly reduced, and all grains above the three fertile spikelets are pygmies. Group A corresponds to *A. triaristata* ssp. *typica.* In group B, the spike is more gradually reduced and the fourth spikelet contains small grains, the fifth pigmy grains (ssp. *elongata* Sch.). In group C, almost all grains are large, small only in the fifth and pigmy in the sixth spikelet, and the spike is still more gradually reduced (ssp. *attenuata* Sch.). All other characters are subordinate to these. All plants examined cytologically in group A had $n=14$; all in group B $n=21$; but in group C plants with $n=14$ could not be distinguished from those with $n=21$. It is thus quite impossible in *triaristata* to relate certain characters to the hexaploid condition. The author considers *contracta* (not examined cytologically), *elongata* Sch. and *attenuata* Sch. as derived from *typica. Elongata* corresponds to ssp. *recta* Zhuk.; *attenuata* to *intermixa* Zhuk. Mendelian characters like hairiness, ripening time, and plant habit were found in all combinations in *triaristata.* These should be described and experimented upon but not named. *Elongata* and *attenuata* appear to belong to the eastern part of the range of *triaristata* and might possibly be grouped as ssp. *asiatica.* The material studied was chiefly from Maltepe, the variation center of the species. —*M. M. Lesley.*

3220. **SELIM, A. G.** A cytological study of Oryza sativa L. *Cytologia* 2(1): 1-26. 47 fig. 1930.—In all 5 races of rice plant examined, $n=12$. The resting nucleus of the pollen mother-cells generally has a single nucleolus. The synizetic knot in most cases is very compact and the threads are extremely delicate and not distinct. No continuous spireme is formed at the loosening of the synizetic knot, but the reticulate character of the threads is retained until later. Two firmly and permanently attached nucleoli are seen during the early prophase stage in three of the races. The other two have a single large nucleolus each. The single or double nucleolus is attached to the thread at more than one point. Dark stained bodies are seen scattered all over the reticulate thread. Chromatin is aggregated around these bodies, the thread is constricted and the chromosomes are formed. The secondary nucleolus disappears during the development of the chromosomes, and the primary one remains spherical throughout diakinesis. At late diakinesis the primary nucleolus fades away gradually until it disappears; at the same time fibrilla-like structures appear between the chromosomes. The above facts suggest that when the nucleolus divides it separates two different materials; and supports the view that the secondary nucleolus contributes material to the chromosomes, while the primary may contribute to the spindle. No resting nuclei are formed during interkinesis; and at homotypic telophase twelve chromosomes could be distinguished.—*Author's summary.*

3221. **SIMONET, MARC.** Sur l'étude cytologique de quelques hybrides d'Iris (groupe Pogoniris). *Bull. Mens. Soc. Nation. Hort. France* 2(1929): 455-463. 2 pl. 1929.—The author describes the behavior of the chromosomes in the reduction divisions in pollen mother cells of certain hybrids. n equals 20 in *Iris chamaeiris* Bertol. and usually in *I. pumila* Hort. A horticultural variety of *I. pumila* L. has $2n=36$ (9 bivalents and 18 univalents). The hybrid × Zwanenburg has $2n=42$ (12 bivalents and 18 univalents). In the garden Iris (*I. germanica* Hort.) are to be found diploids, triploids, tetraploids, and pentaploids with 24, 36, 48 and 60 chromosomes respectively. In all these plants many nuclear anomalies were noted as well as the presence of supernumerary chromosomes, and sometimes also, the absence of a chromosome: $(2n+1)$, $(3n-1)$, $(4n-1)$, $(4n+1)$, $(4n+2)$, and $(5n+2)$. In addition the author has noted a close relation between chromosome complement and gigantism; the largest plants and those having the best developed flowers, have the highest number of chromosomes. *I.*

germanica L. and intermediate forms have 2n=44 (14 bivalents and 16 univalents).—*M. Simonet (transl. by A. M. Wolfson).*

3222. **SINOTO, Y. The chromosomes of Makinoa crispata, Miyake.** *Cytologia* 2(1): 81-84. 5 fig. 1930.—The chromosomes of the ♂ plant of this liverwort seem to be the same in number, shape, and size as those of the ♀, except that the smallest chromosome in the former shows telomitic attachment of spindle fibres. This difference, as suggested by Heitz, is probably related, at least in part, to sex differentiation in the species.

3223. **TUAN, HSU-CHUAN. A new method for safranin differentiation.** *Stain Tech.* 5(3): 103-107. 1930.—A new method of differentiating safranin in pollen-mother-cell smears and paraffin sections is described in detail. Slides stained in safranin are dehydrated in a series of alcoholic solutions containing 1.5% picric acid with constantly decreasing percentages of water. Differentiation is principally effected in 83% alcohol containing 1.5% picric acid and completed in the final dehydration and clearing. Counterstains may be applied in clove oil if desired.—*Author (courtesy Wistar Bibl. Serv.).*

3224. **TURESSON, G. Studien über Festuca ovina L. III. Weitere Beiträge zur Kentnis der Chromosomenzahlen viviparer Formen.** *Hereditas* 15(1): 13-16. 1 fig. 1931.—A study of 10 viviparous forms of *F. ovina,* showing the chromosome series 21, 28, 42. Excepting the unusual type *tennforsiensis,* all forms from the Scandinavian inland are triploid. Types from Scotland and the islands are tetraploid.—*H. Wexelsen.*

3225. **VANDENDRIES, RENÉ. La tétrapolarité et les mutations sexuelles chez Hypholoma hydrophilum Bull.** *Bull. Soc. Roy. Bot. Belgique* 63(1): 26-35. 1 fig. 1930.—The author describes experiments with sex mutants of *Hypholoma hydrophilum* (Agaricaceae). Since these mutants are carried in culture and paired with others to determine sexual reactions, it appears that the mutations are of a permanent nature. In all, he reports on 18 that respond positively as monosexual haplonts. The haplonts may have various combinations of the factors represented by *a, b, a', b'* in which *ab* reacts positively with *a'b'* or *a'b* with *ab'*. In addition to the 18 seemingly unisexual cultures there are certain anomalous ones, as for example No. 1 reacts with *a'b* and *a'b'* and another anomalous form, No. 11, which reacts with all other forms. No. 12 reacts with no other forms except No. 11. In another unexplained case, No. 21 behaves as of the composition *a'b'* but fails to react with No. 1 which in turn reacts with other haplonts of the formula *a'b'*.—*E. A. Baird.*

3226. **WAGNER, N. Le chondriome des embryons des graines au cours de la maturation et de la germination.** *Arch. Anat. Microscop.* 26(3): 419-432. 1 pl., 1 fig. 1930.—Seeds of *Phaseolus multiflorus* and *Cucurbita pepo* showed the constant presence of chondriosomes during all the phases of development of the embryo and during germination. A relation was found between the aspect of the chondriome in embryo cell and the processes of hydration and dehydration.

3227. **WAKAYAMA, K. Contributions to the cytology of fungi. II. Cytological studies in Morchella deliciosa Fr.** *Cytologia* 2(1): 27-36. 2 pl. 1930.—The young ascus is binucleate. After fusion of the two nuclei, meiosis occurs. The first division is heterotypic, and a typical synaptic knot with a large nucleolus is clearly observed. The meiotic spindle is of intranuclear origin, and at each pole is a centrosome with well developed astral rays. The behavior of chromosomes in the anaphase is irregular. Twenty-four univalents are found. The second division is homotypic, giving rise to four daughter nuclei. Twelve chromosomes are present, and the 24 univalents are scattered irregularly in the spindle. In the third division, there are clear indications of "brachymeiosis," as far as the numerical diminution of chromosomes occurs, but the writer is uncertain whether the latter represents a true reduction or not. Accordingly, the number of chromosomes in meiotic division is reported for the present as 12. In exceptional cases, tetraploid asci were met with, and about 48 univalents were found. After the third division, 8 daughter-nuclei with intensively radiating astral rays are formed; radiations proceed until the astral rays meet at opposite poles, sweeping round the nucleus and delimiting the spore by the formation of a spore membrane. A typical mitosis takes place in the spore, 6 chromosomes being observed in the telophase, so that the spore becomes binucleate.—*Author's summary.*

3228. **WEST, GERTRUDE. Cleistogamy in Viola riviniana with especial reference to its cytological aspects.** *Ann. Bot.* [*London*] 44(173): 87-109. 2 pl. 4 fig. 1930.—In *V. riviniana* the first flowers of the season are chasmogamous; then come a few semi-cleistogamous flowers and finally cleistogamous ones. The cleistogamous flowers set good seed; the chasmogamous ones often fail to do so. The anthers of chasmogamous flowers contain both large pollen grains, which are shed, and smaller ones, which germinate in the anther as in cleistogamous flowers. Degeneration of pollen may set in at any stage in cleistogamous flowers. Meiotic phenomena in the anther are in general of the usual type. The embryo sac has 8 nuclei. The pollen tube enters the sac through a synergid and discharges 2 male cells; double fertilization follows. The haploid number of chromosomes is 20.—*L. W. Sharp.*

3229. **WETZEL, GERHARD. Chromosomenstudien bei den Fagales.** *Bot. Arch.* [*Leipzig*] 25(3/4): 257-283. 1 pl., 49 fig. 1929.—Chromosome numbers were obtained from 11 genera, as follows: *Carpinus, Ostrya, Corylus, Betula, Alnus, Fagus, Castanea* and *Quercus*. The haploid number was 8 in *Carpinus betulus* and *Ostrya carpinifolia;* 11 in *Corylus* spp., *Castanea* spp., *Fagus silvatica, Quercus* spp.; 14 in *Alnus* spp. Reduction divisions were normal in all genera. There exists in nature a threefold sexual rhythm in the *Fagales*. In the circumpolar type (*Corylus, Alnus, Betula*), the reduction division occurs as a rule in the year previous to flowering. In the middle European type (*Carpinus, Ostrya, Fagus, Quercus*), the reduction division occurs in the same year with the resultant flower. In the Mediterranean type (*Castanea*), the reduction division and flowering are in the same year, but are delayed until mid-summer.—*R. E. Cleland.*

3230. **WHITAKER, THOMAS W. Chromosome numbers in the cultivated cucurbits.** *Amer. Jour. Bot.* 17 (10): 1033-1040. 1 pl. 1930.—The chromosomes of 8 spp. of cultivated cucurbits were counted during the meiotic divisions of the pollen mother cells. The haploid numbers were as follows: *Cucumis sativus*=7, *C. anguria*=11, *C. melo*=12, *Citrullus vulgaris*=11, *Lagenaria vulgaris*=11, *Cucurbita pepo*=20, *C. maxima*=20, *C. moschata*=24.—*T. W. Whitaker.*

3231. **WOLF, PAUL. Zytologische Untersuchungen über verschiedene Formen der Mentha piperita. [Cytology of M. piperita.]** *Beitr. Biol. Pflanzen* 17(3): 351-392. 7 fig. 1929.—*M. canadensis* L. var. *piperascens* has 27 (haploid) chromosomes; *M. piperita* L. var. *crispa* and 5 distinct forms of the *M. "aquatica* × *viridis* group" have 18 (haploid). All the plants examined are considered to be hybrids; all showed essentially the same behavior during micro- and macrosporogenesis. During meiosis of pollen-mother-cells, aberrant chromosomes fail to reach the poles with resultant formation of microcytes at the tetrad stage. Much dwarf pollen is produced. Most of the normal pollen degenerates in the anthers. Macrosporogenesis is also defective. *M. "aquatica* 3 × *viridis* 1" gave no seed; the other plants produced seed in varying quantities. The author is of the opinion that *M. piperita* is not a form intermediate between its putative parents, *M. aquatica* and *M. viridis;* it consists rather of a series of intermediate forms which show varying resemblances to each parent type. Meiotic irregularities have produced gametes whose 9 chromosomes are partly maternal, partly paternal in origin. The zygote then will show greater resemblance to that parent which contributed the greater number of chromosomes. On account of the variability of *M. piperita* it is necessary to plant the field with entirely new cuttings of a good

M. piperita at least every 5 years in order to secure a good quality of oil.—*A. D. Bergner.*

3232. **WOODWORTH, R. H.** Cytomyxis. *Jour. Arnold Arboretum* 12(1): 23-25. 1930.—The extrusion of chromatin from the nucleus of one pollen mother cell to another has been considered a normal process by some cytologists. A critical study of cytomyxis shows however that it is caused by mechanical injury to the cells during the preparation of the tissue for fixation.—*K. Sax.*

3233. **WOODWORTH, R. H.** Meiosis of microsporogenesis in the Juglandaceae. *Amer. Jour. Bot.* 17(9): 863-869. 2 pl. 1930.—*Juglans regia, J. rupestris, J. nigra, J. cinerea, J. mandshurica, J. sieboldiana* var. *cordiformis,* all have n=16, and all show normal meiosis. *Juglans notha* is a known hybrid. It shows the irregularities of meiosis characteristic of heterozygous plants. It is emphasized that these abnormalities are natural, not being due to the technique employed. Cytomyxis is accompanied by chromosome migration. *Carya ovata, C. laciniosa, C. cordiformis,* have n=16, and exhibit regular meiosis. *Carya alba, C. glabra, C. ovalis,* are tetraploid species with n=32. Meiosis is normal. *Carya laneyi* var. *chateaugayensis* is a known hybrid. It is diploid as are both its parents. Meiosis is abnormal as in other hybrids. *Pterocarya rehderiana* is a known hybrid ($n=16$). Meiosis is somewhat abnormal, due to its heterozygous nature. Cytomyxis is accompanied by chromosome migration. *Betula, Alnus* and *Corylus* with 14, and *Carpinus, Ostrya,* and *Ostryopsis* with 8 chromosomes as the respective fundamental numbers, form two rather distinct groups in the Betulaceae. The Juglandaceae with 16 chromosomes may have a phylogenetic connection with the second of the above groups.—*Author's summary.*

GENETICS

ORLAND E. WHITE, *Editor,* Plant

SEWALL WRIGHT, *Editor,* Animal

(See also in B. A. 6(1): Entries 19, 27, 49, 99, 105, 835, 858, 892, 903, 920, 949, 960, 1289, 1302, 1344, 1438, 1460, 1506, 1573, 1616, 1623, 1629, 1913, 1918, 1924, 2000, 2003, 2064, 2308, 2324, 2330; and in this issue 3001, 3005, 3034, 3165, 3167, 3168, 3171, 3172, 3173, 3174, 3175, 3176, 3183, 3187, 3188, 3192, 3196, 3197, 3198, 3199, 3201, 3203, 3204, 3205, 3208, 3209, 3212, 3215, 3216, 3219, 3221, 3225, 3231, 3233, 3470, 3494, 3497, 3811, 3884, 3896, 3899, 4248, 4271, 4284, 4298, 4769, 4805, 4812, 4814, 4826, 4838, 4842, 4846, 4847, 4892, 4978, 4982, 5027, 5029, 5038, 5096, 5134, 5175, 5176, 5185, 5193, 5194, 5195, 5211, 5363, 5379, 5447)

GENERAL

3234. **FORD, E. B.** The theory of dominance. *Amer. Naturalist* 64(695): 560-566. 1930.—Fisher's theory of the origin of dominance, through natural selection of the gene-complex, is reviewed. It receives confirmation from recent work on the multiple effects of single genes. Haldane's supplementary suggestion, that dominance may arise through natural selection of multiple allelomorphs, is also discussed. It is pointed out that this is also ultimately dependent upon selection of the gene-complex. Evidence is cited that mutations are sometimes due to changes at a given locus and sometimes to actual losses of genic material. But such losses provide no explanation of the recessive state and do not necessarily lead to the recessive condition. Dominance modification will be particularly rapid in polymorphic forms, for in these the heterozygotes form a large proportion of the population. —*E. B. Ford.*

3235. **ZWARENSTEIN, H.** Bridges' genic balance theory of sex determination. *Nature* [*London*] 127 (3216): 927. 1931.—Gives a table to represent the genotypic differences of the various sex types.

PLANT

3236. **BACH, FRIEDRICH.** Kreuzungsversuche bei weissem Winterkalvill. Eine neue Apfelxenie. *Gartenbauwiss.* 1(6): 615-618. 1 fig. 1929.—Crossing of White Winter Calville (♀) × Kalterer Böhmer (♂), with 80-90% of the pollen germinating in 10% sucrose solution, and × Gravenstein (♂), with 30% germination, gave a 23-23.5% and 16-17% fruit set respectively. Only 1.5% of flowers set fruit when White Winter Calville was self-fertilized. This variety is largely self-sterile. Eight cases of zenia were observed in Winter Goldpermain (♀) × White Winter Calville (♂) crosses, in which the pollen parent influenced the form of the fruit.—*A. E. Murneek.*

3237. **BARNES, B.** Induced variation in fungi. *Jour. Quekett Microscop. Club* 16(97): 167-176. 1931.—In experiments on *Eurotium herbariorum, Botrytis cinerea,* and *Thamnidium elegans,* transfer of spores by a hot platinum wire was followed by the appearance of numerous variant forms in the cultures. Some of the abnormalities have persisted through about 100 consecutive sub-cultures. The variants are almost always slower growing than the normal; colonies are denser, with closely approximated branches; the variants are unstable for some time after their appearance. In young colonies of variants, pigmentation and growth sometimes approximate those in old colonies of the normal species.

3238. **BRITTINGHAM, WILLIAM H.** Oenothera lamarckiana mut. acutifolia, a new mutant type produced by a gene outside the first linkage group. *Amer. Naturalist* 65(697): 121-133. 2 fig. 1931.—*Oenothera lamarckiana* mut. acutifolia* appeared [at Princeton University] in the spring of 1929 in a cross-bred line of *O. lamarckiana* which had been maintained for 23 yrs. This new gene mutation is characterized by a narrower, more sharply pointed rosette leaf and a reduction in the amount of crinkling. Plants of *acutifolia* grow much more slowly than the typical *lamarckiana* and are several weeks later, on the average, in coming to bloom. When *acutifolia* first appeared it made up 21.4% of the population of 3 segregating families. Self-fertilized *acutifolia* ($a_f a_f$) has bred true. In a segregating family, 31 phenotypic *lamarckiana* plants were tested and shown to be of 2 genetic constitutions: 8 plants ($A_f A_f$) gave typical *lamarckiana* progenies; 23 plants ($A_f a_f$) threw segregating families. *Acutifolia* is completely recessive. When it was crossed with $A_f A_f$ *lamarckiana,* no *acutifolia* appeared in the F_1; when it was crossed with *lamarckiana* heterozygous for *acutifolia* a 1:1 segregation resulted. The occurrence of typical monohybrid ratios in self-fertilized *lamarckiana* indicates that the gene for *acutifolia* (a_f) is not in linkage-group I with the balanced zygote lethals. Either it is in group II with b_r; or in group III with *v, sp* and b_u; or in group IV for which it would be the first known gene. Mut. *acutifolia* has 14 chromosomes ($2n$), which at diakinesis appear to be arranged in a circle or chain of 12 and a single pair. Thus the configuration in *acutifolia* seems identical with that found in its parent species, *O. lamarckiana.* The cytological work is being continued. The importance of new genes in *lamarckiana* which give typical Mendelian ratios is stressed as providing a means towards solving the problem of the significance of chromosome cohesion in *Oenothera.*—*Author's summary.*

3239. **BUXTON, B. H., and C. D. DARLINGTON.** Behaviour of a new species, Digitalis mertonensis. *Nature* [*London*] 127(3194): 94. 1931.—*D. mertonensis* arose in 1926 by crossing F_1 hybrids of *D. purpurea* and *D. ambigua* inter se. Chromosome number is 112; the hybrid evidently arose by suppression of reduction division in

its parents (each with 56). The sp. is giant and tetraploid; it has been carried on for 5 generations.

3240. **CAYLEY, DOROTHY M. The inheritance of the capacity for showing mutual aversion between mono-spore mycelia of Diaporthe perniciosa (Marchal).** *Jour. Genetics* 24(1): 1-63. 1 pl. 1931.—A large number of tests with mono-spore mycelia of the haplo-heteroecious form of *D. perniciosa* have shown that the capacity for mutual aversion is inherited, and segregates in the 2nd and subsequent ascospore generations. There are 2 forms of aversion, inter-racial and intra-perithecial, macroscopically indistinguishable. The paper deals mainly with intra-perithecial aversion, a form of self-sterility dependent on 2 or possibly 4 pairs of factors, which segregate independently of sex. The mycelia fall into 4 groups. All members of one group show aversion towards all members of the other 3, and yet one group can throw mycelia belonging to another group. These conflicting results are explained by an adaptation of Kniep's 4-group scheme for sex in the Basidiomycetes. In *Diaporthe* 2 mono-spore thalli of like genetical constitution meet and show no aversion, but no zygote is possible in such a combination. When 2 mono-spore thalli of opposite sexes having no factor in common are combined, the mycelia meet and produce fertile perithecia. Aversion occurs only when the total of the allelomorphic pairs carried by the opposing thalli is unbalanced. The occurrence of aversion or no aversion among the mycelia from a single perithecium, or from different perithecia in the same culture, therefore depends upon the type of segregation which has taken place in the asci of the parent perithecium. Different perithecia in the same culture can give different types of segregation, and the same types of segregation can occur in the different groups. The results also indicate that both sex and the self-sterility factors can segregate either at the 1st or the 2nd meiotic division in the ascus. Cases of aversion in other groups of fungi are discussed, and an attempt is made to classify the different forms of heterothallism now known in the fungi, in order to distinguish between true sex heterothallism and other forms in which the sexual affinity of the mycelia is controlled by factors other than sex factors. The paper includes numerous charts and a comprehensive bibliography.—*D. M. Cayley.*

3241. **COLLINS, J. L., LILLIAN HOLLINGSHEAD, and PRISCILLA AVERY. The Crepis setosa chromosomes present in Crepis artificialis; a correction of Tischler's statement concerning autosyndesis among setosa chromosomes.** *Amer. Naturalist* 65(697): 191-192. 1931.

3242. **CRANE, M. B., and W. J. C. LAWRENCE. Sterility and incompatibility in diploid and polyploid fruits.** *Jour. Genetics* 24(1): 97-107. 1931.—In the sweet cherry, *Prunus avium* (diploid), incompatibility is comparatively simple. Self-compatibility is the rule, cross-incompatibility common and always reciprocally expressed. Among established varieties 9 intra-sterile, inter-fertile groups have been found. Investigations with seedlings show that this incompatibility is an orderly phenomenon based on a series of oppositional factors and amenable to the genetic interpretation advanced by East and Mangelsdorf in *Nicotiana*. In the sour cherry (*P. cerasus*) and the "Dukes" (tetraploids), different degrees of compatibility occur. In plums, *P. domestica* (hexaploid), incompatibility is complex. Self- and cross-compatibility, self- and cross-incompatibility, degrees of self- and cross-compatibility and differences in reciprocal matings, both complete and in partial degree, occur. In apples, compatibility is common in partial degree, but rarely completely expressed. "Triploid" varieties are characterised by a high degree of sterility, but it is expressed in the formation of imperfect seeds and weak offspring rather than by failure to form fruits. The expression of incompatibility is more complex and variable in polyploids than in diploids. This is attributable to the polysomic condition of the factors determining incompatibility in polyploids and consequent interactions favorable to great variation in pollen tube growth.—*M. B. Crane.*

3243. **HUSKINS, C. LEONARD. Origin of Spartina townsendii.** *Nature [London]* 127(3212): 781. 1931.—Considered to be an allopolyploid derived by the natural crossing of *S. alterniflora* and *S. stricta.*

3244. **IMAI, YOSHITAKA. Creased flowers of Pharbitis Nil.** *Zeitschr. Indukt. Abstamm.- u. Vererb.* 58 (2): 248-258. 10 fig. 1931.—Creased is an old variation occurring under intense cultivation. Cotyledons are a little crumpled; leaves nearly flat or slightly crumpled; and corollas creased and irregularly split, with supplementary petaloid pieces, like those of feathered; fertility is low. Notwithstanding the fact that creased dates far back of feathered, the former has nearly disappeared in Japanese gardens, while the latter is popular among cultivators. This is due evidently to the easy identification of feathered seedlings by their cotyledons, which are considerably curved upwards. Creased constitutes one of a triple series of allelomorphs with normal and feathered, the order of their dominance being normal, feathered and creased. The other six cases of multiple allelomorphs are described. Creased is linked very closely with cordate, as feathered is, with 1.2% of crossing over. The recessive gene crumpled-1 acts as a dominant when working on the genotypes creased, delicate, crêpe and deformed, and therefore exhibits "reversal of dominance." —*Author's summary.*

3245. **JAGANNATHA RAO, C. The immediate effect of artificial self-fertilization on some economic characters of the cotton plant.** *Madras Agric. Jour.* 19(3): 113-119. 1931.—No appreciable differences are observed in the flowering and bolling curves obtained from plants, the flowers of which are partly selfed and partly left for natural pollination. The 8 boll characters studied, namely, ovules per lock, seeds per lock, fertility index, lint length, kapas weight per seed, lint weight per seed, weight per seed, and ginning %, are not affected by selfing the flowers.

3246. **KOSTOFF, DONTCHO, and JAMES KENDALL. Variants and aberrants of Nicotiana obtained experimentally.** *Biol. Generalis* 7: 271-282. 3 pl., 27 fig. 1931.—By operating on the anthers of *Nicotiana tabacum* var. *macrophylla* (inbred for 4 generations) with a sterile needle before or during the process of meiosis, irregularities were induced in this process that resulted in the formation of viable pollen grains of various sizes as well as a high percentage of abortive grains. The flowers, in which about 70-85% of the pollen was abortive and the viable grains varied greatly in size, were selfed; the resulting capsules yielded about 10-25 seeds per capsule. From seeds so obtained about 800 seedlings were raised. Of this number there were about 100 divergent plants; differences from the normal controls and parent plants were evident not only in the morphological characters of the leaves and flowers but also in certain physiological processes. The plants varied markedly in their rates of growth, and a study of the nicotine content showed significant differences. Cytological study of the pollen mother cells and root tips in a number of the outstanding plants is reported. Plants with abnormal morphological characters were found having the normal chromosome number ($n=24$, $2n=48$), and others with an aberrant number ($n=25$-27, $2n=50$-54). Among the 1st group, the variants, in some cases the meiosis was almost normal, while in others it was irregular and led to formation of considerable abortive pollen and viable pollen grains of varying sizes. In the case of the 2nd group, the aberrants, meiosis was irregular and the pollen contained a high percentage of abortive grains and viable grains of different sizes. Many of the large, and also some of the small, grains in the pollen of these plants were found to germinate on their own stigmas. There appears to be a positive correlation between the percentage of viable pollen grains and the number of seeds set after selfing.—*J. Kendall.*

3247. **KOTILA, JOHN ERNEST. Some chimeras of Solanum tuberosum L.** *Papers Michigan Acad. Sci. Arts*

& *Let.* 11: 219-224. 5 pl. 1929(1930).—A chimera of fasciated stem and one of an abnormal leaf reproduced themselves from tuber cuttings. One involving skin color, found in single tuber clons, reproduced itself through two generations of cuttings. Russet Rural probably is a chimera of Rural New Yorker.—*T. M. Currence.*

3248. **LEWIS, M. T. Inheritance of heading characteristics in lettuce varieties.** *Proc. Amer. Soc. Hort. Sci.* 27: 347-351. 1930(1931).—Heading does not lend itself to precise genetic analysis beyond the fact that it is a quantitative character depending upon multiple factors. This difficulty exists in a degree greater than would be expected in a self-fertilized plant. In not all cases did an intermediate form appear in F_1, while in F_2 a wide range of types was recovered. In the one instance observed, reciprocal crosses gave in F_1 and F_2 similar results except as to non-heading, in which there was a disagreement of about 30%. In general in New York crosses, from 60% to 90% of non-heading plants occur in F_2. For commercial purposes, of the varieties studied, the crosses holding the greatest promise are New York by Hanson and Golden Yellow Stonehead by Early Butternut. In crosses involving varieties of the crisphead group, F_2 types superior to existing commercial strains were rarely recovered, while in the cabbage-butterhead group superior F_2 individuals have been observed.—*Author's conclusions.*

3249. **McCLELLAND, C. K. The genetics, breeding and improvement of corn and cotton.** 74p. Publ. by the author: Univ. of Arkansas, Fayetteville, 1930. Price of complete list $1; for list of corn 75c; for cotton, 60c.—A bibliography of 1300 titles of work published in the U. S. A. and elsewhere during 1889-1929, on the genetics, cytology, breeding and inheritance in the 2 crops mentioned. References to abstracts in the Experiment Station Record of the U. S. D. A and in Botanical and Biological Abstracts are given for most of the articles. The linkage groups of maize as of 1929 are listed.—*J. O. Ware.*

3250. **[NAVASHIN, M. S.]** НАВАШИН, М. С. Случай мерогонии вследствие межвидового скрещивания у сложноцветных. **[A case of true merogony induced through species-crossing in Crepis.]** [German summary.] Журнал Русского Ботанического Общества при Академии Наук СССР. (*Jour. Soc. Bot. Russie, Acad. Sci. URSS*) 12(1/2): 87-98. 6 fig.; also in German in *Ber. Deutsch. Bot. Ges.* 65(2): 115-126. 3 fig. 1927.—The author chanced to find among descendants of an F_1 interspecific hybrid, *Crepis tectorum* ♀ × *C. alpina* ♂, 1 individual which possessed the pure chromosome complement of the ♂ parent, *C. alpina.* Due to very low chromosome numbers (*C. tectorum* and *C. alpina* have only 4 and 5 pairs respectively) and low viability of recombination products, zygotes containing parental chromosome complements should be relatively frequent. Since the ♂ gametes of Compositae bear no cytoplasm, the ♀ parent only supplies the latter to the offspring. The reduction division represents an ideal mechanism for "transplanting" chromosomes of one species into cytoplasm of another, thus giving rise to merogony. The F_1 individual obtained in this case was in all respects identical with ordinary plants of *C. alpina,* despite the fact that only its chromosomes belonged to this species, the cytoplasm obviously being derived from *C. tectorum,* which served as the ♀ parent. This first established case of true merogony in higher plants led to the conclusion that specific characters depend on the nature of the chromosome complex and that the cytoplasm has no influence on the transmission or expression of specific characteristics.—*E. B. Babcock.*

3251. **NICOLAISEN, W. Beitrag zur Immunitätszüchtung des Hafers gegen Ustilago avenae (Pers.) Jens.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(2): 255-278. 1 fig. 1931.—The method of Reed, unmodified, was found best suited in inducing smut infection, in comparison with the vacuum process of Zade or the flower inoculation method. The immune Black Mesdag was crossed with 4 susceptible varieties. Resistance was dominant and segregation was single-factored. In a cross between Black Mesdag and a resistant variety, resistance was dominant. Calculation of factors was difficult but probably segregation was on a 3-factor basis. A very few plants were highly susceptible. The F_3 families were grouped in but 4 classes. The cross between the immune Red Rustproof and a susceptible variety showed 2 factors present. In Red Rustproof × Lochow's Gelbhafer (the latter resistant), the former showed 2 factors for immunity (dominant) and the latter 1 factor for resistance. In the 4th cross the same Gelbhafer was crossed with a mildly susceptible *A. byzantina* variety, Fulghum. From this cross arose a large number of immune, as well as a number of susceptible, selections. Black Mesdag seedlings, after becoming infected, appeared much injured and in a near-lethal condition. Recovery followed and no infected mature plants ever appeared. The Lischower variety showed no corresponding injury but many plants died before maturity. By means of a series of inoculations, geographical races of smut were isolated, and these were found to have different infective capacities with different varieties. The reaction of (mature) Black Mesdag was always zero.—*L. R. Waldron.*

3252. **NILSSON-EHLE, H. En ny växtförädlingsgren vid Sveriges Utsädesförening. [A new line of plant breeding at the Swedish Seed Association.]** *Sveriges Utsädesför. Tidskr.* 41(2): 67-69. 1931.—The Swedish Seed Association has received funds for establishing a laboratory for chromosome investigations, and a review is given of the possibilities of artificially increasing chromosome numbers in field crops.—*G. Nilsson-Leissner.*

3253. **PEARSON, O. H. Further observations on the type of sterility in Brassica oleracea var. capitata.** *Proc. Amer. Soc. Hort. Sci.* 27: 337-342. 1930(1931).—By inbreeding, lines of cabbage plants incompatible to their own pollen and to that of their sibs can be isolated. Certain combinations of these incompatible lines can be made so that perfect sets of seed will be secured. In a few generations such self incompatible lines probably could be isolated and by planting these lines side by side in cross compatible combinations, commercial qualities of F_1 seed, with all the vigor and uniformity characteristic of hybrids, could be obtained.

3254. **PORTER, D. R. Some effects of inbreeding in watermelons.** *Proc. Amer. Soc. Hort. Sci.* 27: 554-559. 1930(1931).—Preliminary report. The variety Klondike may be inbred for at least 4 successive generations without marked decrease in number of fruits or total yield per plant. Inbreeding tends to isolate strains which produce either larger or smaller fruit than the commercial variety. Strains, inbred for 4 successive generations, have been isolated which produce fruit equal in weight to those of the parent variety but which excel the latter in fruit uniformity, flesh color, texture, and quality.—*Author's conclusion.*

3255. **RAUM, H. Über die Vererbung von Ähreneigenschaften bei Kreuzungen zwischen Emmer- und Dinkelreihe des Weizens.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(2): 161-254. 13 fig. 1931.—This work, in part, is a continuation of that already reported (See Biol. Absts. 5(4): 10359), *A* and *B* in this article replacing L_1 and L_2 of the previous article. A 3rd lengthening factor *L* is introduced. These 3 are responsible for rachial internodal length [not spikelet length as stated in the earlier abstract] while *C* shortens the internodes to produce *T. compactum.* In the present work 16 crosses were made between tetraploids and hexaploid wheats, and analyses continued to the F_3, and later, generations. The F_1 plants from *dicoccum* and *dicoccoides* × *hexaploids* showed markedly less fertility than did the F_1 plants from *durum* and *polonicum* × *hexaploids.* Fertility in the F_2 was generally less than in the F_1. The wholly heterozygous individual is *densum* with the formula *AaBbCcLl.* The head types, in order, consist of *hypercompactum, compactum, capitatum, densum, sublaxum* and *laxum.* The *C* factor is present only in *T. compactum* of the hexaploids and in all the tetraploids used except the true emmers and *T. polonicum.* The factors

listed are evidently present in the 28 pairing chromosomes found in the 2 wheat series but not present in the 7 extra chromosomes of the hexaploids.—Factors *S* and *B* are assumed to be responsible for glume tightness and rachial brittleness, respectively, and they are further assumed to be in a dominant condition in all tetraploid and hexaploid chromosome sets of the wheats studied. Inhibiting factors are assumed to be present in the tetraploid (pairing) chromosomes, either dominant or recessive. In addition a dominant (or occasional recessive) inhibiting factor *H* is found in the univalent chromosomes of the hexaploids. The close-glumed tetraploids would be *sshh* and the loose-glumed tetraploids (durums and poulards) *SSIH*. Hexaploids would be *SShh*[*HH*], *SSIH*[*HH*] and *SSHH*[*hh*]. Corresponding formulas are assumed for rachial brittleness. The 1st hexaploid formula would give 1:1 close to open glumes; the 2nd would give 5:3 close to open and the 3rd 3:1 close to open. Due to sterility, these ratios were followed only approximately. The above formulas would explain the presence of "speltoids" which occurred rather freely and which were always heterozygous in the F_2. Novel plants, loose-glumed with brittle rachises, appeared in certain crosses and were named "vulgoids." A *T. turgidum* × *T. vulgare* cross (both with open glumes and tough rachises) yielded an apparently true *dicoccum*. It was not studied cytologically. A *T. dicoccoides* × *T. spelta* cross (both with brittle rachis) resulted in brittle rachis segregation. This might be expected as the breaking of the rachis in the 2 wheats is different.—Four genes are held to be concerned with awnedness: *F* and *G* induce awning while *H* and *I* inhibit the presence of awns. The *I* gene is of an activating nature. All bearded forms are given 1 grouping except the heterozygous tip-bearded wheats. [At least some of the so-called awnless hexaploid parents carried tip awns.] The ratios of awned to awnless are various and range from 3:1 to 165:91. Results from the 16 crosses confirm, in general, the hypothesis. The general closeness of fit to the assumed formulas furnishes strong evidence that the genes concerned are located in the tetraploid (pairing) chromosomes of the hexaploids and not in the univalents. In 2 crosses additional awning genes appeared necessary to account for the splitting in the F_2, but all F_2 plants tested showed normal segregation in the F_3. Only 1 of the awning genes, designated *F*, was assigned to the tetraploids while the hexaploids carried the *G* genes, except for *T. spelta* where both genes were recessive. *H* and *I* were both present in the awnless hexaploids. Difficulty arose in some instances in ascribing the proper formula to a parent due to the nearness of certain ratios; the difference in the expected awned plants in one instance was but 4.3%.—*L. R. Waldron.*

3256. TJEBBES, K. Interfertile Gruppen innerhalb einer selbststerilen Form von Portulaca grandiflora Lindl. *Bot. Notiser* 1930(1): 48-52. 1 fig. 1930.—Ordinarily *Portulaca* is self-fertile but a race originating from Vilmorin Andrieux et C^ie^ in Paris, "pourpre à grandes fleurs de Paraná," and differing only in color from other forms of the species, proves to be self-sterile. The pollen is regularly good, and the reduction division takes place without disorder ($n=9$, as is general in *P. grandiflora*). Each perpetuated plant of this race is the result of crossing between 2 self-sterile plants. The result of 166 cross-pollinations among 20 self-sterile plants are tabulated: 2 flowers of each plant were crossed; 34 combinations gave seeds, 82 were sterile. There appear to be at least 2 intrasterile, interfertile groups in this race.—*H. K. Svenson.*

ANIMAL

3257. AGAR, W. E. A Lamarckian experiment involving a hundred generations with negative results. *Jour. Exp. Biol.* 8(1): 95-107. 1931.—Experiments were devised to determine whether regeneration of the dorsal branch of the 2nd antenna of *Simocephalus* and *Daphnia*, repeated for many generations, would result in an improvement in the regeneration (which is very imperfect) or in any alteration in the process. Neither the character nor extent of the regeneration was influenced in any measurable degree in any of the experiments, even after 100 generations, nor was the normal growth of the antenna affected. A similar experiment, except that selection was practiced in addition, also produced negative results, confirming both the lack of Lamarckian effect and the inefficacy of intraclonal selection.—*J. M. Robson.*

3258. ASTAUROFF, B. L. Studien über die erbliche Veränderung der Halteren bei Drosophila melanogaster Schin. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 115(3): 424-447. 16 fig. 1929.—Recessive mutant "tetrapter" (*tr*), located at 51.3 in chromosome III. Development is usually asymmetrical and highly variable. Majority of homozygotes appear wild-type. Stages of manifestation: (1) Head of halteres develops a row of bristles corresponding to costals of normal wing; (2) flattened lamellae and pronounced costal vein; (3) area larger; radial appears; alula differentiates; (4) still larger; costal, radial, medial present; sense organs on medial; (5) length ½ normal; all veins present; very rare. Transitional stages strongly support idea that halteres represent a reduced second pair of wings. Tetrapter is believed to be non-allelomorphic to earlier similar mutants, bithorax and bithorax-b.—*C. B. Bridges.*

3259. CUÉNOT, L. Génétique des souris. *Bibliographia Genetica* 4: 179-242. 1928.—A review. Sections treat of methods of raising mice, chromosome number, genetical studies in the pre-Mendelian period, in the Mendelian period, the genetic factors, cancer in mice and its inheritance, general facts of heredity, wild mice and their natural sub-species, attempts to produce mutations in mice, attempts to demonstrate the inheritance of acquired characters, and telegony. Bibliographies, mostly extensive, are given for each section.

3260. DRIVER, ERNEST C. Temperature and gene expression in Drosophila. *Jour. Exp. Zool.* 59(1): 1-28. 1931.—In homozygous inbred races of bar and ultrabar mutants of *D. melanogaster* the facet number varies inversely with the temp. in geometrical progression. This rate remains constant for ultrabar through a range of temp. extending from 15° to 30°C., but in the bar race the rate changes abruptly in the neighborhood of 21°C. Temp.-effective periods have been worked out for bar temperatures at 15, 17, 20, 22, 27, and 30°C. and for ultrabar at 15, 17, 20, 22, and 27°C. In ultrabar the effective period covers approximately 26% of the larval life at all the temp. used. In bar the effective period covers approximately 25% of the larval life at temp. below 21°, and 16% at higher temp. Attempts at an analysis of the curves for rate of facet formation in both stocks show that it cannot be compared to a simple chemical reaction nor to a catenary series in which one is the limiting or controlling reaction. It is concluded that facet formation is the resultant of 2 or more opposing forces, the formation of facets being initiated by the whole gene complex and the mutant series of bar genes exerting a retarding influence upon this process. The facet-forming reaction and the reaction retarding it do not have the same temp. characteristic, so that at different temp. a different point of balance is reached and therefore different facet numbers result.—*Author* (*courtesy Wistar Bibl. Serv.*).

3261. GREEN, C. V. Size inheritance and growth in a mouse species cross (Mus musculus × Mus bactrianus). III. Inheritance of adult quantitative characters. *Jour. Exp. Zool.* 59(2): 213-245. 1931.—The 2 forms differed qualitatively as well as quantitatively, the large *musculus* (average weight about 30 gm.) carrying the genes *d, b,* and *a,* while the small *bactrianus* (average weight about 15 gm.) possessed their dominant allelomorphs, *D, B,* and A^w. Ten quantitative indices, body length, tail length, relative tail length, number of caudal vertebrae, adult weight, skull width, and the lengths of skull, humerus, femur, and tibia, were studied. The F_1 animals tended to be intermediate in size, although equaling or exceeding the large parent in some skeletal

measurements. The back-cross generations ($F_1 \times$ *musculus*) were more variable than the F_1, and in some skeletal measurements the means likewise exceeded those of the large race. The inheritance of size probably took place through a number of chromosomal genes, not all of which may have been general in their action. In addition, there were strong indications in the back-cross of linkage between quantitative characters and the qualitative characters *d*, *b*, and *a*.—*Author (courtesy Wistar Bibl. Serv.).*

3262. **GREEN, C. V. Size inheritance and growth in a mouse species cross (Mus musculus × Mus bactrianus). IV. Growth.** *Jour. Exp. Zool.* 59(2): 247-263. 1931.—The curves of growth in weight of a small species of mouse, *Mus bactrianus* (*DBA*^{w}), a large inbred strain of *Mus musculus* (*dba*), and their F_1 and back-cross hybrids show no marked differences in form. The 2 spp. and their hybrids agree in that the greatest relative increase occurs between the 3rd and 5th days. Growth then takes place more slowly until the low point, concomitant with the change in food habits (weaning), is encountered. Thereafter the curves again rise more rapidly, and this accelerated growth continues until after puberty, when the increments become smaller and more irregular. The curves of the back-cross animals present some indications that more genes—or genes of greater potency—affecting growth in weight may be located on the chromosomes with *a* and *b* than on that with *d*.—*Author (courtesy Wistar Bibl. Serv.).*

3263. **GREGORY, PAUL WALLACE, and WILLIAM ERNEST CASTLE. Further studies on the embryological basis of size inheritance in the rabbit.** *Jour. Exp. Zool.* 59(2): 199-211. 1931.—Eggs from a race of rabbits of large adult size are more advanced in development at 40 and 41 hrs. after mating (as well as at all subsequent ages) than eggs from a race of small adult size. But at 30½ hrs. after mating no significant differences can be detected, yet it is probable that a potential if not an actual difference already exists. It is suggested, based on Hammett's postulate, that "the -SH group is the essential chemical stimulus to growth by increase in cell number," that a greater richness of the nucleus in such compounds may be responsible for the more rapid growth rate of eggs and embryos from large-race matings. Whether or not such compounds occur as genes located in particular chromosomes is unknown.—*Authors (courtesy Wistar Bibl. Serv.).*

3264. **JOYCE, P. T. A pedigree study of high-producing Ayrshires.** *Jour. British Dairy Farmers' Assoc.* 43: 42-65. 1931.—A summary was made of the systems of milk recording in 3 countries. High milk-producing cows of the Ayrshire breed were chosen from the records of Canada, Scotland and the United States. The pedigrees were traced to the 4th generation. Thirty-two frequently recurring individuals were chosen and their pedigrees traced further. All except 1 of these animals traced to 3 sires referred to as foundation sires, viz., "Hover-a-Blink of Drumjoan" (1892), "Adjutant of South Cumberland" (1819), and "Craigs of Kyle of Drumjoan" (1793). The inbreeding coefficients of the cows studied were calculated and charted. About 20% of the cows had been inbred in 4 generations, about 5% fairly highly inbred and 20% slightly inbred. Inbreeding was neither good nor bad, and in itself gave little indication of breeding value. A review of sex-linked inheritance applying to milking and fat-producing qualities was made. Sex-linkage did not play an important part in the inheritance of milking qualities.—*Author's summary.*

3265. **KING, HELEN DEAN. Studies on the inheritance of structural anomalies in the rat.** *Amer. Jour. Anat.* 48(1): 231-260. 2 fig. 1931.—Four structural anomalies, which appeared spontaneously in various strains, were studied to determine whether they were somatic or heritable variations. Taillessness and anophthalmus were found to be somatic variations, due, probably, to inhibition to development in early embryogeny. Deficiency in the thyroid apparatus occurring in thirteen generations of a strain of captive gray rats was probably transmitted from parent to offspring, but its mode of inheritance could not be determined. A strain of microphthalmic rats was developed from an anomalous individual in the fourth generation of an extracted albino race. Evidence from extensive series of breeding tests indicates that this eye defect was inherited as a recessive character, and that it was caused by the interaction of several genetic factors. The mode of inheritance was greatly obscured, however, by overlapping between normals and defectives. Microphthalmic eyes were about one-third the size of normal eyes, and they showed degenerative changes in the retina, lens, and iris. There was no significant correlation of the defect with sex. Analysis of data suggests that the direction of asymmetry in asymmetrical young was inherited, the tendency being to a transmission of the defect to the right side. A résumé is given of some recent work on mammals in which eye defects have been induced in the young, seemingly by treatment to which parent forms were subjected.—*Author (courtesy Wistar Bibl. Serv.).*

3266. **LAMBERT, W. V., and C. W. KNOX. The inheritance of leg-feathering in the chicken.** *Proc. Iowa Acad. Sci.* 36: 383-384. 1929(1930).—Inheritance of leg-feathering in crosses of Black Langshan with the White Plymouth Rock and Buff Orpington breeds is dependent upon 2 dominant duplicate factors (S_1 and S_2). Black Langshan is often heterozygous for at least 1 pair of these factors. Neither S_1 or S_2 is linked with the gene producing pigmented plumage (*C*). No tendency was found for F_2 and backcross males to have a higher degree of feathering than the females.—*F. A. Stromsten.*

3267. **PUNNETT, R. C. A sex-linked character in ducks.** *Nature [London]* 126(3185): 757. 1930.—Sex-linked characters were obtained by crossing mallards with Indian runner ducks.

3268. **RICHARDS, MILDRED HOGE. The influence of environment on inheritance of two characters in Drosophila.** *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 28-30. 1929.—Treatment of ten stocks of *D. melanogaster* to reduced temp. brought out 2 new mutations—blistered wings and abnormal abdomen. These characters appeared frequently among the progeny of iced flies. One of the 2 blistered wing stocks depends partly on reduced temp. for fulfillment and 1 abnormal abdomen stock similarly depends somewhat on a moderate amount of moisture for fulfillment.—*Author's summary.*

3269. **SCHOTT, R. G. The sex ratio in guinea pigs.** *Proc. Iowa Acad. Sci.* 36: 383. 1929(1930).—The sex ratio for males in a colony of 2014 animals was 49.4%. The number of males dead at birth is greater than the number of females.—*F. A. Stromsten.*

3270. **SCHULTZ, WALTHER. Methoden zur Darstellung versteckter mendelnder Erbanlagen durch ihre Aktivierung ohne Kreuzung, besonders die Kältepigmentierung weisser Haare und roter Albinoaugen. In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden zur Erforschung der Leistung des tierischen Organismus, Teil 3, Heft 6, Lief. 356.** p. 1055-1112. 2 col. pl., 20 fig. Urban & Schwarzenberg: Berlin, 1931.—The Himalayan type of albino (rabbit, guinea-pig or cat) with pigmented extremities can be made to develop pigment in parts of the coat normally unpigmented, if the temp. of the skin in those parts is reduced below 37.5° C. The presence of genes affecting the character of the pigmentation (as grey, black, blue, brown, yellow) or the presence of color patterns may thus be demonstrated more fully than they are shown by the pigmentation of the extremities alone. The demonstration may be made in vitro by removing pieces of skin to tubes of oxygen maintained at appropriate temperatures. The iris of the eye responds in a similar way but to a less extent to treatment in vitro or in transplants to the ear. The Marder rabbit (a non-agouti chinchilla allelomorph of albinism) and the Thuringian rabbit (non-agouti yellow) can also be darkened or lightened in regions of the coat by appropriate tem-

perature control in the presence of oxygen.—*W. E. Castle.*

3271. **TAIBELL, ALULA.** Osservazioni di genetica su Fringillidi. *Natura* 20(2): 65-68. 1929.—Results of crosses between certain species of canaries, chiefly *Serinus hortulanus* × *S. canaria,* are presented. Fecundity in male or female and somatic inheritance as regards color of plumage, size, etc., are discussed.—*J. G. Edwards.*

3272. **TIMOFÉEFF-RESSOVSKY, H. A.** Röntgenbestrahlungsversuche mit Drosophila funebris. *Naturwissenschaften* 18(20/21): 431-434. 15 fig. 1930.—An F_1 of 7083 flies was obtained from 380 matings of normal females with x-rayed males (dosage about 3600 to 4800 r). An F_2 of 58,375 flies and an F_3 of about the same number were examined. 1137 cultures gave 84 sex-linked lethals and 8 visible mutations against 2 sex-linked lethals and no visible mutations from 1986 control cultures. Eight sex-linked and 11 autosomal mutations are briefly described. These show characteristic peculiarities of this species and are mainly bristle and wing mutants (especially interrupted venation). There is weak phenotypic manifestation and a high percent of dominants.—*A. H. Hersh.*

3273. **WHITING, P. W.** The relation between gynandromorphism and mutation in Habrobracon. *Zeitschr. Indukt. Abstam.- u. Vererbungsl. Supplementb.* 2: 1591-1593. 1927.—Five impaternate ♀ are explained by suppression of 2nd oöcyte division; 3 biparental diploid mosaics (1 ♂, 2 ♀), by somatic mitotic irregularity; 14 haploid mosaic ♂ from heterozygous mothers, by egg binuclearity resulting from failure of extrusion of 2nd polar body; 18 gynandromorphs by fertilization of 1 nucleus in a binucleate egg (♂ parts matroclinous, ♀ parts biparental); 1 gynandromorph with ♂ parts patroclinous, by fertilization of both nuclei in binucleate egg; orange eye-color in 10 cases from black-ivory parents, by mutation correlated with mosaicism. Evidence indicates that prereduction and postreduction may occur simultaneously for different loci.—*P. W. Whiting.*

3274. **WINTERS, LAURENCE M.** Animal breeding. 2nd ed., revised. 389p. 103 fig. John Wiley & Sons: New York, 1930.

MAN

3275. **BALLIN, LUDWIG.** Die Lehre von der Minderwertigkeit der Organe in biologischer Beleuchtung. *Arch. Frauenk.* 16(2): 117-138. 1930.—A review of recent investigations, particularly in heredity, would indicate that the principal criteria of Adler's theory of organ inferiority have little biological foundation.

3276. **BALYEAT, RAY M., and MILDRED HOGE RICHARDS.** Inheritance of hay fever. A preliminary report. *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 31-34. 2 fig. 1929.—Some family histories are reported. Susceptibility to hay fever is incompletely dominant, depending partly on the environment for fulfillment.

3277. **CURTIUS, FRIEDRICH, und GUSTAV KORKHAUS.** Klinische Zwillingsstudien. *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15(2): 228-267. 1930.—In 52 pairs of uniovular twins and 46 of biovular, 36 of which were like- and 10 unlike-sexed, Korkhaus found that in uniovular twins the predominantly exogenous as well as endogenous dermatoses showed an astounding homology in localisation, course, and other respects. The predominantly genotypic limitation of thyroid structure (discrepancy in uniovular twins in 2.5%, in biovular in 11.5%) was verified. Average heart-size coincided more in the uniovular twins; cardiac outline was highly similar in ¾ of uniovular and ¼ of biovular twins. The biovular cases showed that in circulatory insufficiency the iris can participate in the general stasis. Development of cutaneous veins is strongly influenced by the genotype, although paratypic factors play a part. The polyphenia of status varicosus was corroborated. Naevi vasculosi seemed to be more frequent in twins than in the general population. Inherited tendencies played a considerable part in the development of hernia. Lung tracings were much more similar in uniovular twins (63: 18%). Pulmonary affections in 1 of a pair were less frequent in uniovular (1: 43) than in biovular twins (9: 28). In pathological conditions involving both of a pair, the ratio was reversed: 5: 43 in uniovular, and 1: 28 in biovular. Heredity was thus an important factor. It contributed also to catarrhal jaundice, and strongly conditioned the functions of the autonomic nervous system; respiratory arhythmia, height of blood pressure, pulse frequency, reaction to adrenalin supply and absorption (Hb-rarefaction, urine concentration and reaction); these were far more uniform in uniovular partners. The difference in sedimentation rate was 5 times as great between biovular partners. In numerous cases infections in uniovular twins coincide; difference in reaction in them is due primarily to immunobiological factors; in biovular, perhaps primarily, to constitutional ones. The same infection (diphtheria, scarlet fever) can develop in uniovular twins very different symptoms.

3278. **JACOBOWICZ, MELA.** Über eine Exostotikerfamilie. *Zeitschr. Konstitutionsl.* 13(6): 699-703. 1928.—Records a typical case of hereditary deforming chondrodysplasia, with a characteristic family tree—7 affected, out of a total of 11, in 3 generations.—*A. Ehrenfried.*

3279. **KORKHAUS, GUSTAV.** Die Vererbung der Zahnfarbe. Beitrag zur Zwillingsforschung. *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15 (2): 127-133. 2 fig. 1929.—In 3 of 51 pairs of uniovular twins slight differences in color of teeth were found, though the ground color was the same (30 ground colors in scale). In 33 pairs of like-sexed, biovular twins, 11 were the same, 6 showed slight differences, 16 pronounced ones; in 9 pairs of unlike-sexed, 2 were the same, 2 showed slight differences, 5 pronounced ones. The color was thus almost exclusively genotypic; no relation to the general pigmentation of the body was found.

3280. **[LIAKHOVETSKIĬ, A., and M. ROZANOVA.]** ЛЯХОВЕЦКИЙ, А., та М. РОЗАНОВА. Матеріяли до питання про спадковість кров'яних груп. [**Heredity of blood groups.**] [German summary.] *Ukrainisches Zentralbl. Blutgruppenforsch.* 4(3): 156-168. 1930.—Author investigated families of bacilli-carrying patients from tuberculous dispensary in Moscow. 79 families were examined, comprising 376 persons. Results of the investigation fully agree with the present theories of blood-group heredity of Dungern-Hirzfeld and Bernstein-Faruhata.—*B. Van Rosen.*

3281. **ÖSTERREICHER, WALTHER.** Gemeinsame Vererbung von Anonychie bzw. Onychatrophie, Patellardefect und Luxatio radii. Dominantes Auftreten in 5 Generationen. [Simultaneous inheritance of absence or atrophy of nails, patellar defect, and luxation of the radii. Dominant appearance in 5 generations.] *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15(4): 465-476. 12 fig. 1930.

3282. **OREL, HERBERT.** Kleine Beiträge zur Vererbungswissenschaft. VIII. *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15(6): 749-761. 8 fig. 1931.—The author traces 1 family with 5 cases of Dupuytren's constitution, 1 with 4 cases of Charcot-Marie's progressive muscular atrophy, 1 with uniovular twins showing convergent squint, 1 with tendency to appendicitis, 1 with tendency to diphtheria, 1 with anomalies of the bones of the forearm and hand, and finally 1 in which luxations and onychatrophy appeared in 4 generations.

3283. **REINECKE, und F. WOHLWILL.** Über hämophile Gelenkerkrankung. *Arch. Klin. Chir.* 154(3): 425-479. 35 fig. 1929.—25 cases that occurred in 27 years are reviewed. The age ranged from 27-49 yrs.; all were males, the defect being definitely transmitted through female. 14 families were concerned. 15 of the cases exhibited hemorrhage into the joint. The author discusses the diagnosis, treatment and the prognosis of joint hemorrhage in hemophilia. Trauma is not demonstrable, but secondary changes, such as a destruction in part of the cartilage, follow the hemorrhage.—*W. F. Jacobs.*

3284. SIEMENS, H. W. Grundzüge der Vererbungslehre, Rassenhygiene und Bevölkerungspolitik für Gebildete aller Berufe. 4th ed. J. F. Lehmann: München, 1930. 3 RM.

3285. WAGENSEIL, F. Zwei Mitteilungen über die erbbiologische Bedeutung der eineiigen Mehrlinge. [Hereditary-biological significance of uniovular multiple births.] *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15(5): 632-645. 5 fig. 1930.—Anatomical study of triplets and comparative study of uniovular twins of mixed race under very different social conditions.

3286. WICHERN, HEINRICH. Über das Vorkommen erblicher Nervenkrankheiten in einer Ravensberger Familie. *Fünfter Ber. Naturwiss. Ver. Bielefeld u. Umgegend* 1922-1927: 281-288. 1 pl. 1928.—An inherited nervous disease affecting limb movements and speech is described. The first symptoms usually appear during puberty. The muscles are sometimes affected, causing weakness, lameness, atrophy and replacement by fatty tissue. In the family described, the disease appears to be inherited as a dominant affecting both sexes. It has appeared in four generations.—*O. N. Eaton.*

3287. WILLIAM-OLSSON, GUY. Two pairs of twins with rachitic deformities. *Acta Chir. Scandinavica* 67 (1/6): 957-969. 4 fig. 1930.—The author describes 2 pairs of twins, probably monozygotic, aged 6, suffering from rachitic deformities. The 1st is a pair of rachitic dwarfs, displaying deformities strikingly similar. The 2nd pair has knock-knees.—*From author's summary.*

ECOLOGY

W. C. ALLEE, *Editor,* Animal

GEO. D. FULLER, *Editor,* Plant

CHANCEY JUDAY, *Editor,* Plankton

(See also in this issue [GENERAL and ANIMAL ECOLOGY]: (Light) 3600, 3601, 3918, 3928, 3943; (Ultra-violet) 3596, 3599; (Temperature) 3260, 3559, 3591, 3605, 5869; (Salinity) 4670; (Respiration) 3699, 3852; (Climate) 4348, 4640, 4659; (Seasonal changes) 3817, 5364; (Periodicity) 3040, 5458; (Zonation) 5544; (Pollution) 4219, 5555; (Altitude) 3003, 5587; (Zoogeography and distribution) 3011, 3023, 4259, 4388, 5616, 5693, 5696, 5797, 5833, 5843, 5849, 5860; (Caves) 5611; (Hibernation) 5884; (Web of life) 4340, 4385; (Commensalism) 5460, 5461; (Symbiosis) 4229, 4617; (Parasites) 4313, 4706, 4717; (Mimicry) 3044; (Adaptation) 5609, 5684, 5988; (Rheotaxis) 4706; (Senses) 3931, 4733; (Reproduction) 4706; (Methods) 3002, 3674, 4670, 4733, 5589, 5914; (General) 3040, 4080; (Insecta) 4661, 4722, 5587, 5609, 5696, 5697, 5722, 5743, 5744, 5833, 5836; (Arachnida) 5611, 5613, 5616; (Pices) 5843, 5848, 5849, 5859, 5860, 5868; (Amphibia) 5890; (Aves) 5921, 5922, 5955, 5956, 5967, 5968. [PLANT ECOLOGY]: (Seed dispersal) 3526; (Succulents and geophytes) 3537; (Temperature relations) 4491; (Water pollution) 4497; (Legume nodules) 4532; (Time of cutting and shrub reproduction) 4804; (Mallee scrub) 4806; (Plant indicators) 4810; (Root systems of grasses) 4820; (Soil reaction) 4849, 4931; (Soil moisture) 4852; (Fire and organic matter in soils) 4853; (Soil formation) 4854, 4956; (Siam forests) 4903; (Tree growth) 4903; (Brazil forests) 4907; (Cape Cod forests) 4908; (Tree buttresses) 4911, 5179; (Defoliation, effect of) 4915; (Forests of Germany) 4918; (Forest meteorology) 4921; (Natural pruning) 4951; (Halophytic diatoms) 4981; (Japan, algae of) 5000, 5002; (Epiphytic algae) 5003; (Post-glacial algae) 5010; (Oidia and insects) 5015; (Porto Rico, lichens of) 5050; (Insectivorous plants) 5136, 5189; (Albania, floristics of) 5163; (Russia, vegetation of) 5168, 5169; (Mountain vegetation of Washington) 5171; (Contractile roots) 5204; (Ice ages) 5251)

GENERAL

3288. AGERSBORG, H. P. K. Does high temperature in a frigid country limit diversification of the species? *Trans. Illinois State Acad. Sci.* 22: 103-114. 6 fig. 1930.—Detailed studies of the biota of a ditch containing warm starch waste from a corn products plant reveal poly-, meso-, and oligosaprobic regions which overlap vertically. The high temp. (35° C.) in winter markedly limits the population. The pond snail (*Physa gyrina*) thrives in this environment.—*W. C. Allee.*

3289. BLATTER, E. Myrmecosymbiosis in the Indo-Malayan Flora. *Jour. Indian Bot. Soc.* 7(3/4): 176-185. 1928.—Presidential address with bibliography.

3290. EWERT. Die Befruchtung der Cruciferenblüte durch die Bienen. [Pollination of cruciferous flowers by bees.] *Arch. Bienenkunde* 10(8): 310-312. 1929.

3291. GODFREY, M. J. The pollination of Coeloglossum, Nigritella, Serapias, etc. *Jour. Bot.* 69(821): 129-130. 1931.—Notes on some pollinators of various orchids growing in Europe.

3292. GRAHAM, R. M. Notes on the mangrove swamps of Kenya. *Jour. East Africa & Uganda Nat. Hist. Soc.* 1929(36): 157-164. 3 pl. 1931.—These swamps are estimated to cover 180 sq. miles. Of the principal trees and shrubs, 10 are described with notes on some of their special adaptations for aeration, e.g., stilt roots, knee roots, ribbon roots, and pneumatophores. The seed of some germinate on the trees, so that they waste no time in taking root when they fall. The trees are utilized for housebuilding, fuel, tanning, and shipbuilding. Brief notes are given on the fauna of these swamps.

3293. GUENTHER, KONRAD. Das Antlitz Brasiliens. Natur und Kultur eines Sonnenlandes. Sein Tier- und Pflanzenleben. 360p. 32 pl., 40 fig. R. Voigtländer: Leipzig, 1927.—An account is given of a year's journey through eastern and southern Brazil, in which are recorded many observations and notes about the plant and animal life. Special chapters consider the strand, the original forest, and the arid interior; lianas, epiphytes, and stranglers of trees; floral display and its significance; animal voices (bird, batrachian, and insect); maternal care; habits of wasps, bees, ants, termites, snakes, blood-sucking insects, and bats. A chapter discusses the history of the Brazilian biota and its geologic background, while a concluding chapter considers the Brazilian people themselves. The index or "register" also serves as glossary, and gives identification characters of plants and animals mentioned.—*F. W. Pennell.*

3294. HÖEG, OVE ARBO. Pollen on humble-bees from Ellesmere Land. *Kgl. Norske Vid. Selsk. Forh.* 2(16): 55-57. 1929.—Pollen was found on 11 out of 21 humble-bees brought home by the 2nd Fram expedition. Pollen from *Salix* predominated, but a small number of other plants were also identified.—*O. A. Höeg.*

3295. KABURAKI, TOKIO. Effect of the Kwanto earthquake upon marine organisms. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1523-1527. 1926(1928).—This great earthquake of 1923 resulted in extensive destruction of fishes and other marine life in Sagami and Tokyo Bays. The agencies included tidal waves, explosion of oil tanks, generation of deadly gases, contamination of water, and human consumption of edible forms. Algae, worms, mollusks, echinoderms, and other littoral forms were destroyed by uplifting of the land. Some spp. have become reestablished, and an isopod, *Ligia exotica,* increased in numbers. Commercial mollusks suffered from exposure, oil, and being buried under mud. Even deep-sea fishes were found dead.

3296. **MILOST, PIETRO de. Modificazioni tecniche al processo clorometrico di Knudsen nell'analisi delle acque salate e salmastre.** [Modification of Knudsen's chlorometric analysis.] *R. Comitato Talassografico Italiano, Mem.* 151. 1-18. 6 fig. 1929.—For work on small vessels, an English burette (Binks) is proposed to replace the usual Knudsen burette, which is complicated, easily broken, and cleaned with difficulty. There is no glass stop-cock for filling and emptying; the scale permits direct reading (‰); a small tared glass flask is substituted for the automatic pipette, which is filled as a picnometer; the burette and a reservoir for $AgNO_3$ solution are mounted on a suitable base, with a suitable arrangement for filling pipette; to facilitate determination of correction of the $AgNO_3$ solution, a graph has been added, which abolishes tables; $AgNO_3$ accurately titred to 37.11‰ gives the salt content "in situ." The method represents a technical adaptation of Broudon-Boudet's method of determining water hardness.—*P. de Milost (transl. by R. H. M'Gonigle).*

3297. **OMER-COOPER, JOSEPH. Dr. Hugh Scott's expedition to Abyssinia. A preliminary investigation of the freshwater fauna of Abyssinia.** *Proc. Zool. Soc. London* 1930(1): 195-207. 2 maps, 8 pl. 1930.—This fauna is poor in both genera and spp. The absence of Peracarida throughout tropical Africa may indicate a widespread destruction of the fresh-water fauna by desiccation during the Pleistocene. The presence of Eucarida in northern Abyssinia is ascribed to immigration along the Nile tributaries. An account is given of 26 collecting stations, with brief notes on topography, vegetation, and fauna.

3298. **RENSCH, BERNHARD (mit Beiträgen von G. HEBERER und W. LEHMANN). Eine biologische Reise nach den Kleinen Sunda-Inseln.** xii+236p. Map. 33 pl. (1 col.), 4 fig. Gebrüder Borntraeger: Berlin, 1930. Pr. 14 M.—A collecting trip to the islands of Lombok, Sumbawa, Flores, and Bali in 1927 is described. Observations are given on the fauna and flora and ecology of the coral reefs, mangrove swamps, high plateaus, and high mountains of Lombok, the rain forests and the plankton of the blue, red, and green lakes of Flores, and on the Wallace Line and the bat caves of Bali. A study of the coloration of the tropical birds of the Little Sunda Islands lends support to the idea of predominance of brilliant coloration in tropical birds as compared with the non-tropical ones. There is also an increase in green and in yellow colors in the tropics, due to the direct action of climatic factors, resulting in an increase in the dark eumelanine, a widening of the feather radii, and a resulting play of interference colors. Protection coloration is apparent in many sp. Birds of prey are abundant both as to sp. and individuals. The perennial vegetation affords more continuous shelter than occurs in temperate forests, but the scant leafage, brilliant lighting, and diversities of tropical forests permit a high degree of diversified coloration among birds living therein. Natural selection is more potent than direct climatic influences in producing the more brilliant birds in the tropics as compared with the temperate zones. Races of birds on the smaller islands are relatively larger than those on larger islands, as a result of the lower average temp. The ratio of the wt. of the heart to that of the body of the bird falls with the increase in altitude, and also with the decrease in size of sp. The smaller sp. and the bird in higher altitudes requires a large heart to compensate for lower temp. at higher elevations and for their relatively greater surface. German field sparrows have a relatively larger stomach and a relatively larger intestine than those of Malayan races? an adaptation to the climatic extremes of the climates of the temperate zone. Tropical land snails have ova with a relative thick calcareous shell, an adaptation to the high temp. (30-71°) of tropical soil. The number of sp. of snails increases with the altitude, moisture, vegetation, and favorable substrate. The proportion of prosobranchs is high. Fresh-water mollusks are more evenly distributed. Snails are brilliantly colored, protectively colored green when living in foliage, and often banded or flecked with diverse colors as a direct result of climatic conditions.—*C. A. Kofoid.*

3299. **SCHOSTAKOWITSCH, W. B. Die periodischen Schwankungen einiger biologischen Erscheinungen.** *Internat. Rev. Ges. Hydrobiol. u. Hydrogr.* 23(1/2): 139-149. 2 fig. 1929.—Physical and biological phenomena are periodic. This periodicity takes the form of a sine curve. The amplitude and length of the periods are discussed and the curve is treated mathematically.—*Will Scott.*

3300. **[SMORODINTSEV, I. A., and A. N. ADOVA.]** СМОРОДИНЦЕВ, И. А., и А. Н. АДОВА. Железистый режим торфяных вод. [Iron in peat waters.] [French summary.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 7(2): 143-153. 1929.—Peat waters contained less Fe than other artificial or natural waters. Sphagnous waters were 4 times as rich in Fe as waters of *Carex* regions. An inverse ratio exists between concentration of Ca and of Fe, but Fe increased with the concentration of H ions. In sphagnous waters, comparatively rich in Fe and H ions and poor in Ca, larvae of *Anopheles* were very rare. On the contrary, in waters of *Carex* regions such larvae were very numerous.—*B. van Rosen.*

3301. **SNYDER, L. L. A faunal investigation of the Lake Abitibi region, Ontario. General Introduction.** *Univ. Toronto Studies Biol. Ser. No.* 32. 3-6. Map, 1 pl. 1928.—Notes on topography, vegetation, climate, and faunal position, introducing separate papers on mammals and birds by Snyder, on amphibians and reptiles by **J. R. DYMOND,** on Odonata by **E. M. WALKER,** and on spiders by **J. H. EMERTON,** all abstracted separately. The region lies in the Algonquian faunal area of the Canadian zone.

3302. **TIDELSKI, FRITZ. Untersuchungen über spät- und postglaziale Ablagerungen in Becken der kuppigen Grundmoränenlandschaft Schleswig-Holsteins.** *Arch. Hydrobiol.* 20(3): 345-398. 1929.—In deposits from a number of these basins remains of algae as well as of the higher plants were found. The late glacial deposits did not contain any pollen, but small amounts of pollen were found in the preboreal period. Pollen of birch, hazel, pine, and mixed oak forests was found in the boreal and atlantic periods. Shells of Cladocera and of several sp. of Mollusca were also found.—*C. Juday.*

3303. **TIWARY, N. K. A note on the flowers of Tecoma radicans.** *Jour. Indian Bot. Soc.* 8(1): 78-81. 1 pl. 1929.—Older buds and open flowers were punctured near the base by sun birds, *Arachnecthra asiatica,* in search of nectar. The mechanism for pollination is described. Small insects visit the flowers, but no effective pollinators were observed. Self-pollination is presumed.—*W. Dudgeon.*

3304. **VARGA, LUDWIG. Ein interessanter Biotop der Biocönose von Wasserorganismen.** *Biol. Zentralbl.* 48(3): 143-162. 1 fig. 1928.—The bases of the leaves of *Dipsacus silvester* Huds. are cup-shaped so that they hold water, and aquatic organisms populate these miniature aquaria. The temp. of the water is correlated with that of the air; the pH varied from about 7.5 to 8.1. The plant forms living in these waters consisted of bacteria, algae, and fungi; animal forms were represented by protozoa, nematodes, rotifers, tardigrades, water mites, and diptera larvae. The different sp. of plants and animals are indicated, and the biological problems involved in such a limited and temporary habitat are discussed.—*C. Juday.*

3305. **VERNADSKY, W. La biosphère.** 232p. Félix Alcan: Paris, 1929.—The 1st part of this book discusses the biosphere in the cosmos, the 2nd part the domain of life, and an appendix treats of the evolution of sp. and living material.—*C. Juday.*

3306. **WALCH, E. W., and C. J. SCHUURMAN. Salt-water fishponds and malaria.** *Mededeel. Dienst Volksgezondheid Ned.-Indie* 18(3): 341-366. 8 pl. 1929.—The rearing of *Chanos chanos* Forsk is an industry of some importance on the coast of Java. For this purpose ponds

are constructed and, after flooding with seawater by canals, they are closed and stocked with young bandeng caught in the sea. This fish is principally herbivorous and feeds almost wholly on algae, at least, when confined in ponds. The reservoirs furnish excellent breeding conditions for Anopheline mosquitoes (*A. ludlowi* and *A. rossi*), but, when their surfaces become covered with floating mats of green algae in which the mosquito larvae find protection from *Hoplochulus panchox* (Ham Buck), a small larva eating fish, they become a serious hygienic problem. The green algae, although eaten by the fish, are not of such great importance that the animals cannot be grown without them, providing sufficient "bottom algae," consisting chiefly of blue-green algae, are present. Accordingly a method of exploitation has been devised whereby the green algae may be destroyed in large part and the growth of the bottom algae encouraged. This is done by draining the ponds to kill the green algae, afterwards flooding them with a thin sheet of water which encourages the growth of the bottom forms. To do this successfully the bottom of the ponds, of course, must be above the level of the usual low tides, yet low enough to admit flooding on high tides. Mosquito breeding may be controlled by draining the ponds, which, however, destroys a profitable industry; also by dusting with Paris green, but this requires considerable supervision and the authors prefer temporary drainage whenever necessary (once or twice a yr.), the fish being "harvested" before drainage.—*S. F. Hildebrand.*

3307. **WARD, F. KINGDON. Botanical exploration: Mishmi Hills, Assam.** Proc. Linnean Soc. London No. 142. 60-62. 1929/30(1931).—The relation of prehistoric geology to the distribution of plants and animals in southeastern Asia is discussed. The Himalayan uplifts between the Eocene and Miocene cut off Central Asia from the Indo-Malayan region and provided a bridge across Asia at least from Sikkim to Formosa. The glacial epoch drove many sp. and genera southward and sealed Central Asia. Also interesting extensions of the ranges of certain plants are noted.

3308. **YONGE, C. M. A year on the Great Barrier Reef. The story of corals and of the greatest of their creations.** 246p. 6 maps, 69 pl., 17 fig. Putnam: London & New York, 1930. Pr. $6.00.—A nontechnical account is given of the building of coral reefs and islands, with special emphasis on the Great Barrier Reef, Queensland. There are notes and numerous photographs of the variety of animals and plants—corals, clams, snails, chitons, sea urchins, starfish, worms, crustaceans, plankton, fishes, and algae—which compose it, or live on and around the reef; and its influence on the culture of the natives is discussed.

ANIMAL

3309. **ABDERHALDEN, EMIL. Handbuch der Biologischen Arbeitsmethoden. Abt. IX. Methoden zur Erforschung der Leistungen des tierischen Organismus.** Teil 2, 2 Hälfte, Heft 3. Lief. 309. Methoden der Süsswasserbiologie. [Methods of freshwater biology.] 1385-1549p. 50 fig. Urban & Schwarzenberg: Berlin, 1929.—The volume contains: Anleitung zur Untersuchung des Limnoneustons [Investigation of limnoneuston] by **W. M. RYLOV;** Haltung und Aufzucht von Süsswasserbryozoen [Securing and cultivating freshwater Bryozoa] by **HEINZ GRAUPNER;** Die Zucht des Phytoplanktons [Cultivation of phytoplankton], Die Zucht der Cladoceren des Seenplanktons [Cultivation of lake Cladocera], Die Zucht einiger Cladoceren des Litorals [Cultivation of littoral Cladocera], Die Zucht einiger Cladoceren des Teichplanktons [Cultivation of pond Cladocera], Ueber die Zucht eines Ostracodens, *Cyprinotus incongruens* Rauch. [Cultivation of an ostracod, *C. incongruens*], Die Zucht der Copepoden des Seenplanktons [Cultivation of lake copepods], Die Zucht der planktischen Rotatorien [Cultivation of plankton rotifers], and Die Zucht des Aufwuchses unter Anwendung der Methoden des Aufwuchsträgers [Cultivation of societies of organism through application of method of submerged objects] by **EINAR NAUMANN;** Methoden der teichwirtschaftlichen Versuchsanstellung [Methods of experimental pond culture] by **R. DEMOLL** and **E. WALTER;** Die Messung des Eindringens von Licht in Wasser mit photoelektrischen Zellen [Measurement of light penetration into water with photoelectric cells] by **V. E. SHELFORD;** and Methoden zur Untersuchung von Flusslebensgemeinschaften [Methods for investigating stream biocoenoses] by **V. E. SHELFORD** and **SAMUEL EDDY.**—*C. Juday.*

3310. **AGERSBORG, H. P. K. The influence of temperature on fish.** *Ecology* 11(1): 136-144. 4 fig. 1930.—Gizzard-shad, carp, crappies, bluegill, sunfish, chub, steel-colored minnow, shiner, and bullhead catfish that enter a tributary contaminated with warm starch-waste water in early fall before the lake receiving the tributary is cooled, become accustomed during winter to a temp. of 28-30° C., dissolved O between 5 and 6 p. p. m.; while the temp. of the lake is around 0° C., the dissolved O is 12.8 p. p. m., saturation 90%. They live in the warm starch-waste water for some time, feeding on the sludge of fission fungi and slime algae. Some die from the effects of the high temp. and the toxicity of the water. Such dead fish have the bronchial apparatus partially coagulated and some blood vessels ruptured, and may remain in a warm room for several days without any indication of decay. In winter, when fish which live in such semi-polluted starch-waste water are suddenly brought into contact with stream or lake water having the season's temp., they manifest O hunger by surface swimming and by gulping air. Continuous exposure in cold, pure water is fatal. Fish recover if they are returned to the warm semi-polluted water. Death in the cold pure water seems to be due to lack of gill-function, although the cold water actually contains more than twice as much dissolved O as the warm water.—*H. P. K. Agersborg.*

3311. **ANDREW, BESS J. Method and rate of protozoan refaunation in the termite Termopsis angusticollis Hagen.** *Univ. California Publ. Zool.* 33(21): 449-470. 2 fig. 1930.—Termites of this Californian sp. were defaunated by oxygenation and pressure and attempts at refaunation made by various methods. Anal contact with the Protozoa was not a natural method of faunation. Feces from faunated animals failed to reinfect but cannibalism brought about faunation. Refaunation occurs by the feeding of material containing living Protozoa. The transfer is effective by the eating of feces as they drop. Liquid droppings and the fresh nest structure made with fresh intestinal fluid as cement may account in part for normal refaunation. Reinfection did not occur from eating the intestinal lining at molts.—*M. W. Kamm.*

3312. **BARRETT, CHARLES. Wild nature on the Nullarbor Plain.** *Australian Mus. Mag.* 4(4): 115-121. 1 pl., 8 fig. 1930.—A popular account is given of general natural history (chiefly insects, spiders, lizards, and mammals) in this little-explored region of So. and Western Australia. Torrential rains in 1930 caused a great increase in plant and animal life.

3313. **BEAUGÉ, L. Rapport de mission au Gröenland et à Terre-Neuve (Campagne 1929).** *Rev. Trav. Office Pêches Maritimes [Paris]* 2(4): 369-411. 12 fig. 1929.—The points discussed are: hydrological and meteorological situation of Davis Strait and of Baffin Bay; position of the polar current; the turning back of the polar current from the Strait of Belle Isle to Fyllas Bank; the hydrographic situation of the Fyllas Banks in 1929; the pushing in of the warm water from the open ocean toward the land; character of the bottom; hydrography; fishing charts; and history and future of fishing in Greenland, which is an excellent complement to the Newfoundland fisheries in summer, and in the bad yrs. at Newfoundland.—*L. Beaugé (transl. by W. M. Gersbacher).*

3314. **BEAUGÉ, L. Rapport de mission sur la pêche à Terre-Neuve en 1929.** *Rev. Trav. Office Pêches Mari-*

times [*Paris*] 3(1): 79-101. 14 fig. 1930.—Hydrographic researches and the condition of the fisheries in March-June 1929 on the Accores des Chalutiers (S. E. of the Grand Bank) show the importance of atmospheric conditions in spring. The channels of the continental shelf serve as automatic distributors of cold and warm water after the period mentioned. Maps are given of distribution of temp. and salinities on the banks at 50 m. and on the bottom. The swordfisheries are intimately connected with the presence of "cod water" which only covers a small portion of the bottom.—*L. Beaugé* (*transl. by A. O. Weese*).

3315. **BINI, GIORGIO. Sugli effetti tossici sui pesci delle sostanze contenute nelle acque di rifiuto industriali.** [Toxic effects of industrial wastes on fresh water fish.] *Boll. Pesca, Piscicolt. e Idrobiol.* [*Roma*] 5(6): 982-1014. 1929.—The physiological effects of chemical substances contained in industrial wastes on freshwater fish are reviewed. A table shows the minimum lethal doses for different sp. as obtained experimentally by Weigelt, Belding, Smolian, and others. Another table contains analyses of refuse from various industries.—*G. Bini* (*transl. by R. A. Muttkowski*).

3316. [**BIRULÍA, A. A.**] ВИРУЛЯ, А. А. К вопросу о нижнем теченни р. Волги, как зоогеографической границе. [The lower course of the Volga as a zoogeographic limit.] Доклады Академии Наук СССР. Сер. А. (*Compt. Rend. Acad. Sci. URSS. Ser. A.*) 1928(16/17): 338-340. 1928.—*Bulthus eupeus thersites* (C. Koch) is usually found in Transcaucasus, Central Asia, and Mongolia, but 1 ♂ was found in 1927 on the right bank of the lower Volga River. As the actual moving of the insect over the river seemed impossible, the author agrees with Sviridenko's hypothesis that the course of the river changed during the recent geological epoch.

3317. **BJERKAN, PAUL. Fluctuations in the abundance of the various year-classes of food fishes. XIX. Fluctuations in the stock of young sprat off the west coast of Norway and its relation to the sprat population as a whole.** *Conseil Perm. Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 173-181. 1 map. 1929.—The sprat fishing districts of Norway are divided into a small eastern one and a larger western one. The yield displays large fluctuations having a maximum of over 250,000 bl. and a minimum of 25,000 bl. since 1900. Some of the fluctuations are due to technical improvements in fishing but natural fluctuations are also apparent. On the west coast of Norway the 1-yr. old sprat provided 95% of the yield in ordinary yrs. since 1920. The annual renewal depends on immigration from the spawning districts on the Skagerrack and North Sea coasts. Sizes of sprat are variable; those from mixed sprat and herring shoals average larger than those from pure sprat shoals. The spawning season extends through a long period; fry 15-25 mm. long are found March-Sept. and during Sept. some individuals from the same spawning season are 8 cm. long. The largest are marketable in their 1st autumn. First arrivals on the coast are mixed with herring and later arrivals are in pure shoals. Growth continues until Nov. The autumn immigration provides the fiord stock; in most yrs. there is a spring migration that later mixes with the fiord stocks. Generally the spring arrivals are smaller. Fluctuations in the fishery depend on these immigrations. Since 1920 the yield of the fishery was affected by industrial conditions (1920, 1921, and 1925); hydrographical and biological conditions affecting local runs; richness of the yr.-classes; and more or less favorable drift conditions from the spawning grounds especially during the autumn preceding the fishing season under consideration. Two-yr.-old sprat leave the fiords during spring and autumn and constitute the stock in the sherries. They are fished for only occasionally when they penetrate into the fiords. Some yrs. contingents of this class ripen and spawn in the outer fiords. The bulk of the class loiter in the outer fiords till the next spring when they migrate south to the spawning grounds as mature 3-yr.-olds. Sometimes they strike the outer parts of southern fiords en route but leave very soon. A young stock fished so far from the spawning grounds is not likely to be threatened by overfishing.—*O. E. Sette.*

3318. **BROWN, L. A. The natural history of Cladocerans in relation to temperature. II. Temperature coefficient for development.** *Amer. Nat.* 63(687): 346-352. 3 fig. 1929.—Summer and southern sp. of cladocerans have a higher temp. coefficient for development than those of general distribution. This is in conformity with the data for the duration of a single adult instar and with the lethal temp. for the same sp.—*Author's summary.*

3319. **COWLES, R. P. A biological study of the offshore waters of Chesapeake Bay.** *Bull. U. S. Bur. Fish.* 46: 277-381. 15 fig. 1930.—Some 30 areas widely distributed were investigated, usually during all seasons, over 2-3 yrs. and in a quite uniform manner. The salinity of the bay as a whole decreases markedly in the early part of the yr., increases gradually during the middle of the yr., and reaches a maximum toward the latter part of the yr., when an in-going saline under-current of a more or less non-tidal character makes its way up the bay. The stratification of waters of different salinities is least marked in the early part of the yr. It increases later in the yr., and a region of saline discontinuity at about 20 m. deep becomes more evident. The temp. of the surface water varies with the seasonal air temp., as does the bottom water to a less degree, but its maximum summer and winter temp. are attained rather late. The ocean water temp. is lower than that of the bay during the summer, and warmer than that of the bay during the winter. The distribution of some organisms indicates their dependence on the degree of salinity and temp., while that of others indicates their practical independence of such factors. There are other factors, however, such as amount of food and light and strength of current, which must be considered, so that a satisfactory determination of this dependence or independence can only be made by carefully controlled laboratory experiments. Certain organisms which are usually considered to be marine make their appearance in the spring far up in the northern part of the bay and it is probable that this condition is partly dependent on the dominating autumn and winter in-going bottom currents. The groups represented in the distributional data include diatoms (especially extensive), Protozoa, Porifera, Coelenterata, Ctenophora, Nemathelminthes, Chaetognatha, Bryozoa, Annelida, Crustacea (extensive), Xyphosura, Pycnogonida, Echinodermata, Prochordata.—*R. P. Cowles.*

3320. **CREASER, CHARLES W. Relative importance of hydrogen-ion concentration, temperature, dissolved oxygen, and carbon-dioxide tension on habitat selection by brook trout.** *Ecology* 11(2): 246-262. 1930.—The maximum temp. for natural self-sustaining brook-trout waters is 19° C. This is the voluntary toleration limit for waters of ordinary aeration and is the deciding factor in determination of habitat of brook-trout. Streams with water at the maximum temp. are more favorable for growth than very cold water; therefore the best trout streams are in a delicate balance. The effect of temp. is not an indirect result of the influence on dissolved O content, since in natural streams the variation in dissolved O content was not correlated with temp. but seemed to be most influenced by the relative abundance of O-consuming materials. Dissolved O content cannot be used as an index for brook-trout streams. The range of pH for brook-trout extends from 4.1 to 9.5, a range greater than the maximum and minimum values found in natural waters. CO_2 tension has little influence since a range of 0.21 to 1.62 (mm.) recorded for brook-trout streams is little different than the non-brook-trout stream range from 0.28 to 1.99. The effect of these factors upon the temp. limit is very slight.—*C. W. Creaser.*

3321. **DAMMERMAN, K. W. A comparison of the fauna of Krakatau with [that] of Christmas Island.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 1: 966-972. 1926(1928).—Krakatau, 41 km. from Java, has a fauna less than 50 yrs. old, while that of Christmas Isl., 300 km.

from Java, dates at least from the Pleistocene. Each island has a fauna of several hundred sp., and although only 16 sp. are common to both, the numbers of sp. in the different animal groups match each other almost exactly. Apparently the number of animals on an island is directly proportional to the time it has existed and inversely proportional to the distance between it and other land. Thus Krakatau in 40 yrs. has attained a fauna equivalent to that which has been developing on Christmas Island since the Pleistocene. Dispersal through the air is most important in building up a new island fauna. Plant-feeders establish themselves with much less trouble than predaceous and parasitic sp. Hypothetical land connections have been used too freely in explaining the presence of certain animals on islands.

3322. **FRASER, C. McLEAN.** International cooperation in the investigation of pelagic fish eggs and larvae. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 1: 306-309. 1926(1928).

3323. **FUCHS, V. E., and W. F. WHITTARD.** The East Greenland pack-ice and the significance of its derived shells. *Geogr. Jour. [London]* 76(5): 419-425. Map, 2 pl. 1930.—8 Lamellibranchiata, 3 Gastropoda, and also Spongida, Bryozoa, Hydrozoa, Algae, pieces of wood, and mud are recorded from pack-ice off the east coast of Greenland. There is evidence that this material was transported on the ice by drift from the No. Siberian coast. Eventual melting of the ice results in deposition of the shelly muds of Pleistocene age on the sea floor a long distance from their place of origin.

3324. **GALADZIEV, M., et E. MALM.** L'influence de quelques facteurs physico-chimiques sur les Protozoa marins. Доклады Академии Наук СССР. Сер. А. (*Compt. Rend. Acad. Sci. URSS. Sér. A.*) 1929(18): 433-436. 1929.—Protozoan succession was studied over 3 mo. in 9 cultures, in which pH varied from 7.20 to 8.55, and the tension of O_2, CO_2, and H_2S was varied; 2 cultures had normal gas pressure; 4 were without O_2 for some time, H_2S being completely lacking; 2, putrefying, had low pressure (O_2) and high H_2S (up to 25 cc. per liter). *Lionotus iamella, Euplotes harpa, Plagiopyla nasuta, Metopus sigmoides,* et al. (not named) survived anaerobiosis; *Strombidium* disappeared with the exhaustion of O_2. Those which survive anaerobiosis give a positive paraglycogen reaction; evidently the decomposition of paraglycogen confers on the organism the ability to live in the absence of O_2. O_2 tension has no considerable effect on most marine protozoa. Accumulation of H_2S (in putrefaction) likewise has little effect on the existence and on the diversity of protozoa in cultures. Within the limits observed in these experiments (pH 7.2-8.55) effect of variation of pH was slight. Succession went on without change in pH. The direct effect of variation of pH is negligible; whatever effect pH has is chiefly indirect, physico-chemical, in consequence of pH effects on the ion equilibria, etc.; even as such the pH effect was of secondary importance, the main factors governing the population being the intensity of putrefaction, the degree of mineralization and the presence of minimal amounts of O_2 and H_2S. Other experiments, not here reported in detail, were performed on 70 sp. of protozoa cultured in water saturated with CO_2 up to pH 5.2 (the greatest depression of pH, ascribable to CO_2, occurring naturally in the Black Sea). Most of the protozoa were highly sensitive to CO_2. Parallel experiments, in which the acidity was produced by adding HCl, showed they were able to tolerate a range of pH 3.2 to 10.0. It is concluded that the most important ecological factors in "acidity" of carbonic acid, at least as concerns the ecology of marine protozoa, are the carbonate ion (HCO), CO_2, and the undissociated molecule, not the H ion.

3325. **GALTSOFF, PAUL S., and R. H. LUCE.** Oyster investigations in Georgia. U. S. Bur. Fisheries Doc. 1077. 61-100. Map. 9 fig. 1930.—The origin and development of the oyster reefs of coastal waters of Georgia are described, and data are given on the changes in temp. and salinity of the water and velocity of the tidal currents. Biological observations are confined to the time of spawning and distribution, and the attachment (setting) of the oyster larvae.—*P. S. Galtsoff.*

3326. **HEIKERTINGER, F.** Die Frage der Schutzanpassungen im Tierreich mit besonderer Berücksichtigung der Färbungsanpassungen. [In: Wissen und Wirken. Einzelschriften zu den Grundfragen des Erkennens und Schaffens. Bd. 57.] 100p. G. Braun: Karlsruhe in Baden, 1929. Pr. 3 M.—After a discussion of the various types of protective resemblance and warning coloration generally considered of survival value and an examination of data as to food habits of predators, the conclusion is reached that protective resemblance is unimportant in the preservation of sp.—*A. O. Weese.*

3327. **HEIKERTINGER, FRANZ.** Über "Transformative Schutzfärbung" und ihre wissenschaftliche Begründung. *Biol. Zentralbl.* 50(4): 193-219. 3 fig. 1930.—An article by H. H. Karny on a new case of "transformative" protective coloration of a grasshopper (Tettigonidae) is criticized. The larva of the tettigonid *Asthatomina wasmanni* (Karny) is similar in color to certain sp. of the cerambicid genus *Asthates,* which Karny considers as a case of protective resemblance and for which he cites as authority R. Shelford, who asserts that *Asthates* are inedible, protected forms. Shelford at one time considered the *Asthates* as protected, and again as unprotected, and really knows nothing whatever concerning their edibility or their enemies. Research on stomach contents shows that *Asthates,* as well as Galerucinae, are not protected, but are devoured by birds in large quantities. It is therefore a mistake to speak of "protective" resemblance or "mimicry."—*F. Heikertinger (transl. by R. T. Young).*

3328. **HNATEWYTSCH, BOHDAN.** Die Fauna der Erzgruben von Schneeberg im Erzgebirge. *Zool. Jahrb. Abt. Syst. Ökol. u. Geogr. Tiere.* 56(3/4): 173-268. 1 map., 3 pl., 16 fig. 1929.—The geology of Erzgebirge, the history of the mining section of Schneeberg, the topography, and the ecological factors of the mines in this section are discussed. The Metazoa found in the interior of the various mines were studied to trace the responsibility of an epidemic outbreak of a cancerous disease of the lungs of all miners employed in these mines. Metazoa, three sp. of Turbellaria, 3 Oligochaeta, 5 Rotatoria, 20 nematodes, 1 bryozoan, 38 Arthropoda, and 3 Mollusca are individually described with data on their habitats. The Nematoda, *Rhabditis* de mani* (p. 199), *R.* cobbi* (p. 200), *Macrolaimus* maupasi* (p. 204), *Diplogaster* mikoletzkyi* (p. 207), *D.* ditentatus* (p. 208), *D.* subterraneus* (p. 209), and *D.* dubius* (p. 211); the Crustacea, *Niphargus puteanus* Koch; and the Arachnid (Opiliones) *Nemastoma* spinosa* (p. 231) are described in considerable detail. Only *Niphargus puteanus* and *Lepidocyrtus cavernarum* are considered true cave dwellers (troglobionts). Most of the 75 spp. found are troglocoles,—shade-inhabiting spp. ordinarily living in leaf mold, ravines, deep woods, etc., above ground, or living under stones or in soil. A few are "guests" or recent accessions. Food is more abundant than in caves, hence the number of individuals of most spp. is great. As to food habits, 4 groups occur; omnivorous animals (the nematodes, copepods, *Niphargus,* the spring-tails, and the Staphylinidae *Tricophya pilicornis* Marsch. and *Quedius mesomelinus* Gyll); those feeding on detritus and organic remains (the Oligochaetes, many nematodes, the diplopods, mollusks, *Trichocera* larvae, *Sciara* spp., *Lipsotrix* and *Miastor* larvae); those feeding on fungi, *Arion subfuscus* Drap., *Lepidocyrtus cavernarum* Monz., larvae of the Dipterans *Phthinia winnertzi* Mik. and of *Sciara* spp., and apparently the mite *Linopodes;* and the predacious animals (Turbellaria, many nematodes, *Theorus uncinatus* (rotifer), *Lithobius lucifugus* (Myriapod), *Nemastoma spinosa,* the water beetles and mites). In several spp. there is evidence that lack of food may diminish the body size. Distribution of this fauna is passive in the case of most aquatic and amphibian forms; running and seeping water is a frequent means; and is active in most other

forms. *Niphargus,* a typical cave dweller, may have gained entrance to mines by fissures in rock. Since the mines are scarcely 500 yrs. old, and since forms from the outer world have probably retarded the development of a peculiar fauna, morphological adaptation to subterranean life is scarcely noticeable; loss of coloration, regression of eyes, and compensatory hyperdevelopment of the other sense organs, were absent or imperceptible; the chief adaptation consisted in an appreciable limitation of egg production, perhaps a response to the monotony of climatic conditions.—*C. Zeimet.*

3329. **HODGSON, W. C. Fluctuations in the abundance of the various year-classes of food fishes. XV. Fluctuations in the herrings of the southern North Sea.** *Conseil Perm. Internat Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 129-133. 3 fig. 1930.—Data on the age composition of the East Anglian fishery cover 1923-1928, inclusive. Herrings first appear in the shoals when 3 yrs. old and disappear at the age of 11. Proportions of the older yr.-classes suggest that the rate of mortality acts equally on all groups. Five important yr.-classes were observed: 1915, 1918, 1919, 1921, and 1924, the last 2 having their incidence during the period of investigation. Alternate explanations are offered for the success of the 1921 brood: (1) that during 1921 and 1922 there were abnormal plankton and salt water movements causing herring shoals to depart from the usual grounds, thus evading capture and providing a larger stock of spawners; (2) that the unusual hydrographical conditions had provided good conditions for survival of the young. By calculating the lengths of the herring at the time of formation of 1st water-ring on the scales, it is possible to tell respectively the approximate numbers coming from summer, autumn, and winter spawnings. The 1921 class came mainly from 1 spawning (the winter of 1921-22); the 1924 class came from 3 spawnings: summer (1924), autumn (1924), and winter (1924-25).—*O. E. Sette.*

3330. **ISSEL, RAFFAELE. Oasi di "optimum" relativo e insetti visitatori dei Cirsium nel territorio di Bolzano. [An oasis of relative "optimum"; insect visitors on Cirsium in the region of Bolzano.]** *Atti Accad. Sci. Veneto-Trentino-Istriana* 20: 93-101. 1929.—In the highland of Renon above Bolzano, Italy, *Cirsium arvense* var. *horridum* grows in thickets along the edge of the fir forest. The abundance of insect visitors has been noted, especially as regards number of specimens, of sp., and of groups represented (Lepidoptera, Hymenoptera, Coleoptera, Diptera, and others besides Hemiptera and Orthoptera). In other localities of the same region *Cirsium, Carduus,* and other flowering plants are much less visited. The thickets are interpreted as a relative optimum owing to the existence of a small favorable zone adjacent to a large unfavorable zone.—*R. Issel (transl. by R. A. Muttkowski).*

3331. **JÄRVI, T. H. Fluctuations in the abundance of the various year-classes of food fishes. XX. On the fluctuations in abundance exhibited by the stock of lake-herring (Coregonus albula) in Lake Keitele, Finland.** *Conseil Perm. Internat. Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 182-188. 2 fig. 1930.—The lake-herring concentrate in certain places to spawn in Oct. and Nov. The fertilized eggs sink to the bottom where they remain over the winter. A considerable portion of the fishery takes place on the spawning grounds. The stock consists almost entirely of the 4 most recent yr.-classes with usually 90-95% composed of 2 yr.-classes. Good yr.-classes resulted from the spawnings of 1906, 1909, 1911, 1914, 1917, 1921, 1922, 1923, and 1926. Failure of spawning to produce good yr.-classes is ascribed to windy weather during the critical period when the newly-hatched fry rise to the surface and may be driven to the shores by wind and waves. A good yr.-class may result from the spawning of a very reduced stock if the critical period of development be favorable. Since the possible number of yr.-classes in the catch is very small and the fluctuations in the yr.-classes are violent, the yield of the fishery is capricious. The growth rate of individuals in good yr.-classes is lower than in poor ones averaging around 10 and 13 cm. respectively in 2-yr.-old fish.—*O. E. Sette.*

3332. **LEA, EINAR. Fluctuations in the abundance of the various year-classes of food fishes. XII. Mortality in the tribe of Norwegian herring.** *Conseil Perm. Internat. Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 100-117. 6 fig. 1930.—By calculation of a "remanence coefficient," i.e., the ratio that the number of spawners of a yr.-class in a certain yr. bears to the numbers of spawners in that yr.-class during the previous yr., it is possible to arrive at an approximation of: the mortality rate; the relative numerical importance of the various yr.-classes; and a selection curve expressing the portion of a yr.-class entering the spawning stock in successive yrs. A consideration of the consequences of applying different average values for the remanence coefficient indicates that the true value lies in the neighborhood of 0.77-0.81; on either side of these values the results of calculation rapidly approach absurdities.—*O. E. Sette.*

3333. **LE GALL, JEAN. Travaux à la mer du Laboratoire de Boulogne pendant l'année 1928.** *Rev. Trav. Office Pêches Maritimes [Paris]* 3(2): 127-135. 3 maps. 1929.—Results obtained in hydrology at the western opening of the English Channel are given, with practical consequences of the capture of herring and mackerel, and observations on herring fishing in the North Sea.—*J. Le Gall (transl.).*

3334. **LISSNER, H. Fluctuations in the abundance of the various year-classes of food fishes. XVI. Fluktuationen in der deutschen Trawlheringsfischerei.** *Conseil Perm. Internat. Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 134-144. 3 fig. 1930.—On the Fladden ground the 1918 class dominated the trawl fishery for herring 1922-1924. In 1922 they were below optimum size and adversely influenced the fishery, but the following 2 yrs. they were larger and the fishery was better. In 1925 when the 1918 class had disappeared, the fishery had its worst yr. since the War. Only the 1921 and 1922 classes were then present and in 1926 and 1927 these provided a good fishery. In the latter yr. the 1924 class appeared and by 1928 the fishery was good. On Dogger Bank the situation was similar except that the 1920 class dominated in 1924, and the 1924 class in 1928. On Fladden the herring appear at 3 yrs. of age and on Dogger 2-yr. fish (unripe) appear. On the latter ground the yr.-classes appear 1 yr. earlier and the herring have a lower average size. Other conditions affecting the fishery are the nourishment of the herrings, the length of the fishing season, and the weather. The stock of Bank herring has a relatively quick turn-over, a yr.-class influencing the stock for 3 yrs. and remaining in evidence for 8 yrs., as against Norwegian herrings that influence the stock 8 yrs. and are present 10-15 yrs.—*O. E. Sette.*

3335. **LUNDBECK, JOHANNES. Die Bodenbevölkerung im Baltischen und im Alpensee.** *Naturwiss.* 18 (32): 709-714. 2 fig. 1930.—A study was made of 105 lakes with a quantitative bottom sampler. The lakes of the North German plain are on a typically "eutroph" organic mud, richly populated by the saprobe—*Chironomus*—community (747 kgm./ha. live wt.), whereas the "oligo" or "mesotroph" alpine lakes with predominant mineral bottom are much poorer populated by katharobe—*Tanytarsus, Sergentia,* etc.—communities (234 kgm./ha.). In the first, nourishment is in excess, lack of O only working as the limiting factor; in the latter, on the contrary, nourishment is in minimum, and every increase of organic content causes an enrichment of bottom animals.—*J. Lundbeck.*

3336. **MANETTI, CARLO. Geografia zootecnica del Mediterraneo orientale (Siria-Cipro-Egitto). [Zoogeography of the eastern Mediterranean.]** *L'Universo [Firenze]* 7(9): 733-748; (10): 837-858. 1926.

3337. **MATTOON, M. A. A sketch of the Pisgah National Game Preserve.** *Jour. Forest.* 28(5): 675-678. 1930.—Notes on habitat and data on transplanting the Virginia deer are included.—*P. C. Wakeley.*

3338. MAY, E. Der Einfluss von Klima und Witterung auf die Massenvermehrung schädlicher Insekten. [Influence of climate and weather on the mass propagation of harmful insects.] *Zeitschr. Ges. Physikal. Therap.* 39(6): 295-296. 1930.

3339. MAZZARELLI, G. Fenomeni meteorologici e migrazioni gamiche di pesci. [Meteorological phenomena and breeding migrations of fishes.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 598-600. 1930.—Some fishes (as *Mugil capito*) as well as the eels undertake breeding migrations following abrupt diminutions of atmospheric pressure.—*M. Comel.*

3340. [MEDVEDIV, S.] МЕДВЕДІВ, С. Коротке попереднє повідомлення про характер ентомофавни природнього району заповідника Чаплі. [Preliminary report on the character of the insect fauna of the Tschapli nature preserve.] [German summary.] Всеукраїнська Академія Наук, Труды Фізично-Математичного Відділу (Збірник Праць Зоологічного Музею ч. 7). (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Mus. Zool. No. 7*) 13(1): 21-24. 1929.—The results obtained from a study of the insect fauna agree in general with those obtained from a study of the vertebrate fauna, in establishing the lower course of the Dnieper as the border between 2 zoogeographical areas.—*From author's summary.*

3341. NEEDHAM, JOSEPH. On the penetration of marine organisms into fresh-water. *Biol. Zentralbl.* 50 (8): 504-509. 1930.—The eggs of many marine invertebrates are very dependent on the medium in which they develop, since the only stuff with which they are adequately supplied by the parent organism is the organic material (proteins, fats, and carbohydrates). In one egg there is not sufficient ash to construct one finished embryo ready to hatch. This dependence of the egg on the inorganic material of its environment, shown in several recent investigations, seems to be a significant limiting factor, making it impossible for marine animals to colonise the fresh water, until, by some chance mutation, perhaps, the capacity of providing enough ash within the eggs is acquired. To the factors defined by Sollas and by von Martens we must add the importance of the fresh-water egg being supplied with materials that its inorganic surroundings cannot be expected to give it.—*Author's summary.*

3342. O'MALLEY, HENRY. Fur-seal industry of Pribilof Islands, Alaska. [*U. S.*] *Bur. Fisheries Econ. Circ.* 71. 15p. 6 fig. 1930.—A general account is given of the fur-seal industry of the Pribilof Islands, with a summary of the distribution of the various fur-seal herds. —*C. F. Jackson.*

3343. PEARSE, A. S. Ecology of the ectoparasites of Nigerian rodents and insectivores. *Jour. Mammalogy* 10(3): 229-239. 1929.—Fleas were most abundant on large mammals living in a dry climate and frequenting more or less permanent homes. Ticks were most prevalent among low scattered shrubs in dry climates, but were also numerous in wet climates. Mites were abundant where there was a ground cover of low vegetation and were infrequent in the steppe.—*L. R. Dice.*

3344. PELSENEER, PAUL. Quelques phénomènes d'autorégulation. *Ann. Soc. R. Zool. Belgique* 59: 95-111. 3 fig. 1928(1929).—Among the Mollusca occur known cases of regulation, both in normal morphology and in embryonic and adult regeneration. In the different groups of mollusks "constancy of population" is due to what is essentially regulation between the number of eggs or embryos and the probability of destruction of eggs, embryos, larvae, and young. Among the Rachiglossa in which the young emerge from the capsule in the form of the adult (*Purpura lapillus* and others), the eggs, and especially the embryos, are notably few. Likewise with incubatory and oviparous forms the embryos are very few and may be reduced to the "limit": one. In all cases where the eggs are few, their size is proportionally great.—*P. Pelseneer* (*transl. by J. S. Gutsell*).

3345. POULSEN, ERIK M. Fluctuations in the abundance of the various year-classes of food fishes. IV. On the fluctuations in the abundance of cod fry in the Kattegat and the Belt Sea and causes of the same. *Conseil Perm. Internat. Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 26-30. 3 fig. 1930.—The average number of cod fry taken per 30-min. haul with a 2-m. ring trawl in the Belt Sea and the Kattegat was as low as 2 and 5 and as high as 67 and 153 in certain yrs. during 1923-1928. They were found preeminently in the lower layers of water. There is a marked correlation between high average temp. of the water in these layers in March-May of certain yrs. and the good average catches of larvae during the same period. Whether this high temp. favors survival of the larvae directly or indirectly through providing plankton food was not proven but through analogy with plaice fry the latter was considered most probable. There also was a marked correlation between high salinity during Nov.-Jan. and large catches of fry during the following spring. This may be explained by the movements of the adult cod which usually migrate into the Belt Sea in autumn and leave again during the winter or early spring. In yrs. of unusual penetration of salt water into the Belt Sea the return of adult cod may be delayed until after they have spawned in the Belt Sea thus providing an unusually good stock of fry in that area. The fluctuations in the numbers of fry developed in the spring affect the stock of cod in subsequent yrs. as shown by the strong correlation between the number of larvae in the spring, O-group in the summer, I-group the following year, and II-group the next following year in otter-trawl catches in Danish waters.—*O. E. Sette.*

3346. RICHARDS, O. W. The animal community inhabiting rotten posts at Bagley Wood, near Oxford. *Jour. Ecol.* 18(1): 131-138. 1 fig. 1930.—This article is based upon 6 yrs. of study of about 70 posts, which extended about 100 yards. On one side of the posts were hay fields; on the other side cereals and beans. Most of the posts were willow; the others were ash and elm. The animal community found on these posts consisted of moth larvae and psocids feeding on lichens on the posts; beetles, Collembola, and spiders under the bark; beetles feeding on fungus; wood-eating moth and beetle larvae; bees, wasps, and ants nesting in the posts; and various other forms that the author calls "post-users," such as jumping and orb-weaver spiders, moths, flies, hibernating beetles and earwigs, and aestivating snails. Some of the willow posts sprouted, giving rise to an additional community living on the leaves. This consisted of aphids, which were accompanied by ants and preyed upon by syrphid larvae, ladybirds, and lacewings; leafhoppers, moth and sawfly larvae, and beetles feeding on the leaves; gall-making midges and sawflies; mating insects, predaceous flies, and spiders occurring on the leaves. The composition of these communities varied with the season and the age of the posts.—*D. J. Borror.*

3347. RÖDER, RICHARD. Die anthropogeographische Bedeutung der Malaria. *Janus* 34(2): 38-64; (3): 71-96. 1 map; (4): 121-128; (5/6): 142-176. 1930.—Within a belt defined by the isotherms of 16° for the coolest mo. in both hemispheres, malaria is not only endemic but active the yr. through. To the north and south of this tropical malaria belt are strips of the earth's surface, defined poleward by the isotherms of 16° for the warmest mo., where malaria is only a seasonal visitant; but within these isothermic lines are regions where malaria is severe, other malaria-free districts, and still others where malaria is only an occasional epidemic visitor. Regions without mosquitoes are free from malaria. Almost all Europe north of the Alps, however, has mosquitoes without malaria. Certain industries are also more or less identified with malaria, such as fishing, reclaiming waste land, production of linen, and culture of hemp, rice, and bananas.

3348. ROUBAUD, E., et C. TOUMANOFF. Intoxications d'encombrement, chez les larves de Culex vivant en milieu non renouvelé. *Bull. Soc. Path. Exot.* 23(9): 978-986. 1930.—The accumulation of toxic excreta in small breeding places where the water is not changed was experimentally shown to retard or prevent the develop-

ment of mosquito larvae, producing an especially heavy mortality in the 4th stage. The survivors were generally ♂. A long sojourn at a low temp. tended to enable larvae weakened by such toxic action to recover and resume their development. This phenomenon is regarded as the physiologic parallel of the spontaneous "diapause" that requires the reactivation of winter.

3349. **[SAINT-HILAIRE, C.]** СЕНТ-ИЛЕР, К. Экспедиция на Дон летом 1928 г. **[The hydrobiological expedition along the River Don in summer 1928.]** [English summary.] Труды Научно-Исследовательского Института при Воронежском Государственном Университете. (*Trav. Inst. Rech. Sci. Univ. d'État, Voronèje, URSS.*) 1929(3): 62-105. 1929.—In the summer of 1928 the Inst. for Sci. Res. in Voronezh organized a hydrobiological expedition along the River Don, from the mouth of the river Voronezh south. The expedition went down the Don for about 400 km., studying its water-fauna. The depths, swiftness of current, temp., transparency, colour of waters, and content of O were measured. Samples of the earth from the bottom of the river were taken. Bottom fauna and plankton were collected. The material obtained is partly worked through, but not yet sufficiently for making any general deductions. The most interesting sp. discovered are some Crustacea which up to that time had been found but in the lower parts of the Don, namely: *Chaetogammarus tenellus* (Sars), *Dikerogammarus villosus* (Sow.) Mart., *Pontogammarus maeoticus* (Sow.), *Corophium curvispinum* Sars., *C. chelicorne* Sars., *Paramysis baeri* Czern., *Diamysis mecznikowi* (Czern.).—*Author's summary.*

3350. **SCHREIBER, GIORGIO. Il contenuto di sostanza organica nel fango delle grotte di Postumia. [Content in organic substances of the mud of the caves of Postumia, Northern Italy.]** *Atti Accad. Sci. Veneto-Trentino-Istriana* 20: 51-53. 1929.—In the waters of the cave of Postumia there is a lack of vegetable life (on account of the darkness) and protozoa. The animals which live there (e.g., *Planaria cavatica* and *Gordium* ?) are nourished chiefly by the mud which contains 0.237% of organic N.

3351. **SELYS-LONGCHAMPS, MARC de. Observations limnobiologiques faites dans les Alpes Maritimes.** *Recueil Inst. Zool. Torley-Rousseau [Bruxelles]* 1(1): 11-30. 1927.—In this region *Salmo fario* has a discontinuous distribution; some parts of the alpine streams are unsuitable for it by reason of floods, deforestation, etc. It maintains itself the year round in lakes at an altitude of 2200 m. Its food here includes winged ants (*Camponotus herculeanus*). In Belgium, where thousands of trout were examined, this sp. was never found practicing cannibalism in streams, though it may in ponds. In general, it feeds upon *Lumbricus* but not upon other worms such as leeches, planarians, Gordius, and small oligochaetes. *Gammarus* and *Limnaea* are important foods, and Phryganeidae and subimaginal Ephemeridae are especially appreciated. Diptera, Coleoptera, and Orthoptera are eaten, but Lepidoptera are disdained. Miller's thumbs, the young of many other fishes, and small frogs are taken, and there is one case of a water shrew being eaten. The trout is sedentary and solitary in a stream, but in quiet water, such as a lake, it moves about in bands. The trout is able to surmount waterfalls up to about 2 m. high, in part by leaping and in part, it is surmised, by swimming upward through the vertical sheet of water. In the Tinée, a mountain stream of Alpes Maritimes, there appears to be no fish other than the trout above 1000 m. In this region the only amphipod found was *Niphargus*, in a spring at 1800 m. *Gordius aquaticus* is abundant in summer in a nearly dry mountain torrent of this region, and *Branchipus* occurs in a temporary pool at 2000 m. Some forms of phytoplankton and of Cladocera are recorded from Lac de Rabuons, at 2515 m.

3352. **SUND, OSCAR. Fluctuations in the abundance of the various year-classes of food fishes. II. The renewal of fish population studied by means of measurement of commercial catches. Example: the Arcto-Norwegian cod stock.** *Conseil Perm. Internat. Explor. Mer Rapp. et Proc.-Verb. Réunions* 65: 10-17. 6 fig. 1930.—The age of cod is difficult to determine from the scales after it is 6 yrs. old, but it is possible to arrive at an approximation of the relative numbers of cod of various ages in the catch by means of the Petersen frequency method when the data are weighted according to average catch per fishing unit and treated to show % departures from the normal frequency distribution as determined by the average of a large series of yrs. From this it appears that the Norwegian catch of cod has been maintained since 1913 largely by the 1904, 1912, 1919, and, to a less extent, 1915 and 1917 classes. Some of these classes continued important in the catch up to the age of 10-14 yrs. Some classes became evident in the fishery so late in life that they may have been hiding in places not subject to commercial fishing. No notable class has appeared since 1925, indicating the improbability of substantial recruitment of spawning fish before 1932, and the possibility of serious decline 2 or 3 yrs. hence even if a rich brood does appear in summer fishing of 1929.—*O. E. Sette.*

3353. **THOMPSON, D'ARCY W. Fluctuations in the abundance of the various year-classes of food fishes. III. On fluctuations in the abundance of cod.** *Conseil Perm. Internat. Explor. Mer Rapp. et Proc. Verb. Réunions* 65: 18-25. 6 fig. 1930.—Statistics of the cod landed in Aberdeen since the year 1901, treated according to areas of origin, show that the average catch per 100 hrs. trawling has been 60-70 cwt. northwest of the Faroes, 31-37 cwt. southeast of the Faroes and Shetlands, 20-24 cwt. in the middle portions of the northern part of the North Sea, and 13-17 cwt. in the areas off the east coast of Scotland and in the northernmost portions of the North Sea. There is usually a seasonal maximum (sometimes double) during March-June or July, and a minimum July-Dec., depending upon the area under consideration. The fluctuations in average annual catch are parallel in certain areas. There is no evidence of diminution in average catch in the long run except in the Faroes where the averages in recent yrs. no longer equal those at the beginning of the period.—*O. E. Sette.*

PLANT

3354. **[BALABAIEW, G. A.]** БАЛАБАЕВ, Г. А. Вертикальное распространение сорных растений в горах Средней Азии. **[Vertical distribution of weeds over the mountains in Central Asia.]** (English summary.) Известия Главного Ботанического Сада СССР. (*Bull. Jard. Bot. Princ. URSS.*) 27(5/6): 459-519. 1928.—The study was made in the Ura-Tubinsk district (Samarkand) and in some upland regions along the upper Zeravshan River, at elevations of 400-2600 m. The rate of frequency of the weeds at the elevations studied was determined by mathematical formulae. In general, the botanical composition at different altitudes as well as changes in the rate of frequency of particular sp. was due to the unequal distribution of heat and moisture over mountain slopes. Certain sp. and groups of weeds keep to definite altitudes, the southern forms occupying the lower belts and the northern forms the higher. The amount of common annual weeds did not decrease with altitude, but increased 2½ times as regards the number of sp. and 2 times as regards the vegetative mass. It is concluded that the seed of common weeds at the higher elevations have a low optimum germination temp. The occurrence of lowland weeds at the higher elevations is explained by the faculty of their seed to germinate in an immature condition.—*M. C. Merrill.*

3355. **BOMMER, M. Quelques aspects de la végétation marocaine.** *Ann. et Bull. Soc. Roy. Sci. Med. et Nat. Bruxelles* 1928(2/7): 37-42. 1928.—A brief introduction describes the topography and climate of Morocco. This is followed by a detailed description of the distribution and composition of the arborescent vegetation. The forest flora of Morocco, as well as that of Algeria and Tunis, is practically the same as that of Mediterranean Europe. This similarity is explained as a result of the

immigration of the Miocene flora of Europe into northern Africa in the Tertiary epoch when the great alpine foldings gave birth to the north of Africa. In the east the connection was established through the Appenines and Sicily; in the west through the Baetic Cordilleras and the upheaval of the Rif. The colonization of the new emergent surfaces was somewhat different due to the 2 paths of immigration thus established. In the east the Corsican pine and the maritime pine show a relationship with the flora of Italy and Corsica, while in the west the argan (*Argania sideroxylon*) indicates a relationship with an earlier flora of Madeira and the Canary Islands. "The proper elements of the north-African flora, the cedars, and to a certain extent the 'thuja' (*Tetraclinis*) are also some of the elements of the Tertiary European flora or, perhaps for the argan and the gum, of the 'macronesian' group from which they have since disappeared. The distinctive character of the North-African flora resides in the more complete persistence here than in Europe of the Tertiary forest types and the Moroccan flora presents in the case of argan and the gum, the accentuation of this peculiarity of composition."—*P. D. Strausbaugh.*

3356. **BONKER, FRANCES,** and **JOHN JAMES THORNBER.** (Introduction by **HAROLD BELL WRIGHT.**) **The sage of the desert and other cacti. Studies of that fantastic clan, the cactus of the desert, and other interesting and peculiar desert growths.** 106p Illus. Stratford Co: Boston, 1930.

3357. **BORGESEN, F. Notes on the vegetation at Dwarka on the west coast of India, with reference to Raunkiaer's "life-forms" and statistical methods.** *Jour. Indian Bot. Soc.* 8(1): 1-18. 3 pl. 1929.—At Dwarka, temp. ranges from about 21° C. in Feb. to 35.2° in June; about 32 cm. of rain falls June-Aug., 1.3 cm. in Feb., and very little the remainder of the yr. Low rainfall, high insolation, and strong winds combine to suppress all tree growth. *Euphorbia nereiifolia,* 2 m. high, is the largest plant. A small area near the coast was visited in Jan., and 28 sp. of flowering plants collected; they are described and their life-forms indicated. They give a biological spectrum of S 4, E 0, MM 0, M 0, N 14, Ch 50, H 7, G 4, HH 0, Th 21; this is compared with spectra of other places, and with Raunkiaer's normal spectrum. The vegetation at Dwarka is considered very xerophytic.—*W. Dudgeon.*

3358. **BUYS, D. W., H. WITKAMP, F. H. ENDERT, H. C. SIEBERS (assisted by D. F. K. BOSCH). Midden-Oost-Borneo Epeditie 1925.** Uitgave van het Indisch comite voor wetenschappelijke onderzoekingen. 423p. illus. G. Kolff & Co.: Weltevreden, Java. 1927.—This expedition mapped the water courses and made observations on the geology, topography, zoology, botany, population, and economic resources of the region. The floristic ecology of the vegetation adjoining the streams is specially well treated, with a wealth of detail. The plant collections totalling 4000 numbers are believed to comprise about 2500 sp. Most of these are designated by genus or family and collection number, and await further study. Many of these are either identical with or very similar to sp. found in the Philippine forests. Collections were also made of 41 or 42 sp. of mammals, besides birds and insects. Along the lower reaches of the rivers, the lakes are bordered by great areas of grassy marshlands and floating masses of *Eichhornia,* etc. On the river banks, the inundated areas (rapak) are grown up to small misshapen trees, *Coccoceras sumatrana, Ixora* sp., and *Shorea balangeran* (Kahoi) being dormant sp. Epiphytes and vines are poorly represented. The occasionally overflowed lands have a similar but better developed and more varied woodland cover. The Dyak population evidently subsists primarily by fishing, hunting, and a primitive, shifting agriculture, resulting in large areas of grassland and second growth in abandoned fields on the higher ground similar to those of the Philippines. The vegetation of the marshy grasslands and river swamps, as well as the broad areas of overflow lands is described. In the middle and upper reaches of the Telen River where the land is higher, with steep slopes and many rapids along the river, large trees of the Dipterocarpaceae, strangling figs, rattans, ferns, epiphytes, and lianas become more prominent features of the vegetation, though no such extensive areas of heavy timber were apparently encountered as characterize the forests of North Borneo and the Philippines. Gutta percha, rattan, rubber, and gums are important products. At higher elevations above 800 m. in the interior are forests composed of *Agathis borniensis.* Above 1000 m. are tree ferns, many epiphyte ferns, climbing *Freycinethia* sp., an orange-flowered epiphytic *Rhododendron,* sp. of *Vaccinium,* etc., and some interesting hemi-parasites, *Elythranthe, Loranthus, Viscum, Ginalloa.* On the volcanic summits above 1500 m. in the wet forest, where the trees and branches are covered with thick masses of mosses and epiphytes, are a dozen or more sp. of epiphytic rhododendrons with bright rose, violet, dark red and yellow flowers; and *Aeschynanthus* with handsome dark red and violet flowers. *Elatostema, Coelogyne, Eria, Nepenthes, Coleus,* and *Hymenophyllum* are conspicuous. The book gives a detailed account of the explorations and descriptions of many of the characteristic plants in the different types of vegetation; the lake marshes (koempai); submerged lands covered with woodland (rapak); forests of overflow lands (Klan); the old clearings (padang); the hill forests; and mossy forest of high elevations.—*F. T. McLean.*

3359. **COTT, HUGH B. The natural history of the Lower Amazon.** *Ann. Rept. & Proc. Bristol Nat. Soc.* 7(3): 181-188. 6 pl. 1930(1931).—General notes on plant and animal life in the rain forest about Pará and on the open plains of Marajó Isl.

3360. **COWAN, J. M. The fortunes of a botanist on the Persian frontier.** *New Flora & Silva* 3(4): 219-227. 4 pl. 1931.—A general account of the pasture-lands of the Urumia District in N. W. Persia is given. The vegetation of the Urumia Plateau (4,500 ft.), the Plains of Mergavar and Tergavar (6,500 ft.), and the frontier mt. range (6,500-9,000 ft.) is described with special reference to plants of horticultural interest. Several indigenous sp. of tulip, the possible parents of varieties in cultivation, sp. of *Colchicum, Fritillaria, Allium, Ixiolirion, Muscari,* and *Ornithogalum* are recorded as common. *Iris barnumae* is noticed in clumps; *Iris* aff. *ewbankiana, I. reticulata,* and *I. bakeriana* are noted as rare. *Puschkinia hyacinthoides, Gagea* sp., *Colchicum* sp., and a *Ranunculus* fringe the snow-drifts. *Papaver orientale* Linn. and the bracteate *P. bracteatum* Lindl. are regarded as synonyms, both forms being found on the same plant. Other sp. noted are *Delphinium speciosum, Verbascum phoenicium, Aubretia kotschyi, Vicia tenuifolium, Stachys lavandulaefolia, Globularia trichosantha, Aethionema pulchellum, Thymus kotschyanus, Onobrychis cornuta, O. buhseana,* and sp. of *Astragalus.* The country is treeless except near some of the streams where a few stunted willows, poplars, ash, hawthorn, almond, *Elaeagnus angustifolia,* and *Berberis densiflora* are found. Clumps of *Rosa foetida* and its variety *bicolor* are occasionally conspicuous.—*J. M. Cowan.*

3361. **CUATRECASAS, JOSÉ. Una visita al pinsapar de Sierra de la Nieve. [A visit to the Abies pinsapo of Sierra de la Nieve.]** *Butl. Inst. Catalana Hist. Nat.* 10(4/5): 65-68. 3 pl. 1930.—Account of an excursion to these Spanish mountains; with notes on vegetation found at various altitudes.

3362. **DRAPER, PHYLLIS. A comparison of pollen spectra of old and young bogs in the Erie basin.** *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 50-53. 2 fig. 1929.

3363. **EMBERGER, LOUIS. La végétation de la région méditerranéenne. Essai d'une classification des groupements végétaux.** *Rev. Gén. Bot.* 42(503): 641-662; (504): 705-721. 2 fig. 1930.—In this condensed article the author emphasizes the principle that a natural classification of plant communities should be based on ecological criteria and that among these criteria climatic data occupy a foremost place. Vegetation is a response to

climate and the author has sought a systematic formula in which precipitation, temp., and evaporation are recognized as the most important expressions of climate. On this basis he has established for the Mediterranean climate the formula: $P/2[(M+m) \times (M-m)] \times 100$ in which P indicates the annual precipitation, M the mean maximum temp. for the warmest mo., and m the mean minimum for the coldest mo. of the yr. As no direct measurements of evaporation are available it is approximated by the expression $(M-m)$ on the assumption that evaporation varies with temp., being greater with higher temp. From this formula there results a series of precipitation-temp. or "pluviothermic" quotients characteristic of different localities. Then in order to express more accurately the efficiency of the climate of various localities for vegetation, these pluviothermic quotients as ordinates are plotted against the values of m as abscissae and the results expressed graphically in a table where the different localities are seen to group themselves according to similarities of their climatic summations and hence according to similarities in vegetation. The importance of m lies in the fact that low temp. has a restricting influence on vegetation. —Noting the grouping of localities with similar climates and similar vegetation, 5 climatic subregions are distinguished within the climate of the Mediterranean region: arid, semiarid, temperate, humid, and high montane, each of these involving corresponding divisions of the vegetation, divisions which agree ecologically in spite of floristic differences. Each climatic subregion has a corresponding stage of vegetation. These stages are comparable to families in taxonomy and are subdivided into substages and groups corresponding to genera and sp. The 2nd part of the article is devoted to a brief consideration of the vegetation of the various stages and substages, delimited by the formula, and found within the Mediterranean region, together with a brief consideration of the limits of the region.—*From author's abstract (transl. by B. McAvoy).*

3364. ERDTMAN, O. G. E. On the immigration of some British trees. *Jour. Bot.* [*London*] 64: 71-74. 1926. —This note is based chiefly on a statistical investigation of pollen from 2 series of peat samples collected from Chat moss near Manchester and from West House Peat moss from Yorkshire, from which it appears that the forest trees must have reached the middle of England in the following order: birch, pine, willow, hazel, elm, oak, alder, lime, and beech.

3365. FINNELL, H. H. Some effects of wind injury to growing plants. *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 24-27. 1929.—Preliminary observations in Oklahoma showed that next to temp., wind velocity is the most important factor affecting crop yield, and that the effect of wind is not due entirely to its influence on transpiration. In greenhouse experiments on marigolds, exposure of potted plants to artificial "wind" (about 20 mi. per hr.) reduced growth rate and yield, but seemed to increase the number of leaves formed. With sorghum and barley, yield was reduced 30% and 24%, respectively; with marigold, 48%. Blooming of marigold was retarded about 10 days in wind.

3366. FRANCIS, W. D. The rain forest of the Eungella range. *Proc. Roy. Soc. Queensland* 39: 107-114. 4 pl. 1927(1928).—An ecological study of this Queensland range, and comparison with other mountain areas; with a list of 129 plants collected in the rain forest, which has an average annual rainfall of 65 in.

3367. GAMS, HELMUT. Von den Follateres zur Dent de Morcles: Vegetationsmonographie aus dem Wallis. (Pflanzengeogr. Komm. der Schweiz. Naturforsch. Ges. Beiträge zur geobot. Landesaufnahme, Heft. 15.) pp. xii +760. 26 pl. Hans Huber: Bern, 1927. Pr. 39 M. or 48 Fr.

3368. GATES, R. RUGGLES. Vegetation of the Mackenzie River valley. *Proc. Linnean Soc. London No.* 142. 36-40. 1929/30(1931).—Notes on various sp. and associations of plants.

3369. GOTTLIEB. Von den Pflanzenvereinen der Senne. 5. [The plant societies of the Senne River, Belgium. 5.] *Naturwiss. Ver. Bielefeld u. Umgegend* 1922-1927: 108-121. (1928).

3370. GOULD, LOIS. Phenological notes for 1928 on Middle Western spring flowers. *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 39-42. 1929.—The season varies directly with the distance north and south and advances 1° of latitude in about 5 days. The season is later at eastern stations than at western ones of approximately the same latitude.—*Author's summary.*

3371. GOULD, LOIS. Lateness of the spring of 1928 as determined by comparison of first blooming dates. *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9 (456): 43-46. 1 fig. 1929.

3372. HARING, INEZ M. Plant growth under electric light. *Bryologist* 33(6): 89-91. 1930.—Eight sp. of plants were found in range of light and heat from electric lights in Howe's Caverns, New York. Lights were installed in 1929 when the caverns were opened to the public and are kept burning night and day.—*A. M. Taylor.*

3373. HRUBY, JOHANN. Die pflanzengeographische Gliederung Mährens und Schlesiens. *Verhandl. Naturforsch. Ver. Brünn* 60: 1-28. 1925-1926 (1927).—In this concluding article of a series, the lower-growing plant associations of Moravia and Silesia are classified in minute detail, with remarks as to distribution, abundance, etc., of individual classes. The chief divisions covered comprise: parvolignosa (shrub associations without tree cover); nanolignosa (dwarf shrubs); herbosa with the subdivisions terriherbosa (herb-grass formations) and aquiherbosa (water-plant associations); bryosa (moss-associations); lichenosa (lichen-associations); phycosa (assemblages of Algae); and mycosa (fungus associations).—*E. T. Wherry.*

3374. HUGUET del VILLAR, EMILO. Sur la méthode et la nomenclature employées dans mon étude géobotanique de l'Espagne. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 1: 541-564. Geo. Banta Publ. Co.: Menasha, Wisconsin, 1929.—Geobotany is a more limited term than ecology which has many meanings. Synoecia (Latin) is utilized to indicate an individualized botanical cohabitation. The formation is the synoecia from a biomorphologic viewpoint, and the association is the synoecia from a systematic viewpoint. Remainder of article explains many other new terms that are suggested and applied in studying ecological successions, climaxes, subclimaxes, life forms, and environment.—*L. K. Henry.*

3375. IVERSEN. J. Studien über die pH Verhältnisse dänischer Gewässer und ihren Einfluss auf die Hydrophyten-Vegetation. *Bot. Tidsskr. (København)* 40(4): 277-333. 2 pl. 9 fig. 1929.—The author investigated the H ion relations of 50 Danish lakes and placed them in the following categories: I. Permanently acid lakes: (1) permanently very acid, pH<5.3; and (2) changing from very to slightly acid. II. Lakes fluctuating from acid to alkaline: (1) predominantly acid lakes, pH—minimum <5.3; (2) predominantly neutral-alkaline, pH minimum >5.3. III. Permanently alkaline lakes. The acid lakes are fewer, are found on sterile soil, are poor in lime, and often contain humus. Their acidity is not dependent upon CO_2. On the other hand in the fluctuating lakes the pH is partly dependent upon the CO_2 content; hence they are influenced by autotrophic plants. Alkaline lakes are numerous, are rich in lime, and also contain other buffers; humus is found in some of them, in others not. All sp. of plants found are enumerated, and their occurrence in water of different reaction is stated. A comparison of the occurrence of different types of aquatic plants shows that the alkaline lakes represent the most favorable reaction type for the higher aquatic vascular plants; in the very acid lakes only about 20% of the sp. are found.—To determine whether this relation between reaction and vegetation rests upon causality, culture experiments with the different sp. should be made, but it is thought that the reaction itself is of

vital importance for the composition of the vegetation. The following types of lakes are recognized, and the main features of their vegetation given: (1) acid lakes with limpid water; (2) acid humus-lakes; (3) alkaline lakes with limpid water; and (4) alkaline humus-lakes. The paper ends with short descriptions of the 50 Danish lakes investigated.—*Ove Paulsen.*

3376. KAWADA, MASARU. The outline of forest ecology. [In Japanese.] *Soc. Forest. Kyoto Imp. Univ. Bull.* 1. 1-88. 4 pl. 1927.

3377. KLIKA, JAROMÍR. Poznámky ke geobotanickému výzkumu Velké Fatry. [Geobotanic notes on the Slovakian Grand Tatra.] *Sbornik Prirodov. Spolenec. v. Mor. Ostrave* 3: 38-85. 5 pl. 1924-25 (1926).—"Velka Fatra," the Grand Tatra, refers to an arc of the Carpathians. The mts. are of granite with limestone and dolomite of Triassic, Jurassic, and Cretaceous age. The Little Tatra, the Choc, and the Grand Tatra form a phytogeographic unit in which the last stands as a rather distinct subdivision, as indicated by its endemics. The timber line on the greater part of the Grand Tatra is very low compared with that of neighboring mts. The pines are poorly developed as is the alpine formation. The vegetation types include: (1) *Fagus silvatica* forests from the valleys up to 1300 m. and penetrating the pine forest to 1347 m. and poorly developed as high as 1400 m., a climax community with associations characterized by *Oxalis-Maianthemum, Asperula, Oxalis-Cortusa* (montane zone), and where conditions are less favorable by *Oxalis-Myrtillus;* (2) mixed deciduous forest on limestone slopes at low altitudes; (3) forests of *Abies alba* alternating with the beech at the lower altitudes; (4) *Picea excelsa* forests in the upper montane somewhat exceeding the beech in altitude, the forest floor being of *Oxalis, Cortusa, Myrtillus,* or *Myrtillus-Calamagrostis* type; (5) *Pinus silvestris* stands, limited and mostly planted; (6) *Pinus montana,* which appears as the wind timber of the sub-alpine zone at one station (Cerný Kámen, 1480 m.), accompanied by *Myrtillus* and *Calamagrostis villosa;* (7) *Vaccinium,* which forms a heath association above the forests; (8) *Nardus,* which forms a secondary association in the valleys, due to grazing; (9) Sesterieto-Semperviretum; (10) Seslerietum; (11) Firmetum, poorly developed; (12) mesophytic montane meadows; (13) xerophytic montane meadows; (14) grasslands of the forests and valleys; (15) wet grassland with *Primula farinosa;* (16) saxicolous associations of calcareous rocks; and (17) associations of the mud and gravel of streams.—*From author's summary (transl. by B. McAvoy).*

3378. [KOTOV, M.] КОТОВ, М. Ботанико-географический очерк растительности меловых обнажений по р. Осколу и его притокам. **[Botanical and geographical sketch of the vegetation on the chalk cliffs along the Oskol River and its tributaries, Ukraine.]** [English summary.] Журнал Русского Ботанического Общества при Академии Наук СССР. (*Jour. Soc. Bot. Russie, Acad. Sci. URSS.*) 12(3): 249-266. 1927.—The distribution of chalk cliff plants, including *Daphne sophia* Kalen, *Diplotaxis cretacea* Kotov, *Scrophularia cretacea* Fisch., *Hyssopus cretaceus* Du., *Matthiola fragrans* DC., *Artemesia salsoides* W., *Linaria cretacea* Dubj., *Androsace villosa* L., *Allysium montanum* L., and *Plantago maritima* L.—*V. O. Graham.*

3379. LINGELSHEIM, A. V. Zur Biologie der Epipactisblüte. *Beitr. Biol. Pflanzen* 17(3): 297-300. 1 fig. 1929.—Observations are given of insect-capture by the sticky stigmas of *E. latifolia,* and evidence adduced that the plant is insectivorous.—*H. H. Allan.*

3380. LUNDEGÅRDH, HENRIK (transl. by ERIC ASHBY). Environment and plant development. xii + 333p. 8 pl. 87 fig. Edward Arnold & Co.: London, 1931.—Not intended as a handbook, but as an outline of a new mode of research, the Introduction defines the aim of experimental ecology as "the investigation of the plant's reaction to a given 'constellation' of ecological factors, with a view to discovering how the plant behaves in its natural habitat. There exists no sharp distinction between this study and synecology, which investigates plant societies in the same way. The final goal of every science is the causal explanation of observed phenomena. On this ground alone it would be impossible to stop at the mere floristic analysis of vegetation." The Chapter headings are: The light factor; The temp. factor; The water factor; The ecological properties of the soil; The physical structure and aeration of the soil; The chemical properties of the soil; Soil micro-organisms; The CO_2 factor; Principles of experimental ecology; Bibliography.—*C. S. Gager.*

3381. MARLOTH, R. Stone-shaped plants. *South African Jour. Nat. Hist.* 6(4): 273-280. 5 pl. (2 col.) 1929.—Attention is drawn to the biological phenomenon of the desert plants *Titanopsis calcarea** (Marl.) Schwantes, *Lithops lesliei** N. E. Br., *Argyroderma testiculare** (Thunb.) N. E. Br., and *Didymaotus lapidiformis** (Marl.) N. E. Br. as regards their similarity, in shape as well as color, to the ground and the stones among which they grow.—*R. H. Marloth.*

3382. MARSHALL, ROBERT. An experimental study of the water relations of seedling conifers, with special reference to wilting. *Ecol. Monographs* 1(1): 37-98. 1930.—Seedlings were grown in greenhouse and sand beds for about 24 days after emerging from soil and then allowed to wilt and die without further watering. The sp. studied were *Abies grandis, Picea excelsa, P. glauca, Pinus caribaea, P. echinata, P. monticola, P. resinosa, P. ponderosa, Pseudotsuga taxifolia, Thuja occidentalis, T. plicata,* and *Tsuga heterophylla.* Progress of wilting and drying was followed by means of measurements of water contents and dry wts. of seedling tops and by atometer and soil-point readings. A diurnal fluctuation in water content of tops was observed and taken into account. Two stages of drying of seedlings were recognized: (1) a 1st critical stage, probably corresponding to the onset of permanent wilting (Briggs and Shantz); (2) a 2nd critical stage, when leaves and stems became brittle. For Norway-spruce and Norway-pine seedlings the 1st critical stage was attained when the mean water-content % of tops had decreased by 15-20% of the corresponding % for healthy plantlets. At this time the water-supplying power of the soil (at depth of 3-5 cm.) had decreased to about 2 mgm. per sq. cm. for 1st hr. of absorption. This supplying-power index is about ¼ as great as that found necessary to maintain growth in Kentucky blue grass on a Baltimore lawn in summer.—*Author (courtesy Wistar Bibl. Serv.).*

3383. MASAMUNE, GANKEI. Volcanoes and plants. [In Japanese.] *Trop. Hort. [Taihoku]* 1(4): 263-267. 1931.

3384. MELIN, ELIAS (Transl. from German by PAUL W. STICKEL). Investigations of the significance of tree mycorrhiza. An ecological-physiological study. 147p. 48 fig. Edwards Brothers: Ann Arbor, Michigan, 1930. Pr. $2.25.—This book contains the author's results of experiments with the mycorhiza of *Pinus silvestris, P. montana, Picea abies,* and *Larix europea.* Pure cultures of the root fungi are described; and the behavior of these fungi towards phosphatides, various sources of N including the free N of the air, and towards pH is indicated. No evidence of the utilization of free N was found. It is demonstrated that the mycorhiza possess a very vital significance for seedlings and trees in raw humus and related soil types.

3385. NEUSTADT, M. Einige Resultate von pollenstatistische Untersuchungen im Osten des Gouvernements Wladimir. [Some results of pollen analysis in eastern Vladimir, U. S. S. R.] *Geol. Fören. Stockholm Förhandl.* 50(3): 436-442. 2 fig. 1928.

3386. PFEIFFER, HANS. Über die ökologischen Bedingungen des Formationswandels an Schlagflächen. [Ecological conditions of succession on clearings.] *Bot. Arch.* 31(3/4): 543-552. 1931.—A review.

3387. RAUP, LUCY C. The lichen flora of the Shelter Point Region, Athabasca Lake. *Bryologist* 33(5): 58-66. 4 pl. 1930.—Four associations are discussed, with primary

and secondary sp. found in each: lake shore, upland, arboreal, and muskeg (or bog).—*A. M. Taylor.*

3388. SABNIS, T. S. A note on the ecology of the flora of Sind. *Jour. Indian Bot. Soc.* 8(4): 263-286. 1929.—Except for the central alluvial plain, Sind is desert, continuous with the great desert of north-west India. Topography and soil conditions are varied: sandy plains with moving dunes; barren sandstones and volcanic hills; an extensive coast; a few lakes; and alkali soil areas. The flora is correspondingly varied. Rainfall is scanty; temp. ranges from a mean monthly max. of 114.1° F. in June to a min. of 73.2° in Jan. (at Jacobabad); rel. humidity (at 8 A. M.) ranges from 44% in May to 71% in Aug. (at Jacobabad), and 57% in Dec. to 85% in Aug. (at Karachi). Much of Sind is uncultivated, due to lack of irrigation facilities. The flora consists of 540 sp. in 302 gen. and 76 fams.; 498 sp. in 268 gen. and 70 fams. are indigenous; 450 sp. in 253 gen. and 69 fams. are Dicots; and 90 sp. in 48 gen. and 6 fams. are Monocots. There is 1 Gymnosperm. The flora is closely related to that of the western deserts, and is larger than that recorded for the Indus Delta (to the west) or for the Rajputana Desert (to the east). The western deserts are much drier, and the vegetation shows more pronounced xerophytic characters than that of Rajputana. There is evidence for a gradual plant migration toward the east. Ecological conditions are described under Schimper's formations: halophytic and semi-halophytic, aquatic and semi-aquatic, kalar soil (alkali), sand, gravel, rock, and ruderal. Lists of characteristic plants are given. Crop plants, fruit trees, and common village trees are also mentioned.—*W. Dudgeon*

3389. SAMPAIO, A. J. de. Phytogeographia do Brasil. *Bol. Mus. Nac.* [*Rio de Janeiro*] 6(4): 272-299. Map. 1930.—Adopting Engler's classification with a little terminological modification, the Brazilian flora is divided into 2 provinces: Amazonian flora and Extra-amazonian flora or General flora. Lists of plants are given to show clearly that the flora of the Brazilian "Ilha da Trinidade" is similar to that of the continent and that the Brazilian general flora embraces the Amazonian flora in the north. —*A. J. de Sampaio.*

3390. SAMPSON, HOMER C. Succession in the swamp forest formation in northern Ohio. *Ohio Jour. Sci.* 30(5): 340-357. 1930.—The swamp forest formation in northern Ohio comprises several forest communities of which the willow-poplar, elm-black ash-soft (red & silver) maple, and the elm-white ash-soft maple communities have been most generally recognized. Transitional phases of the elm-white ash-soft maple community become evident by the invasion of certain secondary sp. as drainage increases. The bur oak-big shellbark hickory, red oak-linden-shagbark hickory, and the walnut-tulip-magnolia transitional phases—listed in the order of increased drainage—are recognized. Several variants of this community are also brought about by the relative abundance of these secondary sp. which reach the rank of dominants in certain habitats. Characteristic secondary communities following clearing also occur. Numerous small local differences in topography result in a mosaic of communities. The paper includes a chart of the relative abundance and range of distribution of 33 sp. of trees within the forest communities of the area surveyed.—*H. C. Sampson.*

3391. SAMPSON, HOMER C. The mixed mesophytic forest community of northeastern Ohio. *Ohio Jour. Sci.* 30(5): 358-367. 1930.—The mixed mesophytic forest community in northeastern Ohio is limited to local habitats —principally slopes—characterized by soils with a good supply of water and with good internal drainage. Slopes with heavier soils and poorer internal drainage are covered by a beech-maple community. The dryest habitats are occupied by an oak-chestnut community. The principal sp. are beech, sugar, black and red maple, tulip, magnolia, chestnut, white and red oak, and white ash. Somewhat less abundant, but decidedly more abundant than they occur as secondary sp. in the beech-maple community are red and American elm, black and white walnut, linden, black cherry, sour gum, bitternut, pignut, mockernut, and shagbark hickories. Variants are noted, particularly a dryer phase of the community in which beech and hard maple are rare to absent. The paper includes a chart showing the relative abundance and range of distribution of 34 sp. of trees within the forest communities of the region surveyed.—*H. C. Sampson.*

3392. SCHMID, EMIL. Vegetationskarte der oberen Reusstäler. [In: *Beitr. z. geobot. Landesaufnahme der Schweiz.*] 16: 64p. 1 col. map, 2 pl. 8 fig. Hans Huber: Berlin 1930. Pr. 9.50 M.—This contribution to the geobotanical survey of Switzerland consists of a map of upper Reusstäler with the vegetation climaxes in color on a contour map of the region. The principal sp. are put on the map in symbols. The floristic history of the sp. in each climax is discussed and man's part in the distribution of sp. is considered.—*B. McAvoy.*

3393. STEIGER, T. L. Structure of prairie vegetation. *Ecology* 11(1): 170-217. 26 fig. 1930.—An 800 acre tract of natural prairie near Lincoln, Neb., gave this data on the structure of prairie vegetation. The topography is rolling with little or no erosion. The mean annual rainfall is 27.9 in. of which 70% falls in the spring and summer. The soil is glacial silt loam with high water retaining capacity. Data on the hygroscopic-coefficient, moisture equivalent, plastic limits, pH values, and % of N and CO_2 were taken to a depth of 6 ft. on soil profiles of the high and low prairies. The xeric conditions of the uplands are indicated by such sp. as *Stipa spartea, Koeleria cristata,* and *Bouteloua oligostachya.* Usually there is plenty of soil water to support growth in all parts of the prairie. The temp. and relative humidity of the air during the day were the same over both high and low prairies. At night, air temp. over the upland was 8° F. less and the relative humidity 10.5% less than over the lowland. The mean soil temp. at a 6 in. depth was 2° F. higher on the upland than the lowland June-Oct. The wind velocity averaged 7.7 mi. per hr. over the uplands and 5.8 on the low. The average daily water loss was 28.4 cc. on the high and 16.7 cc. on the low prairie. The plant associations vary from wet meadows through mesophytic ravines, north slopes, and low prairies, to xeric uplands. The transitions are usually gradual. A few mesophytic herbs with trees and shrubs occupy the ravines. A transect 30 cm. wide and 100 m. long from a hilltop to the base showed the following variations: dominant grasses at top *Bouteloua gracilis* and *Sporobolus heterolepsis;* on upper slope *Andropogon scoparius;* on the lower slope *A. scoparius* and *A. furcatus;* at the base *A. furcatus.* Height of vegetation at top was 20 cm.; on upper slope 30; on lower slope 35; at base 65. The % of available water at 6 in. deep at the top was 0.2; on upper slope 1.3; on lower slope 1.3; at base 3.8. Soil temp. 6 in. deep at top was 86° F.; on upper slope 83°; on lower slope 80°; at base 73°. The yield in gm. green wt. per sq. m. at top was 336; on upper slope 551; on lower slope 887; at base 964. The wet meadow is an early stage of prairie development. More than 300 sp. from the area are listed. The place of growth and time of flowering are given for 250 sp. The anthesis for the high prairie is late May, for the low late July, and for ravines and wet meadows Aug. Quadrat studies show the order of abundance of grassy and non-grassy sp. The average yield per sq. m. air dry wt. was 215 gm. on the uplands and 391 on the low. The water content of the upper 2 ft. of soil was from 1-4.6% greater on the unmowed than on the mowed prairie. The upper layer of soil on the upland has less H_2O and a more rapid rise in temp. than the same layer of the lowland on account of the greater amount of plant debris. The absence of the upland sp. from the lowland is chiefly because of the lack of light. Light on the soil surface under a dense cover was 1-20% of that on a more open one. The usual method of propagation of prairie plants is vegetative. Of 337 plants only 10 are annual. *Andropogon scoparius* is the dominant grass on the high prairie, covering 26% of the area occupied by grasses and sedges. *A. furcarus, Poa pratensis,* and *A. scoparius*

take first rank in the low prairie covering 34, 30, and 25% of the area respectively.—*C. E. Montgomery.*

3394. **THOMSON, WALLACE A. The photo-electric cell and electric clock as a means of recording the daily hours of bright sunshine.** *Canadian Jour. Res.* 4(3): 299-303. 2 fig. 1931.—Sun's rays, falling on the cathode of a photoelectric cell, start an electric clock by the action of a relay; when sunlight ceases to fall directly on the cathode, the clock stops. Total number of hrs. and min. is thus shown, accurately, but there is no record of the time during which the sun shone.

3395. **TUORILA, PAULI. Wirkung der Kalziumkarbonat- und Schwefelsäurezugaben auf die Azidität von verschiedenen Torfarten.** *Wiss. Ver. Finnische Moorkulturver.* No. 8: 1-75. 1928.—Determinations of pH were made with the quinhydrone electrode in thick suspensions of peat in water. CO_2 was dissolved by this peat-suspension in less than 5 days, so long as the acidity remained greater than pH 6. In general the increase in pH was directly proportional to the amount of $CaCO_3$ added, one part to 100 parts of peat reducing the acidity 0.7 pH. In *Sphagnum fuscum* peats, however, the reduction was only 0.5 pH. The plant composition, degree of humification, and ash content had no appreciable effect on these results. Data are given as to the amounts of $CaCO_3$ required in field applications to yield desired pH values to a depth of 20 cm. per ha. H_2SO_4 will increase the acidity of peats, whether added in pure solution or along with superphosphate, although in the latter case secondary effects may result in ultimate return to the original acidity. There is some evidence that, especially in humus-rich soils, the yield of crops is not directly related to the pH value, but to the condition of the lime or other substances.—*E. T. Wherry.*

3396. **TURRILL, W. B. The flora of Foula.** *Bot. Soc. & Exchange Club British Isles* 8(5): 838-850. 1929.—The island of Foula is the most westerly of the Shetland group and attains an altitude of 1373 ft. Previous accounts of the flora and vegetation are very meagre. 129 sp. of Phanerogams and vascular Cryptogams are now recorded. The flora is analyzed into the following groups: aquatic and marsh sp.; sp. of sea-cliffs, rocks, and sea-strand; arctic-alpine sp.; heath-moor sp.; relicts of woodland ground flora; modified vegetation; weeds of cultivated ground; ruderals; and cultivated plants or ones escaped from cultivation. The dominant category is that of heath-moor sp. A discussion of the physiography and geology shows that the main ice-sheet of the Ice Age reached the island without completely over-riding it. On the basis of Raunkiaer's life-form system the following composition of the total vegetation is obtained: N/2 Ch/13 H/74 G/10 HH/12 Th/26. This yields the following biological spectrum calculated as a % of the whole flora: N/1.4 Ch/9.5 H/54 G/7.3 HH/8.8 Th/19. Paleontological evidence shows that the island was formerly wooded, but though climatic changes are probably concerned in the known vegetational changes it is also probable that man by using wood for fuel and by introducing domestic animals, especially sheep, may have been a subsidiary cause in the disappearance of trees in Foula. The heath-moor flora and the aquatic and marsh flora very probably survived the Ice Age in situ in places free from ice, but the arctic-alpine element was then relatively more important than it is now. Tree sp., especially birch, came in from the south as conditions became more favorable. Local topographical changes, natural succession, and small meteorological changes caused alternations of treeless heath-moor and birch woods, as well as modifications of the latter. The arctic-alpine element became reduced to mere vestiges. Finally the advent of man, the introduction of sheep, and, perhaps, increase of wind storms, destroyed all traces of natural woodland.—*W. B. Turrill.*

3397. **TURRILL, W. B. The plant-life of the Balkan Peninsula, a phytogeographical study.** xxiv+490p. 10 pl., 11 maps. Oxford Univ. Press, American Branch: New York, 1929. Pr. $10.00.—The peninsula covers 187,856 sq. miles and extends north to the head of the Adriatic and the rivers Kulpa, Sava, and Danube. A large proportion of the area is mountainous or hilly. In geological history the area was long connected with Asia Minor; local glaciation scarcely affected it. A great variety of rocks and consequently of edaphic environments exist. Mediterranean climate with hot dry summers predominates near the coast, while much of the interior shows the Central European type with no pronounced dry season. The flora includes 6530 sp., mostly Mediterranean or Central European in relation, and these determine 2 general types of vegetation. In the Mediterranean type xerophytes tend to predominate and the characteristic communities, especially at low altitudes, are sclerophyllous forest, macchie, and phrygana. The Central European type is marked by forests of oak, beech, and conifers, and by extensive areas of brush, grassland, heath, and open rock vegetation. Long occupation of the land by man has made him a very important factor in the vegetation and the great expanses of treeless areas are due to him, although their vegetation now seems to be natural. This effect has apparently extended to the evolution of sp., since the genera characteristic of open areas are highly speciated and often contain an unusually high proportion of endemics. Since the peninsula was connected with central Europe during the Ice Age, it served as an important area of refuge and many relict sp. persist. It has also been a center for sp.-making and emigration into surrounding lands. Available evidence indicates that mutation, hybridization, direct action of the environment, and change of a sp. en masse have all been concerned in evolution; for the latter type the term hamagenesis is suggested. Numerous analyses of the flora and vegetation are presented in detail. In vegetative form hemicryptophytes lead and constitute 44% of the flora, or still more where the Central European element predominates. In the Mediterranean flora annuals may amount to as much as 38%. The flowering season covers the whole yr., with its peak in June and July. A classification of habitats shows the greatest number of sp. in dry stony places (2127) and grassland (1691). The most important trees, arranged with the lowland sp. first are for the Mediterranean region *Pinus halepensis, P. pinea, Quercus ilex, Q. aegilops, Laurus nobilis, Abies cephalonica,* and *Pinus nigra;* for transitional areas *Fraxinus ornus,* various sp. of *Quercus, Aesculus hippocastanum, Juglans regia, Fagus orientalis,* and *Ostrya carpinifolia;* for the Central European region various sp. of *Quercus, Castanea sativa, Fagus silvatica, Pinus nigra, Picea omorika, P. abies,* and *Abies alba.* All communities are described in detail. The history of forest destruction from the earliest times to the present is discussed in extenso. More than 1000 sp. behave as weeds or ruderals. A brief chapter summarizes the cultivated crops, which vary widely through the peninsula. The largest families are Compositae (913 sp.), Leguminosae (545), Caryophyllaceae (418), Labiatae (371), and Gramineae (358). The largest genera are *Centaurea* (171), *Silene* (103), *Dianthus* (101), *Trifolium* (94), and *Campanula* (93). The distribution both within and beyond the peninsula is analyzed in detail. Endemics include 1754 sp., with the greatest number in Greece. The application of the Age and Area hypothesis is considered judicially within general neutral conclusions.—*H. A. Gleason.*

3398. **URBAN, OTTO. Estudios sobre la biologia de algunas plantas endémicas. [Biology of some endemic plants.]** *Rev. Chilena Hist. Nat. Pura y Aplicada* 31: 41-52. 1 pl., 4 fig. 1927(1928).—The author describes pollination and the evolution of the spur in *Tropaeolum speciosum,* pollination in *Alstroemeria aurantiaca,* and the ray and disc flowers of *Leptocarpha rivularis.*

3399. **WEAVER, J. E., and W. J. HIMMEL. The environment of the prairie.** *Conserv. Dept. Conserv. & Surv. Div. Univ. Nebraska Bull.* 5. 1-50. 1931.—The physical factors of the environment of both upland and lowland prairie have been measured at Lincoln, Nebraska, for 12 yrs. The upland is dominated by *Andropogon scoparius* and the lowland by *A. furcatus.* The soil is a deep, fertile, fine-textured silt loam of high

water-holding capacity and is circumneutral in reaction. It readily absorbs water and the subsoil is moist to great depths. Upland grass roots penetrate 2-5+ ft. and those of the lowland approximately 3-10 ft. The roots are thus more extensive than the parts above ground. The mean annual precipitation is 28 in. of which nearly 80% falls during the growing season. Periods of drought are liable to occur at any time and especially after mid-summer. Water-content in the surface 6 in. of upland soil varied widely and rapidly, often 10% or more during a single week. It was reduced to less than 5% 1-4 times during 11 of the 12 yrs., but only twice to the hygroscopic coefficient. Available water-content in the 6- to 12-in. soil layer exceeded 5% ¾ of the time, but fell to 2-3% at 17 different intervals. At no time was the water available for plant growth entirely exhausted. In the 2nd, 3rd, and 4th ft. the water-content was less variable. In general, there was a gradual decrease in the supply with the advance of the summer. This was frequently temporarily interrupted, especially in the 2nd ft., by heavy rains. The available supply usually was 5-15%. The maximum was 21% and a few times the minimum fell to 1-3%. On the lowland available water-content was 3-10% greater in the surface foot and often 5-11% in excess of that of the upland in the deeper soil. Average day air temp. sometimes reached 90° F. but were more usually 75°-85°. They were usually 10° or more higher than those for the night. Soil temp. showed a daily variation of 15° to 18° F. at 3 in. but only 1° to 3° at 12 in. Temp. of air and soil during the long growing season are well within the ranges critical for plants of the prairie and are probably of secondary importance. The average day humidity varied between 50-80% during yrs. of greater rainfall but fell frequently to 40-50% during drier yrs. Low humidity nearly always occurred during periods of low water-content of soil and usually also during periods of high temp. Wind movement was fairly constant and often high. It is an important factor in promoting water loss. Evaporation varied greatly from year to year. It rarely fell below an average weekly loss of 10 cc. per day and was usually 20-30 cc., but during periods of drought it sometimes reached 40-55 cc. High evaporation was correlated with low humidity and both of these with low water-content of soil. Water-content of soil and humidity are the master factors of the environment of the prairie. The climax vegetation is remarkably well adapted to these water relations.—*J. E. Weaver.*

3400. **WILCZEK, ERNEST, GUSTAVE BEAUVERD, et DANIEL DUTOIT. Le comportement écologique du** Bromus erectus Beibl. [Ecological behavior of B. erectus.] *Vierteljahrsschr. Naturforsch. Ges. Zürich* 73(15): 469-508. 1928.

3401. **WILSON, ERNEST H. Plant hunting.** Vol. 1: 29+248p. pl. 1-62. Vol. 2: 9+276p. pl. 63-127. The Stratford Co., Boston. 1927. Pr. $15.00.—The author, who from 1899 to 1922 traveled over a large part of the world in quest of plants, presents in this book a vivid description, mainly from a horticultural point of view, of the vegetation of the regions he visited. The work is divided into 4 parts: South and Central Africa, Australia and New Zealand, the Tropics, and the Orient. The account of each region is preceded by a short history of its discovery and especially of the exploration of its flora, with biographical sketches of the earlier prominent plant collectors. The general features of the vegetation are discussed, the more remarkable and ornamental plants enumerated and briefly described in non-technical language. The numerous plates, mostly reproductions of photographs taken by the author, picture the most striking and important plants or in a few instances represent general views of the vegetation or portraits of plant collectors.—*A. Rehder.*

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*

W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 3198, 3244, 3251, 3384, 3488, 3725, 4532, 4630, 4639, 4640, 4649, 4677, 4687, 4691, 4693, 4800, 4828, 4865, 4940, 5012, 5013, 5020, 5024, 5029, 5037, 5041, 5045, 5046, 5487, 5633, 5656)

DISEASES CAUSED BY FUNGI

3402. **ATWELL, E. A. Occurrence of Cadophora fastigiata in Canada.** *Phytopath.* 21(7): 761. 1931.—*C. fastigiata* was isolated from stained sapwood of *Picea canadensis, Pinus strobus, P. banksiana,* and *Pseudotsuga taxifolia.* In culture, the organism produced an intense grey-green stain on sapwood blocks of *Pinus strobus* and *P. resinosa,* but less intense on *Picea mariana.*—*W. A. Whitney.*

3403. **AYYANGAR, C. RANGASWAMI. Study of a Fusarium isolated from wilted plantains.** *Madras Agric. Dept. Year Book* 1929: 16-21. 1 pl. 1930.—Cultural characters on maize agar, malt-extract agar, and French bean agar are described. Both micro- and macroconidia are produced, the latter being very rare. The fungus was identified as *F. cubense* var. *inodoratum.*

3404. **[BONDARTSEVA-MONTEVERDE, V. N., and N. I. VASIL'EVSKI.]** БОНДАРЦЕВА-МОНТЕВЕРДЕ, В. Н., и Н. И. ВАСИЛЬЕВСКИЙ. Аскохитоз гороха и других бобовых. **[Ascochytose in the pea and other leguminosae.]** [With English summary.] Болезни Растений [*Bolezni Rastenii*] 19(1/2): 8-11. 1930.—Besides *Ascochyta pisi* and *Mycosphaerella pinodes,* a *Mycosphaerella* differing in culture from *M. pinodes,* and an *Ascochyta* differing from *A. pisi* and *A. pinodella,* were isolated from peas.—*From authors' summary.*

3405. **BRAUN, HANS. Der Wurzeltöter der Kartoffel,** Rhizoctonia solani K. *Monographien zum Pflanzenschutz (Morstatt) No. 5.* 136p. 17 fig. Julius Springer: Berlin, 1930.—A monograph of the organism and the disease it produces, treated under the general headings of economic importance, systematics of *R. solani,* geographical distribution of the organism, host plants, symptoms, morphology and physiology of *R. solani,* relation of host and parasite, and control. An 11-p. bibliography is appended.—*W. A. Whitney.*

3406. **BROOKS, A. N. Anthracnose of strawberry caused by Colletotrichum fragariae, n. sp.** *Phytopath.* 21(7): 739-744. 3 fig. 1931.—Strawberry anthracnose has been found under field conditions mainly on runners and occasionally on petioles. The disease has been observed only in the strawberry-growing area of central Florida. It is characterized by dark brown to black lesions on the runners and causes considerable damage by girdling them and preventing the development of new plants. The causal fungus is *C. fragariae** (p. 742). Bordeaux 4-4-50, applied at 10-day intervals during the summer, checks the spread of the disease, but will not completely control it because of the abundant rainfall at that time.—*Author's summary.*

3407. **BUISMAN, CHRISTINE J. Een wortelziekte van Calla, veroorzaakt door een Phytophthora-soort.** *Tijdschr. Plantenziekten* 33(2): 17-22. 1 pl., 2 fig. 1927. —*Phytophthora* richardiae* (p. 17) was isolated from the roots of diseased callas, and was shown by infection experiments to be pathogenic. As a method of control treatment of the corms with 1:49 formalin for 1 hr. is recommended.—*From author's summary.*

3408. **DANA, B. F., and S. E. WOLFF. The occurrence of violet root rot in central Texas.** *Phytopath.* 21(5): 557-558. 1 fig. 1931.—The following are reported as hosts for *Rhizoctonia crocorum: Ambrosia aptera, Diapedium brachiatum, Malvaviscus drummondii, Melia azedarach,*

Morus sp., *Parthenocissus quinquefolia, Phytolacca decandra, Rhus radicans, Rulac texana, Salix, nigra, Sambucus canadensis, Smilax bona-nox, Solanum elaeagnifolium, Verbesina virginica,* and *Viola missouriensis.* The perfect stage, *Helicobasidium purpureum,* was also found. —*W. A. Whitney.*

3409. **EDGERTON, C. W. Entyloma meliloti McAlpine in Louisiana.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(4): 31. 1931. [Mimeographed.]—This smut observed on *Melilotus indica* in sugar-cane since 1929 is increasing in severity.—*W. A. Whitney.*

3410. **[EDGERTON, C. W., J. G. GAINES, and N. E. STEVENS.] Downy mildew of tobacco.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(4): 32. 1931. [Mimeographed.]—Edgerton reports a severe epiphytotic of *Peronospora hyoscyami* in Louisiana during March and April, the first record from this state. Gaines and Stevens found the disease also in Coffee, Colquitt, and Tift Counties, Georgia.—*W. A. Whitney.*

3411. **FRITZ, EMANUEL, and LEE BONAR. The brown heart rot of California redwood. Part I. Notes on the development of the causal fungus, by EMANUEL FRITZ. Part II. The etiology of the causal fungus, by LEE BONAR.** *Jour. Forest.* 29(3): 368-380. 7 fig. 1931. —I. Sporophores of *Poria sequoiae* have been found associated with the common brown heart rot of redwood. They require moderately cool and even temp. and a high relative humidity for their best development, and they may be quickly spoiled by molds [*Penicillium* spp.] after wetting by rain. Sporophores were found in hollow butts, in a rift crack, and on log ends; the latter type occurs only where logs lie very close together, end to end. This is the most destructive disease in redwood, causing a loss of 12-15% of the merchantable part of a stand. Though it does not kill trees, it weakens them mechanically and promotes the spread of fire in the trunk, causing many trees to fall during fires. It commonly enters through fire scars. A dry rot, similar to this brown heart rot, was found, but the connection between them was not established.—II. A brief description is given of *Poria* sequoiae* (p. 377) together with experimental and observational proof of its causal relation to brown heart rot.—*I. from author's summary; II. W. A. Whitney.*

3412. **HURST, R. R. Late blight and rot of potatoes caused by the fungus Phytophthora infestans (Mont.) de Bary.** *Dept. Agric. Canada Bull.* 119. 3-13. 2 col. pl., 6 fig. 1929.—A general treatise on the disease and its control.

3413. **JENKINS, ANNA E. Additional data on the range and prevalence of Lima-bean scab.** *Phytopath.* 21(5): 559. 1931.—Mexico is added to the range that includes Cuba and Porto Rico as the only other stations. *Elsinoe canavaliae* is responsible.—*W. A. Whitney.*

3414. **LEPAGE, E. Le mildiou en Anjou en 1930. [Grape mildew in Anjou, France, in 1930.]** *Progrès Agric. et Vitic.* 95(3): 65-69. 1931.

3415. **LIESE. Der Kienzopf auf der Choriner Provenienzfläche.** *Zeitschr. Forst- u. Jagdw.* 62(12): 836-838. 1930.—In the experimental plantations, stock from southern France exhibited greatest susceptibility to blister rust (*Peridermium pini*), Scotch stock somewhat less, and that from Brandenburg next, while other lots from various geographical localities remained relatively clean. In 1926, about 300 artificial inoculations were made on trees all but 4 of which were clean; 3 yrs. later, infection was most successful on previously diseased trees. The fungus can exist as a true parasite only on well-developed and thrifty shoots, not on undernourished, sickly sprouts. The pathogen does not exhibit racial specialization as other rusts do. Inoculation of healthy trees was without effect. The results point to an individual variation of susceptibility and immunity, and it appears probable that susceptibility is heritable.—*J. Roeser, Jr.*

3416. **"McGINTY, ALOYSIUS T." [WESTON, WM. H., Jr.] Professor McGinty re Pharmacien Frechou.** *Phytopath.* 21(7): 760-761. 1931.—Critical note on the history of *Sclerospora graminicola* antedating 1876 (see also this issue, Entry 5046). A plea for "more attention to strict accuracy in the details of their publications rather than to imaginative speculations as to the activities of pharmacists long since dead." In an appended note, WILLIAM H. WESTON, Jr., accepts the criticism.—*W. A. Whitney.*

3417. **[MILOVTSOVA, M. A.] МИЛОВЦОВА, М. А. Образ жизни и история развития Taphridium umbelliferarum Lagerh. et Juel.** (Предварительное сообщение.) **[Development of T. umbelliferarum.]** [Preliminary report.] [With English summary.] Болезни Растений [*Bolezni Rastenii*] 19(1/2): 15-22. 9 fig. 1930.—The author describes the life cycle of *T. umbelliferarum* on caraway (*Carum carvi*). The source of the primary infection is spores formed the previous year, which germinate at the end of summer or may over winter. The parasite usually affects the first leaves close to the roots, after which the plant grows normally. Development of the fungus has been observed under natural conditions and in pure culture. Inoculations on *Carum* gave positive results.—*Author's summary.*

3418. **MORITZ, OTTO. Studien über Nectriakrebs. [Studies on Nectria canker.]** *Zeitschr. Pflanzenkr. Pflanzenpath. u. Pflanzenschutz* 40(5): 251-261. 1930.—The "perthophytische" [E. Münch] virulence of 22 *Nectria* spp. investigated was found to differ markedly. No correlation between species and virulence was observed, nor any evidence of specialization. Strains which were "perthogen" on *Malus,* were equally so on other very different trees. On this basis, as a pathogenic principle an agent harmful to all cells and as a resistance principle a high rate of regeneration are postulated. In testing fruit tree varieties for canker resistance strains of known average virulence should be used. Infection of uninjured stems was successful on trees kept under very moist conditions.—*Author's summary (transl. by I. Mounce).*

3419. **NANNFELDT, J. A. En skadesvamp å Mahonia, Uropyxis mirabilissima, stadd i stark spridning. [Rapid spread of a parasitic fungus on Mahonia.]** [With English summary.] *Bot. Notiser* 1930(5): 371-379. 1930.—*Uropyxis mirabilissima* is known to occur in Scotland, Germany, Denmark, Finland, Norway, and Sweden. In Sweden it is found at Malmö, Linköping, Upsala, and Västerås. It is probable that the fungus was introduced into Germany before 1914. It is chiefly dispersed by diseased plants sold from nurseries.—*Author's summary.*

3420. **OGILVIE, L., and B. O. MULLIGAN. A leaf spot disease of lettuce due to Pleospora herbarum.** *Gard. Chron.* [*London*] 89(2298): 35. 1 fig. 1931.—An apparently undescribed disease, common in the west of England. The organism (imperfect stage=*Macrosporium sarcinula*) and the disease are briefly described.—*W. A. Whitney.*

3421. **PILÁT, ALBERT. Nová sypavka na tisech v Čechách—Sphaerulina taxi (Cooke) Pilát. [A new species of Sphaerulina on yew in Bohemia.]** [Bohemian, with French résumé, p. 419-420.] *Lesnická práce* 5(9): 409-420. 4 pl. 1 fig. 1926.—The fungus infects the leaves of yew one by one to such an extent that very few healthy leaves are to be found. The disease shows up at the beginning of the summer; in the autumn and winter the aspects of the trees do not change, but in the following spring the fungus begins to grow and in the summer and autumn perithecia are formed. The invaded leaves at first become dark green, then lighter and yellowish, occasionally taking on an intense red or orange color. A key to the Mycosphaerellaceae is given. The organism is *S. taxi* (p. 414) (*Sphaerella taxi;=Metasphaeria t.*).—*A. Pilát (transl. L. Shaw).*

3422. **RUDOLPH, B. A. Verticillium hadromycosis.** *Hilgardia* 5(9): 197-353. 4 pl., 9 fig. 1931.—In California a great group of widely unrelated plants (such as stone fruits, bush fruits, truck crops, ornamentals and weeds) may become affected with hadromycosis caused by a single species of *Verticillium.* The common practice of interplanting young stone fruit orchards with tomatoes is deprecated, as the tomato is very susceptible, readily contracts the disease and passes it on to the trees. A

digest of the world's literature on the subject of *Verticillium* hadromycosis has been prepared, together with a sufficiently comprehensive bibliography and a history of the disease in over 130 plant species. The paper is designed as a source of ready reference for plant pathologists.—*B. A. Rudolph.*

3423. **SCHAFFNER, JOHN H.** Injurious fungus parasite of Equisetum. *Amer. Fern Jour.* 21(2): 75. 1931.—*Stamnaria americana* has done much damage to *Equisetum praealtum* near Columbus, Ohio.—*C. A. Weatherby.*

3424. **[SCHULTZ, Z. M.]** ШУЛЬЦ, З. М. О грибках, наблюдающихся на семенах при их прорашивании. [Fungi found on germinating seeds.] [With German summary.] Главный Ботанический Сад, Записки по Семеноведению (*Jard. Bot. Princ. USSR., Ann. Essais Semences* [*Leningrad*]) 7(2): 51-57. 1930.—The author lists the fungi (parasitic and saprophytic) found in or on economic seeds and doing injury to the seeds or resulting seedlings during the years 1924-29.—*W. Crocker.*

3425. **SMITH, ERNEST C.** Trametes hispida a destructive parasite in apple orchards. *Mycologia* [*New York*] 22(5): 221-222. 1 pl. 1930.—*T. hispida* was observed on a living apricot tree and on living apple trees in Colorado.

3426. **TAUBENHAUS, J. J., and WALTER N. EZEKIEL.** Late blight on tomatoes in the lower Rio Grande valley of Texas. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(6): 53-54. 1931. [Mimeographed.]—Unusual weather conditions, spreading *Phytophthora infestans* from potato to tomato, explain the serious outbreak of late blight, which in some fields in Cameron County attacked 80% of the crop and averaged 50%. Only traces of the disease were found in the 2 adjoining counties, and none at all in northeast, east, and east central Texas.—*W. A. Whitney.*

3427. **TISDALE, W. B., and R. F. WADKINS.** Brown spot of tobacco caused by Alternaria longipes (E. & E.) n. comb. *Phytopath.* 21(6): 641-660. 5 fig. 1931.—A leaf spot disease of bright (flue-cured) tobacco, commonly known as brown spot, has been prevalent for several yrs. in the Florida-Georgia tobacco districts. The disease first appears on the lower leaves as small spots which rapidly enlarge and become brown. If the spots are numerous, coalescence takes place and the entire leaf may turn brown. Under very favorable conditions the disease spreads rapidly to the upper leaves and causes a complete loss of the crop. Tobacco is the only known susceptible plant, and very little difference in the susceptibility of the different varieties of bright tobacco has been noted. The organism hibernates on the stalks which remain in the fields. Proof of pathogenicity has been established by numerous inoculation experiments. Infection occurs by direct penetration of the epidermal cells, and through stomata, wounds being unnecessary. The organism produces catenulate spores, comparable in size to *Macrosporium longipes,* and the character of the spots is almost identical. Because of catenulate spore formation, however, the name *A. longipes** (E. & E.) n. comb. (p. 653) is proposed. The minimal temp. for infection is about 20-22°C. Medium infection was produced when the average temp. was 23-25°, and severe infection at 26.5°C. and above. The optimum temp. for development on culture media was 25-28°, the maximum is near 34-35°C. Maximal amount of growth on potato-dextrose agar was secured at pH 5.5. There was a slight decrease in growth with pH values 6.0 and 6.5, but an increase again with pH 7.0 and 7.5. The stalks of tobacco should be cut and turned under immediately after the crop is harvested to minimize the source of inoculum the following year. Good fertilization, together with crop rotation and frequent cultivation, is advisable. The leaves should be primed when they reach the proper stage of maturity.—*Authors' summary.*

3428. **TOCHINAI, YOSHIHIKO, and SHOICHI SHIMADA.** Sporotrichum narcissi sp. n. parasitic on narcissus bulbs. *Trans. Sapporo Nat. Hist. Soc.* 11(3): 121-127. 1 fig. 1930.—A diseased condition of *Narcissus pseudo-narcissus* was observed in Tokio in the spring of 1930. Affected plants were stunted and barren, the foliage reaching a height of only 3-6 cm. above ground. Adjacent *Crocus* plants were similarly affected. The bulbs of both plants were invaded by a fungus which consumed the fleshy scales and produced dark green acervuli on the surface. Internally the rot spread along the surface of the scales, but not across them except in advanced stages. Even slightly affected plants were weak and barren. 2 slightly different fungi, both of the type of *Sporotrichum,* were isolated from cultures of diseased parts. One of these agreed in general with *S. radicicolum,* described as a saprophyte or weak parasite on the roots of various plants. This is the first record of its occurrence in Japan. The other form differed in general appearance and effects on the bulbs, and also in morphological features in artificial cultures, and is described as *S.* narcissi* (p. 124). Inoculation experiments confirmed the pathogenicity of both species for injured narcissus bulbs, infection occurring through wounded leaves or bulb scales. *S. narcissi* was the more virulent.—*F. Weiss.*

3429. **TUNSTALL, A. C.** Vegetable parasites of the tea plant. Blights on the root. *Indian Tea Assoc. Quart. Jour.* 1930(1): 28-36. 1930.—The author describes blight caused by *Fomes lamaoensis, F. applanatus, F. lucidua,* and *F. lignosus.*—*W. A. Whitney.*

3430. **WORMSER, G., et H. BARAT.** Une maladie de l'Hevea en Cochinchine. *Rev. Path. Vég. et Ent. Agric.* 17(2): 15-20. 2 pl. (1 col.) 1930.—An anthracnose on *Hevea* stems, causing hypertrophy of lenticels and browning of the bark, results from joint infection by a *Gloeosporium* and *Botryodiplodia theobromae.*—*J. Dufrenoy.*

3431. **ANONYMOUS (Published by NORDISKE JORDBRUGSFORSKERES FORENINGS FJERDE CONGRESS).** Potatiskräftproblemet inom de skandinaviska länderna. [Potato wart problem in Scandinavian lands.] (*Beretning Nordiske Jordbrugsfor. Foren. Fjerde Kongr. Helsingfors, July* 1929). *Nordisk Jordbrugsforskning. Hefte* 4/7. 531-554. 2 maps. 1929.—The following papers are included: Potatiskräftan i Sverige. [Potato wart in Sweden] by **TH. LINDFORS;** Potetthreften i Norge. [Potato wart in Norway.] by **IVAR JØRSTAD;** Potatiskräftan i Finland. [Potato wart in Finland] by **J. IVAR LIRO;** Bekaempelsen af Kartoffelbrok (Synchytrium endobioticum) i Danmark [Control of potato wart in Denmark] by **O. NIELSEN.** Discussion of papers follows.

DISEASES CAUSED BY BACTERIA

3432. **ALLEN, T. C.** Bacteria producing rot of apple in association with the apple maggot, Rhagoletis pomonella. *Phytopath.* 21(3): 338. 1931.—The characteristic decay accompanying the work of the "railroad worm" is attributed to a pink bacterium (unnamed) which appears to be distributed by the adult fly and spread by the larva. The bacterium has been isolated from the adult apple-maggot fly.—*W. A. Whitney.*

3433. **BRYAN, MARY K.** Color variations in Aplanobacter michiganense. *Phytopath.* 21(5): 559. 1931.—A shell-pink variant of the tomato canker organism is briefly described. It is characterized by its color and slightly lower virulence yet produces typical cankers. As previously reported, a white strain developed from the normal yellow organism, but the pink strain has thus far remained unchanged.—*W. A. Whitney.*

3434. **BRYAN, MARY K.** Bacterial canker of tomato reported from Mexico. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(3): 20. 1931.—[Mimeographed.] *Aplanobacter michiganense* reported for the first time from Mexico.

3435. **EMERY, HENRI, et HENRI PRAT.** Étude d'une tumeur du chrysanthème cultivé (Pyrethrum sinense Sab.=Chrysanthemum indicum L.). [Chrysanthemum tumor.] *Bull. Mens. Soc. Nation. Hort. France* 4(Avril): 182-193. 4 fig. 1931.—In addition to a general discussion of the subject, and comparison with witches' broom, the authors conclude, as a result of inoculation experiments with *Bacterium tumefaciens,* that the tumors remain localized, but are perpetuated by cuttings.

3436. **[KOKHANOVSKAÏA, L.]** КОХАНОВСКАЯ, Л.

Исследования над эпидемической рябухой махорки. ["Ryabookha," an epidemic leaf spot disease of Nicotiana rustica.] Труды Детскосельской Акклиматизационной Станции при Ленинградском Сельско-Хозяйственном Институте (*Bull. Sta. Acclim. Leningrad Agric. Inst. Detskoe Selo*) 11. 1-10. 2 pl. 1930.—A leafspot of *Nicotiana rustica*, which is called locally "ryabookha," has appeared in epidemic form at the time of topping the crop. The disease has been especially severe in recent years and reduced considerably the commercial value of makhorka (*N. rustica*). The causal agent is a grayish-white unipolar flagellate, which liquefies gelatine slowly, and does not form spores or reduce nitrate. It is gram-negative and is non-acid fast. Average size 1.8μ×0.5μ. Culturally and morphologically it is very similar to *Pseudomonas tabaci* (*Bacterium tabacum*), differing from them by its slight ammonia formation and by its behavior in milk cultures. With pure cultures of this organism the typical disease was reproduced in the greenhouse and in the field. A list of susceptible species of *Nicotiana* and varieties of *Nicotiana rustica* is given.—*From author's summary.*

3437. **TAKIMOTO, SEITO.** A soft rot of sugar beet and its causal organisms. [In Japanese, with English summary.] *Ann. Phytopath. Soc. Japan* 2(4): 350-356. 1931.—This disease occurs in Heijô, northern Korea, and causes a yellowish soft rot with a characteristic odor. The causal organism is described as *Bacillus* betivorus (p. 356). Inoculation experiments proved it pathogenic on carrot root, radish root, potato tuber, and tomato fruit.—*From author's résumé.*

3438. **WELLENSIEK, S. J.** De vatbaarheid voor slijmziekte van 32 geïmporteerde aardappelrassen. [Bacterial wilt-disease susceptibility of 32 imported potato-varieties.] [With English summary.] *Landbouw* [*Buitenzorg*] 6(6): 698-702. 1930.—The susceptibility to bacterial wilt (*Bacterium solanacearum*) of 32 potato varieties, imported from Holland, was investigated by artificial and natural inoculations, of which the latter only gave satisfactory results. All varieties were susceptible, though Botergele (no. 7) and Dauer Rages (no. 10) contract the disease in a late stage of development and are to this extent less susceptible.

DISEASES CAUSED BY PHANEROGAMS

3439. **HARTLEY, ISAAC, and HOLMES ELLIS.** Can Lathraea squamaria have a saprophytic existence? *North Western Naturalist* 6(1): 29-30. 1931.—7 new hosts are recorded: *Fagus sylvatica, Larix decidua, Almus rotundifolia, Sambucus nigra, Ilex aquifolium, Urtica dioica,* and *Rumex obtusifolius.* The discovery of numerous active haustoria penetrating dead and decaying roots in 2 widely separate stations supports the conviction that *Lathraea* may be capable of existing as a saprophyte.

3440. **TUBEUF [v.].** Die zahme Kastanie als Wirt von Viscum album und Loranthus europaeus in Italien. [Chestnut as host of V. album and L. europaeus in Italy.] *Zeitschr. Pflanzenkrank. (Pflanzenpath.) u. Pflanzenschutz* 41(4): 202-203. 1931.

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

3441. **GODFREY, G. H.** The host plants of the "burrowing" nematode, Tylenchus similis. *Phytopath.* 21(3): 315-322. 4 fig. 1931.—The edible canna (*Canna edulis*) and sweet potato are added as new hosts of importance. Symptoms on these are irregularly shaped, dark brown to black spots from a few mm. to 5 cm. in diam. and 2-10 mm. deep. Roots are likewise affected, as with the previously known hosts. The presence of the lesions hastens decay in storage. Symptoms on nut grass (*Cyperus rotundus*), a previously reported host, are similar. *T. similis* has not been found in the pineapple. Control measures are suggested.—*Author's summary.*

3442. **GODFREY, G. H.** Some techniques used in the study of the root-knot nematode, Heterodera radicicola. *Phytopath.* 21(3): 323-329. 2 fig. 1931.—Root-knot susceptible cowpeas, grown in warm, heavily infested soil, develop an abundance of superficial egg masses. These are removed and "incubated" separately on slides or in Syracuse dishes; thus freshly hatched larvae suitable for laboratory studies are obtained. For large-scale operations, roots containing egg masses in abundance are incubated in bulk and larvae are obtained by the millions.—*From author's summary.*

3443. **GODFREY, G. H.** Nematology observations on station experiment No. 15. *Pineapple Quart.* [*Hawaii*] 1(1): 50-52. 1931.—A summary of nematode infestation readings for pineapple "fallow field" plots for the entire inter-cycle period showed survival until planting time in all plots; and data from all plots after 16 months in pineapples showed no decrease in infestation for the fallow plots.

3444. **GODFREY, G. H.** Tylenchus dipsaci on Hypochaeris radicata in Hawaii. *U. S. Dept. Agric., Bur. Plant Indus., Plant Dis. Reptr.* 15(6): 59-60. 1931. Also in *Phytopath.* 21(7): 759-760. 1 fig. 1931.—Notes on the occurrence of this nematode in the flower heads.—*W. A. Whitney.*

3445. **KEMNER, N. A.** Potatisnematoden och dess framträdande i Sverige. [The potato nematode and its importance in Sweden.] (Beretning Nordiske Jordbrugsfor. Foren. Fjerde Kongr. Helsingfors, July 1929). *Nordisk Jordbrugsforskning* Hefte 4/7. 560-567. 1929.

3446. **MOSZYŃSKA, MARJA.** Galasy (zoocecidia) drzew i krzewów półwyspu Helskiego. [Zoocecidia of trees and shrubs of Hela peninsula, Poland.] [French résumé.] *Kosmos* [*Lwów*] 55(1/2): 273-292. 1930.—Of the 80 spp. listed, the following are new for Poland: On *Acer pseudoplatanus, Eriophyes macrorrhynchus cephaloneus* (Acarina); on *Almus glutinosa, Jaapiella clethrophila* (Cecidomyidae); on *A. incana, J. clethrophila* and *Eriophyes bistriatus typicus;* on *Betula pubescens, Hamamelistes betulinus* (Aphidae); on *B. verrucosa, H. betulinus, Anisostephus betulinum* (Cecid.), *Chaitophorus annulatus* (Aphid.), *C. tricolor, Eriophyes laevis lionotus,* and *Plemeliella betulicola* (Cecid.); on *Picea engelmani, Chermes abietis* (Aphid.), recorded on this host for the first time; on *Pinus nigra, Evetria buoliana* (Lepidopt.), and *E. resinella,* both new for this host; on *Pinus rigida, E. buoliana,* new for this host; on *Pinus silvestris, Adelges corticalis* (Aphid.); on *Populus nigra, Chaitophorus leucomelas;* on *Rubus plicatus, Amphorophora rubi* (Aphid.); on *Salix cinerea, Pontania joergenseni* (Tenthredinidae) and *P. leucaspis;* on *Salix daphnoides, Euura laeta* (Tenthr.), *Pontania puellia,* and *P. piliserra.*

3447. **PAINTER, R. H.** A study of the cotton flea hopper, Psallus seriatus Reut., with special reference to its effect on cotton plant tissues. [*U. S.*] *Jour. Agric. Res.* 40(5): 484-516. 7 fig. 1930.—The anatomy and histology of the alimentary tract and associated glands of the cotton flea hopper, *P. seriatus,* are described. Of especial interest are the salivary glands with their complicated accessory glands, the salivary pump and pharyngeal pump. A peculiar gland was also found at the base of the labrum, communicating with the pharynx through 10 openings in the chitinous roof. The salivary secretion in the glands contained bodies suggestive of parasites. In a study of the cotton, the plant cells on which the insects have fed are emptied of their contents or show signs of disintegration of nucleus and chloroplasts. The surrounding cells often contain great numbers of small round bodies. The swellings resulting from the bite of the hoppers show an enlargement of the cells and a displacement of the tissue elements. Certain cells are filled with granules or homogeneous material which suggests a developing parasite. Fresh cotton from Mississippi, Louisiana and Texas on which the hopper had fed was found to contain in the cells similar material to that found in preserved specimens. Moving, oval, shining bodies were found in cells near which the hopper had recently fed.—*R. H. Painter.*

3448. **[STEINER, G.] Tylenchus pratensis parasitizing yams [Dioscorea sp.] from West Africa.** *U. S. Dept.*

Agric. Bur. Plant Indust. Plant Dis. Reptr. 15(3): 21. 1 fig. 1931. [Mimeographed.]

3449. **[STEINER, G.] Tylenchus dipsaci found on new host.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(3): 21. 1931. [Mimeographed.]—Identified from specimens of Sweet William (*Dianthus barbatus*) from Portland, Oregon.—*W. A. Whitney.*

3450. **SZULCZEWSKI, J. W. Wyrośle (zoocecidia) Gdyni i okolicy. [Animal galls of Gdynia and vicinity.]** [German summary.] *Kosmos [Lwów]* 55(1/2): 249-272. 1930.—The author lists 214 cases of galls found on various plants in July. Few of the galls were numerous, but those caused by Hymenoptera were noticeably rare. Some forms may have succumbed during the previous severe winter. Abundance of *Philaenus spumarius* (Cicada) in the woods explained the discovery of 4 new galls caused by it, on *Maianthenum bifolium, Fragaria vesca, Glechoma hederacea,* and *Tragopogon pratensis.* The following more or less numerous forms are characteristic for the vicinity: malformation on *Papaver rhoeas* caused by *Aylax papaveris;* galls of *Didyomyia reaumurianus* (Diptera) on *Tilia cordata;* blossom malformation on *Erigeron acer;* blossom galls on *Tanacetum vulgare* caused by *Rhopalomyia tanaceticolla;* stem-thickening on *Thlaspi arvense* caused by *Ceuthorrhynchus contractus;* galls of *Epiblema lacteana* (Lepidoptera) on *Artemisia campestris.*—*From author's summary.*

3451. **THORNE, GERALD. Aphelenchus helophilus, a new parasite of Lilium sargentiae [in New York].** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(6): 60-61. 1931. [Mimeographed.]

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

3452. **BEWLEY, W. F. The nature of the virus principle in mosaic disease.** *Nature [London]* 127(3203): 442. 3 fig. 1931.—Experiments with *Aucuba* mosaic virus of tomatoes indicate that the virus is of the bacteriophage type.

3453. **BOLAS, BERNARD D., and W. F. BEWLEY. Aucuba or yellow mosaic of the tomato: a note on metabolism.** *Nature [London]* 126(3178): 471. 1 fig. 1930.—The mosaic infection results in mottled distribution of the starch.

3454. **CALDWELL, JOHN. The physiology of virus diseases in plants. I. The movement of mosaic in the tomato plant.** *Ann. Appl. Biol.* 17(3): 429-443. 1 pl. 1930.—Sections of the stem in the middle of tomato plants were killed either by chloroform or steam, leaving the upper and lower parts of the plant connected by dead stem tissue. The xylem elements were not materially affected and water traveled across the dead tissue since the portion above the dead stem remained turgid. When inoculated with mosaic, however, symptoms appeared only in the portion of the plant inoculated and the virus did not pass through the dead stem. There was no evidence of occlusion of the xylem vessels nor of adsorption of the virus by cell remains, since eosin and Chinese ink in solution passed to the upper portions of the plant. It is therefore assumed that the virus did not travel in the xylem stream. Inoculation of uninjured plants showed no localization of movement of the virus such as would be expected if it were passing through the vascular system. It is concluded that the virus movement takes place through the living ground tissue of the plant.—*S. P. Doolittle.*

3455. **DOBROSCKY, IRENE D. Studies on cranberry false blossom disease and its insect vector.** *Contr. Boyce Thompson Inst.* 3(1): 59-83. 11 fig. 1931.—The leafhopper, *Euscelis striatulus,* was found to carry cranberry false blossom. Adults of this species collected in apparently healthy bogs did not transmit the disease. A description of the disease together with an account of the life history and habits of the insect vector are given. A cytological study of the salivary glands and alimentary tract of *Euscelis striatulus* revealed no differences between healthy and viruliferous individuals nor was any foreign organism found that could be associated with the disease. A survey of leafhoppers found in cranberry bogs includes 44 species. Insect experiments to transmit the disease with *Phylloscelis atra, Gypona octolineata,* and *Platymetopius magdalensis* were unsuccessful. Transmission experiments with viruliferous individuals of *Euscelis striatulus* on *Vaccinium corymbosum* failed. *Euscelis striatulus* is parasitized by a species of dryinid and a species of pipunculid, neither of which is an important factor in control. Control measures suggested consist in reduction of insect vector by flooding the bogs and also by application of pyrethrum-soap sprays.—*A. Hartzell.*

3456. **DUFRENOY, J. Maladies à virus du tabac.** *Phytopath. Zeitschr.* 2(4): 321-339. 12 fig. 1930.—Normal tobacco cells, when observed under the ultramicroscope in the living condition, show the nucleus as a whitish body, and the surfaces between the cytoplasmic strands and the vacuoles as bright lines. The cytoplasm itself and the vacuolar solutions show no bright micellae; they are optically empty, and may be considered to be in the gel state. Mitochondria may be discerned in the cytoplasmic strands, their content also being in the gel state. So also are the plastids, the contour of which only becomes bright on the dark field, except when they contain oil droplets, which appear very brilliant. Bright oil droplets also show in the cytoplasm itself. In virus affected cells, some areas in the cytoplasm appear whitish under the dark field, indicating coagulation of the cytoplasmic material. Striated bodies consisting of protein crystals may develop in these areas of coagulated cytoplasm, which appear very bright on the dark field. "X-bodies" or "vacuolated bodies" are coagulated areas of cytoplasm where the lipo-protein constituents of the cytoplasm split into fat droplets and amino acids; some of the latter go into solution in the vacuolar contents, whereas some may crystallise into striated bodies.—*J. Dufrenoy.*

3457. **ELZE, D. L. The relation between insect and virus as shown in potato leaf roll, and a classification of viroses based on this relation.** *Phytopath.* 21(6): 675-686. 1931.—Experiments on the spread of leaf roll from the varieties Bevelander, Green Mountain, Rural, New Yorker, and Irish Cobbler to the varieties President, Duke of York, and Red Star by the aphids, *Aphis rhamni, A. fabae,* and *Myzus persicae,* and the flea beetle, *Psylloides affinis,* show that *M. persicae* infected all 22 plants, *A. rhamni* 13, *A. fabae* 6, and *P. affinis* 8 plants. The low transmitting power of *P. affinis* is ascribed to the fact that insects with cutting mouth parts can cause infection only through the virus residue that may accidentally adhere to the mouth parts. With the aphids and other Hemiptera, on the contrary, the differences are explained by the assumption that the virus taken with the food is more or less destroyed by the organs of the insect, according to the degree of adaptability of the virus to the insect. This assumption is corroborated by the facts that *M. persicae* and *M. solanifolii* do not lose their transmitting power when molting and that the percentage of virus-bearing individuals that are able to transmit the disease is nearly the same before and after the molt. Under similar conditions the transmitting power of *M. persicae* was much greater than that of *M. solanifolii.* Based on the relation of virus diseases to insects, a classification (p. 684) is given whose major divisions are (1) viroses not spread by insects, (2) those spread by different insects and not especially adapted to any one, and (3) those that are adapted to particular insects.—*Author's summary.*

3458. **HEUBERGER, J. W., and A. J. MOYER. Influence of mosaic infection on tomato yields.** *Phytopath.* 21(7): 745-749. 1931.—Experiments showed that early infections cause the greatest reduction in yield and that a direct relationship exists between the time of infection and the amount of reduction in yield. The earliest infections caused a reduction of over 50% in yield, while the latest infection caused a reduction in yield of 1.9% in 1927 and 11.2% in 1930.—*From authors' summary.*

3459. **HOLMES, FRANCIS O. Local lesions of mosaic**

in Nicotiana tabacum L. *Contr. Boyce Thompson Inst.* 3(2): 163-172. 3 fig. 1931.—Inconspicuous yellowish local lesions, comparable to distinct necrotic local lesions previously described in other hosts (*B. A.* 3 (9/11): Entry 17669) are described as occurring at the site of inoculation with extracts of tobacco mosaic plants on leaves of *N. tabacum* var. Turkish. The affected tissues contained more or less starch than the surrounding normal tissues. Staining with iodine served to make the lesions easily conspicuous. Inoculated plants were removed from sunlight and held in darkness 16 hr. at 10° C. and about 8 hr. at 22° C.; they lost starch from normal tissues sooner than from lesions; the lesions were rendered conspicuous by staining with iodine in KI solution. The affected tissues were found to contain much virus, whereas nearby normal green portions of the same leaves contained no demonstrable quantities of virus. The lesions served to indicate the numbers and locations of points of infection in this host.—*F. O. Holmes.*

3460. **KUNKEL, L. O. Studies on aster yellows in some new host plants.** *Contr. Boyce Thompson Inst.* 3(1): 85-124. 50 fig. 1931.—The experimental transmission of aster yellows to 120 new host species in 30 families is reported. The most striking symptoms on each host plant are described. 15 of these are families to which the disease had not previously been transmitted. The following families are represented by the hosts here reported: *Caryophyllaceae, Moraceae, Chenopodiaceae, Nyctaginaceae, Aizoaceae, Ranunculaceae, Papaveraceae, Cruciferae, Rosaceae, Limnanthaceae, Datiscaceae, Cistaceae, Loasaceae, Onagraceae, Umbelliferae, Plumbaginaceae, Primulaceae, Apocynaceae, Polemoniaceae, Hydrophyllaceae, Boraginaceae, Labiatae, Solanaceae, Scrophulariaceae, Gesneriaceae, Acanthaceae, Plantaginaceae, Valerianaceae, Campanulaceae,* and *Compositae.* Aster yellows was not transmitted mechanically by means of juice from diseased tissues to any plant. The disease was carried to all host plants except the tomato by means of *Cicadula sexnotata.* It was transferred to the tomato by budding. Some other plants to which aster yellows was not transmitted after repeated exposure to virus-bearing colonies of *C. sexnotata* are potato, tobacco, peach, celery and *Zinnia elegans.*—*L. O. Kunkel.*

3461. **LINFORD, MAURICE B. Yellow-spot disease of pineapples transmitted by Thrips tabaci Lind.** *Science* 73(1888): 263. 1931.—Experimental evidence was obtained that *T. tabaci* is a major vector operating in the field occurrence of a destructive disease of pineapple plants in Hawaii and that this insect carries the virus to pineapple from certain weeds, of which *Emilia flammea* now appears most important. Preliminary evidence indicates that certain plants other than *Emilia* may be sources of the yellow-spot virus. The feeding of this insect upon pineapple plants appears to be incidental, and it is probable that any natural transfer of the virus from pineapple to pineapple is uncommon.

3462. **LOJKIN, MARY, and CARL G. VINSON. Effect of enzymes upon the infectivity of the virus of tobacco mosaic.** *Contr. Boyce Thompson Inst.* 3(2): 147-162. 1931.—Several purified preparations of the virus and also the untreated juice expressed from diseased tobacco plants were incubated with various enzyme preparations. Under the conditions of the experiments emulsin, pepsin, and yeast extract did not reduce the infectivity. The trypsin preparation showed marked inactivating effect on all purified preparations. Papain was especially effective in inactivating the virus in neutral phosphate solution. The erepsin preparation was effective only after an incubation period of several days. None of the enzyme preparations used was effective in inactivating the virus in untreated juice, from either frozen or fresh plants. Inactivation of the virus was not due to adsorption or to the production of inactivating substances. —*C. G. Vinson.*

3463. **MERKENSCHLAGER, F., (with the collaboration of M. KLINKOWSKI). Zur Biologie der Kartoffel. II. Zur Pathologie der Blattrollkrankheit. [Biology of the potato. II. Pathology of the leaf-roll disease.]** *Arb. Biol. Reichsanst. Land- u. Forstw.* 17 (4): 345-376. 2 pl., 9 fig. 1929.—The degeneration of the potato is held to be an ecological reaction. Leaf roll, which is only one of the manifestations of degeneration, is a pathological increase of an ordinary function. It is characterized by an abnormal state of water balance. The number of functional stomata is greatly reduced. A comparison of the transpiration curve in normal and rolled leaves shows that at first the normal leaf loses water more rapidly. Later this relation is reversed, a fact attributable to the loss of stomatal regulatory power in the diseased leaf. A comparison is made between the leaf rolling which is due to cold, maturity, acid soil, nutritional deficiency, etc., and that characteristic of the leaf-roll disease, and the conclusion is reached that all are fundamentally an expression of water deficiency. In the leaf-roll disease, in the narrow sense, the leaf-rolling tendency has become irreversible. The critical period for the leaf-rolling tendency to become fixed is at the appearance of flowers and the inception of tuber formation. Soil moisture, atmospheric humidity, and temperature are the determining factors in the regulation of the water balance. The infiltration test as a method of demonstrating the condition of the stomata shows whether a potato variety is in its optimum environment. The diverse contributions to the knowledge of leaf roll growing out of 30 years' investigation of the subject are reviewed. It is stated that the matter of transmissibility of a virus as the causal agent of leaf roll is disputed by most investigators. Inheritance of leaf roll through tubers is attributed to the effect of the disease on the colloids of the mother tuber.—*F. Weiss.*

3464. **QUANJER, H. M. The methods of classification of plant viruses, and an attempt to classify and name potato viroses.** *Phytopath.* 21(6): 577-613. 8 fig. 1931.—A standard named collection of potato-virus material from the leading workers of the Old and the New World being available, a new basis was sought for the classification and nomenclature of the viroses of the potato. The principle has been followed that a potato virus should be identified, named and classified after the morbid effect it has on a potato variety that shows clearly definable internal symptoms. For international agreement on nomenclature, a stock of the same differential varieties should be grown in a virus-free state at all research stations where potato virus studies are in progress. One of the best differential hosts is the variety Paul Krüger, called President, in England. The following is proposed as an international nomenclature for the potato diseases of the virus type: (1) anecrotic mosaics (the result of later work may be that some of the members of this section must be classed under one or more of the groups of necrosis); (2) phloem necrosis (containing one disease—leaf roll, or as inoculation-symptom in tubers of Green Mountain, net necrosis); (3) acronecrosis (or top necrosis, a disease produced by "healthy-potato virus" occurring in most of the American standard varieties and in a Scotch and a French variety); (4) acropetal necrosis (containing rugose mosaic and a part of all diseases hitherto called crinkle and streak); (5) phloem-parenchyma necrosis of the tuber-pseudo-net-necrosis (no foliage symptoms of this disease which is perpetuated by the seed tubers); (6) and concentric necrosis of the tuber (no foliar symptoms of the disease, which is not perpetuated by the seed tubers, infection taking place through the soil via the lenticels). Short descriptions of the histological features characteristic for each of the 6 groups are given.—*From author's summary.*

3465. **RANKIN, W. HOWARD. Virus diseases of black raspberries.** *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 175. 1-24. 1931.—A synonymy of the raspberry virus disease names is given, the following being recommended: leaf-curl alpha type, leaf-curl beta type, severe streak, mild streak, red (raspberry) mosaic, and yellow mosaic. The name mild mosaic may be retained for a small dot-like type of mottling, but its virus nature, if it is separable from red (raspberry) mosaic, is

doubted. The symptoms of these diseases are given as they appear in black varieties of raspberries. Results of inoculations, using the 2 known aphid vectors, are given. The rate of spread of yellow mosaic, mild streak, and red mosaic (including "mild mosaic") is given for an experimental planting containing the varieties Plum Farmer, Cumberland, and Ohio. Red mosaic is shown to be very rapid in its spread. Yellow mosaic spreads slowly, apparently due to the early dwarfing and death of the plants reducing the number of sources of spread. Mild streak spreads rapidly in the variety Ohio. Correlation in the variety Plum Farmer between "mild mosaic" and red mosaic in the same plants indicates that they are phases of the same disease as shown by a susceptible variety. The Cumberland is an exception to most black varieties in that the necrotic symptoms are often suppressed to a point where they are scarcely detectable. The suppression of the necrotic symptoms in Cumberland is believed to explain the original description of "mild mosaic" on that variety as a distinct disease.—*W. H. Rankin.*

3466. **RAWLINS, T. E., and W. T. HORNE. "Buckskin," a destructive graft-infectious disease of the cherry.** *Phytopath.* 21(3): 331-335. 2 fig. 1931.—"Buckskin," a disease of sweet cherries in northern California, is characterized by more or less conical fruits that fail to mature and which develop a dull buckskin appearance on the surface of the blossom end. During autumn the leaves on infected portions of the tree show a peculiar orange to maroon coloration along the base of the midrib and extending out along the lateral veins. Diseased trees show considerable variation in vigor. In grafting experiments (examination previously revealing no visible organism), the disease was transmitted to the healthy trunk and to healthy scions in a large proportion of the trees in which diseased Napoleon scions had been grafted. Of 27 trees treated, 12 showed distinct symptoms of the disease in the fruit on either the healthy scion or the trunk, 6 showed slight symptoms, and 7 appeared to be healthy. All diseased Napoleon scions that bore produced diseased fruit. However, 3 diseased Tartarian scions which bore fruit produced healthy fruit and in only one case was there any evidence of transmission by a diseased Tartarian scion. On the other hand, no difficulty was experienced in transmitting the disease from diseased Napoleon scions to healthy Tartarian trunks and healthy Tartarian scions. The variety known locally as "Long Stem Bing" has not been observed to take the disease.—*W. A. Whitney.*

3467. **SALAMAN, REDCLIFFE N. Virus disease of the potato: Streak.** *Nature* [*London*] 126(3172): 241. 1930.—2 strains of virus causing streak disease of potatoes, designated as streak A and streak B, are differentiated by their reactions in standard healthy varieties.

3468. **SMITH, KENNETH M. Thrips tabaci Lind. as a vector of plant virus disease.** *Nature* [*London*] 127 (3214): 852-853. 3 fig. 1931.—Experiments have shown that *T. tabaci* can transmit the virus of ringspot disease of *Solanum capsicastrum, Datura,* and tobacco, the spotted wilt of tomato, and a virus disease of *Dahlia.* Inoculations from dahlias to tobacco and *Datura* suggest that these diseases are the same.

3469. **SREENIVASAYA, M. Masking of spike-disease symptoms in Santalum album (Linn.).** *Nature* [*London*] 126(3190): 957. 1930.—Infected plants may show no external symptoms until injury, loss of leaves, or light pruning brings out typical symptoms.

3470. **STOREY, H. H. The inheritance by a leafhopper of the ability to transmit a plant virus.** *Nature* [*London*] 127(3216): 928. 1931.—Certain *Cicadulina* (*Balclutha*) *mbila* individuals are capable of transmitting streak disease of maize, while others of the same species are not. These characteristics may be fixed by selective breeding. The character of "activity" is dominant to that of "inactivity."

3471. **ZUNDEL, GEORGE L. New or unusual symptoms of virus diseases of raspberries.** *Phytopath.* 21(7): 755-757. 3 fig. 1931.—"Fern leaf"—a symptom not unlike that on tomatoes (cucurbit mosaic)—and a witches'-broom type of growth are reported from Pennsylvania. The latter may be an unusual manifestation of the streak virus.—*W. A. Whitney.*

NON-PARASITIC DISEASES AND TERATOLOGY (INCLUDING DISEASES OF UNKNOWN CAUSE)

3472. **CHESTER, KENNETH S. Graft-blight of lilac.** *Jour. Arnold Arboretum* 11(4): 232-233. 1930.—See following abstract.

3473. **CHESTER, KENNETH S. Graft-blight: a disease of lilac related to the employment of certain understocks in propagation.** *Jour. Arnold Arboretum* 12: 79-146. 4 pl. 1931.—A disease observed throughout the U. S. A. and other countries where varieties of *Syringa vulgaris* are grown and propagated. The diseased plants show symptoms of chronic nutritional deficiency and are short-lived. That the practice of grafting the lilac on understock of *Ligustrum,* chiefly *L. ovalifolium* (California Privet), is the cause of this disease had been suspected by lilac growers, but not hitherto proved experimentally. The author now shows by experiments that the disease is abiotic and non-contagious, and is due to incompatibility between the privet understock and the lilac scion. The immunological differences between stock and scion were studied; precipitin tests between normal plants of genera and species of Oleaceae showed no, or occasionally a slight, reaction, while tests of grafted and blighted lilac scions against the various stocks showed distinct precipitin reactions. The control of graft blight is discussed and the own-root method of propagation strongly recommended.—*A. Rehder.*

3474. **COIT, J. ELIOT. Sun-blotch of the avocado, a serious physiological disease.** *Yearbk. California Avocado Assoc.* 1928: 27-29. 3 fig. 1928.—The presence of pendulous branches together with a rough and scaly condition of the bark; yellowish depressed streaks on the twigs and young branches or irregular, white, yellow, reddish yellow, or red sunken areas on the fruit, usually accompanied by dwarfing or marked distortion of shape, characterize the malady produced as the direct result of sunburn as affecting weak or spindling trees or those suffering from neglect. Trees in a thrifty condition do not contract the disease, nor do healthy trees older than 6-8 yr. The direct incidence of sunlight on the bark in which sap is not moving rapidly, is thought to cause this chimeric condition.—*W. A. Whitney.*

3475. **GRÄSER. Zur Frage des Tannensterbens. [The problem of the fir disease.]** *Forstwiss. Centralbl.* 53(3): 91-106; (4): 117-136. 8 fig. 1931.—The reasons for the extensive dying of *Abies pectinata* in central Europe are discussed, as well as possible remedial measures. The disease is not prevalent where site conditions and composition of the stand are particularly well suited to fir, as in Switzerland, the Carpathians, and certain German forests. In Saxony, where the disease is most widespread, conditions are particularly unfavorable, due in part to the practice of growing spruce in practically pure, even-aged stands. The woolly aphids (*Dreyfusia piceae* and *D. nüsslini*) can not be the primary cause, because fir thrives on good sites even with the aphids present, but dies on poor sites or where grown in dense, even-aged stands even though aphids are absent. Firs with abnormally shallow roots and small crowns suffer the most, especially in drought years. In uneven-aged, mixed stands both roots and crowns are more likely to be normal.—*W. N. Sparhawk.*

3476. **MacMILLAN, H. G. Turgescence and rupture of potato tuber.** *Phytopath.* 21(6): 701-703. 1931.—Newly made cracks of various shapes and sizes on potato tubers grown under irrigation, supplemented by unusually high moisture conditions due to additional rainfall, are caused by the rupture of the super-turgid tuber. As the affected tubers in this condition dried down, the tendency to "explode" decreased until at the end of 8 days no rupturing occurred. Tubers showing this phenomenon averaged 218.03 gm. in weight when taken from the field and in 8 days lost 13.4 gm.—*W. A. Whitney.*

3477. **MARILL, S. Notes sur la "tache jaune" du liège.**

Bull. Stat. Rech. Forest. Nord de l'Afrique 1(8): 331-335. 1 col. pl. 1926.—The "yellow spot" disease attacks and degrades the cork bark of *Quercus suber* in Algeria after the trees are 10 yr. old. If the cork is harvested completely at 9-10 yr., the disease will disappear.—*J. Kittredge, Jr.*

3478. **MARTIN-SANS, E. Fascies chez le Fraxinus excelsior L. Quelques remarques sur la fasciation.** *Bul. Soc. Bot. France* 76(7/8): 740-757. 2 fig. 1929.—2 cases of fasciation are described and discussed as modifications of the normal symmetry of the plant. The theoretical causes of fasciation such as disturbed nutritional conditions, and the disturbance of the dominance of the terminal bud due to various physical and chemical factors, are discussed.—*H. H. Clum.*

3479. **RICHARDS, B. L., and C. M. TOMPKINS. The late blight of the sugar beet.** *Phytopath.* 21(3): 289-314. 4 fig. 1931.—This non-parasitic disease is characterized primarily by an abrupt collapse of the leaf tissue and may not be accompanied by the dry rot (*Phoma betae*), which attacks the root only after its resistance is seriously impaired. Under conditions of continued drought it may not follow leaf blight as an important feature. Late blight in Utah is correlated in its occurrence with abnormally low precipitation during June, July, and August. Experience has shown that late blight can be induced locally in any season by cultural practices, which result in poor tilth and low soil fertility. Excessive alkalinity, high calcium, and high organic content of the soil, especially combined with moisture deficiency, appear as intensifying factors. The exact nature and cause of late blight remain obscure. Control is a complex problem and methods vary for each type of soil and locality.—*Authors' summary.*

3480. **TUCKER, LOWELL R., and GLADYS BOEHM TUCKER. The effects of russet and sunburn on quality and culinary properties of the Italian prune.** *Proc. Amer. Soc. Hort. Sci.* 27: 233-236. 1930(1931).—Russeting caused the storage of a high percentage of sugar and acid in the tissue of the affected area. At the same time the amount of pigment formation in the skin was very low. The flavor was of high quality but the scars injured the appearance for canning and drying. Since these scars do not show in other forms of utilization affected fruit is well suited to other uses. Results indicate that prunes injured 10% or more with russet or sunburn and not seriously deformed in shape should be placed in the U. S. No. 2 grade.

3481. **WILSON, J. D., and H. A. RUNNELS. Bordeaux mixture as a factor increasing drouth injury.** *Phytopath.* 21(7): 729-738. 2 fig. 1931.—The moisture content of the soil in the wood lots became low in June and at certain times then and in July approached the wilting-point value. This factor, combined with dryness of the air, frequently resulted in a severe desiccation of the leaves. Incipient wilting occurred, but plants which had not been sprayed were able to recover before permanent wilting was followed by death. The presence of the Bordeaux film caused increased water loss.—*From the article.*

3482. **ZIMMERMAN, P. W., and WILLIAM CROCKER. Sulphur dioxide injury to plants.** *Proc. Amer. Soc. Hort. Sci.* 27: 51-52. 1 pl. 1930(1931).—Injury resulted from 3-4 parts per million of SO_2 for 1-4 hrs. in tomato, *Coleus*, rose, *Abutilon, Galensoga, Potentilla, Oxalis*, chickweed, nasturtium, geranium, sweet geranium, *Salvia*. Injury resulted from 4-8 parts per million for 3-5 hr. in castor bean, *Sorbus aucuparia*, snapdragon, peach, *Ilex opaca*. Injury resulted from 8-10 parts per million for 4 hr. in carnation, gardenia and rhododendron. The following were resistant to 60 parts per million (except *Cymbidium*, in which the leaves were spotted): *Cymbidium, Oncidium, Cattleya, Odontoglossum, Lilium rubrum.*—*Authors' summary.*

DISEASE RESISTANCE AND PARASITISM

3483. **AJON, GUIDO. Aspetti chimici del malsecco. [Chemical aspects of citrus-blast.]** *Riv. Ital. Essenze e Profumi* 12(10/11): 226-236, 253-262. 1930.—Citrus-blast (*Deuterophoma tracheiphila*) on the lemons of western Sicily follows disturbance of the physiological equilibrium as the result of changes in the mineral nutrition of the trees. Analyses of the leaves, twigs, wood, and bark of diseased and healthy trees have shown a notable deficiency of Ca and Mg in the diseased trees, with an unusually large content of Fe, Cl, SiO_2, P_2O_5 and SO_3. If the ash constituents are calculated as their equivalents of acid and alkali, the balance is strongly basic in the diseased plants. This "balance of equivalence" may prove a useful diagnostic aid in determining susceptibility to disease.—*G. Ajon (transl. by H. S. Wolfe).*

3484. **APPEL, O., und A. SCHEIBE. Beobachtungen über die Verbreitung der einzelnen Getreiderostarten in Deutschland, insbesondere im Jahre 1930. [Grain rusts in Germany, 1930.]** *Mitteil. Deutsch. Landw. Ges.* 46(4): 61-63. 1931.—A survey of the occurrence and prevalence of cereal rusts was made in various provinces in Germany in 1930, seed inspectors collecting samples of diseased leaves, culms, and heads for microscopical and cultural identification. In the 577 rust samples examined, the percentage of each kind of rust was: dwarf rust (*Puccinia simplex*) on barley, 10.34; orange rust (*P. glumarum tritici*) on wheat, 7.16; orange rust (*P. glumarum hordei*) on barley, 3.98; brown rust (*P. dispersa*) on rye, 19.16; leaf rust (*P. triticina*) on wheat, 37.67; stem rust (*P. graminis secalis*) on rye, 5.67; stem rust (*P. graminis tritici*) on wheat, 11.67; black rust (*P. graminis avenae*) on oats, 0.77; stem rust on barley (*P. graminis tritici*), 0.27; and crown rust (*P. coronifera*) on oats, 3.24. As a result of the early onset of summer temp., the 1930 season was chiefly a leaf rust season. Dwarf rust on barley occurred throughout Germany; orange rust on wheat occurred nowhere in large quantities; orange rust on barley attained only a small prevalence; and leaf rust on rye and wheat attained wide prevalence in all Germany. Stem rust attacked late varieties of winter and spring wheat, but heavily only in designated districts. Crown rust of oats was also found chiefly on late varieties.—*L. R. Tehon.*

3485. **ARNAUD, G., et M. GAUDINEAU. Le traitement de la carie du blé. [Continuation.]** *Ann. Sci. Agron.* 47(1): 4-56. 5 fig. 1930.—The majority of dust treatments were generally more effective in the spring, while liquid treatments were best in the fall. Certain varieties were more susceptible to treatment injury in the spring. Copper oxychloride was the best dust treatment used. The presence of inert material lessened the value of the copper dusts. The salts of mercury were the most efficient wet treatments, but their use is prohibited by the French legislature because these salts are poisonous. Copper salts were best for highly contaminated seed. The recommended method consists of steeping for 1 hr. in a 0.5% solution of $CUSO_4$, followed after draining by powdered dry lime. The use of copper solutions for "sprinkling," steeping in copper solution followed by treatment with unslaked lime, and steeps for short durations were unsatisfactory. Copper fluosilicate in a low concentration (0.5%) has shown promise and merits further trial. Bordeaux mixture with casein gave variable results. Copper solutions in oil were unsatisfactory. Formaldehyde and hot water were not studied. The varieties "Red Hussar" and "Martin" proved to be entirely immune. Polish wheat is quite resistant. "Ardito précoce" and "Carlotta Strampelli," though somewhat resistant, are not sufficiently so to warrant dispensing with treatments. The wheats "Prolifique nain" and "Bon Fermier" are quite susceptible to the disease.—*From authors' summary (transl. by E. N. Bressman).*

3486. **BARKER, J. The prevention of wastage in New Zealand apples.** *Gr. Brit. Dept. Sci. & Indust. Res. Food Invest. Spec. Rept. No.* 39. 1-26. [1930].—The wastage in commercial shipments of New Zealand apples in 1928 and 1929 was due chiefly to fungal rotting, and to a lesser extent to bitter pit, internal breakdown, soft scald, and freezing. Split-consignment experiments showed that each of these forms of wastage was markedly affected by temp. during shipment. Wastage from fungal rotting

and from bitter pit (in Cox's Orange Pippins) was greater the higher the temp. in transit, while internal breakdown and soft scald occurred at temp. which, though slightly above the freezing point of the fruit, was still too low for the varieties concerned. For the best results, rapid reduction of the temp. after loading, and the maintenance of a uniform temp. close to the optimum low value thereafter, are essential. The survey of the temp. in the various holds used in the experiments showed that these conditions are seldom attained. The reduction of temp. in the early part of the voyage is generally slow, and the differences in temp. between different parts of the hold in the later part of the voyage are large. The efficiency of certain 'tween-deck holds fitted with improved systems of refrigeration is noted and discussed. It is pointed out that the temp. range for storage and oversea transport accepted as most suitable for particular varieties of apples is not always correct. The effects on the different forms of wastage of certain pre-shipment and post-shipment factors, such as time of picking, delay before shipment, pre-cooling, and delay in marketing, are considered in the light of the split-consignment experiments. Special emphasis is laid on preventing the shipment of over-mature fruit and on providing increased facilities for cold storage at the ports, both for pre-cooling and to minimize the effects of delay pending shipment. A note is included on over-ripeness in pears.—*From author's summary.*

3487. **CURZI, MARIO, e MARIA BARBAINI. Intumescenze e Cladosporium pisi sui legumi di Pisum sativum. [Intumescences and Cladosporium pisi on Pisum sativum.]** *Atti Ist. Bot. R. Univ. Pavia. Ser.* 3. 3: 91-105. 1 pl. 1926.—This disease, heretofore attributed to *Cladosporium pisi,* exhibits pathological manifestations caused by the disturbance of the plant functions. The hypertrophies attributed to *C. pisi* are neither caused nor influenced by any parasitic agent. Various hyphomycetous saprophytes develop on the dead cells of the intumescences, among which the most common is *Cladosporium* sp., which, although preceded by other very common molds, develops vigorously on a layer of dead cells without damaging the living cells of the overgrowth. *C. pisi* is identical with and synonymous to *C. herbarum.* The swellings begin on the stomata and develop especially in the parts where a greater deposit of nutritive substance (ventral suture) or an afflux of water is present. Their development also takes place in naturally or artificially curved cavities of the seed pods, where there is a compression of tissues and a decreased surface for respiration, perhaps an entire closure of the stomata. The formation of the intumescence may be influenced by the variety or vigor of the plant, its age, or the development of the seed pods. Atmospheric moisture is one of the external conditions which influence the development of the intumescence. Temp. and, to a limited extent, light have an influence upon the development of the swellings under identical conditions of moisture. Hypertrophy of this kind may also develop under complete absence of light.—*C. Zeimet.*

3488. **EDDINS, A. H. Pathogenicity and cultural behavior of Ustilago zeae (Beckm.) Ung. from different localities.** *Phytopathology* 19(10): 885-916. 7 fig. 1929.—All multisporidial cultures of *U. zeae,* including the 12 cultures derived from smut galls from different localities in Iowa, and the 5 cultures isolated from 1 smut gall, differed in their pathogenicity on inbred lines of maize. *U. zeae* is regularly heterothallic and 1 monosporidial culture behaved as if homothallism also occurs in the organism. When 5 monosporidial cultures were mated, they were found to represent 4 sex strains of *U. zeae.* Paired multisporidial cultures were generally more virulent than the individual cultures comprising them. Conidia of *U. zeae* retained their ability to produce smut when exposed to winter temp. and cultures of the organism lost their ability to produce smut galls when repeatedly transferred. Hypodermic injection of the inoculum into young tissues of corn plants resulted in a higher percentage of smut infection than did dropping the inoculum on the apical buds. When the latter method was used in the greenhouse, more smut was produced on plants with open apical buds than on those with closed buds. Both methods of inoculation gave a higher percentage of smut infection in the greenhouse than in the field. Colonies of *U. zeae* from the same and different cultures differed from each other in their cultural characteristics.—*Author's summary.*

3489. **GOLDSWORTHY, M. C., and RALPH E. SMITH. Studies on a rust of clingstone peaches in California.** *Phytopath.* 21(2): 133-168. 10 fig. 1931.—A severe epiphytotic of a rust-fungus disease of peaches occurred in the principal canning-peach districts of central California in 1926 and 1927. Serious economic loss was caused by disfiguration of the fruit, which ruined it for canning purposes, as well as by defoliation of the trees. The uredinial stage of the organism was the only one observed. Overwintering of the fungus depends mainly on twig infections which originate in the fall, remain latent and invisible through the winter, and then develop as uredinial sori in early spring. The fungus was also carried over to a certain extent by overwintering of older sori on twigs of the previous season, and by renewed production of urediniospores in spring from such sori. Subsequent infection of leaves and fruit depends upon the presence of sufficient inoculum and the occurrence of periods of several days of rainfall and high humidity. For the germination of urediniospores a period of at least 3 hr. in a saturated atmosphere is necessary. The viability of urediniospores attached to living leaves is limited to a period of about 6 weeks but on dried leaves the spores are somewhat shorter lived. Urediniospores of the peach-rust fungus germinated over a range of temp. between 8° and 38°C. The optimum is between 13° and 26°C. Best growth of the germ tubes was observed at about 22°C. Sulphur and sulphur compounds were found to be more toxic than copper to the germinating urediniospores. Mineral oil seemed to stimulate germination. The identity of the fungus with relation to the prune-rust fungus, *Tranzschelia punctata,* is discussed. In the present instance no spore form other than the uredinial was found on the peach, and the fungus did not attack trees of other *Prunus* spp. (prune, cherry, almond, apricot), even when growing immediately adjacent to badly infected peach trees. In the Santa Clara Valley, California, the telial stage of the prune rust usually develops very abundantly on the leaves of prune trees, in the late fall, but the same fungus was not found on adjacent peach trees.—*Authors' summary.*

3490. **HAMMARLUND, C. Mahonia-rosten, Puccinia (Uropyxis) mirabilissima Peck.** [With English summary.] *Lustgården* 11: 59-80. Map. 3 fig. 1930.—See next entry.

3491. **HAMMARLUND, C. Rostsvampar på Mahonia (Puccinia mirabilissima Peck och P. graminis Pers.). [Rust fungi on Mahonia.]** *Bot. Notiser* 1930(5): 380-407. 4 fig. 1930.—*Puccinia (Uropyxis) mirabilissima,* found on an American species of *Mahonia* in Scotland in 1922, has since been found in Sweden (about 1924), Denmark (1925), Germany, and Holland. It was detected in Limhamn in Scania (1926), but up to the end of 1928 was only known in 4 localities. Since 1928, the fungus has spread rapidly until now there are more than 100 stations throughout southern and middle Sweden. Spread by transplanting infected plants is known in only a single case. In all others old plants, sometimes 10-20 yrs. old, were infected. In 33 localities infection occurred in 1929-30. In the south there were severe snow storms that winter; these, supposedly, favored dispersal. The fungus is winter-hardy. Uredospores, kept at −10 to −20° C. for a month, maintained their germinative power. Minimum temp. for development of the fungus is only a few degrees above 0°C. (optimum about 8-12°C., maximum about 20°C.). Even at a comparatively low temp. the fungus is able to infect leaves of *Mahonia.* In the spring of 1930 aecidia occurred in all investigated localities besides uredo-teleutospores. The author carried out 2 series of infection experiments in which aecidi-

ospores were transferred to leaves of *M. aquifolium*. In the 1st, all 10 inoculated branches and the same number of control branches were covered for 3 weeks by pergamine paper. The inoculated leaves developed numerous red spots but for a time no uredosori, but these sori appeared later. Control branches remained healthy. In the 2nd series many uredosori of *P. mirabilissima* were observed. All controls remained healthy. The author considers the abundant occurrence of aecidia in the spring of 1930 to be associated with the exceptional prevalence of teleutospores as compared with the preceding year. Aecidia of *P. graminis* from leaves of *Berberis vulgaris* and from *Mahonia* leaves showed marked morphological differences, indicating that the 2 rusts are distinct. The aecidium on *M. aquifolium* is referred to *P.* (*Uropyxis*) *mirabilissima*.—*H. K. Svenson.*

3492. **HEY, G. L., and J. E. CARTER.** The effect of ultra-violet light radiation on the vegetative growth of wheat seedlings and their infection by Erysiphe graminis. *Phytopath.* 21(6): 695-699. 1931.—With American Club and Little Joss, 1 min. of irradiation a day for 15 days gave increased growth but only slightly reduced the percentage of infection; while irradiation for 3 min. a day for 15 days reduced growth and greatly reduced the percentage of plants infected by mildew. When irradiation ceased the plants again became infected. In the case of Persian Black, the effect on growth was not so marked, and its immunity from mildew was not affected. It is possible to render the plants free from mildew without causing any visible harmful effects on the seedlings themselves. The effect of irradiation twice a day seems greater than irradiation for the same total time once a day.—*From authors' summary.*

3493. **HOLTON, C. S.** The relation of physiologic specialization in Tilletia to recent epiphytotics of bunt in durum and marquis wheats. *Phytopath.* 21(6): 687-694. 1 fig. 1931.—The virulence of 4 collections of *T. tritici* and 2 collections of *T. levis* was compared on 10 varieties of *Triticum*. The results with *T. tritici* confirmed those already published. The recent epiphytotics of bunt in durum wheats are caused by a physiologic form which has not been prevalent until recent years. Vernal, previously resistant, is now susceptible to bunt, because of the appearance of a form of *T. tritici* previously unknown. 2 physiologic forms of *T. levis* were identified on the basis of their reaction on Kota, Ceres, Marquis, and Marquillo. The St. Paul, Minnesota, collection represents one form which is distinguishable by its high degree of virulence on Kota and Ceres and low virulence on Marquis and Marquillo. The collection from Ivanhoe, Minnesota, represents another form which attacks Marquis and Marquillo, as well as Kota and Ceres, with a high degree of virulence. Field observations have confirmed the experimental evidence. Under field conditions *T. levis* is the predominant species on Marquis and *T. tritici* on Mindum and Vernal. The experimental results show that Marquis is susceptible to *T. levis* and highly resistant to *T. tritici*, while the reverse is true with Mindum and Vernal.—*From author's summary.*

3494. **IMMER, F. R., and J. J. CHRISTENSEN.** Further studies on reaction of corn to smut and effect of smut on yield. *Phytopath.* 21(6): 661-674. 1931.—The larger the galls on the stalks, the greater was the reduction in yield of shelled corn. Large or medium-sized smut galls on the stalk above the ears did greater damage than galls of similar size below the ears. Susceptible lines of corn tend to have a greater number of smut galls to the plant and larger galls than resistant lines. The reduction in yield in shelled corn resulting from large, medium, and small galls on stalks was 50, 25, and 10%, resp. Selfed lines that differ greatly in resistance to smut can be obtained in all varieties of corn used in breeding work at University Farm, Minnesota. 15 lines of corn inbred for at least 8 yr. reacted in a very similar manner for each of the 6 different years when grown in an epiphytotic of smut. In 1928 and 1929 the extent of infection of numerous lines grown in the field, in which smut collections from University Farm only were used, was correlated with the smut infection obtained in a different field where smut collections were from a wider source. The correlation coefficients were 0.47, 0.03, 0.75, and 0.02, resp. The smut infection of 34 F_1 crosses was compared with that of the parents. Crosses between 2 resistant lines were fairly resistant, although they were more severely infected than the parents. A composite cross was made of 7 low-smut lines and of 1 medium-smut line. From a study of 299 F_3 lines selected at random 87% were no more susceptible than the most susceptible parent. The results indicate that composite crosses will undoubtedly yield smut-resistant lines in a large percentage of cases.—*Authors' summary.*

3495. **JANKOWSKA, KRYSTYNA.** Spostrzezenia nad grzybem szklarniowym (Moniliopsis aderholdi Ruhl.). [Observations on M. aderholdi.] [With English summary.] *Pam. Państw. Inst. Nauk. Gospod. Wiejskiego Puławach* (*Mém. Inst. Nation. Polonais Écon. Rur. Puławy*) 11(1): 60-69. 1 pl., 1 fig. 1930.—In *M. aderholdi*, which caused heavy damage to seedlings of begonia, petunia and lobelia in greenhouses, but little specialization was found as to substratum either under natural conditions or in pure culture. Variations in mycelial development were not large over a pH range of 5.4-6.8; 25°C. was optimum and 6-7° minimum for development in culture. It probably lives as a harmless saprophyte and becomes noxious only at high temp. and humidity, such as occur in greenhouses. Pseudosclerotia enable the fungus to survive periods of dryness or cold. They may germinate even when 1 yr. old, though less readily than when fresh.

3496. **JOHNSON, C. O., and E. B. MAINS.** Relative susceptibility of varieties of sorghum to rust, Puccinia purpurea. *Phytopath.* 21(5): 525-543. 7 fig. 1931.—Rust was found on sorghums as far north as La Fayette, Indiana, and Manhattan, Kansas, in 1927. The disease was also seen on sorghums in Oklahoma in the same year. Kafirs and sorgos seem to be moderately susceptible, while the feteritas are very susceptible and the milos very resistant. Both resistant and susceptible varieties were found in kaoliang and broomcorn. In the field shallu proved to be highly resistant in all years, while white durra was susceptible. Several unnamed grass sorghums, Johnson grass, Tunis grass, and Sudan grass proved to be susceptible, while several other unnamed sorghums were resistant. Pronounced purpling accompanied uredinia on most varieties, but none was observed in shallu CI 85, white durra CI 81, and Leoti Red FCI 6610, and "Japanese Honey Drip" KB 2896 sorgos. These varieties apparently lack factors governing the development of red pigment in foliar tissues. No definite evidence of the occurrence of physiologic forms was obtained. *P. purpurea* failed to cause infection in varieties of dent and sweet corn, and no infection resulted from the inoculation of varieties of sorghum with *P. sorghi* p. f. 1. Notes on the characters of the fungus and the pathological histology are given.—*Authors' summary.*

3497. **McINDOE, K. G.** The inheritance of the reaction of maize to Gibberella saubinetii. *Phytopath.* 21(6): 615-639. 6 fig. 1931.—The most suitable soil temp. for experimental infection studies was found to be about 15°C., at which the correlation between replicates was sufficiently high (considering the small numbers used) to warrant conclusions. Crosses of susceptible and resistant parents gave conflicting results in the F_1 generation. Occasionally resistant hybrids appeared from parents possessing an intermediate degree of resistance, but in no case did very resistant progeny appear from parents of extreme susceptibility, although such crosses sometimes proved to be of intermediate resistance. Resistance is probably quantitative in nature and conditioned by multiple factors, as evidenced by an examination of the F_3 progeny of 5 selected crosses. A definite segregation of F_3 lines occurred in conformity with a Mendelian explanation of such inheritance. Where the parental lines differed widely in reaction, highly resistant and

susceptible strains appeared in the F_3, in sufficient proportion to suggest tentatively that relatively few factors for intrinsic resistance are involved. In F_3 lines obtained from parents differing widely in resistance, a significant correlation was found between seedling vigor and resistance, but the relation is not sufficiently constant to warrant selection for resistance on the basis of seedling vigor. No significant correlation was found between seedling reaction in the greenhouse and yield in the field, as affected by infection of mature plants.—*Author's summary.*

3498. **MASSEY, R. E. Studies on blackarm disease of cotton—II.** *Empire Cotton Growing Rev.* 8(3): 187-213. 4 pl. 1931.—Blackarm is due to a combination of factors, of which soil moisture and soil temp. are predominant. Infection of the seed is mainly carried externally but internal infection also occurs. The necessity for the use of clean seed is emphasized. The effect of rainfall in chilling and in increasing the water content of the soil during the critical period of germination has been studied, the amount of infection being directly proportional to the rate of splitting of the seed coats and the penetration of the tissues by the parasite, subject to limitation by a time factor imposed by the lethal properties of the soil. Danger from infected debris may be minimized by watering, whereby the parasite is destroyed. The life of *Bacterium malvacearum* in wet soil is probably limited to 72 hr. The presence of a bacteriophage in the soil of the Gezira has also been demonstrated.—*Author's summary.*

3499. **NIEVES, RAIMUNDO. Resistencia comparativa a la Tilletia levis Kühn, Del Trigo, en la Argentina. [Comparative resistance to T. levis in Argentina.]** [With English summary.] *Phytopath.* 21(7): 705-727. 1931.—The most favorable conditions for infection of fall-sown winter varieties occurred in April and May. The widest spread of infection was noticed where wheat germinated in progressively drying soil. With the exception of varieties belonging to the hard red-winter group, wheats with 14 pairs of chromosomes show greater resistance to bunt than do those with 21 pairs. *Triticum vulgare* presents great variability in the reaction of varieties to infection by *Tilletia,* ranging from total susceptibility to almost complete immunity. Most of the resistant new strains belong to a subgroup of winter wheats, with bearded, lax, white heads, and hard red kernels, that are especially adapted to cold, dry regions (*T. vulgare* var. *erythrospermum*). Strains varying from susceptible to highly resistant have been found in a local variety known as Kansas, which is probably the same as Crimean C. I. 1435 of the U. S. Dept. of Agriculture. Yield tests for 3 yr. with these new strains indicate the possibility of their becoming valuable commercial varieties. Certain strains of winter wheats from Hungary, and the variety Florence from Australia, were shown to be highly resistant.—*From author's English summary.*

3500. **RODENHISER, H. A. Physiologic specialization in some cereal smuts.** *Phytopath.* 18(12): 955-1003. 18 fig. 1928.—In the group of species *Ustilago tritici, U. nuda, U. hordei, U. levis,* and *U. avenae* from 5-18 physiologic forms were obtained for study. Morphological studies were based on color, topography, surface, consistency and type of margin in artificial cultures. Studies with *U. tritici* and *U. nuda* showed that various forms respond differently to temp. Pathogenicity tests were made using forms of *Tilletia levis* and *T. tritici.* Wide variations were found in the amount of smut developed on Pentad, Marquis, and Kota wheat and on Einkorn. Experiments with barley regarding resistance to *U. hordei* gave similar results. New physiologic forms of the smut fungi are developed, probably constantly, by hybridization or mutation.—*J. A. Small.*

3501. **SCHEIBE, A. Die Bedeutung der Spezialisierungsfrage bei den Getreiderostpilzen für Pflanzenbau und Pflanzenzüchtung.** *Züchter* 1(6): 165-171. 3 fig. 1929.—The rusts of Germany and central Europe are discussed, especially the occurrence of specialized forms. A general discussion is given on the present state of knowledge regarding *Puccinia graminis, P. triticina, P. dispersa* and *P. coronifera.*—*F. V. Owen.*

3502. **SCHEIBE, ARNOLD. Studien zum Weizenbraunrost, Puccinia triticina Erikss. I. Methoden und Ergebnisse bei der Bestimmung seiner physiologischen Formen (Biotypen).** *Arb. Biol. Reichsanst. Land- u. Forstw.* 16(4): 575-608. 2 col. pl., 6 fig. 1929.—Collections of physiologic forms (biotypes) in *Puccinia triticina* from various points in Germany and neighboring European countries were grown on differential hosts and the biotypes present determined. Physiologic forms XI, XIII, XIV, and XV were grown in the greenhouse on a series of spring and winter wheat varieties and the type of infection noted. The presence in Europe of the same biotypes as previously had been found in America was demonstrated, and a discussion of the significance of this result to breeding of rust-resistant wheat and the possibilities of the isolation of further biotypes is included.—*J. C. Gilman.*

3503. **SCHEIBE, ARNOLD. Studien zum Weizenbraunrost, Puccinia triticina Erikss. III. Über die geographische Verbreitung der einzelnen physiologischen Formen und Formenkreise in Deutschland und in seinen angrenzenden Gebieten.** *Arb. Biol. Reichsanst. Land- u. Forstw.* 18(1): 55-82. 5 fig. 1930.—Of 12 physiological forms of *P. triticina* found in Germany, 5 were distinctly west European and 7 were east European. The most virulent forms belonged to the east European group. Only 4 forms were typical of Germany proper, and the wheat varieties Malakoff and Norka were resistant to 2 of these 4 forms.—*A. E. Hitchcock.*

3504. **UPPAL, B. N., and M. K. DESAI. Physiologic specialization in Sclerospora graminicola.** *Phytopath.* 21(3): 337-338. 1931.—Oospores of *S. graminicola* from *Setaria viridis, S. magna,* and *S. italica* produced infection in *S. italica, S. magna* and *Euchlaena mexicana* but not in *Pennisetum typhoideum,* while oospores of the same organism from the last-named grass infected only this species. Neither form of the organism was capable of causing infection in *Panicum miliaceum.*—*W. A. Whitney.*

3505. **WELLMAN, F. L. Clubroot of crucifers.** *U. S. Dept. Agric. Tech. Bull.* 181. 32p. 3 fig. 1930.—A detailed report upon studies of the life history of *Plasmodiophora brassicae* and control methods. Spore germination occurred from about 6-27° C., with the peak at 25°. Disease development occurred at 12-27°, with optimum at 18-25°. The temp. range of disease development is a direct result of the action of temp. on the parasite. Infection of the host plant occurred quite readily after 18 hr. of exposure to infested soil of adequate moisture content, indicating that no drainage system could be expected to inhibit infection following heavy rains. A pH range of 5-7.8 was found for 116 disease-infested soils. In a soil of pH 7.2, the addition of K_2CO_3 produced a pH of 8.1 without inhibiting the disease, whereas $CA(OH)_2$ sufficient to change the pH to 7.3 completely prevented infection. Apparently H-ion concentration in itself was not a limiting factor in control. Limes consisting of $CaCO_3$ and $CaSO_4 \cdot 2H_2O$ were not satisfactory for control while those of CaO or $Ca(OH)_2$ composition gave satisfactory control with plants grown in infested soils. For satisfactory control in thoroughly infested seed beds, the author suggests applying at least 1,500 lb. of hydrated lime per acre, while in the field at least 2 tons per acre were required to obtain commercially satisfactory control. Raw ground limestone was not effective, and air-slaked limes were of questionable value.—*Courtesy Exp. Sta. Rec.*

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES AND SPRAYING)

3506. **ANDERSON, H. W., and M. A. SMITH. Experiments on apple disease control in 1930.** *Trans. Illinois State Hort. Soc.* 64: 242-261. 1930(1931).—Flotation sulphurs used throughout the season gave as good control of apple scab and blotch as did the standard spray of lime sulphur alone. There was no significant

difference between any of the treatments where flotation sulphur, lime sulphur, or lime sulphur followed by flotation sulphur was used. All gave a high percentage of scab- and blotch-free fruit. There was no significant difference between the treatments of Thylox and Ferrox, the 2 types of flotation sulphur used. Both gave over 95% scab-free fruit in the varieties Gano and Stayman. Calcium monosulphide failed to give satisfactory control of apple scab in both varieties, Ferrox and Thylox flotation sulphurs both gave as good control of apple blotch as did the standard spray of lime sulphur alone. No serious russeting of the fruit or foliage injury occurred in any of the plots receiving flotation sulphurs, lime sulphur, or calcium monosulphide.—*M. A. Smith.*

3507. **BENTON, R. J. Prevention of decay in oranges.** *Agric. Gaz. N. S. Wales* 42(5): 411-413. 1931.—In untreated fruit decay was 3.35 and 2.06 times as great as in fruit treated with borax and bicarbonate of soda, resp. The appearance of the treated fruit was also better. The mountain-grown oranges had little more than half the amount of decay found in the lowland-grown fruit, the losses being 7.17% and 11.82%, resp.

3508. **CURTIN, LEO PATRICK, and WILLIAM THORDARSON. Experiments in wood preservation. VI. Recent laboratory work.** *Indust. & Eng. Chem.* 20(1): 28-30. 1928.—Toxicity data are tabulated to show the "killing points" of various hitherto untested inorganic preservatives for *Fomes annosus*. 12 additional fungi have been studied, all of which evolved sufficient acid to convert sodium alizarin sulfonate to the free sulfonic acid (pH 5), and 7 gave an acid reaction with methyl orange (pH 3). The toxicity of zinc meta-arsenite in powder form toward 14 wood-rotting fungi has also been studied. —(*Courtesy Indust. & Eng. Chem.*)

3509. **CZIÁKY, JÁNOS. Az új csávázószerek és a rézgálic. [New treating materials and copper sulphate.]** [German abstract.] *Kisérletüzyi Közlemények [Budapest]* 33(1): 43-62. 4 fig. 1930.—Wet seed-treating materials tested were Tillantin, Higosan, Germisan, Resinol, and Triamid, and dry treatments used were Tillantin, Porzol, Tutan, Resopor, Triamid, and a product containing copper sulphate. In the prescribed concentrations these showed neither a stimulating nor injurious action on the germination of the seed. An overtreatment with wet-treating materials injured germination. Their concentration must therefore be controlled. With dusts there was no injury due to overtreatment. Copper sulphate used in 0.5-1.0% solutions afforded as good control as the newer preparations, and the development of young plants was equally vigorous. A 2% solution of copper sulphate caused injury similar to that due to overtreatment with the other liquid disinfectants, which is ascribed to entry of the chemical through cracks in the seed coat caused in threshing. This possibility of injury was the only disadvantage of copper sulphate but is of no practical importance as an excess of seed is always used. The new materials are much more poisonous than copper sulphate, the dry treatments particularly requiring caution since continued inhalation of the dust is dangerous. The new treating materials are also much more expensive than copper sulphate, the cost of treating a specified quantity of grain with them being 2-5 times as great.—*E. L. Griffin.*

3510. **GODFREY, G. H., and H. R. HAGAN. Some experiments on nematode control by clean fallow. Preliminary report.** *Pineapple Quart. [Hawaii]* 1(1): 10-18. 1931.—Report of an experiment showing reduction of effectiveness of the inter-cycle period in nematode eradication in pineapple fields attributed to weeds and volunteer pineapples.

3511. **HAMILTON, J. M. Studies on the fungicidal action of certain dusts and sprays in the control of apple scab.** *Phytopath.* 21(5): 445-523. 7 fig. 1931.—All fungicides applied before inoculation gave excellent control if the trees were not subjected to washing. Leaves treated with sulphur dust or lime-sulphur spray were effectively protected until they became resistant. Bordeaux mixture was somewhat less effective. The fungicidal effectiveness of sulphur dusts and lime-sulphur was not appreciably reduced when applied to foliage which was then held for a period in a moist chamber before inoculation. Temp. within the range 6-23° C. during the infection period appeared to affect the development of host and parasite more than the toxicity of sulphur. When applied after inoculation sprays containing lime-sulphur were more effective than the sulphur dusts (whether finely ground, sublimed, "activated," or containing arsenate of lead), wettable sulphur sprays, calcium monosulphide, Bordeaux mixture, emulsified oils with or without a sulphur fungicide, and certain proprietary mercury compounds. Sulphur-arsenate dust 90-100 afforded but little control when applied later than 12 hr. after inoculation, unless the application was followed by a moist treatment, while sprays containing lime-sulphur, especially 1-40 plus arsenate of lead 1-50, gave good control when the application was made after infection periods of 30-72 hr. Under these experimental conditions no significant difference in scab control between the various wettable sulphurs or finely ground sulphur preparations and the coarser sulphur products tested is evident which is attributable to their physical states. Bordeaux mixture was more effective than certain sulphur dusts or sprays. Some of the emulsified oils and proprietary mercury compounds were effective. The quantity of ascosporic inoculum was a factor in the effectiveness of sulphur fungicides applied after inoculation and temp. above 26° C. was an appreciable factor in the inhibition of the fungus. Higher temp. was most effective against the pathogen before penetration had taken place. Moisture was also an important factor in the maximum effectiveness of lime-sulphur containing sprays when applied after an infection period. Histological evidence shows that the pathogen may be inhibited after infection has taken place. Rapid drying of lime-sulphur appeared to increase its effectiveness in applications made after inoculation. Lime did not diminish the reaction of lime-sulphur plus arsenate to an appreciable extent when applied after infection periods. The increased effectiveness of lime-sulphur from the addition of lead arsenate is due, at least in part, to soluble arsenic (As_2O_5), which may be fungicidal alone. Injury did not result when this soluble arsenic was applied alone at a concentration of 0.04% or with lime sulphur 1-40 at the concentration of 0.03%. Kayso (casein lime) slightly increased the fungicidal property of lime-sulphur plus lead arsenate when applied after infection. The effectiveness of certain sulphur fungicides was increased when applied in a soft-soap solution. Oil emulsion applied before or after inoculation exhibited fungicidal properties, and the addition of oil emulsion increased the effectiveness of certain fungicides. Development of conidia of *V. inaequalis* on leaf lesions was checked according to the fungicidal efficiency and adhesiveness of the materials used. Certain sulphur fungicides and Bordeaux mixture were effective over a larger area than the actual surface covered. No significant increase in fungicidal efficiency of sulphur resulted from the addition of potassium permanganate. Lime-sulphur sprays and Bordeaux mixture were decidedly more adhesive than certain sulphur dusts, finely divided sulphur sprays, and emulsified oils. The addition of soft soap, emulsified oil, Kayso, or ferric oxide increased the adhesiveness of certain fungicides, emulsified oil giving generally the most satisfactory results.—*From author's summary.*

3512. **HEALD, F. D. Blue mold in relation to fruit cleaning methods.** *Washington State Hort. Assoc., Proc.* 23: 143-148. 1927.—From experimental data the author stresses 3 methods of reducing the amount of blue mold (*Penicillium expansum* et al.) in packed apples: Reduction of the blue mold content of both acid and rinse baths to the lowest possible point; more care in handling the fruit from the orchard to cold storage to prevent mechanical injuries, by increased care in sorting out fruit showing any injuries; and reducing calyx injury to the minimum.—*From author's conclusions.*

3513. **HORSFALL, J. G. Combating damping-off of tomatoes by seed treatment.** *New York State [Geneva] Agric. Exp. Sta. Bull.* 586. 22p. 2 fig. 1930.—Damping-off (*Pythium ?debaryanum*) is the most serious disease affecting tomato seedlings in New York. Although control by steam sterilization has been demonstrated repeatedly, the expense and care restrict the use of this method. Seed soaked in a copper sulphate solution, 1 lb. in 8 gal. of water, for 10 minutes to 24 hr., gave remarkable increases in stand and freedom from disease of the emerged seedlings in a number of greenhouse trials. Tomato seed shows great resistance to copper poisoning, and may be soaked in a 7.2% copper sulphate solution for 22 hr. without injury, whereas, seedling plants may be injured by a 0.5% solution applied to the soil at the rate of 1 quart per square foot. Dusting seed with an excess of copper carbonate also gave increased stands and freedom from disease, but this treatment was less efficient than soaking in copper sulphate. Increased stands have also been obtained on a small scale by dusting seed with various other copper salts. Cuprous cyanide caused great injury to germination. Under certain conditions not yet well defined tomato seed is injured by treatment with calomel, mercuric sulphide, mercuric oxide, mercuric iodide, Semesan, Ceresan, and Dipdust (Semesan Bel).—*J. G. Horsfall.*

3514. **MacLEOD, D. J., and R. R. HURST. Potato scabs. Powdery scab Spongospora subterranea (Wallr.) Johns. Common scab Actinomyces scabies (Thaxter) Güssow.** *Dept. Agric. Canada Pamph.* 134. 3-26. 14 fig. 1931.—This bulletin incorporates the results and recommendations for control derived from laboratory studies made in several Dominion Laboratories.

3515. **MARSH, R. W. Spraying trials against apple and pear scab at Long Ashton.** *Jour. Bath & West & Southern Counties Soc.* 5: 143-153. 1930/1931[1931].—Scab control experiments for the 3rd yr. in succession afford striking evidence of the cumulative effect of spraying. Addition of aluminium sulphate to a lime-sulphur spray did not prevent sulphur injury in the variety Lane's Prince Albert. Bordeaux mixture injury to the fruit of Worcester Pearmain is recorded. The use of spray guns with a powder outfit saves time and caused no increase in spray damage. Excellent control of scab on pears was obtained by 2 sprayings with Bordeaux—one before and one after flowering.—*Author's summary.*

3516. **MORWOOD, R. B. Flag smut in wheat experiments, 1930.** *Queensland Agric. Jour.* 35(6): 363-367. 1931.—Bluestone effectively controlled seed-borne infection of flag smut, but treatment of seed with lime after bluestone is liable to impair its effectiveness. Hot water seriously reduced germination, and is impracticable as a method of control. Copper carbonate completely controlled infection in the lightly infested rows, but not entirely in rows planted with seed that was moderately to heavily contaminated.—*From author's conclusion.*

3517. **NILSSON, GEORG. Några resultat från betningsförsök. [Some results from seed treatments to control plant diseases.]** *Sveriges Utsädesför. Tidskr.* 41 (2): 99-116. 1931.—*Fusarium* may be combated with Uspulun dust, bunt with Uspulun, Tutan, Abavit B dusts, or Uspulun Universal; oat smut with Oats-Tillantin or U. T. 687 dusts.—*G. Nilsson-Leissner.*

3518. **SCOTT, I. T., B. F. BOILLOT, and K. C. SULLIVAN. Insect pests and diseases of vegetable and truck crops. Their regulation and control.** *Bull. State Bd. Agric. Missouri* 29(5/7): 1-80. 107 fig. 1931.—A handbook which gives descriptions of diseases, insect pests, and other injuries, with formulae for certain materials used in control.

3519. **TILFORD, PAUL E. The effect of different pressures and of different types of lime in potato spraying.** *Amer. Potato Jour.* 8(6): 145-150. 1931.—Bordeaux mixture applied at 400 lb. pressure was more effective than when applied at either 200 or 600 lb.; 300-400 lb. is considered the most effective pressure for potato spraying. In Ohio good grades of hydrated lime have proved as good for making Bordeaux mixture as stone lime. 2 yr. tests with a high magnesium lime indicate that it may prove as satisfactory for the preparation of Bordeaux as a high calcium lime.

3520. **TORRES, I. L. Bud rot of coconuts in Porto Rico.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(3): 23-24. 1931. [Mimeographed.]—Brief note on the occurrence of *Phytophthora faberi* on coconut and hat (*Sabal causiarum*) palms and progress of eradication of diseased specimens.—*W. A. Whitney.*

3521. **TUCKER, JOHN. The effects of seed treatment on black-leg.** *Amer. Potato Jour.* 8(6): 158-159. 1931.—Data compiled from 9,019 good reports show that potato seed treatments, as at present applied on farms, reduce but do not altogether control black leg. Formalin treatment is but slightly effective; mercury bichloride is more so. The results as compiled from field records during 3 yr. (1928-1930) are fairly uniform.—*Author's summary.*

3522. **[VLADIMIRSKAĬA, N. N.] ВЛАДИМИРСКАЯ, Н. Н. К вопросу дезинфекции почвы. [Soil disinfection.]** [With English summary.] Болезни Растений [*Bolezni Rastenii*] 19(1/2): 22-54. 1930.—Chemical disinfection of the soil with formalin, paradichlorbenzene, chloride of lime, sulfur dioxide and copper carbonate cannot be recommended either agriculturally, economically or phytopathologically. Fungicides introduced into the soil always affect to a certain degree the regular course of the nitrifying process. Treatment of the soil with strong chemicals causes various detrimental effects in plant growth. Fungicides such as paradichlorbenzene and chloride of lime persist in the soil for a long time. Only mercuric chloride as applied against club root has given entirely satisfactory results. In other cases the maximum decrease of infection obtained was only 50%. Disinfection of the soil by heat offers many advantages, as it quickly and completely destroys soil infesting fungi at moderately low temp. (for *Plasmodiophora brassicae* 60° C. for 30 min.; for *Colletotrichum lini*, 50° for 30 min.), whereas chemical disinfection frequently does not kill the spores. Heating of the soil to high. temp. increases its fertility. Heating at 50-60° C. does not interfere with the chemical and physical properties of the soil; plants growing in such a soil show no adverse effects.—*From author's summary.*

3523. **VOELKEL, H. Methoden zur Prüfung von Pflanzenschutzmitteln. II. Die Bestimmung der Haftfähigkeit von Stäubemitteln. [Methods for testing the protective covering of plants. II. The determination of the adhesive properties of dust materials.]** *Arb. Biol. Reichsanst. Land- u. Forstw.* 17(3): 253-272. 6 fig. 1929.—A method is described for comparing the capacity of different dust materials to adhere to leaves and to a slanted slate surface after being agitated by a mechanical shaker. Talc was used on one half of the slate, and the dust to be tested on the other half. Dusted ivy leaves placed at the end of a long rod were shaken in a manner similar to the slate. By this method it is believed that dusts may be evaluated for their adhesive capacity on different leaves under external conditions of wind and rain.—*A. E. Hitchcock.*

3524. **WIANT, J. S. Potato seed treatment with formaldehyde dust for the control of scab.** *Amer. Potato Jour.* 8(4): 101-104. 1931.—Formaldehyde dust effectively controlled scab and reduced the loss from blackleg.

3525. **ANONYMOUS. The testing of wood preservatives.** *Nature [London]* 126(3189): 921-922. 1930.—Wood blocks are preferred as a substrate; several fungi should be tried, by spore as well as mycelial inoculation. Other factors besides toxicity (liability to leaching, stability in wood) need to be considered in evaluating a preservative.

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

3526. **ARRHENIUS, O. Berberis i Södertörn. [Barberries at "Södertörn," Sweden.]** *Svensk Bot. Tidskr.* 24(2): 319-321. 1 fig. 1930.—The author investigated the barberries over a small area in order to increase the

knowledge of their dissemination in the county of Stockholm, and to simplify eventual eradication.

3527. CONNERS, I. L. Report on the prevalence of plant diseases in the Dominion of Canada 1929. [Mimeographed.] *Canada Dept. Agric. Exp. Farms Branch Ann. Rept. Prev. Plant Dis. Dom. Canada* 10: 1-82. 1929 (1931).—A survey of plant diseases in Canada, arranged by crops.

3528. CONNERS, I. L., and E. A. EARDLEY. Report on the prevalence of plant diseases in the Dominion of Canada 1930. [Mimeographed.] *Canada Dept. Agric. Exp. Farms Branch Ann. Rept. Prev. Plant Dis. Dom. Canada* 10: i-v+102p. 3 maps. 1930 (1931).—A survey of plant diseases in Canada arranged by crops.

3529. DANA, B. F. Soil cultures for the laboratory production of sclerotia of Phymatotrichum omnivorum. *Phytopath.* 21(5): 551-556. 2 fig. 1931.—Glass jars with loose-fitting caps filled with unsterilized soil and inoculated with newly-diseased roots are well adapted for the study of moisture and temp. requirements for the production of mycelial strands and sclerotia of *P. omnivorum* under conditions comparable to those of the field, and to test the effectiveness of chemical and fertilizer applications in cotton root-rot control.—*W. A. Whitney.*

3530. FAWCETT, HOWARD S. The importance of investigations on the effect of known mixtures of microorganisms. *Phytopath.* 21(5): 545-550. 1931.—The effects of mixtures of organisms are pointed out, and a plea is made, as the result of previous work, for more investigations along this line.—*W. A. Whitney.*

3531. GUTERMAN, CARL E. F. Diseases of lilies. *Yearb. Hort. Soc. New York* 1930: 51-102. 11 fig. 1931.—A comprehensive review of all available information on diseases of lilies known to be present in the U. S. A.

3532. MARCHAL, P., et É. FOËX. Rapport phytopathologique pour les années 1926-1927 par le Directeur de la Station Entomologique et le Directeur de la Station de Pathologie Végétale de Paris. *Ann. Épiphyties* 13 (6): 383-454. 1927.—This includes an account of the national organization for plant pest surveys, inspection and quarantines, and for the investigation of plant pests and methods of control. A review of quarantines in force is given. The bulk of the report consists of notes on plant pests (insects, nematodes, rodents, etc.) and plant diseases (fungous and non-parasitic) arranged according to crop groups, including cereals, forages, truck crops, vegetables, orchard and small fruits, grapes, forest trees, olives, oranges, greenhouse and ornamental plants. The plant disease records for the 2 yr. are segregated and each is preceded by a review of meteorological conditions during the year.—*F. Weiss.*

3533. MARTIN, J. P. Diseases, malformations and blemishes of sugar cane in Hawaii. *Hawaiian Planters' Rec.* 35(2): 129-134. 1931.—A complete list of all known diseases, giving the part of the plant affected, the nature of the symptoms, and the causal agent. Certain insect injuries are also included.

3534. MILLS, W. D. A method of detecting and demonstrating early leaf infections of apple scab. *Phytopath.* 21(3): 338-339. 1931.—Cobalt paper (filter paper soaked in a 5% solution of $CoCl_2$ and dried) placed over an apple leaf and held in situ by a small press made of two lantern-slide covers and held together by rubber bands showed in a few seconds, by the white areas produced, wherever infection had taken place. For field use, an air-tight tin box fitted with a $CaCl_2$-container is satisfactory. With adequate drying between tests, the Co paper may be used many times.—*W. A. Whitney.*

3535. SCHANDER, G. GÖTZE, und W. SCHLEUSENER. Bericht über das Auftreten der Krankheiten und Beschädigungen der Kulturpflanzen im Bereich der Hauptstelle für Pflanzenschutz in Landsberg (Warthe). Vegetationsperiode 1928/1929. [Report on diseases and pests of crop plants in the Landsberg region, Germany, 1928/1929.] General-Anzeiger: Landsberg (Warthe), [1931?]. Pr. 1.50 RM.

3536. SYMOND, J. E., and T. LLOYD WILLIAMS. Cotton trials at Tamale, season 1928-29. *Dept. Agric. Gold Coast* [Year-book 1929] *Bull.* 22. 264-274. 1930.—Low yield of cotton is undoubtedly due to excessive boll shedding and high insect damage.

PLANT PHYSIOLOGY, BIOCHEMISTRY, AND BIOPHYSICS

B. M. DUGGAR, *Editor*

(See also in B. A. 6(1): Entries 81, 107, 116, 117, 122, 134, 135, 141, 144, 146, 147, 150, 177, 189, 190, 192, 199, 203, 206, 207, 216, 224, 226, 243, 244, 251, 269, 271, 282, 299, 325, 347, 353, 360, 386, 397, 458, 469, 518, 545, 548, 554, 565, 616, 631, 635, 918, 920, 968, 977, 1078, 1186, 1429, 1467, 1561, 1807, 1809, 1810, 1811, 1812, 1814, 1825, 1827, 1832, 1834, 1890, 1926, 1930, 1933, 1941, 1957, 1963, 1974, 1977, 2018, 2050, 2120, 2121, 2128, 2136, 2141, 2142; and in this issue 3169, 3189, 3198, 3200, 3202, 3206, 3207, 3226, 3240, 3365, 3382, 3384, 3394, 3453, 3456, 3459, 3462, 3473, 3476, 3481, 3482, 3483, 3492, 3534, 3545, 3547, 3548, 3555, 3560, 3573, 3583, 3585, 3592, 3595, 3596, 3597, 3609, 3612, 3620, 3621, 3631, 3638, 3639, 3643, 3646, 3663, 3665, 3667, 3674, 3675, 3677, 3683, 3725, 3730, 3731, 3752, 3773, 3788, 3790, 3792, 3799, 3804, 3808, 3820, 3844, 3928, 4229, 4274, 4414, 4513, 4522, 4525, 4528, 4529, 4539, 4540, 4556, 4561, 4568, 4587, 4597, 4830, 4834, 4844, 4876, 4884, 4887, 4905, 4911, 4926, 4936, 4951, 4964, 4965, 4966, 4973, 4975, 4978, 4993, 5017, 5020, 5026, 5027, 5031, 5048, 5056, 5064, 5175, 5176, 5179, 5180, 5183, 5191, 5194, 5195, 5198, 5204, 5208)

BIOCHEMISTRY, METABOLISM (GENERAL)

3537. BEWS, J. W., and J. E. VANDERPLANK. Storage and other carbohydrates in a Natal succulent and a Natal geophyte and their behavior before, during, and after the winter resting season. *Ann. Botany* 44 175): 689-719. 1930.—For the succulent type *Portulacaria afra,* Jacq., and for the geophytic type *Hypoxis cooperi,* Moore, were used. Analyses were made of the leaves and twigs of the former and of the corms and leaves of the latter. Monosaccharides and disaccharides were extracted with aqueous alcohol and their respective reducing powers estimated before and after inversion under Herzfeld conditions. Polysaccharides were estimated after hydrolysis with 1.1% HCl for 4¼ hrs. on boiling water-bath. The reducing powers of sugars were estimated by means of excess Fehling's solution, and the excess was determined iodimetrically or by a new, quick modification of the titanous chloride method. Pentosans were estimated by the Kröber method, the pentoses produced by the hydrolysis of the pentosans being separated from unhydrolysed pentosans by means of aqueous alcohol. The analyses were made from autumn to spring (March or May to October), the *Portulacaria* leaves and twigs being analyzed once each month in May, June, July, August, and October, the *Hypoxis* corms in March, May, June, August, and October, and the leaves in March, May and October. The slight seasonal variations or changes in the content of the various carbohydrates are discussed. The stored starch did not seem to be used to any appreciable extent during periods of renewed growth. The sugars did not seem to be directly affected by the water content. Contrary to Spoehr's findings the data on the succulent plant showed an increase of pentosans with aridity and low temp. Aridity is therefore supposed to be the chief factor affecting pentosan content. The pentosans, however, did not always increase with decreasing water content. The authors believe that for shallow-rooted succulents the distribu-

tion of rain throughout the year is more important than the annual total amount. Differences were noted in the carbohydrate content of *Portulacaria* leaves gathered from the north (sunny) and south sides of the tree. The total carbohydrate content was higher in the leaves on the north side as was also that of the pentosans and hexosans, while the content of monosaccharides and disaccharides was somewhat lower. The hexosans in the *Portulacaria* leaf before photosynthesis commences were found to be largely or totally colloidal by the iodine test for starch and a study of the diurnal changes in carbohydrate content. They, the chief products of photosynthesis, increased largely during the day and decreased at night, so that the content on 2 consecutive mornings was fairly similar.—*M. C. Merrill.*

3538. **CHANNON, HAROLD JOHN, and ALBERT CHARLES CHIBNALL.** The ether-soluble substances of cabbage leaf cytoplasm. V. The isolation of n-nonacosane and di-n-tetradecyl ketone. *Biochem. Jour.* 23 (2): 168-175. 1929.—**CHIBNALL, ALBERT CHARLES, and HAROLD JOHN CHANNON.** The ether soluble substances of cabbage leaf cytoplasm. VI. Summary and general conclusions. *Biochem. Jour.* 23(2): 168-184. 1929. —These 2 papers are parts of a series presenting some of the relations between P and the fatty substances in plant cells. "Although the higher paraffins have been isolated from a large number of plant sources, no evidence has been forthcoming as to their origin in the plant, and the lack of a reasonable hypothesis for their metabolism made it appear vital that the exact position of the carbonyl group should be established with certainty." The total amount of ether-soluble material in the cytoplasm is about 3.5% of the total leaf solids. Since fat-soluble substances containing Ca and Fe had not been demonstrated previously, the proportion of Ca, P, and Fe of the cabbage-leaf present in the form of Ca phosphatidate and the Fe compound was calculated roughly. Water-soluble Fe was too small to be determined gravimetrically. The I value of the glyceride fatty acids is about 200 compared with 137 for the fatty acids present in the phosphatide.—*G. J. Peirce.*

3539. **EHRLICH, FELIX, und FRIEDRICH SCHUBERT.** Über tetra-Araban und seine Beziehung zur tetra-Galakturonsäure, dem Hauptkomplex der Pektinstoffe. *Biochem. Zeitschr.* 203(1/6): 343-350. 1928.—Plant pectins consist of 2 substances, present in approximately the same amounts. One is araban (a pentosan) and the other is a Ca-Mg salt of pectinic acid. Dried sugar beet contains 20-30% of a hydrated pectin, which is obtained by boiling with water and evaporating on a water bath. Yellowish brown leaflets are obtained. These are treated with 70% alcohol, which dissolves the araban only. On evaporation a yellow brown hygroscopic mass is obtained, still impure with saponin, acetic acid salts, and colored matter. This crude araban is hydrolysed by dilute H_2SO_4 and about 90% crystalline l-arabinose is formed. Araban is a mixture of different anhydrides of arabinose. Some arabans apparently consist of 2-3 mols. arabinose from which 1-2 mols. water are extracted. A high molecular araban, probably already partly hydrolysed in the plant by enzymes, but mainly by the prolonged action of the boiling water (which contains acetic acid, developed from the pectinic acid), was isolated from crude araban. This was treated with alcohol and ether and the isolated product was called tetra-araban ($4C_5H_{10}O_5 - 4H_2O = C_{20}H_{32}O_{16}$). It is a nearly colorless, amorphous neutral powder; contains a little ash; is soluble in water and alcohol; reduces Fehling's solution very little; and gives the color reactions of the pentoses. On hydrolysis with acids it reduces Fehling's solution strongly and the solution contains l-arabinose. Tetra araban is also decomposed by takadiastase, l-arabinose being formed. The main compound of pectins is tetra-galacturonic acid, containing 4 mols. d-galacturonic acid and 4 mols. water ($4C_6H_{10}O_7 \cdot 4H_2O = C_{24}H_{32}O_{24}$). Stereochemically d-galacturonic acid is nearly related to l-arabinose. Therefore it seems possible that in the plant araban is formed from tetra-galacturonic acid by enzyme action, CO_2 being released from the 4 free carboxyl groups. The relation of these facts to products such as the plant mucilages (acacia gum, tragacanth, and others), also to the pectins of flax and the xylans of wood and straw is discussed.—*M. G. Breyer-Brandwijk.*

3540. **SCHMORL, KARL.** Getreidechemie. *Naturwiss.* 18(19): 413-417. 1930.—The chemistry of cereals seeks analytical methods for judging cereals and flour; is finding sound chemical devices for the refining, bleaching, and sterilization of flour; and, finally, by the aid of colloidal chemistry, is trying to give a scientific exposition of this special field. In the analytical chemistry of cereals it is of primary importance to determine water, ash, and protein content, diastatic power, acidity, pH, etc. As for the refining of the flour, it is impossible for the miller to produce a good-baking flour from German wheat alone. It was once the practice to mix the gluten-poor wheats of central Europe with foreign types rich in gluten. In recent yrs. less Manitoba wheat has been used, partly because of a falling off in quality and partly because substitutes have been added to the domestic flour. "Bleaching" differs from "refining" of flour in that the former involves only the change in color produced by oxidizing the yellow carotin pigments to colorless oxides. If the baking quality of the flour is improved in this process it is due to accelerated maturation and this does not take place in all cases. The refining or improvement of flour depends on increasing the gluten content.—*K. Schmorl (transl. by C. J. Lyon).*

BIOCHEMISTRY, METABOLISM (ENZYMES, FERMENTATION)

3541. **MÜLLER, D.** Studien über ein neues Enzym Glykoseoxydase. II. *Biochem Zeitschr.* 205(1/3): 111-143. 1929.—The press juice of *Aspergillus niger* yields upon purification a glucose oxidase, which acts at 0-30° C. in the presence of O but not of H, with an optional pH of 5.5-6.5. It attacks glucose, yielding gluconic acid quantitatively. It attacks mannose and galactose but not other sugars or intermediate products. Cultivation on mannose or fructose does not affect the yield of glucose oxidase, but culture on tartaric acid or glycogen eliminates it.—*M. E. Collett.*

ANIMAL PHYSIOLOGY

GENERAL

(See also in this issue Entries 3026, 3773, 5282, 5283, 5284)

3542. **DOGNON, ANDRÉ.** Précis de physico-chimie biologique et médicale. [Biological and medical physico-chemistry.] 310p. 63 illus. Masson et Cie: Paris, 1929. 36 fr.

3543. **FULTON, JOHN FARQUHAR, Editor.** Selected readings in the history of physiology. xx+317 p. Illus. Charles C. Thomas: Springfield, Ill.; Baltimore, Md. 1930.—The contents are arranged under 8 chapters headed respectively,—general principles, circulation of the blood, the capillaries, respiration, digestion, muscle and peripheral nerves, the central nervous system, and miscellaneous. Under these headings are arranged brief quotations and illustrations of the principal significant contributions to facts and theory in physiology from the earliest records of publication to the present day. A brief biographical or historical note is appended to each investigator quoted from. The quotations are brief.—*A. J. Carlson.*

3544. **HICKMAN, CLEVELAND P. Laboratory manual in college physiology.** 116p. Macmillan Co.: New York, 1930. Pr. $1.10.

3545. **MARIE, CH. [Secretary.] Tables annuelles de constantes et données numériques.** Vol. VII, year 1925/1926, in 2 parts. 1896p. Gauthier Villars et Cie: Paris, 1930.

3546. **OPPENHEIMER, CARL. (Herausg. von.) Handbuch der Biochemie des Menschen und der Tiere.** [Handbook of human and animal biochemistry.] 2d ed. completed. viii+528p. Gustav Fischer: Jena, 1930. Pr. 42 M.

3547. **POPOFF, METHODI. Ueber die Methodik der Zellstimulation.** In: **EMIL ABDERHALDEN. Handbuch der biol. Arbeitsmethoden; Lief. 289. Abt. V. Methoden zum Studium der einzelnen Organe des tierischen Organismus.** Teil 2. Heft 12. 1324-1334. Urban & Schwarzenberg: Berlin, 1929.—Stimulating agents are those which hasten the oxidative processes in living cells. Their action is conditioned by their concentration and duration. It falls in 3 phases: acceleration, optimum, and overstimulation, with resulting lowering of vital phenomena. Physical agents such as temp., mechanical action, and radiant energy exhibit comparable stages. *Euglena* reared in 1% peptone plus 1% citric acid encysts when washed and transferred to alkaline water. Glycerophosphoric acid in 0.5% solution induces 80-90% excystment in 10 min. and 100% in 20. A solution of 0.25% induces 100% excystment in 40 min. Stimulation constants have been determined for a wide range of reagents. Sister paramecia, following binary fission, were used for experiment and control, respectively, in determining stimulants to fission. Ten min. exposure to 5% $Mn(NO_3)_2$ followed by washing and transfer to culture fluid resulted in 2490 paramecia, while only 883 were produced in the control. Regeneration in *Hydra* and in *Planaria* is stimulated by specific concentrations of various reagents acting for 1-5 min. Healing of wounds in the horse and in man is accelerated by 30% MgBr, 5% KBr, 15% $MgCl_2$, glycerin, 5% KI, and 1% tannin. Ripe unfertilized ova of *Strongylocentrotus lividus* are in a state of physiological depression. Parthenogenetic development is incited by a very wide range of chemical substances. An optimum concentration and duration can be determined for each. In the case of $MgBr_2$ this is 100% for 40 min., which results in about 90% of the ova attaining the blastula or pluteus stage. Aqueous extract of 1 gm. of fresh pollen of *Quercus* or *Calla* in 4 cu. cm. sea water for 15 min. induces development to the blastula stage. Moribund avitaminose doves lose their symptoms upon subcutaneous injection of 0.0035 to 0.0150 gm. of $MgBr_2$ in 0.5-1 cu. cm. of water. Vitamin extracts of yeast and of rice hulls will induce parthenogenetic development of as high as 80% of the eggs of the sea urchin. Seed soaked for 10 min. to 72 hrs. in solutions of stimulants such as 1% KI, 5% KBr, or various combinations of stimulating chemical solutions give 25-30% increase in yield.—*C. A. Kofoid.*

3548. **SCARTH, G. W. An elementary course in general physiology. Part I: Principles and theory.** John Wiley & Sons: New York; Chapman & Hall: London, 1930.

3549. **SCHEMINZKY, FERDINAND. Leitfaden für die physiologischen Übungen.** vii+207p. 82 fig. Julius Springer: Berlin, 1930. Pr. 10.80 M.

ANIMAL PHYSIOLOGY

COLLOIDS, SURFACE TENSION, ADSORPTION, VISCOSITY, PERMEABILITY, OSMOSIS, ETC.

D. I. HITCHCOCK, *Editor*

(See also in this issue Entries 3598, 3618, 4008, 4245, 4414, 4734, 5366, 5399)

3550. **ANSON, M. L., and A. E. MIRSKY. Protein coagulation and its reversal. The preparation of insoluble globin, soluble globin and heme.** *Jour. Gen. Physiol.* 13(4): 469-476. 1930.—By a procedure involving the use of acid acetone, hemoglobin may be rapidly separated into a precipitate of denatured globin and an acetone solution of heme. By neutralization procedures the denatured globin may be largely converted into a soluble, apparently native form which can combine with heme to form hemoglobin. The heme may be obtained in acetone-free, slightly alkaline solution without the use of strong alkali, which may modify it.—*Authors' summary.*

3551. **ASTBURY, W. T., and A. STREET. X-ray studies of the structure of hair, wool, and related fibres. I. General.** *Phil. Trans. Roy. Soc. London A* 230(683): 75-101. 2 pl., 6 fig. 1931.—X-ray photographs were made of 3 varieties of wool, human hair, llama hair, hedgehog spine, and porcupine quill. The materials studied all contain a crystalline or pseudo-crystalline constituent, which gives substantially the same x-ray photograph. Different photographs were obtained from stretched and unstretched fibers. The interference figures obtained do not suggest a substance of high molecular wt.; like those of cellulose, they suggest "that a comparatively simple unit may be repeated, 'via' primary valency bonds, an indefinite number of times. The photograph (α) of unstretched hair is a typical 'fibre photograph' and may be referred provisionally to a rectangular cell of dimensions, $a=27$ Å., $b=10.3$ Å., and $c=9.8$ Å. On stretching hair, the α-photograph gradually disappears and is replaced by another 'fibre photograph' (β) which first becomes prominent at about 30% extension. The β-photograph may be referred provisionally to a rectangular cell of dimensions, $a=9.3$ Å., $b=6.64$ Å., and $c=9.8$ Å. The α-β transformation is reversible and appears to be based on the elongation of an intramolecular group of length 5.15 Å. to another group of length 6.64 Å., an increase of 29%. The reversible α-β transformation gives a qualitative and quantitative explanation of a number of characteristic tensile properties of hair." Since cystine is the amino acid most abundant in wool protein, a preliminary x-ray examination was made of its structure. "The lattice is hexagonal, with 3 molecules per cell, and $a=9.40$ Å., $c=9.42$ Å. X-ray micro-analytical experiments have shown that stretched hair (β-form) is more vulnerable than unstretched (α-form); and among other things, that in the case of β-hair the main destructive action of Na_2S is preceded by a rapid non-solvent reaction. The structure of cystine and the action of Na_2S on the β-form suggest that the latter is based on molecular chains linked side-to-side by nuclei of cystine or cysteine. The chief molecular grouping of the α-form repeats along the fibre axis with a period equal to the most prominent period of cellulose (5.15 Å.). The whole series of experiments conveys the impression of long filament-like molecules, which in some way involve the continuous repetition of hexagonal ring systems connected by bridge atoms. The x-ray measurements suggest that the primary molecular grouping of hair keratin is based on equimolecular proportions of the 4 chief constituent amino-acids, leucine, glutamic acid, cysteine, and arginine."—*From authors' summary.*

3552. **BRINLEY, FLOYD J. Effects of cyanide on the protoplasm of ameba.** *Jour. Gen. Physiol.* 12(2): 201-206. 6 fig. 1928.—Concentrated solutions ($N/10$-$N/300$) of HCN or KCN produced an initial increase in protoplasmic viscosity of immersed amebae which was followed by liquefaction and cell disintegration. Dilute solutions of HCN or KCN decreased protoplasmic viscosity. Injections of HCN or KCN into amebae produced a reversible decrease in viscosity. These experi-

ments seem to indicate that the toxicity of HCN and KCN for amebae is due to their effect on the cell membrane and not on the internal protoplasm.—*Author's summary.*

3553. **FISCHER, F. P. Über die Teilchengrösse intravenös injizierter Farbstoffe im Serum und Kammerwasser.** *Arch. Augenheilk.* 103(3/4): 554-579. 1930.—The passage of dyes from the blood into the aqueous humor and cerebrospinal fluid is referred to their colloidal properties, especially particle size and electric charge. Hence the author measured the diffusion coefficient of different dyes in watery solution, in blood serum, in primary and secondary aqueous humors, and in serum filtrates of different protein concentrations. In watery solutions only a small portion of dye diffused according to theory, but deviations or anomalous diffusion occurred. Dyes which diffused more rapidly than eosin, which appears in the aqueous and cerebrospinal fluid, were inferred to be in a state of finer dispersion than eosin, and their retention in the blood was referred to their charge, which is the opposite of eosin. All dyes diffused more slowly in serum than in water, apparently because of absorption by the protein, but even in serum a number of dyes showed anomalous diffusion. Fluorescein was the only dye studied in relation to aqueous humors. It diffused more rapidly in primary aqueous than in serum, but more slowly than in water. Its diffusion in secondary aqueous was about equal to that in serum.—*F. H. Adler.*

3554. **HAYASHI, S. Über die parenterale Resorption von Kolloiden. II.** *Biochem. Zeitschr.* 208(4/6): 361-367. 2 fig. 1929.—Urease preparations made from the jackbean were injected intravenously, intraperitoneally, and subcutaneously into dogs. The urease in the blood was determined at intervals by estimating the amount of NH_3 formed from urea by the action of the urease. The largest amounts of urease were found in the blood, naturally, soon after the intravenous injections and most of this had disappeared in 30 hrs. Following intraperitoneal injections the amount in the blood rose gradually for several hrs. and then declined, its relative concentration being always less than that following intravenous injection. The rate of absorption depended on the concentration of the injected solution, the kind of ions in the buffer or salt solution used, and on the pH. Following subcutaneous injections of the urease, the concentration in the blood was at all times still lower.—*J. M. Ort.*

3555. **HÖBER, RUDOLPH. The present conception of the structure of the plasma membrane.** *Biol. Bull. Marine Biol. Lab.* 58(1): 1-17. 1930.—This general review discusses the pore theory and the solution theory of cell permeability and emphasizes the variability of the plasma membrane, in that the same membrane may vary from time to time and corresponding membranes of the same kind of cell may vary from sp. to sp.—*P. H. Mitchell.*

3556. **IRWIN, MARIAN. Spectrophotometric studies of penetration of dyes. VII. Dyes absorbed by a non-medullated nerve.** *Jour. Gen. Physiol.* 13(4): 391-394. 1930.—Living non-medullated nerves of the lobster claw, exposed, were bathed in a solution of methylene blue, azure B, and acid fuchsin, in sea water; rinsed in sea water; and the absorbed dye was extracted from the nerve, with sea water. Spectrophotometric measurements of the extracted dye show that its absorption curve is the same as that of the dye used for the staining. Three successive extractions from the stained nerve within 8 hrs. after staining gave the same results. The experiments show that the dyes were actually absorbed, unchanged by the nerve, but not necessarily that they penetrated into its interior.

3557. **LEBERMANN, FERDINAND. Über die Caseinfällung im isoelektrischen Punkte.** *Biochem. Zeitschr.* 206(1/3): 56-59. 1929.—The buffer capacity of cow's milk requires consideration in the precipitation of casein. Casein precipitated by acetate buffers sets free alkali or withdraws H^+ ions from the milk solution through adsorption or phase buffer action. The optimum precipitation of casein from skim milk was by an acid acetate buffer—8: 1—of pH 3.74. The final pH of the milk plus this buffer was 4.89, thus being different from the isoelectric point of the pure casein, which was precipitated best at pH 4.7.—*D. R. Briggs.*

3558. **MATHYS, HERMANN. Untersuchungen über die Permeabilität der Zelle. 15. Die Permeabilität der Farbstoffe durch die Speicheldrüsen.** *Biochem. Zeitschr.* 234(5/6): 419-440. 1931.—Indigo carmin, Na-fluorescein, or erythrosin was injected into rabbits and excretion of dye through the saliva and urine was studied. Pilocarpine caused all 3 dyes to appear in the urine but not in the saliva, although it stimulated salivary secretion. Thyroxin caused accelerated and increased salivary secretion, but caused only small amounts of fluorescein to appear in the saliva. The results are held to show the difference in permeability between salivary gland cells and kidney cells, and to confirm the permeability promoting effect of the internal secretion of the thyroid.—*D. I. Hitchcock.*

3559. **PRAKASH, SATYA. Influence of temperature on the coagulation of sols and the problem of acclimatisation of animals.** *Allahabad Univ. Studies (Sci. Sect.)* 6(2): 79-92. 1930.—Because an increased temp. accentuates ageing of certain sols, both inorganic and organic, an explanation has been advanced for greater longevity of cold-blooded animals over warm-blooded animals of the same size. Since animal metabolism seems minimum when the outside temp. is 20°, people living in a country having an average outside temp. of 20° should have the maximum longevity.—*P. B. Powers.*

3560. **RUSSO, GIUSEPPE. Influenza degli aneletroliti sulla velocità dell'azione smorzatrice degli organi animali e vegetali. [Influence of non-electrolytes on velocity of buffer action of animal and plant tissues.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 963-965. 1930.—Glucose and urea increased the velocity of the buffer action of animal and plant organs for pH values lower than neutrality, whereas they decreased it for pH values higher than neutrality.—*M. Comel.*

3561. **SPIEGEL-ADOLF, M., und K. F. POLLACZEK. Physikalisch-chemische Untersuchungen an bestrahlten Proteinen. VIII. Über Beziehungen der Lichtkoagulationsgeschwindigkeit von Eiweisslösungen zu deren Sterilität.** *Biochem. Zeitschr.* 214(1/3): 175-186. 1929.—Various protein solutions, some sterile, some inoculated with various bacteria, and some accidentally contaminated with common microörganisms, were irradiated with ultraviolet light from quartz Hg vapor lights. The time necessary for turbidity to develop at a given distance from the light source was determined. Sterile solutions soon coagulated. The infected ones coagulated after a much longer time, due to the accumulation of certain electrolytes which are products of bacterial metabolism; after electrodialysis these solutions had the short coagulation time of the sterile ones. The electrodialysis did not kill the organisms, for in 1-2 days the electrolytes elaborated in the purified solutions again delayed coagulation by ultraviolet light, and tests showed the presence of living bacteria.—*J. M. Ort.*

3562. **TIRELLI, M. Mutamento irreversibile nella viscosità delle uova di "Bombyx mori L." [Irreversible changes in viscosity of silkworm eggs.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 11(1): 80-86. 1930.—Heating silk-worm eggs for 40 min. at 50°C. increased the viscosity of juice expressed from them, and altered their stratification. These changes were irreversible. After 2 mo. the viscosity of the juice from warmed eggs was still greater than that of the control. After hibernation and incubation, the warmed eggs all hatched, their silk-worms being normal. Thus an irreversible variation of a chemical-physical property of the egg may not impede embryonic development. In some cases it is held that such an irreversible change of a chemical-physical property in the egg may cause a somatic mutation by influencing the chromosomes.—*M. Tirelli.*

ANIMAL PHYSIOLOGY

ENZYMES AND CATALYSTS

K. G. FALK, *Editor*

(See also in this issue Entries 3541, 3604, 3623, 3661, 3733, 3745, 3906, 4264, 4540, 5399)

3563. ABDERHALDEN, EMIL, und FRITZ REICH. Fortgesetzte Studien über das Problem der spezifischen Einstellung der Polypeptide spaltenden Fermentkomplexe. *Fermentforsch.* 10(3): 319-329. 1929.—Glycyl-dl-leucyl-β-alanin, β-alanyl-glycyl-dl-leucin and β-alanyl-dl-leucyl-glycyl-dl-leucin were hydrolyzed with *N* NaOH; β-alanyl-dl-leucin was not. Erepsin had no action, trypsin-kinase hydrolyzed β-alanyl-dl-leucyl-glycyl-dl-leucin. β-iodpropionyl-glycyl-dl-leucin was not split by trypsin-kinase. Chloracetyl-dl-leucyl-β-alanin, $C_{11}H_{19}O_4N_2Cl$, was soluble in alcohol, insoluble in ether and petroleum ether, uncrystallizable from water, m. p. 124-126°C. Glycyl-dl-leucyl-β-alanin, $C_{11}H_{21}O_4N_3$, was slightly soluble in water, almost insoluble in alcohol, ethyl acetate, ether and chloroform, m. p. 160°C. β-alanyl-dl-leucin, $C_9H_{18}O_3N_2$, was moderately soluble in water and methyl alcohol and barely soluble in ethyl alcohol, m. p. 245-246°C. β-alanyl-glycyl-dl-leucin, $C_{11}H_{21}O_4N_3$, was soluble in water and alcohol and insoluble in ethyl acetate, ether and chloroform, and decomposed at 125°C. β-alanyl-dl-leucyl-glycyl-dl-leucin, $C_{17}H_{32}O_5N_4$, was amorphous and hygroscopic, soluble in water and alcohol, almost wholly insoluble in ethyl acetate, ether and chloroform, and decomposed at 130°C.—*F. Reich (transl. by G. G. De Bord).*

3564. ABDERHALDEN, EMIL, und EUGEN RIESZ. Vergleichende Untersuchungen über die Spaltbarkeit der CO-NH-Bindung in Polypeptiden und verwandten Verbindungen, deren NH_2- bzw. COOH-Gruppe mit verschiedenen Substituenten besetzt ist, durch verdünntes Alkali, Erepsin, und Trypsin-Kinase. *Fermentforsch.* 12 (2): 180-222. 1930.—Benzoylglycyl-aspartic acid, a substituted compound containing 2 acid groups, was readily hydrolyzed by normal alkali. Erepsin hydrolyzed *dl*-leucyl-*p*-aminobenzoic acid and *dl*-leucyl-taurine, which proved that the foreign grouping coupled with a protein constituent did not annul the action as far as the amino group of the latter was concerned. Polypeptide derivatives whose free COOH-group was combined with aromatic radicals containing COOH groups were not attacked by trypsin or trypsin-kinase as shown by the lack of reaction upon *dl*-leucyl-*p*-aminobenzoic acid, chloracetyl-*dl*-leucyl-*p*-aminobenzoic acid and *N*-*dl*-*α*-bromisocapronyl-glycyl-sulfamido-*m*-benzoic acid, 4-chlor-2-nitro-phenyl-sulfo-*dl*-leucyl-glycine, phenyl-*dl*-leucyl-glycine, dinitro-phenyl-*dl*-leucyl-glycine, and *dl*-leucyl-taurine. Alkali attacked several of these compounds. These data represent no new findings for the action of erepsin and trypsin but do indicate several important points concerning the action of alkali. The latter depends not only on the nature of the atom which effects the union of the substituent with the polypeptide but also its valence (difference between SO_2-NH and CO-NH linkage), the place of entrance of the substitute group in the polypeptide (amino or carboxyl group), the acidity or basicity of the substituting group (difference between phenyl-, dinitro-phenyl-leucyl-glycine, and nitrobenzoyl-leucyl-glycine), and polysubstitution (e.g., *n*-cresoltrisulfo derivative).—*E. McCoy.*

3565. ABDERHALDEN, EMIL, und ELLA von EHRENWALL. Beitrag zur Frage der Einheitlichkeit des Erepsins. *Fermentforsch.* 12(2): 223-230. 1930.—Erepsin-kinase attacked only those polypeptides which contained a free amino group; it may thus be called the amino-polypeptidase. It split chloracetyl-*dl*-leucine and chloracetyl-*d*-alanine but not chloracetyl-*l*-tyrosine. Trypsin preparations free of erepsin split chloracetyl-*l*-tyrosine but not chloracetyl-*d*-alanine. Chloracetyl-*dl*-leucine was hydrolyzed as well by erepsin as by tyrosine. Only when the trypsin solution used contained both trypsin and erepsin were all 3 halogenacyl compounds attacked.—*E. McCoy.*

3566. ABDERHALDEN, EMIL, und FRIEDRICH SCHWEITZER. Studien über die Abspaltung von Halogen durch verdünntes Alkali aus raumisomeren Halogenacylaminosäuren und deren Verhalten gegenüber Erepsin und Trypsin-Kinase. *Fermentforsch.* 12(2): 231-243. 1930.—By test of the racemic forms A and B of α-brom-propionyl-norvaline, α-brom-propionyl-leucine, and α-brom-isocapronyl-valine, and especially by the test of the behavior of optically active forms of the above mentioned racemic bodies, i.e., *d*-α-brom-propionyl-*d*-norvaline, *l*-α-brom-propionyl-*l*-norvaline, *d*-α-brom-propionyl-*l*-norvaline, and *l*-α-brom-propionyl-*d*-norvaline, evidence was obtained that the splitting off of a halogen under the influence of alkali was dependent upon the substituting group in the halogen acyl amino acid.—*E. McCoy.*

3567. ALWALL, NILS, und JORGEN LEHMANN. Berichtigung zur Frage der Herstellung einer fumarase-freien Succinodehydrogenase. *Skand. Arch. Physiol.* 61: 159. 1931.—Lehmann demonstrated that in Alwall's method the fumarase was not heat labile at 50° but that the enzyme left the muscle and passed into the wash water. A phosphate extract of such muscle was fumarase-free. Using the polarimetric determination of *l*-malic, which is synthesized by fumarase, the authors were not sure that the muscle was free of fumarase.—*R. C. Herrin.*

3568. AUBEL, E., et A. GENEVOIS. L'état actuel de la question des ferments. [Present status of the question of enzymes.] 48p. Gauthier-Villars et Cie: Paris, 1929.

3569. CAILLET, O. R. Stability of esterase and ereptase in ground liver and kidney preserved in glycerol. *Proc. Soc. Exp. Biol. & Med.* 28(4): 357-358. 1931.—After 13 yrs. the esterase activity of the dog's liver extract was unimpaired, and the peptone-splitting activity reduced by ¼; ground dog's kidney had lost about ½ its original esterase and more than ½ its original protease activity.

3570. CLEMENTI, A., e D. TORRISI. Sull'assenza di asparagina tra i prodotti abiuretici della idrolisi enzimatica delle proteine. [Absence of asparagine among the abiuretic products of the enzymatic hydrolysis of proteins.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 956-958. 1930.—During digestion of the protein molecule aspartic acid was set free as such, not as asparagine. The latter is therefore not an intermediate product of the enzymatic degradation of proteins.—*M. Comel.*

3571. DELHOUGNE, FRANZ. Untersuchungen über den Fermentgehalt des Blutes. I. Methodisches. Die Fermentzahlen des Blutes beim gesunden Menschen. *Deutsches Arch. Klin. Med.* 165(3/4): 213-222. 1929.—The blood ferments in 20 normal human subjects were estimated. By the Jolles, permanganate and Bach and Zubkowa methods, the catalase values were reckoned in terms of the gm. H_2O_2 reduced by 1 cc. blood; they ranged from 10 to 16, showing from day to day certain variations, which under like conditions were not greater than 10%, but became extreme under pathologic conditions. The variations in the protease findings under physiologic conditions, on the other hand, were very great. The peroxidase value (reckoned in terms of the amount of guaiacol, expressed in 0.001 mgm., oxidized by 0.001 cc. blood in the presence of H_2O_2) in normal subjects ranged from 50 to 100; values many times these were found in sick persons. The esterase values (reckoned in terms of the amount of guaiacol, expressed in 0.001 mgm. split off from guaiacol ester by 0.001 cc. blood) in normal persons ranged from 50 to 120, but under pathologic conditions were many times greater. The ferment values in the blood showed marked increase under the influence of physical work.

3572. **EVARD, HENRI.** Contribution à l'étude des ferments oxydants. [Oxidases.] 58p. (Thèse No. 844, Univ. Genève.) Jent: Genève, 1928.

3573. **GUALDI, ANTONIO.** Die Wirkungsweise tierischer Phosphatase in stereochemischer Beziehung. *Biochem. Zeitschr.* 205(4/6): 320-324. 1929.—The effect of phosphatases from livers and kidneys of rabbits upon the salts of *dl* borneol phosphoric acid, using cell-free extracts, was studied. Rabbit liver phosphatases split the salts asymmetrically, exactly as did the plant phosphatases. Also, the optical properties of the liberated borneol were the same as those obtained with fungus phosphatases; at first *l* borneol and later *d* borneol precipitated out. The behavior of kidney phosphatase was identical with that of liver phosphatase in its tendency to select certain optically active components. Here also the *l* borneol was first formed, then the *d* form.—*B. Kramer.*

3574. **KISCH, BRUNO.** Die Autokatalyse der Adrenalinoxydation. *Biochem. Zeitschr.* 220(1/3): 84-91. 1930.—The oxidation of adrenalin, as indicated by red coloration and promoted by light, rise in temp., and rise in pH of the solution, is autocatalytically hastened by a certain not yet exactly defined oxidation product (designated as omega) which acts in dilutions of 1: 10 billion, and in the dark and in weakly acid solutions (conditions under which normally oxidation of adrenalin is very slow) but not noticeably in the absence of O. Solutions of omega long exposed to O, light or heat lose activity. It is adsorbed on animal charcoal and eluted by alcohol. Omega did not increase blood pressure nor produce hyperglycemia in animals. Freshly prepared p-quinone solution in concentrations of 1: 1 billion oxidized adrenalin solutions.—*N. M. Payne.*

3575. **KISCH, BRUNO.** Die Omegakatalyse der Dioxyphenylalaninoxydation. *Biochem. Zeitschr.* 220(1/3): 92-96. 1 fig. 1930.—Spontaneous oxidation of dihydroxyphenylalanin was increased by rise in temp., increase of pH of the solution, and by light. Addition of omega catalyzed the dihydroxyphenylalanin oxidation even in the dark and in weakly acid solutions. Adrenalin, pyrocatechol, dopa (a proprietary derivative of dihydroxyphenylalanin), and oxidized pyrocatechol solution did not have the effect of omega. Under anaerobic conditions the dopa color reaction did not take place. Omega catalysis and light catalysis acted in synergy on the dopa color reaction. Omega solutions that were filtered through animal charcoal not only lost their positive catalytic reaction, but actually checked dopa oxidation. Addition of KCN (M/1000) did not inhibit the omega catalysis of dopa oxidation in an acid medium, and *p*-quinone in freshly prepared solutions of 1: 100 million accelerated it. Heating decreased the catalytic action of omega.—*N. M. Payne.*

3576. **MILLER, LAWRENCE P.** The effect of thiocyanates upon amylase activity. II. Salivary amylase. *Contr. Boyce Thompson Inst.* 3(2): 287-296. 6 fig. 1931.—The action of KSCN in affecting the hydrolysis of starch by dialyzed salivary amylase, as measured by viscosity changes, color with I, or by the reducing sugars formed, was to cause a shift toward the alkaline side of the optimum pH for the action of the enzyme; with high concentrations this shift might be as much as a whole pH unit. Potassium thiocyanate, therefore, might depress, or stimulate, or have no effect depending upon the pH at which the reaction takes place and upon the concentration of KSCN. At low pH values all concentrations depressed, at high pH values all concentrations stimulated, and at certain intermediate pH values KSCN might depress, stimulate, or have no effect, depending upon the concentration. At the pH of saliva and in the absence of NaCl small amounts of KSCN increased the activity of dialyzed saliva. In the presence of NaCl similar amounts of KSCN had no effect.—*L. P. Miller.*

3577. **OYA, TAKEO.** Über die Spaltung des Lecithins durch die Lecithase und Phosphatase des Präparates "Takadiastase." [XV in LUDWIG PINCUSSEN: Fermente und Licht.] *Biochem. Zeitschr* 215(4/6): 366-371. 1929.—The production of lecithase from lecithin by the action of takadiastase in 10 days darkness was found to be 72.4% of the theoretically possible lecithase content. In a 2nd experiment the action of the lecithase (measured by determination of cholin) and of the phosphatase (measured by determination of total P) of takadiastase at pH 6.6 were found to be parallel. At pH 6.6 phosphatase was much more seriously injured by ultraviolet light than lecithase. About $\frac{2}{3}$ of the lecithase present was inactivated by u.v. irradiation in 30 min.; about $\frac{2}{3}$ of the remainder was inactivated in the next 30 min. The action of the rays was therefore uniform during the observation period, following the law for a reaction of the first order.

3578. **PAZZI, DEMURTAS MARCO.** Ricerche sperimentali sulla quantità e sul tipo di lipasi presente nel sangue in conseguenza dell'azione degli anestetici. [Amount and quality of blood lipase after administration of anesthetics.] *Biochim. e Terapia Sperim.* 17 (10): 402-413. 1930.—After chloroform narcosis a quinine-resistent lipase was present in blood. It is assumed that such a lipase was discharged into the blood from the liver; the activity of normal blood lipase was thereby increased. The amount of quinine-resistent lipase was not related to the amount of chloroform administered.—*M. Comel.*

3579. **RIENZO, A. de.** Azione della fosfatasi delle ossa sull'acido glicerofosforico. [Action of bone phosphatase on glycerophosphoric acid.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1034-1036. 1930.—Bone phosphatase acted upon solutions of α- and β-glycerophosphoric acids to which borate mixtures of various pH values were added, hydrolyzing more easily the salts of α-glycerophosphoric acid (which constituted most of the natural glycerophosphate) and less easily the salts of β-glycerophosphoric acid.—*M. Comel.*

3580. **SCHMIDT, GERHARD.** Lactacidogen. In: **CARL OPPENHEIMER.** Die Fermente und ihre Wirkungen. 5 Aufl. Bd. 3. Die Methodik der Fermente. P. 1185-1211. 1 fig. Georg Thieme: Leipzig, 1929.

3581. **VIANELLO, G.** L'elettività di azione della tripsina dei vari animali sulle proteine della loro ordinaria alimentazione. [The selective action of the trypsin of different animals on the proteins of their ordinary diet.] *Arch. Fisiol.* 29(2): 256-273. 1 fig. 1930.—Trypsin of carnivorous animals (dogs) exerted a certain selective action on the proteins of animal foods, whereas the trypsin of herbivorous animals (ox and horse) exerted a greater action on the proteins of vegetable foods.—*M. Comel.*

ANIMAL PHYSIOLOGY

ELECTROLYTES AND IONS

G. E. CULLEN, *Editor*

(See also in this issue Entries 3067, 3324, 3552, 3560, 3671, 3672, 3753, 3808, 3872, 3906, 4004, 4024, 4025, 4055, 4060, 4172, 4245, 5399)

3582. **BORGGRAEF, L. de.** Ions et excitabilité du coeur de grenouille. *Arch. Internat. Physiol.* 33(3): 300-324. 1931.—Ions normally present and influential in the perfusion liquid were replaced by others chemically related in Mendeleef's tables—Ca by Be, Mg, Sr and Ba; K by Li, Rb, or Cs; and Cl by F, Br and I. By measuring the excitability of hearts perfused with different liquids it was possible to recognize a certain analogy between the chemical properties of these different bodies and their influence on the properties of the cardiac

muscle: rhythm, amplitude of contractions and above all excitability. There also seems to be a relation, differing for anions and cations, between this last property and the atomic weight of the elements; excitability increases with increase of the atomic weight of the cations and diminishes as the atomic weight of the anions rises. These phenomena may be related to the electrolytic potential of the respective elements.—*Author's summary (transl.)*.

3583. **DRUCKER, CARL.** Messungen elektromotorischer Kräfte galvanischer Ketten mit wässerigen Elektrolyten. 234p. Verlag Chemie, G. m. b. H.: Berlin, 1929. Pr. 24 M.—This, the 2nd supplement to an earlier book by the same title, is a reference book of E.M.F. values for all the elements whose electrode potentials have been measured. Part I is an exhaustive bibliography of the period between 1914 and the end of 1917, giving for each citation the particular chain measured. Part II gives the results appearing within this period which have been selected as the most trustworthy. Part III lists the accepted values for the normal potentials of the various electrode processes, indicating those values which have been determined for the first time or which have been changed as the result of better work.—*J. M. Ort.*

3584. **LINDEMAN, V. F. Effect of lithium, ammonium, strontium and barium ions upon the heart rhythm of the crayfish.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 816-818. 1929.—1% LiCl increased heart tone in *Cambarus clarkii* and then arrested it. A 0.5% LiCl produced a decrease in tone, coupled with increase in rate and amplitude. LiCl could replace NaCl in part in a perfusion fluid. Ca and Sr had an analogous effect on the perfused heart. Sr and to a less extent Ba could replace Ca in part. $BaCl_2$ produced an increased tone of the heart leading ultimately to systolic standstill.—*N. M. Payne.*

3585. **PFEIFFER, H. Über die Aufgaben und Grenzen elektroanalytischer Färbungsversuche intra vitam.** *Protoplasma* 8: 261-290. 3 fig. 1929.—The article is an extensive review of work on dielectric constants, and other electrochemical and electrobiological problems.—*W. Seifriz.*

3586. **RUSSO, GIUSEPPE. Influenza del volume e del grado di smorzamento di una soluzione sul potere smorzatore di un'altra.** [Action of the amount and intensity of buffer power of a solution on the buffer power of other solutions.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 759-762. 1930.—The buffer power of a solution of phosphates increased when amount and buffer activity of a solution mixed with it were greater.—*M. Comel.*

3587. **WHITEHEAD, R. W. Responses of excised intestines to alterations of electrolyte concentrations (Na, Ca, K).** *Amer. Jour. Physiol.* 89(2): 253-265. 1929.—Segments about 2 cm. long were taken from the ileum or jejunum of freshly killed rabbits and suspended, as in the ordinary Magnus method, from a light muscle lever, in aerated, physiological solution kept at 38° C. ±0.5°. Fractional deprivation and addition of the 3 important cations in Locke solution, carried out singly and simultaneously, show that: Na increases the amplitude, but has little effect on the tone or rate of contractions; Ca increases the tone and rate of contractions and decreases the amplitude; K in concentrations below normal has effects like Na, and antagonistic to Ca; above the normal concentration it increases the tone and decreases amplitude, synergistic with Ca, while tending to induce periodicity. K deprivation inhibits with a subsequent tendency to spasticity when this ion is added. The effects following simultaneous alteration of cation concentration, in which only the amount of the ions was changed, seem not to have been extensively investigated for mammalian intestinal smooth muscle. The results show that the concentration as well as the ratio of ions must be considered important in maintaining normal functional activity. The changes which appear in the form of periodic contractions, especially with deprivation of Ca, K or both, may be confusing if these are not recognized as qualitative. The author doubts whether these qualitative alterations have so far been sufficiently emphasized. Complete deprivation of Ca has the most pronounced effect in inducing periodicity, K deprivation as well as complete removal of Ca and K results in the appearance of these irregularities less promptly, while removal of Na causes no such response.

3588. **YAMANOUCHI, TOSHIHIKO. Effect of anions in chemical stimulation in the holothurian Candina chilensis (J. Muller).** *Sci. Rept. Tohoku Imp. Univ. 4th Ser. Biol.* 4(4): 603-615. 1929.—KI, KBr, KCl, KNO_3, and K_2SO_4, in 0.2 N solution, were found unequal as chemical stimulants, their effectiveness decreasing in the above order.—*D. J. Healy.*

ANIMAL PHYSIOLOGY

LIGHT AND HEAT

E. NEWTON HARVEY, *Editor*

(See also in this issue Entries 3260, 3268, 3270, 3310, 3318, 3561, 3562, 3575, 3577, 3633, 3691, 3692, 3752, 3943, 3948, 3991, 4173, 4229, 4274, 4587, 4683, 5339, 5433)

3589. **BLACHER, L. J., und W. N. SAMARAJEW. Die Organisationszentren der Hydra fusca L. als Quelle mitogenetischer Ausstrahlungen.** *Biol. Zentralbl.* 50(10): 624-633. 1930.—Cultures of the yeast, *Nadsonia fulvescens*, were used as detector, increased budding being taken as evidence of mitogenetic rays. Emulsions of whole hydras, and the hypostomeal region and of the budding zone, emitted rays, but those of the foot, and of the body region intermediate between the hypostome and the budding zone, did not. Emulsions of regenerating anterior and posterior halves showed no increase of radiation over normal, probably because regeneration takes place without cell division in hydroids. A living hydra in a narrow glass tube emitted rays from its hypostomeal end but not from its foot end. The addition of dilute KCN to an emulsion destroyed radiation, which suggests that the rays originate in an oxidation. Radiation is a property of those regions of hydra which, when transplanted, are known to act as centers of organization. It is presumably a result of the higher rate of oxidation of these centers.—*F. Gilchrist.*

3590. **BLOOMFIELD, J. J., JAMES E. IVES, and ROLLO H. BRITTEN. Effect of radiant energy on the skin temperatures of a group of steel workers.** [*U. S.*] *Public Health Repts.* 45(18): 997-1009. 2 fig. 1930.—This is a part of a study of the influence of environmental conditions on the incidence of respiratory diseases among steel workers, with especial reference to pneumonia. It deals largely with the results obtained by the use of 2 thermoelectric instruments, one type used for the measurement of skin temp. of workers exposed to radiant heat, and the other used for the measurement of radiant heat. Intense sources of radiant energy had a pronounced effect on the skin temp. of workers exposed to them; the forehead and cheeks showed the greatest increase. Great differences in the skin temp. of different parts of the body, for a single individual, were found in workers exposed to radiant energy. Even under relatively cold atmospheric conditions, not far above the freezing point, high skin temp. were encountered in workers exposed to radiant energy. For workers not exposed to radiant energy there was a definite relation be-

tween atmospheric conditions and skin temp., both for arduous and for moderate work; the skin temp. increasing with increase of effective temp.—*J. J. Bloomfield.*

3591. **CAMERON, A. T. Temperature and life and death.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24 (1): 53-93. 4 fig. 1930.—A Presidential Address before the Canadian Royal Society giving a comprehensive review of the subject, especially analyzing Crozier's application of the Arrhenius equation to physico-chemical processes. Species that can withstand desiccation can withstand the greatest range of temp.

3592. **CASTALDI, LUIGI. Ulteriori studi sulle radiazioni "mitogenetiche." Nota I. Bibliografia sulle radiazioni "mitogenetiche."** Pubbl. Staz. Biol. San Bartolomeo (Cagliari). nr. 25. p. 1-12. 1931.

3593. **CREMONESE, GUIDO (preface by GIOVANNI GIORGI). Iraggi della vita fotografati. [Rays of life photographed.]** 79p. 9 pl. Paolo Cremonese: Roma, 1930. Pr. L. 12.50.—This work deals with radiations of varying frequency and wavelength emitted by living organisms. Photographic evidence is given in appended plates. Besides the radiations already discovered by Gurwitsch, plant organisms emit radiations which penetrate the black paper wrapper of photographic plates and produce an impression but do not penetrate metal nor cellophane. They do traverse glass, which gives evidence that they are not identical with the Gurwitsch rays but have a greater penetration and shorter wavelength. The radiations emitted by saliva, blood and the human body, however, penetrate glass and black paper, producing a faint impression on the photographic plate. If, however, a small metallic disc 0.1 mm. thick be placed on the sensitive side of the plate there is produced a very dark black area under the metal as contrasted with the gray color beyond the metal produced by the rays passing through the black paper alone. This leads to the hypothesis that this intense blackening under the metal results from secondary radiations of very short wavelength set up by the rays from the saliva and blood.—*G. Cremonese (transl. by A. Canzanelli).*

3594. **GLASER, OTTO. Temperature and heart-rate in Fundulus embryos.** *British Jour. Exp. Biol.* 6(4): 325-339. 5 fig. 1929.—On the 4th day after fertilization, cardiac rhythm in *Fundulus* embryos is, in all probability, myogenic. Between 5° and 25° C., one of 2 temperature characteristics prevails and fluctuates either about $\mu = 16{,}300$ or 14,300. On the 12th day, embryos, presumably neurogenic, disclose prevailing increments of 20,900 or occasionally of 18,200. A definite critical region is localised about 20° where the prevailing increments break to the orders 16,000, 14,000 or 12,000. Over the corresponding range embryos about to escape from the egg-case exhibit, in the only 2 instances recorded, μ 23,000, 20,900 and 16,300. On presumable restoration of myogenic conditions in embryos of the 12th day, μ may be 14,300 over the entire range. The frequency of μ 14,300 is greater than in normal larvae of the same age, whereas μ 20,900 is restricted to the lower temp. In their bearing on the differences between myogenic and neurogenic rhythms, these results become explicable if we imagine an underlying mechanism identical for both cases. The same increments either occur or suggest themselves at all stages of development, or, if at times some appear to be distinctive of neurogenic *Fundulus*, these can be promptly duplicated from the list of increments shown by myogenic *Limulus*, e.g., 20,900. Clearly, however, the most frequent characteristics found belong to categories exposed by a great variety of biological acts, and their association in cardiac rhythms is common. These facts harmonise well with the recent work on the metabolism of muscle and nerve.—*Author's summary.*

3595. **GURWITSCH, ALEXANDER. Mitogenetische Strahlen als Erzeuger der Zellteilung. (Die Naturwissenschaft in der Sowjet-Union. Herausg. OSKAR VOGT.)** 10p. Ost-Europa-Verlag: Berlin und Königsberg, 1929. Pr. 1 M.—A review.

3596. **HILL, LEONARD. Die Messung der biologisch aktiven ultravioletten Strahlen des Sonnenlichtes.** *Strahlentherapie* 34(1): 117-128. 6 fig. 1929.—The biologically active intensity of sunlight is measured by the fading of a solution of methylene blue in water and acetone. The absorption curve of acetone is in the same spectral region as the erythema producing rays and the erythema is proportional to the fading of the acetone blue solution. Rain, clouds and smoke cause large variations in the amount of biologically active sunlight. The daily amount of biologically active sunlight is high in the Indian Ocean, Assuan (Egypt) and the Rand in So. Africa. Lower values are obtained in more northern regions as southern England and at Davos (Switzerland). The values in smoky cities are less than those for places where the atmosphere is clear. Tables are given of the average daily amount per month of biologically active sunlight, using an arbitrary scale, for points in England and Scotland, Davos and Assuan.—*A. Hemingway.*

3597. **HOPWOOD, F. LLOYD. Ultrasonics: some properties of inaudible sound.** *Proc. Roy. Inst. Great Britain* 26(3): 339-354. 8 fig. 1931.—A review, dealing with biological effects as well as physical properties.

3598. **HUTCHINSON, A. H., and M. R. ASHTON. Specific effect of monochromatic light upon plasmolysis in Paramecium.** *Canadian Jour. Res.* 4(6): 614-623. 1931.—*Paramecium caudatum* was irradiated in a quartz cell at room temp. with a Cooper-Hewitt "Lab-arc" for 6 and 24 hrs. and the rate of plasmolysis in NaCl and sucrose solutions then determined. The organisms passed through the same series of reactions in both solutions but plasmolysis occurred much more rapidly in NaCl than in sucrose solutions, even when the latter were of greater concentration. Apparently the effect of light is to increase the rate of plasmolysis under all circumstances. In general there is a marked similarity between the curves showing the increase in rate of plasmolysis and those showing the effect of irradiation on the growth rate of paramecium. In most cases visible and near ultra-violet light caused an increase in the rate of plasmolysis of less magnitude than that caused by the far ultra-violet. All visible and near u.-v. lines used, except 4960 Å, 4078 Å and 3022 Å, caused stimulation of division rate and these lines had the least effect on the rate of plasmolysis. The single green spectral line ($\lambda = 4960$ Å) retarded growth and also caused a decided increase in plasymolysis. The lines 4078 Å and 3022 Å both caused slight decrease in division rate and slight increase in rate of plasmolysis. Apparently, with few exceptions, the effect of monochromatic lines of the spectrum in increasing the rate of plasmolysis is greater the shorter the wavelength. In many cases injury produced rapid increase and stimulation of growth. It would seem that when light energy is absorbed, the physiological condition of the plasma membrane changes. Apparently the conditions accompanying moderate increase in rate of plasmolysis also accompany increase in the rate of cell division in paramecium, and the conditions accompanying excessive increase in rate of plasmolysis result in decrease of growth.—*Authors' abstract.*

3599. **KLUGH, A. BROOKER. The effect of the ultra-violet component of sunlight on certain aquatic organisms. III.** *Canadian Jour. Res.* 4(5): 483-486. 1931.—The animals were placed in 3 quartz tubes in a 3-compartment box, each compartment receiving only the light which passed through the filter in the front of the compartment. The animals in the 1st compartment received only visible radiation, those in the 2nd compartment received both visible and ultra-violet radiation, and those in the 3rd compartment received only u.-v. radiation and a little of the extreme violet. Young starfishes, *Asterias vulgaris*, were found not to be affected by u.-v. radiation. The nudibranch, *Eolis gymnota*, which occurs at depths from 7 to 10 metres, proved sensitive to ultra-violet. The little thin-shelled mollusc, *Yoldia sapotilla*, was affected injuriously by u.-v., while the amphipod *Hyperia galba*, which lives in the cavity of the jellyfish, *Aurelia aurita flavidula*, proved to be resistant to u.-v. radiation.—*Author's abstract.*

3600. **LAURENS, HENRY, and H. S. MAYERSON.** Seasonal variation in efficiency of New Orleans sunshine and skyshine in promoting growth and preventing leg weakness in chicks. *Proc. Soc. Exp. Biol. & Med.* 27 (9): 1071. 1930.—Preliminary paper.

3601. **LUCKIESH, H.** Artificial sunlight. Combining radiation for health with light for vision. 245p. 65 fig. D. van Nostrand Co., Inc.: New York, 1930.—This is a comprehensive study of the physical properties and biological effects of radiant energy. Methods of measuring various part of the ultraviolet spectrum by physical and chemical means, photo-electric cells, thermopiles and spectrometer are discussed in detail. A chapter is devoted to studies on the lighting and health-giving properties of various light sources and the author's suggestions for realizing this goal.—*O. Glasser.*

3602. **MacGREGOR, MALCOLM E.** Ultra-violet rays and mosquito larvae. *Nature [London]* 128(3219): 68. 1931.—Ultraviolet in the band 2150-2850 Å, especially at 2500 Å, after a 3 min. exposure causes an immediate partial paralysis in the larvae of *Aedes aegypti* and *Culex pipiens*, followed by progressive dissolution of many tissues, though principally affecting the fat-body.

3603. **MAYERSON, H. S., and HENRY LAURENS.** Seasonal variation in efficiency of New Orleans sunshine and skyshine in preventing and curing rickets in rats. *Proc. Soc. Exp. Biol. & Med.* 27(9): 1070. 1930.—Preliminary paper.

3604. **OYA, TAKEO.** Fermente und Licht. XIV. Versuche über den Einfluss der Temperatur bei der Lichtwirkung. *Biochem. Zeitschr.* 207 (4/6): 410-415. 1929.—Destruction of taka-amylase by ultraviolet is quickest at pH 5.91-5.97, which also is its activity optimum. Heat resistance is greatest on the alkaline side. Ultraviolet combined with heat (45-50°C.) is most powerful at pH 4.83-4.89. Heat and u.-v. destruction have thus different mechanisms.—*J. Bělehrádek.*

3605. **SCHULTZE, WALTHER.** Temperaturmessungen im Innern der Haut und deren Beziehung zur Abkühlungsgrösse. *Strahlentherapie* 39(2): 303-319. 1930.—In the course of 6 mo. 45 cooling experiments were done on cool, moderate, and warm days on 3 healthy persons, thermoneedles of 0.53 mm. diameter being used. The curves of the inner skin temp. showed great uniformity; it is a measure of the water economy in so far as it is related to climate.

3606. **UHLMANN, ERICH.** Über histologische Untersuchungen der mit Vitalux-Lampe bestrahlten Haut. *Strahlentherapie* 40(4): 765-770. 6 fig. 1931.—Areas of clipped rabbit skin were irradiated with a Vitalux lamp for 20-40 min. at 50 cm. distance; a control was given purely heat irradiation. Histological examination showed that the heat irradiation produced no alteration in the skin; the inflammatory alterations in the epidermis from Vitalux irradiation were similar to those obtained with ultra violet irradiation and indicated that the effects were produced by the u.-v. portion of the Vitalux lamp.

ANIMAL PHYSIOLOGY

ELECTRICITY, X-RAY, RADIUM

(See also in this issue Entries 3272, 3593, 3630, 3657, 3942, 4025, 4103, 4192, 4193, 5324)

3607. **BUCKY, GUSTAV** (with contrib. by **OTTO GLASSER and OLGA BECKER-MANHEIMER.** Transl. by **WALTER JAMES HIGHMAN**). Grenz ray therapy. xii+170p. Macmillan Co.: New York, 1929. Pr. 15 s. net.—The author describes his experiences with the therapeutic use of oversoft x-rays of an average wavelength between 1 and 3 Å. Since clinical and biological effects of these rays have been observed which resemble those of x-rays as well as those of ultraviolet radiation, Bucky called this range of wave-lengths "Grenz" rays or boundary rays. After a short historical note on the therapeutic use of soft x-rays and a presentation of the guiding principles, there follows an extensive chapter on the physical foundations of Grenz ray therapy in which Glasser presents a discussion of the production of Grenz rays, their spectral distribution, and the practical methods of determining their quality and quantity for practical use. Bucky then continues with a chapter on anatomical and biological considerations in Grenz ray therapy in which he discusses the actual amount of radiation absorbed in the skin and its effect on diseased tissue. A special chapter is devoted to the technique of Grenz ray therapy in which apparatus, technique of application, etc., are gone into thoroughly. A detailed discussion of superficial and internal diseases which are favorably influenced by Grenz rays is given. There is a chapter on the leucocyte drop after application of Grenz rays and a discussion of the dangers of Grenz rays. A bibliography is given.—*O. Glasser.*

3608. **GATENBY, J. BRONTË, R. N. MUKERJI, and SYLVIA B. WIGODER.** The effect of x-radiation on the spermatogenesis of Abraxas grossulariata. *Proc. Roy. Soc. [London] B* 105(739): 446-469. 5 pl. 1929.—Larvae of *Callimorpha jacoboe* were killed at their last instar, 3 days after x-radiation, with a dose corresponding to about 12 times the human erythema dose (85 KV, 4 MA, no filter, 23 cm. focal skin distance). A dose 4½ times the erythema dose hastened pupation of the larvae of *Callimorpha*. The same effect was also observed on *A. grossulariata* after the application of a similar dose. Pupation and emergence were normal after the application of 2½ erythema doses. In parasitised *Pieris brassicae* caterpillars, x-radiation caused the larvae of *Apanteles glomeratus* to come out of the caterpillars, often while the radiation was in progress. After a detailed discussion of the normal spermatogenesis of *Abraxas* the authors present a study of the cytological effects which take place after x-radiation. Five hrs. after radiation most of the spermatocytes in the growth stage in the testis of *Abraxas* were killed. Spermatogonia and spermatids were not so sensitive. It was not possible to show that the mitotic prophase is exceptionally radiosensitive. In many spermatocytes the Golgi bodies form abortive acroblasts which are ultimately absorbed. No clogged chromosomes or abnormal amphiastral figures were discovered.—*O. Glasser.*

3609. **GLOCKER, R., E. HAYER, und O. JÜNGLING.** Über die biologische Wirkung verschiedener Röntgenstrahlenqualitäten bei Dosierung in R-Einheiten. *Strahlentherapie* 32(1): 1-38. 20 fig. 1929.—The biological effectiveness of measured doses of 2 qualities of x-rays (80 KV. fiber filter, and 180 KV. 0.7 mm. Cu filter) differ slightly. The softer rays are about 15% more energetic in producing an erythema and in retarding the growth of bean seedlings, when the dose is small. After larger doses the effects are alike for both qualities. The course of the erythema in the same patient is the same for both hard and soft rays.—*C. Packard.*

3610. **KOIDSUMI, KIYOAKI.** Quantitative studies on the lethal action of x-rays upon certain insects. *Jour. Soc. Trop. Agric.* 2(3): 243-263. 1930.—*Dacus cucurbitae* Coq. and *D. dorsalis* Hendel which damage various kinds of fruits and vegetables in Formosa can be killed by certain doses of x-rays in any stages of their life cycle. The resistance of the animals to x-rays increases as development proceeds from egg to full grown larva; falls rapidly after the beginning of pupation resistance; and increases until the emergence of the adult. The law of Bunsen-Roscoe dealing with photochemical change is applicable within the limits investigated for the lethal action of rays on these insects. When it is constant, the rate of death is the same for every lot investigated. The percentage of animals dying, in relation to the x-ray dosage, is expressed by the formula

$N=N_0e^{kx}$ where N represents the number of animals killed by x-rays, N_0 the number of control animals dying, X the x-ray dose, and e the base of Napierian logarithms. Data presented by Hussey, Thompson and Calhoun showing the prolongation of prepupal period of *Drosophila* caused by x-rays is represented by the analogous formula $D=D_0e^{kx}$ in which D means the length of the prepupal period of the animal after being x-rayed, and D_0 the duration of the period of normal insect. These formulae are analogous forms with the radiochemically inactivation formula of several biological enzymes $Q=Q_0e^{-kw}$ from which it is assumed that change in the activity of protoplasmic enzymes is a physiological process underlying radiobiological phenomena. Radiobiological phenomena as well as radiobiochemical phenomena are subject to the general photochemical reaction, and they are represented by the Weber-Fechner's psychophysical law or by its extension.—*Author's summary.*

3611. **MUNK, FRITZ, und MAX FLOCKENHAUS.** Über die Ruheströme der menschlichen Haut. *Zeitschr. Ges. Exp. Med.* 61(3/4): 363-389. 8 fig. 1928.—By placing unpolarizable electrodes at different places on the human body, according to the method of Tarchanoff, the authors have measured the distribution of potential difference between the different positions of the electrodes. Two galvanometers were used, a mirror galvanometer and a recording string galvanometer. The potential difference between the forehead and different parts of the body was measured for about 50 normal persons and the general distribution determined, the highest values being obtained for measurements between the forehead and either the palm of the hand or the sole of the foot. Measurements were taken on 10 subjects with various nervous diseases which show neither an appreciable deviation from the normal potential distribution or from the usual zero potential between symmetrical points on the body. The potential distribution is shown to persist several hours after death. Excessive cooling of some local part of the body sufficient to cause sneezing and shivering produces considerable variation in the potential distribution. The authors conclude that the body processes involved in the acquiring of a cold are closely connected with those which determine the potential distribution.—*Allan Hemmingway.*

3612. **NORRIS, ROBERT J.** The increased bactericidal effect of inorganic compounds in the presence of X-rays. *Bull. Basic Sci. Res. [Univ. Cincinnati] Ser. 4* 3(1): 21-36. 10 fig. 1931.—When bacteria are irradiated in solutions containing NaBr, NaCl, NaI, $BaCl_2$, $HgCl_2$, uranium nitrate, caesium iodide, or thorium nitrate, the resulting lethal action is very much greater than that obtained by exposing the bacteria successively to x-rays and to the salts previously irradiated with x-rays, and is a true synergistic action. This action has previously been ascribed to ultra-violet fluorescence, or to emission of photoelectrons. These experiments indicate that the synergistic action in the case of the above salts is not due primarily to these factors, and that the synergistic action is independent of permanent chemical decomposition. In the case of thorium salts, the resulting action is greatest at the critical voltage for the ejection of the K electrons while theoretically the speed of the emitted K electrons is at a minimum at this voltage; at a higher voltage, at which the K electrons are emitted at much greater speed, the action is much less. A tentative explanation is based upon the theory that the toxicity of the ion is related to its ionic potential or state of ionization.—*Author's summary.*

3613. **PACKARD, CHARLES, and C. C. LAURITSEN.** The biological effect of high voltage X-rays. *Science* 73(1890): 321-322. 1931.—In studies to determine whether equal doses of x-rays of different wave length have the same biological effect, doses equal in r units (measured by air ionization) were delivered to eggs of *Drosophila* (this being a remarkably uniform material). Beams of hard (0.20Å), medium (0.50 Å), and soft (0.70 Å) rays, delivered at constant potential (50-180 KV.), gave asymmetrical sigmoid mortality curves. Quality of the beam had no effect; intensity was the deciding factor, and it was possible to determine how many r units were required to kill any % of eggs in a sample. Using a tube which operates at 550 KV., the rays filtered through 6 mm. of steel (effective wave length 0.04 Å), doses of 120, 180, and 240 r units were given; these yielded killing percentages agreeing well with the theoretical, computed from the ordinary (0.2-0.7 Å) x-rays. The identity of effect per r unit, of rays of 0.04-0.7 Å, was further demonstrated on mouse tumor.

3614. **RUSS, SIDNEY.** The effect of x-rays on hair. *Nature [London]* 127(3215): 894. 1 fig. 1931.—A photograph is given of a black rat of which the hair fell out at the points exposed to x-rays in the region of about 150 kilovolts and was replaced by thinner, slightly curly white hair.

3615. **[SCHECHTMANN, J. L.]** ШЕХТМАН, Я. Л. Об абсолютных измерениях международной единицы интенсивности рентгеновых лучей "r." [The absolute value of r, the international unit of x-ray intensity.] Известия Академии Наук СССР. Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Phys.-Math.*) 1930(2): 125-135. 13 fig. 1930.

3616. **TSEBRIKOW.** Sur la modification de la perméabilité des tissus vivants sous l'action des rayons de Roentgen. *Arch. Internat. Méd. Exp.* 3(1): 185-199. 1927.—The conductivity of living tissues can be expressed by the following equations:

$$Z=\left(R^2+\frac{2Rr+r^2}{1+4\pi^2r^2\cdot C_1^2v^2(1-\alpha)}\right)^{\frac{1}{2}}$$

$$Z=\left(R^2+\frac{2Rr+r^2}{1+(r/\rho)^2v^2(1-\alpha)}\right)^{\frac{1}{2}}$$

and the resistance to polarization of a membrane is expressed by the equation:

$$R_p=-(j)\ \frac{\rho}{v^{(1-\alpha)}}$$

where Z is the resistance in ohms of a cc. cube of tissue measured at a frequency v, expressed in periods a sec., R_p is the specific polarization resistance expressed in ohms per cc. at a frequency v, R is a constant (specific resistance in ohms of 1 cc. of tissue), r is a constant (resistance in ohms of membranes and intracellular spaces of a tissue), C is a constant (electrical capacity in farads of 1 cc. tissue at a frequency of 1 period per sec.), ρ is a constant (polarization resistance of 1 cc. of tissue at a frequency of 1 period per sec.), α is the numerical coefficient expressing decrease in electrical capacity as a function of frequency,

$$\rho=\frac{1}{2\pi C_1}\quad\text{and}\quad C_v=C_1v^{-\alpha}.$$

The constant R characterizes the physico-chemical state of the protoplasm. The constants r, c, or ρ and α characterize the physiological state of the membrane. R, r and ρ of both normal irradiated mice, normal non-irradiated mice, irradiated mouse cancer and non-irradiated cancer were determined. X-ray dosage varied from irradiation 100 to 200 KV and filter of 0.1 mm. Cu—1 mm. Al to filter of 2 mm. Cu—1 mm. Al. Irradiation decreased the electrical resistance of all tissues, but decreased the resistance of cancer to a greater extent than it did healthy tissue. Constants of resistance of cancer are smaller than of normal tissue. Difference between effects of hard and soft rays was greater than between effects where length of dosage of the same wave length ray varied.

ANIMAL PHYSIOLOGY

OXIDATION AND REDUCTION

WM. MANSFIELD CLARK, *Editor*

(See also in B. A. 6(1): Entries 279, 418, 451, 453, 581, 582, 597, 867, 919, 1832; and in this issue Entries 3572, 3574, 3575, 3661, 3815, 4054)

3617. **CANNAN, ROBERT KEITH. Echinochrome.** *Biochem. Jour.* 21(1): 184-189. 1927.—Echinochrome can be isolated from eggs and perivisceral fluid of *Arbacia punctulata*. It does not form a dissociable compound with O, but is the oxidant of an oxidation-reduction system. Electrode potentials have been measured over a range of pH 2.2-9.76. Normal electrode potential is +0.1995. If echinochrome has any respiratory function, it is an activator rather than a carrier of O. From the electrode equation $E_h = E_o' - 0.03006 \log [S_r]/[S_o]$ at reduction intensities of less than r_H 7, it would appear that enough reduced pigment is present to be important in cell oxidations, even though the quantity is analytically insignificant.—*N. M. Payne.*

3618. **CHAMBERS, R., B. COHEN, and C. POLLACK. Intracellular oxidation-reduction studies. III. Permeability of echinoderm ova to indicators.** *Jour. Exp. Biol.* 8(1): 1-8. 1931.—Living echinoderm larvae were immersed in sea-water solutions of indicators and the penetration of a number of dyes into the interior of the cell investigated. Under aerobic conditions all the penetrating dyes, including methylene blue, can be completely reduced within the ova. Ultimately, through progressive intracellular accumulation of the oxidant, the dyes all impart a visible coloration to the cytoplasm. Eggs immersed in the penetrating indicators eventually die without undergoing segmentation. The eggs immersed in solutions of all but one of the non-penetrating indicators developed into swimming larvae. Upon cytolysis the increased permeability of the disintegrated remains of the egg permits the washing out of the contained indicator. The agent or agents responsible for the reducing activity of protoplasm apparently escapes from the cytolysed cell debris into the surrounding medium in which it may still exert its reducing action.—*J. M. Robson.*

3619. **CONANT, JAMES B., and CARL O. TONGBERG. The α-oxidation of acetaldehyde and the mechanism of the oxidation of lactic acid.** *Jour. Biol. Chem.* 88(3): 701-708. 1930.—The oxidation of lactic acid by ceric sulphate yields acetaldehyde which is further oxidized to formic acid through an intermediate which may be glycolic aldehyde. Equations are given showing how glycolic aldehyde may be formed in the biological oxidation of lactic acid.—*F. Bernheim.*

3620. **DIXON, MALCOLM, and KENNETH ALLAN CALDWELL ELLIOTT. The effect of cyanide on the respiration of animal tissues.** *Biochem. Jour.* 23(4): 812-830. 1929.—A study has been made of the effect of various concentrations of cyanide on the rates of respiration of a number of animal tissues. In most cases a cyanide concentration of $M/1000$ is sufficient to produce maximum inhibition. No greater inhibition is produced by increasing the cyanide concentration 100 times. Maximum inhibition varies in different tissues between 40% and 90%, the average value being about 60%. It is concluded that the respiration of animal tissues is of 2 sorts. One, accounting for about $\frac{2}{3}$ of the total, is due to systems poisoned by cyanide; the other $\frac{1}{3}$ is due to systems which resist cyanide. Warburg's "respiratory enzyme" (Keilin's cytochrome-indophenol-oxidase system) can therefore only account at most for about $\frac{2}{3}$ of the total respiration of animal tissues. The respiration of spleen, unlike that of all the other tissues tested, is not affected by small amounts ($M/1000$) of cyanide. It appears to contain some substance with a greater affinity for cyanide than the "respiratory enzyme." Negelein's statement that the respiration of yeast is almost completely inhibited by cyanide is confirmed. Some samples of yeast, however, show an incomplete (85%) inhibition. The effect of pyrophosphate on the respiration rates of liver, muscle and yeast has also been studied. With liver, small concentrations produce a slight acceleration, but larger amounts produce inhibitions which vary between 30% and 70% but are always considerably less than the corresponding cyanide inhibitions. With muscle pyrophosphate produces a greater inhibition than cyanide Pyrophosphate produces no effect on yeast. Possibly the cell-membranes are not permeable to it. Since the "respiratory enzyme" is not inhibited by pyrophosphate, the inhibition of respiration must be due to its action on some other system. It is shown that pyrophosphate inhibits the reduction of methylene blue by the succinoxidase system, though this reaction is unaffected by cyanide. The actions of both cyanide and pyrophosphate on respiration are reversible.—*Authors' summary.*

3621. **HALDANE, J. B. S. Oxidation by living cells.** *Nature [London]* 128(3222): 175-178. 1931.—A review.

3622. **PREISLER, PAUL W. Kinetics of the reduction of cystine and related dithio (R-S-S-R) acids by reversible oxidation-reduction systems.** *Jour. Biol. Chem.* 87(3): 767-784. 1930.—Dithio (R-S-S-R) acids were reduced by reversible oxidation-reduction systems of high reducing intensity and reaction rates were obtained which resembled approximately those of 2nd order reactions. These results serve as a criterion for the exclusion of certain reduction reactions as the predominating mechanisms. The reduction rates differed for the various acids studied and seemed to depend on the position and nature of the groups attached to the -S-S- linkage, the rates being higher in those cases in which the -COOH or a $-NH_2$ group was adjacent to the -S-S- linkage. The reduction rates decreased as the acidity was increased. Temperature coefficients calculated for certain of the reactions were rather unusual and certain unexpected results were obtained for the effect on the reaction rates of the potential of the reversible reagent employed for the reduction; the rate of reduction was not affected by an alteration of the potential of the reagent employed when the oxidant-reductant ratio was changed, but the use of another system of different E_o value did alter the rate of the reduction. The results led to certain conclusions regarding the possible nature of the apparent reversibility of the change R-S-S-R to R-S-H and a comparison of this system to other oxidation and reduction systems has been presented to assist in classifying this reaction.—*Author's summary.*

3623. **REY-PAILHADE, J. de. Le philothéion, diastase d'hydrogénation.** *Compt. Rend. Soc. Biol.* 99(35): 1700-1702. 1928.—Phylotheion is a proteinic compound containing a chain of S H which enables it to play the rôle of hydrogenating enzyme. 2 R-SH (phylotheion) + O = H_2O + R-S-S-R (phylotheion). The author takes hen's egg albumin, diluted twice with water as a source of phylotheion. When mixed with sulphur and warmed to 40°C., H_2S is given off: 2 R-S-H + S = H_2S + R-S-S-R. This reaction is inhibited when the egg albumin has been previously heated to 80°C. Phylotheion is fixed in the cell and there it is oxidized and reduced reversibly. The author suggests that the sugar molecule may be responsible for the regeneration of phylotheion.—*E. S. G. Barron.*

ANIMAL PHYSIOLOGY

BIOCHEMICAL, BIOPHYSICAL AND PHYSIOLOGICAL METHODS AND APPARATUS

C. H. FISKE, *Editor*, Biochemical and Biophysical

S. E. POND, *Editor*, Physiological

(See also in this issue Entries 3034, 3394, 3542, 3583, 3596, 3601, 3615, 3733, 3741, 3768, 3791, 3793, 3864, 3868, 3875, 3879, 3920, 3990, 4124, 4414, 4733, 5408)

BIOCHEMICAL AND BIOPHYSICAL

3624. **ABDERHALDEN, EMIL.** Zum Nachweis der Abderhaldenschen Reaktion im Harn. [The Abderhalden reaction in urine.] *Fermentforschung* 12(1): 128. 1930.

3625. **ANDREWS, S., and J. A. MILROY.** Sublimation in vacuo as a method of separating certain chemical constituents of the body. *Jour. Physiol.* 70(1): xi-xii. 1930.—Abstract.

3626. **ASADA, YUTAKA.** A micro modification of blood phenol method. *Tohoku Jour. Exp. Med.* 15(3/4): 363-368. 1930.—A modification of Folin's method for urine. Uric acid is removed from the Folin-Wu blood filtrate with Ag lactate, excess of which is removed with NaCl. Color is developed with Bell's modification of Folin's phenol reagent and Na_2CO_3 and compared against standard of resorcinol. Only 0.2 cc. blood is necessary for a determination (0.4 cc. if free and total phenols are determined). Total phenol contents of 3 human cases averaged 3.6 mg. per 100 cc. blood (free phenol = 3.3 mg. and conjugated = 0.36 mg.). In 15 rabbits free phenol = 3.5 mg. and conj. = 0.2 mg. (ave.). Phenol content of blood of rabbit increased after intraperitoneal injection of phenol solution.—*M. R. Freeland.*

3627. **ASHBEL, RIVKA.** Tecnica del metodo manometrico per il ricambio dei tessuti secondo Warburg. [Warburg's manometric method for determining the metabolism of tissues.] *Riv. Patol. Sperim.* 5(2/3): 233-251. 5 fig. 1930.—A review.

3628. **BARIL, G. H., et JULES LABARRE.** Modifications de techniques de détermination du cholestérol, du phosphore et du calcium inorganiques dans le sérum sanguin, en vue de l'association de ces dosages sur une même prise d'essai. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 185-187. 1930.—1 cc. of serum suffices, with the methods described.

3629. **BEČKA, JAN.** Über die praktische Anwendung der kolorimetrischen Magnesiumbestimmung in der Biochemie. *Biochem. Zeitschr.* 233(1/3): 118-128. 1931.—A colorimetric method, based on the work of Hahn and Kolthoff, is given which determines 0-0.015 mgm. Mg in 0.1 cc. urine, 0.1-0.2 cc. blood-serum or plasma, and 0.1 gm. muscle with an accuracy of 0.0001 mgm. between 2 determinations (this does not exceed 5%).

3630. **BENNETT, R. D., N. S. GINGRICH, and W. C. PIERCE.** An experimental oil immersed X-ray apparatus. *Rev. Sci. Instrum.* 2(4): 226-230. 3 fig. 1931.—Description and constructional details for mounting x-ray tube, rectifier tubes and transformers in a single oil filled steel tank. Details are given for construction of the filament transformers. Advantages are portability, compactness, greater usable intensity of x-rays, no exposed high voltage.—*R. D. Bennett.*

3631. **BROOKS, MATILDA MOLDENHAUER.** The absorption spectra of ortho-chlorophenol indophenol and of orthocresol indophenol. *Jour. Amer. Chem. Soc.* 53 (5): 1826-1830. 4 fig. 1931.—Spectrophotometric studies of *o*-chlorophenol indophenol and of *o*-cresol indophenol have been made using 2 samples of each dye: one a commercial sample, the other a very pure one obtained from W. Mansfield Clark. The absorption maximum of *o*-chlorophenol indophenol at pH 8.0-9.6 is at 625 mμ. At these pH values the blue ion predominates. The absorption maximum of the dissociated form of *o*-cresol indophenol is at 610 mμ and that of the red acid form is at 500 mμ. The 2 samples of *o*-chlorophenol indophenol are about of equal purity, whereas in the case of *o*-cresol indophenol the commercial sample appears to be only between 51 and 54% as pure as that of Clark. The height of the maxima varies with pH and concentration of the dye.—*Author's summary.*

3632. **BRULL, L.** L'ultrafiltrat in vivo. [The ultrafiltrate in vivo.] *Compt. Rend. Soc. Biol.* 99(33): 1607-1608. 1928.—In a series of ultrafiltrations on an entire dog and 1 on a Starling cardiopulmonary preparation, the Cl, the glucose and the non-protein N of the blood plasma passed through the filter; inorganic P and Ca were only partially filterable.—*M. K. Chapin.*

3633. **BÜTTNER, K.** Meteorologisch-medizinische Strahlungsmessungen in definierten Spektralbereichen. [Meteorological-medical measurements of rays in definite spectral regions.] *Strahlentherapie* 39(2): 358-368. 1930.

3634. **CAHANE, M.** Sur une microméthode pour le dosage du calcium dans les tissus. *Compt. Rend. Soc. Biol.* 106(9): 743-745. 1931.—A method for preparing tissue so that its Ca content can be determined manganometrically is described. By collecting the wash waters as one proceeds, one can also test for Mg, using the colorimetric method of Kramer and Tisdall.—*E. Weiner.*

3635. **CARTER, EDGAR B.** A proposed chemical test for pyrogen in distilled waters for intravenous injections. *Jour. Lab. and Clin. Med.* 16(3): 289-290. 1930.

3636. **CORLEY, RALPH C.** A colorimetric method for the determination of levulose in blood and urine. *Proc. Soc. Exp. Biol. & Med.* 26(3): 248. 1928.—Preliminary paper.

3637. **CUNY, LOUIS.** Le dosage des sels biliaires dans la bile et le liquide duodénal. 199p. Masson et Cie: Paris, 1927. Pr. 30 fr.—The book is for the most part a review of the literature on the methods of determining bile salts. Part I considers (1) Chemistry of bile acids, (2) Composition of bile and duodenal liquid, (3) Methods of isolation of bile constituents. Part II classifies the methods of bile, etc., analysis under heads of (1) Gravimetric, (2) Surface tension, (3) Alkaline hydrolysis, (4) Colorimetric methods, (5) Determination of sulfur, (6) Acidometric and polarimetric methods. Considerable emphasis has been put upon alkaline hydrolysis, wherein the N is checked by 3 methods. The colorimetric method was carefully studied to provide a simple, rapid method for hospital work. Each series of methods is preceded by general information of the reactions employed. Appendix contains a complete bibliography, calculating tables for gasometric work, and a table of the author's results of analysis of bile.—*J. E. Andes.*

3638. **ELVEHJEM, C. A.** A note on the determination of iron in milk and other biological materials. *Jour. Biol. Chem.* 86(2): 463-467. 1930.—A further revision of Elvehjem and Hart's modification of the thiocyanate method is described, applicable to milk and to other material rich in P. This method eliminates the difficulties encountered due to the formation of pyrophosphate during the ignition of milk samples.

3639. **ERDÖS, JÓZSEF, und JÁNOS SÜRÜ.** Kolloidale Zirkonsäure als Enteiweissungsmittel. [Colloidal zirconic acid as a deproteinizing agent.] *Biochem. Zeitschr.* 231(1/3): 6-12. 1931.

3640. **FLORKIN, MARCEL.** Studies in the physical chemistry of the proteins. 7. The solubility of fibrinogen in concentrated salt solution. *Jour. Biol. Chem.* 87(3): 629-649. 1930.—Fibrinogen is readily transformed, even at room temp. and at neutral reactions, to substances which are no longer precipitated by half saturation with NaCl. Conditions of acidity and of temp. have been determined, however, under which fibrinogen may be sufficiently purified of other proteins and of its own de-

naturation products to yield a chemical individual of constant and reproducible solubility. The solubility of fibrinogen in concentrated salt solutions is defined by the equation $\log S = \beta - Ks\mu$. The values of β and of the salting out constant, Ks, have been determined at 25° for NaCl at pH 5.8, $(NH_4)_2SO_4$ at pH 6.0 and 6.6, and for potassium phosphate at pH 6.6. The results that have been obtained with $(NH_4)_2SO_4$ at pH 6.0 and 6.6 are consistent with the postulate that Ks is a constant for a given protein and salt, independent, over wide ranges, of temp. and pH. The amphoteric properties of the protein are reflected by the values of β. The variation of β from 2.81 at pH 6.6 to 2.51 at pH 6.0 suggests that fibrinogen has an acid isoelectric point. A comparative study of the solubility of the different blood proteins in concentrated solutions of the same salt, $(NH_4)_2SO_4$, shows that, of all of them, fibrinogen has the highest value of Ks. This study is thus a further contribution towards the description of the "salting out" of the blood proteins by neutral salts, in terms of physicochemical constants.—*Author's summary.*

3641. **GERLACH, WALTHER, und WERNER GERLACH. Bleinachweis im organischen Gewebe.** *Naturwissenschaften* 19(5): 111. 1931.—Note. The micro method described by Gerlach and Schweitzer (Zeitschr. Anorg. u. Allgemein. Chem. 195: 1931.) is applicable to organic material and has been used to detect Pb poisoning.

3642. **GETTLER, ALEXANDER O., and HYMAN BLUME. Chloroform in the brain, lungs and liver. Quantitative recovery and determination.** *Arch. Path.* 11(4): 554-550. 2 fig. 1931.—When chloroform-containing distillate is treated with pyridine and NaOH and heated in the water bath for 1 min., a pink color develops, which is read against similarly treated standard chloroform solutions. The use of permanent colored glass standards for the colorimetric work is described. Experiments showed that after death the chloroform content of the tissues decreases daily. After 42 days, only 18% of the original amount present is recoverable. The chloroform content of the brain, lungs and liver in 7 cases of death due to excessive administration of chloroform, was: brain, 372-480 mgm.; lungs, 355-485 mgm.; liver, 190-275 mgm., in 1,000 gm. The chloroform content of the brain, lungs and liver of 9 patients after chloroform anesthesia, given in preparation for surgical operation, was: brain, 120-182 mgm.; lungs, 92-145 mgm.; liver, 65-88 mgm. in 1,000 gm.—*Authors' summary.*

3643. **GILMAN, ALFRED, and GEORGE R. COWGILL. The determination of peptic activity: an examination and application of the Gates method of proteolytic enzyme titration.** *Jour. Biol. Chem.* 88(3): 743-752. 1930.—The Gates method involves the digestion of the gelatin layer on a photographic film. Proteolytic activity is estimated by the difference in light intensity through the film before and after digestion. Films are exposed to x-rays at 25,000 volts, and 10 milliamperes for 2 min. at a 2 ft. distance. They are developed and fixed in plain sodium thiosulphate, and digested at 25° C. at pH 2, as regulated by Sørensen's glycine-NaCl-HCl buffer. The light penetrating is measured by a Klett or Duboscq colorimeter. Armour's pepsin, 1:10,000 is used as a standard at varying dilutions of a similar pH as the film solution. Normal gastric juice gives optimal results in 10 minutes and 0.5 cc. per sample is adequate.—*H. L. Keil.*

3644. **GOIFFON, R. Défécation au permanganate pour le dosage du calcium dans les selles.** *Compt. Rend. Soc. Biol.* 106(9): 723-724. 1931.—The new method described for determining fecal Ca insures quick filtration and produces no disagreeable odor. The results compare well with those obtained by ashing. It is possible to test the clear filtrate obtained for other mineral elements.—*E. Weiner.*

3645. **GREENWALD, ISIDOR, and IRVING LEVY. The preparation of lipoid-free serum. Apparatus for extraction at low temperatures.** *Jour. Biol. Chem.* 87 (2): 281-287. 2 pl. 1930.—Description of apparatus for the continuous extraction at low temp. of solids or of liquids with solvents both heavier and lighter than the material to be extracted. The essential feature is a provision by which the condensed solvent is cooled, in ice, in solid CO_2, or in other cooling material, before coming in contact with the material to be extracted. Denaturation of the protein can thus be greatly reduced or prevented entirely. Using ethyl or methyl alcohol followed by ether in one type of apparatus or N-amyl alcohol, isoamyl alcohol or diethylcarbinol in the other, it was found possible to reduce the lipoid P content of 2 samples of serum from 5.0 mgm. per 100 cc. to 0.5 mgm. per 100 cc., the cholesterol from an initial value of 83 mgm. to 2-7 mgm., and the fatty acids from 73 to 4-40 mgm. (one sample) and from 178 mgm. to 2.4 mgm. (another sample). The preparations with alcohol and ether were completely soluble in water. The amyl alcohols produced considerable coagulation but not enough to affect appreciably the pneumococcus antibody content of the serum.—*I. Greenwald.*

3646. **GRIFFING, E. P., and C. L. ALSBERG. Note on the Ter Meulen-Heslinga methods for the estimation of nitrogen, carbon and hydrogen in organic material.** *Jour. Amer. Chem. Soc.* 53(3): 1037-1039. 1931.—The Ter Meulen and the Heslinga methods have proven highly valuable; both methods employ much less material than the customary macro methods, without requiring the special equipment or unusual technique of the micro methods in general use.

3647. **GUILLAUMIN, CH. O., R. WAHL, et Mlle. M. L. LAURENCIN. Sur le dosage des albumines seriques. Comparaison de quelques resultats obtenus par pesee, par azotometrie et par refractometrie.** *Bull. Soc. Chim. Biol.* 11: 387-399. 1929.—The conditions of separation of various serum albumin fractions were determined by a micro-method after Howe. Compared with the gravimetric method, the determinations have a rapid, uniform technic, yielding about the same result (a little better). With Reiss' tables for reference, refractometry produces considerable error. Other methods of serum albumin measurement are necessary, particularly for large and small molecular groups.—*R. H. M'Gonigle.*

3648. **HAENDEL, MARCELO. La dosificación del ácido glucorônico en la orina y en la sangre. Un nuevo procedimiento. [Determination of glucuronic acid in blood and urine.]** *Rev. Assoc. Méd. Argentina* 42(281/282): 215-220. 1929.—Glucuronic acid is precipitated in 10 cc. urine by means of lead acetate and NH_3. The precipitate is converted into furfural with HCl, distilled, and determined by adding bisulphite. Blood is diluted in 10 vol. strong acetic acid solution and heated to boiling. Pulverized KCl is added till no more precipitate is formed. After 24 hrs. the precipitate is filtered and washed. The filtrate is neutralized to litmus with NaOH and precipitated with lead acetate and NH_3; then treated as with urine. Values found were 5-8 mgm. % in urine, 0.6-1.8 mgm. % in blood.—*E. A. Molinelli.*

3650. **HEILBRON, I. M., and F. S. SPRING. The colour reactions and absorption spectra of sterols in relation to structure.** *Biochem. Jour.* 24(1): 133-135. 1930.—The Tortelli-Jaffe reaction was modified to render it both instantaneous and more sensitive. The reagent seemed to be specific for sterol derivatives containing an "inert" ethenoid linkage, possibly in position $\Delta^{10:19}$. The sterol derivatives showed selective absorption when they contained 2 double bonds and gave positive color reactions with trichloracetic acid or antimony chloride. —*E. B. Carmichael.*

3651. **HEILMEYER, LUDWIG. Die spektrophotometrische Bestimmung des Urobilins und Urobilinogens mit besonderer Berücksichtigung der Terwenschen Methode, zugleich eine Kritik der quantitativen Urobilinbestimmung überhaupt.** *Zeitschr. Ges. Exp. Med.* 76 (1/2): 220-235. 1931.—Spectrophotometric studies showed that urobilin was not a uniform substance; quantitative determination had to be made by way of urobilinogen, which showed absolute uniformity. The spectrum of the

benzaldehyde compound of mesobilirubinogen agreed with that from corresponding preparations from feces and urine. Ratios of absorption averaged 0.0000923. Beer's law for the acetic acid urobilinogen aldehyde solution was confirmed. On these facts a spectrophotometric method for determining urobilinogen was based, and, using Terwen's method of reduction, urobilin plus urobilinogen. Terwen's method was thereby tested and his standardization of the phenolphthalein standard found approximately correct. It seemed probable that the endogenous urobilin was reduced to urobilinogen but that that arising secondarily in the light only slightly so. Material should be reduced as soon as possible to prevent loss. The proportion of urobilinogen to urobilin in fresh urine showed 100% urobilinogen; in urobilinuria much more urobilinogen than urobilin; in feces frequently 100% urobilinogen, though the urobilin content was often higher.

3652. **HEILMEYER, L., und W. KREBS. Die quantitative Bestimmung des Urobilins und Urobilinogens mit dem Zeissschen Stufenphotometer. [Quantitative determination of urobilin and urobilinogen with the Zeiss' graduated photometer.]** *Biochem. Zeitschr.* 231 (4/6): 393-398. 1931.

3653. **HUBBARD, ROGER S. The determination of inorganic sulfate in serum.** *Jour. Biol. Chem.* 88(3): 663-668. 1930.—The method is based on the precipitation of protein with trichloracetic acid, the precipitation of sulphate from the protein-free filtrate by treatment with a solution of benzidine in acetone, and the determination of the precipitated benzidine by oxidation with H_2O_2 and iron. The method is adapted to the study of such amounts of sulphate as occur normally and in most pathological conditions, but must be modified as described when both sulphate and phosphate are present in very high concentration.—*R. S. Hubbard.*

3654. **HUNTER, ANDREW, and JAMES A. DAUPHINEE. The arginase method for the determination of arginine and its use in the analysis of proteins.** *Jour. Biol. Chem.* 85(2): 627-665. 1930.—Factors affecting the arginase method for the determination of arginine and its application to the analysis of proteins were described. Special emphasis was placed on the preparation of the arginase and the testing of its activity. The arginase-urease method for the determination of arginine in pure solutions was sufficiently accurate. The effect of urease in the analysis was negligible. By successive use of the 2 enzymes and with the use of a suitable correction, it was possible to determine arginine quantitatively with an error of not more than 0.5%. A study was made to determine the corrections necessary when the method was applied to proteins. The results obtained with 8 proteins show a marked agreement and agree favorably with those obtained by other methods.—*R. L. Van Peursem.*

3655. **INOUE, YOSHIYUKI, and BUNSUKE SUZUKI. The selective hydrogenation of unsaturated acids and their constitution. II. The isolinolic acid of silk worm pupa.** *Proc. Imp. Acad.* [*Tokyo*] 7(1): 15-18. 1931.—Isolation, purification and chemical properties are discussed.

3656. **JAENSCH, WALTHER. Die Hautkapillarmikroskopie am Lebenden. [Capillary microscopy of the skin in the living.]** In: **[E.] ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Lief. 319. Abt. IX. Methoden zur Erforschung der Leistungen des tierischen Organismus. Teil 3, Heft. 5.** Urban und Schwarzenberg: Berlin, 1930.

3657. **KAHLER, H., FLOYD de EDS, SANFORD ROSENTHAL, and CARL VOEGTLIN. Electron equilibria in biological systems. III. The measurement of electrochemical potentials by means of a vacuum-tube static voltmeter which eliminates minute polarization currents.** *Amer. Jour. Physiol.* 91(1): 225-237. 10 fig. 1929.—A vacuum tube voltmeter is described, which, when adjusted by means of a glass electrode, becomes a static instrument. It gives values agreeing with the electrometer on all systems measured except on thick glass electrode systems where the electrometer may be superior. The voltmeter has the advantage that high speed changes may be detected on feeding the output of the last tube into a recording oscillograph or simply using a fast moving indicating meter. The importance of elimination of minute polarization currents in accurate measurements of physical and biological systems of small electrochemical capacity is demonstrated.—*Authors' conclusions.*

3658. **KERRIDGE, PHYLLIS M. TOOKEY. A new clinical method for the estimation of protein in urine.** *Lancet* 220(5601): 21-22. 1931.—This method can also be used for protein N determinations in cerebrospinal fluid. The urine is mixed with a C suspension (1 to 25 solution). C and protein are precipitated simultaneously with 100% of trichloracetic acid. The grey tone of the precipitate is compared with a set of standards made with commercial horse serum.

3659. **KISCH, BRUNO. Zur Xanthydrolmethode der Harnstoffbestimmung in tierischen Flüssigkeiten.** *Biochem. Zeitschr.* 225(1/3): 193-196. 1930.—Application to the Fosse reaction of a xanthydrol derivative insoluble in alcohol and its extension as a micromethod to the study of urea-rich media.

3660. **KOCKEL, HEINZ. Histochemische Metallnachweise.** *Virchow's Arch. Path. Anat. u. Physiol.* 277(3): 856-874. 1930.—H_2S is the best reagent for Pb and Cu, but is successful only with intravenously injected metal. No satisfactory histochemical method for demonstrating Sn has been found. The methods in use for Fe are defective, in that they change the localization of the metal and do not show occult Fe. Previous treatment with CCl_4 containing Cl once preserved the local relations of Fe unchanged and rendered possible the demonstration of occult Fe. Chlorination also made it possible to use the thiocyanate test, which had hitherto been impracticable, and which on account of its sensitiveness greatly increased the histochemically demonstrable Fe.—*Author's summary* (*transl.*).

3661. **KÜHNAU, JOACHIM. Mikrobestimmung des reduzierten und des Gesamtglutathions der Leber.** *Biochem. Zeitschr.* 230(4/6): 353-372. 1931.—Two simple methods, one for the determination of reduced, and the other for total, glutathione in 0.5 gm. liver are described. The limit of error lies within ± 4%. The influence of the dilution factor, of acidity, and of temp. on the I combining power of crystallized glutathione was investigated, and the reducing action of NaCN on oxidized glutathione measured in very dilute solution.—*Author's summary* (*transl.*).

3662. **LAGUARTA, EDUARDO M. GÁLVEZ. Un sifón de cebamiento automático. [A self-starting siphon.]** *Rev. Acad. Cien. Exact. Fis.- Quim. y Nat. Zaragoza* 13: 151-152. 1 fig. 1929(1930).

3663. **LAMMERT, OLIVE M., J. LIVINGSTON R. MORGAN, and MARGARET A. CAMPBELL. The quinhydrone electrode. II.** *Jour. Amer. Chem. Soc.* 53(2): 597-604. 1931.—An investigation of the effect of N upon the reproducibility of the quinhydrone electrode in 0.1 *N* HCl leads to the following conclusions. The quinhydrone half-cell, when prepared with electrodes dried in N and with solutions stirred with N, or when prepared with electrodes dried with air and with solutions stirred with N, is far more readily reproducible than when prepared with air-dried electrodes and solutions stirred either mechanically in the presence of air or with compressed air or O. In the preparation of the quinhydrone half-cell it is not sufficient to dry the electrodes with N; N must be passed through the solution. If, however, N is passed through the solution the electrodes need not be dried with N. The 0.1 *N* HCl quinhydrone half-cell, prepared as described in this and in the first paper of this series [see Entry 3674], is the most easily and readily reproducible electrode which the authors have used. Electrodes prepared with N acquire a definite equilibrium potential much more quickly than those prepared with air. Short circuiting the electrodes in pairs during pre-treatment does not affect the p. d. obtained in N.—*From authors' summary.*

3664. **LAUG, EDWIN P. The application of the quinhydrone electrode to the determination of the pH of serum and plasma.** *Jour. Biol. Chem.* 88(2): 551-573. 1930.—A comparative study of the pH of normal dog serum and plasma at 38° by the H_2 and quinhydrone electrodes has shown that on the average the latter electrode reads 0.03 pH more acid than the former. Under experimental conditions this difference has remained sufficiently constant to inspire confidence in the reliability of the method. Determinations of pH with the quinhydrone electrode can be rapidly made and require only small amounts of fluid. The occurrence of the 1st change of shed blood, discovered by Havard and Kerridge, has been substantiated with both types of electrodes.—*E. P. Laug.*

3665. **LEACH, W. On a simple electric immersion heater for constant temperature baths.** *Ann. Botany* 45 (178): 373-376. 2 fig. 1931.

3666. **LEULIER, A., et L. REVOL. Sur le cholestérol des surrénales: détection histochimique et dosages chimiques.** *Bull. Histol. Appl. Phys. et Path.* 7(8): 241-250. 1 fig. 1930.—Formalin fixed tissue is treated in various ways: (1) Fresh sections are stained with Sudan and mounted in glycerin jelly; (2) Immerse in digitonine or other saponins in alcohol up to 10 days, wash in alcohol, pass to water, cut, and mount as above. Examine in polarized light. Cholesterol crystals appear only in the cortex though an almost equal amount can be extracted from the medulla or can be shown by colorimetric test.—*J. G. Sinclair.*

3667. **LeVESCONTE, AMY, J. H. BUCHANAN, and MAX LEVINE. The biological estimation of glucose. I. A study of factors influencing changes in H-ion concentration of media.** *Iowa State Coll. Jour. Sci.* 4(3): 331-342. 1930.—Glucose was estimated by means of pH measurements at varying concentrations both in pure solutions and with sucrose. The synthetic medium consisted of a dilute glucose solution with $(NH_4)_2HPO_4$ and KCl. *Aerobacter levans* was used to produce acid from glucose. The medium was brought to pH 7 by adding KOH, using brom thymol blue. The sterilized and inoculated tubes were incubated at 30° C. under anaerobic and aerobic conditions. Incubation time was 2-24 hrs. for aerobic and 4-6 days for anaerobic. Under aerobic the pH first falls as organic acids form, then rises showing their destruction. This secondary change is a function of the glucose concentration. Under anaerobic there is no increase in pH so the total change is a function of the glucose concentration. There is indicated a possibility of quantitative sugar determination by biological means.—*H. L. Keil.*

3668. **LEYS, DUNCAN. Estimation of urea in urine.** *Lancet* 220(5606): 296. 1931.—It is impossible to estimate urea excretion by the hypobromite method when there is a combination of bacilluria and "acidosis." Bacilluria alone does not appreciably affect the result. Excess ammonia in the urine in "acidosis" should be allowed for by estimating by the formalin method, and subtracting 2.6 c.cm. N for every 0.1% ammonia found, whenever urea excretion is estimated in patients whose urine gives a positive nitroprusside reaction.—*Author's summary.*

3669. **LINKE, F. Die Bedeutung des Öffnungsverhältnisses eines Aktinometers für Messungen der Sonnen- und Himmelsstrahlung. [The significance of the aperture ratio of an actinometer for measurements of solar and sky radiation.]** *Strahlentherapie* 39(2): 351-357. 1930.

3670. **LOGAN, MILAN A. An apparatus for the evaporation of liquids in a test-tube.** *Jour. Biol. Chem.* 86 (2): 761-764. 2 fig. 1930.

3671. **LUSTIG, B., und A. PERUTZ. Über ein einfaches Verfahren zur Bestimmung der Wasserstoffionenkonzentration der normalen menschlichen Hautoberfläche.** *Arch. Dermatol. u. Syph.* 162(1): 129-134. 1930.—The author gives a simple indicator method which determines the minimum acid reaction of the skin. This varied in different parts of the body, and also after washing with soap and water or with benzine, the range being pH 4.0-6.8.

3672. **MAGARA, MASANAO. A new hydrogen electrode vessel for the pH determination of the blood.** *Japanese Jour. Exp. Med.* 7(3): 413-416. 1929.—The vessel has a capacity of 1 cc.; it is attached to a cannula by means of a 2-way stopcock, and it has a 2-way valve in its other end, the arrangement being such that the first blood drawn may be rejected, and that the blood from the cannula does not come in contact with air, determination being possible in an atmosphere of H or any other gas. Another apparatus is described, which furnishes H with the same CO_2 tension as blood. The pH of the blood of rabbit, measured with this vessel under pure H gas, is 7.49 at 25°C. and 7.35 at 38°C.; under H gas with CO_2 tension equal to that of blood the pH is 7.27 at 38°C. The difference between the pH of the arterial and venous blood is almost negligible.

3673. **MINOSIMA, TAKASI. Zur Gefrierpunktbestimmung von Lösungen in kleinen Mengen mit Thermoelement. Versuche an Krötenblut.** *Pflüger's Arch. Ges. Physiol.* 226(6): 794-798. 2 fig. 1931.—In place of the usual Beckmann thermometer a 2-junction iron-constantan element was used whose sensitivity was 53.10^{-6} volt per 1°C. It was sealed into a glass tube and protected with shellac. A D'Arsonval coil galvanometer with a sensitivity of 1.2×10^{-8} amp. per mm. at 1.63 meters was the measuring instrument. The freezing point vessel is of the Beckmann type but so small that 0.5 to 1 cc. of material suffices for a determination. The procedure is likewise similar to the Beckmann method. The control element is placed in a water-ice mixture in a vacuum flask. The method of calibration, sources of error and a circuit diagram are given. The sensitivity is 1 mm. of galvanometer deflection $= 0.00997 \pm 0.00018°$ C. The freezing point depression of toad blood was found to be $0.520 \pm .009°$C. In addition freezing points of glucose are reported. An accuracy of 1.2% is claimed.—*W. C. Stadie.*

3674. **MORGAN, J. LIVINGSTON R., OLIVE M. LAMMERT, and MARGARET A. CAMPBELL. The quinhydrone electrode. I.** *Jour. Amer. Chem. Soc.* 53(2): 454-469. 1931.—A study of the reproducibility of the quinhydrone electrode in 0.1 *N* HCl under varying conditions and with a large number of electrodes of different sizes, ages and compositions, leads to the following conclusions. The quinhydrone electrode can be reproduced with ease and with great precision, 2 electrodes made from the same piece of foil consistently giving potential differences agreeing with one another to less than 0.000010 volt. The greatest source of error in the quinhydrone half-cell lies in the preparation of the metal electrode, differences of almost 0.1 volt having been observed when the glass of one of the electrodes was cracked. For this reason a method of making, testing and cleansing the electrodes, which reduces the breakage to a minimum, is suggested. The results obtained when the electrodes are heated in an alcohol flame before use do not justify the method in view of the large number of electrodes which crack. Electrodes made of longer pieces of wire which can be connected directly to the potentiometer wires without the use of Hg as a connecting medium do not give any better results than electrodes made of short wires. The size of the metal exposed to the solution determines the precision with which electrodes properly prepared may be reproduced. Very small, short wires give erratic results; larger, short wires give consistent results but larger deviations than foils or longer lengths of wire; but 2 foils with dimensions greater than 1 sq. cm. give differences of potential, when measured against one another, of less than 0.000010 volt. The composition and age of the metal comprising the electrode is of little importance if the electrode is large enough. However, in 0.1 *N* HCl when the electrodes were much smaller than 1 sq. cm., old roughened platinum seemed to give better results than either new platinum, platinum alloyed with iridium or gold, but the platinum and platinum alloys gave better results than the gold. Two pieces of metal, cleaned and dried by the method

suggested give very nearly the same potential differences whenever they are measured against one another, which fact enables an investigator to select, from a group of electrodes, a few electrodes whose potential differences will invariably be reproduced with great precision.—*Authors' summary.*

3675. **MORGAN, J. LIVINGSTON R., and OLIVE M. LAMMERT. The quinhydrone electrode. III.** *Jour. Amer. Chem. Soc.* 53(6): 2154-2168. 1931.—A study of the comparative potential differences obtained for the quinhydrone electrode in 0.1000 *N* HCl when prepared with metals and graphite of different sizes, ages, sources and compositions leads to the following conclusions. Au electrodes, from whatever source, are likely to give erratic results unless the electrode is a foil or wire as large or larger than 1 sq. cm. Au electrodes give cells of lower current capacities than do Pt electrodes of the same size under the same conditions. Very satisfactory quinhydrone electrodes may be prepared from the graphite core of a lead pencil but not from lamp carbons, etc., since the latter seem to absorb the electrolyte, affecting not only their own potentials but the potentials of any metal electrodes immersed in the same solution. The reproducibility of gold-plated electrodes is not so satisfactory as either Au, Pt or graphite. The reproducibility of quinhydrone electrodes prepared with Au or with graphite is not in general improved in *N*, whereas that of electrodes prepared with C. P. platinum, platinum-iridium, platinum-rhodium alloys, or with gold-plated platinum is very decidedly improved. 24 K gold and C. P. platinum develop, within the limits of the reproducibilities possible with different samples of the same substance, the same potential differences, no matter what the size, age or source of the substance. Lead pencil graphite also seems to develop the same potential difference, although that from only 1 source has been thoroughly tested. Platinum-10% iridium, platinum-10% rhodium alloys and gold-plated electrodes do not develop the same potentials, the C. P. platinum or 24 K gold being negative to the alloys and plate. This difference, however, disappears almost entirely if the solution is stirred with *N*.—*Authors' summary.*

3676. **NEWCOMB, C., and G. SANKARAN. The estimation of iodine in the thyroid glands of albino rats.** *Indian Jour. Med. Res.* 18(2): 557-561. 1930.—Slight modifications of von Fellenberg's method are described.

3677. **OGURI, S., M. MATSUI, S. KAMBARA, and K. KATO. On thermostat.** Original: *Jour. Soc. Chem. Ind. Japan* 32: 360. 1929. Abridgement: *Mem. Fac. Sci. & Engineer., Waseda Univ., Tokyo* 7. 97-100. 4 fig. 1930.—An instrument of great accuracy, for physical research, is described.—*From abridgement.*

3678. **PINCUSSEN, LUDWIG. Analytische Mitteilungen. XII.** *Biochem. Zeitschr.* 229(1/3): 233-237. 2 fig. 1930.—Methods are described for extraction of fat from fluids, for determination of Br in urine, and for microdetermination of NH_3 and urea by the urease method.

3679. **ROMAN, WADIM. Gemeinsame Bestimmung der Halogene in organischen Substanzen.** *Biochem. Zeitschr.* 207(4/6): 416-425. 2 fig. 1929.—The organic substance is fused with KOH and the I titrated with thiosulphate after extraction with alcohol and oxidation with $KMnO_4$. Bromides and chlorides are extracted from the alcohol-insoluble residue with water. The Br is extracted from this aqueous solution with chloroform after oxidation with H_2O_2. After removal of the remaining oxidizing substances KI crystals are added liberating a quantity of I equivalent to the Br. This is titrated with thiosulphate. Cl is determined by titration of the aqueous extract for halogens and then subtracting the determined quantity of Br. The method is rapid and virtually one procedure. It answers the requirements of accuracy and the determination of such small quantities of the halogens as occur in blood and body organs.—*E. K. Borman.*

3680. **SCHEWKET, ÖMER. Eine neue und schnelle Methode zur Bestimmung der Harnsäure. [A new and rapid method of determining uric acid.]** *Biochem. Zeitschr.* 224(4/6): 322-324. 1930.

3681. **SCHYLEMANN, W., F. SCHONHÖFER, und A. WINGLER. Beiträge zum chemischen Nachweis des Plasmochins.** *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 507-511. 1927.—Chloranil (tetrachlorobenzoquinone) proved to be specific for plasmochin, up to 1 part in 200,000 aqueous urine-free solution (plasmochin is extracted from urine with ether), producing an intense blue color. A less sensitive reagent (1: 100,000) is mercuric potassium iodide.

3682. **STEENKEN, WILLIAM Jr. Application of the quinhydrone method for the determination of the pH of solid media.** *Jour. Lab. and Clin. Med.* 16(3): 316-317. 1930.

3683. **TAKETOMI, N., and K. MIURA. On the glucosazone reaction.** Original: *Jour. Soc. Chem. Ind., Japan* 32. 776-779. 1929. Abridgement: *Mem. Fac. Sci. & Engineer., Waseda Univ., Tokyo* 7. 132-133. 1930.—The usual methods of carrying out the phenylhydrazine reaction give osazone yields amounting to only about 50% of the theoretical. Experiments are briefly reported in which the concentrations of reagents, and the time of boiling, were varied. These showed that the optimum proportion of phenylhydrazine hydrochloride to Na acetate is 1: 2.7-2.8; that the osazone yield increases with increasing concentration of reagents up to 3.2 gm. phenylhydrazine hydrochloride in 20 cc. water; optimum time of heating is 3 hrs.—*From abridgement.*

3684. **TAMMANN, G., und H. THIELE. Versuche zur Bestimmung der Konzentration von Oxydationsmitteln mit Hilfe des Reststroms.** *Pflüger's Arch. Ges. Physiol.* 226(6): 694-696. 2 fig. 1931.—A bright platinum electrode as anode and a platinized electrode as cathode in a solution containing H_2 and an oxidizing agent when at a potential below the decomposition potential will give a constant current (Reststrom) after a short time which according to Nernst is $i = \frac{D.\ o.\ n.\ F}{S} . c$, where i = the residual current; D = diffusion coefficient of the depolarizer; n = valence of the oxidizing agent; F = electrochemical equivalent; o = area of the electrode; c = concentration of the oxidizing agent; S = the thickness of the diffusion layer. For H_2O_2 in *N* HCl the residual current was $1.151 \pm 0.015 \times \%\ H_2O_2 \times 10^{-3}$ amp. For $FeCl_3$, $KMnO_4$ and $K_3Fe(CN)_6$ it was found impossible to determine the value of the residual current. In the case of *N* HCl saturated with O and with air the ratio of the residual currents was 1: 3.7 instead of 1: 4.8, the ratio of O concentration. In arterial blood the residual current was 2 m. Amp.; in venous blood it was 0.1 m. Amp.—*W. C. Stadie.*

3685. **TSCHERMAK, A. Über eine Einrichtung zur Umschaltung des Beleuchtungsnetzes von Drehstrom auf Gleichstrom.** *Pflüger's Arch. Ges. Physiol.* 226(6): 746-748. 1 fig. 1931.—High sensitivity galvanometers, particularly string galvanometers, are disturbed by mechanical shaking; irregular stray currents, static charges on the floor and walls and the A. C. of the lighting circuits. The use of D. C. for lamps, motors, etc., does not eliminate this latter difficulty. It is possible, however, by the use of the D. C. from a 120 volt accumulator to eliminate the disturbing effects of the A. C. in the lighting circuit. A diagram of the required circuit is given.—*W. C. Stadie.*

3686. **WADA, ISABURO. An improvement on the potentiometric titration apparatus made in the institute, by introducing a shunt in the galvanometer.** [Japanese] *Rikwagaku-Kenkyū-Jo Ihō* (*Bull. Inst. Phys. & Chem. Res.*) 10(2): 137-145. 1931. [English abstract] *Abstr. from Rikwagaku-Kenkyū-Jo Ihō* (*Bull. Inst. Phys. & Chem. Res.*) p. 8-9. [appendix to *Sci. Papers Inst. Phys. & Chem. Res.* 15(286/287): 1931].—By introducing a shunt into the galvanometer of high sensitivity in the apparatus, the sensitivity may be varied within a wide range, giving ample scope to the titration experiments. Various kinds of titration, which cannot be made satisfactorily by using a galvanometer of a certain definite

sensitivity, may be performed precisely with a high sensitivity, or less precisely but very simply in manipulation with a lower sensitivity. All these facts have been illustrated with the results of the experiments made in the writer's laboratory. Mention has also been made of the abnormal movements of the pointer of galvanometer which come from various causes. Some of these movements can be avoided by cleaning the platinum electrode with a very fine sandpaper, or by other means.—*Author's summary.*

3687. **WEBER, C. J. The determination of arginine in dog blood.** *Jour. Biol. Chem.* 88(1): 353-359. 1930.—The substance responsible in the Folin-Wu filtrate of dog blood for most of the color given with the modified Sakaguchi reaction is believed to be arginine, because it is destroyed by arginase (liver extract) and gives a crystalline precipitate with flavianic acid. A method is given by which arginine may be determined directly on the Folin-Wu filtrates of blood.—*Author's summary.*

3688. **WHITAKER, RANDALL, and B. L. HERRINGTON. The calculation of absolute viscosity from data secured by means of the torsion pendulum viscosimeter.** *Jour. Dairy Sci.* 12(6): 456-463. 1 fig. 1929.

3689. **WIEDERSHEIM, O. Ueber Photo-Nystagmographie.** *Klin. Monatsbl. Augenheilk.* 86(1): 32-38. 14 fig. 1931.

3690. **YEAGER, J. FRANKLIN. A consideration of the pyridine test for chloroform.** *Proc. Soc. Exp. Biol. & Med.* 26(5): 403-405. 1929.—By this test by Cole, the amount of chloroform in a solution mixed with pyridine and NaOH is determined by comparing the red or pink color which appears with a standard set of basic fuchsin solutions. Cole, using the test to determine the % of chloroform in extracts of the brains of rats killed by the inhalation of chloroform vapor, had carried the results to the 5th decimal place. Yeager, using 10 persons to judge the results of 105 tests on a given concentration of chloroform in sea water, obtained results accurate only to the 3rd decimal place, and concludes that Cole has overvalued the accuracy of the test.

PHYSIOLOGICAL

3691. **BENEDETTI, E. Alcuni esperimenti di amplificazione e rivelazione delle correnti bioelettriche mediante l'impiego delle valvole termoioniche. [Detection and amplification of action currents by vacuum tubes.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 7(5): 423-427. 1928.—Five stages of vacuum tube amplification consisting of 3 r. f. stages (including detector) transformer and resistance coupled, and 2 a. f. stages transformer coupled, picked up action currents, through the skin, from the flexors of the fingers, the heart, and the muscles of respiration of man, and of various muscles of the cat and the frog, amplified them and fed them into a loud speaker. The intensity of the sound varied with the force of the contraction, but the frequency did not.—*W. C. Boyd.*

3692. **BENEDETTI, E. Alcuni esperimenti di amplificazione e rivelazione delle correnti bioelettriche mediante l'impiego delle valvole termoioniche. Nota II: Sulla registrazione fotografica delle curve delle correnti amplificate. [Detection and amplification of action currents by vacuum tubes. II. Photographic record of amplified current.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 8(12): 696-700. 2 fig. 1928.—Action currents from the heart of the guinea-pig, picked up by pointed electrodes inserted under the skin, were fed into the primary of a transformer, whose secondary was coupled to an amplifier consisting of eight stages. The amplified currents were fed through a dynamic speaker having a very small mirror instead of a diaphragm, from which a beam of light was reflected onto a moving photographic film. Reproductions of the resultant electrocardiograms, which resembled the usual Einthoven type, but showed more detail, are given, for normal guinea-pigs, and following the administration of caffeine and of adrenalin.—*W. C. Boyd.*

3693. **BENEDICT, FRANCIS G. A helmet for use in clinical studies of gaseous metabolism.** *New England Jour. Med.* 203(4): 150-158. 3 fig. 1930.—A light-weight, head respiration chamber or helmet is described, which can be substituted for the face mask, mouthpiece, or nosepieces, and which is more comfortable and more quickly adjusted than are the other types of breathing appliance. The helmet may be employed both in closed and open-circuit apparatus that are ventilated mechanically by a blower, but not in apparatus having inspiratory and expiratory valves. Details are given regarding its use during rest and during muscular work experiments. The possibilities of using the helmet in O therapy and for resuscitation are cited as illustrations of the general applicability of this respiratory device in the hospital or clinic.—*From author's summary.*

3694. **BÜHL, A. Die absolute Eichung des Otoaudions und seine akustische Leistungsfähigkeit. [The absolute standardization of the Otoaudion and its acoustic properties.]** *Beitr. Anat. Ohres, Nase u. Halses* 28(3/4): 336-343. 1930.

3695. **CAMPBELL, C. J. An electron tube stimulating device. An adaptation of the intermittent valve oscillator.** *Amer. Jour. Physiol.* 89(2): 443-448. 7 fig. 1929.—This device, utilizing an oscillating electron tube and containing no moving mechanical parts other than a few simple electrical switches and sliding contacts, is capable of delivering electrical stimuli at rates varying between a few shocks per min. to several thousand per sec.—*From author's summary.*

3696. **CZONICZER, GABRIEL, und STEPHANIE WEBER. Eine neue Methode zur Bestimmung der Retraktilität des Blutkuchens. [A new method to determine the retractile power of the blood clot.]** *Zeitschr. Klin. Med.* 115(3/4): 604-611. 1 fig. 1931.

3697. **DALLY, J. F. HALLS. Graphic blood pressure records: a new clinical method.** *Lancet* 220(5602): 71-73. 8 fig. 1931.—A description of the apparatus and method of Plesch's tonoscillograph.

3698. **ELMER, A. W., and M. SCHEPS. Comparative researches of the galactose and laevulose test for hepatic efficiency.** *Lancet* 219(5578): 187-188. 1930.—The administration of galactose and levulose has been used to test hepatic efficiency. The fasting blood sugar was examined; then 40 gms. of galactose were given in tea. Blood sugar was run at 30 min. intervals for 2 hours, by the micro method of Hagedorn-Jensen. At the same time sugar was determined in the urine by polarimetry. Dye retention in the blood serum and also bilirubin was determined. Urobilinogen was run qualitatively in the urine. The test was positive if the blood sugar had risen over 30 mg. %. The galactose test was more accurate in most cases than the levulose test.—*H. L. Keil.*

3699. **ENDRES, G. Recording of respiration of small animals.** *Jour. Physiol.* 70(3): 218-220. 4 fig. 1930.—Descriptions of apparatus for recording frequency, depth and type of respiration and total ventilation in small animals such as marmots and rabbits.

3700. **ENGEL, S. Widerstandspupilloskop. Ein neuer Apparat zur Messung der motorischen und optischen Unterschiedsempfindlichkeit.** *Arch. Augenheilk* 103(3/4): 657-664. 3 fig. 1930.—The author calls attention to the disadvantages of the Hess pupilloscope, in particular the influence on the patient of movement of the lever necessary to change the illumination. The instrument of Sander is also objectionable in that the apparatus has to be placed too close to the patient's eye. To overcome these difficulties he has devised an instrument by which a rapid change in the illumination may be made without any change noticeable to the patient which might distract his attention. The instrument consists of a series of resistances through which current is passed to an electric lamp. The eye is illuminated at a constant intensity and a change in this intensity may be made by pressing a lever. This results in an exposure of the eye to 2 different light intensities one of which is constant. The other may be altered by changing the resistance.

The motor and visual discriminative acuity can thus be determined.—*F. H. Adler.*

3701. **FRANK, O. Kurze Bemerkungen über die Bestimmungen der Blutgeschwindigkeit.** [The determination of the velocity of circulating blood.] *Sitzungsber. Ges. Morph. u. Physiol. München* 39: 19-22. 5 fig. 1929/30.—An improvement of the author's differential manometer is briefly referred to.

3702. **FRANK, O. Zur Methodik der Bestimmung der Blutgeschwindigkeit.** [Notes on the methods of determining the velocity of the blood.] *Sitzungsber. Ges. Morph. u. Physiol. München* 39: 79-80. 1929/30.

3703. **GUNN, J. A. An apparatus for measuring transudation through a living membrane.** *Jour. Physiol.* 71 (4): 412-416. 3 fig. 1931.—The exsected living mammalian mesentery is used as a filtration membrane, and through it oxygenated Locke's solution at body temp. is sucked at a constant negative pressure. The rate of transudation is measured. Drugs, toxins, etc., can be added to the Locke's solution and resulting alterations in the permeability of the membrane determined by the change in the rate of transudation.—*Author's summary.*

3704. **HARDEMAN, DANIEL R. Jr. Studies in volume changes of the pancreas.** *Amer. Jour. Physiol.* 93(2): 463-467. 1930.—A method is described of making a collodion plethysmograph for the pancreas which serves admirably for acute experiments. The changes in pancreatic volume thus obtained are reported for a number of drugs and procedures. The results in general are in harmony with the normal vascular responses to these drugs and procedures.—*Author's summary.*

3705. **HELLER, H. Eine Fehlerquelle bei der Bestimmung der perspiratio insensibilis mit der Sauterwaage.** [A source of error in determination of insensible perspiration with the Sauter balance.] *Zeitschr. Ges. Exp. Med.* 73(3/4): 481-487. 1930.—The hygroscopic materials used in the bed change its weight in accordance with increase or decrease in the moisture of the atmosphere.

3706. **HEMINGWAY, A. Surface heating with two types of diathermy electrodes.** *Jour. Lab. and Clin. Med.* 16(3): 271-274. 1930.—To avoid surface heating with saline electrodes, the pads must be soaked in salt solutions having a conductivity greater than that of 10% KCl. Evaporation which produces cooling at the saline pad lowers the surface temp. below that of the metallic electrode. Hence a larger current can be used with a saline pad electrode than with a metallic electrode.—*Author's conclusions.*

3707. **HOFFMAN, WILLIAM J. New technic and instrument for obtaining biopsy specimens.** *Amer. Jour. Cancer* 15(1): 212-220. 11 fig. 1931.—A piece of the tumor is punched out and removed through an outer insulated sheath. The outer sheath of the instrument may be used in conjunction with a syringe for aspiration of the tumor. By connection to a source of high-frequency current the needle track is coagulated and any adherent tumor tissue devitalized, thus preventing implantation of tumor tissue along the course as the needle is withdrawn. The action of the instrument is safe, simple, and positive, obtaining tissue on the first attempt in all cases to date, including many dense, fibrous tumors.—*From author's summary.*

3708. **JACOBJ, C. Weitere Beiträge zur Methode der Durchblutung isolierter überlebender Organe. I. Ein neuer Durchblutungsapparat (Pneumohaematisator). Teil II. Technik der Durchblutung.** *Arch. Exp. Pathol. u. Pharmakol.* 136(3/4): 203-238. 6 fig. 1928.—The author describes the apparatus developed by him during 40 yrs., a "pneumohaematisator" for perfusing isolated organs with blood. The blood is arterialized in a lung artificially ventilated. The gas from the trachea may be analyzed as in living animals. The surviving organs are supplied with an ample blood flow. On the kymograph are registered the blood pressure curve with pulse rate and amplitude, and the respiratory rate. The volume change of the blood stream is transferred, through an electrically driven twin-pump, corresponding to the right and left heart, and filled with glycerine, to 2 rubber balloons, likewise glycerine-filled. These maintain the cross circulation of the blood in 2 cylinders provided with stream-directing valves. The constancy and the regulation of the blood pressure is attained by means of 2 safety-manometer pressure-valves. These control the blood before the insertion of the organs, allowing it to enter against the vestibule of the right heart whence it flows into the lungs. In this way, edema and congestion of the circulation is avoided, and therefore also subsequent overextension and rupture of the capillaries. For the same reason, 2 so-called venous valves are introduced into the venous circulation, preventing too strong suction. The pulse amplitude, depending in the body on the tone of the vascular walls, is here regulated by a rubber balloon, variable in its tension, in the arterial stream. 120 ccm. of blood is required to fill the apparatus; it may be recovered quantitatively for analysis. The venous blood of organs may pass through the apparatus without the influence of the arterial blood, a corresponding amount of normal blood going from the reservoir into the system; therefore, by injection of a solution of poison into the arterial stream of the organs, temporary poisoning with subsequent recovery may be effected. The lungs, organs, all the blood-vascular system, except the heart-pump and blood reservoir, are immersed in the water bath, which is maintained at constant blood temp. by an electrical heater. Taking apart, cleaning, and again setting up the apparatus, which should be done after every experiment, requires only 1½-2 hrs. Part III describes experiments on perfusion of the kidneys, illustrating some of the results obtainable with this apparatus and technique (see entry 3875, in this issue.)—*C. Jacobj (transl. by L. S. Godfrey).*

3709. **JENKINS, C. E. A flicker haemoglobinometer.** *British Jour. Exp. Path.* 11: 261-266. 1930.—The instrument is fully described; it consists essentially of 2 fixed lights and a Simmance-Abady photometer head in a fixed position between them. The brightness is varied by the depth of a glass plunger in a cup containing a coloured solution through which the light from one lamp passes. A glass cell is placed between the head and the other light and contains the sample to be examined. The instrument offers a means of ascertaining the strength of a solution of haemoglobin which is accurate to within 1% as a rule and 2% as a limit, and which is rapid, suitable for routine clinical work, is not easily deranged and is uninfluenced by color.—*J. Bland.*

3710. **JUDSON, LYMAN S., and P. E. GRIFFITH. Electrodynamic recorder.** *Science* 72(1853): 15-16. 1 fig. 1930.—Brief description whereby records can be made on a kymograph at any convenient distance from the stimulated muscle.

3711. **KASAKOW, M. M. Methoden der Blutstillung bei Milzverwundungen.** *Arch. Klin. Chir.* 163(1): 72-85. 7 fig. 1930.—In an unstated number of dogs deep incisions, involving the large veins, were made in the spleen, various hemostatics (mechanical, chemical, physical and biological) applied, and their effect examined in the course of a few days. Vivocoll, a proprietary blood product, was found to obviate the necessity of suture; the scar was smooth and small; the adhesions to surrounding tissues minimal; and it was greatly superior to the other routine methods.

3712. **LAMPERT, HEINRICH. Die Bestimmung der Blutgerinnungszeit.** [The determination of blood coagulation time.] *Münchener Med. Wochenschr.* 77(14): 586-588. 1930.—The wettability of various materials was studied. Substances to which moisture adheres hastened coagulation, moisture-repelling substances delayed it. Glass as a moisture-attracting substance proved unsuitable for blood investigation. Lampert has prepared an alkali-free, transparent, moisture-repelling substance, "athrombit," a condensation product of phenol and formaldehyde, for use in the place of glass in the determination of blood coagulation time.

3713. **LEYSHON, W. A. Note on a frequency recorder for use with a neon lamp excitation circuit.**

Jour. Physiol. 71(2): i-iii. 1 fig. 1931.—A high resistance telephone receiver designed to respond to currents of the order of magnitude of those in the neon lamp circuit, and so modified as to carry a writing point instead of the light aluminium diaphragm, to record the frequency of stimulation of nerve-muscle preparations.

3714. **LINZENMEIER, GEORG, und MARTIN RODECURT.** Versuch einer Schnellmethode zur Bestimmung der Blutsenkungsgeschwindigkeit. *Zentralbl. Gynäkol.* 55(11a): 736-741. 1931.—By placing the micrometric tubes at a 30° angle, the sedimentation rate could be read in 10 min. and there was usually 4-16 mm. more sediment than in 1 hr. with the tubes vertical.

3715. **LOEPER, M., A. LEMAIRE, et J. PATEL.** Inscription graphique des variations tensionnelles du liquide céphalo-rachidien. [Graphic record of the variations of tension in the cerebrospinal fluid.] *Presse Méd.* 38(103): 1761-1763. 4 fig. 1930.—The apparatus consists essentially of a Claude manometer attached to a Marey tambour.

3716. **McCLENDON, J. F. (with the technical assistance of ALLAN HEMINGWAY).** Polarization-capacity as measured with a Wheatstone bridge with sine-wave alternating currents of high and low frequency. *Amer. Jour. Physiol.* 91(1): 83-93. 1 fig. 1929.

3717. **McDOWALL, R. J. S., and J. W. THORNTON.** A method of recording the movements of isolated bronchi. *Jour. Physiol.* 70(4): xliv. 1930.—Abstract.

3718. **MANSFELD, G., und IRENE SCHEFF-PFEIFER.** Eine Methode zur Bestimmung der Minimalluft der Lunge. *Biochem. Zeitschr.* 234(1/4): 274-277. 1931.—The method is based on the volumes of 2 gases of different sp. gr. successively filling the collapsed lungs, volume being determined from the difference in weight of the 2 gases.

3719. **MASTERS, A. H.** An artificial respiration apparatus for use with compressed air. *Quart. Jour. Exp. Physiol.* 20(3): 267-271. 2 fig. 1930.—Air-pressure is made to operate both stroke and volume within wide limits suitable for respiration of a small mouse or a large dog. The device is single acting, so that the air pushes the piston in whence it is subsequently expelled by means of a spring, operating a semi-rotary valve within the cycle.—*S. E. Pond.*

3720. **MELLI, GUIDO.** La determinazione del ricambio respiratorio. [Determination of respiratory exchange.] *Clin. Med. Italiana* 61(9/10): 459-470. 3 fig. 1930.—A new apparatus for volumetric determination of O and CO_2 for brief periods, generally about 10 min., rarely 15 or 20.

3721. **MÉSZÁROS, KARL, und EMIL SCHIFFBECK.** Über die Zuverlässigkeit der Riva-Roccischen Blutdruckmessung auf Grund von Capillarbeobachtungen. *Zeitschr. Ges. Exp. Med.* 74(1/2): 157-161. 1930.—According to the observations of the authors the small von Recklinghausen cuff modification of the Riva-Rocci blood pressure apparatus determines the blood pressure by palpation and auscultation about 2-5 mm. lower than the method employing compression of the artery and complete arrest of the arterial blood stream. They have observed healthy, hypertensive, and also individuals with heart failure.—*H. E. Jordan.*

3722. **MILLER, RAYMOND J.** A feceometer of simple construction. *Jour. Lab. and Clin. Med.* 16(3): 286-288. 2 fig. 1930.

3723. **PATRIZI, M. L.** Proposta di tecnica fisiologica: le curve elettriche della fatica alla Kroneker-Mosso (ergogrammi) e alla Marey-Rollet (cronomiogrammi) scritte simultaneamente dal muscolo isolato. [A proposal to inscribe simultaneously the electric curves of fatigue, the ergogram after Kroneker-Mosso, and the chronomyogram of the isolated muscle after Marey-Rollet.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 356-359. 1930.—Devices are suggested to inscribe simultaneously the ergogram and the chronomyogram, in frog, dog and man.—*M. Comel.*

3724. **POGÁNY, JOHANN.** Die klinische Messung des Venendruckes und ihre Fehlerquellen. [The clinical measurement of venous pressure and its sources of error.] *Zeitschr. Ges. Exp. Med.* 75(1/2): 126-132. 1931.

3725. **RICHARDS, A. N.** A simple instrument for micro manipulations. *Jour. Biol. Chem.* 87(3): 463-466. 2 fig. 1930.—Description of an inexpensive substitute for the apparatus of Barber, Peterfi or Chambers, but designed for less exacting work.

3726. **SCOTT, H. G., and ANDREW C. IVY.** Jejunal alimentation. *Ann. Surg.* 93(6): 1197-1201. 1931.—A diet consisting of 3000 cc. water, 150 gm. cane sugar, 100 gm. dried peptone, 300 gm. wheat flour, 2000 cc. whole milk, 1000 cc. 20% cream (with addition of vitamins) kept jejunal fistula subjects alive—2 dogs for 1 mo. each, 1 dog for 6 mos. and 3 patients for varying periods of time.

3727. **SWEET, J. E., and A. J. DELARIO.** A method for the exclusion of liver function. *Proc. Soc. Exp. Biol. & Med.* 27(9): 1068-1069. 1930.—Preliminary paper.

3728. **TSCHERMAK, A.** Beschreibung einer Vorrichtung zur Fixation und Neigung von Fischen und Reptilien. *Pflüger's Arch. Ges. Physiol.* 222(4): 439-444. 3 fig. 1929.—The contrivance, planned by Tschermak, set up in the Prague Institute, and described in detail in the above journal, permits a comfortable and dependable holding of fish and certain reptiles of very variable size. The body of the fish remains accessible from all sides and aquatic animals can remain long periods of time in the apparatus with the help of aerated water flowing over the gills. The animal is held by means of a variable number of movable spring clamps, covered with rubber tubing, on a horizontal four-cornered bar; smaller animals are of necessity laid upon a wood strip of varying thickness. The apparatus permits the accomplishment of a precise perpendicular and horizontal movement and a measurable adjustment of the body of the animal as well as measurable rotation or inclination of 360° around an axis, which either passes through the medium plane of the body, or through an eye, or outside of the body. Such a practicability is especially important for the investigation of the postural reflex in the fins and eyes of fishes due to the gravity receptors, whereby the downward turned organs are appropriately observed from above in a mirror tilted at 45° under the head of the fish. Especially, by this means, can the vertical divergence of the eyes be investigated. Tschermak studied this postural reflex already investigated by others, in which he found vertical divergence with even eye-movement combined with ventral movement of the eyes. In *Bargibius marmitos* and *Junius* frontally directed rolling of the eyes is combined with vertical divergence. The gravity-receptor postural-reflexes remain persistently with suitable holding of the animal in the forced position. Upon return to the 0° original position they disappear quickly and distinctly.—*A. Tschermak (transl. by J. E. Lynch).*

3729. **WAWO-ROENTOE, F. K.** Eine Methode zur Entnahme grösserer Blutmengen bei Laboratoriumstieren. [A method for taking large amounts of blood from laboratory animals.] *Zentralbl. Bakt. Abt. I. Orig.* 118(1/2): 111-112. 1 fig. 1930.—Device making use of suction produced by a water-jet air-pump.

3730. **WEBB, R. A.** A simple warm stage for class purposes. *Jour. Path. & Bact.* 34(2): 279-282. 3 fig. 1931.—A description of a simple, cheap, efficient warm stage which can be easily made and fitted to any standard type of microscope and mechanical stage. It has been tested under classroom conditions over a period of 8 hrs. with a temp. fluctuation of 3-4° or less.—*R. A. Webb.*

3731. **WREDE, FRITZ.** Ein Apparat zur kontinuierlichen Extraktion grösserer Flüssigkeitsmengen bei erhöhter Temperatur. [An apparatus for the continuous extraction of large amounts of fluid at high temperature.] *Biochem. Zeitschr.* 231(1/3): 173-174. 1 fig. 1931.

ANIMAL PHYSIOLOGY

BLOOD AND BODY FLUIDS

V. C. MYERS, *Editor*

FRANKLIN C. BING, *Assistant Editor*

(See also in B. A. 6(1): Entries 194, 195, 202, 235, 262, 282, 284, 290, 293, 314, 317, 333, 336, 338, 339, 341, 343, 349, 351, 358, 363, 367, 448, 475, 500, 530, 532, 542, 543, 587, 698, 703, 726, 772, 798, 821, 832, 834, 841, 893, 907, 939, 950, 981, 1002, 1020, 1033, 1034, 1085, 1091, 1099, 1103, 1156, 1157, 1162, 1180, 1219, 1228, 1237, 1249, 1260, 1298, 1305, 1318, 1383, 1402, 1407, 1408, 1427, 1435, 1440, 1443, 1452, 1459, 1461, 1465, 1466, 1473, 1474, 1476, 1481, 1488, 1490, 1506, 1508, 1513, 1555, 1560, 1568, 1570, 1572, 1573, 1596, 1597, 1600, 1616, 1618, 1625, 1628, 1629, 1633, 1635, 2497; and in this issue 3094, 3280, 3550, 3571, 3626, 3628, 3632, 3640, 3645, 3656, 3664, 3672, 3673, 3684, 3687, 3696, 3709, 3714, 3815, 3854, 3867, 3880, 3885, 3897, 3997, 4018, 4029, 4038, 4054, 4124, 4143, 4163, 4169, 4172, 4234, 4243, 4247, 4248, 4252, 4254, 4259, 4261, 4271, 4273, 4284, 4287, 4298, 4364, 5373)

3732. **AGAZZOTTI, A., e G. BUCCIANTE. La sedimentazione del sangue studiata al nefelometro. III. Influenza della diluizione. [Nephelometric studies on blood sedimentation.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 569-572. 2 fig. 1930.

3733. **BACH, E. Über die Bestimmung des Katalasegehaltes des Blutes.** *Biochem. Zeitschr.* 227(1/3): 221-229. 1 fig. 1930.—Unless blood defibrinated according to Krueger is used, catalase determinations should be made immediately after taking the sample. The destructive action of H_2O_2 solutions on catalase can be avoided by the use of highly dilute solutions. The variation in pH of the H_2O_2 solutions is equalized with the use of buffers. As a measure of the relative amounts of catalase the author uses the equation of a mono-molecular reaction since it bears a direct relationship to the amount of catalase. The initially described apparatus is used for catalase determinations as its use renders the procedure more simple and it is more serviceable for making a series of determinations.—*Author's summary (transl. by J. M. Johlin).*

3734. **BIERRY, H. Hydrolyse du plasma sanguin et sucre protéidique. [Hydrolysis of blood plasma and protein sugar.]** *Compt. Rend. Soc. Biol.* 97(33): 1456-1458. 1927.

3735. **BURTSCHER, J., und V. NIEDERWIESER. Das Verhalten der Alkalireserve des Blutes bei Erkrankungen von Säuglingen und Kleinkindern.** *Zeitschr. Kinderheilk.* 49(6): 693-708. 1930.—Studies of 145 children, including 6 healthy children and 139 with 36 forms of disease, indicated that the capacity for binding CO_2 is lower in children than in adults, and labile. Low values in infancy are especially significant in nutritional disturbances. In later childhood the alkali reserve tends to remain normal even in severe diseases.

3736. **CLEMENTI, A., e F. CONDORELLI. Nuove proprietà biologiche dei pigmenti biliari. I. Potere emolitico e potere agglutinante della bilirubina. II. Variazioni del potere emolitico e del potere agglutinante della bilirubina per aggiunta di siero di sangue o di sali biliari. [Biological properties of bile pigments. I. Hemolytic and agglutinant power of bilirubin. II. Variations of the hemolytic and agglutinant activity of bilirubin when serum or bile salts are added.]** *Boll. Soc. Ital. Biol. Sperim.* 5 (4): 482-485, 486, 488. 1930.—Bilirubin exercises a remarkable agglutinant and hemolytic action. The latter is less intense than the former, agglutination very promptly following the addition of bilirubin, whereas hemolysis occurs only after many hours, and not constantly. Agglutination is still present at a dilution 1: 20,000. Oxidation to biliverdin is followed by a marked decrease of agglutinant and hemolytic activity. Erythrocyte agglutination is delayed when to bilirubin bile salts or blood serum is added. Hemolysis is delayed by addition of blood serum, but is quickened by addition of bile salts, a summation of their hemolytic action presumably taking place.—*M. Comel.*

3737. **CONANT, JAMES B., and RALPH V. McGREW. An inquiry into the existence of intermediate compounds in the oxygenation of hemoglobin.** *Jour. Biol. Chem.* 85 (2): 421-434. 1930.—As the result of experiments on crystalline oxyhemoglobin prepared from horse hemoglobin no evidence was found for the presence of intermediates in the oxygenation of hemoglobin. Such intermediates will not therefore explain the anomalies in the O dissociation curve. A decrease in the O concentration of buffered solutions of Hb_4O_8 and a persistence of solid Hb_4O_8 in spite of considerable deoxygenation of the solution was found possibly due to "salting out effect" of one protein or the other.—*J. Vaughan.*

3738. **CZONICZER, GABRIEL, und STEPHAN MOLNÁR. Ikterus und Erythrocytenzahl.** *Zeitschr. Ges. Exp. Med.* 72(3/4): 539-544. 3 fig. 1930.—In 8 out of 15 jaundice cases the erythrocyte and bilirubin curves ran parallel; 3 other cases could not be followed out, and in the remaining 4 no regular variations could be discerned. Apparently (1) either erythropoiesis may be stimulated, or (2) erythroclasis checked by the bilirubin in the blood. It is suggested that bilirubin may, concomitantly with other factors, aid in maintaining the erythrocyte count level in health, increased destruction of erythrocytes leading to increased bile-formation which, by increasing resistance, automatically checks further decrease in erythrocytes.

3739. **DAHL, ROLV HOYER. Om differentialtelling av leukocytter i utstrykspreparat. [Differential counts of leucocytes in blood smears.]** *Norsk Mag. Laegevidensk.* 91(9): 972-980. 1930.—The relative dominance of monocytes, eosinophiles and neutrophiles found in the ragged end of a blood smear is sometimes very great. Grave errors may be avoided by counting selected even smears only or by counting the leucocytes in corresponding groups chosen from all parts after a preliminary survey with low magnification. The young forms of neutrophiles (Arneth-Schilling) were relatively constant in distribution. Daily variations in differential counts were inconstant. In fasting normal persons, both the total white count and relative lymphocytosis were variable.—*C. M. Goss.*

3740. **DESEÖ, D. von. Über die Volumenabnahme der Blutkörperchen in hypertonischen Kochsalzlösungen bei Kühen und Föten.** *Biochem. Zeitschr.* 199(1/3): 41-47. 1 fig. 1928.—The method of estimating the shrinkage of erythrocytes of cows and fetal calves is given. The author concludes that erythrocytes of the fetus shrink more, contain more water, have greater volume, and contain more colloids, than those of cows.—*E. A. Baumgartner.*

3741. **DORRANCE, G. M. Demonstration of an instrument for determining the coagulation time of the blood.** *Med. Times* 58(5): 138-139. 4 fig. 1930.—A film of the blood sample is placed on the tapering tip of each of 7 small glass rods, which are placed in water at 1-min. intervals, and the difference in precipitation and clotting noted.

3742. **EFTIMESCU, J. Untersuchungen über die Alkalireserve des Pferdeblutes.** *Zeitschr. Zücht. Reihe B. Tierzücht. u. Züchtungsbiol.* 19(2): 233-267. 5 fig. 1930. —In the case of healthy horses following a period of rest, the limit of the CO_2 binding capacity of horse blood plasma drops below the limit at which acidosis results in humans (53 vol%) which condition for horses was

assumed by Bartsch to occur at 35.7 vol%. Sex was found to influence the alkali reserve, which was higher in stallions than in geldings and mares. A racial difference was not distinctly observed. That of geldings and mares was 0.44 to 0.53 for draft horses and 0.50 to 0.61 for coach horses; that of stallions 0.50 to 0.56 for draft horses and 0.66 to 0.82 for coach horses. There is no relationship between color and alkali reserve of a given sex or race, nor does age appear to affect it. Different food rations, basically hay and oats, influence it but little, and need only be considered when the ration differs fundamentally from the usual basic ration. Temperament of horses has no effect. The CO_2 binding capacity of mares is lowered during lactation. There is a difference of 0.033 ± 0.005 in the alkali reserve as between rest and work. The daily average for the remounts is less than for troop horses of the same race and sex. Data obtained are not sufficient to establish the effect of training. Determinations by the Van Slyke method are practical and certain, but Hg poisoning must be guarded against in case of long continued use of this method.—*Author's conclusions (transl. by J. M. Johlin).*

3743. ERNST, MAX. Das Verhalten der roten und der weissen Blutkörperchen nach intravenöser Einverleibung anisotonischer Flüssigkeiten. *Deutsche Zeitschr. Chir.* 228(6): 331-339. 1930.—In 3 cats, after intravenous injection of distilled water, findings were negative for stromata and for hemoglobinemia; as was spectroscopic study of the blood of 2 animals for coloring matter from the erythrocytes. Likewise, in 8 cats intravenously injected with distilled water subsequent investigation of the vascular system was negative for thrombosis, and microscopic study of the internal organs revealed no hemorrhagic infarcts or embolic foci. Similar negative findings followed "numerous" intravenous injections of cats with hypertonic NaCl and sugar solutions. Thrombosis, however, was twice observed in 22 cases of injection of 50-100 cc. of 50% glucose solution, both cases in patients with retarded circulation and both without untoward results. Ernst believes that the theory of increased erythrolysis or serious change in the white blood-picture through the use of anisotonic intravenous injections is without foundation.

3744. EUGSTER, A. Zur Frage des Chlorgehaltes im Blute und dessen Verteilung auf die Konstituenten unter hämopathologischen, insbesondere anämischen Zuständen des Organismus. *Zeitschr. Klin. Med.* 107(3/4): 224-255. 1928.—An investigation concerning the relationship between the hemoglobin and Cl contents of whole blood showed that the Cl increased as the hemoglobin decreased. This is especially to be observed in cases of severe anemia. In cases of severe nephritis an increasingly anemic condition was found to run parallel to an increase in residual N as indicated by a decreasing hemoglobin content of the blood. Parallel to this was a disturbance in the Cl picture, in the most severe cases of nephritis—there was mainly a decrease in the NaCl content of serum from the normal of 600 mgm. per 100 cc. to 400 mgm., while the NaCl of the cells increased from the normal of 320 mgm. per 100 cc. to 400 mgm. Similar studies were made in cases of infectious diseases, especially pneumonia, and in diabetes mellitus and similar phenomena were noted. Anemia in cases of diabetes indicates that the decreasing hemoglobin content bears a relationship to the accumulation of ketone bodies in the blood. There is an apparent parallelism between the various cases which were studied.—*J. M. Johlin.*

3745. FALKENHAUSEN, M. von, H. J. FUCHS, und M. SCHUBERT. Über proteolytische Fermente im Serum. IX. Über das verschiedene Verhalten der Sera in den einzelnen Metamorphosestadien der Anuren. *Biochem. Zeitschr.* 193(4/6): 269-275. 1928.—The sera of cold blooded animals (*Rana esculenta, Pelobates*) at different stages of metamorphosis show such a behavior toward the fibrins of the same species at more advanced stages of development as they would show toward fibrins of an entirely different species; i.e., they cause an increase of the residual N; on the other hand their behavior toward fibrins of earlier stages of development is like that of an immune serum toward the normal fibrin of the same species; i.e., they produce a decrease in the residual N. The serum of the fully developed older frog behaves toward the fibrins of the stages of metamorphosis as toward the fibrin of a different species; the sero chemical immunological properties do not remain in the fully developed frog. Immune sera produce a decrease in the residual N as they do in the case of normal fibrins of the same species as well as in the case of the normal fibrin of a different species.—*Authors' summary (transl. by J. M. Johlin).*

3746. FISCHER, HANS. Hämin, Bilirubin und Porphyrine. *Naturwiss.* 18(47/49): 1026-1037. 1 fig. 1930.—A brief historical review and an exposition of the biological and chemical relationship of hemin, bilirubin and the porphyrines, giving the natural occurrence and fate of these substances, their constitutional formulae with special reference to side chains, and the results of the structural synthesis of identical compounds.—*J. M. Johlin.*

3747. FOULGER, J. H., and C. A. MILLS. The influence of urea upon blood clotting. II. Tissue fibrinogen clotting and tissue fibrinogen. *Amer. Jour. Physiol.* 96 (3): 509-517. 1931.—Saturation of a 1.5% suspension of tissue fibrinogen in 0.9% NaCl with solid urea at room temp. (about 23° C.) liberates free cephalin and destroys the clotting activity of the tissue fibrinogen. Under the same conditions, 53 gm. urea added to 100 cc. of the tissue fibrinogen suspensions up to a concentration of 31 gm. per 100 cc. has less effect: 31% urea destroys only about ½ the original tissue fibrinogen clotting power. If heat-coagulated tissue fibrinogen is dissolved in saturated urea, then, after removal of urea, free cephalin is found present in high concentration. On standing, the cephalin disappears and a fraction of the original tissue fibrinogen is reproduced. Saturation with urea will again liberate a large quantity of free cephalin. These results indicate that urea, at least partially, reverses the change which heat has produced.—*Authors' summary.*

3748. GELFAN, S., and J. P. QUIGLEY. Conductivity of blood during coagulation. *Amer. Jour. Physiol.* 94 (3): 531-534. 2 fig. 1930.—The authors employed the Kohlrausch method to measure the conductivity of blood during the process of coagulation. They conclude that the conductivity of whole blood or blood plasma is not influenced by the process of coagulation and is consequently independent of the viscosity changes occurring at this time. The increase in the resistance of the whole blood after it has already coagulated is apparently due to the presence of the corpuscles, for the conductivity of plasma is practically unchanged after coagulation. Since conductivity studies indicate that the fibrin gel is similar to such reversible gels as gelatin, soap, agar, and silicic acid, additional evidence is offered in support of the micellar structure of coagulated blood.

3749. GIORDANENGO, GUGLIELMO. Ricerche sperimentali sull'azione del liquido amniotico introdotto nel peritoneo sulla formazione delle aderenze peritoneali post-operatorie. [The influence of amniotic fluid introduced into the peritoneum on the formation of peritoneal postoperative adhesions.] *Ann. Ital. Chir.* 9(6): 543-555. 1930.—In 15 experimental guinea pigs and 5 controls Giordanengo produced the conditions of Hebert's experiments, but the results failed to sustain the latter's finding that amniotic fluid prevents the formation of postoperative peritoneal adhesions. In vitro, amniotic fluid did not increase the proteolytic power of leukocytic ferments; it diminished the intensity of the reaction, though the diminution was less than that produced by blood serum. Hence it appears that the amniotic fluid contains little or no antiferment, which indicates that the liquor amnii is not a simple transudate from the maternal serum. Amniotic fluid is not capable of neutralizing the antiferment in blood serum.

3750. GORDY, SAMUEL T., and STEPHEN M.

SMITH. The permeability of the hemato-encephalic barrier as determined by the bromide method. *Arch. Neurol. & Psych.* 24(4): 727-734. 1930.—A series of 183 cases of mental disorder studied for the determination of meningeal permeability by the Walter bromide method is presented. In dementia paralytica the majority of cases showed a marked tendency toward increased meningeal permeability. In dementia praecox the majority of patients presented normal permeability (about 69%), about 24% increased permeability and the remainder diminished permeability. In the cases of chronic alcoholic psychosis there appears to be a tendency toward increased permeability. A similar tendency is shown to some degree in psychosis with cerebral arteriosclerosis. About ½ the cases of manic-depressive psychosis showed normal and the other ½ increased permeability. In the postencephalitic cases and in senile psychoses no particular tendencies were shown. The Walter bromide method does not appear to afford distinct aid in the differential diagnosis of mental disease, especially as between dementia praecox and manic-depressive psychosis. The wide range of permeability quotients, such as the ones displayed in the catatonic cases of dementia praecox, may be evidence that one is dealing with schizophrenias as a plural concept in contrast with schizophrenia as a unity. It may be that the marked deviation of the permeability quotient from the normal range occurring in other psychoses may have a discoverable organic basis such as occurs in dementia paralytica.—*Authors' summary.*

3751. GOUNELLE, HUGUES, et JULIEN WARTER. De l'influence d'un effort musculaire intense (course) sur l'image blanche du sang périphérique. (La leucocytose de mouvement et le rôle de la rate.) *Arch. Malad. Coeur, Vaisseaux et Sang* 23(12): 757-767. 1930.—After the subjects (15 ♂ and 1 ♀), the latter splenectomized, had run for ¾ min., the leukocytes (chiefly mononuclears) in the peripheral blood increased, invariably but temporarily. In 20-30 min. after the run, the leukocyte figure had reached or dropped below the original figure. The greatest rise was observed in subjects unused to physical exertion. The authors seek to explain this transient leukocytosis as due to contraction of the spleen; but as the rise took place also in the splenectomized subject, they admit that other factors also must be involved. They remark that this leukocytosis of movement explains the difficulty of studying modifications of the blood count in laboratory animals: the animal, unless anesthetized, is sure to struggle frequently, thus complicating the experimental conditions.

3752. GUERRINI, GUIDO. Dell'influenza della luce attraverso schermi colorati sull'azione emolitica della clorofilla. [The influence of light filtered through colored screens on the hemolytic action of chlorophyl.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 567-569. 1930.—The influence which colored filters exert upon the hemolytic action of chlorophyl depends upon the color of the screen; the light filtered through red and yellow screens increases the hemolytic activity, whereas the latter is inhibited by light filtered through green and blue screens. —*M. Comel.*

3753. HAVARD, ROBERT EMLYN, and PHYLLIS TOOKEY KERRIDGE. An immediate acid change in shed blood. *Biochem. Jour.* 23(4): 600-607. 1929.—The authors report an increase in the hydrogen ion concentration of shed blood, of the mean value of 0.05. The change occurs within 6 min. at 38 degrees, and 11 min. at 28 degrees. At room temperature it does not occur until after 1.5 to 2 hrs. The change is not associated with coagulation; and it is not affected by substances which inhibit oxidation, enzyme action or glycolysis. It takes place in laked blood, and in the absence of leucocytes, but not in plasma.—*H. E. Jordan.*

3754. HAYASHI, HARNO. Étude de la réaction de Van den Bergh sur la bilirubine du sang. *Presse Méd.* 37(44): 720-721. 1929.—In a study of the nature of the icterus experimentally produced in dogs (1) by the intravenous injection of a suspension of red blood corpuscles (a hemolytic icterus) and (2) by ligating the bile duct (obstructive jaundice), Hayashi found that (1) the source of the blood serum rather than that of the blood bilirubin determines whether the Van den Bergh reaction will be immediate or delayed; (2) the intravenous injection of red cell stroma causes a delayed reaction. He concludes that the rapidity of the Van den Bergh reaction is determined by the reciprocal quantities of bilirubin and stroma in the serum. If there is more bilirubin than stroma, the reaction is accelerated; if stroma predominates, the reaction is diphasic. He also finds that stroma slowly oxidizes bilirubin with the result that a delayed Van den Bergh reaction is produced. —*M. M. Wintrobe.*

3755. HERMS, J. Über den Zuckergehalt von Pleura- und Peritonealexsudaten. Klinisch-chemische Studien mit besonderer Berücksichtigung der Pneumothoraxexsudate. *Beitr. Klin. Tuberk.* 75(5/6): 748-771. 1930.—The morphological, bacteriological and chemical properties of an exudate may be of use in diagnosis. The cell content and the number of polynuclear leucocytes are increased in inflammation and in resorption. Lymphocytosis is characteristic in mild exudative pleuritis. Eosinophilia may occur in resorptive processes but is not of use in prognosis. Clinical evaluation of the protein curve is difficult as its rise may indicate either inflammatory or resorptive processes. An increased fibrin content often indicates the beginning of resorption. Glucose is the chief reducing substance. Exudate sugar concentration may be 10 mgm. % lower than blood sugar hence the hypothesis of a transudate is improbable. Lower values of exudate sugar may be due to (1) fermentative anaerobic glycolysis, associated with increased lactic acid concentration, (2) adsorption on proteins and (3) change in proportion of solvent. A striking decrease in sugar is found in (1) mixed infection, (2) in chronic protracted pneumothoracic exudates, (3) in rapid suppurative exudates and (4) in empyema.—*D. B. Dill.*

3756. HIRSCHFELD, H. Lehrbuch der Blutkrankheiten. [Textbook of diseases of the blood.] 2nd ed. 263p. 5 pl. 43 fig. Johann Ambrosius Barth: Leipzig, 1928. Pr. 22 M.

3757. HOFFSTAEDT, ERNST. Beobachtungen über Verlangsamung der Blutkörperchen-Senkungsgeschwindigkeit. *Deutsche Med. Wochenschr.* 54(46): 1925-1927. 1928.—Knowledge of retarded rates is as important as that of accelerated velocities. Deceleration occurs constitutionally especially in the vegetative stigmatized, neurotics, hysterics, allergics, etc., besides in organic brain diseases, particularly of the vegetative centers, and in some other disease conditions, as certain liver and cardiac obstruction states. In cases of constitutional retardation, moderately strong and low-grade accelerations readily are masked and hence overlooked.—*Author's summary (transl. by W. A. Peabody).*

3758. HORNEFFER, LUTZ. Das Blut des Menschen, mit neueren Methoden untersucht. II. Mitteilung. Absolute Hämoglobinbestimmungen, Erythrocytenzählungen und Erythrocytenmessungen bei 20 Studenten und 20 Soldaten zur Ermittlung des Hämoglobingehalts eines Erythrocyten und des Hämoglobins pro μ^2 Oberfläche des Erythrocyten. *Pflüger's Arch. Ges. Physiol.* 220(1/6): 703-715. 1 fig. 1928.—The range in Hb content was from 14.39 to 18.03 gm. per 100 gm. of blood and in cell count, from 4.37 to 5.58 million per mm^3. These results give a mean value of 32.4×10^{-12} gm. Hb per cell, which is significantly higher than that previously reported for mammals. Cell diameters varied from 7.75 to 8.46μ and averaged 8.15μ. The average surface area of the dry erythrocyte was 104.2μ^2 and the Hb content was 31×10^{-14} gm. per μ^2 of surface. This agrees closely with the average value of $31.7\text{-}10^{-14}$ for mammals, thus proving that the hemoglobin distribution law is valid for young men.—*L. Horneffer (transl. by D. B. Dill).*

3759. IWATA, AKINOSUKE. On the relationship between the formation of antibodies and various experimental forms of anaemia. II. Pathological, and histological study of the haematopoietic tissues and the reticuloendothelial system. *Acta Scholae Med. Univ. Imp. Kioto*

11(4): 571-578. 2 pl. 1929.—The author found microscopic evidence of increased activity of the blood forming organs of the rabbit (liver, spleen and bone marrow) after the use of blood destroying poisons such as phenylhydrazine, hydroxylamine and pyrogallol. The same effect was produced by bleeding and by chronic benzol poisoning. Young red cells were also circulating in the blood. Similar changes were found shortly after immunizing doses of typhus bacteria, but were not seen 2 mos. later. Rabbits immunized shortly before the bleeding or poisoning showed a much higher agglutinin content of the blood serum, and this was also true of those animals immunized immediately after bleeding or poisoning. The author concludes that the blood forming organs have a marked effect in the production of agglutinins.—*J. C. Watt.*

3760. **JOHANSEN, A. HECHT. Lipemia in hemorrhagic anemia in rabbits.** *Jour. Biol. Chem.* 88(3): 669-673. 1930.—After bleeding rabbits there is found, coinciding with the low hemoglobin percentage, a decrease in serum proteins and in colloid osmotic pressure and an increase in ether-soluble fats in serum. The similarity between these artificially produced conditions in serum and the findings in nephrosis is discussed.—*A. H. Johansen.*

3761. **JORDAN, H. E., and C. C. SPEIDEL. The hemocytopoietic effect of splenectomy in the salamander, Triturus viridescens.** *Amer. Jour. Anat.* 46(1): 55-90. 2 pl. 1930.—In this salamander, the spleen is the chief organ for erythrocytopoiesis and thrombocytopoiesis; the liver capsule, for granulocytopoiesis. After total splenectomy, new erythrocytes are differentiated chiefly in the general circulation, to some extent in the heart and sinuses of the liver. Proliferation by mitosis of young red cells and of their hemoblast progenitors occurs in the general circulation. Of special interest is the failure of the granulocytopoietic capsule of the liver to act as a compensatory locus of erythrocytopoiesis. There is probably an increased rate of production of lymphoid hemoblasts from the reticular cells and lymphoid cells of this region, with their subsequent migration into the sinuses of the liver and the general circulation. Thrombocytes in all stages of development were observed in the blood of some of the splenectomized salamanders kept for one year after the operation. The youngest thromboblasts were of large size and clearly revealed their origin from the lymphoid hemoblast (hemocytoblast). A small number of thromboblasts were seen in mitosis. Extravascular thrombocytopoiesis was not observed. This study emphasizes the importance of the general circulation in the salamander as a potential locus for both erythrocytopoiesis and thrombocytopoiesis. In no case was there formation of a new spleen, although 60 of the animals were kept for from 4 mos. to a year after total extirpation of the spleen.—*Author (courtesy Wistar Bibl. Serv.).*

3762. **KAWAMOTO, NOBUYUKI. Physiological studies on the eel. III. Microscopical observations of the blood.** *Jour. Imperial Fish. Inst.* 26(1): 1-4. 1 col. pl. 1930.—Material, methods and observations are given concerning the blood of the eel *Anguilla japonica.* For morphological studies eels of almost equal size, weighing about 80 gm., were used, but for counting blood corpuscles, much larger and much smaller individuals were used. The number of red blood corpuscles varied from 2,546,000 to 2,855,000 as the individuals varied in weight from 170.00 to 0.78 grams, the number in the small eels being comparatively greater than in the larger ones. The number of the red to white corpuscles was in the ratio of 8: 1.—*Evermann and Clark.*

3763. **KESSLER, ROBERT. Untersuchungen physikalisch-chemischer Eigenschaften des Bluteiweisses in der Gestationsperiode.** *Arch. Gynäkol.* 138(3): 634-709. 1929.—The non-volatile residue, refractometric index, viscosity, blood elasticity, various stability reactions, and the labile-globulin quotient were determined during the period of gestation and compared with those of the blood of normal patients. Determinations of non-volatile residues of the blood show a greater variation during pregnancy, indicating a slower aqueous exchange between blood and tissues than in normal cases. Refractive index determinations show that during 9 mos. of pregnancy the protein content of serum is less than normal and increases again during the 10th month. The viscosity increases slightly at the beginning of pregnancy but soon after decreases and during confinement increases again to exceed the initial value. It was concluded that there is no specific reason for considering blood elasticity differently from indications shown in viscosity determinations. Structural variations in blood proteins, so far as variations in the dimensions of the disperse phase shown by viscosity measurements are concerned, are small. During the first 5 mos. of pregnancy the rate of cell sedimentation increases but slightly, after which until the 7th week after confinement it increases rapidly reaching its highest point at this time. Precipitation methods according to Starling show a variation in the different blood proteins during pregnancy and especially an increase in the fibrinogen-globulin fraction. A similar lability is shown by the flocculation reaction of Gerloczy. The reaction of Matefy showed a decreased stability during pregnancy reaching a maximum during confinement, in 50% of the cases investigated. The most labile phase is that of the labile-globulin, of the euglobulin fraction, which like fibrinogen is a delicate indicator of lability disturbances in pregnant blood. It increases in the early months of pregnancy, decreases again during the middle months and reaches a maximum in the ninth month. Great variations in this fraction are to be observed. Comparisons are made with conditions of inflammation.—*J. M. Johlin.*

3764. **LINTZEL, W. Notiz über die Funktion der Milz als Blutkörperchenreservoir bei der weissen Ratte.** *Pflüger's Arch. Ges. Physiol.* 226(2): 305-306. 1930.—To test the functional importance of the spleen of the white rat in storing erythrocytes and releasing them into the circulation under conditions of O want, the author removed the spleen, ground and extracted it and estimated its hemoglobin colorimetrically. By the same method he estimated the hemoglobin content of the remainder of the body. He thus obtained the splenic hemoglobin as a percentage of the total hemoglobin. The results were as follows: after an hour's narcosis from chloral hydrate, 6.50 and 4.00%; following instant death from a blow on the neck during repose, 4.80, 4.25 and 2.96; following suffocation during narcosis, 2.30 and 1.90; after poisoning with CO, 1.70 and 1.47%. He concludes that the reservoir function of the spleen in the white rat is a very limited one.—*J. H. Austin.*

3765. **MARCHESELLI, I. Contributo allo studio delle funzioni spleniche. [Splenic functions.]** *Ateneo Parmense* 2(5): 488-506. 1930.—The spleen was "externalized" in 6 dogs, which were then made to work and the changes in splenic erythrocyte count and splenic volume observed. The erythrocytes were invariably diminished, and in 26 out of 32 experiments the spleen volume (contrary to Barcroft's findings) was increased after exercise; in 4 there was no difference, and in 2 there was a decrease. To study the theory that modifications in circulating blood are determined by splenic contractions, a drug producing contracture of the spleen (ephedrine) was injected into 5 normal dogs and into 6 splenectomized dogs at various intervals (2 days-12 mos.) after operation. In the normal dogs ephedrine increased the red count; but in 5 of the splenectomized dogs (contrary to Binet's findings) the rise in erythrocytes was more rapid and higher than in the normals; in the 6th splenectomized dog the erythrocytes fell after ephedrine. These results, Marcheselli believes, do not exclude the share of the spleen in producing polycythemia in the normal dog, but they do indicate that some as yet unknown factor may act as a substitute for a missing spleen.

3766. **MINZ, BRUNO. Über das Verhalten kolloidaler Stoffe im Blut. (Ein Beitrag zur Methodik der Blutmengenbestimmung.)** *Zeitschr. Klin. Med.* 114(4/5): 623-

641. 2 fig. 1930.—Author gives critical review of previously used methods for blood volume determinations and describes a new colorimetric method for determining small amounts of coloring matter in plasma. Tests by the usual methods show that values obtained with congo red are more variable and higher than has theretofore been believed, that volume determinations made with congo red and trypan red on plasma of the same animal give different values, and that the concentration of trypan red in plasma diminishes with time, thus giving increasing values for the plasma volume of the normal rabbit at each point of determination. Experiments for determining blood volume by means of colloidal Ag gave the following facts: a) colloidal Ag may be found in the blood 24 hrs. after administration, giving evidence of its relatively slow removal. b) The concentration of the Ag remains the same for periods of 4 to 10 min. c) Tests with Ag-albumin give similar results. d) After the addition of a solution of a salt of Ag to blood (in vitro) Ag is to be detected in the plasma but not in the blood cells. e) Following the injection of colloidal Ag into the blood stream there is a difference in its distribution between plasma and whole blood. f) When, following the injection of larger amounts of collargol into rabbits, blood samples were taken at definite intervals and analyzed for Ag salts, Ag-albumin and metallic Ag, it was found (1) that a large amount of colloidal Ag is changed into Ag salts within 3 minutes, (2) that the Ag salts diminished at a greater rate than the continually diminishing Ag-albumin, whence it might be concluded that the Ag salt is converted into Ag-albumin in the blood and taken up as such by the organs, (3) that a fractionated Ag determination of plasma showed, after 60 min., a decrease of the Ag salt and an increase of Ag albumin.—*Author's summary (transl. by J. M. Johlin).*

3767. NICE, L. B., MARY E. MORRIS, and W. P. ELHARDT. Polycythemia in white rats. *Physiol. Zool.* 3(4): 494-502. 1930.—The number of erythrocytes in the blood of white rats was studied in the normal state; when given daily injections of adrenalin; when adrenalized and administered adrenalin daily, also when subjected to excitement (anger and pain) in the normal, adrenalectomized, and splenectomized states. The average number of erythrocytes per cubic millimeter of blood in 11 normal rats was 10,840,000 in comparison to 12,080,000 after they had been subjected to adrenalin. This is an increase of 11.4%. The average number of erythrocytes in 11 adrenalectomized rats was 9,480,000 in comparison to 10,490,000 in those injected with adrenalin —an increase of 10.9%. In normal rats subjected to faradic stimulation, the average count before excitement was 10,960,000 in comparison to 12,640,000 in the same animals 3 min. after excitement. This is an average increase of 15.3% above the basal counts. The average count for the group of adrenalectomized rats before excitement was 11,240,000, while 3 min. after excitement it averaged 11,160,000, or an average decrease of −0.7%. The number of erythrocytes in the splenectomized group before excitement averaged 10,150,000 per cubic millimeter of blood, while after excitement it was 9,790,000— a decrease of −3.5%. The splenectomized group which was given adrenalin daily had an average of 10,343,000 erythrocytes before excitement and 10,312,000 afterward —a decrease of −0.3%.—*Authors (courtesy Wistar Bibl. Serv.).*

3768. PACKARD, RAWSON J., L. F. PIERCE, and ROBERT L. WORTHINGTON. I. On hemoglobinometry. *Jour. Lab. & Clin. Med.* 15(8): 746-751. 1930.—As a result of experimental comparison, Packard concludes: That normal hemoglobin means normal for age and sex, and should be determined by Williamson's or other standards, and so recorded. The Dare hemoglobinometer should be discarded. For clinical work hemoglobin may be estimated by the following methods: (a) Rough bedside estimations may be made by the Tallqvist or the Sahli. If the blood is below normal, a more accurate method should be used. (b) The Newcomer disk, or the Newcomer hemoglobinometer as furnished by Bausch and Lomb is sufficiently accurate for clinical work. Blood dilutions made with their pipette can be carried to be read at leisure. When the color index is diagnostic, duplicate tests should be made, and an average of 10 readings be taken from each dilution. If there is any doubt as to the accuracy of a disk, it should be checked by the van Slyke O capacity method or an accurate ferrometric analysis through a wide range. In the case of adults there is so long a period during which the normal hemoglobin scarcely varies that the percentage of variation may be added as a simple and vivid comparison, along with the grams per 100 c.c. blood. For infants and children the percentage of an arbitrary ♂ standard, as used in the past, is only misleading. The hemoglobin observed should be recorded in grams, together with the normal for age and sex, which can be interpolated from Williamson's curve.—*Authors' conclusions.*

3769. PONDER, ERIC, and JAMES FRANKLIN YEAGER. The use of nth order equations to describe the action of simple haemolysins. *Proc. Roy. Soc. [London] B* 106(747): 506-531. 1 fig. 1930.—When the kinetics of simple hemolytic systems containing saponin, sodium taurocholate, or other simple lysins, together with washed mammalian red cells are investigated by the improved methods described in this paper, the results are best described by an expression of the nth order instead of by one of the first order ("monomolecular"), taking place in a population of cells whose resistances are distributed according to one or another type of frequency curve. The first order reaction which has been postulated describes the result quite well over the limited range which has been investigated, but is based on assumptions which are seen to be wrong when the experimental range is sufficiently extended. The value of n determining the order of the reaction which is now supposed to be proceeding varies between about 1.0 and about 3.0, the most usual values, at ordinary temperatures, being between 1.5 and 2.0. The value of n varies, however, with the nature of the lysin, with the temperature, and probably with the type of cell, and is also affected by the addition to the hemolytic system of some accelerators and inhibitors. It is tentatively suggested that the value of this constant is determined by the lysin existing in aggregates of varying size, and by the lysin reacting with some cell component, the molecules of which present varying affinities for the lysin molecules; even if this suggestion proves to be incorrect the equations developed from it are useful in that they provide a very complete description of the phenomena. The type of frequency curve which describes the distribution of red cell resistance to the lysin is probably always negatively skew, the degree of skewness, however, varying considerably. In previous papers the distribution has been supposed, in many cases at least, to be of a symmetrical type, but it is probable that this symmetry is spurious, and the result of treating the reaction between cells and lysin as monomolecular, when it is really of a higher order. While the treatment of the reaction between cells and lysin as one of a higher order than the first constitutes quite a fundamental change in the theory of the kinetics of simple hemolysins, it is shown that the conclusions of most previous investigations require no essential modification. On the other hand, quite a number of observations, inexplicable on the previously adopted theory, become readily explicable on the newer hypothesis.—*E. Ponder.*

3770. SCHRÖDER, INGEBORG. Über die Veränderung der Plasmakolloidstabilität nach intravenösen Traubenzuckerinjektionen bei Operierten. *Zeitschr. Geburtsh. u. Gynäkol.* 98(2): 323-337. 1930.—After operation the stability of plasma colloids was increased whether or not glucose was given. When 500 cc. of a 10% glucose solution was given to 5 non-operated patients there was no change in one case and in the other cases a definite increase in lability. It was concluded that the increase in stability found after operation is due to narcosis.—*D. B. Dill.*

3771. WIENER, H. J., and R. E. WIENER. Plasma

proteins. *Arch. Internal Med.* 46(2): 236-265. 1930.—The 2 main groups of the serum proteins, the albumin and globulin fractions, were determined together with the plasma fibrinogen, cholesterol, Ca and some of the other blood constituents significant to the clinical condition studied. A total of 133 cases was examined, including 20 of healthy adults. In 15 cases of diabetes mellitus and 6 cases of benign glycosuria the plasma proteins were within the physiologic limits. In 40 cases of infections the albumin decreased, slightly in mild cases and decidedly in the more severe infections. The fibrinogen increased, even in slight infections which did not call forth an increased globulin concentration. In the more severe infections the globulin increased, and the increase paralleled the severity of the condition. In 12 cases of hepatic cirrhosis of the liver the albumin decreased and the globulin increased. The changes in the serum protein concentrations, however, were not so marked as in the infectious conditions. The fibrinogen was a low normal or decreased. In jaundice without elevation of temp., the serum proteins were normal or increased, the albumin was generally within the normal limits and the globulin was increased. The fibrinogen remained within the normal limits. In 4 cases of cholecystitis and 3 of jaundice due to arsphenamine the picture was similar to that found in infections. In chronic, glomerular nephritis, in the absence of an infection, the serum proteins were slightly reduced, especially the albumin fraction. The fibrinogen was often slightly increased. In acute nephritis the changes found were the same as in infections. In nephrosis the albumin was materially decreased, the globulin was normal and the fibrinogen was much increased.

ANIMAL PHYSIOLOGY

NUTRITION, DIET, VITAMINS, GENERAL METABOLISM, GROWTH

J. R. MURLIN, *Editor*
H. A. MATTILL, *Associate Editor*
E. F. ADOLPH and R. G. SINCLAIR, *Assistant Editors*

(See also in this issue Entries 3262, 3600, 3603, 3605, 3619, 3620, 3621, 3627, 3638, 3650, 3693, 3834, 3852, 3891, 3896, 3904, 3906, 3980, 4001, 4011, 4018, 4032, 4034, 4040, 4042, 4062, 4065, 4078, 4086, 4094, 4112, 4163, 4164, 4168, 4179, 4184, 4185, 4191, 4195, 4265, 4372, 4597, 4683, 4772, 4778, 4786, 4793, 5341, 5364, 5394, 5502, 5598, 5599, 5854)

FOOD AND NUTRITION

3772. **ABDERHALDEN, EMIL. Über den Einfluss der Ernährung und von Umweltsfaktoren auf die Entwicklung von Kaulquappen.** *Pflüger's Arch. Ges. Physiol.* 216: 749-752. 8 fig. 1927.—The growth of tadpoles can be accelerated by the use of a series of food materials (bread, brain, milk, yeast, etc.). The metamorphosis is influenced to a lesser degree but also in a positive sense. If the supplement of these food materials (with algae serving as the basal diet) is carried on for several weeks, in some cases disturbances in development appear. It is of interest from a general point of view that the development of amphibians in the tadpole stage can be influenced so easily and so effectively.—*Author's summary (transl. by G. T. Lewis).*

3773. **ABDERHALDEN, EMIL. [Editor.] Biochemisches Handlexikon. Rev. by HERBERT MAHN, ERNST ROSSNER, and HANS SICKELT. XII. Band (5. Ergänzungsband).** v+1103p. Julius Springer: Berlin, 1930.

3774. **BECKER, J. ERNESTINE, and E. V. McCOLLUM. The nature of dietary deficiencies of milk.** *Amer. Jour. Hyg.* 12(2): 503-510. 1930.—The data presented show that where rats [number not stated] are confined to rations consisting chiefly of milk and dextrinized starch, progress is not normal. Growth curves show a tendency to flatten after about 3 mos. and normal reproduction is seldom observed. Of 38 diets in which milk powder was used at a 60-85% level in combination with other substances, only 24 sufficed for production of young. In only 4 cases were there 5th generation animals. The supplements in these diets were cooked dried beef liver, 4 and 5%; yeast, 5%; and a combination of ferric citrate and $CuSO_4$.

3775. **BÍLEK, F. Versuchsergebnisse der Aufzucht der tierischen Säuglinge verschiedener Haustierarten mit Kuh- und Ziegenmilch, mit besonderer Rücksicht auf die alimentären Anämien.** *Jahrb. Kinderheilk.* 129(1/2): 98-117. 1930.—Young guinea pigs, rabbits, pigs, kids, calves and colts were tested with goat's milk and cow's milk. In the cases of guinea pigs, rabbits, and pigs a control group of 5 were normally fed by the mother animals, for observation of the normal development, bodily condition and blood picture; while a 2nd group of 10 were taken from the mother soon after birth and fed cow's and goat's milk as substitutes, and a 3rd group of 10 were fed goat's milk. Of the kids, 3 were nursed by the mother as controls, and 3 had substituted cow's milk. Of the calves, 10 suckling calves served as controls, while 10 others had goat's milk. From these experiments and the literature it may be said: For calves, goat's milk is not suited to replace the mother's milk in any case. For orphaned pigs, goat's milk is not by itself a suitable substitute food, especially for the first weeks after birth; but on the other hand, undiluted cow's milk is suitable, provided, of course, that the pigs are kept clean and in a dry, warm place. Pigs 6-8 weeks old can take goat's milk if a concentrate and a green feed containing vitamins be given also. Goat's milk, on the other hand, can be used without hesitation as substitute for cow's milk diluted half and fed warm, for orphaned colts of a tender age, and for this it is best to let the colts suckle the goat directly.—*M. H. Keith.*

3776. **BISCHOFF, GEORG. Fäulnisprozess und Sterinreduktion mit besonderer Berücksichtigung der Verhältnisse im Säuglingsdarm.** *Biochem. Zeitschr.* 227 (1/3): 230-236. 1930.—Even on a sole diet of milk reduced sterols are found in the feces in amounts paralleling the clinically observed putrefaction. Small quantities always occur in breast milk stools and other nonputrefying stools though it appears that dihydrocholesterol rather than koprosterin is involved. The old conception of the putrefaction-inhibiting action of milk applies only to the growing young and then only with certain limitations. In stools from sucklings and small children or even stools from a milk diet no such high koprosterin values are found as occur in stools from a mixed, or more especially a meat, diet. Koprosterin is apparently not reabsorbed by man.—*Author's summary (transl. by C. S. Robinson).*

3777. **BOWER, WARD T. Salmon—an economical and valuable food.** [U. S.] Bur. Fisheries Econ. Circ. 69. 19p. 12 fig. 1929.

3778. **BROOKS, R. O. Critical studies in the legal chemistry of foods.** 280p. Chemical Catalog Co. Inc.: New York, 1927. Pr. $6.—The title is somewhat misleading, since the legal aspects of the book constitute but a minor portion of the discussions and only a comparatively small class of foods is involved. The foods discussed are fruits—fresh, dried, preserved, canned, and fruit juices; vinegar, including one chapter on the interpretation of analyses; condimental sauces such as catsup, salad dressing, prepared mustard; a chapter on

edible oils; cacao products; spices; and maple products. There are 8 appendices from publications largely in trade journals, and these cover fruits, fruit products, fruit beverages, pectin, jelly, and mayonnaise. The so-called "Federal Food Standards," as applied to the above-mentioned products, are quoted and discussed. Their shortcomings, irregularities, and liberalities are explained, and a few instances are given of variances between certain natural substances and these standards, past standards, and certain statutory standards. Many quoted and some original analyses of the foods in question are given and discussed. The author declines to discuss fermented fruit juices and deplores the commercial availability of certain highly toxic distilled beverages and the non-availability of the harmless fermented beverages; which condition he believes to have been brought about by legislation. The book will be of value to persons engaged in industries concerned with the foods discussed. It will also be of interest to food-inspection chemists who desire to obtain information regarding certain trade practices not usually found in the standard textbooks on food, and information relative to abnormal analyses which are liable to result from the examination of apparently normal food products.—*H. C. Lythgoe.*

3779. **COLELLA, C., e M. NAPOLI. Sulla costituzione chimica della carne di bufalo. [Chemical composition of buffalo meat.]** *Arch. di Sci. Biol.* 13(1/2): 235-240. 1929.—The authors made several analyses of buffalo meat (water percentage, dry substance, ash, total N, protein, fatty acids, total mineral, lipid and nuclein P). They found that between beef and buffalo meat there is no great difference in nutritive value, and they think that stable breeding of buffalos might be begun; as yet they are only ranch bred.—*A. Jappelli.*

3780. **COMEL, M. Ricerche sul potere di moderazione del latte. [Buffer action of milk.]** *Arch. di Sci. Biol.* 13(3/4): 353-398. 19 fig. 1929.—Whole milk, skim and whey possess a very remarkable buffer action, the peculiarities of which are pointed out.—*A. Jappelli.*

3781. **COOPER, L. F., et al. Nutrition in health and in disease.** (Nursing Manuals.) 3rd ed. J. B. Lippincott Co.: Philadelphia and London, 1931. Pr. 1s. 6d.

3782. **EIMER, KARL, und WERNER VOIGT. Rohkoststudien. II. Mitteilung: Die Rohkostbehandlung des dekompensierten Kreislaufs.** *Zeitschr. Klin. Med.* 112 (5/6): 477-527. 14 fig. 1930.—Illustrative cases are reported. Raw food (vegetables, eggs and milk products prepared without the use of heat or addition of NaCl) in the organism with disturbed circulation produces a dehydration and desalination which does not cease on the 2nd or 3rd day, as in the healthy organism, but continues until the body-stores of H_2O and NaCl have been greatly depleted, not only washing away peripheral and organ edema, but producing regularly a remarkable reversal of the refractive value of the blood serum. The favorable effect of the raw diet is based first on its low H_2O and NaCl content, and next on its high mineral content, especially K and Ca salts and basic balance.—*From authors' summary (transl.).*

3783. **EIMER, KARL, und WERNER VOIGT. Rohkoststudien. III. Mitteilung: Die Bedeutung der Rohkost für die diätetische Behandlung des Nierenkranken.** *Zeitschr. Klin. Med.* 113(2): 224-242. 1 fig. 1930.—The limited amounts of water, protein and NaCl in raw food make it suitable for diet in renal cases, of which 4 are described, 2 of acute glomerulonephritis, 1 of chronic nephritis and 1 of secondary renal cirrhosis. In the 2 latter raw food diet produced a remarkable dehydration.

3784. **FINE, M. S. Cereals and mineral metabolism.** *Cereal Chem.* 7(5): 456-465. 1930.—Rats were fed for long periods on diets containing 60% whole wheat, and 60% oats with suitable variations in the Ca: P ratios in the 2 series. By means of x-ray examinations progressive bone changes were observed. It is concluded that occurrence or non-occurrence of rickets on both these grain diets can be controlled by proper adjustment of the Ca: P ratio within wide limits of consumption levels of these elements. Evidence of spontaneous cures on rachitogenic wheat diets is presented. With a comparable oat diet there is less tendency towards such spontaneous cure. Growth and food consumption were better on the wheat than on the corresponding oat diets. These differences are in harmony with data reported by Mellanby, by Steenbock, Black and Thomas, and by Burton.—*Author's summary.*

3785. **GIL, S. A. Über die Bedeutung der Brustmilch als eines auf die Entwicklung des Kindes wirkenden Faktors.** *Jahrb. Kinderheilk.* 128(1/2): 86-94. 1930.—The question studied was whether stimulation of the vagus or of the sympathetic of the mother may so alter the biochemical nature of the milk as to affect the suckling infant. For this purpose an unspecified number of mothers, aged 17-38 yrs., frequenting the Ukrainian institute for care of mothers and children in Kharkow were induced, after expression of the normal milk, to submit to subcutaneous injection of epinephrine or pilocarpine. About 3 hrs. later the milk was again expressed and fed to 22 healthy infants aged 1-12 mos.; ½ hr. after the meal the milk was siphoned from the infant's stomach and analyzed. It was assumed that, since epinephrine and pilocarpine are quickly broken up in the organism, the milk secreted after injection of either contains, not the respective drug, but the physicochemical properties called forth by its injection into the lactating mother. The chlorides, pH and rennin were compared with those after meals of normal milk. After epinephrine milk the chlorides of the entire gastric contents showed no change in 23.5% of cases, increase in 53% and decrease in 23.5%; chlorides of the gastric juice alone, no change in 25%, increase in 62.5%, and decrease in 12.5%; pH, no change, 29.41%, increase, 47.07%, decrease, 23.52%; rennin ferment, no change, 43.75%, increase, 43.75%, decrease, 12.5%. Thus, while in most cases the chlorides were increased or unchanged, the acidity was decreased or unchanged. After pilocarpine milk the chlorides of the entire gastric contents were unchanged in 58.82% of cases, increased in 23.53, decreased in 17.65; chlorides of gastric juice only, unchanged in 50%, increased in 18.75%, decreased in 31.25%; pH, unchanged in 25%, increased in 12.5% and decreased in 62.5%; rennin, unchanged in 41.18%, increased in 35.29%, decreased in 23.53. Thus in the meal of pilocarpine milk the acidity is increased, indicating that the Cl of the gastric contents must occur chiefly as HCl.

3786. **HAN, JOHN E. S. Monosodium glutamate as a chemical condiment.** *Indust. & Eng. Chem.* 21(10): 984-987. 1 fig. 1929.

3787. **HARDING, E. R. Properties and uses of an edible rice cellulose.** *Indust. & Eng. Chem.* 20(3): 310-311. 1928.—One amongst the numerous new forms of roughage warranted to prevent or correct constipation "all but the most obstinate cases."

3788. **HART, C. V. Composition of European and California almonds.** *Indust. & Eng. Chem.* 22(10): 1128-1129. 1930.

3789. **HAWLEY, E. A short method of calculating energy, protein, calcium, phosphorus, and iron in diet.** *U. S. Dept. Agric., Tech. Bull.* 105. 20p. 5 fig. 1929.—Describes a rapid method of calculating the energy and certain mineral values of the human dietary based upon factors for food groups and suggests its use in dietary studies of relatively large groups of the population. A comparison of this method with the usual method based on tables of the individual dietary ingredients showed an agreement within 10% of the latter of the short cut method.—*E. M. MacKay.*

3790. **JONES, J. BREESE, and FRANK A. CSONKA. The prolamins of dwarf yellow milo and feterita, two horticultural varieties of Holcus sorghum.** *Jour. Biol. Chem.* 88(1): 305-309. 1930.—Prolamin is the predominant type of protein in the seeds of kafir, milo, and feterita. The prolamins of these seeds differ only slightly in their elementary composition and in N distribution as determined by the Van Slyke method. The milo prolamin, however, is characterized by lack of trypto-

phane; feterita prolamin contains 1.29%. A globulin fraction precipitable from 10% NaCl extracts of the meals at 47-50% of saturation with $(NH_4)_2SO_4$ was found in small quantities in each of the 3 varieties. The presence of glutelin could not be demonstrated.—*Authors' summary.*

3791. **KOJUCHAROFF, P., und M. JORDANOFF.** Диференциране на млѣката посрѣдствомъ преципитацията и единъ новъ серологически методъ за сжщата цѣль. [Differentiation of different milk species by precipitation and a new serological method.] [In Bulgarian.] Годишникъ на Софийския университетъ, Ветеринарно-медицински факултетъ (*Jahresber. Univ. Sofia Vet. Med. Fakultät.*) 5: 175-260. 4 fig. 1929.—Adulteration of a milk with foreign milk on pecuniary and other grounds very often occurs in Bulgaria. The forensic differentiation of milk adulterated in this way is not possible with the chemical methods we have today. The serological method discovered by the authors rests upon flocculation of the casein by strongly specific lactosera, so-called "lactotest." (Specific only for a definite milk species:—cow's, buffalo's, sheep's, or goat's.) The method is simple, cheap, and suited to large-scale investigation. It is so sensitive that mixtures of 5% of foreign species can be detected with certainty. Relation reactions are entirely removed. By this method one can even investigate pasteurized, boiled, sterilized, or condensed milks, etc.—*A. Kalojanoff (transl. by E. V. Lynn).*

3792. **KOMETIANI, P.** [The chemical composition of sweet potatoes (Ipomea batatas).] [Text in Georgian; summaries in Russian and English.] *Bull. Inst. Exp. Agric. Georgia [Tiflis]* 1929(2): 23-32. 1929.

3793. **KÖNIG, J. Neues Verfahren zur chemischen Untersuchung der Futter- und Nahrungsmittel.** 65p. illus. Paul Parey: Berlin, 1930. Pr. 3.50 M.—Discusses (a) defects of the usual procedure in food analysis, (b) new investigations of the so-called N-free extract and the plant cell membrane, (c) composition and characteristics of the constituents of the cell membrane, (d) solubility products of the constituents of the cell membrane, (e) synthesis and cleavage of the constituents of the plant cell membrane, (f) divergent views on the functioning of the plant cell membrane, and (g) a new course of procedure for the chemical investigation of feeds and foodstuffs, in collaboration with Fr. Bartschat and B. Stempel. The new procedure distinguishes: I water; II mineral substances (a) soluble in water, (b) soluble in 2% HCl, (c) insoluble in 2% HCl; III ether extract; IV protein, (a) crude, (b) true protein, (c) amids, (d) water-soluble true protein, (e) true protein soluble in 2% HCl, and (f) true protein insoluble in 2% HCl; V pentosans (total), and VI carbohydrates, etc., classified as (a) water soluble, including glucose, sugar after inversion, dextrin, acids, and unknown substances, (b) soluble in 2% HCl including starch, and proto- and hemi- pentosans, hexosans, lignins, etc., (c) soluble in 72% H_2SO_4 or 41% HCl, including orthopentosans, hexosans, lignin, etc., and (d) insoluble compounds, including lignin, and kutin+suberin.—*E. B. Forbes.*

3794. **KRAUSS, W. E. Studies on the nutritive value of milk. IV. The supplementary value of yeast in nutritional anemia of albino rats.** *Jour. Dairy Sci.* 13 (3): 246-256. 1930.—Ten samples of yeast from various sources were assayed for antianemic potency. Albino rats were used, and both curative and prophylactic procedures were carried out. As measured by hemoglobin determinations, 7 samples showed definite hemoglobin regenerating power of varying degrees; 3 showed very little or none. Some correlation appeared to exist between the Cu content of the yeasts and their antianemic potency. No such correlation was evident with respect to Fe. Some supplementary effect on growth was shown by the addition of yeast to milk. This was attributed to vitamin B.—*W. E. Krauss.*

3795. **McCARRISON, R. Relative values of the national diets of certain Indian races.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 322-323. 1927[1928].

3796. **MARTINO, G. Sulla rialimentazione dopo il digiuno nel colombo. [Re-feeding after starvation.]** *Arch. di Sci. Biol.* 13(3/4): 421-442. 2 fig. 1929.—Fasted pigeons, after a few days, when again fed, showed great diminution of food intake. Body weight rose immediately and quickly, and the time necessary to regain the original body weight varied with the length of starvation period and inversely as the capacity for food intake. Temperature, which fell during starvation, rose more or less quickly.—*A. Jappelli.*

3797. **PALMER, L. S. Some recent advances in the chemistry of milk.** *Indust. & Eng. Chem.* 22(1): 39-42. 1930.—A review.

3798. **PATTEE, ALIDA FRANCES. Practical dietetics. With reference to diet in health and disease.** 17th ed. 856p. A. F. Pattee: Mt. Vernon, N. Y., 1929. Pr. $2.75.—This handbook for nurses and dietitians, combines the subjects of dietetics and dietotherapy, greater emphasis being given to the latter subject. Part I is devoted to an elementary discussion of the principles of nutrition and food preparation. Part II deals with the practical phases of the preparation and serving of foods. The energy value, weight of protein, fat and carbohydrates are presented for each recipe. Part III comprising the major portion of the book gives detailed procedures for the dietary treatment of the various diseases. The several chapters of this portion of the book have been written with the supervision of prominent physicians. The subjects of infant and child feeding and of the proper diet during pregnancy and lactation are fully discussed. A very extensive table combines the energy value, carbohydrate, fat, protein and mineral content of 100 gm. portions of food, together with the weight and the approximate amounts contained in average servings, and data on the vitamin content, % of fiber, acid-base reaction and purine content of these foods.—*A. Spohn.*

3799. **PITMAN, GILBERT. Further comparison of California and imported almonds.** *Indust. & Eng. Chem.* 22(10): 1129-1131. 1930.—The shearing stresses of almonds were found to substantiate the "tooth-test" in determining texture. Differences in hemicellulose content did not explain differences in texture. The average composition of the nuts from the two leading almond districts was practically identical, with the single exception that the Drakes were slightly higher in oil. The Drake from Sacramento gave the highest average oil content.—*G. Pitman.*

3800. **QUAM, G. N. Solubility of metals in milk.** *Indust. & Eng. Chem.* 21(7): 703-704. 1929.

3801. **RICE, FRANK E. Evaporated and condensed milk from the chemical and nutritional point of view.** *Indust. & Eng. Chem.* 22(1): 45-48. 1930.

3802. **SEEL, H. Experimentelle Untersuchungen über das Sauermilchpräparat "Saya."** *Zeitschr. Fleisch. u. Milchhyg.* 40(14): 294-297. 1930.—"Saya" is said to be prepared by 6 wks. fermentation of pure, uncooked milk at low temperature with complete exclusion of O, under the influence of *Streptococcus lactis, S. paracitrovorus,* and *S. citrovorus.* In all, 40 rats were used. Of these 4 received bread and milk, 6 bread and "Saya" milk; 4 received oats and water, 6 oats and "Saya" milk. The 4 bread-and-milk rats increased 350% in 60 days; the 6 bread-and-"Saya" rats, 373%; the 4 oats-and-water rats increased 133%, 6 oats-and-"Saya" rats, 306%. The remaining 20 rats received a deficient, rickets-producing diet; "Saya" milk was added on the 8th experimental day to the food of 10 rats, and from the end of the 3rd wk. to the food of the other 10. The 1st 10 made a rapid recovery from the rachitis, and by the 60th day their O consumption was practically normal. The other 10 rats made a slower though clinically complete recovery from rickets, with some retardation of growth compared with normal rats. The preparation, then, appears to promote the growth of normal animals and to cure those affected with rickets.

3803. SNYDER, HARRY. Bread. A collection of popular papers on wheat, flour and bread. (With biographical sketch [of HARRY SNYDER, 1867-1927] by ANDREW L. WINTON.) 293p. 10 portraits, 8 pl. Macmillan Co.: New York, 1930.—An appreciation of Snyder's work, as soils investigator and teacher, by FREDERICK J. ALWAY constitutes the 3rd article in the present book. The main section of the book, entitled "Bread" consists of the following of Snyder's papers, reprinted: "Food habits and flour consumption," "White flour, a wholesome food," "The digestibility of breads," "The relative value of white flour and whole wheat flour," "Mineral components of wheat and flour and their rôle in human nutrition," "Camouflage bread," "The bread-fed man and the well-fed man," "Improved methods of flour milling," "The old-fashioned flour mill," "The grading and merchandising of wheat flour," "The flour moisture standard," "The mill chemist," "Some of the flour miller's problems," "The milling value of wheat," "A working knowledge of flours," "The granulation of flour," "Modern milling of hard wheats," "Some of the baker's problems," "The individuality of wheat," "What science does for farm crops," "Soil wealth and its conservation," "Wheat in times of war and peace," and "Washington as a wheat farmer."

3804. SULLIVAN, BETTY, and MARJORIE HOWE. Minerals of wheat. Part I. Sulfur and chlorine. *Cereal Chem.* 6(5): 396-399. 1930.—Determinations of S and Cl were made on a wheat and products milled from it and also on bread baked from the patent flour. The higher the protein content of the samples analyzed the higher the S content. S is combined organically as a component of cystine. S and Cl were almost completely lost upon ignition of samples at 590-600° C.—*Authors' summary.*

3805. THOENES, F. Über den Einfluss saurer Milchmischungen auf die chemische Zusammensetzung des wachsenden Hundeorganismus. *Jahrb. Kinderheilk.* 128 (3/4): 155-160. 1930.—The feeding experiments were carried out in 4 series on 13 puppies for periods ranging from 28 to 117 days. In Series I, 1 dog received unchanged whole milk and the other Marriot's lactic-acid milk; in Series II, 1 dog received whole milk, Scheer's HCl milk, and 1 dog lactic acid milk; in Series III and IV, 2 dogs in each series received whole milk, 1 HCl milk and 1 lactic acid milk. The dogs were weighed at the beginning and again at the end of the feeding period, and at the end the dogs were killed, the flesh and bones separated, and in Series I and II the water, fat, total ash, N, Ca and P found for the bones of the extremities, and the water, total ash, N, chlorides, K, Na and P for the musculature of the extremities were determined; in Series III and IV only the skeleton was analyzed. While in 1 series the skeletons of the dogs on acid milk diet were strongly mineralized as compared with the control, the findings in the 4 series taken together were far from uniform. In Series I and II the musculature showed insignificant variations as between the full milk and acid milk.

3806. VALENZUELA, ABELARDO, and P. J. WESTER. Composition of some Philippine fruits, vegetables, and forage plants. *Philippine Jour. Sci.* 41(1): 85-102. 22 pl. 1930.—The composition was determined of 6 varieties of Philippine bananas, 1 from Guam, 18 Philippine fruits, 3 tubers, 3 kinds of seeds, 6 vegetables and 12 forages. Description and photographs are also published.—*H. C. Koser.*

3807. WIEDEMANN, JOHANN FRIEDRICH. Die Zelluloseverdauung bei Lamellicornierlarven. *Zeitschr. Wiss. Biol. Abt. A. Morph. u. Ökol. Tiere* 19(1): 228-258. 9 fig. 1930.—The food of Lamellicornia larvae lacks ordinary nourishing substances to such a degree that cellulose must be made use of as food material. The middle part of the intestine produces an alkaline secretion, which is mixed with the food material to produce a thin paste. The protease contained in this secretion acts only in acid solution, and therefore micro-organisms pass the middle part of the intestine unharmed and find excellent living conditions in the large rectum, where they multiply very rapidly. The combined action of the bacteria is to break down cellulose (certain acids appearing as by-products), and to assimilate inorganically bound N. The end-products which occur are not utilized by the larvae; but in certain parts of the rectum the acids produced by the bacterial action neutralize the alkalinity of the intestinal juices, thus allowing the protease to act. It in turn dissolves a large part of the bacteria and flagellates present producing food material which is absorbed by certain regions of the rectum.—*J. F. Wiedemann.*

GROWTH

3808. DARBY, HUGH H. Studies on growth acceleration in protozoa and yeast. *Jour. Exp. Biol.* 7: 308-316. 1930.—*Paramecium caudatum, P. aurelia,* and *Stylonichia pustulata,* carefully washed, were transferred to and cultivated in satisfactory media. No allelocatalytic phenomena were observed when the volume of the medium was decreased. The observations of Wildiers on the multiplication of yeast can be explained by the buffering action of the organisms on a hyperalkaline medium. The original pH of Wildiers' medium was about 7.2 while the optimum for yeast multiplication was found by controlled tests to be 4.4.—*J. M. Robson.*

3809. HAMMETT, FREDERICK S. The natural chemical regulation of growth by increase in cell number. *Proc. Amer. Philosoph. Soc.* 69(4): 217-223. 1930.—A continuation of work showing, "that the -SH or sulfhydril group is the essential chemical stimulus to growth by increase in cell number" in concentrations of one part in ten million of culture solution, for both plants and animals. Reimann has since applied this principle successfully in healing old ulcers, bed-sores, etc. But sooner or later "cell proliferation as a participant in body size increment stops." To account for this the "Law of Mass Action" is invoked, whereby "the progress of a reaction is gradually slowed and brought to a state of equilibrium by the products resulting from the reaction itself." This possibility was tested also on root tips of corn, by comparing "the action of a series of organic compounds containing partially oxidized sulfur groups" with controls of sub- or fully oxidized sulfur, finding retardation of increase in cell numbers, and of length-growth of the roots. Tests on paramecium give like results, as also on "transplantable growth" material in mice.—*W. Browning.*

3810. HAX, DORA. Tierexperimentelle Wachstumsstudien. III. Mitteilung. Die chemischen Veränderungen des Gesamtorganismus und der Organe im Verlauf der postuterinen Entwicklung. *Pflüger's Arch. Ges. Physiol.* 216: 627-639. 5 fig. 1927.—37 puppies from healthy, well-nourished mothers were studied to determine the changes in the chemical composition of the whole body and of the principal organs with age during postnatal development. The relation between water and dry matter and the glycogen and fat content of the body was determined. The total N, residual N, and sugar content of the blood were determined. The results are given in 6 graphs to facilitate comparisons. Together with the live-weights and the weights of the organs obtained with comparable animals over the same period of time (reported in an earlier paper), the data may be of much value in determining the influence of nutrition on the development of the organs, and also, to some extent, the functions of the organs at various stages of development. —*Author's summary (transl. by W. Hendricks).*

3811. HENTSCHEL, HANS-GEORG. Die Bildung des Haarpigments nach Untersuchungen an Mäusen. *Jenaische Zeitschr. Naturwiss.* 64(3): 551-596. 3 pl., 17 fig. 1930.—The development of hair pigment was studied on mice employing a cross between the albino and the Japanese dancing mouse; also on the Japanese dancing mouse and on the wild grey house mouse (*Mus musculus* L.). Since hair pigment is already formed at birth only embryonic material was used. This permitted very clear observation of the ontogenesis of the hair pigment. In order to obtain a general concept of controlling factors,

pieces of skin were taken from different parts of the body of young animals and embryos, cleared in clove oil or xylol and cut in 10μ sections. The observations showed that the hair pigment develops independently in the epidermis and is not related to the pigment in the cutis. Migration of cutaneous pigment, which is formed earlier, into the layers in which hairs are formed, could not be detected. This fact was especially emphasized and controlled. It was confirmed by the voluminous material, which through the crossing produced a large variety of patterns and colors. While the cutaneous pigment is completely absent in the dancing mouse, it appears well developed in the grey house mouse and in the hybrids. Furthermore, the cutaneous pigment was lacking in all animals on the portions of skin which remained white. The pigment-producing cell is to be regarded as the source of pigment formation. It appears in the earliest stages of hair anlage, in the basal layer of the Stratum germinativum and is easy to differentiate from other cells by the brown color. Often these cells are found in the early hair anlage, where they are present in all regions. It is entirely indifferent for the pigmentation process as to where it begins. The formation of the pigment cone is always present in pigmented hairs. It begins at about half the height of the cutaneous papillae and surrounds it, cover-like, toward the upper part. Yet in embryos shortly before birth pigment is found as fine granules about the nucleus, from which the pigment is further developed and increased. The early stages can be clearly observed in the sections. Pigment is never found in the papilla. The formed pigment cone is in the matrix layer, equally distributed, and spreads into the cortical layer of the hair, which appears diffusely pigmented. Later, the pigment is arranged in the matrix over the nuclei and migrates from the hair cortex into the hair medulla. On the 6th to 7th day after birth the pigmentation of the hair is completed.—*H.-G. Hentschel* (*transl. by H. J. Ropshaw*).

3812. [LEVITT, M. M.] ЛЕВІТТ, М. М. Деякі дані про постембріональний ріст прядки соснової (Dendrolimus pini L.) [Some data on the postembryonic growth of D. pini.] [English summary.] Всеукраїнська Академія Наук, Труди Фізично-Математичного Відділу (Збірник Праць Біологічного Інституту 4) (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Inst. Biol.*) 12(4): 269-277. 1929.—Schmalhausen established that for vertebrates the rate of growth falls inversely in proportion to time. In order to study this law on organisms that have a metamorphosis, larvae of *Dendrolimus pini*, in 8 series, were weighed during the ages I-IV of their metamorphosis. The rate of growth (C) was calculated by the formula: $C_v = \log v_1 - \log v/0.4343 (t_1 - t)$ and the growth constant by $K = Cvt$, where t is the time and v the weight. K was determined for every age in every series, for every series as a whole, for every age in all the series and for the growth of all the population. Passing from age I to II, K increases; from II to III it increases slightly; if there is an age (IV) in which the caterpillars pass the winter, then it decreases from III to IV. If the caterpillars pass the winter in age III, K decreases in this age. In every age K decreases from high values at the beginning to negative values at the end, after some fluctuations in the middle. Average value of K in the population = 3.0240. The law of growth mentioned above is operative in this case. The moults, the stiffening of the chitin, the differentiation, etc., are sharply reflected in the rate of growth.—*B. J. Luyet.*

3813. **MERRELL, MARGARET. The relationship of individual growth to average growth.** *Human Biol.* 3 (1): 37-70. 1931.—An analysis of the characteristics of the mean curve which results from averaging a group of individual curves of any given type. It is shown that the mean curve may be expressed as a series, consisting of a term which is the same function as that describing the individuals, and a series of correction terms. The effect of these correction terms is studied in applications of this analysis to two empirical growth equations, the generalized parabola and the logistic. In the case of the parabola, the correction terms vanish and the mean curve has the same form as for the individuals. In the case of the logistic the correction terms remain and may produce major fluctuations and a skewness in the mean curve, not present for the individuals. As applied to human growth material, these results indicate that the description of growth given by getting the average size of different groups of children at successive ages is an adequate description of the growth of an individual child, as to the number of major cycles of growth, but may differ in its degree of skewness, from that which would be found in the individual children if they were followed through their period of growth.—*M. Merrell.*

3814. **MEYER, PAUL FRIEDRICH. Untersuchungen über die Aufnahme pflanzlicher Farbstoffe in den Körper von Lepidopterenlarven.** *Zeitschr. Wiss. Biol. Abt. C. Zeitschr. Vergleich. Physiol.* 11(2): 173-209. 8 fig. 1930.—Lepidopterous larvae from the following families were used in these experiments: Papilionidae, Pieridae, Nymphalidae, Sphingidae, Notodontidae, Lymantriidae, Lasiocampidae, Noctuidae and Geometridae. Chemical analyses were made of the intestinal contents after feeding plants containing various pigments. Neither chlorophyll nor its split products were found in the intestines of the larvae studied. The green coloring matter that was in the hemolymph was not chlorophyll, but an oxidation product of proteins, produced by oxidases in the hemolymph. Carotin in the food was recovered as carotin in the hemolymph and intestinal fluids. Carotin was found, however, in larvae fed carotin-free food; xanthophyll was never found in the body of the larvae. The larvae could not grow, transform nor form their usual body colors on a chlorophyll- or carotin-free diet. In *Pieris brassicae* larvae there was a sex difference in the pigments of the hemolymph. The hemolymph of ♀ larvae in strong HCl was a deep blue violet when heated, that of ♂ larvae a pale red. The red color of larvae about to pupate and of freshly emerged adults of *Vanessa io* and *V. urticae* was found to be excretory in nature. Excretion of the red pigment was also observed to take place from the malpighian tubules into the intestine.

3815. **NEEDHAM, DOROTHY MOYLE. The chemical changes during the metamorphosis of insects.** *Biol. Rev. & Biol. Proc. Cambridge Phil. Soc.* 4(4): 307-326. 9 fig. 1929.—This is a review of the metabolic changes accompanying morphological changes in insects. Changes in O consumption and CO_2 output; in carbohydrate and fat content of the organism during metamorphosis; N metabolism including the fractions; protein N, uric acid N, basic N, water-soluble N, and chitin N; the formation of silk, and the differences in metabolism between insects forming large and those forming insignificant cocoons are discussed. The silk worm (*Bombyx mori*), the hawk moth (*Deilephila euphorbiae*), the blow-fly (*Calliphora vomitoria*), the corpse fly (*Ophyra cadaverina*) and the honey bee (*Apis mellifica*) are considered. The physico-chemical causes of insect histolysis and of regeneration, and the origin of the low respiratory exchange during the middle period of pupation are discussed.—*T. A. Brindley.*

3816. **OGUSHI, K., und K. YOSHIDA. Die Grundformeln bezüglich der wachsenden Körperstatur des Menschen. (Vorläufige Mitteilung.)** *Folia Anat. Japonica* 8(6): 433-437. 1930.—The authors constructed many empirical formulae from different data of the growth in stature of Japanese and of European children, from birth to puberty. The following general expressions were derived from those formulae: (1) $y = at^b + c$, to be applied for height; (2) $y = ae^{bt}$, for the circumference of chest and for weight; (3) $y = ae^{bt+ct^2}$ for indices of the circumference of the chest or the body weight in relation to height (the letters a, b, and c are used to denote the constants which must be computed; t, the variable "age"; and e, the base of the natural logarithms). Starting from 2 hypothetical equalities $u/l = u'/l'$, $w/l = w'/l'$, in which l, u, and w are the original data of height, circumference of chest, and body weight, respectively,

and l', u', and w' are computed values of l, u, and w, which can be obtained from the empirical formulae above mentioned, the authors obtained the following formulae:

$$(1)\ \frac{l'u}{lw'} \gtrless 1; \quad (2)\ \frac{l'\sqrt[3]{w}}{l\sqrt[3]{w'}} \gtrless 1; \quad (3)\ \frac{l'w}{lw'} \gtrless 1.$$

These expressions define the relative quantity of the periodical fluctuations of u and w, taken in comparison with the height, for the annual increments of u and w proceed exponentially, while the height increases neither in the same manner nor linearly, but parabolically.—*Authors (courtesy Wistar Bibl. Serv.).*

3817. ORR, J. B., and M. L. CLARK. A report on seasonal variation in the growth of school children. *Lancet* 219(5581): 365-367. 1930.—Children to the number of 657, aged from 7 to 11 years, from 4 Scottish towns were measured and weighed in quarterly periods. They showed a very much greater increase in height in the 3 mos. from the end of March to the end of June than in any other period, and the smallest increase in height in the months of October to December. The weight increase was greatest in the quarter July to September.—*Authors' summary.*

3818. RAPKINE, LOUIS. L'énergétique du développement de l'oeuf. *Arch. Anat. Microsc.* 25: 482-488. 1929.—A review.

3819. SCHAMBERG, JAY F., and ELI SALEEBY. The growth of hair in newly born albino rats. *Arch. Dermatol. and Syphilol.* 22(1): 34-39. 6 fig. 1930.—During 1 yr. the microscopic changes in the hair of an unspecified number of albino rats (born hairless) were studied from birth to the 16th day of life. Removal of the testicles and 1 adrenal gland was followed by a stunting of the growth of hair.

3820. [SCHMALHAUSEN, I. I.] ШМАЛЬГАВЗЕН, I. I. До теорії росту. **[The theory of growth.]** [English summary.] Всеукраінська Академія Наук, Труди Фізично-Математичного Відділу (Збірник Праць Біологічного Інституту) (*Acad. Sci. Ukraine. Mém. Cl. Sci. Phys. et Math.*) (*Trav. Inst. Biol.*) 12(4): 243-268. 1929.—The usual theory of growth supposes that exponential growth is restricted by an increasing obstacle analogous to growth of a population in a limited space; the theory of parabolic growth supposes that the restriction is due to the progressive diminution of the mass of undifferentiated cells or undifferentiated protoplasm in differentiated cells. The fact that the rate of growth falls inversely with elapsed time is explained on the assumption that the mass of undifferentiated cells falls in inverse proportion to age. The same fact in differentiated cells is explained by a decrease of the mass of indifferent protoplasm inversely proportional to age. The growth of undifferentiated cells may be exponential if there is a proportionate increase of the outer surface: it becomes parabolic if there is a decrease of the surface. The growth constant in organs is usually restricted by the form and distribution of the zones of undifferentiated cells to low values. The growth curve of a whole organism is, in general, parabolic as a summation of parabolic curves of separate organs and tissues. The division of the growth process in separate natural periods is so sharp that it makes impossible a single mathematical formulation.—*B. J. Luyet.*

3821. SCHMALHAUSEN, I. Über Wachstumsformeln und Wachstumstheorien. *Biol. Zentralbl.* 50(5): 292-307. 1930.—A brief description of methods suggested by the author for comparative growth studies. The author replies to several objections to his work raised by W. Ludwig (Biol. Zentralbl 49. 1929).—*I. Schmalhausen (transl. by W. Hendricks).*

3822. SLIFER, ELEANOR H. Insect development. I. Fatty acids in the grasshopper egg. *Physiol. Zool.* 3(4): 503-518. 1930.—The fatty-acid content of the egg of the grasshopper, *Melanoplus differentialis* [and *Chortophaga viridifasciata*], was determined by means of the saponification method of Kumagawa and Suto for, (1) eggs kept at 25° C. from the day they were laid and, (2) for eggs first exposed to low outdoor temp. and then placed at 25°C. until hatched. The newly laid egg contains, on an average, 0.352 mgm. of the higher fatty acids. This comprises from 9 to 12% of the wet weight or from 17 to 22% of the dry weight. Hibernation begins, in eggs kept at 25° C., at the end of the 3rd week. By the 21st day each egg contains approximately 0.040 mgm. less fatty acid than when first laid. During the early stages of hibernation little change occurs in the fat content. The later stages of development were studied in eggs first exposed to low temperatures, then placed at 25°C. until hatched. As development proceeds, the amount of fatty acid falls rapidly; and at hatching, less than half—on an average 45.7%—of that found in freshly laid eggs remains. Changes in the viscosity of the egg contents and of the resistance of the shell to destruction by strong alkali were also noted.—*Author (courtesy Wistar. Bibl. Serv.).*

ANIMAL PHYSIOLOGY

DIGESTIVE SYSTEM AND DIGESTIVE SECRETIONS

A. J. CARLSON, *Editor*

(See also in this issue Entries 3587, 3637, 3643, 3698, 3726, 3727, 3754, 3776, 3807, 3814, 3871, 4072, 4124, 4206, 4761, 4765, 5622)

3823. ALLODI, ANGELO, e GIOVANNI DE-MATTIA. Le variazioni della motilità gastrica dopo stimoli fisici differenti (meccanici, termici, diatermici, elettrici) applicati sulla regione gastrica, studiate parallelamente nello stesso soggetto. [Modifications of gastric motility following mechanical, thermic, diathermic and electric stimuli.] *Arch. Sci. Med.* 54(10): 657-676. 3 fig. 1930.—Physical stimuli applied on the skin of the abdomen caused modifications of gastric motility. Heat, massage, faradisation and diathermy hastened the evacuation of the stomach. More effective than all was diathermy. Cold stimulation causes habitually a delay of evacuation. The authors suspect a reflex vagal action following physical stimulation.—*M. Comel.*

3824. BAUR, M. Studien über die Dünndarmperistaltik. *Arch. Exp. Pathol. u. Pharmakol.* 131(3/4): 233-254. 1928.—These are studies of the action of physostigmine and of electrical stimulation on the isolated small intestine of the guinea pig. Through the action of physostigmine the coordinated movements of the longitudinal and circular muscle, as seen in normal contraction of the gut, are shifted due to a more sluggish but higher contraction of the longitudinal muscle. There is a plateau type of contraction of the circular muscle. With poisons which attack the muscle, e.g., Ba, or with mechanical distension, there is an increased contraction of the longitudinal muscle but coordinated action is maintained by a change in the rate of contraction, i.e., by summation. The action of physostigmine is analogous in its effect to a stimulation of the longitudinal muscle at the beginning of its contraction with a resulting superposition and consequent incoordination. With weak galvanic stimuli there results a "relative refractory period" (never an absolute refractory period) in the rhythmically active gut, no effect if the resting gut is stimulated. The point of attack of physostigmine is not the muscle but is apparently Auerbach's plexus.—*A. C. Ivy.*

3825. BAUR, MAX. Die Peristaltik des isolierten Meerschweinchendünndarms im Filmversuch. *Arch. Exp. Pathol. u. Pharmakol.* 133(1/2): 69-83. 3 fig. 1928.—A study of 30 typical peristaltic waves on the isolated small intestine of the guinea pig based on the photo-

graphic method was made. Thirty-five to 45 photographs of a single contraction were taken. Of these 10-12 films showing characteristic changes were enlarged to 9 x 12 or 13 x 18 and from these the time relationships between contraction of longitudinal and circular muscle determined. Surface measurements were made with a planimeter and from these the volume of the gut in different phases of contraction was calculated. From the calculated volume curves hypothetical curves were calculated which would show the volume change due to the contraction of the circular muscle alone, as compared with that produced by contraction of the longitudinal muscle. The hypothetical curves were interpolated with the normal curves with a maximum error of 10%. Contractions of the longitudinal and circular muscle are not synchronous, the longitudinal muscle contraction preceding somewhat that of the circular muscle. Increase in volume is due chiefly to relaxation of the circular muscle, the greatest amount due to contraction of longitudinal muscle being 25% of the total. These results are not applicable to the rabbit intestine.—*A. C. Ivy.*

3826. BAXTER, STEWART G. Continuous pancreatic secretion in the rabbit. *Amer. Jour. Physiol.* 96(2): 343-348. 1931.—Continuous pancreatic secretion (adhering to the general rule of parallel secretion of enzymes) was traced in urethanized rabbits for as long as 10-12 hrs., and in decerebrate or decapitate rabbits for 5-6 hrs. or until death. It persisted unabated and without marked change in enzyme content for 10-12 hrs. after ligation of the pylorus and the common bile duct, and in decapitate and urethanized rabbits, practically unchanged for 4-5 hrs. after evisceration (stomach and intestines). It is assumed that this continuous secretion is essentially a true "spontaneous" pancreatic secretion due to the particular properties of the pancreatic gland in the rabbit.

3827. BAXTER, STEWART G. Nervous control of the pancreatic secretion in the rabbit. *Amer. Jour. Physiol.* 96(2): 349-355. 1931.—From numerous experiments in vagus stimulation Baxter concludes that the vagus nerve, contrary to previous belief, is a true secretory nerve to the pancreatic gland in the rabbit, and possesses secretory "trophic" and motor fibres to the ducts. The pancreatic secretion in the rabbit was stimulated by the parasympathetico-mimetic drugs, pilocarpine and acetyl-choline. Section of the parasympathetic nerves to the pancreatic gland had no marked effect on the rate of secretion or the enzyme content. Stimulation of the splanchnic nerves in the rabbit produced, after a preliminary inhibition, an increase in the rate of secretion and a definite rise in the tryptic power of the pancreatic juice. Repeated injection of small amounts of adrenaline produced the same results in the pancreatic secretion of the rabbit as stimulation of the splanchnic nerves. Section of the sympathetic nerves in the rabbit produced an immediate and profound fall in the enzyme content of the pancreatic secretion, which had a lasting effect.

3828. BILLI, A. Alterazioni istologiche nell'intestino di animali con fistola duodenale. [Histological alterations in intestine of animals with duodenal fistula.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 594-595. 1930.—In the intestine below the fistula, especially in the colon, alterations of epithelium of the mucosa, hemorrhage and abnormal mucin production were observed.—*M. Comel.*

3829. DELRUE, GEORGES. Étude de la sécrétion acide de l'estomac. I. Sécrétion acide de la muqueuse isolée de l'estomac de grenouille.—Technique.—Action de l'histamine et de la pilocarpine. *Arch. Internat. Physiol.* 33(2): 196-216. 1930.—The surviving isolated gastric mucosa was stretched across lateral communicating apertures between 2 test tubes, placed upright side by side; both tubes were filled with fluid, one representing the organism (O) with Ringer's fluid, the other representing the gastric cavity (I) with distilled water; 23 experiments are reported. The mucosa remained alive in some cases as long as 24-29 hrs., tending to maintain in vitro on the side corresponding to the gastric cavity a constant pH identical with the pH of the contents of the living stomach. Pilocarpine alone in the Ringer's fluid (O tube) had no stimulating effect on the isolated mucosa, but gastric extract with pilocarpine produced an acid secretion and a toxic action by which the mucosa was soon killed. Histamine alone stimulated the mucosa to acid secretion; histamine plus gastric extract was more active and possibly, not certainly, toxic.

3830. DUKES, H. H. Recent advances in the physiology of digestion. 3. The ruminant stomach. *Jour. Amer. Vet. Med. Assoc.* 31(1): 92-97. 1931.—A review.

3831. ERBEN, ALOIS. Über die ernährungsphysiologische Bedeutung der Mikroorganismen im Darmtrakt der Pflanzenfresser. III. Über die Speicherung von ungelöstem pepsinverdaulichen Eiweiss (Infusorieneiweiss) im Blinddarm des Pferdes. *Pflüger's Arch. Ges. Physiol.* 213(5/6): 571-576. 1926.—In the cecum of the horse occurs a storage of insoluble, pepsin-digestible protein, in all probability in the form of infusorial protein. An increase in bacteria does not occur in the cecum; this appears first in the colon. The formation of the pepsin-digestible (infusorial) protein in the cecum results from the nitrogenous compounds from the ileum, which accumulate in the cecum in a non-absorbable non-assimilable form. The absorption of N-containing digestion products is negligible from the terminal part of the ileum to the beginning of the colon in the horse.—*Author's summary (transl. by B. F. Lutman).*

3832. FORSGREN, ERIK. Über die Beziehungen zwischen Schlaf und Leberfunktion. *Skand. Arch. Physiol.* 60(5/6): 299-310. 1 fig. 1930.—From theoretical considerations, discussed at length, and experiments briefly summarized, Forsgren concludes: The human liver, like that of the rabbit, probably has a rhythmic function with an alternating assimilatory and secretory phase of activity. The secretion of bile in the human reaches its maximum in the day-time and its minimum at night. It can therefore be concluded that the assimilatory (anabolic) phase of activity of the liver reaches its maximum at night, at the time of minimum bile secretion. According to observations to date there seems to be a different relation between liver function and sleep in rabbits as compared with the human. The rabbit goes into a state of sleep or inactivity in the day-time during which the liver is usually in its secretory phase of activity. The afternoon inertia due to digestive activity in the human is perhaps a condition related to the day-time sleep of the rabbit. It is, at any rate, possible that certain substances, originating during the secretory phase of activity of the liver, have an hypnotic effect. This assumption is supported by experiments which show that water extracts of the livers of sleeping animals injected subcutaneously into active and alert animals produce a condition of inactivity.—*Author's summary (transl. by B. Blechman).*

3833. GUDJONSSON, SKULI V. (unter Beihilfe von GIRLY OPPENHEIM). Über den Darmdurchgang bei normalen jungen Ratten. *Zeitschr. Ges. Exp. Med.* 71 (1/2): 220-228. 4 fig. 1930.—The periods of time required for transit of food through the various portions of the digestive canal were studied in 120 normal young rats; also the period required to empty the stomach and upper intestine when the rats had consumed a measured portion of food. After 16 hrs. fasting the intestines were half empty. A minute after the rats had begun to eat the ventricle was about full, and after 3 min. the food had begun to pass the pylorus; in 5 min. the duodenum was half full. After 15-20 min. the most of the small intestine was full, and in 1 hr. it was completely full, but the jejunum remained continually only half full, in some segments contents being abundant, in others almost none. The contents remained in the ileum until 80-90 min. after eating had begun; about 80 min. thereafter the cecum was filled; about 160 min. were required to fill the colon. In all 340 min. were required to fill the intestine with the recently eaten food.

3834. HAESLER, KURT. Der Einfluss verschiedener Ernährung auf die Grössenverhältnisse des Magen-Darmkanals bei Säugetieren. *Zeitschr. Züchtung B.*

Tierzücht. u. Züchtungsbiol. 17(3): 339-412. 1930.—In view of the assumption frequently made that bulky foods tend to produce large digestive tracts in swine and thus make possible a greater utilization of the food, extensive investigations were undertaken with growing pigs to determine the influence of foods of animal and plant origin upon the digestive tract. A litter of 9 pigs was divided into 3 groups at the age of 4 weeks. One group received a concentrated diet composed entirely of animal products. The 2nd received a bulky diet of purely plant origin. The 3rd received a normal diet consisting of a mixed feed prepared according to the Ruhlsdorf formula. The animals were slaughtered as soon as they reached a weight of 90 kgm. This weight was attained by the normal group at an age of 21-22 weeks, the vegetable-fed group at 26-27 weeks, and the animal-fed group at 33-35 weeks. The length, volume, inner surface area, and weight of the digestive tract were measured. The length, obtained for only the small and large intestines, was measured after suspending the material in a glass vessel filled with 0.9% NaCl solution and applying a tension of 130 gm. The volume was measured by filling the material with 0.9% NaCl solution at a pressure of 25 cm. The length measurements did not confirm the assumption that a plant diet produces a long intestine and an animal diet a short one. The animal-diet group had the longer small intestines and the shorter large intestines; the plant-diet group, the shorter small intestines and the longer large intestines. For the normal group the length of the small intestine was similar to that for the animal-diet group, and the length of the large intestine was similar to that for the plant-diet group. The length of the whole intestine was 23.20 and 23.90 m. for the normal group and on the average 22.85 m. for the animal-fed group and 21.96 m. for the plant-fed group. The volume of the stomach was greater for the plant-fed group but not significantly smaller for the animal-fed group. The small intestine showed a decrease in volume for the plant-fed group. The cecum was distinctly enlarged by the bulky plant diet, whereas its volume was least for the animal-fed group. The differences in volume were greatest for the large intestine. The data clearly showed a considerable increase in the volume of the large intestine with the bulky vegetarian diet, and a decrease in volume with the non-bulky animal diet. The measurements of the inner surface areas were fairly parallel to the volume determinations. The weight of the stomach corresponds to its volume. The weight of the small intestine was greatest for the normal group and least for the animal-fed group. The weights of the cecum and large intestine correspond to their volumes. The plant-fed group had the heaviest large intestines and the animal-fed group, the lightest. The normal group corresponds more nearly with the plant-fed group in this respect.—*Lenkeit (transl. by W. Hendricks).*

3835. HINRICHSEN, JOSEPHINE, and A. C. IVY. Studies on the ileo-cecal sphincter of the dog. *Amer. Jour. Physiol.* 96(2): 494-507. 1 fig. 1931.—Three methods were used in a study of the innervation and control of the sphincter in the dog: (a) In 40 acute experiments with barbital anesthesia nerves were electrically stimulated to determine the extrinsic innervation of the sphincter. In other experiments various portions of the intestine were distended as a means of studying the reflex innervation. Epinephrine and pilocarpine were injected intravenously. (b) Action of the sphincter on animals with a fistula of the cecum about 1 in. distal to the sphincter was observed directly. (c) In dogs with a fistula of the ileum response to feeding was fluoroscopically observed. Results indicate that the ileo-cecal sphincter in the dog is a true physiological sphincter, for which the vagus nerve contains both motor and inhibitory fibers. The authors believe that the normal vagal control of the ileo-cecal sphincter, the pyloric and cardiac sphincter results in relaxation followed by contraction. The splanchnic nerves contain only motor fibers for and play a rôle in maintaining the tone of the ileo-cecal sphincter, which confirms Elliott's work on the cat and Toennis' on the dog and may explain in part certain clinical observations. Reflex contraction of the sphincter may be caused by either the extrinsic or the intrinsic nervous mechanism. Stimulation of almost any nerve in the abdomen or distension of the stomach, duodenum, ileum, and colon may cause contraction of the sphincter. Motor disturbances of the ileo-cecal sphincter may thus be produced by local pathological changes in the ileum and colon, by abnormal states of the nervous system and by irritation of any portion of the gastro-intestinal tract. Stimulation of the sciatic nerve failed to cause a motor change of the ileo-cecal sphincter, confirming Elliott. Adrenalin and pilocarpine cause the sphincter to contract. A "feeding reflex" is a definite physiological phenomenon, excitation of the duodenum being the most potent factor concerned in the elicitation of this reflex. The emptying of the distal ileum is described and observations of the ileo-cecal sphincter under direct vision in dogs with a cecal fistula are recorded.—*From authors' summary.*

3836. KRAINZ, W. Über die Hauptschluckstelle beim Menschen. *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 126 (3/4): 259-262. 1930.—It is considered that the locus of initiation of the deglutition reflex in man, at any rate for solids, lies at the side of the posterior wall of the hypopharynx at its commencement. This region is innervated by the glossopharyngeal nerve, which would therefore be the chief nerve of deglutition in man. The sensitive margin of the epiglottis evidently serves as the first accessory reflex locus, apparently coming into activity when fluids are swallowed; it is innervated by the superior laryngeal branch of the vagus, which is thus the first accessory nerve of deglutition.—*R. J. Brocklehurst.*

3837. LESSER, E. J. Untersuchungen über Diastasesekretion. I. Die Freilegung der Diastase in den Zellen der Speicheldrüse. *Biochem. Zeitschr.* 184(1/3): 125-146. 3 fig. 1927.—The diastase content of the parotid glands of the mouse was measured, and data are given as to the normal variations and the correlations between opposite glands in the same mouse. The rates of O-consumption and diastase liberation during periods of immersion in Ringer's solution in a Warburg apparatus showed that no synthesis of diastase went on in the isolated gland, that the diastase in the cells probably existed in 2 forms, and that the rate of its liberation into the bath was proportional to the concentration of the diffusible form remaining in the cell. Experiments with atropine were negative, but epinephrine and pilocarpine hastened the liberation of diastase. Epinephrine did not increase the O-consumption of the tissue, but pilocarpine doubled it. Isocapillary solutions of propyl, butyl, and amyl alcohols which did not affect the O consumption nevertheless had about the same effect as pilocarpine in increasing the rate of liberation of diastase. The process of liberation of diastase is apparently not directly connected with the energy producing processes in the cell; in fact, it appears to demand no contribution of energy. The fact that the various alcohols act in isocapillary and not in isomolar concentration points toward an effect on surfaces, i.e., the so-called cell membrane. The course of events is explicable only on the assumption that diastase exists in 2 forms, (1) diffusible, dissolved in the cell liquids, (2) bound. The "bound" diastase (held by adsorption on the surface of the cell structure) is freed from its attachment by the action on the surfaces of homologous alcohol of isocapillary concentration. The author regards it of the highest importance that the substances which liberate diastase in the parotid of the white mouse promote sugar formation in the liver; this, he believes, explains the significant point in the secretion of digestive ferments. There is a difference between the liver and the salivary glands, since liberated diastase does not leave the liver cell; this is attributed to the fact that in the winter liver of the frog the liberated diastase encounters great masses of glycogen which retain it in the cell.—*F. T. Jung.*

3838. MAIRANO, M., e G. VECCHI. Sull'equilibrio acido-base del sangue nell'occlusione intestinale sperimentale. [Acid-base equilibrium of blood during experimental intestinal occlusion.] *Arch. Sci. Med.* 54(10): 677-684. 1930.—Intestinal occlusion was made in dogs at various levels of the intestinal canal (duodenum, ileum, colon). The blood alkaline reserve steadily increased after occlusion and reached very high values before death. The pH values on the contrary continued normal, and only in the terminal stage an increase of pH was noted.—*M. Comel.*

3839. MOLINARI-TOSATTI, P. Secrezione gastrica da istamina e secrezione da pasto. [Gastric secretion following histamine and after meals.] *Arch. di Sci. Biol.* 13(1/2): 97-108. 1929.—A comparative study on Pavlov pouch dogs. The diagram of the histamine secretion, as regards quantity, free HCl, proteolytic power, closely resembles, though a little shortened, that of the meal secretion. Therefore it is permissible to use histamine to test gastric secretion in man, it being better than the old method of the standard test meal, which gives a mixture of gastric juice and semi-digested food.—*A. Jappelli.*

3840. MONTGOMERY, MARY F. The rôle of the salivary glands in the thirst mechanism. *Amer. Jour. Physiol.* 96(1): 221-227. 1931.—After total extirpation of the salivary glands in 6 dogs the average daily water intake was not increased (making it improbable that the salivary glands play a major rôle in the thirst mechanism) and the buccal mucosa remained healthy and moist.

3841. NAKAYAMA, S., and T. TACHIBANA. The effect of ovarian extract on the gastric fluid. *Japanese Jour. Obstetr. and Gynecol.* 13(1): 66-68. 1930.—The problem of the genesis of peptic ulcer in pregnancy was studied by injection of 3 kinds of ovarian extract, oophormin, ovoglandol and luteoglandol, into dogs with Pavlov fistulae. The site of injection and sex and number of dogs are not specified. A tendency to slight decrease in quantity of gastric secretion, and a decrease in HCl and pepsin, with no particular change in total acidity, were noted.

3842. PRIKLADOWIZKY, S., und A. APOLLONOW. Muskelarbeit und Magensekretion. *Arbeitsphysiologie* 3 (4): 309-314. 6 fig. 1930.—The experiments were carried out on dogs with a Pavlov pouch or esophagotomy and gastric fistulas. The work was running on a treadmill a distance of 6.4 kilometers in 30 min. When the dogs were first made to run and then fed 200 gm. of meat or bread, the gastric secretion was nearly the same in amount and lasted nearly as long as at rest. When the feeding was done first and the dogs were then run, the appearance of the secretion was delayed and it was very much smaller in quantity. The authors interpreted this as due to a hindrance to the reflex phase of secretion. This was substantiated by experiments with false feeding and running, in which the secretion was practically absent, whereas false feeding at rest gave normal amounts and duration. Experiments in which the running was performed 1 hr. after the feeding and after secretion was going on actively resulted in a temporary suppression of secretion and a very small amount after the running was ended.—*T. M. Carpenter.*

3843. TEMPLETON, R. D., and HAMPDEN LAWSON. Studies in the motor activity of the large intestine. I. Normal motility in the dog, recorded by the tandem balloon method. *Amer. Jour. Physiol.* 96(3): 667-676. 1931.—Triple tandem balloons, as devised by Templeton and Bollens, inserted through a cecostomy into the proximal colon, or through the anus into the distal colon, were used in unanesthetized dogs (number not stated). Tracings of the contractions (classified under 3 general types) show relationships suggesting that larger contractions are the result of some sort of summation of the smaller. The fundamental activity of the dog's colon is described as rhythmic pulsations. The mechanism of conversion of these pulsations into moving waves is considered. Differences in activity are noted in the proximal and distal colon: The proximal colon shows high tone changes, coinciding with periods of activity, with progressive delay of contractions analward during the first ½ of the period, and rhythmic pulsations during the middle of the period which may be replaced by contractions delayed oralward in a small area near the cecum toward the end of the period. The distal colon shows only slight tone changes, with little tendency toward interruption of simultaneity in the rhythmic pulsations. A reciprocal relationship is observed between certain types of activity in the proximal and the distal colon.

3844. USUELLI, FILIPPO. Das Verhalten der Panseninfusorien gegenüber Cellulose und grünen Pflanzenteilen. *Wissensch. Arch. Landwirtsch. Abt. B. Tiernähr. u. Tierzucht* 3(2): 368-382. 1930.—The infusoria in the rumen of sheep fed hay and barley were allowed to act on the green and other parts of plants and on starch grains; and on maize cellulose colored with fuchsin and then added, ground, to the contents of the rumen and placed in a thermostat. The green parts of the plants, which contained very little cellulose, were taken up by the infusoria in considerable quantity. The cellulose of the unpigmented parts and especially of the seed coat of the grain (barley in the 1st and 2nd and maize in the 3rd series) was taken up by the infusoria only in minimum quantity. The infusoria evidently have an almost negligible intracellular digestive action on cellulose. Over 80% of the starch contained in the feed of ruminants is taken up by infusoria, and this is in part transformed into glycogen.—*Author's summary (transl. by W. E. Joseph).*

3845. VINEBERG, ARTHUR M. The activation of different elements of the gastric secretion by variation of vagal stimulation. *Amer. Jour. Physiol.* 96(2): 363-371. 1931.—A satisfactory method has been evolved for obtaining a gastric secretion in a dog under anesthesia through the application of rhythmical stimuli to the vagi in the neck. Experiments (number not stated) indicate that a weak induction current applied to the vagi in the neck stimulates a flow of mucus having a high digestive power. The chief source of the mucus appears to be the mucous membrane of the body of the stomach, since it was obtained following the exclusion of the mucoid secretions from the esophagus and from the pylorus. Strong induced currents provoke a flow of gastric juice with a very high digestive power, high acidity, normal content of Cl and a small amount of mucus. It is suggested that the vagus nerve contains different fibres innervating different cytological elements of the gastric mucosa and that these may be activated by currents of different strengths.—*Author's summary.*

ANIMAL PHYSIOLOGY

RESPIRATION

ROBERT GESELL, *Editor*

(See also in this issue Entries 3310, 3324, 3617, 3620, 3699, 3718, 3719, 3906, 3988, 3989, 4002, 4018, 4176, 4189, 5363, 5575)

3846. ANTHONY, und HEINE. Spirographische Untersuchungen bei Lungenkollaps. (II. und III.) *Beitr. Klin. Tuberk.* 73(1): 51-58. 11 fig. 1929.—II. Complementary air, reserve air and volume of respiration in unilateral pneumothorax. Reserve air and complementary air are so affected by unilateral pneumothorax that in each individual case the respiratory position of rest corresponds to the new balance of the forces of respira-

tion. The results from different patients are not uniform. In pneumothorax patients the alterations of the neutral position from various changes of posture are not so marked as in healthy subjects; sometimes they are altogether lacking.—III. Normal capacity in unilateral pneumothorax. After unilateral pneumothorax the volume of the thorax and of the sound lung is increased, but the increase fails to offset the decrease in volume of the collapsed lung. The entire study shows with what reserve conclusions should be drawn from spirographic curves after pulmonary collapse, since so many individual factors enter into each case that really parallel cases are hard to find.

3847. BOCK, A. V., D. B. DILL, H. T. EDWARDS, L. J. HENDERSON, and J. H. TALBOTT. On the partial pressures of oxygen and carbon dioxide in arterial blood and alveolar air. *Jour. Physiol.* 68(3): 277-291. 4 fig. 1929.—Alveolar air was collected by a special method and arterial blood by direct puncture, normal men being subjects. Errors due to variations in body temperature, acid production in shed blood, and deviations from a standard dissociation curve were obviated by suitable refinements of technique. O content of inspired air ranged from normal to 9.58%. Pressures of CO_2 in alveolar air and arterial blood showed close correspondence (mean difference 0.2 mm.) when normal air was breathed; with mixtures low in O the difference was somewhat greater (mean 1 mm. higher in blood than in alveolar air). This close correspondence indicates that the number of alveoli in which equilibrium is not established between air and blood must be very small. O pressure of alveolar air exceeded that of arterial blood by 4 mm. or less as long as mixtures low in O were inhaled and blood was less than 85% saturated with O. With higher alveolar O the alveolar O pressure exceeded the arterial by 20 mm. or more. Forced breathing of outside air did not alter this result, so that the difference cannot be due to inadequate ventilation of some alveoli during quiet breathing. It is suggested that when a large proportion of the hemoglobin molecules are unsaturated with O equilibrium with alveolar O is attained more rapidly than when saturation is more nearly complete, because in the latter case the unsaturated molecules would lie deep in the interior of the cells and O would not reach them during the stay in the lungs.—*C. F. Schmidt.*

3848. DAVIES, H. WHITRIDGE. Therapeutic uses of carbonic acid. *Edinburgh Med. Jour.* 36(7): 385-418. 4 fig. 1929.—Respiratory response to CO_2 is increased in conditions of impaired general circulation (mitral stenosis) and of non-gaseous acidosis. It is decreased in conditions of increased CO_2 combining power of the blood, whether due to non-gaseous alkalosis (ingestion of sodium bicarbonate) or to compensated gaseous acidosis (chronic pulmonary emphysema). It has been found that CO_2 is of value in the treatment of many types of respiratory failure, especially those where the respiration tends to be rapid and shallow, gasping or periodic. Also to stimulate the respiratory centre in narcotic poisoning and to promote the elimination of such volatile poisons as methyl alcohol, H_2S and CS_2. By the addition of CO_2 to inspired air, the anesthetist is enabled to control the amount of pulmonary ventilation; by means of the increased ventilation, not only the absorption but the elimination of ether is accelerated. The anesthetist is thus enabled rapidly to deepen or lighten the anesthesia as the stages of the operation may require; therefore to maintain a much lighter anesthesia and use a much smaller amount of ether. This, together with the rapid de-etherisation after the anesthesia, causes a very considerable lessening in post-anesthetic vomiting, collapse and pulmonary complications. The aim of CO_2 use in carbon monoxide poisoning is threefold: (1) To promote the rapid elimination of the poison; (2) to abolish the secondary O_2 lack due to alkalosis; (3) to overcome the functional disability in the conveyance of O_2 by haemoglobin by increasing as far as possible the amount of O_2 in simple solution in the plasma. CO_2 may also be used at high altitudes, improving respiration by the addition of a small amount to the inspired air. The author also advocates the use of CO_2 in cases of shock and collapse, or following the hyperpnea of heat stroke.

3849. EIZAGUIRRE, EMILIANO. Influencia del diafragma en la respiración. *Rev. Soc. Med. Interna y Soc. Fisiol.* 4(2): 211-226. 8 fig. 1928.—A case is described in which phrenectomy and pneumothorax for alleviation of a tubercular lesion were complicated by a subsequent pregnancy, accentuating the effect of the phrenectomy. X-ray examination after resorption of the pneumothorax showed the liver entirely within the thorax and the lung half collapsed by the ascent of the paralyzed diaphragm. Therefore, since so much resistance is offered by the diaphragm in normal pregnancy, this muscle has a more important rôle in respiration than is usually accorded to it.—*B. R. Lutz.*

3850. HERMANN, H., et L. MERKLEN. Des effets physiologiques de la reduction du champ de l'hematose chez les Cheloniens par ligature d'une bronche. *Bull. Soc. Nancy* 2(6): 685-690. 1926.—Earlier work by these authors showed that ligating one bronchus first caused frequency of breathing to diminish while amplitude progressively increased to a maximum. Then frequency increased while amplitude decreased, thus restoring normal respiratory rhythm. At this stage the volume circulating through one lung equaled or surpassed that originally circulating through two. Absorbed O compensation lagged, beginning only after circulating volume was reestablished. However, final O figures were normal. The present paper adds that the absorbed O reaches and maintains a figure considerably above normal in quiet, non-hibernating animals. Body weight falls upon ligation, increases after respiration has been compensated, but never attains its original figure. Compensation is not adequate, for while most animals survive throughout the period of activity, all die at hibernation.—*A. L. Hintze.*

3851. JACOBAEUS, H. C., G. SELANDER, and N. WESTERMARK. Attempt at a clinical functional test of the emptying capacity of the bronchi. *Acta Med. Scandinavica* 71(3/4): 379-437. 45 fig. 1929.—Lipiodol, colored with 1% Red Sudan, was injected into the bronchi and roentgenographic studies were made, following the technic of Sicard and Forestier. Simultaneously sputum was measured and examined: the red color of the oil made possible a study of the duration of expectoration, as well as the appearance and distribution of the material in sputum. The expectoration of lipiodol in all cases (with or without pulmonary disease) was found to occur in two phases: first, the oil appears in large quantity (4-8 hrs. in normals); then frequently a transition stage (8-12 hrs. in normals) during which lumps of oil are still expectorated; then a second phase, often lasting several days, during which the oil appears in streaks or spots. The first phase is believed to be an expression of the emptying capacity of the bronchi, the second that of the finest bronchioles and alveoli. The present study deals mainly with the 1st phase. Of 4 patients with chronic bronchitis, but without bronchiectasis, expectoration time was found prolonged in 2, indicating that the motility, or emptying capacity, even of radiologically and clinically normal bronchi, may be disturbed. In 14 cases of bronchiectasis, expectoration time was prolonged in all, but not as much as expected (days instead of weeks or months). Of 10 cases of pulmonary tuberculosis, 2 showed no bronchial involvement: expectoration time was normal. In the remaining 8 bronchiectasis and cavities were present: expectoration time was prolonged in all, more than in the cases of simple bronchiectasis as a rule. Six additional cases of other types of pulmonary disease (asthma, collapse, empyema, etc.) showed normal expectoration time. Serial roentgenograms showed that the bronchi undergo occasional generalized contraction, less frequently localized contraction or dilatation. Such contractions are not marked enough to be called peristaltic. Expulsion of lipiodol is apparently due to coughing, a mechanism like

that of an air-gun, a general contraction of the bronchi being also conceivably involved. In the finest bronchioles lipiodol is either propelled toward the trachea by some other unknown means, or else it is aspirated into the alveoli, where it remains for months until finally absorbed. An influence of expectorants (senega, iodine) on the elimination of lipiodol from the bronchi could not be demonstrated. Adrenalin, in a few cases, led to increased expectoration of the oil in fine granules, which were apparently casts of alveoli or finest bronchioles. The figures are roentgenograms of the chest and graphs of the expectoration time of lipiodol.—*C. F. Schmidt.*

3852. KÜSTER. Über Gasstoffwechsel in ventilierten Räumen. *Zeitschr. Ges. Physikal. Therap.* 39(6): 340-347. 1930.—The temp. was about 20° with relative moisture of 65%. The size of the room was 120 cu. m. The subject and observer were continually in the room, so that during the course of the 3 hr. experiment changes in the air could be held within narrow limits. At the beginning of the experiment temp. and moisture in various parts of the room were made as near alike as possible by a 15 min. stirring; the ventilator furnished 1200 cu. m. per hr. Throughout the 3 hr. period the subject remained as quiet as possible on a bed and breathing into a Simonson Apparatus. After an hour's rest of the subject, during which the observer carried out an analysis of the air of the room, the first of the tests of the respired air were made; 3 parallel tests (basal exchange) were made at intervals of 10 min. After this the room air was thoroughly mixed 10 times during the course of an hour; then the 2nd basal determinations with 3 parallel tests were carried out. Then followed a period of 1 hr. without ventilation, during which 2 analyses of the room air were made. At the end of the hour the 3 basal determinations were again carried out. We have experimented on 20 days with 8 subjects and have been able in general to confirm the experimental results of Hermann. We found in the great majority of cases after 1 hr.'s ventilation a distinct fall of the basal exchange, expressed in calories per day, a fall which greatly exceeds the fall without ventilation and also exceeds the limits of error of the method. In confirmation of Hermann's findings we were able to show that even with optimal room ventilation there frequently occurred a diminution of the basal exchange. After discontinuation of the ventilation there occurred in the subjects a tendency to return to the previous height of basal exchange. Changes of temp. and moisture, very limited in our experiments, have, according to Bachmann, an influence when carried beyond the limits of comfort and then in a reverse sense: they raise the basal exchange. The fall of the basal exchange brought about by ventilation is, therefore, all the more striking. We have not been able to explain our observations.—*Author's summary (transl. by I. I. Lemann).*

3853. LAUX, L. Über den Anteil der Kapazitäts- und der Widerstandsänderungen der Lungenbahn an den respiratorischen Schwankungen der Stromstärke. *Pflüger's Arch. Ges. Physiol.* 224(1): 110-120. 1930.—Intrapleural and intratracheal pressure during natural and artificial respiration, blood pressure and velocity of flow in the pulmonary artery and outflow from the pulmonary veins were recorded. With uniform increase of pulmonary arterial pressure, velocity flow increases more rapidly than the pressure principally as a result of decreased resistance and to a lesser degree as a result of increased capacity of the pulmonary vascular bed. With natural expansion of the lungs, the resistance of blood flow falls considerably and according to the degree of expansion. With artificial expansion, the resistance decreases only slightly and with low degrees of expansion; with greater expansion, the resistance rises. With natural respiration, the blood velocity rises, therefore, with increase of pulmonary arterial pressure as well as because of expansion of the lungs; during artificial respiration, only with increased blood pressure. Periodic changes of extrapulmonic negative pressure (natural respiration) cause increase of pulmonary inflow and decrease of outflow during inspiration and, conversely, during expiration. The inspiratory increase of inflow rests chiefly on the fall of resistance in the arterial vascular bed; the 3-6 times greater variations of outflow depend on capacity changes in the veins. During periodic changes in intratracheal pressure (artificial respiration) inflow and outflow behave alike, both falling during increase of pressure and both rising during decrease of pressure. The decreased inspiratory inflow is due to increased resistance of the vascular bed and the very much greater decrease of outflow to the artificially expanded lung.—*L. Laux (transl. by D. A. McGinty).*

3854. LINTZEL, W., und T. RADEFF. Über die Wirkung der Luftverdünnung auf Tiere. I. Hämoglobingehalt, Erythrocytenzahl, Herzgewicht. *Pflüger's Arch. Ges. Physiol.* 222(5/6): 674-689. 1929.—White rats and mice were exposed to abruptly or progressively established air pressure of 280 mm. Hg., some of them brought back toward a normal atmosphere while others remained under the low pressure conditions. At the end all were sacrificed. Those exposed to acute anoxemia, which died during the experiment, showed increase in the erythrocytes and Hb per cmm., but their total Hb was scarcely augmented. Increase of Hb and of the total blood-volume was more notable in progressively acclimatised animals. These changes had disappeared 4 weeks after they were brought back to normal air. The heart weight of young animals increased in the low pressure from 3.5 to 4.9 gm. per kgm. of living body-weight. The work-performing capability of the heart is considered as the deciding factor of acclimatisation to low air-pressure. —*W. Lintzel (transl. by J. J. Izquierdo).*

3855. MANQUAT, M. L'eau milieu respiratoire. *Rev. Questions Sci.* 15(3): 431-445. 1929.—The author discusses the principle of the constancy of the respiratory medium (Colosi) and supports it with several arguments. His own observations on the Lumbricidae and Helicidae exposed to drying in a desiccator are given. The observations of Colosi on frogs subjected to a purely aquatic respiration, those of Cecchini on respiration of the Limacidae, those of Domini on respiratory function of wet mammalian skin and those of Caroli on atmotropism of toads are presented. The author reviews the experiments and their results.—*G. Colosi (transl. by A. Canzanelli).*

3856. MARGARIA, R. Die Arbeitsfähigkeit des Menschen bei vermindertem Luftdruck. *Arbeitsphysiologie* 2(3): 261-272. 5 fig. 1929.—The amount of work which could be done in 10-15 min. at various air pressures at or below atmospheric pressure was determined by means of a bicycle ergometer in a pneumatic chamber. With diminishing air pressure, the amount of work performed fell at first slowly, and then at a pressure of 400-500 mm. Hg. fell off very rapidly and at 300 mm. fell to 0. It was concluded that the first stage of the fall in performance was due to a diminution of the oxidation processes in the muscles and that the second and final falling off was due to an asphyxiation of the nerve centers which made them incapable of sending impulses to the muscles.—*T. M. Carpenter.*

3857. MARGARIA, R. Sulla resistenza alla depressione barometrica in miscele di aria ed anidride carbonica. [Resistance to low pressures of animals breathing air of various CO_2 percentages.] *Arch. di Sci. Biol.* 13(1/2): 19-30. 1929.—CO_2 added to the inspired air up to 20% does not modify the resistance of guinea pigs to pressure diminution.—*A. Jappelli.*

3858. NARINS, SIDNEY A. A quantitative study of the effect of chloroform on oxygen consumption of the tadpole (Rana clamitans). *Physiol. Zool.* 3(4): 519-538. 1930.—The average hourly variation in O consumption of 21 tadpoles was 21.4%. Thirty-six tadpoles were subjected to chloroform solutions having the concentrations of 0.01, 0.02, 0.03, 0.04, 0.05, 0.0625, and 0.125%. The average % depression in O consumption was, respectively, 30.9, 41.3, 48.7, 53.2, 55.5, 56.5, and 67.5. Recovery from anesthesia is rapid, normal O consumption being attained within 1 hr. after respiratory movements are resumed.

During deep anesthesia, the O consumption is depressed to a low level, at which point it remains fairly constant as long as the anesthesia is complete. The effect on O consumption of various solutions of chloroform whose concentrations were less than the lowest showing a reversible depressing effect was tested as above on 21 tadpoles. The concentrations used were 0.005, 0.00625, 0.0075, and 0.00825. The average % variation in O consumption was, respectively, 6, 5.5, 15.9, and 15. Since all of these variations were within the average greatest % variation for the normal series, it was concluded that none of the concentrations tested showed any measurable effect. No concentration was found which stimulated O consumption. The threshold point, it was concluded, lies somewhere between 0.00825 and 0.01% chloroform.—*Author (courtesy Wistar Bibl. Serv.).*

3859. PAWLOWSKY, E. N., und N. M. LOPATINA. Einfluss der Nasen- und Trachealatmung auf die Lungenventilation. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(7): 815-823. 1930.—Using the expired air as a measure of ventilation, 42 experiments and more than 300 determinations were made on anesthetized, tracheotomized dogs, nasal and tracheal respiration alternating in 5-min. intervals. The variations in pressure in the pleural excursions were measured by a water manometer. Ventilation was reduced 25-30% during tracheal respiration, mainly through a decrease in the depth of respiration. Extirpation of the nerve supply of the upper and lower respiratory tract, occlusion of the sinuses, division of the olfactory nerves and introduction of warmed, moist air into the trachea did not increase tracheal ventilation. In a few instances in 20 experiments extirpation of the trigeminal nerves resulted in equalization of respiration.

3860. ROMANOFF, ALEXIS L. Effect of composition of air on the growth and mortality of the chick embryo. *Jour. Morph. & Physiol.* 50(2): 517-525. 1 fig. 1930.—Fertilized hen's eggs of known origin were incubated under predetermined, standardized, and uniform conditions of all physical factors except air, the composition of which in respect to the CO_2 and O varied in each experiment. The growth and mortality of the embryo were studied daily, with, on an average, 4 observations. The experimental data show that the continuous exposure to about 0.4% CO_2 in the air of the incubator stimulated growth during the first part of embryonic life. A high content of CO_2 and at the same time a slightly reduced content of O resulted in diminishing of the size and increasing of mortality of the embryo. The maximum combined proportions of these gases possible for growth of the embryo were about 22.0 and 16.3%, respectively. A temporary exposure (24 or 48 hrs.) to a large amount of CO_2 resulted in diminishing the size of the embryo without apparent deformities or increase of mortality.—*Author (courtesy Wistar Bibl. Serv.).*

3861. SCHWIEGK, HERBERT. Der Einfluss der Kohlensäureatmung und Hyperventilation auf die Blutgeschwindigkeit des Menschen. *Zeitschr. Ges. Exp. Med.* 74(1/2): 274-292. 1930.—Voluntary hyperventilation increased O consumption in 6 subjects much more than during an equally increased respiration brought about by rebreathing CO_2. In the period following hyperventilation, O consumption fell below the rest value. After 5 min. breathing an 8% CO_2 mixture, min. volume (Grollman) increased by 50-130%, persisting for about 10 min. in the post-experimental period. During voluntary hyperventilation, the circulation does not accelerate in proportion to the increased O consumption and falls as much as 45% below the rest value in the post-experimental period. The CO_2 dissociation curve of blood does not alter after breathing 8% CO_2 for 5 min. pH calculations in arterial blood after CO_2 show changes toward the acid side of .12 to .18, amounts which according to other investigators bring about physiological changes in the vascular bed.—*Author's summary (transl. by D. A. McGinty).*

3862. SIMONELLI, G., e A. BILLI. L'influenza delle resistenze inspiratorie sulla ventilazione polmonare e sul ricambio respiratorio durante il lavoro muscolare. [Influence of inspiratory resistances on pulmonary ventilation and respiratory exchanges during muscular work.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 588-590. 1930.—A reduction of 10% of pulmonary ventilation was accompanied by no diminution of respiratory exchange; the subject used the inspired air more completely.—*M. Comel.*

3863. WILLEM, VICTOR, et L. de BERSAQUES-WILLEM. Les types de mouvements respiratoires chez les téléostéens. (1. mém.) [Types of respiratory movements in teleostei.] 38pp. Marcel Hayez, Bruxelles, 1927.

3864. WOTZILKA, GUSTAV, und JOSEF SCHRAMEK. Tierexperimentelle Untersuchungen über den Weg des Inspirationsstromes jeder Nasenseite in die Lunge. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(5): 580-585. 4 fig. 1930.—After developing a method by experiments on 4 rabbits, experiments on others (number not stated) in which 1 nostril breathed clean air and the other air in which charcoal dust was in motion showed that the dust was deposited in the lobes of the appertaining side. Dust was found in the nostril of the choana, and at the bifurcation of the bronchi, then followed the bronchi of the affected side, with the exception of a few flecks.

3865. UHLENBRUCK, und A. MERBECK. Über die Erregbarkeit des Atemzentrums bei extremer Cyanose. *Zeitschr. Klin. Med.* 114(3): 256-258. 1930.—As evidenced by the failure of deepening and of acceleration of respiration in 2 cases of long standing high grade cyanosis when breathing a gas mixture of extremely low O tension or containing as much as 13% CO_2, the conclusion has been reached that chronic O want lowers the sensitivity of the respiratory center. This is in contrast to the increased sensitivity of the center in acute asphyxia.—*Authors' summary (transl. by D. A. McGinty).*

ANIMAL PHYSIOLOGY

ENDOCRINOLOGY

W. W. SWINGLE, *Editor*

J. J. PFIFFNER, *Associate Editor*

(See also in this issue Entries 3558, 3676, 3809, 3819, 3832, 3841, 3881, 3893, 3894, 3895, 3898, 3902, 3908, 3925, 4005, 4010, 4026, 4040, 4112, 4170, 4173, 4179, 4207, 4267, 4364, 4372, 4768, 5328, 5348, 5349, 5350, 5352, 5353, 5354, 5355, 5403, 5411, 5417)

3866. GLIMM, E., und F. WADEHN. Weibliches Hormon in Hefe. *Biochem. Zeitschr.* 197(4/6): 442-444. 1928.—Estrus-producing ♀ hormone was found in brewer's and baker's yeasts in amounts as high as 50 and 30 units per kgm. of fresh material.—*G. Knaysi.*

3867. HIRSCH, MAX. Handbuch der inneren Sekretion. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. 3. Band. Lieferung 6. 274p. 6 fig. Curt Kabitzwch: Leipzig, 1928. Pr. M. 22.—**L. PULVERMACHER. Ist die Haut ein innersekretorisches Organ? [Is the skin an endocrine organ?] M. ROSENBERG. Pathologie der inneren Sekretion des Pankreas. [Pathology of internal secretion of the pancreas.] A. v. SZILY, und FR. POOS. Innere Sekretion und Auge. [Internal secretion and the eye.] P. KRANZ. Innere Sekretion und Zahnheilkunde. [Internal secretion and dentistry.]**

3868. LANDSBERG, MARTIN. Interferometrie und

innere Sekretion. *Deutsche Zeitschr. Chir.* 213(3/4): 198-201. 1929.—The relations of glands of internal secretion shown on a normal curve established by Zimmer are compared with the findings obtained from more than 200 individual experiments. In accord with Zimmer, it is found that normally the hypophysis, thymus, and adrenals showed no decomposition over 20 drum divisions and that the relation between hypophysis and thyroid is on an average 1:2.3. Yet there occur also normal instances in the proportion of 1:4. The correlations between thyroid and gonads deviate with a difference of 9 drum divisions, which is pathological. The highest decomposition is not shown with the thymus, as given by Zimmer, but with the adrenals. Deviations are explained from the different effects of the opzimes established by Hirsch which Zimmer and Landsberg utilized. Opzimes of differently established numbers show a difference of 5 drum divisions. Formulation of a generally valid, normal curve is not yet possible.—*M. Landsberg (transl. by G. Bachmann).*

3869. LIPSCHÜTZ, A. Zur Terminologie der weiblichen Sexualhormone. [Terminology of the female sexual hormone.] *Biochem. Zeitschr.* 220(4/6): 453-455. 1930.—In the endocrine activities of the ovary there are 2 phases: the follicular phase (in which folliculin, the estrus-exciting hormone, is formed), and the corpus luteum phase (in which a luteohormone is formed, which is concerned with the implantation of the ovum). It remains to be seen whether there is need to distinguish an α-luteohormone, which governs the growth of the pregnant uterus, and a β-luteohormone, which inhibits estrus. The discovery by Aschheim and Zondek of rut-exciting substances in urine of which it is not yet known whether they are of ovarian or placental origin makes necessary a name by which to identify them without assuming their identity with folliculin. The same applies to the feminizing substances discovered by Loewe et al. in plants, for which Loewe proposed the name "thelykinine." It is desirable to distinguish the estrus-exciting substance of vegetable origin as such. The most suitable term for the purpose is "estrin," proposed by Parkes and Bellerby for the hormone of the follicular fluid but unsuitable for that purpose because based on function, not on localization. "Estrin" is well adapted to indicate substances of non-ovarian origin which produce follicular action; thus, plants produce so many units of estrin; urine contains estrin. Whether there is an estrin identical with the ovarian folliculin is a question for investigation. Laquear and Dingemanse have already shown a difference between the folliculin from follicular fluid and the estrin from urine.

3870. M'GOWAN, J. P. On the nature and structure of the suprarenal cortex. *Edinburgh Med. Jour.* 37(9): 545-553. 1 pl. 1930.—Certain appearances of the suprarenals of fowls suffering from leucosis have led to deductions regarding the structure and function of its tissues. The occurrence of a myelocytic proliferation in the sinusoids would seem to be an instance of the general rule that myeloid tissue is formed in endothelial or subendothelial situations in veins. The cortical nodules are considered to be periarterial structures and to be formed in the mature gland by the development of the reticulo-endothelial elements in the sheaths of arterioles. The cells of the cortex, therefore, are mesoblastic in origin. As regards their function ordinarily in the sex complex, it has been suggested elsewhere by M'Gowan that, while the interstitial cells of the ♂ and ♀ gonad regulate the sex characters, the cells of the suprarenal cortex have a wider function in that they compel the soma of the individual to conform to the type represented by the indifferent germ epithelium. They act, thus, as the architects for the construction of the neutral soma. As they have no contact with the germ cells subsequent to the original one, it is presumed that the essence, incorporated then, is passed on hereditarily from cell to cell in division. As the indifferent germ epithelium of the germinal ridge disappears, it would seem that the interests of the species must be entrusted to some persisting organ. The view advanced here is that this is the suprarenal cortex.

3871. NAKAYAMA, S. Effect of placental extract and a few endocrine preparations on gastric juice. *Japanese Jour. Obstetr. and Gynecol.* 13(2): 176-178. 1930.—This paper merely states conclusions drawn from an experiment in which placental extract in various concentrations was injected into a dog with Pavlov fistula, and the changes in gastric juice throughout a subsequently induced pregnancy were then observed. The placental extract 500 times diluted acts upon the sympathetic nerves as a stimulant, causes decrease in the secretion of gastric juice, and acts inhibitively upon the secretion of acid, especially free HCl. At the same time, among the parasympathetic nerves the extract stimulates the nerves that control the secretion of pepsin. Thus both the controls are balanced, and consequently the normal value is perhaps maintained. In the case of placental extract 20 times diluted, the action is stronger, and the nerves that control the secretion of gastric juice are also stimulated, these belonging to the parasympathetic nerves; thus it is supposed that an increase is caused in the quantity of juice secreted.

3872. VAN DYKE, H. B., PERCIVAL BAILEY, and PAUL C. BUCY. The oxytocic substance of cerebrospinal fluid. *Jour. Pharmacol. and Exp. Therap.* 36(4): 595-610. 5 fig. 1929.—In 12 out of 17 experiments on isolated guinea-pig uteri the effect of cerebrospinal fluids (15 canine and 2 human) on uterine contractions was greater than that of artificial fluids when the Ca content of the cerebrospinal fluid was greater, but the same when the Ca content of the 2 was equal, posterior-lobe oxytocic substance remaining the same. In 4 experiments no effect was produced by either cerebrospinal or artificial fluid. The melanophore-expanding effect of cerebrospinal fluid and serum may be due to differences between their Ca concentrations and those of artificial fluids used in the limb-perfusion method of assay.

ANIMAL PHYSIOLOGY

KIDNEY, URINE, AND EXTERNAL SECRETIONS

A. N. RICHARDS, *Editor*

J. M. HAYMAN, *Associate Editor*

(See also in B. A. 6(1): Entries 420, 423, 456, 460, 466, 468, 470, 472, 475, 478, 525, 531, 534, 543, 546, 833, 838, 926, 1007, 1147, 1201, 1208, 1247, 1328, 2264; and in this issue 3558, 3624, 3648, 3651, 3658, 3668, 3680, 4165, 5334)

3873. BUTENANDT, ADOLF. Über das Pregnandiol, einen neuen Sterin-Abkömmling aus Schwangeren-Harn. [Pregnandiol, a new sterol derivative from the urine in pregnancy.] *Ber. Deutschen Chem. Ges.* 63 (3): 659-663. 1930.

3874. FURUHASHI, YUTAKA. Untersuchungen über Cetacea. XXVIII. Über den Gesamtbasengehalt des Harns. [Studies on whales. The total base content of the urine.] *Japanese Jour. Med. Sci. Trans. II. Biochem.* 1(2): 135-136. 1927.—The author has determined the chloride, total P, P as phosphate, and S as sulphate content and the total base in terms of normality of the urine of various kinds of whales.—*E. G. Schmidt.*

3875. JACOBJ, C., und L. LOEFFLER. Weitere Beiträge zur Methode der Durchblutung isolierter überlebender Organe. III. Untersuchungen über die Mechanik der Harnsekretion an der überlebenden, künstlich durchbluteten Niere. *Arch. Exp. Pathol. und Pharmakol.*

136(5/6): 300-330. 4 fig. 1928.—The perfusion apparatus and technique described by Jacobj (see Entry 3708, in this issue) was employed. The flow of blood to even such sensitive organs as the kidneys may be interrupted for 30 min. or even longer, and the organs brought back to normal function. With a blood pressure maintained at normal height the blood flow through the organs rises after a short initial decrease, so that within 1-1½ hrs. there is gradual recovery, even to the point of urine secretion. In the apparatus, in the absence of vascular tone of the kidneys, normal urine secretion should reach an amount of 200% of the kidney weight (70-80 ccm. for 35-40 gm. kidney tissue), while in the normal living animal with a normal amount of blood flow through the kidneys, 50-100% of the weight of kidney tissue is to be regarded as normal urine secretion. Addition of caffein to the blood accelerates the increase of the blood flow until the height necessary for secretion has been reached, the blood pressure during the restitution period remaining the same. The secretion increases, and may reach a strong diuresis (4.8 liters per day). When such urine secretion occurs, the cells of the tubules show the characteristic microscopic changes described by Heidenhain for strong diuresis in living animals—a proof of their normal life and function. During the recovery of the kidneys, the pulse-rate and amplitude influence urine secretion; a small quick pulse increases diuresis, while a slow pulse with greater amplitude diminishes it. This influence of the pulse in urine secretion confirms, as does the above mentioned microscopic finding, the conception of Jacobj (Münch. med. Wochenschr. 1911. Nr. 36) that for urine synthesis and secretion the "recoil-elevation" (as in the physical mechanics of the hydraulic ram), through the rise of the blood pressure effect in the glomeruli, plays a significant rôle. —*C. Jacobj (trqnsl. by L. S. Godfrey).*

3876. LIVSCHITZ, A. E. Der Einfluss von Schlammprozeduren auf die Bildung des Harnstoffes und auf dessen Ausscheidung im Harn. *Zeitschr. Ges. Physikal. Therap. Abt. A.* 37(4): 161-164. 1929.—The daily total of urine urea increases immediately after institution of the mud bath treatment. Since earlier study by the author showed that this treatment does not alter the blood urea, he concludes that it results in an increased formation as well as an increased excretion of urea.—*Author's conclusions (transl. by M. E. Collett).*

3877. LURZ, L., und H. RÖHRICH. Einfluss der paravertebralen Anästhesie auf die Nierensekretion. *Bruns' Beitr. Klin. Chir.* 147(4): 639-641. 1929.—In a 3-yr. old boy the urinary bladder had been removed. Tests were made of the amounts of urine secreted and of the amounts of NaCl in solution from the right and left ureters with both sides normal, with right paravertebral anesthesia and left side normal, and with left anesthesia. In opposition to Wiedhopf, who maintained that by paravertebral elimination of segments D 11, D 12, and L 1 a regular increase of urinary secretion was produced, with a small proportionate and large absolute increase in NaCl elimination, the present authors found the amounts of urine alike on the normal and anesthetized sides, and no regular change in NaCl excretion.

3878. MADON, V. F. Sulla prova della diluizione e della concentrazione dell'urina dopo la fatica. [The test of dilution and concentration of urine after physical exertion.] *Minerva Med.* 1(18): 737-739. 1930.—To determine the variations in the functional capacity of the kidney to eliminate either water or dissolved substances after intense and prolonged muscular exertion, and the effect of the various toxins formed during exertion and the abundant elimination of water by perspiration on renal functional capacity, 4 persons with normal kidneys were tested by dilution and concentration. For the 1st test, made in repose or after exercise, the subject was made to drink 800 cc. of water 4 hrs. after breakfast; the urine was collected every hour for 4 hrs. For the concentration test, the experiment was begun 4 hrs. after breakfast; in the interval the subject either rested (control) or walked for about 3 hrs., being weighed before and afterward, and then received a luncheon of weighed and specified solid foods; and another 4 hrs. later; the urine was collected every 2 hrs. for 8 hrs. from the first luncheon. In the dilution test the average 4-hr. quantity of urine eliminated was 927 cc. after repose, 240 cc. after exercise; the average quantity of dissolved substances eliminated was slightly augmented after exercise. The weight of the body in the dilution test diminished by 200-500 gm. after repose and by 800-1,000 gm. after exercise. In the concentration test the average 8-hr. quantity of water eliminated was 365 cc. after repose and 305 cc. after exercise; the average 8-hr. quantity of dissolved substances eliminated was increased after exercise by about 11%; the body weight in the test of repose had returned, 8 hrs. after the ingestion of the first and principal luncheon, to the initial value; in the test with exercise the weight increased during the same period by 200-500 gm. This fact indicates the limitation of perspiration, to compensate for the loss of water during exercise. The average quantity of dissolved substances eliminated per cc. of urine was (taking that in the dilution test after repose as 1) 4 after exercise in the same test; in the concentration test, 5 after repose, 7 after exercise. After exercise, then, the quantity of water eliminated by the kidney becomes lessened, but the capacity of the kidney to eliminate dissolved substances does not suffer thereby; a quantity of solute equal or superior to that eliminated after repose is eliminated after exercise in a smaller quantity of water.

3879. WÜLLENWEBER, GERHARD. Untersuchungen über die Druckverhältnisse in Blase, Ureter und Nierenbecken (besonders während der Schwangerschaft). Zugleich Mitteilung einer neuen Apparatur. *Deutsches Arch. Klin. Med.* 165(5/6): 296-310. 2 fig. 1929.—The author studied the pressures in the urinary bladder and kidney pelves simultaneously, after passing No. 5 catheters up to each renal pelvis and keeping the cystoscope in place, using 3 water manometers. Any increase in the bladder pressure will raise the intrapelvic pressure proportionately. In pregnancy he found the pressure in one or both kidney pelves always above normal; in some instances the pressures were high enough to inhibit renal activity.—*M. Muschat.*

ANIMAL PHYSIOLOGY

REPRODUCTION AND LACTATION

OSCAR RIDDLE, *Editor*

(See also in this issue Entries 3235, 3269, 3763, 3797, 3872, 3993, 4140, 4150, 4372, 4768, 4798, 5328, 5330, 5331, 5335, 5348, 5350, 5351, 5353, 5377, 5385, 5386, 5389, 5399, 5403, 5411, 5414, 5425)

3880. ADLER, MARGARETE. Der Calciumspiegel des Blutserums während der Gestationsperiode. *Arch. Gynäkol.* 143(2): 236-247. 1930.—The Ca content in 14 non-pregnant women was 9.24-10.47 (av. 9.64). In 26 women between the 2nd and 8th month of pregnancy Ca averaged (per month) normal, 9.32, 9.26, 8.60, 8.37, 8.67, 8.39. During partus (5 patients) it was: at the beginning of the 1st stage 8.24-8.96; at end of 2nd stage 9.12-9.40; 24 hrs. after partus 8.08-8.80. During the puerperium Ca rose to the lower limits of normal toward the end of the 2nd wk. The change in Ca appears at the same time as the appearance or disappearance of other blood reactions in gestation, and is attributed to the same causes.

3881. ALLEN, WILLARD M., and GEORGE W. CORNER. Physiology of corpus luteum VII. Maintenance

of pregnancy in rabbit after very early castration, by corpus luteum extracts. *Proc. Soc. Exp. Biol. & Med.* 27(5): 403-405. 1930.—Does, spayed 18 hrs. after mating, were given subcutaneous injections of corpus luteum extract, daily, beginning the day after the operation. Four such does were brought to term, delivering normally at 29, 32, 28, and 32 days; 2, under Caesarian section on the 34th and 36th days, respectively, were found to carry fully developed dead fetuses. In 6 animals, implantation failed to occur; in 2, the embryos were resorbed soon after implantation, but the extract used in 7 of these 8 cases was found to have lost potency.

3882. **BAUMGARTNER, W. J. What moving forces are found in the follicles of the Orthopteran testes?** *Trans. Kansas Acad. Sci.* 33: 107-110. 1930.—A summary of possibilities is followed by the query, is it not both a vibratory movement of the tail of the sperm together with a contraction of striated muscles of the follicle?—for which the author has some evidence.—*F. C. Gates.*

3883. **BENTON, ANNE G. Variations in the milk from different quarters of the same udder: their significance in studies of coagulability.** *Jour. Dairy Sci.* 12 (6): 481-483. 1929.—Volume, fat, serum solids, pH, alcohol test, coagulation at 120° C. and bacterial count were determined for the quarters separately on different days. The samples from separately-milked quarters were frequently no more alike than if obtained from different cows. The quarters of the udder are, thus, physiologically as well as anatomically separate units.

3884. **BOLDRINI, MARCELLO. Sulla proporzione dei sessi nei concepimenti e nelle nascite. [Sex-proportion in conceptions and births.]** *Contr. Lab. Ist. Univ. Cattolica Milano* Ser. I. p. 211-281. 1928.—According to an opinion generally accepted by demographers and obstetricians, the males are conceived in much larger proportion than females, but they are more severely eliminated by ante-natal mortality, which reduces their proportion in living births to the well-known figure of 105 males per 100 females. The author finds this opinion wrong. The external genitalia of the human embryo, during the first months, are such that the females are easily taken for males and erroneously registered in clinical certificates and in vital statistics. These incorrect statistics represent the basis of the current opinion on the subject. Taking statistics obtained from embryos anatomically classified by sex and age, the author states that the proportion of sexes, at the moment of conception, cannot be very far from 1:1, as theoretically suggested by the chromosome hypothesis of sex determination.—*M. Boldrini.*

3885. **BRITTON, S. W. Maternal and fetal blood sugar changes under various experimental conditions.** *Amer. Jour. Physiol.* 95(1): 178-185. 1930.—In 12 cats, 2 rats and a dog and their offspring, comparison of maternal and fetal blood sugar changes showed that under insulin the blood sugar in the mother falls readily to the convulsive level; concurrently in the fetus the glucose percentage is notably higher, however, and may be within normal limits. Even when convulsions are allowed to extend for 2 hrs., the sugar values are slightly in favor of the fetus. The conditions do not hold in very young fetuses, or when the mother is anesthetized before making the (Caesarean) delivery. Normally in the later stage of pregnancy the fetal blood sugar is lower than that of the mother. At birth the values in the kitten were somewhat higher than those of the mother. In 1 case in which an animal gave birth to 4 kittens during severe insulin hypoglycemia, the blood sugars in the latter were within the normal limits, but considerable increments were observed an hour after birth. The mother showed none of the usual hypoglycemic symptoms during parturition, although convulsions followed the same insulin dosage a few weeks later. Marked hyperglycemic reactions which were produced in the mother by emotional excitement, or by adrenalin or glucose administration, did not affect notably the fetal glycemia. It is indicated that during the later stages of gestation, important adjustments are able to be carried out by the fetus in response to various emergency conditions that may be imposed on the mother.—*Author's summary.*

3886. **CANNON, W. B., and E. M. BRIGHT. A belated effect of sympathectomy on lactation.** *Amer. Jour. Physiol.* 97(2): 319-321. 1931.—Observations on 2 sympathectomized dogs and 2 sympathectomized cats show that sympathectomy does not interfere with the processes of reproduction in the ♀, but that it may disturb lactation, and that in the cat and dog the disturbances are more profound the longer the time after the sympathetic system is extirpated.

3887. **CORFIELD, C. RUSSELL. The foetal heart beat.** *Lancet* 218(5563): 803. 1930.—In experiments to determine the relationship of the fetal heart rate to sex of the child, and also to age of mother and sex of future children, 3 separate groups of 100 cases were studied. The fetal heart rate was 112-180 per min. and 6 definite groups were found each with an average age-incidence and sex value. There was only 1 group where ♂♂ predominated and it contained the majority of births, showing a sex value of 51.1 of ♂♂, a fetal heart rate of 131-140, and an age-incidence of 24.74. The chances of a woman having male issue become less with age, and "the experiment suggests that the best age of expectation for male issue is between 24 and 25 years of age."

3888. **CREW, F. A. E., and L. MIRSKAIA. On the effect of removal of the litter upon the reproductive rate of the female mouse.** *Quart. Jour. Exp. Physiol.* 20(3): 263-266. 1930.—The reproductive phase of the sex cycle consists of 2 periods separated by an oestrous phase: the 1st of these is occupied by pregnancy, the 2nd takes the form either of lactation or else of another pregnancy. Pregnancy and lactation are of equal duration and are alternative events, and so the reproductive phase represents a double pregnancy period. In any description of the reproductive phase the lactation period must be distinguished from the period of pregnancy. The non-suckling female can give birth to twice as many offspring in a given period of time as can the suckling.—*F. A. E. Crew.*

3889. **DOMM, L. V. Artificial insemination with motile sperm from ovariotomized fowl.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 316-318. 1930.—Preliminary paper. Spermatozoa operatively removed (post mortem) from the gonads of a poulard which had been ovariotomized when 8 days old and which was over 3 yrs. old when killed, were suspended in Locke's solution and introduced with a medicine dropper into the cloaca and distal end of the oviduct of 3 virgin hens. The eggs produced were infertile. The technique of insemination was tested with the spermatozoa of sexually active cocks and yielded fertile eggs when used on virgin hens. This may indicate that the spermatozoa of fowls undergo a ripening process somewhere in the reproductive tract, as happens in mammals.

3890. **FRIEDMAN, MAURICE HAROLD. The mechanism of ovulation in the rabbit. I. The demonstration of a humoral mechanism.** *Amer. Jour. Physiol.* 89(2): 438-442. 6 fig. 1929.—In 4 ♀ rabbits in which both Fallopian tubes and both uteri were removed, coitus was followed by ovulation. In 9 out of 13 oöphorectomized ♀♀ in which ovarian tissue had been grafted into the rectus muscle, signs of ovulation appeared in the grafts after coitus. Up to about 10 hrs. after ovulation, the changes observed in the discharged follicles of the transplants simulated those seen in the discharged follicles of the normal ovary. These results indicate that following coitus there occurs in the humors of the ♀ rabbit some change, or changes, capable of provoking ovulation.

3891. **GOETTSCH, MARIANNE. Relationship between vitamin C and some phases of reproduction in the guinea pig.** *Amer. Jour. Physiol.* 95(1): 64-70. 1930.—The oestrous rhythm is ordinarily a sensitive indicator of the nutritional state of an animal. When [3] guinea pigs with normal cycles were gradually deprived of vitamin C, the oestrous rhythm was maintained regu-

larly until the animals began to lose weight. The cycles continued although the animals were receiving far from enough orange juice to protect them from chronic scurvy. The onset of oestrus was accompanied by a sudden and temporary loss in weight, amounting sometimes to 8% of the weight of the animal. When 7 ♂♂ were gradually deprived of vitamin C, they lost their ability to sire litters. Smears from the epididymis of ♂♂ dying of chronic scurvy contained motile sperm. That such sperm had not lost their fertilizing function was proved by artificial insemination. In a curative experiment, a ♂ recovered the ability to sire litters.—*Author's summary.*

3892. GRAY, J. The senescence of spermatozoa, II. *Jour. Exp. Biol.* 8: 202-210. 1931.—The available data concerning the spontaneous decay in the activity of a sperm suspension are best described without reference to the precise mechanism which brings to an end the active life of individual cells. The facts can be adequately described on the assumption that there exist intracellular units which form a statically heterogeneous system wherein the period of viability of any given unit in any specific environment is fixed and that this period is not the same for all the units of the population. Static variability is, on this hypothesis, a fundamental property of living matter and is not restricted to populations of cells or of complete organisms.—*J. M. Robson.*

3893. HARTMAN, CARL G., WARFIELD M. FIROR, and E. M. K. GEILING. The anterior lobe and menstruation. *Amer. Jour. Physiol.* 95(3): 662-669. 1930.—Injections of Allen-Doisy hormone (e.g., in the form of Amniotin Squibb) have been known to cause bleeding in ♀ monkeys, whether normal or castrated. It is here shown that this also occurs consistently in baby monkeys 1300 to 1700 gm. in weight, about a year old and 2½ to 3 yrs. before the menarche—that is, corresponding to a human child 3 or 4 yrs. of age. That this effect is not a direct one is shown by the fact that hypophysectomy abolishes it. But bleeding occurs in hypophysectomized as well as normal animals upon injection of anterior lobe extracts or by implants of the fresh gland. This is interpreted as a direct effect. A physiological basis of uterine bleeding is, therefore, for the 1st time demonstrated. It seems reasonable to postulate a separate anterior lobe hormone as the direct cause of bleeding, since it is here demonstrated that the bleeding is independent of the follicle stimulating effect of Smith and Engle and the luteinizing phenomenon of Evans and Simpson and other influences attributed to the gland. With the treatments here outlined bleeding may result from a uterus that shows not the slightest macroscopic change. Hence the threshold for bleeding is far below that causing "oestrous" changes (growth, edema, congestion) in uterus or ovaries. This has adaptive significance, for the prime and original function of the bleeding is that of supplying blood cells (perhaps for Fe) directly to the embryo in early pregnancy; "oestrous" changes would be disastrous to the continuance of pregnancy. Since uterine bleeding may be caused so much more readily than hyperplasia of dormant reproductive tract and ovaries, the gynecologist must determine what benefit the patient receives from a mere bleeding without the usual concomitant "oestrous," not to mention pregravid changes.—*Authors' summary.*

3894. HILL, MARGARET, and A. S. PARKES. Attempts to promote the re-formation of germ cells. *Jour. Anat.* 65(2): 212-214. 1931.—Various extracts containing the anterior pituitary principle were administered to 11 oophorectomized mice without increasing the percentage of ovarian regeneration, and to 20 mice sterilized by irradiation without causing the reformation of oöcytes.

3895. HILL, MARGARET, and A. S. PARKES. Studies on ovulation. IV. Induction of ovulation in the hypophysectomized rabbit by administration of anterior lobe extracts. V. The action of the ovulation-producing substance of urine of pregnancy on the hypophysectomized rabbit. *Jour. Physiol.* 71(1): 36-39, 40-46. 1931.—IV. Experiments on 10 hypophysectomized rabbits surviving for 12 or more hrs. after injection show that acid-alcohol extracts of the anterior lobe of ox pituitaries will cause ovulation in estrous, pseudo-pregnant or immature rabbits hypophysectomized by decerebration. The time taken for induced ovulation to occur in estrous animals is greater than the normal reaction time after copulation: in pseudo-pregnant and immature animals the smallness of the follicles results in a much longer latent period.—V. Great difficulty was experienced in inducing ovulation in hypophysectomized rabbits by the administration of urine extracts. In 4 estrous animals out of 19, however, 1 or more follicles ovulated. Extracts of normal rabbits' placentae were found not to induce ovulation. Highly active extracts were, however, prepared from the placentae of intact or hypophysectomized rabbits previously injected with urine extracts.

3896. HOLDAWAY, F. G. Nutritional status and sex determination. *Nature [London]* 126(3169): 131. 1930.—Preliminary notice is given of results on the determination of sex in the flour beetle, *Tribolium confusum* Duval, by starvation of the newly hatched larvae for varying periods of time under controlled conditions of temperature, humidity, light, nutrition of parents and subsequent nutrition of the larvae. The resulting sex ratios indicate an oscillating change in sex ratio with the period of starvation. A proportion of the population is stable as regards its expression of sexuality, while a proportion is more easily converted to the opposite sex one way or the other; or else forms of either sex may be changed to the opposite sex but there are gradations of sexual stability upset only after varying periods of time. In either case it is indicated that there are gradations in constitution which show a relation between nutritional status, dependent on time of starvation, and the ultimate sex expression.—*F. G. Holdaway.*

3897. KELLOGG, HOWARD B. Studies on the fetal circulation of mammals. *Amer. Jour. Physiol.* 91(2): 637-648. 1930.—The O content of the blood within the 2 ventricles of 16 dog fetuses as determined by the Van Slyke method was found practically the same, averaging about 2 volumes %, which proves that the 2 canal streams mix in the right atrium. Kellogg concludes that the early rapid development of the liver, head and upper extremities as compared to the growth of the rest of the body does not depend upon a superior O supply. In gas analyses of umbilical blood from 12 dog fetuses, the O content varied greatly with the size of the fetus, increasing progressively with growth and not approximating that of the uterine vein until the fetuses were near term. In the fetus at term the area of the placental surface and the rate of blood flow through the placenta are so balanced as to give a maximum efficiency at which the blood in the fetal umbilical vein is approximately the same in O tension as the venous blood of the mother's uterus. Apparently the higher O content of the umbilical vein blood in fetuses near term may be largely explained on the basis of an increase in placental area. Although the CO_2 content of fetal blood is relatively high at all ages, there is little difference between very young fetuses and those at term.

3898. KUNDE, M. M., F. E. D'AMOUR, A. J. CARLSON, and R. G. GUSTAVSON. Studies on metabolism. VIII. The effect of estrin injections on the basal metabolism, uterine endometrium, lactation, mating and maternal instincts in the adult dog. *Amer. Jour. Physiol.* 95(3): 630-640. 2 fig. 1930.—The basal metabolic rate in [2] normal dogs was neither lowered nor elevated as a result of subcutaneous injections of ♀ sex hormone (estrin). Many tests near the lower limit of normal variation occurred, so that the average over a period of daily injections may be slightly (2%) below the average for a control period. Congestion and enlargement of the external genitalia, hemorrhagic discharge from the vagina, hypertrophy of the uterine endometrium with histological evidence of secretory activity, and evocation of the mating instinct followed the administration of ♀ sex hormone in [2] normal and

[2] castrate bitches. Hyperplasia of the nipples and slight palpable enlargement of the mammary glands occurred in all dogs, and copious lactation and evocation of the maternal instinct in 1 dog followed the subcutaneous injection of estrin.—*Authors' summary.*

3899. **MIRSKAIA, L., and F. A. E. CREW. On the genetic nature of the time of attainment of puberty in the female mouse.** *Quart. Jour. Exp. Physiol.* 20: 299-304. 1930.—Comparison of the 105 albino and 65 colored ♀ mice showed that in the first group the average age at onset of sexual maturity was 39 days, and in the second 51.6 days. This fact supports the earlier conclusion that age of puberty is a genetic character. The percentage of pregnancies, on the other hand, is affected by environmental conditions, such as food and husbandry.—*F. A. E. Crew.*

3900. **MIRSKAIA, L., and F. A. E. CREW. On the pregnancy rate in the lactating mouse and the effect of suckling on the duration of pregnancy.** *Proc. Roy. Soc. Edinburgh* 51(1): 1-7. 1930/31.—The pregnancy rate of primiparae, suckling their young, was 24.1%; that of multiparae suckling their young, 50%. This difference is not due to differences in the incidence of ovulation associated with postpartum oestrus. The suggested explanation of this difference between puberal and adult groups is that a certain level of somatic maturity is a prerequisite for full reproductive activity. In all cases the duration of pregnancy was prolonged. The degree of prolongation was variable and could not be related to the number of young in the uterus or suckling. The results provide no support for the suggestion that this prolongation, due to delayed implantation of the fertilised ova, is to be referred to an inhibitory action on the part of the mammary gland. The suggestion is made that the delayed implantation and prolonged pregnancy are due to inability on the part of the corpus luteum to cater adequately for implantation and lactation synchronously.—*Authors' summary.*

3901. **NELSON, W. O., J. J. PFIFFNER, and H. O. HATERIUS. The prolongation of pregnancy by extracts of corpus luteum.** *Amer. Jour. Physiol.* 91(2): 690-695. 1930.—Extracts of corpora lutea of pregnancy (sow) were successful, when administered subcutaneously, in prolonging the period of pregnancy in [9] rats for 30-150 hrs. The young born 40 hrs. or more overtime were larger than normal. If the period of prolongation did not exceed 70 hrs. the young were viable when born. In excess of this time stillbirths occurred.—*Authors' summary.*

3902. **NIBLER, C. W., and CHAS. W. TURNER. The ovarian hormone content of pregnant cow's urine.** *Jour. Dairy Sci.* 12(6): 491-506. 1 pl. 1929.—A simple efficient method of extracting the ovarian hormone from the urine of pregnant cows by the use of oil is described. As a result of the study of the diurnal variation in the volume of urine and its ovarian hormone content on a 12 hr. basis, it was found that the excretion of urine from 8 p. m. to 8 a. m. exceeded the collection during the day by 1117 cc. or 13%; however, the difference in the excretion of the ovarian hormone was insignificant. For successive 24 hr. collections, little variation either in volume of urine or number of rat units was observed. The yield of ovarian hormone is generally independent of the volume of urine excreted during a 24 hr. period. Beginning with non-pregnant cows which excrete the ovarian hormone only at oestrum it was shown that following conception there was a slight excretion of the ovarian hormone during the first 100 days. From 100 days until parturition there was a considerable increase in the rate of excretion of the ovarian hormone, amounting to 3.5 to 4 rat units per day. Following the alcoholic extraction of oils containing the ovarian hormone, there was an apparent increase in the number of rat units present in a definite volume of oil. These results are taken to indicate that there is present in the urine, and absorbed by the oil, some agent which has an inhibitory effect on the ovarian hormone. A tentative theory is advanced that this hormone or factor is responsible for maintaining the anoestrous type of cells in the vagina of pregnant animals.—*Authors' summary.*

3903. **PUJIULA, JAIME. Nota embriológica. Por qué se atrasan y deshacen algunos embriones? [Why are some embryos backward and regressive?]** *Butl. Inst. Catalana Hist. Nat.* 8(8/9): 144-146. 1 fig. 1928.—In the rabbit, some atrophic and some dead fetuses were found. The author supposes that implantation of ova is so governed, by hormones, that the implanted ova are properly spaced, each avoiding the field of action of the others. Failure of this mechanism leads to crowding and competition, perhaps for "primary ontogenetic elements." Hormonal insufficiency may be a factor in the atrophy and death of the less fortunate embryos.

3904. **ROWAN, WM. A unique type of follicular atresia in the avian ovary.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 157-164. 4 pl. 1930.—Birds of various species, principally *Junco hyemalis connectens* Coues, were stimulated to recrudescence during winter months at low temp. Although histologically they were normal, certain cases of follicular atresia (5 or 7 in a single ovary; 3 stages described), resembling in initial stages the atresia described by Hill and Gatenby (1926) for *Ornithorhynchus,* were found.

3905. **ROWE, ALLAN WINTER, DOROTHY GALLIVAN, and HELEN MATTHEWS. The metabolism in pregnancy. IV. The nitrogen metabolism.** *Amer. Jour. Physiol.* 95(3): 592-600. 1930.—Three groups of normal women, one drawn from an out-patient service, the other two from institutions, have been studied throughout their pregnancy and for a number of weeks after delivery. With liberal protein intake the N elimination both ante- and post-partum while adequate is somewhat low. This is traced to protein storage during the pregnancy and to protein loss in the milk after delivery. The N partition was studied and only the uric acid showed any marked change with delivery, the earlier values being somewhat high. The nitrogenous constituents of the blood are all somewhat low. Contrary to a frequent report, urea N was found to be nearly 50% of the total non-protein nitrogen throughout the entire period.—*A. W. Rowe.*

3906. **RUNNSTRÖM, JOHN. Struktur und Atmung bei der Entwicklungserregung des Seeigeleis.** *Acta Zoologica [Stockholm]* 9(3): 445-492. 6 fig. 1928.—The effect of mixtures of CO and O on the O intake of *Paracentrotus* and *Arbacia* eggs was studied by the Warburg manometer. Mixtures with 20% O are ineffective; percentages of CO greater than 80% lower the O intake with a maximum effect at 97.5 to 95% CO. The depression is much greater with fertilized than unfertilized eggs; average maximum with the former 64%, with the latter 5%. The spontaneous rise in O intake occurring in unfert. eggs standing in sea-water, the rise in fert. eggs with development, and the accelerating effect of hypertonic sea-water on O intake, are all eliminated by CO. Unfert. eggs after exposure to CO for several hours yield on return to normal sea-water and insemination 100% of membranes; while control eggs kept an equal length of time in normal sea-water produce no membranes but will develop. The CO eggs develop better, however; changes undergone by eggs standing in sea-water are thus eliminated in CO. Fert. eggs after exposure to CO do not develop on return to normal sea-water and show when viewed in the dark field a turbidity indicative of colloidal aggregation. Warburg's theory that CO inhibits oxidation by combining with the respiratory ferment is accepted and on the basis of the equation $n/1-n\cdot CO/O=k$, where n is the amount of uninhibited respiration, k is determined from the data and a curve constructed of the theoretical depression to be expected in fertilized eggs from various CO/O mixtures. The curve agrees well with the data obtained. The lesser effect of CO on unfertilized eggs is considered due to incomplete saturation of the ferment by CO. A symbol for the degree of saturation is introduced into the equation which then yields the result that the degree

of saturation equals the quotient of O intake of unfert. eggs over O intake fert. eggs. KCN inhibits the O intake of fert. and unfert. eggs; the effect is much greater on the former. It also inhibits the spontaneous rise in O intake of unfert. eggs. Urethane can depress fert. and unfert. eggs equally, but usually there is an increase in O intake in unfert. eggs in urethane. The O intake of fert. and unfert. eggs is equally depressed by raising the acidity of CO_2-free sea-water to about pH 6. Hypertonic $MgCl_2$ accelerates the O intake of unfert. eggs; NaCl and $CaCl_2$ had less effect. The increase in O intake is related to the induction of parthenogenesis by these hypertonic solutions.—*L. H. Hyman.*

3907. SIMEONE, F. A., and W. C. YOUNG. A study of the function of the epididymis. IV. The fate of non-ejaculated spermatozoa in the genital tract of the male guinea-pig. *Jour. Exp. Biol.* 8: 163-175. 1931.—Spermatozoa which have attained full functional maturity and are not discharged in copulation, undergo regressive changes which end in death and subsequent liquefaction within the epididymis and particularly within the vas deferens. The number of dead and degenerating spermatozoa appears to be greatest among those removed from the distal end of the vas deferens. It is concluded that spermatozoa are carried out of the testis into the ductus epididymis while they are functionally immature; much of the time consumed in passing through the duct is necessary for a completion of their development. Once full spermatozoon development is attained in a male which is not copulating frequently, there is no influence which preserves them in an optimal functional condition.—*J. M. Robson.*

3908. SLONAKER, JAMES ROLLIN. Pseudopregnancy in the albino rat. *Amer. Jour. Physiol.* 89(2): 406-416. 1929.—During the 1st 8 or 10 days of pseudopregnancy there was a great reduction in spontaneous activity, an absence of oestrual rhythm, an increase in body wt. and in daily food intake, and a development of the mammary glands similar to that found during the same days of true pregnancy. In 475 cases of pseudopregnancy the av. duration from coitus to the 1st succeeding oestrus was 14.53 days (shortest, was 7 days; longest, 19 days). Pseudopregnancies resulted from positive matings of normal ♂♂ with hysterectomized ♀♀ and of vasectomized and castrated ♂♂ with normal ♀♀. Pseudopregnancy can be induced by artificial stimulation of the cervix uteri. Autopsies made at the 1st oestrus following pseudopregnancy showed typical oestrual conditions of the uteri and ovaries. There was no trace of embryos or of resorption. Pseudopregnancy is not caused by any secretion of the ♂ or by young. All the unfertile matings in which erythrocytes were found in the smear following coitus resulted in pseudopregnancy. Many cases, however, in which erythrocytes were not found were observed. Pseudopregnancies were more prevalent in young animals and in those matings made late in oestrus. Evidence indicates that the persistence of the corpora lutea is not caused by a direct nerve impulse to the ovaries. There is a suggestion of a hormone secreted by the mucosa of the vagina, of the uteri, or both, which acts on the corpora lutea either directly or through some intermediary agent, possibly the anterior pituitary gland.—*Author's summary.*

3909. STOTT, T. The spawning of Echinus esculentus and some changes in gonad composition. *Jour. Exp. Biol.* 8: 133-149. 1931.—The spring inshore migration of *Echinus* at Port Erin in 1930 was investigated. Mature gonads were found at the end of February and throughout March and early April. At the end of June all gonads examined were spent. It is probable that May was the chief month in which natural spawning took place. Observations on the cycle of changes in the composition of the gonad from November 1929 to July 1930 showed: (1) An increase in percentage dry weight of the male maturing gonad, the opposite taking place in the female. (2) A decrease in percentage glycogen in both male and female gonads prior to spawning followed by a great post-spawning increase. There is an indication that an increase in the percentage of carbohydrates other than glycogen occurs with the maturation of the gonad and it is suggested that glycogen is transformed into carbohydrate food reserved for the ripe eggs and sperm.—*J. M. Robson.*

3910. VANDEL, A. (préface de M. Caullery). La Parthénogenèse. (Encyclopédie Scientifique.) 412p. 42 fig. Gaston Doin et Cie: Paris, 1931. Pr. 32 fr.—This book gives a history of the discovery of parthenogenesis, a classification of types of parthenogenesis (arrhenotokous, thelytokous, deuterotokous, cyclical, geographic, etc.), and a brief statement of the pertinent facts for each of the taxonomic groups. It contains short discussions of the origin of alternation of generations (as in Cynipidae), of the cycles of rotifers, aphids and cladocera, and of parthenogenesis in general. There are chapters on paedogenesis, accidental (occasional) parthenogenesis, the nematode type of parthenogenesis, and experimental (artificial) parthenogenesis. Under geographic parthenogenesis are described the species in which two races exist, one parthenogenetic and one bisexual, which commonly occupy different areas. Chromosome behavior in natural and artificial parthenogenesis is described. Parthenogenesis in plants is briefly discussed. One chapter is devoted to the relation of parthenogenesis to sex determination. The work of the various authors is critically weighed, not merely restated. Among the general conclusions are discussions of polyploidy, hybridization, variability, and origin of species, all in relation to parthenogenesis. A long but selected bibliography is classified in accordance with the chapter headings and subdivisions, but placed at the end of the book. A full index of authors and another of subjects is included.—*A. F. Shull.*

3911. YOUNG, W. C. A study of the function of the epididymis. III. Functional changes undergone by spermatozoa during their passage through the epididymis and vas deferens in the guinea-pig. *Jour. Exp. Biol.* 8: 151-175. 1931.—Female guinea pigs were artificially inseminated with spermatozoa removed from different levels of the ductus epididymis and with spermatozoa confined in the seminiferous tubules. It was shown that the time consumed by spermatozoa in passing through the epididymis is necessary for a completion of their development and that the changes undergone during this period represent a continuation of changes which start while the spermatozoa are still attached to the germinal epithelium, and are not conditioned by some specific action of the epididymal secretion. Regressive or degenerative changes follow the attainment of an optimal functional capacity in spermatozoa which are not discharged or lost in some other manner. Evidence has been obtained for the existence of a constant distally directed current of spermatozoa through the epididymis even in the absence of copulation. Abortions and intrauterine resorptions occurred with greater frequency among females inseminated with older spermatozoa.—*J. M. Robson.*

ANIMAL PHYSIOLOGY

REACTIONS OF THE ORGANISM AS A WHOLE

E. J. LUND, *Editor*

(See also in this issue Entries 3270, 3304, 3318, 3728, 3943, 3955, 4665, 5406, 5437, 5478, 5889)

3912. HETZER, HILDEGARD, HENRY BEAUMONT, und EMIL WIEHEMEYER. Das Schauen und Greifen des Kindes. Untersuchungen über spontanen Funktionswandel und Reizauslese in der Entwicklung. I. Spontane Zuwendung zu Licht und Farbe im ersten Lebensjahr. *Zeitschr. Psychol. u. Physiol. Sinnesorg. Abt. I. Zeitschr. Psychol.* 113(4/6): 239-267. 8 fig. 1929.—Using a pocket flash light, and red, green, blue and yellow wool as stimuli for children 1-7 mos. of age, Hetzer and Beaumont found that during the 1st and 2nd mos. the child responds with negative effect reactions to both light and color. At the age of 3 mos., positive effect reactions set in. At this age also begins an active turning toward the stimulus instead of the passive reception which previously characterized the behavior. This increasingly positive reaction to optical stimuli appears related to a corresponding decrease in positive reactions in the acoustical field.—*J. L. Jervis.*

3913. HETZER, HILDEGARD, HENRY BEAUMONT, und EMIL WIEHEMEYER. Das Schauen und Greifen des Kindes. Untersuchungen über spontanen Funktionswandel und Reizauslese in der Entwicklung. II. Optische Rezeption und Bilderfassen im zweiten Lebensjahr. *Zeitschr. Psychol. u. Physiol. Sinnesorg. Abt. I. Zeitschr. Psychol.* 113(4/6): 268-286. 7 fig. 1929.—Pieces of cardboard on which were pasted plain colored paper, meaningless figures and pictures of familiar objects were used as optical stimuli in this experiment with 1½ to 2 year old subjects. The results seem to indicate that during the first 4 mos. of the 2nd year there is a transition from mere handling to attentive observation of the meaningful material. Not until 2 years of age is actual comprehension of the pictures evident; in other words, the understanding of graphic representation appears to be acquired simultaneously with the function of speech and the ability to name the objects represented.—*J. L. Jervis.*

3914. [TSVETKOV, A. N.] ЦВЕТКОВ, А. Н. О спонтанных движениях Paramaecium caudatum. [Spontaneous movements of P. caudatum.] Доклады Академии Наук СССР, Сер. А. (*Compt. Rend. Acad. Sci. URSS. Sér. A.*) 1928(7): 105-106. 1928.—Movement of P. caudatum in a drop of water under controlled temp. conditions resembled Brownian movement of inanimate particles in being at random.

3915. VERLAINE, L. L'instinct et l'intelligence chez les Hyménoptères. 8. Note complémentaire sur l'abstraction. *Bull. et Ann. Soc. Ent. Belgique* 68(11/12): 240-250. 1928(1929).—In returning to their nests, certain wasps follow a triangular course, of variable plan, size, degree of illumination, and orientation, but sometimes the course follows other geometrical figures. After a number of trials, the wasps usually tend to follow the triangular course, but never twice in succession alight on the same spot, nor in the same manner, in the same group of courses. This behavior has every external appearance of internal processes of abstraction.—*L. Verlaine (transl. by H. Spencer).*

ANIMAL PHYSIOLOGY

SENSE ORGANS

(See also in this issue Entries 3601, 3700, 3913, 4052, 5313, 5374, 5396)

3916. ADLER, FRANCIS HEED. Reciprocal innervation of the extra-ocular muscles. *Arch. Ophthalmol.* 3(3): 318-324. 1930.—In 2 cases, inward movement of 1 eye occurred in the presence of a complete paralysis of the 3rd nerve when the fellow eye was abducted. This, Adler believes, can be explained only by an inhibition of the contractile activity of 1 external rectus associated with the increase in contractile activity of the opposite antagonistic external rectus and demonstrates that reciprocal innervation of the ocular muscles does exist in man.—*Author's conclusion.*

3917. BEHR, CARL. Der Anteil der beiden Antagonisten an der Pupillenbewegung bei den verschiedenen Reaktionen. *Graefe's Arch. Ophthalmol.* 125(1): 147-155. 1 fig. 1930.—A contusion separated the stroma and pigment layers of the iris for about 1/10 of the average pupillary circumference. In light reflex there was an active increase in tonus in the sphincter and a simultaneous decrease in the sympathetic. In myosis due to near accommodation there was a relaxation of the dilator, though less than in light, and an increase in the tonus of the sphincter. In the psychoreaction there was an active increase in tonus in the dilator at the beginning of movement, which attained a considerable degree. Control experiments in a subject with the stellate ganglion resected showed that there were simultaneous inhibitory processes in the sphincter, which were slight at the beginning of movement. Cocaine led to an active increase in tonus in the dilator without a decrease in sphincter tonus being seen. Eserine produced a pronounced contraction of the sphincter but no corresponding relaxation of the dilator; 2% pilocarpine produced a slight contraction of both membranes. Scopolamine and atropine led to uniformly pronounced dilatation of the pupil. The author concludes that there is no double innervation of the sphincter in man in the sense of a parasympathetic promoting, and a sympathetic inhibiting.

3918. BUDDENBROCK, W. von. Einige Bemerkungen zum augenblicklichen Stand der Frage nach dem Farbensinn der Tiere. *Zool. Anzeiger* 84(7/8): 189-201. 1929.—Hess has shown that many lower animals behave like color-blind persons, choosing different colors because of their relative brightness rather than because of the color. Such animals find the maximum brightness toward the green in a continuous spectrum, red having a very low intensity value. Von Frisch found that there was a positive color sense in bees, *Daphnia,* and minnows. Schlieper demonstrated that *Hippolyte* reacted to brightness alone, and not to color. In the case of bees it was not proven whether there were two sets of receptors, one for color and one for intensity. Hanstroem believes that there is one set of nerves for perception in bright light and another for perception in dim light. There is proof of the existence of visual purple in the eyes of some of the lower animals, but in others we must look for the presence of some other substance.—*D. L. Collins.*

3919. BUNCH, C. C., and T. S. RAIFORD. Race and sex variations in auditory acuity. *Arch. Otolaryngol.* 13(3): 423-434. 1931.—The averages of the thresholds of auditory acuity in 524 white and 169 colored patients are computed according to age, sex and race. The average acuity for tones under 2,048 double vibrations was slightly higher in white ♂♂, i.e., tones of faint intensity were heard better than in white ♀♀. Near 2,048 double vibrations the averages for the two sexes cross, and the average acuity for ♀♀ was higher than for ♂♂ in all decades. The differences between colored ♂♂ and colored ♀♀ were not definite. The average for colored ♂♂ was

higher than for white ♂♂ for tones of high pitch. In each successive decade the average acuity was slightly lower for tones of low pitch. For tones of high pitch, the difference was more marked than for low pitched tones, and the difference between the averages for each age group was greater as the frequency of the tones used as stimuli increased.—*Authors' summary.*

3920. **CANDIAN, F. L. La soglia di eccitamento dei colori semplici dello spettro nei normali. Gradi di passaggio verso le anomalie. [The threshold of excitation for primary colors of the spectrum in normal persons: degrees of transition toward anomalies.]** *Ateneo Parmense* 2(3): 233-266. 1 pl. 1930.—The method employs monochromatic lights corresponding to limited sections of the spectrum, covering intervals of a minimum of 1.9$\mu\mu$ to a maximum of 7.8$\mu\mu$. The thresholds thus determined for each color of the spectrum have a conventional value, conditioned by the intensity of the luminous source and the width of the fissure of emission of the special spectroscope (the monochromator), under present conditions 1000 candle power and 0.3 mm. respectively. Under these conditions, the method permits a quantitative expression of the value of retinal excitability (threshold) for each color of the spectrum and a comparative measure of the excitability of various individuals. The average value of the thresholds determined for 200 subjects was: red, 0.27; green, 1.5; yellow, 2.55; blue, 4.45; violet, 17.34. Determination of the index of variability from the average gives a criterion for defining the limits beyond which retinal excitability for various colors may be considered abnormal.—*From author's summary (transl.).*

3921. **CREED, R. S., and R. D. HARDING. Latency of after-images and interaction between the two retino-cerebral apparatuses in man.** *Jour. Physiol. [London]* 69(4): 423-441. 1930.—By a study of the latent periods preceding the development of the negative after-images of white circular discs, Creed and Granit were able to demonstrate functional differences in the receptor apparatus of the foveal and para-foveal areas of the retina, and to obtain evidence of interaction between the mechanisms concerned in the reception of visual stimuli at varying angular distances from the fixation point. The present enquiry extends this work to the functional relations between the retino-cerebral apparatuses of the 2 eyes in man, thereby supplying data on the mechanism of binocular vision. After visual fixation of the centers of white circular discs, the time intervals which elapse before the appearance of black (negative) after-images have been measured under varying conditions. After-images projected into complete darkness (black proj.) have a longer latent period than those projected on a white screen. They also have a much more distinct halo and, with small discs, are more intensely black. With large discs they sometimes appeared colored. Binocular and uniocular after-images were found to have much the same latency when projected on a white surface. Bin. black proj. images, on the other hand, appear earlier than R black proj. or L black proj. The latter are less distinct than the former, but are generally easy to time. To account for the early arrival of the binocular image, one must assume that the uniocular processes reinforce one another (or are otherwise interacting). If the primary image is received by only 1 eye and the after-image is projected on a white screen presented only to the other eye (R→L and L→R), the latent period is longer than when the same eye is used throughout the experiment. The after-image in the former case appears to darken and remains so until it fades. It is, therefore, of black projection type, and is in successful rivalry with the white field by which the now open eye is being stimulated. The R→L image, however, appears earlier than the R black proj. Its arrival is, therefore, hastened by the formation of an image of the white screen in the L eye, and this indicates interaction at a subperceptual level between the retino-cerebral apparatuses of the 2 eyes. It is suggested that an explanation may be sought for certain differences between R→L and L→R images, and between R black proj. and L black proj. images, by reference to the habits of the observers in concentrating their attention on the field of view of one eye rather than the other. Further evidence of interaction is afforded by observations of the type Bin.→R. The evidence already adduced for interaction between the 2 uniocular mechanisms is discussed in its relation to Sherrington's experiments on binocular flicker.—*Authors' summary.*

3922. **DENKER. Über das Hörvermögen der Fische.** *Acta Oto-Laryngol.* 15(2/4): 247-260. 1931.—The method of conditioned reflexes (association of musical tones with food) was used on *Salmo fario, Perca fluviatilis, Carassius auratus, Idus melanotus* var. *auratus* and *Phoxinus laevis* (apparently 1 or 2 representatives of each, previously blinded). More than 100 experiments on the trout with 5 tones in 3 octaves were negative or doubtful in result; so were numerous experiments on the perch. The other 3 fishes, however, gave unmistakable signs of perception of the sound. The author concludes that a certain group of fishes possesses a sense of hearing, exercised through the labyrinth, while no such sense can be demonstrated in other fishes.

3923. **DODGE, RAYMOND, ROLAND C. TRAVIS, and JAMES CHARLES FOX, Jr. Optic nystagmus. III. Characteristics of the slow phase.** *Arch. Neurol. & Psych.* 24(1): 21-34. 8 fig. 1930.—The slow phases of optic nystagmus are essentially eye movements of pursuit. They are termed adequate when the point of regard consistently falls on 1 of the moving objects of interest; inadequate when the point of regard overshoots or lags behind the visual object. Angular velocities below 40° per sec. evoke approximately adequate pursuit movements, as shown in the fairly uniform photographic records of the eye movements obtained from 8 normal subjects. With gradual increase in the angular velocity the nystagmographic pattern gradually becomes less regular. At angular velocities above 90° per sec., records from the average normal subject show the following features of inadequacy in the pursuit movements: shortening, slowing, irregularity, elision and final complete failure of pursuit. Quantitative data on the relation of speed to inadequate pursuit were sought with a new instrument that recorded the eye movements in pursuit of an oscillating single object. With increasing speed of oscillation the rapid corrective eye movements in 8 normal subjects first increased and then decreased in both number and amplitude, whereas the pursuit movements steadily decreased in amplitude, occasionally reaching still fixation. Hence it seems that the most consistent measure of adequacy is the amplitude of pure pursuit, which is approximately inversely proportional to the speed of the object.

3924. **DUCRET, S., und S. KOGO. Untersuchungen über den Einfluss der Sympathicusreizung auf die Retina.** *Pflüger's Arch. Ges. Physiol.* 227(1/2): 71-80. 4 fig. 1931.—Following unilateral sympathicotomy histologic studies were made on the shape and position of the rods and cones in the two retinae of frogs. In spite of different intervals elapsing between the sympathicotomy and the enucleation of the eyes the authors could not succeed in demonstrating any differences between the two retinae either in the light or dark adapted condition. A third series was examined in which the eyes were given a moderate exposure to light just prior to enucleation. The result in these was also negative.—*F. H. Adler.*

3925. **ENGELHART, E. Der humorale Wirkungsmechanismus der Oculomotoriusreizung.** *Pflüger's Arch. Ges. Physiol.* 227(1/2): 220-234. 17 fig. 1931.—An examination of the effects of aqueous humor of the rabbit and cat on the heart of *Bufo vulgaris* failed to demonstrate the presence of "Vagusstoff," i.e., acetylcholin. In rabbits the application of three drops 1% physostigmine produced a substance in the aqueous similar in all respects to acetylcholin. If one eye was illuminated and the other kept in the dark large amounts of this substance were found in the illuminated eye and practically none in the dark adapted eye. A considerable quantity

was found in the ciliary body and the iris and the amount was increased by electrical stimulation of the third nerve. Following section of the third nerve and degeneration the substance vanished completely from the ciliary body and iris.—*F. H. Adler.*

3926. GRAMONT, ARMAND de. Application de la vision binoculaire au repérage d'une direction. *Compt. Rend. Acad. Sci.* 188(17): 1120-1122. 1929.—Experiments on binocular vision are reported in which the apparent vertical, horizontal and two oblique directions in the field of vision (45° right and left) are determined by 7 observers. Constant errors occur such that the lines appear to converge upward, confirming the results of Helmholtz and Volkmann.—*H. C. Stevens.*

3927. GUILD, STACY R., S. J. CROWE, C. C. BUNCH, and L. M. POLVOGT. Correlations of differences in the density of innervation of the organ of Corti with differences in the acuity of hearing, including evidence as to the location in the human cochlea of the receptors for certain tones. *Acta Oto-Laryngol.* 15(2/4): 269-308. 10 fig. 1931.—A method is described for representing many of the spirally arranged elements of any particular cochlea from properly oriented serial sections, in the form of graphic reconstructions, with fair accuracy. Combined with the counting of ganglion cells in the spiral ganglion, there has been determined for each of 15 ears: (a) the approximate total number of ganglion cells whose fibers supply the organ of Corti; (b) for corresponding regions of ganglion and end-organ, the average number of ganglion cells per mm. of length of the organ of Corti in the lower basal, upper basal, lower middle, and upper middle plus apical regions of the cochlea; and (c) the relative numbers of ganglion cells per mm. in the several regions. In 4 ears of young adults with good hearing the approximate total number of ganglion cells in the spiral ganglia averaged 25,614, with a range of from 23,193 to 27,810. For this group, the average number of ganglion cells per mm. of the corresponding region of the organ of Corti was: lower basal, 934; upper basal, 1,076; lower middle, 971; upper middle plus apical, 502. In 3 ears of young children the approximate total number of ganglion cells in the spiral ganglia averaged 29,019; in each ear there were more ganglion cells than in any one of the 4 ears of young adults with good hearing. For this group, the average number of ganglion cells per mm. of length of the corresponding region of the organ of Corti was: lower basal, 1,010; upper basal, 1,253; lower middle, 1,142; upper middle plus apical, 559. The hearing of these children had not been examined; but records indicate that the hearing of children with normal ears averages somewhat better for all tones than that of young adults. From the evidence furnished by the ganglion cell method the most densely innervated portion of the organ of Corti in normal individuals is that of the upper basal turn and the adjacent part of the lower middle turn, with a definite decrease in density at each end. Some preliminary attempts to count the nerve fibers in the osseous spiral lamina give the impression that there is a much greater decrease in density of innervation as the 2 ends of the organ of Corti are approached than is shown by the ganglion cell method. It is suggested that there is a correlation between these regional differences in density of innervation and the well recognized and proven differences in the energy required, in terms of ergs, for the threshold of hearing for different tones by normal individuals; it being least for tones of the middle range and progressively greater for those of both lower and higher pitch. In 3 ears, each of which had a marked loss of acuity for high tones (and a slight loss of acuity for tones up to at least 2,048 cycles per second), the approximate total number of ganglion cells in the spiral ganglia averaged 19,538; the highest and the lowest were, respectively, 20,808 and 18,504. For this group, the average number of ganglion cells per mm. of length of the corresponding part of the organ of Corti was: lower basal, 579; upper basal, 862; lower middle, 854; upper middle plus apical, 403. The amount of the difference (loss) between these figures and those for the group of young adults with good hearing is about twice as great in the lower basal region as in any other. This indicates that the lower basal region is the one most concerned with the reception of high tones.—*From authors' summary.*

3928. HESSE, RICHARD, et al. Photoreceptoren. (Handb. der normalen und pathologischen Physiologie. Bd. 12) Teil 1, 742pp. 238 fig. Julius Springer, Berlin. 1929. Price, M 69.—Allgemeines und Dioptrik: Einfachste Photoreceptoren ohne Bilderzeugung und verschiedene Arten der Bilderzeugung. Bedeutung der Bilderzeugung, der Auflösung der lichterregbaren Schicht und der optischen Isolierung. [The simplest photoreceptors (forming no image), and various kinds of image-formation. The significance of image formation], by RICHARD HESSE; Phototropismus und Phototaxis der Tiere [Phototropism and phototaxis of animals], by ALFRED KÜHN; Phototropismus und Phototaxis bei Pflanzen [Phototropism and phototaxis in plants], by ERICH NUERNBERG; Lochcamera-Auge. Das musivische Auge und seine Funktion [The mosaic eye and its function], by RICHARD HESSE; Das Linsenauge: Dioptrik des Auges. Refraktionsanomalien. Augenleuchten und Augenspiegel, by GEORG GROETHUYSEN; Die Akkommodation beim Menschen [Accommodation in man], by CARL v. HESS (Abgeschlossen und ergänzt durch GEORG GROETHUYSEN); Vergleichende Akkommodationslehre [The comparative principles of accommodation], by CARL v. HESS (Abgeschlossen und ergänzt durch GEORG GROETHUYSEN); Pupille, by CARL v. HESS (Abgeschlossen und ergänzt durch GEORG GROETHUYSEN); Chemie der Linse. Presbyopie. Star. [Chemistry of the lens. Presbyopia. Cataract.], by ADOLF JESS; [Pharmakologische Wirkungen auf Iris und Ciliarmuskel [Pharmacologic action on the iris and the ciliary muscle], by EDUARD GRAFE; Receptorenapparat und entoptische Erscheinungen [Receptor apparatus and entropic phenomena], by ULRICH EBBECKE; Die objektiven Veränderungen der Netzhaut bei Belichtung [Objective changes of the retina upon illumination], by RUDOLF DITTLER; Licht- und Farbensinn: Licht- und Farbensinn [Light sensation and color sensation], by ARMIN TSCHERMAK; Die Abweichungen des Farbensinnes [Abnormalities of color sense], by HANS KOELLNER. Mit Nachträgen ab 1924, by ERNST ENGELKING; Photochemisches zur Theorie des Farbensehens [Photochemical contributions to the theory of color vision], by FRITZ WEIGERT; Theorie des Farbensehens [Theory of color vision], by ARMIN TSCHERMAK; Zur Lehre von den dichromatischen Farbensystemen [The laws of dichromatic color systems], by JOHANNES v. KRIES; Die "Farbenkonstanz" der Sehdinge [Color constancy of objects], by ADHEMAR GELB; Zur Theorie des Tages- und Dämmerungssehens [Dark and light vision], by JOHANNES v. KRIES; Dämmerungstiere [Nocturnal animals], by RICHARD HESSE; Farbenunterscheidungsvermögen der Tiere [Color discrimination among animals], by ALFRED KÜHN.

3929. HOFE, K. vom. Hypertonie und kompensatorische Hypotonie am Auge. *Arch. Augenheilk.* 102(1/2): 315-324. 1929.—The author objects to the conclusions drawn by Seidel from the results of his fluorescein test in trephined glaucomatous eyes. Seidel maintained that one could draw certain conclusions regarding normal physiological processes. The author carried out a series of experiments in which from 0.1 to 0.2 ccm. physiological salt solution was injected into the vitreous of a rabbit's eye. The intraocular pressure of each eye was measured over a considerable period of time with a tonometer. The tables and graphs show that following the injection there was a considerable increase in the pressure of the experimental eye followed by a fall below normal. This fall persisted for some days. The graphs also indicate that some slight changes occur in the control eye. From these experiments the author concludes that even as simple a procedure as an injection of NaCl upsets the

physiological condition so that one should draw no such conclusions as Seidel has done from eyes which have had a trephine operation. He refers the hypertonus and compensatory hypotonus to changes in internal pressure in the globe.—*F. H. Adler.*

3930. **HUIZINGA, EELCO.** Über die galvanische Vestibularisreaktion und über die Folgen der Exstirpation des Scarpaschen Ganglions bei der Taube. *Pflüger's Arch. Ges. Physiol.* 226(6): 709-722. 4 fig. 1931.—The vestibular reaction of the pigeon to galvanic stimulation can be elicited after destruction of one labyrinth and even after bilateral removal of Scarpa's ganglion, though the current required in the latter case is about 10 times as great as prior to operation. After unilateral extirpation of the ganglion the twisting of the head occurs sooner than after extirpation of the labyrinth without removal of the ganglion.—*G. P. McCouch.*

3931. **KAHMANN, HERMANN.** Untersuchungen über die Linse, die Zonula ciliaris, Refraktion und Akkommodation von Säugetieren. *Zool. Jahrb., Abt. Allg. Zool. u. Physiol. Tiere* 48(3): 509-588. 7 pl., 9 fig. 1930.—Representatives of 29 species of mammals of the following groups were studied: Marsupialia, Insectivora, Chiroptera, Rodentia, Ungulata, Carnivora, Prosimia, Simia. Greatest attention was given nocturnal forms, in which the eye and lens are relatively large, the lens strongly curved and of highly refractive substance. Weight of lens relative to total weight of eye is large: *Mus silvaticus* and *M. agrarius*, 30%; *Epimys norvegicus*, 28%; *Cavia cobaya*, 18%; *Sciurus vulgaris*, 14%; man only 4%. As absolute weight of eye increases relative weight of lens decreases. The relatively large eyes of lower mammals seem in general functionally rudimentary as compared to those of diurnal forms; in the former vision may be overshadowed by other senses. Large size of lens coupled with hard consistency seem to render accommodation in these nocturnal animals well nigh impossible. A comparative study of the zonula ciliaris showed the development of the latter to be dependent upon that of the ciliary body. In Ungulates, Carnivores and Primates the ciliary muscle is well developed and accommodation is better than in other forms considered. Speed of accommodation is much less in Carnivores than in Primates. In the lower mammals studied, with the exception of *Sciurus vulgaris*, accommodation is lacking. A high degree of hypermetropia was found in some of the eyes examined, notably in mice and rats. With increase of absolute size of eye and corresponding decrease of relative size of lens, hypermetropia seems to grade into emmetropia; this is best seen in related forms, for example: mouse +10 D., woodmouse, with large eyes, +6 to +8 D., *Myoxus glis*, +2 D., *Sciurus vulgaris*, emmetropic. The findings support Helmholtz' theory of accommodation.—*H. Kahmann (transl. by P. A. Moody).*

3932. **KUPFER, E.** Versuche zu Hörtheoretischem im Anschluss an Nachbilder und elektrische Nervenphänomene. [Theory of hearing with reference to after images and electrical phenomena of nerve.] *Naturwissenschaften* 19(14): 306-307. 1931.

3933. **LEIRI, F.** Über die Reizung des Nervus octavus im Otolithenapparate. *Acta Oto-Laryngol.* 14(3/4): 378-381. 1 fig. 1930.—Anatomical considerations indicate that this stimulation is mechanical, consisting of a pull on the hairs of the sensory cell exerted by the movement of the cuticular structure.

3934. **LEIRI, F.** Eine modifizierte Resonanztheorie für die Perzeption der ultramusikalischen Töne und von Geräuschen. [A modified resonance theory for perception of ultra-musical tones and murmurs.] *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 128(1/2): 12-15. 1931.

3935. **LEIRI, F.** Über die verstärkte Knochenleitung bei den Stimmgabelversuchen. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(5): 538-546. 1930.—Investigations on normal persons with artificial occlusion of the ear and on those with occlusion due to middle ear lesion show that increased bone conduction is not due alone to the fact that the tone vibrations are confined within the ear but also to the exclusion of external noises and vascular murmurs in the neighborhood. On the other hand, when the ear is stopped so that vascular murmurs cannot escape, or in tinnitus, the murmur will reduce conduction of tones of lower but not of higher frequency.

3936. **LIGHT, V. EARL.** Photoreceptors in Mya arenaria, with special reference to their distribution, structure, and function. *Jour. Morph. & Physiol.* 49(1): 1-44. 1 pl., 7 fig. 1930.—Experimental studies on the responses to light indicate that photosensitive tissue is located somewhere near the inner surface of the siphon and that the siphon is sensitive throughout its entire length. A histological study of the siphon shows cells of a special type in the photosensitive region, which are most abundant where the inner surface of the siphon is most sensitive. They are found throughout the length of the siphon, just beneath the inner epithelial layer, around both the incurrent and excurrent siphons. They receive nerve elements from branches of 16 large nerves. Each cell contains a characteristic inner feature, the optic organelle, composed of a rather large hyaline structure, the lens, which is surrounded by a network of nerve fibrillae, the retinella. Light rays, reflected from a flat mirror through the lens in these cells, are brought to a focus in the region of the retinella, irrespective of the direction of the rays. The cells are similar in structure and function to visual cells in leeches and photoreceptors in the earthworm. Available data indicate that they function as photoreceptors and that the fibrillae of the retinella are direct receptors of light stimuli. Pigment spots found in considerable number on the distal third of the siphon, and thought by some to be eyespots, are, owing to simulation of the background, probably protective in nature, rather than functional in photoreception.—*Author (courtesy Wistar Bibl. Serv.).*

3937. **MELMORE, SIDNEY.** Conjunctival halos. *Nature [London]* 127(3192): 15. 1931.

3938. **MEYER, MAX F.** Hearing without cochlea? *Science* 73(1887): 236-237. 1931.—From an experimental study the author concludes that the hearing in question, claimed by G. Eichhorn for deaf persons with nerve centers intact by using a patented electrical membranous device, is due neither to direct action on the nerve nor to muscle contractions, but to a vibration of the horny skin surface caused by its electrostatic charge.

3939. **NAFE, JOHN P.** Dermal sensitivity with special reference to the qualities of tickle and itch. *Pedagogical Seminary & Jour. Gen. Psych.* 34(1): 14-27. 1927.—Application of various stimuli (needle gives optimum) to dry, wet, and oiled skin on many parts of the body gives agreement with early (1908) findings of E. Murray. Stimuli are controlled by adjustable three-way clamp and observed through microscope. Itch and tickle are qualitatively identical according to some reports. No special tickle spots were found.—*L. S. Judson.*

3940. **PEARCY, J. FRANK.** Evidence of functional rôle of basilar membrane in audition. *Amer. Jour. Physiol.* 91(1): 8-13. 1929.—A number of normal adults were given 2-4 gm. $NaNO_2$ to lower the blood pressure and the alterations in their audiograms were studied. It is considered that the alteration was due to vasodilatation of the cochlear artery in its unbranched portions, the vasodilatation producing increased weight to the basilar membrane and interfering with its auditory function. Epinephrine (15-30 minims) was administered to these individuals and their audiograms studied. Reasons are given for assuming that vasoconstriction of the cochlear artery results, the vasoconstriction decreasing the weight of the basilar membrane and increasing its auditory function. It was found that marked depression and considerable increase of auditory acuity resulted in that portion of the organ of Corti directly over the unbranched cochlear artery which responded by vasodilatation and vasoconstriction. It is concluded that the basilar membrane is actively concerned in audition although it is not denied that the tectorial membrane may also be necessary.—*Author's summary and conclusions.*

3941. POLLAK, FRANZ. Untersuchungen am überlebenden menschlichen Auge. *Graefe's Arch. Ophthalmol.* 125(2): 220-230. 1 fig. 1930.—By suitable perfusion the intrinsic and vascular musculature of the eye can be restored from a few hrs. to a day after death. Permeability of the vessel walls from postmortem changes dominated the intra-ocular pressure and produced mechanical conditions which prevented investigation of the intrinsic muscles. The iris, by pupillary changes, reacted to epinephrine and eserine, but no response to electric stimuli could be elicited. During perfusion, the blood vessels regained their irritability and reacted typically to epinephrine and eserine. It may be possible that specimens obtained immediately after accidental death will show the behavior of the muscle of accommodation.

3942. ROHRSCHNEIDER, WILHELM. Experimentelle Untersuchungen über die Veränderungen normaler Augengewebe nach Röntgenbestrahlung. III. Veränderungen der Linse, der Netzhaut und des Sehnerven nach Röntgenbestrahlung. IV. Röntgenstrahlenempfindlichkeit der einzelnen Teile des Kaninchenauges bei einzeitiger Bestrahlung. *Graefe's Arch. Ophthalmol.* 122(2/3): 282-298. 10 fig.; 383-390. 1929.—Irradiation of the rabbit eye with x-rays produces no effects on the uvea, the retina and the optic nerve; but does produce certain effects on the conjunctiva, the cornea, and the lens. These effects are classified according to the size of the dose.—*S. Hecht.*

3943. STEHR, WILLIAM C. The activating influence of light upon certain aquatic arthropods. *Jour. Exp. Zool.* 59(2): 297-335. 3 fig. 1931.—*Asellus communis* Say, *Hyallela knickerbockeri* Bate, *Cambarus* sp., *Belastoma flumineum* (Say), *Ranatra americana* Montandon, and *Lethocerus americanus* (Leidy) were investigated. All showed an inverse relationship between intensity of the stimulating light and the reaction time of the animal, which is very similar to that found in clams, tunicates, and in the vertebrate eye. Photoreception in the adult Hemiptera studied is through the eye. There is a latent period in the reaction time of these species. The limit of stimulating efficiency of light for *Lethocerus* is between 13 and 25 m.c., but is much higher in the other species. The process of dark adaptation in *Lethocerus* is regular and complete in about 50 min. The variability of all species is high and is probably due to inhibitions and other effects of the central nervous system upon the responses in question. If it were possible to measure the effect on the receptor directly, instead of measuring the motor response, it is probable that less variable results could be obtained. None of the formulae used to express the results of similar investigations express the results of these experiments accurately, but the general trend of the results is such that the photic processes of the compound eye are probably fundamentally similar to those of other types of photoreceptors.—*Author (courtesy Wistar Bibl. Serv.).*

3944. STRUGHOLD, H. The mechanical threshold of the cornea-reflex of the usual laboratory animals. *Amer. Jour. Physiol.* 94(1): 235-240. 2 fig. 1930.—Experiments were made on 10 guinea-pigs, 10 rabbits, 10 rats, 9 pigeons, 6 dogs, 3 cats and 3 monkeys. Strughold finds it very probable that the high sensibility of the center of the cornea (4 to 5 times higher than near the margin) depends upon the richness in nerve endings in this part of corneal epithelium compared with the marginal zones, as is described by a number of histologists. For experimental purposes it follows from this result that it is necessary, for comparison from case to case, to examine always the same point. The most practicable point is the center of the cornea, the threshold-values of which, concerning the usual laboratory animals, have been found to vary little.

3945. WELSH, JOHN H. The mechanics of migration of the distal pigment cells in the eyes of Palaemonetes. *Jour. Exp. Zool.* 56(4): 459-494. 4 pl., 4 fig. 1930.—The distal pigment cells in the eyes of the common shrimp, *Palaemonetes vulgaris,* move "in" and "out," along the sides of the cones, under the influence of light and dark. The proximal movement in the light was found to be due to contractile fibrils within the cells. These fibrils have their origin in the retinular cells and run out through the bodies of the distal pigment cells. The distal movement of the cells may be due to the contractile nature of the distal processes. It was found possible to make direct observations on the movements of the distal pigment cells, due to the transparency of the eyes. Measurements of rate of movement in the light and dark were made on single individuals, giving the average time for migration in the light as 40 min.; that in the dark, 90 min. A study of movements of the distal pigment cells in intermittent light showed that migration begun in the light will continue for an appreciable length of time after the animals are placed in the dark. A considerable variation in the rate of movement was found in different individuals and also at different times during light and dark adaptation, in the same individual; thus demonstrating the advisability of studying the activities of such cells by direct observation whenever possible.—*Author (courtesy Wistar Bibl. Serv.).*

3946. WORSTER-DROUGHT, C., and T. R. HILL. Observations on vibration sense with special reference to postencephalitic parkinsonism. *Jour. Neurol. and Psychopath.* 11(44): 318–323. 1931.—Definite impairment of vibration sense and deep-pressure pain was demonstrated by delicate quantitative methods (described) in 25 cases of generalized postencephalitic Parkinsonism. The authors conclude that the protopathic appreciation of vibration-sense and of deep-pressure pain depends on the thalamus and that the abnormalities of proprioception in Parkinsonism are probably due to some degree of thalamic depression by encephalitic infection.—*From authors' summary.*

3947. WUNDER, W. Bau und Funktion der Netzhaut beim Zander (Lucioperca sandra Cuv. und Val.) und einigen anderen im Balatonsee häufigen Fischarten. *Zeitschr. Wiss. Biol. Abt. C. Zeitschr. Vergleich. Physiol.* 11(4): 749-766. 9 fig. 1930.—There is a biologic connection between the disturbance of the water in Lake Balaton, Hungary, and the abundance therein of those species of fish (*Lucioperca sandra* Cuv. u. Val., *Blicca björkna* L., *Pelecus cultratus* L., *Lucioperca volgensis* Pal., *Abramis brama* L., and *Acerina cernua* L.) that have in their retinal pigment guanin, which in a dim light acts as a reflector to strengthen the light stimulus. The structure of the retina was studied in *L. sandra* and the following zones distinguished: (1) an oval field in the center of the retina, containing chiefly guanin and also a little fine melanin, in which the thickness of the retina is greatest; (2) a ring-shaped Border-zone I, in which was present not only guanin and fine melanin but coarse rod-shaped melanin; (3) a slender ring-shaped Border-zone II, which contains only melanin in the shape of delicate granular and coarse rod-shaped pigment. The change of the pigment is best observed in the center of the retina. In the dark the rods are contracted forward, the cones extended behind. The pigment-cells are shortened, and have the shape of long rectangular parallelograms. The region around the nucleus (about 1/20 of the cell) is pigment-free; next, in about 1/10 of the cell fine melanin is concentrated; the remainder of the cell is filled with guanin. In faint twilight and red dark-room light, which has the same effect, the cones are contracted and the rods lie backward, scattered in the crevices between the pigment-cells. These are lengthened by about ¼, and contracted into an isthmus at the point of concentration of the melanin; the pigment-free zone above the contraction is larger; the melanin fills about ¼ of the cell, and the remainder, to the other side of the contraction, is somewhat thickened and full of guanin. In bright light, especially sunlight, the cones contract and the rods lie far back in triangular spaces behind the principal masses of pigment. The pigment-free nuclear portion of the pigment cell is connected by only a slender stalk with the wedge-shaped pigment-containing portion, filled with equal parts of melanin and guanin, the broad end of which articulates with the

extremities of the cones. Thus the guanin-cell suffers striking ameba-like changes in shape, and the fine black pigment within the cell at the same time changes its location. Border-zone I shows similar changes in form of the pigment-cells under the influence of light and darkness, but the black rod-shaped melanin remains in the forward end of the cell; therefore the function of the guanin, at least at the points where there are great masses of coarse black pigment, is doubtful. Perhaps the black pigment changes its location in longer periods of darkness than the 2-3 hrs. which were the limits of investigation. There is nothing particular to be said of Border-zone II and its function.—*Author's summary (transl.)*.

ANIMAL PHYSIOLOGY

NERVOUS SYSTEM

ALEXANDER FORBES, *Editor*

(See also in this issue Entries 3713, 3827, 3835, 3845, 3856, 3886, 3916, 3924, 3925, 3930, 3987, 3988, 4017, 4028, 4129, 5288, 5402, 5442)

3948. ARTOM, CAMILLO. Temperatura e proprietà funzionali delle strutture nervose. [Temperature and functional properties of nerve structures.] *Arch. Sci. Biol.* [*Napoli*] 11(2): 251-285. 1928.—An elaborate review of the functional variations in peripheral nerves and in nerve centers conditioned by temperature variations. The temperature extremes of abolition of function are also considered, and the effects of temperature on neuromuscular junctions are reviewed.—*R. M. Moore.*

3949. ARTOM, CAMILLO. Effetti del raffreddamento dei gangli nervosi. [Effects of cooling some nerve-ganglia.] *Arch. Sci. Biol.* [*Napoli*] 12: 640-679. 6 fig. 1928.—Experiments on the cat show that cooling of the superior cervical ganglion and of the cervical sympathetic trunk leads to a progressive diminution of the threshold excitability for dilation of the pupil. Conductivity is rapidly and reversibly blocked in the ganglion when its temperature has been lowered to 15° C, but in the nerve trunk only when it is cooled to 7° or 4° C. The curves expressing the variation of threshold excitability as function of the temperature are slightly diverse according to whether the temperature was made to vary in a descending or in an ascending manner, indicating hysteresis. The stellate ganglion also shows a much greater lability to cooling than the fibers of the cardiac accelerator nerve, the blocking temperature being about 15° C for the ganglion, and a little below 6° C for the fibers. On the other hand, afferent impulses modifying respiratory rhythm are abolished in both jugular (homologous) spinal ganglion and vagus trunk in the neck only upon cooling the parts to a little above 0° C. Cooling of either the great auricular nerve, or the second cervical (homologous) spinal ganglion, to a little below 7.5° C, blocks impulses which would give rise to "reflex retraction" of the pinna and contractions of facial muscles, and this with no marked difference between the blocking temperatures of ganglion and nerve. It thus appears that sympathetic ganglia show a much greater lability toward cooling than do nerve fibers or (homologous) spinal ganglia. It is suggested that this difference in the behavior of the two kinds of ganglia is due to the presence of synapses in the one and not in the other, the cooling causing reversible interruption of conductivity with less fall of temperature in the former than in the latter, and on account of colloidal differences in structure.—*C. D. Snyder.*

3950. BARRY, H., D. W. MacKINNON, and H. A. MURRAY. Studies in personality. A. Hypnotizability as a personality trait and its typological relations. *Human Biol.* 3(1): 1-36. 1931.—The authors describe a technique for estimating hypnotizability (H. I. or the Hypnotic Index). The standard technique devised was worked out on 73 college students (men and women) and the results expressed quantitatively on a 0-5 scale. 25% of this sample group were found to be hypnotizable to the extent of complete suggestibility with some amnesia. There were no sex differences. A coefficient of correlation of approximately .75 may be expected between 2 trials of the same test when performed within a week or so of each other by different operators. A coefficient of the same order was obtained when 2 tests, performed by the same operator but separated by an interval of several months, were correlated. The results of the hypnotic test as standardized in this study were found to correlate with the score of hypnotic tests done under other conditions (a. group test and b. Hull's swaying test) with a coefficient of .52. Suggestibility under hypnotic conditions did not correlate with suggestibility under other conditions, that is, when subjects assumed their customary attitudes (cf. results in the Hull swaying test and the group suggestibility test). The problem of explaining hypnosis in terms of needs or instincts is discussed in the text. All observations and tests bearing upon this point proved negative or inconclusive. There did not seem to be any relation for instance between hypnotizability and submission or between hypnotizability and extraversion. The problem of explaining hypnosis in terms of aptitude or psychical configuration is also discussed in the text with special reference to the concept of dissociation. Several investigations were made to determine the relationship between hypnotizability and other possible manifestations of dissociability, but the results were negative or indeterminate.—*H. A. Murray.*

3951. BARUCH, RUDOLF. Erregbarkeit und Leitfähigkeit des narkotisierten Nerven. Ein Beitrag zur Dekrementtheorie. *Zeitschr. Biol.* [*München*] 89(1): 48-58. 3 fig. 1929.—The author has restudied the behavior of the nerve in a narcotizing chamber carefully excluding the possible sources of error enumerated by Kato. Conductivity disappeared while stimulability though diminished is still retained. Within the chamber stimulability disappeared in the middle portion first and then more distally. He accepts the decrement theory and his results do not agree with those of Kato.—*M. Beck (transl. by H. Woollard).*

3952. BETHE, A., G. von BERGMANN, G. EMBDEN, und A. ELLINGER. Handbuch der normalen und pathologischen Physiologie; mit Berücksichtigung der experimentellen Pharmakologie. Band 10. Spezielle Physiologie des Zentralnervensystems der Wirbeltiere. 1284p. 214 fig. Julius Springer: Berlin, 1927. RM. 110.—This volume contains the following: Blutkreislauf im Gehirn, by KARL HÜRTHLE. Dorsale und ventrale Wurzeln, by ERNST TH. BRÜCKE. Reflexgesetze, by VIKTOR von WEIZSÄCKER. Hirndruck, Hirnerschütterung, Schock, by MARTIN REICHARDT. Topographische Physiologie des Rückenmarkes, by RUPPRECHT MATTHAEI. Die Oblongata und die Hirnnervenkerne, by F. H. LEWY. Die Region der Vierhügel (Tectum, Augenmuskelkerne, zentrales Höhlengrau), by ERNST ADOLF SPIEGEL. Das Kleinhirn, by KURT GOLDSTEIN. Physiologie und Pathologie der Stammganglien, by HUGO SPATZ. Die Grosshirnhemisphären, by GRAHAM BROWN. Die Reaktionszeiten, by WILHELM WIRTH. Die Lokalisation in der Grosshirnrinde, by KURT GOLDSTEIN. Die Leitungsbahnen im Rückenmark, by OTTO VERAGUTH. Schlaffe und spastische Lähmung, by OTTO FOERSTER. Klinisch wichtige Reflexe, by ARTHUR BÖHME. Pharmakologie des Zentralnervensystems, by ALFRED FRÖHLICH. Autonomes Nervensystem, by ERNST ADOLF SPIE-

GEL. Pharmakologie des vegetativen (autonomen) Nervensystems, by ALFRED FRÖHLICH. Die trophischen Einflüsse des Nervensystems, by HANS FLEISCHHACKER. Normale und pathologische Physiologie des Liquor cerebrospinalis, by FELIX PLAUT. Die Erkrankungen des Zentralnervensystems der Tiere, by HERMANN DEXLER.

3953. **CATE, J. TEN. Zur Frage der Entstehung des Schlafes beim Menschen.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 122(1/2): 175-186. 1929.—A discussion of the applicability of Pavlov's results on dogs to the problem of the genesis of sleep in man. A review of some recent papers on sleep by other authors. No original experimental data reported in this paper.—*N. Kleitman.*

3954. **CIABATTI, OMERO. Rapporti tra cervello e ganglio celiaco. Ricerche sperimentali. [Relation between brain and celiac plexus.]** *Riv. Biol.* 8(6): 688-700. 4 pl. 1926.—Experimental cerebral lesion (partial decerebration) in the dog gives rise to noteworthy modifications in the nerve cells of the celiac plexus. The cellular alteration does not concern the colorless matter, which remains unchanged, but is limited to the colored matter of the cytoplasm, giving rise to processes of chromatolysis (marked especially by peripheral deepening of the colored matter), also modifications in the form of the cell and various modifications in the form, structure, and position of the nucleus. Said structural modifications can be considered transitory; they appear (in dogs) about the 19th day after the cerebral lesion and reach the maximum degree on the 30th day; then they diminish around the 60th day; they disappear almost completely by the 90th day; by this time there has taken place an almost complete restitution of the structure of the elements of the ganglion. In constrast to what happens in the sympathetic ganglia, the gangliar elements of the cord, particularly the sympathetics of the lateral columns of the spinal cord, show no modifications in form or structure, either with respect to the colored matter, the uncolored or the nucleus.—*O. Ciabatti (transl. by C. E. Kellogg).*

3955. **COGHILL, G. E. The structural basis of the integration of behavior.** *Proc. Nation. Acad. Sci.* 16(10): 637-643. 1930.—The law of development of behavior has been demonstrated by the author in a relatively simple morphological type of vertebrate (the salamander) in which movement has been observed from its beginning to its culmination in the definitive pattern. This law consists in the expansion of a primarily integrated total pattern of action within which partial patterns arise by individuation through the restriction of both the field of motor action and the field of adequate stimulation. This law has been demonstrated in the origin of unconditioned reflexes, and it appears also to apply to the formation of conditioned reflexes, instincts and the so-called process of trial and error. The structural basis of this law is found in the growth of the nervous system; and in this also there appears to be a natural basis for the interpretation of attitude and motivation. Inhibition, conditioned, unconditioned and chain reflexes, trial and error, instinct, posture, attitude and motivation are discussed. The existence of a specific mechanism of total reactions as opposed to local reflexes is emphasized as fundamental to the interpretation of behavior.—*G. E. Coghill.*

3956. **CRISLER, GEORGE. Salivation is unnecessary for the establishment of the salivary conditioned reflex induced by morphine.** *Amer. Jour. Physiol.* 94(3): 553-556. 2 fig. 1930.—In 5 dogs given 2 mgm. daily subcutaneous doses of atropine for 30 days a salivary conditioned reflex failed to appear. No saliva secretion, conditioned or unconditioned, occurred in dogs given atropine previous to injection of morphine; but on discontinuance of the atropine injection after a time long enough to produce a fully conditioned reflex (7-9 days), the animals secreted as much saliva as at any subsequent time. Hence the effector response is not indispensable for the establishment of a typical salivary conditioned reflex, showing that less than the entire efferent limb is necessary for the conditioning process. In another group of experiments, a conditioned reflex was established and continued until the daily secretion rate was practically constant. Pilocarpine hydrochloride was then substituted for the morphine; in spite of the continuation of the effector response, the conditioned salivary reflex disappeared within the normal time. Whether or not this extinction process is retarded by pilocarpine can not be determined from the data presented, because, as Kleitman and Crisler have shown, the curves of extinction are by no means as constant as the curves for the establishment of the conditioned reflex owing to great individual variation in different animals.

3957. **DARROW, CHESTER W. Differences in the physiological reactions to sensory and ideational stimuli.** *Psych. Bull.* 26(4): 185-201. 1929.—This writer's experimental work (published in Jour. Exper. Psychol. 1929) indicates that there are two processes distinguishable physiologically as well as psychologically which have frequently been designated as "emotion"—the immediate reflex response to "sensory" excitation and the response mediated by associative processes or ideas aroused by the stimulus. A comparison of the immediate reflex effect of momentary sensory stimuli with the effect mediated by associative or ideational processes shows that the former is relatively more effective in producing changes in peripheral mechanisms such as those of vasoconstriction, perspiration or the galvanic skin-reflex, while the latter is relatively more effective in increasing the cardiac activity, as indicated by blood pressure and pulse rate. His review of the literature supports these findings with the following exceptions. Disturbing ideas occasioning extreme unpleasantness or depression may slow the heart rate. Tastes and smells, though sensory stimuli, as a rule occasion increased rather than decreased pulse rate. Long continuation of sensory stimuli is likely to be accompanied by increased heart rate. Being frightened or extremely startled following sensory stimuli is likely to be accompanied by a momentary increase in pulse rate preceding the characteristic slowing. A bibliography of 76 titles is included.—*K. S. Bernhardt.*

3958. **DYROFF, RUDOLF. Experimentelle Untersuchungen zur Physiologie des Genitaltraktes beim Weibe. (Beiträge zur Nervenversorgung.)** *Arch. Gynäkol.* 138(2): 362-458. 1929.—In hilus nerves of fetal ovary ganglion cells were found. The gonads apparently derive their parasympathetic supply from the vagus. The literature does not confirm the conception that the mode of antagonism between divisions of the autonomic system is generally stimulation and inhibition; it is another type of opposition, which in respect of motor function results in another contraction form. Motor activity of the parasympathetic causes rhythmic movements, that of the sympathetic, tonic changes, and both contain inhibitory fibres for the antagonists. Genital peristalsis is due to regulated interaction of both peripherally controlled. The autonomic and endocrine systems are so closely interrelated that they must be considered a functional entity, the basis of so-called constitution. Corpus luteum of pregnancy and the fetus produce locally increased parasympathetic tone which largely cuts off the sex organs from physiological endocrine variations. The parasympathetic tone is communicated to the whole body, and determines a stabilising reaction of other endocrine glands which leads to a simultaneous increase of sympathetic tone. Similar local and general reactions in weaker form appear cyclically as corpus luteum activity even in premenstrual phase. Endocrine functional adaptation to sympathicotonic secretion before advent of menses indicates local stabilising reaction, which is supported by the blood loss. The protection exercised by the corpus luteum over the ovum before imbedding, is confined to indirect influence: transportation of ovum and preparation of nidus. The implantation itself is dependent on the ovum's inherent power of fermentative erosion, not on preparation of the site; after implantation the ovum determines the dura-

tion of corpus luteum activity. Without implantation, automatic functional adaptation follows on corpus luteum involution and releases stronger tonic peristaltic movements which, in Primates, must be considered responsible for reduction of parasympathetic tone, and for increased muscle-tone following upon the preponderance of sympathetic tonus, the appearance of which is the basic cause of the functional change of the corpus luteum.—*W. P. Kennedy.*

3959. **ENDERLEN, und EISMAYER. Zur Entnervung des Herzens.** *Deutsche Zeitschr. Chir.* 227(1/6): 126-131. 1 fig. 1930.—The authors used dogs (number not stated); experiments on 2 cited. They conclude that definite differences exist between normal dogs and those whose hearts have been denervated. Respiratory arrhythmia is much diminished after denervation, the pulse rate increased. Poisons which influence the autonomic nervous system such as adrenalin, atropin and gynergen act more powerfully. Animals with denervated hearts are no longer equal to great efforts. They tire very rapidly and the pulse does not increase correspondingly with exercise. The fact that the influence of adrenalin, atropin and gynergen appears on the denervated heart proves that these drugs act on the periphery and that their effect can be restrained through the cardiac nerves. The lack of pulse acceleration after running permits the conclusion that we are dealing with a central chronotropic accelerating effect in normal animals. After section of the nerves the heart is not as adaptable as formerly. It can itself regulate its power extensively, and meet the exigencies of the circulation, but with intact nerves this is done much more completely and more rapidly.—*Authors' summary (transl. by J. M. Nielsen).*

3960. **GASSER, HERBERT, and JOSEPH ERLANGER. The ending of the axon action potential, and its relation to other events in nerve activity.** *Amer. Jour. Physiol.* 94(2): 247-277. 14 fig. 1930.—The electrical response of nerve must be considered as composed of 2 parts. The authors call these parts the "spike" [the probably homologous element in the muscle action potential] and the "after-potential" [a negative after-potential]. The present research deals with their relative magnitudes and their relation to other events attending the nerve impulse. The potentials have been measured with the aid of the Braun tube oscillograph and amplification giving a sensitivity of 1 mv.=26 cm. As previously described, the fast part of the spike of the axon action potential of frog's nerve ends at about 1σ (20°-24° C.). In the immediately succeeding period, the ordinary "monophasic" lead does not accurately reveal the true potential on account of the diphasic artifact of the spike; but within 1.6 to 4σ the potential is found to have fallen in between 1 and 2% of the maximum. It then declines along a decremental curve and becomes zero at 30 to 50σ, provided the nerve has been subjected to only a moderate amount of experimentation. When the 1st response after mounting is measured, the after-potentials end at 14 to 20σ (summer frogs at 20°-24° C.); therefore, in nerves of living frogs they would probably be still shorter. On the other hand, in confirmation of other investigators, the authors have found that the after-potential is greatly prolonged by fatigue. Nerves from winter frogs observed at room temperature have long after-potentials. Cooling a nerve causes a decrease in magnitude and a shortening of the after-potentials. The latter fact is in constrast with the lengthening of the spike which occurs under the same condition. The after-potential is followed by a positive deflection which is explained as an artifact analogous to the diphasic artifact of the spike, that is, as a lead from the dead-live junction through the distal electrode. The experimental basis for this opinion is as follows: a) Cooling shortens the positive deflection and the after-potential until the former fuses with the diphasic artifact of the spike. b) The deflection may be imitated in a diphasic lead by increasing the after-potential at the distal lead with veratrin, or by decreasing it at the proximal lead by cooling. In order to measure the recovery of nerve for comparison with the after-potential, 2 rapid methods were devised so that the after-potential would not be seriously altered during the measurements. One method reveals the nerve's irritability, the other its ability to respond. The spike height (ability to respond) and the irritability return to normal together at the end of the relatively refractory phase; then the irritability rises above normal, while the spike height (above the resting potential) remains constant. There is thus no supernormal response in the supernormal phase; the thresholds are lower but the spikes are alike except for the small amount of after-potential from the first response which cuts them off at the base. The relatively refractory periods of the α and β waves are alike. At room temperature neither the beginning nor ending of the refractory period coincides with any definite event in the potential wave; but in very cold nerve the relatively refractory period is greatly prolonged and ends with the negative potential. The supernormal phase starts at the end of the relatively refractory period and extends throughout the period of the after-potential. The 2 phenomena vary in duration together. The after-potential is prolonged and augmented by acid, an observation which fits with Adrian's observations on the supernormal phase. It is the after-potential, however, and not the acidity which is the necessary condition. When the after-potential persists after a long sojourn in an alkaline buffered Ringer's solution, supernormality also persists. The supernormal phase is shortened by cold in parallel with the shortening of the after-potential and in very cold nerve it disappears altogether. At this time the relatively refractory phase lasts until the end of the action potential, therefore it is reasonable to suppose that the after-potential has disappeared and that all the potential belongs to the greatly prolonged spike. An attempt is made to harmonize the foregoing observations in a theoretical discussion. It is assumed that while the spike and refractory period are controlled largely by a chemical reaction, the after-potential and supernormality are dependent on the state of the plasma membrane. To explain the shortening of the after-potential by cooling a stabilization of the plasma membrane is proposed.—*Authors' summary.*

3961. **HALPERN, I. Über die Ausbreitung von Stromschleifen im Nervengewebe bei Reizung mit Induktionsströmen.** *Pflüger's Arch. Ges. Physiol.* 225(1): 49-50. 1 fig. 1930.—Though long known, current spread is still a source of error in nerve physiology. The spread depends on the moisture and thickness of the nerve trunk. Various nerves such as the axillary of the rabbit, the sciatic of the frog and the vagus of the dog have been studied from this angle.—*H. Woollard.*

3962. **HARDY, W. B. Note on the central nervous system of the crayfish.** *Jour. Physiol.* 67(2): 166-168. 1929.—Semisection of the nerve cord was carried out in the crayfish between the 1st and 2nd thoracic ganglia. The immediate result was loss of tone in the walking limbs, abdominal muscles and uropods on the same side as the injury. After 4 days, the abdominal muscles recovered their tone and the animals were able to swim, but, owing to the continued paralysis of the uropods, they invariably landed on their backs. After the shock of the operation was over the pleopods resumed their regular beats but the paralysis of the walking legs persisted. The author concludes that the uropods, which play an important part in the orientation of the animal while swimming, are so completely controlled by the brain as to be permanently paralysed by semisection of the nerve cord, but the pleopods are apparently independent of cerebral control. The nerve cells were cut away from beneath one of the abdominal ganglia. The immediate disturbance was very slight and suggests that the connection between the nerve cell and its fibre is solely trophic.—*W. M. Tattersall.*

3963. **HEINBECKER, PETER, and GEORGE H. BISHOP. Effect of anoxemia, carbon dioxide and lactic acid on electrical phenomena of myelinated and un-**

myelinated fibres of the autonomic nervous system. *Amer. Jour. Physiol.* 96(3): 613-627. 1931.—The technique was in general similar to that used in the study of somatic nerve fibers, the nerve trunks being placed entirely within the gas chamber. As material, sciatic nerves of bullfrogs, cervical sympathetic and vagus trunks of the cat and turtle were generally used. For special purposes skin nerves of the cat and bullfrog, and Limulus nerves to the extremities were studied. Results indicate that the effect of anoxemia, CO_2 and lactic acid on autonomic nerve fibers is in general similar to the effects of these agents on somatic nerve fibers. The threshold is ultimately raised and the conduction rate lessened. There is usually a marked preliminary lowering of threshold of unmyelinated fibers. The absolute refractory period is prolonged. Absolute refractoriness is a most convenient index of the nerve's condition. Unmyelinated autonomic fibers are depressed more rapidly than myelinated autonomics. Somatic nerve fibers are less rapidly depressed than autonomic ones. The order of recovery in O is reversed. There is no indication of any change in the time relations of the spike of the axon action potential. It is lowered by anoxemia, pure CO_2 and lactic acid. The retained portion of the potential is first increased by anoxemia and pure CO_2 and weak lactic acid, and later decreased with the spike. It is also increased in depressed or injured nerves by 5% CO_2. Both potentials finally disappear and reappear simultaneously. Since the recorded potential is in general the expression of a double lead from the nerve's surface, differential depression of the action potential is inevitable because of the differential susceptibility of injured as compared with uninjured nerve. The possible effects of differential depression on the ballistically recorded action potential are discussed. The completely diphasic lead is the safest one for interpretation of the functions of nerve. The effects of fatigue on the recorded action potential are indicated. Treppe is not infrequently observed in depressed nerves.—*Authors' summary.*

3964. **HUMPHREY, GEORGE. Le Chatelier's rule, and the problem of habituation and dehabituation in Helix albolabris.** *Psychol. Forsch.* 13(2/3): 113-127. 1930.—The withdrawal response of the land snail *Helix albolabris* disappears on appropriate repetition of the (mechanical) stimulus, the snail becoming habituated to the stimulus. The disappearance of the response cannot be due to fatigue, as this term is usually understood; for (a) a single stimulus may be sufficient to effect it, (b) more intense stimulation will, under conditions not quantitatively ascertained, remove the habituation, a fact difficult to reconcile with the ordinary conception of fatigue, (c) cases were observed where the habituation took longer to re-effect after the extraneous stimulus than before. Habituation disappears after appropriate rest. It may be deepened by further stimulation after response has ceased. The hypothesis is put forward of a physiological state or process tending to diminish action; such process would be intensified by appropriate rest and extraneous stimulation. A similar hypothesis is made to explain the "extinction" of conditioned responses by Pavlov, who calls the underlying process "inhibition." The phenomenon investigated, and "extinction" of conditioned reflexes probably have the same explanation. With reference to the phenomena of habituation, the snail, as a biological system, behaves in the manner that would be expected of a system obeying Le Chatelier's rule.—*Author's summary.*

3965. **HUMPHREY, GEORGE. A note on the application of Le Chatelier's rule to biological systems.** *Psychol. Forsch.* 13(4): 365-367. 1930.—Application of Cannon's treatment of organic equilibrium to Humphrey's previous paper: "Le Chatelier's rule, and the problem of habituation and dehabituation in Helix albolabris." *Psychol. Forsch.* 13(2/3): 113-127. 1930.

3966. **JACOBSON, EDMUND. Electrical measurements of neuromuscular states during mental activities. II. Imagination and recollection of various muscular acts.** *Amer. Jour. Physiol.* 94(1): 22-34. 5 fig. 1930.—A result is classed as positive if the magnitude of the string vibrations during imagination clearly and considerably exceeds that during relaxation. In the experiment of imagining the lifting of a 10-pound weight (120 tests on 11 subjects, 8 trained, 3 untrained), the results were positive in 93% of the tests. In imagination of various acts performed with the right arm (4 subjects) results were positive for action-potentials from the right biceps-brachial region in 97.5% (159 out of 163) of the tests. In recollection of various muscular acts commonly performed with the right arm (9 subjects, 8 trained to relax, 1 untrained), for 7 out of 9 subjects, the results predominantly showed action potentials from the biceps-brachial region (in 60 out of 90 tests). In 2 of the 9 subjects, lengthened string vibrations occurred during recollection in only 12 of 54 tests. The action-potentials that are here found characteristic of imagination and recollection of muscular acts are readily distinguished from the psychogalvanic reflex because of marked differences in voltage, reaction-time, frequency per sec., wave-form, direction of potential, tissue of origin, and stimulus. Relaxation of the neuromuscular processes characteristic of the occurrence of voluntary conscious activities such as imagination of lifting a 10-pound weight is accomplished within 0.3 to 0.4 sec. on the average in the present experiments. It is confirmed that diminution of conscious activities can be brought about by muscular relaxation (Jacobson, 1925, 1929, 1930).

3967. **JACOBSON, EDMUND. Electrical measurements of neuromuscular states during mental activities. V. Variation of specific muscles contracting during imagination. VI. A note on mental activities concerning an amputated limb.** *Amer. Jour. Physiol.* 96(1): 115-121; 122-125. 1931.—V. Study of a total of 81 imagination tests with 19 control tests on 5 subjects indicates that imagination of activity of the right arm (or other part) is characterized by contraction of muscle fibers either in that part or in the ocular region or in both localities. This affords further evidence that mental activity is not confined to closed circuits within the brain, but that neuromuscular regions participate. VI. Tests on a subject in whom the arm had been amputated above the elbow joint at the age of 8 (presenting at the age of 40 a stump including the atrophic remnant of the biceps-brachial muscle group), showed that specific muscular imagination or recollection of movements in the amputated part no longer takes place. After repeated observations, the subject reports that his imagination is "shadowy" for movements of the lost part. During such mental activities, contractions (not characteristic in intact individuals) occur in other specific localities, evidently as substitutions. With these substitute contractions (and with visualization or verbalization such as may also occur in the intact), this crippled individual engages in mental activities involving the lost part.

3968. **KLEITMAN, NATHANIEL. The effect of continued stimulation and of sleep upon conditioned salivation.** *Amer. Jour. Physiol.* 94(1): 215-219. 2 fig. 1930.—In a series of dogs placed in stands and given morphine subcutaneously, salivation was produced at first by the morphine and later by conditioned reflex, on being placed in the stand. In 1 dog a continued conditioned flow of saliva was regularly observed (continuing after the morphine injection) over a period of several months. The dog tended to fall asleep in the stand, which would stop the flow of saliva; waking the dog produced a resumption of flow. Bearing in mind that these observations were limited to 1 animal and to 1 conditioned phenomenon, it appears that: (1) Application of the unconditioned stimulus does not prevent further response as a result of the continued action of the conditioned stimulus. (2) With a conditioned stimulus acting continuously, sleep cuts short the conditioned activity and awakening leads to its immediate resumption.

3969. **KURÉ, KEN, Ê-ICHI ARAKI, und TAKEO MAÉDA. Die autonome Innervation des willkürlichen Muskels und ihre Beziehung zur chemischen Wärmeregulation.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 372-383.

1930.—The effects of different nerve-sections on the heat production in the resting gastrocnemius were studied in 50 dogs. Extirpation of the lateral abdominal sympathetic chains; severance of the anterior spinal roots, or separation of the posterior roots of the same territory certainly reduce but do not suppress the heat production. Severance of the cord between the abdominal and thoracic segments does not entirely suppress the heat production, but this is totally lost as soon as the lateral abdominal chain is extirpated. Heat production in muscle results through the abdominal *sympathetic* chains and the *parasympathetic* fibers of posterior roots.—*J. J. Izquierdo.*

3970. **LABHART, FRITZ. Fortgesetzte Untersuchungen über den Einfluss des Nervus sympathicus auf die Ermüdung des quergestreiften Muskels.** *Zeitschr. Biol.* 89(3): 217-236. 15 fig. 1929.—Stimulation of the sympathetic nerves by an induction current provokes a renewed activity of muscles which have been exhausted by repeated stimulation of the motor nerves. The duration of this rejuvenating effect is greater than the one following tetanizing stimulation, it sometimes lasts for 12 min. The restoration of muscle activity by sympathetic stimulation and the disappearance of fatigue following decrease of the stimulation frequency do not represent identical mechanisms. L. discusses the mechanism of the sympathetic stimulation; the sympathetic nervous system probably shortens the interval needed for muscular restitution.—*E. VanCampenhout.*

3971. **LANGFELDT, GABRIEL. En oversikt over den kliniske undersøkelse av det viscerale nervesystem og en kritikk av de forskjellige prøvers praktiske verdi støttet paa egne undersøkelser. [A survey of the clinical research on the visceral nervous system and a critique of the practical value of various tests.]** 134p. (*Skrifter utgitt ved Klaus Hanssens Fond—Nr.* 9) J. W. Eides Boktrykkeri A/S: Bergen, 1929.—The consideration of certain physiological and morphological facts concerning the visceral nervous system shows no absolute antagonism between the parasympathetic and the sympathetic, and indicates the information concerning the peripheral terminations of both systems to be incomplete. The author's experimentation on the effects of adrenaline, atropine, and pilocarpine shows only adrenaline to have even a limited value in determining whether hyperirritability of the sympathetic system is of central or peripheral origin. Aschner's reflex, the cilio-spinal reflex, dermography, and drugs are useless in diagnosing certain mental diseases. Aschner's reflex is useful in the diagnosis of bradycardia parasympathetically conditioned.—*B. R. Lutz.*

3972. **LASHLEY, K. S. Brain mechanisms and intelligence. A quantitative study of injuries to the brain.** xiv + 186p. 11 pl., 33 fig. Univ. of Chicago Press: Chicago, 1929. Pr. $3.00.—An attempt is made to determine the relationship between some forms of adaptive behavior and brain mechanisms. The studies were all carried out in rats (135 were used). Extirpations of different parts of the brain were carried out and the influence of these injuries on the behavior of the animals determined. The problems in adaptation included 3 mazes of different degrees of complexity with food as the ultimate goal, brightness discrimination, and the problem of the inclined box. The experiments were designed to test the ability of the injured rat to learn new methods, retain old ones and discriminate degrees of brightness. On the basis of the results the conclusion is reached that adaptive behavior is directly dependent upon brain functioning and that injury to the brain results in disturbance in adaptability. This disturbance does not depend upon any special localized structure but upon the extent of the injury regardless of its localization. It is felt, therefore, that the brain of the rat functions as a whole, wherein different components are of importance for normal functioning but are not specific for any special function. It is also felt that there are no reasons why this point of view cannot be applied to higher forms such as the dog, monkey and even man. These findings show that the theories of cerebral localization and the reflex theory are inadequate and a new theory is advanced in which the mechanisms of integration are sought in the dynamic relations among the different parts of the nervous system rather than in details of structural differentiation.—*W. Malamud.*

3973. **LHERMITTE, J. Le sommeil.** 206p. Armand Colin: Paris, 1931. Pr. 10.50 fr.—A survey of our present knowledge of sleep. Among other topics the mechanism of sleep and the nature and organization of dreams are discussed. There is also a section of abnormalities of sleep, such as sleep-walking, narcolepsy and insomnia. The author made use of data from both physiology and pathology to demonstrate the existence of a sleep-regulating mechanism in the region surrounding the 3rd ventricle.—*N. Kleitman.*

3974. **MARQUIS, D. G. The criterion of innate behavior.** *Psychol. Rev.* 37(4): 334-349. 1930.—Neurology has accumulated a vast body of factual material dealing with the morphology of the nervous system, but there is as yet little experimental work on developmental physiology. In the present state of knowledge, no adequate concept of the maturation of neural patterns can be formulated. The evidence here presented is intended to justify the conclusion that there is a fundamental difference between the processes of maturation and learning. Both processes, it is true, represent an interaction of organism and environment, but learning is distinguished from maturation by this fact: It represents a modification of the organismic pattern in response to specific stimuli present in the external environment at the time of the modification. Maturation, on the other hand, is a modification of the organismic pattern in response to stimuli present in the inter-cellular and intra-cellular environments, which at the given moment are independent of external influences. Marquis has pointed out that at least in the early stages of development, the environment which is significant for the development of the organism is derived from the parent in a manner comparable to the inheritance of the germ plasm.

3975. **MINAMIKAWA, K. Experimental investigation of the effect of the nervous system on the function of the genital organs.** *Japanese Jour. Obstetr. and Gynecol.* 13(2): 157-165. 16 fig. 1930.—About 1 cm. of the sympathetic nerves surrounding the hypogastric artery near its divergence from the external iliac artery was excised in 16 ♀ rabbits. The bilateral uteri and ovaries were excised in 2 of the rabbits at each of 8 different periods after the operation. The uterus and the ovary on the side of the sympathectomy were found to increase in weight and volume, the ovary more rapidly, the uterus more permanently, than those on the other side. Two other series of experiments were carried out on an unspecified number of rabbits. In one, periarterial sympathectomy was performed as before and also bilateral oöphorectomy. At 3 later intervals both uteri were removed and compared. The sympathectomy apparently compensated to some degree for the atrophic tendency of the removal of the ovaries, for the uterus on the sympathectomized side was invariably heavier than its fellow. In the other series, both ovaries were removed, periarterial sympathectomy performed on one side and the uterus on that side also removed; later the remaining uterus was also removed and its condition compared with that of the one first removed. While results are not clearly stated, apparently they also go to support the general conclusion as to the effect of periarterial sympathectomy.

3976. **MOGENDOWITSCH, M. R. Zur Frage über die Erregungssummation in einer alterierten Nervenstrecke.** *Pflüger's Arch. Ges. Physiol.* 226(1): 104-107. 2 fig. 1930.—A nerve muscle preparation was set up in a moist chamber and the contractions recorded due to single shocks applied to the nerve. When a crystal of NaCl was placed on the nerve either proximal or distal to the electrodes, the contractions became in succession larger, tetanic, veratrine-like, weakly clonic, and then the irrita-

bility and conductivity failed in the region of the crystal.—*W. A. H. Rushton.*

3977. **RANSON, S. W., and J. C. HINSEY. Reflexes in the hind limbs of cats after transection of the spinal cord at various levels.** *Amer. Jour. Physiol.* 94(2): 471-495. 13 fig. 1930.—In cats the spinal cord was transected at levels varying from L 6 to T 4. Varying amounts of time up to 23 days were allowed for recovery. Decapitate cats and acute spinal cats were also studied. The animals were studied while supported in a hammock with legs hanging pendent. Later, kymograph records were made of the responses in the isolated gastrocnemius and tibialis anterior muscles to stimulation of the ipsilateral and contralateral tibial nerves at the ankle with rapid faradic make and break shocks. With the animal supported in the hammock there was considerable extensor tonus which showed itself best when pressure was made against the pads of the toes in the position of the positive Stütz reaction. This reaction was as well developed after transections at L 3 as after transections at higher levels. Cats with transections at or above L 3 were able to bear the weight of the posterior part of the body on the hind legs for varying periods up to 3 min. The ipsilateral flexion reflex was obtained with great regularity in all animals with transection at L 5 or above. The crossed response was more variable. Crossed flexion was more often obtained than crossed extension. Sometimes lightly touching a foot would cause crossed extension and forcefully pinching the toes together would cause crossed flexion. Electrical stimulation of the tibial nerve at the ankle more often caused crossed flexion than crossed extension both in the intact leg and when the contractions of the tibialis anterior and gastrocnemius were recorded on the kymograph. In the crossed response there is a dilemma of reaction which makes these reflexes uncertain and difficult to obtain. This dilemma is just as pronounced after high as after low transections. The contraction of the tibialis anterior in response to ipsilateral stimulation of the tibial nerve is often followed by a prolonged rebound contraction of the gastrocnemius. The after discharge in this extensor rebound contraction may last for many seconds. A diagram of a reverberating neurone circuit is given which could be used to explain after discharge.—*S. W. Ranson.*

3978. **SAGIN, K. Alcune osservazioni alla pubblicazione di Vizioli sul fenomeno di Piotrowski ed il reflesso del malleolo esterno. [Piotrowski's phenomenon and the reflex of the external malleolus.]** *Riv. Patol. Nerv. e Ment.* 33(1): 14-20. 1928.—An antagonistic reflex in the lower leg, known after the name of its discoverer, Al. Piotrowski, was declared by F. Vizioli to be so common as to be virtually a normal phenomenon. Sagin holds, in opposition, that it is a pathological phenomenon, due to a disturbance of the nervous system. —*P. Popenoe.*

3979. **SANTENOISE, D., P. VARÉ, H. VERDIER, et M. VIDACOVITCH. Vagotonie et épilepsie corticale; recherches expérimentales.** *Encéphale* 24(7): 605-618. 1929.—The authors believe that a tonic state of the vagus in dogs is concurrent with a low chronaxie of the cortical motor centers and that these animals are more liable to epileptic convulsions than those in which vagus tone is low and the chronaxie of the motor cortex correspondingly high. The injection of eserin raises vagus tone, lowers the chronaxie of the motor centers and increases the liability to epileptic seizures. Evidence is presented that hypervagotonia causes hypersecretion of a hormone produced by the thyroid gland, that this hormone increases the excitability of the motor centers of the cortex, and is therefore the cause of the predisposition which hypervagotonic dogs show to the occurrence of epileptic convulsions.—*E. A. Linell.*

3980. **SCHREIBER, GIORGIO. Studi sul pigmento cromolipoide, l'apparato fenestrato e la respirazione di supplemento del sistema nervoso. [Studies on chromolipid pigments, the fenestrated apparatus and the supplementary respiration of the nervous system.]** *Pubbl. Staz. Zool. Napoli* 10(2): 151-195. 3 pl. 1930.—The chromolipid pigment of the nervous ganglia of Gasteropods originates in connective tissue which in Aplysia is situated among the cerebral ganglia and is brought to the ganglia by amebocytes which are formed in that connective tissue. These amebocytes form pigmented syncytia which during asphyxia with CO_2 disappear and the pigment increases in the nerve cells. During asphyxia the amebocytogenic connective tissue appears to proliferate. It seems probable that there is a utilization of reserve O during asphyxia since the pigment is derived from an oxidation of unsaturated lipids. In the Cephalopoda the ganglia cells have well developed canaliculi in the cytoplasm. Eosinophilic leucocytes of the circulating blood enter these canaliculi, which demonstrates that the canaliculi are functionally open to the outside of the cell and not artefacts.—*G. Schreiber (transl. by A. Canzanelli).*

3981. **SHERRINGTON, CHARLES. Some functional problems attaching to convergence.** *Proc. Roy. Soc. [London] B* 105(737): 332-362. 3 pl. 1929.—The author gives a description of recent work bearing on the diversity of effects obtained in the motor neurone by reflex stimulation. Afferent stimuli produce states of excitement or of inhibition in the central nervous tissue, the effects of which on the motor neurone may be summation of excitement, summation of inhibition or the algebraic summation of the two. The central reactions are of longer duration than the nerve impulse of nerve trunks. Also these central processes are relatively sensitive to fatigue, variations in bloodsupply, drugs, etc. The central neurones modify the impulses which they transmit and can develop a rhythm of their own, so that the rate of their discharge can rise and fall with the intensity of central excitation and inhibition respectively.—*E. A. Linell.*

3982. **VAN DIJK, J. A. The part played by the sympathetic innervation in producing postural tone in the wing of the pigeon.** *Arch. Neerland. Physiol. Homme et Animaux* Ser. III C. 15(1): 114-125. 15 fig. 1930.—The author, who made experiments upon the wing of the pigeon, concludes that postural tone is composed of 2 components: "Contractile tone" governed by the somatic nervous system and "plastic tone" under control of the sympathetic nervous system. The plastic tone of the wing muscles is maintained by a sympathetic proprioceptive reflex-arc, of which arc the sympathetic chain is the efferent limb. Sympathetic fibres leaving the cord join the sympathetic chain by a white ramus communicans and, leaving it, join the nerves of the plexus brachialis by gray rami communicantes.—*J. W. Langelaan.*

3983. **VAN DIJK, J. A. The effect of stimulation of the cervical sympathetic cord upon the function of cross-striated muscle in the pigeon.** *Arch. Neerland. Physiol. Homme et Animaux* Ser. III C. 15(1): 126-137. 1930.—Faradic stimulation of the sympathetic nerve fibers, innervating skeletal muscles, when they are in a state of fatigue, causes a gradual augmentation of the height of contraction of the muscles after a certain latency, and this augmentation, after reaching a maximum, lasts some time after the stimulation has ceased and then gradually disappears.—*J. W. Langelaan.*

3984. **WINSOR, A. L. Observations on the nature and mechanism of secretory inhibition.** *Psychol. Rev.* 37(5): 399-411. 1930.—Little consideration appears to have been given to the nature and complexity of the conditioned secretory response. An analysis of investigations and observations made with subjects where it was possible to observe quantitative changes in the secretion of 2 or more of the digestive glands at the same time, seems to warrant the assumption that the positive or negative conditioned salivary response represents but a component of an extensive and complex reaction involving all the major nutritive glands. The nature of these reactions suggests a close relationship with the

antagonistic divisions of the autonomic nervous system. The increase in saliva when food is seen may be the result of innervation of the cranial nerve supply, while inhibition of conditioned secretion may be due to sympathetic innervation. In the light of these facts the theories of secretory inhibition advanced by Cannon and Pavlov are compared. Recent investigations made in the Cornell Laboratory, showing the inhibitory influence of mild affective states on parotid secretion, seem to support Cannon's theory that inhibition is of sympathetic origin and is controlled in the optic thalamus, as against Pavlov's theory that the inhibitory process is cortical in origin and is the result of cellular activity rather than the functioning of a system of nerves. Many of the difficulties encountered by investigators of conditioned salivary responses could be explained if this close relationship of mild affective states and inhibition were assumed.—*Author's summary.*

3985. YAMAGUCHI, OSAMU. Ueber die Möglichkeit der Leitungsanästhesie im ganzen Trigeminusgebiet durch Intraneuralinjektion des N. mentalis. *Acta Scholae Med. Imp. Kioto.* 12(1): 67-68. 1 pl. 1929.—The author states that injection of the mental nerve in the rabbit with 0.3-0.4% of 0.2% cocaine in oil gave rise to distant effects such as cutaneous and skull bone anesthesia and loss of the corneal tear reflex. He elicited evidence of central effects such as fall of blood pressure, loss of corneal reflex, changes in the respiration and pupil reaction from injection of the median nerve with 5 cc. 3% ether or chloroform oil. He suggests these results might have some application to man.—*M. Beck (transl. by H. Woollard).*

ANIMAL PHYSIOLOGY

VASCULAR SYSTEM

(See also in this issue Entries 3582, 3584, 3594, 3656, 3697, 3701, 3702, 3721, 3765, 3887, 3897, 4034, 4041, 4047, 4064, 4066, 4071, 4167, 4176, 4194, 5320, 5322, 5325)

3986. ALLEN, EDGAR, und MAX HOCHREIN. Über Venendruck und Schlagzahl des Herzens. *Deutsches Arch. Klin. Med.* 166(3/4): 237-243. 1930.—The venous pressure was studied in 1500 normal and pathologic cases. In most normal cases the venous pressure was between 4 and 8 cm. H_2O, with 10 cm. H_2O as upper limit; it is usually normal in pneumonic and other diseases except circulatory disturbances. For the differential diagnosis of heart disease and the early recognition of slight circulatory insufficiency the measurement of venous pressure is of special significance. These results gave no support to the view that the rapidity of the heart-beat is regulated by venous pressure.—*Authors' summary (transl.).*

3987. ALLEN, WILLIAM F. An experimentally produced premature systolic arhythmia (pulsus bigeminus) in rabbits. III. Pathway of the arhythmia impulse. *Amer. Jour. Physiol.* 96(1): 243-255. 1 fig. 1931.—The purpose of this paper is to ascertain whether the impulses producing bigeminal pulse from benzol insufflation, etc., traverse the spinal cord, to determine the route through the cord and to the heart. To exclude every known pathway from the brain to the heart except the spinal cord route, the vagi and depressors were sectioned and the inferior cervical sympathetic ganglia removed in 6 rabbits. One period of benzol insufflation was sufficient to produce a bigeminal pulse in 4 rabbits, while 2 required an additional period. In 4 rabbits the spinal cord was transected in the lower cervical region; bigeminal pulse from insufflations was blocked. Of 3 rabbits in which the spinal cord was cut at the level of the 3rd thoracic vertebra, 1 gave a bigeminal pulse from insufflation; 2 did not, nor did 2 others in which the cord was cut at the 4th thoracic. In 3 rabbits in which the cord was cut at the levels of the 6th, 7th and 8th thoracic vertebrae respectively, bigeminal arhythmia could be elicited by insufflation but was usually delayed. Both stellate (1st thoracic sympathetic) ganglia were completely removed in 9 rabbits; in no instance was bigeminal arhythmia obtained by insufflation or other means. In 2 rabbits in which the left stellate was extirpated bigeminal pulse followed the 4th and 10th benzol insufflations respectively; in 2 rabbits in which the left stellate was removed and the right sympathetic trunk cut immediately below the stellate, 7 and 10 benzol insufflations, respectively, were required to elicit bigeminal arhythmia. In 3 out of 5 rabbits in which the right stellate had been removed (1 also had the left sympathetic cord cut below the stellate) a bigeminal pulse was readily produced from insufflations; the other 2 gave no arhythmia. Sectioning the last cervical and the 1st and 2nd thoracic spinal roots in 2 rabbits and the 1st 3 thoracic roots in 1 rabbit prevented bigeminal pulse from benzol insufflation. Transection of both lateral columns in some rabbits, the dorsal and ventral columns and the median ½ of the lateral column in others, and the lateral and dorsal columns in still others blocked bigeminal arhythmia from insufflation, transection at the 6th cervical of the dorsal and ventral columns in some rabbits and the right lateral column and the outer ½ of the left lateral column in 1 rabbit did not. It is concluded that such bigeminal arhythmia is caused by impulses which descend the median ½ of the lateral columns of the spinal cord and pass to the left ventricle by way of the upper thoracic roots and the stellate ganglia. This is obviously an action not usually attributed to the sympathetics.

3988. ASHER, L., H. KAWAI, und N. SCHEINFINKEL. Das Funktionieren des Herzens und des Zentralnervensystems von Säugetieren bei hochgradigem Sauerstoffmangel. *Zeitschr. Biol.* 89(2): 139-148. 2 fig. 1929.—Urethanized rabbits, in which adequate pulmonary ventilation is produced mechanically by a special apparatus described, and in which vascular tone is maintained by continuous infusion of epinephrine, show impairment neither of the heart beat nor of arterial pressure when the O in the inspired air is reduced to 4.2% for a period of 1 hr. If the aorta be ligated at the diaphragm, the O may be reduced to 3.6%. Respiratory movements, which disappear during the period of O deprivation, return to normal shortly after admission of air. It is concluded that the heart and respiratory center will withstand profound O deprivation provided that an adequate circulation be maintained.—*V. E. Hall.*

3989. BERNTHAL, THEODORE G. Some observations upon changes in volume flow of blood accompanying changing respiratory conditions. *Amer. Jour. Physiol.* 95(2): 446-464. 1930.—The effects of variations in alveolar O and CO_2 pressures and of the intravenous injection of NaCN upon the femoral, brachial, superior mesenteric and aortic flow of blood were studied with the continuous electrometric method. Distinction between central nervous and peripheral effects was made so far as possible by comparing the responses in denervated tissues with those in tissues with intact nerve supply. In the regions supplied by the femoral and brachial arteries, the results with nerve supply intact confirm those described earlier. Low alveolar O produced an initial decrease in flow of blood which gave way to a flow above the original level. Readministration of room air resulted in a 2nd rapid and transitory increased flow with eventual recovery. High alveolar CO_2 produced a decreased flow of blood in these regions, with recovery upon readministration of room air. NaCN caused usually an initial decreased flow followed rapidly by an increase far above preadministration levels. Denervation of the region supplied by femoral or brachial

arteries resulted in disappearance of the initial decreased flow and the postadministrational increased flow which usually accompany breathing gas mixtures low in O. The administrational increased flow was not affected by denervation. Denervation of the femoral and brachial regions resulted in disappearance of the initial decreased flow usually seen upon injection of NaCN. The usual increased flow was not affected by denervation. Denervation of the femoral and brachial regions resulted in the disappearance of the initial decreased flow usually seen upon injection of NaCN. The usual increased flow was not affected by denervation. It is concluded that there are 2 mechanisms constantly at work in the control of volume flow of blood in this region,—one central nervous and the other peripheral. The results are not opposed to the possibility, previously suggested, of there being a central and a peripheral acid mechanism of volume flow control, modified by the direct action of reduced oxidations, in which the metabolism of the vasomotor centers and of the peripheral contractile elements may play a part. Attention is called to the resemblance of brain flow (previously described) to the flow in denervated tissue. The administration of gas mixtures high in CO_2 decreased the flow in the femoral and brachial arteries even though the nerve supply to the region was destroyed. Reasons are given for believing that increased viscosity of the blood and increased secretion of the adrenal glands are not factors in producing this effect. In the superior mesenteric artery the volume flow of blood was decreased by administration of low O mixtures and increased by administration of high CO_2 and high O mixtures. NaCN caused an increased flow usually preceded by an initial decrease. These effects occur independently of mean blood pressure changes. Denervation of the region supplied by the superior mesenteric artery resulted in the main in an increased flow upon the administration of low O mixtures provided constant artificial ventilation was used. If spontaneous changes in ventilation were allowed, the volume flow decreased. Denervation in the superior mesenteric artery region resulted in absence of the initial decreased flow upon injection of NaCN. It is concluded that here, as in other regions, there are 2 mechanisms,—central and peripheral,—involved in the control of volume flow changes during low O and NaCN administration, and that the results do not exclude an acid mechanism of volume flow control modified by the direct effects of deficient oxidation. The effects of high CO_2 and high O administration upon superior mesenteric arterial flow are not altered by denervation of the region. Reasons are given for believing that the superior mesenteric arterial flow cannot safely be used as an indication of the flow in abdominal viscera in general. The resultant of the changes in flow in the several regions of the body upon the total aortic flow was an increase upon administration of low O and high CO_2, no change or a decrease upon administration of 100% O, and a marked decrease followed by an increase upon the injection of NaCN.—*Author's conclusions.*

3990. BISHOP, LOUIS FAUGERES, and LOUIS FAUGERES BISHOP, Jr. A clinical study of a graphic method of recording blood pressure. *Ann. Internal Med.* 3(8): 808-814. 1930.—Removal of the personal equation in blood pressure is probably the most important point in the use of a graphic method. Some conclusions can be drawn in regard to the cardiac arrhythmias from the records of blood pressure made with this instrument, but in no sense does it replace electrocardiography for this purpose. The curves shown are purely graphs of blood pressure recording the pulsations of the brachial artery. They do not show any intracardiac manifestations. In cases where ordinary methods are very difficult, as, for example, auricular fibrillation and paroxysmal tachycardia, the graphic method is of great value.

3991. CATTELL, McKEEN, and DAYTON J. EDWARDS. The influence of hydrostatic pressure on the contraction of cardiac muscle in relation to temperature. *Amer. Jour. Physiol.* 93(1): 97-104. 1 fig. 1930.—The tension developed during the contraction of the ventricular muscle of the turtle increases as the temperature is lowered. Moderate hydrostatic pressure (950 pounds per square inch) still exerts a large fraction of its usual stimulating action on the tension developed by the muscle after cooling to between 16 and 10° C., i.e., the stimulating action of cold and pressure are in large part summated. With higher pressures (1300 to 1500 pounds) the tension reached by the cold muscle is no greater than at room temperature. When the muscle is cooled to approximately 5° C. pressure no longer causes an increase in the tension developed during contraction. It is suggested that the similarity of the influence of high pressure and low temperature on the freedom of molecular motion may account for the observed results.—*Authors' summary.*

3992. COOK, S. F., and M. I. ROSE. The recovery of the spleen from contraction induced by exercise. *Amer. Jour. Physiol.* 92(1): 240-248. 1 fig. 1930.—Following electrically induced exercise the transiently contracted spleen of decerebrate, and that of amytalized cats shows 2 phases of recovery. The 1st or rapid phase, of from 3 to 5 min., is apparently independent of the length or degree of the exercise. The 2nd or slow phase, varies in most cases with the extent of the exercise. Recovery for equivalent exercise is appreciably slower in the case of the spleen in amytalized than in decerebrate cats.—*H. E. Jordan.*

3993. CORNELL, EDWARD L. Blood-pressure readings in 1000 pregnant women. *Amer. Jour. Obstet. & Gynecol.* 17(7): 42-47. 1929.—Blood pressure readings on 1000 consecutive pregnant cases were studied. Only those patients were included who had been under care at least 1 mo. and who had viable babies, or if still born, when the pregnancy had advanced at least 7 mos. The diastolic readings at first included both 4th and 5th phase readings but as the first diastolic reading is a little more difficult to record it was discarded and the 2nd and 5th phase readings were recorded, this being easier to obtain. There is a difference of only 6 points between the 4th and 5th phase readings, the latter reading is the more accurate and should replace the former. The average readings in all cases have been somewhat lower than those usually recorded. The exclusion of the first diastolic reading did not vitiate the results although it was recorded in some cardiac cases. The patients studied were divided into 3 groups, viz.: A, with systolic readings below 129 include 584 cases; B, those between 130 and 139 including 240 cases and C, those over 140 including 176 cases. The group A cases remained practically normal throughout pregnancy, in fact had lower B.P.'s than normal non-pregnant women. Group B contained the potentially toxic cases and group C the toxic patients although there was not a single case of eclampsia. A graph accompanies this article.—*E. L. Cornell.*

3994. DRESSLER, WILHELM. Dissoziationen und Interferenzen bei partiellem Herzblock. *Zeitschr. Klin. Med.* 111(1): 23-47. 13 fig. 1929.—Two cases of a long continued dissociation of the activity of 2 heart centers of equal frequency were studied. Such a dissociation may occur only if a complete synchronism exists or if the time interval between the activity of the centers does not exceed the time of conduction of the impulse from one center to the other. Each of the 2 centers through the refractory period induced in the portion of the heart controlled protects these portions from the effect of the concurrent center. If the refractory period of the a-v conduction system is longer than a sinus period an interference dissociation may occur if the sinus rhythm is more frequent than the automatic ventricular rhythm. If the ventricular period plus the conduction period is shorter than the refractory phase a complete dissociation occurs. This accounts for the frequently observed total dissociation in cases of ventricular tachycardia. A classification of the various forms of pararhythmia is given.—*H. M. Krueger.*

3995. EDWARDS, DAYTON J., and McKEEN CAT-

TELL. The action of compression on the contraction of heart muscle. *Amer. Jour. Physiol.* 93(1): 90-96. 1 fig. 1930.—The isolated ventricle of the heart of the terrapin was arranged so that the tension of isometric contractions was optically recorded from a steel spring lever. With this method the heart muscle, subjected to a compression of about 1000 pounds per square inch, acting upon it through a completely surrounding liquid system, shows when stimulated a response about 42% in excess of the tension developed by the same preparation at atmospheric pressure. A compression force of about 1500 pounds, acting on the ventricle, gave an average augmentation of the tension response of about 68%, and with preparations employing the auricles acting together the same degree of compression gave an increase of about 142% in the power of developing tension. The contraction phase of the ventricle exhibits very little increase in duration associated with a "pressure effect" of 42% on the tension, but with higher grades of compression, giving an increase in tension of 68%, the phase of contraction shows a prolongation of 8%. It is suggested that the higher pressures may produce definite changes in the viscous-elastic properties of the muscle. The phase of relaxation exhibits a definite prolongation by pressure. The average increase in duration amounts to 9.5% at a pressure of about 1000 pounds, and 15.5% at a pressure of about 1500 pounds per square inch.—*Author summary.*

3996. **ELY, THOMAS C. The rôle played by arteries, veins and capillaries as supplementing the heart action in the forward movement of the blood.** *Med. Times* 58 (4): 95-98. 1930.—A general review.

3997. **FÅHRAEUS, ROBIN, and TORSTEN LINDQVIST. The viscosity of the blood in narrow capillary tubes.** *Amer. Jour. Physiol.* 96(3): 562-568. 1 fig. 1931.—This study deals with the influence of the capillary tube (especially of minimum diameter) on the viscosity of the blood. The blood of the 2 investigators, obtained by venepuncture, was used; 4 representative series of experiments are given. The results indicate that the viscosity of the blood is not a constant quantity, but dependent on the diameter of the tube. Below a critical point at a diameter of about 0.3 mm. the viscosity decreases strongly with reduced diameter of the tube. Consequently the resistance to the flow of blood in the arterioles (and in the small veins) is considerably less than would be the case if the streaming of the blood followed the law of Poiseuille, i.e., behaved as a fluid with regard to its viscosity.

3998. **FISCHER, M. H. Über lokale Einwirkung von Wärmestrahlung auf das Froschherz.** *Pflüger's Arch. Ges. Physiol.* 220(1/6): 539-550. 6 fig. 1928.—With a simple irradiation method, local heating was applied to the sinus, atrium, ventricle, and atrio-ventricular boundary on the isolated heart of *Rana temporaria.* With only sinus irradiation there occurs mainly a strong atrial acceleration with diminution of the extent of contraction. The ventricle follows the atrium only at the beginning, then exhibits partial block in rhythms ½, ⅓, ¼, etc., until finally complete block occurs. The block effect is regarded as a frequency phenomenon. At times there occurs at the very beginning of sinus irradiation, a momentary pause in the atrium and ventricle, whose significance remains undetermined. With longer sinus irradiation, first the ventricle, then the atrium, and lastly the sinus comes to a standstill. This may be interpreted as a gradual decrease of the pace-setting organization in the sinus, ending in its complete "heat paralysis." Local irradiation applied to the atrial or the ventricular musculature brings on a slowly spreading "thermal inhibition" of the irradiated parts with a decrease of the extent of contraction. Local irradiation of the a-v junction leads to a failure of the excitatory conduction in the atrium, and thereby to an a-v bloc. During the block, automaticity of the atrium develops and expresses itself in ventricular contractions and extrasystoles of the atrium in rhythm with the sinus. All described effects are quickly and completely reversible, when the irradiation is discontinued. These observed results are compared with the known effects of heating the whole heart, and in addition it is sought to give an interpretation of the individual effects.—*M. H. Fischer (transl. by A. H. Hersh).*

3999. **FLEISCH, ALFRED. Venomotorenzentrum und Venenreflexe. I. Mitteilung.** *Pflüger's Arch. Ges. Physiol.* 225(1): 26-41. 9 fig. 1930.—To study fluctuations in segments of the venous circulation, the femoral vein (cats and dogs) distal to the inguinal ligament was employed. A length of 30 to 40 mm., with intact innervation, was isolated. Reactions could thus be mediated only through veno-motor nerves. Inhalation of a 3 to 20% mixture of CO_2 with air uniformly produced a contraction of the isolated venous segment, from 2 to 20% of its original calibre. This effect of increased CO_2 concentration signifies stimulations of the veno-motor center. Injections of adrenalin into the jugular vein uniformly evoked an indirect contraction. Whether the veno-motor center is directly stimulated by the adrenalin, or whether the increased blood pressure effects a veno-constrictor reflex remains undecided. Acetylcholin may produce an initial indirect contraction, but more generally a primary transitory dilatation followed by a secondary contraction. Stimulation of the cardiac vagus for 10 to 20 sec. produces late in the period generally an indirect contraction, which disappears with cessation of the vagus stimulus. There is no doubt that the tonus of other portions of the venous system may be reflexly influenced. Section of the innervation renders the vein segment incapable of contractile response.—*Author's summary (transl. by H. E. Jordan).*

4000. **GARREY, WALTER E. The pace maker of the cardiac ganglion of Limulus polyphemus.** *Amer. Jour. Physiol.* 93(1): 178-185. 4 fig. 1930.—The ganglionated portion of the dorsal nerve cord on the heart of Limulus polyphemus, which is known to initiate the cardiac rhythm, is in every way comparable to the pace maker of the vertebrate heart. The actual initiation of impulses may, however, be restricted to a very small group of nerve cells, and it is shown that it is possible by experimental methods to shift this pace maker group to any level of the ganglionated cord. In each such case a coördinating mechanism forces the rest of the ganglion to assume the rate of impulse formation impressed upon it by the most active cells. Normally this pace maker group has no fixed location and is determined by fortuitous circumstances.—*Author's summary.*

4001. **GONZAGA, ARCADIO C. The normal temperature, pulse, and respiration rates of Philippine horses.** *Philippine Agric.* 19(4): 237-242. 1930.—A study to determine the normal body temp. and the rates of pulse and respiration of Philippine horses was conducted from March, 1929, to January, 1930, in which 105 apparently healthy, native horses of both sexes, ranging in age from 2½ to 16 years, and in height from 46 to 53 inches were used. The result of this study shows that the body temperature of these 105 animals which varies from 37.4° to 38.4° C. does not differ greatly from the foreign data. But their pulse rate which ranges from 38 to 50, and frequency of respiration (20 to 32 per minute) are very much higher than those obtained from the much larger American and European horses. The author concludes that the present indiscriminate practice of applying foreign data to Philippine horses is unscientific as one might regard as pathological rates which are normal.

4002. **GREELEY, PAUL O., and CHARLES E. GREELEY. Cerebral, head and body flow of blood during periodic ventilation.** *Proc. Soc. Exp. Biol. & Med.* 26 (9): 828-829. 1929.—Preliminary paper.

4003. **HAUFFE, GEORG. Herz, Pulsation und Blutbewegung. Die Pulsation am Herzen und am Gefässgebiete als zwangsläufig mechanischer Vorgang und das Herz als einziger Motor zur Erhaltung des Blutkreislaufes. (Mit einem Geleitwort von FRIEDR. KRAUS.)** 244p. 9 fig. J. F. Lehmanns Verlag: München, 1930. Pr. 14 M.—Periodically a new volume is added to that small class of books which seeks to upset orthodox con-

ceptions in science and to replace them by revolutionary views of supposedly far-reaching significance. The book attempts to do this in behalf of the heart and circulation. Two radically new conceptions are developed: (1) The rhythmic sequence of the heart beat is conceived as due to mechanical properties of the elastic cardiovascular system rather than to a speculative up-building and discharge of an "inner stimulus." The tempo of the heart beat is not given by impulses formed in and discharged by the sinus node, but is due to a movement externally transferred from the peripheral circulation to the cardiac muscle. The sinus node receives excitations; it does not initiate them. Initiation of stimuli occurs in the peripheral vessels as a result of vascular changes in sufficiently diffused regions. (2) The heart and pericardium acting together form a combined force and suction pump operating somewhat after the following manner: Contraction of the ventricles expels blood into the aorta. This would dilate the aorta and raise the pressure during systole, as is commonly believed, but the author claims to have made the discovery that the size of the aorta becomes smaller and the arterial pressure falls during systole. This is explained as follows:—Contraction of the ventricles in a pericardial sac of constant size serves to unfold the auricular wall, thereby enlarging its cavities. This creates a suction which draws blood into the auricles. But this is not all. The suction component is propagated peripherally through the veins and capillaries to the large arteries. When, on the other hand, the auricles contract they fill the ventricle not only by the pressure created within but through the negative extra-cardiac pressure developed without. Lengthy explanations are given to prove that the feeble auricular contraction can indeed develop powerful effects and that the contractions of the auricular appendage determine the proper direction of the blood stream. The theories are apparently based on certain physical experiments and clinical studies of the author. The former comprise the observations—which have apparently escaped all physicists—that increased velocity of flow decreases the diameter of elastic tubes. Furthermore, the author found that with a suitable velocity a rapid series of expansions and constrictions can be produced and made to travel over elastic tubes. By varying the velocity of flow, the frequency of such periodic disturbances can be changed and even irregularities in rhythm can be inaugurated. These mechanical principles are supposed to be duplicated in the circulation. The clinical observations seem to consist of the x-ray findings that augmented minute output and increased blood flow cause a diminution in the aortic shadows and a fall in blood pressure. From this, the author apparently leaps to the corollary that the size of the aortic and arterial pressure must decrease during systole. The reviewer has looked in vain for direct proof of this assumption. The author is modest in his assertion that the work of Harvey is not completely upset by his hypothesis, but is merely given a more far-reaching significance.—*C. J. Wiggers.*

4004. HOLZLOHNER, E. Ueber den Aktionsstrom des Ventrikels und die Veränderung des Kontraktionsablaufs durch $CaCl_2$ und KCl. *Zeitschr. Biol.* 85(6): 585-598. 1 pl., 5 fig. 1927.—$CaCl_2$ causes a prolongation of relaxation and a corresponding prolongation of the electric response, which extends far into the diastole. In the frog's heart there is a close relation between the moment of relaxation and the T wave, but it is doubtful whether the two are simultaneous as Einthoven believed. The rate of rise of the diphasic and monophasic action currents is delayed by $CaCl_2$, but the rise of the mechanical response is accelerated. The reverse effect is produced by KCl. The current from the base is more affected than the apical current by KCl, by anodal action, and also by $CaCl_2$. The author also noted that $CaCl_2$ acting on a limited area caused a peculiar deformation of the monophasic action current.—*Author's summary (transl. by A. J. Clark).*

4005. IONESCO, DIMITRIE, et A. TEITEL BERNARD. Contribution à l'étude des substances actives du coeur. *Arch. Internat. Physiol.* 30(3): 267-279. 9 fig. 1928.—An alcoholic extract of the right auricle of the beef heart, properly purified and mixed with Ringer solution acts positively on the automaticity, contractility, frequency and conductivity of the frog's heart. When the frog's heart has been previously weakened by repeated washings with Ringer solution the effects just described are even more evident. Extracts from the beef ventricle and skeletal musculature act similarly, but to a lesser extent. Organ specificity does not exist. With greater concentration of the extract, toxic effects appear: sinus bradycardia, arrhythmia, negative inotropic effects going on to complete cardiac arrest. The active agent is apparently histamine. Its effect cannot be described as hormonal; these extracted substances play, however, a significant rôle in the mechanism of the heart beat.—*L. Braun (transl. by G. Bachmann).*

4006. JACOBI, ERICH. Blutdruck und Herzform bei senilen und arteriosklerotischen Psychosen. *Arch. Psychiatr. u. Nervenkrank.* 88(3): 425-434. 1929.—A study of 150 cases of senile and pre-senile psychoses, including some of longer standing and particularly those of alcoholic and luetic origin. Blood pressure and x-ray observations were made and the findings correlated with age and mental status. In pure senile dementia cases the unexpected observation was made that almost half had a very high systolic pressure. A third had typical, often advanced, arterio-sclerotic heart involvement. Twelve per cent of the clinically certain arterio-sclerotics had a pressure below 130, but they were generally alcoholics, luetics, endogenous and presenile psychotics. The most important finding was that, of those with pressures above 190, ¼ were senile and ¾ arterio-sclerotic. Numerous other similar data are discussed.—*M. Dresbach.*

4007. KAHN, MORRIS H. Physiological basis for tests of heart function. *Med. Rev. of Rev. [New York]* 36(4): 281-293. 1930.—A general review and summary.

4008. LANDIS, EUGENE M. The capillary blood pressure in mammalian mesentery as determined by the micro-injection method. *Amer. Jour. Physiol.* 93(1): 353-362. 3 fig. 1930.—The micro-injection method for determination of blood pressure in individual capillaries was used in studying pressure fall in the mesenteric vessels of decerebrate rats and anesthetized guinea pigs. This method permitted the measurement of mean pressure, without disturbance of flow in the observed vessel. Capillary blood pressures ranged from 22 to 49 cm. of water with ⅔ of the determinations lying between 25 to 35 cm. Average pressure in the arteriolar capillary was 30 cm. in the rat and 38.5 cm. in the guinea pig, while in the venous capillary the average blood pressure was 17 cm. in both. The fall of blood pressure did not cease abruptly at the junction of the arteriole and capillary, but continued to the venous capillary. The pressure gradients of the rat, guinea pig and frog showed a similar division of peripheral resistance between the arterioles and capillaries. A balance between average capillary blood pressure and the osmotic pressure of the plasma proteins has been observed in the rat, guinea pig and frog. The mammals, however, differ from the frog in the higher level of pressure at which this balance is maintained. Average arteriolar capillary blood pressure was above, and average venous capillary pressure was below, the osmotic pressure of the plasma proteins. The findings provide evidence in favor of the Starling hypothesis of fluid interchange in mammals.—*Author's summary.*

4009. LAQUA, K. Experimentelle Untersuchungen über die neurohormonale Theorie der Vasomotorenfunktion. *Bruns' Beitr. Klin. Chir.* 150(3): 405-413. 1 pl., 1 fig. 1930.—These experimental investigations have not confirmed the neurohormonal theory in explanation of the vasomotor trophic disturbances following central sciatic neuroma and of the hyperemia which follows periarterial sympathectomy. Of perfusion experiments on the frog's vessels, 20 out of 22, and all experiments on the isolated rabbit's ear showed that the stimulating serum has no

vasoconstrictor effect. Moreover, I believe to have established by faradic stimulation of the nerves of the extremities carrying the vasoconstrictor fibers a stimulus adequate experimentally to the physiological and pathological excitation of the vasoconstrictors. I cannot explain the occurrence in 2 cases of an undoubted vasoconstriction following the perfusion of the frog's vessels after addition of the stimulating serum. In consideration of the negative findings of all remaining 20 experiments, this constriction must be regarded as due to some incidental uncontrollable influence, since the exciting serum was prepared in both cases in exactly the same way. Even though the results of my experiments are negative, I believe that the neurohormonal theory, attractive as filling the gap in our knowledge of the cause of vasomotor trophic disturbances following central neuroma of the sciatic and of the hyperemia which follows periarterial sympathectomy, required an experimental test.—*Author's summary (transl. by G. Bachmann).*

4010. **LIPSCHÜTZ, ALEJANDRO. La autonomía del Corazón. Conferencias pronunciadas en el mes de Diciembre de 1927, en el instituto de fisiologia de la Universidad de Concepción (Chile). [Autonomy of the heart.]** 2d. ed. rev. 80p. Javier Morata: Madrid, 1930.—Three lectures given at the University of Concepción (Chile). The existing evidence on the nervous and humoral factors governing the production and regulation of the heart beat is discussed and summarized.—*J. J. Izquierdo.*

4011. **LOEPER, MAURICE, et ANDRE LEMAIRE. Le régime des cardiaques et la nutrition du coeur.** *Presse Méd.* 38(14): 233-235. 1930.—The authors present figures based on personal work showing that the cardiac muscle contains twice as much P as the ordinary striped muscle, and a little more Fe and S; also, that the composition of the heart is not uniform. Thus, cholesterol is more abundant in the atrioventricular bundle and total lipids in the ventricle. Glycogen, in the hearts of lower animals like the snail, is uniformly distributed; in the guinea-pig and the rabbit it tends to form sparse crescent-shaped clots in all the fibers; in the calf's heart it is found in the atrioventricular zone in enormous proportions, while elsewhere are only rare droplets in the muscular fibers. Hearts fixed a few hrs. after death offer evidence that glycogen is rapidly destroyed, being somewhat more stable in the primitive than in the common muscular fibers, from which it disappears almost instantaneously. This would seem to indicate an unequal glycogenic or amylolytic activity in the 2 varieties of fibers. The transformation of glycogen is effected by amylase contained in the cardiac muscle; but this amylase also is shown to be unequally distributed, being much more abundant in the ventricular wall than in the atrioventricular zone. Hence the cells of the primitive bundle appear to function as glycogen glands, distributing to the adult fibers of the myocardium supplies of the combustible glycogen. The constant explosive disintegration of this stored fuel appears to furnish the motor force which drives the cardiac engine, and it also produces the variations in current recorded by the electrocardiograph preceding the myogram. Whatever the rôle of the S (found in the heart in higher concentration than in any other organ) or of the cholesterol in which the atrioventricular bundle is so rich, sugar appears to be undoubtedly the essential food of the heart, playing the most important part in the mechanism of muscular contraction, and therefore indispensable to cardiac patients. Glycogen and glucose are the 2 terms of a kind of chemical balance which precedes and sets off the mechanical contraction of the heart. Glycogen, the storage form, and glucose, the form for consumption, are in constant reciprocal transformation by a double reversible reaction, which in one direction may require aerobiosis and in the other anaerobiosis. To the experimental proofs previously furnished by other authors as to the important part played by sugar in the physiology of the heart, Loeper and Lemaire add reports of experiments on the snail's heart performed in collaboration with Mougeot. The fresh heart, provided with glycogen reserves, was regular in action and not responsive to glycogen or glucose; but glycogen restored the normal rhythm to a heart in which the reserves had been exhausted by ptyalin, and glucose acted sometimes as a regulator and sometimes as a tonic only on a heart fatigued or altered by changes in environment. The experience of others is cited to show that sugar reinforces the cardiac effect of numerous medicines, such as digitalis, ouabain and quinidin, or even may by itself ameliorate organic arhythmias or the tachyarhythmias of convalescence. A clinical case is also reported in which daily administration of glucose (for which other sugars may not be substituted) ameliorated the symptoms of an arhythmia which quinidin had failed to influence.

4012. **MIURA, GEN. Ueber den Wert des Kontraktionskoeffizienten und des Blutdruckquotienten bei der Funktionsprüfung des Herzens.** *Acta Scholae Med. Univ. Imp. Kioto* 12(2): 177-193. 1929.—The author investigated at the bedside the comparative value of Ishida's coefficient and the Strasburger method which, among many functional tests, is characterized as the simplest and most easily applied to the seriously sick patient. The conclusions he reached were that the Strasburger method often yields erroneous data on the functional capacity of the heart. Ishida's contraction coefficient leads much more rarely to such errors.—*G. Miura (transl. by G. Bachmann).*

4013. **MÜLLER, E. A., H. SALOMON, und G. ZUELZER. Der Einfluss der Sauerstoffausnutzung auf Koronardurchblutung, Wirkungsgrad und maximale Leistungsfähigkeit des Säugetierherzens.** *Zeitschr. Ges. Exp. Med.* 73(1/2): 1-10. 3 fig. 1930.—Researches with the Starling heart-lung preparation on dogs' hearts have led to the following conclusions. The coronary flow is independent of O utilization and venous CO_2 tension. There is therefore no chemical regulation which during increased O consumption relieves O want by means of coronary dilatation. This conclusion is not opposed to the results of Hilton and Eichholtz who found an asphyxial increase in coronary flow due to chemical action on the arterioles, since blood rendered deficient in O after passing the arterioles cannot act in the way mentioned. The degree of heart muscle activity is independent of O consumption and venous CO_2 tension. If O utilization of the heart reaches 100% a further increase in work is impossible. Even in extreme work of the heart there is no accumulation of lactic acid in the blood. The heart does not show the phenomenon of oxygen debt.—*Author's summary (transl. by W. J. Meek).*

4014. **NITZULESCU, I. Problema Hipertensiunii arteriale. [The problem of the arterial hypertension.]** *Rev. Med. Chirurgicala din Iaşi [Roumania]* 37(6): 34-49. 1926.—A simple general review of the different conceptions concerning the pathogenesis of hypertension. No original contribution.—*I. Nitzulescu.*

4015. **RADT, P. Ueber den Einfluss der Strömungsgeschwindigkeit des Blutes auf die intravitale Ablagerung von Tusche.** *Zeitschr. Ges. Exp. Med.* 66(1/2): 265-283. 3 fig. 1929.—The experiments reported deal with the influence of blood velocity on the intracapillary and intracellular deposition of colloidal India ink injected intravenously. When this material is concentrated it remains in capillaries in which the blood stream is especially slow. With dilute solutions the material is deposited intracellularly in the capillary endothelium in locations where the blood stream is slow. The author reports experiments to demonstrate the dependence of deposition of the colloidal material on the velocity of the blood. He believes that all capillary endothelium possesses the property of taking up dyes in granular form. Those parts exhibiting ordinarily a special ability to take up dyes are those in which a low blood velocity is present. He does not believe that the taking up of dyes is a specific property of special endothelial cells and that therefore it is not permissible to classify a part

of these cells into a special system.—*P. Radt (transl. by G. Bachmann).*

4016. RÄIHÄ, C. E., und P. MALM. Über die durch das Insulin verursachte Verminderung des Vaguseffektes auf das Herz. *Skand. Arch. Physiol.* 61(1/3): 64-70. 1 fig. 1931.—Electrocardiographic records on rabbits show that the decreased chronotropic effects of vagal stimulation following insulin injections is not due to any shift in position of the pacemaker but to a lowered cardiac irritability. There is some indication that the depression may be associated with an increased K content of the heart.—*W. J. Meek.*

4017. RAYMOND-HAMET. Sur les effets cardiaques de l'excitation prolongée du vague. *Rev. Pharmacol. et Thérap. Expérim.* 1(2): 97-102. 3 pl. 1928.—As was first noted by Laulanié, cardio-inhibitory effects of the prolonged excitation of the peripheral end of a pneumogastric nerve are often discontinuous. It frequently happens that during this excitation cardio-inhibitory action does not remain the same but increases and decreases several times in intensity. There are thus alternating periods with respectively maximal and minimal inhibitions. Moderate doses of acetylcholin also may produce a discontinuous cardio-inhibitory action, i.e., increasing and decreasing several times before being abolished. This points to a further resemblance between effects of electric excitation of the pneumogastric nerve and those of moderate doses of acetylcholin.—*Author's conclusions (transl).*

4018. ROESE, H. F. Ueber das Minutenvolum und den Gaswechsel des künstlich durchbluteten Säugetierdarmes. *Pflüger's Arch. Ges. Physiol.* 226(2): 184-189. 1 fig. 1930.—The denervated heart-lung-intestine preparation was used. Averages of results in 12 experiments were 235.9 cc. of blood (per kgm. bowel) per min. at 60-75 mm. Hg. pressure; 262.5 cc. per min. at 80-90 mm.; 306.6 cc. per min. at 100-115 mm. In 3 experiments with the innervated preparation somewhat higher values were obtained (261.9 cc. per min. at 65-75 mm.; 305.9 cc. per min. at 80-85 mm.). Changes in blood temperature from 38° to 31° elicited no distinct change in blood flow. Estimations of gas metabolism (Van Slyke method of blood-gas analysis was used) gave, as average figures, per kgm. of bowel per min.: at 30 min. after start of experiment, 4.357 cc. O, 5.611 cc. CO_2; at 60 min. 4.5 cc. O, 4.088 cc. CO_2; at 90 min. 2.523 cc. O, 3.569 cc. CO_2. In 3 experiments on innervated preparations the corresponding figures were 6.255 cc. O, 8.013 cc. CO_2; 3.526 cc. O, 6.713 cc. CO_2. The high respiratory quotients are attributed to unavoidable hyperventilation of the heart-lung preparation, which lowers blood CO_2 tension and leads to excessive removal of CO_2 from the bowel.—*C. F. Schmidt.*

4019. SCHELLONG, F., und E. SCHÜTZ. Ueber die Refraktärphase nach optimaler und nach abgeschwächter Erregung des Herzmuskelelementes. (VII. Mitteilung zu den Untersuchungen ueber die Grundeigenschaften des Herzmuskels.) *Zeitschr. Ges. Exp. Med.* 61(3/4): 285-304. 11 fig. 1928.—Apparatus devised by the authors enabled them to record the monophasic action current of a heart muscle strip and to study the refractory phases of the identical part which produced the action current. The refractory phase was investigated by means of the interval at the end of which a second stimulus became effective. The return of irritability during the relative refractory period was measured by the duration of the second action current which is shortened in proportion to the nearness of the second stimulus. The end of the absolute refractory period coincides with the end of the excitation process. A short period of excitation is therefore followed by a shortened refractory period. A stimulus 4 times the threshold value is effective immediately at the end of the refractory period, no matter whether the period of excitation has been maximal or shortened. The relative refractory period following a maximal excitation is longer than the absolute. The relative refractory period after a shortened period of excitation remains unchanged in length. It follows that the relative refractory period is independent of the degree or duration of the previous excitation process and depends only on the maximum irritability of which the preparation is capable. The irritability of the heart muscle is reduced to zero whether the excitation process is maximal, sub-maximal or shortened.—*W. J. Meek.*

4020. SCHOEN VON WILDENESS, E. Blut und Gravitation. 68p. Verlag Fischer: Berlin, 1928. Pr. 6 M.

4021. STARR, ISAAC, Jr., and LEON H. COLLINS, Jr. Studies of cardiac output in normal men. *Amer. Jour. Physiol.* 96(1): 228-242. 2 fig. 1931.—Experiments on the fundamental assumptions of the improved ethyl iodide method for the determination of cardiac output were repeated and yielded results which increased the authors' confidence in the method. This method yielded duplicate determinations whose average difference was 6.4% of their mean. The results demonstrate that the cardiac output of resting normal adult ♂♂ is essentially constant. The average level in 10 normal young adult ♂♂ in the post absorptive condition, after a prolonged rest period in the horizontal position, was 3.97 liters per min. or 2.08 liters per sq. meter of body surface. These results are quite similar to those of Grollman. The experiments indicated that food and excitement increase cardiac output. Cold caused changes in both directions; becoming warm after having been chilled was always accompanied by a decrease of cardiac output. The change from the lying to the standing position caused no significant alteration in 4 subjects; in 1 subject the cardiac output standing was constantly lower than that lying. These results are in satisfactory agreement with those of many other methods. A subject having a highly reactive type of circulation with inconstant blood pressure showed no difference in general level of cardiac output, nor in response to food, cold, position, and excitement from the other more stable subjects.—*Authors' summary.*

4022. WALINSKI, FRANZ. Blutdruck bei Hyperthermie. *Zeitschr. Ges. Physikal. Therap.* 39(5): 223-237. 1930.—The systolic and diastolic blood pressure was measured in 28 experiments in which artificial hyperthermia was induced in individuals in whom the arteries in most instances were healthy. In a large majority of cases the blood pressure ran parallel with the body temp. During the bath the diastolic pressure sank in spite of the rising systolic pressure; later it adjusted itself to the systolic pressure. In half the experiments there was observed after the return of body temp. to normal, a temporary fall of blood pressure. Pulse and respiration behaved like the blood pressure. The behavior of the systolic pressure is explained by the increase of cardiac activity, that of the diastolic pressure by the dilatation of the peripheral vessels.—*Author's summary (transl. by G. Bachmann).*

4023. WHITTEN, MERRITT B. A comparison of the blood supply of the right and left ventricles in childhood. *Arch. Internal Med.* 45(1): 46-58. 8 fig. 1930.—The celluloid corrosion method is better suited than cleared specimens or roentgenograms for studying the arterial blood supply of the ventricles. The blood supply of the septum can easily be demonstrated with only a slight modification of the technique. During the latter part of fetal life and at birth the right and left ventricles are equally vascular. At the end of the 2nd year the left ventricle shows a vascular preponderance. This preponderance becomes marked by the 6th year and enormous by the 10th. It persists throughout life in normal hearts. There is also an increasing venous preponderance of the left ventricle corresponding rather closely with that of the arteries. It is suggested that the vascularity is in some degree correlated with the weights and thickness of the ventricles. This is substantiated by the greater thickness of the left ventricle after the age of two. Also, in the case of a hypertrophied right ventricle, there occurred a corresponding increase in the right ventricular vascularity.—*H. M. Krueger.*

4024. WIGGERS, CARL J. (in collaboration with

JAMES R. BELL, and MARGARET PAINE). Studies of ventricular fibrillation caused by electric shock. II. Cinematographic and electrocardiographic observations of the natural process in the dog's heart. Its inhibition by potassium and the revival of coordinated beats by calcium. *Amer. Heart Jour.* 5(3): 351-365. 5 fig. 1930.—The natural course of events from the onset of fibrillation following faradic excitation to complete diastolic rest was studied by recording electrocardiograms and moving pictures simultaneously. In addition, intraventricular pressure curves were optically recorded during a number of experiments. The changes taking place when fibrillation was inhibited by intraventricular injections of 5% KCl and the process of recovery following similar injections of 5% $CaCl_2$ solutions combined with massage, were investigated by the same means. Fibrillation induced by faradic stimulation continues naturally for 15-50 min. and may be divided into 4 stages, on the basis of surface changes, electrocardiographic deflections and intraventricular pressure variations. The initial stage of tachysystole lasts less than 1 sec. and is characterized by the spread of rapidly recurring but coordinated contraction waves, by large electrocardiographic deflections with steep gradients and by definite if small intraventricular pressure variations. The 2nd stage of convulsive incoordination ordinarily lasts 15-40 sec. and is characterized by rapid irregular localized contractions which spread short and variable distances over the heart. They are accompanied by large electrical deflections, 600 or more per min., which vary considerably in size, amplitude and contour. The 3rd stage, tremulous incoordination, ordinarily continues 2 or 3 min. and is characterized by multitudes of irregular yet forceful shivering or trembling motions, each spreading a very short distance and with highly variable frequencies over different surface regions. They give rise to small irregular electrocardiographic oscillations having frequencies between 1,100 and 1,700 per min., and are capable of increasing the intraventricular pressure level slightly. The 4th stage of atonic incoordination is characterized by feeble wavelets of contraction spreading irregularly and at slow rates over small areas until more and more areas become quiescent, and finally the very slightest movements remain in a few areas only. The electrical deflections perhaps become slightly more regular in contour and spacing, but their amplitude becomes progressively smaller, and their frequency is gradually reduced to 400 per min. or less. Potassium chloride injected into both ventricular cavities does not modify the stages through which fibrillation naturally passes; it merely hastens the process so that fibrillation stops within an average period of 2.4 min. Intraventricular injections of $CaCl_2$ after K inhibition combined with massage, 1st inaugurate a coordinated idioventricular rhythm, characterized by slow waves of contraction sweeping over the 2 ventricles asynchronously but in coordinated fashion. After a short interval, a supraventricular rhythm is reestablished, the electrocardiogram regaining all its normal characteristics.—*Authors' summary.*

4025. WIGGERS, CARL J. (in collaboration with HAROLD THEISEN, and H. D. B. SHAW). Studies on ventricular fibrillation produced by electric shock. III. The action of antagonistic salts. *Amer. Jour. Physiol.* 93(1): 197-212. 3 fig. 1930.—The experiments reported deal with the mechanisms through which successive intraventricular injections of K and Ca salts abrogate the fibrillary state and restore a coördinated beat. Doses of KCl smaller than those utilized to arrest fibrillary contractions can produce in the normally beating heart a state resembling fibrillation, but not actually identical with it. The changes preceding and leading up to this condition are analyzed in detail and the so-called "fibrillary contractions" are compared with those resulting from faradic stimulation. We conclude that in this instance the incoördination is the result of depressed conduction, first in the bundle branches and internal layers of the ventricle, and subsequently in diverse portions of the myocardium. Incoördination follows when some fractions escape complete depression, but total cessation occurs when they are completely depressed. The so-called "fibrillation" due to use of K salts differs from that following faradic stimulation in the slower, coarser and more regular waves which run over both ventricles. The electrical deflections are larger and more regular while their frequencies (150-270 per min.) are much less than are those which follow after faradic stimulation (660-1200 per min.). The conclusion is reached that the condition produced by K is not a complete incoördination. The production of such a condition is in itself no contra-indication to the employment of KCl solution for arresting existing fibrillation, but emphasizes the importance of employing doses sufficiently large to produce complete depression in all fractions of the heart. The minimal dose that can ordinarily be relied upon to arrest fibrillation is about 50 mgm. per kgm. Evidence is presented that K salts administered intraventricularly produce their action after being distributed through the myocardium. This distribution cannot be accounted for by diffusion, nor by an overflow into the aorta and entry into the coronary system. It is chiefly forced through the Thebesian vessels by low but positive pressures within the ventricular cavities. Subsequent injections of $CaCl_2$ fail to restore coördinate beats unless fluid is massaged into the aorta and thus circulated through the coronary system. This is not due to the fact that Ca is not distributed through the walls by the Thebesian vessels as is K, but rather to the fact that the K is not readily washed out of the tissue unless assisted by massage sufficient to restore a coronary perfusion with the animal's own blood.—*Authors' summary.*

4026. ZWAARDEMAKER, H. Das Elektrokardiogramm des Automatinherzens. *Pflüger's Arch. Ges. Physiol.* 221 (4): 455-459. 1 fig. 1929.—The electro-cardiogram of the eel heart when stimulated to beat by automatin was like the electro-cardiogram of the normal heart. Agonal phenomena appeared in the mechanogram of the isolated heart on partial removal of automatin. Without automatin there was no heart stimulation or pulsation.

PHARMACOLOGY

ERWIN E. NELSON, *Editor*

RALPH G. SMITH, *Assistant Editor*

(See also in this issue Entries 3315, 3552, 3558, 3574, 3575, 3578, 3612, 3620, 3641, 3642, 3690, 3692, 3703, 3704, 3736, 3746, 3759, 3767, 3769, 3800, 3824, 3829, 3835, 3837, 3839, 3858, 3872, 3876, 3917, 3941, 3956, 3971, 3976, 3985, 4005, 4011, 4016, 4017, 4093, 4136, 4145, 4152, 4168, 4180, 4300, 4363, 4370, 4400, 4602. 4734, 5903)

4027. ABDERHALDEN, EMIL, und VLASSIOS VLASSOPOULOS. Zur Kenntnis der Wirkungssteigerung von Adrenalin, ferner von Ephetonin und d- und l-Ephedrin durch Aminosäuren und Polypeptide. [Reinforcement of the action of epinephrin, ephetonin, and d- and l-ephedrin by amino-acids and polypeptids.] *Pflüger's Arch. Ges. Physiol.* 225(4): 558-560. 2 fig. 1930.

4028. ALPERS, BERNARD J. The reaction of the central nervous system to experimental urea intoxication. *Arch. Neurol. & Psych.* 24(3): 492-508. 11 fig. 1930.—Rabbits were injected with pure urea intraven. and subcut. to study the effect upon the neuroglial elements of the nervous system. The fibrous astrocytes in the white matter in close relation to the vessels, and in

less degree the protoplasmic astrocytes in the gray matter were affected. The change in these elements took the form of conversion into so-called ameboid glia cells, various stages in the development of which could be followed. The oligodendroglia were acutely swollen in some instances. The microglia were hypertrophied in a case of very severe intoxication, but were on the whole very resistant to the effect of toxins. The striking feature was the involvement of those glial elements in close relation to the blood vessels, suggesting that one of their functions may be the absorption of poisons circulating in the blood stream.—*B. J. Alpers.*

4029. **BODANSKY, MEYER. The effect of hydrogen ion concentration on saponin hemolysis.** *Jour. Biol. Chem.* 82(3): 567-577. 1929.—The relationship of pH to the resistance of dog and human erythrocytes to saponin has been studied and the results represented by curves. The effect of inorganic acids and bases on saponin hemolysis is believed to depend principally on their chemical combination with globulin and possibly other proteins of the cell membrane, such as globin. On the acid side of the isoelectric point of the red blood corpuscle (pH about 4.6), as the positive charge increases, the resistance of the cell to saponin diminishes. On the alkaline side of the isoelectric point, as the cells become more and more negatively charged, their resistance to saponin increases gradually to about pH 8.5, after which the resistance increases more rapidly to a maximum at about pH 10.—*Author's summary.*

4030. **BROWNING, C. H., J. B. COHEN, S. ELLINGWORTH, and R. GULBRANSEN. The trypanocidal action of some derivatives of anil and styryl quinoline.** *Proc. Roy. Soc.* [*London*] *B* 105(735): 99-111. 1929.—As tested on mice infected with *Trypanosoma brucei*, the most marked trypanocidal action was exerted by substances which contained a free basic group in one nucleus and an acylamino group in the other, especially in the styryl series. The compounds, 2(*p*-amino styryl) -6 acetylamino quinoline methochloride and 2(*p*-acetylamino styryl) -6 dimethylamino quinoline methochloride, were the most active substances, cures being occasionally produced by 1/50 of the maximum tolerated dose. Cures resulted even when ½ of the tolerated dose was administered to mice in a moribund condition whose blood was swarming with parasites. Very little prophylactic action was exerted by the latter substance and it was inactive when ingested *per os. In vitro* it had only slight lethal action on trypanosomes. Drug-resistant strains were developed by the usual method; they were also resistant to arsacetin, tryparosan and trypaflavin but not to trypanblue and Bayer 205. Rabbits treated 3 to 5 weeks after inoculation with *T. brucei*, when definite symptoms had developed, were cured in most cases by a single dose of either substance administered subc. The chemical preparations of the substances are described.—*C. H. Browning.*

4031. **CAPPELL, D. F. The late results of intravenous injection of colloidal iron.** *Jour. Path. and Bact.* 33(1): 175-196. 1930.—Colloidal Fe injected intraven. is taken up first by certain cells belonging to the reticulo-endothelial system and by certain of the circulating leucocytes. Later the Fe undergoes transformations which result in its redistribution. The most important of the later changes is believed to be the entry of Fe into some compound—possibly a loose combination with the plasma proteins; and it is probable that this linkage is brought about through the activity of reticulo-endothelial cells. This loosely bound Fe passes through capillary walls and thus Fe storage appears later in lymphatic glands and in the parenchyma cells of the liver and kidney. In the mouse the liver, spleen and lymphatic glands are the most important sites of Fe storage, especially the liver in the later stages. Excess Fe administered parenterally is dealt with similarly to excess Fe derived from hemolysis in the circulation. No ill effects follow massive accumulation of Fe in the liver cells and the pancreas does not participate in Fe storage. Accordingly nothing analogous to the lesions of hemochromatosis has been observed in the organs of animals subjected to excess Fe over prolonged periods.—*D. F. Cappell.*

4032. **CHIKANO, M. Eine neue chemische Mikromethode zur Adrenalinbestimmung. Zugleich ihre Anwendung auf die intermediären Stoffwechseluntersuchungen.** *Biochem. Zeitschr.* 205(1/3): 166-175. 1929.—The method is based on the reaction of epinephine with iodic acid. Blood or serum is deproteinized by precipitation with metaphosphoric acid. A KIO_3 solution is added to the filtrate. The mixture is boiled for 4 min. and H_2SO_4 is added. After standing over night KI is added and the remaining iodic acid is titrated with sodium thiosulfate. In pure solution 0.05-0.01 mgm. of epinephrine can be determined accurately. Epinephrine added to serum can be recovered quantitatively, whereas when added to defibrinated blood only 32-56% is recovered. Serum and blood contain substances which react with HIO_3. Urea and creatinine could be ruled out, but uric acid uses up HIO_3. The substances which react with HIO_3 are present in increased amounts during starvation or after a protein meal.—*G. T. Cori.*

4033. **CHIKANO, M., und M. KOMINAMI. Über die Spaltung des Adrenalins im Serum.** *Biochem. Zeitschr.* 205(1/3): 176-179. 1929.—Epinephrine added to serum is slowly destroyed. Determinations were made with Chikano's HIO_3 method and by the blood pressure method with identical results. In a buffered phosphate solution at pH 7.1-7.3 epinephrine is destroyed at the same rate as in serum.—*G. T. Cori.*

4034. **CRUICKSHANK, E. W. H., and D. L. SHRIVASTAVA. The action of insulin on the storage and utilisation of sugar by the isolated normal and diabetic heart.** *Amer. Jour. Physiol.* 92(1): 144-159. 1930.—The isolated normal heart responds to insulin by storing glycogen provided that the blood sugar does not fall to an extremely low level. In the diabetic heart while insulin administered in physiological dosage maintains glycogen synthesis, it does not do so after the repeated addition of 10 units of insulin half hourly to the blood perfusing the isolated heart-lung preparation: with the reduction in diabetic blood sugar there is a disappearance of glycogen and muscle sugar from the heart. The average figure for the utilisation of sugar by the normal isolated heart without the addition of sugar approximates 2 mgm. per gm. of heart muscle per hr. The addition of sugar to the perfusing blood causes increased utilisation of sugar and glycogen synthesis. The addition of insulin to normal blood perfusing a normal heart gives an utilisation of about 6 mgm. The addition of both sugar and insulin occasions an utilisation approximately 12 mgm. per gm. of muscle per hr. The perfusion of a diabetic heart with normal blood results in a sugar utilisation of about 4 mgm. per gm. of muscle per hr. On the other hand the perfusion of a diabetic heart with diabetic blood, the animals being 7 to 9 days diabetic, results in no utilisation whatsoever. This points to rather complete elimination of insulin from blood and heart muscle in 7 to 9 days after pancreatectomy. Insulin added to the diabetic blood perfusing the diabetic heart increases the power of the heart to utilise sugar up to 7 mgm. per gram per hr., but it appears to produce no synthesis of glycogen.—*E. W. H. Cruickshank.*

4035. **FERMO, CESARE de. Studii sperimentali sulle anestesie. (Il comportamento della concentrazione glicemica in rapporto alla narcosi eterea, alla anestesia locale novocainica ed all'azione della morfina.) [The blood-sugar concentration in relation to ether, novocain and morphine anesthesia.]** *Arch. Ital. Chir.* 25(3): 356-366. 1930.—Ether, morphine and novocain were administered to 4 dogs (8 experiments). All the anesthetics used caused a temporary rise in blood-sugar, greatest in amount (0.04%-0.08%) for ether, less (0.037%-0.05%) for morphine, and least (0.018%-0.023%) for novocain; of shortest duration (4-5 hrs.) for novocain, longer (5-12 hrs.) for ether, and longest (12-24 hrs.) for morphine. The disturbance of glycemic regulation in the case of ether is attributed to the diminished alkalinity of the blood.—*From author's summary (transl.).*

4036. **FIORANI-GALLOTTA, P. L. Alcoolismo.** 204p. 57 fig. Unione Tipografico-Editrice Torinese: Turin, 1929. 16 L.—The author traces the history of alcoholic beverages, and their uses in religious ceremonies. He tells of the first legislations against alcoholism, of the place held in literature and art by the grapevine and wine, the discovery of distillation and the first researches on alcohol. The bromatology and toxicology of alcohol and alcoholic beverages are discussed. Next are presented the views of different authorities as to the food value of alcohol. Also, the action of alcohol in the organism: in the G-I tract, in the blood system and tissues; its effect on respiration, on the neuro-muscular apparatus; thermic and psychical action; effect on liver, kidneys, and genitals; relation to T. B. and local and general resistance; with further observations and experiments. The author outlines the pathological action of alcoholic beverages; distinguishes between normal and pathologic inebriation; describes chronic alcoholism, alcoholic neuritis, alcoholic psycho-neuroses, gross pathological and histological lesions of the nervous system; lesions in other organs, like stomach and intestine, liver, pancreas, spleen, lung, blood vessels, kidneys, nerves, skin, genitals, male and female. The relation between alcoholism and heredity and its results on children and youths are discussed. The social causes and effects of alcoholism are given, touching upon heredity, sex, environment, pauperism, industrialism, land cultivation, etc. Very pertinent economic factors in relation to alcoholic beverages, their production and uses, their cost and mortality are presented. Finally, the author writes upon the antialcoholic prophylaxis in relation to legislations of many types; the "failure" of prohibition in the U. S.; in other countries, especially of France and Italy; the social measures, aid and provisions in regards to drunkards, their cure and their housing. He mentions various antialcoholistic leagues, their work, their remedies, their propaganda, their effort to substitute sports and other forms of amusements for alcohol drinking, etc.—*S. Jacobs.*

4037. **FORNET, W. Unbekanntes vom Insulin.** 41p. Verlag der Aerztlichen Rundschau, Otto Gmelin: München, 1929.—The urine of normal rabbits and healthy people fed with insulin pills undergoes remarkable changes. First it becomes optically active (levorotatory). Later it contains small amounts of glucose, that disappear again after a short time: "insulin diabetes" or "paradox insulin reaction." Insulin can be chemically standardized by reduction of $K_3FE(CN)_6$ as in the Hagedorn and Jensen blood sugar method. Some 20 different brands of insulin were thus examined.—*W. Fornet.*

4038. **FUJII, IJURO. Diuretine hyperglycaemia in cats.** *Tohoku Jour. Exp. Med.* 15(3/4): 285-323. 1930.—An attempt was made to administer diuretine hypodermically to the cat in a dose of 0.35 to 0.5 gm. per kgm. of body weight. Since the poisoning abolished or greatly diminished the appetite, in some cases food was not given for some days after the injection; in others a standard fluid food, composed of milk, Liebig's extract, soluble starch, glucose and water was given. The blood sugar before and after the diuretine administration and before and after giving the food was regularly investigated. On injecting diuretine the blood sugar of the cat, especially when the food was given not long before the injection, was increased during for, say, 3 to 5 hrs., the peak being reached probably within 1 hour after the injection, there was a return to normal but the sugar level rose again and reached the acme, as a rule, on the 2nd or 3rd day of the poisoning. The hyperglycemia continued as a rule 3 to 6 days or longer. This long lasting, moderate hyperglycemia was observed regardless of whether or not food was given after the diuretine administration. The standard fluid food, above given, invariably occasioned alimentary hyperglycemia, and when it was given during the diuretine poisoning, the alimentary hyperglycemia was apparently exaggerated. But the magnitude of the hyperglycemia may be regarded merely as the sum of the long lasting diuretine hyperglycemia and the alimentary hyperglycemia. The magnitude of the alimentary hyperglycemia during the poisoning was greatest on the 2nd or 3rd day of the poisoning, occasionally on the 4th day, and the exaggeration lasted 4 to 6 days at least. The transitory hyperglycemia which makes its appearance immediately after the diuretine injection and lasts for some hours only, disappeared when the splanchnic nerves and the semilunar ganglia were bilaterally interfered with. It is of central origin. Injection of the drug under the skin evokes extreme excitement which lasts about a half hour and is followed by the depressive stage. The moderate hyperglycemia lasting for several days after the diuretine injection, the alimentary hyperglycemia due to administration of the above mentioned fluid food, and its exaggeration during the diuretine poisoning were capable of developing in the cat so operated on. Therefore two forms of hyperglycemia are to be distinguished, that is, transitory hyperglycemia of central origin, which immediately follows the diuretine administration, and the long lasting hyperglycemia of long latency which is not of central origin. Glycosuria was seldom detected in the fasting cat poisoned with diuretine, but invariably when the alimentary hyperglycemia was induced in the cat under diuretine. Salicylic acid was determined in the urine. Ten to 20 hrs. after the diuretine injection the amount detectable reached the maximum. For 5 to 10 days the reaction was positive.—*Author's summary.*

4039. **FUKUYE, KANICHI. Beiträge zur Erforschung über die Störung des Gehörorgans durch das Nicotin.** [Japanese] *Kyoto Furitsu Ikwa Daigaku Zasshi* 1: 953-960. 1927.—The disturbances of the auditory organs produced in rabbits by subc. and intraven. injection of nicotine were studied. The findings included atrophy of the organ of Corti, macula and crista acustica and degenerative atrophy of the cochlear nerve, vestibular nerve and spiral ganglion.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by I. H. Pierce).*

4040. **GADDUM, J. H. Quantitative observations on thyroxine and allied substances. II. Effects on the oxygen consumption of rats.** *Jour. Physiol.* 68(4): 383-405. 1930.—Adult male rats from standard Wistar stock were fed on a standard synthetic diet, and a record was taken of their O consumption and movements for 3 hrs. every morning by means of the apparatus described by Richards and Collison. From these records the resting O consumption of the rats was determined. The normal value at 25° was 14.44 ± 0.07 c.c. per kgm. per min., or 700 cals. per square metre per 24 hrs. The effects on this of the administration of thyroxine and allied substances were studied. The conclusions already reached as a result of experiments with tadpoles were confirmed. The most effective way of giving thyroxine to rats is the subc. injection of an alkaline-water sol.; the intraven. injection of such a sol., or the subc. injection of a neutral suspension being relatively ineffective. The response to thyroxine was diminished after thyroidectomy and increased if another injection had been given previously. When used in the pure state the naturally occurring isomer, l-thyroxine, had more effect, on rats and on tadpoles, than d-thyroxine. Given orally to rats, I in the form of thyreoglobulin had much more effect than in the form of thyroxine. Tested on tadpoles or by subc. injection in rats, a dose of l-thyroxine was equivalent to a dose of thyreoglobulin with the same total I content. Two dipeptides containing thyroxine had, in equivalent doses, effects not very different from those of thyroxine itself, both when given by the mouth and when given subc. N-acetylthyroxine and diacetylthyroxine (Kendall) injected subc. suspended in water produced large and prolonged increases in O consumption. Diiodothyronine injected in comparatively large doses produced an increase in the O consumption both of normal and of thyroidectomized rats. Thyronine had no effect. The substance in which all the I of thyroxine is replaced by Br had a slight effect like that of thyroxine both on

normal and on thyroidectomized rats. Thyroxamine, diiodotyrosine and ββ-di-(3, 5-diiodo-4-hydroxyphenyl) alanine (which is isomeric with thyroxine) were without effect on the O consumption.—*Author's summary.*

4041. **GRUBER, CHARLES M., and PAUL I. ROBINSON. Studies on the influence of morphine, papaverine and quinidine upon the heart.** *Jour. Pharmacol. & Exp. Therap.* 37(4): 429-449. 12 fig. 1929.—Small and moderate doses of morphine SO_4 cause an increase in the height of contraction of terrapin hearts perfused through their coronary systems. Small doses of papaverine HCl likewise increase the height of contraction of excised perfused terrapin hearts. Moderate doses of papaverine HCl cause a decrease in the height of the contraction of the perfused terrapin heart. Large doses either of morphine SO_4 or of papaverine HCl cause temporary inhibition of cardiac activity. This is a more common effect of papaverine than of morphine. The first few contractions following the cardiac arrest are higher than the average. This process simulates the recovery noted after arrest by vagus stimulation. Atropine SO_4 does not abolish this phenomenon. Papaverine HCl increases the irritability of the terrapin heart until it finally causes fibrillation. A similar change can be induced by morphine though not so readily. Fifty-two % of the fibrillating hearts rendered so by the injection of either papaverine or morphine were temporarily restored to normal rhythm by the injection of quinidine SO_4. Terrapin hearts, fibrillating from excessive papaverine HCl administration, were made to beat with regularity for a short time by the administration of large doses of morphine and vice versa. The action of these opium alkaloids is the same upon excised hearts of rabbits and cats. Both morphine and papaverine cause vasodilatation of the coronary blood vessels, (confirmation of Macht). In the intact plethysmographed hearts of dogs and cats small doses of papaverine injected intraven. decrease cardiac volume. Large doses of papaverine cause dilatation of the heart.—*Authors' summary.*

4042. **HEFFERNAN, PATRICK. Some notes on the biophysics of silica and the etiology of silicosis.** *Brit. Med. Jour.* 2(3584): 489-492. 1929.—Si is a normal constituent of plant and animal tissues. It is found in animal tissues in fairly definite amounts, the quantity differing in various organs. It is exceptionally abundant in connective tissues of pulmonary tubercular lesions and embryonic connective tissue. Si serves to strengthen connective and ectodermal tissues and helps in the production of firm scar tissues. In this capacity it enters into the cell structure, probably in the colloidal form. Where inhaled in excess, Si leads to an overproduction of fibrous tissue due to the colloidal activity of fresh silica hydrosal, and not to any poisoning of the cell protoplasm by soluble Si. Silicosis is produced much more rapidly by inhaling powders made of strongly alkaline soaps and finely ground silica than by inhaling fine quartz particles, because in the presence of the stronger alkaline medium the readily adsorbed fresh silica hydrosal is more rapidly formed. Clays, carbon and perhaps other substances retard or prevent the formation of Si hydrosal or coagulate it when formed and so retard or prevent silicosis. "Asbestosis" is due to the Si content of the asbestos and is a true silicosis. The condition is not known to be produced by substances other than Si.—*A. B. Clawson.*

4043. **HOESSLIN, H. VON, und FRANZ MÜLLER. Theoretische und klinische Pharmakologie. [Theoretical and clinical pharmacology.]** 3d. Ed. 231p. G. Thieme: Leipzig, 1929. M. 11.

4044. **HORNUNG, STANISLAW. Recherches expérimentales sur le traitement prolongé des animaux normaux par l'insuline. [Prolonged insulin treatment in normal animals.]** *Compt. Rend. Soc. Biol.* 97(33): 1500-1502. 1927.

4045. **ITO, MASAMITSU, und TOMOSHIGE SUGIURA. Über den Einfluss einiger Schwermetalle auf den Blutzucker.** (Japanese.) *Tokyo Iji Shinshi.* 51: 2096-2099. 1927.—Novasurol produces in normal rabbits a slight degree of transitory hypoglycemia; an effect which Shilling and Anord have observed in humans. With some preparations of other heavy metals, such as Ag, Fe and Bi, the effects reported by the above mentioned workers were not obtained.—*Authors' abst. (courtesy of Japanese Jour. Med. Sci. IV) (transl. by C. S. Leonard).*

4046. **JANCSÓ, N. von, Jr. Die Bedeutung der retikuloendothelialen Speicherung der chemotherapeutischen Arsenobenzolderivate vom Standpunkt der chemotherapeutischen Wirkung.** *Zeitschr. Ges. Exp. Med.* 65(1/2): 98-128. 1929.—By histochemical methods the mechanism of action of the arsphenamines was shown. The various arsphenamines if injected intraven. in mice show an entirely varying behavior as far as their storage in the reticulo-endothelial system goes. As for recurrent fever, the reticulo-endothelial storage of the investigated arsenobenzol derivatives plays a very minor rôle or none at all in the mechanism of their action. This storage does not influence the spirocheticidal action. Ag arsphenamine, which forms the greatest deposit, has no stronger action, while sulpharsphenamine which has the least deposit is the most active. In the case of trypanosomiasis there exists a different relation between reticulo-endothelial storage and therapeutic action; an entirely different situation as in the case of recurrent fever. Ag arsphenamine and neoarsphenamine, which form the maximum deposit in the reticulo-endothelial system, possess the greatest therapeutic activity, while sulpharsphenamine and "Arsalyt," which form only small deposits in the tissues have no effect in trypanosomiasis of mice. It is concluded that the dischemotherapeutic action of splenectomy has no relation to the storing action of the reticulo-endothelial system and on the other hand storage in these tissues is not a prerequisite for this chemotherapeutic action.—*F. R. Greenbaum.*

4047. **KOBACKER, J. LESTER, und D. SCHERF. Versuche über die Entstehung der Digitalisextrasystolen.** *Zeitschr. Ges. Exp. Med.* 67(3/4): 372-380. 4 fig. 1929.—From 3 series of studies, one on 5 dogs and 5 cats, one on 5 cats and a third on 6 animals, it is concluded that digitalis arouses, in the last stages of intoxication in the intact mammalian heart in situ, irregular extrasystoles, never a regular bigeminy. Previous heart injury, to the point of serious degeneration of heart muscle, induced by P poisoning, does not alter the result; but mechanical injury from pressure or wound produces much earlier intoxication with a much lower dosage. K and Ca lead to a bunching of the digitalis extrasystoles. A vagus stimulation in several experiments increased the extra impulses in the ventricle.

4048. **KOBAYASHI, ATAKA. Über die Gewöhnung an Morphin und seine lähmende und erregende Wirkung.** (Japanese.) *Tokyo Igaku Kwai Zasshi.* 41: 2276-2326. 1927.—In long-continued experiments with morphine on rabbits, dogs, cats and guinea pigs, the alterations in various morphine effects have been studied. The reactions of the central nervous system and peripheral organs in tolerant and non-tolerant animals were studied comparatively. Also the pharmacological action and the continued application of the nitroso-morphine prepared by Tamura were investigated. The following conclusions were reached: 1. The increased power of the organism to destroy morphine, first found by Faust, is not sufficient to explain morphine tolerance, but there must occur a specific acquired cellular immunity. 2. It is believed with McGuigan and Tamura, that the depressant effects are produced by morphine itself, the stimulating action by its decomposition products.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by I. H. Pierce).*

4049. **KOSKOWSKI, W. Choc peptonique et encéphale.** *Compt. Rend. Soc. Biol.* 97(33): 1503-1504. 1927.—Separation of the brain does not affect the appearance of peptone shock.

4050. **LEGRAND, ANDRÉ, et DANIEL SANTENOISE. Action de l'urotropine sur l'excitabilité vagale. [Action of urotropin on vagal excitability.]** *Compt. Rend. Soc. Biol.* 97(33): 1481-1483. 1927.

4051. **LEGRAND, ANDRÉ, et GUY BIERNENT. Contribution à l'étude du mécanisme de l'hyperglycémie**

consécutive aux injections intraveineuses de nitrate de pilocarpine chez le chien. [Hyperglycemia induced by pilocarpine.] *Compt. Rend. Soc. Biol.* 97(33): 1483-1484. 1927.

4052. **LÉVY, JEANNE, et RENÉ HAZARD. Action de quelques mydriatiques sur l'oeil énuclée de grenouille. —Application à l'étude pharmacodynamique des éléments constituants de l'atropine (tropanol et acide tropique) et de quelques-uns de leurs dérivés.** *Arch. Internat. Pharmacodyn. et Therap.* 36(1): 26-48. 1929.—Pupillary area of the freshly excised eye is maximally increased by epinephrine 1:1000, less markedly by 1:5000 and 1:10,000; atropine and pilocarpine do not influence epinephrine mydriasis. Atropine SO_4 is mydriatic in concentration of 1:200, more markedly in 1:100; the base is more powerful than the salt; epinephrine causes further mydriasis after atropine. Pilocarpine NO_3 1:100 causes marked miosis, but does not overcome atropine mydriasis. These observations confirm Poos' belief that the dilator and sphincter muscles are distinct entities, and that the former has a dual innervation, the latter a single one. Tropine itself is mydriatic to the isolated frog pupil; this action depends on the tertiary amine, not on the alcohol group. Tropic acid is miotic, but its simplest ethers are mydriatic; the necessary groupings are an aromatic acid containing a secondary alcohol, primary and tertiary groups making the acid less powerfully mydriatic. The nature of the radical with which the acid combines is immaterial, at least among the simplest tropates. The constituents of atropine are therefore both mydriatic in the form of simple ethers, and the combination simply reinforces the action. This is true only of the excised eye of the frog, not of the eye in situ nor of the isolated mammalian iris.—*C. F. Schmidt.*

4053. **LÉVY, JEANNE, et OLIVIER GAUDIN. Dosage de la narcotine dans les mélanges morphine-narcotine et dans les préparations à base de poudre d'opium. Action de quelques alcaloides de l'opium sur l'intestin isolé de cobaye.** [Concluded]. *Bull. Sci. Pharmacol.* 37(8/9): 478-500. 1930.—The different alkaloids of opium have somewhat similar actions on the isolated intestine of the guinea-pig. However, while the phenanthrene derivatives (morphine, codeine) provoke, in small doses, a slight diminution of peristalsis the isoquinoline derivatives (narcotine, papaverine, narceine), in small doses, cause a slight excitation of peristalsis, which is, however, not constant. In strong conc. all the alkaloids of opium cause a lowering of tonus and a paralysis of peristalsis. The strength of these effects varies with the different alkaloids, morphine being the least active and narcotine one of the most powerful. The constancy of the results and the proportionality between the quantity of alkaloid and the degree of the lowering of tonus is the basis of a method for the quantitative determination of each of the alkaloids, in pure solution. Moreover, narcotine can be determined in morphine-narcotine mixtures or in those of alkaloids similar to the natural composition of opium. The action of these mixtures is compared with that of a known solution of narcotine, always diluting the mixture sufficiently to reduce the morphine and other alkaloids below their efficient concentration. While the method is satisfactory for mixtures of alkaloids it will not work for extract of opium, because of the non-alkaloidal substances present which exert an effect on the intestines. The result obtained with the extract is, however, interesting because it confirms by physiological analysis the presence of a considerable quantity of very active substances, unknown until now.—*Authors' conclusions (transl. by H. C. Wood).*

4054. **LIPSCHITZ, WERNER, PAUL MEYER, und ROBERT SALOMON. Die Grundwirkungen des Kampfers und kampferartiger Substanzen.** *Arch. Exp. Pathol. u. Pharmakol.* 148(5/6): 257-294. 8 fig. 1930.—Camphor has a diphasic action on the oxidation rate of goose erythrocytes; after raising their respiration from 20-40% there follows a non-specific action resembling narcosis superseded by another rise in respiration. Weaker solutions produce first an inhibitation, then an increase in oxidation, then a decrease. The effect of increasing oxidations is specific for all the camphor group except methylbutylketone, which is derived as a condensation product of cyclohexanon. Stimulation by camphor is due not only to its action on the cardiac mechanism, but also to its oxidation effects. It increases oxidation in rabbit erythrocytes, but does not affect the oxidation rate of the model: (animal charcoal, oxalic acid + O). The respiratory quotient of cells treated with camphor is about 1, in Ringer's solution, but is somewhat different in an isotonic solution of pure $CaCl_2$, pure NaCl, and sucrose. The partition coefficient of camphor between erythrocytes and surrounding fluid lies between 1.4 and 1.7. Partition of the I ion between erythrocytes and perfusion fluid is not altered by treatment of the cells with camphor. Blood cells frozen and then thawed after camphor treatment increase their oxidation rate from 100-200%. A camphor solution that inhibits oxidation plus a narcotic has a greater inhibiting effect on oxidations than the sum of their separate action. If the erythrocytes are washed free of the narcotic, and then camphor is added to them, it increases oxidation. Cells treated with camphor are more sensitive than untreated cells to HCN and to narcotics.

4055. **LUDWIG, WILHELM. Die Ursachen der extremen Giftwirkung der Schwermetallionen, sowie der Verunreinigungen von Wasser und Glas auf Paramaecium aurelia.** *Zeitschr. Wissens. Biol. [Abt. C.] Zeitschr. Vergleich. Physiol.* 6(3/4): 623-687 16 fig. 1927.—*P. aurelia* is injured by all solutions of $AgNO_3$ up to dilutions of 10^{-7} and 10^{-8} gm./cc. $AuCl_3$ and $Cu(NO_3)_2$ have similar effects. In these studies, death of the paramecia was taken as the criterion of toxicity; division-rate, being dependent directly upon the bacterial content of the medium, was not a consistent criterion. There is a critical discussion of similar studies of Kolisko, Krawkow and Junker. The cause of the action of $AgNO_3$ is the action of Ag-ions in increasing the permeability of the pellicle for water, resulting in an increase in the normal diffusion from outside in. This increase is proportional to the Ag-concentration and is probably conditioned by the formation of Ag-albumin compounds within the pellicle. The excretory apparatus is unable to dispose of this additional water, and, when death occurs in the more dilute solutions, the organism swells and the pellicle disintegrates. Since hypotonic solutions tend to the same effect, the author increased the toxic action of the Ag salt by decreasing the osmotic pressure of the culture medium. In this way death of the organisms was brought about in $AgNO_3$ solutions as dilute as 10^{-9} gm./cc. This gives a clue to the injurious effects observed from water distilled in Cu or Ag vessels. Ordinarily, paramecium shows no sensitivity to the osmotic pressure differences of distilled water, tap water and culture media. Impurities contained in glass that are of chief practical interest are those absorbed or adsorbed from solutions previously in contact with it. Sometimes these substances can not be or can hardly be removed by ordinary cleaning methods, but when in contact with a liquid over a long period of time are gradually given up to it. Glass exposed to $AgNO_3$ absorbed it in proportion to the concentration in the solution. Glass thus artificially "activated" with $AgNO_3$ showed in the solution with which it was kept in contact a zone of increased concentration near the glass. The toxic effect of the solution could be decreased or stopped by preventing the animals from coming in contact with the glass. Metals go into solution in water in concentrations great enough to kill paramecium. Their injurious action is not different from that of their salts, and we can dispense with the conception of an "oligodynamic action." The paper is followed by a bibliography of publications dealing with the action of dilute solutions; these writings are classified according to subject-matter.—*G. Alexander.*

4056. **MACKLER, H., and J. M. D. OLMSTED. Changes in the chemical constituents of frog's muscle induced by insulin.** *Univ. California Publ. Physiol.* 7

(9): 91-102. 2 fig. 1929.—Determinations of initial inorganic P, phosphocreatine, total P, lactacidogen, glycogen, and lactic acid have been made on individual muscles (gastrocnemii) or groups of muscles (the remaining shin muscles) of large bullfrogs. In the resting muscles of normal frogs, approximately 25% of the P is "labile" P, presumably in the form of phosphocreatine. After prolonged stimulation the labile P is decreased; the customary decrease in glycogen and increase in lactic acid takes place, but there appears to be no change in lactacidogen. When normal frogs are exercised in order to simulate insulin convulsions, the initial inorganic P and lactic acid are higher, and phosphocreatine and glycogen are lower, than normal. If the frogs are allowed to rest after the exercise, the initial inorganic P and phosphocreatine tend to return to their normal values while the glycogen tends to remain low and the lactic acid high, showing that there is no correlation between these two mechanisms. After insulin convulsions, the initial inorganic P and lactic acid are both high, and phosphocreatine and glycogen, low or even absent. Contraction can take place in absence of either phosphocreatine or glycogen, or of both.—*Authors' summary.*

4057. MERCIER, FERNAND. Action de l'hydrastine sur la respiration. [Action of hydrastine on respiration.] *Compt. Rend. Soc. Biol.* 97(33): 1468-1470. 3 fig. 1927.

4058. NAITÔ, TAMIJI. Zum Vergleich der Herzwirkung von Kampfer, Hexeton, Coramin. (In Japanese) *Chiba Igaku Kwai Zasshi* 5: 1366-1385. 1927.—The action of camphor, hexeton, and coramin was studied on the normal and the chloralized frog's heart, using a modified Straub's cannula, applying the drugs both internally (endocardially) and externally (pericardially). Camphor had no stimulating action on the normal heart, but stimulated the chloralized heart, causing increased rate and amplitude. In stronger concentrations camphor caused depression of the heart, the muscle being paralyzed. The paralysis disappeared quickly if the heart was perfused with Ringer's sol. Hexeton also acts as a stimulant for the chloralized heart; but not so certainly nor so promptly as camphor. Strong solutions give more paralysis than camphor. Coramin is still more certain in its stimulating action on the chloralized heart. In strong solutions it brings the heart to standstill in diastole; but the heart muscle is still quite able to contract on stimulation. In this the coramin is quite opposite to camphor and hexeton.—*Author* (*courtesy Japanese Jour. Med. Sci. IV*) (*transl. by C. Brooks*).

4059. NAPIER, L. EVERARD and C. R. DAS GUPTA. The value of a provocative dose of pentavalent antimony in the diagnosis of kala-azar. *Indian Jour. Med. Res.* 17(3): 749-753. 1930.—The intravenous injection of an ordinary therapeutic dose of neostibosan has the effect of increasing the number of leishmania parasites in the blood of a kala-azar patient. The greatest number of parasites will be found between 5 and 10 min. after injection. In this series the number of parasitized cells found in smears taken 10 min. after injection had been given was 34, compared to 10 parasitized cells in the same amount of blood taken from the same patients prior to injection. This increase is so marked that the procedure described may facilitate diagnosis in cases in which the more certain methods of spleen or liver puncture, or blood culture cannot for any reason be employed. The interval between giving the injection and taking the blood for examination should be 10 min. Although in the experiments reported above neostibosan was used, it is probable that any therapeutically active pentavalent compound of Sb would act in a similar way.—*Authors' conclusions.*

4060. OHNO, REISHICHI. Untersuchungen über die Beziehung zwischen Nervengiften und Elektrolyten. I. Mitteilung. Beziehung zwischen parasympathischen Giften und Calcium sowie Strontium. II. Mitteilung. Ueber den Einfluss von Kalium, Rubidium, und Natrium auf die inverse Calciumwirkung. *Kyoto Igaku Zasshi* 24: 792-801, 802-814, 1927.—If a frog's heart, perfused with K-free Ringer sol. after previous treatment with pilocarpine or acetylcholine, be further treated with a Ca sol. of medium concentration, there is observed, instead of the increase in tonus characteristic of the action of Ca, a decided decrease, or one might say an inverse Ca action. With Sr sol. such an inverse action never occurred. For the inverse reaction to occur it is necessary that the parasympathetic system be irritated to a greater degree than the sympathetic and also that the Ca conc. does not exceed M/30.—II. The action of pilocarpine and acetylcholine is more pronounced in K-free than in K-containing normal Ringer sol. The presence of K or Rb in the perfusion liquid suppresses the inverse Ca action. Contrariwise an increase in the Na content of the perfusion liquid favors the occurrence of the inverse Ca action as well as of the action of parasympathetic poisons.—*Author* (*courtesy Japanese Jour. Med. Sci. IV*) (*transl. by L. W. Butz*).

4061. POPOFF, P. Действието на Piscida erythrina върху рибитѣ. [The action of P. erythrina on fish.] [In Bulgarian.] Годишникъ на Софийския университетъ, Ветеринарно-медицински факултетъ. (*Jahresber. Univ. Sofia, Vet. Med. Fakultät.*) 3: 113-142. 1927.—A resinous minor substance was isolated from the root-bark of *P. erythrina* and its action tested on fish. It killed fish by paralysis of certain parts of the brain (diencephalon and midbrain). Another alcohol-soluble substance of piscidia resin, the so-called "second minor substance," showed an especially great activity; it was the strongest fish poison of the resin and was called "piscidin." It killed fish in a dilution of about 1: 400,000 within 10 min.—*A. Kalojanoff* (*transl. by E. V. Lynn*).

4062. PRIBYL, E. K dusikovemu metabolismu pri experimentalnich otravach. I. Subacutní otravy arsenem. [Nitrogen metabolism in experimental poisoning. I. Subacute arsenic poisoning.] [English summary.] *Biol. Spisy Vysoké Školy Zverolékařské Brno* (*Publ. Biol. École Vétérinaires*) 6: (121)-(135). 1927.—Experimental subacute poisoning in 4 rabbits by sodium arsenite has been induced and the changes in ratio between urea N and non-protein N in blood, urea N, ammonia N and total non-protein N in urine were followed. It was found that there was an increase of non-protein N in all cases. The urea N quotient in blood of the poisoned rabbits increased, but in one rabbit on the day before death the urea quotient decreased by ½ the normal value. The increased non-protein N and urea N in blood were associated with an increase of these constituents in the urine. Also in the urine the urea quotient increased above the normal value. The noticed decrease of non-protein N in one rabbit was followed by a decrease of urea N in the urine. The NH_3 excretion in poisoned animals was little changed. The initial stages of hyperemia or fatty degeneration of the liver seemed to have no influence on the blood and urine urea content, but in the advanced stages of fatty degeneration of liver, the urea content was decreased.—*Author's summary.*

4063. RAYMOND, HAMET, et FERNAND MERCIER. Nouvelles observations sur l'action circulatoire de l'hydrastine. [The circulatory action of hydrastine.] *Compt. Rend. Soc. Biol.* 97(33): 1465-1467. 2 fig. 1927.

4064. RENTZ, ED., und C. AMSLER. Die "Potential" oder Phasenwirkungen der Lokalanästhetika am Froschgefässpräparat. *Arch. Exp. Pathol. u. Pharmakol.* 133 (5/6): 274-283. 3 fig. 1928.—The action of alypine, novocaine, tutocain, eucaine B, and cocaine HCl upon the isolated blood vesels of the frog (method of Laewen-Trendelenburg-Backman, see Rentz, Arch. Exper. Pathol. u. Pharmakol. 131, p. 357, 1928) is that of a temporary vasoconstriction even when the rate of perfusion remains unchanged. The substitution of the poison containing perfusion fluid by normal solution after 10 min. perfusion or after returning to the original rate of perfusion also affects the blood vessels. Such effect, however, is opposite to that observed during the initial phase and decreases in intensity in the order of the drugs named. The duration of the effect due to washing also decreases. Changing the drug concentration from weaker to stronger causes a vasoconstriction, and from stronger to weaker—

a vasodilation in the case of drugs the initial action of which is vasoconstriction. The vasodilating drugs, such as psicaine and stovaine, show no effect upon washing. Further work is being done to determine the significance of the above described "phase action" of the drugs.—*E. Rentz (transl. by B. S. Levine).*

4065. **RITLOP, BÉLA. Über die Wirkung des Insulins auf Kohlenhydratverbrennung und Energieumsatz in Tieren, denen Kohlenhydrat beigebracht wurde.** *Biochem. Zeitschr.* 219(4/6): 277-296. 1930.—Dogs which had been paralyzed with curare and then kept breathing by artificial respiration were injected with dextrose and insulin simultaneously. Carbohydrate oxidation increased when insulin was administered. Injected dextrose also had a specific dynamic action. This action was not increased by insulin.

4066. **SIMONDS, J. P., and W. W. BRANDES. The effect of peptone upon the hepatic veins in the dog.** *Jour. Pharmacol. & Exp. Therap.* 35(2): 165-170. 3 fig. 1929.—A method of mechanical recording of alterations in outflow from, and volume of, the liver during perfusion, is described, with an illustration showing the construction of the apparatus. Dog livers were perfused with well oxygenated, diluted, defibrinated dog blood under a pressure of 30-34 mm. of perfusion fluid. Addition of Witte's peptone to the perfusion fluid caused a marked reduction in outflow, whether the perfusion fluid entered by way of the portal or the hepatic vein; a notable increase in liver volume if the fluid entered by the portal vein; and a decrease in volume if it entered through the hepatic vein. These results suggest that Witte's peptone has a specific effect on the hepatic vein in dogs, causing an obstruction probably due to venoconstriction.—*J. P. Simonds.*

4067. **STADELMAN, R. E. The poisoning power of the new-born copperhead, with case report.** *Bull. Antivenin Inst. America* 2(3): 67-69. 1 fig. 1928.—Copperheads only a few hours old are able upon biting to cause typical symptoms of poisoning lasting for at least 2 days.—*A. do Amaral.*

4068. **VELAZQUEZ, B. LORENZO. Estudios farmacológicos sobre la tiroxina. [Pharmacological research on thyroxin.]** *Arch. Med. Cir. y Espec.* 30(4): 97-100; (16): 495-497. 1929.—Thyroxin does not show striking activity on the isolated bowel. The activation of acetylcholine action by thyroxin is definitely established in Magnus and Trendelenburg preparations. The reciprocal activation of thyroxin action by acetylcholine is uncertain. Ergotamine inhibited the hypermotility produced by the summation of the two drugs. Clinical considerations are subjoined.—*J. Pi-Suñer.*

4069. **VINCENT, MAURICE. Influence de l'acide combiné sur le pouvoir anesthésique des sels de para-aminobenzoyl diéthylamino-éthanol. [Influence of combined acid on the anesthetic power of the salts of p-aminobenzoyl-diethylamino-ethanol.]** *Compt. Rend. Soc. Biol.* 97(33): 1444-1447. 2 fig. 1927.

4070. **WAITZ, CARL. Experimentelles zum Oleothorax.** *Beitr. Klin. Tuberk.* 73(1): 59-72. 4 fig. 1929.—The 1st part of this study includes 4 series of experiments on oleothorax in rabbits and guinea-pigs (number not stated). Pure olive oil, mixed with 10% oil of sesame, was used, and in some experiments, 8% gomenol, the oil of one of the Myrtaceae, *Melaleuca viridiflora,* chemically akin to eucalyptus oil and the terpene group. A marked irritative action was observed, especially from the gomenol, causing exudation, perivascular cellular infiltration, formation of adhesions, etc. The 2nd part comprises cultural studies in vitro, and demonstrates the growth-inhibiting effects of oil on staphylococci, *Bacillus putrificus verrucosus* Zeissler and tuberculosis bacilli.

4071. **WATT, J. M. The action of cardiazol on the cardio-vascular system.** *Jour. Med. Assoc. South Africa* 4(2): 36-39. 5 fig. 1930.—Cardiazol or pentamethylenetetrazol produced a depressing action on the isolated cat and rabbit heart. It did not counteract the depressing effects of $CHCl_3$ on the heart. On a heart taken from a rabbit with pneumonia, cardiazol had no effect.

4072. **WAUCOMONT, R. Recherches sur la pharmacodynamie générale de l'intestin.** *Arch. Internat. Pharmacodyn. et Thér.* 36(3): 285-386. 1929.—Activity of isolated intestine is primarily a function of the alkalinity of the sol. employed: Ringer pH 7.85 was used in these experiments; pH 9.10-9.50 gave maximal contractions; pH 6.50-5.20, complete relaxation and arrest of movements. Greater alkalinity caused "systolic standstill" of the segment. Alkaloids in small amounts increase the activity and amplitude of contractions because of their basic property. In larger amounts alkaloids work in one or two ways: (1) paralyzant (trivalent N, cocaine, nicotine, atropine); (2) excitant (pentavalent N, pilocarpine, choline, muscarine, etc.). Ionic modifications in a neutral medium have no effect on contractility. In normal alkalinity Na+K in proper proportion give rise to no contractions as long as the Na+Ca maintains a reduced activity. In weak $CaCl_2$ sol. activity ceases in a state of contracture; in weak KCl sol., in relaxation with marked loss of tone. Alkaloids do not exert their action as long as the ionic composition of the nutritive medium remains normal. Caffeine and ergotamine can not be used to eliminate sympathetic function because of their action on the muscle. Alkalinizing the solution sufficiently prevents the inhibitory action of epinephrine. Nicotine and phenol paralyze the sympathetic fibers without affecting parasympathetic. Atropine in moderate doses paralyzes both. A segment so treated establishes a slow, regular rhythm with moderate tonicity and weak amplitude. This activity is of neurogenic origin; it is irreversibly abolished by methylene blue, which selectively poisons the nerve ends without affecting the muscle. Epinephrine is similarly shown to act on the intermediary substance. While the intrinsic nervous system is characteristically resistant to the action of poisons, particularly alkaloids, it is electively responsive to alkalies. The digitalis group acts on the motor neuromuscular mechanism; Ba salts affect the muscle fibers directly; veratrine relaxes and paralyzes smooth muscle. Gradual moderate distension throughout the length of a loop causes an increase in tone and augmentation of amplitude of contractions. Too strong or sudden distension causes loss of tone and diminution or abolition of contractions. These reactions are ascribed to the intrinsic nervous system. The muscle fibers freed of all nervous elements except the interstitial syncytium retain the functions of contractility and rhythmicity, an elementary power assuring at least a minimal intestinal activity. Bile salts depress the activity of the isolated loop. Rhubarb, senna, cascara and colocynth inhibit the movements and prolong the action of epinephrine. Increasing the alkalinity of the fluid reinstates contractions thus suspended. In animals with biliary fistulae and with the bile ducts ligated, small or moderate doses of the purgatives have no effect. If an alkali (soap or $NaHCO_3$) is given at the same time there is a slight increase in the amount of the stools. Strong doses have a marked purgative action. Numerous tracings, protocols and theoretical discussion are included.—*C. Reynolds.*

4073. **WOKES, FRANK. A note on the potency of Digitalis lanata.** *Quart. Jour. Pharm. & Pharmacol.* 2(2): 292-298. 1929.—A sample of authenticated fresh *Digitalis lanata* leaves has been assayed both by the frog and by the cat methods, the water-soluble constituents being obtained by means of an infusion, and the alcohol soluble constituents by means of tinctures. The infusion gave a somewhat lower result than the 2 tinctures. By the cat method it was 350 ± 22% of the standard for the former compared with 432 ± 47 and 394 ± 45 for the latter. The frog method applied to one of the tinctures indicated a lower potency than the cat method (320 ± 21% compared with 394 ± 45% resp.) but the difference barely exceeded the combined experimental error. The actual potency of the sample of *D. lanata* is probably 3½ to 4 times that of the international standard. —*Author's summary.*

4074. **WOLFF, HAROLD G. The cerebral circulation. XI a. The action of acetylcholine. XI b. The action of the extract of the posterior lobe of the pituitary gland. XI c. The action of amyl nitrite.** *Arch. Neurol. and Psychiatr.* 22(4): 686-690. 3 fig.; 691-694. 2 fig.; 695-699. 3 fig. 1929.—XI a. Intraven. injection of acetylcholine causes dilatation of cerebral arteries, veins and minute vessels, usually a rise in cerebrospinal fluid pressure and a fall in systemic arterial pressure. In the regulation of the diameter of cerebral blood vessels, the chemical content of the blood is of greater importance than its hydrostatic pressure. XI b. Extract of the posterior lobe of the pituitary gland causes constriction of pial arteries, arterioles, veins, venules and minute vessels. Vasoconstriction after intraven. injections of pituitary indicates that the diameter of the brain vessels is influenced more by the chemical content of the blood than by its hydrostatic pressure. XI c. Inhalation of amyl nitrite in cats causes dilatation of cerebral vessels. Associated with the cerebral vasodilatation, there is a fall in systemic arterial pressure and a rise in cerebrospinal fluid pressure.—*Author's conclusions.*

4075. **YOSHIDA, HARUYOSHI, und INOSUKE HAYASHI. Beiträge zur Kenntnis der Kampferwirkung auf das Froschherz.** *Nagoya Jour. Med. Sci.* 2(1): 1-5. 1927.—The isolated hearts of about 450 ♂ frogs were studied when perfused with 1×10^{-2}-2×10^{-3} concentrations of camphor in Locke-Ringer sol. At 1×10^{-4} the height and frequency of contraction are decreased, recovering when the concentration is lowered. In the heart poisoned by camphor, O perfusion brings back regular contractions in from 3 to 25 hrs., depending on the method and the richness of the perfusion. The O reversal is explained by the volatilization of the camphor in the cannula, which was determined by Bohr's method. —*I. Hayashi (transl. by C. Reynolds).*

ANIMAL PATHOLOGY

GENERAL

(See also in B. A. 6(1): Entry 134; and in this issue 4254)

4076. **AGNEW, R. GORDON. Oral pathology in Szechwan.** *Jour. West China Border Res. Soc.* 3: 61-81. 12 fig. 1926/29[1930].—A review of the facts of dental histology, with remarks on the prevalence of certain pathological conditions among the people of Szechwan.

4077. **HERTZLER, A. E. Diseases of the thyroid gland.** 2nd ed. 286p. Henry Kimpton: London, 1929. Pr. 32s.

4078. **HESS, ALFRED F. Rickets, osteomalacia and tetany.** 429p. Henry Kimpton: London, 1930. Pr. 25s.

4079. **HOLMES, BARBARA (preface by F. G. HOPKINS). Cancer and scientific research.** 160p. The Sheldon Press: New York, 1931.—A presentation of some of the facts about cancer in a form that should be easily understood by the moderately well educated non-medical reader. Special emphasis is placed upon such etiological factors as are well demonstrated in a well planned effort to educate the reader in such preventative measures as may seem indicated. No new material is presented. The material is logically and clearly presented in an unusually calm and dispassionate fashion.—*G. L. Rohdenburg.*

4080. **HOLMES, S. J. Differential mortality in the American negro.** *Human Biol.* 3(1/2): 71-106; 203-244. 1931.—A survey of the mortality of negroes and whites reveals wide differences in the death rates of the 2 races from various diseases, in part the result of the unfavorable environmental conditions surrounding the negroes. For several diseases the mortality of the negroes is less than that of the whites (measles, scarlet fever, diphtheria, and erysipelas). Since the environment is everywhere more favorable to the whites, the facts point to the existence of a hereditary racial difference in respect to these diseases. Diphtheria takes a higher toll from the negroes in the first year of life, but the relation is reversed in the 2nd and subsequent yrs. The high negro death rate from tuberculosis is due partly to environmental factors and partly to the imperfect acquisition of an immunity acquired through minimal infections. Tuberculosis in the American negro is approaching the slow chronic character manifested in the whites. How far a true racial diathesis is involved is doubtful. The mortality of negroes from pneumonia is everywhere higher than that of the whites, and in cities it is commonly 2 or even 3 times as high. In the U. S. Army during the late war negro mortality was over twice that of the white recruits for bronchial pneumonia, and nearly 3 times that of the whites for lobar pneumonia. The attack rates for bronchial pneumonia among the negroes were nearly 3 times that of the whites, and over 4 times that of the whites for lobar pneumonia. The ratios of deaths to cases, however, were actually somewhat higher for the whites in both these diseases. Ordinarily, influenza is more fatal to negroes than to whites and the attack rate is generally higher; but at the height of the great epidemic of 1918 the whites suffered more than the negroes. The Army experience, as well as the testimony of several physicians, indicates that the negroes suffer less than the whites from colds, and diseases of the nose, sinuses, throat, and ears. Cancer of the skin is relatively rare in negroes, but cancer of the uterus is considerably more common in negro than in white females. The incidence of most kinds of skin disease among negroes is low. On the other hand, negroes are particularly prone to die from diseases of the heart, nephritis, and cerebral hemorrhage, especially in cities. Negro mortality resulting from syphilis is high, and this fact accounts largely for the high proportion of stillbirths and abortions in the colored population. Congenital malformations and injuries at birth among negroes are relatively rare. The general thesis is advanced that many of the natural immunities of the negro, not only to diseases of the skin, but to infections starting in the mucous membranes of the nose and mouth, are due to the superior resistance of the ectoderm in the negro race.—*S. J. Holmes.*

4081. **KARSNER, HOWARD T., with an introduction by SIMON FLEXNER. Human pathology. A textbook.** 2nd rev. ed. viii + 980p. 20 col. pl., 443 fig. J. B. Lippincott Co.: Philadelphia. 1929.

4082. **LANG, THEO. Zur Frage: Geisteskrankheit und Geburtsmonat.** *Arch. Rass.- u. Ges.-Biol.* 25(1): 42-57. 1931.—Distribution of 17,391 births of psychopathic patients corresponded closely with that of the general population.—*P. Popenoe.*

4083. **VAN SLYKE, D. D., EDGAR STILLMAN, EGGERT MOLLER, W. EHRICH, J. F. MCINTOSCH, L. LEITER, E. M. MACKAY, R. R. HANNON, N. S. MOORE, and CHRISTOPHER JOHNSTON. Bright's disease. Observations on the courses of different types and on the resultant changes in renal anatomy.** 236p. 41 fig. (4 col.) Williams and Wilkins Co.: Baltimore, 1930. Pr. $3.00.—Clinical, chemical and functional observations, continued for periods varying from a few weeks to several yrs., are reported on 67 patients with Bright's disease, hemorrhagic, sclerotic, and degenerative. Gross and microscopic findings are described for 17 of the cases.—*From abstract by D. D. Van Slyke.*

ANIMAL PATHOLOGY

MORBID ANATOMY

E. W. GOODPASTURE, *Editor*

C. EUGENE WOODRUFF, *Assistant Editor*

(See also in B. A. 6(1): Entries 281, 300, 379, 582, 609, 622, 654, 694, 791, 843, 844, 1231, 1302, 1326, 1342, 1357, 1407, 1475, 1594, 1697, 1755, 1764, 1766, 1790, 1792, 2200, 2286, 2306, 2324, 2867; and in this issue 3060, 3277, 3278, 3282, 3287, 3606, 3707, 3828, 4076, 4223, 4235, 4311, 4341, 4475, 5288, 5290, 5336, 5337, 5416, 5421)

4084. BONNE, C. De Ontwikkeling van een Carcinoom. [Development of carcinoma.] *Handelingen 5de Ned.-Ind. Natuurwetensch. Congres Soerabaja* 1928: 258-265. 1928.—The investigation of the initial stages of the experimental carcinomata shows, that these malignant tumors begin at several places simultaneously, and that all transitions between normal cells, thickened epithelial cell layer and true infiltráting growth can be found. From time to time resorption of the formed tumors is found. This conception contrasts with the idea of Ribbert or Boverie that the carcinoma develops only out of its own center without cancerization of the surrounding tissue. The author found some examples in human, e.g., cancers of the skin, but in many other tumors the initial stages are difficult to find, and in the later stages symptoms of cancerization of normal tissue are no longer found.—*W. J. C. Verhaart.*

4085. BORNSTEIN, SIEGBERT. Histologische Glykogenbefunde in Leber und Nieren bei mit Insulin behandelten Diabetikern. *Zeitschr. Ges. Exp. Med.* 66(5/6): 623-634. 1929.—The glycogen content of the liver and kidney is compared in diabetics treated with insulin and those not so treated. Following insulin therapy there is an increase in the intracellular glycogen in the liver, so that in severe cases it is abundant. This confirms the results of animal experimentation and those of Dick in 3 human cases. Carbohydrate depletion of the organism prevents liver glycogen increase. The anatomical finding of glycogen in the kidney, considered characteristic, is not always present in insulin treated cases and is absent in cases with sugar-free urine.—*R. A. Moore.*

4086. BRAMBILLA, SILVIO. Le alterazioni del sistema nervoso centrale in alcune avitaminosi. [Alterations in the central nervous system in certain types of avitaminosis.] *Lo Sperimentale* 84(5/6): 537-552. 1930.—Only pure degenerative changes were observed in scorbutus of guinea pigs and rachitis of rats. There was almost no activity of the glial and mesodermal cells. Avitaminosis does not produce specific neuropathologic lesions.—*M. L. Menten.*

4087. BRODIE, JESSIE LAIRD. Congenital pyloric obstruction. I. Etiology: an experimental study. *Amer. Jour. Physiol.* 89(2): 340-348. 1 fig. 1929.—Protocols are presented of 4 litters of albino rats in which 10 out of 23 young showed pyloric obstruction. The diet of the mother was minimal in the anti-neuritic vitamin. The clinical picture presented was an enlarged and very firm abdomen with extreme general emaciation. At autopsy the stomach was enlarged and packed with curd, and the vagus in all cases examined showed myelin degeneration. In the cases in which the condition was mild or cured by atropin, polyneuritis was later superimposed upon the original condition. The pyloric obstruction is therefore considered as one manifestation of vitamin B deficiency with resulting defective myelinogeny. Of the young of the 1st generation 1.2% showed this condition, and 22% of the young of the 2nd generation: 87.5% of the young thus affected were ♂♂. Comparison is made between this condition in rodents, which cannot vomit, and human babies with congenital pyloric stenosis. The age of onset, sex, and response to atropin all point to a similarity between the 2 conditions.—*Author's summary.*

4088. BUCKLEY, RICHARD C. Pontile gliomas. A pathologic study and classification of twenty-five cases. *Arch. Path.* 9(4): 779-819. 27 fig. 1930.—Of the 188 cerebellar and pontile gliomas occurring in the service of the Peter Bent Brigham Hospital, 25 were "verified, but unclassified." These 25 are here classified, and case reports are given of 15 of them. Four involved the pons alone; 21 involved the cerebellum also, the exact point of origin not being demonstrable, though the symptoms were suggestive. Ten were glioblastoma multiforme, the only examples of this type in this situation found in this clinic. They were large, soft, necrotic, hemorrhagic and cystic; they usually involved the basilar vessels and the cranial nerves, and often invaded the fourth ventricle, causing internal hydrocephalus. The average duration after onset of symptoms was 4 mos. One was an astroblastoma—the only subtentorial example of this type. Fourteen were more slowly growing forms, protoplasmic or fibrillary astrocytoma or spongioblastoma unipolare. The duration after onset of symptoms varied from 4 mos. to 4 yrs., with an average of 2 yrs. The reaction of the glial elements, connective tissue and blood vessels was greater about the periphery of the glioblastoma multiforme than about the more slowly growing forms.—*J. B. Bullitt.*

4089. CALLERIO, GIOVANNI. Les hémohistioblastes basophiles. *Rev. Belge Sci. Méd.* 2(4): 317-327. 1 col. pl. 1930.—These cells, found in the circulating blood in mast-cell leukemia, are characterized by large volume, regular contour, scanty slightly basophil protoplasm in places failing to cover the nucleus, voluminous but not very numerous deep violet granulations, distributed irregularly in the protoplasm and often in series over the voluminous, homogeneous, slightly colored nucleus, which is provided with numerous nucleoli. The author concludes that they should be regarded as circulating histioid mast leucocytes—reticulum cells not simply detached into the blood but differentiated in the leukemic direction.

4090. CAPUA, F. de. Alterazioni del sistema reticolo-istiocitario nella leishmaniosi infantile. II. I monociti nel sangue periferico dei bambini leishmaniotici. [Alterations of the reticulohistiocyte system in infantile leishmaniosis. 2. Monocytes in the peripheral blood.] *Pediatria* 37(22): 1223-1234. 1929.—In 40 children affected with infantile leishmaniosis (visceral kala azar), a constant monocytosis in the peripheral blood (25-30%) was encountered when the disease was of the long duration (6 mos.-1 yr.) while eosinophils and basophils were scarce and normoblasts almost entirely absent. In all cases, moreover, a slight percentage (4.2-5.5) of endothelial cells showed morphological characters approaching monocytes, therefore called tentatively "monocytoid endothelial cells." None contained phagocytosed leishmanias. Their likeness to true endothelial cells on the one hand, and to monocytes on the other, suggests an intermediate classification and furnishes proof of the endothelial origin of monocytes and of the transitional forms. Monocytosis and endotheliosis of peripheral blood are indicators of the mobilization and putting into the circulation of elements of the reticulo-histiocytic system and help to confirm the idea that leishmaniosis infantum shows the characteristics of a "parasitic block" of the reticulo-endothelial system.—*F. de Capua* (*transl. by J. G. Edwards*).

4091. CAYLOR, HAROLD D., and TRUMAN E. CAYLOR. An apparatus to facilitate the preparation of fresh frozen sections. *Jour. Lab. and Clin. Med.* 16(3): 312-313. 1 fig. 1930.

4092. CHAHOVITCH, X. Splenektomija i eksperimentalni rak izazvan katranom. [Splenectomy and ex-

perimental tar cancer in the rabbit.] [French résumé.] *Bull. Acad. Royal Serbe Sci. Arts, Beograde* 137(65): 97-110. 4 fig. 1929.—Vienna tar was painted twice a week on the inner surface of an ear in each of 6 normal and of 6 previously splenectomized rabbits. Within 140 days, all the normal rabbits bore papillomata; the tumors appeared earlier in the normal than in the splenectomized rabbits. Death ensued earlier in the normal cancerous than in the splenectomized cancerous animals. Evidently, splenectomy brought about changes unfavorable for tumor development.

4093. **CICINNATI, VITO.** Il comportamento delle piastrine nel sangue splenico in gattini normali, asfissiati, e avvelenati, con pirodina. [The behavior of the platelets in the splenic blood in normal cats, and in those asphyxiated and poisoned with pyrodin.] *Gaz. Internaz. Med.-Chir. e Interess. Profess.* 1928(13): 245-251. 1 fig. 1928.—If the platelets were derived from the megakaryocytes they would increase under circumstances that cause augmentation of megakaryocytes. The megakaryocyte content of the normal cat's spleen is always greater in animals a few days of age than in the adult. In asphyxiated cats there is an apparent increase of splenic megakaryocytes but the number of platelets in the splenic blood is not greater than in normal cats. In those poisoned with pyrodin there is a marked general increase in platelets but there is no parallel constant increase of splenic megakaryocytes.—*B. Bickel.*

4094. **COMEL, MARCELLO.** Ergosterismo in cuccioli allattati dalla madre trattata con dosi eccessive di ergosterolo irradiato. [Ergosterism in puppies nursed by the mother treated with overdoses of irradiated ergosterol.] *Arch. Ist. Biochim. Ital.* 2(3): 481-492. 1930.—When to ♀ dogs, nursing their puppies, overdoses of irradiated ergosterol (1.6 to 2.7 millions of rat units) are administered, the puppies may exhibit functional and anatomical symptoms of ergosterism, or intoxication by irradiated ergosterol. In the viscera 2 kinds of injuries are produced: one is characterized by degenerative processes of the parenchymal elements (in the liver, spleen, heart, kidney, etc.); the other by more or less extensive Ca depositions in the said organs, liver and spleen excepted. In the latter, a curious disappearance of lymph follicles, followed by a substitutive proliferation of splenocytes takes place. It is claimed that Ca deposition is not necessarily the primordial histo-pathological symptom, and it does not characterize absolutely the first stages of intoxication or ergosterism. Ergosterism may reach a lethal gravity prior to Ca deposition. This follows, on the contrary, always in parenchymas where degenerative processess have already occurred.—*M. Comel.*

4095. **CROWE, S. J.** Pathologic changes in meningitis of the internal ear. *Arch. Otolaryngol.* 11(5): 537-568. 35 fig. 1930.—A report, based upon the findings in 1000 pairs of temporal bones, of the microscopic changes found in various types of meningitis. In general there are illustrated extension of otitis media to the labyrinth and meninges by way of the round window, stapediovestibular articulation and fissura ante-fenestram and the extension of primary meningitis to the labyrinth by way of the perineural spaces of the auditory nerve, the perivascular spaces of the modiolar vessels and the cochlear aqueduct. While otitis media or meningitis is usually recognized, clinically, serous and suppurative labyrinthitis was rarely diagnosed until histological sections were made.—*G. Milles.*

4096. **CUSENZA, G.** Contributo allo studio dei papillomi del naso. [Papillomata of the nose.] *Arch. Ital. Otol. Rinolog. e Laringol.* 39(7): 421-433. 5 fig. 1928.—From the study of 2 cases of papillomata of the nasal fossae the possibility of carcinomatous transformation of common polyps is expressed despite contrary opinion. Accurate clinical and histological examination of the neoplasia observed in 1 of the cases led to the view that regardless of its benign origin as histologically indicated, these tumors ought to be considered as malignant by reason of their persistence.—*P. Redaelli* (*transl. by J. G. Edwards*).

4097. **CUTLER, ORAN I.** Relation of arteriosclerosis of the cerebral vessels to hypertension: distribution of arteries supplying pons and medulla. *Arch. Path. and Lab. Med.* 5(3): 365-379. 6 fig. 1928.—The normal distribution of the arteries in the substance of the pons and of the medulla was determined by stereoscopic roentgenograms after injection of the vessels, and by study of subsequent microscopic sections. The medulla in 18 cases of hypertension (systolic pressure over 200) showed slight to moderately severe sclerosis of the arteries in 8, most marked in patients with cerebral hemorrhage. "Specimens of the pons and medulla which were injected did not show noticeable tortuosity or narrowing or irregularity of the lumen of the arteries in brains showing sclerosis of the vessels in these parts. If the high blood pressure is due to a lack of blood supply to the vasomotor center, it is evident that this abnormal condition is not caused by any demonstrable anatomic changes in the arteries of this region."

4098. **DESCOMBEY, P. A.** Sur le tétanos et sa pathogénie. III. Comment concevoir la pathogénie du tétanos? *Rec. Méd. Vét.* [*École. Alfort*] 106(2): 72-89. 1929.—The author after studying the abnormal forms of the disease explains the pathology of tetanus. He amplifies the hypothesis of Marie and Morax on the rôle of the length of the nerves. The author concludes that the same pathogenic mechanism of tetanus has been involved in all mammals whatever the clinical observations. Furthermore, the variations in symptoms between different species of animals are due entirely to the absolute length of the nerves in these species; the order of appearance of contractions depends in cases such as the horse on the relative length of the nerves. The author also gives a pathogenic interpretation of tetanus of immunization and of tetanus after serum treatment. Bibliography.—*P. A. Descombey* (*transl. by C. S. Gibbs*).

4099. **DUTHIE, E. S.** Phagocytosis by bronchial epithelium in the lungs of mice. *Jour. Path. & Bact.* 33(3): 547-551. 2 pl. 1930.—Phagocytic cells arising from bronchial epithelium were described in the case of a mouse dying from a massive dose of x-rays and also in 4 mice following the inhalation of soot particles. These findings lend support to the theory of origin of the pulmonary phagocyte from the epithelial lining of the alveoli.—*E. S. Duthie.*

4100. **FAHR, TH.** Beiträge zur Pathologie des Knochenmarkes und der mit Blutbildung und Hämoglobinstoffwechsel zusammenhängenden Vorgänge. *Virchow's Arch. Path. Anat. u. Physiol.* 275: 288-304. 7 fig. 1929.—The femoral bone marrow of 500 cases was examined macroscopically. Contrary to the prevailing opinion fatty marrow throughout was found only in 14.2%. Of 16 cases who died suddenly, only 6% showed a fatty marrow. It seemed significant that in syphilis fatty bone marrow was found in 37.5% of the cases, while in tuberculosis fatty bone marrow was found only in 33%. The bone marrow was red in 100 cases of tuberculosis and 50 cases of pernicious anemia examined microscopically. In the former condition the cellular composition was mainly leucocytic and seemingly did not depend upon tubercles found in situ, while in pernicious anemia the cellular reaction was mainly erythrocytic. Author suggests that the bone marrow reaction both in tuberculosis and in pernicious anemia is due to a toxicosis with resulting cell destruction and not to direct stimulation of the bone marrow elements. Comparisons are made of the iron content in the hematopoietic organs in tuberculosis and pernicious anemia.—*G. L. Muller.*

4101. **[FELDMAN, A. A., and E. S. ORECHKIN.]** ФЕЛЬДМАН, А. А., и Е. С. ОРЕЧКИН. К патогенезу болезни Recklinghausen'a. [Pathogenesis of Recklinghausen's disease.] [German summary.] Одеський Медичний Журнал. (*Odessaer Med. Zeitschr.*) 4(8/10): 483-488. 2 fig. 1929.—In a case with an unusually large number of tumors (2313), the disease had existed from earliest childhood and was, apparently, inherited. The

woman showed marked endocrine disturbance, manifested in hyperfunction of hypophysis and in the hypofunction of ovaries, suprarenals and thyroid glands. Vagotonia was pronounced. Frequency of endocrine disorders in neurofibromatosis leads author to assume their common origin—probably, deficient development of ectoderm due to a lesion of the germ plasm.

4102. **FERRARO, ARMANDO. Familial form of encephalitis periaxialis diffusa.** *Jour. Nerv. Mental Dis.* 66 (4): 329-354. 12 fig.; (5): 479-498. 15 fig.; (6): 616-620. 1927.—The 3 patients observed were brothers and a sister, the only children of their family. The findings were a very diffuse and intense demyelination of the white matter, particularly its central portion; numerous globoid bodies in the myelin sheaths; diffusely distributed round bodies resembling globoid bodies; disintegration of the axis-cylinder. The blood vessels were normal, nerve cells in general were typical, there were fatty changes in the meninges and ependyma and degenerative changes in the optic nerve. A large proportion of the mobile gliogenous cells in these cases apparently represent a degenerative form of neuroglia cells. Possibly a primary deficiency of neuroglia cells is at the basis of the failure to elaborate Abbau products. The process of Abbau may be performed independently by the mobile type of neuroglia cells. From the point of view of differential diagnosis, the disease has to be distinguished from multiple sclerosis and diffuse glioma, but is regarded as closely related to the Pelizaeus-Merzbacker disease as anheredo-degenerative disease.—*Gladys Boyd.*

4103. **FREUND, FRANZ. Zur Histobiologie der myeloischen Leukämie bei Röntgenbehandlung.** *Virchow's Arch. Path. Anat. u. Physiol.* 269(3): 501-519. 22 fig. 1928. —Circumscribed, walnut-sized, purplish knots scattered over the trunk and limbs in a case of myeloid leukemia yielded to x-rays in about 4 wks. A knot excised before irradiation showed the transformation of all connective tissue cells into leucocytes, thus sustaining the views of Virchow and others against the theory that the leucocytes in myeloid leukemia are colonists from the spleen. A section, taken after irradiation had caused regression of a knot, showed the reverse process—the transformation of leucocytes into connective tissue cells. Accessory findings were cells similar to *Leucocytozoon ziemanni.*

4104. **FREUND, FRANZ. Über die Herkunft der Wanderzellen im Cohnheimschen Froschzungenversuch.** *Virchow's Arch. Path. Anat. u. Physiol.* 279(1): 30-44. 9 fig. 1930.—Cohnheim maintained that the migratory cells seen in traumatic inflammation of the frog's tongue are extravasated leucocytes from the bloodstream. The author, employing Cohnheim's method on the tongues of 20 living urethanized *Rana esculenta* observed an abundant migration into the tissues of migratory cells (originally with round nuclei, of which a part underwent division) visibly originating from connective tissue cells. The inflammation characterized in section preparations of the frog's tongue by the presence of oxyphil granulated cells with segmented nuclei takes place without any significant migration of cells from the blood having been observed during life. The author concludes that migratory cells found in traumatic inflammation of the frog's tongue do not originate in the bloodstream.

4105. **GESCHICKTER, CHARLES F., and MURRAY M. COPELAND. Recurrent and so-called metastatic giant cell tumor.** *Arch. Surg.* 20(5): 713-755. 26 fig. 1930.—Forty-one cases of giant cell tumor showing clinical or microscopic evidence of malignancy have been analyzed. In the clinical group, 26 cases recurring after primary curettement were studied. Recurrence in this group depended not on histologic structure, but on poor choice of treatment applied in the individual case, or on an incomplete operation. Advanced destruction of the bone shell, incomplete curettement, failure to use chemical or thermal cauterization or needless sacrifice of cortical bone at operation, as well as an age over 35, were factors predisposing to recurrence after curettement. In 7 cases showing a microscopic resemblance to malignancy, the histologic change was usually the result and not the cause of the recurrence, being dependent on intervening infection, necrosis or an accentuated healing reaction following irradiation. In 2 cases, actual sarcomas with giant cells were erroneously placed in this group. Eight cases of so-called metastatic giant cell tumors collected from the literature and from the surgical pathological laboratory of the Johns Hopkins Hospital have been reviewed. In no case were the metastatic nodules in the lungs composed of typical giant cell tumor, and in no case was an original tumor of proved benign giant cell structure associated with death from metastasis. The differential microscopic diagnosis of giant cell tumor is discussed, and a short summary of the diagnostic features of osteogenic sarcoma with giant cells included. A review of the results of various types of treatment in over 200 cases of giant cell tumor is presented.

4106. **GIFFORD, S. R., and N. K. LAZAR. Inclusion bodies in artificially induced conjunctivitis.** *Arch. Ophthalmol.* 4(4): 468-475. 2 pl. (1 col.) 1930.—By using an organism unconnected with trachoma and "inclusion blenorrhea" (*Bacillus pseudotuberculosis-rodentium*), and also by use of nicotine and croton oil, the authors produced in rabbits and guinea-pigs typical inclusion bodies identical in shape and staining reactions with those found in trachoma and "inclusion blenorrhea." The production of these bodies by chemical agents is regarded as proof that they do not represent degenerated bacteria, and indicative of their production by inflammation of the conjunctiva with swelling and lymphoid hyperplasia.

4107. **GIOIA, EDOARDO. Contributo alla patogenesi e all'anatomia patologica dei tumori maligni primitivi del polmone. [Pathogenetic and morphological studies in primary pulmonary cancer.]** *Arch. Ist. Biochim. Ital.* 2(4): 509-534. 11 fig. 1930.

4108. **GRÜTER, WILHELM. Über Bläschenbildung bei Hornhauterkrankungen.** *Sitzungsber. Ges. Beförder. Gesamt. Naturwiss. Marburg.* 64(1): 1-8. 1929(1930).— A corneal vesicle is a circumscribed cavity in the epithelium which is filled with fluid. It may occur singly or in groups as the result of mechanical, degenerative, neurogenic or inflammatory processes. An important mechanical cause is congestive edema in glaucoma, and chronic glaucoma or chronic iridocyclitis are important degenerative factors. Injury to the trigeminal nerve by whatever cause is an important factor on a neurogenic basis. Chemical and toxic substances, bacterial agents, and specific neuro-epithelial-tropic viruses are the chief factors in the production of inflammatory vesicles. Only the less virulent bacteria and viruses, however, produce vesiculation; the more virulent agents produce extensive necrosis only.—*H. M. Zimmerman.*

4109. **HECHST, BÉLA. Zur Histochemie und Histogenese der senilen Plaques.** *Arch. Psychiatr. u. Nervenkrank.* 88(1): 126-147. 5 fig. 1929.—From a study of 50 sections from cases of senile dementia Hechst concludes: The entire senile plaque, rim and interior, gives amyloid reactions and behaves in other ways like amyloid. The amyloid of the plaque originates in the central nervous system, apparently as a product of the pathological breaking up of the nerve cells, through the precipitation of the dissolved amyloid in the form of crystals, especially around the vessels. The precipitated amyloid acts as an irritating foreign body, particularly on the microglia. The Hortega cells proliferate radially around the nucleus of the plaque, contributing to degenerative processes, but neither they nor the macroglia (which forms a fibrous ring around the plaque, isolating the amyloid) take any active part in the formation of the plaque. The changes in the Alzheimer fibrillae have no relation to the amyloid, and on genetic and chemical grounds are to be clearly distinguished from the latter.

4110. **HEIJL, CARL F. A contribution to the question of congenital cysts.** *Acta Med. Scand.* 71(1/2): 67-72. 5 fig. 1929.—Suggests the possibility of the origin

of congenital cysts as due to embryonic inversions.—*M. Lederer.*

4111. **HEINE, L. Über Ciliarepitheltumoren. Mit Bemerkungen über die Reaktionen der ektodermalen Elemente der sekundären Augenblase.** *Graefe's Arch. Ophthalmol.* 125(3): 481-492. 5 fig. 1930.—When retinal detachment does not cease at the ora serrata but extends into the pars caeca, separating the pigment-free ciliary layer from the pigmented, the latter proliferates, forming a spindle-shaped thickening similar to a melanosarcoma of the choroid but differentiated from it by an intact lamella elastica. The proliferation soon assumes a tubular and glandular character and excretes a large amount of interstitial matter. The mesoderm may be involved secondarily by development of blood vessels from the uvea. On a basis of some 20 cases, 4 stages from a slight widening of the contour of the pigment epithelium to true tumor formation were differentiated. This peculiar and apparently specific reaction of the pigmented ciliary epithelium to contact with the subretinal fluids in progressive detachment occurs in zone II as shown by comparative description of the reactions of the 4 zones of the ectodermal constituents of the optic vesicle.—*From author's summary (transl.).*

4112. **HELLWIG, C. A. Zur Jodmangeltheorie des Kropfes. Morphologie der Rattenschilddrüse nach jodarmer Ernährung.** *Endokrinologie* 6(3): 161-167. 2 fig. 1930.—Experimental rats, after 119 days of I-poor feeding, show degeneration, especially of secreting cells. Comparative studies of colloid, follicle, stroma, etc., give results as expected.—*B. Cunningham.*

4113. **HEWER, T. F. R. Changes in the spleen in acute pyogenic infections.** *Bristol Med.-Chir. Jour.* 47 (177): 197-218. 3 pl. 1930.—In 180 necropsies in clinical cases of acute infection generally, in patients over 5 yrs., a high leucocytosis was accompanied by marked splenic change. Experiments were performed on cats to determine whether, during the active formation of antibodies in the absence of infection, there appear in the spleen any of the large mononuclear cells found in acute infections. The spleens of 20 infected cats (staphylococcus and pneumococcus), compared with the spleens of 7 normal cats, showed hyperplasia of the bone marrow and spleen corresponding roughly with the degree of leucocytosis—changes similar to those seen in man. In 4 cats in the serum of which high titers of diphtheria antitoxin were demonstrated after treatment with toxin, no splenic changes were observed similar to those seen in acute infections. High-grade leucocytosis, barely demonstrable antibodies, and spleens not grossly enlarged or softened but changes like those found in acute pyogenic infections of mild virulence, were seen in 5 cats treated with *Staphylococcus aureus* vaccines. Clinical and experimental pyrexia did not produce splenic change. The author concludes that in acute pyogenic infections splenomegaly is due to an increase in the number of cells in the pulp, and in the Malpighian bodies in some cases. The most striking cells are large basophilic non-granular mononuclear cells identical with myeloblasts. The degree of splenic change corresponds with the leucocytosis. The identity of the infecting organism is of less importance to the spleen than the grade of leucocytosis it produces. Pyrexia alone does not produce "acute splenic tumor." The production of "acute splenic tumor" is not essential for, or directly related with, antibody formation.

4114. **HOCHREIN, MAX. Über Angina pectoris bei Mitralstenose.** *Deutsches Arch. Klin. Med.* 169(3/4): 195-204. 1 fig. 1930.—The association of angina pectoris and mitral stenosis is discussed on the basis of the literature and 4 personal cases, 2 of which came to autopsy. The conception that the angina pectoris in mitral stenosis is due to compression of the left coronary artery by the left auricle and the pulmonary artery and the supposition that the paroxysm represents a compensatory process can not be confirmed. On the basis of the present investigation it can be explained by a deformation and kinking of the left coronary orifice. This change is caused by a pull on the mitral side of the aortic ring by the left ventricle due to the cicatricial processes in the mitral valve and chordae tendineae. Thereby the coronary ostia present a mechanical relation similar to that of true angina pectoris of syphilitic aortitis. The apparent increase in angina pectoris in mitral stenosis is probably due to the survival of such patients by proper therapy. Why the anginal symptom is almost exclusively observed in women is not clear.—*R. A. Moore.*

4115. **HORNING, E. S., and K. C. RICHARDSON. Cytological differences between normal and malignant tissues.** *Med. Jour. Australia* 1(8): 238-247. 1930.—Cytological studies of human adenocarcinoma of the breast, human adenocarcinoma of the tongue, mouse adenocarcinoma (Twort), mouse small round-celled sarcoma, Lumsden rat sarcoma and spontaneous transplantable mouse adenocarcinoma confirm the conclusion of Tello and Fãnanás that the Golgi reticulum is less readily demonstrated in neoplastic cells than in normal ones. Masses of chromidia are uniformly found in the cells of the sarcomata studied but are not a constant feature of the carcinomata. Extrusion of chromidia is characteristic of sarcomata. All the neoplasms studied show irregular hypertrophied structure of the plasmasome body, while cells of the adjacent stroma contain normal spherical compact nucleoli.—*J. C. Bugher.*

4116. **IMAI, NOBUKATSU. Experimentelle Untersuchungen über die Verknöcherung im Auge.** *Graefe's Arch. Ophthalmol.* 125 (2): 267-299. 18 fig. 1930.—After removal of the aqueous humor, 10% HCOOH (amount not stated) was injected into the vitreous humor of rabbits; ossification was found in 12 of 26 cases in which the eyeball was examined 25-195 days after injection. Various vaccines produced ossification in only 1 instance (intravitreous injection of vaccinia lymph). There were immediate signs of inflammation and exudation, both regressing in the course of a week. Ossification occurred in the prechoroidal connective tissue without calcareous deposit. The author considers it improbable that calcification of necrotic tissue precedes intraocular ossification. The calcareous impregnation of osteoid tissue is more probably due to the activity of young bone cells formed from connective tissue. Under some circumstances heterotopic bone formation may occur by direct metaplasia (cartilage or bone in sclera where almost no reactive cell increase or rejuvenation occurred). It seems questionable that heterotopic bone always is intimately connected with the cells of the vessel walls.

4117. **JAFFE, HENRY L. The resorption of bone. A consideration of the underlying processes particularly in pathologic conditions.** *Arch. Surg.* 20(3): 355-385. 16 fig. 1930.—The paper is based upon a study of the literature and a large material seen by the author. In resorption of bone, especially in fulminating and inflammatory disease, all canals in the cortex dilate, with dilatation and increase in number of their contained blood vessels. Haversian canals may coalesce. Enlargement of the canals may be associated with the appearance of Howslip's lacunae. The Haversian canals become tortuous and lengthened and longitudinal sections of inflamed compact bone may show cross-sections of the canals. In vascular resorption of bone, enlargement of existing vessel canals is more important in reducing bone substance than the formation of Volkmann's canals. Because of the intimate anastomoses between the vessels of cortex and medulla, inflammatory changes in the cortex are accompanied by similar changes in the medulla, with resorption of spongy trabeculae, analogous to enlargement of vessel canals of the cortex. There are differences in the character of the vascular changes of resorption in the various inflammatory diseases of bone and in the varying degrees of Ca deficiency in the diet. The amount of dilatation of the vessel canals depends on the degree of vascularization, speed and extent of resorption being less when fewer vessels are present and when granulation tissue is more

cellular. Osteoclasts play little part in vascular resorption, and it has not been determined whether the process is preceded or accompanied by decalcification. Enlargement of vessel canals is accompanied by changes in the ground substance of the bone, particularly in the Ca salts. In the region of resorption these appear as large, irregular, coarse granules, whereas in normal bone they are irregular, fine granules. The manner of decalcification and the part played by vessels and granulation tissue are speculative. Decalcification may be brought about by local and general agents, and the extent of decalcification depends upon the cause. Osteoclasts are capable of resorbing bone, but extensive resorption of bone occurs in their absence. Their presence or absence depends upon the cause and the course of resorption, and they are merely an expression of the way in which the tissues are responding to a stimulus. In embryonic life the osteoclast is derived from the mesenchyme, while in later life, both normally and pathologically, it is a reactive cell arising from fusion of resting wandering cells of the tissues supplemented by mononuclears of the circulation. Osteoblasts and bone cells may be present in osteoclasts by virtue of phagocytosis. All osteoclasts observed by the author have acidophilic cytoplasm. Osteoclasts can absorb bone but are of only secondary importance. They finally probably either degenerate locally or enter blood vessels and are removed. They arise locally in Howslip's lacunae as reactive cells, the stimulus to osteoclast formation varying with the resorptive process. The osteoclasts then remove the decalcified bone. Degeneration of bone cells and enlargement of bone cell lacunae are not important in the actual resorption of bone, but such bone is more subject to resorption.—*B. C. Russum.*

4118. **[KOLESNIKOV, N. M.]** КОЛЕСНИКОВ, Н. М. К патологической анатомии костных поражений при мальтийской лихорадке. **[Osteal lesions in Malta fever.]** Русский Журнал Тропической Медицины [*Russ. Jour. Trop. Med.*] 6(9): 598-602. 1928.—In 336 guinea pigs, infected naturally during an epizootic, various forms of bone lesions were found in 13.03%. Only young animals were affected with micrococcal goneitis. Synovial membranes and marrow showed specific granulomas, formed by epithelioid and giant cells, which undergo necrosis and result in abscesses. Localization of granulomas was most frequent in synovial membranes. Periosteal tissue reacted more strongly than the marrow to the infection. In the ribs, periostitis, osteomyelitis, and panosteitis were equally frequent.

4119. **[KOTLER, R. I.]** КОТЛЕР, Р. И. Изоагглютинация и морфологические индексы у туберкулезных больных. **[Blood groups and morphological indexes of tuberculous patients.]** [French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(6): 632-637. 1929.—Observations embraced 237 cases. Pulmonary tuberculosis was found in all 4 blood groups. The 4th group predominated among the advanced stages of phthisis, while 2nd group was relatively small. No correlation was found between the statics and dynamics of the process and the blood groups. Hemoptysis and laryngeal tuberculosis were more frequent in the 1st group. There was correlation between indices of Pignet and Brougche, and none between these indices and the blood groups.

4120. **KÓZA, M. Chondroblastom in der venösen Blutbahn.** *Virchow's Arch. Path. Anat. u. Physiol.* 272(1): 166-204. 13 fig. 1929.—An increasingly painful cartilaginous tumor of the deeper periosteal layers (enchondroma or chondroblastoma) of the right femur developed in a 13 yr. old girl within a few months, and rapidly extended both into the medullary cavity of the femur and into the veins of the systemic circulation (upper femoral vein, iliac veins, lower vena cava and the right heart) as a solid lobulated cylindrical body. Branches extended even into the pulmonary arteries and capillaries; finally the extremities of the growth lost their vessels and became pure cartilaginous tissue. Still there was no infiltration or metastasis. Blocking of the circulation produced death. The author concludes, from this case and others previously reported, that the predilection of cartilaginous tissue for the vessels, and the physical peculiarities of its intercellular structure (productive of pressure atrophy in the surrounding tissues) account for the not infrequent penetration of the blood vessels by chondroblastomata, and that the clinical malignancy of the tumors is due to the structural and biologic properties of cartilaginous tissue. So-called metastases of such tumors are probably only cartilaginous emboli.

4121. **KROSTENSON, ANDERS. Thrombenbildung in der vena iliaca communis sinistra.** *Acta Med. Scand.* 73: 5-82. 1930.—During autopsies (tuberculosis, cancer, endocarditis, etc.) were detected thrombi in the valvular sinuses of vena iliaca communis sinistra. They possess a structure typical for the white thrombus. They are gradually subjected to regressive changes, and are replaced by the changed intima as described. The cause of formation of the thrombus in vena iliaca com. sin. lies possibly in the derangements of nutrition of the endothelium, caused by chronic exhausting illnesses. Thrombosis is favored, however, by mechanical factors as well related to the topography of the mentioned vessel. The position of the vena iliaca communis sinistra in relation to the intervertebral disks, in the most prominent part of the lumbar section (4-5 L), in the presence of a strong lordosis, favors the development of a compression of the vein and together with a vital change of endothelium, may call forth a local formation of the thrombus. The mentioned obliterating thrombosis can form independently of former pregnancies (pressure of the uterus), swellings of the ventral cavity, etc. The resulting fibrosis with stenosis of vena iliaca communis sinistra predisposes to the development of varices and thromboses of the veins of the left foot.—*W. H. Stefko.*

4122. **KUP, J. Zur Frage der Ätiologie der Fettsucht.** *Endokrinologie* 6(2): 102-122. 6 fig. 1930.—Histological examination of autopsy material led the author to group the cases of obesity observed as follows according to origin: castration, 3 cases—2 operative and 1 x-ray; hypophysis, 2 cases—1 fibrosis, 1 degeneration; epiphysis, 2 cases—hyperfunction, based on size; adrenal cortex, 2—tumor; pancreas, 14 cases—hyperfunction; pluriglandular, 1—involving pancreas, hypophysis and thyroid; diabetic, 1; following disease, 1. No evidence of a pure thyroid obesity. Other possible sources although not observed by the author are thymus, thyroid and certain infectious diseases. Five cases of obesity showed no relation to endocrines.—*B. Cunningham.*

4123. **LAMBIN, P., et B. CORNIL. Les érythrocontes de Schilling dans l'anémie pernicieuse.** *Rev. Belge Sci. Méd.* 2(3): 249-252. 1 fig. 1930.—The authors conclude that Schilling's erythrocontes are merely a special form of precipitate of the basophil substance of young erythrocytes, and that the azurophil rodlets displayed by Giemsa's classic staining method represent a rare form of fragmentation of Cabot's rings.

4124. **LAWRENCE, JOHN S., and STEPHEN J. MADDOCK. Variations in the number of white blood cells in dogs following Eck fistula.** *Arch. Path.* 9(2): 461-472. 1930.—Marked monocytosis occurs in dogs within the 1st week following Eck fistula. Splenectomy done at the same time as the fistula tends to prevent this monocytosis. Dogs with reverse Eck fistula do not show this response. Intimal damage, anemia and operation are not responsible. A diminution of the number of eosinophils in the blood of dogs follows various types of operations on the vascular system. The average number of lymphocytes is constantly diminished in such dogs.—*From authors' summary.*

4125. **LEINATI, FAUSTO. Sulla liponecrosi sperimentale del sottocutaneo. (Prima nota.) [Experimental subcutaneous liponecrosis.]** *Atti R. Accad. Fisiocritici* [*Siena*] 3(8/9): 93-111. 1928.—From traumatic liponecroses in the subcutaneous tissues of rabbits and guinea-pigs, some of them normal individuals, others castrated

or thyroidectomized, the author concludes: (1) characteristic small foci of liponecrosis can be produced in animals of both groups; (2) as compared with the control group, the symptoms of the group with a gland removed differ in greater distinctness of the lesions, more prolonged inflammatory reaction, more rapid and abundant development of connective tissue around the lesion, appearance of pseudo-cysts when the lesions are disappearing; (3) the mechanics of causation are not simple, but represent a complex interaction of factors that produce the saponification of the normal fats.—*F. Leinati (transl. by P. Popenoe).*

4126. **LEVINSOHN, G. Zur Anatomie des kurzsichtig gemachten Affenauges und ihre Bedeutung für die Myopiegenese.** *Arch. Augenheilk.* 100/101: 138-163. 19 fig. 1929.—Essed and Saewarno, on the author's suggestion, placed 7 monkeys, aged ½ to 1½ yrs., in boxes for 6 hrs. on each of 6 days per week in such a position that the whole body and the vertical axis of the head were horizontal. In 5 of the 7 instances the hypermetropic eyes were thus converted into myopic eyes. As a rule, myopia began after 3 mos. and increased until the end of the experiment (15 mos.). In one of the 5 animals there were small and in another large temporal sickles; in a third animal the fundus was hyperemic. The first 2 animals had protrusio bulbi. The eyes of 3 controls remained normal. The author investigated anatomically 4 prs. of the myopic eyes and 1 pair of eyes from a control. These were fixed in formalin, embedded in celloidin, sectioned (partly serially), and stained with eosin-hematoxylin, van Gieson, and Weigert's elastic and orcein stains. Most of the sections were first depigmented by Alfieri's method. The anatomic substratum of the conus formation which occurred in these animals was comparable to the anatomic changes which usually occur in human axis myopia. The changes in this experimentally produced myopia are most probably produced by a pull, which affects the ocular bulb commonly on the temporal border of the entrance of the optic nerve. This is produced by the effect of gravity on the eye.—*H. M. Zimmerman.*

4127. **MAGALHÃES, OCTAVIO de. Contribuição para o conhecimento das lesões provacadas pelo "Oidium brasiliense" (O. Magalhães—1914). [Lesions caused by the "Oidium brasiliense."]** [With English transl. p. 37-47.] *Mem. Inst. Oswaldo Cruz* 22: 27-134. 28 pl. 1929.—The characteristics of the nodules caused by the *"Oidium brasiliense"* are:—(1) presence of the parasite in the resistant form; (2) absence of giant cells; (3) presence of epithelioid cells; (4) infiltration of polymorpho-nuclear neutrophils and sometimes eosinophils and mononuclears; (5) perivascular infiltration; (6) presence of connective inflammatory tissue surrounding the center; and (7) absence of plasma cells or fuchsinophil cells.—*O. de Magalhães.*

4128. **MAGLIULO, ALFONSO. Contributo allo studio delle ossificazioni muscolari post-traumatiche.** *Lo Sperimentale* 84(5/6): 301-392. 32 fig. 1930.—The results, based on a clinical study of 14 cases and a histopathologic study of 1 case of ossification of anterior brachial following luxation of the elbow, indicated that there was a metaplasia of the interfascicular connective tissue of muscle with subsequent direct ossification, although the embryonic fibroblasts possibly were differentiated into osteoblasts.—*M. L. Menten.*

4129. **MARINESCO, G., St. DRAGANESCO, O. SAGER, et A. KREINDLER. Recherches anatomo-cliniques sur la localisation de la fonction du sommeil.** *Rev. Neurologique* 36(5): 481-498. 10 fig. 1929.—The authors had previously produced sleep in cats by puncture of the 3rd ventricle and injections of $CaCl_2$ and ergotamine in the lateral ventricles. In this paper they describe 3 cases of tuberculous meningitis and 1 of cerebral tumor, all with pathologic sleep, in which necropsy showed important lesions in the gray substance around the 3rd ventricle and the vegetative nuclei of the infundibulo-tuberian region—just the regions lesion of which had produced sleep in the cat. In a case of cerebellar tumor without troubles of sleep, although there was great distension of the 3rd ventricle with extreme compression at the level of the ventricular floor, the gray substance around the aqueduct of Sylvius was normal, thus, in the authors' opinion, maintaining the normal sleep function.

4130. **MASSON, P. The significance of the muscular "stroma" of argentaffin tumors (carcinoids).** *Amer. Jour. Path.* 6(5): 499-514. 2 pl., 7 fig. 1930.—After discussing 7 cases observed in the appendix, the author concludes: Originating in the nerves of the mucosa, peviously hypertrophied, carcinoids penetrate the myenteric plexuses progressively without destroying them and without provoking their hyperplasia. They merit the name of neurocarcinoid. Invasion of the connective tissue and of the lymphatics is secondary. Connective tissue infiltrated by carcinoids does not originate muscle fibers. On the contrary, when the nerves are invaded by carcinoids, the corresponding muscle coats undergo hyperplasia restricted to the territory of the infected nerve. The muscle fibers formed in the interstices of carcinoids, then, are not an integral part of these tumors; they result from proliferation of preëxisting muscles provoked by the presence of argentaffin cells in their nerves. This myogenic action of the argentaffin cells seems due to a product of limited diffusibility secreted by the cells into the nerves (neurocrinia). As a working hypothesis, one may suppose that the normal argentaffin cells of the intestinal muscosa function like the cells of carcinoids, and that their secretion poured into the plexus of the mucosa plays a rôle in the functioning of the muscularis mucosae.—*Author's summary and conclusions.*

4131. **MAZZACUVA, GIUSEPPE. Sulle alterazioni istologiche epato-renali nell'occlusione intestinale sperimentale. [Histological alterations of liver and kidney during experimental intestinal occlusion.]** *Riv. Patol. Sperim.* 5(4/5): 343-358. 14 fig. 1930.—Intestinal occlusion is followed by degenerative and necrobiotic processes in liver and kidney, supporting the autotoxic theory of occlusion.—*M. Comel.*

4132. **NAKAIZUMI, YUIKMASA. Untersuchungen über die postmortalen histologischen Veränderungen in der Retina des Kaninchens, mit bes. Berücksichtigung auf den Zeitlauf nach dem Tod.** [In Japanese.] *Nihon Gankwa Gakkwai Zasshi* 31(7): 1927.—Histological examination of the retina of the rabbit after death shows first a destruction of the external zone of the layer of rods and cones, which gradually extends to the inner zone. The inner layers of the retina become swollen next and the swelling extends toward the vitreous humor. Following this change the nuclei become difficult to stain while the Mueller's fibers become evident. Then numerous vacuoles appear in cells of the retina layer, especially the granular layer. Next follows a general intense autolytic destruction of the retina. In 24-38 hrs. after death, scarcely any nuclei or fibers can be stained. Temp. has little effect.—*O. Mori (courtesy Japanese Jour. Zool.) (transl. by T. J. Putnam).*

4133. **NANDROT, et CH. GRANDCLAUDE. Volumineux fibrome du cubital.** *Ann. Anat. Path. et Anat. Norm. Méd.-Chir.* 5(7): 751-755. 1 fig. 1928.—The authors discuss a large tumor of the median and ulnar nerves, in which (as distinguished from true neuromas) there were no nerve fibers but only fibrillar elements discontinuous with the cellular protoplasm. This—a pure fibroma—represents in the author's opinion a rare tumor, absolutely different from those gliomatous tumors developing from the sheath of Schwann.

4134. **NEUBÜRGER, KARL. Beiträge zur Histologie, Pathogenese und Einteilung der arteriosklerotischen Hirnerkrankung. [Histology, pathogenesis and classification of arteriosclerotic cerebral affections.]** 118p. 33 fig. Gustav Fischer: Jena, 1930. Pr. 8 M.

4135. **OHTA, TSUGIYA. Experimentelle Untersuchungen über die pathologischen Veränderungen des Gelenkknorpels, des Meniscus und der Grenzlinie des Kniegelenks.** *Fukuoka Acta Med.* 21(4): 714-776. (German summary, p. 34-37.) 3 pl. 1928.—The author injected bacteria, toxins, and drugs (not named) into the knee

joint cavity in rabbits. Injection of staphylococci produced the most marked reactions, and streptococci, pneumococci, and colon bacilli, in order, caused less change. Bacterial toxins and drugs caused necrosis with resulting formation of granulation tissue and ankylosis. Stronger toxins or drugs retarded necrosis and the formation of granulation tissue. With weaker toxins, there occurred regeneration, following a partial necrosis. The marginal portion is the first to be affected, especially at the bounding surface (Grenzlinie). This "Grenzlinie," from its reaction to these injections, is interpreted as a line of resistance for the protection of the bone marrow. Typhoid bacilli produce only slight lesions, tubercle bacilli cause slow changes, with formation of granulation tissue and ankylosis. Introduction of staphylococci often results in formation of hyaline cartilage, use of streptococci results in myxomatous degeneration of the bone marrow, and use of tubercle bacilli in the appearance of round and epithelioid cells but not of Langhan's giant cells. Introduction of sea sand or bone dust causes, after a time, some necrosis with regeneration; cutting, partial section, or injection of poisons into the sciatic nerve causes no change to any of the structures. Uric acid, injected subcutaneously in small amounts, causes round cell and leucocytic infiltration in the periosteum, bone marrow, and bursa near the joint; injection of larger amounts results in hyaline degeneration of the meniscus and soft parts of the joints. Some parts show regeneration.—*From author's summary (transl. by J. Miller).*

4136. **PETRI, ELSE.** Pathologische Anatomie und Histologie der Vergiftungen. [Pathologic anatomy and histology of poisoning.] 724p. 96 fig. Julius Springer: Berlin, 1930. Pr. 144 marks.

4137. **PICK, LUDWIG.** Die Skelettform (ossuare Form) des Morbus Gaucher. [The skeletal form of Gaucher's disease.] *Veröffentlichungen aus der Kriegs- und Konstitutionspathologie.* 4(4): (Heft 20): 1-76. 2 pl., 14 fig. Gustav Fischer: Jena, 1927. Price 6 M.

4138. **PINEY, A., and STANLEY WYARD.** Clinical atlas of blood diseases. 99p. J. & A. Churchill: London, 1930. Pr. 12s.

4139. **POLICARD, A., et (Mlle.) V. MOURIQUAND.** Sur les réactions provoquées dans le tissu conjonctif par l'introduction de particules microscopiques d'amiante. *Bull. Histol. Appl. Phys. et Path.* 7(6): 193-199. 4 fig. 1930.—Pulverized asbestos in suspension was injected into rats subcutaneously and the connective tissue reaction was studied for 1-15 days in stained sections and by microincineration. The tissue liquids coagulate and polymorphs appear for the first 2 days. They do not ingest the fiber. Then a large mononuclear phagocyte appears in such numbers as to fill the tissue and completely phagocytose the asbestos without any result toxic to the cells. These cells are hypertrophied connective tissue cells. The cells are not like those stimulated by injection of diatoms. The adjacent endothelium is not involved.—*J. G. Sinclair.*

4140. **POPOFF, NICHOLAS W.** Testicular tubular adenoma of the ovary. Its etiologic relation to embryonic vestiges and spontaneous sex reversal of the female gonads. Report of a case. *Arch. of Path.* 9(1, part 1): 31-53. 5 fig. 1930.—Embryologic development of the ovaries; gonadic transformation in free-martins; ovarian changes under the influence of x-ray irradiation; the behavior of ovarian grafts and observations on changes in the right ovary following left-side oöphorectomy in birds present a solid foundation for establishing the nature of the human testicular adenoma of the ovary. Spontaneous reactivation of the medullary cords, and even of the germinal epithelium, with consequent organoid transformation of the ovary in the ♂ and neoplastic direction is the source of both sex reversal in ♀ individuals and of neoplasms of the type of the testicular tubular adenoma of human ovaries. The case presented is the fifth reported in the literature and the first one reported from English speaking countries.—*N. W. Popoff.*

4141. **PRISELKOFF, M. M.** Zur Frage des Ursprunges der Leukocyten in Exsudaten. *Zeitschr. Ges. Exp. Med.* 68(5/6): 540-553. 1929.—India ink or trypan blue injected into the peritoneum appears in a few leucocytes in the peripheral blood, but shows extensively in the exudate cells of an induced abscess in the pleural cavities. Simultaneous injection of the infected material and the dye, or of the infected material first followed later by the dye, does not produce pigmented leucocytes. The experiments are interpreted as indicating that exudate cells develop locally from mesenchymal cells.—*R. Isaacs.*

4142. **REDAELLI, P., e G. de GAETANI.** Osservazioni su di un tumore spontaneo del topo. [Spontaneous tumor in a mouse.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 959-962. 1930.—Morphological and biological examination of a spontaneous adenocarcinoma in an adult ♀ mouse.—*M. Comel.*

4143. **[RODIN, Я. N.]** Родин, Я. Н. Изменение картины крови после спленектомии. [Blood changes after splenectomy.] Клинический Журнал Саратовского Университета. (*Klin. Zeitschr. Univ. Saratow*) 7(3): 215-225. 1929.—The author observed 5 patients. Removal of pathological spleen resulted in increase of hemoglobin and of the number of erythrocytes. Polycythemia, both of short and long duration, and presence of Jolly bodies were not rare. Splenectomy always resulted in lymphocytosis.

4144. **SAKURAI, S.** Über das Leukozytenbild bei leprösen Koreanern. [In Japanese, with German summary.] *Acta Dermatol.* 16(4): 369-376. 1930.—The leucocyte picture was studied in 35 cases of non-leprous and 69 of leprous Koreans (23 of lepra nervosa, 21 of lepra maculosa, 12 of lepra tuberosa and 13 of lepra totalis). The great prevalence of various parasitic diseases among Koreans frequently produces a relative increase in eosinophils. In certain forms of leprosy the neutrophils are decreased and the lymphocytes increased. The percentage of increase in lymphocytes is greatest in macular leprosy, greater in lepra nervosa than in tubercular leprosy, and least in lepro totalis. The monocytes (large mononuclears and transition forms) are also increased in tubercular leprosy and lepra totalis. The percentage of basophils is the same in leprosy as in health.—*From author's summary (transl.).*

4145. **SEVERI, ANTONIO.** Sulle alterazioni istologiche sperimentali da ittiolo. [Experimental histologic lesions with ichthyol.] *Lo Sperimentale* 84(5/6): 457-487. 8 fig. 1930.—In mice, guinea pigs and rabbits ichthyol intravenously injected or applied to skin is said to produce, besides degenerative lesions in the various organs, hyperplasia of the epithelium of the bronchi, bile ducts and capsule of Bowman.—*M. L. Menten.*

4146. **SOMERFORD, ALEX. R.** Cancer of the skin. A statistical note. *Lancet* 219(5593): 1008-1009. 1930.—Squamous-celled carcinoma and basal-celled carcinoma were studied in patients of Manchester and Salford Hospital for skin diseases, as to sex and age-incidence, occupational incidence, and situation of lesion. It was found that "by far the most common situation of both forms of cancer is the skin of the face. This fact is against an occupational cause, since the face is the part of the body least likely to be brought into contact with irritating substances used in any occupation."

4147. **STAMMER, ANNEMARIE.** Über multiple Basaliome der Haut des Rumpfes. Typ Epithelioma Pagetoid Darier. 29p. Dissertation. Universität Hamburg, 1929.

4148. **STEFKO, W.** Zur pathologischen Histologie des N. phrenicus und N. vagus bei Lungentuberkulose. *Beitr. Klin. Tuberk.* 73(4): 399-408. 7 fig. 1930.—The histologic changes in phrenic nerves from tuberculous cases, as observed in 11 out of 56 specimens obtained by phrenicoexairesis and 6 out of 11 obtained at necropsy, began as scattered proliferations of the perineurium and endoneurium, which gradually led to degeneration and atrophy of the nerve fibers, probably reflected in the movements of the diaphragm and in the respiratory process itself. These changes differ from those in the vagus nerve both in pulmonary tuberculosis and in acute dis-

eases, which are found at first in the myelin substance and the sheath of Schwann, and only in acute cases involve extensive and regular thickening of the perineurium.

4149. **STERN, RUBY O. A study of the histopathology of tabes dorsalis with special reference to Richter's theory of its pathogenesis.** *Brain* 52(3): 295-316. 2 pl., 1 fig. 1929.—From a study of post-mortem material from 9 cases of pure tabes, 3 of tabo-paresis, 8 of general paralysis, and 27 control cases taken at random, the author concludes that neither Richter's theory nor Hassin's modifications can explain the pathogenesis of tabes. The cells of which Richter's specific "granulation" tissue is composed are characteristic endothelial cells; they were present in 22 of the control cases, and hence are evidently not due to the spirochete. Contrary to Hassin's view, they may occur in normal radicular nerves in the same number and with the same distribution as in tabes, and hence can have no essential connection with the pathologic process of this disease. Stern suggests that in tabes the aorta may act as a focus from which spirochetes may exert their toxic effects on the central nervous system.

4150. **TRAMONTANO GUERRITORE, GIOVANNI. Sopra la cosidetta linfa coagulata del testicolo. [On so-called coagulated lymph of the testicle.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 404-408. 1930.—Histological data show that the coagulated lymph of the testicle is the terminal result of clotting of interstitial plasmatic liquor. —*M. Comel.*

4151. **[TSIPEL'ZON-ROGINSKAÏA, TS. Z.] Ципельзон-Рогинская, Ц. З. К вопросу о состоянии белой крови при малярии. [White corpuscles in malaria.]** [German summary.] Русский Журнал Тропической Медицины. [*Russian Jour. Trop. Med.*] 6(9): 565-569. 5 fig. 1928.—Repeated examinations of 17 patients (8 tertian, 6 quartan, 3 tropical malaria) showed neutropenia as a most important characteristic. Lymphocytes increased in percentage, but absolutely always remained within the norm. Monocytes, eosinophils, and basophils also remained normal. Plasma cells were found in all cases of tropical malaria, rather frequently in tertian and less often in quartan.

4152. **[VISHNEVSKIĬ, N. G.] ВИШНЕВСКИЙ, Н. Г. Паразитологические и гематологические наблюдения в случаях Malariae quartana. [Parasitological and hematological observations in quartan malaria.]** [French summary.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 7(2): 87-93. 1929.—15 patients were examined. Systematic quinine therapy caused shizonts to disappear in 3-4 days; gametes in 8-11 days. Before therapy, marked leucopenia was noticed in majority of patients. Neutropenia was pronounced, while absolute numbers of lymphocytes and monocytes never rose above the norm. Eosinophils sharply decreased, and in many cases disappeared. After therapy leucocytic formula was nearly restored to normal; only neutrophils, though increased, were still below the norm; monocytes increased in some cases, and decreased in others, remaining however within 150-400 per cc.

4153. **VIZIOLI, F., e M. GOZZANO. La resistenza delle neurofibrille nelle alterazioni a tipo retrogrado delle cellule nervose.** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1031-1034. 1930.—Retrograde alterations (from polyneuritis) were present especially in the cells of the anterior columns of the spinal cord, the alterations of the chromophil substance (studied with Nissl's method) being very marked, while the neurofibrillae (studied by Donaggio's method) were modified but preserved.—*M. Comel.*

4154. **WALCHER. Über vitale Reaktionen.** *Deutsche Zeitschr. Ges. Ger. Med.* 15(1): 16-57. 1930.—The length of time a body has been dead can be determined in various ways. Some of the nuclear degeneration and blood stasis appears to be a reaction to drying rather than to length of time after death. Reaction of blood vessels to ligatures, with or without injection of a perfusion fluid, was the most reliable measure of time after death. In order to obtain accurate standards, the blood, skin, and blood vessel conditions of corpses dead from ½ hr. to more than 20 days were studied carefully. Determinations were also made on the newborn.

4155. **WALLART, J., et CH. HOUETTE. Présence de fibres musculaires striées dans un ligament large.** *Bull. Histol. Appl. Phys. et Path.* 7(9): 303-307. 1930.—A tumor of striated muscle fibers was located in the body of the broad ligament of the oviduct of a girl.—*J. G. Sinclair.*

4156. **WEILLE, FRANCIS L. Asthma. XI. The pathology of allergic tissue as seen in the nose and in the accessory sinuses.** *Arch. Otolaryngol.* 12(6): 785-798. 15 fig. 1930.—Tissue (160 specimens) was removed from the nose and accessory sinuses in 26 patients having asthma or vasomotor rhinitis or both. Occasional pus pockets were present in membranes from the sinuses. Microscopic examination showed: (a) metaplasia, at times, of the epithelium; (b) possibly metaplasia of individual epithelial cells; (c) thickening of the basement membrane; (d) edema or fibrosis of the tunica propria in ⅔ of the specimens; (e) active mucous glands, dilated serous glands; (f) increased vascularity, no special smooth muscle hypertrophy; (g) prominence but not predominance of eosinophils as infiltrating cells in tissues of patients with asthma who had been operated on once; (h) regeneration of tissue elements in patients operated on a second time; (i) marked contrast between "pale" and "red" vasomotor mucous membrane. The thickened lining, so frequently reported in the antra of patients having asthma or vasomotor rhinitis, on the basis of the present study offers about 1 chance in 9 of harboring pus pockets, and therefore of itself being a focus of infection.—*Author's summary.*

4157. **WILLIS, HENRY STUART, and PAUL BRUTSAERT. Tumor-like structures in the lungs of guinea pigs artificially exposed to silica dust.** *Amer. Rev. Tuberculosis* 17(3): 268-278. 9 fig. 1928.—In 7 out of 80 pigs subjected to prolonged inhalation of silicon carbide dust, small nodules of epithelial cells were found surrounding fibrotic bronchi. Such lesions were never found in normal or other experimental animals. The question of neoplasia was decided in favor of a probable injury and repair lesion resulting in hyperplasia of the epithelium of the bronchial mucosa. Continuity of the bronchial lumen and the lumina of these abnormally located nests of epithelial cells was demonstrated in 2 instances. Mitoses were not found and the cells appeared in a normally arranged, single layer.—*W. W. Herrmann.*

4158. **ZACHARJEWSKAJA, M. A. Klinische und histologische Untersuchungen über die Arteriolosklerose der Nieren.** *Virchow's Arch. Path. Anat. u. Physiol.* 276(2): 380-446. 7 fig. 1930.—Microscopic studies were made on 44 kidneys, 18 of which were removed from patients with hypertonia with and without symptoms of sclerosis of the renal arterioles. Almost without exception the arcuate arteries and the initial portion of the interlobular showed hyperplastic changes of the intima. Hyperplasia of the intima was due to several conditions. Age was apparently a factor. In the arterioles hyaline degeneration and fat deposits were found. The mutual relation of these vascular changes varied. Sometimes a high grade hyperplasia of the intima was associated with a low grade sclerosis of the renal arterioles; a high grade arteriolosclerosis, however, was without exception associated with a high grade hyperplasia of the intima. Localization of the hyalinization and fat infiltration of the kidneys depended on the degree of sclerosis of the arterioles. In severe cases degenerative changes occurred in the vasa afferentia or in the vasa afferentia and interlobular arteries; in mild cases only the interlobular arteries were affected. Measurements of the blood vessel walls showed that no thickening of the muscularis was associated either with sclerosis of the arterioles or with hyperplasia of the intima of the large arteries. Apparently when the intima, at least in the cortical arteries of medium caliber, thickens, the muscularis as a whole becomes thinner, especially in advanced age. Still less were changes in thickness of the muscularis

dependent on the degree of sclerosis of the arterioles. The frequency of presclerotic changes in glomeruli was proportional to the degree of sclerosis of the arterioles. Changes in the cortical tubules depend not only on atrophy that is produced by their inactivation but also on lack of nutrition due to constriction of the arterioles. The thickening of the stroma of the connective tissue in the medullary substance was more closely connected with the degree of sclerosis of the arterioles than with age. Sclerosis of the renal arterioles bore no definite relation to heart enlargement. The relationship of the degree of renal insufficiency and the number of degenerate glomeruli could not be definitely established. Many glomeruli may be destroyed before definite renal symptoms appear. Functional changes in vascular tonus produced changes in the glomeruli since the tonus changes could decrease the blood supply of the glomeruli. The frequent occurrence of red blood cells in the urine in sclerosis of the renal arterioles is connected with the hyalinosis and fatty degeneration of the glomerular loops, which frequently produce effusions of blood in the capsular space; they may, however, be produced or reinforced by blood stasis.

4159. ZANETTI, GIOVANNI. Sulla struttura ed istogenesi della gomma cerebrale. *Riv. Patol. Nerv. e Ment.* 34(3): 299-347. 21 fig. 1929.—The author's conclusions from a study of 3 cerebral gummas admit 2 types, the nodal and infiltrating gummas. In the first type there are proliferation of vascular and neuroglia tissue, exudative and regressive changes. The second sclerosing type shows neuroglial reaction which is perivascular in position, less well delimited and less clearly demonstrable with the material at hand.—*E. A. Baumgartner.*

4160. ZAVATTARO, TINA. L'inversione nucleare o segno di Velez nella tubercolosi. *Arch. Ist. Biochim. Ital.* 2(4): 535-554. 1930.—The nuclear inversion (the so called symptom of Velez) is constantly present in tuberculosis.—*M. Comel.*

ANIMAL PATHOLOGY

FUNCTIONAL

(See also in this issue Entries 3277, 3282, 3283, 3286, 3287, 3571, 3600, 3603, 3735, 3738, 3744, 3750, 3757, 3759, 3760, 3781, 3794, 3798, 3838, 3841, 3851, 3946, 4006, 4022, 4034, 4042, 4077, 4085, 4092, 4112, 4114, 4122, 4125, 4158, 4254, 4265, 4269, 4281, 4312, 4329, 4330, 4331, 4364, 4427, 4437, 4440, 4464, 5288)

4161. ABELIN, I., und R. VUILLE. Über regulatorische Vorgänge bei der experimentellen Hyperthyreose. [Regulatory processes in hyperthyroidism.] *Endokrinologie* 2(4): 248-256. 2 fig. 1928.

4162. ACHARD, CH., M. BARIÉTY, et A. CODOUNIS. Les variations de l'équilibre protéique du sérum dans la tuberculose pulmonaire. *Bull. Acad. Méd.* 102(31): 153-158. 1929.—On the basis of study of 32 tuberculosis patients the authors declare that tuberculosis is ordinarily accompanied by increase in total blood protein, due especially to hyperglobulinemia with decrease in serin, the increase in the first and the decrease in the second combining to lower the albumin quotient. The authors declare that the fall of the quotient is independent of fever, of hemoptysis and of local anatomical condition: it depends solely on the general nutrition. The quotient has been found normal in apyretic, fibrous forms of the disease accompanied by good general condition; it is extremely low in cachectic cases at the last stage of the disease, in which apparently serin is destroyed and an excess of globulin is produced.

4163. BARLOW, O. W. The influence of inorganic iron on the anemia of rice disease in pigeons. *Amer. Jour. Physiol.* 93(1): 156-160. 4 fig. 1930.—Addition of ferrous carbonate as Blaud's pills during a 6 week period, in quantities ranging from therapeutic to toxic dosages, to the practically Fe free rice diet does not benefit the anemia which develops in rice disease. The larger dosages actually accelerated the usual rate of blood destruction in both rice disease and in normal birds. The ineffectiveness of Fe administration on the anemia of rice disease extending over a 14 week period is explainable by the absence of a body Fe deficit, in spite of the diminished Fe intake. Preliminary histological studies have shown that the hemosiderin deposits in the livers of pigeons are most extensive in rice disease (with extreme anemia), somewhat less after fasting, and least in normal birds. The body Fe storage which parallels the development of anemia in fasting and in rice disease thus further indicates the importance of inanition as a causative factor in the development of rice disease. With the exception of vitamin B, all known deficiencies of the polished rice when added to the diets of pigeons have been ineffective in relieving or controlling the phenomena of rice disease. The vitamin B deficiency of polished rice therefore appears to be the primary if not the only causative factor in the development of this condition.—*Author's summary.*

4164. BARLOW, O. W. The influence of vitamin B on the inanition, anemia and bacteriemia of rice disease in pigeons. *Amer. Jour. Physiol.* 93(1): 161-169. 1930.

4165. BARRAL, PH., et J. ROUSSET. Dosage du soufre urinaire dans quelques dermatoses exfoliantes. *Bull. Soc. Française Dermatol. et Syphiligr.* 1929(7): 712-714. 1929.—Repeated determinations in 4 cases of generalized exfoliating erythrodermia and 1 case each of Duhring's disease, congenital ichthyosis, and of generalized erythrodermia caused by the action of P_2S_5 on the skin. In all cases except the last the total urinary S was much below normal; in all, the ratios between the various forms of S were disturbed.

4166. BECK, STEPHAN, und ERNST LENDEL. Die interferometrische Frühdiagnose des Carcinoms durch Provokation. *Fermentforschung* 11(4): 490-514. 1930.—A total of 137 cases were studied; excluding all those which could not be verified either histologically after operation, or roentgenologically, 42 tumor cases remained and 20 controls. Interferometric tests before provocation in the cancer cases gave 60.5% correct results, and 83.6% afterward; in the controls, 46% before, 70% afterward. Provocation gave especially good results in small tumors and early cases.

4167. CASTEX, MARIANO R., y MARIO SCHTEINGART. La colesterinemia, la calcemia y la potasemia en los hipertensos. *Rev. Soc. Med. Interna y Soc. Tisiol.* 5(2): 199-206. 1929.—Findings in 42 cases of hypertension are tabulated. Blood cholesterol was normal in 8 cases, slightly increased in 11, and markedly increased in 23. In 1 case there was a depression of blood Ca, in 2 a slight increase, and the remainder were normal. The blood K was slightly diminished in 1 case; all the others were normal. The authors regard the cholesterolemia present in the majority of cases, not as the cause of hypertension (there was no relation between the cholesterol figure and the degree of hypertension) but as the result of the lesion which produced the hypertension. They dismiss as fantastic the theory that there is any relation between the Ca: K ratio and hypertension.

4168. COLLAZO, J. A., P. RUBINO, und B. VARELA. Hypervitaminose D. Knochenbildung und Wachstumsstörungen bei Ratten nach grossen Dosen bestrahlten Ergosterins. *Deutsche Med. Wochenschr.* 55(43): 1794-1795. 1 fig. 1929.—Experiments (number not stated) showed cessation of growth in young rats fed 5 mgm. of irradiated ergosterol daily, in rats born of mothers in which hypervitaminosis had been induced, and in normal newborn rats suckled by rats suffering from hypervitaminosis.

4169. COOK, JEROME E., and MICHAEL SOMOGYI. The rate of glycolysis in erythremia (Polycythemia vera).

Arch. Internal Med. 44(6): 813-817. 1929.—In 2 patients with erythremia (1 with no increased white count), there was a greatly increased rate of glycolysis, independent of the red cell count as influenced by phenylhydrazine and showing no direct relation to proportion of young red (reticulated) cells.

4170. **COTTE, G., et G. PALLOT. Hormones ovariennes et ovarite scléro-kystique.** *Compt. Rend. Soc. Biol.* 99(19): 72-74. 1928.—Discussion of the possible relations between the contents of the cysts and the clinical symptoms of the disease.

4171. **EASTLAND, J. S., and E. G. SCHMIDT. The Andrewes diazo reaction in nephritis.** *Arch. Internal Med.* 43(4): 472-482. 1929.—The test is simple and of prognostic value when extensive renal damage is present. As performed on the sera of patients with renal diseases, a positive result was always associated with marked N retention and low phenol red excretion. Patients with a positive diazo reaction usually had marked acidosis. No definite relation between blood creatinine concentration and the intensity of the diazo reaction was noted. —*B. C. Russum.*

4172. **EISLER, BÉLA. Über das Verhältnis von Kalium zu Calcium und den Magnesiumgehalt des Liquor cerebrospinalis.** *Zeitschr. Ges. Exp. Med.* 61 (5/6): 549-559. 1928.—Potassium, Ca and Mg were determined in 154 fluids. In purulent meningitis K and Ca did not change markedly. Magnesium increased considerably. In tuberculous meningitis K rose 15 to 20% above the normal and Ca diminished, so that there was alteration of the normal K/Ca and Mg/Ca. No characteristic changes were found in serous meningitis, nor in luetic diseases of the central nervous system. A marked increase of K and Mg was noted after the malarial treatment in 2 cases of paresis. A low Ca content was observed in tetany and spasmophilia.—*S. Katzenelbogen.*

4173. **FONSECA, FERNANDO, et CARLOS TRINCAO. Modifications de la glycémie chez des sujets normaux par l'irradiation du pancréas. [Modifications of glycemia in normal subjects by irradiation of the pancreas.]** *Compt. Rend. Soc. Biol.* 98(18): 1591-1592. 1928.

4174. **GARDNER, LEROY U. Will the inhalation of siliceous dusts activate a partially healed focus of tuberculous infection?** *U. S. [A.] Treas. Dept. Publ. Health Repts.* 45(6): 282-288. 1930.—Normal guinea pigs were infected by inhalation of tubercle bacilli of attenuated virulence (Strain R_4). At serial intervals thereafter between 54 and 400 days, groups of 4 animals were removed to each of 3 dusting chambers where they were exposed until they died (or were killed) to the inhalation of quartz, granite and carborundum dusts. In normal guinea pigs such infection produces primary tubercles in the subpleural airspaces of the lung with involvement of the tracheobronchial lymph nodes. These lesions rarely spread but heal by resolution after a period of 18 mos. to 2 years. Macroscopic tuberculosis of the abdominal viscera almost never occurs. This experiment demonstrates that dust inhalation, begun as late as 206 and even 400 days after infection, will reactivate healing primary tubercles and result in generalized chronic tuberculosis of the lungs and other organs. Of the animals exposed to quartz 73.6% showed spreading disease; of carborundum, 31.8% and of granite 26.3%. Soft coal and marble dusts had no effect upon such infection. Where dust deposits and tubercles are in close juxtaposition, spread of infection occurs. Phagocytes which have ingested quartz particles are stimulated and migrate into the tubercles in great numbers. Other types of dust are less stimulating to the phagocytes and so spreading tuberculosis is less frequent.—*L. U. Gardner.*

4175. **GOLDRING, WILLIAM, and JOHN WYCKOFF. Studies of the kidney in acute infection. I. Observations with the urine sediment count (Addis) in acute rheumatic infection.** *Jour. Clin. Investigation* 8(4): 569-575. 1930.—By means of the sediment count it has been shown that an appreciable number of formed elements are excreted in the normal urine. This number has been determined. In a series of 16 patients with acute rheumatic infection, excretion of protein and formed elements occurred in excess of the normal. The red blood cells in this group differed from those in the normal group, in their laked and crenated appearance. The abnormal excretion rate of formed elements persisted for 4 to 10 wks. after subsidence of the acute attack of rheumatic infection. There was a direct relationship between the height of the temp. and the excretion of protein and formed elements. —*Authors' summary.*

4176. **HARRISON, TINSLEY RANDOLPH, and COBB PILCHER. Studies in congestive heart failure. I. The effect of edema on oxygen utilization.** *Jour. Clin. Investigation* 8(2): 259-290. 4 fig. 1930.—The O and CO_2 contents of arterial and femoral venous blood have been determined in patients with heart disease, in individuals with edema but no cardiac disease, and in subjects with no edema and no heart disease. The femoral venous O content tends to be high in patients with edema. The O utilization tends to be lower in edematous legs. The changes found at a given time bear no relationship to the progress of the disease, but are proportional to the amount of edema present, regardless of whether it is increasing or decreasing. When patients are in a state of digitalis intoxication or have diminished alkali reserve of the blood, the O utilization tends to be high, regardless of the amount of edema. The amount of CO_2 gained by the blood parallels, in general, the amount of O lost by the blood in the various conditions which have been mentioned. As these studies have been concerned with the blood from edematous tissues they may have value in the interpretation of edema as a symptom. These studies have led the authors to believe that edema causes an increased local blood flow. This seems to be brought about in the following manner: Edema (acting in the tissues, as in the lungs, as a barrier to the diffusion of O)→ diminished tissue O tension → increased local blood flow and decreased O utilization. The symptoms of congestive heart failure are not essentially due to diminished minute output of the heart. Since utilization is faulty it is possible for the cardiac output to be increased and at the same time inadequate. Edema, itself a symptom of congestive heart failure, throws an additional load on the heart and is thus secondarily a further cause of "heart failure." The patient with "heart failure" suffers, when at rest, from circulatory inefficiency rather than from cardiac insufficiency.—*Authors' summary.*

4177. **HØST, H. F., and VICTOR BÜLOW-HANSEN Jr. Studies on ketonuria.** *Acta Med. Scandinavica* 71 (3/4): 325-349. 1929.—The total daily ketonuria (van Slyke's method) has been studied in 13 healthy, nondiabetic persons living on ordinary diets and in 12 diabetic patients with various diets with and without insulin. The physiological ketonuria varied between 0.005 and 0.386 gm. In the diabetic patients the ketonuria was about the same whether the body subsisted on exogenous fats and protein, or was forced by undernutrition (hunger) to subsist on the endogenous fats and protein. The ketonuria was less on from 40-60 gm. protein than on a small supply (6-20 gm.), and tallying with this was the circumstance that the ketonuria and the N in the urine were to some extent in inverse proportion. Increase in fats in the diet (from 127 to 180 gm. and from 140 to 160 gm.) was followed by an increase in ketonuria. The relation between ketonuria and FA/C (Woodyatt) varied considerably in the different patients. Three of them had normal or almost normal ketonuria, although their diet was decidedly ketogenic. Insulin had no direct influence on ketonuria. Neither did hyperglycemia. A febrile infection (angina), on the other hand, caused a great increase in ketonuria. Eight of the patients were dismissed from the hospital with ketonuria more or less raised. Only in one the diabetes became worse. In 5 the disease after 2 years showed no sign of becoming worse, a circumstance which supports

the opinion that a small increase in ketonuria is not injurious.—*H. F. Høst.*

4178. JAEGER, ERNST. Eine bisher nicht beschriebene Form von Bindehauterkrankung. Ein Beitrag zur Pathologie der Bindehaut. *Klin. Monatsbl. Augenheilk.* 84(3): 373-380. 2 fig. 1930.—A painful inflammatory infection of the left eye was under observation for 3 yrs.; 3 outbreaks occurred, the 1st on the lower lid, the 2nd on the nasal half of the bulbar conjunctiva (these cured by excision of necrotic tissue) and the 3rd on the upper lid (spontaneous recovery). No evidence of either bacterial or traumatic origin of the lesion could be found; the inflammatory process was found to have begun in the submucous layers. Therefore an endogenous origin was assumed, presumably pathological processes in internal cell metabolism producing local death of cells, the primary cause of the local disturbance of metabolism being unknown.

4179. JOHN, HENRY J. A summary of the findings in 1100 glucose tolerance estimations. *Endocrinology* 13(4): 388-392. 1929.—From an analysis of a series of 1100 glucose tolerance tests (using 100 gm. of glucose by mouth), the author concludes the following: We can draw the following conclusions: Patients with glycosuria are not all diabetics. About ⅔ are non-diabetic and ⅓ are diabetic, a finding which indicates the necessity of investigating each case carefully to determine its exact status. When glycosuria occurs in pregnancy it is important to study the case carefully as the incidence of diabetes in this group is not insignificant. The discovery of glycosuria in an examination for life insurance often leads to unfair discrimination. In my series shown in Table I, 62.2% of such cases were non-diabetic. These subjects are perfect life insurance risks. Hyperglycemia in a routine examination (2½ hrs. or more after a meal or during fasting), even though slight, should not be disregarded, for in my series 40% of such cases were diabetic. When there is diabetic history in the family the diabetic incidence is higher than otherwise. Obesity carries a high incidence of diabetes, to say nothing of other evils. Normal or subnormal weight protects the individual against diabetes more than any other single factor. It means that the individual eats moderately and that but a small load is thrown on the insulogenic function of the pancreas. Glycosuria in the presence of hyperthyroidism carries with it a high incidence of diabetes, and should not be ignored. The problems presented by such cases should be rigidly investigated. Hypothyroidism is the reverse of hyperthyroidism and the incidence of diabetes among subjects of hypothyroidism is slight. Acromegaly carries with it a high diabetic incidence. Hypopituitarism carries with it a low incidence of diabetes. Hypertension carries with it a high diabetic incidence. Tuberculosis (glycosuria), arthritis, carcinoma and syphilis carry with them a high diabetic incidence. Skin diseases carry with them low diabetic incidence. Diabetes occurred in 29.9% of patients under 20 years of age, these cases having been investigated because of their glycosuria.—*H. J. John.*

4180. JOHNSON, SCOTT, and WALTER J. SIEBERT. Experimental myocarditis. *Amer. Heart Jour.* 3(3): 279-286. 2 fig. 1928.—A single injection of 0.025 gm. caffeine sodium benzoate with 0.2 cc. of adrenaline caused myocarditic lesions in practically all the rabbits used [47]. The most frequent site of this lesion was in the papillary muscles of the left ventricle. Next in frequency were the myocardium of the left ventricle at the upper ½ of the anterior aspect, which in some cases encroached upon the myocardium of the left auricle, then the upper ½ of the posterior aspect of the left ventricle. The lesions appeared a few days after the injections and consisted of (a) interstitial edema; (b) hypertrophy of the muscle fibers and nuclei; (c) degenerative changes in the muscle fibers, which varied in severity from loss of cross striations and increase in intensity of the longitudinal striations, to granulation, vacuolization and solution; (d) connective-tissue proliferation; (e) proliferation of the endocardium adjacent to the myocardial lesion and hemorrhages into the endocardium; (f) pericarditis, and (g) fatty degeneration of the myocardial cells in and immediately around the myocarditic lesions. The lesions were most marked from 12 to 21 days after the injections and were progressively less evident both grossly and microscopically at later periods. [47 rabbits were given each a single intravenous injection of 0.025 gm. of caffeine sodium benzoate in a 1 cc. watery solution, followed several min. later by an injection of 0.2 cc. of a 1 to 1000 solution of adrenalin (Parke-Davis), administered slowly.]—*Authors' conclusions.*

4181. KASSIRSKY, J. A. Über den Grundumsatz bei der Spru. *Arch. Schiffs- und Tropen-Hyg.* 33(5): 283-287. 1929.—In severe cases of sprue the following symptoms were observed: Disturbed metabolism, loss of weight up to 50% and a more or less intense decomposition of protein. Anemia is one of the fundamental symptoms. This is supposed to be due to overcompensation of the organism. Much O is required, which causes intensity of breathing and heart action. There is no relation between acidosis and metabolism. There is an overproduction of amino-acid and blood and tissues contain β-oxybutyric acid and lactic acid.—*P. G. Heineman.*

4182. LARSEN, REUBEN L. A theoretical consideration of the etiology of the toxemias of pregnancy. *Amer. Jour. Obstet. & Gynecol.* 18(3): 374-379. 1929.—Cell permeability is dependent upon and varies with the mineral salt content of the cells. An excess of Ca ions causes increased permeability while an excess of Na or K ions causes decreased permeability. There is an unusual demand for Ca during pregnancy and, inasmuch as there is a strain placed on all bodily functions at this time, the endocrine system may suffer, particularly the parathyroid glands. Thus a Ca deficiency may result from low intake or deficient metabolism. Such a deficiency in the liver cells leads to increased permeability, an outpouring and exhaustion of glycogen and, in a vain endeavor to compensate, the cells pour out their own toxic proteins, products which would not pass through the membranes of cells with normal permeability. This results in "morning sickness" or may go on to hyperemesis gravidarum in early pregnancy and, if the condition is not corrected or the organism does not become adjusted to it, in later pregnancy the cumulative action manifests itself as eclampsia. Because of the compensatory and complementary actions of Mg and Ca, it is suggested that the salutary action of $MgSO_4$ may be greater than can be attributed to its sedative action alone. Because of the interdependence of calcium and phosphorus in other conditions, it may be that this latter element also plays a rôle in the etiology of these toxemias.—*R. L. Larsen.*

4183. LAZZARINI, LANFRANCO. Contributo allo studio dell'adiposi dolorosa. (Ricerche cliniche, istochimiche, fisicochimiche). *Clin. Med. Italiana* 60(3): 255-277. 6 fig. 1929.—The author reports a case of Dercum's disease and findings of a study of the tumefactions removed. He offers evidence to show that these tumefactions are composed of fat similar to the subcutaneous fatty tissue. He believes that these swellings are caused by fatty infiltration due to local incapacity (probably caused by vago-sympathetic disequilibrium involving the trophic branches) to assimilate the fat normally deposited there.

4184. LOUROS, N., und E. GAESSLER. Das "Stoffwechselbild" bei der Puerperalsepsis. *Arch. Gynaekol.* 140(1): 43-65. 9 fig. 1930.—The following conclusions are based on study of 9 cases, 4 of fatal streptococcus infection, 2 fatal staphylococcus infection, 1 fatal mixed infection, and 2 ending in recovery. Taking first carbohydrate metabolism, fatal bacterial sepsis is marked by rise in lactic acid, change in blood reduction values and resulting acidosis. Secondarily the blood protein picture is characterized by fall of total plasma protein, increase in fibrinogen and globulin, and consequent displacement of the fibrinogen-globulin-albumin proportion toward the globulin side. The submolecular proteins (amino-acids) were, surprisingly, not increased in any

case. Fat metabolism showed an increase in total fats with a decrease in total cholesterol and its ester. In ionic metabolism the striking facts were decrease in Na, increase in K, Mg and P, and approximately normal Ca values. Acidosis was confirmed by lowered H (Hasselbalch method) and alkali reserve. The determining factor appears to be, not an oxidation-inhibiting process, but a disturbance in hepatic metabolism. The lactic acid formed in the body is not, as normally, resynthesized in the liver, but is poured out into the blood in toxic and constantly increasing amounts. This acidification of the organism encounters a lowered alkali reserve. The rise in lactic acid is accompanied by a rise in blood sugar, but the latter falls again immediately before death, owing to the constantly decreasing capacity of the liver for glucose mobilization. Hence follows the conclusion that septic death is a liver death.

4185. McCLELLAN, W. S., and R. R. HANNON. A case of osteitis fibrosa cystica (osteomalacia ?) with evidence of hyperactivity of the parathyroid bodies. Metabolic study III. *Jour. Clin. Investigation* 8(2): 249-258. 1930.—Ca and P balances are presented for the subject C. M. who was observed continuously for 154 days. Distinct improvement in the physical condition occurred during his stay in the hospital. An intake of 1.0 gm. of Ca was found necessary to keep him in positive Ca balance. The positive balance was increased by increasing the intake. No definite benefit could be ascribed to cod liver oil or quartz lamp therapy. Thyroid and pituitary extracts diminished the amount of Ca retained. The excretion of Ca in the urine was not affected by increased intake of Ca but was increased as a result of giving thyroid extract. The excretion of Ca in the feces was elevated by increasing the intake and there is suggestive evidence that it is slightly increased by giving pituitary extracts. The excretion of P in the urine was not significantly affected by either intake or glandular therapy. The P in the feces varied with the intake. A positive P balance was maintained throughout the entire period of observation even in those periods when there was definite loss of Ca from the body. The removal of 2 parathyroid glands caused only slight changes in the levels of serum Ca and P and no changes in the basal metabolic rate.—*Author summary.*

4186. MERZBACHER, L. Die Beziehungen der natürlichen Malaria zur Syphilis. Ergebnisse einer Studienreise nach den Nordprovinzen Argentiniens. *Deutsche Zeitschr. Nervenheilk.* 113(1/3): 1-49. 1 fig. 1930.—The author was a member of a commission for study; he visited the northern provinces of Argentina where malaria is endemic and syphilis is frequent, visited hospitals, interrogated physicians, health officers and other officials, and made a personal study of 120 cases. His 2 chief conclusions are: (1) Natural malaria is capable of checking the development of severe metasyphilitic symptoms. (2) The frequency of serologically positive cases and of pathologic colloid reactions furnishes evidence against the ability of natural malaria to effect a complete disinfection of blood and cerebrospinal fluid. Merzbacher reconciles the apparent contradiction by pointing out that an abnormal colloid reaction shows merely that the fluid has not yet been restored to normal; it does not prove that cure may not follow. The abnormal colloid reaction may be merely the persistence of a pathologic sign destined to disappear as the disease becomes more benign. He considers the rarity of severe forms of metasyphilitic diseases in malarial regions a most significant fact.

4187. MEYER, ADOLPH, et al. Schizophrenia (Dementia praecox) in: A series of research publications by the Association for Research in Nervous and Mental Disease. Vol. 5. 491p. 61 fig. Paul B. Hoeber: New York, 1928. $7.50.—ADOLPH MEYER: The evolution of the dementia praecox concept. C. MACFIE CAMPBELL: On the definition or delimitation of the schizophrenic type of reaction. A. A. BRILL: The schizoid concept in the neuroses and psychoses. HORATIO M. POLLOCK: Frequency of schizophrenia in relation to sex, age, environment, nativity and race. ALBERT M. BARRETT: Heredity relations in schizophrenia. A. MYERSON: Hereditary relationship of feeble-mindedness and schizophrenia. THEOPHILE RAPHAEL, WILLIAM G. FERGUSON and OLIVE M. SEARLE: Constitutional factors in schizophrenia. GEORGE S. AMSDEN: Mental and emotional components of the personality in schizophrenia. HARRY STACK SULLIVAN: Affective experience in early schizophrenia. RICHARD H. HUTCHINGS, CLARENCE O. CHENEY and WILLIAM W. WRIGHT: Psychogenic precipitating causes of schizophrenia. HERMAN M. ADLER: Schizophrenic manifestations in prisoners. MENAS S. GREGORY: Alcoholism and schizophrenia. KARL A. MENNINGER: The schizophrenic syndrome as a product of acute infectious disease. SMITH ELY JELLIFFE: The mental pictures in schizophrenia and in epidemic encephalitis; their alliances, differences and a point of view. J. C. WHITEHORN: The effect of glucose upon blood phosphates in schizophrenia. KARL M. BOWMAN: Endocrine and biochemical studies in schizophrenia. GEORGE W. HENRY: Gastrointestinal motor functions in schizophrenia; roentgenological observations. HANS C. SYZ: Psychogalvanic studies in schizophrenia. MARJORIE FULSTOW: Observations on the weight of the heart in schizophrenia and other mental disorders. WILLIAM A. WHITE: The language of schizophrenia. NOLAN D. C. LEWIS: Graphic art productions in schizophrenia. CHARLES B. DUNLAP: The pathology of the brain in schizophrenia. WALTER FREEMAN: Lipid degeneration products in the thalamus and globus pallidus in schizophrenia with a note on calcification. BERTRAM D. LEWIN: Histopathology of the endocrine organs in schizophrenia. EDWARD A. STRECKER and GORDON F. WILLEY: Prognosis in schizophrenia. SAMUEL W. HAMILTON: The treatment of schizophrenia.

4188. NEVER, HENRY E. Avitaminose und Verdauungsorgane. II. Mitteilung. *Pflüger's Arch. Ges. Physiol.* 224(6): 787-792. 2 fig. 1930.—In a dog with duodenal and ileac fistulas avitaminosis produced marked disturbances of digestion with deranged pyloric reflex and delayed transit of food. The delayed resorption of fats and the lengthened sojourn of the fatty acids in the intestine may be the primary factor which produced all the others.—*From author's summary (transl.).*

4189. NUTTING, ROLAND E. Capillary bronchitis. The effect of the administration of oxygen on the healing process. *Amer. Jour. Dis. Children* 37(5): 1051-1054. 3 fig. 1929.—In the case reported, life was prolonged 26 days by continually administrating O. Many bronchioles were occluded by fibrous tissue. Death apparently was due to asphyxia caused by this attempt at healing.—*G. N. Ludwig.*

4190. OLCH, I. Y., and HARRY C. BALLON. Experimental abscess of the lung following ligation of the pulmonary artery and incision and suture of the pulmonary parenchyma. *Arch. Surgery* 19(6): 1586-1594. 5 fig. 1929.—In 10 dogs, ligation of the pulmonary artery to the right lower lobe and simple incision and suture of the pulmonary parenchyma of the corresponding lobe was followed by the formation of an abscess of the lung in 8 instances. No appreciable increase in fibrous connective tissue was observed in the lung over periods up to 4 weeks following ligation of the pulmonary artery. The lobe did not decrease in size, nor did the alveoli appear to be smaller. Simple incision and suture of the pulmonary parenchyma resulted in a scar which resembled a scar elsewhere in the body and was not followed by the development of an abscess of the lung. Phrenicotomy performed on the corresponding side apparently in no way influenced the end result.—*Authors' summary.*

4191. PARTURIER, GASTON, FAUQUE, et MAUCEAU. Les épreuves musculaire et respiratoire chez les hépatiques. *Presse Méd.* 38(7): 99-101. 1930.—Rest-N of the blood, azotemia, uricacidemia, cholesterolemia and glycemia, before and after ½ hr. muscular effort,

were determined in 15 normal subjects and 46 patients with various hepatic complaints (16 serious, 15 medium and 15 light cases). In the normal subjects there was a rise of azotemia and glycemia and a fall in cholesterolemia after the exercise. In the severe hepatic cases there was a fall in glycemia and in urea; the less serious cases approached the normal type. The same tests were made on 6 normal controls and 34 patients taken at random among hepatic and diabetic patients and others, before and after inhalation of CO_2. In the normal subjects the only change was a slight elevation in glycemia. Of the 34 diseased subjects, 10, including 2 with mild diabetes, showed a slight rise in glycemia; 10, including 3 with serious diabetes, showed a fall in glycemia; 14, including 7 with very grave diabetes, showed glycemia unchanged. In 50 tests before and after inhalation of O, as in the case of CO_2, only the glycemia was subject to variation. In normal subjects there was no change, or a slight rise; in hepatic subjects there was a more or less decided fall, the amount apparently corresponding more or less to the severity of the pathologic condition. "It is as if the glucose consumed by hyperoxygenation was immediately replaced by a healthy liver, and as if a diseased liver were able to accomplish the task only with a noteworthy tardiness."

4192. **PATRIZI, M. L. Epilessia faradica ed epilessia umorale fra due soggetti a circolazione intercomunicante ("cardiopagi"). [Epilepsy, faradic and humoral, in parabiotic animals.]** *Boll. Soc. Ital. Biol. Sperim.* 2(5): 451-456. 1927.

4193. **PATRIZI, M. L. Immediata dimostrazione autografica dei fenomeni tossicoemici da fatica nei "cardiopagi sperimentali." [Graphic records of toxic phenomena of fatigue in parabiosis.]** *Boll. Soc. Ital. Biol. Sperim.* 2(5): 456-458. 1927.

4194. **PEEL, ALBERT A. FITZGERALD. Transient inversion of the "T" wave in electrocardiograms in cases of acute rheumatism with cardiac complications.** *Glasgow Med. Jour.* 112(6): 291-303. 19 fig. 1929.—A series of 6 cases of acute rheumatism with cardiac complications have shown inversion of the "T" wave in lead 3 as a transient phenomenon; the phase of inversion is accompanied by a diminution in the amplitude of the "T" wave in lead 2. Variations in the "T" wave of this nature can be demonstrated in the majority of cases with active endocarditis; but a certain number appear to run their course without showing any such variations. Comparison of these cases with cases of cardiac dilatation in Graves' disease suggests that the "T" inversion in the rheumatic cases is due to actual myocarditis rather than to a toxic action on the heart muscle. Inversion of the "T" wave in lead 3 is more than twice as frequent in subjects with acute rheumatism as in persons with normal hearts and some other disease. The discovery of an inverted "T" 3 in a case of acute rheumatism should be regarded as highly suggestive of the presence of active myocarditis until it has been shown to be constant and "normal" for that individual, and provided "digitalis inversion" and the inversion resulting from pre-existent cardiac lesion have been excluded.—*Author's summary.*

4195. **PUCSKO, OTHMAR. Der Einfluss verschiedener Kostformen auf den Ketonkörper- und Zuckerspiegel bei Diabetes mellitus.** *Wien. Arch. Inn. Med.* 15(1): 123-130. 1928.—The author investigated certain established dietary routines in vogue in their relation to ketogenesis and found the following: The older types of diets, such as the tolerance-day according to Allen and others, which are high in protein, produce high ketogenesis. The newer diets, Falta's, are more favorable. A pure plant protein causes a quick rise of ketones in the blood followed by a fall. The restriction of calories alone without reference to the type of diet also has a beneficial influence on ketogenesis.—*H. J. John.*

4196. **RAINE, FORRESTER, and MARGARET C. PERRY. Intestinal obstruction: experimental studies on toxicity, intra-intestinal pressure and chloride therapy.** *Arch. Surg.* 19(3): 478-511. 1929.—In intestinal obstruction the blood nonprotein N and chloride decrease were related to the part of the gut obstructed. Recovery after release of obstruction was more rapid when there had been reabsorption of the contents of the obstructed gut. The rabbit's life was prolonged and the therapeutic value of chlorides was greater as the intra-intestinal pressure in the obstructed bowel was diminished.—*M. L. Menten.*

4197. **RICHTER, CURT P. The dependence of the electromyogram for voluntary contractions on the anterior horn cells.** *Amer. Jour. Physiol.* 85(2): 403. 1928.—After destruction of anterior horn cells in muscular atrophy, poliomyelitis and syringomyelia, the electromyogram is greatly altered.

4198. **ROSENTHAL, EUGENIO. Sul diabete degli infermi portatori di tumori. [The effect of tumors on diabetes.]** *Rin. Med.* [*Napoli*] 7(1): 13-14. 1930.—The author cites several clinical observations indicating that the development of carcinoma in diabetic patients checks the diabetes. In 1 patient, long diabetic, a carcinoma of the head of the pancreas had closed the bile-duct, and intensification of the diabetes was expected. Instead, the glycosuria diminished and disappeared as the carcinoma developed, and did not reappear even when the patient ate sugar. The facts may be explained either by Warburg's observation that tumor-cells require large quantities of carbohydrate for their development, or by Ruffo's discovery in malignant tumors of active insulin-like substances.

4199. **RUSZNYÁK, STEPHAN. Untersuchung zur Frage der Gesamtblutmenge des Menschen unter normalen und pathologischen Verhältnissen. II. Mitteilung. Nierenkrankheiten und Hypertonien.** *Deutsches Arch. Klin. Med.* 158(1/2): 98-118. 1927.—Renal disease (64 cases) is accompanied by a decrease in blood volume. This is also true when renal disease is complicated by edema and increased blood pressure. Only in cases of contracted kidney is there a tendency toward an increase of blood volume. In hypertension without renal involvement (24 cases) the usual findings are decreased blood volume and increased blood concentration. The findings are explained on a basis of lowered capacity of the vascular system—*B. S. Walker.*

4200. **SCHWENTKER, FRANCIS F., and WILLIAM W. NOEL. The circulatory failure of diphtheria. II. The carbohydrate metabolism in diphtheria intoxication.** *Bull. Johns Hopkins Hosp.* 46(4): 259-271. 1930.—In rabbits dying of severe diphtheria intoxication there is found a marked pre-lethal hypoglycemia. In the less severe intoxications, so that death occurs later in the disease, the pre-lethal blood sugar value becomes progressively higher until after the third day a definite hyperglycemia becomes evident. There is a marked reduction, indeed, in most cases a complete absence of hepatic and muscular glycogen during the toxemia. In humans as well as in rabbits there is found a definite inability to assimilate dextrose from the blood stream in diphtheria; this is progressive with the toxemia. Insulin retains to some extent its power to cause the assimilation of the dextrose in diphtheria intoxication. The authors are inclined to picture the mechanism in diphtheria intoxication as follows: In the first stages of the toxemia, there is an increase in the metabolic processes of the body; the glycogen stores in the liver and muscles are reduced to dextrose. This is evidenced by the increased blood sugar in the early stages. Very probably, there is also an increased activity of the thyroid and adrenal glands. If the intoxication is severe, the glycogen and dextrose are rapidly consumed in the process and, when death supervenes, there is found a definite hypoglycemia and a complete absence of hepatic and muscle glycogen. If, however, the intoxication is of longer duration, there becomes apparent a progressive inability on the part of the body to assimilate carbohydrate. Most of this is probably due to a suppression of the production of insulin; it may be due in part to a continued activity of the thyroid-adrenal apparatus. When this stage has been reached, there is a progressive

rise in the blood sugar values but the body is unable to utilize any of the dextrose. The absence of glycogen in the liver and muscles is evidence on this point. Naturally enough, when the body is no longer able to assimilate the dextrose, nutritional disturbances are set up and cellular degeneration occurs. This eventually leads to circulatory failure and death.—*F. F. Schwentker.*

4201. **TEITGE, H. Über die Purinbasenausscheidung im Harn bei chronischer myeloischer Leukaemia.** *Hoppe-Seyler's Zeitschr. für Physiol. Chem.* 186(3): 124-132. 1929.—In a case of chronic myeloid leukemia, 100 l. of urine were collected and treated according to the method of Krüger and Salomon with ammoniated $AgNO_3$ to secure the purine by crystallization in pure form. There were found only methylxanthine (originating from the caffeine) (heteroxanthine 1.47 gm., l-methylxanthine 0.2 gm., paraxanthin 0.54 gm.) while the purine bases were excreted only in traces (adenin 0.03 gm. and hypoxanthin 0.04 gm.). In addition 1.08 gm. of carnin was recovered.—*H. Teitge (transl. by W. F. Jacobs).*

4202. **TOFFANIN, U. Ricerche sulla reazione intracutanea di McClure ed Aldrich.** *Policlinico [Sez. Prat.]* 37(1): 7-10. 1930.—The McClure-Aldrich reaction, used in 83 cases of various kinds, gave, in general, a nearly normal reaction time in infectious diseases (30 cases) and affections of the digestive tract (9 cases); prolonged reaction in senile marasmus (1 case) and in exudative pleuritis and polyserositis (6 cases); and a short reaction in renal lesions with edema (2 cases) and in subacute myocarditis (2 cases).—*From author's summary.*

4203. **VAN ALLEN, C. M., L. S. HRDINA, and J. CLARK. Air embolism from the pulmonary vein. A clinical and experimental study.** *Arch. Surgery* 19(4): 567-599. 14 fig. 1929.—Experimental studies on more than 100 dogs indicate that bronchovenous fistula may be produced by simple thoracentesis and may form a portal of entry for air into the pulmonary veins. Gravity is a determining factor distributing air in the blood circulation. Embolism of the heart (coronary) and brain are the vital effects. The position of the animal determines which of these are primary in a given case. Tolerance for embolism is greatest when the head of the animal is well depressed and least with the head up.—*From authors' summary.*

4204. **VAN ALLEN, C. M., W. E. ADAMS, and L. S. HRDINA. Embolism in bronchogenic infection of the lung.** *Arch. Surgery* 19(6): 1279-1291. 8 fig. 1929.—The lung appears to be in general much more resistant to necrosis and suppuration than are other tissues; however, in the lung, abscess develops much more readily from embolic than from intrabronchial inoculation. Experiments on 64 dogs sustained the hypothesis that the greater vitality of the lung than of other tissues in pyogenic infections is due to a greater blood supply, and that embolism or any other condition which reduces the pulmonary blood supply thereby reduces the vitality of pulmonary tissue to the general level of the tissues of the body.

4205. **WEINGROW, SAMUEL M. The interparoxysmal respiratory rate of epileptics.** *Jour. Nervous and Ment. Dis.* 70(4): 373-378. 1929.—From clinical observations (number of cases not stated) it is concluded that: the range of the interparoxysmal respiratory rate of adult essential epileptic males differs from that of the normal. Luminal medication extending over periods of years does not affect the limits of this range in the individuals studied. The average respiratory rate of idiopathic and symptomatic adult male epileptic patients whether or not receiving luminal falls within normal limits. Sleep per se has little effect upon the respiratory rate of the cases studied. The effect upon the interparoxysmal respiratory rate in epileptic individuals of drugs superimposed upon luminal needs further study.—*Author's conclusions.*

4206. **WENDT, H. Über das Verhalten der Cholesterinester im Blutserum Leberkranker.** *Klin. Wochenschr.* 8(26): 1215-1218. 1929.—Human bile contains a ferment that hydrolyzes cholesterol esters. Dog bile does not contain such a ferment; hence human bile contains only free cholesterol whereas dog bile contains cholesterol and its esters. Ligation of the common bile duct leads, in the dog, to an increase in the concentration of cholesterol and of cholesterol ester in the serum. In hepatopathics, with pronounced icterus, it is not uncommon to find a reduction in the cholesterol ester content of the serum. This reduction is probably due to hydrolysis of the cholesterol esters of the blood by the ferment that has seeped out of the gall bladder.—*M. Hanke.*

4207. **WISHNOFSKY, MAX, and CHARLES S. BYRON. Carbohydrate metabolism in acromegaly.** *Jour. Lab. and Clin. Med.* 15(3): 216-220. 1929.—The authors challenge the opinion of Davidoff and Cushing that the oversecretion of hypophyseal substance is the cause of diabetes mellitus in acromegaly. If this were the sole factor, either all acromegalics should have diabetes mellitus, or none. But, while disturbed carbohydrate metabolism is present in all cases of acromegaly, diabetes mellitus is present in only a fraction of the total number. Moreover, acromegaly is caused, so far as known, by oversecretion of the anterior lobe of the hypophysis, while it is the posterior lobe alone that influences carbohydrate metabolism. Insulin has 2 actions on sugar metabolism; it promotes glycogenesis and also oxidation of glucose. Pituitrin neutralizes the glycogenetic action of insulin, but does not affect its oxidizing action on glucose. In the opinion of Wishnofsky and Byron, the carbohydrate disturbance in acromegaly may be incidental to that disease or to concomitant diabetes mellitus.

4208. **ZIMMERMAN, H. M., and JOHN A. HILLSMAN. Chronic passive congestion of the liver. An experimental study.** *Arch. Path.* 9(6): 1154-1163. 2 col. pl., 2 fig. 1930.—In dogs the vena cava was ligated; 3 in which about 90% occlusion was obtained died 11, 30 and 60 hrs., respectively, after ligation; others, in which 50% occlusion was obtained, lived to be examined from 6 days to 216 days after ligation. The conclusions are: Necrosis of the liver follows simple mechanical obstruction to the outflow of blood, the extent of the necrosis being proportional to the amount of obstruction. The necrosis can involve the whole liver 11 hrs. after the ligation of the inferior vena cava. Ascites is early associated with necrosis of the liver, which is consequent on the obstruction of the inferior vena cava. As early as 6 days after the partial ligation of the inferior vena cava there is evidence in the liver of repair, as manifested by the numerous mitotic figures and the increase in the connective tissue in the areas around the central veins. Nineteen days after partial ligation of the inferior vena cava, the liver shows grossly the picture of chronic passive congestion. Active proliferation of connective tissue is seen around the central veins. In 41 days there are marked distention of the subcapsular venous sinusoids and marked fibrosis of the areas about the central veins, with large vascular spaces newly formed in this scar tissue. The cystlike formations in the connective tissue around the central veins are branches of these vessels. The fibrosis ceases to increase in extent after 85 days and is essentially of the same extent 216 days after the ligation of the inferior vena cava. Central fibrosis of the liver can result without infection being present, and is due to an active proliferation of connective tissue.—*Authors' summary.*

ANIMAL PATHOLOGY

INFECTIOUS AND OTHER DISEASES OF LOWER ANIMALS

F. S. JONES, *Editor*

R. W. GLASER, *Associate Editor*

(See also in this issue the subsection "Lower Animals" in the sections Immunology and Filterable Viruses; and Entries 3259, 4106, 4118, 4237, 4294, 4312, 4377, 4432, 4438, 4449, 4459, 4471, 4477, 4478, 4485, 4494, 4504, 4552, 4562, 4709, 4793, 6041)

4209. **ADSERSEN, VALD., og J. E. S. JØRGENSEN. Undersøgelser over Anaemi hos Pattegrise. 1. Nogle Undersøgelser over Svingningerne i Haemoglobinindholdet i Blodet hos Pattegrise. [Investigation of anemia in suckling pigs. 1. Study of variation in hemoglobin content of blood in suckling pigs.]** *Maanedsskr. Dyrlaeger* 43(5): 113-136. 1931.

4210. **ASCOLI, ALBERTO, e CARLO SETTI. Sul fenomeno dell'anacoresi. IX. L'anacoresi e l'actino-tubercolosi dei bovini. [Anachoresis and actino-tuberculosis in calves.]** *Biochim. e Terapia Sperim.* 18(1): 1-18. 1931.—Symbiosis of Actinomyces and tubercle bacillus was found frequently in either vaccinated or unvaccinated calves. It was possible to isolate both microorganisms from typically tubercular lesions. The predominant factor in the actino-tubercular mixed infection is the attractive action (anachoresis) exerted primarily by the tubercle bacillus on the Actinomyces.—*M. Comel.*

4211. **BAYNE-JONES, STANHOPE, and M. L. LERNER. Ocular lesions of rat-bite fever in guinea-pigs.** *Arch. Ophthalmol.* 4(6): 858-867. 4 fig. 1930.—24 guinea pigs were inoculated with strains of *Spirochaeta morsus muris* obtained from Boston and Rochester. Most of the animals died of the infection or became so ill that they were killed. Some were killed early in the course of the infection for study of incipient lesions. All of the animals had some degree of swelling and crusting of the eyelids, associated with loss of hair around the eyes; 14 animals developed ocular lesions during the period of observation; the other 10 failed to show any significant disease of the eyes.

4212. **BEATTIE, W. W. An epizootic produced by a haemolytic streptococcus in laboratory guinea pigs with abscess formation.** *Jour. Path. & Bact.* 34(4): 453-458. 1 pl. 1931.

4213. **CONKLIN, R. L., and W. A. MAW. Pressure necrosis—a battery brooder feed problem.** *Proc. 21st Ann. Meet. Poultry Sci. Assoc.* 1929 [In: *Bull. Alabama Polytech. Inst.* 25(1): 32-34. 10 fig. 1930].—The authors conclude that pressure necrosis causing loss of either the upper or lower mandible is apparently due to the fine consistency of the ration fed; it may also be due to lack of fibrous material in the ration. It is apparently due to a combination of factors, such as close confinement in brooder battery and finely ground food, leading to apparent continued eating of dry mash without taking sufficient drink to cleanse the mouth. Removal of the adhering food and simple disinfection of the mouth parts correct the condition. The change from a finely ground food to a granular one removes the cause of impaction.—*Authors' summary.*

4214. **DAVID, HANS. Zur Frage der Sonderstellung der Rattenschädlingsbakterien innerhalb der Gruppe des Bact. enteritidis Gärtner.** *Zeitschr. Fleisch- u. Milchhyg.* 40(10): 203-206. 1930.—Evidence is brought forth to show that the Bonner Ratin strain possesses the same biochemical and serological characteristics as the original Copenhagen Ratin, Liverpool virus, Morratin, virus Compagnal (Paris), etc., and that it differs from other enteritidis Gärtner strains. The epizootic in cattle which occurred at Düren and which was described by Haffner as being due to rat pathogens was caused by a typical representative of the Gärtner bacillus group III (Bahr) (paracoli Jensen).—*H. J. Stafseth.*

4215. **DOEVE, W. C. A. Cascado een chronische huidziekte bij rundern. [Cascado, a chronic cutaneous disease of cattle in Celebes.]** [With English and French summaries.] *Ned.-Indische Blad. Diergeneesk.* 43(1): 30-65. 10 fig. 1931.—In the deeper parts of the skin the author found fungous elements which he regards as *Penicillium* and provisionally names *P. bovis* (p. 52). Though cascado was not induced by rubbing pure cultures of this fungus into scarified skin of calves, the author regards it as a factor in the following way: By physical and chemical influences there arises first a slight inflammation of the skin, on the secreta of which the fungus grows. The fungus produces toxins or irritating substances causing itch, and the inflammation grows worse. The fungus then obtains a still better medium, grows more abundantly and penetrates to the deeper parts of the diseased skin. The horny stratum and the corium grow excessively. As the natives use "cascado" for other cutaneous diseases, the author proposes the name "tinea sclerotica bovis."

4216. **DUNÉR, I. B., och SVEN WALL. Nötkreaturstuberkulosens utbredning i Sveriges skilda län år 1929 bedömd med hjälp av tuberkulosprocenten funnen vid köttbesiktning av kött av vuxna nötkreatur vid rikets samtliga köttbesiktningsanstalter. [The extent to which tuberculosis in cattle existed in the different districts of Sweden in 1929, examined with reference to the percentage of tuberculosis found on inspection of the meat from adult cattle at all the meat-inspection stations in the kingdom.]** [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(3): 74-96. 1 map. 1931.

4217. **EIDHERR, ALFRED, und HEINRICH REICHEL. Ist die Ascoli-Reaktion zur Aussonderung milzbrandinfektiöser Häute geeignet?** *Arch. Hyg. u. Bakt.* 105(5): 262-271. 1931.—In 200 pelts, 27 were infected with anthrax by culture test; the modified Ascoli reaction was positive only once.

4218. **EMMEL, M. W. The susceptibility of the guinea fowl to brucella disease.** *Jour. Amer. Vet. Med. Assoc.* 32(2): 228-232. 1931.—Feeding of massive doses of 2 strains of each of the species of *Brucella* produced an infection in guinea fowls, which was not fatal within 120 days. Lesions were similar to those produced in other birds by the same infection. What appeared to be a case of natural *Brucella* infection in 2 guinea fowls is described.—*Author's summary.*

4219. **GUIEYSSE-PELLISSIER, A. Le tissu lymphöide des branchies des poissons.** *Compt. Rend. Soc. Biol.* 106(10): 805-808. 1931.—Examination of fish living in the Juine, a badly polluted stream, showed a growth of lymphoid tissue on the gills which was not found in sea fish caught in the vicinity of Roscoff. These growths may be pathologic in nature.—*E. Weiner.*

4220. **HOBMAIER, M. Duck disease caused by the toxin of Cl. botulinum type C.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 339-340. 1930.—Preliminary paper.

4221. **JAMES, W. A. Streptococcus pyogenes meningeal abscess causing paraplegia.** *Jour. Amer. Vet. Med. Assoc.* 32(1): 94-95. 1 fig. 1931.—Direct smears from an abscess in a pig revealed a great number of cocci and diplococci. Cultures of the pus on blood-agar plates revealed a hemolytic streptococcus (*Strep. pyogenes suis*) as cause of the abscess, with resultant pressure on the spinal cord in the thoracic region.

4222. **JOHNSON, HOWARD W., and I. FOREST HUDDLESON. Natural Brucella infection in swine.** *Jour. Amer. Vet. Med. Assoc.* 31(6): 849-862. 1931.—*Brucella* infection in swine appeared to be due to 1 species, viz., *Brucella suis* Traum. The rapid agglutination test is an accurate method of following the course of infection.

The disease is apparently self-limiting, since the majority of animals recovered within 5 mo. from the time agglutinins first appeared in the blood. Infected sows or gilts conceive less readily. The infection appears to be confined chiefly to the lymphatic tissues. The capacity of *Br. suis* to invade the gravid uterus does not appear to be marked. The field survey indicates that the disease is prevalent in Michigan.—*Authors' summary.*

4223. **JULLIEN, A. De certaines tumeurs et inflammations du manteau de la seiche. [Tumors and inflammations in the mantle of the cuttlefish.]** *Arch. Zool. Exp. et Gén. Notes et Rev.* 67: 139-158. 3 fig. 1928.

4224. **LAUE, W. Untersuchungen über die Brauchbarkeit der Milch-Labhemmprobe nach K. Schern.** *Milchwirtsch. Zentralbl.* 60(1): 1-6. 1931.—Schern suggested that the action of rennet on milk may be used to determine whether or not an animal has inflammation of the udder. He believes that rennet fails to curdle the secretion of an infected gland, or else curdles it only after a longer time than milk from a healthy gland. The author was unable to confirm Schern's observations, and states that the reaction of milk to rennet is less accurate in diagnosing inflammation of the udder than are microscopic, cultural, and chemical methods.—*E. G. Hastings.*

4225. **MALLNER, F. Pelztierkrankheiten, ihre Vorbeugung und medizinische Behandlung. [Diseases of fur-bearing animals, prevention and medical care.]** (*Handbuch der industriellen Pelztierzucht.*) 343p. 67 fig. G. Löffler: Riga; A./G. Walters & Rapa: Riga, 1930.

4226. **MELLO, TAYLOR de, e MOACYR ALVES de SOUZA. O bacillo da Ruiva dos porcos; sua constatação no Brasil. (B. rhusiopathiae suis; first confirmation in Brazil.)** [With English abstract.] *Rev. Zootech. e Vet.* [*Rio de Janeiro*] 17(1): 41-47. 1931.—In a pig imported from the U. S. A. growths were found on the valves of the heart from which the bacillus of swine erysipelas was isolated. It was identified by cultural pathogenic, biological and serological properties.

4227. **NEIVA, CICERO. Sobre a associacao bacteriana na peste bovina. [Secondary microorganisms associated with rinderpest in cattle.]** *Arch. Inst. Biol.* [*São Paulo*] 4: 39-49. 1931.—Secondary microorganisms of the *Salmonella*, *Aerobacter* and *Escherichia* genera apparently play important rôles in the lesions of rinderpest in animals weakened by the ravages of the virus. Of the microorganisms studied, *Salmonella enteritidis* seemed to be most important. All the microorganisms lost their virulence after being cultured on artificial media in the laboratory for 9 yrs.—*From author's abstract* (*C. S. Gibbs*).

4228. **NOWICKI, W., et K. PANEK. Histopathogénie de la réaction provocatrice chez les chevaux morveux.** *Compt. Rend. Soc. Biol.* 106(10): 851-854. 1931.—Autopsy and microscopical examination of horses treated with morvotensin (specific extract from glanders bacilli) showed that its injection produces an exaggeration of the specific morbid process, as shown by intense hyperemia, sloughing of tissue and inflammatory lesions. This occurred only in horses presenting pre-existant modifications due to glanders. The degree of exacerbation is directly connected with the more recent glanders lesions.—*E. Weiner.*

4229. **PFEIFFER, HEINRICH, und HANS JÜRGEN STAMMER. Pathogenes Leuchten bei Insekten.** *Zeitschr. Wiss. Biol. Abt. A. Zeitschr. Morph. u. Ökol. Tiere* 20(1): 136-171. 9 fig. 1930.—*Bacterium* **haemophosphoreum,** isolated from a caterpillar of *Mamestra oleracea,* was shown to be pathogenic for insects. No other groups of animals were susceptible. It is not identical with any of the other 3 known photogenic bacteria pathogenic for invertebrates. Infection occurred only when the organism was injected directly into the hemolymph (M. L. D. 1×10^{-7} mgm.). Feeding experiments with cultures of phosphorescent insects were negative. No toxin was demonstrated. Death seems to be due to a chemical change in the hemolymph. Immunization against 5-10 times the M. L. D. was successful in a large number of experiments. Repeated injection of dead bacteria, especially of old cultures, seemed to increase the susceptibility of meal worms. Since pathogenic phosphorescent bacteria can cause phosphorescence in insects, experiments were carried out with phosphorescent Lampyridae and with *Ceroplatus.* With the Lampyridae a phosphorescent secretion seems probable. With *Ceroplatus testaceus* Dalm. certain fat tissue is phosphorescent, especially the skin fat. Phosphorescence was observed in larvae, pupae and 2-day imagines. Eggs and older imagines (no fat) failed to phosphoresce. No bacteria were discovered in the above; possibly a phosphorescent secretion is present. No cultures were obtained from the above. Only *Lampyris noctiluca* among these insects could not be infected with *Bact. haemophosphoreum.* This is attributed to an unfavorable composition of the hemolymph.—*H. Pfeiffer* (*transl. by C. B. Morrey*).

4230. **POOL, W. A. The etiology of "louping-ill."** *Vet. Jour.* [*London*] 87(4): 177-200; (5): 222-234. 1931.—After a critical review of published investigations from 1896 to date, the author doubts whether an infective agent is present within the bodies of affected sheep. The facts that "louping-ill" is a serious scourge in many parts of the country, and that a high death-rate and the occurrence of severe illness are striking features of its manifestations, compel doubt of experimental results in which the only evidence of a positive reaction in the naturally susceptible animal is the appearance of high temp. In a wide series of experiments involving inoculation by the various methods described, and with a variety of tissues from sick animals, the occurrence of paralytic symptoms on odd occasions might not necessarily be due to a specific infective factor.—*From author's summary.*

4231. **RODE, P. Recherches sur la destruction dans le sol d'un microbe pathogène: Bacillus typhi murium Loeffler.** *Ann. Epiphyties* 15(4): 237-252. 2 fig., map. 1929.—The author shows that *B. typhi murium* is particularly sensitive to drying. Among other things he points out the following biological peculiarities: In soil the organism is resistant to cold, maintaining its virulence for a relatively long time (1 mo. or less). Under normal conditions and with moderate temp., it disappears rapidly from the soil (24 hrs. to 4 days). This is attributed to desiccation, to indirect action of other microorganisms (production of acidity), and to paucity of soil nutrients. In view of these facts, the author outlines the precautions to be taken in the use of *B. typhi murium* (virus of Danysz) for destroying rodents.—*P. Rode.*

4232. **ROSEN, S. GUSTAVE. Ephemeral fever (three days' fever) of cattle in Palestine.** *Vet. Jour.* [*London*] 87(5): 244-246. 1931.—Record of an epizootic, apparently the first to occur in Palestine.

4233. **ROTTGARDT, ABEL. Simbiosis entre el bacilo de Preisz-Nocard y el bacilo piógeno de Poels en los ovinos. [Symbiosis between the bacillus of Preisz-Nocard and Bacillus pyogenes Poels in sheep.]** *Bol. Min. Agric. Nacion* [*Buenos Aires*] 30(1): 73-78. 1 fig. 1931.—In the pyogenous lesions of sheep the author demonstrated the presence of *B. pyogenes* Poels in symbiosis with the Preisz-Nocard bacillus. *B. pyogenes* facilitated in a certain manner the intoxication and infection by the Preisz-Nocard bacillus.—*Author's conclusion* (*transl.*).

4234. **SEEKLES, L., B. SJOLLEMA, en F. C. van der KAAY. De invloed van injecties met bloedcalciumgehalte-verlagende zouten bij runderen en de vergelijking der symptomen met die bij runderziekten met verlaagd bloedcalciumgehalte. [Injections of sodium oxalate decreasing the calcium content of the blood serum in relation to symptoms in cattle ill as a result of decreased blood calcium content.]** [With English, French, and German summaries.] *Tijdschr. Diergeneesk.* 58 (14): 750-755. 1931.—Experiments with cattle showed that intravenous injection of Na oxalate causes a decrease of Ca in the blood serum. With low Ca concentration there is a relative rise in tonus of the para-

sympathicus. The irritability of the animals is decreased and their gait is atactic. These symptoms do not coincide with the lowest point of Ca level, but occur when there is already a considerable increase in serum Ca. Clonic convulsions, on the other hand, occur at the point at which Ca constituents have reached a minimum, immediately before death. Intravenous injection of Na citrate does not cause a lowering of Ca in the serum. The symptoms of milk fever can not be explained alone by decrease of Ca in the blood serum. Decrease in blood Ca provokes a disturbance in the regulatory mechanism of the animal.—*Authors' summary.*

4235. **[SHTEFKO, V. G.]** Штефко, В. Г. Сравнительная патологическая анатомия легочного туберкулеза обезьян в связи с филогенетической эволюцией туберкулезного воспалительного процесса. **[Pathological anatomy of pulmonary tuberculosis in monkeys.]** [With French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(2/3): 165-178. 1929.—The author studied the disease in a series of 12 monkeys. Tuberculous inflammation in *Cercopithecus* proceeds after the type of alterative inflammation, corresponding to the anergic state of the organism toward tuberculosis. The author explains the patho-anatomical differences from human tuberculosis as due to profound difference in mesenchyma. The lesions in *Cynocephalus* showed some histological resemblance to those of the primary infection in man, yet differences were noted. According both to published data and to the author's observations, tuberculosis is more frequent in monkeys of the Old World than in those of the New.—*B. Van Rosen.*

4236. **SOUZA, MOACYR ALVES de. A gangrena gasosa dos bovideos. [Gas gangrene of cattle.]** [With English abstract.] *Rev. Zootech. e Vet.* (*Rio de Janeiro*] 17(1): 57-63. 1931.—An outbreak of malignant edema is for the first time described in Brazil. 11 strains of the isolated *Vibrio septicus* were neutralized by anti-gangrenous serum. Monovalent bovine and rabbit serum obtained with the isolated organism protected guinea pigs. —*From author's abstract.*

4237. **TOPLEY, W. W. C., M. GREENWOOD, and JOYCE WILSON. A strain of Bact. aertrycke with unusual epidemic characters.** *Jour. Path. & Bact.* 34(4): 523-531. 1931.—A strain of *Bact. aertrycke* is described, which was of moderately high virulence as tested by intraperitoneal injection in mice but had relatively little power of inducing fatal infections among mice exposed to contact infection. It did, however, spread from mouse to mouse under these conditions, giving rise to latent infections associated with increased resistance to subsequent contact infection with a virulent strain.—*W. W. C. Topley.*

4238. **TULLBERG, KJELLÅKE. Jämförande virulensbestämning av två olika abortbacillstammar genom intravenös infektion av dräktiga kor. [Comparative determination of virulence of two strains of abortus bacillus by intravenous infection of pregnant cows.]** [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(6): 202-207. 1931.—The virulence of 2 strains of *B. abortus* was tested by simultaneous intravenous infection of pregnant cows which had been bred at nearly the same time. The infection-doses were in all cases the same. 2 cows infected with the 1st strain aborted 33 and 82 days after infection, respectively. Of the 2 cows infected by the 2nd strain, one aborted 106 days after infection, the other calved normally 128 days after infection.—*From author's summary.*

ANIMAL IMMUNOLOGY

GENERAL AND BACTERIAL

S. BAYNE-JONES, *Editor*

(See also in this issue Entries 3276, 3280, 3745, 3749, 3759, 3791, 4066, 4113, 4226, 4236, 4294, 4410, 4413, 4415, 4430, 4431, 4433, 4446, 4448, 4449, 4456, 4463, 4468, 4471, 4485, 4501, 4512, 4535, 4556, 4569, 4571, 4602, 4877)

GENERAL

4239. **ARLOING, FERNAND, et LUCIEN THÉVENOT. Contribution à l'étude de l'action du virus tuberculeux filtrable sur la marche de la tuberculose expérimentale du cobaye.** *Compt. Rend. Soc. Biol.* 100(14): 1203-1205. 1929.—Guinea pigs treated, after tuberculization, with filtrates of the infecting culture, showed a slightly greater resistance to the course of the disease than controls; as did animals treated before and after tuberculization with a filtrate other than that of the infecting culture.

4240. **ASSIS, ARLINDO de. Sobre a technica do preparo da vaccina B. C. G. [Technique of preparing BCG vaccine.]** [With English summary.] *Brasil-Med.* 45(15): 338-341. 3 fig. 1931.—The paper deals with some practical modifications in the preparation of BCG-vaccine, including neutralization of Sauton's medium in presence of phenolphthalein (instead of phenol-red), direct utilization of known bacterial growths (instead of weighing them), and certain other practical steps in Calmette's vaccination technique.

4241. **AZZI, AZZO. Sul valore specifico dell'azione immunizzante del vaccino antistafilococcico alla Wright e della stomosina corrispondente. [Specific activity of Wright's antistaphylococcic vaccine and of the corresponding stomosine.]** *Arch. Ist. Biochim. Ital.* 3(1): 11-28. 5 fig. 1931.—Wright's vaccine and stomosine have a greater activity than milk, the vaccine acting especially in the first stage of infection, and the stomosine when the infection is at its height. The curative dose is less than the preventive. The action is explained by an increase of phagocytic and bactericidal power of blood, accompanied by an increased activity of the reticulo-endothelial system of liver and spleen, and by rise of body temp.—*M. Comel.*

4242. **BARNES, L. A. Studies in local immunity.** *Res. Studies State Coll. Washington* 2(3): 107-109. 1931. —Abstract of a dissertation. General results and conclusions are given of a series of experiments which, in general, failed to substantiate Besredka's theses as to the rôle of local immunity in avoidance of infections.

4243. **BLAZEK, V. Studium koagulace bilkovin sera krevního v kapkách u morčat zdravých a morčat infikovaných sněti slezinnou. [Coagulation of blood sera with chemical precipitants in healthy and anthrax-infected guinea pigs.]** *Biol. Spisy Vysoké Školy Zvěrolékařské Brno* (*Publ. Biol. École Vét. Brno*) 6: (145-151). 1927.—A study of the precipitation of the serum of 10 adult guinea pigs with 11 different precipitants showed a typical figure for sesquichloride of iron. The serum of 10 guinea pigs infected with anthrax was then tested, and it was found that there is a slow lowering of coagulability when tested with the following precipitants; sulphate of iron, sesquichloride of iron, trichloracetic acid, sulphosalicylic acid, and pyrogallol.—*Author's résumé* (*transl. by D. H. Bergey*).

4244. **BOHART, RUBY M. A study of sensitization in experimental tuberculosis.** *Amer. Rev. Tuberc.* 21 (3): 383-399. 1930.—Tubercle bacilli killed by carbol fuchsin in 0.2 mg. quantities given intracutaneously, sensitized guinea pigs to tuberculin. If given in 1.5 mg. amounts the sensitization persists for 1 yr. or more. Ether-killed bacilli behave similarly. Larger quantities of heat-killed tubercle bacilli are necessary for sensitization than of chemically killed organisms. Tubercle bacilli killed by ultraviolet or tuberculins and the proteins derived from them, do not sensitize guinea pigs.—*M. M. Lurie.*

4245. **EAGLE, HARRY. Specific agglutination and**

precipitation. I. The mechanism of the reactions. *Jour. Immunol.* 18(5): 393-417. 1930.—Agglutinating and precipitating antibodies are a specifically altered fraction of serum globulin. The antigen-antibody complex, whether sensitized red cells, agglutinated bacteria, or precipitate formed by soluble protein and corresponding antiserum, contains this antibody globulin, demonstrable chemically, immunologically, and by a change in cataphoretic, flocculating, interfacial, and complement-fixing properties of the antigen towards those of the protein with which it has combined. With cellular antigen, this antibody is present as an invisible film of specifically adsorbed protein; while in the precipitation reaction, it may constitute the bulk of the material formed. There are therefore 3 factors which determine specific flocculation: (1) the hydrophilic antigen is covered with (2) a film of immune globulin denatured by its combination with antigen. In absence of electrolytes, the charge due to ionization of this protein suffices to prevent aggregation. Minute concentrations of (3) electrolyte, however, depress this surface charge below the critical value necessary for stability. The resultant aggregation is therefore primarily of the immune globulin surfaces, and only incidently of the associated antigen. With insufficient immune-serum, only a very small part of the cell surface is covered with antibody globulin; most of the impacts are between hydrophilic antigen surfaces, ineffective in producing cohesion. With increase in immune serum, the greater is the proportion of antigen surface covered with sensitizing denatured protein, and correspondingly the greater is the proportion of effective impacts. The optimum pH for flocculation is intermediate between that of the original cell and that of the antibody globulin, shifting towards the latter as the degree of sensitization is increased (i.e., more extensive antibody film). At the optimum reaction, ionization, and therefore surface charge, are minimal; no added electrolytes are necessary to produce aggregation. In more acid or more basic reactions, the surface charge due to ionization of adsorbed protein causes a mutual repulsion of particles; but traces of electrolytes depress this charge and allow cohesion of the denatured antibody films. The flocculating ion is always the one opposite in charge to the ionized protein, and its flocculating efficiency increases enormously with increasing valence. The further from the isoelectric zone, the greater are the degree of ionization and the amount of electrolytes necessary to depress the surface charge below the critical value.—*H. Eagle.*

4246. [FELDSTEIN, A. O.] ФЕЛЬДШТЕЙН, А. О. **О влиянии больших доз сыворотки на развитие анафилаксии. [Influence of large doses of serum on development of anaphylaxis.]** [With French summary.] Одесский Медицинский Журнал. (*Odessaer Med. Zeitschr.*) 4(5/7): 363-366. 1929.—Experiments on guinea pigs and observations on man lead to the conclusion that large doses of serum (up to 1 liter and more) are not dangerous. The organism loses the faculty of sensitization in a short while and production of specific antibodies is impeded. Serum disease developed less often and grave phenomena were practically absent (isolated exceptions are possible). The maximum of anaphylactic complications was reached after doses of 300-400 cc.; further increase of dosage acts in reverse fashion. A large subcutaneous dose (up to 100 cc.) gave lasting desensitization and made safe any further injections.—*B. Van Rosen.*

4247. **FRIEDENREICH, V. Sur les sous-groupes du groupe sérologique A. Nature de l'agglutinine "irrégulière"** α_1. *Compt. Rend. Soc. Biol.* 106(9): 770-773. 1931.—All the sera in a series of A_2 and A_2B, containing variable amounts of α_1, had temp. curves characteristic of "cold" agglutinins. In sera B and O there was a very high content of α_1 active at 37°. There is then no essential difference between the "cold" agglutinin and the "irregular" agglutinin with respect to temp. curves. With respect to specificity, it resembles an isoagglutinin. In the absorption with isoagglutinins, it was found that at 37° all the active agglutinin is fixed, while there remain large quantities active only at lower temp. The isoagglutinin is composed of a series of fractions with different temp. amplitude. An anti-A serum, after absorption at 37° and then at 21° with erythrocytes A_2, shows a curve similar to that of an "irregular" α_1. This seems to be an intermediate form between an isoagglutinin and a "cold" agglutinin. The "irregular" α_1 is serologically identical with the lower fractions of the total α_1. The higher fractions are thought to be fixed by the A receptors of the organism and therefore do not appear in the serum.—*E. Weiner.*

4248. **FURUHATA, TANEMOTO, and TAKAYOSHI KISHI. A study on the geographical distribution of blood groups of the Japanese. II.** *Japan Med. World* 8 (5): 115-120. 1928.—The author cites his work on typing of 425 families and his hypothesis of human blood group inheritance, based on 3 multiple allelomorphs. The Japanese racial index, which is the largest in Kyushu, gradually decreases as it proceeds from south to north. The A factor is more frequent in Kyushu. Typing has shown that the natives of Formosa belong to the Pacific American, Indo-Manchurian, and Japanese types. These facts show that in Formosa there seem to live several groups of different origin, without intermingling.—*Cora M. Downs.*

4249. **GEDROYC, M. de. Recherches sur la toxicité du tissu nerveux introduit par la voie parentérale.** *Compt. Rend. Soc. Biol.* 100(14): 1245-1246. 1929.—Emulsions of nervous tissue of crayfish, lizard, frog and bird were injected into rabbits. None of the phenomena of fatal shock were induced. Emulsions of mammalian nervous tissue were not found toxic for *Deilephila euphorbiae,* for reptiles or for batrachians. Tissue from embryonic rabbits, when injected into adult rabbits failed to cause fatal shock. The author concludes that the toxicity of mammalian nervous tissue appears during ontogeny.

4250. **GEDROYC, M. de. Le choc anaphylactique chez des mammifères sensibilisés par le tissu nerveux embryonnaire.** *Compt. Rend. Soc. Biol.* 100(14): 1247-1249. 1929.—Rabbits sensitized with homologous embryonic nervous tissue were treated with emulsions of nervous tissue of embryo and of adult rabbits, of adult dogs, neurotoxic serum from a rabbit which had had 3 injections of adult nerve emulsion, emulsion of the brain of a frog and of an owl. Animals receiving brain emulsion of adult rabbits and dogs died, those receiving embryonic and frog tissues showed a drop in blood pressure followed by an increase. Neurotoxic serum and emulsion of owl brain had no apparent effect. The author concludes that these reactions should be considered as non-specific.

4251. **GILDEMEISTER, E., und PAUL HILGERS. An welchen Blutbestandteilen haftet das nach kutaner Impfung des Kaninchens in den Blutkreislauf gelangende Vakzinevirus?** *Zentralbl. Bakt. I. Abt. Orig.* 117(4/5): 258-262. 1930.—Blood taken from a rabbit on the 4th or 5th days after cutaneous inoculation with the authors' neurolapin strain of vaccine virus, was citrated, separated into its constituents by differential centrifugalization and each part tested for virus by injecting into the testicle of a rabbit. After 6-8 days the testicle was removed, ground up and tested for virus on the cornea of a rabbit's eye. 3 days later the eye was enucleated and tested by Paul's method. Virus was found chiefly in the leucocyte fraction and to some extent in the plasma.—*E. C. L. Miller.*

4252. **GOLDEN, GERALD. Distribution of blood groups in South American Indians.** *Lancet* 219(5579): 278-279. 1930.—These observations were made on Brazilian Indians of the Caraji tribe. The technique used was that of Beth-Vincent, except that the proportion of blood to serum was approximately 1:10 to 1:5. Results on 61 Indians showed: Group I 3(5%), II 3(5%), III 31(51%), IV 24(39%). As a control, 43 persons of Brazilian nationality were examined, with the following results: Group II 21(49%), III 3(7%), IV 19(44%); no Group I individuals were found. The author used the Moss classification.—*J. A. Kennedy.*

4253. **HACKENTHAL, H. Über das Verhalten des Kuhpockenvirus beim allergisch reagierenden Wiederimpfling.** *Zentralbl. Bakt. I. Abt. Orig.* 117(4/5): 251-257. 1930.—26 soldiers were vaccinated and, for 2 wks., daily smears were made from the throats of 2 of them (in rotation) and 5 cc. of blood were taken from their veins. The throat smears were inoculated onto scarified corneas of guinea pigs; the leucocyte fractions of the blood specimens were similarly inoculated, and also injected into guinea pig testes. Vaccine virus was found in the throats of 1 of the 2 soldiers tested at the end of 8 hrs., in both soldiers tested after 24 hrs., and in 1 soldier on the 5th and 9th days, respectively. Virus was found in the blood of 3 of 4 soldiers, tested on the 1st day, in both of those tested on the 2nd, 4th and 6th days, and in 1 tested on the 8th, 9th and 10th days. Soldiers 3, 4, 9, 12, 19, 23 and 24 showed allergic manifestations. Virus may have reached the throat through the blood stream, though the possibility must be kept in mind of a droplet infection from an adjacent case.—*E. C. L. Miller.*

4254. **HIRSZFELD, LUDWIG. Konstitutionsserologie und Blutgruppenforschung.** 235p. 12 fig. Julius Springer: Berlin, 1928. Price $6.07.—The work comprises chapters on the concept of iso-antibodies, inheritance of group-specific blood-substances, serologic human races (phylogenetic origin of iso-agglutinable characteristics; blood-groups in anthropology), physiologic and immune-biologic bases of iso-auto-agglutination, subgroups, group-specific differentiation during ontogenesis, the chemical characteristics of iso-agglutinable substances in human blood, group determination in pathology, and the theoretic bases of constitution serology.

4255. **HIRSZFELD, L., W. HALBER, und J. LASKOWSKI. Untersuchungen über die serologischen Eigenschaften der Gewebe. I. Über gruppenspezifische Differenzierung der Normal- und Krebsgewebe. II. Über serologische Eigenschaften der Neubildungen.** *Zeitschr. Immunitätsforsch.* 64(1/2): 61-113. 1929.—I. A summary on reactivity of alcoholic extracts of organs and neoplasms with group-specific immune sera. Group-specific differentiation was obtained with most, but not all, organs. The liver contains a considerable amount of iso-agglutinogen when near a carcinoma; group-substance is not always associated with detectable metastases. It is suggested that presence in such cases of A-substance causes an inhibition with soluble derivatives of the cancer, for which the existence of a biochemical metastasis is proposed. Carcinoma in group-A individuals always contains group substance. Sarcoma appears to contain no isoagglutinogen. Forssman antigen was not found in human organs or in cancer. Kidney extracts generally reacted with goat hemolytic serum independently of blood groups. Antigens reacting with anti-A sera were frequently found in organs and neoplasms of individuals of groups O and B, though such serological "malformations" are not associated with cancerous degeneration. Cancer in Poland is distributed in all blood groups, with a slight preponderance in B. II. By immunization of rabbits with aqueous suspensions of cancer tissue or with lipoids extracted from cancer with pig serum, an antiserum is obtained in some 10% of cases, which reacts specifically with extracts of most gastric tumors, exceptionally with tumors of other parts of the digestive tract, and rarely with those of other regions. Reactivity of tumor extracts seems to be connected with cellular degeneration in the neoplasm. Presence of cancer-body is independent of blood groups. Organ extracts of non-cancerous persons rarely react with anti-cancer serum. In some cases of cancer, presence of the cancer-body was established in organs in which metastases were not apparent; this is presumed to be due to a biological infiltration of cancer antigen into nearby tissues. Metastases generally react like the primary growth, though they occasionally fail to exhibit the serological specificity of the primary tumor. Cancer antigen, like isoagglutinogen, is alcohol-soluble and it is therefore presumed that with cancerous alterations of cells a disturbance of lipoidal metabolism occurs which is detectable serologically, and that cancer lipoids are specifically related to the tumor.—*R. T. Hewlett.*

4256. **INOUE, S. Beiträge zur Rieckenbergschen Reaktion.** *Zentralbl. Bakt. I. Abt. Orig.* 117 (1/3): 80-86. 1930.—Rieckenberg's reaction is performed by mixing 1 loop of the following reagents on a slide, covering with a cover glass sealed with vaseline and observing under the microscope after 20-30 min. at room temp. The reagents are (1) decreasing dilutions of inactivated patient's serum with saline, (2) mixture of guinea pig blood (complement and blood cells) with 2% citrate salt solution, and (3) culture of the spirochaete to be tested. The blood cells act as an indicator, the test organisms apparently clinging to them; bacteria and ink granules serve the same purpose. The author believes this "loading antibody" is distinct from agglutinins and tropins. The reaction can be demonstrated only with motile spirochaetes, but the antibodies may be produced by injection of killed organisms. By this and other tests the author demonstrated that *Spirochaeta icteroides* (Noguchi) and *S. icterohemorrhagiae* are identical, that the spirochaete of Akiyami Type A is an independent species, and that the spirochaete of Akiyami Type B and *S. hebdomadis* are identical. The reaction can be used to detect wild rats infected with *S. icterohemorrhagiae.*—*G. H. Robinson.*

4257. **JACOBSOHN, GEORG, I. JUNDELL, und NILS LÖNBERG. Einige weitere Versuche zur aktiven Immunisierung gegen Scharlach.** *Acta Med. Scandinavica* 71(1/2): 38-46. 1929.—3-4 injections of 100-1000 skin test doses of toxin resulted in 30-47% negative Dick reactions. Increase of dosage caused a considerable number of severe reactions (fever, exanthem). The Dick reaction is a reliable index of susceptibility, as shown by the incidence of scarlatina in a regiment; 6.5% of Dick-positive individuals, 1% of those with a doubtful reaction, and only 0.2% of Dick-negative persons, developed the disease.—*L. C. Havens.*

4258. **JAKIMOW, W. PH. Zur Frage über die Rezidivrassen der Spir. obermeieri bei experimenteller Rekurrens.** *Zeitschr. Immunitätsforsch.* 64(1/2): 9-15. 1929.—The relation between the original and the relapse strain was studied by means of the adhesion test and protective inoculation experiments in animals infected with a Berlin strain of *Spir. obermeieri.* The relapse strain was biologically distinct from the original strain in about 50% of the cases. The relapse strain passed through a series of rats, gradually lost its characters and reverted to the original type. In 3 instances a new type of spirochaete appeared, biologically distinct from both the original and the relapse strains. Mice passively immunized with antibodies of the original strain and subsequently inoculated with this strain showed complete immunity in 40%, incomplete protection in 37.5%, and no protection in 16%, of the animals.—*R. T. Hewlett.*

4259. **JETTMAR, H. M. Blutgruppenuntersuchungen in der Nordostmongolei und der Nordmandschurei. [Studies in blood groups in northeastern Mongolia and in Manchuria.]** *Mitteil. Anthropol. Ges. Wien* 60(1): 39-47. 2 maps. 1930.—The author studied the distribution of the 4 Landsteiner blood groups among 3 sorts of peoples: (1) 114 Mongolians were examined and the following incidence of the 4 groups was found: O, 28.6%; A, 23.2%; B, 31.3%; AB 16.9%. (2) Among 668 Chinese, the incidence was O, 28.1%; A, 29.5%; B, 33.2%; and AB, 9.1%. (3) Among a group of 196 individuals made up of several races occupying the region of the Amur River, the incidence was O, 39.3%; A, 18.9%; B, 36.2%; AB, 5.6%.—*P. Levine.*

4260. **KAUFFMANN, FRITZ. Die Serologie des Paratyphus Breslau-Bacillus.** *Zeitschr. Hyg. u. Infektionskr.* 110(3): 526-536. 1929.—The serologic characteristic of the bacillus is its special receptor, which in all pure Breslau strains is demonstrable by means of specific immune serum, and which is absent in Schottmüller, Newport, Suipestifer and Gärtner bacilli. The Breslau

type is not to be regarded as a "minus" variant of the Schottmüller types (as believed by Uhlenhuth and Seiffert), but as completely independent serologically. A special Freiburg type was not distinguished because the majority of the Breslau types are identical with the so-called Freiburg type. A few Breslau types do not always have a complete receptor apparatus, but this does not justify their designation as a new type. The claim again advanced by Seiffert, of the relatively frequent occurrence of a Schottmüller strain, pathogenic for mice, could not be confirmed.—*Maud L. Menten.*

4261. **KETTEL, KARSTEN, und O. THOMSEN. Quantitative Untersuchungen über die menschlichen Isoagglutinine Anti-A und Anti-B.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 65(3/4): 245-253. 1930.—A quantitative study of the titer of isoagglutinins A and B in the blood groups O, A and B.—*N. W. Larkum.*

4262. **KITAURA, Y. Studien über intraperitoneale Anwendung des Antivirus. I.** *Jour. Oriental Med.* 14(5): [Japanese; with German summary, p. 50-51.] 1931.—After intraperitoneal injection into rabbits, of 2 cc. of sterile NaCl solution, sterile normal bouillon, or antivirus of *Staphylococcus pyogenes aureus* a dose of sterilized suspension of these staphylococci was intravenously injected, and blood from an ear vein examined for phagocytosis ½, 1, 2, 4 and 8 hrs. later. Bouillon culture filtrate in all cases promoted phagocytosis more than did physiologic saline or normal bouillon. Filtrates from bouillon cultures 1, 4, 7, 10, 13, 16 or 19 days old displayed different properties: within 1 wk. after the beginning of culture the activity increased and reached a peak level which it maintained for about 1 wk. and then gradually declined. Antivirus from 7-10-day-old cultures, at the apex of activity, was comparatively non-toxic; at 10 days or later the cultures were highly toxic, intraperitoneal injection causing death of the animal in collapse. The alkalinity of the filtrate increased with age of culture.

4263. **KOMIYAMA, T. The action of salts upon bacteriolysis.** *Jour. Oriental Med.* 14(5): [Japanese; with English summary, p. 46.] 1931.—Na citrate and K oxalate in 1% solution, and Na_2SO_4, $MgSO_4$ and KNO_3 in 2% solution, completely inhibited bacteriolysis in vitro, inhibition being due chiefly to the action of the salts on complement, rather than on the bacilli or other bacteriolytic elements. Na phosphate (concentration not stated) failed to completely inhibit bacteriolysis; Na acetate (0.1-3%) encouraged bacteriolysis.

4264. **KUPELWIESER, ERNST, et al. Versuche über die Nachweisbarkeit immunisatorisch bedingter Fermentprozesse. V. ERNST KUPELWIESER. VI. ERNST KUPELWIESER, und ERNST NAVRATIL.** *Biochem. Zeitschr.* 178(4/6): 298-318. 2 fig.; 319-323. 1926.—A series of studies was made on problems connected with Abderhalden's reaction. These installments deal especially with attempts to detect by refractometric means and by Sörensen's formol titration of amino acids, evidences of the breakdown of unchanged protein antigen when mixed with the serum of an immunized or anaphylactic animal. With serum from anaphylactic or hypersensitive animals there was no evidence of digestion of the protein antigen. In the serum from immunized animals, ferments were found, which caused proteolysis of the antigen.—*S. Bayne-Jones.*

4265. **LAROCHE, GUY, CHARLES RICHET, fils, and FRANÇOIS SAINT-GIRONS; foreword by CHARLES RICHET; transl. by MILDRED P. ROWE, and ALBERT H. ROWE; preface by ALBERT H. ROWE. Alimentary anaphylaxis (gastro-intestinal food allergy).** 139p. Univ. California Press: Berkeley, 1930. Pr. $2.—A translation of the French monograph which appeared in 1919, and of footnotes added in 1929 by the original authors. It discusses many aspects of the allergic disturbances following ingestion of various foods by persons with special hypersensitivity to them. Chapter I gives some evidence on the experimental production of alimentary anaphylaxis conditioned by absorption of unaltered protein from the gastro-intestinal tract, and classifies the symptoms of gastro-intestinal food allergy. In Chapter II, these symptoms are considered in detail in relation to the severe, mild, chronic and hereditary forms of alimentary anaphylaxis. Chapter III (2pp.) summarizes some of the observations made on modifications of the blood from alimentary anaphylaxis. To this group of blood-vascular reactions Widal has given the name hemoclastic crisis. Chapter IV, "Experimental studies" records results of attempts to produce sensitization via the alimentary tract. The authors regard these results as proof that the organism can be sensitized by ingestion. Chapter V, "Pathogenesis," contains material modified by later studies of the authors; absorption of incompletely digested or unchanged proteins from the gastro-intestinal tract, coupled with hepatic lesions, are the essential features in the pathogenesis. Chapter VI deals with diagnosis; Chapter VII, with treatment. The last section is a bibliography of 8 pages, unchanged from its form and content in the 1919 monograph.—*S. Bayne-Jones.*

4266. **LUBINSKI, HERBERT. Beiträge zur Rezeptorenanalyse. Die serologischen Beziehungen zwischen Typhus- und Gärtner-Bazillen. [Serological relations between typhoid and Gärtner bacilli.]** *Zentralbl. Bakt. I. Abt. Orig.* 106: 200-209. 1928.

4267. **LUCACER, M. Tiroxina e sensibilizzazione percutanea. [Thyroxin and percutaneous sensitization.]** *Biochim. e Terapia Sperim.* 18(2): 64-68. 1931.—Some processes of percutaneous sensitization, e.g., phenylhydrazine and old tuberculin, are accelerated by simultaneous percutaneous administration of thyroxin.—*M. Comel.*

4268. **LUMIÈRE, AUGUSTE. La toxicité des sérums d'anguille, de murène et de certains autres poissons est-elle due à leur pouvoir globulicide?** *Compt. Rend. Soc. Biol.* 100(14): 1209-1210. 1929.—Toxicity of the sera of eels and morays depends on the globulicidic power of the serum, and symptoms following injection of heated sera which have lost this power in general resemble and are responsive to treatments for protein or colloid shock.

4269. **MacDONALD, RONALD A. Streptococcal allergy in acute rheumatic infection.** *Arch. Dis. Childhood* 5 (25): 60-72. 1930.—The author considers the literature and his own work on various streptococci isolated from tonsils, teeth, nasopharynx, feces and blood and post-mortem cultures from joints and nodules of rheumatics. Cultures from tonsils and feces of rheumatic and non-rheumatic patients are very similar, with a slightly larger % of green streptococci from feces of rheumatics. The allergic skin reactions to various streptococci and their autolytic products are considered, and 2 definitions of the condition are quoted. Some of the bacteriology and other anomalies of rheumatism are explained on an allergic basis.—*H. L. Gruchl.*

4270. **MAEJI, Y. Studien über die Pneumokokken. I. Beiträge zur Kenntnis der Typenspezifität der Pneumokokken.** *Acta Scholae Med. Univ. Imp. Kioto* 12(2): 229-237. 1929.—The author immunized rabbits and mice with killed pneumococci. The organisms were killed by exposing saline suspensions to 100° C. in a steam sterilizer for 15 min. or by boiling for 30 min. Sera of rabbits immunized with organisms killed by the 1st method showed a higher agglutinin content than with organisms killed by the 2nd method. In both series immunization was carried out on 2 animals immunized against each of types I, II, and III pneumococci. In every instance the sera contained a larger amount of agglutinin for homologous types and relatively smaller quantities for heterologous types. To determine whether sera of immune rabbits protected against heterologous as well as homologous types, mice were given an intraperitoneal injection of serum 3 hrs. before receiving an injection of 100-1000 M.L.D. of cultures. The sera protected mice against heterologous as well as homologous types. Another series of tests was carried out by immunizing young mice (10-14 days old) orally. Mice so immunized against types I and II showed protection against the 3 types. Oral immunization with type III organisms was un-

successful. Results of the several series of tests show that type specificity against the 3 types of pneumococci is not as sharply limited as is generally believed. Agglutinins as well as protective substances develop in the sera of immunized animals in somewhat lower concentration for heterologous types.—*D. H. Bergey.*

4271. **MANAI, ANDREA, e MARIO LIMULA. La determinazione dei gruppi sanguigni negli abitanti delle zone settentrionali dell'isola di Sardegna. [Determination of the blood groups among the inhabitants of northern Sardinia.]** *Minerva Med.* 9(32): 202-207. 1929.—The percentage of the different groups proved to be essentially the same as among the Mediterranean peoples. By determining the percentage in p, q, r, the prevalence of race, R, was stated. The analysis of the blood of whole families, or of that of mothers and sons, showed that here too, heredity is in accordance with Mendel's rules.—*A. Manai (transl. by F. W. Fornet).*

4272. **MARKOWITZ, J., HIRAM E. ESSEX, and FRANK C. MANN. Studies on immunity to rattlesnake venom (crotalin).** *Amer. Jour. Physiol.* 97(1): 180-199. 1 fig. 1931.—When injected into dogs or added to their blood in vitro, rattlesnake venom causes erythrocytes to swell. This fact was used in developing a new technique for assaying the antihemolytic titer of rattlesnake antivenin. Immunity in a given animal is measured in terms of the least quantity of crotalin necessary to cause a 10% increase in volume of erythrocytes under standard conditions. Dogs, when first immunized, develop antibodies very slowly. About 90 days after discontinuance of crotalin injections, their demonstrable immunity completely disappears; but when injections are begun again, antibodies develop far more rapidly and to a much higher degree in previously immunized dogs. This agrees with results obtained by others who used horse serum and typhoid bacilli as antigens. Washed erythrocytes of an immune dog transferred to plasma of a non-immune dog were as vulnerable as those of a non-immune dog. These cells are protected solely by the antibody content of the plasma. Blood pressure of immune dogs with high titers is practically unaffected, whereas dogs with low titers show a very decided depressor response to the standard dose of crotalin. Passive immunity was conferred on dogs by injections of immune rabbit plasma and commercial antivenin. Both were effective in preventing the usual vasodepressor reaction of normal dogs, following injections of crotalin. The authors found no evidence that antivenin reverses the injury from crotalin. It appears that recovery of blood pressure which follows injection of antivenin into a crotalinized animal is due to the natural compensatory mechanisms that can manifest themselves when further injury is prevented. To determine whether cellular immunity to crotalin exists, a study was made of perfused hearts of immune rabbits. Such hearts were incapacitated just as rapidly as hearts from non-immune rabbits, indicating that cellular immunity is lacking in the heart tissues, and probably in the musculature as a whole.—*Authors' summary.*

4273. **MATSUOKA, K. Influence of nucleic acid salt upon the agglutination of the blood.** *Jour. Oriental Med.* 14(1): Japanese; English summary, p. 1. 1931.—Agglutination time of human and rabbit blood was reduced both in vitro and in vivo (intravenous injection).

4274. **MEGRAIL, EMERSON, and HENRY WELCH. Antigenic power of ultra-violet irradiated tetanus toxin.** *Proc. Soc. Exp. Biol. & Med.* 28(5): 494-495. 1931.—Tetanus toxin, detoxicated by two 2-min. successive exposures to ultraviolet (i.e., irradiated by "C" carbons at 25 cm. distance in apparatus kept below room temp. by a current of cool air) apparently retained its antigenic potency: 5 subcutaneous injections were given at 6-7 day intervals; inoculated 3 wks. later with 1-10 M.L.D. of fresh tetanus toxin, no sign of tetanus developed within 45 days.

4275. **MERCIER, RAYMOND. Lipoïdes et états anaphylactiques; nouvelle méthode d'antianaphylaxie.** *Presse Méd.* 38(65): 1091-1093. 1930.—The author's theory of anaphylaxis (based on that of G. Billard) is that it is due to a disturbance of humoral equilibrium, not of the foreign protein alone but also of the electrolytes and lipoids attached to the protein molecule, and that the coefficient of energy with which the foreign substance disturbs the equilibrium depends on the quantitative relations between the various electrolytic, amino-acid, and lipoidal constituents. Billard reported desensitization of patients with anaphylactic conditions by use of mineral waters. The author refers briefly to 3 series of experiments on guinea pigs, in which he produced desensitization by use of lipoids. Series A guinea pigs received horse-serum to which emulsion of horse lipoids had been added. In series 2, injection of horse serum was followed by several injections of horse lipoids. In series 3, the horse serum was followed by injection of guinea pig lipoids. All the animals underwent the various injections without symptoms of anaphylactic shock.

4276. **MITSUSE, B. The strength of an immune body in the artery and vein, and the mechanism of causing the difference in the strength.** *Jour. Oriental Med.* 14(1): Japanese; with English summary, p. 7. 1931.—The author found in the serum of rabbits immunized by cholera bacilli mixed with horse or cow serum, a complement fixation substance reactive to the lipoid antigen generally used in the Wassermann test, in addition to a specific immune body against cholera bacilli. The antibody of the serum of an artery of an animal immunized with the serum was slightly more powerful than that of a vein. The immunizing reaction of the venous serum was made slightly more powerful by an irrigation with O. The immunizing reaction of an artery was made slightly less powerful by an irrigation with CO_2. Hence, the difference in the action of the immune body of the serum of an immunized animal is due to the difference in the contents of O and CO_2.—*Author's summary.*

4277. **MONTANARI, ARRIGO. Sopra una nuova specie di agglutinazione: la licopodio agglutinazione. [A new type of agglutination: lycopodium agglutination.]** *Sperimentale* 85(1): (*Proc. Fiorentina Med. Accad.*) I-II. 1931.—Lycopodium suspensions were made in saline after the lycopodium had been washed and boiled in water. Serum at dilution 1:10 gave agglutination in 15% of 70 cases.—*Maud L. Menten.*

4278. **MURPHY, WILLIAM E. Anaphylactic changes in the nasal mucosa of guinea-pigs.** *Arch. Otolaryngol.* 13(6): 842-845. 2 fig. 1931.—Of 10 experimental guinea pigs, 8 were sensitized by intraperitoneal injections (5 by horse serum, 3 by very dilute filtered egg albumin), and 2 kept as controls. At the end of 2 wks. for those sensitized to horse serum and 3 wks. for those sensitized to egg albumin, a 2nd dose of the respective sensibilinogen was given, eliciting anaphylactic response in 4 of the 5 given horse serum (with recovery in 1) and in 2 of the 3 given egg albumin. The nasal mucosa showed eosinophilia, congestion and petechial hemorrhage.

4279. **NISHIURA, Y. Versuche zur Entgiftung verschiedener Bakterientoxine und des Immunisierungsvermögens derartiger Präparate.** *Zeitschr. Immunitätsforsch.* 64(3/4): 238-270. 1929.—The hemotoxin contained in bouillon cultures of *Vibrio kadiköj* is significantly weakened by 0.2% formaldehyde at 36° after 16 hrs.; after 90 hrs. it is completely inactive. With 0.5% HCHO, total inactivation is attained in 16 hrs. Such altered hemotoxin still possesses a certain binding power for antitoxin and can inhibit hemolysis of blood cells by fresh toxin. In comparison to the avidity of the unchanged toxin, however, that of the toxoid is very small. By repeated injection of a rabbit with the toxoid, an active antihemotoxin was obtained. Flocculation by specific serum was weaker in the toxoid bouillon than in the toxin. The hemolysin was inactivated by 0.01-0.02% salicylaldehyde. Protective action and antitoxin-binding power were not detected in this preparation; nevertheless it produced antitoxin in rabbits. Detoxication by 0.5% furfural lasted 8-10 days at 36°. This toxoid possessed small protective power and weak antitoxin-binding power, and an antihemolytic serum was

obtained by its use. This also, when mixed with toxin, neutralized a large part of the guinea pig lethal dose. Both acetaldehyde and chloral (0.5%) produced a toxoid which gave immune sera neutralizing both hemolysin and acutely lethal toxin. Acetone did not give a toxoid. Phenol, Na benzoate, salicylic acid, m-hydroxy benzoic acid, and o-amino benzoic acid gave toxoids after 16 hrs. at 36°. These toxoids caused no hemolysis, possessed weak protective power for erythrocytes, weak antitoxin-power, and produced an immune serum. N/10 HCl or NaOH destroy the hemolytic activity of the toxin, as does also heating for 16 hrs. in thin layers, i.e., oxidation. Hemolysin destroyed by the latter treatment can be partially reactivated by digestion with colon bacilli. Both hemolytically inactive and reactivated products possessed a weak antitoxin-binding power. Hemotoxin heated 0.5 hr. at 80° became completely inactive, but produced antitoxin in rabbits. By long shaking alone, during which a precipitate is produced in the bouillon, only a partial destruction of hemolytic activity was observed. Tetanus toxin and diphtheria toxin were detoxicated by aldehydes and benzene derivatives, but only the aldehyde toxoids produced significant immunity.—*L. W. Butz.*

4280. **[PLISETSKIĬ, M. A.]** Плисецкий, М. А. К вопросу о фагоцитозе при туберкулезе легких. **[Phagocytosis in pulmonary tuberculosis.]** [With French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(5): 495-502. 1929.—Examination embraced 5 healthy subjects, and 47 tuberculous and 3 non-tuberculous patients. Monocytic phagocytosis in healthy subjects was 15%-21%; neutrophilic index, 16-23%. In tuberculosis (69% of grave cases), the author found weakening of phagocytic index of monocytes; there was also a certain parallelism between the degree of this weakening and that of increase of erythrocyte sedimentation. Phagocytic index of neutrophils was lowered in 38% of grave cases. The author deduces parallelism between phagocytic faculty and intoxication of the organism.—*B. Van Rosen.*

4281. **RALPH, R. S., and G. I. DAVIES.** The Vernes resorcin test and tuberculosis. *Lancet* 218(5574): 1397-1399. 1930.—Sera of 375 individuals—200 with active tuberculosis, 150 with other diseases and 25 normal—were tested by Verne's flocculation method. It was found that a negative reaction definitely excludes active tuberculosis, but that a positive one may be due to other causes. The activity of tuberculosis diminished correspondingly with the optic density of the serum. Inactive cases gave a negative reading even in presence of tubercle bacilli in the sputum. The erythrocyte sedimentation rate paralleled the flocculation of the sera by resorcin in 130 tuberculous and normal individuals. In general, there is a tendency for the globulin fraction of serum to increase with increase in optic density of the serum, but the parallel is only a vague one. The common factor operative in sedimentation rate and in flocculation of sera is perhaps the colloidal lability of the blood in tuberculosis.—*M. B. Lurie.*

4283. **SACQUÉPÉE, E., M. LIÉGEOIS, et J. FRICKER. Recherches sur l'agglutinabilité conférée au streptocoque par les filtrats de produits scarlatins.** *Compt. Rend. Soc. Biol.* 100(14): 1187-1189. 1929.—Filtrate of the urine of scarlatina patients did not lose its power to confer agglutinability on a streptococcus, when treated with heat or iodine. The erythrogenic power, and the ability to endow susceptible sera with the power to obliterate scarlatina exanthems and to neutralize toxins, were not modified.

4284. **SAND, KNUD, W. MUNCK, und T. G. KNUDTZON. Blutgruppenbestimmung in Paternitätssachen. (Die ersten 500 Sachen des Institutes.) [Blood group determination in paternity cases: the first 500 cases at the Institute of Legal Medicine, University of Copenhagen.]** *Deutsche Zeitschr. Ges. Gerichtl. Med.* 15(6): 535-563. 1930.

4285. **SAITOO, G. Ueber den Einfluss des Monokaliumphosphates auf die Agglutination.** *Jour. Oriental Med.* 14(4): Japanese; with German summary, p. 38. 1931.—With addition of monopotassium phosphate the agglutination titer was considerably higher.

4286. **SCHMIDT, S. Immunisation des chevaux avec des toxines et anatoxines purifiées.** *Compt. Rend. Soc. Biol.* 106(9): 767-770. 1931.—30 horses were grouped into lots of 5 according to degree of natural immunity. Each lot was inoculated with one of the following: crude diphtheria anatoxin, ordinary diphtheria toxin, purified toxin, purified concentrated toxin, purified anatoxin, or purified concentrated anatoxin. Samples of blood were taken on the 22nd and 33rd days, and the animals were bled on the 40th and 42nd days. Concentrated anatoxin gave the highest degree of immunity. Concentrated toxin depressed the mechanism for producing antitoxin. Best results were obtained with purified toxin. Toxins are more effective than anatoxins, but the latter produce immunity more quickly. Purified toxins and anatoxins are superior to the corresponding unpurified products.—*E. Weiner.*

4287. **SCHÖTT, E. D. Einige Worte über Titrierung bei Blutgruppenuntersuchungen.** *Acta Med. Scandinavica* 71(1/2): 115-146. 23 fig. 1929.—Apparatus for diluting sera for titration and for sterile storage of sera is described. Sources of error in blood group determination are also discussed, viz., pseudoagglutination, cold agglutination, the Thomsen phenomenon, etc. Sera kept sterile maintain potency better than filtered sera or sera to which preservatives are added.—*A. S. Wiener.*

4288. **SORDELLI, A., y ELVIRA MAYER. Las precipitinas para el agar. [Precipitins for agar.]** *Rev. Soc. Argentina Biol.* 7(1): 69-70. 1931.—Sera of animals immunized by intravenous injection of suspensions of *B. anthracis* and typhoid bacilli contain precipitins for agar, owing to solution of this substance in the media from which the suspension is made.—*J. T. Lewis.*

4289. **SORDELLI, ALFREDO, y FERNANDO MODERN. Producción de suero antidiftérico. [Antidiphtheria serum preparation.]** *Rev. Soc. Argentina Biol.* 7(1): 71-81. 1931.—Rapid immunization of previously selected horses is made by injecting toxin 3 times in 3 weeks. Immediately after, the antitoxic value of the serum remains constant or increases slightly in spite of bleeding up to 12 liters. Within 4 weeks after the last injection the antitoxic value decreases the more rapidly the higher the value obtained. Reinjection of toxin during the decrease, again increases the value within 5-10 days after the 1st injection. The highest value is obtained in 12-19 days. The antitoxin value per gm. of protein or globulin is not influenced by bleeding and reinjection of toxin.—*J. T. Lewis.*

4290. **TAKAHASHI, K., und S. NAGATA. Beiträge zur Kenntnis der Weil-Felix-Reaktion bei experimenteller Fleckfieberinfektion des Kaninchens.** *Jour. Oriental Med.* 14(3): Japanese, with German summary, p. 28-29. 1931.—Experiments on 58 rabbits indicate that a positive Weil-Felix reaction is produced in rabbits only by typhus infection.

4291. **TEISSIER, P., J. REILLY, E. RIVALIER, et H. CHAMBESSÉDÈS. Nouvelles recherches sur l'immunité et la sérothérapie anti-endotoxiques. I. Le sérum anticoqueluceux.** *Jour. Physiol. et Path. Gén.* 27(3): 549-564. 1 pl. 1929.—Serum of immunized animals is unable to neutralize the endotoxins of the Bordet-Gengou whooping-cough bacillus; hence active immunization is very hard to obtain. If the culture of the organism be treated with formaldehyde, the proteins responsible for the endotoxic effects are detoxicated. After repeated inoculations with the formolized culture, guinea pigs ultimately develop an immunity against the original endotoxins. It is hoped by these means to obtain (1) an anti-endotoxic serum, and (2) a means of immunization against whooping-cough.—*W. R. Fearon.*

4292. **THOMPSON, RICHARD. Allergic reactions in vaccinia-immune rabbits.** *Jour. Immunol.* 19(1): 63-77. 1930.—Evidence is given to indicate that allergic reactions occur in only a certain % of vaccinia-immune rabbits. While a state of hyperimmunity tends to re-

duce the amount of induration in the allergic reaction, there is no conclusive evidence that the negative results in some animals are due to this hyperimmunity. The chief factor determining the occurrence or non-occurrence of an allergic reaction is the individual factor in the animal. From apparently successful passive transfer—general and local—of the allergic state and from the apparent acceleration of vaccinal reactions by treatment with immune serum, it seems probable that the allergic reactions are due to antigen-antibody reactions. —*R. Thompson.*

4293. **TILLGREN, J., und ANNA-LISA ALLANDER. Müllers Ballungsreaktion als Ergänzung zu den Wassermann-Untersuchungen.** *Acta Med. Scandinavica* 71 (1/2): 147-164. 1 fig. 1929.—The authors report comparative tests of 1105 cases, using the Wassermann, Müller and Sachs-Georgi reactions. Of this number, 759 were omitted from the tables, because no history of lues or scarlatina accompanied the test material; they were considered controls. The original Müller conglobation test was carried out, excepting that the Müller extract was diluted with 0.9% NaCl instead of 0.85%. This test has the advantage of being easily read because of absence of blood corpuscles. Of 345 tests, 125 were made with all 3 showing − results. Of the remaining 220 cases, 144 were + with both the Wassermann and the Müller reactions. The Müller was − in 17 + Wassermanns and in 33 + Müller reactions the Wassermann was −. The authors conclude that the Müller reaction is valuable as supplementary to the Wassermann. They further observe that the Müller reaction was + in a number of cases of post-scarlatinal conditions.—*P. G. Heineman.*

4294. **[TOGUNOVA, A. I., B. I. MIGUNOV, and Z. L. BAIDAKOVA.]** Тогунова, А. И., Б. И. Мигунов, и З. Л. Байдакова. **BCG.** Экспериментальное изучение вирулентности. Пассажные культуры. **[BCG. Experimental study of virulence. Passage cultures.]** [With French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza.*] 7(5): 485-493. 1929.—39 guinea pigs served as subjects. Subcutaneous and intraperitoneal inoculation with 1st and 2nd passage strains did not affect the general condition of the animals, which gained in weight. Intradermal tuberculin reaction became pronounced in 3-5 wks., then weakened or became negative. Cultures of all passages, injected subcutaneously, caused transitory lesions, mostly local and similar to those caused by the original BCG. Intraperitoneal injection of cultures of the first 2 passages provoked lesions in some guinea pigs in the abdominal cavity, mostly in the epiploon, characterized by profuse exudation of polynuclear leucocytes by persistent limitation of foci with connective tissue, and by their lysis in the course of time. No caseous changes were observed. At the site of accumulation of leucocytes, intense phagocytosis and disintegration of bacilli were noted. Some guinea pigs, following intraperitoneal infection, showed rudimentary tubercles in liver and spleen, unobserved in those killed in later stages. Cultures of the 8th passage, inoculated subcutaneously, gave phenomena usual for BCG, which were quickly lysed. Intracardiac injection gave no specific lesions. Limitation and incapsulation of the foci were pronounced. In later stages, fibrous metamorphoses were found. Spread of the local process was shown in some cases by submiliary nodules in liver and spleen, which were gradually resorbed. Necrosis of isolated nodules was an exception. Progressive changes, typical of virulent strains, were not obtained with any of the passage cultures.—*B. Van Rosen.*

4295. **WARD, HUGH K. Observations on the phagocytosis of the pneumococcus by human whole blood. I. The normal phagocytic titer, and the anti-phagocytic effect of the specific soluble substance.** *Jour. Exp. Med.* 51(5): 675-684. 1930.—Using Todd's technique, a constant amount of defibrinated, whole blood was mixed with varying amounts of pneumococcus culture, sealed in pyrex tubes, and incubated in a rotating apparatus for 24 hrs.; the phagocytic titer is expressed in the number of organisms killed. The titer of blood from 10 healthy subjects tested against pneumococcus types I, II, and III varied over a considerable range in the same subject with different types, and in different subjects with the same type. Number of cells being constant, these variations were due to humoral rather than cellular constituents. Sia's work is confirmed in that the type-specific carbohydrate depressed the phagocytic titer of normal blood against homologous pneumococcus only. However, the titer was not depressed in early cases of untreated pneumonia, even against the type causing the infection.—*A. B. Sabin.*

4296. **WARD, HUGH K. Observations on the phagocytosis of the pneumococcus by human whole blood. II. The neutralization of the anti-phagocytic action of the specific soluble substance by antiserum.** *Jour. Exp. Med.* 51(5): 685-702. 1930.—Depending on concentration, anti-pneumococcus serum, when added to a mixture of human blood, living virulent pneumococci, and homologous pneumococcus-specific soluble carbohydrate, shows different zones of activity. In high concentration there is phagocytic inhibition; on further dilution there is effective phagocytosis which diminishes with increased dilution; with very dilute antiserum the anti-phagocytic effect of the specific carbohydrate remains unneutralized. It is suggested that the inhibition zone is caused by non-specific interference of specific precipitate with leucocytic ingestion of pneumococci. The inhibition zone and the anti-phagocytic action are more marked with Type III than with Type I pneumococci.—*A. B. Sabin.*

4297. **WEISS, EMIL. Further studies on the precipitation test for syphilis.** *Jour. Infect. Dis.* 47(4): 354-358. 1930.—An antigen has been devised, based on a comparative study of Kahn's antigens, which has the following advantages over Kahn's antigens: the technic of preparation is simpler, the specific zone is considerably wider, it does not require additional sensitizing or correcting. It is prepared as follows: Dry beef heart is extracted with ether in the ratio of 1:13 for 40 min. in the ice-box. The extract is then discarded and the tissue dried. To the dried tissue 95% alcohol is added in the ratio of 1:5; alcoholic extraction is carried out at 37° C. for 3 days. This extract is then filtered and left over night at room temp. The extract is refiltered and 0.6% cholesterol is added.—*H. A. Austin.*

4298. **WOLFF, ERIK. Erfahrungen mit 'isoagglutinatorischen Blutgruppenbestimmungen in Paternitätsachen.** *Acta Med. Scandinavica* 71(1/2): 54-63. 1929.—Of 165 paternity cases, in 9 the child had an agglutinogen not possessed by either parent. As by this method 15% of illegitimacies are detected, in 60 of the 165 cases the putative father was not the true father. In 2 of 7 cases where one of 2 men was the father, one of the men could be eliminated, making possible indirect determination of paternity. An analysis of the mother-child combinations fully supported the Bernstein theory. The Swedish laws in paternity cases are discussed.—*A. S. Wiener.*

4299. **YAMAGIWA, KATSUSABURO, SHIGEO TSUKAHARA, und SHIGEKI MORIMOTO. Experimentelle Studie über die Antikörperbildung gegen das Impfkarzinom bei der Maus. VI.** *Gann [Tokyo]* 23(2): 11-30. 3 pl.; Japanese, 175-250. 1929.—Immunization of rabbits with a human mammary carcinoma gave rise in the spleen of immunized animals to substances exerting an inhibitory influence on growth of a transplantable mouse mammary carcinoma. The inhibitory effect of such a spleen extract is only slightly less marked than that of spleen extracts from rabbits after immunization with mouse carcinoma. The latter extracts also inhibit growth of a genetically unrelated mouse tumor, such as tar cancroid.—*C. W. Jungeblut.*

4300. **YOUNG, J. S. The effects of repeated intrapleural injections of electrolytes in the rabbit—acquired insensitiveness of the lung epithelium to a proliferative stimulus: the bearing of the observations on tissue resistance.** *Jour. Path. and Bact.* 34(3): 357-377. 1931.—Lung epithelium can acquire a high degree of resistance

to an electrolyte solution to which it is normally susceptible. This increased resistance is such that it inhibits development of epithelial proliferation under circumstances enumerated. The significance of these observations is discussed with reference to the nature of the biological processes concerned in the onset of proliferation and also, briefly, with regard to tissue resistance and immunity in general.—*J. S. Young.*

LOWER ANIMALS

4301. LIER, G. A. van. Onderzoek op en bestrijding van tuberculose te Pekalongan, gedurende de jaren 1927 en 1928. [Control of tuberculosis in Java.] [With German and English summaries.] *Ned.-Indisch. Blad. Diergeneesk.* 42(6): 589-600. 1930.—Equal tuberculin reactions (+ or ±) on 2 succeeding days or an increased reaction on the 2nd day give reliable indications as to the existence of a tuberculous infection. Animals showing a + or ± reaction on the 1st and no reaction on the 2nd day, are to be regarded as suspected. Of animals with a + discharge on the 1st and a ± discharge on the 2nd day, thus showing a decreasing reaction, a fair % will be found non-infected. Results obtained with the ophthalmic tuberculination are more reliable than those achieved with the subcutaneous method. Animals, showing a positive or dubious subcutaneous reaction, are to be regarded as tuberculous; the eye-reaction in such a case will turn the balance. The ophthalmic tuberculination often fails in cases of heavily infected animals (A) or in those of recent infection (B). The A-animals have undoubtedly reacted in a former stage of the disease, only the reaction has diminished. The B-animals often start to react within a short time and then show a positive section finding.—*Author's summary.*

4302. STAFSETH, H. J. Cutaneous immunization against fowl pox. (Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929.) [In: *Bull. Alabama Polytech. Inst.* 25(1): 80-88. 5 fig. 1930].—Fowl pox can be controlled by use of a living virus vaccine cutaneously administered. Best results are obtainable in birds that have not reached sexual maturity. As a mild reaction confers complete immunity with less unfavorable results, attempts should be made to secure moderate local lesions by use of a highly diluted or attenuated virus, or by applying the vaccine in such a way as to prevent too severe takes. By using a highly diluted virus, birds may be vaccinated with safety during winter. A local reaction following vaccination is a reliable indication that immunity will be established in 2-3 wks., while absence of local reaction means that no immunity is being produced; hence, a representative number of vaccinated birds should be examined for local lesions within 10-14 days.—*Author's conclusions.*

4303. TULLBERG, KJELLÅKE. Experimentell prövning av den subkutana abortvaccinationens immunvärde hos ko. [Experimental testing of the immune value of subcutaneous inoculation of cows with abortus bacterin.] [With English summary.] *Skandinavisk Vet.-Tidskr.* 21 (7): 222-229. 1931.—4 pregnant cows were infected with equal amounts of *Bacillus abortus;* 2 of them had been previously inoculated subcutaneously with abortus bacterin. In the 2 controls, the fetuses were expelled 59 days (average) after infection; in the 2 bacterin-inoculated cows the fetuses were expelled 67 days (average) after infection. Thus some cows, after a single subcutaneous inoculation with abortus bacterin, seem to display increased resistance up to 2 mo. after treatment.

4304. [VISHNEVSKIĬ, P. P.] ВИШНЕВСКИЙ, П. П. Результаты опытов с BCG. на мелких лабораторных животных и рогатом скоте. **[Experiments with BCG on laboratory animals and cattle.]** Вопросы Туберкулеза. (*Voprosy Tuberkuleza.*] 7(2/3): 187-194. 1929.—Both BCG. and tubercle bacillus "Bov. 3" strain were used; 8 passages failed to heighten their virulence and they proved practically avirulent for guinea pigs and rabbits. Intravenous injection into rabbits caused reactions similar to submiliary tuberculosis, which, however, led to no further lesion and disappeared without traces. Both strains were absolutely non-pathogenic to calves. Guinea pigs and rabbits had only brief, heightened resistance which, on infection with a strong tuberculous virus, merely retarded death of vaccinated animals as compared to controls. Vaccination of calves with BCG. created stable resistance for at least 1½ yrs. against even large intravenous doses of strong virus. Preventive qualities of "Bov. 3" were weaker in artificial infection, but in natural infection they were equal to BCG.—*B. Van Rosen.*

ANIMAL IMMUNOLOGY

PARASITOLOGICAL

W. H. TALIAFERRO, *Editor*

(See also in this issue Entries 4318, 4357, 4375, 4381, 4390, 4395)

4305. FAIRLEY, N. HAMILTON, F. P. MACKIE, and F. JASUDASAN. Studies in Schistosoma spindale. Part IV. Further observations on spontaneous cure in Macacus sinicus. *Indian Med. Res. Mem.* 17. 53-59. 1930.—Infection experiments with cercariae of *S. spindale* on monkeys (*M. sinicus*) indicate a spontaneous cure, only early developmental stages being found post mortem. Disappearance of schistosomulae from the portal blood appears to be due either to an obscure immunity or to an inherent unsuitability of blood for later developing forms. Following recovery, there is a period of enhanced refractiveness during which schistosomulae fail to develop beyond penetration of the skin. After 3 mo. normal susceptibility is regained and on reinfection the schistosomulae develop as in a host not previously infected, showing the period of enhanced refractivity to be transient in nature.—*R. O. Christenson.*

4306. MILLER, HARRY M. Jr. Immunity of the white rat to superinfestation with Cysticercus fasciolaris. *Proc. Soc. Exp. Biol. & Med.* 28(5): 467-468. 1931.—Preliminary paper.

4307. MUNIZ, JULIO. Del uso del antígeno Watson (Trypanosoma equiperdum) en la reacción de desviación del complemento en la Enfermedad de Chagas. [Use of Watson's antigen in the complement deviation reaction in Chagas' disease.] *Quinta Reunión Soc. Argentina Patol. Ret. Norte* 2: 897-901. 1930.

4308. MUTERMILCH, S., et (Mlle.) E. SALAMON. L'immunité méningée au cours du nagana expérimental du lapin. *Compt. Rend. Soc. Biol.* 98(17): 1512-1514. 1928.—Trypanosomes, when injected into the blood stream, may appear in the cerebrospinal fluid, but no meningeal reaction or trypanolytic antibodies appear. When introduced directly into the c. s. fluid the trypanosomes disappear in 5 days, and antibodies appear, apparently from the general circulation. No local immunity is set up.

PARASITOLOGY (ANIMAL)

R. W. HEGNER, *Editor*

W. W. CORT and F. M. ROOT, *Associate Editors*

(See also in this issue Entries 3024, 3306, 3311, 3347, 4030, 4059, 4151, 4152, 4305, 4306, 4308, 4469, 4482, 4663, 4664, 4667, 4671, 4713, 4714, 4765, 5464, 5465, 5466, 5467, 5470, 5471, 5472, 5473, 5476, 5479, 5483, 5485, 5486, 5488, 5489, 5490, 5491, 5492, 5493, 5494, 5495, 5496, 5567, 5574, 5585, 5692)

4309. ADLER, S. A study of the sandfly population in endemic foci of infantile kala-azar in Italy. *Bull. Ent. Res.* [*London*] 22(1): 105-113. 2 pl., 2 fig. 1931.—Studies were made of the sandfly population in the neighborhood of Naples and in Catania with special attention to houses in which cases occurred in contrast with places free from the disease. In both foci human and canine visceral leishmaniasis was present. Of all the cases in Naples 9.5% and in Catania 13.3% were in infants under 12 months. Cases of infantile and canine visceral leishmaniasis have been found in the same house on several occasions. The sandflies present were *Phlebotomus papatasii* Scop., *P. perniciosus** Newst., *P. sergenti* Parrot, *P. parroti* var. **italicus*** (p. 107), and *P.* **vesuvianus*** (p. 108). *P. papatasii* was most numerous, and feeds mainly in the early evening. *P. perniciosus* was next in abundance, and was found oftener in stables than in sleeping rooms. Of 1547 ♀♀ dissected none was infected with *Leishmania*. *P. papatasii* was infected with Italian strains of *Leishmania infantum* by feeding on cultures through membranes. The infection rate was low, but in contrast to Indian strains of *L. donovani* in the same sandfly the infection, once established, did not die out.

4310. ADLER, S., and O. THEODOR. The exit of Leishmania infantum from the proboscis of Phlebotomus perniciosus. *Nature* [*London*] 126(3188): 883. 1930.—This can take place during the act of biting and the *Leishmania* can enter a new host in the absence of any active interference on the part of the latter.

4311. ALCOBÉ y NOGUER, SANTIAGO. Contribución al estudio de los Sarcosporidios. [Sarcosporidiosis.] *Mem. R. Acad. Cien. y Artes* [*Barcelona*] 21(10): 257-290. 4 pl. (1 col.) 1928.—The parasites studied were found in muscle tissue of the esophagus of goats and sheep. The wall of the adult cyst is composed of 3 concentric layers: an external muscular one of muscle fiber contiguous with the cyst wall; a middle layer of typical collagenous tissue; and an inner one also composed of connective tissue, not identified as either collagenous or elastic, in which 3 secondary layers may be distinguished. This connective tissue is thought to be pathologically altered by the pressure due to the parasite. Whether the sarcosporidia develop in the interior of a muscle or within the interstitial connective tissue is unknown; in the 1st case it would be necessary to assume that the parasitized muscle fiber is totally destroyed. In the anterior protoplasm of the spores, which appear homogeneous in transmitted light, were found with darkfield illumination refringent granules of isotropic substance. The nucleus of the spore was identified by the reaction of Feulgen; it lies in the posterior ⅓ of the spore, is ovoid, contains chromatin granules and a siderophilous karyosome which emigrates into the protoplasm, where it disappears. In the spore also are siderophilous granules. It was found experimentally that the substance constituting the anterior part of the spore (possibly the sarcocystine) does not have its origin in the siderophilous granulations, because they degenerate at the same time.—*S. Alcobé y Noguer* (*transl. by E. R. Becker*).

4312. ANDREWS, JUSTIN, CARL M. JOHNSON, and V. J. DORMAL. Lethal factors in experimental infections of Trypanosoma equiperdum in rats. *Amer. Jour. Hyg.* 12(2): 381-400. 1930.—Experiments included tests of blood pH in 28 rats at intervals during infection with *T. equiperdum;* ave. CO_2 capacity of plasma of 37 rats dying with *T. equiperdum* infection, and of 41 controls; changes in the gas content of 10 urethanized and 10 non-urethanized rats; changes in O content of blood of 2 series, each of 35 rats (number diminished by accidents), inoculated with *T. equiperdum* and the same number of controls; and changes in all the cases in a similar 3rd series. That the rats die of asphyxia is indicated by the symptomatology, the pathology, and blood chemistry. The trypanosomes, after reaching a certain concentration in the blood, agglutinate. These emboli interfere with circulation, sometimes causing complete occlusion of the vessels, stasis, clot-like formations, and pulmonary edema. Proper aeration of the blood is prevented and anoxemia follows, with consequent accumulation of lactic acid in the tissues resulting ultimately in a non-volatile, uncompensated acidosis. Probably the trypanosomes, multiplying, use up the blood glucose in increasing amounts; to maintain normal sugar level in the blood, glycogen is withdrawn from the liver. Progressive degeneration of the liver due to anoxemia prevents storing of more glycogen, and the liver glycogen becomes exhausted and the circulating blood sugar is decreased. Possibly the damage to the liver interferes with glycogen withdrawal before the storage supply is exhausted (this would account for the varied reports of complete and only partial glycogen depletion in the liver). Thus the reaction is an irreversible one. Administration of glucose and $NaHCO_3$, separately or together, did not consistently prolong life of infected rats. Apparently the glucose failed because it vitalized the trypanosomes without appreciably affecting the host, due to the defective liver. Alkaline treatment was likewise useless.—*From authors' summary.*

4313. ANTEQUEDA, EMILIO A. Investigaciones parasitarias en los perros de Buenos Aires. [Parasites of dogs in Buenos Aires.] *Quinta Reunión Soc. Argentina Patol. Region. Norte Jujuy* 1930: 1020-1053. 25 fig.; also in: *Rev. Med. Vet.* [*Buenos Aires*] 12(3): 87-119. 25 fig. 1930.—The presence of several parasites is established in dogs in Argentina. The enteric spirochaetes, *Treponema regaudi* (Lucet) Macfie, *Spironema* sp., and a new species are commensals. The formation is described of bodies in intestinal villi like those that H. Noguchi considered cultural forms of rabies. An intestinal coccidian (*Diplospora bigemina* Stiles) occurs. In the heart and liver there are nodules containing nematodes, and nematode larvae often occur in the cortex of the kidney. A microfilaria was found in blood, but no adults. On the skin occurs a mallophagan, *Heterodoxus longitarsus* (Piaget, 1880). In the abdominal cavity of this a developmental stage of the dog microfilaria occurs (the 2nd stage of Grassi and Calandruccio). —*E. Antequeda* (*transl. by A. S. Pearse*).

4314. ARNDT, W. Wollhandkrabbe und Lungenegel. *Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin* 1929 (1/3): 1-3. 1929.—In Asia *Eriocheir sinensis* is an intermediate host of *Paragonimus westermanni*. The question arises of the possible danger of infection in Germany, where the crab has been introduced. The mollusks *Tiara* and *Ampullaria*, other known intermediate hosts, do not occur in Germany; therefore there seems to be no danger of infection, either from *Eriocheir* or from the introduced North American *Cambarus affinis*, which might become an intermediate host under suitable conditions.

4315. BARBER, M. A., W. H. KOMP, and C. H. KING. Malaria and the malaria danger in certain irrigated regions of southwestern United States. [*U. S.*] *Public Health Repts.* 44(22): 1300-1315, 1829.—From 1926 to 1928 surveys were made at various points along the

Rio Grande in Texas, along the Rio Grande and Pecos in New Mexico, in the Salt River Valley, Arizona, and the Imperial Valley of California, where irrigation was practiced. The irrigation canals themselves were not often found producing anophelines, which were found abundantly in the drainage ditches, seepage areas and flooded pastures. No breeding was detected in the Imperial Valley. *Anopheles pseudopunctipennis* was found in all other localities. In the lower part of the Rio Grande Valley, *A. quadrimaculatus* was abundant; higher up in Texas and New Mexico, *A. maculipennis* was abundant. A long standing focus of endemic malaria was discovered near Espanol, northern New Mexico, but in Dona Ana County, in the southern part of the same state, malaria first made its appearance in certain areas in 1925. *Plasmodium vivax* is the prevailing parasite, although one small outbreak of estivo-autumnal malaria in Dona Ana County was observed in 1927. The population is mixed and contains many recent immigrants. The distribution of *Gambusia* and the routine dusting of the drains with Paris green are recommended for control.—*M. F. Boyd.*

4316. BARTSCH. Die Räude der Pferde als Kriegstierseuche. [Scab of the horse as an epidemic disease of war animals.] *Ergänzungsbände Zeitschr. f. Veterinärk. Heft 1.* 1-59. 6 fig. 1928(1930).—This includes a historical sketch of scab; its significance as an epidemic war disease in isolated countries and its control; its significance before, during and after the war in Germany and its control there; causes of the spread in the army and among domestic animals during the war; some observations on the disease during and after the war; disposition of scabby and of recovered horses.

4317. BASU, B. C. Studies in the Anopheline fauna and malaria of Bhagalpur (Bihar and Orissa). *Ind. Med. Gaz.* 65(7): 375-379. 6 fig. 1930.—A list of the Anopheline spp. with descriptions of their breeding places* is given. *Anopheles stephensi* is considered to be responsible for the transmission of malaria in the town of Bhagalpur, in which there has been a great rise in malarial incidence in the last quarter century. Other carriers, e.g., *A. culicifacies* and *A. fuliginosus,* are also recorded but their numbers are negligible owing to unsuitable breeding grounds. Superficial differences in some specimens of *A. stephensi* are noted. Remarks on the clinical aspects of malaria are included.—*S. Ribeiro.*

4318. [BELÏAEVA, I. D.] БЕЛЯЕВА, И. Д. К вопросу о совместном течении малярии и туберкулеза у детей. **[Simultaneous course of malaria and tuberculosis in children.]** Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(10): 1258-1273. 1929.—Study was made of 124 children, aged 1-14, of whom 50% were aged 10-12. Most of them were ill both with malaria tertiana and with tuberculosis, either localized or in the form of chronic tuberculous intoxication. No interaction could be noticed between these two diseases, and their simultaneous and parallel course proceeded independently. Quinine therapy acted on malaria in the usual way, no aggravation of the tuberculosis being noticed. Nor did tuberculosis seem to make malarial parasites resistant to quinine.

4319. [BELITSER, A. V.] БЕЛИЦЕР, А. В. Инфицирующие лошадей пироплазмом стадии клеща **Dermacentor reticulatus F.** в средних губерниях РСФСР. **[Stages of D. reticulatus infecting horses with piroplasmosis in Central RSFSR.]** Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(4): 258-262. 1929.—The author found that though in its mature stages *Dermacentor reticulatus* infects horses with piroplasmosis, as a larva it is incapable of causing infection. To determine whether in the intermediate stage (nymph), *Dermacentor* can infect horses, infected mature specimens taken from sick horses were placed in the laboratory; nymphs resulting from their eggs were placed on healthy horses. Nymphs produced no effect, and horses remained well. To prove that this lack of infection was due neither to insusceptibility of the horses, nor to freedom of infection on the part of the nymphs, mature specimens, developed from the same batch of nymphs, were placed on the same horses, and one of the horses contracted piroplasmosis. Apparently, *Piroplasma caballi,* though present in the nymph and larva, becomes infectious only in the imago stage of *Dermacentor.*

4320. [BELITSER, A. V., and A. A. MARKOV.] БЕЛИЦЕР, А. В., и А. А. МАРКОВ. К вопросу о проходимости **Tr. equiperdum** через слизистые оболочки у лошадей при экспериментальных условиях. **[Penetration of Trypanosoma equiperdum through mucous membranes of horses under experimental conditions.]** Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(5): 365-367. 1929.—Ten horses, aged 9-20 (4 ♂ and 6 ♀), were used, all healthy and with mucous membranes apparently intact; 3 of them had their mucous membranes scarified for control purposes. Blood of a guinea pig containing *T. equiperdum* was applied to the surface of conjunctiva in ♂♂, and on the mucous membrane of the vagina in ♀♀. All 10 horses became infected, irrespective of the condition of the mucous membranes. In the literature, mucous membranes, when intact, are considered impenetrable for *T. equiperdum.* However, all horses described in the literature were young. Apparently in mature horses the mucous membranes are easily penetrated by *T. equiperdum.*

4321. BELLI, CARLO MAURIZIO. Igiene coloniale. 235p. 75 fig. Unione Tipografico Editrice Torinese: Torino, 1928. Pr. 25 L.—The author discusses the 3 African colonies of Italy (Libya (subtropical), Eritrea (tropical) and Somaliland (equatorial)), under the headings geography, climatology and nosology (a rapid review of the principal diseases). Physiologically, warm climates have a special effect on skin, renal function and nervous system. Apart from pathological effects due to actinic rays, and heat, usually assisted by alcohol, the author classifies the common diseases as (1) infective, (2) due to vegetable or animal parasites, (3) dietary deficiencies. Predisposing causes are personal, environmental, climatic and social (contact with natives). Prevention of (1) consists in proper handling of the case (diagnosis, isolation, quarantine, disinfection, treatment, immunization) and attacking insect and animal carriers. Prevention of (2) (helminths, insects, mycoses) lies in treatment and sanitation, and of (3) in correction of diet. Poisonous animals and plants are described and discussed. Much space is devoted to acclimatization, individual and racial. The author agrees with Sambon that it is not the influence of climate on man which hinders colonization of the tropics, but a fiercer competition with other organisms from man to wild beasts, from venomous serpents to protozoa and bacteria. Science has done much to dominate disease but the racial acclimatization of the whites in the tropics has been successful only in a few spots (e.g., Hawaii), as judged by undiminished birthrate and the quality and culture of succeeding generations. The author concludes that whites can colonize and populate the subtropics but can only exploit the tropics. Success in the latter depends on the physical, psychic and social qualities of the colonist, protection from pathogenic organisms, personal hygiene (esp. temperance) and sanitation. Final chapters deal with urban sanitation; the planning, construction and hygiene of private and collective habitations (incl. hospitals, barracks, schools, prisons, and public latrines); food; personal hygiene (clothing, exercise etc.), and the organization, equipment and management of military and exploring expeditions in the tropics.—*L. W. Hackett.*

4322. BOGDASCHEN, N. Über die Verbreitung von Pentastomum denticulata in den Mesenteriallymphknoten des Schafes in der Sowjetunion. [Distribution in U. S. S. R. of P. denticulata in the mesenteric lymph nodes of the sheep.] *Tierärztl. Rundschau* 37(23): 401-402. 1931.

4323. BOYD, MARK F. An introduction to malari-

ology. 437p. 82 fig. Harvard University Press: Cambridge, 1930. Pr. $5.00.—The history of malaria, especially in the U. S. A., is discussed, and the present world distribution given One-fourth of the book is devoted to a critical review of the literature on the natural history of malaria. The human phases are covered by discussions of: sources of infection, relapses and resistance, splenomegaly, infectivity of the patient, invasion, and some ill-defined contributory factors such as economic status and degree of nutrition. The following mosquito phases are discussed: susceptibility of species, host and habitat preferences, mosquito density, proportion of ♀♀ which are potential carriers, factors determining mosquito production, length of flight, and effects of climate, season and topography. The actions and interactions of the foregoing factors in the production of endemic and epidemic malaria are treated and summarized. The parts played by vital statistics, malaria histories, and sampling in a malaria survey are discussed. The information required is listed and methods of recording it described. There is detailed and extensive discussion of spleen size and the various methods of measuring it. On the parasitological side, the methods of making, staining and examining blood smears are given; also formulae and staining procedure for the various blood stains. There are colored plates illustrating the appearance of the various forms seen in thin and thick films. Some of the general factors which may affect the interpretation of information gained in the survey,—economic condition, immigration, housing, etc.,—are considered. The way in which the malaria index is finally expressed and interpreted is given. About ⅓ of the space is devoted to the natural history of anopheline mosquitoes. Morphology, systematics, geographical distribution, and length of developmental cycle is followed by treatment of the egg, larval, pupal, and imaginal stages in detail, especially the morphological, physiological, and ecological aspects of the larval and imaginal stages in relation to malarial transmission. The parasites and predaceous enemies of mosquitoes are listed. The materials needed and the technique used in anopheline surveys receive detailed description. Instructions are given for killing, preservation and study of anopheline material. In determining what mosquitoes are the vectors, consideration is given to the two indices of infection, natural and experimental, with a weighing of different points of view as to their comparative values. The technique of dissection of mosquitoes and examination for oocysts and sporozoites is given. Studies of dispersal and flight of *Anopheles*, methods of identification of blood meal, meteorological observations helpful in a survey, and the use of topographical and geographical maps are given consideration. Some relations of surveys to control work are discussed, the conclusion being that a thorough survey should make possible an opinion as to practicability of control or eradication, a decision as to the best measures to be used in control, and a plan by which control may be put in operation; or it may lead to the conclusion that extended orientation studies are required before control can be begun.—*C. G. Huff.*

4324. BRUYNOGHE, R., et P. VASSILIADIS. Contribution à l'étude des Eperythrozoaires coccoides. *Trav. Inst. Bact. Univ. Louvain* 1927-1928: 12p. 2 fig. 1929; also in *Ann. Parasitol. Humaine et Comp.* 7(5): 353-364. 1929.—In studying non-pathogenic parasites which appear in the blood after splenectomy in certain rodents (rats, mice, dwarf-mice, field mice), the authors established the transmissibility of the parasites to splenectomized animals; the differences between *Eperythrozoon coccoides* Schilling and *Eperythrozoon* **dispar*** (p. 361), from *Arvicola arvalis* and *Mus minutus;* the transmission of the parasites by lice; and the therapeutic efficacy of arsenicals (neosalvarsan, tryparsamide, etc.). Attempts at artificial culture failed.—*R. Bruynoghe* (*transl. by L. A. Barnes*).

4325. CARDAMATIS, J. P. Méthode de coloration des plasmodes et des protozoaires qui persiste sans changement pendant 25 ans. [Staining of plasmodia and protozoa which remains unchanged for 25 years.] *Bull. Soc. Path. Exotique* 23(8): 787-789. 1930.—A mixture of 3 solutions (1% methylene blue with sodium carbonate, 1% methylene blue, and 0.1% eosin B.A. extra) is made in proportions of 3:1:12 and dropped on the surface of the dry preparations.

4326. CHODUKIN, N. J. Über die Kinder- und Hundeleishmaniosis. *Arch. Schiffs- u. Tropen-Hyg.* 34 (8): 423-429. 1930.—Study of leishmaniosis in Tashkent has included since 1925 necropsy on ownerless dogs and investigation of 64 foci of infection. Of 25,000 dogs, 2% were affected with leishmaniosis. The numbers of dogs, particularly of dogs allowed to frequent human dwellings, showed close relation with the numbers of human cases of leishmaniosis in any given locality. The isolation of sick dogs and other sanitary measures was followed by fall in human cases of leishmaniosis. Crossed agglutination and absorption experiments showed no distinction between *Leishmania canis* and *L. donovani.* Experiments in which *Phlebotomus papatasii* was allowed to feed on infected dogs proved the possibility of the conveyance of the infection by this blood-sucking fly. Chodukin is convinced that the dog is the true carrier of leishmaniosis and that, in Turkestan at least, the pathogenic organism of canine and human leishmaniosis is the same. He suggests that Central Asia may be the original home of leishmaniosis, and that the specific preferences shown elsewhere for certain tissues may be characteristics acquired later.

4327. CILENTO, R. W., and A. H. BALDWIN. Malaria in Australia. *Med. Jour. Australia* 1(9): 274-282. Map. 1930.—Nothing is known of the incidence of malaria among the aborigines during the pre-Caucasian eras. At present a few minor endemic foci among this race are known, but in general they are free from the disease. Probably cases of malaria occurred as early as 1828 at Moreton Bay (Brisbane), and in 1829 at Raffles Bay (N. Australia), in the latter case introduced from Timor. Neither of these resulted in the establishment of endemic foci. Subsequently up to 1880, malaria was apparently occasionally introduced, both in the southerly and the most northerly parts of the continent, and made a doubtful local headway, failing to establish itself except in the territory around the Gulf of Carpentaria. This failure is largely attributed to sparseness of population. Between 1880 and 1890, temporary concentrations of population resulting from mining activities gave the disease considerable impetus, so that this decade is regarded as the most malarious in the history of the continent. Since then the disease has been in almost continuous decline, and ceased to exist endemically in the southern states. At present malaria is confined to a small area in n. w. Australia, to 2 zones in Northern Territory, and 2 in North Queensland. The infection is almost solely confined to cattlemen, miners, sugar cane laborers and aborigines. Cairns is the only town involved. *Anopheles annulipes* and var. *amictus, bancrofti, punctulatus* and var. *moluccensis, atratipes* and *stigmaticus* are known to occur. Their relative importance as vectors in Australia is not settled; *punctulatus* and its variety *moluccensis* have been incriminated in New Guinea, while *annulipes* has been used to convey induced malaria. The distribution of the latter species is, however, more extensive than that of the disease.—*M. F. Boyd.*

4328. CORSON, J. F. Observations on Trypanosoma rhodesiense in sheep and goats. *Jour. Trop. Med. and Hyg.* 33(24): 385-389. 1930.—From experiments on more than 40 goats, more than 60 sheep and nearly 100 rats, Corson concludes that the characters by which *T. rhodesiense* is distinguished from *T. gambiense,* such as high infectivity and virulence for laboratory animals, rapid multiplication and the occurrence of numerous posterior-nuclear forms in the blood of these animals, were preserved by the trypanosome during maintenance for 6 months in sheep and goats. The trypanosomes showed also, on the whole, a somewhat greater susceptibility to the action of normal human serum, when tested in subinoculated white rats, than was shown when

rats were directly infected from man. So far as can be judged from these direct passage experiments, a herd of sheep and goats can remain infected with *T. rhodesiense* for at least several months and possibly throughout its existence as a herd, where opportunities occur for the transmission of the infection. The animals are infective throughout the course of the disease, which is short and acute.

4329. **DEPPE. Gehirnmalaria eines Säuglings mit folgender Lähmung der linken Körperhälfte.** [Cerebral malaria of an infant with subsequent paralysis of the left half of the body.] *Arch. Schiffs- u. Tropen-Hyg.* 35 (3): 184-188. 1931.

4330. **DESCHIENS, R. Recherches sur l'infection des voies biliaires par les lamblies.** *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(8): 951-957. 1930.—The only positive sign of experimental infection of the bile ducts by giardias is their presence in the gall-bladder or bile ducts either after operation or immediately after the animal has been killed. In man, on the basis of this criterion, Deschiens found 3 cases of infection of the bladder by *Giardia intestinalis* and 9 cases of non-infection of the bladder in patients presenting intestinal infection by *Giardia*. In 12 mice showing intense infection of the intestine by *G. muris*, giardias were not observed in the bile ducts. Intestinal infection by giardias is common therefore, and infection of the bile ducts rare or exceptional.—*Author's summary (transl.)*.

4331. **DESCHIENS, R. Les entamibes de la bouche (E. gingivalis Gros, 1846) peuvent-elles être hématophages?** *Bull. Soc. Path. Exotique* 23(2): 177-180. 1 pl. 1930.—Inclusions, about the size of erythrocytes and staining like them, are frequently seen in vegetative forms of *Entamoeba gingivalis* obtained from gingivitis or pyorrhea. These elements, studied in 2 human and 6 simian cases of gingivitis with pyorrhea, did not in the natural state present the coloration or the regular form of red blood-cells, but rather suggested the nuclei of leukocytes. May-Grünwald-Giemsa staining also indicated that the inclusions are of nuclear nature and hence are not erythrocytes.

4332. **[DMITRIEV, I. D.]** ДМИТРИЕВ, И. Д. О соотношении между водным фактором и комарийностью, комарийностью и заболеваемостью малярией. **[Relation between water factor and mosquitoes, mosquitoes and malaria.]** Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(5): 318-325. 1929.—Author conducted his investigation in Batum, where malaria is widely spread among the population. He used as controls Red Army soldiers, who were not indigenous to this locality and free from malaria. Correlation between the number of larvae in water reservoirs and the number of mature mosquitoes was traced, as well as the rising tide of malaria, depending on the number of mosquitoes. Measures leading to destruction of larvae resulted finally in smaller amount of infection.

4333. **DRAKE, C. J., and R. M. JONES. The pigeon fly and pigeon malaria in Iowa.** *Iowa State Coll. Jour. Sci.* 4(2): 253-261. 2 pl. 1930.—*Pseudolynchia maura*, the intermediate host of *Hemoproteus columbae* (the cause of pigeon malaria), is described with special reference to biology and control. The fly seldom leaves its host and does not feed upon other domesticated or wild birds. It gives birth to full-grown larvae which begin to transform into the resting stage immediately after deposition. The puparium changes in color successively from white through yellow, orange and brown to a jet black in the course of 2-3 hrs. It also becomes strongly indurated. In Iowa pupal transformation required 35 days. The newly emerged fly must have a meal of pigeon's blood within a short time in order to live. By cleaning nests and spraying them with waste crank case oil and dipping pigeons in pyrethrin—soap dip, complete eradication of the fly was accomplished on a large pigeon farm.—*H. J. Stafseth.*

4334. **DUKE, H. LYNDHURST. On the occurrence in man of strains of T. gambiense non-transmissible cyclically by G. palpalis.** *Parasitology* 22(4): 490-504. 1930.—A strain of *Trypanosoma gambiense* isolated from a European 1 or 2 years after his infection, according to the interpretation adopted of the story of his illness, was tested exhaustively with clean laboratory-bred *Glossina palpalis* and was found to be incapable of infecting the glands of the fly, although infections of the intestine were not uncommon. 4612 flies were dissected in these experiments; 66 flies developed massive gut infections; 75% of these lived long enough for the glands to become infected, but in no case did this occur. Three other strains of *T. gambiense*, all freshly isolated from man, were also examined, respectively 767, 456 and 1050 flies being dissected and none developing gland infections. All these strains therefore are non-transmissible by tsetse by the normal cyclical method. With yet another human strain 855 flies were dissected and a percentage found with their glands infected, showing that a strain may retain its transmissibility by tsetse up to the death of the host even in cases where to judge from the condition of the patient the infection had lasted many months. As a rule, however, as an infection with *T. gambiense* progresses the transmissibility of the parasite by tsetse diminishes, and may eventually disappear altogether.—*H. L. Duke.*

4335. **[DYMOV, D. K.]** ДЫМОВ, Д. К. О распространении лейшманиоза у собак Туркестана. **[Distribution of leishmaniosis among the dogs of Turkestan.]** Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(8): 540-543. 1929.—In the cities of Kokand, Samarkand, and Shakhrizîabs, 269 stray dogs were killed in 1927. Leishmaniosis was found in only 6, although in 1913, Iakimov, who examined 49 dogs there, found 44% infected. Possibly this low percentage may be explained by the killing of 1800 stray dogs in Samarkand prior to the investigation. In Shakhrizîabs, where no such measures were taken, out of 61 dogs 5 were infected. On the other hand, only one case of human visceral leishmaniosis has been registered in this city, while in Samarkand, where the percentage of infected dogs was extremely low, human visceral leishmaniosis was found in 250 cases. This disproportion leads to the assumption that human and canine leishmaniosis have hardly anything in common, and that, apparently, the dog is not a virus reservoir, as has been supposed.

4336. **FLETCHER, T. BAINBRIGGE, and S. K. SEN. A veterinary entomology for India. Part XII.** *Jour. Central Bur. Animal Husb. and Dairy., India* 4(3): 90-104. 2 pl. 1930.—Four species of bot flies are described, the 3 most common in India being *Gasterophilus intestinalis bengalensis*, *G. nasalis*, and *G. pecorum*. The larvae parasitize the stomach of horses. The morphology of ova and larvae is described, leading to identification of the species. Treatment of parasitized horses and control measures are discussed. The head maggot, *Oestrus ovis*, infests the nostrils and frontal sinus of sheep. A popular control measure consists of providing sheep with salt troughs smeared with tar which adheres to the nose and repels the flies. *Cephalopsis titillator* deposits larvae in the nostrils of camels; larvae on the mucous membrane of the naso-pharynx cause much irritation, resulting in violent sneezing. The larvae of *Cobboldia elephantis* infest the stomach of elephants, sometimes in such numbers as to interfere with food passage. The larvae of *Gyrostigma sumatrensis* infest the stomach of Sumatran and African rhinoceroses.—*G. W. Rawson.*

4337. **FISCHER, W. Die Amöebenruhr. [Amoebic dysentery.] [In: W. KOLLE, und A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen. 3. Aufl. W. KOLLE, R. KRAUS, und P. UHLENHUTH. Bd. 8, Lief. 9.] p. 181-212. 1 col. pl., 6 fig. Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin u. Wien, 1927.**

4338. **FÜLLEBORN, F. On the larval migration of**

some parasitic nematodes in the body of the host and its biological significance. *Jour. Helminth.* 7(1): 15-26. 2 fig. 1929.—Penetration of the host skin by larvae of *Ancylostoma, Strongyloides stercoralis,* and other nematodes may be assisted by thermotaxis but apparently is a purely mechanical phenomenon. Experiments showed that the path traversed is through the blood and lymphatics to the heart, thence to the lungs and through the walls of the capillaries and air-vesicles to the bronchioles, bronchi, trachea and pharynx. Swallowing of saliva carries the larvae to the intestine. In the lungs some larvae pass to the pulmonary vein, thence to the left heart and, in the aorta, conveyed only in the central part of the blood-stream, reach all organs of the body, producing characteristic hemorrhages on the kidney surface. Frequency and extent of bleeding depend on the structure of the tissue invaded. Larvae of *Ascaris lumbricoides* introduced into the stomach are mostly suffocated by lack of O. A few bore through the walls and, passing first to the liver, complete their normal development in the intestine; these are no longer liable to suffocation in the stomach. Larvae of *Uncinaria stenocephala* can develop in the stomach without previous migration, but enter the glands of the mucosa to reemerge after some days. A similar phenomenon is described for *Trichuris vulpis, Heterakis gallinae, Trichostrongylus,* and *Oesophagostomum columbianum.* The mouth-spear of the youngest Trichotrochelidae larvae is reminiscent of that of *Dorylaimus* and suggests the origin of the group. Larvae of *A. lumbricoides* may take a similar path to those of *Strongyloides,* but mostly pass with the blood of the portal vein to the liver, vena hepatica, right heart and lung. Abdominal infection is accidental. By invasion of the aorta, larvae are transported to all host tissues and have been found in the kidney, heart, brain, and muscles. Pre-natal infection of the lungs of puppies by larvae of *Toxascaris canis* occurs via the placenta, the intestine being invaded later; that of the mother is immune. The origin of larval migration is the ingestion of infected secondary hosts, the definitive host finally becoming also an intermediate one.—*F. J. Meggitt.*

4339. **[GRÜNER, S. A.]** ГРЮНЕР, С. А. Носовой овод у лошадей и его значение при сапе лошадей. **[Nasal gadfly in horses and its importance in glanders.]** Труды Сибирского Ветеринарного Института. [*Rept. Siberian Vet. Inst. Omsk, USSR.*] 10: 303-322. 1 pl. 1928/1929.—On the basis of literature and study of horses killed when found suffering from, or under suspicion of glanders, the author concludes that the nasal gadfly, *Rhinoestrus purpureus* (Brauer), not only fastens itself to the nasal partition and nasal cavities, where it causes inflammation, but is also found under the brain membrane and even in the region of the cerebellum. Contrary to other opinions, the author believes that the larvae do not cause wounds in the nasal cavity, but catarrh of the mucous membrane, then feed on the pus secretion. Probably the larvae produce the same effect on certain tissues of the brain. In a horse suffering from glanders these larvae are thrown out and may be carriers of glanders. A complete description of the gadfly and the difference in the larvae of *Gastrophilus intestinalis, G. veterinus, G. haemorhoidalis, G. pecorum,* and *R. purpureus* is given.

4340. **HINDLE, EDWARD, and FENG LAN CHOW. Experiments with malaria and mosquitoes in Shantung, China: with a note on the value of local species of fish for the destruction of mosquito larvae.** *Trans. Roy. Soc. Trop. Med. and Hyg.* 23(1): 71-80. 1929.—In Tsinan the only endemic type of malaria is benign tertian; even this is not very common, largely on account of fish which devour mosquitoes. From experiments involving feeding mosquitoes on cases of malaria, it is concluded that the species of *Anopheles* which are found in Tsinan, *A. hyrcanus* v. *sinensis* and *A.* (*Myzomyia*) *pattoni,* both serve as transmitters of *Plasmodium vivax;* but *A. pattoni* is a much more efficient vector than *A. hyrcanus* var. *sinensis,* which is infected with difficulty. Also *A. hyrcanus* var. *sinensis* is essentially an out-of-door species while *A. pattoni* frequents houses. The number of mosquito larvae eaten by single fish in 6-24 hrs. was tested for *Pseudorasbora parva, Rhodeus* sp., *Carassius auratus, Pseudogobio sinensis, Aplocheilus latipes, Misgurnus anguillicaudatus* and *Eleotris swinhonis.* All species used devoured mosquito larvae readily. *Pseudogobio sinensis* and *E. swinhonis* were the most efficient.

4341. **HOEPPLI, R. Neuere pathologische Befunde bei experimenteller Trypanosomiasis und Leishmaniasis.** *Arch. Schiffs- u. Tropen-Hyg.* 33(Beih. 3): 101-113. 4 fig. 1929.—Description of findings in experiments reported by Regendanz: *Ibid.* 33(Beih. 3): 97-101. 1929.

4342. **[ISAICHIKOV, I. M.]** ИСАЙЧИКОВ, И. М. К фауне паразитических червей домашних плотоядных Крыма. **[Parasitic worms in domestic carnivorous animals of Crimea. (Continuation.)]** Труды Сибирского Ветеринарного Института. [*Rept. Siberian Vet. Inst. Omsk, USSR.*] 9: 133-169. 1 pl. 1927.—Heterophyidae not previously discovered in domestic carnivores and *Capillaria felis cati* were found. The infection of Kerchenskii dogs with *Metagonimus romanica* may be due to sea fish. The finding of *Cryptocotyle concavum* in dogs and cats showed that the parasite may also attack carnivorous animals as well as birds. *Ascocotyle italica* Allessand. is reported from Russia in dogs, and in cats for the 1st time. From the cat are reported also *Tauridiana pontica,* and **PONTICOTREMA** (Heterophyidae) **euxini*** (p. 142).

4343. **JAMES, S. P. Specimens made during an enquiry into the influence of temperature on the exflagellation of the gametocytes of the benign tertian malaria parasite.** *Trans. Roy. Soc. Trop. Med. & Hyg.* 23(1): 3-4. 1929.—Low temp. (10 and 19° C.) retarded exflagellation. At 0° C. no change was observed even after 24 hrs. At 25° C., ♂ gametocytes flagellated in 5-7 min.

4344. **KAGY, EDWIN S., and ERNEST CARROLL FAUST. Effect of feeding raw liver to dogs infected with Endamoeba histolytica.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 252-253. 1930.—Preliminary paper. Cultures in vitro of a canine strain of *E. histolytica* on liver infusion agar confirmed the findings of Cleveland and Sanders: the organism was able to carry through its entire life cycle. This strain was cultivated in vivo (dogs); daily observation for 10 mo. showed no forms other than trophozoites passed in stools. When a single portion of 250 gm. of fresh calf's liver was fed to each of 4 such dogs on balanced diet, cysts were found in the stools of 3 after 7 days. In all 4, the bowel movements were reduced after the liver feeding and the feces became less fluid. The authors believe the appearance of cysts may be related to the dehydration of the contents of the large bowel.

4345. **KLIGLER, ISRAEL J. The epidemiology and control of malaria in Palestine.** 240p. 22 maps, 32 fig. University of Chicago Press: Chicago, 1930. Pr. $5.00. —The topographical and climatological factors which contribute to the prevalence of malaria throughout Palestine are the limestone formations, the dunes, and the rainfall. The heavy winter rains partially flow down the hills to the sea. The waters flowing along the winter wadis erode holes which form persistent pools in which *Anopheles* breeds. Sand dunes or sandstone outcrops usually block the course of the wadis near the sea, resulting in extensive coastal marshes. Springs in the foothills flow into neglected creeks. In the hills the inhabitants build cisterns for storage, as in Jerusalem and Safad; these constitute the principal anopheline breeding places. The large Huleh Marshes above the Sea of Merom make the surrounding plain and headwaters uninhabitable because of malaria. *A. bifurcatus* breeds only in cisterns in Palestine. There is no good evidence that this is a distinct race different from the species found in other regions of the world. Breeding probably continues in cisterns throughout the year, though adults are not commonly seen in the winter. This species is an important carrier in urban and rural highland districts depending on cisterns for their water supply; but is

of little importance in the foothills and places where natural water is available. *A. elutus* breeds from Mar. to Dec., is a house-visitor and is the most important malaria carrier in Palestine. The other important carriers are *A.* (*Myzomyia*) *sergenti* and *A.* (*M.*) *superpictus*. The other species found were *algeriensis, hyrcanus* (*sinensis*), *pharoensis*, and *multicolor*. *Plasmodium falciparum* is extremely rare in the spring, but the fall epidemic is severe. Numerous cases of *P. vivax* occur during late winter and early spring; there are epidemic outbreaks in June, July, and Aug. *P. malariae* is rare but, if present, is more common during the winter. The blood and spleen rates are highest in the age group 5-9 years. The importance of social factors in the epidemiology is shown by the existence of 2 groups side by side, the one (Jewish) having a high epidemicity and a low endemicity, while the other (Arabs) have a high endemicity and low epidemicity. The Jewish agricultural population is made up of recent city-dwellers living in close communities with good physicians at hand and with schools. Being less accustomed to hardships they are more susceptible to infection, but treatment maintains a low endemicity. The Arabs have no physicians, are of low intelligence and regard illness as of supernatural origin. They have a higher native resistance but the infections are chronic. The movements of population groups have a vast influence on the epidemiology. The Bedouins are practically 100% infected. They have no fixed abode but wander over the country seeking pastures and water. The immigrant, non-immune population in search of work encounter the infected nomadic Bedouins and the Fellahs. The pilgrimages to sacred places bring thousands into malarious regions who return to their homes bearing infections. Control of *A. sergenti* and *A. superpictus* has been successful through deflecting the flow from the springs in different directions at intervals of 5 or 6 days, or by impounding the water in the stream for 2 or more days. Paris green proved preferable as a larvicide to kerosene and cresol. *Gambusia* in clean canals has yielded good results. The native *Tylapia* has proved useful and possesses the added advantages of being able to keep tanks clean by eating vegetation and of being edible. No antagonistic action of *Chara* on larvae was found. In areas where no mosquito control has been possible (Hedera, Benjamina, Gan, Shmuel, and Jissr) there has been no spontaneous regression of malaria. The first three demonstration areas where antilarval measures were employed yielded in 1921 a malaria reduction of 82-91% at an annual per capita cost of $1.40-$2.36. At present, control is being carried on in 11 districts comprising a population of 40,000. The average per capita cost for all districts has been fairly constant for four years,—$0.50. In regions where antilarval measures were not feasible or were ineffective, attempts were made to control malaria by (1) killing of adult mosquitoes in houses, and (2) by quinine prophylaxis; neither was effective. Typical drainage works of a permanent character in specific areas are described.—*C. G. Huff.*

4346. LAUNOY, L., L. PANISSET, et Mlle. PRIEUR. Un cas d'évolution lente du surra expérimental chez le chat. *Rec. Méd. Vét. Exotique École Alfort* 4(1): 27-30. 1931.

4347. [MARKOV, A. A.] МАРКОВ, А. А. О нахождении трипанозом крупного рогатого скота Trypanosoma theileri Lav. в С. С. С. Р. [Trypanosomes of large cattle, T. theileri Lav., in U. S. S. R.] [French summary.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 6(8): 522-524. 1928.—Distribution of this parasite in Russia.

4348. MARTINI, E. Klima und Seuchen vom Standpunkte des Entomologen. *Trans. 4th Internat. Congress Ent., Ithaca, 1928* 2: 463-477. 1929.—The distribution of insect-borne diseases is limited by the temp. requirements of both carrier and causative organism. Emphasis is laid upon the distinction between critical and threshold values of environmental factors and the recognition of this distinction is held to support the belief in the existence in connection with all insect-borne diseases of a territory inhabited by the carrier but not the parasite. This and the other interrelations of host, carrier and parasite are illustrated from the field of malaria, special attention being given to the relation between two opposing factors in the endemic development of malaria: number of *Anopheles* mosquitoes and number of domestic animals in proportion to the human population. The spread of infection is also influenced by temp. as it affects the metabolic rate and viability of the carrier, length of its imaginal life, and rate of development of the parasite. The season of outbreak of a disease depends not only on the biology of the carrier but also on that of the parasite, the peak of an epidemic not necessarily following closely upon the peak of abundance of the carrier. The importance of the exoskeleton in protecting insects against the dangers of evaporation is stressed and is illustrated by the behavior of various Culicidae. In the development of epidemics those relations that obtain between climatic factors, such as humidity and precipitation, and the conditions due to human habitation are considered significant. Other climatic factors are discussed briefly.—*E. M. Walker.*

4349. MATSUI, KAICHI, and ASAO KUMATA. Studies on fish disease. A new Copepod parasite of the fresh water eel. [In Japanese.] *Suisan Kôsyû. Sik. Hok.* 23(4): 131-141. 3 pl. 1928.—*Lernaea elegans* Leigh-Sharpe, 1925, is described and its life history, occurrence and control considered. The parasite is found attached chiefly to the mouth cavity of the eel, but also on the body surface of cyprinids and cyprinodonts. It has a symbiotic alga, *Cassatiovolvox copepodicola,* in its intestinal epithelium. The head of an infected eel has a distorted appearance. The parasite occurred rather abundantly in a culture pond for eels and caused losses. It can not thrive in water of high salinity.

4350. MAURICE, G. K. The history of sleeping sickness in the Sudan. *Sudan Notes & Rec.* 13(1): 211-245. 9 pl. 1930.—This is mainly an historical account of the medical and sanitary measures used in combating epidemics between 1911 and 1929. The rôles of *Glossina palpalis* and *G. morsitans* as carriers of human trypanosomiasis are briefly outlined and an account of the spread of the disease in Africa is of distributional interest. Several photographs illustrate typical fly habitats and methods used in their control.—*W. W. Bowen.*

4351. [MELIK-ADAMÏAN, S. S.] МЕЛИК-АДАМЯН, С. С. О врожденной малярии. [Congenital malaria.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 7(2): 75-78. 1929.—In Sukhum and Azerbaijan (endemic malarial regions) out of 23 infants, examined 8-20 hrs. after birth, 8.5% were positive for plasmodia; in Zangelan district, out of 27, aged 1-10 days, 33%; in Ali-Abad, out of 27, aged 1-10 days, 18.5%. Out of 605 children under 3 years, 46 had plasmodia. Though born in winter, their first malarial attack occurred in March-April, when no fresh primary infection was possible. All this bespeaks congenital malaria. In all the cases the mothers were malarial.

4352. MESNIL, F. Sur l'adaptation des trypanosomes à l'homme. *Bull. Soc. Path. Exotique* 23(7): 719-721. 1930.—Mesnil, experimenting with serum from the case described by Vaucel [see B. A. 6(2): Entry 4396], accepts the conclusion that *Trypanosoma rhodesiense* is only *T. brucei* recently adapted to man.

4353. MORISHITA, KAORU. A flagellate protozoan found in a human blood smear. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 306. 58-59. 1 pl. 1930.—A crithidian flagellate was found in examining a blood smear from a Formosan girl. The source of the organism was not revealed; probably it was not from the blood stream of the patient or from the staining reagents. —*E. C. Faust.*

4354. MORISON, GUY D. Observations on the number of mites, Acarapis woodi (Rennie), found in the tracheae of the honey-bee. *Bee World* 12(7): 74-76. 1931.

4355. **NARRO, RAFAEL B. Un flagelado patogeno. "Pirotrypanum" o "Piroplasma trypanum."** [A pathogenic flagellate.] *Rev. Mexicana Biol.* 7(4): 79-88. 4 fig. 1927.—An organism, isolated from a fatal disease of cattle resembling piroplasmosis, is described. Intracellular forms in the blood cells measure 2-7μ. After a period of intracellular development they leave the blood cells and grow to 40μ. The intracellular stage resembles *Piroplasma bigeminum;* the extracellular form, *Schizotrypanum cruzi.* It is concluded that this organism is not a stage in the life cycle of *Piroplasma* but is a new form occupying a position between *Piroplasma* and *Trypanosoma,* and it is given the provisional name PIROTRYPANUM (p. 88).—*J. McA. Kater.*

4356. **NATTAN-LARRIER, L., et B. NOYER. Trypanosome du dromadaire et trypanosome du cheval au Maroc.** *Bull. Soc. Path. Exotique* 23(7): 747-760. 1930.—Trypanosomes from the horse and the dromedary in Morocco were not identical in their action on small laboratory animals: the equine trypanosome frequently produced abortion in the guinea-pig and did not traverse the placenta; the dromedary trypanosome did not cause abortion but passed easily into the fetal blood and produced infections in the offspring. Both trypanosomes were readily affected by human serum, the dromedary type the more readily. These trypanosomes, if not belonging to different species, must have been profoundly modified by sojourn in their respective hosts.

4357. **NATTAN-LARRIER, L., et B. NOYER. Trypanosome du dromadaire et trypanosome du cheval au Maroc. X.** *Bull. Soc. Path. Exotique* 24(2): 112-122. 1931.—The passage of the Moroccan horse trypanosome successively through 9 pregnant mares did not produce a strain capable of infecting the fetus in utero. Similar passage of the Moroccan dromedary trypanosome through pregnant ♀♀ endowed it with the capacity, not originally present, of infecting the unborn fetus. Experiments in vitro showed that the horse trypanosome did not settle on placental fragments in the test tube, while the dromedary trypanosome not only affixed itself to the surface but penetrated the interior of fragments of dromedary placenta. Previous experiment had shown certain differences in biologic characteristics between horse and dromedary trypanosomes. The question whether they belong to distinct species was submitted to serologic test. Lysis of either horse or dromedary trypanosome was produced by either anti-dromedary or anti-horse serum. Immune serum from a rabbit infected with horse trypanosomes protected 1 mouse entirely against horse trypanosome infection and delayed death in a 2nd mouse infected with dromedary trypanosomiasis; the control mouse died of equine trypanosomiasis. Serum from a rabbit infected with dromedary trypanosomes protected 3 mice completely, the one against dromedary, the other against horse trypanosomiasis. The authors conclude that the 2 trypanosomes belong to the same species, but the one strain has become adapted to the horse, the other to the dromedary and neither is now capable of infecting the host of the other.

4358. **NAPIER, L. EVERARD. The artificial feeding of sandflies.** *Indian Jour. Med. Res.* 18(2): 699-706. 1 pl., 2 fig. 1930.—From limited preliminary observations it is concluded that: (1) in the absence of red blood corpuscles little proliferation of either *Leishmania donovani* or *L. tropica* occurs in *Phlebotomus argentipes;* (2) both species develop equally well in this sandfly in the presence of red blood cells; (3) in *P. minutus* (*babu*), *L. donovani* does not proliferate or, at least, does not proliferate so readily as in *P. argentipes.*

4359. **[NEVĬADOMSKIĬ, M. M.] НЕВЯДОМСКИЙ, М. М. О возбудителе рака. [Cause of cancer.]** [German summary.] Одеський Медичний Журнал. [*Odessaer Med. Zeitschr.*] 5(3/5): 233-236. 1930.—The author describes a parasite found in every cancerous growth of mice, rats and men. It is a sporozoan belonging to Schizogregarinida, since it has a pronounced stage of schizogony. The cycle in cancers of mice and rats is described. In these gregarines, the author reports still another parasite, which he believes to be the true exciter of human cancer, the gregarine being only an intermediate host. This parasite belongs to Sarcosporidia; only certain stages in its development were observed. Injecting cultures containing spores of this parasite into mice produced a cancerous growth. In human cancerous growths, the author reports both gregarines and their parasites. He declares that he obtained in culture development of spores of the exciter of human cancer.

4360. **NIESCHULZ, OTTO. Zoölogische bijdragen tot het Surraprobleem. VI. Overzicht over de tot nu toe bereikte resultaten. [Zoological contributions to the Surra problem. VI. Review of results to date.]** *Handelingen 4th Nederlandsch Indisch Natuurwetensch. Congres Weltevreden* 1926: 329-338. 2 pl. 1926.—Transmission has been effected with *Tabanus rubidus* Wied., *T. striatus* Fabr., *T. immanis* Wied., *T. ceylonicus* Schin., *Chrysops flaviventris* Macq., and *Haematopota cingulata* Wied. Transmission was easily obtained with an interval of 1-15 min., very probable after ½ hr. with *T. rubidus, T. striatus* and *H. cingulata,* negative after ½ day, positive in 1 exceptional case with *T. rubidus* after 1-3 days, negative after long periods up to 30 days. Feeding infected flies on 2 susceptible horses in succession infected both. The disease was transmitted from a naturally infected but clinically healthy buffalo (kerabu). Direct transmission and after ½ hr. interval failed with *Stomoxys calcitrans.* The complete development of the commonest spp., *T. rubidus* and *T. striatus,* was followed in the laboratory. They lay respectively 386-533 and 193-418 eggs in 6-11 mm. long packages. *Chrysops* lays in a flat layer, *H. cingulata* singly or in small groups, *T. striatus* has 7 larval stages: 1st not feeding, lasts ± 15 min.; 2nd to 6th stages feeding, each 2-10 days; 7th is prepupal stage, feeding followed by lethargy, lasts 14-159 days; pupal stage 8-12 days; total 44-210 days. *T. rubidus* is similar; some have 8 larval stages; pupal stage 9-13 days; total 51-192 days. For specific determination chitinous plates of larvae and cephalic tubercles and penultimate abdominal segment of pupae are important. Numerous breeding places are recorded; larvae were all found in soil, mud, or sand close to water in woods or open country. *T. rubidus* and *T. striatus* larvae also found at pools of water containing over 2% salt. At Tapanoeli (Sumatra) larva of *T. bubbermani* and at west coast of Sumatra larvae of *T. pararufiventris,* both new spp. (no description). Most important parasites are *Phanurus* sp. At Buitenzorg from Dec. to Mar. 60% of the eggs were parasitized. The parasites develop in 10 days and copulate immediately after escaping. A ♀ produces 25-103 offspring (6 observations). Fresh and 1-3 day old eggs could be infected experimentally.—*H. O. Mönnig.*

4361. **NIESCHULZ, OTTO. Zusammenfassung der Ergebnisse einiger Surraübertragungsversuche auf Java und Sumatra.** *Arch. Schiffs- u. Tropen-Hyg.* 33(5): 257-266. 1929.—Investigations involving several insect species and over 14,000 specimens indicate that as carriers of Surra the Tabanidae are most important. From Java and Sumatra 17 *Tabanus,* 3 *Chrysops,* and 4 *Haematopota* spp. were shown experimentally to be carriers, *Tabanus* spp. being most efficient. Carrying capacities of each species over various time intervals are given. Closely related *Tabanus* and *Chrysops* species may possess very different carrying capacities. In all attempts Muscidae (*Stomoxys, Lyperosia, Musca*) failed to transmit Surra when horses were used as experimental hosts, but were effective on small laboratory animals. At least some species of mosquitoes (especially *Anopheles fuliginosus*) may transmit Surra over very short time intervals but are regarded as having very little practical significance as carriers.—*L. M. Dickerson.*

4362. **NÖLLER, WILHELM. Die Züchtung der parasitischen Protozoen. [The cultivation of parasitic Protozoa.]** In **S. von PROWAZEK Handbuch der pathogenen Protozoen** 3: 1815-1967. Illust. Johann Ambrosius Barth: Leipzig, 1928. Pr. 16 M.—This compendium is accompanied by a 27-page bibliography.

4363. **ODA, TEIBUN, KAORU MORISHITA, and HIROSHI NAMIKAWA. Studies in the treatment of malaria. I. General introduction and routine methods. II. Experimental treatment with plasmoquine. (I Report.) Effect of the short course treatment in various forms of malaria. III. The therapeutic effect of Saiko, an indigenous drug in the Orient, upon the malarial infections.** *Taiwan Igakki Zasshi [Jour. Med. Assoc. Formosa]* 30(1) (no. 310): 8-13. 1931.—After presenting the history of malaria therapeusis and considering the efficiency and ineffectual properties of the several malaricidal agents, the results are presented on one week's standard treatment with plasmoquine (without and with quinine) on the 3 species of malarial plasmodia. Observations were made up to 9 weeks. The relapse rate in tertian infection was 12.5% with plasmoquine alone, and 14.5% with combined therapy; no relapses in quartan infection occurred in both types of therapy; in malignant tertian, the relapse rate with plasmoquine alone was 100%; in combination with quinine, 42.8%. Data concerning the splenic index, hemoglobin percent, body weight and toxic manifestations are included. Clinical experiments with "Saiko" showed it to have no malaricidal value.—*E. C. Faust.*

4364. **ODRIOSOLA, R. Ein Beitrag zum Studium der Protozoenerkrankung des Darmes beim Kinde.** *Arch. Schiffs- u. Tropen-Hyg.* 34(12): 643-651. 1930.—*Endamoeba histolytica, E. coli, Giardia, Chilomastix, Blastocystis hominis* and other intestinal protozoa have been found in stool examinations of children in Paraguay, particularly in dysenteric cases. These organisms are not only responsible per se for the dysentery but also during a latent period provoke an enterogenous toxemia, with a variety of clinical symptoms. Changes in the blood picture and involvement of the spleen and other haematopoietic organs are at times recorded. Chronic parasitism may affect the glands of internal secretion, with a tendency to infantilism.—*E. C. Faust.*

4365. **OTTOLENGHI, D. La lotta contro la malaria nelle bonifiche. [The struggle against malaria in connection with land reclamations.]** *Italia Agric.* 67(7): 467-475; (8): 528-540. 8 fig. 1930.—Italy is the classical country for land reclamations to restore to agriculture great tracts of land which are inundated either permanently or periodically. These regions are almost always the seat of an endemic malaria more or less intense so that it is important to combat the fever while draining the soil. The author discusses first the fact that if this drainage is complete, the fever is completely wiped out. Following this, he explains the principal problems of the anti-malarial struggle in the regions which are being drained and the means by which these problems are met. He also gives information from personal experiences concerning practical conditions, choosing as a field for his researches the celebrated land reclamations of the Province of Ferrara.—*D. Ottolenghi (transl. by C. W. Dawley).*

4366. **POPOW, P. P., und D. N. SASSUCHIN. Ueber die Parasiten der Eidechse Agama caucasica Eichwald 1831.** *Zentralbl. Bakt. I Abt. Orig.* 120(1/2): 93-96. 1931.—Examination of 6 specimens of this lizard showed Kurloff's bodies and *Haemogregarina lacertae* in the blood, *Thelandros cinctus* v. Linstow ♂ and ♀ in the intestinal canal, and encysted larvae of *Agamospirura* sp. in the muscles.

4367. **QUÉRANGAL des ESSARTS, J. Parasitisme accidentel du tube digestif par un acarien de la famille des tyroglyphinés; le Tyroglyphus farinae.** *Presse Méd.* 38(70): 1176-1177. 1930.—In more than 1000 stool examinations, the author found 8 cases of accidental infestation with *Tyroglyphus* or *Aleurobius farinae,* which is ordinarily found only in wheat or flour.

4368. **[RASVETAEV, V. N.]** РАСВЕТАЕВ, В. Н. **Опыт прививки малярии животным. [Inoculation of animals with malaria.]** Русский Журнал Тропической Медицины. [*Russian Jour. Trop. Med.*] 6(10): 644-648. 1928.—18 rabbits, inoculated intravenously and intraperitoneally, gave negative results, as did 9 mice and 2 rats. 3 fox-terriers showed a clinical picture similar to malaria, but no plasmodia in blood. 6 kittens (aged 1 month) gave different results; all reacted to the inoculation, but showed no plasmodia. One (reaction very strong) was reinoculated with another species of *Plasmodium;* 7 days later it showed clinical, malaria-like picture, and in the blood were forms similar to schizonts of *Plasmodium malariae.* During the paroxysms, formations in blood resembled merozoites. The autopsy revealed hyperemic kidneys, enlarged liver and spleen.

4369. **REGENDANZ, PAUL. Pathogenicity of Trypanosoma lewisi and blood sugar in infections with Trypanosoma lewisi and Bartonella muris ratti.** *Ann. Trop. Med. & Parasitol.* 23(4): 523-526. 1929.—The presence of *T. lewisi* may activate an infection with *Bartonella* even in non-splenectomized rats. The latter infection may be eliminated by the arsphenamines, whereas the former can be treated successfully only with arsenophenylglycine. The data on blood sugar are inconclusive.—*M. W. Kamm*

4370. **RICHTERS, und FRISCHBIER. Die Bekämpfung der Sklerostomiasis des Pferdes vom Standpunkt der Hygiene und Therapie.** *Berliner Tierärztl. Wochenschr.* 46(31): 493-502. 6 fig. 1930.—Vigor and state of nutrition of the horse on the one hand and degree of worm infestation on the other are not always mutually related; likewise month of greatest worm incidence and month showing most frequent gastro-intestinal disturbances. An appreciable proportion of colic cases must be traced to circulatory and paralytic disturbances of the intestinal canal caused by sclerostomiasis. Colic diseases are more frequent in early years but are less fatal than in the more sparsely affected later years with higher mortality. Sclerostome larvae survived in feces outside the body for 16 mo. Motion pictures were taken of larvae migrating in large numbers on glass, blades of grass and fungus hyphae. The larvae were resistant to fertilizers (Thomas meal, Chile saltpeter and kainit) but died in 1-2 hr. in finely broken feces to which had been added quicklime and dilute milk of lime. For destroying the parasite in the stable the biothermic method (packing the manure) should be used. Against ascarids, antimony tartrate and CCl_4 are effective; sclerostomex, atoxyl, chenopodium oil and equivermon are ineffective for sclerostomiasis. Tartar emetic is the most effective means against sclerostomiasis. Larvae in the thrombus of the anterior mesenteric root are also killed. Other control measures are discussed. *Richters (transl. by O. L. Williams).*

4371. **ROBERTS, F. H. S. The occurrence of a beetle (Onthophagus granulatus Bohen) in the stomach of domesticated animals.** *Queensland Agric. Jour.* 35(3): 171. 1931.—In Australia, a dung beetle, *Macropocopris symbioticus* Arrow, lives in the anus of wallabies. The writer believes this is the first report of such beetles in the intestinal tract of lower animals. This note also records *Onthophagus granulatus* in the stomach of a horse and several calves which had died; however, death may have resulted from other causes.

4372. **SALT, GEORGE. A further study of the effects of stylopization on wasps.** *Jour. Exp. Zool.* 59(1): 133-163. 2 pl. 1931.—Stylopized individuals of *Belonogaster* are morphologically unmodified, but their coloration shows a slight diffuse erythrism. No external effect of stylopization is found in *Vespa.* Stylopized specimens of *Odynerus* are often altered in both structure and color. The alterations of the secondary sexual characters are such as to produce an assimilation and in some cases an interchange of certain of these characters. Specimens of *Chlorion* and *Sphex* infested with Strepsiptera are sometimes changed in structure and color. Affected females tend slightly toward the male condition in certain secondary sexual characters. Stylopized females of *Chlorion* and *Sphex* probably fail to construct nesting burrows. Many stylopized individuals of *Odynerus, Chlorion,* and *Sphex* may be looked upon as intersexes. Different characters are modified by stylopization in a more or less definite sequence; this orderly and pro-

gressive modification seems to be one of the distinguishing characters of intersexes. Effects of stylopization have been found, among wasps, in *Odynerus, Chlorion,* and *Sphex,* but are absent in *Belonogaster, Polistes,* and *Vespa.* This difference is attributable to the different feeding habits of the 2 groups of genera, since the first 3 feed on a fixed ration of food, while the last 3 feed progressively. Probably the external abnormalities of stylopized individuals are due to metabolic disturbances produced in them by their parasites.—*Author (courtesy Wistar Bibl. Serv.).*

4373. **SAUTET, JACQUES. Contribution à l'étude de la dysenterie amibienne expérimentale chez le chat.** *Rev. Méd. et Hyg. Trop.* 22(2): 67-72. 1930.—In only 3 out of 9 cats inoculated with amebic feces from 5 human cases were amoebae or amebic lesions found, though 3 of the cats that remained negative died 4-11 days after inoculation.

4374. **SCHILLING, CL., und K. F. MEYER. Piroplasmosen.** [In: **W. KOLLE, u. A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen.** 3 Auflage. **W. KOLLE, R. KRAUS, und P. UHLENHUTH.** Bd. 8, Lief. 9.] P. 1-94. 4 col. pl., 34 fig. (7 col.). Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin u. Wien, 1927.—With 22 pages of bibliography.

4375. **SCHILLING, CLAUS. Spontaneous and experimental infection.** *Jour. Trop. Med. and Hyg.* 33 (22): 334-336. 1930.—It had previously been shown by Schilling and others that laboratory and wild or "genuine" strains of *Trypanosoma brucei* differ both in antigenic qualities and in virulence, the "genuine" having slight virulence to mice, but developing high and constant virulence by 9 passages through mice. In Schilling's recent experiments a single passage of a laboratory strain through its natural vector, *Glossina morsitans,* is sufficient to wipe out this acquired virulence and restore to it the characters of a "genuine" strain.

4376. **SCHNEIDER, OTTO. Subtropische, unter dem Bilde der Syphilis oder des Sodokufiebers verlaufende Insektenstichinfektion. [Subtropical insect-bite infections simulating syphilis or sodoku fever.]** *Arch. Schiffs- u. Tropen-Hyg.* 35(2): 109-110. 1931.

4377. **SCHUMAKER, EUGENE. Relation of Balantidium coli infection to the diet and intestinal flora of the domestic pig.** *Amer. Jour. Hyg.* 13(2): 576-584. 1931.—In determinations on cecal material from 79 pigs, heavy infections with *B. coli* were accompanied generally by an intestinal flora with greater numbers of aciduric organisms and lesser numbers of lactose fermenters and proteolytic anaerobes. The converse was also true; light infections were, in general, accompanied by a lesser number of aciduric organisms and a greater number of lactose fermenters and proteolytic anaerobes. Although high infections were accompanied by a very slightly more acid reaction of the cecal content, it is doubtful whether this finding has any significance. Large amounts of starch, both microscopic and macroscopic, were found in the cecum in pigs heavily infected. Heavy infections were accompanied by a diet high in carbohydrate in the form of grain. This was manifested by the nature of the intestinal flora and by the presence of undigested carbohydrate in the immediate environment of the parasite.—*Author's conclusions.*

4378. **SCHWETZ, J., et L. FORNARA. Y a-t-il des formes d'évolution des trypanosomes chez l'hôte vertébré?** *Bull. Soc. Path. Exotique* 22(9): 862-871. 2 pl. 1929.—In trypanosomiasis in cattle at Stanleyville, often not a single trypanosome was found in the peripheral blood of a dying animal, though they were seen in the heart's blood. In the capillaries of the heart, lungs, spleen, etc., of some animals, however, were leishmanioid or "chromatic" bodies, which the authors believe to be not a degenerative form indicating destruction of the trypanosomes, but something analogous to the division form of *Plasmodium falciparum.* Each consists of 2 nuclear masses, 1 large and 1 small, generally without any distinct surrounding protoplasm or membrane. The small nuclear mass is sometimes by the side of the large one and sometimes within a kind of vacuole in the latter, recalling thus the "latent bodies" of Moore and Breinl. Leishmanioid bodies were found also in some of the organs of an infected hog. They occur only in the capillaries.

4379. **SCHWETZ, J., et F. CABU. Note préliminaire sur les Grahamella-Bartonella des rats splénectomisés de Stanleyville (Congo Belge).** *Bull. Soc. Path. Exotique* 23(5): 464-473. 2 pl. 1930.—The authors describe observations and experiments from which they conclude that Brumpt is right in judging *Bartonella muris-ratti* and *Grahamella muris-ratti* to be synonyms. The latter name should be preserved, not merely because of priority, but to avoid confusion with the other and entirely distinct *Bartonella* forms. [See also A. Lwoff. Grahamella et Bartonella. *Bull. Soc. Path. Exotique* 23(5): 473-474. 1930.]

4380. **SCHWETZ, J., and N. STORCK. On a case of triple infection in a cow—Piroplasma bigeminum, Gonderia mutans and Trypanosoma uniforme.** *Trans. Roy. Soc. Trop. Med. and Hyg.* 23(6): 637-639. 1 pl. 1929.—Three hematozoa were found in a single animal, the *Piroplasma* infection occurring only this one time in 1000 cattle. *T. uniforme* occurs much more frequently in Stanleyville than *T. vivax,* the common Belgian Congo form.—*M. W. Kamm.*

4381. **SEEGERT, JOACHIM. Untersuchungen über Mal de Caderas, ihre Behandlung mit Naganol-Antimosan und die Frage der Übertragung. [Mal de Caderas; its treatment with naganol and antimosan, and its transmission.]** *Arch. Schiffs- u. Tropen-Hyg.* 34(2): 99-123. 14 fig. 1930.—The author provisionally believes that the transmitting agent of the trypanosome is a leech found in waters frequented by affected horses. There appears to be no natural immunity, and a horse once affected seems to be more susceptible to another attack. There are horses, however,—reason unknown,—which have survived the extinction of 2 or more herds.

4382. **SERGENT, EDW., ET. SERGENT, et A. CATANEI. Paludisme des oiseaux. Étude de Plasmodium rouxi chez son hôte vertébré.** *Arch. Inst. Pasteur Algérie* 7(2): 165-180. 1 pl. 1929.—*P. rouxi* occurs in Algerian passerine birds. A very young state always contains 2 unequal pigment granules. The most numerous forms are rectangular 2-4μ long x 1-1.5μ wide. The parasite does not curve around the nucleus of the red cells. The 4 merozoites are arranged around the pigment. The gametes are the largest forms. Experimentally, *P. rouxi* presents the following characteristics: a long incubation period (21 days on the ave.); a rather long acute attack in which the maximum number of parasites is reached only after 1-3 weeks, with maximum never so high as that attained by *P. relictum;* a state of chronic infection lasting several years without being cured and in the course of which parasite recurrences are observed. The organism is very pathogenic, mortality in laboratory inoculated canaries being 30%. Splenomegaly is constant.—*Authors' résumé (transl. by C. W. Dawley).*

4383. **SERGENT, EDMOND, A. DONATIEN, L. PARROT, et F. LESTOQUARD. Transmission héréditaire de Piroplasma bigeminum chez Rhipicephalus bursa. Persistance du parasite chez des tiques nourries sur des chevaux.** *Bull. Soc. Path. Exotique* 24(3): 195-198. 1931. The fact that *P. bigeminum* passes from the adult tick, *R. bursa,* to the larvae of the next generation was demonstrated in 2 experiments. In 2 other experiments *P. bigeminum* persisted in *R. bursa* nymphs taken from horses as well as from cattle into the adult stage of the 2nd generation. In 3 more experiments infected ticks taken from horses were as capable as those from cattle of conveying piroplasmosis to cattle. The number of ticks used in each experiment was about 50-240.

4384. **SIMER, PARKE H. A preliminary study of the cestodes of the spoonbill, Polyodon spathula (Wal.).** *Trans. Illinois State Acad. Sci.* 22: 139-145. 1929.—Of 3 cestode intestinal parasites of the spoonbill, the most common was *Marsipometra hastata* (Linton); 2 are new

to science, *M. parvi* (p. 142) and *M. confusa* (p. 44). All but 1 of the 139 fishes studied were affected; the ave. number per host was about 400, with a maximum of over 5000. No remarks are made concerning the effects of parasitism on the host fish, since an uninfected one rather than an infected one might be regarded as abnormal. No intermediate hosts for the parasites could be discovered.—*Evermann & Clark.*

4385. **SIMMONS, R. J. Notes on a tsetse belt in western Uganda.** *Bull. Ent. Res.* [*London*] 19(4): 421-433. Map. 2 pl. 1929.—Prior to 1900-05 South Ankole was free from tsetse. About 1906-07 *Glossina morsitans* crossed the Kagera northwards at Kakitumba, Nyaruambu, and Kafunza (Tanganyika). Cattle in those areas were moved north on the advent of the fly, thus spreading it in small numbers, mainly northwards. The epizootic recorded in Ngarama and Bukanga in 1910-11 was due to "direct" transmission following the introduction of infected cattle from the south. The influx of man in 1914-15 through the Nyaruambu and Kafunza centers, chiefly the former, caused marked disturbances and rapid spread of the fly, principally along the line of communication to the north. The sudden withdrawal of the human element resulted in marked diminution of fly density, and the advent of rinderpest in 1919 destroyed an important alternative food supply, thus giving further impetus to the reduction. After 27 years the tsetse had retired to those two points from which it had originally spread. The Kakitumba center had not suffered human invasion, as did the foregoing, and no great activity of *Glossina* has therefore been recorded. The picture presented is that man himself has proved the greatest factor in that wide and rapid spread of *Glossina* which Ankole experienced during 1907-1917. The impressions formed from detailed work are: (1) The Ntundu Valley is now the primary center, and serves as a feeder to the Kabiganda and Nyaruambu fly-areas; (2) the fly depends on game for its existence; (3) transportation by man and his vehicles constitutes a grave factor in the spread of the tsetse; (4) smoke-houses, supported in certain circumstances by clearings, should prove valuable factors in control; (5) a motor car is a most useful adjunct in the making of tsetse surveys.—*Author's summary.*

4386. **[SMIRNOVA, E. V., and P. I. SIMANIN.] СМИРНОВА, Е. В., и П. И. СИМАНИН. К вопросу о соотношении количества гамет в крови малярика с количеством ооцист на желудке Anopheles. (Sur la question de la corrélation entre le nombre des gamètes du sang de paludéens et le nombre des oocystes sur la paroi gastrique de l'Anopheles.)** [In Russian, with French summary, p. 69-70.] *Russian Jour. Trop. Med.* 6(1): 38-46. 1928.—The authors experimented with infection of *Anopheles maculipennis* Mg. by *Plasmodium praecox*. In stating the results of 11 experiments the parasite number in each case is reckoned per 500 leucocytes: (1) of 5 ♀ *Anopheles* nourished on a patient whose blood contained 65 gametocytes (37 ♂ and 28 ♀), 2 became infected: 1 had 33 oöcytes present in the tissues, the other 20. (2) Of 6 ♀ mosquitoes which fed on malaria-infected blood containing 37 gametocytes (17 ♂, 20 ♀), 3 acquired the infection; 1 disclosed 2 oöcytes, and the other 4; 3 mosquitoes remained unharmed. (3) Of 4 ♀ *Anopheles* which ingested blood containing 96 gametocytes (56 ♂ and 40 ♀), 2 ♀♀ became infected: 1 showed 15 oöcytes, the other 1. (4) Of 4 ♀ mosquitoes nourished with blood containing 94 gametocytes (34 ♂ and 60 ♀) 2 acquired the infection,—one with 2 oöcytes, the other with 1. (5) Of 14 ♀♀ which ingested blood containing 9 gametocytes (4 ♂, 5 ♀), only 1 became infected and showed 3 oöcytes. (6) Of 9 ♀♀ which sucked blood containing 46 gametocytes (24 ♂ and 22 ♀), 6 became infected: the 1st disclosed 5 oöcytes, the 2nd 3, the 3rd 3, the 4th 4, the 5th 5, and the 6th 2 cysts. (7) Among 3 ♀ *Anopheles* nourished on a patient whose blood contained 43 gametocytes (20 ♂ and 23 ♀) the 1 insect which became infected showed 4 oöcytes. (8) A ♀ mosquito ingested blood containing 125 gametocytes (50 ♂ and 75 ♀); it became infected and showed 8 oöcytes. (9) Of 2 ♀♀ nourished on a patient whose blood contained 42 gametocytes (19 ♂ and 23 ♀), 1 became infected and presented 4 oöcytes. (10) Among 5 ♀ mosquitoes fed on blood containing 62 gametocytes (32 ♂ and 30 ♀), 3 became infected: 1 showed 47 oöcytes, one 93, and the 3rd 56. (11) Among 6 ♀♀ fed on blood which contained 31 gametocytes (10 ♂ and 21 ♀), 4 became infected and carried 10 oöcytes, 5, 7 and 6 respectively. Thus the number of oöcytes of the gastric muscular system is not directly proportional to the number of ♀ gametocytes ingested. The number of gametocytes, per c. mm. of malarial blood, required to produce a probable infection of 50% of the mosquitoes will not be below 150-200.—*From authors' summary* (*transl.*).

4387. **SNIJDERS, E. P. Autochtone amoeben-dysenterie in Nederland in verband met de epidemiologie dezer ziekte.** *Nederlandsch Tijdschr. Geneesk.* 73(50): 5834-5848. 1929.—Several cases of indigenous amoebiasis in the Netherlands are described, together with details of their clinical, diagnostic and epidemiological features. In proportion to the few cases of actual dysentery in Holland, the number of cyst carriers is much greater. This is not necessarily due to a particular type of organism; the difference may be due to the climate.—*E. P. Snijders* (*transl. by D. A. Koch.*).

4388. **SUTTON, HARVEY. Geographical control of disease in Australia.** *Rept. Australasian Assoc. Advanc. Sci.* 19: 480-486. 1 map. 1928 (1929).—Trachoma occurs in districts with high summer temp., low rainfall, dust, glare, and flies; hookworm in the 50-in. rainfall belt north of Kempsey; hydatid in the sheep districts which are areas of somewhat constant moderate rainfall; filaria and dengue are conditioned by the presence and abundance of the mosquito vectors.—*R. T. Hewlett.*

4389. **SWELLENGREBEL, N. H., and A. de BUCK. Correlation between intestinal and salivary infection in Anopheles maculipennis.** *K. Akad. Wetenschappen Amsterdam Proc.* 34(1): 183-185. 1931.—In *A. maculipennis* the incidence of intestinal infection with the malarial parasite allows of a more accurate estimate of the actual number of sporozoite carriers than does the incidence of salivary infection. At present there is no reason why this conclusion should not apply also to other spp. For practical purposes, in establishing the rate of mosquito infection in nature, precedence should be given to the examination of the gut if circumstances do not allow of a more complete investigation.—*Authors' conclusions.*

4390. **TERADA, B., and S. ONO. The toxicological investigation in the toxic substance obtained from the larvae of Hypoderma sp. of Mongolian cattle at the oesophageal stage.** [In Japanese, with English abstract.] *Jour. Jap. Soc. Vet. Sci.* 9(3): 212-220. 3 pl. 1930.—The toxic principle in the larva is precipitated by alcohol or ether. The dried precipitate retains its toxicity for several months. The minimum lethal dose of this precipitate in the rabbit is 3-5 mgm. per kgm. by intravenous injection. This toxic substance in dilute solution is precipitated by CO_2 and half-saturated $(NH_4)_2SO_4$, but not by N/500 H_2SO_4. It is slightly dialyzable and adsorbed by bone charcoal. The toxin resists 60° C. for 30 min., but is destroyed at 100° C. The ash shows no toxic action. The toxin seems to be closely related to globulin. The sudden fall of blood pressure in the carotid artery following intravenous injection of the toxin is due to the marked rise of the blood pressure in the pulmonary artery. The toxin raises the tonicity of the excised small intestine of the rabbit and the contraction of the excised uterus.—*From authors' abstract.*

4391. **TRIPOLI, CARLO J. Preparation of culture media for routine cultures of feces for pathogenic amebas.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 245-247. 1928.

4392. **TSUCHIYA, H. A study of variabilities in dimensions and numbers of discharged cysts of Giardia lamblia (Stiles, 1915) from day to day under normal**

conditions. *Amer. Jour. Hyg.* 13(2): 544-567. 1931.—All feces of 2 human carriers were examined for 36 and 28 days respectively. The total outputs of daily stools were weighed, the number of cysts found per day and per gm. noted, and 100 cysts per day for each carrier measured and these measurements studied statistically. The study showed constant fluctuations in the number of discharged cysts per gm. or per day from day to day, the variability being comparatively regular and cyclical but not to the extent reported by Porter and Boeck, these being 14 days and 7 days respectively. The dimensions of the cysts showed a cyclical variation. A negative correlation existed between the number and the size of the cysts, i.e., as the number of cysts of each strain increased, the volume, length and breadth of the cyst decreased. A possible explanation is offered. The consistency of the stool in the 2 subjects studied is not related to the numbers or dimensions of cysts discharged, showing that the physical factors which influenced the consistencies of the stool had no effect on the development of the cysts and that the principle governing the latter is to be considered as strictly biological. There was a positive correlation between the length and breadth of the cysts, indicating that the length did not increase at the expense of the breadth. Rodenwalt and Reuling's (1921) contention that the younger cysts are always longer and slender was not tenable in all instances.—*From author's summary and conclusions.*

4393. **TURCU, TITUS.** Die zeitliche Verteilung und das Mengenverhältnis der Makrogameten und Mikrogametozyten bei menschlicher und Vogelmalariainfektion. [Chronological distribution and relative numbers of macrogametes and microgametocytes in human and bird malaria.] *Arch. Schiffs- u. Trop.-Hyg.* 31(5): 212-232. 1927.—Thirty cases of treated human malaria showed regularly the presence of gametocytes of both sexes with the ♀ gametocytes more numerous always. In scarce findings exceptions occurred. In acute attacks of bird malaria the gametocytes ran parallel with the illness, both sexes were always present, generally the ♀ gametocytes were more numerous.—*A. de Buck.*

4394. **TURNER, A. W., and D. MURNANE.** On the presence of the non-pathogenic Trypanosoma melophagium in the blood of Victorian sheep, and its transmission by Melophagus ovinus. *Australian Jour. Exp. Biol. and Med. Sci.* 7(1/2): 5-8. 1 pl. 1930.—The authors confirm Hoare's findings as to the infection of *Melophagus ovinus* with *Trypanosoma melophagium* by ingestion of sheep blood, and infection of sheep by ingestion of *M. ovinus.*

4395. **TYZZER, ERNEST EDWARD.** Coccidiosis in gallinaceous birds. *Amer. Jour. Hyg.* 10(2): 269-383. 8 pl., 2 fig. 1929.—*Eimeria* oöcysts derived from infected chickens have usually been considered a single species, but this view is no longer tenable. The name *"Eimeria avium"* also appears to be without status. Young chickens purchased as day-old chicks, and incubator-hatched and brooder-reared turkeys, pheasants and quail were employed. Methods for keeping laboratory stock free from infection, for isolating special strains of *Eimeria,* and also the various controls for experimental infections are outlined. In chickens, 4 species of *Eimeria* are recognized: *E. tenella* [*Coccidium tenellum*] Railliet and Lucet, causing acute disease typically with hemorrhage into the caeca and lower intestine; *E.* **mitis** (p. 294), not notably pathogenic; *E.* **acervulina** (p. 296), causing grayish spots in upper small intestine with chronic disease and wasting; and *E.* **maxima** (p. 299), associated with thickening of the intestinal wall and in some cases with blood-tinged exudate. These species are differentiated on the basis of their distribution in the intestine, morphological features, including size and shape of the oöcyst, time required for the development of oöcysts and for their sporulation, pathogenicity, and host reaction. The development of *E. tenella* was followed throughout, and marked differences were found in the reaction of the epithelial cells to successive generations; in one stage of infection, the gland epithelium acquires invasive properties and becomes phagocytic. A *Cryptosporidium* morphologically identical with *C. parvum* of the mouse also occurs occasionally in the chicken. *Eimeria* **phasiani** (p. 315), and *E.* **dispersa** (p. 316), are found in the common ring-necked pheasant, and an organism morphologically similar to *E. dispersa* is found in the common bob-white or quail. In the domestic turkey *E. meleagridis* Tyzzer and *E.* **meleagrimitis** (p. 321) are recognized. Resistance to *E. dispersa* is not readily acquired by the quail so that heavy infections may occur in mature birds. In collaboration with E. ELIZABETH JONES, a study was made of the host limitation of spp. of *Eimeria.* No cross infections were obtained in chickens, pheasants, turkeys and quail with *E. acervulina, E. phasiani* and *E. meleagridis.* Cross infections were obtained in turkeys and occasionally with chickens with *E. dispersa* from quail, and this organism was readily transmitted from pheasant to quail. Since *Eimeria* infections are self-limited, it was found possible to utilize given lots of birds for successive tests. Immunity in all instances proved to be specific, i.e., immunity to any given species furnished no protection against infection with any other. Nuclear division was studied in the schizonts of *E. tenella* and evidence is furnished to show that the chromatin is included in the karyosome and that the multiple granules found in the polar expansions of the spindle of the dividing nucleus are centriolic in character. Following a consideration of the value of measurements, characteristics of coccidium infections of birds and their complications, the specific reactions of parasite and host cell are compared. Diagnostic and control measures are briefly outlined. Owing to the wide distribution of coccidia in commercial flocks, the presence of small numbers of oöcysts in the discharges is of no great diagnostic significance. In summary it is pointed out that the most acute pathogenic changes are associated with organisms that attain large size and penetrate deeply, e.g., the asexual forms of *E. tenella* and the gametocytes of *E. maxima. E. acervulina,* which produces only slight injury, becomes pathogenic when present in great numbers over a long period. Since the multiplication of the spp. of *Eimeria* studied is limited by cyclical influences, the extent of the infection is dependent upon dosage or the number of sporozoites that invade the epithelium. The number of oöcysts ingested is at best only a rough index of dosage since many pass through the intestine without hatching.—*E. E. Tyzzer.*

4396. **VAUCEL, M.** Identification du trypanosome d'une infection humaine de laboratoire. *Bull. Soc. Path. Exotique* 23(7): 715-719. 1930.—A laboratory assistant who had handled only nagana virus (considered pathogenic for the lower animals alone) was found infected with trypanosomes. Animal experiments identified these with the *Trypanosoma brucei* of nagana, which usually are very sensitive to human serum. Vaucel regards the strain found in this case as having acquired new resistance to human serum. [See also B. A. 6(2): Entry 4352.]

4397. **VOGEL, HANS.** Helminthologische Beobachtungen in Ostpreussen, insbesondere über Dibothriocephalus latus und Opisthorchis felineus. *Deutsche Med. Wochenschr.* 55(39): 1631-1633. 3 fig. 1929.—Examination of feces chiefly of children, among coast dwellers on the Bay of Courland, yielded *D. latus* in 36%, *Ascaris lumbricoides* in 52%, *O. felineus* in 8%, and *Trichuris trichiura* in 84% of the cases. A new 1st intermediate host of the broad tapeworm was found in the copepod *Diaptomus vulgaris.* Human infection with *Bothriocephalus* occurs in this region almost exclusively through consumption of raw liver of the eel-point ("Quappe"), esteemed as a delicacy by the fisherfolk. It is suggested that the therapeutic effect of the liver may counteract the anemia which the tapeworm infection tends to produce, and may thus account for the infrequency of anemia among this highly infested population. Counts of infestation among various fishes and results of experimental infection of monkeys and dogs are given.

4398. WICKWARE, A. B. Parasites and parasitic diseases of economically important waterfowl. *World's Poultry Congress* 4(Sec. C): 379-385; résumé sect., 46-47. 1930.—The paper calls attention to the danger of the parasitic diseases of waterfowl, particularly migrants such as geese, ducks, whistling swans, etc., including the menace to those species under domestication by direct and indirect contact with such migrants. A disease of ducks apparently due to a blood parasite, *Leucocytozoon anatis*, is dealt with at length, while a report of investigations of an obscure condition causing an inordinate death rate amongst whistling swans is discussed. Brief mention is also made of diseases of the Canada wild goose observed by the writer at a game sanctuary. Other forms of parasitism little understood, due to flukes, tapeworms, etc., are described.—*From author's résumé.*

4399. WRIGHT, W. REES. Occurrence of Cepedea in frogs. *Nature [London]* 125(3141): 52. 1930.—A record of finding *Cepedea* sp. (near *dimidiata*) in the intestine of an English specimen of *Rana temporaria*.

4400. YAKIMOFF, W. L. Der Kampf gegen die Piroplasmose der Rinder im Leningrader (Petrograder) Gouvernement. 6. Abhandlung: Ergebnisse eines fünfjährigen Vorgehens. *Zeitschr. Infektionskrankh. Haustiere* 37(3/4): 197-204. 1930.—From 1923 to 1927, 2127 cattle infected with piroplasmosis (*Babesiella bovis*) were treated, ages 1 to 23 yrs.; 407 had been sick in preceding yrs. The temperature had been 37° in 0.3%, 38° in 7.0%, 39° in 24.7%, 40° in 34.6%, 41° in 27.3%, and 42° in 5.7%. The author used the following treatments: (1) Ichthargan, 978 animals, mortality 6.5%, dose 1-1.5 gm. intravenously; (2) Protargol, 123 animals, mortality 11.3%, dose 2-2.5 gm. intravenously; (3) Arrhenal, 443 animals, mortality 10.6%, dose 3-3.5 gm. intravenously and 4 gm. subcutaneously; (4) Trypanblue, 370 animals, mortality 8.1%, dose 3-5 gm. intravenously; (5) Argoflavine, 2 animals, mortality none, dose 1 gm. intravenously; (6) Albargine, 7 animals, mortality 28.5%, dose (insufficient) 1 gm.; (7) Silversalvarsan, 7 animals, mortality none, dose 1 gm. intravenously; (8) Silvernovoarsolan (Russian product), 5 animals, mortality 60%, dose 1 gm. intravenously; (9) Luargol, 6 animals, mortality none, dose 1 gm. intravenously; (10) Apiroplasmine, 4 animals, mortality 50%. Mortality of the disease, without treatment, 1925, 39.8%; 1926, 50-60%; 1927, 40%. Mortality after specific treatment, 1925, 5.9%; 1926, 10%; 1927, 10.4%.—*W. L. Yakimoff (transl. by J. W. Scott).*

4401. YAKIMOFF, W. L. Zur Frage über den Parasitismus der Süsswasserfische. I, II, III, IV, V. *Arch. Protistenk.* 66(2): 297-300, 301-306; 67(1): 215-218, (2/3): 501-508. 1 pl., 509-516. 6 fig. 1929.—The fish studied were from Lake Pidmosero, Province of Leningrad.—(I) *Trypanosoma remaki* L. and M. found in *Esox lucius* is reported for the 2nd time in Russia. (II) *Grahamella* ehrlichi (p. 305) was found in *Perca fluviatilis*. There were as many as 12 parasites in 1 erythrocyte. No free forms were found. This is the 1st time *Grahamella* has been found in other than a mammalian host. (III) *Chlamydophrys* sp.* was found in *Rutilus rutilus*. (IV) *Eimeria* rivierei* (p. 507) from *Perca fluviatilis*, Russia. A table of *Eimeria* spp. and their fish hosts and size is given. (V) Parasites in blood cells of *Esox lucius* are described as *Bartonella* nicollei* (p. 515).—*W. L. Yakimoff (transl. by F. G. Wallace).*

4402. YAKIMOFF, W. L. Zur Frage über Piroplasma bigeminum in Russland (USSR.). *Arch. Protistenk.* 70 (1): 119-130. 3 pl. 1930.—A detailed description of the parasite causing cattle haemoglobinuria is given. There are pear shaped forms (solitary and double, the latter measuring 2.28—4.80μ × 1.14—2.28μ, on the ave. 3.16μ × 1.71μ, they are longer than the radius of the erythrocyte); round ones (1.4—3.15μ, ave. 1.9μ); oval and amoeboid forms. The number in an erythrocyte is 1-4 (arranged in a cross). Infection of the erythrocytes reaches 21.4% (ave. 10.9%). Each parasite contains 2 (rarely 1) masses of chromatin. The piroplasmic index (the relation of length to breadth) of the pear shaped forms is 1: 1.2—3.28 (ave. 1: 2.10), i.e., *P. bigeminum* is twice as long as broad. The divergence of the angle of the pear-shaped forms is acute (in 70-100% of the parasites). The parasite is centrally located in the erythrocyte (88.2-100%). The proportion of the divergent forms is (on the ave.): pear shaped, 56.7%; amoeboid, 18.1%; oval, 4.0%; round, 21.6%. The piroplasmic formula (relation of pear-shaped to round and oval forms) is on the ave. 1: 0.45, i.e., the pear-shaped forms predominate. The difference between *P. bigeminum* and *Francaiella colchica* is difficult to determine. *F. colchica* belongs to a group of small piroplasmas, with the angle of divergence of the double forms, is less than the radius of the erythrocyte, the relation of pear-shaped to round forms is 1: 3.7 on the ave., 1 mass of chromatin, the piroplasmic index 1: 2 on the ave.—*W. L. Yakimoff.*

4403. YAKIMOFF, W. L., und E. F. RASTEGAÏEFF. Zur Frage über Coccidien der Ziegen. *Arch. Protistenk.* 70(1): 185-191. 5 fig. 1930.—The authors found in a ♀ goat, besides *Eimeria arloigni* Mar., *E.* ninae kohlyakimov* (p. 191) and *E.* galouzoi* (p. 191). After cultivation with potassium bichromate (1: 1000) spores and sporozoites were seen.—*W. L. Yakimoff (transl. by H. B. Yocom).*

4404. YAKIMOFF, W. L., W. S. BELAWINE, und E. F. RASTEGAÏEFF. Zur Frage über Rindercoccidien im Nordkaukasus. *Arch. Protistenk.* 70(3): 643-654. 2 fig. 1930.—Hemorrhagic colitis of cattle in North Caucasus is caused by *Eimeria zürni* Rivolta and *E. smithi* Yakimoff and Galouzo, the same parasites that cause dysentery in cattle in northwest Russia. The forms from the two regions are identical in morphology and dimensions; the period of sporogony is considerably longer in *E. smithi* in North Caucasus than in northwest Russia. Sporulation of both species begins within a day following administration of 5% $K_2Cr_2O_7$. Mixed, as well as single infections, occur. Treatment with ichthargan (per os and per rectum) effects cure.—*Authors' summary (transl.).*

4405. YAKIMOFF, W. L., und Mme. MITZKEWITSCH. Ueber Piroplasmose der Renntiere. [Piroplasmosis of Tarandus rangifer.] *Berlin. Tierärztl. Wochenschr.* 46 (18): 282. 1930.—Of 58 reindeer from northern Russia 17 were found infected with *Francaiella tarandi rangiferis* Kerz. Dimensions of the forms: round, 1.25-1.56μ; oval, 1.56 × 0.25-2.16 × 1.25μ; bacilliform, 1.56 × 0.02μ; pyriform (solitary), 1.37 × 0.05-2.50 × 0.03μ; comma-shaped, 1.56 × 0.41μ. The index (width: length) was 1: 2.1-1: 2.6. Chromatin bodies 1. Erythrocytes with 1 or 2 parasites, occupying a central position. This chronic infection may explain the great mortality amongst these animals.—*W. L. Yakimoff (transl. by J. H. Schuurmans Stekhoven).*

4406. YAKIMOFF, W. L., et E. F. RASTÉGAÏEFF. Sur les coccidies des poules en Russie (U.R.S.S.). (Note préliminaire.) *Bull. Soc. Path. Exotique* 23(7): 714-715. 1930.—Three types found in a severe epizootic in chickens in northern Caucasia are described. The 1st type, a round coccidium, is identified with *Eimeria tenella* Raillet and Lucet. No attempt is made either to identify the other 2 with previously known spp. or to name them as new spp. The 2nd type is yellowish-brown, ovoid, measuring 25.2-36.4μ × 18.2-26.6μ (ave. 31.2 × 22.5μ); some oöcysts begin to sporulate at the end of 48 hrs., the majority only after 5-6 days or later. The 3rd type, also yellowish-brown and ovoid, has one less pointed extremity and measures 20.4-25.5μ × 15.3-20.4μ (ave. 23.9 × 17.7μ), with a small refringent point at one end; sporulation begins in about 48 hrs.

4407. YAKIMOFF, W. L., M. SUDZILOWSKY, und E. F. RASTEGAÏEFF. Zur Frage der Piroplasmenarten des Rindes in Weissrussland (Belorussie). *Zeitschr. Infektionskrankh. Haustiere* 37(1): 70-81. 1 pl. 1930.—In 1928 of blood smears from 39 cattle sick with haemoglobinuria, 61.5% contained *B. bovis* and 38.4% a parasite regarded as *F. caucasica.* The forms are round

(2.28μ), oval, amoeboid, pear-shaped (lancet or paired bigeminate, 2.12-2.46 $\times$ 0.76-1.14μ), and rarely anaplasmoid. The ratio of the pear-shaped forms to the round forms is 1:10.4. The angle of divergence of the paired bigeminate forms is obtuse. The percentage of erythrocytes infected is as high as 12.9. The number of parasites in 1 erythrocyte is 1-4. *F. occidentalis* was found in 1927.—*W. L. Yakimoff (transl. by J. W. Scott).*

4408. YORKE, WARRINGTON, A. R. D. ADAMS, and F. MURGATROYD. Studies in chemotherapy. 1. A method for maintaining pathogenic trypanosomes alive in vitro at 37°C. for 24 hours. *Ann. Trop. Med. and Parasitol.* 23(4): 501-518. 1929.—Typical experiments with technique and tabulated results are given using strains of *Trypanosoma equiperdum, T. gambiense,* and *T. rhodesiense* maintained for years in mice. Fresh and deactivated sera from rabbits, sheep, horse, or hog at body temp. are better media for maintaining trypanosomal suspensions than saline, Ringer's solution, or nutrient broth. The parasites lived longest in concentrations of approximately 1000 per c. mm., surviving in the same number for 24 hrs. at 37°. The length of life of the parasites is largely dependent on the amount of sugar present. The given temp. was used to investigate ultimately the trypanocidal action of drugs in live dogs. —*M. W. Kamm.*

FILTERABLE VIRUSES, BACTERIOPHAGE, ETC.

GEO. H. SMITH, *Editor*

(See also in this issue the subsection "Infectious Chloroses" in the section Phytopathology; and Entries 3452, 3498, 4227, 4230, 4302, 4441, 4481, 4488, 4490, 4493, 4543, 4569, 4604, 5603)

GENERAL

4409. BECKWITH, T. D., A. R. OLSON, and E. J. ROSE. The effect of X-ray upon bacteriophage and upon the bacterial organism. *Proc. Soc. Exp. Biol. & Med.* 27(4): 285-286. 1930.—30 min. exposure of 7 strains of *Bacillus coli* bacteriophage (young cultures, in the phase of positive logarithmic growth) to x-rays in lead-free glass tubes, at 14-in. distance from the target of a tube actuated by 75,000 volts, resulted, in the case of 3 of the strains, in reduced effectiveness towards their respective strains of bacteria.

4410. BURNET, F. M., and J. MACNAMARA. Immunological differences between strains of poliomyelitic virus. *British Jour. Exp. Path.* 12: 57-61. 1931.—A poliomyelitic virus from a child dying in Melbourne showed distinct immunological differences from the Rockefeller Institute "mixed virus" strain. In cross immunity experiments, monkeys paralyzed by the Melbourne strain and recovered, succumbed to the Rockefeller strain; and 1 monkey surviving attack by the Rockefeller strain succumbed to the Melbourne strain. In neutralization tests in vitro, a serum affording some protection against the Melbourne strain did not modify the infectivity of the Rockefeller virus.—*J. Bland.*

4411. CLIFTON, C. E. A method for the purification of the bacteriophage. *Proc. Soc. Exp. Biol. & Med.* 28(1): 32-33. 1930.—Staphylococcus bacteriophage suspended in Martin's broth at pH 7.8 was adsorbed on $Al(OH)_3$, and, after washing, released by treatment with 0.5% solution of secondary ammonium phosphate. The Al is filtered off by suction. The bacteriophage recovered in the filtrate was active at a dilution of 10^{-7}; tests of the filtrate for proteins were negative.

4412. DOCHEZ, A. R., KATHERINE C. MILLS, and YALE KNEELAND, Jr. Study of the virus of the common cold and its cultivation in tissue medium. *Proc. Soc. Exp. Biol. & Med.* 28(5): 513-516. 1931.—Nasopharyngeal washings collected from individuals during the first 24 hrs. of a typical attack of common cold were passed through a Seitz filter and, with addition of cysteine hydrochloride, were preserved anaerobically under vaseline seal at room temp. and in ice-box, for 4-13 days. Inoculation of human volunteers and chimpanzees led to common colds in 9 of 12 trials. After repeated passage through human volunteers, resulting in apparently increased virulence, the suspension of nasopharyngeal washings was concentrated 7 times by vacuum distillation, and after 5 days in the ice-box the concentrated virus was inoculated into a tissue medium composed of chick embryo suspended in Tyrodes' solution or in a buffered bouillon prepared from a special peptone to which 0.1% of gelatine had been added. After as many as 15 subculturings in this medium, the original virus by that time diluted $\frac{1}{2}$ quadrillion, inoculation of volunteers with the virus cultures was followed by severe colds in 2 of 3 trials. Controls inoculated with the medium without virus were negative.

4413. ECKSTEIN, A., und M. SARVAN. Klinisch-experimentelle Untersuchungen über die Vaccinations encephalitis. IV. Über den Verlauf der Vaccination bei Affen, deren Allgemeinbefinden experimentell geschädigt wurde. V. A. ECKSTEIN. Über die Permeabilität der Meningen bei normalem Verlauf der Vaccination. *Zeitschr. Hyg. u. Infektionskr.* 111(5): 659-668; 669-671. 1930. —IV. The course of intracutaneous vaccination was studied in 13 *Macacus rhesus,* including 3 controls, 4 splenectomized, 3 chronically starved and 3 chronically alcoholized monkeys. In the controls the local reaction appeared between the 3rd and 4th days after vaccination and healed in 8-12 days, as in previous observations. All the animals showed virulicidal action (most marked on the 21st day in the monkey treated with the most dilute lymph). The monkeys chronically alcoholized reacted locally like the controls. In 2 of the starved monkeys, virulicidal action was displayed on the 21st day; the local reaction tended to severe ulceration, was late in appearance and slow to heal. In the 3rd animal, which was very weak, vaccination was unsuccessful and no virulicidal action appeared. In 2 of the splenectomized animals, vaccination ran its course as in the controls; in 1 the reaction was late (16-28 days after vaccination) with a recurrence on the 45th day of pustules containing vaccine virus and tending to ulceration; no virulicidal action. In the 4th monkey, 2 vaccinations 20 days apart produced no local reaction, although vaccine virus was present in the blood 19 days after the 1st vaccination; no virulicidal action. None of the experimental animals showed signs of nervous disturbance, although the course of vaccination was greatly modified in the starved and splenectomized monkeys. Even the splenectomized monkey which relapsed after recovery showed no encephalitic phenomena in the sectioned brain. V. In 9 persons 5-22 yrs. old and vaccinated for the 1st time, the permeability of the meninges as tested by Walter's Br method, corresponded in all cases to the normal.

4414. ELFORD, WILLIAM JOSEPH. A new series of graded collodion membranes suitable for general bacteriological use, especially in filterable virus studies. *Jour. Path. & Bact.* 34(4): 505-521. 1931.—A new series of graded collodion ultrafilter membranes is described. The principles and technique of membrane preparation are discussed in detail. The membranes are possessed of excellent uniformity and a wide range in permeabilities is available. They provide a basis for refined filtration methods so urgently needed in studies of filterable viruses.—*W. J. Elford.*

4415. KLIGLER, I. J., and L. OLITZKI. Cataphoresis experiments with typhus virus. *British Jour. Exp. Path.* 12: 69-74. 1931.—Experiments were done in both Todd's and Kligler's cataphoresis apparatus. The typhus virus was usually in the form of brain suspensions. In 1 or 2 experiments blood was used. Typhus virus wanders to the positive pole over the range pH 8—6; at pH 5 and 4 it is destroyed. It was impossible by cataphoresis to

obtain virus from tissues of animals recovered from typhus infection, as was done by Olitzki and his associates for other filterable viruses. It was impossible to separate virus from virus-antiserum mixtures by cataphoresis of suspensions at pH 6.0 and 8.6.—*J. Bland.*

4416. **Le SOUDIER, Mlle., et J. VERGE. Sur l'obtention de bactériophages d'après la technique de P. Rosenthal.** *Compt. Rend. Soc. Biol.* 106(10): 783. 1931.—Results were entirely negative.

4417. **LEVADITI, C., P. LÉPINE, et R. SCHOEN. Au sujet des neuro-infections mortelles autostérilisables. L'encéphalite herpétique du renard.** *Compt. Rend. Soc. Biol.* 100(14): 1166-1171. 3 fig. 1929.—A case of fatal autosterilizable encephalitis, induced by herpes virus injected into the brain and into the cornea, is described. Symptoms were similar to those of human lethargic encephalitis. Lesions of the nerve cells were not herpetic in nature. Fragments of the cerebral cortex, olfactory bulb, sciatic nerve, pancreas, adrenal and liver, when emulsified and injected into rabbits, gave no evidence of herpes virus.

4418. **LEVADITI, C., P. RAVAUT, P. LÉPINE, et Mme. R. SCHOEN. Sur les propriétés d'un virus pathogène pour le singe, présent dans certains bubons vénériens de l'homme.** *Compt. Rend. Soc. Biol.* 106(9): 729-730. 1931.—The inguinal glands of certain patients having venereal sores have the clinical aspect of inguinal lymphogranulomatosis and contain a filterable virus pathogenic for certain species of catarrhinic apes. This virus is destroyed by glycerine but can be conserved at least 10 days in the frozen cerebral tissue of infected animals. When administered intracerebrally, it causes in simians either a fatal meningo-encephalitis or a virulent disease without demonstrable lesions.—*E. Weiner.*

4419. **LEWTHWAITE, RAYMOND. Clinical and epidemiological observations on tropical typhus in the Federated Malay States.** *Bull. Inst. Med. Res. Federated Malay States* 1930(1): (1-42). 1930.—Observations are recorded of 164 cases of tropical typhus, so named to mark close similarity to the typhus of the western world, and to stress 2 differences; that, apparently, the disease did not flare up in devastating epidemics, nor was it louse-borne. 2 forms are noted: one is termed the "W" form (urban), the other the "K" form (rural or scrub). The former is of rarer occurrence. In clinical features the 2 appear to be identical; serologically they contrast sharply. Also, the W cases are largely among indoor workers; among the K cases, there are no indoor workers. It is apparently not a seasonal disease. The most hopeful lines of epidemiological investigation suggested lie in a search of the pruning coolie in the field for ectoparasites; examination of the fauna in material handled by the pruner; and identification of the ectoparasites of local rats.—*I. V. Hiscock.*

4420. **LOYGUE, M. Infection expérimentale du cobaye type Fontes-Valtis, obtenue avec le liquide céphalorachidien d'un malade atteint d'une forme particulière de méningo-encéphalite tuberculeuse.** *Compt. Rend. Soc. Biol.* 100(14): 1186-1187. 1929.—Of 2 guinea pigs injected with the cerebrospinal fluid (apparently negative for Koch bacilli), 1 died in 5 wks., with extreme emaciation as the only symptom. The 2nd, killed at 4½ wks., showed hypertrophy of the intertracheobronchial ganglia (negative for Koch bacilli) and a small sternal abscess containing large numbers of the bacillus. The author suggests a connection between the atypical lesions in the brain of the patient and the atypical (ultravirus) reaction of the animals.

4421. **MODROW, IRMENGARD. Filtration und Ultrafiltration des Maul- und Klauenseuchevirus.** *Zeitschr. Hyg. u. Infektionskr.* 110(4): 618-643. 1929.—In the Bechhold ultrafiltration method, a 1% acetic-collodion suspension of the virus is filterable, while a 9% suspension is retained. Strains of the virus vary in ability to pass the ultrafilter. Strain A passes the filter in 2.8% suspension while strains B and C are retained. It is now possible to separate A from B and C on the basis of ultrafilterability, and also to concentrate dilute suspensions by ultrafiltration. If the ultrafiltration results are taken as indicative of the size of the virus, one may conclude that strain A lies between litmus or egg albumin and hemoglobin; B and C are larger.—*D. H. Bergey.*

4422. **MONTEIRO, J. LEMOS. Presença de "rickettsias" nas cellulas endotheliaes da membrana de Descemet em animaes inoculados na camara anterior do olho com o virus do typhus exanthematico de São Paulo. (Nota preliminar.)** [Presence of rickettsias in the endothelial cells of Descemet's membrane in animals inoculated in the anterior chamber of the eye with virus of the exanthematous typhus of São Paulo.] *Brasil-Med.* 45(21): 468-469. 2 fig. 1931.

LOWER ANIMALS

4423. **ALSTON, J. M., and H. J. GIBSON. A note on the experimental transmission of "louping-ill" to mice.** *British Jour. Exp. Path.* 12: 82-87. 1931.—Berkefeld filtrates of the brains of sheep dead of "louping-ill" were inoculated intracerebrally into mice, with production of a disease characterized by tremors, unsteadiness of gait, muscle spasm, clonic convulsions, paralysis, and death. The disease bore considerable resemblance to louping-ill. Of 38 mice inoculated with control brain tissue 2 developed similar symptoms. The disease can be transmitted by mouse passage, is highly infectious, and is transmitted to uninoculated mice caged with the inoculated.—*J. Bland.*

4424. **BRUNO, BENEDICTO. A epizootia de Matto Grosso. [An epizootic at Matto Grosso, Western Rosario District.]** [With English abstract.] *Rev. Zootech. e. Vet.* [*Rio de Janeiro*] 17(1): 15-40. 1931.—In 1925 a peculiar, apparently infectious disease was observed in cattle, in a less degree in horses, and rarely in hogs. It has 2 distinct clinical types: a paralytic form, far more frequent; and a rabid one, rarely found. Symptoms are given in detail. Death occurs in 5-10 days, and losses have been large. The disease can be experimentally transmitted to sheep, goats, rabbits and guinea pigs. Dogs, especially, are resistant to all methods of inoculation. The main arguments against any relation to rabies are: Absence of rabid dogs in the regions and the resistance of these animals to the disease; resistance of pigeons to virus inoculation by the intraocular route; failure of the virus to survive in glycerol; differences in the symptomatology observed in rabbits and guinea pigs, when inoculated with rabies material or the Matto Grosso bovine virus; failure to detect Negri bodies in the horn; and undiminished period of incubation in guinea pigs inoculated in series.

4425. **DAUBNEY, R., and J. R. HUDSON. Enzootic hepatitis or Rift Valley fever. An undescribed virus disease of sheep, cattle and man from East Africa.** *Jour. Path. and Bact.* 34(4): 545-579. 3 pl. (2 col.). 1931.—A virus disease affecting sheep, cattle, goats and man is described from the Rift Valley, Kenya Colony. The disease causes a mortality of over 95% in very young lambs, abortions and a moderate mortality in ewes and cows, and a transient fever accompanied by severe pains in the region of the joints in man. The disease is not contagious, and there is evidence to suggest that it is transmitted by a mosquito.

4426. **GRAHAM, ROBERT, FRANK THORP, Jr., and W. A. JAMES. A filtrable virus-like agent in avian laryngotracheitis.** *Jour. Amer. Vet. Med. Assoc.* 31(4): 506-517. 7 fig. 1931.—Bacteriologically sterile filtrates prepared from composite laryngeal exudates and body tissues of naturally infected fowls in 2 outbreaks of laryngotracheitis inconsistently produced subacute inflammatory changes in the larynx of healthy fowls. The infective nature of the filtrate-induced disease was demonstrated by repeated transfer to healthy fowls. The acute type was not induced experimentally by sterile filtrates in intralaryngeal instillation, but symptoms approaching the acute malady were occasionally observed. The infective character of the unfiltered inoculum was demonstrated in susceptible fowls. Mandler filtrates were

less infective than unfiltered inoculum, as judged by symptoms and gross lesions. The bacteriologically sterile, filterable-virus-like agent in the laryngeal exudate of subacutely infected fowls remained viable at ice-box temp. for 30-60 days. The communicable character of the subacute disease of young chicks to mature fowls was demonstrated by direct laryngeal swabs.—*Authors' summary.*

4427. **GYE, W. E. A note on the propagation of Fujinami's fowl myxo-sarcoma in ducks.** *British Jour. Exp. Path.* 12: 93-96. 1931.—Fujinami's results on fowl myxosarcoma are confirmed. The tumor is capable of giving rise to tumors in ducks, and these are again transferable to chickens. In very young ducklings the tumor usually proves fatal. It can be transmitted to ducks by cell-free filtrates; transmission therefore depends on an adaptation to another species of bird, rather than on some peculiarity of the cancer cell, enabling it to grow indefinitely in a foreign host. This adaptation of a fowl tumor "agent" is striking evidence in favor of the view that the "agent" is a virus.—*J. Bland.*

4428. **JACOTOT, H. Un procédé pour conserver et pour transporter le virus pestique.** *Compt. Rend. Soc. Biol.* 106(9): 706-708. 1931.—Minced spleens from calves infected with rinderpest kept their virulence at 0° C. for 5-7 mo. Virulent blood, defibrinated and preserved in the same way, was not virulent in a dose of 5 cc. after 1 mo. Virulence of the spleen pulp was tested by injection into calves of 1 gm. of pulp, diluted just before using with 9 cc. of physiological saline.—*E. Weiner.*

4429. **KLIGLER, I. J. Recovery of fowl-pox virus from vaccines by cataphoresis.** *British Jour. Exp. Path.* 12: 42-45. 1931.—By cataphoresis it is possible to recover at the anode, active virus from phenolized and dried fowl-pox vaccines suspended in phosphate buffer solutions at pH 7.0. The virus was never found at the cathode. By direct scarification, active virus could be demonstrated in both vaccines prior to cataphoresis.—*J. Bland.*

4430. **SMITH, WILSON. Lesions of the adrenal glands of rabbits caused by infection with herpes virus.** *Jour. Path. & Bact.* 34(4): 493-503. 2 pl. 1931.—Some strains of herpes virus were found capable of causing specific necrotic lesions in both cortex and medulla of the adrenal glands. Lesions only occasionally followed introduction of virus into skin, testes or brain, whereas intravenous inoculation of an adequate dose produced them in nearly every case. Affected adrenals contained abundant herpes virus in the early stages and were always bacteriologically sterile. Typical herpetic intranuclear inclusion bodies were often present. Herpes-immune serum inoculated together with the virus in all cases prevented formation of adrenal lesions. Normal serum and vaccinia-immune serum had no such protective action.—*W. Smith.*

4431. **ZWICK, W., und J. WITTE. Über die Widerstandsfähigkeit des Virus der Bornaschen Krankheit gegen Trocknung und über Schutzimpfungsversuche mit getrockneter virushaltiger Gehirnsubstanz.** *Berliner Tierärztl. Wochenschr.* 47(3): 33-35. 1931.—Virus dried over $CaCl_2$ in vacuo and kept in a darkened refrigerator retained its pathogenicity for rabbits for 326 days. Repeated subcutaneous inoculation of dried infected rabbit brain protected rabbits against a lethal cerebral inoculation. Experiments are being conducted on the protective inoculation of horses with dried virus, instead of the formerly used glycerin virus.—*Authors' summary (transl. by A. L. Brody).*

BACTERIOLOGY AND OTHER MICROBIOLOGY

MEDICAL

JAMES S. SIMMONS, *Editor*

(See also in this issue Entries 4106, 4118, 4127, 4156, 4164, 4174, 4181, 4269, 4318, 4376, 4386, 4422, 4491, 4512, 4534, 4535, 4537, 4541, 4558, 4566, 4577, 4580, 4583, 5014)

4432. **BEMELMANS, E. Infection commensale streptococcique, cause initiale des grippes humaine et équine.** *Rec. Méd. Vét. École d'Alfort* 106(8): 462-474. 1930.—The author concludes from previous and present work that epizootic grippe in man and in horses depends exclusively on an original commensal streptococcic infection which is transformed by transmission of the infection to a diplococcic parasitic infection.—*Author's summary (transl. by G. G. De Bord).*

4433. **BÜRGERS, Th. J., Ed. Verhandlungen des Deutsch-Russischen Scharlach-Kongresses vom 11.-14. Juni, 1928, in Königsberg, Pr.** iii+400p. Th. J. Bürgers: Universität Königsberg, [1928].—The transactions include the following papers: Ueber die Epidemiologie des Scharlachs [Epidemiology of scarlatina], by **FRANZ SCHÜTZ**; Bedeutung stummer Infektion und stummer Immunität für Epidemiologie des Scharlachs [Significance of latent infection and immunity for the epidemiology of scarlatina], by **HANS REITER**; Scharlach-epidemiologie vom Gesichtspunkt stummer Immunisierung ("stiller Feiung") [Scarlatina epidemiology from the viewpoint of latent immunization], by **RUDDER**; Zur Epidemiologie des Scharlachs in Berlin [Epidemiology of scarlatina in Berlin], by **E. SELIGMANN**; Epidemiologie des Scharlachs in Lettland [Epidemiology of scarlatina in Lithuania], by **E. FEHRMANN**; Epidemie der Scharlach- und Diphtherie-Mischinfektionen in Tallinn-Reval (Estland) [Epidemic of mixed infections of scarlatina and diphtheria in Esthonia], by **F. v. BORMANN**; Zur Epidemiologie des Scharlachs in Königsberg [Epidemiology of scarlatina in Königsberg], by **W. NATORP**; Diskussion zur Scharlachepidemiologie [Discussion of scarlatina epidemiology], by **F. v. BORMANN**; Zur Epidemiologie des Scharlachs [Epidemiology of scarlatina], by **BÜRGERS**; Die allergische Theorie der akuten Scharlachfiebersymptome [Allergic theory of acute scarlatina symptoms], by **A. R. DOCHEZ, and FRANKLIN A. STEVENS**; Patho- und Hygionese der Scharlacherkrankung im Lichte der Lehre von den Streptokokkengiften und Gegengiften [Patho- and "Hygionese" of scarlatina in the light of the knowledge of streptococcus toxins and antitoxins], by **FR. v. GRÖER**; Ueber die Aetiologie des Scharlachs [Etiology of scarlatina], by **S. I. ZLATOGOROFF**; Zur Aetiologie und Pathogenese des Scharlachs [Etiology and pathogenesis of scarlatina], by **SELMA MEYER**; Zur Aetiologie und Klinik des Scharlachs [Etiology and clinical picture of scarlatina], by **SCHOTTMÜLLER**; Ueber die Differenzierung der Scharlachstreptokokken [Differentiation of scarlatinal streptococci], by **U. FRIEDEMANN**; Die Scharlachätiologie im Lichte der Gewebezüchtungsmethode in Vitro [Scarlatina etiology in the light of tissue culture methods], by **G. D. BELONOVSKY, and E. F. ROSENFELD**; Neues über Streptokokken und Streptokokkengifte [New light on streptococci and streptococcus toxins], by **H. DOLD**; Scharlachstreptokokken u. Scharlachbekämpfung [Scarlatinal streptococci and scarlatina control], by **GERHARD ELKELES, and KURT MARCUSE**; Beobachtungen über den Streptokokkus-Hämolytikus bei Scharlach-Rekonvaleszenten [Observations on the hemolytic streptococcus in scarlatina convalescents], by **WELIKANOFF, ELIAS METSCHNIKOW, and S. KORSCHUM**; Ueber die Aetiologie des Scharlach [Etiology of scarlatina], by **MANDELBAUM**; Diskussionsbemerkungen zur Anaphylaxietheorie [Observations on the anaphylaxis theory, with discussion by various investigators], by **FRIEDEMANN**; Die Aetiologie des Scharlach [Etiology of scarlatina], by **BÜRGERS**;

Die Dick'sche Reaktion [Dick reaction], by **H. KLEINSCHMIDT**; Ueber die bisherigen klinischen und therapeutischen Ergebnisse der jetzigen Scharlachepidemie in Königsberg [Clinical and therapeutic results of the present scarlatina epidemic in Königsberg], by **A. BÖTTNER**; Klinisches zur jetzigen Königsberger Scharlachepidemie [Clinical observations on the present Königsberg scarlatina epidemic], by **CURT FALKENHEIM**; Die Beteiligung des Zentralnervensystems beim Scharlach [Participation of the central nervous system in scarlatina], by **F. H. LEWY**; Scharlach und Geburtshilfe [Scarlatina and obstetrics], by **BENTHIN**; Neue Hämatologische Befunde bei Scharlach [New hematological findings in scarlatina], by **H. MOMMSEN**; Scharlach unter Usbekiern [Scarlatina among the Usbeks], by **GREKOW**; Zur Frage der Pathogenese und Behandlung von Scharlach im Zusammenhang mit Versuchen einer subduralen Einführung von antitoxischem Serum [Pathogenesis and treatment of scarlatina in relation to experiments with subdural introduction of antitoxic serum], by **N. KOTOW, and B. KOTLJARENKO**; Zur Serumtherapie des Scharlach [Serum therapy of scarlatina], by **H. DEICHER**; Die Auswertung des Scharlachserums [Evaluation of scarlatina serum], by **H. SCHMIDT**; Ueber ein neues Scharlachserum [New findings on scarlatina serum.], by **F. MEYER**; Zur Frage nach der Auswertung der antitoxischen Streptokokkensera [Evaluation of antitoxic streptococcus sera], by **S. W. KORSCHUN, W. A. KRESTOWNIKOWA, and A. M. TSCHEINY**; Die Serum- und Vaccinebehandlung des Scharlach [Serum and vaccine procedure in scarlatina], by **M. KIREEW**; Serotherapie bei Scharlach [Serotherapy in scarlatina], by **M. G. DANILEWITSCH, P. I. GOROCHOWNIKOWA, N. A. NIKITINA, and E. E. PESSIS**; Das Auslöschphänomen als Kontrollmethode der erfolgreichen Serumtherapie des Scharlach [Blanching phenomenon as a control method in successful serotherapy of scarlatina], by **BARDACH.** Scharlach und Nephritis [Scarlatina and nephritis], by **HUEBSCHMANN**; Die Pathogenese der Scharlachnephritis [Pathogenesis of scarlatinal nephritis], by **U. FRIEDEMANN**; Nephritis bei Scharlach [Nephritis in scarlatina], by **E. MAGNUS**; Diskussionsbemerkungen über Klinik, Dick-Reaktion und Serumtherapie [Discussions of the clinical phases, Dick reaction and serotherapy], by various investigators; Der Scharlach vom Gesichtspunkt des Sozial-Hygienikers [Scarlatina from the viewpoint of the social hygienist], by **ARTHUR SCHLOSSMANN**; Versuch einer aktiven Scharlachimmunisierung der Kinder in Moskau [Investigation of an active scarlatina immunization of children in Moscow], by **S. W. KORSCHUN, and A. A. SPIRINA**; Scharlachübertragung und Lüftungsstationen [Scarlatina transmission and fresh air stations], by **G. JUDALEWITSCH, B. LESCHKOW, and O. BAUER**; Ueber Schutzimpfungen bei Scharlach [Protective inoculation in scarlatina], by **S. I. ZLATOGOROFF**; Schutzimpfungen gegen Scharlach in Südprovinzen Russlands in den Jahren 1925 bis 1928 [Protective inoculation against scarlatina in the southern provinces of Russia, 1925-1928], by **M. STUTZER**; Zur Frage der lokalen spezifischen Scharlachprophylaxe [Local specific scarlatina prophylaxis], by **G. D. BELONOWSKY, and A. A. MÜLLER**; Scharlachschutzimpfung in Polen und ihre Erfolge [Scarlatina protective inoculation in Poland, and its results], by **FR. REDLICH**; Die Anwendung von Streptokokken-Antivirus Besredka's mit Rivanol bei Behandlung und Prophylaxe des Scharlachs [Application of Besredka's streptococcus antivirus with rivanol in treatment and prophylaxis of scarlatina], by **M. BARDACH**; Einige Erfahrungen mit den Scharlach-Schutzimpfungen nach Gabritschewsky in Riga (Lettland) [Some experiences with the scarlatina protective inoculations of Gabritschewsky in Riga], by **ARTHUR PLUHME**; Scharlach und Schule [Scarlatina and school], by **v. DRIGALSKI**; Scharlach und Schularzt auf Grund Königsberger Erfahrungen [Scarlatina and the school physician on the basis of Königsberg conditions], by **GENTZEN**; Prophylaxis und Scharlach [Prophylaxis and scarlatina], by **PETERS**; Ueber die Massnahmen der Bekämpfung des Scharlachs, deren Durchführung auf Grund der heutigen Erfahrungen im Rahmen der Gesundheitsfürsorge zu fordern [Measures for control of scarlatina], by **ASCHENHEIM**; Beiträge zur den pathologisch-anatomischen Veränderungen des Scharlachs [Patho-anatomical changes in scarlatina], by **KRITSCH**; Zur Dick-Reaktion, Klinik und Prophylaxe des Scharlachs [Dick reaction, clinical phases and prophylaxis of scarlatina], by **BÜRGERS.** An extensive bibliography of scarlatina literature is appended (p. 371-400).

4434. **CASTELLANI, ALDO. Fungi and fungous diseases.** 203p. American Med. Assoc.: Chicago, 1929. Price $1.50.

4435. **CASTELLIANI, ALDO. Certain bronchomycoses which may simulate pulmonary tuberculosis.** *Jour. Trop. Med. & Hyg.* 32(1): 1-8. 5 fig.; 17-22. 9 fig. 1929.—Discussion of cases of bronchitis and broncho-alveolitis of fungous origin, with detailed descriptions of the fungi found.—*K. Goodner.*

4436. **CHIRAY, M., M. LIÉGEOIS, et G. ALBOT. Etudes bactériologiques récentes relatives aux cholécystitis chroniques.** *Arch. Mal. App. Digest. et Mal. Nutrition* 21(1): 1-19. 1931.—Discussion of current views regarding the etiologic significance of organisms found in cultures from bile and tissues of diseased gall bladders. Evidence indicates that the bacteriology of simple cholecystitis differs from that in cholecystitis with cholelithiasis, but that constitutional and other factors play an important rôle.—*Frances R. Vanzant.*

4437. **CLOSE, H. G. Some observations on acute tonsillitis.** *Guy's Hosp. Repts.* [*London*] 80(1): 45-55. 1930.—From data on 25,629 cases of acute tonsillitis at Guy's Hospital over a 7-yr. period, the author concludes that this disease occurs more frequently among adults than is usually supposed. The peak of infection is reached in the autumn. Acute tonsillitis is more than a minor ailment. Like scarlatina, it usually has a hemolytic streptococcus etiology and similar biochemical changes in the blood.—*D. A. MacPherson.*

4438. **DINGER, J. E., et FRANÇOISE VERSCHAFFELT. Recherches expérimentales sur quelques souches de leptospires.** *Ann. Inst. Pasteur* [*Paris*] 45(3): 396-414. 2 fig. 1930.—A purified culture of a strain of *Leptospira* from the city water of Ghent was subcutaneously inoculated into 4 and intraperitoneally into 2 mice; the organisms were visible in the blood and peritoneal exudate 5 hrs. later, but the next day they had disappeared, having produced no injurious effects. A 2nd strain occurred in the urine of uninjected mice from Ghent. A 3rd strain was isolated from a patient with mud fever ("Schlammfieber"); it showed no relationship to pathogenic or saprophytic strains or to the *Leptospira* of icterohemorrhagic fever or Weil's disease. Repeated passage of these strains through mice indicated that they can be used instead of guinea pigs for study of leptospiras, that the organism infecting the mice of Ghent is not derived from water, and that the *Leptospira* of Weil's disease is not due to a progressive adaptation of aquatic leptospiras to man.

4439. **EARLAM, M. S. S. Urea-splitting staphylococci in urinary tract infections.** *Brit. Jour. Urol.* 2(3): 233-247. 1930.—When studied by Laidley's technique, 6 of 32 strains of *Staphylococcus pyogenes aureus,* 2 of 6 strains of *Staph. citreus,* 22 of 55 strains of *Staph. albus* and 1 of 7 other strains split urea more often than usually supposed. These strains did not differ otherwise from the other staphylococci, except possibly in having a greater tendency to infect the urinary tract.

4440. **ESCOMEL, E. A propos des ckara [kcara] pinta ou caratés dans le Sud du Pérou.** *Bull. Soc. Path. Exotique* 24(3): 215-222. 1931.—"Kcara" is the name given by Peruvians to all diseases discoloring the skin. The author distinguishes 3 "true kcaras," of which 2 are mycotic and contagious; the 3rd, non-mycotic. The 1st mycotic kcara is due to a *Penicillium* which produces red or bi-colored plaques; it is found in the valleys, and is known in Central America as "pinta" or "caratés." The other mycotic and contagious kcara is

caused by a fungus which the author does not further identify; it produces polychrome plaques—blackish, bluish, red and yellow. The 3rd, the "great white kcara," involves and blanches the entire skin of the body, giving it an artificial, translucent appearance like the skin of a blister and changing the racial appearance of the negro or Indian. It is not transmitted by contact, and the author's attempts to inoculate himself and another physician were unsuccessful. He insists that it is neither macular leprosy nor pellagra, though he believes that it is of alimentary origin associated with excess of maize products. He suggests that it may be due to a parasite which is favored by avitaminosis due to prolonged boiling of the maize.

4441. FEJGIN, BRONISLAWA. On the nature of the etiologic agent of typhus fever. *Jour. Prevent. Med.* 3(5): 391-404. 1929.—On the basis of isolation of organisms similar to, or identical with, *B. proteus X 19* from lice (carriers of typhus virus) and infected guinea pigs, the author suggests that this organism is the causative agent of typhus. He brings into consideration the rôle of bacteriophage as a factor in alteration of the organism and its virulence.—*M. S. Fleisher.*

4442. FRANK, MAX. Beitrag zur Kenntnis der Erreger der Colipyurie. *Arch. Kinderheilk.* 92(3/4): 254-269. 1931.—The strains of *Bacterium coli* isolated in 31 cases of pyuria in childhood (26 infants, 5 children) could be separated into 15 groups by biochemical behavior. Most frequent was a type corresponding to *Bact. neapolitanum;* the other frequent types were *Bact. coli communior, Bact. coli commune,* and 1 differentiated from *Bact. neapolitanum* only because it did not ferment dulcite. Most of the types of *Bact. coli* could be isolated from the intestine and vagina in healthy children of the same age.—*From author's summary (transl.).*

4443. GAMMEL, JOHN A., and E. E. ECKER. The virulence of Spirochaeta pallida in culture. *Arch. Dermatol. & Syphilol.* 23(3): 439-444. 1931.—Spirochaetes which may be morphologically typical and motile failed to infect rabbits 72 hrs. after removal of syphilitic tissues from the host, when inoculated intratesticularly. Similarly, in certain media (gelatinized human, sheep and rabbit sera) typical, motile spirochaetes were observed for a period of wks. and mos., but failed to grow in subcultures. These cultures also, even if they retained their morphologic characteristics and motility, did not retain their virulence for rabbits for more than 48 hrs. There is no parallelism between motility and virulence. At present no reliable culture medium is known in which virulent spirochaetes can be successfully grown.—*Authors' conclusions.*

4444. GIOVANARDI, A. Ricerche sull'origine intestinale di alcune infezioni acute (infezioni tifoidee e carbonchiose). II. [The intestinal origin of some acute infections. II.] *Bull. Sci. Med.* 101(4): 348-355. 1929.—Given by mouth in broth suspension, the paratyphoid B bacillus of human origin and the typhoid bacillus sometimes passed through the stomach of normal rabbits into the intestine. Adherent to leaves or suspended in milk, the human paratyphoid B, the Gärtner bacillus and the anthrax bacillus passed constantly and in considerable numbers into the intestine of rabbits or guinea pigs, there to be eliminated with the feces for about a week. The paratyphoid B bacillus, some hrs. after ingestion of infected food, began to traverse the intestinal walls, lodging first in the local lymphatic system, passing thence into the blood to be eliminated through the biliary system, and sometimes lodging for long periods in the liver, the spleen or the peripheral lymph-nodes. The Gärtner bacillus was found capable of producing in the rabbit a subacute and usually benign paratyphoid infection; administration of ox-gall conduced to mortality from septicemia. Intestinal anthrax infection was induced in rabbits and guinea-pigs by administration of germ-cultures on leaves or in broth. In the guinea-pig the infection seemed frequently to penetrate the intestinal wall, producing characteristic anatomo-pathologic changes. In the rabbit the passage of the paratyphoid bacillus through the buccopharyngeal mucosa to the submaxillary ganglia and the blood could not be experimentally produced.—*From author's summary (transl.).*

4445. GONZALEZ, SANTIAGO. Sobre la presencia de un bacilo paratuberculoso en los esputos. [Presence of Bacillus paratuberculosis in sputum.] *Rev. Soc. Argentine Biol.* 5(3): 107-109. 1929.—An organism is described, having the staining characteristics of *B. tuberculosis* but differing from it in growth on media and in absence of a capsule. The author deplores the practice of some bacteriologists in making a diagnosis of tuberculosis from simple acid-fast stains without additional tests of growth on media.—*A. R. Harnes.*

4446. GREEN, RICHARD. Some observations on the leprous reaction (synonyms: leprotic fever, the acute exanthem of leprosy; lepra reaction, etc.). *Trans. Roy. Soc. Trop. Med. & Hyg.* 22(4): 367-380. 21 fig. 1929.—This paper is mostly a review. As regards the theory of the leprous reaction, the author believes that it is an acquired condition of allergy towards *Mycobacterium leprae* already in the tissues. The most effective treatment in the majority of cases, according to the author is by desensitization with adrenalin or ephedrin.—*E. V. Pineda.*

4447. HASSELTINE, H. E. Recent progress in studies of undulant fever. [*U. S.*] *Public Health Repts.* 45(29): 1660-1667. 1930.—A review.

4448. HOEN, E., A. GRÜNFELD, und L. TSCHERTKOW. Bestimmung der Toxizität frisch gezüchteter Diphtheriekulturen in vitro mittels der Ringpräzipitation. *Centralbl. Bakt. I. Abt. Orig.* 107(6/7): 459-464. 1928.—Determination of the toxicity of filtrates of a few strains of *B. diphtheriae* in vitro by means of the ring precipitation test agreed with results in vivo.—*K. Goodner.*

4449. [IZABOLINSKIĬ, M. P.] ИЗАБОЛИНСКИЙ, М. П. К вопросу о безвредности штамма B. C. G. **[Innocuousness of BCG strain.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 211-216. 1930.

4450. JORDAN, PAUL. Über die Häufigkeit des Vorkommens von Streptokokken auf normaler Haut. *Arch. Dermatol. u. Syph.* 159(1): 152-155. 1929.—The author found pathogenic streptococci in about 15% of the healthy human skins examined.

4451. KUHN, M.-J. Evolution des lésions produites par le bacille bilié de Calmette et Guérin (BCG) chez le cobaye. [Development of lesions produced by BCG in guinea pigs.] *Compt. Rend. Soc. Biol.* 97(33): 1520. 1927.

4452. [LINDFORS-ALEKSINA, L. A.] ЛИНДФОРС-АЛЕКСИНА, Л. А. Выделение культур туберкулезных бацилл из патологического материала по способу **Hohn'a. [Isolation of tubercle bacillus cultures from pathological material by Hohn's method.]** [With French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(11): 1357-1362. 1929.—The pathological material consisted of 140 specimens of sputum, serous and purulent exudates, pus from bone lesions, and urine. Collaborators, employing the methods of Löwenstein and of Sumiyoshi, obtained positive results in 70%; the author, using Hohn's method, obtained positive results in 93-95%. This was true of bacterioscopically positive material; with bacterioscopically negative specimens, positive results varied, depending on material, from 15 to 58%. Obtaining 15% of cultures from bacterioscopically negative sputa confirms the opinion that many cases, formerly dismissed as abacillary, are, in reality, merely "oligobacillary." The large % of cultures obtained from pus taken from osseous lesions speaks in favor of bacillary rather than toxic origin of surgical tuberculosis.—*B. Van Rosen.*

4453. MATHIS, C., et C. DURIEUX. Entretien, au laboratoire, des souches de Spirochaeta duttoni. *Bull. Soc. Path. Exotique* 24(2): 150-153. 1931.—The virus of *S. duttoni* var. *crocidurae* was carried through 3 series of mice, one of 6 and the other two of 7 passages each,

cerebral emulsion being used for inoculation. The infections were mild and the few mice that died presented no evidence that death was due to spirochetosis. There was, however, no attenuation of virulence in the strain, for it was always possible to produce a fatal infection by using blood instead of brain substance.

4454. MAZZA, SALVADOR, y FORTUNATO CANEVARI. Ulceras blastomicósicas de la lengua. [Ulcerous blastomycosis of the tongue.] *Quinta Reunion Soc. Argentina Patol. Reg. Norte* 1: 226-230. 4 fig. 1930. —Characteristics of this disease are given but the causal fungus was not identified.

4455. MAZZA, SALVADOR, L. STÁBILE de NUCCI, y E. J. CANAL FEIJÓO. Blastomicosis cutânea de forma lenta por criptococo (n. sp.). *Quinta Reunion Soc. Argentina Patol. Reg. Norte* 1: 293-308. 21 fig. 1930. —Case report of a 10-yr.-old child of the Chaco region of Santiago, with ulcerous, scabby lesions of 7 yrs.' duration and of the appearance of tuberculous scrofula on the ears, upper lip, left hand, chin, knee, and nasal mucosa. Sections of the lesions taken at biopsy revealed a fungus in the tissue, and granulation with the foreign body type of giant cells. Subcutaneous inoculation of pulp into rats gave nodules of similar structure. A *Cryptococcus* was cultivated, which was agglutinated by serum of the patient to a dilution of 1:2560 and which produced a positive skin reaction when a warm suspension was injected into the patient. The fungus grows on ordinary culture media at room temp., but not at 37°. Cultural characters are given. It has been called *Cryptococcus mitis* Mazza, 1929.—*S. Mazza (transl. by G. H. Robinson).*

4456. MEISEL, H., et E. MIKULASZEK. Agglutination des bacilles isolés dans le rhinosclérome. [Agglutination of bacteria isolated in rhinoscleroma.] *Compt. Rend. Soc. Biol.* 97(33): 1495-1498. 1927.

4457. MOON, V. H., and H. L. STEWART. Experimental rheumatic lesions in dogs and in rabbits. *Arch. Path.* 11(2): 190-206. 14 fig. 1931.—Inoculations of *Streptococcus viridans* from a case of bacterial endocarditis in man, into 4 young dogs and 4 young rabbits, not previously sensitized, produced clinical features very similar to, and lesions identical with, those of rheumatic disease, strengthening the evidence that streptococci of low virulence are the direct cause of rheumatic disease.

4458. NATIVELLE, R. Un bacille des gangrènes cutanées. [A bacillus of cutaneous gangrene.] *Ann. Inst. Pasteur* [*Paris*] 45(2): 169-202. 11 fig. 1930.—*Bacillus gangrenae cutis* Milian was isolated from 14 cases of cutaneous gangrene. Morphologic and cultural characters are described.

4459. NEGRONI, PABLO. Actinomyces y actinomicosis experimental. *Rev. Soc. Argentina Biol.* 6(9/10): 539-552. 1930.—Intravenous and intraperitoneal inoculation of Actinomyces virulent for man did not infect guinea pigs or rabbits. Intratesticular inoculation gave typical lesions.—*J. T. Lewis.*

4460. NEGRONI, PABLO. Cryptococcus sp. aislados de epidermomicosis. [Cryptococcus sp. isolated from epidermomycosis.] *Rev. Soc. Argentina Biol.* 6(9/10): 648-652. 1930.—Description of cultural characteristics.—*J. T. Lewis.*

4461. OTTENBERG, REUBEN. The rate and location of removal of bacteria from the blood in human disease. *Arch. Path.* 11(5): 766-774. 1931.—While in 5 cases of bacterial endocarditis the number of bacteria in blood from the vein of the arm and of the 2 internal jugular veins were about equal, in 8 cases of lateral sinus infection the number of bacteria in blood from the arm vein was smaller than that in one or both jugular veins. In view of the regularity of appearance of the phenomenon in sinus cases, it was probably not due to examination exactly at the time of an occasional "shower" of bacteria, which are probably fed somewhat steadily into the general circulation. The rapidity of circulation makes dilution an improbable explanation for the difference in number of bacteria in the general circulation and in the infected vein, which is attributed to rapid filtration, the exact site of which is unknown, but certainly is not the peripheral tissues, since simultaneous cultures from a brachial or radial artery and 1 or more peripheral veins showed no significant differences in number of colonies in each.

4462. PANCOTTO, ETTORE. Contributo allo studio dell' influenza dei terreni avitaminati sulla virulenza batterica. [Influence of avitaminized culture media on bacterial virulence.] *Bull. Sci. Med.* 98(3): 137-143. 1926. —The author reports experiments with anthrax and colon bacilli and 3 anti-anthrax vaccines. He concludes that passage through avitaminized media does not increase bacterial virulence, but in some cases decreases it.

4463. PIAZECKA-ZEYLAND, E. Isolement du BCG des ganglions lymphatiques de cobayes vaccinés par ingestion. *Ann. Inst. Pasteur* [*Paris*] 45(4): 439-442. 1930.—From experiments, the author concludes that BCG introduced into the alimentary tract of newborn guinea pigs settles, at least in part, in the cervical and mesenteric ganglia, but survives for only a short time; and that the digestive tube of adult guinea pigs is less permeable than that of the newborn.

4464. PILLAT, ARNOLD. Bakteriologische Befunde bei Praexerosis corneae. *Graefe's Arch. Ophthalmol.* 125 (2): 173-206. 20 fig. 1930.—One of the earliest, most constant, and most important signs of prexerosis corneae caused by vitamin A deficiency is the bacteriological condition of the cornea, the most frequent organisms being, in order: xerose bacilli, pneumococci, staphylococci, diplobacilli, and Koch-Weeks bacilli; the first 2 may appear exclusively. The hitherto unknown appearance of staphylococci on the cornea is explained by the epidermal-like change of the corneal epithelium by continued mechanical stimulus. All these organisms are regarded as saprophytes which find degenerated epithelial cells their best medium. They were found not only on the cornea, but also on the bulbar conjunctiva and even in the palpebral conjunctiva in amounts exceeding any other disease. Frequently, Bitot's flecks show fewer organisms than the apparently normal, neighboring bulbar conjunctiva. In mixed cases of prexerosis and kerato-conjunctivitis eczematosa, fewer saprophytes are usually found than in uncomplicated cases of the deficiency disease.—*From author's summary (transl.).*

4465. PUNTONI, VITTORIO. (Preface by G. SANARELLI). Manuale di Microbiologica Medica. 750p. 327 fig. Studio Editoriale degli'Istituti Universitari Socrate Bucciarelli: Rome, 1930. Price 90 L.

4466. RIVAROLA, JUAN BAUTISTA. Investigacion de bacilos acidoresistentes en la sangre. [Investigation of acid-fast bacilli in the blood.] *An. Inst. Nacion. Parasitol.* [*Paraguay*] 4(4): 33-34. 1931.—Note on technique.

4467. SCOMAZZONI, T. Il pH del liquido cefalorachidiano e la sua influenza sulla spirocheta. [The pH of the cerebrospinal fluid and its influence on the spirochaete.] *Gior. Ital. Derm. e Sifil.* 71(4): 1216-1230. 1930. —In 20 cases of early syphilis (blood Wassermann positive and biologic reactions in cerebrospinal fluid either positive or negative), the pH of the fluid fluctuated within normal limits. In 4 of 6 cases of incipient general paralysis, the fluid (positive) showed a practically normal pH. Spirochaetes placed in the negative fluid from early syphilitic cases and positive fluid from cases of general paralysis showed no marked differences in survival. The author suggests that when such differences are observed, they are more probably due to differences in resistance of the strains of *Treponema* than to differences in pH of the cerebrospinal fluids.

4468. SIMIČ, T. V. Das Auftreten und die Bedeutung von Bakteriämie bei Diphtherie. *Zentralbl. Bakt. I. Abt. Orig.* 120(7/8): 385-392. 1931.—Of 22 clinical cases of diphtheria which came to necropsy, 7 yielded *B. diphtheriae* both from local lesions and from blood. Of 14 guinea pigs injected subcutaneously with cultures from several of these cases, 2 developed bacteriemia. It is concluded that this sporadic occurrence of bacteriemia

is due on the one hand to the virulence of the strain of bacilli, its capacity to multiply and produce toxins quickly, and on the other to the individual receptivity of the infected organism. Further experiment showed complete curative power of immune sera prepared by use of the toxins of the given strains of diphtheria bacilli, provided these were given at the right time. Ramon anatoxin was completely prophylactic against subsequent diphtheria infection.

4469. **SOROMENHO, L. Spirochaetes in the faeces of patients with blackwater fever.** *Lancet* 219(5593): 1015-1016. 1930.—In 7 cases (white) of blackwater fever, organisms were present and were identified as *Treponema eugyrata* Werner. Similar organisms were found in the feces of 2 natives with intestinal disorders. The author suggests the possibility that these spirochaetes are pathogenic rather than saprophytic.

4470. **SOSA, HECTOR. Detalle de técnica para el aislamiento del gonococo en las uretritis agudas. [Isolation of gonococcus in acute urethritis.]** *Rev. Soc. Argentina Biol.* 6(9/10): 678-681. 1930.—By diluting urethral pus in broth before inoculating agar ascitis plates, a considerable increase in the number of colonies is obtained. If inoculation is not made immediately, ascitic fluid should be added and the tubes kept at 18-22° C.—*J. T. Lewis.*

4471. **SPENGLER, GUSTAV. Die Bangsche Krankheit beim Menschen.** *Wien. Arch. Inn. Med.* 19(1): 145-198. 1929.—Infection with Bang's bacillus is generally produced by consumption of raw cow's milk or milk products. No cases transmitted from man to man are on record. Health departments should test all sera for presence of Bang's bacillus. During the disease, fever may appear suddenly or slowly; it is present periodically, alternating with normal temp. Sweating, neuralgia and arthralgia appear; the pulse is slow, and liver and spleen may be enlarged. Diagnosis is made by agglutination tests. 4 cases among 12 people were observed in 1 establishment. A latent infection may become obvious in connection with some other disease. Serum therapy has not been successful, but vaccination is promising. Milk should be pasteurized and contact with infected animals should be avoided.—*P. G. Heineman.*

4472. **TISSEUIL, J. Sur un cas de lepre nodulaire à évolution tuberculoïde secondaire.** *Bull. Soc. Path. Exotique* 24(1): 17-21. 1931.—At the outset, abundant bacilli were found in typical groupings; at a later stage, sections of the biopsy specimen revealed no bacilli but numerous Langhans giant cells—the 1st unmistakable observation of a secondary tuberculoid leprosy.

4473. **TROSSEL, IRENE von. Erfahrungen mit dem Tuberkelbacillen-Kulturverfahren nach Hohn.** *Beitr. Klin. Tuberk.* 73(5): 619-624. 1930.—By animal inoculation, 8 cases of clinically proved tuberculosis were positive, 8 cultures were positive, 7 were doubtful, and the remainder, negative. The cultures checked with the autopsies more often than did animal inoculations. A positive test by the Hohn method did not always indicate a pleuritis. A positive culture from the urine, however, was indicative of renal tuberculosis, but the type, whether "open" or "closed," was not indicated.

4474. **TYLER, JOSEPH R. Transmission of experimental trachoma by contact.** *Science* 70(1825): 612-613. 1929.—Note on transmission of *Bacterium granulosis* through caging together of inoculated and uninoculated *Macacus rhesus.*

4475. **WAIL, S. S. Die Tuberkulose der Haut und ihre Wechselbeziehungen zur Tuberkulose der inneren Organe. (Experimentelle Untersuchung.)** *Virchow's Arch. Path. Anat. u. Physiol.* 277(1): 115-129. 12 fig. 1930. —Intracutaneous inoculation of 108 guinea pigs, 5 rabbits and 3 monkeys, with tuberculosis, produced a cutaneous tuberculosis histologically very similar to human lupus. Intracutaneously inoculated animals lived 6, 8 or even 12 months, even when the dose of bacilli was large; similar doses given intra-abdominally or subcutaneously produced death in 1.5-3 mo. Intra-abdominally inoculated animals lived longer if an emulsion of cutaneous tubercles was used, than did animals inoculated with an emulsion made from tuberculous internal organs. Generalization begins soon after inoculation of the skin with tuberculosis, but the process is slow; in guinea pigs killed in the first months after inoculation, only an incipient tuberculous process, or none at all, was evident in the internal organs. The pathologic changes in the internal organs were less in those cases in which the cutaneous tuberculosis was marked than in those in which the primary changes in the skin were slight and transient. The fact that size of dose had less effect on severity of infection than localization (intra-abdominal or cutaneous) apparently indicates that the skin, unfavorable for tuberculosis, reduces the virulence of the bacilli.

BACTERIOLOGY AND OTHER MICROBIOLOGY

PUBLIC HEALTH

I. S. FALK, *Editor*

(See also in this issue Entries 3024, 3612, 4080, 4212, 4217, 4237, 4321, 4326, 4345, 4348, 4350, 4388, 4397, 4433, 4437, 4447, 4471, 4512, 4521, 4533, 4569, 4602, 4667, 4672, 4728)

4476. **ANDERSEN, C. W., and AXEL THOMSEN. On the occurrence of abortus bacilli (Bang) in commercial milk from dairies in Copenhagen.** *Acta Path. et Microbiol. Scandinavica Suppl.* 5: 53-57. 1930.

4477. **ARISTARKHOVA, O. Observations sur la peste endémique en Russie.** *Bull. Soc. Path. Exotique* 23(9): 901-904. 1930.—For 2 yrs. the author studied outbreaks of pneumonic and bubonic plague on the Kalmuck steppes, the wild rodents of the region and their parasites, and particularly the fleas (*Ceratophyllus tesquorum* and *Neopsylla setosa*), to which this communication is devoted. Placed in a test-tube, these fleas lived "a long time" without food, provided fresh air were admitted daily. A healthy rodent would acquire from 10 infected fleas an infection fatal in 8-9 days. Experimenting on herself with these fleas, the author found that they would attack man only when famished. This fact and the observation that outbreaks of human plague follow extensive fatalities among rodents indicate that the disease is spread in man when the fleas are driven by hunger to leave the dead rodents that have harbored them.

4478. **ATWOOD, GEORGE E. Undulant fever in Ware County, Georgia.** [*U. S.*] *Public Health Repts.* 45(24): 1343-1354. 1930.—9 of 11 cases of undulant fever occurring in 1929 (Waycross, Ga.) were investigated epidemiologically. All used raw milk (6 exclusively, 3 freely); 8 used raw milk from one dairy,—5 exclusively; 1 used raw milk exclusively from another dairy. Both dairy herds contained cows reacting positively to the abortus agglutination test. The evidence indicates that the cases were due to the porcine strain of *Brucella abortus* coming through the milk supply.—*Author's summary.*

4479. **BERGER, HERBERT. Zur Methode der biologischen Probenahme bei Trinkwässern. [Methods of sampling drinking water for biological testing.]** *Kleine Mitteil. Mitglieder Ver. Wasser-, Boden- u. Lufthyg.* 7 (1/4): 73-75. 1 fig. 1931.

4480. **COUGHLIN, F. E. Undulant fever.** *Pennsylvania Assoc. Dairy & Milk Inspect. Ann. Rept.* 6: 108-111. 1930.—52 cases of undulant fever have been discovered in Pennsylvania of which 29 occurred in 1929. The majority of cases were in rural communities, and most of them are apparently due to use of raw cow's milk

from abortus-infected herds. Efficient pasteurization offers the best solution of the problem.—*Author's summary.*

4481. **CRUCHET, RENÉ. The etiology of epidemic encephalitis.** *Practitioner* 124(2): 174-187. 1930.—The author holds that epidemic encephalitis is polymorphic, and that Economo's encephalitis lethargica is only one of the types of subacute or diffuse encephalomyelitis. He maintains that the disease originated among the French troops in 1915, in cases observed then and described by him in 1917; that Indo-Chinese soldiers engaged around Verdun, where the first cases occurred, later in the same yr. carried the disease back home with them; that from Annam it spread into China and thence along commercial routes back into Europe.

4482. **DUNN, C. L., and D. D. PANDYA. Chemistry and bacteriology of public health.** 412p. Butterworth & Co. Ltd.: Calcutta, 1929. Price 12s.

4483. **FRIEDBERGER, E. Weiteres zur Epidemiologie des Typhus.** [Epidemiology of typhus.] *Münchener Med. Wochenschr.* 74(30): 1280-1285. 1927.

4484. **GERSTEIN, H. H. Efficiency of chlorination at Chicago.** *Jour. Amer. Water Works Assoc.* 23(1): 53-62. 1931.—There appears to be a definite relationship between bacterial quality of raw and chlorinated water. The greater the turbidity of the water, the less the efficiency of chlorination. Using chlorination as the only treatment, Chicago has produced a water well within the U. S. Treasury Department standards, in spite of widely varying characteristics of the raw water. At Chicago, the efficiency is entirely dependent on strict supervision, which relies on continuity of operation and early detection of Cl-absorbing materials in the water. With the increasing trend of pollution by sewage and industrial wastes, Chicago is rapidly approaching a point where chlorination alone will not produce a safe water unless excessive amounts of Cl are used.—*Author's conclusions.*

4485. **GREENWOOD, M., E. M. NEWBOLD, W. W. C. TOPLEY, and J. WILSON. A further study of herd mortality under epidemic conditions.** *Jour. Hyg.* 30(2): 240-265. 1930.—The authors studied herds of mice, some in which pasteurellosis was the chief infection, and some in which aertryckosis caused most of the deaths. The q_x or cage-age mortality curve of a herd increases rapidly to a maximum and thereafter descends to an approximately constant level much above that of the q_x for normal mice of ages within the range of real, physiological age of animals living in the herds. At the latest ages under observation, the principal factor of mortality is still the specific factor, so that the advantage produced by selective mortality and active immunization is brought to a standstill far above the zero line. Exposure in a herd under the conditions used will not produce an ultimate population fully resistant to the specific factor of infection. It is probable that a large proportion of the members of a herd becomes infected early in herd life, and gradually increases in degree of immunity because variations of environmental conditions, so far as these are measured by the general herd mortality, become less and less influential on the ultimate mortality of the exposed, the later the point in time chosen for measurement. Study of the form of the age-mortality curve is still proceeding; at present the authors can not offer an adequate mathematical description of it which takes due account of the biological factors requiring attention. Provisionally, they attribute the difference in time of the maxima of the q_x curves of *Pasteurella* and *Bacillus aertrycke* epidemics to a difference of average interval between infection and death.

4486. **HAMER, WILLIAM. Epidémiologie ancienne et nouvelle.** 184p. Gaston Doin et Cie.: Paris, 1931. Price 32 fr.

4488. **HERELLE, F. D' The carrier problem.** *Yale Jour. Biol. & Med.* 3(1): 21-38. 1930.—Since animals susceptible to cholera and typhoid bacilli are not known, a study was made of a related disease (mouse typhoid) caused by a bacillus of the same group, *Bacillus typhi-murium* Loeffler. Among 8 mutants experimentally obtained, 6 were totally avirulent, in 1 the virulence was greatly attenuated, and with another it was maintained. This would imply that mice carrying any of the first 6 mutants would not have been infectious, while a mouse carrying the 8th mutation would have been as infectious as a sick mouse. It is concluded that in typhoid fever there are chronic infectious carriers, but possibly also carriers which are not infectious, and that the latter propagate an adapted bacteriophage antagonistic to infection. While typhoid is, strictly speaking, endemic throughout the world, rendered so by the persistence of chronic infectious carriers, epidemics being merely local flares of a perpetual pandemic, cholera is endemic in only 2 regions of the world, Bengal and Indo-China with the adjacent Chinese Province of Yunnan. From epidemiologic facts it is concluded that in cholera the carrier is never infectious. Transformation of the vibrio from virulent to avirulent form takes place at the time of bacteriophagy. These carriers are thenceforth protected from infection, and remain so as long as they remain carriers of the symbiosis; furthermore, other individuals become "contaminated" by them. This conclusion is reenforced by experiment regarded as conclusive. First experimentally producing *B. typhi-murium*-bacteriophage symbioses, the author shows that ingestion of such a completely avirulent symbiotic combination by mice protects them against ingestion of several times the fatal dose of virulent *B. typhi-murium*. Hence, it is declared that the sole agents in propagation of cholera are the "incubating" carriers and those with the disease. Moreover, bacteriological examination renders it possible to distinguish the infectious incubating carrier from the recovered or non-contagious contact carrier. In the first, the intestine contains a culture of pure vibrios; in the latter, there is a symbiotic culture, from which it is easy to isolate a bacteriophage which in vitro induces bacteriophagy of the cholera vibrio.

4489. **HOLST, AXEL. Einiges über Friedhöfe.** *Acta Pathol. et Microbiol. Scandinavica Suppl.* 3: 157-165. 1930.—The comparative merits of burial and cremation, from a public health standpoint, were considered, with reference to the popular and widespread belief that gases or emanations from cemeteries are a menace to health, particularly in epidemics. The author concludes that burial is as safe as cremation.

4490. **KHAN, SARANJAM. On the vibriocidal power of the water of certain rivers of India.** *Indian Jour. Med. Res.* 18(2): 361-365. 1930.—The rapid death (24 hrs.) of *Vibrio cholerae* in unboiled water from the Ganges and Junma rivers, as contrasted with its normal longevity (about 3 days) in boiled water from the same source, has been explained on the assumption that the water contains a volatile bactericidal substance (Hankin, 1896), or bacteriophage (d'Herelle, 1926). The author tested vibriocidal Ganges water by culturing *V. cholerae* in broth to which the water had been added, filtering through a Chamberland L 3 candle, and adding the filtrate to a fresh emulsion of *V. cholerae*. No evidence of a bacteriophage was found. He found that the vibriocidal property is destroyed by boiling the water in a sealed tube; is not restored to boiled river water by leading into it the volatile substances (if any) given off when the water is boiled; is destroyed by heating river water to 60°, 70°, 80°, or 90° C. for 15 min., or to 55° for 30 min., but not when heated to 50° for 15 min. The author believes that the death of the vibrios in river water is due to competition of other organisms for food; and that the prolonged life of the vibrios in boiled water is due in part to the elimination of competitors and in part to the fact that the dead bodies of these competing organisms serve as food for *V. cholerae.*

4491. **KLIGLER, I. J., and L. OLITZKI. The relation of temperature and humidity to the course of a B. enteritidis infection in white mice.** *Amer. Jour. Hyg.* 13(1): 349-361. 1 fig. 1931.—Experiments to elucidate the effect of climatic factors on enteric infection showed that white mice of the same stock and age infected with the same number of *Bacillus enteritidis* and kept at different

temp. and humidities react differently: At low temp. and high relative humidity (10°-12° C., and 90), infection is more severe than at higher temp. (20° and 30°) with the same humidity. Fatality rate is the same but incidence of liver abscesses is higher. At 30° mice kept at a relative humidity of 90 are more severely affected than those kept at 35. Under the latter conditions, development of infection is more rapid but it is mild or inapparent, clears up rapidly and leads to relatively few deaths in comparison with the high humidity group. At 20° a higher humidity seems more favorable than a lower one; but the differences are not marked. It appears that the critical factor is not temp. alone or humidity alone, but the combination of the 2, probably the so-called "effective temp."—*Authors' conclusions.*

4492. **KRAUSE, P. Weitere Erfahrungen über die Therapie der Typhusbacillenausscheider.** *Therapie Gegenwart* 70(3): 120-123. 1929.—After intravenous administration of salyrgan to dogs, the highest Hg percentage is found in the bile; less but still considerable in the suprarenals, kidneys and large intestine; some in the fatty tissues, liver, spleen, heart, pancreas, small intestine, stomach, blood and urine; and none in the bone-marrow or brain. In human and animal subjects, elimination is chiefly through the urine, and only in small part through the feces. Successful results are reported in the treatment of 2 typhoid carriers, 1 carrier of paratyphoid A, and 2 Gärtner bacillus carriers.

4493. **LEGER, MARCEL. Rôle non-exclusif des rats comme réservoirs du virus de la peste.** *Bull. Soc. Path. Exotique* 23(6): 564-568. 1930.—Facts suggesting or, in the author's opinion, proving the possibility of the existence of healthy human carriers of the plague virus.

4494. **MÜLLER, MAX. Die Latenz der tierischen Paratyphusinfektionen insbesondere der Schottmüller-infektionen als das entscheidende Moment für das Zustandekommen von Paratyphusepidemien tierischer Herkunft beim Menschen.** *Deutsche Schlachthofzeit.* 29(17): 273-277. 1929.—From a critical review of studies by himself and by others, the author concludes that, since latent animal infections are the decisive factor in causing paratyphoid epidemics in man, special precautions should be taken to prevent sale of infected meat. If animals which appear sick are slaughtered for human food the meat should be examined bacteriologically for paratyphoid organisms. In some instances paratyphoid bacteria have been isolated from apparently healthy animals and it is possible that meat or milk from such animals may cause paratyphoid fever or meat poisoning in man. —*F. W. Tilley.*

4495. **PRESCOTT, SAMUEL CATE, and CHARLES-EDWARD A. WINSLOW. Elements of water bacteriology: with special reference to sanitary water analysis.** 5th ed., rev. ix+219p. John Wiley & Sons, Inc.: New York; Chapman & Hall, Ltd.: London, 1931. Price 12s. 6d. net.

4496. **PUSEY, WILLIAM ALLEN. The care of the skin and hair.** Rev. ed. 182p. D. Appleton & Co.: New York, 1929. Price 5s.

4497. **RAGHAVACHARI, T. N. S., and S. V. GANAPATI. Some observations on the water of the Red Hills Lake at Madras (1925-28).** *Indian Jour. Med. Res.* 16(4): 1139-1147. 1929.—The water was first treated by slow sand filtration in 1914. It has never been of satisfactory quality because of obnoxious odors, due chiefly to H_2S, and lack of uniform quality. Studies of temp., stratification, dissolved O, nature and amount of organic matter, pH, and rainfall have been carried out since 1925. The lake is shallow and stratification, with excessive algal growth, occurs, and this settles to the bottom, putrefies and reduces the dissolved O. Further loss of O occurs in a 7-mile covered conduit leading to filter beds and on the beds themselves O decreases progressively and H_2S is generated. Aeration by passage of water through percolating filters, preceding slow sand filtration, has eliminated the obnoxious gases and a satisfactory water is now obtained.—*C. M. Hilliard.*

4498. **RAMSEY, GEORGE H. Yellow fever in Senegal, with special reference to the 1926 and 1927 epidemics.** *Amer. Jour. Hyg.* 13(1): 129-163. 3 maps. 1931.—Making due allowances for poor reporting, the recorded prevalence of the disease agrees with the theory that Senegal is an epidemic area. Since 1778, epidemics have been reported at irregular intervals with long periods between. All the reported cases were among whites; and the total number of these was insufficient to account for the wide geographical distribution of the disease. This negative finding, together with the mystery surrounding the origin of individual epidemics, leads to the inference that natives must have been attacked in numbers greatly exceeding the incidence among whites. There were, however, only a few observations of typical cases among natives. It was therefore concluded that the native population must have constituted a vast, but hidden reservoir of infection.

4499. **SHAW, THOMAS BROWN. With foreword by ARTHUR GASKELL. Naval hygiene.** 379p. 24 illus. Oxford Univ. Press: New York, 1930. Price 21s.

4500. **SHERMAN, J. M., C. N. STARK, and PAULINE STARK. Destruction of botulinum toxin by milk bacteria.** *Jour. Dairy Sci.* 11(5): 352-358. 1928.—It has been shown that certain bacteria commonly found in milk destroy toxin of *Clostridium botulinum.* Data reported in this and in a previous paper have shown that this destruction may be caused by *Streptococcus lactis, Lactobacillus casei, Bacterium coli, Bact. communior, Bact. aerogenes,* and *Proteus vulgaris.* It is believed that these results explain in part the fact that milk and dairy products are seldom if ever agents in dissemination of botulism. The fact that *Strep. lactis* and *L. casei* have the power to destroy botulinum toxin is of particular interest in connection with cheese, since in most types of cheese *Strep. lactis* is the predominating organism during early stages of ripening, while *L. casei* is one of the predominating organisms in all types of cheese during the later stages.—*Authors' summary.*

4501. **SMILEY, D. F., and G. F. MAUGHAN. Cold preventive work at Cornell University.** *Scientific Monthly* 32(3): 235-239. 1931.—A combination of old and new methods applied to groups of cold-susceptible male students resulted in a reduction of 42½ to 58.26% in cold incidence. Methods employed were: instruction regarding diet, sleep, ventilation and alkalinization; a 15 min. ultraviolet bath once or twice a week from October through April; use of mixed alkalies when colds threaten; in special cases, use of a vaccine.—*D. F. Smiley.*

4502. **SPENCER, R. R. The visible effect of castor-oil soap on certain organisms.** [*U. S.*] *Public Health Repts.* 45(24): 1354-1360. 1930.—Sodium ricinoleate, in appropriate amounts, completely clears bacterial suspensions of certain species in physiological saline. The density of suspensions of certain other bacterial species is increased by appropriate concentrations of sodium ricinoleate. The density of still other bacterial suspensions is increased at one concentration and decreased at another. The explanation of such changes is not yet apparent. Certain bacterial species grow in plain broth containing 1% sodium ricinoleate.—*Author's summary.*

4503. **TOMB, J. WALKER. Observations on the stability of chloride of lime, "stabilized" chloride of lime, and Perchloron in the plains of Bengal.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 553-567. 1927[1928].—As a result of tests the author claims that "Perchloron" is the preparation of choice for future use in hot countries in public health work, for all purposes for which bleaching powder is now ordinarily used.

4504. **TSURUMI, MITSUZO. Épidémie de peste bubonique et septicémique dans la Mongolie intérieure, en 1928. (Rapport de l'Office sanitaire de la Compagnie du Chemin de Fer Sud-Mandchourien.)** *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(2): 261-265. 1930. —Among the 50,000 rodents captured were 10 species of rats, 3 of squirrels, the jerboa, *Alactaga mongolica* (Radde), and *Myosparax epsilamus* Thomas. The rats known to carry bubonic plague are not numerous in

inner Mongolia, but the squirrels, *Citellus mongolicus* Thomas, *C. mongolicus umbratus* and *C. mongolicus* subsp., are abundant, especially the first-named, which Japanese experts have pronounced more sensitive to plague bacilli than any other laboratory animal. The period of spontaneous disappearance of the epidemic (winter) corresponds to the hibernating period of the squirrel; if domestic rats were responsible for the plague in Mongolia, it would be difficult to account for the non-occurrence of epidemics in winter. Among the squirrels captured were 36 which presented clinical signs of plague and from the organs of which was isolated a bipolar bacillus microscopically and biologically resembling the plague bacillus. For these and other reasons the commission concludes that squirrels are here responsible for the epidemics of bubonic plague.

4505. **VEAL, T. H. P. The disposal of sewage.** 173p. D. Van Nostrand Co., Inc.: New York, 1928. Price $4.25.

4506. **WEISSFEILER, J. Die Ursachen des Rückgangs der Tuberkulosesterblichkeit der Kinder.** *Zeitschr. Tuberk.* 59(2/3): 148-151. 1930.—Statistics in Prussia (1878-1927) show that, with the exception of periods of starvation (war, inflation, crisis), the infantile death rate from tuberculosis is parallel to the birth rate and the present drop is due to the drop in birth rate, not to control measures or to an increase in tuberculosis lethality in women of child-bearing age.

BACTERIOLOGY AND OTHER MICROBIOLOGY

FOOD AND INDUSTRIAL

E. B. FRED, *Editor*

(See also in this issue Entries 3561, 4217, 4494, 4500, 4540, 4567, 4796, 5031)

4507. **BORNAND, M. La recherche microscopique des coques de cacao.** *Mitteil. Gebiete Lebensmitteluntersuch. u. Hyg.* 22(3): 124-125. 1931.—Use of antiformin treatment and centrifugation of cacao shells as a method for studying their cellular elements and the microorganisms present.

4508. **BUNZELL, H. H., and MARION FORBES. A method for testing for ropiness of bread.** *Cereal Chem.* 7(5): 465-472. 1930.—Ropiness of bread is caused by *Bacillus mesentericus*. On hot, damp, summer days, infected bread develops ropiness in 36-72 hrs. While scrupulous cleanliness and disinfection are helpful, the only positive and immediate remedy is use of acid (vinegar or lactic acid, a mixture of the 2, or Ca acid phosphate). A dough at pH 4.5-5.0 appears to be safe. An amount of Ca acid phosphate slightly greater than 0.5%, based on the flour used, is adequate.—*E. Richman.*

4509. **FISHLOCK, W. C. Moisture and mould in copra under Western Province conditions.** *Dept. Agric. Gold Coast [Year-book 1929] Bull. 22.* 233-238. 1930.—Well dried copra (6% moisture) can be safely stored for long periods. Superficial grey-green mold may be regarded as harmless. Pernicious molds, i.e., black and brown, do not occur, since copra does not take up enough moisture for their growth. The experiment was continued for 62 weeks but no bad molds were present, though the copra was weevil-infested.

4510. **HAINES, R. B. The growth of micro-organisms on chilled and frozen meat.** *Chem. & Indust.* 50(27): 223T-227T. 1931.—A temp. of −5° C. was not sufficiently low to inhibit microbial growth on frozen meats. The experiments suggested that −10° is satisfactory. Figures are given for rate of growth of microorganisms on a stored carcass of lamb held at −5°, showing that there is at first a decrease in numbers, followed by an increase due mainly to growth of yeasts and molds. Biochemical studies, in which the increase in "soluble nitrogen" was followed, showed that appreciable changes may take place at 0° under optimum conditions for growth of microorganisms. Changes in frozen preparations at −3° and −5° were slight. Successful storage of chilled meats for long periods demands cleanliness of handling and careful control of humidity. Spoilage may occur through contamination with certain microorganisms. Results suggest that changes in fat also may be due in part to microorganisms.—*Author's conclusions.*

4511. **JARVIS, JOE W. Data on freezing strawberries.** *Fruit Products Jour. & Amer. Vinegar Indust.* 10 (11): 339-340, 353. 3 fig. 1931.—Best results were obtained with 3 parts of mature fruit to 1 of fine granulated manufacturer's sugar, with a syrup density of 60-70°. Balling-vacuum-closed cans were most satisfactory. Precooling before and after packing is advised and use of cold storage at 30-31° F. before freezing aids in syrup penetration. Temp. of −10 to +10° F. for freezing and 0 to −10° F. for storage are recommended.

4512. **JORDAN, EDWIN OAKES. Food poisoning and food-borne infection.** 286p. 20 fig. Univ. of Chicago Press: Chicago, 1931. Pr. $2.50.—This is not merely a revision of the former volume; it is entirely rewritten. The essential facts are presented simply and concisely, and the more important topics have received the greater attention. The vast amount of recent work on the paratyphoid-enteritidis group in the U. S. A. and other countries is critically analyzed and the conclusions are summarized. The chapter on botulism is complete, and the other topics, including food allergy, metallic poisons in foods, systemic diseases which may be transmitted by food, parasites from foods, poisonous animals and plants, are fully discussed. Each chapter has a bibliography of leading original articles. California, apparently in error, is not included in the list of States in which food poisoning is reportable. The antiquated term "ptomain poisoning" is relegated to its proper place.—*E. C. Dickson.*

4513. **KERTESZ, Z. I., and E. L. GREEN. Factors influencing the pectin content of stored apple pomace.** *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 179. 1-14. 1 fig. 1931.—Dried and ground apple pomace containing 7.5, 20, 33.3, 50, and 60% moisture was stored for 5 mo., and the amount of soluble pectin and acid-hydrolyzable pectin determined. Changes occur during storage which lower the quantity and quality of pectin extracted. These changes are caused by moisture content and are not of enzymic character. No growth of molds could be observed on artificially infected apple pomace containing 20% or less of moisture. In pomace stored with 33% moisture, molds grew and water-soluble pectin was decreased. In the sample containing 50% moisture, soluble pectin and that obtained by acid extractions were found to be less than in controls without mold infection.—*Z. I. Kertesz.*

4514. **LEIGHTON, G., and J. BASIL BUXTON. The distribution of Bacillus botulinus in Scottish soils.** *Jour. Hyg.* 28(1): 79-82. 1928.—A total of 100 soil samples from various counties of Scotland and 6 from the Isle of Man were examined. 2 produced toxic filtrates of *B. botulinus* Type A (first report for Type A in European soil); 1 sample yielded Type B; and 1 a toxic filtrate neutralized by both Type A and Type B botulinus antitoxin. 3 of these positive results were from soils of pasture lands and 1 was from a ploughed field.—*F. A. Rotondaro.*

4515. **PEDERSON, CARL S. Sauerkraut.** *New York State [Geneva] Agric. Exp. Sta. Bull.* 595. 1-23. 1931. —Preparation of sauerkraut from cabbage is described from the standpoints of both process and fermentation. Fermentation is normally carried on by bacteria that change the sugar to lactic and acetic acids, alcohol, mannitol, and CO_2. Use of starters prepared from various bacterial cultures is discussed. In general, starters are detrimental to a good fermentation; temp., proper covering, and correct salt content are of major importance.

A discussion is given of the various types of spoilage in sauerkraut, including the effect of direct contact with air, lack of sauerkraut juice, lack of or too much salt, improper temp., etc.—*C. S. Pederson.*

4516. **REISINGER, M. C. De beteekenis van de zuurgraadbepaling van vleesch.** [A method for determining pH in meat.] [With English, French, & German summaries.] *Tijdschr. Diergeneesk.* 58(14): 747-749. 1931. —In meat-inspection, estimation of pH by the comparator proved useful in detecting taint.

4517. **ROSENBAUM, ENGELBERT. Beiträge zur Kenntnis der Bäckereihefe. II. Die Schnelltriebhefen.** *Zeitschr. Untersuch. Lebensmittel* 61(1): 80-84. 1931.—Investigation of 9 quick-raising yeasts shows an advance in the yeast industry in regard to production of quick-raising yeasts. Total raising power is considerably better than that of other bakery yeasts.—*E. Rosenbaum (transl. by F. A. McDermott).*

4518. **[SAENKO, N. F.]** САЕНКО, Н. Ф. Изменение микрофлоры виноградного сусла в период брожения. **[Change in the microflora of wine must during fermentation.]** [With French résumé.] Записки Государственного Никитского Ботанического Опытного Сада. (*Jour. Govt. Bot. Gard. Nikita [Crimea]*) 12(3): 169-201. 4 pl. 1929.—Various grape wine musts were analyzed and the yeasts and other microorganisms determined. Cultures were grown in 10% must and in 2% agar media. It is concluded that locality exercises an effect on the kinds of microorganisms entering into the fermentation process.—*L. J. Pessin.*

4519. **SAGE, C. EDWARD. The possible effect of sulphur dioxide when used as a preservative for dried fruits, etc.** *Analyst* 56(664): 451-452. 1931.—Tests showed that "sulphured" fruit and "sulphited" pulps when moistened or diluted with syrup develop an objectionable amount of H_2S if fermentation by yeast sets in. If active yeast cells are present the syrups or mixtures should be pasteurized before bottling.

4520. **SALMONY, U. Ein neues Kühlverfahren durch Silica-Gel für Massentransporte von Fischen und anderen Lebensmitteln.** *Mitteil. Deutsch. Seefischerei-Ver.* 46 (10): 485-488. 3 fig. 1930.—A popular account of the silica gel refrigerator and its application to preservation of fish, frozen meat, etc.

4521. **SANBORN, J. R. Certain relationships of marine bacteria to the decomposition of fish.** *Jour. Bact.* 19(6): 375-382. 1930.—Marine bacteria are consistently present in and on fresh, smoked and frozen fish. They are active at relatively low temp. and many engage in proteolytic processes in fish muscle. Organisms of intestinal genera are invariably present in the visceral cavity of split fish and probably come from the alimentary tract. Among them are definitely putrefactive forms active in decompositions of fresh and frozen fish. Removal of contaminating material from the visceral cavity by washing is a wise precaution. Improved methods of handling will probably result in better keeping quality.—*Author's summary and conclusions.*

4522. **SCHAPOSCHNIKOV, W. N., und J. P. ZACHAROV. Reduktionserscheinungen bei Milchsäuregärung.** *Biochem. Zeitschr.* 216(4/6): 325-329. 1 fig. 1929.—Fermentative mixtures with additions of various reagents (methylene blue, nitrates, S, etc.) were inoculated with *Bacillus delbrücki*, and the latter was found to possess pronounced ability to form active H which not only serves to reduce added reagents but undoubtedly also intermediate products of fermentation.—*F. A. Rotondaro.*

4523. **VONDRAK, J., et F. NEUWIRTH. Sur quelques microorganismes provoquant l'inversion de la raffinade.** *Chim. & Indust.* 25(3 bis): 782-783. 3 fig. 1931.—Report on damage to damp sugar by *Penicillium, Aspergillus,* and *Torula* spp., with isolation of organisms, and pure culture infections of sugar.

4524. **VONDRAK, J. Sur quelques levures provoquant la fermentation des solutions concentrées du sucre.** *Chim. & Indust.* 25(3 bis): 783. 1931.—Note on fermentation of sugar and damage to candy by *Zygosaccharomyces, Willia* and *Torula.*

4525. **W. Zink und Hefegärung.** [Zinc and yeast fermentation.] *Wochenschr. Brauerei* 48(10): 99-102. 1931.—A review with bibliographical footnotes.

BACTERIOLOGY AND OTHER MICROBIOLOGY

SOIL

H. J. CONN, *Editor*

(See also in this issue Entries 3663, 3674, 4231, 4514, 4544, 4576, 4598, 4604, 4959)

4526. **BURKE, VICTOR, and NELSON J. HOHL. Cross inoculation with Rhizobium radicicolum.** *Soil. Sci.* 30(5): 407-411. 1930.—Root nodule bacteria were isolated from red clover, vetch and alfalfa, and composite stock cultures prepared from several typical colonies of each strain. Growing vetch and clover strains on sterile alfalfa root extract or exposing them to living alfalfa tissues for 3 mo. did not change their host specificity. When the 3 strains were cultured on clover, vetch and alfalfa root extracts, different strains and different cultures of the same strain varied in rate of growth, but the rate in homologous and heterologous extract was the same.—*E. V. Abbott.*

4527. **HINO, IWAO, and HAYAO MOMIKI. Active period of soil ciliates in rice straw decoction.** *Bull. Miyazaki Coll. Agric. & Forestry* 3. 43-47. 1931.—All species become active in rice straw decoctions within about 10 days after inoculation, with certain exceptions. Green house soil liberates active forms earlier than soils from other sources, but they generally have a somewhat shorter period than those in other soils.—*Authors' summary.*

4528. **JENSEN, H. L. Notes on a cellulose-decomposing soil fungus of an unusual character.** *Proc. Linnean Soc. N. S. Wales* 55(5): 699-707. 1 pl. 1930.—A fungus, probably a *Botryosporium,* was isolated from an English field soil with addition of manure. It proved very sensitive to acidity, pH 4.5 being very near the limit at which growth could be induced; good growth took place only above pH 6.0, with an optimum zone at pH 6.6-7.4, and possibly higher. In neutral or alkaline solution the fungus exerted a very strong cellulose-decomposing activity; in unbuffered physiologically acid solution almost none. Its sensitiveness to acidity is greater than that of any fungus hitherto studied in this respect. Morphology (briefly) and cultural and physiological characters are presented.—*From author's summary.*

4529. **JENSEN, H. L. Actinomycetes in Danish soils.** *Soil. Sci.* 30(1): 59-77. 1930.—Counts were made of actinomycetes in 56 Danish soils of different character. The numbers ranged from none or a few thousands to about 13 millions per gm. of soil. Nearly all strongly acid soils (pH less than 5) had very small numbers. The highest numbers seemed most frequent at pH 6.8-8. The % of actinomycetes in the total microflora on plates was 0-73%; this figure was very low in strongly acid peat soils; otherwise it showed no correlation with soil reaction. Apart from the reaction, there seemed to be no correspondence between general soil type and number of actinomycetes. Several strains isolated from these soils could be recognized as belonging to the following species-groups: (1) Common—*Actinomyces griseus, cellulosae, olivaceus, bobili, diastatochromogenus;* (2) fairly common to rare—*A. griseoflavus, violaceus-ruber, roseus, erythrochromogenus, pheochromogenus;*

new—*A. fulvissimus* (p. 66). The majority of the strains could not be related to definite groups. Strains of the same species-group often showed great differences in physiological characters, such as pigment production, ability to utilize carbohydrates, acid formation, nitrate reduction and proteolytic activity, although some of these characters remained relatively constant and appeared to have diagnostic value. Organic acids were sometimes formed from carbohydrates; this was always connected with nitrite production. On the whole, the "chromogenous" forms had a lower proteolytic power than the non-chromogenous. The ability of actinomycetes to resist acid reaction varied widely; the final acidity produced in a physiologically acid nutrient solution for each species-group was subject to less variation than most other physiological characters and may be of value for characterization and identification.—*Author's summary.*

4530. KOFFMAN, M. De egentliga jordprotozoerna. Deras ställning till andra jordmikroorganismer och deras roll vid de mikrobiologiska processerna i jorden. [The true soil protozoa: Their relation to other microorganisms of the soil and the part they play in the microbiological processes of the soil.] [With English summary.] *K. Landt. Akad. Handling. och Tidskr.* 70(4): 556-620. 3 pl., 6 fig. 1931.—The investigation yielded the following results: Protozoa in normal soils form an insignificant part of the micropopulation in regard to number, species and volume. Thus, in normal soil they would seem to exercise no appreciable effect on number of bacteria or other microorganisms present. Obtaining of data on the abundance of species and individuals in a soil of normal moisture depends on application of indirect methods involving development of cysts of aquatic protozoa that do not belong to the active inhabitants of the soil. Study of the metabolism of the soil directly under various physiological conditions and normal conditions of moisture confirmed the view that the microfauna of the soil exercises but an insignificant influence on soil microbiological processes. Vegetation experiments also showed that the improved fertility following soil sterilization is due, not to killing of the protozoa, but to other factors. This does not exclude the possibility that under abnormal conditions—e.g., in waterlogged soil or soil irrigated with sewage, as also in use of artificial substrates—results may be attained which tend to show that protozoa check the development of bacteria and are of fundamental importance for their metabolism.—*Author's summary.*

4531. KOSTIUK, FR. Azotobakterové zkoušky v moravských půdních typech klimatogenetických. [Azotobacter tests in the climatogenetic types of soil of Moravia.] *Věstník Českosl. Akad. Zem.* 6(5): 480-483. 1930.—The natural finding of *Azotobacter* and azotobacter reactions after inoculation were tried in separate horizons by the Christens mannite solution, either with or without addition of CaO. The natural occurrence of *Azotobacter* was observed only in the soil types having a saturated absorption complex, and in horizons of humus. The inoculation experiments showed distinct need of lime. Differences in intensity of reaction in separate horizons were not clear. On the development of *Azotobacter*, addition of Al_2O_3 has a positive influence without regard to pH.—*F. Kostiuk.*

4532. SEARS, O. H., and F. M. CLARK. Non-reciprocal cross-inoculation of legume nodule bacteria. *Soil Sci.* 30(3): 237-242. 1930.—Garden and navy beans were the only members of the legume groups which became infected by the nodule bacteria of Wood's clover (*Dalea alopecuroides*). In these, though abundant nodulation was produced, N fixation was less than ½ that fixed by the nodule bacteria normal to them. The nodule bacteria of sweet clover, red clover, soybean, and cowpea failed to produce nodules on Wood's clover. Although inoculation with the nodule bacteria of the garden and navy bean likewise produced no nodules, a peculiar root-knotting was often observed. However, all attempts to isolate bacteria from such knotted roots failed. In all cases, normal nodules were produced on Wood's clover when inoculated with pure cultures isolated from nodules on garden bean and navy bean that had been originally produced by Wood's clover nodule bacteria. —*F. A. Rotondaro.*

GENERAL BACTERIOLOGY

R. E. BUCHANAN, *Editor*

(See also in this issue Entries 3433, 3437, 3612, 3667, 3725, 4214, 4229, 4237, 4256, 4258, 4266, 4414, 4438, 4439, 4443, 4452, 4453, 4458, 4462, 4466, 4470, 4522)

4533. ADVIER, et PEIRIER. Mode d'action des huiles de Caloncoba et de leurs dérivés sur les bacilles acido-résistants. *Bull. Soc. Path. Exotique* 23(8): 767-772. 1930.—Experiments in vitro with tubercle bacilli on Heyden-Hesse medium showed that, within a month, oils of *Caloncoba echinata, C. glauca, C. welwitschii, Taraktogenus kurzii, Hydnocarpus anthelminthica,* and *H. wightiana* had exercised no inhibitory action. At the end of 3 months cultures covered with any of these oils had begun to die.

4534. ALLISON, V. D. Observations on the value of a copper sulphate tellurite medium for the isolation of diphtheria bacilli. *British Jour. Exp. Path.* 11: 244-248. 1930.—Results obtained in isolation of *Corynebacterium diphtheriae, C. hofmannii,* and diphtheroid bacilli from nose, throat and ear swabs are compared, using Douglas' medium and $CuSO_4$-tellurite-serum agar. They show well marked differences in % of organisms isolated, all cases being in favor of the $CuSO_4$ medium. The better results obtained with this medium are due to its greater selective action for diphtheria and diphtheroid bacilli, and to the powerful inhibitory action of the $CuSO_4$ on staphylococci, streptococci, and other commensal organisms of the nose, throat and ears. Different samples of $CuSO_4$ had different optimum concentrations in this medium, and it is suggested that cupri sulphere (A.R.) of British drug houses should be used in a concentration of 0.05%. Chloroform must not be used as a preservative for the serum. The agar must not be more acid than pH 8.0 before adding the trypsinized tellurite-serum and $CuSO_4$.—*J. Bland.*

4535. ASSIS, A. de. Sobre Alcaligenes lenis e sua verificação no homem. [A. lenis and its occurrence in man.] *Bol. Inst. Vital Brazil* 14: 3-13. 1930.—An Alcaligenes recovered from the blood of a girl with a mild typhoid-like disease in Niteroi, Brazil, is described, with detailed cultural characters. It grows well on plain agar with several variants of the *R*-colony form, all proving to be heat-stable in saline solution. Mice proved to be quite insusceptible to its introduction by cutaneous, peritoneal or venous routes; guinea pigs and rabbits appeared somewhat more susceptible, but without distinct symptoms or lesions; no toxin could be detected in old broth cultures. Specifically agglutinating and complement-fixing antisera could be prepared on rabbits; however, their titers were always very poor and the clumps assumed the granular type. A very slight clumping of the Rawlings strain of typhoid bacillus could be seen with these rabbit antisera, but uncharacteristic in nature. The microörganism is termed *Alcaligenes* lenis (p. 7) on account of its mild action on man and animals. —*A. de Assis.*

4536. BERTHO, ALFRED, and HANS GLÜCK. Die Bildung von Wasserstoffperoxyd durch Milchsäurebakterien. [Formation of H_2O_2 by lactic acid bacteria.] *Naturwissenschaften* 19(4): 88. 1931.

4537. BIANCHI, LUIGI. Ricerche batteriologiche sopra un caso di meningite purulenta. [Bacteriology of a case

of purulent meningitis.] *Boll. Soc. Med.-Chir. Pavia* 44(5): 589-613. 1930.—The author isolated from a fatal case of cerebrospinal meningitis an organism bearing a striking resemblance to the *Diplococcus meningitidis liquefaciens* isolated by S. and L. D'Antona from a similar case and by them offered as a new species. He believes, however, that the organism in question belongs to the *Staphylococcus pyogenes* group (in this case a superinfection on the meningitis) and that the species *D. meningitidis liquefaciens* therefore should not be preserved.—*From author's summary (transl.).*

4538. **BORDET, J., et E. RENAUX. L'influence du calcium sur l'évolution des cultures de charbon.** *Ann. Inst. Pasteur [Paris]* 45(1): 1-25. 1 pl. (col.) 1930.—Continued culture of anthrax bacilli on agar decalcified by addition of 0.1-0.2% neutral Na oxalate split the population into 2 types of colonies: Type A, rather flat and rough, tending to enlarge by formation of a narrow border; Type B, whiter, more convex and less rough, giving off plume-like expansions. Both types were spore-bearing and pathogenic. Grown on agar enriched with a little 1% solution of $CaCl_2$, this anthrax strain likewise split into 2 types, 1 of which was identical with Type B obtained on oxalated agar, the other, Type AA, was filamentous, non-spore-bearing, non-pathogenic for guinea pigs and incapable of producing in them any resistance to Type B. The viscid sheath sometimes seen covering anthrax colonies was perpetuated when these were transplanted to oxalated agar.

4539. **BORDET, PAUL. Influence du calcium sur les caractères des espèces microbiennes.** *Ann. Inst. Pasteur [Paris]* 45(1): 26-41. col. 2 pl. 1930.—Ca deficiency rather profoundly alters certain bacterial properties, e.g., it quite regularly and considerably increases sporulation. A bacterial species composed of 2 strains unequally rich in spores, under the influence of oxalation of the nutrient medium, shows a marked predominance of the strongly spore-bearing variety. Ca appears, then, as one of the factors of bacterial variability. Apparently it is a disturbance of this variability which explains the great increase in pigment-producing power of *Micrococcus prodigiosus* observed under Ca deficiency; it produces, in certain bacilli, considerable morphologic modifications by changing them into short elements, most frequently in forms of coccobacilli. These modifications, determined by the oxalation of the nutrient medium, have an essential characteristic—they do not involve decrease in vitality or alteration of hereditary potentialities; placed in contact with Ca the bacterium immediately resumes its normal characteristics.—*Author's summary (transl.).*

4540. **BUCHANAN, R. E., and ELLIS I. FULMER. Physiology and biochemistry of bacteria. Vol. III. Effects of microörganisms upon environment. Fermentative and other changes produced.** 575p. Williams & Wilkins Co.: Baltimore, 1930.—The first chapter (XIV) deals with the special physiological interrelationships of microorganisms—symbiosis, antibiosis, commensalism, metabiosis, synergism; the remaining chapters, with the effects of microorganisms on their chemical environment. Chapter XV deals with enzymes, their characteristics, formation, preparation, classification, occurrence in microorganisms, and theories of mechanism of action. Chapter XVI is a general discussion and classification of types of chemical changes produced by microorganisms. Chapter XVII deals with their action on inorganic materials; XVIII, on non-nitrogenous organic compounds, including a detailed discussion of various theories of fermentation; XIX, on nitrogenous organic compounds. The energetics of the reactions are considered in so far as data are available. Complete literature citations are given (133p.). There are 3 indexes—author, subject and microorganism.—*E. I. Fulmer.*

4541. **CALLERIO, CARLO. Ricerche culturali sul bacillo della tubercolosi. [Cultural studies of the tubercle bacillus.]** *Boll. Soc. Med.-Chir. Pavia* 44(2): 251-260. 1930.—Hohn's method (treatment with 10% H_2SO_4, centrifugation and direct implantation of the sediment on glycerinated, naturally acid egg and broth media [pH 5.8-6.8]) gave satisfactory results more readily than other methods; prolongation of time of treatment up to 4 days had no unfavorable influence. Intravenously inoculated (3 mgm. each) into as many rabbits, 10 strains of tubercle bacilli from human sources killed 4 of them with acute miliary tuberculosis about the 20th-30th days. The others survived to 3½ mos., indicating that under like conditions various strains of tubercle bacilli may show different degrees of virulence.

4542. **CALLERIO, CARLO. Sopra un metodo rapido di colorazione delle spirochete. [A rapid method of staining spirochaetes.]** *Boll. Soc. Med.-Chir. Pavia* 44 (2): 347-352. 3 fig. 1930.—By means of a solution of ammoniacal Ag.

4543. **CALMETTE, A., und J. VALTIS. Die filtrierbaren Elemente des Tuberkulosevirus. Präbazilläre Granulämie und Bazillose.** *Zeitschr. Tuberk.* 58(6): 402-407. 1930.—After reviewing the various steps in discoveries which have enlarged the conception of the causative agent of tuberculosis by addition of invisible, virulent, filterable elements, the authors announce that in 4/5 of 26 fetuses and infants of tuberculous mothers, they have been able to demonstrate intra-uterine transplacental infection with ultravirus. After 5 yrs.' effort with A. Saënz, they have cultivated this ultravirus on an egg medium enriched by a vitamin extract of erythrocytes, and have followed its development through a stage of dust-like granules into acid-fast bacilli appearing identical with Koch bacilli. The ultravirus has the transient capacity to produce an active but labile toxin; this capacity disappears as the granules are transformed into true bacilli.

4544. **CHARGAFF, ERWIN. Über den gegenwärtigen Stand der chemischen Erforschung des Tuberkelbazillus. [Present status of chemical investigation of the tubercle bacillus.]** *Naturwissenschaften* 19(9): 202-206. 1 fig. 1931. —A review.

4545. **[CHERNOV, G. I., and A. M. SIMSKAÏA.]** ЧЕРНОВ, Г. И., и А. М. СИМСКАЯ. К вопросу о действии липазы на палочки туберкулеза. **[Effect of lipase on Bacillus tuberculosis.]** [With French summary.] Вопросы Туберкулеза *[Voprosy Tuberkuleza]* 7(10): 1220-1228. 1929.—Lipase from aqueous solutions is not adsorbed by living or dead *B. tuberculosis*, nor does it penetrate. This refers to solutions of lipase preparations from pancreas, liver, lungs, and blood serum at pH 4.7-7.8; and to diluted blood serum at pH 7.3-7.5, with time of action 5-10 min. and 60 min., respectively. Koch's bacilli, exposed to solutions of the above preparations for 6-8 wks. at 38°, fully retain their ability to reproduce, and can even grow in these solutions; structurally, they show no alterations.—*B. Van Rosen.*

4546. **CHURCHMAN, J. W. Gram structure of cocci.** *Jour. Bact.* 18(6): 413-43. 1 pl. 1929.—Previous observations to the effect that exposure to certain tri-phenyl methane dyes reverses the Gram reaction of *Bacillus anthracis*, reduces its size and diminishes its wt. had justified the hypothesis that this organism is composed of a Gram-negative medulla and a Gram-positive cortex. Similar results could not be obtained by exposure of cocci and other Gram-positive organisms to these dyes. However, such results can be obtained by exposing certain strains of cocci to heat (52°C.), in which case a reversal of Gram reaction, a diminution in size and a loss of wt. are observed. The reaction is not constant for all strains. It is entirely prevented by addition of NA_2CO_3. This reversal of Gram reaction is not a death phenomenon. Suggestive, though not constant, results of a similar kind were obtained with yeasts. As a working hypothesis, it would appear not unlikely, from the observations made, that all bacteria may be placed in a Gram scale, at one end of which stand the constantly Gram-negative, at the other, the constantly Gram-positive organisms. The Gram-positivity of the latter group can only be upset with difficulty, if at all; it remains positive in spite of treatment which reverses the positivity of other positives. At a certain place in the scale, the Gram-negative reaction disappears; beyond this point

all organisms are, when examined in young cultures and by the standard method, Gram-positive. But the Gram-positivity of many of these species may be reversed; in some of them reversal is easily brought about, in others with difficulty. Some of the processes which reverse the Gram reaction of these Gram-positives, lead also to a structural change demonstrable by staining and associated with loss of size and wt. It seems likely that it is this structural change which is the basis of reversal. The absolutely convincing evidence regarding this view, which satisfactory cross-sections of bacteria would present, can not now be offered, since no successful technique has been developed for sectioning bacteria.—*J. W. Churchman.*

4547. **CLAUBERG, K. W. Weitere Mitteilung zur makroskopischen Diphtheriebazillendiagnostik.** *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 324-327. 1 fig. 1931.—A nutrient medium composed of equal parts of mixture A (1 part cattle or sheep blood, 2 parts distilled water) and mixture B (2 parts sheep blood, 1 part glycerol, added to make 5% of a mixture with 3% nutrient agar at pH 7.5, temp. 45-50° C.), the whole mixed with 4% of a 1% solution of K tellurite, is said to inhibit growth of the flora accompanying diphtheria bacilli and thereby to facilitate the macroscopic exclusion of negative cases.

4548. **CLEMENTI, A., e A. CASTELLI. Sulle condizioni in cui si manifesta l'attivitá antibatterica e antitossica della bile. II. Lo sviluppo del B. coli in presenza di bile o di taurocolato di sodio. [Effect of bile and sodium taurocholate on development of B. coli.]** *Arch. Sci. Biol.* 13(1/2): 221-234. 1929.—In presence of bile, growth of *Bacillus coli* is markedly retarded if the medium is acid in reaction, because of glucose fermentation or because of addition of lactic acid: there is no retardation if the medium is alkaline. The same is true in presence of Na taurocholate. Acid reaction is necessary for the appearance of the inhibiting action of bile because of the liberation of the biliary acids, precipitation of which carries down the bacteria.—*A. Jappelli.*

4549. **CONN, H. J. Methylene blue for staining the diphtheria organism.** *Stain Technol.* 6(2): 65-66. 1931. —A note calling attention to the fact that the medicinal grade of methylene blue is ordinarily better for this purpose than that labelled "methylene blue for bacilli." —*Author (courtesy Wistar Bibl. Serv.).*

4550. **DAWSON, MARTIN H. The transformation of pneumococcal types. II. The interconvertibility of type-specific S pneumococci.** *Jour. Exp. Med.* 51(1): 123-147. 1930.—Type-specific S pneumococci may be transformed from one specific S type into other specific S types through the intermediate stage of the R form. R forms of pneumococci, derived from any specific S type, may be transformed into S organisms of other specific types by subcutaneous injection into white mice of small amounts of living R forms together with vaccines of heterologous S cultures. S vaccines heated for 15 min. at 60°-80°C. are effective in causing R forms, derived from heterologous S types, to revert to type of vaccine; heated for 15 min. at 80°-100°, they are not thus effective. S vaccines heated for 15 min. at 80°-100° may cause 2 R and 3 R cultures to revert to original S type. S vaccines of any type, including Type I, heated for 15 min. at 80°-100° are not effective in causing 1 R cultures to revert to original S type. S vaccines heated as long as 2 hrs. at 60°C. are effective in causing R forms, derived from heterologous types, to revert to type of vaccine. A single-cell R strain, derived from a Type II S pneumococcus, was successively transformed into Type III S, Type I S and Group IV S. Corresponding with the various degrees of "degradation" of the R form, there are varying degrees of "development" of the S form. The nature of the conditions responsible for alternation of type as induced by these procedures was investigated and the causes responsible are discussed. All attempts to produce transformation of type in vitro were unsuccessful. The rôle which transformation of type may play in problems of infection and epidemiology is indicated. —*Author's conclusions.*

4551. **DORNER, W. CH. The negative staining of bacteria.** *Stain Tech.* 5(1): 25-27. 1930.—The author does not propose new methods, but calls attention to the value of Burri's India-ink technic and Fischer's use of nigrosin for negative staining of bacteria. The latter is particularly useful. The technique is as follows: Boil 10 gm. nigrosin in 100 cc. water about 30 min. Filter several times through the same filter-paper, adding 10 drops of formalin before the last filtration, as a preservative. Place a small loopful of this solution on a clean slide and add the bacteria with a needle or a loop. After mixing, spread the mixture a little irregularly on the slide and dry either at room temp. or slowly over a low flame. The preparation may be examined in oil immersion without use of a cover-slip.—*Author (courtesy Wistar Bibl. Serv.).*

4552. **FAVILLI, GIOVANNI. Untersuchungen über die Fähigkeit der Bakterien der Brucella melitensis-Gruppe, H_2S zu produzieren. Die Produktion von H_2S als Kriterium für die Differenzierung der verschiedenen Varietäten der Brucella-Gruppe.** *Zentralbl. Bakt. I. Abt. Orig.* 120 (1/2): 24-34. 1931.—Study of 108 strains of various members of the *Brucella* group, cultivated on liver agar, showed varying production of H_2S; thus: Brucellas isolated from cattle and swine (*Br. abortus*) produced much H_2S. Those isolated from goats, sheep and man (*Br. melitensis* and *Br. paramelitensis*) produced little or no H_2S; but those isolated from man infected with the undulant fever of cattle and swine (*Br. abortus* human type) produced H_2S regularly and abundantly, like true *Br. abortus*. The author believes that H_2S production is the most trustworthy method known for distinguishing the species.

4553. **FISCHER, ALFRED. Ergebnisse der Züchtung von Tuberkelbazillen aus dem Blut nach Löwenstein.** *Zeitschr. Tuberk.* 58(5): 331-334. 1930.—The method was successful in 31 of 77 cases. Löwenstein's method of demonstrating the presence of tubercle bacilli directly in the blood stream is destined to have greater importance for both diagnosis and prognosis than the other specific tests, including the tuberculin reaction.—*Author's summary (transl. by R. C. Whitman).*

4554. **GÄRTNER, ST., und J. PÁTER. Bakterienzählung in Aufschwemmungen auf photometrischem Wege.** *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 139-143. 1931.—The Pulfrich graduated photometer is used, the bacterial counts being calculated on the basis of light transmitted, against that transmitted by a standard suspension of the same bacteria of given depths.

4555. **GATTI, G. DELAMARE, y A. BATTILANA. No ácido-resistencia de algunos bacilos de Hansen en el jugo ganglioner. [Non-acid resistance of Hansen's bacillus in lymphatic ganglion extract.]** *Quinta Reunion Soc. Argentina Patol. Reg. Norte* 1: 420. 1930.

4556. **GORINI, COSTANTINO. La chimasi del Bacterium prodigiosum. [The chymase of Bact. prodigiosum.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 517-518. 1930.—The optimum temp. for *Bact. prodigiosum* chymase activity is 40° C., its activity being weaker at 50°.—*M. Comel.*

4557. **GRAVAGNA, M. Ancora sulla coltura artificiale del bacillo di Hansen fuori dell'organismo umano. (Ricerche batteriologiche.) [Culture of leprosy bacilli outside the human body.]** *Arch. Ital. Dermatol., Sifil. e Venereol.* 6(2): 202-206. 1930.—Negative results from Greco's technique confirm Besnier and Doyon's assertion that the method of artificial cultivation is still unknown.

4558. **GREKOWITZ, G. Ueber ein gramnegatives Stäbchen aus der Gruppe der hämoglobinophilen Bakterien (Bacterium haemophilum mucosum).** *Zentralbl. Bakt. I. Abt. Orig.* 112(1/2): 143-151. 1 pl. 1929.—From 4 cases of suppurative meningitis and from 1 of pleuropneumonia, a short gram-negative rod was isolated. It differed from the usual influenza bacillus in details of morphology (size, pleomorphism, and lack of polar staining) as well as in appearance of slimy colonies, the fact

that it was not absolutely haemoglobinophilic, character of capsule and tendency to cause suppuration. The author calls it *Bacterium* **haemophilum mucosum,** and places it in the group of hemophilic bacteria.—*G. Grekowitz (transl. by D. A. Koch).*

4559. GRUMBACH, A. Dissoziationserscheinungen an Pneumokokken. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 245-249. 6 fig. 1931.—In disagreement with Atkin but in agreement with Paul, the author finds that in pneumococci from 3 sources, daughter colonies are not identical with the R forms; the daughter colonies on ascites agar are never actually granular; they remain bile-sensitive, completely virulent, and on transplantation revert to papilla-bearing S colonies Thus they differ from the daughter colonies of *B. coli mutabile.* It remains to be seen whether or not the forms are really identical. Parallel with these morphologic dissociation phenomena frequently went the ability of the strains concerned to produce hemolysis in blood agar and blood bouillon in 48-72 hrs.

4560. GUSTAFSON, F. Streptococcus mast.—Streptococcus lact. Några kontrollförsök. *Skandinavisk Vet.-Tidskr.* 21(2): 41-47. 1931.—The author's studies indicate that the following methods for differentiation of *Streptococcus mastitidis* and *Strep. lactis* give tentative rather than conclusive results: coagulation of milk; color reaction in milk to which has been added litmus, indigo, carmine or methylene blue; growth in litmus milk at ± 10° C.; and hemolytic power. Several Danish investigators have come to the same conclusion in regard to the power of these 2 species to ferment different alcohols and sugars.—*From author's English summary.*

4561. HARRISON, F. C., H. L. A. TARR, and HAROLD HIBBERT. Studies on reactions relating to carbohydrates and polysaccharides. XXXIII. The synthesis of polysaccharides by bacteria and enzymes. *Canadian Jour. Res.* 3(5): 449-463. 1930.—Synthesis of a polysaccharide (levan) from simpler carbohydrates both by the agency of *Bacillus mesentericus* Trevisan and *B. subtilis* Cohn was studied. The action of these organisms is apparently specific in that they bring about polysaccharide formation only from carbohydrates containing a terminal fructofuranose residue in their molecule. A similar synthesis can be carried out by using the corresponding enzyme preparation from *B. mesentericus.*—*H. L. A. Tarr.*

4562. HARTWIGK, H. Zur Biologie mehrerer bei Meerkatzen (Cercopithecus) als Septikämieerreger festgestellter Streptokokkenarten. *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 341-347. 1931.—From 6 guenon monkeys dead of infection, 2 species of streptococci were obtained: 1 species, to which 5 of the strains belonged, was assigned to the type of *Streptococcus anginosus,* the other was assigned to the type of *Strep. mitior.*

4563. HAUPT, H. Kurze Mitteilung über einen zur Züchtung des Bact. abortus Bang geeigneten Nährboden. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 130-131. 1931. Essentially, a nutrient agar with addition of alcoholic solutions of bromthymol blue and basic fuchsin, the former as indicator, the latter to inhibit the growth of gram-positive bacteria

4564. HIMMELFARB, J. K., und E. W. SKROTZKY. Zur Differentialdiagnose zwischen dem Bac. pestis und dem Bac. pseudotuberculosis rodentium auf Kohlehydratnährböden. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 196-199. 1931.—In parallel tests on 11 strains of *Bacillus pestis* and 5 of *B. pseudotuberculosis rodentium,* good differentiation was obtained with a medium composed of 0.5% peptone water (pH 7.2-7.3) with 0.5% of a solution of maltose, levulose, xylose or arabinose (saccharose, dextrin, mannit and galactose gave no differentiation). Freshly isolated cultures reacted the same as old, avirulent laboratory strains.

4565. HOLSTER, STEPHEN G. The microbic dissociation of Hemophilus influenzae. *Yale Jour. Biol. & Med.* 3(4): 321-340. 2 pl. 1931.—A single S-type colony of *H. influenzae* was dissociated by subculturing through many generations, 5 colony types being observed: S, RS, O, Sm, and R. Sequence of colony types was: S → RS → O → R on solid, and S → O → Sm in fluid media. The dissociants differ markedly from the parent S-type in cultural characteristics and in cell morphology. Prolonged cultivation on artificial media appears to have been the essential factor in inducing the dissociation. Delayed subculturing and variations in temp. apparently have very little effect on rate of dissociation. *Staphylococcus aureus* growing in association with *H. influenzae* appears to inhibit the dissociation; *Streptococcus hemolyticus* in association on blood agar inhibits it but slightly. Blood infusion broth tends to inhibit the appearance of R-type dissociants; blood infusion broth agar, to assist in the dissociation. In a fluid medium, granular or agglutinated growth is usually associated with the R-type, but may be associated with an O- or Sm-type. A phenolized broth apparently hastens dissociation of the S-type, but has little, if any, effect on the stable R-type.—*From author's summary & conclusions.*

4566. HUBBARD, ROGER S., and JOHN K. DEEGAN. Note on the action of the colon bacillus upon the non-glucose reducing substances in human blood. *Jour. Biol. Chem.* 86(2): 575-577. 1930.—From blood filtrate, prepared by Benedict's method, the simple reducing sugars were removed by addition of yeast and fermentation for 10 min. After removal of the yeast and of blood protein by precipitation with tungstic acid, pasteurization, and neutralization, the filtrate was inoculated with an organism having the cultural and morphological characters of *Bacillus coli communis,* and incubated at 38° C. for 18-72 hrs. Reducing sugars were decreased during this incubation. The non-glucose-reducing substance or substances were not identified.

4567. HUCKER, G. J., and C. S. PEDERSON. Studies on the Coccaceae. XVI. The genus Leuconostoc. *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 167. 1-80. 6 pl., 10 fig. 1930.—A biochemical study was made of 80 strains and a survey of 86 additional strains of low-acid-producing types of streptococci (*Leuconostoc*). These cultures were isolated from slimy sugar solutions, from fermenting vegetables, and from milk and milk products. A survey of earlier work indicates that investigators studying fermenting vegetables, including sauerkraut, pickles, tomato products, etc.; those working with milk and milk products, such as starters, organisms from ripening cheese, etc.; and those studying organisms from sugar factories, have been dealing with identical or closely related organisms belonging in 1 genus. Study of a series of cultures has shown that they all produce approximately 45% levolactic acid from glucose, 20% CO_2, and 25% volatile products, including acetic acid and ethyl alcohol. In addition, the group produces mannitol from fructose and sucrose and a levulan or dextran from sucrose. These fundamental physiological characters give justification for placing these organisms in 1 genus, for which the name *Leuconostoc* has priority. Study of the morphology of the members of the genus shows that they are intermediate in form between streptococci and lactobacilli. Secondary physiological characters have been used for recognition of species within the genus. Of these secondary characters, fermentation of pentoses and sucrose were found most constant, and the species named are based on these reactions. The genus *Leuconostoc* is characterized and the 3 following species are recognized and described: *L. mesenterioides* Van Tieg.; *L.* dextranicus (*Lactococcus dextranicus* Beij.) (p. 67); and *L.* citrovorus (*Streptococcus citrovorus* Ham.) (p. 67).—*G. J. Hucker & C. S. Pederson.*

4568. ITANO, ARAO, and SATIYO ARAKAWA. Studies on Bacillus thermofibrincolus n. sp. III. Production of volatile acid and alcohol. VI [i.e., IV]. *Bull. Agric. Chem. Soc. Japan* 6(1/5): 17-18, 18-19. 1930.—Abstract. The species is not described here.

4569. IVANIĆ, STEVAN Z., and V. DIMITRIJEVIĆ-SPETH. Das Schichtröhrchen und seine Anwendung zur Sterilitätsprüfung und Züchtung aus Gemischen mit hemmenden Zusätzen sowie zur Untersuchung der "Tief-

enwirkung" von Desinfizientien, Immunstoffen und Bakteriophagen. *Zentralbl. Bakt. I. Abt. Orig.* 118(1/2): 91-101. 1930.—The stratum tube (consisting of an under layer of agar-gelatine with 1% dextrose and some China blue, and a top layer of nutritive broth) can be fractionally sterilized at about 95° without much mixing. Its practical applications are: Culture of pathogenic germs from mixtures of interfering substances; cultivation from clouding raw materials; sterility control of biological products; determination of specific colony inhibition in serum; liberation of bacteriophage; with bile as top layer, for cultivation from bactericidal body fluids. In this tube, inhibitors show striking differences in effect ("Tiefenwirkung") as compared with unstratified nutrients of the same kind. Experiments on bacteria which through various local changes can escape disinfectants temporarily in the depths, correspond more to the true behavior in the organism, in contrast with previous disinfection experiments in a closed liquid system.—*Authors' summary (transl. by W. A. Peabody).*

4570. **IVANOVICS, GEORG.** Ueber die Verfahren zur Anreicherung der Typhusbazillen. I. Die Bewertung der anreichernden Medien. *Zentralbl. Bakt. I. Abt. Orig.* 118(1/2): 101-107. 1930.—Müller's sodium tetrathionate bouillon is an ideal enrichment medium for typhoid bacilli, if the colon bacillus alone is to be dealt with. Good results are also obtained with sodium selenite bouillon, whereas brilliant green and malachite green are especially suitable for paratyphoid bacilli. The antagonistic action of the colon and typhoid bacilli is influenced by the medium used, in so far as it can hinder growth of colon bacilli. The enrichment media used were unable to influence the agglutinating capacity of typhoid bacilli.—*Author's summary (transl. by J. A. Bauer).*

4571. **KADLETZ, N.** Ueber die Rationalisierung der Methodik des Pipettierens bei bakteriologischen und serologischen Untersuchungen. *Zentralbl. Bakt. I. Abt. Orig.* 117(6): 431-432. 2 fig. 1930.—A double pipette is used, the outer sealed at the upper end, the inner open, the 2 connected by a rubber joint which allows the inner, sliding out, to take up, or, sliding in, to drop liquids.

4572. **KAUFFMANN, FRITZ, und CHIKAKO MITSUI.** Zwei neue Paratyphustypen mit bisher unbekanntem Phasenwechsel. *Zeitschr. Hyg. u. Infektionskr.* 111(5): 740-748. 1930.—The 2 new types were obtained from cases of acute gastro-enteritis; they are designated as "Brandenburg" (B group) and "Potsdam" (C group), respectively. The thermolabile antigen of the 2 types is identical, and bears no relation to that of Schottmüller, Breslau or Gärtner types, yet is closely related to that of the "Dar es Salaam" type, which belongs to the Gärtner group. In all 3 types, which are monophasic in the customary sense (not separated into specific and unspecific phases), a new alternation of phases (called α and β phases) was discovered in the thermolabile antigen. The α phase of the Dar es Salaam type, e.g., has the receptors "e," "n" and "w," while the β phase consists of the receptors "l" and "w." The thermostabile antigen of both phases is the same. According to Bruce White's scheme, then, the receptor formula of the Dar es Salaam type, hitherto regarded as a unit, is "e," "n," "l" and "w." Similarly, the Brandenburg and Potsdam types divide into the α phase "e-n-v" and the β phase "l-v," consisting thus of the receptors "e," "n," "l," and "v."—*Authors' summary (transl.).*

4573. **KLINCKOWSTRÖM, A. von.** Plagiocystia verrucosa n. g. et sp., eine neue Angehörige der Parasynascoten Bakterien. *Arkiv Bot.* 23A(3): 1-51. 39 fig. 1930.—The author adopts the Enderlein cyclogenetic concept for a new bacterial species obtained from the air, which he names **PLAGIOCYSTIA verrucosa** (p. 50). The genus is placed in the order Parasynascota Enderlein and the family Migulanidae Enderlein. It differs from the genus *Migulanum* (which contains the anthrax bacillus), in that cystites are produced; and from *Azotobacter*, in that branches are not formed. The organism is closely related to *Bacillus mesentericus*. An elaborate discussion of the life history, morphology, sexual and asexual reproduction is given. The author is convinced of the desirability of following the Enderlein terminology. He says "Früher oder später muss in den sauren Apfel gebissen werden."—*From abstract by C. E. Gabel.*

4574. **KOPELOFF, NICHOLAS.** Man versus microbes. xxiii+311p. Illus. Alfred A. Knopf: New York, 1930. Price $5.00.

4575. **LAPINSKI, ADAM.** Znaczenie proby siarkowodorowej w rozpoznawaniu laseczek grupy "Typhus-Coli." [The H_2S reaction as a means of differentiating bacilli of the colon-typhoid group.] *Pamietnik* 4(1): 9-12; French résumé, 42. 1928.—There are strains of paratyphoid A with which (as with paratyphoid B) H_2S blackens a Pb subacetate agar medium; therefore, this medium cannot replace Petruschky's litmus-whey. The Pb-agar medium has a certain application in differentiation of the colon bacillus from paratyphoid B and typhoid bacilli.

4576. **LLOYD, BLODWEN.** A marine denitrifying organism. *Jour. Bact.* 21(2): 89-96. 2 fig. 1931.—A marine denitrifying microorganism isolated from the Clyde Sea Area, and used for previous experimental work with Cranston on denitrification, is here described. It is named *Bacillus* costatus (p. 94), type cultures in American Collection of Type Cultures and British Collection of Type Cultures. The cultural, morphological and physiological features of this organism are given, and a summary of the experimental results is appended.—*B. Lloyd.*

4577. **LOEWENSTEIN, E.** Die Züchtung der Tuberkelbazillen aus dem strömenden Blute. *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 127-129. 1931.—A medium consisting of eggs and a solution of asparagin in glycerol and distilled water yielded better results than any other medium.

4578. **LORENTZ, FRIEDR. H.** Der Charakter der Diphtheriebazillenkörnchen. *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 331-341. 1931.—Experiments reported show that granule formation distinguishes diphtheria from pseudo-diphtheria bacilli, and also permits recognition of 2 types of diphtheria bacilli: (1) short cell bodies with thick shapeless granules; (2) long cell bodies with small spherical granules. Enrichment of the medium with N promotes cell division and growth, but not granule formation; S promotes granule formation. Slow growth or unfavorable conditions (low temp., insufficient nutrition, etc.) favor granule formation in the separation of types. Icebox temp. with liberal addition of S gives the long-bodied cell type with fine granules.—*Author's summary (transl.).*

4579. **MIRONE, GIUSEPPE.** Die entfärbende Wirkung der chinesischen Tusche in der mikroskopischen Technik. Methode zum Nachweis der Sporen. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 252-253. 1931.—The best preparations are made by staining the material, spread on a slide, with fuchsin Ziehl, covering with a thick layer of India ink, after 2 min. washing off with distilled water, and staining again with methylene blue. The microscopic field thus appears colorless, the vegetative portion of the organism blue, and the spores, with dark capsules, red.

4580. **[MODEL, L. M.]** МОДЕЛЬ, Л. М. О биохимизме питания и роста туберкулезных бацилл. [Biochemistry of nutrition and growth of tubercle bacilli.] [French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(11): 1362-1369. 1929.—The author studied synthetic media in comparison with the classical glycerin, meat-peptone bouillon medium. Results showed that a simple synthetic medium, correctly compounded, is superior. K, Mg, PO_4, and SO_4 are indispensable; Ca, Na, and Cl are not necessary. The ammonium ion is the source of N. Presence of anion of complex organic acid is required for the assimilation of Mg. The best source of carbon is glycerin; carbohydrates in this sense are secondary in importance. Optimum Ph is 7.5. Na oleate hinders growth, as do other surface-active substances. When the surface tension of the medium

is below 0.700, growth becomes impossible. Lipoids (surface-active substances) play an important part in the resistance to tubercular infection.—*B. Van Rosen.*

4581. **MONTI, ACHILLE.** Sulla biologia dei ferrobacteri contenuti nelle acque di Pavia. [Biology of the iron bacteria living in the waters of Pavia.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 845-846. 1930.—An iron bacterium was cultivated, probably *Chlamydothrix crassa,* admitted to be identical with *Chlonothrix fusca.*—*M. Comel.*

4582. **MUNTSCH, OTTO.** Ein Beitrag zur kulturellen Keimzählmethode. [Contribution to the methods of counting in bacterial cultures.] *Centralbl. Bakt. I. Abt. Orig.* 114(4/6): 438-445. 1 fig. 1929.

4583. **PELLEGRINI, ENRICO.** Contributo allo studio morfologico dell'Heliconema vincenti-Sanarelli. (Osservazioni eseguite direttamento sul pus di un paziente affetto da otite media purulenta cronica.) [Morphological study of Heliconema vincenti Sanarelli. Direct observations on the pus of a patient with a chronic purulent otitis media.] [With German summary.] *Lo Sperimentale* 84(5/6): 515-528. 1 pl. 1930.—Various dissociation forms of the organism, previously described in cultures, were observed in exudate directly from the patient.—*Maud L. Menten.*

4584. **PESCH, KARL L.** Das "Kolonoskop," ein Projektionsapparat für Kolonienzählung in Plattenkulturen. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 254-256. 5 fig. 1931.—This "colonioscope" furnishes sufficient magnification to permit recognition of exceedingly small colonies, counting of colonies on thickly grown culture plates, and observation of interesting colony forms, e.g., those of anthrax, gyroides and mycoides.

4585. **PETROFF, S. A., and WM. STEENKEN, Jr.** Biological studies of the tubercle bacillus. I. Instability of the organism—microbic dissociation. *Jour. Exp. Med.* 51(6): 831-845. 1930.—The authors describe the cultural characteristics, with special reference to topography of colony formation and virulence according to colony type, for study of which new methods and media were devised. 3 types of colonies were dissociated from avian tubercle bacilli: (1) perfectly round, smooth, easily emulsified, growing best on alkaline media, and highly pathogenic for chickens; (2) flat, moist with smooth surface and emulsified with difficulty; (3) flat and dry, center giving appearance of small pebbles, difficult to emulsify. (2) and (3) were not as virulent for chickens as (1). 3 colony types were dissociated from bovine tubercle bacilli: (1) perfectly round, smooth, moist, emulsified easily, growing best on alkaline media, highly pathogenic for guinea pigs and rabbits; (2) flat, moist, smooth surface and raised center, growing best on acid media and producing less extensive tuberculosis in laboratory animals; (3) flat, dry, structure appearing as small pebbles, emulsified with difficulty in saline, and only sometimes pathogenic for guinea pigs and rabbits. From BCG cultures, 2 extreme colony types were dissociated: (1) large, flat with large folds, appearing very waxy, growing best on acid media and non-pathogenic for guinea pigs and rabbits; (2) large flat colony, center appearing like a honey-comb, periphery veil-like, growing best on alkaline media and pathogenic for guinea pigs and slightly so for rabbits. Human tubercle bacilli were not yet completely dissociated; they present a number of variant unstable colonies. Reversion of types has been accomplished by changing the environment.—*Dorothy Diment.*

4586. **POE, CHARLES F.** Growth of anaerobes in crystal violet bile media. *Jour. Bact.* 19: 117-24. 1930.—Peptone-lactose broth containing varying amounts of bile and crystal violet were tested with anaerobes, a number requiring a dye concentration greater than 1:1000 to inhibit growth. *Clostridium welchii,* type 11, was most resistant. In bile media without dye, most anaerobes grew well at a bile content of 1-15%. Crystal violet in concentrations over 1:75,000 in lactose broth inhibits most anaerobes except *Cl. welchii,* type 11. Bile destroys the inhibitive power of crystal violet for most anaerobes.—*C. F. Poe.*

4587. **RICHTER, OSWALD.** Natrium ein notwendiges Nährelement für eine marine mikroärophile Leuchtbakterie. *Akad. Wiss. Wien. Math. Nat. Kl. Denkschr.* 101: 261-292. 2 pl. 1928.—Na has 2 functions as a constituent of a medium for growth of *Bacterium phosphoreum* (Cohn)—one as a necessary nutrient, the other as a regulator of osmotic pressure. The latter function can be equally well performed by any of a large series of common salts. The former is confined specifically to Na salts, these not being replaceable by K or Mg. Minute traces of Na salts are sufficient. Enough can be added to the medium by the ordinary method of transferring cultures with a wire loop. 2-3% NaCl is the optimal concentration for maximum growth and luminescence.—*R. D. Coghill.*

4588. **ROLIN, MICHEL.** La forme des bactéries. 160p. Humblot et Cie: Nancy, 1929.

4589. **RIMPAU, W.** Zur Anaerobenzüchtung. [Culture of anaerobes.] *Zentralbl. Bakt. I. Abt. Orig.* 120 (1/2): 143-144. 1 fig. 1931.—Apparatus based on the principle of the Magdeburg hemispheres.

4590. **SAFFORD, CLAIR E., and MOYER S. FLEISHER.** Method for staining bacterial flagella. *Stain Technol.* 6(2): 43-45. 1931.—The following method is recommended for use on smears made from suspensions of 10-16-hr. agar-slant cultures, incubated 30 min. at 37° C. before spreading on cleaned and flamed slides: (1) Cover with fixative (100 cc. of ¼ saturated aqueous solution picric acid, with 5 gm. tannic acid and 7.5 gm. ferrous sulphate). 2. Wash with tap-water, dry, and cover with Fontana spirochaete stain; heat to steaming and allow to act for 1-2 min. Wash in tap-water. The stain is prepared as follows: To 25 cc. 2% $AgNO_3$ add dilute NH_3 till the precipitate which forms redissolves; then add more $AgNO_3$ till a faint turbidity results. A clear solution is useless.—*Authors (courtesy Wistar Bibl. Serv.).*

4591. **SAVINO, E., y C. ACUÑA.** Conservación de la virulencia del Diplococcus pneumoniae. [Preservation of virulent pneumococci.] *Rev. Soc. Argentina Biol.* 6 (9/10): 682-685. 1 fig. 1930.—Virulence is maintained when kept dried in vacuo.—*J. T. Lewis.*

4592. **SCHWARZ, F. K. THEO.** Ein neuartiger Objektträgerhalter. *Zentralbl. Bakt. I. Abt. Orig.* 117(4/5): 319-320. 1 fig. 1930.—This holder for object slides is recommended for its simplicity, convenience and the ease with which it can be disinfected.

4593. **SHAW, FREDERICK W.** Sterilization of cystine culture medium under steam pressure. *Jour. Lab. & Clin. Med.* 16(3): 294-295. 1930.

4594. **SHREWSBURY, J. F. D.** Giant colony culture. *Jour. Path. & Bact.* 34(2): 283-285. 1 pl., 1 fig. 1931.—A simple and inexpensive method of cultivating giant colonies of bacteria and fungi is described, medicine bottles being used as containers for the culture media. The method enables a satisfactory photographic record of a colony to be made.—*J. F. D. Shrewsbury.*

4595. **SIEVERS, H., und E. MÜLLER.** Untersuchungen über den Stoffwechsel des Bacillus tetani. [Metabolism of B. tetani.] *Zeitschr. Biol.* 86(6): 527-534. 1927.

4596. **SONNENSCHEIN, CURT.** Umwandlung von Gelbkeimen in Typhusbakterien? *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 40-47. 1931.—Using 5 strains of the organism called *Bacterium typhi flavum* by Dresel, v. Gara and Stickl (who claimed by special culture to have transformed 7 of 45 strains into typical typhoid bacilli), the author was unable to produce any such change of the yellow bacteria into anything similar to typhoid bacteria, nor the reverse.

4597. **SUNDERLIN, GERTRUDE, and C. H. WERKMAN.** Synthesis of vitamin B by microörganisms. *Jour. Bact.* 16(1): 17-33. 8 fig. 1928.—Synthesis of vitamin B by such biologically separated genera as Torula, Oöspora, Actinomyces and 4 genera of Eubacteriales reveals a general occurrence of its synthesis among widely

separated groups of lower plant forms. Whatever its chemical structure, vitamin B is a constituent prevalent in microörganisms; specifically, the following were found to produce it: *Torula rosea, Oospora lactis, Bacillus adhaerens, Bacterium coli, Bacillus subtilis, B. mycoides, Azotobacter chroococcum, Rhizobium leguminosarum,* and *Actinomyces.* Results showed no marked differences in ability of 3 strains of *Bact. coli* to synthesize vitamin B. Drying at 37° or at 100° C. for 48 hrs. does not materially diminish the vitamin potency of the bacterial mass. Several reasons are suggested to account for discrepancies in the literature dealing with synthesis of vitamin B by microörganisms. The conceptions and definitions of the vitamin are not in accord. After limiting by definition the meaning of the term to the legitimate conception expressed by Drummond, the authors find a multiplicity of methods employed to determine synthesis of a vitamin by microörganisms. Important among them are quantity of organism fed, period of feeding and time allowed for rats to become accustomed to the bacterial diet, manner of feeding organisms to rats, species of animal used as indicator.—*From authors' summary and conclusions.*

4598. SVARTZ, NANNA. Contribution à la question de la classification des clostridies iodophiles de l'intestin. *Acta Med. Scandinavica* 71(1/2): 1-9. 1929.—Several strains of iodophilic clostridia were isolated from feces and compared with similar organisms from soil and with 5 strains of *Bacillus amylobacter* from different bacteriological laboratories. The author concludes that the reaction of the medium determines the deposition of the iodophilic substance in the bacteria, relative carbohydrate content playing only a minor rôle. The author's strains of clostridia were not identical with any of the amylobacteria studied, but resembled *Clostridium butyricum* of Prazmowski. The strains of amylobacteria were not alike. The author believes a revision of the classification of amylobacteria is necessary.—*L. A. Barnes.*

4599. TODD, E. M. Virulence of haemolytic streptococci. I. The influence of oxygen on the production of glossy variants. *British Jour. Exp. Path.* 11: 350-391. 1930.—Virulent cultures of hemolytic streptococci are degenerated to glossy avirulent variants by long continued subculture on aerobic agar. This is due to natural selection of the variants by bacterial peroxide, and the following factors contribute to the process: (a) Glossy variants of certain strains are more resistant to inhibition by peroxide than virulent forms; (b) virulent colonies produce more peroxide, and therefore suffer earlier auto-sterilization than glossy colonies. Selection does not occur in anaerobic cultures when no peroxide is formed; it is accelerated by adding reagent H_2O_2 to the medium and by use of media which preserve peroxide. Natural selection of glossy variants is prevented and virulence maintained if accumulation of bacterial peroxide is prevented by adding catalase to the agar used for subculture; on the other hand, peroxidase does not appear to accelerate, and possibly tends to retard, the natural selection of glossy variants by peroxide.—*J. Bland.*

4600. TOYODA, MINORU. Resistenzversuche mit virulenten und avirulenten Bakterien. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 176-178. 1931.—Of bacteria rendered virulent by animal passage a Gärtner strain showed a rise in resistance to heat and disinfectants parallel with rise in virulence. On the other hand, a streptococcus and a pneumococcus strain were less resistant in the virulent than in the avirulent form.—*Author's summary (transl.).*

4601. WALD, ALFRED. Der Bacillus jordaniformis haemolyticus und sein Hämotoxin. *Zentralbl. Bakt. I. Abt. Orig.* 118(7/8): 406-410. 1930.—In 2 different stool investigations on the same person the author found a gram-negative, non-spore-forming bacterium, characterized by lively motility, gas-formation, especially on dextrose, liquefaction of Löffler serum and gelatine, and strong indol formation. It is not strongly pathogenic for guinea pigs or mice. It forms a hemolysin belonging to the true toxins. Neisser, in an appended footnote, assigns the bacillus to the Cloacae group (a term which he prefers to "Aerogenes group"). Because the organism differs in several particulars from *Bacillus cloacae* Jordan, it is named *Bacillus* jordaniformis haemolyticus (p. 406).

4602. WEICHARDT, WOLFGANG, Editor. Ergebnisse der Hygiene, Bakteriologie, Immunitätsforschung und experimentellen Therapie. Bd. 11. iv+929p. Julius Springer: Berlin, 1930. Price 128 M.

4603. WICHMANN, F. W. Beitrag zum Kohlenstoffverwendungsstoffwechsel des Shiga-Kruse-Ruhr-Bazillus. *Zentralbl. Bakt. I. Abt. Orig.* 118(3/4): 150-152. 1930.—From studies on utilization by 2 strains of NH_3-assimilating Shiga-Kruse bacilli, of 25 different carbohydrate media, it appears that they are more restricted than colon and paratyphoid B bacilli, being able to assimilate from very few carbohydrate sources.

4604. WILKE, FRIEDRICH. Über die Formenfülle in Kulturen von Azotobacter chroococcum. Erster Teil. *Bot. Arch.* 30(3/4): 307-350. 1 fig. 1930.—This organism was studied with reference to types of forms appearing on soil extract agar when incubated at 28° C. for periods ranging between 10 hrs. and 11 weeks.—*L. T. Leonard.*

ECONOMIC ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Associate Editor*

(See also in this issue Entries (Distribution) 3024, 3312, 3446; (Genetics) 3032, 3258, 3272, effect of temp. on, 3260, 3268; (Protective resemblance) 3044, 3048; (Historical) 3071, 3079, 3119; (Biographical) 3076, 3084, 3085, 3087, 3089, 3097, 3105, 3112, 3113, 3116, 3122, 3123, 3128, 3148, 3151; (Cytology) 3216; (Pollination) 3290, 3291, 3294, 3303; (Ecology) 3300, 3304, 3306, 3328, 3330, 3343, 3346, 3347, 3348; (Plant injury) 3447, 3450, 3533, 3535, 3536; (Plant disease vectors) 3455, 3457, 3460, 3461, 3465, 3468, 3470, 3532; (X-rays) 3602, 3610; (Nutrition) 3807, 3814, 3822, 3896; (Metabolism) 3815; (Reproduction) 3882, 3910; (Insect diseases) 4229; (Sense organs) 3943; (Animal disease vectors) 4309, 4310, 4324, 4326, 4334, 4348, 4350, 4358, 4360, 4361, 4375, 4376, 4383, 4385, 4394, 4425, 4477; Animal parasites) 4313, 4319, 4321, 4336, 4339, 4354, 4371, 4372, 4386, 4388, 4390; (Malaria studies) 3119, 4315, 4317, 4323, 4327, 4332, 4333, 4340, 4345, 4348, 4363, 4365, 4368, 4389; (Plant parasites) 4955; (Insectivorous plants) 5136; (Histology) 5433, 5439, 5441, 5444, 5445, 5447; (Embryology) 5446)

4605. BAKÓ, G. Insect pests observed during 1929. *Internat. Inst. Agric., Internat. Bull. Plant Protect.* 4(7): 102. 1930.—Notes on pests of fruit and crops, in Hungary.

4606. BORGMEIER, THOMAZ. Um caso de trophobiose entre uma formiga e um parasita do caféeiro. [A case of trophobiosis between an ant and a parasite of the coffee tree.] *Bol. Mus. Nacion. [Rio de Janeiro]* 3(4): 285-289. 1 pl. 1927.—A state of trophobiosis (see Wasmann 1902) is described, involving the symbiosis of *Acropyga (Rhizomyrma)* pickeli* (p. 287) on the roots of coffee trees, in the State of Parahyba, Brazil, with a coccid, *Rhizoecus coffeae* Laing.—*C. Zeimet.*

4607. COSTA, LIMA A. da. Supplemento ao 2° catalogo systematico dos insectos que vivem nas plantas do

Brasil e ensaio de bibliographia entomologica brasileira. [Supplement to the 2nd systematic catalogue of insects which live on the plants of Brazil, with bibliography.] *O Campo [Rio de Janeiro]* 1(7): 38-48. 1930.

4608. DAMMERMAN, K. W. The agricultural zoology of the Malay Archipelago. The animals injurious and beneficial to agriculture, horticulture and forestry in the Malay Peninsula, the Dutch East Indies and the Philippines. xi+473p. Map. 40 pl. (partly col.) 179 fig. J. H. de Bussy, Ltd.: Amsterdam, 1929. Pr. 2 £.—The book contains chapters devoted to: a general consideration of plant pests, insects of the soil fauna, internal plant parasites, external plant parasites, stored product pests, mammals and birds, beneficial animals, and the control of pests. The more important pests are listed and discussed.

4609. DAVIS, J. J. Insects of Indiana for 1928. *Proc. Indiana Acad. Sci.* 38: 299-314. 9 fig. 1928(1929).—Included are 20 spp. attacking cereal and forage crops; 16 on vegetable crops, 26 fruit insects; 20 on shade trees and shrubs; 16 on flower garden and ornamental greenhouse plants, 4 pests of stored grain and 14 household pests, animal parasites and miscellaneous.—*J. J. Davis.*

4610. HEADLEE, THOMAS J. Some tendencies in modern economic entomological research. *Jour. Econ. Ent.* 23(1): 28-38. 1930.—The economic entomologist must investigate even more deeply into the nature of insect life and its reaction to the physical and biological environment in which it is found. He needs a working knowledge of the principles of physics, chemistry, biology and entomology. He must not neglect any phase of entomology as unimportant for his purposes. His organization for research must involve the physical, chemical, biological points of view as well as the taxonomic, structural, developmental and physiological standpoints of his specialty. Chemical control is becoming increasingly important. Biological control and physical control are in their early stages of development. The opportunities for accomplishment in public service through economic entomological endeavor never were greater but the difficulty of the problems involved is constantly increasing and demanding greater and greater keenness.—*From author's summary.*

4611. HOWARD, L. O. The international aspects of entomology. *Congrès Internation. Xe Zool. à Budapest* 1927(2): 1181-1182. 1929.—The rapid increase in world population will sooner or later bring about widespread starvation, if not soon guarded against. The most obvious thing is to try to stop the loss of food through insects. Agriculture, especially in the newer countries, has made it possible for many insects to increase beyond measure. The annual insect damage in the United States alone approximates $2,000,000,000; the menace in Europe is not so obvious as elsewhere. Many trained men in all countries should be studying all phases of insect life in order to reduce waste and prevent future catastrophe.

4612. HYSLOP, J. A. United States of America: Outstanding entomological features. *Internat. Bull. Plant Protect.* 3(12): 180-182. 1929.—Notes on plant pests.

4613. JABLONOWSKI, J. The black locust-tree-scale, Lecanium robiniarum Dougl., and the European corn borer, Pyrausta nubilalis Hübn., a biological parallel. *Trans. 4th Internat. Congress Ent., Ithaca 1928.* 2: 455-462. 1929.—In Hungary, *L. robiniarum* attacks the American black locust, *Robinia pseudo-acacia,* and the European corn borer *Pyrausta nubilalis* attacks the introduced *Zea mays.* Marchal proved that *L. robiniarum* is merely a large form of *L. corni* Bouché. *Robinia* is free from *L. corni* in the U. S. A.; it became a host after being introduced into Europe. *P. nubilalis* was introduced into the U. S. A., not on corn, but on broom corn or hemp, which it attacks in Europe, in addition to millet, hops, and rarely *Artemisia.* In the U. S. A. it attacks over 200 plants. Hop is probably the original food. *Pyrameis cardui,* a pest of weeds, seems likely to become an important pest of lupine.—*N. F. Howard.*

4614. JEPSON, F. P. The control of "calotermes" in living plants. *Dept. Agric. Ceylon.—Bull.* 86. (1)-(11). 1929.—*Calotermes* constitutes an extremely serious menace to the tea industry in certain parts of Ceylon. Various control measures tried against *C. militaris* and *C. dilatatus* had been found unsatisfactory. Trials were made with Paris Green with 3 primary objects in view: to ascertain the action of Paris Green upon termites within the bushes; to find out whether the treatment could be carried out without injury to the bushes; and to determine the effect on the manufactured tea. To reach the galleries, a hole was bored with a brace and bit into the base of the stem, as near soil level as possible, in a downward direction, and the powder was blown into the galleries by means of an enema syringe of ball pattern, 2 or 3 squeezes of the bulb liberating about 1/12 oz. of Paris Green; then the holes were sealed over with cement or asphaltum. The insects begin to die a few days after treatment, but a period of 3-4 mo. must elapse before the entire colony is killed. In no case did the application of Paris Green injure the bushes. The cost of treating 3,000 bushes worked out at 2.1 cents per bush as carried out on an experimental scale. Sole dependence on this form of control is not advised. Preventive measures are recommended such as the elimination of snags and similar weak spots through which the winged adults gain access to the heart wood of woody plants.—*F. W. Urich.*

4615. KRUGER, G. Cirenaica: Some harmful insects. *Internat. Bull. Plant Protect.* 4(10): 146-147. 1930.—Notes on *Dociostaurus maroccanus, Opatroides punctulatus,* and *Polychrosis botrana.*

4616. LUTZ, FRANK E. In defense of insects. *Sci. Monthly* 32(4): 367-369. 1931.—The author stresses their value in cross-pollination of flowers, in soil-making, in furnishing food for other animals, and in keeping in check injurious spp. of insects.

4617. MAHDIHASSAN, S. The microorganisms of red and yellow lac insects. *Arch. Protistenk.* 68(3): 613-624. 1 pl., 6 fig. 1929.—It has been suggested that an insect dye stuff, like the lac dye, is derived directly from some chromogenic symbiotic microorganism of the insect. Blood smears of such insects show the absence of chromogenic symbionts, both in health and disease. Some lac insects are yellow colored, others are red, but in nearly all cases the secretion resin is yellow colored. *Lakshadia albizziae* and *L. ficii* have red and yellow colored forms of insects, both giving a yellow secretion. The symbionts here do not differ. In *L. ficii* they are identical as far as it can be seen. The color of such yellow and red insects seems to be due directly to the activity of the insects, which differ, while it may be indirectly due to the micro-organisms which are identical. An infectious malady "Grassi's Disease" causes mortality among lac insects growing in drought conditions and probably occurs among other scale insects and may be of world wide distribution.—*C. Zeimet.*

4618. MEYER, PAUL-FRIEDRICH. Untersuchungen über die Aufnahme pflanzlicher Farbstoffe in den Körper von Lepidopterenlarven. [Absorption of plant pigments in the body of Lepidopterous larvae.] *Sitzungsber. u. Abhandl. Naturforsch. Ges. Rostock* 2: 83-94. 1927/29 (1930).

4619. MISTIKAWY, ABDEL MEGID. The locust problem in Egypt and its relation with other countries. *Bull. Soc. Roy. Ent. Egypte* 13(1/3): 29-41. Map. 1929.—Six spp. of grasshoppers are listed as injurious, but only *Schistocerca gregaria,* the desert locust, is treated in detail It has been important from earliest times; the worst recent outbreaks have been in 1891, 1915, 1928, with minor invasions in 1904, 1914 and 1927. The species is widespread in Africa, southwestern Asia and Spain. Solitary and migratory phases occur, with change from one to the other at times. It is probably not a permanent resident in Egypt, but migrates from 3 centers: Eastern Sudan and vicinity; northwestern Sudan; and Arabia; the last is most dangerous to Egypt. Migrations occur at various seasons, most often late fall or early spring; a north or west direction is usually taken. The invaders

often produce another injurious generation. It seems that return migration may sometimes occur. Mechanical control methods have been used.—*F. M. Wadley.*

4620. **MUNRO, J. W.** Insects and industry. (Benn's Sixpenny Library, No. 95). 80p. Ernest Benn Ltd.: London, 1929.

4621. **RODE, P.** Le parasitisme des Enchytreides. *Rev. Pathol. Veg. et Ent. Agric.* 16: 240-259. 1930.—Enchytreideae (Oligochaetes) are unable to feed on healthy, growing plants, but they may be secondary invaders in lesions of wheat grains, cereal seedlings, or beets.—*J. Dufrenoy.*

4622. **SPESSIVTSEFF, P.** Memorandum to the Forest Entomologist and other entomologists who are interested in the study of bark-beetles. *Ent. Record* 42(2): 22-23. 1930.—A proposal for the forming of an International Association of Ipidologists was made at International Congress of Forest Experiment Stations, in Stockholm, July, 1929.

4623. **SUREYA.** Turkey: Crop pests. *Internat. Bull. Plant Protect.* 3(11): 165. 1929.

4624. **ANONYMOUS.** Italy: Insects injurious to various plants. *Internat. Bull. Plant Protect.* 3(10): 148-149. 1930.

ECONOMIC ENTOMOLOGY

FRUITS

W. A. ROSS, *Editor*

(See also in this issue Entries 3432, 4605, 4609, 4614, 4623, 4673, 4675, 4676, 4677, 4679, 4686, 4696, 4697, 4702, 4720, 4733, 5614, 5653, 5654, 5655, 5702)

4625. **BELSAK, J.** Sobre la biología de Trachyderes morio (Fbr.). *Rev. Soc. Ent. Argentina* 1(2): 58. 2 fig. 1926.—Brief note on habits, and possible means of combating the larvae.

4626. **BISSELL, THEO. L.** Some facts about the pecan weevil and suggestions for control. *Proc. Ann. Convent. Georgia-Florida Pecan Growers' Assoc.* 24: 24-27. 1930.—The pecan weevil (*Curculio caryae* Horn) infests pecans of the early maturing varieties Schley and Stuart. Adults emerge from the soil July to Sept. and cause half grown nuts to fall by their punctures. Oviposition begins after nuts have formed kernels. Larvae issue from nuts during the fall and burrow in soil. After 1 or 2 yrs. in soil cells, larvae mature and the resulting adults spend 1 yr. in same cells before emergence. Larvae are attacked by *Myiophasia nigrifrons* (Tachinidae) and by a fungus. Condition of soil surface affects entrance by larvae and exit by adults. The author recommends jarring pecan trees for weevils; cultivation to hinder larvae entering soil; early harvest of nuts to catch issuing larvae; encouraging birds to catch adults and larvae.—*T. H. Bissell.*

4627. **BODKIN, G. E.** A note on the utility of aerial photography in entomological field work. *Bull. Ent. Res.* [*London*] 20(4): 431. 3 pl. 1929.—Used to locate citrus gardens in Palestine in the campaign of fumigation against the "Black Scale," *Chrysomphalus ficus* Ashm.

4628. **BONDAR, GREGORIO.** A formiga de enxerto, praga dos cacauaes na Bahia. [An ant injurious to cacao-trees in Bahia.] *O Campo* [*Rio de Janeiro*] 1(3): 50-52. 5 fig. 1930.—The ant, *Azteca paraensis* Forel, feeds on the honeydew of Coccidae and other hemipterous cacao insects. Nests are located on limbs and trunks and are made with terminal buds gnawed by ants. The nests are enveloped by the intricate root system of epiphytic plants of the families Gesneraceae (*Codonanthe gracilis*), Orchidae (*Coryanthes speciosa, Epidendrum imathophillum*, etc.), Bromeliacae etc. Within a few years such double parasitism kills the trees. Cutting off nest-bearing limbs or pulling off epiphytic plants is recommended. —*G. Bondar* (*transl. by G. Maheux*).

4629. **C., W.** Mealy bugs on planting material and some preliminary data on control measures. *Pineapple News* [*Hawaii*] 4(7): 115-119. 1930.—Dipping infested plant material in dilutions of petrotine at a strength of not less than 1-50 showed promise.

4630. **DODGE, B. O.** Observations on a shothole disease and insect pests of the Japanese cherries. *Jour. New York Bot. Gard.* 30(352): 81-85. 1 fig. 1929.—A severe case of shothole that developed in some Japanese cherries was thought to be due either to *Bacterium pruni* or to the application of certain Volck oil and nicotine sulphate sprays, but the exact cause was not determined. About 10% of the West Indian peach scale, *Aulacaspis pentagona*, survived 3 lime-sulphur applications made in February and March. Trials made of 40% nicotine sulphate, 1: 800, plus 8 lb. fish oil soap to 100 gal., and of 2% Volck oil plus nicotine sulphate to make a 1: 1600 solution, applied June 16, were about equally effective in killing the young scale that hatched previous to the application from eggs laid June 7 and later. Some eggs, hatched after the applications were made, caused a few new infestations. 2 spp. of slug caterpillars, *Parasa fraterna* and *Adoneta spinuloides*, found feeding on leaves in September, were kept under control by insect parasites, while a 3rd sp., *Prolimacodes scapha*, was not numerous. The fall web-worm also infested 2 trees.—*M. F. Barrus.*

4631. **FOWLER, RODNEY.** Results of experimental tests for the control of codling moth as carried on at the Blackwood experimental orchard, season 1929-30. *Bull. Dept. Agric. S. Australia* 243. 1-15. 1930.—Arsenate of lead with the addition of fluxit in last 3 sprays gave good results. Arsenate of lead, 2 calyx sprays or calyx and first cover, followed by 3 oil sprays, using either Volck or Alboleum, gave good results and reduced the arsenical residue trouble. Best results from the standpoint of codling control were obtained with lead arsenate and oil combination, but the present cost of the oils is almost prohibitive. Lead arsenate and oil combinations when mixed before spraying left the highest % of arsenical residue per pound of fruit; also, it was most difficult to remove. Lead arsenate and oil combinations probably owe their extra efficiency to the fact that they make a heavy coverage on the fruit, which is not readily removed by rain or wind. A slight injury to the fruit follows the use of Volck or Alboleum, but the damage is not serious. Volck oil alone controls codling moth, but it seems to inhibit to some extent the coloring of red apples and causes some rustiness. Alboleum may be expected to give almost as satisfactory results as Volck. "Arsinette" alone gave very good results, but a suspicious amount of what may be arsenical residue was noticeable on the fruit at packing time. In a dry season applications of oil tend to collect the dust on foliage and fruit to the detriment of both. Arsenical dusts do not seem to give satisfactory results. It is not advisable to omit the calyx-spray.—*From author's summary.*

4632. **FROGGATT, J. L.** The banana weevil borer (Cosmopolites sordida Chevr.). *Queensland Dept. Agric. & Stock, Div. Ent. & Plant Path. Ent. Leafl.* 5. 1-4. 1 pl. [1928?].—Life history and control.

4633. **HARMAN, S. W.** Midsummer sprays for the peach cottony scale. *New York State Agric. Exp. Sta.* [*Geneva*] *Bull.* 552. 22p. 1 pl. 1928.—Experiments were made to ascertain the tolerance of peach foliage to spray applications of the more promising insecticides, as well as to determine the efficiency of these materials when used during the summer months in combating the peach cottony scale (*Pulvinaria amygdali* Ckll.?). The insecticides used in these tests were lubricating oil emul-

sions containing either Junior Red Engine oil or Diamond Paraffin oil, Volck, Medina Summer Emulsion, white mineral oil No. 11 emulsion, nicotine sulphate, ivory soap, potash fish-oil soap, lime-sulphur, bordeaux mixture, and bichloride of mercury. Under conditions governing the tests, white oil emulsions, namely, Volck, Medina Summer Emulsion, and white mineral oil No. 11 emulsion, caused little or no injury; but, when used in combination with bordeaux mixture or when applied on foliage retaining sulphur residues, they caused shothole injury and premature dropping of the peach leaves. Emulsions containing highly refined oils were more effective in combating the peach cottony scale than any of the other materials safe to use on peach foliage.—*Author's abstract.*

4634. **ILLINGWORTH, J. F. Longhorned grasshopper, Conocephalus saltator (Saussure), as a pest of pineapples in Hawaii.** *Proc. Hawaiian Ent. Soc.* 7(3): 407-408. 1931.—This grasshopper is a valuable predator upon the pineapple mealy bug, *Pseudococcus brevipes,* but the ♀♀, by depositing their eggs in the young fruit, sometimes give rise to the dry rot, characteristic of Kauai disease.

4635. **ILLINGWORTH, J. F. Tarsonemus ananas Tryon, a mite that is becoming a serious pest of pineapples in Hawaii.** *Proc. Hawaiian Ent. Soc.* 7(3): 409-410. 1931.—This mite was reported first as doing damage to pineapple in Queensland. Its attack causes dry rot or Kauai disease.

4636. **SCOTT, HUGH. Note on the life-history of the fig-tree moth, Ocnerogyia amanda, Staud. (Lymantriidae).** *Bull. Ent. Res.* [*London*] 20(1): 39-40. 1929.

4637. **WAGLE, P. V. Nephantis serinope, a new insect pest of the cocoanut in the Bombay Presidency. A warning to the cocoanut-gardeners.** *Poona Agric. Coll. Mag.* 22(2): 74-75. 1930.—*N. serinope* is reported for the first time in Bombay Presidency at Ratnagiri.

ECONOMIC ENTOMOLOGY

CEREAL, FORAGE, AND OTHER FIELD CROPS

(See also in B. A. 6(1): Entries 82, 1345, 1848, 1856; and in this issue 3447, 3457, 3533, 3536, 4605, 4609, 4614, 4619, 4623, 4699, 4704, 4711, 4716, 4722, 4727, 4729, 5652, 5662, 5734, 5758)

4638. **ANDERSON, T. J. Control of maize stalk borers.** *Union So. Africa Dept. Agric. Pan-African Agric. and Vet. Conf. Pretoria Papers Agric. Sect. P.* 238-242. 1929.—A general discussion of control measures of *Busseola fusca* and *Sesamia calamistis,* the common stalk borers in maize, matama and millets.

4639. **FLINT, W. P. Effect on insects of treating seed corn with certain fungicides.** *Jour. Econ. Ent.* 23(2): 404-406. 1930.—This paper summarizes the insecticidal effect obtained by treating seed corn with certain fungicides. The work reported covers a period of 4 yrs. and the treatment of seed corn by 16 fungicides, all of which are quite generally marketed in the corn belt of the United States. While these fungicides are intended primarily for the prevention of injury to seed corn by diseases, certain claims have been made that they will also act as insecticides. The results of treating over 5,000 hills of corn with these materials failed to show that any of them had any marked effect in repelling or killing the corn field ant (*Lasius niger americanus* Emery), corn root aphid (*Anuraphis maidi-radicis*) (Forbes), seed-corn maggot (*Hylemyia cilicrura* Rond.), white grubs (*Phyllophaga* or *Lachnosterna* spp.), wireworms (*Elateridae*), corn seed beetles (*Agonoderus pallipes* Fabricius, *Clivinia impressifrons* Leconte), or thief ants (*Solenopsis molesta* Say).—*W. P. Flint.*

4640. **HUCKETT, H. C. Spraying and dusting experiments with potatoes on Long Island.** *New York State* [*Geneva*] *Agric. Exp. Sta. Bull.* 592. 1-38. 5 fig. 1931.—Experiments on Irish Cobbler and Green Mountain potatoes have been conducted during 5 successive seasons, 1926-1930, chiefly to determine whether during a given series of yrs. profitable increases in yield might be expected, especially if aphid (*Macrosiphum gei*) and leafhopper were controlled. Invariably the means taken to combat the various parasites were successful in protecting the foliage from injury, but this did not always result in profitable increased yields. The causes for these results, which are not in complete accord with the commonly accepted principles of dusting and spraying, are believed to be of an entirely local nature, even on Long Island. Undoubtedly, moisture, soil, and atmospheric conditions during July and August are important determining factors, which vary considerably in their influence during certain seasons from one part of Long Island to the other. At Riverhead the causes were sufficiently dominant to render spraying and dusting during mid-season of doubtful value.—*H. C. Huckett.*

4641. **JOHNSTON, H. B. Pink bollworm (Platyedra gossypiella, Saunders) in the Gezira District of the Sudan in 1927 and 1928.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 26. p. 1-27. 2 maps. 1929.—Data are presented on the extent of the infestation, which in some cases reached 55.5% of the bolls. The average infestation at 21 localities by pink bollworm in 1926-1927 was 3.85% and in 1927-1928 was 24.16%, while the average infestation by the Egyptian bollworm was 3.34% in 1926-1927 and 2.61% in 1928. Control measures were made possible by legislation and organized meetings for instruction, which gave very good cooperation. Clean-up of tenants' grass huts yielded 1.2 living larvae per lb. of seed found. The proportion of dead to live larvae found in the huts was 2.5: 1, while in seed lying in piles in the open field the proportion is from 6.5 to 8.1: 1, showing effect of sunlight. This has led to the practise of exposing cotton seed to the sunlight for at least 2 hours at 62°C., which gives effective control.

4642. **KANNAN, K. KUNHI. Ground grubs and their movements in soils.** *Jour. Mysore Agric. & Exp. Union* 12(1): 3-4. 1931.—From the author's observation and experiments it is concluded that the respiratory requirements of larvae of the palm beetle (*Oryctes rhinoceros*), of cockchafers, and of *Holotricha* have much to do with their movements and attacks on roots of sugar cane and other plants in the soil. It is believed that uniform manuring and thorough cultivation where root grubs are becoming serious may divert them from roots of the crops to food more natural to them, viz., the soil rich in organic matter.

4643. **KING, HAROLD H. A note on the use of dried poison bait against locusts in the Sudan.** *Bull. Ent. Res.* [*London*] 20(1): 99-101. 1929.—Description is given of the method of using sun-dried poison bran bait in control of *Schistocerca gregaria.* Results are reported as universally favorable.

4644. **LEONARD, M. D. An unrecorded food habit of the large tobacco suckfly in Porto Rico.** *Jour. Econ. Ent.* 23(3): 640-641. 1930.—*Dicyphus luridus* Gib., a minor leaf pest, is reported doing serious damage to flower buds of tobacco.

4645. **NEISWANDER, C. R., and L. L. HUBER. Height and silking as factors influencing European corn borer population.** *Ann. Ent. Soc. Amer.* 22(3): 527-542. 6 fig. 1929.—Experimental plots at Bono, Ohio, for several yrs. have shown a higher borer population on early varieties of corn of a given planting date than on late ones; succeeding planting dates for all 6 varieties have shown a significant reduction in the population. The variation in the population of the various planting dates is greater than for the varieties. Plant height and oviposition are definitely correlated; the greater the

average height of corn the more eggs are deposited. But there is only a slight correlation between oviposition and the height of individual plants within a plot. The correlation between silking and egg deposition is high but it must be considered that silking and height are closely correlated. Time of planting has an influence on the chances of survival: 10.16% of larvae placed on May 10 corn were recovered as compared with 5.72% on June 10 plantings. There was a heavier egg deposition and also a higher rate of survival on vigorous than on subnormal corn. The rate of survival is lower on the late-maturing varieties than on the early ones.—*M. W. Boesel.*

4646. **PIERCE, WILLIAM DWIGHT. The sugar cane insect problem in Negros.** *Proc. Ent. Soc. Washington* 32(6): 99-104. 1930.—A brief summary of the insect problem of sugar cane in North Negros [P. I.]. The mean temp. is 78-83°F., the mean humidity 82-88%. Rain falls on 200 days a year with an annual fall of 120-140 inches, varying considerably in monthly distribution on the island. Sunshine is 90-230 hrs. per month. In Jan. 1928 dead heart damage by borers in young cane was very high, averaging 2.4 dead shoots per stool, and 1.28 good shoot to every dead shoot. As a result of parasite redistribution this damage was greatly reduced. A system of clean culture calculated to reduce insect damage is outlined for each step in the culture of the crop. A list of spp. found doing damage includes 6 injuring seed cane in the ground, 11 injuring roots, 8 causing abnormalities of growth, 15 dead heart borers of young cane, 3 spp. injuring buds, 9 stalk borers, 2 stalk suckers, 15 leaf suckers, 4 leaf miners, 11 leaf eaters.

4647. **TORKA, V. Chlorops taeniopus Meig. als Weizenschädling.** *Zeitschr. Ent.* 16(1): 4-5. 1928.—In 1926 *C. taeniopus* did considerable damage to the heads of wheat in Upper Silesia. It was parasitized internally by *Coelinus niger* and externally by a Chalcid.

ECONOMIC ENTOMOLOGY

TRUCK AND GREENHOUSE CROPS

J. E. GRAF, *Editor*

(See also in this issue Entries 3518, 4609, 4718, 5480, 5487, 5602, 5604, 5652)

4648. **COLIZZA, C. Il moscerino delle viole (Dasyneura affinis Kieff., Diptera, Cecydomyidae) nell'Italia meridionale. [The violet midge (D. affinis, Diptera, Cecydomyidae) in southern Italy.]** *Boll. Lab. Zool. Gen. e Agraria* 21: 130-148. 6 fig. 1928.—*D. affinis,* by causing gall formations on the leaves, has been found very destructive to the cultivations of violets in the vicinity of Naples during the years 1926-28. The infestation, which was the severest during the first yr., decreased during the subsequent year, evidently due to the activity of the parasites *Platygaster* sp., *Tetrastichus* sp., *Torymus* sp., and *Eutelus mediterraneus* Mayr., which are described and illustrated. Descriptions of the adults (♀, ♂), egg, and mature larva* are given. The biology of this midge is described, covering the mating, oviposition, and number of generations, of which the author recorded 4 of 41, 39, 27, and 62 days duration respectively, and a 5th, of 206 days duration, running through the winter into the following spring. Means of control are discussed. Chemical sprays and fumigating with poisonous gases are impracticable, owing to the concealed position of the maggots, leaving as the only practicable and effective remedy, the cutting of the infested leaves and their prompt destruction. The author feels that the parasites mentioned are an effective check for the pest in question.—*C. Zeimet.*

4649. **LOCKLIN, H. D. Recommended dates for application of standard hot water treatment to hardy narcissus.** *Western Washington Agric. Exp. Sta. Bull.* 13-W. 32p. 8 fig. 1929.—It is impossible to give exact dates when a given variety of narcissus will always be in best condition for treatment which will apply to all seasons. Allowance must be made in dates given in the following list for the earliness and lateness of the season. In general, large flowered varieties (Victoria, Sassenheim, Spring Glory, Emperor, Von Sion, Sir Watkins, Golden Spur, and King Alfred) are in best condition for treatment from August 12 to August 26, while early treatment (July 30), gives the largest number of normal flowers for the small flowered varieties (Laurens Koster, Poeticus ornatus, and Campernelle regulosus).—*P. A. Glenn.*

4650. **LUNDBLAD, O. Morotbladloppan Trioza viridula Zett. dess biologi och uppträdande som skadedjur i Sverige. [The carrot psyllid, its biology and distribution in Sweden.]** [English summary.] *K. Landtbruks-Akad. Handl. och Tidskr. [Stockholm]* 68(3): 337-379. 19 fig. 1929.—Leaf curl of the carrot is caused by the Carrot Psyllid, *Trioza viridula.* The insect appeared first in the provinces of Blekinge, Smaland and Skane, and spread in all directions. It is now distributed all over Sweden, and causes great damage especially in the southern provinces, rendering impossible the cultivation of carrots in some districts. The 5 nymph-stages can easily be distinguished one from another by the number of wax-filaments surrounding the body. The number of these staffs increases rapidly from the first to the 5th instar.—*Trioza nigricornis* is sometimes also found on carrots in Sweden. Its eggs were previously unknown. They are provided with very long, fine stalks. Although the imago has been recorded on carrots, eggs and nymphs have been reported only on *Brassica,* which is perhaps its true host. The best remedy against the carrot psyllid is spraying with tobacco-extract, good results having been obtained in a series of experiments during 1923-1928. Two sprayings are necessary, the first as soon as the first weak curling has been noticed, the second a week or two later.—*From author's summary.*

4651. **MacDOUGALL, R. STEWART. Insect pests. No. X.** *Scottish Jour. Agric.* 14(1): 60-72. 4 fig. 1931.—A review of the club-horned (Staphylinidae, Silphidae) and saw-horned (Elateridae) beetles, and the turnip gall weevil (*Ceuthorhynchus pleurostigma*), with notes on life history, damage to crop plants, and control measures.

4652. **MILLER, N. C. E. Megymenum brevicorne F. Pentatomidae (Hemiptera-Heteroptera). A minor pest of Cucurbitaceae and Passifloraceae.** *Malayan Agric. Jour.* 17(12): 421-436. 7 fig. 1929.—All stages of *M. brevicorne* F. are described and figured. The duration of the life cycle and methods of control are given.—*N. C. E. Miller.*

4653. **PUSSARD, R. Contribution à l'étude morphologique et biologique de la teigne du lilas (Gracilaria syringella Fab.).** *Ann. Epiphyties* 14(2): 107-131. 8 fig. 1928.—Serious outbreaks of *G. syringella* were observed at Rouen in 1924 and 1925, the larvae feeding on *Syringa, Ligustrum* and *Fraxinus excelsior.* All stages of the insect, especially the embryonic development and the different larval forms, have been described in detail. From May to October, there are in France 3 generations. Over-wintering pupae transform into moths from the end of April, adults being most numerous by the beginning of May at the time of lilac blossoming. First generation larvae pupate about June 15th and moths appear with the first days of July. The 2nd generation develops in August and adults are seen about September 20th; the 3rd generation grows from end of September to October. At the end of Oct. wintering pupae are either in the soil or in crevices in bark. Eggs are laid in groups of 5-7 on lower side of leaves mainly

along the midrib. They hatch in about 10 days. During the first 2 weeks young larvae live as miners and are gregarious; then they come out and feed on a lower leaf. At that time they cut the main vein of the leaf at many points, fold the ends, and form a cone within which they feed. Parasites were scarce at Rouen in 1924 and 1925; on the other hand sparrows and the European earwig, *Forficula auricularia,* destroyed large numbers of larvae.—*R. Pussard (transl. by G. Maheux).*

4654. RAO RAMACHANDRA, Y. The mango-hopper problem in South India. *Agric. Jour. India* 25(1): 16-25. 1930.—In addition to the question of damage due to mango-hopper and mildew the author deals with several other aspects of mango culture in South India—times of flowerings of the trees; the fertilization and setting of the flowers; factors affecting fruit shedding, etc. The term mango-hopper is a collective name given to 3 spp. of Jassids, *Idiocerus atkinsoni, I. niveosparus* and *I. clypealus.* Of these *I. niveosparus* is the most injurious. An account is given of the life-history of the pest and the nature of the damage that it does. The following scheme of control measures is advocated: (1) A preliminary spray of Bordeaux mixture to be given to the inflorescences as the flowers begin to open for preventing the appearance of the mildew; (2) a thorough spray with fish oil resin soap to be given if the hoppers (nymphs) are noticed, to be repeated at intervals of a week in case further hatchings are noticed; (3) lastly, when the fruit has set, the trees should be irrigated with the object that there may be sufficient conservation of soil moisture to counteract the heavy fruit fall.—*H. Singh Pruthi.*

ECONOMIC ENTOMOLOGY

FOREST AND SHADE TREES

J. M. SWAINE, *Editor*

(See also in this issue Entries 3475, 4609, 4614, 4622, 4915, 4955, 5628, 5630, 5653, 5710, 5920)

4655. BEESON, C. F. C. Sense of smell of longicorn beetles. *Nature [London]* 126(3166): 12. 1930.—Field work shows that the Indian sal heartwood borer is promptly attracted by the smell of newly felled *Shorea robusta,* especially of the sap. This fact has been utilized for control by felling trap trees.

4656. BOAS, J. E. V. Et nyt stort Angreb af Lyda arvensis. [A new mass attack of L. arvensis.] *Dansk Skovfor. Tiddskr.* 1930: 1-23. 1 fig. 1930.—Attacks of this sawfly on spruce are quite rare. However, a major infestation in Denmark is here reported. The activities, the work, the characteristics of the larvae and adults are reported upon. The literature is mentioned in brief. —*W. H. Meyer.*

4657. ECKSTEIN. Auffallendes Braunwerden der Endtriebe von alten Kiefern. *Zeitschr. Forst.- u. Jagdw.* 62(2): 120-121. 1930.—Investigation by the Möller Institute of broken-off terminal shoots with brown needles from normally growing pines indicated that the pine beetle (*Myelophilus piniperda*) working in the shoots was the cause of the dying off of the needles.—*J. Roeser, Jr.*

4658. ESCHERICH, K. Das Vorkommen forstschädlicher Insekten in Bayern. II Bericht: das Jahr 1928. [Occurrence of insects injurious to forests in Bavaria; 1928 report.] *Forstwiss. Centralbl.* 52(10): 457-478. 8 fig. 1930.—The occurrence of numerous spp. of insects is noted, together with notes on their life history and methods of control.—*W. N. Sparhawk.*

4659. ESCHERICH, K. Das neue Gesicht der Forstentomologie. [The new viewpoint in forest entomology.] *Forstwiss. Centralbl.* 52(12): 525-546. 1930.—Forest entomological research, formerly devoted largely to biotic factors (parasites), is now mostly in the field of abiotic factors, chiefly climatic. A multiple thermohygrostat in which insects can be bred under controlled conditions of temp. and humidity is illustrated and described briefly. —*W. N. Sparhawk.*

4660. FRANCIS, W. D. A raining or weeping tree in Australia. *Kew Bull. Misc. Inform.* 1931(3): 156-157. 1931.—The deposition of water from trees of *Glochidion ferdinandi* is discussed. The drops are the excretions of homopterous insects feeding on the tree.—*V. S. Summerhayes.*

4661. KALSHOVEN, L. G. E. De Biologie van de Djatitermiet (Kalotermes Tectonae damm.) in verband met zijn bestrijding. [Bionomics of K. tectonae as a basis for its control.] 127 p. 20 pl. H. Veenmann en Zonen: Wageningen, 1930.—Lignicole termites have caused serious damage to living teak trees in Java in recent yrs. This paper gives the results of biological studies begun in 1925, and the technique followed during the investigation; the silvicultural aspects of the problem will be dealt with later. The writer draws attention to the fact that there are only 2 true castes in the *Kalotermes* spp. of Java: the winged fertile form (imagines), and the sterile macrocephale form (soldiers). The external morphology is described in detail. *K. tectonae* has a wide distribution in the teak forests of Java, while *K. dalbergiae* has only been found in a small part of the island (Banjoemas, Kedoe).

The nests are nearly always several meters above ground in the living trunks due to the fact that the colonies are founded in the remnants of dead branches. The developing colonies extend their galleries into the sound wood of the main trunk, causing conspicuous swellings. Several tree species are hosts. There appear to be 7 stages in the development of the winged sexuales. No special soldier larvae were distinguished. Neoteinic individuals (substitute royal forms) in orphaned colonies initiate from individuals in the older stages of development when various stages are present. In incipient colonies the period of development of the eggs averages 57 days and for the first 3 larval stages it may last 15, 20 and 30 days respectively. In older communities these periods may be longer. Young members of a colony may grow into winged forms or deviate and develop into soldiers of neoteinics depending on the population of the colony.

Life history studies show that the growth of incipient colonies is very slow. The rate of development for the first 2½ yrs. is diagramed. The oldest colony age is probably 15 yrs., but the average is about 10. The number of eggs produced by a queen apparently increases with the growth of the colony, and then the period of growth is followed by a period of rather rapid decline in numerical strength, apparently due to decreasing egg production and to the losses of individuals during the swarming seasons. Under normal conditions winged forms are not produced before the 6th year. Colonies from which sexuales have emerged may not swarm the following year. When the wood is drying out imagines may be produced in subsequent periods. The original royal pair may be present to the last and the formation of neoteinics does not appreciably prolong the life of a colony. The members of a dying colony have a typical whitish and meager appearance. The method of swarming, foundation of new colonies and the nesting habits are described. The relation of other animals, chiefly ants, elaterids, scorpions and lizards is shown.—*H. J. MacAloney.*

4662. ORFILA, RICARDO N. Sobre Goniopterus gibberus Bsd. *Rev. Soc. Ent. Argentina* 2(5): 269-270. 1929. —This species, discovered as a pest on eucalyptus in La Plata, is reported from several other localities, and also as devouring flowers of *Chrysanthemum indicum* and *Celosia cristata.*

ECONOMIC ENTOMOLOGY

INSECTS AFFECTING ANIMALS

F. C. BISHOPP, *Editor*

(See also in this issue Entries 3300, 3343, 3348, 3602, 4313, 4315, 4317, 4319, 4323, 4326, 4327, 4332, 4333, 4336, 4339, 4340, 4345, 4348, 4350, 4354, 4358, 4365, 4367, 4371, 4376, 4385, 4388, 4389, 4390, 4394, 4477, 4609, 4713, 4728, 5567, 5603, 5693, 5704)

4663. COLAS-BELCOUR, JACQUES. Ponte et éclosion des Ornithodores: leur élevage. *Arch. Inst. Pasteur Tunis.* 18(1): 43-49, 1929.—A description is given for the care of the ♀ ticks, their feeding before egg-laying and the care of the eggs and newly hatched larvae.—*H. B. Yocom.*

4664. IYENGAR, M. O. T. Regional distribution of anophelines and malaria in Bengal. *Far East Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 116-127. 1 chart. 1927[1928].

4665. KRIJGSMAN, B. J., en G. L. WINDRED. De Gastheerkeuze van Bloedzuigende Arthropoden. Deel II. Lyperosia exigua. [Host selection of blood sucking Arthropoda. II. Lyperosia exigua.] [German and English summaries.] *Nederlandsch-Indische Blad. Diergeneesk.* 42(2): 110-120. 1930.—Experiments begun with *Stomoxys* in the first part of this series continue with *Lyperosia exigua. Lyperosia* reacts to definite warmth stimuli with positive taxis, extension of proboscis and piercing; shows thigmotactic orientation and positive anemotaxis; and reacts to water with positive taxis, extension of proboscis, piercing and a weak sucking reaction. The skin odor of buffalo, Zebu, European cattle, horse and dog causes a positive taxis, extension of proboscis and piercing. Blood and serum give a positive taxis, extension of proboscis and sucking. *Lyperosia* apparently does not differentiate between the odor of individuals of the same host species, but can distinguish the odor of various mammal species. No definite localisation on the host, caused through local odor differences, was found.—*From authors' summary.*

4666. LUTZ, ADOLF. Sammeln, Präparieren, Untersuchen und Bestimmen der hygienisch wichtigen Insekten. [Collection, preparation, investigation and determination of hygienically important insects.] In: W. KOLLE, und A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen. 3. Aufl. W. KOLLE, R. KRAUS, und P. UHLENHUTH. Bd. 10, Lief. 37, p. 551-590. 25 fig. Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin u. Wien, 1929.

4667. MELLO, E. JANSEN de. Medida do progresso e efficiencia dos serviços anti-larvarios nas campanhas contra a febre amarella. [Measure of the progress and efficiency of anti-larvae measures in campaigns against yellow fever.] [With English and French conclusions.] *Arch. Hygiene [Rio de Janeiro]* 4(2): 207-219. 2 graphs. 1930.—Mosquito and other indices are useful in measuring efficiency of anti-larvae measures in these campaigns. The following proportions should be computed: (1) the ratio of houses with breeding-places to all houses examined (house index) and (2) the ratio of breeding-places to the total number of houses visited (density index). The ratio of breeding-places to the total number of receptacles (deposit index) and other ratios interesting in special cases and localities may be of value. The ratio of receptacles found with living larvae-consuming fish to the total number of receptacles capable of supporting fish life (fish index), proposed by the author, has proved useful.—*From author's conclusions.*

4668. PHILADELPHY, A. Ueber Katzenräude beim Menschen. [Human infection with cat mange.] *Wien. Klin. Wochenschr.* 43(1): 268-270. 1930.—*Sarcoptes minor (Notoëdres cati)* and rarely *Chorioptes auricularis (Dermatophagus)* occur in man, at times with fatal results. The author observed 3 cases of cat mite infection in man. Of these, 2 exhibited skin symptoms within 24 hrs., 1 within 8 days. The species was not determined.

4669. SCHWETZ, J. Quelques observations sur les Phlébotomes de Stanleyville [Belgian Congo]. *Rev. Zool. Bot. Africaines* 18(1): 133-146. 1929.—Observations on the habits of adult species of *Phlebotomus* and on their host preferences are given. Apparently *P. schwetzi* attacks indiscriminately both man and cold-blooded animals, while *P. africanus* and *P. schoutedeni* seem to feed almost exclusively upon cold-blooded animals. Human leishmaniasis has not yet been found in the environs of Stanleyville or in that part of Belgian Congo, although it may exist in that region. Another species, *P. collarti,* was found in the region of Stanleyville near the Congo River, living entirely outside human habitations.—*J. L. Webb.*

4670. SINTON, J. A., and N. D. KEHAR. A field method for the estimation of the salinity of the water in mosquito-breeding places. *Indian Jour. Med. Res.* 18(1): 199-201. 1 fig. 1930.

4671. SMORODINZEW, I.-A., et A. N. ADOWA. Sur le rôle de la réaction du milieu dans l'écologie des larves d'Anopheles maculipennis. *Bull. Soc. Path. Exotique* 23(1): 38-43. 1930.—The cardinal factor in the suitability of water to the development of *A. maculipennis* is its alkalinity. The authors emphasize the danger of producing a culture-bed for malarial mosquitoes by hydraulic extraction of turfs, in which natural water of alkaline reaction is used.

4672. TRAVASSOS, LAURO. Über einige Arthropoden als Plagegeister der brasilianischen Küstenzonen. *Arch. Schiffs- u. Tropen-Hyg.* 33(Beih. 3): 273-279. 1929.—These are divided into (1) arthropod disease-carriers; (2) those whose bite causes small lesions; and (3) those which cause temporary pain but no permanent results. The author discusses the 2nd and 3rd classes. In the 2nd class he describes ticks (the horse-tick, *Amblyomma* sp., which attacks human beings as well as horses, and *Ornithodorus* sp.) "borrachudos" (Simulidae), the "tunga" of sand-flea, and "berne," the parasitic larvae of the fly *Dermatobia hominis,* which develops in the skin of human beings and lower animals. Of the members of the 3rd class he mentions only 2, the tabanid "motucas" and the ceratopogon "maruin."

ECONOMIC ENTOMOLOGY

INSPECTION AND REGULATION

(See also in B. A. 5(10): Entries 22868, 24211, 24240, 24264, 24740; 5(11): 26624, 28792, 28821)

4673. BOTTEL, A. E. Disinfection as applied in the [Mediterranean] fruit fly area [Florida]. *Month. Bull. Dept. Agric. California* 18(7): 406-408. 1 fig. 1929.

4674. BRANDES, E. W. Report of the committee on quarantine practice in relation to inter-regional movement of sugar-cane propagating material. *Trop. Agric. [Trinidad]* 6(12): 347. 1929.—An abstract.

4675. CALL, A. H. Inspection work for [Mediterranean] fruit fly in Florida, and how carried out. *Month. Bull. Dept. Agric. California* 18(7): 403-405. 2 fig. 1929.

4676. COX, JOHN P. Quarantine and patrols. *Month. Bull. Dept. Agric. California* 18(7): 393-396. 2 fig. 1929.—The discovery of the Mediterranean Fruit Fly (*Ceratitis capitata*) within the U. S. A. was the occasion for the

undertaking of an eradication campaign, in many respects unique in the history of applied entomology. In spite of the lack of comparable established precedents, a campaign was organized, based on the eradication of the insect by the elimination of its hosts, since there were available no known means of checking the pest. The first concern in the organization of the campaign was that of quarantines to check or control the movement of host fruits into, or out of, the infested or protective zones; the second step involving enforcement of these quarantines to ensure the safety of the protective zones. The enforcement of the quarantine involved, among other activities, the patrolling of the quarantine lines.—*C. H. Hadley.*

4677. **FERRIS, G. F. The effectiveness of a plant quarantine.** *Science* 71(1829): 68-69. 1930.—The mealybug, *Pseudococcus brevipes* Ckll., which is abundant on pineapples in Hawaii, occurs in Florida and Texas (not known to be established in California) on various hosts. This insect is not supposed to pass quarantine barriers; it is frequently reported as among the "pests intercepted" by quarantine officials; yet the author has frequently seen it alive on bananas and pineapples in markets in California. He concludes that belief in the effectiveness of a plant quarantine, founded on the alleged failure of legally excluded pests to become established, is not sound; their failure to become established may be due, as in this case, to biological rather than to legal barriers.

4678. **FERRIS, G. F. The plant quarantines once more.** *Science* 71(1850): 606-607. 1930.—Note on the effectiveness and dangers of plant quarantines.

4679. **FLEURY, A. C. California prepares to prevent [Mediterranean] fruit fly invasion.** *Month. Bull. Dept. Agric. California* 18(7): 386-389. 1929.

4680. **FULLAWAY, DAVID T. Some practical considerations in plant quarantine.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1119-1123. 1926(1928).—An address stressing the value of plant quarantines, with particular reference to the exclusion of insect pests. Research by the inspection staff should be encouraged; the factors governing the establishment of introduced insects should be studied. The exclusion of plants and of soil from the country is approved, and the establishment of quarantine stations for such plants as must be brought in is suggested.

4681. **HARDISON, A. C. The status of the White Fly Campaign [in California].** *Month. Bull. Dept. Agric. California* 16(3): 132-134. 1927.

4682. **HARRIGAN, F. V. Development of equipment and destruction of fruit.** *Month. Bull. Dept. Agric. California* 18(7): 409-412. 2 fig. 1929.—Maceration and steam sterilization best disposed of fruit infested with Mediterranean fruit fly in Florida though most was covered in pits with 3 ft. of lime or oil and earth. Corn-stubble shredders effectively destroyed truck crop host plants. Poison bait sprays were applied to trees with rigs from hand outfits to power machines of 50 gal. per min. capacity. Airplanes were used to locate abandoned and wild host trees in hammocks and swamps.—*H. J. Ryan.*

4683. **HARUKAWA, CHUKICHI. Scientific bases of plant quarantine in the countries of the Pacific.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1131-1140. 1926(1928).—An animal migrant would not be expected to be able to establish itself in a zoogeographical region unlike that in which it originated; but since the present division of the earth's surface into zoogeographical regions is based chiefly on the study of the distribution of mammals and birds, limits so set up may not apply to insects. Two regions, palaearctic and oriental, are represented in the Japanese empire, and the insect fauna is a mixture of oriental and palaearctic spp., overlapping to such a degree that no definite boundary between them can be drawn. The climate of Japan is variable; that of Formosa is like that of Calcutta; Korea has a climate characteristic of the temperate zone. *Hoplocampa pyricola* Rohwer, a pest of the sand pear, is palaearctic in origin; in the south of Japan, where climatic conditions are such as to make possible several broods per year, it remains 1-brooded. The rice borer, *Chilo simplex* Butler, has 4 broods per yr. in Formosa, and 2 per yr. in Kyushu, Shikoku, and Honshu. The paddy borer, *Schoenobius incertellus* Walker, indigenous to India or Ceylon, has 4-6 broods per yr. in Formosa, 2 per yr. in Kyushu and Shikoku. The Oriental Peach moth, *Laspeyresia molesta* Busck has, in Japan, 2-6 broods per yr. according to climatic conditions.

4684. **HERRICK, GLENN W. Some economic aspects of plant quarantines.** *Amer. Assoc. Nurserymen Ann. Conv.* 55: 80-97. 1930.

4685. **HERRICK, GLENN W. Some economic aspects of plant quarantines.** *Florists' Exchange* 74(12): 9, 32, 37. 1930.—Asserting that there has been no perceptible diminution in the stream of foreign pests coming to this country since 1912, and that no domestic quarantine measures ever established have checked or retarded the persistent natural spread of an active, flying insect, the author opposes large expenditures for quarantines and advocates the use of the major part of the funds now spent for domestic quarantines in a rigid study of the behavior of these introduced forms. Foreign plant quarantines may be maintained by inspection and certification at points of origin in foreign countries, cooperating with the authorities in those countries.—*C. G. Bowers.*

4686. **HOIDALE, P. A. The Mexican fruit worm situation.** *Jour. Econ. Ent.* 22(5): 786-789. 1929.—Quarantine regulations with destruction of secondary host trees and clean-up work seemed to be controlling the spread of this insect. At present the Mexican fruit worm (*Anastrepha*) is found in the lower Rio Grande valley.

4687. **KISLIUK, MAX, Jr. Air routes, German dirigible "Graf Zeppelin" and plant quarantines.** *Ent. News* 40(6): 196-197. 1929.—The potential danger of the introduction of insect pests by air routes is dealt with, and a list given of insects and plant diseases which were intercepted from the "Graf Zeppelin" on October 15, 1928, at Lakehurst, N. J.

4688. **KISLIUK, MAX, Jr. Plant quarantine inspection of the dirigible "Graf Zeppelin."** *Jour. Econ. Ent.* 22(3): 594-595. 1929.—List of insects and fungi on flowers of passengers.

4689. **KUWANA, INOKICHI. A scientific basis for plant quarantine in the countries of the Pacific.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1124-1131. 1926(1928).—An address.

4690. **McLAINE, L. S. The basis and aims of plant legislation.** *Jour. Econ. Ent.* 22(3): 449-454. 1929.—While entomological training is necessary for those connected with plant legislation, a knowledge of commerce, economics and transportation is essential for the successful operation of any regulation other than a straight embargo. All regulations should be framed with a scientific background. One solution of the difficulties connected with plant legislation is the establishment of adequate inspection services in all countries, so that all commodities exported may be accompanied by a clean bill of health of real value. A brief review is given of the recently reorganized Canadian service, dealing with both import and export shipments of plants and plant products.—*Author's abstract.*

4691. **NEWELL, WILMON, and J. H. MONTGOMERY. A new angle to plant quarantine activities.** *Proc. Florida State Hort. Soc.* 1929: 145-151. 1929.—The author discusses the added hazards of introduction of pests and diseases through airplane.

4692. **O'KANE, W. C. The quarantine situation in California.** *Monthly Bull. Dept. Agric. California* 18(8): 436-441. 1929.—California represents an extraordinary diversity of topography, crops, insect pests, plant diseases and equally in the quarantine and control measures necessary in meeting plant pests. Port inspection work is highly organized. Control and eradication problems, such as that of the white fly, are well carried out on a large scale. Close relations are maintained with various packing associations. County horticultural commissioners

represent an extensive and important phase of state quarantine and control work. Experiment station activities include many research projects. Problems awaiting solution, such as vegetable weevil, the walnut husk maggot, the date scale, the Hippolates fly, are the subject of extensive studies. Correlation of research, control, and quarantine requires special effort because of the multiplicity of problems in the extensive areas involved. A plan is suggested by which further correlation might be undertaken, this to include the activities of the U. S. Dept. of Agric. through its substations, research work of the Univ. of California, and the activities of the State Dept. of Agric.—*W. C. O'Kane.*

4693. **SMITH, HARRY S. Plant quarantines, their aims, and their biological and economic justification.** *Month. Bull. Dept. Agric. California* 19(3/4): 203-207. 1930.

4694. **SWINGLE, WALTER T. Safeguarding the introduction of plants from foreign countries or distant regions by aseptic propagation in pest-free greenhouses.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1123-1124. 1926(1928).—Abstract. Aseptic propagation in pest-free greenhouses is advocated.

4695. **THOMSON, W. S. Research on infestation of stored products. 1 (a) Entomological aspects—survey and inspection work.** *Ann. Appl. Biol.* 17(2): 400-401. 1930.—Abstract.

4696. **URBAHNS, T. D. Spread of the [Mediterranean] fruit fly.** *Month. Bull. Dept. Agric. California* 18(7): 418-419. 1 fig. 1929.—The transportation of infested fruits and of unsalable culls to dumps, and their use as fertilizer in orchards, are regarded as the principal means of long-distance distribution of this pest in Florida.

4697. **VECHT, J. van der. Over de middellandsche zeefruitvlieg en de maatregelen tegen den invoer ervan in Nederlandsch Indië.** [With English summary.] *Dept. Landb. Nijverh. en Handel, Inst. Plantenziekt. Alg. Proefsta. Landb. Bull.* [*Buitenzorg.*] 22. 1-16. 1 pl., 1 map. 1929.—The most dreaded insect pest of fruit culture, the Mediterranean fruit-fly (*Ceratitis capitata*), has not yet been found in the Netherlands-Indies. In connection with its recent importation into Florida, the possibility of introduction in the Netherlands-Indies is discussed. Brief notes are given of the various stages, the host fruits and the present distribution of *Ceratitis capitata.* Attempts are made to convince the travelling public of the necessity of quarantine measures and of the dangers of importing fruits from abroad in their baggage.—*Author's summary.*

4698. **WHITNEY, L. A. Origin and development of plant quarantines.** *Proc. Hawaiian Ent. Soc.* 7(3): 505-508. 1931.—The first step along quarantine lines was taken by the Legislature of Victoria (Australia) against the grape phylloxera in 1877. The first international convention on such matters was called at Berne, Switzerland, in 1881 and gave rise to the first regulations of planting materials between countries.

4699. **WILLIAMS, R. H. The migratory locust problem in Africa. Advisability of joint action.** *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria Papers Agric. Sect.* p. 263-264. 1929.

4700. **WORTHLEY, L. H. Enforcement of the European corn borer [Pyrausta nubilalis] quarantine in 1928.** *Jour. Econ. Ent.* 22(3): 470-474. 1929.

4701. **YUASA, HACHIRO. On the advantage of the x-ray examination of certain classes of materials and insects subject to the plant quarantine regulations.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1141. 1926(1928).—Abstract.

4702. **ANONYMOUS. Inspection and certification of strawberry plants and black currant bushes.** *Jour. Min. Agric.* [*Gr. Britain*] 36(11): 1073-1078. 1930.

ECONOMIC ENTOMOLOGY

BIOLOGICAL CONTROL

H. S. SMITH, *Editor*

(See also in B. A. 6(1): Entries 1345, 1361, 1729, 1844, 1847, 1860, 2573, 2623, 2662, 2715; and in this issue 3455, 4340, 4640, 4647, 4648, 4707, 5702, 5734, 5758, 5770, 5779)

4703. **ARAVENA, REYNALDO O. Informe sobre el Oeceticus platensis Berg en la localidad de Arano, F. C. S.** *Rev. Soc. Ent. Argentina* 1(3): 61-62. 1927.—Attempts to control the pest by introducing the parasite *Parexorista caridei* have been totally ineffective. Birds, as shown by examination of stomach contents, almost never eat *Oeceticus* [*Oiketicus*].

4704. **d'EMMEREZ de CHARMOY, D. Phytalus (Col., Melol.) in sugar-cane in Mauritius.** *Bull. Ent. Res.* [*London*] 22(1): 83-87. 1931.—*Phytalus smithi* Arrow was apparently imported from Barbados and has now spread over an area of 46,000 acres with appreciable damage on 3200 acres. Since 1911 the total number of beetles collected was 1,704,000,000 at a cost of Rs. 0.055 per 100. During the past 5 yrs. 205,000,000 larvae have been dug up at a cost of Rs. 0.03 per 100. These measures have been very effective in reducing damage. *Tiphia parallela* was successfully introduced from Barbados in 1916 and at present is as completely established as in Barbados with parasitism of 7-30% (ave. 20%). *Elis thoracica* was introduced from Madagascar in 1917 and is now well established as a parasite. It might be worth while to introduce *E. caracasana* from Venezuela or British Guiana. Two other enemies of sugar cane, *Rhizotrogus gravidus* and *R. pallens,* are kept under control in Mauritius by *E. rufa;* and *Oryctes tarandus* is held in control by *Scolia oryctophaga,* which was introduced into Mauritius from Madagascar in 1917.

4705. **FERRIÈRE, CH., et P. VOUKASSOVITCH. Sur les parasites des Aphides et leurs hyperparasites.** *Bull. Soc. Ent. France* 1928(2): 26-29. 1928.—Breeding records of aphid parasites and hyperparasites near Belgrade are given. *Ephedrus lacertosus* was bred from *Macrosiphonella absinthi* and in turn was hyperparasitized by *Pachycrepis clavata. Praon volucre* was a parasite of *Megalosiphum picridis, M. sonchi, Anouraphis amygdali, Rhopalosiphum lactucae,* and *Aphis brassicae. Aphidius medicaginis* attacked an *Aphis* on *Chenopodium,* but was in turn almost completely destroyed by hyperparasites, especially *Aphidencyrtus aphidivorus. Aphidius lonicerae* was bred from *Megalosiphum sonchi. Aphidius ervi* was bred from *Megalosiphum picridis, Macrosiphum cyparissiae,* and *M. pisi,* and was strongly hyperparasitized. *Aphidius sonchi* and *A. cardui* were bred from *Macrosiphum cyparissiae,* and *Aphidius brassicae* from *Aphis brassicae. Lysiphlebus dissolutus* attacked aphids on *Carduus* and *Chenopodium,* but was in turn highly hyperparasitized. *Trioxys aceris* was bred from an *Aphis* on *Ballota foetida;* and another *Trioxys* from *Aphis mali.* The hyperparasites *Asaphes vulgaris, Lygocerus testaceimanus, Pachyneuron aphidis, Aphidencyrtus aphidivorus,* and *Allotria victrix* were numerous and each attacked several hosts.

4706. **FLANDERS, S. E. The mass production of Trichogramma minutum Riley and observations on the natural and artificial parasitism of the codling moth egg.** *Trans. 4th Internat. Congress Ent., Ithaca 1928.* 2: 110-130. 13 fig. 1929.—The mass production of *T. minutum* was undertaken by the author not only to restore the "balance of nature" but to incline "the balance to parasite superiority," in the fight against the codling moth, *Carpocapsa pomonella,* in walnut groves in Cali-

fornia. The ease and rapidity with which it can be reared in enormous numbers under laboratory conditions makes possible its commercial production. Of the several spp. of lepidopterous insects used in the experimental stages for quantity production, it was found that *Sitotroga cerealella* was the best adapted. Countless generations can be reared from stored grain under regulated conditions, the tropisms of the adults are such as to simplify their accumulation into egg deposition cages and their oviposition responses facilitate the collection of eggs. Under laboratory conditions the life-cycle of *Sitotroga* is about 28 days and its fecundity about 40 eggs per ♀. This correlation permits a high rate of reproduction. "It is interesting to note that it will oviposit through a 20-mesh screen into a strong current of air from an electric fan. The air current stimulates oviposition." In 1927 the development of rearing methods progressed rapidly. In May a daily production of about 25,000 *Trichogramma* was obtained; in July this figure was increased to 200,000 daily due to improved methods. Preparations were made to rear a million *Trichogramma* adults daily during 1928. Parasitized eggs for liberation were mailed from the laboratory in tubes $5 \times 3\frac{1}{2}$ inches, in units of 500,000 eggs per mailing tube. Emergence of these eggs was effectively retarded by storage at 2°-7° C. At the beginning of egg deposition and continuing at weekly intervals during the period of maximum egg deposition (portions of) the cards are suspended by wire from the trees infested by the codling moth. The rate of dispersion of the emerged parasites varied directly with the temp. and light intensity, and inversely with excessive air movement and surface moisture. In 1927 "the effect of the release of *Trichogramma* was to increase the percentage of parasitism from less than 1% up to as high as 52.4% on the most highly infested trees," due allowance having been made for natural parasitism. The following year artificial parasitism made increases over natural parasitism of as high as 26%. The author predicts that "in the near future standardized methods in rearing will reduce the cost of *Trichogramma* production to less than $10.00 per million" parasites, permitting "the liberation of enough parasites in local defined areas to over-balance nature, and by parasite superiority cause a reduction of the host to a point below the economic minimum."—*S. M. Dohanian.*

4707. HAZELHOFF, E. H. Biological control of a sugar-cane aphid by transferring its native parasite from the old to the young fields. *Trans. 4th Internat. Congress Ent. Ithaca 1928.* 2: 55-61. 3 fig. 1929.—In Java sugar-cane is grown in 3-annual rotations with other crops, so each year *Oregma lanigera* Zehnt. and its chalcid parasite *Encarsia flavoscutellum* Zehnt. have to migrate from the old to the young fields. If *Encarsia* becomes established in time, the pest is held in check; if not, a serious outbreak may occur. The percentage of parasitism by *Encarsia* is of high prognostic value, indicating whether control measures are necessary. If chemical or mechanical control is used where *Encarsia* is abundant, a considerable decrease of parasitism may give rise to a renewed outbreak of the pest. A combined method of chemical and biological control consists essentially in not disturbing those colonies where *Encarsia* is abundant, and in transferring *Encarsia* to those fields where it is absent or scarce.—*E. H. Hazelhoff.*

4708. JARVIS, HUBERT. The woolly aphis parasite (Aphelinus mali Hald.). *Queensland Dept. Agric. & Stock, Div. Ent. & Plant Path. Ent. Leafl. 3.* 1-3. 1 pl, [1928?].—Life history notes.

4709. KÖHLER, P. Apuntes biológicos. [Biological notes.] *Rev. Soc. Ent. Argentina* 3(1): 63-66. 1930.—The author describes 3 diseases of insects, caused respectively by the fungi *Botrytis bassiana* and *Microsporangium polyedricum*, and by the sporozoan *Nosema bombycis*, and suggests that practical use might be made of them in the problem of insect control.

4710. MARÉCHAL, P. Deux drames dans une ronce. *Bull. Soc. Sci. Seine-et-Oise 2 Ser.* 10: 34-38. 1 pl. 1929.—Description of a mixed nest of the Hymenoptera, *Pemphredon unicolor* F. and *Prosopis confusa* Nyl., the first parasitized by a *Gasteruption* sp. (Evaniidae), the second by an undetermined parasite. The author sets forth the disadvantages of the linear series of the nest chambers.—*P. Maréchal (transl. by A. C. Hodson).*

4711. MEYER, ANTONIO CORREIA. Insecto nocivo á canna de assucar. Uma pratica condemnavel—Os inimigos naturaes. [An insect injurious to sugar cane and its control.] *Bol. Agric. Zootech. e Vet.* [*Minas Geraes*] 2(11/12): 11-16. 5 fig. 1929.—The advantages of the control of *Diatraea saccharalis* Fabr. by means of its natural enemies.

4712. MISRA, M. P., P. S. NEGI, and S. N. GUPTA. The noctuid moth (Eublemma amabilis Moore); a predator of the lac insect and its control. *Jour. Bombay Nat. Hist. Soc.* 34(2): 431-446. 5 pl. 1930.—Redescription of the larva, pupa and adult of this moth with notes on its life-history. A list of the natural enemies and an account of control measures are also given. The authors contend that not a single sample of lac (out of the many examined from various parts of India) was found to be free from the attack of the moth.—*S. Ribeiro.*

4713. NEWMAN, L. J., and H. G. ANDREWARTHA. Blowfly parasite. The red-legged chalcid. Stenosterys fulvoventralis (Dodd). Order Hymenoptera. Family Encyrtidae. Genus Stenosterys. *Jour. Dept. Agric. W. Australia Series 2nd* 7(1): 89-95. 1 pl. 1930.—This parasite was first found in "The South Coast Country" and is thus apparently indigenous to Australia. It has also been found in East Australia, but that strain is less virile. Its eggs are laid in the larvae of the several spp. of sheep blow-flies, and the adults issue from the blow-fly pupae, the length of the life cycle varying from 29 to 72 days. The parasite has become established in several districts and many thousands of adults have been distributed among the sheep flocks. The results with this parasite are more encouraging than with the other 2 under experimentation, namely, *Mormoniella brevicornis* and *Alysia manducator.*—*L. O. Howard.*

4714. PLANK, H. K. Nematodes parasitic on Diatraea saccharalis Fabricius in Cuba. *Jour. Econ. Ent.* 22(6): 982-983. 1929.—*Hexameris meridionalis* Steiner was found in the larva of *D. saccharalis* from Cuba. Other hosts of this species are *Orchelium vulgare*, a cricket, and the grasshoppers *Melanoplus femur rubrum*, and *M. differentialis. Cephalobus elongatus* de Man (?) was recorded from a dead larva of *D. saccharalis.*

4715. POOS, F. W. An annotated list of some parasitic insects. *Proc. Ent. Soc. Washington* 30(8): 145-150. 1928.—Lists 63 spp. recorded from the following hosts: *Acrosternum hilaris, Alabama argillacea, Aphis pseudobrassicae, Autographa brassicae, Bedellia somnulentella, Cirphis unipunctata, Diabrotica vittata, Hymenia fascialis, Illinoia solanifolii, Lema trilineata, Phlegethontius secta, Phthorimaea glochinella, P. operculella, Phytomyza ilicis, Plutella maculipennis, Pontia rapae, Pyrausta ainsliei,* and *Thyridopteryx ephemeraeformis.*

4716. POTGIETER, J. T. A contribution to the biology of the brown swarm locust. *Union So. Africa Dept. Agric. Sci. Bull. 82.* (*Univ. Stellenbosch Sci. Bull. No. 6*) 1-48. 1 map, 8 pl. (1 col.), 1929.—The publication is the result of a study of the locust problem in So. Africa begun in 1924. Details of the life history of *Locustana pardalina* Walk. as revealed in cage experiments and in field observations are recorded. No grounds were found in support of Uvarov's "phase theory" and it is contended that the color manifestations are caused by Mendelian factors. The natural enemies of the brown locust received special attention and the following dipterous parasites were found most effective: The tailed maggot fly (*Symmictus costatus*); the Bombyliid fly (*Systoechus albidus*); the muscid fly (*Stomatorrhina lunata*); the dotted locust fly (*Wohlfahrtia euvittata*). *W. euvittata* was successfully

raised artificially and a summary is given of the main facts of its life cycle.—*P. A. van der Byl.*

4717. **RAMACHANDRA RAO, Y. The prickly-pear cochineal. Its utilization for destroying cactus in South India.** *Madras Agric. Jour.* 19(1): 14-15. 1 pl. 1931.—A brief discussion of a wild cochineal, *Dactylopius opuntiae* (*tomentosus*), introduced from Australia in 1926-1927 and used successfully to exterminate the prickly-pear.

4718. **SPEYER, E. R. Biological control of the greenhouse white-fly.** *Nature* [*London*] 126(3191): 1009-1010. 1930.—Very effective control has been obtained by distribution of the parasite *Encarsia formosa* which most readily attacks the white fly on tomato plants. In this manner parasite stock can be obtained in quantity. Infested branches with parasitized insects are packed in boxes and shipped to subscribers. The best time for obtaining parasite control in the greenhouses is between March and September, or at other seasons if the minimum temp. can be held above 55° F.

4719. **SMITH, LESLIE M. Macrorileya oecanthi Ashm., a hymenopterous egg parasite of tree crickets.** *Univ. California Publ. Ent.* 5(8): 165-172. 5 fig. 1930.—The egg* of *M. oecanthi* is inserted into the egg cavities of *Oecanthus niveus* and *O. californicus,* and placed on the outside of the host egg.* The larvae* tunnel through the pith channel of the stem, eating as many as 15 eggs of the host. Pupation occurs within the stem, and the adults* emerge during Aug. and Sept. An unidentified species of Pteromalid hyperparasite was reared from *M. oecanthi.*—*L. M. Smith.*

4720. **STEENBURGH, W. E. A season's work on the colonization in Ontario of Macrocentrus ancylivora Rohwer, a parasite of the Oriental peach moth (Laspeyresia molesta Busck).** *Canadian Ent.* 62(4): 71-75. 1 fig. 1930.—*M. ancylivora* found in 1929 suitable summer breeding conditions in the Niagara Peninsula and multiplied and spread over about 35 sq. miles. As a very small number of the available Oriental Peach moth larvae were taken in the collections, the parasite recoveries represent a very small percentage of *Macrocentrus* population in the district. Already an appreciable amount of control has been demonstrated at the colonization points and in nearby orchards. Collections and field observations indicate the probability of the parasite overwintering in either of its available hosts.—*From author's summary.*

4721. **STRASSBERGER, RICARDO. Los enemigos de Rothschildia jacobaeae Walker. [The enemies of R. jacobaeae.]** *Revista Soc. Ent. Argentina* 1(2): 57. 1926.

4722. **THOMPSON, W. R. The natural control of Pyrausta nubilalis Hb. in Europe.** *Congrès Internation. Xe Zool. à Budapest* 1927 Part 2. 1183-1195. 1 map, 1 fig. 1929.—In addition to a brief general discussion of the status of insects introduced into new areas and their control by parasites, this paper comprises an outline of some of the principal results secured by the investigators of the U. S. Bureau of Entomology in the study of the controlling factors of *P. nubilalis* in Europe. The differentiations of the principal bioclimatic zones in topography, climate and agriculture are discussed and a map indicates centers of investigation in Europe. The environmental factors under consideration are: A. Natural controlling factors, 1. Intrinsic limiting the ecological optimum, 2. Extrinsic, a. Organic, parasites, predators, disease, b. Inorganic, climatic and topographic, composition of soil. B. Artificial controlling factors, agricultural practices, topping, destruction of stalks, etc. The parasites studied are enumerated and tables are given showing nature and extent of variation of parasitic fauna by zones. Control of *P. nubilalis* in Europe is not due to any single cause but is produced by a complex group of agricultural, parasitic, and meteorological factors which varies quantitatively and qualitatively and some of these are considered hypothetically in the re-establishment of a natural equilibrium.—*J. S. Wade.*

4723. **THORPE, W. H. Observations on the parasites of the pine-shoot moth, Rhyacionia buoliana Schiff.** *Bull. Ent. Res.* [*London*] 21(3): 387-412. 8 fig. 1930.—In this preliminary study of the parasites of the pine-shoot moth, *R. buoliana,* in England, 28 spp. of primary and secondary parasites were obtained; of these, *Gelis fallax, Pimpla elegans, Hypantyx impressus, Microbracon abscissor* and *Eutelus mediterraneus* are new to Great Britain. These and the following are new parasites of *R. buoliana: Phaeogenes coryphaeus* (?), *P. mysticus* (?), *Hemiteles bicolorinus, H. palpator* (?), *Pimpla robusta, Clistopyga incitator, Eulimneria rufifemur, Omorgus mutabilis, O. borealis, O. ensator, Apanteles falcatus, Eubadizon extensor* and *Habrocytus acutigena;* 13 spp. were represented by not more than 2 specimens and are probably of little economic importance. Of the remaining 15, 2 (*H. acutigena* and *E. mediterraneus*) are definitely hyperparasites, and at least 2 of the Pimplines (*Pimpla ruficollis* and *P. brevicornis*) are likely to live as hyperparasites under certain conditions. The dominant or "key" parasites in this complex appear to be the braconid, *Orgilus obscurator,* and 2 ophionines, *Cremastus interruptor* and *O. mutabilis.* These were shipped to Canada and the first 2 have become established there. A brief account is given of the salient facts in the biology of each sp. and the more important diagnostic characters of the adults are described to facilitate accurate identification; the essential critical details of the mature larvae of *O. borealis**, *O. ensator**, *E. rufifemur**, *O. obscurator**, *O. mutabilis, C. interruptor**, *Pimpla examinator**, *P. brevicornis**, and *P. ruficollis**, are described. Of these spp. the majority attack the larva. *P. examinator* is the only true pupal parasite which is at all common, but *O. mutabilis* and *O. obscurator,* although essentially larval parasites, frequently remain in their host and complete their development after it has pupated. Four other spp., though normally living as larval parasites, may occasionally emerge from the pupa. One egg-parasite, *Trichogramma evanescens,* was recorded. None of the common spp. is confined to *R. buoliana,* and there is no reason to suppose that the other spp., about which less is known, are specific.

4724. **TILLYARD, R. J. The biological control of noxious weeds.** *Papers and Proc. Roy. Soc. Tasmania 1929.* 51-86, 8 pl. 1930.—(1) General principles: In the series host-plant, insect enemy, parasite or predator, hyperparasite, any given term is to be regarded as beneficial or injurious according to the economic position of the host-plant in relation to man; e.g., the ladybird beetle, *Cryptolaemus montrouzieri,* must be classed as highly beneficial in California, where it attacks mealybugs on citrus trees, and injurious in the *Opuntia*-infested areas of Queensland, where it checks the activities of the beneficial Cochineal Insect, *Dactylopius tomentosus,* introduced to help to control the prickly pear, *Opuntia* spp. In dealing with the introduction of insects to control noxious weeds, the theoretical risk depends mainly on the degree of specialization of the insect and the botanical position of the weed involved. The practical risks are next considered, and rules laid down for minimizing them, including the careful construction of quarantine insectaries and the carrying out of oviposition and starvation tests therein. Before a liberation permit is secured, negative results should be obtained from tests on a wide range of economic plants.—(2) Early history of biological control of noxious weeds: This section deals with the work done by the Hawaiian Sugar Planters' Assoc. Exper. Sta., Honolulu. Lantana has been partially controlled by *Agromyza lantanae, Crocidosema lantanae, Thecla echion* and *T. bazochii.* Experiments are being carried out on Nut-grass, Pamakani (*Eupatorium glandulosum*) and Gorse.—(3) Biological control of prickly pear in Australia. The Prickly Pear in Australia consists of various spp. of *Opuntia* of which *O. inermis* is the commonest. Sixty million acres are infested, in Queensland and northern N. S. W. The introduced insects are *Chelinidea tabulata, Dactylopius tomentosus, Tetranychus opuntiae* (Red Spider) and a group of tunnelling caterpillars of which one, *Cactoblastis cactorum* from Argentina, has proved highly successful; its work of destruction is completed by the

soft-rot *Bacillus opuntiarum*.—(4) Biological control of noxious weeds in New Zealand: An account of the work begun at the Cawthron Institute, Nelson, in which the weeds being studied are Gorse, Blackberry, Ragwort and Piri-piri (*Acaena sanguisorbae*). *Tyria jacobaeae*, introduced from England for ragwort control, appears to be promising. Blackberry is a very difficult problem.—(5) Biological control of noxious weeds in Australia: An account of the work being taken up at the new Commonwealth Entomological Laboratories in Canberra. The weeds being studied are St. John's Wort (*Hypericum perforatum*), Cockle Burrs (*Xanthium* spp.), Ragwort, Skeleton Weed, etc. *Chrysomela hyperici*, *C. varians* and *C. didymata* have been introduced for *Hypericum* control and are being tested under quarantine conditions.—*R. J. Tillyard.*

4725. TOTHILL, J. D., (assisted by T. H. C. TAYLOR and R. W. PAINE). The coconut moth in Fiji: a history of its control by means of parasites. vii+269 p. The Imperial Bureau of Entomology: London, 1930.

ECONOMIC ENTOMOLOGY

INSECTICIDES AND APPARATUS

C. H. RICHARDSON, *Editor*

(See also in this issue Entries 3523, 4614, 4629, 4630, 4631, 4633, 4639, 4643, 4650, 4673, 4682, 4738)

4726. FLEMING, WALTER E., and REINHOLD WAGNER. Miscible carbon disulphide. *Indust. & Eng. Chem.* 20(8): 849-851. 1928.—A recently perfected miscible CS_2, of which the preparation and the physical properties are discussed in detail, is equally as effective as emulsions of this compound for destroying the soil-infesting stages of the Japanese beetle, *Popillia japonica* Newm. It is no more injurious to plants, and furthermore, has certain physical and chemical advantages. Preparation: Sufficient KOH is dissolved in a solution consisting of 7 parts alcohol (95% denatured) and 3 parts water by volume to give a concentration of 24.5 to 25%. Mix 55 parts by volume of blown castor oil with each 10 parts of the alcoholic KOH solution. Gradually raise the temp. with agitation to 93.3° C and hold at this temp. until the reaction between the oil and the alkali is complete. Cool the mixture to room temp. and add the CS_2 in the amount of 35 parts by volume to 65 parts of the castor oil soap. Stir until the mixture is homogeneous. The resulting mixture should contain about 52% of total solids and 48% of volatile constituents of which about 40% is CS_2.

4727. GERSDORFF, W. A., and W. M. DAVIDSON. New solvents for the active principles of pyrethrum. *Indust. & Eng. Chem.* 21(12): 1251-1253. 1929.—Methyl, ethyl, isopropyl, normal butyl, secondary butyl, and tertiary butyl alcohols, as well as benzene, xylene, carbon tetrachloride, chloroform, ethylene dichloride, amylene dichloride, tetrachloroethylene, and diethyl carbonate, completely removed from pyrethrum the insecticidal principles effective against *Myzus persicae*. Normal and secondary butyl alcohols at 10% concentrations in water and benzene, and CCl_4, ethylene dichloride, tetrachloroethylene, and diethyl carbonate at 5% concentrations in ethyl alcohol, killed 50% or more of these aphids without injury to cabbage. At 5% concentrations all the extracts except xylene and amylene dichloride gave effective control against *M. persicae* without injury to cabbage. Normal and secondary butyl alcohols showed markedly greater toxicity to these aphids than tertiary butyl and isopropyl alcohols, which, in turn, showed markedly greater toxicity than methyl and ethyl alcohols. If cost is taken into account, denatured ethyl alcohol appears to be the best of the solvents tried for extracting pyrethrum when the extract is to be diluted with water for application upon plants. Boiling point temp. gave no advantage over room temp. in the extraction of pyrethrum with these solvents.—*Authors' summary.*

4728. MARCANDIER. Recherches sur l'action antiseptique et insecticide des vapeurs de chloropicrine. II. Action insecticide de la chloropicrine. *Arch. Med. et Pharmac. Navales* 118(3): 205-237. 1 fig. 1928.—Chloropicrin was tested as an insecticidal fumigant both in flasks in the laboratory and in rooms. In a dosage of 10 to 20 gms. per cubic meter for 24 hrs. at 15° C. its vapors killed lice, *Pediculosis vestimenti*, and their eggs both in the open and when covered by cloth. If a higher dosage was used a shorter exposure was sufficient. Saturated vapor of chloropicrin or its water solution killed them in less than 15 min. Higher temp. favored the action of the fumigant. Both the adults and the larvae of moths (*Tineola biselliella, Tinea pellionella* and *Trichophaga tapetiella*) were killed by the vapors of chloropicrin in a dosage of 15-25 gms. per cu. meter for 48 hrs. As there is some doubt about the killing of the pupae of the 3 spp. of moths and the eggs of *T. biselliella* and *T. pellionella*, it is preferable to make 2 fumigations at an interval of 3 or 4 weeks. In a dosage of 10 to 20 gms. per cubic meter for 24 hrs., chloropicrin vapor killed bedbugs (*Cimex lectularius*), their eggs, and cockroaches (*Ectobius lividius, Blattella americana* and *Blatta orientalis*), both exposed and covered with cloth. The action on the eggs of cockroaches is not certain. It is therefore well to fumigate twice at an interval of 3 weeks. For the treatment of sarcoptic itch of man no superiority over other treatments has been shown. Experiments on simultaneous fumigation with formaldehyde in a Gonin fumigator as a disinfectant and chloropicrin as an insecticide showed that the 2 compounds did not interfere with each other, each exerting its characteristic action as if the other were absent. However, it is suggested that the chloropicrin should be added after the formaldehyde gas has been evolved from the generator.—*E. L. Griffin.*

4729. MARCOVITCH, S., and W. W. STANLEY. Insecticidal properties of cryolite and barium fluosilicate. *Indust. & Eng. Chem.* 22(2): 121. 1930.—Preliminary paper. Tests with the flea beetle and hornworm of tobacco and the Mexican bean beetle are reported.

4730. NELSON, O. A. Vapor pressures of fumigants. IV. 1, 1, 2, 2-tetra-, penta-, and hexachloroethanes. *Indust. & Eng. Chem.* 22(9): 971-972. 1930.

4731. PAOLI, GUIDO. Alcune applicazioni delle soluzioni di cianuro di sodio nella lotta contro gl'insetti. [Use of sodium cyanide solution in insect control.] *Boll. R. Staz. Patol. Veg.* [*Firenze*] 9(3): 273-281. 4 fig. 1929.—NaCN solution poured on the ground or on other absorbent substances decomposed rapidly on exposure to air, with the formation of HCN. This is very effective in destroying insects in the ground or in dung, sewage, etc. It is particularly recommended for the destruction of nests of social insects, as termites and ants. $Ca(CN)_2$, the use of which is prohibited in Italy, can be used for slower fumigation of insects indoors, as in warehouses, bins, etc.—*Author's summary* (*transl. by R. A. Muttkowski*).

4732. PEET, C. H. Evaluation of insecticides. *Indust. & Eng. Chem.* 20(11): 1164-1165. 1928.—The following variables should be considered in testing an insecticide by the method of biological assay: Temp., which should be that of the insect's maximum activity; time interval between application of the insecticide and taking the result; humidity of the testing chamber; concentration of the toxic substances in its carrier; kind of sprayer; spraying pressure; agitation, if gases or mists are employed; condition of insect; replication of tests. Method for testing insecticides on the housefly (*Musca domestica* L.) and on aphids and red spiders are outlined.—*C. H. Richardson.*

4733. RIPLEY, L. B., and G. A. HEPBURN. Studies on the reactions of the Natal fruit-fly to fermenting

baits. A new olfactometer successully used with fruit-flies. *Union S. Africa Dept. Agric. Ent. Mem.* 6. pp. 19-53; 55-74. 7 fig. 1929.—An attempt is being made to control the Natal Fruit-fly [*Pterandrus rosa*] by baited traps and repellents, the former to be hung in trees where there is no fruit in stages susceptible to attack by the fly, the latter to be applied to trees bearing susceptible fruit. To test this scheme a detailed search is being made for substances that attract or repel the fruit-fly. Some 150 pure chemicals and a number of essential oils have been tested in field and laboratory, using several kinds of especially designed apparatus, including a new type of olfactometer, which is described in detail. A certain fermenting pollard bait is the strongest attractant known, owing its attractiveness to products of fermentation. Clove oil is nearly as strong an attractant. Its attractive ingredient is not eugenol and is not yet found. Linalyl acetate (occurring in peaches) is the only fruit ester yet found to be a strong attractant, but many volatile compounds occurring in fruits or fermenting baits are weak attractants. No mixtures of attractants tested attract more than certain of the ingredients used alone at a concentration equal to that of the mixture. The optimum concentration for trapping flies with linalyl acetate lies between .1 and .15% with 2.5% ethyl alcohol as a solvent, but higher concentrations are required to attract them from a distance. True repellents appear rare. Peppermint oil and isopropyl alcohol are among the strongest found. (Creosote and asafoetida attract.) Substances obscuring the odor of attractants, termed "obscurants," are numerous, e.g., fusel oil and turpentine, which obscure pollard bait. Visual reactions of the fly to color, luster, light intensity and to objects of different shapes have been studied as indicating the most attractive type of trap for holding the bait. Although highly sensitive to differences in light intensity, preferring lighter colored objects to darker ones, no color sense could be demonstrated. Lustrous objects are preferred to dull. Vitreous luster is preferred to metallic. Heavy glass jars are indicated as traps and have been satisfactory in practise.—*L. B. Ripley.*

4734. **ZACHER, F., und G. KUNIKE. Untersuchungen über die insektizide Wirkung von Oxyden und Karbonaten. (Beiträge zur Kenntnis der Vorratsschädlinge, 5. Beitrag.)** *Arb. Biol. Reichsanst. Land- u. Forstwirtsch.* 18(2): 201-231. 1930.—The insecticidal value of dusts, especially the oxides and carbonates of the light and heavy metals, which are relatively inactive from the chemical standpoint, was studied. The oxides and carbonates of Mg, Mn, Si and other metals, when very finely divided, acted as true contact insecticides upon *Periplaneta, Calandra, Phyllotreta* and other insects. They did not act as stomach poisons or fumigants. The weakly alkaline reaction of the solutions and the metallic radicals are not responsible for the effect, as very finely divided silicon dioxide was effective. Various stages of development were differently affected, as were the different spp. of insects. There seemed to be a relationship with body size, and especially with body surface and contents. The dusted insects became completely dry in a short time, so that loss of weight which caused death could be quantitatively determined. The dusting was not effective in moist air. Plant tissues were not altered by a solution of magnesium oxide, either visibly or in weight. Wheat plants treated with oxides and carbonates of Mg and Cu showed no effects upon growth or reproduction. The insecticidal action is apparently not a chemical one, but is a surface phenomenon of physical character so influencing the water outgo that the dusted animal succumbs in a few days, due to an overwhelming thirst. Because of the especially strong action under conditions of low humidity and high temp. these compounds should be of especial value in hot, arid regions.—*Zacher and Kunike (transl. by W. C. Cook).*

ECONOMIC ENTOMOLOGY

APICULTURE

E. F. PHILLIPS, *Editor*

(See also in this issue Entry 4354)

4735. **ARMBRUSTER, L. Bienen und Bienenzucht.** *Reclam Praktisches Wissen,* pp. 634-642. 1927.—A general account of the historical development of beekeeping from earliest time, with a discussion of the primitive hives used in various parts of Europe, especially Germany. Primitive tools for the beekeeper are also discussed, with their modern forms.—*E. F. Phillips.*

4736. **ELSER, E. Die chemische Zusammensetzung der Nahrungsstoffe der Biene. [Chemical composition of the food of bees.]** [Continuation.] *Biene* 68(7): 212-213. 1930.

4737. **GRIEBEL, C. Zur Pollenanalyse des Honigs. I. u. II.** *Zeitschr. Untersuch. Lebensmittel* 59(1): 63-79. 78 fig. 1930.—A comprehensive study was made of the pollen occurring in German honey, and illustrations are given for identification of species. Part I includes 37 spp., chiefly Leguminosae, Cruciferae, Rosaceae, and Ericaceae, and a few wind pollinating forms with their relative frequency of occurrence. Part II describes 40 spp., especially of the Compositae, Labiatae, Umbelliferae, and Boraginaceae.—*C. Griebel (transl. by H. H. M. Bowman).*

4738. **HIMMER, A. Ein neues Wachsmottenbekämpfungsmittel.** *Bayerische Biene* 52(10): 232-233. 1930.—Note on successful tests with a new preparation, "Areginol," for use against wax moths, etc.

4739. **HINDERER. Bienenzüchter und Rotschwänzchen. [Apiarist and redstart.]** *Aus der Heimat* 43(10): 316-317. 1930.—A pair of these birds fed their young on dead bees, but did not molest flying bees.

4740. **MARTELL, P. Über Bienen-Lehrfilme. [Educational films of bees.]** *Ent. Anzeiger* 10(6): 109-114. 1930.

4741. **MELLOR, J. E. M. A brief note on beekeeping in Cyprus.** *Bull. Soc. Roy. Ent. d'Egypte* 14(2/3): 65-67. 5 pl. 1930.

4742. **MELLOR, J. E. M. Beekeeping in Egypt, Pt. 2.** *Bull. Soc. Roy. Ent. d'Egypte* 14(2/3): 68-74. 1930.

4743. **MURNEEK, A. E. The use of bees in apple sterility studies.** *Proc. Amer. Soc. Hort. Sci.* 26: 39-42. 1929(1930).

4744. **OERTEL, E. Number of egg tubules in queen-bee ovaries.** *Amer. Bee Jour.* 71(3): 118. 1931.—Preliminary report of a study to determine whether a queen with a large number of egg tubules will produce more bees under similar conditions than one with a small number of tubules.

4745. **PHILLIPS, E. F. Definitions for honey. Makers of dictionaries and government officials try to define honey.** *Gleanings in Bee Culture* 58(9): 562-566. 1930.

4746. **SMARAGDOVA, MINA P. Data on the influence of the density of population on the duration of life of the workers of the honey bee (Preliminary reports).** *Bee World* 11(9): 103-105. 1930.

ANIMAL PRODUCTION

G. BOHSTEDT, *Editor*, General
M. A. JULL, *Associate Editor*, Poultry

(See also in this issue Entries 3104, 3264, 3266, 3267, 3274, 3600, 3775, 3779, 3834, 3844, 3860, 3883, 4001, 4213, 4838, 5311, 5340, 5379, 5394, 6041)

GENERAL

4747. **ABULADZE, SH.** Referring to the methodics for standardizing various fibred wool. [In Georgian, with summaries in Russian and English.] *Bull. Inst. Exp. Agric. Georgia* [*Tiflis*] 1929(3): 22-35. 1 pl. 1929.—Various climatic conditions affect the wool sheared during different yrs. and therefore the quality of these wools will not be the same. The age of the sheep also influences the quality of wool. The wool of the first shearing differs largely from the following fleeces of the same sheep. "The Standard of the U. S. S. R." is a classification of wool into 3 categories according to the medulla of the fibre. Since the classification is based on the judgement of the worker, errors due to the personality of the judge are inevitable.—*From author's summary.*

4748. **AXELSSON, JOEL.** Sambandet mellan antalet grisar i kullarna vid födseln och medelvikten pr gris i desamma vid olika ålder. [Relation between the number of pigs in litters at birth and the average weight per pig of the same litters at different ages.] (Beretning Nordiske Jordbrugsforskn. Foren. 4de Kongress Helsingfors, Juli 1929). *Nordisk Jordbrugsforskning* [*Copenhagen.*] Hefte 4/7. 123-141. 1929.

4749. **BEVERIDGE, L. H.** Lamb-raising trials, 1929-30. Hawkesbury Agricultural College. *Agric. Gaz. New So. Wales* 41(7): 532-534. 1930.

4750. **BOGORAS, WALDEMAR G.** New data on the types and distribution of reindeer breeding in Northern Eurasia. *Proc. 23rd Internation. Congress Americanists* (*New York*) 1928: 403-410. Map. 1930.—Mostly ethnographic.

4751. **DAVIDSON, H. R.** The value of grazing for fattening pigs. *Scottish Jour. Agric.* 13(3): 288-293. 1930.—Several factors are involved in the grazing of pigs, many of them advantageous, some of them not. In the case of breeding pigs nearly all of the advantages do not, as a rule, apply. In the case of fattening pigs a number of experimental results indicate that when a ration is otherwise properly balanced the addition of green feed makes little if any difference. When young pigs are grazed for a few weeks after weaning, the advantages of exercise and exposure to fresh air and sunlight lead to an improvement in constitution which is reflected in relatively increased gains when the animals are fattened inside. Where green food must be consumed as being the cheapest available foodstuff, it may be fed, preferably cut and supplied in the sties, at a rate not exceeding an average of about 6 lb. per head daily.—*Author's summary.*

4752. **DSCHAPARIDZE, N., and N. SANADZE.** [The standardization of Georgian wool.] [Text in Georgian, summaries in Russian and German.] *Bull. Inst. Exp. Agric. Georgia* [*Tiflis*] 1929(3): 70-79. 1929.

4753. **DUERDEN, J. E., and P. S. BOTHA.** Density variation in the fleece of the merino. *S. African Jour. Sci.* 27: 546. 1930.

4754. **ELSDON, G. D., and J. R. STUBBS.** The freezing point of milk as a means of detecting added water. *Analyst* 55(652): 423-432. 1930.—For the present it may be assumed that an average of 0.54 may be taken for calculating added water, but that no milk should be considered as watered on the evidence of the freezing point of a single sample alone, unless the depression falls below 0.53. It seems to be fairly well established that as a milk becomes sour the depression of the point increases, so that the method is applicable only to fresh milks or slightly sour milks after suitable correction. All the freezing points determined by the authors have been obtained on fresh milks. The acidities given are in ml. of *N*/10 NaOH for 10 cc. of milk. The Hortvet apparatus is recommended as a convenient and rapid process for the determination of the freezing point of milk.—*From authors' summary.*

4755. **FALTIN, ADOLF, és GÉZA DEDINSZKY.** A tehén- és juhtejzsír néhány állandójának változása évszakonként. [Seasonal changes of some constants of cow and sheep milk fat.] [German summary.] *Kisérletügyi Közlemények* 33(1): 62-77. 1930.—Weekly samples of creamery butter from Debreczen (in the Hungarian lowland plain) were studied for an entire year to find the variations in the Reichert-Meissl number, the Kuhlmann-Grossfeld butyric acid number, the Polenske number and the Raalte xylene number. Twenty-four samples of freshly churned butter from ewe's milk were also investigated. The Reichert-Meissl number averaged 26.94 in the creamery butter and 26.86 in the butter from the ewe's milk with ranges of 22.5 to 31.7 and 22.46 to 30.44 respectively. The averages for the butyric acid number were 18.82 for the creamery butter and 18.47 for the other with ranges of 17.9 to 20.9 and of 15.77 to 21.04. The Polenske number averaged 3.38 in the creamery butter and 3.75 in the butter from ewe's milk with ranges of 1.8 to 5.8 and 2.2 to 6.93 respectively. The xylene number averaged 18.27 in the creamery butter and 18.03 in the butter from ewe's milk with a range from 17.7 to 20.36 in the creamery butter. The Reichert-Meissl numbers were highest in the winter months and lowest in the summer when the animals were on pasture. The transition from pasture to stall feeding affected the butyric acid number and the xylene number less than it did the Reichert-Meissl number. The author believes the butyric acid number and the xylene number are advantageous in the judging of butter. Hungarian butter seems to be poorer in butyric acid than foreign butter is. The figures found for the Polenske number are higher than those usually reported in the literature on the subject. The Polenske number and the Reichert-Meissl number vary in direct proportion to each other. The results with the butter from ewe's milk are very similar to those from the creamery butter. As lactation advances the Reichert-Meissl number and the butyric acid number gradually decrease. The butyric acid number and the xylene number are correlated with the Reichert-Meissl number in fluctuation but are much less variable.—*J. L. Lush.*

4756. **HANSSON, NILS, und SVEN BENGTSSON.** Der allgemeine Nahrungsbedarf der Mastschweine beleuchtet durch praktische Fütterungsversuche. *Tierernährung* 1(5/6): 578-607. 1930.—Hansson's old feeding standard for fattening pigs was examined as to its applicability for swine of bacon type. A more liberal feeding than that stated in the norm gives a higher daily increase but also a higher food consumption per kgm. of growth; a less liberal feeding leads to decreased daily growth but also to a somewhat diminished food consumption per kgm. of gain. The old standard seems, therefore, to meet fairly well the feed requirement of swine of bacon type. The norm is stated in the bulletin and expressed in feed units.—*N. Hansson.*

4757. **HORN, VALENTIN, und THEOBALD PREIS.** Schweinemastversuche mit Gerste und Roggen. [English summary.] *Tierernährung* 2(6): 487-504. 1931.—In tests to determine the value of rye for fattening swine, various mixtures of rye and barley showed better gains than the lots with barley alone. In the main test the gains of the lots with a mixture of $\frac{2}{3}$ barley and $\frac{1}{3}$ rye and of those with barley and rye at equal parts were the same; whereas the gains of the groups with a mixture of $\frac{2}{3}$ rye and $\frac{1}{3}$ barley remained noticeably behind the gains of the other groups, mainly caused by the frequent heat and the smaller feed consumption during

these periods. The application of Vigantol to 2 groups leads to somewhat better gains. An unfavorable influence of feeding rye on the quality of meat and fat could not be proved in any case. Thus the results of the trials show, that rye mixed with barley produces at least the same effect in fattening swine as the feeding of barley alone, without any unfavorable influence on the quality of meat or fat.—*Authors' summary.*

4758. **INGHAM, L. W., DEVOE MEADE, and M. H. BERRY.** Calf feeding investigations. I. Raising dairy calves on nurse cow, whole milk, remade skim milk, and calf meal. *Maryland Agric. Exp. Sta. Bull.* 319. p. 277-302. 7 fig. 1930.—To determine whether or not it is possible to raise strong, healthy, vigorous calves by feeding substitutes for or supplements to whole milk, and to compare the cost and efficiency of several methods of feeding, 16 calves ranging in weight from 70 to 115 lb. and in age from 8 to 20 days were fed from Oct. 15 to Apr. 15. The animals were divided into 4 lots of 4 head each. Lot 1, composed of the 4 youngest and smallest calves, were all put on one nurse cow; lot 2 was hand-fed a minimum amount of whole milk; lot 3, hand-fed remade skim milk (1 part of skim milk powder to 9 parts of water); and lot 4, Maryland Calf Meal mixture (equal parts of ground yellow corn, ground oats, wheat bran, skim milk powder, and ½ part of linseed meal). The latter mixture was fed as a gruel, 1 part being mixed with 9 parts of water, to which was added 1% salt. These results indicate that large vigorous calves may be dropped from liquid feeding when from 30 to 45 days of age, while less vigorous calves should be continued to 60 days of age. The nurse cow is very satisfactory for raising delicate and valuable calves, but hand-feeding of whole milk is too costly a method. Approximately 100 lb. of whole milk and from 60 to 85 lb. of dry skim milk, part of which may be fed as a liquid, are required to raise a normal calf. Remade skim milk may be fed cold with good results. The method which included the Maryland Calf Meal mixture was somewhat cheaper than some of the other methods and reduced the whole milk, grain, and skim milk to a minimum.—*L. W. Ingham.*

4759. **KNEPP, EARL M.** Factors affecting tank type milk coolers. *Agric. Engineering* 11(9): 301-303. 3 fig. 1930.—The use of the agitator greatly increases the rate of cooling obtained by tank type coolers. It is possible to cool milk from 95 to 60° and below in the tank-type coolers using the agitator, in the same time that is required to obtain the same temperature in surface-cooled milk placed in a tank without agitation. When the tank operated at 45°, the agitator greatly reduced the rate of growth of bacteria. Operating the tank at 35° greatly increased the cost of operation, and would not be justified except where the dairyman received a good bonus for his milk, or had to ship it long distances. The number of kilowatt-hrs. used for each 100 B.T.U. of heat removed varied with the different machines, and temp. to which the milk was cooled, from 0.0583 to 0.0123. Even in well-insulated tanks the refrigeration lost through the sides of the tank was from 48-90 lb. of ice for each 24 hrs.—*Author's summary.*

4760. **[KOLMAKOV, D. V.]** КОЛМАКОВ, Д. В. Пух северного оленя и его применение. [The reindeer's down and its utilisation.] Советский Север. [*Soviet North* (*Moscow*)] 1930(1): 106-107. 1930.

4761. **KRZYWANEK, WILHELM, und HANNS BRUEGGEMANN.** Modellversuche zur Physiologie des Saugaktes. *Berliner Tierärztl. Wochenschr.* 46(40): 710-713. 4 fig. 1930.—By means of an artificial teat the action of the mouth of the calf during sucking was recorded and studied. The pressures in the mouth cavity of the calf ranged from +50 to −290 mm. of Hg. Perhaps the range would not be quite this large under normal conditions. The pressure exerted by the calf proceeds in a wave-like manner from the base to the point of the teat.—*J. L. Lush.*

4762. **LING, A. W., C. A. MacEACHARN, and C. COMELY.** The effect of different balanced rations on the yield and composition of milk from dairy cows. *Univ. Bristol Dept. Agric. and Hort. Bull.* 3. 3-18. [1930]. —From the results obtained it appears that, provided the rations are balanced as to starch equivalent and protein content and the constituents of the ration are such as not to cause digestive trouble, they will not seriously affect the yield or composition of the milk. Variations take place in the yield and composition of the milk of individual cows from day to day, but these cannot be correlated with the change of ration of the types investigated. In one of the rations fed the oil content was 10%, but this amount did not appear to depress the percentage of butter fat in the milk.

4763. **MACALIK, BASIL.** Dějiny chovu koní na Hané. [The history of horse raising in the Haná region, Czecho-Slovakia.] [French summary.] *Sbornik Československé Akad. Zemědělské* 5(3): 295-360. 1930.—Studies of skulls and of bones of horses recovered from prehistorical diluvial and alluvial beds prove that 2 spp. lived in the region of Haná: the heavy horse, with the size of the horse of the valley, and the light horse, about the size of oriental horses. In historic times the 2 spp. probably lived simultaneously. According to 18th century writers, Moravian horses were small; documents of the first half of the 19th century represent them as larger and stronger in the mountainous regions than in the plains in the region of Haná. According to studies of laboring conditions of that time, the horse of this country was vigorous, of an average height of 160-170 cm., with a lively temperament, and black or dun. Chestnut and white horses were not found in the region of Haná until the close of the 19th century, when the peasants were required to mate some of the emperor's stallions with suitable mares. The peasants have raised the horses with particular care. All the horses were raised on pasture, where they remained day and night. After the dividing up of the pastures in 1870-1885 the horses have been raised solely in stables. Until 1869 horse raising was under the direction of the ministry of war; since then it is under the ministry of agriculture. Government officials and some horse breeders determined the aim of breeding, which was the raising of a strong and massive horse for the artillery. In order to reach this goal, 2 associations of horse breeders were established: a central association of breeders of medium light horses, and another for the breeding of the heavy horse. Both maintain stud books. It is estimated that 87% of the horses of the region of Haná are light horses.—*From author's summary* (*transl. by W. R. Horlacher*).

4764. **M'CANDLISH, ANDREW C.** The length of life of the dairy cow. *Scottish Jour. Agric.* 13(3): 284-287. 1930.—It is known that dairy cows do not reach maximum production until they are 7 years of age, that is in their 5th lactation. Only a relatively small percentage, however, reach maturity, as their average life in the producing herd would appear not to exceed 4 years. When the animals which reach maturity are considered, it is found that those which calved for the 1st time at an early age have the shortest life but the longest period of usefulness, while those coming into production at higher ages have longer lives but shorter periods in the producing herd. In total lifetime production heifers calving for the 1st time at about 2½ years of age excel all other groups.—*Author's summary.*

4765. **MANGOLD, ERNST, und FILIPPO USUELLI.** Die schädliche Wirkung der Milch und der Veränderungen der H-Ionkonzentration auf die Infusorien des Wiederkäuermagens. *Wissensch. Arch. Landwirtsch. Abt. B. Tierernähr. u. Tierzucht* 3(2): 189-201. 1930.—Milk and several of its fermentation products accelerate the death rate of the infusoria of sheep's rumen contents. The injury to the infusoria was invariably greater, the more acidic the sample. It was concluded that injury to the infusoria of the contents of the rumen caused by feeding milk is principally due to acid formed from the milk by bacterial action.—*Author's summary* (*transl. by E. O. Whittier*).

4766. **NITSCHE, MAX.** Untersuchungen über die

Brauchbarkeit des absoluten und relativen Milchleistungsgrades als Beurteilungsmasstab für die Rentabilität des Einzeltieres im gesamten Kuhstand. *Wiss. Arch. Landw. Abt. B, Tierernähr. u. Tierzucht* 2(5): 599-625. 1930.—Yearly milk and feed records from 334 Schonhengster cows in the Landskroner milk control society were studied. Actual milk and butterfat yields appeared nearly to parallel relative production per feed unit (starch value) in feeds consumed. As total production increased, relative milk yields per 100 feed units also increased. The above relationship varied, dependent upon protein intake of individual cows. Groups of cows receiving 1 part protein per 6.0, 6.9, 7.8 and 8.7 feed units yielded 3,351, 2,753, 2,148 and 2,109 kgm. milk respectively; relative milk yields were 190, 168, 147 and 141 kgm. and feed protein per kgm. milk 5.29, 4.83, 3.51 and 2.60 kgm. Cows on low protein intakes appeared to draw on body protein, and restrict milk production. Protein requirements were influenced more by milk yield than by body weights. Utilization of feed for production by individual cows in a herd appears to be a basis for rating their relative efficiency or profitableness.—*R. B. Becker.*

4767. **OLDENBURG, F. Beeinflussung von Milch und Butter bei Fütterung der Milchkühe mit Kartoffeln, Sorte "Pepo."** *Tierernährung* 2(6): 482-486. 1931.—When potatoes were fed, no effect on flavor or taste of milk or butter could be detected. The consistency of the butter was rather soft, possibly due to the simultaneous feeding of sunflower cake. The quality of whipped cream, too, was rather unfavorable. There was no essential change in the normal physical constants of the milk. When mangels were fed (check period), the milk fat globules were larger than during the periods of feeding potatoes. The melting and running points of pure butterfat tended to decline, when potatoes were fed for a long time. The other physical constants of the butterfat were not essentially changed.—*Author's English summary.*

4768. **RAJSTIS, E., és J. SCHANDL. A Voronoff-operáció hatása a gyapjútermelésre. [Effect of the Voronoff operation on the wool production of sheep.]** [German summary.] *Kisérletügyi Közlemények* 33(1): 88-93. 1930.—The production of clean wool of 3 4-year-old rams in 1928 was determined accurately. After shearing the Voronoff operation was performed. In the following year (1929) no favorable effect on wool production was evident.—*Authors' summary (transl. by W. E. Joseph).*

4769. **ROBERTS, E. J. Some observations on the secondary sex ratio in a group of Dairy Shorthorn and Welsh Black cattle.** *Jour. Agric. Sci.* 20(3): 359-363. 1930.—In the 18 herds, the highest ratio in any herd was 139.1, and the lowest 76.3. The ratio for 2087 Dairy Shorthorns was 97.1, and 100.1 for 2825 Welsh. The effect of season is seen in a ratio of 94.8 for March-August calves, and 106.0 for September-February calves. The effect of age is more difficult to ascertain owing to an increasing tendency of cows to calve in spring as they get older.—*E. J. Roberts.*

4770. **SCHANDL, JÓZSEF. A benöttség értékelése a merinóknál. [Correlation of the extent of wool covering of fine wool Merinos and fineness of wool and density of fleeces.]** [German summary.] *Kisérletügyi Közlemények* 33(1): 93-99. 1930.—The Royal Hungarian Agricultural Institute for wool grading has accurately determined the degree of wool covering of 60 fine wool Merino sheep that were differently covered, and has compared the data with the weight of clean wool obtained from 100 sq. cm. of body surface (side) which had a length of staple of 1 cm. The results show no relation between the amount of wool covering and the density of the wool fibers. Likewise, there was no correlation between wool covering and the fineness of fiber in the fine wool Merino type of sheep. It would also be incorrect to ascribe a greater significance to covering than to the value of parts of the fleece shorn from the better covered extremities or the better covered head. A high degree of wool covering cannot be considered as a measure of the density of fleeces or fineness of wool fiber.—*Author's summary (transl. by W. E. Joseph).*

4771. **SCHMIDT, J., und H. VOGEL. Fütterungsversuche mit rohen Kartoffeln bei Milchkühen.** [English summary.] *Tierernährung* 2(6): 449-466. 1931.—In a normal ration of beet-roots, hay, straw, and a mixture of concentrates, fed to dairy cows yielding various amounts of milk, it was possible to replace the beet-roots completely by an amount of fresh, cut potatoes, containing the equivalent of starch values. At the most, 50 kgm. of beet-roots in the daily ration were replaced by 18.8 kgm. of potatoes. The av. utilization of the feeds, based on the quantity of starch-values, required for the production of 100 kgm. of milk was with potatoes about 20% less, and the average quantity of milk about 5% less, than with beet-roots. The feeding of potatoes had no significant effect on the quantity of milk-fat produced, nor on live weight. Though in this test the feeding of potatoes resulted in a lowered av. utilization of the feeds and a decrease of milk-yield, the feeding of potatoes is recommended in all cases of an unprofitable potato market.—*Authors' summary.*

4772. **SCHOLZ, ROBERT. Untersuchungen an Saugkälbern über die Ausnützung des Milcheiweisses bei Zufütterung von Kohlenhydraten.** *Tierernährung* 1(5/6): 502-538. 1 fig. 1930.—In a preliminary trial with 7 calves, potato flakes (chips) produced 92 gm. greater daily gains. By increasing or at least maintaining these gains in the future they also give promise of a better development of the calves. No impairment in quality of meat could be detected after butchering. The addition of potato chips to the ration reduced the cost of raising calves by 0.03 mk. for every 100 gm. increase in live weight, and by 0.11 mk. after substituting dry malt for the expensive diastase preparation. Feeding potato flakes was accompanied by about 10% less protein decomposition with a correspondingly greater protein retention. After the age of 12-14 days supplementary feeding of potato flakes is recommended especially since the method of feeding is very simple, but diastase should be added, which may perhaps also be replaced by somewhat larger amounts of dry malt.—*Author's summary (transl. by A. H. Kuhlman).*

4773. **SPENCER, J. B. Sheep husbandry in Canada.** 6th ed. *Canada Dept. Agric. Bull.* 75. 1-111. 59 fig. 1928.—A revised edition of Bull. No. 41 N. S. 1928.

4774. **URQUHART, J. C. The composition of the milk of British breeds of goats.** *British Goat Soc. Year Book* 1930: 115-123. 2 pl. 1930.—The average fat content of the milk of all goats in the milking trials at British Shows, 1919-1929, was: a. m. 4.00%; p. m. 4.51%. The average yield per day in the same period was 8.72 lb., showing an increase in average yield from 4.74 lb. in 1919 to 9.81 lb. in 1929. Figures are given showing the average composition and yield, and the variations from year to year for the different breeds. There is some indication that there has been a reduction of fat content accompanying the increase of yield, but that such reduction is slight. Some evidence is given as to the effect of change of conditions, such as removal to a show, on the fat content of the milk.—*From author's summary.*

4775. **WENZEL, H. Der Futterwert verschiedener Rübenarten. Uebersicht über einige skandinavische Gruppenversuche mit Milchvieh. [A review of Scandinavian researches on the feeding value of turnip varieties.]** *Zuckerrübenbau* 12(6): 102-107. 1930.

4776. **WHITEHOUSE, F. Feeding pigs on rough rice. An experiment at Hawkesbury Agricultural College.** *Agric. Gaz. New So. Wales* 41(7): 535-542. 1 fig. 1930.—The small number of pigs (19) and the abnormal weather conditions do not allow of generalisations. Rice was profitably utilised as a grain supplement with a small amount of meat meal fed with it. Gains were proportionate to the total digestible nutrients of the rations. More time was required to prepare wheat than rice, but the same amount of labor in feeding both rations. The pigs relished both rations with avidity. The wheat ration induced a greater desire for cinders than the

rice ration. No evidence of indigestion, digestive derangement or depraved appetite was noted with either ration. The pigs on the wheat ration appeared more contented; those on rice ration more active. The need for increasing rations in accordance with increasing weights was indicated on 2 occasions.—*From author's conclusions.*

4777. **WHITTET, J. N. The importance of pasture improvement to fat lamb production.** *Agric. Gaz. New So. Wales* 40(9): 635-644. 10 fig. 1929.—Statistics showing that the production of fat lambs might profitably be increased in N. S. Wales; and advice for a greater use of top-dressing and more planting of grass and of legumes to improve and enlarge the pasturage.—*M. H. Keith.*

4778. **WÖHLBIER, WERNER, MALKOMESIUS, et al. Allgemeine Ergebnisse der Ernährungsforschung für die landwirtschaftliche Tierzucht. 1. Teil. [General results of livestock nutrition investigations. 1.]** *Züchtungskunde* 6(1): 1-38. 1931.—This general review of investigations of the nutritive value of foodstuffs includes also the following: Ernährung des Pferdes [Feeding of horses], by PAUL EHRENBERG; Ernährung des Rindes [Feeding of cattle], by BÜNGER; Ernährung des Schafes [Feeding of sheep], by A. GOLF; and Ernährung des Schweines [Feeding of swine], by K. RICHTER.

4779. **ANONYMOUS. The American rabbit and cavy breeders' association guide book and standard [for] 1930-1931.** 344p. Illus. Publ. by the Association (to be obtained from A. Weygandt, Secretary): Chicago, Illinois, [1930]. Pr. $2.00—Includes general information on rabbit and cavy breeding and culture, and short articles on different phases of the subject by various authors.

POULTRY

4780. **ATWOOD, H. A study of the time factor in egg production.** *West Virginia Agric. Exp. Sta. Bull.* 223. 11p. 1 fig. 1929.—A study was made of egg laying cycles and the relative time intervals of laying and the effect on the size of the egg. Data with correlation and deviations for egg cycles from 2 to 8 or more eggs showed that the longer the cycle, the shorter are the intervals between the laying of successive eggs. The greatest interval in a given cycle is usually between the last 2 eggs of a cycle, and the shortest intervals are about the middle. Shorter intervals of the cycle as a whole were usually associated with prolific layers and the intervals tend to lengthen as the bird ages. The first egg of each cycle was generally the heaviest with a gradual decline in weight of each succeeding egg until the last of the cycle. This study was based on the premises that when a bird lays for several days in succession, the 1st egg of the cycle or clutch generally is relatively early in the forenoon. The remainder of the eggs are laid later and later on succeeding days, the last egg of the cycle being laid late in the afternoon. Then the bird ceases to lay for 1 or more days, and when a new cycle is started, the 1st egg is again laid early in the forenoon, and so on. The author cites the practical application of the fact that the high degree of regularity with which birds lay later and later in the day on succeeding days affords a means by which trap nest records may be checked with a high degree of accuracy when the time of laying is recorded for each day.—*D. C. Kennard.*

4781. **BLAKE, R. C., and RALPH STOUTAMIRE. Ducks and geese in Florida.** *Dept. Agric. Florida Bull.* 38. 5-24. 8 fig. 1930.

4782. **BLAKE, R. C., and RALPH STOUTAMIRE. Turkey raising in Florida.** *Dept. Agric. Florida Bull.* 41. 5-23. 8 fig. 1930.

4783. **BUCKNER, G. DAVIS, J. HOLMES MARTIN, and W. M. INSKO, Jr. The calcium and phosphorus requirements of growing chicks.** *Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929.* [In: *Bull. Alabama Polytech. Inst.* 25(1): 27-28. 1930.]—Raw bone meal proved equally good, if not better, than raw bone meal and limestone when fed as supplements to a yellow corn meal, wheat middlings and skimmilk to growing White Leghorn chicks.

4784. **CRUM, J. H. The crumalow back-yard poultry system.** 91p. 2 pl., 9 fig. Walton Book Co.: New York, 1928.

4785. **FAWKES, A. K. Record of seven Busra hens sent to the national egg laying test, England, by the U. P. Poultry Association, Lucknow.** *Jour. Central Bur. Animal Husb. and Dairying in India* 4(4): 161. 1930.—Preliminary report of a test to be continued.

4786. **GRAHAM, W. R., J. B. SMITH, and W. D. McFARLANE. Results of a three years study of certain poultry rations as they affect the hatching power of hen eggs as well as the number of eggs laid.** *Ontario Dept. Agric. Bull.* 362. 3-11. 1 fig. 1931.—In feeding value, for egg production, fish meal, powdered buttermilk, beef scrap and tankage, ranked in the order named. Cod liver oil added to a combination of milk and fish scrap, of milk and beef scrap, or of milk and tankage, increased the hatching power of the eggs set and the number of eggs produced. With a grain ration such as this, plus alfalfa meal, the addition of direct sunshine or sunshine substitutes (a good grade of cod liver oil or ultraviolet light) is the most important factor in producing good hatching eggs for the rations tested. Vitamin D appears to be an important factor in hatchability. Birds housed in these feeding trials did not get the necessary amount until there was at least 200 hrs. of sunshine per month. Milk in combination with beef scrap or fish scrap together with cod liver oil appeared to be the most satisfactory feed used, when hatching power of eggs, number of eggs produced and pounds of feed required to produce a dozen eggs are considered.—*Authors' conclusions.*

4787. **JULL, M. A. Good farm feeding practice profitable to farmers, packers, consumers. Growth controlled by amount of feed consumed—a good frame essential to successful finish feeding.** *U. S. Egg & Poultry Mag.* 37(4): 28-31, 66, 69. 7 fig. 1931.—From a series of experiments with pens of cockerels and pullets, respectively, fed specific amounts of feed from hatching time to 24 weeks of age, it was determined that growth in both sexes is controlled by the amount of feed consumed and is irrespective of age.—*M. A. Jull.*

4788. **JULL, MORLEY A. Poultry husbandry.** ix+639p. 229 fig. McGraw-Hill Book Co., Inc.: New York, 1930.—This book presents fundamental scientific principles in their relation to practical methods of husbandry. Introductory chapters deal with the poultry industry and its products, and the origin, breeds and anatomy of chickens. Breeding, incubation, brooding, housing, judging and diseases are discussed. Three chapters are devoted to marketing and economic phases of production. There is an extended bibliography of practical and scientific poultry literature.—*L. W. Taylor.*

4789. **KNANDEL, H. C. The confinement method of poultry management.** *Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929.* [In: *Bull. Alabama Polytech. Inst.* 25(1): 32-34. 1930.]—Results on over 10,000 individuals show that Single Comb White Leghorn pullets at 19 weeks of age averaged 3.02 pounds and Barred Plymouth Rock pullets 3.73 lbs. Eggs from fowls reared and maintained in confinement hatch very satisfactorily. The chicks make uniformly good growth; mortality is low. All confined fowls possess deep yellow pigmentation throughout the rearing period and at maturity. Confinement brooding does not prevent coccidiosis. No tapeworm or round worm infestations have been observed; some isolated cases of cecal worms have been observed. The flesh of fowls is of excellent table quality. The confinement method is not advocated except where poultrymen have great difficulty in rearing chicks on range, owing to round worm and tapeworm infestations.—*H. C. Knandel.*

4790. **LAMON, HARRY M., and JOSEPH WM. KINGHORNE. How to select the laying hen.** 124p. 15 pl. Orange Judd Publishing Co.: New York, 1931.

4791. **LAMON, HARRY M., and JOS. WM. KINGHORNE. Practical poultry production.** Rev. ed. 438p. 323 fig. Webb Book Publ. Co.: St. Paul, Minn., 1930.

4792. **LEARMONTH, R. Milk in the feeding of poults.** *Jour. Amer. Vet. Med. Assoc.* 32(2): 206-209. 1931.—The addition of 30% of dry skimmed milk, in a representative mash mixture fed to poults under 2 weeks of age, increased growth and vitality. The author further concludes from his experiments that the value from dried skim milk was due more to the increase of protein than to the increase of vitamin B. Therefore, a mash mixture high in animal protein seems to be important for growing poults.

4793. **NORRIS, L. C., G. F. HEUSER, and H. S. WILGUS, Jr. Is the chief value of milk for feeding poultry due to the presence of a new vitamin?** *Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929* [In: *Bull. Alabama Polytech. Inst.* 25(1): 43-44. 1930.]—The authors conclude from their results that milk contains a hitherto unrecognized factor, vitamin in nature, which is essential for the prevention of a peculiar type of paralysis in poultry involving the legs and feet, and which is only indirectly growth-promoting. The probability that the effects obtained from this factor have previously been credited to vitamin B is also suggested.—*Authors' conclusions.*

4794. **PORTER, FARLEY. First to last in poultry.** 86p. Illus. Publ. by the author: Maple Ave. Farms, Solus, New York, 1930.—Contains practical suggestions on rearing and feeding chicks, feeding and the management of laying stock, and housing poultry.

4795. **RICE, JAMES E., and HAROLD E. BOTSFORD. Practical poultry management.** (The Wiley Farm Series.) 2nd ed. rev. xvii+540p. John Wiley & Sons, Inc.: New York; Chapman & Hall, Ltd.: London, 1930. Pr. 13s. 6d.

4796. **SHARP, PAUL F., and GEORGE F. STEWART. Carbon dioxide and the keeping quality of eggs. The effect of the addition of carbon dioxide to the air in a cold storage room on the keeping quality of eggs.** *U. S. Egg & Poultry Mag.* 37(6): 30-32, 63, 65-66, 68. 2 pl. 1931.—Eggs were kept over 14 months at 29-30° F. in a series of jars containing 0, 1, 5, 15, 30, and 100% CO_2. Eggs stored in air containing no CO_2 were off in odor and flavor, while those stored in the atmospheres containing CO_2 were scored as flat. Eggs stored in a commercial cold storage room (0.5-0.6% of CO_2) were better than those stored under ordinary conditions in the following respects: odor, condition of the thick white, standing up of the yolk, viscosity of the yolk, taste, and in color of white.

4797. **STOUTAMIRE, RALPH. Florida poultry farming.** *Dept. Agric. Florida Bull. 34.* 5-71. 23 fig. 1930.—A comprehensive guidebook dealing with all phases of the industry, including hatching, incubation, feeding, housing, culling, diseases and insect pests.

4798. **WARREN, D. C. The effect of disturbances upon the rhythm of egg production.** *Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929* [In: *Bull. Alabama Polytech. Inst.* 25(1): 50-51. 1930].—The author concludes that disturbances that are sufficient to cause a decrease in the daily production of a group of White Leghorn pullets affect the rhythm of egg production. Much of the decrease is due to some birds entirely stopping egg production for a period, but there is also a slight lengthening of the average interval between eggs. This effect is not sufficient to cause any very conspicuous changes in the bird's characteristic rhythm.—*Author's summary.*

4799. **VOITELLIER, CH. Possibilities with regard to introducing various kinds of periodical testing of egg production in place of permanent testing.** *World's Poultry Congress* 4(Sect. A): 12-18; résumé sect., 3. 1930.—The author studied methods of testing covering 48 weeks: (1) One day a week over a period of 48 weeks; (2) 2 consecutive days a week over a period of 48 weeks; and (3) 1 whole week in every 4 weeks. A comparison of the theoretical with the average actual production of the 50 hens showed differences of −0.04 and −0.30 for testing 1 day a week, and −0.36 for 2 consecutive days. Although these figures favor the adoption of periodical testing, in the case of some of the hens the individual variations were sometimes very high.—*From author's summary*

AGRONOMY

CARLETON R. BALL, *Editor*

M. A. McCALL, *Associate Editor,* Crops

R. B. DEEMER, *Associate Editor,* Soils

(See also in B. A. 6(1): Entries 15, 55, 58, 60, 102, 114, 469, 633, 1328, 1329, 1857, 1939, 1949, 2063, 2067, 2126; and in this issue 3024, 3125, 3245, 3247, 3249, 3251, 3252, 3255, 3365, 3395, 3399, 3499, 3536, 3663, 3674, 3792, 4642, 4724, 4777, 4860, 5103, 5205, 5206, 5209)

CROP SCIENCE (ARVICULTURE)

4800. **ARNY, A. C., T. E. STOA, C. McKEE, and A. C. DILLMAN. Flax cropping in mixture with wheat, oats and barley.** *U. S. Dept. Agric., Tech. Bull. 133.* 47p. 10 fig. 1929.—These experiments were designed to determine the advantages and disadvantages of growing flax in combination with wheat, oats, or barley. Where weather conditions were favorable mixtures of flax and cereals gave higher yields than where the 2 crops were grown separately. Under dry-land conditions, mixed cropping gave no appreciable increase in yield. The percentage of flax in the harvested crops was less than in the mixture sown, whereas the percentage of wheat or oats was greater than in that sown. Mixed cropping was very effective in checking the growth of weeds. The prevalence of diseases such as flax wilt and stem rust of wheat was not appreciably affected by mixed cropping.—*J. A. Bizzell.*

4801. **BECKETT, W. H. Randomization in field experiment and its application on experiment stations in the tropics.** Gold Coast Dept. Agric. Bull. 20. (2nd Conf. W. African Agric. Officers vol. 2.) 25-74. 2 pl. (1 col.). 1930.—The advantages of randomization are discussed, methods and plans for randomized field experiments are described and illustrated, and examples of each of the statistical methods suggested are presented.—*W. H. Beckett.*

4802. **BERNSTORFF, CHRISTIAN [GUNTHER] von. Untersuchungen über die Stickstoffwirkung der Gründüngung mit Leguminosen. [The nitrogen effect of green manuring with legumes.] Thesis: Universität Leipzig.** 71p. Robert Noske: Borna-Leipzig, 1929.

4803. **BOIS, D. Les plantes alimentaires chez tous les peuples et à travers les âges. Histoire, utilisation, culture. Vol. II. Phanerogames fruitières. [Food plants of all peoples throughout the ages. History, uses, culture. Vol. II. Fruit phanerogams.]** 630p. 225 fig. Paul Lechevalier: Paris, 1929. Pr. 90 fr.

4804. **BROWN, B. A. Effect of time of cutting on the elimination of bushes in pastures.** *Jour. Amer. Soc. Agron.* 22(7): 603-605. 3 fig. 1930.—Plats of former woodland (mixed gray birch, soft maple, etc.) were mowed at various times during the year. Plats mowed in April and May and during the winter remained covered by brush and species undesirable for forage. September cutting reduced bushes and weeds slightly. Cutting in June, July and August gave best results.

4805. **CARRE, GEORGES. L'augmentation des rendements en blé par la sélection généalogique. [Increase**

of wheat production through genealogical selection.] 39p. 31 fig. Librairie Delagrave: Paris, 1929.

4806. CLAYTON, E. S. Mallee farming. *Agric. Gaz. New S. Wales* 41(7): 481-489. 2 fig. 1930.—Introductory statement to a series on the possibilities of growing wheat, etc., on the infertile areas known as mallee country, "mallee" referring to stunted eucalypts. Types of mallee and soil analyses are discussed.

4807. DENAIFFE, et COLLE. La résistance des céréales pendant l'hiver 1928-29 dans les Ardennes. *Compt. Rend. Acad. Agric. France* 15(14): 559-566. 1929. —No fields remained in good condition until the destructive freezes of February and March. Study of 22 types of wheat showed that the time of sowing and character of the soil were most important, i.e., there is a culture optimum for each variety. For eastern France, resistant varieties should be sown early; non-resistant varieties later. An entire series of hybrids between winter and spring barley was completely destroyed.

4808. EICHINGER. Die Beeinflussung der Länge der Winterroggenähren und der Zahl der Ährchen durch Düngung und Aussaatzeit. Eine Methode zur Unterscheidung von Winter- und Sommersaatgut. *Angewandte Bot.* 10(1): 66-79. 6 fig. 1928.—Winter grains sown in the spring give about twice as many tillers as summer grains, but the former do not shoot and head while the latter do. Winter rye sown at 10 day periods from September 15 to October 15 show a decrease in number of tillers per plant on November 5. The spikelets differentiate on the spike primordia of summer grains much earlier than on winter grains. Grains sown August 1 show distinct spikelet primordia in summer grains by November 15 but none in winter grains. On light sandy soil the type of fertilizer and time of application have a marked effect on the number of spikelets formed in the following ascending order: no fertilizer, fall application of N, spring application of N, and spring application of complete fertilizer. Headlength, spikelet number and grain yield are similarly affected.—*W. Crocker.*

4809. FAULKNER, O. T., and J. R. MACKIE. Field experiments in West Africa. *Gold Coast Dept. Agric. Bull. 20.* (2nd Conf. W. African Agric. Officers vol. 2.) 18-24. 1930.—The authors conclude that in West Africa, the methods generally used on English experimental farms are unsuitable, except for very special purposes and in exceptional circumstances.

4810. GAINEY, P. L., and M. C. SEWELL. Indications that available nitrogen may be a limiting factor in hard winter wheat production. *Jour. Amer. Soc. Agron.* 22(7): 639-641. 1930.—The small, well-defined areas of taller and darker green plants, often seen in spring in pastured grain fields, are attributed to deposits of urine. Chemical analysis of soil and of winter wheat from such spots shows that in the spots, N is higher than in surrounding areas. "Plants from the spots . . . made 2.6 times the total growth, contained 1.8 times as much N per unit wt., and had actually assimilated 4.68 times as much N per plant as those from the field at large." There was no deficiency of total N in surrounding soil. Distribution and activity of nitrifying bacteria do not account for the difference, and P is not the determining factor. Evidently available N (but not necessarily total N) is higher in the spots.

4811. HAUSER, JÁNOS. Kiserleti adatok a nemesitett madyar uzák fagyállóságának kérdéséhez. [Cold resistance of breeding strains of Hungarian wheats.] [With German summary.] *Mezögazdasági Kulatások* 3(4): 143-149. 1930.—The abnormal cold of the winter of 1929 caused a great deal of damage in Hungary. In a study to determine the cause of difference in hardiness, a correlation between hardiness and the increase of sugar content of the leaves was noted.—*O. E. Street.*

4812. HAYES, H. K. The commercial use of double crossed corn in Minnesota. *Jour. Amer. Soc. Agron.* 22(7): 606-613. 1930.—Three double crosses, E × I, E × K, and E × L, were distributed in 1930 for commercial trial. These crosses are adapted to central Minnesota. They yield approximately 12% more than standard varieties and mature about a week earlier. Uniformity of maturity is exhibited to a marked degree by the crosses. The first increase crossing plots were handled by cooperation between the Minnesota Agricultural Experiment Station and an organization of farmers known as the Minnesota Crop Improvement Association.—*H. K. Hayes.*

4813. HÉBRARD, J. Observations comparatives sur diverses variétés d'avoines à l'École Nationale d'Agriculture de Montpellier. [Comparative observations on different varieties of oats in the Montpellier region.] *Prog. Agric. et Vit.* 92: 345-352, 376-380. 1929.

4814. JACK, H. W. Genetics in relation to the improvement of important crops and rice in particular. Pure line selection in rice. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1166-1171. 1926(1928).

4815. JANSSEN, GEO., C. K. McCLELLAND, and W. H. METZGER. Sap extraction of sorghum and the localization of juice and sugars in internodes of the plant. *Jour. Amer. Soc. Agron.* 22(7): 627-638. 1930.—The percentage juice and the total sugars of juice extracted from sorghum plants in the process of crushing for syrup manufacture were determined on plants given the following treatments: (a) Cut without stripping leaves at time of crushing; (b) cut with stripping leaves at time of crushing; (c) stripped, cut, and left to lie in a pile for various intervals before crushing; and (d) unstripped and left to lie in piles before crushing. It is clearly shown that there is a proper time for harvesting sorghum in order to obtain high percentage of juice and of total sugar. The highest total sugar was obtained from October 1 and October 4 cuttings; less from the September 25 cutting and later dates in October. There is some difference in the value of internodes from different parts of the sorghum stalks, the central having the highest, the lower ones an intermediate, and the uppermost the least value. Heavy pressure during the processes of crushing the sorghum stalks usually gave the higher amounts of sugar and juice. By repeating the crushings 3 times and by increasing the pressure of the rollers in each case, the respective crushings yielded total sugars in ratio of 2.71: 2.4: 1.26, or in percentage, approximately 43: 40: 17. Stripping of leaves from the plant 3-4 days previous to cutting and crushing caused a slight depression in amounts of total sugars obtained on various dates. Allowing the stalks to remain in piles several days after cutting increased the sugar content of the juice probably due to evaporation, thereby making the sap more concentrated, and hydrolyses of starch and dextrins to sugars. Allowing leaves to remain on stalks in each instance reduced the percentage of juice and the total amount of sugars.—*Authors' summary.*

4816. JENKIN, T. J. New varieties and strains from the Welsh Plant Breeding Station. No. 1. Pure lines of Hen Gymro wheat. *Univ. Coll. Wales, Aberystwyth Leafl. Ser. S.* 1: 7-16, 3 pl. 1928.—The general policy followed with new varieties and strains produced at the Station is outlined. "Hen Gymro" wheat is an old variety of unknown origin which has remained in cultivation in certain Welsh counties. Growers contend that over a number of seasons it gives more satisfactory results than modern English varieties. The grain is typically red, rather small and hard; the straw long, slender and rather weak. The ear is lax in all cases, but it may be bearded or beardless; the glumes may be red or white and either smooth or rough. Intermediate ear types also occur. A total of 265 ears was selected from crops grown from seed obtained from various farmers. By ear-row tests, segregating lines, and some others of little promise, were rejected. Rod-row trials gradually eliminated the less promising lines, but even then the 5-yr. average for the Hen Gymro selections was no better than that for Standard Red, the check variety. In the same period, however, the 5 best Hen Gymro selections averaged 2-14% better than Standard Red. In 1928 these lots in replicated 100th-acre plots showed an advantage of 14-31%. In seasons favorable to grain development in both Standard Red

and the Hen Gymro selections, the grain is decidedly larger in the former than in the latter, but, in poor ripening seasons, grain development in the Hen Gymro lines is better than in Standard Red, despite a greater tendency to lodge.—*T. J. Jenkin.*

4817. **JERWITZ, W. Kunstdüngerverbrauch und Kartoffelerträge in ihren Beziehungen zueinander. [Fertilizer utilization and potato yields in their mutual relations.]** 2nd ed., rev. by LAVALLE. Arbeiten Kartoffelbaugesellschaft e. V. Heft 10. 1-15. 5 pl. (2 col.) Gebr. Unger: Berlin, 1926.

4818. **JOSEPHSON, H. B. Progress in the artificial dehydration of forage crops in the United States.** *Agric. Engineering* 11(9): 295-299. 4 fig. 1930.

4819. **KEEN, BERNARD A., et al. Studies in soil cultivation. 5. Rotary cultivation.** *Jour. Agric. Sci.* 20(3): 364-389. 4 fig. 1930.—Experiments extending over 4 yrs., 1926-9 inclusive, were conducted on a heavy and stony loam soil to compare rotary cultivation with customary methods for the production of a seed-bed. The work was confined to spring-sown crops—swedes and barley—and to spring cultivation. Rotary cultivation gave earlier and better germination of seed, followed by better early growth. In every experiment, however, the final yield was either no better, or significantly less than that obtained from plots cultivated in the usual way. Barley gave equally good yields under the various cultivation treatments. Although there was better germination under rotary cultivation, the plants on other plots, apparently having greater root range, produced more tillers and leveled up the yield. The swede crop did not do so well under rotary cultivation, in spite of better early growth. In the 1926 experiments this was due in part to an extensive hardening or "capping" of the soil on the rotary cultivation plots, but although this effect was absent in the 1928 experiments, a reduced yield was still obtained. In addition to records of yield, measurements were made of the amount of soil pulverisation or comminution produced by the various implements. Soil samples were taken for mechanical analysis before and after cultivation. Rotary cultivation is most effective on soil in poor physical condition, e.g., after a wet and open winter, as it leaves a smaller proportion of large lumps. It does not produce an appreciably finer tilth than the usual implements, but it leaves the soil in a much looser condition, and thus encourages the early germination of seeds. The looser tilth becomes more compact with time, and the initial advantage of rotary cultivation then disappears. If a ridging body is attached behind the rotary cultivator, a further comminution of the soil is produced. The operation of ridging is itself effective in breaking up land in poor physical condition. Ploughing does not necessarily produce any comminuting action unless the soil is well supplied with humus.—*From authors' summary.*

4820. **LAIRD, A. S. A study of root systems of some important sod-forming grasses.** *Florida Agric. Exp. Sta. Bull.* 211. 28 p. 6 fig. 1930.—Root systems of centipede grass (*Eremochloa ophiuroides* (Munro) Hack.), Bahia grass (*Paspalum notatum* Fluegge), Dallis grass (*P. dilatatum* Poir.), blue couch grass (*Digitaria didactyla* Willd.), Bermuda grass (*Capriola dactylon* (L.) Kuntze), St. Lucie grass (*C. d.* var. *st. lucie* (L.) Ktze.), and St. Augustine grass (*Stenotaphrum secundatum* (Walt.) Ktze.) were studied under pasture, lawn, and putting green conditions. When several of the grasses were grown in competition on Fellowship sandy loam under pasture conditions, centipede grass produced the best top growth and second best root growth, and Bahia grass had the best root system. Centipede and Bahia grasses similarly excelled on Norfolk sand under lawn conditions. The other grasses, except Bermuda, protion produced better developed root systems than when not mowed. However, this tendency was not so pronounced with St. Augustine grass. A 3-in. top-dressing of clay on Norfolk sand resulted in better root systems with Bermuda, St. Lucie, and centipede grasses than did the Norfolk sand alone without ammonium phosphate. When ammonium phosphate was applied the growth of the roots on both soils was about the same. A clay top-dressing and an application of ammonium phosphate increased decidedly the concentration of the root systems of all the grasses in the 8 in. of surface soil.—*H. M. Steece* (*courtesy Exp. Sta. Rec.*).

4821. **[LEVENSSON, EVGENIĬ.] ЛЕВЕНСОНЪ, ЕВГЕНИЙ. Овесътъ въ Брѣзнишко. Приносъ къмъ проучване овеса въ България. [Oats of the Bresnik district.]** [German summary.] Годишникъ на Софийския Университетъ, Агрон. Факулт. (*Ann. Univ. Sofia, Agric. Div.*) 6: 211-238. 1927/1928(1928).—The uniform distribution of rain and soils unsuitable for other crops account for the wide cultivation of oats in the Bresnik district (western Bulgaria). The variety grown has open heads, most of the outer kernels are without chaff, each spikelet has 2 kernels, the chaff amounts to 32.2%. Seed purity is low, averaging 89.14%, with *Lolium temulentum* often present.—*I. Kovachevsky.*

4822. **LORD, L. Report by the Economic Botanist on a visit to Malaya, Indo-China, Sumatra and Java. Part 1. The improvement of rice cultivation in Malaya, Indo-China and Java.** *Trop. Agric.* [*Ceylon*] 73(4): 195-221. 16 fig. 1929.—A description of the methods adopted by the Agricultural Departments in the countries visited to improve the cultivation of rice. The Java system of rotating sugar with rice is described. It is concluded that the work being carried out in Ceylon is on similar lines to that in the countries visited but certain improvements are suggested.—*L. Lord.*

4823. **McKEE, ROLAND. Plantas tropicales para cultivos de cobertura y abonos verdes. [Tropical plants used as cover crops and green manure.]** *Bol. Compañia Admin. Guano* 6(9): 479-512. 18 fig. 1930; also: *Bol. Union Panamericana* 64(4): 378-389; (5): 535-553. 24 fig. 1930.—This is a discussion of a large number of leguminous plants used for green manuring in the tropics. This practice is most common in India and the East Indies, where it is frequently employed in the cultivation of rubber, coffee, tea, sugar, rice and tobacco. The rationale and value of green manure and cover crops are discussed with special reference to the tropics, and a classification of suitable crops is given, among which are: *Cajanus indicus, Cracca candida, Sesbania aculeata, Erythina lithosperma, Canavalia ensiformis, Indigofera endecaphylla, Calopogonium mucunoides, Dolichos hoseii, Phaseolus aureus,* and *Vigna sinesis.*—*R. McKee.*

4824. **McROSTIE, G. P. Sweet clover.** Manitoba Dept. Agric. & Immigr. Circ. 99. 7p. 3 fig. 1930.

4825. **MARSHALL, DUNCAN. Weed control, practical experiences in weed eradication.** 159 p. Illus. Imperial Oil Limited: Canada, 1930.

4826. **MENDIOLA, NEMESIO B. Natural crossing in rice and its relation to rice improvement.** *Proc. Third Pan-Pacific Sci. Congr.* [*Tokyo*] 1: 1171-1179. 1926 (1928).—Natural crossing is suggested as the principal cause of the thousands of rice varieties in the world. Making allowance for the beneficial effect of heterosis, natural crossing which results in genetic and mechanical mixtures in varieties causes economic losses to the rice growers. Data are given on opening of the rice flower and the distribution of pollen grains in Los Baños, Philippine Is., which show that rice pollen grains may be transported by wind a distance of 1-2 m. Planting of varieties no closer than 2 m., and the use of pure lines are suggested for the prevention of natural crossing. —*N. B. Mendiola.*

4827. **MÖLLER. Neuzeitliche Umtriebsweidewirtschaft und Stickstoffdüngung.** *Zeitschr. Pflanzenernähr., Düng. u. Bodenk. B. Wirtsch.-Prakt.* 9(8): 363-377. 1930.—Results show that nitrogen fertilization requires greater capital expenditure; on the other hand, its use

leads to greater economy. The practice of intensive fertilization and management is usually dependent on the selling price of the product.—*Author's summary (transl. by O. C. Magistad).*

4828. **NOGUER, J. POCH. Formulario práctico de agricultura y sus industrias. II. Explotaciones agrícolas en pleno campo. Colección de procedimientos, reglas y fórmulas para la práctica de la agricultura y sus industrias, sin previos conocimientos técnicos y sin emplear aparatos especiales ni complicados.** [Practical handbook for agriculture and its industries. II. Agricultural field practices.] 269p. Bailly-Baillière, S. A.: Madrid, 1929.—This is a compendium of general information on farm practice, the broad scope of which is indicated by the principal chapter headings: Weather and soils, with directions for the use of the common meteorological instruments; Preparation of the soil; Crop production, with a discussion of the source and use of fertilizers, methods of planting and grafting; Plant diseases and pests, with control measures; Pruning; Culture of cereals, legumes, vegetables and root crops, with suggested rotations; Culture of feed, industrial and tropical crops; Fruit culture; Gardening and floriculture; and Agricultural mechanics. Fertilizer formulas are given for use with the different crops discussed.—*E. V. Abbott.*

4829. **PENDLETON, RAY A. Nitrate fertilizers for oats in Iowa.** *Jour. Amer. Soc. Agron.* 22(7): 663-668. 1930.—2 series of nitrate fertilization experiments with oats were conducted, one on Shelby loam in greenhouse pots, the other on Carrington loam in the field. The results of both series indicate that sodium nitrate may appreciably increase the yield of oats. Early applications were more effective in producing an increase in yield than late applications. In both series an increase in the N content of the grain was obtained from both early and late applications of sodium nitrate, the late applications being more effective than the early. The use of superphosphate without nitrate had little effect. Applications of sodium nitrate at the rate of 200 lb. per acre, particularly if applied late, tended to produce a late growth of straw and delayed maturity. However, the field results indicated that this amount might be used to advantage if applied in connection with superphosphate.—*Author's summary and conclusions.*

4830. **PETRI, L. "Ginocchiatura" del culmo del grano.** [Bending of the stem of wheat.] *Boll. R. Staz. Patol. Veg.* [*Firenze*] 10(1): 113-115. 1930.—The author describes a bending of the 2nd, 3d, and 4th internodes of the culms of some early varieties of wheat. This phenomenon is attributed to lowering of temp. following a long period of rain in the spring of 1930. The rapid elongation of the internodes and the small content of mineral substances in the young heads (due to lessened transpiration) cause weak turgor and, as a result, a bending of the culm in the zone of least resistance.—*L. Petri (transl. by B. F. Lutman).*

4831. **REYNOLDS, MARK H. Maize and sorghum trials, 1929-1930. A summary of the outstanding results in the Northern District.** *Agric. Gazette N. S. Wales* 41(12): 883-885. 1930.—Successful results were obtained at Singleton by sowing short season grain varieties in early September. Long season varieties sown in mid-September also proved satisfactory. Of the mid-season varieties, Funk's Yellow Dent, sown at Singleton during the 3rd week in September, yielded 16 bu. per acre more than the earlier maturing varieties under test. In a maize fertilizer trial a nitrogen applied with superphosphate was beneficial. In the sorghum green fodder and fertilizer trials, Collier gave better yields than Saccaline. Sumac, a short season variety, was low in yield and would appear more suitable for districts cooler than Singleton, where Saccaline and other long season varieties may be sown as late as early February and still mature before damaged by frost. The water-holding capacity of the alluvial soils on which the trials were sown was shown to be deficient, as in 9 instances crops showed evident moisture need within a few weeks of sowing, despite precipitation of 4-31 inches on the fallow.

4832. **RIVIÈRE, CH., et H. LECQ. Traité pratique d'agriculture pour le Nord de l'Afrique, Algérie-Tunisie-Maroc-Tripolitaine.** [Practical agriculture for North Africa, Algeria-Tunis-Morocco-Tripoli.] Nouvelle ed., revue et augmentée par Ch. Rivière. vol. 2. xviii+687 p. Société d'Éditions Géographiques, Maritimes et Coloniales: Paris, 1929.

4833. **[SAMARIN, N.]** САМАРИН, Н. Подсолнечник в Нижнем Поволжьи. Экономика и техника культуры. [Sunflower in the lower Volga region. Economics and technic of culture.] Журнал Опытной Агрономии Юго-Востока. (*Jour. Exp. Landw. Südost. Eur.-Russl.*) 6(1): 53-69. 1928.—In 1927 the Economics Division of Saratov Experiment Station conducted a survey on the culture and economic importance of sunflowers in the lower Volga region. Of 2,000 questionnaires submitted to farmers 250 were answered. Since the revolution the sunflower crop has increased in acreage and has spread into new regions. As a whole the crop is profitable, since it requires little care, grows on poor soils, fits well into rotation as a fallow crop, kills weeds and is resistant to drought. The cultural methods are still somewhat primitive. Selection of the better types has not received sufficient attention. There is also a need for better machinery for the cultivation and utilization of the product. The crop is disposed of mostly for oil production. It is expected that the sunflower will occupy a more prominent place in the agriculture of this region, depending on the available acreage, introduction of machinery, and the competition with forage crops.—*G. Valley.*

4834. **SCHMORL, KARL. Mehlchemischer Lehrkursus mit einer Einführung in die Chemie.** [A course in flour chemistry with an introduction to chemistry.] 2nd ed. 102p. 57 fig. Moritz Schäfer: Leipzig, 1930. Pr. 4 M.—This book is a simple laboratory manual, written for those with only a rudimentary knowledge of chemistry. The subject matter includes tests and quantitative methods applicable to the flour milling laboratory such as ash analysis, baking tests, protein content, tests for adulterants, measurement of H ion concentration, etc. Each section is profusely illustrated with diagrams of apparatus, and data are given pertinent to the subject matter under discussion. A section is devoted to a brief description of the different types of commercial grains. The final section is designed to give those unfamiliar with chemistry a bird's-eye view of some of the fundamental facts and methods of inorganic, biological and colloid chemistry.—*G. W. Pucher.*

4835. **SCOTT, JOHN M. Legume feed crops grown in Florida.** *Florida Dept. Agric. Bull.* 29. 1-70. 26 pl., 3 fig. 1929.

4836. **SCOTT, JOHN M. Non-legume feed crops grown in Florida.** *Florida Dept. Agric. Bull.* 30. 1-105. 29 pl., 6 fig. 1929.

4837. **SCOTT, JOHN M. Root crops grown in Florida.** *Florida Dept. Agric. Bull.* 31. 5-63. 11 pl., 12 fig. 1929.—A handbook of root crops, including sweet potatoes, sugar beets and mangels, mangel-wurzels, chufas, turnips, rutabagas, dasheens, cassavas and Jerusalem artichokes.

4838. **STÄGMEYR, E. Südafrika und seine Landwirtschaft.** [Agriculture of South Africa.] *Ernähr. Pflanze* 26(18): 414-420. 8 fig. 1930.

4839. **SYLVÉN, NILS. Resultat och önskemål vid vallväxtförädlingen.** [Results and objectives of grass and forage plant breeding.] *Kgl. Landbruks-Akad. Handl. och Tidskr.* [*Stockholm*] 69(4): 513-533. 12 fig. 1930.—A short summary of Swedish grass and clover breeding. Methods are described and varieties, so far commercialized, are discussed. Problems and needs of the immediate future are outlined.—*G. Nilsson-Leissner.*

4840. **TAGGART, J. G., and E. C. SACKVILLE. The improvement of burn-out lands in Southern Saskatchewan. Interim report on investigations now proceeding.** *Canada Dept. Agric. Pamphlet* 114. 5-14. 4 fig. 1930.

4841. **[VVEDENSKII, D. I.]** ВВЕДЕНСКИЙ, Д. И.

К методике и ближайшим задачам селекции конопли на волокно. **[Methods and actual problems of fibre hemp breeding.]** [English summary.] Труды по Прикладной Ботанике, Генетике и Селекции, Прил. (*Bull. Appl. Bot., Genet., and Plant Breeding, Suppl.*) 35: 355-406. 17 fig. 1929.—In breeding hemp in Russia 3 lines must be considered,—for seed and fiber, for fiber only, and for seed only. Individual and mass selection, the method of "halves" with diallel crossing in selection in the ♂ line, and inter-racial crossing are used. Special "kriazhes" or geographical forms are tested in different parts of Russia. Most American and Italian varieties of hemp have too long a vegetative period for the shorter season in Russia. A study of the different characters of the hemp plant has shown a wide range of variation as well as a fair heredity of the majority of characters. Studies are conducted on the morphology of the plant and the quality of the fiber resulting from cutting off the inflorescences, as practiced in the region of the River Desna, and by growing chiefly ♂ plants as practiced in eastern regions. Improvements are needed in the standardization of hemp fiber and also in methods of plant breeding as applied to hemp.—*L. H. Dewey.*

4842. **[VVEDENSKIĬ, D. I.]** ВВЕДЕНСКИЙ, Д. И. Изменчивость и корреляция признаков конопляного стебля. **[Variation and correlation in the Russian hemp stem.]** [English summary.] Труды по Прикладной Ботанике, Генетике и Селекции, Прил. [*Bull. Appl. Bot., Genet., and Plant Breed., Suppl.*] 35: 453-473. 1929.—This paper is based on a biometric study of pistillate hemp plants from the region of Trubchevsko where the best hemp in Russia is grown. A high positive correlation is shown by the combinations: total height and height to 1st branches; total height and diam.; height to 1st branches and diam.; % of height to 1st branches and diam. A high negative correlation is shown by the combinations: total height and relation of height to 1st branches to diam.; total height and % of height to branches; average diam. and % of height to branches. A feebler negative correlation is shown by: height to branches and the relation of this height to diam.; height to branches and the % of this height. The regression coefficients show that the diam. of the stem, measured midway between the ground and 1st branches, increases more rapidly than the total height; and the total height increases at a greater rate than the height to branches, therefore in estimating the yield of fiber on the basis of morphological characters it is necessary to consider not one character only but a complex of characters. The hemp of the Desna valley represents valuable material for plant breeding under the conditions of the Russian hemp growing area.—*L. H. Dewey.*

4843. **WEIGERT, J., und F. FÜRST. Kombinierte Sorten- und Düngungsversuche.** *Blät. Pflanzenbau u. Pflanzenzücht.* 8(2/3): 29-35. 1930.—The farmer should value each variety according to its yield under the conditions of development at his command. Based on experimentation with winter rye, winter wheat, summer barley, and oats, examples are given to show varietal fluctuations according to variations in fertilization.—*J. Weigert (transl. by M. C. Sewell).*

4844. **WILLARD, C. J. Root reserves of alfalfa with special reference to time of cutting and yield.** *Jour. Amer. Soc. Agron.* 22(7): 595-602. 1930.—Any extensive reduction of root reserves of alfalfa as measured by total weight of roots per acre consistently resulted in a reduction in yield and vigor of growth. Severe winter-killing from heaving followed extreme reduction in reserves, but the loss in vigor occurred without this. Up to the 1st cutting for hay, young alfalfa gained in root reserves regularly and consistently, both in the fall of the seeding year and in late April, May, and early June of the next year. Under Columbus, Ohio, conditions, alfalfa did not in 4 yr. show a gain in root reserves in August when the 2nd cutting was allowed to stand from full bloom to seed stage. During the same period in June, gains took place in some years and not in others. This failure to store root reserves after full bloom was associated with yellowed and diseased leaves and does not indicate that gains during this stage would not take place in a region where the leaves remained healthy. The loss in root reserves in recovery after cutting, as an average of 35 observations, was 177 lb. per acre. This was accompanied by an average loss of 0.17 % N (air-dry basis). Recovery after cutting was almost uniformly accompanied by a decrease in the percentage of dry matter in the green roots, averaging 4.9% in 23 comparisons. At Columbus the most uniformly important period of root storage is in October, when the last cutting of the season has been taken off early enough so that a considerable top growth has been produced by October 1. The most favorable condition for storage of root reserves seems to be the combination of a large amount of healthy leaf area and drier weather than normal. While Grimm and other variegated varieties of alfalfa are more winterhardy than common alfalfas under all cutting treatments, there is no evidence that this difference is due to or associated with differences in the amount of root reserves stored. The effect of cutting on different dates at Columbus is determined nearly as much by the activities of the potato leafhopper as by root reserves, but at present the former are to a large extent unpredictable.—*Author's summary.*

4845. **WISHART, J., and WINIFRED A. MACKENZIE. Studies in crop variation. 7. The influence of rainfall on the yield of barley at Rothamsted.** *Jour. Agric. Sci.* 20(3): 417-439. 7 fig. 1930.—Daily records for a 68-yr. period were examined to determine the influence of amount and distribution of rainfall on the yield of barley grown continuously on the same plots under a wide variety of manurial treatments. It was found that (1) excess of rain is beneficial during a short period in summer, and in the case of plots treated with nitrogen, but no phosphate, during the autumn and winter period; (2) rainfall during the 6 months when the ground is not occupied by barley has an important effect on subsequent yield; (3) excess of winter rain reduces the yield of plots receiving phosphate but no alkali salts; (4) excess of rain at sowing time is harmful in all cases; (5) the yields of plots receiving nitrogen are more affected by rain than those of plots without such dressing; (6) the indication of benefit from excess summer rain is not inconsistent with the conclusions of Hooker in a previous study; (7) the farmyard manure plot shows a pronounced loss from excess winter rain, and benefit from summer rain is earlier than for the others. Probable causes are discussed.—*J. Wishart.*

4846. **YAMAGUTI, YASUKE. Genetics in relation to the improvement of rice.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1187-1191. 1926(1928).

4847. **ANONYMOUS. Hybridization of talahib and sugar cane showed wonderful results.** *Sugar News [Manila]* 10(8): 536. 1929.

4848. **ANONYMOUS. Indian (Sunn or Sann) hemp.** *Empire Marketing Board as E. M. B.* 25. 40p. Illus. 1930.—The name "hemp" was first given to the plant *Cannabis sativa.* Several other fibers are called hemp, but the nearest to the true hemp is sunn, also called Indian Hemp and Bombay Hemp. This is a bast fiber obtained from the slender stalks of *Crotalaria juncea.* This plant is useful as a soil renovator, cover crop, and a crop to smother weeds. Stock sometimes eat it but the leaves are bitter; the leaves are eaten better after they have fallen and dried. Sunn is not recommended as a forage crop. Experiments have demonstrated that fiber from plants with seeds nearly mature is as good as that from plants in the early flowering stage, and also that removing the stalks after most of the leaves have fallen does not materially reduce the value of the crop as a soil renovator. A fairly light well drained soil produces the best plants for fiber. Good crops yield up to 1200 lb. of fiber per acre, the average ranging from 500-800 lb. There are several grades of Sunn fiber under the classes Benares, Bengal, Jubblepore and Bombay,

ranging in price from £17-50 per ton. The difference in value is due to greater or less care in the preparation of the fiber. Seed from nearly all districts grown at the Sibpur Botanic Gardens near Calcutta, produced plants yielding fiber in which there was no material difference. In tests conducted by the Imperial Institute, London, sunn fiber, though somewhat weaker than Italian or Russian hemp, deteriorated less from 90 day immersion in either salt or fresh water.—*L. H. Dewey.*

SOIL SCIENCE (EDAPHOLOGY)

4849. **AARNIO, B. Onko maan reaktio muuttamaton suure? [Is the soil reaction constant?]** *Suomen. Maataloustieteellinen Seura. Maataloustieteellinen Aikakouskirja* 1(1/2): 18-25. 1 fig. 1929.—The reaction of the soil varies during artificial drying just as it does upon drying in the field. In different soils the change in reaction may vary from 0 to more than 1 pH, heavy soils showing the greatest change. The change in reaction is very rapid when the drying temp. is 100°C. The amount of change in 24 hr. is about the same as in air drying (0.09 to 1.4 pH). At still higher temp. the change is much more rapid, requiring only 1-2 hr. The reaction of a neutral clay is lowered up to ca. 400°C., then increases, becoming slightly alkaline at 800-1000°. An acid clay remains unchanged up to 400°, then increases and becomes neutral at 1000°. The change in reaction is probably due to reduction of the internal surface by drying, with accompanying lowering of buffer action. Through drying, electrolytes are also released, which increase the acidity, especially those which cause hydrolysis. The soil reaction is thus not of definite magnitude.—*Author's summary (transl. by F. Weiss).*

4850. **AGAFONOFF, M. V. Sur quelques sols rouges en Bienhoa de l'Indochine (Suite et fin).** *Rev. Bot. Appl. et Agric. Coloniale* 9(90): 120-126. 4 pl. 1929.—This paper deals with a study of the cause of infertility. Analyses of 5 soils show that the lack of fertility is not due to deficiency of N, P_2O_5 and K_2O. The suggestion is made that the changes in structure brought about by clearing the forest are responsible. Analyses of soils for their basic exchange (according to Gedroitz) show the absorbing complex of some soils higher in Ca and Mg than others. Analyses of the SiO_2 and Al_2O_3 dissolved by 5% NaOH showed an excess of Al_2O_3 over the proportion 2 SiO_2: 1 Al_2O_3 and indicated a relation between the free Al_2O_3 and the saturation of the absorbing complex by Ca and Mg. In general, the soils low in Ca and Mg have poor structures, with consequent defective water and air circulation.—*E. P. Deatrick.*

4851. **ALLAN, F. E., and J. WISHART. A method of estimating the yield of a missing plot in field experimental work.** *Jour. Agric. Sci.* 20(3): 399-406. 1930.—A method is shown for estimating the yield of a missing plot by the analysis of variance, using the yields of all the other plots. The calculation is given for (a) a Randomised Block experiment, and (b) a Latin Square arrangement.—*F. E. Allan and J. Wishart.*

4852. **BARNES, S., and E. S. HOPKINS. Soil moisture and crop production.** *Canada Dept. Agric. Div. Field Husbandry Bull.* 130. 1-46. 4 pl., 9 fig. 1930.—The storage of moisture in the soil and its utilization by crops has been studied in Western Canada under an average annual precipitation of 15 inches. Snowfall, averaging 30 inches annually, did not appreciably influence the amount of moisture stored in soil. Summer-fallow, the most common practice for moisture conservation, has an efficiency of approximately 35%. Weeds can utilize all moisture entering soil from rainfall. Because of competition for soil moisture by weeds grain crops may be reduced 50% in yield. Grass and clover crops are difficult to grow when seeded with nurse crops on account of competition for moisture. The water requirements of crops are doubled when grown with deficient supplies of moisture.—*S. Barnes.*

4853. **BARNETTE, R. M., and J. B. HESTER. Effect of burning upon the accumulation of organic matter in forest soils.** *Soil Sci.* 29(4): 281-284. 1930.—Analyses are reported of samples from comparable soil (Norfolk Medium Fine Sand, deep phase) on the Florida Mainland (burned over nearly annually for the past 42 yrs.) and in virgin pine forest from an island off the coast (not burned over within the past 42 yrs.). Leaf mold was absent, and N and organic matter were depleted in the burned-over land, and exchangeable lime and hygroscopic moisture was much lower in it.

4854. **FRASER, GEORGE K. The soil and the forest: Soil classification and description.** *Scottish Forestry Jour.* 43(1): 19-33. 1 pl. 1929.—A brief review of knowledge of soil profile structure from the historical standpoint, with descriptions of examples occurring in forests of Scotland.—*A. P. Kelley.*

4855. **HISSINK, D. J., und JAC. van der SPEK. Ueber Titrationskurven von Humusböden. [Titration curves of humus soils.]** *Proc. 2nd Comm. Internat. Soc. Soil Sci. Vol. A, Groningen,* 1926. 72-93. 1926.—Preliminary experiments show that mixtures of humus soil and solutions of strong bases require long periods to reach equilibrium, and for accurate results should be allowed to stand at least 24 and preferably 72 hours, with intermittent rotation. A concentration of 5 gm. of organic matter to 200 cc. of liquid proved most satisfactory. Ca and Ba hydroxides produce almost identical changes in reaction, but Na hydroxide yields somewhat different results. A series of soils with widely differing humus contents were treated with various amounts of these reagents and the pH values attained plotted against gm. CaO per 100 gm. humus. The points at which the curves obtained in the Ca hydroxide treatments cut the line of pH 7.0 are taken to express the theoretical lime-requirements of the respective soils. In practice, however, larger amounts of CaO must be added.—*E. T. Wherry.*

4856. **SHAW, CHARLES F. Potent factors in soil formation.** *Ecology* 11(2): 239-245. 1930.—The character of the soil is determined by the composition of the parent material, climatic and vegetative influences, the intensity and time during which they have operated and any modification by erosion or deposition. Soil classifications which do not evaluate each of these facts are applicable only in a very general way or in local restricted areas where the ignored factors may be fairly uniform. The influence of each of these factors must be considered in any widely applicable scheme of soil classification.—*W. W. Weir.*

4857. **SPURWAY, C. H. A test for water-soluble phosphorus. Studies on water-soluble phosphorus in field soils.** *Michigan Agric. Exp. Sta. Tech. Bull.* 101. 25p. 1929.—A microchemical method for the estimation of the water-soluble phosphate content of soils was developed on the basis of the reaction of Deniges—the interaction of orthophosphate and ammonium molybdate in the presence of nitric acid followed, in the original procedure, by the addition of stannous chloride to produce the blue reduction-derivative of the phosphomolybdate. Applying this method to a number of Michigan soils the author concludes that when the soil showed 0.5 parts per million or less of P, phosphatic fertilizers produced crop increases.—*H. C. Waterman (courtesy Exp. Sta. Rec.).*

4858. **STEVENSON, W. H., P. E. BROWN, and J. L. BOATMAN. The management of peat and alkali soils in Iowa.** *Iowa Agric. Exp. Sta. Bull.* 266. 81-100. 8 fig. 1930.—The first requirement of peat soils was adequate tile drainage, then exposure to frost, snow, and rains by means of fall plowing, which hastened their decomposition. In the shallower parts deep plowing had the advantage of enriching the soil and improving its physical condition by the admixture of the heavy clay subsoil. Frequent cultivation is of value both in opening peat soils and in encouraging their decomposition and in controlling weed growth. The choice of crops for newly drained peats is discussed. These peat soils were found to have a high lime content and to need no additional supplies. They were also rich not only in

organic matter but in nitrogen, and the use of much manure was deemed inadvisable. For corn and small grains, grown after 2-3 yr. of pasture or cropping to vegetables, following drainage, 200-lb. per acre of superphosphate, potassium chloride, or both, was often profitable. Drainage and manuring to rid the soil of excessive soluble salts and plowing under straw and green manure crops, of which sweet clover was one of the most valuable, were the most useful preliminary treatments for "alkali" spots. KCl at 200 lb. per acre often proved effective, and superphosphate occasionally so.—*H. C. Waterman (courtesy Exp. Sta. Rec.).*

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 3024, 3138, 3205, 3209, 3236, 3242, 3248, 3253, 3254, 3401, 3422, 3472, 3473, 3480, 3788, 3799, 4513, 4654, 4743, 4832, 4837, 4838, 5096, 5112, 5159, 5191, 5193)

4859. BANGHART, EDITH H. Meconopsis baileyi. *Nation. Hort. Mag.* [*Washington, D. C.*] 9(3): 153-154. 1 fig. 1930.—Directions are given for the propagation from seed of this difficult subject. The seedlings prefer an acid soil, a moist, shady situation and must not be checked in growth.—*C. G. Bowers.*

4860. BECKER, J. Handbuch des Hackfruchtbaues und Handelspflanzenbaues. [Manual of vegetable and truck crop culture.] 506p. 116 fig. Paul Parey: Berlin, 1928. Pr. 24 M.

4861. BEMELMANS, J. Systématique du genre Coffea Linn. Terres à café du Brésil. *Ann. Gembloux* 36(4): 128-138. 1 fig. 1930.—The author discusses briefly the species of *Coffea,* lists the varieties of each, and describes the coffee soils of Brazil as to type and location.

4862. BLAIR, A. W., and A. L. PRINCE. The influence of lime in vegetable growing. *New Jersey Agric. Exp. Sta. Bull.* 498. 16p. 5 fig. 1930.—Soil fertility plats of which some had received no lime during 20 yr. whereas others had been limed regularly at 5-yr. intervals were used in a study of the growth of various vegetable crops. "In every case the yields were much increased where lime was used. Beets and carrots were a failure on the unlimed plat. The failure in this case was due in part to the fact that the acid soil had a very depressing effect on germination. "For the type of soil and the crops under consideration, a soil reaction represented by medium acidity (slightly above pH 6) seems to be preferable to one that is more acid than medium (below pH 6). Reactions of pH 7, or even slightly higher appear to have no detrimental effect. The important indirect effect of lime in encouraging the growth of soil-improving crops is also noted and attention is drawn to the fact that "strongly acid soils may contain soluble Al compounds which are toxic to certain crop plants. Lime possesses the property of putting these compounds out of action. Heavy applications of superphosphate will do the same, but lime is more economical." In moderate applications, there was little choice as between Ca and Mg limestones.—*H. C. Waterman (courtesy Exp. Sta. Rec.).*

4863. CHADWICK, L. C. Thuja propagation. *Florists' Rev.* 66(1693): 25-26. 2 fig. 1930.—All varieties of thujas do not react the same when propagated in different media. The greatest root growth usually occurs in peat moss. The percentage of rooting in peat depends on its moisture content, which should be relatively low for rooting thuja cuttings. Sand is a good medium for most varieties of *T. occidentalis.* The rooting of *Thuja plicata* is influenced by the acidity of the medium.

4864. CROCE, FRANCISCO M. Elección de las variedades de brotación tardía en la lucha contra las heladas de primavera. [Selection of varieties for late budding as control against early frosts.] *Rev. Mens. B. A. P.* [*Buenos Aires*] 13(153): 46-48. 1930.—The periods of budding and flowering of more than 100 varieties of grapes grown in Mendoza are listed.

4865. CURTIS, K. M., and T. RIGG. Peach culture. Spraying and manurial experiments in the Nelson district. 1. Four years' control of brown rot in New Zealand. 2. Manurial experiments. *New Zealand Dept. Sci. & Indust. Res. Bull.* 15. 1-22. 4 pl. 1929.—1. For 4 consecutive seasons, in some of which climatic conditions were adverse, brown rot has been kept under control on 3 peach varieties in a commercial orchard at Umukuri by eliminating as far as possible the sources of initial infection each spring; cutting out after blossoming time all laterals bearing diseased flowers; and applying adequate sprays (bud-movement, pink to blossom, petal-fall, and immediate pre-maturity), together with an adjustable interpolated series between petal-fall and pre-maturity. Bordeaux mixture and lime sulphur were used. 2. Experiments, conducted over a period of years on several varieties of peaches on the 2 chief peach soils of the Nelson district have demonstrated the importance of manure for peaches on these soils. On the Motueka soil, which is well supplied with available phosphate and lime, nitrogenous fertilizers used at the rate of 3 lb. per tree increased the average annual yield by 1 bushel per tree. There was little benefit from the use of phosphates and potash on this soil. On the Stoke soil, use of a complete fertilizer supplying 2 lb. of superphosphate, 1 lb. K_2SO_4, 1 lb. $(NH_4)_2SO_4$, and 2 lb. $NaNO_3$ per tree gave an increase of about ½ bushel of fruit per tree. In both experiments the increased yield was profitable. The value of fertilizing peaches with phosphates and potash is not so clear. The fertile sand of Umukuri is well supplied with phosphate, and should require little phosphatic manure. The results obtained do not suggest that potassium fertilizers have been very beneficial on the Umukuri sand, although the supply of available potash in the soil is below normal. Growers are advised to use at least 1 lb. of K_2SO_4 per tree. The Stoke soil is typical of many average soils used for peach-culture throughout New Zealand. Undoubtedly the liberal use of nitrogenous manures at the rate of 3 lb. per tree is essential for the maintenance of high yield. Owing to a more restricted root-range on such soils, it is highly desirable to maintain the humus supply of the soil by ploughing in green crops, and to use both phosphate and potash in the manuring of the trees. A dressing of 2-3 lb. of superphosphate, 1 lb. K_2SO_4, 1 lb. $(NH_4)_2SO_4$, and 1 lb. of dried blood per tree is recommended for use early in September. About the middle of November a further top-dressing of 1 lb. per tree of either $NaNO_3$ or $(NH_4)_2SO_4$ should be given. The use of iron sulphate for peaches in the Umukuri district has not improved the yield of fruit or the control of die-back.—*From authors' summary.*

4866. DARNELL, A. W. Illustrations and descriptions of beautiful and interesting plants suitable for outdoor culture in the British Isles. *Hardy & Half-hardy Plants* 2(2): 22-42. 21 pl. (1 col.). 1930.—Illustrations and descriptions of *Campanula lasiocarpa*, Cryptogramma stelleri*, Cypripedium guttatum* var. *yatabeanum*, Dendromecon rigidum* Dimorphotheca calendulacea* Douglasia laevigata*, D. vitaliana*, Hesperoyucca whipplei*, Iris lupina*, Landolphia capensis*, Meconopsis integrifolia*, Nierembergia filicaulis*, Nolana prostrata*, Primula marginata*, Romneya coulteri*, Styrax hemsleyanum*, Syringa persica*, Thunbergia alata*, Trachelospermum jasminoides*, Tumion californicum*,* and *Volvulus sylvaticus*.*

4867. DRÖMER, H. Die Grundlage des holländischen Gartenbaus. *Gartenbauwiss.* 1(5): 517-523. 1929.—The historical development and present status of the pro-

duction and marketing of vegetables and fruits in Holland are briefly discussed.—*A. E. Murneek.*

4868. FOTHERINGHAM, N. Manuring citrus trees at the Berri experimental orchard. *Dept. Agric. S. Australia Bull.* 238. p. 71-74. 1930.—Both in the superphosphate and potash plots the trees are yellow in appearance, especially those receiving potash. Those given mixed manure and bonedust generally appear healthy. The trees in the plot receiving 5 cwt. sulphate of ammonia are in fine condition, while those receiving potash and superphosphate appear incapable of bearing another crop. So convincing are the failures of superphosphate over a period of 8 yr. that a new line of experiments has been laid down.—*From author's conclusions.*

4869. GIOELLI, FELICE. Sopra la "maturazione" dei tralci della vite. [Maturation of grape canes.] *Ann. R. Accad. Agric. Torino* 71: 3-19. 1928(1929).—The author outlines his plans for a comprehensive study of the "ripening" of the canes of the grape vine. Complete maturity is reached by the middle of February in Italy. Generally speaking, maturation is a phenomenon of perfecting the secondary structure, with a storing of nutritive reserves common to all woody plants.—*F. Gioelli (transl. by H. S. Wolfe).*

4870. [HEINTZ, G. W.] ГЕЙНЦ, Г. В. Состояние культуры инжира в разных странах мира. Мировое производство и потребление. **[Fig culture; world production and consumption.]** [English summary.] Бюллетень Государственного Никитского Опытного Ботанического Сада. (*Bull. Gov. Bot. Gard. Nikita, Yalta, Crimea*) 7. 7-69. 6 fig. 1930.—The author discusses the quality of figs grown in different regions and describes the varietal diversity of this crop in different countries. He also deals with the export, the methods of cultivation, harvesting, drying, grading and packing of the fruit and presents statistics of consumption. The following countries are included: U. S. A. (California), Turkey (region of Smyrna), Italy, Spain, Algeria, Portugal, Greece, France, Tunis, Morocco, Chile and Australia. The author concludes that much attention should be devoted to the wide development of commercial fig growing in the USSR, in order that importation of figs may be checked. Since the fig has been grown in different regions of the USSR (Crimea, Caucasus, Turkestan), for centuries, the author thinks that its cultivation may become of commercial importance within a few years, but recommends great care in the selection of appropriate areas. The most favorable combination of climate, soil and cultural characters has nowhere been ascertained; therefore a thorough comparative study of the climatic microregions of commercial fig growing is of great importance.—*From the English summary.*

4871. [HEINTZ, G. W.] ГЕЙНЦ, Г. В. Изюмная промышленность Калифорнии. **[The raisin industry of California.]** [English summary.] Записки Государственного Никитского Опытного Ботанического Сада. (*Jour. Gov. Bot. Gard., Nikita, Yalta, Crimea*) 12(4): 213-250. 19 fig. 1930.—A description of the history of development of this industry, as well as the methods of cultivation used in California, including the technique of drying, grading, cleaning and packing of the raisin.—*From the English summary.*

4872. HOFMANN, FRED W. Effects of nitrogen, phosphoric acid, and potash applications on yields and circumference growth in ensembled data from cultivated apple orchards. *Proc. Amer. Soc. Hort. Sci.* 26: 145-148. 1929(1930).—On the whole over the entire limestone apple sections studied, there are significant gains in yield and trunk increase when some combination of N with either P or K, or both, is applied in cultivated apple orchards. The odds are generally more in favor of a complete combination.

4873. HOFMANN, FRED W. Profitable application of certain fertilizers to apple orchards in the Hagerstown soil series. *Proc. Amer. Soc. Hort. Sci.* 26: 153-157. 1929 (1930).

4874. JAMES, D. M. The fruit and vegetable supply for fifteen cities. *Bull. Pennsylvania Dept. Agric.* 13(8): 1-82. 3 fig. 1930.

4875. JONES, H. A. Spacing, time-of-planting and size-of-seedling studies with California Early Red onion. *Proc. Amer. Soc. Hort. Sci.* 26: 114-118. 1929 (1930).—As the distance between onion plants in the row was increased from 3 to 12 inches, there was a delay in time of maturity, an increase in the size of the bulbs and a decrease in the yield per acre. When seedlings were graded for size at time of transplanting the large seedlings produced a higher yield of bulbs and the average size of the bulbs was larger. Early planting gave the highest yields and there was a decrease in yield and size of bulbs as the time of transplanting was delayed.—*H. A. Jones.*

4876. KORTLEVE, IR. A. Kieming van oliepalmzaden. *De Bergcultures* 4(28): 729-730. 1930.—The sprouting beds are best made by placing sand from low land in beds ± 5 cm. deep, upon which the seed is sown. Then the seed is covered with 3-4 cm. of sand. When exposed to full sunlight, the seed should be watered 1-2 times a day. No method of germinating fresh seed has been devised; therefore it is advised that preliminary treatment be given the seed immediately following harvest. If the seed cannot be planted out directly, it is treated for 2 days with 1% hydrochloric acid (29 parts of water to 1 of hydrochloric acid), washed 2 days in flowing water, and planted. The plants must not remain too long on the beds because they become yellow through lack of nourishment.—*R. H. Westveld (transl.)*

4877. [KOSTOV, DONCHO]. КОСТОВЪ, ДОНЧО. Биология на калуса. **[Biology of the callus.]** [English summary.] Годишник на Софийская Университетъ, Агр. Факул. (*Yearbook Univ. Sofia, Fac. Agron.*) 8: 297-316. 4 pl. 1929/1930.—The morphology, physiology, histology, and cytology of the interspecific and intergeneric graft unions of certain solanaceous plants were studied and attention given to certain similar conditions in *Pyrus* and *Malus*. The scions, depending on the species and genus, manifested a tendency to form small roots, tumorous outgrowths, thin leaves, fasciated shoots, etc., immediately above the callus plane. In the interspecific and intergeneric graft unions the pigment was usually unable to pass through the callus plane. In certain intergeneric grafts flowers were produced with abortive pollen grains and with pollen grains containing an increased number of chromosomes. After selfing such flowers, aberrant and mutant plants were obtained. In the interspecific and intervarietal grafts the scion grew better when it was grafted on to stocks with a better root system than that of the plant from which the scion was taken. This was not true in the case of the intergeneric grafts. By means of the nephelometer and by the "Dialyzing-Ninhydin" colorimetric method, the presence of acquired lysins and precipitins was determined in the scions and stocks not only in the intergeneric and interspecific graft unions but even in the grafts between hybrids and their parent plants. The tissue joining the scion and stock was the product of the stock. An accumulation of starch, silica, and sometimes tannin was found in the scion above the callus plane. The malformation of the scion immediately above the callus plane is due in most cases to the new physiological conditions of the components and rarely to *Bacterium tumefaciens*. In certain grafts an agglutination of the chloroplasts was observed in the callus region. The parenchyma cells of the pith in the callus region had secondary thickening in the older calluses. The cells near the callus plane were rich in cytoplasm and contained many small vacuoles. The appearance of the vacuoles in these cells is apparently chiefly the result of precipitation in vivo and the storage of the foreign substances diffusing into the cells. An increase of cytoplasmic viscosity was observed in the callus region. Cell division is retarded by this increased cytoplasmic viscosity and a number of abnormal conditions appear in this region, e.g., irregular somatic cell division, multinucleate cells, polyploid so-

matic cells, and cells with contracted chromosomes. In the older intergeneric grafts the nuclei of the cells located near the callus plane at first became hypertrophied and later were dissolved. The nucleoli in the hypertrophied nuclei were more numerous and often larger than in normal cells. Sometimes very small ones appeared as though they might be fragmented. They are considered as possibly being catabolic products.—*D. Kostoff.*

4878. **[KOVALEV, N. V.]** КОВАЛЕВ, Н. В. Изюмное виноградство и промышленность в СССР. **[The growing of raisin grapes and the raisin industry in the U. S. S. R.]** [With English summary.] Записки Государственного Никитского Опытного Ботанического Сада. (*Jour. Gov. Bot. Gard., Nikita, Yalta, Crimea*) 12(4): 203-212. 1930.—An account of raisin grape culture in U. S. S. R. and the place of grapes in the general agricultural economy.—*From author's summary.*

4879. **[KRÜKOV, F. A.]** КРЮКОВ, Ф. А. История происхождения культурных слив и географическое распространение их диких родоначальников. **[The history of the origin of cultivated plums and the geographical distribution of their wild ancestors.]** [English summary.] Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot., Gen. and Plant-Breed.*) 22(3): 527-552. 1929.—On the basis of the literature, the author discusses the subdivision of *Prunus*, a genus rich in spp. and widely distributed over the earth; the characteristic of the subsection *Prunophora* Focke and of the section *Euprunus* Koehne and *Prunocerasus* Koehne, a key for determining the species of the plums of the Old and New World, and morphological descriptions of *P. spinosa, P. insititia, P. domestica, P. cerasifera, P. salicina* and *P. simoni* with their allied varieties, subvarieties and forms. For each of the species mentioned the author gives the geographical distribution, history of origin, and introduction into culture. Data from literature on the cytology of plums are also given.—*From English summary.*

4880. **[LAZAREVSKIĬ, M.]** ЛАЗАРЕВСКИЙ, М. К изучению вариаций сорта фурминт(Furmint)в связи с осыпанием цвета и мелкоягодностью у этого сорта. **[Varieties of furmint in relation to the crumbling of flowers and the consequent appearance of small berries.]** [With French résumé.] Записки Государственного Никитского Ботанического Сада. (*Jour. Gov. Bot. Garden Nikita, Yalta, Crimea*) 12(2): 117-151. 9 fig. 1929.—Observations in the vineyards of Magaratch show considerable variation in the variety "Furmint" (Tokay, Mosler). 4 distinct types of clons are distinguished which differ decidedly in size and compactness of clusters and in productivity. One of the clons has abnormal flowers. The value of the Furmint variety in cultivation depends on rigorous selection to eliminate clons low in fruit production.—*A. B. Stout.*

4881. **[LEVASHOV, N. A.]** ЛЕВАШОВ, Н. А. Потребность томатного растения (**Solanum lycopersicum Tourn.**) в воде. **[Water requirements of the tomato.]** [With German summary.] Известия Саратовского Общества Естествоиспытателей. (*Ber. Saratower Naturforscherges.*) 2(2): 109-117. 1928.—Tomato plants are highly resistant to drought. The critical moisture content of the soil for tomatoes, 7.09%, is low in comparison with that for cabbage and cucumber. They have a high capacity for transpiration. For maximum fruit yield and general development of the plant, a water supply from 60-65% [of the maximum water capacity of the soil] was necessary under the conditions of the experiments on sandy humus soil at the given temp. and air moisture. The water requirement of the plant increases with its development, up to the time of the maturity of the fruit.—*Author's summary (transl.).*

is given of the use and development of superior planting material in the Dutch East Indies. There are sections on seed selection, rejuvenation, planting, and green manures and soil erosion. The section concludes with a suggested agricultural and botanical program for rubber research in Ceylon.—*L. Lord.*

4883. **McFARLAND, J. HORACE. Two unusual shrubs.** *Horticulture [Boston]* 8(13): 316. 1930.—*Lonicera korolkowii floribunda* and *Chionanthus retusa* are recommended as valuable for commercial propagation as ornamentals.—*C. G. Bowers.*

4884. **MacGILLIVRAY, JOHN H. Studies of tomato quality. 1. The effect of temperature on storage losses.** *Proc. Amer. Soc. Hort. Sci.* 1926: 208-214. 1926.—Tomato fruits suffer losses of weight, volume, and organic constituents when stored at 13.9°, 27°, and 43° C. These losses are directly proportional to storage temp. and length of storage; they are much lower for fruits with unbroken skin. Decreases in organic constituents such as dry matter, sugar, and acid, resulted from storage. The loss at 27° C. for whole fruits of the Indiana Baltimore variety, during 72 hr., was: weight, 4.3%; volume, 4.2%; dry matter, 4.4%; sugar, 9.3%; and acid, 22.7%. At the same temp. cracked fruits suffered greater losses, as did whole fruits at higher temp.—*J. H. MacGillivray.*

4885. **MELLO GERALDES, C. de., with collab. of CANDIDO DUARTE and FREDERICO GOUVEIA. Contribution à l'étude des fruits des variétés de palmiers à huile et de leurs huiles. [The fruits and oils of the varieties of oil palms.]** *Bull. Matières Grasses (Inst. Colonial Marseille)* 1930(4): 97-104. 1930.

4886. **MITRA, S. K., and P. C. KHONGWIR. Orange cultivation in Assam.** *Dept. Agric. Assam. (India) Bull. 2.* 1-19. 1928.—An attempt to make an approximate estimate of the area and distribution of orange cultivation in Assam with special reference to picking, packing and marketing.—*S. K. Mitra.*

4887. **OPPENHEIM, D. J., and L. WINIK. The determination of the sugar content and the pH value of the Jaffa orange.** [Text in Hebrew and English.] *Hadar [Jaffa]* 3(7/8): 170-173; Hebrew, separately paged sect.: 169-171. 1930.—The acidity of the fruit gradually increases until about mid-August. Thenceforth until January it remains stationary, then decreases. The percentage of sugar increases until about the 1st of January. At that date a certain fall occurs, after which a gradual increase commences once more until the end of the season. There are no differences between the value of pH in light and heavy soils. There are very slight differences in sugar. No relation was determined between meteorological factors and variations in the pH value and sugar content.—*Authors' conclusions.*

4888. **REINECKE, O. S. H. Survey of fruit orchards of the Western Cape Province.** (*Univ. Stellenbosch-Elsenburg Coll. Agric. Sci. Bull. 3*) *Union So. Africa, Dept. Agric. Sci. Bull.* 77. 1-110. (4p. of text and 106 of tables). 1929.—The Western Cape Province produces practically all the deciduous fruit exported from the Union annually, as well as the wines, raisins and other products of the vine. A brief outline of the early development of the fruit industry in South Africa is given and the annual export of fruit compared with that of other agricultural products. A graph indicates the growth of fruit export during the period 1899-1928 and the very rapid expansion of this trade during recent years. Based upon the number of trees planted and the quantities of fruit shipped in the past, an effort is made to forecast the quantities of fruit which may be expected for shipment in 10 yr. Tables indicate the acreage and distribution of fruit farms and vineyards (other than for wine or raisins) in the different districts; the proposed extension for the period 1927-1929; the total number, according to age, of apple, pear, apricot, plum, prune and peach trees in the different fruit growing districts. The varieties grown in each district are treated in detail. Meteorological data are given for the different districts.—*P. A. van der Byl.*

4889. **[RÏABOV, I.]** РЯБОВ, И. Построение про-

граммы научно-опытных работ по плодоводству районной опытной станции на примере Южного Крыма. [Attempt to draw up a program for the scientific pomological work conducted by the regional experiment station, after the example of Southern Crimea.] [English summary.] Бюллетень Государственного Никитского Опытного Ботанического Сада. (*Bull. Gov. Bot. Gard. Nikita, Yalta*) 3. 3-78. 1930.

4890. **SAND, AUSTIN W. W.** A study of Pogoniris varieties. *Cornell Agric. Exp. Sta. Mem.* 100. 159p. 3 pl., 52 fig. 1926.—There have existed perhaps 2,500 named varieties of bearded iris. By checking and comparison more than a thousand were reduced to less than 700 distinct varieties. To this group new sorts have been added and the collection in the Cornell plantation embraces more than 1,200 varieties. The multiplicity of varietal names has been due to the fact that blooms are not identical season after season. Climatic conditions, particularly frost, seem to effect color intensity, and flowers produced on young plants may be slightly different from those produced after the plant has become well established. The history of bearded iris is traced, and directions are given for handling iris, including cut flowers for the trade. Based mainly upon the work of W. R. Dykes, the genus *Iris* is divided into 12 sections with a 13th indicated for hybrids: Juno, Xiphium, Reticulata, Gynandriris, Nepalensis, Evansia, Pogoniris, Pseudoregelia, Oncocyclus, Regelia, Pardanthopsis and Apogon. Each section is again divided into groups. The three most important sections commercially are Apogon, Pogoniris and Xiphium. The subgenus *Apogon* is the largest and most widely distributed. It extends throughout the temperate belt of the northern hemisphere. The second largest subgenus is *Pogoniris*, horticulturally the most important. It is found cultivated in central and southern Europe, northern Africa and eastward to China and northwestern India; no members are indigenous to America. The analytical key to subdivisions of the genus *Iris* is based primarily on the rootstock, whether it be bulbous or non-bulbous. Keys are also presented to the 12 sections or subgenera, the section *Pogoniris* being divided, according to Dykes, into 7 major groups with 35 spp. A description of 172 varieties of the *Pogoniris* section completes the publication.—*T. H. McHatton.*

4891. **THOMAS, P. H.** Pruning deciduous fruit trees. *Tasmania Dept. Agric. Bull.* 5. 1-25. 31 fig. 1930.

4892. **VRIES, O. de, J. SCHWEIZER and F. W. OSTENDORF.** Heveaselectie op Java. [Hevea selection in Java]. *Arch. Rubbercult Nederlandsch-Indie* 13: 245-258. 1929.—A discussion of the methods and results of selection of the Para rubber tree in Java.—*C. D. LaRue.*

4893. **WARTENBERG, HANS.** Die Bodenverhältnisse der niederelbischen Marschen und ihre phytopathologische Bedeutung für den Obstbau. *Arb. Biol. Reichsanst. Landu. Forstw.* 17(5): 401-422. 10 pl., 13 fig. 1929.—The influence of the various soil types mentioned in Rothe's "Geology of the Lower Elbe Marshes," on fruit tree culture, and the influence of climate and cultural practices upon soil types are discussed. Trees grew best on an alkaline sandy clay soil and on a strongly acid, sand free, clay soil high in Fe. Inasmuch as the acidifying effect of the former, or the neutralization of the latter caused damage to trees, it is concluded that soil aeration is of greater importance than soil reaction.—*H. Wartenberg (transl. by W. B. Albert).*

4894. **WAUGH, FRANK A.** Everybody's garden. xiii+396p. illus. Orange Judd Publishing Co., Inc.: New York; Kegan Paul, Trench, Trubner & Co., Ltd.: London, 1930.

4895. **WILSON, E. H.** The story of Azalea indica. *Horticulture [Boston]* 8(10): 244-245. 1 fig. 1930.—It is doubtful whether *A. indica* has had any part in the development of the large-flowered commercial "Indian azaleas" of today. *A. balsaminaeflora* is really the double form of *A. indica.*—*C. G. Bowers.*

4896. **WILSON, E. H.** The old fashioned Mezereon. *Horticulture [Boston]* 8(12): 301. 1930.—*Daphne mezereum* is highly recommended as an ornamental.—*C. G. Bowers.*

4897. **WILSON, E. H.** Summer-flowering trees and shrubs. *Horticulture [Boston]* 8(14): 335-336. 1 fig. 1930.—*Tilia, Magnolia glauca, Oxydendrum arboreum, Koelreuteria paniculata, Sophora japonica, Acanthopanax ricinifolia, Stewartia pseudo-camellia* and *S. pentagyna, Gordonia alatamaha, Aesculus parviflora, Clethra alnifolia, Sorbaria* in variety, *Buddleia davidii, Hibiscus syriacus* and *Hydrangea* are recommended for ornamental planting in the north.—*C. G. Bowers.*

4898. **WILSON, E. H.** A new greenhouse rhododendron. *Horticulture [Boston]* 8(14): 349-350. 1930.—*Rhododendron burmanicum* succeeds well under glass in New England.—*C. G. Bowers.*

4899. **WILSON, E. H.** Azaleas for southern gardens. *House & Garden [New York]* 57(6); 80, 134, 142. 4 fig. 1930.—The coastal climate of the southern U.S.A. offers opportunities for the culture of fine azaleas elsewhere unobtainable. Besides the older varieties, many new species and hybrids are now available which considerably extend the use and beauty of the genus.—*C. G. Bowers.*

4900. **YOUNG, ROBERT A.** Dwarf coconuts from Malaya. *Nation. Hort. Mag. [Washington, D. C.]* 9(3): 140-143. 1 fig. 1930.

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 3233, 3292, 3376, 3382, 3384, 3395, 3411, 3477, 4853, 4854, 4892, 4972, 5081, 5168, 5169, 5200)

4901. **ALLISON, J. H.** The growth of jack, Norway and Scotch pine plantations on Hinckley loamy fine sand. *Jour. Forest.* 29(3): 381-383. 1931.—Plantations of 2-1 stock of *Pinus banksiana* and *P. silvestris* (Riga variety), and 2-2 stock of *P. resinosa*, on poor, droughty soil near St. Paul, Minnesota, grew better than the average for plantations in the Lake States, possibly because of planting in the open, in furrows.—*P. C. Wakeley.*

4902. **BOURGUET.** Formules pour le cubage des arbres sur pied. *Bull. Trimest. Soc. Forest. de Franche-Comté* 19(1): 16-23, 1931.—Formulae applicable in the region of the Vosges and Alps of eastern France are compared with existing volume tables. If V=stem volume in cu.m., h=height in m., D=diam. at breast height in m., then for oak, beech, and other deciduous trees not over 10 m. high, $V=6D^2(h/10)+1/30[6D^2(h/10)]$. For heights of 11 to 18 m., this becomes $V=5D^2(h/10)+2/30[5D^2(h/10)]$. For heights of 18-20 m. $V=10D^2$, and for heights over 20 m., $V=5D^2(h/10)-2/30[5D^2(h/10)]$. For conifers with average form factor=0.80 (i.e., ratio of diam. at middle height to diam. at breast height), $V=2D(2D+0.1)h/10$, and with factor 0.70, $V=2D(2D-0.1)h/10$. The latter formula is applicable to young isolated trees, or to those grown in thinned stands or to trees more than 0.60 m. in diam.—*J. Kittredge, Jr.*

4903. **BRYAN, L. W.** The forests of Siam. *Hawaiian Planters' Record* 35(1): 27-30. 1931.—A brief account of the teak, evergreen, coniferous, mangrove swamp and deciduous forests of Siam.

4904. **CAMBRAY, EUGÈNE de.** Appareil servant à l'accrochage instantané des grillages qui sont utilisés pour protéger contre les lapins les jeunes plantations en forêt. [Apparatus for instantaneous setting up of gratings used in protecting young forest plantations against rabbits.] *Rev. Hist. Nat. Appl. Part. B. Aqui-*

cult., Ent., Aquar. et Terrar. 11(12): 389-396. 10 fig. 1930.

4905. CHALK, L. The formation of spring and summer wood in ash and Douglas fir. Oxford Forestry Memoirs No. 10. 48 p. 3 pl. Clarendon Press: Oxford, 1930. Pr. $2.00. —The trees studied were growing in Bagley Wood near Oxford, England. The 1st part of the memoir deals with the development of the annual ring. Inception, rate, and duration of growth are compared in different parts of the same tree and between individuals growing under different conditions. The results of various investigators are compared. In Douglas fir, growth started first in open-grown trees; the upper parts of the stem started 10-14 days before the lower. In ash, growth commenced at the same time in the upper and lower parts of the stem. In ash, individual vessels developed more rapidly in a tangential than in a radial direction. Growth ceased after 5-6 weeks. Part 2 deals with the effect of climatic conditions on the growth of Douglas fir. The areas and volumes of spring and summer wood varied independently of each other from yr. to yr. The highest correlation coefficients obtained with meteorological data were between: (a) spring wood volume and May-June mean temp.; (b) summer wood volume and June-July-August rainfall. Part 3 deals with the effect of crown size on growth of Douglas fir. From 1924 to 1927 the annual increment of the dominant tree increased; in the intermediate trees it remained constant; and in the suppressed tree it fell steadily. In all the trees the cross-sectional area of each ring was greatest just below the living crown and decreased both upward in the crown and downward in the stem. The decrease in area from the base of the crown to the base of the stem was more marked in the suppressed than in the dominant tree, and in the spring wood than in the summer wood. The weight of wood produced varied between 1.5 and 2.5 gm. per gm. of total needles. The weight of the old needles appeared to be more closely related to the weight of wood produced than that of the new needles. An extensive bibliography on tree growth is given.—*D. A. Kribs.*

4906. CHANG, F. Y. Historical sketch of Chinese forestry. [In Chinese.] *Jour. Agric. Assoc. China* 77: 1-27. 1930.

4907. [CHEVALIER, AUG.] La forêt du Brésil. [The forests of Brazil.] *Rev. Bot. Appl. et Agric. Tropicale* 9(96/97): 177-184. (*Actes et Compt. Rend. Assoc. Colonies-Sci.*) 1929.

4908. COOK, H. O. Original forests of Cape Cod. *Jour. Forest.* 29(3): 422-423. 1931.—The present fire-resistant forest types of Cape Cod, containing pitch pine and scrub oaks, are contrasted with the types containing hemlock, white pine, beech, soft maple, black and yellow birch, tupelo, hornbeam, and red oak, found on 2 islands that have been protected from fire. The latter types are believed to be more typical of the original forests of Cape Cod.—*P. C. Wakeley.*

4909. FENAROLI, L. Il pino mugo o montano (Pinus mugo Turra). *L'Alpe, Riv. Rorest. Italiana* 18(1): 46-53. 13 fig. 1931.—Notes on its varieties and distribution in Italy.

4910. FIORI, ADRIANO. Il pino loricato (Pinus heldreichii Christ. var. leucodermis Ant.). *L'Alpe, Riv. Forest. Italiana* 18(1): 39-40. 1 fig. 1931.—General notes and distribution in Italy.

4911. FRANCIS, W. D. The buttresses of rain-forest trees. *Kew Bull. Misc. Inform.* 1931(1): 24-26. 1 pl. 1931.—Discusses briefly the various theories put forward to account for buttresses. In Queensland, buttresses are well developed on comparatively young trees and long before they become exposed to strong winds. Formation of buttresses may be due to soil conditions. In Australian rain-forests the dense ground cover of organic matter prevents efficient aeration of the soil. As buttresses are best developed in trees growing in moist or wet soils they may be related to deficient aeration of the soil.—*V. S. Summerhayes.*

4912. FRANÇOIS, EDM. L'Eucalyptus à Madagascar. *Rev. Bot. Appl. et Agric. Tropicale* 9(100): 749-752. 1929.

4913. FRY, WALTER, and JOHN R. WHITE. Big trees. 114p. Portrait, Map. 21 fig. Stanford University Press, 1930.—Information of general interest about *Sequoia gigantea.* Chapters are devoted to their significance, early history (fossil history omitted), need for saving, age, size, growth, seedling development, cone and seed production, cone pigment, foliage, bark and root system, and death. A table gives the location, number of trees and general remarks for each of the 71 groves of big trees in the Sierra Mts. of California.—*W. C. Muenscher.*

4914. GIACOBBE, ANDREA. L'abete bianco (Abies alba Mill.). *L'Alpe, Riv. Forest. Italiana* 18(1): 77-86. 9 fig. 1931.—General notes on characteristics and productivity of *A. alba* in the Apennines.

4915. GRAHAM, SAMUEL A. The effect of defoliation on tamarack. *Jour. Forestry* 29: 199-206. 1931.—Four sets of 10 trees each were defoliated for 4 successive yr. and left undefoliated the 5th yr. The experiments demonstrated that: (1) Defoliation causes a reduction in the size of needles in subsequent years and its effects may be localized in the parts defoliated; (2) complete defoliation usually killed after 3 successive yr. (although 2 trees showed signs of life after 4 defoliations), whereas 75% defoliation failed to kill; (3) complete defoliation affected roots as well as tops, but partial defoliation showed little or no effect; (4) increment of wood is reduced in direct proportion to the amount of defoliation; (5) partial defoliation results in gradual reduction, whereas complete defoliation results first in an increased growth followed by a sharp falling off in rate of increment; (6) certain individual trees failed to react like the majority—usually individuals which were suffering from competition with their neighbors. The results are discussed in connection with larch sawfly attack.—*S. A. Graham.*

4916. HARKOM, J. F., and J. B. ALEXANDER. Strength tests of creosoted Douglas fir railway ties. *Canada Dept. Interior, Forest Serv. Circ. 29.* 1-15. 6 fig. 1931.

4917. HARPER, V. L. French face experiments in turpentining. *Jour. Forest.* 29(2): 225-232. 2 fig. 1931.—Yields of gum exceeding those from American faces by 16-25% were obtained from French faces of equal area on young slash and longleaf pines in Florida. A new type of tool reduced the cost of the French face to approximately that of an equal area of American face.—*P. C. Wakeley.*

4918. HARTMANN, F. K. Zur soziologisch-ökologischen Charakteristik von Waldbeständen Norddeutschlands. *Zeitschr. Forst.- u. Jagdw.* 62(11): 749-778. 1930.—A contribution on the determination of plant-sociological criteria for distinguishing forest and stand types and for interpreting the history and development of the forests of Prussia. The forest area investigated includes beech and oak forests of the "Fagion" association, and oak and mixed pine-hardwood forests of the "Quercion" associations, all lying in the glaciated (morain) region northwest and northeast of Eberswalde. 2 variants are distinguished in the beech Fagion association. One is recognized by a scarcity of Quercion species and a preponderance of Fagion species, including *Elymus europaeus, Asperula odorata, Festuca gigantea, Melica uniflora, M. nutans,* and *Milium effusum;* the other has more plants of the Quercion association, and lacks *E. europaeus* and *F. gigantea.* In Fagion and Quercion oak forests, 3 sub-associations are defined: *Aira caespitosa-Lysimachia,* characterizing the damp neutrophile forest; *Poa nemoralis-Brachypodium silvaticum,* the fresh neutrophile forest, and *A. flexuosa-Holcus mollis,* the moderately fresh acidophilous forest.—*J. Roeser, Jr.*

4919. HEUSSER, et J. V. S. HOLDER. Expérience sur un nouveau système de saignée pour les Hévéa greffés. [A new system of tapping grafted Hevea.] *Rev. Bot. Appl. et Agric. Tropicale* 9(99): 715-718. 4 fi 1929.

4920. HICOCK, HENRY W. Pruning in young plantations. *Jour. Forest.* 29(4): 541-543. 1 fig. 1931.—Red pines planted on a sandy outwash plain in Connecticut, approximately 41 inches high after 5 yr. in the field, were pruned annually for 6 yr. thereafter, to reduce crowns to 25, 50, and 75% of the total height. Reducing to 50 or 25% resulted in total height increases of only 188 and 154%, as against 280 and 295% for the lightly pruned and check trees.—*P. C. Wakeley.*

4921. HIRATA, TOKUTARO. Forest meteorology: Solar radiation and temperature. [In Japanese.] *Soc. Forest Kyoto Imp. Univ. Bull. 3.* 1-114. 1929.

4922. JACOBS, HOMER L. Fertilization of shade trees. Part II. Chemical fertilizers for conifers? *Research Dept., Davey Tree Expert Co. Bull. 5.* 16p. 4 fig. 1929.—Urea, sodium nitrate, ammonium sulfate, cottonseed meal, bone meal, a complete fertilizer, and shredded manure were applied to Norway spruce in landscape plantings. The growth for 2 yr. indicated a decided benefit from all applications with slightly better results from the organic materials and those containing phosphorus and potash. Application in perforations to a depth of 12 in. gave almost as good results as application by cultivation.—*H. L. Jacobs.*

4923. JENKINS, J. H. Changes in moisture content of kiln-dried lumber when shipped by rail. *Canada Dept. Interior, Forest Serv Circ. 32.* 1-6. 1931.

4924. JENSEN, C. F. Generationsveksel i skoven. [Crop rotation in the forest.] *Skogen* 18(3): 52-54. 1931.—Further evidence that in nature one species alternates with another on the same area is given in the succession of *Vaccinium vitis idaea* after *Calluna vulgaris* on heaths, the failure of successive generations of *Sorbus* or other trees of the same family in the same nursery bed, and the deterioration of successive timber crops of one species on a given site. Poisonous excretions from the roots may be the cause. Frequently infections with root rot make a change of species advisable. Underplanting, retention of advance growth, mixed stands and selection cutting all tend to correct the evils of soil deterioration and infection.—*H. I. Baldwin.*

4925. JONSON, TOR. Methods and aids in tree form investigations and in the calculation of volume, yield of various products and growth. *Proc. Internat. Congress Plant Sciences, Ithaca, N. Y. 1926* 1: 729-739. Geo. Banta Publishing Co.: Menasha, Wisconsin. 1929.—An exposition of the "form class" method of estimating timber, and its usefulness in commercial and in scientific work, together with the author's method of calculating current volume growth, growth of different sortiments and annual value increment. The form class method facilitates the construction of general volume tables, and the calculation of sortiments and of the supply of wood over a certain minimum dimension, and makes possible, without new measurements, new calculations which will be in harmony with changing utilization standards. The paper mentions a promising new dendrometer devised by the Swedish forester Liljenström.—*F. I. Righter.*

4926. KEITHLEY, E. S. Colorado evergreens turn deciduous. *Jour. Forest.* 29(4): 614-615. 1931.—Severe freezes and unseasonable thaws, and late spring frosts, during 1930, prevented new growth during the following summer on Douglas fir, Engelmann spruce, and Colorado blue spruce above 7,500 ft. on the Pike National Forest, Colorado, and as a result the trees, though still alive and with new buds, entered the winter of 1930-31 in a leafless condition.—*P. C. Wakeley.*

4927. KLIKA, JAROMÍR. Dendrologie. [In Czech.] *Publ. Min. Zemedelství RCS.* 1930(79): 327p. 149 fig. 1930.—A handbook of dendrology systematically arranged, and including descriptions.

4928. LARUE, P. Eclaircie dans les peupliers. *Bull. Trimest. Soc. Forest. de Franche-Comté* 19(1): 37-39. 1931.—A plantation of *Populus* on a low, moist, poor quality site originally spaced 5 × 5 m., thinned at 34 yr. to a spacing of 5 × 10 m., and at 37 yr. to 10 × 10 m., gave current annual growth per tree of 0.07 cu. m. after the 1st thinning and 0.14 cu. m. after the 2nd thinning. The trees on the south side were largest, those in the center, intermediate, and those on the north, the smallest.—*J. Kittredge, Jr.*

4929. LEDOUX, PAUL. Documents et études de drymologie et de phytotechnologie. (To be cont.) *Bull. Soc. Cent. Forest. Belgique* 36(5/6): 232-250. 5 pl. 1929.—This instalment is devoted to "some problems of floristic phytogeography in relation to drymology." Many references are listed.—*H. T. Gisborne.*

4930. LENT. Düngungsversuche in der Preussischen Staatsoberförsterei Willenberg. *Zeitschr. Forst.- u. Jagdw.* 62(12): 839-846. 5 fig. 1930.—An account of results with commercial fertilizers in experiments started between 1908 and 1914. Potassium phosphate tests with "Kainit" and "Thomasmehl" showed that a single application of fertilizer is sufficient to produce an appreciable stimulation in the growth of pine for many years on the poorest sand soils. Fifteen to 17 yr. after fertilizing with various magnesium compounds the basal area growth of the treated stands was 30-163% above that of an untreated stand.—*J. Roeser, Jr.*

4931. LUNCZ, G. The importance of acidity in forest soil. *Internat. Rev. Agric. Pt. 1. Monthly Bull. Agric. Sci. & Pract.* [Rome] 21(11): 431-438. 1930.—The author summarizes the work done by a number of experimenters under the following heads: soil layers, classification of soils in relation to acidity, influence of acidity on the physical and mechanical properties of the soil, nitrogen metabolism, microbiology of the soil, influence of soil acidity on growth, influence of plants on the soil and methods of improvement. A 2-page bibliography is appended.

4932. LUNCZ, G. The problem of the choice of seeds in forestry. *Monthly Bull. Agric. Sci. & Pract.* [Rome] 22(1): 31-35. 1931.—A review of some preliminary work done in different countries, with a suggestion for an international agreement on forest seed control.

4933. MATTOON, WILBUR R., and R. B. MILLER. Forest trees of Illinois. How to know them. A pocket manual describing their most important characteristics. 5th ed. 93p. 93 fig. Schnepp & Barnes: Springfield, Illinois, 1930.

4934. MOREY, H. F. A test of hypsometers on short trees. *Jour. Forest.* 29(2): 233-237. 1931.—For trees up to 50 ft. in height the U. S. Forest Service hypsometer and the Abney hand level proved superior to the Faustmann and Klaussner hypsometers.—*P. C. Wakeley.*

4935. OLBERG. Zapfenertrag und Samenbedarf. *Zeitschr. Forst.- u. Jagdw.* 62(10): 726-728. 1930.—In a good pine seed year (1928), the yield of cones from felled trees was 2.35 liters per cu. m. of timber cut (0.86-6.06 liters for different compartments). In a poor seed year (1929), the yield was 0.05-1.63 liters (aver. 0.53 l. per cu. m.). Based on a yield of 1 kgm. of seed from 100 liters of cones, and a cut of 250 cu. m. per ha., 5.88 kgm. of seed per ha. are available under favorable conditions, and 1.33 kgm. when conditions are unfavorable. The seed needed for sowing and nursery production for the Prussian state forests is 1.44 kgm. per ha. of land to be restocked. Under any conditions the seed required can be supplied from felled trees, provided care in collecting, sowing, and nursery practise is exercised.—*J. Roeser, Jr.*

4936. PATTERSON, C. F., and A. C. BUNCE. Rapid methods of determining the percentages of fertility and sterility in seeds of the genus Betula. *Scientific Agric.* 11(10): 704-708. 6 fig. 1931.—Successful germination tests were made proving the reliability of 2 methods employed. In one, transmitted light below the objectives of a medium power binocular microscope was used. The seeds to be examined were spread thinly over a glass plate and placed on the stage. In a simpler method seeds were spread over a sheet of paper placed between the eye and a strong light.

4937. PAVARI, ALDO. Il pino nero o larício (Pinus nigra Arn.) *L'Alpe, Riv. Forest. Italiana* 18(1): 25-38. 1 pl., 12 fig. 1931.—Notes on its distribution in Italy.

4938. PAVARI, ALDO. Il pino silvestre (Pinus silvestris L.) *L'Alpe, Riv. Forest. Italiana* 18(1): 41-45. 1 pl., 4 fig. 1931.—Notes on *P. silvestris* in Italy.

4939. PETRINI, SVEN. Resebilder från några franska skogsområden. [Travel pictures from some French forest regions.] *Skogen* 18(3): 55-56; (6): 143-146. 9 fig. 1931. —The forests of the Jura consist of *Picea excelsa* at the higher elevations and *Abies pectinata* at the lower, the dividing line being about 1200-1400 m. In the Noirmont forest the rotation for spruce is 150 yr., and the increment 6 cu. m. per year. Biolley's "methode due contrôle" is practiced, as well as cutting in narrow bands parallel with the slope. In the French Alps *Larix europea* is the commonest tree in the subalpine zone; lower down *Pinus silvestris* and *P. cembra* occur, as well as spruce and fir. Larch reproduction is best in the paths of avalanches. Management is usually by the "quartier bleu" system.—*H. I. Baldwin.*

4940. PETTERSON, H., et al. Redogörelse från kommittén för flytbarhetsundersökningar. [Report of the committee on buoyancy investigations.] *Skogsvårdsför. Tidskr.* 28(4): 496-519. 13 fig. 1930.—Wood properly piled on the landings usually dries sufficiently in the spring before driving. There is little danger of fungus damage, although some of checking. Wood cut in September or October and completely barked dries well, and runs no risk of blue stain or checking, but some snow mould may develop. When the green crown is left on the tree after felling the top and center logs do not dry more than ordinary cut logs, although the butt logs of rapidly grown trees dry more when cut by this method. If sufficient drying can take place on the landings in the spring, broad-ringed trees may be cut in the fall or winter; if not, cutting during moist weather in August, leaving the crown attached, is recommended.—*H. I. Baldwin.*

4941. PILLOW, M. Y. Compression wood records hurricane. *Jour. Forest.* 29(4): 575-578. 2 fig. 1931.—The formation of compression wood in 35-yr.-old longleaf pines in Florida is traced to a hurricane near the end of the 1926 growing season.—*P. C. Wakeley.*

4942. POLHAMUS, LOREN G. Experimental tapping of Hevea rubber trees at Bayeux, Haiti, 1924-25. *U. S. Dept. Agric. Tech. Bull.* 65. 1-32 2 fig. 1928.—Plot and individual yields of 95 *H. brasiliensis* trees over a period of 9 months are reported, the average total yield of dry rubber per tree being 3.4 lb. The best tree produced 6.7 lb. in 9 months. A small proportion of the trees produced a large proportion of the latex. The product-moment correlation method was used in studying the relation between the tree yields in the different months. Since low-yielding trees in one month were normally low-yielding in another month, total yields could be determined with a fair degree of accuracy. The use of the regression equation is discussed in connection with production control. The correlation between yield and tree growth was 0.66 ± 0.68; between yield and bark thickness, 0.030 ± 0.070. There was only a slight correlation between latex yield and rubber content. Bark consumption amounted to a mean of 9.3 inches of bark from about ½ of the circumference of the tree. The bark renewal was good, the thickness for 9-months old bark being 4-7 mm. Weather conditions were normal over the period the trees were studied.

4943. RENDLE, B. J., et al. The timber of Corsican pine (Pinus laricio Poiret). *Great Britain Dept. Sci. & Indust. Res., Forest Prod. Res. Bull.* 6. 1-40. 4 pl. 1930.—This bulletin consists of the following reports: I. The structure of Corsican pine, by B. J. RENDLE; II. The seasoning of Corsican pine, by S. T. C. STILLWELL; III. Mechanical and physical properties of Corsican pine, by C. J. CHAPLIN; IV. The antiseptic treatment of Corsican pine; V. The utilization of Corsican pine, by J. R. COSGROVE; and an appendix: Details of woodworking tests, by E. D. van REST, J. A. BUCHANAN, and W. E. WILSON.

4945. ROCHESTER, G. H. The strength of telephone poles. Eastern cedar, red pine and jack pine. *Canada Dept. Interior, Forest Serv. Circ. 31.* 1-16. 4 pl. 1931.

4946. SALA, GIOVANNI. Il larice (Larix decidua Mill.). *L'Alpe, Riv. Forest Italiana* 18(1): 54-64. 10 fig. 1931.—General notes on the cultivation and biological characters of the larch in Italy.

4947. SCHANTZ-HANSEN, T. Some results of thinning 27-year old jack pine. *Jour. Forest.* 29(4): 544-550. 3 fig. 1931.—A lightly thinned (approximately 6 x 6 ft. spacing) and a heavily thinned plot (approximately 8 x 8 ft.), were laid out in dense 27-yr.-old *Pinus banksiana* on light, deep sand at Cloquet, Minnesota. After 5 yr., the lightly thinned plot showed approximately the same periodic increment % as the unthinned check, but 120 cu. ft. less volume increment, whereas on the heavily thinned plot the volume increment was approximately the same as on the check plot, but the increment per cent was 30% greater, laid on by trees of superior quality and size.—*P. C. Wakeley.*

4948. SCHUBERT, J. Grundlagen der allgemeinen und forstlichen Klimakunde. Die Sonnenstrahlung und der Wärmeumsatz an der Bodenoberfläche. [Solar radiation and heat exchange at the soil surface.] *Zeitschr. Forst.- u. Jagdw.* 62(10): 689-705. 1930.—The principal characteristics that distinguish the climate within forests are protection against radiation, the peculiar character of heat circulation, and the manner in which it is modified. —*J. Roeser, Jr.*

4949. SHIRLEY, HARDY L. Does light burning stimulate aspen suckers? *Jour. Forest.* 29(4): 524-525. 1931. —Light burning late in the fall on 10 ft. sq. quadrats on plots in a 43 yr. old aspen stand on the Chippewa National Forest (Minnesota) stimulated the growth of aspen root suckers, apparently because of the increased heat absorption of the blackened surface.—*P. C. Wakeley.*

4950. SOUZA PINTO, G. de. A carnaúbeira a arvore da vida. [The carnauba, the tree of life.] 21p. 2 pl., 7 fig. Typ. Moderda F. Carneiro: Fortaleza, Brazil.—1928.—*Copernica cerifera* is valued economically for its leaves and wood useful in building, its roots used for medicinal purposes, and especially for the wax which it yields.

4951. STÅLFELT, M. G. Die physiologisch-ökologischen Bedingungen der Kronenreinigung, Schaftreinigung und der natürlichen Bestandesreinigung der Fichte. *Skogsvårdsför. Tidskr.* 29(1): 1-44, 8 fig. 1931.—The dying off of branches begins with the failure of new shoots to appear. After a time the needles fall off and the branch withers. Growth usually stops first on branches of higher order, then affects branches of the 2nd order, and finally the terminal bud. Light intensity measured by Wiesner's method was E_s 0.03 where formation of new internodes ceased. This is the same value as that found for spruce needles where assimilation just balances respiration. Death of side branches is thus due to failure to manufacture adequate food. Self-thinning of stands results from the same causes.—*H. I. Baldwin.*

4952. STASSEN. Bodenbearbeitung mit dem "Lindwurm." *Zeitschr. Forst.- u. Jagdw.* 62(11): 791-793. 1930. —Use of this machine greatly facilitated natural reproduction in beech stands, especially on impoverished soils on stand borders.—*J. Roeser, Jr.*

4953. STREYFFERT, TH. Europas virkesförsörjning. [Europe's wood supply.] *Skogsvårdsför. Tidskr.* 28(4): 460-495. 9 fig. 1930.—In 1925-27 Europe produced a surplus of 11 million cu. m. of wood above imports. A possible sustained yield of 185 million cu. m. is estimated for all Europe. The cut averaged 177 million cu. m. for the years studied. Increment amounting to 27 million cu. m. in Russia was mostly balanced by decay. Thus an excess of 19 million cu. m. of cut over growth is indicated, which probably increased to 24 and 22 million cu. m. for 1928 and 1929.—*H. I. Baldwin.*

4954. TELLA, G. di. L'abete rosso (Picea excelsa Lk.). *L'Alpe, Riv. Forest. Italiana* 18(1): 65-76. Map. 13 fig. 1931.—Notes on *P. excelsa* in Italy.

4955. **TRABUT, L.** Tamarix articulata Vahl. *Bull. Stat. Forest. Nord de l'Afrique* 1(8): 336-349. 8 fig. 1926.—The distribution, development, taxonomy, anatomy, insect parasites, history, methods, and status of the culture of the species in north Africa are described.—*J. Kittredge, Jr.*

4956. **WAKELEY, PHILIP C.** Successful storage of longleaf pine seed. *Jour. Forest.* 29(3): 424-425. 1931.—Seed was kept viable for 1 and 2 yrs. by storing at temp. slightly above freezing.—*P. C. Wakeley.*

4957. **WALLMO, UNO.** Individ-vård. [Individual tree selection.] *Skogen* 18(4): 82-89; (5): 117-122. 15 fig. 1931.—The yield of the Högsjö forest in Sweden has constantly increased under individual tree selection until it is now 250% greater than in 1900. The most important factor is the spacing of each tree for optimum use of the site at every stage of development. If properly spaced, individual trees instead of stands can indicate the site quality by their current annual increment. When this sinks more than 25% below its peak, reproduction should be commenced. Different species should be alternated on the same spot; pine and birch can be reproduced after spruce by making heavier reproduction cuttings.—*H. I. Baldwin.*

4958. **WIEDEMANN, EILHARD.** Die Versuche über den Einfluss der Herkunft des Kiefernsamens. *Zeitschr. Forst.- u. Jagdw.* 62(7/8): 498-522; (12): 809-836. 6 fig. 1930.—This is a comprehensive résumé of the results of an international experiment proposed by Schwappach at the 1906 meeting of the International Union of Forest Experiment Stations. *Pinus silvestris* seed from 12 climatic regions was assembled and distributed to the various cooperators in 1907. The plantations constituting the basis of study are now 15-20 yr. old. The latest results indicate that a large number of local pine races exist within the range of the species in Europe and that these exhibit definite heritable characters involving form, growth and susceptibility to certain enemies. Many of these races are adaptable to a wide range of climatic conditions without appreciable change of original characters. However, within the wide range of the species' distribution, climatic variations are so great that careless introduction of a climatic race into a new habitat may result disastrously. The Belgian and East Prussian races have proved to be elite strains, whose introduction into regions considerably removed from their natural range may be recommended. More intensive studies are needed to establish a scale of strains suitable for cultivation in various "normal" localities in central Europe. More information is needed on the desirability of various races for localities with peculiar local climatic conditions. Meanwhile procedure should be cautious and only seed of certain origin should be used.—*J. Roeser, Jr.*

4959. **ANONYMOUS. RHODESIA DIVISION OF FORESTRY.** Establishing pines. Preliminary observations on the effects of soil inoculation. *Rhodesia Agric. Jour.* 28(2): 185-187. 1931.—Inoculation of soil giving poor growth with soil containing mycorrhizas from satisfactory plantations afforded favorable results.

4960. **ANONYMOUS.** West Virginia forests and forest products. *West Virginia Dept. Agric. Bull.* 74. 1-48. Illus. 1928.

4961. **ANONYMOUS.** Zusammenstellung der im Jahre 1929 in den Preuss. Staatsforsten vorgekommenen Waldbrände. *Zeitschr. Forst.- u. Jagdw.* 62(12): 866-867, 1930.—A total of 670 fires occurred, of which 41% were of unknown origin and only 3% were attributable to lightning. They burned over 4,666 acres or 57% of the area burned in 1928. Most of the fires occurred in May and April. Data for 1927 and 1928 are also included.—*J. Roeser, Jr.*

PHARMACOGNOSY AND PHARMACEUTICAL BOTANY

HEBER W. YOUNGKEN, *Editor*

(See also in B. A. 6(1): Entries 54, 58, 655, 1176, 1404, 1429, 1554, 1624, 2120, 2123, 2126, 2134; and in this issue 3024, 3231, 4061, 4073, 4075, 4277, 4321 4507, 4737, 4885, 4950, 5180, 5217, 5455)

4962. **AMES, OAKES.** Rhus verniciflua and Japanese damascene ware. *Jour. Arnold Arboretum* 12(1): 1-3. 1 pl. 1931.—In Japanese damascene ware which caused *Rhus* dermatitis or lacquer poisoning, the black background was found to be non-metallic and to consist of lacquer, the prepared latex of *Rhus verniciflua*, dyed black. This product should be called lacquer-damascene to avoid confusion with the genuine entirely metallic article.—*A. Rehder.*

4963. **BRIDEL, M., et J. RABATÉ.** Sur la présence du picéoside dans l'écorce de saule noir. *Jour. Pharmacie et Chim.* 11(12): 561-571. 1930.—The bark of the black willow is one of the common commercial drugs. In 1900, Jowett isolated from it a glucoside which he named salinigrin. The authors repeated Jowett's work and showed that the glucoside is a combination of glucose with p-hydroxy acetophenone, and is identical with piceoside, which was first prepared by Tanret from *Picea excelsa*. Therefore, the name Salinigrin should give way to piceoside which has priority.—*O. F. Black.*

4964. **CLARK, E. P.** Tephrosin. I. The composition of tephrosin and its relation to deguelin. *Jour. Amer. Chem. Soc.* 53(2): 729-732. 1931.—Deguelin, m. p. 171°, and a compound melting at 198°, were isolated from the leaves of *Cracca vogelii*, derris root and the roots of *Lonchocarpus nicou* (Cubé root). These 2 substances form a mixture which is difficult to separate by fractional crystallization and which appears to be the material designated by Hanriot as tephrosin. It is proposed that the name tephrosin should be retained for the compound with the melting point of 198°. Tephrosin is a dimethoxy lactone, $C_{23}H_{22}O_7$, which, under the influence of certain dehydrating agents, loses one molecule of water, forming dehydrodeguelin. It is suggested that tephrosin is a hydroxydeguelin. The action of potassium permanganate upon tephrosin results in the formation of a dicarboxylic acid, $C_2H_{20}O_{11}$.—*Author's summary.*

4965. **FINNEMORE, HORACE, and CHARLES BERTRAM COX.** Cyanogenetic glucosides in Australian plants. Part II. A.-Eremophila maculata. The native fuchsia. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 172-178. 1929(1930).—Leaves of *E. maculata* (but not those of *E. goodwinii*) treated with sweet almonds, gave a strong positive test for HCN, but were found almost free of the corresponding enzyme. The glucoside was isolated and identified with prunasin. The glucoside amounted to nearly 10% of the dry wt. of the leaves. Procedures of isolation and analysis are reported in detail.

4966. **FINNEMORE, H., C. B. COX, and SUZANNE KATE REICHARD.** Cyanogenetic glucosides in Australian plants. Part II. B. The presence of enzymes in fodder plants as a factor in the poisoning of stock. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 179-182. 1929(1930).—*Heterodendron oleaefolium*, and dried plants of *Eremophila maculata*, although containing cyanogenetic glucosides, are harmless to stock because the enzymes capable of decomposing them are absent or insufficient in amount; hence, a study of various plants was carried out as to their containing β enzymes, since these latter, capable of decomposing prunasin and sambunigrin but not amygdalin, are widely distributed in plants. To 2 gm. portions of minced fresh plants were added 4 cc. of solutions of amygdalin, prunasin, or sambunigrin; the material was incubated at 40°-42°; and color change of picrate paper was taken as indicating hydrolysis. Pods of *Acacia suaveolens* hydrolyzed prunasin; this may explain the poisoning of stock after eating pods of *A. georgina.*

4967. GLASER, ERHARD. Über das unter den Namen B Methyläsculetin, Scopoletin, Gelseminsäure, Chrysatropasäure in verschiedenen Pflanzen vorkommende 4-Oxy-5-Methoxykumarin und das Glukosid desselben. [The 4-Oxy-5-Methyoxycumarin and its glucoside which occurs in different plants under the names: B methylaesculetin, scopoletin, gelseminic acid and chrysatropic acid.] *Arch. Pharm. u. Ber. Deutsch. Pharm. Ges.* 1928 (8): (1-10). 1928.—Confusion exists in the nomenclature of certain plant products which are notable for their property of fluorescence. By experimental work he assigns them to a proper relationship to each other, and also determines their relative fluorescence. A practical side to this lies in the recent use of such fluorescing compounds as a protection to the skin in the practise of ultra violet-ray therapy. A paste containing preparations of this nature has been employed for the purpose.—*O. F. Black.*

4968. HADI, ALI, und WALTHER BAIER. Über histologische Untersuchungen medizinischer Organpräparate. *Deutsche Tierärz. Wochenschr.* 38(22): 337-340. 5 fig. 1930.—The authors' study appears to show that, with the requisite histological knowledge, it is possible to determine by microscopical examination the origin and trueness to declaration of commercial organ preparations (e.g., ovarian, thyroid, testicle, prostate, liver, etc., preparations).

4969. HIMMELBAUER, WOLFGANG, und EMMY ZWILLINGER. Biologisch-chemische Formenkreise in der Gattung Digitalis L. Eine pharmakognostisch-botanische Studie. *Biol. Generalis* 3(5/8): 595-688. 31 fig. 1927.—Recent investigations have shown that *Digitalis purpurea* is not the only glucosidal drug of importance in this genus,—that other spp., e.g., *D. lanata* Ehrh., can be used with advantage. The authors studied the value of *Digitalis* spp. from the standpoint of glucosidal content. Material was obtained from the herbarium and garden of the Vienna Botanical Garden and Natural History Museum, and from other sources. *D. lanata* had 3 times the glucosidal content of *D. purpurea;* the authors therefore used the content of *D. purpurea* as unity, and designated its content as +, and that of *D. lanata* as +++. The genus is peculiar to the Mediterranean region, with 2 centers of distribution, one in the east, and one in the west. They describe each of the 25 species studied in great detail, both morphologically and anatomically, illustrating most of them. As to glucosidal content, they find the following species with less content than *D. purpurea: D. sceptrum, isabelliana, laevigata,* and *eriostachya.* As strong as *purpurea: canariensis, ambigua, gigantea, parviflora, purpurascens,* and *ferruginea.* Most species lie between *purpurea* and *lanata* in glucosidal strength, viz.: *laciniata, amandiana, lutea, guelli, viridiflora, leucophaea, athoa, longebracteata, nervosa, ciliata, sibirica.* Some are as strong as *lanata* (*obscura* and *thapsi*), a few even stronger (*dubia, mariana,* and *orientalis*). In the special part, each species is again treated in great detail, followed by groupings of species. This is done in various ways, according to leaf shape, according to kind of leaf margin, according to pubescence, shape of leaf in transverse section, shape of epidermal cells, size of epidermal cells, size of stomata, size of palisade cells, comparison of width of palisade tissue to that of the spongy tissue, and according to glucosidal content. The western or Iberian species are stronger in glucosides than the eastern or oriental species; the northern species are comparatively weak in this respect. The authors thus get various group-forms, a *laciniata*-group, a *purpurea*-group, a *lutea*-group, etc. *Isoplexis* appears as a subgenus, not as a section. It is so different that it might be considered a genus. The origin of the genus *Digitalis* may well be sought here, and next in *Digitalis laciniata* and *D. obscura.* From these western forms migrations probably took place, gradually spreading over the Mediterranean region, from which, later, developed 2 centers of distribution.—*C. C. Plitt.*

4970. KAFUKU, KINZO, and RYO KATO. On the essential oil of Taiwania cedar. *Bull. Chem. Soc. Japan* 6(3): 65-74. 1 fig. 1931.—The wood chips of *Taiwania cryptomerioides* Hayata give, on steam distillation, 0.23% of an oil, consisting chiefly of sesquiterpene and sesquiterpene alcohol. The sesquiterpenes in the oil are chiefly cadinene, with a little humulene and caryophyllene. From the cadinene, a new oxidation product $C_{12}H_{22}O_2$ (m. p.=142°-143°) was obtained. The sesquiterpene alcohol in the oil, for which the authors suggest the name "taiwanol," closely resembles cadinol of Semmler and Jonas. From cadinol no crystalline phenyl urethane could be obtained, but in case of taiwanol, it affords a crystalline phenyl urethane melting at 134°-135°, and furthermore, it gives a neutral oxidation product (m. p. 170°) if oxidized with permanganate in acetone solution.—*Authors' summary.*

4971. KLEIN, GUSTAV, und FELIX SCHUSTA. Der mikrochemische Nachweis der Alkaloide in der Pflanze. XV. Der Nachweis von Echinopsin. *Österreich. Bot. Zeitschr.* 79(3): 231-248. 2 fig. 1930.—This alkaloid, found by Greshoff in the seeds of *Echinops ritro* L. and other spp. of *Echinops,* Fam. *Compositae,* is very soluble in ethyl alcohol and in chloroform, almost insoluble in ether, very slightly so in benzol, or in petroleum ether, soluble in distilled water, in methyl alcohol, in amyl alcohol, in 3% H_2SO_4, and in 5% HCl. Of the various microchemical reagents, I and the iodides were the most delicate in its detection. The alkaloid was obtained by pulverizing 0.2 gm. of the dried plant material, and extracting it with 10 cc. of 96% alcohol for 1 hr. in a Klein and Tauböck microextraction apparatus. The alcoholic extract was evaporated almost to dryness over a water bath, dissolved in 2 cc. distilled water, filtered and precipitated with basic lead acetate, filtered, and the filtrate treated with H_2S until free of Pb, and again filtered. With aqueous extracts, thus partly purified, the authors found that the seeds of all *Echinops* spp. examined contain echinopsine, and in the same amounts; the protecting scales of the fruits contained almost none; all seedlings contain the alkaloid, and the alkaloidal content remains fairly constant in all young plants. In plants several yrs. old, material examined in the fall showed that the alkaloidal content was high in the fruit and the uppermost youngest stem parts, and least in the old stem. In spring collected material, all spp. are richer in alkaloid than in the fall.—*C. C. Plitt.*

4972. PENFOLD, A. R., and F. R. MORRISON. The occurrence of a number of varieties of Eucalyptus dives as determined by chemical analyses of the essential oils. Part III. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 79-84. 1929(1930).

4973. PENFOLD, A. R., and F. R. MORRISON. The essential oils of Melaleuca decora (Salisbury) Druce, and M. nodosa var. tenuifolia (De Candolle), from the Port Jackson District. Part I. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 102-110. 3 pl. 1929(1930).—Chemical study.

4974. SCHMOLKE, A. Die mikroskopische Prüfung der Digitalis und ihre Verfälschungen. *Heil- u. Gewürz-Pflanzen* 12(4): 142-145. 1 pl. 1930.—The author gives a careful description of the leaf of *Digitalis,* and of microscopical sections of the leaf with illustrations. The action of a few common reagents as KOH, Kl and con. H_2SO_4 on the sections is treated. The common adulterants as *Verbascum, Inula conyza, Symphytum* etc., are then considered, and their characteristics which differentiate them from *Digitalis* described.—*O. F. Black.*

4975. SMITH, SYDNEY. Digitalis glucosides. Part III. Glucosides of Digitalis lanata. *Jour. Chem. Soc.* [*London*] 1931(Jan.): 23-25. 1931.—Gitoxin, hitherto found only in leaves of *D. purpurea,* is reported in leaves of *D. lanata.* Chemical studies on its extraction and properties are reported.

4976. ZENDER, JUSTIN. La question de l'opium. 283p. 12 fig. Librairie Genève: Genève, 1929.

ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 3066, 3195, 3210, 3213, 3214, 3319, 4345, 4349, 5234, 5242)

4977. **ALLEN, G. O.** Charophyte notes from Saharanpur, U. P. *Jour. Indian Bot. Soc.* 7(2): 49-69. 6 pl., 13 fig. 1928.—Saharanpur District, India, lies 30°N. and 78°E. Rainfall averages 39 in., maximum shade temp. rarely rises above 105° F., and severe frost is uncommon. Photographs, distinguishing characters, time of appearance, habitat, and distribution are given for 11 spp. of *Nitella*, 1 of *Tolypella*, and 10 of *Chara*. The charophyte flora of the district is regarded as rich, the number of species being half the total number recorded for all of India. Number of species and abundance are greatest during the cold season.—*W. Dudgeon.*

4978. **BACHRACH, EUDOXIE, et M. LEFÈVRE.** Disparition de la carapace sileuse chez les Diatomées. *Compt. Rend. Soc. Biol.* 98(17): 1510-1511. 1928.—Several marine diatoms and one fresh water form (*Nitzschia palea*) reproduced rapidly on sterilized solid media, giving rise to forms of irregular outline, with no siliceous frustule and what seemed to be merely a hyaline membrane. On culturing such forms on solid media containing silica, the abnormality persisted.

4979. **BHARADWAJA, YAJNAVALKYA.** Scytonema malaviyaensis, sp. nov. *Rev. Algologique* [*Paris*] 5(2): 223-227. 1 pl. 1930.—An epiphyte* growing among mosses on the bark of *Mangifera indica* in Benares, India.—*W. C. Muenscher.*

4980. **BORGE, O.** Beiträge zur Algenflora von Schweden. 4. Die Algenflora am Grövelsee. *Ark. Bot.* [*Stockholm*] 23A(1, paper 2): 1-64. 2 pl., 9 fig. 1930.—This is a list of algae, including an especially large number of desmids, from a high mountain lake and vicinity in southern Sweden. *Cosmarium* inclusum* (p. 37) is described.—*F. Drouet.*

4981. **BUDDE, HERMANN.** Die mesohaloben und halophilen Diatomeen der Lippe in Westfalen. *Ber. Deutsch. Bot. Ges.* 48(9): 415-419. 1930.—An annotated list of 34 spp., each designated as mesohalobe (m) or halophile (h). Of the 34, 15 were halophile, 15 mesohalobe, 3 halophile-mesohalobe, and 1 doubtfully halophile. Only slight periodicity, with perhaps maxima in spring or autumn, was observed. Seven associations are designated, based on the degree of salinity of their environment.

4982. **CHODAT, R.** La mutation généralisée et les mutations chez le Chlorella rubescens Chod. *Compt. Rend. Soc. Phys. et Hist. Nat., Genève* 46(1): 31-38. 1929. (*Suppl.* to: *Arch. Sci. Phys. et Nat.* 11(Jan./Fév.) 1929.)—Author's summary indicates that the asexual *Chlorella rubescens*, in pure culture since 1907 and showing in pure line a remarkable colonial stability, furnished in 1927 as a result of the cultivation of several hundred isolated cells on same standardized medium a series of mutants, some scarcely different from original type and others sufficiently different to justify distinguishing names. The theory of generalized mutation says that the general fact is not constancy but micromutation. —*M. A. Howe.*

4983. **CYRUS, BOHUMIL.** Étude monographique du genre Cymatopleura W. Smith. L'histoire et la phylogénie des Bacillariales. *Acta Bot. Bohemica* 8: 129-146. 1929.—The author divides the genus into 3 spp.: *C. solea, C. regular,* and *C. elliptica,* with varieties in the 1st and 3rd. The genus is cosmopolitan. *C. solea* varies greatly in length. Many stations with associated diatoms are listed.—*J. P. Young.*

4984. **DEFLANDRE, GEORGES.** Sur une algue rare Bernardinella bipyramidata Chod. nouvelle pour la flore française. *Arch. Botanique* 1(Bull. Mens. 11): 220-223. 1 fig. 1927.—The alga,* found in an association of blue-green algae, flagellates, diatoms, green algae and desmids, in Haute Savoie, is described in detail.

4985. **De WILDEMAN, E.** Morphologie du Zygnema ericetorum (Kuetz.) Hansg. *Acad. Roy. Belgique Bull. Cl. Sci.* 16: 422-426. 1930.—The author gives some figures of the above named species, especially of the branching and the formation of the zygospores, and concludes that *Zygogonium* and *Zygnema* cannot be considered distinct.—*E. de Wildeman* (*transl. by Sister Mary Ellen O'Hanlon*).

4986. **FRÉMY, P.** Petite contribution à la flore des Myxophycées de l'Inde meridionale. *Arch. Botanique* 1(Bull. Mens. 3): 46-47. 1927.—List of 9 spp. found in the Madura district of India.

4987. **FRÉMY, P.** Une Stigonémacée nouvelle: Hyphomorpha perrieri. *Arch. Botanique* 1(Bull. Mens. 4): 63-64. 2 fig. 1927.—The genus is described, as well as the n. sp.,* from Madagascar.

4988. **FRÉMY, P.** Note sur le Phormidium luridum (Kuetz.) Gom. *Arch. Botanique* 2(Bull. Mens. 3): 53-54. 1928.—Gomont's description of the species is emended and the forms violacescens and nigrescens are added.

4989. **FRÉMY, P., et R. MESLIN.** Trois Oscillariées nouvelles pour la flore française. *Arch. Botanique* 2(Bull. Mens. 5): 73-78. 2 fig. 1928.—Detailed descriptions of *Schizothrix fuscescens** Kütz., *Microcoleus sociatus** W. et G. S. West, and *Lyngbya martensiana** Menegh.

4990. **GUERRERO, PEDRO GONZÁLEZ.** El género Spelaeopogon Borzi en España. (Cyanophyceae.) *Mem. R. Soc. Españ. Hist. Nat.* 15(1): 437-439. 13 fig. 1929.—*Spelaeopogon* (Scytonemaceae) is reported for the first time from Spain as represented by *S.* populi (p. 437), from Madrid, in cavities of *Populus*. Reproduction in *S. populi* is by isolated, spherical spores which grow into adult filaments, or by hormogonia which lack heterocysts. Taxonomic citations important to the genus are listed.—*H. C. Bold.*

4991. **HANDA, M. R.** Akinetes in a species of Oedogonium. *Jour. Indian Bot. Soc.* 7(1): 15-16. 4 fig. 1928. —An undetermined sp. from the Southern Shan States (Burma) at an alt. of 4675 ft. showed 1 or 2 rounded or elongated akinetes in the vegetative cells, due, it is thought, to low temp.—*W. Dudgeon.*

4992. **HOFFMANN, WM. E., and JOSEPHINE E. TILDEN.** Basicladia, a new genus of Cladophoraceae. *Bot. Gaz.* 89(4): 374-384. 22 fig. 1930.—The authors call attention to the green algae growing on the backs of turtles, and describe **BASICLADIA** (p. 380), related to *Chaetomorpha* and *Cladophora*, type *B.* crassa* (p. 382), Minnesota, from shell of a common snapping turtle, *Chelydra serpentina*. *Chaetomorpha chelonum* Collins is redescribed; *Basicladia* chelonum (*Chaetomorpha c.* Collins) (p. 382) is reported from Michigan, Massachusetts and Iowa.—*J. E. Tilden.*

4993. **[HÜBBENET, E. R., and T. V. VOBLIKOVA.]** ГЮББЕНЕТ, Е. Р., и Т. В. ВОБЛИКОВА. Заметка об ассимиляции красных водорослей, утративших фикоэритрин. **[Photosynthesis of red algae which have lost their phycoerythrin.** (German summary.)] Известия Научного Института имени П. Ф. Лесгафта. (*Bull. Inst. Sci. Lesshaft*) 14(1/2): 43-47. 1928.—The greening of red algae in consequence of loss of phycoerythrin begins in the Polar Sea (Murman Biological Station) towards the end of June and continues until the beginning of Oct. It is correlated with the increased intensity of light and heat. The dark-red and brown-red colors are resumed towards Nov. Photosynthesis and, to a less extent, respiration are suppressed in the green plants. The chlorophyll also gradually disappears. In spite of the usually fresh appearance and normal reproduction of the plants, the greening must be looked upon as pathological. The rôle of phycoerythrin in the assimilation of CO_2 needs further investigation.—*M. A. Howe.*

4994. **HUSTEDT, FRIEDRICH.** Untersuchungen über den Bau der Diatomeen. IX. Zur Morphologie und

Zellteilungsfolge von Eunotia didyma Grun. *Ber. Deutsch. Bot. Ges.* 47: (59)-(69). 5 fig. 1929.—Studies on *Eunotia didyma,* similar to former ones on *Melosira arenaria* Moore by O. Müller, are presented, but in greater detail, and with some differences of opinion concerning relation of the valves, cell membrane, and inner and outer girdle bands during cell division. Diagrams are given of the relationship of these parts through a series of generations of vegetative reproduction. Discussion of the function of elasticity of the cell membrane during division is a new contribution.—*P. S. Conger.*

4995. **HUSTEDT, FRIEDRICH. Die Kieselalgen Deutschlands, Österreichs und der Schweiz mit Berücksichtigung der übrigen Länder Europas sowie der angrenzenden Meeresgebiete.** In: **L. RABENHORSTS. Kryptogamen-Flora von Deutschland, Österreich und der Schweiz.** Band 7. Lief. 3. 465-608. 3 pl. 90 fig. Akademische Verlaggesellschaft: Leipzig. 1929.—A continuation, from a taxonomic standpoint, of parts 1 and 2 of the same series. The genus *Planktoniella* is continued and 19 other genera are discussed, including a total of 66 species. The author makes the n. comb., *Auliscus reticulatus* var. **schmidtii** (*A. s.* Gründl.), and includes *A. ralfsii* W. Sm., *A. sparsus* Ratt., *A. crassus* Van Huerck and *A. tenellus* Bréb. under *Actinocyclus* as *Actinocyclus chrenbergi* vars. **ralfsii*** (p. 528), **sparsa** (p. 528), **crassa*** (p. 529) and **tenella*** (p. 530). Descriptions, figures, classification, synonymy, distribution and literature citations are given, as well as identification keys.—*P. S. Conger.*

4996. **HYLANDER, CLARENCE JOHN. The Algae of Connecticut.** *Connecticut State Geol. Nat. Hist. Surv. Bull. 42.* (*Public Document* No. 47) 245 p. 28 pl. 1928.—This work deals with the species of fresh and salt water algae of Connecticut with keys for their identification and illustrations of many of them. For each species there is noted the citation of the original description, the characteristic environment and the towns in the state in which the species have been collected. The author gives a brief description of the Algae, which he treats under 4 groups: Myxophyceae, Chlorophyceae, Heterokontae, Phaeophyceae and Rhodophyceae. He speaks briefly of the distribution of the Connecticut Algae, classifying them as Subaerial Flora, Submerged Limnophyceae (4 types), and Submerged Halophyceae (6 types), listing the Connecticut genera for each type. The paper includes a short history of Connecticut phycology and an index.—*H. T. C.*

4997. **INOH, SHUMPEI. Embryological studies on Sargassum.** *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5(3): 423-438. 13 fig. 1930.—*Sargassum hemiphyllum* Ag., *S. kjellmanianum* Yendo, *S. confusum* Ag., *S. patens* Ag., *S. piluliferum* Ag., *S. enerve* Ag., *S. ringgoldianum* Harv., *S. serratifolium* Ag., *S. tortile* Ag., *S. nigrifolium* Yendo, *S. micracanthum* (Kütz.) and *S. horneri* Ag. were studied. Collections were made of egg-discharging plants from March 16 to July 7. The time of fruiting was found to be correlated with the spring tide. Living material was taken to the laboratory, where development of the embryos was studied. The 1st segmentation of the zygote is transverse, as in the 2nd, which cuts off a small rhizoid-cell in the lower portion of the embryo. Subsequent divisions of the rhizoid-cell are distinctive and characteristic for each species. Three types of rhizoid-formation were observed: (1) Species with small eggs develop embryos in which the rhizoid-cell becomes cut into 8 irregularly arranged cells, from which as many rhizoids grow; (2) species with somewhat larger eggs form 16 irregularly arranged rhizoid-cells, giving rise to 16 rhizoids; (3) species with still larger eggs and embryos with 8 radially arranged cells and 8 additional rhizoids arising from the cells adjacent to and behind the rhizoid-initials. The author points out that the genus *Cystophyllum* with relatively much larger eggs has 32 rhizoid-cells in the embryo and suggests that species of *Sargassum* with the larger eggs are higher taxonomically.—*G. W. Prescott.*

4998. **KOL, E. Adatok a Tátrai Desmidiaceák kocsonyakiválasztással történö helyváltoztásához. [Movement with slime formation of Desmidiaceae from the High Tatra Mts.]** *Folia Cryptogamica* [*Szeged*] 1(5): 435-442. 2 pl. [German summary] 1927.—The paper treats of the slime forming Desmid species, living under various ecological conditions in the Hohen-Tatra (Czechoslovakia) and in the moors along the base. The speed of their movement depends on light, temperature, and other external factors.—*E. Kol* (*transl. by H. J. Brown*).

4999. **KYLIN, HARALD. Some physiological remarks on the relationship of the Bangiales.** *Bot. Notiser* 1930(6): 417-420. 1930.—From analysis of the several types of phycoerythrin, phycocyanin and xanthophyll differently distributed in the Myxophyceae, Bangiales, Florideae, and the Chlorophyceae (especially *Prasiola*), and with regard to the types of gametes produced, the author confirms his stand that the Bangiales are more closely related to the Florideae than to the Myxophyceae, and are not at all related to the Chlorophyceae. —*W. R. Taylor.*

5000. **OKAMURA, KINTARÔ. On the distribution of marine algae in Japan.** *Proc. Third Pan-Pacific Sci. Congress Tokyo* 1: 958-963. Map. 1926(1928).—The course of the warm Japan current (Kurosiwo) and that of the cold Kurile current are described. In Japan there are 3 distinct algal floras, viz., subarctic, temperate, and subtropical. The author distinguishes 5 regions in the Pacific coast for algal distribution: (1) subarctic, extending from Syumushu Isl. to Kinkwazan, the Ochotsk flora predominating, such as *Thalassiophyllum, Arthrothamnus,* etc.; (2) extending from Kinkwazan to Hyuga-Ôshima on the eastern coast of Kyusyu, rich in temperate flora, with *Undaria, Acanthopeltis,* etc., abundant; (3) the southern part of Kyusyu from Hyuga-Ôshima to Cape Noma on the western coast of the province Satuma, and also Ryukyu, Formosa and Bonin, with *Halicoryne wrightii,* the only indigenous alga, the others being those common to Australia, Red Sea, Indian Ocean, etc.; (4) from Cape Noma to Tugaru Strait along the coast of the Japan Sea, with a floral aspect quite similar to that of the 3rd region; (5) from the Tugaru Str. to Nemuro through the Soya Strait; this has the temperate feature, and may be considered as the continuation of the 4th region with some Ochotsk species.—*K. Okamura.*

5001. **OKAMURA, KINTARÔ. On the evolution of classification of the Rhodophyceae.** [In Japanese.] *Bot. Mag.* [*Tokyo*] 44: 61-69. 1930.—The word Florideae was created in 1813 by Lamoureux, though his so-called Florideae contained besides the red algae in the modern sense many other plants. The foundation of the modern classification of red algae was laid by Bornet and Thuret, who first recognized the female nature of the carpogonium. J. Agardh's classification was long prevalent. Schmitz published in 1883 his system of the Florideae (except the Bangiales), which included Nemalioninae, Gigartininae, Rhodymeninae and Cryptomeninae. Oltmanns (1904) distinguished 5 groups, viz., Nemalionales, Cryptonemiales, Ceramiales, Gigartinales and Rhodymeniales, though later the order of these groups was changed. Kylin (1928) has separated certain forms from Nemalionales and created a new group, Gelidiales.—*K. Okamura.*

5002. **OKAMURA, KINTARÔ. Icones of Japanese algae.** (In Japanese and English.) 6(3): 19-28. 5 pl. (4 col.); 6(4): 29-38. 5 col. pl. Published by author: Tokyo, 1930.—The present instalment (6(3):) illustrates *Chondrus* **pinnulatus*** (*Gymnogongrus p.* Harv.) (p. 19), *C.* **armatus*** (*Cystoclonium? armatum* Harv.) (p. 21); *Herposiphonia tenella** (C. Ag.) Naeg.; *H. insidiosa** (Grev.) Falk.; *Taenioma perpusillum** J. Ag.; *Scinaia moniliformis** J. Ag. 6(4): *Halymenia agardhii** De Toni; *Erythrymenia obovata* Schmitz; *Rhodymenia* **intricata** (*Phyllophora i.* Okam.) (p. 23); **PLUMARIELLA** (p. 24), Ceramiaceae, near *Euptilota* and *Plumaria,* with *P.* **yoshikawai*** (p. 26); *Ceramium* **crassum*** (p. 26); *Erythrymenia,* which was put by Mazza in *Rhodymenia,* belongs to Grateloupiaceae; *Ceramium*

hypnaeoides (*Campylaephora h.* J. Ag.) (p. 27); *Griffithsia* japonica* (p. 28).—*K. Okamura.*

5003. PASCHER, A. Über zwei spezialisierte epiphytische Algen. (Der Beiträge zur Morphologie und Biologie epiphytischer Algen 2. Teil.) *Beih. Bot. Centralbl. 1 Abt.* 47(2): 271-281. 5 fig. 1930.—Chrysophyceae: *Lagynion* cystodinii* (p. 280), epiphytic on *Cystodinium* sp., and EPICYSTIS (p. 281), resembling *Epichrysis*, based on *Epicystis* peridinearum* (p. 281), epiphytic on an undetermined Peridiniae, both from Czechoslovakia.

5004. PETERSEN, JOHS. BOYE. Beiträge zur Kenntnis der Flagellatengeisseln. *Bot. Tidsskr.* [*Copenhagen*] 40(5): 373-389. 1 pl. 1929.—Fischer's modification of Löffler's method for demonstrating the flagella of bacteria is used to bring out the finer modifications of the flagella of the Euflagellata. Five structural types are demonstrable, though many preparations fail in demonstrating these finer structures. (1) The whip flagellum is found in Volvocales, Bodonaceae, and in the smaller flagellum in *Synura*. It has a thickened basal section abruptly contracting distally into a shorter, delicate lash-like terminal thread. The basal part is more rigid, the distal one easily broken off, and more flexible. (2) The one-sided "Flimmer" flagellum of the Euglenaceae is somewhat rigid, swings in the surface of a cone without wavelike contractions. It bears along one side only from the base to the tip a single row of obliquely set, fine cilia. Their movement has not been proved. (3) The flagellum of the Chrysomonadinae and the Monadaceae is undulant, thinner, and more flexible than that of the Euglenaceae, and bears fine, obliquely set cilia on all sides. (4) The axial flagellum of the Craspedomonadaceae is of the whip type with a thick, rigid basal, and a thin, undulant terminal region. The thickened, more rigid section bears on 2 (or all?) sides fine cilia set at right angles to the shaft. The collar is resolved into a row of radial fibrils. (5) The smaller flagellum in the Monadaceae and in some Chrysomonadinae are simple threads throughout, without differentiated regions and without cilia. The finer structure of the flagella has a diagnostic value in differentiating the subdivisions of the Mastigophora.—*C. A. Kofoid.*

5005. SCHWARTZ, W. Studien über die "Blattformen" von Caulerpa prolifera. ["Leaf" forms of C. prolifera.] *Flora* 24(4): 479-490. 3 fig. 1930.—The leaves with cordate tips more often proliferate than those with rounded tips, giving rise to about 84% of the proliferations. The kind of proliferation and its position on the leaf is influenced by the type and age of the leaf from which it grows and its original position on the rhizome. Proliferation experiments with the two types of various ages, and from apical and basal portions of the rhizome, showed varying results depending upon the time of year, thus showing a seasonal factor. The effect of the seasonal factor varies in that toward the end of the period of development of the plant, a basal displacement of the proliferation on the leaf occurs almost independent of the effect of the form of leaf or its position.—*T. C. Frye.*

5006. SECKT, HANS. Algenforschung in Argentinien. II. *Ber. Deutsch. Bot. Ges.* 48(9): 420-427. 1930.—An extensive bibliography of articles dealing with Argentine algae.

5007. TAYLOR, FREDERICK B. Notes on diatoms. An introduction to the study of the Diatomaceae. 269 p. 5 pl. Publ. by the author's estate: 2A Montague Rd., Bournemouth, England, 1929. Pr. $5.—This book professes no original contributions to diatom research, but is, as the name indicates, a collection of "notes on diatoms" or gleanings of salient facts about them compiled for the author's own use from a large and comprehensive library and later organized into book form as a guide for students. The first 4 chapters discuss the nature and substance of diatoms, their discovery and early investigators, their occurrence and distribution both recent and fossil, and the manner of growth and development in the various groups. Chapter 5 discusses in great detail the structure and markings of diatoms, citing instances of the many forms of specific peculiarity, and the opinions of various workers concerning the outer membrane, shell layers, primary and secondary markings, the rhaphe, septae, craticular plates, etc. This is followed by a short statement of the theories of the much disputed question of diatom movement. Chapter 7 discusses the geological age of diatoms, mentioning the important deposits and giving a table of fossiliferous strata with typical organisms. Chapter 8 deals with the numerous uses of diatoms both individually and as diatomaceous earth including recent applications. Chapter 9 on reproduction describes the method of fission and auxospore formation, sporulation, and rest spores. Chapter 10 gives the classifications of leading authorities to genera with comments and comparisons. Chapter 11 is devoted to specific distinctions and diatom species relationships. In chapter 12 diatom literature is discussed somewhat chronologically, giving the periods in which various diatomists worked and their writings and particular original contributions. There is a 1½ page list of monographs of various genera, a list of books of diatom floras of countries and localities, and a list of dealers in diatom books. Chapter 13 describes the various methods of cleaning, preparation and study of diatoms and gives, as an aid to identification, a list of magnifications of illustrations used by different authors. Chapter 14 concerns the time, place, and manner of collecting diatoms. In chapter 15 the author discusses rules of nomenclature and has assembled a complete list giving derivations of diatom generic names from the Latin and Greek. The gathering together of this analytical list, not heretofore done, to facilitate understanding of diatom nomenclature has the aspect of a new contribution to the science. Chapter 16 gives a complete list of diatom genera with the name of the author of each, date of publication, habitat, position in the classified list, and references to other sections of this book, and to other standard works. This chapter of 108 pages is practically a generic catalogue. An appendix is subdivided into chapter headings corresponding to the foregoing chapter subjects, giving under each references to the literature on that subject. The 4 plates of line drawings and 1 plate of photographs are representative illustrations of the various groups.—*P. S. Conger.*

5008. TORKA, V. Gomphonema augur Ehrbg. und Gomphonema parvulum Ktg. *Hedwigia* 70(1/2): 133-136. 5 fig. 1930.—A study of the course of frustule change from the macrotheca to the microtheca in both species indicates that the microtheca constitutes the name form. The form of *Gomphonema augur* Ehrbg., known as var. *gautieri* V. H., is the mesotheca and needs no name.—*V. Torka* (*transl. by F. O. Grover*).

5009. WEBER, (Mme.) A. Sur un nouveau genre de Floridés. *Ann. Cryptogamie Exotique* 2(3/4): 255-261. 8 fig. 1929.—PERIPHYKON (p. 255) with *P.* beckeri* (p. 256), Java, is reported as a "parasite" (but is in reality an epiphyte) on the branches of *Laurencia ceylanica* J. Ag., forming a thin, encrusting stratum composed of 3 layers of different kinds of cells, with marginal growth, attached by occasional groups of rhizoids not penetrating the host, and giving rise on the dorsal surface to short erect protuberances bearing the reproductive cells. The genus is allied with the family Rhodomelaceae.—*N. L. Gardner.*

5010. WERTEBNAJA, P. I. Über eine relikte Algenflora in den Seeablagerungen Mittelrusslands. *Arch. Hydrobiol.* 20(1): 124-133. 1929.—In the post-glacial deposits of Bolschoji Medweschje Lake in the vicinity of Moscow the diatom *Melosira baicalensis* (Meyer) Wislouch is the characteristic plankton form. It occurs very frequently at a depth of 10 m., and again between 4 and 5 m., in the deposits. In between these plankton maxima is a very dense mass of epiphytic and soil inhabiting forms, indicating a dryer period in the lake's history. Kudrjaschew's discovery of ancient beach ridges bears out this theory and his study of the pollen found in these deposits indicates that the first (lower) plankton maximum fell in the period dominated by the birch,

at the beginning of the wet, Atlantic period, and that the second maximum coincided with that of the alder, at the beginning of the dry, subboreal period. *M. baicalensis* appears today in a very impoverished flora. *M. binderana* Ktzg. var. limnetica (p. 130) is new.—*D. G. Doubt.*

5011. YAMADA, YUKIO. Notes on some Japanese Algae 1. *Jour. Fac. Sci. Hokkaido Imp. Univ. Ser. V Bot.* 1(1): 27-36. 5 pl., 2 fig. 1930.—Notes on the following: *Cladophora rhizoplea* Kjell. erroneously included in Japanese flora; *Enantiocladia* okamurai* (p. 27); *Delisea pulchra* Mont. (*D. japonica* Okam.); *Peyssonnelia* distenta (*Galaxaura d.* Harv., of which *Peyssonnelia involvens* Okam. is a synonym) (p. 30); *Callophyllis* palmata* (p. 30); *Acrosorium* flabellatum* (p. 31); *Pseudophycodrys* pacifica* (p. 32); *Acrosorium* yendoi* (p. 33); *Heteronema* japonica* (p. 34); *Hypoglossum* nipponicum* (p. 35).

FUNGI

C. L. SHEAR, *Editor*

EDITH K. CASH, *Associate Editor*

(See also in this issue Entries 3066, 3193, 3225, 3227, 3237, 3240, 3384, 3387, 3402, 3404, 3405, 3406, 3407, 3408, 3411, 3417, 3419, 3421, 3423, 3424, 3425, 3428, 3491, 3493, 3495, 3496, 3500, 3504, 3725, 4215, 4455, 4460, 4528, 4529, 4594, 4709, 5144, 5166)

FUNGI

5012. ASHBY, S. F. Further note on the production of sexual organs in paired cultures of species and strains of Phytophthora. *Trans. British Mycol. Soc.* 14(3/4): 254-260. 2 fig. 1929.—The author examined isolations of *Phytophthora arecae* (Colem.) Pethybridge and of 3 strains of *P. meadii* McRae. *P. arecae* formed no oospores on any medium tried, nor did cultures of the later isolations of the 3 strains of *P. meadii* when grown either singly or in pairs on maize meal agar at 23° C. When, however, each of the 3 strains of *P. meadii* were grown with *P. arecae,* sexual organs developed in 4-5 days, first in the zone of contact of the 2 mycelia, and later throughout most of the growth of *P. meadii,* but not in the *P. arecae* zone. The author concludes, both from the distribution and size of the sexual organs and oospores in the paired cultures, that they belong to *P. meadii,* and that *P. meadii* and *P. arecae* are one species, separable by their behaviour in paired cultures into 2 groups of strains, the "Arecae" and "Meadii" groups, comparable with the "cacao" and "rubber" groups of *P. palmivora.* He also records in more detail the development of sexual organs and oospores in paired cultures of *P. cryptogea* Pethyb. and Lafferty with *P. cinnamomi* Rands, mentioned in an earlier paper. These 2 spp. were also grown in paired cultures with *P. richardiae* Buis. He concludes that the essential similarities, apart from mere differences in the size of the conidia (sporangia) and sexual organs of *P. cryptogea* and *P. richardiae,* do not justify a distinction of species, but that the differences are sufficiently recognised by recording the latter as a variety, namely *P. cryptogea* var. richardiae (*P. r.* Buis) (p. 259) *P. cinnamomi* did not produce sexual organs in pure cultures, but these developed in a paired culture with a strain of *P. parasitica* and showed amphigynous antheridia and oospores of similar sizes to those of *P. richardiae. P. cinnamomi* produced on solid media peculiar vesicles (called chlamydospores by Rands) closely resembling similar bodies formed on the same media by *Blepharospora cambivora,* but sexual organs have not been obtained in paired cultures of these 2 fungi. The proliferation of the pedicel with the production of new sporangia within those which have discharged zoospores, as well as other characters, indicates a close relationship of these 4 forms, but *P. cinnamomi* appears to be nearer to *B. cambivora* than to *P. cryptogea.*—*A. W. Bartlett.*

5013. ASHBY, S. F. The production of sexual organs in pure cultures of Phytophthora cinnamomi Rands and Blepharospora cambivora Petri. *Trans. British Mycol. Soc.* 14(3/4): 260-263. 2 fig. 1929.—The author reports the discovery of sexual organs of *P. cinnamomi* and *B. cambivora* in pure cultures in tubes of sloped maize meal agar. *P. cinnamomi* possesses large amphigynous antheridia, and the sexual organs appear to be borne on separate hyphae. The sexual organs of *B. cambivora* were likewise of the amphigynous type. Petri, however, reported the finding of paragynous antheridia in the tissues of chestnut seedlings attacked by this fungus. The variation in the dominant type of sexual apparatus in the tissues of the host, and in maize meal, respectively, may possibly be explained by the difference in the habitat. The production of similar sexual organs in pure culture strengthens the view as to the close relationship between the 2 spp.—*A. W. Bartlett.*

5014. BOSS, ADOLF. Über Färbung von Fadenpilzen in Kulturen. *Dermatol. Wochenschr.* 90(14): 482-485. 1930.—A loop of fungus is treated for 2 min. on a slide with 10 parts of 25% antiformin and 1 part 1% NaOH, fixed with heat, then stained with Unna's modification of the Unna-Pappenheim stain.

5015. BRODIE, H. J. The oidia of Coprinus lagopus and their relation with insects. *Ann. Botany* 45(178): 315-344. 1 pl., 24 fig. 1931.—The oidia of *C. lagopus* are produced on oidiophores which project away from the substratum into the air, and they are developed in, and are set free into, a drop of adhesive liquid which is of importance in dissemination. The oidia are produced only on haploid mycelia. On a mycelium derived from a spore, oidia are produced only aerially or on the surface of the nutrient medium. When many spores of diverse sex are sown together, the haploid mycelia, in the first few days of their growth, produce oidiophores and oidia in abundance but do not fuse with one another. Then mycelia of opposite sex fuse with one another and mutually diploidize one another with the result that the production of oidiophores and oidia ceases. Oidia are formed from the oidial branches at the apex of the oidiophore by: (1) the division of the protoplasm of the branch into 2-3 separate masses; (2) the shrinking or condensation of these masses with the formation of short water-filled gaps or spaces between them and at the base of the oidial branch; (3) the development of a wall at each end of each shrunken mass of protoplasm; and (4) the dissolution of the wall of the oidial hypha around the water-filled spaces. Under suitable conditions oidia germinate readily. Their germ-tubes, in culture media, develop into a mycelium which soon produces numerous oidiophores and oidia. By sowing oidia, 12 successive generations of oidia were obtained. The mycelium developed from an oidium, as compared with a mycelium derived from a basidiospore, has thinner hyphae, produces more oidial fructifications per unit of surface, develops no aerial hyphae except oidiophores, grows more slowly, and remains sterile so far as ordinary fruit-bodies and fruit-body rudiments are concerned. Haploid mycelia derived from basidiospores, when grown separately on sterilized horse-dung, usually produce haploid fruit-bodies in 10-14 days, whereas a mycelium derived from oidia grew on sterilized horse dung for 3 months without any sign of fruit-bodies. Oidial fructifications of *C. lagopus,* associated with ordinary fruit-bodies of *C. lagopus,* were found on unsterilized horse-dung on 4 occasions. Thus, possibly for the first time, the oidia of a hymenomycetous fungus have been ob-

served and recognized as such under natural conditions. The oidia of *C. lagopus* are not transported by the wind; they may be scattered to a limited extent by rain, but they are mainly disseminated by coprophilous insects and, in particular, by flies. Flies feed on the oidial drops on the oidiophores. They carry away oidia on their feet and bodies, and deposit them in a viable condition in their excreta. From the mycelia of *C. lagopus* flies carry away oidial fluid and oidia only. It has been proved experimentally for *C. lagopus* that, when flies walk on a (+) mycelium and then on a (−) mycelium, they transfer (+) oidia to the (−) mycelium and (−) oidia to the (+) mycelium, with the result that both the (+) mycelium and the (−) mycelium become converted into diploid mycelia. The diploidization of haploid mycelia through the agency of flies took place when 2 mycelia were 3.5 ft. apart. The oidia of *C. lagopus* very closely resemble the pycniospores of the Uredineae in their early appearance on haploid mycelia, in their being immersed in a fluid which is attractive to flies, in their transportation by flies from one mycelium to another, and in their ability to bring about the diploidization of mycelia of basidiosporous origin and of opposite sex.—*Author's summary.*

5016. CEJP, K. Neue Beiträge zur Kenntnis der resupinaten Arten der Hydnaceen in Böhmen. [New contributions on the resupinate Hydnaceae in Bohemia.] *Ann. Mycologici* 28(3/4): 287-290. 1930.—An annotated list. *Odontia pallida* is new for Bohemia.

5017. CHILD, MARION. Preliminary studies in the genus Daldinia. *Ann. Missouri Bot. Gard.* 16(4): 411-486. 3 pl. 1929.—Factors influencing the germination of ascospores and the development of mycelium of *D. concentrica, D. vernicosa,* and 2 unnamed spp., *Daldinia X* and *Daldinia Y,* were studied comparatively in pure culture. In most cases ascospores over 1 yr. old failed to germinate either because of age or as a result of treatment with fumigants. In experiments devised to determine the effects of O, 3 sources were used: O produced by the photosynthetic process of *Pleurococcus;* H_2O_2; and compressed O. Germination of ascospores of *D. concentrica,* both frozen and unfrozen, was stimulated by O from the first and last source, but those of *D. vernicosa* appeared to germinate better in the absence of O artificially supplied. In both spp., when germination occurred, growth of the germ-tubes appeared to be stimulated. Ascospores of *Daldinia X* were indifferent to the O treatment. Ascospores of *D. concentrica* and of *D. vernicosa* failed to germinate in .1-10% pepsin solutions. Ultra-violet rays (578-289 $m\mu$) stimulated germination of both frozen and unfrozen ascospores of *D. concentrica.* Maximum germination of *D. vernicosa* (4%) was secured from unrayed but frozen ascospores; raying slightly favored germination of unfrozen ascospores. Frozen and unfrozen ascospores of *Daldinia X* were adversely affected by raying. Ascospores of *D. vernicosa* and *Daldinia X* frozen for 3 mo. at −5° C. were stimulated to increased germination; with *D. concentrica,* the opposite effect resulted. Ascospore germination of *D. vernicosa* was markedly stimulated by short exposures to high temp. previous to inoculation; although the % of germination decreased as the temp. increased, even at 100° C. more germination was obtained than in the controls. Similar treatment of ascospores of *D. concentrica* resulted in a decrease in germination. In both spp., short exposures at 90° C. seem to have about the same effect as lower temp. (70-75° C.). Ascospores of *D. concentrica,* kept at 38° C. for 24 hrs., failed to germinate, or germinated poorly; but when changed to 25° C. they recovered from partial plasmolysis or increased in percentage of germination. In maltose solutions the maximum germination of month-old and of 1-yr.-old ascospores of *D. concentrica* was obtained in 10% concentration, the minimum in .05-.06%. Year-old ascospores of *D. vernicosa* gave a maximum germination of 17.3% (in a 3% maltose solution); month-old ascospores gave 4% germination in 10% solution. Ascospores of *Daldinia X* 2 mo. old did not germinate in any of the concentrations. After 48 hrs. on a medium of pH 5.6, ascospores of *D. concentrica* gave 70% germination and a minimum of 23% at pH 2.4; the optimum range was pH 4.8-6.0. Conidia occurred at 10 different hydrogen ion concentrations, while in *D. vernicosa* they occurred at only 5. Maximum germination, 17%, occurred at pH 4.8; minimum, 4%, at pH 2.4; the optimum occurred between pH 4.8 and 6.4. For the effect of light and darkness on growth of mycelium, oatmeal agar gave more abundant growth than Pfeffer agar. In both cases, darkness was more conducive than light to rapid and abundant aerial growth. Only slight color changes of *D. concentrica* occurred in darkness, while in the light decided changes were noted. A red secretion appeared both in *D. vernicosa* and *Daldinia Y,* of which the mycelia closely resemble each other in pure culture. Pfeffer's agar was the best for germination and for rapid growth of *D. concentrica, D. vernicosa,* and *Daldinia Y,* but oatmeal agar induced much more abundant mycelium. 32° C. was the most favorable temp. for *D. vernicosa* and *Daldinia Y,* while 23° C. was best for *D. concentrica.* More conidia were found on media rich in carbohydrates. Neither zoning nor the presence of conidia was dependent on differences of exposure to light. The pH range 6.2-6.6 produced the most abundant growth of mycelium of *D. concentrica;* the most rapid growth (3.5 mm. per day) occurred at pH 6.6. The most abundant growth of mycelium of *D. vernicosa* occurred in the range of pH 5.4, 5.8, and 6.2, but the fastest rate of growth (7.11 mm. per day) occurred at pH 5.0. The range of most abundant growth of mycelium of *Daldinia X* was pH 6.6-7.4; the most rapid rate (6.2 mm. per day) occurred at pH 5.4. Although the ascocarp and ascospores of *Daldinia X* closely resemble those of *D. vernicosa,* its behavior in pure culture, as regards mycelium and conidia, is very similar to that of *D. concentrica.* These experiments indicate that the physiological reactions of fungi are correlated with their morphological characters.—*From author's summary.*

5018. COTNER, F. B. The development of the zoöspores in the Oömycetes at optimum temperatures and the cytology of their active stages. *Amer. Jour. Bot.* 17(6): 511-546. 4 pl. 1930.—A low temp. chamber for observation of the development of hanging drop cultures is described. Some improvements are noted in the technique of staining zoospores over that previously described. The optimum conditions are pointed out for the production of zoospores in plants belonging to 12 spp. of 8 representative genera from 4 orders of the Oomycetes: *Allomyces arbuscula, Apodachlya brachynema, Rhipidium europaeum, Saprolegnia monoica* var. *glomerata, Isoachlya paradoxa, Achlya conspicua, Aphanomyces euteiches, Phytophthora cactorum, P. erythroseptica, P. palmivora, P. terrestris,* and *Phytophthora* sp. The details of the cell structure and the typical number, arrangement, and development of the cilia of these spores formed under optimum conditions are shown. The number of cilia is constant for a species when the zoospores are formed under optimum conditions. Zoospores formed under unfavorable temp. and poorly aerated conditions are likely to be atypical, resulting from incomplete cleavage in the sporangium. Each species requires a certain definite set of conditions under which it is capable of forming perfect zoospores, typical of the species. The zoospores of the spp. studied all have a definite basal granule (blepharoplast) at the insertion of each cilium. This granule is connected with the nucleus by a definite strand (rhizoplast). The cilia develop as outgrowths from the region of a basal granule which has reached a position near the plasma membrane, as a result of nuclear activity. The basal apparatus is always of nuclear origin and seems to be composed of several chromatic bodies, one of which forms the basal granule proper (blepharoplast). The remaining granules of the basal apparatus are normally retained or drawn back into the nucleus, and usually form the tip or beak-like part of that organ during zoospore activity. When

the zoospores come to rest after the first swimming stage, the basal granule (or granules) migrates back to the nucleus and apparently becomes part of that organ. The chromatin of the nucleus in the mature active zoospores is arranged in irregular masses in the peripheral region. In some spores a large central mass of chromatin could be distinguished near the center of the nucleus. The cytoplasm of the zoospores studied is finely granular, usually more dense in the central region of the spore. From a few to numerous highly stained granules are usually found variously distributed in the cytoplasm of the stained zoospores.—*F. B. Cotner.*

5019. CRAEGER, DON B. Reproduction in Cyathus stercoreus (Schw.) DeToni. *Proc. Iowa Acad. Sci.* 36: 121-124. 1929(1931).—The author failed to get germination of spores, but had abundant mycelium from peridioles or even from single hyphae of the peridiole wall. He believes the spores have degenerated so as to be unable to germinate, and the reproductive function has been taken over by the peridiole.—*H. S. Conard.*

5020. CUMMINS, GEORGE B. Heterothallism in corn rust and effect of filtering the pycnial exudate. *Phytopathology* 21(7): 751-753. 1931.—*Puccinia sorghi* is heterothallic and the formation of aecia cannot be explained on the basis of an enzymic stimulation, as the pycnial exudate, freed from pycniospores without inactivating its enzymes, lost its stimulatory action.—*W. A. Whitney.*

5021. CUNNINGHAM, G. H. Terminology of the spore forms and associated structures of the rust fungi. *New Zealand Jour. Sci. & Technol.* 12(2): 123-128. 1930.—An historical account of the origin of terms, and of the changes, since Persoon, in terminology of the structures in the life cycle of the rusts, is given. The author advocates the use of a standardized and consistent terminology; and suggests that the following terms, retained, should be adequate, all others being abandoned: pycniosorus, pycniospore, aecidiosorus, aecidiospore, caeomosorus, caeomospore, uredosorus, uredospore, teleutosorus, teleutospore, basidium, and basidiospore.

5022. DEARNESS, JOHN, and G. B. SANFORD. A new species of Plenodomus. *Ann. Mycologici* 28(3/4): 324-325. 1930.—*P.* **meliloti** (p. 324), parasitic on living roots of *Melilotus, Medicago,* and *Trifolium,* and, apparently, on dead roots of *Axyris, Chenopodium* and *Amaranthus.*

5023. DIETEL, P. Über einige neue Puccinia-Arten aus Asien. *Ann. Mycologici* 28(3/4): 273-277. 1930.—*P.* **johreniae** I, III (p. 274), on *Johrenia fungosa* Boiss., Cappadocia; *P.* **johreniae alpinae** I, III (p. 274), on *J. alpina* Fenzl., Cilicia; *P. stauntoniae* Tranzsch. et Diet., III, on *Stauntonia hexaphylla* Decsne., Japan; *P.* **adenophorae** III (p. 276), on *Adenophora remotiflora* Miq., Japan and Manchuria.

5024. GRÄFLINGER, TRUDE. Zur Kenntnis der Kleinarten von Uromyces scillarum. *Ann. Mycologici* 28(3/4): 321-323. 1930.—Schneider's discovery that the *U. scillarum* from *Muscari racemosum* is pathologically distinct, and incapable of passing over to other spp. of *Muscari* or to *Hyacinthus* or *Scilla* spp., led the author to make precise measurements of spore length and spore diameter (about 500 spores from each host) of *U. scillarum* from *M. racemosum, M. neglectum, M. comosum, Scilla bifolia,* and *Hyacinthus ciliatus.* Biometrical study of the limits of variability of these quantities, and of their quotient, are reported. Slight differences were found.

5025. GUBA, E. F. Monograph of the genus Pestalotia de Notaris. Part 1. *Phytopathology* 19(3): 191-232. 1 pl., 7 fig. 1929.—The history, morphology, and relationship of the genus is discussed. Sections Sexloculatae Klebahn (for *P. pezizoides* de Not.) and Quinqueloculatae Klebahn (type, *P. guepini* Desm.) are recognized.—In the latter are: *P.* **vaccinii*** (*P. guepini* v. *vaccinii* Shear) (p. 201); *P. funerea** Desm. (=*P. conigena* Lev.); *P.* **glandicola*** (*Robillarda g.* Castagne) (p. 206); *P.* **sphaerelloides*** Ellis and Langl. (p. 206), from *Carya aquatica; P. palmarum** Cke. (=*P. phoenicis* Vize, *P. brevipes* Prill. et Delacr.); *P.* **rhododendri*** (*P. versicolor* v. *rhododendri* D. Sacc.) (p. 215); *P. clavata** Cke. & Ellis (=*P. grandis* B. & C.). Descriptions are given, with synonymy, hosts, and distribution, of 30 spp., with a key, a host index, and a bibliography of 90 titles.

5026. GWYNNE-VAUGHAN, HELEN. Sex and nutrition in the fungi. *Brit. Assoc. Advancem. Sci. Rept. 96th Meeting.* [*Glasgow*] 1928: 185-199. 1929.—The author reviews the work that has been done on sexual reproduction in the fungi and on the nutritive conditions which determine the appearance of ♂ or ♀ organs or of fruiting bodies. In her opinion it is unfortunate that the mycelial fusions in the Basidiomycetes have been designated as sexual by Kniep, Bensaude, and others, for sexual organs, the ordinary criteria of sex, are wholly lacking. She suggests that heterothallism might better be explained on the basis of the hereditary ability of different strains of the same fungus to extract different nutritive substances necessary for fructification from the substratum. In *Humaria granulata* oogonia give rise to ascogenous hyphae without the intervention of antheridia. The mycelium from single spore cultures are of 2 kinds and when properly paired ascocarps develop only along the line of junction. Both (+) and (−) strains bear well grown oogonia but these produce ascogenous hyphae only where the 2 strains have met. It is difficult to think of this as a difference due to sex when both strains bear ♀ reproductive organs.—*L. Dosdall.*

5027. GWYNNE-VAUGHAN, HELEN, and [Mrs.] H. S. WILLIAMSON. A contribution to the study of nutritive heterothallism. *Proc. Linnean Soc. London* No. 142. 22-23. 1929/30(1931).—Abstract of a lecture. *Humaria granulata* produces globose oogonia, which are multinucleate from their origin. There are no antheridia. Nuclei in the oogonium fuse in pairs, before passing into the ascogenous hyphae. Subsequent nuclear divisions are simultaneous in all ascogenous hyphae and in the oogonium. The spores are incapable of germination till 5 months after they are shed; they remain viable for a yr. or more. Single-spore cultures produce normal archicarps, but these fail to form ascogenous hyphae, nor is any sheath developed around them. In about 50% of cases fruits develop where 2 monothallic strains meet. The strains are of 2 kinds, + and −. Since each produces oogonia, the difference between them cannot be sexual. Mycelial fusions are common; when they take place between + and − strains, the oogonia in the neighbourhood form ascogenous hyphae and develop into fruits. Their asci contain both + and − spores, showing that fusion of + and − nuclei takes place. Not only the oogonium and its branches, but the sheath hyphae developed from the lower cells of the archicarp are affected by the association of + and − strains.

5028. HADDOW, W. R. Studies in Ganoderma. *Jour. Arnold Arboretum* 12(1): 25-46. 2 pl., 1 fig. 1931.—The history of the genus is briefly reviewed and 4 American spp., *lucidum, sessile, curtisii* and *oregonense,* are fully described and discussed. It is shown that there is no host specificity in this genus. The 2 plates represent sporophores and anatomical details.—*A. Rehder.*

5029. HANNA, W. F., and W. POPP. Relationship of the oat smuts. *Nature* [*London*] 126(3187): 843-844. 1930.—Inoculations of oats with cultures of *Ustilago avenae* and *U. levis* indicate that the sporidia of both are of 2 kinds, mating without difficulty with the sexually opposite sporidia of the opposite species. The spp. are genetically distinct with respect to the characters by which they are differentiated, but the ease of crossing suggests close relationship.

5030. HIRATSUKA, NAOHIDE. Über einige interessante oder für Japan neue Rostpilze. *Ann. Mycologici* 28(3/4): 278-280. 1930.—An annotated list. *Phragmidium* **miyabeanum** S. Itô et Hiratsuka f., III (p. 279), on leaves of *Geum pentapetalum* Mak., S. Saghalien, and *P.* **alpinum** Hirat. f., III (p. 280), on leaves of *Rubus pedatus,* Japan. The following are new for Japan: *Puccinia anthemidis* Syd., *P. tranzschelii* Diet., *P. adoxae* Hedw., *P. clintonii* Peck, *P. veronicarum* DC., *P. epilobii* DC.,

P. parkerae Diet. et Holw., *P. rumicis-scutati* (DC.) Wint., *P. fusispora* Syd., *P. liliacearum* Duby, and *Phragmidium papillatum* Diet. *Puccinia haleniae* Arth. et Holw. is reported on *Swertia tetrapetala* Pall., a new genus of hosts for this species. *P. majanthemi* Diet. is reported on *Convallaria majalis* L., *Disporum smilacinum* A. Gray, *Smilacina japonica* A. Gray, and *Trillium kamtschaticum* Pall., these representing 4 new host genera for this rust. *Phragmidium rubi-japonici* Kasai, II, described for the first time.

5031. **JOSLYN, M. A., and W. V. CRUESS.** A comparative investigation of certain film-forming fungi. *Hilgardia* 4(9): 201-240. 5 fig. 1929.—Some of the morphological and physiological properties of 16 strains of *Mycoderma*, 1 of *Torula* and 4 of molds from food storage brines are presented. The Mycodermas resemble each other fairly closely in macroscopic appearance but differ in their microscopic appearance and in their acid and salt tolerance. In synthetic nutrient media, acids are formed by these organisms from sucrose, dextrose, maltose, lactose, mannite and glycerin. These organisms also oxidize acetic, citric, lactic, malic, oxalic and tartaric acids. The *Mycoderma* strains and the molds are remarkably tolerant to acids and NaCl; the concentration of salt necessary to inhibit growth depending upon the composition of the medium, especially its pH value, the manner of inoculating and the previous history of the culture. They are strongly aerobic; their growth and activity are easily checked by limiting their oxygen supply; their action is limited principally to the surface. Their growth is inhibited by exposure to direct sunlight, or by use of various antiseptics; Na benzoate, sulphurous acid, and hydrofluoric acid being more efficient. The concentration of Na benzoate necessary to inhibit growth varies with the pH and salt concentration. The effect of pH and salt on the death temp. of certain of these organisms is presented.—*M. A. Joslyn.*

5032. **KAUFFMAN, CALVIN H.** A study of the fungous flora of the Lake Superior Region of Michigan with some new species. *Papers Michigan Acad. Sci.* 9: 169-218. 22 fig. 1928.—A local list of the spp. collected near the mouth of Rock River, on Shelter Bay, on the southern shore of Lake Superior, in Michigan in the late summer of 1927, composed of Myxomycetes, 20; Myxobacteria, 1; Phycomycetes, 7; Ascomycetes, 92; Fungi Imperfecti, 20; and Basidiomycetes, 128. The new spp. are the following: *Cyathicula* **alni*** Kauff. & Kanouse on decaying leaves of *Alnus incana* (p. 175); *Lachnum* **thujinum** on decorticated wood of *Thuja occidentalis* (p. 177); *Mollisia benesuada* v. **borealis*** on decorticated wood of *Pinus, Betula,* etc. (p. 179); *Mollisia benesuada* v. **polyspora*** on rotten pine wood (p. 181); *Ocellaria aurea* v. **cornicola*** Kauff. & Kanouse on *Cornus alternifolia* (p. 183); *Schizoxylon* **bipartitum*** on decorticated log of *Picea* (probably *nigra*) (p. 184); *Pleospora* **alnea*** on decorticated dead branches of *Alnus incana* (p. 190); *Lophionema* **cylindrosporum*** on *Eupatorium purpureum* (p. 191); *Lophiostoma* (*Lophiotrema*) **thalictri*** on *Thalictrum polygamum* (p. 192); *Libertella betulina* Desm. var. **amelanchieris** on bark of *Amelanchier* sp. (p. 198); *Oospora* **poricola*** on pore-surface of what is apparently *Trametes sepium,* which has the size and shape of *Fomes scutellatus* on *Alnus incana* (p. 199), *Collybia* **papilliformis** on *Sphagnum* in sphagnous bogs (p. 203), *Pistillaria* **thujicola** on bark of *Thuja occidentalis* (p. 207). The following new combinations are reported: *Rutstroemia* **nebulosa** (*Peziza n.* Cke.) (p. 178), *Lophiotricha* **viridicoma*** (*Sphaeria v.* C. & P.) on decorticated wood of *Alnus incana,* emended description (p. 187). *Synchytrium vaccinii* Thomas on living leaves of *Gaultheria procumbens* is transferred to *Synchytrium vaccinii* Halsted, the name of the fungus having been merely suggested to Halsted in a letter by Thomas, whose identity has apparently been lost.—*L. E. Miles.*

5033. **LOHWAG, HEINRICH.** Das Oogon als Wesensbestandteil der Geschlechtsorgane im Pilzreich. *Biol. Generalis* 2(5/8): 699-772. 51 fig. 1927.—With the published data of various authors as a basis, the homologies of reproductive organs of Ascomycetes, Basidiomycetes, and Phycomycetes are discussed. In Ascomycetes the archicarp consists of a more or less spirally wound chain of ascogonia, one or more of which is fertile. The terminal portion (trichogyne) and the basal cell are suppressed ascogonia. In the primitive condition the ♂ and ♀ organs are wound spirally about each other; but in some reduced forms the antheridium is straight, and in the archicarp the spiral is reduced to a slightly eccentric placement of the trichogyne. Spermatia are merely reduced antheridia. In several spp. of Ascomycetes the vegetative mycelium is multinucleate but the ascogonia are uninucleate. In other spp. all cells of the carpogonial chain (suppressed ascogonia) are uninucleate, while in still others the reduction is carried further and all vegetative cells are uninucleate. All such uninucleate cells, including conidia, are potential or suppressed ascogonia. Where true paraphyses are present they arise from the basal cell of the archicarp (a suppressed ascogonium) and are, therefore, homologous with the ascogenous hyphae. A homolog of the trichogyne is found in the Zygomycete genera *Syncephalis* and *Basidiobolus,* and of paraphyses in the enveloping hyphae, arising from the suspensor cells in several Phycomycetes. In Basidiomycetes the binucleate phase is homologous with and strikingly similar to the ascogenous hyphae of Ascomycetes. In the haplophase each uninucleate cell is a potential or suppressed oogonium as in the Ascomycetes. Here the oogonia and antheridia are very much reduced and simplified.—*B. B. Higgins.*

5034. **McKENNY, MARGARET.** Mushrooms of field and wood. 193p. 50 fig. 2 col. pl. John Day Co.: New York, 1929.—Following the introductory explanation of terms and an illustrated key to the classes of fungi discussed, brief descriptions of genera and spp. are given, many illustrated by photographs. The fungi treated are chiefly agarics, though a few of the more common and conspicuous forms of other hymenomycetes and discomycetes are included.—*E. K. Cash.*

5035. **MARTIN, G. W.** Notes on Iowa Fungi—1928. *Proc. Iowa Acad. Sci.* 36: 127-130. 1 pl. 1929(1931).—The Iowa species of *Mutinus* are described: *M. elegans, M. ravenelii,* and *M. caninus.* The synonymy is discussed. *Stypella minor* Moeller is noted for the first time outside of Brazil. *Roesleria pallida* (Pers.) Sacc. was found in Johnson county in 1928. *Ustilago sieglingiae* Ricker, previously reported only from Florida, was collected in Louisa county.—*H. S. Conard.*

5036. **MARTINEZ, J. BENITO, y E. GUINEA.** Nueva aportacion a la micoflora española. [Fungi new to Spain.] *Bol. R. Soc. Espan. Hist. Nat.* 31(3): 211-220. 4 fig. 1931.—Annotated list of: Myxomycetes (2); Phycomycetes (1); Ascomycetes (5); Basidiomycetes (13), including *Pleurotus atro-coeruleus* f. **nigrescens** (p. 217); Fungi Imperfecti (5) including *Isaria guignardi* f. **major*** (p. 219).

5037. **SAKSENA, KANHAIYA LAL.** Fungus flora of Allahabad. Uromyces andropogonis-annulati Syd. et Butl. nov. spec. on a new host, Andropogon pertusus Willd. *Allahabad Univ. Studies* 4: 193-213. 3 pl. 1928; **MITTER, J. H., and R. N. TANDON.** The fungus flora of Allahabad. Part II. *Allahabad Univ. Studies* (*Sci. Sect.*) 6(2): 241-249. 1930.—*Uromyces andropogonis-annulati** Syd. and Butl. reported on *Andropogon pertusus,* a new host, is described. The grass is considerably injured. A brief list of Phycomycetes, Ascomycetes, Uredineae, Ustilagineae, Basidiomycetes proper, and Fungi Imperfecti is given, with hosts, habitats, etc., locality, and dates.

5038. **SATINA, SOPHIA, and A. F. BLAKESLEE.** Imperfect sexual reactions in homothallic and heterothallic Mucors. *Bot. Gaz.* 90(3): 299-311. 16 fig. 1930.—Imperfect sexual reactions were tested between homothallic species (including both homogamic and heterogamic forms) and (+) and (−) races of heterothallic species. Among the heterogamic hermaphrodites there are 2 sexual groups: (1) those with a (−) sexual tendency (*Absidia spinosa, Dicranophora, Zygorhynchus*

moelleri, Z. vuillemini, Zygorhynchus sp.); these show strong reactions with (+) races and weak or no reactions with (−) races; and (2) those with a (+) tendency (*Z. heterogamus*). These show strong reactions with (−) races and weak or no reactions with (+) races. So far as investigated, all the races of a given species have the same sexual tendency. The terminal and lateral zygophoric hyphae of the hermaphrodites investigated are bisexual. The terminal hyphae take part more actively in imperfect sexual reactions than do the lateral branches. In the group of hermaphrodites with a (−) tendency, the large gametangium is shown to be (+) from its reactions with (−) races and the small gametangium is shown to be (−) from the reaction with (+) races. In the group with a (+) tendency, represented by *Z. heterogamus*, however, the large gametangium is shown to be (−) in reaction and the small gametangium to be (+). Representative hermaphrodites of these groups when grown together have given imperfect reactions. A small gametangium of the one group reacts with a small gametangium from the representative of the other group, or less frequently 2 large gametangia, one from each group, show a mutual reaction.—*Authors' summary.*

5039. **SAWADA, KANEYOSHI.** Descriptive catalogue of the Formosan fungi. Part 4. [Japanese.] *Rept. Bot. Agric. Gov. Res. Inst. Formosa* 33. 123p. 4 pl. 1928.—148 spp. are described in Japanese, including the following: *Sorosporium* **formosanum** (*Ustilago formosana* Saw.) (p. 29); *Helicobasidium* **albicans*** on *Citrus unshu* (p. 84); *Verticillium* **agaricicolum*** on *Agaricus* sp. (p. 101); *Dactylaria* **panici-repentis** (*D. panici-paludosi* Saw.) (p. 102); *Dactylium* **alpiniae*** on *Alpinia speciosa* (p. 102); *Cercospora* **acaciae-confusae*** on *Acacia confusa* (p. 105); *C.* **alternantherae-nodiflorae*** on *Alternanthera nodiflora* (p. 106); *C.* **jussiaeae-repentis*** on *Jussiaea repens* (p. 108); *C.* **kusanoi*** (*Clasterosporium mori* Syd.) (p. 109); *Gibellula* **araneae*** on spiders (p. 114); **MULTIPATINA** (sterile mycelia), based on *M.* **citricola*** on *Citrus* spp. (p. 121). Fungi and hosts are indexed under Latin as well as Japanese names.—*E. K. Cash.*

5040. **SINGER, R.** Eine neue Russula-Art: Russula mairei nov. spec. *Arch. Protistenk.* 65(3): 306-320. 1 pl., 1 fig. 1929.—*R.* **mairei*** (p. 306), Austria, is compared with related forms with special reference to chemical reactions of the genus. A detailed description of *Pleurotus nidulans* (Pers.) Fr. is given, including chemical reactions, with critical discussion of general taxonomic problems involved.—*G. W. Martin.*

5041. **SPRAGUE, RODERICK.** Host range and life-history studies of some leguminous Ascochytae. *Phytopathology* 19(10): 917-932. 3 pl. 1929.—Life histories and physiological characteristics of various forms and spp. of *Ascochyta* on leguminous plants, as well as their morphological features, are given. Most of the No. Amer. collections of *Vicia* spp. were shown to be similar or identical with *A. pisi* (of which an emended description (p. 927-928) is given), as it occurs on peas. A form on *V. faba* resembles *A. fabae*. Its difference from *A. pisi* on other vetches was shown to be due to host reaction. No ascigerous stage was found with any form of *A. pisi*. Inoculation studies show *Mycosphaerella pinodes* to be pathogenic on a wide range of hosts, a fact not borne out by field and herbarium study. The writer has found this organism only on *Pisum* spp., *Lathyrus odoratus*, and *L. tingitanus*. Stone's material on vetches was not examined. It is suggested that the occurrence of *M. pinodes* on vetches may be limited to late season. A study of *A. pinodella* shows it to be common and widespread on peas in America and under greenhouse conditions able to attack many hosts not as yet found under field conditions. *A. lathyri* is the common sp. on *L. odoratus* in America; *A. imperfecta* on alfalfa was shown to be distinct from *A. medicaginis* on *Medicago lupulina* and, while variable in the field, is clearly 1 sp. as far as leaf-spot symptoms go. *A. phaseolorum* is reported in America on *Phaseolus lunatus*. As a result of a study of *A. boltshauseri* pycnidia in culture and on the host, the genus *Stagonosporopsis* is untenable. *Diplodina* is probably a polymorphic form of *Ascochyta*, inoculation of leaf and stem with *A. imperfecta* yielding *Ascochyta* pycnidia on the former and *Diplodina* on the stem.—*From author's summary.*

5042. **STEVENS, F. L.** Parasitic fungi from Panama. *Ann. Mycologici* 28(3/4): 281-286. 6 fig. 1930.—An annotated list of Phycomycetes, Ascomycetes, Gastromycetes and Fungi Imperfecti. Ascomycetes: *Phyllachora* **davillae*** (p. 282), on *Davilla rugosa; P. guazumae* P. Henn., described; *Dictyochora* **paspali** (p. 283), on *Paspalum saccharoides; Mycosphaerella* **erythrinae** (p. 285), on *Erythrina* sp., *Pseudothis pulchella** (Speg.) Theiss., described. Gasteromycetes: *Staheliomyces cinctus* Fisch.

5043. **STEVENS, F. L.** Parasitic fungi of Peru and Ecuador. *Ann. Mycologici* 29(1/2): 102-106. 3 fig. 1931.—An annotated list of 5 Phycomycetes, 2 Archimycetes, 22 Ascomycetes, and 1 Imperfecti. *Catacauma* **galactiae** (p. 102), on *Galactia speciosa*, Peru; **PHAEOPHRAGMOCAUMA** (p. 103), Dothideaceae, Scirrhineae, near *Phragmocauma*, based on *P.* **buddleyae*** (p. 103), on *Buddleya incana*, Peru; *Phyllachora* **buettneriae** (p. 104), on *Buettneria brevipes*, Ecuador; *Phyllachora* **distichlidis** (p. 104), on *Distichlis thlassica*, Peru; *Didymella* **clibadii** (p. 105), on *Clibadium* spp., Peru and Ecuador; and *Hendersonia* **fungicola** (p. 106), in locules of *Phyllachora minutissima* on *Pennisetum tristachyum*, Peru.

5044. **THAXTER, ROLAND.** Contribution towards a monograph of the Laboulbeniaceae—V. *Mem. Amer. Acad. Arts & Sci.* 16(1): 1-435. 60 pl., 1 fig. 1931.—All published genera in the Laboulbeniaceae and Ceratomycetineae except *Laboulbenia* (to be dealt with later) are treated. For reference, the known spp. are enumerated, many with notes. Numerous known spp. are illustrated for the first time; among these, attention is called especially to the aquatic genus *Thaumasiomyces* (pl. 54-5), the anomalous *Dipodomyces*, and to the very remarkable trichogynes on pl. 19. The extensive list of spp. includes many from Borneo (here abbreviated as Bor.), Cameroons (Cam.), Grenada Island (Gren.), Guatemala (Guat.), Luzon (Luz.), Madagascar (Mad.), Sumatra (Sum.), and Trinidad (Trin.). *Mimeomyces* **quedionuchi*** (*Sphaleromyces q.* Thaxt.) (p. 8); *M.* **andinus*** (*S. a.* Speg.) (p. 8); *M.* **valdivianus*** (*Corethromyces v.* Thaxt.), *M.* **atropurpureus** (*Sphaleromyces a.* Thaxt.), *M.* **brachyderi** (*S. b.* Thaxter), *M.* **chiriquensis** (*S. c.* Thaxt.), and *M.* **latonae** (*Corethromyces l.* Thaxt.) (p. 9); *Diandromyces chilenus* is described and figured; *Dichomyces* **arimensis*** (p. 11), Trin.; *D.* **bicolor*** (p. 12), Bor. and Luz., in *Philonthus borneensis; D.* **eulyssi*** (p. 12), Trin. (type) and Gren.; *D.* **fumosus*** (p. 13), Sum.; *D.* **lepidus*** and *D.* **pallidus*** (p. 14), Luz.; *D.* **pretiosus*** (p. 15) and *D.* **staphylini*** (p. 15), Sum.; *D.* **thyreocephali*** (p. 16), Venezuela; *Peyritschiella* **clivinae*** (p. 18), Kansas; *P.* **lampropygi*** (p. 18), Panama; *P.* **trichodomiae*** (p. 19), *P.* **xyricola*** (p. 19), and *Cantharomyces* **exiguus*** (p. 23), Cam.; *C.* **haytiensis*** (p. 23), Haiti; *C.* **denigratus*** (p. 27), England; *C.* **flagellatus*** (p. 28), Trin.; *C.* **aquaticus*** (p. 30), Maine; *Kleidiomyces* **hoplandriae*** (p. 33), Trin. (type) and Gren.; *K.* **venezolanus*** (p. 33), Trin.; *Monoicomyces* **asymmetricus*** (p. 36), Sum.; *M.* **athetae*** (p. 36), England; *M.* **barberi*** (p. 37), Maryland; *M.* **californicus** (*Eumonoicomyces c.* Thaxt.) (p. 38); *M. caloderae* Thaxt. (=*M. ocaleae* Speg.); *M.* **diestotae*** (p. 39), Sum.; *M.* **doryloniae*** (p. 39) and *M.* **dorylonillae*** (p. 40), Cam.; *M.* **eleusinus*** (p. 41), Venezuela; *M.* **falagriae*** (p. 41), Cam.; *M.* **furcatus*** (p. 41), Jamaica (type), Haiti, and Guat.; *M.* **gibbosus*** (p. 42), Sum.; *M. invisibilis* (=*Eumonoicocymes i.* Thaxt., *M. affinis* Speg., *Eucom. argentinensis* Speg.); *M.* **javanus*** (p. 44), Java; *M.* **kamerunensis*** (p. 44) and *M.* **osorianus*** (p. 46), Cam.; *M.* **plagiusae*** (p. 47) and *M.* **ramosus*** (p. 47), Sum.; *M.* **singularis*** (p. 49), Cam.; *M.* **trypetae*** (p. 50) and *Eumonoicomyces* **platystethi*** (p. 52), Sum.; as an addendum to the genus *Rickia*, the author refers to the 4th part of the present monograph, where 4 forms of this genus were placed under "species excludendae,"

and gives here notes on the genus and lists the 4 spp. which were omitted from his revision of *Rickia: R. melanophthalmae**, *R. platensis**, *R. perpusilla**, and *R. pumila**. *Amorphomyces* **biformis*** (p. 55), Sum.; *A.* **minisculus*** (p. 56), Guat. (type) and Sum.; *A.* **pronomaeae*** (p. 58), Sum.; *A.* **schistogeniae*** (p. 58), Bor.; *A.* **stipitatus*** (p. 58), Sum.; *A.* **stenusae*** (p. 59), Bor.; **RHIZOPODOMYCES** (p. 60), resembles *Amorphomyces*, type *R.* **merragatae*** (p. 60), Guat.; *Dioicomyces anthici* (=*D. formicillae* var. *anthicicola* Spegg.); *D.* **endogaeus** Picard, on *Anillus coccus*, is the only sp. known to occur on this family of beetles; *D.* **formicomi*** (p. 63), Luz.; *D.* **guatemalensis*** (p. 64), Guat.; *D.* **inclinatus*** (p. 64) and *D.* **indentatus*** (p. 65), Luz.; *D.* **notosci*** (p. 66) and *D.* **prominens*** (p. 67), Guat.; *D.* **trinitatis*** (p. 69), Trin.; **TRIANDROMYCES** (p. 69), type *T.* **bottegoi*** (p. 70), *T.* **arcuatus*** (p. 71), and *T.* **pallescens*** (p. 71), Cam.; **DICRANDROMYCES** (p. 72), similar to *Triandromyces*, type *D.* **terminalis*** (p. 72), Luz.; *Tetrandromyces brachidae**; **APOROMYCES** (p. 74), type *A.* **uniflagellatus*** (p. 75), Cam. (type), Sum., and Luz.; *A.* **trinitatis*** (p. 75), Trin.; *A.* **subulatus*** (p. 76), Luz.; **NANOMYCES** (p. 76), type *N.* **forficulinus** (p. 76); *N.* **fijianus*** (p. 76), Fiji Isls.; *N.* **appendiculatus*** (p. 77), Solomon I.; *N.* **perpendicularis*** (p. 77), Sum. (type) and Java; **APATOMYCES** (p. 78), resembling *Laboulbenia*, type *A.* **laboulbenioides*** (p. 78), Luz.; *Herpomyces* **amazonicus*** (p. 80), Natal and Brazil; *H.* **appendiculatus*** (p. 81), New So. Wales; *H.* **gracilis*** (p. 83), Luz.; *H.* **grenadinus*** (p. 83), Gren.; *H.* **lobopterae*** (p. 84), Argentina; *H.* **panchlorae*** (p. 85), Trin.; *H.* **leurolestis*** (p. 87), Brit. Guiana (type) and Trin.; *H.* **supellae*** (p. 87), Trin.; *Autophagomyces platensis** emend. descr.; *A.* **guatemalensis*** (p. 90), Guat.; *A.* **kamerunensis*** (p. 91), Cam.; *A.* **longicaulis*** (p. 91), Guat.; *A.* **subfuscatus*** (p. 92), Cam.; *A.* **gracilis*** (p. 93), Sum. (type), Gren., Bor., and Cam.; *A.* **grenadinus*** (p. 93), Gren.; *A.* **sarawakensis*** (p. 94), Bor.; *A.* **bryaxalis*** (p. 94), Maine; *A.* **coronatus** (*Bordea coronata* Maire in litt.) (p. 95); *A.* **decarthricola** (*Acompsomyces d.* Speg.) (p. 95); *A.* **spegazzinii** (*Acompsomyces platensis* Speg.) (p. 95); *A.* **strangulatus*** (p. 96), Guat.; *A.* **microveliae*** (p. 96), Sum.; **DISTOLOMYCES** (p. 97), type *D.* **fijianus*** (p. 98), Fiji Isls.; *D.* **malayanus*** (p. 98), Sum.; note is given on *Ilyomyces mairei* Picard; *Acallomyces* **platyolae*** (p. 100), Luz.; critical note on *Acompsomyces; Synandromyces* **psammoechi*** (p. 103), Cam. and Sum.; *S.* **amarygmae*** (p. 104), Fiji Isls. (type) and Solomon Isls.; *S.* **platydemae*** (p. 104), *S.* **peltoidis*** (p. 105), *S.* **floriformis*** (p. 106), and *S.* **tomari*** (p. 106), Cam.; note on 3 *Arthrorhynchus* spp.; **STEMMATOMYCES** (p. 107), near *Stigmatomyces*, type *S.* **anoplischii*** (*Stigmatomyces a.* Thaxt.) (p. 108); *S.* **panamensis*** (p. 108), Panama; *Hesperomyces* **catopii*** (p. 109), Cam.; *H.* **chilomenis*** (*Stigmatomyces c.* Thaxt.) (p. 110); *H.* **coccinelloides*** (*S. c.* Thaxt.) (p. 110); *H.* **lasiochili*** (*S. l.* Thaxt.) (p. 111); *H.* **hyperaspidis*** (p. 111), Trin.; **GLOEANDROMYCES** (p. 112), resembling *Stigmatomyces*, type *G.* **streblae*** (p. 113), Venezuela; *G.* **nycteribiidarum*** (*Stigmatomyces n.* Thaxt.) (p. 113); additional description and notes on the genus *Stigmatomyces*, of which 102 spp. are here enumerated, including: *S.* **hylemyiae*** (p. 116), Sum.; *S.* **subcircinalis*** (p. 118), Cam.; *S. crassicollis** Thaxt. (=*S. papuanus* v. *leiostoma* Maire); *S.* **divergatus*** (p. 122) and *S.* **leptocerae*** (p. 123), Sum.; *S.* **flectatus*** (p. 123), Guat.; *S. papuanus* Thaxt. (=*S. italicus* Speg.); *S. platensis* Speg. (=*S. affinis* Thaxt.); *S.* **sigmoideus*** (p. 128) and *S.* **sumatrensis*** (p. 129), Sum.; *S.* **drosophilae*** (p. 133), Jamaica; *S.* **subinflatus*** (p. 134), Bor.; *S.* **tetrandus*** (p. 135), Sum.; *S.* **variatus*** (p. 136), Cam.; *S.* **gracilior*** (p. 145), Jamaica (type) and Gren.; *S.* **ptilomyiae*** (*S. micrandrus* v. *atissae* Thaxt.) (p. 154); Jamaica; *S.* **recurvatus*** (p. 154), Gren. (type), Jamaica, and Panama; *S.* **ventriosus*** (p. 156), Cam.; *S.* **oesotheae*** (p. 157), Virginia; *S.* **pseudopyrelliae*** (p. 158), Ceylon; *S.* **rubripes*** (p. 160), Sum.; *S.* **gyrophaenae*** (p. 165), Jamaica; *S.* **orientalis*** (p. 166), Luz.; *S.* **pseudomedalis*** (p. 167), Maine; *S.* **stilici*** (p. 167), Bor. (type), Ceylon, Sum., and China; notes on *Idiomyces peyritschii* and *Symplectromyces vulgaris; Teratomyces* **atanygnathi*** (p. 169), Luz. (type) and Borneo; *Diplomyces actobianus**, emended description; *D.* **atanygnathi*** (p. 173), Cam. (type) and Bor.; critical note on *Cucujomyces melanopus** Speg.; *C.* **reynoldsii*** (p. 178) and *C.* **gonicoeli*** (p. 179), Trin.; *C.* **elegantissimus** (*Stephanomyces e.* Speg.) (p. 179); **HISTERIDOMYCES** (p. 181), apparently related to *Cucujomyces*, type *H.* **ramosus*** (p. 182), Venezuela; *H.* **flagelliferus*** (p. 182) and *H.* **venezolanus*** (p. 183), Venezuela; *H.* **acriti*** (p. 183), Panama; **MICROSOMYCES** (p. 184), type *M.* **psammoechi*** (p. 184), Cam. (type) and Sum.; notes and diagnosis of *Corethromyces; C.* **acanthoglossae*** (p. 187), Cam.; *C.* **acuminatus*** (p. 187), Trin.; *C. brunneolus** Thaxt. (=*C. stilicola* f. *sternalis* Speg.); *C.* **buccalis*** (p. 190), Sum.; *C.* **calyculatus*** (p. 191), Cam.; *C.* **chaetophilus*** (p. 191), Sum.; *C.* **circinellus*** (p. 192), Sum.; *C.* **cornutus*** (p. 192) and *C.* **curtipes*** (p. 193), Cam.; *C.* **dachnochili*** (p. 193), Guat.; *C.* **diochi*** (p. 194), Argentina; *C.* **divergens*** (p. 195), Guat.; *C.* **perelegans*** (p. 195), Trin.; *C.* **euaesthetae*** (p. 196), Massachusetts; *C.* **filiferus*** (p. 196) and *C.* **flagellaris*** (p. 197), Luz.; *C.* **flectatus*** (p. 197), Sum.; critical note on *C. formicetorum** Speg.; *C.* **gracilicaulis*** (p. 198), Sum.; *C.* **grenadinus*** (p. 199), Trin.; *C.* **guatemalensis*** (p. 200), Guat.; *C.* **introversus*** (p. 201), Cam.; *C.* **jamaicensis*** (p. 201), Jamaica; *C.* **kamerunensis*** (p. 201), Cam.; *C.* **laminiferus*** (p. 202), Sum. (type) and Bor.; *C.* **lingulatus*** (p. 203), Sum.; *C.* **longicollis*** (p. 203), Cam.; *C.* **luzonensis*** (p. 204), Luz.; *C.* **minisculus*** (p. 205), Argentina; *C.* **nanus*** (p. 206), Trin.; *C.* **piesticola*** (p. 208), Venezuela (type), Amazon R., and Costa Rica; *C.* **protrudens*** (p. 210), Sum.; *C.* **psilotracheli*** (p. 210) and *C.* **recurvatus*** (p. 212), Bor.; *C.* **rostellatus*** (p. 214), Cam.; *C.* **sciopori*** (p. 215), Trin.; *C.* **scopaeicola*** (p. 216), Luz.; *C.* **seticola*** (p. 216), Sum.; *C. sigmoideus* Thaxt. (=*C. stilici* f. *sigmoideus* Speg.); *C.* **spectabilis*** (p. 217), Cam.; *C.* **stereocephali** (*C. pallidus* Speg. not Thaxt.); *C.* **strangulatus*** (p. 219), Guat.; *C.* **vilis*** (p. 222), Sum.; *C.* **apotomi** (*Eucorethromyces a.* Thaxt.) (p. 222); *C.* **batrisi*** (p. 223), Cam.; *C.* **batrisoceni*** (p. 223), Bor.; *C.* **brachyglutae** (*Cryptandromyces b.* J. & W. Siemaszko) (p. 224); *C.* **zethopsi*** (p. 224) and *C.* **cauliculatus*** (p. 224), Cam.; *C.* **geniculatus*** (*Cryptandromyces g.* Thaxt.) (p. 225); *C.* **incurvatus*** (p. 225), Sum.; *C.* **javanus*** (*Cryptandromyces j.* Thaxt.) (p. 226), *C.* **nigromarginatus*** (p. 226), Cam.; *C.* **sarawakensis*** (p. 227), Bor.; *C.* **scydmaenarius*** (p. 227), New Zealand; *C.* **laboulbenioides*** (p. 231), Sum.; *C.* **myodochae*** (p. 232), Guat.; 16 spp. of *Ilytheomyces* are figured, including *I.* **subinflatus*** (p. 240) and *I.* **denudatus*** (p. 242), Ecuador; *Rhizomyces* **cucullatus*** (p. 244), Upper Congo; *R.* **gracilis*** (p. 246), Tanganyika; *Stichomyces* **lepidus*** (p. 248), Cam.; *S.* **sumatrae*** (p. 249), Sum.; *S.* **vesiculiferus*** (p. 249), Cam.; *S.* **capensis*** (p. 250), Cape Province; **ACROGYNOMYCES** (p. 250), type *A.* **eumicri*** (p. 252), and *A.* **arietinus*** (p. 251), *A.* **ellipsoideus*** (p. 251), *A.* **eumicralis*** (p. 252), *A.* **eumicricola*** and *A.* **hamatus*** (p. 254), Cam.; **DICLONOMYCES** (p. 254), type *D.* **eumicrophilus*** (p. 254), Cam.; *D.* **subgaleatus*** (*Cryptandromyces s.* Thaxt.) (p. 255); *D.* **stilomedonis*** (p. 255), Guat.; **APATELOMYCES** (p. 256), type *A.* **ogmoceri*** (p. 256), Liberia; **DERMAPTEROMYCES** (p. 257), type *D.* **ctenophorus*** (p. 257), Trin. (type) and Gren.; *D.* **arimae*** (p. 258), Trin.; *D.* **labiae*** (p. 259), Trin. (type), Gren., and Guat.; **PHAULOMYCES** (p. 259), type *P.* **corylophodis*** (p. 260), Sum. (type), Bor., and Luz.; *P.* **triramosus*** (p. 260) and *P.* **cis*** (p. 261), Solomon Isls.; **KRUPHALIOMYCES** (p. 261), type *K.* **trochoidei*** (p. 262), Fiji Isls.; **CLONOPHOROMYCES** (p. 262), with *C.* **grenadinus*** (p. 262), Gren.; *Scaphidiomyces* **platensis** (*Compsomyces p.* Speg.) (p. 264); *S.* **scaphicomae*** (p. 265), Cam.; *Skelophoromyces osorianus**, with notes on genus and spp.; **DIPODOMYCES** (p. 267), type *D.* **monstruosus*** (p. 267), Cam.; **MEIONOMYCES** (p. 268), resembling

Misgomyces, type *M.* **asteni*** (p. 268), Guat.; *M.* **astenicola*** (p. 269) and *M.* **astenalis*** (p. 269), Sum.; *M.* **dibelonitis*** (p. 270), Gren.; *M.* **mychoceri*** (p. 270), Solomon Isls.; *M.* **thaxterelli*** (p. 271), Cam.; *Smeringomyces* **trinitatis*** (p. 272), Trin.; *Chaetomyces* **pterogenii*** (*Stichomyces p.* Thaxt.) (p. 273); *Rhachomyces* **anophthalmi*** (p. 275), Yugoslavia; *R.* **capucinus*** (p. 276), France; *R.* **clavigerus*** (p. 277) and *R.* **fasciatus*** (p. 278), Gren.; *R.* **gracilis*** (p. 278), Guat.; *R.* **grenadinus*** (p. 279), Gren.; *R.* **madagascarensis*** (p. 280), Mad.; *R.* **perigonae*** (p. 281), Bor. (type) and Luz.; *R.* **rickiopsis*** (p. 282), Luz.; *R.* **sigmoideus*** (p. 282), Sum.; *R.* **trinitatis*** (p. 284), Trin.; *R.* **medonalis*** (p. 286), Gren.; *Cochliomyces* **trinitatis*** (p. 288), Trin.; note on *Ectcinomyces; Misgomyces* **compactus*** (p. 291), Mad.; *M.* **flectatus*** (p. 291), Mad.; *M.* **morionis*** (p. 292), Cam.; *M.* **nigromarginatus*** (p. 292), Bor.; *M.* **obliquatus*** (p 293), *M.* **perigonae*** (p. 294), and *M.* **porrectus*** (p. 294), Cam.; *M.* **perpendicularis*** (p. 295), Mad.; *M.* **spiralis*** (p. 295), Cam.; *M.* **coneglianensis** (*Hydrophilomyces c.* Speg.) (p. 296); *M.* **elegans** (*H. e.* Speg.) (p. 297); *M.* **digitatus** (*H. d.* Picard) (p. 297); *M.* **fastigiatus*** (p. 297), Bor. (type) and Sum.; *M.* **ansatus*** (p. 298), California (type) and Trin.; *M.* **appendiculatus*** (p. 298), Sum.; *M.* **bicornis*** (p. 299), Trin.; *M.* **carinatus*** (p. 299), Sum.; *M.* **copropori*** (*Ecteinomyces c.* Thaxt.) (p. 300); *M.* **argentinensis** (*E. a.* Speg.) (p. 300); *M.* **divexirostris*** (*Ecteinomyces d.* Speg.) (p. 300); *M.* **filarius*** (*E. f.* Thaxt.) (p. 301); *M.* **grenadinus*** (p. 301), Gren.; *M.* **philippinus*** (p. 302), Mindanao, on *Coproporus latus; M.* **platensis*** (*Ecteinomyces p.* Speg.) (p. 303); *M.* **rhizophorus*** (p. 303) and *M.* **stilici*** (p. 304), Sum.; *M.* **thinocharinus*** (*Ecteinomyces t.* Thaxt.) (p. 304); *M.* **trichopterophilus** (*E. t.* Thaxt.) (p. 304); **AMPHIMYCES** (p. 305), type *A.* **cerylonis*** (p. 305), Cam. (type) and Liberia; **ADELOMYCES** (p. 306), type *A.* **discolomidinus*** (p. 306), Sum.; *A.* **ephistemi*** (p. 307), Bor. **EUPHORIOMYCES** (p. 307), related to the previous genus, type *E.* **bilateralis*** (p. 308), Sum.; *E.* **guatemalensis*** (p. 308), Guat.; *E.* **aglyptonoti*** (p. 308), Guat.; *E.* (*?*) **cioideus*** (p. 309), Ohio; *E.* (*?*) **cybocephali*** (*Stichomyces c.* Thaxt.) (p. 309); **ASAPHOMYCES** (p. 310), near *Euphoriomyces,* type *A.* **cholevae*** (p. 311), Maine; **TROCHOIDEOMYCES** (p. 311), near *Schizomeromyces,* type *T.* **gracilicaulis*** (p. 312), Bor. (type) and Sum.; **SCHIZOMEROMYCES** (p. 312), near *Trochoideomyces,* type *S.* **trochoideanus*** (p. 313), Bor. (type) and Sum.; *S.* **astenalis*** (p. 313), Cam.; *S.* **calcaratus*** (p. 314), Mindanao; critical note on *Clematomyces pinophili; Compsomyces* **macropoda** Speg. (*C. verticillatus* f. *macropoda ecalcarata*) (p. 317); *C.* **palameni*** (p. 317), Trin.; *C.* **stilicopsis*** (p. 318), Luz.; note on *Moschomyces insignis;* **CARPOPHOROMYCES** (p. 318), type *C.* **cybocephali*** (p. 319), Ceylon; **CHAETARTHRIOMYCES** (p. 319), type *C.* **flexatus*** (p. 320), Bor.; *Pselaphidomyces pselapti,* notes on genus and sp.; *Hydrophilomyces,* modified diagnosis; *H. rhynchophorus* Thaxt. (=*Ecteinomyces lumbricoides* Speg.); *H. reflexus* Thaxt. (=*E. intermedius* Speg.); *H.* **coelostomalis*** (p. 322), Cam.; *H.* **rhytidopus** (*Ecteinomyces r.* Speg.) (p. 323); *H.* **major** (*E. m.* Speg.) (p. 323); note on *Coreomyces; C.* **arcuatus*** (p. 324) and *C.* **bicolor** (p. 325), Jamaica; *C.* **chinensis*** (p. 325), Fukien, China; *C.* **fastigiatus*** (p. 327), Chile; *C.* **macropus*** (p. 327), Jamaica; *C.* **micronectae*** (p. 327), Luz. (type) and Sum.; *C.* **minor*** (p. 328), China [Soochow] (type) and Luz.; *C.* **orientalis*** (p. 328), Sum.; *C.* **ramosus*** (p. 328), Massachusetts; *C.* **recurvatus*** (p. 329), China; *C.* **sigmoideus*** (p. 329), Jamaica; *C.* **subdivisus*** (p. 330), Chile; *C.* **thaxteri** (*Paracoreomyces t.* Poisson in litt.) (p. 330); *Zodiomyces* **subseriatus** (p. 331), China (type) and Luz.; **THAUMASIOMYCES** (p. 332), type *T.* **scabellularius*** (p. 334), Cam.; *T.* **bipedalis*** (p. 335), Bor.; *T.* **scaurus*** (p. 335) and *Rhynchophoromyces* **amphiopsis*** (p. 338), Cam.; *R.* **sperchopsis*** (p. 338), Maryland; **DREPANOMYCES** (p. 339), near *Rhynchophoromyces,* type *D.* **malayanus*** (p. 339), Sum. (type) and Bor.; **EUSYNAPTOMYCES** (p. 340), resembling *Synaptomyces,* type *E.* **borealis*** (p. 340), Maine; *E.* **africanus*** (p. 341), Brit. E. Africa; *Synaptomyces argentinus**, note on genus and sp.; **PHURMOMYCES** (p. 342), type *P.* **obtusus*** (p. 343), China (type) and Sum., on *Sternolophus* spp.; *P.* **unguicola*** (p. 343), Sum. (type) and China; **EUCERATOMYCES** (p. 343), type *E.* **terrestris** (*Ceratomyces t.* Thaxt.) (p. 344); *Ceratomyces* **costaricensis*** (p. 347), Costa Rica, on *Tropisternus* sp.; *C.* **falcatus*** (p. 348), Trin. (type) and Brazil; *C.* **longicornis*** (p. 349), Florida; *C.* **melanocerus** (*Autoicomyces m.* Speg.) (p. 350); *C.* **occidentalis*** (p. 352), Washington and California; *C.* **platensis** (*Autoicomyces p.* Speg.) (p. 352); *C.* **semiopacus*** (p. 353), Trin.; *C.* **sternolophi*** (p. 353), Sum.; **PLECTOMYCES** (p. 354), type *P.* **gracilis*** (p. 355), Luz.; *Autoicomyces* **bicornis*** (p. 356), Argentina; *A.* **globariae*** (p. 357), Cam.; *A.* **helocharalis*** (p. 358), China (type), Sum., and Cam.; *A.* **incurvatus*** (p. 359), Luz.; *A.* **japonicus*** (p. 359), Japan; *A.* **latens*** and *A.* **longipes*** (p. 360), Luz.; *A.* **marginicola*** (p. 361), Luz. (type), China, and Sum.; *A.* **occultatus*** (p. 361), Maine; *A.* **recurvatus*** (p. 362), Maine and Massachusetts; *A.* **trinitatis*** (p. 362), Trin.; *Helodiomyces elegans**, note on genus and sp.; *Kainomyces* **alutellae** (p. 365), Cam.; *Corethromyces elegans* (*Peyerimhoffiella e.* Maire in litt.) (p. 366); *Autophagomyces* **peyerimhoffii** (*Cryptandromyces p.* Maire in litt.) (p. 366). Index to species and genera and to host-names concludes the paper.

5045. **WATERHOUSE, W. L.** Australian rust studies. II. Biometrical studies of the morphology of spore forms. *Proc. Linnean Soc. N. S. Wales* 55(2): 159-178. 1 pl. 1930.—Spore measurements have been made of aecidiospores, uredospores, and teleutospores of physiologic forms of varieties of *Puccinia graminis* and of uredospores of *P. triticina.* Aecidiospores of 2 physiologic forms of *P. graminis tritici* are significantly shorter, and are probably also significantly narrower than those of a form of *P. graminis avenae.* Uredospores of 13 physiologic forms of *P. graminis tritici* were compared. When produced under uniform conditions, the spores of certain forms showed marked and significant morphologic differences. Of the naturally-occurring Australian forms, similarities in length, width, and shape exist between Forms 43, 44, and 54, which, as a group, show rather marked physiologic similarities. In the same way, the Forms 45, 46, and 55 fall into a group showing affinities between physiologic and morphologic characteristics. That parallelism between morphology and physiology does not necessarily exist was shown by the fact that Form 34, the other naturally-occurring form, which physiologically is quite unlike the first group of 3 forms, gave dimensions similar to those of members of this group. Uredospores of the so-called "New Form," which was produced on a barberry as a hybrid form, were unique in their dimensions. Uredospores of 5 physiologic forms of *P. graminis avenae* were compared; significant differences were shown in the dimensions of certain of them, but there was not necessarily any parallelism between the parasitism and morphology. A comparison between the totals of the dimensions of uredospores of the forms of *P. graminis tritici* and those of *P. graminis avenae* revealed that those of the former were the longer and that there was no difference in the widths. Of the 2 forms of *P. triticina,* the uredospores of Form 2 are significantly longer and narrower than those of Form 1. Teleutospore measurements were also made, and showed that in this stage also, morphologic differences are to be found between physiologic forms. Such differences are not correlated with those found between the uredospores of these forms.—*Author's summary.*

5046. **WESTON, WM. H. Jr.** Pharmacien Frechou and the germination of Sclerospora oospores. *Phytopath.* 21(4): 441-443. 1931.—A note calling attention to Prillieux's reference (1884) to the observations of a M. Frechou on the germination of the oospores of *S. graminicola.* Further information on M. Frechou is requested. See this issue: Entry 3416.—*W. A. Whitney.*

5047. **WOLLENWEBER, H. W.** Pyrenomyzetenstudien III sectio Willkommiotes generis Nectriae. *Proc. Internat. Congress Plant Sci., Ithaca, New York, 1926* 2: 1612-1617. 1929.—In pure culture as well as in nature, the *Nectria* spp. of the section *Willkommiotes,* and related fungi studied, develop spore forms with a similar absolute and average fluctuation in size. As a result of these comparative studies the limits of some spp. such as *Nectria coccinea* could be easily fixed. The limits of other spp. such as *N. galligena* have been restricted to strains averaging from 14.9-17.2 × 5-7.2μ in the spore size. These will include most of the apple canker producing Nectrias. The *Fraxinus* canker *Nectria* with spores averaging 18-19 × 6.5-7.2μ, *N. galligena* var. *major,* seems to be absent on *Pirus* but present on *Salix. N. galligena* has been found on *Pirus, Sorbus* and *Populus,* rarely on *Fraxinus* and exceptionally on *Fagus.* Some of the canker producing Nectrias seem to be more specialized than others. An analytic key has been worked out to facilitate the determination of the 14 *Nectria* spp. belonging to the section *Willkommiotes* of the subgenus *Coryneconnectria.*—*Author's summary.*

5048. **YOUNG, ELAINE M.** Physiological studies in relation to the taxonomy of Monascus spp. *Trans. Wisconsin Acad. Sci. Arts & Lett.* 25: 227-244. 2 pl. 1930.—Constant morphological characters are used as the basis for regarding *M. ruber* van Tieghem as a single species comprising a number of strains differing under cultivation in gross color, extent of growth, tolerance to acids and temp. One strain causes destruction of maize starch blocks (So. Africa) previously soaked in 1% SO_2 water, and drying at a temp. ranging from 30°-40° C. Optimum development of fungus occurs between 30°-35° C. and only in those blocks containing an excessive proportion of protein. Another strain from moldy silage (Australia) grows in 3.5% lactic acid and forms perithecia in 1% lactic acid, conductivity water, besides a large variety of the media, particularly those containing carbohydrates. *Monascus heterosporous* (Harz) Schröter is placed in definite synonymy with *Monascus ruber.* Five clearly defined spp. of *Monascus* (*M. purpureus* Went, *M. barkeri* Dangeard, *M. olei* Pied., *M. mucoroides* van Tieghem and *M. ruber* van Tieghem) are recognised, and in those studied in detail, vigor can be retained over a period of yrs. only when the material can be kept dry.—*E. M. Young.*

LICHENES

5049. **ERICHSEN, C. F. E.** Lichenologische Beiträge. *Hedwigia* 70(3/4): 216-233. 1 fig. 1930.—An annotated list, giving distributional data. *Lecidea* (*Biatora*) **lauenburgensis** (p. 216); *Buellia* **subatra** (p. 218), and form **perlimitata** (p. 219); *Caloplaca pyracea* ssp. **latericola** (p. 219); *Graphis* **neglecta*** (p. 221); *Bacidia* (*Weitenwebera*) **abscondita** (p. 222); *Verrucaria* **frisiaca** (p. 224), all from Germany. Key is given to the crustaceous lichens of the northern lowlands of Germany.

5050. **HEDRICK, JOYCE.** New species of lichens from Porto Rico—IV. *Mycologia* [*New York*] 22(5): 247-255. 1930.—*Porina* **vainii** Fink (p. 247); *Pseudopyrenula* **confluens** G. K. Merrill (p. 247); *P.* **portoricensis** Hedrick (p. 248); *Arthonia* **minutula** Fink (p. 249); **GYMNOGRAPHOIDEA** (p. 249), resembling *Arthonia,* type *G.* **suborbicularis** Fink (p. 249); **LEUCOGYMNOSPORA** (p. 249), resembling the Graphidaceae, type *L.* **intricata** Fink (p. 249); *Melaspilea* **elutericola** Fink (p. 250); the algal host in each case being a sp. of *Trentepohlia. Mycoporellum* **deserticola** Fink (p. 248), the algal host being *Palmella.* **MICROGRAPHINA** (p. 250) somewhat resembles *Melaspilea,* based on *M.* **palmicola** Fink (p. 250), the algal host being *Phyllactidium; Psorotichia* **heterocarpa** Merr. (p. 251) and *P.* **vainii** Fink (p. 251), the hosts being Xanthocapsoid. *Biatorina* **leucoblephariodes** Merr. (p. 251); *Bilimbia* **stevensonii** Fink (p. 251); *Catillaria* **epiphylla** Fink (p. 252); *C.* **zahlbruckneri** (p. 252); *Lecidea* **granulifera** Fink (p. 252); *L.* **gymnocarpa** Fink (p. 253); *L.* **prolifera** Fink (p. 253); *L.* **zahlbruckneri** Fink (p. 253); *Lopadium* **biatorellum** Merr. (p. 254); *Lecanora* **elabens** Merr. (p. 254); *L.* **nigrolimitata** (p. 254); *L.* **portoricensis** Fink (p. 255); *Buellia* **finkii** Merr. (p. 255); and *B.* **substigmatea** Fink (p. 255); the algal host, in each case, being a Protococcoid. The types are in Herb. of Univ. of Michigan.

5051. **JAAG, OTTO.** Recherches expérimentales sur les gonidies des lichens appartenant aux genres Parmelia et Cladonia. 128p. 6 pl., 5 fig. Thèse No. 804. Université de Genève; also published by Imprimerie Jent: Geneva, 1929.—This research is concerned with gonidia of *Cystococcus,* and with special reference to differences of form, of dimensions, general aspect, among these gonidia, (1) in the different genera of lichens, (2) in the different spp. of the same genus, (3) in different specimens of the same sp. collected in different localities, (4) in different regions of the same thallus. A study of the gonidia in situ shows that there is a difference in the dimensions of gonidia belonging to different spp. of lichens. Using the Janse and Peterfi micromanipulator the author transferred thousands of gonidia to artificial media of various compositions and concentrations. Concentrations of around 2% glucose in Detmer's solution gave better development of gonidia than more dilute media. Intense light prevented development of the gonidia in media with weak concentrations whether of salt or sugar; but in media with an abundance of these nutritives, it caused a more intense growth than was obtained either in darkness or in diffuse light. Gonidia from 2 thalli of *Parmelia caperata,* one from the trunk of an oak and the other from the trunk of an apple tree 20 m. distant, proved distinct, and are described as *Cystococcus parmeliae* ssp. **minor*** (p. 109) and *C. p.* ssp. **major*** (p. 110) respectively. Comparison of these with gonidia of *Cladonia* was made. After 4½ mo., all the cultures in darkness grew vigorous colonies. At once 2 groups were noted: one composed of the 2 *Parmelia* gonidia; and one composed of the *Cladonia* gonidia, with one quite unique, the colony formed from *Cystococcus cohaerens.* The differences between the gonidia belonging to the same genus of lichens was less than those which existed between 2 spp. belonging to different genera. All the gonidia of *Cladonia* grow more quickly than those of *Parmelia,* and they can endure as much as 10% glucose. Compared in culture, gonidia of different spp. of *Parmelia* can be distinguished without difficulty. Grouping the colonies according to their resemblances, he obtained as many groups as had furnished the gonidia; hence, each sp. of lichen possesses its specific gonidium. Individuals of the same sp. of lichen may contain specific gonidia according to the region where they have been collected. All the gonidia for spp. of *Parmelia* formed a group sharply distinct from those taken from spp. of *Cladonia,* indicating a specificity of a higher order between the gonidia of the 2 genera. Gonidia from the same thallus were practically identical. To determine whether gonidia develop less actively in summer than in winter, lots of young cultures were kept at 29°, 23°, 5° and 1° C. Those at low temp. grew better than those at high. Gonidia multiplied, first by autospores (the most prevalent form of reproduction), the contents of a cell rounding off into 4, 16, 32, etc., spores (the author has counted up to 120), which escape by the breaking of the cell wall. After leaving the mother cell, the autospores can separate, or they may remain attached. Reproduction by zoospores was also observed. Different forms of zoospores were noted. The more common forms were fusiform, drawn out on one side, and rounded on the opposite side. Two cilia of equal size and 1/5 longer than the body of the zoospore were inserted on the pointed end. They were 2 or 3 times as long as broad. There were others 6-7 times as long as broad. Low temp. favored the formation of zoospores. Besides the zoospores, *Cystococcus parmeliae* ssp. *minor,* and also *major,* produced gametes, isogametes and heterogametes. To study the differences in behavior of the gonidia in their assimilation of N, the author prepared 8 series of media, of which 3 contained N in an organic form, 4

contained it in inorganic form and 1 contained none. The *Cladonia* gonidia thrived well in the media with organic N and also in the medium with $(NH_4)_2SO_4$; the *Parmelia* gonidia remained small. In the remaining 3 inorganic media the differences were less pronounced. Although the gonidia of *Parmelia* gave small colonies, those of *Cladonia* gave growth of fine dimensions in the medium without N. The N was probably obtained from the agar. Following are the spp. of gonidia studied: *Cystococcus parmeliae* ssp. *minor*; *C. p.* ssp. *major*; *C.* **chodati** (*Parmeliae*)* (p. 110), from *Parmelia caperata* L., collected on an ash; *C.* **juratensis** (*Parmeliae*)* (p. 111) from *Parmelia sulcata* Tayl. collected from a fir tree; *C.* **valdensis** (*Parmeliae*)* (p. 111) from *Parmelia saxatilis* L. growing on a beech; *C.* **beringensis** (*Parmeliae*)* (p. 112) from *Parmelia scortea* Ach. on a pear tree; *C.* **lemanensis** (*Parmeliae*)* (p. 113) from *Parmelia acetabulum* Neck., on a fir tree; *C.* **genevensis** (*Parmeliae*)* (p. 113) from *Parmelia saxatilis* L., on an oak; *C.* **scaphusensis** (*Parmeliae*)* (p. 114) from *Parmelia caperata* L. collected on a cherry tree all from Switzerland.—*C. C. Plitt.*

5052. **NILSSON, GUNNAR. Bemerkungen über Cyphelium notarisii (Tul.) Blomb. et Forss. und C. tigillare Ach.** *Bot. Notiser* 1930(2): 105-128. 1930.—The author has examined representatives of these spp. in university herbaria and private collections in Sweden and discusses the taxonomic history. Though treated as variations of a single sp. by many authors, the 2 may be clearly differentiated by the spores which in *tigillare* are constantly 2-celled, in *notarisii* 2-8-celled, with great variation in arrangement of septa. Extremes of variations may be found in the same apothecium. Differences in size of apothecia, thickness of thallus, and size of spermatia are unreliable for identification; geographic distribution, however, is distinct. Whereas *tigillare* is a northern plant occurring through most of the Scandinavian peninsula, *notarisii* is a lowland sp., in Sweden confined to the south. A general account of the range of *notarisii* in Europe and a detailed account with distributional maps showing occurrence in Scandinavia are included.—*H. K. Svenson.*

5053. **ROBBINS, C. A. The identity of Cladonia lepidota Fries.** *Rhodora* 31(366): 101-106. 1 pl. 1929.—*C. piedmontensis* Merrill (*C. lepidota* Fries, in part), ranging from Massachusetts to So. Carolina, Alabama, and "Mexico," is discussed and described, and a key given to the following forms (all on p. 104): f. **epiphylla**, f. **obconica***, f. **intermedia***, f. **squamulosa***, f. **phyllocoma***, f. **lepidifera*** (Wain.) n. comb., f. **squamosissima***. *Cladonia* **simulata** (p. 105), a related sp. from Massachusetts and No. Carolina, is described.—*S. F. Blake.*

5054. **WERNER, R. G. Recherches biologiques et expérimentales sur les Ascomycetes.** (Thèse Fac. des Sc. Paris.). pp. vi-78. 8 pl., 19 fig. Mulhouse et Cie, Paris, 1927.—The paper begins with an historical account of the experimental work already carried on in an attempt to study the nature of lichens. The author's main work consisted in carrying in pure culture the fungi from the foliose and fruticose lichens; their development is compared with that of the crustose lichens, which was similar to the results of Möller (1887). The technique employed in the culture of the algae, the culture of the fungi and the attempts at synthesis, are discussed. The author concludes that there exists a regressive evolution of the organs of reproduction in the lichens. The projection of the spores is limited to the latter part of winter and spring. The spores mature from March to June according to the genera; the development of the fungi of the different lichens studied is identical up to the age of 3 months, and differentiation begins at that time, each fungus taking on the special characters of the corresponding lichen. Organs of multiplication exist, which are made up of aerial hyphae which sometimes cut off definite conidia. There is also multiplication by stolons. The aerial hyphae are capable of establishing contact with the algal cells, but the fungus, unaccustomed to an existence with the gonidia, exerts a destructive action upon them. That they are capable of a saprophytic existence is proved by the pure cultures. To accomplish this it is necessary to observe the time of spore maturity.—*J. Beauverie* (*transl. by C. W. Waters*).

BRYOPHYTA

A. LEROY ANDREWS, *Editor*

(See also in this issue Entries 3066, 3190, 3222)

5055. **CHALAUD, G. Sur la place en systématique de Fossombronia fleischeri Osterw.** *Verhandl. Bot. Ver. Prov. Brandenburg* 72(1): 69-75. 1 pl. 1930.—*Fossombronia incurva* Lindb. is more suitably called *Simodon incurvus* Lindb., because of its terminal perianth, axillary antheridia and other distinctive characters. *Fossombronia fleischeri* Osterw. was reported from the same locality as the above, and resembles it very closely, according to the original description. Upon examination of material furnished by Loeske, however, the latter species was found to be a true *Fossombronia*, closely related to *F. crozalsii* Corbière. The original diagnosis is completed by a number of important additions.—*W. C. Steere.*

5056. **DENING, KARL. Entwicklungsgeschichtliche Untersuchungen am Gametophyten von Buxbaumia aphylla (L.).** *Verhandl. Naturhist. Ver. Preuss. Rheinlande u. Westfalens* 85: 306-444. 52 fig., 1 map., 1 pl. 1928(1929).—In nature spore-germination and protonemal development occur during summer. Apparently gametophores may rarely be formed on these protonemata during the same summer, and may, by September of the same year, give rise to sporophytes. In general, the protonemata developed one year produce gametophores during the following March and April; these give rise during the summer to sporophytes whose spores ripen in late April or early May. Ripening may be hastened by placing plants under a bell jar in a warm room.—Protonemal development was followed in agar cultures. Particularly noticed were anastomosis resulting when the apical cell of a protonema comes in contact with a cell of another filament; and the hitherto unrecorded breaking up of protonemal filaments into brood cells. These cells become rounded and thick-walled; in presence of sufficient water, each may develop into a protonema.—The development of gametophores is described in detail. Both the single leaf and the single antheridium of a ♂ gametophore develop for a time by means of apical cells with 2 cutting faces. The apical cell of the antheridium is finally divided by a periclinal wall into a fertile inner cell and a sterile wall cell; this represents a deviation from the history characteristic of the antheridia of Bryales. Another deviation lies in the failure of the earlier segments to elongate in the direction of the axis of the antheridium, and the consequent spherical form of this organ. One ♂ gametophore was observed bearing 2 antheridia; another, bearing 2 leaves. Ordinarily a ♀ gametophore bears 10-15 leaves; the highest number found was 24. The development of these leaves is similar to that of the leaf of the ♂ gametophore. Older ♀ gametophores develop numerous rhizoid-like filaments from their lower stem segments. Archegonial development is substantially as in other Bryales. Gametophores may bear 3, 4, or 5 archegonia. Among these are 3 or 4 paraphyses, each a filament of 6-8 cells. From a successful attempt to grow the moss on silica jelly with inorganic nutrients, it is concluded

that *Buxbaumia* is capable of purely autotrophic nutrition.—*C. E. Allen.*

5057. DIXON, H. N. Muscineae. *Jour. Bot.* [*London*] *Suppl.* 64: 137-138. 1926.—Annotated list of mosses, 5 from Java, 4 from Timor, and 8 from Sumatra, including *Dicranoloma brevisetum* (Doz. & Molk) Par and *Aerobryopsis leptosigmata* (C. M.) Fleisch., new to Sumatra.

5058. DIXON, H. N., et R. POTIER de la VARDE. Contribution à la flore bryologique de l'Inde méridionale. *Arch. Botanique* 1(Bull. Mens. 8/9): 161-184. 7 pl., 23 fig. 1927.—*Fissidens* **curvatoxiphioides*** (p. 163); *F.* **microdictyon*** (p. 163); *F.* **perumalensis** (p. 163); *F.* **angustiusculus*** (p. 163); *Garckea* **abbreviata** (p. 163); *Calymperes* **mangalorensis*** (p. 164); *Merceyopsis* **spathulifolia*** (p. 164); *Astomum* **minutum*** (p. 165); *Rhamphidium* **madurense*** (p. 165); *Trichostomum* **minusculum*** (p. 165); *Pseudosymblepharis* **indica*** (p. 166); *Hyophila* **comosa*** (p. 166); *H.* **grandiretis*** (p. 166); *H.* **mollifolia*** (p. 167); *Didymodon* **obtusifolius*** Card. (p. 167); *D.* **strictifolius*** (p. 167); *Barbula* **denticulata*** (p. 167); *Pottia* **denticulata*** (p. 168); *Physcomitrium* **insigne*** (p. 168); *Funaria* **pulchra*** (p. 169); *Webera* **humicola*** (p. 169); *Bryum* **euryphyllum*** (p. 170); *Macromitrium* **polygonostomum*** (p. 170); *Calyptothecium* **oxyphyllum*** (p. 170); *C.* **symphysodontoides*** (p. 171); *Fabronia* **madurensis*** (p. 171); *Anacamptodon* **validinervis*** (p. 172); *Pseudoleskeopsis* **perfalcata*** (p. 172); *Haplocladium* **vestitum*** (p. 172); *Brachythecium* **nitidissimum*** (p. 173); *Rhynchostegium* **brachythecioides*** (p. 173); *Rhynchostegiella* **leiopoda*** (p. 174); *Plagiothecium* **vesicularieaeopsis*** (p. 174); *Clastobryum* **patentifolium*** (p. 174); *C.* **barbelloides*** (p. 174); **FOREAUELLA** (Sematophyllaceae, near *Brotherella*) with *F.* **indica*** (p. 175); *Warburgiella* **perviridis*** (p. 176); *Ectropothecium* **densum*** (p. 176). All new spp. from southern India. There follows an annotated list of the more interesting forms recently described by the authors, in the collections chiefly of P. Foreau, especially locality data. Included are: *Ditrichum tortipes* v. **strictum** (p. 177); *Bryum vellei* v. **robustum** (p. 179); *Homalia pygmaea* v. **elongata** (p. 182); *Entodon plicatus* v. **dimorphophyllus** (p. 182); *Plagiothecium neckeroideum* v. **madurense** (p. 183).

5059. EVANS, ALEXANDER W. Three species of Scapania from western North America. *Bull. Torrey Bot. Club* 57(2): 87-111. 8 fig. 1930.—The author treats three species representing the sections Gracilidae, Nemorosae, and Aequilobae of the genus *Scapania* in accordance with H. Buch's recent treatise on the Scapaniaceae of Europe [see B. A. 4(3): Entry 9506]. The species considered are *S. bolanderi* Aust., *S. americana* K. Müll., and *S.* **granulifera*** (p. 107), California. *S. hirosakiensis* Steph. is a syn. of *S. parvitexta* Steph.—*L. S. Cheney.*

5060. GEPP, A. Hepaticae. *Jour. Bot.* [*London*] *Suppl.* 64: 138. 1926.—List of 3 hepatics from Java.

5061. LITARDIÈRE, R. de. Notes sur quelques bryophytes de la Corse. *Arch. Botanique* 1(Bull. Mens. 12): 248-250. 1927.—*Madotheca thuja, Dichodontium pellucidum* and *Fissidens osmundoides* from Corsica are considered from standpoint of their phytogeographical interest.

5062. POTIER de la VARDE, R. Hookeriopsis mittenii nom. mutat. *Arch. Botanique* 1(Bull. Mens. 7): 138-139. 1927.—*H.* **mittenii** (*Lepidopilum versicolor* Mitt. not Schp.).

5063. POTIER de la VARDE, R. Additions aux mousses de l'Oubangui. *Arch. Botanique* 3(Bull. Mens. 1): 1-9. 3 fig. 1929.—*Fissidens grandifolius,* known previously only from Gabon and incompletely described, is here given a full description. Among the other forms listed, the following are new: *F.* **herpetineuron*** (Bryoidium) Broth. et P. de La V. (p. 2), *F. tisserantii* v. **sublaevifolius** (p. 3), *F.* (*Semilimbidium*) **perlimbatus*** Broth. et P. de La V. with f. **albinervis** (p. 3), *F.* (*Aloma*) **rivicola*** Broth. et P. de La V. (p. 3), *F.* (*Crenularia*) **crispifolius*** Broth. et P. de La V. (p. 6), *Moenkemeyera* **flexipes*** (p. 6), *Didymodon*(?) **tisserantii*** (p. 7), *Bryum coronatum* v. **latifolium** Broth. et P. de La V. (p. 8), *Rhacopilum büttneri* f. **brevirostre** Thér. et P. de La V. (p. 9), *Stereophyllum*(?) **laxirete*** Broth. et P. de La V. (p. 9), *Sematophyllum laetevirens* v. **homomallum** (p. 9). The authority is P. de La V. where not otherwise indicated.

5064. SCHWEIZER, G. Physiologisch-morphologische Studien über Funaria hygrometrica L. in Reinkultur. *Ber. Deutsch. Bot. Ges.* 48(3): 75-84. 1 fig. 1930.—*Funaria hygrometrica* was grown in pure culture on agar or sea-sand containing Detmer's solution, brought to the proper acidity by the addition of phosphoric, citric, or huminic acids, or mixtures of them. The spores endure pH 1.55 without impairment of germination. The protonema develops equally richly with high or low acidity, and shows remarkable resistance to the influence of chemical or osmotic agents. The leafy plants are produced several days later in the very acid media than in the less acid media. The protonema is strongly positively phototropic and bears leafy plants not only in the water on the surface of the medium, but on the walls of the flask, and in the air. The young moss plants are produced equally densely in all cultures, regardless of high or low acidity, or absence or presence of huminic acid. In the cultures with huminic acid, the plants produced considerably more antheridia and archegonia, and consequently more capsules than in the cultures lacking huminic acid. This is not directly due to the acidity, however, but to the actual utilization of the huminic acid, since the black color of the medium entirely disappears during the growth of the cultures.—*W. C. Steere.*

5065. THÉRIOT, I. Un nouveau genre de mousses: Maireola (Dicranaceae). *Arch. Botanique* 1(Bull. Mens. 3): 47-48. 1 fig. 1927.—The new genus is based on *M.* **atlantica*** Thér. et Trab. (p. 47), Morocco.

5066. THÉRIOT, I. Deux mousses nouvelles. *Arch. Botanique* 1(Bull. Mens. 4): 66-69. 2 fig. 1927.—*Fontinalis* **utahensis*** (p. 67), Utah, and *Lyellia* **platycarpa*** (p. 67), Yunnan; Card. et Thér. authority for both.

5067. THÉRIOT, I. Étude sur Campylopus concolor (Hook.) Mitt. et C. jamesoni (Hook.) Jaeg. *Arch. Bot.* 2(10): 185-188. 1 fig. 1928.—Critical notes in which it is shown that the species are distinct; the important characters distinguishing *C. jamesoni* from *C. concolor* are given *C.* (*Pseudocampylopus*) **apollinairei*** (p. 187), Colombia, is described.

5068. THÉRIOT, I., et [L.] TRABUT. Quelques mousses inédites de l'Afrique du Nord. [Algeria & Morocco.] *Bull. Soc. Hist. Nat. Afrique du Nord* 21(3): 28-31. 1930.—*Encalypta* **litardierei** (sect. *Diplolepsis*) (p. 28); *Tortella* **elkantarensis** (p. 29); *Pleurochaete squarrosa* v. **brevifolia** (p. 29); *Hyophila* **perpusilla** (p. 29); *Grimmia* (*Rhabdogrimmia*) **verticillatula** (p. 29); *Bryum* **mairei** (p. 30); *B.* (*Apalodictyon*) **trabutii** Thér (p. 30); *Mnium marginatum* v. **aristatum** (p. 31); *Orthotrichum anomalum* v. **algeriense** (p. 31); *Homalothecium philippeanum* v. **maroccanum** (p. 31).

PTERIDOPHYTA

C. A. WEATHERBY, *Editor*

(See also in this issue Entries, 3066, 3158, 5160, 5161, 5164, 5166, 5171, 5173, 5207, 5244)

5069. **BREAKEY, EDITH W., and RUTH I. WALKER.** Preliminary reports on the flora of Wisconsin. XII. Polypodiaceae. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 26: 263-273. 30 maps. 1931.—A list of about 37 spp. and forms, with notes on status and habitat, and with maps showing distribution within the state.

5070. **COPELAND, EDWIN BINGHAM.** Philippine ferns collected by R. S. Williams. *Brittonia* 1(2): 67-70. 3 pl. 1931.—The annotated record of 7 spp. includes: *Dryopteris* **williamsii*** (p. 67), Mindanao; *D.* **verrucosa** (*Lastraea v.* J. Sm.) (p. 68); *Grammitis* **brevipila*** (p. 69) and *G.* **duplopilosa*** (p. 69), Luzon.

5071. **COPELAND, EDWIN BINGHAM.** Sarawak ferns collected by J. and M. S. Clemens. *Brittonia* 1(2): 71-78. 3 pl., 1 fig. 1931.—The 17 spp. recorded include: *Hymenophyllum* **leptocarpum** (p. 71), *Dryopteris* **stenosemioides** (*Acrostichum s.* Baker) (p. 71), *Tectaria* **calcicola*** (p. 72), *T.* **saxicola** (*Aspidium s.* Blume) (p. 72), *T.* **subaequalis** (*Aspidium subaequale* Ros.) (p. 72), *T.* **clemensiae** (p. 73), *Athyrium* **crinitum** (*Asplenium c.* Baker) (p. 73), *Syngramma* **alta** (p. 74), *Polypodium* **clemensiae*** (p. 76), *Campium* **modestum*** (*Acrostichum m.* Baker) (p. 76), *Cyclophorus* **cornutus*** (p. 77).

5072. **COPELAND, EDWIN BINGHAM.** Rarotonga ferns, collected by Harold E. and Susan Thew Parks. *Univ. California Publ. Bot.* 12(14): 375-381. 1 fig. 1931.—Only such spp. (14 in number) are noted from this member of the Cook Isls. as were not treated or were differently identified by Cheeseman (1903). *Hymenophyllum* **involucratum** (p. 375); *Cyathea decurrens* reproduces by a peculiar method of rooting branches; *C.* **alata** (*Alsophila a.* Copel.) (p. 377); *C.* **parksiae** (p. 377); *Dryopteris* **obstructa** (p. 378); *Athyrium* **enorme** (p. 379); *Asplenium* **schizotrichum** (p. 379); *A.* **parksii*** (p. 380); *Cyclophorus* **macrocarpus** (*Niphobolus m.* H. & A.) (p. 381).

5073. **HOLTTUM, R. E.** Aspidium maingayi (Baker) Holttum, comb. nov. *Gardens' Bull. Straits Settlements* 5(7/8): 207-211. 2 pl. 1931.—*A.* **maingayi*** (*Gymnogramme m.* Baker = *Campylogramme trollii* Goebel) (p. 207), with descriptive notes.

5074. **WEATHERBY, C. A.** New American species of Trichomanes. *Contrib. Gray Herb. Harvard Univ.* 95. 36-40. 1 pl. 1931.—*T.* **daguense*** (p. 36) and *T.* **killipii*** (p. 36), Colombia; *T. delicatum** v. d. Bosch is removed from the synonymy of *T. alatum; T.* **crassipilis*** (p. 38), Santo Domingo; *T.* **curranii** (p. 39), Venezuela. Keys are given for 9 spp.

5075. **WEATHERBY, C. A.** The group of Asplenium fragile in South America. *Contrib. Gray Herb. Harvard Univ.* 95. 49-52. 1931.—Key, synonymies, and critical notes on *A. gilliesii, A. lorentzii, A. fragile,* and *A. f.* var. *lomense.*

SPERMATOPHYTA

FRANCIS W. PENNELL, *Editor*

(See also in this issue Entries 3024, 3109, 3124, 3165, 3168, 3173, 3182, 3185, 3202, 3217, 3219, 3228, 3229, 3238, 3239, 3243, 3244, 3256, 3292, 3356, 3360, 3366, 3377, 3381, 3392, 3397, 3398, 3401, 3439, 3440, 3526, 4861, 4866, 4890, 4909, 4910, 4913, 4927, 4933, 4937, 4938, 4954, 4969, 4972, 5178, 5186, 5187, 5188, 5196, 5200, 5205, 5206, 5209, 5212, 5745)

GENERAL

5076. **BAILEY, L. H.** Statements on the systematic study of variables. *Proc. Internat. Congress Plant Sci. Ithaca, N. Y., 1926.* 2: 1427-1433. 1929. Also in reprint, with correction.—The greatest quest or concern in biology is to discover origins; precedent to the quest is accurate identification and adequate record of the forms of life. The importance of these systematic studies is therefore primary and fundamental. The more perplexing and variable the forms, the greater is the necessity for diligent research in their identities; and yet we are wont to confine our attention to invariables or "good species." Four main considerations in the study of variables are discussed: (1) the variables tempt the worker into unrestraint in systematic treatment; (2) they lure one into the swamps of hybridity, whereby anything not understood may be unscientifically disposed of by assuming it to be a hybrid; (3) necessity for a better kind of collecting and field work; (4) the study of variables should eventually throw new light on phylogeny. The assumption that "like produces like," in its common acceptance, is challenged. In biology the variables are in many ways the most significant objects and most in need of painstaking study.—*L. H. Bailey.*

5077. **HILL, A. W.** Index kewensis plantarum Phanerogamarum. Supplement 6: 1916-1920. 222p. 1926. Pr. $23.50. Supplement 7: 1921-1925. 260p. 1929. Oxford University Press American Branch, New York.—These supplements of this well known work include citation of publication for all species of flowering plants published as new to science for the periods indicated in the title.

5078. **REHDER, ALFRED.** Neuere und seltene Gehölze. *Mitteil. Deutsch. Dendrolog. Ges.* 1927: 34-47. 1927.—A description is given of little known species of *Thuja, Juniperus, Abies, Picea, Populus, Celtis, Berberis, Deutzia, Spiraea, Pentactina, Evodia, Buxus, Abeliophyllum, Forsythia, Buddlea* and *Lonicera,* most being of Asiatic origin.—*J. C. Th. Uphof.*

GYMNOSPERMAE

5079. **FASSETT, NORMAN C.** Preliminary reports on the flora of Wisconsin. V. Coniferales. *Transl. Wisconsin Acad. Sci. Arts and Lett.* 25: 177-182. 12 maps. 1930.—In this paper are incorporated many field data collected by L. S. Cheney in 1897-98. Notes on ecological and geographical distribution, with maps, are given for 14 forms.

5080. **[FOMIN, A.]** ФОМІН, А. Голонасінньові Кавказу та Криму. [Gymnosperms of the Caucasus and of the Crimea.] [In German and Latin, with Ukrainian summary.] Всеукраінська Академія Наук, Труди Фізично-Математичного Відділу. (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) 11(1): 3-62. 1928.—A monographic treatment in Latin and German. Tables are provided showing altitudinal and geographic distribution within the area. *Taxus baccata* v. **caucasica** (p. 12), Cis- and Transcaucasia; *Pinus sylvestris* v. **subalpina** (*P. s.* ssp. *hamata* v. *subalpina* Fom.) (p. 22); *P.* **hamata** (*P. silvestris* var. *hamata* Stev.) (p. 23); *P. h.* var. **kochiana** (*P. k.* Klotzsch) (p. 25), with f. **frutescens** (p. 26), Transcaucasia; *P. armena* f. **obtusa** (p. 27), Ciscaucasia; *P. a.* var. **parvifolia** (p. 27), Kars. Armenia; *Juniperus communis* var. **typica** (p. 37); *J. c.* proles **transcaucasica** (p. 38), Transcaucasia; *J. c.* f. **compacta** (p. 39), Armenia; *J. oxycedrus* ssp. *rufescens* f. **compacta** (p. 43), Taurida, Crimea; *J. o.* ssp. *rufescens* × *communis* (p. 43); n. hybr. *Ephedra distachya* f. **caspia** (p. 54), Transcaucasia.

5081. **KURDIANI, S.** [Pinus silvestris and its mutative forms in a region in Georgia [Caucasus].] [In Georgian, with German summary.] *Bull. Mus. Géorgie* [*Tiflis*] 3:

81-88. 2 fig. 1926(1927).—In a gorge (some 40 hectares in extent, descending 600 m. from a height of 1200 m.), 2 new forms of *Pinus silvestris* occur; one has the cones borne at the middle of the branch (not at the end as is usual in the species); the other bears many cones (instead of 2-3) in a fruiting branch. Nearly ⅓ of the trees in the area belong to these forms, which are referred to 2 growth types: pyramidal, *P. s.* var. **pyramidalis**; and compact, *P. s.* var. **compacta**. The richness of the forms in this small area is perhaps due to hybridization of these 2 types, but the new forms are so distinct from the normal pines as to suggest that they may be mutants. They may be of use as ornamentals.

5082. TRABUT, L. Le sapin du Maroc. Abies maroccana Trab. (Soc. Bot. Fr., 1906). *Bull. Soc. Bot. France* 75(9/10): 898-902. 1 fig. 1928.—The author discusses the 6 Mediterranean spp. of *Abies* and their relationship. In the histological characters of the leaf *A. maroccana* is very close to *A. pinsapo*, while in the shape of the cone-scales it resembles most *A. numidica*. The figure represents cone-scales of the 4 western spp.—*A. Rehder.*

ANGIOSPERMAE (MIXED)

5083. BLACK, J. M. Additions to the flora of South Australia. No. 27. *Trans. and Proc. Roy. Soc. S. Australia* 53: 261-263. 1929.—Gramineae: *Danthonia* **geniculata** (p. 261); *D.* **auriculata** (p. 261). Cyperaceae: *Cladium* **monocarpum** (*Schoenus monocarpus* Black) (p. 261); *C.* **gracile** (p. 261). Leguminosae: *Acacia microcarpa* var. **linearis** (p. 262). Rutaceae: *Correa* **calycina** (p. 262). Compositae: *Helichrysum ambiguum* var. **paucisetum** (p. 262), S., Cent., & W. Austr.; *Helichrysum basedowii* Black (=*Leptorrhynchus tetrachaetus* var. *penicillatus* Black); *Athrixia tenella* v. **horripes** (p. 263); *Myriocephalus rhizocephalus* v. **pluriflora** (p. 263); *Sonchus* **megalocarpus** (*S. asper* var. *m.* Hook.) (p. 263). There is also a note on the rare *Acacia peuce*.

5084. CASTELLANOS, ALBERTO. Bromeliáceas y Cactáceas de los alrededores de Buenos Aires y de la Isla Martín García. [Bromeliaceae and Cactaceae of the environs of Buenos Aires and of Martin Garcia Isl., Argentina.] *Physis [Buenos Aires]* 10(35): 85-98. 3 pl. 1930.—Only those spp. are discussed which are represented in herbaria. Five forms of *Tillandsia* (Bromeliaceae) and 7 of the genera *Cereus, Echinopsis, Opuntia*, and *Rhipsalis* (Cactaceae) are discussed, with synonymies, descriptions, and distributional records. There is a key to the 4 genera of Cactaceae.

5085. CAUM, EDWARD L. New Hawaiian plants. *Bernice P. Bishop Mus. Occ. Papers* 9(5): 1-30. 15 pl., 2 fig. 1930.—*Gunnera* **kauaiensis*** Rock (p. 3); *Hibiscus brackenridgei* vars. **molokaiana*** Rock (p. 4) and **kauaiana*** (p. 5); *H. kokio* v. **pukoonis*** (p. 7); *Phyllostegia* **longiflora*** (p. 9); *Straussia* **grandiflora*** (p. 9); *Pritchardia* **kamapuaana*** (p. 10); *P.* **macdanielsi*** (p. 11); *P.* **donata*** (p. 12); *P.* **kahukuensis*** (p. 13); *P. kaalae* v. **minima*** (p. 13); *P.* **elliptica*** Rock and Caum (p. 14).

5086. HONDA, M. Nuntia ad floram Japoniae III. *Bot. Mag. [Tokyo]* 43(510): 291-294. 1929.—*Carex* **pseudo-wrightii** (p. 291); *Sakakia ochnacea* v. **contracta** (p. 292); *Agropyron* **yezoense** (p. 292), Yezo; *Trisetum* **homochlamys** (p. 293), Yezo; *Parabenzoin praecox* v. **pubescens** (p. 293); *Ischaemum* **sakaguchii** (p. 293); *Glyceria* **viridis** (p. 294). Unless otherwise stated, all are from Hondo.

5087. MACBRIDE, J. FRANCIS. Spermatophytes, mostly Peruvian—2. *Field Mus. Nat. Hist. Publ.* (278.) *Bot. Ser.* 8(2): 77-130. 1930.—Under the caption (1) "New species of various families" (pp. 77-84) the following are described. (a) Araceae by K. KRAUSE: *Anthurium* **schunkei** (p. 77); *A.* **gracilipedunculatum** (p. 78); *A.* **siccisilvarum** (p. 78); *A.* **macbridei** (p. 79). (b) Iridaceae by L. DIELS: *Sisyrinchium* **palustre** (p. 79). (c) Cruciferae by O. E. SCHULZ: *Weberbauera spathulifolia* v. **integrifolia** (p. 80); *Sisymbrium oleraceum*, emended descriptions; *S.* **weberbaueri** (p. 80); *Cremolobus* **paysonii** (p. 80); *Descurainia* **macbridei** (p. 81). (d) Lauraceae by O. C. SCHMIDT: *Nectandra* **macbridei** (p. 81). (e) Meliaceae by H. HARMS: *Cedrela* **weberbaueri** (p. 82). (f) A. WEBERBAUER "Ueber die Rhamnaceen Gattung Scypharia Miers" makes the following n. combs.: *Scutia* **spicata** (*Colletia s.* Willd.) (p. 83), *S.* **guayaquilensis** (*Rhamnus g.* HBK.) (p. 83), *S.* **pauciflora** (*Discaria p.* Hook f.) (p. 84), *Citharexylon spinosum* HBK. (=*Scypharia tetragona* Miers). Thus, with its species all allocated elsewhere, *Scypharia* is stricken.—Under the heading (2) "Leguminosae, especially of the genera *Parosela* and *Psoralea*," specific characters are discussed in the former, and generic and specific limits in the latter. Included are: *Psoralea lasiostachys* v. **potens** (*P. p.* Macbr.=*Hoita versicolor* Rusby) (p. 88); *P.* **timorata** (p. 89), Bolivia; *Calliandra* **tumbeziana** (p. 89); *Acacia* **huarango** Ruiz., in herb. (p. 90); *Mimosa* **dichoneuta** (p. 90); *M. albida* v. **erratica** (p. 91); *Cassia* **helveola** (p. 91); *C.* **weberbaueri** (p. 92); *C.* **andina** Rose (p. 93); *Hoffmannseggia viscosa* v. **egena** (p. 93); *Crotalaria nitens* v. **trichina** (p. 94); *Lupinus* **fieldii** Rose, in herb. (p. 94); *L.* **andinus** Rose (p. 95); *L.* **huaronensis** (p. 95) and v. **pascoensis** (p. 96); *L.* **visoensis** (p. 97); *L. microphyllus* v. **chavanillensis** (p. 97); *Medicago sativa* f. **salaverryensis** (p. 97); *Coursetia* **tumbezensis** (p. 97); *Astragalus* **dillinghami** (p. 98); *A. richii* Gray (=*A. macrorrhynchus* Ulbr.); *A. garbancillo* v. **varus** (p. 99); *A. g.* v. **mandoni** (*A. m.* Rusby) (p. 100); *Adesmia* **augusti** (p. 100); *Aeschynomene* **tumbezensis** (p. 101); *Desmodium* **distortum** (*Hedysarum d.* Aubl) (p. 101); *D.* **micranthum** (*Meibomia micrantha* Schindl.) (p. 101); *D.* **poeppigianum** (*Nephromeria p.* Schindl.) (p. 101); *D.* **weberbaueri** (*Meibomia w.* Schindl.) (p. 102); *D.* **delotum** (p. 102); *Geoffroya* **striata** (*Robinia s.* Willd.) (p. 102); *Vicia* **lomensis** (p. 102); *V. matthewsii* v. **lessoni** (Alef.) (p. 103); *Clitoria* **pozuzoensis** (p. 103); *Erythrina* **lorenoi** (p. 104); *Cratylia* **dichrona** (p. 104); *Rhynchosia* **mantaroensis** (p. 105).—Under the heading (3) "Peruvian Solanaceae" (pp. 105-112) appear: *Nicotiana* **leguiana** (p. 105), Peru (type) and Bolivia; *N.* **raimondii** (p. 106); *Iochroma* **peruviana** (*Chaenesthes gesnerioides* v. *p.* Dunal) (p. 107); *Dunalia* **campanulata** (*Cestrum campanulatum* Lam.) (p. 107); *D.* **horrida** (*Lycium horridum* HBK) (p. 108); *D.* **dolichostyla** (*Acnistus dolichostylus* Bitter) (p. 109); *D.* **solanoides** (*Codochonia s.* Dunal) (p. 109); *D.* **umbellata** (*Lycium umbellatum* R. & P.) (p. 109); *D. besseri* Damm. (=*D. angustifolia* Damm.). *Saracha* **pallascana** (*S. weberbaueri* ssp. *p.* Bitter) (p. 109); *Lycianthes* **cutacensis** (*Solanum cutacense* HBK) (p. 110); *Solanum* **tafallae** (*S. multifidum* R. & P. not Lam.) (p. 111); *S. diffusum* v. **miozygum** (*S. d.* ssp. *m.* Bitter) (p. 111); *S.* **maleolens** (*S. foetidum* R. & P. not Rottb.) (p. 111); *S. patulum* f. **album** (p. 111); *S. amblophyllum* Hook. (=*S. hypostichopogon* Bitter); *Cyphomandra* **crassifolia** (*Solanum crassifolium* Ortega); *Brunfelsia* **bonodora** (*Besleria b.* Vell) (p. 112).—Under the heading (4) "Other Peruvian Plants, chiefly New Species" (pp. 113-129) appear: *Carex hypsipedos* Clarke (=*C. umbellata* v. *depressa* Kükenth.); *Dichromena* **exaltata** (*Rynchospora e.* Kunth) (p. 113); *D.* **locuples** (*Rynchospora l.* Clarke) (p. 114); *Dimerocostus* **bicolor** (p. 114); *Pourouma* **folleata** (p. 114); *Suaeda* **insularis** (*Dondia i.* Britton) (p. 115); *Cleome gigantea* L. (=*C. kerberi* Brig. and *C. monochroma* Macbr.); *Ribes* **hirticaule** (p. 115); *R.* **praecox** (p. 116); *R.* **incertum** (p. 116); *Rubus* **sparsiflorus** (p. 117); *R. roseus* v. **lechleri** (*R. l.* Focke) (p. 118); *R. r.* v. **santarosensis** (*R. s.* Ktze.) (p. 118); *R. floribundus* v. **nimbatus** (p. 118); *Fagara* **tumbezana** (p. 119); *Heteropteris nervosa* v. **lessertiana** (*H. l.* Juss.) (p. 120); *H. orinocensis* v. **eglandulosa** (*H. e.* Juss.) (p. 120); *Banisteria sanguinea* v. **benthamiana** (*B. b.* Juss.) (p. 120); *Tetrapteris crispa* v. **punicans** (p. 121); *T.* **triopteris** n. n. (p. 121) (*T. crispa* ssp. *pseudotriopterys* Ndz.); *Vochysia* **leguiana** (p. 121); *Mauria* **denticulata** (p. 122); *Ilex* **caniensis** (p. 122); *Hippocratea* **opacifolia** (p. 123); *Cormonema spinosum* v. **peruvianum** (p. 124); *Cuphea* **carthagenensis** (*Lythrum carthagenense* Jacq.)

(p. 124); *Laguncularia racemosa* f. **longifolia** (p. 125); *Niphogeton* **dissecta** (*Petroselinum dissectum* Benth.) (p. 125); *N. d.* v. **aspera** (*Oreosciadium dissectum* v. *asperum* Wedd.) (p. 125); *N.* **weberbaueri** (*Apium w.* Wolff) (p. 126); *N.* **magna** (p. 126); *N.* **glaucescens** (*Apium g.* HBK) (p. 126); *Clavija* **euerganea** (p. 126); *Geissanthus* **abditus** (p. 127); *Rapanea dependens* v. **saxatilis** (p. 127); *Symplocos* **scabra** (p. 128); *Styrax* **ferax** (p. 128); *Cordia* **lucayana** (*Varronia l.* Millsp.) (p. 129).—Under the heading (5) "An Illinois Variety of Shooting Star" are reported: *Dodecatheon meadia* v. *frenchii* Vasey and *D. m.* f. **alba** (p. 129), Illinois. All the forms new to science are from Peru except when stated otherwise.

5088. MARQUAND, C. V. B. The botanical collection made by Captain F. Kingdon Ward in the Eastern Himalaya and Tibet in 1924-25. *Jour. Linn. Soc. London, Bot.* 48(321): 149-229. 1929.—An historical account of botanical exploration in the area, and of publications on the Tibetan and Himalayan flora, introduces an enumeration of the plants now collected. The following novelties are, unless otherwise stated, from southeastern Tibet and proposed jointly by Marquand and Shaw: *Thalictrum* **diffusiflorum** (p. 153); *Anemone demissa* v. **grandiflora** (p. 154); *A. rupestris* vars. **villosa** (p. 154) and **pilosa** (p. 154); *A.* **wardii** (p. 155); *Ranunculus* **oreionannos** (p. 155); *Delphinium* **gyalanum** (p. 156); *D.* **wardii** (p. 157); *Aconitum soongaricum* v. **lasiocarpum** (p. 158); *A.* **tangense** (p. 158); *Corydalis* **chrysosphaera** (p. 160); *C.* **lupinoides** (p. 160); *C.* **wardii** (p. 161); *Iberidella* **tibetica** (p. 163), *Lychnis* **atsaensis** Marquand (p. 163); *L.* **namlaensis** Marquand (p. 164); *L.* **rubricalyx** Marquand (p. 164); *L.* **wardii** Marquand (p. 165); =*Myricaria* **wardii** Marquand (p. 166); *Impatiens* **fragicolor** (p. 167); *I.* **nyimana** (p. 167); *Euonymus* **rongchuensis** (p. 168); *Piptanthus* **bombycinus** Marquand (p. 169); *Caragana* **crassispina** Marquand (p. 170); *Astragalus* **tumbatsica** (p. 171); *Potentilla eriocarpa* v. **dissecta** (p. 174); *P. fruticosa* v. **grandiflora** Marquand (p. 175); *Rosa sweginozowii* v. **inermis** (p. 175); *Saxifraga* **bergenioides** Marquand (p. 176); *S.* **gyalana** (p. 177); *S.* **heterotricha** (p. 177); *S. hookeri* v. **aequifolia** (p. 178); *S.* **kingdonii** Marquand (p. 179); *S.* **megalantha** Marquand (p. 179); *Saxifraga montana* v. **subdioica** (Hook. f.) Marquand (p. 180); *S.* **muricola** (p. 180), with vars. **brachypetala** and **quinquenervis** (p. 180); *S.* **pasumensis** (p. 181), with f. **gracilis** (p. 181); *S.* **signatella** Marquand (p. 182); *S. stella-aurea* v. **ciliata** (p. 182); *S.* **taraktophylla** (p. 182); *S. umbellulata* f. **pectinata** (p. 183); *Hydrangea heteromalla* v. **parviflora** (p. 183); *Sedum rotundatum* v. **oblongatum** (p. 184); *Schefflera* **wardii** (p. 186); *Lonicera cyanocarpa* v. **porphyrantha** (p. 187); *L. ovalis* v. **subcoriacea** (p. 188); *Anaphalis adnata* v. **petiolata** (p. 190); *Tanacetum myrianthum* v. **wardii** (p. 190); *Senecio* **drukensis** (p. 191); *S. paucinervis* v. **brachylepis** (p. 192); *Saussurea* **rohmooana** (p. 192); *Crepis glomerata* v. **porphyrea** (p. 194); *Cyananthus* **wardii** Marquand (p. 196); *Campanula aristata* v. **longisepala** (p. 196); *C.* **pasumensis** Marquand (p. 196); *Agapetes* **praeclara** Marquand (p. 197); *Gaultheria* **wardii** (p. 198); *Cassiope* **wardii** Marquand (p. 199); *Androsace strigillosa* v. **canescens** Marquand (p. 201); *Buddleia tibetica* v. **grandiflora** (p. 202); *B.* **tsetangensis** Marquand (p. 202); *B.* **wardii** Marquand (p. 203); *Crawfurdia* **wardii** Marquand (p. 203); *Gentiana* **namlaensis** Marquand (p. 205); *G. prostrata* vars. **crenulatotruncata** Marquand and **bilobata** (p. 205); *G. tubiflora* v. **namlaensis** Marquand (p. 206); *Lomatogonium* **deltoideum** (*Pleurogyne deltoidea* Burk.) (p. 207); *L.* **oreocharis** (*P. o.* Diels) (p. 207); **KINGDON-WARDIA** (p. 207), between *Gentiana* and *Swertia*, based on *K. w.* **codonopsidioides** Marquand (p. 207); *Swertia hispidicalyx* f. **subglabra** Marquand (p. 208); *S.* **wardii** Marquand (p. 208); *Pedicularis* **aschistorrhyncha** Marquand (p. 210); *P. bella* v. **holophylla** (p. 211), with f. **rosea** (p. 211); *P.* **cryptantha** (p. 211); *P.* **mychophila** (p. 212); *P. roylei* v. **cinerascens** (p. 213); *Plectranthus* **wardii** (p. 216); *Micromeria* **wardii** (p. 216); *Phlomis* **tibetica** (p. 218), Eastern Himalaya; *P. t.* var. **wardii** (p. 219); *Salix* **annulifera** (p. 222) with var. **macriula** (p. 222); *Populus ciliata* v. **aurea** (p. 223); *Fritillaria cirrhosa* v. **brachyantha** (p. 227); *Lloydia serotina* f. **parva** (p. 228); *Arisaema* **wardii** (p. 228); *Pegaeophyton* **scapiflorum** (*Cochlearia scapiflora* Hook. f. & Thoms.) (p. 229).

5089. POLE EVANS, I. B. [Ed.] The flowering plants of South Africa 10(40): pl. 391-400. 1930.—The following species are described, each with hand-colored plate: *Faurea speciosa**, figured for the first time; *Stapelia asterias* var. *lucida**; *Mesembryanthemum marianae**; *M. longifolium**; *Cotyledon schäferiana**; *Stapelia variegata**; *Cotyledon* **pygmaea*** W. F. Barker (pl. 396), Cape Province; *Strumaria watermeyeri**; *Monsonia multifida**; *Conophytum minutum**.

5090. POLE EVANS, I. B. [Ed.] The flowering plants of South Africa 11(41): pl. 401-410. 1931.—The following plants are described, each with hand-colored plate: *Lachenalia ovatifolia**; *L.* **longibracteata*** Phillips (pl. 405), Cape Province; *Dolichos gibbosus**; *Crassula* **lettyae*** Phillips (pl. 403), S. Africa; *Hessea* **mathewsii*** Barker (pl. 404), Cape Province; *Mundulea suberosa**; *Stapelia* **clavicorona*** Verdoorn (pl. 407), Transvaal; *Asclepias dregeana* v. *calseolus**; *Asparagus suaveolens**; *Parapodium costatum**.

5091. ST. JOHN, HAROLD. New and noteworthy northwestern plants. Part 4. *Proc. Biol. Soc. Washington* 44: 29-36. 1931.—Notes on various species, including: (Juncaceae) *Juncus drummondii* v. **longifructus** (p. 29), Brit. Columbia and Washington (type), with f. **davisonii** (p. 30); (Liliaceae) *Allium* **equicaeleste** (p. 31); (Portulacaceae) *Lewisia exarticulata* St. John (=*L. pygmaea* v. *aridorum* Bartlett); (Cruciferae) *Chorispora tenella* DC., a Eurasian plant, adventive to Washington; (Scrophulariaceae) *Penstemon* **pickettii** (p. 33); (Orobanchaceae) *Orobanche* **columbiana** St. John & English (p. 34); (Compositae) *Arnica amplexicaulis* v. **piperi** St. John & Warren (p. 36). All are from Washington.

5092. STAPF, O. Plants from the Royal Botanic Gardens, Kew. *Curtis's Bot. Mag.* 154(1): Tab. 9205-9215. (col.): (2): 9216-9226. (col.) 1928(1930).—Descriptions by author unless otherwise specified, with hand-colored plates, of: *Lilium formosanum** Wallace; *Maxillaria elatior** Reichb.; *Rhododendron albrechtii** Maxim.; *Codonopsis ovata** Benth.; *Ligustrum quihoui** Carr.; *Primula sikkimensis* **microdonta*** (*P. m.* Franch.) (tab. 9210); *Osmanthus fragrans* v. *aurantiacus** Makino; *Arisaema purpureogaleatum** Engl.; *Leontopodium haplophylloides** Handel-Mazz.; *Acacia elata** Cunningham, described by V. S. SUMMERHAYES; *Veronica teucrium* ssp. *thracica** Velenovský, by W. B. TURRILL; *Cymbidiella humblotii** Rolfe, by Summerhayes; *Rhododendrum didymum** Balf. & Forrest; *Primula anglenia-na** Balf. & Forrest; *Caryopteris mongolica** Bunge; *Iris winogradowii** Fomin; *Rhododendron amesiae** Rehder & Wilson; *Epigaea asiatica** Maxim.; *Aster farreri** W. W. Smith & J. F. Jeffrey; *Tremacron forrestii** Craib; *Kniphofia insignis** Rendle; *Papaver macrostomum** Boiss., by Turrill.

MONOCOTYLEDONES

5093. BOJKO, HUGO. Heleocharis vierhapperi nov. spec. Eine neue Sippe aus den Dolomiten. *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): 300-307. 10 fig. 1929 (1930).—*Heleocharis* **vierhapperi*** (p. 300), Italy.

5094. BRAUN-BLANQUET, J. Poa granitica, nouvelle Graminée de l'Europe centrale. *Arch. Botanique* 3(Bull. Mens. 3): 46-48. 1929.—*Poa* **granitica**, Tatra.

5095. BURRET, M. Palmae cubenses et domingenses a Cl. E. L. Ekman 1914-1928 lectae. *Kgl. Svenska Vetenskapsakad. Handl.* 6(7): 1-28. 14 pl. 1929.—Records the entire collection, including: *Copernicia* **gigas*** Ekman Ms. (p. 3); *C.* **ekmannii** (p. 5), Haiti; *C.* **oxycalyx** (p. 6); *C.* **yarey** (p. 7); *C.* **ramosissima** (p. 8); *C.* **pauciflora** (p. 8); *Hemithrinax* **ekmaniana*** (p. 9); *Coccothrinax* **ekmanii*** (p. 11), Haiti; *C.* **pauciramosa** (p. 12); *C.* **concolor** (p. 14) and *C.* **gracilis** (p. 14), Haiti; *C.* **fragrans** (p. 16), Cuba (type) and Haiti;

C. **montana** (p. 17), Santo Domingo; *C. crinita** Becc. and *C. anomala** Becc., emend. descr.; *Pseudophoenix sargenti* H. Wendl. (=*P. linearis* O. F. Cook,=*P. saonae* O. F. Cook); *P.* **ekmanii*** (p. 19), Santo Domingo; *P. vinifera* (Mart.) Becc. (=*P. insignis* O. F. Cook); *Attalea* **crassispatha** (*Maximiliana c.* Mart.) (p. 23); *Bactris* **cubensis** (p. 25); *Thrinax* **ekmanii** (p. 27) and *Pseudophoenix* **navassana** Ekman Ms. (p. 27), Navassa Isl.; *P.* gracilis Ekm. Ms. (p. 28), Haiti. Unless otherwise stated, the locality is Cuba. Many previously known species are included in this systematic list, with locality records or taxonomic remarks.

5096. CHEVALIER, C. Monographie des Broméliacées-Tillandsiées (Étude botanico-horticole). *Bull. Mens. Soc. Nation. Hort. France* 3(Juillet): 337-367. 1930.—Brief notes on the morphology of the Bromeliaceae are followed by synoptic tables of the genera and subgenera of the Tribe Tillandsieae after Baker and Mez. He gives a summary of the principal cultivated spp. of *Vriesea, Tillandsia* and *Guzmania* according to the classification of Mez. One chapter deals with the numerous hybrids of *Vriesea*. Hybrids of *Tillandsia* are rare and bigeneric hybrids still more so. The author obtained *Vriesea-Tillandsia* hybrids, but they have not yet flowered. He concludes that the power of character transmission is a quality of the individual whether it operates as the male or as the female element.—*C. Chevalier* (*transl. by L. B. Smith*).

5097. FASSETT, NORMAN C. Preliminary reports on the flora of Wisconsin. VI. Pandanales. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 25: 183-187. 6 maps. 1930.—Three forms of Typhaceae and 8 of Sparganiaceae are discussed, with maps and notes on ecological and geographical distribution. A key to the 3 Typhaceae is given.

5098. HITCHCOCK, A. S. Four new grasses. *Jour. Washington Acad. Sci.* 20(15): 381-384. 1930.—*Agrostis* **hendersonii** (p. 381), Oregon; *Calamagrostis* **stipitata** (p. 382), Chile; *Stipa* **smithii** (p. 382) and *Panicum* **killipii** (p. 383), Peru.

5099. HOEHNE, F. C. Contribuições para o conhecimento da flora orchidologica brasilica. [Contribution to a knowledge of the orchid flora of Brazil.] *Arch. Inst. Biol.* [*S. Paulo*] 2: 5-52. 10 pl. 1929.—An enumeration of the species of Orchidaceae of the genera *Pleurothallis* and *Octomeria* which, up to August 1928, have been added to the herbarium of the "Secção de Botanica e Agronomia" of the "Instituto Biologico de Defesa Agricola e Animal," with critical notes on every species, showing its affinity with other species or giving characters not mentioned in the original descriptions. *Pleurothallis muscosa* v. **parviflora*** (p. 12); *P.* **duartei*** (p. 12); *P.* **heliconiscapa*; *P.* altoserrana*** (p. 20); *P. josephensis* vars. **integripetala, subcrenulata,** and **papillifera** (p. 22); *P.* **jordanensis*** (p. 23); *P.* **puttemansii*** (p. 24); *P.* **sonderanoides*** (p. 30); *P.* **unguiculata*** (p. 32); *P.* **ornithorrhyncha*** (p. 34); *P.* **montipelladensis*** (p. 36); *P.* **anomala*** (p. 43); *P.* **brachiloba*** (p. 44); *Octomeria* **recchiana*** (p. 48); *O.* **caldensis*** (p. 50). The following redescriptions and synonymy occur: *Pleurothallis caespitosa* Barb. Rdr. (=*P. subcordifolia* Cgn. =*P. platycaulis* Reichb. f.); *P. mentigera** Kraenzl.; *P. paranaensis** Schltr.; *P. parvifolia* Ldl. (=*P. succedanea* Hoehne & Schltr.); *P. grobyi* Ldl., regarded as distinct from *Lepanthes marmorata* Fl. Br.; *P. caldensis** Hoehne & Schltr.; *P. smithiana* Ldl. (=*P. riograndensis* Barb. Rdr.); *P. glaziovii* Cgn. (=*P. alexandri* Schltr=*P. vitellina* Porsch.); *P. heterophylla* Cgn., notes; *P. densiflora* Cgn., emended description; *P. macrophyta* Barb. Rdr. (=*P. loefgrenii* Cgn.); *P. depauperata* Cgn. (=*P. sororcula* Schltr.); *P. bradei* Schltr., placed in the *mouraei* group of the Lepanthiformes, is undoubtedly a hybrid species; *Octomeria serrana** Hoehne, redescribed; *O. wilsoniana** Hoehne, redescribed, the name being a correction from *O. wilsoniae* Hoehne.

5100. KRÄNZLIN, F. Catasetum gongoroides spec. nov. aus Colombia. *Rep. Spec. Nov. Reg. Veg.* 27 (741/750; paper 25): 254. 1930.—This new orchid belonging to § *Myanthus* bloomed at the Hamburg Bot. Gard. in 1929.—*H. K. Svenson.*

5101. KRÄNZLIN, FR. Pleurothallis rhodosticta spec. nov. *Rep. Spec. Nov. Reg. Veg.* 27(741/750; paper 26): 255. 1930.—This new orchid of unknown origin bloomed in the Hamburg Bot. Gard. in Dec., 1929.—*H. K. Svenson.*

5102. LITARDIERE, R. de. Sur une forme à épillets velus du Festuca ovina subsp. indigesta var. durissima. *Arch. Botanique* 1(Bull. Mens. 11): 231-232. 1927.—The new form, from Cap Cerbère, Pyrenees, is named **villiflora.**

5103. MALTE, M. O. Commercial bent grasses (Agrostis) in Canada. *Ann. Rept. for 1926, Nation. Mus. Canada* 1928: 105-126. 6 pl. 1928.—Discusses the nomenclature and taxonomy of *Agrostis stolonifera* L., *A. tenuis* Sibth., and *A. canina* L.—*M. O. Malte.*

5104. MORTON, C. V. A new species of Calathea from Panamá. *Jour. Washington Acad. Sci.* 20(15): 372-374. 2 fig. 1930.—*Calathea* **magnifica*** Morton & Skutch (p. 372).

5105. ÖHRSTEDT, G. Blomningen hos Epipogium aphyllum Sw. [Flowering in E. a.] *Bot. Notiser* 1930 (3/4): 309. 1930.—The author observed a large colony for 7 successive years and reaches the conclusion that only a few plants of each colony flower in a single year, the remaining plants resting. Since mature seeds are rarely if ever produced, the method of dispersal is unknown.—*H. K. Svenson.*

5106. OSTENFELD, C. H. Additions to the list of Australian sea-grasses. *Proc. Roy. Soc. Victoria* 43(1): 1. 1930.—*Diplanthera uninervis* and *Halophila spinulosa*, W. Australia; *Cymodocea isoetifolia, C. rotundata, Zostera capricorni,* and *Halophila ovalis,* Queensland; last 2 also from N. S. Wales.

5107. PARODI, LORENZO R. Dos nuevas especies de Gramineas de la flora Argentina. [New Argentine Gramineae.] *Physis* [*Buenos Aires*] 8(30): 372-379. 1 pl., 1 fig. 1926.—*Paspalum* **epilis*** [sic] (p. 372) and *Digitaria* **fallens*** (p. 375).

5108. SCHLECHTER, R. Einige neue Orchideen des Itatiaya (Brasilien). *Rep. Spec. Nov. Reg. Veg.* 27(741/750; paper 33): 296-301. 1930.—*Habenaria* **campos-portoi** (p. 296); *H.* **edentula** (p. 297); *H.* **itatiayae** (p. 298); *H.* **rolfeana** (p. 298); *H.* **sampaioana** (p. 299); *H.* **verecunda** (p. 300); *Pelexia* **itatiayae** (p. 300).—*H. K. Svenson.*

5109. SMALL, JOHN K. Palms of the continental United States. *Sci. Month.* 32(3): 240-255. 1 pl., 17 fig. 1931.—While palms were much more widely distributed in past ages, about 1200 spp. still exist. Tropical America and tropical Asia are now the main centers of distribution. They occur between latitudes 38° N. and 37° S., in regions with an average temp. of 60° F. or more. The distribution and uses of the 17 spp. occurring in the U. S. A. are given. They are confined mainly to the Atlantic and Gulf Coastal Plains, their distribution being almost identical with that of the flowering epiphytes. Birds are considered probable agents in extending the range of some spp. northward along the Atlantic Coast. On the other hand, *Roystonea regia* has retreated from central to southern Florida. This state contains nearly all spp. of both palms and flowering epiphytes occurring in the U. S. A. Two genera, *Serenoa* and *Rhapidophyllum,* are endemic in the U. S., six others are apparently Antillean in origin, and *Washingtonia* of California is related to Mexican and Pacific forms. Botanists were slow in recognizing the native palms.

5110. SMITH, J. J. Icones Orchidacearum Malayensium I. *Bull. Jardin Bot.* [*Buitenzorg*] *Súppl.* 2(1/2): (1-100). 50 pl. 1930.—The first instalment of analytic figures is published of the species treated in the series "Neue Orchideen des malaiischen Archipels" and "Orchidaceae novae malayenses."

5111. STENT, SYDNEY M. South African Gramineae. Some new species of Digitaria. *Bothalia* 3(1): 147-156. 1930.—*Digitaria* **pentzii** (p. 147), Cape Province (type), Orange Free State, Transvaal; *D. p.* var. **minor** (*D. eriantha* v. *stolonifera* Stapf.) (p. 148), Transvaal; *D.* **valida** (p. 148), Transvaal (type), Orange Free State,

and Cape Province; *D. v.* var. **glauca** (p. 149), Transvaal; *D.* **polevansii** (p. 149), Cape Province; *D.* **decumbens** (p. 150), Transvaal; *D.* **swazilandensis** (p. 150), Swaziland; *D.* **rigida** (p. 151), Transvaal; *D.* **glauca** (p. 151), Transvaal, Orange Free State, Cape Province; *D. g.* var. **bechuanica** (p. 152), Cape Province; *D.* **natalensis** (p. 152), Natal; *D.* **littoralis** (p. 153), Cape Province; *D. l.* var. **prostrata** (p. 153), Cape Province; *D.* **geniculata** (p. 154), Cape Province (type) and Orange Free State; *D.* **foliosa** (p. 154), Cape Province; *D.* **trichopodia** (p. 155), Cape Province; *D.* **apiculata** (p. 155), Swaziland (type), Transvaal.

5112. **WARBURG, O. Heimat und Geschichte der Lilie (Lilium candidum).** *Rep. Spec. Nov. Reg. Veg. Beihefte* 56: 167-204. 2 pl. 1929.—A critical examination of the literature discloses that earlier reports of *Lilium candidum* in Palestine were erroneous. In June, 1925, specimens of this lily were found for the first time growing wild in Palestine, and it is believed that the species is a native of this region. In the more western regions wherever *L. candidum* is found, it grows in the vicinity of old ruins, villages or churches, indicating that it has found its way thither as an ornamental plant. The author concludes that it is a forest plant which became established in Syria and Palestine during the rainy period of early times when these regions were largely forested. With the subsequent change in climate came the replacement of forest by the maquis and the disappearance of the lily from all but the most favorable habitats, where it has managed to persist. Its ornamental and decorative value has probably further restricted its distribution. —*P. D. Strausbaugh.*

DICOTYLEDONES

5113. **ACEVEDO, REBECA. Sobre el género Lathyrus L., en Chile. [The genus Lathyrus in Chile.]** *Rev. Chilena Hist. Nat. Pura y Aplicada* 31: 123-126. 1927(1928).—The author places under *L. multiceps* 2 plants previously considered distinct: *L. m.* var. **setiger** (*L. s.* Ph.) (p. 126), with f. **eurypetalus** (*L. setiger* Ph. var. *e.*) (p. 126). The distinguishing characteristics of these plants are discussed.

5114. **AELLEN, PAUL. Ein neues Chenopodium von St. Helena.** *Rep. Spec. Nov. Reg. Veg.* 27(741-750; paper 35): 335-336. 1930.—*C.* (sect. *Chenopodiastrum*) **helenense** (p. 335). This new apparently endemic species has not been collected for over 100 years, and may have been exterminated.—*H. K. Svenson.*

5115. **ANDERSON, R. H. A revision of certain Australian Chenopodiaceae.** *Proc. Linn. Soc. N. S. Wales* 51(3): 382-386. 3 pl. 1926.—In revising the Australian spp. of *Bassia, B. tricornis* (Benth.) F. v M. and *B. enchylaenoides* F. v M. were excluded. The former now becomes **MALACOCERA** (p. 383), **tricornis*** (*Bassia t.* Benth.). The latter is transferred to *Kochia* as *K.* **crassiloba** (*Enchylaena villosa* F. v M., *Chenolea enchylaenoides* F. v M.), while another plant that had been confused with it is described as *K.* **pentagona*** (p. 385) from S. Australia, Victoria and N. S. Wales.—*G. T. Hastings.*

5116. **BENOIST, R. Une Lauracée nouvelle de la Guyane française.** *Arch. Botanique* 3(Bull. Mens. 1): 10. 1929.—*Ocotea* **subglabra.**

5117. **BENOIST, R. Une Acanthacée de la Nouvelle-Calédonie.** *Arch. Botanique* 3(Bull. Mens. 4): 63-64. 1929.—*Pseuderanthemum* **incisum.**

5118. **BLACKBURN, KATHLEEN B. A new rose from Northumberland [England].** *Proc. Univ. Durham Phil. Soc.* 8(2): 101-103. 1 pl. 1928-1929[1929].—*Rosa* **berniciensis*** "var. nova" (p. 101). The text states that it belongs to *R. glauca* ssp. *subcanina,* under which it is apparently to be considered as a "micro-species" or "variety."

5119. **BLATTER, E. The Indian species of Terminalia L.** *Jour. Indian Bot. Soc.* 8(4): 245-264. 1929.—20 species are listed with short descriptions and synonymy, and complete key. Geographical considerations are included. *Terminalia chebula* f. **tomentella** (*T. t.* Kurz), f. **tomentosa** (p. 254), and f. **villosa** (p. 255) appear to be new. —*E. Blatter.*

5120. **BLATTER, E. A proposed revision of the flora of British India.** *Jour. Indian Bot. Soc.* 9(2/3): 140-150. 1930.—Urges the need of a revision of Hooker's "Flora of British India," and, as an illustration of method, presents a revision of the Indian Malpighiaceae, with keys to genera and spp. Includes *Brachylophon curtisii* v. scortechinii (*B. s.* King) (p. 150).—*E. Blatter.*

5121. **BONATI, G. Sur trois espèces nouvelles du genre Pedicularis.** *Arch. Botanique* 1(Bull. Mens. 11): 217-219. 1927.—*P.* **koueytchensis** (p. 217), *P.* **gagnepainiana** (p. 218), and *P.* **rigidiformis**, all from China.

5122. **BONATI, G. Scrofulariacees de Madagascar. (Collections Perrier de la Bathie, Decary, Waterlot, Viguier et Humbert, d'Alleizette.)** *Bull. Soc. Bot. France* 74(1/2): 86-101. 1927.—A list of species (none indicated as new) of Scrophulariaceae determined from the above Madagascan collections.—*J. P. Poole.*

5123. **BOUCHON, A., et G. MALVESIN-FABRE. Note sur "Thlaspi alliaceum" L., crucifère nouvelle pour la Gironde [France].** *Actes. Soc. Linn. Bordeaux, Proc.-Verb.* 80: 54-57. 1928.

5124. **BRIQUET, JOHN. L'organisation florale des Cynaroïdees dites monadelphes.** *Beibl. Vierteljahrsschr. Naturforsch. Ges. Zürich* 73(15): 719-743. 1928.—The genera *Silybum, Tyrimnus,* and *Galactites* were thought by Cassini to have monadelphous filaments and were on this account grouped by Lessing in one division, *Silybeae;* but Baillon decided that the filaments were not concrescent. The problem has been investigated anew. The filaments are fastened together by a glutinous secretion so as to form a sheath, but at the base they are distinct. The group should not be united with *Carduus* as proposed by Baillon. The relationships of these 3 genera to the rest of the Cynaroideae are yet to be determined and the group *Silybeae* can only be considered as a convenient means of isolating these 3 genera. There follow revised Latin diagnoses of the 3 genera.—*J. P. Young.*

5125. **CHOUX, M. P. Nouvelles observations sur les Sapindacées de Madagascar.** *Ann. Mus. Hist. Nat. Marseille* 22(2): 5-17. 10 pl. 1929.—This report is based upon material collected by MM. Perrier de la Bathie and Decary in 1923-27. Emended descriptions are given of *Manongarivea perrieri**, *Eriandrostachys chapelieri** Baillon, *Omalocarpus macrophyllus**, *Molinaea arborea** Gmelin, *Cardiophyllarium apetalum**, and *Majidea zanguebarica** Kirk. *Macphersonia gracilis* O. Hoffm. (=*M. hildebrandtii* O. Hoffm.). *Tina* **tsaratananensis*** (p. 42). Some of the above-mentioned species are recorded from parts of Madagascar where they were unknown previously.

5126. **CUFODONTIS, GEORG. Die Namen Senecio integrifolius und helenitis in ihrer richtigen Verwendung.** *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): 297-299. 1929(1930).—The correct name of the first sp. is *S. integrifolius* (L.) Clairv., of which *campestris* Retz. is a synonym. *S. helenitis* (L.) Schz. & Thell. (=*Cineraria spathulaefolia* Gmelin).

5127. **DAVIDSON, A. Horsfordia alata Gray, a new record for U. S.** *Bull. Southern California Acad. Sci* 29 (2): 100. 1930.—Found in the Colorado Desert, California.

5128. **DENIS, M. Observations sur les Uapaca malgaches et diagnoses d'espèces nouvelles.** *Arch. Botanique* 1(Bull. Mens. 11): 223-231. 1927.—Among the 12 species recognized are *U.* **amplifolia** (p. 224) (with keys to distinguish it from *U. clusioides* and *U. ferruginea,* related Madagascar species), *U.* **rivularis** (p. 225), *U.* **sambiranensis** (p. 226), *U.* **angustifolia** (p. 227), *U.* **perrieri** (p. 228), *U.* **littoralis** (p. 228), and *U.* **louveli** (p. 230), which was confused under the name of *U. thouarsii* Baillon which latter species is here emended. *U. densifolia* Baker (=*U. myricaefolia* Baker); *U. bojeri* Baillon (=*U. clusiacea* Baker).

5129. **FASSETT, NORMAN C. Preliminary reports on the flora of Wisconsin. VIII. Aceraceae.** *Trans. Wisconsin Acad. Sci. Arts and Lett.* 25: 195-197. 6 maps. 1930.

—Five spp. and several varieties of *Acer* are discussed, with maps and distributional data, the latter furnished chiefly by L. S. Cheney.

5130. FRITSCH, KARL. Zur Kenntnis der Camelina rumelica Velenovský. *Akad. Wiss. Wien, Math.-Naturwiss. Kl. 1. Abt.* 138(7): 347-370. 1929.—*C. rumelica*, while an independent sp., is not sharply delimited from other spp., especially *C. microcarpa*. *C. rumelica* Vel. (=*C. albiflora* Kotschy). *C. rumelica* occurs in southern and southeastern Europe and southwestern Asia. It is a variable plant; hairiness is its most dependable characteristic. Intermediate forms (not hybrids) are present but not abundant. *Camelina* **transcaspica** (p. 365), Transcaspian regions and Persia. There are intermediate forms which link these species. Forms of *C. microcarpa*, which approach *C. rumelica* by their abundant, long-bristly hairs, occur also in southern Switzerland and in Germany.—*K. Fritsch (transl. by P. A. Young).*

5131. FURRER, ERNST. Abruzzesische Hieracien. [Hieraciums of Abruzzi, Italy.] *Vierteljahrsschr. Naturforsch. Ges. Zürich* 74(3/4): 225-233. 1929.—An annotated list of 25 species collected by the author in 1922-28, with locality and habitat records, including: *Hieracium bupleuroides* ssp. *breviflorum* v. **aprutiorum** (p. 227); *H. arrectum* ssp. **furreri** Zahn (p. 227); *H. scorzonerifolium* ssp. **croceoglossum** (p. 228); *H. murorum* ssp. *tenuiflorum* a *genuinum* f. **bifidiceps** (p. 229); *H. dentatum* ssp. **xanthostylophorum** (p. 229); *H. wiesbaurianum* ssp. *wiesbaurianum* v. **sigilloanum** (p. 230); *H. cotteti* ssp. **brachycaulodes** (p. 230); *H. kerneri* ssp. **amoenohastatum** (p. 231); *H. prenanthoides* ssp. **lissocorium** (p. 232); *H. racemosum* ssp. *alismatifolium* v. **subbarbatum** (p. 233); *H. racemosum* ssp. *barbatum* a *genuinum* b *glabrescens* 3 **italiciforme** (p. 233). All are by Furrer and Zahn except the 2nd.

5132. Green, M. L. Lagoseris Marsch.-Bieb. and Lagoseris Hoffmgg. & Link. *Kew. Bull. Misc. Inform.* 1929 (2): 54-56. 1929.—In the past, *Lagoseris* Marsch.-Bieb. (type *L. crepoides* Marsch.-Bieb.) and *Lagoseris* Hoffmgg. & Link (type *Pterotheca nemausensis* Cass.) have been confused. A detailed synonymy and a list of species referable to each genus are given.—*M. L. Green.*

5133. GUȘULEAC, M. Note critice asupra speciei Pulmonaria rubra Schott. [Critical notes on P. rubra.] [With French summary.] *Bul. Fac. Stiinte Cernăuți* 3 (1/2): 321-336. 1 pl. 1929.—The plant on which Schott based his diagnosis of *Pulmonaria rubra* is not a new species, but *P. rubra* × *P. officinalis*. There are 2 varieties: *P. rubra* v. *transsilvanica*, of Macedonia to Bukowina, and *P. rubra* v. **filarszkyana** (*P. f.* Jávorka) (p. 330), of Poland, Czechoslovakia, and Bukowina. *P. rubra* f. **indurata** (p. 331); *P. r.* f. **stenophylla** (p. 331); *P. r.* f. **baumgarteni** (p. 331); *P. r.* monstr. **marmorata** (p. 331). The synonymy and distribution of the 2 varietes of *P. rubra* are given in detail.

5134. HALL, HARVEY M. The genus Haplopappus. A phylogenetic study in the Compositae. *Carnegie Inst. Washington Publ.* 389. 1-391. 16 pl. 1928.—The monograph illustrates the application of the principles of phylogeny to the classification of a complex and highly specialized group of plants. The studies were made both in the field and in the herbarium, and in some instances plants were transplanted from diverse habitats to a uniform environment in order to test the stability of their differentiating characters. Numerous illustrations and charts are included. A discussion of the relationships of the N. Amer. spp. of *Haplopappus* to those of S. Amer. is given. The N. Amer. spp. of *Haplopappus* are divided into 16 sections, the S. Amer. spp. into 5 sections. A list of spp. and vars. which have received names under *Haplopappus*, but which are now excluded from the genus, is given. New spp. and subspp.: *H.* **occidentalis*** (p. 214), California; *H.* **rosulatus*** (p. 329), Chile; *H. phyllocephalus* **primitivus*** (p. 56), Mexico; *H. suffruticosus* **tenuis** (p. 190), California; *H. bloomeri* **compactus*** (p. 199), Nevada; *H. squarrosus* **stenolepis** (p. 253) and *H. palmeri* **pachylepis*** (p. 267), California. New combinations: *H. phyllocephalus* **typicus** (*H. p.* DC.) (p. 58); *H. p.* **annuus*** (*Sideranthus a.* Rydb.) (p. 58); *H. p.* **megacephalus** (*Eriocarpum megacephalum* Nash) (p. 59); *H.* **stenolobus*** (*E. stenolobum* Greene) (p. 65); *H. spinulosus* **scabrellus** (*E. scabrellum* Greene) (p. 74); *H. s.* **gooddingi*** (*Sideranthus g.* Nels.) (p. 75); *H. s.* **incisifolius*** (*H. arenarius* var. *i.* Johnston) (p. 75); *H. s.* **typicus*** (*Amellus s. t.* Pursh) (p. 76); *H. s.* **australis** (*Eriocarpum australe* Greene) (p. 77); *H. s.* **cotula** (*Sideranthus cotula* Small) (p. 77); *H. s.* **glaberrimus** (*S. g.* Rydb.) (p. 77); *H. s.* **laevis** (*S. l.* Wooton & Small) (p. 78); *H. fremonti* **typicus** (*Pyrrocoma foliosa* Gray) (p. 87); *H. f.* **monocephalus** (*Oonopsis m.* Nels.) (p. 87); *H. f.* **wardi*** (*H. f.* var. *w.* Gray) (p. 88); *H.* **engelmanni*** (*Bigelovia e.* Gray) (p. 94); *H. croceus* ssp. **typicus*** (*H. c.* Gray) (p. 98); *H. c.* ssp. **genuflexus** (*Pyrrocoma genuflexa* Greene) (p. 99); *H. carthamoides* ssp. **maximus** (*H. c.* var. *m.* Gray) (p. 103); *H. c.* **typicus*** (*Pyrrocoma c.* Hook.) (p. 103); *H. c.* **rigidus** (*P. rigida* Rydb.) (p. 103); *H. c.* **cusicki*** (*H. c.* var. *c.* Gray) (p. 104); *H. c.* **subsquarrosus** (*Pyrrocoma subsquarrosa* Greene) (p. 104); *H. c.* **erythropappus** (*P. erythropappa* Rydb.) (p. 105); *H. integrifolius* **typicus*** (*H. i.* Gray) (p. 110); *H. i.* **insecticruris** (*H. insecticruris* Hend.) (p. 111); *H. i.* **liatriformis** (*Pyrrocoma l.* Greene) (p. 111); *H. i.* **scaberulus** (*Pyrrocoma scaberula* Greene) (p. 111); *H. lanceolatus* **typicus** (*Donia lanceolata* Hook.) (p. 115); *H. l.* **subviscosus** (*Pyrrocoma subviscosa* Greene) (p. 117); *H. l.* **vaseyi** (*H. l.* var. *v.* Parry) (p. 117); *H. l.* **solidagineus** (*Pyrrocoma solidaginea* Greene) (p. 118); *H. l.* **tenuicaulis** (*H. t.* D. C. Eaton) (p. 118); *H. hirtus* **typicus*** (*H. h.* Gray) (p. 124); *H. h.* **sonchifolius** (*Pyrrocoma sonchifolia* Greene) (p. 125); *H. h.* **lanulosus*** (*P. lanulosa* Greene) (p. 125); *H. racemosus* **typicus*** (*Homopappus r.* Nutt.) (p. 128); *H. r.* **congestus*** (*Pyrrocoma congesta* Greene) (p. 128); *H. r.* **duriusculus** (*P. duriuscula* Greene) (p. 129); *H. r.* **longifolius*** (*P. longifolia* Greene) (p. 130); *H. r.* **prionophyllus*** (*P. prionophylla* Greene) (p. 131); *H. r.* **glomeratus*** (*Homopappus g.* Nutt.) (p. 134); *H. r.* **brachycephalus*** (*Pyrrocoma brachycephala* Nels.) (p. 135); *H. r.* **sessiliflorus*** (*P. sessiliflora* Greene) (p. 136); *H. r.* **halophilus** (*P. halophila* Greene) (p. 136); *H. uniflorus* **typicus*** (*Donia uniflora* Hook.) (p. 148); *H. u.* **howelli** (*H. h.* Gray) (p. 150); *H. u.* **gossypinus** (*Pyrrocoma gossypina* Greene) (p. 151); *H. linearifolius* **typicus*** (*H. l.* DC.) (p. 156); *H. l.* **interior** (*H. i.* Coville) (p. 158); *H. acaulis* **typicus*** (*Chrysopsis a.* Nutt.) (p. 166); *H. a.* **glabratus** (*H. a.* var. *g.* D. C. Eaton) (p. 166); *H. lanuginosus* **typicus** (*H. l.* Gray) (p. 172); *H. l.* **andersoni** (*Stenotus a.* Rydb.) (p. 172); *H.* **aberrans*** (*Macronema a.* Nels.) (p. 185); *H. suffruticosus* **typicus*** (*Macronema suffruticosum* Nutt.) (p. 190); *H. greenei* **typicus*** (*H. g.* Gray) (p. 194); *H. g.* **mollis*** (*H. m.* Gray) (p. 195); *H. bloomeri* **typicus** (*H. b.* Gray) (p. 198); *H. b.* **angustatus** (*H. b.* var. *a.* Gray) (p. 198); *H. b.* **sonnei** (*H. b.* var. *s.* Greene) (p. 199); *H. macronema* **typicus** (*Macronema discoideum* Nutt.) (p. 204); *H. m.* **linearis** (*M. lineare* Rydb.) (p. 206); *H. venetus* **typicus** (*Baccharis veneta* HBK) (p. 224); *H. v.* **vernonioides** (*Isocoma vernonoides* Nutt.) (p. 224); *H. v.* **tridentatus** (*Bigelovia tridentata* Greene) (p. 225); *H. v.* **oxyphyllus** (*Isocoma oxyphylla* Greene) (p. 225); *H. v.* **furfuraceus** (*Bigelovia furfuracea* Greene) (p. 226); *H. acradenius* **typicus** (*B. acradenia* Greene) (p. 223); *H. a.* **eremophilus** (*Isocoma eremophila* Greene) (p. 233); *H. a.* **bracteosus** (*I. bracteosa* Greene) (p 233); *H.* **pluriflorus** (*Linosyris pluriflora* Torr. et Gray) (p. 238); *H. squarrosus* **typicus*** (H. s. Hook. et Arn.) (p. 251); *H. s.* **obtusus*** (*Hazardia obtusa* Greene) (p. 253); *H. palmeri* **typicus*** (*H. p.* Gray) (p. 267); *H.* **cooperi*** (*Bigelovia c.* Gray) (p. 276); *H.* **philippi** (*Aster p.* O. Kuntze) (p. 325); *H.* **punctatus** (*Conyza punctata* Willd.) (p. 339); *H.* **integerrimus** (*Diplopappus i.* Hook. et Arn.) (p. 340); *H.* **pristiphyllus** (*Pyrrocoma pristiphylla* Remy) (p. 351). New names: *H.* **contractus*** (*Pyrrocoma acuminata* Rydb., not *H. acuminatus* DC.) (p. 155); *H.* **eastwoodae*** (*Chrysoma fasciculata* Eastw.,

not *H. fasciculatus* Vasey & Rose) (p. 258); *H.* **reicheanus** (*H. vernicosus* Reiche, not Brandegee) (p. 324); *H.* **rotundifolius** (*Diplopappus ilicifolius* Hook. & Arn.) (p. 347). New sections: **POLYPHYLLA** (p. 302); **XYLOLEPIS** (p. 302). Trinomial names are to be read as subspecies, rather than as varieties.—*Minna F. Koch.*

5135. **HANDEL-MAZZETTI, HEINRICH. Ein bisher unbekanntes Vorkommen nordischer Taraxaca in den Alpen.** *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): 307-308. 1929(1930).—*Taraxacum reichenbachii* and *T. ceratophorum* in Tyrol, Austria.

5136. **HICKEN, CRUSTÓBAL. La planta cruel "El Tasi" (Araujoa sericifera Brot.).** *Darwiniana* 2(1): 24-29. 1928.—Review of literature concerning this sp. of Asclepiadaceae presents the history of the generic name with its variant spellings, the distribution over southern Brazil, Uruguay and northern Argentina, and both from the botanical and entomological sides the curious ability of the plant to imprison in its flowers and to kill certain insects (Lepidoptera and Hymenoptera).

5137. **HOLZFUSS, E. Neuheiten aus der Rosenflora Pommerns.** *Rep. Spec. Nov. Reg. Veg.* 27(734/740; paper 21): 230-233. 1929. *Rep. Europ. et Mediter.* 3 (paper 6): 38-41. 1929.—The following varieties collected and worked out by B. Matsson and the author are different from any northern varieties: *Rosa mollis* vars. **arrectans, systema,** and **intensifrons** (all p. 230), **intensicolor** (p. 231); *R. omissa* vars. **cyanopsis** and **labenziensis** (p. 231); *R. tomentosa* vars. **pleonazans** and **corchemeropsis** (p. 231), **pomeranica, radekowiensis** (with f. **curtifrons**), and **baeotorne** (p. 232); *R. canina* vars. **gyrizans** (p. 232), **fatuans** (p. 233), *R. coriifolia* v. **schlawensis** (p. 233). The authors of new varieties are Holzf. and Matsson.—*H. K. Svenson.*

5138. **KELSO, LEON. A new Castilleja from Colorado.** *Madroño, Jour. California Bot. Soc.* 1(16): 241-242. 1929.—*Castilleja* **flavoviridis** (p. 241).

5139. **KILLIP, ELLSWORTH P., and A. C. SMITH. The South American species of Viburnum.** *Bull. Torrey Bot. Club* 57(4): 245-258. 1930.—Since the authors' account of the species of *Viburnum* in northwestern S. Amer. (*Ibid.* 56: 265-274. 1929), they have examined all the Andean material at Kew and at the Bot. Mus., Berlin, and now present a single account; for the species treated in the earlier paper detailed diagnoses are not repeated, though specimens examined are listed. A key is provided to the 29 spp., which include: *V.* **undulatum** (*Oreinotinus undulatus* Oerst.) (p. 248); *V.* **jamesonii** (*O. j.* Oerst.) (p. 249); *V.* **goudotii** (*O. furcatus* Oerst., not *V. furcatum* Blume) (p. 249); *V.* **tridentatum** (p. 251), Peru; *V.* **halli** (*O. h.* Oerst.) (p. 251); *V. triphyllum* forms **macrophyllum** (*O. triphyllus macrophyllus* Oerst.) (p. 252), **lanceolatum** (p. 252), Peru, and **microphyllum** (p. 252), Peru; *V.* **mathewsii** (*O. m.* Oerst.) (p. 253); *V. tinoides* f. **venezuelense** (*V. leptophyllum* f. *v.* Killip & Smith) (p. 254); *V.* **antioquiense** (p. 256) and *V.* **subsessile** (p. 256), Colombia; *V. seemenii* forms **bolivianum** (*V. b.* Gandoger) (p. 258) and **minus** (p. 258), Bolivia. With the exception of *V. roraimense* K. & S. from Brit. Guiana, all are confined to the Andes of western Venezuela, Colombia, Ecuador, Peru and Bolivia.

5140. **KILLIP, ELLSWORTH P. Ten new species of Passiflora, mainly from Colombia and Peru.** *Jour. Washington Acad. Sci.* 20(15): 374-381. 1930.—*Passiflora* **dolichocarpa** (p. 374), Guatemala; *P.* **tenella** (p. 375), Peru; *P.* **dawei** (p. 375), *P.* **bucaramangensis** (p. 376) and *P.* **popayanensis** (p. 377), Colombia; *P.* **lyra** Planch. & Linden (p. 377), Venezuela; *P.* **smithii** (p. 378), Colombia; *P.* **cuzcoensis** (p. 379), *P.* **spectabilis** (p. 379) and *P.* **crassifolia** (p. 380), Peru.

5141. **KRAJINA, VLADIMIR. New Hawaiian species of Pipturus.** *Bernice P. Bishop Mus. Occ. Papers* 9(3): 3-6. 2 pl. 1930.—*Pipturus* **skottsbergii*** (p. 3); *P.* **forbesii*** (p. 6).

5142. **LECOMTE, HENRI. Le genre Viscum à Madagascar.** *Notulae Systematicae* 4(3): 65-83. 1 pl. 1927.—This study is based on the extensive collections in the Museum of Paris. The Madagascar species are listed, and brief notes on specimens collected, range, and distinguishing features are given. The following are new: *Viscum* **debile** (p. 68); *V.* **erectum** (p. 68); *V.* **granarium** (p. 69); *V.* **apiculatum** (p. 70); *V.* **conicum** (p. 71); *V.* **decaryi** (p. 72); *V.* **demissum** and var. **mahafalense** (p. 73); *V.* **farafanganense** (p. 73); *V.* **humbertii** (p. 75); *V.* **multiflorum** (p. 76); *V.* **multipedunculatum** (p. 77); *V.* **papillosum** (p. 78); *V.* **parvifolium** (p. 78); *V.* **pedicellatum** (p. 78); *V.* **perrieri*** (p. 79); *V.* **semialatum** (p. 80); *V.* **tsaratananense** (p. 80). The following n. spp. and n. combs. are based by the author on what he considers as nomina nuda of Van Tieghem: *V.* **bakeri** van Tiegh. (p. 71); *V.* **comorense** (*Ploionixus c.* van Tiegh.) (p. 71); *V.* **pervillei** (*Alepidixia p.* van Tiegh.) (p. 69); *V.* **grandidieri** (*Aspidixia g.* van Tiegh.) (p. 74); *V.* **spathulatum** (*Tetrixus s.* van Tiegh.) (p. 80). (Of these, the first two lack Latin diagnoses). An emended description is given of *V. multicostatum*. A key to spp. of sect. *Ploionixia* is provided.

5143. **LITARDIÈRE, R. de. Le Petasites albus (L.) Gaertn. en Corse.** *Arch. Botanique* 2(Bull. Mens. 5): 84-85. 1928.

5144. **LOOSER, GUALTERIO. Nothofagus, Cyttaria y Myzodendron en el Cerro del Roble (Prov. de Santiago).** *Rev. Chilena Hist. Nat. Pura y Aplicada* 31: 288-290. 1927(1928).—Brief notes on the geographic and altitudinal distribution of species of these genera in this Chilean province.

5145. **MAIDEN, J. H., and W. F. BLAKELY. Descriptions of fifty new species and six varieties of western and northern Australian Acacias, and notes on four other species.** *Jour. Roy Soc. Western Australia* 13: 1-36. 22 pl. 1926-1927(1928).—Pungentes (Plurinerves): *Acacia* **pulviniformis*** (p. 1); *A.* **calcarata*** (p. 2); *A.* **acellerata*** (p. 2); *A. sulcata* vars. **hirsuta*** (p. 3) and **platyphylla** (p. 3). Pungentes (Uninerves): *A.* **sedifolia*** (p. 3); *A.* **excentrica*** (p. 4); *A.* **inops*** (p. 4). Calamiformes (Plurinerves): *A.* **fragilis*** (p. 5); *A. eremophila* v. **variabilis*** (p. 6), Queensland; *A.* **abrupta*** (p. 6); *A.* **viscifolia*** (p. 7). Calamiformes (Uninerves): *A.* **maxwelli*** (p. 7), Northern Australia; *A.* **enervia*** (p. 8); *A.* **inceae*** (p. 8), probably Western Australia. Uninerves (Triangulares): *A.* **orbifolia*** (p. 9). Uninerves (Brevifoliae): *A.* **chrysopoda*** (p. 10); *A.* **oblonga*** (p. 10); *A.* **subretusa*** (p. 11), Northern Australia; *A.* **semicircinalis*** (p. 11); *A.* **pallidiramosa*** (p. 12); *A.* **glabriflora*** (p. 12); *A.* **merrickae*** (p. 13), Northern Australia. Uninerves (Angustifoliae): *A.* **glutinosissima*** (p. 13); *A.* **acutifolia*** (p. 14). Uninerves (Racemosae): *A.* **subglauca*** (p. 14) with v. **angustiuscula*** (p. 15); *A.* **validinervia*** (p. 15); *A.* **steedmani*** (p. 16); *A.* **chrysella*** (p. 16); *A.* **semiaurea*** (p. 17); *A.* **bracteata*** (p. 18). Plurinerves (Oligoneurae): *A.* **deflexa*** (p. 18); *A.* **kingiana*** (p. 19); *A. benthamii* Meissn., recognized as a distinct sp.; *A.* **obtecta*** (p. 20). Plurinerves (Microneura): *A.* **pachyacra*** (p. 21); *A.* **subangularis*** (p. 21). Plurinerves (Nervosae): *A. sclerophylla* v. **teretiuscula** (p. 22). Juliflora (Tetramerae): *A.* **malloclada*** (p. 23), Northern Australia. Juliflora (Stenophyllae): *A.* **sessilispica*** (p. 23); *A.* **desertorum*** (p. 24); *A.* **inophloia*** (p. 25); *A.* **websteri*** (p. 25); *A.* **fauntleroyi*** (*A. oncinophylla* var. *f.* Maiden) (p. 26). Juliflorae (Falcatae): *A.* **clementi*** (p. 26); *A.* **eriopoda*** (p. 27); *A.* **numerosa*** (p. 27); *A.* **cognata*** (p. 28); *A.* **adsurgens*** (p. 28); *A.* **jibberdingensis*** (p. 29); *A.* **glabripes*** (p. 29); *A.* **sphaerogemma*** (p. 30), Northern Australia; *A.* **lentiginea*** (p. 30); *A.* **ancistrocarpa*** (p. 31), Northern and Western Australia; *A. cunninghamii* v. **tropica*** (p. 31), Northern Australia; *A.* **gardneri*** (p. 32). Unless otherwise stated these are from Western Australia.

5146. **MORTON, C. V. A new cannon-ball tree from Panama.** *Jour. Washington Acad. Sci.* 20(16): 396-398. 1 pl. 1930.—*Couroupita* **cutteri*** Morton & Skutch (p. 396).

5147. **MORTON, CONRAD V. Two new species of Meibomia from Mexico.** *Bull. Torrey Bot. Club* 57(3):

181-182. 1930.—*M.* occidentalis (p. 181) and *M.* saxatilis (p. 182), from Jalisco.

5148. [NIKIFOROV, K. F.] НИКИФОРОВ, К. Ф. Саксаул в горах. [Black saksaul (Arthrophytum ammodendron v. aphyllum) in mountains.] Природа [*Priroda, Leningrad*] 1930(6): 672. 1930.—About 20 bushes were found in Turkestan, at an altitude of about 1400 m.

5149. PERRIER de la BATHIE, H. Observations nouvelles sur le genre Kalanchoe. *Arch. Botanique* 2 (Bull. Mens. 2): 17-31. 1928.—Descriptions of Madagascar forms as follows: *K. schizophylla* (Baker) Baillon, heretofore incompletely described; *K. miniata* vars. decaryana, anjirensis, glandulosa (p. 19), and tsinjoarivensis (p. 20); *K. pinnata* with var. calcicola (p. 21); *K. peltata* var. stapfi (*K. s.* R. Hamet et Perr.) (p. 21); *K.* suarezensis (p. 21); *K.* ambrensis (p. 23); *K.* tuberosa (p. 24); *K.* tsaratananensis (p. 24); *K.* globulifera (p. 25) with var. coccinea (p. 26); *K.* macrochlamys (p. 27); *K.* scandens (p. 28).

5150. PERRIER de la BATHIE, H. Les Podostémacées de Madagascar. *Arch. Botanique* 3(Bull. Mens. 2): 17-25. 1929.—Key to the three genera represented, *Tristicha*, *Sphaerothylax* and *Dicraea*. The following are new: *Sphaerothylax* mangorensis (p. 19), *S.* bemarivensis (p. 20), *Dicraea* rubra (p. 21), *D.* isalensis (p. 23), *D. minutiflora* ssp. typica (p. 24) and ssp. orientalis, the latter with forms inumbrata and insolata (p. 25).

5151. PRAEGER, R. LLOYD. Semperviva of the Canary Islands area. *Proc. Roy. Irish Acad.* 38B(15): 454-499. 8 pl. 1929.—*Aichryson dichotomum* × *porphyrogennetos* n. hybr. (p. 462); *A. d.* × *punctatum* n. hybr. (p. 462); *A. porphyrogennetos* × *punctatum* n. hybr. (p. 464); *Aeonium* burchardii (*Sempervivum b.* Praeger) (p. 465); *A. caespitosum* × *mauriqueorum** n. hybr. (p. 466); *A. c.* × *percarneum** n. hybr. (p. 466); *A. c.* × *undulatum** n. hybr. (p. 467); *A. canariense* × *cuneatum** n. hybr. (p. 467); *A. castello-paivae* × *subplanum** n. hybr. (p. 468); *A. castello-paivae* × *viscatum* n. hybr. (p. 469); *A. ciliatum* × *haworthii** (p. 470); *A. ciliatum* × *holochrysum** n. hybr. (p. 470); *A. ciliatum* × *nobile** n. hybr. (p. 470); *A. ciliatum* × *palmense** n. hybr. (p. 471); *A. ciliatum* × *urbicum* n. hybr. (p. 471); *A. glandulosum* × *glutinosum** (*Sempervivum glandulosum* × *glutinosum* R. P. Murray) (p. 473); *A.* gomerense (*Sempervivum g.* Praeger) (p. 473); *A. goochiae* × *palmense* n. hybr. (p. 474); *A. haworthii* × *urbicum** n. hybr. (p. 474); *A. hierrense* × *palmense** n. hybr. (p. 475); *A. h.* × *valverdense* n. hybr. (p. 475); *A. lindleyi* × *tabulaeforme** n. hybr. (p. 476); *A.* nobile (*Sempervivum n.* Praeger) (p. 477); *A. palmense* × *valverdense** n. hybr. (p. 478); *A. percarneum* × *undulatum** n. hybr. (p. 479); *A. p.* × *virgineum** n. hybr. (p. 479); *A. saundersii* × *subplanum* n. hybr. (p. 480); *A. smithii* × *spathulatum* n. hybr. (p. 481); *A.* spathulatum (*Sempervivum s.* Hornem.) (p. 482); *A. s.* v. cruentum (*A. c.* W. & B.) (p. 482); *A. subplanum* × *viscatum** n. hybr. (p. 482); *A. tabulaeforme* × *urbicum** n. hybr. (p. 483); *A.* valverdense (*Sempervivum v.* Praeger) (p. 484); *Greenovia aizoon* × *aurea** n. hybr. (p. 484); *G. dodrentalis* × *Aeonium haworthii* n. hybr. (p. 486); *G. dodrentalis* × *Aeonium* (?) *spathulatum** n. hybr. (p. 487); *Monanthes anagensis* × *laxiflora** n. hybr. (p. 489); *M. brachycaulon* f. ramosa (p. 490) and f. fasciata (p. 491); *M. b.* × *pallens** n. hybr. (p. 492); *M. b.* × *polyphylla** (p. 492); *M.* icterica (*Petrophyes i.* Webb) (p. 492); *M. laxiflora* f. minor and f. foliis-aureis (p. 494); *M. l.* × *pallens** n. hybr. (p. 494); *M. pallens* v. silensis with f. ramosa (p. 495); *M. pallens* × *polyphylla* n. hybr. (p. 496); *M. polyphylla* × *subcrassicaulis** *M.* subcrassicaulis (*Sempervivum monanthes s.* Kuntze) (p. 496).—*R. L. Praeger.*

5152. RYDBERG, PER AXEL. (Rosales) Fabaceae Galegeae. *North American Flora* 24(5): 251-314; (6): 315-378; (7): 379-462. 1929.—Sixty-one genera are described, all segregates of *Astragalus*, except *Oxytropis* and *Caragana*. A key is given to the genera; also keys to the species of each genus where there are more than one. *Kentrophyta* coloradensis (*Astragalus kentrophyta c.* M. E. Jones) (p. 253); *Homalobus* woodruffi (*A. w.* M. E. Jones) (p. 264); *H.* amphidoxus (*A. a.* Blankinship) (p. 264); *H.* tegetarioides (*A. t.* M. E. Jones) (p. 265); *H.* amblyodon (p. 266), Alaska; *H.* hitchcockii (p. 271), Nevada; GYNOPHORARIA, type *G.* falcata (p. 280), Yukon; *Diholcos* jepsoni (*Astragalus j.* Sheldon) (p. 281); *D.* oocalycis (*A. o.* M. E. Jones) (p. 282); *Cnemidophacos* reventiformis (p. 284) and *C.* knowlesianus (p. 284), Washington; *C.* hoodianus (*Astragalus h.* Howell) (p. 285); *C.* adanus (*A. a.* A. Nelson) (p. 285); *C.* moencoppensis (*A. m.* M. E. Jones) (p. 286); *C.* sophoroides (*A. s.* M. E. Jones) (p. 286); *C.* toanus (*A. t.* M. E. Jones) (p. 287); *C.* rafaelensis (*A. r.* M. E. Jones) (p. 287); *C.* grayi (*A. g.* Parry) (p. 287); *C.* pectinatus (*A. p.* Dougl.) (p. 288); *C.* troglodytus (*A. t.* S. Wats.) (p. 288); *Xylophacos* blyae Rose (p. 303), Arizona; *X.* consectus (*A. c.* Sheldon) (p. 306); *Pterophacos* pterocarpus (*A. p.* S. Wats.) (p. 308); *P.* cinerascens (p. 309), Oregon; LONCHOPHACA (p. 312), type *L.* macrocarpa (*Phaca m.* A. Gray) (p. 312); *L.* macra (*Astragalus macer* A. Nels.) (p. 313); *L.* osterhoutii (*A. o.* M. E. Jones) (p. 313); *L.* duchesnensis (*A. d.* M. E. Jones) (p. 313); *L.* kaibensis (*A. k.* M. E. Jones) (p. 314); BATIDOPHACA (p. 314), type *B.* villosa (*A. villosus* Michx.) (p. 319); *B.* humistrata (*A. humistratus* A. Gray) (p. 315); *B.* hosackiae (*A. h.* Greene) (p. 316); *B.* tenerrima (*A. humistratus tenerrimus* M. E. Jones) (p. 316); *B.* stipulacea (p. 316), New Mexico (type) and Sonora; *B.* humivagans (p. 317), Arizona (type), Utah and New Mexico; *B.* senorae (*Astragalus s.* A. Gray) (p. 317); *B.* albula (*A. albulus* Wooton & Stand.) (p. 317); *B.* accumbens (*A. a.* Sheldon) (p. 317); *B.* g.lensis (*A. g.* Greene) (p. 318); *B.* sesquiflora (*A. sesquiflorus* S. Wats.) (p. 318); *B.* parryi (*A. p.* A. Gray) (p. 318); *B.* desperata (*A. desperatus* M. E. Jones) (p. 319); *B.* petrophila (*A. desperatus petrophilus* M. E. Jones) (p. 320); *Batidophaca* variegata (*Tium variegatum* Rydb.) (p. 320); *B.* sparsiflora (*Astragalus sparsiflorus* A. Gray) (p. 320); *B.* sabinarum (p. 320), Utah; *B.* obcordata (*Astragalus obcordatus* Ell.) (p. 321); *B.* lotiflora (*A. lotiflorus* Hook.) (p. 321); *B.* cretacea (*Phaca c.* Buckl.) (p. 322); *B.* nebraskensis (*Astragalus lotiflorus n.* Bates) (p. 322); PISOPHACA (p. 322), type *P.* flexuosa (*Astragalus flexuosus* Dougl.) (p. 324); *P.* proxima (*Homalobus proximus* Rydb.) (p. 323); *P.* sierrae-blancae (p. 323) and *P.* ratonensis (p. 324), New Mexico; *P.* diehlii (*Astragalus d.* M. E. Jones) (p. 324); *P.* flexuosa (*A. flexuosus* Dougl.) (p. 324); *P.* pinonis (*A. p.* Jones) (p. 325); *P.* elongata (*Phaca e.* Hook.) (p. 325); *P.* salidae (*Homalobus s.* Rydb.) (p. 325); *P.* hallii (*Astragalus h.* A. Gray) (p. 326); *P.* coriacea (*A. coriaceus* Hemsl.) (p. 326); *P.* gertrudis (*A. g.* Greene) (p. 326); *P.* famelica (*A. famelicus* Sheldon) (p. 326); *P.* antonina (*A. antoninus* S. Wats.) (p. 327); *P.* greenei (*A. g.* A. Gray) (p. 327); *P.* gracilenta (*Phaca g.* A. Gray) (p. 327); *P.* saundersii (p. 328), Colorado; *P.* datilensis (p. 328) and *P.* stictocarpa (p. 328), New Mexico; *P.* punicea (*Astragalus puniceus* Osterhout) (p. 328); *P.* (?) neomexicana (*A. neomexicanus* Wooton & Standley) (p. 329); *Phaca* asymmetrica (*A. asymmetricus* Sheldon) (p. 335); *P.* encenadae (p. 336), Lower California (type) and California; *P.* capillipes (*Astragalus c.* Jones) (p. 336); *P.* curtipes (*A. c.* A. Gray) (p. 337); *P.* potosina (p. 337), Mexico; *P.* oophora (*Astragalus oophorus* S. Wats.) (p. 338); *P.* jucunda Jepson & Rydb. (p. 339), California (type); and Nevada; *P.* argentata (p. 340), Nevada; *P.* siskiyouensis (p. 340), California; *P.* pinosa (*Astragalus whitneyi pinosus* Elmer) (p. 341); *P.* lenophylla (p. 341), California; *P.* nutans (*Astragalus n.* Jones) (p. 342); *P.* oocarpa (*A. oocarpus* A. Gray) (p. 343); *P.* pseudoocarpa (p. 343) and *P.* vallicola (p. 343), California; *P.* topoensis (p. 343), Lower California; *P.* parishii (*Astragalus p.* A. Gray) (p. 344); *P.* perstricta (p. 344), California (type) and Lower California; *P.* megalophysa (p. 344), California; *P.* glaberrima (*Astragalus douglasii glaberrimus* Jones) (p. 345); *P.* piscina (*A. piscinus* Jones) (p. 345); *P.* unde (p. 345), California

and Washington (?) (type); *P.* **pomonensis** (*Astragalus p.* Jones) (p. 346); *P.* **virgata** (*A. crotalariae virgatus* A. Gray) (p. 347); *P.* **nivea** (p. 348), Lower California (type) and Mexico; *P.* **miguelensis** (*Astragalus m.* Greene) (p. 348); *P.* **lutosa** (*Astragalus lutosus* M. E. Jones) (p. 349); *P.* **polaris** (*Oxytropis p.* Seem.) (p. 349); *P.* **wootoni** (*Astragalus w.* Sheldon) (p. 351); *P.* **tracyi** (p. 351), Texas (type) and Mexico; *P.* **pondii** (*Astragalus p.* Greene) (p. 351); *P.* **pardalina** (p. 352), Utah (type) and New Mexico; *P.* **zacatecana** (p. 352), Mexico; *P.* **diurna** (*Astragalus diurnus* S. Wats.) (p. 353); *P.* **triquetra** (*A. triquetrus* A. Gray) (p. 353); *P.* **insularis** (*A. i.* Kellogg) (p. 353); *P.* **arida** (*A. aridus* A. Gray) (p. 354); *P.* **vaseyi** (*A. v.* S. Wats.) (p. 354); *P.* **metana** (*A. metanus* M. E. Jones) (p. 354); *P.* **deanei** (p. 355), California; *P.* **palmeri** (*Astragalus p.* A. Gray) (p. 355); *P.* **prorifera** (*A. proriferus* A. Gray) (p. 355); *P.* **juliana** (*A. julianus* M. E. Jones) (p. 355); *P.* **arenicola** (p. 356), California; *P.* **lerdoensis** (p. 356), Mexico; *P.* **pulsiferae** (*Astragalus p.* A. Gray) (p. 357); *P.* **pychnostachya** (*A. pychnostachyus* A. Gray) (p. 357); *P.* **lanosissima** (p. 357), California; *P.* **hornii** (*Astragalus h.* A. Gray) (p. 358); *P.* **bajaensis** (*A. b.* Sheldon) (p. 358); *P.* **tularensis** (p. 358), California; *P.* **stragala** (*Astragalus stragalus* Fernald) (p. 360); *P.* **yukonis** (*A. y.* M. E. Jones) (p. 360); *P.* **prebblei** (p. 361), Alberta; *P.* **quinqueflora** (*Astragalus quinqueflorus* S. Wats.) (p. 361); *P.* **scalaris** (*A. s.* S. Wats.) (p. 361); *P.* **davidsonii** (p. 362), California; *P.* **laxiflora** (*A. preussii laxiflorus* A. Gray) (p. 363); *Atelophragma* **atratum** (p. 372), Yukon (type) and Alaska.—*R. P. Wodehouse.*

Phacomene **artemisiarum** (*Astragalus a.* M. E. Jones) (p. 383); *P.* **weiserensis** (*A. beckwithii w.* M. E. Jones) (p. 383); *P.* **pontina** (p. 383), British Columbia; *P.* **cimae** (*Astragalus c.* M. E. Jones) (p. 384); *Tium* **brevisetum** (*A. racemosus brevisetus* M. E. Jones) (p. 386); *T.* **platycarpum** (p. 387), Colorado; *T.* **stenolobum** (p. 388), New Mexico; *T.* **arthuri** (*Astragalus a.* M. E. Jones) (p. 388); *T.* **howellii** (*A. h.* A. Gray) (p. 389); *T.* **misellum** (*A. misellus* S. Wats.) (p. 389); *T.* **inyoense** (*A. inyoensis* Sheldon) (p. 389); *T.* **nevinii** (*A. n.* A. Gray) (p. 390); *T.* **traskiae** (*A. t.* Eastw.) (p. 390); *T.* **malheurense** (*A. malheurensis* A. Heller) (p. 391); *T.* **remotum** (*A. arrectus remotus* M. E. Jones) (p. 391); *T.* **leibergi** (*A. l.* M. E. Jones) (p. 392); *T.* **michauxii** (*Tragacantha m.* Kuntze) (p. 392); *T.* **terminale** (*Astragalus terminalis* S. Wats.) (p. 393); *T.* **oxytropoides** (*A. conjunctus o.* M. E. Jones) (p. 393); *T.* **sheldoni** (p. 393), Oregon; *T.* **conjunctum** (*Astragalus conjunctus* S. Wats.) (p. 393); *T.* **obscurum** (*A. obscurus* S. Wats.) (p. 394); *T.* **miserum** (*A. miser* Dougl.) (p. 394); *T.* **atratum** (*A. atratus* S. Wats.) (p. 394); *T.* **mensarum** (*A. atratus m.* M. E. Jones) (p. 395); *T.* **atratiforme** (*Hamosa atratiformis* Rydb.) (p. 395); *T.* **owyheense** (*Astragalus owyheensis* Nels. & Macbr.) (p. 395); *T.* **salmonis** (*A. s.* M. E. Jones) (p. 396); *T.* **panamintense** (*A. panamintensis* Sheldon) (p. 396); *T.* **egglestonii** (p. 396), New Mexico (type) and Arizona; *T.* **recurvum** (*Astragalus recurvus* Greene) (p. 397); *T.* **orcuttianum** (*A. orcuttianus* S. Wats.) (p. 397); *T.* **palans** (*A. p.* M. E. Jones) (p. 397); *T.* **amplexum** (*A. amplexus* Payson) (p. 398); *T.* **wilsoni** (*A. w.* Greene) (p. 398); *T.* **ursinum** (*A. ursinus* A. Gray) (p. 398); *T.* **mokiacense** (*A. mokiacensis* A. Gray) (p. 398); *Brachyphragma* **brauntonii** (*A. b.* Parish) (p. 399); *B.* **shockleyi** (*A. s.* M. E. Jones) (p. 400); *B.* **mohavense** (*A. mohavensis* S. Wats.) (p. 400); *B.* **pachypus** (*A. p.* Greene) (p. 401); *B.* **circumdatum** (*A. circumdatus* Greene) (p. 401); *Jonesiella* **sabulosa** (*A. sabulosus* M. E. Jones) (p. 402); *J.* **pattersoni** (*A. p.* Brand.; A. Gray) (p. 402); *J.* **arcta** (*A. preussii arctus* Sheldon) (p. 402); *J.* **ellisiae** (p. 403), New Mexico; *J.* **recedens** (*Astragalus r.* Greene mss.) (p. 403), Colorado; *J.* **mearnsii** (p. 403), Arizona (type), Utah and New Mexico; *J.* **rothrockii** (*Astragalus r.* Sheldon) (p. 404); *J.* **praelonga** (*A. praelongus* Sheldon) (p. 404); *Cystium* **fremontii** (*A. f.* A. Gray) (p. 407); *C.* **kennedyi (p. 407)**, Nevada; *C.* **yuccanum** (*Astragalus lentiginosus yuccanus* M. E. Jones) (p. 407); *C.* **macrolobum** (p. 408), Nevada; *C.* **nigricalyce** (*Astragalus lentiginosus nigricalycis* M. E. Jones) (p. 408); *C.* **agninum** (*A. agninus* Jepson) (p. 408); *C.* **arthu-schottii** (*A. a.-s.* A. Gray) (p. 409); *C.* **eremicum** (*A. eremicus* Sheldon) (p. 409); *C.* **vulpinum** (p. 409), Nevada (type) and California; *C.* **stramineum** (p. 409), Utah; *C.* **merrillii** (p. 410), Wyoming; *C.* **platyphyllidium** (p. 410), Oregon (type), Washington, Idaho, Nevada and California; *C.* **floribundum** (*Astragalus lentiginosus floribundus* A. Gray) (p. 411); *C.* **scorpionis** (*A. lentiginosus s.* M. E. Jones) (p. 411); *C.* **griseolum** (p. 411), Nevada; *C.* **cornutum** (p. 412), Oregon (type) and California; *C.* **ormsbyense** (p. 412), Nevada; *C.* **sierrae** (*Astragalus lentiginosus s.* M. E. Jones) (p. 412); *C.* **albifolium** (*A. lentiginosus albifolius* M. E. Jones) (p. 413); *C.* **kernense** (*A. kernensis* Jepson) (p. 413); *C.* **sesquimetrale** (p. 414), Nevada; *C.* **idriense** (*Astragalus lentiginosus idriensis* M. E. Jones) (p. 414); *C.* **tehatchapiense** (p. 414) and *C.* **pardalotum** (p. 415), California; *C.* **latum** (*Astragalus diphysus latus* M. E. Jones) (p. 415); *C.* **macdougali** (*A. m.* Sheldon) (p. 415); *Contortuplicata* **contortuplicata** (*A. contortuplicatus* L.) (p. 416); *Hamosa* **feensis** (*A. f.* M. E. Jones) (p. 421); *H.* **monophyllidia** (p. 421), Nevada; *H.* **madrensis** (*Astragalus m.* M. E. Jones) (p. 426); *Hamosa* **clariana** (*A. clarianus* Jepson) (p. 427); *H.* **francisquitensis** (*A. f.* M. E. Jones) (p. 429); *Hamosa* **hookeriana** (*A. hookerianus* D. Dietr.) (p. 435); *H.* **wrightii** (*A. w.* A. Gray) (p. 437); *Hedyphylla* **glyciphylla** (*A. glycyphyllus* L.) (p. 438); **HESPERONIX** (p. 438), type *H.* **bolanderi** (*A. b.* A. Gray) (p. 440); *H.* **accidens** (*A. a.* S. Wats.) (p. 438); *H.* **watsoni** (*A. w.* Sheldon) (p. 439); *H.* **vallaris** (*A. v.* M. E. Jones) (p. 439); *H.* **scaphoides** (*A. arrectus s.*) (p. 439); *Astragalus* **hartmanii** (p. 442) and *A.* **sanguineus** (p. 443), Mexico; *A.* **earlei** (p. 444), Texas (type), New Mexico and Mexico; *A.* **irolanus** (*A. orizabae i.* M. E. Jones) (p. 444); *A.* **pervelutinus** (p. 444), Mexico; *A.* **marcidus** (p. 446), Texas (type) and Mexico; *A.* **halei** (p. 447), Louisiana (type) to Alabama; *A.* **torreyi** (p. 448), Nevada (type), California and Idaho; *A.* **pachystachys** (*A. spicatus* Nutt., not Pall.) (p. 448); *A.* **brevidens** (p. 450), Oregon; *Hesperastragalus* **peonis** (*Astragalus diphacus p.* M. E. Jones) (p. 457).—*F. C. Gates.*

5153. SASAKI, SYUN'ITI. Miscellaneous contributions to the Flora of Formosa, VI, VII. *Trans. Nat. Hist. Soc. Formosa* 19(105): 479-485. 1929; 20(108): 163-170. 1930.—Notes on various species, including: *Corydalis formosana* v. **microphylla** (p. 482); *Pedicularis* **ikomai** (p. 164); *Anaphalis* **transnokoensis** (p. 166); *Buddleja curviflora* Hook. et Arn., new to Formosa.

5154. SCALA, AUGUSTO C. La validez del género "Magallana" Cav. y su rehabilitación. [The validity of the genus Magallana Cav.] *Rev. Mus. de la Plata* 32: 23-39. 1 pl., 21 fig. 1930.—The author defends the validity of *Magallana** as distinct from *Tropaeolum**, and points out that the proper specific name is *porifolia*, not *porrifolia*, as used by most authors. However, since the meaning of this name does not accord with the facts, he proposes a new name, *M.* **cavanillesii** (p. 25), to replace *M. porifolia* Cav. A detailed description of the plant is given.

5155. SKÄRMAN, J. A. O. Ännu ett växtställe for Viola silvestris Rchb. i Västergötland. [Another locality for V. silvestris in Västergötland, Sweden.] *Bot. Notiser* 1930(5): 408-409. 1930.

5156. SYLVEN, NILS. Quercus sessiliflora Salisb. funnen i Lurö skärgård i Värmland. [Q. sessiliflora found in the Lurö islands in Värmland, Sweden.] *Bot. Notiser* 1930(3/4): 305-307. 1930.—A brief résumé is given of its occurrence in other parts of Sweden. It is found on comparatively few of the islands and in small numbers, together with a hybrid between *Quercus sessiliflora* and *Q. robur*. The author contrasts its appearance with that of *Q. robur* and states that the hybrid has somewhat the appearance of a back-cross between an F_1 hybrid and the parent form. *Q. s.* is new to the province of Värmland and thus shows a considerable northward extension in range.—*H. K. Svenson.*

5157. VERDOORN, I. C. A revision of the Crotalarias of south and south-east-tropical Africa. *Bothalia* 2(2): 371-420. 1 map. 1928.—The area covered includes the Union of South Africa, Rhodesia, Nyassaland, and Portuguese East Africa. There is a key to the 123 recognized species but no generic sections are designated. There is an index to the species and synonyms. The following appear: *Crotalaria* **athroophylla** (p. 390), Rhodesia; *C.* **doidgeae** (p. 392), Transvaal; *C.* **ceciliae** (p. 393), Portuguese E. Africa; *C.* **friesii** (p. 405) and *C.* **shamyaensis** (p. 405), Rhodesia; *C.* **allenii** (p. 417), S. Rhodesia; *C. lachnocarpoides* var. **valida** (*C. l.* ssp. *valida* Bak. f.) (p. 395). Descriptions of the following new species and varieties are taken from the manuscript of the Transvaal flora by J. Burtt-Davy, which is ready for press: *C.* **longidens** (p. 390); *C. monteiroi* v. **galpinii** (p. 391); *C.* **cinerea** (p. 411); *C.* **brachycarpa** (*C. globifera* v. *b.* Benth.) (p. 412); *C.* **orientalis** (p. 417).—*T. D. Howe.*

5158. VESTERGREN, T. Über den Verwandtschaftskreis der Myosotis versicolor (Pers.) J. E. Sm. *Svensk Bot. Tidskr.* 24(3): 449-467. 2 fig. 1930.—The group as a whole is characterized and a note given on seed-distribution (principally by animals). Of the 5 divisions recognized, 4 are found in France, 3 in Great Britain, 2 in Sweden, 1 in Spain. The range extends easterly and southerly to Austria, the Atlas Mts., the North Balkan area, Ukrainia, Turkey and the Caucasus, and, by adventive plants, to N. and S. Amer. *M. lutea* (Cav.) Hoffmannsegg & Link. and *M. balbisiana* Jord. are redescribed. Under *M. versicolor* (Pers.) J. E. Sm. are the following subspecies: **longicalyx*** (p. 456); **fallacina*** (*M. f.* Jord.) (p. 459); **dubia*** (*M. d.* Arrondeau) (p. 463).—*J. W. Gillespie.*

5159. WORSDELL, W. C. Hybrid poppies. *Gard. Chron.* [*London*] 88(2292): 452. 1930.—A brief historical account of hybrid poppies is given, including *Papaver* **ashfordense**, a spontaneous hybrid of *P. somniferum*, and *P. rhoeas*, which was seen in 1929 in a garden (but not in 1930) in Kent, England. This is the first record of a hybrid of these spp.

5160. YAMAMOTO, YOSHIMATSU. Contributiones ad floram Formosanam. *Trans. Nat. Hist. Soc. Formosa* 19: 104-107. 1929.—*Alsophila acaulis* Makino, *Crawfurdia* **cordifolia**, *Viburnum* **yamadai** Bartlett & Yamamoto, *Patrinia glabrifolia* Yamamoto & Sasaki and *Lobelia trigone* Roxburgh are discussed.—*Author* (*courtesy Japanese Jour. Bot.*).

5161. YAMAMOTO, YOSHIMATSU. Contributiones ad floram Formosanam, III. *Trans. Nat. Hist. Soc. Formosa* 20(107): 97-105. 1930.—The 7 species listed include: *Equisetum ramossissimum* v. **taikankoense** (p. 97); *Aconitum* **bartlettii** (p. 98); *Clematis* **bartlettii** (p. 101); *Euphrasia* **matsudae** (p. 102); and *E.* **nankotaizanensis** (p. 104).

5162. ZAHN, KARL HERMANN. Hieracium 2. Lieferung 118/119 of: Synopsis der Mitteleuropäischen Flora, by PAUL ASCHERSON und PAUL GRAEBNER, fortgesetzt von P. GRAEBNER Sen. und PAUL GRAEBNER Fil. 12(2): 1-160. 1930.—This installment is devoted wholly to a treatment of part of the genus *Hieracium*. A key is given to the sections of the subgenus *Euhieracium*, and the entire systematic list of forms is arranged under the subdivisions of a general key. The treatment of each form includes synonymy, diagnosis, and distribution. The category in which each form below the rank of species belongs—whether subspecies, variety, subvariety, etc.—is not made clear. No new forms, combinations, or synonyms seem to be designated. Many hybrids are treated.

FLORISTICS AND PLANT DISTRIBUTION

5163. BALDACCI, ANTONIO. Le fonti della flora Albanese. [Sources of the Albanian flora.] *Boll. Soc. Adriatica Sci. Nat. Trieste* 29: 27-48. 1926(1927).—A study has been made of the reports of all the botanical explorations in Albania, from Pouqueville to Markgraf; their significance for a proposed flora of Albania is considered. The phytogeographical importance of such a flora is stressed and von Degen of Budapest suggested as the logical compiler.—*A. Baldacci* (*transl. by H. S. Wolfe*).

5164. DUTHIE, A. V. List of vascular cryptogams and flowering plants of the Stellenbosch Flats [Cape of Good Hope]. *Ann. Univ. Stellenbosch, Sect. A* 8(4): 5-52. 2 col. pl. 1930.—An annotated list including also 16 Pteridophyta and 2 Gymnospermae. Colored plates of *Gladiolus alatus* L. and *Microloma tenuifolium* K. Schum. are given.

5165. GAVIOLI, ORAZIO. Note sulla flora Lucana, Monte Serranetta e suoi contrafforti a sud-est di Potenza. [On the flora of Lucana, Mount Serranetta and its foot-hills southeast of Potenza, Italy.] *Arch. Bot. Sist., Fitogeog. e Gen.* 4(3/4): 186-201. 1928.—An annotated list of flowering plants, including *Linum gallicum* v. pusillum (p. 190).

5166. ISSLER, E. Contributions à la flore haut-rhinoise. 2. [Contribution to the flora of the department of Haut-Rhin, France.] *Bull. Assoc. Philomathique Alsace et Lorraine* 7(2): 113-120. 1926(1927).—Eleven species of lichens are listed. Notes are given on about 35 ferns and flowering plants.

5167. JACOT, ARTHUR PAUL. Contributions from the herbarium of the Shantung Christian University. *Jour. N. China Branch Roy. Asiatic Soc.* 61: 127-155. 2 pl. 1930.—III. Spring flowers of the Tsinan plain. Popular descriptions and ecological notes of 46 species.—IV. The Shantung dandelions. *Taraxacum mongolicum* vars. **caninum*** and **laeve*** (p. 141), and *T.* **dupex*** (p. 142), all Tsinan.—V. The violets of northeast China. Based on Becker's papers, descriptions, keys and notes on 10 spp. besides a few extra limital are given, including *Viola* **cheelooi** (p. 155). Mts. Tsinan.—*A. P. Jacot.*

5168. [KOTOV, M.] КОТОВ, М. Ботанические экскурсии в Купянский округ Харьковской губ. и в Артемовский—Донецкой губ. **[Botanical excursion into Kupiansk district, Kharkov province, and in Artemovsk district, Donets province, U. S. S. R.]** [English summary.] Журнал Русского Ботанического Общества. (*Jour. Soc. Bot. Russie*) 14(2): 175-179. 1929.—A description of some forests in this region, with lists of the vascular plants observed.

5169. [KOTOV, M.] КОТОВ, М. Ботаникогеографический очерк лесов окрестностей сл. Уразово Валуйского уезда Воронежской губ. **(Botanical and geographical notice about the woods in the environs of Urasovo village, Valouiky district, Voronezh Province, U. S. S. R.)** [English summary.] Журнал Русского Ботанического Общества (*Jour. Soc. Bot. Russie*) 14 (2): 181-186. 1929.—These small forests lie in ravines on the right sides of the Oskol and Urasovo rivers. *Quercus pedunculata* Ehrh. is prevalent, also *Corylus avellana* L. shrubbery; where the forest has been cut down *Salix caprea* L. grows. The forest borders are rich in steppe-plants, e.g., *Clematis integrifolia* L., *Anemone silvestris* L., *Vinca herbacea* W. K., *Adonis vernalis* L., *A. wolgensis* Stev., *Geranium sanguineum* L., etc. In the thickets *Lithospermum purpureo-coeruleum* L., *Viola elatior* Fr., *Aristolochia clematitis* L., etc., are common. *Cephalaria tatarica* Schrad., *Gymnadenia conopsea* R. Br., *Platanthera bifolia* Rich., etc., occur rarely. Here and there along the forest edges on the ravine slopes are chalk outcrops where grow *Clematis pseudoflammula* Schm., *Matthiola fragrans* DC., etc. The forests are in deplorable condition due to ruthless cutting.

5170. POWERS, W. H. Flora of the Upper Missouri Valley. *Proc. South Dakota Acad. Sci.* 11(7): 85-100.—From the collection of early explorers, Lewis and Clark, Bradbury and Nuttall, as studied by the last and by Pursh, there has been compiled an alphabetical list of 260 species of spermatophytes. The identifications have been revised, both by the authors and Arthur T. Evans. Each entry gives the collector's statement of the plant's occurrence.

5171. ST. JOHN, HAROLD, and EDITH HARDIN.

Flora of Mt. Baker. *Mazama* 11(12): 52-102. 3 pl., 20 fig. 1929; also a corrected reprint, C. S. English, 1586 Chatham St., Portland, Oregon.—Mt. Baker, 10,750 feet in height, is a western spur of the Cascade Mts. in Washington. It is within 13 miles of the Canadian boundary. There is given, in non-technical language, an account of the vegetational areas on the mountain: the lower forest, the upper forest, the mountain meadows, and the alpine region. Earlier collectors on the mountain were M. W. Gorman and G. W. Turesson. Complete keys are included, as well as descriptions, habitats, and abundance for the 334 species of pteridophytes and spermatophytes. These include: *Agrostis hyemalis* v. geminata St. John (*A. g.* Trin.) (p. 63); *Poa* englishii (p. 64), Mt. Baker; *Anemone occidentalis* v. subpilosa Hardin (p. 73), Mt. Baker; *Saxifraga ferruginea* f. vreelandii St. John & Thayer (*Spatularia* v. Small) (p. 77); *S. mertensiana* v. glandipilosa (p. 77), Washington (type), Idaho, and Oregon; *Lomatium* angustatum St. John (*Peucedanum martindalei* var. *a.* C. &. R.) (p. 83); *Mimulus lewisii* f. leuceruthrus Hardin (p. 88), Mt. Baker; *Penstemon diffusus* f. albiflorus Hardin (p. 89), Mt. Baker; *Antennaria* gormannii St. John (p. 92), Mt. Baker; *Aster* bakerensis St. John (p. 93), Mt. Baker; *Senecio triangularis* v. trichophyllus (p. 95), Washington (type) and British Columbia.—*H. St. John.*

5172. **STECKI, K., i K. ZALESKI. Parietaria officinalis L., Geranium sibiricum L. i inne rośliny, jako pozostałości dawnego Botanicznego Ogrodu Licealnego w Krzemieńcu. [P. officinalis L., G. sibiricum L., and other plants as relicts of the earlier Lyceum Garden in Krzemieniec, Poland.]** [With German summary.] *Kosmos* [*Lwów*] 53(4): 680-684. 1 fig. 1928(1929).

5173. **SVENSON, HENRY K. Report on a botanical exploration trip to the Galapagos Islands.** *Brooklyn Bot. Gard. Rec.* 19(6): 269-284. 6 fig. 1930.—This is the administrative report of the botanist of the Astor Expedition to the Galapagos Islands, March 23–May 2, 1930. Herbarium specimens with duplicates were collected to the amount of about 500 members of flowering plants and ferns, collected chiefly on Indefatigable and Cocos Islands, "including at least fifty species that have not previously been reported from these islands."—*C. S. Gager.*

5174. **TORO, RAFAEL A. Una contribucion a nuestro conocimiento de la flora silvestre y cultivada de San Andrés. [A contribution to our knowledge of the wild and cultivated flora of San Andrés, Caribbean Sea.]** *Rev. Soc. Colombiana Cienc. Nat.* 4(103): 201-207. 1929. —This island has few indigenous species, and most of them resemble those of the Antilles; 96 angiosperms are listed.

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in this issue Entries 3050, 3065, 3066, 3170, 3172, 3183, 3185, 3189, 3200, 3211, 3218, 3228, 3236, 3478, 4738, 4905, 4911, 4926, 4941, 4943, 4969, 5221, 5244)

5175. **BUCHHOLZ, JOHN T. The dissection, staining, and mounting of styles in the study of pollen-tube distribution.** *Stain Tech.* 6(1): 13-24. 8 fig. 1931.—The methods here outlined, given in general in previous publications, are summarized with special reference to *Datura* styles. Pistils, artificially pollinated and kept at 18-22° C., are slit along 2 sides, scalded ½-2 min. in water at 70-75° C., and killed by immersing several hours in 50% alcohol containing 6% formalin. Within 12 hours of killing, they are dissected with needles and forceps under a wide-field binocular microscope, removing the cortex from style and stigma. The strand of conducting tissue thus separated is stained within 24 hours of dissection in a watch-glass containing a mixture of 8 parts 1% aqueous acid fuchsin and 2 parts 1% aqueous or alcoholic light green. Staining requires 3-6 hours, and may be continued over night if stain is not too concentrated. The strand of tissue is cleared several hours or overnight in 80% lactic acid, carefully spread out on a slide, and mounted in lactic acid. After a few days the preparations are sealed around the edges of the cover-glasses with damar in xylol or paraffin which has gum mastic added to it.—*Author* (*courtesy Wistar Bibl. Serv.*).

5176. **CHANDLER, CLYDE. A method for staining pollen-tubes within the pistil.** *Stain Tech.* 6(1): 25-26. 1931.—Pistils are collected after pollination and immediately killed (6 to 7 cc. formalin in 100 cc. 70% alcohol), and may be examined promptly or stored. For pistils with a central canal: Place entire style on glass slide and split longitudinally with needles along one side to the central canal. Spread cut surfaces apart. Place a drop of aceto-carmin (saturated solution in warm 45% acetic acid) on exposed surface. After a few seconds, add a drop of saturated aqueous magenta. Remove excess stain with blotting-paper. Destain by passing absolute alcohol over the style and absorbing it at the basal end with blotting-paper. For solid pistils: If the style is short and thick, free-hand sections may be made and placed on the slide. In some cases (*Brassica* and *Convallaria*) the entire pistil may be thus sectioned and stained. If tissue differentiation is difficult, a drop of anilin blue may be added just before the magenta.—*Author* (*courtesy Wistar Bibl. Serv.*).

5177. **CHIARUGI, A. Osservazioni embriologiche sulla partenocarpia in Zizyphus sativa Gaertn.** *Atti Soc. Ital. Progr. Sci. 18ª riunione, Firenze, Settembre,* 1928; **Partenocarpia in Zizyphus sativa Gaertn.** *Nuovo Gior. Bot. Ital.* 37: 287-312. 21 fig. 1930.—Author describes parthenocarpy in *Z. sativa* of Chinese origin, which showed distinct dimorphism of mature drupes, small sterile ones and large drupes with embryos in the seeds. It was found in lesser degree in native *Z. sativa* and in *Z. lotus.* Ovules of parthenocarpic *Z. sativa* were sterile due to absence of fertilization and not because of embryo abortion. This is believed to be the first contribution to cytology and embryology of the Rhamnaceae with ♀ gametophyte developing according to *Scilla* type. Parthenocarpy in *Zizyphus* may be considered an hereditary character, revealed when environmental conditions impede sexual functioning.—*H. D. Hill.*

5178. **CHUTE, HETTIE M. The morphology and anatomy of the achene.** *Amer. Jour. Bot.* 17(8): 703-723. 3 pl. 1930.—The achene (studied in numerous species of Ranunculaceae and Rosaceae) has been derived from the follicle by reduction. The morphological changes are a marked decrease in the size of the carpel and in the number of ovules per carpel, the multiovular carpel becoming uniovular. In some forms ovular traces to suppressed ovules occur; in other forms abortive ovules without vascular tissue; and in still others, rudimentary ovules. The anatomical changes involve the reduction of the vascular tissue both in the number of traces which a carpel receives and in the traces themselves within the carpel. All stages of reduction from the typical 3-trace follicle to the most simple 1-trace achene are shown in a series of pistils in the Ranunculaceae and Rosaceae. Reduction of the vascular tissue has accompanied reduction in number of ovules, and in size of carpel.—*H. M. Chute.*

5179. **COLLINS, J. F. On changing the direction of sap conducting tissues.** *Rhodora* 32(380): 145-146. 1930. —Report of experiments on chestnut trees in which (1) zigzag grains were produced in the wood by removing portions of the bark; (2) spiral conduction was induced and spiral grain in wood resulted from cutting a spiral groove around the trunk; (3) the grain of newly formed

wood and bark was turned as much as 50-87° from the perpendicular by cutting grooves through the bark.—*S. F. Blake.*

5180. CZAPLA, KARL. Seltene Erdmetalle im Dienste der Pflanzenaschendiagnostik. 1. Aschenpräparation von Zellstoffen der Papierindustrie mittels Lösungen seltener Erdmetalle. *Faserforschung* 8(4): 238-254. 2 pl. 1930.—A method for impregnating plant fiber materials, especially celluloses used in the paper industry, incorporates small amounts of the rare earth metals, cerium and thorium. The mineral skeleton yields on ashing an ash picture useful for identification of the celluloses. Animal fibers, resisting impregnation, can be distinguished from plant fibers in textiles. Old paper, because of fillers and deformations resulting from grinding, yields no usable ash picture. An identification key for celluloses can be made by associating, with the ashing, measurement of width of tracheids and fibers in the ash.—*N. E. Pfeiffer.*

5181. ELFORD, F. G. The palisade cells of the seed coat of Albizzia lophantha. *Proc. Roy. Soc. Victoria* 42(2): 92-98. 3 fig. 1930.—The seed coat can be successfully sectioned after soaking at least 1 week in HF, and by transferring quickly through the alcohols and chloroform to paraffin. Safranin and light green in combination are suitable stains to differentiate the structure of the testa. One layer of palisade cells forms the epidermis. In the cavity of each palisade cell is a highly transparent globule of a waxy nature. These globules appear to be arranged in a distinct line across the cells. They dissolve slowly in wax solvents, are stained on the exterior by fat stains, and have a high melting point. A layer of hour-glass cells separates the epidermal layer from the inner layers of the integument.—*Author's summary.*

5182. EVANS, A. T., and I. H. CROWELL. Cutting microscopic sections of wood without previous treatment in hydrofluoric acid. *Stain Tech.* 5(4): 149-150. 1930.—A review of a paper by Kisser proposing softening of wood by steam is followed by a description of a similar method worked out independently by the junior author. Water is boiled slowly in an Erlenmeyer flask, from which the vapor is led to the microtome through a small copper tube in which there are a few coils. A Bunsen burner beneath the coils vaporizes the water before it leaves the tube. The steam flows over the piece of wood to be sectioned; up to 500 sections of very hard wood have been cut with a single sharpening of the razor. A possible improvement in using tubing of aluminum or monel metal instead of copper is suggested. —*Authors (courtesy Wistar Bibl. Serv.).*

5183. FUNKE, G. L. On the biology and anatomy of some tropical leaf joints II. *Ann. Jard. Bot. Buitenzorg* 41(1): 33-62. 10 pl. 1930.—One or more well developed leaf joints are typical of tropical plants, both trees and lianas. Most families and genera are characterised by the arrangement and structure of these joints. As to location and number, at least 15 types can be distinguished. Anatomy shows 4 distinct types, which can be distinguished by the arrangement of the vascular bundles. When there are more joints per leaf than 1, their anatomy is mostly the same. When outwardly the type is very complicated, the anatomy need not therefore also be complicated. Though outwardly the joints are often hardly visible, there are certain constant general structural characteristics: pericycle absent, starch sheath present, vessels narrow, probably higher osmotic pressure. Idioblasts and crystals occur frequently, but by no means generally. Probably the joints are of the utmost importance for the light position of the leaves.—*Author's summary.*

5184. GOURLEY, J. H. Basic fuchsin for staining vascular bundles. *Stain Tech.* 5(3): 99-100. 1930.—Plants are removed from the soil, their roots washed and immersed for 24-48 hrs. in a basic fuchsin solution prepared by dissolving 50 mgm. of the dye in 2 cc. 95% alcohol and diluting with 100 cc. tap-water. After removing, wash with water and (1) dissect under a binocular microscope after boiling in water or a very dilute KOH solution, or (2) clear (10-12 hrs.) by running through alcohols and then mixtures of alcohol and xylol into pure xylol.—*Author (courtesy Wistar Bibl. Serv.).*

5185. HORTLEDER, ALMA. Some anatomical features of Sorbopyrus auricularis. *Trans. Kansas Acad. Sci.* 33: 29-30. 1930.—An anatomical description of this generic hybrid (*Sorbus aria* × *Pyrus communis*) followed by detailed comparisons with each parent and statements of differences from both parents.—*F. C. Gates.*

5186. KOCH, MINNA F. Studies in the anatomy and morphology of the composite flower I. The corolla. II. The corollas of the Heliantheae and Mutisieae. *Amer. Jour. Bot.* 17(9): 938-954; (10): 995-1010. 4 pl., 5 fig. 1930.—I. A primitive gamopetalous corolla of 5 petals usually has a vascular supply of 15 bundles (10 lateral, 5 median). The venation in a primitive corolla of a disk floret of the Compositae consists of 10 bundles (5 fused lateral, 5 median). Reduction from this primitive condition (15 bundles) to a type having 5 bundles can be traced. Venation types in the ray corollas are termed "Aster," "Heliantheae," and "Bilabiate." The "Aster" type usually has 4 bundles; the "Heliantheae" type 8 or 9, and 2 or 3 other prominent large bundles which differ from the first group; the "Bilabiate" type, found in the Mutisieae, has the venation of a disk corolla supplying a strap-shaped lobe and 2 shorter lips which spread laterally. *Aster laevis* is used as an example of the anatomy of the floret. 5 to 10 strands given off from the floral stele in the base of the disk floret furnish the vascular supply of the floret. This is also the situation in the ray corolla. The reduction of the bundle system of the floret is traced in *Aster* and *Senecio*. It is shown that the split in the ray corolla takes place at a point where a fused lateral bundle has aborted or divided. The ray corolla is a modification of the disk corolla and shows the same fundamental structure as found in the latter.—II. The ray "corolla" of the Heliantheae constitutes a structure which consists of a typical composite corolla plus part of a reduced calyx, 2 or 3 appressed bundles. The calyx and corolla have apparently become fused and the vascular supply of these floral whorls united in part. *Bidens cernua* is used as an example in the Heliantheae to show the presence of these appressed bundles on the dorsal surface of the ray corolla. The bilabiate corolla of the Mutisieae is believed not to be the intermediate form from which the ray corolla has been derived, as indicated by: (1) the tip lobing of the ray corolla; (2) division of the lobes of the corolla of *Centaurea;* (3) variation of the corollas of the Mutisieae; (4) vascular anatomy of the ray corolla.—*M. F. Koch.*

5187. KUMAZAWA, MASAO. Studies on the structure of Japanese species of Ranunculus. *Jour. Fac. Sci. Imp. Univ. Tokyo. Sect. 3. Bot.* 2(3): 297-343. 2 pl., 18 fig. 1930.—16 species of Japanese *Ranunculus* (½ endemic to Japan) were studied anatomically. The course of the vascular bundles of the stem was traced in many species. The vigorous species are rather complicated in this respect because of the large number of leaf trace strands. The vascular arrangement does not suggest phyletic relationship in this group. Two types of leaf trace strands were found: (A) those running from the petiole down without fusing, as a rule, with any stem strand, at least in the 1st internode; (B) those fusing with stem strands immediately below their entrance into the stem. The strands of these 2 categories were examined in each species and their behavior and significance are discussed. The ontogeny of these strands was studied, and 2 nodal conditions were found: in the seedlings of most species, each of the 3 traces of a leaf forms a gap of its own, while in *R. zuccarini* the 3 strands depart from a common gap. It seems that in this genus the trilacunar and unilacunar conditions of the node are closely related; one condition may change readily to the other, even in the same plant, by the dislocation of the point of exit of the leaf trace strands, the partial fusion of the leaf trace strands with the stem strands, and by the appearance of new leaf gaps. The vascular supply of

the floral organs was also traced. Stem bundles are, in some species, entirely surrounded by mechanical sheaths, so that cambial activity is greatly restricted. Such a sheath is not common in dicotyledons, but is prevalent among monocotyledons. It is called the *Ranunculus* type. *R. sceleratus* and other species do not possess such sheaths, and show no tendency to develop them. These bundles, rather rare in *Ranunculus*, are called the *Anemone* type. This type is probably more primitive than the former in this genus. Probably environmental conditions, particularly humidity of the substratum, exert the greatest influence upon the appearance of structural divergences. If phylogenetically considered from various points of view, *R. sceleratus* may be regarded as probably one of the most primitive representatives of the genus.—*M. Kumazawa.*

5188. **LEANDRI, JACQUES. Recherches anatomiques sur les Thyméléacées.** *Ann. Sci. Nat. Bot.* 12(1): 125-237. 26 fig. 1930.—Some abnormal characters of the conducting tissues were studied. Sieve-tubes are described and compared in normal phloem and in medullary and interxylary strands. The sieve-tubes of the anomalous phloem show by their structure that they conduct elaborated sap. Differentiation of these strands is not uniform, but they do not arise from pith cells. Interxylary strands constitute the continuation of the phloem of the leaves, and show different characters in Aquilarioideae and Thymelaeoideae. Structural anomaly in some subterranean stems was also studied. None of these anomalies seems to be pathologic in nature, nor are they dependent upon climatic conditions. Anatomy of flowers and buds demonstrates the petaloid nature of the throat scales; the fact that the flower tube is formed by united appendages and not by intussusception of axis; and the presence of an articulation in the pedicel in most cases. It shows clearly the remoteness of the Octolepidoideae, and the relationship of other members of the Thymelaeaceae to the Elaeagnaceae and some groups of the Rosaceae. The Thymelaeaceae are not related to the Lythraceae, Lauraceae, and Combretaceae.—*J. Leandri.*

5189. **LLOYD, FRANCIS E. The structure of the trap of Utricularia capensis.** *Jour. Bot. Soc. S. Africa* 1930 (16): 5-10. 5 fig. 1930.

5190. **MAHESHWARI, PANCHANAN, and UDAI BHAN SINGH. The development of the female gametophyte of Asphodelus tenuifolius.** *Jour. Indian Bot. Soc.* 9(1): 31-39. 3 pl., 3 fig. 1930.—The plant is a common winter weed in N. India. The archesporial cell cuts off a primary wall cell, which divides by anticlinal walls. Walls are formed after each division in meiosis; the innermost megaspore functions, in the usual way. The embryo sac is broad. The polar nuclei fuse in the upper part of the sac, but the fusion nucleus migrates to the chalazal end. The synergids degenerate early. The wall cells disappear at about the 4-nucleate stage of the embryo sac, which then comes into contact with the epidermis. The primary endosperm nucleus divides before the egg, and forms a free-nuclear endosperm. The embryo is of the usual *Lilium* type. The aril, or 3rd integument, begins to develop from the chalazal end of the nucellus at the 4-nucleate stage, and completely surrounds the ovule after fertilization. Degeneration in the embryo sac from the 4-nucleate stage onward was observed in a small percentage of flowers.—*W. Dudgeon.*

5191. **MANN, C. E. T. Studies in the root and shoot growth of the strawberry. V. The origin, development, and function of the roots of the cultivated strawberry (Fragaria virginiana × chiloensis).** *Ann. Bot.* [*London*] 44(173): 55-86. 4 pl., 7 fig. 1930.—Development of the runner and the root system is described. Adventitious roots arise from small groups of meristematic cells within the stele, alternating with the primary vascular strands and between the outer pericycle tissue and the medullary tissues of the center of the stele. These groups are observed in greatest number in the region of departure of the leaf-trace bundles. Differentiation of the apical meristem of the root occurs before the differentiation of the secondary vascular cambium of the stem in the majority of cases, differing in this respect from that recorded in other plants. The initiation of root meristems in the stem occurs during periods of vigorous growth, characterized by the absence of excess carbohydrates and a low dry matter content of the tissues. Further development of the roots follows on a period of carbohydrate accumulation as indicated by deposition of starch in the storage parenchyma of the plant as a whole, and a marked increase in dry matter content. When vigorous growth of the shoot occurs simultaneously with a readily available supply of carbohydrate materials, as in the case of the young "runner" plant, further development of root meristems follows closely on their initiation. The development of a specialized polyderm forms a very characteristic feature of the older main roots, which continue to develop secondary tissues and function little as absorbing organs after their first season's growth. No polyderm development was observed on the majority of the lateral roots and they became largely functionless with the formation of new adventitious roots in the later summer and autumn. In the primary condition of the root, starch accumulates in the cortex; in roots showing secondary developments of phellogen and vascular tissues, the phelloid cells of the polyderm form the chief region of starch deposition. Accumulation occurs as the dormant season is approached, and again during the month of June and in early July. Depletion takes place in the spring and in late July, during periods of vigorous new root development.—*G. M. Darrow.*

5192. **MONOYER, A. Les variations vasculaires dues à la manière d'être des feuilles et l'établissement des types de structure.** *Bull. Soc. Roy. Bot. Belgique* 62(1): 69-72. 1929(1930).—A review and critique.

5193. **NEBEL, B. R. Xenia and metaxenia in apples.** *New York State* [*Geneva*] *Agric. Exp. Sta. Tech. Bull.* 170. 16p. 5 fig. 1930.—It is shown that 2 apples on the same tree originating from different kinds of equally efficient pollen are not strictly alike. The dissimilarities were found in several characters of the apple, such as height, breadth, color, weight, and seed length, and it is assumed that they may extend to all remaining characters of the apple, which, however, will be very difficult to prove. The dissimilarities are very slight and can be detected only with refined methods of measurements on series of individuals.—*B. R. Nebel.*

5194. **NEBEL, B. R. Lacmoid-martius-yellow for staining pollen-tubes in the style.** *Stain Tech.* 6(1): 27-29. 2 fig. 1931.—Material collected in small vials is kept from drying out by the addition of a drop of water. Slender styles and ovaries are crushed between 2 slides; larger ones are first sectioned longitudinally by hand. The material is stained in 5 mgm. lacmoid and 5 mgm. martius yellow dissolved in 10-15 cc. water, with reaction adjusted to pH 8 by adding a few drops of 1% solution of ammonia (making staining fluid deep olive-green). After 2-5 minutes, the material is mounted in the stain or else in water of same reaction. To make permanent mounts the following procedure may be followed: (1) Crush, dissect, or otherwise prepare fresh material; (2) fix material in Carnoy's solution; (3) transfer via 70% alcohol to alkaline water; (4) wash thoroughly in tap-water to remove all acid or excessive alkali; (5) transfer to stain for 1-5 minutes; (6) Dehydrate rapidly in alcohols containing lacmoid in solution in its blue modification (pH 8); (7) mount in balsam via xylol or in cedar oil. The latter mount should be sealed.—*Author* (*courtesy Wistar Bibl. Serv.*).

5195. **NOACK, KONRAD L. Untersuchungen an Pelargonium zonale "Freak of nature."** *Zeitschr. Bot.* 23: 309-327. 4 fig. 1930.—Leaves of this race have a white center and green border of varying width, with veins and petioles mostly colorless. There is no periclinal or sectorial arrangement of the green and colorless portions. The variegation is inherited through the egg cells as well as the pollen. In crosses with other races, spotted seedlings occur which cannot be distinguished from spotted forms in crosses of white-coated forms. From this it is concluded that the origin of the variega-

tion of the parent plant and the colored seedlings can be explained not through variously colored independent plastids but through physiological peculiarities.—*K. L. Noack (transl. by H. D. Hill).*

5196. PARKIN, JOHN. The structure of the starch layer in the glossy petal of Ranunculus. *Ann. Bot. [London]* 45(177): 201-205. 9 fig. 1931.—The cells composing the starch layer in the glossy petal of the 4 spp. of *Ranunculus* investigated take an unexpected oblique course, thus presenting in transverse section the appearance of a layer 2-3 cells deep, though in reality only 1 cell thick. The development of the layer in the petal of *R. ficaria* has been followed in detail. The direction of the slope of the starch cells in *R. acris, R. bulbosus,* and *R. repens* runs in the opposite direction to that in *R. ficaria.* There may, therefore, be considerable variety in the structure of the starch layer in the genus, perhaps useful in working out a phylogenetic scheme for the genus.—*Author's summary.*

5197. PETCH, T. Buttress roots. *Ceylon Jour. Sci. Sect. A. Bot., Ann. Roy. Bot. Gard. Peradeniya* 11(3): 277-285. 4 pl. 1930.—From observations on *Poinciana, Ficus, Canarinum, Cedrela, Tarrietia, Weinmannia* and *Ceriops,* the hypothesis is advanced that the presence of buttressed roots is associated with a deficient tap root and the formation of the buttresses is due to the restriction of the food and water currents to limited narrow regions of the stem continuous with the lateral roots.—*J. E. Cribbs.*

5198. RITTER, GEO. J. Wood fibers. *Jour. Forest.* 28(4): 533-541. 12 fig. 1930.—The location of 2 forms of lignin in woody tissues is described and figured, together with the several layers into which the cell wall of a wood fiber can be separated by treatments with NaOH and phosphoric and sulphuric acids. The individual layers can in turn be separated into fibrils and the fibrils into regularly shaped, fusiform bodies. The physical reactions and optical properties of these various parts are described and discussed.—*P. C. Wakeley.*

5199. RITTER, GEO. J., and R. M. SEBORG. Newly discovered microscopic structural units of wood fibers. *Indust. & Eng. Chem.* 22(12): 1329. 1930.

5200. SAINT-LAURENT, J. de. Etudes sur les caractères anatomiques du liber secondaire dans les essences forestières d'Algerie. [Anatomy of secondary phloem in the forest species of Algeria.] *Bull. Sta. Rech. Forest. Nord Afrique* 1(10): 421-516. 18 pl., 48 fig. 1930.—Suggestions for preparing wood and bark for photomicrographs are followed by a key for the anatomical determination of the secondary phloem of 119 forest species indigenous to Algeria and Tunis belonging to 44 families. A comprehensive synoptic table of the anatomical elements and a table of the chief characteristics of structure by species summarize the findings. Bibliography of 29 titles.—*J. Kittredge, Jr.*

5201. SAXTON, W. T. Notes on conifers. V. Erect and exserted seeds in Sequoia gigantea, Torrey. *Ann. Bot. [London]* 44(174): 415-417. 4 fig. 1930.

5202. SCHNARF, KARL. Zur Kenntnis der Samenentwicklung von Roridula. *Österreich. Bot. Zeitschr.* 79 (2): 180-182. 2 fig. 1930.—The ovary consists of 3 distinct loculi. The ovules are "apotrop" suspended. The ovule has 1 integument, directly surrounding the embryo sac, only a few nucellar cells being present at the chalazal end. Earlier stages were not available to determine history of the nucellus. The embryo sac is of the usual constitution. The endosperm is described but not its development, material for which was lacking.

5203. SHULL, C. A. Occurrence of multiple-seeded Xanthium in Australia. *Bot. Gaz.* 89(3): 310-311. 1930.

5204. SMITH, FRANK H. The corm and contractile roots of Brodiaea lactea. *Amer. Jour. Bot.* 17(9): 916-927. 3 pl. 1930.—The general structure and seasonal development of the corm are described. A new corm is produced each year from the terminal bud of the old corm. Also in Sept. or Oct. axillary buds appear at the nodes of the old corm, forming offsets. Each offset develops a single contractile root which draws the cormlet downward and away from the parent corm. The next year adventitious nutritive roots are produced by this offset but never another contractile root. The contractile roots, 4-15 cm. long, may contract 75% of the original length. Lateral roots do not appear. The contraction proceeds as follows: (1) The cortical cells decrease in length and increase in radial and tangential measurements; (2) a collapse of cells begins in certain portions of the cortex and a distortion of the stele than results from the turgor of the remaining cells. The distribution of the collapsed cells is irregular. (3) This collapse continues until there are only 2 or 3 rows of turgid cells separated by wide bands of collapsed tissue. The turgid cells tend to become rounded as the pressure of the surrounding tissue is relieved. The cause of the changes in the relative diameters of the cells and of the irregular collapse of tissue was not determined. The only functions of the contractile roots of *B. lactea* are absorption and the anchoring and lowering of the offset into the soil.—*F. H. Smith.*

5205. SNELL, K., und J. Fr. PFUHL. Beitrag zur Morphologie und Systematik der Weizensorten. *Mitteil. Biol. Reichsanst. Land- u. Forstw.* 39. 5-37. 3 fig. 1930. —Among the varieties of *Triticum vulgare* the young plants present types of growth from the recumbent to the upright Japhet type. Among the older plants, the gray waxy layer of culm, blade and ear separates certain varieties. Among the characters of the ears are the awns, density, form, hairiness and color. An important character is the form of the tooth and the margin of the empty glume. The tooth is either straight or bent and the margin is either horizontal or oblique. Taxonomic features are the natural color of grain and the color after a phenol solution treatment. One classification is based on the color of the grains; a second, on characteristics of ears and color of non-treated grains.—*K. Snell (transl. by J. M. Haber).*

5206. SNELL, K. Vorarbeiten zu einer Sortenkunde der Futterrüben. *Mitteil. Biol. Reichsanstalt Land- u. Forstw.* 39. 63-79. 2 pl., 1 fig. 1930.—Form and color of *Beta vulgaris* are most important features. The shape may be rod, olive, cylindrical, globose or oblate. The underground portion is orange-yellow, dark red or white. In general the leaves are green, but produce varietal differences in the yellow or red color of the costa or the petiole. The green sprouts are red-spotted or striped. The seeds and fruits are similar in all varieties, but the color varies from green to yellow-green, orange-green, orange-red, rose, light bluish red, vermilion to dark bluish red. The varieties are arranged in 11 groups based on above characteristics; 90 varieties are listed as to breeders and regions.—*K. Snell (transl. by J. M. Haber).*

5207. STOKEY, ALMA G. Prothallia of the Cyatheaceae. *Bot. Gaz.* 90(1): 1-45. 186 fig. 1930.—Under favorable conditions the plate stage follows very quickly after germination; there is ordinarily no filament left at the base of the prothallium. The mature prothallium usually is longer and the cushion heavier than in the Polypodiaceae. Forking of the cushion of the prothallium occurs frequently in old cultures, and in certain species may occur in relatively young prothallia. Multicellular hairs developed more or less abundantly on mature prothallia of all species of *Alsophila, Hemitelia,* and *Cyathea,* and rarely on *Lophosoria.* None were found on *Thyrsopteris, Culcita, Cibotium,* or *Dicksonia.* The multicellular hair arises from a special initial, a wedge-shaped cell cut from the anterior face of a superficial cell near the apical meristem. The hairs are found on both dorsal and ventral surfaces, on or near the cushion, but not on the margin. The hairs may reach a length of 2 mm. The wall of the antheridium typically consists of 5 cells: an oblique basal cell, a lower ring cell with a "binding wall" on one side, an upper ring cell, an opercular cell, and a crescent-shaped cell formed by the division of the cap cell. Many variations from this type occur. The antheridia of *Lophosoria* are larger and less symmetrical than those of *Alsophila, Hemitelia,* and *Cyathea.* Those of *Thyrsopteris* are the largest and

least symmetrical of the family, ordinarily not conforming to the type just given. The antheridia of the Dicksonieae are usually larger than those of the Cyatheae. The necks of the archegonia in the Cyatheae are straight or slightly curved; they have more cells in the neck and are longer than those of the Polypodiaceae. Those in the Dicksonieae and *Thyrsopteris* are longer than those of the Cyatheae, and are more apt to be recurved. The walls of the neck cells are more or less cutinized. The neck contains 2 neck canal nuclei not separated by a wall. Archegonia with 4 neck canal nuclei were found in all species. Apogamous growths were found in *Lophosoria quadripinnata, Alsophila excelsa, A. armata; Hemitelia parvula, Cyathea medullaris, C. dealbata, Thyrsopteris elegans, Dicksonia squarrosa, Cibotium barometz,* and *C. schiedii.* The evidence from the gametophyte indicates that the family Cyatheaceae, in the broader sense, is not a natural group, but is of polyphyletic origin.—*Author's summary.*

5208. VEH, ROBERT von. Untersuchungen und Betrachtungen zum Blattstellungsproblem. *Flora* 25(1): 83-154. 23 fig. 1930.—The author considers that the causal standpoint, introduced into phyllotaxis by Hofmeister, has given negative results, as witnessed by our inability to recognize the internal factors determining the emergence of successive leaf initials. He follows instead the methods of formal morphology which, in Goebel's recent interpretations of whorled leaves, led the author to the view that all monocotyledon leaf positions could be derived from a 2-ranked, all dicotyledons from a 4-ranked, decussate, phyllotaxis. Veh confirms Goebel's views as the result especially of intensive studies of species of *Costus,* which have apparently a 1-ranked spiral arrangement, but which he shows, by study of seedlings and young lateral shoots, derives from an originally 2-ranked system. Veh argues that the shoot has an autonomous tendency to develop, either along straight (orthodrome tendency) or spirally curved (spirodrome tendency) lines. He concludes that the original monocotyledon half system or dicotyledon decussate system may be modified by the operation of the following factors: (1) A primary factor determining the number of leaves arising simultaneously at the apex (in the monocotyledon 1, in the dicotyledon, 2); (2) the orthodrome, or spirodrome, tendency; (3) a secondary whorl formation as the result of the interpolation of internodes by longitudinal extension.—*J. H. Priestley (from abst. by R. v. Veh).*

5209. VOSS, JOHN. Die Untersuchung der Keimpflanzen als Hilfsmittel der Sortenfeststellung beim Weizen. *Mitteil. Biol. Reichsanst. Land- u. Forstw.* 39: 39-62. 6 fig. 1930.—Coloration of coleoptile and cotyledon, hairiness and type of growth including position and attachment of first foliage leaves, showed varietal differences. The first 2 of these characters can best be observed in seedlings grown in the greenhouse, the others in plants grown in the field. The characters are useful in varietal determination when the plants are grown under definite and not too extreme conditions. Summer and winter varieties of *Triticum vulgare* were divided on the basis of seedling coloration. Two groups with further subdivisions were made on the basis of degree of anthocyanin development; 3 groups were formed on the basis of hairiness, and 3 on the basis of development of the first leaves.—*From author's summary (transl. by H. D. Hill).*

5210. WEATHERWAX, PAUL. The ontogeny of the maize plant. *Bull. Torrey Bot. Club.* 57(4): 211-219. 1930.—This paper is chiefly a résumé of work previously published by various authors. The new material presented has since been published, with illustrations, in *Amer. Journ. Bot.* 17: 371-380. 1930.—*P. Weatherwax.*

5211. WEISS, F. E. Note on the Crataegomespili of Saujon. *Mem. & Proc. Manchester Lit. and Phil. Soc.* 74: 89-95. 1 fig. 1930.—After examination of *Crataegomespilus bruni* and *C. bonnieri,* graft hybrids between hawthorn and medlar, the author concludes that, as in the case of the Crataegomespili of Bronvaux described by Haberlandt, these cannot be considered as pure periclinal chimaeras, since the epidermal cells are intermediate between those of the two parents instead of like those of the medlar.—*A. M. Taylor.*

5212. WEISSE, ARTHUR. Der morphologische Aufbau von Corchorus und Corchoropsis. *Jahrb. Wiss. Bot.* 70 (2): 163-180. 10 fig. 1929.—The central stem of the inflorescence in *Corchorus* is a sympodium. The primary axis of the plant bears the cotyledons and a number of foliage leaves arranged in a spiral with a single flower at the end. This flower is pushed aside by the growth of a branch in the axil of the preceding leaf so that it appears to be opposite this leaf. This branch bears a scale leaf, a foliage leaf, and 3 bracts arranged in a spiral, and terminates in the 2nd flower of the inflorescence. It is also pushed aside by the growth of a branch from the axil of the foliage leaf. This process continues during the growth period. The branches developing in the axils of the lower leaves are like the axillary branches in the inflorescence except that there are several foliage leaves. In *Corchoropsis* both the main floral axis and the lateral vegetative branches are monopodia. The flowers are solitary in the axils of the foliage leaves with 3 whorled bracts on the peduncles. In *Corchorus* the petals are cochlear or quincuncial in the bud while in *Corchoropsis* they are contorted. Thus the view that it is better to place *Corchoropsis* in the Sterculiaceae rather than in the Tiliaceae seems to be well founded.—*A. Weisse (transl. by T. D. Howe).*

5213. WEISSE, ARTHUR. Blattstellungsstudien an Sämlingen abnorm keimender Dikotylen. *Beitr. Biol. Pflanzen* 18(1): 17-80. 2 pl. 1930.—In some pseudomonocotyledons the single cotyledon surrounds the 1st foliage leaf and scale leaf by a broad sheathing base, hence the phyllotaxy is alternate. In *Cyclamen* the broad base is almost opposite the 1st leaf, which is not a belated 2nd cotyledon. In acotyledonous dicotyledons small scaly leaves appear in spiral arrangement, the first 2 of which form belated cotyledons. In heterocotyledonous seedlings no definite relationship between size of cotyledons and phyllotaxy is evident. Unilateral fusion of cotyledons occurs as a monstrosity in which the 1st leaf is opposite the bicotyledon, while the 2nd is over the cotyledon. Cotyledons may be fused along basal margins to form a cupule. Cleavage of cotyledons is characteristic as well as abnormal. When normal the cleavage takes place simultaneously. In monstrosities, when cotyledons are slightly lobed, there is no effect on phyllotaxy; when decidedly cleft, the first 2 leaves are forced over toward the entire cotyledons. In tricotyledonous seedlings in which 2 cotyledons are perfect, the first 2 leaves appear in the larger intervening spaces. Where spiral phyllotaxy prevails, the 3rd leaf comes between the nearest cotyledons; in decussate plants there is no relationship. In seedlings with 4 cotyledons, 4 large dissimilar leaves form among the cotyledons, the larger ones in the larger gaps between the cotyledons.—*J. M. Haber.*

5214. WENT, F. A. F. C. Morphological and histological peculiarities of the Podostemonaceae. *Proc. Internat. Congress Plant Sci. Ithaca, N. Y. 1926* 1: 351-358. Geo. Banta Publishing Co.: Menasha, Wisconsin, 1929. —The following species growing in direct sunlight in swift waters of falls and rapids in Coppenam and Surinam Rivers, Dutch Guiana, were studied: *Oenone staheliana, O. richardiana, O. marowynensis, Mourera fluviatilis, Tristicha hypnoides, Apinagia perpusilla, A. flabellifera, A. nana.* Stems are reduced so that the leaves seem to grow out from each other or from the roots. The leaves of most species have outgrowths, various in shape and point of origin, which are extremely hairy although submerged. The chloroplasts are restricted to the inner faces of the epidermal cells of leaves and roots. No stomata are present. Phloem can be detected and xylem, if present, is represented by a few annular vessels; mechanical tissues are collenchyma, which becomes sclerenchyma at time of flowering. Roots are attached to the substratum by the root hairs, which secrete a sticky substance which makes them adhere

to rock or tree trunks in swift water. A great mass of reserve food is stored in the developing inflorescence. When the water becomes shallow the flowers and seeds are produced in a few days. Embryo sac is minute in all species, composed of 2 synergids, an egg cell, 1 polar nucleus; no trace of endosperm. All species have a milky sap in multinucleate tubes. The above species are compared with African species.—*A. R. Bechtel.*

5215. **WILCZEK, E.** Anomalies florales. *Bull. Soc. Vaudoise Sci. Nat.* 57(224): 113-114. 1930.—The following, among others, are described: *Gymnadenia conopea* R. Br., with anomalous flowers and stems; and bracteomania ("wheat ear") of carnation.

5216. **WILD, G. V., and V. D. ZOTOV.** Notes on sexual expression in certain species of New Zealand Coprosmas. *Trans. & Proc. New Zealand Inst.* 60(4): 547-556. 3 pl. 1930.—Of 15 spp. of *Coprosma* examined, 11 exhibited more or less abnormality in either the ♂ or the ♀ flower, or in both. In 9 spp. the ♂ plant had some pistillate flowers; in 8 spp. the ♀ plant had some staminate flowers. One plant of *C. lucida* and 6 of *C. rhamnoides* were definitely polygamous. In 4 spp. ripe fruit was found on a ♂ plant. Every plant of *C. lucida* examined, and nearly every ♂ plant of *C. robusta,* was abnormal in its floral parts.—*G. V. Wild.*

5217. **WOLKOFF, A.** Indisches Flachsstroh. *Faserforschung* 8(4): 282. 1 fig. 1930.—Note on morphological characters distinguishing Indian flax straw.

PALEOBOTANY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 3308, 5250, 5251, 5254, 5255, 5262, 5263, 5264, 5265, 5269, 5275, 5276, 5277)

5218. **BALL, OSCAR M.** A partial revision of fossil forms of Artocarpus. *Bot. Gaz.* 90(3): 312-325. 17 fig. 1930.—From fossil beds of Indio formation (Eocene) in Bastrop County, Texas, a large number of specimens of *Artocarpus* have been secured. After thorough study of this widely varying material and comparison with earlier specimens from different sections of the U. S. A., the author concludes that the specimens previously classed by Knowlton and others in 5 spp. (*A. lessigiana, pungens, dubia, similis,* and *dissecta*) are all variants of one, *A. lessigiana* (having priority). Among the figures are those of 2 new, and much larger forms. A table indicates the occurrence of the 5 types in other sections of the U. S. A. —*A. M. Taylor.*

5219. **BERTRAND, P., et P. CORSIN.** Observation sur le Neuropteris scheuchzeri Hoffmann. *Ann. Soc. Geol. du Nord* 52: 155-159. 1927.—Detailed description of this species of the group Rachivestiteae Bertr. & Corsin (Paripinneaes Gothan).—*W. Berry.*

5220. **CARPENTIER, ALFRED.** La flore Wealdienne de Féron-Glageon (Nord). *Mém. Soc. Geol. du Nord* 10(1): 1-151. Map. 25 pl. 42 fig. 1927.—This flora from northern France comprises 93 different plants, among which are listed 41 ferns, including FERONIA (p. 27) (Matoniaceae), type *F.* sewardi* (p. 27), *Laccopteris* ? tenuinervis* (p. 28), *Cladophlebis* feronensis* (p. 29), *C.* stricta* (p. 45), *Gleichenites* gosseleti* (p. 32), *G.* boulayi* (p. 37); 6 cycads, including *Nilssonia* cf. *orientalis* stenophylla* (p. 60); 1 ginkgo; 35 conifers, including *Brachyphyllum* ? milloti* (p. 74), *Elatocladus* longifolia* (p. 75), *Pityostrobus* ? feronensis* (p. 80), *Dadoxylon* (*Araucarioxylon*) feronense* (p. 87); 5 angiosperms and 5 plant fossils of uncertain affinities.—*W. Berry.*

5221. **CARPENTIER, ALFRED.** Note sur des péridermes d'âge Wealdien trouvés à Féron-Glageon (Nord). *Ann. Soc. Geol. du Nord* 55: 145-147. 1 pl. 1 fig. 1930. —The author describes a piece of silicified coniferous wood both macro- and microscopically, from the Wealden of northern France. This fragment is referred to Cycadeoidea.—*W. Berry.*

5222. **CORSIN, P.** Sur la position systématique du Zeilleria avoldensis Stur. *Ann. Soc. Geol. du Nord* 52: 28-36. 2 pl. 2 fig. 1927.—*Z. avoldensis** of the Carboniferous of northern France belongs to the family Pecopterideae, probably close to *Pecopteris miltoni,* possibly analogous to *Psaronius.*—*W. Berry.*

5223. **CORSIN, PAUL.** Sur les fructifications et la position systématique de Sphenopteris zamioïdes P. Bertrand. *Ann. Soc. Geol. du Nord* 53: 222-230. 4 pl. 4 fig. 1928.—Both ♂ and ♀ fructifications of *S. zamioïdes* from the upper Westphalian (Carboniferous) from Bethune Mine (Bully-Grenay), France, are described and figured. Based on the fructifications this species is placed among the pteridosperms or cycadales in the genus PTERIDOZAMITES, with *P. zamioides** (*Sphenopteris z.* P. Bertrand) (p. 230).—*W. Berry.*

5224. **CORSIN, P., et G. MATHIEU.** Note sur un Lepidophloïos du bassin houiller de Langeac (Haute-Loire). *Ann. Soc. Geol. du Nord* 54: 82-87. 1 pl. 1929.—Associated with some 8 spp. of fossil plants is *L. laricinus* v. verticillatus* (p. 83), Stephanian.—*W. Berry.*

5225. **DEPAPE, G.** Plantes fossiles des Iles Baleares; gisement burdigalien de Majorque. *Ann. Soc. Géol. du Nord* 53: 13-19. 1 pl. 1928.—The Burdigalian from the Isl. of Majorca comprises 1 gymnosperm, several fragments of monocotyledons, and 7 dicotyledons including *Phyllites* balearica* (p. 18).—*W. Berry.*

5226. **DEPAPE, GEORGE.** La flore landénienne des environs d'Arras. Etude paléobotanique. *Ann. Soc. Geol. du Nord* 54: 16-19. 1 pl. 1929.—Concerns 2 spp. of fossil plants including *Musaphyllum* eocenicum* (p. 17), from the Eocene of northern France.—*W. Berry.*

5227. **DUTERTRE, A.** Sur l'identification des "Aroides." *Ann. Soc. Geol. du Nord* 53: 78-80. 1928.—Aroides belong to the Dasycladacea and probably those described from the English Bathonian are close to *Goniolina cylindrica* J. Pia.—*W. Berry.*

5228. **GERBER, ED.** Eine neue Poiretia aus dem untersten kohleführenden Horizont der Emmentaler Molasse. *Eclogae Geol. Helvetiae* 21(2): 427-433. 1 fig. 1928.—*P.* (*Pseudoleacina*) bernensis* (p. 431), Tortonian. —*W. Berry.*

5229. **GOTHAN, W.** Über einige pflanzenführende Geschiebe Norddeutschlands. [Plant-containing boulders of northern Germany.] *Zeitschr. Geschiebeforsch.* 4(1): 1-8. 3 fig. 1928.

5230. **HALLE, T. G.** Fossil plants from South-western China. *Palaeontologia Sinica. Ser. A.* 1(2): 1-26. 5 pl. 1927.—New specimens of old forms as well as: the Permian *Sigillaria* acutangula* (p. 5), and *Ptychocarpus* tingi* (p. 10), and some unidentified species.

5231. **KOOPMANS, R. G.** Researches on the flora of the coal-balls from the "Finefrau-Nebenbank" horizon in the province of Limburg (The Netherlands). *Geol. Bur. Nederlandsche Mijngebied. Holland. Flora en Fauna van het Nederlandsche Karboon* 1. 1-53. 18 pl., 3 fig. 1928.

5232. **LAURENT, L., et P. MARTY.** Flore Pliocène des Cinérites des Hautes Vallées de la Petite-Rhue et de la Véronne (Cantal). *Ann. Mus. Hist. Nat. Marseille* 21: 1-132. 23 pl. 1927.—Before an enumeration of the flora the authors summarize the stratigraphy and paleontology of the volcanic massif of Cantal and place the new plant bearing beds in the Plaisancian. The flora consists of 49 spp., of which 34% are herbaceous. The flora is mainly dicotyledonous.—*E. W. Berry.*

5233. **Le MAÎTRE, Mlle. D.** Observations sur les algues et les foraminifères des calcaires dévoniens. *Ann. Soc. Geol. du Nord* 55: 42-50. 1930.—In Part I, Algae in the middle Devonian of Avesnois (northern France), are described 3 spp. of *Sphaerocodium* and 1 of *Calcisphaere.* In part II, Foraminifera and *Cidaris* in the Devonian limestone of Bartin (Turkey), are recorded

4 genera of arenaceous Foraminifera and a *Cidaris* fragment.—*W. Berry.*

5234. **LEMOINE, [Mme.] PAUL. Les Solenopora du Jurassique de France.** *Bull. Soc. Géol. France* 27(6/9): 405-417. 2 pl., 7 fig. 1927.—The *Solenopora*, marine calcareous algae, became widespread during the Paleozoic, being found in considerable numbers in the Silurian rocks of N. Amer., Scotland, England, Norway, and the Baltic provinces. Towards the close of the Paleozoic only 1 species is found in the German Devonian and 1 from the English Carboniferous. In the Mesozoic the genus appears at Timor (Pacific Ocean) and the last representatives are found in the Great Oolite and the Coral Rag of England. The author claims that the fossils from the 2 English localities represent the same species. One known species is described from the Bartonian of the Ardennes. From the Argovian of the Ardennes are described 1 known species and 1 new variety, *Solenopora jurassica* v. **delepinei*** (p. 416). No difference is found between the fossils of the Argovian and the Coral Rag. Between the *Solenopora* of the Argovian and those of the Bartonian there is a slight difference as exemplified by the variety *delepinei* which the author considers as a "simple variation and not as a stock." Mention is made of the unnamed *Solenopora* in the Paleontology coll. of the École des Mines.—*E. W. Berry.*

5235. **LIESEGANG, RAPHAEL ED. Pseudomorphosen und verkieselte Hölzer.** *Natur u. Mus.* 61(3): 137-143. 2 fig. 1931.—A popular discussion of the physics and colloid chemistry of the formation by fossils by the infiltration of Si compounds and the replacement of the original material, molecule by molecule, with the Si compound.

5236. **MATHIEU, GILBERT. La flora Stéphanienne du bassin houiller de Langeac (Haute-Loire).** *Ann. Soc. Geol. du Nord* 55: 75-85. 1 pl. 3 fig. 1930.—After discussing the stratigraphy, 43 fossil plants are described, including *Carpolithes* **crassicostus*** (p. 81).—*W. Berry.*

5237. **NĚMEJC, F. Příspěvek k floristice východního cípu kamenouhelného revíru kladensko-rakovnického.** *Rozpravy České Akad. Věd a Umění* 35(No. 35): 1-8. 2 pl. 1926.—The author describes plant impressions found in the road-cut leading from Blevice (near Kralup, the Carboniferous coal district of Kladno and Rakovník, Bohemia) toward the west. The locality is that of the hanging sandstone series ("arkosa") with interlayers of sandy till clayey shales above the upper Radnice coal-measure (the so-called main Kladno coal-measure). The impressions are from a bed of clay-shales (about 2 m.) containing a thin layer of shaly coal. The impressions are fragmentary, consisting often of only isolated parts of fern pinnules, single leaves of Sphenophyllum, etc.; the specimens are variously broken, the Cordaites leaves are often torn. The author did not collect large trunks (Lepidodendron or Stigmaria), therefore he considers the plant remains as well as the thin interlayer of coal as allochton, i.e., deposed by the water from the surroundings. The flora is rather poor. Specimens of *Cordaites palmaeformis* Goepp., *Cordaianthus* sp., *Calamites* sp., *Asterophyllites equisetiformis* (Schl.) Bgt., *Sphenophyllum emarginatum* Bgt., *Pecopteris plumosa* Artis, *P. plückeneti* Schl., *P.* aff. *crenulata* Bgt., *P. miltoni* Artis, and *Schizopteris lactuca* Presl., were collected.—*F. Němejc.*

5238. **NĚMEJC, F. Paleobotanický výzkum travertinového masivu kolem vesničky Lůček u Ružomberka na Slovensku.** *Rozpravy České Akad. Věd a Umění Tř. 2.* 37(paper 35): 1-17. 1 pl., 4 fig. 1928; also published as: Palaeobotanical investigation in the travertine-complex around the village of Lůčky near Růžomberok in Slovakia. *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Présentés Cl. Sci. Mat., Nat. et Méd.* 29: 183-201. 1 pl., 4 fig. 1928.—Two complexes of travertine sediments were found near the village of Lůčky; nonconformably deposed along the brook in the Holocene valley sediments containing remains of broad-leaf trees and *Picea excelsa,* but no *Fagus,* and at either side of this first sediment there are complexes of Pleistocene travertines situated higher above the brook-level. These contain at the base a *Pinus-Betula* vegetation, above broad-leaf trees with numerous remains of *Corylus avellana, Acer pseudoplatanus, Fraxinus, Picea,* but no *Fagus;* here appear also *Cotinus coggygria* and *Carpinus betulus.*—*F. Němejc.*

5239. **NĚMEJC, F. Některé zajímavější nálezy rostlinných otisků ze středočeských pánví kamenouhelných.** *Rozpravy České Akad. Věd a Umění, Tř. 2.* 37(paper 46): 1-9. 2 pl., 1 fig. 1928; also published as: Some new interesting discoveries of plant impressions in the coal basins of Central Bohemia. *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Présentés Cl. Sci. Mat., Nat. et Méd.* 29: 355-363. 2 pl., 1 fig. 1928.—The author describes the following plant remains of the Carboniferous of central Bohemia: *Zeilleria hymenophylloides* (new for Bohemia) from Strádonice, the "Schleifsteine" shales horizon; *Zeilleria* **haidingeri** (*Sphenopteris h.* Ettingsh.), fructifications from Strádonice, the "Schleifsteine" horizon; a *Calymotheca* fructification, from the same loc. and horizon, related to *C. acutum* Carp.; and some *Taeniopteris* remains of the shales in the carboniferous sandstone quarry near Třemošná (at Plzeň).—*F. Němejc.*

5240. **[NEUBURG, M. F.] НЕЙБУРГ, М. Ф. К стратиграфии и возрасту угленосных отложений Кузнецкого бассейна в Сибири. [Stratigraphy and age of coal deposits in the Kuznetsk Basin in Siberia.]** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1929(14): 337-342. 1929.—Discovery by the expedition of the Geol. Mus. of the Acad. of Sciences of 30 forms of plant fossils in the region of the village Protopopova and middle Tom river proves the presence of Mesozoic deposits in the coal deposits of the Kuznetsk Basin. The presence of *Clathropteris meniscioides* and *Marattiopsis muensteri* shows that the flora of the basin is probably Lr. Jurassic. Also the discovery in the middle Tom river region of *Lepidophloios* sp. and *Knorria,* sporadic for the region, shows the difficulty of classifying coal deposits of the region by lithology. Fossils characteristic of the 2 main horizons of the Kuznetsk Basin are listed.

5241. **NEUWEILER, E. Liste der Pflanzenreste aus dem Kälberhügel Vindonissa. Mitteilungen aus dem Botanischen Museum der Universität Zürich (CXXIII). [Plant remains from the Kälberhügel Vindonissa.]** *Vierteljahresschr. Naturforsch. Ges. Zürich* 72(3/4): 326-331. 1927.

5242. **OSBORNE, FRELEIGH FITZ. A possibly biogenic structure in Grenville limestone in Hastings County, Ontario.** *Canadian Jour. Res.* 4(6): 570-573. 1 pl. 1931.—These elliptical structures, possibly of algal origin but regarded by the author as more probably non-biogenic, are associated with *"Eozoön"* and resemble *Collenia* and *Cryptozoön.*

5244. **SAHNI, B. On Asterochlaenopsis, a new genus of zygopterid tree-ferns from western Siberia.** *Phil. Trans. Roy. Soc. London B* 218(460): 447-471. 3 pl., 4 fig. 1930.—**ASTEROCHLAENOPSIS** (p. 461) (Zygopterideae, probably Permian), type *A.* **kirgisica*** (*Asterochlaena* (*Clepsydropsis*) *k.* Stenzel) (p. 461), and including *Rachiopteris ludwigii* Schenk; combines a *Clepsydropsis*-like petiolar strand with a leaf-trace sequence resembling *Asterochlaena,* while the stem stele is intermediate between the latter and *Ankyropteris.* The leaf-trace at its point of origin, structurally closely resembles the Permian osmundaceous ferns *Zalesskya* and *Thamnopteris.* The *Clepsydropsis* type of rachis bundle is no guide to generic, and perhaps not to family, affinity.—*W. N. Edwards.*

5245. **ZALESSKIJ, M., et H. ČIRKOVA. Observations sur deux végétaux nouveaux du dévonien supérieur du bassin du Donetz.** Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(10): 1009-1016.

1 pl. 1930.—**CARACUBOXYLEAE** (p. 1010), near the Pityeae in Cordaitales, based on **CARACUBOXYLON** (p. 1010), with 2 species, *C.* **bakhasuense*** (p. 1011), and *C.* **arnoldi*** (p. 1013), both found in yellow schist.

5246. ZALESSKIJ, M. Végétaux nouveaux du dévonien supérieur du bassin du Donetz. Известия Академии Наук СССР., Отделение Математических и Естественных Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Math. et Nat.*) 1931(4): 557-588. 8 pl. 1931.—The author reports a group of new lepidophytes chiefly of sigillarian type, which are described and compared with related forms. *Heleniella* may be ancestral to both *Sigillaria* and *Lepidodendron*. The following are from the Up. Devonian unless otherwise stated. **HELENIA** (p. 558), near *Syringodendron*, erected for the following spp.: *H.* **bakhassuensis*** (p. 562); *H.* **approximata*** (p. 562); *H.* **confluens*** (p. 563); *H.* **microrugosa*** (p. 564); *H.* **costata*** (p. 564); *H.* **undata*** (p. 564); *H.* **sinuosa*** (p. 565); *H.* **helenataramensis*** (p. 566); *H.* **stylensis*** (p. 566); *H.* **elegans*** (p. 567); *H.* **genuina*** (p. 567); *H.* **bella*** (p. 568); *H.* **volnovakhica*** (p. 569); *H.* **prisca*** (p. 569); *H.* **conciliata*** (p. 570); *H.* **similis*** (p. 570); *H.* **pulchella*** (p. 571); *H.* **vera*** (p. 571); *H.* **germana*** (p. 571); *H.* **gracillima*** (p. 583), Lr. Carboniferous. *H.* **primaeva** (*Lepidodendron primaevum* Rogers) (p. 588). **HELENIELLA** (p. 572) (Sigillariaceae), related to *Rhytidolepis*, erected for *H.* **theodori*** (p. 573); including also *H.* **youngiana** (*Sigillaria y.* Kidston) (p. 584), *H.* **canobiana** (*Sigillaria c.* Kidston) (p. 584), *H.* **strivelensis** (Kidston) n. comb. (p. 584), *H.* **tchirkovaeana** (*Sigillaria t.* Zalessky) (p. 584), and *H.* **bellula*** (p. 584), Lr. Carboniferous. **AMADOKIA** (p. 577) (Sigillariaceae), near *Heleniella*, erected for *A.* **tchirkovae*** (p. 577); *Lepidodendron* **stylicum*** (p. 578); *L.* **satteles*** (p. 580); *Bergeria* **bellula*** (p. 580); *B.* **confluens*** (p. 581); *Knorria* **microcostata*** (p. 581); **VOLNOVAKHIA** (p. 582), resembling *Lepidodendron*, erected for *V.* **sagenarioides*** (p. 582).

5247. ZALESSKY, M. D. Sur l'extension du continent de l'Angaride et premières données sur la flore de ses limites oussouriennes. *Ann. Soc. Geol. du Nord* 53: 118-138. 19 fig. 1928.—Based upon the discovery of the characteristic *Gangamopteris* and *Rhipidopsis* flora in the mines of Soutchan near the village of Sitza, situated upon the Little Sitza river, the area of the Permian continent Angara is extended toward the Pacific and a connection between this ancient continent and that of Gondwana, by way of the Petchora river, is established. The following forms are reported from the mines of Soutchan: *Pecopteris* **maritima*** (p. 123), *Callipteris* **sahnii*** (p. 126), *C.* **orientalis*** (p. 128), *C.* **congermana*** (p. 130), *Thinnfeldia* **paulovi*** (p. 129), *Odontopteris* **ussuriensis*** (p. 131), *Scapanophyllum* **sitzense*** (p. 132), *Ctenis* **renaulti*** (p. 135), all Permian; and 2 species of *Ullmannia* including *U.* **longifolia*** (p. 136) from the overlying Mesozoic.—*W. Berry.*

PALEOZOOLOGY

(Abstracts of general papers only. Abstracts of systematic and morphological papers are grouped with those of a similar nature treating of living animals)

B. F. HOWELL, *Editor*

JOHN R. SANDIDGE AND GLEN L. JEPSEN, *Associate Editors*

(See also in this issue Entries (Unclassified) 3013, 3131, 3161, 3308, 3323, 5235; (Protozoa) 5233; (Coelenterata) 5449, 5451, 5453, 5454, 5456; (Brachiopoda) 5509, 5511, 5512, 5513, 5514, 5862; (Bryozoa) 5516, 5517; (Echinodermata) 5233, 5862; (Mollusca) 3302, 5356, 5509, 5517, 5521, 5522, 5528, 5534, 5535, 5539, 5541, 5552, 5559, 5561, 5562, 5862, 6048; (Crustacea) 3302, 5583, 5586, 5862; (Insecta) 6048; (Ostracodermi) 5853, 5865; (Elasmobranchii) 5853, 5862; (Pisces) 5853, 5858, 5862, 6048; (Amphibia) 5882; (Reptilia) 5303, 5862, 5897, 5901, 5904, 6013; (Aves) 5919, 5921, 6013; (Mammalia) 3159, 3160, 6007, 6008, 6009, 6011, 6012, 6013, 6015, 6016, 6019, 6020, 6021, 6023, 6024, 6029, 6030, 6031, 6035, 6036, 6037, 6038, 6039, 6040)

5248. BOULE, MARCELLIN, et L. de VILLENEUVE. La grotte de l'Observatoire à Monaco. *Arch. Inst. Paléont. Humaine* [*Paris*] *Mém.* 1: 1-113. 27 pl., 16 fig. 1927.—Describes and discusses this cave and its fossils and Aurignacian human implements. There are listed 35 mammals and 39 birds. The mammals are compared with those of the Cave of Grimaldi. There are 8 plates of figures of implements and 18 of mammals: *Rhinoceros mercki**, *Cervus samonensis**, *C.* sp.*, *Tarandus rangifer**, *Ovis* sp.*, *Capra ibex**, *Canis lupus**, *Cuon alpinus* v. *europaea**, *Vulpes lagopus**, *V. vulgaris**, *Putorius lutreola**, *Mustela martes**, *Ursus arctos**, *Felis pardus**, *F. lynx**, and *F. pardina spelaea**.—*B. F. Howell.*

5249. BUTTS, CHARLES. Some issues in Chester stratigraphy in Kentucky and Illinois. *Jour. Geol.* 37(1): 30-46. 1 pl. 1929.—Records from this Carboniferous area the anthozoans *Campophyllum gasperense**, *Lithostrotion harmodites*, and *Lyropora*, the echinoderms *Pentremites pyriformis*, *P. godoni**, *P. planus*, *P. princetonensis*, *P. welleri*, *P. symmetricus*, *Talarocrinus de wolfi*, *T. ovatus*, *T. buttsi*, *T. sexlobatus*, *T. symmetricus*, *T. patei*, *Pterotocrinus serratus*, *Agassizocrinus*, and *Platycrinus penicillus*, the bryozoans *Archimedes confertus*, *A. laxus*, and *Cystodictya labiosa*, and the brachiopods *Composita trinuclea*, *Spiriferina subspinosa*, *Chonetes chesterensis*, *Productus inflatus*, *Martinia* sp., and *Spirifer pellaensis*.—*D. J. MacNeil.*

5250. CABLE, EMMETT J. Duration of Peorian interglacial interval. *Pan-Amer. Geol.* 51(3): 183-192. 1 fig. 1929.—Records some undescribed plants and the presence of many insect remains, including *Carabus meander sangamon* and *Chioenius plicatipennis*, from the Pleistocene glacial deposits of Illinois.—*D. J. MacNeil.*

5251. COLEMAN, A. P. Ice ages. Recent and ancient. xliii+296 p. 8 maps, 51 illus. The Macmillan Co.: New York, 1929.—This book includes non-technical discussion of the fossil life of the interglacial periods as well as the effects of continental glaciation on the faunas and floras living in various glacial periods.

5252. COLLIN, L. Un nouveau gisement à Calcéoles dans le Dévonien de la Presqu'Ile de Crozon. (Finistère [Brittany].) *Bull. Soc. Géol. et Minéral. Bretagne* 7(3/4): 201-208. 1926(1929).—Records and discusses the finding of a fauna of 5 corals, crinoids, 4 brachiopods, and a trilobite in some of these beds, and of 3 corals, 10 brachiopods, and a trilobite in others nearby; and gives the stratigraphic and faunal succession of the early, middle, and late Devonian strata of the Fret Syncline, naming a few of the most characteristic spp. of each division.—*B. F. Howell.*

5253. COLLIN, L. Étude géologique de la côte est de la Presqu'Ile de Roscanvel (Rade de Brest [Brittany]). *Bull. Soc. Géol. et Minéral. Bretagne* 7(3/4): 208-215. 2 maps, 1 fig. 1926(1929).—Records and discusses the numerous Devonian brachiopods, 2 trilobites, 1 pelecypod, and 1 conularid found in this district, and shows the distribution and succession of the beds.—*B. F. Howell.*

5254. DAVIES, J. A., and T. R. FRY. Notes on the gravel terraces of the Bristol Avon. *Proc. Spelaeological*

Soc. [*Bristol*] 3(3): 162-172. 2 fig. 1928(1929).—Lists and discusses the fossils found in various Pleistocene gravel terraces at several localities in this part of England, as follows: from the 100-ft. terrace, human implements, *Elephas,* mammoth, woolly rhinoceros, horse, and musk-ox; from the middle terrace derived Jurassic fossils (corals, a brachiopod, a bryozoan, cephalopods, and pelecypods), human implements and bones of the elephant, mammoth, lion, Irish deer, reindeer, *Bos primigenius,* bison, horse, woolly rhinoceros, and *Ovibos moschatus;* and from the low terraces derived Jurassic fossils (plants, corals, brachiopods, cephalapods, and pelecypods), a derived Tertiary shark, and Neolithic human implements.—*B. F. Howell.*

5255. **ESTORFF, FRITZ E. von. Kreyenhagen shale at type locality, Fresno County, California.** *Bull. Amer. Assoc. Petroleum Geol.* 14(10): 1321-1336. Map. 4 fig. 1930.—This "organic shale" proves to be Upper Eocene or Oligocene, not Miocene. One mollusk, fish scales, a broad-leaved plant, abundant *Radiolaria,* and 21 genera and 27 spp. of Foraminifera are reported. The Foraminifera include numerous *Spiroplectoides,* a genus hitherto not known as fossil on the Pacific Coast. They suggest faunal migration from the Gulf of Mexico region, accumulation in a deep marine basin, probably within the bathybic zone, and a cool bottom temperature (about 8° C.), although the climate may have been subtropical.

5256. **FAUSTINO, LEOPOLDO A. Stratigraphy of the coal measures of the Philippine Islands.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 2: 1535-1539. 1926 (1928).—The foraminiferal fauna and the characteristic molluscan genera *Vicarya* and *Ampullinopsis* indicate Oligocene age for the coal beds of the Philippines. The author questions some of Dickerson's determinations of fossil mollusks and other invertebrates.

5257. **GAERTNER, HANS RUDOLF von. Obersilurische Fauna aus den spanischen Pyrenäen.** *Nachrichten Ges. Wiss. Göttingen, Math.-Phys. Kl.* 1930(2): 179-188. 7 fig. 1930.—The author presents a list of 6 trilobites and 2 brachiopods, with synonymies, taxonomic remarks, and distributional data. Some of the forms are not specifically determined. Trilobitae: *Encrinurus* **rialpensis*** (p. 181), Carnic Alps [Austria or Italy] and Spain, Wenlock, type in Geol. Inst. Univ. Göttingen. The occurrence of *Ambocoelia praecox** [Spiriferidae] in the Wenlock of Spain is the earliest on record for this genus.

5258. **GALLWITZ, HANS. Stratigraphische und tektonische Untersuchungen an der Devon-Carbongrenze des Sauerlandes.** *Jahrb. Preuss. Geol. Landesanst. Berlin* 48: 487-527. 1 map. 3 fig. 1927(1928).—The fauna consists mainly of ostracods, trilobites, cephalopods, and brachiopods. Discussions and original references are given of the brachiopods *Orthis bergica, O. resupinata, Leptaena rhomboidalis, Chonetes tumidus, C. hardrensis, C. buchiana, C. muricata, C.* cf. *polita, C. perlata, Productella* cf. *semicostata, Productus* aff. *niger, P. fallax, P. praelongus*? v. *simplicior, P.* sp., *Strophalosia productoides, Liorhynchus subcurvata, Rhynchonella pleurodon, Atrypa tubaecostata, Spirifer* cf. *verneuili, S.* aff. *ranovensis, S. centronatus, S. distans, S. lineatus, S. urii, Spirifcrina laminosa, S. peracuta, Retzia multiplicata,* and *Athyris royosi.*—*F. Anderegg.*

5259. **GRIGOROVITCH-BERESOVSKI, N. A. Les dépôts tertiaires du Daghestan.** *Compt. Rend. Congrès Géol. Internat.* 14(4): 1997-2002. 1926(1928).—Fossil Foraminifera, sponges, mollusks and fishes are recorded from various horizons in the Tertiary of this province of southern Russia.—*L. S. Russell.*

5260. **JACKSON, J. WILFRID. Report on the animal remains found in the Kilgreany cave, Co. Waterford.** *Proc. Spelaeological Soc.* [*Bristol*] 3(3): 137-152. 1 fig. 1928(1929).—Bones of the domesticated ox, sheep, goat, pig, horse, and dog, and of the wild boar, hare, rabbit, badger, otter, wild cat, brown rat, bats, birds, frogs, and land and marine mollusks are recorded from an upper layer, of Prehistoric age; and the remains of man, wild boar, Irish elk, reindeer, wild ox, brown bear, wolf, dog?, fox, wild cat, stoat, hare, rabbit, field mouse, field vole, Arctic lemming, bats, birds, and land mollusks are listed and discussed from a lower, Late Pleistocene, horizon. The cave is in Ireland, and the single field vole skull found is the first trace of such an animal to be found in that island.—*B. F. Howell.*

5261. **KÜHNEL, JOHANNES. Geologie des Berchtesgadener Salzberges.** *Neues Jahrb. Mineral. Geol. u. Paläont. Abt. B* 61(3): 447-559. 4 pl. 6 fig. 1929.—Lists from the Triassic of Bavaria 10 corals, 3 pelecypods, 3 gastropods, and 1 cephalopod; from the Jurassic 16 cephalopods and a fish tooth. Bibliography.—*F. Anderegg.*

5262. **McLEARN, F. H. Stratigraphy, structure, and clay deposits of Eastend area, Cypress Hills, Saskatchewan.** *Canada Dept. Mines, Geol. Surv. Summary Rept.* 1927(Part B): 21B-43B. Map. 1928.—This report lists fossil plants from the Ravenscrag formation (late Cretaceous and ? early Tertiary), fossil mollusks from the marine shales (late Cretaceous) and the Ravenscrag formation, and fossil vertebrates from the Whitemud (late Cretaceous), Ravenscrag, and Cypress Hills (Oligocene) formations.—*L. S. Russell.*

5263. **McLEARN, F. H. Southern Saskatchewan.** *Canada Dept. Mines, Geol. Surv. Summary Rept.* 1928 (Part B): 30B-44B. 1929.—This geological report records plants from the upper Ravenscrag beds (early Tertiary?), mollusks from the Bearpaw formation (late Cretaceous), and vertebrates from the Whitemud and lower Ravenscrag beds (late Cretaceous).—*L. S. Russell.*

5264. **[MOISEEV, A. S.]** МОИСЕЕВ, А. С. К геологии юго-западной части главной гряды Крымских гор. **[Geology of the southwestern part of the principal mountain chain of Crimea.]** (French summary.) Геологический Комитет, Материалы по Общей и Прикладной Геологии. (*Com. Géol. Mat. Géol. Gén. et Appl.*) 89. 1-82. 2 pl. 1930.—Includes lists of fossil animals (largely mollusks, brachiopods, and echinoderms) and plants from various Permian, Triassic, and Jurassic formations.

5265. **OLIVEIRA, EUZEBIO PAULO de. O que realizou o Serviço Geologico na Amazonia. [What has been accomplished by the Geological Survey in the Amazon region.]** *Ministerio Agric. Industr. e Commercio Serv. Geol. e Mineral. Brasil* [*Rio de Janeiro*] pp. 1-20. 1929. —Many of the fossils recorded from the area in the past are noted—Silurian graptolites; Devonian trilobites, gastropods, pelecypods, brachiopods, foraminiferans, a gymnosperm, pteridophytes, and algae; Carboniferous brachiopods and pelecypods; a Cretaceous mosasaur; and Tertiary gastropods, pelecypods, and a stonewort.—*B. F. Howell.*

5266. **PAECKELMANN, WERNER. Die Konglomerate des Oberen Mitteldevons im Schwarzbachtale bei Ratingen und ihre belgischen Äquivalente.** *Zeitschr. Deutsch. Geol. Ges. B. Monatsber.* 80(11/12): 379-395. 1 fig. 1928(1929). —Lists from the Middle Devonian of Germany: 1 tabulate coral, 1 crinoid, 1 bryozoan, 12 brachiopods, and 4 pelecypods; and gives fossils characteristic of both the German and Belgian beds. Bibliography.—*F. Anderegg.*

5267. **PALMER, R. H. Geology of southern Oaxaca, Mexico.** *Jour. Geol.* 36(8): 718-734. 8 fig. 1928.—Records from the Cretaceous of this region foraminifera and the rudistids, *Apricardia* and *Radiolites.*—*D. J. MacNeil.*

5268. **PICQUENARD, CH. Notes d'excursion dans le Callovien entre Fontenay-le-Comte et Poire-sur-Velluire (Vendée [Western France]).** *Bull. Soc. Géol. et Minéral. Bretagne* 7(3/4): 192-196. 1926(1929).—Lists and discusses the fauna of the Jurassic Callovian west of Fontenay-le-Comte (a worm, 4 brachiopods, 5 pelecypods, a gastropod, and 17 cephalopods), discusses the stratigraphy and distribution of the beds and the correlation of the fauna, and reviews the work which has been done on it.—*B. F. Howell.*

5269. **REAGAN, ALBERT B. Pleistocene mollusks from Hopi Buttes.** *Pan-Amer. Geol.* 51(5): 337-338. 1 pl. 1929.—Records the pelecypod *Unio**, the gastropods *Planorbis trivolvis** and *Limnaea stagnalis* var. *appressa**,

some indeterminable plant-stems, and some fragments of an alga in this Pleistocene formation of northeastern Arizona. States that a short-nosed mastodon occurs in the lower portion of the section.—*D. J. MacNeil.*

5270. **RENZ, CARL.** Neue mittelkretazische Fossilvorkommen in Griechenland. *Abhandl. Schweizerischen Paleont. Ges.* 49(Mem. 5): 1-10. 2 pl. 1929(1930).—*Exogyra columbiana* has been found in the Middle Cretaceous limestone of the Skiron pass between Megara and Corinth. *Aspidiscus* felixi* (p. 9) (Coelenterata) is described from near Dremisa in the Kiona Mts. of central Greece. It is concluded that *Aspidiscus* is related to *Hydnophora* and thus to the Macandrinaceae of the coral family Astraeidae.—*C. Renz (transl. by C. O. Dunbar).*

5271. **SCHNÉEGANS, DANIEL.** Note préliminaire sur la répartition des faciès à Radiolaires dans le massif dévonien de la Bruche. *Compt. Rend. Somm. Séanc. Soc. Géol. France* 1928(15): 253-255. 1928.—The author describes radiolarian cherts from various horizons in the Devonian (Eifelian and above) of the Bruche valley, Alsatian Vosges Mts. He concludes that the radiolarians are facies fossils to be expected in any very fine-textured marine deposits rich in silica and in association with volcanic tuff or greywacke.—*D. Schnécgans (transl. by. B. F. Howell).*

5272. **STAPPENBECK, RICHARD.** Geologie des Chicamatales in Nordperu und seiner Anthracitlagerstätten. *Geol. u. Palaeont. Abhandl. [Jena]* 16(4): 307-355. 4 col. maps. 5 pl. 6 fig. 1929.—Mentions 16 ammonites from the Jurassic; and 7 echinoids, 42 pelecypods, 7 gastropods, and 24 cephalopods from the Cretaceous of Peru. —*F. Anderegg.*

5273. **STAUFFER, CLINTON R.** The Devonian of California. *Univ. California Publ. Bull. Dept. Geol. Sci.* 19(4): 81-118. 5 pl. 1930.—This consists of a thick deposit of shales and limestones well developed in the Inyo Mts. of the east central part of the state and in the Klamath Mts. of the northern part. The fossil content indicates that these deposits represent isolated parts of the Kennett formation. The fauna contains a large European contingent, among which are *Heliolites porosa* and *Calceola sandalina*, two of the characteristic Lower Middle Devonian fossils of England, Germany, Russia, and China. The Kennett formation, therefore, doubtless represents about the same age as the *Calceola*-Schichten of the Eifel region in Germany. Described as new are: (Coelenterata) *Heliolites* **occidentales*** (p. 108); (Echinodermata) *Strobilocystites* (?) **kearsargensis*** (p. 108), *Gomphocystites* (?) **californicus*** (p. 108), and *Urasterella* **inyoensis*** (p. 109); (Mollusca) *Eatonia* **bicostata*** (p. 109) and *Palaeotrochus* **kennettensis*** (p. 109). —*C. R. Stauffer.*

5274. **SUTTON, A. H.** Geology of the southern part of the Dawson Springs quadrangle. *Kentucky Geol. Surv.* 31: 175-280. 2 maps, 20 fig. 1929.—The abundant fossils collected from various localities in or near the quadrangle are listed from the following formations of the Chester Series (Mississippian): Renault, Paint Creek, Cypress, Golconda, Glen Dean, Menard, Clore, and Kinkaid. Many are not specifically identified.

5275. **SWINNERTON, H. H.** The growth of the world and of its inhabitants. 210p. 31 fig. Richard R. Smith, Inc.: New York. 1930.—A popular account of physical geology and earth history, with discussions of organic evolution and paleontology. The chapters dealing with fossils, evolution, and historical geology have the following titles. Life in its lowliest forms. Grades of animal structure. Styles of animal architecture. Fossils, their origin and uses. The stream of life through the ages. Racial progress and decline. The interlacing of lines of descent. The link between the generations. The growth of a species. The growth of complexity in nature. Individual and racial development. Adaptation and extinction. Adaptation to life on land. Specialization among mammals. The emergence of mankind. The growth of intelligence and culture. *Homo sapiens.*—*B. F. Howell.*

5276. **TRICALINOS, JOHANN.** Untersuchungen über den Bau der Celtiberischen Ketten des nordöstlichen Spaniens. *Zeitschr. Deutsch. Geol. Ges. A. Abhandl.* 80(4): 409-482. 2 pl. 1929.—Lists from the Cambrian a trilobite; from the Silurian gastropods, cephalopods, a brachiopod, graptolites, and a trilobite; from the Devonian a brachiopod and trilobite; from the Carboniferous brachiopods and a conifer; from the Triassic pelecypods, gastropods, cephalopods, corals, and plants; and from the Jurassic pelecypods, cephalopods, and brachiopods. Bibliography.—*F. Anderegg.*

5277. **WOODWARD, HERBERT P.** The age and nomenclature of the Rome ("Watauga") formation of the Appalachian valley. *Jour. Geol.* 37(6): 592-602. 1929.—Gives a complete list of the known fossils of this Lower and Middle Cambrian formation,—an alga, worms (trails), brachiopods, a pteropod, and trilobites. States that the most abundant and diagnostic fossil is the trilobite *Olenellus thompsoni.*—*D. J. MacNeil.*

5278. **YOUNG, C. C.** Bemerkungen ueber einige abnormale Formen von Fossilien und den Versteinerungsgrad der Knochenablagerungen von Chou Kou Tien. *Bull. Geol. Soc. China* 9(2): 183-188. 5 fig. 1930.—Abnormalities resulting from deformation of the enclosing strata, particularly brecciation, from the gnawing of contemporary rodents, and from disease are reported. Variability in degree of bone petrification in this deposit shows the unreliability of this criterion of age.

VERTEBRATE ANATOMY, HISTOLOGY, AND PHYSICAL ANTHROPOLOGY

Editors

WAYNE J. ATWELL, *Endocrine Glands, Genito-Urinary System;* ELIZABETH C. CROSBY, *Neurology;* ROBERT S. CUNNINGHAM, *Hematology, Adenoid Tissue, Reticulo-endothelium;* CHESTER H. HEUSER, *Technique:* DAVENPORT HOOKER, *Experimental Anatomy and Regeneration;* C. C. MACKLIN, *Alimentary System and Respiratory System;* PETER OKKELBERG, *Gross Anatomy (except Primate);* WILLIAM L. STRAUS, JR., *Physical Anthropology;* WALTER E. SULLIVAN, *Bones, Muscles, Joints, Fasciae*

STACY R. GUILD, *Advisory Editor*

(See also in this issue Entries 3013, 3056, 3058, 3062, 3066, 3262, 3285, 3551, 3656, 3666, 3762, 3764, 3767, 3813, 3816, 3817, 3820, 3834, 3870, 3897, 3904, 3927, 3931, 3947, 3969, 3971, 3980, 3982, 4023, 4089, 4091, 4093, 4097, 4099, 4100, 4103, 4104, 4115, 4117, 4123, 4128, 4138, 4139, 4141, 4248, 4252, 4254, 4259, 4271, 5377, 5378, 5382, 5385, 5387, 5390, 5397, 5401, 5402, 5403, 5407, 5409, 5411, 5434, 5855, 5870, 5887, 5888, 6006, 6012, 6023, 6024, 6030, 6033, 6039)

GENERAL

5279. **ADACHI, BUNTARO.** Das Arteriensystem der Japaner. Bd. 1 u. 2. 793p. 4 pl., 539 fig. Kaiserlich-Japanische Universität: Kyoto, 1928.

5280. **BARTELS, M., und A. BIRCH-HIRSCHFELD.** Orbita, Nebenhöhlen, Lider, Tränenorgane, Augenmuskeln, Auge und Ohr. [Orbit, sinuses, lids, lacrimal glands, ocular muscles, eye, and ear.] 745p. Julius Springer: Berlin, 1930.

5281. **BRUNI, A. C.** Istologia ed embriologia. 217p. F. Vallardi: Milan, 1929.

5282. **BUNDY, ELIZABETH R.** Textbook of anatomy

and physiology. 6th ed., rev. and enlarged by **S. D. WEEDER.** 460p. J. & A. Churchill: London, 1931. Pr. 10s. 6d.

5283. **CLENDENING, LOGAN.** The human body. 2nd rev. ed. xiv+399p. Alfred A. Knopf: London and New York, 1931. Pr. 10s. 6d.

5284. **FISCHER, ALBERT.** Gewebezüchtung. Handbuch der Biologie der Gewebezellen in vitro. [Tissue culture. Manual of the biology of tissue cells in vitro.] 3rd ed. 661p. 310 fig. Rudolph Müller & Steinicke: München, 1930. Pr. 79 M.

5285. **HARTRIDGE, H., and F. HAYNES.** Histology for medical students. 416p. Oxford University Press: New York, 1930.

5286. **JORDAN, HARVEY ERNEST.** A textbook of histology. 5th ed. 857p. D. Appleton: New York, 1930.

5287. **JOSSIFOW, G. M. (transl. from the Russian by J. W. AVTOKRATOW).** Das Lymphgefässsystem des Menschen, mit Beschreibung der Adenoide und der Lymphbewegungsorgane. 176p. 120 fig. Gustav Fischer: Jena, 1930. Pr. 12 M.

5288. **KUNTZ, ALBERT.** The autonomic nervous system. 576p. 70 fig. Lea & Febiger: Philadelphia, 1929. Pr. $7.—The entire field of visceral innervation is covered, the peripheral more fully than the central. A brief summary of the gross morphology is followed by chapters on general histology, general physiology and embryology. Next the autonomic innervation of the organs of the body is systematically reviewed, anatomically and physiologically, with excellent illustrations. Chapter 16 summarizes the pathology, including functional changes in nerve-cells, the functional significance of pathological changes in these cells, neoplasms and pathological changes in brain and cord. Visceral sensitivity is discussed in Chapter 17, together with referred pain and its mechanism, and in Chapter 18, vagotonia and sympatheticotonia. The following chapter treats of the autonomic system in disease, including endocrine disorders, emotional disturbances, infectious diseases, immune reactions, cardiovascular disease, reflex disorders of the digestive tract, gastric and duodenal ulcer and cutaneous reflexes. The final chapter on surgery of the autonomic system discusses sympathectomy in detail. There is a bibliography of 60 pages and an index. The extensive literature of the field covered is summarized and critically evaluated.—*C. J. Herrick.*

5289. **MENGE, KARL.** Anatomie und topographische Anatomie, Entwicklungsgeschichte und Bildungsfehler der weiblichen Genitalien. 723p. Bergmann: München, 1930.

5290. **NERIS, G. REMY.** Le tractus thyreoglosse. 170p. 23 illus. Gaston Doin et Cie: Paris, 1929. Pr. 30 fr.

5291. **PIERSOL, G. A.** Human anatomy. 9th ed., revised by **G. C. HUBER.** 2104p. J. B. Lippincott Co.: Philadelphia, 1930. Pr. $10.

5292. **PIERSOL, G. A. (ed. by W. H. F. ADDISON).** Normal histology. 14th ed. 479p. J. B. Lippincott: Philadelphia, 1930. Pr. $6.00.

5293. **SAHASRABUDHE, N. S.** Introduction to anatomy. 236p. 13 pl., 26 fig. Deshmukh: Nagpur, 1929.

5294. **SCHMIDT, F. A.** Unser Körper: Handbuch der Anatomie, Physiologie und Hygiene der Leibesübungen. [Manual of anatomy, physiology and hygiene of bodily exercises.] 8th ed., rev. by **W. KOHLRAUSCH.** 662p. R. Voigtländer: Leipzig, 1931. Pr. 18 M.

5295. **TOLDT, C.** Anatomischer Atlas für Studierende und Ärzte. [Anatomy atlas for students and practitioners.] Reviewed and edited by **F. HOCHSTETTER.** 15th ed. In 3 vols. Vol. 1-2. 794p. Urban und Schwarzenberg: Berlin und Wien, 1931. Vol. 1, 24 M.; Vol. 2, 23 M.

5296. **TRAUTMANN, A., und JOS. FIEBIGER.** Lehrbuch der Histologie und vergleichenden mikroskopischen Anatomie der Haussäugetiere. [Textbook of histology and comparative microscopic anatomy of domestic mammals.] 6th ed. 405p. 447 fig. Paul Parey: Berlin, 1931. Pr. 26 M.

5297. **TRIEPEL, HERMANN.** Die anatomischen Namen: ihre Ableitung und Aussprache. [Anatomical terms: their derivation and pronunciation.] 13th ed. vii+100p. J. F. Bergmann: München, 1930. Pr. M. 3.30.

5298. **WEIGNER, KAREL.** Topograficka Anatomie. 205p. 107 fig. Josef Springer: Prag, 1930.

5299. **ZIETZSCHMANN, OTTO.** Blätter für den anatomischen Unterricht. 3p. 61 pl. M. & H. Schaper: Hannover, 1930. Pr. 5 M.

GROSS ANATOMY (EXCEPT PRIMATE)

5300. **BAUM, HERMANN.** Das Lymphgefässsystem des Huhnes. [Lymphatic vessel-system of the chicken.] (Sonderdruck aus *"Zeitschr. Gesamte Anat." 1. Abt.* 93(1/2).) iv+34p. 5 pl. Julius Springer: Berlin, 1930. Pr. 12 M.

5301. **CAHN, ALVIN R.** Auditory ossicles of living and giant beavers. *Jour. Mammalogy* 11(3): 292-299. 1 pl. 1930.—Auditory ossicles of *Castor canadensis* and *Castoroides ohioensis*, described and illustrated, are very similar. The family Castoroididae belongs in the same suborder of rodents as the Castoridae.—*L. R. Dice.*

5302. **FROST, G. ALLAN.** A comparative study of the otoliths of the Neopterygian fishes. [Continued.] *Ann. & Mag. Nat. Hist.* [*London*] 4(19): 120-130. 2 pl. 1929.—The description of the otoliths of the order Percomorphi is concluded with the suborders Mugilioidea, 8 spp.; Stromateoidea, 3 spp.; Blennioidea, 20 spp.; and Gobioidea, 7 spp. Of the Symbranchii,—in the suborder Alabetoidea, small Australian fishes, *Alabes dorsalis*, no otoliths were discernible. In the Symbranchoidea, the otoliths of 3 spp. are described. In the division Ophidiiformes of the Blennioidea the otoliths are of a new type described as "Brotulid." The otoliths of the Gobioidea are highly specialized and form a type described as "Gobiid." Otoliths of 34 spp. are figured.—*R. P. Bigelow.*

5303. **GRODZIŃSKI, A.** Über die Lymphherzen von fossilen Reptilien. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II)* 1929(8/10): 433-439. 4 fig. 1929.—On the basis of the relations of lymph hearts to caudal transverse processes in living lizards and snakes, an attempt is made to determine the position of these structures in the dinosaurs, *Apatosaurus* and *Diplodocus.*—*A. S. Romer.*

5304. **JOSIFOFF, J. M.** Die tiefen Lymphgefässe der Extremitäten des Hundes. *Anat. Anz.* 65(4/6): 65-76. 3 fig. 1928.—The author studied the course of the deep lymphatics of the extremities of the dog by injecting diluted India ink into the living muscle (of the chloroformed animal). As in man, the lymphatics may be divided into superficial and deep. The former lie external to the fasciae and drain the skin, while the latter drain the bones and muscles, and are prolonged as chief vessels along the deep arterial trunks. In the anterior extremity these lymph vessels extend to the axillary lymph node, from which a larger channel, the truncus subclavius, passes centrally. The lymph vessels that follow the femoral artery divide into 2 groups: an outer and an inner. The inner group drains the muscles nourished by the caudal femoral artery, and also receives lymph from the popliteal lymph node. The outer group of lymph vessels which accompany the femoral artery represents a continuation of the lymph trunks associated with the posterior tibial artery and draining the muscles supplied by it. In the middle of the thigh there is often a lymph node of insignificant size. Both the outer and inner group of femoral lymphatics pass above Poupart's ligament and form a plexus of 3-10 trunks which follow the external iliac artery and drain into 1 or 2 lymph nodes situated at the beginning of the artery.—*O. F. Kampmeier.*

5305. **JOSSIFOW, J. M.** Das Lymphgefässsystem des Kaninchens. *Anat. Anz.* 71(21/22): 464-475. 4 fig. 1931.—Injection of muscles and thoracic and abdominal organs of the living rabbit showed that the principal superficial lymph vessels followed the subcutaneous veins and the principal deep ones followed the principal blood vessels. In the extremities the lymph nodes and vessels resembled those of the dog though the nodes were relatively

smaller. The superficial axillary lymph nodes were divided into anterior and posterior (dorsal). Unlike the dog, there were no deep inguinal and popliteal lymph glands. The number of lymph nodes was relatively smaller than in man, particularly in the mesenterial lymph nodes.—*From author's summary (transl.).*

5306. KLAAUW, C. J. van der. On mammalian auditory bullae showing an indistinctly complex structure in the adult. *Jour. Mammalogy* 11(1): 55-60. 1930.—The very large collections of dry skulls of *Procavia (Hyrax), Galeopterus, Ictieyon* and *Tapirus* (which show a complex bulla according to investigations on fetal and young material with soft tissues) very seldom showed a distinct entotympanic, due to the fact that this element was either free and fallen out or early fused with the tympanic. The importance of investigating skulls in which the soft parts are preserved, as for example late fetal, new-born, and very young, is emphasized.—*C. J. van der Klaauw.*

5307. KLAAUW, C. J. van der. Een verzameling uit den eersten tijd van de vergelijkende ontleedkunde (de collectie Brugmans). [An old collection in comparative anatomy. The Brugmans' collection.] *Natuur* 50: 49-53; 73-78; 97-101; 122-126. 31 fig. 1930.—Discussion of this old collection in Leiden, the number of specimens illustrating the different systems of organs (very few invertebrates, of vertebrates especially dry preparations), the technique of the preparations (injections, etc.) and that of contemporaries (end of the 18th, beginning of the 19th centuries).—*C. J. van der Klaauw.*

5308. LATSKY, LULU. Die Borsskouerapparaat van Hemisus marmoratus. *S. African Jour. Sci.* 27: 470-480. 2 fig. 1930.—The episternum of *H. marmoratus* is well developed and represented by a cartilaginous as well as an ossified portion, which latter articulates syndesmotically with the procoracoidal arch. The sternum is totally absent. Although vestiges of the epicoracoidal cartilages are observed between the median ventral portions of the narrow coracoidal ossifications, the greater part of the epicoracoids is represented by connective tissue. It is suspected that the transitional cartilage, between the procoracoids and the epicoracoidal connective tissue, is nothing less than further vestiges of the epicoracoidal cartilage. The procoracoidal arch owes its solidity and sturdiness largely to the well developed clavicle, which covers the entire ventral portion of the procoracoid, with the exception of a small median ventral zone. An interesting ossification of the procoracoidal arch on the side approaching the glenoid cavity is totally fused with the clavicle. The condition prevailing in the suprascapular region can be compared osteogenetically with that of the procoracoidal arch. The cleithrum is completely fused with the ossified portion of the suprascapular region. If, as is frequently maintained, the Engystomatid-Brevicipitid genera tend to have the clavicular-procoracoidal arch reduced, the breast-shoulder apparatus of *Hemisus* is proof of its non-Brevicipitid affinities. Since, however, some Brevicipitidae possess a complete cartilaginous and bony anterior arch (e.g., *Breviceps* and *Dyscophus*), and since some Ranidae (e.g., *Arthroleptella*) show incipient reduction of the arch, not much importance of a phylogenetic nature can be ascribed to the variation of the girdle alone. Sections of a postmetamorphic specimen reveal skeletogenic processes, but the gross anatomy does not differ appreciably from that of the adult form.—*Author's English summary.*

5309. MAYNARD, CHARLES JOHNSON. Vocal organs of talking birds and some other species. 380p. 3 pl., 75 fig. C. J. Maynard Estate: West Newton, Mass. 1928.

5310. PALMGREN, AXEL. Zur Anatomie und Entwicklungsgeschichte des Mittelfelles (Mediastinum) der Haussäugetiere. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 87(3/4): 367-409. 32 fig. 1928.—The writer offers proof that the tissue around the venae cavae (Hohlvenengekrös) is a part of the mediastinum bounded by the cavum pleurae intermedium. This conclusion is based partly on investigation of the development of the postcardiac mediastinum in calf embryos and partly on the demonstration that in the sheep and goat the plica venae cavae is derived from a definite medial and ventral portion of the mediastinum. The septum which in young embryos separates the 2 pleural cavities gives origin only to the middle portion [dorso-ventrally] of the adult mediastinum. The portions which extend dorsal to the esophagus and ventral to the roots of the lungs result from secondary extension of the primitive pleural cavities in the dorsal and ventral directions. The development of the mediastinum cranial to the heart depends very little on the extension craniad of the pleural cavities, more upon their growth ventrad and dorsad, but chiefly on the displacement of the heart in reference to the vertebrae and ribs. The cause of this displacement is to be sought in the slower growth of the heart in the late embryonic period. The pleural cavities enlarge ventrally in older calf embryos so that ultimately the mediastinum at its sternal attachment occupies but a fraction of the breadth of the sternum. In the adult, however, the separation between the lines of junction of the costal and mediastinal pleurae in the cardiac region is as a rule greater than the breadth of the sternum. The post-fetal (secondary) displacement laterally of these lines of reflection is due to subpleural accumulation of fat in the cardiac region. Because of the lateral situation of these lines of reflection it is possible to trepan the sternum in the area extending from the 5th to the 7th incisura costalis and to open the pericardial cavity without injury to the pleura. In a horse, a similar lateral position of the reflection line between the costal and mediastinal pleurae is primary. Because of the topographical position of the pericardium and the lines of reflection of the cavum pleurae intermedium the anatomically most suitable sites for paracentesis of the pericardium are the base of the xiphoid cartilage or the 5th or 6th intercostal spaces medial to the reflection of the pleura. The cupula pleurae on the right side extends a few centimeters beyond the anterior border of the 1st rib ventral to the axillary vein; in cattle, 6-7 cm. beyond the anterior border of the 1st rib dorsal to the axillary vein; in the dog and cat, a variable distance beyond the anterior body of the 1st rib on the medial side of the sternothyroid muscle. On the left side in cattle and in the horse, the cupula pleurae does not reach the anterior border of the 1st rib; in the dog it extends further than on the right. In the horse, dog and cat intravital perforation of the mediastinum occurs.—*Author's summary (transl. by H. von W. Schulte).*

5311. PRIESNER, A. Kraniologische Studien über die Abstammung des Rindes der polnischen Westbeskiden. [Craniological studies on the origin of cattle in the Polish West Beskids.] *Bull. Internat. Acad. Polonaise Sci. et Lettr. Cl. Sci., Math. et Nat. Sér B. Sci. Nat. (II) [Zool.]* 1927(3): 283-325. 1 pl. 1927.

5312. SAUNDERS, J. T., and S. M. MANTON. A manual of practical vertebrate morphology. 220p. 43 fig. The Clarendon Press (Humphrey Milford): Oxford, 1931. Pr. 15s.

5313. TAMURA, S. Anatomie des Sehorgans und seiner Hilfsorgane von Manis pentadactyla (Schuppentier). *Taiwan Igakkai Zasshi. [Jour. Med. Assoc. Formosa]* 309. 83. 1930.—The macroscopic and histologic anatomy of the eye-lids, the Harderian glands, tear glands, eye muscles, bulbus and nictitating membrane of *Manis* are described.—*E. C. Faust.*

5314. VIALLI, MAFFO. Ricerche morfologiche e istologiche sui plessi coroidei dei rettili. [Morphologic and histologic studies on the choroid plexuses of reptiles.] *Riv. Sperim. Freniatria* 53(3/4): 277-345. 16 fig. 1930.—Among Chelonia, the author personally examined and studied *Emys orbicularis, Tryonix* [sic] *ferox* and *Testudo ibera;* among Lacertilia, *Tarentola mauritanica, Phyllodactylus europaeus, Agama inermis, Ophisaurus apus, Anguis fragilis, Lacerta muralis, L. viridis, Notopholis fitzingeri, Ophiops elegans, Acanthodactylus boskianus,*

Chalcides ocellatus, C. tridactylus, and *Blanus strauchii;* among Ophidia, *Tropidonotus natrix, Coronella austriaca, Tarbophis fallax, Vipera ammodytes* and *V. aspis.* Among reptiles, as among other vertebrates, 2 main portions of the plexus may be distinguished, a caudal (of the 4th ventricle) and a morphologically and embryologically more complex cephalic portion including a median portion which may be called "tela choroidea superioris" and 2 lateral portions, the plexuses of the lateral ventricles. The tela choroidea superioris is divided, in Studnička's terminology, into 3 portions, paraphysis, velum and dorsal sac. Each portion of the plexus assumes characteristic arrangements in the various groups of reptiles. The paraphysis is a permanent organ among reptiles. The epithelial cells of the plexus generally measure the same in all dimensions and are of equal size in all portions of the plexus. There are species in which the epithelial cells are very flat, and in some cases the cells of some portions of the plexus differ from those in other portions. The choroid epithelium is always vibratile. The nuclei are of the usual type; in some rare cases, immediately after lethargy, occasional karyokinesis may be observed, but normally no cell proliferation, mitotic or amitotic, is to be seen. The chondriome is always abundant, in the form of either mitochondria or chondriocontes, according to the species. Fats and lipoids are rare in the epithelial cells. Glycogen and hemosiderin are completely lacking in the epithelium; the pigment sparsely present is of the nature of melanin. The quantity and distribution of connective tissue varies greatly from species to species; it is generally more abundant in some species of saurians. Granular cells, reticulo-endothelial cells, fat and lipoid bearing cells, Kolmer's cells and chromatophores are present in the connective tissue of the plexus. The fibrillary portion of the connective tissue is represented by reticular fibrils, which are the most numerous, but collagen and elastic fibrils are not lacking.

5315. WHITEHOUSE, R. H., and A. J. GROVE. The dissection of the frog. 101p. University Tutorial Press, Ltd.: London, 1930. Pr. 2s.

5316. WINCKLER, GEORGES. La morphogénèse de la chair carrée de Sylvius. *Arch. Anat. Hist. et Embryol.* 9(4/7): 309-341. 9 fig. 1928/1929.—The quadratus plantae varies in the series of mammals from a maximal development (*Ornithorhynchus paradoxus, Homo sapiens*) to complete absence (*Erinaceus europaeus, Talpa europaea, Lepus cuniculus,* prosimians and gibbons). It does not always show the same relation to the long tibial flexor as in man. There is frequently fusion with the long peroneal flexor (*O. paradoxus*). The morphological equivalence of the quadratus plantae with the deep layer of the flexor of the toes is indicated when a perforating flexor tendon detaches itself from the elements of the quadratus plantae (*Didelphys virginiana, Hapale jacchus, Macacus rhesus*). This usually goes to the great toe. The quadratus plantae is here seen to take an active part in the flexion of the toes. In other cases its function cannot be so explained. In the carnivores the fibers lie transversely and obviously can not produce flexion. The obliquity of the long flexor of the toes certainly has great importance relative to the development of the quadratus plantae. However, this factor is not absolutely decisive. In *Talpa,* for example, where there exists a manifest obliquity, there is no trace of an accessory, while the muscle occurs elsewhere where there is no change in the primitive direction of the tendon of the long flexor (*Ornithorhynchus*). The pronation of the foot and the extent of movement in the talo-calcaneal and talo-navicular joints appear to have the greatest influence in the development, or absence, of the quadratus plantae. There is, in general, great development of the muscle in cases where pronation is the normal attitude of the foot, and free movement is permitted at the talo-calcaneal and talo-navicular articulations (*O. paradoxus, H. jacchus,* man). The action of the accessory is clearly to lessen the tendency to supination which the long flexor of the toes necessarily develops in flexion of the toes. Thus no trace of the quadratus plantae is found in species where, although there is pronation of the foot, accessory movement on the part of the flexor is not permitted (rabbit, *E. europaeus, T. europaea*). Furthermore this muscle is much reduced when the medial border of the foot is raised (*Cebus fatuellus, M. rhesus, Cercopithecus mona*). Where supination is maximal (*Lemur mongoz, Hylobates lar, Nycticebus tardigradus*) the suppression of the muscle becomes complete. The intermediate stages characterize the anthropoids.—*C. W. Osgood.*

5317. WISLOCKI, GEORGE B. A study of scent glands in the marmosets, especially Oedipomidas geoffroyi. *Jour. Mammalogy* 11(4): 475-483. 3 pl. 1930.—The author studied 13 specimens of *O. geoffroyi* (9 ♂♂ and 4 ♀♀), 1 of *Seniocebus bicolor,* 2 of *Callithrix penicillata,* and 2 of *C. jacchus.* Complex scent glands, located in the pubic region, on the genitalia, or in the perineum, are characteristic of a number of the Callitrichidae. They are most extensive in *O. geoffroyi* and are well developed in *C. pencillata* and *C. jacchus* but are absent in some members of the family (*Seniocebus bicolor* ♂ and, according to Pocock, *Leontocebus rosalia* ♂ and ♀, and *O. oedipus* ♀). The glands are not sex limited, but in at least *O. geoffroyi* are best developed in the ♀. The scents possibly serve for individual recognition or for sex attraction. The glands are developed from highly modified hair follicles. The presence of these glands lends support to the view that the marmosets are primitive and that they represent the lowest order of the Simiae.—*L. R. Dice.*

VASCULAR SYSTEM (INCLUDING LYMPHATICS)

5318. BAUM, HERMANN. Das Lymphgefässsystem des Huhnes. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 93(1/2): 1-34. 5 pl. 1930.—The lymph-vascular system of birds is phylogenetically distinguished by the general disappearance of the reptilian lymph-hearts, the appearance (in only some of the birds and never abundantly) of true lymph-nodes, and the attainment by the lymph-vessels of independent status and of valves, though both vessels and valves are less numerous than among mammals. These studies are on fowl preparations in which the macroscopically recognizable lymph-vessels were injected with blue fluid.

5319. DUBREUIL, G. Signification et valeur de la média et des tissus élastiques et musculaires des parois artérielles. *Arch. Anat. Microsc.* 25: 450-458. 1929.—The rôle of the elastic tissue is to maintain constant pressure in the arteries. The essential vascular wall is formed of elastic connective tissue. The muscular media is a supplementary acquisition of vessels with limited territory of irrigation; it is an intermittent regulator of the blood supply and not a permanent compensator of pressure.—*G. Dubreuil (transl. by J. P. McMurrich).*

5320. GRANT, R. T. Observations on direct communications between arteries and veins in the rabbit's ear. *Heart* 15(3): 281-303. 2 pl., 10 fig. 1930.—Observations on the ears of 10 living rabbits showed numerous direct arteriovenous anastomoses, which reacted to mechanical stimulation, histamine, acetylcholine and cold by dilatation, and to epinephrin by constriction. There is an unusually rich distribution of the perivascular sympathetic nerve plexus to the anastomoses. They can be dilated through the action of the local axon reflex. They are particularly responsive, contracting vigorously and quickly to sympathetic impulses. The anastomoses serve 2 functions (a) local, and (b) general: (a) It is mainly through their agency that the temp. of the ears is maintained when these are exposed to cold; (b) they are important in regulating body temp., aiding the dispersal of heat by allowing an enormous blood flow through the ears.

5321. GRZYBOWSKI, J. La phylogénèse de l'artère coeliaque chez les Primates. [Phylogeny of the coeliac artery in primates.] *Bull. Soc. Anthrop. Paris* 8(4/6): 142-158. 2 fig. 1927.

5322. KIHARA, TAKUSABURO, und ZENZO NOSÉ.

Muskulöse Trichterklappe an den Ostien der Froschlymphsäcke. *Folia Anat. Japonica* 9(2): 143-147. 1 col. pl. 1931.—The valve of the lymphatic ostia of the lymph sacs of the frog is shaped like a funnel and has a circular muscle in its wall. As most of the lymphatic ostia have this kind of valve, and since it is always so arranged that its tip points toward the lymph sacs situated nearer to the lymphatic heart, it is evident that the valve plays an important rôle in the circulation of the lymph, though it has heretofore been unknown.—*Authors (courtesy Wistar Bibl. Serv.).*

5323. [KRAUSE, K., and A. ANDREEFF.] КРАУЗЕ, К. та А. АНДРЕЕВЪ. Върху измѣнения на аортата у бивола. [Changes in aorta in the buffalo.] Годишникъ на Софийския университетъ, Ветеринарно-Медицински факултетъ. (*Jahresber. Univ. Sofia, Vet.-Med. Fak.* 6: 243-282. 5 fig. 1930.—A study of the aorta in 100 buffaloes, 20 under 1 yr., 30 under 10 yrs., and 50 over 10 yrs. The histology of the thoracic and abdominal aorta is that of the ox. With age, a diffuse thickening of the intima occurs. Fat is deposited in the intima only secondarily. With age the amount of connective tissue increases in the media. Calcification of the media is subordinate and secondary and is only local. In general, changes in this form have little to do with arteriosclerosis in man.—*A. Kalojanoff (transl. by R. F. Shaner).*

5324. OTTAVIANI, GAETANO. Indagini radiografiche sul sistema linfatico. [Radiographic investigations of the lymphatic system.] *Arch. Ital. Anat. e Embriol.* 28(1): 38-58. 16 fig. 1930.—Methods of injection of preparations with Hg, "idrobarina" and "gelobarina" for x-ray examination.

5325. STERN, L., et J. L. RAPOPORT. Les rapports entre l'augmentation de la perméabilité de la barrière hémato-encéphalique et les altérations de son substratum morphologique. *Compt. Rend. Soc. Biol.* 18(17): 1515-1517. 1 fig. 1928.—When increased colloidal permeability occurred the endothelium of capillaries and precapillaries of the subcortical and cortical nuclei of the brain in particular showed fatty infiltration. In crystalloid infiltration the capillaries of the choroid plexus appeared netted, with cellular desquamation.

5326. TANTURRI, D. Die Lymphbahnen zwischen Mittelohr und Schädelinnerem. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(9): 1005-1015. 6 fig. 1930.—Injection of dye (experiments covering a period of 20 yrs.) showed that the normal routes of lymphatic communication between the middle ear and the interior of the skull are formed by lymph spaces and intermediate spaces, not by lymph vessels. These spaces are formed by the lymph routes of the nerve bundles of the facialis (via middle ear and interior of skull), of the acusticus (via labyrinth and interior of skull), and by the perilymphatic spaces of the cochlea (perhaps by way of the aquaeductus cochleae), more rarely by those of the vestibulum.—*From author's summary (transl.).*

5327. WOLHYNSKI, TH. Über den Bau der Verzweigungsstellen der kleineren Arterien. *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 7 (1): 83-97. 6 fig. 1928.—The author considered primarily the structure of the tunica media and the lateral wall of the vessel at the region of the branching in 141 preparations of the A. lingualis and its branches in children and adults (3-70 yrs. old). The observations of others are confirmed and a few bundles of muscle fibers are added to the tunica media. The topography of these bundles is: (1) along the lateral wall of the main vessel and of the branch; (2) at the bend of the wall of the vessel where 2-3 branches are given off; (3) in the wedge at the point of branching. All these bundles are in different portions of the media. The first two originate some distance from where the branches are given off. At first the fibers are single and appear as a continuation or branch of the oblique fibers of the media but frequently are also independent. The more median circular muscle fibers decrease in number toward the branches while the longitudinal fibers increase and at the branching almost completely crowd out the circular fibers. The muscle fibers of 1 and 2 are 100-150μ long; they taper gradually toward each end and terminate in fine threads which become scattered among the circular fibers, many taking an oblique course and gradually disappearing in the circular fibers of the media. Some of the longitudinal fibers of the main vessel become circular fibers as soon as they reach the point of branching and loops may surround main vessel and branch. Such fibers were only on the side of the arteries from which the branches are given off. Close to where the lateral branches arise the media is thinner than elsewhere. The muscle fibers of the wedge at the branching were arranged in 2 directions. In one the longitudinal fibers are directly under the tunica elastica interna of the lateral wall of the main vessel and pass upwards to the wedge to meet the fibers of the opposite side, forming a swelling. The elastic fibers take a similar course. This condition was found primarily in the large arteries (aorta, coeliac, etc.). In the other case the muscle fibers in the large branches lie immediately over the fibers described and in the branches of the A. lingualis they are under the tunica elastica interna. The fibers in this case are (1) the endings of the median fibers and (2) the oblique fibers which pass from the main vessel to the lateral branch and, turning at various angles in the muscle mass of the wedge, return. The constant longitudinal muscle fibers are also described.—*H. F. Nachtrieb.*

GENITO-URINARY SYSTEM

5328. ALLEN, WILLARD M. I. Cyclical alterations of the endometrium of the rat during the normal cycle, pseudopregnancy, and pregnancy. II. Production of deciduomata during pregnancy. *Anat. Rec.* 48(1): 65-103. 6 pl. 1931.—This study was undertaken to determine whether during pseudopregnancy in the rat, there are sufficient histological alterations in the endometrium to warrant the substitution of these changes for proliferation of the rabbit's uterus as a routine test for the activity of corpus-luteum extracts known to cause proliferation. It was found that during pseudopregnancy the rat's endometrium undergoes cyclical changes which are different from those in the normal cycle, and that these alterations are identical with those which occur in pregnancy over the same period of time. However, these changes, although definite and characteristic, are not sufficiently pronounced to be used as a test for extracts. Incidentally, it was also found that, from the 4th to the 6th day of pregnancy or pseudopregnancy, the endometrium is histologically different from that at any other period. Since this period coincides with the periods of sensitization and of early implantation, it seemed likely that even in later pregnancy deciduomata could not be produced by mechanical stimulation. In II, it is shown that in the non-pregnant horn of unilateral pregnancy it is impossible to produce deciduomata after about the 6th day, thus physiologically as well as histologically the endometrium of later pregnancy is different from that of early pregnancy.—*Author (courtesy Wistar Bibl. Serv.).*

5329. BECCARI, N. Rigenerazione testicolare e genealogia delle cellule genitali nel "Triton cristatus." *Boll. Soc. Ital. Biol. Sper.* 3(6): 669-672. 1928.—In adult ♂♂ of *T. cristatus*, almost the entire testis was extirpated, and the regeneration of the remaining fragments was studied microscopically at intervals of 5, 8, 15, 30, and 60 days. After 60 days the fragments had produced a new lobe of normal size and spermatids were giving rise to spermatozoa. This indicates that all the genital cells are derived by cell division from original spermatogonia or primary spermatocytes.—*N. Beccari (transl. by P. Popenoe).*

5330. COURRIER, R. Les modifications saisonnières de l'appareil uro-génital chez Uromastix acanthinurus (Bell.). [Seasonal changes in the urogenital apparatus of U. acanthinurus.] *Arch. Anat. Microsc.* 25: 388-394. 3 fig. 1929.—Histological study of the secretory activity of the

glandular "sexual segment" of the ureter, in the ♂ of certain snakes and lizards, shows that this "sexual segment" exhibits cyclic changes which occur synchronously with changes in glandular activity of the epididymis. The idea that the structure is a part of the genital apparatus is thus confirmed.—*W. G. Lynn.*

5331. **ENGLE, EARL T. Prepubertal growth of the ovarian follicle in the albino mouse.** *Anat. Rec.* 48(2): 341-350. 1931.—The growth of the prepubertal follicle and the process of follicular atresia have been studied from the 1st to the 37th day of life in the mouse. Three litter mates were killed each day, affording 6 ovaries to be studied for each day of life. The diameters of the 10 largest follicles in each ovary were measured, and the median of the 60 follicles for each age day is plotted. A slow growth of the follicle occurs until the appearance of the antrum folliculi on the 12th, 13th, and 14th days. On the 15th day, the follicular diameters show a sudden and pronounced rise to a size almost equal to that of the follicle at the occurrence of the first oestrus. This growth level is maintained, within variable limits, in all later prepubertal stages. Follicular atresia appears not to be cyclic, as in the adult mouse. Pseudomaturation spindles and the degenerative fragmentation of such ova do not appear until after the ovum has attained mature size. A large number of atretic follicles are found about the 20th day, and this number is fairly constant until puberty.—*Author (courtesy Wistar Bibl. Serv.).*

5332. **IVANIZKY, M. Beiträge zur Anatomie des Ductus ejaculatorius.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 87(1/2): 11-21. 11 fig. 1928.—In material from 37 corpses (3 boys and 34 adults), the many variations of the ejaculatory duct could be grouped under 3 types. In (1) the vas deferens opens into the excretory duct of the seminal vesicle and the ejaculatory duct appears as a continuation of the excretory duct, which is thicker than the endpiece of the vas deferens; 22 of the 34 cases were of this type. In (2) the vas deferens and the excretory duct contribute equally to the formation of the ejaculatory duct. The caliber of the excretory duct is about the same as that of the vas deferens; 9 cases were of this type. In (3) the excretory duct (with narrower lumen) opens into the vas deferens (with wider lumen) and the ejaculatory duct appears as a continuation of the latter; 3 cases of this type. Measurements of position, etc. of the ducts are given in a table. The rotation of the lumen of the excretory duct at the ejaculatory sinus (Felix) was not observed; in the vas deferens, it was occasionally observed. The lumen of the ejaculatory duct turned through 90° in only 39% of the cases; its condition depends primarily upon the pressure of neighboring organs. If the ejaculatory duct lies within the prostate, as is frequent, the longer axis of the lumen is sagittal. If, however, the duct lies on the dorsal side of the prostate, the longer axis of the lumen is more frontal in direction.—*H. F. Nachtrieb.*

5333. **KAUFMANN, JOSEPH, and RUDOLF GOTTLIEB. The innervation of the renal parenchyma. A study to demonstrate nerve endings in renal epithelium.** *Amer. Jour. Physiol.* 96(1): 40-44. 8 fig. 1931.—Study of sections of kidneys from rats, guinea pigs, cats, dogs and man indicated that an extensive non-medullated innervation of the parenchyma of the kidney is present in addition to the purely vascular nerve supply.

5334. **PETER, KARL. Untersuchungen über Bau und Entwicklung der Niere. 2. [Structure and development of the kidneys.]** 196p. 1 pl., 24 fig. Gustav Fischer: Jena, 1927. Pr. 15 M.

5335. **SAIGRAEFF, M. Zur Frage der Histotopographie der Vorsteherdrüse und der Samenblasen. Vorläufige Mitteilung.** *Zeitschr. Urol. Chir. (Orig.)* 24(3/4): 389-412. 23 fig. 1928.—200-300 cc. of a 10% formol solution were injected into the urinary bladder of human bodies and the penis was then ligated, 24 hrs. before the autopsy. The organs removed were fixed 24 hrs. in 10% formol solution. Frozen sections, 40μ, were made through the prostate and the seminal vesicle, stained with hematoxylin-eosin and van Gieson. Two newborn, 1 4-yr. old, 49 adults, and 3 monkeys (pavian and chimpanzee) were examined. The accessory lobes of the prostate, described by Walker in rats and guinea pigs, were found in men and monkeys also, between the prostate and the seminal vesicle at the level of the body of the seminal vesicle. They were enclosed in a capsule and contained slightly developed villi, which were not found in the prostate. The straight ends of the seminal vesicles, the cervix, in monkeys and adult men form an angle of 50°; in the newborn, 90°; at 16-19 yrs., 60°-70°; at 60 yrs., 100°-120°. The wall is 250-700μ thick at the apex; the medial wall of the corpus is 200μ; the lateral, 800μ. In a hypertrophic prostate the wall of the seminal vesicle becomes thinner, the lumen broader. The villi of the mucous membrane are better developed in the corpus than in the apex. They can be divided into 3 groups: (1) the epithelial layer forming a shallow zig-zag line (in children); (2) the epithelial layer having a villous structure, 150μ high (in adults and old men); (3) the villi forming a dense network, sometimes filling the whole lumen of the seminal vesicle (in young men). The epithelium is columnar, with one or more layers, or it is cuboidal. The ampulla, the continuation of the vas deferens, is analogous in structure with the wall of the seminal vesicle. The muscle layer is 1000μ thick. The colliculus seminalis is covered with a connective tissue capsule containing muscle fibers. It is 1500-2000μ wide (at 26-40 yrs.), has a reticular structure and is clearly separated from the prostatic raphe by a layer of connective tissue. This network consists of muscular and connective tissue. The thickness of the walls is 300-400μ, the cubic epithelium has more layers, and in the interspaces homogeneous secretion and corpora amylacea are present. The 2 ejaculatory ducts are separately encircled by the 2 spermatic sphincters (Porosz); the 3rd strip of muscle, which encircles both of the excretory ducts, is not to be seen. In the upper corner of each ejaculatory duct (in the part turned toward the urinary bladder) are thick strips of muscle fibers which promote the expulsion of the contents. In the pavian, there are 7 excretory ducts of the prostate on each side of the colliculus seminalis. Their lumen is surrounded by strong annular muscle fibers. The seminal vesicle is 9 cm. long in chimpanzees, and 3.5 cm. wide; the prostate is 3.5 cm. long and 3 cm. wide.—*E. Barta.*

SKIN AND ITS APPENDAGES

5336. **BETTMANN, S. Zur Oberflächenmikroskopie der Haut am lebenden Menschen. [Superficial microscopy of the skin in living persons.]** *Arch. Dermatol. u. Syph.* 161(2): 444-455. 13 fig. 1930.

5337. **BETTMANN, S. Leichen-Dermatogramme.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 92(1): 27-33. 8 fig. 1930.—Skin impressions were made, on the same plan as finger prints of the living, from the abdominal skin of 2 corpses, 1, 2 and 11 hrs. after death, showing the gradual change in cutaneous tension. The author suggests that the method may be so refined as to be serviceable in determining the time that has elapsed since death.

5338. **[BITTNER, H.] БИТНЕРЪ, Г. Хистология на кожата, косъма и обработената кожа на бивола. [Histology of skin, hair, and leather of buffalo.]** Годишникъ на Софийския Университетъ, Ветеринарно-Медицински Факултетъ. *(Jahresber. Univ. Sofia Vet.-Med. Fakultät* 2: 127-178. 11 fig. 1926.—This work is a detailed histological description of the structure of the skin, hair, and leather of buffalo. These structures show great variation in comparison with those in cattle. —*A. Ralojanoff (transl. by Z. K. Cooper).*

5339. **CERUTTI, P. Ricerche sulla pigmentazione della cute dei conigli. [Pigmentation of the skin in rabbits.]** *Gior. Ital. Derm. e Sifil.* 71(4): 1281-1286. 1930.—In each of 2 gray rabbits (1 irradiated with ultraviolet, the other with infra-red) 4 areas were shaved on the back; 1 area was repeatedly injected with 0.1%

skatol solution, which, in the course of several days, gave rise to infiltration, induration and thickening of the skin. Another area was injected with acetic acid, which produced an eschar. The other depilated areas were kept as controls. In each of the depilated areas 2-3 slaty-brown spots appeared on about the 14th day, the spots being much larger in the control areas than in those injected with skatol and acetic acid. In these hyperpigmented spots abundant dark brown, almost black hairs began to grow, while scarcely a hair was seen in the non-pigmented areas after the lapse of months. In 4 rabbits 2 or 3 areas were depilated by plucking; 2 animals received repeated intravenous injections of 0.1% skatol, the other 2 intravenous injections of 0.1% dopa; 2 were kept in daylight and irradiated with ultraviolet and infra-red, 1 received daylight only for a few hrs. on certain days, and the 4th was kept in the dark. In all the rabbits all the spots turned dark by the 8th day and soon thereafter were covered with thick dark hair, as were spots plucked in 3 controls. In 2 rabbits in which 4 zones were depilated by different means (shaving, plucking, chemical depilation, cutting with scissors) all showed the same phenomena. In 3 white but not albino rabbits, 2 dorsal areas of each were depilated by plucking; in these no pigmentation appeared. Microscopically the melanic pigment in granular form appeared on the 4th day after plucking, in particular abundance corresponding to the cells and intercellular spaces of the connective tissue of the skin; pigment was present, but less plentiful, in the basal stratum of the epidermis. Tar painting over part of a depilated area on a gray rabbit produced infiltration and ulceration and delayed appearance of pigmentation and regeneration of hair, but the latter phenomena were essentially the same. The results, unlike those of Introzzi, showed no influence from ultraviolet rays on hair regeneration and pigmentation over plucked areas. Rabbits kept in complete darkness underwent the same changes as those kept in daylight. The author concludes that pigmentation of the depilated skin of the rabbit occurs spontaneously and that mechanical, physical or chemical factors affect it only by disturbing normal pigmentation or destroying the hair-producing mechanism, which is closely connected with it.

5340. CHAMBERS, G. K. The growth of angora rabbit hair. *World's Poultry Congress* 4(Sect. F): 964-969 (discussion 969-973). 1930.—The "suspension of growth" following clipping is normal and universal in rabbits. The stages of growth are: (1) the formation of hair ball in the follicle and the development of a thick tip, involving about 20 days after extraction of the old hair from the follicle; the length of (2), the growing stage, varies with the type of coat. The rate of growth for both long and short haired types approximates 1 mm. a day and apparently cannot be increased by dietary or genetic means. A dormant period (3) of the mature hair terminates with the extraction of the hair and root from the follicle. The bearings on clipping and plucking are discussed.—*E. W. Sheets.*

5341. DESSELBERGER, HERMANN. Über das Lipochrom der Vogelfeder. *Jour. Ornith.* [*Berlin*] 78(3): 328-376. 2 pl., 5 fig. 1930.—The paper is chiefly an inquiry on the histology and on the origin of the lipochrome pigment in the feather. In the first part the formation of the lipochrome in the feather—hitherto unknown—is described in different birds, mainly in *Amadina fasciata* Gm. In the second part these histological results are discussed and compared with the facts known about the lipochromes in all animal groups. The principal results are: The lipochromes—belonging to the carotinoids—are doubtless not autochthonous in the animal organism, but they originate in the plants only and are taken up by the animals with the food, absorbed in digestion and transported within the organism by the body liquids. The various lipochromes deposited in animals differ probably by several degrees of oxidation or only of concentration. In the feather germ the lipochrome begins to appear in connection with very small drops of lipoids. Subsequently these drops disappear again and the lipochrome, which often forms a flaky precipitate in this stage, dissolves in the first stages of keratin formation. When this formation is completed, the lipochrome pigment is wholly dissolved in the keratin. The lipochrome precipitates, unlike the melanin, only in cells which will be permanently stained by it; cells distributing the pigment to other cells, like the "melanophores" in the melanin feather germs, do not exist in the lipochrome feather germ. The precipitation of lipochrome also retards the development of the most differentiated parts of the feather. Since these parts, the little hooklets, are very important for the solidity of the feather, lipochromes are almost never found in the parts of the bird plumage, which have an important mechanical function.—*H. Desselberger.*

5342. JULLIEN, A. Recherches sur les caractères histologiques de la tige des poils chez les mammiferes carnivores et ruminants. *Bull. Histol. Appl. Phys. et Path.* 7(6): 169-192. 6 fig. 1930.—The description of freshly collected hairs mounted whole in glycerin, in balsam, and in transverse section includes both coarse and fine hair of 44 species: *Lama glama* L., *Tragulus* Briss, *Moschus moschiferus* L., *Cervus elaphus* L., *C. capreolus* L., *C. rangifer*, *C. alces* L., *Dama vulgaris* Br. *Rupicapra rupicapra* Pall., *Gazella dorcas* Licht, *Haplocerus americanus* Blaini., *Bubalis mauretanica* Sundv., *Capra hircus*, *C. ibex* L., *Ovis musimon* Schreb., *O. aries* L., *Bos taurus* L., *Camelopardalis giraffa* Gm., *Canis familiaris* L., *C. lupus* L., *C. aureus* L., *C. dingo*, *C. vulpes* L., *Vulpes lagopus* L., *Ursus maritimus* Desm., *U. arctos* L., *Viverra genetta*, *V. civetta* Schreb., *Herpestes ichneumon* K., *Meles taxus* Pall., *Mephitis occidentalis*, *Mustela martes* L., *Putorius furo*, *P. vulgaris* L., *P. ermineus* L., *P. lutreola* L., *Gaulo* Storr., *Lutra vulgaris* Erxl, *Enhydris marina* Erxl, *Hyaena crocuta* Zimm., *Felis leo* L., *F. pardus* L., *F. tigris* L., *F. onca* L., *F. catus* L., *F. domesticus* L., *Lynx lynx* L.—*J. G. Sinclair.*

5343. KRESIMENT, MAX. Zur Frage einer Geschlechtsreaktion an den Haaren. *Deutsche Zeitschr. Ges. Gerichtl. Med.* 15(3/4): 257-264. 1930.—Kosjakoff's method for distinguishing between hairs from men and from women by difference in S content gave less than 70% of correct results in an unspecified number of tests.

5344. MATTHEWS, SAMUEL A. Observations on pigment migration within the fish melanophore. *Jour. Exp. Zool.* 58(1): 471-486. 4 fig. 1930.—When the scales of *Fundulus* are mounted in tissue-culture preparations, their melanophore processes become so readily visible that they can be studied even when free from pigment, the cells themselves remaining alive for several days. Careful measurements failed to detect any change in the diameters of these processes during either central or peripheral migration of the pigment granules. The fish melanophore is in no sense amoeboid. The pigment in a melanophore process isolated from its cell by means of a microneedle can still spread over a wide field or concentrate in a small area, even when the body of the cell has been destroyed. Hence the centrosphere exerts no essential influence on pigment migration within melanophore processes. The differences in physical condition of a melanophore with expanded pigment, as contrasted with one with contracted pigment, tend to support Spaeth's interpretation of the mechanism of melanophore "contraction" as "a process similar to the gelation of an emulsoid."—*Author* (*courtesy Wistar Bibl. Serv.*).

5345. MONACELLI, M. Note istologiche sul sistema reticolo-istiocitario della cute. [Histologic notes on the reticulo-histocytic system of the skin.] *Gior. Ital. Derm. e Sifil.* 71(4): 1265-1274. 1930.—A discussion of various methods of bringing out the histocytic elements of the skin by vital stains, local and general.

5346. SCHRÖDER, ADALBERT. Ist die Unterscheidung von Menschen- und Tierhaaren durch Untersuchung der Cuticula möglich? *Deutsche Zeitschr. Ges. Gerichtl. Med.* 15(2): 127-148. 16 fig. 1930.—It is not possible to distinguish human from animal hairs by the cuticular

scales alone. If the whole shaft of the hair is available, a human hair may be known by the fine pattern which is lacking over portions of the shaft in the animal hair—as, for instance, in the apical ⅓ of the deer's hair. The hair of the dog and the cat, having the same pattern, are not distinguishable. The hairs of the horse, cow and goat are also identical in pattern.

ENDOCRINE GLANDS

5347. **ARX, JOSEF von. Die Schilddrüse des Pferdes in verschiedenen Altersstadien.** [The thyroid of the horse at various ages.] 32p. Dissertation. Universität Bern, 1928.

5348. **BENOIT, JACQUES. Structure, origine et fonction des cellules interstitielles du testicule chez le coq domestique.** *Arch. Anat. Microsc.* 25: 173-188. 1 pl., 2 fig. 1929.—Mitochondrial stains were best for the tissue studied. Interstitial cells in adult fowl testes are glandular, with an abundance of chondriosomes—particularly of chondrioconts, and contain fatty substances formed largely of cholesterol but probably to a lesser degree also of phosphatides. Both interstitial and Sertoli cells arise from embryonic sex cords in the germinal epithelium. They do not degenerate in the embryonic testis, or at puberty, but are found, cytologically transformed, in the adult testis. The apparent scarcity of interstitial cells is due to the extensive development of the seminiferous tubules. Actual determinations show the ratios of the mass of interstitial cells to the mass of (1) testis and (2) body to be greater in the fowl than in cat or man. The interstitial cells produce the testicular hormone but their qualitative function depends upon the medium in which they are placed. In ovariotomized fowls which become in turn ♂-like, then ♀-like, the same interstitial cells (of the residual gonad) are considered to have elaborated in turn (1) ♀ hormone, before the operation, (2) ♂ hormone, following the operation, when under the influence of seminiferous tubules in the regenerating gonads, and finally (3) ♀ hormone, when these tubules are undergoing involution and transformation to interstitial cells which resemble those of the ovary in having fewer chondriosomes and less fat than the interstitial cells of the testis. Thus, it is considered that while interstitial cells of the testis are the sole source of the testicular hormone, they can produce it only through the intermediary action of the Sertoli cells in the tubules which maintain the necessary ♂ physiological environment.—*F. B. Hutt.*

5349. **BRYANT, ARTHUR R. The effect of total thyroidectomy on the structure of the pituitary gland in the rabbit.** *Anat. Rec.* 47(2): 131-145. 1 pl. (col.) 1930.—The structure of the normal pituitary gland is analyzed cytologically, and the changes produced by total removal of the thyroid gland are determined. In the normal gland the special cells of the pars intermedia described by Maurer and Lewis in the pig are confirmed for the rabbit. In the thyroidectomized animals an increase of weight of the hypophysis as compared with litter mates of the same sex is noted. No change could be detected in the pars tuberalis, pars nervosa, or pars intermedia, but the change in weight is due to a great increase in size of the chromophobe elements of the anterior lobe. With this change there is a progressive reduction in the number of eosinophiles of the anterior lobe.—*Author (courtesy Wistar Bibl. Serv.).*

5350. **CHAMPY, C., et N. KRITCH. Les glandes anales du cobaye et leur influencement par les glandes génitales.** *Arch. Anat. Microsc.* 25: 459-470. 6 fig. 1929.

5351. **DEANESLY, R. The development and vascularisation of the corpus luteum in the mouse and rabbit.** *Proc. Roy. Soc.* [*London*] 107: 60-76. 2 pl. 1930.—A description is given of the development of the corpus luteum in the mouse and the rabbit, up till the time when the lutein cells, formed by the enlargement of the follicular epithelium, have reached their full size. The theca interna gives rise to the vascular connective tissue of the corpus luteum; at its maximum state of development it includes numerous fat-containing cells, some of a fibroblastic type, and others with large oval vesicular nuclei. These cells do not become detached from the sheath but divide mitotically shortly after ovulation and give rise to fibroblastic cells containing fine cytoplasmic fat granules, which penetrate inwards, and constitute both the walls of the blood spaces and the supporting tissue of the corpus luteum. The repeated division of these cells produces a network of endothelial cells, with small darkly-staining nuclei, whose fibers ramifying among the lutein cells constitute the corpus luteum reticulum. During the vascularisation the large cells of the theca interna gradually disappear, leaving no evidence of wholesale degeneration; 36 hours after ovulation little or no trace of the theca interna persists. The theca externa takes part in the vascularisation and forms the sheath of the full grown corpus luteum, but the more active growth comes from the theca interna. It is suggested that the cells of the latter show affinities to the histiocytes of connective tissue. The conditions in the developing corpus luteum of the mouse and rabbit are contrasted with those described by other writers in man and larger mammals, where the theca interna cells are more abundant in proportion to the lutein elements. —*R. Deanesly.*

5352. **FRASER, A. H. H. Lipin secretion in the elasmobranch interrenal.** *Quart. Jour. Microsc. Sci.* 73(1): 121-134. 2 pl. 1929.—The occasional occurrence of an intimate anatomical relationship between the interrenal and chromaffin tissue in *Raja clavata* is described. In addition to the ordinary lobule commonly figured, the interrenal may show hypertrophied lobules, disintegrating lobules, and acini. These various histological pictures are interpreted as various phases in a definite cycle of glandular activity, viz.: resting lobule, distension of lobule; disintegration of lobule; formation of acinus; collapse of acinus; reformation of resting lobule. Evidence is advanced of a massive secretion of lipin into the interlobular capillaries. The exact nature of the lipin could not be determined histochemically. Melanin pigment occurs in glands in the secretory phase. A metabolic relationship between the formation of melanin and the secretion of lipin is thus indicated.—*From author's summary by J. H. Wales.*

5353. **NOBLE, G. K., and S. H. POPE. The modification of the cloaca and teeth of the adult salamander Desmognathus by testicular transplants and by castration.** *British Jour. Exp. Biol.* 6(4): 399-411. 2 pl. 1929. —*D. fuscus carolinensis* exhibits pronounced sexual dimorphism of dentition. In the ♂, premaxillary teeth are monocuspid, directed forward; maxillary teeth broadened, dentary teeth are hypertrophied and restricted to anterior part of jaw, vomerine teeth lacking. Castration of adult ♂ results in replacement of premaxillary and maxillary teeth of the ♂ type by those of ♀ type. No teeth are developed on posterior part of dentary or prevomers, where they occur in ♀♀. Transplantation of testis into adult spayed ♀ causes replacement of ♀ teeth by those of ♂ type. It also evokes the development of pelvic, abdominal and cloacal gland. In one case, where ovary was only partly removed, no cloacal glands developed, but median premaxillary teeth were hypertrophied in ♂ direction, thus exhibiting greater susceptibility to the testis hormone.—*F. A. E. Crew.*

5354. **SMITH, PHILIP E. The effect of hypophysectomy upon the involution of the thymus in the rat.** *Anat. Rec.* 47(1): 119-129. 4 fig. 1930.—The thymi of 17 rats hypophysectomized between the ages of 39 and 93 days have been compared as regards weights and structure with those from controls killed: (1) at the time the pituitary was ablated and, (2) at the termination of the experiment. The time elapsing between hypophysectomy and autopsy varied from 7 to 282 days. The thymus ceases to grow immediately after the ablation of the hypophysis and regresses in weight, although its growth may continue for some time in the controls. This is due to the loss of the anterior, not the posterior, hypophysis, as shown by partial hypophysectomies. The thymi of the operated rats in the long survivals weigh

less than ½ those of the controls. The percentage weights on body weights are, however, nearly the same in the two, due to the difference in general body weights. The hastened involution of the thymi in the operated rats is usually, though not invariably, shown by structural changes. The hastened involution of the thymus following hypophysectomy does not necessarily indicate a direct influence of the anterior pituitary upon the thymus, since other factors (inanition and gonadal, thyroid, and adrenal-cortex atrophy) induced by the hypophysectomy would be sufficient to account for the response.—*Author (courtesy Wistar Bibl. Serv.)*.

5355. **VIALLI, MAFFO.** L'apparato epifisario negli anfibi. [The epiphysial apparatus of amphibia.] [With French, English and German summaries.] *Arch. Zool. Ital.* 13(3/4): 423-451. 1 pl. 1929.—In studies of the histology and cytology of the epiphysial apparatus of anurans the author records the constant presence of sensory cells, indicating that this apparatus is fundamentally sensory. Also, the cycles of its cells and the fact that the products of disintegration (and often fats and lipoids) are poured into the epiphysial lumen show that this apparatus has a glandular function. The epithelial cells also have a secretory function besides their trophic one for the sensory cells; the possibility of an internal secretion, similar to that shown by Adler in the arrest of development of tadpoles after removal of the epiphysis, is also suggested.—*Author's summary.*

BONES, MUSCLES, JOINTS, FASCIAE

5356. **BINSWANGER, HERBERT.** Über physikalische Zustandsänderungen an Knochentransplantaten und krankhaft veränderten Knochen. *Deutsche Zeitschr. Chir.* 203-204: 413-428. 1 fig. 1927.—The changes that occur in bone transplants can be shown by the physical properties. In rabbits, autotransplantation into the soft parts of pieces of the diaphysis of the tibia covered with periosteum showed a decrease in bone elasticity during the first 20 wks.; after 35 wks., an increase (6 rabbits). In 9 wks. a tibia transplant showed about ½ the elasticity of a fresh piece of tibia from the same patient. Pathological changes in bones can also be recognized by variations in physical properties.—*R. R. Best.*

5357? **BÖHMIG, RICHARD.** Über die kataplastischen Veränderungen im menschlichen Rippenknorpel. *Beitr. Path. Anat. u. All. Path.* 81(1): 172-210. 2 pl. 1928.—Cross sections in 301 cases of the 1st, 3rd, 5th, and 7th ribs were examined microscopically. A description of the normal costal cartilage is given first, and includes the local changes which occur during various periods of growth, the course and disappearance of vessels in the cartilage, the development of structures, marrow spaces, fatty deposits, calcification, ossifications, and the appearance of the brown coloring deposits.—*From author's abstr. (transl. by A. Blumberg)*.

5358. **MECHANIK, N.** Untersuchung der Markhöhle und der kompakten Schicht des Oberarmbeines des Menschen und der Haustiere. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 89(4): 513-531. 7 fig. 1929.—Serial sections, each 1 cm. in thickness, were made of the diaphysis of the humerus, the number of the segments for each bone varying in accordance with its length. In all, 363 segments of human and 48 of animal humeri were made. The greatest thickness of the compact layer was found at the level of the 13th-20th segment at the narrowest part of the diaphysis. In childhood the compact layer is not relatively thick, but it increases with age and is thickest between the ages of 32 and 37. Later in life the compact layer becomes resorbed and sparse and the index reaches its lowest value in old age. The layer is thinner in ♀♀. The marrow cavity of the humerus is narrowest from the 13th-20th segment. In children, it is relatively large and has a high index. As age advances this value becomes less and reaches the relatively slightest size from the 32nd to the 37th yr. Later, with the resorption of the compact layer, the cavity becomes relatively large again. The index value is higher in ♀♀ than in ♂♂.—*N. Mechanik (transl. by C. S. Simkins)*.

5359. **NAUCK, E. TH.** Über die Kniescheibe. I. Teil. Das Baumaterial in seinen Beziehungen zur Funktion. *Verhandl. Anat. Ges.* 37: 156-180. 13 fig. 1928.—From a study of numerous amphibia, reptiles, and mammals the author finds that a patella occurs when the tendons of the extensor muscles of the knee converge and interlace. He describes 3 grades of patellae, (1) tendinous-vesicular or patelloid, (2) cartilaginous, and (3) bony. Patelloid forms are found where the tendons of the quadriceps muscle meet at an acute angle, the other forms where the tendons meet at an obtuse angle. The functional adaptions of the 3 sorts of patellae are discussed.—*E. Th. Nauck (transl. by R. F. Shaner)*.

5360. **PATERSON, R. E.** A radiological investigation of the epiphyses of the long bones. *Jour. Anat.* 64(1): 28-46. 1 pl. 1929.—A study based on the examination of some thousands of radiograms and including not only the epiphyses of the long bones, but also the primary centers for the carpal and tarsal bones. The general results are the throwing back of the times of appearance of many of the centers to earlier dates than are usually assigned to them and the emphasizing of their earlier appearance and especially their earlier fusion with the diaphysis in ♀♀, this latter difference in the cases of the epiphyses around the elbow joint amounting to as much as 4 yrs. The earlier appearance of sexual maturity in the ♀ is suggested as an explanation of the difference. —*J. P. McMurrich.*

5361. **RUNGE, HERMANN.** Die Beziehungen der Zahnkeime und Zahnwurzeln zur Oberkieferhöhle während des Kindesalters. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 85(5/6): 734-761. 18 fig. 1928.—In a series from the head of a newborn child to the skull of a 19 yr. old youth, the relation of the tooth-germs and roots of the milkteeth (canine and 2 premolars) and the permanent teeth (canine, 2 premolars and 2 molars) to the sinus was studied in decalcified halves of 6 heads and in 12 "Roentgenograms." The germs and roots of the milkteeth are not in close relation to the sinus at any stage of development. The distance of the germs and roots of the permanent teeth from the sinus is considerably less and more variable than that of the milkteeth. From the 1st to 5th yr. no germ, except the first permanent molar, comes into immediate contact with the sinus. From the 6th to 11th yr. practically all germs, with the exception of the first premolar, which in no case was close to the sinus, are in immediate contact with the sinus. From the 12th to 16th, 19th yr. the close relation of the germs of both molars and the 2nd premolar is maintained. Most variable and striking during this stage of development is the position of the canine in relation to the sinus, and the distance of the tip of the root from the floor or anterior wall of the sinus—less than .5 mm. in the 15th yr., 6.5 mm. in the 16th yr. and again .5 mm. in the 19th yr. In adults the canine is as a rule 7.1 mm. from the anterior wall of the sinus. The reason for the peculiar wandering of the canine is found in the spreading of the nasal cavity and the related growth in length of the upper jaw. If the width of the lower nasal passage in the first year is taken as 4 mm. and in the adult as 9 mm. it necessarily follows that portions of the alveolar arch which originally are lateral to the nasal cavity must later move to the region of the lower nasal passage. This also explains the medial movement of the canine in relation to the forward end of the jaw cavity.—*H. F. Nachtrieb.*

5362. **SCHELL, KLARA.** Das Verhalten des Musculus pectoralis minor bei verschiedenen Stellungen des Schulterblattes. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 85(5/6): 784-789. 6 fig. 1928.—Observations were made on cadavers to determine the direction and length of the pectoralis minor muscle in the different positions of the shoulder blade in order to find out the usefulness of the muscle in the elevation of the ribs, and thus also for inspiration. With the shoulder

blade depressed or drawn back this muscle has little or no effect, it may even have an expiratory effect. The shoulder in high position is favorable for the inspiratory action of the pectoralis minor, but under physiological conditions this position is rare, as perhaps in swimming. In dyspnea it is of practical significance. The middle position is very favorable for inspiratory action for the normal length of the muscle.—*H. F. Nachtrieb.*

UNCLASSIFIED

5363. **ALBRECHT, W. Zur Frage der Pneumatisation des Mittelohres. Histologische Untersuchungen am Schläfenbein des Neugeborenen.** *Acta Oto-Laryngol.* 14(1/2): 221-228. 4 fig. 1930.—Previous work has shown that the origin of the cells in the mastoid process and the development of the mucous membrane in the middle ear is definitely dependent on an hereditary character. These observations are supported by histological studies showing that of 44 newly born the process of dedifferentiation of the mucous membrane is extraordinarily varied, but that in one individual both ears are always alike. This is further evidence of the significance of heredity. The varying rates are caused partly by differences in the developmental energy of the epithelium, partly by variations in the resistance of the embryonic connective tissue.—*E. H. Behre.*

5364. **BERKSON, JOSEPH. Evidence of a seasonal cycle in human growth.** *Human Biol.* 2(4): 523-538. 1930.—Data contained in Woodbury's "Stature and Weights of Children under Six Years" were examined, and it was found that there is a suggestive yearly cycle in the progression of the means of stature and weight, plotted against age in months. The statistical significance of the cycle is tested in a number of ways, and it is concluded that the cycle is not fortuitous. Several explanations are suggested, the author favoring the one that there is a direct effect on growth of conditions that are correlated with season of the year, e.g., sunlight, food habits, etc.—*J. Berkson.*

5365. **CLARK, ELIOT R., and ELEANOR LINTON CLARK. Observations on the macrophages of living amphibian larvae.** *Amer. Jour. Anat.* 46(1): 91-147. 2 col. pl., 14 fig. 1930.—The life history, morphological characteristics, and reactive powers of the tissue macrophages have been studied by observation of living cells in the tails of amphibian larvae. Individual cells were followed by uninterrupted observation of 4-36 hours' duration. By means of extravascular injection of carmine granules, which were picked up by tissue macrophages, it was possible to follow with certainty the same cell groups and frequently even individual cells for 3 weeks or longer. The differentiation of early wandering cells from a strand of primitive mesoderm was followed before the appearance of vascular endothelium or of blood cells in the tail. The change of such early wandering cells, following phagocytosis of various substances, into typical large pigmented macrophages was observed. The tissue macrophages were actively migratory and exceedingly phagocytic and underwent amazing transformations in shape and size. Mitotic divisions of macrophages were seen. The permanent transformation of macrophages into any other form of blood or tissue cell was never observed. Macrophages were the most resistant cells in the region studied. They were never seen to die, even in cases of degeneration of, or of injury to, large surrounding areas. Moreover, individual macrophages marked with carmine were identified and followed for 3 weeks, and showed no sign of degeneration. —*Authors (courtesy of Wistar Bibl. Serv.).*

5366. **DALL'ACQUA, VIRGILIO. Ricerche sperimentali sulla fissazione dell'eosina nei tessuti viventi. [Fixation of eosin in living tissues.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 724-726. 1930.—Through local action of anesthetics it was possible to obtain a retention of eosin by living tissues. No granular precipitates were observed in the cells or extracellularly. The coloration persisted longer in the surface layers of derma and epidermis; and disappeared first in the deeper layers of connective tissue. After 24 hrs. the eosin disappeared through elimination.—*M. Comel.*

5367. **DALL'ACQUA, VIRGILIO. Ricerche sperimentali sulla fissazione dell'eosina nei tessuti viventi. [Fixation of eosin in living tissues.]** *Lo Sperimentale* 84(5/6): 529-536. 2 col. pl. 1930.—Eosin injected intravenously into rabbits appeared fixed in the dermis and epidermis of areas in the ear over which ether had been applied. Many cells with eosinophilic granules were especially abundant along the blood vessels. The color disappeared in 24 hrs., being lost first in the deep connective tissue. —*M. L. Menten.*

5368. **DOLFINI, GIULIO. I grassi delle cellule cordali. [The fats of the chordal cells.]** *Monitore Zool. Ital.* 40(11/12): 360-361. 1930.—More or less frequently the cells of the notochord in the rabbit, guinea-pig, cat, dog, tadpole and sturgeon contain droplets of fat. The author considers the histochemical properties of this fat and discusses its probable significance.—*G. Dolfini (transl. by J. P. McMurrich).*

5369. **FRY, W. E. Variations in the intraneural course of the central vein of the retina.** *Arch. Ophthalmol.* 4(2): 180-187. 5 fig. 1930.—Serial sections of several optic nerves disclosed frequent variations in the course of the central vein with relation to the course of the central artery, occurring with great regularity and in many cases examined, and differing markedly from the usually described course. In 42% of the cases, the artery and vein pass through the center of the nerve, and at a variable distance behind the lamina cribrosa turn at right angles to the direction of the nerve stem and approach the periphery of the nerve. Usually, they proceed together and cross the intervaginal space immediately after gaining a subpial position. In 58% of the cases the artery and vein pass at a variable distance behind the lamina cribrosa, to the periphery of the nerve in such a way as to make a right angle course with each other. In the cases listed under type 2, the artery and vein approach the periphery of the nerve at different levels within the nerve, the vein usually doing so first; but, no matter which vessel comes to the periphery first, the artery is always the first to cross the intervaginal space and pierce the dura, and may do this a considerable distance anterior to the point of the venous crossing.

5370. **GALKIN, W. S. Über die Bedeutung der "Nasenbahn" für den Abfluss aus dem Subarachnoidalraum.** *Zeitschr. Ges. Exp. Med.* 72(1/2): 65-71. 1 fig. 1930.—The communication between the nasal passages and the subarachnoidal space was closed by operation on 10 dogs; subsequent injection of the subarachnoidal space with India ink and following necropsy demonstrated the great importance of the communication as an overflow passage.

5371. **GERARD, P., R. CORDIER, et L. LISON. Sur la nature de la réaction chromaffine.** *Bull. Histol. Appl. Phys. et Path.* 7(5): 133-139. 1930.—The color reaction in the suprarenal gland treated with bichromate, iodine, osmic acid, or silver nitrate is a compound of 2 stages. The first is the result of oxidation of adrenalin to a quinone which has an orange brown color which may be decolorized by ammonium hyposulphite. This may serve as a depot for the metals which in turn mask the original color. The term chromaffin, referring to chrome salts, should be dropped and pheochrome, signifying colored, should be substituted.—*J. G. Sinclair.*

5372. **HADJIOLOFF, ASSEN. Recherches sur le tissu adipeux chez les poissons et la grenouille.** *Bull. Hist. Appl. Phys. et Path.* 7(1): 8-20. 6 fig. 1930.—Supravital staining demonstrates the first appearance of oil in tiny vacuoles in fibrocytes. This leads to nuclear division probably amitotic, as the vacuole grows. Binucleate fat cells are the rule but multinucleate cells are found. Other cells may also become fat cells.—*J. G. Sinclair.*

5373. **HIGGINS, GEORGE M., and C. GRANT BAIN. The absorption and transference of particulate material by the great omentum.** *Surg., Gynecol. & Obstetr.* 50 (5): 851-860. 8 fig. 1930.—A method is described for the study of absorption by the omentum by isolating

its distal ⅔ in a pouch within the ventral abdominal wall between the integument and muscle layers. The degree of absorption by the isolated omentum was studied at frequent intervals, ranging from 30 min. to 48 hrs. after injection. Lymphatic vessels within the omentum have not been demonstrated conclusively and yet absorption from this organ is essentially by way of the lymphatics of the diaphragm and the mediastinum. It was not possible to demonstrate either free particles or graphite-laden histocytes in the omental blood vessels, following injection into the subcutaneous pouch. Following phagocytosis of the graphite particles by active mobile histocytes these cells accumulate along the blood vessels and pass toward the gastric and splenic attachments of the great omentum. The routes of drainage from the distal part of the omentum follow essentially the mesothelial lining of the lesser peritoneal sac. From the gastrolienal ligament, drainage follows around the dorsal surface of the stomach, along the lesser omentum to the caudate lobe of the liver, and thence along the coronary ligament of the liver and the central tendon of the diaphragm to the anterior mediastinal lymph nodes.—*Authors' summary.*

5374. **KIKAI, KUNIMARO. Über die Vitalfärbung des hinteren Bulbusabschnittes.** *Arch. Augenheilk.* 103(3/4): 541-553. 6 fig. (col.). 1930.—Following the intravenous injection of dyes into albino rabbits, the animals were examined with the ophthalmoscope and the eyes then quickly enucleated and the retinas examined. Some retinas were fixed by the gelatin-freezing method and sectioned. Only acid dyes such as fluorescein, eosin, trypan blue and Chicago blue colored the retinal vessels. Na indigo acid sulphate did not color the vessels; nor did the basic dyes used (malachite green, methyl violet, crystal violet, bismarck brown, isamine blue, aniline blue, Bavarian blue, diamond black, pyronin G, basic fuchsin and trypaflavin); these latter stained the retina and choroid at the moment of injection but almost immediately were reduced by the tissues; if the retinas were removed the coloring returned. Methyl blue, methyl green, toluidin blue, naphthylene blue, brilliant cresyl blue and neutral red stained the cellular elements of the retina but could be demonstrated only in flat preparations and not ophthalmoscopically. Methylene blue stained the layers of the nerve fibers and ganglion cells chiefly, while brilliant cresyl blue was selective for the amacrine cells. The acid sulphur dyes as fuchsin S, etc., stained the choroid and left the retinal vessels and retina uncolored. The choroid appeared to be more acid than the retina which remained alkaline.—*F. H. Adler.*

5375. **SCHAFFER, JOSEF. Über das sogenannte Ligamentum annulare einiger Knochenfische.** *Jahrb. Morph. u. Mikrosk. Abt. 2. Zeitschr. Mikrosk.-Anat. Forsch.* 18 (1 2): 37-46. 7 fig. 1929.—This paper represents a portion of the author's chapter on supporting tissues in "v. Möllendorff's **Handbuch der mikroskopischen Anatomie"** (1928). Observations on the ligamentum in the eye of *Anabas scandens, Cyprinus carpio, Alburnus lucidus, Belone guianensis* and *Ramphistoma belone* reveal the presence of the most primitive type of supporting tissue ("chordoidem Typus"), undoubtedly of mesodermal origin, in bony fishes, and also a hitherto unknown rich glycogen storer, apparently attached to this tissue. These peculiar supporting cells remind one of the tonofibrillae of the epidermis in the carp and of the conditions noted by Tretjakoff in the cells of the chorda dorsalis of cyclostomes.—*H. F. Nachtrieb.*

5376. **TURKEWITSCH, B. G. Alters- und Geschlechtseigenschaften des anatomischen Baues des menschlichen knöchernen Labyrinthes.** *Anat. Anz.* 70(11/12): 225-234. 8 fig. 1930.—The material consisted of 61 preparations, sources distributed as follows according to age and sex: 12 fetuses of 8 mos. (5 ♂, 7 ♀), 8 fetuses of 9 mos. (5 ♂, 2 ♀, 1 ?), 19 new-born (11 ♂, 2 ♀, 6 ?), 2 ♀ infants of 6 mos., 2 ♀ infants of 8 mos., 1 ♂ infant of 9 mos., 4 children 1 yr. old (2 ♂, 2 ♀), 4 children 1½ yrs. old (2 ♂, 2 ♀), 1 ♂ 2 yrs. old, 2 ♂♂ 2½ yrs. old, 1 ♂ 8 yrs. old, 1 ♂ 15 yrs. old, 1 ♂ 16 yrs. old, 1 adult (sex unknown) 30-40 yrs. old, 1 ♀ 45 yrs. old, 1 ♀ 81 yrs. old. The conclusions are: The length of the vestibule does not change up to 2½ yrs. and becomes only about 0.2mm.-0.3mm. larger towards old age. Growth in breadth of the vestibule stops at the 5th mo. The height of the vestibule is the same in both sexes. The vestibule becomes more flattened with age but the vestibular window does not change. The vestibular walls thicken with age and fuse with the compact substance of the petrous portion of the temporal bone. The vestibule is larger in ♂♂ than in ♀♀. The dimensions of the vestibular window are the same in both sexes. The semicircular canals do not enlarge with age but become rounded in cross section. The canals, ampullae and crus commune are longer in ♂♂ than in ♀♀. The S-shaped curve of the canals (i.e., the spiral lateral curve) is clearly marked in fetuses and new-born. The relationship of the planes in which the canals form the S-shaped curves does not change with age or sex. The cochlea becomes higher with age and the breadth of the base of its first coil becomes larger. Shape and size of the vestibular window are very variable, although unrelated to age and sex. In ♀♀, the cochlea is higher and the base of its first coil is broader. —*Author's conclusions (transl. by H. W. Kaan).*

VERTEBRATE EMBRYOLOGY

CARL HARTMAN, *Editor*

C. F. DEGARIS, *Associate Editor*

(See also in this issue Entries 3013, 3263, 3265, 3281, 3818, 3870, 3897, 3903, 3955, 4110, 4140, 5281, 5284, 5289, 5290, 5310, 5334, 5341, 5360, 5363, 5365, 5386, 5410, 5732, 5874)

DESCRIPTIVE

5377. **ALLEN, EDGAR, J. P. PRATT, Q. U. NEWELL, and L. J. BLAND. Human ova from large follicles; including a search for maturation divisions and observations on atresia.** *Amer. Jour. Anat.* 46(1): 1-53. 5 pl. 1930.—In human ovaries removed at operation, the number of follicles ranged from 2 to 32 per ovary, the size from 3 to 30 mm. in average diameter. Most of the normal ova were attached to the follicle walls. Mitotic division of follicle cells was used as a criterion of normale growing follicles. The description of normal ova includes measurements and observations on living eggs checked by study of sectioned specimens. One oocyte in the process of meiotic division was removed from a 10-mm. follicle on the 14th day following onset of the previous menses. The chromosomes of the second maturation spindle were intact and 22 were counted. The first polar body contained 12 chromosomes. Several follicle cells in mitotic division indicated that this follicle was still actively growing and might have ovulated. The pre-ovulation size of the human follicle is at least 10 mm. A majority of large follicles were atretic and several interesting types of atresia are described. One type showed the invasion of follicle cells under the zona pellucida combined with vacuolation or fragmentation of the vitellus. This may give rise to "cell balls" obtained from washing out uterine tubes. Selective elimination of ova occurs in human ovaries during late stages of growth of the follicles.—*Author (courtesy Wistar Bibl. Serv.).*

5378. **AOYAMA, FUMIO. Die Entwicklungsgeschichte des Kopfskelettes des Cryptobranchus japonicus.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 93(1/2): 107-181. 26 fig. 1930.—The trabeculae cranii of

the prechordal skull and the otic capsules of the parachordal skull are the first parts to appear. The fenestra olfactorii lies first in a vertical parasagittal plane, later much nearer the frontal plane. Just before metamorphosis there appears a hitherto undescribed cartilaginous plate beneath the cavum internasale, and it persists in the adult. The columella appears attached to the palatoquadrate. Its auricular end mushrooms, while the attachment to the palatoquadrate is lost. The base of the skull remains cartilaginous. The notochord degenerates except in the atlanto-occipital region where it chondrifies. The internasal cartilage arises from an independent center and completely separates the internasal cavity from the cranial cavity. The palatoquadrate offers several peculiarities including a hitherto undescribed hyoid process. Ossification in the neural skeleton begins around the nerve foramina. The first bones to complete their development are the premaxillary and the dental. Details of ossification of other bones especially of the pterygoid palatine, tympanic and operculare are given.—*R. F. Shaner (from summary).*

5379. BYERLY, THEODORE C. The effects of breed on the growth of the chick embryo. *Jour. Morph. & Physiol.* 50(2): 341-359. 1930.—The growth of embryos of heavy and light breeds and the reciprocal crosses between them is described. The embryos of the heavier breed and the hybrids were somewhat heavier than the embryos of the lighter breed from the 10th day of incubation to hatching time. In eggs of the same weight from the 2 breeds the size difference tends to disappear toward hatching time, probably due to the equivalence of the strictly limited food supply. It is pointed out that the size difference is more probably due to difference in the proportion of cells dividing at a given time than to a difference in duration of mitoses. The mortality of the hybrid embryos was intermediate between that characteristic of the parent breeds, while the percentage of monsters in the hybrids was less than that for either parent breed. There is thus some indication of heterosis. —*Author (courtesy Wistar Bibl. Serv.).*

5380. CHIARUGI, G. Stadi precoci nello sviluppo della cornea e della membrana pupillare in Petrogale penicillata. [Precocious stages of development of cornea and pupillar membrane in P. penicillata.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 790-791. 1930.—The middle layer of the cornea had the characters of a mesostroma in an embryo of 10 mm., while corneal cells and pupillar membrane were already differentiated in embryos of 15 mm. —*M. Comel.*

5381. DAWES, BEN. The development of the vertebral column in mammals, as illustrated by its development in Mus musculus. *Phil. Trans. Roy. Soc. London B* 218(453): 115-170. 4 pl., 7 fig. 1930.—This is a study of the development of the vertebral column in 200 embryos, representing 30 stages, from 2 mm. to parturition. Cells which subsequently comprise the sclerotomes are liberated from the dorso-mesial portions of the primitive somites. A narrow cleft divides each sclerotome into a cranial and a caudal sclerotomite. The caudal divides into a dorsal and a ventral half. The dorsal portion forms the basi-dorsal component; while the ventral forms the basi-ventral component. The development of the vertebral column in white mice falls naturally into 4 stages, designated the mesenchymatous, sclerotogenous, chondrogenous, and osteogenous. The mesenchymatous stage is the early one in which the notochord is surrounded by a loose layer of mesenchyme. It is not an axial supporting organ. Sclerotomes develop during this period, which terminates at about the 5.5 mm. body length. The sclerotogenous stage begins with the development of the perichordal disc from the cranial and caudal sclerotomites. Basi-dorsals and interdorsals form, and primordia of the ribs are formed. The stage reaches to about the 7.2 mm. body length. The chondrogenous period arises with the centrum rudiment and the chondrification of the basidorsal and the rib components. The procartilaginous basi-dorsals fuse with the centrum, the interdorsals and rib processes chondrify and the neural arches are completed during this period. The zygapophyses are formed near the end of the period, which extends to the 14 mm. stage. During the osteogenous period bone centers are laid down in the angles of the ribs, the neural arches and the centra in turn.—*G. M. Higgins.*

5382. GÖGL, HERMANN. Der sekundäre und tertiäre hintere Neuroporus beim Kanarienvogel. *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschr. Mikrosk.-Anat. Forsch.* 23(1/2): 227-235. 4 fig. 1930.—Examination of 5—13 day old embryos and 3—5 day old canaries showed that the secondary posterior neuropore appeared very late in the incubation period (9th day), the first changes appearing on the 8th day. In manner of formation (distension and rupture) it was midway between the large and small secondary neuropore of the chicken, duck, and goose. The epithelium regenerated again, the canal was again surrounded with neuro-epithelium, and the end of the cord receded cranially. In the 3 day old bird a tertiary posterior neuropore formed, which was still present in the 5 day old and presumably was permanent.

5383. GRAY, PETER. The development of the amphibian kidney. Part I. The development of the mesonephros of Rana temporaria. *Quart. Jour. Microsc. Sci.* 73(3): 507-546. 5 pl. (1 col.), 8 fig. 1930.—In *R. temporaria* the early malpighian units (tubule + glomerulus and its capsule) arise as vesicles within the nephrogenic blastema, the tubules of the left side being always more advanced in development than those of the right. Some 5 or 6 of these units fail to develop completely but become modified into the so-called collecting tubules. The peritoneal funnels arise from a small mass of cells of uncertain origin but uniformly evident between a glomerulus and the peritoneal surface of the mesonephros. The later units begin to appear when the larva is about 18 mm. in length and continue to be formed until the end of the 2nd year of life. A vesicle appears within the blastema and later develops into glomerulus and capsule, the tubule growing out from the latter. Connection is established with the archinephric duct through fusion with buds which appear upon the collecting tubules. The vesicles are first formed in the dorsal part of the organ; as development proceeds they are pushed ventrally by those produced later; hence they occur in dorsiventral rows. Some peritoneal funnels arise as with the early units but more arise from special "funnel-forming" tubules which appear dorsally in the blastema and grow ventrally reaching the peritoneal surface of the mesonephros. Here their tips become ciliated, separate from the rest of the tubule, and while one end establishes a connection with a blood vessel the other end opens into the peritoneal cavity. No peritoneal funnel ever opens into a malpighian corpuscle. The short larval life seems to require the rapid development of mesonephric units; suggestions are offered as to the possible manner of derivation of this rapid method from the ancestral amphibian type.—*W. H. Piersol.*

5384. GUDGER, EUGENE WILLIS, and BERTRAM G. SMITH. The segmentation of the egg of the Myxinoid, Bdellostoma stouti, based on the drawings of the late Bashford Dean. In: **Bashford Dean Memorial Vol. Archaic Fishes, ed. by E. W. GUDGER.** p. 47-60. 2 pl., 7 fig. *Amer. Mus. Nat. Hist. New York,* 1931.—The egg is large, 14.3-29 mm. long; average length for 70 eggs, 22.8 mm., average width, 8 mm. The egg is strongly telolecithal: most of the protoplasm is segregated at the opercular end, in the vicinity of the micropyle. The blastodisc is upraised to form the unique germinal hillock. This at first is nipple-shaped, but through a gradual reduction in height and a broadening of the base it becomes dome-shaped or helmet-shaped. Its later history is obscure but it probably flattens out to conform to the general contour of the egg since it is entirely absent at the time of gastrulation. A fairly complete series of segmentation stages is illustrated by lithographic reproductions of Dean's drawings. Cleavage is discoidal; the marginal blastomeres are incompletely separated from each other and from the general protoplasmic mass

by radial furrows. Early cleavage is limited to the germinal hillock but in later stages extends beyond its site.—*B. G. Smith.*

5385. HARGITT, GEORGE T. The formation of the sex glands and germ cells of mammals. III. The history of the female germ cells in the albino rat to the time of sexual maturity. *Jour. Morph. & Physiol.* 49(2): 277-331. 5 pl. 1930.—The entire ovary, including its germ cells, is produced by a local proliferation of peritoneal cells. The germ cells of the embryonic ovary grow, divide, become grouped into nests, pass through synaptic changes, and becomes primary follicles by 3 days after birth. At that time, growth of all the ova and follicles begins, and this results in a normal maturation, then a degeneration of all the ova by about 32 days after birth; few, if any, of the original germ cells remain after this degeneration. About 23 days after birth, there begins a great activity of the germinal epithelium in forming new ova, reaching its maximum between 36 and 39 days, but continuing into the adult animal. The definitive ova of the adult are transformed peritoneal (germinal epithelial) cells formed anew during the late youthful and adult life. This occurs chiefly by a local enlargement of single germinal epithelial cells which become surrounded by follicle cells and push into the ovary; there is also the production of ova from ingrowing cords of the surface layer of the ovary. The original germ cells pass through synapsis and other meiotic changes in late embryonic and early postnatal periods, but these all degenerate; synapsis cannot be distinguished later than 3 days after birth. But it is possible to follow, in young and adult ovaries, the transforming germinal epithelial cells into ova which pass through normal maturation and ovulation; therefore, these must be considered as true ova, which they are in fact, even though synapsis cannot be observed in their history.—*Author (courtesy Wistar Bibl. Serv.).*

5386. HARGITT, GEORGE T. The formation of the sex glands and germ cells of mammals. IV. Continuous origin and degeneration of germ cells in the female albino rat. *Jour. Morph. & Physiol.* 49(2): 333-353. 2 pl. 1930.—The current view in mammals is that ova are formed in the embryo in large numbers and stored in the ovary as a reserve to be drawn on through adult life; they may persist for long periods in a latent condition, a few resuming active development at each recurring oestrous period; new ova are not and cannot be added. An alternative hypothesis has been presented by several authors: New ova are formed throughout life, from the embryonic period through the time of sexual maturity; each ovum so produced must at once begin its growth and development or die; long latency of oocytes and primary follicles is not possible and does not occur. There is a constant degeneration of most follicles, and only a few come to ovulation. A study of the albino rat presents evidence which is consistent with the second view and supports it more strongly than it does the older hypothesis. Similar evidence is found in other mammals. It seems probable that the newer hypothesis is the correct one, at least in some mammals; further investigation may show it to be of general application.—*Author (courtesy Wistar Bibl. Serv.).*

5387. HOFFMAN, A. C. Opsomming van nuwe Navorsinge oor die Opbou en Ontogenese van die Zonaalskelet bij amphibia, vernaamlik van Cryptobranchus alleghaniensis, Necturus maculatus, Heleophryne en Xenopus laevis. [Formation and ontogeny of the pectoral skeleton in amphibia.] *S. African Jour. Sci.* 27: 446-450. 1930.—In this paper a description of the development of the sternum and of the ypsiloid cartilage of the urodeles, of the epipubis of *Xenopus* and of the episternum of *Heleophryne* is given. The sternum of *Cryptobranchus alleghaniensis* is of mixed origin. It develops partly as a paired chondrification of the linea alba, and partly it is of zonal origin as in *Bombinator* (de Villiers, 1922). *Necturus maculatus,* in which the problematic chondrifications of the inscriptiones tendineae are totally absent, shows arcifery in the posterior portions of the coracoids only. The sternum is here only potentially present in the form of paired chondrifications in the linea alba. The episternum of *Heleophryne* seems to be of zonal origin, but a full developmental series must still be studied before this could be considered as proven. The ypsiloid apparatus develops in the form of a paired chondrification of the linea alba immediately in front of the girdle. There is never any cartilaginous continuity between the ypsiloid cartilage and the pubic region of the girdle. There is no homology between the ypsiloid apparatus and the processus epipubicus of *Necturus.* The ypsiloid cartilage must be considered as homologous to the epipubis of *Xenopus.*—*Author's summary.*

5388. LIU, CHENG-CHAO, and JU-CHI LI. The changes in the digestive system of Rana nigromaculata and Kaloula borealis during metamorphosis. *Peking Soc. Nat. Hist. Bull.* 4(4): 67-91. 3 pl. 1930.—The formation of the stomach and duodenum is earlier than the intestine as a whole, which is differentiated step by step from the central yolk mass. The liver and pancreas appear at about the same time as the stomach and duodenum. Due to the coil formation of the intestine, the stomach, liver and pancreas change their positions 4 times before they reach the adult condition. After metamorphosis the intestine is reduced until it is 1/9 of its maximum length. Shortening of the intestine and stomach is probably due to contraction of the newly developed muscular coats. The larval stomach and intestine consist of 2 layers of tissues, the inner epithelium and the outer membranous coat. Between the two, certain small, round, deeply-stained basal cells make their appearance in the 18 mm. tadpole. The degenerative process starts below the larval epithelium and near the basal cell region at the time the 2 hind legs of the tadpole are half developed. The degeneration is by autolysis and not by phagocytosis; it is accompanied by a compensating regenerative process centering around the basal cells which increase in number to form a growth zone from which the adult organs are differentiated. After the larval epithelium is discarded into the lumen of the intestine, some of the basal cells become giant cells and form a syncytial layer, from which the new mucosa is formed. Throughout metamorphosis the muscular layers constantly increase in thickness as a result of the mitosis of the primary muscle cells. The degeneration in the liver is due to autolysis as in the stomach and the intestine. The liver of the young adult is formed by rearrangement and aggregation of the larval tissue. In the pancreas, evidences of mitosis are found, indicating that beside the rearrangement and aggregation of larval elements there may be some new growth in the formation of the adult pancreas. Stomach and intestine show a gradual and constant increase in length, volume, and thickness from the 7 mm. to the 45 mm. stage when the hind legs are fully developed. Liver and pancreas likewise increase in weight and volume during the same interval except that the liver reaches its maximum size slightly later. After the 2-leg stage, while the stomach continues to increase its weight, volume and thickness as before, the intestine shows a rapid decrease in length, volume and weight. However, the thickness begins to increase gradually. Liver and pancreas after having reached their maximum size decrease in weight and volume continuously all through metamorphosis. The number of mitoses was carefully counted, showing that with increase in thickness of the alimentary canal there is a corresponding increase in the number of cell divisions. When metamorphosis is nearly completed the number of mitoses diminished. Great significance is attached to this phenomenon as clean-cut evidence to show that the new cellular activities are responsible for the formation of the adult organs.—*Authors' summary.*

5389. LOEB, LEO. Parthenogenetic development of eggs in the ovary of the guinea pig. *Proc. Soc. Exp. Biol. & Med.* 27(5): 413-416. 1930.—Embryological evidences are presented that the structures observed by the author in the ovaries of virgin guinea pigs (Arch.

Mikrosk. Anat. u. Entwicklungsgesch. 65: 3. 1905) are embryos, not merely abnormal corpora lutea as was suggested by Kampmeier (Amer. Jour. Anat. 43: 45. 1929). In some cases, these bodies were found in gravid ♀♀ in late pregnancy. They are not uncommon.

5390. **MEYER-RÜEGG, H. Die Einbettung und erste Blutversorgung des menschlichen Eies.** *Arch. Gynaekol.* 140(2/3): 466-495. 14 fig. 1930.—This article is based on histologic study of a human ovum in situ. The conclusion is that the human ovum, on its arrival in the uterus, finds a subepithelial blood focus into which the ovum with its coverings penetrates to the capillary wall. Thus, from the beginning it lies in a blood-space the contents of which are renewed by the capillaries, and which is gradually enlarged by inclusion of the surrounding vessels. Imbedding and blood-supply are essentially connected; neither is possible without the other.

5391. **ODGERS, P. N. B. Some observations on the development of the ventral pancreas in man.** *Jour. Anat.* 65(1): 1-7. 1 pl., 3 fig. 1930.—Reconstruction models of the pancreas were made from human embryos 5, 7.1, 11.4, 14 and 23 mm. in length. In the 5 mm. embryo the ventral pancreas appears as a bilobed mass, in which 2 apparent lumina can be distinguished; this is replaced in the 7.1 mm. stage by a single outgrowth. These observations tend to support the view that the ventral pancreas in man is developed by 2 separate proliferations from the hepatic diverticulum, both of which, fusing early, may share in the formation of the adult gland. This view is confirmed in the 11.4 mm. embryo. Here there is a duplication of the ventral duct, apparently due to delayed fusion of the 2 ventral anlagen.—*Author's summary and conclusions.*

5392. **PORTA, ELETTA. Sulla distribuzione topografica delle mitosi nel cuore di embrioni di pollo nei primi due giorni di incubazione. [Topographic distribution of mitoses in the chick heart during the first two days of incubation.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 897-899. 1930.—The frequency of mitosis was greater in the dorsal region and the surrounding portions than in other portions of the embryo. In the stage preceding the disappearance of the dorsal mesocardium the growth of the heart is more intense in the dorsal region, whereas the growth becomes diffuse and uniform after disappearance of the dorsal mesocardium.—*M. Comel.*

5393. **QUIRING, D. P. The development of the ear of Acanthias vulgaris.** *Jour. Morph. & Physiol.* 50(1): 259-293. 3 pl., 27 fig. 1930.—This is the first single detailed account of the development of the selachian ear. The auditory placode appears at 3.5-4 mm. stage. The endolymphatic duct, formed at 5 mm., remains open to the exterior in the adult. Anlagen of the semicircular canals appear at 15-20 mm. At 22 mm. the sacculus, ventriculus, and lagena arise in the walls of the vesicle. The differentiation of the component structures of the ear is complete at the 33 mm. stage. Innervation of the ear is described. Comparisons with related forms are made. In *A. vulgaris,* the posterior semicircular canal opens into the sacculus medially. Eight drawings are from wax reconstructions of various stages.—*J. W. Price.*

5394. **ROMANOFF, ALEXIS L. Study of metabolic changes in the embryo and egg-contents under the standard conditions of artificial incubation.** *Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929.* In: *Bull. Alabama Polytech. Inst.* 25(1): 45-49. 1930.—Under standardized conditions of artificial incubation it was possible to obtain regular curves of the natural embryonic growth and metabolic changes in the embryo and in egg-contents. The embryonic growth curve was very regular, with but slight indication of the invariably present growth-cycles. The curves of the dry matter, total ash and Ca content of the embryo were also very regular and closely follow the growth curve. The curves of the % (a) of dry matter in wet-weight, (b) of total ash in wet-weight and in dry matter, and (c) of Ca in wet-weight, in dry matter and in total ash, were regular, but quite distinct in each case. The curves for the physico-chemical changes in eggs were regular and distinct, particularly in the loss of weight by eggs and in the percentages of dry matter in yolk, albumen and eggshell.—*Author's summary.*

5395. **ROUVIÈRE, H. Quelques observations sur le cloisonnement de l'oreillette primitive et sur le mode d'oblitération du trou de Botal. [The partitioning of the primitive auricle and the manner of obliteration of the foramen of Botalli.]** *Ann. Anat. Path. et Anat. Normale Méd.-Chir.* 7(4): 478-484. 8 fig. 1930.

5396. **SONDERMANN, R. Beitrag zur Entwicklungsgeschichte der Vorderkammer und des Hornhautendothels.** *Graefe's Arch. Ophthalmol.* 125(3): 407-427. 21 fig. 1930.—Eyes of fetuses showed that the corneal endothelium was of ectodermal origin. The thick ectodermal layer lying before the lenticular vesicle was split toward the surface by ingrowing scleral fibers so that these were clasped by epithelial cells on both sides. The endothelium proceeded from the cells on the inner side. The anterior chamber formed in the periphery following the development of the pupillary membrane which began about the end of the 2nd month. The aqueous humor filtered from the relatively wide capillaries of the pupillary membrane and of the tissue lying before the transitional fold of the secondary optic vesicle. Filtration occurred because of the inhibitory pressure exerted on the efferent irido-scleral vein by the sclera, increasing the blood pressure above normal. The formation of the anterior chamber and the pupillary membrane often may be retarded even several months.

5397. **YAMAZAKI, K. Essai sur l'asymétrie mandibulaire normale chez le foetus et le jeune enfant.** *Arch. Anat. Histol. et Embryol.* 12(1/4): 111-124. 1930.—This paper presents the statistical results of comparisons of measurements of weights and several linear components of the right and left rami of the jaws (dried) of 167 fetuses and young infants ranging in age from 5 mos. before to 5 mos. after birth. The measurements taken in 0.1 mm. are applied to: rectilinear length from symphysis to condyle, tangential to the alveolar groove (*L T*); length of alveolar groove (*L A*); maximum height of coronoid process (*H R*); minimum width of coronoid process (*L R*); maximum thickness of mandibular ramus (*E H*); and minimum height of mandibular ramus (*H H*). Inequality of weight is more frequent on the right side as compared with the left (34% as compared with 17%). Inequality in the linear measures is more frequent on the left side for all measurements except the minimum height of the mandibular ramus. The linear measurements which follow most closely the variations in weight are the maximum height of the coronoid process and the minimum height of the mandibular ramus. Of all the linear measurements, *H R* is the most variable, followed by *L A* and *L T*. There is a correlation between the homolateral variations of *L T* and *L A*, *L T* and *L R*, and *H R* and *H H* (these are found either by using the method of frequencies or of means). It is concluded that if a mandible in contrast with its congener is variable in its length then the several components of its length are variable; the same is true of the variations in the components of height. The 2 principal types of asymmetry are of architectural origin, that is to say, they are consequent to a general asymmetry of the face and of the cranium rather than of local origin such as could be caused by asymmetry of muscles and teeth.—*J. E. Kindred.*

EXPERIMENTAL

5398. **ADAMS, A. ELIZABETH. Some effects of removal of endoderm from the mouth region of early Amblystoma punctatum embryos.** *Jour. Exp. Zool.* 58(1): 147-163. 1 pl., 20 fig. 1930.—A large rectangle of endoderm was removed from the stomodaeal region of *A. punctatum* embryos with closing or closed neural folds. 32 of 65 embryos operated upon survived for study of mouth- and tooth-germ formation. In some cases no ectodermal-endodermal contact was established, and if such embryos lived to a stage when the mouth should

have opened, no perforations were formed. In other instances, a contact between ectoderm and endoderm occurred, and such embryos developed open mouths, somewhat abnormal in shape and size, when old enough to do so. Tooth germs developed in all embryos of stage 38 or older, but they were in every case reduced in numbers when compared with normal animals of similar stages. This reduction occurred not only in tooth germs with endodermal enamel organs (endoderm had been removed), but also in those with ectodermal enamel organs (no ectoderm had been taken away). Numbers of both types of dental anlagen were relatively higher in animals where open mouths had formed. These results seem to emphasize the importance of a proper arrangement of the potential tissues for normal mouth formation. No decision was reached concerning which layer (epithelium or pulp) instigates the formation of a tooth germ. The results, perhaps, indicate a greater primary activity of the epithelium.—*Author* (*courtesy Wistar Bibl. Serv.*).

5399. EINSELE, WILHELM. Entwicklungserregung von Froscheiern durch Injektion zellfreier Organextrakte. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 123(2): 279-300. 1930.—Using glass capillary tubes, serum or extract of sperm, of blood cells, of muscle, or of blood was injected into frog eggs, controls being either pricked or injected with distilled water. Thus inoculation with formed elements was avoided in studying the nature and mechanism of the so-called 2nd factor of traumatic parthenogenesis in Anura. The results were about the same as with the old inoculation method (40-60% morulae). The percentage of developing eggs depended upon the concentration of the injected extracts. The undiluted extracts were lethal; increasing dilution led to increasingly high percentages of developing eggs to an optimal point. Great dilutions gave the same results as when eggs were only pricked. No difference between the action of sperm and blood extract was found. Muscle extract gave no positive results; when undiluted it killed the eggs, diluted it had no effect. Its pH was about 5.6, the pH of the other extracts ranged about 7; addition of n/200 NaOH to muscle extract, increasing its pH to 7, was also without effect. Experiments to reproduce the supposed colloid-chemical action of the organic extract by the swelling and precipitating action of salt solutions (sol. of KSCN, KCL, $MgCl_2$, $MgSO_4$, $CaCl_2$, mixtures of these solutions in the most varied concentrations injected into the eggs), likewise peptone, were unsuccessful. Only very high concentrations (more than 1 mol) of many salt solutions (e.g., KSCN not even in concentrated solution) caused injuries similar to those produced by the concentrated extracts; no improved development was observed. To determine whether definite substances were responsible for stimulating development, the ferments of the extracts were investigated; thus blood extracts which had been heated for varying periods of time were injected. Unequivocal results were not obtained. Thus far it appears as if the fermentative action participates, for blood extract quickly warmed to 75° had about the same effect on the eggs as the untreated extract, while blood extracts heated 1 hr. at 55° had almost no action. The same method was used to determine whether a certain colloid-chemical structure of the extract was necessary, since blood extract warmed to 75° was dirty gray and very clouded, while the untreated extract was ruby red and clear. Since the brief heating to 75° and the great change in structure apparently did not affect its action it is assumed that the colloid-chemical structure of the extract had no particular significance.

5400. GIACOMINI, ERCOLE. The anatomic vascular conditions of the embryonic ovaries and tubes of birds and their functional significance. *World's Poultry Congress* 4(Sect. A): 83-87; résumé sect., 11. 1930.—Concerns the embryonic adnexa (allantois and yolk sac). See B. A. 5(11): Entry 29227.

5401. HELFF, O. M. Studies on amphibian metamorphosis. VIII. The rôle of the urostyle in the atrophy of the tail. *Anat. Rec.* 47(2): 177-186. 1 fig. 1930.—*Rana pipiens* larvae, 75-90 mm. long were used. The urostyle develops from a small cartilaginous rod 2-3 mm. in length located near the junction of the body and tail between the notochord and dorsal aorta. In 26 cases of extirpation which lived through subsequent metamorphosis, normal tail atrophy took place during involution simultaneously with groups of normal and operated controls. Subsequent autopsy failed to reveal regeneration of urostyle cartilage. It is concluded that the growth of the urostyle cannot be considered the fundamental cause of tail atrophy, while the tissues of the tail appear to be specifically susceptible to histolytic agents in the blood stream. Possible lowering of the blood pH or the presence of specific chemical substances capable of inducing histolysis is suggested as the possible causative factor.—*Author* (*courtesy Wistar Bibl. Serv.*).

5402. HOOKER, DAVENPORT, and J. S. NICHOLAS. Spinal cord section in rat fetuses. *Jour. Comp. Neurol.* 50(2): 413-467. 3 pl., 1 fig. 1930.—An experimental study of the functional and morphological changes occurring after section of the spinal cord of 11-20 day fetuses of the albino rat (246 fetuses of *Mus norvegicus albinus* and 47 fetuses of a hooded strain). Following transection by electrocautery or by mechanical means, the fetuses exhibit no shock, nor are reactions reflexly elicited qualitatively different from the normal. The threshold to stimuli is, however, increased. The reactions shown result in coordinated movements during intra-uterine life. As no histological evidence of a continuous nervous pathway is found, an hypothesis to explain this phenomenon is as follows: The mechanism of the transmission of responses from one end of the body to the other across the break in the nerve paths probably is as follows: (a) stimulation posterior to the level of cord injury is transmitted by exteroceptive nerves to the intact portions of the cord; (b) through the cord, muscular movements in the dorsal, flank, and ventral musculature occur; (c) the muscular reaction sets up a tension in the flank muscles or a reaction in a contiguous muscle group; (d) the muscular contraction is carried by proprioceptive fibers to uninjured cord segments across the region of transection, where, (e) a reflex motor discharge occurs. When specific responses are individuated from the mass reactions of these rats after birth, coordination of movement fails in many respects. There is no evidence of regeneration in the cord or ganglia, the cells of which undergo cytolysis, probably autolytic in nature. There is little or no cellular replacement.—*Author* (*courtesy Wistar Bibl. Serv.*).

5403. HUMPHREY, RUFUS RICHARD. Studies on sex reversal in Amblystoma III. Transformation of the ovary of A. tigrinum into a functional testis through the influence of a testis resident in the same animal. IV. The developmental potencies exhibited by the modified ("freemartin") ovary of Amblystoma tigrinum following removal of the testis which had induced its modification. *Jour. Exp. Zool.* 58(1): 333-365. 5 pl., 2 fig.; 367-399. 4 pl. 1930.—III. By removal of 1 gonadic preprimordium from *Amblystoma* embryos of stages 24-32 and its replacement with a preprimordium from another embryo of like age, animals may be secured in which an ovary and a testis develop concomitantly from early embryonic life. Under these conditions, the ovary present in any host undergoes modifications reducing it to a rudimentary or vestigial state. Formation of the central ovarian cavity is suppressed and growth of the ovarian cortex is inhibited and its germ cells caused to degenerate. The proximal portion of the ovary (medulla, hilar region, and adjacent mesovarium) becomes prominent, due to the hypertrophy of its rete elements. If any considerable number of germ cells is present in this situation in any part of the ovary, this region may give rise to testicular lobules and thus transform into a testis of normal adult structure. In some cases spermatozoa were developed in such transformed ovaries; since these organs are connected by efferent ductules to the wolffian duct or vas deferens, they would be able to function as

normal testes. Germ cells of the ovary which give rise to testicular lobules appear to be those which do not become included in the ovarian cortex at the time of sex differentiation, but remain at the hilus of the organ or in the mesovarium.—IV. In the above mentioned rudimentary or vestigial condition of increased prominence of the hilar and medullary portions and the degenerate condition of the cortex of the ovary, the appearance is that of a testis rather than of an ovary. Upon removal of the testis which had induced this modification, however, the gonad usually regenerates as an ovary, unless, in some portion of its extent, it has already begun transformation into a testis. In this event, the transformed or testicular portion of the gonad usually suppresses or inhibits cortical regeneration in the remainder of the organ, and the gonad continues its development as a testis. Since germ cells of the cortex decrease in number during the time the ovary continues under testicular influence, while germ cells (spermatogonia) of the hilus and medulla tend to increase, even though slowly, it follows that early removal of the testicular influence favors regeneration of the modified ovary as an ovary, while delaying such removal favors reversal of the ovary into a testis.—*Author (courtesy Wistar Bibl. Serv.).*

5404. **KODAMA, SAKUZI. Physiological studies on tissue in vitro. I. Influence of temperature upon the growth of fibroblasts in coverglass cultures.** *Cytologia* 2(1): 77-80. 1930.—The longest time during which all the tissues in the hanging drop cultures (embryonic tissue juice and plasma of chicken) retain their activities to grow in unaltered media was 1 day at −1° C., 12 days at 25° C., and 10 days at 30° C. Fibroblasts from heart muscle of chick embryo were used.

5405. **KRÜGER, FRIEDRICH. Transplantation junger Linsen in das Blastocöl bei Tritonen.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(1): 1-11. 6 fig. 1930.—*T. palmatus, T. alpestris,* and *T. taeniatus* were used; 130 individuals were operated on, 95 of the transplantations being homeoplastic and 35 heteroplastic. The lenses were, in most cases, removed from the larvae shortly before or after detachment from the ectoderm, and implanted in blastulae or young gastrulae. Mortality in the days immediately following operation was great, and, in the specimens that survived to be sectioned, only 42 sections showed the lens. The conclusions are: "The lens of *Triton* transplanted into the blastocoele shows no inductive ability. Therefore, although the primitive gut not only induces the medullary plate but makes an inductor of the medullary plate itself, the eye anlage of the medullary plate can induce the lens but does not transfer to this its power of induction. It shows that further differentiation may take place in the lenses of *Triton* on which the experiments were performed, after the removal of the optic cup and the transplantation into a younger embryo. Lenses in which lens fibers are beginning to develop show a slightly developed lens knob a few days after transplantation. A lens placode which has been transferred merely rounds up and shows no lens fiber development."—*J. A. Welsh.*

5406. **LARSELL, O. The effect of experimental excision of one eye on the development of the optic lobe and opticus layer in larvae of the tree frog (Hyla regilla). II. The effect on cell size and differentiation of cell processes.** *Jour. Exp. Zool.* 58(1): 1-20. 6 fig. 1930.—Excision of one eye in the frog, after connections with the optic lobe had been established and after optic function had been experimentally demonstrated to be present, resulted in failure of the affected optic lobe to develop to normal size or to proliferate the normal number of cells. The neuroblasts of the 8th and 9th layers, which were most directly affected by the experiment, were reduced in number. They also failed to grow to normal size or to show the normal development of dendritic processes. These results appear due to the absence of normal functional stimuli which reach the optic lobes in the normally developing frog or to the absence of factors directly attributable to these stimuli.—*Author (courtesy Wistar Bibl. Serv.).*

5407. **NUSSMANN, T. C. Further observations on the influence of transplanted eyes on the development of spinal nerves in Amblystoma punctatum.** *Jour. Exp. Zool.* 58(1): 21-30. 1 fig. 1930.—The optic vesicle of *A. punctatum* (64 specimens) was transplanted to the right limb site of another embryo whose limb rudiment had been excised. Microscopic sections showed that the spinal ganglia in the brachial region had undergone a hypoplasia of about 50%. The presence of the eye did not influence their development, since removal of the limb alone causes the same amount of hypoplasia. The brachial nerves grow out toward the eye, but make no peripheral connections with it, showing that spinal nerves have a certain amount of specificity or power of selectivity in making peripheral connections.—*Author (courtesy Wistar Bibl. Serv.).*

5408. **SCHOTTÉ, OSCAR. Transplantationsversuche über die Determination der Organanlagen von Anurenkeimen. I. Allgemeines und Technik der Transplantation.** *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 123(2): 179-205. 2 fig. 1930.

5409. **SEVERINGHAUS, A. E. Cellular proliferation in heterotopic spinal-cord grafts.** *Jour. Comp. Neurol.* 51(2): 237-270. 12 fig. 1930.—These experiments were designed to study cellular proliferation in segments of *Amblystoma punctatum* spinal cord, which were excised at the tail-bud stage and transplanted into the somatic region of host embryos lateral to the normal cord. Segments of approximately 3 somites' length from various spinal levels were employed. A marked sensory hyperplasia and a moderate motor hyperplasia were characteristic of all these heterotopic grafts. An increase in the total cross-section area of the grafts corresponded closely to the increase of the cellular area. The interganglionic distances in the grafted cords were often less than in corresponding normal cords. A reversal of the anteroposterior axis of the graft gives results entirely similar to those recorded for grafts of normal orientation. The characteristic posterior taper seen in the normal cord is maintained in the grafted cords, and this feature is also independent of the orientation of the graft. The bearing of these results upon previous researches and upon the interpretation of suggested forces regulating cellular proliferation within the spinal cord is indicated. —*Author (courtesy Wistar Bibl. Serv.).*

5410. **TAZELAAR, M. A., J. S. HUXLEY, and G. R. de BEER. Some further effects of an antagonistic temperature gradient upon the frog's egg.** *Anat. Rec.* 47 (1): 1-11. 1 pl., 4 fig. 1930.—Frog eggs were treated with temp. gradients for long periods (24-48 hrs.). Previous results showing that eggs heated at the animal pole were more advanced, even as regards segmentation of the vegetative cells, than those kept at the same mean temp. but heated vegetatively (antagonistic gradient) were confirmed. Long-continued antagonistic gradients caused the following effects in gastrula stages: (1) A ring-shaped groove encircling the eggs, at the level of the top of the yolk. (2) A very thin roof to the blastocoel. (3) In later development strikingly microcephalic embryos were produced. If the closure of the blastopore is nearly complete, no other abnormality is noted. (4) Often, however, the blastopore remains widely open, producing extreme spina bifida. In these forms the foregut invagination is found dorsally just behind the brain; the proctodaeum, quite separate, dorsally just in front of the tail. The stomodaeum is later formed in the normal position, thus establishing a communication from the mouth to the dorsal surface just behind the brain. (5) In these forms it appears also that, probably owing to the incomplete extent of invagination, the most anterior section of the presumptive medullary plate does not become converted into actual medullary plate; thus the anterior end of the brain is in a different position, relative to the original egg axes, from that which it occupies in normal embryos.—*Authors (courtesy Wistar Bibl. Serv.).*

5411. WITSCHI, EMIL. Studies on sex differentiation and sex determination in amphibians. V. Range of the cortex-medulla antagonism in parabiotic twins of Ranidae and Hylidae. *Jour. Exp. Zool.* 58(1): 113-145. 5 pl., 8 fig. 1930.—From embryos of *Rana sylvatica, R. aurora,* and *Hyla regilla,* grafted together in the tail-bud stage, a total of 111 prs. of parabiotic twins has been obtained, 56 of which later proved to be heterosexual combinations. As reported previously, genetic ♀♀ twinned with ♂♂ first differentiate independently, but later undergo sex reversal. In 2 cases more quickly developing ♀♀ induced hermaphroditism in twin ♂♂. Analysis of the effects of heterosexual parabiosis reveals the following: The testicular medulla of a ♂ suppresses the development of the ovarial cortex of its ♀ co-twin. Vice versa, the ovarial cortex acts as a similar, though less powerful, inhibitor of medullar development. The principles causing these inhibitions spread with falling gradients of efficiency from the gonads of either animal into the body of its co-twin. The medullar development in ovaries following the inactivation of their cortex is not due to stimulation from side of the ♂ co-twin; but represents an autonomous reaction of the rete ovarii, released after elimination of the cortical control. It is assumed that the interactions of twin gonads are established through morphogenetic substances, the medullarin, product of the medulla, and the cortexin, product of the cortex. These substances differ from typical hormones in that they are not released into the blood stream, but spread out slowly through the tissues.—*Author (courtesy Wistar Bibl. Serv.).*

ANOMALIES, MONSTERS AND MARKED VARIATIONS IN DEVELOPMENT

5412. BAMATTER, FRÉDÉRIC. Osselet surnuméraire exceptionnel du tarse coexistant avec une variation du ligament astragalo-scaphoïden supérieur. [Rare supernumerary ossicle of the tarsus co-existent with a variation of superior astragalus-scaphoid ligament.] *Arch. Anat. Histol. Embryol.* 7(1/3): 135-144. 1 fig. 1927.

5413. BOULGAKOW, BORIS. The effect of non-development of the allantois as illustrated by a case of sympodia. *Jour. Anat.* 63(2): 253-258. 4 fig. 1929.—The conditions which characterize sympodia are correlated with incomplete formation of the hind-gut and, in particular, with non-development of the allantoic diverticulum and of the cloaca. Incomplete development of the hind gut results in absence of the organs which develop from these parts, i.e., kidneys, ureters, bladder, part of the penile urethra and part of the rectum. Non-development of the allantois and cloaca can be explained by maldevelopment of the hind gut which is arrested in its caudal growth at the level of the body stalk and therefore gives no opportunity for an allantoic diverticulum to enter the body stalk in order to form the allantois, and since the hind gut fails to reach the tail end of the embryo no cloaca could be established. The presence of only a single umbilical artery could be explained as due to the absence of an allantoic diverticulum in the body stalk along which, in the normal embryo, 2 arteries grow towards the chorion as allantoic vessels, becoming at a later stage umbilical arteries; but if the body stalk does not contain the diverticulum there is no necessity for a splitting of the umbilical artery which is to establish the placental circulation. It is suggested that, owing to the incomplete descent of the hind gut, the conditions appear to be favorable for the fusion of the lower limb buds, because there is now no intervening structure to keep them apart. This fusion explains the failure of the limb buds to rotate forwards.—*B. Boulgakow.*

5414. CHENG, TSO-HSIN. A new case of intersexuality in Rana cantabrigensis. *Biol. Bull. Marine Biol. Lab.* [*Woods Hole*] 57(6): 412-421. 1 fig. 1929.—This specimen is an adult wood-frog, measuring 3.7 cm. in body length, and is typically ♂ in its secondary sex characters and accessory sex organs. Both gonads, from a surface examination, appear as normal testes, containing, however, a number of ova amid their spermatic substance. The ova average about 200μ in diameter and closely resemble the normal young oöcytes of the 2nd growth period. The writer attempted to analyze the sex nature of the testis-ova, and to point out the possible causes of their genesis.—*T.-H. Cheng.*

5415. FISCHER, KARL. Über Umbildung der Knochen- und Gelenkform durch geänderte Muskelmechanik. *Zeitschr. Ges. Anat. Abt. I. Zeitschr. Anat. u. Entwicklungsgesch.* 87(5/6): 746-757. 4 fig. 1928.—The case is that of a woman who died of pernicious anemia at the age of 27 yrs. and who had never stood on her feet. The record notes, among other abnormalities, atrophic arms with small somewhat cramped hands, legs so abnormal that the lower legs can be bent forward at right angles to the thighs, which are short and thick, feet a kind of pes equinovarus, infantile breasts. Both legs and shoulders were "weak" at birth, but the child learned to turn the feet back to the rump and crawl about on its knees. Leg skeleton and musculature are described in detail. Apparently at birth, the leg bones and knee joints were normal but certain muscles, such as the biceps femoris and extensor muscles of the lower leg were practically absent. As a result of these defects and the reaction to the active muscles, the shaft and condyles of the femur especially and the tibia were so deformed that the knee joint became similar to that of the elbow. The defective musculature resulted both in the deformation of the bones and in a change in the muscle mechanics, especially in the region of the knee.—*H. F. Nachtrieb.*

5416. FONTANA, ALFREDO. Sulle atrofie renali congenite ed acquisite. [Congenital and acquired renal atrophy.] *Arch. Ital. Chir.* 22(5): 441-481. 12 fig. 1928.—The author, in a brief introduction, divides renal anomalies into those of defect (or deficiency), of excess (or superfluity), and of fusion; he then speaks of the various types of renal malformations which accompany malformations of other organs and defines the differentiating characters of congenital and acquired atrophies, and of congenital atrophy and renal hypoplasia. His observations are based upon the study of 2300 sections. He describes 2 cases of congenital renal atrophy: (1) an atrophic cystic kidney, with atresia of the ureter in the upper $\frac{2}{3}$, and lack of left testicle; (2) an atrophied cystic, horseshoe kidney. After discussing the etiopathogenesis of the various forms of renal atrophy, he confines himself in his own particular cases to unilateral congenital atrophy; this being an alteration difficult to establish histologically as well, in which the kidney is transformed into a single, large cyst. He cites the dualistic embryogenetic concept to explain the vitium primae formationis in his special cases. Next he takes up monolateral, acquired renal atrophies, distinguishing total from partial ones (3 cases), and points out that these may be the result either of an arteriosclerotic process or of circumscribed inflammation. In the first case the presence of marrow and very young osseous tissue led the author to study the genesis of renal osseous metaplasia, reporting 3 other instances; these being obtained from rabbits in which the vessels of the hilum were ligatured. Finally the author discusses functional hypertrophy of a compensatory type in 2 cases, in which the functioning power of a kidney, for various causes, had been wholly or partially lost. He concludes that the vicarious hypertrophy of a kidney is more pronounced in cases of congenital atrophy, and that vicarious hypertrophy is based principally upon an hypertrophy of the glomeruli and of the tubules along with cellular hyperplasia in the elements of the tubules.—*A. Fontana (transl. by E. W. Count).*

5417. FRANCESCHINI, PIERO. Su la ipertrofia compensatrice dei testicoli nell'uomo. A proposito di un caso di monorchidia vera. [Compensatory hypertrophy of the testicles in man. A case of true monorchism.] *Endocrin. e Patol. Costituz.* [*Bologna*] 4(11): 164-182. 9 fig. 1929.—A man of 22 yrs. with congenital absence of the left testicle, also lacked the vas deferens, seminal vesicle and the seminal ampulla; prostate gland was normal. The

right testicle was much bulkier than the average human testicle at the same age; histological analysis showed increase in the mass of seminiferous tubules and increase in interstitial tissue. The former appeared to be due to a dilatation of the tubules; the latter was caused primarily by hypertrophy and hyperplasia of the Leydig cells. With the technique of Del Rio-Hortega, the author shows the special relation of the Leydig cells with the delicate reticular tissue, by which the Leydig cells are united on one side to the membranes of the seminiferous tubes, on the other to the reticular adventitia of the blood capillaries. Extraordinary increase in the lipoid exchange, of both interstitial tissue and seminiferous tubules, was likewise shown.—*P. Franceschini.*

5418. **FRITSCHEK, F. Über eine amniogene Schädel- und Hirnmissbildung.** *Virchow's Arch. Path. Anat. u. Physiol.* 267(2): 318-325. 2 fig. 1928.—In a ♀ fetus, lacking the calvarium, of the anencephalus type with an oblique right facial fissure at the cranial end of which the amnion started, the placenta sprang directly from the skull base. A band extended from the placental tissue at the skull base to the left forearm where the epidermis was lacking. There was little amniotic fluid at birth; the amnion and the membranes were drawn tightly across the skull and the membranes intermingled with those of the brain. The general condition was that of an 8 months' fetus. The author believes that the time of the malformation can be established in the 2nd quarter of the 1st half of gestation, when the embryo was about 12 cm. long. In this case the adrenals were small,—typical anencephalic adrenals; the hypophysis was small, with a tiny, glious posterior lobe bent into a depression of the pars buccalis and a hyperemic anterior lobe with very sparse eosinophil cells. In accordance with causal relations laid down by Kraus and others, the author attributes the atrophy of the adrenals to the insufficiency of the eosinophil cells in the anterior lobe and connects this case of amniogenic hemicrania and exencephaly with the accompanying endocrine disturbances.—*From abstr. by B. Bickel.*

5419. **GASTEIGER, HUGO, und KO HIDANO. Experimentelle Beiträge zur Frage der Entstehungsweise der angeborenen Missbildungen des Auges.** *Graefe's Arch. Ophthalmol.* 119(3/4): 733-754. 2 fig. 1928.—The rats came from a stock bred in the laboratory for 3 yrs., with 500 offspring none of which had eye anomalies. Mice from a colony without eye anomalies were also used. The adrenals of both animals were removed in 6 prs. of rats. When these were mated, 1 ♀ produced no young, 2 had normal litters, and in 3 litters eye anomalies occurred. One litter had 7 normal young with 1 abnormal having a bilateral anophthalmus; another litter had 5 normal young and 1 in which an iris coloboma occurred. The 3rd litter contained 1 rat with combined micro-ophthalmus and coloboma. Extirpation of thyroid of 3 animals (2 ♀, 1 ♂) resulted in death of the 2 ♀♀. When the ♂ was paired with a normal ♀, no abnormal offspring resulted. Hyperthymic animals also produced no abnormal offspring. The rat with anophthalmus lacked the eye anlage. The micro-ophthalmic eye lacked the lens entirely and had only a partially developed retina. Both ♀ and ♂ rats were irradiated with accurately measured x-ray dosage. After irradiation, matings were performed as follows: Irradiated ♂ with non-irradiated ♀; irradiated ♀ with non-irradiated ♂; irradiated ♂ with irradiated ♀. No anomalies were produced by the 1st type of mating. Some of the ♂♂ were sterile and in some cases there were reduced litters. The mating of 2 irradiated parents produced no eye anomalies. Mating of an irradiated ♀ and a normal ♂ produced anomalies in 3 out of 5 litters. In litters with anomalies, 6 individuals occurred with either anophthalmus or micro-ophthalmus.

5420. **KADLETZ, MAXIMILIAN. Amelia anterior dextra beim Hund.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 1, Gegenbaur's Morph. Jahrb.* 60(2/3): 359-370. 5 fig. 1928.—All of the right foreleg was wanting. The scapula was practically normal. The presence of the Mm. latissimus dorsi and pectoralis major et minor leads the author to conclude that the anlage of the forearm was established but later was removed by an intrauterine amputation. The muscles connected with the scapula and their readjustments due to the absence of the forearm are described. The aortic arch also presented a rare variation in the origin of the great vessels and the author offers a developmental explanation which he thinks will, at least to some extent, correlate the human anomaly known as dysphagia lusoria and the "two-rooted vertebralis." In the diagram illustrating the embryonic relations of the anomaly, the aortic arch between the right common carotid and the right subclavian is wanting and the right subclavian communicates with the dorsal aorta through the original right dorsal portion of the arch. A brief account of variations in the nerves and the nerve plexus of the shoulder region concludes the paper.—*H. F. Nachtrieb.*

5421. **KAKUSCHKIN, N. Cysten- und Drüseneinschlüsse des Tubenwinkels der Gebärmutter in einem Falle von kongenitalem einseitigen Mangel der Tube und des Ovariums.** *Arch. Gynäkol.* 133(2): 533-557. 5 fig. 1928.—Congenital absence of only 1 ovary or of only 1 tube is very rare and is not infrequently associated with greatly changed vestiges of other organs though the remainder of the genital tract is usually normally developed. Unilateral congenital absence of the uterine adnexa is sometimes associated with presence of a dermoid in the ovary of the opposite side, which perhaps may be regarded as a product of excessive functional demands placed upon the single ovary. The general conception is that such absence of the uterine adnexa (more frequently on the right side) is the result of constriction following torsion or of the production of adhesions after inflammatory conditions in early periods of intra-uterine life and subsequent atrophy and resorption. Detailed anatomical examination of a growth excised from the region of the right tube indicates that the formation is an adenoma derived from rests of the Wolffian body and duct. In the present case it may be that the genital functions produced a definite irritation in the malformed parts, which favored both the production of the neoplasm and inflammation.—*Author's summary (transl. by O. F. Kampmeier).*

5422. **KRASTIN, LUCIJA. Hämapophysis beim Menschen.** *Anat. Anz.* 65(11/13): 222-239. 2 fig. 1928.—Among the skeletons at the Anat. Inst. of the Univ. of Lettland were 63 sacra in which the first coccygeal vertebra was ankylosed with the last sacral. In 2 cases this coccygeal vertebra had a small abnormal process on the anterior side. The sacro-coccygeal region and abnormal process of these 2 cases are described in detail; the few recorded accounts of this rare abnormality and related variations in other animals are noted and discussed. The author states that under certain formative stimuli during ontogenesis latent potentialities are awakened which may lead to the formation in their or neighboring regions of atavistic characteristics.—*H. F. Nachtrieb.*

5423. **LEECH, JOHN V., LAWRENCE W. SMITH, and HOWARD M. CLUTE. Aberrant thyroid glands.** *Amer. Jour. Path.* 4(5): 481-493. 4 pl., 1 fig. 1928.—In this study the probable etiology of aberrant thyroid glands is ascribed to the ultimobranchial bodies. It is supposed that in their migration these cells fail to meet and fuse with the thyroid and subsequently give rise to tumor formation. In a series of nearly 4,000 cases of thyroid disease only 4 with lateral, aberrant thyroid tumors were noted. Of the 4 cases, 1 was apparently frankly malignant and had metastasized to adjacent lymph nodes, 2 were considered as still benign although potentially malignant. A case of aberrant thyroid tissue in a multilocular teratoid cyst of the ovary is described.—*H. D. Caylor.*

5424. **LENTZE, F. A. Verwickelte Missbildungen der Harngeschlechtsorgane.** *Virchow's Arch. Path. Anat. u. Physiol.* 272(1): 279-294. 9 fig. 1929.—The abnormalities in a child 8 mos. old were as follows: spina bifida; horseshoe kidney; double right ureter; diverticulum of the

bladder due to interference with the sphincter; swelling of left ureter due to a valve-like closure of the posterior end due to pressure atrophy of the prostate; absence of both seminal vesicles and of right vas deferens with retention of left müllerian duct; scoliosis; club foot.—*W. H. T. Baillie.*

5425. LLOYD, J. H. Hermaphroditism in the common frog. (Rana temporaria.) *Amer. Nat.* 63(685): 130-138. 1929.—A description of 2 cases of hermaphroditism in the frog, the entire animal in 1 case and the urinogenital organs only in the other. Both possess testes and vasa efferentia, with one or more oviducts. Pigmented lobes which are attached to the testes are considered as ovarian tissue, though no histological examination seems to have been made. It is concluded that these specimens were originally ♀♀ whose ovaries have degenerated and testes formed, though no evidence is given to support the conclusion. The question of sex determination is discussed and it is concluded that evidence is accumulating that sex is not determined by sex chromosomes.—*G. T. Hargitt.*

5426. MILLS, H. M., and HYMAN STRAUSS. A case of pregnancy in uterus didelphys. *Amer. Jour. Obstet. & Gynecol.* 18(2): 263-265. 1929.—Examination showed 2 uteri separated by the recto-vesical ligament at the level of the internal os of each uterus.

5427. [NIKITSKIĬ, B. A.] НИКИТСКИЙ, Б. А. Два случая микроцефалии у детей. [Two cases of microcephaly in children.] [French résumé.] Материалы по Антропологии Украины. (*Anthrop. Ukraine*) 1: 177-181. 2 fig. 1926.

5428. [NIKOLAEV, L. P.] НИКОЛАЕВ, Л. П. Случай акромегалического гигантизма. [Acromegalogigantism.] [French résumé.] Материалы по Антропологии Украины. (*Anthrop. Ukraine*) 2: 198-206. 3 fig. 1926.—Description of a giant with acromegaly, whose daughter showed deformities suggesting heredity of acromegalic constitution.

5429. POLITZER, G., und H. STERNBERG. Über einen missbildeten menschlichen Embryo des ersten Monates. *Frankfurter Zeitschr. Path.* 37(1/2): 174-210. 23 fig. 1929; *Wien. Klin. Wochenschr.* 1928(33): (1-2). 1928.—The monster, from an ovule 8 x 10 x 14 mm., is 1.9 mm. long and presents a sharp curvature of the back so that the head and tail almost touch. In the otherwise excellently preserved tissue, especially the embryonal connective tissue, are numerous disintegrating cells, and open spaces. Individual organs show varying degrees of development. Somites and anlagen of the uropoietic system are lacking. The central nervous system is open its whole length, while other organs, such as the ear invagination and the hind gut, are further advanced in their development. The minimum age of the embryo corresponds to a normal one of about 20-22 pairs of somites or one of 4 wks. Deformities may be: (1) typical, involving usually only single organs or regions of the body, frequently hereditary, and apparently due to causes inherent in the embryonic anlage itself; or (2) atypical, involving many kinds of associated defects, often amounting to true monstrosities and apparently due to causes outside of the embryonic anlage, such as chorionic lesions or coalescence with the enveloping membranes. The present example belongs to the 2nd group. Pathologic changes are present in the chorion, and the question may be raised whether the disturbance in embryonic development caused the alterations in the chorion, or whether changes in the chorion caused the malformation of the embryo. The authors suggest, without coming to a final decision, that both chorionic and embryonic changes may be due to a single external cause, such as pathologic change in the site of implantation in the uterus.—*O. N. Eaton.*

5430. SCHIDLOWSKY, P. S. Zur Frage nach den Nieren-, Nierenbecken- und Harnleiteranomalien. *Anat. Anz.* 65(11/13): 193-214. 10 fig. 1928.—This paper is unusually valuable because of a review of the more important inaccessible Russian literature on this subject. Twelve original cases of urinary anomalies are given: partial double ureter and pelvis, left; complete double ureter and pelvis; 3 of horseshoe kidney; double ureter (right); 3 of fused single kidney; partially fused unilateral kidneys; ectopic kidney at brim of pelvis; and single right kidney. The embryology and practical considerations of these conditions are discussed.—*R. A. Moore.*

5431. SPANNER, R. Untersuchungen zur Genese der Rhachischisis anterior und posterior mit Berücksichtigung der Craniorhachischisis. *Zeitschr. Ges. Anat. Abt. I, Zeitschr. Anat. u. Entwicklungsgesch.* 85(3/4): 323-362. 20 fig. 1928.—The author agrees with Ernst that defective development of the medullary plate is the important factor in the production of posterior spina bifida. Since the normal medullary plate has been shown to be connected along its side walls with the epidermis, failure of closure of the medullary tube is regarded as the starting point of posterior spina bifida. Various other theories are thus excluded, e.g., that of Förster, that spina bifida results from abnormal accumulation of fluid in an already closed medullary tube; that of Lebedeff that primary axial curvature inhibits growth of the medullary tube; that of Dareste who believes that the amnion arrests closure of the tube. Anterior spina bifida results from an early growth arrest of the medullary plate, whereby lack of differentiation of the germ layer leaves ventral parts of the medullary plate free of ependyma and mantle layer, while marginal parts are normal. The author denies that anterior spina bifida represents persistent remains of the neurenteric canal. The cases of anterior spina bifida with abnormal opening between neural and intestinal canals are to be regarded not as disarrangements of the blastoporic closure, which would be required by the concrescence theory, but rather as a secondary growing together and breaking down of the undeveloped medullary plate and the intestinal tract. Regressive changes in the brain and the hypophysis are also discussed.—*From author's summary by C. F. DeGaris.*

5432. SULZBERGER, MARION B. Ueber eine bisher nicht beschriebene congenitale Pigmentanomalie (Incontinentia pigmenti). *Arch. Dermatol. u. Syph.* 154 (1): 19-32. 3 fig. 1928.—In 1925 Bloch presented a case of anomalous distribution of pigment which is here given in detail. Clinically it is the same condition as Naegeli's familial chromatophore nevus. This anomaly presented fine, very irregular, brown and grayish lines which had a tendency to heal slowly, forming scars after several years. The hypothesis is advanced that melanoblasts had undergone congenital pathologic changes, letting the melanin reach the cutis too rapidly, instead of further distributing it. The pigment in being eliminated is taken into the connective tissue cells and forms accumulations resembling tattoo marks.—*B. Bickel.*

INVERTEBRATE EMBRYOLOGY AND HISTOLOGY

(See also B. A. 6(1): Entries 22, 228, 234, 259, 581, 885, 887, 888, 976, 2131, 2276, 2330, 2332, 2385, 2530, 2581, 2610, 2702, 2738; and in this issue Entries 3273, 3589, 3608, 3618, 3906, 4653, 5281, 5646, 5667, 5696)

5433. ANDERSON, B. G., and L. A. BROWN. A study of chitin secretion in Daphnia magna. *Physiol. Zool.* 3(4): 485-493. 1930.—An experimental method has been developed for the determination of the time at which chitin secretion begins. This method consists of injuring the carapace of an animal at a definite time within the instar and noting the type of wound resulting in the following instar. Three types of wounds are found, depending on the time at which the injury is inflicted. For injuries produced during the first half of the instar,

wounds with smooth edges result. For the next 20% wounds have rough edges during the postoperative instar, showing that chitin has been secreted to a small extent. Chitin was secreted after injury in the first group to produce a smooth edge. For wounds made during the last 30%, sufficient chitin had been secreted to carry over into the following instar the brown material which is formed shortly after injury. Experiments were run at 3 different temperatures. Approximately 480 animals were used. The data show that—The time at which chitin secretion begins in *Daphnia magna* at 3 temperatures (15°, 22°, and 25° C.) is approximately a period at which 60% of the instar has passed. For the temperature range studied the time at which chitin secretion begins within the instar is a function of the temperature, and temperature coefficient is of the same magnitude as that for instar lengths.—*Authors (courtesy Wistar Bibl. Serv.).*

5434. COMINI, ADELE. Sul connettivo reticolare della fibra muscolare dei vermi. [With French, English and German summaries.] *Arch. Zool. Ital.* 14(2/4): 373-380. 1 fig. 1930.—The author studied the sarcolemma of the muscles of various worms with the method of Del Rio Hortega for the reticular connective tissue and found an evident fibrillation in *Diphyllobothrium ranarum, Allolobophora trapezoides* and *Haemopis sanguisuga*. On account of the histochemical characters and relationships, he thinks that such fibers are reticular in nature and that in general they have a character similar to that already noted for the sarcolemma of the vertebrates.

5435. DANIEL, R. J. The abdominal muscular systems of Meganyctiphanes norvegica (M. Sars). *Proc. & Trans. Liverpool Biol. Soc.* 43[Append. I.]: 149-180. 1 pl., 1 fig. 1929.—A study of the abdominal musculature of a schizopod, with comparisons with that of *Crangon* and of *Praunus*, previously studied by the author. The ventral longitudinal muscles of *Meganyctiphanes* are less differentiated and show a greater tendency toward a segmental arrangement. Strong complex transverse muscles occur in the first 4 abdominal segments and independent U-shaped muscles in segments Q&E are homologized with the central muscles of *Crangon*. The superficial ventral muscles are in 2 parallel series and are segmental; the dorsal muscles are also in 2 series, a more median one in which the fibers are twisted on one another and a more lateral in which the fibers are parallel. A fan shaped lateral is present in segments 1 and 2.—*J. P. McMurrich.*

5436. DRACH, PIERRE. Étude sur le système branchial des crustacés décapodes. *Arch. Anat. Microsc.* 26 (1): 83-133. 26 fig. 1930.—I. The morphology of the branchial system is described. The dissymmetry of the branchiae is due to the difference in the amount of space afforded to the different branchiae in the various segments of the cephalothorax. While in the Brachyura generally the space for retained water in the branchial cavity is reduced to a minimum, in *Carcinus moenas* and *Pachygrapsus marmoratus* a sort of longitudinal gutter extending the length of the branchia permits the retention of a larger amount of water in the branchial chamber and favors the animal's prolonged sojourn out of the water. The extent of the respiratory surface varies within a species in proportion to the volume of the body. II. Histology and topography are described. The network contained in the branchiae (both tubes and lamellae and raphé) is epithelial, like the columns which join the 2 faces of each lamella. The differentiation of the network and the nephrocytes varies in accordance with the species. III. The constitution and the development of the nephrocytes are described. They accumulate both basic and acid stains, but the basic colors (methylene blue, Janus green) are rapidly eliminated or reduced, and thus are not flocculated in the vacuoles. Functionally, a colorless colloidal protein substratum in the large vacuoles of the nephrocytes is to be distinguished from a yellow acid substance fixed on this substratum. The greater or less abundance of the latter determines the localization of the vital stains absorbed by the nephrocyte, sometimes in the large central vacuole, sometimes in the little peripheral vacuoles, and sometimes in the form of what Chlopin calls a "crinoma," an accumulation of irregular granulations or of small new-formed vacuoles, the whole not corresponding to any preexisting element. The variations in the quantity of this yellow substance in the vacuoles is in proportion to the length of time from the last moult.

5437. GEBHARDT, HANS. Untersuchungen über die Determination bei Planarienregeneraten. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 107(4): 684-726. 19 fig. 1926.—Head- and tail-regenerating tissues from pre- and post-pharyngeal regions of *Planaria lugubris* were transplanted to various regions of individuals of the same species. Head-regenerates, 1-4 days old from pre- to post-pharyngeal, and 2-5 days old to post-pharyngeal regions, developed into heads. Head-regenerates, 3 days old from post-pharyngeal to pre-pharyngeal, and 3-4 days old to post-pharyngeal regions developed into indifferent structures. In both types, 5 day old transplants gave rise to heads. A 2 day old tail-regenerate from pre-pharyngeal and one from post-pharyngeal region developed into heads when placed in eye region; in other grafts, 2 and 3 days old, the resulting structures were indifferent. Isolated pieces of tissue similar to those transplanted were non-viable. Grafts of old tissue unaccompanied by regenerating material did not form heads, whereas grafts of regenerating material without old tissue did. The graft is said to have a slight influence on the zone to which it is transplanted, whereas host tissue, except in eye region, exerts no form-determining influence on donor tissue. The results on pre- and post-pharyngeal transplants are said to agree with Child's observations of a decrement of head-forming intensity from head to tail.—*E. D. Goldsmith.*

5438. GISBERT, DOMINGO ESPINÓS. Algunas aportaciones al estudio de la neuroglia en los invertebrados. [The neuroglia in invertebrates.] *Arch. Neurobiol.* 10 (3): 238-244. 4 fig. 1930.—Description of sections of the nerve chain and of the fibrous neurogliar cells of the annelids *Arenicola marina, Serpula,* and *Perinereis culhijeru.*

5439. GRABENHORST, ANNALIESE. Die mit der Ausbildung des Frontauges zusammenhängenden postembryonalen Entwicklungsvorgänge im Lobus opticus einiger Ephemeridenmännchen. *Zeitschr. Wiss. Biol. Abt. A. Morph. u. Ökol. Tiere* 18(3): 430-473. 31 fig. 1930.—In *Cloëon dipterum* and *Leptophlebia marginata,* the frontal eyes are distinct from the lateral eye and in these the optic ganglia belonging to each eye are separate. The 3 ganglia of the frontal eye are: deuterolamina ganglionaris, deuteromedulla externa and interna. Their development is intimately associated with the first postembryonic appearance of the frontal eye. The cells of this deuteroganglion were developed from 2 formative foci, an outer and an inner. Through numerous divisions of the neuroblasts of the formative foci, new neuroblasts arise, then primitive ganglion cells and finally, ganglion cells. The fiber masses of the deuteroganglion are formed from the retinula fibers of the frontal eye and from the processes of the newly arising ganglion cells. The structure of this deuteroganglion is different from that of the ganglia of the lateral eyes. In *Ecdyonurus lateralis* the frontal eye is united to the lateral eye; so the optic centers show no separation. New ganglia were not formed; only an enlargement and differentiation of the 3 existing ganglia take place.—*A. Grabenhorst (transl.).*

5440. HENKE, KARL, und JULIUS PREISS. Über Naturfunde von Mehrfachbildungen an Schmetterlingsflügeln. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(1): 105-116. 6 fig. 1930.—Specimens are described showing that, besides the familiar duplications from 2 lateral components, triple supernumerary wings occur in moths to which Bateson's rules of symmetry apply. The size of the discoidal

ocellus of *Aglia tau* depends not on that of the wing but on the dimensions of the veins.—*Authors' summary (transl. by J. H. Gerould).*

5441. **HOLLANDE, A. CH. La rénovation de l'épithélium de l'intestin moyen du criquet égyptien Orthacanthacris (Acridium) aegyptia L. [Renewal of the epithelium in the midintestine of the Egyptian cricket.]** *Compt. Rend. Acad. Sci [Paris]* 184(24): 1476-1478. 3 fig. 1927.

5442. **JANDA, VIKTOR. O vlivu nervstva na obnovu odstraněných částí těla bezobratlých. [Influence of the nervous system on regeneration in invertebrates.]** *Véda Přírodní.* 10(1): 17-18; (2/3): 58-60. 1929.—See B. A. 5(6 7): Entry 18571.

5443. **MERTON, HUGO. Die Wanderungen der Geschlechtszellen in der Zwitterdrüse von Planorbis.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 10(3): 527-551. 12 fig. 1930.—*P. planorbis, P. cornuta,* and *P. carinata* were studied and for comparison some species of *Helix* were also examined. The germinal epithelium of *Planorbis* is limited to the atrium of the hermaphroditic duct, differing in this respect from other stylommatophorous Pulmonates. The germ cells migrate from this region into the acini, within which their development is completed. Female germ cells migrate along the wall of the acinus, while the developing stages of ♂ germ cells are found toward the base of the acinus. The latter are not capable of independent movement, but are transported by basal cells to which they are permanently attached. After the completion of spermatogenesis, kinoplasm-spherules, which migrate into contact with the spermatids, develop in the basal cells. It is only after the sperm are enveloped by a covering of kinoplasm that they become motile. The oocytes become surrounded by nutritive cells only after reaching the body of the acinus. Male and female germ cells leave the acinus through the central portion of its lumen.—*H. Merton (transl. by L. E. Griffin).*

5444. **MILLOT, J. Le tissu réticulé du céphalothorax des aranéides et ses dérivés: néphrocytes et cellules endocrines.** *Arch. Anat. Microsc.* 26(1): 43-82. 2 pl., 10 fig. 1930.—By his histologic study of the cephalothorax in more than 90 species of spiders, the author has distinguished 4 kinds of elements of common origin in what previous authors have called merely "connective" or "adipose tissue." Besides these 4 elements and intermingled with them, he has found leucocytes of various kinds which have not previously been recognized as blood cells. (1) The connective tissue proper is always very sparse in arachnids; it occurs as thin sheaths, shown by the elective stains of the collagenous substance, surrounding the various organs, such as the mid-intestine and its diverticula, vessels, nerve ganglion, venom glands, etc. This tissue, found in both abdomen and cephalothorax, is more and more developed as the animal grows older. (2) The reticulated tissue is a network of cells linked together by laminated expansions enclosing hemolymphatic spaces; the protoplasmic expansions may contain fibers, but these are never stainable like collagenous substance. The reticulated tissue occurs at several points of election: in front of the cerebroid ganglion, at the base of the rostrum and at the anterior and posterior limits of the sternal region. It diminishes with age and is sometimes difficult to demonstrate in adults because of the more or less complete transformation of its elements into nephrocytes and endocrine cells. (3) The nephrocytes are large and numerous elements often multinucleated, isolated or agglomerated, which become differentiated with important specific variations from the previously described network. They are always limited to the cephalothorax, and predominate in the lower part, where they generally form an extensive layer separating the ganglionic nerve mass from the sternal wall. They absorb electively certain substances dissolved in the hemolymph which bathes them, and were colored red after injection of a spider with ammonia carmine. They produce crystalline waste enclaves, but do not in their entirety constitute a "kidney of accumulation," as was formerly thought, for their excreta are redissolved, taken up in the blood, and secondarily eliminated by the cloacal epithelium and the Malpighian tubes. Their rôle in the arachnids appears comparable to that of the pericardial cells in the insects. (4) The endocrine elements are extremely variable in size, with homogeneous very chromophil protoplasm, representing another stage in the development of the reticulated tissue. Their differentiation like that of the nephrocytes, with which they are often intimately mingled, is characterized by great specific variations. In general, however, the endocrine elements are found to a greater extent in the lateral regions of the cephalothorax. They multiply by amitosis, and their nuclei present remarkable figures of budding and direct division. These secretory elements discharge into the hemolymphatic spaces the products which they elaborate and ought consequently to be considered as forming, as a whole, a diffuse gland of internal secretion the precise rôle of which is at present difficult to define.—*Author's summary (transl.).*

5445. **PAILLOT, A., et R. NOEL. Recherches histophysiologiques sur les cellules péricardiales et les éléments du sang des larves d'insectes.** *Bull. Histol. Appl. Phys. et Path.* 5(3): 105-128. 5 fig. 1928.—Pericardial cells of *Bombyx mori* normally have a finely mottled chromatic nucleus and fuchsinophil nucleolus. Abundant chondriome filaments and rods of uniform caliber are present without polarized distribution. During metamorphosis the chondriosomes become albuminoid flakes and fuchsinophil granules appear. After moulting, fuchsinophil elements are of 2 categories, mitochondria and vacuolated elements. Blood cells include micronucleocytes with small, very chromatic nucleus and early stages of mitochondria, and macronucleocytes with achromatic nuclei. The latter undergo mitosis marked by a very condensed equatorial plate which splits without forming separate chromosomes. Homologous cells of *Pieris brassicae* are similar.—*J. G. Sinclair.*

5446. **SPEYER, W. Die Embryonalentwicklung und das Ausschlüpfen der Junglarven von Psylla mali Schm.** *Zeitschr. Wiss. Insektenbiol.* 24(7/8): 215-220. 5 fig. 1929.—In the spring, characteristic color changes in the egg make embryological development discernible. Shortly before the larva hatches, 2 hard spines for cutting the shell develop on the inner egg membrane. At very low temp. a great many eggs shrink, but they regain their original size and develop normally after the cold ceases. —*W. Speyer (transl. by A. L. Hintze).*

5447. **UMEYA, YOSITIRO. Duplication of sexual organs in the male-moth of Bombyx mori L.** *Proc. Imp. Acad. [Tokyo]* 6(9): 371-374. 3 fig. 1930.—In 4 individuals the external sexual organs and the internal sexual organs (except vas deferens and testes) were duplicated, this being probably the first record of such duplication in any animal not a gynandromorph. Since the external and internal sexual organs are formed from the ectoderm of Herold's organ, it is concluded that these abnormalities must have originated from the doubling of the imaginal discs. The abnormal moths came from a strain belonging to the pedigree of an abnormal ♂ having hereditary malformation of the genitalia.

5448. **WHITAKER, DOUGLAS, and T. H. MORGAN. The cleavage of polar and antipolar halves of the egg of Chaetopterus.** *Biol. Bull. Marine Biol. Lab. [Woods Hole]* 58(2): 145-149. 1930.—Eggs were cut before fertilization either in the equatorial plane or parallel to it; the membrane was not entirely severed after the egg was cut, so as to reduce injury to the segments. Polar halves of *Chaetopterus* eggs divide unequally, but without formation of the yolk lobe. Antipolar halves divide unequally with a proportionately small lobe. Lobe formation is therefore not a necessary part of the unequal cleavage pattern, nor is the size of the lobe determined as if by a fixed amount of "material." The relation is discussed of the "pear-shaped" stage and of lobe formation to size and position of the mitotic figure. —*D. Whitaker.*

COELENTERATA AND CTENOPHORA

P. L. KRAMP, *Editor*

(See also B. A. 6(1): Entries 974, 2178, 2183, 2185; and in this issue 3319, 5249, 5252, 5254, 5261, 5265, 5266, 5276, 5277)

COELENTERATA

5449. **BULMAN, O. M. B.** The genotypes of the genera of graptolites. *Ann. and Mag. Nat. Hist.* 4(20): 169-185. 1929.—The author presents a list of generic and subgeneric names of graptolites, with their types. He selects genolectotypes for genera in which they were previously lacking, and attempts to fix the synonymy of the forms in question. Authorities are cited for the selection of each genotype. *Akidograptus* Davies, emended to *Acidograptus; Buthograptus* Hall (=*Birastrites* Geinitz, of which *Buthograptus laxus* Hall is made genolectotype); *Chaunograptus* Hall (=*Thallograptus* Öpik, not Hall); *Didymograptus* M'Coy (=*Cladograpsus* Geinitz, of which *Graptolithus murchisoni* Beck is made genolectotype); *Cladograpsus dissimilis* Emmons is made genolectotype of *Cladograpsus* Emmons, 1855, which is preoccupied by Geinitz, 1852; *Nemagraptus* Emmons (=*Coenograptus* Hall, of which *Graptolithus gracilis* Hall is made genolectotype); *Diplograptus* M'Coy (s. str.) (=*Mesograptus* Elles & Wood); *Graptolithus palmeus* Barrande is made genolectotype of *Diprion* Barrande; *Diversograptus ramosus* Manck is made genolectotype of *Diversograptus* Manck; *Koremagraptus* Bulman, emended to *Coremagraptus;* though *Lomatoceras* Bronn and *Monoprion* Barrande have priority over *Monograptus* Geinitz, the last is suggested for the list of nomina conservanda; *Monograptus* Geinitz (=*Demirastrites* Eisel, of which *Rastrites triangulatus* Harkness is made genolectotype; =*Linograptus* Frech; =*Monoclimacis* Frech; =*Pomatograptus* Jaekel, of which *Lomatoceras priodon* Bronn is made genolectotype; =*Pristiograptus* Jaekel; =*Spirograptus* Gürich, of which *Graptolithus turriculatus* Barrande is made genolectotype); *Nanograptus lapworthi* Hadding is made genolectotype of *Nanograptus* Hadding; *Lasiograptus margaritatus* Lapworth is made genolectotype of *Neurograptus* Elles & Wood; *Retiolites nebula* Elles & Wood is made genolectotype of subg. *Plegmatograptus; Cyrtotheca corrugata* Matthew is made genolectotype of *Protistograptus* McLearn. Extensive bibliography.

5450. **CARLGREN, OSKAR.** **Actiniaria der Deutschen Tiefsee-Expedition.** In: *Wissenschaft. Ergeb. Deutschen Tiefsee-Exped. Dampfer "Valdivia"* 1898-1899. *Herausgeb. von Carl Chun.* 22(4): 125-266. 4 pl. (2 col.), 86 fig. Gustav Fischer: Jena, 1928.—The collection consists of 48 spp., 33 of which have not been described previously. *Halcurias* **capensis*** (p. 132), off Cape Province, 155 m.; *H.* **minimus*** (p. 134), off St. Paul Is., Indian Ocean, 672 m.; **MACROCNEMA** (p. 140) (Condylanthidae), based on *M.* **nicobarica** (p. 140), Nikobar Is., 805 m.; *Bolocera* **somaliensis*** (p. 143), off Italian Somaliland, 823 m.; *B.* **capensis*** (p. 146), off Cape Province, 106 m.; *Liponema* **brevicirrata*** (p. 149), off Cape Province, 500 m.; **PSEUDACTINIA** (p. 152), resembling *Actinia,* based on *P.* **flagellifera*** (*Anemonia f.* Hertwig, *Actinia anachoreta* Pax, *A. psapharoderma* Pax) (p. 153), new locality, off Cape Province, 102 m.; *P.* **plettenbergensis*** (p. 157), off Cape Province, 100 m.; *Myonanthus* **bankamensis*** (p. 160), off Sumatra, 141 m.; *Bunodactis* (*Parabunodactis*) **inflexibilis*** (p. 162) and *B.* **nikobarica*** (p. 164), both Nikobar Isl., at 296 m.; **ISADAMSIA** (p. 164), near *Adamsia,* based on *I. cancrisocia* (p. 167), off E. coast of Tanganyika, 818 m.; symbiotic with *Parapagurus armatus* v. *trispinosus;* **BATHYDACTYLUS** (p. 172) (Paractidae), based on *B.* **valdiviae*** (p. 172), 63° 16′ S. lat., 57° 51′ E. long., 4636 m.; *Sicyonis* **sumatriensis*** (p. 177), off Sumatra, 903 m.; *Actinostola* **kerguelensis*** (p. 179), off E. coast of Kerguelen Is., 88 m.; **PARACTINOSTOLA** (p. 181), near *Actinostola,* based on *P.* **bulbosa*** (p. 182), off Somaliland, 823 m.; *P.* **capensis*** (p. 184), off Cape Province 500 m.; *Exocoelactis* **valdiviae*** (p. 187), off Somaliland, 823 m.; **PARACALLIACTIS** (p. 193) (Sagartiidae), related to *Calliactis,* based on *P.* **valdiviae*** (p. 193), off Italian Somaliland, 823 m., symbiotic with *Parapagurus bicristatus* and *P. andersoni; Adamsia* (?) *involvens* McMurr. also is referred to this genus; *Actinauge* **granulata*** (p. 202), off Cape Province, 500 m.; *Hormathia* **bouvetensis*** (p. 205), east of Bouvet Is., Atlantic Ocean, 567 m.; *Phelliactis* Simon (=*Chondrodactis* Wassil.); *P.* **algoaensis*** (p. 208), Algoa Bay, off Cape Province; *P.* **somaliensis*** (p. 211), 823 m., and *P.* **siberutiensis*** (p. 213), 750 m., both off Italian Somaliland; **CHONDROPHELLIA** (p. 215), type *C.* **coronata** (*Actinauge nodosa* v. *coronata* Verr., *A. fastigiata* McMurr.) (p. 216), *C.* **africana*** (p. 216), off Italian Somaliland, 1079 m.; *Amphianthus* Hert. (=*Gephyropsis* Carlg.); *Stephanauge* **bulbosa*** (p. 220), S. W. of Nikobar Is., 296 m.; *Amphianthus* (*Korenia*) **capensis*** (p. 222), off St. Paul Is., 672 m.; *A.* (*K.*) **armatus*** (p. 225), off Nikobar Is., 362 m.; *A.* (*K.*) **radiatus*** (p. 227), off Principe Is., 2492 m.; *A.* (*K.*) **valdiviae*** (p. 229), off Italian Somaliland, 628 m.; *Sagartiogeton* **antarcticus*** (p. 231), 63° 16′ S. lat., 57° 51′ N. long., Antarctic Ocean, 4636 m.; **PARATHOE** (p. 233), based on *P.* **stimpsonii*** (*Cereus s.* Verr., *Sagartia capensis* Pax) (p. 233); *Isophellia* **algoaensis*** (p. 236), off Cape Province; *Phelliogeton* **kerguelensis*** (p. 239), off Kerguelen Is., Indian Ocean; *Synphellia* **dubia*** (p. 240), 54° 29′ S. lat., 3° 43′ E. long.; *Halianthella kerguelensis* (Stud.) (=*Dimyactis duplicata* Pax); *Rhytidactis antarctica* Pax, taxonomic note; *Anthosactis* **epizoica** (*Antholoba e.* Pax, =*Sagartia antarctica* Pax); *Stomphia selaginella* Steph. (=*Cymbactis frigida* Pax); *Thoe* **kerguelensis** (*Sagartia k.* Pax) (p. 255); *Bunodosoma* **fallax** (*Bunodactis f.* Pax) (p. 249); *Parathoe* (?) **vincentina** (*Calliactis v.* Pax) (p. 257).

5451. **CRAWFORD, W.** **Geology of the Black Forest area.** *Victorian Nat.* 46(7): 146-149. 1929.—Various Ordovician graptolites including *Cardiograptus morsus, Oncograptus upsilon, Didymograptus caduceus, D. c.* v. *deflexus, Tetragraptus serra, T. fruticosus,* and *Goniograptus speciosus,* are found in this area.

5452. **DAWYDOFF, C. N.** **Protohydra caulleryi nov. sp. des eaux indochinoises.** *Arch. Zool. Exp. et Gén. Notes et Rev.* 70(2): 55-57. 1930.

5453. **GREGORY, J. W.** **A new Ceratotrochus from the Upper Cretaceous of Portuguese East Africa.** *Geol. Mag.* 67(796): 475-477. 1 fig. 1930.—*C.* **mennelli*** (p. 475), Cheringoma district, an area including the southern end of the Great Rift Valley. *C. mennelli* furnishes evidence as to the date of the formation of that valley. —*M. A. Fenton.*

5454. **GREGORY, J. W.** **The fossil fauna of the Samana Range and some neighbouring areas: Part VII. The Lower Eocene corals.** *Mem. Geol. Surv. India, Palaeont. Indica* 15: 81-128. 6 pl., 1 fig. 1930.—The author discusses the stratigraphic position and lists the species from 4 horizons. There are descriptions, figures, and discussion of relationships of 41 spp. from 32 genera, including: *Placotrochus* **tipperi*** (p. 86); *Trochosmilia* ? **hastata*** (p. 87); *Placosmilia* **wadiae*** (p. 88); *Euphyllia* **thalensis*** (p. 89); **PLATASTROCOENIA** (p. 90), new subg. of *Astrocoenia,* type *A.* (*P.*) *ranikoti** (Duncan); *Cyclolitopsis* **pascoei*** (p. 93); **STAMINOCOENIA** (p. 94), type *S.* **rudis** (*Hydnophora r.* Duncan) (p. 97), near *Monticulastraea; Latimaeandra* **kurramensis*** (p. 98); *Pseudastraea* **daviesi*** (p. 99); *Paracyathus* **altus*** (p. 100); *Stylophora* **vaughani*** (p. 101); *Aplophyllia* d'Orb. (=*Rhabdophyllia* Ed. & H.); [*Circophyllia*] (*Antillia*) **octoformis*** (p. 104); *Stylina* **duncani*** (p. 107); *S.* **cellulata*** (*Astrocoenia c.* Duncan) (p. 108); *Astrocoenia* **daviesi*** (p. 111); *Stephanocoenia* **tricoro-**

nata* (p. 112); *Trochoseris* obliquatus* (p. 114); *T.* daviesi* (p. 114); *Thamnastraea* punctata* (*Isastraea p.* Duncan) (p. 117); *Thamnoseris* piriformis* (p. 118); *Thecoseris* circumvictus* (p. 119); *Actinacis* lata* (p. 122); *Goniarea* piriformis* (p. 123); *Isis* ranikoti* (p. 124); *Montlivaultia* lakiensis* (p. 125); and *Palassopora* eocenica* (p. 127). All types in Geol. Surv. India.

5455. **HERKLOTS, G. A. C.** Jelly fish. *Hong Kong Naturalist* 1(2): 72-75. 1 fig. 1930.—The author discusses some species occurring at Hong Kong, with notes on the effect and treatment of their stings.

5456. **LEWIS, HERBERT PRICE.** The Avonian succession in the South of the Isle of Man. *Quart. Jour. Geol. Soc.* 86(342): 234-290. 5 pl., 6 fig. 1930.—Formations are described and faunal lists are given; comparisons are made with other areas. Anthozoa: *Caninia benburbensis**, remarks on structure and distribution; *C.* minor* (p. 267); *C. subibicina* v. densa* (p. 268); *Clisiophyllum* nemistioides* (p. 268); *C. multiseptatum* v. rigidum* (p. 271); *Dibunophyllum* monense* (p. 271); *Koninckophyllum* divisum* (p. 272); *K.* scarlettense* (p. 273); *Lithostrotion martini* v. densum* (p. 274); *Zaphrentis enniskilleni* v. ashfellensis* (p. 279); *Z. e.* v. derbiensis* (p. 279). Cephalopoda: *Merocanites applanatus**, notes. Types in British Mus.—*M. A. Fenton.*

5457. **MOLANDER, ARVID R.** South and West African Octactiniae in the Gothenburg Natural History Museum. *Göteborgs Kgl. Vetensk. och Vitterhetssamh. Handl., Ser. B.* 1(paper 7): 1-16. 2 pl., 1 fig. 1929(1930). —Ten spp. from Cape Colony and 1 sp. from Angola are listed, with synonymies, habitat and distributional records, and taxonomic discussion. *Alcyonium paessleri* May (=*A. antarcticum* Hickson, *Metalcyonium patagonicum* S. Thompson, *M. variabile* vars. *molle* and *durum* S. Thompson); *Spongioderma verrucosa* (Möbius) (=*Dendrogorgia capensis* Simpson); *Eunicella papillosa* (Esper) (=*E. rigida* Kükenthal); *Lophogorgia* capensis* (*Gorgonia c.* Hickson) (p. 11).

5458. **ROWAN, WM.** On a new Hydra from Alberta. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 165-170. 3 pl. 1930.—*Hydra* canadensis* (p. 165). Occasional redness in this colorless sp. is due to contained copepod eggs. The nematocysts may be the cause of an "itch" affecting local bathers. There is a marked periodicity in sexual reproduction. This begins in early October, ♀♀ maturing a week or 10 days later than ♂♂. Breeding is practically over within 3 weeks. A series of consecutive frosts prove fatal to the animals. Sexual activity seems independent of temperature fluctuations, but the length of the October day may be the controlling factor.

CTENOPHORA

5459. **DAWYDOFF, C. N.** Sur une nouvelle Coeloplanide (Coeloplana perrieri nov. sp.) provenant du Golfe de Siam. *Arch. Zool. Exp. et Gén. Notes et Rev.* 70(2): 52-54. 1930.—French Indo-China.

5460. **DAWYDOFF, C.** Une nouvelle Coeloplanide de la côte sud d'Annam (Coeloplana agniae nov. sp.). *Arch. Zool. Exp. et Gén., Notes et Revue* 70(3): 83-86. 1930. —Commensal with *Alcyonium* sp. [Anthozoa].

5461. **DAWYDOFF, C.** Coeloplana duboscqui nov. sp., Coeloplanide provenant du Golfe de Siam, commensale des Pennatules. *Arch. Zool. Exp. et Gén., Notes et Revue* 70(3): 87-90. 1930.—French Indo-China, commensal with *Pteroeides* [Anthozoa].

5462. **FAUSTINO, LEOPOLDO A.** Recent Madreporaria of the Philippine Islands. *Bur. Sci. Manila, P. I. Monogr.* No. 22. 1-310. 100 pl. 1927.—A compilation of descriptions of all species known, or reported to occur, in the archipelago. Original descriptions of the 221 species listed are copied; French and German descriptions are printed in the original languages with English translations. The collections studied belong to Leland Stanford Univ. and U. S. Nation. Mus. The following nomenclatorial changes occur: *Madrepora* alcocki (p. 106); *Cladocora* moseleyi (p. 112); *Goniopora* bernardi (p. 284); *Porites* mactanensis (p. 294); *P.* hoffmeisteri (p. 295).—*L. E. Griffin.*

PLATYHELMINTHES AND MESOZOA

H. W. STUNKARD, *Editor*

(See also in this issue Entries 3328, 4342, 4384, 4397, 5434, 5484)

5463. **BAYLIS, H. A.** Correction to the descriptions of two species of Notocotylus [Trematoda]. *Ann. and Mag. Nat. Hist.* 7(41): 507. 1931.—The shell-gland is anterior to the ovary in *N. chionis* Baylis and *N. tachyeretis* Duthoit.

5464. **BHALERAO, G. D.** Two new trematodes from reptiles: Paryphostomum indicum n. sp. and Stunkardia dilymphosa n. g., n. sp. *Parasitology* 23(1): 99-108. 5 fig. 1931.—*P.* indicum* (p. 99) obtained from the duodenum of *Uromastix hardwickii*, northern India, is the 3rd sp. of the genus recorded and the 2nd member of the family Echinostomidae obtained from a reptilian host. **STUNKARDIA** type *S.* **dilymphosa** (p. 103) is described from the rectum of the tortoise, *Batagur baska*, Rangoon. This genus is the 2nd member of the subfamily Zygocotylinae, which is here emended. The excretory and the lymphatic systems, hitherto unknown in Zygocotylinae, are described. An account of the amphistomes so far recorded from chelonians is given.—*G. D. Bhalerao.*

5465. **BROWN, F. J.** Some fresh-water larval trematodes from Cheshire. *Parasitology* 23(1): 88-98. 2 pl. 1931.—Two echinostome cercariae: *Cercaria* oscillatoria* (p. 89), redia and cyst from digestive gland of *Planorbis carinatus; C. limbifera**, redia, cyst, and excysted larva from digestive gland of *Limnaea palustris*. Three fork-tailed Cercariae: *C.* echinomorpha* (p. 94), cercaria, sporocysts, from digestive gland of *Planorbis carinatus; C.* chromatophora* (p. 95), cercaria, sporocysts, from digestive gland of *Limnaea stagnalis; C.* pygocytophora* (p. 96), sporocysts from *Planorbis carinatus.*

5466. **CHATTERJI, R. C.** Preliminary observations on the life-history of an amphistome cercaria—Cercariae Indicae XXVI Sewell 1922. *Zool. Anz.* 95(5/8): 177-179. 1931.—Amphistome cercariae and cysts of "Cercariae Indicae XXVI Sewell" obtained from *Indo-planorbis exustus* in Rangoon, were fed to a young goat, which died a month after the last infection and contained many young *Paramphistomum* sp. in duodenum and small intestine. As none were found in the check animal it is believed that the cercaria developed into the *Paramphistomum.*

5467. **DOGIEL, V.** Eine merkwürdige Redie aus turkestanischen Pulmonaten. *Zool. Anz.* 94(11/12): 319-322. 1 fig. 1931.—Reports the finding of *Redia* paradoxa* [Trematoda] (p. 319) in a species of *Planorbis* (?), Aral Sea.

5468. **KEPNER, WM. A., und JEANNETTE S. CARTER.** Olisthanella virginiana nov. sp. *Zool. Anzeiger* 95(3/4): 87-94. 3 fig. 1931.—From Virginia, in mud at base of *Typha latifolia* stalks. The sp. has extremely large ♂ reproductive organs*.

5469. **MOGHE, M. A.** A supplementary description of Lytocestus indicus Moghe (syn. Caryophyllaeus indicus Moghe 1925. Cestoda). *Parasitology* 23(1): 84-87. 6 fig. 1931.

5470. **PRICE, EMMETT W.** Four new species of trematode worms from the muskrat, Ondatra zibethica, with a key to the trematode parasites of the muskrat. *Proc. U. S. Nation. Mus.* 79(4): 1-13. 4 fig. 1931.—*Psilostomum* ondatrae* (p. 1), Ontario and Oregon, from liver of *O. zibethica* and proventriculus of gull, *Larus californicus; Echinochasmus* schwartzi* (p. 3), Maryland and District of Columbia, from small intestine of *O.*

zibethica and *Canis familiaris; Urotrema* **shillingeri*** (p. 7), Maryland, from small intestine of *O. zibethica; Paramonostomum* **pseudalveatum*** (p. 9), Maryland, from large intestine of *O. zibethica.* Types in U. S. N. M.

5471. PRICE, HELEN FLORENCE. Life history of Schistosomatium douthitti (Cort). *Amer. Jour. Hyg.* 13(3): 685-727. 4 pl. 1931.—The life history of *Cercaria douthitti* was completed experimentally in the laboratory in rats and mice. The natural host of the adult worm was found to be *Microtus pennsylvanicus,* a species of mouse trapped near ponds from which snails infected with the cercarial stage were collected. Two new spp. of snail hosts, *Lymnaea palustris* Müller and *Physa gyrina elliptica* Lea, were discovered. Every stage in the life history, including adults, egg, miracidium, mother sporocyst, daughter sporocyst, and cercaria, was studied in detail. New morphological facts discovered include a cirrus in the ♂; in the miracidium, a complicated sensory apparatus, definitely arranged ciliated epithelial cells, dorsal and ventral rods of cells of unknown function; in the cercaria, a pair of penetration glands present only before normal emergence of the larvae from the snail host, and unicellular, subcuticular glands.—*Author's summary.*

5472. STEINBERG, D. Die Geschlechtsorgane von Aspidogaster conchicola Baer und ihr Jahreszyklus. (Vorläufige Mitteilung.) *Zool. Anz.* 94(5/8): 153-170. 11 fig. 1931.—The annual cycle of the sexual organs of this trematode* in the mollusk *Pseudanodonta anatina* is described and figured.

5473. THAPAR, GOBIND SINGH. Sur un nouveau trématode d'un poisson de L'Inde, Gomtia piscicola n. g. n. sp. *Ann. Parasit. Hum. et Comp.* 8(3/4): 249-253. 4 fig. 1930.—A large number of specimens were obtained from the intestine of a siluroid fish at Lucknow, belonging to the family Opisthorchidae.—*G. S. Thapar.*

NEMATHELMINTHES AND NEMATOMORPHA

M. C. HALL, *Editor*

B. G. CHITWOOD, *Associate Editor*

(See also in this issue Entries 3319, 3328, 3441, 3442, 3443, 3510, 4338, 4342, 5494)

5474. ALLGÉN, CARL. Über einige freilebende Nematoden aus dem Wettersee. *Arch. Hydrobiol.* 17(4): 714-729. 9 fig. 1926.—*Monhystera* **suecica*** (p. 718), *M.* **parasimilis*** (p. 718), and *M.* **paradoxa*** (p. 719), Sweden. Critical notes, in some cases descriptions, are given for *Aphanolaimus aquaticus, Tripyla papillata, Chromadora leuckarti, C. ratzeburgensis, Ethmolaimus pratensis, Trilobus gracilis, T. medius, Desmolaimus brachystoma*, Diplogaster fictor, Plectus cirratus* v. *rhizophilus,* and *Dorylaimus carteri.*

5475. ALLGÉN, CARL. Südschwedische marine Nematoden. *Göteborgs Kgl. Vetensk. och Vitterhetssamh. Handl. Ser. B.* 1(2): 1-40. 10 fig. 1929(1930).—A report on 36 spp. collected in the littoral zone of the southwestern coast of Sweden. The systematic account includes references to previous literature, ecological data, measurements, and taxonomic discussion. *Eurystomina* **littorale*** (p. 13); *Cothonolaimus* **longisetosus*** (p. 16); *Paracanthonchus* **kreisi*** ♂ (p. 18); *Spilophora* **spectabilis*** (p. 21); *Oistolaimus* **suecicus*** (p. 25); **DIPLOLAIMELLA** (Monhysteridae; Monhysterinae) (p. 29), erected for *D.* **monhysteroides*** ♂ (p. 29); *Linhomoeus lepturus* v. **zosterae*** ♀ (p. 30); *Trigonolaimus* **setosus*** ♂ (p. 37).

5476. ALLGÉN, CARL. Über einige freilebende Moosnematoden. *Nyt Mag. f. Naturvidensk.* [*Oslo*] 67: 211-229. 7 fig. 1929.—The material was collected by Sten Wallin during Captain C. A. Larsen's expedition to the Ross sea in 1923-1924, when Tasmania, New Zealand, Campbell and Macquarie Islands were visited. All spp. belong to known genera. 18 spp. are listed of which 5 are new: *Alaimus* **tasmaniensis*** (p. 212), Tasmania; *Monhystera* **campbelli*** ♀ (p. 214), *Oncholaimus* **campbelli*** (p. 219), *Mononchus* **campbelli*** (p. 222), and *M.* **parazschokkei*** (p. 224), all 4 Campbell Is. One *Dorylaimus* sp. described but not named.

5477. ALLGÉN, CARL. Über eine neue Art des Genus Siphonolaimus de Man, S. obtusicaudatus n. sp., von der schwedischen Westküste. *Zool. Anz.* 92(9/10): 235-238. 3 fig. 1930.—*S.* **obtusicaudatus*** (p. 235), 70 m.

5478. CHITWOOD, B. G. Studies on some physiological functions and morphological characters of Rhabditis (Rhabditidae, nematodes). *Jour. Morph. & Physiol.* 49(1): 251-275. 3 pl. 8 fig. 1930.—Intravitam stains were used to determine the functions of several organs in 2 spp. of nemas (*R. strongyloides* and *R. elongata*). The organs were also studied in section. From the results obtained it is concluded that the amphids are not excretory in function, but more probably sensory, for definite connections were observed to extend to the nerve ring. No migratory cells, such as those described by Stefanski, were seen. The phasmids stained with all intravitam stains used, but were never observed to secrete. It seems doubtful that they serve as excretory organs. The excretory system was seen to consist of a typical X system. Actual excretion was observed. Deirids were seen for the first time in both species. Oesophageal glands were also described. A study was made of the structure of the intestinal cells, rectal glands, and anal muscles. Attention was called to the fact that there are two kinds of ejaculatory glands, one of which probably serves as a "cement gland," while the function of the other is still in doubt.—*Author (courtesy Wistar Bibl. Serv.).*

5479. COBB, N. A. A nemic parasite of Pecten. *Jour. Parasitol.* 17(2): 104-105. 1 fig. 1930.—*Paranisakis* **pectinis*** from scallop, North Carolina.

5480. FUCHS, GILBERT. Diplogaster horticola n. sp. *Zool. Anzeiger* 81 (7/10): 229-237. 8 fig. 1929.—*D.* **horticola*** (p. 229), found in heads of red cabbage and cauliflower.

5481. KREIS, HANS A. Freilebende terrestrische Nematoden aus der Umgebung von Peking (China). II. *Zool. Anzeiger* 87 (3/6): 67-87. 9 fig. 1930.—*Diplogaster* **minutus** (*D. minor* Kreis) (p. 67); *Rhabditis* **lepidus** (*R. elegans* Kreis) (p. 67); **ASYMMETRICUS** n. n. for *Pseudorhabditis* Kreis (p. 67); *Plectus* **aberrans*** (p. 67); *P.* (*Wilsonema*) **fausti*** ♀ (p. 69); *Acrobeles* **obtusicaudatus*** ♀ (p. 71); *A.* **sinensis*** (p. 72); *Dorylaimus* **rhabdotus*** (p. 75); *D.* **mesonyctius*** (p. 77); *D.* **gibbero-aculeatus*** (p. 80); *D. monohystera* de Man, first description of ♂; *Dolichodorus* **heterocercus*** (p. 84).

5482. MUELLER, JUSTUS F. The mechanism of copulation in the nematode Ascaris lumbricoides. *Trans. Amer. Microscop. Soc.* 49(1): 42-45. 1 pl. 1930.—A pair fixed *in copula* were studied with reference to the mechanism of transmitting the sperms. The spicules are found withdrawn into their sheaths, apparently playing no part at this time. The posterior gut, cloacal cavity, distal ends of the spicule sheaths, vesicula seminalis, and ductus ejaculatorius are found packed with mature sperms. These are also present in the terminal portion of the vagina, and are massed around the vulva. The transfer seems to have been accomplished by simple apposition of the ♂ and ♀ orifices.—*Author's summary.*

5483. POPOFF, N. P. Contribution to the fauna of horse-strongylids of U. S. S. R. *Ann. Trop. Med. & Parasitol.* 22(2): 265-266. 1928.—List of nemas from horse in Russia: *Oesophagodontus robustus, Triodontophorus serratus, T. brevicauda, T. tenuicollis, Gyalocephalus equi, Poteriostomum imparidentatum, P. ratzii, Trichonema coronatum, T. labiatum, T. labratum, T.*

sagittatum, T. calicatum, T. longibursatum, T. minutum, T. poculatum, T. catinatum, T. goldi, T. pateratum, T. radiatum, T. adersi, T. elongatum, T. insigne, T. leptostomum, T. nassatum, T. triramosum, T. bicoronatum, T. euproctum, T. prionodes, T. brevicapsulatum.

5484. **SANDGROUND, J. H.** A new liver fluke from a monkey and new parasitic roundworms from various African animals. *Proc. U. S. Nation. Mus.* 75(12): 1-11. 2 pl. 1929.—A list of parasitic worms collected by the Harvard African Expedition (1926-27) contains the following new forms. Trematoda: *Dicrocoelium* colobusicola* (p. 2) from liver of the monkey *Colobus*, Belgian Congo. Nematoda: **LEIPERIATUS** (p. 5) (Trichostrongylidae), type *L.* hopkeni* (*Nematodirus h.* Leiper) from *Hippopotamus amphibius*, Lake Albert; *Oswaldocruzia* agamae* (p. 7) from intestine of *Agama colonorum*, Liberia: **COLOBOSTRONGYLUS** (p. 8) (Strongylidae), type *C.* strongi* (p. 9) from intestine of *Colobus polykomos*, Liberia. All types in U. S. Nation. Mus.—*H. W. Manter.*

5485. **SCHWARTZ, BENJAMIN and JOSEPH E. ALICATA.** Two new species of nodular worms (Oesophagostomum) parasitic in the intestine of domestic swine. *Jour. Agric. Res.* 40(6): 517-522. 12 fig. 1930.—*O.* brevicaudum* (p. 517) and *O.* georgianum* (p. 520) from large intestine of swine (*Sus scrofa domestica*), Georgia. Types in U. S. Nation. Mus.—*J. E. Alicata.*

5486. **THOMAS, LYELL J.** Rhigonema nigella spec. nov., a nematode and its plant commensal, Enterobrus sp.? from the milliped. *Jour. Parasitol.* 17(1): 30-34. 2 pl. 1930.—*R.* nigella* (p. 31) from the intestine of *Parajulus dux*, Michigan. A fungus, *Enterobrus* sp., appears as a commensal in the milliped intestine and often covers the cuticula of the nematode, giving the latter the appearance of woolly caterpillars. The author found the nematode excellent material for teaching the anatomy of round worms to beginning students.

5487. **TRIFFITT, MARJORIE J.** On the morphology of Heterodera schachtii with special reference to the potato-strain. *Jour. Helminthol.* 6(1): 39-50. 1 pl. 1928.—This nematode causes damage to beets, oats, potatoes, etc. A strain specialised on one host will not readily attack another. This gave rise to the idea that *H. schachtii* represented several similar but distinct spp. parasitic upon different hosts. The strain attacking potatoes has been named *H. rostochiensis* by Wollenweber. Students of the morphology of the worm have given widely varying measurements of the various developmental stages from beets and oats. A comparative study of *H. schachtii* on beets, oats, and potatoes, shows that, although dimensional variations are even greater than was supposed, they occur equally in all 3 strains, whereas the general morphological characters are identical in all major particulars, regardless of the sp. of host plant. Zimmermann, 1927, 1928, claims successfully to have infected beets with the potato-strain by growing crops for 2 successive seasons on heavily infested land. The author concludes that *H. rostochiensis* is not a true sp. but a synonym of *H. schachtii.*—*M. J. Triffitt.*

5488. **WALTON, A. C.** Studies on some nematodes of North American Amphibia. II. Cryptobranchidae. *Jour. Parasitol.* 17(1): 20-24. 1 pl. 1930.—From *Cryptobranchus allegheniensis* from Pennsylvania rivers are described: *Spironoura* cryptobranchi* ♀ (p. 20), *Zanclophorus* cryptobranchi* (p. 21), and *Spiroxys* allegheniensis* ♂ (p. 22). Types in coll. of H. B. Ward, Univ. Illinois.

5489. **WALTON, A. C.** A new Hedruris from Diemyctylus viridescens. *Jour. Parasitol.* 17(1): 49-51. 1 fig. 1930.—*H.* brevis*, North Carolina, type in coll. of H. B. Ward, Univ. Illinois.

5490. **WEHR, EVERETT E.** New species of bird nematodes from the Philippine Islands. *Jour. Parasitol.* 17(2): 80-84. 1 pl. 1930.—*Ceratospira* thriponaxis* (p. 80) and *Thelazia* philippinensis* (p. 81) from *Thriponax* sp.; *Ascaridia* subequalis* (p. 82) from *Cuckoo* sp.; *Diplotriaena* corrugata* (p. 83) from *Ptiocichla basilonica.* Types in Parasitol. Coll., Univ. Illinois. A key to the spp. of *Ceratospira* is given.

5491. **WETZEL, RUDOLF.** On the biology of the fourth stage larva of Oxyuris equi (Schrank). *Jour. Parasitol.* 17(2): 95-97. 1 pl. 1930.—These larvae attach themselves to the mucous membrane of the colon by drawing a portion of the stratum gladulare into the anterior part of the esophagus, which for this purpose has adapted itself to the shape and function of a mouth capsule. This results in a mechanical destruction of the superficial layers of the mucosa, the cells of which, together with tissue juice, are probably the actual food of the larvae.—*Author's summary.*

5492. **WETZEL, RUDOLF.** Description of a new species of amidostomine worm of the genus Epomidiostomum from the gizzard of anserine birds. *Proc. U. S. Nation. Mus.* 78(21): 1-10. 2 pl. 1931.—*Epomidiostomum* crami* (p. 4), Washington, D. C., under the cuticular layer of the gizzard of *Branta canadensis c.* and *Chen caerulescens.* Life history unknown. Type in U. S. N. Mus. A key to the spp. of the genus is given, and the type species, *E. uncinatum*, is redescribed.

ACANTHOCEPHALA

H. J. VAN CLEAVE, *Editor*

(See also in B. A. 5(11): Entries 28443, 29307)

5493. **BHALERAO, G. D.** On a new species of Acanthocephala from Ophiocephalus striatus. *Ann. and Mag. Nat. Hist.* 7(42): 569-573. 4 fig. 1931.—*Farzandia* nagpurensis* (p. 569), Central Provinces, in duodenum and intestine of host, type in Indian Mus., Calcutta. The infection occurred in 60% of the fishes dissected, but only 2 to 19 worms could be obtained from each host.

5494. **BHALERAO, G. D.** Two new parasites from the king cobra (Naja hannah). *Ann. and Mag. Nat. Hist.* 8(43): 102-109. 5 fig. 1931.—Nematoda: *Kalicephalus* radicus* (p. 102), from intestine and rectum of *Naja hannah.* Acanthocephala: *Centrorhynchus* reptans* (p. 106), from intestine and rectum of *N. hannah*, both from Muktesar, India. Types in Imp. Inst. Vet. Res., Muktesar, Kumaun, U. P., India.

5495. **DATTA, M. N.** On Echinorhynchus sp. inq. from common crows, Corvus corax and Corvus splendens, of Allahabad. *Allahabad. Univ. Studies* 4: 41-61. 9 pl. 1928.—*E.* robustus* (p. 59) is described in detail.

5496. **MEYER, A.** Die Stellung des Genus Heterosentis Van Cleave 1931 im Acanthocephalensystem. *Zool. Anzeiger* 94(9/10): 258-265. 2 fig. 1931.—The genus *Heterosentis* Van Cleave is referred to the Quadrigyridae; *H. heterancanthus** is described from intestine of *Atherinichthys microlepidotus* [Pisces]. Quadrigyridae (=Pallisentidae) is emended to contain *Quadrigyrus, Pallisentis, Neosentis,* and *Heterosentis,* with *Cleaveius* as an "Anhang," all parasitic in fishes. Rhadinorhynchidae contains *Serrasentis, Telosentis, Tegorhynchus, Rhadinorhynchus, Leptorhynchoides,* and *Polyacanthorhynchus,* all parasitic in fishes. Echinorhynchidae contains *Acanthocephalus, Echinorhynchus, Pomphorhynchus,* and **ACANTHOCEPHALOIDES** (p. 263), based on *A.* propinquus (Dujard) new comb., all parasitic in fishes. These three families and the Polymorphidae and Acanthogyridae belong to the order **PALAEACANTHOCEPHALA** (p. 264), and the Neoechinorhynchidae are assigned to the order **ARCHIACANTHOCEPHALA** (p. 264). These two orders are to be defined in a work in press.

5497. **VAN CLEAVE, HARLEY J.** Heterosentis, a new genus of Acanthocephala. *Zool. Anz.* 93(5/6): 144-146. 2 fig. 1931.—Rhadinorhynchidae: **HETEROSENTIS** (p. 144), type *H.* heteracanthus* (*Echinorhynchus h.* v. Linstow) (p. 144), of which an emended description is given.

NEMERTEA

W. R. COE, *Editor*

5498. **COE, WESLEY R. A new species of nemertean (Lineus vegetus) with asexual reproduction.** *Zool. Anz.* 94(1/2): 54-60. 7 fig. 1931.—*L. vegetus** (p. 55), California. Morphology of organ systems, reproduction by fragmentation, and remarkable capacity for regeneration of minute pieces are described.

5499. **STIASNY-WIJNHOFF, G. Die Gattung Oerstedia.** *Zool. Mededeel.* 13(3/4): 226-240. 3 pl., 1 fig. 1930.—*Oerstedia* is redefined and its generic position is discussed anatomically. The genus does not belong to the Prostomatidae, but rather to the Emplectonematidae. *O. rustica* (Joubin) is referred to *Prostoma*. The internal anatomy of *O. dorsalis** is described.

5500. **VALKANOV, A. Über das Vorkommen von Süsswassernemertinen in Bulgarien.** *Zool. Anz.* 95(3/4): 76. 1931.—A report of the finding in 3 places in Bulgaria of *Tetrastemma* [=Prostoma] *graecense*.

ROTATORIA, GASTROTRICHA, ECHINODERA, AND CHAETOGNATHA

CHARLES H. BLAKE, *Editor*

(See also in this issue Entries 3319, 3328, 6048)

5501. **HÜNERHOFF, ERNST. Über ein bisher unbekanntes Larvenorgan und die Regeneration bei dem Rädertier Apsilus vorax.** *Zool. Anz.* 92(11/12): 327-332. 6 fig. 1931.—The larva of *A. vorax** (rare in Europe) possesses an organ which, from its structure and function, must be a statocyst. The statolith shows strong double refraction in polarised light and disappears 2-3 days after metamorphosis. The fully developed sessile animal can regenerate portions cut from the nucleated coronal mask. The question of the regeneration of the excised nuclei has great theoretical importance in connection with cell constancy in Rotatoria. The investigation is being continued.—*E. Hünerhoff (transl. by C. H. Blake)*.

5502. **LUNTZ, ALBERT. Rädertier-Tabellen.** *Tabulae Biologicae Periodicae* 1(1): 107-109. 1 fig. 1931.—Growth, growth curves, and specific wts. are tabulated.

ANNELIDA

J. PERCY MOORE, *Editor*

(See also in this issue Entries 3319, 3328, 4381, 4621, 5268, 5434, 5438, 5448)

5503. **LIN, SHAO-WEN. Anatomy of Pheretima aspergillum (E. Perrier), the Amoy earthworm.** *Peking Soc. Nat. Hist. Bull.* 5(1): 15-27. 1 pl. 1930.—An anatomical study for use in laboratory teaching.

5504. **MICHAELSEN, W. Pheretima (Archipheretima) ophiodes n. sp., ein eigentümlich bunter Regenwurm von den Philippinen.** *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 85-90. 1 col. pl. 1931.

5506. **MICHAELSEN, W. The Oligochaeta of China.** *Peking Soc. Nat. Hist. Bull.* 5(3): 1-23. Map, 1 pl. 1931.—*Drawida japonicus**, *D. gisti** (p. 8), Shantung and Hopei; *Pheretima pingi*, redescribed; *P. guillelmi** (Mich.) may be referred to *P. houlleti* E. Perr. as a variety; *P. tibetana** (p. 13), Tibet; *P. pectinifera** (p. 15), Kiangsu; *P. siemsseni** (p. 17) and *P. fokiensis** (p. 19), Fukien; *P. robusta*, descriptive notes; *P. kiangensis** (p. 21), Kiangsu. Bibliography of 17 references.

5507. **ORTON, J. H., and H. B. MOORE. Occurrence of Protodrilus flavocapitatus at Port Erin.** *Nature [London]* 127(3212): 780-781. 1931.—On the British coast under stones just below highwater neaps and in gravel where fresh water flows into the sea.

5508. **SCRIBAN, I. A., und E. EPURE. Beobachtungen über das Gefässsystem von Herpobdella atomaria Carena.** *Zool. Anz.* 94(11/12): 322-328. 5 fig. 1931.—Describes the circulatory system, which is derived from the coelom, the sphincter serving to regulate blood flow.

BRACHIOPODA, BRYOZOA, PHORONIDEA

R. C. OSBURN, *Editor*

(See also in this issue Entries 3319, 5249, 5252, 5253, 5254, 5257, 5258, 5264, 5265, 5266, 5268, 5276, 5277, 5862)

GENERAL

5509. **[FREDERIKS, GEORGII.] ФРЕДЕРИКС, ГЕОРГИЙ. Верхнепалеозойская фауна Хараулахских гор. [Upper Palaeozoic fauna of the Kharaulakh Mts.]** [English summary.] Известия Академии Наук СССР., Отделение Математических и Естественных Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Math. et Nat.*) 1931(2): 199-228. 4 pl. 1931.—This Permian fauna of 29 described forms includes: *Aviculopecten (Deltopecten) subclathratus* mut.? **multicostatus*** (p. 199); *Dielasma truncatum* mut. **borealis*** (p. 201); *Lytha* **tolmachoffi*** (p. 205); *Cyrtospirifer dubium**, an Australian form reported from Asia for the first time; *C.* **kharaulakhensis*** (p. 207); *Strophalosia* King (=*Aulosteges* Helmersen); **WYATKINA** (p. 211) (Productidae), type *Aulosteges gigas* Netschaew; *Marginifera* **verkhoyanica*** (p. 211), Verkhoyanskii Range; *Krotovia* **tolli** (p. 213), with vars. **semicircularis*** (p. 214) and **semiovalis*** (p. 214); *K.* **vollossovitschi*** (p. 215); *Cora* **kharaulakhensis*** (p. 216). All from Kharaulakh Mts., Siberia, unless otherwise stated.

BRACHIOPODA

5510. **ALLAN, R. S. On a new Recent Terebratella from northern New Zealand.** *New Zealand Jour. Sci. and Tech.* 12(6): 385-387. 4 fig. 1931.—*T.* **haurakiensis*** (p. 385), type in author's coll.

5511. **DUTERTRE, A. P. Découverte d'Uncites dans le Dévonien du Boulonnais.** *Ann. Soc. Geol. du Nord* 53: 287-288. 1928.—The new found occurrence of *Uncites* in this region of northern France is discussed.—*W. Berry*.

5512. **LICHAREV, B. On two new representatives of the family Productidae from the Lower Permian of North Caucasus.** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(16): 436-440. 4 fig. 1930.—*Loczyella* (?) **parvula*** (p. 437); **PECTENOPRODUCTUS** (p. 439), near *Productus*, type *Pectenoproductus* **proprius*** (p. 439).

5513. **MUIR-WOOD, HELEN MARGUERITE. The fossil fauna of the Samana Range and some neighboring areas: Part III. The Brachiopoda.** *Mem. Geol. Surv.*

India, Palaeont. Indica 15: 25-37. 2 pl. 1930.—One Jurassic and 9 Cretaceous forms are treated, with descriptions, figures, and taxonomic remarks. *Rhynchonelloidea arcuata** recorded as new to India; *Rhynchonella* **samanensis*** (p. 27); *R.* **reticulata*** (p. 29); *Terebratula* **samanensis*** (p. 29); *T.* **daviesi*** (p. 32); *Kingena* **tumida*** (p. 34). All new forms from the Lr. Gault (Cretaceous) of India; types in Geol. Surv. India.

5514. **RUIZ, CARMELA.** Gli Strofomenidi del Permiano del bacino del Sosio (Palermo). Nota preventiva. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 12(11): 588-590. 1930.—In this preliminary note the author records 12 forms of Strophomenidae from the Permian of the Sosio Basin. The following are new to Sicily: *Streptorhynchus crenistria, S. c.* var. *senilis, S. pelargonatus, S. pseudopelargonatus, Derbya buchi, Orthotetes guadalupensis, O. distortus,* and *Meekella uncitoides.*

5515. **SCHAEFFER, CORNELIA.** Untersuchungen zur vergleichenden Anatomie und Histologie der Brachiopodengattung Lingula. [Comparative anatomy and histology of Lingula.] *Vierteljahrsschr. Naturforsch. Ges. Zürich* 72(1/2): 186-204. 1927.

BRYOZOA

5516. **BASSLER, R. S.** Pursuing microfossils. *Smithsonian Inst., Explorations and Field-Work of the Smithsonian Inst. in 1930. Publ.* 3111. 7-12. 2 pl. 1931.—A popular account of field investigations of Bryozoa in the Atlantic Coast States by the author and Ferdinand Canu. Also a description of the Cushman Foraminiferal Laboratory* at Sharon, Mass.

5517. **FRITZ, MADELEINE A.** Two new species of fossils from the Palaeozoic rocks of Ontario. *Trans. Roy. Canadian Inst.* 17(2): 223-225. 1 pl. 1930.—*Zitteloceras* **fimbriatum*** (p. 223) (Cephalopoda), Black River formation; *?Amplexopora* **spinulifera*** (p. 224) (Bryozoa), Hamilton formation. Types in Royal Ontario Mus. Palaeontology.

5518. **GRAUPNER, HEINZ.** Haltung und Aufzucht von Meeresbryozoen. In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden der Erforschung der Leistungen des tierischen Organismus. Teil 5, Heft 3, Methoden der Meerwasserbiologie. Lief. 278.** p. 421-430. 3 fig. Urban & Schwarzenberg: Berlin, 1928.—Methods are described for obtaining, transporting, and keeping marine Bryozoa in the aquarium. Special devices are discussed for observing spawning and cleavage which cannot be observed in ordinary aquaria with a flowing current or the usual type of aeration. For observation of the budding process and of incrusting forms the animals should be attached on a silk thread. A chapter is devoted to the rearing of larvae, substrata for the final settling of which must be prepared in time to have them in a handy condition for microscopical work. Finally, methods are described for the breeding of Bryozoa in the open sea, especially important for the studying of the life cycle, the density of growth, and the budding conditions.—*C. R. Boettger.*

MOLLUSCA

H. A. PILSBRY, *Editor*

H. B. BAKER, *Associate Editor*

J. B. REESIDE, *Associate Editor,* Mesozoic and Paleozoic Mollusca

(See also in this issue Entries 3099, 3102, 3295, 3298, 3323, 3325, 3328, 3599, 3936, 5253, 5254, 5255, 5256, 5258, 5259, 5260, 5261, 5262, 5263, 5264, 5265, 5266, 5267, 5268, 5269, 5270, 5272, 5273, 5276, 5277, 5443, 5465, 5509, 5517, 5862, 6043, 6044, 6048)

5519. **AGUILAR-AMAT, J. B. de.** Observaciones malacológicas. X. El Mastigophallus rangianus (Fér.) (Helix rangiana) en Cataluña. *Butl. Inst. Catalana Hist. Nat.* 9(9): 173-175. 1929.—A review of the locality records for this species as mentioned in the literature since 1830, with mention of a recent record.

5520. **AGUILAR-AMAT, J. B. de.** Observaciones malacológicas XI. Algunos moluscos recogidos por el Rdo. Dr. D. J. R. Bataller, Pbro. *Butl. Inst. Catalana Hist. Nat.* 10(1/2): 33-34. 1930.—A list of 16 forms, with locality records.

5521. **BUCKMAN, S. S.,** Type Ammonites.—6(53-63A): 1-61. 192 pl. Published by author. Sold by Wheldon and Wesley, Ltd.: London, 1925-1927.—The text discusses a series of unrelated topics pertaining to the Jurassic chiefly of England: The selection of genotype specimens. A scheme of recording the proportions of ammonite sutures. The meaning of the term "nomen nudum." The identification of *Ammonites redcarensis* Young & Bird. The relations of *Pallasiceras, Lydistratites, Holcosphinctes, Paravirgatites, Shotoverites.* The genus *Kerberites* Buchman. The superfam. **KOSMOCERATACEAE** (p. 20), including the families **GOWERICERATIDAE** (p. 20), **GULIELMICERATIDAE** (p. 20), **PARAPATOCERATIDAE** (p. 20). Kosmoceratidae. The relations of *Wheatleyites pringlei* Pruvost, *Shotoverites pringlei* Buckman, *Pallasiceras pringlei* Neaverson. The genus *Aposphinctoceras.* The identity of *Ammonites pseudogigas* Blake. The age of the Hartwell clay and beds in exposures on the Dorset coast. The family Dactylioceratidae containing **KRYPTODACTYLITES** (p. 41), type *Ammonites semicelatus* Simpson; **TENUIDACTYLITES** (p. 41), type *T.* **tenuicostatus*** (*Ammonites t.* Young & Bird); **XEINODACTYLITES** (p. 41), type *X.* **helianthoides*** (*Dactylioceras h.* Yokoyama); **ANGUIDACTYLITES** (p. 41), type *A.* **anguiformis** (p. 41); **NODICOELOCERAS** (p. 42), type *Ammonites crassoides* Simps.; **CRASSICOELOCERAS** (p. 42), type *C.* **pingue** (p. 42); *Porpoceras;* **VERMIDACTYLITES** (p. 42), type *V.* **vermis*** (*Ammonites v.* Simps.); **TOXODACTYLITES** (p. 42), type *T.* **toxophorus** (p. 42); **LEPTODACTYLITES** (p. 42), type *L.* **leptum** (p. 42); **SPINICOELOCERAS** (p. 42), type *S.* **spicatum** (p. 42); **LOBODACTYLITES** (p. 42), type *L.* **lobatum** (p. 42); **PERIDACTYLITES** (p. 42), type *P.* **consimilis** (p. 42); **MULTICOELOCERAS** (p. 42), type *M.* **multum** (p. 42); **ATHLODACTYLITES** (p. 43), type *Dactylioceras athleticum* (Simpson); **SIMPLIDACTYLITES** (p. 43), type *S.* **simplicosta** (p. 43); **KOINODACTYLITES** (p. 43), type *K.* **communis*** (*Ammonites c.* Sowerby); **NOMODACTYLITES** (p. 43), type *N.* **temperatus** (p. 43); **CURVIDACTYLITES** (p. 43), type *C.* **curvicosta*** (p. 43); **PARVIDACTYLITES** (p. 43), type *P.* **parvus** (p. 43); **MUCRODACTYLITES** (p. 43), type *Ammonites mucronatus* d'Orb.; *Dactylioceras; Peronoceras; Collina; Catacoeloceras; Orthodactylites; Microdactylites; Arcidactylites; Zugodactylites.* Discusses **EMILEITES** (p. 46), type *E.* **malenotatus*** (*Ammonites humphriesianus* Woodward); and *Emileia;* and the ages of certain local British deposits. The plates bear no pagination and are mostly unrelated to the text, but in part illustrate previous volumes. Each plate contains but one species and a brief diagnosis. *Hildoceratoides* **serpentinus*** (*Ammonites s.* Reinecke) (plate 1380); *Pectinatites* **pectinatus*** (*Ammonites p.* Phillips) (pl. 354A); *Lunuloceras* **lonsdalii*** (*Ammonites l.* Pratt) (pl. 502A); *Clydoniceras* **discus*** (*Ammonites d.* Sower.) (pl. 506A); *Sonninites* **alsaticus*** (*Sonninia a.* Haug) (pl. 528A); *Parapatoceras* **calloviense*** (*Ancyloceras calloviensis* Morris) (pl. 537); *Shotoverites* **pringlei*** (*Wheatleyites p.* Pruvost) (pl. 562A); *Parammatoceras* **rugatum*** (*Hammatoceras dolium* Buck.) (pl. 578); **PLANIFASTIGITES,** type *P.*

platys* (pl. 579); *Witchellia* **platymorpha*** (pl. 580A); **ODONTOLKITES,** type *O.* **longidens*** (*Ammonites parkinsoni l.* Quenstedt) (pl. 582); *Plagiamites* **cyphus*** (pl. 583); *P.* **campylus*** (pl. 584); *Strigoceras* **gracile*** (*Ammonites truelli gracilis* Quenst.) (pl. 585); **GULIELMINA,** type *G.* **quinqueplicata*** (pl. 586); **KELLAWAYSITES,** type *K.* **multicostatus*** (*Reineckeia multicostata* Petitclerc) (pl. 587); **PARACARDIOCERAS,** type *P.* **persecans*** (*Cardioceras suessi?* Buck.) (pl. 588); *Pallasiceras* **rotundum*** (*Ammonites rotundus* Sower.) (pl. 590); **POLYMEGALITES,** type *P.* **polypreon*** (pl. 591A); *Gigantites* **pachymeres*** (pl. 592A); **GELASINITES,** type *G.* **gelasinus*** (*Witchellia* aff. *sutneri* Buck.) (pl. 593A); *Witchellia* **glauca*** (pl. 594); *Zigzagiceras* **clausyprocerum*** (*Stephanoceras c.* Buck.) (pl. 595A); **LOBOPLANULITES,** type *L.* **longilobatus*** (pl. 596); *Anakosmokeras* **effulgens*** (pl. 597A); *Gulielmites* **sedgwickii*** (*Ammonites s.* Pratt) (pl. 598); **SCOTICARDIOCERAS,** type *S.* **scoticum*** (*Cardioceras* cf. *excavatum* Buck.) (pl. 592); *Sagitticeras* **moderatum*** (pl. 600); **KERATINITES,** type *K.* **keratophorus*** (pl. 601); *K.* **cornutifer*** (pl. 602); *Paravirgatites* **infrequens*** (pl. 603); *Pallasiceras* **lydianites*** (pl. 604); *Lydistratites* **biformis*** (*Ammonites triplex* Smyth) (pl. 605A); *L.* **cunctator*** (pl. 606A); **CRENDONINA,** type *C.* **subrotundata*** (pl. 607); *Schlotheimia* **redcarensis*** (*Ammonites r.* Young and Bird) (pl. 608); **HOMECHIOCERAS,** type *H.* **simile*** Trueman and Williams (pl. 609); *Kilianía* **depilata*** (pl. 610); *Papilliceras* **micracanthicum*** (pl. 611); *Parkinsonia* **pachypleura*** (*Cosmoceras parkinsoni* v. *rarecostatum* Buck.) (pl. 612); *Gonoxyites* **limosus*** (*Oppelia fusca* Solly and Walker) (pl. 613); *Galilaeites* **curticornutus*** (pl. 614); *Binatisphinctes* **fluctuosus*** (*Ammonites f.* Pratt) (pl. 615); *Cardioceras* **costellatum*** (pl. 616A); *Plasmatoceras* **plastum*** (pl. 617); **PLASMATITES,** type *P.* **crenulatus*** (pl. 618); **GYROMEGALITES,** type *G.* **polygyralis*** (pl. 620A); *Galbanites* **cretarius*** (pl. 621); *Bigotites* **trifurcatus*** (pl. 622); *Zigzagiceras* **pseudoprocerum*** (*Stephanoceras p.* Buck.) (pl. 623); *Z.* **subprocerum*** (*Stephanoceras s.* Buck.) (pl. 624); **BIKOSMOKERAS,** type *B.* **geminatum*** (pl. 625); **KUKLOKOSMOKERAS,** type *K.* **kuklikum*** (pl. 626A); *Sagitticeras* **cariniferum*** (pl. 627), *Anacardioceras* **expositum*** (*Cardioceras* cf. *suessi* Buck.) (pl. 628A); *A.* **secundarium*** (pl. 629); *A.* **delicatum*** (pl. 630); *Sonninites* **simulans*** (pl. 631); *Xipheroceras* **ziphus*** (*Ammonites z.* Hehl-Zieten) (pl. 632); *Cardioceras* **costicardia*** (pl. 633); **PACHYCARDIOCERAS,** type *P.* **robustum*** (pl. 634); *Anacardioceras* **delicatulum*** (pl. 635); *Vertebriceras* **costulosum*** (pl. 636); *Allovirgatites* **distans*** (*Sphinctoceras d.* Neaverson) (pl. 638A); *Lydistratites* **gibbosus*** (pl. 639A); *Metechioceras* **aplanatum*** (*Caloceras a.* Hyatt) (pl. 640); *Parammatoceras* **dolium*** (*Hammatoceras d.* Buck.) (pl. 641); **RUBRILEIITES,** type *R.* **ruber*** (pl. 642); **PHAULOZIGZAG,** type *P.* **phaulomorphus*** (pl. 643); *Micromphalites* **oxus*** (pl. 644); *Lunuloceras* **glyptum*** (pl. 646); **GALECARDIOCERAS,** type *G.* **galeiferum*** (pl. 647); **OTOSPHINCTES,** type *O.* **ouatius*** (pl. 649); **DICHOTOMOSPHINCTES,** type *D.* **antecedens*** (*Dichotomoceras a.* Salfeld) (pl. 650); *Keratinites* **proboscide*** (pl. 651); *K.* **naso*** (pl. 652); **KEYNSHAMITES,** type *K.* **keelingi*** (*Coroniceras k.* Tutcher) (pl. 653A); **ORTHODACTYITES,** type *O.* **directus*** (pl. 654); **MICRODACTYLITES,** with *M.* **attenuatus*** (*Ammonites a.* Simps.) (pl. 655); *Dactylioceras* **delicatum*** (*Ammonites delicatus* Bean-Simpson) (pl. 656); **ARCIDACTYLITES,** with *A.* **arcus*** (pl. 657); **ZUGODACTYLITES,** type *Z.* **braunianus*** (*Ammonites b.* d'Orb.) (pl. 658); **ANOLKOLEIITES,** type *A.* **plenus*** (*Witchellia laeviuscula* Buck.) (pl. 659); *Teloceras* **banksii*** (*Ammonites b.* Sower.) (pl. 660A); *Bikosmoceras* **deficiens*** (pl. 661A); *Peltoceratoides* **intertextus*** (*Ammonites i.* Simps.) (pl. 662); *Perisphinctes* **cowleyensis*** (pl. 663A); *Keratinites* **nasutus*** (pl. 664); **CRENILYTOCERAS,** type *C.* **crenatum*** (*Lytoceras cornucopia* Thompson, part) (pl. 665); **ORCHOLYTOCERAS,** type *O.* **metorchion*** (*Lytoceras cornucopia* Thompson, part) (pl. 666); *Hildoceras* **hildense*** (*Ammonites hildensis* Young & Bird) (pl. 667); *Sherbornites* **adicrus*** (*Sonninia adicra* Waagen) (pl. 669); **OPPELINA,** type *O.* **pulchra*** (pl. 670); *O.* **umbilicata*** (pl. 671); *Ringsteadia* **sphenoidea*** (pl. 672); *Holcosphinctes* **kimmeridiensis*** (*Ammonites k.* Seebach) (pl. 673); *Lydistratites* **trigonalis** (pl. 674A); *Virgatites* **scythicus*** (*Perisphinctes s.* Michalski) (pl. 675); **HYDROSTRATITES,** type *H.* **bifurcus*** (pl. 676); *Leucopetrites* **caementarius*** (pl. 677); **PRIMARIETITES,** with *P.* **primitivus*** (pl. 678); *Tragophylloceras* **nanus*** (*Ammonites n.* Simps.) (pl. 679); *Crenilytoceras* **formosum*** (*Lytoceras cornucopia* Thompson, part) (pl. 680); *Orcholytoceras* **appropinquans*** (*L. cornucopia* Thompson, part) (pl. 681); *Harpoceras* **falcula*** (pl. 682); *Peronoceras* **fibulatum*** (*Ammonites fibulatus* Sower.) (pl. 683); **MACONICERAS,** type *M.* **vigoense*** (pl. 684); *Hildoceras* **semicosta*** (pl. 685); **COSTIGRAMMOCERAS,** type *C.* **costigerum*** (*Grammoceras striatulum* Buck.) (pl. 686); **DUNDRYITES,** type *D.* **albidus*** (pl. 687); *Witchellia* **falcata*** (*W. sutneri* Buck.) (pl. 688); *W.* **actinophora*** (pl. 689); *Cardioceras* **quadrarium*** (pl. 690); *Anacardioceras* **serrigerum*** (pl. 691A); *Virgatites* **pallasianus*** (*Ammonites p.* d'Orb.) (pl. 693); *Plesechioceras* **typus** (*P. delicatum* Trueman and Williams) (pl. 694); *Pleurechioceras* **typicum*** (*P. deciduum* T. and W.) (pl. 695); **STENECHIOCERAS,** type *S.* **angustilobatum*** (*Euechioceras a.* True. and Will.) (pl. 697); **PLATYHARPITES,** type *P.* **platypleurus*** (*Ammonites* cf. *kurrianus* Buck.) (pl. 698); *Dactylioceras* **annulatum*** (*Ammonites annulatus* Sower.) (pl. 700); *Peronoceras* **praepositum*** (pl. 701); *Cardioceras* **anacanthum*** (pl. 703); *Prionodoceras* **truculentum*** (*Ammonites cordatus* v. *excavatus* Woodward) (pl. 704); *Pectinatites* **scalariformis*** (pl. 705); *Xipheroceras* **binodulatum*** (pl. 706A); **PREPAPILLITES,** with *P.* **arenatus*** (*Ammonites a.* Quens.) (pl. 709); *Emileia* **brocchii*** (*Ammonites b.* Sower.) (pl. 710A); *E.* **subcadiconica*** (pl. 711); *Kumatostephanus* **perjucundus*** (pl. 712A); **BAJOCISPHINCTES,** with *B.* **bajociensis*** (*Perisphinctes b.* Siemiradski) (pl. 713); *Perisphinctes* **tumulosus*** (pl. 714); *Dichotomosphinctes* **holtonensis*** (*Perisphinctes parandieri* Buck.) (pl. 715); *Pictonia* **costigera*** (pl. 716); *Glottoptychinites* **audax*** (pl. 717A).—*J. B. Reeside, Jr.*

5522. **BUCKMAN, S. S. Type Ammonites. VII., With editorial note, chronological and other tables and index,** by **A. MORLEY DAVIES.** 7 (64-72): 1-78. 118 pl. Published by the author (pts. 64-70) and by the executors of the late S. S. Buckman (pts. 71-72). Sold by Wheldon & Wesley, Ltd.: London, 1927-1930.—The text discusses a series of unrelated topics pertaining chiefly to the Jurassic of England: *Dichotomosphinctes* **ingens** (*Ammonites i.* Young & Bird) (unnumbered page). The relations of *Dichotomoceras; Harpoceratoides;* **GLYPTARPITES** (p. 8), type *G.* **glyptus*** (p. 8); **TARDARPOCERAS** (p. 9), type *T.* **tardum*** (p. 9), *Poecilomorphus,* including *P.* **regulatus*** (p. 10), *P.* **umbilicatus** (*Ammonites cycloides* d'Orb., part) (p. 10), *P.* **evolutus** (p. 10), *P.* **primiferus*** (p. 10), *P.* **fasciatus** (*Ammonites cycloides* d'Orb., part) (p. 10), *P.* **asper** (p. 10), *P.* **inclusus** (p. 10), *P.* **angulinus*** (p. 10), *P.* **capillaceus** (p. 10); **MACERATITES** (p. 11), type *M.* **aurifer*** (p. 11), including *M.* **costulatus** (*Poecilomorphus macer* Buckman, part paratype) (p. 11), *M.* **macer** (*Poecilomorphus macer* Buckman, typical) (p. 11); **SPATULITES** (p. 12), type *S.* **spatians*** (p. 12); *Dundryites;* **ZUGELLA** (p. 12), type *Z.* **connata*** (p. 12); **NANNINA** (p. 13), type *N.* **evoluta*** (p. 13); *Maconiceras,* including *M.* **soloniacense*** (*Grammoceras s.* Lissajous, part) (pl. 721), *M.* **lassum*** (*Grammoceras soloniacense* Lissajous, part) (pl. 722); **PHAULARPITES** (p. 13), type *P.* **exiguus*** (p. 13). And the form of the inner margin of the whorl. The remaining text pages are contributed by A. Morley Davies as a conclusion of the 7 volumes and include: A historical note; an explanation of Buckman's system of notation; a table showing the arrangement of the families touched upon in the 7 volumes of Type Ammonites; a geologic chronology and index of the species included; a chronologic list

of the plates; alphabetic indexes of genera and species included; an index of the species names changed during the publication of the volumes; and a list of the new specific names appearing in the text matter. Since the publication of the final part, the editor has printed a further series of corrigenda. Subscribers who have not received this are requested to write for it to Dr. A. Morley Davies, Imperial College of Science and Technology, London, S. W. 7, England. The plates bear no pagination and are mostly unrelated to the text. Each plate contains 1 species and a brief diagnosis. New are: *Schlotheimia* **antiquata*** (*Ammonites antiquatus* Simpson) (plate 718A), *Nodicoeloceras* **crassescens*** (*Ammonites c.* Simpson) (pl. 719), *Zugodactylites* **mutatus*** (pl. 720), *Emileia* **vagabunda*** (pl. 723A), *Chondroceras* **gervillii*** (*Sphaeroceras g.* Buckman) (pl. 724), *Sphaeroceras* **globus*** (pl. 725), *Bajocisphinctes* **curvatus*** (pl. 726), *Pseudocadoceras?* **laminatum*** (*Ammonites sublaevis* Pratt) (pl. 727), *Nodicoeloceras* **acanthus*** (*Porpoceras a.* d'Orb.) (pl. 729A), *Emileia* **bulligera*** (pl. 732A), *E.* **multifida*** (pl. 733), *Pseudocadoceras?* **concinnum*** (pl. 735), **PARACORONITES,** type *P.* **noduliferus*** (pl. 737A), *Orthodactylites* **mitis*** (pl. 738), *Harpoceratoides* **strangwaysi*** (*Ammonites s.* Sowerby) (pl. 739), *Harpoceras* **concinnum*** (pl. 742), *Zugodactylites* **rotundiventer*** (pl. 743), *Emileia* **contrahens*** (pl. 744A), *Witchellia* **laeviuscula*** (*Ammonites laeviusculus* Sowerby) (pl. 745), *Dichotomoceras* **strumatum*** (pl. 747A), *Parinodiceras* **reineckii*** (*Ammonites striatus r.* Quenstedt) (pl. 748A), *Harpoceras* **falciferoides** (pl. 749), *Dundryites* **pavimentarius*** (*Sonninia* sp. Buckman) (pl. 751), *Nannina* **undifera*** (pl. 753), **PHAULOSTEPHANUS,** type *P.* **paululus*** (pl. 754), **KRETEROSTEPHANUS,** type *K.* **kreter*** (pl. 755), *Analcosmoceras* **trinode*** (pl. 759), **MACROGRAMMITES,** type *M.* **grammicus*** (*Waehmeroceras extracostatum* Tutcher, part) (pl. 761A), *Microderoceras* **gigas*** (*Ammonites birchi g.* Quenstedt) (pl. 762A), **DUROTRIGENSIA,** type *D.* **dorsetensis*** (*Ammonites d.* Wright) (pl. 767A), *D.* **eimensis*** (*Parkinsonia e.* Wetzel) (pl. 768), *Aspidoceras* **akantheen*** (pl. 770A), *Macrogrammites* **antiquatus*** (*Schlotheimia a.* Buckman) (pl. 718A), *Xipheroceras* **revertens*** (pl. 771A), *Murleyiceras* **gyrale*** (pl. 772), *Hildoceras* **walcotti*** (*Ammonites walcotii* Sowerby) (pl. 773), **GIBBISTEPHANUS,** type *G.* **gibbosus*** (pl. 780A), *Durotrigensia* **parkinsoni*** (*Cosmoceras p.* Buckman) (pl. 781A), *Aspidoceras* **ferox*** (pl. 782A), *Apoderoceras* **trinornatum*** (pl. 783A), *Lytoceras* **furcicrenatum*** (*L. fimbriatum* Buckman) (pl. 784A), *Ancolioceras* **capillare*** (pl. 786), *A.* **maeandrus*** (*Nautilus m.* Reinecke) (pl. 787), *Teloceras* **multinodus*** (*Ammonites coronatus m.* Quenstedt) (pl. 788A), *Parkinsonia* **typus*** (*P. parkinsoni* Bayle) (pl. 789), *Haselburgites* **subgaleatus*** (pl. 790).—*J. B. Reeside, Jr.*

5523. BURKENROAD, MARTIN D. Observations on the Louisiana oyster (Oystrea virginica). *Louisiana Conservation Review* 1(2): 14-15. 1 fig. 1930.—Notes on food, environment, spawning, and enemies.

5524. COEN, GIORGIO. Note Malacologiche. *Atti Accad. Sci. Veneto-Trentino-Istriana* 20: 133-137. 1 pl. 1929.—*Arca noae* **v. suprapectinata*** (p. 134), Dalmatia. *Modiolaria* **rufa*** (p. 136), Italy. The author also discusses a peculiar hypertrophic development of the cicatrices of the anterior adductor of the valves in some specimens of *Arca noae**.

5525. DUPUIS, PAUL. Notes concernant une ponte de Semifusus (Megalatractus) incisus, Martyn, se trouvant dans les collections faites au cours du voyage de S. A. R. le Prince Léopold de Belgique aux Indes Orientales Néerlandaises en 1929. [Egg-laying of S. incisus.] *Bull. Mus. Roy. Hist. Nat. Belgique* 6(9): 1-7. 2 pl. 1930.—The author reviews the nomenclatural history of this sp.*, following Tapparone-Canefri (1874) in using the specific name *incisus*, which had been ignored by later authors in favor of *Semifusus proboscidiferus* Lam. Oothecae* and embryos* from the Aru Isls. are described.

5526. FULTON, HUGH C. On new species of Latiaxis, Fasciolaria, Cassis, and Sunetta. *Ann. & Mag. Nat. Hist.* 6(36): 685-686. 1 pl. 1930.—*Latiaxis* **kinoshitai*** (p. 685), Japan; *Fasciolaria* **strebeli*** (p. 685), and *Cassis* **africana*** (p. 686), Natal; *Sunetta* **perexcavata*** (p. 686), W. Australia.

5527. GALTSOFF, PAUL S. The fecundity of the oyster. *Science* 72(1856): 97-98. 1930.—*Ostrea virginica* in 1 spawning period laid 15-114.8 million eggs; the ♀ can be induced to spawn 5-6 times during the season, and the author considers it probable that the maximum number of eggs in a single adult ♀ may be close to ½ billion. *O. gigas* laid 11.4-55.8 million eggs in 1 spawning period; 1 oyster induced to spawn 3 times in 18 days laid 91.9 million eggs.

5528. GEYER, DAVID. Unsere Land- und Süsswasser-Mollusken: Einführung in d. Molluskenfauna Deutschlands. Dritte vollständig neubearbeitete Auflage. xi +224p. 33 pl. K. G. Lutz: Stuttgart, 1927. 12 M.—A well illustrated descriptive monograph of German fossil and recent land and fresh water mollusks, with keys to families, genera and species, many of which are illustrated.

5529. HAAS, F. Bivalvia (Muscheln). In: **Bronn's Klassen u. Ordnungen des Tier-Reichs. 3**(Abt. 3. Lief. 1): 1-176; (Lief. 2): 1-292. 80 fig. 1929.—The first Lieferung begins with a classification of bivalve (pelecypod) families which is an amplification of Thiele's scheme and is mainly based on conchological characters. Orders Anisomyaria, Taxodonta, and Eulamellibranchiata are recognized; the last is divided into the suborders Schizodonta, Heterodonta, Hemidapedonta, Desmodonta, and Anomalodesmata. The discussion begins with a general account of the orientation of the entire body and the relative positions of the organs. The remainder of this part deals with the shell. Chapters follow on: the mathematical interpretation of growth form, the various adult shapes, beaks, beak and shell sculpture, internal topograph, brood chamber, hinge, ligament, hinge armature (with a discussion of the various formulae proposed), phyletic and ontogenetic development of hinge armature, accessory shelly growths, secondary shells, erratic forms, and sexual dimorphism. The second Lieferung consists of a bibliography, which is arranged alphabetically by authors; this lists all of the papers on bivalves known to the author (almost 7000 citations).—*H. B. Baker.*

5530. HECHT, FRANZ. Ausgeworfene Muscheln (Mya arenaria L.) in Lebensstellung, zur Beurteilung eines Beweismittels in der Küstensenkungs-Frage. [Cast-up mussels (Mya arenaria) in lifelike position as a criterion in the question of coast sinking.] *Senckenbergiana* 12 (4/5): 274-278. 1 fig. 1930.

5531. HESSE, P. Die Nacktschnecken der paläarktischen Region. *Abhandl. Arch. Molluskenk.* 2(1): 1-152. 2 pl. 1926.—Since the times of Simroth and Pollonera, there has been a certain standstill in the anatomical and systematic study of Palaearctic slugs. The author, therefore, herein presents a comprehensive account showing what is already known and how much yet remains to be done in this field of research. The slugs treated are arranged into 3 families: (1) Limacidae, (2) Trigonochlamydidae, and (3) Arionidae; all of which must be allocated to their proper place within the general system, since the only character common to all is the absence of external shell. The paper gives a description and classification of genera and subgenera based on anatomical characters and also points out the gaps in our knowledge of this group. The insertion of these families within the Stylommatophora is discussed. The family Limacidae (divided into 2 subfam., Limacinae and Parmacellinae) is regarded as related to the Vitrinidae. Many of the groups of Stylommatophora have branched off rapacious forms, which have been grouped together as Agnatha by certain authors. But in light of present knowledge, this arrangement, based on absence of jaw, must be modified, and (e.g.), *Plutonia* classed with the Vitrinidae, and *Daudebardia* with the Zonitidae. There are also rapacious slugs in the Palaearctic region, e.g., the Trigonochlamydidae, grouped with the Limaci-

dae, especially within the genera *Milax* and *Parmacella*, as pointed out by Simroth. The Trigonochlamydidae are probably as closely related to the Parmacellinae as these latter are to the Limacinae. This small group of rapacious slugs, restricted to the Caucasian district, might, therefore, well be included as a special subfamily amongst the Limacidae, as the Daudebardiinae, which have a similar mode of life, are within the Zonitidae. Of the Arionidae (3 subfam.: Binneyinae, Ariolimacinae, Arioninae), only the Arioninae, which is the most specialized of the subfamilies, belongs to the Palaearctic region. Pilsbry regards them as a descendent of the Endodontidae. A list is given of the 266 spp. of slugs found in the Palaearctic region, which is valuable both as a catalogue of the spp. and of the scattered literature. A list of corrections was published in *Arch. Molluskenk.* 58: 234-235, 1926. The following new groups are described: **CASPILIMAX** (p. 14), subg. of *Limax*, type *L. keyserlingi* Marts.; **SVANETIA** (p. 15), subg. of *Limax*, monotype *L. svaneticus* Simroth; **MICROMILAX** (p. 33), subg. of *Milax*, type *Milax cyprius* Simroth (substitute for *Cypria* Simroth); **MESARION** (p. 65), section of *Arion*, type *A. subfuscus* Drap.; **CARINARION** (p. 65), sect. of *Arion*, type *A. circumscriptus* Johnston (substitute for *Carinella* Mabille); **MICROARION** (p. 66), sect. of *Arion*, type *A. intermedius* Normand.—*C. R. Boettger.*

5532. HULL, A. F. BASSET, and JEAN RISBEC. The loricates of the New Caledonian region. (Class Mollusca—Order Loricata.) [To be cont'd.] *Australian Zoologist* 6(3): 277-286. 5 pl. 1930.—Previous literature on the Loricata of this region is reviewed. Owing to great individual variation, the radula is less useful than the valves and the girdle in differentiating the forms. *Ischnochiton* **acomphus*** (p. 278). Egg-laying and larval development are described in detail.

5533. IHERING, HERMANN von. Die Nephropneusten in systematischer und phylogenetischer Hinsicht. *Abhandl. Arch. Molluskenk.* 2(2): 1-229. 5 fig. 2 pl. 1929.—The Nephropneusta includes the stylommatophorous pulmonate mollusks. The present paper is divided into 6 parts: (1) The nephropneust question in light of the latest data; (2) Genitalia and systematics of the Helicidae and Fruticicolidae; (3) Origin of nephropneust lungs; (4) The classification of Mollusca; (5) The classification of Nephropneusta; and (6) Bibliography of the author's published works (1872-1929). The Helicidae are divided into the subfamilies Helicinae, Campylaeinae, Lysinoinae, and Leucochroinae; the Fruticicolidae into the Fruticicolinae, Xerophilinae (=Helicellinae), Eulotinae, Cepolinae, and Cochlostylinae. Many anatomical references are included. The order Nephropneusta includes 2 groups: Meganota and Micronota. The Meganota is subdivided into the Ditremata (Onchidiidae, Vaginulidae, and Rathouisiidae) and the Monotremata (Janellidae and Philomycidae). The Micronota also includes 2 groups: Orthurethra (Achatinellidae, Amastridae, Partulidae, Cochlicopidae, Buliminidae, Pupidae, and Valloniidae) and Anurethra (=Heterurethra+Sigmurethra). The Anurethra are further subdivided into the Aulacopoda (Endodontidae, Phenacohelicidae, Zonitidae, Limacidae, Parmacellidae, Urocyclidae, Trigonochlamydidae, Systrophiidae, Streptaxidae, Aperidae, Rhytididae, Glandinidae, Testacellidae, Arionidae, and Ostracolethidae) and the Holopoda (Acavidae, Achatinidae, Ferussaciidae, Megaspiridae, Clausiliidae, Cerionidae, Cylindrellidae, Bulimulidae, Sagdidae, Helicidae, Fruticicolidae, Polygyridae, Pleurodontidae, and Succineidae). In the phylum Mollusca, 3 subphyla are recognized: (1) Amphineura, (2) Arthromalakia, including the classes Solenoconcha (=Scaphopoda auct.), Cephalopoda, Lamellibranchia and Cochlides (=Prosobranchia auct.), and (3) Platymalakia, with one class, Ichnopoda (=Opisthobranchia+Pulmonata auct.).—*H. B. Baker.*

5534. IREDALE, TOM. Mollusca from the continental shelf of eastern Australia. No. 2. *Rec. Australian Mus.* 17(4): 157-189. 4 pl. 1929.—Continuing an earlier paper (published in 1925), the author describes new pelecypods and gastropods and suggests that some are possibly related to fossil forms. Nuculanidae: *Nucula obliqua* **subdilecta** (p. 158), S. Australia; **SCAEOLEDA** (p. 158), type *S.* **crassa** (*Nucula c.* Hinds) (p. 158); *S. c.* **illepida** (p. 158), S. Austr.; **TERETILEDA** (p. 158), type *Nuculana oculata* Iredale, including also *N. fortis;* **MAGALEDA** (p. 158), type *Leda inopinata* E. A. Smith; **THESTYLEDA** (p. 158), type *Leda ramsayi* E. A. Smith; *Comitileda* **remensa** (p. 159), S. Austr.; *Leda pala* Hedley is transferred to *Comitileda; Poroleda* **flindersi** (p. 159), S. Austr.; **MICROCUCULLAEA** (p. 159), near *Cucullaea*, type *Bathyarca perversidens* Hedley; *M.* **adelaideana** (p. 159), S. Austr.; **LORINGELLA** (p. 160), type *Limopsis loringi* Angas; **PHRYNELIMA** (p. 160), type *Limopsis-brazieri* Angas; **ASPALIMA** (p. 160), near *Trinacria*, type *A.* **erecta** (*Limopsis erectus* Hedley & Petterd) (p. 160); *A. e.* **idonea** (p. 160); S. Austr.; **CYRILLONA** (p. 160), type *Cyrilla dalli* Hedley; **CYRILLISTA** (p. 160), type *Nuculina concentrica* Verco; *Glycymeris* **magnificens*** (p. 161), N. S. Wales; *G.* **broadfooti** (p. 162), S. Austr.; **MESOPEPLUM** (p. 162), type *M.* **caroli*** (p. 162), N. S. Wales; **MIMACHLAMYS** (p. 162), type *Pecten asperrimus* Lamarck; **SCAEOCHLAMYS** (p. 162), type *Pecten lividus* Lamarck; **EQUICHLAMYS** (p. 162), type *Pecten bifrons* Lamarck; **BELCHLAMYS** (p. 164), subg. of *Chlamys*, type *Pecten aktinos* Petterd; **TALOCHLAMYS** (p. 164), subg. of *Chlamys*, type *C. famigerator* Iredale; **VEPRICHLAMYS** (p. 164), subg. of *Chlamys*, type *C. perillustris* Iredale; **CHLAMYDELLA** (p. 164), type *Cyclopecten favus* Hedley; **CTENAMUSIUM** (p. 164), type *Amusium thetidis* Hedley; *C.* **salacon** (p. 164), locality not stated; *Spondylus* **regillus*** (p. 165), N. S. Wales; **AUSTROLIMA** (p. 165), type *A.* **nimbifer** (*Lima n.* Iredale) (p. 165); *A. n.* **gemina** (p. 165) and *A.* **spectata** (p. 165), S. Austr.; **ESCALIMA** (p. 165), type *Limea acclinis* Hedley; *Lima murrayi* Smith is also referred to this genus as *E. m.* **murrayi** (p. 166); *E. m.* **acclinis** (*Limea a.* Hedley) (p. 166); *E. m.* **maugeana** (p. 166), Tasmania; *E. m.* **relegata** (p. 166), S. Austr.; **GEMELLIMA** (p. 166), type *Limaea austrina* Tate; **ISOLIMEA** (p. 166), subg. of *Gemellima*, type *Limaea parvula* Verco; **EXOSIPERNA** (p. 166), type *Arcoperna scapha* Verco; *E.* **relata** (p. 167), N. S. Wales. Trochidae: The genus *Minolia* is rejected; *Spectamen* **epitheca*** (p. 168), N. S. Wales; **MINOLOPS** (p. 169), type *Minolia pulcherrima emendata* Iredale; *Minolops* **emendata*** (*Minolia pulcherrima e.* Iredale) (p. 169); *M.* **pulcherrima*** (*Minolia p.* Angas) (p. 169); *M.* **rosulenta** (*Solarium rosulentum* Watson) (p. 169); *M.* **arata*** (*Minolia a.* Hedley) (p. 169); **ARCHIMINOLIA** (p. 170), type *Monilea oleacea* Hedley & Petterd; *Talopena* **gloriola*** (p. 170), N. S. Wales; *Astele subcarinata* Swainson, new to N. S. Wales; *Onustus* **peronianus** (p. 172), Australia. Cymatiidae: *Charonia* **euclia** (*C. nodifera* var. *e.* Hedley) (p. 172); *C. e.* **instructa*** (p. 172), eastern Austr.; *Cymatium boltenianum** A. Adams is reinstated as a sp. distinct from *C. spengleri* Perry; *C. spengleri* **procerum*** (p. 173), locality not stated; *Mayena australasia* **benthicola*** (p. 174), locality not stated; *Cymatiella verrucosa** (Reeve) redescribed; *C.* **lesueuri*** (p. 175), Victoria (type), S. Austr., and Tasmania; *C.* **gaimardi*** (p. 176), S. Austr.; *C.* **peroniana*** (p. 176), N. S. Wales; **CYMATONA** (p. 177), type *C.* **kampyla** (*Nassaria k.* Watson) (p. 178); **NEGYRINA** (p. 177), type *N.* **subdistorta** (*Triton subdistortus* Lamarck) (p. 178), new to N. S. Wales; *Cymatium waterhousei* **frigidulum*** (p. 177), *Xenogalea* **spectabilis*** (p. 178), and *Natica* **luculenta*** (p. 179), N. S. Wales. Volutidae: **AMORENA** (p. 180), subg. of [*Voluta* ?], type *Voluta undulata* Lamarck; **ZEBRAMORIA** (p. 180), subg. of [*Voluta* ?], type *Voluta zebra* Leach; **CYMBIOLENA** (p. 181), type *Voluta magnifica* Shaw & Nodder; **CYMBIOLISTA** (p. 181), subg. of [*Voluta* ?], type *C. marmorata* Swainson; **CYMBIOLACCA** (p. 181), subg. of [*Cymbiola* ?], type *Cymbiola complexa* Iredale; *Voluta kenyoniana* Brazier is reinstated to specific rank; **MESERICUSA** (p. 181), type *M. sowerbyi* **perspecta*** (p. 181), N. S. Wales; **NANNA-**

MORIA (p. 181), type *N.* amicula* (p. 181), N. S. Wales; *Conus* howelli* (p. 182), N. S. Wales; **LARGISIPHO** (p. 183), type *L. oligostira* spectanda* (p. 182), N. S. Wales; **RATIFUSUS** (p. 183), type *R.* adjunctus* (p. 183), N. S. Wales; **XENOTROPHON** (p. 184), type *X.* euschema* (p. 184), N. S. Wales; **ENIXOTROPHON** (p. 185), type *Trophon carduelis* Watson; **EMOZAMIA** (p. 185), type *Murex licinus* Hedley & Petterd; **ENATIMENE** (p. 185), type *Trophon simplex* Hedley; **LITOZAMIA** (p. 185), type *Peristernia rudolphi* Brazier; **GEMIXYSTUS** (p. 185), type *Trophon laminatus* Petterd; **APIXYSTUS** (p. 185), subg. of [*Trophon* ?], type *Trophon stimuleus* Hedley; **BENTHOXYSTUS** (p. 185), type *Trophon columnarius* Hedley & May; **OLLAPHON** (p. 168), near *Fusinus*, type *Trophon molorthus* H. & M.; **ANATROPHON** (p. 186), type *Trophon sarmentosus* H. & M.; **GATLIFFENA** (p. 186), type *Donovania fenestrata* Tate & May; **TOLEMA** (p. 186), type *T.* sertata* (*Purpura s.* Hedley) (p. 186); **MATHILDONA** (p. 186), type *M.* euglypta* (p. 186), N. S. Wales; **CHARILDA** (p. 187), type *Mathilda rosae* Hedley; **EUCHARILDA** (p. 187), type *Mathilda elegantula* Angas; **OPIMILDA** (p. 187), type *Mathilda decorata* Hedley. Taxonomic notes are given on a number of other spp. —*J. S. Williams.*

5535. **JAYET, AD.** Les limites de la variation individuelle chez les Ammonites et la diagnose des espèces. Note préliminaire basée sur l'analyse d'Inflaticeras varicosum (Sowerby). [Limits of individual variation in ammonites and diagnosis of species. Preliminary note based on the analysis of I. varicosum.] *Verhandl. Schweizer. Naturforsch. Ges.* 110: 192-193. 1929.—Abstract.

5536. **JOUBIN, L.** Notes préliminaires sur les Céphalopodes des Croisières du Dana (1921-1922) Octopodes-2e partie. IV. Études sur quelques Octopodes dépourvus de Nageoires (Apteroti). *Ann. Inst. Océanograph.* 7(1): 1-24. 2 pl., 19 fig. 1929.—*Tremoctopus violaceus** is redescribed on the basis of an Atlantic specimen, and a detailed comparison is made with Berry's description of specimens from Hawaii, which he determined as this sp. but which are really *T. quoyanus. Ocythoe tuberculata**, description of young ♂; **HEPTAPUS** (p. 11), compared with *Alloposus*, erected for *H.* danai* (p. 11), Atlantic Ocean, off Cape Hatteras, 100 m.; *Vitreledonella* ingebörgae* (p. 16), Azores, 2000 m. The last is the second known incubating cephalopod.

5537. **KEVAN, D. K.** Land and fresh-water Mollusca of Great Cumbrae. *Scottish Nat.* 1930(184): 117-119. 1930.—The author lists 26 spp. found on a recent visit to this Scottish island.

5538. **LAMY, ÉD.** Note sur l'"Erycina cardioides" Lamarck. *Arch. Mus. Hist. Nat.* [*Paris*] 6: 59-61. 1 pl., 1930. —The author briefly reviews the nomenclatural history of 11 spp. placed by Lamarck in his genus *Erycina*, and discusses more fully the synonymy of *E. cardioides**, now known as *Chioneryx cardioides.*

5539. **LEONARDI, PIERO.** Nota preliminare sul Werfiano inferiore (Strati di Siusi) di Valle di Fiemme nel Trentino. [The Lower Werfenian (Seiss beds) of the Valle di Fiemme in the Trentino.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 20: 61-68. 1929.—The author lists 28 forms of mollusks from this formation, including. *Pseudomonotis clarai* v. tesidea (p. 63); *P. c.* var. radialis (p. 63); *P. aurita* v. flemmensis (p. 63); *P.* dalpiazi (p. 64); *P.* (?) catharinae (p. 65); *Pleuromya* zanoni (p. 66); *Homomya canalensis* Catul., emended description.

5540. **LONES, T. E.** Notes on a species of Succinea. *Trans. Hertfordshire Nat. Hist. Soc. & Field Club* 18 (3): 180. 1927.—*Succinea putris* v. *vitrea* recorded in Hertfordshire.

5541. **MATHEWS, A. L.** Natica as a radicle. *Amer. Naturalist* 64(694): 430-435. 1930.—Observations of fossil and living coiled gastropods show that the protoconchs are naticoid. *Natica* is the radicle for the entire group, since it fulfills the following biogenetic law: If any primitive character appears in the protoconchs of the highly divergent stocks which can be attributed to the simple early form, it would be indicative that such a form serves as a parent from which the divergent stocks sprang, and thus can be considered the radicle for the entire group.—*A. L. Mathews.*

5542. **MINELLI, TERESA de.** Osservazioni sugli stadi giovanili di Chiroteuthis veranyi (Férussac). *Boll. Mus. Zool. e. Anat. Comp. Univ. Genova* 9(31): 1-4. 1 pl. 1929.—Description of a *Doratopsis* larva measuring 42 mm., at the beginning of the metamorphosis. On comparing the suckers of the clubs in different stages it was found that *Doratopsis* larvae belong to the same Mediterranean species, *Chiroteuthis veranyi* (Fér.).—*T. de Minelli.*

5543. **MORIN, G., et A. JULLIEN.** Sur la structure du coeur chez Murex Trunculus. *Bull. Hist. Appl. Phys. et Path.* 7(3): 79-96. 4 fig. 1930.—The heart of this mollusk contains circular and longitudinal fibers, both striate, the latter serving as a conduction system from very primitive muscle at the ventricular base. Nerve cells are present. The striations are confined to the middle of the cells and longitudinal fibrils are prominent. —*J. G. Sinclair.*

5544. **ODHNER, NILS HJ.** Die Molluskenfauna des Tåkern. *Sjon Tåkerns Fauna och Flora* (*K. Svenska Vetenskapsakad.*) Paper 8. 1-129. 7 pl., 89 fig. 1929.—Tåkern is a small, shallow lake in central Sweden long known for its abundant animal life. In the 1st section single species composing the fauna are treated; for each species the characteristic features of its ecology, its variation, and striking peculiarities in habitus and occurrence are discussed. The 55 spp. considered were all previously known in the Swedish fauna. New facts of morphology, however, are given with a view to completing our knowledge of the systematic interrelations of the Planorbidae especially; a key of the Swedish genera is based on anatomical characters; a survey of the Swedish spp. with chief synonyms follows. A detailed study was also made of the anatomy of all the Swedish Sphaeriidae, the spp. of *Sphaerium* and *Pisidium* having been only imperfectly known morphologically. Even the soft parts are useful in characterizing the species, and diagnoses taking into account the anatomical as well as the conchological characters are given for *Pisidium amnicum* Müll., *P. lilljeborgi* Cless., *P. henslowanum* Shepp., *P. cinereum* Ald., *P. subtruncatum* Malm., *P. pulchellum* Jen., *P. nitidum* Jen., *P. hibernicum* West., *P. obtusalastrum* Woodw., and *P. milium* Held. Stress is also laid upon the habitus, number and variation of the young mussels still within the gills of the mother. Reproduction of the Pisidia is, as a rule, autogamous, and there is also, it is stated, a tendency to neoteny. These facts, together with the morphological variation, have influenced the origin of species in *Pisidium* and complicates their specific identifications. The 2nd part deals with the fauna as a whole, its appearance and adjustment to environmental and seasonal, or other conditions, e.g., drought. The fauna shows a differentiation into concentric zones according to the vegetation. On the shore there is a dry zone characterized by a few xerophilous forms, e.g., *Limnaea truncatula, Pupilla muscorum, Succinea pfeifferi* f. *nilssoniana.* Next follows the girdle of humid strand meadows with *Agriolimax agrestis, Vallonia pulchella, Zonitoides nitidus, Carychium minimum,* and others, and farther towards the lake this passes into the Magnocaricetum with the aquatic *Planorbis*-fauna composed chiefly of *Limnaea palustris* and *Planorbis planorbis;* here *Succinea putris* occupies the real contact zone at the water's edge. Of the following limnetic fauna certain species are restricted to the large emerged plant-formations, e.g., *Ancylus lacustris, Valvata cristata, Bithynia tentaculata,* whereas *Limnaea stagnalis* is common also on the submerged vegetation characterized and frequented by *Planorbis carinatus, Bathyomphalus contortus, Limnaea ovata, Physa fontinalis, Valvata piscinalis antiqua, Sphaerium* and most of the *Pisidium* species; *Anodonta* prefers naked muddy or stony parts of the bottom in the open lake. Changes in the components of the fauna

were noted at the time of these investigations, and these results have been supplemented by comparing with earlier data. Before the lowering of the lake in 1844, its shores were stony and the vegetation rare; *Valvata antiqua* and *Anodonta minima* then were common; the latter did not survive the lowering, and the former species now occurs in an altered form. Of the changes noted from later years the most striking is the sudden invasion of *Myxas glutinosa*, which was absent before 1910 but which was found dominating in 1914. *Armiger crista* and *Bathyomphalus contortus*, on the contrary, were dominating formerly and have disappeared recently. To some extent these changes are due to climatic conditions such as cold winters with heavy ice, which, when breaking, destroys vegetation and fauna in shallow parts of the lake; but also purely biological causes may bring about a regression after a time of luxuriance. The last chapter contains a brief survey of the fauna in the vicinity of the Tåkern.—*N. H. Odhner.*

5545. **[PANOCHINI, S.].** ПАНОЧІНІ, С. Причинки до лізнання фавни слимаків м. Київа та його околиць. **[Slugs of Kiev and vicinity.]** [German summary.] Всеукраінська Академія Наук, Труды Фізично-Математичного Відділу (Збірник Праць Зоологічного Музею ч. 7.) (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Mus. Zool. No. 7*) 13(1): 111-114. 1929.—This is a revision and correction of a list published by K. Jelsky in 1862. The present annotated list includes 6 spp.

5546. **PARONA, C. F. Breve relazione sulla collezione dei Megalonti [Megalodonti?] del Museo di Storia Naturale in Trento. [Megalodontidae of the Museo di Storia Naturale in Trento.]** *Studi Trentini Sci. Nat.* 11(1): 69-70. 1930.—Mention of a number of spp. from Italian localities.

5547. **POLICE, GESUALDO. Voci dialettali dei Molluschi lamellibranchi del Mercato di Napoli. [Local names of lamellibranchs in the Naples market.]** *Boll. Pesca, Piscicolt. e Idrobiol.* 6(4): 581-583. 1930.

5548. **RISBEC, JEAN. Nouvelle contribution à l'étude des Nudibranches Néo-Calédoniens.** *Ann. Inst. Océanograph.* 7(7): 263-298. 1 col. pl., 69 fig. 1930.—Further collections by the author have raised to 110 the number of nudibranchs known from New Caledonia; 25 are listed from Mouac Isl., and 5 from Neba Isl. The author describes an unnamed sp. of *Melibe**, and unnamed varieties of *Doridopsis mollis**, *Kentrodoris inframaculata**, and *Placobranchus guttatus**. Emended descriptions are given of *Platydoris spongilla**, *Phlegmodoris paagoumenei**, *Asteronotus boholiensis**, *Carminodoris punctulifera**, *Trevelyana kouaouae**. *Doridopsis* **arenosa*** (p. 266); *Chromodoris* **mouaci*** (p. 278); *Noumea* **violacea*** (p. 281); *Carminodoris* **cockerelli*** (p. 283); *Aeolidia* **nebae*** (p. 294).

5549. **ROBSON, G. C. Cephalopoda, I. Octopoda.** *Discovery Repts. Government Dependencies Falkland Isl.* 2: pp. 371-402. 2 pl., 18 fig. 1930.—This report covers 14 spp., taken mostly in subantarctic or antarctic waters. There are introductory remarks on the distribution and taxonomy of the group. *Cirroteuthis* **glacialis*** ♂ (p. 375), Palmer Arch., 278-500 m.; *Eledonella massyae* ssp. **purpurea*** ♀ (p. 379), 33°25′ S., 6°31′ E., 1000 m.; *Vitreledonella* **translucida*** ♂ (p. 380), 9°38′ S., 12°42′ E., 200-230 m.; *Amphitretus* **thielei*** ♀ (p. 383), 34° S., 16° E., 350-400 m.; *Graneledone* **polymorpha*** (p. 390), with forms **oblonga** (p. 391) and **affinis** (p. 391), South Georgia, 15-273 m.; **THAUMELEDONE** (p. 392) (Octopodidae), type *Eledone brevis* Hoyle, including also *T.* **gunteri*** ♀ (p. 392), 53°48′ S., 35°57′ W., 401-411 m., type in Brit. Mus.; *Alloposus* **hardyi*** ♂ (p. 397), 00° 56′ S., 14°08′ W., 250 m. For the previously known spp. there are notes on distribution, morphology, and taxonomy.

5550. **ROBSON, G. C. Two remarkable cephalopods.** *Nat. Hist. Mag.* [*London*] 2(16): 257-259. 2 fig. 1930. —A popular account of *Melanoteuthis beebei** and *Bathothauma lyromma**.

5551. **ROTH, HANS. Zur Kenntnis des Epithels und der Entwicklung der einzelligen Hautdrüsen von Helix pomatia.** *Zeitschr. Wissenschaft. Zool.* [*Leipzig*] 135 (3/4): 357-427. 64 fig. 1929.—The epithelium covering the body of *H. pomatia* consists of a single layer which is ciliated on the sole of the foot, the lateral borders of the foot as far as the lateral groove, and about the breathing pore only. In embryonic stages the epithelium of the sole contains small, apparently albuminous inclusions. The mantle-epithelium found beneath the shell is especially differentiated for secretion of the shell in young individuals. There can be distinguished mantle-groove, glandular fillet, epithelium covering the lung, and the epithelium of the visceral sac. All these portions produce a changing mixture of lime and organic substance from which the different layers of the shell are formed. Outside the shell are numerous and variable forms of subepithelial cutaneous glands. Of these there are 3 principal types: (1) Mucous glands, with mantle and sole subtypes; (2) albuminous glands, with subtypes of pure albumen glands and lime-secreting glands; (3) the pigment glands. Embryological studies show that all the cutaneous glands develop from the body-epithelium by the sinking of a yet undifferentiated cell into the dermis. In the cell, connected with the epithelium only by a secretory duct, then begins the transformation of the plasma into the secretion of the time being. All types of glands described may develop an extraordinary number of modifications in their mature as well as in their juvenile stages. Most variable are the pure albuminous glands, which also present a peculiar modification with strongly refractive granules. The pigment glands, and a portion of the normal epithelial cells, contain a yellow pigment which appears to be an excretory product of the body. The lime glands develop from certain albumen glands in which in the course of time lime is deposited, derived from reservoirs in the body in the process of metabolism.—*H. Roth* (*transl. by L. E. Griffin*).

5552. **SMITH, BURNETT. Some specific criteria in Conus.** *Proc. Acad. Nat. Sci. Philadelphia* 82: 279-288. 12 fig. 1930.—The value of 2 criteria of specific discrimination in *Conus* is discussed. These are apex and subsutural flexure; 4 types of apex and 2 types (including 2 subtypes) of subsutural flexure are described and illustrated. *Conus* **waccamawensis*** (p. 286), Pliocene (Waccamaw formation of Waccamaw River), S. Carolina. Holotype in Acad. Nat. Sci. Philadelphia.

5553. **STOHLER, R. Beitrag zur Kenntnis des Geschlechtszyklus von Mytilus californianus Conrad. [Sex-cycle in M. californianus.]** *Zool. Anz.* 90(9/12): 263-268. 3 fig. 1930.—In *M. californianus*, collected at Salada Beach, California, no sex products were found between March 7, 1929, and June 13, 1929. Ripe and ripening sex-products (spermatocysts with spermatocytes, and oöcysts with oöcytes) were observed in the mantle after June 13, 1929. Mantles increased in thickness until Aug. 1, 1929; on Aug. 5, 1929, all observed were "empty." Until Oct. 21, 1929, no changes were seen; on Nov. 4, 1929, very active spawn formation appeared. From Nov. 18, 1929, to Jan. 14, 1930, the mussels again became full of sex products; but on Jan. 27, 1930, they were again "empty." That 2 spawning seasons occur in the mussels from that locality is concluded from these observations. That sexes in *M. californianus* are separate was observed macroscopically.—*R. Stohler.*

5554. **STOHLER, R. Gewichtsverhältnisse bei gewissen marinen Evertebraten. [Weight-relations in certain marine invertebrates.]** *Zool. Anz.* 91(5/8): 149-155. 1930. —Fresh-weight, skeleton-weight, skeleton-weight in % of fresh-weight are tabulated for *Pisaster ochraceus* (Brandt); *P. brevispinus* (Stimpson); *Pycnopodia helianthoides* (Stimpson); *Acanthina spirata* (Blainville); *Acmaea cassis pelta* (Eschscholtz); *A. scutum patina* (Eschscholtz); *A. scabra* Gould; *Tegula funebralis* (A. Adams); *Mopalia muscosa* (Gould). Total fresh-weight, weight of water content, total dry-weight, net skeleton-weight, dry-weight of meat, expressed in grams, and dry-weight in % of fresh-weight, skeleton-weight in % of dry-weight, skeleton-weight in % of fresh-weight,

are tabulated for *Pisaster ochraceus; Pycnopodia helianthoides; Dermasterias imbricata* (Grube); *Strongylocentrotus purpuratus* (Stimpson); *Ischnochiton cooperi* Carpenter; *Katharina tunicata* (Wood); *Cryptochiton stelleri* (Middend.); and *Mytilus californianus* Conrad. The same data and in addition the lengths of the arms are given for 36 specimens of *Pisaster ochraceus* (one specimen with 6 arms instead of 5); for 10 specimens of *P. brevispinus;* and for 6 specimens of *Asterina miniata* (Brandt). Autotomy was especially noticed in *P. brevispinus.* Notes on the stomach-contents of 8 *P. ochraceus.* Since only empirical data are given in connection with other work of the author, no conclusions are drawn.—*R. Stohler.*

5555. **THIEL, MAX EGON.** Untersuchungen über den Einfluss der Abwässer von Hamburg-Altona auf die Verbreitung der Arten der Gattung Sphaerium in der Elbe bei Hamburg. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 24(5/6): 467-484. 14 fig. 1930.—The sewage content of the Elbe water at Hamburg affects both favorably and unfavorably the distribution of species of *Sphaerium.* Their growth is favored by the use of sewage as food, but hindered by poisonous gases and lack of oxygen. Their distribution is correlated with their ability to tolerate the gases and the lack of oxygen. The unique occurrence of *S. corneum* in the whole harbor area is due to its greater resistance to the effects of sewage and of the bottom mud. Thus this species alone is able to profit by the great abundance of food afforded by the sewage. The other species, through their lesser tolerance of pollution, are restricted to the periphery of the harbor area, where the amount of the sewage is reduced. Their abundance here is explained by the nourishment they receive from the dilute sewage.—*From author's summary.*

5556. **THIELE, JOH.** Revision des Systems der Hydrobiiden und Melaniiden. *Zool. Jahrb. Abt. Syst. Ökol. u. Geogr. Tiere* 55(5/6): 351-402. 1 pl., 63 fig. 1928.—Mainly on the basis of radulae, new arrangements of the families Hydrobiidae (or Amnicolidae), Micromelaniidae, and Melaniidae are attempted. A "typische Art" is designated for each of the recognized groups. Hydrobiidae, Hydrobiinae: **PROBYTHINELLA** (p. 370), section of *Hoyia*, type *H. emarginata* (Küster); **INDOPYRGUS** (p. 373), subg. of *Potamopyrgus,* type *P.* **nevilli*** (p. 373), Andaman Is.; **WALKERILLA** (p. 372), sect. of *Somatogyrus,* type *S. coosaensis* Walker; genus **PACHYDROBIELLA** (p. 367), type *P.* **brevis*** (*Pachydrobia brevis* Bavay) (p. 367), Indo-China; genus **LITHOGLYPHOPSIS** (p. 366), type *L.* **modesta*** (*Lithoglyphus modestus* Gredler) (p. 365). Radulae* of *Pseudamnicola similis, Lithoglyphoides fluminensis, Cincinnatia cincinnatiensis, Hoyia emarginata, Lyogyrus petiti, Littoridina australis, Potamopyrgus corolla, P. nevilli, Amnicola limosa, Cochliopa rowelli, Somatogyrus isogonus, S. coosaensis, Fluminicola* sp., *Benedictia baicalensis, Lithoglyphus naticoides, Tricula minutoides, Pachydrobiella brevis, Lithoglyphopsis modesta, Emmericia patula* and another species. Verges* of *Bythinella, Littoridina, Amnicola, Fluminicola,* and *Benedictia.* Truncatellinae: Radulae* of *Pomatiopsis lapidaria, Oncomelania* sp., *Pyrgula annulata, Truncatella pacifica, T. truncatula, Geomelania lirata,* and *Tomichia ventricosa.* Synolopsinae: no new data. **HYDROCOCCINAE** (p. 375): **HYDROCOCCUS** (p. 375), type *H.* **graniformis*** (*Paludina granum* Mke., non Say) (with radula*), Australia. Stenothyrinae: Radula* of *Gangetia uzielliana.* Bithyniinae: **EMMERICIOPSIS** (p. 357), sect. of *Bithynia,* type *B. lacustris* (Mart.), Sumatra. Radulae* of *B. lacustris,* and *Mysorella marginata.* Verge* of *B.* (*Hydrobioides*) *nassa.* **IRAVADIINAE** (p. 355): Radula* of *Iravadia ornata.* Micromelaniidae, Micromelaniinae: Radula* of *Chilopyrgula sturanyi;* verge* of *Baicalia* (*Liobaicalia*) sp. Conocaspiinae: genus **CASPIELLA** (p. 353), type *C.* **conus** (*Rissoa c.* Eich.) (p. 353), Caspian Sea. **FAIRBANKIINAE** (p. 354): Radula* of *Fairbankia bombayana.* Melaniidae, Melanatriinae: *Pachychilus* **rasconensis*** (p. 384), Mexico; *Potadoma* **mayumbensis*** (p. 387), *P.* **togoensis*** (p. 387), and *P.* **urundica*** (p. 388), West Africa; *P.* (*Rhinomelania*) **angulata*** (p. 386), Cameroons. Radulae* of *Pachychilus pila, P. tristis, Brotia finschi, B.* (*Sulcospira*) *hügeli, Melanatria fluminea, Potadoma nigritina,* and *P. angulata.* Melanopsinae: Radula* of *Fagotia esperi.* Pleurocerinae: Radulae* of *Pleurocera strigosa, Lithasia armigera, Io umbilicata, Semisulcospira libertina,* and *S. globus.* Amphimelaniinae: Radula* of *Amphimelania holandri* and *A. parvula.* Paludominae: genus **PSEUDOCLEOPATRA** (p. 394), type *P.* **togoensis*** (p. 394), West Africa; *Paludomus* **binaluanensis*** (p. 392), Palawan. Radulae* of *Cleopatra bulimoides, C. moniliata, C. africana, Pseudocleopatra togoensis, Paludomus nigricans, P. globulosa, P. stephanus, P. sulcata,* and *Paramelania damoni.* Melaniinae: *Melania* **voltae*** (p. 396) and *M.* **manguensis*** (p. 396), West Africa. Radulae* of *Melania glans, M. amarula, Pachymelania byronensis,* and *Hemisinus brasiliensis.* **CUBAEDOMUS** (p. 397), subg. of *Hemisinus,* type *H. brevis* (Orb.), Cuba.—*H. B. Baker.*

5557. **THORSON, G.** Über die Landschnecken der Dolomiten und ihre Verbreitung. *Vidensk. Meddel. Dansk. Naturhist. For. Köbenhavn* 88: 113-138. Map. 1929/1930.—This report is based upon material collected by the author in 1928. Special attention is paid to the limits and manner of distribution of the spp. The systematic list of 65 spp. consists mainly of local and altitudinal records, with remarks on general distribution. Records of previous workers are also included. The author lists 17 northern, 10 southern, and 3 eastern spp. whose range seems to be limited in part by the Dolomites.

5558. **TORRE, CARLOS de la.** New Cuban Urocoptidae. *Proc. Acad. Nat. Sci. Philadelphia* 81: 443-447. 1929.—*Urocoptis* **intusfalcata*** Torre & Ramsden (p. 443); *U.* **manzanillensis*** (p. 444); *U.* **nodulifera*** (p. 444); *U.* **cuestai*** (p. 445); *U.* **terebella*** (p. 445); *U.* **rocai*** (p. 446); *Microceramus* **bermudezi*** (p. 446). Types in Acad. Nat. Sci. Philadelphia.

5559. **TRUEMAN, A. E.** Results of some recent statistical investigations of invertebrate fossils. *Biol. Rev. and Biol. Proc. Cambridge Philos. Soc.* 5(4): 296-308. 9 fig. 1930.—Statistical investigations of lamellibranchs and gastropods show that there is considerable variation in any series collected at one horizon. The variation is greatest in such sedentary forms as *Gryphaea* and *Carbonicola,* but the variations appear to be similar in character, although they are not so wide in range, in certain gastropods. At each horizon variation appears to be continuous, and the characters, on the whole, vary independently. Each community is apparently homogeneous and indivisible. It is suggested that such an evolving stock must be regarded as a "plexus" or bundle of anastomosing lineages.—*Author's summary.*

5560. **WAGNER, HANS.** Über die Schnecken des Mátragebirges (Oberungarn). *Zool. Anz.* 92(5/6): 155-159. 2 fig. 1930.—A list of 35 spp., including a *Bythinella.*

5561. **[VÏALOV, O. S.]** ВЯЛОВ, О. С. Описание третичных пелеципод из некоторых мест Тургайской области. **[Description of Tertiary Pelecypoda from Turgai.]** [French summary.] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR.*) 49(3): 75-102. 4 pl. 1930.—Twelve forms, probably referable to the Lr. Oligocene, are described, with synonymies and taxonomic remarks, including *Crassatella deshayesiana* v. **elliptica*** (p. 76); *Pectunculus turanglicus*; Chlamys* (*Aequipecten*) cf. *aturi* v. *rotunda**; *C.* (*A.*) **turgaicus*** (p. 81); *Ostrea* (*Cubitostrea*) *plicata**; *O.* (*C.*) *p.* var. **aralensis*** (p. 86); *O.* (*C.*) *flabellula**; *O.* (*C.*) *prona**.

5562. **VINCENT, EMILE.** Les Erycines des sables de Wemmel (Éocène Supérieur.) *Bull. Mus. Roy. Hist. Nat. Belgique* 6(7): 1-7. 5 fig. 1930.—The author adds 5 spp. of this group to the 2 previously known from the

Wemmel sands of Belgium. *Spaniorinus* wemmelensis* (p. 2); *Erycina* nystana* (p. 3); *E. ruellensis** Cossm.; *E.* brabantica* (p. 6); *Kellya* wemmelensis* (p. 6).

5563. WIESER, G. Gelege einer Weinbergschnecke. [Nidus of the edible snail.] *Aus der Heimat* 43(10): 314. 1 fig. 1930.—One of these snails laid 35 eggs* in a self-excavated hole in the ground in June, then covered the hole with earth and slime.

CRUSTACEA

MARY J. RATHBUN, *Editor*

WALDO L. SCHMITT, *Associate Editor*

CHANCEY JUDAY, C. DWIGHT MARSH, H. A. PILSBRY, CLARENCE R. SHOEMAKER, CHARLES B. WILSON, *Assistant Editors*

(See also in this issue Entries 3295, 3319, 3328, 3349, 3599, 3945, 4000, 4314, 4349, 5252, 5253, 5257, 5258, 5265, 5276, 5277, 5433, 5435, 5436, 5862, 6043, 6044, 6048)

5564. BEHRE, CHAS. H. Jr. Branchinecta at Leadville, Colorado. *Science* 73(1887): 235-236. 1931.—*Branchinecta coloradensis* (Packard) was found at 11,450 ft. in 2 isolated permanent pools, both probably completely frozen during winter. Apparently activity ceases in these Alpine species about Sept. 1. Time and manner of "seeding" isolated ponds is speculated upon.

5565. BORUTZKY, E. W. Materialien zur Harpacticidenfauna des Baikalsees III. *Zool. Anz.* 94(9/10): 281-287. 12 fig. 1931.—BAIKALOCAMPTIDAE (p. 281), new fam. placed between Laophontidae, Cletodidae, and Canthocamptidae, based on BAIKALOCAMPTUS (p. 282), type *B.* verestschagini* (p. 283), Baikal.

5566. BOSCHMA, H. On the identity of Sacculina triangularis and Sacculina inflata. *Proc. Roy. Soc. Edinburgh* 51(1): 64-70. 6 fig. 1930/31.—Specimens of *Sacculina** from *Cancer pagurus*, from the type locality of *S. triangularis* And., are co-specific with *S. inflata* Leuckart from *Hyas coarctatus*. Therefore *S. triangularis* is reduced to synonymy. The internal anatomy of the species is described from sections.

5567. BRIAN, ALEXANDRE. Copépodes parasites de poissons et d'annélide provenant des campagnes scientifiques de S. A. R. le Prince Albert Ier de Monaco. Résultats des Campagnes Scientifiques accomplies sur son yacht par Albert Ier Prince de Monaco. *Fasc.* 76: 1-36. 5 pl. (2 col.). 5 fig. 1929.—Seven species of parasitic Copepoda (Crustacea Entomostraca) are recorded, 5 of which were taken from fishes and 1, only, from an annelid. The host of *Caligus bi-aculeatus* is unknown. The spp. were collected at different stations in the Atlantic, 4 from the Sargasso Sea, 1 from the coasts of Newfoundland, and 1 from the Azores (S. Jorge). The following genera are represented: *Caligus* Müller (3 spp.); *Pandarus* Leach (1 sp.); *Sarcotretes* Jungersen (1 sp.); *Pennella* Oken (1 sp.); and *Hedyphanella* Leigh-Sharpe (Herpyllobiidae) with 1 species, *H. superba* L.-S., parasitic on the annelid, *Gattyana cirrosa* Pallas. Detailed descriptions are given of the species, especially of *Pennella sagitta** L., parasitic on *Antennarius histrio* L. The author examined several post-larval stages of *P. sagitta* hitherto overlooked and also describes the previously unknown ♂.—*A. Brian (transl. by W. M. Tattersall).*

5568. CREASER, E. P. A new blind isopod of the genus Caecidotea, from a Missouri cave. *Occ. Papers Mus. Zool. Univ. Michigan 222.* 1-7. 2 pl. 1931.—*C.* antricola* (p. 1), type in Mus. Zool., Univ. of Michigan. A key to spp. of the genus is included.—*E. P. Creaser.*

5569. DENIS, J. R. Sur les Crustacés bathypélagiques de Banyuls-sur-Mer. I. Euphausiacés et Mysidacés (pp.). *Arch. Zool. Exp. & Gén. Notes et Revue* 69(2): 69-74. 1929.—A list of 7 Euphausiacea and 1 Mysidacea, with notes on general distribution, and local records.

5570. GRAF, HERBERT. Süsswasser-Ostracoden aus Südgeorgien. *Zool. Anz.* 93(5/6): 185-191. 3 fig. 1931.—*Cypris* fontana* ♀ (p. 186); *Eucypris* pestai* ♀ (p. 188); *Cypridopsis* frigogena* ♀ (p. 190).

5571. KARAMAN, STANKO. Gammarus cari n. sp. aus Westjugoslawien. *Zool. Anz.* 94(9/10): 265-268. 1 fig. 1931.—*Gammarus* cari* (p. 265), Jugoslavia.

5572. KESSELYÁK, A. Faunistisches über Isopoden. *Zool. Jahrb. Abt. Syst., Ökol. u. Geogr. Tiere* 60(3/4): 239-256. 4 fig. 1930.—An annotated list of 14 spp. from Hungary, Austria, and Istria, collected in 1927-29, including: *Androniscus roseus* ssp. microcavernicolus* (p. 241), Istria; *Alpioniscus* Racovitza (=*Illyrionethes* Verh.); *Trichoniscus* (*Spiloniscus*) *noricus* Verh. and *Androniscus dentiger* are new to Hungary, also *Cyphoniscellus* (*Calconiscellus*) *karawankianus* Verh., genus and species new to Hungary. *Protracheoniscus* méhelyi* (p. 250), Istria. German description is given of *Haplophthalmus hungaricus** Kesselyák, previously described in Hungarian, and *Chaetophiloscia elongata* Dollfus *illyrica** Verh. emended description.—*B. Torelli.*

5573. KIEFER, FRIEDRICH. Kurze Diagnosen neuer Süsswasser-Copepoden. *Zool. Anz.* 94(5/8): 219-224. 10 fig. 1931.—*Macrocyclops* neuter* ♀ (p. 219), Java; *Eucyclops* prionophorus* (p. 219) and *Cyclops* (*Diacyclops*) haueri* ♀ (p. 220), Connecticut; *C.* (*D.*) charon* (p. 220), Italy; *Canthocamptus* assimilis* (p. 221), Connecticut; *Elaphoidella* unica* ♀ (p. 222) and *E.* (?) dubia* ♂ (p. 223), Italy.

5574. LEIGH-SHARPE, W. HAROLD. Pennella germonia n. sp., a parasitic copepod of Germo alatunga. *Parasitology* 23(1): 109-111. 1 fig. 1931.—*Pennella* germonia* ♀ (p. 109), embedded in skin of *Germo alatunga* (Pisces), France.

5575. MONTEROSSO, B. Sulla persistenza dei fenomeni respiratorii nei Ctamalini mantenuti in ambiente subaereo. *Boll. Soc. Ital. Biol. Sperim.* 3(8): 1067-1070. 1928.—*Chthamalus stellatus*, an inhabitant of the tidal zone, which when uncovered by the receding tide rhythmically aspirates atmospheric air into the pallial cavity by means of complex movement of the opercular parts of the mantle and of the body itself. In this way oxygen comes in contact with the persistent layer of water covering the surface of the body, and carbon dioxide and other gases are given up. This continues for a variable period. The barnacle passes from aquatic to aerial respiration without difficulty. The latter is comparable in a measure to the respiration of higher animals. After an interval, the aerial respiratory rhythm becomes slower and finally ceases, the opercular fissure closes hermetically, and the cirripede becomes dormant.—*B. Monterosso (transl. by W. L. Schmitt).*

5576. ORTMANN, A. E. Crawfishes of the southern Appalachians and the Cumberland Plateau. *Ann. Carnegie Mus.* 20(2): 61-160. 1931.—This work was published after the author's death (Jan. 3, 1927). The writer discusses 38 forms of *Cambarus* as to taxonomy, and distribution according to drainage areas. They fall into the subgenera *Ortmannicus*, *Faxonius*, and *Cambarus*. These subgenera are divided into sections and keys are given to the forms of each section. *C.* (*F.*) *erichsonianus* Faxon (=*C. spinosus gulielmi* Faxon); *C.* (*F.*) *rusticus* forceps (*C. f.* Faxon) (p. 72); *C.* (*F.*) *r.* placidus (*C. p.* Hagen) (p. 76); *C.* (*F.*) *r.* mirus (p. 81), Tennessee; *C.* (*F.*) *juvenilis* Hagen (=*C. putnami* Faxon) is distinct. Much material formerly attributed to *C. spinosus* also belongs to *C. j. C.* (*Cambarus*) *extraneus* Hagen (=*C. girardianus* Faxon, *C. jordani* Faxon); *C.* (*C.*) *montanus* Girard is removed from *C.* (*C.*) *bartoni* and restored to specific rank; *C.* (*C.*) *montanus* acuminatus (*C. a.* Faxon) (p. 108); *C.* (*C.*) *m.* veteranus (*C.*

bartoni v. Faxon); *C.* (*C.*) *longulus* longirostris (*C. longirostris* Faxon); *C.* (*C.*) *bartoni* striatus (*C. latimanus striatus* Hay); *C.* (*C.*) *monongalensis* Ortmann is sustained as a good species. The bibliography contains 46 references.

5577. **RATHBUN, MARY J.** New crabs from the Gulf of Mexico. *Jour. Washington Acad. Sci.* 21(6): 125-128. 2 pl. 1931.—*Benthochascon* schmitti* (p. 125), Tortugas, Florida, 180 fath.; *Persephona* crinita* (p. 128), Horn Isl. Pass, Mississippi, 3 fath. Types in U. S. Nat. Mus.—*M. J. Rathbun.*

5578. **RATHBUN, MARY J.** Two new crabs from the Gulf of Mexico. *Proc. Biol. Soc. Washington* 44: 71-72. 1931.—*Calappa* springeri ♀ (p. 71), Louisiana, 12 fath.; *Chasmocarcinus* mississippiensis ♂ (p. 72), Mississippi Sound, 2-5 fath. Types in U. S. Nat. Mus.

5579. **SCHELLENBERG, A.** Ein in Deutschland wiedergefundener Brunnenkrebs. *Zool. Anz.* 94(3/4): 125-128. 1 fig. 1931.—*Eucrangonyx* subterraneus* (*Crangonyx s.* Bate) (p. 126), recorded from Saxony.

5580. **SMIRNOV, SERGIUS.** Cyclopina barentsiana nov. sp., eine neue Copepoden-Art aus dem Barents-Meer. *Zool. Anz.* 94(9/10): 269-273. 5 fig. 1931.—*Cyclopina* barentsiana* ♀ (p. 269), Barents Sea.

5581. **[SMIRNOV, S. S.]** СМИРНОВ, С. С. О новом виде Phyllopoda anostraca из Уссурийского края. [A new species of Phyllopoda anostraca from the Ussuri region.] Доклады Академии Наук СССР. Сер. А. (*Compt. Rend. Acad. Sci. URSS. Sér. A.*) 1930(4): 75-78. 1 fig. 1930.—*Pristicephalus* longicornis* (p. 75), Siberia.

5582. **[SMIRNOV, S. S.]** СМИРНОВ, С. С. Новый вид p. Diaptomus Westw. (Crustacea, Copepoda) из Амурской области. [A new species of Diaptomus from the Amur region.] Доклады Академии Наук СССР. Сер. А. (*Compt. Rend. Acad. Sci. URSS. Sér. A.*) 1930 (4): 79-84. 1 fig. 1930.—*D.* rylovi* (p. 79), Siberia, type in Zool. Mus. Acad. Sci., Leningrad. The author points out relationships between certain Palearctic and Nearctic forms of Diaptomidae.

5583. **ULRICH, E. O., and R. S. BASSLER.** Cambrian bivalved Crustacea of the order Conchostraca. *Proc. U. S. Nation. Mus.* 78(4): 1-130. 10 pl. 1931.—Bradoriidae: *Bradoria vigilans* concentrica* (p. 17), *B. benepuncta* spissa* (p. 18), *B.* medialis* (p. 19), *B.* subquadrata* (*Bradorena spectator* v. *acuta* Matthew [part]) (p. 20), *B.* elongata* (p. 20), and *B. robusta* longula* (p. 24), Nova Scotia, Lr. Cambrian (Etcheminian); *B.* tontoensis* (p. 24), Arizona, Middle Cambrian (Bright Angel shale); *B.* curta* (p. 26), Nova Scotia, Lr. Cambrian (Etcheminian). **WALCOTTELLA** (p. 31), type *W. apicalis* (p. 33), Arizona, Middle Cambrian. The following spp. are from Arizona, Middle Cambrian (Bright Angel shale): *W.* concentrica* (p. 34); *W.* breviuscula* (p. 34); *W.* scitula* (p. 35); *W.* pulchella* (p. 36); *W.* leperditoides* (p. 37); *W.* nitida* (p. 37); *W.* oblonga* (p. 38); *W.* obsoleta* (p. 39); *W.* limatula* (p. 40); *W.* ventrosa* (p. 41); *W.* subtruncata* (p. 41); *W.* longula* (p. 42). **BEYRICHONIDAE** (p. 42) (includes the following genera: *Beyrichona* Matthew (=*Escasona*), *Sellula* Wiman, *Aluta* Matthew, *Eremos* Westergaard, *Hipponicharion* Matthew, *Polyphyma* Groom). *Aluta* Matthew emended; *A.* (?) rimulata* (p. 61), Alberta, Middle Cambrian (Ptarmigan); *Hipponicharion* plicatum* (p. 64), *H.* parvum*, and *H.* confluens* (p. 64), Nova Scotia, Middle Cambrian (Johannian); *Polyphyma* marginata* (p. 66), Newfoundland, Up. Cambrian; **INDIANIDAE** (p. 68) (includes *Indiana* Matthew emended, and the new genera, *Dielymella* and *Mononotella*). *Indiana* longula* (p. 73), New Brunswick, Lr. Cambrian (Hanfordian); *I.* suberecta* (p. 74), New York State, Lr. Cambrian; *I.* matthewi* (p. 76), N. Brunswick, Middle Cambrian; *I.* labiosa* (p. 79), Brit. Columbia, Middle Cambrian. The following are from Arizona, Middle Cambrian (Bright Angel shale): *I.* faba* (p. 79), *I. faba* intermedia* (p. 80), *I.* curta* (p. 81), *I.* impressa* (p. 81); **DIELYMELLA** (p. 85), type *D.* recticardinalis* (p. 86); *D. recticardinalis* angustata* (p. 87); *D.* nasuta* (p. 88); *D.* appressa* (p. 88); *D.* dorsalis* (p. 89). *D.* brevis* (p. 89), Vermont, Lr. Cambrian: **MONONOTELLA** (p. 91), type *M.* fusiformis (*Primitia? f.* Matthew) (p. 92). Types of new forms in U. S. Nat. Mus.—*E. O. Ulrich.*

5584. **VECCHI, ANITA.** Anfipodi di Cirenaica raccolti dal Prof. Edoardo Zavattari. [Amphipods of Cirenaica, N. Africa, collected by Zavattari.] *Boll. Zool.* [*Napoli*] 2(2): 57-66. 7 fig. 1931.—Includes *Gammarus* eduardi* (p. 57); *Orchestia* magnifica* ♂ (p. 62).

5585. **WILSON, CHARLES BRANCH.** Parasitic copepods from the White Nile and the Red Sea, 1901. *Results Swedish Zool. Exp. to Egypt and the White Nile* 5(Paper 3): 1-17. 3 pl. 1928.—*Ergasilus* nodosus* (p. 2), from gills of *Bagrus bayad; Caligus* lunatus* (p. 4), Sinaitic Pen., from gills of *Seriola aurovittata; Lamproglena* angusta* (p. 11), from gills of *Malapterurus electricus; Lernaea* composita* (p. 13), from skin of *Malapterurus electricus.* Except where otherwise given, new spp. are from the White Nile. Types in Naturhist. Mus., Stockholm. Notes are given on *Hatschekia sargi* Della Valle. Complete description is given of *Lernanthropus micropterygis* Richiardi, hitherto but partially described.

5586. **WOODS, HENRY.** A monograph of the fossil macrurous Crustacea of England. Pt. IV, V, & VI. (Continuation and to be cont'd.) In: *Palaeontographical Soc.* [*London*] 79(paper 2): 49-64. Pl. 13/16, 3 fig. 1925(1927); 80(paper 2): 65-72. Pl. 17/20, 2 fig. 1926(1928); 82(paper 4): 73-88. Pl. 21/24. 1928(1930).—Continues description of the genus *Glyphea* of Glypheidae. From the Lias: *G.* prestwichi* (Carter MS.) (p. 51), Up. Toarcian, Yorkshire coast, type in Mus. Yorkshire Phil. Soc.; *G. regleyana*; G. udressieri*; G. rostrata*; G.* calloviensis* (p. 59), Scarborough, Kellaways Rocks (Up. Jurassic). From the Cretaceous: *G.* vectensis* (p. 60), Isle of Wight, Lr. Aptian, type in Brit. Mus.; this species is the only form of *Glyphea* at present known in the Lr. Cretaceous of England; *G. cretacea*; G. carteri*; G.* willetti* (*Meyeria w.* Woodward) (p. 63); *Mecochirus* clypeatus* (*Gebia c.* Carter=*Upogebia c.* van Straelen) (p. 65); *M. socialis*; M. pearcei*; Meyeria ornata*, rapax* and *magna*.* Erymaidae: *Eryma birdi*, bedelta*, ventrosa*, mandelslohi*, georgii*, villersi; E.* stricklandi (*Glyphea s.* Phillips) (p. 79); *E.* portlandica* (p. 79), Dorset, Portland Limestone; *E. sulcata*; Enoploclytia* dorsetensis* (p. 81), Dorset, Corallian (Up. Jurassic), type in Brit. Mus. The following species are from the Cretaceous: *E. tuberculata*, E.* dixoni (*Palaeastacus d.* T. Bell) (p. 83), *E. leachi*.* The present part begins a list of Cretaceous spp. of the genus *Homarus.*

ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Associate Editor*

(See also in this issue Entries (Distribution) 3024, 3312, 3446; (Genetics) 3032, 3258, 3272, effect of temp. on, 3260, 3268; (Protective resemblance) 3044, 3048; (Historical) 3071, 3079, 3119; (Biographical) 3076, 3084, 3085, 3087, 3089, 3097, 3105, 3112, 3113, 3116, 3122, 3123, 3128, 3148, 3151; (Cytology) 3216; (Pollination) 3290, 3291, 3294, 3303; (Ecology) 3300, 3304, 3306, 3328, 3330, 3343, 3346, 3347, 3348; (Plant injury) 3447, 3450, 3533, 3535, 3536; (Plant disease vectors) 3455, 3457, 3460, 3461, 3465, 3468, 3470, 3532; (X-rays) 3602, 3610; (Nutrition) 3807, 3814, 3822, 3896; (Metabolism) 3815; (Reproduction) 3882, 3910; (Insect diseases) 4229; (Sense organs) 3943; (Animal disease vectors) 4309, 4310, 4324, 4326, 4334, 4348, 4350, 4358, 4360, 4361, 4375, 4376, 4383, 4385, 4394, 4425, 4477; (Animal parasites) 4313, 4319, 4321, 4336, 4339, 4354, 4371, 4372, 4386, 4388, 4390; (Malaria studies) 3119, 4315, 4317, 4323, 4327, 4332, 4333, 4340, 4345, 4348, 4363, 4365, 4368, 4389; (Plant parasites) 4955; (Insectivorous plants) 5136; (Histology) 5433, 5439, 5441, 5444, 5445, 5447; (Embryology) 5446)

5587. **BERTOLINI, FAUSTA.** Distribuzione dei parassiti delle piante forestali in Alto Adige. [Distribution of parasites on forest plants in Alto Adige.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 20: 103-131. Map. 1929.—A list is given of various Orthoptera, Lepidoptera, Hemiptera, Coleoptera, and Hymenoptera, found on forest plants in this region, with notes on geographical and particularly altitudinal distribution. Some of these parasites are found up to the maximum altitude at which the plants they infest occur, but others only up to certain lower limits. *Ips acuminatus* and *Ernobius abietis* [Coleoptera] are new to Italy.

5588. **DINELLI, LUIS M. Vuelos. [Flight.]** *Anal. Soc. Cient. Argentina* 103(1/3): 113-118. 1 fig. 1927.—The flight of the Cathartidae, Colubridae, Icteridae, and Hylactidae are discussed briefly and compared with the flight of certain insects, the Lamellicornidae, Elateridae, Buprestidae, Aphididae, and the Diptera furnishing examples. The method of flight of *Phanaeus,* a lamellicorn beetle, is described and illustrated by 2 schematic figs. Sound production in both birds and insects, and its mechanical basis, is briefly indicated.—*P. Knappen.*

5589. **GUILLEAUME, F. [Account of the insects collected by the author [in Belgium] since 1884.]** *Bull. & Ann. Soc. Ent. Belgique* 66(1/2): 17-30. 1926.—An address. Some species are rare, others new to the country. Notes are given on the method of collecting.

5590. **HORN, WALTHER. Über den musealen Missbrauch mit Insekten-"Typen."** *Congrès Internation. Xe Zool. à Budapest* 1927. Part 2. pp. 1022-1042. 1929.—The chaos prevalent in the use and definition of types is reviewed and criticized. The author gives a list of 122 different expressions for types.—*C. Zeimet.*

5591. **HORN, WALTHER. Über die Not der Entomo-Bibliographie.** *Congrès Internation. Xe Zool. à Budapest* 1927. Part 2. pp. 1043-1052. 1929.—A critical review of the subject, and an announcement of the author's "Index Literaturae Entomologicae," which is in preparation. —*C. Zeimet.*

5592. **JONES, DAVID T. A snail-collecting aphis-lion larva. A preliminary study of external features.** *Marietta Coll. Res. Publ., Zool. Ser.* 1(1): 1-9. 3 pl. 1929.—This aphis-lion larva [possibly of the Chrysopidae], found in Vinton Co., Ohio, instead of carrying the usual cloak of aphis hulls, prefers a cloak of minute snail shells, such as *Punctum pygmaeum, Euconulus fulvus,* and *Striatura milium,* intermingled with fragments of beetles. Elongate, hairy thoracic pedicels, and shorter, tufted abdominal pedicels, aid the hairs of the back in supporting the burden. The eye and empodium present peculiarities.—*D. T. Jones.*

5593. **MUIR, F. The rôle of function in taxonomy and relationship to the genitalia in insects.** *Trans. 4th Internat. Congress Ent., Ithaca, 1928* 2: 600-604. 1929.—The chief taxonomic divisions of the animal kingdom are based upon function although they are generally defined in terms of morphology. As we descend to the lower divisions function is less evident, until, in genera and species, it is seldom looked for. Evidence is presented, especially from the class Insecta. The functional differences of the ♂ genitalia of the insects, as evinced by their structure, especially of the Hemiptera and Coleoptera, are considered with the idea of giving them a more definite place in taxonomy as a better knowledge of the form and function of the genitalia of insects will enable us to understand better their evolution and relationships, and therefore enable us to rest their classification upon a more scientific basis than at present is possible in many groups. It is suggested that specializations often may have arisen from chance variations but that it is improbable that the gradate series of considered mutations necessary for the evolution of complex functional structures are due to chance independent mutations.—*F. Muir.*

5594. **NEL, R. I. Studies on the development of the genitalia and the genital ducts in insects. I. Female of Orthoptera and Dermaptera.** *Quart. Jour. Microsc. Sci.* 73(1): 25-85. 3 pl. 5 fig. 1929.—The material examined was mainly from the genera *Locustana** and *Colemania*, Blattella**, and *Forficula**. The anterior ovipositor lobes (ventral valves) are serially homologous with the lateral ovipositor lobes (dorsal valves) and represent gonocoxites from which no telopodites corresponding to the inner lobes are differentiated. The common oviduct is wholly ectodermal and arises as an unpaired invagination between sterna 7 and 8, the position of the gonopore in the adults of saltatorial Orthoptera being due to a secondary extension of the common oviduct along the 8th sternum. In *Forficula* and *Blattella* the primitive position of the gonopore is retained up to the adult stage. Accessory genital invaginations develop in the Orthoptera between the ovipositor lobes on sterna 8 and 9. The invagination on the 8th atrophies in *Blattella* but in other Blattidae and in Orthoptera in general it gives rise to the spermatheca. An homologous invagination of similar function is present also in *Forficula,* arising practically between sterna 8 and 9. The spermathecal function in *Blattella* is served by 2 pairs of accessory invaginations in the 7th intersternal membrane. The invagination of the 9th sternum gives rise in *Blattella* to the paired colleterial glands; in the Locustidae it is vestigial; in *Forficula,* it is absent. A hypothetical ancestral condition of the oviducal system is deduced for insects in general, in which paired mesodermal oviducts opened separately within the 7th intersternal membrane. An ectodermal common oviduct and a single gonopore between sterna 7 and 8 were acquired at an early stage, the oviduct extending later upon the 8th and sometimes the 9th sternum. Extensive bibliography.—*E. M. Walker.*

5595. **ORFILA, RICARDO N. Sobre canibalismo en insectos. [Cannibalism in insects.]** *Rev. Soc. Ent. Argentina* 1(4): 65-66. 1927.—Several examples of this habit were observed.

5596. **PICTET, ARNOLD. Démonstration d'un piège**

lumineux démontable. *Bull. Soc. Lépidoptérol. Genève* 5(4): 154. 1927.

5597. SAEZ, FRANCISCO ALBERTO. ¿Puede la citología influir en la orientación de los problemas taxonómicos? [Has cytology an influence on taxonomic problems?] *Rev. Soc. Ent. Argentina* 10: 251-262. 17 fig. 1929.—A brief review of the papers of Montgomery, and of McClung and his school, on the germ cells of insects, together with a discussion of the importance of the chromosomes in the establishment of phylogenetic relationships of any determined biological group. The author believes that the taxonomic criteria offered by external characters are frequently insufficient and that systematics of the future must take into consideration the behavior of the chromosomes.—*I. Corey.*

5598. ZABINSKI, JAN. Élevage des blattides soumis à une alimentation artificielle. *Compt. Rend. Soc. Biol.* 98(1): 73-77. 1928.—Larvae were fed on synthetic diets. B, a diet with ovalbumin as the protein source, diet G, glycocoll substituted for ovalbumin, diet Z, gelatin as protein source. One adult ♀ was obtained reared on synthetic, vitamin-free diet G, development requiring 45 days more than for those on a normal diet. For a part of the period the rate of growth was similar for all of the diets, but the larvae on a normal diet began at once to grow more rapidly. The period of development for *Periplaneta orientalis*, under optimum conditions, was determined as 10-14 months, that of *Blattella germanica* as 3-5 months.

5599. ZABINSKI, JAN. Nouvelles recherches sur l'élevage des blattides soumis à une alimentation artificielle. Influence de la composition du régime. *Compt. Rend. Soc. Biol.* 98(1): 78-80. 1928.—Cockroach larvae, on a nitrogen-free diet, survive for some time without loss of weight. Decreased nitrogen in the diet leads to slower growth. Carbohydrate-free diets result in rapid death. Beer, yeasts, bran extracts, and ultra-violet irradiation of the diet seem to have no effect on the growth.

5600. ANONYMOUS. IV. Internationaler Entomologen-Kongress in Ithaca. *Ent. Blätter* 24(1): 188-192. 1928.—A general account of the meeting with a copy of the resolutions adopted and of W. Horn's proposal of an "Entomological Institute for International Service."—*M. H. Hatch.*

ACARINA

AUGUST E. MILLER, *Editor*

(See also B. A. 6(1): Entries 1340, 1716, 1845, 1887; and in this issue 3198, 3343, 4319, 4663)

5601. BEQUAERT, J. Synopsis des tiques du Congo Belge. *Rev. Zool. et Bot. Afric.* 20(3): 209-251. 1931.—A critical review is given of the 46 spp. and 5 varieties of Argantidae and Ixodidae definitely recorded from the Belgian Congo, with keys to genera and species known to occur or likely to be found in that territory. The hosts and distribution are discussed for each form. *Rhipicephalus schwetzi* Larrousse is synonymized with *R. dux* Dönitz.—*J. Bequaert.*

5602. McGREGOR, E. A. A new spinning mite attacking Asparagus plumosus in Florida. *Proc. Ent. Soc. Washington* 32(9): 161-163. 1 fig. 1930.—DIVARINYCHUS (p. 161) (Tetranychidae), type *D. floridensis** (p. 161), Florida, attacking *Asparagus plumosus*, type in U. S. Nat. Mus.

5603. RONDELLI, MARIA TONELLI. Ornithodoros franchinii, n. sp., un nuovo Argasidae della Tripolitania. *Boll. Zool. Unione Zool. Italiana* 1(3): 113-115. 2 fig. 1930.—*O. franchinii** (p. 113), Tripoli, reported as attacking sheep and gazelles, and as carrying "tick-bite fever" in man.

5604. SPEYER, E. R. Red spider mite. (Tetranychus telarius L.) *Exp. & Res. Sta. Nursery & Market Gard. Indust. Devel. Soc. Turner's Hill, Cheshunt, Herts, Ann. Rept.* 16: 68. 1930(1931).—Notes on life history.

5605. UCHIDA, TOHRU. Einige Wassermilben aus Japan. *Zool. Anz.* 95(9/10): 262-268. 13 fig. 1931.—*Hygrobates longipalpis* ♂*, and *Megapus nodipalpis**, descriptive data; *H. japonicus** (p. 265).

ARACHNIDA (EXCEPT ACARINA)

ALEXANDER PETRUNKEVITCH, *Editor*

(See also B. A. 6(1): Entry 1716; and in this issue 3041, 3312, 3319, 3328, 4322, 5444, 6043, 6048)

5606. BERLAND, LUCIEN. Remarques sur deux araignées de France. *Ann. Soc. Ent. France* 100(1/2): 21-22. 1931.—Records the third finding of *Ulesanis hankiewiczi*, taken in France in *Pinus laricio*, and also further findings of *Physocyclus simoni* in France at different points, possibly introduced, but yet of unknown origin.

5607. BRYANT, ELIZABETH B. New species of the genus Xysticus (Arachnida). *Psyche* 37(2): 132-140. 2 pl. 1930.—*X. aprilinus** ♀ (p. 132), Texas, *X. coloradensis** (p. 133), Colorado (type), Texas, New Mexico, *X. keyserlingi** ♂ (p. 135), New Mexico, all types in N. Bank's coll.; *X. pallidus** (p. 138) and *X. vernalis* ♂ (p. 139), Massachusetts, types in author's coll.

5608. CHAMBERLIN, JOSEPH CONRAD. Parachernes ronnaii, a new genus and species of false scorpion from Brazil (Arachnida-Chelonethida). *Ent. News* 42(7): 192-195. 1 fig. 1931.—[Chernetidae] PARACHERNES (p. 192), near *Chernes*, type *P. ronnaii** (p. 194), Rio Grande do Sul, taken clinging to a fly. Type in Stanford Univ.

5609. DENIS, JACQUES. Les araignées au fond des houillères. *Ann. Soc. Ent. France* 99(4): 273-310. 3 fig. 1930.—As coal mines are of recent development, and made by man, the fauna is of recent adaptation and more or less influenced by human activity. The questions of temp., humidity, variable factors, and depth are discussed. In certain mines the vicinity of the silicious conglomerate "tourtia" greatly increases the humidity so that the wooden supports for the mine tunnels have to be frequently replaced. In such places the spiders and insects are abundant. Notes are presented on the occurrence, habits, and hypotheses of origin of habit for the following species: *Dysdera crocata, Pholcus phalangioides, Theridion tepidariorum, Lessertia dentichelis, Lepthyphantes leprosus, Bathyphantes gracilis, Nesticus cellulanus, Tegenaria domestica*, and *T. urbana*.

5610. ERMOLAJEW, W. Zur Frage der Nordgrenze des Verbreitungsgebietes der Bärenspinne in Nordwestasien. *Zool. Anz.* 95(1/2): 62-64. Map. 1931.—A map is presented showing the records of occurrence of *Lycosa (Hogna) singoriensis* Laxm. from the Volga to Irkutsk.

5611. FAGE, LOUIS. Biospeologica LV. Araneae. Cinquième série, précédée d'un essai sur l'évolution souterraine et son déterminisme. *Arch. Zool. Exp. et Gén.* 71 (2): 99-291. 48 fig. 1931.—A study of cave-dwelling spiders from North Africa and Europe. The writer notes especially the absence from caves in this region of the entire suborder Theraphosae, and also of the families Gnaphosidae, Zodariidae, Mimetidae, Thomisidae, Pisauridae, Lycosidae, Oxyopidae, and Salticidae. The general condition of life in caverns is darkness, an even temp. throughout the year, fluctuating perhaps 5° C. and

a constant humidity, near saturation. Some species are found in caves in winter and not in summer, showing the influence of the warmer temp. The influence of darkness and high humidity upon various species is considered, as regards habits and structure. The species discussed consist of 4 Dictynidae, 1 Uloboridae, 1 Sicariidae, 10 Leptonetidae, 6 Dysderidae, 1 Pholcidae, 5 Theridiidae, 94 Argiopidae, 4 Clubionidae, and 16 Agelenidae. *Amaurobius* **cerberus*** ♂ (p. 126), Spain; *Leptoneta*, partial key to species, *L. jagei** redescribed; *Dysdera* **bicornis*** (p. 133), Spain; *Stalita stygia** Joseph (=*S. gracilipes* Kulczynski) redescribed; *S. schiödtei** Thorell (=*S. hercegovinensis* Nosek) redescribed; *S. taenaria*, descriptive notes; *Robertus* **cantabricus*** ♀ (p. 141), Spain; illustrations of seminal receptacle of *R. mazaurici**, *R. lividus**, and *R. truncorum**; *Trogloneta granulum** (p. 143), descriptive notes; *Gonatium* **orientale*** (p. 144), Rumania; *Scotoneta barbara**, first record from Spain; *Porrhomma proserpina* (E. S.) and *P. myops* E. S. are reduced to forms of *P. pygmaeum* (Bl.); new descriptive data are given for *P. subterraneum**, *P. rosenhaueri**, *P. microphthalmum**, *P. oblongum**, and *P. egeria**; *Centromerus microps**, first description of ♀; *C.* **chappuisi*** ♀ (p. 171), Rumania; *C.* (?) **viduus*** ♂ (p. 172), Spain; *Troglohyphantes* **kulczynskii*** (p. 175), Rumania; *T. herculanus**, first description of ♂; *Leptyphantes centromeroides** position doubtful in this genus, showing resemblance to *Troglohyphantes*; *L.* **phallifer*** ♀ (p. 181), Spain; *L. lorifer**; *L.* **berlandi*** ♀ (p. 184), Portugal; *L.* **bolivari*** (p. 185), Spain; *L.* **byzantinus*** (p. 186), Turkey; *L. afer**; *L. venereus** descriptive notes; *L.* **emarginatus*** ♀ (p. 190), Algeria; *L.* **gadesi*** ♀ (p. 191), Spain; *Taranucnus* **bihari*** ♀ (p. 193), Rumania; **METELLA** (p. 195), near *Meta* in Tetragnathinae, type *M.* **breuili*** ♀ (p. 196), Spain; *Nesticus* **lusitanicus*** ♀ (p. 199), Portugal; descriptive notes are given for *N. puteorum**, *N. spelaeus**, *N. fodinarum**, *N. hungaricus* first descr. of ♂*, and *N. biroi**; *N.* **simoni*** ♂ (p. 203), Rumania; *Brachyanillus liocraninus* descriptive notes; *Tegenaria antrorum**, *T.* **herculea*** ♀ (p. 210) and *T.* **hispanica*** ♀ (p. 212), Spain. The bibliography contains 68 references. This is followed by a list of species with names of caves where found, and a list of 558 caves in Kenya, Seyidie, Tanga, Zanzibar, Madagascar, Algeria, Morocco, Spain, France, Italy, Portugal, Rumania, Turkey, and Jugoslavia, with species recorded from each. Types of new spp. in Mus. Nation. d'Hist. Nat., Paris.

5612. GRAVIER, CH. Les appendices fouisseurs des Limules. *Arch. Anat. Microsc.* 25: 270-279. 4 fig. 1929.—The 6th cephalothoracic appendage is used for digging; it is composed of 7 articles besides the 2 terminal ones which form a chela. The functions of the different articles as seen in *Tachypleus tridentatus* are described. The author reviews the studies of previous writers.—*M. J. Rathbun.*

5613. HINGSTON, R. W. G. Spiders: their devices for concealment and protection. *Jour. East Africa and Uganda Nat. Hist. Soc.* 1929(36): 149-156. 8 pl. 1931.—The author describes and figures various devices constructed by orb-weaving spiders as a protection against parasitic wasps. Some add to the web pellets, bits of bark, or cocoons bearing a marked resemblance to themselves. Others construct silky bands, zigzags, or spiral threads, among which the spiders themselves become inconspicuous. In thus manufacturing an artificial protective environment, the spiders go beyond the host of animals which are merely passive in resembling their environment.

5614. ILLINGWORTH, J. F. The black widow spider. *Proc. Hawaiian Ent. Soc.* 7(3): 410-414. 1 pl. 1931.—This poisonous spider, *Latrodectes mactans*, has spread very rapidly in the pineapple areas, especially where mulching paper is used. The irregular web surrounds a pineapple plant*. The ♀ forms an egg cocoon a week, each cocoon containing hundreds of eggs (one contained 521). As many as 15 egg sacs have been made by one ♀ in captivity, only one mating being necessary. The young spiders are distributed by the wind blowing thin light webs, sometimes hundreds of miles to sea. They reach maturity in 1-2 months. Laboratory animals (rabbits, guinea pigs) are partially paralyzed by the bite.

5615. JERMOLAJEW, W. Beschreibung einer neuen sibirischen Spinnengattung aus der Familie Linyphiidae. *Zool. Anz.* 90(7/8): 216-221. 3 fig. 1930.—**NARCISSIUS** (p. 216), resembling *Stemonyphantes*, erected for *N. taiganus** (p. 217), Siberia.

5616. KISHIDA, KYUKICHI. Trapdoor spiders of Japan and their bearing on zoögeography. *Annot. Zool. Japonenses* 11(4): 385-387. 1928.—A list of 18 spp. of 2 families, Liphistiidae (1) and Avicullariidae (17), with distributional notes.

5617. KISHIDA, KYUKICHI. A new linguatulid, Armillifer yoshidai, with notes on the Porocephalidae. *Annot. Zool. Japonenses* 11(4): 397-405. 1 pl. 1928.—*A. yoshidai** (p. 397), Osaka Zool. Park, Japan, in the lungs of *Python molurus*, type in author's coll. **POROCEPHALIDAE** (p. 399), type genus *Porocephalus* Humboldt, to include the subfams. Porocephalinae Sambon and **ARMILLIFERINAE** (p. 400), type genus *Armillifer* Sambon; **CUBIREA** (p. 400), type *C.* **annulata** (*Pentastoma annulatum* Baird) (p. 400). Key to genera and spp. of Armilliferinae is given.

5618. KISHIDA, KYUKICHI. Pseudoscorpions (Microcreagris) of Japan. *Annot. Zool. Japonenses* 11(4): 407-413. 3 fig. 1928.—An annotated list of 5 spp. of *Microcreagris*, with key to Chinese and Japanese species, including *M.* **cyclica*** (p. 409), Japan, type in author's coll.; *M.* **japonica** (*M. gigas* var. *j.* Ellingsen) (p. 408); *M.* **formosana** (*M. granulata* v. *f.* Elling.) (p. 411); *M. pygmaea**.

5619. KOLOSVÁRY, GABRIEL von. Über die Variabilität der Trochosa singoriensis Laxm. [Variability of T. singoriensis.] *Arch. Naturgesch. Abt. A* 91(12): 265-276. 1 pl., 8 fig. 1927.—See B. A. 4(2): entry 3591; also vols. 2(3/5): entry 7910; and 3(7/8): entry 16223.

5620. LAWRENCE, R. F. The harvest-spiders (Opiliones) of South Africa. *Ann. South African Mus.* 29(2): 341-508. 90 fig. 1931.—Opiliones, key to suborders. Suborder Cyphophthalmi. Sironidae, key to subfamilies. Sironinae, key to genera. **SPELEOSIRO** (p. 348), near *Purcellia*, based on *S.* **argasiformis*** (p. 348), found in a cave. Suborder Laniatores, key to families. Phalangodidae, key to subfamilies. *Metabiantes*, key to spp.; *M.* **maximus*** ♀ (p. 356). Assamiidae, key to subfamilies: **NAMUTONIA** (p. 357), in Trionyxellinae, based on *N.* **scabra*** (p. 358), South West Africa. Assamiinae, key to genera: **CRYPTOPYGOPLUS** (p. 360), near *Wintonia*, key to spp., based on *C.* **africanus*** (p. 361), Portuguese E. Africa; *C.* **damaranus*** (p. 362), S. W. Africa; *C.* **rhodesianus*** (p. 363), Rhodesia. Triaenonychidae, key to subfamilies. Triaenonychinae, key to genera: *Ceratomontia*, key to spp.; *C.* **tabulae*** (p. 371); *C.* **fluvialis*** (p. 372); *C.* **karrooensis*** (p. 373); *C.* **minor*** (p. 374); *C.* **hewitti*** (p. 376); *C.* **irregularis*** (p. 378); *C.* **setosa*** (p. 379); **MENSAMONTIA** (p. 381), in Triaenonychinae, key to species, based on *M.* **morulifera*** (p. 382); *M.* **melanophora*** (p. 383); **ROEWERIA** (p. 384), near *Mensamontia*, based on *R.* **inermis*** (p. 385); **AMATOLA** (p. 386), in Triaenonychinae, based on *A.* **dentifrons*** (p. 387); **ROSTROMONTIA** (p. 388), in Triaenonychinae, key to spp., based on *R.* **truncata*** (p. 389); *R.* **granulifer*** (p. 391); *R.* **lisposoma*** (p. 392); *R.* **capensis*** (p. 394); **CRYPTOBUNUS** (p. 396), in Triaenonychinae, based on *C.* **setifemur*** (p. 396), Natal; **AUSTROMONTIA** (p. 398), near *Rostromontia*, key to spp., based on *A.* **silvatica*** (p. 398); *A.* **capensis*** (p. 400); *A.* **caledonica*** (p. 402); **BIACUMONTIA** (p. 403), in Triaenonychinae, key to spp., based on *B.* **paucidens*** (p. 404); *B.* **cornuta*** (p. 406); *B.* **truncatidens*** (p. 408); *B.* **fissidens*** (p. 410); **AUSTRONUNCIA** (p. 411), in Triaenonychinae, based on *A.* **spinipalpis*** (p. 411); **GRAEMONTIA** (p. 413), in Triaenonychinae, key to spp., based on *G.* **bifidens*** (p. 414); *G.* **dentichelis*** (p. 415); **MONOMONTIA** (p. 416), in Triaenonychinae, key to spp., based on *M.* **atra*** (p. 417); *M.* **rattrayi*** (p. 418); *Acumontia*

natalensis* (p. 420), Natal; **SPELEOMONTIA** (p. 422), in Triaenonychinae, based on *S.* **cavernicola*** (p. 422), found in complete darkness in caves. Adaeinae, key to genera; *Adaeulum*, key to spp.; *A.* **natalense*** (p. 426), Natal; *A.* **godfreyi*** (p. 428); *A.* **coxidens*** (p. 430); *A.* **bicolor*** (p. 433), Zululand (type) and Natal; *Adaeum*, key to spp.; *A.* **spatulatum*** (p. 439); *A.* **granulosum*** (p. 441); *A.* **squamatum*** (p. 442); **CRYPTADAEUM** (p. 445), near *Adaeulum*, based on *C.* **capense*** (p. 445); **MICRADAEUM** (p. 448), in Adaeinae, based on *M.* **rugosum*** (p. 448); *Larifuga*, key to spp.; *L.* **dentifer*** (p. 451); *L.* **granulosa*** (p. 453); *L.* **calcarata*** (p. 456); *L.* **capensis*** (p. 457); *L.* **montana*** (p. 459); **MONTADAEUM** (p. 464), in Adaeinae, based on *M.* **purcelli*** (p. 464); **PARADAEUM** (p. 466), in Adaeinae, based on *P.* **rattrayi*** (p. 466). Suborder Palpatores, key to "Tribes." Acropsopilionidae: **OONOPSOPILIO** (p. 470), near *Acropsopilio*, based on *O.* **africanus*** ♂ (p. 470). Phalangiidae, key to subfamilies. **NEOPILIONINAE**, new subfam. (p. 473), based on **NEOPILIO** (p. 473), with *N.* **australis*** (p. 474). Phalangiinae: *Rhampsinitus*, key to spp.; *R.* **capensis*** (p. 478); *R.* **littoralis*** (p. 480); *R.* **vittatus*** (p. 482); *R.* **longipalpis*** (p. 483); *R.* **unicolor*** ♂ (p. 485) and *R.* **flavidus*** ♂ (p. 486), Transvaal; *R.* **levis*** (p. 487); *R.* **cristatus*** (p. 489); *R.* **silvaticus*** (p. 491); *R.* **transvaalicus*** (p. 493). Unless otherwise specified, new spp. are from Cape Province. All new species in coll. of S. African Mus.

5621. **MELLO-LEITÃO.** Aranhas de Pernambuco, colhidas por D. Bento Pickel. [Spiders of Pernambuco collected by Bento Pickel.] *Ann. Acad. Brasileira Sci.* 1(2): 91-112. 3 pl. 1929.—*Phormictopus* **multicuspidatus*** ♂ (p. 91); *Dolichothele* **scintillans** ♀ (p. 92); *Ariadna* **taperae** (p. 93); *Scytodes* **plumbeus*** ♂ (p. 94); *Physocyclus globosus*, first record for Brazil; *Psylochorus* **taperae*** (p. 94); *Leptopholcus* **occidentalis*** ♀ (p. 95), first record of the genus in America; *Selenops maranhensis* Mello-Leitão, first description of ♂; *S.* **rapax** ♂ (p. 96); *Ctenus ocelliventer* Strand, first descr. of ♀; *C.* **senex*** ♀ (p. 98); **CENTROCTENUS** (Ctenidae) (p. 98), type *C.* **longimanus*** ♂ (p. 99); **MESOCTENUS** (Ctenidae) (p. 100), type *M.* **sericeus*** ♀ (p. 100); *M.* **spinulosus*** ♂ (p. 101); *M.* **omega*** ♀ (p. 101); *Gayenna* **taperae*** ♀ (p. 102); *Teudis* **heraldicus** ♀ (p. 103); *T.* **lecochlorus*** ♂ (p. 104); *T.* **dichotomus*** ♂ (p. 105); *Osoriella* **discolor*** (p. 105); *Castianeira* **polyacantha** ♂ (p. 106); *C.* **atypica** ♀ (p. 107); *C.* **leptopoda** ♀ (p. 108); **PSEUDOCETO** (Clubionidae) (p. 109), type *P.* **pickeli*** ♀ (p. 109); *Acacesia foliata*, *Hypognatha testudinaria*, and *Micrathena bifidum*, new to Brazil; *Micrathena* **conspicuum*** ♀ (p. 110); *Peucetia* **heterochroma*** (p. 112). A few previously known spp. are also recorded.

5622. **MILLOT, J.** Les glandes venimeuses des Aranéides. *Ann. Sci. Nat. Zool.* 14(1): 113-147. 23 fig. 1931. The writer examined 107 spp. in 29 families of spiders. Anatomical illustrations of the head, showing the venom glands, are presented for *Segestria senoculata**, *Thomisus onustus**, *Holocnemus pluchei**, *Dolomedes plantarius**, *Tetragnatha extensa**, *Palpimanus gibbulus**, *Thanatus formicinus**, *Filistata insidiatrix**, *Sicarius* sp.*, *Zoropsis spinimanus**, *Oecobius cellariorum**, *Pholcus phalangioides**, *Aelurillus insignitus**, *Nemesia carminans**, *Uroctea durandi**, *Tegenaria domestica**, *Loxosceles rufescens**. A section through the cephalothorax* of *Hyptiotes paradoxus* shows that venom glands are lacking. The article discusses the form and structure of the poison gland, and its excretory canal, and the digestive role of the venom. He holds that these glands are of taxonomic value. Spiders with reduced nervous system have enlarged poison glands, and vice versa. The bibliography contains 35 references.

5623. **ROBINS, E. A.** Spiders. *Jour. Quekett Microscop. Club* 16(97): 201-205. 1931.—An account of habits of a number of spp., chiefly British.

5624. **ROEWER, C. FR.** Opilioniden aus Süd-Amerika. *Boll. Mus. Zool. ed Anat. Comp. R. Univ., Torino* 40 (Paper 34): 1-34. 2 pl. 1925(1926).—This report is based upon material in the Turin Mus., collected by Borelli and Festa, chiefly in Ecuador and Bolivia. Cosmetidae, Cosmetinae: *Rhaucoides* **festae*** (p. 3); *Cynorta* **dariensis*** (p. 4) and *Eucynortula* **ypsilon*** ♂ (p. 5), Colombia; *Paecilaema* **festae*** ♀ (p. 6); **CYNORTELLULA** (p. 6), erected for *C.* **bimaculata*** (p. 7); **LIBITIOLA** (p. 7), erected for *L.* **borellii*** (p. 8), Bolivia, and *L.* **tibialis*** (p. 9), Argentina; **CYNORTOPLUS** (p. 9), erected for *C.* **albimaculatus*** (p. 9); **VONONELLA** (p. 10), erected for *V.* **maculata*** (p. 11); **PYGOCYNORTA** (p. 12), erected for *P.* **festae*** (p. 12); **PAECILAEMELLA** (p. 13), erected for *P.* **festae*** ♀ (p. 13). Gonyleptidae: *Parabalta* **sicaria*** (p. 14), Bolivia (type) and Argentina; *P.* **borellii*** ♂ (p. 16), Argentina; **IBARRA** (p. 17) (Pachylinae), erected for *I.* **festae*** (p. 17); *Rhopalocranaus* **festae*** ♂ (p. 18); *Cranaus* **similis*** (p. 19); *Phareicranaus* **parallelus*** (p. 21); *P.* **festae** ♂ * (p. 23); **RHOPALOCRANELLUS** (p. 24) (Cranainae), erected for *R.* **festae*** (p. 25); **PERIPA** (p. 26) (Cranainae), erected for *P.* **clavipus*** (p. 26); **NIEBLIA** (p. 27) (Cranainae), erected for *N.* **festae*** (p. 28); **PUNA** (p. 29) (Cranainae), erected for *P.* **festae*** ♀ (p. 29). Phalangiidae: *Geaya* **elegans*** ♂ (p. 31); *Prionostemma coxale*, first record for Ecuador; *P.* **festae*** (p. 31), Colombia; **CAIZA** (p. 32) (Gagrellinae), erected for *C.* **colliculosa*** (p. 32), Bolivia (type) and Ecuador. Except where otherwise given, new spp. are from Ecuador. Types of new spp. in Mus. Zool. Turin.

5625. **WILLIAMS, F. X.** A spider eating ant larvae or pupae. *Proc. Hawaiian Ent. Soc.* 7(3): 425-426. 1931. —An attid (salticid) spider was observed grabbing larvae from a stream of moving ants, *Prenolepis bourbonica* Forel, and eating them. On another occasion the spider *Heteropoda regia* was observed capturing swarming queens of *Prenolepis sharpii*.

COLEOPTERA

ANDREW J. MUTCHLER, *Editor*

(See also in this issue Entries 3807, 4371, 4622, 4625, 4626, 4632, 4657, 4662, 4704, 5044, 5587, 5588, 6043, 6048)

5626. **ANDREWES, H. E.** On some new species of Carabidae from Sumatra. *Arkiv Zool.* [*Stockholm*] 21A (4, paper 29): 1-12. 1930.—*Clivina* **trachys** (p. 1); *Tachys* **nephelodes** (p. 2); *Oxycentrus* **nitidus** (p. 3), type in British Mus.; *O.* **striolatus** (p. 4); *Trichotichnus* **laticeps** (p. 4), type in Brit. Mus.; *Stenolophus* **volucer** (p. 5); *Colpodes* **sjöstedti** (p. 6), type in Genoa Mus.; *Lachnothorax* **malayicus** (p. 7), Kuala Lumpur, type in Brit. Mus.; *Orthogonius* **orphnodes** (p. 8); *Holcoderus* **chrysomeloides** (p. 9); *Mochtherus* **magnus** (p. 10), type in Genoa Mus.; *Risophilus* **fulgureus** (p. 11) and *Pentagonica* **tenebrosa** (p. 12), both Singapore, and types in author's coll. Types in Stockholm Mus., unless otherwise indicated.

5627. **APFELBECK, V.** Neue Anaspis-Arten aus Jugoslavien. (Coleopt., Mordellidae.) *Ent. Anzeiger* 11 (2): 37-39. 1931.—*A.* (*Larisia*) **cavipalpis** and **bernikovi** (p. 37), and *A.* (*Silaria*) **serbica** (p. 38).

5628. **BEESON, C. F. C.** The biology of the genus Xyleborus, with more new species. *Indian Forest Rec.* 14(10): 209-272. (Ent. Ser. pp. 33-96.) 2 pl., 8 fig. 1930.—The following new spp. of Indian *Xyleborus* are described: **burmanicus** ♀ (p. 210); **intextus** ♀ (p. 211); **senchalensis** ♀ (p. 212); **rodgeri** ♀ (p. 213) and var. **privatus** (p. 213); **concinnus** ♀, India, Burma, and Java (p. 214); **citri** ♀ (p. 215); **eggersi** ♀ (p. 215); **butamali** ♀ (p. 216); **hirtuosus** ♀ (p. 217); **melancranis** ♀ (p. 218); **dorsosulcatus** ♀ (p. 219). Types are in British Mus. The

genus *Xyleborus* includes a large section of the pinhole and shothole borers of Indian timbers. The development of the pattern of the gallery-system in different spp. is described; figures are given for *cognatus* Bldfd., *incurvus* Eggers, *interjectus* Bldfd., *kraatzi* Eichh., *noxius* Samp., *riehli* Eichh., *rodgeri* Beeson, *semigranosus* Bldfd., *shoreae* Stebb., *vicarius* Eichh. The life-cycles, seasonal history, and emergence-periods are discussed. The life-cycle may be as short as 10 days for spp. boring in twigs and branchlets (e.g., *discolor, morigerus*) while at the other extreme colonies may inhabit suitable timber continuously for over a year before emerging (e.g., *kraatzi, minor, submarginatus, shoreae*). The emergence of beetles from attacked timber occurs at all seasons of the year, though a few spp. such as *interjectus* and *minor* show a tendency to swarm contemporaneously in the early hot weather. Records are given in detail of the distribution and food-plants of some 93 spp. found in India. The better known spp. of *Xyleborus* are intensely polyphagous; *fornicatus* Eichh. is known to bore into 32 trees or woody shrubs, *interjectus* Bldfd. into 41, *kraatzi* Eichh. into 75. An alphabetical index to nearly 200 spp. of food-plants with the associated *Xyleborus* spp. is provided.—*C. F. C. Beeson.*

5629. **BERNHAUER, MAX. Neue Zyras-Arten aus dem tropischen Afrika. (25. Beitrag zur Staphylinidenfauna Afrika's.)** *Wiener Ent. Zeit.* 47(3): 126-148. 1930. —Locality is Belgian Congo, except where otherwise specified. Key to 9 spp. of *Zyras* is given; *Z.* (*Trigonodonia*) **bicallosus** (p. 127); *Z.* (*T.*) **hargreavesi** (p. 128), Sierra Leone; *Z.* (*T.*) **subglaber** (p. 129); *Z.* (*T.*) **bifoveolatus** (p. 130); *Z.* (*T.*) **subopacus** (p. 131); *Z.* (*Cephalodinia*) **sparsicauda** (p. 132); *Z.* (*Camonia*) **kabetensis** (p. 133), Kenya Colony; *Z.* (*C.*) **magniceps** (p. 134), Tanganyika Terr.; *Z.* (*C.*) **depressicollis** (p. 135); *Z.* (*C.*) **pustulipennis** (p. 136) and *Z.* (*Glossacantha*) **cylindricus** (p. 137), S. W. Africa; *Z.* (*G.*) **johnstoni** (p. 138), Sudan; *Z.* (*G.*) **turnerianus** (p. 139) and *Z.* (*G.*) **okahandjae** (p. 140), S. W. Africa; *Z.* (*Trachydonia*) **patrizii** (p. 141); *Z.* (*T.*) **puncticauda** (p. 142); *Z.* (*T.*) **densatus** (p. 143), *Z.* n. subg. **MICROCEPHALODONIA**, with *Z.* (*M.*) **diabolicus** (p. 144); *Z.* (*Grammodonia*) **silvestrii** (p. 145), French Guinea; *Z.* (*G.*) **nitidipennis** Bernh., 1st description of ♂; *Z.* (*G.*) **bilineatus** (p. 146); *Z.* (*Parophthalmonia*) **manowensis** ♀ (p. 147), Kenya Colony [?], type in author's coll.; *Z.* (*Ctenodonia*) **yeboensis** (p. 148).

5630. **BLAIR, K. G. The Indian species of Palorus Muls. (Coleoptera: Tenebrionidae) and some associated beetles.** *Indian Forest Rec.* 14(5): 133-152. (Ent. Ser. pp. 1-20.) 1 pl. 1930.—A key is provided for the Indian spp. of *Palorus* in which 3 new subg., **COELOPALORUS, STENOPALORUS,** and **PALORINUS,** are characterised (p. 135) and the following spp. described as new: *Palorus* (*Coelopalorus*) **foveicollis***, India, Burma, Malacca, Philippines, etc. (p. 136); *P.* (*Stenopalorus*) **hypophloeoides***, Dehra Dun, ex *Dalbergia sissoo* and *Pinus longifolia* (p. 136); *P.* **sinuaticollis***, Burma, Tonkin, ex *Tectona grandis* and *Mangifera* sp. (p. 137); *P.* **longifoliae***, ex *Pinus longifolia* (p. 138); *P.* **shoreae,** ex *Shorea robusta* (p. 138); *P.* **andrewesi** (p. 139); *P.* **tenuipunctatus,** Burma, ex *Mangifera* sp. (p. 139); *P.* **beesoni,** India, Burma, ex *Ficus glomerata, F. religiosa, Butea frondosa, Boswellia serrata, Mangifera* sp. (p. 140); *P.* **genalis,** Ceylon, Andamans, Philippines, ex *Myristica andamanica* and dry paddy (p. 140); *P.* (*Palorinus*) **quadraticollis** (p. 142); *P.* (*P.*) **bicolor,** ex *Poinciana elata* (p. 143); *P.* (*P.*) **carinatus*** Nilgiris, Bombay, Ceylon, ex *Ficus* and *Grevillea* (p. 143); key to separate the similar genera *Palorus, Hypophloeus* (*H. flavipennis**), *Latheticus* (*L. oryzae**), *Tribolium, Lyphia,* and *Ocholissa* (*O. laticeps**); *Hypophloeus* **dorsalis,** ex *Mallotus philippinensis* and *Ficus bengalensis* (p. 145); *H.* **beesoni,** ex *Ficus religiosa* (p. 146); *Tribolium* **indicum,** ex *Dalbergia sissoo,* described and separated in a key from its allies; *Lyphia* **orientalis,** Sylhet, ex *Vitex negundo* Belgaum, Ceylon, Siam, Burma, China (p. 150); *L.* **subopaca,** ex *Shorea robusta, Mallotus philippinensis,* and *Boswellia serrata* (p. 150); *L.* **assamensis***, ex *Vatica lanceaefolia* and *Mesua ferrea* (p. 151). Records of the distribution and associated timbers are given for the Indian spp. of the genera mentioned above and a note on the biology of the group is added by C. F. C. BEESON. Types are in British Mus.—*C. F. C. Beeson.*

5631. **BORGMEIER, TH. Zwei neue Gattungen ecitophiler Aleocharinen (Col., Staph.).** *Zool. Anz.* 92 (7/8): 165-178. 27 fig. 1930.—[Staphylinidae] **ECITOPHANES** (p. 165), related to *Leptanillophilus,* type *E.* **crassicornis*** (p. 167), associated with *Eciton crassicorne;* **ECITOCRYPTUS** (p. 173), related to *Diploeciton,* type *E.* **sulcatus*** (p. 174), associated with *Eciton schlechtendali.* Both spp. from Goyaz, Brazil.

5632. **BRUCH, CARLOS. Un género y especie nuevos de estafilínido ecitófilo. [A new genus and species of staphylinid, parasitic on Eciton.]** *Physis* [*Buenos Aires*] 10(35): 17-20. 1 pl. 1930.—**ACAMATUSINA** (p. 18), near *Mimonilla,* type *A.* **inopinata*** (p. 20), parasitic on *E. strobeli,* Argentina.

5633. **BRYANT, G. E. Some new injurious Phytophaga from Somaliland and Uganda.** *Bull. Ent. Res.* [*London*] 21(3): 361-363. 3 fig. 1930.—*Sebaethe* **guavae*** (p. 361), Italian Somaliland, feeding on *Psidium; Epitrix* **pubipennis*** (p. 362), Uganda, on *Solanum* sp.; *Phyllotreta* **hargreavesi*** (p. 362), Uganda, on flowers of *Gynandropsis* sp.

5634. **CARTER, H. J. A new species of Stigmodera (Buprestidae).** *Australian Zool.* 6(4): 386. 1931.—*S.* (*Castiarina*) **callubriensis** ♀, New S. Wales, type in author's coll.

5635. **CHAPIN, EDWARD A. A new Serica from New Jersey.** *Proc. Biol. Soc. Washington* 44: 5-6. 1931.—*S.* **imitans** (p. 5), New Jersey, type in U. S. Nation. Mus.

5636. **DELAHON, PAUL. Nachträge zu "Schilskys systematischen Verzeichnis der Käfer Deutschlands" von 1909 mit besonderer Berücksichtigung der Formen der Mark Brandenburg, sowie einige sonstige Bemerkungen über Käfer aus Deutschland. (Col.).** *Mitteil. Deutschen Ent. Ges.* 1(9): 130-134. 1930.

5637. **FISHER, W. S. A new leaf mining buprestid from the Canal Zone (Coleoptera).** *Proc. Ent. Soc. Washington* 33(2): 42-43. 1931.—*Pachyschelus* **psychotriae** (p. 42), type in U. S. Nation. Mus.

5638. **GAUSE, G. F. Die Variabilität der Zeichnung bei den Blattkäfern der Gattung Phytodecta.** *Biol. Zentralbl.* 50(4): 235-248. 7 fig. 1930.—The application of statistical and geometrical methods to the study of variation of pattern in chrysomelid beetles showed different stability of different components of pattern and the existence of the polymorphous and binomial distribution of pattern in different species. The form of elytra was expressed by means of an equation and the correlation between the form of elytra and the position of pattern was studied. It was found that the correlation within the species (intragroup) has an opposite sign from the correlation within the genus (intergroup).—*G. F. Gause.*

5639. **GSCHWENDTNER, L. Neue Dytiscidae aus Formosa.** *Ent. Anzeiger* 11(1): 21. 1931.—*Bidessus* **megacephalus** and *Hyphoporus* **rotundatus,** Kotosho Is.

5640. **HAYES, WILLIAM PATRICK. Morphology, taxonomy, and biology of larval Scarabaeoidea.** *Illinois Biol. Monogr.* 12(2): 3-119. 15 pl. 1929.—The study of the larvae of North American Lamellicornia, including the now recognized families Scarabaeidae, Lucanidae, Trogidae, and Passalidae, attempts to bring together facts of their biology, including the writer's life-history studies, and presents keys for their identification based on morphological studies. No comparative structural studies of these insects have hitherto been made. The mouthparts and the last abdominal segment have proved the most useful taxonomic characters. The analytical keys are preliminary, a great many of the spp. being still unknown in the larval stage. The long life-cycle in many spp. makes rearing difficult. In the biological discussion the general facts concerning postembryonic development are compared. Consideration is given to the late embryonic processes, and larval and pupal de-

velopment are discussed. There are detailed life-history studies in the subfamilies Melolonthinae, Rutelinae, Dynastinae, Cetoniinae, and in the coprophagous spp. of the Scarabaeidae.—*W. P. Hayes.*

5641. **HELLER, K. M. Vier neue Tanymecini (Col. Curculionidae) der palaearktischen Region.** *Wiener Ent. Zeit.* 47(3): 105-109. 3 fig. 1930.—*Chlorophanus* **mimus** ♀ (p. 106), *C.* **funicularis** (p. 106), and *C.* **roseipes** (p. 106), all from Sze-chwan; *Enaptorrhinus* **convexiusculus*** (p. 108), near Peking, with key to differentiate it from *sinensis* and *granulatus*.

5642. **KANO, T. Formosan Paussidae, with descriptions of two new species.** (In Japanese and English.) *Kontyu* 4(2): 90-98. 1 pl. 1930.—Keys to subfamilies and to Formosan genera and spp., with descriptions of all the spp. *Pseudorhopalus* Shiraki is a synonym of *Platyrhopalus; Paussus* **elongatus** (p. 92 & 96); *P.* **horikawae** (p. 93 & 97). Types in author's coll.—*R. Takahashi.*

5643. **KLEINE, R. Bestimmungstabelle der Trichalusverwandtschaft.** *Treubia* 11(3): 325-338. 2 pl. 1930.—Key to *Eniclases, Enylus, Diatrichalus, Flabellotrichalus, Microtrichalus,* and *Leptotrichalus,* and keys to their spp. *Flabellotrichalus* Pic (=*Stereotrichalus* Kleine). The following are described (in the key): *Eniclases* **moluccanus** ♀ (p. 328), Moluccas, type in author's coll.; *Enylus* **amplus** ♂ (p. 329), N. S. Wales; *Diatrichalus* **ternatensis** ♀ (p. 329), Moluccas; *Flabellotrichalus* **duplicatus** ♂ (p. 330), West Australia; *Leptotrichalus* **reticulatus** ♀ (p. 333), Sarawak; *L.* **timorensis** ♀ (p. 333), Dutch E. Indies; *L.* **insulanus** ♀ (p. 335), Sangir Is.; *L.* **parvicostatus** ♀ (p. 336), Sunda Is. Unless otherwise specified, types are in British Mus.

5644. **KLEINE, R. Zur Lycidenfauna der Kleinen Sunda-Inseln.** *Treubia* 11(3): 341-347. 21 fig. 1930.—New localities are listed for 15 previously described spp. New spp. are: *Lycostomus* **timorensis*** ♀ (p. 342); *L.* **andonarensis*** ♂ (p. 342); *Calochromus* **timorensis*** ♀ (p. 343); *Cladophorus* **latithorax** (p. 343); *Plateros* **obscuriventris*** ♂ (p. 344); *P.* **tecticollis*** ♂ (p. 344); *P.* **pervulgatus*** ♀ (p. 345); *P.* **fuliginosus*** (p. 345); *P.* **obscuritarsis*** ♀ (p. 346); *P.* **nitens*** (p. 346); *Conderis* **flavicolor** ♀ (p. 347). Types are in British Mus.

5645. **KLEINE, R. Studien zur Gattung Bulenides C. O. Wtrh.** *Treubia* 11(3): 349-355. 15 fig. 1930.—*B.* **malayensis*** ♀ (p. 349) and *B.* **coccineus*** ♂ (p. 350), Malay Peninsula, and types in Fed. Malay States Mus., Kuala Lumpur; *B.* **nebulosus*** ♂ (p. 350), Malay Peninsula; *B.* **bicoloratus*** ♀ (p. 351), Sumatra; *B.* **triangularis*** ♀ (p. 351), Sarawak; *B.* **philippinensis*** ♂ (p. 351) and *B.* **reticulatus*** ♂ (p. 352), Philippines. Types are in author's coll., unless otherwise stated. Key to the spp. is given.

5646. **KRAUTWIG, META. Untersuchungen am Kornkäfer (Calandra granaria L.). Der Bau der Geschlechtsorgane und ihre gegenseitigen Korrelationen.** *Zool. Jahrb. Abt. Anat. u. Ontog. Tiere* 52(4): 539-596. 34 fig. 1930.—In addition to whole mounts, 3-10μ sections through the sexual organs of *Calandra granaria* were studied, fixation in Susa and staining in Azan and Heidenhain proving most satisfactory. Spermatogenesis proceeds from the follicular margin to the middle of the testis. The spermatozoa possess a needle-shaped head with perforatorium and centriole and a flagellum with undulatory membrane. The vasa deferentia are without musculature. The secretions of the accessory gland and prostate consist each of 2 components. Secretion begins in the larval stage. The apparatus for its discharge, commonly present in insects, is lacking in both glands. The penis consists of a chitinous tube, continued into a wide-spaced preputial sac, upon the ventral side of which the ejaculatory duct opens. Longitudinal muscles serve as retractors. The upper side of the preputial sac is armed with hooks, denticles and plates. A praepenis is absent. In the ovary the protoplasmatic space in the terminal chamber is confined to the anterior section. The ovarioles are without a nutritive chamber. The oviduct, lined with fine gliding scales [chitinous platelets, overlapping posteriorly to assist in the discharge of the eggs], opens ventrally into the vagina, opposite the dorsal entrance of the spermathecal duct. The spermatheca is a falciform chitinous capsule, on whose broader end the accessory gland terminates in a conical prominence. Adjacent to this the spermathecal duct begins in a dome-like invagination provided with chitinous tubules. The spermatheca acts as a sperm pump. The accessory gland is of a complex type. Each gland cell possesses a collecting vesicle for secretion and a slender chitinous duct. In coitus only the end of the penis enters the vagina. The preputial sac is then unfolded within the genital passage of the ♀. The ejaculatory duct opens into the bursa copulatrix just before the entrance of the spermathecal duct. The differentiations of the chitinous lining of the preputial sac and that of the bursa function as claspers and titillators. A spermatophore is formed in which the seminal filaments lie in the prostatic secretion and are enveloped by that of the accessory gland.—*M. Krautwig (transl. by E. M. Walker).*

5647. **LEA, ARTHUR M. On Australian Coleoptera. Part VI.** *Rec. S. Australian Mus.* 4(2): 243-273. 1 fig. 1930.—*Blaps gigas* v. *azorica** reported from S. Australia, probably introduced by ships from Africa. *Decilaus* **megapholus** (p. 244) and *D.* **abdominalis** ♂ (p. 244), Queensland; *D.* **nitidirostris** (p. 245), Victoria; *D.* **curvirostris** (p. 246), New S. Wales; *D.* **mediolalbus** (p. 246) and *D.* **albohumeralis** (p. 247), Victoria; *D.* **parvidens** (p. 248), Queensland, type in Queensland Mus.; *D.* **nigrohumeralis** (p. 249), Norfolk Isl. [New S. Wales]; *D.* **episternalis** (p. 250), *D.* **triangulifer** (p. 251), *D.* **semicalviceps** (p. 252), and *D.* **lineifer** (p. 252), all 4 Victoria; *D.* **ruficornis** (p. 253), Tasmania; *D.* **subfasciculatus** (p. 254), *D.* **erythropholus** (p. 255), *D.* **wilsoni** (p. 255), and *D.* **erythromelas** ♂ (p. 256), all 4 Victoria; *Exithius* **murinus** ♀ (p. 257), Tasmania; *E.* **edentatus** ♂ (p. 258) and *E.* **semicalviceps** ♀ (p. 259), New S. Wales; *E.* **bidentatus** (p. 260), Victoria; *E.* **squamosis** (p. 260), Queensland, type in Queensland Mus.; *E.* **parvidens** (p. 262) and *E.* **microps** ♂ (p. 262), New S. Wales; *E.* **carinicollis** (p. 263), Victoria; *E.* **insularis** (p. 264), Tasmania; *E.* **episternalis** (p. 265), *E.* **pullatus** (p. 266), and *Ophrythyreocis* **fasciculatus** (p. 268), all 3 Victoria; *O.* **vigilans** (p. 269), W. Australia; *O.* **niger** (p. 270), S. Australia; *O.* **alternatus** (p. 270), New S. Wales; *O.* **tibialis** (p. 271), Victoria; *O.* **cyclothreus** (*Exithius c.* Lea) (p. 272); *O. microps* Lea, first record from Victoria and first description of ♂; *Roptoperus* **lissorhinus** (p. 272), Tasmania; *R.* **carinatus** (p. 273), Victoria. Types presumably in S. Australian Mus., except where otherwise stated. There are distributional and taxonomic notes on several previously known spp.

5648. **LIEBKE, M. Revision der amerikanischen Arten der Unterfamilie Colliurinae (Col. Carab.).** *Mitteil. Zool. Mus. Berlin* 15(3/4): 647-726. 62 fig. 1930.—The present paper is based on a study of the Carabidae of the Mus. für Naturkunde, Berlin, Stettiner Mus., British Mus., and others, besides those of many private collections. A catalogue is given of genera, subgenera, and spp., with keys and notes. *Calophaena* **caeruleofasciata** (*C. unifasciata* Motsch. not Chaudoir) (p. 679); *Colliuris* (**PROCOLLIURIS** n. subg.) (p. 658), type *C. rugicollis* Dej.; *C.* (*P.*) **viridiocellata*** (p. 682), Bolivia, type in Zool. Mus. Berlin; *C. rugicollis* v. **nigra** (p. 682), Colombia, type in Zool. Mus., Berlin; *C.* (*P.*) **maculipennis** (p. 682), Sta. Catharina and Mexico; *C.* (*P.*) **laeviceps** (p. 683), Peru and Mexico; *C.* (*P.*) **crispella** (p. 683), Paraguay; *C. subdistincta* v. **maculata** (p. 683), Mexico; *C.* (*P.*) **gratiosa*** (p. 685), and var. **viridana** (p. 686), both Matto Grosso, types in Zool. Mus., Berlin; *C. crispa,* new to Bolivia; *C.* (*P.*) **arrowi** (p. 707), Argentina; *C.* (*P.*) **cuyabana** (p. 708), Matto Grosso; *C.* (**COLLIURINA** n. subg.) (p. 658), type *C. batesi* Chaud.; *C.* (*C.*) **kuntzeni** (p. 684), Matto Grosso; *C.* (*C.*) **immaculipennis** (p. 704), Amazonas, type in Brit. Mus.; *C.* (**ANAPLAGIORRHYTIS** n. subg.) (p. 658), type *C.* (*A.*) **lugubris*** (p. 686), Matto Grosso, in

Zool. Mus., Berlin; *C.* **(COLLIURELLA** n. subg.) (p. 658), type *C. flavicornis* Brullé; *C. elongata**, emended description; *C.*(*C.*) **lagoenicollis*** (p. 692), Sta. Catharina, type in Zool. Mus., Hamburg; *C.* (*C.*) **gestroi** (p. 705), Argentina, type in Museo Civico Genoa; *C.* (*C.*) **variabilis*** (p. 706), Rio de Janeiro; *C.* **(PSEUDOCASNONIA** n. subg.) (p. 658), type *C. leprieuri* Cast.; *C. viridicollis* and *C. signata,* new to French Guiana; *C. rudis,* new to Dutch Guiana; *C.* (*P.*) **multifoveata*** (p. 702), French Guiana, type in Zool. Mus. Berlin; *C.* (*P.*) **ellipticeps*** (p. 703), Honduras; *C.* (*P*). **bucephala*** (p. 704), Bolivia, type in author's coll.; *C. marginestriata,* new to Costa Rica; *C.* **(ODACANTHELLA** n. subg.) (p. 658), type *C. pennsylvanica* L.; *C.* (*O.*) **portoricensis** (p. 688), Porto Rico; *C.* (*O.*) **humboldti*** (p. 688), Paraguay and Matto Grosso, type in Zool. Mus., Berlin; *C. picta* vars. **concluda** and **extrema** (p. 689), Mexico; *C. surinamensis* L. (=*C. maculicornis* Gory); *C. tristigma,* new to Mexico; *C. peruana* Erichs., emended description; *C.* (*Odacanthella*) **demerarae** (p. 693), Brit. Guiana, type in Zool. Mus., Hamburg; *C.* (*O.*) **trimaculata** (p. 694), Sta. Catharina, type in Zool. Mus., Berlin; *C.* (*O.*) **horni** (p. 695), Brazil, type in Deutsch Ent. Inst., Berlin-Dahlem; *C.* (*O.*) **emdeni*** (p. 696), Peru, type in Mus. f. Tierkunde, Dresden; *C.* (*O.*) **cyanea*** (p. 699), Amazonas; *C.* (*O.*) **cyanella** (p. 700), Amazonas, type in Brit. Mus.; *C.* (*O.*) **yucatana** (p. 700), Yucatan, type in Brit. Mus.; *C. strasseni,* established in subg. *Odacanthella; C. geniculata** Gory (=*C. incerta* Chaud.); *C.* (*Plagiorrhytis*) **robusta*** (p. 696), Peru, type in Langenhan coll.; *C. flavipes** Chaud. (=*C. bella* Liebke); *C. flavipes* ssp. **ecuadorica** (p. 684), Ecuador; *C. corrusca,* new to Peru; *C. plicaticollis,* new to French Guiana and Brazil, previously known only from Colombia; *C.* **(PSEUDOPLAGIORRHYTIS** n. subg.) (p. 657 & 697), type *C.* (*P.*) **excellens*** (p. 697), Peru, in Langenhan coll.; *C.* (*P.*) **hubenthali*** ♀ (p. 698), Costa Rica, type in Langenhan coll.; *C.* **(PARACOLLIURIS** n. subg.) (p. 658), type *C.* (*P.*) *sipolisi* Oberth.; *Calophaena* **grandispina*** (p. 710), Colombia, type in Naturhist. Mus., Stettin; *C.* **ephippigera*** (p. 711), type in author's coll., *C.* **hieroglyphica*** (p. 711), and *C.* **moseri*** (p. 712), all 3 Peru; *C.* **arrowi*** (p. 713), Ecuador, type in Brit. Mus.; *C.* **nevermanni*** (p. 714), and *C.* **costaricensis*** (p. 715), Costa Rica; *C.* **rutilicollis*** (p. 716), Ecuador; *C.* **schroederi*** (p. 717), Brazil, type in Naturhist. Mus., Stettin; *C.* **buckleyi*** (p. 717), Ecuador; *C.* **dupuisi*** (p. 718), Peru, type in Langenhan coll.; *C.* **sexmaculata*** (p. 719), Costa Rica; *C. gerstaeckeri,* described and figured; **CALOPHAENOIDEA** (p. 721), near *Calophaena,* based on *C.* **arrowi*** (p. 721), Ecuador, type in Brit. Mus.; **PSEUDOMETABLETUS** (p. 722), near *Stenocheila,* based on *P.* **nevermanni*** (p. 723), Costa Rica, type in Nevermann coll. An alphabetic list of the genera and sp. concludes the paper.

5649. MADER. Mitteilungen der Sammelstelle für Neubenennungen des V. D. E. V. [Union of German-speaking Ent. Soc.] (Col.). *Ent. Anz.* 10(18): 359. 1930. —*Semiadalia 11-notata* abs. **7-notata** and **patricia,** in Wien Mus.; *Scymnus subvillosus* ab. **sahlbergianus** (*S. subvillosus* ab. *fulvicollis* Sahlb. not Muls.); *Hippodamia 13-punctata* ab. **10-punctata** Mader; *H. heydeni* ab. **varia**; *H. 7-maculata* abs. **paupera, modesta, praespectata, nutans, praedicta,** and **exspectata.**

5650. MADER, L. Über paläarktische Coleopteren. I. *Ent. Anzeiger* 11(1): 19-20. 1931.—*Cystocnemis discoidea* Gebl. (=*Chrysomela nigrovittata* Ball); *Gastroidea viridula* ab. **cyanicollis** (p. 20).

5651. MAŘAN, JOSEF. Nova aberace Chlaenius vestitus Payk. z Čech. [New form of C. vestitus.] *Časopis Československé Společnosti Ent.* [*Prague*] 26(1/2): 33. 1929.—*C. v.* ab. **stichai,** Bohemia.

5652. MARSHALL, GUY A. K. New Curculionidae (Col.) from cultivated plants. *Bull. Ent. Res.* [*London*] 19(4): 391-400. 5 fig. 1929.—*Mimaulus* **matabelenus** (p. 391), Rhodesia, on tobacco; *Tanymecus* **arushanus** (p. 391) and *Systates* **habenatus*** (p. 392), both Tanganyika Terr., on cotton; *Cholus pistor* **bahiensis** (p. 394), on *Paspalum densum, Rhyssomatus* **psidii** (p. 395), on guava trees, and *Conotrachelus* **bondari*** (p. 396), on *Anona squamosa,* all 3 Bahia; *Cryptorrhynchus ephippiatus* and *strangulatus* Boh. are referred to *Metoposoma* (p. 397); *Metoposoma* **canavaliae*** (p. 397), Bahia, on *Canavalia* beans; *Peloropus* **batatae*** (p. 399), Uganda, on sweet potatoes.

5653. MARSHALL, GUY A. K. New Curculionidae (Col.) from cacao and camphor. *Bull. Ent. Res.* [*London*] 20(2): 201-204. 2 fig. 1929.—*Ischnotrachelus* **theobromae** ♀ (p. 201), Fernando Po, on cacao trees; *Dermatodes* **camphorae** (p. 201), Java, on *Cinnamomum camphora; Tylodes* **vellericollis*** (p. 202) and *Conotrachelus* **curvicostatus*** (p. 203), both Bahia, on cacao.

5654. MAULIK, S. New injurious Hispinae. *Bull. Ent. Res.* [*London*] 20(1): 81-94. 10 fig. 1929.—*Promecotheca* **nuciferae*** (p. 81), Celebes, mining leaves of coconut palm, larva* and pupa* also described; *P.* **soror*** (p. 84), Moluccas, damaging coconut palm; *Octotoma* **tessellata*** (p. 85), Bahia, on leaves of *Canavalia ensiformis; Anisostena* **fasciata*** (p. 87), Bahia, on grasses; *Cephalolia* **saccharina*** (p. 88), Bahia, on sugar cane; *Anoplitis* **canavaliae*** (p. 89), Bahia, on leaves of *Canavalia ensiformis,* larva* and pupa* also described; *Chalepus* **bondari*** (p. 92), Bahia. Types in British Mus.

5655. MAULIK, S. Injurious Hispinae from the Solomon Islands. *Bull. Ent. Res.* [*London*] 20(2): 233-239. 6 fig. 1929.—This paper is based on material belonging to the Imperial Bur. Ent. **PHARANGISPA** (p. 233), type *P.* **purpureipennis*** (p. 233), also description of larva*, on "ginger in bush"; **AULOSTYRAX** (p. 235), type *A.* **nuciferae*** (p. 235), on coconut leaflets; *Promecotheca* **alpiniae*** (p. 238), on *Alpinia* sp. Types in British Mus.

5656. MAULIK, S. New injurious Hispinae. *Bull. Ent. Res.* [*London*] 21(1): 45-56. 8 fig. 1930.—*Craspidonispa* **saccharina*** (p. 45), Trinidad, on sugar-cane; *Xenochalepus* **mucunae*** (p. 46), Bahia, on leaves of *Mucuna pluricostata;* **CODIOHISPA** (p. 48), resembling *Probaenia,* type *C.* **anonicola*** (p. 48), Bahia, on leaves of *Anona squamosa;* **CNESTISPA** (p. 49), resembling *Acanthodes,* type *C.* **darwini*** (p. 50), Bahia, on *Cymbotoma; C.* **acuminata*** (p. 51), Para; *C.* **flavipes** (*Acanthodes f.* Baly) (p. 52); *Acanthodes* **rana*** (p. 52), Brazil; *Gyllenhalius* **palmarum*** (p. 53), Gold Coast, from oil palm and coconut leaves; *Wallaceana* **phoenicia*** (p. 54), Malay Peninsula, on *Oncosperma tigillaria.* Types in British Mus.

5657. [MEDVEDEV, S. I.] МЕДВЕДЕВ, С. И. Материалы по фауне жуков (Coleoptera) Хивы. **I. Scarabaeidae. [The Coleoptera fauna of Khiva, Asiatic Russia.]** Русское Энтомологическое Обозрение. (*Rev. Russe. d'Ent.*) 24(1/2): 128-131. 1930.—A list of 43 spp. with locality records, and a discussion of general distribution of some spp. not previously recorded from this region.

5658. MIWA, YUSHIRO. H. Sauter's Formosa-Ausbeute (Elateridae I.). *Wiener Ent. Zeit.* 47(2): 91-97. 1930.—Annotated list, including: *Cardiophorus* **anpingensis** (p. 91); *Neodiploconus* **castaneus** (p. 92); *Athous* **rufithorax** (p. 92); *Csikia* **taiwana** (p. 93); *Agriotes* **fuscus** (p. 93); *Glyphonyx* **longulus** (p. 94); *Silesis* **sauteri** (p. 95), with key to differentiate it from *assimilis* and *okinawensis.* Types in Ent. Mus. Gov. Res. Inst., Formosa.

5659. [PLIGINSKII, V. G.] ПЛИГИНСКИЙ, В. Г. Две новых формы **Meloidae (Coleoptera). [Two new Meloidae.]** [In Russian and German.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(1/2): 109-110. 1930.—*Proscarabaeus* **abyssinicus** ♂ (p. 109), Abyssinia; *Meloë variegata* ssp. **mandzhurica** (p. 110), Manchuria. Types in Zool. Mus., Leningrad.

5660. [REICHARDT, A. N.] РЕЙХАРДТ, А. Н. Заметки о палеарктических **Histeridae (Coleoptera). II. [Notes on palaearctic Histeridae. II.]** [German summary.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(1/2): 46-55. 1 fig. 1930.—Locality records and taxonomic notes are given for 25 spp., including *Hypo-*

caecus dauricus (p. 52), Transbaikalia and northern Mongolia, type in Mus. Zool. Acad. Sci. [Leningrad]. *Gnathoncus suturifer** Rtt. is removed from the synonymy of *G. rotundato* Kug. and here redescribed.

5661. **St. GEORGE, R. A.** The discovery of what is possibly the larva of an introduced tenebrionid, Leichenum variegatum Küst. *Proc. Ent. Soc. Washington* 32 (7): 122-123. 1 pl. 1930.—The characters of the larvae of Opatrinae are described and compared with those of the specimen tentatively determined as *L. variegatum*.

5662. **STSHEGOLEVA-BAROVSKAJA, T.** De duabus novis Mordellidarum speciebus e tesquis ponticis (Coleoptera). Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(1/2): 56-58. 8 fig. 1930.—*Mordellistena*, n. subg. **MORDELLISTENULA**, with *M.* **planifrons*** (p. 56) and *M.* **parvuliformis*** (p. 57), both southern Russia. Types in Mus. Zool. Acad. Sci. Leningrad. *M. parvuliformis* is reported to be injurious to sunflowers.

5663. **UHMANN, E.** Amerikanische Hispinen aus den Museen für Tierkunde und Völkerkunde zu Dresden. (25. Beitrag zur Kenntnis der Hispinen [Col. Chrys.].) *Wiener Ent. Zeit.* 47(3): 149-155. 1 fig. 1930.—*Cephalolia* **daguana*** (p. 149), Colombia; *C. deplanata*, emended description; *C.* **emdeni** (p. 151), Petropolis, Brazil; *Acentroptera* **emdeni** (p. 152), Colombia; *Stenispa* **peruana** (p. 153), Peru; *S.* **guatemalensis** (p. 154), Guatemala.

5664. **VOSS, EDUARD.** Die Attelabiden der Hauserschen Sammlung. (Col. Curc.) (28. Beitrag zur Kenntnis der Curcul.) *Wiener Ent. Zeit.* 47(2): 65-88. 1930.—The majority of these spp. were found in the Manchurian and the oriental subregions. Types, where specified, are mostly in the Hauser coll. *Auletobius* (*Aletinus*) **perturbatus** ♀ (p. 65), Szechwan [China]; *A.* (*A.*) **consimilis** (p. 66), "Yunnan-sen," type in Marshall coll.; *Aderorrhinus* **pedicellaris** (p. 67), "Yunnan-fou"; *Eugnamptus* **cervinus** (p. 67), Sze-chwan; *Rhynchites* (*Auletomorphus*) **monticola** (p. 68), Yunnan; *R. coeruleus* ssp. **ussuriensis** (p. 69), Ussuri; *R.* (*Involvulus*) **lepidus** (p. 69), Sze-chwan; *R.* (*I.*) **obsitus** (p. 70), "Yunnan-fou"; *R.* (*I.*) **indubius** (p. 71), "Yunnan-fou"; *R.* (*I.*) **marshalli** (p. 71), Maymyo, India, type in Marshall coll.; *R.* (*I.*) **gentilis** (p. 72), Himalaya and "Yunnan-fou," China; *R.* n. subg. **CYLLORHYNCHITES** (p. 73), with key to the spp. [described only in the key]; *R.* (*C.*) **cumulatus** (p. 75), "Yunnan-sen"; *R.* (*C.*) **spinicollis** (p. 75), Darjeeling Distr., India; *R.* (*C.*) **andrewesi** (p. 75), type in Marshall coll., *R.* (*C.*) **homalinus** (p. 76), and *R.* (*C.*) **subcumulatus** (p. 76), all 3 "Yunnan-sen"; *R.* (*C.*) **auricapillus** (p. 77), Sze-chwan; *R.* (*C.*) **rostralis** (p. 78), "Yunnan-sen"; *R. heros* ssp. **mongolicus** (p. 78), E. Mongolia; *Bycticus* **regularis** (p. 79), Siberia; *Deporaus unicolor* f. **yunnanica** (p. 80), "Yunnan-sen"; *Paramecolabus* (*Catalabus*) **nigrosuturalis** (p. 80), Sze-chwan; *Henicolabus* (*H.*) **haematideus** (p. 82), Sze-chwan; *Euops* (*Neosynaptops*) **viridiceps** (p. 82), Dutch New Guinea; *Paroplapoderus* **hauseri** (p. 83) and *Apoderus* (*A.*) **tuberculimerus** (p. 84), Sze-chwan; and f. **subopaca** (p. 85); *A.* (*Strigapoderus*) **funebris** (p. 85), Hupeh and Chekiang; *A.* (*Leptapoderus*) **cinctipectoralis** (p. 86), Yunnan-fou; *A. dimidiatus* f. **umbrata** (p. 86), Hupeh and Chekiang; *A.* (*Leptapoderus*) **pedestris** (p. 87), Yunnan; *Paracycnotrachelus* **foveostriatus** (p. 88), Yunnan.

5665. **WEST, AUGUST.** Some notes on the coleopterous fauna of Iceland. *Ent. Meddel.* [*Copenhagen*] 16 (8): 414-416. 1930.—Comments on previously published works by various authors. Total number of spp. of Coleoptera at present known from Iceland is about 141.

5666. **WEST, AUGUST.** Tillaeg og Rettelser til Fortegnelserne over de danske Coleoptera. [Additions and corrections to the list of Danish Coleoptera.] *Ent. Meddel.* [*Copenhagen*] 16(8): 441-448; (9): 449-492. 1930.—An extensive list, 68 species of which are new to Denmark.

5667. **WILLIMZIK, EDITH.** Über den Bau der Ovarien verschiedener coprophager Lamellicornier und ihre Beziehung zur Brutpflege. *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 18(4): 669-700. 23 fig. 1930.—A distinction is made between Brutfürsorge, placing the egg in a supply of food, and Brutpflege, care of the young. Both are correlated with diminished egg production and thus with changes in the reproductive system. The female system is described for a number of beetles of the fam. Scarabaeidae, subfam. Coprophaginae; *Aphodius fimetarius, A. inquinatus, A. fossor, Geotrupes stercorarius, G. vernalis, G. silvaticus, Ceratophyus typhoeus, Lethrus apterus, Onthophagus fracticornis, O. nuchicornis, Copris lunaris,* and *C. hispanus.* The seminal receptacle and histology of the ♀ system are described in detail. Reduced ovaries, simple accessory parts, lack of a typical bursa copulatrix, modified seminal receptacles, and absence of terminal filaments on the egg tubes are the chief features of the ♀ system of the Coprophaginae. Reduction in egg output in correlation with care of young is accomplished in 2 ways: by production of very large, slowly ripening eggs with normal number (5 to 7 on each side) of egg tubes, as in *Aphodius* and *Geotrupes;* or by reduction of the ovaries to a single (left) egg tube as in the Coprinae.—*L. H. Hyman.*

DIPTERA

E. T. CRESSON, JR., *Editor,* Brachycera

O. A. JOHANNSEN, *Editor,* Nemocera

(See also in this issue Entries 4309, 4315, 4317, 4323, 4327, 4333, 4339, 4345, 4360, 4644, 4648, 4665, 4669, 4686, 4716, 4733, 4744, 5044, 5588, 5745, 6048)

5668. **ALDRICH, J. M.** New two-winged flies of the family Calliphoridae from China. *Proc. U. S. Nation. Mus.* 78(1): 1-5. 3 fig. 1930.—*Calliphora* **grahami*** (p. 1), China and Siberia, and introduced in California; **XANTHOTRYXUS** (p. 3), near *Pollenia,* type *X.* **mongol*** (p. 3), Szechuen; *X.* **draco** (p. 4), Szechuen; **LISPOPAREA** (p. 4), allied to *Pollenia,* type *L.* **flava*** (p. 5), Szechuen. Types in U. S. Nation. Mus.

5669. **ALEXANDER, CHARLES P.** New or little-known Tipulidae (Diptera). XLVII. Australasian species. *Ann. and Mag. Nat. Hist.* 7(37): 17-36. 4 fig. 1931.—*Trentepohlia* (*Mongoma*) **brevipes** ♀ (p. 18), Papua, and *T.* (*T.*) **taylori** ♀ (p. 19), Queensland, types of both in Australian Inst. Trop. Med.; *Gonomyia* (*Lipophleps*) **mesoneura** ♀ (p. 20), Victoria, type in Wilson coll.; *Teucholabis* (*T.*) **reginae** (p. 21), Queensland; *Tasiocera* **hiemalis** (p. 23), Victoria, type in Wilson coll.; *T.* **terrae-reginae** ♂ (p. 23), Queensland, type in Univ. Queensland; *T.* **acanthophallus** ♂ (p. 24), New South Wales; *T.* **cyatheti*** ♂ (p. 25), *T.* **bucephala*** ♂ (p. 26), and *T.* **dicksoniae*** ♂ (p. 28), all 3 Victoria, and types in Wilson coll.; *T.* **taylori** ♂ (p. 29), Queensland, type in Australian Inst. Trop. Med.; *Cryptolabis* (*C.*) **convoluta** (p. 29), N. S. Wales; *Amphineurus* (*A.*) **fergusoni** (p. 30), W. Australia, type in E. W. Ferguson coll.; *A.* (*A.*) **spinitergatus** ♂ (p. 32), N. S. Wales; *Erioptera* (*E.*) **diplacantha** ♂ (p. 33) and *Paragymnastes* **riedeli** (p. 34), both Queensland and N. S. Wales, type of latter in Riksmuseet, Stockholm; *Ceratocheilus* **davidsoni** ♂ (p. 35), Queensland. Unless otherwise stated, types are in author's coll.

5670. **ALEXANDER, CHARLES P.** New or little-known Tipulidae (Diptera). XLVIII. Australasian species. *Ann. and Mag. Nat. Hist.* 7(38): 153-172. 1931.—*Molophilus* **militaris** (p. 153), *M.* **bunyipensis** (p. 155), *M.* **distinctissimus** (p. 156), *M.* **obliteratus** (p. 157), *M.*

elatus (p. 158), *M.* subhorridus (p. 159), *M.* bawbawiensis (p. 160), *M.* sublyratus (p. 161), *M.* permutatus (p. 162), *M.* vividus (p. 163), *M.* trigonalis (p. 164), *M.* subalpicola (p. 165), *M.* congregatus (p. 166), and *M. chloris* ssp. inquirendus (p. 167), all from Victoria, and types in Wilson coll.; *M.* tersus (p. 167), New S. Wales, type in author's coll.; *M.* subasper (p. 168), Victoria, and subhastatus (p. 170), Victoria and Tasmania, types of last 2 in Wilson coll., *M.* capitellum ♂ (p. 171), New S. Wales, type in Tonnoir coll.

5671. ALEXANDER, CHARLES P. The crane-flies. (Family Tipulidae, order Diptera). In: The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard African Expedition 1926-27. Vol. 2. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* no. 5) Part 3. XXXII: Entomology. p. 1004-1021. 2 fig. Harvard Univ. Press: Cambridge, 1930.—The author reports on about 31 forms collected by J. Bequaert in Liberia and the Belgian Congo, giving synonymies, distributional records, and taxonomic remarks. *Tipula* speiseriana ♂ (p. 1004) and *Nephrotoma* tumidiverticalis ♂ (p. 1006), Belgian Congo; *Limonia* rhizosema Speiser (=*L. rhanthisa* Speiser); *L.* subapicalis (*Libnotes capensis* Alex., not *Limonia c.* Macq.) (p. 1007); *Limonia* (*Limonia*) firestonei* ♂ (p. 1007) and *L.* (*L.*) bequaerti* ♀ (p. 1008), Liberia; PROTORIMARGA (p. 1010), near *Orimarga* and *Diotrepha*, type *P.* bequaertiana* ♂ (p. 1011), Liberia; a key is given to the 3 genera of the subtribe Orimargaria; *Eriocera* monroviae* (p. 1012), Liberia; a key is given to the Ethiopian spp. of *Eriocera; Clydonodozus* schoutedeni ♂ (p. 1014), Belgian Congo; a key is given to the Ethiopian spp. of *Clydonodozus; Trentepohlia speiseri* ssp. africana ♀ (p. 1016), Sierra Leone to Uganda; *Gonomyia* (*Gonomyia*) liberiensis (p. 1016), Liberia; a key is given to the 3 spp. of *Podoneura; P.* bequaertiana* ♂ (p. 1018), Belgian Congo; *Teucholabis nodipes* ssp. praescutellaris* (p. 1019), Liberia; a key is given to the African spp. of *Teucholabis* and *Ceratocheilus; Styringomyia* liberiensis* (p. 1020) and *S.* dendroides* (p. 1021), Liberia. Types in author's coll.

5672. ALEXANDER, CHARLES P. New or little-known Tipulidae from eastern Asia (Diptera), VII. *Philippine Jour. Sci.* 42(4): 507-534. 2 pl. 1930.—The present paper is based on material from Japan, Formosa, and China. Lists are given in full of spp. of Tipulidae taken by Prof. Issiki on Mount Kirishima, Yakushima Is., and on Arisan, Formosa. Types of new spp. are in author's coll. *Tipula* latiligula* ♂ (p. 509), Honshiu; *Limonia* (*Dicranomyia*) kansuensis* ♂ (p. 510), Kansu, China; *L.* (*L.*) yakushimensis* ♂ (p. 511) and *L.* (*L.*) tristina ♀ (p. 512), Japan (Kiushiu); *L.* (*L.*) unicinctifera* (p. 513), Szechwan, China; *Helius* (*Helius*) costofimbriatus* (p. 514), Japan (Loochoo Is.); *H.* (*H.*) pallidissimus* ♀ (p. 515), Szechwan; *Antocha* (*A.*) subconfluenta* ♂ (p. 516), Japan (Kiushiu); *Orimarga* cruciformis* (p. 517), Szechwan; *O.* yakushimana* (p. 517), Japan (Kiushiu); *O.* omeina* (p. 518) and *O.* seticosta* (p. 519), Szechwan; *Dicranota gibbera* ssp. karafutonis* ♂ (p. 520), Japan (Karafuto); *Dactylolabis longicauda* ssp. megastylata ♂ (p. 521), Japan (Kiushiu); *Limnophila* (*Dicranophragma*) dorsolineata* ♂ (p. 521), Formosa; *L.* (*Prionolabis*) lipophleps* (p. 522), *L.* (*P.*) liponeura* (p. 523), and *L.* (*Tricholimnophila*) satsumicola (p. 524), all 3 Japan (Kiushiu); *L. platystyla* ssp. parallela (p. 524) and *Atarba* (*Atarbodes*) issikiana* (p. 525), Formosa; *Atarba,* key to Japanese and Formosan spp.; *A.* (*A.*) minuticornis ♂ (p. 526) and *Elephantomyia* (*E.*) dietziana (p. 527), Japan (Kiushiu); *Gonomyia* (*Progonomyia*) perturbata* ♂ (p. 528) and *G.* (*G.*) omeiensis* (p. 529), Szechwan; *G.* (*Lipophleps*) quadrifila* ♂ (p. 530), Japan (Kiushiu); *Erioptera* (*E.*) luteicornis* (p. 531), Szechwan; *E.* (*E.*) himalayae* ♂ (p. 532), eastern Himalayas; *Molophilus* aricola (p. 533), Formosa.

5673. ALEXANDER, CHARLES P. Observations on the dipterous family Tanyderidae. *Proc. Linn. Soc. N. S. Wales* 55(3): 221-230. 2 pl., 1 fig. 1930.—The author gives a preliminary description of the immature stages of the Tanyderidae, this being the sole remaining family of lower Orthorhapha the larva of which had baffled discovery to the present time. The description is based upon specimens of *Protoplasa fitchii** from Quebec. A key is given to the larvae of families of orthorhaphous Diptera, and to the pupae of several families allied to the Tanyderidae. *Radinoderus* dorrigensis* ♀ (p. 228), N. S. Wales, type in author's coll.

5674. BEQUAERT, M., et P. WALRAVENS. Phlébotomes du Katanga [Belgian Congo]. *Rev. Zool. et Bot. Africaines* 19(1): 34-42. 9 fig. 1930.—Among a series of phlebotomes collected in 1925 and 1926 at Elisabethville were: *Phlebotomus* katangensis* (p. 35), *P. africanus* v. congolensis* (p. 38), and *P. ingrami** Newst.

5675. CURRY, DALFRES P. Anopheles (Anopheles) neomaculipalpus. A new species of the Arribalzagaia group of Anopheles from Panama. *Amer. Jour. Hyg.* 13(2): 643-647. 1 fig. 1931.—Larvae of *A.* neomaculipalpus* (p. 645), type in Gorgas Memorial Lab., Panama, have been taken in considerable numbers from water in cattle tracks exposed to the sun in low-lying marshy pastures, on the Atlantic side of the Isthmus near Gatun and on the Pacific side in the flat coastal savannas east of Panama City. A key is given to the Panama spp. of the *Arribalzagaia* group of *Anopheles.*

5676. CURRY, D. P. Recognition of Anopheles argyritarsis by the characteristics of the male genitalia. *Amer. Jour. Hyg.* 13(2): 648. 1931.

5677. DAVIS, NELSON C. A new anopheline mosquito from Pará, Brazil. *Amer. Jour. Hyg.* 13(1): 345-348. 2 pl. (col.) 1931.—*Anopheles* shannoni* ♀ (p. 345), type in U. S. Nat. Mus.

5678. DUBOVSKY, N. Über die systematische Stellung von Aëdes (Ochlerotatus) behningi Martini. *Zool. Anz.* 86(7/8): 179-184. 1 fig. 1930.—The ♂ of this sp.*, previously unknown, is described from Russia. The sp. proves to be distinct, though close to *A. excrucians* and *A. fitchii.*

5679. EDWARDS, F. W. Some Nematocerous Diptera from Yunnan and Tibet. *Ann. and Mag. Nat. Hist.* 1(6): 681-703. 1 pl. 1928.—This paper is based on material of Nematocerous Diptera in the British Mus. collections from Tibet and from high altitudes in adjacent territories. Scandinavian spp. were found on Mt. Everest at a height of 17,000 ft. Up to 10,000 or 12,000 ft., the fauna seems to be almost purely oriental in type but above this altitude there is a definite admixture of Palaearctic spp. *Penthetria* pilosa ♀ (p. 683), Tibet; *Tipula* gregoryi* ♀ (p. 684), Yunnan; *T.* waltoni* ♀ (p. 685) and *T.* hobsoni ♀ (p. 685), Tibet; *T. thibetana**, notes; *T.* wardi* ♂ (p. 686), Tibet; *T. griseipennis* Brun. var., described but not named; *T.* bodpa* (p. 688), Tibet, *T.* trilobata* ♂ (p. 688) and *T.* subscripta ♂ (p. 689), Yunnan, *T.* avicularia ♂ (p. 689), Tibet and Sikkim; *T.* pleuracantha* ♂ (p. 690), Sikkim; *T.* scandens ♀ (p. 691), Tibet; *T.* tardigrada (p. 691), Yunnan; *T. nigroapicalis,* note; *T.* tetragramma* ♂ (p. 292), Yunnan; *T.* cruciata* (p. 693), Tibet and Sikkim; *T.* leucosema* ♀ (p. 694), *T.* yunnanica* (p. 695), *T.* brunnirostris* ♂ (p. 696), and *T.* atuntzuensis ♀ (p. 696), all 4 Yunnan; *T.* chumbiensis ♂ (p. 697), Tibet; *T. continuata,* emended description, *T.* xanthopleura* (p. 698), Tibet, Kumaon, and Sikkim; *T.* hingstoni ♀ (p. 699), *Nephrotoma* nigrohalterata ♀ (p. 700), *N.* distans ♂ (p. 700), and *Cylindrotoma* rufescens ♂ (p. 700), all 4 Tibet; *Limonia* yunnanica* (p. 701), Yunnan, *L. kashmirica** note; *Dicranomyia* baileyi* ♀ (p. 702), Tibet; *Neolimnophila* fuscinervis* ♀ (p. 702), Yunnan; *Rhaphidolabis* punctipennis* ♂ (p. 703).

5680. ENDERLEIN, GÜNTHER. Entomologica Canaria. VII. *Zool. Anz.* 92(1/2): 41-56. 12 fig. 1930.—Diptera: PAMPHAGOPHAGA (Tachinidae) (p. 42), near *Acemyia,* type *P.* gomerana (p. 43), on *Acrostira bellamyi; P.* acuminata (*Masicera a.* Becker) (p. 42); *Platystoma* euphorbiinum (p. 44), feeding on *Euphorbia canariensis; Alliophleps elliptica,* development described;

Acrostira, emended diagnosis. Orthoptera: *Arminda* **hierroënsis*** (p. 55); *A.* **latifrons*** ♀ (p. 56). There are descriptive and distributional notes on some previously known spp. All forms are from the Canary Is.

5681. FERRIS, G. F. Some African Diptera Pupipara. *Parasitology* 22(3): 275-282. 6 fig. 1930.—The author questions the distinctness of *Pseudornithomyia* Lutz, Neiva and Costa Lima, from *Ornithomyia* Latr. *O.* **inocellata*** (p. 275), Transvaal, host *Petrochelidon spilodera; Echestypus paradoxus*, emended description; *Raymondia pagodarum**, emended description, with records from *Hipposideros ruber*, Uganda, and from an undetermined host, China; *R.* **bedfordi*** (p. 281), South West Africa, host *Nycteris damarensis*, type in Stanford Univ. coll.; *Nycteribosca kollari*, recorded from *Rhinolophus mehelyi*, Italy, and from *R. geoffroyi*, Transvaal.

5682. HARDY, G. H. Australian Empididae. *Australian Zool.* 6(3): 237-250. 1930.—This is a general review of Australian forms, with some references to those of New Zealand. Marked affinity with this country and with South America is evident in the family. Keys to subfamilies, genera, and some of the spp. are provided. Chief attention is given to genera and higher groups. *Hilara certa* Walker (=*H. efficiens* White); *H. confirmata* Walker (=*H. nimia* White); *Hilarempis* Bezzi (=*Hilaropus* White); *Ceratomerus* **albistilus** ♀ (p. 246), *C.* **tuberculus** ♂ (p. 247), and *C.* **inflexus** (p. 247), Tasmania; *C.* **ordinarius** ♂ [in key, p. 245; but *ordinatus* in description, p. 247], Tasmania.

5683. HENDEL, FR. Entomologische Ergebnisse der schwedischen Kamtchatka-Expedition 1920-1922. 28. Diptera Brachycera 2. Fam. Cordyluridae und Dryomyzidae. *Arkiv Zool.* [*Stockholm*] 21A(3, paper 18): 1-12. 1930.—(Cordyluridae) An annotated list of 18 spp. Excepting the new spp. here described, most are palaearctic; a few are nearctic, and several holarctic. *Norelliosoma* **septentrionale** ♂ (p. 2); *Cordylura* **latigenis** (p. 3); *C.* **apicata** ♀ (p. 4); *C.* **nigrithorax** (p. 5); genus *Parallelomma* Becker, reduced to subgeneric rank under *Cordylura; C.* (*Parallelomma*) **ochracea** ♀ (p. 6); *Gonatherus* **fumipennis** ♀ (p. 7); *Orthochaeta* **fuscipennis** ♂ (p. 8); *Amaurosoma* **kamtschatkense** (p. 9); *A. k.* var. **variofemoratum** (p. 10); *A.* **carbonarium** (p. 11). Types in Stockholm Mus. (Dryomyzidae) 1 sp. is listed.

5684. KEILIN, D., and P. TATE. On certain semi-carnivorous anthomyid larvae. *Parasitology* 22(2): 168-181. 1 pl. 5 fig. 1930.—The larvae studied are *Ophyra leucostoma, Polietes albolineata, P. lardaria, Mesembrina meridiana*, and *M. mystacea*. In all these larvae the bucco-pharyngeal armature consists of a strong basal sclerite, a strong intermediate sclerite, and oral sclerites consisting of a pair of lateral hooks, of unequal length in all except *M. meridiana*, a median ventral arc, a pair of oral bars, and an anterior ribbon. This type of armature is found in carnivorous cyclorhaphous dipterous larvae, but the presence of longitudinal pharyngeal ridges in the above larvae indicates that they are semi-carnivorous or omnivorous. This is in agreement with previous knowledge of the biology of all the larvae, except *M. meridiana* which has been observed only as a pure coprophage.—*P. Tate.*

5685. KRÖBER, O. Die Tabanidensubfamilie Silviinae der neotropischen Region. *Zool. Anz.* 88(9/10): 225-239. 11 fig. 1930.—There are keys to tribes, genera, and some of the 10 spp. discussed. There is a description, a statement of distribution, and (with one exception) a figure of each sp. *Dasyapha annulicornis* (Phil.) (=*Tabanus rubricornis* Phil.); *Veprius* **rubricornis*** ♂ (p. 236), Chile, type in Vienna; **HEMICHRYOPS** (p. 237), erected for *H.* **fascipennis*** (p. 237), Colombia and Costa Rica, type in London; **HISTRIOSILVIUS** (p. 238), erected for *H.* **longipalpis** (*Pangonia l.* Macq.) (p. 238).

5686. KRÖBER, O. Die Pityocerini (Tabanidae) der neotropischen Region. *Zool. Anz.* 88(11/12): 305-312. 5 fig. 1930.—There is a key to 3 genera of this tribe, including **PSEUDELAPHELLA** (p. 305), near *Elaphella*, erected for *P.* **nana*** (*Pangonia n.* Wlk.) (p. 306) and *P.* **patellicornis*** (p. 307), Matto Grosso, Brazil, type in London. There are also synonymies and descriptions of *Elaphella cervus** and *Pityocera festae**.

5687. KRÖBER, O. Die Dipterenausbeute der Sunda-Expedition Rensch. Beitrag II: Therevidae und Conopidae. *Zool. Anz.* 89(3/4): 65-73. 7 fig. 1930.—The author lists 8 Therevidae and 12 Conopidae previously known from the Sunda Is., mentioning those represented in the present collection and describing certain new spp. Conopidae: *Physocephala* **renschi*** ♀ (p. 67); *Conops* **rubripes*** ♀ (p. 68); *C.* **rufitarsis*** ♂ (p. 69); *C.* **inconspicuus*** ♀ (p. 70); *C.* **microvalvus*** ♀ (p. 71), Java; *Pleurocerinella* **violacea*** ♂ (p. 72).

5688. KRÖBER, O. Neue Tabaniden und Zusätze zu bereits beschriebenen. *Zool. Anz.* 90(3/4): 69-86. 21 fig. 1930.—*Chrysops* **semiignitus*** ♀ (p. 69), Szechuan, type in Dresden; *C.* **engeli*** ♀ (p. 70), Mexico, type in Munich; *C.* **auroguttatus*** ♀ (p. 71), Colombia and Trinidad, type in London; *C. a.* var. **pallidefemoratus*** ♀ (p. 72), Trinidad, type in London; *Diachlorus* **angustifrons*** ♀ (p. 74), Bahia, type in London; *D.* **nigrithorax*** ♀ (p. 74), British Guiana, type in London; *Spheciogaster* **albomarginatus*** ♀ (p. 76), Colombia, type in London; *Bolbodimyia* **lateralis** ♂ (p. 77), Argentina, type in Stuttgart; *Stenotabanus* **brunnipennis*** ♀ (p. 78), Uruguay, type in Tropenhygien. Inst., Hamburg; *Acanthocera* **formosa** ♀ (p. 79), Peru, type in Halle; *Pseudacanthocera* **fraterna** ♀ (p. 80), Paraguay, type in Budapest; *P.* (?) **minuscula*** ♀ (p. 80), Mexico, type in Munich; *Phaeotabanus* **intermedius** ♀ (p. 81), Costa Rica, type in Budapest; *Lophotabanus* **communis** ♀ (p. 83), Dutch Guiana, *L.* **macquarti** ♀ (p. 83), Venezuela, and *L.* **albopruinosus** ♀ (p. 85), Brazil, types of all 3 in Vienna. Emended descriptions of *Chrysops tanyceras, Balbodimyia erythrocephala, Lophotabanus flavibarbis*, and *L. lividus*. *Tabanus ocellus* Wlk. is an artifact. *Diachlorus ferrugatus* F. (=*Tabanus rondanii* Bell.).

5689. LENGERSDORF, FR. Les Sciarides (Lycoriidae) de la collection de J. W. Meigen. *Encyclop. Ent. Ser. B. Diptera* 5: 55-61. 2 fig. 1929.—The writer has re-examined a number of Meigen's types in the Mus. Nation. Hist. Nat., Paris. The collection contains 2 specimens labeled *Sciara annulata* Meig., one =*S. autumnalis* Winn. and the other *S. ornata* Winn., and the writer inferentially establishes the synonymy as *Sciara brunnipes* v. *annulata* Meig. (=*S. autumnalis* Winn., *S. hyalinipennis* Meig.); *S. bicolor** Meig. (=*S. rufiventris* Macq.); *S. morio* Meig. (=*S. lugubris* Winn.), synonymy based on 1 ♂, 3 ♀♀; two other ♀♀ are *annulata; S. carbonaria* Meig. (=*S. atra* Meig.); *S. nervosa* Meig. [1818, p. 282] (=*S. fucata* Meig. [1818, p. 280], *S. placida* Winn.) (p. 61); *S. longipes*, descriptive notes. Under *S. nitidicollis* are confused three spp. and the writer selects one of these as type, establishing the synonymy as *S. nitidicollis* Meig. (=*S. albicans* Winn., *S. alacris* Winn. ♂, *S. fenestrata* Meig.). A second specimen is now described as *S.* **pygmaea*** (Meigen i. litt.) (p. 60); the third specimen is perhaps *S. vivida* Winn. Under the name *S. pallipes* Fabr. are confused 3 species in the Meigen coll.; of these one may be identified as *S. solani* Winnertz (*S. nitidicollis* auct. not Meig. as now defined); a second as *S. forcipata* Winn.; the third is redescribed (p. 58) but not identified. The *S. lutea* material consists of 2 ♀♀ which may be regarded as typical and one ♂ *Phorodonta flavipes* Meig. Part of the *S. fenestrata* material equals *nitidicollis* but 1 ♂, 1 ♀ are *S. mundula*. *Sciara pusilla* Meig. (=*S. pavida* Winn.) based on the present reviser's decision; a ♀ in the series equals *S. albicans* Winn., and a ♂ belongs to *Lestremia. S. vitripennis* Meig. (=*S. hirticornis* Meig., *S. quinquelineata* Macq.), but in the *S. v.* series one is equal to *S. autumnalis* Winn. and one ♀ equal to *S. fera* Winn. *S. scatopsoides* Meig. (=*S. albicans* Winn.), although the writer thinks *scatopsoides* ought to be eliminated. Descriptive data are given on *S. aprilina* Meig. (=*S. nemoralis** Meig.), *S. minima, S. ruficauda*, and *S. nigripes** (which is close to *S. myrtilli** Winn.). *S. glabra* Meig. (=*S. splendens* Winn.); *S.*

*vittata** Meig. (=*S. opaca* Winn.), redefined; *S. praecox* Meig. (=*S. simplex* Winn.), redefined.

5690. **MALLOCH, J. R. Exotic Muscaridae (Diptera). 30.** *Ann. and Mag. Nat. Hist.* 6(33): 321-334. 3 fig. 1930.—*Sigaloessa* **insularis*** ♂ (p. 321), Society Is.; *S. melbournensis* Malloch, transferred to *Astiosoma; Asteia* **striatifrons** ♂ (p. 323), Peru; *Cyrtonotum gibbum* (Fabr.) (=*Curtonotum taeniatum* Hendel); *Cyrtonotum* **hendeli** (p. 325); *C.* **striatifrons** ♀ (p. 325); Sudan, type in Imp. Bur. Ent.; *C.* **magnum** ♀ (p. 326), Brazil; key is given to the spp. of **ANASEIOMYIA** (p. 328), (Drosophilidae) near *Cyrtonotum*, type *A.* **uniformis*** (p. 328), also *A.* **dissimilis** (p. 330), both Federated Malay States, types of both in British Mus.; *Mycodrosophila* **halterata** ♀ (p. 331), Society Is.; *Xenosina* **setipennis** ♀ (p. 332), Malay Peninsula, type in Federated Malay States Mus.; *Actia* **perdita** ♂ (p. 333), Federated Malay States, type in Brit. Mus.

5691. **MALLOCH, J. R. Ortalidae, Calliphoridae. Insects of Samoa, Part 6. Diptera.** *Fasc.* 5. 215-237. 6 fig. 1930.—The author gives distributional and taxonomic notes on 14 Ortalidae and 7 Calliphoridae, 2 of the former being recorded only from other South Sea islands than Samoa. New forms are from Samoa unless otherwise specified. Ortalidae: *Euxesta* **semifasciata*** (p. 216), Ellice Is.; **NEOEUXESTA** (p. 218), near *Euxesta*, type *N.* **fumicosta*** ♂ (p. 218); *Rivellia*, key to 4 spp.; *R.* **imitans** (p. 220); **APACTONEURA** (p. 223), resembling *Plagiostenopterina*, type *A.* **flavicornis*** ♀ (p. 223), in Bishop Mus., Honolulu; **XENOGNATHUS** (p. 225), resembling *Engistoneura*, type *X.* **bryani*** (p. 226), type in Bishop Mus.; *X.* **inermis*** (p. 228); *Plagiostenopterina* **samoaënsis** (p. 230), type in Brit. Mus. Calliphoridae: *Paurothrix* **auriceps** ♂ (p. 236), type in Hamburg State Zool. Mus.

5692. **[MUFEL, P. P.]** МУФЕЛЬ, П. П. **Anopheles bifurcatus L. в центрально-черноземной области. [A. bifurcatus in the central black soil region.]** [German summary.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 7(1): 56-57. 1929.—29 ♀♀ and 26 ♂♂ were collected, the first record of this sp. from the Government of Voronezh.—*B. Van Rosen.*

5693. **ORLOWA, A. A., und S. D. SCHACHOW. Culicidae und Phlebotominae des Bezirkes Kaarry-Kala in Turkmenien.** *Arch. Schiffs- u. Tropen-Hyg.* 34(11): 593-608. 12 fig. 1930.—A survey indicating relation of local topography to distribution, enumerating 6 spp. of Culicidae and 6 of the Phlebotominae, found in this region, and describing some anomalies of the sexual organs in the Phlebotomi.

5694. **RINGDAHL, O. Entomologische Ergebnisse der schwedischen Kamtchatka-Expedition 1920-1922. 30. Diptera Brachycera 3. Fam. Muscidae.** *Arkiv Zool.* [*Stockholm*] 21A(3, paper 20): 1-16. 6 fig. 1930.—Of 116 spp. of Muscidae, 73 were European, 5 were hitherto known only in North America, and of the rest, 15 are new: *Phaonia* **malaisei** (p. 6), *Coenosites* **grisescens** ♀ (p. 6), *Fucellia* **kamtchatica** ♂ (p. 7), *F.* **hypopygialis** (p. 7), *Acroptena* **kamtchatica** ♂ (p. 8), *Phorbia* **subgrisea*** (p. 8), *Hylemyia* (*Euryparia*) **aculeata*** ♂ (p. 9), *H.* **angulosa** ♂ (p. 9), *H.* (*Delia*) **gracilipes** ♂ (p. 10), *H.* **simplex*** ♂ (p. 10), *H. discreta* v. **angustifrons** (p. 11), *Coenosia* **luteipes** (p. 11), *C.* **oblongolamellata** (p. 11), *C.* **griseiventris** ♂ (p. 11), and *C.* **pilipyga** ♂ (p. 13). *Alloeostylus albi-basalis* Zett., note; *Pegomyia frigida* Zett. (=[*P.*] *bivittata* Stein).

5695. **SCHMITZ, H. Pnyxia dispar n. spec. (Dipt.).** [In German & Spanish.] *Rev. Soc. Ent. Argentina* 1(4): 27-30. 3 fig. 1927.—*P.* **dispar*** (p. 27), La Plata, myrmecophile of *Acromyrmex lundi.*

5696. **THIENEMANN, AUGUST. Chironomiden-Metamorphosen 2. Die Sectio Tanytarsus genuinus.** *Arch. Hydrobiol.* 20(1): 93-123. 1 fig. 1929.—A review of the spp. of *Tanytarsus* (sens. lat.) of which larval and pupal stages are known, with keys to immature stages, and with biological and distributional data. The author recognizes 3 groups: *Eutanytarsus, Rheotanytarsus,* and *Paratanytarsus.* The larvae of the 1st group, which live in cylindrical cases in quiet waters, are usually red in color and have small, long petiolate Lauterborn organs. The anal angles of the penultimate segment in the pupa are provided with 10-20 teeth. This group includes the genera *Micropsectra, Cladotanytarsus, Goetghebueria, Lundströmia, Calopsectra, Phaenopelma, Tanytarsus, Tetratanytarsus, Xenotanytarsus, Fournieria, Clinotanytarsus,* and *Lauterbornia.* The group *Rheotanytarsus* contains but the 1 genus, the larvae of which are usually yellowish, with small, short petiolate Lauterborn organs. They live in swift water in conical cases which have 2 or more longitudinal ribs that are continued into filaments. The anal angles of the penultimate segment of the pupa are each produced into a rather strong hook. The group *Paratanytarsus* with the genera *Paratanytarsus, Stylotanytarsus,* and *Monotanytarsus* have reddish or more rarely greenish larvae which live in uncontaminated water in cylindrical cases that usually are attached to plants. The Lauterborn organs are large and sessile. The anal angles of the penultimate segment of the pupae are provided with 5-8 teeth. Of the 88 spp. of which more or less is known concerning immature stages, 72 belong to the 1st, 6 to the 2nd, and 10 to the 3rd group.—*O. A. Johannsen.*

HEMIPTERA AND HOMOPTERA

H. H. KNIGHT, *Editor,* Hemiptera

Z. P. METCALF, *Editor,* Homoptera

(See also in this issue Entries 3447, 3470, 4650, 4652, 4677, 4717, 4718, 5044, 5446, 5588, 5697, 6044, 6046, 6048)

GENERAL

5697. **WEBER, HERMANN. Biologie der Hemipteren. Eine Naturgeschichte der Schnabelkerfe.** (*Vol. 11 of "Biologische Studienbücher."*) 543p. 329 fig. Julius Springer: Berlin, 1930. Pr. 44 M.—This book deals chiefly with the morphology, biology, and ecology of the Hemiptera and Homoptera. A list of hemipterous families mentions the characters for each. The order Hemiptera is regarded as a super-order divided into the orders Heteroptera and Homoptera. The Heteroptera is divided into suborder Geocorisae containing 24 families, and suborder Hydrocorisae with 8 families. The order Homoptera is divided into 5 suborders as follows: (1) Cicadina with families Fulgoridae, Cercopidae, Cicadidae, Jassidae, and Membracidae; (2) Psyllina; (3) Aleurodina; (4) Aphidina with families Aphididae, Phemphigidae, Chermesidae, and Phylloxeridae; (5) Coccidae. While these names are not new they are employed in an unusual category. The author considers with much detail the morphology of special structures and modifications in Hemiptera and Homoptera. The subjects dealt with are: (A) Movement as a mechanical phenomena; nervous system and sense organs; (B) methods of taking food; secretions, respiration; and circulation of blood; (C) genital organs, structure and function; development and metamorphosis; also pigmentation; (D) ecological relationships and geographical distribution; (E) relationships between Hemiptera and other animals; symbiosis and parasitism; relationship to plants; galls. A bibliography and index complete the volume.—*H. H. Knight.*

HEMIPTERA

5698. **CHINA, W. E. A new genus and two new species of Plataspidae (Hemiptera).** *Ann. and Mag. Nat. Hist.* 7(42): 574-578. 2 fig. 1931.—A large collection of

Hemiptera from Sikkim (north India) contained: **ERYTHROSOMASPIS** (p. 574), near *Coptosoma*, type *E.* **stevensi*** ♂ (p. 575); *Coptosoma* **sikkimensis** ♀* (p. 576).

5699. **CHINA, W. E.** Heteroptera. In: Insects of Samoa. Part 2: Hemiptera. Fasc. 3. pp. 81-162. 28 fig. *Brit. Mus.* (*Nat. Hist.*): London, 1930.—The known Samoan heteropterous fauna (apart from Miridae) includes 70 spp. in 51 genera, 60 spp. of which are treated in this paper. The distribution is given by islands in Samoa, and elsewhere, and is compared by families with Fiji. The distribution of Samoan genera is shown by a table to be world-wide. The systematic list includes synonymies, distributional records, and notes on taxonomy and habits. *Glaucias* **samoanus*** (p. 93); *Riptortus* **insularis*** ♂ (p. 97) and var. **obscurus** ♀ (p. 100); *R. tutuilensis** ♀; **CHIASTOPLONIA** (p. 104) (Dysodiidae), near *Mezira*, type *C.* **pygmaea*** ♂ (p. 104), in rotten bark of *Hibiscus tiliaceus; Pictinus* **pacificus*** (p. 106); *Ctenoneurus* **samoanus*** ♂ (p. 108); *Carventus* **kirkaldyi*** ♀ (p. 109); *Protacanthus* Uhler (=*Auchenoplus* Bergr.); *P.* **pacificus*** (p. 111), Fiji (type) and Samoa; *P.* **bihamatus** (*Metacanthus b.* Dist.) (p. 112); *Melanerythrus* Stål, distinct genus; *Nesostethus* Kirkaldy, raised from subgeneric to generic rank (p. 115); *N.* **niger*** ♀ (p. 113); *Graptostethus* **nigriceps** (*G. servus* var. *n.* Stål) (p. 115); *Nysius* (*Nysius*) **pacificus*** ♀ (p. 116), New Hebrides (type) and Samoa; *Germalus* **samoanus*** (p. 118); *G.* **buxtoni*** (p. 122); **NEOCROMPUS** (p. 125) (Lygaeidae), near *Crompus* and *Ischnorhynchus*, type *N.* **kellersi*** (p. 126); *Reclada moesta* B. White (=*Clerada minuta* China); *Orthaea* **ventralis*** (p. 130); *O.* **puberula*** (p. 133); **BRYANELLA** (p. 135), (Lygaeidae), near *Ozophora*, type *B.* **longicornis*** (p. 136); *Cligenes* **swezeyi*** ♀ (p. 138) and ssp. **major** ♀ (p. 139); **IDIOCYSTA** (p. 141) (Tingitidae), near *Physatocheila*, type *I.* **hackeri*** (p. 142); *Gardena* **geniculata*** ♀ (p. 143); *Luteva insolida** B. White (=*Ploiaria collenetti* Cheesman), redescribed; **DICTYNNA** (p. 150), **n. subg.** of *Empicoris*, type *E.* (*D.*) **nitidicollis*** ♀ (p. 148); *Polytoxus* **similis*** (p. 151); *Sastrapada* **hopkinsi*** (p. 153); *Arbela costalis* **v. flavicollis** (p. 156); *Reduviolus* **annulipes*** (p. 157). New forms are from Samoa, unless otherwise stated. The following spp. are new to Samoa: *Brachyplatys pacificus, Geotomus pygmaeus, Coleotichus sordidus, Cantheconidea cyanacantha, Platynopus melacanthus,* on caterpillars of *Atella exulans, Pegala biguttula, Piezodorus rubrofasciatus, Leptoglossus australis, Leptocorisa varicornis, Melanacanthus margineguttatus, Leptocoris insularis, Mezira membranacea, Pyrrhobaphus leucurus, Graptostethus nigriceps, Orthaea pacifica, O. nigriceps, O. nietneri, Aphanus insularis, Dysdercus insularis, D. impictiventris, Gardena pacifica, Luteva insolida, L. subaequalis, Empicoris rubromaculatus, Oncocephalus pacificus, Peregrinator biannulipes, Arbela costalis, Reduviolus capsiformis,* and *Cimex hemipterus.* Altitude records are given for many spp.

5700. **DRAKE, CARL J.** Two new species of Tigava from South America (Hemiptera-Tingitidae). *Proc. Hawaiian Ent. Soc.* 7(3): 405-406. 1931.—*T.* **semota** ♂ (p. 405) and *T.* **bondari** (p. 405), Brazil. Types in author's coll.—*O. H. Swezey.*

5701. **EVANS, J. W.** A new species of Nysius (Hem., Lygaeidae) from Australia. *Bull. Ent. Res.* [*London*] 19(4): 351-354. 3 fig. 1929.—*Nysius* **clevelandensis*** (p. 351), Queensland, on *Sonchus oleraceus, Gnaphalium purpureum,* and *Erigeron linifolius,* type in Brit. Mus.; *N. vinitor**, redescribed. The author states that the subgenera of *Nysius* may be regarded as valid genera, and treats them as such in a "key to genera included under *Nysius* auctt." Described in the key are: **HUDSONA,** type *Nysius anceps* B. W. (p. 353); **MYERSIA,** type *Nysius clavicornis* F. (p. 353).

5702. **ILLINGWORTH, J. F.** Notes on some bugs associated with pineapples in Hawaii. *Proc. Hawaiian Ent. Soc.* 7(3): 465-467. 1931.—*Leucopoecila albofasciata,* an introduced sp., breeds in purslane and nightshade, and under certain circumstances will oviposit in the tender pineapple leaves; *Pycnoderes 4-maculatus,* a newcomer, has been found on purslane in the pineapple fields; *Triphleps persequens* oviposits in the leaves of purslane and is a valuable predator on aphids and thrips.

5703. **[KIRICHENKO, A. N.]** КИРИЧЕНКО, А. Н. Водные полужесткокрылые (Hemiptera: Hydrobiotica и Sandaliorhyncha), собранные Д. А. Тарноградским в с. -з. Персии и на Кавказе. [Aquatic Hemiptera-Heteroptera collected by Tarnogradsky in northwestern Persia and in the Caucasus.] [German summary.] Работы Северо-Кавказской Гидробиологической Станции. (*Trav. Sta. Biol. Caucase du Nord.*) 3(1/3): 45-62. Map. 1930.—The author lists 11 spp. from Persia and 25 spp. from North Caucasus, with locality and date records. *Microvelia reticulata* and *Micronecta minutissima* are new to the Caucasus. Study of *Notonecta* material in various collections shows the following distribution of the 4 recognized spp. of the eastern Palaearctic: *N. maculata,* E. and SE. Persia; *N. marmorea,* southern Russia to Persia and Turkestan; *N. glauca,* N. and S. Russia to Siberia, Mongolia, and Chinese Turkestan; *N. obliqua,* S. Russia to Turkestan. There is also a supplement to that part of the author's "Hemiptera-Heteroptera Faunae Caucasicae, I" (1918) which deals with aquatic Hemiptera.—*From author's summary.*

5704. **NIÑO, FLAVIO L.** Breves noticias sobre el Triatoma infestans en la República Argentina. *Rev. Soc. Ent. Argentina* 1(4): 55-64. Map, 2 pl., 1 fig. 1927.—Description and figures of eggs, larvae, nymphs, and adults of this blood-sucking sp., with notes on life history and habits in captivity. A distributional map is given.

5705. **SCHOUTEDEN, H.** Un genre nouveau d'Etrichodien du Congo. *Rev. Zool et Bot. Africaines* 20(2): 207-208. 1931.—**OKONDO** (p. 207), near *Katanga* and *Afrocastra,* type *O.* **collarti** (p. 207), Belgian Congo.

5706. **WALLEY, G. STUART.** A review of the genus Palmacorixa Abbott (Hemip., Corixidae). *Canadian Ent.* 62(5): 99-106. 2 pl. 1930.—The genus, type *P. gillettii** Abb., is re-defined, original description is quoted, and a key to the spp., based on ♂♂, is given. *P. gillettii* **v. confluens*** (p. 103), and *P.* **nana*** (p. 106), Quebec, types in Canadian Nat. Coll. *P. gillettii, P. bueoni,* and *P. mexicana* are discussed.

HOMOPTERA

5707. **BLÖTE, H. C.** Nieuwe Naamlijst van Nederlandsche Jassidae. [New name-list for the Jassidae of the Netherlands.] *Tijdschr. voor Ent.* 70(3/4): 210-231. 1927.—These number 161; the total of all other Homoptera known to the country is 459, of which 221 are Cicadariae, 31 Psyllidae, 3 Aleurodidae, 166 Aphidoidea, and 38 Coccidae.

5708. **BUEKER, ELMER D.** Two new mealy-bugs (Coccidae) in nests of ants (Lasius). *Amer. Mus. Novitates* No. 453. 1-3. 8 fig. 1931.—*Cryptoripersia* **leucocystis*** (p. 1) and *Trionymus* **interjecti*** (p. 3), Colorado.

5709. **DELONG, DWIGHT M.** A new species of bean leaf-hopper from Haiti. *Canadian Ent.* 62(4): 92-93. 1 fig. 1930.—*Empoasca* **fabalis*** (p. 92).

5710. **FROGGATT, WALTER W.** Notes on gall-making coccids with descriptions of new species. II. *Proc. Linnean Soc. N. S. Wales* 55(4): 468-474. 2 pl. 1930.—*Apiomorpha* **dumosa** (p. 468), Victoria on *Eucalyptus* sp.; *A.* **longmani*** (p. 469), *A.* **annulata*** (p. 469), and *A.* **fusiformis*** ♀ (p. 470), all 3 Queensland, on *Eucalyptus* sp., and types in Queensland Mus.; *A.* **spinifer** ♀ (p. 470), Queensland, on *Eucalyptus* sp. The galls of a number of previously known spp. of *Apiomorpha* are described and recorded from various spp. of *Eucalyptus.*

5711. **GILLETTE, C. P., and M. A. PALMER.** Notes on Colorado Aphididae. *Ann. Ent. Soc. Amer.* 21(1): 1-24. 4 pl. 1928.—*Macrosiphum* **longipes*** (p. 1) on *Artemisia tridentata; M.* **glabrum*** (p. 2) on *Artemisia dracunculoides; Macrosiphoniella* **frigidicola*** (p. 3) on *A. frigida, A. abrotanum,* and *Eurotia* [*Eurotium?*]

lanatum; Macrosiphum **filifoliae*** (p. 5) on *A. filifolia* and *A. vulgaris; M.* **jonesii** (p. 7) on *A. cana; Anuraphis* **minutissima*** (p. 8) on *A. filifolia; A.* **filifoliae*** (p. 9) on *A. filifolia; Chaitophorus* **populella*** (p. 15) from *Populus* spp.; *Myzus* **alpinus*** (p. 18) on *Pedicularis bracteosa.* The new name **essigi** (p. 18) is proposed for *Eichochaitophorus populifolii* Essig preocc. Critical notes, based on examination of type slides, are given for: *Anuraphis canae* A. hermistonii, A. oregonensis*, Aphis artemisicola.* There are also notes on *Macrosiphum valerianae*.*

5712. **GREEN, E. ERNEST.** Two new mealy bugs from India. *Ann. and Mag. Nat. Hist.* 7(42): 557-560. 2 fig. 1931.—*Ripersia* **oryzae*** (p. 557), Madras, on rice-plants and various wild grasses and sedges; *Rhiziecus* **cynodontis*** (p. 559), at the roots of *Cynodon dactylon.*

5713. **GREEN, E. ERNEST.** Fauna Sumatrensis. (Bijdrage Nr. 65.) Coccidae. [In English.] *Tijdschr. voor Ent.* 73(3/4): 279-297. 10 fig. 1930.—The present paper is based on collections made by Edward Jacobson in Sumatra, 1923-1927. Only 6 spp. of Coccidae have been previously reported from this region. The present collection contains 23 spp., listed here, and including: *Drosicha* **sumatrensis*** (p. 281); *Icerya* (*Crypticerya*) **nuda*** (p. 282), on *Gigantochloa aspera; Pseudococcus* **jacobsoni*** (p. 284), on *Ficus retusa; Lecanium* **bambusicola*** (p. 285), on *Bambusa nana; L.* (*Saissetia*) **crassum*** (p. 287), on *Broussonetia papyrifera,* and from India on *Ficus religiosa* and *Psidium guyava; Ctenochiton* **formicophilus*** (p. 288), in nests of ant *Dolichoderus carbonarius-latisquama* associated with *Ctenochiton inclusus* and *Anomalococcus multipori; C.* **inclusus*** (p. 289), in nests of ants associated with *C. formicophilus* and *Anomalococcus multipori; Vinsonia* **magnifica*** (p. 290), on *Mangifera odorata* and *Eugenia malaccensis; Aulacaspis* **sumatrensis*** (p. 292), on *Mangifera odorata.* Types in author's coll.

5714. **KUSNEZOV, VICTOR.** Asiatische Penthimia-Arten. *Ent. Nachrichtenbl.* 5(1): 8-12. 1931.—*Penthimia nigra* v. **caucasica** (p. 10), Caucasus; *P.* **nana** ♂ (p. 12), Amur [Siberia].

5715. **KUWANA, INOKICHI.** The diaspine Coccidae of Japan, VI. Genus Phenacaspis. *Min. Agric. & Forestry Japan Sci. Bull.* 2. 1-14. 3 pl. 1931.—Includes a key to the 6 spp. described, with *Phenacapsis* **quercus*** (p. 6) on *Quercus myrsinaefolia,* Yokohama; *P.* **fujicola*** (p. 8) on leaves of *Wistaria chinensis* v. *multiguga,* Angyo; *P.* **momi*** (p. 9), on leaves of *Abies firma,* Mt. Hakko, Shiznoka-ken; *P.* **kentiae*** (p. 10) on *Kentia* and other green house plants, Yamamoto.

5716. **LAING, F.** An interesting aphid and coccid from the Argentine Republic. *Rev. Soc. Ent. Argentina* 1(4): 23-26. 2 fig. 1927.—*Myzocallis* **edwardsi*** ♀ (p. 23), on *Nothofagus* sp.; *Fagisuga triloba*,* emended description.

5717. **LALLEMAND, V.** Homoptères nouveaux de la Somalie Italienne méridionale. *Boll. Soc. Ent. Ital.* 62 (10): 185-187. 1930.—*Hilda* **paolii** (p. 185), on *Abutilon; Sepullia* **somalica** (p. 186), on *Abutilon asiaticum* and on cotton.

5718. **LALLEMAND, V.** Decription de trois nouveaux Homoptères Congolais. *Rev. Zool. et Bot. Africaines* 20 (3): 302-304. 1931.—**LEPTOFLATA** (p. 302) (Flatidae), near *Flatamorpha* and *Sanurus,* type *L.* **seydeli** (p. 302), type Congo Mus.; *Ricania* **lujai** (p. 303) and *R.* **burgeoni** (p. 303), both in author's coll. All 3 from Belgian Congo.

5719. **MUIR, F.** New and little-known Fulgoroidea in the British Museum (Homoptera). *Ann. and Mag. Nat. Hist.* 7(40): 297-314. 11 fig. 1931.—Types of the following spp. are in Brit. Mus. Tropiduchidae: *Daradax* **grandis*** ♀ (p. 297), Siam; *Mulucha* **variegata** ♀ (p. 298), Gold Coast; *Numicia* **viridis** (p. 299), Natal, and var. **infuscata** (p. 299); *N.* **nitida*** (p. 300), Uganda; **CATULLIARIA** (p. 300), type *C.* **njalae*** (p. 300), Sierra Leone; *C.* **ugandae*** (p. 301), Uganda; **AMACLARDEA** (p. 301), near *Amapala* and *Clardea,* type *A.* **gowdeyi** ♀ (p. 302), Jamaica; *Neotangia* **munda** ♂ (p. 302), Brit. Guiana; *N.* **emarginata** (*Dictyophara e.* Uhler) (p. 303); *Tambinia* **zonata** ♀ (p. 303), Madras Presidency; **PARAGARUMNA** (p. 303), type *P.* **pseudolepida*** ♀ (p. 304), Siam.; *P.* **melichari** (*Garumna m.* Baker) (p. 305); *Tangidia* **uhleri** (p. 305), Grenada; *Rotunosa* **intermedia** ♂ (p. 306), Honduras; *Neommatissus* **bakeri** ♀ (p. 306), Philippine Is.; **STENOCONCHYOPTERA** (p. 307), related to *Conchyoptera* and *Turneriola,* type *S.* **darwini*** (p. 308); also *Turneriola* **breviceps** ♂ (p. 308), and *T.* **hirsuta** ♀ (p. 310), all 3 Cape Province; *Ommatissus* **bimaculatus** ♀ (p. 310), United Provinces. *Buca simplex** Walker is referred to the Issidae. Eurybrachidae: **MICROEURYBRACHYS** (p. 312), type *M.* **vitrifrons*** ♂ (p. 313), Pondoland.

5720. **MUIR, F.** New and little-known Fulgoroidea from South America. *Proc. Hawaiian Ent. Soc.* 7(3): 469-480. 1 pl. 1931.—*Taosa* **viridis** ♂* (p. 470), Brazil, type in Stockholm Mus.; *T.* **bimaculifrons*** (p. 470), Brazil (type) and Ecuador, and *T.* **lineatifrons** ♀* (p. 471), Brasil, types in H.S.P.A. Exp. Sta., Honolulu; *T.* **pseudoscriptiventris** (p. 472), Brazil, type in Brit. Mus.; *T.* **scriptiventris** (*Cladodiptera s.* Walker) (p. 472); *T.* **holmgreni** ♂* (p. 472), on frontier between Peru and Bolivia, east side of Andes, type in Stockholm Mus.; *T.* **viridifrons** (*Cladodiptera v.* Walker) (p. 473); *T.* **sororcula** (*Dictyophora s.* Berg) (p. 473); *T.* **rufa** ♀* (p. 473), Brazil, type in Brit. Mus.; *T.* **herbida*** (*Dichoptera h.* Walker) (p. 474); *T.* **paraherbida*** (p. 474), British Guiana, type in H.S.P.A. Exp. Sta.; **BRACHYTAOSA** (p. 474), (*Dictyophoridae*) near *Taosa,* based on *B.* **venturii** ♀* (p. 475), Argentina, type in Brit. Mus.; *Alcestis* **costalis** ♂* (p. 475) and *A.* **romani*** (p. 476), Brazil; **CARRIONIA** (p. 476), (Lophopidae) near *Jivatma,* based on *C.* **flavicollis** ♀ (p. 477), Ecuador, type in Brit. Mus.; *Hesticus* Walker is referred from Dictyophoridae to Lophopidae; *H.* **rufimanus** (*Cladodiptera r.* Walker) (p. 480); *H.* **sanguinifrons** ♀* (p. 480), Ecuador. —*O. H. Swezey.*

5721. **SCHMIDT, EDMUND.** Gynopygoplax schultzei, eine neue Cercopide von den Philippinen. (Hemipt.-Homopt.) *Ent. Rundschau* 48(6): 64. 1931.—*G.* **schultzei,** Luzon. Type in Berlin-Dahlem Mus.

5722. **SLEESMAN, J. P.** A monographic study of the North American species of Euscelis and allied genera. (Homoptera—Cicadellidae.) *Ent. Americana* [*Brooklyn*] 10(2): 87-148. 10 pl. 1929(1930).—*Drylix* **truncatus*** (p. 100), Ohio; *Ophiola* **luteola*** (p. 120), Massachusetts; **AMBLYSELLUS** (p. 131), type *A.* **curtisii*** (*Athysanus c.* Fitch) (p. 131); *Thamnotettix* **tetanus*** (*Athysanus t.* Osborn & Ball) (p. 132); *Deltocephalus* **dentatus** (*Athysanus d.* Osb. & Ball) (p. 133). Types of new spp. in De Long coll. Redescriptions and keys to the genera and spp. are given, also food habits, distribution, and ecological habitats. A detailed comparative study of the internal ♂ genitalia* is included.—*J. P. Sleesman.*

HYMENOPTERA

S. A. ROHWER, *Editor*

(See also in this issue Entries 3294, 3915, 4372, 4606, 4628, 4647, 4656, 4683, 4708, 4713, 4719, 4720, 4723, 5625, 5632, 5695, 6043, 6044, 6046, 6048)

5723. **BENOIST, R.** Une nouvelle espèce d'Osmie d'Algérie. *Ann. Soc. Ent. France* 96(3/4): 270. 1927; 97(1/2): 18. 1928.—*Osmia* **armala** (p. 270), type in Paris Mus.; *O.* **insolita** (p. 18), type in coll. J. Pérez.

5724. **BEQUAERT, J.** Podalonia violaceipennis (Lepeletier), a dimorphic fossorial wasp. (Hymenoptera.) *Bull. Brooklyn Ent. Soc.* 24 (4): 220-221. 1929.—A case of color dimorphism among the Hymenoptera.

P. luctuosa ♀ and *P. violaceipennis* ♂ were found mating. This, together with the fact that the latter was recently raised from a *P. luctuosa* parent, confirms the conjecture that *P. violaceipennis* is a dimorphic sp.

5725. BRADLEY, J. CHESTER. The species of Campsomeris (Hymenoptera-Scoliidae) of the plumipes group, inhabiting the United States, the Greater Antilles, and the Bahama Islands. *Proc. Acad. Nat. Sci., Philadelphia* 80: 313-337. 3 maps. 1 pl. 1928.—All spp. of the scoliid wasps of the subg. *Campsomeris*, with the exception of 4, are discussed: *C. plumipes* (including ssp. *fossulana* and *confluenta*), *C. tolteca*, and *C. pilipes* within the U. S. A.; *C. tolteca*, *C. dorsata*, *C. trifasciata*, and *C. t.* ssp. **nassauensis** (p. 322) (Bahamas, type in Cornell Univ.), in Central Amer. and the West Indies. These constitute what the author calls the *plumipes* group, about which there has been considerable uncertainty in regard to status and distinctions. A large amount of material from the main collections of the U. S. A., as well as from the museums of Budapest and Vienna, was studied.—*L. O. Howard.*

5726. BRÈTHES, JEAN. Hyménoptères Sud-Américains du Deutsches Entomologisches Institut: Terebrantia. *Ent. Mitteil.* 16(5): 319-335. 3 fig. 1927.—[For abstract of the first half of this paper see B. A. 3(1/3): entry 3853.] Ichneumonidae, Pimplinae, tribe Acoenitini: **LEPTOGLYPHIS** (p. 319), with *L.* **minasensis** (p. 320); **NEOGABUNIA** (p. 322) (tr. Xoridini), with *N.* **paulistana*** (p. 322). Braconidae, Coenocoelininae: **PLECTOBRACON** (p. 325), with *P.* **testaceus** (p. 326), and *P.* **minor** (p. 326). Chalcididae, Eulophinae: **PARASYMPIESIS** (p. 328), with *P.* **cecidicola** (p. 328); **TROPIMIUS** (p. 329), with *T.* **willei*** (p. 329); **IDIOBIA** (p. 330) (Miscogasterinae), with *I.* **schmidti** (p. 330), Costa Rica. Serphidae, Diapriinae: **KIEFFEROPRIA** (p. 333), with *K.* **horni** (p. 334). Other new spp. are: *Casinaria* **brasiliensis** (p. 323); *Parabatus* **neotropicus** (p. 324); *Astiphromma* **albitarse** (p. 324); *Ipobracon* **horni** (p. 327); *I.* **guaruja** (p. 327); *Bracon* **pauloënsis** (p. 328); *Bruchobius* **brasiliensis*** (p. 329); *Eucharomorpha* (?) **brasiliensis** (p. 331); *Spilochalcis* **fischeri** (p. 332); *S.* **T-nigrum** (p. 332); *Syntomaspis* (?) **alegrensis** (p. 333); *Tropidobria* (?) **brasiliana** (p. 334); *Lophyroides* **paraguayensis** (p. 335), Paraguay; *Ptilia* **uberaba** (p. 335); *Chelonus* **mexicanus** (*C. annulipes* Cameron). Except where otherwise given, new spp. are from Brazil. There are taxonomic notes on *Cecidopimpla ronnai*.—*C. E. Mickel.*

5727. BUCKLE, J. W. Ancistrocerus capra and the larvae of Epargyreus tityrus. (Hymenop.) *Canadian Ent.* 61(12): 265-266. 1929.—The hunting, capture, and stinging of the larva of the silver spotted skipper (*E. tityrus*) by the wasp *A. capra*, are described.

5728. BUCKLE, J. W. Croesus varus (De Villaret) (Hym.). *Canadian Ent.* 62(1): 21-22. 1930.—The author reports the taking of a specimen of this sawfly, which is quite rare in N. Amer., at the flowers of the common parsnip (*Pastinaca sativa*) at the foot of Mt. Royal, Canada. The only previous record of the sp. in N. Amer. is apparently that of a ♂ taken in Nova Scotia.

5729. COCKERELL, T. D. A. Descriptions and records of bees. CXXII. *Ann. and Mag. Nat. Hist.* 5(25): 156-163. 1930.—*Bombus discrepans*, emended description; *Trigona ambusta*, *T. bakeri*, and *T. biroi*, listed as new to Siam; *Augochlora* (*Pseudaugochloropsis*) **ogilviei** ♀ (p. 157); *A.* **phanerorhina** (p. 149); *A.* (*Augochloropsis*) **cataractae** (p. 159); *A.* (*A.*) **semitoralis** (p. 160); *Halictus* **potaroënsis** (p. 161); *Sphecodes biroi* **mariae** ♂ (p. 162), Siam; the ♀♀ of *Habropoda sutepensis* Ckll. and *Osmia pseudamala* Ckll., are described. Except where otherwise stated, new spp. are from Brit. Guiana.

5730. COCKERELL, T. D. A. New bees from the Mesa Verde National Park, Colorado. *Jour. New York Ent. Soc.* 37(4): 441-448. 1929.—*Emphoropsis* **citulus** ♂ (p. 442); *Anthophora* **subignava** ♀ (p. 443); *Nomada* **frankei** ♂ (p. 443); *Andrena* **viridibasis** ♀ (p. 444); *A.* **speculifera** ♀ (p. 444); *A.* (*Trachandrena*) **abjuncta** ♀ (p. 445); *A.* **heterura** ♀ (p. 445); *A.* (*Pterandrena*) **platyrhina** ♀ (p. 446); *A.* (*Trachandrena*) **tardula** ♀ (p. 447).

5731. COSTA LIMA, A. da. Sur le Dielocerus formosus Klug. (Hymenoptera, Tenthredinoidea.) *Compt. Rend. Soc. Biol.* 97(31): 1366-1367. 1927.—Some latent larvae of *D. formosus* were found in material from Pernambuco. A case is cited of larva of this sp. remaining latent for a period of 3 years.

5732. CRÈVECOEUR, AD., et J. de WALSCHE. Description de trois Hyménoptères gynandromorphes ou monstrueux. *Bull. et Ann. Soc. Ent. Belgique* 69(1/2): 37-39. 3 fig. 1929.—A specimen of *Halictus calceatus**, of *Andrena albicans** and of *Vespa vulgaris** is described.

5733. CROS, AUGUSTE. Contribution à la biologie de Scolia interstincta Klug. *Bull. et Ann. Soc. Ent. Belgique* 69(10/11): 354. 1930.—The author confirms the identity of the victim of *S. interstincta* as *Aethiessa floralis*.

5734. CUSHMAN, R. A. Three new ichneumonoid parasites of the rice-borer (Chilo simplex (Butler)). *Proc. Hawaiian Ent. Soc.* 7(2): 243-245. 1929.—*Centeterus* **alternecoloratus** (p. 243), *Dioctes* **chilonis** (p. 244), and *Chelonus* **chilonis** (p. 244), all China, types in U. S. Nation. Mus.

5735. CUSHMAN, R. A. Miscellaneous notes and descriptions of ichneumon-flies. *Proc. Soc. Nation. Mus.* 72(Art. 13): 1-22. 2 fig. 1927.—Short revisions of N. Amer. spp. of several genera, key to N. American spp. of *Agrothereutes*, *Protarchoides*, and *Ceratogastra*. *Ischnopsidea* **alberta** ♀ (p. 1), *Cryptus* **caligatus** ♀ (p. 2), and *Agrothereutes* **rufopectus** ♀ (p. 4), Alberta; *A.* **slossonae** ♀ (p. 4), New Hampshire; *A.* **microalatus** ♀ (p. 4), New England; *Ischnus* **doddi** (p. 5), Uruguay; *Trichocryptus* **bicolor** (p. 8), with critical notes on the genus; **TRICHESTEMA** (p. 9) resembling *Trichocryptus*, based on *T.* **helcostizoides*** ♀ (p. 9), S. Dakota; *Ephialtes* **nigroaeneus** ♀ (p. 10), Jamaica; *E.* **polychromus** ♀ (p. 11), Cuba; *Hemitales hemipterus* (Fabr.) (=*H. insignipennis* Schmied.); *Syrphoctonus* **foutsi** (p. 12), Maryland; *Himertus* Thomson (=*Clepsiporthus* Davis, *Neoprotarchus* Cushman); *Himertus* **ater** (*Neoprotarchus a.* Cushman); *H.* **flavidus** (*Clepsiporthus f.* Davis) (p. 14); *H.* **dakota** ♀ (p. 14), S. Dakota; *H.* **rubiginosus** (*Mesoleptus* ? *r.* Cresson) (p. 15); *Protarchoides* **pallipes** ♀ (p. 15), Alberta; *Phrudus* **dakota*** (p. 17), S. Dakota; *P.* **exarealatus** ♀ (p. 19), New York; notes on the systematic position of *Phrudus*; *Podogaster* **cactorum** (p. 19), Argentina; *Ceratogastra* **trifasciata** ♀ (p. 21), Massachusetts; *C.* **rufa** (*Dyspetes rufus* (Prov.)) (p. 21). Types in U. S. Nation. Mus.

5736. EBEL, GUILLERMO. El Syntomaspis laetus. *Rev. Chilena Hist. Nat. Pura y Aplicada* 32: 167-170. 1 fig. 1928(1929).—This sp., whose larvae are found in the galls of "coliguay," is described and figured. The author believes that it is parasitic upon *Exurus colliguayae* and feeds upon it.

5737. FERRIÈRE, CH. Notes on some chaldic parasites of lac-insects. *Bull. Ent. Res.* [*London*] 19(2): 171-176. 2 fig. 1928.—*Tachardiaephagus tachardiae* (How.) (=*T. thoracicus* Ashm., *Lissencyrtus troupi* Cameron); *Lissencyrtus somervilli* is included in the genus *Tachardiaephagus* (p. 171); *Elasmus claripennis** (Cam.) (=*E. colemani* Mahdih.); *Coccophagus tschirchii** Mahdih., described for the first time (p. 173); *Tetrastichus purpureus** (Cam.) (=*T. immsii* Mahdih.).

5738. FINZI, BRUNO. Quarto contributo alla conoscenza della fauna mirmecologica della Venezia Giulia. [Fourth contribution of the ants of Venezia Giulia, Italy.] *Boll. Soc. Ent. Italiana* 60(8): 128-130. 1928.—A short list, including *Leptothorax sordidulus* v. **tergestina** (p. 129).

5739. FORSIUS, RUNAR. Eine neue Cephide aus Japan. *Notulae Ent.* [*Helsingfors*] 8(3): 67-69. 1928.—*Monoplopus* **japonicus** ♂ (p. 67). A key is given to the 4 known spp. of *Monoplopus*.

5740. FORSIUS, RUNAR. Über neue oder wenig bekannte Tenthredinoiden aus Sumatra. *Notulae Ent.* [*Helsingfors*] 9(2): 53-64; (3): 65-70. 1929.—Of 179

specimens, collected by Edward Jacobson of Fort de Kock, 2 genera and 10 spp. are new and here described, besides 4 genera and 4 spp. new to Sumatra. Types in Naturhist. Mus., Leyden. *Corporaalinus* **jacobsoni** ♀ (p. 54); *Anapeptamena* **montana** ♂ (p. 56); *A.* **albicornis** ♀ (p. 57); *Canonias* **jacobsoni** (p. 58); **CANONIADES** (p. 59), resembles *Canonias,* type *C.* **jacobsoni** ♀ (p. 60); *Athalia* **funebris** (*A. proxima* var. *f.* Forsius) (p. 61), ♂ described for the first time; *Stromboceridea* **jacobsoni** (p. 61); *Neothrinax* **sumatranus** ♂ (p. 64); *Salatigia roepkei,* new to Sumatra; **JACOBSONIELLA** (p. 65), resembling *Athlophorus* and *Canonias,* type *J.* **brachycera** ♀ (p. 66); *Athlophorus orbitalis,* ♂ described for the first time; *A.* **sumatranus** (p. 67); *A.* **similis** ♀ (p. 68); *Tenthredella umboginera,* ♂ described for the first time.

5741. FORSIUS, RUNAR. Notes on some little known Australian Tenthredinoidea. *Notulae Ent.* [*Helsingfors*] 9(3): 81-84. 1929.—*Pterygophorus interruptus* v. **queenslandicus** (p. 81), *Perga hartigi* Westw. ♂, and *Diphamorphos nigriscens* Roh. ♂, are described for the first time; *Clarissa variabilis* v. **sternalis** (p. 83). Types of n. vars. in Wilson coll. *Neoeurys caudatus, N. pusillus,* and *N. leai* are new to Victoria.

5742. FORSIUS, RUNAR. Perga titschacki eine neue australische Tenthredinoide. *Notulae Ent.* [*Helsingfors*] 9(3): 85-86. 1929.—*Perga* **titschacki** ♀ (p. 85), Victoria, type in Naturhist. Mus., Hamburg.

5743. FRISON, THEODORE H. A contribution to the knowledge of the life history of Bremus bimaculatus (Cresson) (Hym.). *Ent. Amer.* 8(4): 159-223. 4 pl. 1928.—Information is given regarding technique used in securing data, and series of experiments and observations regarding this sp. of social bee. Data on nesting habits, anthophilous habits, duration of the developmental stadia, seasonal appearance of the castes, caste ratios, size of colonies, color variation of adults, cocoons and food storage, mating, and domestication, are given. Bibliography.—*T. H. Frison.*

5744. GEDDE, FRIEDRICH. Feuer im Ameisenhaufen! *Kosmos* 27(2): 47-48. 4 fig. 1930.—When a candle was inserted in an ant-hill in the Austrian Alps, and lighted, the ants (*Formica rufa*) quenched the flame in 4½ minutes by sprinkling it with a fluid from the hind end of their bodies. To do this, they assumed an upright position, with the hind end of the body directed forward. This was done by large ants, the smaller ones giving no visible aid.

5745. GIRAULT, A. A. Notes on and descriptions of chalcid wasps (Chalcididae) in the South Australian Museum. *Rec. S. Australian Mus.* 3(3): 309-338. 1927.—An annotated enumeration, including: *Stethynium* **poema** (p. 309), S. Australia; *Hexanusia* **sanguinithorax** (p. 310), host, *Syrphus balteatus; Anusoidea* **varia** (p. 310), N. S. Wales; *Taneostigmodes* **unifascia** (p. 311), S. Austr.; *Eupelmus* **unipunctipennis** (p. 311), Tasmania; *Mesamotura* **keatsi** ♀ (p. 312); *M.* **aeschyli** (p. 312); **SCHIZONOTELLA** (p. 312) (Cleonyminae), type *S.* **eupelmoidea** ♀ (p. 312); *Aligherinia* **angustifrons** ♀ (p. 313); *Epistenia* **speciosissima** (p. 313); *Thaumasura* **marmoratipennis** ♀ (p. 314); *T.* **pulchripes** ♀ (p. 314); *T.* **auritegula** ♀ (p. 315); *T.* **dentatitibia** ♀ (p. 315), Victoria; *Westwoodiana* **purpureipes** (p. 316); *Systolomorphella* **silvifilia** ♀ (p. 316), Tasmania; *Dinoura* **pulchra** ♀ (p. 316), S. Austr.; **EPISYSTOLE** (p. 317) (Cleonyminae), type *E.* **peota** (p. 317); *E.* **meteora** (p. 317); *Perilampus* **cupreovarius** (p. 318) and *Eurytomomma* **atricoxa** ♀ (p. 319), S. Austr.; *Eurytoma* **eylandti** (p. 320), N. Territory; *E.* **silvipuer** ♀ (p. 320), *E.* **saltinatus** ♀ (p. 320), and *E.* **filisilvae** ♀ (p. 321), S. Austr.; *Decatoma* **sidnica** ♀ (p. 321), N. S. Wales, reared from *Ficus rubiginosus; D.* **persephone** ♀ (p. 321), reared from *Ficus* fruit; *Chalcis pomonae* v. **edna** ♀ (p. 322), *C.* **juno** (p. 323), *C.* **minerva** ♀ (p. 323), and *C. schuberti* v. **mariana** ♀ (p. 323), S. Austr.; *C.* **puella** (p. 323); *C.* **aligherei** ♀ (p. 324); *C.* **poema** ♀ (p. 324); *Phasgonophora* **miltoni** (p. 325); **METARRETOCERA** (p. 325) (Chalcidinae, Haltichellini), type *M.* **burnsi** ♀ (p. 325); *Xenarretocera* **tricarinata** ♀ (p. 325); *Pareniaca* **emersoni** ♀ (p. 326); *P.* **atricornis** ♀ (p. 326), and *Stomatoceras carlylei* v. **salti** (p. 327), S. Austr.; *S.* **saltensis** ♀ (p. 327), Tasmania; *S.* **luci** ♀ (p. 327), W. Austr.; *Chalcidellia* **guttatipennis** ♀ (p. 327); a key to the *Irichohaltichella,* with *I.* **silvae** ♀ (p. 329), S. Austr., and *I.* **silvifilia** ♀ (p. 329), N. S. Wales; *Macrodontomerus* **aligherini** ♀ (p. 329), N. S. Wales, type in Macleay Mus.; *Podagrionella* **julia** (p. 330), S. Austr.; *Megastigmus* **quadrisetae** ♀ (p. 330), and *M.* **sexsetae** (p. 331), Tasmania; *Neomegastigmus* **ater** (p. 332), from galls on leaves of *Eucalyptus obliqua,* S. Austr.; **PSEUDIDARNES** (p. 332) (Callimominae, Idarnini), type *P.* **minerva** ♀ (p. 332), N. S. Wales, from *Ficus rubiginosus; Koebelea fusca* v. **flava** ♀ (p. 332), N. Terr., from *Ficus glomeratus; Ormyromorpha* **silvifilia** ♀ (p. 333), N. S. Wales; *O.* **aeneiscapus** ♀ (p. 333) and *Tomocera* **viridivertex** ♀ (p. 333), S. Austr.; *Ophelosia* **aligherini** ♀ (p. 334), Tasmania; *O.* **keatsi** (p. 334), S. Austr.; **PSEUDIPARELLA** (p. 334) (Pteromalinae, Diparini), type *P.* **emersoni** ♀ (p. 335), Tasmania; *Isoplatoides* **quadripustulatus** ♀ (p. 335), N. S. Wales; *Systasis* **keatsi** ♀ (p. 335), S. Austr.; *Erotolepsiella* **Nemorum** ♀ (p. 336) and *Closteromyiia* **speciosa** (p. 336), Tasmania; *Entedonella* **aereiscapus** ♀ (p. 337), S. Austr.; *Pleistodontes* **nigricaput** (p. 337), from *Ficus rubiginosus,* S. Austr. and N. S. Wales; *Blastophaga* **niveipes** (p. 338), from *Ficus glomeratus,* N. Terr.; *B.* **semiauriceps** (p. 338), S. Austr. Except where otherwise given, new spp. are from Queensland.

5746. GOURLAY, E. S. A note on the validity of the proctotrypoid genus Tanyzonus Marshall. *Trans. & Proc. New Zealand Inst.* 58(3): 310. 1927.—*T. bolitophilae* Marsh. appears to be distinct from *Betyla fulva* Cameron.

5747. HANNES, F. Noch einmal "Der Bienenflugton." Ein Nachtrag zu dem Aufsatz "Bienenflugton und Flügelschlagzahl" im Märzheft dieser Zeitschrift. *Biol. Centralb.* 46(9): 563-564. 1926.—The author gives the results of further observations on the flight tones of bees and concludes that there are 2 fundamental tones, an octave apart. Comparisons by ear are erroneous and only by the use of tuning forks can correct decisions be made.—*H. F. Wilson.*

5748. HARTMANN, FR. Beiträge zu Badens Ameisenfauna. *Mitteil. Bad. Land. Naturkunde und Naturschutz.* 2(1/2): 12-16. 1926.—The following are recorded: Ponerini, 1 genus (1 sp.); Myrmicini, 6 genera (9 spp., several subspp.); Dolichoderini, 2 genera (2 spp.); Camponotini, 4 genera (12 spp., numerous subspp.).

5749. HERBST, PAUL. Nuevos ponpilidos chilenos. *Rev. Chilena Hist. Nat. Pura y Aplicada* 32: 135-139. 1 pl. 1928(1929).—*Pompilus* **smaragdinus*** (p. 135), *P.* **eximius*** ♀ (p. 136), *P.* **araucanus*** (p. 138).

5750. KUZNETZOV-UGAMSKIJ, N. N. Vorläufige Uebersicht über die mittelasiatischen Formen der Gattung Messor (Hym., Form.). *Folia Myrmecologica et Termitilogica* 1(7): 89-94. 1927.—A key which includes the following from Central Asia and Russian Turkestan: *M. barbarus meridinalis* vars. **denticulatus** (p. 90), **glabriusculus** (p. 90), **inermis** (p. 90), and **infumatus** (p. 91); *M. structor* ssp. **turanicus** (p. 91); *M. s.* var. **subpolitus** (p. 92); *M. similis* v. **striolatus** (p. 92); *M.* **similis** (p. 93); *M. s.* var. **clypeatus** (p. 93); *M.* **vicinus** (p. 94); *M.* **variabilis** (p. 94).

5751. [KUZNETSOV-UGAMSKII, N. N.] КУЗНЕЦОВ-УГАМСКИЙ, Н. Н. Материалы по мирмекологии Туркестана. III. **[Contribution to the myrmecology of Turkestan.]** (In Russian and German.) Русское Энтомологическое Обозрение. (*Rev. Russe Ent.*) 21(3/4): 186-196. 23 fig. 1927.—Keys are given to the spp. and subspp. of *Acanthomyops,* including *A. niger* ssp. **nitidus*** (p. 188); *A. niger alienus* vars. **turkmenus*** (p. 189), **pilicornis*** (p. 189), and **flavidus*** (p. 189); and of *Myrmica,* including *M. rugosa dshungarica* vars. **infuscata** (p. 192) and **brevispina** (p. 193), and *M. scabrinodis* ssp. **intermedia** (p. 194). Notes and figures are also given on other forms.

5752. MENOZZI, C. Due nuove specie di Eciton Latr. (Hymenoptera—Formicidae). *Folia Myrmecologica et*

Termitologica 1(2/3): 29-32. 2 fig. 1926.—*E.* (s. str.) velutatus* ♂ (p. 30), Costa Rica; *E.* (*Labidus*) sedulus ♂* (p. 31), Colombia, types in author's coll.

5753. **MERCET, R. GARCIA.** Afelínidos paleárticos (Hym. Chalc.). *Bol. R. Soc. Espan. Hist. Nat.* 28(5): 289-294. 4 fig. 1928.—*Casca* occidentalis* Silvestri & Mercet (p. 289), and *Encarsia* longicornis* (p. 292), both from Spain.

5754. **OGLOBLIN, A. A.** Two new species of Acolus (Scelionidae, Hym.) from podkarpathian Russia. *Casopis Ceskoslov. Spol. Ent.* 26(3/4): 51-55. 2 fig. 1929.—*A.* černosvitovi* (p. 51); *A.* aureopetiolatus* (p. 53).

5755. **RAYMENT, TARLTON.** The plumed bees. *Victorian Naturalist* 46(8): 155-162. 1 pl., 1 fig. 1929.—The range of *Trichocolletes venustus** is extended from Queensland to Victoria, where it frequents a bitter-pea (*Daviesia ulicina*). The ♂ is described for the first time. *Paracolletes marginatus* also occurs in Victoria, but harvests from different plants. Both species excavate shafts in the ground, where their larvae remain for 10 months. *Trichocolletes* nigroclypeatus* ♀ (p. 162), Victoria, frequents *Daviesia corymbosa*. All 3 spp. have a high-pitched note in flight.

5756. **RÉAUMUR, de.** Histoire des fourmis. Avec notes de **CHARLES PÉREZ.** (Encyclopédie entomologique Vol. 11). 116 p. Paul Lechevalier: Paris, 1928. 40 fr.

5757. **ROMAN, A.** Oxford University Greenland Expedition, 1928. Ichneumonidae collected by Major R. W. G. Hingston on the Oxford University Expedition to Greenland, 1928. *Ann. and Mag. Nat. Hist.* 5(27): 281-288. 1930.—This collection consists of 25 specimens representing 13 spp., for which dates, localities, habitats, and taxonomic notes are given. Though not represented in the collection, *Cryptus fabricii* Schiödte is considered a race of *C. laborator* Thbg. *Plectiscus* arcticus ♀ (p. 284); *Bauchus monileatus* Gr. (=*B. palpalis* Ruthe); *Mesoleius* groenlandicus ♂ (p. 285); *Anilasta pectinata* Thoms. (=*Limneria deichmanni* Nielsen, *Astiphromma d.* Lundbeck).

5758. [ROSA, J.] A new host for Cremastus hymeniae Vier. *Proc. Hawaiian Ent. Soc.* 7(2): 217. 1929.—Reared from *Chilo simplex* in a rice stalk.

5759. **ROSS, HERBERT H.** Two new forms of the genus Zaschisonyx Ashmead (Tenthredinidae: Hymenoptera). *Canadian Ent.* 61(12): 272-273. 1929.—*Selandria montana* (=*S. gentilis* Cresson); *Zaschisonyx montana* v. drabula (p. 272), Manitoba, type in Canadian Nat. Mus.; *Z. m.* ssp. occidentalis (p. 272), Idaho, type in Univ. Illinois coll.

5760. **SANTSCHI, F.** À propos du Tetramorium caespitum L. *Folia Myrmecologica et Termitologica* 1(4/5): 52-58. 1927.—*T. c.* vars. indocile (p. 53), and sulcinode (p. 53), Russian Turkestan, penninum (p. 54), Switzerland, coeleste (p. 54), China, and immigrans (p. 54), Chile; *T. semilaeve* vars. liparaeum (p. 55), punctatum (p. 55), and siciliense (p. 56), Sicily, and kutteri (p. 56), Switzerland; *T. inerme* st. *armatum* v. ligatum (p. 57), Russian Turkestan; *Strongylognathus huberi* st. *cecconii* v. kutteri (p. 58), Sicily.

5761. **SCHERTZ, EDUARD.** Ein eigenartiges Nest der Ameise Lasius mixtus. *Ber. Senckenberg. Naturforsch. Ges.* (*Natur u. Mus.*) 59(9): 473-475. 1 pl., 1 fig. 1929.—A nest near Mainz, Germany, was constructed of sand grains with the aid of a viscid secretion, forming a spongelike network. In it were observed the ant guests: a lepismatid and 3 isopods (*Plathyarthrus hoffmannseggi*).

5762. **[SCHOUTEDEN, H.]** Un nid des guêpes "Digba" de l'Uelé. *Rev. Zool. Africaine* 15(3): [37]-[38]. 1927.—Notes on the nest and behavior of *Polybioides tabida* and *P. melaina*.

5763. **SCHULTHESS, A. von.** Some more South African Masaridae (Vespoidea). *Ann. and Mag. Nat. Hist.* 5(27): 326-330. 3 fig. 1930.—A key is given for *Masaris discrepans* and *M.* braunsiella* (p. 326), and a supplementary key for several spp. of *Quartinia*. *Q.* poecila* (p. 327), *Q.* punctulata (p. 329), and *Q.* niveopicta (p. 329). All new spp. from Cape Province, with types in Brit. Mus. *Q.* variegata* Brauns in litt. (=*Q. signata* Brauns).

5764. **SCHULTHESS, A. de, et al.** Voyage au Congo de S. A. R. le Prince Léopold de Belgique (1925). Hymenoptera. (Art. 1-3.) *Rev. Zool. Bot. Africaines* 17(2): 184-207. 7 fig. 1929.—This work includes reports by specialists in the various groups. The first 2 articles consist of annotated lists, with localities, dates, and (3rd article) new taxonomy. Art. 1. A. de Schulthess. Apides, Vespides, Sphérides, Chrysidides, Scoliides, Mutillides, Formicides. Twenty-one Apidae, 11 Vespidae, 7 Sphegidae, 4 Chrysididae, 5 Scoliidae, 1 Mutillidae, 5 Formicidae, including some undetermined. Art. 2. A. ROMAN. Braconides et Ichneumonides. Six Braconidae, 3 Ichneumonidae. Art. 3. H. HAUPT. Psammocharidae. Eight species are listed. Pepsinae: **TRICHONYX** (p. 195), erected for *Hemipepsis unguicularis* Kohl. There is a key to the 4 African genera of the *Mygnimia* group, including **PACHYNIMIA** (p. 197), type *P.* tinctor (Sauss.), n. comb. (p. 197); **MONODONTONYX** (p. 202), type *M.* helenae* ♀ (p. 204). Psammocharinae: *Paracyphononyx* apicalis* ♀ (p. 206). All from Belgian Congo.

5765. **SCHULTZ, VICTOR G. M.** Geheimnisvolles von den Schlupfwespen. *Internat. Ent. Zeitschr.* 21(40): 367-370. 1928.—Over 2000 specimens of a small ichneumonid (*Lithomastix truncatellus* Dahl.) were bred from a larva of *Plusia gamma*, a case of polyembryony.

5766. **SHESTAKOV, A.** Neue Cerceris Arten aus der Gruppe Cerceris tuberculata Vill. (Hym.) *Societas Entomologica* 42(8): 30-31. 1927.—*C.* gemmina (p. 31). Desert of Muganensia, type in author's coll.; *C.* hunchuz (p. 31), Manchuria, type in Zool. Mus., Russia Acad.; *C. tuberculata* ssp. draco (p. 31), China.

5767. **SMITH, M. R.** Two introduced ants not previously known to occur in the United States. *Jour. Econ. Ent.* 22(1): 241-243. 1929.—*Iridomyrmex iniquus* and *Wasmannia auropunctata*, tropical ants, have become established in the U. S. A., the former in a greenhouse at Urbana, Illinois, the latter on an estate at Miami, Florida. Synonymies are given for both spp. A key is presented for the determination of workers of all spp. of *Iridomyrmex* (both native and imported) known to occur in U. S. A.—*M. R. Smith.*

5768. **SONAN, J.** On Vespa from Formosa. [In Japanese.] *Trans. Nat. Hist. Soc. Formosa* 19(101): 136-149. 1929.—An annotated list of 11 spp., with a key, synonymy, and locality and date records. *Vespa magnifica* v. nobilis (p. 140), *V.* flavitarsus (p. 142), *V.* arisana (p. 147), *V.* karenkona (p. 148), *V.* 4-maculata (p. 148).

5769. **SONAN, JINHAKU.** Some wasps and bees of Hôkotô (Pescadores Islands) [Formosa]. [Partly in Japanese.] *Trans. Nat. Hist. Soc. Formosa* 19(105): 533-540. 2 fig. 1929.—*Odynerus* hôkotôensis (p. 534) and *O.* emma ♂ (p. 535), Pescadores and Formosa; *Nomia* (*Paronomia*) hôkotôensis* (p. 537) and *N.* (*P.*) rufopostiata ♂* (p. 538), Pescadores. Some previously known spp. are also recorded from Pescadores.

5770. **STUARDO O., CARLOS.** Notas entomológicas. Algunas observaciones sobre dos Afelininos parásitos de Aleurothrixus porteri Quaint. [Two Aphelinidae parasitic on A. porteri.] *Rev. Chilena Hist. Nat. Pura y Aplicada* 32: 154-157. 2 fig. 1928(1929).—Of 41 individuals of the homopteran *A. porteri* attacking the leaves of *Cestrum parqui* in February, 31 were parasitized by *Prospaltella conjugata*, 7 by *Cales noacki**, and 3 by *Eretmocerus corni*. Among 72 individuals obtained in April, 67 were parasitized by *C. noacki* and 5 by *P. conjugata*. These 2 parasites have not been recorded previously from Chile.

5771. **[SWEZEY, O. H.]** Amblyteles rufiventris (Brulle). *Proc. Hawaiian Ent. Soc.* 7(2): 216. 1929.—First record from Hawaii.

5772. **SWEZEY, O. H.** The hosts of Cremastus hymeniae Viereck in Hawaii (Hymenoptera). *Proc. Hawaiian Ent. Soc.* 7(2): 281. 1929.—The hosts, belonging to the Phycitidae (1), Pyraustidae (13), Tortricidae (4),

Eucosmidae (5), Carposinidae (1), Cosmopterygidae (2), Tineidae (2), and Cygnodidae (1), are listed.

5773. **TAKEUCHI, KICHIZO.** Descriptions of new sawflies from the Japanese Empire. (I). *Trans. Nat. Hist. Soc. Formosa* 19(105): 495-520. 1929.—*Siobla* metallica ♀ (p. 495); *S.* apicalis (p. 496); *S. ferox* hirasana ♀ (p. 497); *Macremphytus* deutziae ♀ (p. 498), the larvae feeding on *Deutzia* sp.; *M.* albilabris (p. 499); *M.* fasciatus ♀ (p. 500); *Allantus* (*Emphytus*) nakabusensis ♀ (p. 500); *Emphytina* geranii (p. 501), the larvae feeding on *Geranium nepalense; E.* longicornis ♀ (p. 502); *Taxonus* carbonarius (p. 503); *T.* japonicus ♀ (p. 504); *Parasiobla* autumnalis ♀ (p. 505); *P.* minomensis (p. 506); *P.* tenuicornis ♀ (p. 507); *P.* bella ♀ (p. 507); *Allomorpha* hirasana (p. 508); *Ametastegia* polygoni (p. 510), larvae feeding on *Polygonum reynoutria; A.* kirishimensis ♂ (p. 511); *Hemitaxonus* minomensis ♀ (p. 511); *Abeleses* satonis (p. 512); **HEMIBELESES** (p. 513), near *Abeleses*, type *H.* nigriceps (p. 514); *H.* athaliodes ♀ (p. 515); *Pseudotaxonus* secundus (p. 515), the larvae feeding on *Osmunda regalis* v. *japonica; Strongylogaster* blechni (p. 517), the larva on *Blechnum nipponicum; Aneugmenus* kiotonis (p. 518); *A.* maculatus (p. 519); *Nesoselandria* nipponica (p. 519). Types in author's coll. There is a key to the 4 Japanese spp. of *Macremphytus*.

5774. **TAVARES, JOAQUIM da SILVA.** Os Cynípides da Península Ibérica. *Brotéria Zool.* 25(2): 49-96. 14 fig. 1928.—This installment deals with *Biorhiza* and *Neuroterus;* and concludes the treatment of *Diplolepis. Biorhiza pallida* with sspp. codinae (p. 60), hispanica (p. 61), and lusitanica (p. 62); *Neuroterus* cardiguensis* (p. 91); *N. tricolor* ssp. ulysipponensis (p. 70). Keys to 3 European spp. of *Biorhiza*, to 5 subspp. of *B. pallida*, and to 25 European spp. and subspp. of *Neuroterus* are given.

5775. **UCHIDA, TOICHI.** Zweiter Beitrag zur Ichneumoniden-Fauna Japans. *Jour. Fac. Agric. Hokkaido Imp. Univ.* 21(5): 177-297. 3 pl. 1928.—A revision of the genera and spp. of the subfam. Ophioninae of the Japanese Empire, including Sakhalin, the Kurile and Riukiu Is., Formosa, and Korea, thus embracing portions of both palearctic and oriental zoogeographical regions. Five genera, 79 spp. and 23 vars. are described as new. The previously known ophionine fauna of Japan of 48 spp. and 5 vars. is increased to 164 spp. and 29 vars., of which 79 spp. and 23 vars. are new to science. Included in the total are 37 previously described spp. and one var. first reported here as occurring in Japan. A list of the known hosts is followed by brief discussion of the economic value of certain spp. Four pages are devoted to a review of the literature of Japanese Ophioninae. A chart showing the distribution of the spp. treated and a bibliography of 3 pages are appended. The classification includes keys to tribes, genera and species. **AMEBACHIA** (p. 198) (tribe Paniscini), near *Parabatus* Thoms., type *A.* baibarana* (p. 198), Formosa; **NIPPONOPHION** (p. 201) (Ophionini), near *Microphion* Szepl., type *N.* variegatus* (p. 201), Hokkaido, parasite of *Actias artemis;* **FORMOSANOMALON** (p. 240) (Anomalini), near *Habronyx* Foerst., type *F.* baibarensis* (p. 241), Formosa; **NOTHANOMALOIDES** (p. 273) (Campoplegini), near *Nothanomalon* Szepl., type *N.* matsuyamensis* (p. 273), Shikoku; **MELALOPHACHAROPS** (p. 280) (Campoplegini), near *Zacharops* Vier. and *Echthronomas* Foerst., type *M.* tamanukii* (p. 280), Hokkaido, parasite of *Melalopha anastomosis; Paniscus* nigrus* (p. 188), Hokkaido; *P.* takaozanus* (p. 189), Honshu; *Parabatus* maculifemoratus* (p. 193), *P.* baibarensis (p. 194), and *P.* kiuhabonus (p. 195), Formosa; *Amebachia* coreana (p. 199) and *Nipponophion* coreanus* (p. 203), Korea; *Ophion* nikkonis (p. 204), Honshu; *O.* hokkaidonis (p. 205), Sakhalin; *O.* takaozanus* (p. 206), Honshu; *O.* okunii* (p. 207), Hokkaido; *O.* castaneus (p. 208), Formosa; *O.* orientalis* (p. 208), Sakhalin; *O.* ainoicus (p. 209), Hokkaido; *Dicamptus* isshikii* (p. 212), Honshu; *Pleuroneurophion* longicornis* (p. 212), and *Henicospilus* mushanus* (p. 216), Formosa; *H.* fuscomaculatus* (p. 216), Honshu; *H.* shinkanus (p. 217), Formosa; *H.* yonezawanus* (p. 218), Honshu; *H.* pudibundae* (p. 219), Hokkaido, parasite of *Dasychira pudibunda* L.; *H.* maruyamanus* (p. 220), Sakhalin; *H.* triguttatus* (p. 221), *H.* bifasciatus* (p. 222), *H.* nigribasalis* (p. 222), *H.* formosensis* (p. 223), *H.* tainanensis (p. 225), *H.* kanshirensis (p. 226), and *H.* taiwanus* (p. 226), Formosa; *H.* yezoensis* (p. 227), Hokkaido; *H.* gyochiensis* (p. 229), Formosa; *Allocamptus* orientalis* (p. 230), Okinawa; *Schizoloma* coreanum* (p. 235), Korea; *Trichomma* cnaphalocrocis* (p. 239), Formosa; *Aphanistes* orientalis* (p. 242), Kawakami, Sakhalin; *A.* kankonis* (p. 244), Formosa; *Anomalon* moiwanum* (p. 245), Moiwa, Hokkaido; *A.* hirayamaeum (p. 246), Honshu; *A.* garugawense* (p. 246), Hokkaido; *A.* yanagiwaraeum* (p. 247), *Labrorychus* niikunii (p. 248) and *L.* nikkonis* (p. 249), Honshu; *L.* yezonis* (p. 249), Hokkaido; *Agrypon* kiushuense (p. 251), Kiushu; *A.* maruyamense (p. 252), *A.* japonicum* (p. 252), and *A.* sapporense (p. 253), Hokkaido; *A.* oyeyamense* (p. 254), Honshu; *A.* tamahonum* (p. 255), Formosa; *A.* daisetsuzanum* (p. 256), Hokkaido; *A.* elongatum* (p. 257), Honshu; *Gongropelma* tainense (p. 258) and *G.* kikuchii* (p. 258), Formosa; *Astiphromma* jezoense* (p. 260) and *A.* geniculatum* (p. 261), Hokkaido; *Mesochorus* iwatensis (p. 262), Honshu; *Tegona* bimaculata* (p. 263), Hokkaido; *Xenoschesis* crassicornis* (p. 266), Korea; *Exetastes* karafutonis* (p. 267), Sakhalin; *E.* miniatus* (p. 269), Kiushu; *E.* longigenus* (p. 270), Sakhalin; *E.* fukuchiyamanus* (p. 270), *E.* ishikawensis (p. 271) and *E.* longipes* (p. 271), Honshu; *Campoplex* subrubrus (p. 275), Hokkaido; *C.* sachalinensis (p. 276), Sakhalin; *C.* yezoensis* (p. 276), *C.* daisetsuzanus (p. 276), and *Trophocampa* teshionis* (p. 278), Hokkaido; *Casinaria* albibasalis* (p. 279), Honshu; *Limnerium* exartemae* (p. 282), Hokkaido, parasite of *Exartema mori* Mats.; *L.* ishiyamanum (p. 283) and *Pristomerus* rufiabdominalis* (p. 284), Hokkaido; *Diaparsis* coreanus* (p. 285), Kiushu; *Campoplex* matsumurae (*Mesochorus japonicus* Mats.) (p. 277); *Opheltes glaucopterus* v. fuscus (p. 187), Kurile; *Paniscus testaceus* v. nigronotatus (p. 191), *P. t.* var. nigrinotus (p. 191) and *Parabatus cristatus* v. japonicus* (p. 196), Hokkaido; *P. c.* var. kikuchii* (p. 197), Formosa; *Nipponophion coreanus* v. infuscus (p. 203), Shikoku; *Ophion sibiricus* v. japonicus (p. 206), Sakhalin; *Dicamptus nigropictus* v. fuscus (p. 211), Formosa; *Henicospilus combustus* v. shikokuensis (p. 224), Shikoku; *Nototrachys folicator* v. coreanus* (p. 231), Korea; *N. f.* var. japonicus (p. 231), Hokkaido; *N. f.* var. formosanus (p. 232), Formosa; *Schizoloma amictum* v. nigricoxalis (p. 234), Sakhalin; *S. a.* var. intermedium (p. 234), Honshu; *Exochilum circumflexum* v. nipponicum (p. 236), Hokkaido; *E. circumflexum* v. rufomaculatum* (p. 237), Formosa; *Heteropelma calcator* v. flaviscutellum (p. 238), Hokkaido; *H. c.* var. elongatum* (p. 238), Honshu; *Aphinistes jozankeanus* v. nigricans (p. 242) and *A. orientalis* v. asahidakeanus (p. 243), Hokkaido; *Agrypon suzukii* v. nigromaculatum (p. 251), Honshu; *Campoplex subrubrus* v. jozanus (p. 275, in key) (no locality); *Diaparsis coreanus* v. kondonis (p. 286), south Manchuria, parasite of *Nephopteryx pirivorella* Mats. New synonymy is as follows: *Thyreodon* Brulle (=*Coracophion* Shest.); *Eremotylus* Foerst. (=*Leptophion* Cam.); *Henicospilus* Steph. (=*Tripilus* Krchb., *Pterospilus* Krchb.); *Henicospilus flavocephalus* Kirby (=*H. similis* Mats. & Uchida); *H. semiopacus* Mats. (=*H. hariolus* Morley); *H. merdarius* Grav. (=*H. flavicaput* Mats. & Uch., nec Morley); *Exochilum circumflexum* L. (=*E. laricis* Mats.); *Banchus falcatorius* Fab. (=*Corynephanes sachalinensis* Mats., *Banchus sachalinensis* Mats.); *Exetastes ichneumoniformis* Grav. (=*E. scutellaris* Mats. ♂ non ♀); *Limnerium* Ashm. (=*Eulimneria* Schmiede.). The following new combs. appear: *Opheltes glaucopterus* v. major (*Opheltes m.* Cush.) (p. 187); *Dicamptus* nigropictus (*Ophion n.* Mats.) (p. 211); *Exochilum circumflexum* v. dendrolimi (*E. dendrolimi* Mats.) (p. 236); *Habronyx heros* v. matsukemushii (*Habronyx m.* Mats.) (p. 240); *Aphinistes*

jozankeanus (*Habronyx j.* Mats.) (p. 242); *Agrypon* **suzukii** (*Anomalon s.* Mats.) (p. 251); *Rhythmonotus* **takagii** (*Casinaria atrata* Takagi, nec Morley, =*Casinaria takagii* Mats.) (p. 279); *Dioctes* **lineatus** (*Anomalon lineatum* Ishida) (p. 282); *Diaparsis* **japonicus*** (*Temelucha j.* Ashm.) (p. 285).—*R. A. Cushman.*

5776. VERLAINE, L. Les reines fécondées des Hymenoptères sociaux peuvent-elles normalement engendrer des mâles? *Ann. et Bull. Soc. Ent. Belgique* 66(8/10): 287-318. 1926.—Author presents evidence that queens of bees, bumblebees, wasps, and ants which have mated and are still supplied with semen are incapable of laying at will either ♂- or ♀-producing eggs. ♂-producing eggs are laid only by individuals called neuters which do not mate because they are morphologically incapable, but which can oviposit when in nutritive condition, permitting development of reduced ovaries.—*P. W. Whiting.*

5777. VERLAINE, L. Le déterminisme de l'emplacement du nid chez la Vespa sylvestris Scop. *Ann. et Bull. Soc. Roy. Sci. Méd. Nat. Bruxelles* 1926(8/10): 9-22. 1926.—Et. Rabaud reduces the choice of the nesting site by a fertile queen to tropisms. The author refutes this interpretation. In his opinion tropisms are elements of the general psycho-physiological activity whose origin is often more complex than is generally believed and often starts from associative processes.—*L. Verlaine (transl. by J. Bequaert).*

5778. VUKASOVIĆ, PAVLE. Observations biologiques sur les Hyménoptères parasites. [Serbian, with French summary.] *Bull. Acad. R. Serbe Sci. et Arts* 119(54): 9-18. 1 fig. 1926.—*Trissolcus simoni** is an internal parasite of the eggs of *Eurydema ornatum**. Its biology was not studied previously. Females, unlike those of most Hymenoptera, display intense rivalry, not tolerating the presence of other ♀♀, but endeavoring to drive them from the group of *Eurydema* eggs selected for oviposition. Eggs are examined with the antenna by the ♀ before oviposition, those having marks of oviposition being avoided. The complete development of the parasite requires 13-16 days at a mean temp. of 22°-26°. In all cases observed where a group of *E. ornatum* eggs are infested at the same time, ♂♂ hatch before the ♀♀ and remain in the *E. ornatum* eggs to copulate with the ♀♀ as soon as the latter emerge. The ♀ is fecundated once in her life. Females are much more numerous than ♂♂. Eggs of *E. ornatum* may be parasitized in all stages of their development.—*French summary (transl.).*

5779. WATERSTON, JAMES. Two new parasitic Hymenoptera. *Ann. and Mag. Nat. Hist.* 5(26): 243-246. 2 fig. 1930.—*Thripoctenus* **maculatus*** (p. 243), Punjab, internal parasite on vine thrips; *Agriotypus* **gracilis*** (p. 244), Japan. The occurrence in Japan of *Agriotypus* denotes a considerable eastward extension of range of the genus; it is unknown in Russia.

5780. WATERSTON, JAMES. On the occurrence of Neorhacodes enslini, Ruschka (Hym. Ichneumonidae) near London. *Entomologist* 62(792): 97-99. 1 fig. 1929.—Netted with *Spilomena troglodytes*, which it was probably following. The systematic position of *N. enslini* is reviewed.

5781. WEYER, FRITZ. Die Eiablage bei Formica rufa-Arbeiterinnen. *Zool. Anz.* 84(9/10): 253-256. 1929.—According to Eidmann, the brood-rearing instinct in *F. rufa* devolves mostly upon egg-laying workers, since from the eggs of these emerge most of the ♂♂ in the colony. Weyer considers this view not tenable. Egg-laying by workers is almost non-existent in normal *F. rufa* colonies. Most eggs formed in the workers are abnormal; they degenerate and are resorbed by the body.—*F. Weyer (transl. by R. E. Danforth).*

5782. WÜLKER, G. Biologie der Blattwespen, besonders der wirtschaftlich wichtigen Arten. *Internat. Ent. Zeitschr.* 19(47): 374-376. 1926.—A discussion of various spp. of sawflies, with especial mention of *Pteronidea ribesii* and *Lygaeonematus pini*. The former has 4-5 broods, and, besides bi-sexual reproduction, frequently shows parthenogenesis. *L. pini* has but one generation. Both are very injurious to vegetation.

MACROLEPIDOPTERA

J. McDUNNOUGH, *Editor*

(See also in this issue Entries 4636, 4712, 5445, 6046)

5783. BARGMANN, RUDOLF. Lemonias thara Hew., forma Krügeri Bgm. *Internat. Ent. Zeitschr.* 24(31): 331. 1930.—*L. t.* f. **krügeri**, Amazonas, type in Krüger coll.

5784. BELLING, H. Der Apollofalter des Pustertals, Parnassius apollo comes, subsp. nov. (Lep. Rhopal.). *Internat. Ent. Zeitschr.* 23(45): 518-520. 1 fig. 1930.—Italy, type in author's coll.

5785. BELLING, H. Parnassius apollo rivalis, subsp. nov. (Lep. Rhopal.) *Internat. Ent. Zeitschr.* 24(16): 191-194. 2 fig. 1930.—Dolomite Alps, South Tyrol, type in author's coll.

5786. BELLING, H. Der Apollofalter des Martelltales, Parnassius apollo marmorarius, subsp. nov. (Lep. Rhop.). *Internat. Ent. Zeitschr.* 24(32): 341-343. 1 fig. 1930.—*P. a.* ssp. **marmorarius*** (p. 341), South Tyrol, type in author's coll.

5787. BELLING, H., und F. BRYK. Der Apollofalter des Passeiertals, Parnassius apollo andreashoferi, subsp. nov. (Lep. Rhop.). *Internat. Ent. Zeitschr.* 24(14): 176-178. 1 fig. 1930.—Germany, type in coll. Belling.

5788. BERGER, RUDOLF. Am Bisamberg. *Zeitschr. Österr. Ent.-Vereines* 15(9): 89-90. 1930.—A list of 45 spp. from the west side of Bisamberg [southern Austria].

5789. DIEHL, FRITZ. Die erste erfolgreiche Zucht von Lycaena alcon F. und Beobachtungen über die Biologie der ersten Stände dieses Schmetterlings. *Internat. Ent. Zeitschr.* 24(4): 35-42. 5 fig. 1930.—Extensive notes on rearing.

5790. GEHLEN, B. Neue Sphingiden. *Internat. Ent. Zeitschr.* 24(20): 217-220. 1 pl. 1930.—*Protoparce* **reducta*** ♂ (p. 217), Peru, and *Panacra dohertyi* ssp. **continentalis*** (p. 218), Upper Assam, types in Berlin Mus.; *Celerio euphorbiae conspicua* ab. **giganteomaculata*** (p. 218); *C. e. euphorbiae* ab. **nigerrima*** (p. 218); *C. e. e.* ab. **apiciplaga*** (p. 219); *C. e. e.* ab. **nebulosa*** (p. 219); *C. e. e.* ab. **virescens** (p. 219). Types in author's coll. except where otherwise stated. *Protoparce scutata* R. & J. (=*P. henrici* Gehlen); *P. corallina* **extrema** (*P. e.* Gehlen) (p. 219); *Pholus achemon* f. **trigon** (*P. a.* ssp. *t.* Gehlen) (p. 220).

5791. HEIN, SIGMUND. Zwitter und Aberrationen. *Zeitschr. Österr. Ent.-Vereines* 13(6): 59-62. 2 fig. 1928.—*Gnophos myrtillata* v. *limosaria* ab. **interrupta*** ♂ (p. 61), Wurzner Alps.

5792. HOFFMANN, FRITZ. Copiopteryx virgo Zikan. *Internat. Ent. Zeitschr.* 24(5): 55-56. 1930.—The following synonymy is established: *C. virgo* Zikan (=*C. biedermanni* Katzsch.).

5793. HOFMANN, E. Zwei neue Geäderaberrationen. *Internat. Ent. Zeitschr.* 23(31): 375-376. 1929.—*P[arnassius] apollo* ab. **paradoxa** ♂ (p. 375), and *P. apollo* ab. **monstrosa** ♂ (p. 375). Types in coll. Riemel, Munich.

5794. KAUTZ, HANS. Gnophos caelibaria H. S. *Zeitschr. Österr. Ent.-Vereines* 15(3): 33-36; (5): 49-52. 1930.—*Gnophos caelibaria* ab. **insignata** (p. 34), Julian Alps; *G. c.* **intermedia** (p. 36), Noric Alps. Critical notes are given on several spp.

5795. KITT, M. Aberrative Falter aus meiner Sammlung. *Zeitschr. Österr. Ent.-Vereines* 15(3): 32-33. 1 pl. 1930.—Notes on 8 spp., including *Cidaria pupillata* ab. **interrupta.**

5796. KLEMANN, PAUL. Orgyia hybr. leucantiqua m. *Internat. Ent. Zeitschr.* 23(29): 347-348. 1929.—*Orgyia* hybr. **leucantiqua** (p. 348) (*O. leucostigma* ♂ × *O. antiqua* ♀).

5797. LOIBL, HANS. Hyphoraia (Arctia) aulica L. in Schleswig-Holstein! *Internat. Ent. Zeitschr.* 23(20): 242-243. 1929.—*H. aulica* was reared from woolly bear-caterpillars, which were apparently living on *Calluna* when in the open, and on dandelion when in captivity. This arctiid is a Siberian sp., known previously from Finland, Denmark (Jutland), and from east and west Prussia to Pomerania and Magdeburg. The occurrence in Schleswig-Holstein establishes a new link between widely separated localities.

5798. MÜLLER, E. [Two new aberrations.] *Internat. Ent. Zeitschr.* 24(12): 153-154. 2 fig. 1930.—*Anthocharis cardamines* ab. **buschmanni*** ♂ (p. 153), and *Leucochloë daplidice bellidice* ab. **alba** ♂ (p. 154), Germany?, both in author's coll.

5799. NEUSTETTER, H. Eine neue Catopsilia von Madagaskar. *Internat. Ent. Zeitschr.* 23(28): 336-337. 1929.—*C.* **mabillei** (p. 336), type in author's coll.

5800. REISSER, HANS. Aberrative Falter aus Niederösterreich. *Zeitschr. Österr. Ent.-Vereines* 15(2): 17-19. 1930.—An annotated list of 9 spp., including *Ptychopoda rufaria* ab. **purpurea*** ♂ (p. 17), type in author's coll.

5801. RÖBER, J. Über einige exotische Falter. *Internat. Ent. Zeitschr.* 23(27): 323-327. 1 fig. 1929.—Notes and comparative descriptions of some 10 spp.; **NAROPINA** (p. 326), n. gen., is proposed provisionally for *Narope* **pusilla** ♂ (p. 325), Bolivia; *Morpho achilles* ssp. **michaeli** (p. 326), Peru; *Hippotion* **leucocephalus** ♀ (p. 327), Africa?; *Astyloneura* **bicoloria** ♂ (p. 327), Abyssinia, type in coll. Kotzsch.

5802. RUPP, FRIEDR. Die Sammlung Dr. Philipps endgültig in deutschem Besitz! *Internat. Ent. Zeitschr.* 24(18): 210. 1930.—This palearctic butterfly collection, one of the largest in the world (some 25 cases), has been donated to the University of Coblenz.

5803. SCHNEIDER, CARL. Zusammenstellung der in Württemberg und Hohenzollern neu aufgefundenen Noctuiden. *Internat. Ent. Zeitschr.* 23(44): 505-509. 1930.—A list of 61 spp., among which *Apamea nickerlii* Frr. is new to Germany.

5804. SCHWINGENSCHUSS, LEO. Beitrag zur Heterocerenfauna von Korneburg in Niederösterreich. *Zeitschr. Österr. Ent.-Vereines* 14(9): 85-89. 1929; 15(2): 20-21; (3): 30-32. 1930.—A list of 312 spp. including: *Mamestra reticulata* ab. **decolor** (p. 88). *M. splendens* and *Plusia ni* are reported established in southern Austria.

5805. STICHEL, H. Eine neue Riodinide von Amazonas (Lep. Rhop.). *Internat. Ent. Zeitschr.* 24(24): 257-258; (25): 276. 1930.—*Euselasia* **scotinosa** (p. 276), type in coll. Pohl.

5806. THURNER, JOSEF. Ein Sammelausflug auf die Ascher-Hütte in den Paznauer-Alpen (Nordtirol). *Zeitschr. Österr. Ent.-Vereines* 14(1): 7-9; (2): 16-17; (3): 34. 1929.—A list of 68 spp.

5807. WARNECKE, G. Wo liegt in Deutschland die Nordgrenze des ständigen Vorkommens von Papilio podalirius L.? *Internat. Ent. Zeitschr.* 23(30): 357-368. *Map;* (31): 369-375. 1929.—The author refers to a number of works by various authors on the distribution of this sp. A map showing its occurrence is given. A list of place names within the northern limit concludes the paper.

5808. WARNECKE, G. Ist Miana captiuncula Tr. (Lepid. Noct.) ein "Glazialrelikt"? *Zeitschr. Österr. Ent.-Vereines* 13(4): 37-40; (5): 52-56. 1928.—The author reviews the distribution of this sp. in Europe, and finds that it occurs neither in the northern part of the Palaearctic region nor in the higher elevations of the mountains of central and southern Europe. Therefore it is doubtful if it can be considered a boreal-alpine form or a glacial relict.

MICROLEPIDOPTERA

CARL HEINRICH, *Editor*

(See also in this issue Entries 4653, 4706, 4723, 5801, 6048)

5809. FLETCHER, T. BAINBRIDGE. Dates of publication of Stainton's "Manual," vol. II. *Entomologist [London]* 63(807): 187-188. 1930.—Gives the dates of the parts of Stainton's Manual of British Butterflies and Moths, in vol. II; of Lederer's paper on European Tortricina in Wiener Ent. Monatsschr., and of Wilkinson's The British Tortrices. Stainton's treatment antedates that of both Lederer and Wilkinson.

5810. HUGGINS, H. C. Laspeyresia conicolana, Heylaerts: A tortrix new to the British Isles. *Entomologist [London]* 64(813): 27-29. 1 pl. 1931.

5811. JORDAN, KARL. Two new Zygaenidae (Lepid.). *Novitates Zool. [Tring]* 36(2): 277-278. 4 fig. 1931.—*Araeocera* **prasina*** (p. 277), Java, type in British Mus.; *Procris* **levantina*** (p. 277), Syria and Cyprus Is.

5812. MEYRICK, EDWARD. Occurrence of Coleophora vacciniella Herr.-Schäff., a species new to Britain. *Entomologist [London]* 63(801): 38. 1930.—Larvae found on *Vaccinium myrtillus* and *V. uliginosum* in Cumberland.

5813. MITTERBERGER, KARL. Unsere Nepticula-Arten an Weissdorn. *Ent. Rundschau* 47(7): 25-27; (8): 32; (9): 33-35. 1930.—Records of life history and hosts of *N. pygmaeella, N. nitidella, N. oxyacanthella, N. nylandriella, N. regiella, N. gratiosella, N. prunetorum, N. ignobiella, N. atricollis,* and *N. aterrima.*

5814. WEST, R. J. Descriptions of new species of Japanese, Formosan and Philippine Pyralidae. *Novitates Zool. [Tring]* 36(2): 206-219. 1931.—Conclusion of the descriptions of new spp. in the Wileman coll., now in the British Mus. *Corcyra* **brunnea** ♀ (p. 206), Formosa; *Pempelia* **baea** ♀ [Galeriinae] (p. 206); *Ramila* **thectopetina** ♀ (p. 207); *Ambesa* **cartera** ♂ (p. 207); *Phycita* **southi** (p. 207), Formosa; *Ceroprepes* **jansei** ♂ (p. 208), Japan; *Macalla* **shibuyai** ♂ (p. 208); *Coenodomus* **hampsoni** ♂ (p. 209); *Stericta* **caradjai** ♂ (p. 209); *S.* **schausi** (p. 210); *S.* **plinthochroa** ♂ (p. 210); *Orthaga* **meyricki** ♂ (p. 211); *O.* **durranti** ♂ (p. 211); *Endotricha* **wilemani** ♀ (p. 212); *Orthoraphis* **paula** ♀ (p. 212); *Pyralis* **callista** ♂ (p. 212); *Diloxia* **euteles** ♂ (p. 213); *Ambia* **pedionoma** ♀ (p. 213); *Aulacodes* **simplex** ♀ (p. 214); *A.* **splendens** (p. 214); *Tatobotys* **tanyscia** (p. 215); *Phostria* **jansei** ♂ (p. 215), type in Brit. Mus. (not Wileman coll.); *Dichocrocis* **liparalis** ♀ (p. 216); *D.* **acoluthalis** ♀ (p. 216); *Sylepta* **lygropialis** ♀ (p. 217); *S.* **elegans** ♂ (p. 216); *S.* **macallalis** ♀ (p. 216); *Noorda* **aeanalis** ♂ (p. 218); *Pyrausta* **homoeides** (p. 218); *P.* **cricophora** (p. 219). From Philippines, unless otherwise indicated.

NEUROPTEROIDS

F. M. CARPENTER, *Editor*

(See also in this issue Entry 5593)

5815. [ARTOBOLEVSKIĬ, G. V.] АРТОБОЛЕВСКИЙ, Г. В. К экологии стрекоз Теберды. [Ecological observations on Odonata of Teberda, North Caucasus.] [French summary.] Работы Северо-Кавказской Гидробиологической Станции. (*Trav. Sta. Biol. Caucase du Nord*) 3(1/3): 33-43. 1930.—Notes on ecology and life history of 7 spp.

5816. BYERS, C. FRANCIS. Dixie dragonflies collected during the summer of 1930 (Odonata). *Ent. News* 42(4): 113-119. 1931.—Collecting records in Florida, Georgia, North and South Carolina, and Tennessee.

5817. BORROR, DONALD J. The genus Oligoclada (Odonata). *Univ. Michigan Mus. Zool. Misc. Publ.* 22. 1-42. 7 pl. (1 with 6 maps). 1931.—The material studied was collected at 39 places in S. Amer., and the type localities are in some cases very closely defined. The 14 species treated fall into 6 natural groups. *Oligoclada* is more fully described; key to groups and species; *O.* monosticha* (p. 20), Peru; *O.* stenoptera* ♂ (p. 22), *O.* xanthopleura* (p. 27), and *O.* crocogaster* (p. 29), Brazil; *O.* heliophila* (p. 32), Colombia (type), Venezuela, and Panama Canal; *O.* umbricola* ♂ (p. 38), Venezuela (type) and Colombia. Fuller descriptions are given for *O. sylvia**, *O. pachystigma**, *O. amphinome**, *O. raineyi**, *O. walkeri**, and *O. abbreviata**. Types in Mus. Zool. Univ. Michigan.

5818. DOW, RICHARD. Odonata from Santa Clara, Cuba. *Proc. Biol. Soc. Washington* 44: 55-60. 1931.—A list of 35 spp.

5819. KILLINGTON, FREDK. J. Neuroptera (sensu lato) from France: August-September, 1929. *Entomologist* 63(804): 111-112. 1930.—A list of 14 Odonata, 3 Neuroptera, 3 Mecoptera, and 20 Trichoptera from Nièvre Dept.

5820. KILLINGTON, FREDK. J. Notes on British Neuroptera. *Entomologist* 64(815): 73-76. 1 fig. 1931.—Collecting records and life history data on *Raphidia notata, R. maculicollis,* and *Chrysopa phyllochroma**, with record of 17 other spp.

5821. KILLINGTON, FREDK. J. Synonymic notes on certain Neuroptera. *Entomologist* 64(816): 112-114. 1931.—*Hemerobius humulinus* L. (=*H. humuli* L.); *Chrysopa carnea* Stephens (=*C. vulgaris* Schneider), *C. ventralis* Curtis (=*C. prasina* Burm.); *C. alba* L., notes. The specimen bearing Linnaeus' label is not the *C. alba* auct. but *C. ventralis*. *C. ciliata* Wesmael (=*C. alba* auct. not L.).

5822. KILLINGTON, FREDK. J. Osmylus fulvicephalus, Scop. (Neuroptera): The fore coxae of the female, with remarks on a confusion of the sexes. *Entomologist* 64(817): 135-136. 1 fig. 1931.

5823. McDUNNOUGH, J. New species of North American Ephemeroptera. *Canadian Ent.* 63(4): 82-93. 1931.—*Thraulus* albertanus (p. 82), Alberta; *Ephemerella* cornutella (p. 82), *E.* serratoides (p. 83) and *E.* subvaria (p. 84), Quebec; *Pseudocloeon,* key to the nymphs of 3 spp.; *P.* cingulatum (p. 85), Quebec; *P.* rubrolaterata ♂ (p. 86), *P.* futile ♂ (p. 86) and *Centroptilum* quaesitum (p. 87), Alberta; *C.* intermediale (p. 87), Quebec; *Cloeon* triangulifer (p. 88), Ontario (type), Quebec; *Ameletus* sparsatus (p. 89) and *Siphlonurus* autumnalis ♂ (p. 89), Alberta; *S.* inflatus ♀ (p. 90), Alberta (type) and Brit. Columbia; PSEUDIRON (p. 91), near *Siphloplecton,* type *P.* centralis ♀ (p. 91), Kansas (type) and Manitoba; *Heptagenia* umbratica (p. 92) and *H.* rusticalis (p. 92), Quebec. Types in Canadian Nat. Coll.

5824. NEEDHAM, JAMES G. Additions and corrections to the Manual of the Dragonflies of China. *Peking Soc. Nat. Hist. Bull.* 5(4): 1-10. 1 pl., 1 fig. 1931.—*Gomphus* succumbens* (p. 2) and *G.* citimus* (p. 2), Manchuria, types in Cornell Univ.; *G.* lautus* (p. 2) and *G.* flavicornis* (p. 3), Fukien, types in U. S. Nat. Mus.; *G. brevipennis,* ♀* described; *Davidius* trox* (p. 4), Szechuan, type in U. S. Nat. Mus.; *Somatochlora viridaenea,* Manchuria, new to China; *Mesopodagrion tibetanum**; *Rhipidolestes aculeata* Fukien, new to China; *Calicnemus miniata,* Szechuan, new to China.

5825. TRAVER, JAY R. A new mayfly genus from North Carolina. *Canadian Ent.* 63(5): 103-109. 1 pl. 1931.—OREIANTHUS (p. 104) (Ephemerinae), type *O.* purpureus ♀* (p. 105), nymph*; type in Cornell Univ. *Caenis maxima* Joly is referred to *Oreianthus.*

5826. ULMER, GEORG. Key to the genera of Ephemerida. *Peking Soc. Nat. Hist. Bull.* 4(4): 1-18. 1930.—A translation into English from the original German in *Stett. Ent. Zeit.* 1920. Keys to the suborders, families, and genera.

5827. WILLIAMSON, E. B. Common names for dragonflies. *Ent. News* 42(2): 46-50. 1931

ORTHOPTEROIDEA

A. N. CAUDELL, *Editor*

(See also in this issue Entries 3822, 3882, 4619, 4634, 4716, 5044, 5439, 5441, 5594, 5680, 6048)

5829. BOLÍVAR y PIELTAIN, C. Estudios sobre Eumastácidos (Orth. Acrid.). 1. Contribución al conocimiento del género Mnesicles. *Bol. Soc. Españ. Hist. Nat.* 31(4): 289-300. 10 fig. 1931.—A key to distinguish the species is divided in groups I. *crassipes* Karsch, II. *novaeguineae* C. Bol., and III. *saussurei* C. Bol. and the following n. spp. are included: *Mnesicles* horni* (p. 293), Philippines, type in Madrid Mus.; *M.* stylatus* (p. 295), New Guinea, type in Berlin Mus.; *M.* palawanensis* (p. 297), Philippines, type in Ent. Inst., Berlin-Dahlem; *M.* poultoni* (p. 299) Borneo, type in Oxford Mus.

5830. CAUDELL, A. N. Notes on Blattidae, adventive to the United States (Orthop.). *Ent. News* 42(7): 204. 1931.—*Holocompsa azteca,* Arizona; *Hemiblabera tenebricosa,* Florida; *Capucinella delicatula,* California, in a bunch of bananas; *Eurycotis caraibea,* Minnesota, in crate of peaches; *E. dimidiata,* Pennsylvania and Washington, D. C.; all are new to the U. S. A.

5831. [DIŪKOV, N. N.] ДЮКОВ, Н. Н. К познанию распространения Oxya fuscovittata Marsh. (Orthoptera, Catantopinae.) [Distribution of O. fuscovittata.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 23(1/2): 141-142. 1929.

5832. KARNY, H. H. Revision der Gryllacriden des Naturhistorischen Museums in Wien einschliesslich der Collection Brunner v. Wattenwyl. 2. Hälfte. *Ann. Naturhist. Mus. Wien* 44: 45-198. 77 fig. 1930.—A continuation [See B. A. 5(8/9): entry 22069.] of descriptive notes of type and other historical material. Gryllacrinae: *Gryllacris* xiphiura ♀* (p. 48), Java; *G.* bicornuta ♀* (p. 56), Celebes; *G. si-rambeica* v. litoralis ♂ (p. 84), Sumatra; *G. contracta* Walker var.* ? (p. 95); *G. signifera* ssp. padangica ♂* (p. 102), Sumatra; *G. s.* ssp. intermedia ♂* (p. 103), Borneo; *G. s.* ssp. robustior ♂* (p. 103), Malacca; *G. s.* ssp. bancana ♂* (p. 105), Banka; *G. fícalbii* ssp. astemmna ♀* (p. 115), Lombok; *G.* melanophoxa ♀* (p. 119), Cambodia; *G.* paradoxa ♂* (p. 124), Celebes. Henicinae: HYPOCOPHOIDES (p. 134), type *H.* indicus* (*Hypocophus i.* Bolivar) (p.

134); *Brachyporus* **pallidifrons** ♀ (p. 136), Madagascar. Anostostominae: *Anostostoma* **spinosum** ♀ (p. 155), N. S. Wales; *Anabropsis* **griffinii** ♀* (p. 159), Darjeeling; *A.* **cervicornis** ♂* (p. 161), Tonkin. Rhaphidophorinae: *Rhaphidophora* **tessellata** ♀* (p. 167), Molucca Is.; *R.* **amboinensis** ♂* (p. 169), Amboina; *R.* **neglecta** (p. 172), Java; *Heteromallus* **spinipes*** (p. 185) and *H.* **pectinipes** ♂* (p. 187), Chile. Notes on venation and other characters are given on the following spp.:—Gryllacrinae: *Gryllacris exigua* Br. v. W., *G. fasciata* v. *nigrata** Br. v. W., *G. eugenii** Griffini, *G. amitarum** Grif., *G. permodesta* Grif., *G. inconspicua** Br. v. W., *G. i.* subsp. *kuhnei** Grif., *G. infelix* Grif., *G. holdhausi** Grif., *G. nana** Br. v. W., *G. macilenta** Pictet & Saussure (=? *G. pallidula* Serville), *G. ruficeps** Serville, *G. wolffi** Krausse, *G. braueri** Grif., *G. moesta** Br. v. W., *G. maculipennis* Stål, *G. vittipes* Walker (=*G. nasalis detersa* Grif.), *G. excelsa** Br. v. W., *G.* (*Eremus*) *spinulosus** Br. v. W., *G. pardalina** Gerstaecker, *G. spuria** Br. v. W., *G. lincolata** Serville, *G. l.* var. *menzeli** Karny, *G. voluptaria** Br. v. W., *G. fuscifrons* Gerstaec., *G. aethiops** Br. v. W., *G. nigrilabris* Gerstaec., *G. kinabaluensis** Grif., *G. maculata* subsp. *nobilis* Walker, *G. javanica* Grif., *G. atropicta** Grif., *G. contracta** Walker, *G. buruensis** Karny, *G. signifera** (Stoll), *G. s.* subsp. *obscura** Br. v. W., *G. appendiculata** Br. v. W., *G. marginata** Walker, *G. heros** Gerstaec., *G. punctipennis** Walker, *G. p.* subsp. *keyica* Karny, *G. personata** Serville (=*G. falcata* Br. v. W.), *G. japonica** Matsumura & Shiraki, *G. eta* v. *aneta* Karny, *G. la-baumei** Grif., *G. podocausta** De Haan, *G. genualis** Walker. Henicinae: *Lezina mutica** (Br. v. W.), *L. brasiliensis* Br. v. W., *Brachyporus personatus** Br. v. W., *Spizaphilus alatus** (Butler) with discussion of generic characters, *Onosandrus maori* Pict. & Saus., *Mimnermus dregii* (Burmeister) and *costulatus* Br. v. W. Schizodactylinae: *Schizodactylus monstrosus** (Drury). Anostostominae: *Hemideina thoracica** (White), *H. megacephala* (Buller), *Anabropsis carli** Grif., *A. alatus* (Br. v. W.), *A. mexicanus** (Saussure). Rhaphidophorinae: *Rhaphidophora mutica* Br. v. W., *R. nigerrima** Br. v. W., *R. fulva** Br. v. W., *Tachycines asynamorus* Adelung (discussion of confusion of nomenclature of this greenhouse species), *Gammaroparnops crassicruris** (Hutton), *Pleioplectron cavernae** Hutton, and short descriptive notes, often illustrated, of American species of *Ceuthophilus* and relatives represented in the collection.—*L. P. Rockwood.*

5833. KARNY, H. H. Phylogenetische und tiergeographische Erwägungen zur Systematik der Rhaphidophorinen. (Orth. Fam. Gryllacridae.) *Arch. Klassif. u. Phylog. Ent.* **1**(2): 57-76. Map. 9 fig. 1930.—The distribution of the genera indicated that previous generic grouping was not natural. The paired spines of the metatarsus of the hind leg separate genera (Macropathini) of the Southern Hemisphere from all others. A key to the 6 tribes is given with figures. Macropathini and Rhaphidophorini are separate primitive branches from a hypothetical ancestral form resembling Anostostominae. Troglophilini (=Dolichopodini of table), derived from Rhaphidophorini and Tropidischiini, are an aberrant branch from the former earlier than Ceuthophilini. Daihiniini are an offshoot of Ceuthophilini. Rhaphidophorini occur in southern and eastern Asia, Japan, and the Malay Arch. (to New Guinea) with the center of development on the mainland; Troglophilini in Asia Minor and southern Europe in caves; Tropidischiini, Ceuthophilini, and Daihiniini in N. Amer., the ancestral forms coming over a north Atlantic land bridge. The subfam. is predominately of the temperate zone, only *Rhaphidophora* reaches the equatorial region. The Macropathini, most developed in N. Zealand, are separated from all others by a wide zone. One genus each is recorded from southern Chile, Patagonia, and the Falkland Is., and *Spelaeiacris tabulae* Peringuey from Capetown, S. Africa. This distribution indicates an Antarctic continent. S. American Anostostominae and Gryllacrinae show relationship with N. Zealand and Australian forms, those of Africa do not.—*L. P. Rockwood.*

5834. KARNY, H. H. On Malaysian katydids (Tettigoniidae). Represented in the collections of the Federated Malay States Museum (Kuala Lumpur) and the Raffles Museum (Singapore). *Jour. Fed. Malay States Mus.* **13**(2/3): 69-157. 2 col. pl., 48 fig. 1926.—Scaphurinae (=Phaneropterinae): *Elimaea signata* ssp. **siamensis** ♀* (p. 70), Siam. Key to the species of *Scambophyllum* included. *Scambophyllum* **basileus*** (p. 75), Negri Sembilan; *S.* **pendleburyi** ♂* (p. 77), Perak; *S.* **rarofasciatum** ♀* (p. 79), Siam; **STYLOMOLPA** (p. 82) near *Molpa* Walker, with *S.* **angustipennis** ♂* (p. 83), Selangor. The "Ancylecha-Holochlora-group" represents the most important group of the Malaysian Phaneropterinae: *Tapiena* **triangulata** ♀ (p. 91) and *Elbenia* **robinsoni** ♂* (p. 92), Selangor; *E.* **smedleyi** ♂* (p. 93), Sumatra; *E.* **pendleburyi** ♂* (p. 94), Perak; *Pseudopsyra* **bilobata** ♂* (p. 97) and *P.* **digitata** ♂* (p. 97), Selangor; *Parapsyra* **hyalina** ♂* (p. 101), no locality; *P.* **murice-tincta** ♀* (p. 101), Perak; *P.* **laticauda** ♀* (p. 102), Negri Sembilan; *Holochlora* **annulicornis** ♀* (p. 104), no locality; **PARANEROTA** (p. 105), type *P.* **gracilis** (*Phaneroptera g.* Burmeister); *Phaneroptera furcifera* Stål is also referred to *Paranerota; Isopsera* **chaseni** ♂* (p. 105) and *I.* **rotundata** ♀* (p. 107), Pahang; *Stibaroptera* **parvula** ♂* (p. 109), Pulau Pisang. Pterophyllinae (=Pseudophyllinae): *Pseudophyllus* **pomposus** ♀* (p. 112), Siam; *Cratioma* **oculatum** ♀* (p. 113), Pahang; *Phyllomimus* **boden-klossi** ♀ (p. 118), Singapore; *Olcinia* **pallidifrons*** (p. 123), Perak; *Typhoptera* **siamensis** ♀* (p. 126), Siam. Mecopodinae: Key to the species of the genus *Characta* included. *Characta* **kinabaluensis** ♂* (p. 127), Borneo. Meconeminae (=Meconeminae+Listroscelinae part): *Xiphidiopsis* **chaseni** ♂* (p. 130), Perak; *X.* **exigua** ♀* (p. 131), Pahang; *X.* **elaphocerca** ♀* (p. 132), Perak; *X.* **siamensis** ♀* (p. 134), Siam; *X.* **denticulata** ♀* (p. 135) and *Amytta* **subanalis** ♂* (p. 137), Selangor; *A.* **tribola** ♂* (p. 138) and *A.* **tahanensis** ♂* (p. 139), Pahang. Hexacentrinae (=Listroscelinae part+Tympanophorinae): **GLENOPHISIS** (p. 140), similar to the So. Amer. genera *Carliella* Karny and *Arachnoscelis* Karny, type *G.* **pretiosa** ♂* (p. 141), Perak. Agraeciinae: **PSEUDOSUBRIA** (p. 147), intermediate between *Subria* Stål and *Eppioides* Hebard, type *P.* **decipiens** ♀* (p. 147), Perak; *Scytocera* **laticauda** ♀* (p. 149), Perak, nocturnal. —*O. W. Olsen.*

5835. REHN, JAMES A. G. African and Malagasy Blattidae (Orthoptera),—Part I. *Proc. Acad. Nat. Sci. Philadelphia* **83**: 305-387. 4 maps, 5 pl. 1931.—*Ectobius* is considered by groups, and 4 maps present the known distribution of the African species, key to spp.; *E.* **kikuyuensis*** ♂ (p. 323), Kenya (type in Paris Mus.), Uganda, and Sudan, at altitudes 4000-5600 ft.; *E.* **kikensis*** ♂ (p. 328), Dahomey, type in Paris Mus.; *E. togoensis** ♂ redescribed; *E. aethiopicus** additional description, alpine and subalpine; *E. neavei** addit. descr.; *E.* **larus*** ♂ (p. 338), Belgian Congo, type in Belgian Congo Mus.; *E.* **makalaka*** ♂ (p. 340), So. Rhodesia, type in So. African Mus.; *E.* **insperatus*** ♂ (p. 343), Kenya (type in Paris Mus.), Uganda, Tanganyika, and Nyasaland; *E. africanus** Sauss. (=*Hololampra sjöstedti* Shelford), addit. descr.; *E.* **textilis*** (p. 354), Natal, type in Acad. Nat. Sci. Philadelphia; *E.* **leptus*** ♂ (p. 357), Belgian Congo, type in Belgian Congo Mus.; *E.* **darbandae*** ♂ (p. 358), French Equatorial Africa, type in Paris Mus.; *E. lineolatus** first description of ♀; *E.* **stanleyanus*** ♂ (p. 362), Tanganyika, type in Brit. Mus.; *E.* **nuba*** ♂ (p. 363), Sudan, type in Brit. Mus.; *E. rammei** redescription; *E.* **alleni*** ♂ (p. 367), Kenya, type in Mus. Comp. Zool.; *E.* **involutus*** (p. 369), Transvaal (type in Acad. Nat. Sci., Phila.), Brit. Bechuanaland and Orange Free State; Group **XOSABLATTAE** (p. 374) in Ectobiinae, next to group Maretae, based on **XOSABLATTA** (p. 374), type *X.* **natalensis** (*Chorisoblatta n.* Rehn) (p. 374); *Epilampra* **usambarensis*** ♂ (p. 375), Tanganyika, type in Berlin Zool. Mus.; *Panchlora* **stanleyana*** (p. 378), Cameroons (type in Acad.

Nat. Sci. Phil.), Gold Coast, and Uganda; *Oxyhaloa* **conia*** (p. 380), Uganda (type in Imp. Inst. Ent.) and Belgian Congo; *Zuluia* **lithostrota*** ♀ (p. 383), Portuguese E. Africa, type in Acad. Nat. Sci. Phil.

5836. UVAROV, B. North Caucasian species of the genus Paradrymadusa Herm. (Orthoptera, Tettigoniidae) and their zoogeographical importance. Ежегодник Зоологического Музея Академии Наук СССР. (*Ann. Mus. Zool. Acad. Sci URSS.*) 30(2): 331-337. 12 fig. 1929.—*P. beckeri** Adel., *robusta** Miram, and **picta*** (p. 334) (Daghestan) are closely related, the last also allied to *konowi* Bol. from Anatolia; *P.* **gracilis** ♀* (p. 331), Daghestan, is probably allied to *sordida* Herm. from Transcaucasia. Key to north Caucasian species only. *Paradrymadusa* is a typical representative of the ancient fauna of the dry mountainous regions of Mediterranean Asia. The relict occurrence of these species north of the isolating forest belt of western Transcaucasia is additional evidence of former continuous northward extension of the xeric Mediterranean fauna and flora. Such relicts extend much farther westward along the parallel ridges of the northern Caucasus than has been recognized. The relict xerothermic elements appear to be in a state of progressive development.—*T. H. Hubbell.*

5837. WU, C. F. A list of species of crickets from the China Coast. *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 2: 25-26. 1929.—36 spp. are listed.

PROCHORDATA

(See also in this issue Entry 3319)

5838. SALFI, M. Su alcuni Ascidiacei del golfo di Napoli. *Ann. Mus. Zool. R. Univ. Napoli* 6(1): 1-7. 4 fig. 1929.—An annotated descriptive list of 7 mostly rare or little known spp. *Polycitor* (*Eudistoma*) *costai** (Della Valle) is described in detail. *Didemnopsis inarmata* v. **linearis** (p. 6).

5839. SALFI, MARIO. Note descrittive e biologiche su due ascidie del golfo di Napoli. *Publ. Staz. Zool. Napoli* 8(3/4): 273-288. 2 pl., 2 fig. 1927.

5840. SLUITER, C. PH. Seconde note complémentaire sur "Les Ascidies de la côte Atlantique du Maroc" d'après les recherches de l'office de faunistique du Maroc. *Bull. Soc. Sci. Nat. Maroc* 9(7/8): 113-119. 3 fig. 1929. —Data are given on 8 spp., including *Didemnum* **pingue*** (p. 114) and *Tridemnum* **acanthodes*** (p. 117).

5841. VAN NAME, WILLARD G. The ascidians of Porto Rico and the Virgin Islands. *Sci. Surv. Porto Rico & Virgin Isl. (New York Acad. Sci.)* 10(4): 403-512. 4 pl., 73 fig. 1930.—A general discussion is given of the anatomy of ascidians and of their relations to vertebrates. The strong similarity of a larval ascidian* to a tadpole* is discussed. A list is given of 26 spp. from Porto Rico and 25 spp. from the Virgin Isls. The majority of the species are fully described, and illustrated anatomically, and photographs of some are presented. The bibliography contains 48 references.

CYCLOSTOMATA, ELASMOBRANCHII, AND PISCES

BARTON WARREN EVERMANN, *Editor*

H. WALTON CLARK, *Associate Editor*

(See also in this issue Entries 3024, 3044, 3295, 3306, 3310, 3313, 3314, 3315, 3317, 3320, 3322, 3329, 3331, 3332, 3333, 3334, 3339, 3345, 3352, 3353, 3762, 3922, 3947, 4219, 4268, 4315, 4340, 4345, 4349, 4384, 4520, 5254, 5255, 5259, 5261, 5302, 5344, 5352, 5372, 5375, 5384, 5393, 5473, 5493, 5496, 5574, 6048)

5842. BAILLY, M. PIERRE. Description d'un stomiatide nouveau de la région des Iles Canaries. *Bull. Mus. Nat. Hist. Nat. [Paris]* 2(4): 378-382. 1 pl., 6 fig. 1930.—**PAREUSTOMIAS** (p. 378) (Stomiatidae), with *P.* **chabanaudi*** north Atlantic, Lat. 28° 21′ N., 17° 40′ W. from a depth of 1900 meters; type in Mus. Nat. Hist. Paris.—*Evermann & Clark.*

5843. BOLTON, LLOYD L. Sockeye tagging on the Fraser River, 1928. *Bull. Biol. Board Canada* 16. 8p. Map. 1930.—Details are given of the tagging of 402 fish (*Oncorhynchus nerka*) in the lower Fraser River between July 28 and Sept. 8. At the time of writing the report, there had been returned 61 tags, 5 of which were accompanied by insufficient or obviously incorrect information so that the conclusions were drawn from only 56 fish. They are as follows: The fish normally transfer from salt water to fresh in a gradual and rather leisurely manner; any attempt to hasten this transfer is in general likely to be unsuccessful, the fish tending either to return towards the sea or remaining where liberated for some time before proceeding up stream. The handling necessary for the transportation of the fish is also a disturbing factor. The normal rate of movement up stream is slow, the average being probably about 4 miles a day.—*Evermann & Clark.*

5844. CHABANAUD, PAUL. Sur la taxonomie des soléidés du Nouveau-Monde. *Bull. Mus. Nat. Hist. Nat. [Paris]* 2(3): 260-268. 1930.—Following a discussion of early descriptions and an examination of types, the author gives a synopsis of the subfam. Soleinae including the genus *Achirus* and of the subfam. Trinectinae including the genera *Trinectes, Baeostoma,* and *Catathyridium.—Evermann & Clark.*

5845. CHABANAUD, PAUL. Sur quelques poissons de la famille des soléidés peints par Risso. *Bull. Mus. Nat. Hist. Nat. [Paris]* 2(3): 269-270. 1930.—Risso's descriptions were often not intelligible and his ichthyological collection was destroyed. However, the library of the Museum has an album entitled "333 fishes painted by Risso." Among the soles this enables us to determine what he meant by several of his species; for example: Plate 281, *Monochirus pegusa* Risso = *M. hispidus* Raf.; Pl. 282, *Solea oculata* Risso = *Quensella ocellata* (L.); Pl. 283, *Rhombus mangili* Risso = *Microchirus variegatus* (Donovan); Pl. 284, *R. theophilus* Risso = *Pegusa lascaris* (Risso) *juvenis;* Pl. 285; *Solea polus* Risso = *Pegusa kleini* (Bonaparte).—*Evermann & Clark.*

5846. CHABANAUD, PAUL. Description d'un nouveau Cubiceps (Pisces Stromateidae) de la mer Rouge. *Bull. Mus. Nat. Hist. Nat. [Paris]* 2(5): 519-523. 1930.—*Cubiceps* **dollfusi** (p. 519), closely related to *C. pauciradiatus* and *C. brevimanus,* Red Sea. Seven specimens were obtained in the Gulf of Suez.—*Evermann & Clark.*

5847. CHU, YUANTING T. Bibliography of Chinese fishes. *Peking Soc. Nat. Hist. Bull.* 4(4): 45-65. 1930.—This bibliography aims to include all known publications on Chinese fishes. The main list comprises 194 titles, while a supplement includes 50 papers which have some references to Chinese fishes.

5848. [FILATOV, D. P., and S. N. DUPLAKOV.] ФИЛАТОВ, Д. П., и С. Н. ДУПЛАКОВ. Материалы к изучению рыб Аральского моря. **[Study of fishes of the Aral Sea.]** Бюллетень Средне-Азиатского Государственного Университета. (*Bull. Univ. Asie Centrale [Tashkent]*) 14. 203-230. 1 pl. 1926.—Morphology, ecology, reproduction, geographical distribution, migrations, and industrial aspects of 24 spp., divided into 2 main groups based on character of the spawn and length of spawning period.

5849. FLEMING, R. A. Preliminary report on ex-

periments with marked fishes, 1929-1930. *Proc. and Trans. Liverpool Biol. Soc.* 44: 87-94. 1929/30.—Of 550 marked plaice liberated in the Irish Sea, 34 were recaptured within a few weeks. While some were taken on the same fishing grounds, others showed a general southerly movement through St. George's Channel, several having traveled for 150-200 miles in 9-12 weeks. One went 70 miles north in 5 days.

5850. FOWLER, HENRY W. A collection of fishes from the Texas coast. *Copeia* 1931(2): 46-50. 1 fig. 1931.—A list of 39 spp., with locality and date records and with descriptive notes on some spp.

5851. FOWLER, HENRY W. A synopsis of the fishes of China. Part I. The sharks, rays, and related fishes. Part II. The herrings and related fishes. [To be cont'd.] *Hong Kong Naturalist* 1(1): 24-34. 7 fig.; (2): 79-88. 5 fig.; (3): 129-138. 7 fig.; (4): 177-189. 5 fig. 1930. 2(1): 69-79. 7 fig.; 2(2): 111-123. 14 fig. 1931.—This is an account, by systematic groups, of the fishes reported from China. Brief diagnoses and keys are given for families and genera, and there are keys to the spp. of some genera. Under each sp. the original reference and type locality are cited, together with other references pertaining to China. These are followed by a brief description and a statement of general distribution. Chinese common names are supplied in some cases. Many of the spp. are figured.

5852. FOWLER, HENRY W. Fishes obtained by the Barber Asphalt Company in Trinidad and Venezuela in 1930. *Proc. Acad. Nat. Sci. Philadelphia* 83: 391-410. 6 fig. 1931.—A systematic list of 106 spp. from Trinidad and 37 spp. from Venezuela, with locality and date records, and with descriptive notes for some of the spp. *Tachysurus* **atroplumbeus*** (p. 394), Trinidad; **PELTATETRAOPS** (p. 396), n. subg. of *Anableps* Bloch, type *A. microlepis* Müller & Troschel; *Menidia venezuelae* Eigenm. (=*Kirtlandia beani* Meek & Hildebrand); **TIGRIGOBIUS** (p. 401), n. subg. of *Gobiosoma* Girard, type *G. macrodon* Beebe & Tee-Van; *Brannerella* **guttata*** (p. 401), Trinidad; **POROALTICUS** (p. 403), Blenniidae, related to *Blennius*, type *P.* **sewalli*** (p. 403), Trinidad; *Thalassophryne* **wehekindi*** (p. 404), Trinidad; *Anchoviella* **venezuelae*** (p. 406), Venezuela. Types of new spp. in Acad. Nat. Sci. Philadelphia.

5853. GOODRICH, E. S. On the relationship of the ostracoderms to the cyclostomes. *Proc. Linnean Soc. London* 142. 45-49. 1929/30(1931).—The author reviews some of the characters on which Stensiö based his claim of relationship between these groups. He concludes that the Petromyzontia and the Myxinoidea together form a single monophyletic group; and that, even if derived from some remote cephalaspidomorph ancestor, the modern cyclostomes must have acquired some of their most conspicuous special characteristics after they had diverged from the cephalaspidomorphs. The evidence for the theory that the cyclostomes are the degenerate descendants of the Palaeozoic cephalaspidomorphs is still weak.

5854. GRAY, J., and S. B. SETNA. The growth of fish. IV. The effect of food supply on the scales of Salmo irrideus. *Jour. Exp. Biol.* 8(1): 55-62. 1931.—*S. irrideus* fed continuously throughout the year exhibit on their scales no seasonal periodicity in the distance apart of their eccentric ridges or rings. Similar fish fed with abundant food form on a proportion of their scales abnormally wide rings even during the winter months. Fish fed with limited diet developed abnormally narrow rings. The width of the rings is probably closely associated with growth rate.—*J. M. Robson.*

5855. GUDGER, E. W. Fishes with two mouths. *Amer. Mus. Novitates* 444. 7p. 9 fig. 1930.—In a yellow perch (*Perca flavescens*) with 2 mouths, the second or lower mouth was formed by an accidental tearing away from the lower jaw of the whole floor of the mouth and the hyoid region. Figures and descriptions are also given of a similar 2-mouthed *Gadus luscus* from England, a *Salmo fario* and a *Thymallus vulgaris* from Sweden, and a *Lophius piscatorius* from Nice, France. Three of these 5 fishes were hooked in the lower mouth, whence it is inferred that this is functional and most used.—*E. W. Gudger.*

5856. GUDGER, E. W. Ichthyomyzon concolor in the Coosa River at Rome, Georgia, with notes on other lampreys in our south Atlantic and Gulf drainages. *Copeia* 4. 145-147. 1930.—Seven medium-sized adults (5 parasitic on one cat-fish) are described with measurements and tooth counts. This is the first record of these fishes in the Alabama River system and apparently the first for the Gulf of Mexico drainage. *Petromyzon marinus* is on record in the waters of both N. and S. Carolina, and from the east coast of Florida, but apparently not recorded from Georgia or the Gulf drainage.—*E. W. Gudger.*

5857. HARDENBERG, J. D. F. Some remarks on the genus Chirocentrus (Cuv.). *Treubia* 12(1): 51-65. 1930.—Statistical differences were found between the 2 spp. of *Chirocentrus*, i.e., *C. dorab* Forsk. and *C. hypselosoma* Bleeker, in respect to the length: height relation, length of head: height of head relation, caudalis-dorsalis: height of caudal peduncle relation, and the head: length relation. *C. dorab* has the larger scales, and one more ray in pectoral. Gill rakers of *dorab* usually 3-14/15; *hypselosoma* 5-16/17. *Dorab* has 2-4 more vertebrae. *Hypselosoma* has a longer maxillary. The samples studied may embrace more than one race of each species. The distributions overlap. There is evidence that ♂♂ of *C. hypselosoma* are much smaller than ♀♀.—*J. H. Wales.*

5858. HEINTZ, ANATOL. The anterior-lateral plate in Titanichthys. *Ann. and Mag. Nat. Hist.* 8(44): 208-212. 3 fig. 1931.—A specimen described by Claypole in 1893 as the "left premaxillary" of a new form, *Dinichthys clarki*, proves to be the anterior-lateral plate* of a *Titanichthys* sp. The development and specialization of this plate in various Arthrodira (*Coccosteus**, *Dinichthys**, *Titanichthys*, and *Heterostius**) are traced.

5859. HODGSON, WILLIAM C. Investigations into the age, length and maturity of the herring of the southern North Sea. Part III. The composition of the catches from 1923 to 1928. (A section on the hydrography of the area by J. R. LUMBY.) *Min. Agric. & Fish., Fishery Invest.* [*Gr. Brit.*] *Ser. II* 11(7): 3-75. 34 fig. 1929.—Data collected six consecutive years. A preliminary report was published by the author in 1925. Length data were taken by a method described by Wollaston and Hodgson in 1929; age estimates by the usual method of annual growth zones on scales. The stock of herrings in the western part of the southern North Sea forms a definite unit in the herring population of the North Sea as a whole. Return each year of the old stock is shown, and no indication of outstanding additions of fish from other areas where the length at a given age was different from that of the southern North Sea; nor has there been any noticeable migration from the stock. The composition of a "year-class" (fishes with the same number of growth zones) remains constant and is the same for northern and southern samples. Large proportions of winter, autumn, and summer-spawned fish enter into the make-up of big year-classes; lesser ones are composed mainly of one dominant brood. Data on changes in proportion from year to year between the several year-classes do not yet warrant conclusions. Whitebait samples show 3 characteristic groups of modal lengths corresponding to the groups of modes of l_4 found by calculations from the scales of adults; the commonest group in each case being 7-8 cm., a size derived from December–February spawning. Study of the vertebrae, in connection with the temp. and salinity of the water for this area during the spawning months, gives no consistent results, although the author is inclined to the previously advanced view that variation in number depends on temp. conditions at time of hatching. To discover what conditions are necessary to bring about good productivity of the various spawnings, it would be important to form an idea of the intensity of any one spawning season for

the whole North Sea by investigating the composition of the stock of herring in other areas.—*F. LaMonte.*

5860. **JORDAN, DAVID STARR, BARTON WARREN EVERMANN, and HOWARD WALTON CLARK.** Check list of the fishes and fishlike vertebrates of North and middle America north of the northern boundary of Venezuela and Colombia. U. S. Dept. Commerce Bur. Fisheries Report U. S. Fish Com. for 1928. Pt. II, Bur. Fish Doc. 1055. pp. 1-670. 1930.—A revision of the Jordan & Evermann Check-List of 1896, containing in as natural sequence as our present knowledge permits (1) the names of all species and subspecies that the authors admit as valid, (2) as many of the vernacular or common names for each species as have been readily obtainable, (3) the known geographic distribution of each species, (4) the reference to every real synonym. Thus, this work is really a check-list of all the scientific names that have ever been applied to any American fish. Three hundred eleven families are included, represented by 1490 genera, or 4137 species.—*Evermann & Clark.*

5861. **[KAGANOVSKIĬ, A.]** КАГАНОВСКИЙ, А. Гибрид между жерихом и язем. **Aspius aspius taeniatus n. iblioides × Leuciscus idus oxianus. [A hybrid between Aspius and Leuciscus.]** [English summary.] Бюллетень Средне-Азиатского Государственного Университета. (*Bull. Univ. Asie Centrale* [*Tashkent*]) 14. 63-64. 1 pl. 1926.—Description and table of dimensions of a specimen* from the Aral Sea.

5862. **LERICHE, MAURICE.** Les poissons du Crétacé marin de la Belgique et du Limbourg hollandais. (Note préliminaire.) Les résultats stratigraphiques de leur étude. *Bull. Soc. Belge Géol. Paléont. et Hydr.* 37(3): 199-318. 19 fig. 1927(1929).—Records from the Cretaceous of this region the following elasmobranchs (Selachii), *Acanthias appendiculatus; Squatina* **hassei*** (p. 206), Holland; *Ptychodus decurrens; P. mammillaris; P. rugosus; P. latissimus; P. polygyrus; Rhombodus binckhorsti; Corax falcatus; C. pristodontus; Pseudocorax laevis; P. affinis; Hybodus (Polyacrodus) woodwardi*; H.(?)dewalquei; Acrodus dolloi; Synechodus* **nerviensis*** (p. 230), Belgium; *S. faxensis; Cestracion rugosus; Ginglymostoma minutum; Scapanorhynchus rhaphiodon, S. (?) subulatus; Odontaspis macrorhiza; O. bronni; Lamna appendiculata; L. serrata; L. venusta; L. crassa; L. semiplicata; L. (?) arcuata; Oxyrhina mantelli; O. acuminata; O. angustidens; Ischyodus lonzeensis*; Edaphodon* **ubaghsi*** (p. 257), Belgium; *Elasmodus greenoughi; E.* **planus*** (p. 261), Holland. Teleosteii: *Coelodus* **glauconiensis*** (p. 264), Belgium; *Anomoeodus munsteri, A. subclavatus; A. fraiponti; A.* **foriri** (p. 268), Holland; *Athrodon tenuis; Acroteminus splendens; Protosphyraena ferox; Belonostomus cinctus; Portheus* sp.; *Enchodus faujasi; E. lemonnieri; Apateodus corneti; Climolichthys* sp.; and *Cylindracanthus cretaceus.* In addition to the above listed fishes the author records the presence of many echinoderms, a few brachiopods, pelecypods, and cephalopods, and the decapod, *Hoploparia muncki,* the chelonians *Glyptochelone suyckerbuyki* and *Allopleuron hoffmanni;* the plesiosaurian, *Plesiosaurus houzeaui;* and the mosasaurians, *Hainosaurus bernardi, Plioplatecarpus houzeaui, Prognathosaurus solvayi, P. giganteus,* and *Mosasaurus lemonnieri.*—*D. J. MacNeil.*

5863. **NICHOLS, J. T. Some Chinese fresh-water fish synonyms.** *Peking Nat. Hist. Bull.* 5(2): 15-26. 1930.—An attempt to correlate the nomenclature in 2 taxonomic papers on Chinese fresh water fishes published almost simultaneously in 1928 without possible reference to one another, namely by Rendahl, *Arkiv. für Zool.* 20A (I, No. 1). p. 1-194 [see B. A. 5(1): entry 3424], and Nichols, *Bull. Amer. Mus. Nat. Hist.* 58(1): p. 1-62 [see B. A. 4(1): entry 3072]; and to allocate names more or less current in recent literature. No new names are proposed.—*J. T. Nichols.*

5864. **NICHOLS, JOHN TREADWELL. Egg capsule of Scyliorhinus retifer.** *Copeia* 1931(2): 38-39. 1 fig. 1931.—Description of egg capsule*, presumably of *S. retifer,* taken from stomach of a sea bass off the Atlantic Coast of the United States.

5865. **PATTEN, WILLIAM.** New ostracoderms from Oesel. *Science* 73(1903): 671-673. 1931.—Ostracoderms from the Up. Silurian, Oesel Isl., Baltic Sea, with data showing their genetic relationship to sea scorpions: *Trematapis milleri* (p. 672), *Trematapis* **mammillata** (p. 672), **DARTMUTHIA,** representing a new family **DARTMUTHIDAE** (p. 672), in some respects intermediate between the Cephalaspidae and Trematapidae, with *D. gemmifera.*

5866. **PELLEGRIN, JACQUES.** Les barbeaux d'Espagne. *Bull. Mus. Nat. Hist. Nat.* [*Paris*] 2(5): 510-515. 1930.—The immense genus *Barbus,* which has 2 representatives in France, has 4 in Spain, the distribution of which is given in detail. Attention is called to 2 ♂ specimens of *B. bocagei,* which, during the breeding season, were provided with many nuptial tubercles or "pearl-organs," these being rare in this genus. The species of *Barbus* are exceedingly variable, and hybridism occurs, not only between different species of the genus, but even between *Barbus* and fishes of different genera; thus Steindachner described a hybrid between *Barbus bocagei* and *Chondrostoma polylepis.* For the purpose of comparison, the spp. of North Africa (Barbary, Morocco, and the Sahara) are discussed. In general, though there are exceptions, the more northern species have smaller scales, and therefore a greater number along the lateral line. An analytical key is given to 17 spp. of the genus.—*Evermann & Clark.*

5867. **[POPOV, A. M.]** ПОПОВ, А. М. К познанию ихтиофауны крымского побережья Черного моря. **[Ichthyofauna of the Black Sea coast of Crimea.]** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(9): 211-216. 1930.—Ecological distribution of 56 spp., of which *Spratella serdinka, Pomatoschistus minutus,* and *Syngnathus schmidti* are recorded near the Crimean shores for the first time, and *Box boops* is new for the Black Sea. The author also found a rare hybrid *Acipenser stellatus × A. guldenstaedti,* and a new hybrid *Atherina pontica × A. hepsetus.*

5868. **[POPOV, A. M.]** ПОПОВ, А. М. О новом роде рыб Davidijordania (Zoarcidae, Pisces) в Тихом Океане. **[A new genus of fishes, Davidijordania, in the Pacific Ocean.]** [English summary and diagnosis.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1931(8): 210-215. 1931.—**DAVIDIJORDANIA** (p. 212), compared with *Lycenchelys,* type *D.* **lacertina** (*Lycenchelys lacertinus* Pavlenko) (p. 213), including also *L. ornatus* Soldatov and *L. poecilimon* Jord. & Fowler. *Hadropareia* **brachyrhynchus** (*Lycenchelys b.* Schm.) (p. 211); *Lycodes* **fasciatus** (*Lycenchelys f.* Schm.) (p. 212). No true representatives of *Lycenchelys* are found in the Pacific, the genus being confined to the north Atlantic.

5869. **REID, MARGARET E. The distribution and development of the Cunner (Tautogolabrus adspersus Walbaum) along the eastern coast of Canada.** *Contr. Canadian Biol. and Fish.* 4(25/29): 433-441. 1929.—Data were obtained by examining tows taken at 5 points along the eastern coast of Canada. In the Gulf of St. Lawrence spawning probably begins early in June, but the most favorable season is from early July to early Aug. Somewhat similar conditions obtain in St. Mary Bay. In the Shelburne region and in Passamaquoddy Bay conditions were found to be unfavorable. Low temp. is believed to be the factor accounting for the lack of success in the latter 2 regions.—*J. R. Dymond.*

5870. **SANZ ECHEVERRÍA, JOSEFA. Investigaciones sobre otolitos de peces de Melilla. [Otoliths of the fishes of Melilla.]** *Bol. R. Soc. Españ. Hist. Nat.* 29(2): 71-80. 2 pl., 1 fig. 1929.—A study made at Melilla, northern Spain, of otoliths from 19 spp. of fishes. Measurements and a full description of the otoliths is given, but no measurements of the fishes from which they were taken. Attention is called in the résumé to possible use of the otoliths in the identification of families.—*L. A. Adams.*

5871. **SCHMIDT, P.** On the Pacific halibut. Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(8): 203-208. 4 fig. 1930.—The halibut of the Pacific coast of N. Amer., hitherto regarded as identical with the Atlantic species, *Hippoglossus hippoglossus** L., proves to be *H. stenolepis** Schmidt, 1904, described from the Sea of Okhotsk. The characters of the 2 spp. are compared in detail.

5872. **SCHMIDT, P., and G. LINDBERG.** On a new Japanese fish, Paracanthochaetodon modestus n. gen. et sp. (Chaetodontidae). Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(17): 468-470. 1930.—**PARACANTHOCHAETODON** (p. 469), near *Holacanthus*, type *P.* modestus (p. 469), Japan; type in Zool. Mus. Russian Acad. Sci.

5873. **SCHROEDER, WILLIAM C.** An account of the fishes dredged by the Albatross II along the continental slope south of New England in February and March, 1929. *Copeia* 1931(2): 41-46. 1931.—Little systematic dredging has been done in this area during the past 35 years. The present account records 22 spp. taken in 3 hauls between latitudes 37° and 41° N., at depths of 28 to 100 fms. It consists chiefly of descriptive and taxonomic notes. *Argentina striata*, first record outside of Gulf of Mexico; *Hypoclydonia bella* Goode & Bean, emended description; *Merluccius bilinearis* shows little growth during the first winter, and attains a length of about 250 mm. by the second winter.

5874. **SCHULTZ, LEONARD P.** Hermaphroditism in the striped bass. *Copeia* 1931(2): 64. 1931.—*Roccus saxatalis*.

5875. **SMITH, HUGH M.** A new name for a Siamese goby. *Copeia* 1931(2): 64. 1931.—*Rhinogobius* simulans (*R. similis* Smith, not Gill).

5876. **SMITH, HUGH M.** The osteoglossid fish Scleropages in Siam. *Copeia* 1931(2): 64. 1931.—First record of Osteoglossidae on mainland of Asia (*Scleropages formosus* in Siam).

5877. **WHITLEY, GILBERT P.** Studies in Ichthyology. No. 4. *Rec. Australian Mus.* 18(3): 96-132. 6 pl., 2 fig. 1931.—[See also B. A. 3(7/8): entry 16844; and 5(4): entry 13034.] Rajidae: **IROLITA** (p. 97), related to *Psammobatis* Günther, type *I.* waitii (*Raja v.* McCulloch) (p. 97); *Malacorhina* Garman replaces *Psammobatis* Günther, preoccupied by *Psammobates* Fitzinger. Dasyatidae: *Taeniura lymnia* halgani* (*Trygon h.* Less.) (p. 97); *Pastinachus sephen* ater (*Taeniura atra* Macleay=*T. mortoni* Macleay) (p. 99). Muraenidae: Bleeker's selection of *G. reticularis* as the type of *Gymnothorax* Bloch is upheld. Syngnathidae: *Phyllopteryx* lucasi* (p. 102), W. Australia. Myctophidae: *Lampanyctus* piabilis* (p. 103), Macquarie Isl. Hemiramphidae: **LOLIGORHAMPHUS** (p. 105), type *L.* normani* (p. 105), Queensland. Cobitidae: **ENOBARBICHTHYS** (*Enobarbus* Whitley, not *Aenobarbus* Temminck) (p. 107). Carangidae: **ZAMORA** (p. 108), type *Z.* hulliana (*Caranx hullianus* McCulloch) (p. 108); **PANTOLABUS** (p. 108), near *Alepes* Swainson, type *P.* parasitus* (*Caranx p.* Garman) (p. 108), redescribed; *Selene vomer* (L.) (=*Stromateus depressus* Perry). Chaetodontidae: *Microcanthus* joyceae* (p. 111), Queensland and New S. Wales; *M.* vittatus* (*Neochaetodon vittatum* Castelnau) (p. 112); *M.* howensis* (p. 112), Lord Howe Isl. Coridae: **HALINANODES** (p. 113), type *H.* leucostigma (*Halichoeres l.* Fowler & Bean) (p. 113), new to Australia (N. Australia); *Pseudanampses* Bleeker (=*Ampheces* Jordan & Snyder); *Anampses geographicus* Cuv. & Val., designated as type. Cheilinidae: *Cheilinus fasciatus* (Bloch) (=*Sparus bandatus* Perry). Callionymidae: **YERUTIUS** (p. 115), related to *Callionymus*, type *Y.* apricus (*Callionymus a.* McCulloch) (p. 115), including also *C. phasis* Günther and *C. rubrovinctus* Gilbert. Platycephalidae: *Neoplatycephalus castelnaui** (Macleay), emended description. **GLYPTAUCHENIDAE** (p. 117), erected for *Glyptauchen* Günther; *G. panduratus* deruptus (p. 117), S. Australia [type dep. not given]; *G.* insidiator* (p. 118), N. S. Wales; *G. i.* mirandus (p. 120), Tasmania. Notograptidae: *Notograptus* livingstonei (p. 120), W. Australia. Gobiidae: *Parvigobius* Whitley, first diagnosis; *P. immeritus* Whitley, emended description and first record for N. S. Wales. Aluteridae: *Navodon* Whitley, emended diagnosis. Diodontidae: *Allomycterus* McCulloch was based upon a specimen which was wrongly identified with *Diodon jaculiferus* Cuvier, and which is now made the type of a new sp., *A.* pilatus (p. 125), N. S. Wales; this sp. becomes the genotype of *Allomycterus;* **TRAGULICHTHYS** (p. 125), near *Allomycterus*, type *T.* jaculiferus* (*Diodon j.* Cuvier) (p. 126). Molidae: *Mola* ramsayi* (*Orthragoriscus r.* Giglioli) (p. 126) is removed from the synonymy of *M. mola* and revived for the Australian and New Zealand sp.; an emended description is given, and early records for N. S. Wales are reviewed. Except where otherwise given, types of new spp. are in Australian Mus.

5878. **WU, HSIEN-WEN.** Description de poissons nouveaux de Chine. *Bull. Mus. Nat. Hist. Nat.* [*Paris*] 2(3): 255-259. 1930.—*Parasilurus asotus* longus* (p. 255), from a mountain stream, Chekiang Province; *Amblyceps* marginatoides* (p. 256) (closely related to *A. marginatus* Günther), Szechwan Province; *Botia* tientainensis* (p. 258) from a mountain stream, Chekiang Province, is compared with *B. pratti* Günther.—*Evermann and Clark.*

AMPHIBIA AND REPTILIA

G. K. NOBLE, *Editor,* Amphibia

KARL PATTERSON SCHMIDT, *Editor,* Reptilia

(See also in this issue Entries 3024, 3044, 3312, 4067, 5260, 5265, 5303, 5308, 5330, 5353, 5378, 5383, 5387, 5388, 5425, 5862, 6013, 6043)

GENERAL

5879. **BURT, CHARLES E.** Herpetological results of the Whitney South Sea Expedition IV. Descriptions of new species of lizards from the Pacific islands (Scincidae). *Amer. Mus. Novitates* 427. 1-3. 1930.—*Emoia* murphyi (p. 1), Savaii Isl., Samoa; *E.* whitneyi (p. 1), *Sphenomorphus* taylori (p. 2), *Tribolonotus* blanchardi (p. 2) and *T.* schmidti (p. 3), Solomon Isls. Types in Am. Mus. Nat. Hist.

5880. **KINGHORN, J. R.** Herpetological notes. No. 2. *Rec. Australian Mus.* 18(3): 85-91. 3 fig. 1931.—Notes on taxonomy, distribution, and habits of various spp. *Chersydrus granulatus*, new to Solomon Isls.; *Egernia whitei* carnarae (p. 88) and *Tiliqua occipitalis* auriculare (p. 88), W. Australia, types in Australian Mus.; *Lygosoma albertisii*, new to Queensland; *Amphibolurus barbatus*, mating ceremonial described.

5881. **WU, HSIEN-WEN.** Herpetological notes from Hangchow. *Nation. Central Univ. Sci. Repts.* [*Nanking*] *Ser. B* 1(1): 51-58. 2 fig. 1930.—Annotated list of 6 Amphibia, 4 Sauria, and 2 Serpentes including *Takydromus septentrionalis** Guenth. and *Eumeces elegans** Blgr.

AMPHIBIA

5882. **ADAMS, L. A., and H. T. MARTIN.** An addition to the urodele fauna of Kansas from the Lower Pliocene. *Bull. Univ. Kansas, Sci. Bull.* 19(2): 289-291. 3 pl. 1930.—Descriptive notes on *Plioambystoma kansense** [See B. A. 4(4): entry 13640.] The associated vertebrate fauna is listed.

5883. BLANCHARD, FRANK N., and FRIEDA COBB BLANCHARD. Size groups and their characteristics in the salamander Hemidactylium scutatum (Schlegel). *Amer. Naturalist* 65(697): 149-164. 5 fig. 1931.—Evidence is presented in favor of the view that *Hemidactylium* attains sexual maturity near the end of its 3rd season of life, i.e., when it is approximately 2½ yrs. old. Juveniles in their 1st autumn can be recognized by their small size (about 26-41 mm. of total length) and by their short tails (less than the length of the body measured to the posterior insertion of the hind leg). There is practically no difference in length between the sexes at this age, but the mean for the ♀♀ is slightly, perhaps significantly, greater than that for the ♂♂. Juveniles in their 2nd autumn are distinctly longer than the yearlings, but as a group they overlap in length the shorter portion of the adult group. The ♀♀ average about 4 mm. longer than the ♂♂. The relative length of the tail is not significantly different between the sexes at this age. It is distinctly different, however, from that of the yearlings, for it is nearly always longer than the body. The adults are, of course, larger than the juveniles, except for some overlapping. The ♀♀ are longer by 9½ mm., on the average, than the ♂♂, and, when bearing eggs, have distinctly wider abdomens. The ♂♂ have relatively longer tails than the ♀♀, and are recognizable otherwise by differences in the shape of the head. There is some evidence that differences in local conditions may have a decided influence on the sizes attained by the different populations.—*Authors' summary.*

5884. FOSI, VITTORIA. L'ibernazione dei girini di Rana esculenta nel Senese. Nota preliminare. [Hibernation of tadpoles of R. esculenta near Siena, Italy. Preliminary note.] *Boll. Zool.* [*Napoli*] 2(2): 67-75. 1931.

5885. HSU, HSI-FAN. A new giant frog of Amoy. *Contrib. Biol. Lab. Sci. Soc. China. Zool. Ser.* 6(3): 19-23. 3 fig. 1930.—*Rana* **nantaiwuensis***.

5886. LANTZ, L. A. Description of two new salamanders of the genus Hynobius. *Ann. and Mag. Nat. Hist.* 7(38): 177-181. 1 pl. 1931.—*Hynobius* **hirosei*** (p. 177), Shikoku, and *H.* **longimanus*** (p. 178), Hondo, Japan; *H. peropus** Boulenger is described for differentiation.

5887. LATSKY, LULU. Die Sistematiese posiesie van Heleophryne met Betrekking tot die Klassifikasie van Noble (1922). [With English summary] *S. African Jour. Sci.* 27: 442-445. 4 fig. 1930.—According to Noble's classification of the Anura (1922), *Heleophryne* is considered a toothed bufonid (leptodactylid). The vertebral column, used by Noble to distinguish between the 4 suborders, is exactly the same in *Heleophryne* as in Diplasiocoela. The thigh musculature, considered by Noble of additional taxonomic value in subdividing the Anura, is useless in the case of *Heleophryne* in determining the suborder to which it belongs, since it does not agree with that of any of the suborders. Therefore, the vertebral column is the only characteristic which can be used for this purpose and *Heleophryne* should consequently be classified under the Diplasiocoela. The peculiar constitution of the breast-shoulder apparatus makes it practically useless for classificatory purposes. Since the adult form is firmisternous, it is not impossible to classify *Heleophryne* under the Diplasiocoela. According to the shape of the sacral vertebrae, the only anatomical characteristic used by Noble to distinguish between the 2 diplasiocoelous families, *Heleophryne* should be regarded as a ranid. *Heleophryne,* therefore, approximates more closely to the Ranidae than to any other family of the Anura.—*From author's summary.*

5888. LATSKY, LULU. A synopsis of researches relating to the validity of the South African Brevicipitidae as an autonomous family of the Anura. *S. African Jour. Sci.* 27: 451-455. 1930.—The author investigated the vertebral column, thigh musculature, breast-shoulder apparatus, ear region, and larval specializations of various species, in order to test the validity of the characters used by Noble in separating the families Ranidae and Brevicipitidae. The material included all the S. African and 3 foreign genera of Brevicipitidae and 2 S. African genera of Ranidae. The author concludes that the characters so far used in distinguishing the two families are unreliable; that the S. African Ranidae and Brevicipitidae can not be separated on either anatomical or embryological grounds; and that the Brevicipitidae in general are not an autonomic family.

5889. LIU, CH'ENG-CHAO. Secondary sexual characters and sexual behavior in Peping toads and frogs. *Peking Nat. Hist. Bull.* 5(2): 49-52. 1930.—The spp. treated are *Bufo bufo asiaticus, B. raddei, Rana nigromaculata, R. plancyi,* and *Kaloula borealis.* Secondary sexual characters of color and structure (more distinct in toads than in frogs) and sexual behavior of each are described. Female toads not ready for mating feign death if grasped by a ♂. Such a reaction is never seen in frogs. At the time of egg-laying the ♀ toad moves around with the ♂ on her back. A ♀ frog will not move around until all the eggs are discharged.

5890. LIU, CH'ENG-CHAO. Time table of the life history of North China frogs and toads. *Peking Nat. Hist. Bull.* 5(2): 53-58. 1930.—A brief summary of the life history and habits of the 8 common frogs and toads of North China, including data on size, color, hibernation, habitat, egg-laying, eggs, and tadpoles.

5891. MERTENS, ROBERT. Die von Dr. F. Kopstein auf den Molukken und einigen benachbarten Inseln gesammelten Froschlurche. *Zool. Mededeel.* [*Leiden*] 13(3/4): 141-150. 2 fig. 1930.—A systematic list of 10 spp. of Anura, with locality records and descriptive and taxonomic notes. A number of species are new to some of the islands. *Hylophorbus* **amboinensis*** (p. 145), Amboina; *H.* **kopsteini*** (p. 147), Sanana Isl.; types in Leiden Mus.

5892. MYERS, GEORGE S. Notes on some amphibians in western North America. *Proc. Biol. Soc. Washington* 43: 55-64. 1930.—Distributional data on some western amphibians, based on material in the collections of Stanford Univ. and on field work during the past 2 years, are given. *Bufo canagicus* **canagicus** (*B. boreas* Baird & Girard) (p. 61) for the common toad of the Pacific Coast; the change also involves the common toad of California, a southern subspecies, which must now be known as *B. c.* **halophilus** (B. & G.).—*S. C. Bishop.*

5893. MYERS, GEORGE S. The status of the Southern California toad, Bufo californicus (Camp). *Proc. Biol. Soc. Washington* 43: 73-78. 1930.—A careful comparison of *Bufo cognatus,* the Desert toad, with *B. cognatus californicus* together with observations on habitats, calls, and distribution has convinced the writer of the specific distinctiveness of the 2 forms and for the latter the name *B.* **californicus** (Camp) is proposed.—*S. C. Bishop.*

5894. NOBLE, RUTH CROSBY. Pine barren pixies. *Nature Mag.* 17(4): 225-228, 266. 11 fig. 1931.—A popular account of the voice and breeding habits of *Hyla andersonii* in New Jersey, with flashlight photographs of calling ♂♂.

5895. OKADA, YAICHIRO. Notes on Japanese frogs. *Annot. Zool. Japonenses* 11(4): 269-277. 1928.—This paper is based on the examination of the coll. of frogs in Mus. Zool. Inst., Tokyo Imp. Univ., containing the following: *Bufo vulgaris* **yakushimensis** (p. 269), Kagoshima Prefecture; *B. v.* **hokkaidoensis** (p. 269), Hokkaido; *Rana* **tagoi** (p. 271), Gifu Prefecture; *Rhacophorus schlegelii* v. *arborea* (Okada & Kawano) and *R. s.* var. *intermedia* (Okada & Kawano) are described; *Rana nigromaculata coreana* and *R. temporaria coreana,* originally described in Japanese (Jour. Chosen Nat. Hist. Soc. No. 6, March, 1928), are here described in English.

REPTILIA

5896. COCHRAN, DORIS M. New reptiles from Beata Island, Dominican Republic. *Proc. Biol. Soc. Washington* 44: 89-92. 1931.—*Anolis dominicensis* **wetmorei** (p. 89);

Uromacer wetmorei (p. 91); *Leimadophis parvifrons* lincolni (p. 91). Types in U. S. Nat. Mus.

5897. GILMORE, CHARLES W. A new species of troödont dinosaur from the Lance formation of Wyoming. *Proc. U. S. Nation. Mus.* 79(9): 1-6. 5 pl. 1931.—*Troödon* Wyomingensis* (p. 1), Up. Cretaceous, type in U. S. Nat. Mus. Figures are given of dermal skull bone and skull bone of 3 unidentified *Troödon* species, and of skull bone of *T. formosus* Leidy. Notes on these specimens are included.

5898. MARCH, D. D. H. Two deaths from one snake bite (Bothrops atrox). *Bull. Antivenin Inst. America* 2(4): 106. 1929.—The death is reported of 2 persons in consequence of one *B. atrox* bite: a man who received the bite of the snake and his wife who probably absorbed some venom through her lacerated finger tips while bathing her husband's punctures.—*A. do Amaral.*

5899. MILLER, N. C. E., and H. T. PAGDEN. Insect remains in the gut of a cobra, Naia tripudians. *Nature [London]* 127(3210): 706. 1 fig. 1931.—This snake, taken in the Federated Malay States, contained heteropterous, coleopterous, and hymenopterous insects.

5900. PING, C. Notes on the shell of a land tortoise from the ancient ruins of Annyang. *Bull. Fan Memor. Inst. Biol.* 1(13): 217-226. 3 fig. 1930.—Although the bones of the head and neck and appendages are missing, the essential characters of the shell enable the author to describe it as *Testudo* anyangensis*.

5901. [RĪABININ, A. N.] РЯБИНИН, А. Н. Mandschurosaurus amurensis nov. gen. nov. sp., верхнемеловой динозавр с р. Амура. (Mandschurosaurus amurensis nov. gen. nov. sp. A Hadrosaurian dinosaur from the Upper Cretaceous of Amur River.) [In Russian and English.] Русское Палеонтологическое Общество. Монографии. (Soc. Paléont. de Russie. Mém.) 2. 1-36. Map, 2 pl., 4 fig. 1930.—**MANDSCHUROSAURUS** (p. 15) (Hadrosauridae), erected for *M.* amurensis* (*Trachodon amurense* Riabinin) (p. 15). This genus is referred to the Hadrosaurinae, and is considered intermediate between *Kritosaurus* and *Orthomerus*. The complete skeleton is described. The deposits in which it was found are believed to be not older than the Belly River or the top of the Senonian—instead of the Lance formation, as formerly assumed. There is a detailed discussion of the classification of the Hadrosauridae and the Trachodontidae.

5902. SLEVIN, JOSEPH R. A note on the discovery of the genus Typhlops in the Hawaiian Islands. *Copeia* 1930(4): 158. 1930.—*Typhlops braminus,* new to Hawaii.

5903. THOMSON, DONALD F., [and C. H. KELLAWAY]. Observations on the venom of a large Australian snake, Pseudechis australis (Gray). I. DONALD F. THOMSON. Synonymy. II. KELLAWAY, and THOMSON. The venom yields and venom. *Australian Jour. Exp. Biol. and Med. Sci.* 7(3): 125-133. 1 pl., 6 fig.; 134-150. 1 pl. 1930.—I. A series of *P. australis* from Cape York Pen. and another of supposed *P. darwiniensis* in the Macleay Mus. exhibit a graduation in the character used for differentiation of these species, i.e., the proportions of the frontal shield. Similar variation in this character within a well-defined species of the same genus, *P. porphyriacus,* affords supporting evidence of its invalidity as a character for the differentiation of species. *P. darwiniensis* is a synonym of *P. australis. P. cupreus* Boulenger is also placed in the synonymy of *P. australis.* II. There seems to be little evidence of any neurotoxic action by this venom, the only hints of such action being afforded by the ptosis which occurs as an early symptom in monkeys, the effects on the blood pressure of rabbits, and the failure of respiration which in some species is the terminal event following its injection. Unlike most other Australian venoms it has a striking action on the heart muscle. Possibly the venom contains a haemorrhagin though this, if present, plays no striking rôle in causing death.

5904. WIMAN, C. Parasaurolophus tubicen n. sp. aus der Kreide in New Mexico. *Nova Acta R. Soc. Sci. Upsaliensis* 7(5): 1-11. 3 pl. 1931.—*P.* tubicen* (p. 1), based on a skull from the Ojo-Alamo formation; type in Univ. of Upsala. The author regards the casque of the Lambeosaurinae as a resonance organ, analogous to the avian syrinx.

AVES

LUDLOW GRISCOM, *Editor*

JAMES L. PETERS, *Assistant Editor*

(See also in this issue section Economic Ornithology; and Entries 3024, 3044, 3298, 3904, 5248, 5260, 5341, 5495, 5588, 6013)

Correction: In preceding issue (6(1):), last line of Entry 2895 should read "are reproduced. A bibliography is given."

GENERAL OR POPULAR

5905. BOETTICHER, H. von. Fr. v. Lucanus, "Das Leben der Vögel" und die Vererbungslehre. *Verhandl. Ornithol. Ges. Bayern* 18(1/2): 176-179. 1929.—Erroneous statements of v. Lucanus on inheritance of sex in birds are corrected in accordance with modern knowledge of heredity.—*H. von Boetticher (transl. by M. M. Nice).*

5906. DIEUZEIDE, R. Un cas d'albinisme incomplet chez un proyer d'Europe. (Miliaria calandra L.) *Actes Soc. Linnéenne Bordeaux, Proc.-Verb.* 80: 36-37. 1928.—Specimens taken in Gironde.

5907. GROEBBELS, FRANZ. Zur Physiologie des Vogelzuges. *Verhandl. Ornithol. Ges. Bayern* 18(1/2): 44-74. 1929.—Various physiological factors in bird migration are discussed. Its inception depends on inner secretions, especially from the sex and thyroid glands. The fat that birds acquire in autumn serves as a source of warmth, energy and food during migration. Temperatures of some birds on the night of migration or the day after proved to be strikingly low.—*M. M. Nice.*

5908. HARDING, Mr. and Mrs. RICHARD B. Juncos with diseased feet. *Bull. Northeastern Bird-Banding Assoc.* 2(2): 39-40. 1926.—Whitish lumps on the toes of several *Junco h. hyemalis.*

5909. HILDEBRANDT, HUGO. Von gemischten Vogelgesellschaften. *Mitteil. Ver. Sächs. Ornithologen* 2(4): 125-132. 1928.—A review of the literature reveals a diversity of opinion on the question of the leadership of mixed companies of such birds as tits, gold-crested wrens, tree creepers, nuthatches, and woodpeckers. The author doubts if there is any individual leadership, for these loose flocks break up readily because of the different requirements of the various species in respect to feeding areas, sleeping quarters, etc. The composition of the groups varies from day to day.

5910. HOFFMANN, BERNH. Aus Bernhard Hantzschs letztem Tagebuch. *Mitteil. Ver. Sächs. Ornithologen* 2(Sonderheft): 5-28. Map, 1 fig. 1929.—This German ornithologist started in 1909 on a voyage to Baffinland, where he died in June, 1911. His notes on the birds of Baffinland have already been published. This presents his ornithological observations during the voyage, including stays at Dundee, Scotland, and Blacklead Island, Baffinland. The notes on 42 forms refer chiefly to distribution and habits. The paper closes with a tribute to Hantzsch's personality.

5911. HOWARD, H. ELIOT. An introduction to the study of bird behaviour. xii+136pp. 11 pl. Macmillan Company. 1929. Pr. $14.00.

5912. LAMBERTON, C. Notes d'ornithologie malgache. Sur une variété albine de Coracopsis nigra Linné. *Bull.*

Acad. Malgache 10: 42. 1927 (1928).—An albinistic specimen from Madagascar is described.

5913. **LAVAUDEN, L.** Les oiseaux des Alpes Françaises. In: *Peuplement des Hautes Montagnes. Mem. Soc. Biogeogr.* [*Paris*] 2: 38-46. 1928.—A discussion of the distribution and particularly the origin of the birds of the high Alpine regions of France. A list of the typical Alpine birds includes 22 resident and 7 summer resident species. No water birds are included and it is believed that northern breeding shore birds taken in the high Alps during the summer belong to the "bandes de célibataries." Survivals of the pre-glacial period are the lammergeier (*Gypaëtus barbatus*) and the dipper (*Cinclus cinclus*) and perhaps the 2 species of chough (*Pyrrhocorax*). There are a number of survivals of this Arctic fauna, which reached the Alps during the glacial period, including the three-toed woodpeckers (*Picoïdes*) and nutcracker (*Nucifraga*). One form, the snowy owl (*Nyctea nyctea*), has probably disappeared since the retreat of the glaciers. The remaining forms have probably reached the Alps by way of central Asia and the Mediterranean. Man has caused the rarity of a few of the game birds, in particular, the rock partridge (*Alectoris graeca*) and the black cock (*Lyrurus*).—*J. Bond.*

5914. **LINSDALE, JEAN M.** A method of showing relative frequency of occurrence of birds. *Condor* 30 (3): 180-184. 3 fig. 1928.—A modification of Raunkaier's method for enumeration of plants by areas as recently quoted by Kenoyer is adapted to ornithology. Frequence of occurrence by days rather than by area is used and is expressed as a % of the number of days of field observation. Data on birds of an area near Geary, Doniphan County, Kansas, enumerated on 200 days in 1921-24 are summarized. Histograms show the distribution of field days by months and the number of species present on the area by months.—*T. I. Storer.*

5915. **LOFFBERG, LILA M.** Bird banding at Florence Lake, 7340 feet altitude [Fresno County, California]. *Condor* 30 (5): 308-314. 1 fig. 1928.—Seventeen species were banded, 1926-28. Data are given on dates of arrival and departure, % of returns, health and injuries in banded and unbanded birds, and habits about the traps. Facts of especial interest: The Clark nutcrackers bury surplus food in the manner of bluejays; 2 Blue-fronted Jays banded here were recovered in Eldorado and Tulare Counties respectively; only ♂♂ of the Cabanis woodpecker winter at this altitude; ♂♂ of the red-winged blackbird arrive on nesting grounds a month before the ♀♀, the latter arriving with the Brewer blackbirds. One Western mockingbird was trapped at this montane station.—*T. I. Storer.*

5916. **LOOS, KURT.** Vierzehnter Bericht über die Tätigkeit der ornithologischen Station des Lotos in Liboch a. d. Elbe für das Jahr 1927. [14th. report of the ornithological station of Lotos in Liboch, Czechoslovakia, for 1927.] *Naturwiss. Zeitschr. Lotos* 77 (5/12): 100-115. 1929.—During the year, 1215 birds of 63 spp. were banded by various collaborators in Czechoslovakia. Among the return records reported are: *Larus ridibundus* from Italy, Dalmatia, Hungary, Germany, and France; *Anas boschas* from Switzerland, Yugo-Slavia, and Italy; *Spatula clypeata* and *Anas crecca* from Italy; *Sturnus vulgaris* from Italy and France. The report also includes numerous detailed observations on the distribution, migration, and habits of various spp.

5917. **LOW, G. CARMICHAEL.** List of the vertebrated animals exhibited in the gardens of the Zoological Society of London, 1828-1927. Vol. 2. 832pp. Publ. by. the Society: London, 1929.—This volume aims to present the name of every bird exhibited alive by the Society from 1828 to 1927. Species to the number of 2330 (not including subspecies) are listed in 37 orders, beginning with the Passeriformes and ending with the Struthioniformes. The Sagittariiformes and the Cathartiformes are kept separate from the Accipitriformes; the names **BALEARICIFORMES** (p. 496) and **BALEARICIDAE** (p. 500), both apparently proposed as new, replace Gruiformes and Gruidae, respectively; and a new order, **MESOENIFORMES** (p. 658), has been added to include the Mesoenidae. Several family names are changed. The treatment of the species and subspecies includes the technical name, with reference to original publication, common English name or names, well-known synonyms, geographical distribution, references to colored plates when such exist, and, in the case of many species, lists of geographical races. The index includes technical names from order to subspecies, and common names as well.

5918. **MICHENER, HAROLD.** Where engineer and ornithologist meet: Transmission line troubles caused by birds. *Condor* 30 (3): 169-175. 5 fig. 1928.—Electric power transmission lines operated at 150,000 and later 220,000 volts in southern California, have experienced numerous "flash-overs," by establishment of an arc across an insulator. Excrement from birds, particularly large raptorial species, proved to be the cause; voiding of excrement on or even in the air near an insulator shortened the insulation distance sufficiently to initiate an arc. When saw-toothed strips of sheet metal were placed with points upward over the outer insulator supports and flat pans of sheet metal over the central insulators and spaces over the central insulators blocked in with wood the damage practically ceased. Approximately $100,000 has been spent in providing these protective devices.—*T. I. Storer.*

5919. **MILLER, LOYE.** The antiquity of the migratory instinct in birds. *Condor* 30 (1): 119-120. 1928.—Miocene shearwaters and gannets differ only in very unimportant details from their Recent representatives and many Pleistocene species are still present in California. With climate in the Pleistocene even milder than at present, the faunal complex, as indicated by marine beds of the Upper San Pedro and the freshwater assemblages of the McKittrick and La Brea asphalt deposits, suggests that migratory movements occurred during Pleistocene. Twelve species believed then to have been migratory are listed.—*T. I. Storer.*

5920. **MUNRO, J. A., et al.** From field and study. *Condor* 31 (2): 74-81. 1929.—By Munro.—"The Horned Owl an enemy of Barrow Golden-eye?" (p. 74). One adult ♀ *Glaucionetta islandiea* was seen, followed by a concentration of 43 downy young all of about the same age, on Rollings Lake northeast of Vernon, Brit. Columbia. Remains of this species have been found in adjacent woods. *Bubo virginianus,* which is common thereabout is suggested as the cause of the decrease in numbers of golden-eyes. The amphipod, *Gammarus limnaeus,* abounds in the lake and is a staple article of food for the ducks. "Male Tree Swallow feeding nestling robins." (p. 75-76). "Evidence of a barn swallow returning to the same nesting site." (p. 77-78). *Hirundo erythrogaster* at Okanagan Landing, Brit. Columbia. "On the courtship of the American bittern." (p. 79). A pair of *Botaurus lentiginosus* observed at Osooyos Lake, Brit. Columbia; the ♂ "pumped," then mated with the ♀. "Blackbirds feeding on the forest tent caterpillar." (p. 80). *Agelaius phoeniceus* and *Euphagus cyanocephalus* at Rollings Lake, Brit. Columbia, June 5, 1925. **A. D. HENDERSON.** "Bears and hawks' nests." (p. 74-75). Evidence cited for bears climbing after hawk nests is purely circumstantial. **WILSON C. HANNA.** "Vermillion flycatcher breeding in Coachella, California." (p. 75). *Pyrocephalus rubinus mexicanus* nesting April 15, 1928, the most westerly station known. **LOYE MILLER, WALTER P. TAYLOR, and H. S. SWARTH.** "Some winter birds at Tucson, Arizona." (p. 76-77). **J. STUART ROWLEY.** "California purple finch nesting in Alhambra, Los Angeles County, California." (p. 77). *Carpodacus purpureus californicus.* **ED. S. CURRIER.** "Least bittern near Portland, Oregon." (p. 78). *Ixobrychus exilis.* "Lesser yellow-legs in Willamette Valley, Oregon." (p. 80). *Totanus flavipes.* **MARGARET S. WYTHE.** "The E. B. Richards collection of birds: Changes in names." (p. 78-79). Four records based on this collection are corrected as to identification. **MARGARET M. NICE.** "Eight-mile censuses in 1927." (p. 79). Additions to bird censuses in

central Oklahoma. **WRIGHT M. PIERCE.** "Bird notes from Big Bear Lake, San Bernardino Mountains, during the summer of 1928." (p. 79-80). Six species. **CLARENCE COTTAM.** "A shower of grebes." (p. 80-81). At Caliente, Nevada, at about 2 a. m. of Dec. 13, 1928, several thousand American eared grebes (*Colymbus nigricollis californicus*) fell on houses, in streets and the surrounding territory. The previous evening the air was comparatively warm and still. By midnight a general and heavy snowstorm set in. The birds were probably on migration to the Pacific coast of southern California when overtaken by the storm. Others were forced down in Enterprise, Nevada, and Uvada and Modena, Utah.—*T. I. Storer.*

5921. **NAGY, EUGEN.** Die paläographische Entwicklung der europäischen Avifauna. *Congres Internat. Xe Zool. a Budapest 1927.* Part 2. pp. 1282-1292. 1929.—The author discusses first the general evolution of the birds, beginning with the Cretaceous and taking up the fossil birds of the Tertiary of Central Europe, and especially of Hungary, and makes deductions from this evidence concerning the climatic conditions of those times, when there were, of course, tropical species in that part of the continent. Later, as the Pleistocene came on, these species were forced southward, and an Arctic fauna occupied Central Europe. In the warmer interglacial intervals, the warmth loving southern species returned, and the Arctic fauna retreated northward or up into the higher, moister, and colder districts, where a few species have remained until today as relicts. The Hungarian fossil birds give evidence of these climatic changes. The author also described the evolution of bird migration, which could have been brought about only by the periodicity of the Pleistocene ages and the seasons of the year. The birds migrate southward and back each year just as they went southward and returned in the ages of the Pleistocene. This, and not hormone secretions, is the true cause of bird migration. That the migrations of today follow the original route of spread toward the north is clearly shown by such American species as *Dendroeca kirtlandi* and *Protonotaria citrea.* The extension toward the north is still going on, as in the case of *Serinus serinus;* and the contrary movement toward the south is also in progress, as witness *Syrnium uralense* or *Turdus pilaris.*—*E. Nagy (transl. by B. F. Howell).*

5922. **OORT, E. D. van.** Resultaten van het Ringonderzoek betreffende den vogeltrek, ingesteld door 'S Rijks Museum van Natuurlijke Historie te Leiden. [Results of bird-banding undertaken by the Leiden Museum.] *Zool. Mededeel.* 12(3/4): 217-247. 1929.—This report covers the years 1926, 1927, and 1928, giving return records for numerous individuals belonging to about 50 spp. The birds were banded in Netherlands and recovered in Netherlands, Germany, Belgium, France, England, Ireland, Portugal, Spain, Italy, Azores, Morocco, Tunisia, and Angola.

5923. **PALMER, T. S.** Notes on persons whose names appear in the nomenclature of California birds. *Condor* 30(5): 261-307. 5 fig. 1928.—A contribution to the history of west coast ornithology, comprising biographical information in varying amount on 183 persons who have described or whose names have been used in the description of birds found in Lower and Upper California. There is also an index to published portraits of 115 of the persons listed.—*T. I. Storer.*

5924. **SCHEFFELT, ERNST.** Die Vogelwelt unserer Heimat. [The bird life of our homeland.] (*Der Weg zur Natur. Gemeinverständliche Darstellungen aus dem Reich der Natur.*) 182pp. 2 col. pl., 51 fig. Herder u. Co.: Freiburg im Breisgau, 1928. $1.45.—This book aims to acquaint the beginner with the birds of central Europe, their habits, and their habitats. The first section describes some of the species characteristic of the various seasons of the year. Their structure, environment and adaptations to it, breeding, song, and migration are described. A third section of the book treats of a number of bird groups, arranged according to the types of landscape or habitat they frequent—forest, plain, mountain, vineyard, park and garden, river, marsh, and lake. The voices of some species are represented by musical notation. A list of reference works and a register of common and technical names complete the book.—*F. Harper.*

5925. **SCHMIDT-BEY, WILHELM.** Stösserjagden und Erkennung fliegender Raubvögel. [Hunting and recognition of birds of prey in flight.] *Ornithol. Monatsschr.* 54(10): 161-169. 1929.

5926. **SPRAWSON, EVELIN.** Concerning hooded parrakeets. *Avicult. Mag.* 4(9): 256-259. 1926.—A discussion of plumage variations.

5927. **UCHIDA, SEINOSUKE.** Bird-banding in Japan. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1040-1041. 1926 (1928).—Abstract.

5928. **WHITTLE, CHARLES L., and HELEN GRANGER WHITTLE.** Some bird weights. *Bull. Northeastern Bird-Banding Assoc.* 2(2): 33-36. 1926.—Records of 11 species (chiefly Passeres) are given. In some spp., such as *Carpodacus p. purpureus,* adult ♂♂ seem to weigh more than ♀♀ or immature birds.

SYSTEMATICS

5929. **BOWEN, W. WEDGWOOD.** A new race of Heterotrogon vittatum from Mount Kenya: eighth preliminary paper on the birds collected during the Gray African Expedition—1929. *Proc. Acad. Nat. Sci. Philadephia* 82: pp. 265-266. 1 fig. 1930.—*Heterotrogon vittatum* keniensis* (p. 265), Kenya Colony, type in Acad. Nat. Sci. Philadelphia. A synopsis of the 4 subspp. of this bird is given.

5930. **BOWEN, W. WEDGWOOD.** Geographical variation in Poicephalus fuscicapillus. *Proc. Acad. Nat. Sci. Philadelphia* 82: pp. 267-268. 1930.—Three subspp. are recognized, including *P. f.* tanganyikae (p. 267), Tanganyika Terr., type in Acad. Nat. Sci. Phila.

5931. **CHASEN, F. N., and C. BODEN KLOSS.** On some birds of the genus Cyornis. *Bull. Raffles Mus., Singapore* No. 2. [23]-[42]. 1 col. pl. 1929.—This review is confined to the birds of Malaysia, Indo-China, India, and Ceylon. It conforms largely to Stresemann's earlier treatment of the genus, but gives additional information. There is a key to the several groups or "formen-kreise." The systematic list includes distributional data and taxonomic discussion. *Cyornis b. banyumas* (Horsf.) (=*C. b. limitans* Robinson). *C. b. cantatrix* (Temm.) is taken out of the synonymy of *C. b. banyumas. C. b.* montana (*C. whitei m.* Robinson & Kinnear) (p. 28). *C. turcosa* rupatensis (*C. elegans r.* Oberholser) (p. 39). *C. t. turcosa* (=*C. elegans antelia* Oberh.). The ♀♀ of *C. rufigastra sumatrensis* and *C. r. indochina* are figured on a colored plate.

5932. **CORTI, ULRICH A.** Beiträge zur Systematik der Goldhähnchen. *Ornithol. Beobachter* [*Bern*] 25(1): 6-8. 1927.—In plumage, nesting, voice, and habits the spp. of *Regulus* seem closer to *Phylloscopus* than to *Parus.* The author therefore follows Reichenow, rather than the majority of authors, in referring *Regulus* to the Sylviidae instead of to the Paridae. He does not recognize the family Regulidae nor even a subfamily Regulinae.

5933. **DICKEY, DONALD R., and ADRIAAN J. van ROSSEM.** Geographic Variation in Aulacorhynchus prasinus (Gould). *Ibis* 6(1): 48-55. 1 fig. 1930.—Synopsis of the races. *Aulacorhynchus prasinus* stenorhabdus (p. 52) and *A. p.* volcanius* (p. 53), El Salvador; types in D. R. Dickey coll.—*W. W. Bowen.*

5934. **FIGGINS, J. D.** Proposals relative to certain subspecific groups of Carpodacus mexicanus. *Proc. Colorado Mus. Nat. Hist.* 9(1): [1]-[3]. 1930.—*C. m.* smithi (p. 2), NE. Colorado; type in Colo. Mus. Nat. Hist. The name *obscurus* McCall is revived for the subspp. inhabiting SE. Colorado, New Mexico, Kansas, Oklahoma, Texas, and perhaps eastern Arizona. The name sayi is proposed for the subspecies west of the continental divide, replacing the name *frontalis* Say.

5935. **GYLDENSTOLPE, NILS.** On a new spine-tail

from East Ecuador together with some notes on the forms of the Synallaxis rutilans-group. *Arkiv. f. Zool.* [*Stockholm*] 21A(3, paper 25): 1-20. map. 1930.—*Synallaxis* cherriei cherriei (*S. rufogularis* Cherrie, not Gould) (p. 2); *S. c.* napoensis ♀ (p. 3), Ecuador, type in Royal Nat. Hist. Mus., Stockholm. The *S. rutilans* group is reviewed, and a key is given for the 6 forms recognized. The treatment of each form includes synonymy, citation of type, description, measurements, distribution, and taxonomic remarks. *S. r. amazonica* Hellmayr (=*S. r. caquetensis* Chapman).

5936. **HARTERT, ERNST.** Types of birds in the Tring museum. *Novitates Zool.* 35(1): 42-58. 1929.—Detailed notes on the synonymy and distribution of most of the 53 forms treated. The majority of the forms were described by Mathews, but there are 4 Bonaparte types, 2 of Stresemann, and 12 others by a single authority. In every case the modern name is given with the synonym. The Corvidae are treated exhaustively, and 19 forms are listed with annotations but are not given serial numbers in the list. Numerous names are reduced to synonymy, and others questioned.—*L. Jones.*

5937. **HENRY, G. M.** Coloured plates of the birds of Ceylon, with a short description of each bird by W. E. WAIT. Part 3. 16 col. pl. Publ. Ceylon Govt., Dulau & Co., 32 Old Bond St.: London, 1930.

5938. **JOUARD, HENRI.** Sous-espèces nouvelles de Passereaux paléarctiques (Paridae et Certhiidae). *Bull. Soc. Zool. France* 54: 245-252. 1929.—*Parus palustris* darti (p. 245), western France, type in coll. Louis Bureau; *Aegithalos caudatus* bureaui (p. 246), Pyrénées-Orientales, type in author's coll.; *A. c.* galliae (p. 247), western and northern France, type in coll. René d'Abadie; *A. c.* potyi (p. 248), central France; *Certhia brachydactyla* bureaui (p. 248), Brittany, type in coll. J. Rapine; *C. b.* parisi (p. 249), Pyrénées-Orientales, type in author's coll.; *C. familiaris* fatioi (p. 250), Switzerland, type in author's coll.; *C. f.* rufa (p. 252), Bavaria, type in Zoolog. Staatsammlung, Munich.

5939. **KISTJAKOVSKIJ, A., und G. KOTSHUBEJ.** Eine neue Lerche aus dem Ussurigebiet—Alauda arvensis nigrescens subsp. nov. Всеукраїнська Академія Наук, Труды Фізично-Математичного Віддилу (Збірник Праць Зоологічного Музею ч. 7). (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Mus. Zool. No. 7*) 13(1): 247. 1929.—*A. a.* nigrescens, Siberia.

5940. **MATHEWS, GREGORY M.** [New birds.] *Bull. British Ornith. Club* 50(338): 41-42. 1930.—Loriidae: DOREENIA (p. 41), type *Nestor notabilis* Gould. Motacillidae: *Anthus novaeseelandiae* taupoensis (p. 42), New Zealand; type in Brit. Mus. Psittacidae: *Cyanoramphus auriceps* novana (p. 42), New Zealand; type in Brit. Mus. Charadriidae: *Limnocinclus acuminatus* juva (*L. a. rufescens* Mathews, not Middendorff) (p. 42).

5941. **MEYER de SCHAUENSEE, RODOLPHE.** A new barbet from the Batu Islands. *Proc. Acad. Nat. Sci. Philadelphia* 81: 521. 1929.—*Mezobucco duvauceli* tanamassae, type in Acad. Nat. Sci. Philadelphia.

5942. **NEUMANN, OSKAR.** Die Formen von Pyrrhura perlata Spix. *Verhandl. Ornithol. Ges. Bayern* 17(4): 428-431. 1927.—Critical notes on the 4 forms recognized: *P. p. perlata,* range unknown; *P. p. lepida,* Para and Maranhão; *P. p. coerulescens,* Maranhão; and *P. p. anerythra,* Rio Tocantins.

5943. **OBERHOLSER, HARRY C.** Another new subspecies of Nannus troglodytes from Alaska. *Proc. Biol. Soc. Washington* 43: 151-152. 1930.—*Nannus troglodytes* stevensoni (p. 151), Amak and Amagat Isls.; type in U. S. Nat. Mus.

5944. **RILEY, J. H.** Four new forms of birds from Szechwan, China. *Proc. Biol. Soc. Washington* 43: 133-136. 1930.—*Columba rupestris* austrina (p. 133). *Yuhina nigrimentum* quarta (p. 134); *Y. gularis* omeiensis (p. 134); *Garrulax albogularis* laetus (p. 134). Types in U. S. Nat. Mus.

5945. **ROTHSCHILD.** [Remarks on birds of paradise.] *Bull. British Ornith. Club* 50(338): 38-40. 1930.—Among various forms discussed, the author considers *Cicinnurus goodfellowi* a hybrid between *C. regius* and *Diphyllodes guilelmi-tertii,* and *Falcinellus astrapioides* a hybrid between *F. fastosus* and *Astrapia nigra.*

5946. **SALOMONSEN, FINN.** Remarks on the European forms of Haematopus ostralegus L. *Ibis* 6(1): 56-66. 1 fig. 1930.—Three races are recognized on size and shape of bill; *H. o. ostralegus** L., *H. o. occidentalis** Neum., and *H. o.* malacophaga (p. 58), Thorsa, Iceland, type in Zool. Mus., Copenhagen. Wing and bill measurements of a large series are tabulated.—*W. W. Bowen.*

5947. **SHULPIN, LEONID M.** Pericrocotus roseus divaricatus (Raffles), seine Biologie und Verbreitung im russischen fernen Osten. *Jour. Ornith.* [*Berlin*] 78(1): 113-122. 1930.—Detailed description of distribution and notes on the ecology. With remarks upon moult, color, and dimensions of specimens.—*L. M. Shulpin.*

5948. **STEGMANN, B.** Zur Systematik der Rotschwänze. *Jour. Ornithol.* [*Berlin*] 76(3): 496-503. 1928. —*Phoenicurus phoenicurus mesoleucus* is regarded as a ssp. of *P. p. phoenicurus,* intergrading with it in the Caucasus. *P. ochruros ochruros* of the Caucasus is regarded as a mixture of *P. o. gibraltariensis* and *P. o. semirufa;* the extremely variable specimens from this region are thus accounted for by Mendelian variation. *P. o.* xerophilus (p. 501), Tibet, type in Zool. Mus. Russian Acad. Sci.

5949. **VAN ROSSEM, A. J.** The Sonora races of Camptostoma and Platypsaris. *Proc. Biol. Soc. Washington* 43: 129-132. 1930.—*Camptostoma imberbe ridgwayi* Brewster is revived from the synonymy of *C. i. imberbe,* and its range is given as northwestern Mexico and southern Arizona. *Platypsaris aglaiae* richmondi (p. 130), Sonora to southern Arizona, type in D. R. Dickey coll.

5950. **WETMORE, ALEXANDER.** The ground-dove of Navassa Island. *Proc. Biol. Soc. Washington* 43: 149-150. 1930.—*Chaemepelia passerina* navassae (p. 149), Navassa Isl., W. Indies; type in U. S. Nat. Mus.

LOCAL AND FAUNISTIC

5951. **BÄSSLER, FRIEDRICH A.** Das Haselhuhn, Tetrastes bonasia rupestris (Brehm), in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 2(4): 168-169. 1928.—Remains of one hazel hen was found in 1928.

5952. **BERNHARDT, P.** Kormorane, Phalacrocorax carbo (L.), in Moritzburg. *Mitteil. Ver. Sächs. Ornithologen* 2(3): 119. 1928.—Single records of Cormorants in May and Sept., 1919, and Nov., 1927; a number in Sept., 1927.

5953. **CHARLEMAGNE, M.** Matériaux de l'Ornithofaune de l'Ukraine. [Material on the ornithofauna of the Ukraïne.] 66p. Comité académique ukrainien pour la Coopération intellectuelle: Prague, 1927.

5954. **DANFORTH, STUART T.** Wilson's petrel in the West Indies. *Bull. Northeastern Bird-Banding Assoc.* 3(3): 59-60. 1927.—A sight record of *Oceanites oceanicus* on May 9 is the first one for Porto Rico, and one of very few for the West Indies.

5955. **DITTMANN, E.** Weitere Mitteilungen über den Brachpieper, Anthus c. campestris L., in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 2(1): 27-30. Map. 1927. —A map of the breeding localities of the tawny pipit shows that practically all are in northern Saxony below the 200 m. line. Each pair seems to require a breeding area of about 90,000 to 125,000 sq. m. Song and call-notes are represented syllabically.

5956. **HEYDER, RICH.** Von der Verbreitung des Schwarzkehlchens, Saxicola torquata rubicola (L.), in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 2(2): 57-62. Map. 1927.—A review of the records of the stonechat in Saxony shows that this species breeds in the valleys, for the most part below 200 m., and never above 500 m.

5957. **HEYDER, RICH.** Wann starb der Steinadler als Brutvogel in Sachsen aus? *Mitteil. Ver. Sächs. Ornithologen* 2(2): 68-69. 1927.—The last definite breeding

record of the golden eagle in Saxony was in 1642, not about 1825, as previously reported.

5958. HEYDER, RICH. Die Grenzen der Verbreitung des Schwarzkehlchens, Saxicola torquata rubicola (L.), in Mitteleuropa. *Mitteil. Ver. Sächs. Ornithologen* 2(3): 94-102. Map. 1928.—The northern limit of the breeding range of the stonechat, as shown on a map, extends from Schleswig-Holstein to Saxony, upper Silesia, and southwestern Poland. It is not clear what the barrier is to the further extension of its range.

5959. LANGE, R. Polarseetaucher, Colymbus arcticus L., in und bei Chemnitz. *Mitteil. Ver. Sächs. Ornithologen* 2(1): 23-24. 1927.—Six of these loons, apparently lost in a fog while migrating, came to earth during the night of Dec. 23, 1926, and were captured.

5960. MEYER, HORST. Vom Auerwild, Tetrao u. urogallus L., im Zittauer Gebirge. *Mitteil. Ver. Sächs. Ornithologen* 2(4): 158-160. 1928.—The capercaillie still exists in the Zittauer Mts., Saxony, in small numbers, in spite of numerous enemies.

5961. NEUBAUR, F. Ornithologische Miszellen aus der Rheinprovinz 1926 und 1927. *Sitzungsber. Naturhist. Ver. Preuss. Rheinlande u. Westfalens* 1927(A/F): 29D-38D. 1927(1928).—Notes on the occurrence of 52 spp., giving new breeding stations for many. *Numenius arquatus* and *Botaurus stellaris* still breed rarely in lower Schwalm valley despite drainage. *Circus cineraceus* has returned to the Elmpter Moor. *Falco peregrinus* is again nesting on Drachenfels. *Dryocopus martius* has increased in the last 10 years. *Emberiza cirlus* was first seen near Bonn in 1920; since 1923 it has been a regular breeder.—*M. M. Nice.*

5962. PEMBERTON, J. R. The American Gull-billed Tern breeding in California. *Condor* 29(6): 253-258. 5 fig. 1927.—*Gelochelidon nilotica aranea,* to the number of at least 500, were nesting on some small islands in Salton Sea, Imperial Co., California, May 20, where they had not been reported previously. Incidental notes are given on *Pelecanus erythrorhynchos* and a few other water birds, including 1 roseate spoonbill (*Ajaia ajaja*).—*T. I. Storer.*

5963. PETIT, L. Note sur l'arrivée des Hirondelles. *Bull. Soc. Zool. France* 53: 298. 1928.—In spring the swallows arrive in France when the temp. reaches a suitable point (say 14°-15°), and sometimes make a retrograde movement if the temp. drops too low.

5964. RÄSÄNEN, SULO. Columba oenas oenas Karjalassa. (In Finnish with German summary.) *Ornis Fennica* 4(4): 119. 1927.—This species, hitherto considered a very rare breeder in eastern Finland, seems to have become pretty generally distributed in southern Karelia.

5965. SALZMANN, WALTER, und HERBERT LINDNER. Einige Bemerkungen über die Vogelwelt der östlichen Umgebung Leipzigs, vor allem der Muldenaue. *Mitteil. Ver. Sächs. Ornithologen* 2(2): 62-68. 1927.—Notes on the occurrence of 16 spp.

5966. SCHLEGEL, RICH. Ornithologische Beobachtungen im Elstergebiet von Eythra; ein Beitrag zur Ornis des Leipziger Augebietes. *Mitteil. Ver. Sächs. Ornithologen* 1(7): 176-184. 1926.—The concluding part of an annotated list of 148 forms.

5967. SCHLEGEL, RICH. Zur Brutverbreitung der Uferschwalbe, Riparia r. riparia (L.), in der Leipziger Gegend nebst einem Ueberblick über ihr einstiges und gegenwärtiges Brutvorkommen in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 2(1): 16-23. Map. 1927.—Detailed records for various localities show that there has been a marked decrease in the numbers of this species.

5968. TATE, RALPH C. The American magpie in the Oklahoma Panhandle. *Condor* 29(5): 244-245. 1927. —*Pica pica hudsonia* in Oklahoma appeared in the Panhandle region in 1919 and nested in Cimarron County where it had not been observed in the preceding 18-20 years. Similar range extensions in western Kansas, Iowa, and N. Dakota are mentioned.—*T. I. Storer.*

5969. WEISSMANTEL, P. Der Fischadler, Pandion h. haliaëtus (L.), 1925 Brutvogel in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 2(1): 30-35. 1927.—This is the first record of the osprey breeding in Saxony since 1903. Notes on nest, young, food, voice, and general habits are given.

5970. WEISSMANTEL, P. Vom Gänsezug durch die sächsische Oberlausitz. *Mitteil. Ver. Sächs. Ornithologen* 2(3): 109-113. 1928.—Although there are few definite records, *Anser fabalis fabalis* evidently migrates regularly through this region in the fall, and sometimes winters, but rarely appears in spring. *A. anser* is a rare fall migrant, and *A. albifrons albifrons* is an accidental visitor. The direction of the fall migration is toward the southwest.

5971. WHITE, FRANCIS BEACH. Common and Arctic terns at Seabrook, New Hampshire. *Bull. Northeastern Bird-Banding Assoc.* 3(2): 36-37. 1927.—Notes on a breeding colony.

5972. ZIMMERMANN, RUD. Die Brutvorkommen der Graugans, Anser anser (L.), im oberlausitzischen Niederungsgebiet. *Mitteil. Ver. Sächs. Ornithologen* 2(1): 35-39. 1927.—Records for the past century are reviewed. Several recent records show that this goose still breeds in the Ober Lausitz lowland, Saxony, though irregularly and in small numbers.

5973. ZIMMERMANN, RUD. Zwei Wiederansiedlungen des Wanderfalken, Falco peregrinus Tunst., in der Oberlausitz. [Two reoccupied nesting sites of the peregrine falcon in Ober Lausitz, Saxony.] *Mitteil. Ver. Sächs. Ornithologen* 2(2): 70-71. 1927.

5974. ZIMMERMANN, RUD. Das Zwergsumpfhuhn, Porzana parva (Scop.), Brutvogel in der Oberlausitz. [The little crake as a breeder in Ober Lausitz, Saxony.] *Mitteil. Ver. Sächs. Ornithologen* 2(2): 71-72. 1927.—A definite record in 1927, the first one for nearly a century.

5975. ZIMMERMANN, RUD. Ueber die Einwirkungen von Unwetterkatastrophen auf die Vogelwelt. *Mitteil. Ver. Sächs. Ornithologen* 2(3): 120-124. 1928.—In 1926 rain, flood, and wind in Ober Lausitz, Saxony, were disastrous to the nesting of many birds. In 1927 *Sylvia communis* was visibly less numerous; *Acrocephalus arundinaceus* appeared in equal numbers; *A. scirpaceus,* which had suffered especially in 1926, was actually more numerous; *Motacilla flava, Anthus pratensis, Saxicola rubetra, Alauda arvensis, Vanellus vanellus, Tringa totanus,* and *Capella gallinago* were much scarcer.

LIFE HISTORY

5976. ASTLEY, A. Pied flycatcher eating worms. *British Birds* 24(2): 52. 1930.—*Muscicapa h. hypoleuca,* in England.

5977. BAUMGARTEN, A. Beobachtungen über die Heidelerche. *Aus der Heimat* 43(5): 129-134. 5 fig. 1930. The author has frequently found the wood lark* singing on the wing at night in Germany, once for at least 2½ hours continuously. The nesting habits are described.

5978. BROOKS, FRED E. White oven-bird's eggs. *Bird-Lore* 32(4): 275. 1930.—A set of 3, in W. Virginia.

5979. CARPARY, H. Tödliche Unglücksfälle in der Natur. *Aus der Heimat* 43(6): 187-188. 1930.—A young starling, held in its nest by an entangling horse hair, was fed by its parents long after the usual time for leaving the nest.

5980. CORLETT, GEOFFREY. Notes on Montagu's harrier. *British Birds* 24(4): 94-96. 1930.—Description of five nestings of *Circus pygarus* (presumably in Great Britain) and of plumage variations in young and adults. The ♀ incubates from the first egg laid, the eggs are laid at intervals of 36 hours to 3 days, each egg hatches on the 28th or 29th day of incubation, and the average clutch is 4.

5981. DAVIS, H. H. Food of tawny owl. *British Birds* 24(1): 30. 1930.—Remains of *Gallinula c. chloropus* and *Picus v. virescens* at nest of *Strix aluco sylvatica* in England.

5982. DOBBRICK, WALDEMAR. Zum Brachvogeldurchzug bei Oestlich Neufähr-Danzig, Herbst 1928 und 29. *Der Vogelzug* 1(2): 91-94. 1930.—Fall migration of

Numenius a. arquata here is in 2 distinct directions—westerly and southerly. It begins about mid-June and ends in early Sept. *N. p. phaeopus* is a rather uncommon migrant in this area, moving chiefly toward the west, but partly toward the south. The migration lasts from July to Sept. The calls of both species are described.

5983. **DOBBRICK, WALDEMAR.** Durchzug von Buntspechten und Tannenhähern bei Oestlich Neufähr. *Der Vogelzug* 1(2): 96-97. 1930.—The migration of *Dryobates m. major* continued from Aug. to Dec. A few nutcrackers, moving W. or SW., were seen on Sept. 30 and Oct. 1.

5984. **DROST, R.** Zur Invasion des Grossen Buntspechtes (Dryobates m. major) 1929. *Der Vogelzug* 1 (2): 97. 1930.—One banded on Helgoland in Sept., found near Bremen, Germany, in Dec.

5985. **DROST, R.** Zum Zugweg deutscher Rauchschwalben (Hirundo r. rustica). *Der Vogelzug* 1(2): 97. 1930.—One swallow banded in Germany in Aug., 1927, was taken in French Middle Congo in Nov., 1927.

5986. **ELLIOTT, J. S.** Starlings using a roost in summer. *British Birds* 23(10): 273. 1930.—Thousands of starlings frequented a roost in Bedfordshire in May and June. Each of 12 shot proved a ♂, the ♀♀ evidently being occupied with incubation.

5987. **GROSS, ALFRED O.** That bird the toucan. *Nature Mag.* 16(5): 291-294. 7 fig. 1930.—A popular account of the habits and life history of *Ramphastos brevicarinatus* in Central Amer.

5988. **HÄBERLE, G.** Spechtschmiede. [A woodpecker forge.] *Aus der Heimat* 43(3): 88. 1 fig. 1930.—A great spotted woodpecker in Germany brought pine cones to a groove in a pine trunk, for convenience in pecking out the seeds. Hundreds of discarded cones accumulated in a heap on the ground below.

5989. **HAMILTON, DAVID.** Black-headed gull feeding in trees. *Scottish Naturalist* 1930(183): 93-94. 1930.—Apparently on caterpillars, in Perthshire.

5990. **HEILFURTH, FRITZ.** Fortpflanzungsbiologische Notizen über einen Aufenthalt im mexikanischen Staat Veracruz. *Jour. Ornith.* [*Berlin*] 78(1): 39-46. 1 fig. 1930.—At the end of May—the beginning of the rainy season—a majority of the birds observed in the State of Vera Cruz, Mexico, were breeding. Insect food is especially abundant at this time. Breeding is believed to take place at the time when food is most easily obtainable.

5991. **HIBBERT-WARE, A.** Rooks collecting rubber objects. *British Birds* 24(1): 27. 1930.—This habit of *Corvus f. frugilegus* has been noted in an English rookery for over 20 yrs.

5992. **HINDWOOD, K. A.** The habits of cuckoos. *Australian Mus. Mag.* 4(1): 17-21. 3 fig. 1930.—A general account of the parasitic habits of these birds.

5993. **HOFFMANN, BERNH.** Die Stimmen der Saatkrähe, Corvus fr. frugilegus L. *Mitteil. Ver. Sächs. Ornithologen* 2(6): 284-287. 1929.—An intensive study of the calls of adults and young at a rookery in Saxony, with syllabic representation.

5994. **LEHMANN.** Der Schwarzpecht als Holzbearbeiter. *Naturforscher* [*Berlin*] 7(2): 53-55. 2 pl. 1930.—Descriptions and figures of excavations by the great black woodpecker in decayed trees in the Thuringian Forest, Germany.

5995. **MASSON, P. W.** Night soaring of swifts. *British Birds* 24(2): 48-50. 1930.—In Kent, England, the author has observed *Apus a. apus* ascending to great heights at twilight in summer. On July 14 a flock of 100 reached an estimated height of 1-1½ miles. There is speculation as to whether the birds spend the night in the air.

5996. **NAUMAN, E. D.** Cardinal vs. brown thrasher. *Bird-Lore* 32(4): 274-275. 1930.—A single nest in Iowa contained eggs of both species. Both species incubated at different times.

5997. **NICHOLS, J. T.** Trap-shy house sparrows. *Bird-Banding* 1(2): 80. 1930.—After a few birds from a flock of house sparrows had been trapped, banded, and released, no more could be trapped. How did these few communicate caution to their fellows?

5998. **OWEN, J. H.** Breeding-habits of the jackdaw. *British Birds* 24(2): 51-52. 1930.—In Essex, England, many nests contained only 3 or 4 eggs. Various nesting-sites are described.

5999. **PITMAN, C. R. S.** Eggs of the Bateleur Eagle. *Oologists' Rec.* 10(1): 3-4. 1930.—Measurements of eggs of *Terathopius ecaudatus* are given.

6000. **SMITH, WENDELL P.** A possible migrating family group. *Bird-Banding* 1(2): 77-79. 1930.—The presence of 6 young and 2 adults of *Zonotrichia l. leucophrys* in Vermont in Oct. suggest the continuance of the family bond through the southward migration.

6001. **WATSON, J. B.** Mortality amongst swifts caused by cold. *British Birds* 24(4): 107. 1930.—*Apus a. apus* in July in Suffolk.

6002. **WENNER, M. V.** Male ring-ouzel brooding. *British Birds* 24(1): 30. 1 pl. 1930.—*Turdus t. torquatus* in Wales, illustrated with photograph.

6003. **WILSON, ALEC. T.** Hen blackbird incubating thrush's eggs. *British Birds* 24(2): 52. 1930.—When a sitting *Turdus philomelos clarkei* was killed on its nest in Wales, a ♀ *T. m. merula* took its place, hatching and rearing the young.

6004. **WITHERBY, H. F.** Twenty-year-old ringed black-headed gull. *British Birds* 24(2): 55-56. 1930.—A *Larus r. ridibundus,* ringed as a nestling in Cumberland, England, in 1910, was recovered there in 1930. Only one other bird is known to have carried a ring for 20 years.

6005. **ZIMMERMANN, RUD.** Beobachtungen am Neste der Zwergrohrdommel, Ixobrychus m. minutus (L.) [Observations on the nesting of the little bittern.] *Mitteil. Ver. Sächs. Ornithologen* 2(5): 223-232. 1929.—In Saxony.

MAMMALIA

GERRIT S. MILLER, *Editor*

REMINGTON KELLOGG, *Associate Editor*

(See also in this issue Entries 3024, 3039, 3040, 3044, 3259, 3312, 3337, 3342, 3358, 3900, 3931, 5248, 5254, 5260, 5269, 5301, 5306, 5313, 5316, 5317)

6006. **AUBERT, EDMOND.** Etude des sinus chez les singes. *Ann. Mus. Hist. Nat. Marseilles* 22(1): 3-27. 3 pl., 12 fig. 1929.—Morphologic study of the sinuses of the various primates is of unequal value, varying according to the different families. In the anthropoids, especially the gorilla, it is of considerable value. Many features point to recent theories regarding the significance of the perinasal pneumatic cavities. The old hypothesis of their supposed part in olfaction and resonance of sound production is rejected. The study supports the mechanical function theory of the sinuses as put forth by Tillaux.—*B. Bickel.*

6007. **BLACK, DAVIDSON.** Notice of the recovery of a second adult Sinanthropus skull specimen. *Bull. Geol. Soc. China* 9(2): 97-98. 1 pl. 1930.—The new specimen yields information concerning some parts not represented in the first, more perfectly preserved, skull and shows some differences which may possibly be due to difference in sex.

6008. **[BORISIAK, A.]** БОРИСЯК, А. Ископаемый морж с Охотского побережья. [A fossil walrus from the Okhotsk coast.] [English summary.] Ежегодник Русского Палеонтологического Общества. (*Ann. Soc. Paléont. Russie*) 8: 1-8. 1 pl. 1928/1929(1930).—*Tri-*

chechus obesus v. **ochoticus*** (p. 7), Siberia, early (?) Quaternary. Type in Mus. Blagovyeschensk, Amur. region.

6009. **BUWALDA, JOHN P., and BERNARD N. MOORE.** The Dalles and Hood River formations [Oregon], and the Columbia River gorge. *Carnegie Inst. Washington Publ.* 404. Map. 11-26. 1930.—A horse tooth is reported, suggesting *Hipparion condoni*, which, with other evidence, points to Middle Neogene age for the Dalles formation.

6010. **COOLIDGE, HAROLD J. Jr.** Notes on the gorilla. In: The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard Africa Expedition 1926-27. Vol 2. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* no. 5) Part 3. XXXIII: Mammals. pp. 623-635. Map, 3 pl. Harvard Univ. Press: Cambridge, 1930.—Abbreviation of a longer paper (*Mem. Mus. Comp. Zool.* 50: 4, pp. 293-381. 1929).

6011. **EHRENBERG, KURT.** Neue Ausgrabungen in österreichischen Höhlen. *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): (71)-(75). 1929(1930).—The author compares the faunas of the Mixnitz, Schreiberwand, and Winden Caves, consisting chiefly of *Ursus spelaeus* and other mammals.

6012. **FURLONG, EUSTACE L.** Capromeryx minor Taylor from the McKittrick Pleistocene, California. Carnegie Inst. Washington Publ. 404. 49-53. 2 fig. 1930.—Specimens, presumably from one individual, include 2 upper* and 2 lower molars* and a calcaneum*, which are described, and measurements of dentition compared with those of a specimen from Rancho La Brea. *Capromeryx* was apparently less numerous in the Pleistocene than *Antilocapra*.

6013. **GAZIN, C. LEWIS.** A Tertiary vertebrate fauna from the Upper Cuyama drainage basin, California. Carnegie Inst. Washington Publ. 404. 55-76. Map. 4 pl., 4 fig. 1930.—The age of the fauna is probably Temblor (Middle Miocene). Fragmentary remains of Testudinidae, Aves, and the following Mammalia are included: canid sp.; **PROTOSPERMOPHILUS** (p. 64), n. subg. of *Citellus* [Rodentia], erected for *C.* (*P.*) **quatalensis*** (p. 64); *Perognathus* **furlongi*** (p. 66) [Rodentia]; *Hypolagus* ? **apachensis*** (p. 67) [Rodentia]; mastodon teeth; *Merychippus sumani*; Protohippus* sp.; *Hipparion* ? sp.; oreodont sp.; camelid sp.; and *Merycodus* sp.* Types are in California Inst. Tech.

6014. **GILES, F. H.** Curious behaviour of Thamin deer. *Jour. Siam Soc., Nat. Hist. Suppl.* 8(1): 55. 1929.—An adult ♂ *Cervus eldi platyceros*, reared from infancy by Siamese priests, remained tame, though unconfined and disappearing each year during the rutting season.

6015. **JEPSEN, GLENN L.** New vertebrate fossils from the Lower Eocene of the Bighorn Basin, Wyoming. *Proc. Amer. Philosoph. Soc.* 69(4): 117-131. 4 pl. 1930.—(Multituberculata: Ptilodontidae) **PARECTYPODUS** (p. 120) (near *Ectypodus*), with *P.* **simpsoni*** (p. 120) (type), and *P.* **tardus*** (p. 121); **NEOLIOTOMUS** (p. 122), similar to *Liotomus*, type *N.* **conventus*** (p. 122); (Insectivora; Leptictidae) *Diacodon* **tauri cinerei*** (p. 124); (Primates; Tarsiidae) *Tetonius* **tenuiculus*** (p. 126); (Primates ?; Plesiadapidae) **TEILHARDELLA** (p. 126), type *T.* **chardini*** (p. 126); (Creodonta; Oxyaenidae) *Dipsalidictis* **amplus*** (p. 128); (Amblypoda; Uintatheriidae) *Probathyopsis* **successor*** (p. 128). Types of all new genera and spp. in Princeton Paleontological Mus. Formerly the Wasatch horizon had been subdivided into the "Sand Coulee" on lower part and the Gray Bull on upper part, but the presence of *Homogalax* in the "Sand Coulee" beds invalidates this term and extends the Gray Bull downward, making it synonymous with "Wasatch" in the Bighorn Basin.—*G. L. Jepsen.*

6016. **JEPSEN, G. L.** Stratigraphy and paleontology of the Paleocene of Northeastern Park County, Wyoming. *Proc. Amer. Philosoph. Soc.* 69(7): 463-528. 2 maps, 10 pl., 1 fig. 1930.—From the Puerco level: (Multituberculata; Ptilodontidae) *Eucosmodon* **gratus*** (p. 499); (Creodonta; Oxyclaenidae) *Loxolophus* **nordicus*** (p. 501); (Triisodontidae) *Eoconodon* sp.* (p. 502); (Mioclaenidae) *Oxyacodon* sp.* (p. 503). From the Torrejon level: (Multituberculata; Ptilodontidae) *Ptilodus* sp.* (p. 503); (Insectivora; Pantolestidae) *Palaeosinopa* sp.* (p. 504); (Creodonta; Oxyclaenidae) *Chriacus* sp.* (p. 504); (? Primates; ? Plesiadapidae) **PLESIOLESTES** (p. 505), type *P.* **problematicus*** (p. 505). Princeton Quarry—Tiffany—Bear Creek level: (Amblypoda; Coryphodontidae) *Titanoides* **gidleyi*** (p. 506); (Multituberculata; Ptilodontidae) **MICROCOSMODON** (p. 508), type *M.* **conus*** (p. 508); (Insectivora; Leptictidae) *Leptacodon* **packi*** (p. 510); *Diacodon* **minutus*** (p. 511); (? Insectivora) **LITOLESTES,** type *L.* **ignotus*** (p. 513); (? Primates; Plesiadapidae) *Phenacolemur* **pagei*** (p. 514); *Pleisiadapis* **fodinatus*** (p. 515); (? Artiodactyla) **PHENACODAPTES,** type *P.* **sabulosus*** (p. 517); (Incertae sedis) *Carpolestes* **dubius*** (p. 520); upper jaw fragment with teeth proves *Litotherium complicatum*, a supposed multituberculate, to be based on an upper tooth of *Carpolestes*. Clark Fork level: (Creodonta; Oxyaenidae) **DIPSALODON** (p. 524), type *D.* **matthewi*** (p. 524); (? Primates; Plesiadapidae) *Plesiadapis* **cookei*** (p. 525). Types of new genera and spp. in Princeton Paleontological Mus. Three new Paleocene faunal horizons were discovered in the Fort Union of the northern part of the Bighorn Basin of Wyoming by the Princeton Scott Fund Expeditions of 1927, 1928, and 1929. The lowest is above the Lance dinosaur-bearing beds in the base of a heavy buff sandstone (heretofore regarded as Lance by the U. S. Geol. Surv.), and has afforded among other Puerco genera, *Oxyacodon, Eoconodon, Conacodon,* and *Loxolophus*. Two hundred feet higher a 2nd level yields Torrejon forms, such as *Chriacus, Tetraclaenodon,* and *Tricentes*. Above this a 3rd new horizon which was locally quarried contains among other genera *Carpolestes, Leptacodon,* and *Ectypodus,* which correlate it in part with the Montana Bear Creek and the Colorado Tiffany. The 4th and uppermost horizon of the Paleocene in this locality is the Clark Fork, described by earlier workers. From an erosional disconformity at the top of the Lance upward through the Paleocene to the locally angular unconformity between the Clark Fork and the Gray Bull, no pronounced structural or stratigraphic break has been observed. The sediments are a series of somber clays and sandstones. This single section contains representatives of all the Paleocene mammalian faunas previously known in North America, and is confined by the Lance below and the Gray Bull above. These two facts afford important new evidence of the relationships of the elements within and bounding the Fort Union.—*G. L. Jepsen.*

6017. **KLOSS, C. BODEN.** A note on Javanese monkeys. *Ann. and Mag. Nat. Hist. Ser. 10* 6(36): 697. 1930.—A translation from the Dutch of H. J. V. Sody's description of the new race proposed by him, *Pithecus aygula fredericae*, published in "De Tropische Natuur Orgaan van de Ned-Indische Natuurhist. Ver." xix. 1913, p. 68.

6018. **KOLLER, OTTO.** Die Soriciden des Zoologischen Museums in Buitenzorg auf Java. *Treubia* 11(3): 313-324. 1930.—This material comprises various forms of the genera *Suncus* and *Crocidura* from the Indo-Malayan region. Variations of *Suncus* in several characters had led to the description of many invalid spp.; 4 named froms (*müllleri, sumatranus, celebensis,* and *semmeliki*) are recognized as color varieties of *S. i. indicus*, a wild-living animal; and 3 forms described as spp. (*S. hosei, S. heterodon,* and *S. fuscipes*) are recognized as color varieties of *S. i. coeruleus*, an animal adapted to living in human habitations. A key is given to 13 recognized Indo-Malayan spp. of *Crocidura*, and there are tabular diagnoses of 27 described spp. Seven forms are treated further, with locality records and taxonomic remarks. Doubt is cast on the validity of various described forms of *Crocidura*.

6019. **KRAGLIEVICH, LUCAS.** Los más grandes

carpinchos actuales y fósiles de la subfamilia "Hydrochoerinae." (Conclusión.) [The largest Recent and fossil "carpinchos" of the subfam. Hydrochoerinae. (Concl.)] *Anal. Soc. Cient. Argentina* 110(5): 340-358. 9 pl. 1930.—*Neochoerus pinckneyi, N. robustus,* and *N. magnus** are discussed and compared in detail; the first 2 may prove to be synonyms of *N. magnus*. *N. giganteus* is redescribed. **PLIOHYDROCHOERUS** (p. 350), n. subg. of *Neochoerus,* erected for *N.* **tarijensis** (*Hydrochoerus t.* F. Amegh.) (p. 350), which is redescribed. A chart shows the author's conception of phylogenetic relationships of the various representatives of the subfamily Hydrochoerinae. There is a bibliography of 32 titles.

6020. KRAGLIEVICH, LUCAS. Nuevos Megalonícidos gigantescos de los géneros "Megalonychops" Kragl. y "Diheterocnus" Kragl. *Rev. Mus. la Plata* 32: 9-21. 7 pl. 1930.—*Megalonychops fontanai**, emended description; *M.* **carlesi*** (p. 14), Argentina, type in Mus. de la Plata; *Diheterocnus holmbergi**, emended descriptions; *Nothrotherium* **roverei** (p. 19), Argentina, type in Mus. Bernardino Rivadavia.

6021. LICENT, F. E. The Nan Ye Li Sanmenian fossiliferous deposit. *Bull. Geol. Soc. China* 9(2): 101-104. 2 fig. 1930.—Sixteen mammalian forms are represented, most of which are identified only generically. The deposit may be transitional between Upper Pliocene and Lower Pleistocene.

6022. LING, A. W., C. A. MacEACHARN, and E. C. READ. Mole destruction experiments. *Univ. Bristol Dept. Agric. and Hort. Bull.* 4. 1-14. 1 fig. 1930.—Baits prepared from Red Squill, liquid or powder, are satisfactory for ridding badly-infested areas of moles, when prepared and handled with care. Gassing also may be used to drive the moles from the runs, and the retreats of the moles under banks or in woods should be gassed as well. Trapping, with all its limitations, is quite satisfactory in the hands of an experienced person.—*From authors' summary.*

6023. LÓPEZ ARANGUREN, DOLORES J. Camélidos fósiles argentinos. [Fossil camelids of Argentina.] *Anales Soc. Cien. Argentina* 109(1): 15-35. 9 fig.; (2): 97-126. 13 fig. 1930.—Previous work on these forms is reviewed. Different interpretations of the dental formula have created confusion. Pm^3 is generally present, but pm_3 is lacking in all the specimens of the alpaca and the vicuña examined by the author, and is found in only a small % of specimens of the guanaco and the llama. Thus generic differences based on the presence or absence of the latter are without value. The form of the premolars, however, may have taxonomic value. The generic and specific names applied to fossil Argentinian Camelidae are reviewed. *Eulamaops* Ameghino, though not recognized by Burmeister, is considered valid. *Camelotherium medium* Bravard, a nomen nudum validated by Burmeister, nevertheless does not apply to a camelid. The systematic list of fossil spp. includes synonymies, descriptions, and taxonomic remarks. *Hemiauchenia major** (Liais) (=*H. paradoxa* H. Gervais & Amegh., *Palaeolama leptognatha* Amegh.); *Lama* **major*** (*Palaeolama m.* H. Gerv. & Amegh.) (p. 98); *L.* **angustimaxila*** (*Mesolama a.* Amegh.) (p. 101); *L.* **gigantea*** (p. 102), type in Mus. de la Plata; *L.* **ameghiniana*** (p. 105), n. n. for *Auchenia mesolithica* Amegh., preoccupied by *Palaeolama m.* H. Gerv. & Amegh., since both are referred to *Lama; L. guanicoe guanicoe** (Müller) (=*Palaeolama mesolithica* H. Gerv. & Amegh.); *L. guanicoe* **lönnbergi** (*Auchenia l.* Amegh.) (p. 109); *L. glama** (L.) (=*Auchenia intermedia* Gerv., *A. castelnaudi* Gerv., *A. cordubensis* Amegh., *A. ensenadensis* Amegh., *Palaeolama crequii* Boule); *L.* **gracilis*** (*Auchenia g.* H. Gerv. & Amegh., =*Hemiauchenia pristina* Amegh.) (p. 114); *L. pacos** (L.) (=*Auchenia lujanensis* Amegh.); *Vicugna vicugna** (Molina) (=*Auchenia frontosa* H. Gerv. & Amegh.). The fossil Camelidae of Argentina are represented by 5 distinct genera: *Palaeolama, Hemiauchenia, Lama, Eulamaops,* and *Vicugna. Eulamaops* alone is distinguished by well-marked cranial characters, the others chiefly by dental characters. None of the spp. is earlier than Post-Pliocene. They reached Argentina with the great immigration from the north in the Pleistocene. Fossil remains show that *Lama glama, L. guanicoe,* and *L. pacos* are distinct spp., the first 2 having coexisted during the entire Pleistocene. Only Post-Pampean remains of *L. pacos* are known. Historically 3 groups may be recognized: spp. which have existed in the wild state since the Pampean (*L. guanicoe* and *V. vicugna*); spp. extinct in the wild state but now domesticated (*L. glama* and *L. pacos*); and all the other spp., now extinct, which probably disappeared before the end of the Pleistocene. There is a bibliography of 24 titles.

6024. LULL, RICHARD SWAN. A remarkable ground sloth. *Mem. Peabody Mus. Yale Univ.* 3(2): 1-20. Map, 9 pl., 3 fig. 1929.—The specimen was found in an extinct volcanic fumarole, near Aden, Dona Ana Co., New Mexico, in a thick accumulation of bat guano at the bottom of the pit. Above this guano were bones of recent mammals, the pit acting as a natural trap. The ground sloth (probably Pleistocene) is referable to *Nothrotherium shastense**, a sp. occurring in the Rancho la Brea fauna. The preservation of the present specimen, however, suggests no great lapse of time since entombment. The skeleton is practically complete, and is held in articulation by the ligaments. Portions of hide, membrane, muscle fibre, and the claws are present, as well as a single coprolite. No other remains have been found at the same level. The skull is smaller than those described by Stock from the Rancho la Brea, and there are other differences in detail, but some of these may be due to the juvenile condition of the present specimen. The premaxillaries, not found at Rancho la Brea, extend well posteriorly, with wide articulations for the maxillaries. There is an ossicle at the mandibular symphysis, evidently with an incisor-like function. The malleus consists only of head and manubrium. The dentition differs from those of the Rancho la Brea specimens principally in the proportions of the teeth. The vertebrae differ slightly from those described by Stock. The number of thoracic vertebrae is definitely shown to be 17. The clavicles are larger than those from Rancho la Brea, but the other bones of the limbs are less rugged and robust, evidently a juvenile character. The distal end of the ulna has a concavity for the reception of the cuneiform. There are 5 digits in the manus, the 1st and 5th not bearing weight. The trapezium is fused with metacarpal I in the left manus but not in the right. The femur has 2 flabellae articulated with it, as well as a flattened ossicle below the outer condyle. In the pes only the outer margin, and mainly metatarsal V, was in contact with the ground. Digit I is represented only by the metatarsal fused with the entocuneiform. Digit IV is complete but relatively small. Digit V has 2 phalanges but no claw. The various patches of skin preserved show no traces of dermal ossicles. The hair is yellow in color, fairly coarse, straight, and subcylindrical. The claws are much larger than the inclosed phalanges. The restoration follows the pose of the skeleton closely. Plant remains in the coprolite include stems and roots of angiosperms of the "sagebrush" type; there is no trace of cactus-like plants. Stock's generic diagnosis may be modified somewhat from this specimen. The type of *Nothrotherium texanum* differs fom the present skull only in characters that may be ascribed to more advanced age. *N. texanum* and *N. shastense,* therefore, are conspecific.—*L. S. Russell.*

6025. NELSON, E. W., and E. A. GOLDMAN. Three new raccoons from Mexico and Salvador. *Proc. Biol. Soc. Washington* 44: 17-22. 1931.—*Procyon lotor* **shufeldti** (p. 17), Mexico, type in U. S. Nat. Mus.; *P. l.* **dickeyi** (p. 18), Salvador, type in Dickey coll.; *P. insularis* **vicinus** (p. 20), Maria Magdalena Is., off Mexico, type in U. S. Nat. Mus.

6026. PIGOT, R. A search for Schomburgk's deer. *Jour. Siam Soc., Nat. Hist. Suppl.* 8(1): 51-54. 1929.—

Wide inquiry through Siam failed to elicit any very definite information concerning *Cervus schomburgkii*, which is considered nearly or quite extinct.

6027. **ROBERTS, AUSTIN.** New forms of African mammals. *Ann. Transvaal Mus.* 13(2): 82-121. 1929.—Descriptions of 45 spp. and subspp. from southern Africa: *Sylvisorex* **angolensis** (p. 84), Angola; *Suncus* **warreni** (p. 84), Cape Province; *Nasilio brachyryncha* **tzaneenensis** (p. 85), Transvaal; *N. b.* **langi** (p. 85), Portuguese East Africa; *N. b.* **shortridgei** (p. 86), N. Rhodesia; *Macroscelides proboscideus* **hewitti** (p. 86), Cape Province; *Mungos mungo* **bororensis** (p. 88), So. Africa; *M. mungo* **rossi** (p. 89), N. Rhodesia; *M. m.* **pallidipes** (p. 89), Transvaal; *Cynictis penicillata* **coombsi** (p. 90), Cape Province; *Leoleo* **krugeri**, Transvaal; *Gliriscus angolensis* **jordani** (p. 95), N. Rhodesia; *Claviglis* **tasmani** (p. 95), S. Rhodesia; *C.* **littoralis** (p. 97) and *C.* **vandami** (p. 97), Portuguese E. Africa; *C.* **alticola** (p. 98), Transvaal; *Gerbillus paeba* **coombsi** (p. 98) and *Tatera afra* **gilli** (p. 100), Cape Province; *T.* **natalensis** (p. 101), Natal; *T. brantsi*, critical notes: *T. lobengulae* **pestis** (p. 103), Orange Free State; *T. l.* **mitchelli** (p. 103) and *T. l.* **pretoriae**, Transvaal; *T. l.* **limpopoensis** (p. 104), Cape Province; *T. l.* **tzaneenensis** (p. 105), Transvaal; *T. l.* **littoralis** (p. 105) and *T. l.* **beirensis** (p. 106), Portuguese E. Africa; *Parotomys brantsi*, critical notes; *Myotomys unisulcatus* **bergensis** (p. 108), Cape Province; *M. sloggetti* **jeppei** (p. 109), Jamestown; *M. s.* **basuticus** (p. 110), Cape Province; *Otomys laminatus* **mariepsi** (p. 110), Transvaal; *Otomys irroratus* **natalensis** (p. 111), Natal; *O. i.* **randensis** (p. 112), Transvaal; *O.* **tugelensis** (p. 113), Natal; *O. t.* **sabiensis** (p. 114), and *O. t.* **pretoriae** (p. 114), Transvaal; *O. t.* **saundersiae** (p. 115), Cape Province; *Dendromus* (*Poemys*) **angolensis** (p. 115), Angola; *D. melanotis* **chiversi** (p. 116) and *Steatomys krebsi* **orangiae** (p. 116), Orange Free State; *S. k.* **transvaalensis** (p. 117), Transvaal; *S.* **natalensis** (p. 117), Natal; *Pelomys fallax* **rhodesiae** (p. 118), N. Rhodesia; *Cryptomys* **langi** (p. 119), Natal; *Lepus saxatilis* **chiversi** (p. 119), Orange Free State; *L. capensis* **ochropoides** (p. 121), Cape Province.—*G. M. Allen.*

6028. **SANBORN, COLIN CAMPBELL.** A new Oxymycterus from Misiones, Argentina. *Proc. Biol. Soc. Washington* 44: 1-2. 1931.—*O.* **misionalis** (p. 1), Argentina, type in Field Mus. Nat. Hist.

6029. **SCHLAIKJER, ERICH MAREN.** Description of a new Mesohippus from the White River formation of South Dakota. *Proc. New England Zool. Club* 12: 35-36. 1931.—*M.* **barbouri** (p. 36) (nearly complete skeleton), type in Mus. Comp. Zool.

6030. **SCHREUDER, A.** Conodontes (Trogontherium) and Castor from the Teglian Clay compared with the Castoridae from other localities. *Arch. Mus. Teyler* [*Haarlem*] 6(3): 99-318. 4 maps, 16 pl., 12 fig. 1929.—A complete survey is given and all particulars of the remains of *Trogontherium cuvieri* found on the Sea of Asov and in Germany at Mosbach, Jockgrim, Hochsachsen, and Mauer, and of *Conodontes boisvillettii* found along the east coast of England, in France at Saint-Prest, Bligny, Chagny, St. Cosme and Curtil, and in the Clay of Tegelen in the Netherlands. They first appear in the later Pliocene and die out in the High-Terrace period. *Trogontherium minus* is a small forerunner known from the English Red Crag and from the fauna of Roussillon. All 3 genera were associated with *Castor*. Teeth and parts of nearly the whole skeleton of *C. boisvillettii* are abundant at Tegelen. A careful comparison is made with those of *Castor fiber, Castoroides, Palaeocastor,* and *Steneofiber* and with the parts known of *T. cuvieri*. Important characters found of *C. boisvilletti* are an alisphenoid canal in the skull; epistropheus and 3rd cervical are coössified like the 6th and 7th; tail vertebrae not flattened, humerus and femur are shorter, and ulna, radius and tibia-fibula longer than those of *Castor;* the fore-foot is smaller, the hind-foot much greater; very strong epicondylar tuberosity on the femur; fibula, completely coössified distally with tibia, articulates with calcaneum; tongue-shaped lateral process on the astragalus; metatarsale IV very stout and large. Conspicuous new characters of *T. cuvieri* are: large pterygoid fossae separated only by a plate consisting of the pterygoids lying against each other forming, with the similarly united maxillae, the base of a wide ductus pneumaticus cranii penetrating basi- and prae-sphenoid. The necessity of distinguishing *T. cuvieri* from *C. boisvilletti* is discussed. Their size does not surpass that of *Castor,* they were swifter movers and dug roots and tubers. A review of fossil Castoridae is given, but nothing can be affirmed yet regarding phylogenetic relationships, or migrations. *Cylindrodon fontis, Eutyponys,* and *Anchitheriomys wiedemanni* may belong to the Castoridae. *Castor subpyrenaicus* Gervais is identical with *Steneofiber jaegeri* Kaup. *Castor praefiber* Dép., *C. issiodorensis* Croiz. & Jobert, *C. plicidens* Major, *C. veterior* Lank., *C. rosinae* Major, and *C. californicus* Kell. cannot be separated from *C. fiber*. A diagnosis of the family is given, a bibliography, and an index.—*A. Schreuder.*

6031. **SLODKEWITSCH, W.** Zur Osteologie der Handwurzel von Elasmotherium caucasicum Borissiak. Ежегодник Русского Палеонтологического Общества. (*Ann. Soc. Paléont. Russie*) 8: 83-90. 1 pl. 1928/1929 (1930).—Fragments of the carpus and metacarpus of *E. caucasicum** from southern Russia are described for the first time. The author discusses the correlation between their structure and the probable habitat of the animal. He agrees with Ringström in separating *Elasmotherium* from the Rhinocerotidae.

6032. **SMITH, G. ELLIOT.** The subdivisions of the order Primates. *Nature* [*London*] 124(3136): 876-877. 1929.—As a compromise between the conflicting views of Haeckel and Hubrecht, Gadow divided the Primates into the suborders Lemures, Tarsii, and Simiae. Later Smith called these suborders Lemuroidea, Tarsioidea, and Anthropoidea. Now J. P. Hill divides the last-mentioned group into Pithecoidea (monkey) and Anthropoidea (apes and man).

6033. **SODY, H. J. V.** De Adjag (Cuon javanicus, Desmarest). *Natuurkundig Tijdschr. Nederlandsch-Indië* 89 (2): 210-380. 29 fig. 1929.—Extensive destruction of game by wild dogs (adjag or wolves of East Indies), is reported. Three spp. of *Cuon* are differentiated: *Cuon dukhunensis, C. javanicus,* and *C. alpinis*. *Canis familiaris sumatrensis* Hardw. is apparently synonymous with *C. javanicus*. The dentition of *Canis* and *Cuon* is compared. In Canidae, molars and premolars indicate a mixed diet; in *Cuon* a carnivorous one. Forehead line, configuration of trunk, ears, tail, etc. indicate plainly that *Cuon* is not an ancestor of the house dog. Crossing of the two has not occurred. Body of *Cuon* is larger, snout shorter than kampoeng dog. Nostrils, eyes, and ears all indicate keen sense receptors. Hair is thick and long, tail plumy, color a dirty brown. Adult male measures: body 85 cm.; tail (exclusive of hair) 28 cm.; shoulder height 48 cm.; weight 12.9 kg.; skull, widest part, 177 mm.; skull, zygomatic width, 106 mm. *Cuon* makes a sound quite different from *Canis*—a note of anguish is prominent. Its bark is infrequent. The widely prevalent idea that there are at least 3 varieties of *Cuon* has no foundation in fact. The adjag, although afraid of man, is curious, and unintelligent, and is easily caught in traps. Its habits are roving. Litters are of 1-3; groups few—50. Small litters, high death rate, and disease (mange), are causative factors in limiting numbers. On the other hand natives regard the adjag as sacred and do not kill it. The numbers of adjags in 1927 in the islands and many districts of the East Indies are compiled. Extermination of the adjag would mean increase in kidangs and wild hogs, which are destructive to crops and to mahogany forests. Shooting, traps, snares, poisoning, etc. are advocated as measures to reduce the number of adjags or exterminate them.—*J. van de Erve.*

6034. **STEPHEN, A. C.** True's beaked whale (Mesoplodon mirus) new to the Scottish fauna. *Scottish Nat.*

1931(188): 37-39. 2 fig. 1931.—Specimen stranded in 1931. Teeth and lower jaw figured.

6035. **STOCK, CHESTER.** Oreodonts from the Sespe deposits of South Mountain, Ventura County, California. *Carnegie Inst. Washington Publ.* 404. 27-42. Map, 1 pl., 1 fig. 1930.—The author records for the first time the presence of a type allied to *Promerycochoerus* west of the John Day region in central Oregon, and a member of the *Leptauchenia-Cyclopidius* group west of the Great Plains. SESPIA (p. 38), n. subg. of *Leptauchenia*, erected for *L. ?* californica* (p. 38); *Promerycochoerus ?* hesperus* (p. 39), upper part of Sespe (Lower Miocene). Types in Univ. California.

6036. **STOCK, CHESTER.** Carnivora new to the Mascall Miocene fauna of eastern Oregon. *Carnegie Inst. Washington Publ.* 404. 43-48. 1 pl., 2 fig. 1930.—*Leptarctus* oregonensis* (p. 45), based on fragments of a skull, type in Calif. Inst. Tech.; *Amphicyon* cf. *simapius**, description and measurements of a fragmentary mandible.

6037. **STOVALL, J. WILLIS.** The protoloph-ectoloph angle and its correlation with the geologic horizon of five genera of North American Equidae. *Jour. Geol.* 37 (8): 790-794. 1 fig. 1929.—The author has observed from a study of the dentition of the North American horses that the angle formed between an axis parallel to the center of the protocone-protoconule and a line parallel to the ectoloph, measured along the anterior and posterior cusps on the external side of the upper premolars and molars, shows considerable variation between the earlier and later species. He states that the protoloph-ectoloph angles for the various genera are directly related to their phylogenetic position, the more primitive having the larger angle; and that the average angle in all the horses of an epoch is directly related to their postion in the geologic column.—*D. J. MacNeil.*

6038. **TEILHARD de CHARDIN, P., and C. C. YOUNG.** Preliminary report on the Chou Kou Tien fossiliferous deposits. *Bull. Geol. Soc. China* 8(3): 173-202. Map, 2 pl., 8 fig. 1929.—A provisional list of mammalian remains (Lower Pleistocene) includes 6 Insectivora, 3 Chiroptera, 13 Carnivora, 22 Rodentia, 12 Ungulata, 1 proboscidean, and 2 Primates, including *Sinanthropus pekinensis*. Few are specifically identified. A table of geological formations, Lower Pliocene to Upper Pleistocene, with characteristic faunas, is appended.

6039. [TERÎAEV, V. A.] ТЕРЯЕВ, В. А. Был ли Elasmotherium трехпалым? (Has the Elasmotherium been tridactylous?) [English summary.] Ежегодник Русского Палеонтологического Общества. (*Ann. Soc. Paléont. Russie*) 8: 77-82. 1 fig. 1928/1929(1930).—*Elasmotherium* may have been tetradactylous, having digits II, III, IV, and V. This suggests a swamp habitat.

6040. **YOUNG, C. C.** Notes on the Mammalia remains from Kwangsi. *Bull. Geol. Soc. China* 8(2): 125-128. 1 pl. 1929.—A rodent, *Rhizomys sinensis**, and 2 spp. of deer from the middle Quaternary.

6041. **ZIMMERMANN, ÁGOSTON.** A Házinyûl Természetrajza Tenyésztése És Hasznosítâsa. [The rabbit, its natural history, breeding, and utilization.] *Magyar Természettudományi Társulat Kiadása.* [*Soc. Royale Hongroise des Sci. Nat., Budapest.*] 319p. 214 fig. 1927.—The first part, on the natural history of the rabbit, includes chapters on the place of the rabbit in the animal kingdom, on the varieties of species, on the life habits, ecologic and physiologic characteristics, and the systematic anatomy of the rabbit. The second part deals with the breeding and includes chapters on the economic significance of rabbit breeding, on the housing and care, on feeding, and on the most frequent and important diseases of rabbits. The third part is on the utilization of the rabbit as raw material (meat, skin, manure), as an experimental animal.—*B. Halpert.*

SYSTEMATIC ZOOLOGY

(GENERAL)

(See also in this issue Entry 3024)

6042. **BATHER, F. A.** Nomenclature at the Eleventh International Zoological Congress. *Nature* [*London*] 127(3192): 39-41. 1931.—An unofficial account, by a member of the International Commission, of the discussion and conclusions on nomenclature at this Congress, with particular reference to the question of "binary" vs. "binominal" nomenclature. The author points out that the revisers of the Code in 1901 really intended to give the phrase "binary nomenclature" what one may call the Tournefort sense, though that intention has never been clear to a large number of zoologists. The Horn resolution, supporting the Linnean interpretation and adopted by the 1930 Congress, apparently does not involve any alteration of the rules. The author proposes the acceptance of the Linnean interpretation, the formulation of a new opinion admitting the generic names of such authors as Brisson and Scopoli by *ad hoc* suspension of Article 25b, and the redrafting of Opinons 20 and 24.

6043. **BEIER, MAX.** Zoologische Forschungsreise nach den Jonischen Inseln und dem Peloponnes. I. [no subtitle]; II. Pseudoscorpionidea. Bearbeitet von MAX BEIER; III. Japygidae (Thysanura). Bearb. von F. SILVESTRI; IV. Myriapoda. Bearb. von KARL ATTEMS; V. Reptilia, Amphibia, Orthoptera, Embidaria und Scorpiones. Bearb. von FRANZ WERNER; VI. Pisces. Bearb. von MAXIMILIAN HOLLY; VII. Ixodoidea. Bearb. von PAUL SCHULZE; VIII. Coleoptera, I. Tenebrionidae. Bearb. von A. SCHUSTER. Cantharidae (=Malacodermata). Bearb. von R. HICKER. Coccinellidae. Bearb. von HANS STROUHAL; IX. Araneae und Opiliones. Bearb. von EDUARD REIMOSER und C. FR. ROEWER; X. Die schalentragenden Land- und Süsswassermollusken. Bearb. von FRANZ KÄUFEL; XI. Crustacea. Amphipoda, Bearb. von STANKO KARAMAN. Decapoda und Süsswasserproben. Bearb. von OTTO PESTA; XII. Die Ameisen der Jonischen Inseln. Bearb. von BRUNO FINZI; XIII. Hymenoptera parasitica. Bearb. von CH. FERRIÈRE. *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. Abt. I.* 138(8): 425-443. 4 maps, 4 pl.; 445-456. 6 fig.; (9/10): 457-461. 4 fig.; 463-470. 6 fig.; 471-485. 1 fig.; 487-489. 2 fig.; 491-495. 4 fig. 1929; 139(3/4): 133-142; 143-154; 161-188. 2 pl., 6 fig.; 283-290. 2 fig.; (5/6): 309-319; 393-406. 4 fig. 1930.—The introductory installment (I) treats of the general character of the region (Corfu, Levkàs, Cephalonia, northwestern Peloponnesus), and of the problems under consideration, which were the collection of soil-bound [bodengebundenen] forms of significance in zoogeography, i.e., those tending to the development of endemism. (II) An annotated list of the 22 Pseudoscorpionidea of western Greece. Cheliferidae: *Chelifer* (*Lamprochernes*) *nodosus* v. moreoticus (p. 445); *C.* (*Trachychernes*) jonicus* (p. 446); *C.* (*Chelifer*) cephalonicus* (p. 448). Obisiidae: *Obisium* (*Blothrus*) odysseum* (p. 451). [(III.) See B. A. 5(4): entry 12950.] (IV.) Twenty-five spp. were taken, including *Chromatoiulus* leucadius* (p. 465). (V.) The reptilian fauna of Corfu and Levkàs appears significantly different from that of Ithaca, Cephalonia, and Zante, and more closely related to that of the adjacent mainland. A systematic list is given of 15 Reptilia and 7 Amphibia, with locality records and taxonomic remarks. A table shows their known distribution on the Ionian and Aegean Isls. and neighboring mainlands. There is also a systematic account of 18 Orthoptera, 1 Embidaria,

and 2 Scorpiones. (VI.) *Gobius* pygmaeus (p. 487). [(VII.) See B. A. 5(4): entry 12671.] (VIII.) Annotated lists. (IX.) Annotated lists, with tabulation showing the world distribution of each species. Most of the spp. are new for the Ionian islands. (X.) A systematic account of about 72 forms, with distributional data and taxonomic remarks. Important previous literature is mentioned. *Hyalacme* beieri* (p. 166); *Albinaria schuchi* ssp. interjecta* (p. 173); *A. s.* ssp. *interjecta* morpha pumilio* (p. 174); *Aegopis acies* ssp. jonicus* (p. 179). All new forms from Levkàs. A table shows the distribution of the various forms on the 5 larger Ionian Isls. and on the mainland. (XI.) Amphipoda: *Gammarus* beieri (p. 283). Decapoda and fresh water forms: *Potamon* (*Telphusa*) *fluviatile* (Latr.), at 800 m. altitude. (XII.) An annotated list of 60. The ♀ of *Camponotus aethiops* v. *concava* Forel is described. (XIII.) The author calls attention to the considerable proportion of terrestrial and wingless spp. of Hymenoptera on the Ionian Isls. A systematic list is given of 28 spp., with locality records and taxonomic remarks. Ichneumonidae: *Gelis nigritus* var. meridionalis ♀ (p. 394). Braconidae: ALYSIELLA (p. 397), related to *Alysia*, erected for *Alysiella* cursitans* ♀ (p. 398). Eurytomidae: *Harmolita* graeca (p. 399). Pteromalidae: *Trimicrops* Kieffer is transferred to this family from the Calliceratidae. Calliceratidae: *Calliceras* cephalonica ♀ (p. 405). All new forms are from the Ionian Isls. The following are new to Greece: *Gelis lichtensteini, Microbracon carinatus, Trimicrops claviger* ssp. *dorsalis, Acanopsilus clavatus,* and *Conostigmus multicolor.*—*M. Beier* (*transl.*).

6044. **FINZI, BRUNO, WOLFGANG ADENSAMER, FRANZ KÄUFEL, HANS STROUHAL, und HERMANN PRIESNER. Weitere Beiträge zur Kenntnis der Fauna Griechenlands und der Inseln des Aegäischen Meeres.** *Akad. Wiss. Wien Math.-Naturw. Kl. Abt. I.* 137(10): 787-798. 1929.—The ants of Greece and of the islands of the Aegean are dealt with in the section by Finzi. An annotated list of 26 spp. includes: *Messor barbarus varrialei* v. werneri (p. 789); description of the ♂ and ♀ of *Plagiolepis pallescens* Forel, apparently known hitherto only from the ☿. An article on the land and fresh water Mollusca, by Adensamer and Käufel consists of an annotated list of 36 spp., and a list in which those from the Aegean are arranged according to the islands in which they occur. The land isopods are dealt with by Strouhal, an annotated list being given. Priesner gives a list of the (32) Rhynchota collected in Greece.

6045. **HAGMEIER, ARTHUR. Die Züchtung verschiedener wirbellosen Meerestiere. In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden der Erforschung der Leistungen des tierischen Organismus.** Teil 5, Heft 4, Lief. 326. p. 443-464. 7 fig. Urban u. Schwarzenberg: Berlin, 1930. Pr. 9 M.—A review together with much original material setting forth the importance of rearing marine animals from the early stages, places and apparatus for collection, methods for keeping them in the laboratory, their breeding dates and the general ecology of the more important marine invertebrates. Detailed descriptions and figures show methods of securing circulation, of feeding marine larvae and of securing pure cultures of food organisms. The accounts of small aquaria, of rearing jars and the wide use of celluloid in pipes and apparatus for sea water are particularly valuable.—*T. C. Nelson.*

6046. **HALLETT, H. M. Entomological notes, 1926.** *Trans. Cardiff Naturalists' Soc.* 59: 39. 1926(1927).—Three spp. in Hymenoptera, Aculeata; 2 in Hemiptera, Heteroptera, and 6 in Lepidoptera are added to the Welsh fauna.

6047. **SHERBORN, CAROLO DAVIES. Index animalium sive index nominum quae ab A. D. 1758 generibus et speciebus animalium imposita sunt. Sectio secunda a kalendis ianuariis, 1801 usque ad finem decembris, 1850.** Part 23: S littera-serratus. pp. 5703-5910; part 24: serratus-squamosus. pp. 5911-6118. Brit. Mus.: London, 1930.

6048. **STRAND, EMBRIK. Zoological and palaeontological nomenclatorical notes.** *Arbeiten Syst.-Zool. Inst. Lettländ. Univ.* 29. 1-29. 1929.—The author lists names, with biblographic data, of genera either omitted or incompletely cited in "Nomenclator animalium," and also erects the following new names for rejected homonyms. —Flagellata: CHRYSOCARNEGIA (*Carnegia* Pantocsek, not Holland) (p. 3); CATAROLA (*Echinopyxis* Pantocsek, not Claparède & Lachmann) (p. 4). Euflagellata: CYRTOPHORANA (*Cyrtophora* Pascher, not Simon) (p. 4). Nemathelminthes: Strongylidae, AMIROIDES (*Amira* Clayton Lane, not Girault) (p. 4); Spiruridae, SEUROCYRNEA (*Cyrnea* Seurat, not Deshayes) (p. 4), *Gongylonema* notosoedironis (*G. ingluvicola* Smit & Notos.) (p. 5); Acuariidae, *Dispharynx* smitiana (*Dispharagus* sp.? Smit & Notosoediro, 1926) (p. 4). Gastrotricha: DACTYLOPODOLA (*Dactylopodella* Remane, not Sars) (p. 5). Nomenclatural emendations in the Mollusca are confined chiefly to fossil forms (Ammonoidea) among which the following are noted: ACROCHORDICEROIDES (*Acrochordiceras* Waagen, not Hyatt) (p. 5); ARCTOCERODES (*Arctoceras* Hyatt, not Böhm) (p. 6); ASPIDITELLA (*Aspidites* Waagen, not Peters) (p. 6); CENTROCERATOS (*Centroceras* Wedekind, not Hyatt) (p. 7); CLIONITITES (*Clionites* Moijs., not Mantell) (p. 8); CYRTOCHILELLA (*Cyrtochilus* Meek, not Jakowlew) (p. 8); DAXATINA (*Dawsonites* Böhm, not Scudder) (p. 9); PARODICERELLUM (*Parodiceras* Wedekind, not Hyatt) (p. 9). Gastropoda, Cypraecea: CRIBRARULA (*Cribraria* Jousseaume, not Persoon) (p. 8). Crustacea, Copepoda: ANOPLOSOMELLA (*Anoplosoma* Sars (lap. cal. *Anaplosoma*), not Agassiz) (p. 9); ASPIDISCIFERA (*Aspidiscus* Norman, not Koenig) (p. 10); BRYAXONA (*Bryaxis* Sars, not Kugelann) (p. 10); CYCLOPINULA (*Cyclopina* Claus, not Agassiz) (p. 10). Arachnida: ABBOTIANA (*Abbotia* McCook, not Leach) (p. 10); ACANTHARANEA (*Acantharachne* Tullgren, not Lütken) (p. 11); ACHAEARANEA (*Achaea* Cambridge, not Hübner) (p. 11); AENIGMAARANEA (*Aenigma* Karsch, not Newman) (p. 11); ALTHEPODA (*Althepus* Thorell, not Rafinisque) (p. 12); PETRUNKEVITCHIUM (*Anaurus* Petrunkevitch, not Rafinisque) (p. 12); ANEPSION (*Anepsia* Koch. not Gistel) (p. 12); ASCURISOMA (*Ascuris* Simon, not Haeckel) (p. 14; ASTITUTA (*Astia* Keyserling, not Agassiz) (p. 14); ATKINIA (*Atkinsonia* Cambridge,, not Stainton) (p. 14); AULETTOBIA (*Auletta* Cambridge, not Schmidt) (p. 14); PELLOLESSERTIA (*Avakubia* Lessert, not Pilsbry) (p. 14); LESSERTIOLA (*Berlandia* Lessert, not Dalmas) (p. 15); BIZONELLA (*Bizone* Simon, not Walker) (p. 15); BOETHUOLA (*Boethus* Thorell, not Förster) (p. 15); CETONANA (*Ceto* Simon, not Gistel) (p. 16); CLADONOTULA (*Cladonotus* Thorell, not Saussure) (p. 17); CYCLOTHORACOIDES (*Cyclothorax* Mello Leitao, not Frauenfeld) (p. 17); DECETICA (*Decetia* Cambridge, not Walker) (p. 18; DEMADIANA (*Dema* Karsch, not Gistel) (p. 18); LEPTOFISCHELIA (*Leptostylus* Fischel, not Le Conte) (p. 18); IDA-STRANDIA (*Pseudamycus* Szombathy, not Simon) (p. 18). Orthoptera: ASEMOBLATTANA (*Asemoblatta* Hebard, not Handlirsch) (p. 18). Following are new names proposed for fossil Orthopteroidea.—Protoblattoidea: ANADYOMENELLA (*Anadyomene* K. v. Fritsch, not Gistel) (p. 19); Blattariae, SULCOBOLTONIA (*Boltonia* Handlirsch, not C. D. Koenig) (p. 20), COMPSOBLATTULA (*Compsoblatta* Handlirsch, not Saussure) (p. 21). Palaeodictyoptera: BOLTOPRUVOSTIA (*Boltonia* Pruvost, not C. D. Koenig) (p. 20). Rhynchota, Aphidae: Species described but not named by Takahashi in 1925 are named as follows: *Macrosiphum* tricholobicola, *M.* lactucicola, *Myzus* takahashii, *M.* siegesbeckicola, *Capitophorus* takahashii, *Amphorophora* stellariae, *Astegopterus* taka-

hashii, and *Tetraneura* **radicicola** (all p. 22). Diptera: **ASYNCRITULA** (*Asyncritus* Kertész, not Handlirsch) (p. 22). Coleoptera: **ALCINOETA** (*Alcinoe* Ménétriés, not Rang) (p. 23); **ANTHOBATULA** (*Anthobates* Le Conte, not Gistel) (p. 23); **IDA-STRANDIELLA** (*Apolites* du Val, not Schönherr) (p. 23); **TRIPOLICRYPTUS** (*Brachycryptus* Quedenfeldt, not Thomson) (p. 24); **CABIRUTUS** (*Cabirus* Mulsant & Rey, not Hübner) (p. 24); **OBENBERGERIA** (*Callicomus* Motsch., not Agassiz) (p. 24); **CARIDUA** (*Carida* Mulsant, not Rafinisque) (p. 24); **BEMBIDIONETOLITZKYA** (*Daniela* Netolitzky, not Koch) (p. 25). Lepidoptera: **OIKETICOIDES** (*Chalia* Moore, not Walker) (p. 25). Hymenoptera: **OBENBERGERELLA** (*Alienus* Bridwell, not Handlirsch) (p. 25). Pisces (fossil): **CRENILEPOIDES** (*Crenilepis* Dames, not Reis) (p. 27).

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 | MARCH, 1932 Entries 6049-9062 | NUMBER 3

GENERAL BIOLOGY

A. H. GRAVES, *Editor,* Plant

C. A. KOFOID, *Editor,* Animal

(See also in this issue Entries 6418, 6421, 6673, 6890, 7196, 8059, 8084, 8362, 8641, 8644)

GENERAL

6049. **COCKERELL, T. D. A. The designation of women biologists.** *Nature [London]* 126(3190): 957. 1930.—The author suggests that women authors of taxonomic papers retain their maiden names, to avoid confusion as to the authority for new names they propose.

6050. **DINGLER, HUGO. Das Experiment. Sein Wesen und seine Geschichte.** 263p. Ernst Reinhardt: München, 1928. Pr. 8.80 M.—This is an exposition of the underlying philosophy and logic of experimentation largely as applied to physics with a chapter on the development of experimental science.—*C. W. Dodge.*

6051. **DROOGLEEVER FORTUYN, A. B. A recent modification of the species-idea.** *Nature [Gr. Britain]* 1927: 1-4. 1927.—A review of the concepts of sp. of Darwin, Mendel, De Vries, Johannsen, the Hagedoorns, and Goodrich.

6052. **FESTA, E. Missione zoologica del Dr. E. Festa in Cirenaica. [Zoological excursion into Cirenaica, Tripoli.]** *Boll. Mus. Zool. ed Anat. Comp. R. Univ., Torino* 40(Paper 38): 1-85. Map, 12 pl. 1925(1926).—An account of trips made in 1921 and 1922, with notes on topography and brief lists of plants and animals (chiefly birds, mammals, and reptiles) observed in many localities.

6053. **HILL, A. V. Biology in education and human life.** *Nature [London]* 127(3192): 19-26. 1931.—In this address, stressing the importance of biology as a component of a general education, the general ignorance of biology is deplored.

6054. **MENGE, EDWARD J. v. K. A survey of national trends in biology.** 156p. Bruce Publ. Co.: Milwaukee, 1930. Pr. $2.—A questionnaire was sent to the head of the department of zoology and biology of every university outside of U. S. A. and of 20 universities in the U. S. A., inquiring as to (1) what they consider the most important biological work done in their respective countries, particularly in the last 30 yrs.; (2) what biological problems have been solved during that period; (3) what field of study has been pursued by most workers in their respective countries; (4) what they consider the most fundamental biological problems of today; (5) the attitude of the ablest biological workers in their respective countries in regard to vitalism vs. mechanism; (6) what biological work has had the most profound influence on the life and thought of their respective countries; etc. Based on the replies received, and on a survey of the literature of biology, the author presents an analysis of current endeavor in biology. In chapter III, "A cross section of present-day biological thought," he lists those findings of biology which seem to have had the greatest influence on mankind: (1) progress in medicine and public health, parasitology, and disease prevention; (2) application of bacteriological and parasitological findings to commercial processes, insect and plant control, the food supply, and work on applied genetics; (3) the beginnings of human biology, and the findings of comparative psychology which lead toward a better understanding of human relations; (4) organic evolution; and (5) the virtual establishment of the non-inheritance of acquired characteristics. Few biologists were willing to go on record either as mechanists or as vitalists; the opinion that both philosophies are in some respects inadequate, or that either view, alone, is insufficient as a statement of the nature of life, is presented as one of the commoner attitudes toward the question. Chapter IV, "Provocative biological theories," reviews briefly the organismal, organization-centrum, axial or metabolic gradients, metabolic determination of sex, plasmogeny (Herrera), and emergent evolution theories. These are regarded as the most important by the outstanding workers in all lands. Chapter V discusses the major programs and enterprises regarded by the respondents as most important, and some of the biologists regarded by them as most eminent in their respective countries. A bibliography (25p.) and an index are given.

6055. **MITCHELL, PETER CHALMERS. Materialism and vitalism in biology. [The Herbert Spencer Lecture delivered at Oxford, 1930.]** 30p. Oxford Univ. Press: New York, 1930. Pr. 70c.—Materialistic monism is more, not less, credible than when Spencer wrote, regardless of the recrudescence of esoteric and mystical doctrines following in the wake of post-war revulsion. The element of surprise, as in the discovery of x-rays, is still a warrant for external reality. A 2nd warrant is permanence with change as shown in the progress of science. We are more positive than Spencer about the immediate data of consciousness, but more skeptical than he about the validity of scientific laws. Cause and effect, united by an implied time relation, have lost their meaning; but mind is still anchored to matter by Planck's constant, and the velocity of light suggests an objective world, as do also the irreconcilable theories as to the nature of radiation. This stubborn externality appears in 2 contrasting sets of phenomena grouped under the words matter and life, materialism and vitalism. The advances of science have made matter a more, rather than a less, probable substratum for life. Every step in the analysis of living phenomena has been a step towards their resolution into material processes, chiefly phenomena of colloid systems. Vital action is chemical action in a colloid system. Even photosynthesis can take place in the absence of any peculiar vital principle. Structure is not a principle peculiar to life. It prevails in all organizations of substance. Life, amazing as it is in its more complex and higher forms, fades down as it is traced back to its simplest types until it passes into a set of processes of the inorganic world. The evolution of structure and accompanying function is largely determined by mechanical conditions. Growth and form have their antecedents. Life abounds in meaningless by-

products, as for example the aroma of the intestines of petrels, the shapes of the pellets of conies, and the colors of deep-sea animals. Nerves regenerate when cut, whether or not the limb has been amputated. Genes, hormones, and plague germs bring solutions to the mysteries of heredity, behavior, and disease. Under vitalism should be grouped many proposals of imaginary principles made in order to refer the phenomena of life or of living matter to some principle different in kind from the agencies and processes observed in matter that is not alive. The vis essentialis of Wolff and the nisus formativus of Blumenbach reappear as O. Hertwig's embryonic control, Driesch's entelechy, Smut's holism, Bergson's creative evolution, McDougal's purposive striving, Lloyd Morgan's emergent evolution, Cope's bathmism, and Osborn's unknown law of hereditary diaposition. Knowledge and control over man's fate have come about by the materialistic way of science.—*C. A. Kofoid.*

6056. MORGAN, C. LLOYD. Novelty throughout nature. *Nature [London]* 127(3205): 519-520. 1931.—In reference to inorganic as well as to organic nature, the author defends the thesis that events take place and "novelties" come into being which are entirely unpredictable before the event.

6057. MOTTA, MARIO. L'origine della materia vivente. La storia fisico-naturale del mondo. [Origin of living matter.] 155p. Giovanni Bolla: Milano, 1930. Pr. 12 L.—The topics considered are:—the living matter; creative evolution (of Bergson); irritability of protoplasm; ferments and diastases; pathogenic ferments; neovitalism and stereochemistry (Pasteur); chemical equilibrium; panspermia; Pasteur's ideas of fermentation, spontaneous generation, and the origin of life; synthesis of biochemical substances; oxidations; reversible processes; protoplasm; ultra-violet rays; photosynthesis; the cell and its chemistry; appearance of life on the earth; chemical unity of life; irritability; nutrition; and the missing link, the cyanogen of Pflüger.—*C. A. Kofoid.*

6058. NEWMAN, H. H. An orientation course. *Jour. Higher Education* 2(3): 121-126. 1931.—The origin, development, arrangement of subject-matter, and results, as well as criticisms of the general-survey course, "The nature of the world and of man," given for several yrs. at the Univ. of Chicago, are described by the director of the course since its inception in 1925.

6059. PINCHOT, GIFFORD. To the South Seas. The cruise of the schooner "Mary Pinchot" to the Galapagos, the Marquesas, and the Tuamotu Islands, and Tahiti. xiv+500p. 3 maps, 1 col. pl., 247 fig. John C. Winston Co.: Philadelphia, 1930. Pr. $3.50.—This is a popular account of a combined sporting and naturalist's collecting cruise in the South Seas March-Dec., 1929, with the assistance of A. K. Fisher and H. H. Cleaves, ornithologists, and H. A. Pilsbry, conchologist. The book has much on the natural history of porpoises, sharks, giant rays, tunnys, mackerel, guahu, swordfish, and other pelagic fishes of the tropics. Observations were made on the birds of the Galapagos, especially the doves, albatrosses, tropic birds, boobies, fork-tailed gulls, and hawks. Notes on the habits and behavior of the giant lizards were made at Indefatigable Island, and on the giant tortoise of Duncan Island. There are also accounts of the robber crab (*Birgus latro*) and of pearl fishing at Hikueru Island in the Tuamotu Archipelago.—*C. A. Kofoid.*

6060. PINEY, A. (editor) Recent advances in microscopy. Biological applications. 260p. 83 fig. P. Blakiston's Son & Co.: Philadelphia, 1931. Pr. $3.50.—This member of the "Recent Advance Series" contains 4 sections: "Medicine" by the editor (30p.); "The living eye," **BASIL GRAVES** (57p.); "Zoology," **E. W. MacBRIDE and H. R. HEWER** (80p.); and "Botany," **E. C. B.-WRIGHT** (87p.). Under "Medical sciences" are brief discussions of recent observations on a variety of tissues and organs. "Microscopy of the living eye" contains a discussion, largely clinical, of instruments and methods applied to pathological conditions of the anterior half of the eye. "Zoology" deals almost entirely with cytoplasmic structures. "Botany," on the other hand, has much about nuclear elements, with particular emphasis upon chromosome numbers. There is no unity of treatment beyond that afforded by consideration of recent topics. There is a helpful summary on yolk formation in the section "Zoology."—*C. E. McClung.*

6061. PLUNKETT, CHARLES R. Outlines of modern biology. viii+711p. 198 fig. Henry Holt & Co.: New York, 1931. Pr. $3.75.—The subject is treated from the standpoint that the living organism is a physico-chemical mechanism, with emphasis on general principles rather than factual details. The book falls into 5 parts: Protoplasm, Nutrition, Response, Reproduction, and Evolution. Appendices contain an outline of the classification of organisms, a discussion of chemical symbolism and nomenclature, and a classification of chemical compounds. There is also a brief bibliography of important books.—*C. A. Kofoid.*

6062. PRÉAUBERT, E. La place de la biologie dans le plan mondial. *Bull. Soc. Études Sci. Angers* 58: 1-52. 1928(1929).—The 3 chief interpretations of life are here discussed briefly, and the attempt is made to appraise spiritualism, vitalism, and materialism. Spiritualism is said to approach reality most nearly when it abandons belief in the immateriality of the soul. The relations of chemistry and biology lead to the conclusion that the vital principle is lodged in the atom. Biological processes are intimately related to intraatomic energy with the energy itself supplied from electrons and protons. Other chapters deal with a theory of a granular ether, and biology in infinite space together with a note on the nature of cancer.—*A. M. Chickering.*

6063. RANC, ALBERT. L'organisation d'un service national de la recherche scientifique en France. *Rev. Scient.* 68(22): 688-693. 1930.—The question of the organization of a national service for scientific research has been placed before the Chamber of Deputies by M. Herriot, and the Acad. of Sci. of the Inst. of France by M. Jean Perrin. Research professors should be paid by the state. These workers would not be employees of the state but would be given a more stable position than would be possible in private enterprise alone. A superior council of research will direct the organization of the service. A certain number of members less than 40 yrs. old will comprise the service, and an effort will be made to obtain free expression of all current ideas.—*A. Ranc (transl. by A. M. Chickering).*

6064. SLEVIN, JOSEPH R. Log of the schooner "Academy" on a voyage of scientific research to the Galapagos Islands 1905-1906. *Occasional Papers California Acad. Sci.* 17: 1-162. Map, 16 pl. 1931.—Includes voluminous observations on the general natural history of the Galapagos Isls., Cocos Isl., various islands along the coast of Mexico, and the Pacific Ocean.

6065. TERROINE, E. F., et M. M. JANOT. Données numériques de biologie. pp. i-xix+1604-1671 of Vol. VII (1925-1926) of: Tables annuelles de constantes et données numériques. Gauthier-Villars et Cie: Paris, 1930. Pr. 55 F.—Numerical data and contents taken from biological literature of 1925-1926 are tabulated with the citation of the original paper. Titles and explanations are in French and English. The tables are classified according to subject matter: general properties of living beings, animal biology, and vegetable biology. Molecular wts. and volumes of proteins, lipids, etc.; composition of various proteins, carbohydrates, fats, and other organic compounds; optical rotatory power of many compounds; absorption spectra of many; cardinal points of temp. and of pH for many organisms; potency of enzyme preparations; toxicity or disinfectant power of many compounds; chemical composition of organisms and of parts or tissues of organisms; composition of secretion products; data on metabolism (calorie production per kgm. of various foods, metabolic quotients, etc.); composition of foods; changes in such properties as blood composition during pregnancy and other states of the organisms; wts. and dimensions of seed; variation in

respiratory intensity of plants under many conditions of life; and many other topics are included.

6066. **WOODRUFF, LORANDE L. Foundations of biology.** [4th ed.] 501p. 297 fig. Macmillan Co.: New York, 1930. Pr. $3.50.

PLANT

6067. **BATES, JAMES C. A method for clearing leaves.** *Amer. Naturalist* 65(698): 288. 1931.—In chloral hydrate (sat. solution) 48 hrs.; then in $KClO_3$ plus HNO_3 for 10-30 min.; then in $KClO_3$ plus chloral hydrate for a week.

6068. **BENEDICT, RALPH C. A laboratory lesson in variation.** *Torreya* 30(6): 145-152. 3 fig. 1930.—For class study of evolution, a demonstration of specimens of *Nephrolepis* spp. and varieties, showing their wide variation, is excellent.

6069. **BONNIER, G., et LECLERC du SABLON. Cours de botanique.** Vol. II. Fasc. VI. Part 2.; Fasc. VII. Part 1. Librairie générale de l'enseignement: Paris, 1928.

6070. **BRAUNER, L. Die Pflanze. Eine moderne Botanik.** 294p. 17 pl., 40 fig. Deutsche Buch-Gemeinschaft: Berlin, 1930.—This book deals with plant phenomena in a manner that should make the subject attractive to the layman. The arrangement of chapters places the ontogeny of plants first, followed by discussions of the cell types, mechanical structure of plants, growth, and response to photoperiods. A chapter on alternation of generations and sexual forms is followed by one on the biology of flowers. Water intake, assimilation of nutrients, symbiosis, and respiration are dealt with briefly. Tropisms are given considerable space. The final chapter deals with the economic relation of plant products, especially vegetables and cereals, to the diet of different peoples.—*O. E. Street.*

6071. **CHAMBERLAIN, C. J. Elements of plant science.** 394p. 321 fig. McGraw-Hill Book Co.: New York, 1930.—This is a text-book for secondary schools. Part I deals with the structure and functions of seed plants; Part II with the structure and the development of plants. Particular emphasis is placed on life histories, and the evolution from lower to higher forms. Directions for laboratory work, including suggestions for collecting, preserving, and studying materials, with practical methods for making permanent microscope slides, are appended. The outstanding feature of the book is the illustrations, which are new and original.—*M. Halushka.*

6072. **CHIPP, T. F., L. DIELS, and E. D. MERRILL, committee in charge. International address book of botanists, being a directory of individuals and scientific institutions, universities, societies, etc., in all parts of the world interested in the study of botany.** xv+605p. Published for the Bentham Trustees by Baillière, Tindall and Cox: London, 1931.—The low price at which this invaluable aid to working botanists is sold ($3.25, in the U. S. A. and Canada, 13 shillings in England) was rendered possible by a grant made by the Carnegie Corporation of New York, and a loan from the Bentham Trustees, London. The project was initiated by the International Botanical Congress, Cambridge, England, which at its final plenary session in August, 1930, recommended the preparation and publication of the work. The special committee appointed charged with assembling the data and providing for publication consisted of T. F. Chipp, Kew, Chairman, L. Diels, Berlin, and E. D. Merrill, New York. The work contains in excess of 13,000 entries, the data being arranged alphabetically by countries. Under each country appears: (1) societies, academies, etc.; (2) institutions arranged under the towns or cities in which they are located; (3) individuals, alphabetically arranged. In the latter category, initials, degrees, title, post office address and field of special interest are given. The volume contains an index of countries, list of abbreviations used, and an alphabetic list of all individuals included.—*E. D. Merrill.*

6073. **CZAJA, A. TH. Die Analyse der metachromatischen Färbungen von Pflanzengeweben mit organischen Farbstoffen.** *Ber. Deutsch. Bot. Ges.* 48: (100)-(104). 1930.—Preliminary paper; detailed report to appear in Planta.

6074. **FEDDE, FRIEDRICH. Über die Ursachen des Rückganges der systematischen Botanik und der pflanzengeographischen Forschung in Deutschland. II.** *Rep. Spec. Nov. Reg. Veg.* [*Berlin*] *Beihefte* 56: 205-212. 1929.—The older academic teachers of physiology have sufficient knowledge of systematic botany but the younger instructors do not possess any appreciable knowledge of plants. The students of botany at present show very little interest in systematic botany and plant geography. Correspondence with several German botanists attests the precarious state of systematic botany. In some cases there has been difficulty in filling the vacancies of teachers in this subject. While in former days herbaria at the universities were kept up by private collections, such interest is now rapidly vanishing. In zoology similar conditions seem to prevail.—*T. R. Swanback.*

6075. **GATES, R. RUGGLES. Adaptations in cell structure.** *Jour. Roy. Microsc. Soc.* 51(1): 1-13. 3 pl., 3 fig. 1931.—The extreme specializations of structure found in such Protozoa as *Diplodinium, Euplotes, Paramecium,* and *Cycloposthium* are described. Brief comparison of cilia in plant and animal cells is made, and mitosis is treated as an adaptive mechanism which reaches a high state of perfection in higher organisms. This mechanism possibly was evolved long before evolution could make more than a limited use of it. The adaptations of plant cells are concerned chiefly with the cell wall. In this connection is discussed the evolution of the capillitium of Mycetozoa and of the spiral elaters in liverworts, *Equisetum,* etc. The coiled suspensors of Cycads and Conifers are treated as an example of overspecialization of growth in length of the cell wall, resulting from the sharp competition involved in polyembryony. The real origin of the variations thus selected remains unknown. Mutations do not follow the laws of chance but occur repeatedly in certain directions, frequently giving rise to parallel mutations in related forms. Why different variations recur in unrelated lines is unknown.—*R. R. Gates.*

6076. **GRAVES, ARTHUR HARMOUNT. Forms and functions of roots.** *Brooklyn Bot. Gard. Leaflets* 18 (8/10): 1-8. 2 fig. 1930.—This guide to the study of roots of seed plants was prepared for teachers and students of botany and biology who visit the Brooklyn Botanic Garden, using for illustrations, as far as possible, specimens growing in the conservatories and outdoor plantations of the Garden.—*A. H. Graves.*

6077. **HANNA, G. DALLAS. Hyrax, a new mounting medium for diatoms.** *Jour. Roy. Microscop. Soc.* 50(4): 424-426. 1930.—This synthetic resin, a product of naphthalene, has a pale straw color, not noticeable in the slides; and an index of refraction of 1.82248. Diatoms mounted in it have kept perfectly for over 3 yrs.

6078. **HITCHCOCK, A. S. A botanical trip to South and East Africa.** *Sci. Monthly* 31(6): 481-507. Illus. 1930.—This is a popular account of a trip from Cape Colony to Kenya, with stops at the Canary Isls. and St. Helena. There are many notes on botanical institutions and on the vegetation of the region with special reference to grasses.

6079. **KOENIG, PAUL. Neue Verfahren zur Herstellung von Pflanzen-Präparaten für Krankheitsforschung und Züchtung.** *Angewandte Bot.* 12(5): 348-351. 1930.—By means of a new method, it is possible to prepare plant material (leaves especially, but also flowers) in such a way that it retains its natural form and color. The material is pressed in flexible paste-board (drying paper, water-color paper, etc.), at a fixed temp. and humidity. In good preparations, it is possible to preserve with exactness the natural condition of even the most difficult color combinations, such as the pathological manifestations on leaves. For demonstrative work, it is important that the form and size of the leaves should be exactly preserved. Further, a method is given, the so-called ozalid method, with which, in a most inexpensive way, large images of leaves in natural sizes and with

considerable venation detail can be produced.—*P. Koenig (transl. by A. G. Plakidas)*.

6080. **LAWRENCE, WILLIAM E. A laboratory manual for the study of general botany prepared for use at the Oregon State College.** [4th ed.] 226p. Frontispiece, 19 fig. State College Press: Corvallis, Oregon, 1930.—A rearrangement and revision of the 3rd edition, which appeared in 1927, and the addition of 6 new study charts of plant life histories.—*W. E. Lawrence.*

6081. **LOWNDES, A. G. Marlborough College practical botany note-book: elementary.** 37p. W. G. Maynard: Marlborough, 1931.

6082. **LU, PAUL K. Y.** [General Botany.] [In Chinese.] 400p. 129 fig. Publ. by the author: 56 Shih Chia Hutung, East City, Peking, 1930.—This text devotes 152p. to structure and life processes of higher plants, and most of the remainder to a survey of the plant kingdom,—structures and life histories. The Thallophyta are divided into "subphyla" Myxomycetes, Schizomycetes, **EUPHYCETES** (Algae), Eumycetes (Fungi), Lichens, and Charales. The last few pages are on heredity. The index, in both Chinese and English, is really a glossary of equivalents, many of which are here published for the first time. The many illustrations are adapted (and mostly improved) from the usual sources.—*H. S. Conard.*

6083. **RIGG, GEORGE BURTON. College botany. With special reference to liberal education.** 442+xviii p. 157 illus. Lea & Febiger, Philadelphia, 1930.—Botany is presented from the viewpoint of its place in general college and university education. The parts are (1) The structure of the higher plants from the functional viewpoint; (2) The functions of plants; (3) The relationships of plants from the viewpoint of form and structure; (4) Plants in relation to their environments; and (5) Some general phases of botany, including (a) the relation of botany to other fields of knowledge, (b) some important periods in the history of botany, (c) the part played by scientific method in the progress of botany, (d) plants in relation to human welfare.—*G. B. Rigg.*

6084. **RITCHIE, JOHN W., and JULIA P. ECHAVARRIA (with the assistance of ANTONINA B. LAYUG). Philippine plant life. A botanical and agricultural reader.** 244p. Frontispiece, 168 fig. Silver, Burdett & Co.: Newark, New Jersey, 1930. Pr. 96c.—Elementary text for secondary schools and adapted to Philippine conditions.

6085. **RYDBERG, P. A. Scylla or Charybdis.** *Proc. Internat. Congress Plant Sci. Ithaca, N. Y.* 1926. 2: 1539-1551. 1929.—This paper is in the main a criticism of "the purpose and the principles" set forth in the preface to the "Phylogenetic method in taxonomy" by Hall and Clements, and "the inconsistency in carrying out the plan" as presented. Splitting of spp. and the use of binomials throughout is defended as a more desirable and more consistent mode of procedure than the lumping of spp. accompanied by the affixing of trinomials, quadrinomials, and polynomials to indicate ssp., var., sub-var., subform, proles, lusus, mutans, and similar categories, ad infinitum. The author emphasizes the difficulties confronting the taxonomist who would be consistent in sailing through the Messina of systematic botany: the splitter is liable to be headed for the rocks of Scylla and the lumper may be lost in the whirlpool of Charybdis.—*P. D. Strausbaugh.*

6086. **SKENE, MacGREGOR. School botany.** vii+243p. Oxford Univ. Press: London, 1931. Pr. 3s. 6d.

6087. **SMALL, JAMES. Pocket-lens plant lore: month by month.** vii+224p. J. & A. Churchill: London, 1931. Pr. 5s.

6088. **SMALLWOOD, MABEL E. A guide for the study of plants.** 97p. D. C. Heath & Co.: Boston, 1929. Price $1.—Laboratory guide for elementary botany.

6089. **SPRAGUE, T. A. Principles and problems of plant nomenclature.** *Proc. Internat. Congress Plant Sci. Ithaca, N. Y.*, 1926. 2: 1422-1426. 1929.—Instability of plant nomenclature retards progress, and a closer agreement among the workers is necessary to insure progress. The author attempts to define the object and basic principles of nomenclature, as a common basis for such agreement. The object is a ready means of indicating accurately the identity of any taxonomic group that other workers may thus be enabled to make use of the data recorded. The 3 principles are: (1) unambiguity of names, (2) definition of groups, and (3) fixity of names. These are explained and methods of carrying them out are indicated. The rules of nomenclature are criticised, and suggestions are made to indicate the procedure necessary to effect a world-wide agreement on nomenclature. It is the author's opinion that the agreement proposed "would combine the best features of the International Rules and the American Code."—*P. D. Strausbaugh.*

6090. **STÄGER, ROBERT. Vom Leben und Lieben der Pflanzenwelt: Beobachtungen eines Naturfreundes.** 197p. 3 pl. Rascher und Co.: Zürich, 1929. Pr. 6 M.

6091. **SWINGLE, CHARLES F. Oxyquinoline sulphate as a preservative for plant tissues.** *Bot. Gaz.* 90(3): 333-334. 1930.

6092. **ANONYMOUS. Rules and recommendations for the nomenclature of garden plants.** *Gard. Chron.* [*London*] 85(2218): 477-478. 1929.—This report of a committee of the Royal Hort. Soc. includes (1) introduction, a brief survey of the International Rules of Nomenclature, (2) difficulties arising out of a strict interpretation of these rules, and (3) rules and recommendations for naming horticultural varieties and hybrids.

ANIMAL

6093. **BORRADAILE, L. A. Elementary zoology for medical students.** [2nd ed.] 398p. Oxford Univ. Press: New York, 1930.

6094. **BRANT, IRVING. Compromised conservation. Can the Audubon Society explain?** 15p. Issued by the Emergency Conservation Committee: New York, 1930.—The policies of the administration of the National Assoc. of Audubon Soc. are said to reflect the views of gunners rather than those of true conservationists. Its opposition to a reduction of the federal bag-limits on ducks and geese is cited as an example.

6095. **HERTWIG, R. (transl. by C. PARONA, and C. del VECCHIO). Trattato di zoologia.** p. 16-732. Vallardi: Milan, 1928.

6096. **HUNT, H. R. Some biological aspects of war.** 118p. Galton Publ. Co.: New York, 1930.—The purpose of the investigation was to determine, as far as possible, whether war is a selective agent in human evolution. Enlistment and death rates in the World War were studied for the continental U. S. A. and among the students and former students of Harvard Univ. Some Civil War data also were analyzed. In the World War about 83% of American drafted men who possessed defects of a probably more or less hereditary character were rejected for military service. Holders of Harvard degrees showed higher enlistment rates than the ♂ of the continental U. S. A. and suffered a higher mortality rate than the ♂ population of the U. S. A. These enlistments and mortalities were probably dysgenic.—*H. R. Hunt.*

6097. **MATHEWS, GREGORY M.** [Comments on **Opinion 115 of the International Commission on Zoological Nomenclature.**] *Bull. British Ornith. Club* 51 (348): 66-69. 1931.—Inconsistency is charged.

6098. **MILLER, W. DeWITT, WILLARD G. van NAME, and DAVIS QUINN. A crisis in conservation. Serious danger of extinction of many North American birds.** 15p. Privately printed: New York, 1929.—The authors charge bird-protection organizations with lack of earnestness and efficiency, especially in protecting spp. in danger of extermination. They list 4 spp. as already extinct and 6 others as beyond saving, and point out the menace of game clubs and sportsmen.

6099. **VAN CLEAVE, HARLEY JONES. Invertebrate zoology.** [2nd ed.] 282p. 126 fig. McGraw-Hill Book Co.: New York, 1931. Pr. $3.

6100. **YUAN, I-CHIN. Life tables for a Southern**

Chinese family from 1365 to 1849. *Human Biol.* 3(2): 157-179. 1931.—Based upon the age distribution of mortality from the genealogical record of a southern Chinese family of 3,748 ♂ and 3,752 ♀ born 1365-1849, life tables have been constructed for each quinquennial age from 20 to 75. The outstanding finding is the trend of gradually rising death rates among the young adult and middle-aged persons of both sexes over a period of 485 yrs. The same trend holds in the survivorship as well as in the expectation of life. This indicates that in the past several centuries the most energetic and productive persons were dying faster and faster and their expectation of life becoming shorter and shorter.—*I-Chin Yuan.*

6101. ANONYMOUS. The United States Biological Survey. Destruction, not scientific investigation and conservation, now its chief activity. 23p. Issued by the Emergency Conservation Committee: New York City, 1930.—It is claimed that the wholesale poisoning and trapping operations of this bureau are one of the biggest factors in the extermination of the animals and birds of the western U. S. A. Particular protest is made against the indiscriminate destruction of predatory and fur-bearing mammals, without adequate scientific investigation of any need for such action.

TECHNIQUE

6102. CHASE, SAMUEL WOOD. Device for prolonged continuous change and agitation of fluids. *Anat. Rec.* 46(1): 41-43. 1 fig. 1930.—A device for prolonged washing, fixing, or decalcification consists of a large flask with a delivery tube passing through a 1-hole stopper inverted over a small Stender dish, so that the opening of the delivery tube is alternately sealed and opened by the rising and lowering of the fluid in the dish when the latter is drained by a capillary siphon or wick delivering at the desired rate. This rate can be varied to cause emptying of the flask in any time between a few min. and several weeks by selecting the proper ratio of size between siphon and flask.—*Author (courtesy Wistar Bibl. Serv.).*

6103. HAUSER, E. A. Étude sur la technique des micromanipulations. *Rev. Gén. Colloides* 8(80): 358-361. 3 fig. 1930.—The difficulties so far encountered when applying dark field illumination to microdissection are enumerated. A new dark field condenser especially devised for microdissection experiments by E. Leitz, Wetzlar, is described and experiments carried out on latex of *Hevea brasiliensis* given as example. A new instrument (also put on the market by E. Leitz) for drawing micro needles automatically is discussed.—*E. A. Hauser.*

6104. HOLMES, W. C., and A. R. PETERSON. Absorption ratios of biological stains. *Stain Tech.* 5(2): 65-72. 1930.—Absorption ratios are supplied for most of the dyes used as biological stains. The use of these ratios will enable the analyst to identify the stains conveniently, and will also frequently afford information of considerable value respecting their purity.—*Author (courtesy Wistar Bibl. Serv.).*

6105. MARGOLENA, LUBOV A. Feulgen's reaction applied to protozoa and small worms, mounted in toto in Venetian turpentine. *Stain Tech.* 6(2): 47-49. 1931.—Permanent mounts of certain protozoa and small worms are obtained as follows: Kill suspensions of the organisms with Feulgen's fixative for 3-24 hrs. Pipette off fixative, add successively 70% iodized alcohol; ditto, 30 min. later; 50%, then 35% alcohol; 2 baths distilled water; normal HCl. Transfer to cold water and heat to 60° C. for 4-5 min. or longer. Cool under running water; and wash in distilled water. Stain 1-3 hrs. in Feulgen's fuchsin H_2SO_3. Pass through 3 baths of 200 cc. distilled water with 10 cc. normal HCl and 1 gm. $NaHSO_3$ and alcohol grades. Counterstain with fast green FCF, orange G, or eosin Y in 95% alcohol. Pass through 2 changes of absolute alcohol. Transfer to 10% Venetian turpentine and place in a desiccator; mount after the turpentine has become concentrated. For sections go to paraffin of M.P. 56° C. with 3% beeswax.—*Author (courtesy Wistar Bibl. Serv.).*

6106. NAVILLE, ANDRE. L'emploi du micromanipulateur de Peterfi: Fabrication et montage des microinstruments. I, II. *Bull. Histol. Appl. Phys. et Path.* 7(9): 273-299; (10): 311-332. 9 fig. 1930.—Manufacture and manipulation of micro-pipettes, needles, and pincers; micro-cautery; natural objects serving as special tools; micromanipulation with the ultramicroscope; ultracondensers; colorimetric pH determinations; microelectrodes; and continuous change of media are the subjects considered.—*J. G. Sinclair.*

6107. PETROFF, S. A. A useful coverslip holder. *Jour. Lab. & Clin. Med.* 16(3): 314-315. 1 fig. 1930.

6108. SASS, J. E. A wire holder for staining slides. *Stain Tech.* 5(1): 29-30. 1 fig. 1930.—A slide holder is made of 20-gauge Cu wire. It is bent into shape around 1-in. brads driven into a hardwood block. In this way, loops are made inside which the slides can rest. Two pieces of wire, thus bent and formed into a square, are soldered to a piece of 18-gauge wire the right size to fit a Coplin jar and extended to form a handle.—*Author (courtesy Wistar Bibl. Serv.).*

6109. SPIERER, CH. Über Dunkelfeld-Mikroskopie bei mehrseitiger Beleuchtung. [Dark field microscopy with multilateral lighting.] *Kolloid Zeitschr.* 53(1): 88-90. 1 fig. 1930.

6110. STANLEY, JOHN. A method of copying biological reconstructions with any desired factor of magnification. *Anat. Rec.* 47(1): 13-18. 3 fig. 1930.—As an aid to the making of greatly enlarged copies of paraffined-paper or wax models from serial sections, an instrument was constructed for the accurate measurement of original models in 3 dimensions. The copies were made in plasticine, minor structures being fitted by examination of the original sections. Detailed directions for the construction of the instrument from simple and readily accessible materials, many of them from the "Meccano" toy, and for the method of using it are given.—*Author (courtesy Wistar Bibl. Serv.).*

6111. STIER, T. J. B. A cooling unit for low-temperature thermostats. *Science* 73(1889): 288-289. 1 fig. 1931.—Details of construction of a unit which maintains a constant temp. within ± 0.01° C. between 0° and room temp.

6112. ANONYMOUS. The Leakey-Harper drawing machine. *Nature [London]* 126(3171): 220-222. 3 fig. 1930.—An instrument for preparation of full-size drawings of objects (e.g., specimens in zoology, paleontology, anatomy, anthropology, etc.) is described. It is made by the Cambridge Instrument Co., London.

GENETICS

ORLAND E. WHITE, *Editor,* Plant

SEWALL WRIGHT, *Editor,* Animal

(See also in this issue Entries 6292, 6384, 6501, 6613, 6651, 6653, 7213, 7700, 7863, 7875, 7882, 7888, 7893, 7899, 7903, 7935, 7936, 7984, 8004, 8006, 8059, 8133, 8134, 8135, 8171, 8172, 8221, 8340, 8410, 8428)

GENERAL

6113. AJREKAR, S. L. A simple method of illustrating Mendelian mono-hybrid and di-hybrid ratios. *Jour. Indian Bot. Soc.* 9(1): 62-64. 1930.—Equal numbers of two colors of beads are mixed in a bag, then drawn out in pairs to illustrate mono-hybrid ratios. For di-hybrid ratios, equal numbers of beads are first tied together in pairs: small colored-large colored; small colored-large white; small white-large colored; and small white-large white. They are then mixed in a bag, and drawn

out two pairs at a time. The method is easy to use, and strikingly illustrates chance union of gametes.—*W. Dudgeon.*

6114. **BRIDGES, CALVIN B. Chromosome aberrations and the improvement of animal forms.** *Jour. Heredity* 19(8): 349-354. 1928.—Chromosome aberrations are classified according to genic balance into those with normal balance and those with an unbalanced relation. The difficulties and advantages of aberrations of these two kinds are discussed. Animal and plant material are contrasted in desirable characteristics.—*C. B. Bridges.*

6115. **STOMPS, THEO. J. Fünfundzwanzig Jahre Mutationstheorie. (Vortrag, Wiss. Ges. Diligentia im Haag.) [Twenty-five years of the theory of mutation.]** 68p. 2 fig. Gustav Fischer: Jena, 1931.

PLANT

6116. **BHALERAO, S. G. The grain-shedding character in rice plants, and its importance.** *Imp. Inst. Agric. Res. Pusa Bull. 205.* 36p. 9 pl. 1930.—A general description is given of wild forms of *Oryza sativa* L., referred to as wild rices, found in the Ghat areas of the Belgaum, Dharwar, and up-Ghat Kanara Districts of the Bombay Presidency, India. The seed of these rices shatter readily. Cross-fertilization appears to be more common among wild rices than among cultivated varieties. Mixed with cultivated types there are rices possessing many characteristics of cultivated rices and yet completely shedding their grain. These self-sown rices are known as "gonags." The relation of wild rices and the gonags is considered. Variations in the sheath color, position of panicle branches and awns of the cultivated rices grown in the Bombay Ghat areas are described. A study of the grain-shedding rices in line-culture for several years shows that many pure-breeding wild gonags occur in the cultivated crop. It is suggested that they are the pure breeding recessives of natural crosses of wild rices with cultivated varieties. The cultivated gonags seem to be crosses which have not so far reached a fixed condition. Methods for the control of grain-shedding are discussed. It is estimated that loss of grain due to shedding varies from 3 to 30% of the crop, depending upon care of the seed and the field.—*C. E. Chambliss.*

6117. **BLAKESLEE, ALBERT F. Cryptic types in Datura due to chromosomal interchange, and their geographical distribution.** *Jour. Heredity* 20(4): 177-190. 16 fig. 1929.—Cryptic types induce special chromosome configurations and definite proportion of pollen abortion in hybrids with other lines. It is shown that they are widespread in nature within the species *D. stramonium* and that their origin is best explained by segmental interchange between non-homologous chromosomes. Such interchanges must have played a part in differentiating species of *Datura* and in the origin of geographical races of plants.—*L. M. Dickerson.*

6118. **BLEDSOE, R. P. Multiple kernels in wheat-rye hybrids.** *Jour. Heredity* 20(3): 137-142. 4 fig. 1929.—Double and triple kernels were found in a strain of selfed rye, and also in an F_3 wheat × rye cross. Pistillody as described by Leighty and Sando (1924) was present with this variation. Also, some of the rye flowers showed a multiplication of flower parts. The multiple kernels are normal, except that they are smaller. Plants have been grown from multiple kernels and these plants always produce multiple kernels. As pistillody has been found in a number of wheat × rye crosses, it is suggested that hybridization may have been the cause of this variation.—*Author's abstract.*

6119. **BREDEMANN, G., und W. HEUSER. Beiträge zur Heterosis bei Roggen.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(1): 1-56. 1 fig. 1931.—In the complete experiment comparisons were made as follows: (1) original seed of variety A; (2) original seed of variety B; (3) mixture of (1) and (2); (4) intrapollinated seed of (1); (5) same of (2); (6) hybrid of (1) and (2) (F_1); (7) — (9) F_2 — F_4. As a variation of the above, (1) and (2) were grown in alternate rows and separately harvested. The experiment left no doubt of the possibility of increased yields through the combination of certain rye varieties. Four F_1 hybrid combinations outyielded each of the 4 parent pairs, as an average for the 6 trial years. Favorable results were not secured from 2 other combinations. The excesses in yield in grain of the F_1 in the 4 favorable combinations over the best yielding parent ranged from 9.2 to 12.7%, while the excesses over the poorer parent were from 13.8 to 21.9%. With regard to straw, similar figures were 0.4 to 11.9% and 7.0 to 28.9%. These excess yields continued into the F_2 nearly unchanged, but the F_3 and F_4 yields showed marked declines. Heterosis was manifest even in the young plants. Increased yields were pronounced in 4 out of the 6 years but markedly less in 2 of the years. This loss of heterosis effect may be due to unsuitable fertilization relations in the previous generation or to an unsuitable environment of the year of low yield. Analyses of yields showed 3 factors contributing to the excesses: thickness of stand, weight per 1,000 kernels, and number of seeds per ear; the contributions of these factors were unequal, and varied distinctly from year to year, depending upon environmental conditions.—*G. Bredemann (trans. by L. R. Waldron).*

6120. **BREGGAR, THOMAS. Waxy endosperm in Argentina maize.** *Jour. Heredity* 19(3): 111. 1931.—Record of the appearance of waxy endosperm in maize in the Argentine Chaco, found in an orange-yellow, flinty variety called Cuarenton. Whether this case is the result of mutation or importation is not known.—*L. M. Dickerson.*

6121. **BRIEGER, FRIEDRICH. Selbststerilität und Kreuzungssterilität im Pflanzenreich und Tierreich. [Self-sterility and cross-sterility in plant and animal kingdoms.] (Vol. 21 of "Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere.")** xi+395p. 118 fig. Julius Springer: Berlin, 1930. Pr. 32M. —This volume is devoted to "Parasterilität," a term employed to include the many limitations in functioning of organs and sex cells inherently potent and able to function in certain relations. Parasterilities are surveyed in the higher plants, metazoa, thallophytes and protista. The main classes discussed are dichogamy, herkogamy, self-parasterility (self-incompatibility) and cross-parasterility, incomplete parasterility (various types of selective fertilization), heterostyly, and the sterilities in hybridization. The various phenomena of reproduction and of sexual processes are assembled under these classes and discussed as to physiology, genotypic and phenotypic determination, specificity, and theories of the effects of inbreeding.—*A. B. Stout.*

6122. **BRINK, R. A., and P. H. SENN. Ragged, a dominant character in maize linked with A_1, TS_4 and D_1.** *Jour. Heredity* 22(5): 155-161. 3 fig. 1931.—This new character is described. The plant at maturity is characterized by the torn appearance of the foliage. The seedlings are indistinguishable from the normal. Ragged plants produce pollen abundantly but only occasionally set ears. *Rg* designates this dominant gene; *rg* its normal allelomorph. Thirteen families, resulting from backcrossing heterozygous ragged to normal, gave 919 ragged and 914 normal plants. Normal, from progenies segregating ragged, gave only normal offspring. *Rg* was inherited independently of *c, sh, wx, gl_1, f, j, bt,* and *bm_2*. In backcross progenies 1.7% crossing over was found between *Rg* and *ts_4*; 11.9% between *Rg* and *d_1*; and in two backcross families of 520 plants 41.9% recombination was observed between *Rg* and *a_1*. The evidence supports the conclusion that the two linkage groups *a_1-ts_4* and *d_1-pg_2*, which have been tentatively recognized heretofore as distinct, are in reality one.—*P. H. Senn.*

6123. **CLARKE, ALFRED E. Inheritance of the dwarf branching habit in sweet clover.** *Scientific Agric.* 11(6): 326-332. 1931.—The dwarf branching habit in the strains studied results from one or the other of two genes, bunched dwarf (*bd*) and spreading dwarf (*sd*). Both are recessive to normal sweet clover. Two genes, *pg_1*

and pg_2, for the development of the pale green seedling character are described. Pg_1 is linked with *sd*. About 21% crossing-over occurs between these two genes. Evidence is presented to show that the dwarf branching strains have arisen from gene mutations and not from a cross between Arctic sweet clover and alfalfa.—*Author's summary.*

6124. **COLBY, A. S. The inheritance of anthracnose resistance in certain raspberry hybrids.** *Jour. Heredity* 19(8): 377-381. 2 fig. 1928.—The differences in anthracnose resistance found in the large number of varieties tested is believed to be evidence of physiological individuality of the several plants. The data show that it is inherited to a greater or less degree. The range in susceptibility suggests that it is determined by more than a single genetic factor.—*L. M. Dickerson.*

6125. **CONDIT, IRA J. Other fig chimeras.** *Jour. Heredity* 19(2): 49-52. 3 fig. 1928.—Several chimeric variations in Adriatic, Calimyrna and Panachee figs are described. In some cases both fruit and foliage are affected.—*L. M. Dickerson.*

6126. **CURRENCE, T. M. A new pod color in snap-beans.** *Jour. Heredity* 22(1): 21-23. 1 fig. 1931.—A new pod color, White (*S-s*), was obtained from crosses between "Crystal White Wax" and yellow wax field beans (*Phaseolus vulgaris*). White segregates as a Mendelian recessive independent of yellow (*Y-y*) and normal green (*G-g*). The white pods are attractive and the variety may be of commercial importance.—*L. M. Dickerson.*

6127. **EINSET, O. Cross-unfruitfulness in the apple.** *New York State [Geneva] Agric. Exp. Sta. Tech. Bull. 159.* 24p. 1930.—Presenting a general survey of experimental work on cross incompatibility in the apple, the author discusses the results of experiments on various factors, such as experimental technic, which may bear on the problem. Comparing the effect of removing the sepals, petals, and stamens with simply removing the petals and stamens, it was found that in certain varieties the removal of the sepals apparently interfered greatly with fruit setting; hence it is concluded that in certain reported cases of incompatibility, for example, crosses on Delicious, the negative results obtained may have been due to an injurious type of emasculation. No significant difference was noted between translucent and white opaque paper sacks as covers for emasculated blooms, but only light sets were secured without cover. Much of the incompatibility reported is believed due to zygotic abortion caused by irregularities in the reduction division of the generative cells. Irregular chromosome behavior in triploid varieties is deemed the cause of xygotic abortion and suggests the inadvisability of interplanting triploid varieties. In the Gravenstein apple, fruit weight was directly correlated with a combined number of both empty and filled seeds.—*J. W. Wellington (courtesy Exp. Sta. Rec.).*

6128. **EYSTER, W. H. Heritable characters of maize—male sterile$_2$.** *Jour. Heredity* 22(3): 99-102. 2 fig. 1931.—Male sterile$_2$ is inherited as a simple Mendelian recessive, and is the expression of a gene which has its locus in chromosome I. Tests with shrunken endosperm indicate that crossing over between the genes for shrunken endosperm and male sterility$_2$ amounts to about 30%. The anthers of male sterile$_2$ plants are empty when mature, and are usually not exserted from the spikelets.—*W. H. Eyster.*

6129. **EYSTER, W. H. Heritable characters of maize—male sterile$_3$.** *Jour. Heredity* 22(4): 116-119. 2 fig. 1931.—Male sterile$_3$ is inherited as a simple Mendelian recessive, and is the expression of a gene which has its locus in chromosome VII, as indicated by its linkage with crinkly. Preliminary tests indicate approximately 30% crossing over between these genes.—*W. H. Eyster.*

6130. **FROST, HOWARD B. Chromosome-mutant types in stocks. II. Putting a tramp chromosome to work.** *Jour. Heredity* 19(3): 104-111. 3 fig. 1928.—Trisomics of *Matthiola* prove useful in selecting double-flowered plants and in genetics teaching.—*R. C. Cook.*

6131. **GUILLAUMIN, A. Les "Phalaenopsis" hybrides autres que ceux issus du "P. amabilis" Bl.** *Arch. Mus. Hist. Nat. [Paris]* 6: 75-80. 2 col. pl. 1930.—A continuation of work reported in the same periodical, 4: 33-36. 1929. The author concludes: (1) that the characters of *P. amabilis* are clearly recessive to those of *P. rosea* and *P. mannii;* (2) that they are dominant to those of *P. schilleriana* and *P. stuartiana;* (3) that, in crosses between *P. amabilis* and hybrids of *P. rosea,* the latter exercises a perceptible influence when present to the extent of only $\frac{1}{4}$ or $\frac{1}{8}$; and (4) that hybrids of *P. amabilis* with *P. luddemaniana* or *P. violacea* present absolutely new characteristics.—*A. Guillaumin (transl. by P. Weatherwax).*

6132. **GURNEY, H. C. The inheritance and linkage relations of xantha seedlings in maize.** *Australian Jour. Exp. Biol. and Med. Sci.* 7(4): 215-221. 1930.—Colored and colorless endosperm seeds from a hybrid which was segregating xantha seedlings were grown and carried through several generations. The presence of 2 duplicate genes, xn_1 and xn_2, determining the xantha seedling character, was confirmed. Plants showing evidence of linkage between the endosperm color factor *R* and one of the factors xn_1, for xantha seedling, were carried on through several generations and a number of back-crosses for endosperm color made. A definite linkage between *R* and xn_1 was found, an average of results giving a cross-over value of 23.4%. The linkage was found in both coupling and repulsion series, and for 1:1 and 3:1, 3:1 and 3:1, and 9:7 and 3:1 ratios. Omitting a very low result of 11% for the repulsion series of 9:7 and 3:1 ratios, the cross-over percentage is raised to 26.4, which seems a better average of the results than 23.4%.—*Author's summary.*

6133. **HARRISON, GEORGE J. Trellising cotton.** *Jour. Heredity* 19(7): 324-326. 2 fig. 1928.—A trellis of simple construction for supporting large cotton plants is described. It is especially adapted to cotton breeding work.—*L. M. Dickerson.*

6134. **HARTMANN, MAX. Verteilung, Bestimmung und Vererbung des Geschlechts bei den Protisten und Thallophyten.** In: **E. BAUR, und M. HARTMANN. Handbuch der Vererbungswissenschaft Band II, Lief. 9.** 115p. 83 fig. Gebrüder Borntraeger: Berlin, 1929. Pr. 12 M.—Every organism, every cell, has the potentiality for development of either sex, determination occurring during development. If both sexes are developed on the same individual or clone, no specific inheritance factors but internal or external development conditions are responsible for the differentiation of sex. This is phenotypic sex determination. In cases of separate sexuality, sex determination is genotypic, or due to genes. Various nomenclatures are discussed. Four types of sex-determination are discussed: phenotypic in haplophase and in diplophase, genotypic in haplophase and in diplophase. Examples are cited from Algae, Fungi, and Protozoa. Sex is also regarded as manifested wherever copulation occurs, even where isogamy is apparently present. Capacity for copulation itself indicates sex differentiation, even when all other criteria fail. In many cases of isogamy, genotypic differentiation has been demonstrated, and in other cases morphological or physiological differences have been demonstrated where isogamy has been reported. Evidence of bisexual potentiality from Algae, Fungi, and Protozoa is presented, including the phenomenon of "relative sexuality" in Algae and Fungi. In this condition, gamete A may act as female relative to gamete B, but as male to more strongly feminine gamete C. The evidence here is meager but suggestive. One observation, heretofore unpublished, is that of Belar and Hartmann, in 1924, of copulation between macrogametes of *Bryopsis.*—*G. M. Robertson.*

6135. **HAYES, H. K., and H. E. BREWBAKER. Heritable characters in Maize. XXXII. Sorghum tassel.** *Jour. Heredity* 19(12): 560-567. 4 fig. 1928.—A recessive variation called sorghum tassel, (*sg sg*), which appeared in a selfed line of Rustler White Dent, is described. It resembles sorghum in the appearance of the tassel, which contains both ♂ and ♀ florets. The linkage rela-

tion for (*sg*) and 18 other characters in known linkage groups were studied in F_2. No definite indications of linkage were obtained. In a cross between sorghum tassel and tunicate homozygous for (*sg*) and (*Tu*), ears of "cauliflower" type were obtained. Plants homozygous for (*sg*) and heterozygous for (*Tu*) also gave evidence of cauliflower tissue on some of the plants. (See *Ibid.* 20(4): 166 for corrections.)—*Author's summary.*

6136. **HIORTH, G. Die Anwendung elektrischer Beleuchtung für Vererbungsversuche mit Pflanzen.** *Züchter* 1(7): 204-209. 1 fig. 1929.—Several species were grown under artificial light. On a 4 × 2 meter table, four 750 watt lamps were compared with one 1500 watt lamp as the sole source of illumination. The plants grew better under the four 750 watt lamps. An early variety of barley ripened in 47 days after seeding. In another experiment, crosses were made between *Collinsia* varieties, and F_2 generations were successfully produced under the artificial light. Precautions to be observed and uses of artificial light in breeding work are discussed. Experiments were performed in a greenhouse as well as in dark chambers. As many as 5 generations of certain plants could be grown in 1 yr. by the use of artificial light.—*F. V. Owen.*

6137. **HIRAMA, SOSABURO. Cross-breeding varieties and strains of sweet potatoes. Part II.** *Formosa Govt. Res. Inst. Dept. Agric. Rept.* 46. 1-48. 1 pl. 1930.

6138. **HOOVER, M. M. Wheat-rye hybrids.** *Jour. Heredity* 20(4): 170-171. 1 fig. 1929.—Natural hybrids from a plot of Fultz 7 wheat are described as resembling wheat rather closely but intermediate in most characters. All were completely sterile.—*L. M. Dickerson.*

6139. **HUME, A. N. The possibility of utilizing selfed strains in practical corn improvement.** *South Dakota Agric. Exp. Sta. Bull.* 245. 22p. 1930.—Corn continuously selected for yield for 17 years by mass selection averaged 48.1 ± 2.2 bu. per acre; by systematic ear-row selection with detasseling of alternate rows (Illinois system), 49.2 ± 2.2 bu.; and by selection of high-yielding ear remnants (Ohio system), 52.5 ± 2.5 bu. The last 2 systems furnished a more rapid process of adaptation than the 1st. Evidently continuous selection by such methods is a means of selecting superior strains, although not of itself adequate for genetic improvement. The progeny of ear-row selections long continued by the above methods were observed to possess a degree of close breeding and appeared capable of serving as a parent when hybrid vigor is desired. Row yields in 1929 from near hybrids (S_5 strains selfed for 5 generations × Selection 1210, a close-bred selection) were 35% higher than yields from selected strains. Similarly, 5 of 6 of the same near-hybrid strains outyielded the standard variety. A system of corn improvement outlined proposes to continue to utilize ear-row selection and thus maintain adapted strains and varieties now generally recognized and to utilize the principle of hybrid vigor and prevent losses from close breeding.—*H. M. Steece (courtesy Exp. Sta. Rec.).*

6140. **IMAI, YOSHITAKA. Linkage studies in Pharbitis Nil. II.** *Zeitschr. Indukt. Abstamm.- u. Vererb.* 58(3/4): 317-331. 1 fig. 1931.—The recombination frequencies, 14.9% for variegated and crumpled-1, 17.8% for crumpled-1 and blown-1, and 30.8% for variegated and blown-1, which were determined by backcross experiments, are also applied to the F_2 data, and show almost complete agreement. Data showing weak repulsion between creased (allelomorphic to feathered) and crepe are presented. This gives additional proof that crepe is located in the cordate chromosome. The recalculated recombination frequency for margined-1 and tube-white is 5.0%. From available data, the recombination for interaxil-green and contracted is estimated to be 6.6%. The 5.6% of recombination for interaxil-green and contracted, calculated by the other linkage relations, agrees perfectly with the repulsion data. Flecked is linked closely with margined-1 and contracted, the recombination in the former relation being 1.2%. Flecked also shows linkage with interaxil-green. Expanded is closely linked with contracted. Further data on the independent relations of the ten linkage groups are given. Two loci, maple (willow) and polymorphic, seem to be situated in other chromosomes. Two new cases showing linkage were detected. Purple is linked with crisscrossed, recombination frequency being 19.0%. Light-2 and ivory show close linkage. The proof of independence of these and the linked lined-striated genes in respect to the ten linkage groups and the two independent genes (maple and polymorphic) is incomplete. New data giving proofs of independence of certain genes are presented.—*Author's summary.*

6141. **ISENBECK, KARL. Vererbungsstudien an einigen Weizenkreuzungen in Bezug auf die Widerstandsfähigkeit gegenüber Puccinia glumarum tritici und Puccinia triticina.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(1): 82-104. 1931.—Selections for rust resistance were made during the unusually dry seasons, 1929 and 1930. Efforts to induce an epiphytotic of *P. glumarum* in the field made excellent headway until in June; unusual heat and drought terminated the artificial epiphytotic. Rust readings from plants artificially inoculated in the greenhouse from 1 to 3 times and field readings are given. Four races of *P. glumarum* were used. Selections were made from later generations from 3 crosses already reported. [Phytopath. Zeitschr. 1: 465-525. 1929.] 6 types of resistance were used in judging. In a cross using parent type reactions 0-3 × 4, no 0-type reactions were found. From a 1921 cross, an immune Chinese wheat × the susceptible squarehead, 41 selections were made, but none of these was either type 0 or immune (type 1), yet immunity was probably dominant. The assumption was made that in this cross immunity was linked with undesirable characters, e.g., weak straw, and that the immunes had been eliminated by natural and artificial selection. In another group from the same cross, immunity was found combined with cold resistance. In crosses with spring wheats, the *P. glumarum* resistant parent was Normandie (type 0). From a study of the F_2 it was considered that resistance was recessive and conditioned by a single factor. Half-resistant forms were fewer with the more pronounced separation of the parents. One cross carried to F_3 confirmed the above. Only 2 crosses were concerned in the study of resistance to *P. triticina*. From a study of F_2 and F_3 it was concluded that the resistance of the Normandie parent was dominant and due probably to 1 factor, although the number of heterozygotes in F_2 was definitely in excess. Attention is called to the importance of confirming greenhouse (seedling) inoculation results with field readings.—*L. R. Waldron.*

6142. **KIRK, L. E. Inheritance of dwarf branching habit in a new variety of sweet clover and its potential economic value in breeding.** *Scientific Agric.* 11(6): 315-325. 3 fig. 1931.—An inheritance study of crosses between a variety of typical common white-flowered biennial sweet clover known locally as Arctic and a new variety of white-flowered biennial sweet clover, Alpha, is reported. The character complex which consistently differentiated the 2 varieties which were intercrossed is the fine-stemmed, dwarf, branching habit designated as the "Alpha" character. Forty-three F_2 families, with an average of 78 plants in each, were grown. The proportion of typical to Alpha was a good approximation to 3:1, Alpha being recessive. While the majority of Alpha-type plants in F_2 could be recognized as such in greenhouse flats, the two types could not be classified accurately in the field until they had attained considerable size. Field counts were made toward the end of the first season.—*From author's summary.*

6143. **KIRK, L. E., and T. STEVENSON. Seed color markings in white flowered sweet clover, Melilotus alba Desr.** *Scientific Agric.* 11(9): 607-611. 1 fig. 1931.—Purple flecking or spotting of sweet clover seed has been regarded as a reliable indication that such seed belongs to yellow sweet clover (*M. officinalis*). Sweet clover seed with color markings indistinguishable from those of

M. officinalis has been found in the white-flowered species, *M. alba*. The arctic variety of white-flowered sweet clover had about 1% spotted seeds, and a strain of dwarf, white-blossom sweet clover had 100% of spotted seeds. The character of "color markings" on sweet clover seed appeared to be dominant over the absence of "color markings." Color markings on sweet clover seed cannot be regarded as conclusive evidence that the seed belongs to *M. officinalis*.—*Author's summary.*

6144. **[KOBRANOV, N. P.] КОБРАНОВ, Н. П. К вопросу о происхождении разновидности белой акации v. monophylla Kirchn. (A contribution to the question of the origin of the Robinia pseudoacacia var. monophylla Kirchn.** [English summary.]) Труды по прикладной Ботанике, Генетике и Селекции. (*Bull. Appl. Bot., Genet. and Plant-Breed. Leningrad, USSR.*) 20: 435-457. 6 fig. 1929.—In 1912 the author discovered in a plantation of *R. pseudoacacia* in the Veliko-Anadolsk forest district two single-leaved white locust trees which had grown from the same trunk as fresh growth. In that year the tree blossomed in summer and autumn. In autumn only the single-leaved form blossomed. Thus, during 1 vegetative period, cross pollination took place in summer, self pollination in autumn. The resulting seeds were collected separately and sown in different beds. In 1928 it appeared that the seedlings and progeny of the 15 yr. old plants of the autumn crop belonged to the typical form, while from the seeds collected in winter, formed through self pollination, resulted 32% of the variety *monophylla*, and 68% of the common form. It is concluded that the single-leaved form is a recessive.—*Author's summary.*

6145. **KOSTOFF, DONCHO. Ontogeny, genetics and cytology of Nicotiana hybrids.** *Genetica* 12(1): 33-119. 10 pl. 1930.—This paper discusses compatibility, embryo-development and vigor in *Nicotiana* species-crosses; the slow growth of the hybrid embryos and the behavior of the starch in ovules when the egg is fertilized by sperm of foreign species; other abnormalities in ovules carrying hybrid endosperm and hybrid embryo; gamete formation in the hybrids; cytology and physiology of the tapetum; irregularities in nuclear and cell division; incompatibility and sterility and certain physiogenical aspects connected with hybridization and reproduction. It treats problems of hybrid cytology from a biophysical and biochemical point of view.—*M. J. Sirks.*

6146. **LESLEY, J. W., and M. M. LESLEY. The "Wiry" tomato, a recessive mutant form resembling a plant affected with mosaic disease.** *Jour. Heredity* 19 (8): 336-344. 7 fig. 1928.—In F_2 from a cross between 2 tomato varieties, 7 among 187 plants had characteristics suggesting severe mosaic-disease of the shoestring or tendril type. Because of the appearance of the leaves, the new type is called "wiry." It is hereditary and probably due to a gene mutation. Wiry (*w*) is completely recessive to normal (*W*) and in the authors' cultures has been completely sterile.—*Authors' abstract.*

6147. **LI, H. W. Heritable characters in Maize XXXVII—Brevis.** *Jour. Heredity* 22(1): 14-16. 1 fig. 1931.—Brevis, a recessive factor for semi-dwarf plant, was found to be linked with *pr* and v_3 of the *pr*-v_3 linkage group. The data suggest the order *pr-bv*-v_3. The recombination percentage between *bv* and *pr* was $21.7 \pm .80$. Gene *bv* was inherited independently of *C, sh, wx, g, R, su, Tu, B, lg, Y, Pl, j,* ts_2, *ra, cr, A,* and ts_4.—*Author's summary.*

6148. **LINDSTROM, E. W. A haploid mutant in the tomato.** *Jour. Heredity* 20(1): 23-30. 5 fig. 1929.—A haploid plant carrying genes *PdORY* is described. During 5 generations of cuttings no further mutations have appeared and no fruit has set except under open pollination. From seed of such fruits 3 plants were obtained. A few diploid cells have been found in root-tip sections.—*L. M. Dickerson.*

6149. **LOVE, H. H., and W. T. CRAIG. A note on yellow fatuoids.** *Jour. Heredity* 20(4): 172. 1929.—Recording the observation of yellow fatuoid oats by the authors.—*L. M. Dickerson.*

6150. **MacARTHUR, JOHN W. A spontaneous tomato chimera.** *Jour. Heredity* 19(7): 331-334. 3 fig. 1928.—An F_2 tomato plant, 5 generations pedigreed, produced a chlorophyll-deficient, albinoid, branch sport, and subsequently developed (1) green (normal); (2) albinoid (parasitic); and later, (3) chimeric portions, in which green and white tissues occur in adjacent sectors in all chlorophyll-bearing parts. Inheritance is apparently maternal; seedlings are all green, or white (dying early), never, as yet, chimeras.—*J. W. MacArthur.*

6151. **MACAULAY, T. B. The improvement of corn by selection and plot-inbreeding.** *Jour. Heredity* 19(2): 57-72. 5 fig. 1928.—The plot method of selection and inbreeding is described and compared with selfing and backcrossing. It is claimed that corn can be inbred, even to an extreme degree, without loss of vigor or impairment of yield, under proper conditions, and that strains can be developed which are superior to the open pollinated ears from which they originate.—*L. M. Dickerson.*

6152. **McCLELLAND, C. K., and GEORGE JANSSEN. Multiple ear character in maize.** *Jour. Heredity* 20(3): 105-109. 3 fig. 1929.—A new character appearing in an inbred strain of Jarvis Golden Prolific corn is described. Enlarged ears in this strain are each made up of several ears, some fertile and some infertile, and these enveloped as follows: (a) each in its own husk, (b) 2 or 3 grouped within a 2nd husk, and (c) all ears then encased in a common outer husk. Since other strains of this variety do not show this character, and since all the divergent strains of the given strain do, it is probable that the character is heritable.—*Author's abstract.*

6153. **MALINOWSKI, EDMUND. Variegation and chromosomes in Petunia.** *Jour. Heredity* 19(11): 521-526. 5 fig. 1928.—The opinion is expressed that the variegation accompanying purple flower color in a strain of *Petunia violacea* is due to unknown factors located in the cytoplasm. This conclusion is based on cytological data. There are differences in size and shape of chromosomes in normal and in variegated flowers of the above strain. The differences therefore which exist between normal and variegated flowers and accompanying the color distribution cannot be determined by genes or "gene elements" located in the chromosomes. The variegated strain behaves as a recessive when crossed with any normal uniform variety, and the variegation may be transmitted independently of other characters.—*E. Malinowski.*

6154. **MALINOWSKI, EDMUND. A case of linkage of a higher order.** *Proc. Internat. Congress Plant Sciences, Ithaca, N. Y.*, 1926. 1: 833-836. Geo. Banta Publishing Co.: Menasha, Wisconsin, 1929.—A discussion of the genetics of spikelet and glume characters in *Triticum* crosses in which the results are interpreted as "linkage of a higher order due possibly to an association between the chromosomes."—*O. E. White.*

6155. **MANGELSDORF, P. C. The effects of a lethal on the heterozygote in maize.** *Jour. Heredity* 19(3): 123-131. 2 fig. 1928.—The effects of a recessive lethal in the heterozygous condition, with all other genetic factors held constant, were studied in hybrids of an inbred strain which had mutated to defective seeds in the 13th generation and which was apparently homozygous for all other genetic factors. In homozygous condition, this recessive is completely lethal, reducing the development of the embryo and endosperm and rendering the seeds incapable of germination. In heterozygous condition, its effects, though very slight, were significant and measurable. Plants lacking the lethal factor were slightly superior to those which carried it, in stature, earliness of blooming, length and weight of ears. It is concluded that deleterious factors having only a slight effect in the heterozygote could accumulate in the germ-plasm without becoming associated with particularly favorable factors for growth and development, and that their elimination during inbreeding is sound practice.—*P. C. Mangelsdorf.*

6156. **MANGELSDORF, P. C., and G. S. FRAPS. A direct quantitative relationship between vitamin A**

in corn and the number of genes for yellow pigmentation. *Science* 73(1887): 241-242. 1931.—Four lots of corn having, respectively, 0, 1, 2, or 3 genes for yellow pigment in the cells of the endosperm were found to have a vitamin A content of 0.05, 2.25, 5.00, 7.50 units of vitamin A per gm. of material, showing that the gene for yellow endosperm color is directly associated with vitamin A. It is also shown that white-seeded varieties of corn which contain little or no vitamin A are capable of forming it in their seeds when the gene for yellow color is introduced by pollinating with a yellow-seeded variety.—*P. C. Mangelsdorf.*

6157. **MENDES, CARLOS TEIXEIRA. A biometria nos estudos de genetica. [Biometry applied to genetics.]** *Rev. Agric.* [*Saõ Paulo*] 6(1/2): 3-20. 1931.—No correlation was found in maize, rice, *Manihot* and bananas between the purity of the variety and the frequency curve of the individuals.—*J. R. Miner.*

6158. **NEBEL, B. "Über einige Obstkreuzungen aus dem Jahre 1929" und "Zur Cytologie von Malus II." ("Fruit crosses in 1929" and the cytolgy of Malus II.)** *Züchter* 1(7): 209-217. 2 figs. 1929.—This is chiefly a summary of previous publications on sterility among varieties of fruit trees. Observations on frost resistance among varieties of pears, apples and plums are also included. Crosses are reported among varieties of peaches, apricots, cherries, plums, pears and apples; and the relationships are indicated. The discussion on the cytology of the apple is a summary of what appeared previously in "Gartenbauwissenschaft Vol. 1. No. 6." The chromosome number of all apple varieties fell in two groups, either $2n=34$ or $2n=51$. Particular attention is given to the Gravenstein variety ($2n=51$) and its mutations.—*F. V. Owen.*

6159. **PHIPPS, I. F. Heritable characters in maize XXXI. Tassel seed-4.** *Jour. Heredity* 19(9): 399-404. 3 fig. 1928.—A tassel-seeded strain isolated originally from White Cap Yellow Dent is described. Breeding behavior indicates that tassel seed-4 (ts_4) is independent of tassel seed-1 and tassel seed-2 and is recessive to normal. The data suggest linkage between ($Ts_4 - ts_4$) and the ($A - a$) factor for anthocyanin color in the kernels, but this has not been confirmed.—*L. M. Dickerson.*

6160. **SCHULL, J. M. Mutations of Zinnia and Aster.** *Jour. Heredity* 19(2): 83-84. 2 fig. 1928.—Two unusual mutations are described.—*L. M. Dickerson.*

6161. **SMITH, W. K., and J. B. HARRINGTON. Wheat albinos.** *Jour. Heredity* 20(1): 19-22. 1 fig. 1929.—In a cross between Vernal (*T. dicoccum*) and Marquis (*T. vulgare*), 38 albino seedlings appeared in an F_2 of 2,229 plants. In F_3 there were 13 non-segregating families and 5, 9 and 4 families that gave green and white seedlings in the ratios 63:1, 15:1 and 3:1, respectively. The results showed that Vernal and Marquis carry 3 recessive genes for albinism, 2 of them being in 1 variety and the 3rd in the other.—*J. B. Harrington.*

6162. **SPINKS, G. T. Families of strawberry seedlings bred for resistance to aphis.** *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 17-27. [1930].—Aphis-resistant varieties of strawberries were crossed with varieties of desirable market quality: Royal Sovereign and Stirling Castle. The families of seedlings resulting from each cross are described.—*W. H. Chandler.*

6163. **STANTIAL, HELEN. The persistence of acclimatization to fluoride, after sporulation of the yeast.** *Trans. Roy. Soc. Canada, Sect. 3* 22(2): 263-265. 1928.—Yeasts acclimatized to HF, or fluorides, ordinarily retain their tolerance for some time (up to more than 190 hrs.) when cultured in a F-free medium. Spores formed in F-tolerant yeast are more tolerant of F than normal spores; the progeny of asci picked out, individually, in strains rendered F-tolerant by prolonged culture in media containing fluorides, were much more resistant to F than the progeny of normal asci. The author is inclined to interpret this as a case of the inheritance of an acquired character.

6164. **STANTON, T. R., and F. A. COFFMAN. Yellow-kerneled fatuoid oats.** *Jour. Heredity* 20(2): 66-70. 2 fig. 1929.—Yellow-seeded fatuoids were found in the distinctly yellow-kerneled varieties Richland and Iogold. These occurred under a wide range of climatic and other environmental conditions.—*Author's summary.*

6165. **STEIN, EMMY. Weitere Mitteilung über die durch Radiumbestrahlung induzierten Gewebe-Entartungen in Antirrhinum (Phytocarcinome) und ihr erbliches Verhalten. (Somatische Induction und Erblichkeit.)** *Biol. Zentralbl.* 50(3): 129-158. 27 fig. 1930.—Plants in early embryonic stages were subjected to radium treatment, resulting in induced, somatic gene mutations in localized regions. Tissues developed from these regions were subject to carcinoma-like growths. Germ cells produced from tissue carrying the mutated genes were capable of passing on to the F_1 an inherited tendency toward cancerous growths. Lesions occur in any part of the body in F_1 and F_2, however, in contrast to the parental plants, in which they occurred only in tissues derived directly from regions of the embryo in which gene mutations had been induced. That the induced mutations were rather complex is indicated by the presence of several different types of inherited abnormality in F_1 and F_2. This is not a case of the inheritance of acquired characters, but of true inheritance of somatically induced gene mutations.—*R. E. Cleland.*

6166. **STRONG, W. J. Breeding experiments with the cucumber (Cucumis sativus L.).** *Scientific Agric.* 11(6): 333-346. 2 pl., 5 fig. 1931.—Seven characters showed complete dominance: regular length of internode, dominant to irregular; grooved and ridged stem, dominant to smooth and round; mottling of fruit, dominant to non-mottling; dullness of fruit, dominant to glossiness; wartiness of fruit, dominant to non-warty; thick tough skin, dominant to thin tender; black spines, dominant to white. Nine characters lacked dominance and 3 of these appeared to be inherited on a 1-factor basis, giving approximately a 1:2:1 ratio: color of fruit, color of spines, number of spines. The other 6 had a multiple factor basis: size of leaves, color of leaves, length of internodes, length of fruit stalks, length of fruits, size of spines. The non-clustering fruiting habit appeared to be dominant to clustering in some cases, partially dominant in others. Shape of fruit appeared to depend on several size- and shape-factors, but its mode of inheritance was not determined. There appeared to be linkage between the fruit characters mottled, dull, warty, thick and tough, and non-mottled, glossy, non-warty, thin and tender.—*Author's summary.*

6167. **SWANSON, ARTHUR F., and JOHN H. PARKER. Inheritance of smut resistance and juiciness of stalk in the sorghum cross, Red Amber × Feterita.** *Jour. Heredity* 22(2): 51-56. 3 fig. 1931.—Susceptibility (*K-k*) to covered kernel smut (*Sphacelotheca sorgi*) is inherited as a single factor difference dominant to resistance in a cross, Red Amber × Feterita. Dry stalks are dominant to juicy, showing a single factor difference. No conclusive evidence of genetic linkage between the factors for reaction to smut and those for dry or juicy character of the stalks was obtained in F_3 populations, although in subsequent generations there was a tendency for the hybrid selections having juicy stalks to be the more susceptible.—*L. M. Dickerson.*

6168. **TIRELLI MARIO. Sulla predeterminazione funzionale. Influenza dell'ambiente sul germe. Selezione ambientale delle razze di grano e ipernatalità umana in Gennaio. [Functional predetermination. Influence of environment on the germ. Environmental selection of races of grain and excess of human births in January.]** *Italia Agricola* 68(1): 52-57. 1931.—Tallarico found that some races of wheat, usually cultivated on the plains, if cultivated under unfavorable, alpine conditions furnish seed that will produce, if sowed under usual lowland conditions, more than that produced by an equal weight of seed of the same race grown exclusively on the plains. Tallarico says that the unfavorable, alpine conditions have reinforced the race. The author finds this interpretation incorrect. The seeds are composed of embryo and endosperm. The embryo probably has the same size

in the same race, whether cultivated under favorable or unfavorable conditions. The unfavorable conditions may decrease the weight of the endosperm, but this reduction would not influence the genetic potentiality of the seed, the genetic factors being contained in the embryo. For this reason a given weight of seed cultivated under favorable conditions contains a smaller number of seeds than the same weight from the same stock cultivated under unfavorable conditions; but the embryos of the 2 kinds are genetically identical. Hence, the product of the former lot of seed will be smaller than that of the latter.—*M. Tirelli.*

6169. **TROLL, HANS-JÜRGEN. Untersuchungen über Selbststerilität und Selbstfertilität bei Gräsern.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(1): 105-136. 3 fig. 1931.—Twenty-five spp. and varieties of grasses were tested for self fertility. Panicles were isolated singly or in groups by parchment bags upon several or many plants for each variety or species tested. A total of 3368 tests were made upon 1576 plants. The grasses tested may be placed in 4 groups relative to self fertility: (1) with seed production from 1 to 5%; (2) from 5 to 10%; (3) from 10 to 20% and (4) with seed production above 20%, of florets present. The spp. and vars. assigned to the 4 groups are as follows: to group (1) *Agrostis alba, Bromus inermis, Beckmannia eruciformis, Dactylis glomerata, Lolium muliflorum westerwoldicum, Phalaris arundinacea, Phleum pratense,* and *Tristum flavescens;* to group (2) *Avena elatior, Festuca pratensis, Lolium perenne* and *Lolium multiflorum;* to group (3) *Alopecurus pratensis, Cynosurus cristatus, Festuca arundinacea, F. ovina, F. rubra, Poa compressa, P. fertilis, P. pratensis,* and *P. trivialis;* to group (4) *Bromus arvensis, B. mollis, Glyceria fluitans,* and *Poa nemoralis.* No complete self sterility was found. A variation in a species of as much as 4% was found between strains differing in geographical origin. Biological notes on flowering are given for many of the species.—*L. R. Waldron.*

6170. **TSCHERMAK, ERICH. Neue Beobachtungen am fertilen Artbastard Triticum turgidovillosum.** *Ber. Deutsch. Bot. Ges.* 48(9): 400-407. 1930.—This hybrid is the result of crossing *Triticum turgidum* and *T. villosum.* It is constant, fertile and shows no evidence of Mendelian segregation. The constancy and fertility are correlated with the "chromosome addition" hypothesis previously formulated for *Aegilotricum.* Zygotes of F_2 and following generations show di-diploid chromosome condition, as distinct from tetraploid; gametes, the dihaploid complements of the 2 parental species independent throughout.—*H. D. Hill.*

6171. **TSCHERMAK, ERICH. Über Zenien bei Leguminosen.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16 (1): 73-81. 2 fig. 1931.—A critical analysis is made of the various phases of xenia with special reference to legumes. Attention is called to the fact that the phenomena can be utilized in breeding operations and therefore becomes of practical as well as of theoretical importance.—*L. R. Waldron.*

6172. **WAGNER, S. Topinambur als Ersatz für Zuckerrüben. [The artichoke as a substitute for sugar beets.]** *Züchter* 1(6): 190-193. 3 fig. 1929.—Summary of existing information regarding *Helianthus tuberosus.* Attention is called to sterility of flowers and mechanical difficulties in making crosses. Mention is made of several contributions towards improvement in artichokes, especially the efforts of the De Vilmorin Seed Company of France. *H. doronicoides* is said to have a higher inulin content than *H. tuberosus,* and a cross between these 2 spp. is reported. Literature citations are not given.—*F. V. Owen.*

6173. **WATKINS, A. E. The wheat species: a critique.** *Jour. Genetics* 23(2): 173-263. 15 fig. 1930.—The 3 groups of wheat were distinguished on the basis of morphology, serum reactions and disease resistance, before chromosome numbers were determined. The 1st, characterized by 14 chromosomes, is easily defined, but in the 2nd and 3rd groups it is difficult to fix upon any one character carried exclusively by the 28 or 42 chromosome group. Of the 13 wheat spp., 7 belong to the 28, and 4 to the 42 chromosome group. *T. vulgare* is the most diverse of the 13 spp. Percival suggested a hybrid origin of the *vulgare*-group wheats with *Aegilops,* one parent, furnishing hollow straw, awnlessness or short awns, rounded back of glume, and other *vulgare* characters. Vavilov has shown, however, that groups 2 and 3 have distinct geographic dispersal centers. The origin of groups 2 and 3 took on new significance with a recognition of polyploidy in *Triticum.* When wheats of 28 and 42 chromosomes are crossed, 14 bivalents and 7 univalents, the latter undoubtedly from *vulgare,* are found in heterotypic division. The univalents split in this phase, the new units lagging more or less. During homeotypic division the bivalent elements behave normally, but the univalents merely segregate at random, with a possibility that some are excluded at the poles at either phase. Chromosome number thus varies considerably in the F_2. In crosses involving parents with 14 and 28 chromosomes, behavior is still less methodical and sterility more pronounced. When *Aegilops cylindrica* ($2n=28$) is crossed with *T. vulgare,* 7 bivalents and 21 univalents generally appear, but when *T. durum* participates, pairing at the heterotypic division rarely takes place. This affords evidence that *vulgare* (and its allies) is differentiated from *durum* by 7 chromosomes similar to those of *A. cylindrica.* No bivalents seem to be formed when *A. ovata* is crossed with *T. vulgare,* and bivalency is nearly lacking when *T. durum* or its allies enter into the cross. In pentaploid hybrids, F_2 and later plants produce mega- and microspores with 14 to 21 chromosomes, $2n=28$ to 42. When 14 bivalents assemble in company with 0 to 7 univalents, fertile plants result, with a tendency in later generations to form 28-chromosome plants. In plants with more than 35 chromosomes, fertile plants are in evidence when bivalents + univalents = 21. In this case true breeding fertile 42-chromosome plants usually result. It has been found that in F_2 pentaploids, many more 28-chromosome plants are found than if random assortment took place. Sterility associated with this disparity may be due (1) to lack of grain germination, (2) to failure to set grain (due to pollen or egg cell failure), (3) to elimination of zygotes, and (4) to pollen sterility. The genetics of pentaploid wheats are complex, and only a few characters show monohybrid ratios. New and abnormal types often appear. Type is obviously associated with chromosome number. It has not been shown conclusively that specific *vulgare* genes are carried by the 7 univalents thought to belong peculiarly to *vulgare.* In certain crosses 28 and 29 chromosome plants varied in resistance and were sometimes susceptible to rust; no resistance was found in the high chromosome extractives in a *durum* × *vulgare* cross.—In 1 pentaploid, *turgidum* × *vulgare,* both parents waxy, waxless plants appeared in the F_2, of *turgidum* type. The F_1, back-crossed to *turgidum,* gave waxy which bred 1:1 but when F_1 was back-crossed to *vulgare* only waxy appeared. Assumption of a dominant waxy unpaired gene located in a univalent explains the facts. Allosyndesis is of usual occurrence. Other *turgidum* × *vulgare* crosses lead to the conclusion that both the paired and unpaired chromosomes carry a similar set of factors represented by A_1A_2 and $A_1a_2A_3$, A_3 being carried by the unpaired chromosomes and A_1a_2, when segregated out, giving a new character, say waxless or speltoid (new type). A_2 and A_3 may represent groups of linked factors.—Speltoid mutants are explained by Winge by assuming that among the hexaploid chromosomes of *vulgare,* irregular pairing may take place to form gametes *ABB* and *ACC* resulting in the heterozygous speltoid of, say, *ABC/ABB.* Winge's hypothesis, carried through, does not account for certain linkage phenomena nor for the origin of part mutations. Nilsson-Ehle's hypothesis of factor mutation accounts for the foregoing, but does not account for the fact that speltoids can be formed by the addition or loss of an entire chromosome. Factor mutation seems to account for some of the speltoid phenomena.—The phenomenon of

"shift," in glume length, observed in *T. polonicum* × *T. durum*, when the parent characters are not recovered, is explained by Darlington by autosyndesis, in which *Ww* would be the gamete formed from pure *WW WW* and *ww ww* parents. Modifying factors segregating normally would prevent intermediacy.—If, generally, the 3 sets of 7 chromosomes in *vulgare* carry similar factors, then inheritance in hexaploid wheat crosses should show corresponding cumulative effects; and such inheritance should be limited to polyploid organisms.—*L. R. Waldron.*

6174. **NOGUCHI, YOSHIKCKI.** A few fundamental findings for breeding rice plants. (Translated [from the Chinese] by C. P. KWAN.) *Jour. Agric. Assoc. China* 78/79. 13-20. 1930.

ANIMAL

6175. **ASDELL, S. A., and A. D. BUCHANAN-SMITH.** Inheritance of color, beard, tassels and horns in the goat. *Jour. Heredity* 19(9): 425-430. 1 fig. 1928.—From an examination of the Kid Register of the British Goat Society, entries from 1884 to 1923, some indication of the inheritance of color was obtained. Black appeared to be the lowest in a series of black, chocolate, fawn, and cream, in that order. Brown appeared to be dominant to all colors save true white; red and tan seemed recessive to the black series. Gray and roan appeared to be dominant to all colors save brown, to which it seemed to be recessive. True white is dominant to all colors. From other records beard is inherited in a simple sex-limited manner, being dominant in the male and recessive in the female. Tassels are inherited as a simple dominant, but there may be complications apart from that of the inheritance of misplaced tassels. Further evidence of the dominance of polled is found.—*S. A. Asdell and A. D. B. Smith.*

6176. **BLUHM, AGNES.** Zum Problem "Alkohol und Nachkommenschaft." *Arch. Rass.- u. Ges.-Biol.* 24: 12-82. 1930.—Starting with highly inbred albino mice, the ♂♂ of 114 pairs were treated with alcohol; 114 similar pairs were carried as controls, and all were bred through 8 generations, covering more than 32,000 offspring. The lines which started with alcoholized ♂♂ showed a somewhat higher mortality of offspring, both before and at most ages after birth, somewhat diminished vigor of growth, greater variability, and an increased proportion of sterile individuals. Male descendants were more affected than ♀, indicating that genes in the X and Y-chromosome had been damaged by the alcoholization. There was no increase in abnormalities or degenerative conditions. It is concluded that definite mutations (sublethal genes) were induced by the alcohol.—*P. Popenoe.*

6177. **CASTLE, W. E.** The rex rabbit. *Jour. Heredity* 20(5): 192-200. 5 fig. 1929.—A recessive mutation has given rise to a new variety which, because of its short plush-like coat without clearly differentiated guard hairs, is of economic interest to the furrier. A study has been made of its linkage relations with other known genes of the rabbit with negative results. Confirmation is made of the fact discovered by Pease that yellow fat in rabbits is a recessive mutation, the gene for which is closely linked with the color gene and its albino allelomorphs. The occurrence of crossing-over between these genes has been observed with a frequency estimated at 5-10%.—*Author's abstract.*

6178. **COLTON, HAROLD S.** "High Brow" albino rats. *Jour. Heredity* 20(5): 225-227. 2 fig. 1929.—In a colony of white rats several have been born with this peculiar hydrocephalic condition. These births were among close relatives. Most of the "High Brow" rats died before or shortly after weaning. One was raised and mated with his normal sister and the offspring mated inter se. All offspring of F_1, F_2, and F_3 were normal. The highbrow condition, therefore, either is not inherited or, if inherited, is due to more than a single factor difference.—*From author's abstract.*

6179. **COMAS, MARGARITA.** Contribución al conocimiento del determinismo del sexo en Paramermis contorta v. Linzt. [Determination of sex in P. contorta.] *Mem. R. Soc. Españ. Hist. Nat.* 15(1): 47-52. 1929.—The sex of this parasitic nematode, when only 1 occurs in a *Chironomus* larva, is usually (85% of cases) ♀. Genotypic ♂♂ apparently have changed into phenotypic ♀♀ (intersexes). When many of the parasites enter, presumably not simultaneously, the first 1 or 2, responding to favorable nutritive conditions, become ♀♀, others arriving later become mostly phenotypic ♂♂ (intersexes) or genotypic ♂♂. From these and other facts it appears that instability of genotype in sex-determination is fairly common in Mermithidae.—*Author's conclusions.*

6180. **DAVIS, FREDERICK ALLISON, and HARVEY M. SMITH.** The rôle of lens antigen and uveal pigment in the production of hereditary anomalies of the eye. *Arch. Ophthalmol.* 4(5): 672-690. 4 fig. 1930.—Spontaneous occurrence of coloboma was observed in 5 out of 12 eyes in a litter of 6 rabbits the mother of which had normal eyes. In 61 experiments on pregnant rabbits (44 receiving lens antigen, 5 having 1 or both lenses needled, 12 receiving uveal pigment injections), 41 pregnancies came to term, resulting in 263 offspring among which only 2 showed any ocular defect. Many of the offspring have been subsequently mated without the appearance of a defective eye. The authors conclude that the anomalies described by Guyer and E. A. Smith are not due to the effect of injected lens substance, but are probably hereditary defects of unknown origin. They believe that, while coloboma may occur as a recessive (colobomatous offspring from normal-eyed parents), it is not a simple recessive, since it may appear in F_1 from the mating of a rabbit with defective eyes with a rabbit with normal eyes.

6181. **DUNN, L. C., and B. F. GLESSING.** The genetics of the domestic fowl. *Jour. Heredity* 19(11): 511-519. 1928.—The occurrence of 3 unhatched chicks without down plumage is reported from the Central Genetical Station, Moscow, U. S. S. R. All originated from matings between close relatives belonging to the same pedigree. The downless condition is ascribed to mutation.—*L. C. Dunn.*

6182. **DUNN, L. C.** The genetics of the domestic fowl. Part II. The genetics of leg feathering. Memoirs of the Anikowo genetical station. *Jour. Heredity* 20(3): 111-118. 3 fig. 1929.—The author presents a digest of translations from the original papers. The breeding behavior of 7 types of leg feathering is reported. Genes for "heel tufts" (*susti*) and recessive leg-feathering (*asuso*) are here described and established for the first time. Descriptions used are all based on leg feathering in the baby chick. Each type is an average around which fluctuations occur. See also *Ibid.* 20(7): 322 for corrections of errors in some of the tables and percentages.—*L. M. Dickerson.*

6183. **FORD, E. B., and J. S. HUXLEY.** Genetic rate-factors in Gammarus. *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 117(Festschr.): 67-79. 7 fig. 1929.—Mutations in *G. chevreuxi* (Amphipoda) which influence the color of the facets of the eyes act by modifying the time-relationships governing the deposition of melanin. In the normal black eye (*RR*), which is at first red, melanin is deposited so rapidly that a dense black color is attained by the time of extrusion from the maternal brood-pouch. In red (*rr*) eyes the time of onset and rate of melanin formation is always slower. It may be modified by a factor "*s*" slowing it down considerably, and a factor "*m*" slowing it down to a less degree. A factor "*d*" has also been found which delays onset of rapid pigment development until sexual maturity. Melanin formation is also influenced by temperature and eye-area. In *rr* eyes melanin is formed rapidly at 28° C. and very slowly at 14° C. Large eyes are lighter than small, since a given quantity of melanin has to be spread over facets of greater area. Growth, and consequently eye color, is controlled both phenotypically and genotypically. In

the latter case a single factor "*g*" reduces the growth rate, though not final size.—*E. B. Ford.*

6184. **FRETS, G. P. Keimgifte. [Germ-plasm poisons.]** *Arch. Rass.- u. Ges. Biol.* 24: 83-96. 1930.—Review of literature indicates that lead, thallium, iodine, nicotine, chloral hydrate, methylene blue and other chemicals are real germinal poisons. The evidence as to alcohol is conflicting.—*P. Popenoe.*

6185. **GODBEY, C. B., and D. H. REID. A hen with variable plumage color.** *Jour. Heredity* 22: 59-62. 3 fig. 1931.—A Barred Plymouth Rock pullet after completing her first moult in 1927, was practically white in appearance and remained so until after the moult in 1930. Following this moult, she again took on the plumage color of a normal Barred Rock. Her genetic constitution, as determined by breeding tests, is that of a normal Barred Rock hen.—*C. B. Godbey.*

6186. **GONZALEZ, B. M., and VALENTE VILLEGAS. "Bighead" of horses a heritable disease.** *Jour. Heredity* 19(4): 159-167. 4 fig. 1928.—In experimental matings of horses in the Philippines, a supposedly homozygous osteoporotic stallion was the progenitor of osteoporotic stock. In all, 14 successful matings are reported, and it is concluded that osteoporosis is a heritable constitutional disease. A hypothesis is provisionally advanced that it is a simple dominant, autosomal Mendelian character, and that the disease may be caused by the failure of an organ or organ system to function properly.—*B. M. Gonzalez.*

6187. **GORDON, MYRON. Pigment inheritance in the Mexican killifish. Interaction of factors in Platypoecilus maculatus.** *Jour. Heredity* 19(12): 551-556. 5 fig. 1928.—There are 2 types of melanophores, each controlled by a dominant gene. The gene *Sp* for black spotting is sex linked but *St* for stippling (graying) is autosomal. When the killifish is spotted + stippled the *Sp* factor has a partial inhibitory effect upon *St;* but at the same time the *St* factor enhances the effect of *Sp.* The inhibitory power that *Sp* has over *St,* however, is not so great as the power *St* has in increasing the effect of *Sp;* for while *Sp* may reduce the effectiveness of *St* only about 30%, *St* increases the effectiveness of *Sp* about 70%.—*M. Gordon.*

6188. **GREEN, C. V. Size inheritance and growth in a mouse species cross (Mus musculus × Mus bactrianus). I. Litter size. II. Birth weights.** *Jour. Exp. Zool.* 58(1): 237-258. 1930.—I. Large series of litters showed that an inbred strain of dilute brown non-agouti *Mus musculus,* averaging 5.4 ± .04 young per litter, differs significantly in litter size from a stock of *M. bactrianus* which averaged 4.6 ± .11 young. When *musculus* females were mated to *bactrianus* and to F_1 males, the average litter sizes remained very nearly the same (5.4 ± .20 and 5.3 ± .14 offspring, respectively) as when mated to *musculus* males. The reciprocal back-cross (F_1 females × *musculus* males) produced litters averaging 6.4 ± .12 young. These results indicate that in mice the litter size is determined entirely by the female. The genetic constitutions of the offspring in the two types of back-cross are the same, the marked difference in litter size being a manifestation of heterosis of the hybrid mother. II. Newborn weights of a strain of large inbred *M. musculus* (dilute brown non-agouti), a stock of small *M. bactrianus* (intense black agouti), F_1 animals from both types of matings, and animals from 2 types of back-cross matings were investigated statistically. The average newborn weight is specifically constant, the mean weight of young from all litters, irrespective of size, apparently giving as true a picture of the genetic basis of birth weight as that of young from modal litters only. Males in all types of matings tend to be heavier at birth than females. The results of reciprocal crosses indicate that the genetic complex of the growing fetus is more important than the mother in determining the weight at birth. Although the back-cross generations consisted of mice of 8 color classes, no evidence of linkage between factors controlling weight at birth and any of the 3 qualitative factors investigated was detected.—*Author (courtesy Wistar Bibl. Serv.).*

6189. **GROTH, A. H. A fertile mare mule.** *Jour. Heredity* 19(9): 413-416. 4 fig. 1928.—An aged mare mule gave birth to 3 offspring, 2 of which lived (the 3rd was a cyclopean monster). One of these two was sired by a Jack, the other by a Saddle Stallion. The ♂ colt sired by the Saddle Stallion has proved fertile. Efforts to breed the mare sired by the Jack have been futile. The mule and her offspring are owned by the Animal Husbandry Department of the Agricultural and Mechanical College of Texas.—*A. H. Groth.*

6190. **HÄMMERLING, J. Dauermodifikationen.** In: **E. BAUR und M. HARTMANN. Handbuch der Vererbungswissenschaft.** Bd. 1, Lief. 11. 70p. 31 fig. Gebrüder Borntraeger: Berlin, 1929. Pr. 6 M.—A brief summary of general conclusions regarding heredity and variation, modifications, and the effects of selection in Protozoa, is followed by a review of the investigations on *Paramecium* and *Arcella* which led Jollos to advance the conception of Dauermodification (an induced non-genotypic change which recurs in subsequent generations for a shorter or longer time after return to normal conditions). Increased resistance to As, increased division rate (induced by Ca), change in size, increased resistance to temp. are discussed. The longer the treatment, the more elevated in grade is the modification, although a certain high point cannot be exceeded, and the longer does the modification persist in vegetative reproduction under normal conditions. The return may be accelerated by sudden change of cultural conditions, more so by endomixis, still more by conjugation. The part of the cell affected is in some cases the plasma; in others (which show no return to normal in vegetative reproduction), the macronucleus also is involved. The significance of bacterial factors is discussed. Results interpreted as possible effects of selection within a clone (Jennings and others) may be consistently interpreted as dms. (Dauermodifications). Stein's work on radiomorphs in *Antirrhinum* is reviewed. Dms. in bacteria, fungi, cormophytes, probable cases in cladocera, rotifers, lepidoptera and rats are briefly mentioned. Their peculiar inconstancy forbids them to be classified as mutations. Known dms. have no evolutionary significance. The return of the plasma to normal condition may possibly be caused by the action of the unchanged nuclear genes or genetically independent elements in the plasma, or by the change of outer factors to the normal. Difficulties in regard to these three possibilities are pointed out in a critical examination of the relationship of plasma and nucleus in inheritance, especially in connection with the work of Harder and of von Wettstein. The latter's conception of the plasmon is contrasted with Jollos' plasmotype.—*A. H. Hersh.*

6191. **HANCE, ROBERT T. Detection of heterozygotes with x-rays. Difference in strength of genetic character resulting from single or double genes shown in case of color in the mouse.** *Jour. Heredity* 19(11): 480-485. 3 fig. 1928.—When given a certain exposure to x-rays the pigmented hair of colored mice falls out and is replaced with uncolored or white hair. The hair of mice pure for pigmentation becomes on the whole darker, while hybrid mice almost completely lose their color. A tentative explanation based on the observed increase of oxidative activity of tyrosinase following x-radiation is suggested.—*Author's summary.*

6192. **HAWORTH, ERASMUS. A mule colt from Nebraska.** *Jour. Heredity* 19(9): 412. 1 fig. 1928.—A letter reporting a mule which has given birth to a foal sired by a jack and is believed to be again in foal.—*L. M. Dickerson.*

6193. **IBSEN, HEMAN L., and L. D. BUSHNELL. Eye defects in rabbits.** *Jour. Exp. Zool.* 58(1): 401-421. 1 pl. 1930.—Two methods used by Guyer were employed in attempting to induce eye defects in rabbits: (1) Hens were injected with rabbits' lenses in order to produce lens antibody, and the serum from such hens was injected into pregnant rabbits. (2) The eyes of rabbits,

both males and females, were needled for the purpose of allowing the animals to produce their own lens antibody. The percentage of eye defects in the descendants of treated animals was much lower than that obtained by Guyer. Several very noticeable eye defects were found in untreated stock. The difference between the per cent of defectives in the treated stock and the untreated was not significant statistically. It seems highly probable that a modification of a third method used only to a slight extent by Guyer would be of a more critical nature than the two mentioned above, i.e., injecting lenses directly into rabbits of both sexes until the antibody content was found to be high in at least some of the animals, mating them, and continuing to inject the females during pregnancy.—*Authors (courtesy Wistar Bibl. Serv.).*

6194. **JULL, MORLEY A., and JOSEPH P. QUINN. Inheritance in poultry. Data on the genetics of vulture hocks, hen feathering and crooked neck in the domestic fowl.** *Jour. Heredity* 22(5): 147-153. 5 fig. 1931.—Vulture hock is recessive to its absence and due to a single factor. Hen-feathering is dominant to cock-feathering and is the result of a single factor, with the probability that modifying factors are involved. Crooked neck does not appear until the birds are about half grown and apparently is inherited on a monofactorial basis. The defective condition becomes progressively more serious as the birds mature, unfitting them for breeding.—*L. M. Dickerson.*

6195. **KEELER, CLYDE E. Thelytoky in Scleroderma immigrans.** *Psyche* 36(1): 41-44. 1929.—In this mutilloid wasp, wingless ♀♀ × winged ♂♂ produced 6 winged ♂♂, 1 wingless ♂ and 84 wingless ♀♀. Wingless ♀♀ × wingless ♂♂ gave one wingless ♀. Virgin wingless ♀♀ produced 33 wingless ♀♀. The author queries whether he could have been dealing with a parthenogenetic strain, or whether change of conditions produced a functional difference in mode of reproduction.

6196. **KISLOVSKY, D. A. Naked—a recessive mutation in the rabbit.** *Jour. Heredity* 19(10): 438-439. 2 fig. 1928.—This defect in hair growth is described and illustrated. All the mutants were observed in the progeny of a normal "champagne" ♂ N. 89 and resulted from mating him with his daughters and granddaughters. Matings of heterozygous individuals gave 17 normals to 7 mutants, a ratio near to the expected 3:1. The hair defect is associated with defects in teeth. Pure recessives could not be mated, as all the mutants died early.—*D. Kislovsky.*

6197. **KNOX, C. W. Color chimeras in the domestic fowl.** *Jour. Heredity* 22(4): 133-134. 1 fig. 1931.—A skin-color mutation resulted in a "half and half" mosaic. In another case, a small, yellow area developed on one shank of a white-shanked bird. Another mutation—probably a loss of the gene for melanic pigment—produced a bird having one yellow and one green shank; the green shank might also be due to a dominant mutation, the other retaining the recessive yellow color.—*L. M. Dickerson.*

6198. **KROON, H. M., en G. M. van der PLANK. Enkele sub-letaalfactoren bij huisdieren in Nederland. [Sublethal factors in domestic animals in Holland.]** [With French, German, and English summaries.] *Tijdschr. Diergeneesk.* 58(13): 681-694. 5 fig. 1931.—The factors are: albinism in cows, epitheliogenesis imperfecta neonatorum in cows, absence of a part of the limbs in sheep, and dwarf form in the Frisian horse. All are recessive sub-lethals which came to light in inbreeding.

6199. **LAMBERT, W. V. A "Half and Half" skin-color mosaic in the chicken.** *Jour. Heredity* 20(4): 167-169. 1 fig. 1929.—Attention is called to a chicken of which half of the body had white skin and half yellow skin. Possible causes of the mosaic are discussed.—*W. V. Lambert.*

6200. **LANDAUER, WALTER. The morphology of intermediate rumplessness in the fowl.** *Jour. Heredity* 19(10): 453-467. 4 fig. 1928.—This new heritable character is marked by the absence of one or two synsacro-caudal vertebrae and all vertebrae of the pygostyl except the last two. The 5 free caudal vertebrae as a rule are present, but show a widely varying degree of differentiation. A graded series leads from pelves in which the first two caudal vertebrae are almost normal to those in which all caudal vertebrae and the remaining part of the pygostyl are fused in a very irregular fashion. Males on the average show a longer and better developed free caudal segment than females. Sex has no influence, however, upon the number of vertebrae present in the synsacro-caudal region. Size and degree of differentiation of the synsacro-caudal region and of the free caudal part of the vertebral column appear to be correlated, pelves with a greater reduction in free caudal vertebrae usually showing a smaller number of vertebrae in the synsacro-caudal region. A discontinuous suppression of vertebrae may take place in a segment of the vertebral column without affecting the normal appearance of the remaining vertebrae in this region.—*W. Landauer.*

6201. **LANDAUER, WALTER, and L. C. DUNN. Studies on the creeper fowl. I. Genetics.** *Jour. Genetics* 23(3): 397-413. 1 pl. 1930.—This breed is characterised by extreme shortness of the long bones of the extremities, bending of the tibia, and a highly differentiated fibula. Breeding experiments with four different strains, obtained from America, Germany, Scotland, and the Marquesas Islands, led to these conclusions: creeper traits are determined by a single dominant Mendelian gene; in homozygous condition the creeper gene is lethal. The lethal nature of the homozygous creeper condition is demonstrated: (a) by the fact that only heterozygotes exist (breeding tests); (b) by the segregation of two creepers to one normal in inter se matings of creepers; (c) by the fact that approximately 25 per cent. more embryos die during the first six days of incubation in inter se matings than in out-crosses. Homozygous embryos, at the age of 72 hours, show a striking retardation in growth and differentiation. A small percentage of homozygous embryos in inter se crosses of the original stocks, and, apparently due to hybrid vigor, a considerably larger number in crosses between different creeper lines and in inter se crosses of F_1 creepers from matings with normal fowls, survive the lethal period. Such embryos exhibit a malformation closely resembling, if not identical with, phokomelia in humans and other mammals. They usually die during the last week of incubation, but in rare instances are still alive at hatching time; they never hatch. The fact that in back-crosses as well as in inter se matings the proportions of creepers to normals show a deficiency of creepers among the hatched chicks, and a surplus of creepers among the chicks which failed to hatch, demonstrates that even the heterozygous creeper condition is slightly semi-lethal. Crosses between the different creeper lines yielded essentially the same results with regard to segregation and embryonic mortality as did intra-line crosses. Thus the creeper condition in all four lines is evidently due to one and the same mutation.—*Authors' summary.*

6202. **LI, JU-CH'I. A new food for laboratory cultures of Drosophila.** *Peking Soc. Nat. Hist. Bull.* 5(4): 29-31. 1931.—The new formula consists of 75 cc. water, 1.5 gm. agar, 10 gm. corn-meal, 13.5 cc. red sugar seeded with a few drops of yeast culture.

6203. **MacDOUGALL, MARY STUART. Another mutation of Chilodon uncinatus produced by ultraviolet radiation, with a description of its maturation processes.** *Jour. Exp. Zool.* 58(1): 229-236. 12 fig. 1930.—This appeared in a culture which had had 3 exposures to ultraviolet rays—one of 30 seconds and two of 15 seconds each. The main difference from *C. uncinatus* is that there is a prolongation of the convex dorsal portion of the body, resembling somewhat a form described by Stokes as *C. caudatum*. There is also a change in the ciliation and body shape. In the beginning of the work one large exconjugant, with a conspicuous tail, was isolated and allowed to multiply. In this line more

than 20 conjugations have occurred without any sign of reversion to the original form. This line appears to be homozygous. Five out of 75 pairs of conjugants isolated from other lines obtained from the original mass culture have reverted to normal. These normals have never shown any sign of a caudal appendage.—*Author (courtesy Wistar Bibl. Serv.).*

6204. **MOHR, OTTO LOUS.** Dödbringende arvefaktorer i storfé. [Lethal hereditary factors in cattle.] *Tidsskr. Norske Landbruk* 1(2-13) : 5 fig. 1929.—A study was made of 4 series of hereditary lethal factors in cattle discovered in certain districts of Norway and Sweden. In 1 series the calves may be designated as "bulldog-faced," in a 2nd as "hairless," in a 3rd as "legless," and in a 4th as "elk-like." In each series the calves were strikingly similar. They die either shortly before, or at birth, but in a few cases they may live for a few hrs. or days (sublethal). The factors are all recessive and appear only on inbreeding. In each case the factor was quite widely spread in the district before detected. All of the 4 factors were traced back to introduced bulls of extraordinary qualities in other respects. Methods in backcrossing are suggested for testing such animals for unfavorable recessive traits before the factors are allowed to spread.—*P. Okkelberg.*

6205. **NABOURS, ROBERT K. Mutations and allelomorphism in the grouse locusts (Tettigidae, Orthoptera).** *Proc. Nation. Acad. Sci. U. S. A.* 16(5) : 350-353. 1930.—Extremely close linkage prevails. The 70 dominant, elementary, color patterns may have resulted, respectively, from aggregations of mutants too closely linked to allow of crossing over. Only one of the mutants has occurred (once) under observation.—*R. K. Nabours.*

6206. **POPOVA-WASSINA, E. T. A naked lamb.** *Jour. Heredity* 22(3) : 90-92. 1 fig. 1931.—A male lamb, naked except for a small amount of hair on the dorsal surface of the hind tibiae and some hair on the tip of the tail, was born in a flock of highly inbred sheep. Its skin is black and shiny. A twin sister had normal wool. The animal has been kept for breeding tests.—*L. M. Dickerson.*

6207. **ROBERTS, ELMER, and W. E. CARROL. The inheritance of "hairlessness" in swine. Hypotrichosis II.** *Jour. Heredity* 22(4) : 125-132. 6 fig. 1931.—A study of the inheritance of a hypotrichotic condition found in the so-called "hairless" swine of Mexico is reported. The difference between normal and "hairless" is due to a single factor. The normal is only partially dominant, the heterozygotes being intermediate in the amount of hair. The cause of "hairless" is not known. The hair follicles, though much less numerous in the "hairless" individuals than in either normal or heterozygotes, are normal. The administration of cystine gave negative results, and iodine deficiency seems not to be a causative factor.—*Authors' abstract.*

6208. **ROBERTSON, W. R. B. Hybrid vigor—a factor in tettigid parthenogenesis?** *Amer. Naturalist* 65(697) : 165-172. 1931.—Partheno-reproducing lines of Tettigidae descended from hybrid ♀♀ may continue to be heterozygous, since, on account of pre-synapsis splitting, there are four strands in each tetrad concerned in crossing-over and with this the giving off of but one polar body. If hybrid vigor, through heterozygosis, may be expressed in parthenogenesis, it should continue, though in diminishing amount, as homozygosis is approached.—*W. R. B. Robertson.*

6209. **SEREBROVSKY, A. S., and S. G. PETROV. A case of close autosomal linkage in the fowl.** *Jour. Heredity* 19(7) : 305-306. 1928.—A cross of a cock heterozygous in the autosomal genes for rose comb and creeper legs by doubly recessive hens (single comb, normal legs) produced 1 rose creeper, 22 rose normal, 33 single creeper, and 4 single normal chicks. It is concluded that the genes rose and creeper are linked with a crossover value of 8 ± 3.5. (See also *Ibid.* 9(8) : 376. for correction.)—*A. S. Serebrovsky and S. G. Petrov.*

6210. **TIMOFEEFF-RESSOVSKY, N. W. Reverse genovariations and gene mutations in different directions II. The production of reverse genovariations in Drosophila melanogaster by x-ray treatment.** *Jour. Heredity* 22(2) : 67-69. 1931.—X-rayed males from *white, ycvvf, scw^{e}ec, X-ple, III-ple* and *"rucuca"* stocks were crossed with virgin females from the same stocks and the F_1 flies examined for reverse gene mutations of these recessive genes. Reverse mutations of $sc > Sc$, $w^e > W$, $cr > Cc$, $f > F$, $h > H$, and $p^p > P$ were found. "Direct" mutations also had been produced by x-ray treatment at most of these loci previously.—*Author's abstract.*

6211. **TURNER, C. L. A wing mutation in a Borborid fly.** *Jour. Heredity* 22(1) : 35-38. 1 fig. 1931.—The life history and culture methods are described for *Leptocera fontinalis* Fullen, a fly not used before in experimental work in genetics. The life cycle is completed in 18 to 25 days. A variable, notched-wing mutation is also described and its genetics discussed. The mutation appears to be dominant, autosomal, existing only in heterozygous condition. Preliminary examination indicates that $2n = 6$ or 8.—*L. M. Dickerson.*

6212. **WASSIN, BORIS. Linkage studies in sheep.** *Jour. Heredity* 22(1) : 9-13. 3 fig. 1931.—In sheep the 3 dominant characters, additional nipples (*N-n*), presence of wattles (*W-w*) and piebaldness or "necklace" (*Pn-pn*) are inherited independently. Expression of (*N*) is completely inhibited in the presence of gene (I^n). Weak repulsion is suggested between white coat color (*C*), (*w*) and (*n*). Gene (P_n) is expressed visibly only in black sheep.—*L. M. Dickerson.*

6213. **WHITNEY, LEON F. The inheritance of a ticking factor in hounds.** *Jour. Heredity* 19(11) : 498-502. 5 fig. 1928.—Ticking (*T*), called roaning (*R*) by some authors, is apparently inherited as a simple dominant. It appears at about 4 weeks of age, must be associated with white and does not affect other colors.—*L. M. Dickerson.*

MAN

6214. **ADAMS, MARY. Six talks on heredity: a handbook to the cradle.** 104p. Frontispiece. 20 fig. W. Heffer & Sons, Ltd.: Cambridge, 1929.—A series of radio talks on heredity and eugenics.—*S. Wright.*

6215. **BANKER, HOWARD J. Genealogical correlations of student ability.** *Jour. Heredity* 19(11) : 503-508. 1928.—Having derived a numerical index based on the ability of students to meet the curriculum requirements of the common public school, correlations for this index are determined in the case of various consaguineous relationships, such as father and mother, parents and children, and combinations of sibs. These give in nearly all cases positive and significant correlations strikingly similar in value to like correlations in physical characters obtained by others.—*H. J. Banker.*

6216. **BLAINE, EDWARD S. Congenital radio-ulnar synostosis. With report of case.** *Amer. Jour. Surg.* 8(2) : 429-434. 3 fig. 1930.—Two fairly distinct types of this defect may be distinguished; (a) the type in which the radial head is absent, the proximal end of the radius being fused with the ulna, and (b) the type in which the head of the radius is displaced toward the flexor side of the arm. The extent of the bony union varies from about 2 to 6 cm. The radius and ulna develop out of the same precartilage plate, and, at a later stage, the perichondrium of the 2 bones is continuous at their proximal ends. The abnormal developmental impulses which lead to synostosis are indicated by other bony defects in the propositus or his family. Among the commonest of these are; exostoses, clubfoot and clubhand, flatfoot, abnormally diminished growth of long bones, short stature and bowlegs; in general, dyschondroplasia. There are genotypical differences in families, but synostosis is always dominant. Males are twice as likely to be affected as females; and this holds for bone defects in general. Frequent lack of symmetry in the defect suggests imperfection of dominance. Radio-ulnar synostosis appears to be a dominant, partially sex-limited trait, which varies in degree of expression.—*Author's summary.*

6217. **BUTT, N. I., and LOWRY NELSON. Education**

and size of family. *Jour. Heredity* 19(7) : 327-330. 1928.—The authors base their statistical analysis on the results of field studies including every household in 2 communities with populations of approximately 2000 and 3000 inhabitants respectively. They conclude that education is of minor importance in determining the size of the family, being far outweighed by vocation, social attitudes of groups, inherent physical vigor, economic conditions and other factors.—*L. M. Dickerson.*

6218. **CHAMBERLAIN, HERBERT D. The inheritance of left-handedness.** *Jour. Heredity* 19(12) : 557-559. 1928.—A résumé of a survey made of the handedness of 2177 students entering Ohio State University in 1927, together with the handedness of their parents and sibs. Also a record of 33 cases in which both parents were lefthanded. Lefthandedness increases from 2.1%, when both parents are righthanded, to 46%, when both parents are lefthanded.—*H. D. Chamberlain.*

6219. **CLEMENTE, LEOPOLDO S. A claw-fingered family.** *Jour. Heredity* 19(12) : 529-536. 6 fig. 1928.—A new abnormal nail mutation which resembles a "claw" was discovered in a certain Philippine family. No such case was ever found before among the immediate relatives of the first affected individual. This abnormality is due to a single factorial, autosomal, mutation, which affects only the nails of both hands and feet. It behaves as a simple Mendelian dominant.—*L. S. Clemente.*

6220. **CLOUSTON, H. R. A hereditary ectodermal dystrophy.** *Canadian Med. Assoc. Jour.* 21(1) : 18-31. 13 fig. 1929.—Six generations having a dystrophy of hair and nails. Hair has tendency to thin out and disappear in places of friction. Both toe and finger nails are only partly developed. There is some evidence that abnormalities of other ectodermal organs, such as teeth, nervous system and endocrines, may be involved. In this family there was not a large percentage of mental or moral defectives.

6221. **CUTTER, RAY T., and W. M. NELSON. A short-toed family; brachydactyly in the feet of humans.** *Jour. Heredity* 22(5) : 163-166. 4 fig. 1931.—In a case of brachydactyly of the human foot, 3 men and 1 woman were affected, during 3 generations. A radiograph showing absence of one set of phalanges is given.—*Authors' abstract.*

6222. **DAVENPORT, CHARLES B. Crime, heredity and environment.** *Jour. Heredity* 19(7) : 307-313. 1928.

6223. **DAYTON, NEIL A. Order of birth in mental defectives. A survey of 10,455 retarded children in the public schools of Massachusetts.** *Jour. Heredity* 20(5) : 219-224. 2 fig. 1929.—By means of examinations covering 10 fields, including mental, physical, pedagogic, psychologic and social aspects of retardation, retarded children were studied in families of different size. The order of birth of the retarded or mentally defective was found to be of little importance. Families having a mentally defective child (mean = 6.24 ± 30 S. D.) are larger than families having a retarded child (mean 5.71 ± .04 S. D.). These figures include both complete and incomplete families.—*Author's abstract.*

6224. **DOWNING, ELLIOT R. Elementary eugenics.** 137p. 7 fig. University of Chicago Press: Chicago, 1928. Pr. $2.—A revision of the author's "The Third and Fourth Generation" written for young people.

6225. **ENRIQUES, PAOLO. Le diverse forme di eredita "legata col sesso" nella specie umana, e la loro spiegazione. [Diverse forms of sex-linked heredity in man, and their explanation.]** *Zeitschr. Indukt. Abstam.- u. Vererbungsl. Supplementb.* 1: 631-634. 1928.

6226. **FANTHAM, H. B., and ANNIE PORTER. Some further cases of physical inheritance and of racial admixture observed in South Africa.** *S. African Jour. Sci.* 27: 391-405. 3 fig. 1930.—Particulars are given of inheritance of the following physical characters:—Brachydactyly appearing in 4 generations in family of Russian origin, both males and females being affected; supernumerary fingers in 3 generations of a Cape colored family, confined to males; supernumerary big toe in Cape colored family in males of 2 generations; white forelock in 4 generations of European family, males and females affected; white forelock in natives, affecting men belonging to three generations; premature whiteness of hair in 4 generations of European women. Details of the cases of racial admixture involving European, Chinese, and native Hindoo are set forth.—*H. B. Fantham.*

6227. **FISCHER, EUGEN. Erbschädigung beim Menschen.** *Das Kommende Geschlecht Band 5, Heft 6.* 27p. 1930. Pr. 2 M.—A review of recent successful attempts to induce mutations in lower organisms by x-rays, emphasizing the danger from possible induction of hereditary abnormalities in man by x-rays.—*H. R. Hunt.*

6228. **FISCHER, WERNER. Beitrag zur Frage der Gültigkeit der Bernsteinschen Blutgruppenerbformel. [Validity of the Bernstein theory.]** *Zeitschr. Rassenphysiol.* 2(4) : 153-171. 3 pl. 1930.—Six formulae are derived for the frequency of the genes determining the incidence of the 4 blood groups in the population of Frankfort a/M. These were made both for the Bernstein theory and the von Dungern and Hirschfeld theory. A comparison of the observed values on the one hand, and the derived formulae on the other, shows a much better fit in favor of the Bernstein theory.—*P. Levine.*

6229. **GARDNER, W. JAMES, and CHARLES H. FRAZIER. Hereditary bilateral acoustic tumors.** *Jour. Heredity* 22(1) : 7-8. 4 fig. 1931.—A study of bilateral deafness in man due to acoustic-nerve tumors indicates that this condition is inherited as a Mendelian dominant. The study includes 5 generations. The average age at death is decreasing with each generation.—*L. M. Dickerson.*

6230. **GATES, R. RUGGLES. Triplets in a relatively homozygous family.** *Jour. Heredity* 20(5) : 209-212. 3 fig. 1929.—Triplet sons 8 yrs. of age are described in a family of 12. The parents are nordics with fair hair, the father having blue eyes, the mother hazel. The sibs of these triplets all agreed with them in eye color and hair characteristics, being intermediate between the parents who differed but slightly and were nearly pure recessives. The triplets were probably identical but certain differences in ears and palms were noted.—*Author's abstract.*

6231. **HALDANE, J. B. S. Prehistory in the light of genetics.** *Proc. Roy. Inst. Great Britain* 26(3) : 355-370. 3 maps. 1931.—A lecture. The distribution of blood group factors (genes A, B, and R) over the world shows that group B has a maximum in Central Asia; and it seems probable that its distribution elsewhere is due to migration of peoples therefrom. It seems absent among the aborigines of America and Australia. Vavilov's work on the origin and evolution of cultural plants is also reviewed.

6232. **HARPER, ROLAND N. Some lights on the inheritance of longevity.** *Jour. Heredity* 22(3) : 93-98. 2 fig. 1931.—Differences in the average longevity of different social groups are here shown in several ways. The members of an aristocratic church that has separate cemeteries in two Florida cities live longer on the average than other white people in the same communities; and this seems to be true not only for the complete expectation of life (in which the difference might be ascribed to the smaller proportion of children among the aristocrats), but also for persons above any selected age. There is some evidence that long-lived men tend to pick long-lived wives, and vice versa, and this is consistent with the theory of differences in longevity in different social strata.—*Author's abstract.*

6233. **HIRSCH, N. D. M. Twins: Heredity and environment.** 159p. Harvard University Press: Cambridge, 1930.—A book written for "the educated public as well as the specialist." The first four chapters deal with the theory of twinning and with previous studies of twins from the standpoint of evaluation of the rôles of heredity and environment. The remaining six chapters present new data and their interpretation. The author selected 58 pairs of twins on the basis of similarity in appearance, voice, etc., and in school work. For comparison, 38 pairs

of twins were selected for dissimilarity in these respects. The mean difference between the dissimilar twins was from two to six times as great as that between the similar twins (head width 2.2, cephalic index 2.6, weight 2.7, height 4.7, head length 4.9, I. Q. 6.0). The correlation between similar twins was +.97 in I. Q. and +.95 in cephalic index, between the dissimilar twins +.53 and +.59 respectively. Five pairs of similar twins which had been separated for several years and which were not included above showed approximately the same mean differences as those continuously together.—*S. Wright.*

6234. **HOLCOMB, D. Y. A fragile-boned family.** *Jour. Heredity* 22(4): 104-115. 6 fig. 1931.—A family is described in which bone fragility occurred in a number of individuals in five generations. None of the affected individuals have the bluish coloring of the sclerotic coat of the eye often found in connection with the brittle-bone condition, but they all show other peculiarities which have been frequently described as associated with osteopsathyrosis, such as shortness of stature, abnormally rapid healing of broken bones and cessation of fractures at puberty. The cause of the bone fragility is unknown. The condition is apparently inherited as a Mendelian dominant, and is transmitted with equal frequency by mother or father.—*Author's abstract.*

6235. **HUMPHREY, J. H. HARE. Premature whitening of the hair.** *Jour. Heredity* 20(1): 31-32. 1 fig. 1929. —Evidence is presented to show that premature whitening of the hair in human beings probably behaves as a simple Mendelian dominant.—*L. M. Dickerson.*

6236. **JENKINS, RICHARD. The occurrence of a skin papillus through four human generations.** *Jour. Heredity* 19(4): 174. 1928.—A skin papillus located just in front of the external meatus of the left ear appears to be a simple Mendelian recessive. Fifteen individuals spanning 4 generations are recorded.—*L. M. Dickerson.*

6237. **LEVIT, S. On the heredity of atheroma.** *Jour. Heredity* 22(1): 3-5. 1 pl. 1931.—Case studies of five generations of a family of Russian peasants indicate that atheroma—a type of sebaceous cyst—is inherited as a simple autosomal recessive instead of a dominant as previously reported. F_4 and F_5 data indicate that certain population areas may be well saturated with this gene.—*L. M. Dickerson.*

6238. **LÓPEZ AYDILLO, NICOLÁS. La herencia de la epilepsía y de sus equivalentes. [The inheritance of epilepsy and its equivalents.]** *Arch. Neurobiol.* 10 (1/2): 124-137. 1930.—Family histories of 252 epileptics indicated the existence of an hereditary constitutional base for epilepsy, features of which are headaches, night terrors, eclampsia, enuresis, etc. These epileptic equivalents may give rise to true epilepsy or vice versa. Headaches in the mother appear to be the most strongly predisposing factor in the hereditary transmission of the epileptic genotypic factor.

6239. **MUCKERMANN, HERMANN. Wesen der Eugenik und Aufgaben der Gegenwart.** *Das Kommende Geschlecht.* Band 5. Heft 1/2. 48p. Ferd. Dümmler: Berlin, 1929. Pr. 2.50 M.—A history of the modern eugenics movement is given, including the contributions of Galton, Ploetz, Schallmayer, Lenz, Bauer, and Fischer. The objectives, philosophy, and methods of eugenics are discussed.—*M. Plum.*

6240. **NEWMAN, H. H. Mental and physical traits of identical twins reared apart. Case I. Twins "A" and "O".** *Jour. Heredity* 20(2): 48-64. 3 fig. 1929.—"A" and "O" were born in London, and were separated at 18 months, "A" continuing to live in London and "O" being brought to a small town in Ontario, Canada. They were separated for over 17 years, living in as different environments as are likely to be encountered by such twins. The evidence that they are monozygotic, and therefore genetically identical, is abundant and conclusive. Mental tests indicate that they are intellectually nearly three times as different as the average of fifty pairs of identical twins reared together. Temperamental and emotional tests bring out above all else a very striking similarity between the two girls. No generalization as to the relative potency of heredity and environment should be attempted on the basis of a few cases.—*Author's abstract.*

6241. **NEWMAN, H. H. Mental and physical traits of identical twins reared apart. Case II. Twins "E" and "G."** *Jour. Heredity* 20(3): 96-104. 1 fig. 1929.—These monozygotic twin girls were separated at 18 months of age and were unknown to each other for 19 years. Ten mental tests were given. In every test of mental capacity, the better educated twin has the superior mind, the difference between the two being from 3 to 6 times as great as the average difference between 50 pairs of identical twins reared together. In temperamental-emotional characteristics the twins are strikingly similar but with significant minor differences. Many of the temperamental peculiarities appear to have a genetic basis.—*L. M. Dickerson.*

6242. **NEWMAN, H. H. Mental traits of identical twins reared apart. Case III. Twins "C" and "O."** *Jour. Heredity* 20(4): 153-166. 6 fig. 1929.—This pair of twin boys, although reared apart, experienced a similar environment in so far as could be determined. In native mental ability they are nearly identical; their "personalities" entirely different. Twin "C" has had a slight advantage in formal schooling and registers, accordingly, slightly higher in testing. Proof of monozygotic origin is given in detail.—*L. M. Dickerson.*

6243. **NEWMAN, H. H. Palm-print patterns in twins. On the use of dermatoglyphics as an aid in the diagnosis of monozygotic and dizygotic twins.** *Jour. Heredity* 22 (2): 41-49. 6 fig. 1931.—Reply to H. Cummins, who concludes that dermatoglyphics have little value in twin diagnosis.

6244. **PEARL, R. Studies on human longevity. IV. The inheritance of longevity. Preliminary report.** *Human Biol.* 3(2): 245-269. 1931.—This preliminary report is based upon (a) an examination of extensive genealogical data analyzed by the method of correlation; and (b) an actuarial study of data derived from family history records. The defects of genealogical material for the study of the problem of the inheritance of duration of life are discussed and earlier work is critically examined. Correlations of the duration of life of fathers and offspring derived from extensive genealogical material are not as a whole essentially different from zero and could not, if they stood alone, be regarded as giving evidence of any sensible or regular parental inheritance relative to this character, duration of life. Life tables embodying, in total, well over a half million life years of exposure to risk are discussed. They indicate that: (1) the expectation of life of the parents (either father or mother) of children dying at 50 and over years of age is, at all ages from 20 on, greater, by amounts varying from about 7 to 20 percent, than the expectation of life of parents of children dying under 50 years of age; (2) the expectation of life of grandparents (either grandfather or grandmother) of grandchildren dying at 50 and over years of age is, at all ages from 20 on, greater, by amounts varying from about 7 to 59 percent, than the expectation of life of grandparents of grandchildren dying under 50 years of age; (3) the expectation of life of fathers of children dying (or living) at 80 and over is, at all ages from 20 on, greater, by amounts varying from about 26 to over 50 percent, than the expectation of life of fathers of children dying under 5 years of age; (4) the expectation of life of mothers of children dying (or living) at 80 and over years of age is, at all ages from 20 on, greater, by amounts varying from 23 to 36 percent, than the expectation of life of mothers of children dying under 5 years of age. These studies also indicate that the expectation of life of sons of fathers dying (or living) at 80 and over years of age is greater, at all ages from birth on, than the expectation of life of sons of fathers dying at age 50-79 years, and is still greater than the expectation of life of sons of fathers dying under 50 years of age. These

differences are regular and considerable in amount.—*R. Pearl.*

6245. **POPENOE, PAUL. Eugenic sterilization in California.** *Jour. Heredity* 19(2): 73-82. 1 fig. 1928.—From a study of hospital records and completed families it is concluded that in general a group of insane women of the type studied will not wholly reproduce itself even if unsterilized. Men are less fecund. Among the married insane, fecundity is reduced by abortion, still births and infant deaths, contraception, separation of husband and wife and physiological sterility. There are no significant differences between the sizes of families of sterilized women with different types of psychoses. Insane women who had the largest number of living children also had the largest number of dead children.—*L. M. Dickerson.*

6246. **POPENOE, PAUL. Eugenic sterilization in California. 14. The number of persons needing sterilization.** *Jour. Heredity* 19(9): 405-411. 1928.—Group tests of school children, army tests and the experience of institutions for the care of defectives indicate that there must be in the U. S. nearly 10,000,000 people who are definitely subject to mental disease of a serious nature. The great number of affected persons makes it imperative that the state take an immediate and active interest in voluntary as well as in compulsory sterilization.—*L. M. Dickerson.*

6247. **POPENOE, PAUL. Some prodigies.** *Jour. Heredity* 20(5): 233-238. 1929.—That phenomenal achievement is based on heredity is illustrated by the cases of lightning calculators. Mathematical ability is considered to be mainly due to inheritance because (1) it runs in families, as the lack of it also does; (2) parent-offspring correlations are about the same as for other inherited traits, and the expected segregation is found; (3) it appears at an early age; (4) it behaves independently in transmission; (5) it comes out in spite of an unfavorable environment; and (6) it is little influenced by training.—*Author's abstract.*

6248. **ROWE, E. C. The resemblance of triplets.** *Jour. Heredity* 19(4): 175-176. 2 fig. 1928.—A set of triplets, descended through the mother from twinning stock, have maintained the same I. Q. order, sequence in teething, walking and general traits of development from infancy to adolescence. They appear to be identical twin sisters and a brother.—*L. M. Dickerson.*

6249. **SJØGREN, TORSTEN. Die juvenile amaurotische Idiotie. Klinische und erblichkeitsmedizinische Untersuchungen.** *Hereditas* 14(3): 197-425. 22 fig. 1931.—The author describes 85 cases of juvenile, amaurotic idiocy in 4 institutions for the blind, 30 cases in their families and 5 others. The patient develops normally until an age of 6-9 years when characteristic changes in the eyes appear, progressive decrease in sight, yellow-brown pupil, thin veins, degenerative changes of the retina with fine-grained pigment. Later, fits of epilepsy occur with an increasing demens and disturbances of walking and other movements, mainly extrapyramidal. The disease ends with blindness, high degree of idiocy and marasmus; on an average, death occurs at 18 years of age. The families of the abnormal individuals have been examined very carefully, the study comprising 4500 persons and being carried back to the 7th generation from the patients. The disease behaves as a monohybrid recessive. A geographic study has also been made of the districts from which the ancestors have come, especially the probable heterozygotes, in the hope of finding a heterozygote centrum from which they have spread. A single "heterozygote focus" was not found; the author delimits 23 different "heterozygote foci." The affected families show a higher degree of inbreeding than the population in general.—*G. Waaler.*

6250. **SNYDER, LAURENCE H. Studies in human inheritance. V. Multiple allelomorphism as opposed to linkage in blood group heredity.** *Amer. Naturalist* 65 (699): 332-342. 1931.—Bauer's hypothesis of linked factors as the basis for the inheritance of the blood groups is analyzed and shown not to be tenable. On a statistical basis, as well as on the basis of individual family histories, the hypothesis of triple allelomorphs is shown to be the only correct explanation of the heredity of the groups.—*L. H. Snyder.*

6251. **SNYDER, LAURENCE H. A recessive factor for polydactylism in man. Studies in human inheritance III.** *Jour. Heredity* 20(2): 73-77. 4 fig. 1929.—Polydactylism, consisting of an extra finger on each hand, was found among the negro population of Pamlico County, N. Carolina. The 3 family histories given include 171 individuals, 54 of whom show the polydactylism. The character appears to be inherited as a recessive. The possibility of imperfect dominance does not seem to apply. There was no indication of sex linkage. Blood group determinations were made on 120 of the individuals. The gene for this type of polydactylism seems to be inherited independently of the blood groups.—*Author's abstract.*

6252. **THURSTONE, L. L., and RICHARD L. JENKINS. Order of birth, parent-age, and intelligence.** 132p. University of Chicago Press: Chicago, 1931. Pr. $3.—Study of records of 1500 children from the Institute of Juvenile Research, Chicago, indicates that there is a steadily increasing advantage, with each succeeding child, in I. Q. This seems to be a function of birth-rank and not of parental age. The second part of the book is a review of other studies on the subject.—*P. Popenoe.*

6253. **WEISS, FREEMAN. Heredity in adherent tongue.** *Jour. Heredity* 20(4): 171-172. 1929.—A family is reported in which there is an inherited abnormality preventing the elevation of the tongue, which results in defective speech. Only males are affected.—*L. M. Dickerson.*

6254. **WILSON, P. T. A study of like-sexed twins. Part II. Their health and disease records.** *Human Biol.* 3(2): 270-281. 1931.—The disease histories of 161 pairs of like-sexed twins (69 prs. identical, 72 prs. fraternal and 20 prs. "undetermined") were secured by interviews with the mothers. The incidence of contagious diseases among twins resembles closely the incidence tables which have been published for the single born. The fraternals showed more intra-pair differences than the identicals in most traits of general health; they also showed more intra-pair differences in the incidence and severity of most children's diseases. Although the effect of heredity is not established in quantitative terms, there is strong indication that it plays an important part in these phenomena. Intra-pair differences in general health (as estimated by the mothers) are about equal in the two types of twins at the time of the interview; during the first year of life, however, such differences are much more numerous among the fraternals. In the combined experience of the mothers, a discriminable health difference during infancy bears no relationship to discriminable health differences during the school period. A weight superiority shown in one member of a twin pair at birth, tends to be retained in the second period.—*P. T. Wilson.*

6255. **WOODS, F. A. Successful men have larger families. Further evidence for mental evolution.** *Jour. Heredity* 19(6): 271-279. 1928.—The author concludes that a real mental and moral evolution is going on, at least within certain classes of society, and that human strains of greatest moral worth tend to perpetuate themselves.—*L. M. Dickerson.*

6256. **WOODS, F. A. Perpetuation of old families. Inheritance of the parental instincts and "social conification."** *Jour. Heredity* 19(9): 387-398. 1928.—The history of the royal families shows no general degeneracy of the group as a whole. Evidence from the British peerage, here presented for the first time, confirms the conclusions drawn from royalty. In general, families that once acquire high social position will retain it. Old families do not become decrepit because of their age nor does wealth and power lead to idleness, sterility and mental degeneracy. The same is probably true of nations.—*L. M. Dickerson.*

ECOLOGY

W. C. ALLEE, *Editor,* Animal
GEO. D. FULLER, *Editor,* Plant
CHANCEY JUDAY, *Editor,* Plankton

(See also in this issue [GENERAL and ANIMAL ECOLOGY]: (General) 6101, 7194, 7828, 7841, 8207, 9061; (Methods) 6111, 7816, 8470, 8558, 8893; (Light) 7801; (Temperature) 6835, 6838, 6845, 6855, 6894; (Atmospheric pressure) 6791, 6991, 7187; (Altitude) 6832, 6877, 6993; (Osmosis) 6702; (Respiration) 6832, 7001; (Seasonal cycles) 6860, 7039, 8368; (Food) 6892, 6957, 8859; (Parasites) 7558, 7834; (Web of life) 7809; (Distribution) 8213, 8448, 8542, 8806; (Adaptation) 8235, 8752, 8815; (Commensalism) 8568; (Mimicry) 8691, 8875; (Protozoa) 8444, 8452; (Porifera) 8469; (Platyhelminthes) 7521; (Nemathelminthes) 8503; (Mollusca) 8556, 8558, 8575; (Myriopoda) 8598; (Crustacea) 8610, 8611, 8630; (Arachnida) 8677, 8682; (Insecta) 7826, 7828, 7831, 8633, 8638, 8659, 8714, 8724, 8737, 8743, 8749, 8768, 8791, 8823, 8826, 8827, 8828, 8829; (Pisces) 8859, 8869, 8875, 8878; (Aves) 8922, 8931, 8935, 8955, 8960, 8979, 9019; (Mammalia) 9032, 9048. [PLANT ECOLOGY]: (Seed germination) 6390, 6630, 6635, 6636, 6638; (Osmotic concentration of cell sap) 6432, 6442, 6444, 6450; (Suction force of soils) 6449; (Water requirement) 6464; (Leaf absorption) 6468; (Stomatal movement) 6474; (Drought resistance) 6493, 7941; (Light requirement) 6503; (Seasonal variations in tannins) 6533; (Periodic flowering) 6597; (Sex reversals in plants) 6613; (Sleep movements in plants) 6623; (Pollen germination) 6640; (Cold resistance) 6655, 6656; (Altitudinal limits of cereals) 7905; (Range ecology) 7906, 7958, 7966; (Root development) 7954; (Origin of cultivated plants) 7960; (Ecology of Abies pinsapo) 8007; (Trees of Wales) 8014; (Ecology of algae) 8047, 8054; (Mycorhiza) 8070; (Lichens of Bohemia) 8101; (Limits of northern distribution) 8141; (Vegetation of Somaliland) 8142; (Vegetation of Lower California) 8148)

GENERAL

6257. **BOURN, WARREN S. The destruction of aquatic duck food plants in Back Bay and Currituck Sound.** *Trans. 16th Amer. Game Conference* p. 46-53. 1930.—Back Bay, Virginia, and Currituck Sound, No. Carolina, with an area of about 300 sq. miles of inland waters, was until recently one of the few and one of the most important winter feeding grounds for migratory wildfowl. With the destruction of the locks and the enlargement of the Chesapeake and Albemarle Canal all spp. of duckfood plants have been disappearing. The Boyce Thompson Inst. for Plant Res. undertook a thorough study of the causes, and made careful studies both in the field and laboratory. The destruction of the once rich flora is due to increased salinity, turbidity, and pollution, all attributable to the removal of the locks. Salinity has been accompanied by a great growth of hydroids also destructive to plants; 90% of the area is now barren of plants and the catch of fish is reduced to 10% of what it once was. The only way of restocking the area is by replacement of the dam and locks. Prompt action is needed, and efforts are being made to obtain action by Congress.—*W. E. Praeger.*

6258. **BROWN, MARY J., and L. O. JACKSON. Some biotic data at the edge of a snowslide.** *Proc. Oklahoma Acad. Sci.* 10: 29-38. 1930.—The growth of *Veratrum speciosum* at Gothic, Colorado (alt. 9,474 ft.), began while it was still covered with snow. The highest growth rate was during the 1st and 2nd weeks after its appearance, with a decided decline in rate after the 4th week. The rate was greater during the afternoon than in the morning or at night. The average daily growth in height was 1.19 in. The insect population of the soil and herb stratum of the area increased with the advance of summer. The Thysanoptera, Diptera, and Heteroptera dominated the early summer, followed by a reduction in numbers of Thysanoptera, and a note-worthy increase in Heteroptera, Diptera, and Coleoptera in the herb stratum. A period of abundance of the Miridae, followed by a marked decline in numbers with a later and greater increase, and the presence of nymphs seemed to indicate 2 generations during the season. There was little correlation between the rate of growth of *V. speciosum,* the insect population, and the meteorological data, except during the early part of the season, when with an increase in the temp. there was an increase in the rate of growth of the *Veratrum* and the insect population, which indicated the coming out of hibernation of the insects.—*M. J. Brown.*

6259. **FRASER, W. M. Notes on a visit to Three Kings Islands.** *New Zealand Jour. Sci. & Tech.* 11(3): 148-156. 5 fig. 1929.—Great Isl., the largest of this group, lies 38 miles northwest of New Zealand. The principal trees are white tea-trees (*Leptospermum ericoides*), pohutukawas (*Metrosideros tomentosa*), and cabbage-trees (*Cordyline*). There are also shrubs, ferns, grasses, and other plants. The bird life includes *Cyanorhamphus novae-zealandiae, Anthornis melanura, Halcyon sanctus, Ninox novae-zealandiae, Rhipidura flabellifera, Anthus novae-zealandiae, Larus novae-hollandiae, Pelecanoides urinatrix,* and *Coturnix novae-zealandiae.* The last had been considered extinct. Lizards, a centipede, an endemic snail (*Placostylus bollonsii*), and introduced goats also occur.

6260. **FRITSCH, KARL. Beobachtungen über blütenbesuchende Insekten in Steiermark, 1910.** *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. Abt. 1.* 139(8/10): 601-639. 1930.—A long list of insect flower visitors arranged according to the classification of the plant hosts.

6261. **HOOPER, CECIL H. Insect visitors to fruit blossoms.** *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28: 211-215. 1931.

6262. **KELLERS, HENRY C. Biological collecting on "Tin-can Island."** *Smithsonian Inst., Explorations & Field-Work of Smithsonian Inst. in 1930.* Publ. 3111. 67-82. Map, 10 fig. 1931.—General notes on the plant and animal life of Niuafoou Isl. in the Tonga Archipelago.

PLANT

6263. **ADAMSON, R. S. The vegetation of the south-west region.** *Jour. Bot. Soc. So. Africa* 1929(15): 7-12. 1929.—The winter rainfall area of the southwest Cape has a well characterised vegetation. Two main types are recognized, bush and forest, the latter being confined to the more sheltered ravines and river banks. Bush is subdivided on topographic lines into a more xerophytic (at the lower levels) and an ericoid bush (at higher altitudes with greater rainfall). The salient features of the successions are outlined and some of the changes produced by fire and by human activity. Such a community as that dominated by the rhenosterbush (*Elytropappus rhinocerotis*), is secondary. Marsh vegetation is mentioned.—*R. S. Adamson.*

6264. **AICHINGER, ERWIN, und RUDOLF SIEGRIST. Das "Alnetum incanae" der Auenwälder an der Drau in Kärnten.** *Forstwiss. Centralbl.* 52(20): 793-809. 5 fig. 1930.—Among the characteristic plants of this association

are *Alnus incana, Prunus padus, Berberis vulgaris, Rubus caesius, Brachypodium silvaticum, Aegopodium podragraria, Festuca gigantea, Agriopyrum canninum, Geum urbanum, Circaea lutetiana, Thalictrum exaltatum, Viola riviniana, Veronica chamaedrys, Ajuga reptans, Geranium robertianum, Struthiopteris germanica, Urtica dioica, Stachys silvatica, Salvia glutinosa,* and *Mnium undulatum.* The appearance of certain other spp., such as *Paris quadrifolia, Maianthemum bifolium, Asarum europaeum,* and *Adoxa moschatelina,* indicates a transition to spruce mixed forest, which tends to replace the alder type as the ground-water level is lowered through channel-deepening of the river. Pasturing hinders this transition to an economically more valuable type by packing the soil and thus reducing its air capacity considerably below the normal 8-14%, which is favorable for plant growth. Around alder clumps where the soil is not trampled the air capacity may reach 23%. For optimum productivity the soil must contain a fair proportion of fine particles, besides being porous and sufficiently moist.—*W. N. Sparhawk.*

6265. **BLATTER, E., C. McCANN, and T. S. SABNIS. The flora of the Indus Delta. III. Physical aspects.** *Jour. Indian Bot. Soc.* 6(3/4): 115-132. 4 fig. 1927.—The area is low-lying land, cut by active or silted-up branches of the Indus River, or by old channels utilized as canals. The south-east corner is a salt waste. The Indus changes channels frequently, because of the soft soil and the enormous volume of water when the river is in summer flood. The river carries much silt, and the coast is increased about 3 sq. mi. each yr. Rice, leguminous crops, and wheat are grown under irrigation. The entire delta is alluvial except for a few limestone hills and some sand dunes. Physical and chemical properties of various types of soil in the Delta are given. There are 3 seasons: rainy, cold, and hot. Temp. ranges from a mean min. of 50°F. in Jan. to a mean max. of about 101° in June (hot season). Annual rainfall is about 6 in., mostly falling June-Aug., with the max. in Aug. Soil water is provided mainly by inundation. Humidity is comparatively high, due to the large expanse of streams, and the prevailing westerly winds coming from the sea. Rel. humidity varies from a mean min. of about 40% in Jan. to a mean max. of about 85% in July-Sept. Dew is heavy, especially in Oct., and probably provides considerable moisture for the vegetation. There is little cloud, except during June-Aug. The Delta is beautiful during the cold season, but a dreary waste of river and tidal water during the monsoon.—*W. Dudgeon.*

6266. **BLATTER, E., C. McCANN, and T. S. SABNIS. The flora of the Indus Delta. IV. Plant-geographical considerations.** *Jour. Indian Bot. Soc.* 7(1): 22-43. 8 fig. 1928.—The Indus Delta flora comprises 279 indigenous and 53 introduced spp., belonging to 220 genera and 73 families. Dicots number 139 genera and 211 spp.; monocots, 44 genera and 67 spp. Out of 61 indigenous families, 36 are represented by 1 genus only, and 28 by 1 sp. only. The largest families are Gramineae, 40 indigenous spp.; Leguminosae, 23; Compositae, 18; Convolvulaceae, 13; Euphorbiaceae, Amarantaceae, and Cyperaceae, each 11; and Malvaceae, 10 spp. The largest families are compared with those from other Indian areas. 265 of the indigenous spp. are classified according to their geographical distribution: endemic, 6; Indian element, 29, found in various parts of India and sometimes extending into Ceylon; Indo-Malayan element, 16, some extending to Australia and Polynesia; North African-Indian Desert element, 60; Tropical and North African-Indian Desert element, 37; common to tropical Africa and India, 13; common to the Old World tropics, 39; common to the tropics generally, 19 spp.; and a few smaller groupings. Three well-marked elements can be distinguished in the flora: 16 spp. belonging to the eastern element (Indo-Malayan); 118 to the western element; and 131 to the "general element." Of the 279 indigenous spp., 226 are found in other parts of Sind. The possible origins of some of the 54 spp., not yet found in other parts of Sind are: 6 from Cutch; 6 from the Rajputana Desert; 4 from the Punjab; and 4 from Baluchistan. A long table compares the flora of the Indus Delta with that of the Sundribuns (delta of the Ganges-Brahmaputra).—*W. Dudgeon.*

6267. **BLATTER, E., C. McCANN, and T. S. SABNIS. The flora of the Indus Delta. V. A comparison of the vegetation of the Indus Delta with that of the Sundribuns.** *Jour. Indian Bot. Soc.* 7(2): 70-96. 12 fig. 1928.—From the Sundribuns (Ganges-Brahmaputra Delta) are recorded 304 indigenous spp., belonging to 230 genera and 72 families; the corresponding figures for the Indus Delta are 279, 184 and 61. But the Indus Delta flora may exceed that of the Sundribuns when adequate explorations are made. The 2 Deltas are similar in many respects: at the north corner of a sea; near the Tropic of Cancer; formed by large rivers rising in close proximity in the Himalayas; topography; exposure to similar ecological and physiological influences; and open to plant immigration from vast areas. But the difference in plant-geographical position has produced "2 vastly different floras." Hooker's statement that "The Indus Delta repeats the vegetation of the Sundribuns of Bengal, with a greatly reduced number of spp." is refuted. In spite of more favorable situation for immigration, the Sundribuns have a flora that is comparatively poor, perhaps because of unfavorable soil and water conditions. Of the total of 87 families found in both Deltas taken together, 15 are found only in the Indus Delta, and 26 only in the Sundribuns. The largest families in the Sundribuns stand in the following order: Leguminosae, Gramineae, Cyperaceae, Euphorbiaceae, Orchidaceae, Convolvulaceae. Of the total of 336 genera in the 2 Deltas taken together, only 67 are common to both; 113 have been found in the Indus Delta only, and 156 in the Sundribuns only. 48 of the spp. common to the 2 Deltas also have mostly a very wide distribution. The Indus Delta flora contains 6% of eastern element, 44% western element, and 50% general element; the corresponding figures for the Sundribuns are 12, 7, and 81%. The purely eastern element is small in both, while the Indus Delta receives a distinctive character from the western element. The mangrove group is surprisingly small in the Indus Delta, suggesting that a number of spp. have been overlooked. —*W. Dudgeon.*

6268. **BLATTER, E., C. McCANN, and T. S. SABNIS. The flora of the Indus Delta. VI. Some ecological notes.** *Jour. Indian Bot. Soc.* 7(3/4): 168-175. 10 fig. 1928.—More important ecological habitats are described, and lists of plants are given for such different conditions as sand dunes; various kinds of soil; canal, river, and lake banks; ditches and tanks; salty soil; field and garden crops; ruderals; rocky banks and low hills; and mangrove swamps.—*W. Dudgeon.*

6269. **[BUSCH, N. A., and E. A. BUSCH.]** БУШ, Н. А., и Е. А. БУШ. Ботаническое исследование Юго-Осетии в 1928-1930 гг. **[Botanical study of South Osetia in 1928-1930.]** Известия Академии Наук СССР., Отделение Математических и Естественных Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Math. et Nat.*) 1931(3): 439-448. 1931.—The flora is naturally divided into 2 parts by the watershed of Kura-Rion. The general aspects of each region are described, with detailed lists of sp. for each locality.

6270. **CYRENS, OTTO. Vegetationsbilder aus Portugal.** *Vegetationsbilder* 21(3/4): 1-9. 12 pl. 1930.—A sketch of the geographical, geological, and climatic conditions of the country is followed by a description of the principal types of vegetation. The illustrations include forests of *Pinus pinaster, Erica arborea,* and *Arbutus unedo;* and habitat studies of *Iberis welwitschii, Rhododendron ponticum; Quercus lusitanica, Q. suber, Q. coccifera, Cupressus lusitanica, Asphodelus lusitanicus, Drosophyllum lusitanicum,* varieties of *Cistus ladaniferus,* scrub of *Juniperus communis nana* and *Erica australis aragonensis,* and grassland of *Festuca ovina* and *Poa bulbosa.*—*G. D. Fuller.*

6271. **DENGLER, ALFRED. Ökologie des Waldes mit**

besonderer Berücksichtigung des Wirtschaftswaldes. [Ecology of forests, with special reference to forestry.] 272p. 2 pl. Julius Springer: Berlin, 1930. Pr. 25 M.

6272. **DIELS, LUDWIG.** Pflanzengeographie. [3rd. ed.] 160p. Map. Walter de Gruyter & Co.: Berlin, 1929. Pr. 1.50 M.—A concise presentation is given of the relation of the vegetable kingdom to the earth, from 3 points of view: the floristic concept, grouping unit elements of the flora in reference to systematic relationships and considering the extent of these units as to their range and their relations to other units; the ecologic concept, which includes a survey of plant communities and considers the dependence of these plant societies in reference to habitats; and the genetic concept, which includes a study of plant distribution in reference to the phylogeny of plant communities, comparing fossil forms, their communities and relationships with existing ones. On the basis of these studies, 6 major areas are defined under the following terms: Holarktis, Neotropis, Palaeotropis, Capensis, Australis, and Antarktis.—*G. L. Wittrock.*

6273. **DOMIN, KAREL.** Trinidad and the West Indies. [In Iltis: Totius orbis flora photographica arte depicta. Vol. 1.] 50p. 100 fig. 1 map. 1928. B. R. Rohrer: Brünn. Pr. 29 M.—Trinidad and Tobago are floristically allied to S. America rather than to the West Indies. Brief descriptions summarized from existing literature are given of the vegetation of the Bahamas, Porto Rico, Hispaniola, the American Virgin Islands, and the Dutch West Indies. The vegetation of Dominica and Trinidad is described largely from the author's own observations. In the former are distinguished 4 main types: the lowland tropical forest, the mountain rain-forest, the mossy forest of higher altitudes, and the scrub of the highest volcanic peaks. The most important types of Trinidad are the palm forest, the mixed rain-forest, and the mora (*Dimorphandra*) forest, but various other types exist. A chapter devoted to economic plants presents observations on limes, sugar cane, coconut, bay rum, calabash, cacao, vanilla, and banana. A useful but brief bibliography of 26 titles and an index of plant names conclude the descriptive portion. The photographs, 9 × 12 cm., illustrate the lowland forests (4), the higher forests (18), the Barbados forest (1), the rain-forest (9), palm forest (2), and mora forest (1) of Trinidad; the mossy mountain forest (2), the vegetation of volcanic peaks (2), littoral forests (2), coastal vegetation (5), xerophytic vegetation (5), epiphytes (6), lianas (6), and cultivated and otherwise useful plants (45).—*H. A. Gleason.*

6274. **DUFF, MARY.** The ecology of the Moss Lane region, Lough Neagh. *Proc. Roy. Irish Acad. Sect. B.* 39(22): 477-496. 5 pl. 1930.—In this area are 3 distinct plant formations: aquatic, fen, and moor. The aquatic formation is divided into 4 associations: submerged leaf, floating leaf, open reed swamp, and closed reed swamp. The fen formation is represented by 3 associations: fen, fen carr, and swamp carr associations. The moor formation is represented by the *Molinia* zone in transition stage, mixed *Carex* zone with *Calluna,* and *Calluna* on bank below Moss Lane.—*V. O. Graham.*

6275. **DU RIETZ, G. EINAR.** Algbälten och vattenståndsväxlingar vid svenska Östersjökusten. [Algal belts and changes of water-level at the Swedish coast of the Baltic.] [*English summary.*] *Bot. Notiser* 1930(6): 421-432. 1930.—The following maritime and marine vegetation belts at the eastern coast of Sweden are suggested: (1) the aerohalophyte (or aerohaline) belt, beyond the reach of the ocean water; (2) the hygrohalophyte (or hygrohaline) belt with groups of plants intermittently under water (through waves or extremely high water level), its lower limit marked by the lower limit of *Verrucaria maura;* (3) the hydrohalophyte belt (or the belt of hydrohaline water plants), a belt divided into 3 distinct sub-divisions: the division of summer-annual filiform algae, whose lower limit is determined by low water periods in the spring; a *Fucus-Pylaiella* division, whose upper limit may vary from yr. to yr. but is determined by the limit of drying-out during periods of low water, and whose lower limit is about 7 m. or less; and the *Furcellaria* division; and (4) the belt of true zoocoenoses. The boundaries between this and the previous belt are not definitely known, but it may sometimes reach a depth of 40 ft.—*T. R. Swanback.*

6276. **FABER, FRIEDRICH CARL von (transl. by HOWARD C. ABBOTT).** The crater-plants of Java in physiological and ecological aspect. 160p. Illus. Economy Publishers: Seattle, Washington, 1931. Pr. $1.60.—The crater associations are described in their natural solfatara habitat, on dry talus slopes of active volcano peaks, and on the soil of old inactive volcano crater peaks. Many correlations are made of the many factors that affect the plants in these habitats. Under climate are given facts concerning atmospheric pressure, temp., humidity, wind velocity, light intensity and composition, and air content of CO_2 and SO_2. Soil reaction, composition, origin, nutrient salts, and the kinds of root systems found are discussed. Mycorhiza occur on a large number of sp. A study of root systems and anatomical investigations of leaves of various crater-plants show that representatives of the crater association do not possess homogeneous characters. Transpiration activity, power of absorption, intensity of CO_2 assimilation, and chlorophyll content are presented in numerous tables and discussions. Birds and wind are important dissemination factors. Crater-plants are oligotrophs. Germination of seed and establishment of plants are closely related to soil composition and temp. The factor of competition plays a leading rôle in the distribution of crater-plants in various habitats. Crater-plants are so closely adjusted to the original agronomic conditions that they exclude the competition of other plants. Should the agronomic habitat factors change in an unfavorable sense for the crater vegetation, they would gradually succumb to the competition of other plants so that a new crater association would appear.—*H. G. Baker.*

6277. **[FEDCHENKO, B. A., and O. E. KNORRING.]** ФЕДЧЕНКО, Б. А., и О. Э. КНОРРИНГ. Введение в изучение растительности Китайского Туркестана. [Introduction to the study of vegetation of Chinese Turkestan.] Труды по Прикладной Ботанике, Генетике и Селекции. (*Bull. Appl. Bot., Gen. & Plant Breed.*) 22(5): 395-432. 6 fig. 1929/1930.

6278. **FENAROLI, L.** Clima e flora alpina. Sintesi ecologica. Le vie d'Italia. 16p. Illus. Touring Club. Ital.: Milano, 1929.—The character of the alpine flora is determined by the climate. It is adapted especially to low temp., intense light, and partially lessened moisture, i.e., it is a hekistothermous, heliophilous, and partially xerophilous flora.—*M. Onno.*

6279. **GARSIDE, S., and S. LOCKYER.** Seed dispersal from the hygroscopic fruits of Carpanthea (Mesembryanthemum) pomeridiana N. E. Br. *Ann. Botany* 44(175): 639-655. 1 pl., 15 fig. 1930.—The complex capsules of *C. pomerideana* consisting of 10-20 carpels are known to remain closed until wetted by rain. An investigation of their structure reveals a hygroscopic mechanism neatly adjusted to a type of seed dispersal effected by falling rain. The capsules are not emptied slowly and gradually as others have hitherto believed, but within 10-20 min. A saturated atmosphere or even a fine mist will not suffice to bring about the ejection of the seed; the smallest droplets capable of inducing ejection had a radius of 0.0644 cm.—a size corresponding to medium rain in nature. During a heavy rain the seed were distributed to a distance of 1 m. from the capsule. The rate of opening of the capsule decreases with rise of temp., and increases until the valve is half open, after which it decreases until the fully opened condition is attained.—*P. D. Strausbaugh.*

6280. **GÁYER, J.** Die Meidung des Wettkampfes. *Magyar Bot. Lapok* 29: 276-283. 1930.—Examples are given to show that in some cases the elimination of competition among different spp. of plants may be a geographical factor, e.g., the ephemeral therophytes do not occur except where the struggle with other spp. is excluded, and the maintaining of some relict-spp. is due

to the same circumstance. Also the occurrence of some spp. in great quantities may be due to this fact.—*C. Schermann.*

6281. **GIACOBBE, ANDREA. Sull'ecologia dell'abete bianco di Camaldoli. [Ecology of Abies alba of Camaldoli.]** *Arch. Bot. Sist. Fitogeogr. e Gen.* 4(3/4): 165-185. 1928.

6282. **GRAY, EDWARD F. Leif Eriksson discoverer of America, A. D. 1003.** xxxii+188p. 17 pl., 5 fig. Oxford University Press: New York, 1930.—Various references are made to original vegetation of No Man's Land, Martha's Vineyard, and Cape Cod, which is discussed in relation to its bearing on the location of the land discovered and visited by Eriksson in 1003 and by other Norsemen in later voyages. Cape Cod was "originally covered with woods at the time of early British settlers, except in patches cultivated by Indians." No Man's Land is said to have been found in 1602 "full of wood, vines, gooseberry bushes, wortleberries, raspberries, eglantines, etc." The trees were beech and cedar. There are no trees now growing on the island, and the only shrubs are found in the bogs, which alternate with grassy ridges and pastures strewn with stones and boulders. No Man's Land is identified as the place where Leif Eriksson built his house, cut trees, and gathered grapes to take back to Greenland in 1003.—*W. E. Lawrence.*

6284. **HEUSER, W. Effetto dei fattori meteorologici sulla struttura delle foglie. [Effect of meteorological factors on the structure of leaves.]** *Ann. Tecn. Agrar. [Rome]* 4(2): 213-216 [Latin summary p. 239]. 1931.—Study of the 2 upper leaves in 3 varieties of summer wheat grown in Bengasi, Imola, Rastatt, Svalöf, and Ultuna, showed that the structure, although characteristic for individual varieties, was greatly affected by external factors. Length of stomata increased and number per unit area decreased with increase of leaf surface.—*N. E. Pfeifer (from abstract by Boekholt).*

6285. **HEYWARD, JEAN. Flowering periods of Victorian plants.** *Proc. Roy. Soc. Victoria* 43(2): 154-165. 1931.—Records, chiefly presented in a chart covering 7 pages, are given for all native Victorian genera except *Eucalyptus*. They fail to substantiate Illichevsky's hypothesis that the order of flowering throughout the season is the same as the order of phylogenetic evolution. In the following arbitrary groups: (1) all Dicotyledons; (2) Dicotyledons with inferior ovaries; (3) Sympetalae (Dicotyledons); and (4) Compositae, the mo. of maximum flowering is Nov. For (5) all Monocotyledons; (6) Monocotyledons with inferior ovaries; and (7) Gramineae, it is Dec. For (8) Liliaceae, it is Oct.; and for (9) Orchidaceae, maximum flowering is prolonged through Sept., Oct., and Nov. It is concluded that other factors than temp. (regarded by Illichevsky as the main one) affect the period of flowering. Rainfall seems of prime importance; habitat, phenology of the pollinating insects, soil composition, etc. are also considered.

6286. **KING, C. M. Blooming dates for Ames, Iowa, 1930.** *Rept. Iowa State Hort. Soc.* 65: 57-63. 1930 [1931].

6287. **KLIKA, JAROMÍR. O rostlinných společenstvech a jejich sukcesi na obnažených písečnych lesnich půdách ve střednim Polabiv. [Plant associations and their successions on the bare sandy forest floor of the plains of the Elbe R.]** [German translation.] *Věstník Československ. Akad. Zem.* 7(1): 21-24. *Sborink Československ. Akad. Zem.* 6(2): 277-302. 1931.—On the middle plains of the river Elbe, ancient river terraces and original dunes were covered with pines. After the denudation, opening of the sand pits presented the opportunity to observe the plant successions. Three stages can be differentiated: an initial phase,—loose porous sand with scanty humus content and high air capacity, i.e., the stage with *Carex hirta;* the optimum phase with the *Festuca psammophila-Koeleria glauca* association; and a degeneration phase characterized by *Calluna* and lichens, in which the accumulated humus increased the difficulty of competition by other sp. and in which physical changes in the soil reduced the virility of the leading psammophytes. A mixed pine and birch forest is the climax association of the sands, while a mixed oak forest is the climax in more moist and humus richer soil. Individual stages in succession serve as good soil indicators, which makes their study of value in forestry.—*F. Detmers.*

6288. **[KOVALEVSKIĬ, GEORGIĬ.]** КОВАЛЕВСКИЙ, ГЕОРГИЙ. Вертикальное распространение главнейших культурных растений в республиках и автономных областях Кавказа. [Vertical distribution of the main cultivated plants in the republics and autonomous territories of the Caucasus.] Труды по Прикладной Ботанике, Генетике и Селекции. (*Bull. Appl. Bot., Gen. & Plant Breed.*) 22(5): 107-216. 1929/1930.

6289. **[KURENTSOV, A. I.]** КУРЕНЦОВ, А. И. Степи в бассейне верхней Оки в Орловской губернии. [The steppe in the basin of the Oka river in the Province of Orel.] Известия Северо-Черноземной (бывш. Шатиловской) Областной Сельско-Хозяйственной Опытной Станции. (*Annals of the Shatilov Agric. Exp. Sta.*) 3(2): 157-172. Map, 1 fig. 1929.—Annotated list of plants and detailed description of their distribution.

6290. **LÄMMERMAYR, LUDWIG. Vergleichende Studien über die Pflanzendecke oststeirischer Basalte und Basalttuffe. 1.** *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. Abt. 1,* 139(8/10): 567-599. 1930.—The vegetation is outlined of several East Styrian areas of basalts and basaltic tuffs, for some of which (Gnas, Auersberg, Edelsbach, Pertlstein, and Steinberg) there were no previous botanical reports, while the known flora of other areas (Klöch and Kapfenstein) is enriched by the discovery of additional sp. The flora of these areas is in general of a mixed character, although the calcicoles strongly predominate over the silicicoles. There appears to be no important difference between the vegetation of the basalts and that of the basaltic tuffs, yet the latter, owing to their slighter decay and the lack of crevices, are unfavorable for occupation by typical chasmophytes and are thus often poor in sp. The abundance of olivine in many tuffs (Kapfenstein, Auersberg, Unterweissenbach) has no formative effect on the ferns growing there, *Asplenium viride* and *A. adiantum nigrum,* in the sense of a transformation into *A. adulterinum* or *A. cuneifolium.* The flora of the basalts and the tuffs stands in sharp contrast to its surroundings, owing to the almost constant occurrence of *Fagus silvatica* and many of its associates. The basalts and the tuffs are especially favorable to the colonization of thermophilous sp.; in many cases they furnished special refuges for Tertiary relicts in the Glacial Period and for xerothermous relicts in later times. The meeting there of subalpine and thermophilous elements is observed repeatedly. The pH value of the basalts and the tuffs was in general 7.6-8.0.—*Author's summary.*

6291. **LITARDIÈRE, R. de, et G. MALCUIT. Contributions à l'étude phytosociologique de la Corse. Les hêtraies de l'Incudine.** *Arch. Bot. Mém.* 3(4): 1-12. 2 pl. 1929.—A subalpine forest of *Fagus silvatica* exists on the slopes of the massif of l'Incudine, Corsica, at 1200-1800 m. The beech is the only tree of the forest and at its upper limits it becomes dwarfed, twisted, and distorted by the wind. Phytosociological analyses of various stands are presented showing the shrubby and herbaceous vegetation to be poor in sp. and in places to be almost completely absent. A biological spectrum shows 73% hemicryptophytes and only 2.5% geophytes due to the compact rocky siliceous soil. Clearings in the forest are usually occupied by scrub dominated by *Juniperus communis nana* and *Berberis vulgaris aetnensis.* Due to pasturing by goats and swine as well as cutting by the shepherds, reproduction of the beech is prevented and the limits of the forest are being narrowed.—*G. D. Fuller.*

6292. **[MALEEV, V. P.]** МАЛЕЕВ, В. П. Методы акклиматизации в применении к фитоклиматическим условиям ю. Крыма. [Methods of acclimatization and their application to the phytoclimatic conditions of south-

ern Crimea.] [English summary.] Записки Государственного Никитского Ботанического Сада. (*Jour. Gov. Bot. Gard. Nikita, Crimea*) 10(4): 3-40. 1929.—The study of acclimatization of plants includes not only knowledge of climatology and plant geography, but also of genetics and plant physiology. A knowledge of protoplasmic colloids and plant biochemistry is essential. In southern Crimea, such American sp. as *Magnolia grandiflora, Liriodendron tulipifera,* and *Taxodium distichum* are well adapted to the moister regions although they may suffer at times from summer drought. Southern Crimea is divided into 5 principal zones: the 0-200 m. zone corresponds to the cold Lauretum; the 200-400 m. zone corresponds to the warm Castanetum; the 400-700 m. zone to the oak zone of France; the 700-1000 m. zone to the oak zone of Germany; and the 1000-1200 m. zone to the coniferous timber zone of Norway. The lower zones include many exotic agricultural and horticultural plants, introduced principally from southern countries, while the upper zones are mainly timber zones. —*L. J. Pessin.*

6293. **PALM, BJÖRN. Pinus and Boletus in the Tropics.** *Svensk Bot. Tidskr.* 24(4): 518-523. 3 fig. 1930. —*Boletus pallidus* (?) is listed as a mycorhiza former on *Pinus merkusii* in Sumatra.—*A. B. Hatch.*

6294. **RAMSBOTTOM, J. Orchid mycorrhiza.** *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926.* 2: 1676-1687. 24 fig. 1929.—Practically all orchids either growing wild or cultivated have the mycelium of a fungus present in their roots. The fungus enters the suspensor end of the seed and almost invariably at the same spot. The mycelium has a peculiar manner of growth and its distribution is characteristic for any given sp. of orchid, but always confined to certain cortical layers. It is evident that there are different strains of these orchid fungi and the constant association of the same fungus and orchid under natural conditions seems to be of some special significance. Does the special fungus supply the "stimulus" necessary for germination (symbiotic), or does it merely have a "stimulative action" in developing in the substratum some form of sugar necessary for germination (non-symbiotic)—Knudson's view? To secure non-symbiotic germination the seed are sterilized before planting to suppress a growth of moulds that would otherwise prevent germination, but in nature one cannot postulate sterilized seed falling on either sterilized media containing sugars in the appropriate amount or on one which has been satisfactorily prepared by the haphazard occurrence of fungi capable of bringing about changes in the substratum similar to those necessary for successful germination in the laboratory. The killing of the seedlings by the orchid fungus has been too much stressed.—*P. D. Strausbaugh.*

6295. **RIGG, GEORGE B., and E. S. HARRAR. The root systems of trees growing in sphagnum.** *Amer. Jour. Bot.* 18(6): 391-397. 4 fig. 1931.—The root systems of *Pinus contorta, P. monticola, Tsuga heterophylla, Thuja plicata, Picea sitchensis,* and *Pseudotsuga taxifolia* growing in bogs whose surface layer is composed of sphagnum peat show striking peculiarities. The roots are all close to the surface, the depth of penetration being largely controlled by the water table though in some cases lack of O, abundance of CO_2, and high acidity may be factors. The root systems spread far more widely than those of the same sp. growing in firmer soils, and mat-like pedestals often develop. Excessive root fusion occurs. The roots show marked eccentricity of growth and enlargement, the cross sections conforming to general types: oval, T-girder, and I-beam. These combined effects increase the mechanical efficiency of the anchorage and are largely responsible for the lack of wind-falls in the bogs of the north Pacific coast.—*G. B. Rigg.*

6296. **ROMELL, LARS-GUNNAR. Blodriskan, en Granens Följesvamp. [Lactarius deliciosus, a fungus following spruce.]** [German summary.] *Svensk Bot. Tidsk.* 24(4): 524-530. 1930.—The literature associating *L. deliciosus* with trees, in the main, supports the author's observations that at least in parts of Sweden this fungus is a mycorhizal fungus with spruce (*P. abies,* Karst.) exclusively. It commonly produces sporophores along the margins of coniferous woods where grasses are abundant, since it prefers good humus soils to acid raw humus soils.—*A. B. Hatch.*

6297. **ROMELL, L.-G., and S. O. HEIBERG. Types of humus layer in the forests of northeastern United States.** *Ecology* 12: 567-608. 1931.—This paper represents a 1st systematic effort to apply outside Europe the principles and method laid down by P. E. Müller in his classical studies on natural types of humus layer. It is also a contribution to the question of classification and nomenclature of forest humus layers in general. A fundamental point of Müller's system is that the classification applies to the entire humus layer. The authors strongly oppose the tendency inaugurated by Ramann to classify the humus alone, which is only one constituent of the biological unit. Müller's 2 main types, mull and duff, are retained. Specific types listed are crumb mull, grain m., twin m., detritus m.; root duff, leaf d., greasy d., and fibrous d. The crumb mull is the classical prototype of the mull group, inhabited by large earthworms. The types greasy and fibrous duff have been taken over from the Danish forester, Juncker. The distribution of the types within the region is discussed. Groundwater conditions seem to be a particularly important factor locally. Some plants are listed as indicators of mull and of duff. The most valuable hardwoods of the region seem to prefer mull. Data are presented on nitrification, pH, and lime content of the different types. Contrary to European experience, nitrification was found in the laboratory within all types, even pronounced duffs, and down to a pH of 2.9, which was close to the lowest pH value encountered in any sample, whether nitrifying or not. Still, a great difference was found between the types, the mull samples being practically all nitrifying, whereas the majority of samples of pronounced duffs did not nitrify.—*L. G. Romell.*

6298. **SCHMUCKER, TH. Endemismen und Charakterpflanzen von Kreta.** *Vegetationsbilder* 21(5): 1-6. 6 pl. 1930.—Among the spp. illustrated and described are *Diotis maritima, Dracunculus criticus, Phlomis viscosa, Ranunculus asiaticus, Urginea maritima, Mandragora hausknechtii, Daphe sericea, Berberis cretica, Chionodoxa nana, Dianthus arboreus, Ebenus creticus,* and *Pteromarula pinnata.*—*G. D. Fuller.*

6299. **[SELIANINOV, G.]** СЕЛЯНИНОВ, Г. Агроклиматические зоны Абиссинии, Эритреи и прилегающих частей Судана и Сомали. **[Agricultural and climatic zones of Abyssinia, Eritrea, and the adjoining regions of Sudan and Somaliland.]** Труды по Прикладной Ботанике, Генетике и Селекции. (*Bull. Appl. Bot., Gen. & Plant Breed.* 22(5): 489-521. 1929/1930.

6300. **[SHELKOVNIKOV, A. B.]** ШЕЛКОВНИКОВ, А. Б. Уголок сухих субтропиков Закавказья. **[A corner of the dry subtropics in Transcaucasia.]** Труды по Прикладной Ботанике, Генетике и Селекции. (*Bull. Appl. Bot., Gen. & Plant Breed.*) 22(5): 625-635. 1929/1930.

6301. **SINCLAIR, JESSE D., and ARTHUR W. SAMPSON. Establishment and succession of vegetation of different soil horizons.** *Hilgardia* 5(7): 155-174. 4 fig. 1931.—The soil horizons are delineated according to Glinka: horizon *A*, the upper region of the soil containing decomposed organic matter and from which materials have been removed by leaching; horizon *B*, the horizon of deposition; and *C*, the lower unweathered substratum. Six plants were used in the study, 2 representing the climax stage, and occurring where horizon *A* is well developed. The 3rd and 4th plants, *Bromus hordeaceus* and *B. rubens*, are annual native grasses common throughout the uncultivated areas of California and characteristic of low seral communities. *Triticum vulgare*, a variety known as Sonora wheat, was used as a check in each soil horizon studied. In all instances the growth in soil from horizon *A* was greater and more rapid than from horizon *B*, and also greater and more rapid in soil from horizon *B* than in that from horizon

C. This study points out the importance of keeping soil horizon *A* intact because it is richer in nitrate-N and total N than the underlying horizons; furthermore the removal of this horizon not only decreases but retards the luxuriance of plant growth if it does not actually prevent the reestablishment of subclimax and climax vegetation. Where horizon *A* has been removed by erosion it would be useless to attempt to establish a cover of perennial grasses in order to prevent further erosion. Such pioneer stands should consist of annual plants.—*V. O. Graham.*

6302. [TROITSKIĬ, N. A.] ТРОИЦКИЙ, Н. А. Растительность Грузии, как естественно-производительная сила. [Vegetation of Georgia as a natural resource.] Труды по Прикладной Ботанике, Генетике и Селекции. (*Bull. Appl. Bot., Gen. & Plant Breed.*) 22(5): 79-106. 1929/1930.

6303. [VERNANDER, T. B.] ВЕРНАНДЕР, Т. Б. Анализ растительности степей б. Орловского уезда. [Analysis of vegetation of the steppes of the Orel district.] Известия Северо-Черноземной (бывш. Шатиловской) Областной Сельско-Хозяйственной Опытной Станции. (*Annals of the Shatilov Agr. Exp. Sta.*) 3(2): 173-207. Map. 1929.—Annotated list of plant spp. and detailed description of their distribution.

6304. **WERDERMANN, E. Die Pflanzenwelt Nord- und Mittelchiles.** *Vegetationsbilder* 21(6/7): 1-12. 12 pl. 1931.—The vegetation of the arid coastal region and foothills, and of the northern high cordilleras is described and illustrated. The photographs include those of desert with *Cereus spinibarbis, C. coquimbanus, C. acidus, Echinocactus cinereus,* and *Skytanthus acutus;* scrub of *Aextoxicum punctatum, Eugenia thalassica,* and *Polylepis tarapacana;* sclerophyll and deciduous forests, the latter with *Nothofagus dombeyi;* tussocks of *Ephedra americana* and *Stipa frigida;* and cushions and polsters of *Donatia fascicularis, Drosera uniflora, Adesmia* spp., *Verbena uniflora, Oriastrum sphaeroidale,* and *Cajophora coronata.*—*G. D. Fuller.*

6305. **WIŚNIEWSKI, T. Les associations des Muscinées (Bryophyta) épiphytes de la Pologne, en particulier celles de la forêt vierge de Bialowieża.** *Bull. Internat. Acad. Polonaise Sci. et Lettr. Cl. Sci. Math. et Nat. Sér. B. (I) [Bot.]* 1929(8/10): 293-340. 9 pl. 1929. The associations of mosses on tree trunks and at their bases were studied by means of modern phytosociological methods. Attention was given to the quantity, sociability, density, constancy, and fidelity of the various sp. Statistical data are tabulated. The associations are: I. Epiphytic—(a) *Anomodon viticulosus* and *Leucodon sciuroides,* (b) *Drepanium cupressiforme* var. *filiforme* and *Orthodicranum montanum;* II. at bases of tree trunks—(a) *Eurhynchium striatum,* (b) *Pleurozium schreberi.* The relations of the associations to climatic factors (light, temp., rain, dew, snow, and atmospheric humidity) are analyzed and biological adaptations are discussed. Geographically, the mosses involved are grouped as Holarctic (15 spp., 48.4%), Atlantic (10 spp., 32.3%), Cosmopolitan (4 spp., 12.9%), and Eurasiatic (2 spp., 6.4%).—*G. B. Rigg.*

PLANKTON

6306. **[ADOVA, A. N., and M. I. RAVICH-SHCHERBO.]** АДОВА, А. Н., и М. И. РАВИЧ-ЩЕРБО. Соотношение между окисляемостью и содержанием органических веществ в болотно-горфных водах. [Correlation between the degree of oxidation and the content of organic matter in sphagnous waters.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(4): 278-284. 1929.—Between the content of organic matter and the degree of oxidation of acid waters in sphagnous regions there exists a direct relationship. To obtain the index of organic matter content, oxidation (mgm. O per liter) must be multiplied by the coefficient $K = 1.44 \pm 0.02294$. In waters coming from *Carex* soil, this parallelism is not so clear, and their degree of oxidation is weaker. The higher the degree of oxidation of sphagnous waters, the less favorable they are for the development of the larvae of *Anopheles.*—*B. Van Rosen.*

6307. **BRAARUD, T., B. FÖYN, und H. H. GRAN. Biologische Untersuchungen in einigen Seen des östlichen Norwegens August-September, 1927.** *Avhandl. Norske Videnskapsakad. Oslo Mat.-Naturvidensk. Kl.* 1928 (Paper 2): 1-37. 1 fig. 1929.—Observations on temp., pH, O, plankton, and large aquatic plants were made on 10 lakes. The shallower lakes yielded the larger plankton crops since their waters were in complete circulation and all of the dissolved food materials were made available to the phytoplankton. The major part of the plankton consisted of relatively few forms; the largest crop was found in a typical eutrophic lake.—*C. Juday.*

6308. **BRANDT, K. Phosphate und Stickstoffverbindungen als Minimumstoffe für die Produktion im Meere.** [English abridgement.] *Cons. Perm. Internat. Explor. Mer, Rapports et Proc.-Verb. Réunions* 53: 5-35. 1929.—Regional and seasonal fluctuation in number of spp. and abundance of individuals of plankton are regarded as due chiefly to fluctuations in the quantity of plankton algae, since these serve as the primary food of the other forms; hence a study of the effect of the nutritional factors governing the growth of these algae seemed desirable. Earlier studies had indicated that most of the factors significant for plankton growth (light, temp., CO_2, most inorganic substances) are present in ample amount, except N and P, which are present in very small quantities and are probably limiting factors. Necessity of quantitative methods suitable for analysis of the scarcely perceptible traces of N and P present, and of analysis of water at and near the bottom (since the nutrient salts are renewed from the bottom upward), is stressed. The assumption that the N cycle, as known on land, is valid also for sea, has been sustained by the discovery of nitrifying and denitrifying bacteria (Baur & Brandt, 1901) in bottom samples; and it is probable that the great acceleration of denitrification at high temp. is responsible for the depletion of nitrates in the warmer parts of the sea. Hence, the importance of chemical study of N and P content of water at different levels. There is given a comprehensive critical review of the development of methods of estimating N and P_2O_5 in sea water. In the euphotic layers, photosynthesis is active and the disappearance of free N and P compounds from water is rapid. Replacement of these elements is from the bottom, and the source is, to a great extent, the disintegrating bodies of plankton (and large) animals which fall to the bottom at death. Diffusing upward slowly, often passing through many cycles of utilization by organisms and release on the death of these, the N and P may, in the course of yrs., reach the neighborhood of the euphotic layer. Among the important agencies which hasten this upward movement are (1) "stream currents," as where a strong wind, blowing from shore, clears away the surface layer of water and "sucks up" cooler and richer water from deeper layers—an important factor in the richness of plankton near coasts; and (2) convection (vertical) currents brought about by differences in the specific gravity of upper and lower layers of water. The effect of thermic stratification in retarding the ascent of nutrients, and thus limiting plankton growth, is referred to, and the periodicity of plankton in the temperate zone, as related to the disturbance of a stratified condition of the water by vertical currents, is stressed. Continuous thermic stratification in the tropics is regarded as one of the causes of the relative poverty of phytoplankton there.

6309. **BREHM, V. Einführung in die Limnologie. (Biologische Studienbücher, Bd X.)** 261p. 88 fig. Julius Springer: Berlin, 1930.—The 1st part of this book deals with the physics and chemistry of freshwater. The 2nd section discusses the special position of freshwater biology in contrast to marine biology, including the hypothesis that freshwater is an older habitat for life than the sea. A short history of hydrobiological researches in central Europe since the middle of the 19th

century is given. Examples of oligotrophic, eutrophic, and dystrophic lakes are described. A large part of the book is taken up with a discussion of the plankton; the seasonal changes in the quantity of plankton and in the form (cyclomorphosis) of many of the organisms are considered, along with various other plankton problems, such as nutrition, distribution, and periodicity. A special discussion of Baikal and Tanganyika lakes is included. The cuts are mainly original and represent largely the unusual forms that are met with in freshwater. An extended bibliography is given.—*V. Brehm (transl. by W. L. Tressler).*

6310. **[BUKHALOVA, V. I.]** БУХАЛОВА, В. И. Биологическое обследование реки Воронежа в районе города Воронежа. **[Biological study of the river Voronezh in the region of the city of Voronezh.]** [German summary.] Воронежский Государственный Университет, Бюллетень Общества Естествоиспытателей. (*Bull. Soc. Nat. Voroneje*) 2(3/4): 123-150. 1929.—The degree of pollution of the river was determined by Kolkwitz and Marson's method. In the water above the city oligosaprobic and β-mesosaprobic forms were found, which are characteristic of swamp ponds. Among the water edge forms of this region the forms most frequently found were *Dinocharis pocillum, Euchlanis dilatata, Monostyla lunaris, M. bulla, Metopidia lepadella, Pterodina patina, and Brachionus bakeri.* The population of the water in the city, on the whole, was not different from that above the city; β-mesosaprobic forms were found more frequently, especially *Cocconeis pediculus, Rhoicosphaenia curvata, Diatoma vulgare,* etc. The presence of α-mesosaprobic forms observed in some localities of this region showed only local pollution, as *Thorea ramosissima,* which is characteristic of pure water. In the river below the city the population was more varied, especially on the bed of the river; the presence of *Ilyodrilus hammoniensis* showed that the water below the city was not more polluted than that in the city. Winter samples of the water from the 3 regions of the river proved that the water was more polluted in winter than at any other time of yr.—*G. A. Lebedeff.*

6311. **BULL, H. O. Resistance of Eurytemora hirundoides Nordquist, a brackish water copepod, to oxygen depletion.** *Nature [London]* 127(3202): 406-407. 1931.—*E. hirundoides* is one of the most abundant and most hardy of the few estuarine organisms able to withstand the low O content of the water of the River Tyne estuary,—a consequence of industrial pollution. Analysis of the estuary water for O at various times from May 23 to Sept. 5 gave readings of 0.14-0.76 gm. per 100,000 gm. of water. On incubation for 7 days at air temp., the O content was depleted (nil in 4 samples; 0.004-0.45 in 4 samples; 0.45 in the remaining), and *Eurytemora* was found surviving except where the O had entirely disappeared.

6312. **[CHIGIRIN, N. I., and P. T. DANILCHENKO.]** ЧИГИРИН, Н. И., и П. Т. ДАНИЛЬЧЕНКО. Азот и его соединения в Черном море. **[N and its compounds in the Black Sea.]** [French summary.] Труды Севастопольской Биологической Станции Академии Наук СССР. (*Trav. Sta. Biol. Sebastopol*) 2: 1-15. 1930.—Frankland and Armstrong's method (modified by Winkler) was used for determination of NH_3; Tillman and Suthoff's for determination of nitrates; Griess' method—for determination of nitrites; and both Hempel's and Krogh's apparatus were used to determine the O dissolved in the water. Down to a depth of 200 m. 0.05-0.17 mgm. of nitrate N per liter was found, the quantity increasing near the mouth of big rivers. Below 200 m. the amount of nitrate decreases progressively, disappearing at 300 m. The amount of nitrite N in the upper layer was 0.0004-0.0025 mgm. per liter, the quantity increasing with depth, reaching a maximum at 300 m. and disappearing in the lower layers. The NH_3 content in the upper layer was similar to that of other seas (0.04-0.15 mgm. of ammonia N per liter). The amount increased with depth, reaching 1.10-1.46 mgm. per liter at 1500-2000 m. The amount of N in the upper layer was 97-100% of the possible solubility. The amount increased with depth, reaching an average value of 6% per liter in excess of saturation. The denitrification process in the depth of the Black Sea seems to be more chemical than bacterial in origin.—*S. A. Corson.*

6313. **[CHIGIRIN, N. I.]** ЧИГИРИН, Н. И. Фосфор в воде Черного моря. **[Phosphorus in the water of the Black Sea.]** [English summary.] Труды Севастопольской Биологической Станции Академии Наук СССР. (*Trav. Sta. Biol. Sébastopol*) 2: 143-163. 2 fig. 1930.—Using Denigès' method, the amount of P_2O_5 at a depth of 75-100 m. was 30-80 mgm. (depending on season) per cu. m., increasing constantly with depth. This layer contained most of the phytoplankton. Below 100 m. the increase of P_2O_5 was more marked, reaching an average value of 370 mgm. per cu. m. at 175-200 m. Below 200 m., after an immediate slight decrease, the quantity of P_2O_5 increased progressively, but not constantly, reaching a value of 625-635 mgm. per cu. m. at 2000 m. The phosphate content in the upper layer was at a minimum in May, when higher temp. and a minimal plankton content were observed. The amount of phosphate increased during Dec. The phosphate content at the same depth increased with distance from shore. This particular distribution of phosphates is explained by the absence of vertical circulation of the water below 150 m. —*S. A. Corson.*

6314. **EGGLETON, FRANK E. A limnological study of the profundal bottom fauna in certain fresh-water lakes.** *Ecol. Monogr.* 1(3): 231-331. 63 fig. 1931.—Most of the investigation concerned 2 Michigan lakes in which the profundal benthic habitat was studied in relation to bottom deposits and physicochemical conditions of superimposed water. Qualitative-quantitative counts of bottom animals showed the presence of 2 ecological groups: (1) a typical profundal bottom fauna comprising representatives of *Corethra, Chironomus, Protenthes, Limnodrilus, Pisidium, Musculium,* and *Hydromermis;* (2) a heterogeneous group consisting of about 50 spp. Seasonal variations of the typical profundal bottom fauna within the true profundal zone showed marked periodicity with annual midsummer minima and midwinter maxima. Following the midsummer minimum the total population increased only slightly until late fall, when a sudden large increase occurred in the deepest regions of the lake. A zone of concentration of profundal bottom animals occurred in the upper profundal and lower sublittoral regions during the summer. This zone shifted downward in autumn and upward in spring. The number of sp. and of individuals varied: with the season, in different lakes, and in different depressions of the same lake. Factors affecting qualitative-quantitative variations and distribution were: bottom characteristics, physicochemical nature of superimposed water, and certain biological phenomena. The profundal benthic fauna forms a very distinct ecological association, qualitatively limited, but becoming quantitatively very rich at certain seasons. The evidence indicates that members of this fauna are facultative rather than obligatory "anaerobes." —*Author (courtesy Wistar Bibl. Serv.).*

6315. **GESSNER, FRITZ. Die Biologie der Moorseen. Untersucht an den Moortalsperren des Isergebirges.** *Arch. Hydrobiol.* 20(1): 1-64. 4 pl., 9 fig. 1929.—The author studied 3 kinds of waters in the granite basins of the Iser Mts. in lower Silesia: (1) bog lakes with high acidity, dark brown water, limited plankton (chiefly *Dinobryon);* (2) recently formed backwater lakes (behind dams), with lower acidity, less highly colored water, rich zooplankton (especially *Ceriodaphnia*), very little phytoplankton; (3) older backwater lakes with neutral to alkaline clear water, rich phytoplankton. It is concluded that the degree of acidity in a bog lake depends on age of the lake and amount of water flowing through it. Evidence shows that dystrophic lakes change rather rapidly into oligotrophic or eutrophic lakes, hence their present scarcity. The transparency of the water decreased with decreasing acidity to about pH 6.5 at which

point the phytoplankton became so numerous as to affect the color and opacity in neutral and alkaline lakes. —*L. E. Noland.*

6316. **HAEMPEL, O. Fischereibiologie der Alpenseen.** In: *Die Binnengewässer* 10: 1-259. 15 pl., 47 fig. Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—Lakes situated in Savoy, Bavaria, Switzerland, eastern Austria, and northern Italy are discussed in this volume. The 1st chapter deals with the lakes as a habitat, discussing the inflow and outflow of water; seasonal changes in the temp. of the water, with the resulting summer and winter periods of stagnation separated by the spring and autumn overturning and circulation of the water; color and transparency; chemistry; the bottom zones and their population; and the food cycle. The 2nd chapter deals with the economic importance of the alpine lake fisheries. The lakes are classified on the basis of the predominant fishes; and an extended survey of the fish population of many of the more important lakes is given. The 3rd chapter deals with the fish productivity of the lakes. In general the production is relatively small (2-10 kgm. of fish per ha.); some of them, however, yield up to 25 kgm. per ha. With proper regulation and culture methods, the fish production of many of these lakes could be greatly increased.—*C. Juday.*

6317. **HARVEY, D., and C. B. SYMES. Oxygen absorption of natural waters in Nairobi with reference to Anopheline mosquitoes.** *Bull. Ent. Res.* [*London*] 22(1): 59-64. 1931.—Tests of mosquito infested and mosquito free waters were made weekly in 5 areas for O absorption by the organic matter in the water. With some exceptions, the organic indices were higher in waters containing *Anopheles.*

6318. **ISELIN, C. A report on the coastal waters of Labrador, based on explorations of the "Chance" during the summer of 1926.** *Proc. Amer. Acad. Arts. & Sci* 66(1): 1-37. Map, 13 fig. 1930.—Data on the temp., salinity, and density of the coastal waters of Labrador and Newfoundland, and on the possible sources of the Labrador Current, are followed by an annotated list of the phytoplankton collected: 34 diatoms, 1 silicoflagellate, 5 peridinians, and 3 infusorians. Many of these have been reported from the Gulf of Maine and the Norwegian fiords, and relatively few are definitely arctic forms. Thus temp. and salinity are evidently of minor importance in the distribution of these organisms. The surface microplankton of Labrador coastal waters was relatively poor during July and August.

6319. **JENKIN, PENELOPE M. A double releasing mechanism and other apparatus for quantitative plankton collecting.** *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(1/2): 33-45. 7 fig. 1931.—Detailed specifications are given of the double release, messenger wts., and modified net and depth gauge, all home-made from standard materials at low cost. The combination is light enough to use single-handed from a row-boat for horizontal plankton hauls at measured depths. The length of haul is measured by surface buoys, the net being opened after lowering and closed again before hauling up.—*P. M. Jenkin.*

6320. **JOHNSON, MARTIN W., and THOMAS G. THOMPSON. The sea water at the Puget Biological Station from September 1927 to September 1928.** *Publ. Puget Sound Biol. Sta.* 7(1): 119-128. 1929.—Observations on air temp., water temp., pH, chlorinity, O content, and state of plankton are tabulated for approximately weekly intervals and briefly discussed. Temp. and salinity conditions were in general similar to those for 1926-1927. Average surface temp. ranged from 6.8° (Jan.) to 11.3° (July), extreme variation being 7.4°; average chlorinity ranged from 15.82‰ (June) to 17.00‰ (Oct.), extreme variation being 3.36‰ pH was quite constant except during time of freshets (surface value 7.8-8.5) while dissolved O of surface water showed a general increase during spring and summer (4.28-10.83 mgm. per liter), dilution of surface water was accompanied by a decided increase of dissolved O. The seasonal distribution of plankton was much the same as in the previous year, the seasons of greatest abundance coinciding with each other. The greatest production of diatoms occurred on July 28, 1928. —*H. R. Seiwell.*

6321. **LENZ, FR. Chironomiden aus norwegischen Hochgebirgsseen. Zugleich ein Beitrag zur Seetypenfrage.** *Meddelel. Zool. Mus. Oslo* 12: 111-192. 5 pl., 30 fig. 1928. —The 4 primary lake types, based on relative amounts of organic food present and characterized by the Chironomid genera best adapted to them, are *Tanytarsus* or *Lauterbornia, Stictochironomus, Sergentia,* and *Chironomus* lakes. The 1st, corresponding to Naumann's ultra-oligotrophic lakes, includes *Lauterbornia coracina* and other members of the *Tanytarsus* group as the dominant forms, with *Stictochironomus* as the principal associate. These waters are low in nutritive substances. The dominant genus of the 2nd group is *Stictochironomus* with *Tanytarsus* and *Sergentia* as principal associates. Most of the waters formerly designated as *Tanytarsus* lakes, i.e., oligotrophic, belong here. The 3rd group has as principal associate of the dominant *Sergentia,* members of the genus *Stictochironomus.* Such sp. of *Chironomus* as occur here belong to the group which lack ventral blood gills, since the waters have a higher O content than those of the next group. The dominant form of the 4th primary lake type is *Chironomus.* The waters of this type are rich in organic food. The principal associates, though sublittoral and not bottom forms, are *Microtendipes* and *Polypedilum.* The Norwegian lakes are alpine with elevations of 810-1380 m. above sea level and depths from 1½ to over 24 m. Statistics regarding O and pH values have not yet been published. The faunas of individual lakes are described with the larval and pupal stages of *Stictochironomus histrio, Sergentia longiventris,* and *Fournieria norvegica.* Also the pupal stages of *Micropsectra insignilobus* and *Calopsectra bathophila* are described.—*O. A. Johannsen.*

6322. **LINDEMANN, E. Über eine limnologische Bedeutung der freien Kohlensäure. [Limnological significance of free carbonic acid.]** *Naturwiss.* 18(51): 1113. 1930.

6323. **LÖNNERBLAD, GEORG. Über die Sauerstoffabsorption des Bodensubstrates in einigen Seentypen.** *Bot. Notiser* 1930(1): 53-74. 1930.—In general, ooze in the deeper zones of calcareous lakes in Sweden consists of "gyttja," derived from planktonic sedimentation; but in nutritionally-poor non-calcareous waters the bottom is composed of "dy," formed from humus products. Still another type, "dygyttja," is intermediate and forms the bottom in light-colored humus waters and in clear upland lakes. The effect of O absorption by ooze on the O content of the adjacent water has been little studied. The author studied both "dy" and "dygyttja." By dredging apparatus (Lundquist, type E) ooze was obtained from various depths, and allowed to settle out in the glass tubes of the apparatus. A light brown upper layer and a dark lower layer are formed, the latter presumably due to S-Fe compounds formed by putrefactive organisms where O is excluded. In 2 of the tubes *Isoetes lacustre* was found. After standing 5 weeks, precipitation of $Fe(OH)_3$ occurred only in the tubes with *Isoetes.* A circulation of O from metabolism of plants with concomitant oxidation of Fe may perhaps explain "Roströhren." The O content immediately above the "dy" was undoubtedly greater than in nature, but no O transport could be observed. Absorption of O by the "dy" is complete only at the point of contact, the resulting compounds forming an O barrier. Both colorimetric and titration methods were used. 20 gm. of ooze placed in 150 cc. flasks was covered with water rich in O; some of the flasks were treated with 3 drops of 0.3% indigo solution, and kept in the dark till decolorized. Equal masses of bottom-material (about 30 gm.) were placed in 150 cc. flasks, one of them sterilized. To the samples was then added sterile water of known O content. Most rapid O absorption occurred in specimens from Grunnen Lake; 6 hrs. afterward all traces of O had disappeared, due perhaps to the large amounts of saw dust dumped

into the lake. The greatest O content was found in small lakes surrounded by high-moor. For complete reduction of the O in samples of equal quantity, "dy" required 12-18 hrs., "dygyttja" 60 hrs. or more. True "gyttja" is not found in the Aneboda region but material from southern Sweden showed strong O absorption only (12 hrs. required); sterilized material on the other hand showed O even after 4 days. Sterilization of material was also carried out with ether, which was unsatisfactory, and by Zn and Pb chlorides, a concentration of 0.1% of the latter causing death to micro-organisms in 24 hrs. Sterilized samples showed great variations in O absorption. Only in clear peat was there uniformity. The acid "dy" contains reducing substances which take up the O rapidly so that the presence of micro-organisms is unimportant. In the "gyttja" however the micro-organisms are the most important factors.—*H. K. Svenson.*

6324. **LOTZ, HELLMUT. Beiträge zur Hydrobiologie des oberen Allgäu.** *Arch. Hydrobiol.* 20(4): 531-634. Map. 3 pl., 19 fig. 1929.—The temp., pH, O and CO_2 content, and the biology of several small alpine lakes situated near the southern boundary of Bavaria are discussed, with lists of the phytoplankton and zooplankton forms obtained.—*C. Juday.*

6325. **NAUMANN, EINAR. Einführung in die Bodenkunde der Seen.** In: **Die Binnengewässer Vol. 9.** 1-126. 3 maps, 7 pl., 25 fig. Schweizerbart'sche Verlagsbuchhandl.: Stuttgart, 1930.—This is a detailed presentation of methods of studying slime, Ca, Fe, and Mn deposits. The presentation is according to regions; interrelations with other fields of science (biology, geology) are discussed.—*E. Naumann (transl. by R. A. Muttkowski).*

6326. **NAUMANN, EINAR. Limnologische Terminologie.** 776p. 158 fig. Urban und Schwarzenberg: Berlin, 1931. Pr. 46.40 M.—Limnology is a relatively new science and its rapid growth during the past 1-2 decades has brought forth a great variety of terms. These terms, widely scattered in the literature, are brought together in this book, which, however, is more than a limnological terminology because the various terms are not only defined, but in many cases are discussed at some length and illustrated with figures. References are given to the original literature and the original definitions of the terms are quoted in many cases. A large % of the terms refer to ecological phases of limnology, which makes the book useful to those who are interested in freshwater ecology and in methods and apparatus for carrying on such studies.—*C. Juday.*

6327. **NEEDHAM, JAMES G. The fresh water life of a dry island.** *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 5(4): 10-11. 1930.—Various insects and an ostracod are recorded from pools on San Clemente Isl., California. The cosmopolitan character of many of the forms is striking.

6328. **RYLOV, V. Das Plankton des Kardywatsch-Sees (Nordwest-Kaukasus).** [Preliminary paper.] Доклады Академии Наук СССР, Сер. А. (*Compt. Rend. Acad. Sci. URSS, Sér. A.*) 1930(14): 376-380. 1930.—In 2 tables the vertical distribution is given for the prevailing forms: *Diaptomus acutilobatus, Cyclops strenuus,* copepod nauplii, *Daphnia pulex, Chydorus sphaericus, Synchaeta* sp., *Polyarthra platyptera, Notholca striata, Alona affinis, A. quadrangularis,* and *Alonopsis elongata.* The 1st named is the dominant sp.

6329. **SHEPPARD, GEORGE. Plankton changes on the coast of Ecuador.** *Nature* [*London*] 127(3208): 629-630. 1931.—During Feb., 1931, patches of turbid, yellowish-brown masses of plankton material (mostly marine algae), emitting a disagreeable fetid odor, appeared along the coast of Ecuador.

6330. **STANGANELLI, MARIO. La misura della concentrazione idrogenionica nelle acque.** [Measurement of the pH of water.] *Boll. Pesca, Piscicolt. e Idrobiol.* 6(3): 370-387. 13 fig. 1930.—This is a practical guide for the measurement of pH of water with annotations on the technic in use.—*M. Stanganelli (transl. by A. Canzanelli).*

6331. **THOMPSON, THOMAS G., and MARTIN W. JOHNSON. The sea water at the Puget Sound Biological Station from September 1928 to September 1929.** *Publ. Puget Sound Biol. Sta.* 7: 345-368. 1930.—Weekly observations showed that chlorinity increased during the winter and decreased markedly for a short period in late summer due to accumulation of Fraser River water. Silicates and phosphates also decreased during the summer due to depletion by diatoms and dilution by fresh water. Dissolved O increased during the winter and fluctuated considerably in the summer; pH varied but little; and temp. range was about 6° C. In general zooplankton was richest in the spring and summer, with increases in larval forms in spring and fall. Phytoplankton, especially filamentous diatoms, predominated in summer, with maxima in late spring and autumn.—*T. G. Thompson.*

6332. **WORTHINGTON, E. B. Vertical movements of fresh-water macroplankton.** *Proc. Linnean Soc. London No.* 142. 67-69. 1929/30(1931).—In Lake Lucerne vertical hauls for plankton showed that most sp. of Crustacea begin to descend at dawn, reaching their lowest level (50-60 m.) before noon. Then a slow upward movement starts, accelerating at and continuing after dusk. Light forces them down into the lower layers during the morning. Hunger causes them to reascend to the upper layers, where the nanoplankton on which they feed is most abundant.

6333. **YOSHIMURA, S. Seasonal variation of silica in Takasuka-numa, Saitama.** *Japan Jour. Geol. & Geog. Trans.* 7(3/4): 101-113. 2 fig. 1930.—For the estimation of silica the colorimetric method of Diénert and Wandenbulcke was used, taking the color of a solution of picric acid 36.9 mgm. per liter as equivalent to that produced by 50 mgm. per liter of silica with the reagents. The pond had an area of 32,600 sq. m. and mean depth 3.1 m., maximum 6.0 m. After April the water shows thermal stratification. During circulation the water is at pH 7.6, rising to 8.7 in spring and summer at the surface, the bottom being at pH 6.5-7.0 and the intermediate layer at pH 6.1-6.9. The bottom water contains H_2S during summer. The silica content also shows stratifications during the existence of temp. stratification, and data are given for each meter. For the surface a minimum of 6.9 mgm. per liter was found in June, 1928, with 6.7 in June, 1929, and 6.3 in July, 1929. The maximum, 13.1, was observed in Feb. At the bottom a minimum 9.5 was observed in May, when the vertical column was nearly uniform; and the next value was 9.8 on Jan. 14, with again a uniform column. The maximum observed was 20.2 mgm. per liter SiO_2 on Oct. 14. Ten Japanese lakes varied in silica content from 2.3 to 27.3 mgm. per liter SiO_2 for the surface in summer and from 8.3 to 33.9 for the bottom. Of these, 4, poor in silica, were oligotrophic and 6 eutrophic. The silica stratification occurs in those with an abundant growth of diatoms.—*W. R. G. Atkins.*

6334. **YOSHIMURA, SHINKICHI. Limnological reconnaissance of several volcanic lakes of South Kyushu (III).** [In Japanese.] *Jour. Geogr.* [*Tokyo*] 42(501): 656-665. 1930.

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*

W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 6124, 6141, 6146, 6165, 6167, 6293, 6294, 6296, 6486, 6501, 6532, 6573, 6629, 6648, 6656, 6662, 7759, 7795, 7799, 7843, 7846, 7847, 7849, 7903, 7918, 7920, 7964, 7970, 7976, 7986, 7994, 7996, 8064, 8070, 8071, 8074, 8077, 8079, 8087, 8089, 8091, 8098, 8433, 8504, 8507, 8652)

DISEASES CAUSED BY FUNGI

6335. **AGOSTINI, ANGELA.** Cladosporiosi, causa di seccume in Ficus magnolioides Borzi. [Cladosporiosis, the cause of withered leaves in F. magnolioides.] *Riv. Patol. Veg.* 19(7/8): 155-163. 1 fig. 1929.—In March, 1929, the leaves, bracts, and tips of twigs of *Ficus magnolioides* were found withering. On the leaves the spots started at the tips or margins, were grayish yellow in color on the upper surface, brownish yellow on the lower. *Cladosporium epiphyllum* was found on these spots, and cultures from diseased tissue gave only this fungus. A review is given of similar diseases previously recorded and of other diseases caused by species of *Cladosporium*. A description of morphological and anatomical changes caused by the disease is given.—*F. M. Blodgett.*

6336. **BOYCE, J. S.** Decay in Pacific Northwest conifers. *Yale Univ., Osborn Bot. Lab., Bull.* 1. 1-51. 34 fig. 1930.—The important decays in commercially valuable conifers of the Pacific Northwest are discussed in popular style, particularly with reference to their detection and estimation in living trees and in logs. General facts are given on stages, types, indications, spread, rate and control of decay. Decay in down timber and stains and discolorations in wood are briefly mentioned. Wood destroying fungi considered are *Echinodontium tinctorium, Fomes annosus, F. applanatus, F. juniperinus, F. laricis, F. pinicola, F. roseus, Polyporus amarus, P. ellisianus, P. schweinitzii, P. sulfureus, Polystictus abietinus, Poria weirii* and *Trametes pini.*—*J. S. Boyce.*

6337. **BRANDENBURG, E.** Onderzoekingen over ontginningsziekte. [Experiments on the reclamation disease.] *Tijdschr. Plantenziekten* 37(2): 17-48. 4 pl. 1931.—The disease, once thought to be physiological, resulting from injurious chemical constituents of the soil, is here treated from a phytopathological standpoint. In pots with diseased soil the roots of oats became yellow and died, while in sterilized soil the roots remained healthy. In the former secondary roots did not develop or died soon, the leaves showing the symptoms of the disease. The mycelium of a Phycomycete was detected in diseased roots. An *Aphanomyces,* the oospores of which resembled those found in the roots, was isolated. No satisfactory results have as yet been obtained in infection experiments. In pot culture, with diseased soil, healthy plants were grown by treating the soil with $CuSO_4$, Uspulun or formalin, or by drying it. Sugar beets also showed leaf and root symptoms and the vessels turned brown. A *Pythium* was isolated from roots. Infection experiments in pot and water cultures gave positive results. The symptoms are caused largely by toxic substances produced by the fungus; they may appear in 24 hrs. after inoculation. After part of the root is killed the toxic effect ceases and new, nearly normal leaves are formed. The toxic effect was also shown by the use of filtrates of pure cultures, the symptoms on the leaves being less prominent, but discoloration of the vessels distinct. The toxic property of the filtrate was lost after boiling for ½ hr. The disease was observed in 25 widely separated fields, the fungus isolated from roots, and infection experiments performed. Symptoms on peas resemble those on beets. *Vicia* spp. did not show distinct symptoms on the leaves but these turned yellow and died. The vessels in both hosts became brown, and a *Pythium* was isolated from the roots. Infection experiments produce diseased plants with typical symptoms. In this case also the discoloration of the vessels is a result of toxic substances. The *Aphanomyces* and *Pythium* from oats and peas did not produce the disease on beets, nor those from beets and peas on oats. The *Pythium* from *Vicia* when inoculated into peas produced typical symptoms.—*H. L. G. de Bruyn.*

6338. **BRATLEY, CYRIL O.** Decay of sweet cherries from California. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(7): 73-74. 1931.—[Mimeographed.] —Note on the comparative pathology of decays produced by species of *Cladosporium, Rhizopus, Penicillium, Botrytis* and *Aspergillus,* and *Sclerotinia fructicola.* —*W. A. Whitney.*

6339. **COOK, MELVILLE T.** La Roña de la Toronja en Puerto Rico. [Citrus scab in Porto Rico.] *Gob. Puerto Rico Dept. Agric. y Trabajo Estac. Exp. Insular, Circ.* 92. 5-15. 2 pl., 1 fig. 1931.—A popular paper dealing with citrus-scab on grapefruit in Porto Rico. The author points out the risk of planting a grapefruit orchard in the highlands, where conditions are favorable for scab infection and the nature of the terrain does not permit the use of high power sprayers. Control of the disease is discussed.—*A. Roque.*

6340. **DILLON-WESTON, W. A. R.** Virulency of Tilletia caries on wheat varieties. *Nature [London]* 127 (3204): 483-484. 1931.—Physiological forms of *T. caries* exist, and their distribution has an important bearing on smut resistance. Although Martin wheat is, in England, resistant to bunt spores from Little Joss, a sample of Martin wheat, from England, grown in Denmark, was readily infected with spores from the Danish wheats.

6341. **FEISTRITZER, W.** Merkmale zum Erkennen flugbrandkranker Pflanzen bei Winter- und Sommergerste vor dem Ährenschieben. *Pflanzenbau, Pflanzenschutz u. Pflanzenzucht* 8(1): 16-17. 1 fig. 1931.—In winter barley the leaves of smut-infected plants are yellowish green or yellowish white; in spring barley they are ochre yellow or brownish. In healthy plants the leaves are a bright green. In diseased plants the upper part of the sheath surrounding the head is light green and translucent; in healthy plants it is dark green and not translucent. This method of distinguishing infected plants does not apply to wheat.

6342. **FOEX, E., et E. ROSELLA.** Sur les diverses formes du pietin. *Rev. Path. Vég. et Ent. Agric.* 17(2): 41-51. 1930.—In wheat fields around Paris *Leptosphaeria herpotrichoides* causes brown spots about the first basal node of the wheat stem, and is mostly responsible for foot rot. Some oval spots, however, may result from infection by an undetermined sterile fungus often associated with *Cercosporella herpotrichoides. Ophiobolus graminis,* infecting the base of wheat stems, inhibits grain formation. Ascospores (from perithecia overwintering in the field) were germinated and proved pathogenic to wheat seedlings. *O. herpotrichoides,* though causing "penetration phenomena" in infected wheat cells, seems to be a weaker pathogen.—*J. Dufrenoy.*

6343. **FRON et MONCHOT.** Contribution à l'étude du pourridié du "Jasmin." *Ann. Inst. Nation. Agron. [Paris] Sér.* 2(23): 173-187. 2 pl. (1 col.), 10 fig. 1930.—Decay of jasmine is due to the simultaneous action of *Roselinia necatrix* and *R. aquila,* although the precise influence of each has not been determined. Lime inhibits the development of both species, particularly *R. aquila.* The practice of hilling up the plant at the foot to prevent freezing during winter may favor invasion of the tissues at this point by retaining moisture and preventing aeration. Possibly the application of sufficient lime in each hillock would be advantageous. The need for nitrogenous fertilization is indicated.—*Authors' conclusions (transl. by F. A. Wolf).*

6344. GIOELLI, F. Sopra un caso di cascola dei frutti di mandarino. [Fruit drop of mandarin orange.] *Riv. Patol. Veg.* 20(3/4): 73-77. 1930.—In the province of Palermo where the culture of the mandarin orange is very extensive, some trees have small, pale colored fruit that falls prematurely. This is most common where the trees are close together and shaded. After falling, the fruit develops a brown lesion starting from the point of insertion of the peduncle and gradually enlarging over the whole rind. *Penicillium digitatum* was isolated from the internal and external epicarp at the edge of spots and also from parts that showed no signs of the disease. Fruits were successfully inoculated by injection, by wounding and spraying a spore suspension on tissues exposed by the removal of the peduncle.—*F. M. Blodgett.*

6345. GOODING, L. N. Didymosphaeria oregonensis, a new canker organism on alder. *Phytopath.* 21(9): 913-918. 2 fig. 1931.—Distributed in Oregon, Washington, and Idaho, this new canker of *Alnus rubra, A. tenuifolia,* and *A. sinuata* is characterized by zonate bands ½-24 inches wide around the trunks and branches. The disease has not been found on *Betula glandulosa* growing in stands of affected *Alnus.* The organism is described as *D.* oregonensis* (p. 916).—*W. A. Whitney.*

6346. [GOMOLIAKO, N. I.] ГОМОЛЯКО, Н. И. Наблюдения над развитием порошистой парши у картофеля. [Powdery scab of potatoes.] [German summary.] Болезни Растений. [*Bolezni Rastenii*] 19(1/2): 79-88. 1930.—The disease is reported at the White Russian Potato Station and its distribution in U.S.S.R. discussed. The morphology and biology of *Spongospora subterranea,* and the influence of certain agricultural factors on the development of the disease, are discussed. The selection of resistant varieties is considered possible.—*From author's summary (transl. by K. H. Fernow).*

6347. GUYOT, A. L. De l'influence de quelques operations culturales sur le developpement du pietin du ble en 1928-1929. *Rev. Path. Veg. et Entomol. Agric.* 17 (2): 52-62. 1930.—Fertilizing with a mixture of KNO_3 and ammonium phosphate increased the yield, although it made foot rot diseases more severe. Spraying with H_2SO_4 always decreased the percentage of affected wheat stems; it may decrease or increase yields, depending on time of spraying.—*J. Dufrenoy.*

6348. KERLEROUX, L. Quelques observations sur le piétin du blé. [Foot rot and take-all of wheat.] *Rev. Path. Vég. et Ent. Agric.* 17(2): 36-40. 1930.—*Leptosphaeria herpotrichoides* first infects a leaf sheath. In wet weather it may grow into the stem cells in the vicinity of infected sheath cells, or it may grow down into the node. Dry weather checks stem infection from the sheath.—*J. Dufrenoy.*

6349. LINDEGG, GIOVANNA. Marciume del colletto di piantine di cotone appena germinanti. [Collar rot of cotton seedlings.] *Riv. Patol. Veg.* 20(1/2): 9-17. 4 fig. 1930.—A damping off of seedlings was found in a plant bed at Turin where cotton was grown following tomatoes which were similarly affected. The roots and stem up to the ground level were discolored and flaccid. Later the whole plant turned yellow, wilted, and dried up. Fungous hyphae present in the tissues grew out and produced spores in a moist chamber. The fungus (described) agreed in all characters with *Fusarium vasinfectum.* The disease was apparently favored by frequent watering and covering with glass and was arrested by removing affected plants, thinning the remainder and distributing a mixture of equal parts of quicklime and iron sulphate between the rows.—*F. M. Blodgett.*

6350. LINDEGG, GIOVANNA. La golphe bianca del culmo di grano. [White blight of wheat culms.] *Riv. Patol. Veg.* 20(3/4): 79-85. 4 fig. 1930.—Wheat plants (variety Mentana) were found infected in the upper nodes affected by the conidial stage of *Gibberella saubinetii.* The spike was withered but not invaded by the fungus and the lower part of the culm and the roots were healthy.—*F. M. Blodgett.*

6351. MITTER, J. H., and R. N. TANDON. A note on Sclerospora graminicola (Sacc.) Schroet. in Allahabad. *Jour. Indian Bot. Soc.* 9(4): 243. 1930.—About 45% of the *Pennisetum typhoideum* in low-lying fields was severely attacked by *S. graminicola.* Infected plants produced no grain.—*W. Dudgeon.*

6352. MONTEMARTINI, LUIGI. Note di fitopatologia: 6. Osservazioni e considerazioni sopra l'Erysiphe graminis D. C. 7. Un'epidemia di Sphaerotheca pannosa (Wallr.) Lév. su Prunus laurocerasus L. *Riv. Patol. Veg.* 20(1-6): 1930.—It is stated that in central Italy *E. graminis* can probably pass the entire yr. in the conidial condition, perhaps never forming perithecia. The form which attacks barley, and does not normally pass to oats or brome grass, appears to attack them when they are severely rusted. A severe attack of *P. laurocerasus* by *S. pannosa* is described.—*L. Montemartini (transl. by B. F. Lutman).*

6353. MOORE, W. D. Pod blight of lima beans in North Carolina and Virginia. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(11): 113-114. 1931. [Mimeographed].—The disease resembles that produced on snap beans by *Colletotrichum caulicolum* in Texas and the Georgia lima bean disease attributed to *Vermicularia polytricha.* The organism attacks the pods, and affects the branches in much the same manner as *Macrophoma phaseoli* or *Diaporthe phaseolorum.*—*W. A. Whitney.*

6354. MOORE, W. D. Ashy stem blight on lima beans in North and South Carolina. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(11): 114-115. 1931. [Mimeographed].—First report of *Macrophoma phaseoli* in these states.

6355. PASSALACQUA, T. Sopra la "Alternariosi" del garofano. [Alternariosis of carnation.] *Riv. Patol. Veg.* 20(5/6): 133-135. 1930.—*Alternaria dianthi* was found at Mondello on the leaves and stems of carnations which were introduced from Riviera Ligure, where this disease was first found in Italy in 1915. Associated with the *Alternaria* was a perithecial fructification which closely resembled *Pleospora herbarum* except the asci reach a length of 130μ. Cultures of *Alternaria* were obtained from *Pleospora* spores but not vice versa. The fungus appeared to be a weak parasite, as inoculations succeeded only on older basal leaves and plants were attacked only under very humid conditions, and recovered when the weather became dry.—*F. M. Blodgett.*

DISEASES CAUSED BY BACTERIA

6356. ELLIOTT, CHARLOTTE. Manual of bacterial plant pathogens. ix+349p. Williams & Wilkins Co.: Baltimore, 1930.—This is an alphabetical list of bacterial plant pathogens with a description of each organism and list of synonyms, and much of the available information on each disease arranged under symptoms, hosts, geographical distribution, methods of control and literature. A 2nd list of non-pathogenic organisms associated with bacterial diseases and included in the literature is added. To facilitate comparison, the morphological, cultural and physiological characters of the pathogenic organisms have been arranged in the form of a chart.—*C. Elliott.*

6357. EMERY, M. H. Étude sur les tumeurs de l'orme. *Bull. Mens. Soc. Nation. Hort. France* 4(July): 352-353. 1931.—*Bacterium tumefaciens* was isolated from elm tumors and, when trees were inoculated with the bacteria, tumors were again produced.

6358. LINDEIJER, E. J. Een bacterieziekte van de wilg. *Tijdschr. Plantenziekten* 37(3): 63-67. 1931.—The external and internal symptoms of a disease on willow caused by *Bacterium salicis* are described. In Holland the disease is found on pollard trees of *Salix alba,* on willow coppice of a variety of *S. viminalis* and a variety of *S. alba.* The use of healthy cuttings for propagation is recommended.—*H. L. G. de Bruyn.*

6359. ROSEN, H. R. Is the honeybee responsible for the spread of the fireblight germs? Part II. The

work of the Arkansas Agricultural Experiment Station. *Amer. Bee Jour.* 71(7): 320-321. 2 fig. 1931.—In the Ozark district oozing from overwintered cankers in early spring has little or nothing to do with the 1st blight infections. Since earliest infections were practically always in pear blossoms, and bees are the commonest visitors, many samples of material from hives located in an infected orchard were examined and cultures of the fireblight organism obtained. Healthy pear shoots were inoculated and typical fireblight was produced.

6360. **THORNBERRY, H. H., and H. W. ANDERSON. Bacterial leaf spot of Viburnum.** *Phytopath.* 21(9): 907-912. 4 fig. 1931.—Bacterial spot of *Viburnum* was discovered May 25, 1929, on the University of Illinois campus, and is apparently of local distribution. The pathogene lives over winter in cankers, in infected buds, and possibly in infested leaf debris in the soil. Primary infection, in all cases observed, developed from infected buds. Artificial inoculations produced typical lesions and the organism, which is described as *Phytomonas* **viburni** (p. 912), was reisolated in pure culture.—*Authors' summary.*

DISEASES CAUSED BY PHANEROGAMS

6361. **NUESSLE, FRIEDRICH. Wachstumsschwund durch Parasitismus.** *Aus der Heimat* 43(10): 313-314. 2 fig. 1930.—Observations were made on 5 similarly situated branches of a medium-sized red fir tree. One of the branches, which carried a heavy growth of mistletoe, became devitalized upon reaching a length of only 80 cm. and was bare of needles, while the healthy branches measured 150 cm.—*F. Nuessle (transl. by F. F. Halma).*

6362. **ZABORSKI, M. Sur l'autoparasitisme foliaire chez Viscum cruciatum Sieb.** *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 96-98. 1 pl. 1929.—Parasitism of *V. cruciatum** on plants of the same sp. is described as occurring in the Moroccan Atlas Mts.

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

6363. **BINKLEY, A. M. Correction on psyllid-yellows.** *Science* 74(1907): 72. 1931.—Note clearing the confusion that exists on the original association of the Psyllid with the new yellows disease of solanaceous plants.

6364. **STEINER, G. Two interesting findings of Tylenchus dipsaci, the bulb or stem nema.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(9): 92-93. 1931 [Mimeographed].—*Plantago maritima* in Oregon and onion bulbs in New York are reported as hosts in the U. S. A. for the first time.—*W. A. Whitney.*

6365. **STEINER, G. Tylenchus pratensis de Man on tobacco, tomato and strawberry.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(10): 106-107. 1931 [Mimeographed].—Tobacco in North Carolina, tomato in Massachusetts, and strawberry in Massachusetts and Florida are reported as new hosts for this nematode.—*W. A. Whitney.*

6366. **STEINER, G. A nematosis of yams caused by a new species of Hoplolaimus.** *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(11): 121. 1931. [Mimeographed.]—Disease of *Dioscorea* sp. in Jamaica, due to an undescribed sp. of *Hoplolaimus.*

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

6367. **DUNLAP, A. A. Carbohydrate variations accompanying the mosaic disease of tobacco.** *Amer. Jour. Bot.* 18(5): 328-336. 1931.—Mosaic leaves of tobacco were found to contain smaller amounts of certain carbohydrate materials (hexoses, disaccharides, dextrin, starch, and pentosans) than comparable healthy leaves. The greatest reduction occurred in the amounts of sugar and starch. Comparative studies were also made of the carbohydrates in mosaic and healthy plants which had been kept in the dark for several days, and also of plants kept at low temp.—*A. A. Dunlap.*

6368. **FENNE, S. B. Field studies on the ring-spot disease of burley tobacco in Washington County, Virginia.** *Phytopath.* 21(9): 891-899. 1931.—Steam sterilization of tobacco-plant beds did not prevent ring-spot infection in the field planted from these beds. Negative results were obtained in all cases in attempts to transmit ring-spot virus by means of tobacco flea beetle, cucumber flea beetle, leaf hopper, aphis, firefly, and the tobacco horn worm. Stick weed (*Verbesina alternifolia*) and sweet clover (*Melilotus alba*) were found naturally infected with ring spot. Infection was readily obtained on tobacco with the juice expressed from these plants. 25 other species of weeds were tested for ring spot, with negative results. The percentages of ring-spot infection in 10 counties in Virginia in 1927 was 2.5. In Washington County, in 1928, it was 3% and, in 1929, 7.6%. There was an average injury of 43% to the affected plants. It is estimated that ring spot caused a total loss of $27,384 in Washington County in 1929.—*Author's summary.*

6369. **ILLINGWORTH, J. F. Yellow spot of pineapples in Hawaii.** *Phytopath.* 21(9): 865-880. 10 fig. 1931.—A new disease of pineapples appeared in Hawaii during 1926. It was usually characterized by necrosis of the tissues at the base of one or more leaves, the stem soon bending over in the direction of the injured part, and the whole plant at length collapsing. This led to the name side rot. A subsequent discovery that an initial yellow spot on one or more leaves usually preceded the rotting at the base, caused the name to be changed to yellow-spot. The disease was most troublesome on newly planted tops because of their open structure, which may be attacked while still attached to the fruits. All attempts to control the disease with sprays proved futile. The disease increased each year and became widespread in Hawaii. During the dry season of 1929, it increased more than 10-fold. The disease was assumed to be of virus nature, but it was not possible to transmit it by artificial means. The search for an insect vector narrowed down to a species of thrips. (See Entry 6372.) —*Author's summary.*

6370. **KIRKPATRICK, T. W. Preliminary note on leaf-crinkle of cotton in the Gezira area, Sudan.** *Bull. Ent. Res.* [*London*] 21(2): 127-137. 1930.—A description is given of the symptoms of leaf-crinkle, its spread in the Gezira, and its effect on the cotton plant. Efforts to induce mechanical transmission of the disease were unsuccessful. Transmission was not effected by thrips, aphids or jassids, but strong indications were found that the aleurodids are the principal and possibly the only vectors of this cotton disease in the Sudan.—*E. F. Grossman.*

6371. **KOCH, KARL. The potato rugose mosaic complex.** *Science* 73(1901): 615. 1931.—Rugose mosaic is due to a combination of 2 distinct viruses. The "mottle" virus, normally present in apparently healthy potatoes of most if not all standard American varieties, is one of the viruses in the complex and is readily transmitted by plant extract but not by aphids. The other virus is readily transmitted by aphids and by plant extract.

6372. **LINFORD, M. B. The transmission of yellow-spot by Thrips tabaci.** *Pineapple Quart.* 1(2): 53-61. 1931.—Yellow-spot [see Entry 6369] is a virus disease transmitted to pineapple by *Thrips tabaci* from several wild hosts, among which the red *Emilia* is one of the most important in areas where the disease is prevalent. Larvae from a non-infective colony become infective after feeding upon a diseased plant; but adults treated similarly do not. The virus survives pupation, and insects, which feed upon a source of virus while larvae, may be infective as adults. There is an incubation period of approximately 10 days after first feeding upon a diseased plant before thrips transmit infection. A single insect, larva or adult, may transmit the virus to *Emilia.* The minimum incubation period in *E. sagittata* is about 8-9 days, mean about 14.6 days. In young pineapple plants the minimum is 7 days and the mean about 12.2 days. *Thrips tabaci* transmits the virus to and recovers it from several other plants in addition to pineapple and *Emilia.*—*Author's summary.*

6373. **LÜDTKE, MAX. Untersuchungen über Viruskrankheiten. (9. Mitteilung.) Beiträge zur Kenntnis des Stoffwechsels mosaikkranker und gesunder Tabakpflanzen.** *Phytopath. Zeitschr.* 2(4): 341-359. 1930.—The accumulation of starch in mosaic tobacco plants does not depend upon a decreased efficiency of the diastase. The latter is even more active in the diseased organism. A cane sugar- and a peptone-splitting enzyme were found equally active in healthy and mosaic plants. Enzymes of pepsin and papain-like nature, as well as a dipeptidase giving rise to glycyl-glycine were lacking, at least during the time of these investigations. That this mosaic disease is due to a disturbance of the activity of the enzyme and, therefore, can be called an enzymic disease, is not claimed. The leaf albumen of the tobacco leaves cannot develop from albuminous forms present in pepsin and papain. The gelatin was not split by the leaf enzyme; in only 2 cases was there a minimum increase of the NH_2 constant found. Isoamylamin produced no symptoms like mosaic. This so-called albinism cannot, therefore, be considered in connection with virus diseases. The pectin substance of mosaic diseased leaves in all probability experiences no changes when compared with the normal individual.—*Author's summary (transl. by W. B. Tisdale).*

6374. **McKINNEY, H. H. Differentiation of viruses causing green and yellow mosaics of wheat.** *Science* 73(1902): 650-651. 1931.—Wheat mosaic represents a mixture of types which can be resolved into distinct yellow and green forms. The yellow type was concentrated in relation to the green type and was rendered very severe in its expression on Harvest Queen wheat, which shows only slight traces of it in combination with green mosaic when infections occur naturally from soil or when artificial inoculations are made with virus from plants which became infected from soil. Rosette is evidently not associated with yellow mosaic on Harvest Queen, whereas it is with green mosaic on this variety. The nature of the association is unknown.

6375. **TAKAHASHI, WILLIAM N., and T. E. RAWLINS. Electrophoresis of tobacco mosaic virus.** *Hilgardia* 4(15): 441-463. 1930.—The various types of evidence as to the nature of a virus are considered in some detail. Electrophoresis should be very helpful in purifying a virus and in giving evidence as to its nature. Using the Todd U-tube electrophoresis apparatus and adjusting the pH to desired points, it was found that the tobacco mosaic virus migrated to the anode during electrophoresis between pH 4 and 9. No migration of the virus was detected between pH 3 and 1.2.—*J. Johnson.*

6376. **VERPLANCKE, G. Expériences sur la transmission des maladies de dégénérescence de la pomme de terre.** *Ann. Gembloux* 37(2): 65-69. 1931.—The results of transmission studies of various degeneration diseases, as affecting 27 varieties of potatoes, carried out in the field during 1930, at the Gembloux experimental station, are noted.—*G. Verplancke.*

6377. **ZELLER, S. M. A witches' broom of ocean spray (Holodiscus discolor).** *Phytopath.* 21(9): 923-925. 1 fig. 1931.—The disease has been found in the foothills of the western slope of the Cascade Mts. from Linn to Wasco Counties in Oregon and in Thurston County in Washington. Budding of diseased nodes into healthy stems and the transfer of *Aphis spiraeae* from diseased to healthy plants have both apparently induced the disease. The symptoms and performance of the disorder lend evidence to its virus nature.—*From author's summary.*

NON-PARASITIC DISEASES AND TERATOLOGY (INCLUDING DISEASES OF UNKNOWN CAUSE)

6378. **HEPPNER, MYER J. Pear black-end and its relation to different rootstocks.** *Proc. Amer. Soc. Hort. Sci.* 24: 139-142. 1927.—In true black-end fruits, the calyx end turns black, the discoloration first appearing at the ends of the lobes and spreading backwards into the flesh. Some fruits do not show the discoloration but instead become hard and gritty around the calyx end. In practically all cases where the abnormal fruit is evident, a rootstock relation exists. Black-end fruit is found on trees growing on the Japanese root, *Pyrus serotina,* and rarely on the French root, *P. communis. P. ussuriensis* and Kieffer are 2 other rootstocks with which black-end fruit is associated. No abnormally developed fruit is associated with the quince root, *Cydonia oblonga.*—*Author's summary.*

6379. **KOMURO, HIDEO. Über die Entstehung der Gewebeabnormität und des Knotenanfangs infolge von Infiltration spezieller Zellgruppen in Röntgenbestrahltem Pflanzengewebe. [The origin of tissue abnormalities and the initiation of nodules in consequence of infiltration of special cell groups in X-rayed plant tissue.]** *Proc. Imp. Acad. [Tokyo]* 7(3): 117-120. 2 fig. 1931.

6380. **PLAGGE, H. H. Effect of storage temperature on soggy breakdown of Golden Delicious apples.** *Proc. Amer. Soc. Hort. Sci.* 25: 298-300. 1928.—Apples became very susceptible to soggy breakdown at the usual cold storage temp. employed, unless the fruit went into storage immediately after picking. Since immediate storage is not always practicable and other factors, as time of picking and season, may alter the susceptibility to soggy break-down, 36° F. is considered the most desirable storage temp. The susceptibility to soggy breakdown increased in a rather definite proportion to the lowering of storage temp. and also to the length of the period preceding cold storage. No disadvantages of storing at 36° F. were evident when the fruit was sound and wrapped in oiled paper.—*Author's conclusions.*

6381. **PLASSCHE, A. W. van der. Proefneming bij roode bessen (Duitsche zure) met verschillende kalibemestingen in verband met de aantasting door randjesziekte.** *Tijdschr. Plantenziekten* 37(6): 131-134. 1931. —In the beginning of summer red currants (var. German Sour) on the plots manured with patent potash (1200 and 2400 kg. per ha.) or with K sulphate (600 and 1200 kg. per ha.) did not show leaf edge disease, while those on the plots manured with 40% K salt (750 and 1500 kg. per ha.) and those on the control plots were badly diseased. In August the disease developed in all the plots though in less degree in the first two series of plots.—*H. L. G. de Bruyn.*

DISEASE RESISTANCE AND PARASITISM

6382. **BAMBERG, R. H. Bacteria antibiotic to Ustilago zeae.** *Phytopath.* 21(9): 881-890. 2 fig. 1931.—Ten cultures of bacteria were found to have a deleterious effect on the development of *U. zeae* in culture, while 5 others had no observable like effect. Sporidia apparently failed to multiply in the presence of a culture of bacteria isolated from corn plants which failed to produce galls when inoculated with *U. zeae.* Evidence of disintegration of sporidia by the bacteria was obtained. A combination of monosporidial lines was made less virulent in its attack on the host by association with these bacteria. The injurious effect on the development of smut in the host persisted when the bacteria were injected into the corn plant at least 3 days before inoculation with *U. zeae.* Apparently the bacteria are able to live in or on the corn plant at least that long. The virulence of the smut seemed to be significantly reduced also when injection of the bacteria followed by 3 days the inoculation with *Ustilago.* Smut galls were disintegrated and spore formation was prevented even after distinct galls more than ½ inch in diam. had been formed. The destructive action seems to be directly associated with the presence of the bacteria, as the filtrate from bacterial cultures had no appreciable effect on the fungus in culture or on the development of smut galls in inoculated plants.—*Author's summary.*

6383. **BUISMAN, C. Overzicht van de soorten van iepen, in verband met het iepenziekteonderzoek.** *Tijdschr. Plantenziekten.* 37(5): 111-116. 3 pl. 1931.—A list is given of various species of elms and their characters described, with special reference to their susceptibility to *Graphium ulmi.*—*H. L. G. de Bruyn.*

6384. **DRAGHETTI, ALFONSO. L'importanza dello**

studio dell'internodo superiore del culmo di frumento nella costituzione di varietà agrariamento refrattarie alle Puccinie. [Importance of studying the upper internodes of wheat culms in designation of varieties resistant to Puccinia.] *Riv. Patol. Veg.* 20(5/6): 121-131. 2 fig. 1930.—Short version of a paper already noted: *Ann. R. Staz. Sper. Agraria di Modena* N. S. 1: 69-121. 3 pl. 1930.—A study was carried out on 40 progenies of F_2 hybrids derived from 12 crosses between varieties of varying grades of resistance. The plants were artificially infected from rusty culms and allowed to grow to maturity. A table of results is presented which shows, by grading the degree of infection, that the upper parts both of the culms and leaf sheaths are more resistant. In progenies of the different crosses 3 types of segregation were found based on studies of the upper internodes and leaf sheaths: (1) a 1:2:1 ratio from crossing a resistant with a susceptible variety; (2) crossing resistant with resistant gave 71.8% resistant, 23.6% intermediate, 1.6% susceptible; (3) a cross between 2 susceptible lines gave no resistant, 74.2% intermediate, 25.8% susceptible.—*F. M. Blodgett.*

6385. **GRAVES, ARTHUR H. The present status of the chestnut in North America.** *Northern Nut Growers Assoc. Rept. Proc. Ann. Meeting* 20: 48-63. 1929.—Blight-resistant American chestnuts (*Castanea dentata*), as noted by the author in New York in 1918, owed their resistance rather to favorable environmental features than to inherent resistance. The large number of chestnut sprouts in blight-infected regions is due to the fact that the roots and root collar of the American chestnut show greater resistance to *Endothia*, as proved by experimental inoculations. Vigorous, prolific, and disease-resistant Japanese (*C. crenata*) and Chinese (*C. mollissima*) chestnuts now growing in the vicinity of New York City are described. The desirability of crosses between these and the American chestnut is emphasized.—*A. H. Graves.*

6386. **ITO, SEIYA, and SHOICHI SHIMADA. On the nature of the growth promoting substance excreted by the "Bakanae" fungus.** *Ann. Phytopath. Soc. Japan* 2(4): 322-338. 1 pl. 1931.—Experiments with the filtrate from a species of *Fusarium*, the causal fungus of "Bakanae," gave the following results: The optimum concentration of the filtrate producing "Bakanae," or overgrowth of the rice seedlings, seems to be between 10 and 1%. The principle producing the symptom is not common to all *Fusarium* spp., e.g., is absent in *F. lini* with which the "Bakanae" fungus was compared. The growth-promoting substance is thermostable, neither enzymic nor volatile and is adsorbed completely by animal black. It diffuses through a semipermeable membrane. Filtrates from cultures in Richards' sol. without KH_2PO_4 or $MgSO_4$, or both, cause no overgrowth of rice-seedlings, but check normal growth.—*Authors' summary.*

6387. **JOHNSON, DELIA E. The antibiosis of certain bacteria to smuts and some other fungi.** *Phytopath.* 21(9): 843-863. 6 fig. 1931.—4 types of bacteria are noted which are antibiotic to certain rusts and other fungi. They consist of a coccus; a motile, non-spore-bearing rod-like bacterium; a motile, spore-bearing, rod-like bacterium; and a *Myxobacterium*. A study of the enzymes of these bacteria was made to determine whether they can break down the cell wall of the sporidia and so destroy the smut growth. Sporidia of *Ustilago zeae* were stained to determine the chemical constituents of the cell wall. Some of the bacteria contain enzymes with which they may be able to dissolve the corresponding constituents of the cell walls of sporidia. However, certain other bacteria, with the same types of enzymes do not affect the sporidia of the same smuts. Probably other factors are involved in the antibiotic property. The cultures become avirulent after long cultivation upon artificial media. The results of experiments to determine the effect upon infection of corn plants by smut, indicate that the bacteria may inhibit infection to some extent. The suggestion is advanced that antibiotic processes occur in nature.—*Author's summary.*

6388. **SCHLUMBERGER. Prüfung von Kartoffelsorten auf ihr Verhalten gegen Schorf im Jahre 1930. [Testing of potato varieties for reaction to scab (Actinomyces) in 1930.]** *Mitteil. Deutsch. Landwirtsch.-Ges.* 46(12): 229-232. 1 fig. 1931.

6389. **SNELL, WALTER H. The Kelm Mountain blister-rust infestation.** *Phytopath.* 21(9): 919-921. 1931.—History of this Warren County, New York, station and observations on the progress of white pine blister rust (*Cronartium ribicola*). 147 trees (about 13% of the original stand) seem to be immune even though exposed constantly to natural infection.—*W. A. Whitney.*

6390. **STEHLÍK, V., und FR. NEUWIRTH. Ökologie der aufgehenden Rübe mit Berücksichtigung ihrer Krankheiten. Anfängliche Entwicklung der jungen Pflanze.** *Zeitschr. Zuckerindust. Čechoslovak. Republ.* 55(9): 95-102. 6 fig. 1930.—A discussion of the anatomy and the physiology of germination of beet seed from sprouting to greening of the cotyledons with special reference to seedling diseases, is given.—*V. Stehlík.*

6391. **STOUGHTON, R. H. The influence of environmental conditions on the development of the angular leaf-spot disease of cotton. II. The influence of soil temperature on primary and secondary infection of seedlings.** *Ann. Appl. Biol.* 17(3): 493-503. 1930.—Naturally-infected cotton seed delinted with H_2SO_4 and treated with $HgCl_2$ sol. was grown in comparison with artificially infected seed and with untreated naturally-infected seed, in soil regulated to a range of temp. while the air temp. was kept uniform in automatically controlled closed chambers. Seed derived from diseased plants may give rise to infected seedlings but *Bacterium malvacearum* is carried only on the outside of the seed and on the fuzz. Thorough disinfection of the exterior of the seed results in healthy plants. The amount of primary infection resulting from infected seed decreases with rise of soil temp. above 30°C., but infection is not inhibited at 40°. Copious seedling infection occurred at 15°, the lowest soil temp. employed. Soil temp. has little or no effect on secondary infection. Plants diseased in the seedling stage out-grow the disease if no further inoculation occurs. No evidence of internal seed infection or systemic infection was disclosed.—*V. H. Young.*

6392. **WESTERDIJK, JOHA., M. LEDEBOER, and J. WENT. Mededeelingen omtrent gevoeligsheidsproeven van iepen voor Graphium ulmi Schwarz gedurende 1929 en 1930. [Susceptibility of elms to G. ulmi during 1929 and 1930.]** *Tijdschr. Plantenziekten* 37(5): 105-110. 1931.—Different species and varieties of elms were artificially inoculated with a spore suspension of *G. ulmi*. 6 proved resistant, 2 somewhat resistant, and 22 were susceptible. The resistance of seedlings from different sources was also investigated. The best method of inoculation was injection of the twigs with a spore suspension in June or July.—*H. L. G. de Bruyn.*

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, AND SPRAYING)

6393. **ARNAUD, G., et M. GAUDINEAU. Le traitement de la carie du blé. 2.** *Ann. Agron.* [*Paris*] 1(1): 5-81. 1931.—Seed treatments for control of *Tilletia tritici* gave results during the mild winter of 1929-30 similar to those secured in the spring of 1929, but differing from those obtained in the fall of 1928. Dust treatments were more effective than copper in acid solution effected without preliminary washing, but inferior to treatments with liquids which depend on wetting (Produit G, caseinated bordeaux mixture), or on vaporization (formol). Mere washing with water diminished infection appreciably and should precede liquid treatments. For practical control a preliminary washing with water is advised, then a 1-hr. treatment with 0.5% $CuSO_4$ solution followed by dusting with lime. Cu chloride and oxychloride gave erratic results but merit further trial.—*Authors' conclusions* (*transl. by Helen Hart*).

6394. **BICHET, R. Poudres cupriques et rots du raisin en Beaujolais.** *Progrès Agric. et Vitic.* 96(34): 181-185.

1931.—While copper dusts cannot replace sulphur entirely, one such treatment may be given between 2 applications of S, thus reducing the cost of mildew protection, especially in years when mildew is not very serious.

6395. **CARTER, WALTER. Tobacco dust and yellow spot control.** *Pineapple Quart.* 1(2): 99-104. 1931.—Results indicate the superiority of tobacco dust; 7 other nicotine forms tried were valueless in reducing infestation. Incidence of the disease was conditioned by growth and succulence of the plant, being less in the poorer areas of the field. The reduction of infestation by tobacco dust is attributed to changes induced in the plant by the dust application; agronomic variations between areas may modify this effect.

6396. **DURUZ, WILLIS P. Coryneum of apricots and its control.** *Proc. Amer. Soc. Hort. Sci.* 24: 176-179. 1927.—For general protection, it is best to apply 5-5-50 bordeaux just before or soon after the first fall rains, and again as the buds swell or the petals just show in the spring, and 2-3-50 bordeaux immediately after the husks have been shed from the young fruits.—*From author's summary.*

6397. **FAES, H., et M. STAEHELIN. L'apparition et le développement de la tavelure tardive sur les pommes de garde.** *Ann. Agric. Suisse* 32(2): 167-201. 1931.—Although apples may seem sound when put in storage, scab may develop during storage, the incubation period being 1-1½ mo. Wrapping in oiled paper or silk is of no avail. Washing in alcohol or in ordinary solutions of fungicides does not stop this development of scab, *Venturia,* in the infected apples. Control must be effected while the fruit is still on the tree.—*From authors' summary (transl.).*

6398. **FRANSEN, J. J. Enkele gegevens omtrent de verspreiding van de door Graphium ulmi Schwarz veroorzaakte iepenziekte door de Iepenspintkevers, Eccoptogaster (Scolytus) scolytus F. en Eccoptogaster (Scolytus) multistriatus Marsh in verband met de bestijding dezer ziekte. [Dissemination of G. ulmi by the elm bark beetles, in relation to disease control.]** [German summary.] *Tijdschr. Plantenziekten* 37(3): 49-62. 3 pl. 1931.—*S. scolytus* appears early in spring (first seen in March) and can be found till late autumn. The different generations overlap. The ♂ and ♀ beetles have a feeding period (*reifungsfrass*) of about 10 days. This is done with preference on healthy trees. The beetles attack the trees often on old wound scars. Trees other than elm are not generally attacked; on prune and apple trees the feeding was superficial. Infection by *Graphium* probably occurs during the *reifungsfrass.* The wood is discolored extending from these areas. The bark is not directly infected from the wood, but by beetles laden with spores which enter it. Spores of *G. ulmi* were found in the galleries of the mother beetle; the fungus existing on the residues, and the pupal chamber furnishes excellent conditions for its sporulation fructification. *G. ulmi* was reisolated from a twig artificially infested with beetles during their *reifungsfrass* and which died afterwards. Spraying with bordeaux mixture and lead arsenate gave no satisfactory results. Better results were obtained with trap trees. The bark of these must be burned before 5 weeks have elapsed. During the summer it is thought the infected twigs of diseased trees should be destroyed every 6 weeks. From bark containing larvae which was buried 40 cm. in the soil, a part of the beetles developed normally and emerged. Placing felled trees in water did not kill all the beetles. One of the most important parasites of the beetle was *Coeloides scolyticida;* in some places 89% of the beetles were parasitized. The nematode, *Rhabditolaimus leuckarti,* was found in larvae. Woodpeckers and tomtits destroy many beetles.—*H. L. G. de Bruyn.*

6399. **GLOYER, W. O. China aster seed treatment and storage.** *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 177. 1-41. 5 fig. 1931.—Several seed-borne fungi that in the past have been epiphytotic on the China aster (*Callistheplus chinensis*) have proved amenable to a chemical seed treatment. A brief summary is given of the botanical characteristics of the China aster, as well as some cultural practices, with special reference to parasitic diseases. The nature of the aster achene is such that fungi readily infect the surface or scurf. The following pathogenic fungi are seed-borne: *Septoria callistephi, Ascochyta asteris, Fusarium conglutinans* var. *callistephi, Botrytis cinerea* type, *Pleospora herbarum,* and *Alternaria* spp. Of various chemicals tested as seed disinfectants, $HgCl_2$ proved most satisfactory. Hot water alone was not effective and tended to lower the percentage of germination. Soaking the seed in water at room temp. without proper drying reduced germination. The following method was found the most efficient and safest for treating aster seed: (1) presoak in water for 30 minutes at 100° F. and drain, (2) immerse in a 1:1,000 $HgCl_2$ sol. for 30 min. at 100° and drain, (3) wash 5 min. in cold running water, then spread out to dry 24 hr. at room temp., avoiding direct sunlight. On a commercial scale, the seed was subjected to 90° instead of 100° F. At lower temp., the efficiency of the treatment may be so reduced that complete killing of *Septoria* does not result. Treatment at room temp. up to 80° may not always be efficient and a supplemental application in the seed bed with weak bordeaux mixture may be necessary. Liquid or dust treatments with organic mercury compounds were less efficient. Semesan dust when added to aster seed kept in storage showed neither injurious nor beneficial effects. Aster seed readily gives off and takes on moisture from the surrounding atmosphere. If the seed is stored in an atmosphere of high relative humidity deterioration, first manifest by delayed germination and increase of mycelium on the surface, sets in. Fresh seed stored in a damp atmosphere soon took on the characteristics of old seed. Aster seed best maintains its vigor and germination if dried in a heated room during the winter, then stored in fruit jars. Such seed may live 4 yr. or more, while seed stored in cloth bags may die within a yr. The same method of seed treatment is also effective against *Septoria* on other crops, such as celery.—*W. O. Gloyer.*

6400. **GRAM, ERNST. Fruktträdgardens hälsovard. [Orchard hygiene.]** *Sveriges Pomologiska Förenings Arsskr.* 31(2): 67-81. 4 fig. 1930.—Winter spraying with tar oil emulsions and oils has been generally practiced, but is now decreasing, partly because the orchards have been more or less cleaned up and partly because summer spraying is on the increase, which makes the winter treatment less necessary. Winter spraying still remains unequaled as the first treatment for neglected orchards. Apple scab is controlled better by bordeaux mixture ½-1-100 (kg./liter basis) than by lime-sulphur 2:100. 4 bordeaux treatments also reduced brown rot greatly, and controlled die-back and Nectria canker. Russeting is a problem with the Reinette group, for which it has been found best to apply lime-sulphur for the pink and calyx sprays, and bordeaux ½-1-100 at the 2 following treatments. Against *Sclerotinia cinerea* on cherries spraying with bordeaux 10-15 days, and again 2-5 days, before blossoming proved efficient.—*E. Gram.*

6401. **HARVEY, R. B. Sprays for the protection of trees against sunscald and rodent injury.** *Proc. Amer. Soc. Hort. Sci.* 27: 548-549. 3 pl. 1930 (1931).—A preparation made by heating linseed oil to 470°F. and adding 10% of powdered sulphur was found to be a better repellent than those previously used.—*R. B. Harvey.*

6402. **JOHNSON, J. Steam sterilization of soil for tobacco and other crops.** *U. S. Dept. Agric., Farmers' Bull.* 1629. 14p. 7 fig. 1930.—Information on the effects of and methods for sterilizing soil, details of the inverted pan method of steaming the soil, and the management of steam sterilized plant beds, cost of steaming, and soil steaming for crops other than tobacco are given.—*H. M. Steece (courtesy Exp. Sta. Rec.).*

6403. **McCLINTOCK, J. A. The relation of canker treatment to fire-blight control.** *Phytopath.* 21(9): 901-906. 3 fig. 1931.—With blossom-visiting insects excluded from caged trees, the absence of fire-blight (*Bacillus*

amylovorus) infection during and immediately following the blooming period is proof of the effectiveness of the 53% zinc chloride sol. in destroying the blight bacteria in hold-over cankers on crab apple trees. The fact that 2 of these caged trees were later artificially infected through water-borne bacteria, while the unexposed tree remained healthy, indicates that these trees were equally susceptible to blight in 1930 as when naturally infected in 1929. No serious injury resulted from treatments with 53% zinc chloride sol. The primary spread of the organism by bees can be greatly reduced by a thorough application of zinc chloride sol. to the hold-over cankers.—*W. A. Whitney.*

6404. **MUNDKUR, B. B.** Bacteriophage and its possible relations to the control of plant parasites. *Jour. Indian Bot. Soc.* 9(4): 211-217. 1930.—A summary of recent work.—*W. Dudgeon.*

6405. **PASINETTI, L.** Prove di devitalizzazione dei semi di Cuscuta nel terreno con l'acido monocloracetico. [Tests of the devitalization of Cuscuta seed in soil with monochloracetic acid.] *Riv. Patol. Veg.* 20(1/2): 1-8. 1930.—Seed of wheat, maize, trefoil, peas, and radish, treated with various concentrations of monochloracetic acid, showed the trefoil and peas to be least injured and the wheat most. In plot experiments concentrations of 3-10% acid used at the rate of 1.2-1.4 liters per sq. m. were sufficient to prevent the growth of *Cuscuta*, and also alfalfa when sowed previous to the treatment or soon afterward. Trials with wheat indicated that if planting was delayed for 15 days injury would be avoided. —*F. M. Blodgett.*

6406. **SCHANDER, R., und G. STAAR.** Untersuchungen über die Bekämpfung der durch Phytophthora infestans hervorgerufenen Kraut- und Knollenfäule der Kartoffeln mit besonderer Berücksichtigung der kupferhaltigen Stäubemittel. *Arbeiten Kartoffelbaues No.* 33. 138p. 14 fig. 1930.—Part 1 gives a description of the disease and the conditions under which it develops on the vegetative parts and tuber of the potato. A distinction is made between primary infection, which apparently originates from the stored tuber, and secondary infection, which spreads from plant to plant by means of zoospores. The growth of the fungus depends upon humidity, air temp. and resistance of the individual plant. Resistance is conditioned by the growth stage (less resistance after flowering) and upon inherent characteristics. Early planting of sprouted tubers of early varieties in warm, well drained soil is recommended. Dusting with copper-containing preparations has proved unsatisfactory because of insufficient resistance to rain. Part 2 deals with attempts to improve dusts. With bordeaux mixture the irreversibility of the colloidal particles when precipitated is important from the standpoint of resistance to rain. Experiments with 8 different mixtures showed that the thicker the layer applied of a 2% sol. the less the adhesiveness, while the reverse is true of a 1% sol. A dust composed of 1 part anhydrous $CuSO_4$, 2 parts CaO and 2 parts talc, exhibited extraordinary adhesiveness. Various dusting preparations were tested under laboratory and field conditions for copper content, resistance to rain, wind and agitation, relative adhesiveness, pulverizing properties, and reaction. Cupulvit (manufactured by the Chemische Fabrik Meyer, Mainz) was outstanding and was followed closely by the author's preparation L 122. All other materials failed in laboratory tests. Under field conditions Cusisa (Merck, Darmstadt), preparation 110 (Pflanzenschutz G. m. b. H. Schweinfurt) and to some extent Schering 240 (Schering-Kahlbaum) proved relatively satisfactory. The final chapter deals with practical control of potato blight, including the design, selection and cost of equipment. —*G. Staar (transl. by F. F. Halma).*

6407. **SORGES, FELICE.** L'osside di metilene e il suo impiego nelle fumigazione. [Ethylene oxide and its use in fumigation.] *Riv. Patol. Veg.* 21(3/4): 127-132. 1931.—The practicability of the use of this material is discussed based on the experiments of various other workers.—*F. M. Blodgett.*

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

6408. **CROCKER, WILLIAM.** A delicate method of detecting illuminating gas in a greenhouse. *Florists Exch. & Hort. Trade World* 70(12): 15, 54, 2 fig. 1929; also in *Boyce Thompson Inst. Prof. Papers* 11. 81-85. 1929.—Concentrations of artificial illuminating gas far below those detectable by odor or chemical methods will do injury to some greenhouse plants. The tomato plant shows marked epinastic growth of the leaf petiole in concentrations of gas as low as 1 part of water gas in 200,000 of air, ethylene being the effective constituent. The tomato plant can be used for detecting illuminating gas in the lowest concentration that will injure plants. —*W. Crocker.*

6409. **DeLONG, W. A., and A. D. PICKETT.** On a possible effect of fungicides upon the composition of apples. *Science* 73(1902): 649-650. 1931.—Sulphur-treated fruit possessed a slightly lower reducing power than bordeaux-sprayed or unsprayed fruits. The numbers of determinations were too few and the differences too small for final conclusions.

6410. **HILTNER, L., K. FLACHS, und A. PUSTET.** Pflanzenschutz nach Monaten geordnet. 2nd edit. 391p., 185 fig. E. Ulmer: Stuttgart, 1926. Pr. 10m.—An enlarged edition of HILTNER'S "Plant Protection," in which the practical application of protective and sanitary measures is stressed. The descriptions of diseases are abbreviated but ample consideration is given to control measures. It is brought up to date to embody recent investigations. A comprehensive appendix contains an account of chemical means of disease control. There are chapters on soil reaction, influence of fertilization, phenology, and inoculation of leguminous crops, and sections dealing with diseases caused by fungi, by animals, and by non-parasitic agencies. A very comprehensive index makes the contents easily accessible.—*Morstatt.*

6411. **HOPKINS, J. C. F.** Some common diseases of potatoes in Southern Rhodesia. *Rhodesia Agric. Jour.* 28(8): 736-742. 2 pl. 1931.—*Alternaria solani, Rhizoctonia solani, Fusarium culmorum, F. solani,* brown fleck, frost injury, white spotting, and virus diseases are discussed.

6412. **HUBERT, ERNEST E.** An outline of forest pathology. 543p. 168 fig. John Wiley & Sons, Inc.: New York, 1931.—This book especially covers the principles and practices of forest pathology in the U. S. A., but is general enough to be applicable to forest conditions in Canada. It is intended to serve those interested in forestry, tree surgery, logging, lumbering, wood preservation, pulp and paper manufacture, the manufacture and sale of various kinds of forest products, and in the erection, maintenance, and protection of wooden structures. Chapter headings and sub-headings are as follows: Historical; The trend in forest pathology; Classification of tree diseases; The influencing factors; The relative importance of tree diseases; Economic losses; Symptoms; Non-organic or physiogenic agencies; Organic agencies, The classification of fungi, Schizomycetes, Phycomycetes, Ascomycetes, Fungi imperfecti, Basidiomycetes, Phanerogamic parasites; Control methods; The properties of wood affected by decay; The relative resistance of wood to decay; Saprophytic agencies, Dry rot in buildings, The decay of ties, posts, poles, piling and mine timbers, The decay and stain of logs and wood pulp; Semi-parasitic agencies; Control methods.—*C. S. Gager.*

6413. **MARCHAL, P., et E. FOEX.** Rapport phytopathologique pour l'année 1928. *Ann. Épiphyties* 14(6): 415-470. 1928.—An official report on the prevalence of insects and fungous diseases of cultivated plants in France, with observations on the effects of meteorological conditions. The summer in question was dry and cool, causing extensive drought injury. The occurrence of *Armillaria mellea* on *Juglans, Coryneum* on peach and apricot, *Oidium* and *Plasmopara* on the vine are reported. Chlorosis and court-noué continue to reduce

the growth of vines, especially on certain types of soils. —*H. S. Reed.*

6414. **[NESTERCHUK, G. I.]** НЕСТЕРЧУК, Г. И. Леса Карело-Мурманского края и их вредители. [Forests of Karelia-Murman and their pests.] [German summary.] Болезни Растений. [*Bolezni Rastenii*] 19 (3/4): 159-182. 1930.—Among the chief causes contributing to the development of pests in the region are forest fires and cutting in the forest without proper disposal of slash. Among the fungi injurious to forestry are: *Trametes pini, Fomes annosus, F. fomentarius, F. ignarius, Peridermium pini corticola.* Other fungi and insect pests are listed in the appendix. The extensive occurrence of mycorrhiza merits study, since forest growth is thereby favored where the vegetative season is short, especially within the Arctic Circle where chemical processes are slow in the cold soils. In addition to direct damage to forest stands by pests, injury occurs indirectly from lichens of the genus *Usnea,* which at times cover the tree crowns and, especially in drought seasons, favor the spread of forest fires. The quantity of decadent timber in the forest varies with latitude, but, contrary to expectations, rot and defects decreased toward the south. The high frequency of defective trees in the far north is due to the age of the stands. The forests on the Kola Peninsula are commonly 300-350, and more, yr. old, hence, overmature and low in commercial value. Here the defective material in stands on quality V sites may be as high as 78% for pine and 100% for spruce. A strip, burnt from recurrent fires, varying in breadth up to 3 km., extends along the Murman railway. Recently the careless system of lumbering has afforded favorable breeding grounds for detrimental insects, which now concentrate their attacks on the small areas of forest that escaped devastation by fire. On such burns occur epidemic developments of *Ips acuminatus, I. sexdentatus, Blastophagus piniperda, Pityogenes bidens* and other such pests. The last named insect attacks and thrives on spruce on the Kola Peninsula. It is interesting and important here that *Ips subelongatus* and *Dryocoetes baicalicus* occur on pine, although larch is their normal host.—*Author's summary (transl. by G. S. Perry).*

6415. **NOBÉCOURT, P. Pathologie végétale et pathologie animale.** [Pathology of plants compared with that of animals.] *Rev. Gén. Sci. Pures et Appl.* 39 (12): 369-373. 1928.

6416. **PILÁT, ALBERT. Die Fäulnis der Weinstöcke auf den Weinbergen der höheren Staatlichen Obst-Wein und Gartenbauschule in Mělník.** *Jahresber. Staat. Obst.-Wein u. Gartenbauschule [Mělník, Bulgaria.]* 1928/1929: 95-111. 3 pl. 1929.—Rotting of poles in vineyard is due chiefly to *Lenzites abietina, Trametes odorata, Poria medula panis, P. vaillantii, Gyrophana lacrymans, Coniophora cerebella, Odontia corrugata, O. arguta, Stereum sanguinolentum, Peniophora molleriana, P. incarnata, Corticium confluens, C. laeve,* and *Dacryomyces deliquescens.* The greatest damage is caused by *Merulius lacrymans, Coniophora cerebella* and *Poria vaillantii.*—*A. Pilát.*

6417. **ANONYMOUS. Plantesygdomme i Danmark 1930. (Plant diseases and pests in Denmark 1930.)** [With English summary.] *Tidsskr. Planteavl* 37 (3): 458-508. 1931.

PLANT PHYSIOLOGY, BIOCHEMISTRY, AND BIOPHYSICS

B. M. DUGGAR, *Editor*

(See also in this issue Entries 6050, 6065, 6103, 6121, 6136, 6145, 6156, 6163, 6165, 6322, 6373, 6379, 6386, 6405, 6408, 6409, 6649, 6667, 6817, 6896, 6927, 6932, 6936, 6937, 6946, 7140, 7265, 7428, 7626, 7676, 7691, 7692, 7695, 7700, 7729, 7732, 7742, 7751, 7759, 7766, 7911, 7916, 7925, 7940, 7950, 7955, 7971, 7975, 7981, 7984, 7987, 7991, 7998, 8001, 8029, 8038, 8054, 8099, 8146, 8149, 8150, 8158, 8159, 8163, 8170)

GENERAL

6418. **MacDOUGAL, D. T. The green leaf: The major activities of plants in sunlight.** 142p. 22 fig. D. Appleton & Co.: New York, 1930.—This is one of the volumes of Appleton's "New World of Science Series." The chapter headings are: Living matter from rocks, water, and air; Place in the sun; Models of sun-screens and our utilization of their products; The grass blade; Pine needles: tree records of climate; The oak leaf: movements of sap and autumnal colors; Green stems; A visit to green leaf-mills; Green mills and their grist; Protoplasm: how it started and how it goes on: growth; Ghosts and other dwellers in darkness; Leaf-products and human populations; Index.—*C. S. Gager.*

PROTOPLASM

6419. **COLLA, S. Untersuchungen über Plasma und Plasmaströmung bei Characeen. II. Die Wirkung verschiedener Salze auf die Plasmaströmung.** *Protoplasma* 6: 438-448. 1929.—KCl, NaCl, and $MgCl_2$ increase the speed of streaming of full-grown normal *Chara* in the following order: K > Na > Mg. NaCl, Na_2CO_3, and $MgCl_2$, on the other hand, slow up the speed in young cells. Li-, Ca-, and $BaCl_2$ stop motion quickly in the following order: Li > Ca > Ba. Ba and Li are very toxic to young cells. Na_2SO_4, Na_2CO_3, Na_3Po_4, and NaCl all increase the rate of streaming in grown cells in the following order: NO_3 > (HPO_4, H_2PO_4) > SO_4 (HSO_4) > Cl > CO_3 (HCO_3).—*L. Moyer.*

6420. **JOST, L. Einige physikalische Eigenschaften des Protoplasmas von Valonia und Chara.** *Protoplasma* 7: 1-22. 1929.—In the presence of certain plasmolysing agents, especially Ca salts, the protoplasm of *Valonia* falls together in a net. The plasma membrane is also destroyed. The cytoplasm adheres to the walls and forms folds. *Chara* does not form such clear nets and if it does, they are confined to the outer part of the cytoplasm, while the central portion remains as a closed sack. Wherever Ca enters to the inner portion a new membrane is formed. A cell of *Chara* cut across forms no membrane, but a protoplasmic plug which permits it to live for a long time. *Valonia* can, however, completely recover. Cations with a valence of 2 or higher produce normal plasmolysis in *Chara,* while with univalent cations and non-electrolytes the cell usually is killed.—*L. Moyer.*

6421. **KIESEL, ALEXANDER. Die Plasmodien der Myxomyceten als Objekt der chemischen Protoplasmauntersuchung.** *Protoplasma* 6: 332-369. 1929.—This article is a review dealing with the direction protoplasm research is taking, its problems, the metaphysical viewpoint of the living substance, and the identity and chemical constitution of protoplasm.—*W. Seifriz.*

6422. **LEONTJEW, H. Über das spezifische Gewicht der Plasmodien von Myxomyceten.** *Protoplasma* 8: 152-154. 1929.—The specific gravity of plasmodia is 1.04.—*W. Seifriz.*

6423. **STRUGGER, SIEGFRIED. Untersuchungen über Plasma und Plasmaströmung an Characeen. III. Beobachtungen am ausgeflossenen Protoplasma durchschnittener Chara-Internodialzellen.** *Protoplasma* 7: 23-45. 1929.—Observations made with dark-field illumination on *Chara* internodes showed that the plasma streaming out of a *Chara* internode cell cut across forms a large ball of protoplasm which is surrounded by a clearly visible membrane. The peripheral plasma is first altered by the water. This is seen by alterations of the optical properties. Thereupon the ball has a 3-layered structure: haptogen membrane, an almost optically empty middle layer, and an optically unaltered inner layer. Later the protoplasm undergoes a complete alteration due to the taking up of water. This altered protoplasm is no longer

able to surround itself with a membrane. It distributes itself by flowing out in the water and is partially miscible with water. Hence a flocculation is noticeable. The nuclei flowing out with the first protoplasmic portion coagulate. This coagulation is not called forth by the medium but by the traumatic stimulus caused by injury to the cell. After taking up water this gel condition of the nucleus goes over to that of a sol and the nuclei appear optically empty. The nuclei flowing out later keep their optically empty appearance. If the protoplasmic ball is broken at any place after about 20-30 min., then the nuclei flocculate. Only a part of the nucleus goes over into a gel condition; a semi-spherical bubble surrounded by a membrane remains as a sol. While the contents of this sol droplet slowly flocculate, there begins to form a 2nd optically empty droplet formed from the 1st and surrounding it. This grows gradually. Finally the sol droplet disappears, then the outer nuclear droplet and only the gel part of the nucleus remains visible. Fixation reveals that the gel part consists of chromatic while the sol part consists of achromatic substance.—*L. Moyer.*

6424. **WEBER, FRIEDL.** Vergessene Beobachtungen. *Protoplasma* 6(1): 157-158. 1929.—A brief discussion is given of Brücke's paper (1862) on the effect of electromagnetic forces on protoplasmic streaming in hairs of *Urtica urens* and a comparison is made of the formation of protoplasmic threads observed by Brücke with recent similar observations by Küster, Scarth, and others.—*W. Seifriz.*

6425. **WEBER, FRIEDL.** Fadenziehen des Endoplasmas bei Spirogyra. *Protoplasma* 6(1): 159-161. 1929.—The formation of protoplasmic threads has an important bearing on the viscosity, adhesiveness, and other physical properties of protoplasm. Heretofore nearly all observations have been on ectoplasmic threads. The endoplasm in *Spirogyra* likewise forms threads. These can be produced by deplasmolyzing *Spirogyra* protoplasts; the shrunken chloroplast does not return to its former position and as a result endoplasmic threads are formed as the protoplasm returns to its deplasmolyzed state.—*W. Seifriz.*

6426. **WEBER, FRIEDL.** Bildung von Niederschlagsmembranen im Musa-Saft mit Neutralrot. *Protoplasma* 8: 434-436. 1 fig. 1929.—Bag-like structures were found in sap of banana upon treatment with neutral red. These are typical Traube cells. The rest of the sap is colorless in appearance. Tannins, combined with the dye are suggested as the cause of these formations.—*L. Moyer.*

OSMOSIS, PERMEABILITY, PHYSICO-CHEMICAL PHENOMENA

6427. **BROOKS, MATILDA MOLDENHAUER.** Studies on the permeability of living cells. X. The influence of experimental conditions upon the penetration of methylene blue and trimethyl thionine. *Protoplasma* 7: 46-61. 3 fig. 1929.—*Valonia ventricosa* and *Nitella* were placed in .000095 M. solutions of methylene blue (Grübler's; Merck's; and dye prepared by Clark) in sea water and in doubly distilled water, respectively, buffered at pH 5.8 and at 8.83. After various time intervals up to 3 hrs., the sap from the vacuoles was analyzed spectrophotometrically. The results confirm previous experiments on *V. macrophysa* which showed that the dye penetrating into the sap of these plants is not an oxidation product such as trimethyl thionine, but methylene blue itself. The accuracy of the spectrophotometric method is limited since this instrument does not detect small amounts of impurities. Interpretations of data obtained by this method must be made with this reservation. The rate of penetration of methylene blue varies with the pH of the external solution, but after a given time, the concentration of dye in the sap is equal, at all pH values used, to the concentration of dye in the external solution. This indicates that an equilibrium had been reached. Various samples of methylene blue from different sources were tested for purity and Clark's was found to be the purest. Trimethyl thionine penetrated *Nitella* much more rapidly than methylene blue. Irwin's findings differ from the writer's because of certain details of technique including her use of excessively high pH values, high concentration of dye, and relatively impure dyes.—*From author's summary.*

6428. **BROOKS, S. C., and SAMUEL GELFAN.** Bioelectric potentials in Nitella. *Protoplasma* 5: 86-96. 3 fig. 1928-1929.—Potential differences between 2 microelectrodes, one in the protoplasm of *Nitella* and one just outside the cell, have been measured. The p. d. increases with increase in size of the cells studied in tap water or in .001 M. NaCl from 15 m. v. for a cell volume of about 0.5 mm.^{3} to about 40 m. v. for cells of 3 mm.^{3} in volume. Larger cells showed irregular p. d., mostly less than 40 m. v. The p. d. yielded by cells immersed in artificial *Nitella* sap was 7 m. v.; dilution of the sap to $\frac{3}{4}$, $\frac{1}{2}$, or $\frac{1}{4}$ strength led to successively greater p. d., approaching as a limit the figure for cells of similar size in tap water or .001 M. NaCl.—*Authors' summary.*

6429. **BROOKS, S. C.** The accumulation of ions in living cells.—A non-equilibrium condition. *Protoplasma* 8: 389-412. 5 fig. 1929.—Living cells of *Valonia macrophysa* were exposed for different lengths of time to sea water in which the proportion of K had been increased or decreased by the addition of isotonic KCl or NaCl solutions. The concentration of K in the sap ordinarily increased more than that of Na or Cl regardless of whether it was present in more or less than normal concentration in the surrounding solution. The Cl concentration in the sap ordinarily changed in much the same way as the K concentration, but to a significantly smaller extent. The Na concentration appears to have first increased and then decreased, depending upon the length of exposure and the extent to which the sea water was altered. This may be explained by supposing that: (a) the cell is normally in a non-equilibrium condition with respect to the surrounding solution; (b) the cell is surrounded by a plasma membrane consisting of a mosaic of anion-permeable and cation-permeable areas which are of the nature of charged porous films, and as such exaggerate differences between the diffusion velocities of the ions to which they are permeable; (c) the diam. of the pores varies according to experimental conditions; (d) the penetrabilities of different ions are characteristic functions of their own effective diam. and of the diam. of the pores in the membranes. This theory explains more or less completely also the intake of ions by plants, the changes in morphology of green algae grown in darkness, the characteristic ion content of erythrocytes and of neoplastic cells, and the relation between glycolysis and growth of neoplasms.—*Author's summary.*

6430. **DERRY, B. H. E.** Plasmolyseform- und Plasmolysezeit-Studien. *Protoplasma* 8: 1-49. 3 fig. 1929.—Saccharose solutions used as plasmolysing agents on *Spirogyra* revealed that the stronger the solution the longer was the time needed for plasmolysis. The idea is advanced that short plasmolysing times depend on a low viscosity of the protoplasm, while longer times are due to a high viscosity. By treatment with low temp. (0° C.) before treatment with the saccharose, the plasmolysing time is indefinitely increased. Narcotics in slight doses for varied times produce increased speed of plasmolysis. Increase of the pH of the culture fluid had an opposite effect.—*L. Moyer.*

6431. **DIETRICH, FRITZ.** Beobachtungen über Stoffwanderung in lebendigen Zellen. *Protoplasma* 8: 161-198. 1929.—The rate of diffusion of chrysoidin in *Mucor* is 5 μ per min., in gelatin, 25 μ per min. The higher the protoplasmic viscosity the lower is the diffusion rate. The rate of diffusion of chrysoidin in plasmodia is 50 μ per min. faster in the endoplasm than in the ectoplasm. Diffusion rates of other dye stuffs in other materials are given.—*W. Seifriz.*

6432. **GAIL, FLOYD W., and WM. H. CONE.** Osmotic pressure and pH measurements on cell sap of Pinus ponderosa. *Bot. Gaz.* 88(4): 437-441. 1929.—Osmotic

pressure measurements made by means of freezing point depressions, and pH values determined electrometrically were made on 1st, 3rd, and 5th yr. needles of *P. ponderosa*. There is a high pH and low osmotic pressure during the period of growth, and a lower pH and higher osmotic pressure during the dormant period. The pH and osmotic pressure of the cell sap increase with the age of the needles for any given time. The fluctuation of osmotic pressures and pH values becomes less as the age of the needles increases. The needles fell when the pH was approximately 4.1.—*Authors' summary.*

6433. **GALVEZ, NICOLAS. The use of the antimony electrode in the control of cane juice defecation and for measuring the hydrogen ion concentration of soils.** *Philippine Agric.* 19(4): 219-227. 1930.

6434. **GICKLHORN, J. Kristalline Farbstoffspeicherung im Protoplasma und Zellsaft pflanzlicher Zellen nach vitaler Färbung.** *Protoplasma* 7: 341-352. 2 fig. 1929.—Neutral red in 0.05% concentration employed as a vital stain for the leaves of *Ceratophyllum submersum* and *C. demersum* produced crystals in the cells after long immersion. These crystals vary in position and shape according to the type of leaf cell in which they are found. They may even resemble droplets. These crystals may be found in the cytoplasm or in the vacuole. No granules are found which might serve as foundations for them. In no preparation in which crystals were found in the cytoplasm, was the cell sap colored. Stains other than alkaline neutral red did not produce as great an effect nor did they go beyond the epidermis.—*L. Moyer.*

6435. **GRÜSS, J. Semipermeabilität der Gerstenfrucht und Samenschale. III.** *Wochenschr. Brauerei* 47(22): 249-252. 2 fig.; (23): 257-261. 5 fig.; (24): 269-272. 1 fig. 1930.—Barley grains (100) soaked in N/10 NaOH take up 0.4 gm. NaOH in 6 hrs. and 0.054 gm. in 10 hrs. A notable difference can be seen if one lets microscopic sections lie for some time in normal KOH and NaOH solutions. Longitudinal and surface sections placed in KOH and NaOH solutions showed after a moderately long action a great difference in the tissue, which is destroyed easier by NaOH than KOH.—When grains were soaked in 1% Na_2CO_3 solutions, 100 grains took out 0.041 gm. Na_2CO_3 in 6 hrs. and the tissue showed no semipermeability for the salt. The entrance of Na_2CO_3 into the grain can be followed by phenolphthalein after killing the tissue. Grains placed in $NaHCO_3$ take up very little of this salt and their viability is not injured. The diffusion gradient and viability for grains placed in NaOH, KOH, Na_2CO_3, K_2CO_3, $CA(OH)_2$+ Na_2CO_3 are tabulated. In the penetration of these substances through the membranes of the pericarp no semipermeability is shown. Without exception, the diffusion gradient increases with the concentration of the diffusing substance.—*J. Grüss (transl. by Oran Raber).*

6436. **JOST, LUDWIG. Elektrische Potential-Differenzen an der Einzelzelle.** *Sitzungsber. Heidelberg. Akad. Wiss., Math.-naturwiss. Klasse* 1927(13): 3-27. 4 fig. 1927.—Individual internodal cells of *Chara coronata* were laid as a bridge connecting 2 paraffin vessels containing various solutions. Similar electrodes were placed in 2 other vessels containing tap water, each connected by a siphon of tap water in agar to one of the solutions. E.M.F. measurements were made by the compensation method, using a capillary electrometer, the sensitivity being 1 or 2 millivolts. Using the same salt in concentrations of 0.01 and 0.1 *N*, the dilute end was always positive, the potentials being of the order of 20-40 millivolts. Using different salts at the same concentration, both anions and cations could be arranged in series with respect to their influence on the size of the potential. With one end in dilute alcohol and the other in tap water, the alcohol end was negative. Mechanical injury to one end of the cell, or to an adjoining cell, made the injured end negative. Experiments with *Valonia* gave small and discordant potentials of 1-3 mv. This is ascribed to the fact that the walls of *Valonia* had imbibed highly conducting sea water, while those of *Chara* contained poorly conducting tap water. The lack of constancy and reproducibility of all the potentials is explained by the theory that the seat of the P. D. is the protoplasmic membrane, and that its permeability is easily changed.—*D. I. Hitchcock.*

6437. **KACZMAREK, A. Untersuchungen über Plasmolyse und Deplasmolyse in Abhängigkeit von der Wasserstoffionenkonzentration.** *Protoplasma* 6: 209-301. 1929.—The course of plasmolysis, deplasmolysis, and the entrance, in time, of injury and death to the cells of *Rhoeo discolor* shows in alkali salt solutions a clear relation to the pH and to the concentration of the plasmolysing medium. A minimum number of plasmolysed cells is reached at the end of the 1st quarter hr. at pH 4.2. With increasing and falling acidity the number of plasmolysed cells lessens. In the interval pH 4.3-5.5 lies a minimum. From here the curve climbs to a maximum on the alkaline side. Deplasmolysis is not seen at lower pH values, but increases as the pH increases until at pH 4.75-5.25 a maximum is reached. Above this, deplasmolysis is slower. Injury and death are greatest at the highest and lowest pH values, and the minimum is at pH 4.7-7.5. Mixtures of $CaCl_2$ and KCl did not slow up plasmolysis, but the resistance of the cells against the medium was increased sharply. *Rhoeo* is permeable to sucrose if deplasmolysis is taken as an index for the entrance of substances. The longer the cells are washed with water beforehand, the greater the plasmolysis.—*L. S. Moyer.*

6438. **KOVAR, LADISLAV. On the influence of surface active substances upon the imbibition of plant tissues. I. Imbibition of potato tuber in monovalent alcohols and in chloralhydrate, studied by the auxographic method.** *Protoplasma* 8: 585-627. 1930.—In connection with the relative experiments, the surface tension of the solutions used was measured before and at the conclusion of each experiment. The suction tension of the tissue was interpolated with the help of the data supplied by the auxograms obtained. The time suction curves thus obtained for each of the substances in question were then compared with one another and a quantitative ratio of the toxicity of the alcohols to the number of C atoms was numerically expressed.—*Author's summary.*

6439. **KÜSTER, E. Beiträge zur zellenphysiologischen Methodik. I u. II.** *Protoplasma* 5: 191-200. 8 fig. 1929.—The effects of puncturing plasmolyzed cells are described.—*W. Seifriz.*

6440. **KÜSTER, E. Beobachtungen an verwundeten Zellen.** *Protoplasma* 7: 150-170. 1929.—The cytoplasmic and vacuolar membranes of injured cells retain their semipermeability for a long time after the injury. It is possible in badly wounded cells to bring opened vacuoles to contraction so that 2 portions separate themselves from one another, one of which is closed on all sides and the other open and in communication with the outside. This last soon disappears. In lightly wounded cells it is possible to bring not only the membrane but the whole body of the cell to osmotic contraction. One can place foreign substances in the opened vacuole before contraction. The spontaneously occurring vacuole contraction is a wound reaction in the bulb leaves of the onion. Sap extracted by pressing leaves of *Rhoeo* is a strong plasmolyzing agent on the cells of its epidermis. It is also toxic even when made hypotonic by dilution. This effect is expressed by the contraction of the protoplasts.—*L. Moyer.*

6441. **MAHDIHASSAN, S. Die Wasserstoffionenkonzentration im Zellinnern von Fusarium lini B. und Hefe. Mechanismus der Enzymwirkung, 7.** *Biochem. Zeitschr.* 226(1/3): 203-208. 1930.—In agreement with their almost identical metabolism, the endo-cellular pH of yeast XII and of *Fusarium lini* B. was determined by microinjection to be for yeast 5.9-6.0 and for *F. lini* B. 6.0-6.1. This agrees well with the findings of Tait and Fletcher as well as of Nord and Franke, according to whom the optimum zymatic activity occurs near pH 6.0.—*A. G. Olsen.*

6442. **MORAVEK, VLADIMIR. Osmotic studies on**

Nereocystis. *Protoplasma* 7: 145-149. 2 fig. 1929.—The bladder of *Nereocystis* was prepared as an osmotic cell by cutting away the stem and leaves and fastening a glass tube to the cut end of the bladder. Various experiments on the osmotic effect of solutions inside and outside of the bladder are recorded, particularly with reference to the partition of Cl in the interior and exterior fluid. Using natural sea water, dilute sea water, and distilled water, as the liquids separated by the *Nereocystis* bladder cells, the exosmosis of Cl was found to proceed in either direction across the membrane. Part of the water was taken into the head, and used for the swelling of the cells; part of the water was transported through the head in the direction from the inside layers through the outside epidermis.—*From author's summary.*

6443. **OHN, ASTA. Viscosity of pectin sols. II. Effect of citric acid and various sugars.** *Indust. & Eng. Chem.* 22(6): 635-639. 3 fig. 1930.—The specific effect of the variables (citric acid, sucrose, fructose, dextrose, and lactose) upon the viscosity of unheated pectin sols was studied to determine their ability to aid gelation. The measurements of viscosity were made by an Ostwald viscometer. Citric acid decreased the viscosity of both the unheated pectin and pectin-sugar sols. Under the same experimental conditions, sucrose caused a greater increase in the viscosity of the pectin sols than any of the other sugars used. Pectin-citric acid-sucrose sols set to a firmer jelly than the sols containing any of the other sugars. Crystalline formation was found in the pectin-citric acid-sucrose sols at a higher pH value than in the jellies containing dextrose or lactose. No visible crystals were found in the pectin-citric acid-fructose jellies. In consideration of the data obtained, it seems feasible to postulate that the mechanism for gelation of pectin-acid-sugar sols may depend a great deal upon the specific effect of the acid upon the pectin fibrils.—*A. Ohn.*

6444. **OPPENHEIMER, HERMANN. Osmotische und Saugkraftmessungen an unseren Kulturpflanzen. III. Gemüse und Handelsgewächse.** *Fortschr. Landw.* 2(7): 215-219. 1 fig. 1927.—The plants which mature early and especially those which are forced, show higher osmotic values (shown by resistance to plasmolysis) than the more slowly maturing kinds which ripen later. Plants that are resistant to heat and cold also have a higher osmotic value than those that are not. A regularity existed between absorption power and length of developmental period; and the product of the absorption power and length of developmental period is a constant for each kind of plant. The relation between absorption power and yield, just as between yield and length of developmental period, shows no regularity. The investigated sp. from the same field of origin had approximately equal osmotic values.—*Author's summary (transl. by E. T. Bartholomew).*

6445. **PEIRCE, GEORGE J. The movement of starch suspensions through vascular bundles.** *Amer. Jour. Bot.* 16(10): 852. 1929.—Abstract.

6446. **SELIBER, G., und R. KATZNELSON. Der Einfluss der Zusammensetzung des Nährbodens auf das Gewicht und den osmotischen Wert der Hefezelle.** *Protoplasma* 7: 204-231. 1929.—The determination of the number of cells in 1 gm. of yeast in relation to the wt. of the yeast cell cultivated in colonies with varying sugar concentration has shown that with the increase of the sugar concentration the number of cells in 1 gm. of yeast first lessens and consequently the wt. of each cell increases, but with further increase the number increases and the wt. lessens. At a concentration of 35% sugar the wt. of the cell approaches a minimum. The number of the cells in relation to the wt. of a cell depends on the nature of the peptone. On the basis of the alteration of the wt. of the yeast cell after a stay in salt solutions of varying strength, is made a method of defining the osmotic value of the yeast cell. It is claimed that as the sugar concentration increases, the osmotic value of the yeast cell increases but this is not proportional for all concentrations and not all high concentrations show this increase in comparison to all lower. Yeast on glucose solutions shows a lower value than that on sucrose. NaCl and NaF solutions of the proper strength sharply increase the values.—*L. Moyer.*

6447. **[SHOLOKHOVA, V. N.]** ШОЛОХОВА, В. Н. Накопление пластических веществ в пшенице люте-сценс No. 62, ячмене, просе No. 853, горчице под влиянием повышения при помощи Na_2SO_4 осмотического давления почвенного раствора на 1, 3, 5 атмосфер по данным 1925 г. [**The storing of plastic materials by plants under increased osmotic pressure of the soil solution.**] Саратовская Областная Сельско-Хозяйственная Опытная Станция. Краткий отчет о работах отдела полеводства. [*Saratov Agr. Exp. Sta. Short Repts. Saratov, USSR.*] 1925-26: 152-156. 1927.—Increasing the osmotic pressure of the soil solution from 1 to 3 atmospheres had a slight effect on plant development; an increase to 5 atmospheres produced a considerable effect apparent even in the early stages of development. Thus tillering of wheat was slightly retarded, and in barley increased. Increased osmotic pressure (a) decreased the yield of wheat and millet more than that of barley and mustard, (b) increased the content of N and by materials in the grain and straw of wheat, but decreased their absolute yield, and (c) increased the content of dry materials of the grain and straw of millet. Under these conditions, however, the content of N and dry materials in the grain and straw of barley was slightly decreased both in % and in absolute quantity; but in mustard the content of N and dry materials in the grain was increased.—*G. A. Lebedeff.*

6448. **STEWARD, F. C. Phosphatides in the limiting protoplasmic surface. 1. A review with special reference to the plant protoplast.** *Protoplasma* 7: 602-621. 1929.—The article is a review and concludes with the statements that notwithstanding the varied properties of the lecithin molecule, the experimental justification for many of the theoretical speculations regarding the rôle of this, or related substances, in plant cells is either lacking or of controversial significance. The paramount importance of phosphatides in nuclear behavior and hereditary phenomena seems to be overemphasized. Much indirect evidence indicates that fat-like substances have some function in the plant protoplasmic surface. To ascribe predominant importance to them as a group, more especially to any specific substance like lecithin or related phosphatide, seems to be at present unjustified.—*From author's summary.*

6449. **STOCKER, OTTO. Über die Messung von Bodensaugkräften und ihrem Verhältnis zu den Wurzelsaugkräften.** *Zeitschr. Bot.* 23: 27-56. 2 fig. 1930.—The suction force of a soil may be measured within ± 1 atmosphere by the use of strips of filter paper saturated with cane sugar solutions. The value of this force is of great importance in the water economy of the plant. If one determines the suction pressure of the absorbing cells of the root, at the same time one may calculate the pressure gradient with which the plant draws water from the soil. The suction force of different strata in the alkali steppes of Hungary varies from 5 to over 400 atmospheres. On the other hand the suction pressure values of the root cells of plants growing on these soils, even in dry periods, are only about 40 atmospheres, and following rain periods drop to approximately 7. In general, the pressure gradient between root-cell and soil does not exceed 2-7 atmospheres. The root hairs of these plants die when the suction force of the soil approaches 30 atmospheres but quickly form again with rain. Thus, these steppe plants make up a very versatile group, their vitality fluctuating with the quickly changing soil conditions.—*O. Stocker (transl. by J. D. Wilson).*

6450. **URSPRUNG, ALFRED. The osmotic quantities of the plant cell.** *Proc. Internat. Congress Plant Sci., Ithaca, N. Y.*, 1926. 2: 1081-1094. 4 fig. 1929.—The quantities: suction force of the cell, suction force of the contents of the cell, and wall pressure or turgor pressure, are defined and illustrated. The confusion re-

sulting from failure to separate these forces in practice is pointed out. It is shown that in beech and ivy the suction force of the cells increases from the ground upward, and in a single leaf from the vicinity of a vein to more distant regions. In the absorbing root of *Vicia faba* the suction force increases from the epidermis through the cortex, but the endodermis, pericycle, and vascular parenchyma show lower values. By a special method it was determined that the outer sides of these tissues have a higher suction force than the cortical cells, while the inner sides have very low or even negative values. By a simplified method the mean suction force of tissues in the field was measured, and high values are correlated with low humidity and low soil moisture. Measurements of turgor pressure showed high values correlated with the opening of stomata, but low turgor pressure and high suction force were found in regions of most rapid growth in roots.—*H. H. Clum.*

6451. **WEBER, FRIEDL. Plasmolyze-Zeit-Methode.** *Protoplasma* 5: 622-624. 1928-1929.—The form of the plasmolyzed protoplast, i.e., whether convex, concave, or angular, indicates the viscous and adhesive state of the protoplast. The time required to plasmolyze, which may be instantaneous or infinite, is also an indication of the physical properties of protoplasm.—*W. Seifriz.*

6452. **WEBER, FRIEDL. Plasmolysezeit und Lichtwirkung.** *Protoplasma* 7: 256-258. 1929.—The viscosity of the protoplasm of mesophyll cells is much higher in light than in darkness.—*W. Seifriz.*

6453. **WEBER, FRIEDL. Zentrifugierung und Protoplasma-Viskosität.** *Protoplasma* 7: 444-445. 1929.—Previous centrifuging has no effect on plasmolysis form and time. Centrifuging has no effect on viscosity.—*W. Seifriz.*

6454. **WEBER, F. Plasmolyse-Ort.** *Protoplasma* 7: 583-601. 14 fig. 1929.—The positive "place of plasmolysis" is the point where the protoplast clings to the cell; the negative one is the point where the plasmolyzed protoplast is free from the wall. Usually there are numerous such points, the number of which is often characteristic.—*W. Seifriz.*

6455. **WEBER, FRIEDL. Plasmolyse in verdünntem Gewebesaft.** *Protoplasma* 8: 437-439. 1929.—The ripe berries of *Polygonatum officinale* if crushed on a slide in distilled water, enter at once into apparent plasmolysis. *Elodea* leaves are not plasmolysed if added to the water used. This is supposedly due to the complete crushing of some cells and the production of a mixture irritating if not hypertonic to the whole cell.—*L. Moyer.*

HYDROGEN ION CONCENTRATION

6456. **ARMSTRONG, J. I. Hydrogen-ion phenomena in plants. I. Hydrion concentration and buffers in the fungi.** *Protoplasma* 8: 222-260. 7 fig. 1929.—In *Hypholoma fasciculare,* phosphates account for only half the buffering in the pH range 6.0-7.0 while in *Coprinus micaceus* the buffer complex is composed of phosphate, oxalate, and an unknown but small quantity of citrate, the phosphate accounting for all the buffering in the range pH 7.0-7.5. In *Collybia velutipes* the buffer complex is composed of phosphates, malates, and citrates but phosphates account for only half the buffering in the range pH 6.5-7.0.—*From author's summary.*

6457. **ARMSTRONG, J. I. Hydrogen-ion phenomena in plants. II. An investigation of the Buffer complex of sap from stems of Pelargonium sp.** *Protoplasma* 8: 313-343. 2 fig. 1929.—The expressed sap from young and mature stems and leaves has a low initial pH, in the region of pH 4.0. Organic acids constitute the major part of the buffer complex at the initial pH of the sap. The acids found and estimated include oxalic acid 0.0573 M., malic acid 0.0337 M., citric acid 0.0066 M., and tartaric acid 0.003 M.; and the contributions made by all these buffer systems to the buffering exhibited by expressed sap are considered in detail.—*Author's summary.*

6458. **ARMSTRONG, J. I. Hydrogen-ion phenomena in plant tissues. III. The acidity of certain cell walls considered in relation to the higher fatty acids.** *Protoplasma* 8: 508-521. 1930.—Higher fatty acids belonging to both the acetic or saturated series and the oleic or unsaturated series, together with certain derivatives of oleic acid, notably ricinoleic or suberinic acid, are tested with a series of 9 indicators recently used in an investigation of the pH of plant cells and tissues.—*Author's summary.*

6459. **INGOLD, C. TERENCE. The hydrion concentration of plant tissues. X. Buffers of the potato tuber.** *Protoplasma* 6(1): 51-69. 4 fig. 1929.—The use of the "buffer index," dB/dpH, to express buffer capacity is discussed. The buffer index of the potato tuber sap increases from an average value of 0.0079 at pH 6—7 to 0.0105 at pH 5—6 and 0.026 at pH 4—5. The sap of the tuber is much more strongly buffered than that of the leaflets. The buffer index curves of the leaflets and of sunflower hypocotyl sap are very similar. Inorganic phosphates in the sap account, on the average, for 30% of the buffer index at pH 6—7. At pH 5—6 they account for about 8% and at pH 4—5 for less than 1%. In a particular case, citrate in the boiled and filtered sap accounted for 22.5% of the buffer index at pH 4—5, 39% at pH 5—6, and 19% at pH 4—5.—*W. Seifriz.*

6460. **LOEHWING, WALTER F. Sap hydrion concentration as a factor in plant metabolism.** *Proc. Iowa Acad. Sci.* 35: 135-139. 1928(1930).—Sterile muck soils of high acidity were used. Application of lime and potash often proved harmful, due largely to low hydrion concentration of the sap which caused precipitation of Fe in the lower parts of the plant. Examples (cited) show that increased absorption of some mineral nutrients may involve reduced intake or improper movement of others.—*H. S. Conard.*

6461. **ROBERTSON, I. M., and A. M. SMITH. A capillary electrode suitable for the determination of the hydrogen-ion concentration at a point on plant tissue.** *Chem. & Indust.* 49(9): 120t-121t. 1 fig. 1930.—Potato tubers were examined with aid of the apparatus described for variation of pH value from point to point on the tissue and results are tabulated. The pH value of pulp was always higher than that of tissue, due probably to loss of CO_2 present in the sap.

WATER RELATIONS, SAP MOVEMENT

6462. **HEINICKE, ARTHUR J. A method for studying the relative rates of transpiration of apple leaves and fruits.** *Proc. Amer. Soc. Hort. Sci.* 26: 312-314. 2 pl. 1929(1930).—The water lost by the leaves is taken up by $CaCl_2$ contained in small weighing bottles held to the leaf by a special clamp. The amount of water given off is determined by the increase in the wt. of the bottle and its contents. The light conditions are not interfered with. The values obtained by this method were comparable with those of other methods in common use. The method does not give absolute values of transpiration, but is convenient for studies involving comparisons in the rates of water loss where the entire plant cannot be used.—*A. J. Heinicke.*

6463. **KÔKETSU, R., und S. TSURUTA. Anwendung der "Pulvermethode" für vergleichende Bestimmungen der Transpirationsgrösse. [The "powder method" in comparative determinations of transpiration magnitudes.]** *Arb. Bot. Lab. Kaiserlichen Kyushu-Univ.* 23p. 253-266. 1929.

6464. **KOYAMA, TAKUJI, and YOSISUKE TAKIGUTI. Growth and water requirement of young soybean plants in auto-irrigated soils, as related to the water-supplying power of the soil.** [Japanese, with English summary.] *Bulteno Sci. Fakult. Terkult. Kjusu Imp. Univ.* [*Fukuoka, Japan*] 4(2): 53-65. 1 fig. 1930.—Soybeans were grown in soil mixtures of clay and sand in different proportions in porcelain containers, each being auto-irrigated under a different hydrostatic pull (Livingston's method). The growth and the water requirement of the plants were compared; also the water-supplying power of the soil was determined by

Livingston's "soil point." The growth rate, the fresh and the dry wt., and the leaf area were in the same order as the water-supplying power of the soil. A conspicuous relation was observed between the wt. of 1 c.c. of powdered tissue of the plant (determined by Koketsu's "Pulvermethode") and the water-supplying power of the soil, but this relation varied with age. At a month old, the greater the water-supplying power the higher was the apparent specific gravity of the powdered tissue. With older plants this was reversed. The higher the water-supplying power, the greater was the total transpiration loss. Likewise when the plants were young, the more water they transpired to produce 1 gm. of dry matter, but when they grew older, the relation became quite reversed. These facts suggest that the relation between the physiological condition of the plant and the water-supplying power of the soil varies with age.—*From authors' summary.*

6465. **MASKELL, E. J., and T. G. MASON. Studies on the transport of nitrogenous substances in the cotton plant. II. Observations on concentration gradients.** *Ann. Bot.* [*London*] 43(172): 615-652. 2 fig. 1929.—Upward movement of N in the wood, its elaboration in the leaves, and downward transport via the bark towards the roots, as reported in Part 1, is here confirmed. The downward transport of N takes place against a concentration gradient of total N, and of the total organic crystalloid (non-protein) N in the bark, while the parallel transport of carbohydrates is along a definite gradient of sugar concentration. Two possibilities are considered: (1) some only of the crystalloid N fractions are concerned in longitudinal transport, the positive gradient in these fractions being masked by negative gradients in the other fractions; (2) there is a positive gradient of some or all of the crystalloid N fractions in the actual conducting cells, but this is masked by negative gradients of the same fractions in the other tissues of the bark. As to (1), chemical analysis establishes well marked negative gradients in asparagine (acid amide) N and in amino-acid N, which together more than account for the observed negative gradient in organic crystalloid N. There results a positive gradient in the residual N fraction, but this gradient is relatively small and, on the data available, is not statistically significant. As to (2), the vertical gradients of asparagine N, amino-acid N and residual N are much the same in the inner half of the bark (which contains most of the sieve-tube groups) as in the outer half. The radial distribution of N fractions across the bark (subdivided into inner, middle, and outer zones) indicates that the amino-acid and residual N fractions occur mainly in the sieve-tubes, while asparagine is present in highest concentration in the rays. This localisation suggests that residual N or amino acids may be concerned mainly with longitudinal transport, and asparagine mainly with storage. The organic crystalloid N of the leaf parenchyma is chiefly residual N, and this fraction shows a marked concentration gradient out of the parenchyma through main veins and petiole to the bark of the main axis. There is a small gradient of amino acids in the same direction, but the gradient of asparagine is in the opposite direction. It is possible that some part of the residual N fraction may form the head for transport throughout the plant, but until some closer analysis of the dynamic and storage components of the observed gradients is possible, no definite conclusions as to the mobile fraction or fractions can be attempted.—*T. G. Mason.*

6466. **MATSUDA, KIYOKATSU. Ueber die Wassergehaltsveränderung der sich entwickelnden Reiskörner und die Beziehung zwischen ihre Entwicklung und Reifestadien.** [Japanese.] *Proc. Crop Sci. Soc. Japan* 3: 58-65. 1929.—The length of developing rice grains was determined during the milk stage while the breadth and thickness of the grains was first measured at the beginning of the stage of yellow ripeness. Increases in fresh wt. of rice grains continued for some time after the beginning of yellow ripeness and increases in dry wt. continued still longer. The water content reached its maximum at the milk stage and decreased gradually during yellow ripeness to maturity. The water content of the grain at the time of blooming was 86% of the fresh wt. and only 19% 49-51 days later.—(*Courtesy Japanese Jour. Bot. Transl. by A. D. Moinat*).

6467. **MONTEMARTINI, L. Sul ordine di caduta delle foglie nei pioppi e nei gelsi.** [Leaf fall of poplars and mulberries.] *Atti. Soc. Ital. Sci. Nat.* 69(1): 23-29. 1 pl. 1930.—In the Po valley the last leaves to fall from the poplar are those at the ends of the branches, the youngest; whereas the last mulberry leaves are those at the base of the branches, the oldest. This is correlated with the difference in the type of transpiration of these trees. In the poplar, transpiration is chiefly stomatal, and the young leaves have the more mobile stomata, so that they control water loss better. In the mulberry, the transpiration is chiefly cuticular, and the older leaves are the better protected.—*L. Montemartini (transl. by H. S. Wolfe).*

6468. **NAKANO, HARUFUSA. On the remarkable powers of water absorption by the leaves of Polypodium lineare Th., with special reference to the ecology of this plant.** *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1901. 1926(1928).—Abstract.

6469. **NEWTON, R., and W. H. COOK. The bound water of wheat-flour suspensions.** *Canadian Jour. Res.* 3(6): 560-578. 1930.—The bound-water method was modified for use with flour suspensions and provided a simple means for the direct measurement of the approximate hydration of the colloidal constituents in dilute lactic acid. The average hydration of the dry matter in 15% suspensions was 40-50%, the value being slightly higher in washed suspensions. Starch maintained a hydration close to 30% under all conditions investigated. The prepared proteins, in dilute lactic acid, were hydrated about 85%. The calculated hydration of the proteins as they occurred in the flour was about 100% in unwashed and 200% in washed suspensions. No significant differences were found in the hydration of strong and weak flours, and it is thought that such differences as may exist are too small to be major factors in baking quality. The experimental results are harmonized with the facts concerning viscosity and behavior of bread dough by assuming micellar aggregation of the gluten.—*Authors' summary.*

6470. **PARK, O. W. The influence of humidity upon sugar concentration in the nectar of various plants.** *Jour. Econ. Ent.* 22(3): 534-544. 3 fig. 1929.—Sugar concentration in nectar varied inversely with relative humidity. Correlation between these 2 factors was much closer in some types of flowers than in others. The Abbé refractometer was highly satisfactory for the work. —*Author's summary.*

6471. **REED, HOWARD S. The swelling of citrus fruits.** *Amer. Jour. Bot.* 17(10): 971-982. 1930.—Oranges and lemons were submerged in test solutions and the volume changes were registered by an auxograph. Both fruits absorbed water, acids, bases, and salts with resulting increases in volume. Solutions of compounds which coagulate pectins caused incipient swelling, but it was followed by shrinkage. The translocation of liquids appears to depend upon their passage through the layers of hydrophilic colloids on the walls of the mesocarp cells and only to a small degree upon the participation of living cells. The juice sacs in the locules of the fruits have sufficient suction pressure to pull water from the hydrophilous colloids in the mesocarp. The prompt expansion of fruits in water indicates that there was an unsatisfied capacity for imbibition in most of the fruits. —*H. S. Reed.*

6472. **SCHROPP, W. Beiträge zur Frage der Regelung der Standorts- und Wasserverhältnisse bei Vegetationsversuchen in Gefässen.** *Angewandte Bot.* 11(5): 461-552. 24 fig. 1929.—The importance of the pot culture method justifies an examination of this technique. The relative position of the pots takes a place of special importance. This question and that of water relations

are examined in this paper. The following points are considered: How will soil temp. and the use of water in each pot be influenced by the relative position of the pot? How will tillering, length of each plant, yield, and soil reaction in each pot be affected? To answer these questions 2 experiments were performed with summer barley and summer rye, each on 2 trucks. One series involved 9 fertilizer treatments, the other no differential fertilizing. All of the factors could not be readily differentiated, so that indirect methods of interpretation must be used. Especially useful was the application of probable error to the yields. An unfavorable judgement of the usefulness of the method of maintaining pots in position is not justified. With the customary arrangement of pots on one truck, with border pots on each end, the short-lived agricultural plants at least need not have their positions changed daily without introducing excessive experimental error. Rectangular boxes are recommended in order to utilize the space to the maximum, and to reduce the cost. The relative water-loss approximates very closely the values obtained by Hellriegel.—*W. Schropp (transl. by E. L. Proebsting)*.

6473. **SELIBER, G. Die Mutterknolle als wasserversorgendes Organ der Kartoffelpflanze.** *Angewandte Bot.* 12(3): 216-224. 1930.—By means of determination of the dry wt. of the wilting plant with the mother tuber attached, the capacity of the latter to supply the daughter plant with water was determined. It was proven that the plant is able to draw water from its seedpiece, or the seedpiece may supply water to the daughter plant. Possibly this capacity varies with different varieties. The solution of the question as to whether the low transpiration rate of the plant with the mother tuber attached is due to (1) the decreased absorptive power of such a plant or (2) to a particular characteristic of the mother tuber must remain for future investigation. —*G. Seliber (transl. by A. D. Moinat)*.

6474. **STÅLFELT, M. G. Die Abhängigkeit der Spaltöffnungsreaktionen von der Wasserbilanz.** *Planta Arch. Wiss. Bot. Abt. E. Zeitschr. Wiss. Biol.* 8(1/2): 287-340. 16 fig. 1929.—Three reaction systems are recognized in the opening and closing of the stomata: the passive, the photo-active, and the hydro-active. The operation of these 3 systems is related to the water content of the plant. Thus, when the water content is supra-optimal the guard cells of the stomata are caused to open and close by the changing pressure of the turgescent cells of the adjacent epidermis and mesophyll; and, since the guard cells act only in a passive manner, this is called the "passive" system. The photo-active system results from the effect of light in influencing either the osmotically active substances within the guard cells, or by a stimulative effect of light upon the pressure equilibrium between the guard cells and the surrounding tissue. The opening and closing is particularly sensitive to the photo-active system at the time of optimum water content; if the water content is increased, then the passive system comes into play, and at a certain water content a delicate balance between these 2 systems results. When the water content becomes sub-optimal, then the stomatal movement is dominated largely by the hydro-active system, in which process the stomatal cells take an active and not merely a passive part. The hydro-active reaction does not come into operation at once after the water loss but becomes effective a few min. afterward. Here again, as the water content falls below the optimum a stage is reached in which the photo-active and hydro-active systems are nicely balanced as to their importance in the regulation of the stomatal opening. Observation on *Picea excelsa* in the field, and measurements on *Vicia faba* in the laboratory, furnished the data for these conclusions. The interrelations of the 3 factors at different water contents, at different hrs. of the day and under different external conditions are given.—*F. E. Denny*.

6475. **SU, M. THET, and ERIC ASHBY. The interaction of factors in the growth of Lemna. 2. Technique for the estimation of dry weight.** *Ann. Bot. [London]* 43(170): 329-332. 2 fig. 1929.—In order to avoid significant decomposition, also excessive expenditure of time, on the one hand, and risk of loss on the other by overheating, samples of *Lemna* dried for ½ hr. at 50° C. in a vacuum (5mm. of Hg) yielded consistent results. The drying apparatus is here described.—*G. J. Peirce*.

MINERAL NUTRIENTS, SALT RELATIONS

6476. **BERTRAND, GABRIEL, et VORONCA-SPIRT. Recherches sur la présence et la répartition du titane dans les plantes phanérogames.** *Ann. Sci. Agron.* 46: 551-60. 1929.—To determine whether Ti is a component part of the plant structure or merely present in the extraneous deposit of dust and dirt, 53 phanerogams and parts of plants were analyzed. After preliminary treatment to remove adhering dust and dirt, sufficient fresh material was dried and ignited to furnish 10-50 gm. of ash. After removal of the SiO_2 by HF, the Ti was determined by the method of Weller modified to obviate interference by Fe and phosphates. Ti was found in all the plants examined. As in the case of Fe, Mn, Zn, etc., the green parts, especially the leaves, contained the largest amount. In the seed almost the whole amount was found in the integument. The parenchyma contained only very small amounts. It is, therefore, concluded that Ti like Fe and Mn is a physiological element.—*K. S. Markley*.

6477. **BROOKS, S. C. Composition of the cell sap of Halicystis ovalis (Lyng.) Areschoug.** *Proc. Soc. Exp. Biol. & Med.* 27(5): 409-412. 1930.—The anomalous chemical composition (particularly as to ratio K: Na) of the cell sap of *Halicystis ovalis* (reported under the name *Valonia ventricosa*) found by Osterhout and Dorcas is considered, and their analyses of this alga and of *V. macrophysa* are criticized on the grounds that the floating plants used were possibly rendered abnormal by being torn loose from their normal habitat. Analyses are reported of a Pacific coast *Halicystis* morphologically identical with *H. ovalis*, from its normal position, and of *V. ventricosa* from Tortugas, and are compared with Brooks' data on *V. macrophysa* from Tortugas. In these 3 sp., the K: Na ratio was 1.50: 1, 10.58: 1, and 5.53: 1, respectively, as compared with 0.0271: 1 in sea water (Brooks) and 0.0278: 1 in the sap of *Halicystis* reported by Osterhout and Dorcas.

6478. **CHAPMAN, G. W. An easily constructed form of micro colorimeter.** *Analyst* 55(652): 443-444. 1930.—The apparatus described was designed for colorimetric determination of Fe and Mn in ash from sap of plant fragments.

6479. **FREAR, DONALD E. The adaptation of the Benedict-Denis method to the determination of sulfur in plants.** *Jour. Biol. Chem.* 86(1): 285-289. 1930.—The Benedict-Denis solution may be used alone as an oxidizing agent for determining S in plants, giving results which are in close agreement with the values obtained by the official Na_2O_2 fusion method. The use of any preliminary treatment of the sample is thus avoided, thereby making the determination shorter and simpler. While these results are only for corn, buckwheat, cabbage, spinach, and onions, these crops represent 5 different families and a wide range of S content; and the methods here used may be applied to any crop with the expectation of reasonably accurate results.—*Author's summary*.

6480. **GREAVES, J. E., and C. T. HIRST. The mineral content of grains.** *Utah Agric. Exp. Sta. Bull.* 210. 38 p. 1929.—The ash contents of wheat, oats, and barley, respectively, were materially raised by increased quantities of irrigation water on a productive calcareous Utah soil, the maximum % of ash being produced at 40-50 in. of irrigation water. Ash content in wheat varied slightly with variety. Ash contents of wheat, oats, and barley varied greatly with the section of Utah in which they were grown. The basic elements Ca, Mg, and K were studied individually. Their %, respectively, in the different cereal grains varied between wider extremes than did total ash, but in substantially the same order. Individual studies with P, S, and Fe, the acid forming

elements, showed variations of a similar nature.—*M. J. Blish.*

6481. [GRISHAEVA, K. F.] ГРИШАЕВА, К.Ф. Влияние солей в уравновешенных растворах на накопление пластических веществ в культурных растениях. [The effect of salts in balanced solutions on the storing of plastic materials by cultivated plants.] Саратовская Областная Сельско-Хозяйственная Опытная Станция. Краткий отчет о работах отдела полеводства. [*Saratov Agr. Exp. Sta. Short Repts., Saratov, USSR.*] 1925-26: 139-144. 1927.—Wheat, millet, sorgo, and flax showed different resistances to the same concentration of balanced solution of soil chlorides. The most resistant was wheat, which withstood 0.5 *N*, and gave only a very slightly diminished yield at 0.1 *N*. The transpiration coefficient of all plants was lowered with increasing concentration of the salts to 0.1 *N*. The content of *N* and dry materials in the grains and straw increased with increase of salts in the soil, except in millet, in which the % of *N* and dry materials in grain and straw decreased.—*G. A. Lebedeff.*

6482. **KOEHLER, Z. Sur les composés phosphorés des plantes. V. La solubilité des composés phosphorés des embryons de seigle.** *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B (1[Bot.])* 1829 (2/7): 237-254. 1929.—Previous work has established that aqueous extracts of various embryos (maize, barley, etc.) show a ratio between organic and inorganic phosphates depending on the pH of the solvent employed, using dilute solutions of HCl, acetic acid, and rarely NaOH. With HCl (0.01% or greater) consistent results were obtained on the relation of the organic to inorganic phosphates. At a lower concentration of acid the phosphatases are stimulated with a consequent rise in the amount of inorganic phosphate at the expense of the organic. An analysis of air-dried, defatted rye embryos gave a total phosphate content of 3.548% P_2O_5, of which 11% approximately is inorganic.—*O. F. Black.*

6483. **PRÁT, S., und B. MINASSIAN. Über die Stoffaufnahme und Wasserabgabe bei Moosen.** *Protoplasma* 5: 161-167. 6 fig. 1929.—Strips of filterpaper with 1 end in a nutrient solution resorb the solution in unaltered concentration. Plants of *Polytrichum* behave in precisely the same way.—*W. Seifriz.*

6484. **RIPPEL, AUGUST. Über den Zusammenhang zwischen dem Aufnahmeverlauf der Bodennährstoffe bei den höheren Pflanzen und der Beweglichkeit dieser Stoffe in der Pflanze. (Untersuchungen über physiologisches Gleichgewicht bei Pflanzen, III.)** *Biochem. Zeitschr.* 187 (4/6): 272-282. 4 fig. 1927.—Determinations of the mineral substances in *Helianthus annuus* (sand cultures) were made at 15 growth periods. Taking the quantity in mature plants as 100, the relative amount in young plants (period 7) was: dry matter 8, N 50, K 37, P 16, Mg 12, Ca 12, S 11. This is taken to indicate that the more mobile ions are absorbed earlier than the less mobile. The absolute amounts in plant tops per pot (5 plants) at this period were: N 0.77 gm., K_2O 1.67, P_2O_5 0.128, MgO 0.186, CaO 0.742, and SO_3 0.187 gm.—*S. H. Eckerson.*

6485. **RUNNEHJELM, DAGMAR. Mikro-Eisen-Bestimmungen an chlorophyll-defekten Blättern.** *Biochem. Zeitschr.* 224 (4/6): 481-486. 1930.—Micro analyses of the total Fe content according to the Friedenthal-Lachs-Schönheimer-Oshima method were carried out with leaves deficient in chlorophyll. Although no difference in total Fe content could be found between normal leaves of barley (albino type) and those deficient in chlorophyll, white leaves of *Tradescantia,* which lacked chlorophyll, showed more than twice as much Fe as normal leaves.—*Author's summary (transl. by C. J. Lyon).*

6486. **SAMUEL, GEOFFREY, and C. S. PIPER. Manganese as an essential element for plant growth.** *Ann. Appl. Biol.* 16 (4): 493-524. 3 pl., 1 fig. 1929.—The conclusions of certain previous investigators that Mn is an essential element for plant growth have been confirmed by means of water-cultures. Mn becomes necessary to plants at an early seedling stage, and remains necessary until a late stage in growth. The symptoms of Mn deficiency are essentially an arrest of development followed by death of the undeveloped tissues at the growing points, and the use of the word chlorosis as the primary symptom is misleading. In many cases a special type of chlorosis of the upper parts of the plant does occur before death of the tissues. Rye developed to maturity in water-cultures on an amount of Mn which did not allow the complete development of oats. A concentration of Mn of 1 part in 50,000,000 parts of nutrient solution allowed complete development of rye, and would probably be sufficient for oats also if a method of continuous solution change were arranged. Evidence is given that the minimum quantity of Mn which will allow healthy growth of Algerian oats is about 14 parts per million of the dry matter at the flowering stage. On certain soils oats are unable to absorb this minimum quantity and they then suffer from the Grey Speck disease, a true Mn deficiency disease which can be cured by application of a soluble Mn salt. On soils with abundant available Mn considerably more is absorbed by oats than is required for normal development. The amount absorbed varies greatly, and probably depends to some extent on soil reaction and soil aeration. Analyses given show that a number of plants, when growing on a red clay loam soil on which no deficiency disease occurs, have a much higher Mn content than similar plants taken from soils on which oats suffer from Mn deficiency. Such factors as the presence of organic matter, or excess of Ca ions, which have at various times been claimed as causes of the Grey Speck disease of oats, have been shown to play no part in the appearance of this trouble in water-cultures where a soluble Mn salt is present. These factors cannot themselves render Mn unavailable when it is present in a soluble form. This does not exclude the possibility that they may later be found to have some effect, in conjunction with other factors as yet undetermined, in rendering Mn unavailable in certain soils. None of 10 different rarer elements tried, nor the combination Zn, Cu, Bo, and Al, was able to replace Mn in the growth of oats.—*Authors' summary.*

6487. **STOKLASA, JULIUS. Die Resorption des Jods durch das Wurzelsystem der Pflanze.** *Protoplasma* 8: 199-214. 1929.—Hydrophytes and halophytes accumulate a marked quantity of I.—*W. Seifriz.*

6488. **TUBBS, F. R. Physiological studies in plant nutrition. II. The effect of manurial deficiency upon the mechanical strength of barley straw.** *Ann. Bot.* [*London*] 44 (173): 147-160. 5 fig. 1930.—The force in gm. required to crush 1 cm. of stem radially is taken as a measure of strength. The strength of succeeding internodes of fully-manured plants falls off rapidly. N and P deficiency results in a large increase in strength of the lower internodes, while K starvation decreases the strength of the lower and increases that of the middle internodes. The effects of manurial deficiency are most marked in the lower internodes, the upper ones approximating to the normal. Variation in thickness of mechanical tissues follows that of strength, but is not sufficient to account for the large differences observed. Total and partial linear correlations between strength and the morphological status of the internode, and between strength and thickness of the sclerenchyma, lignified parenchyma, and unlignified parenchyma have been calculated. It is concluded that the observed fall in strength of succeeding internodes is due both to decrease in efficiency of the mechanical tissues and also to decrease in their actual amount. Equations connecting strength and morphological status of the internode give a good fit in the fully manured, N-deficient and P-deficient series. The relation between strength and internode number is logarithmic (the strength of each internode being a constant fraction of that next below), the value of the fraction being dependent on the type of manuring applied. The ratio of the external radius to the internal radius of the mechanical tissues is constant for in-

ternodes of the same status, independent of manuring. It appears that the mechanical function of the elements composing them is determined at a very early stage. The observed effects of mineral deficiency may be explicable on the assumption that K is essential to the production of an efficient mechanical tissue.—*Author's summary.*

6489. **WALLACE, T. Experiments on the manuring of fruit trees. III. The effects of deficiencies of potassium, calcium, and magnesium, respectively, on the contents of these elements, and of phosphorus in the shoot and trunk regions of apple trees.** *Jour. Pomology & Hort. Sci.* 8(1): 23-43. 1930.—Eighty maiden apple trees of Stirling Castle variety worked on Malling Type I rootstock were used, divided into 4 equal groups for the 4 treatments—complete nutrient, Ca omitted, Mg omitted, and K omitted. Planting was done Jan., 1926, in 10-in. waxed pots containing quartz sand. The first applications of nutrient solution were given Feb. 25. Each group was again subdivided into a summer pruned group and a winter pruned group. The experiment was continued for 3 seasons and detailed growth observations and chemical analyses of leaves, stem, petioles, and shoots (as bark and wood) were made each season. K omission resulted in increased shoot growth, leaf scorch, and defoliation of shoots. Ca omission produced slightly increased shoot growth, relatively large leaves, and breakdown of leaf tissue in patches. Mg omission effected a great reduction in shoot growth after the first season, and after 2 seasons the trees were unable to make appreciable shoot growth. The omission of Mg produced the most severe leaf breakdown of the 3 omission tests. Reduction in K_2O and MgO content was effected in all material by omission of these bases, but omission of Ca did not make such large reduction of CaO. The respective omissions possibly affected the P_2O_5 content in dry matter in the various parts of the trees, this content being generally high in the leaves and shoots and low in the main stems.—*M. C. Merrill.*

6490. **WALLACE, T. Experiments on the effects of leaching with cold water on the foliage of fruit trees. I. The course of leaching of dry matter, ash and potash from leaves of apple, pear, plum, black currant and gooseberry.** *Jour. Pomology & Hort. Sci.* 8(1): 44-60. 1930.—This work was done in 1927 on 4 varieties each of the fruits named. Two samples of leaves, each weighing approximately 20 gm., were taken from each variety, one being used as a control and the other given 4 successive leachings (24 hrs. each) in a 1-liter cylinder of distilled water at laboratory temp. Only the laminae were leached. The leached leaves of all varieties lost considerable proportions of potash, ash, and dry matter, the leached proportion of potash being greater than that of ash, and that of ash being greater than that of dry matter. The ratios of the leached % of potash to ash and of ash to dry matter varied for the different fruits and varieties. Leaves of all varieties of apples and gooseberries were readily leached; pear leaves only fairly so; plum varieties showed much variation; black currant leaves were least readily leached. Summation curves indicate that the leaching was continuous; and the curves for potash, ash, and dry matter suggest that the same groups of materials were leached throughout the leaching periods.—*M. C. Merrill.*

6491. **WINTER, O. B., and O. D. BIRD. The determination of aluminum in plants. II. Aluminum in plant materials.** *Jour. Chem. Soc.* 51(10): 2964-2968. 1929.—The analytical procedure involves the slow ashing of the plant material, digesting the ash with HCl, removal of the iron and silica, and the determination of the Al by a colorimetric method previously described. The accuracy of the method was proved by analyses of samples of plant material to which known amounts of Al were added and by checking against other methods. Analyses of 76 kinds of dry plant materials showed a range in Al content from 2.0 p.p.m. in wheat flour to 850.0 p.p.m. in lettuce roots.—*E. N. Fergus.*

6492. **ANONYMOUS. Recherches sur la présence et la répartition du titane dans les plantes cryptogames.** *Ann. Sci. Agron. Franç. et Étrang.* 47(1): 1-3. 1930.—Titanium is ordinarily found in cryptogams as in phanerogams, except that in certain fungi the amount is consistently smaller (perhaps 10 times less) than is usually the case. This does not exclude a physiological rôle for Ti in plants, as in these sp. other elements, especially Mn, are also extraordinarily reduced.—*Author's résumé (transl. by J. J. Taubenhaus).*

PHOTOSYNTHESIS, CHLOROPHYLL

6493. **ALEXANDROV, W. G. Zustand und Tätigkeit der Chloroplasten bei verschiedenen klimatischen Bedingungen.** *Protoplasma* 6: 429-437. 1929.—At high temp. (33° C.) and strong sunlight, *Helianthus* and *Zea* store sugar instead of starch. The plastids alter in composition under such conditions; their permeability increases; they lose the sharp outlines of their contours and swell. Plastids of *Helianthus* swell more than those of *Zea* and are often destroyed. Plastids in different tissues of the same leaf are differently affected. To the number of indications which characterize the natural resistance of a plant to drought, there must be added the resistance of the plastids. A plant resistant to drought must have resistant plastids or higher temp. may so injure it that it cannot regain its normal condition.—*L. Moyer.*

6494. **BRIGGS, G. E. Experimental researches on vegetable assimilation and respiration. XX. The energetic efficiency of photosynthesis in green plants: some new data and a discussion of the problems.** *Proc. Roy. Soc. [London]* B105(734): 1-35. 2 fig. 1929.—The structural complexity of several photosynthesizing tissues is discussed. Equations are given for the absorption and transmission of light by *Monostroma* thallus. Measurements of photosynthesis were made on *Phaseolus vulgaris*, yellow elm, green elm, and *Sambucus nigra*. Yellow-red, green, or blue light was obtained from a 1500 watt lamp by means of gelatin filters. Incident energy was measured with a thermopile. The efficiency of photosynthesis was found to decrease from the red to the blue end of the spectrum. The results are discussed in relation to those of Ursprung, Reinke, Brown and Escombe, Wurmser, and Warburg and Negelein. The possible significance of the yellow pigments is discussed, and the efficiency of photosynthesis is considered from the point of view of photochemical theory.—*R. Emerson.*

6495. **CHOUCHAK, D. L'assimilation chlorophyllienne de l'acide carbonique par les feuilles vertes dans un champ électrique.** *Rev. Gén. Bot.* 41(488): 465-468. 1929.—The amount of CO_2 existing in the air before and after passing through a tube containing leaves of *Casuarina equisetifolia* was measured. The leaves, divided into 2 lots united by a Pt wire, are placed in a U-shaped tube which can be set in an electrical field of 1500 volts/cm. One lot takes a positive load, the other a negative one. The experiments show that the electrical field has no action in the darkness, but that, in the light, the leaves with positive load absorb a greater amount of CO_2 than those with a negative load. The action is reversible by inverting the direction of the field. The explanation must be sought in the number and properties of ions in the air, and the electrical state of the substances of the leaves.—*M. Homès.*

6496. **DOLK, H. E., und A. G. van VEEN. Über die Bildung von Sauerstoff aus Kohlendioxyd durch Eiweiss-Chlorophyllösungen. [Formation of O from CO_2 by protein-chlorophyll solutions.]** *Biochem. Zeitschr.* 185(1/3): 165-168. 1927.

6497. **GORDON, ROBERT B. Suggested equations for the photosynthetic reaction.** *Ohio Jour. Sci.* 29(3): 131-132. 1929.—Many investigators in this field agree that the photosynthetic process is composed of 2 reactions, one a chemical reaction with a temp. coefficient of about 2, and the other a photo-chemical reaction with a low temp. coeff. The 2 following equations are suggested as

a better representation of the probable behavior of chlorophyll in the process of photosynthesis:

(1) $6C_{55}H_{70}O_6N_4Mg + 6H_2O \rightarrow 6C_{55}H_{72}O_5N_4Mg + 6O_2$
(Chlorophyll "b" + water → Chlorophyll "a" + oxygen);

(2) $6C_{55}H_{72}O_5N_4Mg + 6CO_2 \rightarrow 6C_{55}H_{70}O_6N_4Mg + C_6H_{12}O_6$
(Chlorophyll "a" + carbon dioxide → Chlorophyll "b" + glucose).
—*Author's summary.*

6498. **GORSKI, FRANCIZEK. Recherches sur les méthodes de mesure de photosynthèse chez les plantes aquatiques submergées.** *Acta Soc. Bot. Poloniae* 6(1): 1-29. 4 fig. 1929.—The bubbles of gas set free in the course of photosynthesis by *Elodea canadensis* and *Potamogeton lucens*, and analyzed by means of a micropipette of special construction, consist of a mixture of O (21-50%), N (50-80%), and CO_2 (2%). The % of O increases with the intensity of light, and the curve of increase may be represented approximately by an equilateral hyperbola. The quantity of O contained in the bubbles is only approximately proportional to the rate at which bubbles are produced, being relatively greater for greater intensities of photosynthesis. Since gas analysis would take no account of the O absorbed by the water, whereas the curve of the total volume of gas set free parallels closely that of the total O produced, it is urged that methods based on the number or volume of bubbles give more exact results than those based on chemical analyses of bubbles.—*F. Gorski* (*transl. by H. S. Wolfe*).

6499. **GUTTENBERG, HERMANN von. F. A. Preisings Untersuchungen über den Kohlenhydratstoffwechsel immergrüner Blätter im Laufe eines Jahres.** *Zeitschr. Wiss. Biol. Abt. E. Planta* 6(5): 801-808. 4 fig. 1928.—It was attempted to follow the course of carbohydrate metabolism in native evergreen leaves (*Ilex aquifolium, Hedera helix,* and *Pinus cembra*) throughout the yr. in order to see whether leaves surviving the winter retained the same composition as in the previous summer. The exact quantitative methods caused much difficulty, but in spite of this the results indicated that old leaves, on the summer following, continued to metabolize carbohydrates, but in a way essentially different from that exhibited by the young leaves.—*O. F. Black.*

6500. **[HENKEL, P. A., and L. S. LITVINOV.] ГЕНКЕЛЬ, П. А., и Л. С. ЛИТВИНОВ. О сезонных изменениях фотосинтетической способности некоторых растений. [Seasonal variations in photosynthesis in certain plants.]** [German summary.] Известия Биологического Научно-Исследовательского Института и Биологической Станции при Пермском Государственном Университете. (*Bull. Inst. Rech. Biol. Univ. Perm.*) 7(3): 133-146. 1930.—Seasonal variations in the ability to photosynthesize were studied throughout the yr. in *Asarum europaeum,* an evergreen; in *Helianthus tuberosus,* an annual; and in *Fragaria vesca* (Victoria), intermediate in character. Photosynthesis was determined by Sachs' method under natural conditions and in the greenhouse. In the 3 sp. the intensity of assimilation in leaves decreased throughout the fall, finally reaching a minimum in which the loss of dry substance by respiration exceeded the gain by photosynthesis. The overwintering leaves (*Asarum* and *Fragaria*) were in a condition of anabiosis; no assimilation took place, and the loss by respiration, determined by comparison of the dry wt. per unit of surface in late fall with that in the spring, was not perceptible. On the approach of spring the leaves came out of anabiosis. In early spring the loss by respiration exceeded the gain by photosynthesis, but this condition was of short duration. The intensity of assimilation increased rapidly, reaching a maximum during the summer. The overwintered leaves of *Fragaria* and *Asarum* died in late spring and early summer, without having undergone any decrease in the intensity of assimilation. This annual periodicity in the photosynthesizing capacity of the plant is ascribed to (1) the effect of the annual succession of macro- and micrometeorologic factors on the assimilation process, and, more important, (2) the effect of these same factors on the photosynthetic apparatus, which brings about a persisting effect, or a complicated reaction of the organism, upon the change of external conditions.—*From authors' summary* (*transl.*).

6501. **LANZONI, F. Ricerche sulle screziature di Acer negundo L. b. variegatum Hort. I. [Variegation in A. n. variegatum.]** *Ateneo Parmense* 2(5): 481-487. 4 fig. 1930.—The specimen in question is a flourishing, very leafy tree derived by layering from a completely white offspring of a variegated tree. It has borne abundant but infertile fruit. It receives abundant sunlight, and the blanching is evenly distributed, as abundantly on the sunny as on the comparatively shaded sides. No full-grown leaf is entirely green; the green coloration rarely amounts to $\frac{3}{4}$ of the leaf surface, and sometimes is reduced to a mere discontinuous line following the leaf ribs perhaps half way, or even to a mere dot; but the tips of the twigs and the rudimentary leaves are green. The depth of coloring varies not so much from leaf to leaf as from one zone of the leaf to another. Histological examination showed that, while in leaves of ordinary specimens of *A. negundo* all 3 layers of palisade cells contain chloroplasts, in this variegated specimen the upper layer, even in the most deeply colored portion, contained none; in the paler portions 2 palisade layers were without chloroplasts; in the completely blanched zone there were no chloroplasts in any of the palisade cells; and these were reduced in volume. The flourishing condition of the tree compels acceptance of the blanching as a physiological, not a pathological condition. The peculiar distribution of chloroplasts may be an adaptation enabling the plant to make the most efficacious use of the light that reaches it.

6502. **MARCHLEWSKI, L., et A. SYZMANSKI. Studja w grupie chlorofilowej. [Studies in the chlorophyll group.]** *Bull. Internat. Acad. Polonaise Sci. et Lettr. Cl. Sci. Mat. et Nat. Ser. A. Sci. Mat.* 1929(2): 119-129. 1929.—A method is given for preparing Cu-neochlorophyll from neochlorophyllan, and for the transformation of Cu-neochlorophyll into Cu-neo-β-prophyllotaonine and Cu-neo-α-prophyllotaonine. By similar methods allocholorophyllan was converted into Cu-allochlorophyll, and the latter into Cu-allo-β-prophyllotaonine and copper-allo-α-prophyllotaonine. Studies were made of the absorption of ultra-violet and visible lights by phytol, Cu-neochlorophyll, Cu-allochlorophyll, the Cu-neo-prophyllotaonines, and the Cu-allo-prophyllotaonines. Phytol was found not to cause selective absorption of light, and is not transformed into another substance by distilling as was supposed by its discoverer. —*W. H. Eyster.*

6503. **MONTFORT, CAMILL. Fucus und die physiologische Licht-Einstellung der Wasserpflanzen. Studien zur vergleichenden Ökologie der Assimilation. 1.** *Jahrb. Wiss. Bot.* 71(1): 52-105. 10 fig. 1929.—The commonly accepted shade character of submerged plants does not hold as a general characteristic of marine algae. The photosynthetic activity of *Fucus vesiculosus* was studied near the surface, at 1.5 m., and at 3 m. deep. Curves of "assimilation-surplus" recorded in successive afternoon hrs. became rapidly steeper with decrease in incident light, but even with the same amount of light falling on the surface, the ratio of surface: 1.5 m.: 3 m. varied on different days according to the physiological condition of the photosynthetic cells. These depth curves offer evidence against the determination of the lower limit of the *F. vesiculosus* (and possibly also of the *F. serratus*) zone by a purely photosynthetic factor. Ratios were formulated between the daily performance of *Fucus* and that of other aquatics and of land plants. *Fucus* showed an adaptation to much higher light intensity than either a fresh water *Cladophora* from moderate shade, or the extreme shade form, *Trichomanes.* The light curves of photosynthetic surplus of *Fucus* were markedly different, not only from those of *Tri-*

chomanes, but also of land plants adapted to moderate shade. The maximum relative increase in photosynthesis with increase in light intensity (the efficiency of the plant) shows *Fucus* from sunny habitats to be related to the sun land plant, *Nasturtium,* rather than to any of the various grades of shade land plants. *Fucus* utilized 50% of each unit of light increase; *Nasturtium* 68%. The most efficient shade plant, *Oxalis,* utilized only 24%. *Fucus* from sunny habitats should be classified as an ecological equivalent of a sun plant. If a shade *Cladophora,* with its light curve similar to that of *Trichomanes,* be considered as the "norm" of light adaptation for shade aquatics, the opposite condition of a sun-adapted *Fucus* shows that just as heterogeneous ecological types of light adjustment have been developed in water as on land.—*L. M. Snow.*

6504. **NOACK, KURT. Der Zustand des Chlorophylls in der lebenden Pflanze.** *Biochem. Zeitschr.* 182(1/3): 135-152. 1927.—True solutions of chlorophyll in organic solvents show strong red fluorescence while colloidal aqueous solutions are non-fluorescent. Tending to harmonize the view that in the living leaf chlorophyll exists mostly in the adsorbed state and the fact that red fluorescence occurs in the normal chloroplast, is the fact that pure chlorophyll in solution is adsorbed by $Al(OH)_3$ and other solid substances, including lipoid-free globin, and the preparations show red fluorescence in ultra-violet light. By fractional centrifuging the product of grinding plants of *Selaginella* or fresh leaves of spinach, *Aspidistra,* and grass with $CaCO_3$ and water, a dark green mass composed chiefly of crushed chloroplasts can be isolated. This mass forms colloidal solutions in water which show red fluorescence. Heating to 70-100° for 1-5 sec. destroys the fluorescence but longer heating restores it. The fresh solution yields with salts of heavy metals and $(NH_4)_2SO_4$ a dark green mass which quickly loses its fluorescence when heated. Assuming the chlorophyll is weakly combined with a labile protein, heating might modify this protein so as to cause the chlorophyll to pass into the colloidal stage and lose its fluorescence. Further heating would cause the liquefied lipoid to partially dissolve the chlorophyll, thus restoring its fluorescence. Treatment of the solution with proteolytic enzymes also destroys the fluorescence. In the living leaf the chlorophyll is best considered as consisting of an adsorbed monomolecular layer on the protein of the chloroplast.—*W. W. Garner.*

6505. [RÎAZANTSEV, A. V.] РЯЗАНЦЕВ, А. В. К вопросу о сезонных изменениях ассимиляционного аппарата у некоторых вечно-зеленых растений. [Seasonal changes in the assimilation apparatus of evergreens.] [German summary.] Известия Биологического Научно-Исследовательского Института и Биологической Станции при Пермском Государственном Университете (*Bull. Inst. Rech. Biol. et Sta. Biol. Univ. Perm*) 7(3): 105-132. 3 pl. 1930.—Specimens of *Pinus silvestris, Picea excelsa, Abies sibirica, Juniperus communis, Andromeda polifolia, Cassandra calyculata, Ledum palustre, Oxycoccus palustris,* and *Vaccinium vitis idaea* were collected 1925-1927 in Perm. The material when removed from the plant was immediately placed in the fixing fluid, a solution of 95% ethyl alcohol and 1% formalin. To this was added a solution of 1 part of a 10% formalin and one part of 3% K-dichromate. The material remained in the fixing fluid for 4-7 days, and the washing lasted 12-24 hrs. Results showed that the cold season produced small marked disintegrations in the chloroplasts. Nor are the disintegrations very marked even during the spring, when the chloroplasts are assuming assimilatory functions. The beginning of cold weather brings forth a rearrangement of the chloroplasts in all the observed sp. With the beginning of spring, a reversed rearrangement of the chloroplasts occurs, which lasts through the summer. The time for the various rearrangements is not definite but depends on the temp. Variations in seasonal temp. also produce variations in size of plastids.—*L. J. Pessin.*

6506. **WALTER, HEINRICH. Plasmaquellung und Assimilation.** *Protoplasma* 6(1): 113-156. 11 fig. 1929.—The extraction of water by means of osmotically active substances (cane sugar) produced a marked reduction in assimilation in *Elodea canadensis.* Assimilation was reduced in proportion to the amount of water withdrawn from the protoplasm and fell to zero at a suction pressure of the protoplasm of 12.75 atm.=0.5 gm.-mol. cane-sugar. Respiration was not greatly influenced.—*W. Seifriz.*

6507. **WOOD, J. G. The relation between water content and amount of photosynthesis.** *Australian Jour. Exp. Biol. & Med. Sci.* 6(2): 127-131. 1 fig. 1929.—No direct correlation exists between water content and amount of assimilation in leaves, as stated by Dastur (1925). Fluctuations in water content of about 10% around the normal fresh wt. of the leaf cause no changes in the amount of assimilation; though with further water-loss by evaporation or by injection of the leaf with water the rate of assimilation decreases.—*J. G. Wood.*

BIOCHEMISTRY, METABOLISM (GENERAL)

6508. **ADAM, W. B., F. HARDY, and M. NIERENSTEIN. The catechin of the cacao bean.** *Jour. Amer. Chem. Soc.* 53(2): 727-728. 1931.—The catechin of the cacao bean is identical with one of the 3 catechins present in the heartwood of the cutch-producing acacias, namely, l-acacatechin.—*Authors' summary.*

6509. **ARNEMAN, WILLIAM GERHARD, and JOHN CAMPBELL EARL. The celluloses of some Australian plants.** *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 44-46. 1929(1930).—The hypothesis that celluloses of all plants are chemically identical has been called in question by the isolation from *Posidonia* fiber of a cellulose whose triacetate, dissolved in chloroform, has [a] $D = -39.8°$ (the value for cellulose triacetate from cotton is $-22.3°$). Therefore, an examination of celluloses from various plants was undertaken to yield more data on their possible identity. Celluloses were isolated by Cross and Bevan's chlorination method. Acetylation was by Barnett's (1921) method. Values of [a] *D* of acetate [presumably in chloroform; not stated definitely] are: cellulose from *Posidonia* fiber, $-39.9°$; from *Posidonia* leaves, $-39.9°$; from *Cymodocea* sp., $-22.0°$; from *Potamogeton* sp., optically inactive (only 1 sample investigated); from undetermined water plants, possibly *Zostera* sp., $-22.2°$; from wood of *Doryphora sassafras,* $-22.6°$; from wood of *Araucaria cunninghamii,* $-22.6°$; from *Atriplex vesicarium,* a saline plant, $-20.1°$. The assumed identity of celluloses from various plants must then be regarded as doubtful.

6510. **BISH, ERNEST JOHN BROOK. The determination of small quantities of starch in vegetable tissue.** *Biochem. Jour.* 23(1): 31-34. 1 fig. 1929.—In work on the reserve foods of the bracken fern, a more accurate method of estimating starch in small quantities was required than those which involve comparison of determinations of the sugar mixture, obtained after hydrolysis, by reduction of Cu salts, and by the polarimeter, as the quantities were too small for use of the polarimeter. A method was therefore devised by which the Cu-reducing power of the hydrolysed starch was related to the reducing power of known quantities of a carefully purified starch preparation. Such a method does not give absolute values as the reducing power of starches of different origins is not the same. It does, however, give values comparable with each other for any 1 material and this is sufficient for many purposes, such as the comparison of the amounts of starch present at different stages of development.

6511. **BUTKEWITSCH, WL. S., und M.W. FEDEROFF. Über die Umwandlung der Essigsäure durch Mucor stolonifer in Bernstein- und Fumarsäure und das Verfahren zur Trennung und quantitativen Bestimmung dieser Säuren.** *Biochem. Zeitschr.* 207(4/6): 302-318. 1 fig. 1929.—Fumaric acid is not produced in any quantity when *M. stolonifer* acts on succinic, malic, lactic, or tartaric acids in presence of $CaCO_3$, but it is produced

in considerable amount when glycerol is used under similar conditions. In the presence of $CaCO_3$ acetic acid is converted to the extent of 15-30% into fumaric and succinic acids. Here the succinic acid constitutes 80-90% of the total ether-soluble acids produced, whereas when sugar is used it constitutes only 10% of the mixture. When sugar is added to the acetic acid, the balance of acids formed is shifted in favor of fumaric acid. The chemical interpretation of these facts is discussed and the separation of fumaric and succinic acids by means of permanganate is described.—*O. Owen.*

6512. CHRZASZCZ, T., und D. TIUKOW. Oxalsäure in Schimmelpilzkulturen. *Biochem. Zeitschr.* 218(1/3): 73-85. 1930.—Oxalic acid of the substrate was increased when amino-acids were added to the culture medium of *Penicillium* X. Oxalic acid was increased at the cost of the sugars present and depended on the structure of the amino-acids. The smaller the number of C groups the amino-acid had, the smaller amounts were necessary to increase the oxalic acid of the medium. Oxalic acid was a source of energy and also a product of protein degeneration. Amino-acids added to the culture medium also increased the citric acid concentration of the nutrient medium. A small amount of citric acid was formed on protein breakdown.—*N. M. Payne.*

6513. DOYLE, JOSEPH, and PHYLLIS CLINCH. Further notes on the metabolism of conifer leaves. *Proc. Roy. Irish Acad. Sect. B.* 38(7): 116-127. 1928.—The main groups of Coniferales are each distinguished by a characteristic pH. No obvious relationship could be established between the winter variation in water soluble pentosan and the pH. Peroxidase is the only oxidizing enzyme demonstrable in the leaves. This may be marked by the presence of an inhibitor removable by alcohol. The inhibitor, apparently, fades on standing, at any rate in water suspensions of fresh leaves. Autoxidizable substances can readily be demonstrated in the leaves, although normally their oxidization is prevented by the presence of tannins.—*E. L. Evinger.*

6514. FINK, HERMANN. Über die Koproporphyrie der Hefe. *Biochem. Zeitschr.* 211(1/3): 65-130. 1 fig. 1929.—Two yeast stocks of *S. anamensis* were grown for over a year with an excess of Cu porphyrin (Cu salt of porphyrin "e"). During this process the greater part of the yeast at the end of every fermentation was removed for further study, while the rest was used to continue the stock. By employment of a single pure culture apparatus the yeast was carried through 30 generations entirely free from contamination. In spite of the plentiful supply of Cu porphyrin the cultures did not die out. The number of red fluorescent Cu cells was determined at each 2 transfers in a spectro-microscope. The same agrees more or less well with the number of dead methylene blue positive cells. The high glycogen content was correlated with a low protein content. The respiration and fermentation were estimated at regular intervals. The quotient maintained by the Cu yeasts was lower than for ordinary *S. anamensis*. The respiration was generally less affected than the fermentation. Along with the great porphyrin intake the appearance and disappearance of the intensely red chromogen is to be noticed. Light seems to play a rôle in this; the greater part is colorless at first, and color compounds form when the yeast comes in contact with air. Even in the oldest cultures the color spectrum of the cytoplasm could be recognized. The isoelectric point of Cu porphyrin, as estimated by various methods, lies around pH=4. These physico-chemical results were the starting point for the solution of important questions on the Cu culture of yeast. While previous workers contended that the porphyrin was exclusively within the cell, it was noted that 70-80% of the total is loosely bound to the yeast. Upon the death of the cells, the complex is broken down in a neutral or weakly alkaline reaction, and the red-fluorescent Cu cells vanish. Solution occurring most easily at about pH 7, it is evident that the transfer into new media causes the disappearance of the color. The dissolved porphyrin combines itself with that of the dead cells, and from these is adsorbed on the surface of the living cells. The remaining 20-30% of the color compound is within the living yeast cells and cannot be extracted without killing them. Conversely, the adsorption of Cu porphyrin by the yeast was determined under physiological conditions. When a porphyrin containing yeast suspension was adjusted to pH 4, the cells which were dead or weakened by autolysis quantitatively removed the porphyrin from very dilute solutions and formed beautiful red fluorescent bodies. The live yeast takes up the porphyrin in small amount, yet shows the red fluorescence. While Cu porphyrin is able to enter into the dead cells, it is only adsorbed on the surface of the living cells. Thus it is established how, under the Cu culture, the loose combination of the porphyrin with the yeast comes about, together with the further appearance of the red fluorescent Cu cells at the end of the fermentation when the cells are mostly dead. Upon transfer the dissolved porphyrin is again adsorbed on the yeast. In the light of the physico-chemical principles, the mysterious appearance and disappearance of red fluorescent Cu cells appears as an equilibrium between absorption and adsorption. The question yet remains, where and how the increased porphyrin occurs, further the manner by which the Cu porphyrin is generated in the first "generation."—*H. Fink (transl. by O. E. Street and T. R. Swanback).*

6515. FIRKET, J., et COMHAIRE. Recherches expérimentales sur la teneur en glutathion des pois au début de la germination. *Bull. Acad. Roy. Med. Belgique* 9(3): 93-122. 5 fig. 1929.—Glutathione, or at least substances with SH, appears in peas from the time of swelling. This glutathione comes entirely from the reserve of peas; it precedes and actually conditions the development of the embryo. The large content of the reserve and of the embryo is maintained, so that the growth is regular during the first few days. There is no parallelism between the intensity of growth and the relative content of glutathione, which is not localized in the places of most intense cellular multiplication. It disappears from the plant as chlorophyll development proceeds. In seedlings that develop in darkness, which they sometimes do quicker than in the light, the content of glutathione remains high. Whether the disappearance of glutathione conditions the etiolation of plants in darkness or during the period which precedes the chlorophyll assimilation is not stated, but glutathione plays an energetic rôle when this function is initiated. If glutathione disappears when the plant becomes green, it is because the chlorophyll, in oxidizing it, removes it. Its rôle in the first stage of germination does not appear to be less important.—*From authors' conclusions (transl. by W. A. Whitney).*

6516. GAFFRON, HANS. Methoden zur Untersuchung der Kohlensäureassimilation. In: Handbuch der biol. Arbeitsmeth. Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze. Teil 4, Heft 1, Lief. 300. p. 100-160. 28 fig. Urban & Schwarzenberg: Berlin, 1929. —A description is given of the manometric methods developed by Warburg and Negelein for studying photosynthesis, respiration, fermentation, nitrate assimilation, and other processes involving the formation or exchange of gaseous products. The principles are discussed on which the methods are based, as well as the derivation of the mathematical formulae, and the apparatus is described in detail. This includes the manometers, thermostats, light sources, light filters, and means of measuring light intensity. The applications of these in Warburg and Negelein's investigations with *Chlorella* are given together with extracts from their results.—*H. A. Spoehr.*

6517. HESS, K., und E. GARTHE. Zellobiosan und Zellulose. [Cellobiosan and cellulose.] *Naturwiss.* 19(8): 180-181. 1931.—A note.

6518. HIBBERT, HAROLD, and JOHN BERNARD PHILLIPS. The nature of the resins in jack pine (Pinus banksiana). *Canadian Jour. Res.* 4(1): 1-34.

1931.—Green and seasoned jack pine had an average crude resin content of 4.58% and an ether-soluble of 3.52%. The value of "total acids" present in the resin was the same in each case, but the proportion of "fatty" acids was greater in green wood, while the unsaponifiable matter was considerably less. The seasoned wood contained a lower % of fats than the green wood and a correspondingly higher % of resin acids. The amount of unsaponifiable, polymerized terpenic substances was also higher. There was a marked decrease in the amounts of phytosterol and "resene" in the seasoned wood. The isolated resin acids obtained by distillation, or esterification, contained a high % of abietic acid formed by transformation of the original acids. A higher % of crystalline acids was found in the resin acids from green wood than from seasoned, due presumably to change into amorphous products during storage. The fatty constituents were chiefly members of the unsaturated series, present both as free acids, glycerides, or other esters. The amount of the total unsaturated fatty acids was higher in the glycerides and free acids from green wood than from seasoned wood. The quantities of essential oil obtained from the resins of each kind of wood were very small, amounting to 1.5-4.3% of the total crude resins. The % of phytosterol and resene were extremely small, and were appreciably less in the seasoned than in the green wood.—*From authors' summary.*

6519. [IGAKI, SHIGEFUKU.] [Quantitative changes of the constituents of each part of the tobacco [plant] during growth.] [In Japanese, with English summary.] *Bulteno Sci. Fakult. Terkult., Kjuŝu Imp. Univ., Fukuoka, Japan* 3(4): 317-326. 1929.—This investigation is a comparative study of changes of composition of leaves, stalks, roots, and flowers in the different stages of growth of tobacco. Samples for examination were cropped 4 times, once a mo., from transplantation to ripening. The samples for analysis were prepared by rapidly drying with a current of air, after heating for 20 min. at 100° C. in a water bath in order to destroy the enzyme. The constituents determined in each sample were total N, nicotine, protein N, nitrate N, ammonia N, organic base N, crude ash, crude fibre, crude fat, and soluble N-free extractive matter. In all parts of the leaves, stalks, and roots, the water content decreased continuously in proportion to the growth. The leaves and stalks contained more water than the roots. The highest nicotine content was obtained in the leaves. In the other parts, there was found a small quantity of nicotine and the difference in each stage of growth was also small. In leaves, the % of nicotine in fresh material increased continuously until the end of growth, but in dry material it reached a maximum about 90 days after transplantation and then decreased slightly, owing to the rapid increase of the % of solid matter. In comparisons made with fresh material, the % of total N was almost constant in the leaves, but decreased continuously in the other parts. In comparisons made with dry material, the % decreased in all parts. There was generally little variation in the % of protein N in the fresh material. The leaves contained more protein than the other parts. The % of organic base N generally increased in the fresh material. There was little variation in the % of crude ash. The % of crude fat generally increased in proportion to growth, especially in the leaves. The % of crude fibre increased in proportion to growth. The roots contained the most, and the leaves the least. The % of soluble N-free extract generally increased in the fresh material.—*Author's summary.*

6520. **ISEKI, TAKO. Die Spaltung der β-oxybuttersäure durch Oidium Lactis. Über die Konfiguration der optisch aktiven β-oxybuttersäure.** [Japanese.] *Osaka Igaku Kwai Zasshi* 26: 2745-2760. 1927.—Certain microorganisms decompose fatty acids (or cyclic compounds with a fatty acid side chain) so that they oxidise a newly formed, terminal hydrocarbon group into a carboxyl group, while CO_2 is given off. Chikano and Kitano proved that *Oidium lactis* probably does this. Therefore it is possible that this mould forms lactic acid out of β-oxybutyric acid by decarboxylization and oxidation. This was proved right by the writer, who also showed that the used dl-oxy-butyric acid was attacked asymmetrically. In the nutrient medium appeared l-β-oxybutyric acid in addition to the lactic acid which was the d-form. Therefore, d-β-oxybutyric acid and d-lactic acid probably have the same configuration.—*Author (courtesy Japanese Jour. Med. Sci. IV. Transl. by M. C. Brandwijk).*

6521. **JACOBS, WALTER A., and EDWIN L. GUSTUS. The digitalis glucosides. III. Gitoxigenin and isogitoxigenin.** *Jour Biol. Chem.* 82(2): 403-409. 1929.—In a previous article the probable close relationship of gitoxigenin to digitoxigenin was pointed out. A further study of these glucosides and some of their derivatives enables one to state definitely that gitoxigenin, like digitoxigenin, is a tetracyclic lactone in which a C atom, presumably γ to the lactone γ C atom, carries a tertiary OH group. —*O. F. Black.*

6522. **KIM, CHANG SEI. Some chemical and biological studies of the mung bean, Phaseolus aureus Roxburgh.** *China Med. Jour.* 42(5): 337-349. 1928.—Germination of the mung bean results in a loss of approximately ¼ its original mass, owing to the utilization of carbohydrates and fats by the growing seedling. The germinated product possesses higher content of vitamins B and C, a higher content of roughage, and more pronounced characteristics of greens.—*From author's conclusions.*

6523. **[KÔKETSU, RIICHIRO, et al.] Über den Effekt der Anwendung der "Pulvermethode" für die Bestimmung des Stoffgehaltes im Pflanzenkörper. I. Bestimmung des Wassergehaltes im Pflanzenkörper in den oekologischen und vergleichend-physiologischen Studiengebieten. (R. KÔKETSU und SADAO YASUDA.) II. Vergleichende Bestimmung des Trockensubstanz- und Aschengehaltes an den Samen. (R. KÔKETSU und SADAYOSHI FUKAKI.) III. Vergleichende Bestimmung des "spezifischen Pulvergewichtes" an den Samenkörnern von verschiedenen Reispflanzensippen. (R. KÔKETSU und HIROSI KOSAKA.) IV. Vergleichende Bestimmung des Aschengehaltes an den physiologisch und oekologisch verschiedenen Pflanzenkörpern. (R. KÔKETSU und MAKOTO TAKENOUCHI.) V. Vergleichende Bestimmungen des Kohlenhydrat- und Eiweissgehaltes. (R. KÔKETSU, H. KOSAKA, TOSHIO SATO, und TERU FUJITA.)** [In Japanese, with German summaries.] *Bulteno Sci. Fakultato Terkult. Kjuŝu Imp. Univ. Fukuoka, Japan* 2(3): 200-208; (4): 273-286. 1927; 3(1): 36-48; (2): 154-181. 1928; (3): 232-243. 1929.—I. Comparative determinations are given of the water content of the leaves of 30 plants growing under widely diverse conditions. The data are expressed as % of total and of dry wt. and as amount of tissue powder per unit of volume; the object being to determine which of these methods is the most useful for expressing ecological and comparative physiological effects. It is concluded that the powder method is best and that data expressed on the basis of total wt. is the least useful. II. The relative wt. of dry substance and the relative value of ash content of the seed of various cereals, as determined by the usual methods and by the powder method, do not give good agreement. Each of the ordinary methods of determination has certain sources of error which seem to be lacking in the powder method. The dry wt. per cc. of powder of various seed or tissues is a specific property of dry substance, and is designated as the "specific powder wt." Obviously this is not the same as true specific gravity of the powder, but is of greater significance. III. The dry wt. per cc. of tissue powder (the specific powder wt.) of hulled seed of various lines of rice was determined by the powder method in order to give numerical comparison of the differences between these lines. The specific powder wt. of ripening grain increased as ripening proceeded; seed from plants grown on well fertilized soil had a smaller specific powder wt. than seed from plants on soil which was unfertilized or fertilized

with an incomplete fertilizer. Material of one and the same line grown in different regions, shows different values for the powder wt.; the same is true of seed of various lines grown in the same area; in the latter case seed native to the region on which it was grown had generally the higher value. It is concluded that seed with a high specific powder wt. is well ripened; and that seed shown with high powder wt. is well adapted for the locality in which it is grown. The question of whether the quality of the seed is better when the powder wt. is higher remains as yet unanswered. IV. The ash content of the plant body, and more particularly of the leaves, was determined under different external conditions, and the data expressed as % of dry wt. and of fresh wt. and also in content per unit of volume of tissue powder in order to establish which data were most suitable for the purpose. For comparison, data obtained by these 3 methods were reduced to a definite standard material. Since the material used showed discrepancies, for the most part in the relation of the relative wt. to both the dry matter and the fresh wt., it follows that a certain error is concerned both in the use of dry wt. and of fresh wt. methods. It is concluded that the powder method is a method well adapted to comparative determination of ash content in physiological and ecological studies, and that this method could be used with advantage in studies of whatever purpose dealing with the significance of the ash content in plant life. Finally it is proposed that there be adopted a universal standard value for the content of a given substance in order to make possible a physiologically and ecologically useful general comparison of results of different studies. In this investigation an average value of 7.102 gm. of ash per 100 cc. of tissue fiber was found in the leaves of the 105 plant sp. investigated, these sp. being widely different from each other ecologically. The value 7.00 gm. per 100 cc. of tissue fiber is suggested as an example of a standard value, in the sense indicated above, for the ash content of leaves. V. The sugar, starch and protein of the plant body were determined from the diverse conditions. Data were expressed in % of fresh and dry wt. and also as amount per unit of volume of tissue powder, and also occasionally as amount per unit of surface of material. For purpose of comparison the data from each comparative study were reduced to a definite standard. The results obtained, considering the diversity of method employed, were as different as expected. However, in the case of the results obtained by the fresh wt. and dry wt. methods corrected by the use of the formula indicated in the preceding article, the results corresponded well with those obtained by the powder volume method, in all the materials investigated—an indication that the use of the powder method in these cases, and in all probability in all similar cases, is highly advantageous.—*Authors' summaries (transl.)*.

6524. KÔKETSU, RIICHIRO. Eine Auto-maschine zur Messung der Pulvervolumen. [Japanese, with German summary.] *Bulteno Sci. Fakult. Terkult. Kjušu Imp. Univ.* [*Fukuoka, Japan*] 4(2): 134-140. 2 fig. 1930.—An electrically driven shaking machine is described in which the powder is shaken compactly into graduated cylinders 1 cm. in diam. Error in measurement of plant powders is within 1%.

6525. KROEBER, LUDWIG. Ein Beitrag zur Kenntnis der Verteilung der Saponine in der Pflanze während verschiedener Reifestadien. *Heil- u. Gewürz-Pflanzen* 12 (4): 131-137. 1930.—Although not especially outstanding, it appears that the hemolytic titer of plants is influenced by the quality of the soils in which they grow; plants from Brandenburg sand, medium rich Munich garden soil, and rich garden soil from Hameln on the Weser exhibited low, medium, and high values respectively. Complete agreement in saponin values was obtained for 3 consecutive yrs. with plants from the Munich soil. Saponin in leaves increased with development of the plant and reached its high point in late autumn. The saponin content of unopened flowers was significantly higher than from opened ones. Saponin in seed is less than in flowers. Roots were practically saponin-free at every stage of development (Jan., May, July, Aug., Sept.). The low absolute and relative saponin content of stems decreased with development of the plants, finally almost completely disappearing. Hemolytic titers of stems (200-250), seed, flowers (3846-4762), and leaves (6000-7144) followed in ascending scale. Slow drying in air of *Saponaria* led to a considerable decrease in saponin content compared with artificial drying at 55° C. It is inadvisable from the similar conducts of *Saponaria* and *Solidago* under drying to draw the conclusion that all carriers of saponin act in a similar manner. The saponin content of *Solidago virga aurea* was about 50% less than that of *S. gigantea*.—*Author's summary (transl. by L. T. Leonard)*.

6526. KUBES, VL. Studie o koagulaci rostilinných bílkovin kapkovou metodou Bečkovou a o jejím použití ve fytoserologii. [**Coagulation of plant albumins by means of Bečka's drop method and its use in phytoserology.**] [German summary.] *Biol. Spisy Vysoké Školy Zvěrolékařské Brno* (*Publ. Biol. École Vét. Brno*) 7: (119-134). 1928.—The precipitation of albumins from water extracts of plants estimated according to form and extent of the precipitate depends, as in the case of animal albumin solutions, upon the quality and concentration of the albumin solution and the precipitating agent. It is not possible by this method to differentiate normal and immune sera (rabbit, *Triticum sativum, Lens esculenta*). The relatively low titer of the immune sera used does not permit the use of the drop method as a substitute for the precipitin reaction. By the Bečka drop method, a union of the antigen with the specific antiserum takes place under certain conditions at such concentrations of these reaction components at which the precipitation still fails to appear.—*Author's summary (transl. by C. I. Nelson)*.

6527. KURSCHNER, K., und A. HANAK. Zur Bestimmung der sog. Rohfaser. Ein neues Verfahren der Bestimmung der Rohcellulose in Kakao. *Zeitschr. Untersuch. Lebensmittel* 59(5): 484-494. 1930.—This reports on a rapid and practical method of determination of crude fiber of both fat-free and not fat-free cacao. The hydrolysis consists of boiling with a mixture of 10 parts by volume of 80% acetic acid and 1 part by volume of commercial HNO_3. This corresponds to a concentration of HNO_3 of approximately 7% by wt. Constant wt. of crude fiber is reached after boiling 15-20 min. The end product possesses the characteristic color of good crude fiber. Further experiments indicate the possible general usefulness of this reagent in crude fiber determinations of other substances (flours, feeding materials, potato pulp, etc.). It is also evident that this method, in a certain degree, is applicable to microdeterminations.—*From authors' summary (transl. by E. Carsner)*.

6528. LEEMANN, A. Chemical biogenesis and the development of secretion cells. *Nature* [*London*] 124 (3138): 946-947. 1929.—Studies of the development of secretory cells in *Asarum europaeum, Laurus nobilis,* and *Cinnamomum camphora,* show that terpenes originate in the cytoplasm, not by gelatinization of the cell wall as was held by Tschirch. The probable mechanism of the formation of terpenes in secretion cells is explained on the following hypothesis: "The protoplasm as a whole is transformed into terpenes (together with phosphatides and perhaps some minor constituents). Thus a destruction of protoplasm has to precede the synthesis of terpenes, and this disintegration certainly leads through the stage of amino-acids. The deamination of amino-acids by the deaminases is a well-known process, which generally leads to the production of an alcohol. If the deamination be incomplete it will result in an aldehyde. *l*-Leucine, one of the most abundant amino-acids, would in these circumstances yield isovaleraldehyde."

6529. LUY, P. Gasometrische Mikrobestimmungen von Wasserstoffsuperoxyd, Stickstoffverbindungen und Gärungskohlendioxyd. *Biochem. Zeitschr.* 201(1/3): 165-184. 5 fig. 1928.—The use of Paechtner's "Ponderovolu-

meter (P.V.M.)" to determine the volume of a gas freed from a compound is described. Tables are included giving the amounts of O_2 split off from H_2O_2 by K-permanganate; of N_2 set free from urea by bromine-NaOH; and of CO_2 produced in fermentation of glucose by yeast. The % error differs with each apparatus but in general was ± 1%.—*S. H. Eckerson.*

6530. **McNAIR, JAMES B. The differential analysis of starches.** *Field Mus. Nat. Hist. Bot. Ser.* 9(1): 3-44. 1930.—The extensive tables of the various histological, physical, and chemical characteristics of 350 starches as determined by Reichert are rearranged according to physical and chemical properties. The use of these tables and characteristics of previously undetermined starches makes it possible to identify readily the starches of different plant families, different members of the same family, and different varieties of one sp. These tests require a minimum of material and individually each test requires not more than about 1 hr. Details are given of the preparation of the starch specimen, the preparation of the reagents, and the method of analysis. —*J. B. McNair.*

6531. **McNAIR, JAMES B. A study of some characteristics of vegetable oils.** *Field Mus. Nat. Hist. Bot. Ser.* 9(2): 47-68. 1930.—There may be a relationship between the melting point of a fat or oil of a plant and the temp. of its environment. Such a relationship is known to exist in the case of oils of marine and land animals. Oils are found in 83 plant families out of 277 listed by Engler and Prantl. Some 318 oils from these families show 62 to be drying, 83 semi-drying, 71 non-drying, and 102 are fats. Oils found in seed coverings may have a higher m.p. than oils of seed kernels. Waxes are found more abundantly on tropical plants than on those of temperate climates. There is a close agreement between the oils of the different sp. of a genus. The physical and chemical properties of oils may be more or less definitely correlated with specificity. Tables of I nos., saponification nos. and specific gravity of over 300 oils are given. Tropical and subtropical plants are more likely to have fats and non-drying oils than semi-drying or drying oils; i.e., tropical and subtropical oils have higher m. p. than the oils of temperate climates. As to the possible relation between high m. p. oils and tropical origin a list of 40 families is given. Of this list 3 are mainly temperate in habitat.—*J. B. McNair.*

6532. **MUCH, H., mit T. NYRÉN und SCHUBERT. Fünf Beiträge zur Lipoidbiologie.** *Zentralbl. Bakt. I. Abt. (Orig.)* 116(1): 1-18. 11 fig. 1930.—This paper consists of notes and observations having some bearing on lipid relations, under the following headings: (1) The tea fungus; (2) Tuberculosis bacilli in living plants; (3) Lipid acids and bacteria; (4) Plant [*Digitalis*] studies; and (5) Explosions.

6533. **NIETHAMMER, ANNELIESE. Histochemische Untersuchungen über Gerbstoffe im Blatte von Carpinus betulus zu verschiedenen Zeitpunkten.** *Biochem. Zeitschr.* 216(4/6): 462-466. 1929.—On the 9th of May the upper epidermis was free from tannins. Palisade-cells and parenchyma in general had a great deal of tannin but some sections of palisade-cells were tannin free. After rain tannin was more generally distributed than on sunny days. On the 24th of June the upper epidermis of the leaf gave a negative test for tannin, the under epidermis a weak test. The parenchyma was strongly positive for tannin. In Sept. the palisade-cells were strongly positive for tannin, the upper epidermis was negative, and the under was weakly positive. Results in Oct. were similar to those in Sept.—*N. M. Payne.*

6534. **PHILLIPS, MAX. The chemistry of lignin. V. The distillation of alkali lignin with zinc dust in an atmosphere of hydrogen.** *Jour. Amer. Chem. Soc.* 53(2): 768-774. 1 fig. 1931.—The distillate [from corn cobs] consisted of an aqueous portion and an oil. The aqueous distillate contained methanol, acetone, and acetic acid to the extent of 1.48, 0.36, and 0.24%, respectively (calculated on basis of the wt. of lignin used). Catechol was present in the aqueous distillate. The yield of oil obtained amounted to 16% of the wt. of the lignin used; 55% of the oil was alkali-soluble, and in this fraction guaiacol was definitely identified. A phenol containing the methoxyl group and yielding a 3, 5-dinitrobenzoyl derivative melting at 110° was also obtained but was not further identified. The isolation of catechol and guaiacol as degradation products of lignin is believed to lend support to the hypothesis that lignin contains an aromatic nucleus. The evolution of CO_2 in the Zn dust distillation of lignin in an atmosphere of H indicates that, in all probability, the lignin molecule contains at least 1 C atom directly united to 2 O atoms. This may indicate the presence of either a carboxyl group, free or esterified, or a lactone group in the lignin molecule.—*Author's summary.*

6535. **RAISTRICK, H., et al. Studies in the biochemistry of micro-organisms.** *Phil. Trans. Roy. Soc. London B* 220: 1-367. 1931.—**I. W. RINTOUL. Introductory.** p. 1-10. Generalizations are given concerning the biochemistry of 238 spp. of fungi investigated. By means of carbon balances it is possible to classify different spp. in certain families of fungi, particularly so in the case of Aspergilli. The data obtained, in general, indicate a Cannizzaro reaction involving the production of a molecule each of mannitol and gluconic acid from 2 molecules of glucose as the initial step in the breakdown of this sugar by fungi. With certain spp. definite metabolic products are produced which are characteristic only for small sub-groups and the identification of these products is a valuable aid in classifying the organism. The marked ability of fungi to bring about synthetic reactions is pointed out.—**II. J. H. BIRKINSHAW. Quantitative methods and technique of investigation of the products of metabolism of micro-organisms.** p. 11-26. Methods used for the estimation of C by wet combustion and for the separation and analysis of the types of products formed are outlined. C of the product is divided into 3 general groups: (1) as gaseous compounds; (2) as insoluble solid compounds; (3) as compounds in solution. (1) is subdivided into C as volatile compounds soluble in H_2SO_4, C as CO_2, and C as permanent gases. (2) consists of mycelium. (3) is subdivided into C as residual glucose, as CO_2 in solution, as volatile and non-volatile acids, as volatile and non-volatile neutral compounds, and as C unaccounted for. From such data a carbon balance sheet may be prepared for each organism.—**III. J. H. BIRKINSHAW, J. H. V. CHARLES, and J. A. R. STOYLE. Quantitative examination by the carbon balance sheet method of the types of products formed from glucose by species of Aspergillus.** p. 27-54. 96 sp. of *Aspergillus* were each cultured at 23-25° C. on 250 cc. of Czapek-Dox medium containing 12.5 gm. glucose. Each culture was aerated by passing 500 cc. of sterile air over the mycelium for one hr. each day and the results obtained therefore apply to these organisms only when they are allowed to develop under a restricted air supply. The data are tabulated carbon balance sheets. The chief value of the results is that they enable a choice to be made of organisms to be further investigated and offer a means of biochemical classification which in the main agrees well with the system based on morphological data.—**IV. J. H. BIRKINSHAW, J. H. V. CHARLES, and A. C. HETHERINGTON. Quantitative examination by the carbon balance sheet method of the types of products formed from glucose by species of Penicillium (including Citromyces).** With an appendix by **C. THOM.** p. 55-92. 75 spp. of *Penicillium* and 81 of *Citromyces* were investigated and the data tabulated. The close agreement between the morphological and biochemical classifications found with Aspergilli is not so apparent with Penicillia, although in the majority of cases it is good. With several species a large part of the C remains unaccounted for, i.e., did not fall within any of the sub-groups given in II. A history of the spp. used and comments by Thom are given in the appendix.—**V. J. H. BIRKINSHAW, J. H. V. CHARLES, and J. A. R. STOYLE. Quantitative examination by the carbon balance sheet method of the types**

of products formed from glucose by species of Fusarium. p. 93-98. Twenty-three spp. of *Fusarium* were investigated. Despite a relatively poor growth, considerable quantities of glucose were metabolized. The main product of metabolism was ethanol and the suggestion is made that selected spp. of *Fusarium* might be of some value in its production from waste vegetable matter. Fusaria do not lend themselves to biochemical classification as readily as do the Aspergilli.—VI. **J. H. BIRKINSHAW, J. H. V. CHARLES, C. H. LILLY, and A. C. HETHERINGTON. Kojic acid (5-hydroxy-2-hydroxymethyl gamma pyrone).** p. 127-138. Kojic acid was isolated from the metabolic products of a number of Aspergilli of the *flavus-oryzae* group. One species of *Penicillium* was also found which produced this substance. A strain of *A. effusus* produced kojic acid from glycerol, xylose, arabinose, glucose, levulose, galactose, mannitol, sucrose, lactose and starch. An apparatus is described in which kojic acid was produced in quantity (500 gm.) with recovery yields, calculated on sugar, of 18.8% and 16.8% from sucrose and glucose respectively.—VIII. **J. H. BIRKINSHAW. The estimation of kojic acid.** p. 139-152. A method for the quantitative estimation of kojic acid involving oxidation with alkaline iodine solution is described. To the solution containing 7-14 mg. of kojic acid, 40 cc. of 0.1*N* iodine is added, followed by 50 cc. of 0.1*N* NaOH. The mixture is shaken and set aside for 90 minutes in a stoppered flask. 10 cc. of 2*N* H_2SO_4 is then added and the excess iodine is titrated with 0.1*N* $Na_2S_2O_3$. The difference between this figure and a blank determination with 40 cc. of 0.1*N* iodine solution gives the quantity of iodine absorbed and from this the quantity of kojic acid is calculated (1 cc. 0.1*N* iodine solution = 0.00142 gm. kojic acid). The reaction has been experimentally found to proceed as follows: $C_6H_6O_4 + 5I_2 + 11\ NaOH = CHI_3 + 7\ NaI + HCOONa + (COO)_2Na_2 + CH_2OHCOONa + 6\ H_2O$.—IX.—**J. H. BIRKINSHAW, J. H. V. CHARLES, and A. C. HETHERINGTON. On the production of mannitol from glucose by species of Aspergilli.** p. 153-171. The formation of mannitol from glucose by 3 unnamed spp. of white *Aspergillus*, a strain of *A. elegans* and 5 strains of *A. nidulans* was investigated. Restricted aeration of the cultures was essential for its formation in appreciable quantities. Large scale experiments were carried out in the apparatus described in VII with the recovery of 600 gm. of mannitol from 60 l. of 5% glucose solution. Replacement of the exhausted solutions with fresh glucose solutions gave good yields of mannitol in a shorter period than the first fermentation. Succinic and malic acids in small quantities as well as appreciable quantities of glycerol were also found.—X. **W. YOUNG. The estimation of mannitol in fermentation solutions.** p. 173-207. Two methods are described for the estimation of mannitol in the presence of glucose based on the optical rotation of mannitol in borax solution. In one method glucose is removed by fermentation to ethanol. The second method takes advantage of a new observation that glucose at a concentration of 0.9% in a 6% solution of $Na_2B_4O_7.10H_2O$ is optically inactive and at concentrations below 0.9% is actually levo-rotatory. Extensive tables are included.—XI. **A. C. HETHERINGTON. On citromycetin, a new yellow coloring matter produced from glucose by species of Citromyces.** p. 209-244. A new biochemical product designated as citromycetin ($C_{14}H_{10}O_7$) was isolated from culture solutions of various species of *Citromyces*. Glycerol proved to be a superior source of carbon. Citromycetin is almost insoluble in cold water, slightly soluble in hot water, fairly soluble in cold absolute ethanol, hot glacial acetic acid and somewhat soluble in acetone. It is readily soluble in aqueous Na_2CO_3 and $NaHCO_3$ with evolution of CO_2. It does not melt sharply, darkening at 263° C., becomes progressively darker and finally melts with decomposition at 283°-285° C. It is optically inactive, contains no N, reduces cold ammoniacal $AgNO_3$ and Benedict's solution on boiling, and contains no OCH_3 groups. It crystallizes from 50% aqueous ethanol as lemon yellow needles containing 2 molecules of H_2O of crystallization. A number of derivatives are described, the most characteristic of which is the polymorphic diacetyl compound which crystallizes from absolute ethanol as typical crystals melting with decomposition at 223-224° C., while it separates from its solution in aqueous potassium acetate on acidification with dilute HCl as needles melting with decomposition at 235-236° C. Decomposition products of citromycetin resulting from various methods of treatment were investigated in attempts to establish its constitution and a tentative structure is given.—XII. **J. H. BIRKINSHAW. A new methoxy-dihydroxy-toluquinone produced from glucose by species of Penicillium of the P. spinulosum series.** p. 245-254. A dimethoxy-dihydroxy-toluquinone, $C_9H_{10}O_4$, melting at 202-203.5° C., was isolated from well aerated glucose solutions on which *P. spinulosum* was cultured. After purification the crystals are dark colored, almost black, with a metallic luster. The diacetyl derivative melts at 139.5° C. The complete identity of the new product has as yet not been definitely established.—XIII. **M. L. RINTOUL. On a new type of mucilaginous material, luteic acid, produced from glucose by Penicillium luteum Zukal.** p. 255-267. *P. luteum* when cultured on glucose solution gives rise to a mucilaginous acid product which is designated luteic acid. It is an amorphous hygroscopic substance and in aqueous solution is strongly acid to litmus. (α)Hg green of Na salt = −47°. It does not contain a CHO group and is not hydrolyzed by diastase or invertase. 100 grams of luteic acid on acid hydrolysis yields 83 grams glucose and 23.4 grams malonic acid as the sole end products. Alkaline hydrolysis yields malonic acid and a complex polysaccharide, luteose. Luteic acid is probably a complex compound, each molecule of which is built up of a number of similar units. Each unit is a condensation product of 2 molecules of glucose with one molecule of malonic acid with the loss of 2 molecules of water. The compound is constituted so as to leave one carboxyl group of the malonic acid free while the CHO groups of the glucose are linked in a manner so as to destroy their aldehydic properties.—XIV. **A. C. HETHERINGTON. On the production and chemical constitution of a new yellow coloring matter, citrinin, produced from glucose by Penicillium citrinum Thom.** p. 269-295. A new metabolic product, citrinin ($C_{13}H_{14}O_5$), is produced by *P. citrinum* when cultured on modified Czapek-Dox glucose solution. Its production is apparently specific for this species. It is a yellow crystalline compound melting with decomposition at 166-170° C., soluble in chloroform, acetone and hot ethanol and slightly soluble in boiling water. It dissolves in aqueous Na_2CO_3 with evolution of CO_2. Levorotatory in alcoholic solution. Its phenyl hydrazide melts at 207° C. with decomposition. An extensive account is given of the investigation of various decomposition products of citrinin.—XV. **F. P. COYNE and R. ROBINSON. The molecular structure of citrinin.** p. 297-300. The results of the previous paper, together with some new observations, are discussed, from the standpoint of the probable constitution of citrinin. A structure is proposed which is in harmony with the known reactions of this compound.—XVI. **P. W. CLUTTERBUCK, and M. L. RINTOUL. On the production from glucose by Penicillium spiniculisporum Lehman of a new polybasic fatty acid, $C_{17}H_{28}O_6$ (the lactone of γ hydroxy-β-δ-dicarboxypentadecoic acid).** p. 301-330. *P. spiniculisporum*, when cultured on Czapek-Dox glucose solution, produced succinic acid and the lactone of γ-hydroxy-β-δ-dicarboxypentadecoic acid, the identity of which is definitely established. The new product melts at 145°-146° C. (α)Hg green (in absolute ethanol) = −2.44°. (α)Hg green of Na salt in H_2O = +14.98°. The acid is soluble in ethanol, acetone, ether and boiling H_2O but practically insoluble in cold H_2O.—XVII. **J. H. BIRKINSHAW. The products of glucose metabolism formed by various species of fungi (Helminthosporium, Clasterosporium, etc.)** p. 331-353. Czapek-Dox glucose solution was used. *Helminthosporium geniculatum* produced chiefly mannitol and ethanol, to-

gether with small quantities of glycerol and acetaldehyde. *Clasterosporium* spp. in addition to the foregoing substances, formed succinic and probably malic acids. *Aspergillus wentii* produced gluconic acid as the chief metabolic product, together with smaller quantities of glycerol and mannitol. *Fumago vagans* formed a new, strongly rotary $(\alpha)^{18}$ Hg yellow $= +217°$ polysaccharide, $(C_6H_{10}O_5)_n$, composed entirely of glucose units and readily soluble in hot H_2O. The main metabolic product of this organism was gluconic acid and in addition smaller quantities of glycerol and succinic acid were formed. *Penicillium chrysogenum* formed gluconic acid and mannitol as the chief metabolic products.—XVIII. **J. H. BIRKINSHAW, and J. H. V. CHARLES. Biochemical characteristics of species of Penicillium responsible for the rot of citrus fruits.** p. 355-362. *P. digitatum* Saccardo produces considerable quantities of ethyl acetate when cultured on glucose solutions. Ethanol is also formed. A strongly rotatory $(\alpha)^{20}$ Hg green $= +299°$ complex carbohydrate, which hydrolyzes to glucose and is insoluble in cold H_2O, is obtained by hot H_2O extraction of the mycelium. *P. italicum* produces a substance which gives characteristic color reactions with $FeCl_3$ and with bleaching powder and which are "characteristic of and diagnostic for *P. italicum* Wehmer."—*O. E. May.*

6536. **SANDE, J. G. van der. Préparation et étude de quelques produits de l'assimilation de Pleurococcus vulgaris.** *Rec. Trav. Chim. Pays-Bas* 49(4): 471-478. 1930.—The presence of "phycic acid" and erythrite-i in *P. vulgaris* is reported, together with an improved method of preparation of these 2 substances. The "phycic acid" was found to correspond to the formula $C_{27}H_{51}N(OH)_4$. The exact molecular wt. was not established. Its general physical and chemical properties indicate that "phycic acid" is neither an acid, a free base, an aldehyde, a ketone, an acid ketone, a primary or secondary amine, an acid amine, an anhydride, a lactone, a nitro, nitroso or isonitroso derivative, nor an ether compound of an alcohol or a phenol. Moreover, it is not a phytosterin, nor a derivative of urea or of anthracine. Neither pentose, other sugars, nor glycerine are decomposition products. Oxidation of the molecule did not reveal any additional evidence of structure. It is possible that the molecule contains an atom of N in ring formation (perhaps as a derivative of coniine), around which are grouped the C atoms combined with H and with four OH groups, forming a saturated compound.—*Author's summary (transl. by F. B. Wann).*

6537. **SCHNEIDER, ERICH. Beiträge zur Physiologie der Farbstoffe der Purpurbakterien. I. Die Reinkultur des Rhodobacillus palustris Molisch und die Gewinnung seiner Pigmente.** *Beitr. Biol. Pflanzen* 18(1): 81-115. 6 fig. 1930.—*R. palustris* was isolated from foul ditch water and grown in pure culture on glycerin-pepton-agar. It is a spore-forming organism 2-3μ long and 0.6-1.3μ wide, whose optimum temp. for growth is 32-36° C. Blue light is less effective for growth and pigment production than red or chlorophyl filtered light. The most favorable O tension for pigment production is 2% (air=20.8%). In complete absence of O the bacteria develop very little pigment. For mass pigment production, bacteria were grown in glycerin-pepton broth at 30-36° C. The air over the cultures was diluted with H. In 2-3 weeks 2.5-3.5 gm. of bacteria (fresh wt.) can be grown on 500 cc. of medium. The bacteria were filtered by suction through a layer of talcum and dried in vacuo at 40-50° C. The pigment is best extracted in a mortar with a boiling mixture of methyl and ethyl alcohols. Saturated $(NH_4)_2SO_4$ changes the absorption spectra of the pigment markedly. An apparatus is described for extraction of pigment in the absence of O. —*R. D. Coghill.*

6538. **STENT, HOWARD BRAITHWAITE, VIRA SUBRAMANIAM, and THOMAS KENNEDY WALKER. The mechanism of the degradation of fatty acids by mould fungi.** *Pt. 3. Jour. Chem. Soc. [London]* 1929 (Sept.): 1987-1993. 1929.—*Aspergillus niger* was cultured in a solution of normal Ca-butyrate. Small quantities of succinic acid were isolated, and also inactive malic acid which is said to result from a secondary reaction of the succinic acid. The formation of inactive malic acid is of much interest since it is one of the few instances where a racemic compound is isolated from the products of a living organism.—*O. F. Black.*

6539. **TAKATA, RYOHEI. An undertaking on the utilization of microörganisms for human food materials. Chemical composition of the mycelium of Aspergillus oryzae. [Preliminary examination.]** *Jour. Soc. Chem. Indust. Japan Suppl. Binding* 32(6): 169B-170B. 1929.—Abstract.

6540. **TAKATA, RYOHEI. The utilization of microorganisms for human food materials. VIII. Proteins of the mycelium of Aspergillus oryzae. IX. Nucleic acid of the mycelium of Aspergillus oryzae. X. Carbohydrates of the mycelium of Aspergillus oryzae. XI. The sterols of the mycelium of Aspergillus oryzae. XII-XVI. Fundamental studies on the culture of Aspergillus oryzae. (I). The relation between the growth of mycelium and bios substances. (II). The relation between the growth of mycelium and the buffer strength of the medium. (III). The relation between the hydrogen ion concentration of the medium and the yield of mycelium. (IV). The influence of sodium chloride, sodium sulphate and sugar concentration on the growth of the mycelium. (V). The relation between the duration of culture, yield of mycelium, nitrogen content of the mycelium and sugar concentration.** *Jour. Soc. Chem. Indust. Japan Suppl. Binding* 32(9): 243B-247B, 32(10): 268B-271B; 32(11): 306B-308B. 1929.—Abstract.

6541. **TANGE, UME. On a certain wax in rice polishings.** *Sci. Papers Inst. Phys. & Chem. Res. [Tokyo]* 14(275/276): 275-277. 1930.—The wax, named melissyl cerotate ($C_{56}H_{112}O_2$), is described chemically.

6542. **TÄUFEL, K., und M. RUSCH. Über den Einfluss des Mälzungsprozesses auf das Fett der Gerste.** *Biochem. Zeitschr.* 209(1/3): 55-61. 1929.—During malting 11% of the total dry wt. of the seed is used up and 12% of the fatty portion. Of the fatty fraction oleic acid and the glyceride of this acid are used mainly and less of linoleic and palmitic acids, while linoleic increases some in amount and stearic acid markedly. During malting there is a marked increase in the non-saponifiable fatty fraction. This is said to show the significance of this fraction in the physiological processes of germination. —*W. Crocker.*

6543. **WOLFF, H. Die natürlichen Harze. [The natural resins.]** *[Monograph. der Fett-Chemie.]* 379p. 4 pl., 5 fig. Wissenschaftl. Verlagsges.: Stuttgart, 1928.

6544. **WREDE, FRITZ, und OTTO HETTCHE. Über Thiocellobiose und Thiocellobioside.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 172(4/5): 169-178. 1927.—In order to produce a S-containing sugar of greater stability than the previously obtained glucose derivative, cellobiose was used, and from this a beautifully crystalline sulphuric derivative of pronounced stability was prepared. This was obtained in the form of cellobiose acetate, following the method of Freudenberg, from absorbent cotton; and acetobromcellobiose by the method of E. Fisher and Zemplen, with certain modifications. Other similar substances can be obtained, e.g., dicellobiosyldisulfid, hepta-acetylthiocellobiose, thiocellobiose, silversalts of thiocellobiose, methylthiocellobiosid-heptaacetate, methylthiocellobiose, athylthiocellobiosid-heptaacetate, and ethylthiocellobiosid. Emulsin acts on these bodies so that the cellobiose component is split without formation of glucose; thus, from the dicellobiosyldisulfid, diglucosylsulfid, and from the methylthiocellobiosid, methylthioglucosid were obtained. Both compounds can be characterized in the form of acetates.—*G. J. Peirce.*

BIOCHEMISTRY, METABOLISM (NITROGEN RELATIONS)

6545. **ANDREADIS, THALES. Über den Nitratgehalt des Tabaks und über eine Fehlerquelle der bisherigen**

Bestimmungsmethode. *Biochem. Zeitschr.* 204 (4/6) : 484-492. 1929.—According to the method criticized nitrate was extracted from pulverized tobacco by hot 40% alcohol, then reduced by $FeCl_2$ in HCl and the resulting NO gas measured. But the hot alcohol also extracts some pectic substance which is partially hydrolyzed by the reducing agent, freeing CO_2. Thus the volumeter contains both NO and CO_2, causing an error. If KOH be introduced into the volumeter tube, the gas volume after absorption will be a true measure of the NO gas.—*S. H. Eckerson.*

6546. **FAITELOWITZ, A. Zur Kenntnis des Nikotinabbaus im Tabak.** *Biochem. Zeitschr.* 224 (4/6) : 459-470. 1930.—A rapid orientation method is described for the estimation of nicotine in a tobacco liquor, which consists in dissolving the nicotine in an excess of mercuric KI reagent, giving a transparent liquor. In the absence of $CHCl_3$ an acid decoction of tobacco gradually loses its acidity and becomes alkaline after 48-72 hrs. This reaction does not occur in the presence of $CHCl_3$ (2%) and is favored by a large surface as well as the presence of the tobacco pulp. As the acidity becomes less there is also a loss in the nicotine content and an increase in the total N bases. Decomposition of the nicotine ceases as soon as the liquor becomes alkaline. If an alkaline decoction along with the tobacco from which it came is evaporated at ordinary room temp. until the tobacco is air-dry, there is a large loss of N bases, the latter being quite volatile. If more water is added to this air-dry nicotine-poor tobacco, the decomposition of nicotine begins again. The repetition of this procedure 2-3 times gives a tobacco that is free from nicotine. However, its content of N bases is so very low that it seems flat when judged by its smoking qualities. As the nicotine is decomposed the catalase activity of the tobacco increases, indicating bacterial action. Most kinds of tobacco bear bacteria which ferment sugar and starch to acids and those which decompose the protein of milk and thereby form ammonia. If 1% sugar (dextrose, lactose, sucrose, or starch) is added to a decoction of tobacco, there is an acid fermentation which develops CO_2. This does not take place in the presence of $CHCl_3$, and is checked by too large a surface although the liquor becomes alkaline. It may also be checked if the concentration of the liquor is too high (probably on account of the toxicity of the nicotine). The reaction which decomposes the nicotine proceeds along with the acid fermentation but ceases as soon as the acidity becomes too great. There is also an increase in the basic content, corresponding to the decomposition of nicotine. If the extract and the tobacco are evaporated to dryness, this tobacco shows an increase in total N bases which corresponds to the decrease in nicotine. These bases are not volatile in combined form. The resultant tobacco has an acid reaction and is rich and mild for smoking. A total decomposition of nicotine without loss of N is obtained (1) if only the tobacco extract is subjected to fermentation, and (2) if one part of the extract is given a large and the other part a small surface. It is then possible to neutralize with the acid liquor the basic reaction formed in the extract with the large surface, and to continue until the liquor has become entirely free from nicotine. This gives an almost nicotine-free tobacco with the same N content and an increased catalase content. The bases appear to have a great influence on the value of tobacco for smoking.—*Author's summary (transl. by C. J. Lyon).*

6547. **FINNEMORE, HORACE, and CHARLES BERTRAM COX. Cyanogenetic glucosides in Australian plants.** *Jour. & Proc. Roy. Soc. New South Wales* 62: 369-378. 1928 (1929).—The phyllodes of *Acacia glaucescens* and *A. cheelii* gave by extraction with ether the same cyanogenetic glucoside, identified as sambunigrin (*d.* mandelo-nitrile glucoside). Five samples of the former, collected at different seasons, yielded 0.12-0.42% of HCN, calculated on the air dried material. In view of the suspected toxicity of *Euphorbia drummondii* to stock, a systematic collection showed that of 113 specimens, from 35 districts, 11 contained an unknown cyanogenetic glucoside. The HCN obtained was 0.041-0.103%. *Goodia lotifolia* yielded 0.25% of HCN, equivalent to 0.57, calculated on the air dried leaves. Herbarium specimens contained none. *Poranthera microphylla* gave 0.051% HCN and *Eucalyptus corynocalyx* 0.179%, while *P. corymbosa* is only slightly cyanogenetic.—*H. Finnemore.*

6548. **[FUKAKI, SADAYOSHI.] [Über den Nährwert des Calciumnitrats und des Ammoniumsulfats als Stickstoffquelle zur Wasserkultur der Reispflanzen (Oryza sativa).]** [In Japanese with German summary.] *Bulteno Sci. Fakult. Terkult. Kjusu Imp. Univ. Fukuoka, Japan* 3 (3) : 244-262. 5 fig. 1929.—For the most part swamp rice, but occasionally mountain rice, was used in these tests, using modified Knop's solution and Hansteen-Cranner's solution in 1/20th dilution as culture media. The solutions were obtained from 3 different mixtures, the 1st having the N in the form of $(NH_4)_2SO_4$, the 2nd as $Ca(NO_3)_2$, and the 3rd with a mixture of these 2. or in the form of NH_4NO_3, comparable quantities being used throughout. The tests and experiments were carried out with particular reference to the reaction and concentration of the cultural media; the pH was determined frequently and buffer mixtures of H_3PO_4 and its salts were added to regulate the pH. In dilute solutions, well regulated as to pH, rice plants developed well through all of their vegetative stages, not only on $Ca(NO_3)_2$ or $(NH_4)_2SO_4$, but also on mixtures of these. In all stages of development $(NH_4)_2SO_4$ appeared better than KNO_3 for vegetative development; but for seed development, differences between these sources of N were difficult to observe; however, there seems to be a tendency for $Ca(NO_3)_2$ to be more favorable for maturing of seed.—*Author's summary (transl.).*

6549. **HOPKINS, FREDERICK GOWLAND (with a section by LESLIE J. HARRIS). On glutathione: a reinvestigation.** *Jour. Biol. Chem.* 84 (1) : 269-320. 1929.—A rapid and easy method is described for separating from yeast a pure crystalline substance with the characters of a tripeptide. It yields on hydrolysis glycine, glutamic acid, and cysteine and its % analysis corresponds exactly with the composition of a tripeptide containing these 3 amino acids. The yield from yeast is 1 gm. per kilo and upwards. The substance is present in red blood corpuscles. Acidimetric titration methods have been applied (by Harris) to the determination (1) of the NH_2 and COOH groups, and (2) of the minimal molecular wt. The values so found agree with those calculated for a tripeptide of the above constitution within the experimental error of 2% when the routine methods generally applicable to amino acids, polypeptides, etc., were used; or less (e.g., within 0.3%) when special refinements were adopted. The substance is unstable. On boiling with pure distilled water for instance it yields the diketopiperazine of cysteine and glycine, together with free glutamic acid; but also slowly undergoes a more deep-seated decomposition. The tripeptide constitutes a large proportion of the preparations of glutathione made by earlier methods. The description of that substance as a dipeptide was, therefore, erroneous.—*Author's summary.*

6550. **JANKE, ALEXANDER, und HANS HOLZER. Probleme des Stickstoffkreislaufs. II. Weitere Untersuchungen über das proteolytische Vermögen der Mikroben.** *Biochem. Zeitschr.* 226 (4/6) : 243-249. 1930.—The breakdown of casein by normal, multiplying cells was compared with that caused by equal numbers of chloroform-treated cells of *Bact. prodigiosum, Streptococcus lactis, Saccharomyces cerevisiae,* "Spiritushefe" Rasse XII, *Willia anomala, Kloeckera apiculata, Mycoderma vini, Aspergillus niger,* and a *Fusarium* sp. In agreement with previous findings, the casein breakdown by the so-called liquefiers was more vigorous with the normal cells than with the chloroform-treated cells; the non-liquefiers, however, exhibited a reverse behavior. Appar-

ently the proteolytic enzymes of the liquefiers occur as exoenzymes and those of the non-liquefiers as endoenzymes, so that the former are active at all times while the latter become active only after injury to the cell walls. The proteolytic activity reported in the literature for many organisms may well have been due to dead or degenerating cells. The coli test of Wollman for the detection of microbial proteolysis should be employed with caution.—*Authors' summary (transl. by B. Cohen).*

6551. **JODIDI, S. L.** The nature and source of plant nitrogen. *Jour. Franklin Inst.* [*Philadelphia*] 208(6): 767-772. 1929.—A general account of the sources of N and of the classes of N compounds in plants.

6552. **KAPELLER-ADLER, REGINE, und TIBOR CSATÓ.** Über das Auftreten von methylierten Stickstoffverbindungen im Seetang. *Biochem. Zeitschr.* 224(4/6): 378-383. 1930.—An investigation made of the possible presence of amines in seaweed (*Fucus vesiculosus* and *F. serratus*) showed that ammonia, methylamine, and trimethylamine occur in these plants in considerable quantities in the form of salts.—*Authors' summary (transl. by C. J. Lyon).*

6553. **KEENAN, GEORGE L., and J. D. WILDMAN.** Note on a previously unrecorded occurrence of crystalline globulin in banana seeds. *Jour. Biol. Chem.* 88(1): 425-426. 2 fig. 1930.

6554. **KENDALL, EDWARD C., BERNARD F. McKENZIE, and HAROLD L. MASON.** A study of glutathione. 1. Its preparation in crystalline form and its identification. *Jour. Biol. Chem.* 84(2): 657-674. 1929.—The formulae suggested in this paper are based on 3 facts: (1) succinic acid is obtained after H_2O_2 treatment only after hydrolysis; (2) glycine but no glutamic acid can be separated after treatment with HNO_2; (3) neither glutamic acid nor glycine can be separated after oxidation with H_2O_2. The fact last mentioned is negative in character; therefore, until more evidence positive in nature is obtained, the structure of the tripeptide must remain in doubt.—*From authors' summary.*

6555. **KLEIN, G.** Nitratsassimilation bei Schimmelpilzen. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 174 (5/6): 278-283. 1928.—A reply is made to objections of Kostytschev to an earlier work of Klein, Eigner, and Müller dealing with the same subject.

6556. **KLEIN, GUSTAV, KARL TAUBÖCK, und HANS LINSER.** Harnstoff und Ureide bei den höheren Pflanzen. I. Das Vorkommen von Harnstoff im Pflanzenreich und sein Wandel im Laufe der Vegetationsperiode. *Jahrb. Wiss. Bot.* 73(2/3): 193-225. 3 fig. 1930.—Minor improvements have been made in Tauböck's previously reported micro-method for the detection of urea and ureides in plants, whereby an acetic acid extract of plant tissue is treated with xanthydrol on a cover glass, with the formation of dixanthylcarbamide, whose small doubly refracting crystals can be microscopically identified. Within certain limits quantitative estimations may be approximated. The authors have identified urea or ureides in large numbers, in many varieties of seed-bearing plants. The quantities varied among the different families and sp., in the different organs of the plant, and with the growth stage. Urea was not found in ripe seed. Seedlings contained urea more frequently than older plants. Some seedlings show urea in all parts, some only in their roots. Herbaceous plants generally contain urea in their roots, but this is not true of the woody plants. Young leaves, petioles and leaf buds usually give positive tests. Distribution of urea between blossom and pedicel varies greatly among different plants. Urea is most likely to occur in the more actively growing parts of plants. This irregularity of the distribution of urea renders difficult the drawing of conclusions as to its origin and physiologic function.—*M. J. Blish.*

6557. **KLEIN, GUSTAV, und KARL TAUBÖCK.** Physiologie des Harnstoffs in der höheren Pflanze. II. *Österreich. Bot. Zeitschr.* 76(3): 195-221. 1927.—Urea has been found in a wide range of plants, particularly in the *Urticacae, Leguminosae,* and *Aceraceae;* also in cucurbits, grasses, and orchids. In dicotyledons urea, when present, is found in the petioles; in orchids in the roots. Latex from different plants, likewise all lichens, mosses, and ferns examined, contain no urea. The amount present in any group of plants is very variable. Of the blossoms examined, only those of *Laburnum anagyroides* gave positive results. There appears to be an inverse relation between urea and urease. In culture solutions ammonia from the decomposition of urea is liable to cause injury. Part of the urea is also liable to "exoenzymatic" decomposition. The possibility that arginine is the precursor of urea in plants is discussed.—*O. Owen.*

6558. **PIRSCHLE, KARL.** Nitrate und Ammonsalze als Stickstoffquellen für höhere Pflanzen bei konstanter Wasserstoffionenkonzentration. *Zeitschr. Wiss. Biol. Abt. E, Planta* 9: 84-104. 3 fig.; also in *Ber. Deutsch. Bot. Ges.* 47(Generalversammlungsheft): (88)-(92). 2 pl. 1929.—The physiological reactions of N salts (nitrate and ammonium) were investigated to determine their differences in nutritive physiological action. Water and sand cultures (constant renewal) with constant pH and different plants in strong acid and in alkali regions give poorer growth with ammonia-N than with nitrate-N. In a narrow range of pH (pH 5-7) the yields were equal. The physiological reactions of the nitrate (alkaline) and the ammonium salts (acid), although important, cannot be the only grounds for the nutritive physiological differences between these forms of N, or otherwise comparative cultures at equal and constant pH would give equal yields, which is not the case.—*K. Pirschle (transl. by J. B. Hester).*

6559. **SAUNDERS, FELIX.** Studies in proteins. II. Concerning the uniformity of the protein fraction extracted from orange seed meal by salt solutions. *Jour. Amer. Chem. Soc.* 53(2): 696-700. 1931.—The alkali halide salts in normal concentration all extract the same amount of N from orange seed meal; there is no evidence for the existence of a lyotropic series. The protein isolated from orange seed meal by extraction with different salts is probably the same in every case.—*Author's conclusions.*

6560. **SVEDBERG, THE, and TOMINOSUKE KATSURAI.** The molecular weights of phycocyan and of phycoerythrin from Porphyra tenera and of phycocyan from Aphanizomenon flos aquae. *Jour. Amer. Chem. Sci.* 51(12): 3573-3583. 1 fig. 1929.—The specific volume, light absorption and molecular wts. of phycoerythrin and phycocyan from *P. tenera* and of phycocyan from *A. flos-aquae* have been determined at different pH values. The specific volumes of these proteins are identical and independent of pH and, within the limits of error, also identical with the specific volumes of all other proteins studied except the hemocyanins. This fact is in line with the result of the molecular wt. determinations, according to which all the proteins in question are loosely built up of units of approximately the same mass. viz. 34,500. It is also probable that they have the same general constitution. The light absorption of the phycoerythrins from *Porphyra* and *Ceranium* are identical and the same is the case for the corresponding phycocyans. The light absorption of phycocyan from *Aphanizomenon* is different from that of the proteins of Rhodophyceae. Near the isoelectric points the molecular wts. of these 3 proteins are identical and approximately 208,000 ± 5000. With increasing pH decomposition of the moleclules takes place. The phycoerythrin is the most stable one. At pH 6.8 it is still undecomposed but at pH 11.0 it consists of a mixture of 75% 208,000 and 25% $\frac{1}{8} \times 208{,}000$. Phycocyan from *Porphyra* shows indications of decomposition at pH 6.8, but the bulk of it consists of $\frac{1}{2} \times 208{,}000$; at pH 11.0 it is decomposed into small units of varying size. Phycocyan from *Aphanizomenon* is decomposed into a mixture of 65% of 208,000 and 35% of 100,000 at pH 6.8 and is completely decomposed into the protein unit $\frac{1}{8} \times 208{,}000$ at pH 12.0.—*Authors' summary.*

BIOCHEMISTRY, METABOLISM (ENZYMES, FERMENTATION)

6561. **AMBROS, OTTO, und ANNA HARTENECK.** Über natürliche Aktivierung von Proteasen pflanzlicher Milchsäfte. *Hoppe-Seyler's Zeitschr. Physiol.* 181 (1/2/3) : 24-41. 2 fig. 1929.—Comparison of fresh papaya juice with commercial papain shows that the fresh juice varies in activity according to the degree of ripeness of the fruit. Similarly in the expressed juice of the pineapple, especially in the unripe fruit, the presence of an activator can be demonstrated which increases the effectiveness of the proteolytic enzyme to the same degree as that shown by commercial papain activated by HCN. On the other hand, the ripe fruits contain no activator, but the juice can be activated by HCN or by the juice of unripe fruits. The fully ripe papaya fruits yield no milky juice. Extracts from seed are fully activated. Therefore it appears that in the earlier stages of development of papaya fruits, the protease can hydrolyze higher and lower proteins, but with increasing ripeness confines its activity to the higher ones. The same relation between ripeness and condition of activation is shown in the pineapple; but due to the structure of the pineapple, it was impossible to distinguish between the activator and inactivated proteases. The name phytokinase is proposed for such natural activators of fruit proteases. Besides the simple system of proteases in the milky juices of plants there is another group of plant proteases, such as those in pumpkin and cucumber, the action of which is checked by HCN.—*G. J. Peirce.*

6562. **AMELUNG, H.** Säurebildung aus Raffinose mittels Aspergillus niger. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 187 (4/5) : 171-172. 1930.—*A. niger* split raffinose into melibiose and fructose. Melibiose was then not used as a C source, but fructose was further utilized and citric acid was formed from part of it.—*N. M. Payne.*

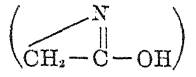
6563. **BARTON, ARTHUR WILLIS.** Studies in autolysis. I. Autolysis in seeds. *Trans. Kans. Acad. Sci.* 32: 34-36. 1929.—Under the ordinary conditions of experimentation the so-called autodigestive changes commonly known as autolysis, as far as seed are concerned, would seem to be brought about by microorganisms, since when complete sterilization of living seed was effected, no autolytic changes occurred.—*F. C. Gates.*

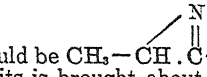
6564. **ENGLIS, D. T., and F. A. DYKINS.** The effect of ethylene upon the hydrolysis of salicin by emulsin. *Jour. Amer. Chem. Soc.* 53 (2) : 723-726. 1931.—The fact that ethylene hastens coloration of many fruits and vegetables gave rise to the belief that its effect might be associated with the activation of the enzyme responsible for the hydrolysis of many glucosides. A study was made of its influence upon the rate of hydrolysis of salicin by emulsin, followed by polarimetric observations and determinations of reducing sugar. No acceleration of the reaction was observed in favor of the treated samples over the controls. The results are in accord with the idea that ethylene does not directly affect the activity of enzymes, but acts indirectly through its effect upon the living matter.—*Authors' summary.*

6565. **EULER, H. v., KARL MYRBÄCK, und SIGNE MYRBÄCK.** Zur Bestimmung der Katalase in Pflanzenmaterial. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 186 (4/6) : 212-222. 3 fig. 1930.—Catalase was determined for dry barley meal, for embryonic leaves, and for sprouts. There was no evidence of a naturally occurring anti-catalase. Maximum activity of malt extract occurred at pH 7-8. A phosphate buffer was used. Catalase of the sprouts was higher than that of the barley kernel from the 7th to 12th days of the experiment. On the 6th day the kernel had a slightly higher catalase content than the sprouts. Catalase content of sprouts grown in dark was lower than that of those grown in light, from the 4th to 8th day, but by the 10th day tended to be the same. Total catalase of barley increased with length of time after germination.—*N. M. Payne.*

6566. **GRASSMANN, WOLFGANG, und HANNS DYCKERHOFF.** Über die Wirkungsweise der Hefepolypeptidase. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 175 (1/2) : 18-37. 1928.—The dipeptidase-free polypeptidase splits d, l-leucyl-glycyl-glycin into leucine and glycyl-glycine, and glycyl-glycyl-l-leucine into glysin and glycyl-leucine, i.e., the enzyme attacks the end with the free amino group. Leucyl-diglycyl-glycine is split into leucine and diglycylglycine; triglycyl glycine into glycine and the tripeptide. The tripeptide resulting from the hydrolysis of the leucyl-diglycylglycine is not attacked because of inhibition by leucine; but leucine has little effect on the hydrolysis of the tetra- or dipeptide. Substitution of the amino group destroys the affinity of the enzyme for the substrate.—*G. S. Eadie.*

6567. **HUPPERT, OSKAR.** Konstitution und Konfiguration der Eiweissstoffe. 41p. 7 fig. F. Deuticke: Leipzig & Vienna, 1928. Pr. 4 M.—The formation of proteins and carbohydrates, in nature, is brought about by a photochemical means from the system CO_2 and NH_3 in the presence of water. Carbamic acid (NH_2-COOH) is formed from the CO_2 and NH_3 which assumes the more reactive form iminocarbonic acid [$NH=C(OH)(OH)$] and this compound by the condensation of 2 molecules and loss of H_2O_2 forms cyanimidocarbonic acid [$NH=C(OH)CN$]. By methylene polymerization of the cyanimidocarbonic acid cyanoaminomalonimidic acid ($NH_2-\underset{\underset{CN}{|}}{C}=C=NH$) is formed. From this compound the anhydride of glycolimidic acid



is formed, and this is the fundamental unit of all proteins, since all the amino acids can be considered derivatives of it, e.g., alanine would be  , etc. Condensation of these units is brought about by photochemical energy and a micromol of a normal protein is formed. Further condensation of several micromols produces the protein itself. No new experimental data are presented but there is an appended bibliography of 60 references.—*H. O. Calvery.*

6568. **KERTESZ, Z. I.** The acidity optimum of yeast hexosediphosphatase. *Jour. Amer. Chem. Soc.* 52 (10) : 4117-4119. 1930.—The pH optimum of the yeast hexosediphosphatase was 6.5.

6569. **KONOPKA, K., und H. ZIEGENSPECK.** Die Kerne des Droseratentakels und die Fermentbildung. *Protoplasma* 7: 62-71. 1929.—On feeding with meat, egg albumen, and pollen, the cells of the tentacles of *Drosera* reveal rounded structures in the cytoplasm which are claimed to be partially assimilated food. These later dissolve. Meanwhile the nucleus decreases in size and disappears. Indications point to the substance around the nucleus as a digesting organ. Alterations in the nucleus and nucleolus are thought to be due to the formation of enzymes.—*L. Moyer.*

6570. **[KUNO, YUFU.] [Critical study on the enzymic decomposition of nicotine.]** [In Japanese, with English summary.] *Bulteno Sci. Fakult. Terkult. Kjusu Imp. Univ. Fukuoka, Japan* 3 (3) : 287-291. 1 fig. 1929.—Fodor and Reifenberg published a paper purporting to show that nicotine is decomposed by an enzyme in tobacco juice or extract. To confirm their findings their experiments were repeated, and for the determination of nicotine several methods were used. The analytical results obtained agreed in all the 4 methods except Fodor and Reifenberg's, which as a rule gives a lower value of nicotine. The findings of Fodor and Reifenberg were not confirmed and the conclusion was reached that there is no enzyme splitting nicotine in tobacco juice and extract. The discrepancy should be ascribed to the incompleteness of their method of determining nicotine, and also to the fact that their experiments lacked proper controls.—*Author's summary.*

6571. **LANTZ, C. W.** Temperature and catalase activity in germinating corn. *Proc. Iowa Acad. Sci.* 35: 147-149. 1928 (1930).—Three strains of corn [*Zea mays*] were used at 30-40° C. Catalase diminishes rapidly at 42° and growth is retarded, but Palladin states that respiration does not diminish. If this is true, catalase is not responsible for physiological oxidation, but more probably for destruction of injurious peroxides formed in metabolism.—*H. S. Conard.*

6572. **NARAYANAMURTI, D., and ROLAND V. NORRIS.** Studies in enzyme action. II. The nature of amylase. *Jour. Indian Inst. Sci.* 11A(11): 134-139. 5 fig. 1928.—The activity of electro-dialysed cholam (*Sorghum vulgare*) diastase was considerably increased as compared with that subjected to ordinary dialysis. The electro-dialysed diastase gave none of the usual protein reactions but was positive to the Molisch test. The diastase is separated into saccharifier and liquefier fractions by electro-osmosis.—*H. D. Brown.*

6573. **PITMAN, GILBERT A., and W. V. CRUESS.** Hydrolysis of pectin by various microorganisms. *Indust. & Eng. Chem.* 21(12): 1292-1295. 1929.—The pectinase activity of representatives of the more important groups of microörganisms occurring on fruits was determined for aerobic growth at room temp. in or on apple juice containing added apple pectin. Of the microörganisms tested, *Penicillium glaucum* and a *Pythium* sp. exerted the greatest hydrolytic action. In fact, the *Pythium* sp. destroyed practically all of the pectin in 12 weeks' incubation at approximately 20° C. The bacterial cultures, *B. aceti* and *B. amylovorus*, had little effect under the experimental conditions. Yeasts (*Saccharomyces cerevisiae*, several strains of Mycoderma, and *S. ellipsoideus* from grapes) had no noticeable effect on the pectin. The effect of several organisms on the pectin was not only quantitative but qualitative. The appearance and texture of the pectin precipitate varied greatly, indicating that the degradation of the pectin had occurred in more or less definite stages. One organism had apparently not greatly reduced the quantity of pectin as shown by the Wichmann method, but it had changed its character so markedly that the "pectin" refused to form a jelly under conditions where even lower concentrations of pectin from other cultures gave a firm jelly. The enzyme involved in the latter case was apparently pectase rather than pectinase. The viscosities of the liquids from most of the cultures followed in only a general way the apparent pectin content as determined by the Wichmann method. In the presence of Ca salts pectic acid as well as pectin affects the viscosity. The natural enzymes of apple tissue did not greatly reduce the pectin content during the period required for complete alcoholic fermentation of the sugars by *S. cerevisiae* at 35° C. This finding confirms earlier observations and indicates a method of reducing the cost of extraction of pectin commercially from apple waste. Hydrolysis of pectin by *P. glaucum* was more rapid in media of pH 6 and 5 than in one of pH 3. This is in keeping with the finding of Wilson and others that pectin is more stable in solutions of moderately low pH value than in those of high pH value. Dextrose, when present in a pectin stock solution, is not altogether objectionable, as it has a protective effect against the hydrolysis of pectin by *P. glaucum*. This effect would probably apply to other organisms.—*G. A. Pitman.*

6574. **TATE, P.** On the enzymes of certain dermatophytes, or ringworm fungi. *Parasitology* 21(1/2): 31-54. 1929.—Enzyme preparations were made by the acetone powder method from 6 typical sp. (*Trichophyton tonsurans, Sabouraudites radiolatus* (2 forms), *S. audouini, S. lanosus,* and *Grubyella schoenleinii*) of dermatophytes. A trypsin-like proteolytic, and a lipolytic enzyme, amygdalase, urease, maltase, and diastase were found in all sp.; invertase, inulase, lactase, zymase, and a keratolytic enzyme were absent in every case. The sp. with most proteolytic activity have least carbohydrases and conversely.—*R. W. Thatcher.*

6575. **TAUBER, HENRY.** Studies on crystalline urease. Inactivation by ultra-violet radiation, sunlight with the aid of a photodynamic agent, and inactivation by trypsin. *Jour. Biol. Chem.* 87(3): 625-628. 1930.—Direct sunlight did not affect urease to which no eosin has been added at the various temp. and time intervals studied. In the presence of eosin, sunlight inactivated the urease. Ultra-violet had an inhibitory effect upon the activity of urease, inversely proportional to the distance. The presence of eosin increases this effect. Crystalline urease was inactivated by trypsin in the presence of a protective colloid, which would indicate its protein nature.—*Author's summary.*

6576. **TRAUTWEIN, K., und J. WASSERMANN.** Die Gärleistungen der Hefen der ersten Untergruppe der Gattung Saccharomyces (Meyen) Rees. *Biochem. Zeitschr.* 215(4/6): 293-318. 3 fig. 1929.—CO_2 production from sucrose, dextrose, and maltose was measured in terms of the number of min. necessary to hydrolyze ½ of a given amount by a weighed quantity of dry yeast. Temp. in the different experiments was 17-22° C. In all sp. of yeast except a Johannisberg culture and *Saccharomyces saké*, sucrose was hydrolyzed more readily than dextrose. Sp. differences for maltose hydrolysis were the most variable, ranging from a ratio of 82 for *S. batatae* to 502 for *S. yedo* when compared with 100 as the unit for sucrose hydrolysis. In only 1 case (*S. willianus*) were the hydrolysis rates for dextrose and sucrose identical, although they approached identity with *S. saké, S. vordermanni,* and *S. validus*. Both quantitative and qualitative differences seem to exist between different yeasts. Dextrose was as a rule more readily hydrolyzed than maltose, although there were a few cases in which the reverse was true.—*N. M. Payne.*

6577. **VINES, S. H.** The proteases of plants; a record and a reply. 32p. Macmillan Co.: London, 1930. Pr. 1 s. —A brief summary of 13 papers published by the author in Annals of Botany 1897-1910 is followed by a discussion of the controversial views of himself and Willstätter and his collaborators as to whether protein hydrolysis by plant enzymes through the 2 steps of proteins → proteoses and peptones → amino-acids, respectively, is effected by a single enzyme or by 2 distinct enzymes, the 1st a proteinase and the 2nd an ereptase. The author defends his original views in favor of the latter hypothesis but says that he has had no opportunity to secure experimental evidence during the last 20 yrs.—*R. W. Thatcher.*

6578. **VIRTANEN, ARTTURI I., H. KARSTRÖM, und O. TURPEINEN.** Über die Vergärung von Dioxyaceton. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 187(1/3): 7-44. 1930.—The fermentation of dihydroxyacetone by *Bacillus coli* was studied. These bacteria were grown in culture media, which were then centrifuged, and the bacteria washed in sterilized water to which chalk had been added, in order to keep the products of bacterial groups separate from those of their fermentation. *B. coli* strain I produced from glucose about 40% lactic acid, 20% succinic acid, 10% acetic acid, and 10% alcohol and formic acid which split to CO_2 and H_2. Bacilli that has been grown in nutrient media in which dihydroxyacetone was present fermented dihydroxyacetone much faster than bacilli grown on glucose. Fermentation rate of glucose, however, was independent of the nutrient medium in which bacteria were grown. 1 gm. of bacteria could ferment 500 mgm. of glucose in 864-950 min. 1 gm. of bacteria grown in lactose or glucose fermented 500 mgm. dihydroxyacetone in about 2400 min.; 1 gm. of *B. coli* from cultures grown in media containing 0.22% dihydroxyacetone fermented 500 mgm. dihydroxyacetone in 425 min. The optimal phosphate concentration for fermentation was 0.5-1.0% P_2O_5. Dihydroxyacetone was not condensed to hexose, but was produced directly from glucose. From dihydroxyacetone, *B. coli* strain I produced about 50.1% glycerol, 30% acetic acid, and 15% formic acid. Some minor products of fermentation were also formed. The fermentation of dihydroxyacetone is considered as primarily a regrouping of 2 triose molecules. According to Cannizzaro, this transformation

would involve 1 mol. of glycerine and 1 mol. of glyceric acid. The latter would break down to acetic and formic acid.—*N. M. Payne.*

6579. VIRTANEN, ARTTURI I., und ERKKI PELTOLA. Über die Vergärung von Glycerinsäure. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 187(1/3): 45-52. 1930.—*B. coli* breaks down *dl*-glyceric acid into acetic and formic acids, the latter breaking farther to H_2 and CO_2. l-glyceric acid is first fermented, but since the reaction stops when the levo-acid is consumed, the d-acid can be isolated in pure form from the fermentation solution. The d-glyceric acid can be fermented, however, if the reaction is allowed to go to completion. The rate of fermentation is slower with glyceric acid than with dihydroxyacetone.—*N. M. Payne.*

BIOCHEMISTRY, METABOLISM (RESPIRATION, OXIDATION)

6580. ALBACH, W. Mikrospirometrische Untersuchungen über den Einfluss der Vitalfärbung und der Plasmolyse auf die Atmung von Pflanzenzellen. *Protoplasma* 7: 395-422. 10 fig. 1929.—A long stay in damp air has no effect on the respiration intensity of *Elodea canadensis* taken from the water. Equal wts. of different parts of the plant have different respiration values; stem tips respire more than older parts. Animal material reveals that with increasing age respiration slows up. Injury and increased temp. increase respiration. Methylene blue increases the respiration of *Elodea* about 100%. Neutral red only increases it 30%. Fuchsin S acts like methylene blue. Eosin and chrysoidin decrease it about 33%. All these changes can be brought back to normal by washing out the stain with water. The respiratory quotient during these experiments remained near 1. KNO_3 and $Ca(NO_3)_2$ hinder the gas exchange, while weak sugar solutions increase it and stronger ones decrease it.—*L. Moyer.*

6581. GENEVOIS, L. Sur la fermentation et sur la respiration chez les végétaux chlorophylliens. *Rev. Gén. Bot.* [*Paris*] 41(484): 252-271. 1929.—In this work, Pasteur's reaction as defined by O. Meyerhof was studied. That means synthesis of carbohydrates by using the energy produced by respiration. This synthesis is the inverse of fermentation. Meyerhof has shown this reaction to proceed in frog's muscle, in bacilli of lactic fermentation, and in yeast. Genevois does the same for *Lathyrus odorato* where the fermentation persists, in the air, in the cotyledons by reason of their thickness. The oxidation quotient is nearly the same as that found by Meyerhof for yeast. Respiration is thus the sum of 2 phenomena: oxidation of carbohydrates (exothermal) and synthesis of carbohydrates, or Pasteur's reaction (endothermal). The 2nd is nearly hidden by the 1st in green algae, and there KCN arrests both reactions. In animals, KCN stops only Pasteur's reaction. Genevois shows that, in *Lathyrus odorata,* a suitable quantity of KCN acts also upon Pasteur's reaction and not upon respiration. Fermentation proceeds in lower algae and in phanerogams. Respiration and fermentation are the same in plants and animals.—*M. Homès.*

6582. GUSTAFSON, FELIX G. Intramolecular respiration of tomato fruits. *Amer. Jour. Bot.* 17(10): 1011-1027. 1930.—Tomatoes can respire anaerobically for a long time without showing a great decrease in the CO_2 production besides the initial decrease which occurs during the first 24 hrs. Every time air was admitted after a period of anaerobiosis there was a large increase in the CO_2 production above the original amount. This is interpreted as being due to the respiration of some substance produced as a result of the intramolecular respiration, as the increase was less when the period of anaerobiosis was short than when it was long. The production of CO_2 in absence of O is not due to injury, as the fruits were in perfect condition after the experiments.—*F. G. Gustafson.*

6583. HARRIS, G. H. Studies on tree root activities. I. An apparatus for studying root respiration and factors which influence it. *Sci. Agric.* 9(9): 553-560. 15 pl. 1 fig. 1929.—The bases of young fruit trees were placed in air-tight containers with the roots in nutrient solution through which air was bubbled. The amount of CO_2 produced was then determined.—*H. H. Clum.*

6584. JOYET-LAVERGNE, PH. Glutathion et chondriom. *Protoplasma* 6(1): 84-112. 7 fig. 1929.—This is a review of the literature on glutathione and its rôle in oxidation and respiration, emphasizing particularly the relation of this substance to the mitochondria.—*W. Seifriz.*

ORGANISM AS A WHOLE

6585. GAGER, C. STUART. Aeration of tree roots—theory. *Nation. Shade Tree Confer.* 5: 26-27. 1929.—Note.

6586. KIGASAWA, T. Untersuchungen über Hefepopulationen. *Arch. Hyg.* 99(5/6): 196-208. 1928.—Both of the 2 yeasts used in this work exhibited active fermentation properties and small bud formations. Beer wort and occasionally other media were used, and always the same Pt loop. One loop to 2 cc. sterile salt solution was denoted as $\frac{1}{2}$, a loop from this to 2 cc. of the $\frac{1}{2}$ solution as $\frac{1}{3}$, etc. A loop of the resultant growth was stroked on wort agar plates, and colonies counted, in the following experiments: (1) Strong dilutions of wort culture added to 5 cc. beer-wort at room temp., observed after 2, 4, 8, etc., to 192 hr. intervals showed no colonies at 8 hrs., with marked increase at 24, and maximum at 120 hrs., the Malaga yeast showing slight, the Compressed no increase after this. (2) From the 192 hrs. old cultures, centrifuged repeatedly, washed in salt solution, and inoculated in 4.5 cc. fresh media, 3 strengths were made: (a) 4 cc., (b) 0.4 cc. with 3.6 cc. fresh medium, (c) 0.04 with 3.96 cc. fresh medium. Results were surprisingly uniform with (1), especially in (a) where with $\frac{1}{2}$ and $\frac{1}{4}$ dilutions no growth appeared and with $\frac{1}{8}$ dilutions about 100 colonies without further increase. In (b) and (c) there was a large increase over (a), showing a strong inhibition of growth in (a) from death or loss of virility of cells. (3) From (2c), after growth of 128 hrs., centrifuging, washing the precipitate with salt solution and mixing with 3 cc. beer-wort, 4 strengths were made: 2 cc. full strength; 0.5 cc. with 1.5 of wort; 0.05 with 1.95; and 0.005 with 1.995. Further dilutions after 24 hrs. were made from the above, from these again further dilutions, and so on, 5 times. The results displayed many peculiarities; the $\frac{1}{2}$ to $\frac{1}{3}$ dilutions produced colonies of 200-300, the $\frac{1}{4}$ none, or, rarely 2-40. On the whole, the result showed that a certain concentration was not exceeded, the doubling of growths in (3) being due to a constantly fresh source of supply of the necessities of life. Further tests were made by counting cells microscopically with a hemocytometer after growth on, (1a) 20 cc. hop infusion and (2a) 4 cc. of 10% glucose in 16 cc. of hop infusion, from each of which 2 infusions of (b) 1/10 and (c) 1/100 strength were made. The cells were counted at intervals up to 264 hrs. In the hop infusion very little growth was noted in (2), slight in (b), none in (c). In medium (2) the growth was considerable in all 3 and held the relationship of 1, 1/10, and 1/100, the same as the dilution. The absence of growth in the first 24 hrs. is analogous to the latent period of growth of bacteria. The period from 72 hrs. on, during which the growth was stationary, shows that either cell division ceases at a certain point, or that cell division continues, but is not apparent owing to the death or dissolution of the cell, a constant balance being thus produced between new cells and dying ones. To determine this, cultural and counting methods were used side by side. The figures in the cultural methods were very low and showed that many cells which were transplanted on agar did not develop, making the method uncertain. Other experiments gave similar results. On the whole the M concentration for yeast followed the same laws as for bacteria.—*J. A. Bauer.*

6587. TUORILA, PAULI. Untersuchungen über die chemische Zusammensetzung der Kartoffeln in Finnland.

Suomen Suoviljelyshydistys Tietellisiä Julkaisuja No. 11. 1-73. 1929.—A table shows the relation between the specific wt. of potatoes and that of starch and dry material. During the growth period starch and dry substance increase with regularity; N and ash show irregularities. The average starch content of Finnish potatoes is 14%, that of German potatoes 19%. Dry substance varies similarly. These differences are ascribed to the colder climate of Finland and the consequent incomplete ripening of the potatoes. The starch content is more influenced by temp. than by moisture. The N content of Finnish is equal to that of German potatoes, while potash and phosphates are somewhat lower. Comparative results are given for tubers grown on high and low moorland and on sandy soil. Different varieties of potatoes showed a wide variation in habits of growth and in constituents.—*O. F. Black.*

6588. **YOUNG, H. C. The aeration of tree roots.** *Nation. Shade Tree Confer.* 5: 28-34. 1929.—An address.

GROWTH, DEVELOPMENT, REPRODUCTION

6589. **BAAS-BECKING, L. G. M., and LELAND S. BAKER. Studies on growth. 1. The point binomial and its derivatives. 2. Experimental data—application of the theory.** *Stanford Univ. Publ., Univ. Ser., Biol. Sci.* 4(2): 61-135. 30 fig. 1926.—Part I is a statistical analysis of the expectation of sizes in a population composed of cells which are undergoing fission. It is emphasized that fission by itself gives rise to skewness in the frequency of sizes. Frequencies taken at any one time thus tend to be bimodal ("clivoid"). Various forms result, depending on whether or not growth-rate depends on age or size of cell, whether or not cell division results in equally sized progeny, whether or not fission occurs regionally, periodically, or multiply. Part II is an analysis of measurements made at intervals of a few hrs. upon each cell in certain filaments of *Spirogyra* and *Chaetomorpha*. The rate of growth in length decreased with the size of the cells. Daughter cells were definitely unequal in size as compared with their sisters, at least in *Chaetomorpha*. Fission tended to occur only in the largest cells; yet skewness toward small sizes was not found among the cells measured, being perhaps masked by the inequalities in rate of growth at various cell ages.—*E. F. Adolph.*

6590. **BORESCH, KARL. Gibt es Beziehungen zwischen dem Vorkommen von Blausäure in Knospen und ihrer Treibwilligkeit?** *Beitr. Biol. Pflanzen* 17(2): 259-271. 1 fig. 1929.—Since exposure of dormant plants to HCN has the effect of inducing growth in the buds, and since many plants contain cyanogenetic glucosides from which HCN can be liberated, experiments were undertaken to determine whether this naturally occurring cyanide was related to the dormancy of buds and to the breaking of their rest periods. Tests were applied to 79 sp. in 25 families to determine whether HCN could be released from bud tissue (and if so in approximately what quantities); simultaneously, a comparison was made with the length of time required for bud development to take place from cut twigs placed in the greenhouse. No broad relationship was found since plants not containing HCN were easily forced in the greenhouse, and others whose buds yielded HCN on autolysis could be forced only late in the season. Yet, when the comparisons were made between closely related forms differing with respect to their content of cyanide compounds, the correlation was sufficiently close so that in such cases "yes" was regarded as a better answer than "no" to the title of the paper.—*F. E. Denny.*

6591. **COCKERHAM, GEORGE. Some observations on cambial activity and seasonal starch content in sycamore (Acer pseudoplatanus).** *Proc. Leeds Philos. Soc. (Sci. Sect.)* 2(2): 64-80. 2 pl. 1930.—The experimental plants were 13 comparable young trees. One was felled each mo. and samples taken at 1-ft. intervals along the stem, main branches, and roots. Duplicate samples were used for observing the starch content. Xylem differentiation showed a swelling of cells, in the cambial zone, then differentiation of vessels without cambial cell division, followed by periods of rapid cell division, slower division with relatively increasing differentiation, and finally cessation of cambial division after the differentiation of summer wood. This activity began in the new elongation growth in the buds and spread downwards through the branches, stems, and the basal region of the roots. The distal portions of the roots showed "typical root cambium" which slowly divides throughout the yr. Phloem differentiation began by a swelling of the nucleus, then uncallused sieve plates developed, and later callus was deposited. This activity was most rapid in the spring before the xylem differentiation, and again at leaf fall when the summer wood is complete. Determination of the starch content was by the I method and not strictly quantitative. Seasonal starch content showed 2 maxima (in late winter and at leaf-fall) and 2 minima (in early winter and just after bud-break). The disappearance of starch seemed to be from the apex downwards; the reappearance began at the base of the stem and roots.—*M. B. Garnett.*

6592. **DENNY, F. E. Der Einfluss des Thioharnstoffs auf die Gipfelaugenentwicklung und auf die Vieltriebigkeit der Kartoffelaugen.** *Jour. Landwirtsch.* 77(3): 219-221. 2 fig. 1929.—Following previous results with 3 var. of potatoes (in which soaking cut tubers with thiourea solutions induced the development of several buds at each eye of the potato, and prevented the dominance of the apical eye over basal eyes), the experiments were repeated with 7 other var.: Spaulding's Rose, Early Rose, Jersey Red Skin, Burbank, Early Ohio, Great Scot, and Green Mountain. All varieties tested responded in the manner above described. Von Velsen's failure to corroborate these results completely was probably due to the use of intact rather than cut tubers.—*F. E. Denny.*

6593. **FREY, ALB. La formation des cellules géantes du "Sterigmatocystis nigra."** *Rev. Gén. Bot.* 39(461): 277-305. 7 fig. 1927.—The nucleus is not enlarged. The vacuome consists of 1 or several very large vacuoles; the metachromatin occurs in the form of little corpuscles placed at the periphery of the vacuoles. The immersed cells store fat. The liquid medium (Molliard's) upon which the *Sterigmatocystis* grows becomes increasingly acid due to the formation of oxalic acid. When the pH reaches 2.0, the mycelium is still normal and the cell sap has a pH of about 6.0. Below the level of pH = 2.0 the hyphae change into giant cells, and the pH of their sap decreases to 5.0—3.5. Following the combustion of some sugar in the medium, the pH increases, the giant cells produce normal hyphae and fructification ensues if K is present in the solution. Relying upon the previous investigations of Molliard, the conclusion is that the giant cells are caused by a shortage of K and also by a pH lower than 2.0. In this latter instance it may be that the large number of H^+ ions present prevent the entrance of the K^+ ions into the hyphae, and thus create a shortage of K.—*A. Frey (transl. by P. D. Strausbaugh).*

6594. **FUJA, M. C. On the formation and development of roots and shoots on the isolated cotyledons of Cucurbita, Cucumis and Lupinus.** *Bull. Internat. Acad. Polonaise Sci. et Let. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (I[Bot.])* 1929(2/7): 209-218. 4 pl. 1929.—*Cucurbita pepo, Cucumis sativus,* and *Lupinus* possess dormant buds in the axils of the cotyledons; these, if left on the isolated cotyledons develop into shoots, or may even produce an entire plant. The axillary cotyledonary buds of *C. pepo* appear as collateral-serial buds. The isolated cotyledons of *Cucurbita, Cucumis,* and *Lupinus,* if kept in a moist place, develop calluses on the nerves at the cut end; these calluses produce roots, and in some rare cases shoots. The isolated cotyledons of 1 sort of *L. albus* form no calluses, but develop roots directly from the cambium of the fibrovascular bundle at the cut end; cotyledons derived from another sort produce calluses and roots. The longitudinal and the farther transverse halves of the cotyledons of *C. pepo* form calluses on the middle cut surface and produce roots. Cotyledons isolated from the embryo or from

very young seedlings produce longer and more vigorous roots than cotyledons isolated from older seedlings or than portions of the cotyledons.—*Author's summary.*

6595. **HELDMAIER, CLARA.** Über die Beeinflussbarkeit der Sexualität von Schizophyllum commune (Fr.) und Collybia velutipes (Curt.). *Zeitschr. Bot.* 22 (4): 161-220. 3 fig. 1929.—Toxic substances, extremes of temp., and x-rays were applied to *C. velutipes* and *S. commune*. All but the x-rays produced sexual modifications. *S. commune* was more strongly influenced than *C. velutipes* in all cases.—*C. Heldmaier (transl. by T. C. Scheffer).*

6596. **JONÁS, VÁCLAV.** Nové zpusoby mnození kulturních drozdárenských kvasinek a vznik nových kvasnicných forem. [New methods of reproduction of pure yeast plants and development of new yeast forms.] *Chemický Obzor* 4(11): 345-347. 1929.—From seemingly dead yeast which had been killed by physical or chemical means there were successfully grown a few typical forms of organisms representing evolutionary lines of development from that of unorganized plasmatic substance to normal yeast cells. These new forms of yeast can reproduce by means never previously observed in yeast, viz. by small "sporoid" bodies, and a few types of "plasmatic" reproduction. From the enzymic standpoint this discovery contributes to the discussion of the validity of Buchner's theory.—*Fr. Hruska.*

6597. **KAWAMURA, SEIICHI.** On the periodical flowering of the bamboo. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1915. 1926 (1928).—Abstract.

6598. **KOMÁREK, V.** Zur experimentellen Beeinflussung der Korrelationstätigkeit von epigäischen Keimblättern. *Flora oder Allgem. Bot. Ztg. [Jena]* 24(3): 301-314. 1930.—Two effects of removing the cotyledons from seedlings are recognized: increase of axillary growth or retardation of it. In the study of a number of seedlings with epigean cotyledons there are some anomalous results, but for the most part growth is retarded. In certain cases of increased axillary growth the effect is lost if the mutilation is applied to older seedlings, and it appears that where the effect is to increase growth it is to be interpreted as secondary to other physiological effects of the experimental treatment. Any variations in the influence of many epigean cotyledons is explicable as due not to specific inherence but rather to variations in growth habits.—*E. A. Baird.*

6599. **MAEKAWA, TOKUJIRO.** Preliminary report on the influence of cotyledons on the root regeneration of young plants. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 2: 1916-1920. 1926 (1928).—Cuttings consisting of young plants devoid of tap roots show very energetic root-regeneration in a few days, largely due to the plastic substances contained in the cotyledons, and partly to the assimilation products prepared by the leaves grown on the cutting. The favourable influence of cotyledons on root-regeneration in *Phaseolus nana* and in *Pisum sativum* is especially noticeable.—*Author's conclusions.*

6600. **MONTEMARTINI, L.** Di alcune azioni ormoniche nelle piante. [Plant hormones.] *Boll. Soc. Ital. Biol. Sper.* 4(7): 872-874. 1929.—When leaves of *Crassula* are exposed to desiccation, transpiration is curtailed whenever adventitious buds develop along the petiole. When a red-hot wire is thrust into an unripe pear and the seed are penetrated and killed, the ripening of the pulp is greatly accelerated. Seed exert a chemogenetic as well as a morphogenetic effect.—*L. Montemartini (transl. by H. S. Wolfe).*

6601. **NIETHAMMER, ANNELIESE.** Bio- und Histochemie pflanzlicher Früchte und Samen. II. Reife- und Alterserscheinungen. *Biochem. Zeitschr.* 227(4/6): 462-471. 1930.—In unripe fruit and seed there are often deposits of Ca-oxalate which practically disappear with ripening. The druses of Ca-oxalate are used again in metabolism and are therefore not a useless excretion. In many fruits of certain families, over-ripening brings on inclusions which are sack-like structures that fill the cells. Most fruits show an increased content of acetaldehyde as they ripen. Dry seed and fruits exhibit such an increase only when they have the maximum capacity to germinate. Chemical changes are to be observed in the embryos of some seed as they grow older.—*Author's summary (transl. by C. J. Lyon).*

6602. **OKADA, YÔNOSUKE.** Study of Euryale ferox Salisb. IV. On the rate of growth of the lamina. *Sci. Rept. Tôhoku Imp. Univ. Biol.* 4(2): 361-368. 2 pl., 2 fig. 1929.—The largest lamina appear from late Aug. to mid-Sept., the air and water temp. being the determining factor. Diam. of random samples were measured twice daily for 2 days. The increment was as high as 25 cm. in 24 hrs., being slightly greater by day than by night. The ratio of mass to area is greater the smaller the diam. The ratio of dry wt. to fresh wt. is almost constant, and independent of size and age.—*Mrs. W. R. Garnett.*

6603. **PFEIFFER, HANS.** Experimentelle und theoretische Untersuchungen über die Entdifferenzierung und Teilung pflanzlicher Dauerzellen. I. Der isoelektrische Punkt (IEP) und die aktuelle Azidität von meristematisierten Zellen. *Protoplasma* 6: 377-428. 6 fig. 1929.—The article deals with the relations between cell differentiation, dedifferentiation and aging, and such purely physical properties as isoelectric point, acidity, imbibition, and hysteresis.—*W. Seifriz.*

6604. **POPESCO, CONSTANTIN.** Régénération des faisceaux conducteurs libéroligneux dans la moelle, à la suite de la décortication annulaire. *Rev. Bretonne Bot. Pure et Appl.* 1926: 1-47. 14 pl., 15 fig. 1926.—The removal of a ring of bark from the stem of herbaceous plants or from small twigs of woody plants causes, after a few weeks, a noticeable swelling of the stem just above the girdle and a slight swelling at and just below the girdle. Following this increase in diam. of the stem there appear longitudinal cracks in the girdled part. Girdling has caused living cells within the stem (parenchyma in the medullary rays, pith or wood) to grow and from them develop new tissues which are responsible for the swelling of the stem and the cracking of the old wood in the region of the girdle. By this experiment it has been show that living cells in old tissues, whenever there is a necessity, are rejuvenated and become again embryonic in character and upon development supply all types of tissues necessary to heal the gap caused by girdling.—*A. E. Longley.*

6605. **SAEGER, ALBERT.** A method of obtaining pure cultures of Spirodela polyrhiza. *Bull. Torrey Bot. Club* 57(2): 117-121. 1930.—Resting buds treated with 10% "Zonite" (solution of NaOCl) yielded cultures free from other organisms. Successful cultures were maintained in Knop's solution containing inorganic salts only, thus showing that Bottomley's contention that minute amounts of organic matter are essential for growth of green plants (Lemnaceae), and also, Mockeridge's point that the necessary "auximones" may be supplied by contaminating organisms, are not tenable. In one experiment the addition of autolyzed yeast greatly stimulated growth as contrasted with the purely synthetic culture medium.

6606. **SÖDING, HANS.** Untersuchungen an Aspergillus niger über das Mitscherlich-Baulesche Wirkungsgesetz der Wachstumsfaktoren. *Zeitschr. Wiss. Biol. Abt. E. Planta* 6(3): 482-509. 6 fig. 1928.—Cultures of *A. niger* were prepared on media having graded quantities of K and phosphate. With optimum doses of K and phosphate, maximum amounts of fungous substance, A, were harvested; with known insufficient amounts of K a fraction of the maximum $(1/m)A$, was obtained; with known insufficient amounts of phosphate a fraction, $(1/n)A$. These were so valued with simultaneous insufficiency of K and phosphate as to get for the product, E, the relation: $(1/m)A$ and $(1/n)A > E > (1/m \cdot n)A$. Neither Liebig's law nor the Mitscherlich-Baule law of action fits this. The first forms an upper, the latter a lower limit for the actual product. These results were obtained with fungous cultures about 100 hrs. old. It is suggested that the results with microorganisms of such

short experimental periods but not those of long duration, may probably apply also to higher plants.—*H. Söding (transl. by L. R. Tehon).*

6607. **STEPHAN, JOHANNES. Entwicklungsphysiologische Untersuchungen an einigen Farnen. I.** *Jahrb. Wiss. Bot.* 70(5): 707-742. 14 fig. 1929.—For the germination of *Osmunda regalis* a 0.16% Tottingham solution was a more favorable culture medium than the solutions of Knop, A. Meyer, or v. d. Crone. Contrary to earlier results germination occurs also on distilled water. The optimal concentration of the various solutions is not the same for light and darkness. The addition of orthophosphoric acid to the normal nutrient solution aids germination and growth. Organic acids in general injure the spores, and lactic acid only gave a stimulating effect. Normal germination and growth can be obtained in darkness but only on solutions of grape sugar and of glycerine. Laage's results with germination on K_2PO_4 and on $MgSO_4$ were not confirmed. By this the conception of "germination" expressed by Laage (1906) is refuted. In the young germination stages, phosphates, then chlorides, are the best for producing large-celled prothallia; then follow sulphates, which, with the exception of $MgSO_4$, favor the production of large-celled prothallia; at the end come the nitrates which usually produce small-celled prothallia. In agreement with the results of Prantl, the failure of the meristem occurred on N-free solutions, but the lack of N usually did not check the formation of the meristem. As to the effect of the different rays of the spectrum on germination and growth, the investigations (conducted in daylight owing to lack of suitable facilities) in agreement with earlier work, permit the assumption of a specific quality effect. To each kind of ray is ascribed a specific morphogenic effect, and in opposition to the results of Klebs (1916-1917) each has a special photoblastic effect on elongation, as well as on the number and type of cell divisions. In agreement with Klebs, the "blue" rays do not show any specific checking influence on germination. According to Klebs no prothallia are formed in the "red"; the forms are exceptionally small and show only oblique divisions, as well as a complete lack of meristem. A typical increase in elongation, as was shown by the author in *Balantium* (1928), does not occur in *O. regalis*. The prothallial structures obtained by Klebs are interpreted as the result of a combination effect of several rays which passed through the filter. Preliminary investigations on spores of *Ceratopteris thalictroides* show the possibility of germination without previous illumination. Narrow prothallia with terminal meristem are formed in "red" light; in "blue," shorter and broader prothallia with lateral meristem. The prothallia grow as germination filaments in all rays of the spectrum, as reported by Klebs (1916-1917), because of fluctuations in intensity.—*J. Stephan (transl. by A. G. Stokey).*

6608. **STYER, J. FRANKLIN. Nutrition of the cultivated mushroom.** *Amer. Jour. Bot.* 17(10): 983-994. 1930.—Solutions of higher concentration than 0.2 molar inhibited the growth of mycelium of *Agaricus campestris*. The water content of manure in test tubes could vary from 125% to 200% without affecting the growth. Above 200% growth rapidly decreased, this effect being attributed to poor aeration. High moisture content favored rhizomorph formation. Sowing spores in masses promoted their germination. As C sources, sugars (except galactose), starch, peach gum, pectin, wheat bran, peat moss, rotten wood, and several proteins were good, while cellulose, the organic acids, and mannite were poor; as N sources, proteins, except nucleo-proteins, NH_4NO_3, glycine, leucine, creatine, and creatinine were good, while urea, $(NH_4)_2SO_4$, $NaNO_3$, glutamic acid, and arginine were poor, these materials having been tested in a silica gel base containing nutrient salts.—*J. W. Sinden.*

6609. **TADOKORO, T., and M. ABE. Studies on the ripening of rice-grains. 2.** *Jour. Fac. Agric. Hokkaido Imp. Univ.* 27(3): 349-387. 1930.—The actual wt. of unhulled and hulled rices increased until a certain period of maturity, then decreased. The specific gravity of unhulled rice increased at first and afterward decreased while that of hulled rice at first decreased and then increased. The specific gravity seemed likely to be most affected by the water content. The sharp drop of unripened and half-ripened grains may perhaps be due to the dead ripeness. The water content of hulled rice increased at first and then decreased, showing a close relation with the specific gravity. The decrease of dry substances in 1000 grains is probably due to the reversibility of physiological functions during ripening. The ash and phosphoric acid contents decreased for a while and crude fat also showed a tendency to decrease. Total N showed no definite change during ripening, but the ratio of pure protein to crude protein constantly increased. Of the 4 kinds of protein, the water-soluble form gradually decreased with ripening, the NaCl-soluble and alcohol-soluble forms increased, and the alkali-soluble was inconstant, with tendency to decrease. The reverse changes characterize germination. The free-amino N in the non-protein substances sharply decreases with the free amino-N in protein substances, indicating that the protein substances are formed from non-proteins. The decreasing velocity of free amino-N formation in both cases suggests that this transformation proceeds more rapidly than the polymerization of higher proteins from lower. Protein solubility and reducing sugar of hulled rice decreased with ripening, while dextrin and starch increased. The ash and P contents of oryzenin of hulled rice decreased at a definite time in the ripening period, while N, S, and free amino-N increased. The quantity of HCl required to cause maximum turbidity and surface tension of the protein solution also decreased at this period, thus placing the isoelectric point of oryzenin on the alkaline side. The specific rotatory power increased. The increase or decrease, with ripening, of the various amino acid fractions was determined. From these results, it seems that oryzenin is probably at the peak of condensation at a time in late ripening, and then disintegrates again. The ash and phosphoric acid contents of rice starch decreased gradually with ripening, while the saponification value increased, showing the change of quantity or construction of starch molecule. The amount of glucose formed from starch by hydrolysis with HCl acid reached a maximum at a definite time of ripening. The ash content of soluble starch decreased gradually like that of the original starch, while the phosphoric acid slightly increased in the last period. The specific rotatory power of acetylated starch reached a maximum at a definite time and the content of acetyl radical a minimum, showing the least quantity of the hydroxyl group replaced by the acetyl radical, by condensation. These results suggest that the starch is also more condensed then.—*From authors' summary.*

6610. **TOMKINS, R. G. Studies of the growth of moulds.—I.** *Proc. Roy. Soc. [London] B* 105(738): 375-401. 12 fig. 1929.—The rate of germination of mould spores is measured at known temp. on "soils" in equilibrium with known humidities. The rate of germination decreases with decrease of humidity. The range of humidity allowing germination is greatest at the optimum temp. and decreases the further the temp. is removed from the optimum. It is increased by presence of nutrients. Germination is independent of the surface if it provides nothing assimilable to the spores. The relation between the growth of a "colony" and temp., humidity, and nutrients resembles qualitatively that found for the germination of spores.—*R. G. Tomkins.*

6611. **WILLIAMS, ROGER J., and ELIZABETH M. BRADWAY. The further fractionation of yeast nutrilites and their relationship to vitamin B and Wildiers' "bios."** *Jour. Amer. Chem. Soc.* 53(2): 783-789. 1931.—Experiments show that Wildiers' original yeast "bios" is not readily absorbed by fuller's earth and appears to be the same as the nutrilite which stimulates the growth of Mayer yeast. No conclusive evidence of its multiple

nature is available. The yeast nutrilites studied by W. L. Miller and his associates are distinct from the "bios" of Wildiers. The Toronto workers should be credited with the discovery of a new series of yeast nutrilites. Yeast No. 578 of the American Type Culture Collection and old process baker's yeast appear to have more complex requirements than Wildiers' yeast. Evidence is presented for the existence of a 4th distinct nutrilite concerned in the growth stimulation of yeast No. 578. It seems reasonable to suspect that several of the nutrilites for this yeast may be components of "vitamin B," since the antineuritic vitamin has previously been shown to affect its growth very strikingly.—*Authors' summary.*

6612. **WILLIAMS, ROGER J., and RICHARD R. ROEHM. The effect of antineuritic vitamin preparations on the growth of yeasts.** *Jour. Biol. Chem.* 87(3): 582-590. 1930.—Certain yeasts do not require for growth stimulation any substance which is adsorbed readily by fullers' earth. Only those yeasts which require such material can be materially affected by antineuritic vitamin preparations. A satisfactory method is described for determining quantitatively the potency of preparations with respect to their content of the readily adsorbed yeast nutrilite. The "bios" of Wildiers is not precipitated by phosphotungstic acid (or other common precipitants) nor presumably absorbed by fullers' earth. It probably has no relationship to the antineuritic vitamin. However, the method of Jansen and Donath for preparing the antineuritic vitamin is very effective for concentrating the adsorbed yeast nutrilite, as far as the major portion of the procedures is concerned. A sample of crystalline antineuritic vitamin proved very effective (in conjunction with the unadsorbed factor) for stimulation of growth of certain yeasts. 1 part of the crystals in 100,000,000 parts of the culture medium can easily be detected. This crystalline substance has twice the potency of the most active preparation hitherto reported (Z_2). However, one of the preparations made by Williams and Waterman from fractions discarded in the Jansen-Donath acetone-alcohol procedure has an activity for yeast at least twice as great as that of the crystalline vitamin. The antineuritic vitamin of Jansen and Donath thus appears to be only one of the substances involved in yeast growth stimulation.—*Authors' summary.*

6613. **YAMPOLSKY, CECIL. Induced alteration of sex in the male plant of Mercurialis annua.** *Bull. Torrey Bot. Club* 57(1): 51-58. 1 pl., 2 fig. 1930.—Eighteen ♂ plants selected for vigor and uniformity of growth were severely pruned. Eleven of the 18 responded by producing besides the ♂ flowers varying numbers of ♀ and ☿ flowers. Eighteen check plants failed to produce other than ♂ flowers. Subjecting ♂ plants to severe pruning, therefore, results in a sex reversal. The reversal is transitory and after a time the plants return to their original ♂ condition.—*C. Yampolsky.*

TROPISMS, GROWTH AND TURGOR MOVEMENTS

6614. **ANDREWS, F. M. A natural proof that the root tip alone is sensitive to the gravitational stimulus. 2.** *Proc. Indiana Acad. Sci.* 38: 87-89. 1928(1929).—This paper deals with those cases in which the root tip is encased in the tissue of the grain immediately surrounding it so as to prevent movement, thus functioning as in the glass cap experiment.—*F. M. Andrews.*

6615. **CASTLE, E. S. The light-sensitive system as the basis of the photic responses of Phycomyces.** *Proc. Nation. Acad. Sci. U. S. A.* 16(1): 1-6. 2 fig. 1930.—Sporangiophores of *Phycomyces* show 2 types of photic response: acceleration of the rate of elongation and phototropic bending. The total reaction time of each type of response consists of an exposure period, a "latent period," and an action time. The duration of the reaction time of each mode of response varies similarly as a function of the duration of exposure to light, for sufficiently brief exposures. The 2 responses are therefore based on the same photosensitive system. The velocity of the latent period process is directly proportional to the amount of preceding photochemical change. —*E. S. Castle.*

6616. **DOSTÁL, R. Versuche über die Massenproportionalität bei der Regeneration von Bryophyllum crenatum.** *Flora [Jena]* 24(3): 240-300. 4 fig. 1930.—Fresh and dry wt. was determined of sprouts and roots produced by isolated leaves and one-node stem pieces of *B. crenatum.* The relative amount produced by mature leaves and stem pieces taken from the apical part of the shoot was greater than that produced by the basal ones. Likewise the apical parts of halved leaves produced relatively more than the basal half. Division of the leaves also increased the relative production of regenerated material. The results obtained contradict Loeb's conception of the existence of a simple "mass relation" in *Bryophyllum.* There are minute but significant correlations between marginal leaf buds and axillary stem buds which are influenced, although secondarily, by water and nutrients. —*R. Dostál (transl. by F. F. Halma).*

6617. **KEEBLE, FREDERICK, M. G. NELSON, and R. SNOW. The integration of plant behaviour. 1. Separate geotropic stimulations of tip and stump in roots.** *Proc. Roy. Soc. [London] B* 105(739): 493-498. 1929. —Seedlings of *Zea mays* were kept with their coleoptiles and main roots horizontal for 1-2 hrs. The tips of these organs were then cut off and placed upon the decapitated roots of other similar seedlings that were kept pointing vertically downwards all the time. The latter roots curved towards the side of the tip that had been lowest when horizontal. Also seedlings with decapitated roots were arranged with the roots horizontal for 1-2 hrs. They were then arranged with the roots pointing vertically downwards again, and the tips of vertical coleoptiles of other seedlings were placed upon some of the roots. The proportion of the roots that curved towards the side that had been lower was significantly increased by the unstimulated tips.—*R. Snow.*

6618. **MEYLAN, SUZANNE. Effet phototropique et distribution dans le temps de la quantité de lumière.** *Bull. Soc. Vaudoise Sci. Nat.* 57(223): 89-90. 1929.— A difference was manifested in the phototropic responses of small oat plants receiving the same quantity of light accordingly as the intensity was increased or decreased during the period of exposure.—*S. Meylan (transl. by P. D. Strausbaugh).*

6619. **RIMBACH, A. Endodermiswellung und Caspary-scher Punkt.** *Ber. Deutsch. Bot. Ges.* 46(7): 424-433. 1928.—The folding of the endodermis and the Casparian point are caused by the physical peculiarities of the Casparian strip. The folding is due to the peculiar mechanical structure of the Casparian strip, of which a part, being less capable of shortening than the rest, is drawn together in folds. This folding can be imitated by fastening a strip of rubber between 2 somewhat stretched strips and allowing the 3 to contract, when the middle one will necessarily fold. There are, however, 2 forms of endodermal folding: the natural, often very pronounced, which takes place in roots in consequence of their shortening, and is therefore not found in the younger parts; and weak folding, which can be produced in cross sections by plasmolysis, through the reduction of turgor. There follows in this instance a contraction of cell walls in roots or stems, which can be produced in both young and older endodermis. In uninjured plants the folding takes place only where conditions permit contraction longitudinally. This occurs only in roots. The endodermis takes only a passive part in this contraction; therefore its folding is limited to those parts of the root which shorten, and the degree of folding depends entirely upon the degree of shortening. The Casparian point is due to the optical peculiarities of the Casparian strip. It is more widely distributed than the natural endodermis folding, for it is visible in all cross sections which contain the Casparian strip, whether this contracts or not during the development of the uninjured plant. It is therefore not limited to contractile roots, but is seen in other roots as well as in rhizomes

and above-ground stems in which natural folding of the endodermis does not occur. Therefore natural folding of the endodermis is not the cause of the Casparian point. If one assumes the folding of the cell wall as the cause of the Casparian point, one could produce it also by artificial folding of the endodermis cell walls, but this is not the case. Therefore, endodermal folding and the Casparian point have distinct origins consisting in the physical constitution of the Casparian strip, and the folding of the endodermis is not necessary to the development of the Casparian point, which is a peculiar optical appearance.—*Author's summary (transl. by G. J. Peirce).*

6620. **SAVELLI, R. Difetto di reazione geotropica in germinazioni di canapa da seme vecchio. [Failing geotropical reaction in seedlings from old hemp seed.]** *Atti. Soc. Nat. e Mat. Modena* 7: 90-92. 1 fig. 1928.—In fresh (1 yr.) hemp seed, even if placed with the radical apex upward, the radicle, as soon as it appears, presents a very strong positive geotropism. In old seed placed with the radical apex upward, the radicle often grows upward and only later bends down towards the ground.—*M. Tirelli.*

6621. **STÅLFELT, M. G. Pulsierende Blattgewebe.** *Planta; Arch. Wiss. Bot. Abt. E. Zeitschr. Wiss. Biol.* 7(5): 720-734. 7 fig. 1929.—Under normal conditions stomatal cells of leaves of *Vicia faba* show continuous rhythmic changes in volume. The pulsations of all stomatal cells on the upper side of a leaf show an almost synchronized occurrence. In turgid leaves, pressures exerted on the stomatal cells by epidermal and palisade cells also show rhythmic fluctuations. Hence the epidermal and palisade cells pulsate also. The frequency of their occurrence corresponds with those of the stomatal cells. However, the epidermal pulsations are timed inversely with those of the palisade tissue.—*N. A. Pettinger.*

6622. **ULLISCH, ANNA. Die Gewebespannungen beim Entfalten monokotyler Blätter.** *Bot. Arch.* 30(1/2): 195-234. 6 fig. 1930.—By cutting leaves in various ways and observing the resulting bending, it was found that internal tensions were greatest in the regions of most rapid growth. The formation of special developmental tissues is unnecessary; when such exist they give direction to the tensions of the entire organ, and can fix the movements due to turgescence by the permanent form of the cells or of their walls. The developmental tissue is in many cases, perhaps in all, not active, but passive. Also the tissue which develops active tensions can fix the plastic shape of its cells and thus alone or in conjunction with developmental tissue determine the permanent form. The fall of leaves in Araceae and palms is brought about by tissue tensions, caused in certain places by the transformation of the cells or by the formation of special abscission tissue. Very often we find antagonistic tensions in developing leaves and stems which bend them first to one side and then to the other. Thus the development of the organs has a great similarity to circumnutation movements. That the tension causes sprouting is shown by its latent presence, before it is outwardly perceptible; and, as it were, development follows.—*H. H. Clum.*

6623. **WALLACE, RAYMOND H. Studies on the sensitivity of Mimosa pudica I. The effect of certain animal anesthetics upon sleep movements.** *Amer. Jour. Bot.* 18(2): 102-111. 1 pl. 1931.—Quantitative experiments have shown that the sleep movements of *Mimosa pudica, Oxalis stricta,* and *Marsilia macropus* can be inhibited by certain concentrations of ether and acetylene. The concentration of ether necessary to prevent the evening closing is different from that necessary to prevent the morning opening. The lethal concentration (about 2.5%) of chloroform seems to have little or no effect on the sleep movements of these 3 sp. The plants continue to show their usual evening closing and morning opening in atmospheres composed of approximately 100% nitrous oxid or ethylene. Very high concentrations of acetylene, ethylene, and nitrous oxid are harmless to the foliage.—*Author's summary.*

6624. **WENT, F. A. F. C. Les conceptions nouvelles sur les tropismes des plantes.** *Rev. Gén. Sci. Pures et Appl.* 41 (22): 631-643. 13 fig. 1930.—A survey of modern conceptions on tropisms, especially those of the Utrecht School.

GERMINATION, DORMANCY, RENEWAL OF ACTIVITY

6625. **BARTON, ARTHUR W. The effect of long-continued soaking on seed germination.** *Trans. Kansas Acad. Sci.* 32: 37. 1929.—The capacity for germination is not destroyed by long continued soaking (3 or more mo.) in sterilized water saturated with CO_2.—*F. C. Gates.*

6626. **BERKNER, und W. SCHLIMM. Der Einfluss der Herkunft von Weizenkörnern auf ihre Keimenergie.** *Wiss. Arch. Landw. Abt. A, Pflanzenbau* 2(3): 545-562. 6 fig. 1929.—Germinated seed (200-400 in each lot) of different origin were grown in cane sugar solutions of various concentrations. The concentration limit, which fluctuates around a mean, is characteristic for the sp. The concentration limit for xerophytes is higher than that for hydrophytes. Only mean values of many experiments with seed of different origins give reliable results. Seed obtained under extreme conditions give misleading results.—*Author's summary (transl. by F. F. Halma).*

6627. **BREMER, H. Die Abhängigkeit der Zuckerrübenkeimung von der Temperatur.** *Angewandte Bot. [Berlin]* 11(2): 112-115. 1929.—The minimum temp. of the germination of sugar beet seed has recently been given as 9.4° C. although existing data indicate that even at 3° C. germination may take place although very slowly. Perhaps, however, from the practical standpoint a limit exists at about 9° C., above which good results are assured. Above 35° C. the germination rates indicated a harmful temp. effect.—*L. F. Hawley.*

6628. **BUCHINGER, A. Der Einfluss hoher Angangstemperaturen auf die Keimung, dargestellt an Trifolium pratense.** *Jahrb. Wiss. Bot.* 71(1): 149-153. 1929.—Seeds were put into a liter of water at 23°, 30°, 40°, 50°, 60°, 70°, and 80° C. and allowed to stand in a 23° C. room until they attained room temp. Temp. up to 40° C. hastened germination but gave the same final germination as the check. Temp. higher than this lowered germination % and rate but reduced the number of hard seed. The injury increased with the temp. At 40° C. it took 200 min. for the seed to reach room temp.—*W. Crocker.*

6629. **DEKKER, J. F. Stimuleerende werking van zilvernitraat op kiemplanten van bloemkool. [Stimulation of $AgNO_3$ on cauliflower seedlings.]** *Tijdschr. Plantenziekten* 36(5): 96-97. 1930.—A solution of 0.1% of $AgNO_3$ used for disinfection of seed decreased the % of germination, but 0.05% gave good results. At the same time the plants treated showed better growth than the untreated, which difference was still to be seen after several weeks.—*H. L. G. de Bruyn.*

6630. **DOERFEL, FRANZ. Über den Einfluss des Frostes und intermittierender Temperaturen auf die Keimung verschiedener Samen.** *Bot. Arch.* 30(1/2): 1-50. 1930.—The seed that Kinzel claims are greatly favored in their germination by freezing (*Ranunculus sceleratus, Primula officinalis, Lysimachia punctata, Gentiana straminea, G. cruciata, G. kesselringi, G. lutea, Cuscuta europaea, Hyoscyamus niger, Datura stramonium, Verbascum thapsus, V. thapsiforme,* and *Digitalis purpurea*) germinate as well or better at daily intermittent temp. of 0° or 5° C. as at the lower temp. In some cases freezing lowers the germination as compared with best intermittent temp. above freezing. Kinzel did not distinguish between freezing and intermittent temp. effects and received favorable results from the latter rather than the former. The effect of daily intermittent temp. was studied on *Hyoscyamus, Datura, Lysimachia,* and *Gentiana cruciata* using 60 different combinations of high and low temp. with a wide variation in length of time

each was applied daily. There are 2 types of response: *Hyoscyamus* type and *Lysimachia* type. In the 1st type the daily intermittent temp. is most effective when the low temp. acts for a short period and the high temp. for a long period daily, also when the difference between the temp. is great. Zero or 5° C. in combination with 30° C. is very effective, but 10° C. in combination with 20° C. sometimes gave less germination than favorable constant temp. 25° in combination with 30° C. always inhibits germination as compared with favorable constant temp. In the 2nd type intermittent temp. always favor germination, and a longer lower temp. and a shorter higher daily temp. is most effective. Maximum germination was obtained when 10-20° C. were combined with higher temp. *Datura stramonium* is like the latter, except that the daily low temp. may be too long for maximum results. Increased partial O pressure did not favor germination in these seed and a full atmosphere of the O inhibited. This is contrary to Gassner's results with *Chloris ciliata*. The author believes that intermittent temp. as such are not stimuli to germination but that different metabolic processes in the seed have different cardinal temp. so that only combinations of distinct temp. and duration of action produce optimum conditions for germination. He also holds that difference in internal O pressure with various temp. does not explain the effect of intermittent temp. in the seed he studied, as it does for *Chloris ciliata* studied by Gassner.—*W. Crocker.*

6631. FUKAKI, SADAYOSHI. Über die Frage der Beeinflussung des eigenen Fruchtsaftes auf die Samenkeimung. [Japanese, with German summary.] *Bulteno Sci. Fakult. Terkult. Kjušu Imp. Univ. Fukuoka, Japan* 4(2): 119-133. 1930.—Suppression of germination within the fruit was ascribed by Oppenheimer to lack of water and O, and to the action of inhibitors. The extent to which osmotically active substances in the sap, aside from the presence of inhibitors, influence germination, is uncertain. Experiments aimed to clarify this question are reported. Seed of *Solanum lycopersicum*, *Cucumis sativus*, *C. melo* var. *common*, and *Luffa cylindrica*, in various stages of maturity, were sown on filter paper in petri dishes, and flooded with sterile (filtered) fruit juice, or with cane sugar solution isotonic with fruit juice. Unripe seed of *S. lycopersicum*, *C. sativus*, and *C. melo*, rinsed with the juice of ripe fruit, showed to some extent an inhibition of germination, other than that due to osmotically active substances. The action of the substance responsible for this inhibition differs according to the respective maturity of seed and fruit. The inhibitory action of fruit juice on 1-yr. old seed of *C. sativus*, on the slightly after-ripened seed of *C. melo*, and on the seed of *L. cylindrica* not after-ripened was scarcely noticeable. The substance is apparently not present in the fruit juice of *C. sativus*. The osmotic pressure of the fruit juice increases on boiling, while the inhibitory action decreases.

6632. GASSNER, G., und H. RABIEN. Weitere Untersuchungen zur Frage des Frühtreibens durch gasförmige Blausäure. *Gartenbauwiss.* 1(4): 385-402. 9 fig. 1928.—The following plants responded to a 2-4 hr. exposure to HCN gas (0.25 to 3 vol. %) at 1-12° C.: *Carpinus betula, Dicentra spectabilis, Astilbe japonica, Rosa* sp., *Tilia parvifolia, Tamarix tetrandra, Fraxinus excelsior*, and *Viburnum lantana*. Negative results were obtained with: *Tulipa gesneriana, Hyacinthus orientalis, Viola odorata, Phlox canadensis, Aster alpinus*, and *Doronicum caucasicum*. Responsive plants were forced by a 20 hr. exposure at 0.24 vol. %.—*H. D. Hooker.*

6633. KONSULOFF, STEFAN. Samenstimulation durch Druck und Vakuum, nebst Bemerkungen über die Stimulationserklärungsversuche. *Biol. Generalis* 5(4): 605-626. 1 fig. 1929.—Cell stimulation is interpreted to mean any change of metabolic rate (+ or −) produced by outside influences. This change lasts a varying time after the stimulating factor has been eliminated and also shows in later cell generations without affecting the genotype. Stimulation experiments with rice seed were carried on with an increased pressure to 2 atmospheres and with the vacuum of a water pump. A positive effect in which the difference is higher than the 3x average error was also obtained. The experiment with CO_2 under pressure gave positive results under certain circumstances. These results contradict the opinion of many authors on the suspension of the narcotic effect of CO_2 by pressure. The results with dry and swollen seed contradict the opinion on cell stimulation as a direct effect of enzymatic processes. Decreased or increased enzymatic processes are not the cause of cell stimulation, but the result. Cell stimulation affects the cell mechanism, the condition of the protoplasm itself. These changes keep on through several cell generations without affecting the genotype. The existence of cell stimulation in the sense described above is confirmed by investigations on the lasting modifications of unicellular organisms.—*Author's summary (transl. by J. Giersbach).*

6634. SAVELLI, ROBERTO. Germinazioni gemellari ed anomalie correlative in "Cannabis sativa" L. [Twin embryos and correlative anomalies in C. sativa.] *Arch. Bot. Sist. Fitogeog. e Gen.* 4(3/4): 206-213. 3 fig. 1928.

6635. SCHEIBE, ARNOLD. Über das sorteneigentümliche Verhalten der Kulturpflanzen im Keimlingsstadium, dargestellt am Sommerweizen. *Fortschr. Landw.* 2(21): 677-681. 4 fig. 1927.—Seed of different varieties of summer wheat were planted under sterile conditions in wide-mouth Erlenmeyers on 5-20% gelatin. Observations were made on the time for first appearance of radicle tip in at least 30% of the seed and of the average shoot length at the end of the experiment, using different temp. Strains found in previous transpiration studies to be xerophilous germinated more quickly than those found to be hygrophilous, and with increasing gelatin concentration the latter types showed more difference than the former. Xerophytic types germinated quickly and grew fairly well even on 20% gelatin, while hygrophytic ones germinated slowly or not at all and made slow growth, although at lesser concentrations the slower starting hygrophytes often overtook the xerophytes later. These differences in germination and growth are believed to be due to inherent rhythms of development, and are criteria of "germination energy." Account must be taken of racial differences of the kind here studied when using seedlings of oats for tropism studies.—*H. S. Wolfe.*

6636. STEPHAN, JOHANNES. Stimulationsversuche mit Cannabis sativa. *Faserforschung* 7(4): 292-298. 1928.—Hemp seed treated with 0.25% Uspulun gave higher and faster germination (indicating greater stimulation) in light than in darkness, whereas untreated seed gave a higher germination % in darkness. The optimum length of treatment was 1 hr.; optimum concentration was 0.01%, which gave maximum germination in light as well as in darkness. Uspulun in optimum concentration increased both % and speed of germination. High concentrations and long treatments, singly or combined, were inhibitory to germination. Maximum germination for short-time treatments with orthophosphoric acid occurs at a concentration of 0.1%; however, all concentrations increased germination over that of untreated seed. In longer treatments (½-1 hr.), maximum germination after 24 hrs. was at 1% concentration but after 60 hrs. germination was essentially the same at 1%, 0.25% and 0.10% concentration. In 2-hr. treatments, maximum germination occurred at .01% concentration. Germination, following treatment, was equally good in light and darkness. In general, results with $MgSO_4$ follow closely those obtained with orthophosphoric acid. As the time of treatment was increased, the concentration producing maximum germination was shifted to a lower level. Treatment with 1% solution resulted in definite injury to the seed especially as length of treatment was increased. In all cases, for same concentration and length of treatment, the germination % was higher in darkness than in light (directly opposite to results with Uspulun and orthophosphoric acid), indicating that $MgSO_4$ can to only a slight degree overcome

the inhibitory effects of light on germination of hemp seed. Length of root of seedlings is correlated with high % germination. No correlation exists between root and shoot length. It is believed that the frequency of cell division is accelerated. Swelling processes, occasioned by treatment with agents, alone can not account for the stimulation noted, for seed soaked in distilled water gave, in respect to germination, number of cotyledons freed from seed coats, root length, and subsequent growth of seedling, lower magnitudes than when one of the 3 agents was used in favorable concentration. A definite and direct influence upon the seed must be ascribed to the agent, the exact nature of which awaits solution.—*G. L. Fick.*

6637. **ANONYMOUS. Algunos datos interesantes acerca de la estimulación química de las semillas. [Some interesting data on the chemical stimulation of seed.]** *Rev. Agric. Puerto Rico.* 22(7): 34-35, 39. 1929.—The work of several European investigators on stimulation of seed, tubers, and other plant parts by chemical agents, is reviewed.—*A. C. Hildreth.*

RADIANT ENERGY RELATIONS, PHOTOPERIODISM

6638. **FEICHTINGER, NORA. Über die Einwirkung von α- und β-Strahlen auf das Protoplasma.** *Naturwiss.* 18(12): 252-257. 11 fig. 1930.—The "germ" roots 1-2 mm. long of *Crepis virens* were irradiated with α and β rays of equal total energy from polonium and radium E respectively. The α rays produced injury to a depth of 30μ, the inner root appearing normal. The β rays damage the entire root due to the greater penetration.—*N. Feichtinger (transl. by H. Kahler).*

6639. **[GURWITSCH, A. G.] ГУРВИЧ, А. Г. Некоторые проблемы митогенетического излучения. [Some problems of mitogenetic rays.]** (German summary.) Журнал Русского Ботанического Общества при Академии Наук СССР. (*Jour. Soc. Bot. Russie Acad. Sci. URSS.*) 13(1/2): 179-189. 1928.—In answer to criticisms contained in the literature, an exhaustive discussion on the fundamentals of the method for detecting mitogenetic rays is followed by an analysis of their successful induction. The chief criticism presented comes from von Guttenberg, who on the basis of his findings and those of N. Wagner denies the existence of the high-grade symmetry of the roots which the author maintained was present in respect to mitosis. The investigations in induction are thus questioned. The author reaffirms that in his extensive research material of over 100 cases with "Nulleffect" the induction always shows a high grade symmetry of both sides of the onion root depending on the amount of mitosis, the deviations seldom reaching 10%. The preponderance on the induced side which follows without exception in certain types of experiments can only depend on a real induction effect. The conclusions are again restated that point to the identification of these mitogenetic factors with ultraviolet rays. The author concludes with a discussion of some theoretical questions.—*Author's summary (transl. by H. S. Mayerson).*

6640. **GURWITSCH, ALEXANDER. Über den derzeitigen Stand des Problems der mitogenetischen Strahlung.** *Protoplasma* 6: 449-493. 4 fig. 1929.—In this article, which is a review of the work of Gurwitsch and others, the (universal) presence of such rays in bacteria, yeast, amphibian eggs, blood, muscle, seedlings, root tips, etc., is emphasized, and their physical nature is discussed.—*W. Seifriz.*

6641. **HUTCHINSON, A. H., and DOROTHY NEWTON. The specific effects of monochromatic light on the growth of yeast.** *Canadian Jour. Res.* 2(4): 249-263. 1930.—An isolated strain of a cultivated yeast was exposed to monochromatic light of various wave-lengths (obtained from the line spectrum of a Cooper-Hewitt lamp) continuously for 24 hrs. Controls were run in ordinary light and in darkness. In general, the orange, yellow, and green bands stimulated multiplication of the yeast cells, and the blue and violet bands inhibited it. The bands in the near ultra-violet region gave rather inconclusive results, sometimes causing stimulation and sometimes retardation. The explanation given is that at either end of the near u.-v. portion of the spectrum inhibitive and stimulative lines are in close proximity, that the yeast cells were exposed to these simultaneously, and that sometimes one line predominated and sometimes another. The far u.-v. bands including line λ2253Å and all shorter ones used markedly retarded multiplication.—*F. Brown.*

6642. **LUYET, BASILE. La radiosensibilité à l'ultra-violet chez les Mucorinées, en fonction de leur âge.** *Arch. Sci. Phys. et Nat.* [*Genève*] 11: 107-108. 1929.—*Mucor hiemalis* was exposed to u.-v. light of 235-400mμ at 25 cm., using cultures 1, 6, 14, 22, and 38 hrs. old. The lethal exposure period of mycelium 6, 12, and 24 hrs. old was 10-20 sec. After the formation of sporangia, 20 min. exposure to u.-v. were required to kill the fungus.—*N. M. Payne.*

6643. **MAGROU, J., et M. MAGROU. Action à distance du Bacterium tumefaciens sur le développement de l'oeuf d'Oursin.** *Compt. Rend. Acad. Sci. Paris* 186(12): 802-804. 4 fig. 1928.—Eggs of *Paracentrotus lividus* develop into abnormal larvae filled with mesoderm cells when exposed to "radiation" of colonies of *B. tumefaciens* through quartz. No abnormal effect was found when exposure was through glass. Similar results had been obtained earlier in studies using onion roots.—*E. Deichmann.*

6644. **MEZZADROLI, GIUSEPPE. Acción de los rayos ultra-violetas sobre la formación de los azúcares, y de los aldehidos a partir de soluciones de bicarbonatos y de anhidrido carbónico en presencia de catalizadores reductores y coloidales. [Action of ultra-violet rays on the formation of sugars and aldehydes by breaking down solutions of bicarbonates and CO_2 in the presence of colloidal, reducing catalysts.]** *Rev. Industr. y Agric. Tucumán* 19(5/6): 154-159. 1928.—In solutions of bicarbonates the reducing power increases gradually on exposure to u.-v. until a maximum is reached (after 30 min. when exposed in an open vessel; after 1 hr. in a quartz receptacle with Ca-bicarbonate; and after 2 hrs. in a quartz receptacle with $KHCO_3$) then decreases rapidly; solutions of CO_2 obtained by bubbling it continually into distilled water show a constant increase in reducing power; the presence of colloidal reducing catalysts sensibly increases the reducing power of the solutions. Experiments performed under the same conditions in the presence and absence of catalysts, have given, in most cases, with the most active catalyst, an increase of triple or quadruple the maximum reducing power obtainable in solutions exposed to u.-v., without a catalyzer; the maximum yield, calculated in reducing substance in relation to CO_2 placed in reaction, is obtained with Ca-bicarbonate in the presence of very finely powdered metallic Mg.—*Author's summary (transl. by A. C. Hildreth).*

6645. **MURO-HIDEO, KO. Mikrochemische und zytologische Befunde an röntgenbestrahltem Pflanzengewebe. I. Über "tiefgefärbte zytoplasmatische Zellgruppen" im Wurzelspitzengewebe von Vicia faba. [Microchemical and cytologic findings in x-ray irradiated plant tissues. I. "Deeply stained cytoplasmatic cell-groups" in the apical root tissue of V. faba.]** *Fortschr. Geb. Röntgenstrahlen* 41(6): 948-949. 2 fig. 1930.

6646. **PETRI, L., e M. de CECCO. Ricerche sulle sostanze fluorescenti delle piante in rapporto al alcuni fenomeni di fotolisi. [Fluorescent plant materials in their relation to some photolytic phenomena.]** *Boll. R. Staz. Patol. Veg.* 8(4): 374-406. 1 col. pl., 1 fig. 1928.—Blue or violet fluorescent substances have been found in various groups of the higher and lower plants. In the phanerogams, no relation has been noted between resistance to intense and excessive illumination (eliophylic plants) and the presence of such fluorescent substances, which in some cases seem to be able to determine photolytic actions when the temp. is higher (45° C.) than ordinary. The fluorescent substances studied belong to the glucosides and fluoroglucotannoids

in the higher plants and to the anthracenes and hydroquinones in fungi.—*L. Petri (transl. by B. F. Lutman).*

6647. **WIGODER, SYLVIA B., and RUTH PATTEN. Some effects of Röntgen rays on seedlings.** *Proc. Roy. Irish Acad.* 39B(9/10): 146-155. 2 pl. 1929.—When dry seed of *Vicia faba*, barley, white mustard, timothy grass, and peas were irradiated with x-rays, the results were negative in every case. Seed were then soaked for short periods and afterwards irradiated, with negative results. Injurious effects, consisting mainly of failure to develop root or shoot, were obtained with bean seed kept in germinating conditions for 5-7 days and then irradiated for short periods. Maximum effect occurred with actively dividing cells in the last 4 mm. of the root tip. Mitosis greatly decreased 3 hrs. after irradiation and was almost entirely absent after 3 days. Cell division was often resumed after 5-8 days, when many abnormal multinucleate cells were observed.—*J. M. Arthur.*

TEMPERATURE RELATIONS

6648. **[ALEKSEEV, A. M.] АЛЕКСЕЕВ, А. М. К. вопросу о влиянии супрамаксимальных температур на растение. [The effect of high temperature on a fungus.]** [German summary.] Журнал Русского Ботанического Общества (*Jour. Soc. Bot. Russie* [*Leningrad*]) 14(3): 479-488. 1929(1930).—Studies are reported on the effect of high temp. (60-65° C.) on the germination of chlamydospores of *Ustilago panici miliacei* Wint. With short exposure, germination as high as 60% was obtained. The rapidity of germination (of single spores) was cut down, but the time during which germination goes on was lengthened. The relationship between the time of exposure to high temp. and the % of germination is expressed by Newton's formula as modified by Porodko, which is an empirical formula descriptive of the sigmoid curves obtained by plotting time of exposure at various temp. against the % of spores killed. $\log (J_\infty - J) = \log (J_\infty - J_0) - 0.4343k\ (Z - Z_0)$. Where Z is the time of heating, Z_0 the time required for the spores, after immersion, to reach the temp. of the water bath J=the % of dead spores after heating for the time Z, J_∞=the % of dead spores at infinitely long heating period, J_0= the % of spores which have died in the period Z_0, k is a constant, and e the base of the natural system of logarithms. A 2nd attempt was made to determine the effect of temp. on the energy of germination of the spores, using Porodko's modification $(Z_1/Z_2 = (t_2/t_1)^m$, where t=temp., z the time of heating, and m is a constant) of the formula of Harcourt and Esson. The formula, so modified, represents the temp. effect well; the mean value of m was 19.55. Spores heated even for a short time did not germinate in a normal manner.

6649. **BĚLEHRÁDEK, JAN. L'emploi de la formule D'Arrhénius en biologie, est-il justifié?** *Protoplasma* 5: 311-318. 2 fig. 1929.—The thermodynamic law of the velocity of chemical reactions in terms of temp. increase (the temp. coeff. Q_{10} of van't Hoff) having been established for homogeneous systems is not applicable to heterogeneous biological systems.—*W. Seifriz.*

6650. **BOOTH, E. G. Daily growth of the oat kernel and effect on germination of immaturity and controlled low temperatures.** *Minnesota Agric. Exp. Sta. Tech. Bull.* 62. 42p. 9 fig. 1929.—The progressive development of the kernels of Gopher oats was studied from pollination to maturity, and samples of Gopher, Victory, and Banner oats in the early milk to ripe stages were subjected to controlled low temp. at daily intervals. The average flowering period in panicles lasted about 8 days. Flowering progressed from the apex downward, so that the kernels in the lowest whorl were still in the late dough stage when apical kernels were ripe. The growth in length was more rapid during the first 6 days and then became more gradual until the maximum was attained on the 15th day. The width and thickness increased rapidly during the first 10 days and reached their maxima before growth in length ceased. The developmental period of the kernels studied continued for 15 days after pollination and ended when the glumes of the apical spikelet assumed a straw color. General ripening occurred in 2 days and was completed in 4 days, during which time the lemma and palea took on a uniform straw color and the moisture dropped from 41.5 to about 21%. The green wt. increased rapidly for 13 days, but after the 15th day a pronounced decline occurred. The dry wt. rose more gradually than green wt. until ripening began on the 15th day. The increase in dry matter during the ripening period was 3% of the maximum, and the loss when harvesting was delayed 2 days was 8.3%. The N increased rapidly during the first 10 days and the ash during the first 12 days. Thereafter the quantity of N in 20 kernels fluctuated considerably, and differences in the amount of ash were very slight. Exposure to controlled temp. (31-27° F. for 1-3 hrs.) apparently did not affect germination, whether the samples were cooled for 2 hrs. before the exposure or were placed in the chamber without precooling. The average germination in the laboratory increased materially and the field germination still more with the accumulation of dry matter in the kernels. The average germination in the laboratory exceeded that in the field. In general the laboratory germination of immature samples was relatively high and did not indicate reliably what field results might be. With mature samples the laboratory germination always averaged slightly higher than the field tests but was a reliable index of field germination. Immature kernels made low field germination, and the seedlings lacked vigor. Potted oats plants were particularly sensitive to low temp. soon after pollination but endured the cold better when nearing maturity. Exposure during the developmental period to a temp. of 31° for 1 hr. destroyed most of the green color in plants of Gopher oats.—*H. M. Steece (courtesy Exp. Sta. Rec.).*

6651. **GASSNER, G. Die experimentelle Bestimmung der Frosthärte von Getreidepflanzen.** *Züchter* 1(9): 257-264. 4 fig. 1929.—The underlying physical and chemical causes of winter hardiness are very complex, and breeding cold resistant plants is not a simple task. A simple cold resistance test during germination did not give a true index of what a plant may do in the field.—*F. V. Owen.*

6652. **GEDDES, W. F. Chemical and physico-chemical changes induced in wheat and wheat products by elevated temperatures. II.** *Canadian Jour. Res.* 2(1): 65-90. 1930.—Studies were conducted on heat-treated samples of unbleached straight-grade flour milled from Western Canadian hard red spring wheat with the purpose of determining the influence of time and temp. of heating flour with normal moisture content on certain biochemical properties related to "strength." Gluten quality was impaired in all heat-treated samples, as evidenced by decreased viscosity of leached, acidulated flour suspensions, a decreased rate and extent of imbibition of the washed out gluten, and decreased gas retention of the dough. Diastatic activity, as determined by the modified Rumsey method and by the rate of gas production in doughs without added sugar, revealed only slight decreases with those flours which showed improvement in baking quality due to heat treatment. Marked decreases were observed with the more severe heat treatments. Susceptibility of the starch to diastatic action was unaltered until marked damage to baking quality resulted, when significant decreases were noted. Heat inactivation of diastase evidently occurred before changes in amyloclastic susceptibility. Proteolytic activity markedly decreased with heat treatment, significant decreases being noted before diastatic activity was appreciably altered. The pH of flour extracts revealed no particular trend due to heat treatment, but the buffer value was somewhat increased. The biochemical changes investigated were, for the most part, in a direction associated with decreased baking quality, and provided no adequate explanation for the improvement in baking quality observed in certain samples when baked by the basic procedure.—*From author's abstract.*

6653. **HIORTH, GUNNAR. Ein Versuch über den Einfluss der Erwärmung des Pollens auf die Nachkommenschaft.** *Zeitschr. Indukt. Abstamm.- u. Vererb.* 56(1): 39-50. 1930.—The resistance of the pollen of *Antirrhinum majus* to heat was tested by subsequent germination experiments in gelatin-sugar solution and by pollination. The results of the 2 tests were in agreement. A few viable seed were obtained from pollen which had been maintained 8 days at 42°, 62 hrs. at 61°, 46 hrs. at 66.5°, 60 min. at 95°, and 17 min. at 102°. The exposure of pollen to adverse conditions (measured by the number of progeny per pollinated flower) led to an increase in number of variants in the progeny, especially when pollen had been maintained at 42° for 8 days or at 66.5° for 46 hrs. The variants were genetically unstable, but there was no increase in the frequency of gene mutations.—*Author's summary (transl. by H. S. Reed).*

6654. **THOMPSON, H. C. Influence of temperature on flowering in celery.** *Proc. Internat. Congress Plant Sci. Ithaca, N. Y. 1926* 2: 1070. 1929.—Of the various environmental factors influencing seeding of celery, temp. seems to have the most marked effect. Exposing the young plants to relatively low temp. in the cold frame (above freezing) for periods of 15-35 days resulted in the production of flowers and seed the 1st yr. Similar lots of plants kept in the greenhouse at an average temp. of 60° F. until time for planting in the field did not produce flowers. Results of other experiments carried on in the greenhouse, where the plants were grown to maturity, indicate that relatively high temp., averaging 70° F., prevented seeding regardless of the previous treatment. High temp. favored vegetative growth and prevented reproduction. If, however, flower stalks had started before the plants were subjected to high temp., flowering and seeding were hastened by the transfer from low or medium to high temp.

6655. **WARTENBERG, HANS. Zur Biologie der Kartoffel-III. Über die Wirkung der Kalidüngung auf die Frostempfindlichkeit der Kartoffelpflanze.** *Arb. Biol. Reichsanst. Land- u. Forstw.* 17(4): 377-384. 2 pl., 2 fig. 1929.—An attempt was made to check the assumption of Bolhuis that potash fertilization increases the hardiness of the potato. Hardiness may be considered as of 2 types, primary or innate, and secondary or induced. Increased hardiness induced by repeated exposure to cold changes the susceptibility relation which is primarily determined by potash fertilization, so that a demonstration of Bolhuis' results is possible.—*H. Wartenberg (transl. by W. B. Mack).*

6656. **WOOD, J. G. Physiological derangements in vines subsequent to injury by cold.** *Australian Jour. Exp. Biol. & Med. Sci.* 6(2): 103-106. 2 fig. 1929.—Sultana and currant vines in S. Australia after a "black frost" first showed a degeneration of the cambium owing to extensive oxidative metabolism resulting in the formation of poly-hydroxy benzenes. Subsequently air was admitted to the tracheids, which became functionless. Later still, when flower buds developed from the injured shoots, they all fell. Again, this was due to intense metabolism of tannins and phenols, causing death of the cells and isolation of the vascular tissues from the buds.—*J. G. Wood.*

TOXIC ACTION

6657. **COTTON, MARJORIE. Toxic effects of iodine and nickel on buckwheat grown in solution cultures.** *Bull. Torrey Bot. Club* 57(2): 127-140. 1930.—Buckwheat plants were grown in a solution containing KH_2PO_4, $Ca(NO_3)_2$, $MgSO_4$, and $FeSO_4$, and in a 2nd solution containing the following additional salts in low concentrations: $MnSO_4$ $ZnSO_4$, H_3BO_3, $Al_2(SO_4)_3$, NaCl, $Co(NO_3)_2$, $CuSO_4$, $LiNO_3$, KF. In the 1st experiment the plants also received a low concentration of $Ni(NO_3)_2$. KI was extremely injurious. Concentrations equalling 40.1 p.p.m. and 126.9 of I killed nearly all of the plants within 3 weeks. Marked depression of growth occurred at 1.27-12.7 p.p.m. Although weaker concentrations did not reduce growth, they had a toxic effect on the leaves. In all tested concentrations I induced on the leaves pale brown spots surrounded by a darker margin; it had no stimulative action. Ni appeared to be less harmful; concentrations of 5.87-58.68 p.p.m. were very toxic. In the stronger solutions the stems and leaves lost their turgidity and the young plants died within 2 weeks. At 5.87 p.p.m. most of the plants also died. The surviving plants were stunted; new leaves that developed were yellow and covered with minute brown spots, and brown lesions appeared on the stems. 1.88 p.p.m. caused spotting and chlorosis of leaves and depression of growth. In some cases 0.59 p.p.m. caused chlorosis without affecting growth. Weaker concentrations were neither toxic nor stimulative. Plants supplied with a full nutrient solution containing minute quantities of $MnSO_4$, $ZnSO_4$, H_3BO_3, $Al(SO_4)_3$, NaCl, $Co(NO_3)_2$, $CuSO_4$, $LiNO_3$, and KF made decidedly better growth than plants grown in a solution containing only the 3 main nutrient salts and Fe. A markedly higher yield was obtained from plants grown in a full nutrient solution than from those grown in good garden soil, under the same environment. Equal growth occurred in the soil and in a solution containing only the 3 main salts and Fe. Additional light caused plants in soil cultures to produce more flowers, but did not increase the yield of dry material.—*Author's summary.*

6658. **HAMMETT, FREDERICK S. Studies in the biology of metals. III. The localization of lead within the cell of the growing root.** *Protoplasma* 5: 135-141. 1 fig. 1928-1929.—Tests on root tips of *Allium cepa, Zea mais,* and *Vicia faba* prove definitely that lead is combined in especially high concentration with the nuclei and cell walls in these structures.—*Author's summary.*

6659. **HAMMETT, FREDERICK S. Studies in the biology of metals. IV. The influence of lead on mitosis and cell size in the growing root.** *Protoplasma* 5: 535-542. 1929.—In the growing root, lead decisively retarded cell proliferation while allowing cell growth in size to proceed unrestricted.—*Author's summary.*

6660. **HAMMETT, FREDERICK S., and ELIZABETH S. JUSTICE. Studies in the biology of metals. V. The selective fixation of lead by root nuclei in mitosis.** *Protoplasma* 5: 543-546, 1 fig. 1929.—The mitotic nucleus of the growing root has a special avidity for lead. It is largely because of this that growth by cell proliferation is inhibited by the metallic ion.—*Authors' summary.*

6661. **HAMMETT, FREDERICK S. Studies in the biology of metals. VI. The nature of the lead compound deposited in the growing root.** *Protoplasma* 5: 547-562. 1929.—A micro-chemical analysis was made of the deposit found concentrated in the region of cell proliferation of roots of seedlings grown in culture solutions containing lead. The various tests indicate that the precipitate is a combination between Pb and an organic sulphydryl compound analogous to if not glutathione itself. The implications of this finding are discussed.—*Author's summary.*

6662. **HAMPL, JAN. O poškození vegetace při výrobě superfosfátu. [The effect of acid phosphate factories on vegetation.]** [With English summary.] *Věstník Českoslov. Akad. Zem.* 7(1): 24-26. 1931.—These fumes have but little injurious effect on vegetation,

6663. **TRUE, RODNEY H. The toxicity of molecules and ions.** *Proc. Amer. Philosoph. Soc.* 69(4): 231-245. 1930.—The toxic equivalent of a substance is the least concentration of the substance that kills the roots of seedlings of *Lupinus albus* in 24 hrs. The toxic equivalents of a considerable number of salts and acids both organic and inorganic were determined; and when this physiological series dealing with ions was compared with atomic weights, speed of migration of ions, and solution tension no very close correspondence was found between physiological and physical values. It is suggested that toxicity being a property of concentration represents the results of an adaptation throughout evo-

lutionary history of plants to the soluble constituents of their environment, the toxic substances being in general those that have been rare in the form here offered and, therefore, not concerned with plants during their history. Different sp. of plant protoplasm are chemically different and have different toxic equivalents for given ions.—*R. H. True.*

ELECTRICAL PHENOMENA

6664. **HERČÍK, FERD. Die photoelektrischen Grundlagen der photokapillaren Reaktion.** *Protoplasma* 5: 400-411. 1929.—The attempt is made to interpret the photocapillary reaction of plant sap as a photoelectric phenomenon. Cataphoretic experiments support this. The surface tension of the colloidal micelle is raised or lowered by a greater or less charge caused by light.—*W. Seifriz.*

6665. **REMINGTON, ROE E. The high frequency Wheatstone bridge as a tool in cytological studies; with some observations on the resistance and capacity of the cells of the beet root.** *Protoplasma* 5: 338-399. 13 fig. 1929.—The literature of the subject of cell permeability has been reviewed, and the accepted idea as to the structure and properties of the plasma membrane discussed in detail. According to this conception, the membrane of the cell is a non-homogeneous film composed of lipoids and hydrophile colloids, lipoid-soluble and water-soluble substances being transferred across the membrane by different paths. Based on methods used in electrical engineering, a mathematical treatment of resistance and reactance is developed for electrolytes and for tissues or closely packed cells. The resistance values read off the bridge can truly represent those of the circuit within the electrolyte or tissue only when the configuration of resistances and condensers in the measuring arm is the same as that within the electrode vessel, and that neither the series nor parallel condenser method of balancing gives true values for the resistance. A number of measurements on slices of tissue of the beet root are reported, the average of which gives, for a single plasma membrane, a resistance of 32 ohms and capacity of 0.88 microfarad per cm.^{2} of membrane surface. On the assumptions that the membrane is a uniform dielectric of dielectric constant 10, and that the plates of the electrolytic condenser act like metal plates, the thickness of the plasma membrane is calculated at 100 Å, and the specific resistance of the membrane material at 3.2×10 ohms.—*Author's summary.*

6666. **UMRATH, KARL. Zellwandpotentiale lebender und toter Helodea-Blätter.** *Protoplasma* 5: 444-446. 1929. —The potential between the cell walls of living *Elodea* leaves and water is 9 millivolts; the leaves are negative. —*W. Seifriz.*

ANIMAL PHYSIOLOGY

COLLOIDS, SURFACE TENSION, ADSORPTION, VISCOSITY, PERMEABILITY, OSMOSIS, ETC.

D. I. HITCHCOCK, *Editor*

(See also in this issue Entries 6419, 6420, 6427, 6430, 6431, 6443, 6448, 6453, 6603, 6685, 6690, 6702, 6704, 6709, 6710, 6733, 6766, 6796, 7029, 7054, 7063, 7069, 7126, 7172, 7276, 7306)

6667. **ELFORD, WILLIAM JOSEPH. Structure in very permeable collodion gel films and its significance in filtration problems.** *Proc. Roy. Soc.* [*London*] *B* 106(743): 216-228. 1 pl. 1930.—Microscopic and ultramicroscopic studies were made on collodion membranes prepared from alcohol-ether solutions and from acetic acid solutions absorbed in filter paper. In structure the former were "ultragel films" of a permeability of 100 mμ or less, while the latter were "microgel films" of a permeability of 1-5 μ or less, with a much more variable pore size, which depends on the concentration of the nitro-cotton. The bearing of these observations on the general behavior of ultra filter membranes is discussed.—*J. M. Ort.*

6668. **FRIEDENWALD, JONAS S. The permeability of the lens capsule to water, dextrose and other sugars.** *Arch. Ophthalmol.* 4(3): 350-360. 1 fig. 1930.—The permeabilities of lens capsules from the eyes of adult cows, pigs, and rabbits are of the same order of magnitude. The permeability decreases with age and with increasing molecular wt. of the diffusing substances.—*From author's summary.*

6669. **HARPUDER, KARL. Über Diffusionsvorgänge an der menschlichen Haut.** *Zeitschr. Ges. Exp. Med.* 76 (5/6): 724-730. 1931.—Distilled water and various dilute solutions were applied by compresses to the inner forearm for 2 hr. periods. Analysis indicated an exchange of ions between skin and solution.

6670. **HOLOBUT, WIESLAW. Les changements de perméabilité des membranes cellulaires du muscle et leurs effets biologiques.** *Compt. Rend. Soc. Biol.* 100 (14): 1230-1232. 1929.—The work of Ebbecke and Woronzow on the effect of electric current and different salt solutions on the colloidal state of the albumin and permeability of cells was verified, using mono- and di-valent salts and a constant electric current on the gastrocnemius of the frog.

6671. **MOND, RUDOLF, und KLAUS AMSON. Über die Ionenpermeabilität des quergestreiften Muskels.** *Pflüger's Arch. Ges. Physiol.* 220(1/6): 69-81. 1928.—Perfusion experiments through the frog thigh with Ringer's solution showed that the resting uninjured muscle was impermeable to anions and to the cations Ca^+, Li^+, and Na^+; but permeable to K^+ and Cs^+. These results furnish evidence for Michaelis' theory of selective permeability to cations. The muscle takes up K from solutions containing more than 13 mgm. % and gives up K to solutions with low K content.—*N. M. Payne.*

6672. **ORT, JOHN M., and J. MARKOWITZ. Osmotic pressure, bound water, and edema in perfused hearts.** *Amer. Jour. Physiol.* 96(3): 541-546. 1931.—Rabbit and dog hearts were perfused with Ringer-Locke's solutions, some made hypertonic with extra NaCl and with sucrose, and some containing gum acacia, starch, or egg white. All hearts gained wt., and the effects of pH were similar to those previously obtained with standard isotonic Ringer-Locke's solution. It is concluded that the isolated hearts were more permeable than normal hearts in intact animals, since their water uptake was not influenced by the osmotic properties of the perfusing fluid.—*J. M. Ort.*

6673. **TIRELLI, MARIO. Regolazione viscosa impedita dalla fecondazione e aumento viscoco seguito da sviluppo in uova di Arbacia aequituberculata (Blainv.) (Considerazioni sulla struttura chimico-fisica della cellula.) [Regulation of viscosity impeded by fertilization and increased viscosity following development in the egg of A. aequituberculata.]** *Pubbl. Staz. Zool. Napoli* 10(2): 197-230. 1 pl., 3 fig. 1930.—The viscosity of the unfertilized *Arbacia* egg increases with the rise in temp., the increase in viscosity is reversible for a time; but if the egg is fertilized then the increased viscosity may become irreversible. This phenomenon is clearly demonstrated by an increase in time of the first segmentation, by the different shape of the cells in the first "plasmodieresis" (cytoplasmic division), etc. Later the increase in viscosity is irreversible; the fertilized eggs show a very slow but normal development. In a 3rd period "oolysis" (cytolysis) was observed.—*M. Tirelli.*

ANIMAL PHYSIOLOGY

ELECTRICITY, X-RAY, RADIUM

(See also in this issue Entries 6191, 6203, 6379, 6638, 6640, 6664, 6665, 6942, 7063, 7069, 7175, 7246, 7259, 7459, 8245)

6674. **HELD, A. Die Blutzuckerregulation unter Röntgenstrahlen.** *Strahlentherapie* 38(1): 27-39. 1930.—A distinction is drawn between the general action of x-rays on blood sugar regulation, and their direct action on sugar transformation within the sphere of irradiation. Experiments involving re-injection of irradiated own blood show that the general action of rays on blood sugar regulation manifests itself as hyperglycemia, and is due to reaction products of the rays. Decreased pH transmineralization, and the denaturation products of albumin are some of the factors responsible for these general effects. The direct action of rays was studied in comparison of blood sugar of arterial capillaries and veins of irradiated and non-irradiated lower extremities. Muscle cells also may interfere with blood sugar regulation. In the absorption territory of the rays, hypoglycemia occurs; this is regarded as a direct reaction to the rays.—*Author's summary (transl. by P. M. Susk).*

6675. **HOED, D. den, and G. STOEL. Intensity measurements of radium rays.** [With English, French and German summaries.] *Acta Radiol.* 10(5): 442-461. 7 fig. 1929.—The advantages and disadvantages of the photographic method for measuring the intensity of radium rays, as compared with the ionometric method, are outlined. With the photographic method, it is possible to measure up to a very small distance from the source of rays with the ionometric method, measurements less than 2 cm. from the source are subject to errors due to the size of the ionometer and to the shortness of time of running down; the measurings can be made from point to point; the experiment is simple to set up; and the blackenings obtained have a documentary value. The disadvantages of the photographic method are: There are difficulties with applicators of a complicated shape; at a distance from the source of rays the duration of the measurings becomes very long; and the different operations (developing, determining and calculating of the blackenings) require considerable time. Care has to be taken in photographic measurings that the blackening is of sufficient strength, and that it is not larger than 1, otherwise there is no linear relation between blackening, time of exposure and intensity. The methods may be combined. Use of the photographic method for the first few cm. and the ionometric method for larger distances is recommended. The measurements done with this method indicate that the intensity in the deeper regions (in relation to that of the surface) may be increased by enlarging the field of irradiation, or by applying a distance filter between the Ra and the skin.—*From authors' summary.*

6676. **HOEHNE, HERMANN. Der Einfluss von Röntgenstrahlen verschiedener Wellenlänge auf den Cholesterinstoffwechsel.** *Arch. Gynäkol.* 146(1): 41-61. 1931.—Serum cholesterol was determined in irradiated patients immediately before and after irradiation and 1-3 times at 24-hr. intervals thereafter. Series I: 13 carcinoma-free, irradiated patients on hospital diet, 8 unirradiated controls; II, 6 carcinoma-free and 4 carcinomatous patients on a standard diet and relatively short wave length (hard) irradiation; III, 5 carcinomatous on standard diet and relatively long wave (soft) irradiation. A decrease in cholesterol usually occurred in carcinomatous, an increase in carcinoma-free patients, averaging ± 10.4% with hard rays, ± 22.2% with soft. Composition of the diet appeared to be of significance.

6677. **KNUDSON, ARTHUR, and PHILIP J. SCHAIBLE. The effect of exposure to an ultrahigh frequency field on growth and on reproduction in the white rat.** *Arch. Path.* 11(5): 723-727. 1931.—Exposure of 28 young rats for ½-1 hr. daily and raising their body temp. to 40.5° C. did not seem to retard growth. The reproductive organs were not appreciably affected nor was there loss in power to breed. Repeated exposures in which the body temp. was raised to 40.5° C. produced no abnormal lesions.

6678. **KNUDSON, ARTHUR, and PHILIP J. SCHAIBLE. Physiologic and biochemical changes resulting from exposure to an ultrahigh frequency field.** *Arch. Path.* 11(5): 728-743. 1 fig. 1931.—The body temp. of dogs could be raised to any desired point by exposure to an ultrahigh frequency field, returning to normal quite rapidly unless the animal had been heated above 42°C. Animals heated above 42.5°C. for any great length of time did not survive, although one animal heated momentarily to 44.5° survived. Exposure to an ultrahigh frequency resulted in loss of weight, dependent somewhat on the length and intensity of treatment. There was also a decrease in blood volume (up to 25%). The concentration of the blood was also evidenced by the increase in cell volume and hemoglobin. Weight and blood volume usually returned to normal within 24 hrs. Raising the temp. to 41.7° C. produced no great change in pH of the plasma, although there was a tendency toward alkalosis. With higher temp. the tendency was toward acidosis, apparently caused by great increase in the production of lactic acid, probably due to greatly increased tissue metabolism resulting in a tissue anoxemia. Changes in the chloride, total protein and total base were accounted for by the dehydration. Bicarbonate was greatly reduced, owing to excessive pulmonary ventilation with rise in body temp. Changes in inorganic P were somewhat variable, although with a maximum temp. to 41.7° there was a marked reduction. Blood non-protein N was generally increased; in some instances the increase was over 200%. Urea N, creatinine and amino-acid N were also increased. These increases were accounted for by the increased metabolism resulting from rise in temp. and the oliguria. Blood sugar increased in most experiments, in some cases 150%, the greatest increase occurring in experiments in which the pH had been lowered most. There was an increase in both red blood cells and total white cells; also, in many instances, a marked increase in immature forms of red cells, suggesting a stimulation of the hematopoietic tissues.

6679. **KÖHNLE, HANS. Die allgemeinen Grundlagen der Röntgenstereoskopie erläutert an Hand des Hasselwanderschen Stereoskiagraphen.** [The general bases of X-ray stereoscopy.] *Sitzungsber. Phys.-Med. Soc. Erlangen* 61: 221-278. 3 pl., 43 fig. 1929(1930).

6680. **LACASSAGNE, A. M. B., et G. GRICOUROFF. De l'action des radiations sur les leucocytes du sang, étudiée au moyen de la méthode des cultures.** *Arch. Exp. Zellforsch. bes. Gewebezücht. (Explantation)* 6: 303-315. 1928.—Cultures of rabbit leucocytes were irradiated with x-rays or with radon, and their survival was studied. X-rays and γ-rays did not prevent migration. β-rays killed them quickly. Filtered rays had no effect on polynuclears. The lymphocytes are more sensitive than the other leucocytes. The insensitive monocytes become macrophages. Leucopenia, observed after experimental or therapeutic irradiation, is due to lesions of the centers of leucocyte formation and the arrest of the production of new leucocytes, not to the destruction of the leucocytes in the circulating blood.—*A. M. B. Lacassagne (transl. by E. R. Gregory).*

6681. **LASER, HANS. Strahlenbiologische Untersuchungen an Gewebekulturen.** *Strahlentherapie* 38(3): 391-437. 1930.—Cultures of 18 yr. old Carrel chicken fibroblast strain, a 40 day old fibroblast strain in the 15th passage, chicken osteoblast cultures 3-5 mos. old, pure cultures of iris epithelium from chicken embryo at the

20th-30th passage, embryonic rat fibroblasts at the 9th passage, mouse carcinoma cultures (Ehrlich strain) which had been about 2 yrs. in the culture, and cultures of a rat sarcoma at about the 60th passage, were exposed to x-ray or radium (mesothorium), ½ the given culture being shielded as control. Sensitivity (shown by a retardation of growth) and latency bore a definite relation to speed of proliferation, for both malignant and normal cells. Cultures with experimentally determined growth velocity (in latent life) show, after a small irradiation, no change in their accustomed growth rate. After any irradiation which does not produce death, a gradual recovery occurs. Sometimes, but not regularly, one may observe a temporary (compensatory) growth increase of the irradiated cultures over the controls. By preliminary irradiation and immediate repeated transplantations,—on account of the regeneration being thus accelerated,—an increase in sensitivity can be produced. Repeated irradiation of an already irradiated culture, after a certain time, produces no further effect (immunity). The biological sensitivity of the cells, measured by the retardation of growth,—with regard to the direct effect,—corresponds with the product of the time and intensity of irradiation. Carcinoma cultures treated by irradiation followed by transplantation show an especially high sensitivity. The relationship thus established does not indicate a qualitative difference, but merely a quantitative one.—*E. H. Quimby.*

6682. MOPPETT, WARNFORD. Observations on the action of colloidal lead on an in vitro culture with reference to supplementary irradiation. *Med. Jour. Australia* 2(21): 690-692. 1930.—The γ rays from radium D reinforce the destructive action of colloidal lead on cultures of heart muscle from an 8-day chick embryo; mixed x-rays are without effect. This difference may be due to a time effect or to some specific selective action of the radiation. Possibly the atoms of the colloidal Pb become ionised and so pass more readily through the cell-membrane.—*W. Moppett.*

6683. POHLE, ERNST A., and C. H. BUNTING. Skin reactions following exposure to roentgen rays. I. A comparison of the effect of two different wave lengths on the skin of rats. *Radiology* 13(6): 496-503. 7 fig. 1929.—Exposure of the skin of rats in small fields on the back to x-rays of an effective wave length $\lambda = 0.61$ Å (60 K. V., no filter, measured through 2.0 Al) and of $\lambda = 2.0$ Å (7 K. V., no filter, measured through 0.1 Al), in doses of 4 times the average human erythema dose (2,400 r and 1,000 r, respectively) leads to the following reactions: The area treated by the radiation produced at 7 K. V. [apparently 60 is meant] shows a slight macroscopic ulcer between the 10th and 14th day following the exposure, which heals with a smooth scar after 2 mo.; the area treated by the radiation produced at 7 K. V. likewise shows a slight macroscopic reaction but the skin is in an atrophic condition 2 mo. following the exposure. There is no doubt as to the effect of these rays on the capillaries and on the hair follicles.—*From authors' conclusions.*

6684. REISNER, A. Biologische Versuche über die Wirkung der verschiedenen Strahlenmengen bestimmter Radiumpräparate auf die Haut. *Strahlentherapie* 38(1): 19-26. 2 col. pl. 5 fig. 1930.—The dose designated in literature as a skin bearable dose caused an intense inflammation (radiodermatitis of 3rd degree). The overdosage amounted to about 40%. A second series of irradiations with correspondingly lowered doses gave the skin reaction answering the conception of HED. For the tubelet-preparation used, the skin bearable dose was about 310-330 with exposure at 1 cm. distance and about 60 mgeh on immediate contact over skin. The difference in skin responses after exposure to hard x-rays and radium rays is discussed. In comparison of x-rays and radium the doses must be evaluated on the basis of resulting skin change.—*P. M. Suski.*

6685. SCHUBERT, MARTIN. Biologische Röntgenstrahlenwirkung, ihre Erforschung mittels der Gewebeexplantationsmethode. *Strahlentherapie* 26(3): 425-471. 16 fig. 1927.—Explants of the heart of chick embryos 9 days old, on having been radiated in the eggs with 10 HED without filter, grew for 3-4 days if explanted immediately after the radiation. If explanted 4 hrs. after irradiation, growth does not occur. By washing in Ringers solution the inhibition of growth can be prevented in explantations made 2 hrs. after irradiation. The embryos left in the eggs were dead 3 days after irradiation. Cultures irradiated in vitro showed no inhibition in growth. The experiments confirm the works of Krontowsky. Embryonal extracts of the irradiated embryos, taken 4 hrs. after irradiation, produced a slight inhibition of growth when added to the tissue cultures; if taken 24 hrs. afterwards, they completely inhibited the growth in the cultures. The same results are caused by extracts of frozen chick embryos, an indication that the effect is not specific for x-rays. In both cases the pH of the embryonal extract is shifted to the acid side. Grenz rays (a dose of 1½ HED) caused the same effects. The inhibition of growth is supposed to be due to a primary damage of cells in the egg. This damage causes, secondarily, poisonous decomposition products which pass into the embryonal extracts. The death of the cultures to which embryonal extract irradiated in ovo has been added is believed to be due to a change of the permeability of cells after the x-ray treatment in vitro. This change in permeability is supposed to be ineffective in the case of cultures irradiated in vitro because the embryonal extract in this case originates from normal animals.—*F. Freund.*

6686. SPERTI, GEORGE, and ROBERT J. NORRIS. Theoretical and experimental investigation of the excitation of corpuscular, atomic, and molecular radiations in tumor tissue. *Bull. Basic Sci. Res.* [*Univ. Cincinnati*] 2(1): 11-31. 6 fig. 1928.—In the x-ray treatment of cancer, the part of the absorbed energy responsible for a cure is shown to be probably that energy which is changed to fluorescent radiations and photo-electrons. For every depth and thickness of tumor there exists an optimum band of wave-lengths within which treatments should be given. The absorption of energy by the tumor during x-ray treatment can be increased by injection of elements of such atomic numbers that characteristic radiations, and photo-electrons, or β particles, are emitted in the tumor itself. Only a limited number of possible combinations of elements with radiations of specific wave-length will in general produce the desired results. The lethal dose of x-rays for a transplantable mouse sarcoma in vitro at 150 peak K.V., 20 M.A., 19″ skin target distance is 40 min. without CsI_2 and 30 min. with CsI_2 (2 mgm. per gm. body wt.). This action is due to one or more of the following factors: characteristic radiation of relatively long wave-length, fluorescent radiation in the ultra-violet region when excited by x-rays, emission and subsequent absorption of photo-electrons. The dose of x-rays required to kill a given tumor is independent of the age of the tumor and is the same for all mice.—*J. L. Cameron.*

6687. WIESER, WOLFGANG von. Röntgentherapie des Schwachsinnes bei Kindern. *Radiologische Praktika-Band* 10. 266p. 85 fig., Otto Nemnich Verlag: Kempton i. A, Germany. 1928.—This book presents a summary of 5 yrs. effort in studying, classifying, and treating roentgenologically various types of mentally deficient children. The material consisted of 719 afflicted children and 361 adults, and of these, 571 children and 217 adults were subjected to treatment and observation for varying periods of time. In addition, 1500 normal children were studied in establishing the boundaries of normalcy. Roentgentherapy was at first directed only to the pituitary glands, but later the frontal, occipital and parietal regions, as well as the thyroid, thymus, kidneys, tonsils, spinal cord and genitalia were also exposed to radiation. In certain instances this was supplemented by the feeding of appropriate endocrine glands, which often seemed to hasten the appearance and prolong the beneficial effects of irradiation. Beneficial effects of roentgentherapy were observed in the following types

of cases (classified according to Ziehen): Psychoses with intelligence defect, such as Mongolian and microcephalic idiocy, dementia epileptica, and focal degenerative processes, such as those following meningitis, encephalitis, syphilis, hemiplegia, dementia praecox, etc.; psychoses without intelligence defect, such as those due to epilepsy, periodic mania, kleptomania, pyromania, and psychopathic constitution; and disturbances of physical development with normal intelligence, e.g., dwarfism and chondrodystrophy. Perhaps the best results of all were seen in Mongolian idiocy, a condition hitherto regarded as almost entirely intractable to treatment. Improvement of children with mental deficiency associated with hypofunction of the genital, thyroid, and other endocrine glands was only slightly less satisfactory. The book contains a discussion of the theoretical grounds for roentgentherapy, description of the exact technique followed, and numerous illustrations to show the effects of therapy.—*T. C. Hempelmann.*

6688. WOSKRESSENSKY, N. M. Ueber die Wirkung der Roentgenbestrahlung auf das embryonale Wachstum. *Zeitschr. Wissenschaft. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 113(3): 447-461. 5 fig. 1928.—Studies of the biological effects with various doses of x-rays and the effects which may depend on the age of the growing organism are reported, using axolotl embryos and larvae of *Drosophila melanogaster*. From a chart of the results one may predict the time of death of the radiated embryo after each given dose at a certain age. It is concluded that sensitivity of the growing organism to radiation decreases with age according to a hyperbolic function; that the decrease of sensitivity is synchronous with the decrease of velocity of the growth; and that variations in the curve of decrease of sensitivity between *Drosophila* and axolotl are caused by differences in the type of growth and in the processes of cell division in the 2 objects.—*N. M. Woskressensky (transl. by O. Glasser).*

ANIMAL PHYSIOLOGY

BLOOD AND BODY FLUIDS

V. C. MYERS, *Editor*

FRANKLIN C. BING, *Assistant Editor*

(See also in this issue Entries 6674, 6678, 6680, 6808, 6823, 6827, 6843, 6893, 6993, 7009, 7074, 7088, 7099, 7108, 7112, 7127, 7128, 7129, 7166, 7188, 7199, 7244, 7279, 7300, 7306, 7314, 7335, 7336, 7347, 7361, 7418, 7441, 7444, 7456, 8242, 8243, 8246, 8248, 8250, 8251, 8257, 8258, 8265, 8328)

6689. ALEXEEFF, A. I., und K. I. RUSSINOWA. Über die Einwirkung der physikalischen Faktoren auf die Katalase des Blutes. II. Die Einwirkung einiger physiko-therapeutischer Prozeduren auf die Katalase des Blutes. *Biochem. Zeitschr.* 231(4/6): 460-471. 1931.—Studies on 71 men showed that there may be a ± 3% variation in catalase under normal conditions in the course of 40 min. and as much as +4.6% in 8 men in the course of 2 hrs. after taking food. In 17 men the percent of variation was from +1.9% to −17.9% after 45 min. to 1 hr. of exercise (volley ball). Following a 10-15 min. full length bath (40 men) at 38-41° (high temp.) a 6.9-23.6% decrease appeared; no significant change in the bath at 33-35° or after a CO_2 bath. Baths at a temp. of 22° at 2.5 atmospheres pressure for 25-30 sec. showed no immediate significant change but after 30 min. a 7.7-18.8% decrease in 14 men. Electric baths (8 men) at 32-50° produced a decrease of 4.8-20.0%; air baths (11 men) at 21.2-23.1° produced no change. Thus under the same conditions the blood catalase remains fairly constant, food and light exercise have little effect on it, but temp. has a pronounced effect—the higher the temp., the lower the catalase action of the blood.

6690. ANSELMINO, KARL JULIUS, und FRIEDRICH HOFFMANN. Vergleichende Untersuchungen über osmotische Resistenz und Permeabilität der roten Blutkörperchen von Mutter und Kind. *Arch. Gynäkol.* 142(3): 649-661. 1930.—It is proven by the method of partial hemolysis, that in the blood of the new-born a part of the corpuscles (40-50%) are osmotically less resistant, and another and greater part (50-60%) more resistant than those of the mother. The range of osmotic resistance in the child is increased to 3 or 3.25 atmospheres, whereas that of the mother, outside of pregnancy, does not exceed the physiological limit of 2 atmospheres. From the observation that a relatively large number of the corpuscles of the child have a lowered resistance, it is concluded that this condition favors an increased destruction of blood in the newborn. Corpuscles of mother and child differ also in that the lipid phase (which, together with the protein phase forms the mosaic structure of the cell membrane, the function of which in permeability is briefly discussed) of the new born is more permeable, as shown by experiments with pentose and hexose sugars. Similar experiments with substances which penetrate by means of the hydrophile phase, show that there is no difference in permeability in the protein phase in the 2 cases.—*Authors' summary (transl. by R. E. Remington).*

6691. BACH, E., und L. LUSZTIG. Lipaseuntersuchungen am Leichenmaterial. *Virchow's Arch. Path. Anat. u. Physiol.* 280(1): 325-339. 1931.—The lipase of the serum was determined in 107, and of the spinal fluid in 76 unselected cadavers. Serum determinations were made in some cases 2-3 days before, and a few hrs. after death; the variations were within the limits of error. No variations were found in determinations 6-12-24 hrs. after death. Usually increase in serum lipase was paralleled in the spinal fluid. The lipase content of the serum varied with the condition of the patient, high in obese, and low in thin patients, below normal in cachectic. In acute tuberculosis it was apt to be increased, in the chronic type tending to caseation it was low or absent. It usually decreased following uremic conditions. Following acute, febrile conditions it was usually high, frequently many times normal values.

6692. BANUS, M. GARCIA, L. N. KATZ, and J. W. MULL. Observations on the rôle of tissues in maintaining the acid-base equilibrium of the blood. III. Further studies on the hind-leg preparation. *Amer. Jour. Physiol.* 91(1): 150-156. 1929.—The finding is confirmed that the perfusion of blood acidified with HCl through a hind-leg preparation of a dog tends to restore the acid-base equilibrium of the blood toward normal. It is shown that the increase in CO_2 combining power (and pH) of the blood may be explained by a migration of chloride from the blood to some tissues in the hind-leg preparation. Perfusing acidified blood through bone tissue causes no outpouring of red blood cells from its marrow, nor any significant liberation of Ca under the conditions of the experiments.—*Authors' summary.*

6693. BAYLISS, L. E., and A. R. FEE. Studies in water diuresis. IV. The changes in the concentration of electrolytes and colloids in the plasma of decerebrate dogs produced by the ingestion of water. *Jour. Physiol.* 70(1): 60-66. 1 fig. 1930.—Having shown in an earlier paper of this series that a true flood diuresis could be produced in decerebrate dogs not only as a result of the absorption of water from the alimentary canal, but also as a result of the injection of 0.6% NaCl intravenously, the

authors undertook a re-examination of the concentration of the blood plasma in these circumstances. The 11 dogs, including 2 controls, were anesthetized with chloroform and ether, both carotids tied and cannulated, 1 for measurement of the blood-pressure, and the other for obtaining the blood samples; both ureters were then cannulated extra-peritoneally (in ♂ animals) or a catheter passed (in ♀ animals); and, usually, a central incision was made in the abdominal wall, and a loose ligature passed round a loop of small intestine (usually duodenum), so that it could be brought to the surface for the insertion of the large needle used to introduce water. (In some cases water, with a little $NaHCO_3$, was given by stomach tube.) Decerebration was then performed. In the 2 controls no water was introduced, blood samples being taken at intervals. Variations up to 3% in electrolyte concentration and possibly 10% in the colloid concentration occurred, owing partly to experimental inaccuracy and partly to mobilization of fluid due to loss of blood. In every experiment in which water was introduced the colloids became more dilute as a result of the ingestion of water, and the magnitude of this dilution was approximately that which would be expected if the extra water had been uniformly distributed throughout the body. The concentration of the electrolytes, on the other hand, remained constant, within the limits of experimental error in 4 experiments, while in the remaining 3 experiments the change was definitely less than that of the colloids. In 2 experiments 0.6% NaCl was injected intravenously at a rate of 300 cc. per hr. In both of these dilution of the plasma colloids took place, the magnitude of which was approximately that expected.

6694. BENHAMOU, ED., et A. NOUCHY. La leucocytose adrénalinique. *Jour. Physiol. et Path. Gén.* 29(1): 7-37. 16 fig. 1931.—Unlike adrenalin erythrocytosis, which is related to splenic contraction, the leucocytosis due to adrenalin gives no guide to splenic behavior in man. It is not consistently and significantly affected by splenectomy or diseases involving the spleen, and seems to be a defensive reaction involving the entire blood rather than the mere emptying of a local reservoir.—*W. R. Fearon.*

6695. BERGH, A. A. HYMANS van den. Der Gallenfarbstoff im Blute. [Blood bilirubin.] 112p. S. C. van Doesburgh: Leiden; J. A. Barth: Leipzig, [1929?] Pr. 3.60 fl.

6696. BINGER, CARL A. L., RONALD V. CHRISTIE, JOHN STAIGE DAVIS, Jr., and ALMA HILLER. Blood chlorides in conditions associated with pneumonia. *Jour. Exp. Med.* 49(4): 603-614. 1929.—Attempts have been made in dogs to lower the serum chlorides by means of various procedures. Of these the withholding of food, anoxemia, tissue destruction, anaphylactic shock, leucocytosis, and fever yielded negative results. Ingestion of large amounts of water lowered the chloride level independently of body temp. The chloride drop under these circumstances could not be accounted for by excretion and appeared to run parallel with an increase in the serum water content. Experimental pneumococcus infection in 2 animals reduced the serum chloride concentration.—*Authors' summary and conclusions.*

6697. BOERNER, FRED. Method for reporting and interpreting the leucocyte count. *Jour. Lab. and Clin. Med.* 16(3): 296-300. 1930.

6698. BORCHARDT, W. Die physiologische Chemie des Blutes in den Tropen. *Arch. Schiffs- u. Tropen-Hyg.* 34(11): 608-612. 1930.—The average Na, Cl, phosphate, sulphate, rest-N and sugar of the blood in the tropics were within normal limits, but the heavy perspiration reduced the K and Ca ions in the blood (number of observations not stated).

6699. BURNS, E. L., F. H. SCHARLES, and L. F. AITKEN. The effect of mixtures of tissue extracts and blood sera of various animals on the coagulation of blood. *Amer. Jour. Physiol.* 97(2): 233-242. 1931.—Experiments in incubation of various blood sera and kidney extracts produce the following effects on coagulation of dog heparinized plasma: (a) marked inhibition of clotting preceded in some cases by acceleration; (b) marked acceleration of clotting. Evidence points to the development of 2 substances in mixtures of serum and extract, one causing inhibition and the other acceleration of coagulation; both form through combinations of precursor substances in blood sera and tissue extracts. Accelerating and inhibiting precursor substances are both present in all sera and extracts tested, but they vary in amount or activity in different species. The effect of the mixtures on coagulation is the resultant action of these 2 substances. There is evidence of a specific adaptation between both accelerating and inhibiting substances. The inhibiting precursor substances tend to disappear in the blood serum of P-poisoned dogs.—*Authors' summary.*

6700. CASTEX, MARIANO R., LUIS E. ONTANEDA, y MARIO SCHTEINGART. Efectos de la punción cisternal sobre la colesterolemia. [Blood-cholesterol after ventricular puncture.] *Rev. Soc. Argentina Biol.* 6(9/10): 560-570. 1930.—In 13 cases it diminished, in 2 it increased and in 1 no variation was observed.—*J. T. Lewis.*

6701. CIACCIO, IVAN. Comportamento dei fosfati e del glucosio del sangue di cani normali e di cani deficienti di tessuto adrenalogeno per azione del bagno freddo. [P and glucose content of blood in normal dogs and in dogs with adrenal deficiency following cold baths.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 997-1001. 1930.—Following cold baths a marked increase of blood glucose occurred at first with a fall of body temp.; later a rise of temp. was accompanied by a decrease of the glucose content. The increased glucose was accompanied by an increase in inorganic P, the latter being of various amount compared with the first. The total P content of the blood was also increased.—*M. Comel.*

6702. CONDORELLI, LUIGI. Ricerche sulla pressione osmotica del sangue in alcuni pesci del Golfo di Napoli. *Boll. Soc. Ital. Biol. Sper.* 3(2): 197-203. 1928.—Quantitative analysis of the urine of the goosefish, *Lophius piscatorius,* shows it is always hypotonic with respect to the blood. Similarly the urine, lymph, sarcoplasm, bile, intestinal content and blood have always an osmotic pressure much lower than that of the water in the Bay of Naples. Therefore the membranes separating the fish from the surrounding water have a selective function permitting to pass into the fish a solution significantly hypotonic with respect to sea water. The osmotic pressure of the blood of teleosts living in different seas is independent of that of the water in such seas—it is practically constant.—*L. Condorelli (transl. by J. G. Edwards).*

6703. CONKLIN, RUTH E. The formation and circulation of lymph in the frog. I. The rate of lymph production. II. Blood volume and pressure. III. The permeability of the capillaries to protein. *Amer. Jour. Physiol.* 95(1): 79-90. 2 fig.; 91-97; 98-110. 1930.—I. In 33 urethanized and 30 curarized frogs and 4 in which the lymph hearts were cauterized lymph was collected and fluid shown to be lost from the blood at a rapid but variable rate, according to the circulatory condition of the frog. During edema caused by stoppage of the lymph hearts induced by curarization in 6 frogs gains in weight of 16-28% were made in 6 hrs.; in 6 frogs in which urethane was added to the curare the increase was 10-32%, the urethane not having the expected effect of increasing the lymph flow. Fluid injected into the circulation did not remain long in the blood vessels. In 6 frogs 1 gastrocnemius was removed from each and weighed, the frog intravenously injected with 10 cc. Ringer's solution, and later the other gastrocnemius removed and weighed. In each case the 2nd gastrocnemius had gained slightly in weight. The muscles being thus shown not to be the chief depot for water, comparative weighing experiments were made on all organs of 22 injected and 62 uninjected frogs; the skin was found to be the only tissue absorbing any amount of fluid. Hence it was inferred that the skin vessels were more

permeable to fluid than other vessels.—II. A new method is here described for determining blood volume in the frog. This method is a micromodification of the dye injection method, and does not require the immediate sacrifice of the animal. The values obtained by this method are higher than those reported by earlier observers. The average blood volume is 8.74% of the body weight. A method is described for the direct observation of blood pressure in the anterior tibial artery of the frog. Initial values for blood pressure varied in 9 cases from 14.8 to 42.0 cm. of water. When blood pressure is watched for several hrs. it is maintained in quiescent frogs at practically the initial level. Exercise causes an immediate rise in blood pressure, with a rapid readjustment to the former level, due to transudation of fluid. Blood volume and pressure are mutually dependent and intimately related to the formation of lymph. Increase in blood pressure brought on by activity concentrates the blood, forcing more fluid out of the capillaries, and so increasing the flow of lymph. Quick return of lymph to the blood is provided for by the lymph hearts.—III. Capillaries of the frog's skin are normally permeable to protein, but this substance, once it has left the capillaries, does not return through their walls, but takes the lymphatic route, passing through the lymph sacs, and eventually being returned to the blood by the lymph hearts. Experimental proof is offered as follows: (1) Lymph normally contains fibrinogen, albumins and globulins, the proteins of the plasma. (2) The plasma proteins may be almost entirely washed out of the blood by injecting large amounts of Ringer's solution into the circulation of curarized frogs. The lymph hearts are stopped by the curare, and the lymph is drained off through cannulas inserted under the skin. The percentage of protein in the lymph rises quickly, then falls slowly as the blood is depleted. At the end of the experiment both blood plasma and lymph are vary low in protein. Foreign proteins injected into the circulation pass through the skin capillaries and may be recovered in the lymph. Hemoglobin and hemocyanin pass through with relative ease, while egg albumin and gelatin will pass through only after the capillaries have been rendered abnormally permeable by injection of Ringer's solution. The latter is also true of colloidal carbohydrates. The integrity of the lymphatic system is essential to the frog, because of its important circulatory function in returning protein to the blood.

6704. CURTIS, GEORGE M., and A. BRUNSCHWIG. The permeability of the synovial membranes. *Proc. Soc. Exp. Biol. & Med.* 27 (5) : 358-360. 1930.—In experiments on 5 ♂ patients with effusion of the knee joint (4 traumatic, 1 chronic multiple arthritis, *Streptococcus viridans* being present in the effusion fluid), effusion fluid was withdrawn with a bored needle, and phenolsulphonephthalein was injected; withdrawal of urine through a catheter gave indication of phenolsulphonephthalein in the urine after 9-13½ min. (ave. 11½ min.) a longer lag than is usual with intravenous or intramuscular injections of phenolsulphonephthalein. By a similar technique, the times elapsing before appearance of P. S. P. in urine after its passage through the tunica vaginalis (10-12 hrs.); peritoneum (2nd hr.); pleura (2nd hr.); synovial bursa; and synovial tendon sheath (15 min.) were compared.

6705. DELAVILLE, MAURICE, et PAUL TCHERNIAKOFSKY. Variations de l'équilibre acido-basique du sang en relation avec un rythme paradoxal de fatigue. *Compt. Rend. Soc. Biol.* 100 (14) : 1179-1180. 1929.—Cases (9) in which morning fatigue decreased progressively throughout the day showed a simultaneous decrease in the alkaline reserve. The authors conclude that alkalosis is responsible for fatigue.

6706. DENNIG, H., J. H. TALBOTT, H. T. EDWARDS and D. B. DILL. Effect of acidosis and alkalosis upon capacity for work. *Jour. Clin. Investigation* 9 (4) : 601-613. 1931.—In view of the complications associated with exercising a sick man the authors established acidosis in a normal man by NH_4Cl administration and studied his performance while normal, while in acidosis, and while in the alkalosis subsequent to withdrawing NH_4Cl. The buffer value of blood proteins is reduced 1/9 or more with a decrease of 1/2 in carbonic acid capacity. Owing to this effect as well as to decrease in carbonic acid capacity, the ability to neutralize lactic acid and hence to accumulate an O debt is greatly curtailed when one begins exercise in a state of acidosis. Inferentially, the ability to accumulate an O debt is increased by establishing a state of alkalosis before beginning exercise.

6707. DETRE, LADISLAUS, und IMRE ZARDAY. Über die Pathogenese der Arbeitserythrocytose. (Neue Beiträge zur Frage der symptomatischen Polycythaemien.) *Zeitschr. Klin. Med.* 114 (3) : 379-387. 1930.—Reports and recent investigations (on 8 dogs, 2 humans) have established that acidosis causes an erythrocytosis in the circulating blood. Since with muscular activity acidosis occurs as well as erythrocytosis, it is suggested that work erythrocytosis is an acid-erythrocytosis. Work erythrocytosis accompanies acidosis in man as well as in animals. On the basis of the well known part which the spleen plays in work erythrocytosis, it can be assumed, that acidosis is one factor in the causation of splenic contraction.—*Author's summary (transl. by M. Lederer).*

6708. DIRKEN, M. N. J., and H. W. MOOK. The carriage of carbon dioxide by blood. *Jour. Physiol.* 70 (4) : 373-384. 5 fig. 1930.—An apparatus is described with which it is possible to measure either the pH or CO_2 tension of a fluid after CO_2 has been added at various moments up to about 4 sec. The reaction of acids with phosphate solutions is found to be very rapid, whereas anhydrous CO_2 reacts very slowly. This suggests that the hydration of CO_2 is responsible for the retardation. In the same sense the dehydration of H_2CO_3, although much more rapid than its reverse reaction, must be regarded as slow, as can be deduced by comparing the velocity with which acids combine with bicarbonate and phosphate. If hemoglobin is present anhydrous CO_2 disappears from the fluid just as rapidly as any acid. From this it is concluded either that there must exist some direct combination of anhydrous CO_2 with hemoglobin as suggested by Henriques, or else that a catalytic acceleration of the reaction $CO_2 + H_2O \rightarrow H_2CO_3$ by hemoglobin occurs.—*Authors' summary.*

6709. DJURICIC, ILIJA. Glucose et résistance globulaire. *Compt. Rend. Soc. Biol.* 100 (14) : 1222-1223. 1929.—Glucose exercised a protective action on blood corpuscles in hypotonic solutions, or in isotonic solutions to which had been added hemolyzing agents which attack the protein colloids. No such action was manifested against those agents which attacked the lipid colloids (saponin). The author concludes that hemolysis by hypertonic solutions is in part due to a change in the protein colloids of the surface of the cell.

6710. DJURICIC, ILIJA. Glucose et normo-hémolysine. *Compt. Rend. Soc. Biol.* 100 (14) : 1224-1225. 1929.—Glucose exercises no protective action against normal hemolysin (rabbit corpuscles and beef serum). The author concludes that normal hemolysin does not act against the colloidal proteins of the surface of the corpuscle.

6711. DÖRLE, M. Über die Einwirkung von Muskelbewegung und Andrenalin-injektion und Reizung mit mittleren galvanischen und faradischen Strömen auf den Blutzuckerspiegel. *Zeitschr. Ges. Exp. Med.* 69 (1/2) : 242-254. 1929.—Vagotonic patients (asthmatics) showed fall of blood sugar level following muscular exertion or adrenaline injection; sympathicotonic patient (thyroid poisoning, Graves' disease) showed rise. Several cases with abnormal blood sugar level (diabetes mellitus, arsenic poisoning) showed rise. Excitation of vegetative nervous system in rabbits by electric current caused rise in blood sugar; in one case marked fall. Sugar was determined as total reducing substances in blood. Alterations in blood pressure, corresponding to but not parallel with changes in sugar content, were observed in all cases. Author's explanation is that sugar

content and pressure of blood depend on cell and nerve tone, this on the adrenal system, the latter on the vegetative nervous system.—*R. J. Doyle.*

6712. **ETTISCH, G., und H. SACHSSE. Zur Frage der chemischen Selbständigkeit der Serumproteine.** *Biochem. Zeitschr.* 230(1/3): 129-135. 1931.—By the authors' method of affinity determination of protein for Cu it was found that euglobulin when 1/3 saturated with $(NH_4)_2SO_4$ agreed with the globulin fraction in electrodialysis. The paraglobulin which was precipitated on half saturation with $(NH_4)_2SO_4$ was to be regarded as a chemical entity. It occupied a well characterized position between globulin and albumin.—*From authors' summary (transl.).*

6713. **FISHBERG, ELLA H. The rate of disappearance of foreign sugar from the blood stream.** *Jour. Biol. Chem.* 86(2): 665-670. 1930.—The monomolecular reaction velocity equation is found to apply to the rate of disappearance of foreign sugars injected into the blood stream of rabbits. It is thus possible to determine the concentration of the non-fermentable reducing substance at any time in the blood when its concentration at any definite time is known, since the logarithm of the concentration of the foreign sugar at any time is proportional to the time after injection.—*Author's summary.*

6714. **FOLIN, OTTO, and ANDREA SVEDBERG. Diffusible non-protein constituents of blood and their distribution between plasma and corpuscles.** *Jour. Biol. Chem.* 88(3): 715-728. 1930.—The average ratio of the amount of sugar in the corpuscles of normal human blood to that in the plasma was about 60: 100. For diabetic blood this ratio was about 69: 100. This ratio for urea and for creatinine was about 80: 100, which ratio signifies equal concentration in the water of the plasma and of the cells. The ratio for uric acid is about 22: 100. Contrary to previous beliefs, the diffusible amino acid N was much more abundant in the plasma than in the intact corpuscles. All of the analyses show that unlaked blood is more useful than laked blood in clinical applications of blood analysis.—*H. C. Koser.*

6715. **FONTÈS, GEORGES, et LUCIEN THIVOLLE. Identité du taux glucidique dans le plasma vivant et dans le plasma fluoré a 2 p./1,000.** *Compt. Rend. Soc. Biol.* 100(14): 1196-1197. 1929.—The glucose content is the same for fluorated as for living plasma. Exchange between corpuscles and plasma cannot take place instantaneously, and it is on the plasma only that the determination of free blood glucose should be made.

6716. **FONTÈS, GEORGES, et LUCIEN THIVOLLE.** La perméabilité des hématies aux glucides plasmatiques. *Compt. Rend. Soc. Biol.* 100(14): 1198-1199. 1929.—Experiments with prolonged induced hyperglycemia in 9 dogs indicated that the corpuscles are slowly permeable to glucides. Epinephrine appeared to aid in the establishment of an equilibrium between the plasma and corpuscle glucides. The authors conclude that the difference in the permeability of red corpuscles to glucides, which exists between man and other vertebrates, is merely one of degree.

6717. **FONTÈS, GEORGES, et LUCIEN THIVOLLE. L'action hyperglucidémiante de l'adrénaline.** *Compt. Rend. Soc. Biol.* 100(14): 1200-1202. 1929.—The blood contains, besides glucose, a saccharoid which the authors name "glucide X." The latter fraction is increased in relatively greater quantities than the glucose following the injection of adrenalin, which, then, is said to exercise a hyperglucidemic power. Morphine and ligation of the portal vein cause an increase in the glucose, but none in "glucide X"; therefore their action is considered as hyperglycemic. This "glucide X" is immediately utilized by yeast and is precipitated by $Hg(NO_3)_2$.

6718. **FONTES, G., et L. THIVOLLE. Sur la validité des chiffres de la glucidémie immédiatement réductrice. VI. La différence de pouvoir réducteur obtenue, par molybdomanganimétrie, entre les filtrats des défécations tungstique et mercurielle du sang est due à un glucide. (Seconde preuve.)** *Bull. Soc. Chim. Biol.* 12: 264-270. 1930.—Adrenaline increased the difference in the reducing power between tungstic acid and mercurial deproteinized blood filtrates, and this difference exceeded considerably any possible experimental errors. The reducing agent which produces the difference in reducing power between the two filtrates is of saccharoid nature of unknown constitution and will be called "glucide X." It is present in all blood, entirely utilized by yeast and is augmented by adrenaline. The increase in "glucide X" by adrenaline is greater in plasma than in whole blood.—*E. G. Schmidt.*

6719. **FORBES, W. H. [et al.]. The equilibrium between oxygen and haemoglobin. I. W. H. FORBES, and F. J. W. ROUGHTON. The oxygen dissociation curve of dilute blood solutions. II. W. H. FORBES. The oxygen dissociation curves of dilute solutions of horse haemoglobin.** *Jour. Physiol.* 71(3): 229-260, 261-267. 1931.—I. Two independent gas analysis methods were developed for studying the O dissociation curves of dilute blood or hemoglobin solutions: (1) a modification of the Van Slyke-Neill technique; (2) a method depending on the manipulation and analysis of gas phases, carried out by the Haldane method, so modified as to measure O pressures to within 0.002-0.001 atmosphere. Both methods give an accuracy of about 1% oxyhemoglobin when applied to blood solutions of hemoglobin content equal to 1/30-1/50 that of whole blood. The 2 methods also check satisfactorily with one another. When applied to diluted sheep's blood solutions, pH 7.8-9.3, temp. about 20° C., both methods give definitely S-shaped dissociation curves. These are interpreted on Adair's intermediate compound hypothesis, in connection with which various theoretical aspects are discussed.—II. Solutions of 0.5% purified horse hemoglobin in a 1% borate buffer solution of pH 9.1 gave S-shaped curves in all cases except 1, in which putrefaction was beginning. There was evidence in all cases of a slight inconstant amt. of denaturation. Variations in dilution between 0.32 and 0.94% had no effect on the points on the curves.—*Authors' summaries.*

6720. **FREMONT-SMITH, FRANK [et al.] The equilibrium between cerebrospinal fluid and blood plasma. I. FREMONT-SMITH, FRANK, MARY ELIZABETH DAILEY, H. HOUSTON MERRITT, MARGARET P. CARROLL, and GILES W. THOMAS. The composition of the human cerebrospinal fluid and blood plasma. II. FREMONT-SMITH, FRANK, MARY ELIZABETH DAILEY, H. HOUSTON MERRITT, and MARGARET P. CARROLL. The composition of the human cerebrospinal fluid and blood plasma in meningitis.** *Arch. Neurol. and Psych.* 25(6): 1271-1289, 1290-1296. 1931.—I. Data are presented on 240 simultaneous samples of venous blood plasma or serum and cerebrospinal fluid. The cerebrospinal fluid of human beings is in osmotic equilibrium with the blood plasma and has a constancy of composition as great as that of the blood plasma.—II. Study of the sugar, nonprotein N, chloride and protein in 89 parallel samples of blood plasma or serum and cerebrospinal fluid from 50 patients, aged 2½-65 yrs., showed that the principal changes in the chemistry of the spinal fluid characteristic of all forms of acute meningitis, including tuberculous and acute syphilitic meningitis, were: (a) increase in cells and protein; (b) decrease in sugar and chlorides. In addition, in the few cases in which the authors studied P and Ca, they, like Cohen, found an increase in these substances. They also observed a decrease in Na in a few cases. In the blood plasma the sugar was frequently increased, even though the patient may have been fasting; this increase (in marked contrast to the decrease in the sugar in the spinal fluid) is striking evidence that the diminution of sugar in the spinal fluid is due to a local breaking down of sugar. The chlorides in the blood plasma were nearly always decreased, and this decrease accounts in large part for the decrease in the chlorides in the spinal fluid in the majority of cases, as pointed out previously. These values for Na, Ca and P in the serum were usually below normal. The protein in the serum varied greatly in these

cases, but in the majority it was within the normal range.

6721. **GARSIDE, EARL.** Effect of complete biliary fistula on blood cholesterol. *Proc. Soc. Exp. Biol. & Med.* 28(3): 336-338. 1930.—Blood cholesterol was determined daily on the blood in dogs with a complete biliary fistula, both with and without the presence of a gallbladder, using Sackett's modification of Bloor's method. After several normal readings were obtained, operation was done, and daily determinations of blood cholesterol were continued. There was no appreciable difference in blood cholesterol in dogs with complete biliary fistula, with cholecystectomy, and those with complete biliary fistula only.

6722. **GEILL, T.** Recherches relatives à l'action de sels biliaires sur la réaction sédimentation du sang. *Compt. Rend. Soc. Biol.* 106(9): 761-764. 1931.—Mixture of equal volumes of citrated blood (from a case of arterial hypertension) and sodium taurocholate was allowed to stand for 1 hr. The speed of sedimentation was determined with the apparatus of Westergren. The conclusion of former workers that bile salt has an inhibiting effect was true only for the first 15-16 min. The inhibiting effect disappeared entirely when the mixture was allowed to stand at room temp. for 24 hrs. Sodium glycocholate has practically the same effect. Allowing the mixture to stand for 24 hrs. in an ice-box increased the inhibiting effect. Exposure to 37°C for 24 hrs. reduced the action of the salts. Addition of fresh erythrocytes to mixtures which were allowed to stand 24 hrs. and then centrifuged showed that the plasma retained an inhibiting effect. In most of these, an increase in speed of sedimentation occurred after 6-8 hrs. Fresh plasma and erythrocytes, exposed to bile salts 24 hrs., showed a sedimentation which was strongly accelerated within a few hrs. The effect of these salts is probably on the erythrocytes or on the colloidal state of the plasma proteins. Effects in vitro cannot be directly applied to those in vivo. The slow sedimentation noted in jaundice may not be attributed with certainty to the retention of the bile salts.—*E. Weiner.*

6723. **GLASS, JERZY.** Veränderungen der Chlorverteilung im Blute unter dem Einfluss der Ultraviolettbestrahlung. *Biochem. Zeitschr.* 231(1/3): 45-53. 1931.—Blood samples (5-6 cc.) were taken from ears of 5 rabbits before and ½, 1, 2, 4, and 24 hrs. after ½-3 hrs. U. V. irradiation (50 cm. distance, 130 v. and 3.5 amp.). Between 2-4 hrs. after irradiation there was a shift of Cl to the red blood cells, which often lasted 24 hrs. Three men were irradiated, chest and back, for 3-8 min. at 220 v. and samples from the cubital vein taken before, and 24 hrs. after, irradiation. After 24 hrs. there was a similar shift of acidotic character. The vol. % of blood cells, Cl conc. in mgm. % in blood cells and plasma, color index of blood cells, and Cl content in mgm. per 100 cc. blood for blood cells, plasma and total blood were determined.

6724. **GNOINSKI, H.** Variations du niveau de la glycémie chez les chiens néphrectomisés sous l'influence du blocage du système réticulo-endothélial. *Compt. Rend. Soc. Biol.* 98(1): 72-73. 1928.—Blockage of the reticulo-endothelial system resulted in a still greater rise in the blood sugar of double nephrectomized dogs. The intensity of the hyperglycemia varied with the glycogen reserve of the liver.

6725. **GRENDEL, F.** Über die Lipoidschicht der Chromocyten beim Schaf. *Biochem. Zeitschr.* 214(1/3): 231-241. 1929.—The lipids were extracted from erythrocytes of the sheep and their composition determined. 36% of the total lipids was cholesterol, 50% cephalin, and 13% sphingomyelin. It is proposed on the basis of measurements on the spreading of lipids on a fluid surface, that they occur in a bimolecular film on the surface of the erythrocytes. Observations indicate that a decrease in Ca of the plasma conditions a decrease in the thickness of the lipid film on the blood cells.—*K. Jeffers.*

6726. **GREVENSTUK, A. Jr.** Über freien und gebundenen Zucker im Blut und Organen. [Free and combined sugar in blood and tissue.] 247p. J. F. Bergmann: Munich, [1929] Pr. 16.50 M.

6727. **GRIGOROWA, O.** Das Blutbild der Kinder in der Pubertätsperiode. *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15(1): 24-34. 1929.—Girls (100) between 12 and 16, and 100 boys between 13 and 17, were separated into 3 groups: (1) those with no sign of sexual maturity, (2) initial signs, (3) fully developed. The Hb was higher the more the children were developed; low Hb was compensated for by increased erythrocyte production. Delay in puberty, particularly hypogenitalism, was accompanied by a hemogram similar to that of castrates, i.e., increase in mononuclear cells, lymphocytes, and particularly monocytes; the leucocytes of the myeloid system decreased at the same time, juvenile forms often appeared, and eosinophils increased to some extent. The hemogram was very dependent upon the constitutional peculiarities caused by the hormone system. Evaluation of the hemogram was more difficult than in adults since deviations may have not only a pathological but also a biophysiological character owing to disharmony in organic correlation.

6728. **HAYNES, FLORENCE W., and MADELEINE E. FIELD.** The cell content of dog lymph. *Amer. Jour. Physiol.* 97(1): 52-56. 1931.—The number of cells in the lymph from different parts of the body as shown by experiments agreed with the data of others and showed similar irregularities. The cervical lymph which had passed at least in part through lymph glands contained 2,800-68,600 white cells per cu. mm., whereas leg lymph which had passed through few if any nodes contained 0-2,500 cells. By a short period of massage of the cervical lymph glands the white cell count of the cervical lymph could be greatly increased, falling gradually on continued massage.—*From authors' summary.*

6729. **HEILMEYER, LUDWIG.** Klinische Farbmessungen. IV und V. Die Harnfarbe in ihrer physiologischen und klinischen Bedeutung. *Zeitschr. Ges. Exp. Med.* 60 (5/6): 626-647. 7 fig.; 648-664. 4 fig. 1928.—The author continues his reports on a study of urinary pigments as determined by spectroscopic methods. Clinical estimation has shown that the most important source of coloring material is blood pigment. Normally there occurs a formation of bilirubin in the healthy liver from the blood pigment, and it is excreted via the intestinal tract. A small portion of the end product is excreted by the kidneys as urobilin. The origin of urobilin according to Friedrich Müller is probably intestinal. It is as yet an open question whether other pigments arise at this point. In disturbances of liver function or in conditions where there is an increased blood destruction the transformation into bilirubin is incomplete and a larger portion of the pigment is eliminated in the urine through the kidney. Urobilin is only a part of these pigments and furthermore is not the one most frequently involved. An essential portion is undoubtedly uroerythrin. There must be other unknown pigments. Urochrome, derived from protein, plays the least important rôle. There was no indication from these studies either experimentally or clinically that the kidneys had anything to do with the production of urinary pigments. Diuretics produced no effect on the elimination of urinary pigments, even when the secretory power of the kidney was markedly increased. Even in acute kidney disturbances there is no disturbance of urinary pigment excretion except in very severe cases of renal insufficiency, in which instance the diminution is a disturbance of excretion rather than of production of pigment. The two pathogenic instances that lead to an increased elimination of the normal urinary pigments are injuries to the liver and conditions in which there is increased blood destruction.—*D. Perla.*

6730. **HEKMA, E.** Ist das Fibrinogen in dem natürlichen Plasma im freien oder im komplexen Zustande vorhanden? *Biochem. Zeitschr.* 209(1/3): 90-102. 1929.—Fibrinogen is found in the free state in plasma and may be removed by vigorous mechanical treatment. —*M. E. Turner.*

6731. HEKMA, E. Zur Existenzmöglichkeit fibrinogenhaltiger Komplexe neben freiem Fibrinogen in plasmatischen Flüssigkeiten. *Biochem. Zeitschr.* 209(1/3): 128-133. 1929.—An inactive fibrinogen complex is associated with the free fibrinogen of blood plasma under certain experimental conditions.—*M. E. Turner.*

6732. HENDERSON, L. J., A. V. BOCK, D. B. DILL, and H. T. EDWARDS. Blood as a physicochemical system. 9. The carbon dioxide dissociation curves of oxygenated human blood. *Jour. Biol. Chem.* 87(2): 181-196. 1930.—A contour line chart is given defining the properties of the CO_2 dissociation curve of oxygenated blood as functions of 2 variables, CO_2 combining capacity at a partial pressure of 40 mm. (T_{40}) and O combining capacity. By its use one can obtain values of the slope of the CO_2 dissociation curve. An alignment chart is described by means of which one can construct the CO_2 dissociation curve of a specimen of oxygenated blood when one knows (1) the total H_2CO_3 content at any pressure of CO_2 and (2) the O capacity of the specimen. —*D. B. Dill.*

6733. HÖBER, RUDOLF, und GIULIO PUPILLI. Neue Versuche über die Aufnahme von Farbstoffen durch die roten Blutkörperchen. *Pflüger's Arch. Ges. Physiol.* 226 (4): 585-599. 1931.—A general parallelism is found between the tendency of dyes to accumulate in red blood corpuscles and their solubility in Nirenstein's mixture of oil of almonds, oleic acid and diamylamine. The intake from dilute solutions of dyes insoluble in this mixture is only apparent, the observed concentration changes being due to a superficial adsorption. In the case of a number of dyes, the intake by corpuscles of different species is in the order: horse < ox < pig. These specific differences are attributed to differences in the cell lipids. —*M. H. Jacobs.*

6734. HOLTZ, PETER. Der Einfluss des bestrahlten Serums auf die Zuckerabgabe der isolierten Warmblüterleber. *Pflüger's Arch. Ges. Physiol.* 226(4/5): 578-584. 1931.—The lowering of blood sugar by irradiation was investigated by perfusing livers from rabbits, cats, and dogs with Tyrode solution, normal or irradiated cattle serum. pH was measured and was kept approximately constant. Irradiation was conducted in open glass vessels at 20° with a mercury vapor lamp. Livers were perfused first with Tyrode solution and then normal and irradiated serum were alternated. Sugars were determined by the Hagedorn-Jensen method. In a large proportion of the experiments the sugar produced was less with irradiated than with normal serum.—*H. C. Bazett.*

6735. IMPARATO, E. Action des extraits placentaires sur le pH sanguin. *Compt. Rend. Soc. Biol.* 100(14): 1190. 1929.—In general, placental extract caused a slight increase in alkaline reserve, although exceptions were noted. pH also increased slightly. Method of administration made no difference in results.

6736. JERVELL, OTTO. Über Glykolyse im Blut mit besonderem Hinblick auf die Milchsäurebildung. *Acta Med. Scandinavica* 74(3): 221-234. 1930.—Glycolysis experiments carried out with the blood of various pathologic conditions showed no differences. No glycolytic ferment could be found in case of cancer. Glycolysis is independent of the initial concentration of blood sugar. Insulin has no effect on the glycolytic capacity of blood. Lactic acid formation is less than the blood sugar deficit caused by glycolysis.—*J. M. Johlin.*

6737. JOHNSTON, CHRISTOPHER. A comparison of the urea nitrogen content of cutaneous and venous blood by micro gasometric analysis. *Jour. Clin. Investigation* 9(2): 209-213. 1930.—The concentration of urea N in the blood from ear puncture has been compared with that from the vein in 13 experiments on 6 normal and 6 nephritic subjects, without regard to food intake. No difference betwen venous and cutaneous blood exceeding the limit of experimental error was found to exist.—*Author's summary and conclusions.*

6738. JORGENSEN, I. M. I. Studien über die Fällung der Serumproteine. *Skand. Arch. Physiol.* 61: 34-157. 1931.—$(NH_4)_2SO_4$ precipitation curves for the proteins of horse, dog, rabbit and human sera were established. A pH range of 7.0 to 5.4 had no influence, but lower pH values increased the precipitation. The Starlinger and Hartl method of determining serum proteins was improved by adding a buffer to the precipitating solution. The serum proteins are influenced only by repeated and considerable venesection. In such cases serum albumin regenerates more rapidly than the globulin.—*R. C. Herrin.*

6739. JUSSIN, W., und S. BELAWENETZ. Das Retikuloendothelialsystem des Hodens bei den weissen Ratten. *Anat. Anzeiger* 70(13/17): 274-277. 2 fig. 1930.—Injections of trypan blue and pyrrol blue solutions were given to 33 rats with simultaneous irritation of the testicles by light compression, producing enlargement of the blood-vessels, infliction of trauma by bruising, irradiation with white and blue light, and injection of solutions of $KMnO_4$, collargol-xylol or $ZnCl_2$. The animals were later killed and the tissues fixed and examined. The conclusions are: In the testicles of the white rat only the interstitial testicular and epididymal cells perform a reticulo-endothelial function. No other cells of the testicles are blocked, and the dye-stuff does not penetrate the interior of the tubules. Blockage is increased by all factors which promote dilatation of the blood-vessels and rise in metabolism. Hunger, injections of xylol and collargol, as well as pus formation, produce a depression of the testicular reticulo-endothelial system.

6740. KASAHARA, MICHIO [et al.] Studien über Liquor cerebrospinalis. I. MICHIO KASAHARA und YOSHIO FUJISAWA. Über die normale Cerebrospinalflüssigkeit der Versuchstiere. II. MICHIO KASAHARA, ISAMIR INO und MINORU TOMINAGA. Experimentelle Untersuchungen über Liquorzucker. *Zeitschr. Ges. Exp. Med.* 73(1/2): 11-13; 14-18. 1930.—I. Yamaoka's technique of suboccipital puncture was employed. The cerebrospinal fluid of 4 monkeys, 7 dogs, 5 goats, 5 cats and [?] rabbits was found to be similar in reaction and composition to human fluid.—II. Intravenous injection of 12 rabbits with glucose, 10 with lactose, 10 with saccharose, 9 with epinephrine, 13 with synthalin, and 10 with various narcotics (ether, chloroform, urethane, morphine and chloralhydrate, showed that the spinal sugar ran closely parallel with the blood sugar, both for normal, subnormal and hyperglycemic values.

6741. KESTEN, H. D. A study of saponin hemolysis of individual erythrocytes. *Amer. Jour. Physiol.* 91(1): 1-7. 1929.—A method is described for the study of saponin hemolysis of single, isolated, red blood cells. Utilizing this method, several series of determinations of single cell hemolysis were carried out. In each series the greatest number of cells was found to hemolyze during the earlier time intervals after addition of saponin, with a progressive falling off in number of cells hemolyzed as the time increased. This curve is different from the derivative of the usual sigmoid hemolysis time curve, and since observations on individual cells should, if anything, accentuate the probability distribution of individual cell resistances, no evidence can be found for such a distribution. It seems less probable that the curve is a manifestation of individual cell resistance than of the fortuitous completion of the hemolytic reaction on identical erythrocytes.—*Author's summary.*

6742. KISCH, BRUNO. Blutzuckeruntersuchungen bei Selachiern. *Biochem. Zeitschr.* 211(4/6): 276-291. 1929. —The blood sugar of *Scyllium* and *Torpedo* was investigated by the method of Hagedorn and Jensen. The lowest values in healthy animals approached those in frogs (20 to 40 mgm. %). The state of fullness of the stomach or intestine does not affect these values. Following hepatectomy the blood sugar sinks after a few days; the lowest values were 5-10 mgm. %. The disappearance of sugar is greatly accelerated by warming the animal. Asphyxia leads to hyperglycemia after 1 hr. at 15° C., sooner at higher temperatures. Arterialization of the blood with O does not prevent a continued rise for several hrs. A recovery of the blood sugar to normal takes

place very slowly; the normal value may not be regained after 7 days. The source of this excess of sugar is the liver. Hyperglycemia as a result of asphyxia is not to be observed after hepatectomy. Adrenalin, in the case of *Scyllium*, causes marked asphyxia. These changes in blood sugar may be associated with the peculiar functioning of the autonomous nervous system of these animals.—*J. M. Johlin.*

6743. **KOSCHATE, JORG. Ueber die Beeinflussung der Bakterizidie des Blutes durch gerinnungshemmende Stoffe.** *Zentralbl. Bakt. I. Abt. Orig.* 118(1/2): 60-63. 1930.—Reduction of the coagulating tendency of blood, especially by the addition of Na citrate, had the desirable effect of diminishing its bactericidal action in blood cultures. In 3 cultures of *Staphylococcus aureus* on citrated blood the organism was invariably found, while in control cultures on bile and bouillon 2 out of 3 on each were sterile. Cultures on citrated blood of *Streptococcus hemolyticus*, colon bacillus, paratyphoid B, typhoid and *Staphylococcus albus* were more abundant than on bouillon, and more abundant than on bile except in the case of *S. hemolyticus*.

6744. **KOSKOWSKI, W., et P. KUBIKOWSKI. Les propriétés dynamiques du sang au cours de la digestion.** *Compt. Rend. Soc. Biol.* 100(14): 1240-1242. 1929.—Defibrinated blood of the fasting dog has no effect on the isolated virgin uterus of the guinea pig. 25 hrs. after the ingestion of 500 gm. of horse meat the blood has a very decided action. After defecation the blood has no action. Various compounds (leucine, histidine, asparagine, etc.) were tested for their effect on the virgin uterus; creatinine had a slight effect, methylguanidine, α-alanine, choline, and histamine all had a marked effect. The ingestion of pure glucose was followed by a slight effect, that of fats only when connective or muscle tissue was present.

6745. **KOSKOWSKI, W., et P. KUBIKOWSKI. Les propriétés dynamiques des hématies pendant la digestion.** *Compt. Rend. Soc. Biol.* 100(14): 1243-1245. 1929.—The pharmaco-dynamic qualities of the blood, as evidenced by its action on the virgin uterus of the guinea pig, are present in the plasma for a very short time, and are then rapidly transferred to the corpuscles, which retain this action for a prolonged period. The use of purgatives or of absorbing agents such as animal charcoal, following the feeding of milk or horse meat, prevent the absorption of the active material by the blood.

6746. **KRYŽANOWSKAJA, L. I. Wassergehalt des Blutes in verschiedenen Zirkulationsbezirken nach Versuchen an angiostomierten Hunden.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 667-669. 1928.—Water (200 cc.) was injected in divided doses into the intestine of dogs during the course of 10 min., or was administered by mouth with other food. The dogs were fed on liver and milk. The increase in nutritive content of the portal vein after feeding was not proportional to its increase in water. The amount of dry substance resorbed began at 1.4%, then rose to 6.6%. The average amount of dry matter was about 5%. There is without doubt a direct relation between the quantity of water absorbed and the quantity excreted by the kidneys. Increase of the quantity of water absorbed leads to increase in quantity of water excreted. The liver withdraws only small amounts of water from the blood in fasting condition.

6747. **KUSCHINSKY, GUSTAV. Über das Verhalten von Kalium und Calcium im Blut des Hundes beim Histaminshock.** *Zeitschr. Ges. Exp. Med.* 64(3/4): 563-568. 1929.—Calcium, K, Hb, erythrocytes and refractive index were determined on plasma, serum and whole blood drawn from the jugular vein of grown dogs during typical histamine shock. Blood pressure and respiration changes were recorded. Hemoglobin content and erythrocyte count were increased while refractive index varied slightly. The K was greatly increased in the plasma and serum while the Ca was only slightly increased. In whole blood, the rise in K was small and Ca remained fairly constant.—*M. E. Turner.*

6748. **LENNOX, WILLIAM G. (with the assistance of ERNA LEONHARDT). The oxygen and carbon dioxide content of blood from the internal jugular and other veins.** *Arch. Internal Med.* 46(4): 630-636. 1930.—In a large series of patients, O and CO_2 content of the blood from an artery and various veins were measured. The gaseous content of blood from the femoral vein was the same as that of blood from a cubital vein. In sharp contrast, blood from the internal jugular vein was more reduced and blood from the external jugular less reduced than that from a cubital vein. These statements are true for average values. Measurements for individual patients varied widely. In 51 patients the average corrected respiratory quotient for blood from a cubital vein was 0.84 and from the internal jugular vein, 0.9. More sugar disappeared from the blood in its passage through the brain than in its passage through the arm. The former of these observations suggests that in the metabolism of the human brain, carbohydrates are unusually important. —*Authors' summary.*

6749. **LITARCZEK, G., H. AUBERT, et I. COSMOLESCO. Des facteurs qui peuvent influencer l'affinité de l'hémoglobine pour l'oxygène exprimée par la constante 1/k. Le pH plasmatique.** *Compt. Rend. Soc. Biol.* 106(9): 740-742. 1931.—In anemic, hyperthyroid, patients with polycythemia and cardiac patients, the independence of variations in the value $1/k$ from the pH of the plasma was verified. Therefore variations in $1/k$ must depend on certain intraglobular modifications, expressed by the factor α from the equation of Peter-Barcroft, $1/k = \alpha C_H \times 10^8$. From experiments on a normal and an anemic subject, it is concluded that the organism has 2 means of changing the affinity of hemoglobin for O: by intraglobular modifications, letting the pH of the plasma remain constant; or by extraglobular variations of the plasma pH. The former generally occurs.—*E. Weiner.*

6750. **LOEPER, M., R. DEGOS, et A. LESURE. Action des rayons ultraviolets sur la thiémie.** *Compt. Rend. Soc. Biol.* 106(9): 718-719. 1931.—Six subjects were exposed for 10 min. Blood S was determined before exposure, and 10 min., 1 hr., and 2 hrs. after. The total S was lowered after 10 min. In 4 of 6 cases, it continued to decrease for 10 days after. Neutral S diminished more than oxidized S, so that the ratio of oxidized S to total S was augmented generally. The results are probably due to increase in oxidation of the S.

6751. **LOUCKS, MILO M., and F. H. SCOTT. Calcium in the coagulation of blood.** *Amer. Jour. Physiol.* 91(1): 27-46. 1929.—Clark's Ca method was checked against ashing methods and the amount of Ca was found to be the same within experimental error, in serum, citrated plasma and heparinized plasma, if the oxalate was allowed to stand in contact with the plasma or serum for sufficient length of time. It was found that the ether-extractable lipids held some Ca in combination with them, but not all Ca soaps act as thrombin. Thrombin is probably a Ca-"tissue juice" compound which alters the sol fibrinogen to the gel fibrin. Prothrombin, if such exists, is any potential source of tissue extract (broken tissues, platelets or white blood cells) and not a separate chemical entity of the circulating blood. Rettger's work regarding the recalcification of fluoride blood was confirmed. Fluoride plasma will clot upon recalcification if the Ca is not added in excess. Vine's results showing that 3 or 4 times the amount of oxalate necessary to precipitate the normal amount of blood Ca must be added to blood to prevent its clotting, were confirmed. Thrombin is inactivated by means of oxalate. This is due to the removal of Ca and is not merely a salt effect. It seems impossible to remove Ca from thrombin by dialysis. Fibrin ordinarily contains Ca, but this Ca may be removed by washing. The Ca of fibrin probably belongs to the thrombin. Lowering of surface tension of blood is probably the causative factor concerned in the rupturing of platelets in shed blood.—*Authors' conclusions.*

6752. **MARGARIA, R. The vapour pressure of normal human blood.** *Jour. Physiol.* 70(4): 417-433. 1 fig. 1930.

—Measurements have been made of the vapor pressure of defibrinated human blood with Hill's thermoelectrical nethod. The accuracy of this method as used is such hat the probable error of a single determination is about ± 0.2 to 0.3%. The average value, expressed in terms of gm. of NaCl in 100 gm. of water, is for men (19 observations) 0.9447, with a probable individual deviation of ± 0.00495, for women (16 observations) 0.9269, with a probable individual deviation of ± 0.0059. The reality of a difference betwen the values of the osmotic pressure or men and for women is statistically certain; the difference is 0.0178 ± 0.0019. Such a difference is mostly lue to the difference in bicarbonate and urea content. The values of the probable individual deviations are an ndex of the great uniformity of the osmotic pressure of human blood under normal conditions. A preliminary tudy was made of the maximum variations which may occur in the osmotic pressure of human blood. After drinking 1500 to 2000 cc. of water, values were found as ow as 0.88: after severe muscular exercise a value as high as 1.048 was observed.—*Author's summary.*

6753. MARSHALL, F. W. The sugar content of the blood in elderly people. *Quart. Jour. Med.* 24(94): 257-284. 1931.—From study of 50 cases of old age, including 6 of healthy old men, the remainder being more or less pathological, Marshall concludes that 5 types of glucose-tolerance curves occur in healthy old people: the normal adult; the storage defect; the "lag"; the "flat"; and he typical diabetic types. The frequency with which each of these types occurs has been indicated, and the storage-defect type has been shown to occur most requently. The "lag" type of curve occurs in 25% of healthy cases, and this is probably a much higher incidence than is found in the normal adult. The same 5 types of curve occur also in the group of unhealthy cases, but the incidence of each type is altered and the "diabetic" type preponderates, and is found in as many as 0% of cases. It is concluded that most diseases (and particularly chronic bronchitis), when they occur in old age, have a deleterious effect on the sugar tolerance. No relation can be traced between the height of the blood-pressure, and either the sugar content of the blood, or he renal threshold. The renal threshold in healthy old age is generally raised, and may be taken to be in the neighbourhood of 0.2%.

6754. MATHIS, HERMANN. Über eine Proteidätherschwefelsäure aus der Magenschleimhaut. *Biochem. Zeitschr.* 220(4/6): 493-495. 1930.—A connection is suggested between this substance and the results obtained by feeding stomach tissue in pernicious anemia.

6755. MAZZEO, MARIO. La colesterina del siero di sangue e degli organi nel coniglio dopo introduzione d'adrenalina. [Cholesterol of blood serum and of the organs of the rabbit after adrenalin administration.] *Arch. Sci. Biol. [Napoli]* 11(3/4): 381-390. 1928.—In a 1st series of experiments 10 rabbits received subcutaneously each 1 cc. adrenalin per kgm. body weight, and 6 rabbits were given the same dose orally; in all the rabbits the blood cholesterol rose, beginning the 1st ½ hr., and reaching a peak in the 6th-18th hr. after the administration of adrenalin. In 8 rabbits, 4 ♂ and 4 ♀, of which 2 of each sex were dosed with adrenalin and not so treated, comparison of the cholesterol content of the blood, suprarenals, kidneys, testicles, ovaries, liver and spleen in the experimental animals and the controls showed that the rise in blood cholesterol was in proportion to the fall in cholesterol content of the other organs (more than ½ in the suprarenals, less in the other organs). The author concludes that introduction of adrenalin into the organism produces, not an even increase, but an abnormal distribution of cholesterol in the tissues and liquids of the body.

6756. MESSINI, M., e A. POLI. Ricerche sulle variazioni glicemiche in rapporto alla diminuzione del fosforo nel sangue. [Variations in blood sugar corresponding to diminution in blood phosphorus.] *Clin. Med. Italiana* 1(9/10): 421-442. 1930.—The relations between blood sugar and blood P, following injection of uranyl acetate and thymus extracts, were studied in rabbits (15 experiments reported). Intravenous injection of uranyl acetate diminished the concentration of inorganic P in the blood and simultaneously provoked hyperglycemia, a primary phase without and a secondary phase with glycosuria with signs of renal lesion and following oliguria and anuria. Subcutaneous injection of extract of calves' thymus likewise produced hyperglycemia and diminution of the concentration of the thymus. So far as this study goes, then, decrease in blood P is accompanied by a rise in blood sugar. The 1st set of experiments indicate that, contrary to current opinion, uranyl salts should not be counted among the substances causative of hyperglycemia without glycosuria, since hyperglycemia without glycosuria is constantly observed under suitable technical conditions. The thymus experiments support the theory of the anti-insulinic function of the thymus.

6757. MILLS, C. A. Do blood platelets, plasma, and tissues yield thrombin, or tissue fibrinogen? *Amer. Jour. Physiol.* 95(1): 1-6. 1930.—From experiments and critical review of literature, the author concludes: (1) that plasma alone contains, beside blood fibrinogen and Ca, prothrombin and cephalin; (2) that blood platelets do not yield thrombin or prothrombin, but do yield on extraction free cephalin and tissue fibrinogen; (3) that tissue juices likewise yield no extractable thrombin or prothrombin, but do yield free cephalin and tissue fibrinogen; (4) that there are at hand methods of properly identifying these various clotting agents, methods which should receive proper consideration in any study of the clotting problem.

6758. MOORE, NORMAN S., and HAROLD J. STEWART (with the assistance of YETTA POROSOWSKY). The variations of the specific gravity of the plasma of the blood and the means available for altering it. *Jour. Clin. Investigation* 9(3): 423-442. 1930.—It has been demonstrated that the specific gravity of the plasma and (Moore and Van Slyke's observations) the plasma proteins of normal individuals show remarkable constancy for short periods (days) provided the samples of blood are taken at the same time each day. In 5 patients suffering from heart disease who were in water balance the maximum and minimum daily variations in the specific gravity were 0.0004 and 0 respectively. In 2 normal individuals the variations were 0.0015 and 0.0011 over a period of 14 mos. There was corresponding variation in the protein content of the plasma. The specific gravity of the plasma of a normal individual varied 0.0007 in the course of a day. The protein content and the specific gravity of the plasma of arterial blood were found (in 7 cases studied for this point) to be uniformly less than those of venous blood. The intravenous injection into 2 dogs of normal salt solution resulted in decrease in the specific gravity of the plasma of the blood. The administration of water 1000 cc. by mouth to 2 human beings decreased the specific gravity of the plasma, however, only slightly. During "concentration tests" 2 patients exhibited increases (0.0013) in the specific gravity of the plasma of the blood. Hemorrhage in a dog was followed by decrease in specific gravity of the plasma, and a corresponding decrease in the plasma protein concentration. Return to the initial level occurred 4 days after bleeding. The intravenous injection of hypertonic solutions of glucose in 3 dogs resulted in decrease in the specific gravity of the plasma. The injection of gum acacia in glucose solution in an edematous patient increased the specific gravity of the plasma slightly, but the volume of fluid injected and the dilution resulting from the presence of hypertonic glucose solution decreased the protein concentration. Moore and Stewart conclude that the specific gravity and the protein content of the plasma of patients suffering from cardiac disease are within the range found in normal individuals. In those cardiac patients exhibiting edema as well as in those in whom this sign is not present, there is a linear relationship between the specfic gravity and the total protein content of the plasma which is expressed by the formula of Moore and

Van Slyke. They remark that the anticoagulant used has an effect on the specific gravity of the plasma. If data are to be compared with those published by Moore and Van Slyke, heparin must in consequence be used.

6759. **MORGULIS, SERGIUS, and ANNE MACGREGOR PERLEY.** Studies on cerebrospinal fluid and serum calcium, with special reference to the parathyroid hormone. *Jour. Biol. Chem.* 88(1): 169-188. 1930.—In experimental jaundice in dogs there was no change in either the cerebrospinal fluid or serum Ca. Ingestion of Ca salts was followed by only a slight rise in serum Ca without materially affecting the cerebrospinal fluid Ca. When the serum Ca was markedly increased by feeding Ca salts with injections of parathyroid hormone or by means of continuous intravenous injections of $CaCl_2$ solution, Ca of the cerebrospinal fluid commonly showed little increase. There was no transfer of Ca to the erythrocytes following parathyroidectomy. Serum was dialyzed against cerebrospinal fluid after continuous injection of large doses of $CaCl_2$, with or without the addition of parathormone, also on thyroparathyroidectomized and on unoperated dogs. The values for diffusible Ca were practically those obtained with normal dogs.—*S. Morgulis.*

6760. **MÜLLER, FRANZ, und GEORG CRONHEIM.** Die unter dem Einfluss des Höhenklimas im Blut auftretende Sauerstoffzehrung. *Biochem. Zeitschr.* 234(1/4): 302-306. 1931.—With rarefaction of air corresponding to ½ atmosphere (an altitude of 5500 m.), 38 determinations were made on 15 rats, and 250 on the author's blood in Berlin and at 1562 m. and 2550 m. In rats without the addition of reduced glutathione and in man with it, products occurred in whole blood and plasma which consumed O and which were due to altitude, since they did not appear in determination made at Berlin.

6761. **MUNCH-PETERSEN, CARL JUL.** Der Zuckergehalt der Cerebrospinalflüssigkeit. I. Untersuchungen über den Einfluss der Glucose- und Adrenalin-Hyperglycämie sowie der Glucose-Adrenalin-Hyperglycämie auf den Liquorzucker. *Acta Med. Scandinavica* 74(1): 31-58. 1930.—Spinal fluid sugar is only slightly raised within 4 hrs. by an alimentary hyperglycemia. It is promptly raised, however, by a hyperglycemia produced by adrenalin. Adrenalin and glucose taken together produce a more striking rise than either alone. This may be used clinically as a test for permeability.—*T. J. Putnam.*

6762. **MUNCH-PETERSEN, CARL JUL.** Der Zuckergehalt der Cerebrospinalflüssigkeit. II. Untersuchungen über den Einfluss der Glucose-Adrenalin-Hyperglycämie auf den Liquorzucker bei organischen Nervenleiden. *Acta Med. Scandinavica* 74(3): 235-283. 1930.—Glucose (50 gm.) per os, followed by a subcutaneous injection of 0.5 mgm. of adrenalin, caused an increase in the blood sugar amounting to 0.16% or more. This in turn caused an increase in the cerebrospinal fluid sugar ranging from 0.018 to 0.026% in normal individuals. Any increase below or above these limits is considered pathological. A number of cases with mental or nervous disease were studied. The diagnoses were post-encephalitic conditions, other extra-pyramidal diseases, neurasthenias, unclassified diseases, epilepsy, psychoses, brain tumor, and multiple sclerosis. It was found that extra-pyramidal diseases, especially those that are due to encephalitis, usually show an increase which is below 0.015%. Some of these may show an increase which is above the normal. A theory is advanced to explain the functions underlying this phenomenon.—*W. Malamud.*

6763. **NAEGELI, CLARA.** Experimentelle Untersuchungen über die Wirkung der Luftverdünnung auf die Resistenz der roten Blutkörperchen gegenüber hypotonischen Kochsalzlösungen. *Biochem. Zeitschr.* 231(1/3): 95-102. 1931.—Rabbits (7) at an average of 300 mm. Hg pressure (equivalent to about 6500 m. above sea level) showed osmotic sensitivity in a small number of erythrocytes after 144-192 hrs. The minimum resistance sank (in 5 cases to 0.02% of NaCl solution, in 1 to 0.06%, in 1 to 0.08%). The maximum resistance, on the other hand, rose (at least 0.08% of the NaCl solution). The more resistant the erythrocytes, the more intense the blue color in May-Grünwald staining of microscopic preparations.

6764. **NEALE, A. VICTOR, and MARION S. ESSLEMONT.** Observations on the chloride, sugar and calcium contents of the cerebro-spinal fluid in children. *Arch. Dis. Childhood* 3(17): 242-256. 1928.—In 41 non-meningitic cases the Cl content of the cerebrospinal fluid was normal; but in 5 cases of acute pneumococcus infection the Cl was subnormal. The sugar content in 24 non-meningitic cases and the Ca content in 19 such cases were within normal limits. The Cl and sugar content in tuberculous meningitis (25 cases) were not, as sometimes asserted, constantly low, but varied according to the stage of the disease, falling at first and rising later. Pneumococcal meningitis (7 cases) showed a progressive fall to death. Fatal meningococcal cases (2) showed the same fall, but cases ending in recovery (2) rose to normal. Cl in the cerebrospinal fluid was found to vary to some degree with that in the blood in 5 non-meningitic cases and 11 of tuberculous meningitis. Ca was usually above normal in the cerebrospinal fluid with inflammation (especially suppurative) of the meninges. No Ca deficiency was detected in patients having convulsive seizures in meningitis.

6765. **NORRIS, JOAN H.** A chemical investigation in Victoria (Australia) of the blood of cattle and sheep. *Australian Jour. Exp. Biol. and Med. Sci.* 7(1/2): 3-4. 1930.—In 50 samples of blood from steers and cows inorganic P ranged from 2.57 mgm. per 100 cc. to 8.25; total P from 6.1 to 17.39; and Fe from 35.1 to 75.75.

6766. **OELKERS, H. A.** Untersuchungen über den kolloidosmotischen Druck des Serums. *Zeitschr. Klin. Med.* 115(5/6): 854-863. 1931.—The colloid-osmotic pressure (C. P.) in the blood serum of 18 healthy subjects measured per mgm. protein N was almost constant (av. 38.4 mm. H_2O). The slight variations corresponded closely to simultaneous variations in the albumin: globulin; this parallelism was not present in 27 patients. The addition of salyrgan to serum in vitro increased its C. P.; in some cases an increase was found after ingestion of salyrgan at the time of diuresis, paralleling a simultaneous increase of albumin in the serum.

6767. **OKUNEFF, N.** Studien über parenterale Resorption. V. Über die Resorption des Farbstoffs Trypanblau aus dem subkutanen Bindegewebe. *Biochem. Zeitschr.* 226(1/3): 147-156. 1930.—The author's experiments show that the accumulation of trypan blue in the blood does not reach as high a value in the case of subcutaneous as in intraperitoneal injection. The reason may lie in the anatomical differences. In spite of these quantitative differences the types of curve obtained in both cases are similar, which suggests similar physiological processes. This similarity we may first of all seek in the part played by the lymphatic system in subcutaneous absorption. The author's experiments show that heat, cold, adrenalin and mustard plaster applications have a definite influence on the absorption, likely due to their strong local effect on blood and lymph circulation. Finally experiments with subcutaneous absorption from a focus of inflammation show considerable variation between different stages of inflammation, viz., acceleration at the start, retardation in later stages; this is correlated with the disturbance of the normal blood circulation associated with different inflammatory stages. The number and kind of experimental animals are not stated.—*A. G. Olsen.*

6768. **OSBORNE, WILLIAM ALEXANDER.** The toxicity of blood which has been frozen. *Australian Jour. Exp. Biol. and Med. Sci.* 7(4): 223-225. 1930.—The defibrinated blood of dogs (number not stated), when frozen, thawed and intravenously injected in the donor, produced syncopal fall of blood pressure, sometimes death; no such changes were produced by control injections of defibrinated unfrozen blood. This toxicity was not due to the ragged "ghosts" of broken corpuscles,

as was shown by development of toxic symptoms from injections of centrifuged and optically pure serum.

6769. **PARTOS, ALEXANDER.** Gesetzmässiger Zusammenhang zwischen Blutzuckergehalt und Blutgerinnungszeit. V. Mitteilung. Zusammenhang zwischen Blutzucker, Blutgerinnungszeit und Blutglykolyse. *Pflüger's Arch. Ges. Physiol.* 226(3): 347-353. 1930.—Determinations of the sugar content of approximately 80 mgm. portions of rabbit blood tend to show that there is no set relation between rate of glycolysis and blood clotting time as Stuber and Lang state. An important exception is cited. The author believes his experiments illustrate rather that there is a direct relation between the sugar level in the blood and the blood clotting time.—*E. P. Laug.*

6770. **PARTOS, ALEXANDER, und ALFRED HERZOG.** Gesetzmässiger Zusammenhang zwischen Blutzuckergehalt und Blutgerinnungszeit. VI. Mitteilung. Das Verhalten des Blutzuckers und der Milchsäure während der Glykolyse. *Pflüger's Arch. Ges. Physiol.* 226(3): 464-471. 1930.—There is no regular relation, as has been stated by other workers, between rate of disappearance of blood sugar and appearance of lactic acid. In fact, in many cases there is actually an increase in blood sugar within the first ½ hr. after drawing the blood, with no marked increase and in some cases even a decrease in lactic acid. Rabbit blood was used. An explanation for these observations is given.—*E. P. Laug.*

6771. **PARTOS, ALEXANDER, und ALFRED HERZOG.** Gesetzmässiger Zusammenhang zwischen Blutzuckergehalt und Blutgerinnungszeit. VII. Mitteilung. Das paradoxe Verhalten des Blutzuckers während der Glykolyse. *Pflüger's Arch. Ges. Physiol.* 227(1/2): 181-187. 1 fig. 1931.—There is an autolytic and glycolytic enzyme in blood. The addition of NaOH inhibits the autolytic enzyme but appears to speed up the glycolytic. Rabbit blood was used. It was found, by Bang's method for sugar analysis, that the sugar content of NaOH-treated blood was much lower than the control blood. The author's explanation for this is that autolysis, unless inhibited, liberates sugar from combinations, such as glycoproteins. This causes a piling up of sugar, more rapidly than the glycolytic enzyme can destroy it.—*E. P. Laug.*

6772. **PELLEGRINI, GIUSEPPE.** Sulle modificazioni delle proteine del siero dopo epatectomia. [Modifications in serum protein after hepatectomy.] *Boll. Soc. Med.-Chir. Pavia* 44(5): 571-575. 1930.—An unspecified number of frogs were hepatectomized in September and another group in January. In the 1st group the total serum protein (especially the albumins) diminished from a preoperative normal of 2.62-3.2 gm. % to 1.534 gm. % at death (on the 7th day), while the average weight was increased by edema about 27% by that time, the animals becoming blanched and the skin tense. Pellegrini believes that the water retention is due to the blood modifications. The January hepatectomies, however, produced an immediate fall in total serum proteins and rise in weight, after which the body weight and percentage of serum proteins remained fairly constant. Pellegrini attributes the fall in blood proteins after hepatectomy to the operative bleeding; the blood is rapidly regenerated after ordinary hemorrhage but not after extirpation of the liver. The difference between the autumnal and vernal postoperative results he ascribes to the difference between winter and summer metabolism in frogs.

6773. **PICKERING, J. W. The blood plasma in health and disease.** 247p. Macmillan Co.: New York, 1929. Pr. $4.25.

6774. **PONDER, ERIC, and GEORGE SASLOW. The measurement of red cell volume. [I.] II. Alterations in cell volume in solutions of various tonicities.** *Jour. Physiol.* 70(1): 18-37; (2): 169-181. 1930.—[I.] A colorimetric method is described, by means of which the average volume of the mammalian red cell can be found, with a maximum error in a single determination of ± 3%. A comparison between the colorimetric method and the hematocrit method, in which rate and time of spinning are varied, demonstrates the inadequacy of the latter method for the accurate determination of cell volume. The average volumes of the red cells of several mammals, as found by calculation from direct measurement of the various dimensions, agree satisfactorily with the volumes determined by the colorimetric method. The refractometric method of determining the average volume of the red cell is shown to lead to erroneous results.—II. The addition to rabbit's blood and plasma of a solution of NaCl or glucose, whose depression of freezing point is approximately the same as that of rabbit's plasma, does not alter the mean volume of the red cells. The concentration of such a solution is (or is equivalent to) 1.12 gm. NaCl per 100 gm. of water (very nearly 1.12% NaCl). The cell volume increases in hypotonic media produced by the addition of solutions of NaCl to rabbit's blood and plasma, and the increase is approximately as great as would be expected on the assumption that the cells are simple osmometers and contain about 33% "free" water by volume. In hypotonic media produced by the addition of KCl or glucose the swelling is greater than can be accounted for in this way. The cell volume does not decrease (except very temporarily) in hypertonic media produced by the addition of NaCl, KCl, or glucose. The volume, in fact, steadily increases as time goes on. This indicates that the added substances penetrate into the cell. Crenation does not appear to be necessarily associated with a decrease in red cell volume, but is to be regarded rather as a failure on the part of the cell to maintain its peculiar shape.—*Authors' summary and conclusions.*

6775. **RAMSEY, ROBERT, and CHARLES O. WARREN, Jr. The rate of respiration in erythrocytes.** *Quart. Jour. Exp. Physiol.* 20(3): 213-229. 1 fig. 1930.—Using a modification of the Fenn type respirometer, the rate of respiration of suspensions of turtle, chicken, rabbit, and human blood cells were determined and found to be comparable to that of other resting tissues (from 14 to 85 mm^3/gm./hr.). Upon hemolysis by saponin, sodium taurocholate, sodium oleate, or hypotonic saline, there is a great but temporary increase in O consumption and also a production of heat. This is shown to be due to an increase in metabolism accompanying a liberation of cell contents.—*R. Ramsey.*

6776. **RAY, G. B., and L. A. ISAAC. Chemical studies on the spleen. III. The action of splenic and other tissues upon the removal of hemoglobin-methemoglobin solutions.** *Amer. Jour. Physiol.* 91(2): 377-389. 1930.—Experiments showed that $FeCl_2$ reduces methemoglobin to Hb in the absence of O. This action is reversed in the presence of O. The alcoholic extracts of spleen and muscle behave in the same manner as $FeCl_2$. Liver extract produces an oxidation of Hb regardless of the O tension. —*Authors' summary.*

6777. **RAY, G. B., and L. A. ISAAC. Chemical studies on the spleen. IV. Evidence favoring the formation of a colorless form of hemoglobin after splenectomy.** *Jour. Biol. Chem.* 85(2): 549-558. 3 fig. 1930.—The non-functional hemoglobin derivative, which accumulates after splenectomy in the dog, was studied, observations showing concentrations of unknown pigment varying from 5 to 29%. These values represent the differences found between figures for total pigment determined by Stadie's cyanhemoglobin method, and the O capacity, determined by the method of Van Slyke and Neill. The name "leucohemoglobin" is suggested for this unknown, non-functional compound which is colorless and probably closely related to hemoglobin or methemoglobin.—*R. A. Greene.*

6778. **REID, CHARLES, and B. NARAYANA. Studies in blood diastase. Factors which cause variations in the amount of diastase in the blood.** *Quart. Jour. Exp. Physiol.* 20(4): 305-311. 1930.—The blood diastase decreases after meals, injections of glucose, glycogen, and insulin, while anesthetics and injections of starch cause a slight increase. Since pancreatectomy causes little or no change in the amount of circulating diastase, the pancreas is not its main source. Ligature of the pan-

creatic duct does not result in any striking change in the diastase content of the blood in the course of 1-2 weeks. Since definite variations can be induced in the blood diastase by injections of insulin, glycogen, etc., it appears likely that the circulating diastase is not entirely a waste product on its way to excretion. Evidence is adduced that variations in blood diastase are probably due to its being taken up or given out by the liver cells, etc., according to the requirements of the body with respect to the glycogen $\rightleftarrows$ glucose, probably in association with insulin.—*Authors' conclusions.*

6779. **RIBADEAU-DUMAS, L., L. ROUQUÈS, et NIGAY-PETIBON. La coagulabilité "in vitro" du sang du nourrisson.** *Rev. Franç. Péd.* 6(5): 624-642. 1930.—In 32 determinations on infants, the coagulation time was 2-5 min., while in the adult it was 4-5 min. with the same technique.

6780. **RIMINGTON, CLAUDE. The carbohydrate complex of serum proteins and the clinical determination of "bound sugar" in the blood.** *Nature [London]* 126 (3188): 882-883. 1930.—Preliminary note.

6781. **SAMSON, K. Physikalisch-chemische Grundlagen der Mastixreaktion. III. Mitteilung. Das Verhalten der Liquoreiweisskörper bei der Normo-Mastixreaktion.** *Zeitschr. Ges. Exp. Med.* 60(5/6): 665-675. 9 fig. 1928.—In previous studies the author determined that the globulin was the important protein substance operative in the normal flocculation phenomenon that occurs in mastic reaction. To determine the rôle played by the albumin, he studied the mastic reaction in spinal fluid from which the globulin had been precipitated by half saturation with $(NH_4)_2SO_4$. He found that the mastic sol shows a sensitivity to salt depending on the pH. The protein sensitivity of the mastic sol does not parallel its salt sensitivity. The principal substance of the spinal fluid concerned in the precipitation is incorporated in the globulin fraction. Large amounts of this substance protected the mastic sol against precipitation. The precipitation phenomenon occurs at the definite concentration globulin requirement of the mastic sol. The precipitation phenomenon occurs at a definite concentration and is also independent of the relative concentration of the globulin to the mastic sol. Albumin may act as a protective colloid but in its action produces precipitation with the mastic sol.—*D. Perla.*

6782. **SATO, EIICHI. Studies on the decomposition of glucose in blood.** *Nagoya Jour. Med. Sci.* 5(2): 167-174. 1931.—Experiment showed that there was no material difference between human blood at 37° C. and at room temp. Decomposition is most rapid in the first 3 hrs., whether the medium be physiological salt solution or blood serum. Soon after, it decreases gradually but can still be observed up to 48 hrs. Decomposition in human blood corpuscles in physiological salt solution is almost equal to that in blood serum, but it is more marked in phosphate solution; it diminishes in proportion to hemolysis in distilled water.

6783. **SCHMOLL, G. Das Blut des Menschen, mit neueren Methoden untersucht. IV. Mitteilung. Absolute Hämoglobinbestimmungen, Erythrocytenzählungen und Erythrocytenmessungen bei 40 jungen Frauen zur Ermittlung des Hämoglobingehalts eines Erythrocyten und des Hämoglobins pro μ^2 Oberfläche des Erythrocyten.** *Pflüger's Arch. Ges. Physiol.* 227(1/2): 160-170. 1931.—The hemoglobin content of the erythrocytes of normal young women was approximately 32×10^{-14} gm. per μ^2 of erythrocyte surface. Though the absolute amounts of hemoglobin in single erythrocytes are stated to be different in the 2 sexes, the amounts per unit area are practically the same in both and are in good agreement with those reported by Bürker for other mammals.—*M. H. Jacobs.*

6784. **SCHOLTZ, HANS GEORG. Über Änderungen des physikalischen Zustandes von anorganischen Bestandteilen des Serums durch gegenseitige Beeinflussung.** *Biochem. Zeitschr.* 231(1/3): 135-143. 1931.—Experiments with the ultrafilter showed the formation of a colloidal Ca-phosphate complex in the serum when the Ca or phosphate level was raised artificially. Mg formed a similar phosphate complex. Both reactions could be found in the living animal. After Ca infusion in 3 cats colloidal phosphate rose; after potassium phosphate injection in 4 cats colloidal Ca rose; after $MgCl_2$ infusion in 4 cats colloidal phosphate increased; after infusion in 2 cats colloidal Ca decreased. By addition of $CaCl_2$ to serum more K, and by addition of $MgCl_2$ more Ca, passed the ultrafilter. This reaction also appeared in animals. The hypothesis of colloidal K in serum gains more support.

6785. **SCHTEINGART, MARIO, LUIS E. ONTANEDA, y JOSÉ F. RINALDI. Efecto de la punción cisternal sobre el nitrogeno y el cloro sanguíneos. [Blood N and Cl after ventricular puncture.]** *Rev. Soc. Argentina Biol.* 6(9/10): 553-559. 1930.—Blood urea and non-protein N either increase or decrease irregularly. Cl increased in 12 cases and diminished in 2.—*J. T. Lewis.*

6786. **SCHWARZ, KARL, und HERWIG HAMP. Über den normalen Blutzuckergehalt beim Hunde und seine physiologischen Schwankungen. (The normal blood sugar level of the dog and its physiological variations.)** *Biochem. Zeitschr.* 194(4/6): 351-361. 1928.—On an adequate diet 12 hrs. after feeding, the blood sugar level of the same dog was very constant, varying only 4-6mgm. per 100cc. Unbalanced feeding, as with only meat or pure carbohydrate sufficient to meet energy requirements, had little effect on the fasting blood sugar. After feeding, the blood sugar rises rapidly and reaches a maximum between 2 and 3 hrs., and returns to normal within 12 hrs. The maximum values are 28-50% above the normal level.—*E. G. Schmidt.*

6787. **SHEAR, M. J., and BENJAMIN KRAMER. Composition of bone. 9. Equilibration of serum with dicalcium phosphate.** *Jour. Biol. Chem.* 86(2): 677-694. 1930.—Blood sera were shaken with crystalline $CaHPO_4$ for 1 hr. and then analyzed for Ca, P, and pH. The product $[Ca] \times [HPO_4^=]$ increased in each case as a result of equilibration. The lower the initial value of $[Ca] \times [HPO_4^=]$ in the serum as drawn, the greater was the increase produced by equilibration. These experiments show that serum is undersaturated with respect to $CaHPO_4$.—*Authors' summary.*

6788. **SOFUE, NORIBUMI. Experimentelle Untersuchung über die Ursache der Verspätung der van den Berghschen Bilirubin-Reaktion an hämolytischem Serum. [Cause of retardation of the van den Bergh bilirubin reaction in hemolytic serum.]** *Proc. Imp. Acad. [Japan]* 4(1): 27-29. 1928.

6789. **SOMOGYI, MICHAEL. Nitrogenous substances in zinc filtrates of human blood.** *Jour. Biol. Chem.* 87 (2): 339-344. 1930.—Blood filtrates, [practically free from reducing non-sugars], prepared by deproteinization with Zn contain substantially smaller quantities of N than tungstate filtrates. The non-protein N in Zn filtrates normally varies between 11 and 21 mgm. per 100 cc. of human blood, the average being 17 mgm. %: in cases of N retention the non-protein N is in excess of 21 mgm. %. Urea shows identical values in Zn and tungstate filtrates, while creatinine is slightly lower and uric acid entirely absent in Zn filtrates. Zinc filtrates, prepared for the determination of true blood sugar are also adequate for the determination of non-protein N, urea, and creatinine.—*Author's summary.*

6790. **[SPERANSKAĬA-STEPANOVA, E. N.]** СПЕРАНСКАЯ-СТЕПАНОВА, Е. Н. **К вопросу о влиянии щитовидного аппарата и симпатической нервной системы на содержание Са в сыворотке крови. [Influence of the thyroid apparatus and of the sympathetic nervous system on Ca content of blood serum.]** [French résumé.] Архив Биологических Наук. (*Arch. Sci. Biol.*) 30(5/6): 593-601. 1930.—Experiments were conducted on cats, with urethane narcosis for the greater part. Serum was taken from the femoral artery, and its Ca content determined by the de Waard method. Decerebration caused a temporary increase of Ca in the serum provided the circulation in the thyroid apparatus remained normal. Even if the thyroid were excluded from

the general circulation, a strong irritation of the brain increased the Ca content. Irritation of the cranial extremity of tr. sympathicus below the thyroid glands would cause increase of Ca in serum only when the thyroid apparatus was present. Removal of the latter or its temporary exclusion from the general circulation causes the increase of Ca within the first few hours. Irritation of the caudal extremities of the abdominal sympathetic nerve below the nn. splanchnici also increased the Ca content of the serum.

6791. **STAHL, V. O. A study of blood development and the effect of barometric pressure on the number of corpuscles.** *Jour. Ent. & Zool.* 21(4): 137. 1929.—The red cell count in the rat's blood was lowest just after birth and at 67 days the highest of any early period. The adult condition was reached at the end of 10 mos. As the red cells mature they decrease in size. At 120 hrs. after birth they are of the adult size. Similar results were observed by use of a barometric chamber as in high altitudes. The red cells increase when subjected to lowered pressure. When the same lowered pressure was used but with the addition of O at the rate of 500 cc. per min., the red cell count fell below that in the control animals. Oxygen tension seems to govern the increase or decrease of the red cell count when the animals are subjected to varying barometric pressures. Changes begin to appear within 24 hrs.—*W. A. Hilton.*

6792. **STEINER, PAUL E., and FRANCIS D. GUNN. The response of blood platelets to external stimuli: ultraviolet light, iodine and coal tar.** *Arch. Path.* 11(2): 241-254. 1931.—The average normal platelet counts (90) in 14 normal rabbits were somewhat higher than those reported by others. The effect of U. V. light on blood platelets as reported by others was corroborated. I applied to the backs of rabbits caused thrombocytosis, beginning in 2-5 days, reaching a maximum by the 6th day, and slowly receding to normal in 2-3 weeks. Coal tar applied to the back was followed by either thrombocytosis or thrombopenia. The numbers of the other blood elements were not appreciably changed. The similarity between the effects on the platelet level of U. V. light and of other substances producing dermatitis suggests that the effects may be due to tissue injury and to the absorption of breakdown products that stimulate the formation of platelets.—*Author's summary.*

6793. **SUKO, HIDEO. Die Einflüsse des Lungenextraktes und der Lungenspülflüssigkeit auf die Sedimentierungsgeschwindigkeit der Erythrozyten des Kaninchens.** (In Japanese.) *Chosen Igaku Kwai Zasshi* 78: 514-524. 1927.—The lung fluid and the lung extract, both produced by the author's method (*Ibid.* no. 35), on intravenous injection accelerate the sedimentation rate of erythrocytes. The same effect is noted in vitro. On the other hand, a highly concentrated extract retards sedimentation. The active substance of the extract was removed by CO_2, and adsorbed by kaolin. It is concluded that the activity of the extract is due to globulin. But the activity of the lung fluid is not thus explained since these treatments do not lessen its activity.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by L. S. Godfrey).*

6794. **SŬLA, JAN. Studium oxyheminu z krve člověka a domácích zvířat. (Oxyhemins prepared from the blood of man and domestic animals.)** *Spisy Lékarské Fakulty Masarykovy Univ. Brno. (Publ. Fac. Med. Brno.)* 6(55): 1-6. 1928.—In 23 cases the author isolated the α modification; only in 1 case, with protracted action of H_2SO_4 (3 days), was the β modification obtained. The experiments support Hamsik's view that the blood contains only one modification of the prosthetic group, which by the influence of chemical agents may be changed into other modifications.—*From English summary.*

6795. **SUNDERMAN, F. WILLIAM. Studies of serum electrolytes. VII. The total base and protein components of the serum during lobar pneumonia with a note on the gastric secretion.** *Jour. Clin. Investigation* 9(4): 615-633. 1931.—The total base and protein components of the serum have been studied before and after the crisis in patients suffering with lobar pneumonia. The Na concentration in the serum was decreased in all cases studied before and for a considerable period after the crisis. The decreased concentration of Na was approximately equal to the decreased concentration of total base. The K concentration in the serum was increased in over ½ the determinations made before the crisis. This increase tended to persist after the crisis. The Ca values were generally decreased during the febrile period. Mg values were scattered about the normal range throughout the period of infection. The albumin concentration in the serum was diminished not only during the period of active infection but also during convalescence. The globulin fraction was usually increased, so that the total protein tended to remain within the normal or lower normal limits. Base bound by protein was usually decreased during the febrile period. From studies of 14 gastric analyses on 4 patients suffering with lobar pneumonia it was noted that: (1) The gastric acidity tended to be lowered until after the crisis. (2) When lowered it was generally increased by histamine stimulation. (3) There was no apparent correlation of either total base or chloride of the serum with the gastric acidity.—*Author's conclusions.*

6796. **TERROUX, KATHLEEN GODWIN. The isoelectric point of sheep oxyhaemoglobin determined by titration curves with the glass electrode.** *Jour. Physiol.* 71(3): 323-330. 1931.—The isoelectric point of sheep oxyhemoglobin, measured by a direct method, was found to be 6.79 ± 0.03 at 22° C.—*Author's summary.*

6797. **TSCHERNIKOFF, A. M., W. W. MALENJUK, M. I. JAKUBOVITSCH, und M. CH. KALANTAROFF. Zur Unterbindung der V. portae.** *Pflüger's Arch. Ges. Physiol.* 227(1/2): 85-89. 2 fig. 1931.—There is a marked decrease in peripheral blood clotting time when the vena cava is ligated, while the blood on the liver side of the V. C. shows marked increase in clotting time. These changes are associated with marked diminution in number of thrombocytes in peripheral circulation. When the lymph flow from the thoracic duct is prevented from entering the circulation no effects are noted. The phenomenon may be caused by disturbance of functional activity of intestine.—*E. P. Laug.*

6798. **VAN SLYKE, DONALD D., and JAMES A. HAWKINS. Studies of gas and electrolyte equilibria in blood. 16. The evolution of carbon dioxide from blood and buffer solutions.** *Jour. Biol. Chem.* 87(2): 265-279. 1930.—The rates of evolution of CO_2 from blood and phosphate buffers have been determined. As much CO_2 is liberated from blood or erythrocyte solution in 5 sec. as from a phosphate or serum protein solution with the same CO_2 content and buffer value in 80 sec. These findings agree with those of Henriques. The addition of red cells to the phosphate buffer in sufficient quantity so that the hemoglobin concentration is 0.05 that in blood accelerates the liberation of CO_2 so that the rate is as rapid as from whole blood. We have at present no explanation of the mechanism by which the cell contents (probably but not certainly hemoglobin) accelerate CO_2 evolution from solution. The direct combination of anhydrous CO_2 with hemoglobin assumed by Henriques is not proved. That the CO_2 in the blood is accounted for by the amounts present as bicarbonate and physically dissolved CO_2 has, furthermore, been shown by quantitative data published from this laboratory. The rapidity of evolution of CO_2 from evacuated blood solutions appears to be best described as due to a catalytic acceleration by the cell contents of the reaction $HCO_3^- + H^+ \rightleftarrows H_2CO_3$. Concerning the mechanism of the catalysis no data are at present available for the formation of a reasonably probable hypothesis.—*Authors' summary.*

6799. **VARS, HARRY M. Blood fibrin studies. The concentration of fibrin yielded by canine plasma in relation to dietary factors.** *Amer. Jour. Physiol.* 93(2): 554-567. 1930.—When diets of known composition, in which all the components but the carbohydrate and

protein portions remained constant (these 2 being substituted isocalorically, one for the other), were fed to dogs, the concentration of fibrin yielded by the blood depended upon the nature of the previous regimen and the duration of its feeding. The feeding of different protein-containing diets caused variations in the fibrinogen concentration of the blood. Rations containing a high percentage of protein, when fed over long periods, did not cause the fibrin values to remain at a high level. This seems to indicate that the ingested protein acted as some sort of transient stimulus to increase fibrinogen production. When rations containing gradually increased amounts of protein were fed the concentration of fibrin yielded by the blood did not increase with each increment of protein. Apparently, the type of protein ingested did not play any marked part in determining the response elicited; similar results were obtained with the widely unlike casein and "meat residue." Rations extremely low in protein when fed over long periods also seemed to stimulate fibrinogen production. Under the experimental conditions adopted pig stomach appeared no more effective in causing changes in the fibrin values than did pig liver or kidney. In fact, the variations were no greater than those observed when casein and "meat residue" were fed. Observational periods of 10 days or longer were necessary to secure a clear cut demonstration of the effects of the special diet. Longer periods might profitably be employed, whereas short periods were likely to give an entirely erroneous picture. The daily variations in fibrin concentration, observed in some periods, were less than 10%, though usually they amounted to more than this (20-25%). The reasons for the fluctuations were still unexplained. Starvation periods of 3 to 6 days might cause minimum fibrin values. The results, however, would depend largely upon the type of diet and duration of its feeding immediately preceding the inanition. As to fibrin concentration of blood from vessel to vessel, no difference was noted between arterial (heart) and venous (jugular) blood and the variations that were noted between other vessels were mostly within the limits of experimental error.—*Author's summary and conclusions.*

6800. **VILLA, LUIGI. Über den Ursprung des Hämoglobins.** *Virchow's Arch. Path. Anat. u. Physiol.* 277(2): 380-385. 32 fig. 1930.—The site of hemoglobin synthesis is the cell nucleus and not the protoplasm.

6801. **WADSWORTH, AUGUSTUS, FRANK MALTANER, and ELIZABETH MALTANER. Further studies of the chemical reactions underlying the coagulation of the blood. The activity of lecithin.** *Amer. Jour. Physiol.* 91(2): 423-428. 1930.—By a process of mild hydrolysis and precipitation in alkaline solution with $CaCl_2$, a fraction was isolated from pure lecithin which possessed active coagulative properties. The pure lecithin itself had no coagulative action. This hydrolyzed fraction of pure lecithin corresponds very closely both in method of preparation and in coagulative activity with the active lipid substance previously obtained from the crude acetone insoluble lipids of beef-heart tissue. In the authors' previous studies they suggested that this active lipid substance might be the residue of cephalin resulting from the replacement of the base, amino ethanol, with H, which is a diglyceride phosphoric acid. The results of the present study suggest that a corresponding residue of lecithin and the active lipid obtained from tissue extract are similar substances.—*Authors' summary and conclusions.*

6802. **WADSWORTH, AUGUSTUS, FRANK MALTANER, and ELIZABETH MALTANER. Further studies of the chemical reactions underlying the coagulation of the blood. The activity of cephalin.** *Amer. Jour. Physiol.* 97(1): 74-81. 1931.—A new method for the preparation of a relatively pure cephalin, free from lecithin, was developed. Purified cephalin prepared by this method possessed a high degree of coagulative activity. An aqueous solution reacted with $CaCl_2$ in neutral solution to produce a distinct chemical compound of cephalin with Ca, which, when washed free of its reaction product, HCl, was inactive as a coagulant of blood plasma. The cephalin recovered from the Ca compound possessed a high degree of coagulative activity. When an aqueous solution of cephalin was mixed with a solution of serum albumin or pseudoglobulin in the presence of a slight amount of acid (HCl), a globulin-like precipitate was formed whereas in the absence of acid no visible reaction occurred. No precipitation occurred when this amount of acid was added to the cephalin or the protein alone. Similar results were obtained when $CaCl_2$ instead of acid was added to a mixture of cephalin and serum protein. Lecithin, on the other hand, which has no coagulative action, did not give rise to precipitation when mixed with these proteins either in the presence or absence of similar amounts of acid or $CaCl_2$.—The results indicate that cephalin, like the active lipid fractions isolated from the crude tissue extract and from pure lecithin, coagulates blood plasma and, further, that this action is associated with a chemical reaction of the lipid with ionized Ca salts resulting in the formation of mineral acid.—*Authors' summary and conclusions.*

6803. **WALKER, MAURICE A., and NORMAN M. KEITH. The effect of a solution of acacia in restoring diminished body fluid.** *Amer. Jour. Physiol.* 95(3): 561-572. 1930.—Intravenous injection of a volume of 6% solution of acacia equal to 8% of the body weight of a dog (4.8 gm. acacia for each kgm. body weight [into 4 dogs]) did not cause manifestations of toxicity and resulted in secretion of practically the same volume of urine as injection of a similar quantity of 0.8% solution of NaCl [into 2 dogs], but the concentration of hemoglobin in the blood remained decreased for at least 3 days. After dehydration of dogs by intravenous injection of concentrated solutions of sugar [14 experiments], the largest amount of acacia injected without evidence of toxicity was 1.9 gm. for each kgm. body weight. Amounts of 4.8 gm. for each kgm. of body weight caused death. [In 5 experiments] dogs were dehydrated also by intravenous injection of sugars dissolved in solution of acacia. Except when the quantity of 1 or the other substance was great, the results were not noticeably different from those obtained when solution of sugar alone was used for dehydration. After loss by hemorrhage of approximately 50% of the total amount of blood in the body the fluid lost could not be restored with isotonic solution of NaCl or of solution of dextrose, and the animals died. However, solution of acacia restored the blood volume and the animals remained well, although the concentration of hemoglobin was greatly reduced. The volume of urine secreted in 22 hrs. was greater than the volume of solution of acacia injected. The general results of these experiments indicate that solution of acacia has the property of holding the injected fluid in the circulation for a considerable period. It does not inhibit renal excretion of water. There is evidence that under certain conditions acacia not only holds water in the blood, but at the same time favors renal excretion of water of extra-vascular origin.—*Authors' summary.*

ANIMAL PHYSIOLOGY

NUTRITION, DIET, VITAMINS, GENERAL METABOLISM, GROWTH

J. R. MURLIN, *Editor*

H. A. MATTILL, *Associate Editor*

E. F. ADOLPH AND R. G. SINCLAIR, *Assistant Editors*

(See also in this issue Entries 6156, 6386, 6522, 6539, 6546, 6559, 6567, 6589, 6611, 6612, 6658, 6676, 6678, 6692, 6693, 6705, 6734, 6736, 6746, 6754, 6772, 6775, 6786, 6787, 6955, 6974, 6976, 6993, 7002, 7005, 7009, 7021, 7028, 7030, 7032, 7034, 7040, 7044, 7051, 7053, 7061, 7062, 7067, 7075, 7080, 7089, 7112, 7123, 7129, 7130, 7133, 7154, 7169, 7205, 7235, 7246, 7247, 7265, 7270, 7286, 7288, 7289, 7290, 7310, 7316, 7328, 7330, 7334, 7339, 7343, 7482, 7634, 7678, 7697, 7873, 7876, 7879, 7889, 7891, 7892, 8222, 8322, 8342, 8604, 8743)

FOOD AND NUTRITION

6804. ABDERHALDEN, EMIL. Studien über den Einfluss bestimmter Nahrungsarten auf den Gesamtzustand des tierischen Organismus. *Biochem. Zeitschr.* 234 (1/4): 142-169. 2 fig. 1931.—The author gives a comprehensive review of his experimental work in this field for the past 15 yrs.

6805. ABELIN, I. Über den Nähr- und Wachstumswert des Zwiebacks. *Zeitschr. Kinderheilk.* 50(4): 465-481. 1930.—On a diet of zwieback prepared with milk and butter 7 young rats averaged only 2 gm. increase in wt. in 2 mo., and 3 died; in the next mo. 22 gm. were gained. With the addition of 5 cc. boiled milk 64 gm. were gained in 12 wks. (av. wt. 138 gm.). On a normal bread and milk diet wt. increased to 153 gm. in 1 wk. Confirmatory experiments were made on 9 other rats on similar zwieback and 2 cc. or 5 cc. of raw milk followed later by bread and milk. Another experiment with 9 rats with bread or zwieback similarly prepared gave comparable results. No signs of avitaminosis appeared, except loss of hair; addition of yeast had no effect except on the hair. Experiments with amino acids (4 controls; 4 exp. rats) show that 25 mgm. lysine per day promoted growth (15 gm. in 2 wks.) but that 10 mgm. lysine + 25 mgm. cystine and 25 mgm. tryptophane had little effect; when baked with zwieback the lysine lost its effect (7 rats av. 25 gm. gain in 6 wks.—1 died; the following 11 days, on zwieback and 20 mgm. lysine per animal per day, av. gain of 12 gm.). Swedish bread given 7 rats for 4 mo. gave an av. gain in wt. of 30 gm.; 3 died; all showed loss of hair as a sign of disturbed nutrition; there was some xerophthalmia, keratomalacia, and frequent deformity of the thorax. Feeding of olive oil and mixtures of vitamins A, B, and D did not check the loss of hair; fresh growth reappeared with small amounts of thyroid gland (12 rats). Prophylactic feeding with thyroid or 25-75 mgm. cystine prevented loss of hair.

6806. BECKER, R. B., and W. M. NEAL. Relation of feed to bone strength in cattle. *Proc. Amer. Soc. Animal Prod.* 1930: 81-88. 1931.—Breaking strengths of ribs and leg bones of cattle, using principally a 6-inch span on an electrically driven Riehle Bros. testing machine, are presented. Leg bones of a persistent producing cow on a low-Ca ration were extremely weak, breaking at 335 pounds. Leg bones from 3 others whose feed contained 2% bonemeal broke at 7.0-10.3 times this weight; from 5 Angus on unsupplemented ration at 8.1-9.4; from an extreme low-P cow, 4.5; from a range cow on low mineral pasture, 5.3; from 2 on P-deficient plus $CaCO_3$ ration, 6.9 and 8.0; and from a cow fully recovered from P-deficiency, broke at 10.8 times this weight. Ribs were too flexible to give breaking strengths representative of the state of mineral storage. Depletion of mineral reserves through an inadequate intake is a suggested cause of weak bones; this is overcome by mineral supplements.—*R. B. Becker.*

6807. BICKEL, A. Zur Verwertung der Magermilch. Eine Anregung zur Lösung einer volks- und ernährungswirtschaftlichen Frage. *Zeitschr. Untersuch. Lebensmittel* 57(5): 437-443. 1929.—It is urged that dried casein from skim milk be used more for human food and experiments are described to show that such casein is of high biological value, as is that of fresh milk. Plasmon was superior to dried peas and to black bread in favoring growth in young rats and slightly negative N balances in dogs fed on oatmeal ration were improved when a part of the oatmeal was replaced by Plasmon of the same N content.—*M. H. Keith.*

6808. BICKEL, ADOLF, und GERHARD LISS. Weinessig- und Zitronensaftgenuss in ihrer Beziehung zur morphologischen Beschaffenheit des Blutes. *Arch. Verdauungs-Krankh.* 48(3/4): 158-166. 1930.—Three dogs received through an esophageal tube per kgm. body wt. respectively 0.525 cc. vinegar, 0.398 cc. vinegar, and 0.454 cc. lemon juice, each in 200 cc. water. Dog 4 received only 200 cc. water. The dogs were weighed daily, and blood counts and Hb estimations were made weekly. All the dogs showed a higher Hb content and erythrocyte count at the end of the experiment than at the beginning, indicating that there was no permanent production of anemia by ingestion of acid. To learn whether any transient change in the blood-picture followed the use of acid, supra-vital staining with basic stains was employed. Most erythrocytes are not stained by these basic colors, only those cells containing the so-called substantia granulo-filamentosa, which ordinarily occur in the ratio of about 1: 1000, but are increased when the bone-marrow is stimulated, especially in regenerating anemias. A dog in whose blood no cells with substantia granulo-filamentosa were found, and the 3 experimental dogs, were given acid; water was given as previously to the 4th dog; blood samples were stained 1 and 2 hrs. after the ingestion of the acid or water. A slight transient rise in the erythrocytes containing substantia granulo-filamentosa was observed in the dog given water; the dogs given acid showed no change. The authors conclude that the chronic use of vinegar in ordinary quantities does not injure the blood.

6809. CARR, R. H., and C. M. JAMES. Synthesis of adequate protein in the glands of the pigeon crop. *Amer. Jour. Physiol.* 97(1): 227-231. 2 fig. 1931.—In the lower end of the pigeon crop and extending into the esophagus are many branched alveolar glands (absent from the crop of a chicken) formed by hypertrophy of the basal cells of the stratified squamous epithelium which lines the entire crop. The ducts of the glands open upon the inner surface of the crop and esophagus. The desquamation of the basal lining cells produces the milky serum secreted by parent pigeons when feeding their young. This fluid is high in fat, protein, mineral matter, and contains such enzymes as rennet, amylases and saccharases, etc., all of which aid in providing a suitable food for the young. A possible synthesis may go on in these glands to supplement the amino acids known to be missing in corn and necessary for maintenance and growth.

6810. DÖRFFEL, J. Klinische, experimentelle und chemische Studien über den Einfluss der Ernährung auf Entzündungsvorgänge in der gesunden und kranken Haut. *Arch. Dermatol. u. Syph.* 162(3): 621-681. 3 fig. 1931.—Investigations on 141 patients on the Herrmannsdorfer modification of the low salt diet showed an increase in the inflammatory response of the diseased or healthy skin during the diet, which was sometimes considerable. This reaction regressed quickly when a normal diet was resumed. In rabbits, too, a corresponding

diet (oats) increased the response to inflammation. The alkaline, green diet had the opposite effect. The oat diet in rabbits had an effect similar to the salt-poor diet in man, particularly on the tuberculous infiltrate after intracutaneous inoculation with living bovine type. In non-specific wounds, too (after a more pronounced, circumscribed reaction), there was a more rapid healing than on green diet. In investigations on the alkali reserve, the actual reaction of the 24 hr. urine before and during the diet showed the slight acid influence of the Herrmannsdorfer diet. Additional acidification in the salt-poor diet by NH_4Cl and Ca silicate increased the therapeutic effect, particularly in chronic ulcers. The acid-base equilibrium was shifted correspondingly. The oat diet showed, as is known, an acidification of the actual reaction in the rabbit urine, the green diet an alkalinization. The salt-poor diet apparently called forth a moderate dehydration of the entire body which was definitely demonstrable on all the skin, most distinctly in the area diseased. In rabbits the dehydration was found in the skin after either the oat or the green diet. The acid Herrmannsdorfer diet in man, as well as the oat diet in the rabbit, produced a considerable mineral shift in the skin. K was increased, Ca and Mg sank. In the salt-poor diet Na was likewise decreased. The alkaline green diet produced the reverse condition. Particularly pronounced in the salt-poor diet was this mineral shift in the diseased area.—*Author's summary (transl.)*.

6811. **FRAZIER, WILLIAM C.** A defect in milk due to light. *Jour. Dairy Sci.* 11 (5) : 375-379. 1928.—A "cardboard" taste and "linseed-oil" odor develop in whole milk which has been exposed to diffuse daylight for 8 or more hrs. at about freezing temp. The light apparently acts as a catalyst in the oxidation of the milk fat. The defect develops more rapidly in pasteurized than in raw milk. The presence of neither enzymes nor bacteria is necessary for the reaction. The defect develops no more rapidly in milk from cows fed heavy rations of cottonseed meal or linseed cake than in milk from cows receiving no oil feed.—*Author's summary.*

6812. **HEIDUSCHKA, ALFRED.** Lebensmittelchemisches Praktikum. [Practical course in food chemistry.] xi+190p. 15 fig. Akademische Verlagsges. M. B. H.: Leipzig, 1929.

6813. **KOSCHKIN, M. L.** Untersuchungen über mit Bierhefezusatz hergestelltes Brot. *Zeitschr. Untersuch. Lebensmittel* 60 (5) : 489-495. 1930.—Brewers' yeast contains 58.09% of digestible (88%) protein. By means of repeated washing with water and removal of the hop-resins, the unpleasant taste can be largely eliminated. The physical properties of the yeast-bread were not clearly distinguishable from the properties of the control-bread. Porosity was less, but moisture content and acid were greater than in the control-bread.—*C. R. Moulton.*

6814. **KRAUSS, W. E.** Studies on the nutritive value of milk. III. The supplementary value of various constituents of synthetic basal rations. *Jour. Dairy Sci.* 12 (6): 438-444. 1929.—Yeast, casein, starch, agar, and McCollum's salt mixture 185 were found effective in preventing nutritional anemia in rats fed an exclusive whole milk diet. The degree of effectiveness depended in general on the amount of Cu and Fe furnished by each substance. Cod liver oil, gelatin, rice polishings, wheat germ oil, and irradiated milk were found to be ineffective in preventing nutritional anemia in rats. An exclusive whole milk diet fed ad libitum to rats furnishes adequate protein, energy, and vitamins for growth, but is deficient in Cu and Fe.—*Author's summary.*

6815. **McCLELLAN, WALTER S., and EUGENE F. DU BOIS.** Clinical calorimetry. 45. Prolonged meat diets with a study of kidney function and ketosis. *Jour. Biol. Chem.* 87 (3) : 651-668. 1930.—Two men lived on an exclusive meat diet for 1 year and a third man for 10 days. The relative amounts of lean and fat meat ingested were left to the instinctive choice of the individuals. The protein content varied from 100 to 140 gm., the fat from 200 to 300 gm., the carbohydrate, derived entirely from the meat, from 7 to 12 gm., and the fuel value from 2000 to 3100 calories. At the end of the year, the subjects were mentally alert, physically active, and showed no specific physical changes in any system of the body. During the 1st week, all 3 men lost weight, due to a shift in the water content of the body while adjusting itself to the low carbohydrate diet. Thereafter, their weights remained practically constant. In the prolonged test, the blood pressure of one man remained constant; the systolic pressure of the other decreased 20 mm. and the diastolic pressure remained uniform. The control of the bowels was not disturbed while the subjects were on prescribed meat diet. In one instance, when the proportion of protein calories in the diet exceeded 40%, a diarrhea developed. Vitamin deficiencies did not appear. The total acidity of the urine during the meat diet was increased to 2 or 3 times that of the acidity on mixed diets and acetonuria was present throughout the periods of exclusive meat. Urine examinations, determinations of the nitrogenous constituents of the blood, and kidney function tests revealed no evidence of kidney damage. While on the meat diet, the men metabolized foodstuffs with FA: G ratios between 1.9 and 3.0 and excreted from 0.4 to 7.2 gm. of acetone bodies per day. In these trained subjects, the clinical observations and laboratory studies gave no evidence that any ill effects had occurred from the prolonged use of the exclusive meat diet.—*Authors' summary.*

6816. **MANGOLD, ERNST, ed.** Handbuch der Ernährung und des Stoffwechsels der landwirtschaftlichen Nutztiere als Grundlagen der Fütterungslehre. Bd. 3: Stoffwechsel der landwirtschaftlichen Nutztiere einschliesslich der Ernährung und des Stoffwechsels der Fische und Bienen. Bearbeit. von **L. ARMBRUSTER, F. HONCAMP, W. KIRSCH, F. LEHMANN, W. LINTZEL, E. MANGOLD, J. PAECHTNER, R. W. SEUFFERT, W. VÖLTZ, und H. H. WUNDSCH.** xi+674p. 145 fig. J. Springer: Berlin, 1931. Pr M. 66; bound, 69.

6817. **NELSON, E. K., and H. H. MOTTERN.** The organic acids of spinach, broccoli and lettuce. *Jour. Amer. Chem. Soc.* 53 (5) : 1909-1912. 1931.—Fresh spinach contained 0.31% of oxalic acid. Citric acid and a small quantity of malic acid were separated by the ester distillation method. Analysis of broccoli shows that the leaves and buds have similar composition and nutritive value. Both buds and leaves contain protein somewhat in excess of that reported in spinach. The predominating organic acid in broccoli is citric acid. It also contains *l*-malic acid and small amounts of oxalic and succinic acids. The proportion of citric and malic acids is 3: 2. The organic acids of lettuce were oxalic acid, 0.011%; *l*-malic acid, about 0.065%; citric acid, about 0.048%.—*Authors' summary.*

6818. **NEWCOMB, CLIVE.** On the interpretation of nutritional experiments. *Indian Jour. Med. Res.* 16 (2) : 537-543. 1 pl. 1928.

6819. **POPOW, N. A., A. A. KUDRJAWCEW, F. A. GUBAREW, und W. W. ROMANOWSKAJA.** Zur Frage über den Einfluss des Zentralnervensystems auf die Ernährungsprozesse. *Pflüger's Arch. Ges. Physiol.* 226 (3) : 377-392. 1930.—The corpus striatum of the cerebral hemispheres was removed in pigeons, and the processes concerned in weight regulation were found to be modified. Decerebrated birds and normal controls were fed autoclaved rice (artificial feeding in both cases); the experimental animals lost weight less rapidly than the controls, but became ill and died sooner. The operated animals were also more sensitive to the toxic effects of alcohol, morphine, etc. With complete starvation the loss of weight is slower and the survival period longer than in the controls. Feeding with starch gave results similar to those with autoclaved rice, but the differences between operated animals and controls were slight. Experiments using these diets with yeast added are reported; with rice and yeast the operated animals put on weight. Increase in weight was possible only when vitamin B was fed.—*H. C. Bazett.*

6820. **PROUDFIT, TAIRFAX T. Nutrition and diet therapy. A textbook of dietetics.** 5th ed. 705p. Macmillan Co.: New York, 1931.

6821. **ROSENOW, L., und MAX ROSENOW. Der Einfluss eingesalzener Hefen auf das Wachstum junger Ratten.** *Biochem. Zeitschr.* 228(1/3): 163-164. 1930.—Addition of preserved (salted) yeast to bread fed to rats accelerated growth 30-60% in 24 days.

6822. **RUOTSALAINEN, ARMAS. Über die Resorption und Retention des Hühnereies (Stickstoff, Phosphor, Schwefel, usw.) bei Säuglingen.** *Zeitschr. Kinderheilk.* 46(3): 370-383. 1928.—Balance experiments were carried out on 2 infants, 11 and 3.5 mos. old, respectively, during 3 successive periods of 5 days each. In Periods I and III the ration was made up of Dryco dried milk powder (100 gm.), wheat flour (20 gm.), cane sugar (35 gm.), and water (1000 gm.); during Period II 20 gm. of the sugar was replaced by an isodynamic amount of well mixed egg (45 gm.). For the egg periods the N balances were positive, while the P and S balances of the younger child were positive and those of the older slightly negative.—*M. H. Keith.*

6823. **SEBRELL, W. H. An anemia of dogs produced by feeding onions.** [*U. S.*] *Public Health Repts.* 45(21): 1175-1191. 1930.—Five dogs were given daily supplements of cooked onions (approximately 5, 10, 15, 20, and 25 gm. per kgm. of body weight) in addition to the stock diet. Two dogs were given daily supplements of raw onions, 15 and 20 gm. per kgm. of body weight, respectively. Dogs receiving 5 and 10 gm. of onions per kgm. of body weight showed a slight and gradual reduction in the number of red cells and in the amount of hemoglobin, which became more marked when the quantity of onions was increased. With 15, 20, and 25 gm. of cooked onions and 15 and 20 gm. of raw onions per kgm. of body weight, there was a sudden and marked decrease in the number of red cells and in the amount of hemoglobin, with a considerable increase in the number of leucocytes and reticulated red cells. This decrease in red cells and hemoglobin reached its maximum in 7-12 days. There was then a rapid but slight increase, followed by a slow and gradual return toward the normal in spite of the continued administration of onions. All animals remained in excellent condition. The only evidence of abnormality was an extreme paleness of the mucous membranes of the mouth, and an increased rate of respiration in some cases at the severest stage of the anemia. In one dog the onion supplement was discontinued at the severest stage of the anemia and was followed by a more rapid and greater increase in red cells and hemoglobin than occurred in those animals in which the daily supplement was continued. In one dog after 32 days on 22 grams of onions per kgm. of body weight the daily supplement was increased to 34 gm. without increasing the severity of the anemia. After 35 days on this quantity the onion supplement was discontinued and was followed by a return of the blood findings toward the normal. In 1 dog after 32 days on 15 gm. of onions per kgm. of body weight the daily supplement was increased to 23 grams per kilo of body weight with a resulting definite decrease in hemoglobin and red cells and an increase in leucocytes, followed by a slow return toward the normal in spite of the continued ingestion of the onions.—*From author's summary.*

6824. **SEKINE, H., and Y. KAKIZAKI. On a synthetic diet for use in fish culture. I. Coefficient of utility of dietary protein.** [Japanese with English abstract.] *Jour. Imp. Fisheries Exp. Sta. Tokyo* 1(1, pt. 1): 143-153. 1930.—Three groups of trout-fry (*Salvelinus fontinalis* Mitchell) were kept for 8 weeks on diets containing 16, 36 and 64% of protein, respectively, the caloric value being the same in each case. The best result was obtained on the lowest protein diet (16%); the other 2 groups were not in such good condition, though some of them grew more quickly. The experimental results indicate that the 3 diets have the biological values, 0.335, 0.205, and 0.109, respectively. Hence, if A be a biological value of dietary protein, and x the percentage of protein in a diet, $A = e^{-0.742-0.0220x}$; thus, the utilisation of the dietary protein is expressed by Ax, and, from the equation given, the maximum value of Ax is about 44% of protein. It is concluded that in a synthetic diet the amount of protein content exceeding 44% goes to waste. —*From authors' summary.*

6825. **SULLIVAN, M. X., and W. C. HESS. Studies on the biochemistry of sulphur. X. The cystine content of meat and fish.** [*U. S.*] *Public Health Repts. Suppl.* 94. 1-13. 1931.—The cystine content of round steak, sirloin steak, haddock, halibut, and salmon was determined by estimating cystine in hydrolysates of the fresh material and of tissue powders dehydrated and defatted by acetone and ether; the Sullivan, the Okuda, and the Folin-Marenzi methods were used. The first 2 gave results of the same order of magnitude; the Folin-Marenzi results on the same hydrolysates were higher. The acetone-ether extracted material seems best suited for cystine determinations. The Sullivan and the Okuda methods give fish a higher cystine content than meat; the Folin-Marenzi method indicates no great difference between them. Sodium cyanide added before the addition of the uric acid reagent stops color formation by cystine but only partially checks color formation by the meat and fish hydrolysates. The Folin-Marenzi method gives a positive reaction with some non-cystine compound in the hydrolysates. The evidence at hand indicates that the cystine findings for meat and fish by the Sullivan and the Okuda methods are the more reliable. By these 2 methods the average cystine content of meat is about 0.8% on the dry ash-free basis, and by the 3, that of fish is about 1.2%. By using the cystine values obtained on the acetone extracted material and correcting for the moisture of the fresh material, the cystine content of meat as bought is approximately 0.19%, of fish as bought 0.26%. The prevention of humin formation by $TiCl_3$ gives no higher cystine values. The glutathione content of meat was slightly higher than that of fish. In both cases the cystine represented by glutathione is but a small part of the total cystine.—*Authors' summary.*

6826. **TAYLOR, ALONZO E. The national overweight.** *Scientific Monthly* 32(5): 393-397. 1931.—There are instinctive impulses and physiological tendencies in the direction of overweight, which will prevail unless restrained or counteracted. American economic circumstances permit an easy functioning of the influences making for overweight. Foodstuffs are available in extraordinary variety and profusion, and restraint in eating is lacking except in the poorest classes. Unless restrained the average overweight of people over 40 will become higher, and the effect of overweight on incidence of disease will be more conspicuous. Four factors may serve as restraining influences; education in nutrition, medical precept, life insurance admonition and, greatest of all, style.

6827. **TSO, ERNEST, and S. M. LING. Changes in the composition of blood in rabbits fed on raw and cooked soybeans.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 219-220. 1930.—In the experiments reported there are no demonstrable changes in the blood composition of rabbits whether they are fed cooked or raw soybeans or a control diet of millet and cabbage except perhaps in cholesterol content. Uric acid is present in rabbit's blood only in negligible quantity. The blood cholesterol value is perhaps slightly higher in animals fed on soybeans than in controls. There is, however, no appreciable difference in cholesterol levels between rabbits fed on cooked and raw soybeans.

6828. **WHITNAH, CARRELL H. Indications of glucose in milk.** *Jour. Amer. Chem. Soc.* 53(1): 300-304. 1931.—To determine whether a large increase of blood sugar of cows would cause the appearance of glucose in milk, a method for estimating small amounts of glucose in milk has been developed. The sugar in the milk was estmated polarimetrically. The glucose was removed by fermentation with carefully washed baker's yeast; and the lactose remaining was estimated polarimetrically.

Changes in rotary power corresponding to glucose percentages varying from zero to 0.35% of glucose have been found in normal cow's milk.

6829. **WOODMAN, A. G. Food analysis. Typical methods and the interpretation of results.** 3rd ed. 557p. 110 fig. McGraw-Hill Book Co., Inc.: New York, 1931.

6830. **ZIEGELMAYER, WILL. Die naturwissenschaftlichen Grundlagen des Kochens und der Ernährung. In Verbindung mit den Grundbegriffen der Kolloidchemie und der physikalischen Chemie.** 272p. Illus. Julius Beltz: Berlin, 1929. Pr. 8.50 M.—The style and subject matter of this book are chosen with a view to giving to the intelligent housewife the scientific basis for the selection, preservation, handling, and cooking of food materials. The work differs from most treatises on the subject mainly in taking the point of view that foods consist almost exclusively of colloids and that all the changes that they undergo are to be explained on the principles of colloid chemistry. The changes during storage, preparation for the table, and utilization in the body are not, in fact, due simply to the protein, carbohydrate and fat, but are much affected by the amounts of water and of mineral salts present and their relation to the protein or carbohydrate. The physico-chemical explanations of some of these changes are therefore discussed. A 26-page introductory chapter defines terms used in colloid chemistry, illustrating them by application to foods and food materials. Then follows a chapter on "Reasons for the Conversion of Starch into Sugar, a Colloid-disperse System into a Molecular-disperse System: True and Apparent Solution," showing the significance and the method of this change in plant and animal physiology. The section on Carbohydrates and Crude Fiber considers mainly breads and other cereal preparations, with some detail also on the potato and several pages on beer. A chapter headed "Protein Building Stones" includes lengthy discussions of milk and dairy products and of meats of all kinds. Other kinds of food are less fully treated but there are added chapters on digestibility of food, man's food requirements, and dietaries for infants and children.—*M. H. Keith.*

ENERGY METABOLISM

6831. **ANDERSON, I. A., R. A. CLEGHORN, J. J. R. MACLEOD, and J. M. PETERSON. The effect of evisceration on the respiratory metabolism of the decerebrate preparation.** *Jour. Physiol.* 71(4): 391-402. 1931.—By indirect calorimetry, employing Pearce valves, light Douglas bag and Haldane gas apparatus, the respiratory metabolism of decerebrate and decerebrate-eviscerate cats was measured simultaneously with measurement of the lactic acid and sugar concentrations and CO_2 content of the arterial blood. Following evisceration a slowly rising blood lactic acid concentration was accompanied by a falling blood CO_2 content and a raised R. Q. Respiratory quotients of 0.85 or less were obtained. Higher values were associated with lowering of the CO_2 content of the blood. With rising minute volume of expired air the respiratory movements caused an increasing O consumption. When the blood lactic acid reached about 80 mgm. %, the blood CO_2 content having fallen to 25-30 vols. %, the preparation rapidly deteriorated.—*I. A. Anderson.*

6832. **BORNSTEIN, A., und A. LOEWY. Über den Alkoholumsatz beim Menschen im Höhenklima.** *Biochem. Zeitschr.* 230(1/3): 51-67. 1931.—Experiments on 3 persons showed that the alcohol content of the blood in man rises more quickly and more abruptly in the mountains than in the lowlands. After the maximum was attained, the decrease was approximately the same in both places. The change in respiratory minute volume and respiratory frequency was just as great as in the lowlands. The respiratory quotient (R. Q.) in fasting experiments was lower in the mountains than in the lowlands. After taking alcohol the R. Q.—as an index of alcohol oxidation—sank more than in the lowlands, frequently to the level of oxidation of pure alcohol, but returned to the original values more quickly. After exclusive use of alcohol, no specific-dynamic action was found in the mountains or in the lowlands. It occurred in both places only after sugar was taken in addition to alcohol and was then distinctly more pronounced in the mountains.—*Authors' summary (transl.).*

6833. **BORSOOK, HENRY, and HOWARD M. WINEGARDEN. On the specific dynamic action of protein.** *Proc. Nation. Acad. Sci. U. S. A.* 17(2): 75-91. 3 fig. 1931.—In conjunction with data on the efficiency of the process of renal excretion, analyses of the data bearing upon the relation of the increase in metabolism following the ingestion of protein or amino acids reveals: A close correlation between the specific dynamic action of proteins or of amino acids and the increase, over the basal level of excretion, in the urinary N; that neither the direct experimental evidence nor the considerations of the energy relations support the view that the specific dynamic action of protein is necessarily due to the conversion of the deaminized fractions into glucose. The values of the specific dynamic action of amino acids and of proteins indicate that 25-60% is due to the work imposed upon the kidney. The remainder of the specific dynamic action of protein or amino acids is due to the metabolism of the N and C, though it is not possible, from the evidence, to estimate the proportion for which each is responsible. The hypothesis that the specific dynamic action of protein is due to at least two distinct processes, which do not proceed at similar rates, provides an explanation for some hitherto anomalous phenomena in the specific dynamic action of protein.—*H. Borsook.*

6834. **CORKILL, A. B., H. H. DALE, and H. P. MARKS. The respiratory quotient of the eviscerated spinal cat.** *Jour. Physiol.* 70(1): 86-95. 1930.—The R. Q. of 9 eviscerated spinal preparations, with artificially maintained blood sugar, was determined under conditions excluding excessive ventilation, and found usually to be 1. In certain cases somewhat lower quotients were obtained, but the view that the usual quotient of 1 is due to excessive ventilation is shown to be untenable.

6835. **DHAR, N. R. Influence of temperature on metabolism and the problem of acclimatization.** *Allahabad Univ. Studies* 2: 313-328. 1926.—[See B. A. 1(2): entry 2686.]

6836. **EFIMOFF, W. W., M. N. SARCH, K. S. SAMYTSCHKINA, P. P. MITROFANOFF, O. A. SALZGEBER, A. J. LEWINA, und S. S. MARGULIS. Physiologische und biochemische Untersuchungen der Fliessarbeit des "Nerventypus." (Eigentümlichkeiten des Gaswechsels und der Biochemie des Blutes bei Nerventätigkeit.)** *Arbeitsphysiologie* 3(5): 372-396. 1930.—The studies were made on 17 workers in the manufacture of caps in which the work was done either by electric sewing machines or by hand and a conveyor system was used in a table at which 15 workers on each side were employed in various manipulations. The workers were in the main of a poor grade of health and the incidence of disease and mortality were much higher in this occupation than in other trades. The basal metabolism of 9 workers averaged 16% below the Benedict standards. The range of O absorption for the different kinds of work varied from 73 to 332 cc. per minute. The respiratory quotient during work varied between 0.80 and 1.10 in 75% of the measurements and was higher when the subjects worked 1 hour 50 min. with a 10 min. pause than when they worked 55 min. with a 5 min. pause. The high respiratory quotients are ascribed not to an increased formation of lactic acid but to an increase in other acid products or to an increase in the irritability of the respiratory center. There was no change in the organic P of the blood during the working day, but a decrease in the alkali reserve. The P elimination in the urine fell off during the working day. In general the changes in blood morphology as the result of the work were not large. The blood morphology according to Schilling's formula showed that the subjects were fatigued even before they began the day's work. The conclusion is drawn that light work with a conveyor system re-

quiring a high degree of attention is more fatiguing than the more strenuous work of ironing in which a conveyor system was used, and that 55 min. of work with 5 min. pause gave more favorable data than a working period of 1 hour 50 min. with a 10 min. pause. —*T. M. Carpenter.*

6837. **FARKAS, G., J. GELDRICH, und A. SZAKALL.** Über das Verhalten des Grundumsatzes beim Ernten. *Arbeitsphysiologie* 3(6): 468-476. 1930.—The basal metabolism of 6 subjects was determined by the Douglas bag method over varying lengths of time during the periods of harvesting, threshing and idle periods. The longest period covered was over 7 weeks. The metabolism was found to be about 10% higher in the most active period as compared with the minimum in periods of idleness.—*T. M. Carpenter.*

6838. **GIAJA, ALEXANDRE.** Prilog izučavanju energetike domaćih životinja. Termoregulacija tica. [Temperature regulation in birds.] [French résumé.] *Bull. Acad. Royal Serbe Sci. Arts, Belgrade* 137(65): 113-127. 4 fig. 1929.—A study of the basal metabolism of the goose, turkey, and cock is reported. These fowls show no noteworthy difference in basal metabolism, the values being around 900-1000 calories per sq. m. per day. Differences in environmental temp. of 0 to 20° make only slight differences in the energy loss by the goose and the cock. Heat loss due to plucking is greater at lower temp. (around 0) than around 20°. The plumage seems to have more heat-conserving efficiency at lower than at higher temp. It is possible that plucking causes profound disturbances in metabolism, and that the change in heat loss may be due to other causes than to the absence of plumage,—causes such as possible modification of the circulation in the skin. The value of alimentary expenditure for maintenance is not in agreement with the data derived from respiration calorimeter studies. Factors seem to operate in the former case which have no direct effect on calorimeter data, but which may have significance in physiology and from the point of view of practical nutrition.

6839. **GIAJA, ALEXANDRE.** Sur la thermorégulation des oiseaux partiellement plumés. *Compt. Rend. Soc. Biol.* 100(14): 1225-1226. 1929.—See preceding abstract.

6840. **GIANNONE, E.** Esiste un ritmo nictemerale nel metabolismo basale dei colombi? [Is there a nocto-diurnal rhythm of basal metabolism in pigeons?] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 271-273. 1930.—In 11 experiments on 4 pigeons kept in thermic neutrality, the CO_2 output showed considerable individual differences. The data obtained do not corroborate the existence of a nocto-diurnal metabolic rhythm, the night diminution being irregular.—*M. Comel.*

6841. **HOCHREIN, M., J. MICHELSEN, und H. BECKER.** Schlaf, Schlaflosigkeit und körperliche Arbeit in ihrem Einfluss auf den Blutchemismus. II. Die Erholungsphase. *Pflüger's Arch. Ges. Physiol.* 226(6): 738-745. 1 fig. 1931.—A comparison has been made of the reactions to muscular work after a normal night with sleep and one without. While the resting conditions of the subjects show little differences under the 2 conditions the reaction to exercise is quite different and shows a relative instability of compensatory mechanisms. Observations were made on CO_2 content, the O capacity, lactic acid and water content of venous blood. The $BHCO_3$ in plasma at a constant CO_2 tension, proteinate lactate, chloride total base, and water content of the plasma were also determined, as well as the cell volume and blood sugar concentration. The pH of the serum was calculated. Data were also obtained on pulse rate, arterial pressure, O content of venous blood and O consumption per min., and the changes are expressed on the percentage basis. After a sleepless night lactic acid reaches a higher level during work and returns to the normal more slowly. The alkali reserve changes in the opposite direction. After a sleepless night the water content of the blood and plasma during rest is increased, but a blood concentration which occurs during exercise is exaggerated and the return to a normal level is slowed. After a sleepless night the actual metabolism accompanying the work appears to be increased and O consumption and circulation return to their normal level more slowly.—*H. C. Bazett.*

6842. **HORN, Z., und G. ÓNODY.** Über die sogenannte spezifisch-dynamische Wirkung der Nahrungsstoffe. II. Wirkung von Kohlenhydraten auf den Sauerstoffverbrauch von isolierten Zellen. *Biochem. Zeitschr.* 226 (4/6): 286-296. 1930.—In experiments designed to explain the mechanism of the specific dynamic action of foods the effects of the products of the digestion of carbohydrates on erythrocytes (goose) as examples of simple body cells were studied with Warburg respirometers. Glucose, fructose and galactose were found to increase the O consumption of these cells suspended in broth though not in proportion to the concentration of the carbohydrates.—*C. S. Robinson.*

6843. **HORN, Z.** Über die sogenannte spezifisch-dynamische Wirkung der Nahrungsstoffe. III. Wirkung des Blutserums auf die Oxydationen der Erythrocyten. *Biochem. Zeitschr.* 226(4/6): 297-307. 1930.—The addition of serum from goose, dog, human or rabbit blood increased the oxygen consumption of goose erythrocytes suspended in broth in proportion to the amount of serum added. The active constituents of the serum are not inactivated by temperatures up to 56° C. The concentration of blood sugar is without effect on the potency of blood serum. When serum is subjected to dialysis both dialysate and residue are active.—*C. S. Robinson.*

6844. **HORN, Z.** Über die sogenannte spezifisch-dynamische Wirkung der Nahrungsstoffe. IV. Wirkung von Hormonen auf die Zellatmung. *Biochem. Zeitschr.* 226 (4/6): 308-314. 1930.—Neither thyroxin nor insulin increased the O consumption of goose erythrocytes suspended in broth. Serum from thyroidectomized rabbits acted like serum from normal animals. Sera from diabetic men and dogs behaved in small amounts like normal sera but in larger amounts produced either no increase or an inhibition. The simultaneous use of insulin and carbohydrates did not augment the effect of the latter.—*C. S. Robinson.*

6845. **HOUGHTEN, F. C., W. W. TEAGUE, W. E. MILLER, and W. P. YANT.** Thermal exchanges between the bodies of men working and the atmospheric environment. *Amer. Jour. Hyg.* 13(2): 415-431. 1931.—Work tests were made on 4 normal ♂ subjects at effective temp. of −2.0-32.6° C. and relative humidities of 20 and 95%. All the subjects were normally clothed and had previously partaken of their regular diet. The work was performed on a special work machine and in the majority of tests the rate was 4578 kgm. per hr. A few tests were made at ½ and a few at double this rate. A special test is reported showing the increase in metabolic rates for different states of activity. The efficiency of the human body as an engine is shown to vary from 11 to 20% in performing this type of work. Metabolic processes as measured by gaseous exchange reach equilibrium very quickly after changes in state of activity. A minimum energy production or metabolic rate of 119 calories per sq. m. per hr. was found for men working at a rate of 4578 kgm. per hr. in the temp. range 6-24° C. effective temp. Energy production within, and total heat loss from the body, are shown to be functions of the effective temp. index for men normally clothed, working. Total heat loss is divided into loss by evaporation and combined loss by radiation and convection, both of which are shown to be functions of dry bulb temp. All curves for working men show similar characteristics to those for men seated at rest; but are of greater magnitude, the points of change occurring at lower temp. for men working. Excessive heat produced in the body due to work is shown to be dissipated largely by increased evaporation controlled by the availability of perspiration. Change from insensible to sensible perspiration takes place at 10.0 and 13.9° C. effective temp. with 95

and 20% relative humidity respectively.—*Authors' summary.*

6846. **KEETON, ROBERT W., HELEN MacKENZIE, SELMA OLSON, and LOUISE PICKENS.** The influence of varying amounts of carbohydrate, fat, protein and water on the weight loss of hogs in under-nutrition. *Amer. Jour. Physiol.* 97 (3) : 473-490. 1931.—Approximately mature hogs [2] confined in metabolism cages maintained their weight on basal requirements when such requirements were estimated according to Voit's figures of 19.1 calories per kgm. of body wt. On basal rations, hogs were in positive N balance. In cage life on rations 30% below basal requirements, including 0.94 gm. of protein per kgm. and wide variations in carbohydrate, they developed a negative N balance. Loss in weight paralleled the caloric deficiency. In cage life and on rations 20% below their basal requirements including 0.94 gm. protein per kgm. body wt., they remained in N balance but lost weight. All submaintenance rations, which were 20% below basal requirements, contained 15.28 calories per kgm. body wt. Three types of secondary variations were introduced: (a) Variations in carbohydrate and fat: To both animals 0.94 gm. of protein per kgm. body wt. was fed. To 1 animal no carbohydrate was given and to the other as much carbohydrate as was consistent with the calories selected. Fat furnished the remainder of the calories. (b) Variations of protein: To one animal a protein of 0.94 gm. per kgm. and to the other a protein of 0.03 gm. per kgm. was fed. Fat and carbohydrate furnished the remainder of the calories. (c) Variations of water; In this case the ration of both animals contained the same carbohydrate, fat and protein. To one animal water was given ad libitum, taking 24,191 cc. per day. To the other animal 1700 cc. per day was given. Through all of these variations the hogs lost wt. at the same rate. The loss was uniform without evidence of water retention, and parallel to the caloric deficiency. On the high fat ration the fatty acid to glucose in the metabolizing mixture approximated a value of 3.6, which is higher than the threshold of ketogenesis in normal men. The animals showed no ketosis. The weight loss of the hog fed 0.03 gm. of protein per kgm. can be ascribed to fat and its intimately associated fluids and protein. There was no significant destruction of body protein as shown by the N excretion. The hog with the limited intake of water (1700 cc.) after 19 days showed evidence of desiccation, absence of saliva and a dry mouth. Evidence is presented that this desiccation was not sufficient to alter appreciably the intra-cellular structure or activity.—*Authors' summary.*

6847. **KNOLL, W., und TH. MATTHIES. Kommt spontaner Ausgleich von Gewichtsverlusten nach Arbeitsleistung vor?** *Arbeitsphysiologie* 3 (6) : 525-528. 1930.—The authors weighed 3 riders after 1 hour's track riding, 40 rowers before and after a contest and 36 boxers in training and then weighed them again after ¾ to 1 hr. No food was taken and no urine was voided. There were further losses of weight during this time of 50 to 400 gm. which could be explained by the loss of water from naked skin or from clothes. Two subjects were investigated 4 to 14 times and the same kind of results obtained. No spontaneous recovery of weight took place. —*T. M. Carpenter.*

6848. **KOMMERELL, BURKHARD. Schilddrüse und Arbeitsstoffwechsel.** *Pflüger's Arch. Ges. Physiol.* 227 (1/2) : 1-23. 4 fig. 1931.—Dogs were used, and were made to work by running on a horizontal treadmill pulling a known load by means of a collar and harness with a weight hanging free over a roller. A load of 2-4 kgm. gave a metabolism of 540 to 750% above the basal level. In normal dogs the efficiency of the work was similar on a meat diet and on one poor in protein. Work done during the specific dynamic action of proteins was efficiently performed and Rapport's observations that this energy can be utilised for work was confirmed. The R. Q. during work was lower on a pure meat diet. The metabolism of work is somewhat lower in the thyroidectomised animal, and administration of thyroxin raises again the energy expended in work. This effect is particularly in evidence in lighter grades of work, and analysis indicates that the effect is due to an increased cost of free movement. While the increase in basal metabolism produced by thyroxin is to be ascribed to increased cell activity, that of exercise is of a different character, and may depend on the muscular movements being badly coordinated (compare tremors). It might then be considered as the opposite effect to that of training, where the muscle movements become more coordinated and efficient.—*H. C. Bazett.*

6849. **MANSFELD, G., und Z. HORN. Über die sogenannte spezifisch-dynamische Wirkung der Nahrungsstoffe. V. Die Wirkung von Nahrungsstoffen auf den Stoffwechsel der isolierten Lunge.** *Biochem. Zeitschr.* 234 (1/4) : 257-273. 1931.—A description is given of a method of determining the gaseous exchange of the isolated perfused lung in dogs. Glucose and fructose added to the perfusion blood, with insulin, augmented the O consumption of the lungs considerably in 3 of the 5 experiments, whereas the sugars applied as well as insulin, used separately, were ineffective. Of protein components, glycine was ineffective, while alanine considerably increased the consumption of O. The blood of a well nourished dog likewise caused an increase in O consumption in 1 of 4 experiments. The experiments, therefore, do not contradict the possibility that the specific-dynamic effect of foods is conditioned by the fact that the cells and tissues of higher organisms increase their O consumption corresponding to their food, as has been found for the unicellular organisms.—*Authors' summary (transl.).*

6850. **MARK, ROBERT E., und HELMUTH REINWEIN. Gaswechseluntersuchungen am Halbnierenhunde.** [Gaseous metabolism in unilaterally nephrectomized dogs.] *Arch. Exp. Path. u. Pharmakol.* 142 (1/2) : 78-85. 1930.—Discussion of tabulated results from experiments on 3 animals.

6851. **MUKHERJEE, HARENDRA NATH, and PRATUL CHANDRA GUPTA. The basal metabolism of Indians (Bengalis).** *Indian Jour. Med. Res.* 18 (3) : 807-812. 1931.—The basal metabolism of 18 normal Bengali young men averaged −13.3% (Aub and Dubois standards). The vital capacity is markedly low, i.e., on the average about 14.8% lower than Western standards. The pulse pressure appears to be low. The low basal metabolism of Bengalis is perhaps due to climatic and nutritional causes.—*Authors' summary.*

6852. **NECHELES, H. Basal metabolism in Orientals.** *Amer. Jour. Physiol.* 91 (2) : 661-663. 1930.—Orientals (6) with a low basal metabolic rate did not show any appreciable drop in basal metabolic rate during sleep. Two Orientals with a normal or high basal metabolic rate showed a considerable drop in basal metabolic rate during sleep. Westerners with normal and high basal metabolic rates showed a drop during sleep comparable to that of the 2nd group of Orientals. There is evidence that the lower basal metabolic rate of Orientals is partly due to a greater degree of habitual relaxation.—*Author's conclusions and summary.*

6853. **RAPPORT, DAVID. The nature of the foodstuffs oxidized to provide energy in muscular exercise. III. The utilization of the "waste heat" of metabolism in muscular exercise.** *Amer. Jour. Physiol.* 91 (1) : 238-253. 1929.—The experiments were performed on a single well trained dog, which was given the customary standard maintenance diet of about 60% carbohydrate, 25% fat, and 15% protein. The animal was caused to run for 10 min. at about 14.4 miles per hr. on a horizontal treadmill introduced into a closed system for obtaining the gaseous exchange. Employing the term "work" loosely to indicate the mass of the animal moved through horizontal distance, the "work" done was approximately 3,000 horizontal kgm. Experiments during the post-absorptive state, at least 18 hr. after the last food, were alternated with experiments after the ingestion of either fat, glucose or meat. Most of these latter experiments followed the

ingestion of fat. The exercise was preceded and followed by periods during which the resting metabolism was obtained, and the excess metabolism of exercise and recovery was calculated upon the difference between the exercise and recovery gaseous exchange, and that of the average of the pre- and post-exercise resting periods, as had been done in the previous work. The conclusions are: The specific dynamic action of fat, as well as that of glucose, is abolished during muscular exercise and recovery, i.e., this extra energy, which at rest appears as waste heat, is utilized as free energy in muscular work. This tends to confirm the non-specificity of the oxidative recovery process of muscular contraction. On the other hand both the "calorigenic" action of epinephrine and the specific dynamic action of tyrosine, like that of protein, cannot be used in muscular work. Hence the above mentioned non-specificity is limited, as certain oxidative exothermic reactions will not serve for this purpose. Incidentally, the experiments confirm the conception that the calorigenic action of epinephrine is due neither to muscular work nor to the specific dynamic action of carbohydrate.

6854. REGELSBERGER, HERMANN. Die Beurteilung unspezifischer Reaktionen mit Hilfe der alveolaren Kohlensäure. *Zeitschr. Ges. Exp. Med.* 60(5/6): 591-610. 10 fig. 1928.—In an effort to study the mechanism of non-specific "reiz" substances, proteins or metals, the author recommends the determination of the reaction of the respiratory center. Using the method of Haldane and Priestley, he determines the alveolar CO_2, the blood CO_2 bound and unbound. Study of the continuous curves of the alveolar CO_2 tension is of clinical significance. Variations in the normal tension curve is a more sensitive gauge of the effect of irritative substances than the temperature changes. There is an accentuation of the post digestive wave in the CO_2 tension curve. This is probably dependent on the specific dynamic action of the food.—*D. Perla.*

6855. RIDDLE, OSCAR, GUINEVERE CHRISTMAN, and FRANCIS G. BENEDICT. Differential response of male and female ring doves to metabolism measurement at higher and lower temperatures. *Amer. Jour. Physiol.* 95(1): 111-120. 1930.—From 589 measurements made at 20° and 30° C., on ♂♂ and ♀♀ of 16 standardized races of ring doves, it is definitely established that the metabolism of the ♂ suffers a greater decrease with increase of external temp. than does that of the ♀. Between these limits the decrease in ♂♂ is 28.1%, in ♀♀ 20.3%. These values are further and fully confirmed by 167 measurements on 10 additional races, and by still other data. Under extreme (and abnormal) depression of the metabolism by a temp. of 30° C. the metabolism of the ♀♀ is higher (7.1%) than that of the ♂♂. At 20° C. the measurements of all the 3 large racial groups indicate a higher normal metabolism in the ♂ (3 ÷ %). Additional but preliminary measurements made at 15° C. similarly indicate a higher metabolism in ♂♂ when measured at this temp. The heat production of certain species and races—like that of the ♂ sex—is much more depressed by a high external temp. than is that of other species or races. All races of common pigeons studied by the authors are much less affected than are the ring doves. Some races of ring doves—all of which races have been established on the basis of size of thyroid and pituitary—are much less depressed than other ring dove races. Measurement at these temp. was preceded during 24 hrs. by maintenance at the same temp., and with all the technique earlier found necessary to the accurate measurement of heat production in these animals. The measurements made at 30° C.—which is approximately the temp. that yields a minimum metabolism but with this varying somewhat for sex, race, and season—supply evidence that such minimum values are obtained on birds in a non-physiological state. There is already some evidence that this applies to still other animals. This differential response of the normal metabolism of the sexes to temp. is of much consequence not only in metabolism studies, but in growth, vitamin and nutritional research, and in experimental biology generally. In accurate measurements very different results with the 2 sexes may be obtained merely through keeping the animals at, or temporarily subjecting them to, a high or low environmental temp.—*Authors' summary.*

6856. ROSZTÓCZY, E. v. Sportärztliche Untersuchungen. II. Die Nachwirkung des Schwimmens und Ruderns auf den Stoffwechsel während des Trainings und nach dem Training. *Arbeitsphysiologie* 3(7): 564-578. 10 fig. 1930.—The basal metabolism and the mechanics of breathing were determined with the Krogh respiration apparatus on 30 athletes 15 to 31 years of age during and after training in swimming and rowing and on a group of normal controls. The results were obtained from 2 or 3 periods 10 to 12 min. in duration run during training 12 to 16 hrs. after last training period and after training ceased at 3 to 16 days after last practice. The average basal metabolism of 10 controls was ±3.7% from normal, of 12 subjects training, −23.2%; of 2 subjects after training who had taken up a new sport within 24 hours, −8.3%; of 13 subjects after training ceased, +13.6%, and of 3 subjects after a rest from training of 48-60 hrs., +12.3%. The depth of respiration increased in proportion to the body surface. The frequency of respiration had an inverse relationship to the body surface. The O absorption during training had an inverse relationship to the depth of respiration, but after training it had a direct relationship to the amplitude of breathing. During training the O absorption was in direct relationship to the frequence of breathing. After training the respiration rate increased along with the increased O absorption but did not attain normal control values. The volume of quiet breathing during training averaged 900 cc. per respiration.—*T. M. Carpenter.*

6857. ROTHSCHILD, P. Notiz über Atmung von Kaltblüter-Muskulatur in Gegenwart von Zucker und Hormonen. *Biochem. Zeitschr.* 217(4/6): 365-367. 1930.—O consumption of frog muscle in the summer without glucose ranged from 210 to 282 cu. mm. per gm. per hr.; with glucose from 201 to 300 cu. mm. per gm. per hr. In the fall O consumption per gm. per hr. was 212-348 without glucose; with glucose 305-456. Fructose was in effect equivalent to glucose; galactose, maltose and saccharose had no effect within the limits of error. Neither insulin in 10^{-5} to 10^{-14} per cc. of solution, adrenalin (10^{-5} to 10^{-8} concentration), nor thyroxin (10^{-5} to 10^{-8}) influenced O consumption of frog muscle.

6858. SIMONSON, E., und PETER DOLGIN. Rationalisierung industrieller Arbeit nach physiologischen Gesichtspunkten. III. Mitteilung. Weitere Untersuchungen über arbeitsphysiologische Rationalisierung des Formens. *Arbeitsphysiologie* 3(3): 254-275. 11 fig. 1930.—This is a continuation of previous studies (B. A. 4, Entries 24429, 24430) on the energy expenditure in moulding. A new form of hand press had been devised for pressing in the sand around the form. The experiments were carried out at the end of the usual day's work on 4 men. The energy output per piece with the new hand press was 5250 gm. calories as compared with 5820 in the former investigation with a hydraulic press. An excess amount of sand as well as dry sand increased the energy expenditure. The energy output in shovelling sand could be diminished about 200 gm. calories per piece when the sand was placed at a convenient height instead of on the floor. The respiratory quotients of the 4 subjects at rest were from 0.78 to 0.81, and the specific respiratory quotients of the excess gaseous exchange due to work varied from 0.64 to 0.735. The author's interpretation was that the previous work had so exhausted the store of carbohydrate that the energy for the later work of the day was derived from fat or from the transformation of fat to sugar. The energy expenditure in a day's work was calculated to be 2376 calories which would be supplied by 527 gm. of carbohydrate in about 1054 gm. of bread.—*T. M. Carpenter.*

6859. STEINHAUS, ARTHUR H., and THOMAS A.

JENKINS. Studies in the physiology of exercise. IV. Further concerning exercise and basal metabolism in dogs. *Amer. Jour. Physiol.* 95(1) : 202-210. 1930.—Basal metabolism data gathered in the latter 3 yrs. of a 5-yr. study on 3 ♂ dogs observed in and out of exercised states are presented and analyzed. Dietary additions to support body weight during exercise were marked by increases in basal metabolism; this is in accord with the findings of others. When care is taken to distinguish between effects due to exercise and those due to increased food intake, the observations lend further evidence to the view that an extended period of training which puts the animal in excellent athletic condition is without noticeable effect on basal metabolism per sq. m. per 24 hrs. It is proposed that the high degree of relaxation acquired by the trained animal may explain why it is possible to have muscular hypertrophy without increased basal metabolic rate. Marked spontaneous fluctuations around averages often much lower than those reported for normal dogs are noted. A position is developed which would explain the appearance of greater fluctuations coincident with the attainment of more nearly true basal conditions. There is some indication that the fluctuations are cyclic in nature. Whatever their cause it is clear that any study of the effects of drugs, hormones or other factors on basal metabolism must in some way reckon with these fluctuations. In the present work this was done (1) by extending the observations over a long period of time; (2) by holding at least 1 and usually 2 dogs as untreated controls to reflect the nature, trend, and extent of the spontaneous variations.—*Authors' summary.*

6860. TILT, JENNIE. The basal metabolism of young college women in Florida. *Jour. Biol. Chem.* 86(2) : 635-641. 1930.—The average metabolism of 52 subjects 17-25 yrs. old was −9.9 per cent (Harris-Benedict standards) and −10.6 per cent (Aub-Du Bois standards). Limited data indicate that there is no change in metabolism with change in season. Eight of the subjects who indulged in greater physical activity had an average metabolism agreeing closely with the average of the entire group.—*Author's summary.*

6861. WANG, CHI CHE, SOLOMON STROUSE, and MARIE ANDERSCH. Metabolism of obesity. VIII. Basal metabolism and insensible perspiration during a period of reducing weight. *Arch. Internal Med.* 46(6) : 1002-1013. 1930.—Metabolic tests (190) were made during a period of reducing weight by diet in 3 obese women, 1 of whom had diabetes. In the latter a steady decrease in basal metabolism was observed until thyroid extract was administered. In the other 2 subjects, the decrease was less marked. Per kgm. of body weight, the basal metabolism of 1 of the subjects (C.B.) increased gradually with the loss of weight, but no such relationship was observed in the other 2. The coefficient of correlation between the loss of body weight and the increase of heat produced per kgm. per 24 hr. showed a fair degree of inverse correlation, −0.71 in C.B. and only a very slight correlation in the other 2, −0.33 and −0.25, respectively. A slight tendency toward the lowering of the respiratory quotient was observed in C.B. but not in the others. In E.S., the pulse rate showed a tendency to decrease with the basal metabolism, but the values varied independently of the basal metabolism in the other 2 subjects. Insensible perspiration of 2 of the subjects showed marked fluctuation. The average insensible loss was 31 gm. per hr. in E.S. and 29 gm. in C.B. No definite relationship was found between insensible perspiration and basal metabolism in these 2 subjects.—*Authors' summary.*

PROTEIN METABOLISM

6862. ABDERHALDEN, EMIL. Die biologische Bedeutung von Zwischenverbindungen. *Naturwissenschaften* 18(20/21) : 429-431. 1930.—The importance of the chemical union in biological compounds, such as the OC-NH linkage in polypeptids, is discussed. This aspect is emphasized in a consideration of the phosphoric esters of glucose, hormone reactions, vitamins, immune bodies, and intermediary products of metabolism.—*W. H. Chambers.*

6863. ABDERHALDEN, EMIL, und SEVERIAN BUADZE. Fortgesetzte Studien über die Herkunft des Kreatins bzw. Kreatinins im tierischen Organismus, zugleich ein Beitrag zum Problem des Purinstoffwechsels. III. *Zeitschr. Ges. Exp. Med.* 69(5/6) : 561-576. 1930.—Administration of allantoin, uric acid, uracil, methylimidazole or caffeine had no influence on the excretion of urinary creatinine of an adult bitch. Dried powdered human placenta caused an increase in total creatinine excretion and daily injections of 1c.c. of Menformone had the same effect. Administration of hemoglobin or of globin increased the excretion of total creatinine, uric acid and allantoin. Completely hydrolysed globin, from which arginine and histidine were removed, had no effect. Addition of arginine had no effect and addition of histidine only a slight effect. A definite effect was obtained after both histidine and arginine were added to the globin hydrolysate from which these amino acids had been removed. The increased excretion of allantoin and uric acid after administration of globin points to the possibility of the synthesis of the purine bases.—*H. Zwarenstein.*

6864. BERGAMI, GINO. Uricolisi sperimentale nel preparato cardio-polmonare. [Uricolysis in the heart-lung preparation.] *Boll. Soc. Ital. Biol. Sperim.* 5(6) : 934-936. 1930.—Uric acid injected into blood in the heart-lung preparation is not destroyed. Addition of uricase to the circulating blood is followed by but slight diminution of blood uric acid.—*M. Comel.*

6865. BORNSTEIN, A. Die Zersetzung von Eiweiss und Aminosäuren der Nahrung, gemessen am Ammoniak des Blutes. *Biochem. Zeitschr.* 212(1/3) : 136-148. 1929.—When glycocoll, alanine, or asparagin were injected intravenously into fasting dogs, the ammonia of the blood rose sharply at once, followed by a similar increase of urea. When these substances were administered per os similar, but less marked, changes occurred. If meat was given to these animals there was no marked increase in ammonia until the 4th or 6th hr. These observations are dicussed in connection with Lusk's theory of specific dynamic action.—*A. G. Hogan.*

6866. BORNSTEIN, A., und H. F. ROESE. Über Ammoniakbildung aus Aminosäuren in überlebenden Organen. *Biochem. Zeitschr.* 212(1/3) : 127-136. 1929.—Blood from a fasting dog was perfused through the liver of another fasting animal. The ammonia of this blood remained constant or decreased. When glycocoll was added to the perfusion fluid the ammonia increased many times within a few minutes. Similar results were obtained with alanine, aspartic acid and asparagin, but leucin gave no increase. The lungs apparently bring about the same reaction as the liver, but to a much smaller extent. Results with the extremities were negative, with the kidney doubtful.—*A. G. Hogan.*

6867. BROOKS, F. P. The protein intake of medical students. *Amer. Jour. Physiol.* 89(2) : 403-405. 1929.—A study of 817 24-hr. urine specimens from 192 ♂ students over a period of 6 yrs. shows: An av. N excretion of 10.34 gms. which corresponds with a protein consumption of 71.3 gm. per 70 kgm. of body weight after adding 10% for protein lost in the feces. The protein consumption of students living at a mean temp. of 5.0-6.9° C. was approximately the same as of students living at 13.05-26.77 and −4.4 to 1.0° C. Hence protein habits within this range of climate and in this occupation are little affected by change of temp. The protein consumption of this class of individuals is far below the accepted dietary standards as was shown by Denis and Borgstrom and by Beard. The results further support the view of Chittenden that 60 gm. of protein per 70 kgm. body wt. was an ample allowance.—*Author's conclusions.*

6868. CALVERY, HERBERT O. Some chemical investigations of embryonic metabolism. 5. The tyrosine, tryptophane, cystine, cysteine, and uric acid content of the developing hen's egg. *Jour. Biol. Chem.* 87(3) : 691-

700. 1930.—These constituents were determined in 5 eggs each day throughout the period of development. The tyrosine content decreased but the tryptophane showed no decrease by either of the methods used; Sendju reported a marked decrease in both tryptophane and tyrosine. The cystine content was determined on 2 series of eggs by 2 methods. The values obtained by the Okuda method agree very well for the 2 series and with values previously reported by Sendju for the early stages but not for the later stages of development. The values obtained by a modification of the Folin and Marenzi method agree very closely for the 2 series of eggs but not at all with the values obtained by the Okuda method. They are much higher at the beginning of the period and show an increase throughout the entire period whereas the cystine content as determined by the Okuda method shows a marked decrease. The cysteine content was determined by 2 methods and the values agree very closely. It reaches a peak on the 8th day, thereafter it declines to a minimal value on the 15th day, and then reaches a 2nd peak at the time of hatching. The relationship of the cysteine content to the 3 periods of development, to the glutathione content, and to the activity of the tissue biologically is discussed.—*Author's summary.*

6869. CERECEDO, LEOPOLD R. Studies on the physiology of pyrimidines. III. The intermediary metabolism of uracil. *Jour. Biol. Chem.* 88(3): 695-700. 1930.—Experiments are described in which isobarbituric acid and isodialuric acid were fed to dogs maintained on a nitrogenous equilibrium. Evidence was obtained that isobarbituric acid and isodialuric acid, when fed in small amounts to dogs, are to a great extent metabolized to yield urea. It is assumed that in the metabolism of uracil we are dealing wih the following sequence of reactions: uracil → isobarbituric acid → isodialuric acid → urea + an unknown carbon compound. Following the feeding of isobarbituric acid and isodialuric acid a distinct drop in the output of inorganic sulfates was noted. This drop in the excretion of inorganic sulfates is due to a practically proportionate increase in ethereal sulfate. Pending the isolation of isobarbituric acid and isodialuric acid sulfate from the urine it is tentatively assumed that these compounds are excreted partly in the form of ethereal sulfates.—*Author's summary.*

6870. CHRISTMAN, A. A. Purine metabolism. 3. Diet and caging as factors in the allantoin excretion of the rabbit. *Jour. Biol. Chem.* 86(2): 477-489. 1930.—The daily allantoin excretion varies widely. The most striking variation is the decreased excretion when the rabbit is caged over a long period on a constant diet. A marked change may be obtained by a change in diet, which cannot be explained by the performed purines fed. The administration of $CaCl_2$ *per os* produced an increase in the excretion, rather than a decrease as reported by others. However, an increase in dietary Ca obtained by feeding milk was followed by a decreased excretion in several experiments. The uricolytic index of the rabbit was approximately 91.—*From author's summary.*

6871. CHRISTOMANOS, ANAST. A. Verhalten und Wirkung organischer Schwefelverbindungen im Hundeorganismus. I. Wirkung und Schicksal des Thiophens im Stoffwechsel des Hundes. *Biochem. Zeitschr.* 229 (1/3): 248-254. 1930.—A colorimetric method for estimating small amounts of thiophene has been worked out. After ingestion of thiophene by dogs, 5.7-12.17% of the quantity introduced appears conjugated in the urine. The hypothesis is made that a part of the introduced thiophene is changed to ethyl sulphide in the intermediary metabolism. In contradiction to the belief of earlier authors thiophene possesses no inhibiting influence on the total N metabolism. After the feeding of thiophene a characteristic clinical picture develops in dogs with ataxia phenomena predominating.—*Author's summary (transl. by C. W. Ackerson).*

6872. DOCK, WILLIAM. The relative increase in metabolism of the liver and of other tissues during protein metabolism in the rat. *Amer. Jour. Physiol.* 97(1): 117-123. 1931.—The rate of O consumption of rats fed on a diet containing 74% casein, and anesthetized with chloretone, was compared with that of controls fed on a diet containing no casein, immediately before and after ligating the blood supply of various regions of the body. The O consumption of the kidneys, in terms of O per min. per 100 sq. cm. of body surface, was practically the same in the 2 groups, although the total O intake of the former was 35% greater than the controls on low protein. Urinary secretion was not measured and no conclusions as to renal metabolism are drawn. The O consumption of the hind-quarters was only 8% greater in the rats on the high protein diet, while that of the abdominal viscera was 141% greater during protein than during carbohydrate feeding. At least 85% of the heat evolved as a result of the specific dynamic action of protein in chloretone-anesthetized rats is liberated in the abdominal viscera. It is concluded that the liver is probably the chief site, and possibly the only site, of the intermediary metabolism of those amino-acids which raise the metabolic rate, and that at least 80% of the specific dynamic action of these acids is due to the increased energy liberated by the hepatic cells during protein digestion.—*Author's summary.*

6873. EMERSON, OLIVER H., and LEOPOLD R. CERECEDO. Studies on the physiology of pyrimidines. 2. The metabolism of the nucleosides of uracil and cytosine. *Jour. Biol. Chem.* 87(2): 453-462. 1930.—These nucleosides were fed to dogs maintained in N equilibrium. Evidence was obtained that when fed in small amounts to dogs they are metabolized to yield urea. The behavior of the nucleoside cytidine is in marked contrast to the free base cytosine, which is partly excreted unchanged, partly deaminized to uracil. Cytidine, fed in doses of 4.0 to 5.0 gm. to dogs, seems to stimulate the metabolic processes of the cells. Ribose, the pentose sugar in the nucleoside molecule, is practically completely burned; certainly not more than a trace appears in the urine. The average C:N ratio in the urine of dogs under the experimental conditions was 0.65, remaining practically constant from day to day. In 7 of 8 experiments there was a rise in the ratio after feeding uridine and cytidine.—*Authors' summary.*

6874. FOSTER, G. L., and A. B. GUTMAN. On the fate of diiodotyrosine in the animal organism. *Jour. Biol. Chem.* 87(2): 289-294. 1930.—After diiodotyrosine was fed to rabbits approximately 10% of the total I in the urine was recovered as inorganic iodide, 60% as unchanged diiodotyrosine, 18% as 3,5-diiodo-4-hydroxyphenyllactic acid, and 12% could not be isolated.—*Authors' summary.*

6875. KAMIYA, TOKUO. The quantitative estimation of the glutathione in normal and pathological tissues. III. Relationship between the development and the glutathione content in the chick embryos. IV. Glutathione content in various organs of pigeons fed on polished rice and subjected to starvation, and also starved rabbits. V. Relationship between glutathione content and neurotomy in muscles of pigeons fed on polished and unpolished rice. *Nagoya Jour. Med. Sci.* 5(1): 1-5; 6-17; 18-23. 1930.—III. Analyses showed that the glutathione content in chick embryos taken as a whole increases gradually during the 1st half of the developmental period, reaching the maximum during the 12th-14th day and, from this period on, gradually decreasing. The liver is the richest organ, then brain, heart, leg-muscle and eye.—IV. In 7 normal pigeons fed on unpolished rice the greatest glutathione content was found in the liver; next came the suprarenal bodies, spleen, kidney, brain and pancreas; lung, nerve, heart, muscle and blood contained small amts. In 10 pigeons fed with polished rice there was a tendency for glutathione to decrease in the liver, heart and muscle, and to increase in the suprarenals, spleen and blood, but especially in the suprarenals, in which the glutathione content was sometimes double the normal. In 2 starving pigeons the glutathione content of liver, kidney, lung, heart and

muscle tended to decline below normal (muscle below β-avitaminosis); in the spleen, pancreas and suprarenals it increased (suprarenals 3 times normal); the glutathione content of the heart was normal. In 7 starving rabbits the glutathione content of spleen and suprarenals increased progressively, and that of liver, kidney, pancreas, stomach, lung, brain, muscle, ovary and testicle progressively decreased.—V. In 25 pigeons the right sciatic nerve was severed, the left remaining as control; 15 birds were kept on normal diet and 10 were placed on polished rice; 3 of the normal diet series and 2 of the polished rice were killed respectively on the 3rd, 6th, 10th, 15th and 20th days, and the glutathione content of the 2 legs compared. In both the normal and the avitaminosis series the neurotomized leg progressively decreased in weight and increased in % of glutathione content; the glutathione content of the control leg decreased, but more in the polished rice than in the normal diet series.

6876. LOEWY, A. Skiläufe im Hochgebirge unter Aufnahme eines phosphorhaltigen Trankes. *Arbeitsphysiologie* 3(3): 276-286. 1930.—The urines of 25 participants in 28 and 18 kilometer run of the Swiss military patrol on skis were collected at the end of the run and the total N, ammonia, urea, preformed and total creatinin and the pH were determined. In contrast to the findings of Hopf (Arbeitsphysiol 1, 433 (1929)) the ammonia was under 1% of the total N and the percentage relation of the creatinin was normal. The urines were not so acid as those of Hopf; many were neutral or alkaline. The results are ascribed to the ingestion of 250 to 300 ccm. of a beverage containing 0.25 to 0.3 gm. of P previous to the runs. The preparation was "Eviunis" made from green plants and contained a P-vitamin complex in which the P was combined in an organic form as Ca and Mg salts of inosite hexaphosphoric acid.—*T. M. Carpenter.*

6877. LOEWY, A. Beobachtungen über den Eiweissabbau in übergrossen Höhen. Ein Beitrag zur Frage nach den Grenzen der Akklimatisation an das Höhenklima. *Arbeitsphysiologie* 3(7): 596-604. 1930.—Ten urines were obtained from 6 members of Dyhrenfurt's expedition to the Himalayas when they were at altitudes between 5150 and 7300 m., and in all but one case after strenuous mountain climbing. The urines were collected in sterile air-tight bottles containing powdered thymol and shipped to the author at Davos. In terms of total N the urea N average 75.4%, the ammonia nitrogen 5.05%, the preformed creatinine-N 3.74%, the total creatinine-N 4.80%, uric acid-N, 2.22%, amino acid-N 0.94%, and the undetermined-N 12.5%. The urines were nearer to normal than those obtained by Hopf (Arbeitsphysiologie 1, 433 (1929) on ski runners in the 2nd winter Olympic. The approach to normality of the urines of the Himalaya expedition cannot be explained by the inhalation of O as only one sample was obtained after this procedure and its composition was close to that obtained from the same subject without such inhalation. The nearness to normality can be due to the extensive acclimatisation at the high altitudes. The acclimatisation began at 2700 m. and the urines were collected 49 to 86 days later. Meanwhile the subjects had gradually attained the higher altitudes.—*T. M. Carpenter.*

6878. McCLELLAN, WALTER S., VIRGIL R. RUPP, and VINCENT TOSCANI. Clinical calorimetry. 46. Prolonged meat diets with a study of the metabolism of nitrogen, calcium, and phosphorus. *Jour. Biol. Chem.* 87(3): 669-680. 1930.—The results of the analyses of many samples of meat are presented. They agree in general with the findings in other available reports. Observations were made to determine the efficiency of absorption of the foodstuffs from the intestinal tract. The loss of N in the feces of K. A. was 4.5% of the intake and for V. S. 7.5%. The loss of fat for K. A. was 3.0% and for V. S., 9.2%. The use of the meat diets by the 2 subjects studied did not reduce the efficiency of absorption from the intestinal tract. One subject (K. A.) remained in N equilibrium while receiving meat with an average daily intake of 19.9 gm. and the other (V. S.) showed a slight negative balance with an intake of 18.7 gm. per day. The daily intake of Ca was 0.05-0.15 gm. The average daily excretion of calcium for one subject was 0.44 gm., and for the other 0.47 gm. Both men showed negative Ca balances when taking meat alone. In spite of the high P intake, K. A. showed a positive P balance of only +2.34 gm. for the entire period of meat ingestion, while V. S. showed a balance of −5.34 gm. This was due to the increased excretion of P in the urine since the P in the feces decreased when the meat diet was taken. The influence of the acid nature of the diet on mineral balances is discussed.—*From authors' summary.*

6879. MACKAY, EATON M., and LOIS LOCKARD MACKAY. Age and the effect of unusual diets. *Jour. Biol. Chem.* 86(2): 765-771. 1930.—Evidence is presented which indicates that cystine added to the diet is no more toxic for young than for old rats. The apparent difference in the effect appears to be due to the larger dose received by the young rat because its food and hence cystine intake is higher in relation to body size than that of the adult. Likewise a higher protein diet seems to produce a greater change in the kidney weight of young than of old rats because the food and therefore protein intake of the former is much greater. These results are considered in relation to the effect of unusual diets and age in general.—*Authors' summary.*

6880. MARENZI, AGUSTIN D. El hígado y la eliminación de fenoles en la sangre. [Liver and elimination of phenols from blood.] *Rev. Soc. Argentina Biol.* 7(1): 27-35. 1931.—In hepatectomised dogs conjugation of phenols occurs as in normal animals, though disappearance from the blood is somewhat slowed. Hence the liver is not an indispensable factor in these processes.—*J. T. Lewis.*

6881. MARENZI, AGUSTIN D. Papel del riñon en la eliminación de los fenoles de la sangre. [Kidney and elimination of phenols from blood.] *Rev. Soc. Argentina Biol.* 7(1): 36-57. 1931.—In hepatectomised dogs the remaining kidney was tied off. After injection of phenol, the free blood phenol rose rapidly and remained high for 1 hour, returning to normal in 2 hrs. Total phenol increased and remained high, conjugation occurred as in normal animals. After extirpation of one kidney and ligature of blood vessels of the other the same results were obtained. In other experiments both kidneys were tied off and a kidney was transplanted to the neck by connecting the carotid and jugular with the renal vessels; phenol was injected intravenously and determined in the blood entering and leaving the kidney and in urine. Results obtained show that phenols are retained in the kidney before being excreted. In severe experimental nephritis provoked by salts of mercury and uranium, phenols are not excreted, and the blood curves are identical with those of nephrectomised animals.—*J. T. Lewis.*

6882. MARENZI, AGUSTIN D. ¿Existe algún órgano encargado especialmente de la conjugación de los fenoles? [Conjugation of phenols.] *Rev. Soc. Argentina Biol.* 7(1): 58-68. 1931.—Tying off all abdominal viscera in dogs markedly retards but does not suppress conjugation after injection of phenol. Extirpation of the intestine has the same effect; while hepatectomy and nephrectomy, extirpation of the spleen, stomach and colon have no influence on conjugation. This conjugation therefore is common to all tissues but especially marked in the intestine.—*J. T. Lewis.*

6883. MEYER-BISCH, R., und F. TECHNER. Über das Schicksal parenteral verabfolgten Schwefels. *Biochem. Zeitschr.* 231(1/3): 110-112. 1931.—The total and the hydrolyzable S in 3 bovine and 6 rabbit livers were first determined and the rabbit values compared with those from rabbit livers after parenteral S injection. No change in Hb and leukocyte count occurred after the injection. The same experiments were made on 2 dogs. In neither rabbits nor dogs was any change found in the water content, in the total S, or in the hydrolyzable S. It is therefore improbable that the liver plays a particularly

active rôle in the changes in S metabolism after parenteral administration.

6884. **POTICK, DORA, y PEDRO M. RÉ. Modificaciones del triptófano de los órganos y sangre durante el ayuno prolongado.** [Tryptophane of tissues and blood in prolonged fasting.] *Rev. Soc. Argentina Biol.* 7(1): 82-92. 1931.—Comparing tryptophane content of tissues of dogs killed after 18 hrs. fast, with those of dogs submitted to 6 to 11 days fasts showed a decrease in the latter in the following tissues: muscle, kidney, spleen, brain, adrenal, blood plasma and corpuscles and an increase in pancreas, thyroid and liver.—*J. T. Lewis.*

6885. **ROMINGER, E., und HUGO MEYER. Untersuchungen des Stickstoffumsatzes beim gesunden Säugling.** *Zeitschr. Kinderheilk.* 50(5): 509-519. 1931.—Investigations lasting 6-54 days (4 with human milk, 10 with cows' milk—in 11 infants) showed an av. daily +N balance between +0.30 and +0.54 for breast feeding, between +0.66 and +1.07 for artificial feeding (1 artificially fed child had a +N balance of only 0.36 but previous to the experiment had had a diet high in salt); the N intake was 1.12-1.39 and 1.79-4.44 respectively. The high N balance appeared to entail no pathologic consequences and was the result of a special storing ability and tendency in artificially fed children. No periods of N flooding were found; the N retention was not entirely due to requirements but also to the supply; if the supply was reduced the N balance was reduced only gradually. In spite of the N retention the N outgo (corresponding to protein breakdown) was high in comparison to the breast fed child, explaining the higher caloric requirements of the artificially fed infant.

6886. **SANNICANDRO, G. Glutatione della cute.** [Glutathion of the skin.] *Gior. Ital. Derm. e Sifil.* 71 (4): 1374-1376. 1930.—Glutathion was not found in the epidermis. Methods but not subjects, details or numbers of experiments are stated.

GROWTH

6887. **ANDERSEN, E. BUCH, und A. FISCHER. Über die Wachstums- und Hemmungsfunktion bei Gewebekulturen in vitro.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 114(1): 26-53. 9 fig. 1928.—At various stages of growth the areas of the tissue cultures were measured. The fundamental law of growth derived by the authors is a proportionality between the area of the culture and the square of its age: $A_t = K_1^2 t^2 + A_0$, in which A_t is the area at any age, t, and A_0 is the initial area of the culture. Assuming the initial area to be zero, the area at any age, t, may be written: $A_t = K_1^2 t^2$, or $\sqrt{A_t} = K_1 t$. If the radius, r, of the culture is assumed to be proportional to $\sqrt{A}$: $dr/dt = k$, in which $k = K_1/\sqrt{\pi}$. If the inhibition in the rate of growth of r at any time is assumed to be proportional to r, the preceding equation may be modified to: $dr_t/dt = k - ar_t$, which upon integration becomes $r_t = k/a(1 - e^{-at})$ or $\sqrt{A_t} = k/a\sqrt{\pi}(1 - e^{-at})$. The last equation was fitted to data obtained from pairs of carcinoma cultures reported by Fischer and Laser; each pair was derived from the same parent culture. The values of k obtained from two such pairs were 0.443 and 0.432, for the first pair, and 0.347 and 0.312 for the second. The corresponding values of a were 0.102 and 0.101 for the first pair, and 0.134 and 0.116 for the second. The effect of the pH of the medium upon the values of the constants in the growth curve was studied, using data on the growth of fibroblasts and carcinoma tissue reported by Fischer. The value of k had a maximum at pH = 6.70 for each culture. The values of a declined continuously as the pH increased, the decrease being more rapid in the case of carcinoma tissue. Data were obtained on the growth of fibroblasts and carcinoma tissue when reared separately and together in the same medium. The values of k for the growth curves of fibroblasts, carcinoma tissue, and fibroblasts plus carcinoma tissue, were, respectively, 0.589, 0.508, and 0.687. The corresponding values of a were 0.287, 0.157, and 0.205. Data on the growth of carcinoma tissue reared in media containing different proportions of rat serum and Tyrode solution are likewise recalculated. The values of k obtained for the growth curves of carcinoma tissue reared in media containing 25%, 50%, and 100% rat serum were, respectively, 0.321, 0.418, and 0.291; the corresponding values of a were 0.126, 0.091, and 0.100. The values of k and a for a fibroblast culture reared in a 50% rat serum medium were, respectively, 1.02 and 0.458. The values of the constant, k, must be regarded as relative, since they were dependent on the degree of magnification with which the images of the cultures were projected. The values of a, however, are absolute for they are independent of the degree of magnification.—*W. Hendricks.*

6888. **BAHRS, ALICE M. The modification of the normal growth-promoting power, for planarian worms, of the digestive mucosa of the rabbit, through diet, fasting, and age.** *Physiol. Zool.* 4(2): 189-203. 1931.—Definite regions of the digestive mucosa from freshly killed rabbits formed the exclusive diets for experimental groups of planarian worms, each consisting of 30 measured worms, the gains in length of which were determined at the end of the 3 to 4-week feeding period. The growth-promoting power of the digestive tract was resident only in the mucosa. When rabbits received a diet of alfalfa hay and rolled barley, the 6 regions of the digestive mucosa used exhibited the following order in growth-promoting power: esophagus and colon < stomach and cecum < small intestine < vermiform process of the cecum. By feeding rabbits the inadequate diets of bread and raw carrot or rolled barley, the growth-promoting power of the vermiform process suffered the greatest reduction. Starving the rabbits 48 hrs. also resulted in a loss in the growth-promoting power of the fundus of the stomach, duodenum, cecum, and vermiform process. In rabbits over 1 yr. old, the fundus of the stomach, duodenum, cecum, and vermiform process had a lower growth-promoting power than the same parts from rabbits 2-3 mos. old.—*Author* (*courtesy Wistar Bibl. Serv.*).

6889. **BUSH, S. F., and J. S. HUXLEY. Distribution of growth activity in Eupagurus.** *Nature* [*London*] 126 (3172): 240-241. 1930.—Investigations of the relative growth of parts in the hermit crab, *Eupagurus prideauxi*, show that the conception of growth gradients can be extended from the growth of single appendages to that of the body as a whole. What may be loosely called the "growth potential" is distributed in an orderly fashion through the animal body, in a series of growth gradients, which apparently interact so that an active growth center in one appendage is correlated with increased growth-activity in limbs immediately posterior to it and with decreased growth-activity in those immediately anterior.

6890. **HAMMETT, F. S., and S. P. REIMANN. Cell proliferation response to sulfhydryl in mammals.** *Jour. Exp. Med.* 50(4): 445-448. 1929.—The sulfhydryl group stimulates cell proliferation in mammals as in lower organisms. The fact that the stimulation is exhibited in such a wide diversity of species, including both plants and animals, is justification for the belief that it is the expression of a fundamental biological phenomenon. Literature and discussions of the subject are cited.—*F. S. Hammett.*

6891. **KON, S. K. Lactation v. improved growth in stock albino rats.** *Lancet* 220(5614): 778. 1931.—Letter. After failure of modified Evans' diet to remedy faulty lactation, a modification of Steenbock's diet by the replacement of yellow maize by rye, the inclusion of dried ox liver instead of 2% alfalfa, addition of carrots, and of 10% roller dried milk instead of the unlimited supply of fresh milk was tried. This diet gave rapid growth but did not improve lactation in the author's rats. He suggests that the failure is due to differences in the composition of the foodstuffs.

6892. **KOPEĆ, S. O wpływie przerywanego głodzenia na długość zycia formy dojrzałej Drosophila melanogaster. [Influence of intermittent starvation on longevity of**

adult D. melanogaster.] [French summary.] *Acta Biol. Exp.* [*Warsaw*] 1 (Paper 4) : 1-20. 1928.

6893. **KUBÁNYI, E. Callusbildung und Säurebasengleichgewicht.** *Arch. Klin. Chir.* 158 (1/2) : 203-213. 6 fig. 1930.—Callus formation after artificial fracture was studied in relation to acid-base equilibrium. In 135 animals (guinea pigs and rabbits) kept under identical nutritional and hygienic conditions, fractures were produced; the blood of one series was alkalinized by injection of $NaHCO_3$, that of the other acidified by injection of HCl. The animals were killed at varying intervals and the calluses examined. The proliferation during the 1st 2-3 wks. was more intense in the alkalinized than in the acidified series. This difference in favor of the alkalinized animals, surprisingly, is confined to the period when the callus consists mainly of granulation tissue. The cause is questionable; an explanation borrowed from Balint is that it may be due to the swelling (i.e., hydration) of the tissue colloids, which promotes cell respiration. The relation between the acidified and alkalinized series is reversed in the later weeks. During the period of calcification the callus formed more rapidly in the acid-treated animals; the author is inclined to believe that the acid reaction promotes Ca deposit. No explanation is offered, but an agreement is remarked between these findings and those of Balint, that in experimental tuberculosis calcification of the foci occurred more rapidly in acid-treated than in alkali-treated or untreated animals.

6894. **OLIVO, O. M. Accrescimento ponderale e coefficiente mitotico dell'accrescimento nel cuore embrionale di pollo incubato a temperatura inferiore alla normale. [Growth in weight and mitotic coefficient of growth in embryo chick hearts incubated at subnormal temps.]** *Boll. Soc. Ital. Biol. Sperim.* 5 (6) : 882-884. 1930.—During the first stage of incubation growth is progressively retarded with lowering of temp. (36.5° and 34.5° tested) below normal (39.5°). In the second stage growth at low temp. is accelerated, and surpasses the values for normal embryo hearts, due almost exclusively to hyperplasia of the contractile tissue. The mitotic coefficients at 34.5° are much higher during the second stage than those at 39° C., this difference being sufficient to account for the increased growth.—*M. Comel.*

6895. **PIJOAN, M. A note on the effects of kidney extract on micro-organisms (in vivo) and tissues (in vitro).** *Jour. Ent. & Zool.* 21 (4) : 125-127. 1929.—Kidney extract augments growth of bacteria inoculated into rat and of tissues in vitro.—*W. A. Hilton.*

6896. **RAPER, H. S. The synthetic activities of the animal cell.** *Lancet* 219 (5584) : 509-512; *Nature* [*London*] 126 (3185) : 762-766. 1930.—The raw materials for synthesis in the cell consist of 20 amino-acids, 2 purine bases, 3 pyrimidine bases, 3 hexoses, glycerol, and higher fatty acids. Synthesis may be from unidentified raw materials and even when their identity is postulated on available evidence, it is difficult to prove, as in the cases of adrenalin and thyroxin. The raw materials even when known may be synthesised by unknown chemical reactions as in the production of fat from carbohydrates. Syntheses from known raw materials may be accomplished by chemical processes as yet only partially understood. Thus more than the mere reversal of the action of the enzyme or enzymes which hydrolyse glycogen may be necessary to explain its synthesis. The site of protein synthesis is probably in the nucleus rather than in the cytoplasm.—*C. A. Kofoid.*

6897. **[SCHMALHAUSEN, I.] ШМАЛЬГАВЗЕН, І. Визначення питомої продуктивности росту як метода порівняльного досліджування. [Determining the specific productivity of growth as a method of comparative investigations.]** [English summary.] Всеукраінська Академія Наук, Труди Фізично-Математичного Відділу (Збірник Праць Біологічного Інституту No. 4.) (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Inst. Biol.*) 12 (4) : 329-342. 1929.—The author calls specific productivity of growth (u) the "whole amount of material produced by a unit of volume or weight of living substance during a certain time, or during the whole period of growth." That quantity is given by the formula $u = k \log (t_2/t_1)/(1/0.4343)$, (1), t being the time. The total productivity is obtained by summing up the productivity for the separate periods. In large animals u reaches the value of 20-25, in small ones half of that. In fishes the embryonic productivity is small, the postembryonic larger; in birds and mammals the relation is reversed; in man the embryonic productivity is 21, the postembryonic 3.3. The initial and final size (m and v) of an organism are given by $v = me^u$, (2). The volume (m) of the embryo at the time 1, which may hardly be determined directly, may be calculated from the data about further growth by the formulae (1) and (2). The method may also be used for comparing the growth of different breeds, sexes, and experimental animals.—*B. J. Luyet.*

6898. **SLONAKER, JAMES ROLLIN. The effect of different per cents of protein in the diet. III. Intake and expenditure of energy. IV. Reproduction.** *Amer. Jour. Physiol.* 97 (1) : 15-21; (2) : 322-328. 1931.—III. Rat groups I, II, III, IV, and V, 10 ♀♀ in each group, were fed continuously throughout life on diets containing 10, 14, 18, 22, and 26% of protein respectively. Up to approximately 150 days of age the av. daily food consumption from greatest to least was in the order of groups I, II, III, IV, and V. During the 1st 120 days the av. % increase in body wt. from greatest to least was V, IV, III, II, I. Group V averaged 306% and I 112%. During the 1st 120 days the av. spontaneous running activity from greatest to least was III, I, IV, II, V. During the 1st 120 days the energy available for growth and basal metabolism from greatest to least was I, II, III, IV, V. The protein content of this energy was 570, 673, 742, 845, and 969 calories respectively. For the whole life span the av. daily food intake in gm. from greatest to least was group III, 20.11; V, 19.94; I, 18.36; II, 17.92; IV, 16.00. The av. total miles run was group III, 2795; II, 2735; V, 2683; I, 2622; V, 2546. The av. number of miles run daily was group I, 3.28; III, 3.09; II, 3.03; IV, 3.01; V, 3.00. The av. life span from longest to shortest was in the order of groups II, III, V, IV, I. The order of number of young born from greatest to least was groups II, III, I, IV, V; the number of young nursed and weaned was in the same order. The order of av. maximal wt. was group III, 307; II, 294; I, 288; V, 253; and IV, 247 gm. These results indicate that a diet containing between 14 and 18% protein would result in greatest efficiency in maximal growth, spontaneous activity, reproduction and life span in the rat. They also show that during the growing period the diets containing the larger per cents of protein produced the greater per cents of gain in body wt.—IV. The groups of rats were those described in the preceding chapter. The mortality of the ♂♂ of the 1st matings was in general greater than that of the ♀♀. The mortality of both sexes was least in groups II and III. It was greatest in group V. Sterility was more pronounced in the ♂♂ than in the ♀♀ in each group. Group II had the highest per cent of fertile animals in each sex and group V the lowest. The order of fertility in both sexes from highest to lowest was group II, I, III, IV, V. The extreme per cents of fertility in the ♂♂ were group II, 87 and in group V, 33. In the ♀♀ they were 100 and 50% respectively. From longest to shortest reproductive spans the order in both sexes was group II, I, III, IV and V. The ♂♂ of group I, II, III had longer reproductive spans than the ♀♀ of these groups. In groups IV and V the reverse obtained. The av. number of litters and the av. number of young born per pair from greatest to least was in the order of groups II, I, III, IV, V. The size of the litter was in the order of I, II, III, IV, V. The sex ratio of the young at birth was highest in group II and lowest in group V. The ratio was below normal in all groups. Results suggest a greater pre-natal mortality of ♂♂ than of ♀♀. With exception of group V, a higher per cent of ♂♂ in each group were reared and weaned than ♀♀. Group II had the greatest per cent of young weaned (72%) and

group V the lowest (49%). Post-natal mortality was in general greater in the ♀♀ than in the ♂♂, indicating a greater vitality of the ♂♂. The length of the gestation period was the shortest in groups I and II and increased in the order of V, IV, III. The differences in the length may be due to the age of the mother and the size of the litter. In general the order of efficiency in reproduction of these 5 diets from greatest to least was II, I, III, IV, V.—*Author's summaries.*

6899. **TEISSIER, GEORGES. Dysharmonies biochimiques dans la croissance larvaire de Tenebrio molitor L.** *Compt. Rend. Soc. Biol.* 100(14): 1171-1173. 1929.—The chemical constituents of *T. molitor* seem to follow the author's law of disproportionality relating the growth of parts to the growth of the whole body. There was no sudden chemical change prior to metamorphosis. No details of experimental technique are given.

6900. **TERAO, ARATA. Change of vitality with age as based on the living unit of organisms. I. Oxygen consumption in the Daphnid, Simocephalus exspinosus.** *Proc. Imp. Acad. [Tokyo]* 7(1): 23-25. 1 fig. 1931.—Computations based on Obreshkove's data show that the relationship between O consumption per unit of living matter, and age in days, is linear: $y=65.855\ e^{-.0282x}$ where y is % rate of O consumption compared with that at 1st instar; x is age in days; and e the base of the Napierian logarithms.

6901. **WEISS, P. Die Spannungsverteilung im Medium bestimmt die Wachstumsrichtungen der Zellen.** *Zool. Anz. Suppl. Band (Verhandl. Deutsch. Zool. Ges. E. V.)* 3: 164-169. 1 fig. (1927) 1928.—Fibroblasts obtained from embryonic chick hearts were explanted and reared in culture media under mechanical stresses. The media were prepared by dipping glass frames of various geometrical designs into blood plasma and coagulating the films of plasma which became suspended in the frames; surface tension subjected the media to stresses which were dependent upon the designs of the frames. The growth of the fibroblasts proceeded along the lines of maximum stress, the directional effect increasing as the stresses were increased. This effect was not due to any mechanical force upon the growing tissue itself, but to the fibrous nature of the culture medium when subjected to strain. The shape of the cells is determined by the amount of liquid present and tends to become more spherical as the amount of liquid is increased. The cellular components of blood do not show similar behavior when reared in such media.—*W. Hendricks.*

6902. **WERTHEIMER, ERNST. Stoffwechselregulationen. XIII. Über die Sonderstellung von Zellen mit stärkster Wachstumstendenz im Organismus.** *Pflüger's Arch. Ges. Physiol.* 225(1): 118-130. 1930.—Cells with very strong tendency to grow are beyond the regulatory control of the total organism. This is seen in the eggs of frogs, the embryos of mammals, the rapidly growing uterus of the pregnant ♀, in the placenta at the height of its growth, and in carcinoma and sarcoma. This autonomy, that is, the relative independence of the growing cells of the regulation of the entire organism, is seen also in newborn animals. A marked division may be made between animals which are born "young" and those born "old," that is, those which after birth show very strong tendency to growth and those which show a less marked tendency. Rats and mice belong to the 1st class and guinea-pigs to the 2nd. Comparative experiments were made on these animals (number not stated). The 1st were very insensitive to thyroxin, insulin, and epinephrine, while the guinea-pig was more sensitive to them. Rats and mice showed a quite surprising resistance toward all kinds of suffocation; guinea-pigs did not. The autonomy of the vigorously growing cells of the newborn showed itself most clearly after decapitation and exsanguination of the animals. Newborn rats and mice showed until 2, or often 3 hrs., after these operations distinct phenomena of life and reflex responses to stimulation of the skin. As the age increased these indications of life continued for shorter and shorter periods until, on about the 13th day of life, even a few seconds after decapitation of the rat, such reflex responses could no longer be elicited. These phenomena could not be observed in the newborn guinea-pig; it behaved about like a 13-day old rat. The autonomy of the single cells disappears along with their articulation into the regulation of the total organism, and the capacity of the single cells for independent survival becomes correspondingly less. Thus, for instance, the more distinct and more permanent the regulation of respiration becomes, the shorter is the period of survival of the cell. The regulation of temperature appears when the autonomy of the cells is lost. In the guinea-pig both these regulatory mechanisms are well developed at birth. Just as morphologically ontogeny is a recapitulation of phylogeny so physiologically a similar order of development is followed, that is, from the highest autonomy of the cell, down to its strictest subordination to the governing regulation. The hearts of very young animals may remain functionally active after the death of the animal without any special effort to preserve their function. In newborn mice and rats (not guinea-pigs) no rigor mortis is to be seen.—*From author's summary (transl.).*

6903. **WULZEN, ROSALIND, and ALICE M. BAHRS. Unbalance in planarian nutrition.** *Physiol. Zool.* 4(2): 204-213. 1 fig. 1931.—When planarian worms are fed diets consisting of certain proportions of egg white, liver, and starch, they develop a pathological condition characterized by a definite syndrome. Other proportions of the same food substances are entirely harmless for the worms, and fasting develops no such syndrome. When represented on coordinates showing percentages of liver, starch, and egg white, the area of damage is found to be so arranged that with increasing percentages of egg white there must be a decreasing percentage of liver and starch in order to secure damage, and, conversely, with increasing percentages of liver and starch, the percentages of egg white necessary to produce damage must decrease.—*Authors (courtesy Wistar Bibl. Serv.).*

6904. **ZAKRZEWSKI, Z. Über die Produktion von Wachstumsfaktoren durch Sarkomzellen in vitro.** *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat.* (II) 1930(3/4): 267-279. 1930.—Jensen's rat sarcoma and Vienna mouse sarcoma were added to normal tissues in Ringer's solution, rat serum, and embryonal extract for various periods. The tumor cells promoted the growth of the normal rat tissues. Technic, graphs and details are given.—*From author's summary (transl. by W. Browning).*

VITAMINS

6905. **ABDERHALDEN, EMIL. Studien über das Wesen der Wirkung des Vitamin-B-Komplexes.** *Pflüger's Arch. Ges. Physiol.* 226(6): 723-737. 1931.—Pigeons were fed on polished rice until familiar symptoms of polyneuritis (loss in weight and decrease in body temp.) occurred. Feeding of desiccated tissues, such as liver, kidney, brain, muscle was somewhat effective in alleviating symptoms but never prevented their onset and final resulting death. Liver ranked as most effective, but did not compare in efficacy with yeast preparations. Heating of tissues above 100° destroyed their efficacy. The improvement in condition of polyneuritic pigeons was approximately the same whether tissues of healthy or neuritic birds were fed.—*E. P. Laug.*

6906. **ABDERHALDEN, EMIL, und VLASSIOS VLASSOPOULOS. Studien über das Wesen der Wirkung des Vitamin-B-Komplexes. II.** *Pflüger's Arch. Ges. Physiol.* 226(6): 808-815. 2 fig. 1931.—The action of dehydrase, an enzyme supposed to be intimately connected with the O uptake by tissues, and therefore with tissue metabolism, has been found to be materially decreased in the tissues of pigeons suffering from the effects of vitamin B deficiency. Addition of yeast to diet causes an apparent increase in dehydrase action and also an alleviation of symptoms.—*E. P. Laug.*

6907. **BLACKBERG, S. N. Vitamin A and B content of canned sweet potatoes.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 254-256. 1928.—Preliminary paper. Fed to rats

on diets lacking (1) vitamins A and D, and (2) vitamin B, canned sweet potatoes showed an abundance of vitamin A, and a small amount of vitamin B.

6908. **BÜRGI, EMIL.** Die Pflanzenfarbstoffe und das Wachstumsvitamin A. *Deutsche Med. Wochenschr.* 56 (39): 1650-1652. 1930.—The author summarizes experiments in which the inhibited growth of rats on a vitamin-A-free diet was restored to normal by crude chlorophyll, pure phaeophytin, Na-chlorophyllin or pure chlorophyll, each of which was as effective as butter. (The chlorophyllin was given subcutaneously; the other substances in the food.) Bürgi concludes that the fat-soluble growth factor is either identical with chlorophyll or is built up in the body from chlorophyll. At the same time, the possible existence of more than one growth-promoting factor must be recognized.

6909. **CADY, OSMAN HORACE, and JAMES MURRAY LUCK.** Studies in the chemistry of vitamin A. *Jour. Biol. Chem.* 86(2): 743-753. 1930.—Cod liver oil, butter, and a concentrated alcohol extract of alfalfa were treated with SO_2. The active principle of cod liver oil was rapidly and completely destroyed; that of alfalfa suffered no appreciable destruction; the vitamin A activity of butter was lessened. Alfalfa and spinach, when sulfured in the dry and green conditions, experienced no loss of vitamin A activity. Phosphorus pentachloride, chlorine, acetyl chloride, nitrous fumes, and Benedict's alkaline copper reagent destroyed the active principle in cod liver oil. Prolonged treatment with $NaHSO_3$ had the same effect. H_2S, ethylene, NH_3, and Benedict's reagent after neutralization exhibited no destructive action. Formaldehyde had little effect. H_2O_2 brought about a partial loss. Attempts to regenerate the vitamin A potency of oils inactivated by SO_2 and O were unsuccessful. It is concluded that vitamin A activity is the property of a specific atomic grouping rather than of a specific molecule. The active principle in cod liver oil is probably not identical with that in alfalfa. An alternative explanation is that alfalfa contains substances, absent from cod liver oil, that exercise a protective function against the destructive action of SO_2. The latter explanation in considered less acceptable. The active principle of cod liver oil possesses aldehyde properties.—*Authors' summary.*

6910. **CHANUTIN, ALFRED.** Vitamin B "complex" in a concentrated aqueous liver extract. *Virginia Med. Month.* 57(10): 637-638. 1931.—A liver extract tested for its effect on pernicious anemia has been assayed for the vitamin B "complex" (anti-neuritic and anti-pellagra factors). It has been found relatively rich in this "complex" when contrasted with other foods already studied.—*Author's summary.*

6911. **COLLAZO, J. A., P. RUBINO, y B. VARELA.** Hipervitaminosis experimental de las ratas con grandes dôsis de ergosterina irradiada de Windaus. [Effects of large doses of irradiated ergosterol.] *Rev. Assoc. Méd. Argentina* 41(271/272): 707-716. 3 fig. 1928.—White rats, 3 weeks old, were given Diet No. 3143 (McCollum) and kept in darkness. Each group of 8 received food and water ad libitum, one lot had also 5 mgm. daily of irradiated ergosterol, another 3 drops daily of cod liver oil, the third was left as control. In 3 to 5 weeks all animals receiving ergosterol died; symptoms were stabilisation of weight followed by loss up to 40%, low temperature, damp skin, hairs erect, diarrhea towards the end, slowness of gait, slight paralysis and in 2 cases spastic paralysis. Post mortem showed atrophy of liver, spleen and pancreas, but normal bone formation.—The other lots had no symptoms.—*E. A. Molinelli.*

6912. **COWGILL, GEORGE R., H. A. ROSENBERG, and J. ROGOFF.** Studies in the physiology of vitamins. XIV. The effect of administration of large amounts of water on the time required for development of the anorexia characteristic of a deficiency of the vitamin B complex. *Amer. Jour. Physiol.* 95(3): 537-541. 1930.—Experiments on 5 dogs, 1 of which was a control, indicate that the administration of large amounts of fluid by mouth to an animal subsisting on a diet relatively free from undifferentiated vitamin B markedly shortens the time required for the appearance of the anorexia characteristic of a lack of this dietary essential. This result is not in harmony with the hypothesis that the symptoms of B deficiency are essentially those of a toxemia. A practical application of these results is suggested in the clinical treatment of the marasmus in infants due to lack of vitamin B by administration of fluid together with the missing vitamin.—*Authors' summary and conclusion.*

6913. **CUGNAC, A. de.** Essais de purification de la vitamine antinevritique (facteur hydrosoluble B) par precipitations fractionnées. *Bull. Soc. Chim. Biol.* 11: 443-465. 1929.—Extracts made from beer yeast by Seidell's method were subjected to fractional precipitation from water, acetic acid, acetic ether, and formic acid by various precipitants such as graduated concentrations of alcohol, acetone, and ether, and the various products were tested for ability to protect pigeons against polyneuritis, the original extract being employed as a check. —*J. S. Caldwell.*

6914. **EATON, A. G., F. E. CHIDESTER, and N. K. SPEICHER.** The influence of manganese iodide and ethyl butyrate on rats furnished a vitamin A-free diet. *Amer. Naturalist* 65(697): 187-190. 1931.—Manganese iodide, given in presence of irradiated ergosterol, does not prolong the lives of rats on a vitamin A-deficient diet more than 6 weeks and adds little to their growth, even when small quantities of ethyl butyrate are added.

6915. **EDDY, WALTER H.** An improvement in the quantitative assay of the antiscurvy vitamin (C). *Amer. Jour. Publ. Health* 19(12): 1309-1320. 5 fig. 1929.—The methods of Sherman and Höjer for the assay of vitamin C are compared. The first is based on autopsy findings as to condition of bones and the presence of hemorrhages, the latter on the microscopic appearance of the teeth. Eddy substantiates Höjer's claims and finds the method more sensitive than Sherman's. The minimum protective dose by Höjer's method is approximately twice that by Sherman's.—*J. Waddell.*

6916. **FRANCIS, LILLIAS D., ARTHUR H. SMITH, and T. S. MOISE.** Diet and tissue growth. VIII. Influence of vitamins B, G and undifferentiated B on the effects produced by protein-rich diets upon the kidney of the rat. *Amer. Jour. Physiol.* 97(1): 210-214. 1931. —Groups (18) of rats were maintained from 30 to 86 days of age on diets containing 18 and 90% casein supplemented with necessary vitamins, 14 groups being subjected to right unilateral nephrectomy at the beginning of the experiment (30 days of age). Histological examination revealed no pathological renal lesions. Renal enlargement due to the high-protein ration occurred in intact rats as well as in those having one kidney. This increase in the size of the kidneys was neither lessened nor prevented by the use of any amt. or combination of vitamins B, G and undifferentiated B employed.—*Authors' summary.*

6917. **GUHA, B. C.** Chemistry of vitamin B_2. *Nature [London]* 127(3207): 594-595. 1931.—If vitamin B_2 is a single chemical entity, on the basis of present evidence it is probably not a base, an acid, or a peptide, but a neutral substance. It is fairly readily adsorbed by neutral precipitates.

6918. **HESS, ALFRED F., J. M. LEWIS, und HELEN RIVKIN.** Der Stand der therapeutischen Wirkung von bestrahlten Ergosterol. *Strahlentherapie* 34(3): 443-456. 1929.—The treatment of young infants with rayed ergosterol should be based on a biological estimation of its anti-rachitic action. Neither toxic symptoms nor hypercalcemia need be feared if the correct dose is given. Rayed dry milk was found valuable for prevention of rickets and tetany, but rayed cereals played no rôle in controlling rickets.—*R. G. Turner.*

6919. **HOTTINGER, A.** Zur Wirkungsweise des D-Faktors. *Strahlentherapie* 34(3): 639-645. 7 fig. 1929.—In 4 cases of rickets in children with acid reacting feces healing took place under vigantol administration in spite of dietary alkalinization of the intestine. Rickets and the

healing process are not related to the acidity of the intestine.—*H. A. Mattill.*

6920. **HOTTINGER, A. Untersuchungen über bestrahltes Ergosterin. V. Stoffwechselversuche zur Ermittlung der biologischen Wirkungsweise.** *Zeitschr. Kinderheilk.* 47(3/4): 341-371. 4 fig. 1929.—The effects of large doses of irradiated ergosterol were studied by means of Ca and P balances and examination of urine for signs of acidosis, together with x-ray examination, on 2 normal infants, 2 with florid rickets, 1 beginning rickets, 1 rickets with tetany, 1 healing rickets, and 2 dogs with spontaneous rickets (1 spontaneously healing). During the first 24 hrs. after ingestion of vitamin D, the Ca output in the normal breast-fed or bottle-fed infant rises markedly, in the rachitic infant it falls and the Ca balance improves. The same is true, though less marked, of the P balance; the P balance improves slowly and mainly by improved absorption from the intestine. Urine analysis indicates a temporary acidosis in the normal infant after vitamin D ingestion; the acidosis of rickets remains long and disappears completely only with definite healing. In tetany the Ca balance rises but less P is retained under the influence of vitamin D.—*M. H. Keith.*

6921. **KESSLER, A. Experimental studies on injuries to pigeons caused by rice of different ages and various milling processes.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 409-422. 1927[1928].—Undermilled rice loses its vitamin content after some months, as already shown in Otto's experiments cited by De Langen. Heat and long storage destroy the vitamin content of rice devoid of the usual coating, as shown by husked 3-yr. old and steamed 6-yr. old rice. Rice remains with its full vitamin content for 3 yrs. if kept unhusked at moderate temp. Only unhusked rice should be used for export and import or other transport, especially in countries where it forms the principal food. —*Author's conclusions.*

6922. **KING, EARL J., und G. EDWARD HALL. Hypervitaminose bei Hühnern.** *Biochem. Zeitschr.* 229(4/6): 315-322. 1930.—Of 18 Plymouth Rock fowls on a standard diet, 9 received daily for 41 days the dose of ergosterol (0.016 mgm.) regarded as curative for rachitis; these remained normal. The other 9 were divided into 3 equal groups, of which the 1st received 0.6 mgm., the 2nd 1.8 and the 3rd 3.6 mgm. ergosterol daily for the 1st 41 days and respectively 9, 27 and 54 mgm. daily thereafter until killed, a dose several hundred times larger than the therapeutic. During the 1st part of the experiment the hypervitaminosis produced anemia and weakness in the legs, especially marked in those receiving the largest amount of ergosterol. The blood became thick and scarcely fluid. No Ca deposits were found in the organs but the bones became softened and bent. There was a decrease in phosphatase in the bones and kidneys.

6923. **KON, STANISLAW, MIECZYSLAW MAYZNER, and HENRYK ADELFANG. A study of the antirachitic value of irradiated yeast.** *Lancet* 218(5563): 794-796. 1930.—Symptoms of rickets disappeared in children in 6-8 weeks following daily administration of 0.75 gm. of dried irradiated yeast. Serum P rose rapidly.

6924. **LAWROW, B. A., und NATALIE JARUSSOWA. Sauerkraut als C-Vitaminträger.** *Biochem. Zeitschr.* 229 (1/3): 115-127. 1930.—For guinea-pigs on a diet of autoclaved hay and oats the prophylactic dose of sauerkraut juice was 30 cc., an activity of 5-10% of that of orange juice, and about equal to that of raw cows' milk.—*Author's summary (transl. by A. Spohn).*

6925. **McCARRISON, R. The effects of high protein diets on the thyroid gland. Part 1. With a statistical note by K. B. MADHAVA.** *Indian Jour. Med. Res.* 18, (2): 619-661. 16 fig. 1930.—A high concentration of animal protein in the diet did not cause thyroid enlargement in growing rats whether the diets were rich or poor in fat-soluble vitamins or in iodine. The general effect of the experimental diets was to cause the thyroid gland to be smaller than normal. A less common effect, thyroid enlargement, was not related to an insufficient absorption of I but to deficiency of fat-soluble vitamins especially in diets having a low content of animal protein. Deficiency of fat-soluble vitamins was not the only factor concerned; the existence of an unknown positive goitrogenic agency is postulated. High protein diets had a marked effect in increasing the volume of urine, in causing albuminuria and the excretion of I in the urine. The ingestion of large amounts of animal protein, in association with an insufficiency of vitamin A, was very prone to cause disease of urinary, respiratory and gastro-intestinal tracts.—*From author's summary.*

6926. **MACCHI, ANNIBALE, e PASQUALE SCALPATI. Esiste la vitamina antirachitica nel latte di donna? [Does human milk contain antirachitic vitamin?]** *Arch. Ist. Biochim. Ital.* 2(4): 625-638. 4 fig. 1930.—Human milk added to a rickets-producing diet healed rickets in young rats but the results were not constant.

6927. **McKINNIS, RONALD B., and C. G. KING. The nature of vitamin C. A study of its electrical transference.** *Jour. Biol. Chem.* 87(3): 615-623. 2 fig. 1930.—A new type of electrical transference apparatus, which protects the solution from alkali, O, Cl, and heat liberated during electrolysis, as well as O from the air, was devised and used for a study of the acid-base properties of vitamin C. The activity of lemon juice in the anode, cathode, and middle compartments after 5 hrs. electrolysis was measured for antiscorbutic value by feeding to guinea pigs. Evidence was found for the rapid diffusibility of vitamin C through collodion membranes. Comparative measurements were made for the transfer of amino acids in acid and faintly alkaline solutions, showing a marked concentration in the cathode chamber in acid solution and in the anode chamber in alkaline solution (pH 7.2). Vitamin C showed no distinct transference towards the cathode in strongly acid solution (pH 0.9) nor in natural lemon juice (pH 2.4), and it is therefore not a salt-forming N compound such as an amino acid. In slightly alkaline solution there was evidence of a concentrating effect in the anode chamber, indicating that the active substance is acidic in nature. These findings are in harmony with previous evidence concerning the chemical nature of vitamin C.—*Authors' summary.*

6928. **MASSENGALE, O. N., and MILDRED NUSSMEIER. The action of activated ergosterol in the chicken. 1. The effect on the calcium and inorganic phosphorus of the blood serum. 2. The prevention of leg weakness.** *Jour. Biol. Chem.* 87(2): 415-422, 423-426. 1930.—I. In birds receiving a diet lacking in vitamin D with a ratio of Ca to P of 8:1, the serum Ca increased during the 1st week and remained above normal for 8 weeks; the inorganic P decreased rapidly during the first 3 weeks and then remained approximately stationary. The addition of activated ergosterol (=4000% cod liver oil) caused a marked increase of the Ca but only a slight increase of the P. When the ratio of Ca to P was 5:1, the Ca remained above normal for 5 weeks but there was a steady decrease of the P, though not as much as when the ratio was 8:1. The addition of the activated ergosterol caused both Ca and P to become approximately normal. When activated ergosterol was fed to birds on high Ca rickets-producing diets, there were marked changes in the Ca of the blood serum within 48 hrs. The serum Ca and P of birds of the age used in this experiment (18 weeks) remained approximately normal when they received a rickets-producing diet in which the ratio of Ca to P was 1.6:1. The addition of activated ergosterol had no marked effect on either the Ca or phosphate of the serum until after 15 to 35 days, when an increase in serum Ca was noted. When the birds received a diet low in Ca and P, both the serum Ca and inorganic P decreased. Activated ergosterol caused a marked increase in serum Ca but only a slight increase in phosphate. After 35 days the Ca of the serum was approximately normal, yet the inorganic P remained subnormal.—II. Activated ergosterol,

in concentrated or dilute solutions, was much less effective than the rat equivalent amount of cod liver oil in preventing leg weakness in chickens.—*Authors' summaries.*

6929. **MAURER, E.** Über die Vitamingehalt der Hefe. *Zeitschr. Kinderheilk.* 47(2): 202-214. 1929.—A survey of the literature on the vitamins of yeast and the consequent value of yeast in the diet.—*M. H. Keith.*

6930. **NAHMMACHER, HANS.** Der Einfluss des D-Vitamins auf die Entwicklung des Neugeborenen, nach Darreichung von Vigantol an dieses selbst, die Wöchnerin und die werdende Mutter. *Arch. Gynäkol.* 142(3): 618-648. 1930.—In an exhaustive discussion of 426 cases of infants (316 without and 110 with vigantol), 887 puerperae (661 without and 226 with vigantol), and 207 pregnant women (162 without and 45 with vigantol) Nahmmacher finds that vigantol increases the physiologic loss of weight in the newborn, is negative in effect when given to the lactating mother, and delays birth by about 10 days when given to the pregnant woman.

6931. **PELCZAR, K.** Über den Verlauf der Taubenavitaminose B unter dem Einfluss einer nicht vollwertigen Eiweissernährung. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B. Sci. Nat. (II) [Zool.]* 1928(3/7): 219-249. 1929.—Pigeons were fed vitamin B-deficient diets, one containing casein and gelatin (adequate NH_2 acids) another gelatin alone, another oats with the essential amino-acids in very small amounts. The more generous the intake of amino acids the earlier the symptoms appeared, the more typical was their manifestation and the earlier the decline. The diets poor in amino acids caused paralysis and rather marked emaciation, but without the typical convulsions and opisthotonus observed on the protein-rich diet. About the 10th day loss of appetite developed; in force fed birds, regurgitation was especially common on the diet poor in amino-acids; much food remained undigested in the crop. Fasting considerably prolonged life and the more frequent the vomiting, especially during the early stages, the longer was the survival period. Loss of appetite and regurgitation apparently represent defense mechanisms. Studies of N metabolism indicated fluctuating balances on both diets; there was a much greater negative balance in the birds on the protein-poor diet, probably caused by the greater loss of food through vomiting. There was no change in the amino-acid or undetermined N in the blood, but an increase in the uric acid.—*K. E. Mason.*

6932. **PETERS, RUDOLPH A.** The Harben lectures, 1929. Co-ordinative bio-chemistry of the cell and tissue. Lecture II. The ministers of metabolic change. Experimental researches upon the number, nature and distribution of the water soluble vitamins. *Jour. State Med.* 38(1): 3-30. 5 fig. 1930.—Experimental evidence is given for the existence of 3 factors in yeast required for the nutrition of the rat, and 3 for the pigeon. Various factors in yeast needed for the growth of yeast and of other microorganisms are discussed.—*H. C. Koser.*

6933. **PINCHERLE, M., e V. NAVA.** Le dosi eccessive di vitamina D. (Considerazioni e controlli sperimentali.) [Excessive doses of vitamin D.] *Riv. Clin. Pediatr.* 28(3): 177-202. 3 pl. 1930.—Experiments on an unspecified number of rats indicate that there is ample margin between the antirachitic and the toxic action of vitamin D, and that osseous, vascular, renal, splenic and trophic injuries begin with overdosage.

6934. **POULSSON, E.** Vitaminreserve des männlichen und des weiblichen Geschlechts. *Deutsche Med. Wochenschr.* 56(40): 1688-1689. 1930.—Birnbacher had shown by statistics taken in Vienna, during the World War, that the previously rare disease hemeralopia and its sequel xerophthalmia had greatly increased, owing presumably to the insufficiency of fat in the diet. Out of 330 cases, however, only 38 were in ♀♀, and of these only 2 in the period of greatest sexual activity, between the ages of 15 and 30. Poulsson offers the theory that reserves of vitamins A and D are stored in the subcutaneous fat layer, with which women are so much better provided than men that they are less easily chilled, can dispense with heavy clothing and can endure swimming for longer periods. In water man is the weaker vessel, not because his muscles are more easily fatigued, but because he is more easily chilled. Preliminary studies on the subcutaneous fat in human and bovine ♂ and ♀ tend to support this theory.

6935. **ROSE, WILLIAM B. [et al.].** Studies in the physiology of vitamins. VIII. **WILLIAM B. ROSE, and CHARLES J. STUCKY.** The effect of parathormone on normal and vitamin B-deficient rats. IX. **WILLIAM B. ROSE, CHARLES J. STUCKY, and LAFAYETTE B. MENDEL.** Hemoglobin, sugar and chloride changes in the blood of vitamin B-deficient rats. X. **WILLIAM B. ROSE, CHARLES J. STUCKY, and GEORGE R. COWGILL.** Further contributions to the study of gastric motility in vitamin B deficiency. XI. [Same authors.] The effect of insulin on gastric atony in vitamin B deficiency. XII. [Same authors.] The effect of parathormone on gastric motility in vitamin B-deficient and normal dogs. *Amer. Jour. Physiol.* 91(2): 513-519; 520-530; 531-546; 547-553; 554-562. 1930.—VIII. Parathormone was tested for the possible presence of vitamin B by biologic assay on 12 albino rats 26 days old (same litter), placed on a basal vitamin B-deficient ration. Three controls receiving yeast supplement throve. Six rats receiving a parathormone supplement lost weight and developed symptoms of B-avitaminosis until yeast was substituted for parathormone, when abnormally rapid growth ensued. Three rats receiving daily parenteral injections of parathormone declined and died after the 3rd injection. Likewise 3 normal rats weighing 114-128 gm. died on the day following the 3rd daily subcutaneous injection of 30 units of parathormone; but 4 young rats survived 4 successive daily injections of the same dose per unit weight. To learn whether hypercalcemia (to which rats are said to be immune, but which is said to be caused by parathormone in dogs), was the cause of death, 7 normal rats were given subcutaneous injections of parathormone, and their blood Ca determined and compared with the blood Ca of 11 normal untreated rats. The Ca in the serum of the parathormone-treated rats averaged about 42% higher than in the untreated rats. The parathormone preparation employed does not contain any appreciable amount of vitamin B.—IX. A basal vitamin B deficient ration was fed to 14 albino rats weighing 198-264 gm. A control group was given on an average the same amount of food and water as the rats on deficient diet consumed, together with supplements of material rich in vitamin B. Blood samples, obtained by cardiac puncture from each rat of both groups from week to week during the course of the vitamin deficient and realimentation periods, were analyzed for hemoglobin, sugar and chlorides. There was definite increase in hemoglobin during the deficient period, followed by a pronounced reduction in this constituent during the 1st wk. of realimentation. This evidence of the development of anhydremia came from the control rats as well as from the deficient animals, and may be accounted for by the diminished food and water consumption incident to B-avitaminosis. No significant differences in the blood sugar levels of control and deficient rats appeared, and vitamin B has no specific rôle in regulating blood sugar level. Values for individual rats were erratic, and averages of all the blood sugar data during each wk. suggest that the changes were due largely, if not entirely, to inanition. There was a tendency to a decrease in blood chlorides in B-avitaminosis, as well as in the control animals. These results are in accord with those found in vitamin B deficient dogs—and are probably a result of starvation.—X. The occurrence of anorexia in vitamin B deficiency led to a search for its physiologic basis by studying gastric motility. Control dogs were employed, each receiving the same amount of food and water daily as was consumed by a corresponding deficient-diet animal. A technique was developed which made it possible to record hunger contractions continuously over a period

of 24 hrs. or longer. Records of gastric motility were made at frequent intervals during the course of vitamin B deficiency and recovery therefrom. Tracings were never taken when neuromuscular symptoms were present. The data indicate that: (1) Disturbances of gastric motility developed in all dogs suffering from vitamin B deficiency. (2) This depression of the motor power of the stomach may become so pronounced as to yield evidence of complete gastric atony (recorded for over 100 hrs. in 1 dog) in some cases. Atony may occur long before nervous manifestations are apparent (approximately 10 days in these experiments). (3) Complete anorexia over a period of wks. is not necessarily associated with gastric atony. Shallow hunger contractions and slight tonus changes have been recorded 1 day prior to the onset of nervous manifestations. (4) The avidity for food does not appear to depend upon the vigor of the hunger contractions under the conditions of these experiments. (5) The "water-and-food" control animals likewise showed evidence of a variable decrease in total gastric activity. However, none of the controls developed gastric atony. (6) Apparently the decrease in gastric contractions is not due to any specific and direct effect of a lack of vitamin B in the diet. However, a deficiency of this food essential seems to accentuate the disturbances described. The blood sugar level remained well within the normal range in all cases, so that hyperglycemia does not appear to enter into the mechanism involved. (7) Evidence suggests that the water intake of the organism may be one of the factors which affects the muscular contractions of the stomach. (8) Gastric stasis was present in some vitamin B-deficient animals.—XI. To determine whether insulin would restore hunger contractions in dogs showing long-maintained gastric atony due to B-avitaminosis, a group of dogs was fed a vitamin B-deficient ration. Insulin was administered to 2 dogs which had lost their hunger contractions completely and manifested prolonged atony of the stomach long before neuromuscular symptoms made their appearance. An injection of the hormone in a dose which is effective in normal dogs failed to elicit a response from the gastric musculature. In 1 animal 3 successive injections of insulin resulted in a partial restoration of the hunger contractions, which, however, were very slight and associated with low gastric tonus. Dogs in the advanced stages of B-avitaminosis seem to be peculiarly sensitive to insulin. The hormone appears to have precipitated generalized neuro-muscular symptoms in the 2 animals here studied. The results suggest that this heightened response to insulin is not readily shared by the musculature of the stomach in dogs manifesting gastric atony due to B-avitaminosis.—XII. Parenteral injections of parathormone produced no significant effect on gastric atony in 3 dogs suffering from B-avitaminosis. Tracings of the motility of the stomach of 4 normal dogs were indistinguishable from similar tracings made after the hormone was injected, when the dose employed was insufficient to produce marked hypercalcemia. In 1 animal, depression of the motor function of the stomach occurred during the latter half of a continuous 24 hr. gastric tracing and during this period the serum Ca was elevated over 50% above the normal level.

6936. SALMON, W. D., and N. B. GUERRANT. Liver extract as a source of vitamins B and G. *Science* 73 (1887): 243-244. 1931.—The liver extract (No. 343, Eli Lilly & Co.) tested on rats was an excellent source of vitamin G; it is not such a good source of vitamin B. It contained 4-5 times as much vitamin G but only about 1/5 as much vitamin B as a sample of brewer's yeast. The vitamin B content of the extract compared favorably with that of pure dried baker's yeast commonly on the market.

6937. SCHEUNERT, ARTHUR. Ueber das Vorkommen von antirachitischen Vitamin in Grünfutter und Heu. *Berliner Tierärzt. Wochenschr.* 46(40): 746-751. 4 fig. 1930.—While it is certain that the usual meadow grasses and the hay from them may contain vitamin D, there is a great variation in the amount present. The cause of this variation is not yet discovered. Fertilization seems to exert no significant effect; and experiments have corroborated the belief that sun drying acts favorably and rain and lack of sunshine act unfavorably. Of 3 varieties of mountain hay, 2 obtained from altitudes of about 900-1400 meters showed a high content of vitamin D, while the content of 1 from a height of 2000 m. was less. Succulent grasses and hay, especially legumes, are the most important feeds for the control of and prevention of disturbances in the Ca and phosphate metabolism. The manner in which the hay has been cured is of first importance.—*Author's summary (transl. by V. G. Heller).*

6938. SCHIEBLICH, MARTIN. Zur Wertbestimmung von Vitamin-D-Präparaten. II. *Biochem. Zeitschr.* 230 (4/6): 312-319. 1931.—Tests on rats showed that the curative dose was always higher, sometimes much higher than the protective dose. The great variations between the two are to be attributed to varying general injury which can not be evaluated roentgenologically. The line test, in general, gave the same results as the roentgenological method. Access to feces did not influence the results in the protective experiments. If several animals are kept in a cage mutual licking transfers small amts. of vitamin D.—*From author's summary (transl.).*

6939. SCHMIDT, WERNER, and CARL L. A. SCHMIDT. The relation of bile to the intestinal absorption of vitamin A in the rat. *Univ. California Publ. Physiol.* 7(13): 211-221. 1930.—With the vaginal smear picture as a criterion to determine the absorption of the vitamin, exclusion of bile from the intestinal tract by ligating and sectioning the common bile duct did not lead to the continuous appearance of cornified cells in the vaginal smears of animals which had been maintained on a diet adequate in vitamin A. When the abdomens of animals which had been maintained on a diet low in vitamin A were opened and closed surgically without however inducing icterus, subsequent administration of cod liver oil restored the vaginal smear picture to normal. When icterus was induced in animals which had been maintained on a diet low in vitamin A the subsequent administration of cod liver oil per os led to the reappearance of the normal vaginal smear picture in a certain percentage of the animals. This in interpreted as indicating absorption of vitamin A from the gastrointestinal tract in the absence of bile. Both the mortality and the percentage of icteric rats which failed to respond to cod liver oil when administered subcutaneously or per os is high. A possible reason for this is discussed. In experimental icteric rats it was possible to restore the normal vaginal smear pictures by administration of cod liver oil per os, then again to deplete the storage of vitamin A to a level such that only cornified cells were found in the vaginal smears and a second time to restore the normal pictures by giving cod liver oil per os.—*Authors' summary.*

6940. SCHMITZ, ERNST, und ERICH GEORGE. Beitrag zur Frage der Einheitlichkeit des B-Vitamins. *Biochem. Zeitschr.* 204(1/3): 165-178. 5 fig. 1929.—Groups of pigeons were fed (1) a normal diet; (2) the normal diet plus sunflower seeds; (3) rice alone; and (4) rice plus sunflower seeds. The blood lipids, body weight and the weights of various organs were compared. The first 2 groups reacted in much the same way, maintaining weight fairly well. The 3rd group developed polyneuritis, lost weight rapidly and died within 5 weeks. The 4th group maintained weight for 5 mos., following the controls very closely, then it began to lose weight and to show the development of polyneuritic symptoms which continued until death in the 8th month. The authors think that a true picture of the effect of removing one component of vitamin B has thus been obtained.—*M. Fay.*

6941. SEIDELL, ATHERTON, and VICTOR BIRCKNER. Experiments on the isolation of the antineuritic vitamin. *Jour. Amer. Chem. Soc.* 53(6): 2288-2295. 1931.—The procedure involving adsorption of the antineuritic

vitamin upon fuller's earth and subsequent extraction, benzoylation and acetone precipitation has yielded, without the use of any precipitating agents, final products the most active of which was curative in 0.03-mgm. doses, by the Smith rat method. This is an activity about ¼ greater than that of the Jansen and Donath crystals. It is more than twice as great on the N basis. Products of somewhat lower activity were obtained in considerably larger yields. Apparently, small variations of conditions at certain stages of the process may effect greatly the quantity and quality of the final product. Especial attention has been given to the effect of varying the ratio of the benzoylating reagents and of the reaction temp. on the quality and yield of the final concentrate. —*Authors' summary.*

6942. SHELOW, ELIZABETH, and JOHN R. LOOFBOUROW. The antirachitic activation of ergosterol by soft x-rays. *Bull. Basic Sci. Res.* [*Univ. Cincinnati*] *Ser.* 4. 3(1): 47-64. 4 fig. 1931.—The possibility of the antirachitic activation of ergosterol by soft x-rays from a Shearer tube was investigated, because of the much greater absorption of these rays by biological materials as compared with ordinary Coolidge tube rays. Previous workers had, for the most part, found Coolidge tube radiations ineffective. Irradiation of ergosterol dry and in alcoholic solution under various conditions produced changes in the ultra-violet absorption spectra comparable to those obtained by irradiation with ultra-violet light. These changes were obtained whether or not air was present. Two series of animal experiments showed healing of rickets by 0.002 mgm. daily doses of soft x-rayed ergosterol exposed 5 to 30 min. at 40,000 to 50,000 volts. In the 2nd series, samples irradiated for longer periods of time showed less protection, indicating destruction of the vitamin D by prolonged irradiation, as in the case of ergosterol irradiated with full ultra-violet.—*J. R. Loofbourow.*

6943. SHERMAN, HARTLEY EMBREY. Relative content of water-soluble vitamin B in thirty oriental foods. *Philippine Jour. Sci.* 38(1): 9-36. 37 fig. 1929.—The vitamin content of these foods was tested by feeding varying quantities of them to white mice, and later to albino rats, kept on a diet lacking vitamin B. Results obtained with mice and with rats agreed, and led to the following conclusions: "the following foods are deficient in vitamin B, and do not protect from beriberi at any feeding level: Chinese persimmon (*Diospyros kaki* L.); water chestnut (*Eleocharis tuberosa* Naves); fermented rice, or lao mi (*Oryza sativa*); and locust seed (*Robinia pseudoacacia*). Hsiang ch'un, the leaf of *Cedrela sinensis,* contains a poison which causes violent convulsions and death when fed in concentrated form. Wo sun (perhaps a variety of *Lactuca sativa*), hao tzu kan (*Chrysanthemum coronarium* L.), and p'ieh lan (apparently a variety of *Brassica campestris*) are not growth producing when fed at high levels, even when added to a complete diet, thus apparently showing the presence of substances that are harmful in very great concentrations. All of the other foods tested—ch'ia ts'ai (*Phaseolus aureus* Roxb.), huang tou (*Soya max* L.), huang tou ya (sprouts of *S. max*), ch'ing tou (green variety of *S. max*), ch'ing tou ya (sprouts of the green variety of *S. max*), hung kao liang (red variety of *Sorghum vulgare* Pers.), pai kao liang (white variety of *S. vulgare*), t'zu ku (*Sagittaria sagittaefolia*), wo kua (probably a variety of *Cucurbita pepo*), huang hua ts'ai (probably *Hemerocallis flava*), chieh ts'ai ying (probably a variety of *Brassica campestris*), hu tzu (variety of *Lagenaria vulgaris*), ssu kua (*Luffa cylindrica*), weng ts'ai (a Chinese variety of *Ipomoea reptans* Poir.), upo (a Philippine variety of *Lagenaria vulgaris*), chico (*Achras sapota* L.), tou fu (bean curd from *Soya max*), hsi hu lu (probably a variety of *Cucurbita pepo*), tung kua (a Chinese variety of *Benincasa hispida* Cogniaux), kan lu (not identified), and papaya (*Carica papaya* L.) —are sources of vitamin B in varying amounts. Chico, hsi hu lu, and tung kua are low in this vitamin."

6944. SHERMAN, HARTLEY EMBREY. Relative water-soluble vitamin C content of nine oriental fruits and vegetables. *Philippine Jour. Sci.* 38(1): 37-46. 10 fig. 1929.—Vitamin C content was tested by feeding these to guinea pigs on a basal diet deficient in vitamin C, and observing, post mortem, for scurvy. Pomegranate, Chinese cabbage, and hsiang ts'ai (*Coriandrum sativum* L.) were rich in vitamin C; hung kuo, pich'i (*Eleocharis tuberosa* Naves), and ou (*Nelumbium speciosum* Willd.) were good sources of it; p'ieh lan (probably *Brassica oleracea caulorapa*) contained only a small amount; hung tsao (probably *Polygonum orientale* L.) and wo sun (a variety of *Lactuca sativa*) contained very little.

6945. SHERMAN, HARTLEY EMBREY. Certain proteins added to Mung bean, or to white or red Sorghum vulgare, increase the fertility of mice. *Philippine Jour. Sci.* 38(1): 47-67. 26 fig. 1929.—A diet consisting of mung bean, or of white or red *Sorghum vulgare* as the only protein, gave normal weight of white mice, but subnormal reproduction. For increased fertility, and for good growth of the 2nd generation, the best supplements (of those tested) for a mung-bean (*Phaseolus aureus* Roxburgh) diet are small quantities of fat-free peanut, of gelatine, or of casein; the best supplements for the white variety of edible sorghum (*Sorghum vulgare*) are small quantities of mung bean, of fat-free soy bean, or of fat-free peanut. Not one of the foods tested as supplements to the red variety of *Sorghum vulgare* was able to raise to normal the rate of reproduction of the 1st generation, nor the number of young of the 2nd generation surviving the period of lactation; but casein was a better supplement than was mung bean, fat-free peanut, or fat-free soy bean.

6946. SPARLING, E. M. Chemical derivatives of Bios II. *Trans. Roy. Soc. Canada Sect. 3.* 22(2): 271. 1928.—Studies on the activation of inactive derivatives of Bios II are reported briefly.

6947. STEENBOCK, HARRY, BLANCHE RIISING, ARCHIE BLACK, and BYRON THOMAS (with the cooperation of ALICE M. WIRICK, and FLORA HANNING). Cereals and rickets. II. Antirachitic activation of cereals. *Jour. Amer. Med. Assoc.* 93(24): 1868-1874. 1 fig. 1929.—Various cereals were made antirachitically active by ultraviolet radiation. This activity remained stable: (1) when autoclaved at 15 lbs. pressure followed by drying at 60 C. for a few days; (2) when stored for 16 mos. at 60 C. or at a lower temp.; (3) when cooked. Vitamin A and the vitamin B complex were found to be labile to ultraviolet radiations, but may be sufficiently stable to withstand the minimum exposure to insure maximum antirachitic activation. Commercial irradiation of cereals was standardized to prevent change in palatability, destruction of vitamins and hypervitaminosis.—*M. Collins.*

6948. STEUDEL, H., und E. PEISER. Über den Nachweis des Vitamins A. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 174(3/4): 191-195. 1 fig. 1928.—Of two samples of oil tested for vitamin A by the antimony chloride reaction of Price and Carr, and by feeding in appropriate amounts to young rats as the sole source of vitamin A, the oil which gave the higher color reading proved less potent in preventing keratomalacia. The author concludes that the biological test is the only accurate test thus far devised for vitamin A.—*M. Fay.*

6949. SUPPLEE, G. C., ODESSA D. DOW, and G. E. FLANIGAN. The concentrated water soluble fraction of milk as a source of vitamin B. *Jour. Dairy Sci.* 11 (5): 420-426. 1 pl. 1928.—The data given show that the solids of the water soluble fraction of milk, when properly prepared and concentrated, are highly potent in vitamin B content and compare favorably with dried yeast as a source of the growth promoting and antineuritic factor.—*Authors' summary.*

6950. TŮMA, VLADIMIR. K histologii mléčné žlázy u normálnich a avitaminoscních krys. [The histology of the mammary gland of normal rats and rats fed on a diet deficient in vitamins.] *Rozpravy Ceske Akad.*

Věd a Umění Třida II (Matematicko-Přírodnická) 37 (3): 1-9. 1 pl. 1928. (Also in *Bull. Internat. Acad. Sci. Bohême 1928; Compt. Rend. Assoc. Anat. 23ème réunion à Prague, 1928.*)—Of 2 groups of rats, 1 was fed a diet without vitamins, the other the same diet with the addition of cod-liver oil. Histological comparison of the mammary glands of the 2 groups showed the normals to contain mast cells, fibrocytes, small lymphocytes, histiocytes, plasma cells, eosinophilic granulocytes and young lipoblasts in the interstitial tissue. In the rats fed on a dict deficient in vitamins the mast cells showed marked variations, were less numerous than in the normal, and the granules, usually tinctorially reactive to basic aniline dyes, gave the same reaction but did not react to stains specific for lipids or fats. The author concludes that the mast cell lipid substance is reduced in rats on a diet deficient in vitamins. He further believes that the mast cells may play a rôle in the metabolism of vitamins.—*V. Tůma (transl. by J. E. Kindred).*

6951. **VOGT-MOLLER, P., and F. BAY. On treatment of sterility in cows with wheat germ oil (vitamin E). (Preliminary communication.)** *Vet. Jour.* [*London*] 87 (4): 164-170. 1931.—The results obtained after a single dose of wheat germ oil administered intramuscularly are termed so satisfactory that they encourage further experiments.

6952. **WEATHERBY, LEROY. Vitamins C, D, and E.** *California Avocado Assoc. Year Book* 1930: 100-105. 1930.—Avocado as the sole source of vitamin C slightly prolonged the lives of guinea pigs, but not throughout the required experimental period. Vitamin D was found to be present in avocados. Blood P, the line test, and the rachitic rosary test all indicated that the symptoms of rickets were practically prevented by 5 gm. of fresh avocado or by 0.5 cc. of avocado oil per rat per day. The presence of vitamin E in avocados was indicated by the cure of female sterility in rats. The experimentation was not sufficiently exhaustive to warrant conclusions as to male sterility. These determinations were made on the Calavo, which has a high oil standard.—*L. Weatherby.*

6953. **WOLFF, L. K., J. OVERHOFF, und M. van ECKELEN. Ueber Carotin und Vitamin A.** *Deutsche Med. Wochenschr.* 56 (34): 1428-1429. 1930.—The authors briefly report, without details, that diseases caused by lack of vitamin A can be cured by pure carotin. Feeding studies indicate that the minimum dose of carotin per rat is 2-3 γ per day. Determinations of vitamin A and carotin in a large series of products indicated that vitamin A occurs either not at all or in inappreciable quantities in the plants, and that the source of vitamin A is carotin, transformed into that vitamin in the animal organism. This idea is strengthened by the fact that vitamin A is colorless; carotin is yellow; the vegetable portions to which vitamin A is attributed are colored yellow, while animal products often contain vitamin A but no color (egg yolk and butter contain both carotin and vitamin A). It is further confirmed by experiments on 4 rabbits, in which small pieces of liver, removed for preliminary analysis, showed either no vitamin A or very small amounts. Injection of carotin dissolved in oil into 3 of the rabbits was followed 3 days later by appearance of 370-1000 units of vitamin A in the liver. Feeding of carotin to the 4th rabbit had similar results.

6954. **ANONYMOUS. Report of the committee on beri-beri of the Philippine Islands.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 423-443. 1927[1928].—Eighty per cent remaining external layers of the grain of rices, determined by staining and inspection method, may be recommended as standard for the selection of rices for institutions and armies but not as a legal standard. In the determination of the percentages of remaining external layers, the Gram I staining and inspection method should be used. The production of highly-milled rice (0-20% external layers) should be discouraged. Any rice having 1.77% of P_2O_5 plus fat, but not less than 0.4% P_2O_5, or any rice having not less than 0.62% P_2O_5, or any rice having not less than 0.50% P_2O_5 and with at least 75% of the external layers of the grain remaining, is suggested as the tentative chemical index. The production of vitamin-containing home vegetables should be encouraged. A wide campaign of education for the spread of knowledge about beri-beri-prevention should be continued.—*Committee's recommendations.*

ANIMAL PHYSIOLOGY

DIGESTIVE SYSTEM AND DIGESTIVE SECRETIONS

A. J. CARLSON, *Editor*

(See also in this issue Entries 6721, 6742, 6746, 6809, 6882, 6935, 6939, 7145, 7164, 7197, 7333, 7347, 8322, 8431, 8495)

6955. **BARCO, PAOLO. Ricerche su alcune modificazioni del ricambio dopo la derivazione completa della bile. (Studio sperimentale.) [Some modifications of metabolism after the complete diversion of the bile.]** *Arch. Ital. Chir.* 26 (1): 50-70. 1930.—In 4 dogs with biliary fistulae completely removing the bile from the system, the Ca, P, lactic acid, and alkaline reserve of the blood, and the pH and organic acids of the urine were determined on the 30th, 60th, 90th and 120th days after the operation. Barco concludes that complete deprivation of bile results in a progressive state of acidosis and osteomalacic changes continuing to death.

6956. **BAXTER, HAMILTON. Further studies on the composition of saliva in different phases of the secretion.** *Amer. Jour. Physiol.* 97 (3): 450-458. 1931.—It had previously been shown that the composition of saliva from a dog with a permanent parotid fistula changes in different phases of the secretory period, the 3 phases then recognized being: (1) the 1st min. while the dog was being stimulated by food, etc.; (2) 1st min. of after-flow; (3) succeeding period of after-flow. For the present study, a 4-phase experiment was devised, phase 1 being separated into 2 30-sec. periods, phases 1A and 1B. Experiments were performed on 5 dogs with permanent salivary fistulae. Two dogs had each a single parotid fistula; 1 had a single submaxillary fistula and 1 parotid fistula; and 1 had 2 parotid fistulae. The saliva was collected according to the Pavlov method. The 4-phase type of experiment showed that the salivary secretion of the parotid and mixed glands is qualitatively and quantitatively different in the various periods. The Cl concentration in saliva from the parotid and mixed glands diminishes steadily from phase 1A to phase 3. The concentration of Cl has no relation to the amt. of organic matter secreted. In pilocarpine saliva, notwithstanding the increased secretion, there is invariably a fall in the organic and inorganic moieties, which cannot be attributed to exhaustion of the available supply. Therefore, the secretion of salts in the saliva under the influence of pilocarpine is not dependent only on the rate of secretion. Atropine injected in progressively greater amts. diminishes the total output of fluid parts and of ash in all 3 phases of salivary secretion. In the 3rd phase, however, it increased the total output of organic substances (diminished during the 1st and 2nd phase), when the dose of atropine injected did not exceed 2 mgm.

6957. **BECK, GALLUS. Neue Beiträge zur Zweikomponententheorie des Hungers. (Versuche mit Hühnern.)** *Zeitschr. Psychol. Physiol. Sinnesorg. Abt. I., Zeitschr. Psychol.* 118 (4/6): 283-349. 1930.—The hunger experiments were made on 4 2-yr. old fowls, fasted

for 24 hrs. before an experiment. The average intake of food with free choice was first determined on this basis; maximum food taken on a laying day was less than the minimum on normal days; more food was taken when H_2O was freely available than when it was present only during feeding; during moulting there was a decrease and a recovery in weight, which was preceded, not paralleled, by loss of appetite, recovery far beyond the average, then regression to another stable intake about 11% higher than before moulting. Since food intake is dependent upon vision, not taste or smell, it paralleled illumination. More food was eaten when successive small portions were given, when it was constantly present, and when the animals were stimulated by the sight of food or others eating. Three periods of increased hunger were found each day—5 a.m., 3 p.m., and 7 p.m.

6958. **BENDIXEN, H., und A. ANGELOWA. Über den Einfluss des Speichels auf die Magensekretion.** *Zeitschr. Klin. Med.* 115(3/4): 612-622. 1931.—By continuous intubation gastric samples were obtained every 10 min. from 24 patients (2 healthy, 22 with various troubles) after test meal of 30 gm. flour in 1 liter water, first with the saliva expectorated, then with it swallowed; experiments were also made introducing 300 cc. physiological saline (2 patients) or distilled water (1 patient); in 9 patients the expectorated saliva was introduced through the tube, in 3 instances with no porridge; in 6 patients the pepsin content was tested. It was found that the saliva increased the production of HCl and pepsin. Either a hematogenic or a neurogenic stimulation was possible, the latter the more probable.

6959. **BRODY, HENRY, and MOSES SAMUEL SHILING. A note on the relation of salivary secretion to the oxygen tension of the inspired air.** *Amer. Jour. Physiol.* 91(2): 399-404. 1930.—The effect of diminishing the O tension of the inspired air upon the rate of submaxillary secretion in dogs was studied. The response, during anoxemia, was unchanged when the gland was stimulated through the chorda tympani. There was a marked decrease in the secretion rate during anoxemia when the stimulus was pilocarpine.—*Authors' summary.*

6960. **BUDDE, OTTILIE. Untersuchungen zur Verdauungsphysiologie des Säuglings. XII. Über den Lösungszustand von Kalk und Phosphat im Chymus.** *Zeitschr. Kinderheilk.* 50(4): 482-495. 1930.—In vitro tests of the influence of digestive processes on the ultrafiltrability of Ca and P of milk showed that of the total Ca about 70% in human milk, and 20-30% of cows' milk is ultrafiltrable and about 36% and 52% respectively of the total P. Acidification and proteolysis increases the amt. of ultrafiltrable Ca and phosphate. Coagulated milk did not have a higher content in ultrafiltrable Ca and P than the original. Lipolysis considerably reduced the ultrafiltrable portion by the formation of Ca-soap. The ultrafiltrability of Ca and the formation of Ca-soap was not influenced by bile or the salts of biliary acids, nor by oxidation or desaturation of fatty acids. The Ca precipitating action of lipolysis predominated over the dissolving action of proteolysis in the action of the duodenal juice on whole milk, reducing the ultrafiltrable Ca. Boiling milk, but not pasteurization (30 min. at 70°) reduced the ultrafiltrable Ca.—*Author's summary (transl.).*

6961. **COLOMBI, CAMILLO, e ULRICO SACCHI. Ricerche sulla secrezione dello stomaco in un uomo portatore di fistola gastrica. [Studies on gastric secretion in a man with gastric fistula.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 401-403. 1930.—Data were collected which show the importance of psychic stimuli for gastric secretion, as well as its psychic inhibition. Secretion during rest was observed, confirming Carlson's findings.—*M. Comel.*

6962. **DRAGSTEDT, LESTER R., and JAMES C. ELLIS. The fatal effect of the total loss of gastric juice.** *Amer. Jour. Physiol.* 93(2): 407-416. 1 fig. 1930.—To permit the complete loss of gastric juice under conditions otherwise as normal as possible and without obstructing the gastro-intestinal tract anywhere, use was made of the method of Lim, Ivy, and McCarthy, modified to leave the vagus nerves to the isolated stomach largely intact. Daily observations were made on 6 dogs that survived the operation. Total loss caused death in 5-8 days. The continued loss of gastric juice produced changes in the blood chemistry similar to those occurring after pyloric obstruction. The symptoms in 4 dogs were temporarily relieved, the blood chemistry returned toward the normal and life prolonged, by the intravenous injection of 2,000 to 3,000 cc. of Ringer's solution per 24 hrs. The isolated stomach, prepared by the method described above with intact blood and vagal supply, secreted in 24 hrs. as much as 1000-2600 cc. of gastric juice. The gastric glands can continue to secrete gastric juice of high free and total acidity even when the blood chloride has been reduced to less than ½ of its normal concentrations and an extreme alkalosis exists.

6963. **DRAGSTEDT, LESTER R., M. LAURENCE MONTGOMERY, and JAMES C. ELLIS. A new type of pancreatic fistula.** *Proc. Soc. Exp. Biol. & Med.* 28(2): 109-110. 1930.—The duodenum is cut across 2 cm. distal to the pylorus and again about 8 cm. lower down, just below the entrance of the lower pancreatic duct. The pyloric antrum is resected and the lower duodenum anastomosed to the open end of the stomach by the end to side suture. The common bile duct is sectioned near its entrance into the duodenum and implanted either into the stomach or upper jejunum. The upper short section of duodenum containing the entrance of the pancreatic ducts (usually 2 or more in the dog) is converted into a closed sac by inversion and closure of both ends. An external fistula of this duodenal-pancreatic sac is then established by means of a special gold plated cannula.

6964. **DRAGSTEDT, LESTER R., M. LAURENCE MONTGOMERY, WARREN B. MATTHEWS, and JAMES C. ELLIS. Fatal effect of the total loss of pancreatic juice.** *Proc. Soc. Exp. Biol. & Med.* 28(2): 110-111. 1930.—Total elimination of pancreatic juice in dogs leads to death in 4-6 days. Secretion of pancreatic juice continues till death, but in gradually reduced quantities. There is a reduction in plasma base, a decrease in plasma chlorides, an increase in N.P.N. and urea, and increased acidity of the blood.—*A. J. Carlson.*

6965. **FINKLEMAN, B. On the nature of inhibition in the intestine.** *Jour. Physiol.* 70(2): 145-157. 1 fig. 1930.—An inhibitory nerve-smooth muscle preparation is described, and on this strictly parallel effects are produced by nervous and chemical inhibition. Ephedrine antagonizes both nervous and adrenaline inhibition. When the preparation is brought into equilibrium with a fairly high concentration of adrenaline, neither nervous nor adrenaline inhibition can be elicited. A method is described for obtaining pendular movements of isolated pieces of rabbit gut not immersed in Ringer-Locke. When the movements of such a piece of gut are inhibited by stimulating the nerve, a substance appears in the fluid passing over the surface which has the power of inhibiting a 2nd piece of gut. Hence it is argued that the inhibitory nerves to plain muscle act by liberating peripherally an inhibitory substance.—*Author's summary.*

6966. **FOIT, RICHARD. Nová gastro-duodenálna (Sonda). [New gastro-duodenal tube.]** [With French, English and German summaries.] *Bratislavské Lekarske Listy* 9(1): 56-59. 1 pl. 1929.—The tube consists of a single piece of elastic rubber (largest diam. 7 mm.) with an arrangement for automatic removal of duodenal juice. With this tube, the author found that if the gastric acidity increases, the alkalinity in the duodenum increases also, and vice versa. However, the alkalinity of the duodenal content did not exceed pH 8.3 in any case examined.—*From English summary.*

6967. **GILMAN, ALFRED, and GEORGE R. COWGILL. The effect of histamine upon the secretion of gastric pepsin.** *Amer. Jour. Physiol.* 97(1): 124-130. 1931.—Studies of the response of the pepsin secreting glands

to histamine stimulation were made in 7 gastric pouch dogs of the Pavlov and Heidenhain type. With increased volume of secretion in response to histamine stimulation, there was a relative decrease in pepsin concentration, indicating that the histamine had not stimulated pepsin secretion. A parallelism between pepsin and neutral chloride concentration in the gastric juice was also observed.—*Authors' conclusions.*

6968. GOLDSTEIN, BORIS. Zur Physiologie des isolierten Pankreas. III. Über die Wirkung des sympathischen Nervensystems auf die fermentbildenden und sekretorischen Prozesse im isolierten Pankreas. IV. Über die Wirkung des Sekretins auf die Adrenalinsekretion der isolierten Nebenniere. *Zeitschr. Ges. Exp. Med.* 74(1/2): 128-134; 135-137. 1930.—III. Adrenalin, used as a sympathetic stimulant, produced a decrease in the enzyme content of the secretion of the isolated pancreas, if the increased vascular contraction was compensated for by the increase of pressure under which the Ringer-Locke's solution was forced through. On perfusing one pure Ringer-Locke's solution after the adrenalin action, the enzyme concentration was increased; but this rise is much less than by the action of pilocarpin. The amount of fluid increased insignificantly under the effect of adrenalin. Sometimes the rise of the strength of the enzyme in the secretion and in the Ringer-Locke's solution proceeds during the adrenalin action. Adrenalin which is perfused through the gland simultaneously with secretin produces at first a decrease of enzyme concentration in the secretion and later an increase; the amount of fluid is not influenced or insignificantly increased. The cited results are explained on the supposition that the sympathetic nervous system influences the pancreatic secretion in two ways: it increases the enzyme formation process and it holds back the enzyme (perhaps also other organic materials) in the cell, probably owing to an action upon cell permeability.—IV. Secretin increases greatly the adrenalin secretion, during its action upon the isolated adrenal, whereby the secondary effect is characteristic. The acid-stimulating secretion arises possibly as a result of a double action of secretin: (1) An immediate stimulation of the pancreas; (2) a stimulating of the sympathetic nervous system, which is excited through an increase of adrenalin secretion due to the effect of secretin.—*Author's summary (transl. by P. E. Claus).*

6969. HALPERT, BÉLA, and JULIAN H. LEWIS. Experiments on the isolated whole gall bladder of the dog. *Amer. Jour. Physiol.* 93(2): 506-520. 1 fig. 1930.—A specially constructed cannula permitted accurate estimation, at any time, of the fluid content of the viscus and the measurement of the movements in terms of hydrostatic pressure. Spontaneous rhythmic contractions were obtained regularly and tonic contractions occasionally. The former represented a power to displace a column of about 0.1-2.3 cc. of Locke's solution against a hydrostatic pressure of approximately 13-16.5 cm. of the same fluid, and occurred at a rate of 1-3 or more per min. Tonic contractions rarely occurred spontaneously and rarely reached a higher level than that representing a power to displace more than a column of 1-2 cc. of Locke's solution, under the same conditions. The effect of histamine, pilocarpine and atropine was about the same as on smooth muscle in general. The effect of epinephrine was inconstant, affecting sometimes only the tonus or the rhythmic contractions and sometimes both. Pituitrin, cholecystokinin [Ivy-Oldberg] and Koehler's extract of the suprarenal cortex had no appreciable influence upon either the tonus or the rhythmic contractions. When the fluid content of the gall bladder was increased or decreased, adjustment of tonus soon occurred and the pressure in the viscus eventually returned to about its previous level and the curve gradually resumed its former shape. This latter observation strongly suggests that the function of the muscular coat of the gall bladder is that of effecting adjustment in size to the varying content, rather than the emptying of the viscus.—*Authors' summary.*

6970. HIRSCH, G. C. Eine vorläufige Mitteilung über den Rhythmus der holokrinen Sekretion in der Mitteldarmdrüse von Astacus leptodactylus. *Tijdschr. Nederlandsch. Dierkd. Ver. Ser. 3* 1(2): 58-63. 2 fig. 1928.—The holocrine secretions of *Astacus* show a rhythmic cycle; indeed the activity of the entire gland exhibits a definite rhythm. The rhythm of the active forms of the secreting cells and the ferment stand in direct relation to the rhythmic increase of cell division, but an explanation as to the cause of this rhythm is still wanting. Cell division at the blind end of the cecum does not suffice to keep up the required number of B cells. Cell materials to replace those forming the holocrine secretion flow in two streams from opposite directions, from the blind end as well as from the dorsal cecum of the actual midgut toward the middle to form the B cells which there discharge into the lumen.—*W. L. Schmitt.*

6971. HUKUHARA, T. Die normale Dünndarmbewegung. (Mit Hilfe der Bauchfenstermethode und Kinematographie.) *Pflüger's Arch. Ges. Physiol.* 226(4/5): 518-542. 6 fig. 1931.—After a survey and critique of data yielded by other methods, the author describes in detail the results of his studies on intestinal movements in the dog, cat, rabbit and guinea pig by means of cinematographic records taken through an abdominal window. The movements seen in the empty intestine duplicate the movements in the intestine of a fed animal. Antiperistalsis was never observed. On the basis of these studies the author offers some slight modifications of the conceptions arising from Cannon's early work with the x-ray method.—*M. H. Friedman.*

6972. IZUMITA, TOMOTAKE. Über die Entleerungszeit des Mageninhaltes bei dem gesunden japanischen Säugling. *Jahrb. Kinderheilk.* 128(1/2): 108-117. 1930.—The evacuation time in 32 healthy children aged 1-10 yrs. was studied by Demuth's roentgenologic method for ½ galactosan (a substitute for larosan), human milk, whole milk, ¾ milk, ½ milk and ¼ Mariott's lactic acid milk. The evacuation time was individually variable, in some cases a difference of 3 hrs. existing between different feedings of the same food. The different foods also were characterized by different evacuation times, so that it was necessary to make several studies of each child. The longest average evacuation time for any food was for ¼ lactic acid milk, then in descending order ½ galactosan, whole milk, ¾ milk, human milk and ¼ milk. The acidity of the gastric juice bore no relation to the evacuation time.

6973. IZUMITA, TOMOTAKE. Über die Azidität des Magensaftes bei gesunden Neugeborenen und Säuglingen. *Jahrb. Kinderheilk.* 129(5/6): 319-334. 1930.—Healthy infants from the children's clinic and the children's dispensary were studied. They were of average length and weight and in a good nutritional condition. There were 35 cases in all, age 1-12 months; and 52 new-born, 3 hours to one week of age. The acidity of the gastric juice of healthy Japanese infants was: total acidity 4-26, average 12.3; free HCl 0.0-18.0, average 6.0; pH, 2.0-4.2. A positive Gunzberg's test was secured in 84% and negative in 14% of the cases. Individual fluctuations in the acidity of the infants were very pronounced whereas daily fluctuations were very small. The acidity increased with age. The gastric acidity in male infants was higher than in the females.—*E. G. Schmidt.*

6974. KAWAMURA, KOICHI. The influence of vitamin B on the intestinal secretion. The method of the quantitative estimation of the protein enzyme of the intestinal juice. *Japanese Jour. Exp. Med.* 7(2): 157-175. 1929.—Thiry-Vella fistulae were made in healthy dogs, and when the animals were sufficiently recovered from the operation they were placed on vitamin B adequate and vitamin B deficient diets. The amount of secretion of intestinal juice and the quantity of enzymes it contained were estimated. Vitamin B deficient diets caused a marked decrease in the secretion of intestinal juice; the addition of rice bran extract and vitamin B caused an increase of the secretion. The quantity of

enzyme was found to be small when the amount of secreted intestinal juice was great. Meat apparently causes an increase of the secretion of the intestinal juice. A certain quantity of intestinal juice is secreted during a period of starvation. Vitamin B deficient diets cause lack of appetite.—*E. B. Boldyreff.*

6975. **KOKAS, E. von. Vergleichend-physiologische Untersuchungen über die Bewegung der Darmzotten.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 416-420. 2 fig. 1930.—The animals studied were deeply narcotized; through a small opening in the abdominal wall a loop of intestine was drawn out, opened and examined. In the dog, cat and fox the villi were finger-shaped, and on stimulation underwent contraction by shortening and rumpling (like a glove-finger pushed off hastily) without increase in diameter. In the rabbit, rat and guinea-pig, the villi were flat, somewhat tongue-shaped, and contracted laterally, by a circular constriction of the muscularis mucosae. Both the shortening of the finger-like villi and the lateral contraction of the tongue-like villi had the effect of rhythmically emptying the chyle-spaces within. In the hedgehog both the finger-shaped and the tongue-shaped villi were present; only the finger-shaped villi moved in the pump-like extension and contraction lengthwise.

6976. **LANDAU, ANASTAZY, et JERZY GLASS. Les rapports entre la fonction sécrétoire de l'estomac et les équilibres chloré et acido-basique de l'organisme. I. L'influence de l'excitation et de l'inhibition de la fonction sécrétoire de l'estomac sur l'équilibre chloré et acido-basique de l'organisme. II. L'influence de la mobilisation du chlore tissulaire par le novasurol et l'influence du régime hypochloruré sur la sécrétion gastrique.** *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(8): 907-935; (9): 1017-1051. 1930.—I. Stimulation of the secretory function of the stomach by means of Ehrmann's alcohol test meal results in: the reduction to the lower limits of normal of total blood chloride due to a reduction in plasma chlorides; an increase in the alkaline reserve of the blood to the upper limits of normal; a decrease in urinary excretion of chloride which parallels the degree of gastric secretion; and a variable effect on urinary acidity. Following inhibition of secretion by atropine there is a decrease in free and total acidity of the gastric contents and a slight decrease in the chloride secretion; a reduction below normal limits in both plasma and corpuscle chloride; and a slighter reduction in the alkaline reserve of the blood, less decrease in chloride excretion in the urine and higher urinary acidity than after the test meal without atropine.—II. When the alcohol test meal is given simultaneously with an intravenous injection of Novasurol to mobilize tissue chlorides there results a slight decrease in plasma chloride, an increase in corpuscular chloride to the upper limits of normal and a biphasic reaction on the stomach during the first phase of which there is an increase in concentration of chloride and acidity of the gastric secretion associated with the increased mobilization of tissue chloride for 1½ hours, followed by a 2nd phase with a decrease in chloride and free and total acidity during which time there is an exaggerated elimination of chloride in the urine. After a period of salt privation there is an initial increased secretion of chlorides and acid by the stomach, an elevation of blood chloride and an increased elimination of urinary chloride but the stimulation is of shorter duration and at the end of the 2nd hour the concentration of chloride in the gastric juice and in the urine is diminished.—*F. R. Vanzant.*

6977. **MAJUS, M., und O. PORGES. Über den Einfluss der psychischen Sekretion auf die Azidität des Mageninhaltes.** *Arch. Verdauungs-Krankh.* 49(1/2): 1-15. 1931.—In 21 groups of experiments patients were subjected to (a) no suggestion, (b) appetite suggestion, and (c) unpleasant suggestion, after a coffee test breakfast had been given through a sound; gastric acidity was determined at 5-min. intervals. In the first ½ hr. acidity in (b) was greater than in (a) or (c); thereafter the curves were more or less approximate.

6978. **MATSUI, T. Beeinflussung der Sekretion der Verdauungssäfte des Menschen durch subkutane Injektion von eiweissfreiem Extrakt aus der Mucosa des Schweinemagens. I. Mitteilung: Magensaftsekretion.** *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] *308.* (Nov.): 81. 1930.—Abundant secretion of gastric juice is produced in normal individuals; no increase was noted in persons with carcinoma of the stomach.—*E. C. Faust.*

6979. **MIDZUTA, NOBUO. Experimental studies of esophageal reflex movements. Report 2. Promotion and restraining of the esophageal reflex movements.** *Japanese Jour. Gastroenterol.* 1(3): 147-154. 3 fig. 1929.—A confirmation of the fact that the co-ordination of activity in the esophagus is maintained by the vagus nerves, and not by the sympathetic, and not by any nerves in the wall of the tube itself. Stimulation of one part of the esophagus tends to inhibit the activity of parts a few centimeters caudad.—*W. C. Alvarez.*

6980. **OPPEL, W. W. Schicksal der Fructose im tierischen Organismus. II. Rufen die Verdauungssäfte eine Umwandlung der Fructose in Glucose hervor?** *Biochem. Zeitschr.* 230(4/6): 269-284. 1931.—Fructose solutions with gastric, intestinal, or pancreatic juice and toluol, at various pH, showed no change to aldose in the course of 20 hrs. in the thermostat; likewise none during 1-5 hrs. without toluol. The digestive juices contain no ferment which in vitro can change one monosaccharide to another.—*From author's summary (transl.).*

6981. **POLLAND, W. SCOTT, and ARTHUR L. BLOOMFIELD. Normal standards of gastric function.** *Jour. Clin. Investigation* 9(4): 651-658. 1931.—In "normal" adult hospital patients (i.e., without digestive symptoms and secreting a juice with free HCl over 10), the fasting gastric juice was aspirated, 0.1 mgm. histamine per kgm. body weight was hypodermically injected, and the total secretions aspirated over successive 10-min. periods until the flow of juice had subsided to the basal level. The greatest 10-min. volume of secretion and the highest titratable acidity were considered indices of stomach function. Wide variations in volume were observed, with progressive decrease in amount with advancing age. About ½ determinations, however, fell within 21-35 cc. Considerable variation was also observed in highest titratable acidity; however, about ¾ of the values lie above 100. The acid values show a decline with advancing age when the figures in various decades are averaged.

6982. **ROMEO, MARIO. Sulle modificazioni indotte nelle vie biliari dalla legatura del coledoco. (Ricerche sperimentali.) [Modifications produced in the biliary passages by ligature of the bile duct.]** *Clin. Chirurg.* 33(6): 695-718. 10 fig. 1930.—Of a series of 9 dogs in which the bile-duct was ligated, 2 died in a few days with symptoms of hypercholemia; the other 7 were killed 5-130 days after operation. In a 2nd series of 11 dogs, 3 likewise died after ligature of the bile-duct. In the other 8 the ligature was removed 3-80 days after being tied; the dogs were killed 8-60 days after removal of the ligature. The most conspicuous dilatation of the whole biliary tree occurred from the 5th to the 40th day, while after that day the caliber of the passages, while dilated, never attained the excessive size encountered in the earliest phases of obstruction. The biliary passages, both within and without the liver, though dilating readily when obstructed, underwent prompt reduction with equal readiness when the obstruction was removed, provided the obstruction had not remained in place more than about 40 days.

6983. **[TEMPER, B. A.]** ТЕМПЕР, В. А. **Влияние внутривенного введения хлористого натрия на кислотность желудочного содержимого. [Influence of intravenous NaCl on gastric acidity.]** [German summary.] Одеський Медичний Журнал. (*Odessaer Med. Zeitschr.*) 5(3/5): 258-260. 1929.—Injections of 2-7 cc. of 10% solution of NaCl (16 subjects) produced no apparent change. When $CaCl_2$ solutions were injected, acidity was augmented. This increase is ascribed to the Ca, not the Cl, ion.—*B. Van Rosen.*

6984. WIGGLESWORTH, V. B. Digestion in Chrysops silacea Aust. (Diptera, Tabanidae). *Parasitology* 23(1): 73-76. 1931.—The histological changes in the gut of *Chrysops silacea* during the digestion of blood are the same as those described by Cragg in *Tabanus*. Digestive enzymes (an active invertase, a weak amylase, an active tryptase and peptidase) are confined to the posterior half of the mid-gut. These results are compared with those for *Glossina* and *Calliphora*. The function of the gut is discussed.

ANIMAL PHYSIOLOGY

RESPIRATION

ROBERT GESELL, *Editor*

(See also in this issue Entries 6760, 6831, 6900, 7059, 7125, 7163, 7171, 7187, 7362, 8580)

6985. CAMPBELL, J. ARGYLL, and LEONARD HILL. Concerning the amount of nitrogen gas in the tissues and its removal by breathing almost pure oxygen. *Jour. Physiol.* 71(3): 309-322. 3 fig. 1931.—Experiment indicated that the gaseous N content of bone-marrow fat of an animal (ox, horse, sheep) breathing air is about 5 cc. per 100 cc. fat; the results agree with Vernon's figures for cod-liver oil, olive oil and lard. Brain tissue contains about 1 cc. N per 100 cc. tissue. Experiments on 5 subjects showed that the more easily removable N (200-300 cc. under normal atmospheric pressure) in the human body is removed in a few min. by breathing O. After exposure to +1 and +2 atmospheres of ordinary air, the amount removed in the same time is about doubled and trebled respectively.

6986. CERUTI, G. Variazioni della portata circolatoria nel pneumotorace sperimentale. [Variations of cardiac output following experimental pneumothorax.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 902-904. 1930.—In decerebrate dogs following pneumothorax the cardiac output diminished initially; a resultant increase occurred during the 2nd, 3rd and 4th hours. Occlusion of one bronchus, while followed by increased respiratory rate, pulse frequency and minute vol., was not followed by change of cardiac output.—*M. Comel.*

6987. CHURCHILL, EDWARD D., and OLIVER COPE. The rapid shallow breathing resulting from pulmonary congestion and edema. *Jour. Exp. Med.* 49(4): 531-537. 1929.—In a series of cats the right lung was isolated from the rest of the circulation of the animal by ligating the corresponding branches of the pulmonary artery and the pulmonary veins. Ventilation of this lung was maintained by the normal respiratory movements of the animal with the lung in its normal position in the closed pleural cavity. A cannula was inserted into the occluded branch of the pulmonary artery and joined to a reservoir filled with fresh blood. By changing the height of the reservoir it was found possible to alter the intravascular pressure in this isolated lung without modifying the dynamics of the systemic circulation or altering the gaseous respiratory exchange. A sudden elevation of intravascular pressure with consequent production of pulmonary congestion and edema was followed by a slowing of the heart rate, a fall in systemic blood pressure and a temporary inhibition of respiration, succeeded by rapid shallow breathing. As a chemical effect on the respiratory center is excluded by the nature of the preparation, the conclusion is reached that the rapid shallow breathing attending pulmonary congestion and edema is due to the stimulation of nerve endings (vagal) in the lungs. —*E. D. Churchill.*

6988. COMEL, M. Analisi della curva di assorbimento dell' ossigeno di poltiglie muscolari in funzione della concentrazione degli idrogenioni. [Analysis of the O absorption curve of hashed muscles as a function of the CH. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 8(5/6): 255-257. 1928.—The O absorption curve of hashed frog muscles is expressed by the equation: $y = ax + bx^2 + cx^3 + dx^4$ where y is the amount of O absorbed, x the pH value of the phosphate buffer solution and a, b, c, d 4 parameters. Mathematical analysis of this equation by means of the differential calculus showed a maximum value for pH near 7, and 2 inflection points near pH 6.5 and 6.0. By these values three regions of O absorption are delimited, the 1st of intense respiratory exchange (physiological), the 2nd of reduced O absorption, the 3rd pathological. The O absorption decreases quickly, becoming nil for acid pH values.—*M. Comel.*

6989. COOMBS, HELEN C., and F. H. PIKE. The nervous control of respiration in kittens. *Amer. Jour. Physiol.* 95(3): 681-693. 1930.—Ontogenetic development of the vagus-phrenic portion of the respiratory mechanism has been completed at birth and is functionally active from that time onward. A closer relationship between the vagus and phrenic nerves in respiratory regulation than between the vagus and dorsal spinal nerve roots is demonstrated. Development of the mechanism for adequate thoracic respiration is not completed before the end of the 3rd wk. after birth in the kitten, as is shown by its lack of ability to compensate for failure of diaphragmatic respiration. The functional relationship of the nuclei in the corpora quadrigemina to the costal respiratory mechanism is not established earlier than 10 days after birth and possibly later.—*Authors' conclusions.*

6990. CROW, W. B. Voice and the vocal apparatus. 29p. W. Heffer & Sons, Ltd.: Cambridge, 1930. Pr. 1s.—A description of the fundamental facts of structure and function of the human vocal apparatus introducing some comparisons, as between skeleton of larynx and thorax, and points in the historical development of our knowledge of the voice. Analogies of vocal apparatus with musical instruments are explained because the latter have evolved from projecting vocal action into the external world. The relation between genital and vocal apparatus is discussed, and the basis of this relation in bodily polarity. The phylogeny of the voice is outlined, and must be viewed as the addition of various components to primitive locomotor movements. Speech is one of the final components.—*W. B. Crow.*

6991. DAMANT, G. C. C. Physiological effects of work in compressed air. *Nature [London]* 126(3181): 606-608. 1930.—A discussion of the problem of decompression and methods used to prevent collapse due to absorption of N. Mention is made of the tendency of higher pressure to produce mental aberrations.

6992. DANIELOPOLU, D., I. MARCOU, et G. G. PROCA. Sur le réflexe respiratoire sino-carotidien. Filets centripètes sino-carotidiens excitateurs et inhibiteurs. *Compt. Rend. Soc. Biol.* 106(9): 734-737. 1931.—The diphasic form of this reflex is produced sometimes with the vagus intact, more often when it is cut. Variations in the duration of mechanical stimulation modified the form of the diphasic reflex in chloroformed dogs, a short stimulus producing an inhibition; a longer one, an inhibition followed by an excitation after the stimulus was removed; and a still longer one causing inhibition and excitation to occur during the application of the stimulus. These results are comparable to those produced with electrical stimulation. It is concluded that the centripetal fibers of the carotid sinus are double, being both inhibitors and stimulators of the respiratory centers. Excitation of the sinus produces a reflex in which either of two groups of fibers can predominate. The vagus, which influences the tonus of the respiratory centers, consists also of two groups of fibers, inhibitors and stimulators.—*E. Weiner.*

6993. **DILL, D. B., H. T. EDWARDS, A. FÖLLING, S. A. OBERG, A. M. PAPPENHEIMER Jr., and J. H. TALBOTT.** Adaptations of the organism to changes in oxygen pressure. *Jour. Physiol.* 71(1): 47-63. 1931.—The investigation included observations on the acid-base equilibrium and the form and position of the CO_2 and O dissociation curves in human blood, with the changes at the altitudes of 10,000 and 14,000 ft. The venous blood, equilibrated at 37.5°, of 8 visitors, was compared with that of 3 Leadville residents (10,000 ft.). The results indicate that the O dissociation curve of human blood after complete acclimatization at 10,000 ft. and after 4 days at 14,000 ft. has about the same position as at sea-level when H-ion concentration is constant. The carbonic acid dissociation curve of oxygenated blood is lowered 1/10 at 10,000 ft. and slightly more after 4 days at 14,000 ft. Chloride concentration in cells and in serum increases slightly, but its distribution between cells and serum is practically unchanged. The ratio, $(HCO_3)c/(HCO_3)s$, increases about 3% at 10,000 ft. and somewhat more at 14,000 ft. The increase may be related to decrease in alkaline reserve, since a similar change is found when alkaline reserve is decreased in exercise. The pressure head of O from lungs to blood remains positive even after acclimatization at 10,000 ft. No evidence of secretion of this gas was found. CO_2 pressure in alveolar air decreases to $\frac{3}{4}$ its sea-level value at 10,000 ft. and to $\frac{2}{3}$ at 14,000 ft. The calculated reaction of arterial serum shows an average decrease in pH value of 0.03 at 10,000 ft. and of 0.8 at 14,000 ft., but the change is too small to shift the O dissociation curve of arterial blood outside its normal sea-level range. The O transport capacity may be decreased by 1/5 in normal men at 10,000 ft. It is suggested that this large effect is due to an indirect effect of a small change in O saturation of arterial blood upon the limiting value for cardiac output. This explanation is consistent with the experiments of Furusawa, Hill, Long and Lupton, showing that man can increase his O transport capacity by 2/5 at sea-level by breathing 40% O.

6994. **GAY, HAROLD H. A comparison of the effects of low alveolar oxygen, of sodium cyanide and of sodium sulfide upon respiratory movements and the response of muscle to direct, indirect and reflex stimulation.** *Amer. Jour. Physiol.* 95(3): 519-526. 1930.—Dogs (number not stated) weighing 10-30 kgm. were used. The contractions of the anterior tibialis muscle when stimulated reflexly, indirectly through its motor nerve, and directly was recorded during the administration of NaCN, Na_2S, and gaseous mixtures low in O. When submaximal induction shocks were used there was a definite increase in contraction to each type of stimulation. When supermaximal stimuli were employed the effects were missing or small. Since these results are obtained during constant ventilation when the tissues are assumed to turn acid it is concluded that the general increase in excitability of the muscle, nerve, and cord occurs independently of acid changes for CO_2 produces a general decrease in excitability. It is concluded that impairment of oxidations may result in a chemical control of ventilation, peripheral to the respiratory center proper, by action on sensory nerve fibers, by central action on the cord, and by direct action on striated muscle.

6995. **GOIFFON, R., et R. PARENT. Influence du rythme de la ventilation sur le quotient respiratoire.** *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(8): 968-972. 1930.—Patients often do not breathe naturally under the basal metabolism test. If the breathing is hurried the respiratory quotient is diminished; if the respiratory rate is retarded, the quotient is increased. It is therefore important to observe any change of breathing rhythm during a metabolism test.

6996. **GREELEY, PAUL O., and CHARLES E. GREELEY. Circulatory changes during periodic breathing produced by moderate obstruction to the cerebral arteries.** *Amer. Jour. Physiol.* 95(2): 371-381. 2 fig. 1930.—Periodic breathing was induced in dogs under morphine and urethane anesthesia by moderate occlusion of the cerebral blood vessels. This was accomplished by placing one of the common carotid arteries in a compression chamber, thus making possible partial or complete occlusion of this artery. The remaining cerebral arteries were occluded and de-occluded as conditions required. Pulmonary ventilation and mean blood pressure were recorded. Volume flow of blood was followed in the carotid and femoral arteries thermoelectrically with small thermopile vessels of short lag. The vertebral and external jugular venous flows were recorded by the enclosed drop method and intestinal venous flow by the external drop method. Periodic changes occurred in mean blood pressure, in femoral and carotid arterial blood flows, in vertebral, external jugular, and splanchnic venous flows, and in depth and rate of respiration. Changes in blood flow were synchronous with the periodic variations in mean blood pressure. In contrast to this general periodicity there were no obvious rhythmical changes in heart rate. Ventilation increased during decreasing blood pressures and blood flows, and decreased with increasing pressures and flows. With the conditions provided no apneas developed. The absence of periodic changes in heart rate suggested that the changes in mean blood pressure may be due to periodic activity of the vasomotor center. It is concluded that the periodic changes in ventilation are related to the periodic changes in the circulatory system but since volume flow of blood and mean blood pressure vary with each other the periodic changes in ventilation may be a result of periodic chemical changes in the respiratory center produced by fluctuations in blood flow or of the reflex effects of periodic stretching and contraction of the aorta and of the carotid sinus. The relative importance of these 2 effects cannot yet be evaluated.—*Authors' summary.*

6997. **GREELEY, CHARLES E., and PAUL O. GREELEY. Circulatory changes during periodic ventilation with apneas produced by marked curtailment of blood flow to the brain.** *Amer. Jour. Physiol.* 95(2): 382-395. 1 fig. 1930.—Periodic respiration with pronounced apneas, produced by marked occlusion of cerebral blood vessels, was studied [in dogs]. The blood flow to the brain was curtailed by various methods. Increasing curtailment of blood flow was accompanied by initial stimulation of respiratory movements, followed by a period of partial or complete depression. After this depression, periodicity of ventilation sometimes followed. The periodicity of ventilation thus established was accompanied by periodic changes in mean blood pressure, volume flow of blood, and heart rate. The respiratory groups were initiated during decreasing flow of blood and decreasing blood pressure. In some experiments they terminated in apnea while blood pressure and blood flow were still decreasing and in others they extended for a short period into the increasing blood pressure and increasing blood flow. Since apnea was initiated towards the close of decreasing blood flow or beginning of increasing blood flow, it was suggested that apnea was produced by both severe depression and by processes of recovery. Accordingly apneas were designated as depression and recovery apneas. In experiments in which periodic changes in heart rate occurred, slowing of the heart was in the main associated with decreasing mean blood pressure and decreasing flow of blood, and augmentation with increasing blood pressure and increasing flow of blood. It is thus suggested that the cardio-inhibitory center is stimulated like the respiratory center by the same chemical mechanism. It was suggested that the rapid rate and gross change in chemical state of the medullary centers coupled with their impaired functional activity provide conditions for periodic activity. A decreased blood flow brings about a decrease in the chemical and physical transport of acid, a decrease in oxidations with a consequent broken coördination of the dual function of hemoglobin all resulting in an altered state of oxidations, and increased acidity of the respiratory center and an over ventilation of the blood. An increased blood flow of oxygenated blood now reverses these processes.

Oxidative and non-oxidative removal of lactic acid and the liberation of free base and improved transport of acid combine to bring about a new state of oxidation and a decrease in acidity. The absence of changes in heart rate in 1 series of experiments with marked periodicity of ventilation, blood pressure, and blood volume flow indicates that periodicity may have its origin in periodic changes of the vasomotor center. However, the volume flow of blood ran parallel in the splanchnic, femoral, submaxillary, and cerebral blood vessels. Direct evidence of active vasomotor changes was, therefore, not obtained. These results suggest that periodic chemical stimulation of the circulatory centers produces periodic changes in ventilation of a central chemical origin. Since decreasing blood pressure may reflexly stimulate pulmonary ventilation this phenomenon may be looked upon as a possible modifying factor.—*Authors' summary.*

6998. GRIFFITH, FRED R. Jr., GEO. W. PUCHER, KATHERINE A. BROWNELL, JENNIE D. KLEIN, and MABLE E. CARMER. Studies in human physiology. III. Alveolar air and blood gas capacity. IV. Vital capacity, respiratory rate and volume, and composition of the expired air. *Amer. Jour. Physiol.* 89(2): 449-470; (3): 555-583. 1929.—III. This paper is the 3rd installment of a series describing the physiological changes observed in 2 men and 3 women during the 2-yr. period 1925-1927. Statistical measures are given of: the intra-individual variability of these functions; the degree of correlation between the components of the alveolar air and the barometric pressure; and the correlation between the alveolar CO_2 tension and the blood CO_2 capacity. The striking effect of menstruation on the alveolar CO_2 percentage and tension is the most definite effect of menstruation that the authors have observed in all of the functions of which they have kept record. The alveolar air shows a seasonal variation in composition which the authors believe is related, the O directly and the CO_2 inversely, to the av. barometric pressure. The blood gas capacity also shows a seasonal variation; the CO_2 capacity is quite conclusively lowest during the summer; this is also true of the O capacity for 1926 and reasons are given for believing that this is probably the typical effect. In addition, the blood gas capacity shows a progressive increase throughout the 2 yrs. which the authors were unable to account for except, perhaps, as a stimulating effect on blood regeneration of taking the weekly blood samples.—IV. For each of the functions studied (variations in vital capacity, rate and volume of the respiration and composition of the expired air) are given the statistical constants defining the modes and means and the extent and degree of variability. In addition the authors calculated the degree of correlation between the rate and minute and tidal volumes of the respiration; and between these and the O consumption and CO_2 production. There is an unusually high correlation between the volume of pulmonary ventilation and the CO_2 output; reasons are given for believing that this is not due to increased breathing washing out increased amts. of CO_2, but is an expression of the fundamental control of pulmonary ventilation by the rate of CO_2 production. The results of the 2 yrs. are sharply separated as regards the minute and tidal volumes and the composition of the expired air; this was due to the dead space in the apparatus for collecting the expired air being large (about 50 cc.) during the 1st yr. and small or practically negligible during the 2nd. The large dead space was associated not only with large absolute values for these functions, but occasioned, also, a much greater degree of variability. Going to sleep (dozing) during the collection of the expired air decreases the minute volume 3-4%; it is not clear to what extent this is due to variations of rate or of tidal volume. Menstruation had no effect on vital capacity or the rate of respiration; on the other hand, the volume of pulmonary ventilation and the composition of the expired air are definitely affected. It is shown that the menstrual variations in metabolism, pulse rate, composition of the alveolar air and blood gas capacity described in previous reports may be consistently correlated with the changes described here. Neither the vital capacity nor the respiratory rate can be seen to have a seasonal variation; the tidal and minute volumes and the composition of the expired air, however, show the most definite and uniform variation of any of the functions studied except the basal pulse rate. —*From authors' summaries.*

6999. HECKSCHER, H., H. FADDERSBÖLL, und E. MORGENSEN. Untersuchungen betreffend die Konstanz der alveolaren Ventilation und die Schwankungen des alveolaren Kohlensäureprozents und des alveolaren Sauerstoffdefizits bei willkürlichen Variationen der Frequenz und Tiefe der Respiration. *Pflüger's Arch. Ges. Physiol.* 226(3): 418-430. 1930.—Seventeen healthy young adults were made to breathe through valves from a Krogh spirometer. Each experiment comprised 4 5-min periods: 1st and 3rd unrestricted breathing, 2nd at a rate of 12, and 4th at a rate of 6 per min., depth to be that which was "natural" at each rate. In most cases alveolar CO_2 fluctuated quite markedly during these periods, indicating that the automatic reciprocal variation of volume with rate is variable in different individuals and is usually imperfect. Estimation of alveolar ventilation from total ventilation minus dead-space confirmed this conclusion, showing all variations from very slight to 150% at different rates of breathing. Evidently hyperventilation occurred in some of the periods, hypoventilation in others. The quotient, alveolar CO_2%/ alveolar O deficit, was found to vary directly with alveolar ventilation. Aveolar CO_2 can readily be lowered to a markedly subnormal level by voluntary hyperventilation, but it can be raised only relatively slightly above normal by voluntary hypoventilation.—*C. F. Schmidt.*

7000. HECKSCHER, HANS. Untersuchungen über das Sauerstoffdefizit und die Kohlensäurespannung in der Alveolarluft. *Pflüger's Arch. Ges. Physiol.* 226(3): 431-447. 1930.—Patients with metabolic diseases (thyroid disorders, obesity, gout, etc.), were made to breathe from a Krogh spirometer, alveolar air being collected directly in 3 periods: at the start, after 10 min., and after 20 min. 102 experiments were made on 96 individuals. Alveolar CO_2 was found to be lower than normal if the preceding inspiration was deep, higher than normal if it was shallow. The observed range was from 4% to 6.48% (30 to 50 mm. Hg.). Alveolar O deficit (i.e., O absorption per unit of alveolar ventilation) varied from 2.21 to 7.65%, calculating alveolar from total ventilation by means of Lindhard's formula for dead-space correction. Given constancy of metabolism and ventilation, the ratio alveolar CO_2/alveolar O deficit should equal the R. Q.; in 51 experiments this constancy was present, yet the ratio varied from 0.63 to 1.36, average 0.92. The variation is due to inaccuracies in Lindhard's formula for estimating the dead-space. Assuming R. Q. to be 0.83, dead-space was calculated from the above ratio: it varied from 110 to 280 cc., and increased with depth of respiration (e.g., from 140 to 250 cc. with an increase in depth from 280 to 720 cc.). Alveolar CO_2 values below 4% and above 6.5% must be regarded as very unusual.—*C. F. Schmidt.*

7001. HELFF, O. M. Studies on amphibian metamorphosis. VI. The effects of lung extirpation on the life, oxygen consumption, and metamorphosis of Rana pipiens larvae. *Jour. Exp. Zool.* 59(1): 167-178. 1 fig. 1931.—A technique was developed whereby one or both lungs of the frog tadpole could be extirpated. The operative mortality is high, especially following double extirpation. The larval lung is not essential for life, as evidenced by the survival and normal activity of 36 cases of single and 19 cases of double extirpation. Comparison with unoperated controls gave no evidence of delayed transformations. The young frogs lived 1-3 weeks following complete metamorphosis. The effect on O consumption following single and double lung extirpation was determined by O-consumption tests (Winkler method) made just prior to and at variable

intervals following extirpation. A decided drop in O consumption occurred following both single and double extirpations, being somewhat more pronounced in the latter case. The most pronounced drop was experienced when the second O test was made ½ hour following extirpation. This amounted to 14-21% in the case of single extirpations and 18-30% where double extirpations had been made. O-consumption tests made at 3-, 15-, and 27-hr. intervals following extirpation gave evidence of a decided, though less pronounced, drop. It is concluded that the lungs of *R. pipiens* larvae are functional for a considerable period prior to the onset of metamorphosis.—*Author (courtesy Wistar Bibl. Serv.)*.

7002. **HELFF, O. M., and K. I. STUBBLEFIELD. The influence of oxygen tension on the oxygen consumption of Rana pipiens larvae.** *Physiol. Zool.* 4(2): 271-286. 1931.—The results of over 400 Winkler O-consumption tests show that anuran larvae possess remarkable respiratory regulation throughout considerable ranges of O tension. The following abbreviated results were obtained: Twenty larvae were tested, individually, for 5 consecutive 90-min. periods. The average amount of variation in O consumption was approximately 12% between any 2 periods. Twenty-four larvae were tested, individually, at 90-min. intervals under decreasing O tensions produced by their own respiration. The larvae (average weight, 4.7 gm.) possessed respiratory regulation between approximately 10S and 23% saturation, partial pressure, 26°C. Approximately the same variations in O consumption were found as previously determined under constant O tensions. To determine more accurately the lower limit of regulation, 20 larvae were tested, individually, as above, but at 1 hr. intervals and in approximately 4 times the initial amount of water which had previously been reduced to about 40% saturation. The lower limit of regulation was thus determined as approximately 22% saturation. Asphyxiation occurs very rapidly at or below the lower limit of regulation and is complete between 21 and 18% saturation. The results are discussed and suggestions offered relative to the nature of the respiratory mechanism controlling O consumption.—*Authors (courtesy Wistar Bibl. Serv.)*.

7003. **HERSHEY, J. WILLARD. Animal life in synthetic mixtures of nitrogen and oxygen.** *Trans. Kansas Acad. Sci.* 33: 133-135. 1930.—A discussion, with graphs, of the effect upon the lives of white mice of synthetic atmospheres of O and N in varying proportions.—*F. C. Gates*.

7004. **HESS, W. R. Kritik der Hering-Breuerschen Lehre von der Selbststeuerung der Atmung.** *Pflüger's Arch. Ges. Physiol.* 226(2): 198-211. 6 fig. 1930.—The classical literature on the Hering-Breuer reflexes is reviewed, particularly in the light of recent work which has indicated the presence of action currents in the diaphragm even at the end of expiration. Diaphragmatic tonus was investigated in rabbits with a widely opened thorax; the degree of diaphragmatic contraction was found to be decreased by an experimentally produced rise in intrapulmonary pressure even during apnea due to over-ventilation. These changes in tone commenced after a latency of 0.07 to 0.22 sec. and required several seconds for completion. They might be induced during spontaneous respiratory movements and then were only fully in evidence ¾ of a respiratory phase after the change in pressure. In a curarised animal the frequency of the action currents in the phrenic was slowed by a rise of intrapulmonary pressure. Reflexly induced movements of the diaphragm are not inspiratory or expiratory movements but variations in tone which affect the depth of respiration by determining the expiratory level from which inspiration starts, and with which regulation of the respiratory rate is coordinated. Reflex apnea may be produced in a vagotomised animal by forcible separation of the rib stumps; reflex changes induced by thoracic stimulation require further investigation.—*H. C. Bazett*.

7005. **HIESTAND, WILLIAM A. The influence of varying tensions of oxygen upon the respiratory metabolism of certain aquatic insects and the crayfish.** *Physiol. Zool.* 4(2): 246-270. 1 fig. 1931.—Nymphs of the dragon fly, *Nasiaeschna penthacantha*, larvae of the caddis fly, *Limnephilus rhombicus*, and the crayfish *Cambarus virilis*, were used. Oxygen consumption and carbon-dioxide output were measured as the animals lowered the O tension of the water by their own respiration. The respiration of all forms was independent of varying O tensions for the greater part of the range of tensions. Free CO_2 or a lowered pH stimulated the rate of respiration of *Nasiaeschna* nymphs. The rate of O consumption of *Limnephilus* and *Cambarus* was influenced by the rate at which the O tension of the water diminished. If these animals were allowed sufficient time, they could regulate their respiration over a considerable range of tensions. High O tensions in no way altered the normal rate of O consumption. Evidence is given to show that O is stored in the tissues. Oxygen consumption does not behave as a simple physical diffusion process in these forms. The presence of respiratory pigments is indicated.—*Author (courtesy Wistar Bibl. Serv.)*.

7006. **JACOBS, WERNER. Untersuchungen zur Physiologie der Schwimmblase der Fische. I. Über die "Gassekretion" in der Schwimmblase von Physoklisten.** *Zeitschr. Wiss. Biol. Abt. C. Zeitschr. Vergleich. Physiol.* 11(4): 565-629. 34 fig. 1930.—Morphologic and physiologic methods were combined in the study of the nature of the "gas secretion." A certain amount of gas was removed by puncture from the swim-bladder of the fishes studied (river perch) and the ensuing decrease in volume of the fishes was measured and the gas analyzed. The fish secreted gas to replace that removed, the increase in volume was measured, and at a given stage the fish was again punctured, the gas glands were fixed, and the gas mixture removed was analyzed. The gas removed from the swim-bladder at first had, on the average, about the composition of atmospheric air: CO_2 2.54%, O 19.37%, and N 78.09%. The loss of volume by puncture was replaced first by O and next by CO_2; the average composition on 2nd puncture was CO_2 21.4%, O 42.9%, and N 35.7%. During increase of volume after puncture the CO_2 content of the swim-bladder increased rapidly until it reached a certain proportion (about 24%), which was never surpassed: the O content, on the other hand, increased steadily until the volume was completely replaced. This was apparently due to the fact that, after a certain degree of CO_2 tension was reached in the swim-bladder, an amount diffused out, through the bladder walls, equal to the amount flowing in from the gas glands, while the walls of the swim-bladder were relatively impermeable for O. While exact measurement was not possible, it appeared that the "replacement gas" consisted of about ⅔ CO_2, about ⅓ O, and a little N. After the volume had been restored, the excess CO_2 disappeared quickly from the swim-bladder (in the course of hours or a few days), the O more slowly (in the course of weeks), while N increased until at last the pre-puncture proportions were attained. CO_2 evidently plays an important part under the normal alterations of air-pressure and the slight changes of water-pressure on the swim-bladder under normal conditions. In the gas glands of all animals various cell forms occur, connected transitionally with each other. The cells of gas glands are typical glandular cells; they produce a fluid secretion which is stored in the cell in granular form and apparently given off into the numerous capillaries of the glandular tissue; the gas glands are therefore to be classed with the endocrine glands. In the different glands the different cell-forms occur in varying relative proportions. Comparative cell counts in animals with highly active and non-active gas glands confirm the conclusions drawn from cytologic study; changes in the structure of the gland are in direct relation to compensatory increase in volume necessitated by puncture. Curves of increase in volume, made from repeated measurements of volume on several animals under parallel conditions, show that increase in volume after puncture

is not continuous, but rhythmic. The outlines of the individual were conditioned on the one hand by a rhythmic activity of the gas glands and on the other by the tension resistance which the gases have to overcome in order to penetrate the swim-bladder. The capillaries in gas glands activated by puncture have a much wider lumen than those in non-punctured animals. These facts furnish the basis for a new working hypothesis of the mechanism of gas secretion.—*Author's summary (transl.).*

7007. **KAGAN, E. M., und P. M. KAPLAN. Reaktion auf Einatmung von Luftgemischen mit gesteigerter CO_2-Konzentration als Index der körperlichen Leistungsfähigkeit.** *Arbeitsphysiol.* 3(1/2): 27-60. 2 fig. 1930.—The reaction of the breathing to inhalation of air containing 2.8-3.4% CO_2, 4.6-5.8% CO_2, 2.9 to 8.8% CO_2, was studied by means of an open circuit using Douglas bags, mouthpiece and Elster meter. Two groups of subjects were used, load carriers (6-8), and mental workers (3-8). The rest or fore period was 5 min. and the periods of inhalation of the different mixtures were 2.5 and 5 min. The recovery after inhalation was followed in 3 successive periods, totalling 12.5 min. The volume of lung ventilation, the respiration rate, the composition of inspired and expired air, the gaseous exchange and the R.Q. were determined. The alveolar CO_2 was calculated from an assumed dead space which was varied according to the depth of respiration, and the amount of CO_2 retained during the periods of inhalation of CO_2 containing air as well as the extra CO_2 eliminated in the recovery periods. The results are given in detail. Although the mental workers reacted differently from the load carriers, the individual variations in each group are large and the authors conclude that the intensity and character of the reaction of the respiration to the inhalation of air mixtures containing 3 to 8% CO_2 can in no way serve as an index to the physical capacity for work.—*T. M. Carpenter.*

7008. **KELLER, ALLEN D. Nervous control of respiration. I. Observations on the localization of the respiratory mechanism in the isthmus, pons and upper medulla of the cat.** *Amer. Jour. Physiol.* 89(2): 289-309. 3 pl. 1929.—An operative method is described by which the floor of the 4th ventricle can be exposed without interfering with the respiratory or vasomotor mechanisms, reflex polypnea occurring spontaneously or being induced experimentally. The light anesthesia polypnea mechanism is very sensitive to surgical manipulation, can be entirely eliminated without affecting the ordinary mechanism of quiet respiration and the region about or just caudal to the inferior colliculi is especially sensitive. Polypnea is not dependent on centers situated in the reticular formation, or on fiber tracts crossing the mid-line or passing cephalad or caudal through the medial stems of the isthmus, pons, or upper medulla. If polypnea is dependent on cephalic centers, the centers as well as the fiber tracts passing to and from the centers are located in the extreme lateral stems of the pons and upper medulla. Although lesions that cut the lateral stems eliminate polypnea, this does not necessarily mean that anatomical structures concerned with respiration are destroyed. It is demonstrated that the typical respiratory acceleration response that can be obtained through a sciatic during light anesthesia can still be obtained with the brain-stem hemi-sectioned through the upper medulla level. Section of the opposite side of the stem eliminated the response. Short rapid respiratory excursions superimposed upon the inspiratory phase of the slower ordinary respiratory excursions as a result of unilateral lesions were elicited reflexly through a sciatic stump or by means of a heat beam. Ordinary quiet respiration was slowed by sectioning only 1 lateral stem through the pons region just as by sectioning the whole brain-stem at this level. Sectioning the opposite lateral stem after the 1st has been sectioned caused a further slowing of the respiratory rate. An animal can respire in a normal and coordinated manner with vagi cut and with 1 lateral stem sectioned through the caudal region of the pons. In the cases observed section of the opposite lateral stem at this level eliminated coordinated respiratory movements.—*Author's summary and conclusions.*

7009. **KIMURA, KOTARO. Veränderungen des Stoffaustausches zwischen Blut und Gewebe durch experimentelle Überventilation bei normalen und pathologischen Gewebszuständen.** *Tohoku Jour. Exp. Med.* 15 (3/4): 199-235. 1930.—30 minutes of 5-fold artificial overventilation in normal lightly anesthetized dogs resulted in the following changes in the blood: A considerable rise in O saturation of arterial and of venous blood, accompanied by a decrease in CO_2 content somewhat greater in venous than in arterial blood. Pronounced fall in O capacity. Hemoglobin and serum protein diminish, the latter somewhat less than the former. Blood chloride increases slightly while serum chloride falls. All values tend to return to normal 30 to 60 min. after cessation of overventilation. These results point toward dilution of the blood and are probably occasioned by a loss of fluid by tissue cells and a return to normal on cessation of overventilation. After cantharidine poisoning, O saturation, especially venous, rises during overventilation, less however than in the normal dog since, following cantharidine, gas exchange between blood and tissues is disturbed and respiration of the blood cells themselves is diminished. Alterations in blood concentration following overventilation are less and appear more slowly after cantharidine poisoning than in the normal and the return to previous conditions is delayed. In uranium poisoning, the alteration in blood chemistry is the same as in cantharidinized tissues but less marked.—*D. A. McGinty.*

7010. **LANIEZ, GABRIEL. Les puissances hémithoraciques évaluées grâce à une méthode simple.** *Jour. Physiol. et Path. Gén.* 29(1): 42-44. 2 fig. 1931.—By means of a movable belt placed successively in 4 positions round the thorax, a graphic record is got of the movements of each side. From this, the work done and the contraction force of each side of the thorax is calculated. A typical ratio found was, right: left = 20: 17.—*W. R. Fearon.*

7011. **McGINTY, DANIEL A. The regulation of respiration. XXXIV. The carbon dioxide content of the intact brain of the frog in relation to changes of oxidation.** *Amer. Jour. Physiol.* 93(2): 528-535. 1930.—Intact living frogs were equilibrated for ¾-2 hrs. in gaseous mixtures containing varying amounts of CO_2 in room air, in high and low O gaseous mixtures and in room air during simultaneous administration of NaCN in the dorsal lymph sac. At the end of the equilibration period, the frog brain was removed quickly, with due precaution to prevent gas exchange, and analysed for total CO_2 by the $Ba(OH)_2$ electrical conductivity method. The total CO_2 content of the brain in a high O gaseous mixture, in room air, in a low O mixture and in room air during cyanide poisoning were 27.4, 22.8, 13.3 and 9.9 volumes % respectively. When CO_2 was added to these mixtures the same relative positions of the curves held true. These results indicate an increased buffering capacity of the brain when oxidations are improved and a decreased buffering capacity when oxidations are impaired. Applying the Henderson-Hasselbalch equation it is computed that for a CO_2 pressure of 25 mm. Hg the pH of the brain in the order of the conditions named would be approximately 7.33, 7.28, 7.19 and 7.10. Conversely, for a pH of 7.2 the CO_2 pressure would be approximately 36, 33, 23 and 16 mm. Hg. It is, therefore, suggested that the decreased CO_2 pressure and H-ion concentration of the blood commonly associated with temporarily impaired oxidations may be accompanied by an increased acidity of the brain. When the curves of these experiments are compared with CO_2 dissociation curves of frog's blood or of those of excised muscle and nerve obtained with other methods it appears that frog's brain is better buffered than frog's muscle or nerve but less well than frog's blood. The significance of the relative buffering capacity of brain compared to that of blood, muscle and nerve is discussed.—*Author's summary*

7012. **NACK, ARTHUR, and GEORGE WULP. Regulation of respiration. XXXII. The site of action of sodium sulphide as related to peripheral chemical control of pulmonary ventilation.** *Amer. Jour. Physiol.* 89(2): 315-321. 1929.—The site of stimulation of respiratory movements by Na_2S was studied by injection into the femoral and external jugular veins, into the common carotid artery, internal carotid artery, the vertebral artery and the abdominal aorta at, above and below the level of the bronchial arteries; 395 injections were made in 19 dogs under varying conditions, such as with the vagus nerves intact and with the stellate ganglia intact and removed. Intravenous injection of Na_2S elicited temporary stimulation of respiratory movements commonly followed by temporary depression or apnea. Similar injections into the cerebral arterial circulation produced the same general effects. The abrupt response following injection into the internal carotid or the vertebral artery, compared with the markedly delayed response to intravenous injection and the absence of response to injection into the external carotid artery indicated central chemical action of Na_2S. Preponderance of central chemical action is suggested by the similarity of results obtained by administration before and after double vagotomy and double removal of the stellate ganglia. The failure to establish a difference in latent periods before and after vagotomy in favor of peripheral chemical stimulation of the afferent endings in the lungs and the failure to stimulate respiratory movements by administration of Na_2S into the bronchial arteries is suggestive of the absence or minor significance of peripheral chemical stimulation.—*From authors' summary and conclusions.*

7013. **OMODEI-ZORINI, A. Sulla mobilità attiva dei margini polmonari in condizioni normali e patologiche: "L'indice espiratorio." [The active motility of the pulmonary margins in normal and pathologic conditions.]** *Boll. e Atti R. Accad. Med. Roma* 56(11/12): 346-347. 1930.—The author applies the name "expiratory index" to the difference between the displacement of the lower pulmonary margin and the diaphragmatic cupola in forced expiration and that in deep inspiration.

7014. **[PETROV, I. R.]** ПЕТРОВ, И. Р. Экспериментальные исследования об изменении функции некоторых центров при анемии головного мозга. [Functional changes of respiratory centers during cerebral anemia.] [French résumé.] Архив Биологических Наук. (*Arch. Sci. Biol.*) 30(4): 433-442. 6 fig. 1930.—About 50 experiments were conducted on dogs and rabbits, with anemia produced repeatedly for short periods. Different stages were observed in the functional changes of respiration. Excitation of the respiratory center, increased during the first anemia, was considerably lowered after the series of consecutive anemizations, and even a brief cessation of respiration could be observed. At times, the augmented excitability of respiratory centers remained constant during the entire period of anemia; then it assumed a periodic character—respiration of Cheyne-Stokes type; still later this excitability was considerably lowered. After a series of repeated anemias, one could observe strong respiratory movements, which, according to Lumsden, are due to paralysis of the "pneumotaxic" center. This was followed by the exclusion of the "apneastic" center—the "gasping" respiration—and, finally, by complete cessation of respiration, due to paralysis of the respiratory center. However, the functioning of this center can be restored after a certain time, provided the circulation of blood in the brain is reestablished. If the circulation is preserved, absence—for an hour or more—of excitation of the respiratory center does not always imply its paralysis; its excitability by a reflex irritation may be preserved even during the cerebral anemia.

7015. **PUPILLI, GIULIO. Sympathicotomie cervicale et respiration. 2. Les effets de la sympathicotomie cervicale sur les échanges gazeux pulmonaires et sur la portée circulatoire dans la veine pulmonaire chez la "Testudo graeca" décérébrée.** *Boll. Soc. Med. Parma* 21(2): 113-130. 1928.—In the decerebrated *Testudo graeca,* following a plane which passes just before the caudal extremity of the optic lobes, bilateral sympathectomy in the neck induces a decrease in the rate of blood circulation in the pulmonary vein and a decrease in the gaseous exchanges in the lung. The two phenomena are of a transitory nature.—*G. Pupilli (transl.).*

7016. **PUPILLI, G. Respirazione periodica provocata dalla simpaticotomia. [Periodical respiration following sympathectomy.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 788-790. 1930.—In *Testudo graeca* following decerebration and sympathectomy a change of the breathing was observed, the respiration assuming a periodic rhythm.—*M. Comel.*

7017. **RAHN, H., und F. KLEINKNECHT. Die Atemführung beim Riemenrudern.** *Arbeitsphysiologie* 3(5): 397-408. 2 fig. 1930.—The breathing during rowing was studied with respect to the synchronism of the phases of inspiration and expiration with the pulling and reaching forward periods of rowing. The study was made on 24 males and 9 females in an indoor rowing tank. The phases of rowing and of inspiration and expiration were registered simultaneously. Five different types of breathing were found which could be roughly divided into two classes: (A) inspiration corresponded with the stroke; (B) inspiration corresponded with the reaching forward after the stroke. B occurred more frequently in rapid rowing and with beginners. As the rowers trained, they gradually changed to the A class.—*T. M. Carpenter.*

7018. **READ, HÉCTOR. Der Einfluss der Mundatmung und der Spirographie auf die Lungenventilation.** *Beitr. Klin. Tuberk.* 76(1): 121-128. 1930.—A review of some hundreds of respiratory curves as well as some thoracographs showed that respiration through the mouth was usually uniform during physical and mental rest. In many patients attachment of the nasal clamp produced a few deeper or irregular inspirations. The alveolar CO_2 tension was determined in 10 subjects with a Knipping apparatus, samples being taken at the beginning and at the end of 15 and 45 min. mouth breathing, and after a subsequent 15 min. nasal respiration. With 1 exception (epistaxis) the variation was not more than 0.22% CO_2 or 4.0%. Mouth breathing did not induce respiratory insufficiency. In a series of 25 subjects 2 samples were taken, the 2nd at the end of 10 min.; in 18 the variations were up to 0.17% CO_2—less than 5%, in 7 the variations were between 0.22-0.55% CO_2—more than 5%. Thus, in ¼ of the subjects respiration was affected; hypoventilation, due to previous hyperventilation, existed.

7019. **RICHARDS, DICKINSON W., Jr., and MARJORIE L. STRAUSS. Carbon dioxide and oxygen tensions of the mixed venous blood of man at rest.** *Jour. Clin. Investigation* 9(3): 475-532. 2 fig. 1930.—For the investigation of mixed venous blood gases in man at rest, 2 normal subjects were studied. The methods employed were simple, involving the rebreathing of gas mixtures from a bag, and the taking of instantaneous samples at intervals of 5 sec. during the rebreathing period. The latter lasted usually about 30 sec., sometimes as long as 50 sec. Thus it was found that an equilibrium can be regularly established, for CO_2 with certain high O mixtures, and for both CO_2 and O with certain low O mixtures. These 2 equilibria represent essentially the same CO_2 content levels in the (venous) blood of the subject. The mixtures of rebreathed gases that can be used to establish such equilibria can be varied within small but fairly well defined limits. To accept these equilibria as representing the state of the mixed venous blood at rest involves certain assumptions; these have been described in the 1st part of the present study. Previous workers have shown that (a) with proper technique complete mixture of lung-bag gases is attainable; (b) "true" and "oxygenated" mixed venous CO_2 levels are the same. The authors' experiments have confirmed the above and have further shown that (c) the error due to progressive O absorption during the oxygenated mixed venous equilibration is small, (d) lung gases and blood are in approximate equilibrium at the

end of a "true" mixed venous equilibration, (e) the method of intermittent rebreathings gives false "mixed venous" equilibria in 1 of the subjects studied. No further evidence has been obtained as to the presence or extent of error due to (a) altered respiratory movements during the procedure, or (b) recirculation within the time of the procedure, of small amounts of blood; but the comparison of the authors' arteriovenous differences with those recently obtained by Lauter with direct cardiac puncture, suggests that the error involved is small.

7020. SAPEGNO, ENNIO. Resistenza alla depressione barometrica e soppressione della funzione vagale. [Resistance to low barometric pressure and suppression of vagal function.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 895-897. 1930.—Vagotomised animals showed a diminished resistance to experimental barometric depression. The resistance of animals treated with atropin was also diminished—more than in animals which underwent unilateral vagotomy, less than in animals with bilateral vagotomy.—*M. Comel.*

7021. SCHNEIDER, EDWARD C., and GORDON C. RING. The influence of a moderate amount of physical training on the respiratory exchange and breathing during physical exercise. *Amer. Jour. Physiol.* 91(1): 103-114. 1929.—Moderate physical training, about an hour daily, increased the load-carrying ability [in 2 subjects] within 1 wk. but the full effect was observed only after 5-7 wks. Any let down in the regularity or amount of daily work soon reduced the load-carrying ability, but even with complete neglect of exercise some of the gain in power was maintained for several months. The percentage of CO_2 exhaled and of O absorbed during work was increased by training, the full effects being reached within 4 or 5 wks. These soon dropped back to the pre-training level when training was discontinued. The minute-volume of breathing for any given load of work decreased with training, and reached its lowest level in 4-6 wks. This effect disappeared within 4-6 wks. after training was discontinued. In 1 subject the absorption of O was increased as training changed overloads to normal or crest-loads. In another subject a slight decrease in the O consumption of work was evidenced as training proceeded. A decrease in the respiratory quotient of work during training suggested a gain in ability to more adequately reconvert lactic acid into its precursor. The effects of physical training were manifest, in the subject sitting at ease, by a higher percentage output of CO_2 and intake of O and by a higher metabolism per sq. meter of body surface.—*Authors' summary.*

7022. SHAW, LOUIS A., and ANNE C. MESSER. The carbon dioxide capacity of the body and the rate at which the body comes into equilibrium with changes in the alveolar carbon dioxide tension. *Amer. Jour. Physiol.* 93(2): 422-432. 1 fig. 1930.—In 10 experiments cats were made to breathe from a gas mixture containing about 11% CO_2 until equilibrium had been established at a level which was about 54 mm. Hg above the normal. During the return to the normal level, while the cat breathed outdoor air, the expired air was collected, and the CO_2 which was in excess of that produced by oxidation during the collection period represented that which had been retained by the body as a result of the previous saturation to a higher CO_2 level. One kgm. of cats' blood, within the CO_2 tension limits of these experiments, will retain about 3.2 cc. CO_2 per mm. of Hg tension difference, while the entire body under the same conditions will retain about 1.78 cc. CO_2. The CO_2 retained by the blood alone was 10.5% of that retained by the entire body. On the assumption that the body is 70% water by weight and that the CO_2 retained by the body is held by the water of the body, the authors estimate that 1 kgm. of tissue fluid, exclusive of the blood, will retain an average of 2.49 cc. CO_2 per mm. tension difference. In 30% of their experiments the buffering capacity of the tissue fluids was equal to or greater than that of the blood. It requires 45-140 min., with an average value of 102 min., for the body of the cat to come into equilibrium with a change in the alveolar CO_2 tension.—*Authors' summary.*

7023. SHAW, LOUIS A., and ANNE C. MESSER. Cutaneous respiration in man. II. The effect of temperature and of relative humidity upon the rate of carbon dioxide elimination and oxygen absorption. *Amer. Jour. Physiol.* 95(1): 13-19. 1 fig. 1930.—The rate of CO_2 excretion and O absorption through the skin of the arm was observed at different temperatures and a constant relative humidity, and at different relative humidities and a constant temp. [in a single subject]. The rate of CO_2 excretion increases with rising temp. At 34° C., there is a critical point above which the rate of CO_2 excretion becomes 6 times as rapid per degree of temp. increase as at temp. below 34° C. The O absorption bears an approximately constant ratio to the CO_2 excretion until 34° C. is reached, at which point the ratio of CO_2 excretion to O absorption becomes greatly increased. The rate of cutaneous respiration increases with the relative humidity due to the thermal effect of evaporation.—*From authors' summary.*

7024. TURNER, ABBY H. Vital capacity in college women. I. Standards for normal vital capacity in college women. II. A study of students with high and low vital capacity. *Arch. Internal Med.* 46(6): 930-937; 938-945. 1930.—I. A study of the vital capacities of 1,337 freshman college women is summarized. The correlation with standing height is the best and with surface area only slightly less good. As previously determined, the weight correlation is distinctly less close. II. A comparative study of students whose vital capacity was more than 15% above or below the average for their heights (121 with high and 85 with low vital capacity). While in a few instances there seemed to be direct association of low vital capacity with past or present disease of the thorax, heart or lungs, the majority seemed to be young women for whom the exercise program in the years previous to college was very limited. The response of 22 students in 1 class, specially trained for thoracic development, was gratifying. By whatever test this low vital capacity group was tried out (general health, academic or social success), it appears that it was at a disadvantage.

7025. WILLIAMS, DONALD H. The production of tetany in albino rats through decreased atmospheric pressure. *Trans. Roy. Soc. Canada (Sect. 5, Biol.)* 23 (2): 143-150. 1929.—Gradual reduction of O tension in the air breathed by young white rats produces death from uncomplicated asphyxia, from tetany preceded by asphyxial symptoms, or from tetany not preceded by asphyxial symptoms. The essential factor determining which series of events will occur is the rate of fall of O pressure. The average rate of fall for 3 cases was .50, .61 and .73 mm. Hg per minute respectively. The results agree generally with the diphasic theory of the effects of anoxemia.—*H. M. Krueger.*

7026. YSSELING, M. A. Über die Atmung der Weinbergschnecke (Helix pomatia). *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Verglcich. Physiol.* 13(1): 1-60. 6 fig. 1930.—A capillary tube containing fluid was inserted into the lung, the column rising when the lung closed, lowering when it opened. When closed, movements occurred which increased in intensity when an unfavorable condition persisted and decreased when free respiration again occurred. Respiratory movements began when the O content of the lung apparatus sank below 9-11%; under normal conditions there was no regulation of diffusion. When the degree of moisture changed, *Helix* responded by keeping the respiratory opening open. The reaction occurred in the direction dry-moist and moist-dry; movements of air and absorption of CO_2 could suppress it. In an N atmosphere the lung opened and closed in rapid succession (panting). This did not occur in an atmosphere of more than 11% O, appeared when it was below 9-11% O. If the 9-11% atmosphere was replaced by one of 20% O the lung was open for a long time (open reaction). CO_2 did not alter the re-

action to O deficiency or excess-respiratory movements, panting and the open reactions persisting. It is probable that CO_2 exerted an effect on the amount of respiratory opening, since an accumulation of CO_2 in the region of the opening caused further opening. An open reaction occurred when the shell was closed airtight, the snail being indrawn. This was apparently caused by the CO_2, which had an effect because respiratory movement was absent. The regulation of respiratory movement (regulating factor O deficiency) was apparently central; that of the size of the opening peripheral. Analyses showed that the O mechanism was not used in the lungs below 11%, respiratory movements beginning at this content. The O consumption was greatly influenced by the appearance of CO_2. Closing of the lungs initiated an inhibition of cardiac activity, particularly in an O-poor medium. O deficiency had little influence on cardiac activity; in a N medium the heart often beat as rapidly during the open period as in the O medium. CO_2 had a pronounced action on the cardiac activity, the frequency becoming less (even when sufficient O was present). Though the frequency was low under the influence of CO_2, it increased when the temperature was increased.

ANIMAL PHYSIOLOGY

MOTOR APPARATUS

W. O. FENN, *Editor*

(See also in B. A. 6(2): Entries 3567, 3710, 3713, 3751, 3856, 3916, 3966, 3967, 3992, 3995, 4056, 5004, 5359, 5415; and in this issue 6671, 6848, 7052, 7089, 8235, 8898)

7027. **BAEYER, H. v.** Gibt es beim Menschen Synergisten und Antagonisten? *Pflüger's Arch. Ges. Physiol.* 227(1/2): 171-180. 6 fig. 1931.—Mechanical relations of various muscles and their modification by change of posture and point of fixation of the limb are analysed. The principle is emphasised that muscles which are antagonists for one movement may be synergists for another. Reflex factors in coordination are not dealt with.—*G. P. McCouch.*

7028. **BANCROFT, WILDER D., and GEORGE BANCROFT.** Glycogen metabolism. *Proc. Nation. Acad. Sci.* 16(10): 651-657. 1930.—The authors criticise the theory that the recovery process in muscle after activity involves the coupled reactions of oxidation of lactic acid and conversion of lactic acid into glycogen. Instead, they postulate that these reactions are independent, and that a reversible equilibrium, catalyzed by enzymes, exists in muscle between glycogen or glucose, and lactic acid. Displacement of this equilibrium occurs when adsorption of glycogen by protein is decreased, as when a muscle is stimulated. They suggest that in cancer the adsorptive power of protein for glycogen is very low.—*M. Dann.*

7029. **BAUER, ERWIN, und M. TSCHUKITSCHEWA.** Über ausgleichende Vorgänge beim Absterben lebender Systeme. II. *Pflüger's Arch. Ges. Physiol.* 223(1/2): 104-112. 5 fig. 1929.—Dead tissues from white rats and mice and fresh tissues from normal animals, from animals fatigued by exercise, and from muscles tetanized by induction currents, were placed in distilled water and the increase of weight with time was determined together with the changes in lactic acid and glycogen content of the muscles. Dead tissues or fatigued tissues swell to a maximum weight and thereafter the water content remains constant, while fresh live tissues shrink for some time after the maximum water uptake, which is reached in 2-4 hrs. Accompanying the water uptake in fresh tissues is an increase of lactic acid and decrease of glycogen contents; with the subsequent shrinking stage, the reverse. Thermodynamic calculations of the energies involved in swelling and shrinking and in the conversion of glycogen to lactic acid and vice versa lead to the conclusion that this swelling and shrinking is simply a long drawn out contraction and relaxation of the muscle by the normal contractile mechanism.—*J. M. Ort.*

7030. **BLASCHKO, H.** The delayed anaerobic heat production of stimulated muscle. *Jour. Physiol.* 70(1): 96-100. 1930.—The delayed anaerobic heat production after a tetanus has been subjected to a critical examination. It is not due to condensation of water vapor caused by a possible temporary rise of osmotic pressure, nor is it due to non-uniform heat production in contraction or control. Its occurrence has been verified, and it has exhibited the usual variability and order of size. It seems to be due to some real process occurring in the muscle.—*Author's summary.*

7031. **BLUME, WILHELM.** Über die Erstickungsstarre an Fröschen. *Arch. Exp. Path. u. Pharm.* 127 (3/4): 165-172. 1928.—When water in which *Rana temporaria* is immersed is warmed to 33-34° reversible rigidity of muscles develops. Temp. required is lower than that needed for heat narcosis (35°), and this rigidity develops more rapidly than the peripheral heat rigor of muscle. It resembles the rigidity of narcosis, asphyxia, or decerebration in cats, being prevented by section of posterior roots, but differs from them in depending upon centers in the entire central nervous system, brain as well as cord. Before rigidity develops there are convulsions. The entire picture is attributed to asphyxia, resulting from increased O consumption because of heat, with no corresponding increase in O supply. —*C. F. Schmidt.*

7032. **BRAMWELL, CRIGHTON, and REGINALD ELLIS.** Some observations on the circulatory mechanism in Marathon runners. *Quart. Jour. Med.* 24(95): 329-346. 2 pl. 1931.—A group of 28 Marathon runners, examined clinically, radiographically, and electrocardiographically during their final stage of training, consisted of older, more phlegmatic men, of lighter build and with a slower heart rate than that of other Olympic runners, and with hearts relatively larger than those of any other group of athletes examined. Of the first 7 places, 5 were taken by men whom the authors had previously examined; no constant physical finding served to differentiate them from less successful competitors. It is suggested that the smallness of the O debt probably accounts for the absence of distress among Marathon runners, and that shortage of glycogen is one of the most important factors in determining the limits of their endurance.

7033. **BRISCOE, GRACE.** Adequate electrical stimuli for posture and movement. *Jour. Physiol.* 71(3): 292-308. 1931.—The quadriceps muscle of the cat was so arranged that in full postural contraction the leg and foot were held straight up in the air. The leg was denervated except for the experimental muscle. Low rates of stimulation (20-25 per sec.) will maintain posture for hrs.; higher rates are suitable for rhythmic phasic contractions. Prolonged postures have been obtained under ether anesthesia alone, dial alone, and under a combination of these 2 drugs. There is a limited range of rates within which full steady posture can be held without sign of fatigue; rates below or above this range lead either to tremulous action or to decline of posture. There is no hard and fast line between the stimuli for tonic and the stimuli for phasic activities in the muscle. Comparing the conditions found in decerebrate rigidity with those necessary for exhibiting artificial posture, a close parallelism is observed. This suggests that the electrical stimuli employed in the latter case may be termed adequate, since they produce effects similar to those resultant from natural stimuli.

7034. BROWN, MARION, and C. G. IMRIE. On the creatine and phosphorus content of muscle. *Jour. Physiol.* 71(2): 214-221. 1931.—Determinations on 31 muscles removed from 20 cats indicated that, as a rule, in the muscles of normal cats when the amt. of creatine is high the total acid-soluble P and the proportion of it present as phosphagen are also high. Occasionally the total creatine is greater than the phosphagen. When the concentration of creatine in the muscles is increased following the absorption of creatine introduced into the duodenum, there is evidence that the concentration of total acid-soluble P is also increased.

7035. CASTEX, M. E. Méchanisme du soulèvement du corps sur la pointe des pieds. *Jour. Physiol. Path. Gén.* 28(3): 544-555. 10 fig. 1930.—In the movement of extension on the leg, the foot is always a lever of the 1st order, the fulcrum being the tibio-tarsal joint. When the thrust is taken by the point as in rising on tip-toe, the foot becomes, in addition, a lever of the 3rd order. Similarly, in flexion of the fore-arm, as when trying to raise a fixed weight, the radius forms a lever of the 3rd order of which the fulcrum is the shoulder.—*W. R. Fearon.*

7036. DAVENPORT, H. A., HELEN K. DAVENPORT, and S. W. RANSON. Chemical studies of muscle contracture. 4. Changes in phosphorus, nitrogen, and fat produced by tetanus toxin. *Jour. Biol. Chem.* 87(2): 295-298. 1930.—The changes in acid-soluble P found during tetanus contracture consisted of a reduction in the total P (proportional to the protein N), a decrease in phospho-creatine which was somewhat greater than would be accounted for by water change in the muscle, and an inconstant variation of other fractions. The fat content was increased 10% in the tetanus muscle in 3 and essentially unchanged in 2 animals. It therefore seems to have no significance for the acute stage of contracture. —*Authors' summary.*

7037. DAVIS, LOYAL, and LEWIS J. POLLOCK. Studies in muscle tone. II. Resiliency of muscles in decerebrate rigidity. *Amer. Jour. Physiol.* 89(2): 395-399. 1 fig. 1929.—Further proof is advanced that a muscle intoned by a tonic labyrinthine reflex undergoes a change in its physical properties. Not only is such a muscle similar to gum in that it may be "pulled out" and remain so, but when it is compressed and the compression then removed, it remains indented and a part or the entire amt. of the bulging produced by the tonic reflex is "pressed out." The resiliency of a muscle intoned by a tonic labyrinthine reflex is diminished in comparison to that of a normal muscle.—*Authors' conclusions.*

7038. DJURICIC, ILIJA. De la sensibilité envers l'anode du muscle des grenouilles d'hiver. [The anodal sensitivity of muscles of the winter frogs.] [In Serbian, with French résumé.] *Bull. Acad. R. Serbe Sci. Arts Belgrade* 135(64): 57-94. 1929.—Muscles of winter frogs excited by a strong induced current traversing the entire length of the muscle are less reactive than those of summer frogs. Narrow electrodes are placed at one end of a muscle and the muscle is excited by means of strong induced currents in such a way that at one time the cathode, and at another the anode is nearer the mass of the muscle. In the first case the muscle responds by maximal twitches all of the same height; in the second, the reaction is reduced because the wave of excitation must cross the region of anelectrotonus. During the passage of an induced current from end to end of a muscle there are formed in the excited muscle numerous secondary electrodes at each of which is produced a similar condition of anelectrotonus which, by diminishing excitability, diminishes contraction. Later only a constant current of long duration (1-5 min.) would provoke the anelectrotonic modification. Towards November 15th, it manifested itself at the make of the constant current; therefore the induced current was just able to produce the effect. According to the author, this is the first stage of hibernation. The 2nd stage occurs in late December or early January when weak induced currents produce the anelectrotonus. At the end of this stage, the anelectrotonus becomes so marked that the excited muscle reacts no longer if the anode is nearer the main mass of muscle. In February or March anelectrotonus can be produced by an induced current which passes from end to end of the muscle. It appears from this that the secondary anodes throughout the muscle show with difficulty their anelectrotonic action.—*Author's résumé (transl. by J. M. D. Olmsted).*

7039. DJURICIC, ILIJA. Action du courant constant sur les muscles squeletiques des grenouilles d'hiver, de printemps et d'été. [In Serbian with French résumé.] *Bull. Acad. R. Serbe Sci. Arts Belgrade* 135(64): 97-101. 1929.—Muscular contraction resulting from the break of a constant current of sufficient intensity is due to excitation by a current of polarization which develops in the muscle during the passage of the constant current. The effect of the polarization current is easily manifest when a current of moderate intensity passes throughout the entire length of the muscle, but less easily so when the muscle is excited at one end only. In winter frogs the break of even a very strong current (20 v.) passing from end to end of the muscle has no effect. Therefore during hibernation the sensitivity of the muscles is greatly reduced. When these results are compared with the results on nerve (Pflüger's Laws) it will be seen that muscles of winter frogs, in contrast to those of summer frogs which obey the first and second parts of this law only, obey the first and third parts of this law, and not the second.—*Author's résumé (transl. by J. M. D. Olmsted).*

7040. EGGLETON, PHILIP. The diffusion of creatine and urea through muscle. *Jour. Physiol.* 70(3): 294-300. 1930.—By observing the diffusion of creatine into or out of muscles immersed in salt solutions containing creatine, it has been shown that a concentration of 80 mgm. of creatine per 100 cc. of solution is just sufficient to prevent loss of creatine from a resting muscle (frog's sartorius). If the equilibrium were a simple osmotic one, this would indicate a concentration of 65 mgm. of creatine per 100 gm. of muscle (80 mgm. per 100 cc. of water in the muscle). This figure of 65 mgm. per 100 gm. has been previously obtained by direct chemical analyses. Only 1/5 therefore of the "total creatine" of resting muscles is actually present as creatine. In the case of fatigued muscles equilibrium is obtained at concentrations of 200 to 300 mgm. creatine per 100 cc. of solution. It seems probable, therefore, that stimulation to fatigue trebles the amount of free creatine. Urea distributes itself between resting muscles (frog's sartorii) and surrounding isotonic salt solutions in such a manner as to indicate that the whole of the water in the muscles is capable of dissolving urea.—*Author's summary.*

7041. FENN, W. O., H. BRODY, and A. PETRILLI. The tension developed by human muscles at different velocities of shortening. *Amer. Jour. Physiol.* 97(1): 1-14. 2 fig. 1931.—Graphical records were taken of the swinging of the arm from the shoulder and the leg from the knee. Velocity of movement was determined and from the change in velocity with time the acceleration and hence the forces exerted by the muscles at different parts of the swing were deduced. The force exerted by the muscles when the limb was held isometrically was determined at the moment when the limb was suddenly released. From the resulting acceleration of the limb as deduced from the graphic record of the swing the moment of inertia of the limb was calculated and agreed within 10% with the value estimated from the weight of the individual and the dimensions of the limb. When the force exerted in such a "quick release" experiment was plotted against the velocity at different moments during the swing, it was found that the tension decreases as the speed of movement increases (av. rate of decrease—3.1% for a rate of shortening of 10% of the muscle length per sec.). It was concluded that this represented a maximum figure for the effect of viscosity alone. A similar constant calculated from Hill's data gave 7.3%, probably because reflex inhibition contributed to the decrease of tension.—*Authors' summary.*

7042. **FENN, WALLACE O. Work against gravity and work due to velocity changes in running: movements of the center of gravity within the body and foot pressure on the ground.** *Amer. Jour. Physiol.* 93(2): 433-462. 1 fig. 1930.—From measurements made on moving picture films of sprinters, figures are obtained from which some of the work done in running can be calculated. The movements of the center of gravity within the body due to changes in the positions of the limbs are determined. Both arms and legs tend to raise the center of gravity within the body at the end of the period when the foot is in contact with the ground, the total average rise being 2.9 cm. Simultaneously the body itself rises an average distance of 3.1 cm., the total rise of the center of gravity in relation to the ground being therefore 6 cm. This rise occurs while the foot is on the ground. The corresponding rate of energy expediture is 0.215 H.P. Backward and forward movements of the limbs are largely compensatory on the 2 sides of the body. The velocity of the head is greater than that of the pelvis while both feet are in the air but the reverse is true while either foot is in contact with the ground. The changes in velocity of the pelvis are not so great as they appear to be from direct measurement of the film because there is a compensatory movement of the center of gravity within the body which is shown to move backwards when the apparent forward velocity of the pelvis is at a maximum. An apparatus is described by which the horizontal pressure of the foot on the ground is measured during sprinting. During each period of contact there is first a forward pressure and then a backward one. This constitutes a direct method of measuring energy loss due to fluctuations in the forward velocity. The forward pressure on the ground represents for the whole run a loss of 0.34 H.P. and the backward pressure an expenditure of 0.5 H.P. The difference of 0.16 H.P. is due to wind resistances. The loss of velocity due to contact of the foot with the ground is 13 cm./sec. as measured on the special apparatus (running platform) described and it is 12-24 cm./sec. when calculated from the vector velocity of the center of gravity of the runner and the angle of contact with the ground.—*Author's summary.*

7043. **FENN, WALLACE O. A cinematographic study of sprinters.** *Sci. Monthly* 32(4): 346-354. 4 fig. 1931.—A semi-popular summary of work described in abstracts vol. 5(5): Entry 14133, and in this issue 7041 and 7042. —*W. O. Fenn.*

7044. **FISCHER, E. Die Wärmebildung des Skeletmuskels bei aufgehobener Milchsäurebildung.** *Pflüger's Arch. Ges. Physiol.* 226(4/5): 500-517. 1931.—With the help of the Hill-Hartree method of thermoelectric measurement, the amount and course of the heat production of muscles (sartorius) poisoned with monobromacetic acid were determined. The poisoning was produced by injection into the lymph system of the frog or by immersion of isolated muscles in Ringer's solution containing monobromacetic acid. The caloric quotient of the poisoned muscles was unchanged. Under aerobic conditions, the poisoned muscle had the same heat production as a normal muscle under anaerobic conditions. The poisoned muscles showed no recovery heat production. The partition of initial heat showed no alteration. It may be concluded that the changes in muscle chemistry which result during contraction after poisoning with monobromacetic acid have to do only with secondary changes of the contraction process.—*D. W. Wilson.*

7045. **GASPERO, H. di. Betrachtungen über biologische Eigentümlichkeiten am statisch-locomotorischen Funktionssystem.** *Zeitschr. Ges. Physikal. Therap.* 39(4): 136-150. 7 fig. 1930.—A general discussion of the neuromuscular apparatus, its relation to work, maintenance of posture, fatigue and efficiency. Some of the author's own experiments with the ergograph point to the importance of mental factors in muscular contraction and fatigue. Absolute muscle force is a relative term, since force depends upon psychic effort.—*H. S. Hopkins.*

7046. **HARVEY, E. NEWTON. The effect of high frequency sound waves on heart muscle and other irritable tissues.** *Amer. Jour. Physiol.* 91(1): 284-290. 1929.—High frequency (340 kilocycles) sound waves of high intensity will cause rhythmic contraction of quiescent ventricular muscle of frog or turtle immersed in Ringer's solution and a more rapid natural rhythm of the auricles accompanied by lessened amplitude of contraction and often by increased tone. Touching ventricle or skeletal muscle or nerve to glass carrying intense supersound waves does not stimulate. Smooth muscle of the alimentary tract exhibits some contraction from supersonic stimulation but the effect is negligible compared with that of heart muscle. Curarized gastrocnemius is not stimulated. The effect may be due to increased pressure changes accompanying the sound waves since it is known that increased pressure will stimulate.—*Author's summary.*

7047. **HINTZE, A. LAURA, and LLOYD SEAGER. The tonus of the ear muscles in the rabbit after cutting the cervical sympathetic.** *Amer. Jour. Physiol.* 89(2): 400-402. 1929.—After section of 1 cervical sympathetic, 9 of 11 rabbits showed a slight drooping of the ear on the operated side which may be interpreted as a slight loss of muscular tonus due to the vasodilation and consequent sudden rise in temp. of the ear muscles. After a few hrs. no difference could be distinguished between the 2 ears (observed up to 23 days). Both ears reacted alike to rubbing with alcohol, fatigue from weights and sudden changes in temp. There was thus nothing disclosed justifying a belief that the cervical sympathetic had any direct influence on the tonus of the ear muscles. —*Authors' summary.*

7048. **HORTON, H. V. The reversible loss of excitability in isolated amphibian voluntary muscle. II. A comparison of the inexcitable condition obtained by different methods. Chronaxie and potassium diffusion.** *Jour. Physiol.* 70(4): 389-403. 1930.—Sartorius muscles (*Rana esculenta*), which have been well soaked in Ringer's solution, can be made reversibly inexcitable by treatment with CO_2 or Ringer's solution at pH 5.5, by damage with pin pricks and by soaking in solutions containing large amounts of K or small amounts of Na. The inexcitability so produced is analogous to that which ensues spontaneously in a muscle dissected without the use of Ringer's solution and suspended in a moist gas, etc. Inexcitable muscles lose K while excitability is being regained by soaking in Ringer's solution. With the onset of the inexcitable condition the values of rheobase and chronaxie rise, to fall again to normal with recovery of excitability. Sartorius muscles will lose up to 70% of their total K if soaked in Ringer's solution for 2 days. The loss of K from muscles may be considerably delayed if the Ringer's solution used for the diffusion contain about 4 times the normal amount of K. A high K/Na ratio in the fibres and a low one in the interspaces may be necessary for excitability. Permeability of some of the fibres may alter these ratios. The diffusion of K and the possible effect of plasma on this diffusion are discussed. Modifications in the method of Kramer for estimating K are described.—*Author's summary.*

7049. **HÜRTHLE, K. Zur Kenntnis der Struktur des ruhenden und des tätigen Froschmuskels. I. Abhandlung. Lässt sich die Struktur des Froschmuskels im Zustand der Verkürzung durch chemische Fixierungsmittel festhalten?** *Pflüger's Arch. Ges. Physiol.* 223(6): 685-698. 1 pl., 2 fig. 1930.—When tetanized muscle is immersed in fixing solution, tension and length return nearly to resting values. This explains the disagreement between results of Franks and H. on changes of the isotropic-anisotropic ratio in contraction.—*G. H. Hitchings.*

7050. **ISHIDA, J., und ELISABETH VOSS. Untersuchungen über die Arbeitsökonomie in der Klinik. II.** *Zeitschr. Ges. Exp. Med.* 75(1/2): 56-63. 1931.—Training (½ yr.) had very little effect on metabolism associated with equal amounts of work of an uncomplicated variety.

7051. **LEESE, CHESTER E., HARRY M. HINES, and DOROTHY P. JORDAN. Effect of fasting upon the ac-**

tivity of the intact skeletal muscle of the rat. *Proc. Soc. Exp. Biol. & Med.* 28(3): 247-248. 1930.—Preliminary paper. The intact gastrocnemius muscle of rats starved for various times up to 144 hrs. did as much work and required as many stimuli to produce fatigue as the muscle of well fed animals.

7052. MACKLER, H., J. M. D. OLMSTED, and W. W. SIMPSON. Phosphocreatine as a buffer in mammalian muscle. *Amer. Jour. Physiol.* 94(3): 626-629. 2 fig. 1930.—Comparison of the data shows (1) there is a buffering effect in mammalian (cat) muscle brei until approximately ¾ of the phosphocreatine has disappeared; (2) the breaking point in the buffering action occurs when the lactic acid has reached a concentration of approximately 0.25%.

7053. MANN, T. Über den Ammoniakgehalt und die Ammoniakbildung im Muskel und deren Zusammenhang mit Funktion und Zustandsänderung. VIII. Über den angeblichen Anteil des Amidostickstoffs des Blut- und Muskeleiweisses an den chemischen Vorgängen im arbeitenden Muskel. *Biochem. Zeitschr.* 231(1/3): 33-38. 1 fig. 1931.—Blood samples were removed from the elbow vein in 3 subjects during muscle rest, and after the hand had been fatigued by kneading plasticine, 5-6 determinations being made on each subject. Four experiments were also made on the gastrocnemius of the frog, 1 determination immediately on removal from the body, the other after 10 min. electrical stimulation. Amino-N was determined by Bliss' method, substituting titration with n/100 NaOH for colorimetry. In neither case could participation of amino-N in the metabolic processes during exertion be found.

7054. MEYERHOF, O. Über die Änderung des osmotischen Drucks des Muskels bei Ermüdung und Starre. *Biochem. Zeitschr.* 226(1/3): 1-15. 2 fig. 1930.—A thermoelectric method for measuring the freezing point changes of muscle during fatigue and rigor is described and the observed change of Δ is compared with accompanying change in number of molecules. During a high degree of fatigue and rigor the measured freezing point depression is about 30% greater than is explicable through demonstrable molecular cleavage.—*Author's summary (transl. by D. Ludwig).*

7055. MEYERHOF, OTTO. The chemistry of muscular contraction. *Lancet* 219(5600): 1415-1422. 1930.—Abstract of a series of 4 lectures given at University College, London.

7056. RÜCHERT, WOLFGANG. Die phylogenetische Bedingtheit tonischer Eigenschaften der quergestreiften Wirbeltiermuskulatur. *Pflüger's Arch. Ges. Physiol.* 226(3): 323-346. 14 fig. 1930.—Four reactions were employed to indicate tonic characteristics: acetylcholin contracture, nicotine contracture, a plastic response to stretch, and contracture which followed galvanic stimulation was prevented by atropine and novocaine. It is maintained that postural function and reflex tonus are not related to these reactions, which are associated with the phylogenetic age of the muscles.—*G. P. McCouch.*

7057. RUSHTON, W. A. H. Excitable substances in the nerve-muscle complex. *Jour. Physiol.* 70(4): 317-337. 2 fig. 1930.—In this paper an attempt has been made to learn whether in the nerve-muscle complex there exist an α and a γ substance, or whether the claims of Lucas to this effect have been due to experimental errors. The sartorius muscle was immersed in a trough of Ringer's fluid through which the current could be sent in parallel lines at various angles with the muscle. Since the optimum angle for the α substance is often quite different from that for the γ substance, this method allows the 2 to be distinguished and hence strongly supports Lucas. Evidence for 2 excitable substances is obtained by 2 different criteria. First, the strength-duration curve of the muscle shows a break which is well outside the limits of error; 2nd, the variation of threshold with angle shows a transition from a substance in the direction of the muscle to one (usually) at a different angle. The α and γ curves may be obtained at all stages from a spinal animal to an excised muscle after 24 hrs. equilibration with Ringer. The γ substance, which is isochronous with nerve, so far from being the excitable substance of the normal muscle fibre, lies in a direction which is usually quite different, and appears to be absent from the pelvic extremity of the sartorius; the α substance, on the contrary, seems to have the properties of the excitable element of the muscle fibre, both with regard to its direction and distribution.

7058. SCHLESINGER, GEORGES. L'hypotonie musculaire dans la première enfance. [Muscular hypotony in early infancy.] 104p. Marcel Vigne: Paris, 1927.

7059. SCHNEIDER, EDWARD C. A study of responses to work on a bicycle ergometer. *Amer. Jour. Physiol.* 97(2): 353-364. 1931.—A linear relationship between the amount of O absorbed and the load of work was maintained by all subjects during moderate exertion. In 4 of 6 cases, the linear relationship was broken soon after the crest-load was passed. The pulse frequency also, like O absorption, augments roughly in a linear relationship to the increase in work up to a certain load, which is found to vary from man to man. The O-pulse rises steadily with an increasing load of physical work, and gives a plotted curve with the concavity towards the abscissa, except for the heaviest loads. The minute-volume of breathing for the 4 subjects who reacted well maintained a linear relationship to the load of work up to the crest-load. For larger loads the increase in lung ventilation becomes excessive and diverges upward from the normal line of augmentation. There is a tendency for the frequency and depth of breathing to increase proportionately with the load up to or just above the crest-load. With overloads of work the frequency of breathing augments inordinately. The limit of voluntary physical effort in 2 cases seemed to be due primarily to failure of the heart to augment proportionately to the increased demands of the tissues for O. Another limiting factor was indicated in the failure of the O-pulse to augment in the usual degree. This is interpreted to be due to an inability to adequately increase the coefficient of utilization of O.—*Author's summary.*

7060. SERENI, ENRICO. Notizie sulla produzione di calore nei muscoli lisci. [Heat production in smooth muscles.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1045-1050. 1930.—In *Sipunculus nudus*, Holothuria and *Stichopus regalis* the heat production by smooth muscles as related to muscular contraction showed 2 distinct stages: (1) a non-oxidative one, related to contraction and relaxation; (2) an oxidative one, related to recovery. In smooth muscles the maintenance of musclar tension was always accompanied by heat production.—*M. Comel.*

7061. SMITH, PAUL W., and MAURICE B. VISSCHER. On the source of energy for anaerobic contraction in glycogen-poor muscle. *Amer. Jour. Physiol.* 95(1): 130-138. 1930.—Experiments on 48 grass and bull frogs, using the procedure of Olmsted and Coulthard, and 15 large bull frogs, with a modification of the procedure to allow the measurement of developed tension as well as glycogen and lactic acid, showed that within the limits of experimental error the lactate accumulation in anaerobic contraction to fatigue is entirely balanced by the loss in glycogen in glycogen-poor, as well as in glycogen-rich muscle. In 24 experiments recording isotonic contractions the authors have found that the magnitude of the mechanical response is invariably proportional to the quantity of lactate formed from glycogen. From these studies there is no evidence that the energy for tension development in muscle poor in glycogen arises from a different source than in muscles rich in glycogen.

7062. SOLARINO, GIUSEPPE. Comportamento del fosfogeno e dei fosfati nei muscoli dopo azione del bagno freddo. [Action of cold baths on phosphagen and phosphate content of muscles.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1001-1003. 1930.—Only slight decrease of phosphagen and phosphates followed cold baths in dogs.

No marked variation followed exercise (massage, running) after the bath.—*M. Comel.*

7063. **STIASNY, GOTTFRIED. Permeabilität und Ermüdung. IV. Der Wendungseffekt bei tetanischer Reizung.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 230-264. 11 fig. 1930.—The gastrocnemius muscles of frogs were given tetanizing stimuli of A. C. and of half- and completely rectified A. C. The tetanic contractions when produced by the rectified A. C., as has been found for rhythmic condenser discharges, can be repeated after recovery by the reversal effect. This is not so with tetany produced by A. C. The observation of Ewert that the form of the contraction curves depends on the direction of current flow holds also for tetanic contractions. For tetanizing stimuli also, it was found that, at the beginning of an experiment, the speed of recovery with rest was nearer to that caused by the reversal effect, while later on, after more work had been done, again the reversal effect was much more speedy, and could be effective when rest no longer could bring about any recovery. In agreement with theory, a muscle tetanized by A. C. does not react to a half-rectified current of equal maximum amplitude but does if the amplitude is greater. Hence also, with A. C. the fatigue is localized at the cathode but in this case in two halves at the two electrodes. If a muscle is being tetanized by pulsating D. C., A. C. will then cause the muscle to do work. Towards the end of the experiment, however, the irritability to A. C. disappears, but can be again regenerated by a brief renewal of the stimulation with pulsating D. C. after the A. C. has been tried. Rest will also restore this irritability to A. C. under these conditions, if the experiment has not gone too far. With fresh muscle, half rectified A. C. is more irritating in spite of its lower current frequency and average current strength, while with a more fatigued muscle, fully rectified A. C. is the more so. A. C. is more so than either in both cases, and is effective when the other two can no longer cause a response. These results also indicate that the fatigue in isolated frogs muscle is a membrane phenomenon and is concerned with ion aggregations at these surfaces. Hence, as has often been observed, A. C. exerts a reversible effect on the central nervous system.—*J. M. Ort.*

7064. **THÖRNER, WALTER. Untersuchung über die polare Erregung des Muskels bei Degeneration und im Kationenantagonismus.** *Pflüger's Arch. Ges. Physiol.* 222(1/2): 37-51. 1929.—This paper is concerned with the fibrillation of striated muscle which occurs after denervation. Frogs (100 *Rana temporaria*) were used. One half centimeter of the sciatic plexus was excised on one side and survival permitted. After a few weeks to 3 mos. the normal and denervated muscles were observed simultaneously in a comparison microscope. Fibrillation was the striking feature of the denervated muscle. Passage of a galvanic current through the denervated muscle and solutions of NaCl and KCl increase the fibrillation. Thörner infers from his results that denervation increases the permeability of the muscle cell. No mention is made of the related work of Langley and Stevens.—*H. C. Stevens.*

7065. **TUTTLE, W. W., and R. C. WILKINS. The application of the pulse-ratio test to efficiency in performing on gymnasium apparatus. The horizontal bar.** *Arbeitsphysiologie* 3(6): 449-455. 1 fig. 1930.—The pulse-ratio test is the effect of light exercise of graded intensity on the heart rate and is found by dividing the pulse rate for two minutes after the exercise by the resting pulse rate for one minute. The most practical way to obtain it is to have the number of trials which produce a pulse-ratio of less than 2.5 and a number of trials which produce a pulse-ratio of more than 2.5 and then interpolate to obtain the number of trials necessary to produce exactly a pulse-ratio of 2.5. The norm was first established in 5 different exercises on the horizontal bar with an efficient subject in excellent physical condition. Thirty subjects were then selected at random from classes in physical education. Most of them produced a pulse-ratio in less number of trials than the norm. The conclusion is that the pulse-ratio test is an index to efficiency in performance on the horizontal bar, an index to the comparative difficulty of the exercises, and that practical application may be made of the pulse-ratio test in following the progress of students in the horizontal bar technique.—*T. M. Carpenter.*

7066. **UFLAND, I. M., und L. W. LATMANISOWA. Einfluss der Arbeit auf die Chronaxie des Nerven-Muskelapparates des Menschen.** *Arbeitsphysiologie* 3(5): 360-371. 1930.—The influence on the chronaxie and rheobase of the position of the hand and arm at angles of 140°, 90° and 30° and holding a weight of 2 kgm. was studied and no alterations were found. Dynamic work with a hand ergometer was performed by 50 men. It consisted of raising a weight of 12 kgm. 25 cm. rhythmically 120 times a min., changing from one hand to the other. There was an average increase of 14% in chronaxie and rheobase of the biceps muscle. About ½ of the subjects showed an increase, whereas a majority of the remainder showed no alteration. After static work there was no alteration in chronaxie of the biceps muscle, but a tendency to increase in the rheobase. The lifting of a weight by flexing the hand at the wrist caused an increase in the muscle chronaxie. The chronaxie of the nerves of the corresponding muscles remained unaltered. Work with the feet caused an increase in the chronaxie of the biceps.—*T. M. Carpenter.*

7067. **VISSCHER, MAURICE B., and PAUL W. SMITH. The relation between contraction frequency and lactate accumulation, and its bearing upon the economy of tension production and maintenance in striated muscle.** *Amer. Jour. Physiol.* 95(1): 121-129. 1930.—The production of lactic acid in contraction in relation to the interval between contractions has been investigated by comparing the lactate concentration in 1 gastrocnemius muscle of a frog after stimulation at a given frequency with that of the other gastrocnemius treated identically and stimulated the same number of times but at another frequency. In 25 experiments in which the 2 opposite gastrocnemii were treated exactly alike except for frequency of stimulation, it was found that the lactic acid produced per contraction in the frog's gastrocnemius is inversely proportional to the frequency of stimulation. It is found that the lactic acid coefficient of developed tension is a more constant factor than is the coefficient of total maintained tension. The latter is very different at various frequencies of contraction, whereas the former is nearly a constant. The total tension coefficient is a measure of economy of tension maintenance in contraction, and indicates a marked increase in efficiency of tension maintenance at higher frequencies. The slow rate of removal of lactic acid is of advantage to the organism in those muscles where the maintenance of tension is an important function. Fatigue contracture appears, in the light of the experiments reported, to be due to the depletion to a very low level of the store of base for neutralizing free lactic acid.—*Authors' summary.*

7068. **WERESTSCHAGIN, N. Untersuchungen über Muskeltonus und Ermüdung. (Neue Methode zur Bestimmung des Dehnungwiderstandes des Muskels.)** *Pflüger's Arch. Ges. Physiol.* 227(1/2): 188-203. 10 fig. 1931.—A method is described for measuring the resistance offered by the flexors of the knee to knee extension when the thigh is flexed. The method is similar to that of Spiegel for the quadriceps femoris. Both extent of movement and applied tension are recorded. Percentage lengthening of muscles is calculated. Normals show a characteristic curve from which pathologic cases deviate. Fatigue is followed by immediate decrease, soon followed by increase in resistance to passive extension. —*G. P. McCouch.*

7069. **WHITE, M. M. Relation of bodily tension to electrical resistance.** *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 165-171. 1929.—In general there was a higher electrical resistance in relaxation than in tension, and general contracture differed more from

general relaxation than did local contracture. These facts are supported by a comparison of general muscular relaxation with general muscular contraction, localized muscular contraction, and bodily conditions during silent multiplication.—*From author's summary.*

7070. WÖHLISCH, EDGAR. Besteht die Säuretheorie der Muskelkontraktion zu Recht? *Verhandl. Phys.-Med. Ges. Würzburg* 52(2): 90-96. 1927.—The author starts with the supposition that there may be 2 processes involved in the contraction, rigor and contracture of muscle; one the action of acid on collagen fibers in muscle, the other a true contraction. Although the temperature coefficient for isometric contraction is known to be negative, it is found for acid-contracture to be positive, in muscle as also in collagen. A muscle subjected to heat or chloroform finally loses its contractile power. Likewise a muscle after the resolution of rigor no longer contracts to heat or chloroform. Such muscles still shorten in lactic acid, with the same tension as in the fresh state; so that the effect is upon some resistant substance, probably collagen. A reagent like chloroform, penetrating a muscle and acting on contractile fibers, should lead to a nearly uniform rate of increase in tension. If acid acts on collagenous material, which forms mainly the external muscle sheath, it should give an early and abrupt increase, followed by a more gradual rise in tension. Results of isometric measurements, using chloroform and lactic acid, bear out these assumptions. In contrast to acid-contracture, moreover, death-rigor has a negative temperature coefficient for isometric tension, thus resembling true contraction and the second phase of chloroform-contracture.—*H. S. Hopkins.*

PHARMACOLOGY

ERWIN E. NELSON, *Editor*

RALPH G. SMITH, *Assistant Editor*

(See also in this issue Entries 6163, 6176, 6184, 6658, 6663, 6664, 6686, 6694, 6709, 6710, 6717, 6740, 6742, 6744, 6745, 6754, 6755, 6756, 6761, 6767, 6803, 6808, 6853, 6857, 6871, 6880, 6881, 6882, 6918, 6923, 6956, 6959, 6965, 6967, 6994, 7012, 7020, 7036, 7044, 7212, 7218, 7227, 7241, 7270, 7301, 7302, 7305, 7325, 7334, 7393, 7464, 7520, 7538, 7656, 7851)

7071. AJURE, G. G. Über die Wirkung oberflächenaktiver Stoffe und ihres Vertreters des Adrenalins auf das isolierte Froschherz. *Zeitschr. Ges. Exp. Med.* 57(3/4): 381-387. 1929.—Epinephrine is notable among substances which lower surface tension, particularly at surfaces where 2 fluid phases like water and oil meet. This characteristic of epinephrine produces on the isolated frog heart a positive chronotropic effect due to an increased concentration of Ca ions produced by a decrease in the surface tension of the excited tissues.

7072. BARCO, PAOLO. Modificazioni dell'equilibrio acido-basico in rapporto alla narcosi narcilenica. [Modifications of the acid-base equilibrium after narcilene anesthesia.] *Arch. Ital. Chir.* 25(6): 652-666. 1930.—From study of 25 clinical cases Barco concludes that the acid-base equilibrium after operation under narcilene anesthesia generally inclines toward acidity, from such causes as the nature of the anesthetic and the operative trauma. This disturbance of acid-base equilibrium, though marked, was slighter in degree than that observed by other authors after chloroform and ether anesthesia.

7073. BARONI, BENIGNO. Sulle alterazioni locali determinate de ipodermoclisi adrenalinizzate. [Local changes following injection of adrenalinized salt solution. [French, English and German summaries.] *Riv. Med.* [*Napoli*] 6(18): 429-431. 1929.—Experiments on guinea pigs indicated that necrosis at the site of injection of adrenalinized solutions was connected with the dose of adrenalin. This reaction was more often produced in guinea pigs by adrenalin in NaCl solution and in man by a solution in glucose.

7074. BICH, ALESSANDRO. Studii sperimentali sulle anestesie. II. L'influenza dell'anestesia generale eterea e dell'anestesia locale novocainica sulla riserva alcalina, sull'azotemia e sulla cloruremia. [Anesthesia. II. The effect of ether and novocain anesthesia on the alkaline reserve, azotemia and chloridemia.] *Arch. Ital. Chir.* 25(6): 691-699. 3 fig. 1930.—Ether was used on 7 dogs and novocain on 5. Under prolonged ether anesthesia (1-1¼ hrs.) the alkaline reserve fell, remaining low for about 6 hrs., and becoming normal within 24-48 hrs., while the blood N and chlorides first rose, then fell to normal. Under local novocain anesthesia the chlorides rose, the N generally rose, but sometimes fell, while the alkaline reserve was unchanged. The curves of the concentration of chlorides in the plasma and in the total blood declined together to a certain point from which the plasma chloride curve continued downward while the curve of the total blood chlorides began to rise along with the rise in alkaline reserve. These facts point toward some such regulatory mechanism for the blood as that suggested by Blum, who believes that increase in the concentration of CO_2 in the blood favors the passage of Cl from the plasma into the blood corpuscles, which in return yield up Na, thereby increasing the alkalinity of the plasma.

7075. BISCHOFF, GEORG. Nebenschilddrüssenhormon und Ergosterinhypercalcämie. *Hoppe-Seylers Zeitschr. Physiol. Chem.* 188(6): 247-250. 1930.—In dogs given hypercalcemia through overdoses of vitamin D (Vigantol), parathormone (Collip) produces a short initial rise in serum Ca followed by a lasting fall. About 12 hrs. after the beginning of the fall, a compensatory rise begins. It may exceed the initial Ca figure. If the hypercalcemia is moderate the serum Ca fall is of value, but if extreme, the result may be fatal.—*G. Bischoff (transl. by A. L. Hintze).*

7076. BRAUDE, I. L., und E. M. SCHWARZMANN. Über die Wirkung des Jods auf die Ovarien. *Arch. Gynäkol.* 138(3): 782-792. 8 fig. 1929.—I subc. in 8 sexually mature female rabbits caused destructive changes, the degree of change depending less on the dosage than on the duration of treatment. The iodized rabbits failed to become pregnant. No such changes were produced by subc. injection of a protein preparation (lactosan) into 2 controls. In 5 out of 6 mice the cyclic changes of the vaginal mucosa ceased on injection of I.

7077. BUSCH, MAX. Der Ablauf der Meerschweinchentuberkulose unter Eosinwirkung. Ein Beitrag zur Frage der Heilbehandlung der Tuberkulose. *Centralbl. Bakteriol. Abt. I. (Orig.)* 114(4/6): 446-470. 15 fig. 1929.—The findings of Löwenstadt and Lange, that tuberculous guinea-pigs may be so sensitized to light by treatment with eosin as to have the course of the disease shortened, have been investigated. Using 2 controls, 9 guinea-pigs treated with eosin from the day of infection, and 5 animals treated with eosin 7 days after infection, negative results were obtained. There were no noteworthy differences between the untreated animals and those subjected to eosin treatment, whether early or late; all displayed "progressive tuberculosis."

7078. CANTONI, OSCAR. Ricerche farmacologiche sulla Nevralteina. [Pharmacological studies on neuralthein.] *Minerva Med.* 9(37): 422-426. 1929.—Studies are reported on the action on arterial pressure and respiration of neuralthein intraven. in spinal or chloralosed dogs. With therapeutic doses the action is favorable, especially if compared with acetylsalicylic acid under the same conditions. The toxicity is low, the lethal dose being 4-5 gm. per kgm.—*O. Cantoni.*

7079. CASTEX, MARIANO R., y R. LÓPEZ RAMÍ-

REZ. El cloruro de bario por via endovenosa en los bloqueos experimentales y clínicos. [Intravenous injection of $BaCl_2$ in experimental and clinical heart block.] *Prensa Méd. Argentina* 16(24): 1145-1150. 20 fig. 1930.—$BaCl_2$ (.5 to 1%) usually had no effect on auriculo-ventricular block of the toad's heart. Only in 2 toads out of 18 was the heart automatism restored by $BaCl_2$ after block. Dogs with heart block produced by nerve section were given from .01-5.5 gm. of $BaCl_2$, which slowed the auricular frequency and increased the ventricular. Extrasystoles were frequently recorded on the electrocardiograph. Clinical application of $BaCl_2$ in patients with Morgagni-Adams-Stokes syndrome showed that it was not a suitable drug to use in auriculo-ventricular heart block.

7080. CHAHOVITCH, X., et MLLE. M. VICHNJITCH. Action du chlorhydrate de morphine, de la caféine et de la quinine-uréthane sur le métabolisme énergétique. (Le métabolisme de base et le métabolisme de sommet.) *Jour. Physiol. et Pathol. Gen.* 26(3): 389-391. 1928.—It is concluded from exps. on rats that morphine and caffeine each cause an increase in the basal metabolism but a decreased total metabolism, while quinine-urethane produces a mild increase in the basal metabolism (in small doses without influence) and a decrease in total metabolism.—*H. S. Wells.*

7081. De KOCK, GILLES. Pathology of phenol poisoning in sheep induced by certain dips. *Union So. Africa Dept. Agric. 15th Ann. Rept. Dir. Vet. Serv.* 2(5/9): 643-652. 4 fig. 1929.—Phenol poisoning in sheep induced by certain proprietary dips was characterized post-mortem by a general venous hyperemia, hydropericardium, hydrothorax, emphysema of lungs, mediastinum, peritracheal region, tissues of cervical region, subcutis, edema of mucosa and larynx, sometimes of pharynx and trachea; hyperemia of lungs and mucosa of bronchi; sometimes this was complicated with small hemorrhages. Besides hyperemic and degenerative changes in certain parenchymatous organs, the lungs revealed characteristic changes microscopically, viz., extensive hyperemia and cubical transformation of the epithelial lining of the alveoli, which was in part shed, probably as a result of the accumulation of gas between epithelium and connective tissue. The question as to whether alveolar epithelium plays a part in the elimination of phenol is discussed.—*Author's conclusions.*

7082. DELBET, PIERRE. Sels halogénés de magnésium et cancers. *Presse Méd.* 36(93): 1473-1477. 11 fig. 1928.—Halogen salts of Mg are beneficial in precancerous conditions. Cancer grafts made on animals fed on a diet which included these Mg salts showed definitely smaller growths than grafts on control animals. Grafts made from growths of Mg-treated animals were in some way modified and tended to die. Gravel placed in gall bladders of control animals caused definite cancerous conditions while Mg-treated animals were entirely free from growths.—*A. M. Woodruff.*

7083. DEMOLE, V., et A. CHRIST. Guérison de la tétanie parathyréoprive du chien au moyen de l'ergostérol irradié. *Bruxelles Méd.* 10(12): 321-323. 1930.—Technique and results are outlined but no individual exps. are reported, nor is number of exps. stated. The parathyroidectomized controls died in 3-7 days with the usual symptoms. The ingestion of sufficient doses of irradiated ergosterol maintained the blood Ca at normal level and prevented untoward symptoms; insufficient doses retarded the fall of blood Ca and the appearance of fatal tetany. The administration of efficacious doses of irradiated ergosterol, with or without parathyroid hormone, kept parathyroidectomized dogs in good health for months.

7084. EDMUNDS, CHARLES W., HAROLD W. LOVELL, and SPENCER BRADEN. Studies in bioassays: "The proposed international standard for digitalis." *Jour. Amer. Pharmaceut. Assoc.* 18(8): 778-784. 1929.—The powdered digitalis which is proposed as an International standard is about 30% stronger than the U. S. P. X standard. With the strophanthins and with the tinctures of strophanthus, a dose 10% larger is necessary to cause systolic standstill of the frog's heart in 4 hrs. when it is given into the lymph sac than when the drug is given intravenously and 1 hr. allowed for observation. A dose of the strophanthins 40-50% larger is required in the 1-hr. lymph sac method than in the 1-hr. intravenous method. For tinctures of strophanthus the dose, when it is given into the lymph sac and one hour allowed for observation, must be almost double the intravenous dose. For tinctures of digitalis, the dose, whether for a 1-hour or for a 4-hour period of observation, must be about 65% above the intravenous dose, indicating greater ease of absorption of digitalis from the lymph sac as compared with strophanthus, as absorption is practically complete in 1 hr.—*Authors' abstract.*

7085. EICHHOLTZ, FRITZ. System biologischer Schwermetallreagenzien. *Arch. Exp. Pathol. u. Pharmakol.* 148(5/6): 369-376. 1930.—The metabolic functioning of the living cell is partly dependent on the action of heavy metals. Thus, for example, glycolysis in carcinoma cells is considered to be a Cu catalysis, and the Pasteur reaction an iron (ferro) catalysis. For the determination of such heavy metal catalyses in living cells, non-poisonous substances which can form complexes with heavy metals are needed, possessing specific affinity to each particular heavy metal. The paper lists a provisional system of such heavy metal complex formers, collected for the purpose of discovering further cases of biological heavy metal catalysis.—*F. Eichholtz (transl. by C. S. Leonard).*

7086. EIGENBERGER, F. Some clinical observations on the action of Mamba venom. *Bull. Antivenin Inst. America* 2(2): 45-46. 1928.—An intradermal injection of diluted Mamba venom is followed by burning sensation, local itching and swelling, sensorial irritability, weakness and various nervous symptoms; about 5 or 6 hrs. later, pain is felt over all the body especially in the cranial nerve fields, gradually decreasing until the next day when only a little discomfort in the tongue and esophagus with some swelling at the site of the injection are all that remain of the effects of the venom. This type of poisoning seems to be due to an effect on the central nervous system, particularly marked on the subcortical centers.—*A. do Amaral.*

7087. EWSEROWA, E. K. Das Nervensystem der Hunde bei experimenteller Bleivergiftung. *Arch. Psychiatr. u. Nervenkrank.* 88(5): 752-775. 8 fig. 1929.—Length of life and severity of symptoms bore no direct relation to each other in experiments on 5 dogs. The clinical manifestations were (a) psychic, (b) convulsive, of general and cortical type, (c) paresis and ataxia, and (d) emaciation, exhaustion and sometimes marked cachexia. The pathologic-anatomic changes were of various types: (a) diffuse degenerative processes in the visceral and somatic centers of the brain and spinal cord with predominant localization sometimes in the deep cortical layers, sometimes in the tuber cinereum, (b) cell proliferation, formation of foci in the vascular walls, and (c) in one case a focus in nerve tissue. The psychic changes, the convulsions, the pareses and the ataxia were due to a diffuse degenerative process in the brain, particularly the cortex. The lesion of the nucleus of the tuber cinereum might possibly be the cause of the disturbance of metabolism, the exhaustion and cachexia, but this was not the sole causal factor in this series of animals. The pathologic-anatomic processes in this series of dogs differs from those observed by other authors in cats, through lack of the ameboid reaction and presence of mesodermal proliferative changes.

7088. FALKENHAUSEN, M. Die Wirkung der experimentellen Phosphorvergiftung auf die Verdauungsfermente des Blutes. *Arch. Exp. Path. u. Pharm.* 132(1/2): 106-117. 1928.—P poisoning is followed by an extraordinary increase in the diastatic action of blood serum. This is not due to a change in activation or to an accumulation of diastase which might result from disturbed excretion in the urine, or to the effect of a transfer of bile to the bloodstream. The pancreas is not the seat

of increased diastase production, because the increase following P poisoning also occurs in depancreatized dogs. The liver is the probable seat of this increase. A change in the proteolytic capacity of serum towards carmine fibrin could not be demonstrated. The lipolytic capacity of serum is remarkably decreased by P poisoning even following the extirpation of the pancreas. This effect offers no explanation of the origin of blood lipase.—*J. M. Johlin.*

7089. FREINSCHMIDT, O., und D. FERDMANN. Die Einwirkung von Adrenalin auf den Kreatinphosphorsäuregehalt der Muskeln. *Biochem. Zeitschr.* 205(4/6): 325-328. 1929.—Phosphocreatine and inorganic phosphates were determined according to the authors' modifications of the Fiske-Subbarow method. Epinephrine (0.6-0.7 mgm.) was injected into the pectoral muscle of pigeons and the same muscle was analyzed 45 to 110 min. after injection. In 5 uninjected controls the inorganic P was on an average 45 and the phosphocreatine-P 32 mgm. %. After epinephrine injection into 7 pigeons the corresponding values were 81 and 12 mgm. % resp. The conclusion is that epinephrine splits phosphocreatine. After 2 hours hydrolysis in 2% $NaHCO_3$ the muscle of the injected pigeons contained more inorganic P than that of the controls. In 2 controls the average lactic acid content of the muscle was 143, in 4 animals injected with epinephrine it was 272 mgm. %.—*G. T. Cori.*

7090. GIACOMINI, ERCOLE. Sulla presenza, distribuzione e vie di eliminazione dell'ormone tiroideo (tiroxina) nell'ipertiroidismo sperimentale ed osservazioni analoghe sul comportamento dell'adrenalina e di altri ormoni. (Ricerche chimiche e biologiche comparative su uccelli, mammiferi, girini e axolotl). [Presence, distribution and elimination of the thyroid hormone (thyroxin) in experimental hyperthyroidism and analogous observations on the behavior of epinephrine and other hormones (chemical and biological studies on birds, mammals, tadpoles and axolotl.)] *Rend. Sess. R. Accad. Sci. Ist. Bologna Cl. Sci. Fis.* 32: 22-52. 1927-28(1928).—Metamorphosis of the axolotl, *Amblystoma tigrinum,* and of the tadpoles of *Rana, Hyla* or *Bufo* is induced by giving the fresh or powdered organs (liver, kidneys, spleen and desiccated blood, urine and bile) of animals (guinea pigs, dogs, chickens) previously hyperthyroidized by large doses of fresh or dried bovine thyroid. Thus a part of the thyroid hormone, thyroxin, is recovered in the organs (e.g., bile) of the the hyperthyroidized animals and in their excreta (urine) in which there is an increase of I content. Similarly for epinephrine after large doses of fresh or dried adrenal medulla, and of fat bodies, after large doses of adrenal cortex. Hormone elimination is one of the means of regulating the hormone content in blood when present in excess thus aiding in maintaining the hormonic equilibrium of the blood.—*E. Giacomini (transl. by J. G. Edwards).*

7091. GILBERT, N. C., and G. K. FENN. The effect of the purine base diuretics on the coronary flow. *Arch. Internal Med.* 44(1): 118-127. 2 fig. 1929.—Experiments on dogs indicated a vasodilator effect from purine base diuretics on the coronary arteries, as shown by an increased return flow through the coronary sinus, the order of efficacy being: theobromine and salts (71 exps.); theophylline ethylenediamine (23 exps.); theophylline sodium acetate (11 exps.), and caffeine (12 exps.).

7092. GRUBER, CHARLES M. The peristaltic and anti-peristaltic movements in excised ureters as affected by drugs. *Jour. Urology* 20(1): 27-59. 13 fig. 1928.—A perfect metabolic gradient from kidney to urinary bladder was not observed in the excised ureter of the pig. It was normally highest in the kidney end, gradually decreasing until the lowest 4th was reached where it suddenly increased again to an irritability almost as great as that in the kidney end. Spontaneous peristaltic contractions were noted in the kidney half of the ureter in 73.6% of the segments tested and in only 28.1% of the segments of the bladder half of the ureter. Spontaneous antiperistaltic contractions were observed in the kidney half of the excised ureter in 26.3% of the cases but in the bladder half of the ureter this reverse movement was found in 71.9% of the segments. Spontaneous antiperistaltic movements as well as peristaltic movements were noted when the whole excised ureter was used. Fluids placed in the lumen of the ureter were propelled from the kidney end toward the bladder end during peristalsis and in the reverse direction during antiperistalsis. A relative refractory phase was also noted to stimulation. Decreasing the temp. of the "pace maker" from 39.5 to 22° C. causes slowing of contraction and in some cases complete inhibition. If the temperature of the fluid surrounding the dependent segment is maintained at the optimum temp. 39.5° C., a reversal of the direction of contraction is frequently seen, i.e., antiperistalsis is converted into peristalsis and vice versa. Decreasing the pH of the solution bathing the dependent segment from 7.8 to 5.6 has little or no effect upon its contractions, on the contrary decreasing the pH of the solution bathing the "pace maker" caused temporarily complete inhibition of activity of both segments. If the pH of the dependent segment is maintained at 7.8 to 8.8 reversal of movements is noted. Epinephrine added to the solution bathing the dependent segment stimulated it and reversed the direction of conduction and peristaltic movements were thus converted into antiperistaltic contractions and vice versa. Urea, acetylcholine and nicotine caused changes similar to those caused by epinephrine, though in most instances less marked.—*C. M. Gruber.*

7093. HEIDE, E., und E. SCHILF. Über den Einfluss von Isoamyl- und Äthylalkohol auf Blutdruck und periphere Gefässe. *Zeitschr. Kreislaufforsch.* 21(22): 673-676. 4 fig. 1929.—Isoamyl alcohol lowers the blood pressure and dilates the blood vessels. Ethyl alcohol at low concentration dilates the peripheral blood vessels, and at high concentration constricts them.

7094. HEYMANS, C., et P. REGNIERS. Influence de l'ergotamine sur les réflexes cardio-vasculaires du sinus carotidien. *Arch. Internat. Pharmacodyn. et Thér.* 36(1): 116-121. 1929.—Ergotamine reinforces the cardio-inhibitor reflexes of the carotid sinus; this action is due as Rothlin has shown to the fact that ergotamine sensitizes the cardio-parasympathetic. This hyperexcitability persists only from 10 to 15 min. after injection. Ergotamine suppresses all the vaso-regulating reflexes from the carotid sinus. To admit the theory of Dale on the subject of paralysis of the vaso-constrictors and not of the vaso-dilators one must conclude that the vaso-regulating reflexes are due solely to some modification of tonus of the vaso-constrictors. If vaso-dilators intervene in the vascular reflexes of sinus origin they ought to persist in effect (Dale) and even be reinforced (Rothlin) after the injection of ergotamine. Ergotamine suppresses equally the epinephrine reflex of the vaso-motor tone of sinus origin. Ergotamine does not act upon the vaso-sensitive terminations of the carotid sinus but upon the other peripheral or central elements of cardio-vascular and suprarenal reflexes.—*C. Heymans (transl. by L. B. Nice).*

7095. HIRSCH, JULIUS. Studien zur Verkehrshygiene. II. Die Anwendung der titrimetrischen Bestimmung kohlenstoffhaltiger Gase in der Praxis der Autoabgas-Analyse. *Zeitschr. Hyg. u. Infektionskrankh.* 109(2): 266-271. 1 fig. 1928.—The method of analysis has been previously reported. It is readily applicable whether the car is standing or moving. The efficiency of a patent safety apparatus for diluting the fumes with atmospheric air before disposal was studied. The toxic gases were found to be diluted by this apparatus from 10 to 15 times.—*H. S. Wells.*

7096. HIRSCHFELDER, ARTHUR D. Antagonization of the narcotic action of magnesium salts by potassium, sodium and other monovalent cations, with a contribution to the theory of narcosis and analgesia. *Jour. Pharmacol. & Exp. Therap.* 37(4): 399-412. 1929.—Rabbits narcotized with $MgSO_4$ can be awakened by the injection of KCl as completely and as suddenly as by $CaCl_2$. RbCl, NaCl and CsCl produce the same effect. The

order of ionic effectiveness is K > Rb > Cs > Na > Li. This order of effectiveness does not follow the order of either atomic weight, distribution of electrons or ionic hydration. The antagonism of monovalent cations to Mg, like that of Ca, can be explained by Clowes' theory of the existence of a balanced mixture of water-in-oil and oil-in-water emulsions in the surface layer of the cells, though most of the facts can also be explained by the existence of a continuous layer of lipids, especially of phosphatids, as claimed by Koch, Hansteen-Cranner, Lillie and MacDougall. The predominance of water-in-oil emulsions or of dehydration of the phosphatids seems to associate the "anesthetic and analgesic phase" with the surface layer of the nerve cells. The same phenomena of alteration in the balance of emulsions is also encountered in the effects on emulsions induced by volatile anesthetic, soporific and analgesic drugs, which are non-alkaloidal in nature; and are substantiated by the synergism of analgesic with narcotic drugs, and of Mg salts with cinchophen. These purely physical effects seem to furnish a clearer picture for the explanation of the action of these drugs than is furnished by their effects upon blood dilution.—*Author's summary and conclusions.*

7097. **HOLBØLL, S. A. Untersuchungen über die Ausscheidungsverhältnisse von Phenolsulfonphthalein und Natriumthiosulfat bei Personen mit gesunden Nieren.** *Zeitschr. Klin. Med.* 111(1): 117-127. 1929.—The excretion of phenolsulphonephthalein and $Na_2S_2O_3$ injected intraven. was investigated in 5 normal individuals. Injections were made in varying doses but always together in the constant ratio of 6 mgm. phenolsulphonephthalein to 1 gm. $Na_2S_2O_3$. About 80% of the phenolsulphonephthalein was excreted through the kidneys independent of the amount of the dose. The proportion of $Na_2S_2O_3$ excreted, however, was closely dependent on the dose employed. This indicates that an important distinction between the 2 functional tests consists in the fact that $Na_2S_2O_3$ is very easily oxidized in the organism. The urine was collected at intervals of 20 min.; it was apparent that the largest amounts were excreted in the first 20 min. after injection.—*From author's summary (transl.).*

7098. **HOLZBACH, KOTTLORS, und IRION. Orasthin und Tonephin, zwei Fraktionsprodukte des Hypophysins.** *Zentralbl. Gynäkol.* 54(2): 90-97. 1930.—Orasthine contracts muscle strongly, increases muscle tonus, and acts on the uterus, but not on blood pressure. Tonephine does not affect the uterus. In strong concentrations it contracts muscle. It acts on blood pressure like the whole extract, hypophysin. Tonephine's chief action is its intense effect on intestinal peristalsis. It also produces water retention in the tissues.

7099. **HORSTERS, HANS, und HEINRICH BRUGSCH. Über die Wirkung des Insulins am narkotisierten Tier.** *Arch. Exp. Pathol. u. Pharmakol.* 147(4/6): 193-210. 1930.—Narcotized or curarized rabbits survive in spite of blood sugar values at or below the convulsive level. No symptoms occur even when narcosis is interrupted and the blood sugar remains low. But when caffeine is injected hypoglycemic convulsions of marked severity are observed.—*H. Horsters (transl. by G. T. Cori).*

7100. **HÜCKEL, R., und H. WENZEL. Über Veränderungen im Tierkörper durch Vergiftung mit bestrahltem Ergosterin, insbesondere über Veränderungen der Arterien. [Pathologic changes in the animal body, especially arterial changes, from poisoning with irradiated ergosterol.]** *Verhandl. Deutschen Gesellsch. Kreislaufforsch.* 2: 57-62. 1929.

7101. **HUGHES, T. A., and D. L. SHRIVASTAVA. Studies on the enlarged malarial spleen. I. Effect of adrenalin on the blood picture. II. Effects of intravenous and oral administration of quinine on the blood picture.** *Indian Jour. Med. Res.* 17(3): 651-655. (ibid.) 657-665. 1930.—I. Observations were made on the changes in the blood picture brought about by contraction of the enlarged spleen in chronic malarial patients following the subc. injection of 1 cc. adrenalin sol. (1:1000). In some patients of this type contraction of the spleen causes little or no increase in the circulating red cells, especially in the absence of an acute condition. A leucocytosis always followed injection of adrenalin, the most marked change in quiescent cases being an increase in the monocytes and large lymphocytes. II. A study was made of the changes in the blood picture in chronic malarial patients with enlarged spleens following the administration of quinine (a) by the intravenous, and (b) by the oral route. (a) Intravenous injection of 6 grains of quinine HCl in 10 cc. saline brought about the following changes:—1. An increase in the leucocytes, especially the large lymphocytes and monocytes. This is similar to the leucocytosis that follows injection of adrenalin in such subjects. 2. A fall in the red cells succeeded by a return to normal or a slight increase. There was also a delayed increase in the bilirubin content of the plasma. Reasons are given for considering this to be an indication of hemolysis. It did not occur in control experiments on normal subjects. (b) Blood counts made at intervals of 24 hrs. on patients having 10 grains of quinine HCl by mouth 4 times a day revealed the following changes:—1. A rise in the leucocytes always affecting the monocytes. 2. A small rise in the red cells. When quinine in these doses was combined with alkalies there was a sharp rise in both white and red cells reaching a maximum about the 2nd day. The granulocytes often took a prominent part in the leucocytosis.—*Authors' conclusions.*

7102. **HUTCHISON, R. H. On the incidence of snake-bite poisoning in the United States and the results of the newer methods of treatment.** *Bull. Antivenin Inst. America* 3(2): 43-57. 1929.—According to statistics based on 607 cases of snake bite reported within the Continental U. S. A. during 1928, 451 of which were definitely assigned by species, 171 were caused by the copperhead (*Agkistrodon mokasen*) and 100 by the Texas rattler (*Crotalus atrox*), these two making up about ½ the total. Among the states, Texas contributed 163, Alabama 49, and Pennsylvania 42. Most of the victims were adult males; the regions most often bitten were the feet, the fingers, the shins, the ankles, the hands, etc. The mortality among the cases treated without antivenin was 10.8%, whilst that among the antivenin treated cases was 3%. A complete description is given of the therapeutic measures indicated to combat snake poisoning.—*A. do Amaral.*

7103. **ISHII, RAIUI and SHINZO SAKATA. Über den Synergismus zwischen dem Adrenalin und dem Cocain bei der Zuckermobilisierung der Krötenleber.** [Orig. in Japanese p. 158-183.] *Folia Pharmacol. Japonica (Breviaria)* 8(3): 4. 1930.—The sugar content of the perfusion fluid of surviving toad livers was analyzed by the Hagedorn method. Cocaine 1:300,000 mobilized no sugar, cocaine 1:100,000 was slightly effective. Previous perfusion of the liver with cocaine always increased the action of epinephrine on sugar mobilization.—*Author's summary (transl. by G. T. Cori).*

7104. **JUNG, GEORG. Tierexperimentelle Untersuchungen zur medikamentösen Therapie der eitrigen Meningitis.** *Zeitschr. Hals-, Nasen- u. Ohrenheilk.* 25(1): 32-62. 1929.—Experiments were made on the therapeutic effect of hexamethylenamine on *Staphylococcus aureus* (*hemolyticus*) infection of the rabbit's brain. Of 8 rabbits injected intraven. with hexamethylenamine at the same time they were infected with the staphylococcus, only 1 survived. Of 23 rabbits injected previously, then infected, and subsequently treated with hexamethylenamine, 13 survived; but of the 10 that died 3 succumbed apparently to other causes than meningitis. Other studies were made on the organic injury inflicted by hexamethylenamine. Exps. on 2 rabbits showed that injection of 2 gm. or even 1.2 gm. of hexamethylenamine per kgm. in 40% sol. caused a 60% drop in blood pressure. Exps. on 2 other rabbits showed that the same dose in 20% and 10% sol., resp., caused practically no fall in blood pressure. Exps. in vitro showed that hexamethylenamine

is somewhat hemolytic to both human and rabbit blood. No special injury to kidneys and bladder from hexamethylenamine, intraven., in amounts from 2 to 29 gm. per kgm., was found in 14 rabbits. This might be attributed to the fact that in the rabbit, an exclusively herbivorous animal, the urine is alkaline, so that no formaldehyde irritation can result. To produce acid urine, 2 rabbits were fed exclusively on oats and milk. In one, given intraven. doses of hexamethylenamine, very slight injury to the urinary tract appeared; in the other, given what corresponds to therapeutic doses, none at all. In 2 dogs, given heavy doses of hexamethylenamine by mouth, one with and one without $NaHCO_3$, no great difference in the bladder and kidney changes were observed. No prophylactic, therapeutic or injurious effect was observed from trypaflavine, given to 6 rabbits. Rivanol, given to 13 rabbits, had a certain favorable therapeutic influence, less prophylactic effect than hexamethylenamine, and no injurious effect.

7105. KELLAWAY, C. H., and F. ELEANOR WILLIAMS. The venoms of Oxyuranus maclennani and of Pseudechis scutellatus. *Australian Jour. Exp. Biol. and Med. Sci.* 6(3): 154-174. 5 fig. 1929.—Three samples of snake venom have been investigated, 2 unquestionably from *Oxyuranus maclennani* Kinghorn, and 1 which is almost certainly the venom of *Pseudechis scutellatus* Peters. The venom of *Oxyuranus* injected subc. is lethal to monkeys in doses of the order of 1.0 mgm. per kgm., to rabbits in those of 0.5 mgm. per kgm., to guinea-pigs in those of 0.08 mgm. per kgm., and to rats in those of 0.6 mgm. per kgm. Injected intraven. it is lethal to rabbits in doses of the order of 0.1 mgm. per kgm. The venom contains "thrombase," and causes intravascular coagulation in sufficient dosage. It coagulates citrated plasma *in vitro*. It is only feebly hemolytic, but is powerfully neurotoxic, death in most animals being due to this activity of the venom. It has a slight immediate depressor effect on the blood pressure, and finally causes death by respiratory failure. It diminishes the output of the heart. The venom presumed to be that of *Pseudechis scutellatus* injected subc. is lethal to rabbits in doses of the order of 2-3 mgm. per kgm., to guinea pigs in doses of from 1.5-2.0 mgm. per kgm., and to rats in doses of 4-8 mgm. per kgm. Injected intraven. in rabbits it kills in doses of about 0.7 mgm. per kgm. The venom has powerful anticoagulant and hemolytic activities, but is only feebly neurotoxic. Its effects on the circulation in rabbits are in the main secondary to its hemolytic action. Both these venoms have a stimulant action on isolated plain muscle.—*Authors' conclusions.*

7106. KIM, SANGTAE. Über die pharmakologische Wirkung des ätherischen Öls von Atractylis ovata Thunb. [Japanese] *Chosen Igaku Kwai Zasshi* 83: 1008-1018. 1927.—The volatile oil prepared by Ichika Yamaguchi from the rhizome of *A. ovata*, a drug which is employed in Chinese medicine in various diseases, was studied on animals. It produces in frogs a central depression of respiration, general motor paralysis, and finally cessation of respiration. In mice, there are increased reflex activity, sweating and convulsive attacks. Respiration becomes more frequent and dyspneic, then slower, weaker and finally stops. In rabbits light motor paralysis of the extremities and transient increase in respiration occur. The blood pressure is lowered. These effects are due primarily to central depression, but also in part to heart weakness and peripheral vaso-paresis. Later, respiration is paralyzed by large doses. The frog's heart, isolated or in situ, is depressed and finally arrested in diastole, probably by direct effect upon the heart muscle. The blood vessels of frog's muscles are dilated. In organs with smooth muscle the poison acts chiefly upon the muscle. The tone of the rabbit's intestine and uterus is depressed and the pendulum movements are weakened. Skeletal muscles and motor nerves are but little affected by the oil.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by B. Fantus).*

7107. KINDT, BRUNO, und HUBERT VOLLMER. Untersuchungen über pharmakologische Eigenschaften des β-Naphthochinolins und einiger seiner Abkömmlinge. *Arch. Exp. Pathol. u. Pharmakol.* 148(3/4): 198-210. 1930.—β-naphthoquinolin and its derivatives had an [injurious] action on both the gastrocnemius of the frog, and the animal as a whole. This series also exerted a central toxic action on the nervous system. Phenantrolin was least active. Naphthoquinolin caused marked lowering of temp. in mammals without fever. In both frogs and mammals poisoned by naphthoquinolin derivatives there was hemorrhage of the internal organs and fatty degeneration of the liver. Cardiac action of naphthoquinolin and its several derivatives was much alike. The heart beats increased in frequency, then the heart no longer responded to stimuli, and finally came to a systolic standstill. The toxicity of these drugs for the whole animal can be placed in series as follows: Naphthoquinolin > nitroaminonaphthoquinolin > mono- and diaminonaphthoquinolin. The amino compounds had a stronger antiputrefactive action than the others. Phenantrolin is about as toxic, but inhibited putrefaction somewhat less than did naphthoquinolin.

7108. KLEIN, O., und M. KMENT. Beobachtungen über Insulin-Hypoglykämie beim Menschen. III. Verhalten der Eiweissfraktionen des Blutes, des Bilirubins, der Blutkonzentration und der Blutgerinnung, insbesondere bei Leberkranken. *Zeitschr. Klin. Med.* 107(5): 476-487. 1928.—The following observations were made in liver disease when insulin shock was induced. There was generally lowering of the bilirubin content, shortening of the coagulation time and an increase in the total serum albumin. There was an absolute and often also a relative increase in the fibrinogen and globulin fractions. After long-continued administration of insulin in high dosage there develops hydremia with increase in relative amount of fibrinogen and globulin fractions and also increase in the volume of the individual red cells but in the earlier stages of insulin shock there is definite concentration of the blood with decrease in the volume of the individual red cell and decrease in plasma volume. Earlier observations of the association of water metabolism with insulin effect are thus confirmed.—*R. G. Stillman.*

7109. KOCHMANN, M. Prüfung von Ovarialpräparaten des Handels. *Arch. Exp. Pathol. und Pharmakol.* 137(3/4): 187-200. 1928.—The pseudo-oestrus producing efficiency of 7 ovarian preparations was studied by injecting various dosages into spayed mice. Determined activity: Hormovar and Succototal 4 to 5 units per ccm. (as claimed by label); Sistomensin 1 unit per ccm. (no standard claimed); Menoformon, of two preparations tested, one showed an activity of 20 to 26 units per ccm. and the other an activity of 8 to 10 units per ccm. although both preparations were labeled as 40 units per ccm. Panhormon showed an activity of 2 instead of 20 units per ccm. as claimed. Agomensin was ineffective. The influence of these preparations on metabolism (O consumption and CO_2 production) was also noted. Following injection of ¼ to ½ of a rat unit of menoformon, hormovar, succototal and panhormon, an increased O consumption of greater or less degree occurred. Sistomensin and the remaining preparations were ineffective. Following oral administration, Oophorin and dried ovary are not tolerated by rats. Ovowop depressed O consumption without affecting body weight. Ovaradin was well tolerated and when fed over a 4 week period depressed metabolism slightly; during the succeeding 6 weeks, a slight but insignificant rise occurred. —*O. W. Barlow.*

7110. KOHLHOFF, HEINZ. Experimentelle Untersuchungen über Coramin. *Arch. Exp. Pathol. und Pharmakol.* 136(5/6): 331-348. 1928.—Coramin stimulates all reflexes (position and movements) of rabbits. Respiration is deepened and accelerated. During convulsions the position reflexes are paralysed but rapidly return on cessation of the convulsion. The effects of coramin develop rapidly after intraven., subc., or oral administration. The rapid development of the effects after oral administration suggests absorption from the stomach.

Coramin convulsions may be as effectively produced after removal of the fore- and mid-brain as in a normal animal. Spinal animals show tonic convulsions and running movements after its administration. The convulsant actions of coramin may be antagonized by paraldehyde or chloral. With light grades of hypnosis, coramin injections produce a temporary recovery, but permanent recovery can not be produced by successive injections at short intervals.—*O. W. Barlow.*

7111. **KOTELNIKOW, K. I. Charakter und Wirkungsmechanismus kleiner Mengen von Salzen und des Truneček-Serums.** *Zeitschr. Ges. Exp. Med.* 69(3/4): 297-320. 1930.—Therapeutic literature abounds in accounts of "wonderful" cures by injection of NaCl, $CaCl_2$, KI, $MgSO_4$, Lugol's solution and Truneček's serum. The undeniable effect of these substances on the acid-base equilibrium has never been explained. To determine the changes produced by acid, neutral and alkaline salts and by Truneček's serum, and to try to find an explanation for these changes, a series of studies (number not stated) was carried out. The curve of variations in CO_2 tension in a patient was studied for several control days without injection of any kind of treatment, and then after subc. injection of Truneček's serum; and similarly for sols. of single salts. The following conclusions were reached: The effect of these small quantities (5, 15 and 25 mgm.) of inorganic salts and of Truneček serum on the acid-base equilibrium is unmistakably expressed in changes in the CO_2 tension of the alveolar air. Strongly alkaline salts, subc. employed, decrease the CO_2 tension; acid salts in most cases increase it; neutral salts produce variable changes, now increasing, now decreasing the tension. K salts are more active than the corresponding Na salts of the same anions. There are 3 possible ways in which these substances may affect the organism: by immediate action on the cells, by indirect effect on the cells through the vegetative centers reached by the blood, or by stimulation of the peripheral nerve endings transmitted to the vegetative centers. The last view is favored. The vegetative reaction to acid and alkaline salts parenterally introduced is paradoxical, the acid salts increasing the alkaline valences in the blood and the alkaline salts increasing the acid reaction. The reactions are not proportioned to the amounts of acid-forming or alkaline substances introduced, and are thus comparable to biological reactions like immunization.—*From author's summary (transl.).*

7112. **LABBÉ, M., F. NEPVEUX, et MONZAFFER CHEVKI. Effet de l'alcool sur la glycémie et sur les échanges respiratoires chez les sujets sains et les diabétiques.** *Arch. Malad. Appar. Digestif* 19(9): 1053-1058. 1929.—Alcohol ingestion lowered blood sugar in diabetics and raised it in normal persons. From 12 to 17 gm. of alcohol was fed. The action was apparent after ½ hr. and remained for about 5 hrs. The effect of alcohol on total metabolism in diabetics was variable. In one case metabolism was increased, in 3 cases lowered, the maximum effect being observed ½ hr., 1 hr. or 2 hrs. after administration. In normal subjects basal metabolism increased. Respiratory quotient was decreased in diabetics and normal subjects by alcohol.

7113. **LAZAREW, N. W., und S. N. KREMNEWA. Bemerkungen über die Giftigkeit der Dämpfe des Zyklopentans und seiner Homologen. [The toxicity of vapors of cyclopentane and its homologues.]** *Arch. Exp. Path. u. Pharmakol.* 149(1/2): 116-118. 1930.

7114. **MANTEGAZZA, O. Ricerche comparative sulla eliminazione quantitativa dello Jodio dopo somministrazione di Joduri alcalini e Alcalino-terrosi. [Comparative studies on Iodine elimination following administration of alkali salts and alkali earth salts of Iodine.]** *Biochim. e Terapia Sperim.* 17(1): 16-25. 1930.—When alkaline and alkaline earth salts of I are administered per os to rabbits, the quantity of I eliminated through the kidneys is different for the different metals with which I is combined. Its elimination is greatest when it is combined with Ca; is less when combined with Sr, Mg, NH_4 (with these salts the elimination of the anion is the same); still less when I is combined with Na, K, Rb, the elimination being the same with these 3 metals, and least when combined with Li.—*M. Comel.*

7115. **MANTINI, MANRICO. Il perhydrol e l'acido peracetico nella distruzione delle Sostanze Organiche in Tossicologia. [Perhydrol and peracetic acid in the destruction of organic substances in toxicological tests.]** *Riv. Biologia* 10(5/6): 623-629. 1928.—In view of the well known accelerating action of oxidizing agents in the destruction of organic substances, exps. were made on white mice and guinea pigs, boiling their viscera for a period of 2-4 hrs. in 1 part by wt. of glacial acetic acid and 6 of perhydrol. After eliminating the excess of H_2O_2 by addition of $NaNO_2$, clear and positive reactions were obtained in tests for Pb, Ba, Ag, Hg, As and Sb. This method combines rapidity with the maximum of practical results.—*M. Mantini (transl. by P. Hillkowitz).*

7116. **MARULLAZ, M. Action des sels de magnésium sur la genèse des tumeurs du goudron.** *Bull. Acad. Méd.* 103(5): 166-172. 1930.—In 2 rabbits from a previous series of experiments, to which $MgCl_2$ had been administered for 411 days, while each ear had been painted with tar for 368 days, the growths produced were benign, and the formation had become retarded. $MgCl_2$ was now administered daily from July 25, 1929, to a new series of 8 rabbits. August 1, the upper ½ of the inner surface of the right ear was painted with tar, and the treatment was repeated once a week thereafter. After 168 days, 3 of the animals presented no alteration except a beginning follicular hypertrophy of the zones treated, while proliferation of the epidermis was observed between the 60th and 90th day in 8 out of 10 controls treated with tar but no $MgCl_2$. In 5 of the $MgCl_2$-treated animals, more marked abnormal activity of the epithelium was present, but temperature, sensitiveness and consistency of the ears were normal. In 1 of 2 albinos, a benign papilloma at length underwent regression. In another a tumor formed, became detached, and fell, leaving a notch 0.5 cm. long by 3 mm. deep in the edge of the ear. To study the curative effects of $MgCl_2$, it was given to 3 rabbits in which neoplasms had been produced by tar. In all 3 an arrest of the growth was obtained in about a month after the $MgCl_2$ treatment had begun; in 2 the tumors showed a tendency to become dry.

7117. **MEYER, ERNST. Über das Muttkorninfus.** *Zeitschr. Geburtshülfe u. Gynäkol.* 95(1): 96-124. 2 fig. 1929.—Ergot preparations of various types and ages were compared with gynergen, pituitrin, etc., by the reaction of the guinea pig uterus. The reaction to an infusion of ergot varies markedly due to both biologic variability and to the relative content of the various components of the infusion. The ages of the infusions (up to 12 days) thus gave widely different results, but the method used for standardization gave no significant data which could demonstrate variations of potency with time. The effectiveness of ergot preparations is dependent on all of the infusion components and to no particular one. None of the standardization methods give results which are quite reliable either as to effectiveness or as to the nature of the reaction of the human uterus. The final and most important test of effectiveness is the reaction of the human uterus rather than that of the guinea pig.—*O. W. Barlow.*

7118. **MHASKAR, K. S., and J. F. CAIUS. A study of Indian medicinal plants. II. Gymnema sylvestre,** Br. *Indian Med. Res. Mem.* No. 16. pp. 1-49. map. 1 pl. 1930.—The air-dried leaves of *G. sylvestre** yielded, after ignition, 11.45% of inorganic matter which was found to contain in %: "alkali" 46.76; H_3PO_4 6.73; Fe_2O_3 5.44; Mn 1.31. They do not contain any water-soluble or alcohol-soluble substance which destroys glucose in vitro; nor do they yield any chemical body resembling insulin. They contain the 2 hydrocarbons hentriacontane and pentatriacontane, chlorophyll *a* and *b*, phytol, resins, tartaric acid, inositol, anthraquinone bodies, and "gymnemic acid." "Gymnemic acid" is a

highly complex mixture which may be fractionated by successive treatment with petroleum ether, ether, chloroform, ethyl acetate, and alcohol. It is evident that none of these fractions represents a homogeneous substance. The leaves of gymnemic acid have no bactericidal action in vitro. Their toxic action is manifested by loss of appetite, diarrhea and asthenia, which, in animals, is followed by paresis of the limbs, irregularly high temp., and death, usually without convulsions, due to respiratory failure. They stimulate the heart and circulatory system, increase urine secretion and activate the uterus. They cause hypoglycemia which sets in soon after the administration of the drug whether by mouth or by injection, lasts for a variable time, is not necessarily proportionate to the dose and is never excessive. The drug has no direct action on carbohydrate metabolism, and acts indirectly through stimulation of insulin secretion of the pancreas. The presence of anthraquinone derivatives accounts for the laxative action of the leaves. The drug appears to be useful in checking glycosuria when administered in doses of 2 to 4 gm. of dry leaf.—*Authors' summary.*

7119. **MIYASAKI, SABURO.** **Zur Pharmakologie des Bleies. V. Mitteilung: Die Resorption des Metalls vom Magen-Darmkanal und die Möglichkeit ihrer Beeinflussung.** *Arch. Exp. Path. u. Pharmakol.* 150(1/2): 39-46. 1 fig. 1930.—Absorption of Pb from the gastro-intestinal canal is a simple diffusion process. In a given period a certain percentage of the total Pb present will be absorbed, but this quantity is not proportional to the total amount administered. Dialyzed $Fe(OH)_3$, or milk, delayed Pb absorption. The action of milk on Pb absorption can be explained by the phosphate content of the milk, since Pb phosphate was found unable to pass through a precipitation membrane of permanganate.

7120. **MODINOS.** **Le sérum du vésicatoire dans le traitement et la prophylaxie des maladies infectieuses.** *Paris Méd.* 19(15): 349-352. 1929.—Out of an indefinite "large series" of clinical observations, 4 illustrative cases are given (1 Malta fever, 1 typhoid, 1 asthma and 1 pyodermatitis) in which vesicants were applied to the skin and injection of the serum from the blisters induced cure.

7121. **MONCORPS, CARL.** **Untersuchungen über die Pharmakologie und Pharmakodynamik von Salben und salbeninkorporierten Medikamenten. I. Über das Wasserbindungsvermögen von Salben. II. Über die Resorption und Pharmakodynamik der salbeninkorporierten Salizylsäure. III. Untersuchungen über die Resorption und Pharmakodynamik des salbeninkorporierten elementaren Schwefels. IV. Über die Beeinflussung des Schwefelhaushaltes beim Menschen nach Schwefelsalbenanwendung.** *Arch. Exp. Path. u. Pharmakol.* 141(1/2): 25-49. 10 fig.; 50-66; 67-86. 3 fig.; 87-104. 1929.—I. Pastes and salves are divided into 2 main classes, of which the larger is that in which the aqueous portion is emulsified in an oil medium (Wa_a-Ö emulsions) and the other, that in which the disperse phase is that of the oil, emulsified in a watery medium ($Ö_a$-Wa emulsions). The cooling effect of a salve depends not on the amount of the water incorporated in it but on the readiness with which the water evaporates. This is facilitated by either an $Ö_a$-Wa emulsion or a coarsely disperse, labile Wa_a-Ö emulsion. The effect of Wa_a-Ö emulsions varies according to the stability of the emulsion and the form of application; a thick layer of a stable Wa_a-Ö emulsion is like an impermeable moist dressing, while a labile Wa_a-Ö emulsion has much the effect of an $Ö_a$-Wa emulsion or of a moist permeable dressing. The different forms of emulsion create different adsorption conditions. II. A number of series of inunction experiments were carried out on 6-10 human subjects with salicylic acid in various bases; both base and method of application affected the results. Absorption, as was shown by elimination through the urine, varied within wide limits; no salicylic acid was demonstrable in the urine 6 hrs. after application. Keratolysis was markedly increased if the salve was such or so applied as to promote swelling of the stratum corneum. Salicylic acid in aqueous solution applied in the form of permeable moist dressings neither affected keratolysis nor produced a stronger absorption than alcoholic solutions. The alkali reserve of the blood was not affected by the absorption of salicylic acid incorporated in salves. III. The backs of 175 white mice were shaved, care being taken to avoid breaking the skin, over which was spread a salve containing 0.5 gm. of 10% precipitated S, the animal being kept outstretched to prevent its removing the salve. About 0.3-0.5 cc. of a 2% suspension of Bi subnitrate was then subc. injected under the salve without breaking the underlying skin (the long, slender needle being introduced in the tail and directed to a point under the skin of the back). After 5-6 hrs. a blackening of the Bi deposit (not seen in the control animals) indicated the formation of Bi_2S_3. Of the various bases, benzoinated lard produced the most rapid and intense effects, and ZnO paste the least. To determine the earliest time at which the S begins to react with the subcutaneous Bi, 20 mice were treated with S salve and injection of Bi, and killed and histologically examined at 10-min. intervals afterward. The marginal blackening of the subcutaneous deposit was found to begin 110 min. after injection at the earliest. While the result was not affected if the Bi injection was made 5-6 hrs. before the S application, it was much weakened if the Bi suspension was injected 4-5 hrs. after the application of the S salve, and nearly or quite annulled if the injection was made 12 hrs. afterward. To determine if the absorbed S could produce sulphides at a point distant from the application of the salve, 20 mice received subc. injections of bismuth subnitrate in the head as well as the body, either immediately after or 12-15 hrs. after the S application. The head deposit, when made immediately after the S salve application, was distinctly blackened but less than the deposit underlying the salve; no reaction occurred in the cases in which the Bi salt was deposited 12-15 hrs. after the application of the salve. H_2S was not demonstrable in expired air but in 18 out of 25 cases its formation was demonstrated at the spot of application of the S salve. Clinical experiments showed no H_2S in the venous blood of 10 untreated healthy controls; H_2S was faintly demonstrable in 1 out of 5 healthy subjects previously treated with S salve; a more or less positive reaction occurred in nearly all of 15 cases of skin disease treated with S salve, the intensity of the reaction varying with the degree of skin defect and the time of observation, the blood showing the H_2S most distinctly 6-8 hrs. after the first application of S salve. The reduction of the S may be connected with the cysteine-cystine or glutathial-glutathionid oxid-reduction system. The results of comparison of the Berlin blue reaction in the normal and S-treated skin (on 40 white mice and 25 guinea-pigs) showed a more intense coloration of the S-treated skin. IV. A preliminary study on 18 healthy persons showed an average total S content in the blood serum of 157.3 mgm. %. After a 12-hour application of salve of 10% precipitated S, a rise in total S was observed exceeding the limits of the physiologic variation found in salves with benzoinated lard, yellow vaseline and eucerin as bases, within physiologic limits in salves with bases of ZnO paste or "Physiol C." Control experiments with 2% salicylic acid salves and artificial erythema showed slight rise in total S of blood serum, but so much less than that from the S salves as to indicate absorption as the cause of the changes following the use of the latter. A rise of total N accompanied but did not parallel the rise in total S; the theory is advanced that a part of the increased total S in the serum after absorption circulates in inorganic form. Several series of experiments on 6 and 12 persons without skin disease showed, after 12-hr. application of 100 gm. of 10% precipitated S salve, an increase in sulphate S and total S in the urine, the rise in the sulphate S exceeding that of the total S. Results varied with different bases in order similar to that previously

noted. No regular relation was observed between the effect on S economy and the changes in basal metabolism.

7122. **MÜLLER, JOHANNES.** Tierexperimentelle Untersuchungen über die Verteilung des Quecksilbers im Organismus und klinische Erfahrungen über die Ausscheidung desselben nach Salyrganinjektionen. (Unter besonderer Berücksichtigung der Pathologie und Therapie der Typhusbazillenträger.) *Arch. Exp. Path. u. Pharmakol.* 141(1/2): 1-18. 1929.—Salyrgan (2-6 cc.) was intraven. injected into 10 German shepherd dogs; 1 died 7 min. after receiving 6 cc.; 5 were killed in 20 min. by bleeding from the carotid under ether-chloroform narcosis; the others were killed, 2, 4, 6 and 10 hrs. resp. after injection. The bile, gall-bladder, kidneys, small intestine and blood were analyzed for Hg in all, and the bone-marrow, liver, skeletal muscle, suprarenals, large intestine, stomach, pancreas, spleen, brain, cerebrospinal fluid, lungs, urine and subcutaneous fatty tissue in some. The greatest percentage of Hg was found in the gall-bladder, the suprarenals, the kidneys and the large intestine. Observations on 5 typhoid carriers showed that 5 hrs. after injection of 1 cc. salyrgan (=36.22 mgm. Hg) 31.9 mgm. Hg had been excreted in the urine; 1.1 mgm. Hg appeared in the feces. Of the remaining 3.22 mgm. Hg, all but 1 mgm. was excreted through the feces and urine during the next 20 hrs. All but an insignificant part of the Hg injected, then, was excreted during the 24 hrs. following injection, by far the larger part through the urine. In dogs also the greater part was excreted through the urine.

7123. **NAHMMACHER, HANS.** Was ergibt die kindliche Gewichtskurve nach Vigantoldarreichung an Säuglinge, Wöchnerinnen und Schwangere? *Zeitschr. Kinderheilk.* 49(4): 454-460. 1930.—From comparison of results in 316 infants treated without, and 110 with vigantol, 661 puerperae without, and 226 with, and 162 gravidae treated without, and 45 with, it was concluded (opposed to results of Vogt) that vigantol given to the pregnant woman delays birth, and given to the mother or to the child increases the physiologic postnatal loss of weight and delays recovery of birth weight.

7124. **OLSEN, OTTO.** Om Virkningen af Insulin resorberet fra Mundens Slimhinde. [Action of insulin absorbed from the mucous membrane of the mouth.] *Ugeskr. Laeger* 91(9): 173. 1929.—Insulin was absorbed by the oral and lingual mucous membrane to produce a fall in blood sugar in diabetics.

7125. **ORESTANO, GIROLAMO.** Azione dei farmaci del gruppo della canfora sul respiro periodico da cocaina. [Effect of drugs of the camphor group on the periodic respiration of cocaine.] *Arch. Internat. Pharmacol. et Therap.* 35(3): 351-365. 5 fig. 1929.—Esetone, camphor, coramine and cardiazol stimulate respiration when given intraven. The isodynamic doses are approximately esetone 1, camphor 3, cardiazol 10, and coramine 20. None of these drugs injected simultaneously with or after cocaine hinder the production or cause disappearance of Cheyne-Stokes respiration. Only esetone prevents periodic respiration when injected before cocaine. Probably none of these drugs increase the resistance of the respiratory center to the paralyzing effect of cocaine; esetone apparently diminishes it. The action of the latter used previously to cocaine may be explained by the fact that the effect of esetone lasts for a considerable time and the effect of the cocaine is superimposed on it so that the center, already fatigued, is soon exhausted, without being able to maintain itself at that level of excitability necessary for the production of periodic respiration.—*I. H. Pierce.*

7126. **PACK, GEORGE T., ISABEL SCHARNAGEL, and J. ROSS VEAL.** The placental transmission of bismuth. *Amer. Jour. Syphilis* 14(2): 233-235. 1930.—Bi is transmitted through the placenta of the rabbit and cat when lethal doses are given intramuscularly to pregnant animals of these species. Pathologic changes in the fetal kidneys are not induced until the amount of Bi introduced into the pregnant animal approaches 60 times the therapeutic dose for human subjects.—*Authors' summary.*

7127. **PASCHKIS, KARL.** Zur Biologie des retikuloendothelialen Apparates. VII. Ueber Vergiftung des retikulo-endothelialen Apparates. Zugleich ein Beitrag zur Nephroseentstehung und zur Adsorptionstherapie. *Zeitschr. Ges. Exp. Med.* 67(1/2): 84-99. 5 fig. 1929.—The so-called "blockade" of the reticulo-endothelial system is discussed. In a previous paper it was suggested that it was not the mechanical filling of a cell with colloidal material which stops cell function but a sort of "poisoning" of the cell due to a reaction of the injected colloid (dye, metal, etc.) with the protoplasm. Using the method of Jansco (adsorption of a poison to a colloid that can be taken up by the reticulo-endothelial system) the poisoning of the reticulo-endothelial system with Janus green, adsorbed to cuprocollargol, was demonstrated by histological investigation. The vital functions of these poisoned cells were studied, using vital stains as a test: They were not able to take up lithion-carmin in granular form, which proved that their function was really damaged. But the poisoning with Janus green is not suitable for further studies of the function of the reticulo-endothelial system, because there is always a lesion of parenchymal cells (of the liver and bone-marrow) besides the lesion of the reticulo-endothelial system. It is possible that this lesion of parenchymal cells is due to a nutritional disturbance of the reticulo-endothelial cells towards the parenchyma, but it may be that the poison enters the liver cell (or bone-marrow cell), passing through the damaged reticulo-endothelial cell. Poisoning with optochin and with sublimate did not give any better results as far as the lesions of the parenchyma were concerned. Intravenous administration of Janus green alone (without cuprocollargol) does not affect the liver, spleen or bone-marrow, but causes severe lesions of the kidneys (tubular and glomerular nephrosis). As these lesions do not occur when Janus green adsorbed to cuprocollargol is injected, this is a new example of "parenteral adsorption therapy." Cuprocollargol alone, injected intravenously, causes a marked anemia, which is due to the Cu, not to the Ag, content of cuprocollargol.—*K. Paschkis.*

7128. **PELLATHY, S. v., und J. v. FERNBACH.** Ueber die Wirkung des Parathyreoideaextraktes auf das Blutbild. *Endokrinologie* 3(6): 406-412. 1929.—Parathyroid extracts administered subc. increased the number of myeloid cells. The effect seems to be through the nervous system rather than due to blood Ca. The effect is sympathotonic. It should be useful in vagotonic diseases such as asthma.—*B. Cunningham.*

7129. **PELLEGRINO, F., e G. CAIZZONE.** Azione del Selenio-Tellurio-Cobalto sul Ricambio Idrocarbonato. [Action of selenium, tellurium and cobalt on carbohydrate metabolism.] *Arch. Farmacol. Sper. e Sci. Aff.* 45(3): 75-80. 1928.—Selenic acid, telluric acid, and cobalt nitrate were injected intramuscularly into rabbits. Both selenic and telluric acids increased blood sugar. Their action was not due to the H ion since injection of equivalent HCl did not increase blood sugar. Injection of selenic or telluric acids (1 cc. of N/20 sol. per kgm.) following insulin did not neutralize the hypoglycemia. Intramuscular injection of 1 cc. of $Co(NO_3)_2$ per kgm. produced a small rise in blood sugar. Injection of $Co(NO_3)_2$ coincident with injection of $\frac{2}{3}$ unit of insulin in part neutralized the hypoglycemia.

7130. **PETOW, H., H. KOSTERLITZ, und H. PROBST.** Zur Frage des aktiven Eisens. III. Seine Wirkung auf die Blutregeneration bei der Toluylendiaminanämie des Hundes. *Zeitschr. Ges. Exp. Med.* 72(5/6): 717-725. 3 fig. 1930.—Small doses of toluylendiamine were used to produce in the dog an anemia like the secondary anemia following clinical cases of infection, carcinoma, etc.; 3 series of exps. were carried out on 5 dogs, including 1 control. In this anemia, notwithstanding abundant Fe in the diet, ferrum reductum and "benzidin-active" ferroferricarbonate stimulated the bone-marrow and thereby regeneration of the blood. The "benzidin-active" fer-

roferricarbonate had a more powerful action than the reduced Fe, a fact which the authors attribute, not to a greater "activity," but possibly to a better solubility in the gastric juice and greater absorbability.

7131. PIGHINI, GIACOMO. Ricerche sul liquor folliculi. V. L'ormonizzazione sessuale della donna nelle malattie nervose e mentali. [Studies on the liquor folliculi. V. Sexual hormone treatment of nervous and mental diseases in women.] *Riv. Sperim. Freniatria* 53 (1/2) : 1-33. 1929.—For psychoneuroses and effective psychoses in women a highly concentrated extract of liquor folliculi ("estrofollicolina") has been successfully used. The results in 22 cases tend to confirm the theory that dementia praecox arises from congenital causes affecting principally and primarily the brain, with frequent concomitant alterations in the genito-sexual endocrine system (anterior lobe of the hypophysis and gonads). "Estrofollicolina" in some cases ameliorates the condition by influencing favorably the ovarian dysfunction; in other cases it is without effect either on the sexual dysfunction or on the course of the disease.—*From author's summary (transl.)*.

7132. POLONOVSKI, MICHEL, P. NAYRAC, et J. TIPREZ. Le N-oxyde de morphine en thérapeutique. *Bull. Acad. Méd.* 103 (5) : 174-178. 1930.

7133. POULSSON, LEIF T. Beitrag zur Kenntnis der Wirkung des Pituitrins auf die Ionenausscheidung. *Zeitschr. Ges. Exp. Med.* 72 (1/2) : 232-243. 2 fig. 1930.—Of 20 exps. described, part were performed on Poulsson himself and part on healthy medical students. Pituitary (10-15 units) was intramuscularly injected in the morning with the subjects fasting, after which food was taken as usual; hourly urine determinations were made. Characteristic changes in the ion content of the urine appeared. The total fixed base content rose in proportion to the Na content, while the NH_3 and the titratable acidity declined sharply. Simultaneously the reaction of the urine became more alkaline.

7134. PŘIBYL, E. Farmakotherapeutický účinek koloidního hydroxydu hořečnatého na záněty jater a ledvin toxikogenního původu. [The pharmacotherapeutic action of colloidal magnesium hydroxide in experimental hepatitis and nephritis of toxic origin.] *Biol. Spisy Vysoké Školy Zvěrolékařské Brno (Publ. Biol. École Vétérinaires)* 6: 291-318. 1927.—In this experimental work the therapeutic action of $Mg(OH)_2$ in colloidal state (introduced in medical practice by Bečka and sold under the trade name Polysan) in inflammatory processes in liver and kidneys has been studied. One group of rabbits was poisoned by P or by As in order to induce hepatitis, a 2nd by uranium nitrate to induce nephritis. The clinical changes in P and As poisoning, respectively, have been measured by determining the grade of icterus, occurrence of albumin and bilirubin in urine and the level of N. P. N. in blood. The clinical behavior of animals has been daily recorded. In nephritis the function of kidneys has been followed by determining the N. P. N. in blood, the excretion of phenolsulphonephthalein in urine and the grade of albuminuria and bilirubinuria. Also the temperature and body weight have been observed. When the mentioned symptoms of hepatitis or nephritis have occurred, the emulsion of Polysan has been injected for several days intraven. and all further changes in state of treated animals have been recorded and compared with those of control rabbits. $Mg(OH)_2$ (Polysan) acted in P hepatitis as follows: the N. P. N. decreased which may be attributed to decreased autolysis of liver tissue. The disappearance of bilirubin and albumin was observed. In one case the exitus was delayed for 10 days, otherwise the animals recovered from poisoning completely. In As poisoning similar therapeutic influence of $Mg(OH)_2$ was observed. In nephritis several doses of Polysan caused very great improvement of kidney function: there was a decrease of N. P. N. in the blood, and an increase of phenolsulphonephthalein excreted in urine. The albuminuria disappeared and subnormal temperature reached its physiological height. This improvement in function has been observed also in rabbits havng symptoms of advanced uremia: edema, anuria etc. By histological examination of the liver poisoned by P it was found that the liver of the rabbit, into which $Mg(OH)_2$ had been injected, was in a state of hyperemia. Also very prominent processes of regeneration were evident. The liver of control rabbits showed the picture of advanced inflammation, fatty degeneration and necrosis. In the kidneys of the rabbit treated by $Mg(OH)_2$ the hyperemic state was found also, whereas the kidneys of control rabbits showed the picture of typical tubulonephritis. From the experiments it may be concluded that $Mg(OH)_2$ has a healing action on inflammatory processes in liver and kidneys. It is believed to neutralise the increased acidity in inflamed tissue which is necessary for inflammatory processes and therefore acts directly against inflammation. The Mg-ion liberated by neutralisation influences the processes of regeneration of tissue by catalytic action.—*Author's summary.*

7135. QUIN, J. I. The toxic properties of Cucumis myriocarpus Naud., and Cucumis africanus Linn. *Union So. Africa Dept. Agric.* 15th Ann. Rept. Dir. Vet. Serv. 2 (5/9) : 769-775. 1929.—*C. myriocarpus* and *C. africanus*, especially their ripe fruits, are toxic to animals. The poisonous juice is stable to desiccation and boiling for long periods. When given in sufficient amount it is rapidly fatal, although the symptoms and frequently the post-mortem findings are not very striking. Except for the yield, which in *C. africanus* is much less than in *C. myriocarpus*, the 2 substances appear identical. The poison is non-alkaloidal and non-glucosidal and probably of a resinous nature. On injection it is rapidly fatal, death coinciding with a severe pulmonary edema. From the nature of its action, it is difficult to reach an understanding of the factors involved. It seems that the poison is readily taken up by the blood-stream even following subc. injection, and passed through the heart into the pulmonary circulation. In the lungs gross injury is effected, the poison apparently acting directly on the endothelial lining. This assumption, if correct, would imply a physico-chemical disturbance in the cell body rather than a morphological change. Thus in no case was pulmonary hemorrhage noticeable, i.e., actual tearing of blood-vessels can be excluded, and yet the effect on the minute vessel wall must be very significant when large amounts of apparently whole plasma containing protein molecules are capable of being forced through. There seems to be little doubt that this is a case of a primary pulmonary edema, since the heart-beat remains normal until shortly before death, when asphyxia sets in. The possibility of vasomotor disturbances accounting for the edema seems remote. Blood-pressure tracings obtained from decerebrate dogs and rabbits show practically no deviation after intraven. injection of extracts. In such cases the respiration and heart-beat come to an end from the same cause, i.e., the marked pulmonary edema. When this appears, but not before, there is a marked fall in the general blood-pressure. With small animals as much as half the plasma may be lost in this way, while in sheep a concentration of the red corpuscles from a normal of ± 25% to 75-80% is frequently noticed.

7136. RATH, ERICH. Zur Pharmakologie gebromter Baldriansäureester. *Arch. Exp. Path. u. Pharmakol.* 142 (3/4) : 162-165. 1929.—Exps. on fish and mice indicated that the introduction of a Br atom into the acid radical of isovaleryl amylene hydrate produces a much more active compound than if the Br is introduced in the alcoholic radical.—*Author's summary (transl.)*.

7137. REDNIK, T. Die Beeinflussung der Medikamente auf die Dextrose-Belastungs-Blutzuckerkurven, als Leberfunktions-Prüfung. *Zeitschr. Klin. Med.* 109 (6) : 720-724. 1929.—On the assumption that the hyperglycemia following the oral administration of carbohydrate is due not to absorbed sugar but to a reflex action on the liver, an attempt was made to influence the blood sugar rise after oral administration of bread or dextrose by the administration of $CaCl_2$ by vein (a procedure which reduces tonus of sympathetic and of parasympathetic)

and also by the oral administration of gynergen (reduction of sympathetic tone) simultaneously with the ingested sugar. Results fully confirm those of Hetenye and Pogany. Following the administration of a sufficient dosage of carbohydrate, a blood sugar rise occurs in man —with normal liver function. This reflex hyperglycemia can be diminished by Ca or ergotamine. The latter drug may inhibit the reaction entirely. A diseased (cirrhotic) liver does not react similarly, i.e., no reflex hyperglycemia occurs and Ca and ergotamine are consequently without effect. It is suggested that the alteration of the sugar binding power of the liver by Ca or ergotamine (implied by the reflex hyperglycemia following sugar adminstration) offers a satisfactory test for liver function.—*O. W. Barlow.*

7138. **REICHLE, HERBERT S.** Toxic cirrhosis of liver due to cinchophen. *Arch. Internal Med.* 44(2): 281-288. 4 fig. 1929.—Report of 2 cases with review of 47 previously published.

7139. **REID, W. L.** Changes in the volume of the kidney in the intact animal; a plethysmographic study with especial reference to diuretics. *Amer. Jour. Physiol.* 90(1): 157-167. 12 fig. 1929.—A method for plethysmographic study of the kidney is described. It is an adaptation of Hargis' collodion plethysmograph. Observations were made on virtually intact dogs. Simultaneous tracings of carotid bl. press. were made under local anesthesia in some of the animals. The effects of caffeine, theobromine sodio-salicylate, theophylline ethylene diamine, pituitrin, digitalis, merbaphen, nitrites, epinephrine, spinal anesthesia and distilled H_2O were studied. Results agreed with those of other workers on anesthetized dogs. From 0.5-1 cc. dist. H_2O per kgm. produced a temporary but pronounced decrease in volume, without change in blood pressure.—*M. R. Freeland.*

7140. **RENTZ, EDUARD.** Zur Pharmakodynamik des Chlorophylls. *Skand. Arch. Physiol.* 56(1/4): 36-117. 40 fig. 1929.—Chlorophyll extracts were used in exps. on living animals or surviving tissues. Moderate doses of chlorophyll increase the tonus and the height and frequency of contraction of the isolated rabbit intestine, while higher concentrations generally reduce movements after momentary increase. The effect of the parasympathetic stimulants on the intestine is increased by moderate doses of chlorophyll, while stronger doses reduce or completely check the results. The effect of atropine is not greatly influenced by chlorophyll; at most it is somewhat weakened. The effect of epinephrine is plainly prolonged. $BaCl_2$ with strong chlorophyll doses continues very active. Moderate chlorophyll doses stimulate the rabbit uterus somewhat in movement and in tonus. Strong and very strong concentrations act like epinephrine. The effect is reversible. The effect of epinephrine itself is prolonged by chlorophyll. Atropine neutralizes the influence of chlorophyll. After strong doses of atropine strong chlorophyll doses diminish tonus. $BaCl_2$ is unchanged in effect. On the isolated frog heart chlorophyll increases systole and decreases the frequency. Chlorophyll does not increase the effect of epinephrine. On hearts treated with ergotamine chlorophyll is as effective as on untreated hearts. The effect of acetylcholine is reduced or completely offset by stronger chlorophyll doses. Electrical stimulation of the vagus after strong chlorophyll doses is weakened or ineffective. Also the response of the sympathetic nerve is lessened. On preparations of isolated circulatory systems of frogs chlorophyll extract produces widening of the vessels, and in spite of this the effect of epinephrine is increased by chlorophyll and the action of $BaCl_2$ is unaffected. Tonus and the effect of epinephrine upon the rabbit aorta are increased by chlorophyll. Blood pressure exps. on rabbits show slight improvement of respiration by chlorophyll, a slight increase in blood pressure, an insignificant reduction in the pulse rate, a widening of kidney and intestinal blood vessels, while the leg blood vessels remain either unaffected or contract slightly. Strong chlorophyll doses produce optimal results in respiration, blood pressure, kidney and intestinal blood vessels. The effect of epinephrine is not visibly increased. Blood pressure experiments in the cat are similar, but the effect of epinephrine on blood pressure and on the kidney vessels is increased, although chlorophyll widens, though slightly, the kidney vessels. Chlorophyll in moderate doses can, therefore, be considered a material which stimulates smooth muscle and increases the sensitiveness of the sympathetic nervous system. The question whether the increase in the effect of epinephrine by chlorophyll is due to decrease of oxidation of epinephrine, especially since chlorophyll is involved in intracellular respiration, must remain unanswered for the present, as well as the question of increase in permeability by chlorophyll solutions and their effect upon the action of epinephrine.—*G. J. Peirce.*

7141. **REZNIKOFF, PAUL.** Rectal administration of liver extract (cod). *Jour. Amer. Med. Assoc.* 93(5): 367-368. 1929.—Preliminary paper. Administration of cod liver extract to a pneumonia patient with vomiting resulted in cessation of vomiting, increase in hemoglobin %, and in red blood cell count.

7142. **RIKL, ALEXANDER.** Die lokale Reizwirkung der Narkotika. *Arch. Exp. Pathol. und Pharmakol.* 133 (3/4): 192-201. 1928.—The limiting concentrations of many alcohols and other narcotics in regard to their burning or stinging effect on the human eye and tongue were determined. An homologous regularity was found, as Führer observed in the narcotic activity of homologous alcohols on the frog heart. The local irritant action of the narcotics used runs parallel with the strength of their narcotic effect. No numerical relationship between the described results and the central stimulating action of narcotics can be established. Phenol, camphor and menthol, tested comparatively, show by far the strongest local irritation.—*I. H. Pierce.*

7143. **ROOSEN, R.** Zur Isaminblautherapie der bösartigen Geschwülste. *Zeitschr. Krebsforsch.* 31(5): 506-516. 1930.—The action of the dye appears to be one of dehydration of the tumor tissue, ascribed to upset of intracellular equilibrium. Much of its effectiveness depends on sufficient dosage, since only part of the administered dye is absorbed by the tumor tissue, and as tumors differ greatly in their affinity for the dye, larger doses are necessary in the case of those with low absorptive power. With insufficient doses, the absorption and its effects are limited to the periphery of the tumor, leaving the central portion free to grow. In regard to combined therapy, x-ray, at least in large doses, interferes with the use of isamine-blue, as it tends to diminish its absorption. Concerning its combined use with bismuth-iatren, very careful technique is necessary, for if the inflammatory reaction induced by the iatren regresses before there is sufficient storage of isamine-blue, the latter is gravely interfered with. The possibility is suggested of promoting the absorption of the dye in certain regions by administration of substances acting through the nervous system, e.g., choline in gastric cancer, the general splanchnic dilatation induced by small doses promoting deposition of the dyestuff. Animal experimentation is of little value in this particular clinical problem, since the inoculated tumors of animals are as a rule rather well delimited, so that in them the perineoplastic deposition, so important in human tumors, is without effect. Diathermy along with isamine-blue tends to increase its absorption, but in intensive doses there is danger of intoxication from degeneration products, particularly in the case of superficial cancers. To avoid this, either the diathermic dosage must be carefully regulated, or as much of the tumor as possible should first be extirpated surgically.—*H. E. Eggers.*

7144. **ROSENTHAL, SANDFORD M.** Some effects of alcohol upon the normal and damaged liver. *Jour. Pharmacol. & Exp. Ther.* 38(3): 291-301. 1930.—Alcohol orally administered to normal dogs (2 cc. per kgm.) produces no increase of urobilin in the urine or bilirubin in the blood. There is a slight impairment indicated by the bromsulphthalein test, which returns to normal in 24 hrs. Alcohol produces no greater distur-

bance of function in dogs whose livers have been damaged by $CHCl_3$ or CCl_4 than it does in normal dogs. In spite of the negligible disturbance as shown by tests of liver function, alcohol greatly increases the susceptibility of dogs to $CHCl_3$ (by inhalation) even after the visible effects of alcohol have worn off. A 2 hr. period of anesthesia was fatal to 6 of 10 dogs who had received 2 cc. of alcohol per kgm. (by mouth) 3 to 4 hrs. prior to the anesthetic. As a control 10 dogs received a similar period of $CHCl_3$ anesthesia alone, without a fatality.—*Author's summary.*

7145. SALANT, WILLIAM, and KEEVE BRODMAN. The effect of mercury on intestinal motility. *Jour. Pharmacol. & Exp. Therap.* 37(1): 55-66. 1929.—Soluble salts of Hg stimulated intestinal movements in different animals, their contractions being increased by small doses of pilocarpine. Stimulation of the vagi by the interrupted current was more effective after than before Hg. The effect was also increased in animals in which Ca deficiency was produced by the repeated administration of Na-oxalate. Stimulation by Hg was often preceded by primary inhibition of short duration. Atropine usually prevented stimulation of the isolated intestine of the rat by Hg. On the basis of the above results it was concluded that the movements of the intestine provoked by Hg were due to stimulation of the parasympathetic endings. Occasional failures of the intestine to respond to Hg were discussed. The conclusion was reached that they were due to causes other than excessive stimulation of the splanchnics. Evidence was also adduced indicating that Hg depressed the Auerbach plexus.—*Authors' summary.*

7146. SALANT, WILLIAM, and KEEVE BRODMAN. Functional changes in the autonomic system and the action of mercury. *Jour. Pharmacol. & Exp. Ther.* 37(2): 121-130. 1929.—Small and medium doses of adrenalin increase but large doses decrease the resistance to Hg. Its toxicity is also considerably diminished by moderate amounts of ephedrine. Hg was most toxic for the heart when given after paralysis of the sympathetic by ergotamine. The action of Hg is also increased by cardiac inhibition but not nearly to the same extent as by paralysis of the accelerators. Complete denervation of the heart by atropine and ergotamine produces effects on the action of Hg similar to those observed when it is given after ergotamine only. The relation of the autonomic system to the action of Hg was discussed and the beneficial effects of small doses of adrenalin analyzed. It was concluded that the resistance of the heart depended upon the balance between the sympathetic and parasympathetic systems.—*Authors' summary.*

7147. SCALA, VINCENZO. La chemioterapia del granuloma maligno. [Chemotherapy of malignant granuloma.] *Minerva Med.* 9(52): 1041-1050. 7 fig. 1929.—Biopsies in 4 cases of Hodgkin's disease treated with antimony (given in the form of "stibional") showed that in a short time an intense connective tissue sclerosis was completely replacing the typical granulomatous process. It is believed to act in the disease rather by stimulating the reticulo-endothelial system to resistance than by directly antagonizing the pathogenic agent.

7148. SCHAZILLO, B. A. Beiträge zum Studium über die Bedeutung der Blutdrüsen für den Verdauungstrakt. Die Wirkung von Adrenalin und Insulin auf die Sekretion des Dünndarmsaftes. *Arch. Verdauungs-krankh.* 45(3/4): 264-271. 1929.—In a fasting dog with a Vella fistula adrenaline (1 mgm. subc.) was found to increase secretion about 3-fold; but after feeding with meat extract an increase could only be obtained by intravenously administered adrenaline. Insulin (5 units subc.) increased the secretion both when fasting and after feeding. It is suggested that intestinal secretion depends on changes in the tone of the autonomic system, with relative parasympathetic preponderance at the height of digestion.—*R. J. Brocklehurst.*

7149. SCHNEIDER, PHILLIP. Einiges über Paraldehydvergiftung. *Wiener Klin. Wochenschr.* 42(12): 357-360. 1929.—Anatomical and histological descriptions of tissues in paraldehyde poisoning.—*W. N. Berg.*

7150. SEBENING, W. Physiologische Grundlagen der Avertinnarkose. *Schmerz* 2(11): 403-439. 8 fig. 1930.—A method is described for the quantitative determination of avertin absorption during rectal narcosis. Rate of absorption of avertin determines rate and depth of narcosis. Perfusion of the dog liver by avertin caused injury that was similar to that produced by phlorhizin. From 20-30 min. after avertin was introduced into the rectum it reached its highest concentration in the blood. The highest concentration found was between 5-9.5 mgm. %; values under 4 mgm. % produced an incomplete general narcosis. The organs in the body which contained the highest percentage of lipids contained the highest amount of avertin, i.e., the brain. Cerebrospinal fluid sometimes contained less avertin than the blood. The blood corpuscles contained from 2-7.5 times as much avertin as did the plasma.

7151. SHERIF, M. A. F. The effect of certain drugs on the oxidation processes of mammalian nerve tissue. *Jour. Pharmacol. & Exp. Ther.* 38(1): 11-29. 1930.—The effect of various drugs on the oxidation processes of nerve tissue has been investigated by 2 methods: (*a*) by observing the time for reduction of methylene blue, and (*b*) by the use of a modified Barcroft apparatus. Generally, the result of either method confirms the other. Cocaine HCl inhibits O usage in concentrations of 0.2 to 1.0%. Novocaine borate has a similar action, but requires nearly double the concentration to produce a comparable effect. Urethane is effective only in still higher concentrations. Caffeine citrate increases oxidation in concentrations lower than 0.5%. Above this concentration oxidation is diminished. Oxidation is inhibited, not only by drugs which are known to diminish conduction in nerve fibers, but by certain other substances which do not possess the properties of local anesthetics. While glucose 0.1% has no effect on O uptake, galactose in the same percentage concentration enables the nerve to take up O at a uniform rate for at least 3 hrs., whereas in the control nerves the O uptake falls off after the 1st hr.—*Author's summary.*

7152. SHIROTA, RYOHEI. Der Einfluss verschiedener Pharmaka auf den Gasstoffwechsel der Niere. [Japanese.] *Hokkaido Igaku Zasshi* 5: 377-399. 1927.—Rabbits for the most part and sometimes cats were used for the exps. The apparatus was Plesch's gas analyzer with M. Miva's modification. Fifteen min. after intraven. injection of such compounds of Bi as castis, muthanol, neotrepol and trepol O-consumption of the kidney increased, secretion of urine decreased at the same time. Larger doses of these compounds diminished the gas exchange of the kidney. In most experiments with trional the O-consumption of the kidney was also increased. With uranium compounds both urine secretion and gas exchange of the kidney were usually increased. The last was diminished however in cases of acute U nephritis, especially in cases when advanced regressive changes in the tubules were present. Urotropin and helmitol used even in larger doses failed to alter O-consumption of the kidney, but caused a well marked diuresis. The compounds of the phenol group, given in doses which ordinarily do not cause convulsions or blood changes, are able to raise the gas exchange of kidney. The secretion of urine is always diminished with such doses, while smaller ones tend to increase it. The intensity of action in raising the gas exchange of the kidney seems to depend very much on the toxicity of the compound used; i.e., the more toxic the compound, the stronger the action. With regard to the intensity of action the compounds can be arranged as follows: pyrocatechin, hydrochinon, resorcin, phenol and pyrogallol. The action of phloroglucin on the gas exchange of the kidney is practically negligible.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by B. Siaulis).*

7153. SHPINER, LEONARD BENJAMIN. Blueberry leaf extract overdosage. *Arch. Internal Med.* 44(2): 204-208. 1929.—In view of the recently demonstrated

antidiabetic effect of blueberry leaf extract (myrtomel) and also of von Noorden's findings of hepatic necrosis following intraven. injection of this extract, exps. were made with oral overdosage (2 to 4 times the therapeutic dose) on 2 normal and 2 partially pancreatectomized dogs. No toxic or untoward results were observed.

7154. **SIMON, A. Ergänzung der Arbeit: "Über die Beeinflussung der Leberautolyse durch Insulin und Thyroxin" von A. Simon und P. Weiner.** *Biochem. Zeitschr.* 215(1/3): 102-105. 1929.—Additional data are presented which show that thyroxin decreases autolysis somewhat in a phosphate buffer mixture. Insulin apparently does not influence autolysis.

7155. **SOBOL, M. E., und Z. J. SVETNIK. Die Wirkung des Wismut auf das Nervensystem.** *Arch. Psychiatr. u. Nervenkrank.* 88(4): 586-597. 4 fig. 1929.—The clinical results and pathologic change induced by intramuscular injection of insoluble Bi salts were observed in 3 rabbits. It is concluded that, so far as the nervous system is concerned, metallic Bi is not a parenchymatous poison. Chronic poisoning with insoluble Bi salts produces a marked alteration of the chloroid plexus, of the cerebral vessels and of the meninges, without alterations in brain-substance; nor does injury to the hematoencephalic barrier through poisoning by a heavy metal necessarily involve parenchymatous alterations. The nervous complications which in rare cases occur after long-continued administration of Bi salts are to be regarded as secondary and of vascular origin; not as primary alterations in cerebral functions.

7156. **SPYROPOULOS, CHARALAMBOS. Experimentelle Prüfung der bakteriziden Wirkung des Thorium X-Degea in Lösung und in Salbe gegenüber eigigen augen-pathogenen Bakterien in vitro.** *Arch. Augenheilk.* 100/101: 418-438. 1 fig. 1929.—In testing the bactericidal action of thorium X the author used the following cultures—staph. aureus, staph. albus, pneumococcus, gonococcus, streptococcus, pseudomonas aeruginosa, and Morax-Axenfeld and xerosis organisms grown either in serum bouillon or suspended in physiological saline. While in solutions containing 10,000 e.s.E. per cc. doses there was some bactericidal action after a 16 hr. exposure, and while in salves 2000 to 5000 e.s.E. per cc. proved bactericidal at distances under 10 mm. in 11 to 12 hr. exposures, it is believed that there is little likelihood of favorable action on eye infections as the action is very superficial and the organisms are enveloped in secretion or enclosed within cells.—*H. F. Smyth.*

7157. **STANOJEVIC, LAZA. Die ergographische Leistungsfähigkeit nach dem physiologischen und nach dem mit verschiedenen hypnotischen Mitteln erzeugten Schlafe. Eine psychopharmakologische Studie.** *Monatsschr. Psychiatr. und Neurol.* 74(1/2): 121-128. 5 fig. 1929. —The subjects of investigation were normal persons, former patients now in remission after acute psychoses, and psychopathic persons (number not stated). Ergographic records were taken after sleep induced with narcotics (adalin, a urethane derivative; neodorm, and phanodorm) and after physiologic sleep. A decided difference appears in the ergographic record of capacity for exertion after physiologic sleep and artificially induced sleep. Hypnotics appear to affect the cerebral cortex as well as various points in the central nervous system. The ergogram obtained after sleep induced by hypnotics is short and irregular, owing to association and innervation processes induced by the drug. Capacity for physical exertion is apparently dependent primarily on the central nervous system, the peripheral neuromuscular apparatus appearing to play only a secondary part therein.

7158. **STARK, W. BERKELEY. Irrigations with aqueous solution. Their effect on the membranes of the upper respiratory tract of the rabbit.** *Arch. Otolaryngol.* 8(1): 47-55. 5 fig. 1928.—The nasal fossae of 24 rabbits were irrigated with 0.9% NaCl solution, tap water, or 2% NaCl solution, at a temperature of 40° C., and 8 healthy rabbits were used as controls. Irrigations, varying from 3 to 24, were made daily. Examinations were made in some instances a few minutes after the last irrigation; in others, 24 hrs. afterward. At necropsy, 75% of the rabbits irrigated were found to have mucopurulent secretion in the nasal fossae and in the paranasal sinuses. The animals examined from 15 to 20 min. after irrigation showed that the paranasal sinuses on both sides were filled with irrigating fluid, whereas the sinuses of rabbits examined 24 hrs. after irrigation were clear of it. Of the 18 rabbits having mucopurulent sinusitis, the sinusitis was on the right side in 3, on the left in 4 and on both sides in 11. The reaction of the nasal mucous membrane to 2% NaCl solution and to tap water was more marked than the reaction to the 0.9% NaCl solution. Varying degrees of change were noted macroscopically and microscopically in the mucous membrane: hyperemia with marked leukocytic infiltration, increased glandular activity, and increase in the size of vacuoles and epithelial cells.—*Author's summary.*

7159. **STAUB, H., und A. JEZLER. Zum Synthalinmechanismus.** *Zeitschr. Klin. Med.* 112(1/2): 1-18. 5 fig. 1929.—In animals previously treated with phlorhizin, large regular doses of synthalin subc. or intraven. decreased the amount of urine excreted. If a guanidine preparation was injected into the renal artery a marked polyuria was produced. The blood in the renal vein became bright red. Polyuria was produced by inhibition of oxidation, following injury to the tubules and paralysis of the blood vessels. Polyuria followed oliguria. Synthalin did not act on the kidney itself since increased blood sugar was not followed by increased sugar in the urine. Stool analyses of diabetics before and after synthalin administration showed a disturbance in fat digestion and absorption, in those cases in which abdominal distress had followed administration of guanidine. The toxic action of synthalin was due to a disturbance of enzyme action, especially of the pancreas. However, enzyme tests on the stool were negative. Lactic acid appeared in the human urine after the usual dose of synthalin; but did not as a rule appear in rabbits in which synthalin had produced hypoglycemia.

7160. **STEPHAN, RICHARD. Ueber die Wirkungsart des gallensauren Insulins bei subkutaner Anwendungsform.** *Deutsche Med. Wochenschr.* 56(3): 88-91. 1930.—Addition of Na desoxycholate to the insulin molecule produced a drug having the same effect on blood-sugar as insulin, but with none of the subjective symptoms found with insulin injection. The Na desoxycholate compound was suitable for oral or subc. administration.

7161. **STEPPUHN, O., und W. SWEREFF. Zur Wertbestimmung von Lobelia inflata. [Assay of Lobelia inflata.]** *Arch. Exp. Path. u. Pharmakol.* 141(1/2): 116-122. 5 fig. 1929.

7162. **SUGIURA, KANEMATSU, and STANLEY R. BENEDICT. The influence of suprarenalin (epinephrin) on the growth of carcinoma and sarcoma in animals.** *Jour. Cancer Res.* 14(4): 487-501. 5 fig. 1930.—The toxic action of suprarenalin on the Flexner-Jobling rat carcinoma and the Rous chicken sarcoma has been investigated in 3 different ways, namely, (a) injection directly into and around the tumor, (b) injection subc. at a point away from the tumor, and (c) in vitro. In 58 rats with 56 controls inoculated with Flexner-Jobling rat carcinoma and 12 chickens inoculated with Rous chicken sarcoma, both series treated with repeated intratumoral injections of suprarenalin, the development of small tumors was completely inhibited, while large tumors were seldom beneficially affected. Metastases of the chicken sarcoma were not affected by treatment; and in 60 carcinoma-bearing rats treatment with subc. injections of suprarenalin at points remote from the tumor did not hinder the development of the latter. In vitro experiments indicate that the proliferating capacity of the Flexner-Jobling rat carcinoma was partially destroyed by suprarenalin, but the Rous chicken sarcoma was unaffected as respects its growth after implantation. Hence, any possible therapeutic value of suprarenalin (epinephrin) for cancer treatment is limited to local application.

7163. **TAINTER, M. L. Comparative effects of**

Ephedrine and Epinephrine on blood pressure, pulse and respiration with reference to their alteration by cocaine. *Jour. Pharmacol. & Exp. Therap.* 36(4): 569-594. 4 fig. 1929.—The responses of blood pressure and pulse and respiratory rates to ephedrine and epinephrine were compared in uncocainized and cocainized cats and dogs. The responses of all the functions studied decreased progressively with several successive intraven. injections of different doses of ephedrine, the decreases being more marked with increasing doses; but the diminution in pressor response to the second injection of ephedrine, which is the important injection in the phenomenon of cocaine-desensitization to ephedrine, was practically insignificant. On the other hand, the responses of the same functions tended to increase, if anything, with successive injections of epinephrine in the dosage used. The stellate ganglion is not demonstrably concerned either in the circulatory actions of ephedrine, contrary to the claims in the literature, or in the cocaine-desensitization to ephedrine. Cocainization of cats and dogs definitely desensitizes, i.e., prevents or greatly decreases, the pressor, cardiac and respiratory responses to ephedrine, and simultaneously sensitizes the pressor and cardiac, and may reverse the respiratory, responses to epinephrine, a truly sympathomimetic drug. Cocainization is thus effective with or without preliminary injections of control doses of the amines. The use of the pressor responses of the cocainized organism is a valuable pharmacological method for the analysis and classification of drugs in respect of sympathicotropic (truly "sympathomimetic") and pseudo-sympathicotropic actions, and the results by this method correlate with those obtained on the ergotized (ergotoxinized) organism. The significance of both the cocainized and ergotized organisms in pharmacological studies is discussed and the correlation of the two methods which holds for epinephrine, tyramine, ephedrine and phenylaminoethanol is pointed out; of these drugs, only epinephrine is sympathicotropic.—*Author's summary.*

7164. **TAKAHASHI, YOSHIO. Über den Unterschied zwischen Dünn- und Dickdarm bei verschiedenen Tieren in ihrer Reaktion auf einege Nervenmuskelgifte.** [Japanese.] *Okayama Igaku Kwai Zasshi* 39: 977-997. 1927.—The intestines of rabbits, guinea pigs, rats, dogs and cats were used. From all animals, the small intestine was the more sensitive to epinephrine. The action was usually inhibitory, but in young rats and in rabbits the large intestine often showed a stimulation. (Differing distribution of sympathetic augmentor fibers.) Ephedrine and mydriatin in small doses produced always a sympathicomimetic effect, in larger doses a direct muscular stimulation. The large intestine was generally more sensitive to pilocarpine, certain exceptions indicating differences in parasympathetic arrangement. Small doses of tyramine in the rabbit inhibit the small intestine and stimulate the large, the opposite occurring in the guinea pig. Rats and cats always showed a depression. When the dose was increased tyramine became always a stimulant, the large intestine being the more sensitive in any case. Ba, also, acts more readily on the large. The differences in responses to atropine follow the differences in parasympathetic predominance. The action of a drug upon the small intestine can not be taken as the story of its total effects in the intestinal tract because of these variations.—*Author* (*courtesy Jap. Jour. Med. Sci. IV*) (*transl. by C. Reynolds*).

7165. **TAKEDA, MASAO. On the cause of the change in the blood coagulability due to the intravenous infusion of hypo- and hypertonic salt solutions.** (Orig. in Japanese p. 125-143.) *Folia Pharmacol. Japonica* (*Breviaria*) 8(3): 1-2. 1930.—After intraven. injection of 50 c. c. per kgm. of NaCl at body temperature (0.6, 0.9, 1.8, 3.6, and 4.5%), into rabbits at the rate of 10 c. c. per kgm. per min., the clotting time of the blood, and the fibrinogen, thrombin, thrombokinase and Ca content were determined. The blood coagulability was always accelerated, showing a maximal effect just after injection. It was most marked with a 1.8% salt sol. The fibrinogen content did not change, whereas the thrombin content was, in general, augmented with the increased blood coagulability. Blood-platelets and leucocytes increased with the augmentation of coagulability and returned to the normal parallel with the latter. The blood Ca was not perceptibly increased by the infusion. It is concluded that in the augmentation of blood coagulability due to the infusion of salt solutions the increase in thrombokinase, which is formed by the destruction of blood-platelets and leucocytes, plays an important rôle, and moreover the increase in the thrombin content is of no little significance in this connection, but fibrinogen and Ca have little or no bearing on the changed coagulability.

7166. **TANAKA, HISASHI. Über den Einfluss des Insulins und des Pituitrins auf die Gerinnbarkeit des Blutes.** [With German summary, Breviaria p. 32.] *Folia Pharmacol. Japonica* 7(3): 422-428. 1928.—Insulin in vitro did not change the coagulation time of blood in rabbits. After intraven. injection of small doses of insulin (0.3-0.5 units per kgm.) there was at 1st a delay, later an acceleration of coagulation. Intensity and duration of the effect differ in different animals. Small doses of pituitrin (0.05-0.3 cc. per kgm. intraven.) delay coagulation; in larger doses (.5 cc. for example) pituitary extract at 1st inhibits coagulation, then hastens it. The anti-coagulating effect which pituitary extract has in vitro in addition to that of the citrate added to plasma is neutralized by NaOH. In the strict sense of the word epinephrine does not act as a coagulant for blood in vitro.

7167. **THOMPSON, MARVIN R. The pharmacology of ergot with special reference to biological assay and standardization. Part IV. Study of aqueous extracts of ergot.** *Jour. Amer. Pharmaceut. Assoc.* 19(1): 11-23. 1930.

7168. **THOMPSON, WILLARD OWEN, ALLEN G. BRAILEY, PHEBE K. THOMPSON, and EDWARD G. THORP. The range of effective iodine dosage in exophthalmic goiter. I. The effect on basal metabolism of rest and of the daily administration of one drop of compound solution of iodine.** *Arch. Internal Med.* 45(2): 261-281. 1930.—During the daily administration of 1 drop of compound solution of I (about 6 mgm. of I) to 17 unselected hospital patients with exophthalmic goiter, 15 showed a reduction of 15 to 49 points in basal metabolism, and 2 showed no change. The reduction appeared to be as great as that noted by other observers on much larger doses. A maximum decrease in basal metabolism also appeared to occur in most outpatients during the administration of 1 drop daily. In the house patients, the administration of 1 drop daily caused a maximum reduction in basal metabolism in 7 days, on the average. The time that elapsed between the beginning of I administration and the onset of a decrease in basal metabolism varied from 1 to 4 days. In 5 of the cases it had started within 24 hrs. after administering only 6 mgm. of I.—*From authors' summary.*

7169. **THOMPSON, WILLARD OWEN, EDWARD G. THORP, PHEBE K. THOMPSON, and ARCHIBALD C. COHEN. The range of effective iodine dosage in exophthalmic goiter. II. The effect on basal metabolism of the daily administration of one-half drop of compound solution of iodine.** *Arch. Internal Med.* 45(3): 420-429. 1930.—During the administration of ½ drop of compound solution of I (3 mgm. of I) daily to 20 unselected hospital patients with exophthalmic goiter, 13 showed a significant reduction in basal metabolism, 5 showed no change and 2 showed an increase. Seven showed a lower level of basal metabolism during the subsequent administration of 30 drops daily than during the administration of ½ drop daily. The average reduction in basal metabolism during the administration of ½ drop of compound solution of I daily was 14 points (from plus 40 to plus 26%)—which was only about ½ as great as that during the administration of 1 drop daily. The total decrease in metabolism from all doses

of I was less than in the 1 drop series. In the 13 cases that responded, the maximum reduction in basal metabolic rate appeared on the average in 7 days. In 4 cases a reduction occurred within 24 hrs. The daily oral administration of 3 mgm. of I in the form of compound solution of I is inadequate to produce a maximum reduction in basal metabolism in most cases of exophthalmic goiter in Boston, whereas 6 mgm. is adequate.—*Authors' summary.*

7170. **THOMPSON, WILLARD OWEN, ARCHIBALD C. COHEN, PHEBE K. THOMPSON, EDWARD G. THORP, and ALLEN G. BRAILEY. The range of effective iodine dosage in exophthalmic goiter. III. The effect on basal metabolism of the daily administration of one-quarter drop of compound solution of iodine and of slightly smaller doses, with a summary of results to date.** *Arch. Internal Med.* 45(3): 430-455. 1930.—During the daily administration of ¼ drop of compound sol. of I to 14 unselected hospital patients with exophthalmic goiter, 7 showed a reduction in basal metabolism of from 10 to 26 points, 6 showed no significant change and 1 showed an increase. During the administration of ¼ drop daily to 2 hospital patients with the disease, 1 showed a reduction of 14 points and the other showed no change. In the ¼ drop series, the basal metabolism was only slightly lower, and in the 2 hospital patients who received ⅛ drop, no lower during the subsequent administration of 30 drops a day, than during the administration of the small doses. Whereas only 50% of the patients showed a reduction in basal metabolism of 10 points or more during the daily administration of ¼ drop, 65% showed a reduction during the daily administration of ½ drop, and 88% during the daily administration of 1 drop. The administration of ¼ drop a day caused an average reduction in basal metabolism of only 9 points (from +43 to +34%) as compared with 14 points (from +40 to +26%) for ½ drop and 27 points (from +36 to +19%) for 1 drop. In the 7 patients who responded to ¼ drop, the maximum reduction in basal metabolism occurred on the average in 5 days. In 1 patient it had started within 24 hrs. In a series of outpatients, most of whom had the disease in a mild form, the daily administration of ⅛ drop produced an average reduction in basal metabolism of only 8 points (from +32 to +24%) as compared with 21 points (+32 to +11%) for 1 drop. Large doses given immediately after ⅛ drop caused a lowering of the metabolism to nearly the same level as 1 drop given initially in the 2nd series.—*Authors' summary.*

7171. **TIEMANN. Über die Erregung des Atemzentrums durch Salze niederer Fettsäuren (insbesondere Ketonkörper).** *Arch. Exp. Pathol. u. Pharmakol.* 148 (1/2): 102-110. 3 fig. 1930.—Salts of normal butyric acid and β-hydroxy butyric acid had an intense stimulating action on the respiratory center. This action was not dependent on their acid character. Normal valeric acid had a similar action. The respiration in animals poisoned by these drugs resembled that found in diabetes mellitus when ketosis occurs. The salts of acetoacetic acid, isobutyric acid and propionic acid had no effect on the respiratory center.

7172. **TRAUBE, J. Die Grenzflächenaktivitätstheorie (Haftintensitätstheorie, Oberflächenaktivitätstheorie) der Narkose.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 749-766. 1928.—Forces which determine the strength of narcotics are primarily surface forces. The amount of material adsorbed and the strength by which it is held largely determine the degree of narcosis. Narcotic action consists in inhibiting chemical, physical and especially bioelectrical phenomena. All these depend on adsorption. The intensity of adsorption of ions and non-electrolytes determines their narcotic action. Enzyme coagulation is essentially a surface phenomenon. The measurement of the surface tension of phase boundaries (fluid-fluid and solid-fluid) can be done only with great difficulty. The measurement of the surface tension between an aqueous solution and air is possible. Measurements of a series of solutions in which alcohols, ethers, esters, ketones, and fatty acids have been dissolved have been made. The surface activity of most of the alkyl halides is smaller than that required for narcosis. Adsorption equilibria of narcotics on silica gel and carbohydrates have been determined by Langmuir and Warburg and by Traube and Birutowitsch. The general theory of surface equilibria of these researches can be applied to the narcotic acid. The theory of Richet-Führer, which considers that narcotic action is dependent only on intensity of adsorption, holds for water soluble substances only. The work of Rehbinder and Okuneff showed that the surface activity theory could not replace the phase boundary theory. The observation of Winterstein and Höber, that narcotics in general decrease permeability, appears to be incorrect, or not to fall in line with the present theory. The significance of the stimulating effects of small amounts of narcotics is explained on physico-chemical principles by the theories of Arndt, Schulz, and Regel.

7173. **TRUFFI, GIOVANNI. Sulla alopecia da tallio. Il meccanismo d'azione del tallio nella produzione della alopecia nel bambino. [Alopecia from thallium. Mechanism of the action of thallium in the production of alopecia in the child.]** *Giornale Ital. Dermatol. e Sifilol.* 1: 3-23. 1 pl. 1928.—Histological examinations of the hair covered skin of children subjected to the action of Tl acetate in therapeutic doses were made a few hours after administration and at the time of falling and subsequent regeneration of the hair. Distinct lesions were demonstrated of the matrix of the hair and of the epithelial elements of the bulb, also of the root sheath and follicle sheath, lesions which produce falling of the hair. Most of the follicles produce new downy hair by regenerative action in about a month after administration of the drug. While this regeneration is verified, the deeper parts of some follicles undergo sclerosis. The lesions mentioned, probably due to direct action of Tl, are sufficient to explain the alopecia without recourse to intervention of the neuro-vegetative system.—*I. H. Pierce.*

7174. **ULRICH, HELMUTH. Synthalin-B in diabetes mellitus.** *New England Jour. Med.* 201(17): 814-816. 1929.—Each of 7 patients with diabetes mellitus received by mouth 40 mgm. synthalin-B (methyl guanidin) a day in 4 equal doses. The blood sugar was lowered in every case. The greatest drop was from 181 mgm. % to 100 mgm. %, the least from 235 mgm. % to 210 mgm. %. The effect became apparent in 1 or 2 days and usually persisted for several days after the drug was omitted. Two patients received 2 courses of treatment each, with intervening rest periods of 4 and 5 days, resp. Three patients experienced poisonous effects consisting of one or more of the following: nausea, vomiting, abdominal pain, diarrhea, headache. These symptoms vanished within 24 hrs. after the drug had been stopped. A smaller amount (30 mgm. per day) is recommended to lessen the toxic effects.—*H. Ulrich.*

7175. **VÁSÁRHELYI, JOHANN V. Experimente mit Thallium an stillenden Ratten.** *Dermatol. Wochenschr.* 87(45): 1741-1744. 5 fig. 1928.—Thallium given per os in rats, for 2 weeks after delivery, is secreted with the milk. The young show the characteristic symptoms of the Tl poisoning (hairless skin), whereas no effect of the Tl can be observed in the lactating animal. The increased toxic effect of Tl in young animals can be explained by the lability of their endocrine system. On the contrary the endocrine system of the adults is apparently more stable during the lactation period.—*J. V. Vásárhelyi.*

7176. **VESTERGAARD, J. D. E. Insulin and ocular tension. Observations on normal individuals, diabetics and glaucoma patients. (Preliminary report.)** *Acta Ophthalmol.* 7(3): 273-300. 1929.—Experimental procedure: Fasting patients were the subjects. Blood sugar was determined as usual; blood pressure and intraocular tension were read by means of Schiötz tonometer under holocaine anesthesia; the pulse rate was counted at intervals from 5 to 10 min. Twelve units of insulin were

then administered intraven. and the blood sugar, blood pressure, pulse rate and intraocular tension again determined at 5, 10 and 15 min. intervals. Control tests on patients with previous normal eye tension were made. The data are presented in 23 tables and 23 graphs. Results: *Normal individuals* showed an average fall of intraocular tension of 3.2 mm., or 17.5% of the original mean tension. This fall began 10 to 20 min. after injection of the insulin. The lowest tension was generally manifest before the blood sugar reached its minimum. It rose to normal in 65 min. *Diabetic patients*—one showed no change in the eye tension. The remaining patients of this group showed an eye tension change distinctly lower than those of the group of normals. *Glaucomatous patients* showed a slight fall in tension amounting to about 1 mm. in from 10 min. prior to 10 min. following the injection. Within the next 15 to 35 min. the fall reached 10.5 mm., or 30%. It then rose slightly and remained at a constant level for 5 hrs. *Effects of injection of adrenalin and hypophysin:* The effect of intraven. injection of adrenalin was too instantaneous for study. Results of subc. injection show that the fall of tension was apparently of the same type as that produced by insulin. Hypophysin (Hoechst —1 cc.) effected a fall of tension from 18 to 15 mm. in 10 min., and to 14 within 10 min. following. Within another 40 min. the eye tension regained its normal value.—*B. S. Levine.*

7177. VITTORIO, SUSANNA. Azione della colina sul sistema cardio-vasale. [Action of cholin on the cardiovascular system.] *Arch. Fisiol.* 28(3): 432-442. 9 fig. 1930.—Cholin produces a peripheral vasoconstriction, acting probably on the vascular smooth muscle. In animals with intact autonomic system it induces by vagal excitation a temporary fall of the arterial pressure, which however quickly returns to normal or above. In vagotomised and atropinised animals a constant increase of blood pressure follows the administration of cholin. —*M. Comel.*

7178. WATT, J. M. The pharmacology of Xysmalobinum. *Jour. Pharmacol. & Exp. Ther.* 38(3): 261-270. 1930.—Xysmalobinum, a crystalline glucoside isolated from the root of xysmalobium undulatum, R.Br., is toxic and produces a digitalis-like action on the heart. The degree of toxicity is low compared with other glucosides of similar action, and is less than that of a dry alcoholic extract of the root. The glucoside contracts the smooth muscle of the uterus, intestine, bladder and bronchi, the effect being especially marked in the bronchi. This last results in severe respiratory embarrassment which plays a part in the toxic action. The point of action in smooth muscle is peripheral to the nervous mechanism. The glucoside stimulates the secretion of saliva by stimulation of the terminations of the secretory nerves. A marked diuresis occurs in the rabbit.—*Author's summary.*

7179. WIGGERS, CARL J. Monophasic and deformed ventricular complexes resulting from surface applications of potassium salts. *Amer. Heart Jour.* 5(3): 346-350. 3 fig. 1930.—Concentrated KCl solution applied to the ventricular surfaces or injected into the pericardial sac in small quantities produced either monophasic or deformed ventricular complexes resembling those due to coronary occlusion. However, similar changes in the ventricular complex may occur from other influences. This observation represents the 1st crucial proof that drugs and chemicals can be absorbed from the ventricular surface of mammalian hearts.

7180. WILKINSON, JOHN F. Pernicious anaemia. Preliminary report on the results obtained by treatment with certain preparations of stomach. *Brit. Med. Jour.* 1(3604): 236-239. 1930.—Experiments, based on the possibility that pernicious anemia is a type of deficiency disease in which some essential factor is lacking in the gastric juice, were undertaken on 9 patients. The patients were divided into 3 groups, treated respectively with normal gastric juice, with raw fresh mucous membrane or muscular layer of hogs' stomachs, and with desiccated preparations of these 2 portions. The separate fractions were found equally potent, disposing of the argument that the efficiency of the treatment depends on the gastric pepsin. Clinical conditions, blood picture and reticulocyte count showed a response slightly more favorable than that obtained by liver therapy. Theoretical considerations are to be discussed and full details furnished later when other work has been completed.

7181. WINTER, J. E., C. H. RICHEY, and H. G. BARBOUR. Magnesium oxide as an aid to the antipyretic action of phenacetin in dogs. *Jour. Pharmacol. & Exp. Ther.* 38(3): 343-347. 1930.—Oral administration of phenacetin to dogs produces an antipyretic effect which is considerably enhanced by the addition of MgO. The results thus far obtained preclude final decision as to the presence or absence of synergism (i.e., potentiation as distinguished from simple summation); but they suggest trial of phenacetin fortified by Mg in the hope of securing equal therapeutic benefit, with less chance of poisoning.—*Authors' conclusions.*

7182. WISE, EDWIN C., and FREDERICK W. HEYL. A chemical study of urine as affected by combinations of ammonium chloride and methenamine. *Arch. Internal Med.* 44(2): 252-262. 1929.—Exps. on normal young men employed at light labor and fed a basic diet are reported in 3 series, each on 2 subjects. In the 1st series the subjects received daily doses of 0.97 gm. NH_4Cl and 0.49 gm. methenamine. In the other series the doses were larger. It was found that NH_4Cl, even against the high buffering effect of nearly neutral urine, produces a rapid acidifying effect, which at a level of 15 grains 5 times a day showed a pH of about 5.5. Methenamine at a level of 7½ grains 5 times a day gave a conc. somewhat but not proportionately lower than that found at the dosage of 15 grains. The acidity is of prime importance. In this work the dosage of methenamine varied from 37½ to 105 grains a day. The higher doses gave the higher conc. of formaldehyde, other factors being equal. NH_4Cl did not yield the maximum acidifying effect until the 2nd day. Following the last dose in the evening, the conc. of formaldehyde fell somewhat but usually became higher during the night, owing to the length of time the urine remained in the bladder. The sample taken at 6 a. m. usually had a high formaldehyde concentration, since most of the methenamine had been excreted during the night. There is a marked drop in the formaldehyde conc. in the forenoon, but it rises rapidly as the excretion of methenamine is increased following the medication.—*Authors' summary.*

7183. WOHLWILL, FRIEDRICH. Ueber eine Massenvergiftung durch Phosgengas in Hamburg. 2. Zur pathologischen Anatomie der Phosgenvergiftung. *Deutsche med. Wochenschr.* 54(37): 1553-1557. 3 fig. 1928.—Six autopsies were worked up from the phosgene catastrophe in Hamburg. Deviation from the previously communicated reports depended upon the fact that this time phosgene was at work, and not the so-called war gases. As to the main seat of morphological changes, the upper air passages were peculiarly exempt. There were injuries of the small bronchioles, the lung parenchyma, and the vessel walls, resulting in a marked impairment of the lesser circulation, with most of the significant changes in the other organs easily accountable. Contrary to the pharmacological literature, only part of the latter could be explained by immediate poisoning. Here belong degenerative changes in the liver, heart, and, especially, so far unobserved brain changes that could not be explained by simple circulatory disturbances. In a fatal case where death occurred 11½ days after the poisoning, thrombi in both ventricles with emboli in the left coronary artery were the immediate causes of death. There were interesting organizations in the lungs, also regenerative changes with corpora amylacea.—*F. Wohlwill* (*transl. by F. B. Flinn*).

7184. YAMAKAWA, K. Die Wirkung der arsenigen Säure auf das Ohr. [The action of arsenious acid upon the ear.] *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 123 (3/4): 238-296. 27 fig. 1929.—Arsenious acid sol. intro-

duced into the middle ear of rabbits or dogs produces the same symptoms as the extirpation of the labyrinth. The microscopic changes of the middle ear consist of secretions and exudative processes, of damage to the vessels and of edema, swelling and finally of necrosis of the mucous membrane. The pathologic changes in the labyrinth comprise 3 groups: 1st, a reactive hypersecretion, 2nd, pathologic changes like fibrinous labyrinthitis in human beings. The third group consists in hemorrhages and necrotic processes. The clinical as well as the anatomical changes are always the same at varying concentrations of the poison, but they begin sooner with higher concentrations. The possibility that certain high dilutions may kill the most sensitive portions of the labyrinth can often be of certain advantage. The conception of Wittmarcks that hydrops is an important factor in the dissolution of necrosis was confirmed. The consequences of the action of arsenic on the ear are identically the same as those of inflammatory necrosis of the labyrinth.—*F. R. Greenbaum.*

7185. **YAMAUCHI, MASASHI. Über die periphere Wirkung des Yohimbins.** *Okayama Igaku Kwai Zasshi* 39: 1890-1893. 1927.—By action on the smooth muscle, in small doses it generally stimulates isolated surviving organs of the rabbit, such as uterus, tubes, ligamentum rotundum, vagina, bladder, and vessels of the ear. Epinephrine checks or removes the stimulating effect and its own stimulation is counteracted by yohimbine, a phenomenon explained in paralysis of the accelerator fibers of the sympathetics by yohimbine without effect on the inhibitor mechanism. The smooth muscle and parasympathetic nerves are not paralyzed, since the stimulating actions of Ba and pilocarpine are not checked. Yohimbine is, therefore, similar to atropine, quinine and ergotoxine, but the action is much more distinct with yohimbine, because the muscular paralysis is much weaker than from quinine and because, unlike atropine, there is no action on the parasympathetics. The drug represents an important means for pharmacological and physiological investigation, because it easily permits distinguishing sympathetic action of any poison, and also makes possible the exclusion of sympathetic accelerator fibers.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by E. V. Lynn).*

7186. **YOSIMOTO, MASARU. Die Einflüsse des Traubenzuckers auf die Leukozyten.** (Japanese.) *Juzenkwai Zasshi* 31(10): pp. ? 1926.—Glucose (intraven.) in rabbits caused the leucocytes to increase, especially the eosinophils. Their count later returned to normal. Their increase is definitely related to that of the blood platelets.—*O. Mori (courtesy Japanese Jour. Zool.).*

7187. **YOSOMIYA, RYŪZŌ. Experimentelle Studien über die Einflüsse verschiedener Pharmaka auf die durch progressive Sauerstoffverdünnung entstehenden physiologischen Reaktionen. III. Über die Einflüsse der Inkrete und der vegetativen Nervengifte. [Influence of different drugs on the physiological reactions due to progressive lowering of O concentration. III. Effect of autacoids and nerve poisons.]** *Tohoku Jour. Exp. Med. [Sendai]* 9(2/3): 229-250. 5 fig. 1927.

7188. **YOUMANS, JOHN B., and W. H. TRIMBLE. Experimental and clinical studies of ergotamine. I. Effect of ergotamine on the blood sugar and epinephrine hyperglycemia in trained unanesthetized dogs.** *Jour. Pharmacol. & Exp. Ther.* 38(1): 121-132. 1930.—Ergotamine tartrate intraven. (0.125 to 0.5 mgm. per animal), caused no consistent change in the blood sugar level of trained, unanesthetized, normal dogs. Both a rise and a fall of blood sugar was observed at different times but in half the experiments no significant change occurred. The action of ergotamine was not modified by atropine. Ergotamine (0.25 to 0.5 mgm. per animal intraven., or 0.5 to 1.0 mgm. subc.), failed to prevent or diminish the hyperglycemia caused by the intraven. injection of epinephrine in these dogs. It seems unlikely that ergotamine in doses which can be safely employed in exps. on man can significantly influence those functions of the sympathetic which may be concerned with the maintenance of blood sugar levels or the hyperglycemic action of epinephrine.—*Authors' summary and conclusions.*

7189. **ZEISS, F. R., and WILLIAM A. BRAMS. Studies on the effect of nitroglycerin, amyl nitrite and acetylcholine on hypertension.** *Amer. Heart Jour.* 5(3): 300-304. 1930.—A series of patients with hypertension and renal involvement were given nitroglycerin, amyl nitrite, and acetylcholine after the blood pressure had been reduced to a fixed level by bed rest, diet, and limitation of fluid intake. The results were controlled by a study of a similar series of normal persons. Nitroglycerin, gr. 1/50, under the tongue, produced a fall in blood pressure in all the normal controls, but this effect was inconstant in the patients with hypertension. Amyl nitrite caused a fall in pressure in the controls and hypertensive cases in every instance, being effective also in those instances where nitroglycerin failed to act. A reaction in the form of a temporary rise to a level above that existing before the administration of the drug occurred in a large proportion of the cases with hypertension receiving amyl nitrite or nitroglycerin. The control cases receiving nitroglycerin showed a similar reaction rise, but not after amyl nitrite. This rise may be of some clinical value in cases of impending or actual cerebral hemorrhage. The effect of amyl nitrite in the doses used was much more marked and lasted almost as long as that of nitroglycerin but headache, vertigo, and flushing were more marked after the former drug. Acetylcholine was found to be inert in both the controls and the cases of hypertension, in contradistinction to the claims made in the literature.—*Authors' summary.*

7190. **ZUNZ, EDGARD. Elements de pharmacodynamie générale.** 465p. 82 fig. Masson et Cie: Paris, 1930. 75 fr.—This is a compilation of existing information concerning the physical, chemical, physico-chemical, and physiological factors which underlie the action of drugs. There are 22 chapters, the titles of some of which may give an idea of the unique scope of the book: modifications of drugs in the organism; modifications of the blood by drugs; effects upon internal secretions; upon external secretions; synergisms; antidotisms and antagonisms; inversions; relation of chemical composition to physiological effect; modes of action; biological assays. A bibliography is appended to each chapter, and a complete one at the end of the book. Unusual features in a work on pharmacology are discussions of the laws of osmosis and diffusion and the Donnan equilibrium in relation to the absorption of drugs; of the factors concerned in regulating the reaction of the blood; the effects of drugs upon erythrocyte and leucocyte counts and upon phagocytosis; the influence of O upon chemotaxis of leucocytes; the regulation of the secretion of epinephrine. Structural formulae are used liberally and effectively. The chapter on bio-assays gives a brief account of the recent developments in international standardization of drugs, and the last chapter is an epitome of the methods and procedures of pharmacologic investigation. Such topics as theories of narcosis and the newer electro-physiology of nerve and muscle are omitted. The material is presented here in concise, categorical fashion. The author's interpretation of the material is uncritical, for the most part. The book serves to emphasize the descriptive, centrifugal nature of most of the information available to the pharmacologist, and the need for centripetal information concerning the mode of reaction of drug with tissue substance.—*C. F. Schmidt.*

ANIMAL PATHOLOGY

GENERAL

7191. **GIORDANO, MARIO. Patologia tropicale clinica delle malattie, tropicali protozoologia-elmintologia-entomologia-nozioni di tecnica generale.** [Clinical pathology of tropical diseases; technical considerations in protozoology, helminthology, and entomology.] 538p. 4 maps, 146 fig. Nicola Zanichelli: Bologna, 1929.

7192. **GUIART, JULES, CHARLES GARIN, et MARCEL LÉGER. Précis de médecine coloniale: maladies des pays chauds.** [Handbook of colonial medicine: diseases of the tropical countries.] (Bibliothèque du Doctorat en Médecine. Publiée sous la direction de P. CARNOT, et L. FOURNIER.) 408p. 94 fig. J. B. Baillière et Fils: Paris, 1929.

7193. **HOPPE, H. B. Die Bedeutung des Erwerbs der aufrechten Körperhaltung für die Pathologie.** [The significance of the acquisition of upright posture for pathology.] *Ergebnisse Allgem. Pathol. u. Pathol. Anat.* 22 (2): 1-69. 1928.—The paper is a review, largely philosophical. Some of the topics are: The erect posture; the erect peculiarity in pathology; the trunk shortening process; the asymmetry problem; relative baldness; growth; chronic gastric ulcer; gallstone formation and frequency; lordosic and orthostatic albuminuria; sex organs; and, the general constitution of man.—*H. F. Nachtrieb.*

7194. **LANE, W. ARBUTHNOT. The prevention of the diseases peculiar to civilization.** xiv+99p. 44 fig. Faber & Faber, Ltd.: London, 1929. Price 2s.—A popular presentation of the author's views on the effects of posture, occupational exertions, diet, lack of exercise, and similar factors upon somatic changes in the structure and function of the skeleton and other (particularly the digestive) systems of the body.—*I. S. Falk.*

7195. **REED, ALFRED C. Tropical medicine in the United States.** 410p. illus. J. B. Lippincott Co.: Philadelphia and London, 1930.

7196. **SCHWARZ, OSWALD. Medizinische Anthropologie. Eine wissenschaftstheoretische Grundlegung der Medizin.** 383p. S. Hirzel: Leipzig, 1929. Pr. 13 M.—This is a work in philosophy. It deals with anthropology and medicine from a purely theoretic viewpoint and hence will appeal chiefly to those who are interested in a systematic development of ideas in the science of man. The public to whom it is addressed is dual, philosophers and physicians; and this lack of homogeneity in audience introduces the difficulty (well recognized by the author) of keeping the presentation understandable for one type of reader without becoming banal for the other. The first part is devoted to the presentation of fundamental concepts in anthropology proper and, in addition to its own inherent value, serves as a background in which is set the more distinctively medical theory which forms the closing part. Anthropology is considered the fundamental medical discipline; and after an initial chapter in which the concept of a medical anthropology is developed, the author proceeds to unfold his thought under the headings, "Man as Part of Nature," "Man as Creator of Culture," and "Man as Member of a Community." This first portion ends with a consideration of the position of anthropology in the system of sciences. In the more medical part are discussed: first, the fundamental concepts of medical anthropology—"type," "norm," "sick"; and then concepts of medicine itself such as "disease" and "therapy." In the handling of "disease," especially, are presented ideas of importance to every physician, for under this caption will be found the discussions of "etiology," "symptoms," "diagnosis," etc. The work ends with a chapter on the intellectual currents in the medicine of today in which are outlined the steps which have led to the "Personalismus" characteristic of modern medical thought, and in which is traced the development of the concept of disease from "Organpathologie," through "Konstitutions-pathologie," to a "Pathologie der Person." There is a bibliography limited, however, almost exclusively to German references.—*W. D. Inlow.*

ANIMAL PATHOLOGY

MORBID ANATOMY

E. W. GOODPASTURE, *Editor*

C. EUGENE WOODRUFF, *Assistant Editor*

(See also in this issue Entries 6220, 6229, 6234, 6236, 6237, 6249, 6697, 6911, 6950, 7183, 7193, 7259, 7266, 7281, 7295, 7323, 7356, 7390, 7532, 7542, 7570, 7581, 7582, 7638, 8255, 8271, 8299, 8300, 8301, 8306, 8311, 8324, 8326, 8336, 8343, 8352, 8358, 8364, 8374, 8392, 8412, 8417, 8420, 8951)

7197. **AGRIFOGLIO, MARIO. Ricerche sperimentali sulla dilatazione diffusa dell'esofago.** [Experimental diffuse dilatation of the oesophagus.] *Arch. Ital. Chir.* 28(4): 337-360. 32 fig. 1931.—The first results of denervation of the cardia in 8 dogs was ectasia and atony of the oesophagus, while in most cases the tonus of the cardia was perfectly preserved. Later the oesophagus became dilated and oesophageal peristalsis reappeared, though shallow and slow. In a few cases x-ray showed oesophageal atony extending to the cardial tract. Histologically a slight thickening of the oesophageal wall and sometimes of the submucous connective tissue was apparent; sometimes the mucosa seemed like a thin uniform layer. The cardia was normal except when ulcerative lesions were present.

7198. **ANDREI, ORESTE. Sulle cisti, o gangli, così detti sinoviali.** [So-called synovial cysts or ganglia.] *Chir. Organi Movimento* 15(3): 187-265. 8 fig. 1931.—The author examined the hands of 7 fetuses (3-8 months) and of 4 adult subjects without finding "subsynovial bodies" or "synoviparous follicles" such as reported by Gosselin and others. He reports 15 experiments on dogs, rabbits and a cat in which he attempted, with uniformly negative results, to produce synovial cysts or ganglia by contusions, isolation of the tendon sheath and introduction into it of foreign bodies, injection into the joint or the tendon sheath of mechanical or chemical irritants, and injection into the synovia of a suspension of killed tubercle bacilli. From these observations and from 7 clinical cases described he concludes that so called synovial ganglia or cysts are usually the expression of a dropsical degeneration sui generis of the connective tissue especially around the joints and tendons, and are not to be ascribed to any specific etiological agent.

7199. **ARMENTROUT, AUBREY WEBSTER. Embolism and thrombosis: prolonged direct observation of the phenomena in pial vessels of the living cat.** *Arch. Path.* 11(4): 519-545. 12 fig. 1931.—Emboli in the pia were observed in 37 living cats (18 with various kinds of fat, 10 with charcoal, 3 with emery, 1 with powdered glass and 5 with blood clot), the animal being anesthetized and the field exposed for microscopic observation through a specially designed glass window. Fat droplets in the arteries of the pia, in the vast majority of instances, completely blocked the vessels in which they lodged. White thrombi formed on fat droplets, but to a less degree than

on other types of foreign bodies. The thrombi produced by rough and irregular pieces of charcoal were frequently insufficient to block the blood vessels in which they lodged, even when present over a long period of time and when there was marked slowing of the blood stream. Sharp substances (emery and powdered glass) produced extensive thrombosis, and death in a short time. Contrary to the author's expectations, blood clot emboli, moist, dry or highly contaminated, did not produce obstructive thrombosis, in some instances, when observed as long as 96 hrs. After numerous repeated injections of small amounts of air, the pial circulation remained apparently uninjured. There were no hemorrhages in relation to emboli of any nature in periods of observations as long as 96 hrs., irrespective of complete or incomplete vascular occlusion. The author concludes that following embolism in the cat the first reaction is the separation of the foreign body, no matter what its nature, from the blood stream by a collection of platelets, an extremely friable "white thrombus," the formation of which practically ceases when the foreign body has been separated from the blood stream. If the endothelium has been injured by the foreign body, progressive thrombosis occurs. The distinction between these 2 processes probably lies in the freeing of thromboplastic substances in the latter instance. When progressive thrombosis does not occur, the external surface of the white thrombus is apparently entirely bland, so that the blood continues for many hours to flow past the obstruction, even when the space between the embolus and the opposite vascular wall barely admits a single erythrocyte. The effect of slowing of the blood current on this process—namely, the exteriorization of foreign bodies from the active blood current—is not perceptible. If not originally large enough to occlude the blood vessel, the white thrombus, in general, does not grow large enough to do so, even in the presence of a falling blood stream or when bathed in blood that flows only intermittently. This last observation is contrary to all previously reported opinions. In the pia, no perivascular reaction to vascular occlusion can be observed.

7200. **ATKIN, E. E. Primary carcinoma of bronchus.** *Jour. Path. and Bact.* 34(3) : 343-348. 1931.—The histological type of bronchial carcinoma is correlated with the age of the patient; the age is greater when the carcinoma is a squamous-celled one. All the growths showing definite cavitation after death were squamous-celled, and all the examples of secondary deposits in the opposite lung were in this type of carcinoma.—*E. E. Atkin.*

7201. **BARNARD, W. G., and F. M. R. WALSHE. Capillary haemangeioma of cerebrum.** *Jour. Path. and Bact.* 34(3) : 385-387. 1931.—This rare tumor, in a woman aged 47 yrs., was definitely in the cerebrum and is believed to be a true tumor.—*W. G. Barnard.*

7202. **BARNARD, W. G. Multiple teratomata of peritoneum.** *Jour. Path. and Bact.* 34(3) : 389-391. 1931.—More than 100 small solid and cystic masses of growth on all parts of the peritoneum and larger masses in the omentum proved to be teratomatous, nervous tissue being especially abundant, and were associated with a teratomatous cyst of the left ovary. The patient was a married woman 40 yrs. of age who had suffered from swelling of the abdomen and discomfort due to ascites for 3 mos.—*W. G. Barnard.*

7203. **BAUER, K. H. Über Selbstzertrümmerung von Gallensteinen und Neubildung von Steinen auf der Grundlage von Steintrümmern. [Spontaneous crumbling of gallstones and formation of new stones about the fragments.]** *Arch. Klin. Chir.* 165(1) : 53-80. 21 fig. 1931.

7204. **BÖHMIG, RICHARD. Über Formanomalien des Nucleus pulposus der Wirbelbandscheiben. [Anomalies of shape in the nucleus pulposus of the intervertebral disks.]** *Virchow's Arch. Path. Anat. u. Physiol.* 280(3) : 873-881. 9 fig. 1931.

7205. **BORLAND, V. G., and C. M. JACKSON. Effects of a fat-free diet on the structure of the kidney in rats.** *Arch. Path.* 11(5) : 687-708. 5 fig. 1931.—Rats (124) were divided into 10 groups, including 3 groups of test rats (42), 2 groups of cured rats (44) and 5 groups of control rats (38). Characteristic renal lesions were demonstrated in the rats reared on Burr's highly purified diets, which are practically fat-free but otherwise adequate. The most striking and characteristic renal lesion was the calcification in the cells of some renal tubules and in necrotic areas of the renal medulla. In extreme cases there was complete disintegration of the apical region of the pyramid. Various forms of renal epithelial degeneration and fatty or lipoidal changes also occurred to a variable extent, sometimes associated with the calcification, sometimes not. In the medulla, large quantities of fatty or albuminous material sometimes accumulated, forming casts in the lumina of the tubules and especially in the papillary ducts. An atypical (uncornified) hyperplasia was often found in the renal pelvic epithelium, usually most pronounced where necrosis of the papilla was also present. Slight focal infiltration by round cells was found in the test rats, but no more frequently than in the normal controls. The inclusion bodies incidentally noted in the cortical epithelium of some of the controls apparently had no relation to the disorder caused by a deficiency of fat in the diet. The addition of 2-20% of lard, or of slight amounts of cod liver oil, to the diet usually prevented or cured the renal disorder, at least to a large extent, almost completely eliminating the calcareous degeneration and casts. Various other types of fat (corn oil, olive oil and methyl linolate) usually appeared somewhat less beneficial to the kidney, in which some of the lesions persisted, although the general condition of the body was cured or greatly improved. The concentration of dietary protein, within the range used, showed no definite relation to the incidence or to the severity of the renal lesions observed.

7206. **CASAZZA, ROBERTO, e GIUSEPPE PELLEGRINI. Contributo di ricerche alla questione degli xantomi. [Studies on xanthoma.]** *Arch. Ist. Biochim. Ital.* 3(2) : 159-186. 10 fig. 1931.—Morphological and biochemical studies on 1 case of xanthomatosis.—*M. Comel.*

7207. **CUMMINS, S. L., and A. F. SLADDEN. Coal-miner's lung.** *Jour. Path. and Bact.* 33(4) : 1095-1132. 5 pl. 1930.—Chemical and pathologic examination of the lungs of 32 Welsh coal-miners and 6 controls showed that the black material present consisted chiefly of coal-dust, retained because the high silica content of the lungs had damaged and blocked the lymph channels, thus impairing the normal power of the lungs to dispose of inhaled dust. Fe was not an important constituent. This refutes Jousset's contention that the black pigment is of endogenous origin and that anthracosis should be called siderosis.—*S. L. Cummins.*

7208. **DIETERICH, HANS. Die Regeneration des Meniscus.** *Deutsche Zeitschr. Chir.* 230(3/5) : 251-260. 4 fig. 1931.—The regenerates, examined 11, 18, and 28 days and 2, 3½, and 4½ mos. after partial resection of the meniscus in 6 dogs, were morphologically incomplete, the defects being replaced by tendon-like cicatricial tissue, not by cartilage. When the course was associated with synovitis proliferans the prognosis for joint mechanism was poor. In relatively rare cases the regenerate can approximate the form of the normal meniscus.

7209. **DURANTE, G. Vagabondage cellulaire.** *Soc. Med. Hôp. Paris.* 52(16) : 758-761. 1928; also *La Presse Médicale* 36(51) : 808-811. 1928.—Parenchymatous cells are frequently present in the blood vessels of various organs. In the vessels of the liver, hepatic cells, renal and intestinal epithelium and other unidentified cells were found. Similarly in the renal vessels, epithelium of the Henle's tubules and smooth muscle cells were observed. There is a system of wide vessels in the kidney formed by a single layer of endothelium in which the desquamation of the fixed parenchymatous cells and their delivery to the blood stream takes place. This process occurs in normal and in diseased organs and fol-

lows sudden changes in blood pressure.—*C. Durante (transl. by J. Furth).*

7210. **FELDMAN, WILLIAM H. The histology of experimental tuberculosis in different species. A comparative study.** *Arch. Path.* 11(6): 856-913. 11 fig. 1931.—Infection with pure human, bovine, and avian strains of *Mycobacterium tuberculosis* was induced in chickens, rabbits, guinea pigs and dogs (no. not stated). The lesions varied, not with the type of infecting organism, but with "certain indefinite factors" characteristic of the species to which the infected animal belonged.

7211. **GERSTEL, GUSTAV. Zur Kenntnis der Graviditas superficialis ovarii und ihrer klinisch-histologischen Diagnose.** *Virchow's Arch. Path. Anat. u. Physiol.* 280 (2): 435-443. 3 fig. 1931.—In a case of extrauterine pregnancy there were chorionic residues on the outer surface of a hemorrhagic mass in the ovary; they contained ectoblast, Langhans' cells, syncytium, and chorio-epithelial migratory cells. The actual ovary and corpus luteum were entirely free of chorionic material.

7212. **GOUGH, J. Mitochondrial changes in experimental oxalate and uranium nephritis.** *Jour. Path. and Bact.* 34(4): 423-428. 1 pl. 1931.—With the method of Gough and Fulton for the demonstration of mitochondria, intravenous injections of Na oxalate and uranium acetate into rabbits produced morphological changes in the mitochondria of the renal epithelium within a few minutes of the injection. In oxalate poisoning, the changes consisted of granulation and fusion of the mitochondria and reached their maximum extent within ½ hour of the injection. In cases where small dosage of the poison had been used, resolution subsequently occurred in most of the affected cells. In uranium poisoning, replacement of the mitochondrial filaments by large, scattered, spherical bodies was characteristic. This change was indicative of more severe and permanent cell degeneration.—*J. Gough.*

7213. **GOLDSTEIN, DN., und P. NIKIFOROV. Über die sogenannte Kaschin-Beckschе Krankheit. (Eine röntgenologische und klinische Studie.) [Kaschin-Beck's disease.]** *Fortschr. Geb. Röntgenstrahlen* 43(3): 321-336. 25 fig. 1931.—The author reports a family in which the father was affected at 5 yrs., oldest son at 3 yrs., and 5th child, ♂, at 3½ yrs.; the 4th child, ♀, was affected before death at 2 yrs.; 2 boys died at 7 yrs. and 6 mos. respectively without signs of disease. There was no family history of the disease. The disease is characterized by polyarticular, symmetrical deformities of the joints of the extremities; in these cases the spine and skull were also involved. While usually appearing in the 5th yr. it has been found in the newborn and embryos; it is apparently correlated with disturbances of the incretory glands, particularly thyroid. Mentality and nervous system are usually little affected. Roentgenographically, the disease belongs to the osteochondroarthroses.

7214. **HEINE, L. Über die Vielgestaltigkeit (Polymorphismus) und Kriechbewegung (Amöboismus) der Sarkomzellen, sowie über 12 Fälle von kleinsten Sarkomen und sarköser Entartung der Aderhaut. [Polymorphism and amoeboidism of sarcoma cells; also 12 cases of very small sarcomata and sarcous degeneration of the choroid.]** *Virchow's Arch. Path. Anat. u. Physiol.* 280(1): 122-135. 11 fig. 1931.

7215. **HURST, E. W. The occurrence of intranuclear inclusions in the nerve cells in poliomyelitis.** *Jour. Path. and Bact.* 34(3): 331-334. 1931.—In the nuclei of degenerating nerve cells in cases of monkey and human poliomyelitis, multiple small rounded bodies were stained electively by phloxin-methylene blue and giemsa. They were found in the anterior-horn and other cells of the spinal cord in the brain-stem and in the Betz cells of the motor cortex. Most numerous on the first day of the disease, they were difficult to find later and were never seen in completely necrotic cells or in masses of debris undergoing neuronophagia. They were never seen in normal nerve cells or in glial cells, or during the incubation period or in controls. They appear to be nuclear inclusions of the same order as those in herpetic encephalitis and Borna disease.—*E. W. Hurst.*

7216. **KING, E. S. J. Malignant phaeochromocytoma of the adrenals.** *Jour. Path. and Bact.* 34(4): 447-452. 2 pl. 1931.—In a hitherto undescribed form of phaeochromocytoma of the adrenals the growths were solid and bilateral. Cells of 2 types were present: typical phaeochrome cells and anaplastic cells not giving the typical chrome stain but showing all transitions from the typical cells. The multiple metastases in the liver, lungs, bones, skin and aortic glands, usually had the same structure as the anaplastic areas of the adrenals, but some showed both this and typical phaeochrome tissue.—*M. J. S.*

7217. **LASNITZKI, A. Über die Regeneration des Hautepithels bei vermindertem Luftdruck.** *Virchow's Arch. Path. Anat. u. Physiol.* 281(1): 66-72. 8 fig. 1931.—Four burns 1 cm. long were made in the skin of each of 4 guinea pigs; 5 scalpel incisions deep enough to produce capillary hemorrhages and some stab wounds made with an 0.5 mm., glowing platinum needle were made in each of 5 others; 2 of the first group and 3 of the second were placed under decreased pressure of 335 mm. Hg (experiments done at Davos = 125 mm. Hg decreased pressure). Two of each group died in 6-7 days and the controls were killed at the same time; the other died at the end of 2 days. Another set of controls was kept in Berlin at sea level. Regeneration of skin at 335 mm. Hg occurred exactly as in normal atmospheric pressure.

7218. **LENZ, ROBERT. Zur Frage der rheumatischen Chorea. (Mit einem Beitrag zur Histopathologie der Chorea und zur Nirvanol-Behandlung.)** *Wien. Arch. Inn. Med.* 21(1): 95-126. 5 fig. 1931.—Investigations were made on 27 patients with rheumatic chorea (8 treated without success) and necropsy obtained in 2. Degenerative alterations were found in the small ganglion cells of the striatum with occasional injury to some elements of the large cells, and in the ganglion cells of the hypothalamic nucleus; inflammatory changes, either acute or chronic, were present in the vessels and their immediate neighborhood. Rheumatic nodules were found in the heart. Nirvanol inhibited the stimuli passing to the large cells of the striatum, the effective dose lying near the toxic. Nirvanol sickness appeared to be caused by toxic decomposition of protein.

7219. **MAGALHÃES, AGGEU de GODOY. The kidneys in yellow fever.** *Arch. Path.* 11(4): 561-573. 1931.—Material from 87 patients with yellow fever and from 34 monkeys (*Macacus rhesus*) experimentally infected with yellow fever was used. Of the cases in man, 53 occurred in West Africa and 34 in South America; all the experimental animals had been infected with West African virus. The kidneys were severely and characteristically injured. The convoluted tubes were dilated, and their cells swollen, undergoing intense hyaline and granular degeneration. There was necrosis of some cells in the various structures; the glomeruli, with their tufts, were engorged; the capsular space was dilated. The cells of the epithelial covering of Bowman's capsule were necrotic and desquamating; there was granular material or debris in the interior of a great number of convoluted tubes; hyaline, granular, and calcareous casts occupied the lumina of some convoluted tubules, of Henle's loops or of the collecting tubules. Congestion of the small vessels was most marked in the medullary zone. There was neither hemorrhage nor inflammation. Fatty degeneration played a minor rôle in the ensemble of degenerative changes in most cases. The calcareous casts contained Fe. Some of the nuclei of the degenerating cells contained acidophil, homogeneous, hyaline inclusions, sharply isolated in an empty, clear space. Other nuclei showed some form of degeneration as manifested by their solidification into acidophil, compact, hyaline masses, breaking up afterward into innumerable granules which tended to lose their color and gradually to become fused with the mass of protoplasm, which in such cases was always undergoing hyaline and granular disintegration.

7220. **MELINA, F. Actinomicosi sperimentale del fegato e sistema reticolo-endoteliale. [Experimental actinomycosis of the liver, and the reticulo-endothelial system.]** *Arch. Ital. Chir.* 28(1): 1-33. 19 fig. 1931.—The liver was infected with *Actinomyces asteroides eppingeri* in 16 guinea pigs, of which 8 had not had previous treatment, while 8 had previously had the reticulo-endothelial system (R. E. S.) blocked with trypan blue. The liver was directly infected in 4 of each series; in the other 4 the infection reached the liver by way of a branch of the mesenteric vein. Both methods produced infection. The nodules in the liver were at first predominantly exudative, later proliferative, going on to a cicatricial phase. The organism was often found even in the center of the nodules, in the mass of leucocytes, under various forms, usually radiating, with terminal clubs; it could be obtained by back culture, but with difficulty when the granuloma was already in advanced fibrous evolution. Trypan blue in vitro (1 drop of 1% solution to about 2 cc. of medium) did not inhibit the growth of the culture, nor did vital staining hinder the infection of the liver. The so-called block of the R. E. S. did not hamper the normal processes of defense and repair, but in the foci of infection the leucocytes were the first line of defense, and only later did the elements of the R. E. S. come into play. In the formed actinomycotic granuloma of the liver, the cells of the R. E. S. (mostly voluminous, some giant polymorphonuclears, stuffed with dye granules) occupied chiefly the middle zone (where they were phagocytic) and periphery (where they were fibroblastic). The elements of the R. E. S. in hepatic actinomycosis are furnished chiefly by the elements of the interstitial tissue of the region in which the phlogistic process occurs, and probably in less degree of the contiguous regions; all these elements develop consequently great activity, particularly phagocytic and histocytic.

7221. **MINDER, JULIUS. Über die Hydronephrose auf Grund klinischer und experimenteller Erfahrungen.** *Zeitschr. Urol. Chir.* 31(5/6): 173-192. 21 fig. 1931.—Various portions of the bladder and ureter in 29 rabbits and 7 dogs were treated externally with applications of paraffin or cerumen, the ureter being patent or occluded with paraffin or a drainage tube. Various portions of some ureters were denuded (usually surgically, also chemically) and the effect of mechanical obstruction at a distance therefrom observed. Undoubtedly the anatomical condition of the ureteral wall is of significance in the development of hydronephrosis, since denudation alone was sufficient to produce it, though it occurred more rapidly when mechanical obstruction was also present.

7222. **MOURIQUAND, G., J. ROLLET, et Mme. CHAIX. Etude biomicroscopique et histologique des lésions cornéennes dans l'avitaminose A. Les stades initiaux de la xerophtalmie.** *Bull. Histol. Appl. Physiol. et Path.* 8(3): 72-83. 4 fig. 1931.—The first corneal change is an edema resulting in loss of transparency. Carried to the point where the epithelium and edematous tissues slough, infection enters and ulceration follows. The early phenomena cannot be determined from histological preparations only.—*J. G. Sinclair.*

7223. **MUIR, R. Further note on Paget's disease of the nipple.** *Jour. Path. and Bact.* 34(4): 594-595. 1931. —Confirms the previous view that Paget's disease is due to the invasion of the epidermis by a carcinoma arising in the ducts.—*A. E. Boycott.*

7224. **NORDGREN, BO. A case of agranulocytosis with intestinal changes.** *Jour. Path. and Bact.* 34(3): 379-384. 1931.—A case of agranulocytosis with death from ulcerous and necrotic enteritis is reported. It is concluded that in these cases the septicemia (and local necrotic lesions) is the result and not the cause of the defect in the granulopoietic system.—*M. J. S.*

7225. **PESCATORI, FRANCESCO. Contributo istopatologico allo studio della morfologia e patogenesi dei corpi ialini nei tessuti. [Morphology and pathogenesis of hyaline bodies in tissues.]** *Lo Sperimentale* 85(1): 1 pl. 25-52. 1931.—After a histopathologic study of such conditions as ulcerating neoplasms, gastric ulcers and granulomata, the author concludes that all hyaline bodies do not arise as simple degeneration products within such elements as plasma cells and eosinophiles, and he accepts the earlier concept of Lubarsch that they owe their genesis mainly to local metabolic disturbances (e.g., compression, and vascular stasis) in the tissues.—*M. L. Menten.*

7226. **PESSIN, S. B. The enterochromo-argentaffin cells.** *Arch. Path.* 11(2): 171-189. 9 fig. 1931.—The part played by argentaffin cells in inflammatory processes, especially of the appendix and the intestinal tract in general, was studied in 66 appendices removed at operation, in tissues from all portions of the gastro-intestinal tract (including the appendix), and in the pancreas, suprarenals, paraganglionic tissue and hypophysis from 45 necropsies, and also in the duodenum of the rabbit and of the guinea pig. The author draws no definite conclusions concerning the pathologic significance of the argentaffin cells; but he calls attention to the fact that the Kultschitzky-Schmidt-Ciaccio cells are the same as the chromo-argentaffin cells of Masson. He concludes that the glandular argentaffin cells specifically belong to the intestinal tract and may be termed enterochromo-argentaffin cells. The periglandular argentaffin cells are morphologically so variable and their origin is so uncertain that no definite classification is possible at present.

7227. **PETRI, ELSE. Pathologische Anatomie und Histologie der Vergiftungen. [Pathologic anatomy and histology of poisoning.]** 724p. 96 fig. Julius Springer: Berlin, 1930. Pr. 144 M.

7228. **POLICARD, A., et JACQUES ROLLET. Réactions du tissu cornéen vis-à-vis des particules minérales siliceuses.** *Bull. Histol. Appl. Physiol. et Path.* 8(2): 52-58. 1 fig. 1931.—The cornea is non-vascular and injection of the silica dust in fine suspension causes no inflammation. Capillaries at the corneal border congest and there is some edema with recovery. There follows a very slow connective tissue degenerative action demonstrating a mild toxicity of the dust.—*J. G. Sinclair.*

7229. **RAVAULT, PIERRE P., et C. BOUYSSET. Les lésions des artères dans la gangrène diabétique.** *Bull. Histol. Appl. Physiol. et Path.* 8(1): 5-20. 4 fig. 1931. —In diabetic gangrene in contrast with thrombosis or other circulatory interference, the part remains at body temperature or warmer and shows a capillary pulse. The arterial defects follow the nutritional instability of the tissues as an accident of infectious or inflammatory nature. The result is edema and hyperplasia of the intima with cholesterin deposits and calcification of the media.—*J. G. Sinclair.*

7230. **ROTTER, WERNER. Über die histologischen Veränderungen des Dünndarms bei Ankylostomiasis. [Histological changes in the small intestine in ancylostomiasis.]** *Virchow's Arch. Path. Anat. u. Physiol.* 280 (3): 587-594. 8 fig. 1931.—A detailed description, based on a large no. of cases, of the 2 types of injuries (hemorrhages from bites and conditions subsequent to them, and chronic enteritis) is given.

7231. **SALLMANN, L. Zum histologischen Bild der Goldspeicherung in der menschlichen Hornhaut nach Tätowierung. [Histology of gold storage in the human cornea after tattooing.]** *Graefe's Arch. Ophthalmol.* 126 (1/2): 297-303. 1 fig. (col.) 1931.

7232. **SCHULTHEIS, THEODOR. Histologische Untersuchungen an Steinnieren.** *Zeitschr. Urol. Chir.* 31 (5/6): 193-230. 20 fig. 1931.—There is always pyelitis varying according to the size of the concretion, the functional disturbance elicited, and the infection. Glomerulo-tubular nephritis with a more atrophic tendency was found in the aseptic kidneys; it had a strongly inflammatory component in the infected kidneys. The interstitial tissue was sometimes edematous, sometimes hypertrophic. Occasionally intrarenal sclerosis of an artery was observed. Finally, there was a relatively

slight inflammatory participation of the fibrous and of the adipose capsule.—*Author's summary (transl.)*.

7233. **SNIJDERS, E. P., und J. E. DINGER. Die pathologisch-anatomische Diagnose des Gelbfiebers bei Affen.** *Virchow's Arch. Path. Anat. u. Physiol.* 280(2): 444-462. 17 fig. 1931.—Necropses were performed on 76 [*Macacus*] *rhesus*, 16 *M. cynomolgus*, and 1 *M. nemestrinus* monkeys that had died of yellow fever, 5 *rhesus* in which diagnosis was doubtful, 20 *rhesus* and 3 *cynomolgus* controls. Only the hepatic changes were sufficiently characteristic to be of value. While Torres inclusions were of diagnostic value it was very doubtful that they were indicative of the presence of the virus in the nucleus. Rather, it appeared that nuclear degeneration occurred because of the virus. Serum of 6 persons with dengue was injected into *rhesus* monkeys; 3 received 14 cc. of 1:4 dilution of serum and 0.5 cc. of infectious blood from yellow fever monkeys; 1 control received the same amount of virus and normal serum; 3 received 4, 3.5, and 2 cc. of 1:4 dilution and 2 hrs. later were bitten by the yellow fever mosquito. All developed yellow fever. Serum of dengue, thus, exerts no protective action against yellow fever; such an action had seemed probable since the two fevers had a similar course.

7234. **STEWART, T. D. Dental caries in Peruvian skulls.** *Amer. Jour. Phys. Anthrop.* 15(2): 315-326. 1931.—An adequate racial study of dental caries should consider the relative susceptibility of the surfaces of the individual tooth forms of both jaws, controlled as to age and sex. In 100 Peruvian skulls of each sex, within the age period between closure of the basilar suture and beginning closure of the sagittal, the relative antemortem loss (assumed to be due to dental caries) of each tooth form was determined. Age determinations are not sufficiently accurate in the skull to delimit older age groups; besides, alveoloclasia and attrition later complicate the antemortem loss. For comparison, the antemortem loss in 100 older Peruvian skulls of each sex is given. Teeth of the ♀♀ were more carious than those of the ♂♂. Maxillary teeth were more carious than mandibular. The first molar was not as susceptible to caries as the second and third, but probably became equally susceptible at a later age. Observations on the teeth present showed that caries attacked the tooth below the enamel line on the cervix and through developmental defects in the crown. The former type showed affinity for certain surfaces. Although more comparative data are necessary for further conclusions, it seems safe to state that only moderate dental hypoplasia existed in this group. The existence of a racial factor is not regarded as proved.—*Author (courtesy Wistar Bibl. Serv.)*.

7235. **SURE, BARNETT, HARVEY S. THATCHER, and DOROTHY J. WALKER. Avitaminosis. I. Pathologic changes in nursing and in weaned albino rats suffering from vitamin B deficiency. II. Pathologic changes in the albino rats suffering from vitamin G deficiency.** *Arch. Path.* 11(3): 413-424; 425-433. 3 fig. 1931.—I. In 67 young nursing albino rats suffering from a deficiency of vitamin B complex, fatty metamorphosis of the liver was observed, also atrophy of the spleen, hemorrhages in osteogenic tissues, and anhydremia associated with disturbance in hematopoietic function. In 80 young nursing albino rats suffering from uncomplicated vitamin B deficiency there was marked reduction in the glycogen content of the liver, atrophy of the spleen, hypoglycemia and anhydremia associated with hematopoietic disturbance. In 15 weaned young rats deprived of vitamin B complex, the pathologic changes were mainly those of inanition, with cardiac and adrenal hypertrophy and fatty metamorphosis of the liver in some cases. In 2 groups of weaned albino rats suffering from uncomplicated vitamin B deficiency, splenic atrophy and adrenal and cardiac hypertrophy (the last due mainly to increased blood volume) were observed. In the 1st group, 14 rats receiving no vitamin B whatever, inanition and loss of weight occurred. In the 2nd group, 15 rats given inadequate amounts of vitamin B, some small gains in weight occurred, emphasizing the associated atrophic and hypertrophic changes. The authors find that vitamin B per se possesses the function of producing growth unrelated to food intake. Uncomplicated vitamin B deficiency produces lymphopenia and a corresponding polymorphonuclear leucocytosis.—II. Vitamin G deficiency was produced in 64 albino rats on a variety of diets. The main symptoms were cessation of growth, loss of weight, and dermatitis. Other symptoms in some animals were ophthalmia, chromogenic urine, and incontinence of urine. No correlation was found between loss of body weight and the onset of skin lesions, and it is therefore concluded that the antidermatitic and growth-promoting syndromes are not identical. A seasonal variation was noted in the occurrence of the dermatitis. Alopecia, ulceration of the skin, atrophy of the spleen and of the thymus, fatty changes of the liver and hemorrhages and congestion of the intestines were the main pathologic changes.

7236. **TROITZKAJA, A. D. Morphologische Blutveränderungen und die Bedeutung der Klassifikation der Neutrophilen nach Arneth bei Syphilis.** *Arch. Dermatol. u. Syph.* 159(3): 482-490. 1930.—The blood picture was studied in 30 cases of congenital syphilis. There was an oligocythemia with high color index. The red blood picture thus resembled chlorosis and also more or less strongly, chloranemia. The lymphocytes were increased in number; and the neutrophiles without exception showed a shift to the left.

7237. **TWORT, C. C. The aetiology of lymphadenoma: A summary of six years' researches.** *Jour. Path. and Bact.* 33(3): 539-564. 1 pl. 1930.—Histologic examinations of healthy and diseased organs, examination of diseased tissues by "special technique" for vegetable parasites, and by dark ground illumination, the various silver precipitation methods, intense staining with Giemsa, Twort, Pappenheim-Unna, Mann, etc., special treatment of sections and films with acids, alkalis, antiformin, glycerine, soft soap, etc., for animal parasites gave negative results. Rabbits, guinea-pigs and mice were inoculated with lymphatic glands, liver, spleen, kidney, bone-marrow, brain, blood, etc., in the fresh state or preserved in saline, broth, glycerine, etc.; all without success. Attempts to cultivate a specific parasite on artificial media, and tubercle bacilli in lymphadenomatous tissues, likewise failed, as did examinations of allergic reactions to tuberculin in patients' feces, of blood for lipase content, and of blood and urine for antigens and antibodies.

7238. **WARBURG, BETTINA. Experimental poliomyelitis. Histology of the persistent lesions of the central nervous system.** *Arch. Neurol. and Psychiatr.* 25(6): 1191-1232. 34 fig. 1931.—In the central nervous systems of 15 *Macacus rhesus* monkeys surviving the onset of acute poliomyelitis, pathologic changes were: (1) degenerative and inflammatory (perivascular and extra-adventitial infiltration, degeneration of the nerve cells and fiber tracts), and (2) reparative (proliferation of microglia, astrocytes, and capillaries); these changes were variously distributed through the spinal cord and ganglia, medulla and pons, midbrain, basal ganglia, cortex and cerebellum. Inflammatory areas persisted in the central nervous systems of 4 animals which had made a good functional recovery.

7239. **WATSON, A. F. Experimental tar tumours in the white rat.** *Jour. Path. and Bact.* 34(3): 301-306. 1931.—Skin tumors were obtained in 2 ♂♂ and 2 ♀♀, from a litter of 6 ♂♂ and 5 ♀♀, by periodical treatment of the skin with a petroleum ether extract of rat tissues, followed in each case by applications of a gas works coal tar. The tumors of the ♂♂ were squamous cell carcinomata and once initiated grew vigorously, 1 animal showing extensive metastases in the lungs, both kidneys, and the pleural cavity. The tumors of the ♀♀ grew less vigorously; only 1 case showed histological evidence of local infiltrative growth.—*A. F. Watson*

7240. **WEBER, HERBERT. Ein Papillom der Pul-**

monalklappe. *Centralbl. Allg. Path. u. Path. Anat.* 48 (2): 49-54. 3 fig. 1930.—In a man who had died from croupous pneumonia, the heart was enlarged, and the papilloma was attached to the valve by a stalk. There was marked infiltration of the subendothelial layer of the surrounding tissue.

ANIMAL PATHOLOGY

FUNCTIONAL

(See also in this issue Entries 6180, 6238, 6658, 6659, 6660, 6661, 6676, 6678, 6681, 6686, 6691, 6711, 6714, 6722, 6729, 6736, 6753, 6759, 6761, 6762, 6764, 6766, 6773, 6810, 6823, 6850, 6861, 6875, 6880, 6887, 6902, 6904, 6905, 6912, 6919, 6920, 6923, 6928, 6939, 6955, 6978, 6995, 7009, 7014, 7028, 7075, 7079, 7082, 7090, 7108, 7112, 7130, 7134, 7148, 7158, 7168, 7176, 7180, 7191, 7203, 7206, 7217, 7418, 7451, 7452, 7465, 7549, 7572, 7615, 7628)

7241. **ACHARD, CH., et M. ENACHESCO. De l'action réciproque de la chloruration et de l'alcalinisation de l'organisme dans les maladies aiguës. 1. Épreuve de chloruration.** *Jour. Physiol. Path. Gén.* 28(3): 587-595. 2 fig. 1930.—NaCl was given orally in 10-15 gm. doses repeatedly, and the chloride content of serum and urine, together with the alkaline reserve of the blood, the urinary pH, and carbonate were determined in cases of pneumonia, acute rheumatism, catarrhal jaundice, angina, and convalescence after infective fevers. The fate of the administered chloride depends on the presence or absence of chloride retention due to the disease, but any increase in retained chloride is not necessarily associated with a decreased alkali retention.—*W. R. Fearon.*

7242. **ACHARD, CH., et M. ENACHESCO. De l'action réciproque de la chloruration et de l'alcalinisation de l'organisme dans les maladies aiguës. II. Épreuve d'alcalinisation. Épreuve mixte de chloruration et d'alcalinisation.** *Jour. Physiol. Path. Gén.* 28(3): 612-623. 4 fig. 1930.—In health, reciprocity exists between chlorides and alkalies, retention of the one being followed by expulsion of the other. This relationship does not obtain in acute diseases, when chloride retention and alkalosis may develop separately or together.—*W. R. Fearon.*

7243. **ADLER, ALFRED. Studie über Minderwertigkeit von Organen.** 2nd edit. 92p. G. F. Bergmann: München, 1927. 4.20 M.—Since the appearance of the 1st edition (1907), the correctness and fruitfulness of Adler's views as to disposition to disease—as being related to morphological (hereditary) or functional inferiority of organs—have been confirmed by numerous discoveries and developments. Endocrine disorders, underdevelopment of testes (as found by Kyrle) and other parts of the genital system, compensatory overdevelopment of "inferior" organs, psychical disturbances due to—or revealing—organ inferiorities, the development of cancer in inferior organs, are some of the lines of investigation to which this theory is related. This edition presents the original doctrine, in the light of the progress of the past 20 yrs. (See also B. A. 6(2): Entry 3275.)

7244. **AKIYA, MINORU. Klinische und experimentelle Studien über die anorganischen Salze und das Säurebasengleichgewicht im Blut beim Fieber.** *Zeitschr. Klin. Med.* 109(3/4): 312-341. 1928.—Determinations of hemoglobin, serum protein, Ca, chloride, K, Na, Mg, inorganic P and pH are reported.—*R. S. Anderson.*

7245. **ALIPOV, G. Experimentelle Beiträge zur Frage der Pathogenese des traumatischen Schocks. (Zur Theorie der traumatischen Toxämie von Quénu.)** *Deutsche Zeitschr. Chir.* 228(6): 349-364. 1930.—Experiments were made on 20 dogs and 10 cats, and included 11 experiments on dogs and 9 on cats with mechanical lesions by the method of Cannon and Bayliss, and 10 experiments in stimulation of the nerve trunk. The conclusions are: "The occurrence of injurious, aseptic, protein disintegration products in the injured tissue has not yet been proved. The development of traumatic shock under the influence of absorbed, aseptic, degenerative products of body tissue, injurious to the organism, has not been confirmed in these experiments on animals. Therefore Quénu's theory of "traumatic toxemia" as the chief cause of shock is not accepted. Changes which occur in the body in conditions of shock can best be explained from the standpoint of the nervous mehanism and in the light of Crile's theory. The satisfactory results of early operation as recommended by Quénu in severe injuries and in shock can be explained otherwise than by the prevention of a traumatic toxemia."—*H. M. Zimmerman.*

7246. **ARKUSSKY, I. Über Jodausscheidung durch den Organismus unter dem Einfluss der Röntgenbestrahlung.** *Strahlentherapie* 31(4): 806-811. 5 fig. 1929.—The author reports on the change of I excretion in the urine under the influence of Roentgen radiation in 70 patients with malignant tumors. He is inclined to ascribe the major influence on the amount of I excretion to the radiated tumor tissues. He assumes that the I output from the tissues depends on the degree of tissue decomposition. He found in lymphogranuloma, ovaphoroma, seminoma, lymphosarcoma and others larger I excretion after radiation than in carcinoma. Accordingly the I excretion after treatment and its rise after exposure to x-rays is a measure of the radio sensibility of the tumor, of the degree of regressive processes and of the prognostic expectations.—*I. Arkussky (transl. by E. A. Wolf).*

7247. **AYKROYD, W. R. Beriberi and other food-deficiency diseases in Newfoundland and Labrador.** *Jour. Hyg.* 30(3): 357-386. 1930.—Beriberi occurring on a white-flour staple is similar to that occurring on a rice staple. Under the climatic conditions of North Newfoundland and Labrador, families are obliged to buy food stores in November or December to last until the following May or June. When poverty prevents a sufficient variety of foodstuffs, and calories are the foremost consideration, white flour with few extras forms the main dietary, and beriberi tends to occur in April, May or June. It occurs in families who have grown few vegetables and shot little game. The disease attacks more men than women, and very rarely children between the ages of infancy and puberty. The age and sex incidences of beriberi are difficult of explanation and differ in different countries. Infantile beriberi probably occurs in Newfoundland and Labrador, but is largely unrecognized. The main cause of beriberi is vitamin B_1 deficiency, but the diets of patients suffering from beriberi are deficient in other respects. It is suggested that the infrequency of wet beriberi in Newfoundland may be due to the fact that wheat flour has a higher protein content than polished rice. Since poverty and deficiency disease are rigidly associated, prevention is an economic rather than a medical problem. Severe scurvy and rickets are not often met. Functional hemeralopia or night-blindness occurs mainly during the summer among men. It occurs on a diet deficient in vitamin A, and is rapidly curable by vitamin A containing foods, a fact well known to the Newfoundlanders. The disease may occur in men taking a deficient diet for less than one month. Other evidences of vitamin A deficiency are lacking. Tuberculosis, severe dental caries, functional stomach complaints and constipation are common. Gastric and duodenal ulcer, diabetes and obesity are rare.—*Author's summary.*

7248. **AYRER, EVELINE, und HERBERT HENTSCHEL. Über Stoffwechselveränderungen bei Rachitis.**

II. Mitteilung. Zum Kohlenhydratstoffwechsel. *Zeitschr. Kinderheilk.* 45(3): 289-295. 1 fig. 1928.—The retarded glycolysis found by Freudenberg and Welcker in the blood of rachitic children, also demonstrated by Brock and Welcker in the blood and liver pulp of rachitic rats, is to be considered as an interference with the fermentative synthesis of sugar with phosphate to hexose-phosphoric acid preceding glycolysis, since the hexose-phosphoric acid ester itself can be further split to trioses. The lessened synthesis, previously found by us in the muscles of rachitic rats, together with this retarded glycolysis, shows that the fermentative, assimilative reactions in carbohydrate metabolism, proceeding endothermically in florid rickets as signs of the slowing of metabolism, are depressed. The glycogen content of the muscles of healthy and rachitic rats shows extraordinary individual variations. The glycogen content seems to be without significance as far as the ability of the muscles to synthesize hexose with phosphate to hexose-phosphoric acid ester is concerned.—*Authors' summary (transl. by J. B. Youmans).*

7249. **BABES, A. Les lésions du thymus chez le lapin consécutives à l'intoxication par le goudron.** *Bull. Assoc. Française Étude Cancer* 18(8): 675-687. 4 fig. 1929.—The thymus in rabbits injected with tar is characterized by considerable atrophy of the lobules of the thymus and by an abundance of connective tissue. The thymic lobules now form only a small portion of the microscopic field or, rather, a large portion of these are formed exclusively of connective tissue. The lesions correspond to that of accidental involution of the thymus, to a more pronounced degree than those (lesions) which we have described as the modifications of the third degree. There is no doubt that the greatest importance of this phenomenon lies in the diminution even to the point of disappearance of the lymphocytes.—*A. Babes (transl. by A. H. Gardiner).*

7250. **BABES, A. Les modifications de l'hypophyse consécutives aux badigeonnages et aux injections de goudron.** *Bull. Assoc. Française Étude Cancer* 18(8): 723-726. 1929.—The animals that died as a result of injections or applications of tar showed a very marked diminution of the eosinophiles, a diminution which in the case of the rabbits that died between the 17th and 34th day, with the exception of one case, reached the complete disappearance of these elements.—*A. Babes (transl. by A. H. Gardiner).*

7251. **BALYEAT, RAY M., and F. L. BRITTAIN. Allergic migraine, based on the study of fifty-five cases.** *Amer. Jour. Med. Sci.* 180(2): 212-222. 1930.—The hereditary factors in migraine are apparently identical with those of asthma and hay-fever, suggesting a common etiology.—*W. H. Manwaring.*

7252. **BEHREND, MOSES. Efficiency of the various types of anastomoses of the hollow viscera. Clinical and experimental data.** *Ann. Surg.* 91(4): 514-519. 1930.—All types of gastrointestinal anastomosis were performed on dogs. The x-ray and the general nutrition of the animal were used to determine the efficiency of the operation. In almost all instances the dog died after a Billroth No. 2 or a resection of the stomach, and the reason was not evident. If the dog survived the operation, the type of operation was not important, and the anastomoses were all efficient. An x-ray of the normal stomach of the dog can well be compared to those taken in man. Only the physical results of anastomoses in animals can be compared to those in man, for in the latter there is present some disease of the viscera. In man the kind of anastomosis is immaterial, if the stoma is proper in size and position.—*B. C. Russum.*

7253. **BÉNARD, HENRI, JACQUES LENORMAND, et FÉLIX-PIERRE MARKLEN. Étude comparative des variations du chlore et du sodium sanguins dans l'acidose rénale.** *Bull. et Mém. Soc. Méd. Hôp. Paris* 45(23): 894-902. 2 fig. 1929.—Both blood chloride and Na show considerable variation in renal acidoses. Certain types of nephritis are associated with low alkaline reserve and low blood chloride. There seems no relation between Cl ion and Na ion, and their relation alone does not afford an explanation of the mechanism of acidosis in nephritis. Often hyperchloremia is associated with low Na content and vice versa. In renal acidosis, then, with or without edema, the two minerals may show independent values. Other factors must enter into disturbance of the acid-base equilibrium, probably organic substances and proteins.—*B. Bickel.*

7254. **BERGAMI, GINO. Variazioni del potere uricolitico del fegato di cani operati di stenosi della vena cava. [Variations of uricolytic activity of liver in dogs with stenosis of the vena cava.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 522-524. 1930.—Following operative stenosis of the vena cava in dogs the uricolytic activity of the liver is subnormal.—*M. Comel.*

7255. **BERLINER, M. Untersuchungen über optisch wahrnehmbare Phänomene an Punktionsflüssigkeiten bei Carcinom- und anderen Krankheiten. Zugleich ein Beitrag zur Kenntnis der Gerinnungsvorgänge.** *Zeitschr. Krebsforsch.* 32(1/2): 171-181. 4 fig. 1930.—In 20 puncture fluids, 12 of which were from cancerous patients, the effect of admixture of these with sera from various sources was studied by means of the nephelometer. In all those of cancerous origin there was a development of definite turbidity in such mixtures regardless of the source of the serum. A lesser reaction was shown by tuberculous exudates, still less by those of pneumonia and by transudates and cystic fluids. The author suggests the value of study of the earlier stages of colloidal aggregation by means of the nephelometer.—*H. E. Eggers.*

7256. **BICKEL, A. Dysoxydative Carbonurie und Krebskrankheit.** *Zeitschr. Krebsforsch.* 32(1/2): 110-111. 1930.—By the term "dysoxidative carbonuria" Bickel designated a relative increase in the urinary output of C over N—a finding which is frequent in cancerous disease. This he ascribes to the anoxidative destruction of glucose in the cancer cell, as well as the general sharing in this process of even the non-cancerous tissues. As the phenomenon is not constant, B. urges that the conditions in which it occurs should be more closely investigated.—*H. E. Eggers.*

7257. **BODNÁR, J., und JOHANN STRAUB. Biochemische Untersuchung des endemischen Kropfes in Ungarn, auf Grund der Jodmangeltheorie.** *Biochem. Zeitschr.* 227(1/3): 237-244. 1930.—The iodine modification obtained in connection with the great goitre endemic (82% of school children and 24.6% of the general population were found goitrous), in Bodahegykozseg, Hungary, leads to the following conclusions: (1) The I content of the drinking water is 0 to 1γ per liter. (2) The I introduced through the food supply of each child amounts to 15.8γ daily. The daily urine of goitrous children contains an average of 8γ of I, while that of healthy children and adolescents contains 31 to 25γ. All of these results, as well as the fact that the goitre of children regresses markedly with I, prove, at least in the cases presented, the undoubted correctness of the I deficiency theory of goitre.—*Authors' summary (transl. by E. H. Boyer).*

7258. **BONOMO, VINCENZO. Sulla patogenesi dello shock traumatico. [The pathogenesis of traumatic shock.]** *Arch. Ital. Chir.* 24(2): 145-174. 1929.—A hemostatic ligature was applied to 3 dogs (part of the body not stated) without anesthesia, for about 7 hrs., with production of intense pain. Immediate fall of arterial pressure with all the signs of grave shock followed removal of the ligature, with death in 10 minutes in one case and after 6-10 hrs. in the others. In 2 dogs the left femoral artery and vein of 1 hind leg, and in another the femoral vessels of both hind legs, were compressed without anesthesia for about 3 hrs. None showed sign of shock or change in arterial pressure, though one interrupted the experiment by repeated vomiting and died in 12 hrs.; the others survived. In another dog, after compression for 5 hrs. of the left iliac artery and "primitive" iliac, the limb was cold and the tissues became livid. Removal of the compres-

sion was followed by very slight fall in arterial pressure; the femoral pulse began to beat and the color of the tissues improved. There was no sign of shock after 3 hrs. The author's conclusion is that some other factor than interruption of circulation (or the entrance into the blood of toxic substances from the forcibly checked region of circulation) enters into the production of shock, and that this factor is pain or intense stimulation of the nerve centers.

7259. **BRDICZKA, GEORG. Beiträge zur Kenntnis der biologischen Einwirkung der Röntgenstrahlen bei Tuberkulose. I. Biologische Leukocytenkurven bei röntgenbestrahlten Fällen von Lungentuberkulose.** *Beitr. Klin. Tuberk.* 72(3): 298-311. 11 fig. 1929.—Blood pictures of patients with a productive cirrhotic type of tuberculosis were studied during and after radiation. Heavy filtered rays (½ mm. Zn) were used at 30 cm. focal distance and applied in doses of 1/40 to 1/10 of a skin unit dose. These doses were given weekly up to a total of 20 to 70% of the skin unit dose. For comparative blood examinations, 200 cells were counted 2-3 times a week. The sedimentation rate was studied at the same time. Of the 31 patients, 4 responded with an eosinophil reaction, 4 with a predominantly monocytic, 12 with a polymorphic and 2 with a reduction reaction (temporary disappearance of eosinophils and drop in lymphocytes), while 4 showed no reaction.—*O. Glasser.*

7260. **BRICKER, F., und F. SUPONIZKA. Zur Lehre von der Entzündung. III. Der Kohlenhydratstoffswechsel des entzündeten Gewebes im Initialstadium der Entzündung.** *Arch. Exp. Path. u. Pharm.* 129: (1/2): 100-107. 1928.—Examination of venous blood from normal rabbits' ears revealed little variation in carbohydrate metabolism. In inflamed ears there was a greater amount of sugar than normal. Conclusions were that: 1. Sugar is not abstracted from arterial blood of inflamed tissue; 2. More sugar is formed in inflamed tissue. Results are the same in tissue fluids as in blood. The amylolytic index indicates that there is an increase of carbohydrate splitting in inflamed tissue. Degree of reduction of respiratory coefficient indicates decreased combustion and less sugar resorption in inflamed tissue. Methods and tables are included. Short bibliography.—*A. E. Taft.*

7261. **BRICKER, F., und J. LASARIS. Zur Lehre von der Entzündung. IV. Der Stickstoffwechsel im Anfangsstadium der Entzündung.** *Arch. Exp. Path. u. Pharm.* 129(1/2): 122-132. 1928.—Metabolism in inflammatory tissue is characterized by the fact that more protein is split, but that less completely than in the normal. Determinations showed that the first split products of protein in blood from inflamed rabbits' ears were the important factors. When poured into the blood stream, these give rise to secondary phenomena in the organism, with production of proteases and peptones. These produce the same effect as protein therapy. The greater the coefficient of qualitative oxidation of protein, so much less is protein split, and conversely. In fractional examination of tissue cultures, the substance which most increases growth is represented by the first split products of protein. The peptose forms are the most active. Methods and tabulated results, with a brief bibliography, are included.—*A. E. Taft.*

7262. **BRICKER, F. Zur Lehre von der Entzündung. V. Azetonkörper im Blute des entzündeten Gewebes.** *Arch. Exp. Path. u. Pharm.* 129(5/6): 285-287. 1928.—In the blood which streams from the inflamed ear, the acetone content is greater than in the blood from the non-inflamed ear. This increased acetone formation is sometimes weakly and again strongly expressed. Evidently, in the processes of increased metabolism, split products are formed, due to an incomplete oxidation of organic materials.—*J. S. Latta.*

7263. **BUCHMAN, JOSEPH, and ISAAC F. GITTLEMAN. Inorganic blood chemistry in the osteochondritides.** *Amer. Jour. Dis. Children* 40(6): 1250-1261. 8 fig. 1930.—A series of 43 cases, including vertebral epiphysitis, osteochondritis of the vertebral body, Legg-Perthes' disease, Osgood-Schlatter's disease, Koehler's disease of the tarsal scaphoid and cases of displaced upper femoral epiphyses, furnished no evidence of rickets; the inorganic P, Ca, Na, K and Mg content of the serum was well within normal limits.

7264. **CAPUANI, GIAN FRANCO. La colloido-labilità plasmatica nella tubercolosi. [Lability of the plasma colloids in tuberculosis.]** *Policlinico [Sez. Med.]* 37(7): 329-337. 1930.—From about 1200 plasma reactions (about 1000 with the Fahraeus reaction, 200 with the Costa method, of which 100 were parallel with the Fahraeus) and 40 serum reactions (Matefy and Daranyi methods), Capuani concludes that plasma lability is caused by disturbance, due to the toxemia of necrobiosis, of the normal equilibrium among the various protein constituents of the plasma, and that it is not specific for any disease.—*From author's summary (transl.).*

7265. **CAUER, H. Neue Untersuchungsergebnisse über das Jodvorkommen und sein Zusammenhang mit dem Kropf.** *Zeitschr. Ges. Physikal. Therap.* 39(1): 10-50. 5 maps. 1930.—In the provinces of Upper Hesse, Rhenish Hesse and Starkenburg, there appeared to be no direct relation between the I content of the soil and the occurrence of goiter, but a very clear relation between goiter and lack of I in the water (and also bad social conditions). The factor which Cauer emphasizes, however, is the I content of the air. In agreement with von Fellenberg, he finds that rain, fog and snow wash I out of the air, but that the air is again enriched by evaporation from the soil. Hence it would be expected that the air of predominantly cloudy and foggy regions would be poor in I. That part of the I in inspired air is resorbed by the lungs Cauer shows by a table of I values of air in a dark room (av. 0.545γ per cu. meter, and in exhaled air, 0.43γ per cu. meter) showing a retention of the lungs of 0.115γ I per cu. meter inhaled air, or about ¼ the I content of the air. At Bad Kreuznach in fine weather the average daily I content of the atmosphere is about 2γ per cu. meter; if resorption were only ¼, a man would get a daily dose of 25-30γ I per day. That inhalation of I has a favorable influence on goiter is indicated by a clinical experiment on a goiter patient, in whom 14 days' inhalation treatment produced a marked reduction in the size of the goiter, which again increased in size on cessation of treatment. Cauer found a much higher percentage of I in chlorophyl-rich than in chlorophyl-poor leaves, and a larger proportion of the I in organic combination in the chlorophyl-rich leaves. Hence he deduces that I is not a foreign substance in plants, but has a function to perform. In the green leaves of *Campanula rotundifolia* from Kühtai, Tyrol, 2000 meters above sea level, he found an average of 5041γ per kgm., while green leaves of the same plant from Kuhberg near Kreuznach, only 250 meters above sea level, where the air is rich in I, gave an average of 3300γ per kgm. This might at first glance seem to indicate that the I content of the air is without influence on vegetation, and that vegetable I is drawn from the soil. Cauer calculates, however, that the I content of a blackberry bush, for instance, could not possibly be drawn up by the roots or derived from the earth. He suggests that the decay of organic material in the earth may set free gaseous I, which is resorbed by the leaves; and that intensive solar irradiation may enable plants which grow at high altitudes to resorb more I than the plants which grow in the I-rich atmosphere of lower levels. Fog maps and goiter maps of the 3 provinces studied show a certain degree of correspondence.

7266. **CHINI, VIRGILIO. Ricerche sperimentali sull' azione locale dell'acido urico sui tessuti. [Local action of uric acid on tissues.]** *Boll. Soc. Ital. Biol. Sperim.* 5 (4): 519-522. 1930.—Injection of uric acid solutions is followed in rats by local response in subcutaneous and muscular tissues, an inflammatory process leading to a granuloma being developed; the latter is gradually enclosed by a reactive connective tissue capsule. When uric acid suspensions are injected, the uric acid is chiefly retained locally, and exerts on the surrounding

tissues an irritant action. Granulations grow to involve the injected matter, and gradually an incapsulation by connective tissue follows. Some morphological data observed (such as presence of giant cells, and aspect of the stroma in the zone of uric acid deposition) recall morphological findings recorded in arthritis and gout.—*M. Comel.*

7267. **CIAMBELLOTTI, E. Erpete recidivante del volto di probabile natura anafilattica. [Recurrent herpes facialis of probable anaphylactic nature.]** *Dermosifilografo* 3: 523-543. 1928.—In 1 case of recurrent herpes facialis the hypersensitivity to ovarian products is shown. By means of intradermal injections of such products, premonitory phenomena of herpetic efflorescence were elicited. These were reduced and finally made to disappear by recurrent menses. In order to explain the appearance of a center of hypersensitivity so limited and constant, something in the nature of anaphylaxis is suggested aside from the herpetic virus inducing herpetiform efflorescence. Data on a theory of anaphylactoid syndromes are set forth.—*E. Ciambellotti (transl. by J. G. Edwards).*

7268. **CIAMBELLOTTI, E. Valore e costanti di errore nella ricerca del quoziente respiratorio e del metabolismo basale nei dermopatici. [Value and constants of error in the study of the R.Q. and B.M. in dermopathics.]** *Arch. Ital. Dermatol. Sifilogr. e Venereol.* 4(2): 101-165. 1928. Determinations of R.Q. and B.M. in dermatological patients can be of great service, but a systematic and prolonged study is necessary in the same subject and in the different phases preceding and following the disease. Such measurements indicate the condition of the system at the time they are made and the development of the dermatosis as well as the disturbing action that the cutaneous form exercises on the interrelation, directly and through reactions arising within the organism. The determination is frequently vitiated because of unavoidable error depending on the same dermatosis: pruritus, excitement, insomnia, abnormal reactions of the central and sympathetic nervous systems through functional and anatomical changes of the skin, large anatomico-pathological lesions, exudates, vicarious hyperfunction, absorption from necrotic and suppurative processes,—all these are active causes introducing error in the study. Account is taken of all these causes. The experimental data cannot be precise in their absolute value but interpretative. Examples are given and interpretations set forth.—*E. Ciambellotti (transl. by J. G. Edwards).*

7269. **CIMINATA, A. Guarigione del diabete pancreatico sperimentale, con la enervazione operatorio delle glandule surrenali. [Cure of pancreatic diabetes by denervation of the suprarenal gland.]** *Boll. Soc. Ital. Biol. Sperim.* 3(9): 1251-1260. 1928.—Extirpation of the pancreas produced diabetes in the dog. After denervation of the suprarenal the diabetic symptoms disappeared. Within a few days the diabetes was cured although mixed diet with high carbohydrate was given. The immediate response of the glycogen curve within 3 days proved the effect of suprarenal nerves upon diabetes. The number of Islands of Langerhans in the pancreatic tissue was found small. Four laparotomies were required for this experiment. The animal tolerated the intervention well, and began to gain weight and spirit immediately after the section of the suprarenal nerves.—*B. Bickel.*

7270. **COLLAZO, J. A., B. VARELA, y P. RUBINO. Hipervitaminosis D y tumores. Adenomas difusos con degeneración maligna inicial del estômago del conejo, producidos por la ergosterina irradiada en exceso. [Hypervitaminosis D and tumors. Diffuse adenoma with beginning malignant degeneration of the rabbit stomach, produced by excessive irradiated ergosterol.]** *Arch. Argentinos Enfermedades Aparato Digest. y Nutricion* 4(1): (1-16). 5 pl., 6 fig. 1928.—Rabbits fed corn meal, green alfalfa, water, and irradiated ergosterol in doses 5,000 times the therapeutic dose, receiving a total of 250 mgm., developed initial symptoms of epithelioma with invasion of the submucosa, and died in 30 days. Thus experimental tumors were produced by biologic agents which are constantly present in the food of man and animals.—*B. Bickel.*

7271. **DRAKE, T. G. H., P. MARSH, and J. L. GAMBLE. The alkalosis of vomiting and the acidosis of advanced renal disease.** *Amer. Jour. Dis. Children* 40(4): 705-717. 1930.—The data presented show the changes in the ionic composition of the blood plasma produced by continued vomiting [7 cases] and those found in the presence of advanced renal disease [in 2 cases]. The extent of repair obtained by the subcutaneous and intravenous injection of water and the substances indicated is also recorded by means of direct measurements of the chief factors of plasma structure.—*Authors' summary.*

7272. **DULIÈRE, W. Action sur l'intestin isolé de Mammifères de nouveaux amino-ethers du groupe des éphédrines. [Action on the isolated intestine of mammals of new amino esters of the ephedrine group.]** *Compt. Rend. Soc. Biol.* 97(26): 905-906. 1927.—Amino esters of the ephedrine group usually inhibited the isolated intestine (rabbit and cat) in concentrations of 1 in 500,000 and upwards but liminal doses sometimes produced stimulation. Natural ephedrine on the other hand always augmented the intestinal movements.—*A. J. Clark.*

7273. **EASTWOOD, ARTHUR. Systemic influences in immunity and cancer.** *Jour. Hyg.* 30(3): 267-299. 1930.—The idea that there are systemic influences concerned with the genesis of cancer has assumed many forms and is often expressed ambiguously. Does it mean that normal cells have a "natural tendency" to malignancy and will actually become malignant if freed from systemic control? Eastwood does not accept this; unrestrained growth does not suffice to explain the origin of cancer. By "systemic control" the author means control which regulates normal cells and he believes cancer cells to be independent of it; nor does he agree that there is a special kind of antimalignant systemic control which may destroy the fully fledged cancer cell. By "susceptibility" Eastwood means an essentially cellular property, not a humoral or systemic influence, though he admits that irritant material which gains access to the circulation may increase the susceptibility of particular cells. Eastwood also discusses the meaning of "resistance" (either local or systemic) to cancer. Owing to the recuperative powers of the animal body, local disturbances of metabolism are often corrected and there is a return to the normal condition; some of these disturbances, if left uncorrected, might have led to cancer and the fact that they have been corrected may, the author feels, be called resistance to the genesis of cancer. It is also known that true cancerous foci or metastases may remain quiescent for a considerable time. But Eastwood does not believe that such quiescence has been shown to be attributable to a specific kind of antimalignant "resistance" (either local or systemic). While there is no satisfactory evidence, either direct or indirect, of a systemic influence which causes cancer, systemic influences are so complex and obscure that this possibility cannot be definitely excluded. But the author does not feel there is any cogent reason for dissenting from the view that the production of the malignant variant is due to its local environment.

7274. **EICHHOFF. Experimentelle Appendicitis.** *Arch. Klin. Chir.* 162(Kongressbericht): 178-181. 1930.—Attempts to produce appendicitis in 18 rabbits without stenosis or with incomplete stenosis were unsuccessful, even with trauma to the mucosa and injection of enterococci, colon bacilli, pneumococci, streptococci or Fränkel's bacilli. Complete stenosis without bacterial infection produced appendicitis in 2 out of 6 rabbits. Complete stenosis produced gangrenous appendicitis in 3 out of 4 rabbits injected with streptococci, and in 15 out of 19 injected with Fränkel's bacilli. Trauma made no difference in the production or non-appearance of appendicitis.

7275. **ELSNER, ERICH. Die unspezifische Bereitschaft der Haut zur Blasenbildung bei Hautkrankheiten.** *Arch.*

Dermatol. u. Syph. 161(3): 574-585. 1930.—The following conclusions are drawn from experiments on 100 dermatologic patients and 23 healthy subjects. According to Hahn, intracutaneous injections of aqueous urea solutions may produce bullae within a few minutes without notable discomfort or damage. By this method the "blister threshold" of the skin may be determined quantitatively within a short time. The threshold or effective point is a constant in any given individual and region on his body. Flexor surfaces show a response to concentrations varying from 10-12%, exceptionally exhibiting vesiculation with concentrations as dilute as 9%. One hundred patients suffering from various dermatoses were given tests in areas of non-involved skin, and 95 of these showed normal threshold values. The presence of dermatoses has no influence on the responsiveness of the skin to non-specific vesicle-producing urea solutions. Of the 5 patients exhibiting atypical response, 2 developed blisters on the forearm after injection of an 8% solution, and 3 required a concentration of 13%. These exceptions cannot be attributed to the associated dermatoses, as other patients showing the same dermatoses evidenced no alteration in blister-threshold values. Lowered threshold values were seen in involved areas of patients with epidermolysis bullosa and naevus anaemicus. Elevated values occurred in zones showing dermatographic or urticarial wheals. It seems probable that the increased permeability seen in these disorders lasts for a variable length of time, as suggested by the varying concentrations required to produce vesiculation.—*Author's summary* (*transl. by J. A. Gammel*).

7276. **EUFINGER, HEINRICH, und RUDOLF SPIEGLER. Die Kolloidstruktur des Plasmas während der Gestation. VI. Die klinischen Symptome der Ödneklose in ihrer Abhängigkeit von der Kolloidstruktur.** *Arch. Gynäkol.* 133(2): 510-532. 6 fig. 1928.—A theoretical discussion of the topic.—*Authors' summary* (*transl. by G. L. Rohdenburg*).

7277. **FAIRÉN, V. Étude physico-chimique du sérum dans les rhinites colloïdoclastiques. [Physico-chemical study of the serum in colloidoclastic rhinitis.]** *Acta Oto-Laryngol.* 14(1/2): 282-284. 1930.

7278. **FAULEY, GORDON B., and A. C. IVY. Experimental gastric ulcer: the effect of the consistency of the diet on healing.** *Arch. Internal Med.* 46(3): 524-532. 6 fig. 1930.—In 9 rabbits a simple ulcer produced by excision healed within 30 days irrespective of the consistency of the diet (5 rabbits on soft diet, 4 on rough). Of 22 rabbits with anterior lesion plus silk suture, all fed on soft diet, 5 died prematurely; of 17, killed on the 30th day, only 3 showed unhealed ulcers. Of 12 rabbits with anterior lesion plus silk suture, fed on rough diet, all that were killed on the 30th day had typical chronic ulcers; 1 killed at 42 days showed complete healing, but others kept for longer periods than 30 days failed to show complete healing. These results indicate that the consistency of the diet has an influence on the healing of an ulcer.

7279. **FERRARI, RODOLFO. Influenza delle proteine del sangue sulla scomparsa dell'edema nella rana salata. [Influence of blood proteins on the disappearance of edema in the perfused frog.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 838-840. 1930. The diminution of edema in perfused frogs is related to an increase in blood protein, the edema showing the greatest intensity when blood protein is lowest, diminishing when the latter increases, and disappearing when the blood protein reaches normal values.—*M. Comel.*

7280. **FISCHER. Züchtung von Karzinomgewebe in vitro.** *Arch. Exp. Zellforsch. bes. Gewebezücht.* (*Explantation*). 6: 138-141. 1928.—Mammalian carcinoma cells may be grown indefinitely in vitro, retaining malignancy. Mouse carcinoma cells infiltrate and destroy normal tissue, living or dead, homologous or heterologous. They grow unhindered in an animal medium into which the carcinoma can not be transplanted. Carcinoma cells outgrow all normal cells, even fibroblasts; in sharp contrast to all normal epithelium. They can utilize intercellular growth principles, besides those specific for their own cell type.—*Author's summary* (*transl. by M. C. Marsh*).

7281. **FISCHER, A., H. LASER, und H. MEYER. Ein 3 Jahre alter Carcinomstamm in vitro. Einige Betrachtungen nach den bisherigen Arbeitsergebnissen.** *Zeitschr. Krebsforsch.* 32(1/2): 99-106. 3 fig. 1930.—During 3 years' continuous cultivation in vitro of mouse cancer tissue (Ehrlich's mouse carcinoma) a study was made of the relative growth of the tissue in heterologous and homologous media; its powers of infiltration in homologous and heterologous tissues; humoral and cellular growth factors; the reactions between normal and malignant tissue cells; the growth of cancer cells in plasma and serum-constituents; the effect on their growth of varying concentration of embryonal extract in the culture medium; the effect of varying H-ion concentration; the effects of varying O tension, of x-rays and radium emanations; the production of lactic acid; respiration experiments and chromosome counts. All these studies have been reported in detail; they show principally that the active proliferation of cancerous tissue in an individual cannot be regarded as the result of a general enhancement of growth rate, and that as yet no essential qualitative differences have been found between cancerous and normal tissues. Such differences as do exist are quantitative in character. If this conclusion is confirmed by the application of more delicate methods than those now available, it will follow that no sharp line can be drawn between normal and malignant tissues. The alleged importance to malignant growth of the association of stroma is not confirmed in the writers' experiments, since no normal tissues have been added to the cancer cultures for the last 1½ years, and the growth is that of a pure strain of epithelial cells. The cultivated cancerous tissue was extraordinarily sensitive to alteration of environmental conditions, and even with normal conditions it showed an early tendency to central necrosis not observed with normal tissues. A comparison of cancerous growth with the processes of normal growth and regeneration led to the somewhat paradoxical conclusion that the cause of the unlimited proliferation of cancer cells was to be sought in their short life duration and lessened resistance. As a matter of fact, in vitro cancer cells frequently grow more slowly than normal tissues, despite the relatively much more frequent appearance of mitoses among them. Their characteristic trait would appear to be an extreme lability, enabling them to respond by proliferation to irritants insufficient to affect normal cells, along with a tendency to chronic disintegration which itself serves as a stimulant to regeneration.—*H. E. Eggers.*

7282. **FISCHER, ALFRED E., and MIRIAM REINER. Pentosuria in children: with laboratory data on four cases.** *Amer. Jour. Dis. Children* 40(6): 1193-1207. 1930.—The unusual opportunity to observe 4 juvenile cases within a short time led the authors to study the relationship between pentose ingestion, pentosemia and pentosuria. The method of Somogyi for the separation of dextrose from nondextrose reducing substances in the blood by the addition of yeast lends itself very well to the study of pentosuria following the ingestion of pentose. It appears that the nonfermentable reducing substances of the blood are not increased in pentosuric persons. Their tolerance for dextrose is unchanged. When pentose is given to normal persons, the rise in pentose is slower than that in dextrose and reaches its maximum later, but is maintained longer than the rise in dextrose. The blood pentose curve in pentosuric persons is similar to that in normal persons. Only a small amount of the ingested pentose is accounted for in the urine and the stool. Fischer and Reiner were unable to determine the fate of the remainder. The output of ingested pentose by a pentosuric person lasts somewhat longer and is slightly greater than that by normal persons. Pentosuria is a metabolic disease and

is not due to an increased permeability of the kidney for pentoses.

7283. **GAETANI, G. F. DE. Ricerche sulla influenza dell'alimentazione sui tumori sperimentali da catrame. [Studies on the influence of nutrition upon the experimental tar tumors.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 439-441. 1930.—Mice fed with spleen, meat and liver showed (especially when fed with crude spleen) an early development of the tar tumor growth. The mice fed with spleen show greater resistance to application of tar, whereas those fed with liver died from cachexia. The further development of the tumor depends upon the state of nutrition, being greater when the animal is in good condition, whereas the tumor regresses in weakened subjects.—*M. Comel.*

7284. **GATEWOOD, WESLEY E., OLIVER H. GAEBLER, EDWARD MUNTWYLER, and VICTOR C. MYERS. Alkalosis in patients with peptic ulcer.** *Arch. Internal Med.* 42(1): 79-105. 1928.—The authors studied the acid-base balance on a series of 46 patients with peptic ulcer undergoing the Sippy alkali treatment. A definite correlation was observed between the alkalemia and a group of clinical symptoms which were chiefly nervous in character. About ⅔ of these patients at some time showed a high CO_2 content or pH or both, and 21 showed an uncompensated alkalosis, i.e., electrometric pH values of 7.48 or above. These 21 cases all showed an increased bicarbonate concentration. In a number of cases pyloric obstruction was found to be the important factor in the production of the alkalosis. In such cases surgical relief of the pyloric obstruction restored the acid-base balance. When alkalies are used in the amounts called for in the Sippy treatment of peptic ulcer they almost always produce characteristic changes in the blood chemistry, even though symptoms of alkalosis may not occur. When $CaCO_3$ and MgO were employed without $NaHCO_3$, there was little evidence of alkalosis, if the complication of obstruction or vomiting was not present. The alkalosis was most marked at the end of the day and tended to return to normal during the night. With the rise in the blood bicarbonate there was a corresponding fall in the plasma chloride. The rise in the bicarbonate appeared to be accompanied in many cases by a slight rise in serum Na.—*V. C. Myers.*

7285. **GECK, OTTO F. Pellagra and tuberculosis—some remarks about the pathogenetic factors.** *Virginia Med. Month.* 57(4): 256-262. 1930.—From a review of the literature and a study of a large number of cases the author concludes that at the present status of our knowledge of pellagra, the dietary factor in the pathogenesis is not fully established, nor is the infectious hypothesis entirely rejected. In both directions further experiments are suggested. Chewing tobacco could be tested for eventual pellagra-preventive properties. Collection of data is needed to answer the questions how far are pellagrins "immune" against pulmonary or other tuberculosis, and whether pellagra itself is not possibly a special (nervous) form of tuberculosis.—*From author's summary.*

7286. **GENTILE, FRANCESCO. Ricerche sulle avitaminosi. Nota V. Avitaminosi ed anafilassi. [Researches on avitaminosis. V. Avitaminosis and Anaphylaxis.]** *Ann. Clin. Med.* 18(2): 87-97. 1928.

7287. **GILARDONI, ENRICO. Neoplastogenesi. Di una soluzione veramente integrale del secolare problema riguardante l'origine dei tumori.** 88p. Portrait. Edizioni Sapientia: Rome, 1930.—A polemic treatise, explaining and defending Gregoraci's theory that tumors are due to symbiosis between the body cells and certain "saprophytic" organisms living in these cells.

7288. **GRANT, AGNES H. The effect of rachitic diets on experimental tuberculosis. IV. Effects of disturbing optimal ratio between calcium, vitamin C and vitamin D.** *Amer. Rev. Tuberc.* 21(1): 115-125. 1 fig. 1930.—Resistance to tuberculosis can be decreased from a natural immunity to moderate susceptibility, without destroying the growth impulse, by a prolonged disturbance in the optimal balance between Ca, vitamin C and vitamin D of the diet. A prolonged excess of vitamin D in the diet, either with a deficiency of Ca or with a normal amount, hastens the spread of tuberculosis through the lungs. The substitution of vitamin C for vitamin D at the time of inoculation or the addition of vitamin C to a diet deficient in vitamin D tends to increase the amount of tuberculosis in the lung, rather than decrease it. The addition of vitamin C to a diet containing vitamin D tends to increase resistance to tuberculosis. The degree to which diets corrected after inoculation can retard the spread of tuberculosis in white rats depends upon the type of deficiencies and excesses in the diet before inoculation, and upon how long the deficient diets have been given.—*M. Lederer.*

7289. **GRÄVINGHOFF, W. Untersuchungen über die Ziegenmilchanämie. [Researches on goat's milk anemia.]** 86p. S. Karger: Berlin, 1928. Price 4.80 M.

7290. **GRAY, H., and JEAN M. STEWART. Quantitative diets versus guesswork in the treatment of obesity and diabetes.** *Sci. Monthly* 32(1): 46-53. 1 fig. 1931.—Gives figures to contrast 3 types of diabetic diets: high fat, i.e. FA/G 1.5, average, i.e. FA/G 1.0 approx., and high carbohydrate, i.e. FA/G about 0.5. All these are iso-caloric and iso-protein. If in the same clinic, in order to rule out the personal equation, patients should be fed now one of these types, now another, evidence as to relative merit might be obtained.—*H. Gray.*

7291. **GREENBERG, D. M., and LEWIS GUNTHER. III. The diffusible calcium of the blood serum in allergic diseases.** *Arch. Internal Med.* 46(1): 72-74. 1930.—Analyses of the serum in 14 cases of allergic disease show values for diffusible Ca that vary within the normal range. Other data collected by the authors indicate that except in diseases in which there is a marked reduction in serum proteins (which causes abnormal variation in the non-diffusible Ca), physiologic variations in the Ca occur ordinarily in the diffusible Ca fraction, often with little concomitant variation in the total Ca values, as shown strikingly in the tetany of parathyroid deficiency. Hence the observation that the total and diffusible blood serum Ca vary together within the normal range in allergic diseases indicates that physiologically available Ca is present in the blood in adequate amounts.

7292. **GUBIN, W. M., und R. B. GOLDINA. Ueber die aktuelle Reaktion der Hirnsubstanz bei experimenteller Tollwut.** *Zentralbl. Bakt. I. Abt. (Orig.)* 116(1): 76-80. 1930.—The various parts of the brain of the normal guinea-pig and rabbit showed some differences in pH, but were on the whole weakly alkaline, almost neutral. Intracerebral infection of a series of rabbits (number not stated) with fixed virus of rabies produced by the 3rd day an acidification of the brain reaction which was unchanged until the 6th day, when an alkalinization set in, reaching its maximum on the 8th day (day of death). Subcutaneous infection of 5 guinea-pigs with a fatal dose of tetanus bacilli produced weak acidification of the brain substance on the 2nd day; on the 3rd day (day of death) it became alkaline again.—*Author summary (transl.).*

7293. **GUNTHER, LEWIS, and DAVID M. GREENBERG. II. The diffusible calcium and the proteins of the blood serum in malignant diseases.** *Arch. Internal Med.* 46(1): 67-71. 1930.—Following out the suggestion that abnormal Ca metabolism may be concerned in neoplastic development, Gunther and Greenberg determined total and diffusible Ca in the sera of 15 patients. Their observations indicate that the diffusible Ca is within the limits of normal variations in malignant diseases. If the diffusible Ca may be considered a measure of the physiologically available Ca, it may be concluded that it is present in adequate amount in malignant disease, and that the blood Ca is apparently not a factor in the etiology of such disease.

7294. **GUREWITSCH, N. A. Über den Kreislaufshock bei dem akuten Darmverschluss.** *Arch. Klin. Chir.* 154 (3): 584-596. 7 fig. 1929.—The lower intestinal content (after definite methods of preparation) of normal dogs and the blood serum and stomach content of dogs after

acute intestinal obstruction cause a decrease in the perfusion rate through the isolated rabbit's ear, a fall in blood pressure and a dilatation of the skin capillaries in a manner entirely analogous to the action of histamine. The intestinal contents above the obstruction from living animals do not cause these phenomena, but the same contents 4 hours after death produce the circulatory changes. There is a progressive fall in blood pressure after acute obstruction and this is paralleled by an increase in the coagulability of the blood. The therapeutic use of large amounts of isotonic saline before and after operation is recommended. Acute verrucose endocarditis was observed in 7 of 12 animals with acute intestinal obstruction of 4 to 7 days duration.—*R. A. Moore.*

7295. **HADY, LUTFI, und SCHÜKRÜ. Chorionepitheliom beim Manne mit stark positiver Aschheim-Zondekscher Schwangerschaftsreaktion. [Chorion epithelioma in a man with strongly positive Aschheim-Zondek pregnancy reaction.]** *Zentralbl. Gynäkol.* 55 (11 a): 912-917. 6 fig. 1931.

7296. **HANDLEY, W. SAMPSON. Lymph-stasis the precursor of cancer.** *Brit. Med. Jour.* 2(3587): 607-611. 17 fig. 1929.—Cancer is an ativistic reversion of certain cells of the body to the state of their one-celled ancestors. The cancer cell is living among the body cells as a parasite. It is an anarchist in the body politic representing either a spontaneous reversion or a product of disorders. Origin of cancer is intimately associated with local lymphatic obstruction. This must have lasted for 20 to 30 years. As seen in cancer following x-ray, epithelial hyperplasia follows an obliterative lymphangitis. Change in connective tissue precedes development of tar carcinoma, thus a lymphatic obstruction followed by papillary hypertrophy is the precursor of papillomatous formation which frequently precedes cancer. Author cites frequency of lupus carcinoma and tuberculous origin of intestinal and vesical polyposis. Papillary hypertrophy precedes many breast cancers, especially of the duct type. Papillary hypertrophy occurs only when the central lymph vessel of the papilla blocks, stasis occurs, supply of O and hormones (growth inhibitors) is blocked. This chronic lymphatic block or lymphangitis may be caused by tuberculosis, syphilis, pyogenic infections, or many of the agents which have been considered as irritants.—*L. H. Jorstad.*

7297. **HASSIN, GEORGE B. Hydrocephalus: studies of the pathology and pathogenesis, with remarks on the cerebrospinal fluid.** *Arch. Neurol. & Psych.* 24(6): 1164-1186. 16 fig. 1930.—Hassin criticizes previous explanations of the cause of hydrocephalus as based on anatomy rather than histology, and results of experimental work on the subject as not in agreement with observations in clinical cases. In 12 cases of hydrocephalus of the so-called communicating type large amounts of fluid were observed to coexist with a deficient or defective choroid plexus. Hassin therefore concludes, in opposition to Dandy and Blackfan, that the choroid plexus is not responsible for hydrocephalus, which is but a partial manifestation of a hydropic condition of the brain, of which such phenomena as distention of the subarachnoid spaces and rarefaction of the cerebral tissues are probably more important and sometimes the sole manifestations; that the sole avenue of escape or absorption of the cerebrospinal fluid is from the subarachnoid spaces by way of their prolongations along the perineural spaces of the cranial nerves and spinal roots; and that occlusion of the cisterns and the perineural spaces of the cerebral nerves preventing the escape of fluid, may be an important factor in the production of hydrocephalus.

7298. **HELLNER, HANS. Ergebnisse der Übertragung menschlicher Geschwülste auf Mäuse.** *Arch. Klin. Chir.* 161(1/2): 1-48. 23 fig. 1930.—This work was undertaken 2 yrs. ago to test the conclusions of Heidenhain, who had reported the production of carcinomata and sarcomata in mice by use of autolysates of human tumors. Hellner injected autolysates and fresh tumor pulp into 381 mice, and obtained 14 tumors, or 3.7%. Of 327 controls, 7 developed tumors (2.77%). Of the controls, 176 had received injections of embryonic extract or other tissue; 5 of these (2.8%) developed tumors, while of the uninjected controls 2 (1.3%) developed tumors. Hellner concludes that the difference between the percentages of tumor developing in experimental animals and controls (3.7% against 2.2%) is too small to justify deductions as to the part played by the autolysate, particularly since the autolysate tumors are not distinguished in any way from spontaneous tumors, and occur in percentages no higher than those for spontaneous tumors.

7299. **HERRMANN, FRANZ. Harnsäureuntersuchungen bei Psoriasis.** *Arch. Dermatol. u. Syph.* 161(1): 114-126. 1930.—Different methods of determination of the uric acid content of the blood serum gave varying results. Numerous comparisons showed that the Benedict method is the most suitable provided that the NaCN solution used is freshly prepared each day. A total of 179 individuals were examined. Of 140 patients with psoriasis, 44 showed a serum uric acid of 5 mgm.% or more. Thus in 31.4% of the patients a uric acidemia was found. An increase is observed most frequently in patients with arthritis psoriatica. A considerable percentage of the patients with retention of serum uric acid showed a retarded uric acid elimination in the urine, therefore a lower urine/blood uric acid ratio. In 50% of the cases "Ambard's Constant" for uric acid (Steinitz) was .07 and more. No relationship between psoriatic skin manifestations and the serum concentration of uric acid could be established. The cause of the increased serum uric acid and its relation to psoriasis is unknown. The observation of Scherk that there is a difference in the uric acid content of blood serum and bullae produced by cantharidinum could not be confirmed.—*Author's summary (transl. by J. A. Gammel).*

7300. **HESS, ALFRED F., MILDRED WEINSTOCK, H. RIVKIN, and J. GROSS. The lack of relationship between the development and cure of rickets and the inorganic phosphorus concentration of the blood.** *Jour. Biol. Chem.* 87(1): 37-46. 1930.—Rickets may be associated with normal concentrations of inorganic P in the blood. If milk is incorporated in a standard rickets-producing ration, a peculiar chain of circumstances can be brought about. On the addition of small amounts of irradiated ergosterol, the inorganic P is raised to the normal level without accompanying signs of healing of the rachitic lesion. Animals which receive supplements of cod liver oil do not attain as high a concentration of P but do show definite evidences of healing. Of course, if full doses of irradiated ergosterol are given, prevention or cure can be relied upon. Irradiation may elaborate a factor which increases the inorganic P in the blood, quite apart from any antirachitic action. This paradoxical phenomenon—a rise of inorganic P unaccompanied by a healing of the epiphyses—shows that although rickets usually is associated with a decrease of the inorganic P of the blood, this diminution cannot be regarded as an essential or inherent feature in the pathogenesis or the healing of this disorder. In addition to the systemic disturbance characteristic of rickets, there is probably a local disturbance at the epiphyses which prevents the anchorage of Ca and P in cartilage and bone.—*Authors' summary.*

7301. **HIEGER, IZRAEL. The spectra of cancer-producing tars and oils and of related substances.** *Biochem. Jour.* 24(2): 505-511. 2 pl. 1930.—The fluorescence spectra of many cancer-producing substances show the same bands at wave-lengths 4000, 4180 and 4400 Å. These bands are quite similar to those of the fluorescence spectrum of 1:2-benzanthracene. The absorption spectra in the ultra-violet lend support to the view that there is some connection between the cancer-producing substances and 1:2-benzanthracene.—*E. B. Carmichael.*

7302. **HIRSCHHORN, SIGMUND, und WALTER ROBITSCHEK. Über Hämatoporphyrinausscheidung im Harn bei chronischer Bleivergiftung.** *Zeitschr. Klin. Med.* 106(5/6): 664-670. 1 fig. 1927.—From 3 cases the authors

conclude that in chronic lead-poisoning as in congenital hematoporphyrinuria an increased destruction of erythrocytes furnishes a supply of hemoglobin as mother substance of the hematoporphyrin.

7303. **HORSTERS, HANS.** Studien über den Diabetes mellitus des Menschen. I. Mitteilung. Über den Phosphat-Kohlenhydratstoffwechsel beim Diabetes mellitus (nach experimentellen und klinischen Untersuchungen). *Zeitschr. Ges. Exp. Med.* 66(1/2): 89-128. 1929.—Studies of the carbohydrate-phosphoric acid balance in diabetes mellitus depend on the quantity of insulin. In most instances insulin causes an increase of the CH-PO_4 balance. Often moderately severe and severe diabetics which show a negative K-H-PO_4 balance without insulin become positive on insulin and in proportion to the quantity of insulin up to a certain optimum which varies for every patient. Insulin can activate the utilization of the carbohydrates through the activation of phosphates.—*H. Horsters (transl. by H. J. John).*

7304. **HORSTERS, HANS, und HEINRICH BRUGSCH.** Insulinstudien. III. Mitteilung. Über den Insulingehalt menschlicher Organe beim Diabetes mellitus. *Zeitschr. Ges. Exp. Med.* 66(1/2): 143-156. 7 fig. 1929.—In diabetic patients who died from various causes, one finds (also in coma, diabetic coma) in the organs a relatively large quantity of insulin. Insulin deficiency alone cannot be the cause of diabetes. There must be in a diabetic a faulty distribution of insulin; the insulin in diabetes does not reach its necessary physiological substratum to enable it to act.—*H. Horsters (transl. by H. J. John).*

7305. **ICHIMI, TAKEO.** Über Adrenalinempfindlichkeit des Blutdrucks und des Blutzuckerspiegels bei Hypertonikern. *Tohoku Jour. Exp. Med.* 13(5/6): 405-423. 6 fig. 1929.—The author refers to the accumulated evidence demonstrating the sensitivity of the blood pressure in hypertensives as compared to normal individuals, and to the absence of information respecting the effect of small doses of adrenalin on the blood sugar in hypertensives. His investigations lead to the following conclusions. In benign hypertension there is a slightly increased adrenalin sensitivity, very seldom inverse; with malignant hypertension it is also increased. In secondary renal atrophy a preliminary lowering of blood pressure is followed by a rise. In uremia the adrenal sensitivity is diminished sometimes below the normal. The blood sugar in general is increased in hypertensives, especially in those that have azotemia. Intravenous injection of minimal adrenalin doses yields blood pressure fluctuations in hypertensives of all forms that can not be considered typical.—*W. F. Jacobs.*

7306. **ITO, WASHIMI, ICHIYA SEKI, und FUSAKICHI NAKAZAWA.** Studien über den kolloid-osmotischen Druck des Bluts bei normalen und pathologischen Zuständen. I. Kolloid-osmotischer Druck des Bluts bei Lungentuberkulose. *Tohoku Jour. Exp. Med.* 14(2/3): 254-264. 1929.—The author prefaces his study by citing the established evidence that in tuberculosis there is an increased rapidity in the sedimentation reaction of the blood while the manner in which this occurs is not clear. The normal colloidal osmotic pressure was found to range between 40.5 and 49.5 with an average of 46.5. In 1 series of moderately advanced tuberculosis the range was 48.1 to 40.1 with an average of 42.9. In a 2nd series the range was 39.9 to 30.6 with an average of 37.6. Summarizing the study of normal Japanese, the average colloidal osmotic pressure was 385 mm. of water pressure and about 46.2 per 1% serum albumin. In moderate tuberculosis normal values were approximated. In severe tuberculosis reduction to 301 mm. of water with colloidal osmotic pressure mm. per 1% serum albumin, 40-30.—*Wm. F. Jacobs.*

7307. **JACOBY, M.** Betrachtungen über Proteolyse und Carcinom. *Zeitschr. Krebsforsch.* 32(1/2): 107-109. 1930.—Jacoby points out that by the application of recent methods to the study of proteolysis in cancer,—the recognition that between a complex protein and its final cleavage into amino-acids there intervene a whole series of separate enzyme actions,—it should be possible to add greatly to our knowledge not only of the ferments of cancer, but of its nature as well by the qualitative and quantitative study of the ferments themselves, and of known ferments acting on cancerous tissue as a substrate.—*H. E. Eggers.*

7308. **JACQUEMART, L., et CH. PFEIFFER.** Tréponème et Néoplasmes. 165p. N. Maloine: Paris, 1927. Pr. 15 fr.—The authors maintain on purely clinical and speculative grounds, with no experimental evidence other than observations of Carrel, Gye, and others, which they reinterpret as supporting their conclusions, that:—All tumors, cancerous or non-cancerous, benign or malignant, are due, in man, to syphilis. Human cancers are quaternary syphilides. Early syphilis does not give rise to cancer. The older the syphilis, the more cancerogenic it becomes. Early syphilis is the manifestation of the visible, non-sporulated *Treponema*, susceptible to the action of treponemicides. Old and heredo-syphilis are the manifestations of an invisible, sporulated *Treponema*, (of the type of an infra-virus or ultramicroscopic virus), not susceptible to treponemicides. The cancer cell is a product of syphilis. The sporulated *Treponema* infects this cell and causes repeated mitoses, to the point of producing a neoplasm. Syphilis explains cancer families and cancer centers in villages and houses, as well as cancer epidemics. Peoples free from syphilis suffer little or not at all from cancer. The war on cancer therefore resolves itself into a war on syphilis. Tumors of the lower animals are due to infra-viruses, invisible forms of common and visible parasites. Plant tumors are parasitic tumors.—*R. C. Whitman.*

7309. **JEZLER, ADOLF.** Beitrag zur funktionellen Leberdiagnostik. *Zeitschr. Klin. Med.* 111(1): 48-70. 13 fig. 1929.—A review of methods of liver function tests for diagnostic purposes. The author gives several tables of his own results, using the best known methods. The qualitative diazo test, accompanied by a quantitative bilirubin estimation, indicates parenchymatous disorder if the bilirubin is not above 425 mgm. %. The bilirubin excretion value is a simple test for diffuse parenchymatous damages of the liver. Tetrachlorphenolphthalein adds nothing to the value of methods in diagnosis of disorders of liver function. Galactose tolerance tests are of value in differentiating between mechanical and parenchymatous malfunctions of the liver. The changes in reducing power of the blood should be considered as well as the secretion of galactose in the urine. Takata's flocculation reaction is always positive in decompensated cirrhosis of the liver with ascites. It is not known that this test is specific.—*D. R. McCullagh.*

7310. **JOLTRAIN, E., T. KÉVÉSZ, et R. WOLFF.** Cancer et troubles du métabolisme des sucres. *Bull. Assoc. Française Étude Cancer [Paris]* 17(3): 125-138. 3 fig. 1928.—In normal subjects a known quantity of sugar absorbed induces, during the following hours, a marked elevation of the respiratory quotient. From 0.700-0.900 before ingestion, for instance, the quotient rises to 0.960-1.04 after ingestion; ordinarily the highest value is reached at the end of 2 hrs. This shows that the R. Q. of normal persons increases by 15-20%. The same is true of most patients examined. After ingestion of sugar the R. Q. increases in about the same proportion as in normal individuals. An analogous increase was even seen in patients with cachexia with considerable emaciation and in very poor general condition. However, in patients suffering from cancer at whatever point, the R. Q. increases only slightly, or not at all, after sugar ingestion. The greatest increase did not exceed 12%, while it is 16% in normal persons and those suffering from other ailments. This marked difference in changes of R. Q. in normal and other pathologic conditions as compared with cancerous patients is most manifest in the curves we have assembled. These new results show that the cancer patients do not burn their sugar as do normal individuals or those suffering from other diseases. This is another incontestable proof of some disturbance in the sugar metabolism in cancer.—*Authors' conclusions (transl. by B. Bickel).*

7311. **KIRITA, KENZABURO. Experimental studies in gall-stone formation. 4. A contribution to the knowledge of the etiology of gall-stone formation. 1. Studies on the influence of the functions of the autonomic nervous system on gall-stone formation.** *Japanese Jour. Gastroenterol.* 2(1): 41-54. 1930.—Previous work by Ohta dealt in the main with the quantitative estimation of some inorganic constituents in bile and not the changes in the reaction of bile. The present work investigated the H-ion concentration, cholesterol content, surface tension, viscosity and specific gravity of rabbit's liver bile, when autonomic nerve poisons were given, or when a portion of the autonomic nervous system was mechanically stimulated. Stimulation of the parasympathetic nervous system was studied by injecting pilocarpine hydrochloride, electrically stimulating the vagus, and by section of the major splanchnic nerve. The sympathetic system was stimulated by injecting adrenalin hydrochloride and atropine sulphate, electric stimulation of the splanchnic ganglion and by section of the vagus. In the latter series the pH of the bile tends to decrease, while in the former it increases, suggesting an intimate relationship between the function of the autonomic nervous system and the formation of gall-stones. The cholesterol content, specific gravity and viscosity of bile were changed, suggesting that when the parasympathetic system is excited, bile is concentrated, affording strong evidence of intimate relationship between the function of the autonomic nervous system and gall-stone formation. Increased concentration and total quantity of cholesterol in the bile seem especially important as a factor in lithogenesis. The surface tension of bile changed, but its relation to stones is not clear.—*B. C. Russum.*

7312. **KLAUDER, JOSEPH V., and HERMAN BROWN. Experimental studies in eczema. V. Studies of the potassium, total and diffusible calcium ratios in the blood of patients with diseases of the skin.** *Arch. Dermatol. & Syphilol.* 22(5): 877-892. 1930.—Eleven determinations were made of the K-Ca ratio in 8 normal persons. The total serum Ca ranged from 9.5 to 12.8 and the K from 19.1 to 24. The K-Ca ratio was within a normal range, 1.72-2.08. A total of 120 determinations of total serum K and total serum Ca and diffusible Ca was made in patients with different diseases of the skin. From these data the percentage diffusible Ca of total Ca, the K-Ca ratio and the K-diffusible Ca ratio were calculated. In 107 patients with 24 different diseases of the skin the K-Ca ratio was within normal limits in 78 patients, and an abnormal ratio ranging from 2.11 to 2.46 was observed in 29 patients with 11 different diseases of the skin. The following figures were regarded as within normal limits: total serum Ca, 9-11; total serum K, 18-20; percentage of diffusible Ca of total Ca, from 45-55%; K-Ca ratio up to 2.10; K-diffusible Ca ratio, from 3.50-4.50. There was no disease of the skin in which the K-Ca ratio was uniformly altered in all patients.

7313. **KRABBE, KNUD H., et OLINE CHRISTENSEN. Recherches des helminthes dans la sclérose en plaques.** *Acta Psychiatr. et Neurol.* 5(4): 509-514. 1930.—Negative findings in the feces in 19 cases.

7314. **KYLIN, ESKIL. Studien über den kolloidosmotischen Druck. VII. Über den kolloidosmotischen Druck des Blutserums bei Diabetikern, besonders während der Insulinbehandlung. VIII. Der kolloidosmotische Druck des Blutserums bei Morbus Basedowi und Myxöden.** *Zeitschr. Ges. Exp. Med.* 72(5/6): 650-658. 5 fig.; 659-665. 1930.—VII. The values for the colloid-osmotic pressure of the blood-serum in 20 diabetics lay in general within the normal, but frequently on the upper border. The average pressure for the 20 was in general 19 mm. H_2O higher than those found in normal cases. During insulin treatment of the diabetics the colloid-osmotic pressure sank distinctly, and (with one exception) an accumulation of water became, a little later than the fall in pressure, a clinically recognizable edema. Kylin presents reasons against the theory that insulin edema is produced by fall in colloid-osmotic pressure.—VIII. The colloid-osmotic pressure in 15 cases of Basedow's disease was often (and especially in the most refractory cases) subnormal, the average for the 15 being near the lowest normal value. During improvement of 3 Basedow cases under x-ray treatment the colloid-osmotic pressure rose to normal. In both of 2 untreated cases of myxedema the colloid-osmotic pressure was high, in 1 case about on the upper limit of the normal, in the other far above. Under thyroid treatment the pressure in both cases sank decidedly, indicating a reducing effect by the thyroid hormone on the colloid-osmotic pressure.

7315. **LAKHOVSKY, GEORGES. À propos de la théorie étiologique du cancer basée sur la nature biologique du sol.** *Rev. Gén. Sci. Pures et Appl.* 39(12): 357-362. 1928.—Cancer preferentially develops in districts where the soil is clay or alluvial, rather than those where the soil is sand or sandstone. Soil is the underlying cause of cancer while injury may be the accidental cause. The cosmic rays are absorbed to a depth of 100 meters. In soils such as sandstone they are reduced to ½ of their amplitude at a depth of 80 meters. Conflicting theories are discussed.—*Z. E. Taylor.*

7316. **LEITES, S., und D. EBITSCH. Zur Charakteristik der Stickstoffwechseldynamik bei Tuberkulosekranken.** *Beitr. Klin. Tuberk.* 75(5/6): 662-675. 1930.—As a stimulus peptone was fed and the curve of the residual N in the blood and the N of the urine served as the index of reaction. In all, 63 determinations after feeding 43 patients and 7 determinations after feeding clinically healthy subjects, were made. The following types of reactions were noted in tuberculous patients: (a) Direct reaction: elevation of the residual N of the blood; N of the urine unchanged or elevated. (b) Inverse reaction: residual N reduced; N of the urine either unchanged or diminished. (c) Torpid reaction: only slight changes in the residual N of the blood. (d) Mixed reaction: periods of elevation and diminution of the N of the blood. The inverse reaction of the blood, coupled with a clear-cut, direct reaction in the urine are modifications of a direct reaction, obviously modified by the function of the kidney. The designated types of azotemia and azoturia permit the setting up of 3 main types in the reaction of N metabolism in tuberculous patients, namely: normal, hyper and hypo reactions. The normal reactions run parallel with the compensatory phases, the hypo and hyper reactions constituting the decompensatory phases. Rich nitrogenous diets bring the hypo reactions nearer the normal; the decrease of protein in the diet bringing the hyper reactions nearer the normal. Obviously the character of the azotemia and azoturia depends on the N reserve of the organism.—*W. W. Herrmann.*

7317. **LENNOX, WILLIAM G., and MARGARET B. ALLEN. Studies in epilepsy. XI. The calcium content of the blood and of the spinal fluid.** *Arch. Neurol. & Psych.* 24(6): 1199-1205. 1930.—Measurements of serum and spinal fluid Ca were made in 77 unselected patients who were subject to recurring convulsions. Average concentrations and average spinal fluid-serum ratios were within normal limits. As compared with measurements in non-epileptic patients there was an abnormally wide distribution of values, with a special tendency toward low spinal fluid measurements. In ⅛ of the patients the ratio of spinal fluid to serum Ca was less than 45%. Only 1 of the patients had clinical tetany.—*Authors' summary.*

7318. **LICKINT, FRITZ. Über den Gehalt des Serums an stickstoffhaltigen Bestandteilen und Kochsalz bei der Prostatahypertrophie zugleich unter Betrachtung der Funktion der hydronephrotischen Schrumpfniere.** *Deutsches Arch. Klin. Med.* 163(1/2): 51-64. 1929.—Conclusions are drawn from 150 cases, for a part of which detailed urinary analyses are tabulated. The concentrating capacity of the kidneys ordinarily suffers before their capacity to excrete N compounds. This latter capacity is impaired, not uniformly, but chiefly for uric

acid and urea, and least for creatinine. From this difference in the excretion capacity it is concluded that the various N compounds are secreted from different localities: the creatinine, which suffers least retention, from the glomeruli, on which the urinary engorgement inflicts least damage; the other urinary constituents from the more seriously injured tubuli.

7319. **LUISADA, A. Ipertensione encefalica ed edema polmonare sperimentale di natura riflessa. [Encephalic hypertension and experimental reflex edema of lung.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 528-530. 1930.—In dog and cat the experimental increase of encephalic pressure was accompanied by edema of lungs. The author suggests that edema was produced by nervous reflexes increasing the permeability of the lung vessels.—*M. Comel.*

7320. **McCLINTOCK, JOHN T., and HARRY M. HINES. Occurrence of a toxic proteose fraction in material from various sources.** *Arch. Surg.* 21(5): 860-864. 1930.—A toxic proteose fraction was isolated from normal intestine, obstructed small and large intestine, intestine of animals with obstruction of the portal vein and liver and from tissue allowed to undergo anaerobic autolysis in the presence of intestinal flora. The presence of this fraction was determined by the symptoms, changes in the blood and pathologic processes produced by its injection into dogs. It is suggested that the presence of this toxic material in various pathologic conditions should be regarded as indicating increased amounts of a material normally present rather than the elaboration of a new and specific substance.—*Authors' summary.*

7321. **MAGAT, J. Phosphatidhaushalt der Krebszelle und des Krebsgewebes. Histochemische Untersuchung des Ehrlichschen Adenocarcinoms.** *Zeitschr. Krebsforsch.* 31(6): 557-564. 1 fig. 1930.—Magat finds that the injection of a stable emulsion of lecithin into tumor animals is followed by the storage of phosphatids in the spleen and in the cancerous tissues, regardless of whether these are living or necrotic. Storage in other sites may take place,—there is evidence for its accumulation in the red cells,—but in a dispersed state which does not lend itself to ocular observation, as is the case with the first-named tissues. It appears that spleen and tumor tissue have an elective affinity for phosphatids, without having the power to effect their intracellular dispersion. Apparently the altered relations of lecithin and cholesterol so usually shown by tumor tissues are to be explained by this phenomenon, as well as their altered physico-chemical properties,—in natural conditions with the phosphatids coming in part from cellular decomposition, in part from the accumulation without dispersion of endogenous phosphatids. Magat suggests the possibility of these substances being used as carriers to tumor tissue of active therapeutic agents.—*H. E. Eggers.*

7322. **MARINO, S. Contributo allo studio delle variazioni quantitative dei lipoidi e dei loro rapporti nel sangue delle anemie sperimentali e cliniche. [The quantitative variations of the lipoids and their ratio in the blood in experimental and clinical anemia.]** *Policlinico [Sez. Med.]* 37(11): 541-556; (12): 566-591. 1930.—Studies on the cholesterol, fatty acids and lipid P in 9 dogs (4 subjected to anemia from repeated bleedings and 5 to anemia by toxic hemolysis) and 18 cases of clinical anemia, showed important variations in the blood lipids and their ratio, but no such significant relation between the total cholesterol: phosphatid ratio and the degree or kind of anemia as some authors believe they have found.

7323. **MENON, T. BHASKARA. Some pathological aspects of chronic appendicitis. III. The histological diagnosis of chronic appendicitis.** *Indian Jour. Med. Res. Calcutta* 16(4): 1019-1022. 1929.—Marked fibrosis, thickening and eosinophilic infiltration of submucosa, fibrosis and cellular infiltration of muscularis, together or even singly, are diagnostic in the microscopical determination of chronic appendicitis.—*I. Davidsohn.*

7324. **MERTENS, V. E. Über zwei bisher unbekannte Stoffe im Blut und ihre Beziehungen zum Krebs.** *Arch. Klin. Chir.* 162(Kongressbericht): 341-344. 1930.—The 1st substance, which Mertens calls "pathodyne," is a neutral yellowish-white powder obtained in carcinomatous or sarcomatous tissue. Administered to white mice, it does not act for 2 hrs. or so; then it produces typical convulsions in which the animal lies prone, its eyes closed, its whole body twisting while the paws are raised first on one side and then the other; the agitation increases, the animal rolls and leaps and sometimes goes into opisthotonos, while the temp. falls to about 21°. After about 12 hrs. the animal may either recover or die, having first lain motionless for a long time. The other substance, which Mertens calls "normodyne," is obtained from healthy human blood; it produces in mice convulsive movements and death inside of 5 min.

7325. **MERTENS, V. E. Zigarettenrauch eine Ursache des Lungenkrebses? (Eine Anregung.)** *Zeitschr. Krebsforsch.* 32(1/2): 82-91. 4 fig. 1930.—Mice kept in an atmosphere of cigarette smoke showed 2 cases of bronchial adenocarcinoma, out of 125 animals with which the experiment was started. Only one of these certainly originated during the experiment, and the writer leaves a causal relationship open to question. The animals in general showed various degrees of acute inflammation of the trachea, bronchi and lungs. M. records changes observed in the spleen, skin and intestine. The animals bore no young, but the cause of this was not determined. —*H. E. Eggers.*

7326. **METZLER, F. Experimentelles zum Wundschock.** *Deutsche Zeitschr. Chir.* 228(6): 340-348. 1930. —Experiments (number of animals not stated) involving either laceration of muscle tissue or ligation of extremities for variable lengths of time, using the method of H. Pfeiffer for the determination of peptidase content in the organism, demonstrated that as cause for traumatic shock both a protein decomposition poisoning and a nervous component are operative. Careful avoidance of traumatic shock is essential in operations. This is made possible by operations which spare the tissues and by putting injured regions at rest; to influence the nervous components, by elimination of pain and the use of modern methods of narcocsis, as avertin with nitrous oxide.—*Author's summary (transl. H. M. Zimmerman).*

7327. **MONTEIRO, HERNÂNI. Simpático e vasômotricidade. [The sympathetic and vasomotor action.]** *Portugal Méd.* 1930(4): (3-26). 8 fig. 1930.—The writer studied the rôle of the sympathetic nervous system in vaso-motor phenomena, calling attention to facts which explain various therapeutic effects encountered by surgeons. He describes some anomalies of the cervical sympathetic of surgical importance and has noted the effects of cervical sympathectomies (in dogs and rabbits) on vaso-motor phenomena, temperature, leucocytosis, and the cicatrization of experimental wounds.—*H. Monteiro (transl. by N. D. C. Lewis).*

7328. **NAKAHARA, WARO, and EIICHI SOMEKAWA. Vitamins and tumor growth. IV. On the vitamin B consumption by growing rat tumor.** *Proc. Imp. Acad. [Tokyo]* 6(8): 345-347. 1930.—Of 120 albino rats which had been kept a week on a diet of unpolished rice and water, ½ were inoculated with Fujinawa rat sarcoma, and all were then transferred to a diet (horse meat protein 15%, starch 65%, butter 15%, McCollum's salt mixture 5%) deficient in vitamin B. All were killed 2 weeks later, and the vitamin B content of the livers of sarcomatous and healthy rats (dried at 80° C) was assayed by feeding to young albino rats on the above vitamin B-deficient diet. Results showed that the livers of tumor-bearing and healthy rats were not significantly different in the amount of vitamin B reserve. The authors conclude that growing tumors do not consume vitamin B in the body of the host. These results confirm those previously obtained with Rous chicken sarcoma.

7329. **NEAL, M. PINSON, and MAX M. ELLIS. Etiological factor of fat necrosis.** *Southern Med. Jour.* 23(4): 313-320. 5 fig. 1930.—A lipase fraction has been

isolated, by accredited chemical methods, from fresh hog's pancreas, dried pancreatin and the dried seeds of *Arachis*, the peanut, and *Helianthus*, the common sunflower. Each of these lipase fractions produced definite fat necrosis when injected intraperitoneally into white rats. These lipase fractions: (a) Were not thermostabile, and were rendered inactive, in so far as the production of fat necrosis was concerned, by treatment with ethyl alcohol in strengths above 50%. (b) Were water soluble and were not injured by the presence of ether, toluene, or xylol. (c) Were not adsorbed by blood or animal charcoal from either acid or alkaline solutions. (d) Were extracted from both acid and alkaline material. (e) Did not digest fibrin, but were active in splitting ethyl butyrate. Histologic lesions of fat necrosis were found 6 hrs. following injections of the lipase fraction derived from *Arachis*. There was damage to cell walls, cytoplasm, nuclei, and cell fat content. Loss of nuclear material within 6 hrs. after injections showed the critical character of the process. The lesions were demonstrable 8 days after injections of the *Arachis* material. Anatomic lesions were found 16.5 hrs. after injections of the lipase fraction from hog's pancreas. There were no definite clinical manifestations in the animals injected. The assumption of Langerhans that lipase is an etiological factor of fat necrosis has been proved experimentally by the use of lipase fractions derived from animal and vegetable materials.—*From authors' summary.*

7330. **NEUBERG, C., M. KOBEL, und H. LASER. Über den Mechanismus der Zuckerspaltung im Tumor und embryonalem Gewebe.** *Zeitschr. Krebsforsch.* 32(1/2): 92-98. 1930.—By the extraction of rat sarcoma tissue with alcohol and ether or acetone a dried preparation was obtained containing active glycolase. In this procedure the co-ferment is so inactivated or destroyed that in the action of the tumor preparation on hexose-phosphate the methylglyoxyl produced is not utilized, and is accumulated. Some of the methylglyoxyl, however, is affected, or added methylglyoxyl disappears, so that the mode of lactic acid formation in tumors is similar to that of other glycolytic systems. Similar results were obtained with embryonic tissues.—*H. E. Eggers.*

7331. **NOTKIN, J. Basal metabolic rate in untreated and treated patients with epilepsy.** *Arch. Neurol. & Psych.* 24(6): 1231-1237. 1930.—The basal metabolic rate in a group of 50 untreated epileptic patients (29 women and 21 men) was normal in a high percentage in both sexes; Notkin's observations showed a relatively smaller group of patients with a rate below −10 than the reports of some other workers; there is a higher percentage of below −10 readings in the ♀ group than in the ♂ group. No correlation could be established between the chronological age and the basal metabolic rate. The basal metabolic rate in a group of 16 epileptic patients treated with phenobarbital showed a considerable decrease in the percentage of normal readings and a threefold increase of the percentage of readings below −10. He concludes that phenobarbital definitely decreases the basal metabolism. The basal metabolic rate of a group of 26 patients treated with bromide showed no rate above the normal range, a decrease in the percentage within the normal range and an increase in the percentage of the lower readings. A comparative study of basal metabolism in a group of 12 patients before treatment and during the course of treatment with bromide tends to show a decrease, with only a few exceptions. The decrease is marked in some instances.—*Author's summary.*

7332. **NOTO, GAETANO GIOVANNI. Provocazione di aromatemia e aromatumia in dementi precoci mediante ingestione di tirosina. [Color reactions of blood and urine following tyrosin administration in dementia praecox.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 510-514. 1930.—Following administration of tyrosin, Millon's reaction and Buscaino's Ag nitrate reaction were found positive in blood and urine in some cases of dementia praecox, the reactions being given by substances of the phenol group.—*M. Comel.*

7333. **OHTA, RYUICHI. Experimental studies in gall-stone formation. 2. Alkali and alkaline earth and metal content in bile. 3. Effect of abnormal functioning of the vegetative nerve system on alkali and alkaline earth metals contained in bile.** *Japanese Jour. Gastroenterol.* 2(1): 19-40. 1930.—Studies were made on the relations between the quantities of Ca, Na, K, and Mg in bile when the chlorides of these metals are injected into the blood. Bile was collected for 4 hrs. through a biliary fistula and the quantities of the metals excreted determined. It was shown that these metals are excreted by the liver and not by the gallbladder; they are increased in the bile after intravenous injections. The effects of the injection of a chloride of one of these metals on the distribution of the other kinds of alkali and alkaline earth metals in bile was also studied. When NaCl was injected, the content of the metals showed no marked difference from the normal but when the chloride of any other metal was injected, varying increases followed, with changes in the distribution of metals in bile. By raising the concentration of the chloride of one of these metals in the blood, a change was also produced in the distribution of the other metals in the bile. The process is not understood. To properly investigate changes in amounts of substances in bile, observation must be conducted on single animals, since there are marked individual differences in the quantity of hepatic bile excreted by rabbits. The normal concentration of K, Na, Ca, and Mg in bile has the following average ratio: K: Na: Ca: Mg = 6: 180: 6: 1. The hypothesis is advanced that in conjunction with various other conditions that tend to raise concentration of these metals in the blood, the injection of the chloride of one of these metals promotes biliary concretion.—3. To clear up doubt concerning the relation of gall stones to abnormally contracted bile ducts and qualitative changes in bile caused by abnormal functioning of the vegetative nerve system, studies were made on the changes in the quantities of alkali and alkaline earth metals in rabbit's bile after injecting autonomic poisons and applying mechanical stimuli to certain parts of the autonomic nervous system. Animals and methods of securing bile were those described by the author in his Report No. 2 detailing studies of the alkali and alkaline earth metal content in bile. By injecting pilocarpine, electric stimulation of the vagi, and section of the splanchnics, thereby impeding the sympathetic, there were quantitative changes in bile collected from the liver, with increased total content and concentration of Ca and K. Ca showed the most marked change. Injection of pilocarpine hydrochloride increased the total content and concentration of Mg, while with the various stimuli the quantity of Na was unchanged. The content of the metals was not due to condensation of bile. It is concluded that a certain change is produced in each of these metals in the blood when the above-mentioned stimuli are applied; the changes in the quantities of these metals in the bile are secondary. With sympathetic stimulation hepatic bile was decreased, while the metals in the bile tended to decrease in total quantity, and all except Na decreased in concentration. These changes were not due to condensation of bile. Since metals have a precipitative effect on hydrosols of bilirubin and cholesterol it is thought there is an intimate relation between the function of the vegetative nerves and gall-stone formation. The fact that Ca, which has a powerful condensing influence on both hydrosols, was most markedly increased in total content and concentration in bile when the parasympathetic was stimulated, points to augmented function of the vagus as a factor in biliary concretions. It is thought that the lithogenesis is caused by quantitative changes in bile due to stimulated function of the parasympathetic, but not to abnormal contraction of the bile ducts as Westphal thought.—*B. C. Russum.*

7334. **PARTOS, ALEXANDER, und FRANZ SVEC. Regulation des Kohlehydratstoffwechsels. V. Die syner-**

getische Wirkung der Milchsäure auf das Insulin. *Pflüger's Arch. Ges. Physiol.* 222(3): 287-292. 1929.—Human blood corpuscles take up increased amounts of glucose from plasma of rabbits which have received a lactic acid injection. Rabbit blood corpuscles take up no glucose from rabbit plasma or glucose-salt solution, but do so when the plasma comes from a rabbit injected with lactic acid or a glucose-salt solution to which lactic acid has been added. The paradoxic behavior of lactic acid injected simultaneously with insulin (instead of compensation, a more intense hypoglycemia than from injection of insulin alone), previously observed by Partos, is thus explained as due to increase in the capacity of the blood cells to absorb glucose.—*A. Partos (transl. by G. T. Cori).*

7335. **PINNER, MAX, and GEORGINE MOERKE (in collaboration with D. H. SALEY). Pleural effusions. Laboratory findings and clinical correlations.** *Amer. Rev. Tuberc.* 22(2): 121-183. 2 fig. 1930.—Experiments on rabbits show that the normal pleura is highly permeable in either direction for the constituents of the blood. In patients under pneumothorax treatment for pulmonary tuberculosis and with pleural effusions, a marked decrease of the pleural permeability is shown by actual experiments and must be assumed to exist from the results of chemical studies of the blood and the pleural effusion. In 16 such patients, 32 specimens of pleural fluid and blood were examined chemically. The results, more complete than any heretofore reported, are discussed particularly from the standpoint of pleural permeability. Cytological, bacteriological and serological studies on these 32 specimens are reported. Neither chemical, nor cytological, nor serological data afford per se dependable diagnostic or prognostic criteria. The failure of resorption of pleural effusions cannot be explained by their chemical constitution; it must be due to an alteration in the pleural permeability.—*Authors' summary.*

7336. **PITTS, HERMAN C., and HELEN R. JOHNSON. A comparative study of body fluids in cancerous and non-cancerous individuals.** *New England Jour. Med.* 202(9): 415-423. 1930.—The blood serum of cancer patients contains essentially the same amounts of K, Ca and Na and has the same pH as non-cancerous serum, although the pH and K are perhaps a bit higher in the cancer cases. In the blister fluid of cancer patients the Ca and pH are lower and the K and Na higher than in non-cancerous individuals. The Ca of the blister fluid of tuberculosis patients is higher than that of normal or cancer cases. Cancer is not more prevalent in individuals of any one blood type than in any other.—*Authors' summary.*

7337. **POINOT, ANDRÉ. L'anémie scorbutique de la première enfance. [Scorbutic anemia of early infancy.]** 62p. Thesis: Paris, 1927.

7338. **POLAYES, S. H., E. HERSHEY, and M. LEDERER. Postmortem blood chemistry in renal disease.** *Arch. Internal Med.* 46(2): 283-289. 1930.—From a postmortem study of the creatinine and urea contents of blood specimens in 100 cases, the following conclusions may be made: Blood creatinine determinations are often helpful as an aid in determining the status of the renal function during life. The urea values are less helpful. A creatinine content of 4 mgm. or more per 100 cc. of blood obtained post mortem indicates marked creatinine retention during life and therefore severe renal insufficiency.—*Authors' conclusions.*

7339. **PYBUS, F. C., and H. T. FAWNS. The effect of variations in the media on the growth of normal and malignant tissues in vitro.** *Journ. Path. & Bact.* 34(1): 39-44. 1931.—Pregnant serum is shown to have a growth stimulating effect on tissues grown in it. A technique is described whereby the growth promoting properties of tissue extracts, etc., may be compared with each other, and experiments with embryo and testis extracts are cited as examples. Pre-heating the media at 55° C. for ½ hr. favoured the growth of carcinoma but retarded the growth of normal embryonic tissues irrespective of whether complement was added to the media after heating or not. Embryonic heart and kidney were used as the normal tissues and mouse carcinoma (I. C. R. F. No. 63) as the malignant.—*H. T. Fawns.*

7340. **RICCI, ALFREDO. Zolfo e glicemia. [Sulphur and glycemia.]** *Policlinico [Sez. Med.]* 37(12): 561-566. 1930.—In healthy subjects Ricci found 0.07-0.10 cgm. S per liter blood serum; in 4 pulmonary tuberculosis patients (1 with diabetes also), 0.06-0.07 cgm.; in 3 diabetes patients, 0.05-0.08 cgm. Intramuscular injection of 1 mgm. colloidal S slightly increased the blood S; the time of elimination by the kidneys exceeded 24 hrs. In 2 diabetic cases the respiratory quotient and blood sugar were studied after injection of colloidal S; the respiratory quotient (which is regularly lower in the diabetic than in the normal subject) was raised, and the blood sugar was lowered. Ricci concludes that S hastens the combustion by which the blood sugar is consumed.

7341. **RICHTER, L. E. Der ausgestorbene Schornsteinfegerkrebs.** *Zeitschr. Krebsforsch.* 31(6): 565-569. 1930.—Chimney-sweeps' cancer, reported with some frequency in Germany a number of years ago, is now practically non-existent in that country. Richter believes that it resulted from a combination of chemical, mechanical and thermal irritation, and that its disappearance is to be explained solely by the greater cleanliness now observed by chimney-sweeps there. It has not disappeared nearly so completely in England, where it always was more frequent—apparently these facts being due to properties of English coal.—*H. E. Eggers.*

7342. **RIDDLE, MATTHEW C. Pernicious anemia: blood regeneration during early remission.** *Arch. Internal Med.* 46(3): 417-439. 1930.—From evidence collected from a group of 68 patients with pernicious anemia undergoing remission as a result of liver treatment and from a consideration of the theoretical factors that influence blood-regeneration under these circumstances, it appears that the magnitude of the reticulocyte response is governed directly by the dosage of the active principle contained in liver. As the magnitude and the rate of the reticulocyte response are to a certain extent interdependent, the condition of the bone-marrow apparently influences indirectly the rate of the response, and the dosage of liver used influences indirectly the magnitude of the response. The percentage of reticulocytes expected, on the average, at the peak of the reticulocyte response can be formulated in terms of the concentration of erythrocytes before treatment. The equation $R = 0.73 - 0.2E_0/0.73 + 0.8E_0$ which represents this relationship can be used in determining the efficiency of treatment and in testing the potency of extracts of unknown value. For 4 patients whose collected data were satisfactory for mathematical analysis, the blood regeneration was formulated according to an equation used by Robertson to express a general law of biologic growth and regeneration. When the rate at which the reticulocytes in the blood of these patients were transformed into mature erythrocytes was estimated by this equation, the curve representing the concentration of reticulocytes during the reticulocyte response could be duplicated mathematically. It was estimated in these patients 2 days were required for the differentiation of reticulocytes in the blood into mature erythrocytes. In 2 other patients in whom the stimulus to regeneration of blood was less intense, it was estimated that between 3 and 4 days were required for the maturation of reticulocytes in the blood to their mature form. A correlation of the relative maturity of the reticulocyte with the amount of reticular material it contained showed that, under the circumstances present, reticulocytes containing small amounts of reticular material disappeared during the following day. When the amount of reticular substance in a reticulocyte was used as a standard for estimating its degree of maturity, it was found that during the early part of the reticulocyte response reticulocytes were liberated in an earlier stage of development than toward the end of the re-

sponse. The rate at which reticulocytes are liberated from the bone-marrow into the blood appears to be a factor of importance which influences the rate and magnitude and velocity of the reticulocyte response. The rate of the liberation of the reticulocytes into the blood seems to be proportional to the rate at which they are formed from the more primitive red blood cells within the bone-marrow and to the numbers of reticulocytes being formed there. An increase of a million red blood cells per cubic millimeter of blood is accompanied by an excretion of approximately 10 gm. of endogenous uric acid in patients with pernicious anemia during early remission.—*Author's summary.*

7343. **RIECKER, HERMAN H., with the technical assistance of MARY E. WINTERS. Iron metabolism in pernicious and in secondary anemia.** *Arch. Internal Med.* 46(3): 458-469. 1930.—It had already been known that a partly diffusible Fe compound present in blood serum is increased in hemolytic diseases of the blood and decreased in the presence of long-continued hemorrhage or a dietary deficiency of Fe. In 19 cases of pernicious anemia the level of the serum Fe usually was higher than normal but became normal during remissions in the disease. A remission in pernicious anemia was accompanied by an increase in excretion over the intake of Fe, as determined by analyses of stool and urine. In 20 cases of secondary anemia, as marked Fe starvation was rarely found as in experimental hemorrhage in animals on a diet low in Fe.

7344. **RIEDER, W. Die Bakterienausscheidung der Niere infolge Gefässschädigung und ihre Beziehung zum vegetativen Nervensystem.** *Arch. Klin. Chir.* 162(Kongressbericht): 695-700. 1930.—It had previously been shown by Müller and Petersen that organs and tissues are receptive to infections during vascular contractions of vegetative origin, as in fever, ague and chilling. To test this theory by interruption of the autonomic nervous supply, Rieder and Müller denervated one kidney in animals (kind and number not stated), the kidney being chosen as a bilateral organ which could be left normal on one (control) side. A bacterial suspension was instilled into the femoral vein by the drop method for 18-24 hrs. about 14 days after the operation. Urine and blood were repeatedly examined. The urine remained sterile for 40-60 min. after the production of bacteremia. At length, after contraction of the cutaneous and renal vessels, albumin, blood and bacteria appeared in the urine on the normal side, while water secretion was decreased. On the operated side the urine remained sterile, clear and free from blood and albumin up to the 17th hr., and the water secretion was unchanged, though urea and creatinine were excreted much more abundantly than on the unoperated side. In some cases, isolated bacteria and a little blood and albumin appeared in the urine on the denervated side toward the 24th hour. If the animals were chilled by ice packs, albumin, blood and bacteria appeared immediately (instead of after 40-60 min.) in the urine from the unoperated side, while on the denervated side the urine remained normal. Rieder concludes that, contrary to accepted views, organs with a vegetative nervous supply are especially receptive, so long as they are in vascular contraction, toward bacteria circulating in the system, the local cell activity being damaged and rendered less resistant by O insufficiency induced by the vascular contractions. This throws light on the origin of acute hemorrhagic nephritis and on the connection between chill and infection.

7345. **RIEHM, W. Experimentelle Übertragung eines lokalen Überempfindlichkeitszustandes von einem paarig angelegten Organ auf das andere, zugleich ein Beitrag zur Genese der sympathischen Ophthalmie.** *Deutsche Med. Wochenschr.* 55(22): 907-910. 1929.—Injection of horse serum in the eye of the rabbit shows that from an immunological standpoint there are various layers in the organism, each susceptible to individual immunization. This newly discovered phenomenon of anaphylaxis explains the origin of sympathetic ophthalmia, which causes in both uveae an "elective tissue sensibility" to either bacterial antigen or to decomposed sarcoma tissues. The same phenomenon no doubt also plays a rôle in tuberculosis and accounts here for the predominating presence of a definite tissue. (Tuberculosis of skin, bones, iris and kidneys.)—*W. Riehm (transl.).*

7346. **ROCCHI, F. Le alterazioni chimiche della saliva parotidea nella parotite epidemica. [Chemical changes in the parotid saliva in epidemic parotitis.]** *Policlinico [Sez. Med.]* 37(11): 509-532. 1930.—In 12 cases of epidemic parotitis the Ca and Cl content of the parotid saliva rose up to the 13th or 15th day, then gradually fell, reaching normal level on about the 27th-30th day from the onset of the disease. The HCNS and the amylolytic power underwent no appreciable changes.

7347. **ROHRBÖCK, FRANZ von, und JOSEF ISTVÁNCSICS. Untersuchungen zum Studium des Zusammenhanges zwischen Blut- bzw. Plasma-Chlor und Magensekretion bei pathologischen Verhältnissen im Kindesalter.** *Jahrb. Kinderheilk.* 119(1/2): 90-99. 1928.—Studies were made on 7 cases of hypo-acid and normal and 10 of hyper-acid gastric content. The conclusions are: Contrary to the findings in adults and infants, the findings of simultaneous determinations of gastric secretions and plasma chlorides in childhood do not run parallel. The cause lies in the fact that the pathologic conditions found in the stomach in childhood are rarely severe. For the determination and recognition of changes in the stomach during childhood, since only orienting values are necessary, the ordinary test breakfast is simplest.—*Author's summary (transl. by W. W. Herrmann).*

7348. **SALOMON, M., et F. de POTTER. La cholestérinémie de la grossesse chex les femmes tuberculeuses.** *Ann. Méd.* 19(6): 587-608. 1926.—In pulmonary tuberculosis cholesterolemia undergoes changes in accordance with the development of the disease. Almost always hypocholesterolemia is seen with great fluctuation of temperature in severe cases rather in accordance with the activity than with the extent, of the lesions. In tuberculous women cholesterolemia shows variations depending on the form of tuberculosis, during pregnancy and after confinement. In inactive tuberculosis changes, such as are seen in the course of normal pregnancy and confinement, are encountered. In active tuberculosis, on the other hand, only slight hypercholesterolemia is seen during pregnancy, with marked and persistent decrease of the cholesterol index after confinement. The amount of cholesterol in the blood may afford an interesting indication for the prognosis of tuberculous pregnant or paturient women. Comparison of allergic reactions and arterial tension with blood cholesterol in pregnant tuberculous women and other tuberculous patients shows that there is no interrelation between cholesterolemia, allergy to tuberculine and arterial blood-pressure.—*Authors' conclusions (transl. by B. Bickel).*

7349. **SCHNEIDER, HERM. Über das Vorkommen und über die Bedeutung von Gewebsgiften bei Shockzuständen des Menschen.** *Arch. Klin. Chir.* 162(Kongressbericht): 561-563. 1930.—The resemblance between histamine shock and traumatic shock has suggested that human traumatic shock may be caused by the presence of histamine or histamine-like substances in the general circulation. Taking the blood-pressure-lowering property of histamine as its most salient characteristic, Schneider sought to determine pharmacologically the presence or absence of histamine in 37 cases (including 23 of traumatic shock, the remainder being burns, postoperative collapse and isolated tissue injuries). He found no trace of any blood-pressure-lowering substance, but in all cases intestine stimulating substances in a concentration which would correspond to a single injection of 12-15 mgm. histamine for the given individual appearing 2-4 hrs. after trauma, reaching its height generally in 12-20 hrs., and disappearing after recovery. Schneider concludes that histamine cannot be the cause of traumatic shock,

but that the connection of the intestine-stimulating constituent of the blood with tissue breakdown is indubitable.

7350. **SCHOTTMULLER, H. Beziehungen zwischen Leber und Blutkrankheiten. [The relationship between liver and diseases of the blood.]** *II Verhandl. Ges. Verdauungs- u. Stoffwechselkrankh.* 1928(1929): 96-114. 1928(1929).—A review.

7351. **SILVA-MELLO, A. da. Autochthone Wasserbildung im Körper bei Myxödem.** *Wien. Arch. Inn. Med.* 15(1): 183-194. 1928.—In a typical case of myxedema in an adult thyroid therapy yielded intense effects upon water metabolism in the beginning. This resulted in excessive diuresis with corresponding loss of body weight. Thyroid therapy was particularly effective in the presence of the myxedematous changes even if the doses applied were rather small. The effect of thyroid was altogether different after disappearance of the infiltration. In this stage there is a disturbance of the water metabolism which may be influenced by thyroid but cannot be completely relieved. This disturbance consists in an autochthonous production of water within the tissues, similar to that previously described by the author in genuine nephrosis.—*Author's summary (transl. by M. A. Goldzicher).*

7352. **[SLONIM, M. I.]** СЛОНИМ, М. И. К вопросу о взаимоотношении между сифилисом и пернициозной анемией. **[The relation between syphilis and pernicious anemia.]** [French resumé.] Труды Средне-Азиатского Государственного Университета, Сер. IX. Мед. (*Acta Univ. Asiae Mediae, Ser. IX. Med.*) *No.* 10: 1-5. 1928.

7353. **STEINBACH, M. MAXIM, ALFRED F. HESS, and MILDRED WEINSTOCK. The effect of ultraviolet irradiation on tuberculous peritonitis in guinea pigs.** *Amer. Rev. Tuberc.* 22(1): 35-47. 1930.—The varying therapeutic results of others led the authors to undertake an experimental investigation of ultraviolet therapy in experimentally induced tuberculosis. The procedure consisted of intraäbdominal inoculation into guinea pigs of avirulent tubercle bacilli. One group of animals, 16, received an avirulent strain of tubercle bacilli intraperitoneally, and general irradiation at a distance of 2 feet for ½ hr. every other day. Autopsy found these treated animals with more extensive tuberculous disease, macroscopically and microscopically, than the controls. A second group, 22, was inoculated with 0.01 mgm. of tubercle bacilli; all the animals in this group were treated locally on the shaved abdomen, 10 exposures in all. Subsequently they were given general irradiation. At autopsy the treated animals were found uniformly to have more diffuse lesions than the controls. Because of the poor results obtained in the first 2 experiments, the authors thought that the infecting dose might still be too large, or that the time interval between infection and treatment was too long, or that the animals were very susceptible to tuberculous infection, although they used an avirulent strain not considered highly pathogenic for guinea pigs. With a smaller dose, 0.001 mgm., treatment was begun on the 2nd day after infection. All the animals were also immunized with dead Rl bacilli subcutaneously. By this last procedure they hoped to hold the infection more or less in situ. The guinea pigs (18) were inoculated intraperitoneally; 9 were irradiated, and 9 served as controls. The 9 treated animals once more showed more extensive disease than did those not exposed to ultraviolet rays.—*Authors' summary.*

7354. **STEWART, HAROLD J., and NORMAN S. MOORE. The number of formed elements in the urinary sediment of patients suffering from heart disease, with particular reference to the state of heart failure.** *Jour. Clin. Investigation* 9(3): 409-421. 1930.—From study of 30 cases it appears that the number of casts found in 12 hrs. is usually increased in patients suffering from cardiac disease. If averages are considered, the greatest numbers were passed by patients suffering from heart failure of the congestive type; the numbers were fewer after recovery and fewer still in those who had never suffered from this illness. Granular casts were frequently found. The number of red blood cells in the urine of patients who had experienced cardiac decompensation was frequently greater than the highest normal value, but within the limits in those who had never suffered from heart failure. The average number of red blood cells found in cases which had never experienced heart failure was twice as great as in normal individuals; in those who were suffering from heart failure or had recovered from it, however, the average number was 10-15 times the normal. The number of white blood cells was normal in the urine of patients who had not suffered from heart failure, but the average number was approximately twice the average observed in normal individuals. The number was usually within the normal range both during and after recovery from cardiac decompensation; the average numbers, however, were greater approximately 9 and 3 times respectively than in normal individuals, the average being less in patients without heart failure than in those who had recently recovered from it and less than in those who were still suffering.—*Authors' summary.*

7355. **STIMSON, CHENEY M., and HAROLD W. JONES. The erythrocyte sedimentation test in gynecology.** *Amer. Jour. Obstetr. & Gynecol.* 17(7): 81-93. 1 fig. 1929.—Following a concise review of the literature the authors give their observations. They used the Cutler method as it shows not only the distance of settling in a given time but also, the equally important, manner of sedimentation (in 4 types). In early abortion, the frequent acceleration of sedimentation and temperature elevation with associated sapremia made the determination of definite infection questionable unless there was leucocytosis also. In pelvic inflammatory disease "sedimentation will indicate the exact time when operation may be undertaken with the minimum of risk," the temperature and leucocyte count to the contrary in some instances. The incidence of complications was indicated by the test in cases of myoma, pelvic relaxation and displacement, and ovarian cyst. Sedimentation in cancer was increased in all but early, superficial growths,—"the further advanced the malignant process, the more marked the sedimentation reaction." Unruptured and early ruptured ectopic pregnancies with slight hemorrhage showed little disturbance of sedimentation; whereas, those with marked bleeding and those with rupture for several days gave marked reactions. Uncomplicated cervicitis gave practically normal sedimentation. The reaction in urological conditions depended upon the extent of the inflammatory process. Attention is called to the fact that lesions in the body distant from the one in question can cause an increased sedimentation rate.—*R. S. Siddall.*

7356. **TAKATA, M., and I. SUZUE. On the relation of physical constitution to tumors of uterus, with special reference to uterine cancer and myoma.** *Japanese Jour. Obstetr. and Gynecol.* 11(1): 51-53. 1928.—Studies were made of 278 patients: 81 cases of carcinoma uteri, 35 cases of myoma uteri, 33 cases of ovarial cyst, 5 cases of papilloma ovarii, 1 case of sarcoma uteri, 3 cases of chorioepithelioma, the rest controls. The following conclusions were drawn: 1) Patients having carcinoma uteri were of strong constitution. 2) Myoma uteri was found in general among women of moderate or relatively weak constitution: adenomyoma uteri (6 cases) appeared among women of more or less strong constitution. 3) Ovarial cyst appears more likely to occur in women of strong constitution. The authors believe there are 2 sorts of ovarial cyst; 1, the simple retention cyst and the other, the genuine tumor. 4) Papilloma ovarii appeared among women of strong constitution. 5) Chorioepithelioma appeared (3 cases) among women of rather weak constitution, but cannot be definitely affirmed as the number of cases examined was so small. 6) Cancer of vagina or ovary appears more likely among women of strong constitution.

7357. **TAYLOR, HOWARD C., Jr. The etiology of neoplasms of the breast, with notes on their relation to other tumors of the reproductive system.** *Arch. Surg.*

21(3): 412-443. 4 fig.; (4): 597-665. 1930.—Taylor's is a more individualized study than Janet Lane-Claypon's massive report on 508 cancer cases and as many controls. He prefaces his study by observing that: It is the ovarian secretion to which the breast cell is specifically responsive throughout life. In many respects a normal response of the parenchyma of the breast to the ovarian secretion differs only slightly from that of certain neoplastic processes. As illustrated by the work of Eugen Albrecht, tumors resemble organs in structure, behavior, and probably origin. Tumors of other parenchymatous organs of the reproductive system have in many cases been shown to be caused by ovarian dysfunction, which, according to evidence now given, also probably causes certain borderline hypertrophies and hyperplasias between physiologic and neoplastic growths. Experimental evidence is cited concerning mammary cancers in animals. It may be highly significant, Taylor suggests, that in mice, tumors, strongly hereditary and affected by oophorectomy, are glandular cancers as in women, while attempts to produce mammary cancers in rabbits by a local irritant resulted only in epithelioma. The parenchyma of the breast has been shown to depend on the sexual cycle for all its normal variations of structure and to be capable of rapid growth and transformations under certain physiologic conditions of ovarian activity. In this respect the breast is similar to the endometrium, the thyroid and certain ovarian structures. Pathologically, the various forms of tumor of the breast have their counterparts in the tumors of the 3 organs mentioned and of the prostate. What clinical observations can be collected from the literature and from this study of 271 cases indicate that etiologically the tumors of the breast, including carcinoma, are closely related to those of the endometrium, thyroid and ovary, are somewhat allied to myomas of the uterus and are in a way equivalent to tumors of the prostate. The tumors of these 5 organs, therefore, form a group, the etiology of whose members shows many points of resemblance. To attempt to relate inflammatory accidents of lactation to cancer of the breast is to classify it etiologically with cancer of the cervix, which on both inductive and deductive grounds appears unjustifiable. It is possible that the contrast afforded by the causes of these 2 common types of new growth may lead to the formulation of a general principle. Such a principle would amend the teaching that cancer results from chronic irritation by adding that the stimulus must as a rule be of the same type as that to which the particular tissue is biologically best adapted to respond with poliferation. Such a conception would appear, superficially at least, to reconcile the conflicting theories of numerous authors, who have formed their opinions of the causes of cancer from the study of the new growths of entirely different tissues. With this view it would be entirely consistent for mechanical or chemical irritants to produce cancerous changes in the protective epithelial cells covering the surface of the body and lining the walls of the intestinal tract, for an infectious agent to induce new growth in lymphoid, myeloid or granulomatous tissue, for trauma to produce tumors by evoking the reparative function of fascial and osteogenic cells and finally for hormonal influences to be effective in producing hypertrophy, hyperplasia and neoplasms in the breast and other organs whose normal growth processes are under endocrine control.

7358. **THOMPSON, A. RALPH. Renal and ureteric stone formation.** *Guy's Hosp. Rept.* 79(2): 173-200. 1929.—Post-mortem records at Guy's Hospital from 1890 to 1909, at the London Hospital for 1909 and 1910, and the Victoria Hospital for Children from 1889 to 1912, totalling 12,888, were read, and among them 2200 cases were found with some urinary interest. Stone, defined as any collection of precipitated mineral matter in the urine, was found in 162 instances, about equally divided between the sexes, more often on the right, and bilateral in ⅓ of the total. Bright's disease is sometimes diagnosed when a stone is present, and may be caused by the stone, occurring more often in males. Bilateral pyonephrosis is more common in females. Stone may form in the urinary tract as the result of some wasting disease. Stone more commonly forms in the kidney pelvis. Compensatory hypertrophy of one kidney, when the other is diseased, is not common. Stones may recur after operative removal. Three tumors were recorded in which stone appeared important as a cause. The travelling stone is serious, especially if it becomes impacted. Local spread of disease of the kidney following on the presence of a stone is very rare.—*B. C. Russum.*

7359. **VOLTERRA, M. Ricerche sperimentali della patogenesi delle leucemie. Riproduzione del quadro leucemieo negli animali con iniezione di ultrafiltrato del sangue leucemico. [Reproduction of the leucemia picture in animals following injection of an ultrafiltrate of leucemic blood.]** *Lo Sperimentale* 84(4): lxx-lxxiii. 1930.—Ultra-filtrates of blood of individuals with myeloid leucemia reproduced a transitory picture of leucemia when injected into white mice or guinea pigs. It is postulated that cause of leucemia is of chemical nature. —*M. L. Menten.*

7360. **WAKEMAN, A. MAURICE, and CLARENCE A. MORRELL. Chemistry and metabolism in experimental yellow fever in Macacus rhesus monkeys. I. Concentration of nonprotein nitrogenous constituents in the blood. II. Nitrogen metabolism.** *Arch. Internal Med.* 46(2): 290-305; (3): 382-401. 1930.—I. Determination of total nonprotein N and the individual nonprotein nitrogenous components (urea, amino-acid, ammonia, uric acid and creatinine) have been made on the blood of [31] normal *Macacus rhesus* monkeys and similar animals with experimentally produced yellow fever. Uric acid, creatinine, rest N and ammonia are not constantly altered, although creatinine and rest N usually rise to a variable extent in the terminal stages of the disease. The constituents chiefly affected are urea and amino-acids. Amino-acid N rises rapidly in the terminal stages of the disease; urea N may rise, but sometimes remains constant or falls. In any case amino-acid increases proportionately far more and urea far less than total nonprotein N, evidence that the power of the liver to deaminize amino-acids and to produce urea is greatly impaired or destroyed. This functional derangement becomes apparent only during the last hrs. of life.—II. Studies of changes in the nonprotein nitrogenous substances in the blood and urine of [5] *rhesus* monkeys suffering from yellow fever are presented. The nonprotein N, amino-acid, urea and rest N of the blood, increase by considerable amounts during the last hrs. of life. Blood creatinine, uric acid and ammonia change little if at all. Amino-acid increases both in absolute amount and in proportion to the nonprotein N, while urea decreases in proportion to nonprotein N. A few cases were found in which there was an absolute decrease in blood urea N. These changes were found to be terminal events. No significant alterations occurred during the early stages of the disease or in monkeys which recovered. There were no marked alterations in the partition of these substances in the urine. The changes in the terminal period are much more pronounced when the accumulation of these substances in the body fluids is considered. Organic acid and P excretion usually increased considerably during the disease. The changes observed were interpreted as resulting from a loss of liver function. No definite evidence of serious impairment of kidney function was observed, except a terminal anuria probably due to extreme reduction of blood pressure.—*Authors' summaries.*

7361. **WIECHMANN, ERNST. Hypertension und Blutzucker.** *Arch. Klin. Med.* 161(1/2): 92-110. 1928.—The author investigated the question as to whether hypertension is more frequent in diabetics than in similar aged individuals with normal metabolism and the blood sugar factor in hypertension compared to that in diabetics. He concludes that there is a close relation between hypertension and diabetes mellitus, that hyper-

tension is more frequent in diabetics than in non diabetics, that the blood sugar condition in hypertension is characteristically like that in diabetics. Hypertensives exhibit the same partition of sugar between plasma and erythrocytes as diabetics. The blood sugar difference of venous and arterial plasma in the morning without breakfast is as a rule less in hypertensives than in normals, while in the main this difference was not found marked. It was, however, more pronounced when glucose was administered. A latent diabetes exists in a majority of hypertensives.—*W. F. Jacobs.*

7362. **WILLIAMSON, RAYMOND. Observations on the pulmonary ventilation and oxygen consumption in pulmonary tuberculosis, and on the effect of the respiratory quotient on the relation between pulmonary ventilation and oxygen consumption.** *Quart. Jour. Med.* 21(83): 371-382. 10 fig. 1928.—O consumption and pulmonary ventilation in patients with pulmonary tuberculosis when examined over a considerable period under basal conditions vary together; the results of the experiments when plotted out graphically give a curve approximating to a straight line. Even under varying conditions there is an approximately direct relationship between the O consumption and pulmonary ventilation. Experiments on a normal subject show that there is a relationship between O consumption and pulmonary ventilation which is close under basal conditions, but not so close under other conditions, being considerably modified by the respiratory quotient. The results of the experiments when plotted out show that the points do not fall on a straight line, but within a narrow band, their position in the band depending on the respiratory quotient. For practical purposes the relationship between O consumption and pulmonary ventilation seems sufficiently close to permit the assumption that the measure of pulmonary ventilation indicates the rate of metabolism. It is suggested that in pulmonary tuberculosis measurements of the pulmonary ventilation at intervals under similar conditions may be a useful method of investigating the progress of the patient. For the same amount of work a greater pulmonary ventilation is required by a tuberculous subject than by a normal one, and in consequence dyspnea will ensue earlier in the tuberculous subject.—*Author's summary.*

7363. **YOSHIDA, YONETARO. Malignant tumours and blood catalase.** [In Japanese.] *Jour. Gastroenterol.* 1(8): 791. 1926.—In experimental malignant tumors in hens, rabbits, and albino rats, blood catalase (by *Inoue-Ochi-Shirai's* method) and hemoglobin were estimated. The ratio obtained is called the hemoglobin-catalase index. The index shows a marked difference according to the kind of animals. The individual difference is most marked in hens and rabbits and relatively small in albino rats. In the same individual the daily difference is very small. Hen myoma, rabbit myoma, albino rat myoma, and albino rat carcinoma were transplanted in the experimental animals; the blood catalase decreased gradually with the lapse of time after the transplantation. The degree of the decrease was most marked in the case of hen myoma, then in rabbit myoma, least marked in albino rat myoma and albino rat carcinoma. As in all the cases the hemoglobin-catalase-index rather decreases with the growth of the tumor, the decrease of the blood catalase is not due merely to anemia.—*Courtesy Jap. Jour. Gastroenterol.*

ANIMAL PATHOLOGY

INFECTIOUS AND OTHER DISEASES OF LOWER ANIMALS

F. S. JONES, *Editor*

R. W. GLASER, *Associate Editor*

(See also in this issue the subsection "Lower Animals" in the sections Immunology and Filterable Viruses; and Entries 6186, 6415, 6823, 6951, 7081, 7210, 7215, 7233, 7292, 7416, 7422, 7426, 7455, 7472, 7483, 7507, 7584, 7587, 7592, 7601, 7604, 7609, 7611, 7628, 7629, 7633, 7635, 7637, 7642, 7644, 7665, 7687, 7763, 7818, 7869, 8042, 8097, 8271)

7364. **ANTHONY, D. J., F. W. JACKSON, and T. G. JOYCE. "Black gut."** *Vet. Rec.* 11(31): 801-803. 1931.—A black discoloration sometimes found in the caecum and colon of pigs is shown to consist of ferrous sulphide. Specimens of the caecum in which the discoloration is present possess pH values over 6.5; normal specimens show lower values. The view is advanced that ionic Fe in process of excretion emerges through the intestinal wall into a neutral or alkaline medium containing soluble sulphide, with resulting precipitation in situ. Occurrence or non-occurrence of the deposit thus depends on variations in the reaction of the large intestine. These variations may arise through diverse methods of feeding or differences in intestinal flora. The importance of the discoloration commercially and in post-mortem work is mentioned.—*D. J. Anthony.*

7365. **BEACH, J. R. Fowl-pox and coryza.** *North Amer. Vet.* 12(5): 35-40. 1931.—A résumé of the results of studies by American investigators, of diseases involving the upper respiratory tract of fowls including fowl-pox and avian diphtheria, coryza, vitamin A deficiency, and infectious laryngotracheitis. A bibliography of 32 references is appended.—*J. R. Beach.*

7366. **BECKER, R. B., W. M. NEAL, and A. L. SHEALY. I. Salt sick: its cause and prevention. II. Mineral supplements for cattle.** *Florida Agric. Exp. Sta. Bull.* 231. 5-23. 1931.—I. "Salt sick" of cattle on certain iron-deficient sandy and residual soils has proved to be a nutritional anemia due to deficiency of Fe, or of Fe and Cu in the forage crops. Symptoms are progressive loss of appetite, emaciation, retarded growth, low hemoglobin content and diminished blood volume. The spleen parenchyma is atrophied, the heart muscle lacks tonus, and the tissues are pale. Cattle of all ages, as well as sheep, goats and swine, are affected. Animals recover when changed to clay range areas, or when the deficient minerals are supplied. II. There is a popular discussion of the following mineral supplements for cattle: NaCl, Ca, P, I and S. The Ca, P and Fe contents of some local forages are presented; also salt and bonemeal consumption by cattle.—*R. B. Becker.*

7367. **BENESCH, F., und K. STEINMETZER. Klinisch-experimentelle Untersuchungen über die normale und medikamentell beeinflusste Uterusbewegung am lebenden Rind im Involutionsstadium Puerperium.** *Wien. Tierärztl. Monatschr.* 18(3): 65-70. 2 fig. 1931.—A rubber balloon was introduced and inflated into the uterus of 5 cows, 4 hrs. to 7 days post partum, for observation to determine whether an epidural anaesthesia of the genital apparatus in the puerperium would disturb the movements of the uterus. The curves revealed the fact that the contractions of the uterus during the anaesthesia remained the same and that the anesthesia merely inhibited the voluntary pressure.—*F. Benesch (transl. by C. S. Simkins).*

7368. **BLIECK, L. de. Een haemoglobinophile bacterie als oorzaak van coryza infectiosa gallinarum. [A hemoglobinophilic bacterium as cause of coryza infectiosa gallinarum.]** [With German, English and French summaries.] *Tijdschr. Diergeneesk.* 58(6): 310-314. 1931.—The author separated coryza from fowlpox-diphtheria by infecting birds immunized against fowl-pox with antidiphtherin. He succeeded in infecting birds in series with pure coryza. No filterable virus as the cause of coryza was

found. From a case of pure coryza the author isolated a bacterium of the "influenza group." With subcultures in 8 passages, 17 fowls were infected, showing typical coryza symptoms. It was also possible to infect other birds from those originally infected by cultures. With other bacterial species cultivated from coryza cases, no experimental infections were achieved.—*Author's summary.*

7369. **BLIECK, L. de, en JAC. JANSEN. Gasoedeem bij kippen na bloedtappen. Pathogeniteit van anaërobe gasoedeembacillen voor kippen. [Pathogenicity of anaerobic gas edema bacilli for fowls.]** [With English, German, and French summaries.] *Tijdschr. Diergeneesk.* 58(16): 862-864. 1931.—3 strains of bacilli cultivated from fowls dead from malignant oedema were also found in the soil of the poultry farm and on the feathers of live fowls. After a comparative soil research, it appeared that the poultry farm was highly contaminated with anaerobic bacilli pathogenic for fowls. Of the 3 strains, the bacilli of Fraenkel and of Novy were pathogenic to fowls, but *Bacillus parasarcophysematosa* showed no pathogenicity.—*Authors' summary.*

7370. **BRAGA, AMERICO, e MOACYR ALVES de SOUZA. O cholera das gallinhas. [Chicken cholera.]** [With English summary.] *Rev. Zootech. e Vet. [Rio de Janeiro]* 17(2): 115-128. 1931.—Results of vaccination with killed cultures of *Pasteurella* as a control procedure in an outbreak of fowl cholera are discussed. As a diagnostic procedure, agglutination was tried, but with poor results. The authors point out that where fowl cholera is endemic, agglutinins for the casual organism may be demonstrated in the blood of fowls.

7371. **CAMPBELL, J. A., and P. FILDES. Tetanus. X: the effect of the oxygen tension of the tissue fluids in controlling infection by B. tetani.** *British Jour. Exp. Path.* 12: 77-81. 1931.—Experiments were done on guinea pigs the O tension of whose tissue fluids was altered by changing the composition of the air breathed, the animals being enclosed in 2 air-tight chambers and provided with sufficient water, food and bedding for 4-5 days. The chambers were fitted with pans to keep the air mixed. The CO_2 produced by the animals was absorbed by soda lime and the O used was automatically replaced. Experiments showed that the tissue O tensions of such animals could be varied in a regular manner by such measures. When the guinea pigs were inoculated with tetanus spores and aleuronate, the incidence of germination and tetanus could be reduced by increasing the O tension of the tissue fluids and facilitated by reducing it. This supports the view that the O tension of the tissue fluids controls the germination of tetanus spores.—*J. Bland.*

7372. **COTTIER, HENRI. Hygiène et médecine vétérinaire à la ferme. Encyclopédie des connaissances agricoles.** 508p. 5 pl., 168 fig. Hachette: Paris, 1929. Price 25 fr.

7373. **DALLING, T., and G. H. WARRACK. Bacillary white diarrhoea (B.W.D.).** *Eggs. (Sci. Poultry Breeders' Assoc., England)* 23(5): 79-81. 1930.

7374. **DEARSTYNE, R. S. Fundamental aspects of bacillary white diarrhea (pullorum disease).** *Proc. 21st Ann. Meet. Poultry Sci. Assoc. 1929.* [In: *Bull. Alabama Polytech. Inst.* 25(1): 77-79. 1930.]—The relative ease with which negative adult birds contract pullorum disease and develop into chronic carriers is indicated by experimental oral infection of negative birds; in about 75% the disease was established, and antibodies were demonstrated 14-18 days after infection. Studies of variations in serum titer of adult carriers indicate the possibility of temporary bacteriemias in such birds. Studies on direct transmission of pullorum disease through the egg indicate the probability of a greater ratio of infection existing than heretofore recognized.—*R. S. Dearstyne.*

7375. **DE KOCK, G. Are the lesions of jaagsiekte in sheep of the nature of a neoplasm?** *Union So. Africa Dept. Agric. 15th Ann. Rept. Dir. Vet. Serv.* 2(5/9): 611-641 15 fig. 1929.—It is concluded that there may be 2 specific lung diseases in sheep in So. Africa, viz., a chronic indurative catarrhal pneumonia, and multiple papilliform cystadenoma complicated by terminal pneumonia. Local congestion of the alveolar capillaries as a stage in the formation of primary lesions of jaagsiekte could not be confirmed. Neither could the presence of inter-alveolar infiltration as primary lesions be substantiated in the lung sections of clinically healthy So. African sheep from known jaagsiekte-infested areas and of those still believed to be free of the disease. The early lesions of jaagsiekte consist of papilliform proliferations arising mainly from alveolar epithelium. These multiple adenomata become complicated with pneumonia from which the animal succumbs.—*F. Volkmar.*

7377. **EBER, AUGUST. Sektionsbefunde bei Legehennen, die an den Folgen gestörter Legetätigkeit gestorben sind. (Ein Beitrag zur Frage der Ursachen und des Wesens der Legestörungen beim Haushuhn.)** *Berliner Tierärztl. Wochenschr.* 46(40): 688-696. 1930.—In autopsies of hens from 1911 to 1928, the author observed soft eggs (i.e., eggs with weak shells or shell-less eggs). The defect was associated with many conditions,—deficiency of lime salts in the food; inflammation of the oviduct caused by *Prosthogonimus pellucidus* or *Plegiorchis arcuatus;* catarrhal enteritis which interfered with Ca metabolism and excited sympathetic peristalsis of the egg duct; and improper maintenance of flocks.—*H. Bunyea.*

7378. **FELDMAN, WILLIAM H. A study of the subcutaneous lesion of cattle reacting to tuberculin.** *Cornell Vet.* 21(3): 268-285. 2 pl. 1931.—An attempt was made to demonstrate the etiologic agent in subcutaneous lesions of cattle reacting to tuberculin. Most guinea pigs and rabbits used were inoculated intracerebrally. From one of the cases a *Mycobacterium tuberculosis* was isolated, which proved virulent for rabbits and chickens, but not for guinea pigs. This was considered of avian origin and may represent a chance infection. In 5 other instances, definite collections of epithelioid cells, constituting lesions resembling those of tuberculosis, were observed in the brains of 6 rabbits. Failure of the lesions to appear in the thoracic or abdominal viscera would indicate an etiologic agent of slight aggressiveness, which may or may not have been *M. tuberculosis.* The possibility of the experimental lesions being caused by dead tubercle bacilli or by strains of mycobacteria ordinarily assumed to be non-pathogenic, is considered.—*Author's summary.*

7379. **FIKENTSCHER, R. Tierische Ochronose und Porphyrie.** *Virchow's Arch. Path. Anat. u. Physiol.* 279(3): 731-739. 1931.—Presence of porphyrin in the bones was demonstrated by the fluorescent spectroscope and in histologic sections from slaughtered cattle showing ochronosis. The author failed to find it in bones of normal cattle. This refutes the suggestion that porphyrin originates from the breakdown of blood pigment during chemical examination, since primary fluorescence, spectroscopically analyzed as porphyrin, of the morphologically undemonstrable, diffusely distributed, brownish-red pigment, was obtained from bone sections which had undergone no chemical treatment. Chemical and spectrochemical examination by H. Fink showed the extracted porphyrin to be uroporphyrin. The study shows that, in at least some cases, ochronosis (osteochromatosis) of slaughtered animals is due to the presence of porphyrin. —*Author's summary (transl. by I. E. Newson).*

7380. **FRIEDRICH, Weiteres zum Problem der Sennekrankheit.** *Tierärztl. Rundschau* 37(34): 604-606. 1931.—Senna sickness of horses is not produced by molds or chemical poison as previously thought. Before the disease appears, an incubation time of 4 or more weeks is needed, indicating that it is produced by a microorganism.

7381. **GIORELLI, G. Contribution à l'étude des bactériémies post-opératoires consécutives aux extirpations des dents infectées des chiens.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 355-359. 1931.—Postoperative bacteriemias in dogs are relatively rare and when they do occur are of short duration.

7382. HEIM, F. Hühnergeschwülste. *Zeitschr. Krebsforsch.* 33(1/2): 76-125. 1 fig. 1930.—This is a review of the reported literature on fowl tumors, with bibliography of about 200 references.—*H. E. Eggers.*

7383. HUSSON, MARC-JULIUS. Les tuberculoses animales aux Colonies Françaises. 51p. Map. Le Français: Paris. 1929.

7384. KFOURI, PHILIPPE. Étude de la sensibilité broncho-pulmonaire du cheval à divers agents pathogènes des voies respiratoires de l'homme. *Rev. Path. Comp. et Hyg. Gén.* 31(415): 465-477. 1931.—It was shown that the Pfeiffer coccobacillus from man is non-pathogenic for lungs of horses when inoculated for the first time. Intrapulmonary re-inoculation of a large quantity of culture (80 cc.) produced a broncho-pneumonia of average intensity. This infection seemed to develop in the respiratory tract a certain degree of active immunity, protecting against 2 large inoculations (100 cc.) given later. Association of the Pfeiffer bacillus with pneumococcus Types I, II, and III, and with Friedlander's bacillus did not modify the severity of the pneumonia.—*Author's summary (transl. by M. Pittman).*

7385. KFOURI, PHILIPPE. Recherches sur la sensibilité bronchopulmonaire du cheval aux pneumocoques type I, type II, type III, d'origine humaine. *Rev. Path. Comp. et Hyg. Gén.* 31(416): 545-559. 1931.—The first inoculation of pneumococci into the lungs of young horses is followed by a severe lobar pneumonia which heals spontaneously in about 8 days. After convalescence, injection of virulent pneumococci fails to produce infection, but the horse reacts with mild pulmonary congestion. No immunity results unless the first injection is followed by at least a subacute, temporary broncho-pneumonia. These experiments demonstrate that development of active immunity in lungs of horses depends on the development of the pneumonia.—*Author's conclusions (transl. by L. C. Havens).*

7386. KIESSIG, W. Zur Diagnose der Streptokokken-Mastitis. *Deutsche Tierärztl. Wochenschr.* 39(36): 570-571. 3 fig. 1931.—Cultural diagnosis is discussed.

7387. KLARIN, E. Undersökning över förekomst av B. abortus Bang i mjölk från kor, som kastat till följd av infektion med denna bakterie. [Bacillus abortus Bang in milk from aborting cows.] *Skandinavisk Vet.-Tidskr.* 21(8): 249-269. 1931.—Cows which have aborted from infection with *B. abortus* frequently show the organism in the milk, usually from the 1st week after abortion. Milk infection is probably due to autogenous infection from the uterus. Occurrence of the bacteria in the milk usually lasts 2 mo. or more, but may cease after 2-4 wks. If milk infection first appears 6-8 weeks after abortion, it is probable that infection of the cow has come from external sources. In affected herds, cows may secrete *B. abortus* with their milk, whether or not they have aborted.—*From author's English summary.*

7388. LACHENSCHMID, B. Ueber den Keimgehalt der Gallen gesunder Schlachtkälber. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(1/2): 94-101. 1931.—Examination of the bile of 550 healthy calves failed to reveal paratyphoid infection,—contrary to the prevailing opinion that healthy calves occasionally harbor organisms of this group.—*L. D. Bushnell.*

7389. LUND, L. Grundriss der pathologischen Histologie der Haustiere. [Elements of pathological histology of domestic animals.] xii+471p. 311 fig. M. & H. Schaper: Hannover, 1931.

7390. MEYER, J. R. Observações anatomo e histopathologicas feitas em orgãos de papagaios (Amazona amazonica e A. farinosa) mortos espontaneamente e após inoculação de um virus que se demonstrou filtravel. [Anatomical and histopathological observations on organs of parrots (A. amazonica and A. farinosa) dying spontaneously and when inoculated with a filterable virus.] *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 25-38. 8 pl. (5 col.) 1931.—The research is based on 30 parrots—2 normal, 16 spontaneously infected with a disease similar to avian psittacosis, and 12 after inoculation with material from the diseased birds. The macroscopical lesions encountered in the psittacosis-like disease consisted in a general congestion, accumulations of a clear fluid in the serous cavities, and in a large number of whitish, yellow or grayish areas in liver and spleen. The main microscopical lesions were found in the liver and spleen. The acute processes were represented by focal necrosis and the presence of large, semilunar-shaped inclusions in the nuclei of both liver and splenic cells. The lesions of the chronic type consisted in proliferation of mesenchymatous cells around the small vessels of the liver or in proliferation of reticular cells in the splenic pulp. In several cases there was found, around the focal necrosis, a cytoplasmic mass containing numbers of nuclei. In other cases, leucocytes were found in the bile ducts.

7391. MIAOULIS, V. Coexistence du charbon bactéridien et de la babésiellose ovine. *Rec. Méd. Vét. École d'Alfort* 107(8): 463-464. 1931.—Autopsies and microscopical examinations of sheep in Greece, showing coexistence of anthrax and babesiellosis in sheep.

7392. PACHECO, GENESIO, e OTTO BIER. Epizootia em papagaios no Brasil e suas relações com a psittacose. [Parrot epizootic in Brazil, resembling psittacosis.] *Arch. Inst. Biol. Defesa Agric. e Animal.* 4: 89-120. 1 pl. 1931.—An epizootic was observed among parrots in an aviary in a Park in São Paulo. Clinical and post-mortem symptoms were similar to those of psittacosis; the organisms isolated were Salmonellas, but distinct from Nocard's *S. psittacosis*, which was isolated from 3 other cases. Attempts to transmit the disease were unsuccessful. From 2 parrots bought in a store a filterable virus was obtained, which could be transferred indefinitely to other parrots without alteration of pathogenic properties, but which was non-pathogenic to laboratory animals (guinea pigs, white mice, chicks, pigeons and monkeys). The reservoir of human psittacosis in Europe is attributed to *Amazona aestiva*, not *A. amazonica* [Psittacidae].

7393. PETERSEN, WILLIAM E., E. A. HEWITT, W. L. BOYD, and W. R. BROWN. Artificially induced hypoglycemia in the cow and the relationship to parturient paresis or milk fever. *Jour. Amer. Vet. Med. Assoc.* 32(2): 217-227. 1931.—Hypoglycemia: The bovine tolerates a much lower blood-sugar level than is reported for other species. The rather prolonged cases of hypoglycemia, going as low as 17 mg. per 100 cc., show that low blood sugar is not a cause of parturient paresis. Hypocalcemia: Beef animals gave some evidence of tetany, while only 1 of the dairy animals showed symptoms that could be likened to tetany. If only sufficient sodium citrate is injected to cause a marked staggering gait, spontaneous recovery follows promptly. $CaCl_2$ in 20% solution must be given intravenously. If not carefully administered, varying amounts of the solution will be deposited in the tissues, which may result in edema, abscesses, necrosis and Phlebitis.

7394. PROSCHOLDT, O. Gärtnerinfektionen der Kälber und Rinder. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(1/2): 115-140. 1931.—The author discusses numerous outbreaks of Gärtner bacillus infection in calves and cows. In all, he studied 505 strains of the Gärtner-paratyphoid group. Of these, 404 were Gärtner-enteritidis, 61 Breslau-enteritidis, 2 Schottmüller type, 1 *B. paratyphosus abortus equi*, and 37 undetermined strains. He considers a positive agglutination test in calves at dilutions of 1:100 as diagnostic of infection, although titers of 1:400 or higher are reported. In adult cows which become carriers, titers of 1:12,000 are reported. It is recommended that bacteriological examinations be made of the feces and blood of suspected animals to detect carriers.—*L. D. Bushnell.*

7395. REIS, JOSÉ, e ANNITA SWENSSON. Flora estreptococcica das mammites esporadicas. I. Revisão geral do assumpto e contribuições originaes para seu conhecimento no Brasil. [Streptococcic flora of infectious mastitis of cattle. General review and original contributions toward the knowledge of the subject in Brazil.] *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 143-190. 2 pl.

1931.—The authors can not accept the use of media of lowered surface tension for differentiation of streptococci from sour milk and from mastitis, and show the absence of uniformity in results obtained by use of different techniques. From a study of 54 strains of streptococci, they conclude that assumption of specificity for mammitis streptococci is erroneous. *Streptococcus mastiditis* is critically studied. The conditions under which successful experimental production of mammitis in cows and goats may be accomplished are described. A bibliography of 7p. is appended.

7396. **REIS, JOSÉ. Estudos sobre cholera aviaria. I. Diagnostico de cholera em cadaveres em putrefacção. [Studies on avian cholera. 1. Diagnosis of cholera in putrefying cadavers.]** *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 291-300. 1931.—In carcasses decomposed in the air, diagnosis of avian cholera by inoculation in a rabbit was successful 11 days after death; this was also possible in an exhumed bird, but search must also be made for *Pasteurella* in smears from decomposed organs. In 12-day carcasses determination was impossible.

7397. **RYDIN, KARL. Något om sjukdomar hos våra pälsdjur. [Diseases of our fur-bearing animals.]** *Svensk. Veterinartidskr.* 35(7): 199-204. 1930.—The author calls attention to the similarities of the maladies of dogs kept in kennels, to those encountered in foxes, martins and minks kept for fur-bearing purposes. A number of the now common ailments are discussed. —*B. Bickel.*

7398. **SIGWART, H.** Lamsiekte of sheep in South West Africa. *Jour. So. African Vet. Med. Assoc.* 1(3): 25-29. 1 fig. 1929.—The first cases occur during August and the losses increase as progressing drought reaches its culminating point in December or January. The majority of sheep affected are ♀♀. The disease is associated with depraved appetite. Symptoms and pathological lesions resemble those in cattle, but the course is more acute. *Clostridium parabotuinum* could not be found in blood smears. Feeding of bone meal prevented the disease.—*F. Volkmar.*

7399. **SMITH, DAVID T., NORMAN BETHUNE, and J. L. WILSON. Etiology of spontaneous pulmonary disease in the albino rat.** *Jour. Bact.* 20(5): 361-370. 1930. —An unidentified anaerobic coccus and an aerobic bacillus were isolated from the lungs of albino rats with spontaneous pulmonary disease. A symbiosis of the 2 organisms was demonstrated by failure to reproduce the disease from inoculation of pure cultures of either, while the combined pure cultures produced a lesion identical with the spontaneous disease. In the use of albino rats for experiments on pulmonary tuberculosis, care should be taken to exclude a spontaneous lung disease.—*J. B. Nelson.*

7400. **SOITUZ, V. Sur un staphylocoque adapté à la glande mammaire de la lapine.** *Rev. Path. Comp. et Hyg. Gén.* 30(392/393): 381-388. 1930.—Staphylococci found in the mammary gland of a lactating rabbit were thought to have been perhaps the result of a generalized infection, since Calmette and Petit have demonstrated that virulent staphylococci are capable of traversing the intestinal mucosa and eventually producing generalized infection.—*Author's summary (transl. by C. S. Gibbs).*

7401. **THOMSEN, AXEL. L'avortement épizootique à Brucella chez les porcs au Danemark.** *Rev. Gén. Méd. Vét.* 40(476): 457-466. 1 fig., 1 map. 1931.—This disease spread to 150 herds in central Jutland and was carried to Seeland by infected animals sold there. Spread is often brought about by the wind, but also by mating with an infected boar. The genitalia of 6 infected boars were examined and the organism was isolated from 6, especially in the seminal vesicle. All the stock cultures (22) grew aerobically in the 1st generation. Transmission from hogs to cows and vice versa was not demonstrated. Examination of 5,600 sows and boars from Danish abattoirs shows that the malady was limited to this outbreak.—*Author's summary (transl.).*

7402. **TRUCHE, C., et J. BAUCHE. Contribution à l'étude de la pseudo-tuberculose des oiseaux.** *Bull. Acad. Vét. France* 3(9): 391-394. 1930.—An account of pseudotuberculosis avium in the canary (*Passer canaria*) and duck (*Anas domestica*), due in both cases to the bacillus of Mallasez and Vignal.—*R. C. Whitman.*

7403. **VERSÉ, M. Bemerkungen zur Frage der Cholesterinkrankheit des Kaninchens.** *Beitr. Path. Anat. u. Allg. Path.* 80(1): 235-238. 1928.—Rabbits (24) were fed 0.7-340 gm. cholesterol and 14-2636 cc. oil as pure cholesterol, pure linseed oil, or cholesterol plus linseed or peanut oil, and observed for 1-650 days. The initial liver wt. was about 3 gm. per 100 gm.; the final, 55-250 gm.; the livers were markedly fatty. Rabbits fed pure cholesterol showed small, brown, cirrhotic livers with but little fatty degeneration. In cholesterol-oil feeding, the fat appeared predominantly in the central and middle zones of the lobules and, as in feeding pure linseed oil, fat drops were found in the epithelium of the small biliary ducts, rarely in the medium, and never in the large ducts. In animals receiving pure cholesterol, there was but little fat in the small biliary ducts but more fatty infiltration in the star cells. Normal feeding of cholesterol: oil in the proportion of 0.025: 0.5 gm. per 100 gm. animal per day and dose must be instituted to obtain values with which other experimental work may be compared.

7404. **WALL, SVEN. Nötkreaturstuberkulosnes utbredning i Sverige länsvis under åren 1918-1929 jämförd med människotuberkulosens utbredning i riket under åren 1911-1929. [Spread of tuberculosis in cattle in Sweden, according to Government districts, 1918-1929, compared with that of tuberculosis in man, 1911-1929.]** [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(5): 121-173. 4 fig. 1931. —Investigation of tuberculosis in cattle shows with certainty that it is on the increase in most of the government districts of Sweden. The occurrence is now highest in the provinces lying around Lake Mälar, then follow the Scanian and Västgöta provinces, and the government districts of Halland and Kalmar. Lower % occur in the provinces of Göteborg and Bohus, Jönköping, Kronoberg, Blekinge and Västernorrland. The districts of Gotland, Västerbotten and Jämtland are relatively free. Investigation of the extent of tuberculosis in man shows it is diminishing in all the provinces. At present the number of deaths per thousand population is highest in the province of Norrbotten, followed by the districts of Västerbotten, Jämtland, Västernorrland, Gävleborg, Blekinge, Göteborg, Bohus, Gotland, Kopparberg, Värmland and Stockholm. A relatively low mortality is displayed by the districts of Kahmar, Kronoberg, Uppsala, Västmanland, Halland, Örebro, Älvsborgs, Jönköping, Skaraborg and Kristianstad, lowest mortality returns being found in the provinces of Malmöhus, Östergötland and Södermanland. Bovine and human tuberculosis spread throughout Sweden independently of each other. A more detailed investigation of mortality from tuberculosis in children up to 5 yrs. of age seems to point to infantile tuberculosis as having 2 sources of infection, viz., man, and cows with tuberculosis of the udder.—*From author's summary.*

7405. **WOLTERS. Über das Vorkommen von Geflügeltuberkelbakterien beim Rind.** *Deutsche Tierärztl. Wochenschr.* 39(35): 548-550. 1931.—By cultural methods, acid-fast bacilli were obtained from milk samples. Differentiation and culture in solid and liquid malachite green media and animal inoculations showed them to be avian tubercle bacilli. Tests from individual cows showed that the milk of some contained the avian bacillus. Such infections occurred on small farms. In 80 samples of bovine sputum, avian tubercle bacilli were found 4 times.—*Author's summary (transl.).*

ANIMAL IMMUNOLOGY

GENERAL AND BACTERIAL

S. BAYNE-JONES, *Editor*

(See also in this issue Entries 6180, 6193, 6228, 6231, 6250, 6251, 6526, 6743, 6747, 7111, 7120, 7220, 7233, 7251, 7267, 7286, 7345, 7353, 7370, 7384, 7385, 7583, 7589, 7595, 7597, 7598, 7600, 7605, 7608, 7611, 7614, 7619, 7626, 7631, 7633, 7635, 7641, 7642, 7645, 7653, 7655, 7657, 7662, 7675, 7749, 7753, 7754, 8221, 8248, 8338, 8346)

7406. ADAMSKI, J. Sur la valeur biologique des lipoïdes isolés des antigènes, dans la réaction de Bordet-Wassermann, après fractionement par l'eau salée. *Compt. Rend. Soc. Biol.* 106(10): 857-858. 1931.—It is possible to obtain by fractionation of a great number of antigens, even the less active ones, lipoids from the sediment, the action of which in the Bordet-Wassermann reaction (in more than 2000 cases) is very close to that of secondary lecithin described by Kiss, as well as to that of standard antigens. It is necessary to determine their concentration, since, in the technique described, it does not pass 1 mgm. of lipoid for 4 mgm. of cholesterin in alcoholic solution in 14 cc. of saline.

7407. ALSTON, J. M., and D. STEWART. Some observations on passive immunity in the normal subject produced by antipneumococcic sera. *British Jour. Exp. Path.* 12: 49-56. 1931.—Normal healthy persons were given intravenous injections of different antipneumococcal sera, and at varying intervals after injection their blood was tested for bactericidal effect on types I, II, and III pneumococci, and their serum for power of protecting mice against lethal doses of the 3 types. The antipneumococcal sera used contained antibodies against types I and II but not against III. The bactericidal power of the blood and the protective action of the serum may be greatly increased for at least 72 hrs. as regards type I and II pneumococci, by such injections in therapeutic doses. The validity of the results was checked by the lack of change in bactericidal power of blood against type III organisms, and by the smaller or negligible increase in bactericidal power or protective action when the injection given was a fraction of a therapeutic dose of other preparations of immune serum.—*J. Bland.*

7408. ANTON, HELLMUT. Zur Frage nach dem Vorhandensein einer Beziehung zwischen Giftresistenz und Fettgehalt weisser Mäuse. *Arch. Hyg. u. Bakt.* 105 (5): 275-286. 1931.—After they had attained uniform wt., food was withheld from 56 mice for 16 hrs., 0.014-0.02 cc. 50% alcohol per gm. wt. (lethal dose, 0.02 cc. 50% alcohol per gm. wt.) was given with a sound, then food; 24 died; those not dying in 48 hrs. were killed, and fat was extracted; it varied from 4 to 25%. No relation between resistance to alcohol and fat content was found. After 70 ♂ mice were brought to uniform wt., they were divided into 2 groups, one fed abundantly (F) the other (M) very little (6 died). After 4 weeks, both groups were fed moderately for 2 days; group F averaged −8.6% and group M +1.5% of initial wt., though there were pronounced deviations. After injection the lethal dose (0.0125 cc. per gm. body wt.) of tetanus toxin (1: 100,000), 66⅔% of group F and 13⅓% of M died within 14 days. Relative to wt. before division into groups, however, animals which had lost most wt. showed lowest mortality; in group F there was lower mortality in those weighing least. Another group of 163 mice, after attaining uniform wt., were given 0.014 cc. of 1: 100,000 tetanus toxin per gm. wt.; here again, the lighter mice were more resistent than the heavier; of animals of the same wt., there appeared to be a higher mortality among the pronouncedly longer ones (tip of nose to root of tail).

7409. AREA LEAO, A. E. de. L'intradermo-réaction dans l'actinomycose. Réaction spécifique de la peau avec le filtrat de culture d'Actinomyces bovis. *Compt. Rend. Soc. Biol.* 98(17): 1575-1576. 1928.—Individuals with actinomycosis gave a local reaction (pain, oedema, rise in temp.); healthy controls did not. Use of inoculation in diagnosis of cases of internal actinomycosis is suggested.

7410. ARTHUS, MAURICE. Les anavenins (quatrième mémoire): I. Toxicité des sérums formolés pour les animaux anaphylactisés. 2. Réactions d'anaphylaxie provoquées par les anavenins. *Jour. Physiol. et Path. Gén.* 29(2): 256-269. 1931.—It is not possible by treating horse serum or ovalbumin with formaldehyde to render them harmless to anaphylactically sensitized rabbits. Anavenins, freed from formaldehyde, are able to evoke an anaphylactic response in rabbits previously sensitized to the anavenin, the corresponding snake venom, or even to other avenins or proteins.—*W. R. Fearon.*

7411. ASSIS, ARLINDO de. Sobre a vaccinação antituberculosa pelo BCG por via subcutanea. (Ensaios no Preventorio Dona Amelia.) [Subcutaneous vaccination of children with BCG in the "Preventorium Dona Amelia."] *Brasil Medico* 45(5): 97-103. 1931.—The paper deals with the subcutaneous use of BCG in 25 healthy children living permanently in a "preventorium" free from tuberculous contact. After testing each child several times intradermally with large tuberculin doses (1 mg.), only those with permanent − reaction to tuberculin were chosen for BCG vaccination. Doses of 0.01-0.1 mgm. of living BCG proved quite harmless, a marked local reaction being noticed in one case of cold abscess that healed completely after evacuation. A slight degree of tuberculin allergy was constantly found as the result of BCG inoculations, whenever the doses reached 0.06-0.1 mgm. of BCG. Large intradermal doses of tuberculin, as well as early readings of results (24 hrs.), are to be strictly observed to secure clear-cut results. Subcutaneous reinoculations of BCG in children whose tuberculin allergy had ceased, proved also to be innocuous, and carried out again the state of tuberculin hypersensibility that seemed to be somewhat more decided than after the 1st injection. Additional notes on variations of tuberculin allergy in apparently healthy children follow.—*A. de Assis.*

7412. BAILEY, G. HOWARD, and MARY SHAW SHORB. Heterophile antigen in pneumococci. *Amer. Jour. Hyg.* 13(3): 831-856. 1931.—An antigen corresponding in properties to the heterophile component of sheep erythrocytes is present in the various types of pneumococci and in certain strains of green-producing streptococci. Pneumococci stimulate production of the Forssman anti-sheep hemolysin in high titer when injected intravenously into rabbits, and after boiling absorb the hemolysin so produced when mixed with it in vitro; while the hemolysin itself has all the characteristics of the heterophile type, including primary toxicity for guinea pigs. There is an indication that heterophile antigen and antibody have a biological significance in pneumococcus infections, since immunization of rabbits with sheep erythrocytes renders them relatively resistant to pneumococcus infection.—*G. H. Bailey.*

7413. BARR, MOLLIE, and A. T. GLENNY. The preparation of fractions of different antitoxic quality from the same serum. *Jour. Path. and Bact.* 34(4): 539-543. 1931.—A diphtheria antitoxic plasma yielded, by successive precipitations with solid $(NH_4)_2SO_4$, a series of globulin fractions of different antitoxic quality as measured by the in vivo/in vitro ratio. The ratio of the fractions precipitated by the least quantities of $(NH_4)_2SO_4$ exceeded that of the original plasma (1.52) and a progressive decrease was obtained throughout the series, from 2.69 in the first fraction to 0.93 in the

last. The results suggest the existence, in the same serum, of different types of antitoxin qualitatively distinct.—*A. T. Glenny.*

7414. **BELEZKI, W. K., und R. M. UMANSKAJA. Über die Natur der Immunität bei Rückfallfieber. VII. Morphologische Untersuchung der Schutzfunktionen bei Rückfallfieber des Menschen.** *Virchow's Arch. Path. Anat. u. Physiol.* 272(2): 305-312. 5 fig. 1929.—Spirochaetolysins play an important rôle in combating the infection, lysis occurring both in blood stream and in organs. Phagocytosis was very active in the tissues and less so in the blood. Phagocytosis occurs in the reticulo-endothelial cells of the organs, the migratory and fixed histiocytes, and in the monocytes of histiocytic origin. In the central nervous system, the glia cells function as phagocytes.—*J. T. Myers.*

7415. **BIERBAUM, K., und K. RASCH. Immunisierung gegen Tetanus mit Formoltoxoiden.** *Tierärztl. Rundschau* 37(15): 249-251. 1931.—The authors confirm the work of other investigators in completely detoxifying tetanus toxin by addition of 0.2% formaldehyde and incubating at 37°C. for 3-4 weeks. Guinea pigs and a horse immunized with such a toxoid developed an immunity protecting them against an amount of toxin many times the fatal dose.—*Authors' summary (transl. by E. F. Voigt).*

7416. **BLIECK, L. de, en JAC JANSEN. Het onderzoek van met mond- en klauwzeer-virus besmette vaccine. [Investigations on vaccine contaminated with foot-and-mouth disease virus.]** [With German, French and English summaries.] *Tijdschr. Diergeneesk.* 58(15): 802-806. 1931.—In order to find out whether vaccine is contaminated with foot-and-mouth disease virus, it is tested on experimental animals. By preference calves are used, as guinea pigs are unreliable in reaction to a weak virus. The vaccine is inoculated intravenously and into the oral mucosa. When the reaction is negative, the calf must be infected with strains A, O and C of foot-and-mouth disease virus, to ascertain that it was not previously immune.—*Authors' summary.*

7417. **BOES, J. Vaccination antituberculeuse par le B. C. G. Etat actuel de la question.** *Ann. Méd. Vét.* 76(6): 243-269. 1931.

7418. **BOXWELL, W., and JOSEPH W. BIGGER. Autohaemagglutination.** *Jour. Path. and Bact.* 34(4): 407-417. 1931.—A case of autohemagglutination in a female, aged 65, suffering from anemia and an atypical leukemia, is described. The literature is reviewed and it is concluded that up to the present only 22 authentic cases of autohemagglutination have been described. The following definition is propounded: "Autohaemagglutination is a clumping of erythrocytes into irregular masses, visible to the naked eye, occurring in the presence of the individual's own serum, without bacterial action, at air temperature and reversible at body temperature."—*J. W. Bigger.*

7419. **BROWN, AARON, E. L. MILFORD, and A. F. COCA. Studies in contact dermatitis. I. The nature and etiology of pollen dermatitis. Preliminary report.** *Jour. Immunol.* 20(5): 393. 1931.

7420. **BURNET, F. M. The interactions of staphylococcus toxin, anatoxin and antitoxin.** *Jour. Path. and Bact.* 34(4): 471-472. 1931.—Toxin detoxicated with formalin is an effective antigen; its binding power is ½ that of the toxin from which it was derived. The theory of toxin-antitoxin combinations is discussed.—*A. E. Boycott.*

7421. **CAPUA, F. de. Sulla trasmissibilità di anticorpi per via placentare.** *Pediatria Rivista* 36(4): 186-195. 1928.—Studies on the rabbits prove that while hemagglutinins do not pass the placenta, hemolysins are thus transmitted, but not all rabbits born from the same delivery have the same quantity of hemolysins. The rapid disappearance of the hemolytic power of the serum after the birth suggests that it is due to a passive immunity.—*E. Ponzi.*

7422. **CARPENTER, C. M., RUTH BOAK, and O. D. CHAPMAN. The significance of Brucella abortus agglutinins in human serum.** *Rept. New York State Vet. Coll. Cornell Univ.* 1928/1929: 111-125. 3 fig. 1930.—Agglutination tests for evidence of *Brucella abortus* infection, on sera collected from 4050 Wassermann samples in Syracuse, New York, showed 7.3% to contain abortus agglutinins. Examination of 955 similar samples of serum collected in New York City, showed 2.4% to agglutinate a *Br. abortus* antigen. *Br. abortus* agglutinins could not be demonstrated in serum from adults who had been drinking pasteurized milk containing such antibodies. Evidence is submitted to indicate that *Br. abortus* agglutinins in the blood serum are a result of active production by the living micro-organism which has invaded the body tissues. *Br. abortus* agglutinins may disappear from human sera very slowly. One serum titer was 1: 405, 2 yrs. after apparent recovery from undulant fever. Because of the variable antigenic properties of certain strains of *Br. abortus*, no specific serum titer can be established as diagnostic of undulant fever.—*Authors' conclusions.*

7423. **CASTALDI, FRANCO, e ANNIBALE MACCHI. La rivaccinazione per via cutanea col B.C.G. negli animali. [Cutaneous revaccination with B.C.G. in animals.]** *Arch. Ist. Biochim. Ital.* 3(2): 139-158. 13 fig. 1931.—Cutaneous revaccination of animals previously treated with the same vaccine per os, is followed by local phlogistic specific lesions, which show a tendency to spontaneous regression. Localizations of epithelioid character are observed in lymph glands and lungs. No revaccinated animal died, whereas all controls died between the 45th and 60th days from experimental infection.—*M. Comel.*

7424. **CIMINO, GIUSEPPE. Influenza dello stato di vascolarizzazione cutanea sulla cutireazione alla v. Pirquet.** *Pediatria Rivista* 36(4): 195-205. 1 fig. 1928.—The Pirquet reaction augments with intensity of constriction in the cutaneous vessels and in the passive hyperemia, in consequence, perhaps, of conditions more adapted to a larger fixation of the antibodies, and becomes weaker, instead, when the circulation is more rapid.—*E. Ponzi.*

7425. **COCA, ARTHUR F. Note concerning differences between the clumping of pseudoagglutination and that of isoagglutination.** *Jour. Immunol.* 20(4): 263-267. 4 fig. 1931.

7426. **COMBIESCO, D., E. SORU, et S. STAMATESCO. Recherches sur les substances solubles spécifiques (residual antigens) de la bactéridie charbonneuse.** *Arch. Roumaines Path. Exp. et Microbiol.* 2(2/3): 291-311. 1 fig. 1929.—The authors extracted from cultures of anthrax bacillus a water-soluble substance having the properties of the polysaccharide obtained by Dochey and Avery, and by Avery and Heidelberger, from pneumococci. From this extract a C-substance was obtained by hydrolysis and examined in detail. This residual antigen was non-toxic for white mice and guinea pigs when injected intravenously and did not produce antibodies on injection into rabbits. A heavy precipitation was found in the presence of specific serum, when the serum used came from animals injected intravenously rather than subcutaneously. Neither active nor passive sensitization of guinea pigs or rabbits was possible, nor could an allergic condition of the skin of guinea pigs be established with this residual antigen.—*E. I. Parsons.*

7427. **COSTERO, I. Studien zur Geschwulstimmunität. X. Über die immunisierende Fähigkeit von homologem Muskelautolysat.** *Zeitschr. Krebsforsch.* 33(3): 261-263. 1930.—Attempts at immunization of animals against transplanted Ehrlich mouse carcinoma by intravenous injection of autolysates of mouse muscle yielded negative results.—*H. E. Eggers.*

7428. **CRAIGIE, J. A method of drying complement from the frozen state.** *British Jour. Exp. Path.* 12: 75-76. 1931.—The apparatus consists of a vacuum pump (Geryk); a desiccator containing dry $CaCl_2$, a thin glass dish; and a support for the latter, the most suitable form being an X-shaped wire frame with the 4 ends fixed into corks. The dish should have ample clearance from the sides of the desiccator and the $CaCl_2$. The com-

plement is placed in the dish in a layer at least 1 cm. deep, the desiccator luted down with rubber-vaseline compound and evacuated. Slight bubbling takes place, the complement freezes solid and rapidly dries. The dried complement is easily pulverized and resuspended in distilled water, and the suspension is indistinguishable in appearance and hemolytic titer from the original. 1 lb. of dry $CaCl_2$ should be used for each 75 cc. of complement. The method can be applied to other biological fluids.—*J. Bland.*

7429. **CROMWELL, HOBART W., and MARJORIE B. MOORE. Studies on pollen and pollen extracts. III. Skin reactions to pollen extracts in rabbits.** *Jour. Immunol.* 20(2): 161-167. 1931.—Skin sensitivity to pollen extracts was demonstrated in actively immunized rabbits, using trypan blue as an aid, after Ramsdell's method. The reaction is specific, and is more delicate than the precipitin test as indication of an immune response. Localization of trypan blue also occurs in the abdominal fluid of immune animals following intraperitoneal injection of pollen antigen. Passive transfer of skin sensitivity from immune to normal rabbits was accomplished by use of large quantities of immune serum.—*Authors' summary.*

7430. **DAVIS, NELSON C. Uso experimental de uma vaccina cloroformada contra a febre amarella. [Experiments with yellow fever vaccine treated with chloroform.]** *Brasil-Med.* 45(12): 268-270. 1931.—Saline suspensions of virulent yellow fever virus (monkey livers) remained virulent for at least 28 days under treatment with chloroform, if preserved at 10° C. 1 cc. of this yellow fever vaccine (virus attenuated with chloroform) protected animals against only 1 test dose of an active virus administered 40 days after vaccination.—*Author's summary (transl. by A. de Assis).*

7431. **DIENES, L. The specificity of the tuberculin type of sensitiveness produced with the different substances of the eggwhite.** *Jour. Immunol.* 18(4): 279-283. 1930.—According to observations here described, sensitiveness of the tuberculin type produced in guinea pigs with egg globulin, crystalline egg albumin, and ovomucoid is specific to the preparation with which the animals are treated. The specificity of this type of sensitiveness, like that of anaphylactic sensitiveness, corresponds to the antigen specificity.—*L. A. Barnes (from author's summary).*

7432. **DONADEI, G. Essais d'immunisation par la voie nasale, contre la toxine du streptocoque isolé des scarlatineux.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(1): 21-22. 1931.—Preliminary experiments showed that it is possible to vaccinate rabbits by the nasal route, as well as by the subcutaneous or intravenous routes, against infection by streptococci isolated from scarlatina cases.

7433. **DURAN-REYNALS, F. On the spontaneous immunization of rabbits to vaccine virus.** *Jour. Immunol.* 20(5): 389-391. 1931.

7434. **FASTING, GEORGE F. On the concentration of antistreptococcus serum.** *Jour. Infect. Dis.* 45(5): 360-365. 1929.—A modification of the Felton method for precipitating antibody-euglobulin in antistreptococcus sera is described. Use of ether in the diluent, for lowering surface tension, appears to have technical advantages and does not destroy the therapeutic merits of the antibody-euglobulin. The antibody fraction was administered intramuscularly and subcutaneously in a large number of cases, over a long period, without observation of complications or undesirable features of whole serum or of that concentrated by the salting method. Prolonged immunization of horses with green-producing streptococci produces a change in the euglobulin, manifested by appearance and increase of a fraction with an isoelectric point near that of normal blood, which carries down the bulk of the agglutinin and other antibodies, and which is of definite therapeutic value.—*Author's summary.*

7435. **FIALHO, AMADEU, et GENESIO PACHECO. Influence du système réticulo-endothélial sur la virulence bactérienne.** *Compt. Rend. Soc. Biol.* 98(17): 1562-1564. 1928.—Rabbits in which the reticulo-endothelial system was blocked by lithium carmine, were inoculated with attenuated *Bacillus pestis.* The authors conclude that the reticulo-endothelial system plays a part in the alteration of virulence of infections, since cultures taken from the animals showed greater virulence than the infecting cultures.

7436. **FINDLAY, G. M. The fractionation of anti-vaccinia serum.** *British Jour. Exp. Path.* 12: 9-12. 1931.—A pooled immune serum from a number of rabbits was treated with $(NH_4)_2SO_4$, and euglobulin, pseudoglobulin and albumin fractions were obtained. These were compared with the untreated serum in neutralisation, flocculation and phagocytosis experiments. In antivaccinia immune sera from rabbits, the immune body responsible for the protective action, for flocculation of the virus, and for stimulating phagocytosis of the virus, is associated with the globulin fraction.—*J. Bland.*

7437. **GLENNY, A. T., A. G. HAMP, and M. LLEWELLYN-JONES. The absorption of diphtheria antitoxin.** *British Jour. Exp. Path.* 12: 21-30. 1931.—Rabbits and guinea-pigs were given a known dose of antitoxin and bled at various intervals afterwards; the antitoxin value of the serum was then determined by intracutaneous tests. The total amount of antitoxin absorbed after each interval is then calculated by multiplying the antitoxic value per cc. of the serum by the serum volume taken as 1/20 of the body wt. There is a considerable difference in total amount of antitoxin absorbed into the blood-stream by different guinea-pigs injected subcutaneously with the same amount of serum; therefore, no conclusions can be drawn from experiments on a limited number of animals. There is no significant difference between amount of antitoxin absorbed, whether given diluted or undiluted. Rate of absorption of antitoxin depends on amount of protein injected, as compared with body wt. of animal, and is greatly affected by it. This influence of protein is greatest when the amount is large in relation to body wt. The average concentrated therapeutic serum is absorbed at least as rapidly as unconcentrated serum containing the same number of units, with small dosage; and more rapidly, with large dosage.—*J. Bland.*

7438. **GORDON, J. The action of Congo red on streptococcal haemolysin and on B. welchii haemolysin.** *Jour. Path. and Bact.* 34(44): 439-445. 1931.—Certain concentrations of solutions of Congo red neutralize the hemolysins of *Streptococcus haemolyticus* and *B. welchii.* These neutralizations are reversible; in the case of the streptococcus, addition of cuprammonium artificial silk adsorbs the Congo red and liberates the hemolysin. This method can not be used with *B. welchii,* as the hemolysin is destroyed by artificial silk. Reversibility with both the hemolysins of *Strep. haemolyticus* and *B. welchii* can be shown by the adsorption of Congo red on ox serum. Reversibility is best effected where the concentration of Congo red is just sufficient to neutralize the hemolysin. Congo red does not neutralize the hemolytic activities of solutions of saponin, sodium taurocholate or sodium ricinoleate.—*J. Gordon.*

7439. **GRAHAM, ROBERT, and FRANK THORP, Jr. Antigenic value of botulinum toxoids kept one year at ice box temperature.** *Jour. Immunol.* 20(4): 305-312. 1931.—An antigenic decline in botulinum toxoids of 30-60% over a period of 1-12 mo. was measured by the increased number of arbitrary units required to protect guinea pigs against lethal amounts of homologous toxins. None of the 11 toxoids that proved non-toxic in 1-unit doses later became toxic in the same amounts, notwithstanding an occasional toxoid-inoculated pig died of intercurrent infection. 7 of 11 samples of botulinum toxins A, B, and C containing 0.3-0.9% formalin became detoxified at 37-42° C. in 1 mo. The remaining 4 of 11 samples required 2-5 mo. for detoxification. One sample retained its original antigenic properties for 5 mo.; another for 3 mo.; 3 for 2 mo.; and 2 for 1 mo. 10 of the 11 toxoids were atoxic and antigenic in 2-unit

doses at 10-12 mo. of age. Rate of detoxification in botulinum toxoids by formalin and heat seemed uncorrelated with longevity of antigenic properties. One toxin with 20,000 guinea-pig-lethal doses per cc. required a longer period for detoxification than other toxins containing 10,000 guinea-pig-lethal doses per cc. However, no consistent difference in rate of antigenic decline was observed between toxoids prepared from toxins containing 10,000 and 20,000 guinea-pig-lethal doses per cc. The pH of 11 botulinum toxoids changed from an original titer of 7.6 in the inoculated media to an average of 6.7 in 7½ mo.—*Authors' summary.*

7440. **GRASSET, E. Sérum anti-typhoïdique concentré et purifié. Technique de préparation. Applications cliniques.** *Compt. Rend. Soc. Biol.* 106(10): 810-812. 1931.—A method for preparing polyvalent serum (typhoid and paratyphoid A, B and C bacilli) is described. This serum, used for over 600 cases of typhoid, has a marked curative action. Fractional precipitation with anhydrous Na_2SO_4 showed that the pseudoglobulin contains practically all of the therapeutic antibodies, thus providing a method of concentrating the antibodies to 4-6 times the concentration in the serum. Therapeutic action varies with amount of serum injected and is not accompanied by shock. The practical dose is 3-4 intramuscular injections of 20-40 cc. of concentrated serum, given at intervals of 24-48 hrs.—*E. Weiner.*

7441. **HARVEY, W. F. Variations in blood grouping.** *Indian Jour. Med. Res.* 17(4): 1307-1311. 1930.—5 blood groups have emerged by testing the blood of a limited number of individuals strictly against every other, instead of by means of a standard serum. There is then a possibility that still more groups might be obtained if this method of testing were carried out. The gradation of agglutination found within the groups, as judged by using a time unit as a measure, points to the possibility of one group merging into another and to the possible existence of variant individuals of whom it can not be said positively that they belong to one or another of the selected groups or to a new group.—*Author's summary.*

7442. **HERHOLZ, GÜNTHER. Weitere Erfahrungen mit der aktiven Scharlachimmunisierung.** *Zeitschr. Kinderheilk.* 50(6): 680-690. 1931.—About 1400 children in an institution were injected with Dick toxin (12,500 skin test doses); 9 (0.6%) developed scarlatina more than 2 weeks after the last injection. Of 266 unvaccinated children, 14 (5.2%) were attacked.—*G. Herholz (transl. by L. C. Havens).*

7443. **JULIUS, H. W. Over agglutinatie van carcinoomcellen. [Agglutination by carcinoma cells.]** [With English, French and German summaries.] *Nederl. Tijdschr. Hyg., Microbiol. en Serol.* 6(1): 71-79. 1931.—Based on a series of experiments, the writer concludes that the phenomenon of agglutination in cancer cells, as discovered by Waterman, is not specific for carcinoma. A hypothesis is introduced that the reaction may be classed in the well-known system of heterogenetic antibodies and their heterophilic (Forssman's) antigen.—*Author's summary.*

7444. **KOLLER, SIEGFRIED, und MAX SOMMER. Zur Kritik der von S. Wellisch angewandten mathematischen Methoden in der Blutgruppenforschung.** *Zeitschr. Rassenphysiol.* 3(1): 27-44. 1930.—13 mathematical papers written by Wellisch on the theory of blood groups are criticized, and numerous serious mathematical errors are pointed out. A single positive result could not be obtained from all these works. In his rebuttal, Wellisch only defends a moot point.—*S. Koller (transl. by A. S. Wiener).*

7445. **KOULIKOFF, W., P. SMIRNOFF, et M. BOBKOVA. Conditions physico-chimiques de la thermostabilité de l'antitoxine diphtérique.** *Compt. Rend. Soc. Biol.* 98(17): 1503-1504. 1928.—Antitoxin (300 units per cc.) was acidified with N/10 HCl to pH 3.6-2.6 and heated 10 min. at 100°. No precipitation occurred until the solution was neutralized. The precipitate redissolved at pH 7.9-8.2. The serum retained 60-120 units immunizing power per cc. after this treatment.

7446. **KRITSCHEWSKI, I. L., und K. A. FRIEDE. Über die zelluläre Natur des anaphylaktischen Schockes. VII.** *Zeitschr. Immunitätsforsch.* 64(5/6): 493-509. 1929.—Experiments were carried out on blood vessel preparations (Friedberger & Seidenberg) of the hind legs of guinea pigs sensitized with sheep erythrocytes and of the ears of rabbits sensitized with sheep erythrocytes or horse serum. The blood vessels were thoroughly perfused with Ringer-Locke solution before addition of antigen. Controls were done with preparations from normal animals. Further experiments were done on blood vessel preparations of rabbit ears thoroughly perfused with Ringer-Locke solution and kept in the refrigerator over night before the test. The authors found that when antigen was added to guinea pig and rabbit blood vessel preparations previously perfused free of antibodies, the vessels contracted. Intensity of contraction was independent of amount of antibodies in the blood. The negative results of some of the preparations kept in the refrigerator over night are attributed to partial necrosis of the preparations. The authors believe that these experiments confirm the importance of cellular antibodies and their independence of humoral antibodies in anaphylaxis.—*H. L. Gruehl.*

7447. **KYES, PRESTON, and ROBERT T. PORTER. The antigenic properties of fibrinogens.** *Jour. Immunol.* 20(2): 85-88. 1931.—In further studies on blood fibrinogen as a source of serum shock, the authors prepared fibrinogen from the blood of Plymouth Rock cockerels, and administered 6 injections of 5 cc. of standard solution (i.e., dissolved in a volume of dist. water equal to the original volume of plasma from which the fibrinogen was obtained), at 2½ day intervals, into rabbits. About ½ the rabbits survived. As little as 0.005 cc. of this immunized rabbit serum precipitated fibrinogen from a dilution (1:20 of a 2% Na citrate solution) of the "standard." This anti-fibrinogen immunization was specific for fibrinogen from fowls; that from sheep or horses was not precipitated.

7448. **LEBEDJEWA, M. N., und L. B. LEVINSON. Über die Anaphylaxie gegenüber Lipoiden.** *Zentralbl. Bakt. I. Abt. Orig.* 117(7/8): 519-535. 1930.—A brief review of the literature is given. Guinea pigs were sensitized with 5 daily doses of 1.5 cc. of a mixture of lecithin and hog serum prepared by evaporating a 1% alcoholic solution of lecithin, redissolving in an equal volume of 1:10 hog serum, and holding at room temp. for at least ½ hr. Test was carried out 14 days later by the blood vessel preparation method of Friedberger and Seidenberg, perfusing with serum-lecithin mixture. Controls were done with serum and with lecithin. Sensitization was demonstrated to serum, but not to lecithin. Preparations from a desensitized animal showed similar results. Attempts to sensitize paramoecia to lipoids also failed. The authors conclude that lipoid anaphylaxis does not occur, since the reactions obtained with lipoid-serum mixture were reactions to serum alone.—*H. L. Gruehl.*

7449. **LEHNER, E., und E. RAJKA. Künstliche Sensibilisierung und Desensibilisierung der menschlichen Haut unter Vermittlung von Schleppersubstanzen.** *Zeitschr. Ges. Exp. Med.* 71(1/2): 128-136. 1930.—Artificial sensitization of human skin can be produced in almost every individual if the depot method of application is used. Here the substances are always applied to the same place on the skin. With some materials, application of the single substance is sufficient; with others, especially definite chemical substances, it is necessary to add some aiding substance. The best of these are blood serum, other protein-containing substances, cholesterol, and dextrose. Sensitization begins in the neighborhood of the depot and gradually extends to the entire skin. On further application to the depot, desensitization occurs; this also begins at the depot and extends over the entire body surface.—*J. T. Myers.*

7450. **LEWIN, J., et L. POJARISKAJA. Les réactions**

de l'anaphylaxie sur l'intestin isolé et son application. *Rev. Hyg. et Méd. Prévent.* 52(4): 267-270. 1 fig. 1930.—A preliminary series of experiments to determine the dosage in the isolated intestine reaction and a parallel series contrasting the efficacy of this reaction with that of the precipitin test, showed the former the more sensitive. The authors advance several reasons for use of the smooth muscle experiment in legal medicine.—*H. L. Gruehl.*

7451. **LUDFORD, R. J.** Resistance to the growth of transplantable tumours. I. The influence of vital staining on induced resistance. *British Jour. Exp. Path.* 12: 45-48. 1931.—Mice were vitally stained with repeated inoculations of trypan blue and were immunized by injection of finely minced mouse embryo skin. They were then transplanted with tumor. The effect on these mice was compared with similarly transplanted normal mice and immunized mice untreated with trypan blue. Vital staining with trypan blue breaks down the immunity to tumor transplantation induced by inoculation of embryo skin emulsion. A local cellular reaction in the immunizing process is shown to occur, and it seems most probable that vital staining modifies this reaction in some manner so as to affect the general reaction of host to inoculated tumor cells.—*J. Bland.*

7452. **LUDFORD, R. J.** Resistance to the growth of transplantable tumours: II. The influence of dyestuffs and of colloids on natural resistance. *British Jour. Exp. Path.* 12: 108. 1931.—Trypan blue, vital new red and various inorganic colloids—substances of very different chemical and physical properties—are capable of breaking down the resistance of mice to the growth of transplantable tumors. However, these substances have 2 properties in common: they are segregated by certain cells of the animal body, especially the macrophages; and, in the doses used, they reached the limit of toxicity. —*J. Bland.*

7453. **LUMIÈRE, AUGUSTE.** Le néologisme "anaphylaxie." *Rev. Gén. Sci. Pures et Appl.* 42(9): 258-260. 1931.—Note containing a brief history of our knowledge of anaphylaxis.

7454. **MARRACK, J., and F. C. SMITH.** Quantitative aspects of immunity reactions: the precipitin reaction. *British Jour. Exp. Path.* 12: 30-34. 1931.—The amount of precipitate obtained when antigen (horse-serum pseudoglobulin) and antibody (rabbit serum) were mixed in optimum proportions, was relatively independent of conditions under which precipitation took place. Addition of non-specific proteins had no effect and the effects of variation in concentration of electrolytes and temp. at which flocculation took place were appreciable only when the antigen-antibody mixture was much diluted. When antigen is in excess and the volume large, the amount of precipitate is greatly increased by addition of $BaCl_2$. This is thought to be due to neutralization of the negative charge of an insoluble suspension. The mixture of horse-serum pseudoglobulin and its antibody is slightly soluble in 0.9% NaCl. The precipitate is composed of protein; no substances soluble in fat solvents were detected.—*J. Bland.*

7455. **MAZZETTI, GIUSEPPE.** Comportamento del bac. del carbonchio negli organi di cavia uccisa con un ceppo asporigeno di tale germe e tenuti alla temperatura del ghiaccio fondente. (Esper. in "vitro.") [Behavior of anthrax bacilli in the organs of a guinea pig killed by a non-sporulating strain and kept at the temperature of melting ice. (In vitro test.)] *Boll. Soc. Italiana Biol. Sper.* 3(8): 1195-1197. 1928.—The author in previous experiments had demonstrated that the organs (particularly the spleen) of a guinea pig killed with anthrax bacilli and kept at the temp. of melting ice rid themselves gradually of these organisms. The author, using a non-sporulating, virulent strain of anthrax bacillus, found that the phenomenon in vitro was the same as that in the cadaver. The spleen is the organ showing a true and specific activity inhibiting the survival of anthrax bacilli even at low temp. The other organs—some more, some less—keep the organism viable. In muscular tissue it was still alive after 2 mo.—*G. Mazzetti (transl. P. Hillkowitz).*

7456. **MOCHIZUKI, N.** Colloidal character of serum of the 4 types viewed from isoagglutination. [In Japanese, with English summary, p. 5.] *Jour. Oriental Med.* 14(1): 1931.

7457. **MOOG, OTTO.** Hautfunktionsprüfungen. 207p. Gustav Fischer: Jena, 1927. Price 11 M.

7458. **MORGAN, W. T. J.** A specific precipitating polysaccharide from B. dysenteriae (Shiga). *British Jour. Exp. Path.* 12: 62-65. 1931.—A method is described for isolating a polysaccharide from the smooth variant. This substance gives specific precipitation with homologous immune serum to a dilution of 1:6 million, but fails to give rise to production of demonstrable antibodies when inoculated intravenously into a rabbit.—*J. Bland.*

7459. **NUZZI, PASQUALE.** Influenza dei raggi ultravioletti in vivo ed in vitro sul potere complementare del siero di cavia. [Effect of ultraviolet rays in vivo and in vitro on the complementary power of guinea pig serum.] *Morgagni* 73(12): 547-553. 1931.—Under the experimental conditions, complementary power was not affected by ultraviolet irradiation in vivo, or of undiluted serum or whole blood irradiated in vitro. At dilution 1:40, complement was inactivated by 15 min. irradiation. The number of experiments or subjects is not stated.

7460. **PASTORE, ROMOLINA, e GIUSEPPINA GUAGENTI.** Sul tempo di comparsa degli anticorpi nella pertosse. [Period of appearance of antibodies in whooping-cough.] *Pediatria Rivista* 36(14): 745-755. 1928.—In 50 children affected with whooping-cough, deviation of complement, done with an emulsion of bacillus of Bordet-Gengou as antigen, has been nearly always positive after the 15th day of illness. The agglutination test is very inconstant and always has a very low titer.—*E. Ronzi.*

7461. **PERELLI, C.** Rayons ultra-violets et action anti-anaphylactique. *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(1): 22-23. 1931.—Irradiated serum showed no attenuation in anaphylactic power.

7462. **PERRIN, M., et A. CUÉNOT.** Sur le mécanisme de formation des dérivés savonneux atoxiques. *Compt. Rend. Soc. Biol.* 106(10): 817-819. 1931.—The probable method of formation of cryptotoxins from toxins is discussed, after a review of opinions on the true nature of colloidal adsorption phenomena. The formation of cryptotoxins is comparable to that of the alkaloid and metallic soaps. All the soapy derivatives, as well as the cryptotoxins, are much less toxic than the original poisons.—*E. Weiner.*

7463. **PHILPOTT, CHARLES H.** Use of protozoa in measuring the neutralizing value of cobra antiserum. *Science* 74(1910): 157-158. 1931.—The method described is that of measuring the strength of cobra antiserum by placing paramecia in various mixtures of venom and antiserum, and thus determining the least amount of antiserum required to protect them from a given amount of venom.—*C. H. Philpott.*

7464. **PHISALIX, M., et F. PASTEUR.** Action des rayons ultra-violets sur le sérum de la Vipère aspic (Vipera aspis L.). *Bull. Mus. Nation. Hist. Nat. Paris* 1928(5): 321-324. 1928.—The toxicity of viper serum is not affected by ultraviolet irradiation; its antigenic power is destroyed, as is its power of neutralizing rabies fixed virus.

7465. **PITTMAN, MARGARET, and I. S. FALK.** Studies on respiratory diseases. XXXIV. Some relations between extracts, filtrates and virulence of pneumococci. *Jour. Bact.* 19(5): 327-361. 1930.—A saline extract of pneumococcus prepared by Rosenow's method decreased the phagocytosis of avirulent organisms, reduced the opsonic content of serum, only slightly increased the virulence of a borderline culture after it had been transferred several times in presence of the extract, and failed to influence the virulence of an avirulent pneumococcus. When an extract of pneumococcus produced by freezing and thawing was inoculated into white mice

it produced purpura. This extract protected mice against infection with a pneumococcus of low virulence, when the extract had preceded the culture by 24 hrs. The protection lasted only as long as purpura was visible. If the extract was given simultaneously with culture or after a slight infection had developed, fatality resulted. When the extract followed the culture inoculation, the purpuric reaction was absent or less severe. The borderline culture, after having been transferred rapidly in a medium containing some of the extract, was not changed in virulence. Fresh filtrates of pneumococcus prepared with several different media were not sufficiently toxic for laboratory animals to cause death, but they tended to increase the localization power of avirulent pneumococci when mice were given the 2 substances simultaneously. Virulence of pneumococci was not significantly affected when they were transferred rapidly in presence of old culture filtrates containing a large amount of soluble specific substance, in enriched media and in media containing substances that lower and raise the electrophoretic potential of bacterial cells. Rabbits inoculated intravenously with 10 small doses of pneumococcus filtrate developed sufficient immunity to cause a localization of pneumococci in the lungs.—*Authors' recapitulation.*

7466. **PREDTECHENSKY, S. N.** Production of potent antitetanic serum. *Jour. Immunol.* 20(2): 143-148. 1931.—In the method described, a ground-immunity was obtained by a few injections of toxin and antitoxin; then the horses rested during 3-4 mo.; after that, they were immunized with doses of toxin doubled each time. The serum content of antitoxin reached 1500 or more units per cc.—*Author's summary.*

7467. **RAMON, G.** Sur la stabilité des propriétés de l'anatoxine diphtérique. *Compt. Rend. Soc. Biol.* 98(17): 1504-1506. 1928.—Diphtheria anatoxin kept at 3-4° C. or at room temp. was found, after 5 yrs., to have retained its immunizing power and not to have become toxic. Refrigerated serum precipitated antigens most rapidly.

7468. **RAMON, G., R. LEGROUX, et M. SCHOEN.** Sur l'anatoxine diphtérique extraite du floculat spécifique. Ses propriétés. *Compt. Rend. Soc. Biol.* 106 (10): 779-782. 1931.—Diphtheria anatoxin extracted from the specific flocculate retained its flocculating power after heating at 100° C. for 10 min. The dissociating power was also retained. The immunizing power was tested by injecting guinea pigs with samples of the recovered anatoxin, the value of which was determined by flocculation. After 1 mo. the animals were killed and the average amount of antitoxin was measured. The anatoxin, heated to 100°, had an immunizing power equal to that of anatoxin derived directly from toxin. This method of extraction of anatoxin provides a simple means of concentrating this antigen, since most of the nitrogenous substances are removed in the process.—*E. Weiner.*

7469. **RICHET, CHARLES, fils, [JEAN] DUBLINEAU, et RAYMOND COUDER.** La bactériolyse tissulaire du bacille de Koch. *Jour. Physiol. et Path. Gén.* 29(2): 277-287. 1931.—Bacteriolysis of Koch's bacillus can be brought about by a relatively simple, thermolabile lysin found associated with the proteins of liver, muscle and blood corpuscles.—*W. R. Fearon.*

7470. **RICHET, CH., fils, JEAN DUBLINEAU, et RAYMOND COUDER.** Essais de thérapeutique expérimentale; action des sucs d'organes dans la tuberculose du lapin. *Jour. Physiol. et Path. Gén.* 29(2): 294-298. 1931.—In certain animals, onset of tuberculosis was retarded by simultaneous inoculation with meat juice or extract of blood corpuscles. This is believed to be due to the agent concerned in the beneficial results sometimes obtained in zomotherapeutic treatment of tuberculosis.—*W. R. Fearon.*

7471. **ROSLING, EYVIND.** Undersøgelser over difteridisposition og difteriimmunitet med saerlight henblik paa blodgrupper, Schickreaktion og arvelighedsforhold. [Investigations on predisposition and immunity to diphtheria, with special reference to blood groups, Schick reaction, and inheritable conditions.] [With English summary.] 135p. Arnold Busck: Copenhagen, 1928.—Determination of the blood groups of 339 normal children below 15 yrs. old yielded figures deviating from those of Thomsen for individuals over 65 yrs. old. There is some reason to believe that the proportionality between individual blood groups undergoes a change with advancing age, group II increasing at the expense of the other groups. Other investigations seem to point to the same conclusion. Blood group as well as sex influences the course of diphtheria, post-diphtherial pareses occurring more frequently and being more severe in group I than in group II; within each group; also these conditions are more frequent and more severe in boys than in girls. Cardiac complications are more frequent in group I than in group II, without displaying differences with regard to sex. Variations in the same morbidity curves of the same disease, and the cause of such variations, are discussed. A detailed survey of the history, technic and course of the Schick reaction and its variations is given. Schick reactions differ in the 2 sexes, there being more Schick-negatives among boys than among girls. Some statements regarding the duration of negative Schick reactions are criticized. It has been pointed out that the limit between positive and negative Schick reactions must be supposed to lie about 1/100 unit of antitoxin per cc. of serum. A difference in the relations of the Schick reaction within the different blood groups has not been observed. The author's investigations show that, even though clinical diphtheria is more frequently met in Schick-positive than in Schick-negative individuals, it is not infrequently observed in the latter. By following the Schick reaction during the course of mild cases which have not been treated with serum, and by re-examining patients with severe diphtheria sometime after onset, it has been shown that a production of antitoxin demonstrable by means of the Schick reaction commences rather late or in many cases fails to occur. Antitoxin production could most frequently be demonstrated in patients with mild diphtheria, whereas among patients who had had a severe diphtheria only 30% were found to be Schick-negative when examined 5-11 mo. after onset. The author's investigations bearing on the relations of the Schick reaction in the laboring classes of Copenhagen are recorded. In these as well as in other investigations, a distinct rise is witnessed in the number of Schick-negative individuals at age 13. There are 3 forms of immunity against diphtheria: (1) the capability of producing antitoxin, (2) a not yet definitely known function depending on the suprarenal capsules, and (3) antibacterial immunity expressed by pseudoreaction to the Schick test. Immunity against diphtheria is not merely a question of antitoxin; it depends also on a series of other factors, such as sex, blood group, the beginning of puberty, the ovarial function, and possibly also on a great many others, of which the importance and interrelations are as yet far from being clear.—*K. C. Berthelsen.*

7472. **ROSSET, WILLY.** L'action du choc par centrifugation sur la résistance du cobaye à l'infection par le Mycobacterium aquae Galli-Valerio. *Zeitschr. Immunitätsforsch.* 64(5/6): 510-520. 3 fig. 1929.—The problem was to determine whether a diminution of individual resistance could transform a non-pathogenic bacillus into a pathogenic one. The resistance of guinea pigs was lowered by daily rotations of 1 min. duration in a specially constructed centrifuge (Galli-Valerio). Normal guinea pigs were infected, subcutaneously or intraperitoneally, with *M. aquae* and then subjected to rotation. Controls were infected without rotation. The authors found that centrifugalization influenced the localization of the micro-organism and that it inhibited bacteriolysis, allowing the animals to become infected more easily. The central nervous system was never affected. The action of centrifugalization suggested an increase of virulence of *M. aquae* by lowering the resistance of the organism which it infected.—*H. L. Gruehl.*

7473. **RUBINO, M. C.** Séro-diagnostic de la lèpre par

la agglutino-sédimentation des globules rouges de mouton formolés. *Bull. Acad. Méd.* [*Paris*] 105(21): 890-893. 1931.—Of 340 sera examined, 36 were from lepers, of which 27 gave positive results; 304 were from patients with other diseases, and of these 303 gave negative results. The 1 positive case on further investigation yielded evidence of contamination with leprosy.

7474. **SCHMIDT, S., und A. HANSEN. Über die Reinigung und Konzentrierung von Diphtherietoxin und Diphtherieanatoxin, mit besonderem Hinblick auf die aktive Immunisierung von Menschen.** *Biochem. Zeitschr.* 228(4/6): 263-290. 1930.—By a combined adsorption of toxin and anatoxin with $Al_2(OH)_6$ (Willstätter's method) and charcoal a strongly concentrated, colorless and odorless toxin and anatoxin solution was produced, which retained the specific immunological property of the raw product. Toxins and anatoxins have been produced containing 500-1000 units per cc. The protein content of the concentrated products does not exceed that of the raw product.—*M. S. Nichols.*

7475. **SCHULTE-TIGGES, H. Einfaches Tuberkulosekomplementbindungsverfahren mit aktivem Serum nach Goldenberg.** *Beitr. Klin. Tuberk.* 71(3): 332-335. 1929.—Goldenberg recommends the use, with Besredka's antigen, of normal sheep amboceptor and complement of patient's serum. In 536 cases, in which the author compared this method with the original method of Besredka, a close parallelism was found between results obtained by the 2 methods.—*L. Dienes.*

7476. **SELLHEIM. Die Bestimmung der Vaterschaft nach dem Gesetz und vom naturwissenschaftlichen Standpunkt. [Determination of paternity from legal and scientific standpoints.]** 32p. J. F. Bergmann: München, 1928. Price 2.80 M.

7477. **SHIBUYA, S. The relation between tuberculosis and typhoid. Experiments on animals.** [In Japanese, with English summary, p. 27.] *Jour. Oriental Med.* 14 (3): 1931.—Inoculation of typhoid vaccine into tuberculous rabbits slightly encouraged phagocytosis against tubercle bacilli, but had no effect on outcome of the disease. In tuberculous rabbits inoculated with typhoid vaccine the output of agglutinin against typhoid bacilli was smaller, and the disappearance of agglutinin was quicker than in normal rabbits similarly immunized. Tuberculous rabbits immunized by typhoid vaccine showed less vigorous phagocytosis for a time. The process gradually became slightly more vigorous than in tuberculous rabbits not immunized by typhoid vaccine, but the outcome of the disease was not noticeably affected. Rabbits immunized by typhoid vaccine showed no increase of agglutinin against typhoid bacilli due to their infection with tuberculosis, but the agglutinin disappeared sooner than in non-tuberculous rabbits. The author found no specific relation between the 2 diseases with respect to phagocytosis or agglutination.—*Author's summary.*

7478. **SICKLES, GRACE M. Local skin reaction obtained by intravenous injection of agar following intracutaneous inoculation of meningococcus toxin.** *Jour. Immunol.* 20(2): 169-172. 1931.—Intravenous injections of agar may be followed by reactions in skin areas prepared by injections of meningococcus toxic filtrate. Local reactions did not occur at the site of intracutaneous injections of agar when followed by intravenous injections of agar or of toxin. No reactions were obtained after intravenous injection of other non-bacterial substances such as galactose, gelatin, serum or India ink, following intracutaneous injection of meningococcus toxic filtrate.—*Author's summary.*

7479. **SORDELLI, A., y E. SAVINO. Anticuerpos del suero antineumocóccico. [Antibodies of antipneumococcus serum.]** *Rev. Soc. Argentina Biol.* 7(2): 169-195. 1931.—Serum obtained by intravenous immunization of horses contains precipitins, agglutinins, protective antibodies and sensitizers. Subcutaneous immunization produces no precipitins or agglutinins, but both other antibodies are present. Antibodies for soluble specific antigen (characteristic of each type) are found in the insoluble globulins. Antibodies for nucleoproteins found in the water-soluble proteins are common to all types of pneumococcus.—*J. T. Lewis.*

7480. **SUMNER, JAMES B., and J. STANLEY KIRK. Antiurease.** *Science* 73(1908): 102. 1931.—Urease injected into veins or peritoneum of young rabbits caused convulsions and death; after immunization they withstood large doses without injury.

7481. **TONINA, TEODORO A. La reacción de los Dick entre los escolares débiles.** [Dick test in weak school children.] *Semana Méd.* 35(1777): 253-262. 5 fig. 1928.—A positive test was found in 237 of 347 children between 6 and 13 yrs. old, in a school for children of feeble health, Buenos Aires.—*E. A. Molinelli.*

7482. **TROSSARELLI, L. Equilibres de la défense immunitaire au cours de l'infection expérimentale des animaux normalement alimentés et des animaux en état d'avitaminose.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 461. 1931.—In animals lacking vitamins, the defense reaction is prompter but is of very short duration.

7483. **VELU, H., et R. EYRAUD. Le vaccin japonais antirabique phéniqué offre-t-il des garanties suffisantes pour servir de base à une prophylaxie spécifique?** *Bull. Acad. Vét. France* 6(3): 171-172. 1931.—8 dogs were each given 3 injections of phenolized antirabic vaccine at intervals of 3 weeks; the doses were poorly tolerated. 1 yr. later, following intra-ocular injection of a virus which killed 3 of 4 controls, 3 of the 8 dogs died of rabies. 5 dogs were injected as in the 1st series, but were re-vaccinated 5 mo. after the 1st dose. Of these, only 1 succumbed when given the test inoculation. Although these conditions differed from those used in practice, it does not seem that the phenolized antirabic vaccine would serve as a satisfactory basis for specific prophylaxis.—*L. A. Barnes.*

7484. **VIRANO, G. L'équilibre de la défense immunitaire dans l'infection expérimentale chez des animaux soumis à des stimulations uniques et à des stimulations répétées.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 459-460. 1931.—The ensemble of defense reactions is analogous in animals submitted to a single stimulus and in those submitted to repeated stimuli; but in the latter the reactions are more intense.

7485. **WADSWORTH, AUGUSTUS, and JAMES J. QUIGLEY. Studies on the bacterial toxins. Concentration and purification of the toxin of streptococcus hemolyticus with acetone.** *Jour. Immunol.* 20(6): 459-462. 1931.

7486. **ZINSSER, HANS. Resistance to infectious diseases. An exposition of the biological phenomena underlying the occurrence of infection and the recovery of the animal body from infectious disease, with a consideration of the principles underlying specific diagnosis and therapeutic measures.** 4th ed. rev. xviii+651p. Illus. Macmillan Co.: New York, 1931.

LOWER ANIMALS

7487. **BOYER, L., et L. PLACIDI. Réaction de Vernes-résorcine et tuberculoses bovines.** *Compt. Rend. Soc. Biol.* 106(10): 833-834. 1931.—Using resorcinol and following the technique of Vernes in examination of the sera of 300 cattle (blood having been removed from the heart after removal of the viscera), normal sera gave indexes less than 20, while about 80% of the sera from tuberculous animals gave indexes over 30, miliary lesions giving important differences in every case, where present.—*E. Weiner.*

7488. **COBURN, D. R., and H. J. STAFSETH. A field test for pullorum disease. Preliminary report.** *Jour. Amer. Vet. Med. Assoc.* 32(2): 241-243. 1931.—3 improvements in the technique of the rapid agglutination test are reported: a highly stained (gentian violet) antigen; a white porcelain plate for a contrasting background, thereby eliminating the necessity of artificial lighting; and standardized pipettes for delivering accurate quantities of blood and antigen.—*Authors' summary.*

7489. **COMINOTTI, LUIGI.** Der Kampf gegen die Maul- und Klauenseuche mittels der Simultanimpfung in der Lombardei. *Deutsche Tierärztl. Wochenschr.* 39 (32): 497-499. 1931.—Simultaneous inoculation with highly potent serum and virus very effectively protected against both the malignant and mild forms of foot-and-mouth disease.

7490. **CURASSON, G.** La prophylaxie de la peste bovine. *Rec. Méd. Vét. École d'Alfort* 3(4): 161-175. 1930.—A comprehensive review of immunization methods against rinderpest, with bibliography.

7491. **FORTNER, J.** Immunitätsbeziehungen zwischen Variolavakzine und Geflügelpocken beim Huhn. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(1/2): 150-159. 1931. —The author concludes that it is not possible to protect fowls against variola vaccine virus with fowl-pox virus, or vice versa. The variola vaccine gave a slight protection against a reinoculation, while the fowl-pox virus gave complete protection against a reinfection with homologus virus.—*L. D. Bushnell.*

7492. **HADLEY, F. B., and W. E. WELSH.** On the persistency of the agglutination reaction for Brucella abortus. *Cornell Vet.* 21(3): 286-291. 1931.—The data presented demonstrate that within 2 yrs. a relatively large number of high titer reactors became low reactors, while a smaller number became non-reactors. On the other hand, all the low titer reactors in the herd under discussion became non-reactors. Detailed results are given in tables.

7493. **HÄGERSTAD, GÖSTA.** Kvarkvaccinens immuniserande förmåga. III. [Immunizing value of strangles bacterin III.] [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(9): 289-292. 1931.—The immunizing value of strangles bacterin was tested on a horse after a 2nd subcutaneous inoculation with 15 cc. of 0.1 volume-% of strangles bacterin (strangles streptococci killed by boiling and suspended in phenolated saline), as compared with the immunizing power after a 1st inoculation carried out in the same way. The immunizing value was estimated by the protective action of the horse-serum on mice, which, the day after treatment with serum, had been infected with a strangles strain which killed non-treated mice within 24 hrs. The serum (0.02 cc.) was injected subcutaneously. Both after the 1st and the 2nd inoculations, an increased immunizing value followed within 1 week and attained its maximum height in 3 weeks; subsequently the immunity-value decreased,—quickly after the 1st inoculation but more slowly after the 2nd.—*From author's summary.*

7494. **KARMANN, P.** Die Milzbrandimpfung nach Besredka. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39 (1/2): 51-69. 1931.—The author describes results of treating white mice, guinea pigs, rabbits and sheep, cutaneously and intra-cutaneously, with Pasteur anthrax vaccines I and II (Besredka method). Some of the animals failed to survive treatment, but those which did showed a relatively high degree of immunity. The intracutaneous method was most satisfactory, since the cutaneous method led to more severe vaccination losses. —*L. D. Bushnell.*

7495. **KATRANDJIEFF, K.** Sur les propriétés précipitogènes du lait de Bufflesse. *Compt. Rend. Soc. Biol.* 98(17): 1508-1510. 1928.—Antisera of buffalo milk are specific for dilutions above 1 part per 100; below this dilution they precipitate cow milk, although more slowly. Cow antisera precipitate buffalo milk rapidly, and goat antiserum is specific only at about 1 part in 4,000. Equalization of protein content caused the cow antiserum to retain its specificity. The author concludes that casein played the principal rôle in precipitation.

7496. **LÜCKE.** Vergleichende Untersuchungen über die intrakutane Anwendungsmethode des Tuberkulins. *Zeitschr. Veterinärk.* 43(8): 286-297. 1931.—Intradermal tests, as compared with those on the conjunctiva, are at least of equal value; the reaction is clearer and permits a more objective estimate of results, and is not so easily effaced.

7497. **MENCK, FR.** Die Abortus-Klärungsreaktion (A.K.R.) eine neue einfache und sichere Methode zur Serodiagnose des Abortus Bang. [The abortus clearing reaction: A new and sure method for serodiagnosis of contagious abortion.] *Berliner Tierärztl. Wochenschr.* 47(12): 178-180. 1931.

7498. **NORDBERG, ÅKE.** Immuniseringsförsök på möss med rödsjukeympämne. (Immunization experiments with swine erysipelas vaccine on mice.) [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(8): 231-247. 1931.—There are swine erysipelas bacilli which are perfectly avirulent for mice but which give rise in them to immunity against subsequent infection with virulent bacilli. It should be possible to employ this characteristic for diagnosing avirulent swine erysipelas bacilli. The latter may occur in company with virulent swine erysipelas bacilli, with which they may be obtained in cultures. From cultures of a mixture of the virulent and avirulent bacilli, the latter can be obtained pure by carrying for a long time on artificial media without mouse-passage, in which process the virulent form is so greatly checked in development that it finally dies. Inoculation with the avirulent bacilli (0.2 cc. of serum bouillon culture, 24 hrs. old) increases in high degree the power of resistance of inoculated mice against subsequent infection with the virulent bacilli. This was observed within 7 days after inoculation, and remained undiminished for a further 10 weeks.—*Author's summary.*

7499. **SCHAFFER, JACOB M., ANGUS D. MacDONALD, WALTER J. HALL, and HUBERT BUNYEA.** A stained antigen for the rapid whole blood test for pullorum disease. *Jour. Amer. Vet. Met. Assoc.* 32(2): 236-240. 1931.—The new antigen consists of a suspension of *Salmonella pullorum* in 0.85% NaCl adjusted to a turbidity 75 times that of Standard No. 1 of the McFarland scale, killed and preserved by addition of 1% liquor formaldehydi U. S. P., and stained by addition of 0.03% crystal violet. The test may be made by mixing 1 drop of antigen with a rather heavy blood smear on a glass plate.—*Authors' summary.*

7500. **SCHMEY, und HENKE.** Das Guttadiaphot in der Tierheilkunde. *Arch. Wiss. u. Prakt. Tierheilk.* 61 (6): 465-484. 4 col. fig. 1930.—The guttadiaphot is a non-specific blood test, useful in veterinary medicine along with other methods in establishing a diagnosis of tuberculosis or of parasitic invasion. The guttadiaphot is principally influenced by the age of the lesion (tuberculosis) or the severity of the invasion (parasites). The interpretation must be made with respect to age and general condition of the animal, since old age and poor condition may give a positive result.—*Authors' summary (transl. by I. E. Newson).*

7501. **TORRES, SYLVIO.** Technica para preparo de vaccina antirabica para uso animal. [Technique for preparation of anti-rabic vaccine for use with animals.] *Rev. Zootech. e Vet.* [*Rio de Janeiro*] 17(2): 129-134. 1931.

7502. **ZERNOFF, V.** Sur la spécificité de l'immunité passive chez Galleria mellonella. *Compt. Rend. Soc. Biol.* 98(17): 1500-1502. 1928.—*G. mellonella* inoculated with blood of caterpillars previously treated with heated emulsions of bacillus of Danysz, *B. subtilis* var. *galleriae,* and *Coccobacillus acridiorum,* acquired immunity to lethal doses of these bacteria. The immunity conferred was in the above order. Bouillon and blood of normal caterpillars had a lesser immunizing power. The author concludes that *G. mellonella* is too short-lived to give reliable results.

ANIMAL IMMUNOLOGY

PARASITOLOGICAL

W. H. TALIAFERRO, *Editor*

(See also in this issue Entries 7233, 7540, 7547, 7551, 7556, 7559, 7567, 7829)

7503. ADAMS, A. R. D. The action of various sera, in vitro, on the gut and salivary gland forms of T. rhodesiense and T. gambiense from Glossina palpalis. *Ann. Trop. Med. and Parasitol.* 25: 299-312. 1931.—This paper deals with the action in vitro of a variety of sera (mammalian, avian, reptilian) on the gut and salivary gland forms of 4 strains of *T. rhodesiense* and of 1 strain of *T. gambiense*, obtained from experimentally infected *G. palpalis*. The experiments were conducted at 24°-29°C., and it was found that all fresh, complement-containing sera are rapidly lethal to the gut forms of the *Trypanosoma rhodesiense* and *T. gambiense* strains used. It is shown that removal of hemolytic complement destroys the trypanocidal action of these sera, and that in these deactivated sera the gut forms survive up to 24 hrs. The salivary gland forms are not killed by hemolytic complement, thus differing from the gut forms. Presence of an anticomplementary substance in saline extracts of salivary glands and of mid-intestines of *G. palpalis* was demonstrated, and it was found that blood is deprived of its complement within 10 min. after ingestion. It is due probably to the presence of this anticomplementary substance that feeding of fresh blood fails to sterilize the infected fly.—*A. R. D. Adams.*

7504. AMAKO, T. H. Ueber die Rolle der Milz und der Leber bei der Antikörperbildung bei experimenteller Trypanosomiasis. *Zentralbl. Bakt. I. Abt. Orig.* 117 (7/8): 470-479. 1930.—The author studied agglomeration [agglutination] in *Trypanosoma gambiense*, using rabbits immunized with a trypanosome vaccine as source of immune serum. He concludes from the following type of experiments that the spleen and liver are the chief sites of antibody formation: Splenectomy or partial destruction of the liver by hepatotoxin (a rabbit antiliver serum) or chloroform 1-2 days before immunization, significantly lowered the titer of the agglutinins as compared to normal controls. The same procedure at height of antibody formation had no such effect. Transplantation of spleen and liver of immunized rabbits into normal rabbits was followed by antibody production. Direct injection of small amounts of trypanosome vaccine into liver or spleen led to demonstration of antibodies in the peripheral blood more quickly and in higher titers than intravenous injection. Examination of liver and spleen extracts taken at various stages during immunization showed antibodies earlier and in greater amounts than in other sites. Throughout, the spleen is more important in antibody formation than the liver. When the spleen is removed, its loss of function is compensated for by the liver; loss of liver function is similarly compensated for by the spleen.—*W. H. Taliaferro.*

7505. DUKE, H. LYNDHURST, and J. M. WALLACE. "Red cell adhesion" in trypanosomiasis of man and animals. *Parasitology* 22(4): 414-456. 1930.—An adhesion phenomenon is described in which, under certain circumstances, red blood corpuscles of primates adhere to trypanosomes. The substance responsible for this phenomenon, designated "adhesin," appears in the blood of an animal in the course of its infection with trypanosomes, whether or not the animal is treated with trypanocidal drugs. When citrated blood of such animals is mixed with a blood containing trypanosomes, and if one blood is that of a primate, red cell adhesion occurs. The mixed citrated bloods (1 vol. blood+1 vol. 2% citrated saline) are placed on a slide, covered with a coverslip and observed under the microscope, readings being taken 10 min. after mixing. A negative reaction does not exclude trypanosomiasis, but a positive reaction invariably indicates recent or actual infection. No absolute specificity was obtained in this reaction; *T. gambiense* adhesin bloods not uncommonly react with *T. rhodesiense*. It was impossible to differentiate between "passage" and "relapse" strains by this test. 216 treated and untreated cases of human trypanosomiasis in Uganda Protectorate were examined and positive reactions with *T. gambiense* obtained in 38.8%; of 19 untreated cases, 14 gave a strongly positive reaction. Of 92 cases tested with both trypanosomes, 6 gave positive reactions with *T. rhodesiense* as well as with *T. gambiense*, but none reacted to *T. rhodesiense* alone. Control tests with 96 natives and 9 Europeans, without trypanosomiasis and apparently healthy, were all negative. A preliminary study of the mechanism of the test showed that the red cells of some primates are essential. The relationship between red cell adhesion and the adhesion phenomenon described by other workers is discussed, and evidence is produced suggesting that all the reactions are due to the same hypothetical substance, "adhesin."—*H. L. Duke.*

7506. [KONSTANSOV, S. V.] КОНСТАНСОВ, С. В. Противомалярийные иммунитет, вакцина и вакцинация. [Anti-malarial immunity, vaccine and vaccination.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. (*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*) 7(10): 645-657. 1929.—Vaccination of 5 patients was done with an anti-malarial vaccine. Quinine therapy was abandoned, since its plasmodicidal action prevents development of antiplasmodic factors. 2 cases had to be interrupted; in 3 the results, though slow to develop, were positive. In the periods of normal temp., plasmodial content of the blood gradually and steadily decreased and plasmodia were exclusively mature schizonts. Prior to complete disappearance of plasmodia, they showed signs of degeneration and necrosis. Clinical phenomena, morphological picture of blood and changes in the leucocytic formula fully corresponded to the apparent development of immunity.—*B. Van Rosen.*

7507. NIESCHULZ, OTTO, und A. BOS. Über den Einfluss der Milz auf den Infektionsverlauf von Surra bei Hunden. *Deutsche Tierärztl. Wochenschr.* 39(31): 488-489. 1931.—In 5 splenectomized dogs, the course of the trypanosomiasis differed essentially from that in 4 controls. In general, infections in splenectomized animals were more severe and of shorter duration.

7508. PFANNENSTIEL, W., und B. SCHARLLAU. Die Einwirkung menschlichen Blutes auf Dourineinfektionen. *Arb. Staatsinst. Exp. Ther. u. Georg Speyer-Hause, Frankfurt a. M.* 21: 133-151. 1928.—The trypanocidal principle of normal human blood is contained in the serum and not in the platelets, leucocytes or erythrocytes. Extraction with alcohol or precipitation of the globulin failed to give the trypanocidal principle in pure form; but that substance was enriched if the serum was dried, pulverized, and taken up in physiological saline. By injection of suitable doses of powdered human serum, infections with dourine trypanosomes were permanently cured. Mixing human serum or serum powder with inactive animal sera diminished the trypanocidal effect. Combined treatment with dried serum and germanin or neosalvarsan considerably increased the curative effect of these components.—*Authors' summary (transl.).*

7509. RAY, IYOTIS CHANDRA. Intrakutanreaktion zur Diagnose der experimentellen Leishmaniosen (Kala-azar, Orientbeule). *Arch. Schiffs- u. Tropen-Hyg.* 32(7): 369-376. 1928.—In 6 hamsters newly infected with kala-azar the intracutaneous reaction was positive with kala-azar antigens. A rabbit strongly immunized to a culture of kala-azar gave a strong positive reaction to a glycerine kala-azar antigen and a light reaction to an alkaline antigen. Of 2 hamsters locally infected with

kala-azar, 1 gave a light positive reaction, the other a negative with *Leishmania tropica* antigen. One rabbit strongly immunized to a culture of *L. tropica* gave a lightly positive reaction to *L. tropica* antigen. In hamsters infected with kala-azar and 1 rabbit immunized to kala-azar, the Oriental boil antigen gave a negative reaction. Against this, 1 of 2 hamsters immunized to Oriental boil and 1 rabbit immunized to *L. tropica* gave positive reactions to Oriental boil antigen. The author concludes that the reaction is specific.—*D. Koch.*

PARASITOLOGY (ANIMAL)

R. W. HEGNER, *Editor*

W. W. CORT, AND F. M. ROOT, *Associate Editors*

(See also in this issue Entries 6984, 7191, 7192, 7195, 7230, 7313, 7377, 7391, 7397, 7505, 7506, 7509, 7623, 7819, 7820, 7822, 7826, 7827, 7830, 7831, 7832, 8235, 8432, 8445, 8446, 8449, 8450, 8451, 8452, 8454, 8467, 8478, 8479, 8480, 8481, 8482, 8483, 8484, 8490, 8491, 8493, 8494, 8497, 8508, 8509, 8510, 8525, 8529, 8575, 8632, 8727, 8749)

7510. **AUGUSTINE, D. L., M. HELMY, and M. NAZMI.** Ancylostomiasis and ascariasis in Egypt. *Amer. Jour. Hyg.* 11(1): 136-148. 13 fig. 1930.—Ascariasis is almost wholly confined to Lower Egypt; in the delta region the incidence may be 70%. Ancylostomiasis is more prevalent in Upper than in Lower Egypt. Intensity of ancylostomiasis is similar for both sexes during childhood, maximum for men between ages of 25 and 30 years, for women at age 17. Hookworm infections were usually light.—*H. W. Manter.*

7511. **BACCHELLI, GUIDO.** Il metodo Noguchi-Tilden nella fissazione e conservazione dei più vari protozoi ed elminti. [Fixation and preservation of Protozoa and helminths according to the method of Noguchi-Tilden.] *Arch. Ital. Sci. Med. Coloniale* 8(6): 330-335. 1927.—The fluid of Noguchi-Tilden is an excellent fixative and preservative for amoebae, trypanosomes, Crithidiae, Herpetomonas, spirochaetes, flagellates of the human intestine and of insects, Hemosporidia and Filariae. Blood films become dehemoglobinized and smears of feces become clarified, permitting a minute study of the parasites when stained with the stain of Giemsa-Romanowsky. Protozoa, eggs of helminths, spirochaetes, Coccidia, etc., may be preserved with the materials containing them, and retain their typical structure even after 15-20 days. —*J. H. Schuurmans Stekhoven, Jr.*

7512. **BAKER, ALEX. D.** The internal parasites of poultry in Quebec. *Sci. Agric.* 11(3): 150-158. 6 fig. 1930.—The following from domestic fowls are recorded: *Eimeria avium, Ascaridia lineata, Heterakis gallinae, Capillaria meleagris, Amoebotaenia sphenoides, Davainea proglottina, Raillietina (Skjabinea) cesticillus, Hymenolepis carioca, and Choanotaenia infundibulum.* The injury, distribution, and relative importance of these parasites in Quebec are discussed.—*A. D. Baker.*

7513. **BOGOJAWLENSKI, N. A., und R. C. LEWITZKI.** Wurmträger unter den zur Wehrpflicht Einberufenen nach den Ergebnissen perianaler Abschabung. *Arch. Schiffs- und Tropen-Hyg.* 33(8): 413-416. 1929.—At the Malarial Station at Kasach, 1000 natives were examined for worms by means of perianal grattage. 82.2% were infested as follows: *Enterobius vermicularis,* 55.6%; *Taenia,* 52.6; *Ascaris lumbricoides,* 11.2; *Trichuris trichiura,* 5.3; *Ancylostoma duodenale,* 0.1; *Dicrocoelium lanceolatum,* 0.1; *Fasciola hepatica,* 0.1. Infestation with 1 sp. occurred in 44.7% of the people examined; 2, 32.8; 3, 4.4; 4, 0.3. Persons infested with tapeworms were not different from others in weight, height, chest measure, or Pignet index.—*A. S. Pearse.*

7514. **CAMERON, T. W. M.** Helminth parasites of stock in the British West Indies. *Jour. Helminthol.* 8(2): 77-84. 1930.—Conditions are unfavorable for parasitism, the percentage of animals with helminths is high but the degree of infection small. The most important diseases are protozoal. The following are recorded: from cattle *Setaria labiato-papillosa, Monodontus phlebotomus, Oesophagostomum radiatum, Dictyocaulus viviparus, Cysticercus bovis,* amphistomes; from sheep and goats *Trichostrongylus instabilis, Muellerius capillaris;* from pigs *Cysticercus cellulosae, Stephanurus dentatus, Hyostrongylus rubidus, Necator suillus, Globocephalus ursosubulatus, Oesophagostomum dentatum, Metastrongylus elongatus, M. brevivaginosus, Macracanthorhynchus hirudinaceus;* from horses, donkeys and mules *Ascaris equorum, Oxyuris equi, Habronema microstoma, H. muscae, Setaria equina, Strongylus vulgaris, S. edentatus, S. equinus, Triodontophorus minor, T. serratus, Trichonema* spp. The relationship between *Necator suillus* and *N. americanus* is discussed.—*F. J. Meggitt.*

7515. **CHANDLER, ASA C.** Introduction to human parasitology. 4th ed. 655p. 308 fig. John Wiley & Sons: New York, 1930. Pr. $5.

7516. **CONKLIN, R. L., and ALEX. D. BAKER.** Presence of the Lancet fluke, Dicrocoelium dendriticum (Rudolphi 1819), in Canada. *Jour. Parasitol.* 17: 18-19. 1930. *D. dendriticum* was found in sheep livers from the Lake St. John region of Quebec and from Nova Scotia. It has not previously been recorded from Canada or the U. S. A.—*A. D. Baker.*

7517. **CORRADI, GIOVANNI.** Della malaria latente e in particolare della sua attivazione spontanea e provocata. [Latent malaria and particularly its spontaneous and artificial activation.] 86p. Fresching: Parma, Italy, 1928.

7518. **DEY, DEBAKAR,** Generalized infection of Coenurus serialis or Multicepa gaigerii in goats. *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 656-657. 2 pl. (1 col.). 1927[1928].—Review of the author's previous studies and history of a case of generalized infection, including the brain.

7519. **[DIAGILEVA, A.]** ДЯГИЛЕВА, А. Случай множественного цистицеркоза мозга. [A case of multiple cysticercosis of the brain.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 6(10): 655-657. 1 fig. 1928.—80-100 *Cysticercus cellulosae* were found in the brain of a 14 year old boy. No worms were found in the intestines. Most parasites were partly disintegrated, and only isolated specimens fully preserved.

7520. **DOBELL, CLIFFORD** (with cooperation of **ANN BISHOP**). Researches on the intestinal protozoa of monkeys and man. III. The action of emetine on natural amoebic infections in Macaques. *Parasitology* 21(4): 446-468. 1929.—Most spp. of *Macacus* appear to be parasitized with two strains of an amoeba indistinguishable from *Entamoeba histolytica.* Double iodide of emetine and bismuth was administered daily per os to 5 healthy young tame acclimatized monkeys. By careful administration the total infections of this amoeba were repeatedly eradicated from 4 of the 5 animals, with no or only temporarily harmful effects to the hosts; on the other parasites, *Entamoeba coli, Endolimax nana, Enteromonas* sp., etc., it had no curative effect. Emetine affects the protozoon fauna of *Macacus* spp. as it does that of man, and therefore these monkeys may be used for the study of remedies for human amoebic dysentery. —*M. W. Kamm.*

7521. **DU, S. D.** Preliminary report on a fluke found in shrimps in Chengtu and its environs. *China Med. Jour.* 44(7): 679-683. 1 pl. 1930.—Of 769 shrimps dissected in Szechuan, 425 were river and stream shrimps. The infested shrimps (40.6%) came entirely from rivers and streams, none from ponds, and were found during

the spring and summer months. These flukes are not necessarily pathogenic to man as they lost their vitality in 10-20 min. on immersion in 0.3% HCl.

7522. [DZHAPARIDZE, P. S.] ДЖАПАРИДЗЕ, П. С. Клинические формы анкилостомидозов. [Ancylostomae in Abkhazia.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 6(9): 584-587. 1928.—*Ancylostoma duodenale* and *Necator americanus* were found in many cases. Worm carriers showed various degrees of anemia, and lesions of gastrointestinal tracts and of the nervous system.

7523. **FAUST, E. C. Infection experiments in man and other mammalian hosts with Sparganum stage of Oriental diphyllobothrids.** *Proc. Soc. Exp. Biol. and Med.* 26(3): 252-254. 1928.—Collections from man, and from domestic animals and their wild relatives, in China included *Diphyllobothrium cordatum* from dog, *D. mansoni* from cat, wild-cat, and leopard, *D. ranarum* from cat, and *D. houghtoni* [nomen nudum] from man, cat, and dog; and heavy sparganum infections in frogs, snakes, and several mammals, from north, central, and south China. Sparganum larvae, indistinguishable as to species, were fed to various mammals including man. The sparganum from *Rana esculenta* gave infection in cat, not in man, and proved to be *D. mansoni;* that from *Microhyla sowerbyi* likewise gave infection in cat, not in man, and proved to be *D. decipiens;* that from *Canis procyonides* likewise infected cat, not man, and proved to be *D. ranarum;* that from *Erinaceus dealbatus* infected cat and dog, not rabbit or man, and proved to be *D. erinacei.* In no case was there indication that the parasite penetrated the intestinal wall or developed a somatic sparganosis. Sparganum larvae were found in man in 2 cases—an ulcerated thumb and an ulcerated wrist; both cases following the application of "split" frogs (presumably infected, as frog infestation is almost universal) to abscessed members as a therapeutic measure. To test the hypothesis that occurrence of sparganum infestation in the orbital region, or elsewhere in flesh or in adipose tissue, results from such application, sparganum larvae from the hedgehog were applied to the conjunctiva of a dog, and introduced aseptically into the thigh muscles of other susceptible animals. Infection apparently resulted; in some cases the parasites multiplied for several months.

7524. **FAUST, ERNEST CARROLL. A study of the rare human tapeworm, Taenia confusa, with a report of the fourth case.** *Southern Med. Jour.* 23(10): 902-906. 14 fig. 1930.—The entire living worm measured 495.5 cm. in length and consisted of 581 segments, an unsegmented length of about 5 mm. in the cervical region, and a scolex. The present study affords no new evidence as to the relationship of *T. confusa* and *T. bremneri* (Stephens), but the shape of the distal segments and the branching of the uteri in the 2 forms suggest that they are probably the same species. Moreover, the differences in length and breadth between the living and fixed examples of the terminal segments of the Louisiana specimen indicate that a marked variation in macroscopic appearance may obtain. A study of this latter material has shown that there is adequate evidence for retaining *T. confusa* as a separate species of the *T. saginata* type (subgenus *Taeniarhynchus*), in which the scolex is unarmed and in which the embryonic membrane is provided with polar projections.

7525. **FAUST, ERNEST CARROLL, and CLAUDE R. KELLOGG. Parasitic infections in the Foochow area, Fukien Province, China.** *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 268-278. 1927[1928].—The following important facts have been obtained from the survey of human parasitic infections: a small number of species and low incidence of intestinal protozoa; uniformly heavy infection with *Ascaris* and to a somewhat lesser degree of *Trichuris;* low (sub-clinical) incidence of hookworm infection in the area, except in the Hak Ka villages near Foochow, where a heavy infection of apparently pure *Ancylostoma duodenale* was encountered; absence of *Taenia, Echinococcus, Hymenolepis* and *Dipylidium* infection in the population; occasional presence of *Sparganum mansoni* in man and the possibility of human infection with the adult *Diphyllobothrium,* due to the high infectivity of the intermediate hosts commonly consumed as food without sufficient heating; incidental infection with *Schistosoma japonicum* and *Fasciolopsis buski* in the vicinity of Foochow; complete absence of *Clonorchis* infection in man and in dogs and its low percentage of infectivity in cats. It seems that human intestinal parasitic infections are not clinically so significant in northern Fukien as in the Yangtze Valley. Individuals may not infrequently manifest clinical symptoms due to infection with a particular species, and under certain local conditions a whole community may be seriously affected by a particular species; but the area as a whole is much less heavily parasitized than had been supposed. —*From authors' conclusions.*

7526. **FISCHER, WALTHER. Ein unbekannter Parasit der Leber.** *Virchow's Arch. Path. Anat. u. Physiol.* 269(1): 162-165. 3 fig. 1928.—Sections of a liver nodule showed a body which could not be identified as a foreign body, and which resembled no known parasite. The material, shown to several parasitologists, possibly represents one of the aberrant species of the Gastrotricha, common along the Baltic Sea.

7527. **GALIANO, E. FERNÁNDEZ. Los animales parasitos.** [Animal parasites.] 199p. 108 illus. Editorial Labor, S. A.: Barcelona & Buenos Aires, 1928.—In this small manual on parasitology the 1st section presents a general consideration of parasites, showing their various modes of adaptation, with brief morphological description, life history and mode of transmission. The remaining 3 sections are devoted to the description of arthropod, metazoan and protozoan parasites, with special reference to their life history, mode of transmission and the causation of disease in man. The book is especially recommended to pre-medical students.—*D. de Rivas.*

7528. **HAUGHWOUT, FRANK G. Note on the occurrence of "Sarcocystis" in the Philippine carabao (Bubalus bubalis Linn.).** *Philippine Islands Dept. Agric. and Nat. Resources Bur. Agric.* [*unnumbered pamphlet*] 8p. 1 pl. Manilla Bureau of Printing: Manilla, 1928.

7529. **HERRERA VEGAS, MARCELINO. Hydatid cysts of the lung in children.** 300p., 14 fig. S. A. Imprenta Lamb y Cia Ltd.: Buenos Aires, 1928.—A monographic study based upon exhaustive review of the literature and upon 50 cases under the care of the author, most of them operated by him. These cases occurred in a period of 20 years during which 25,000 children's histories were recorded. Each is reported in detail; there were 30 definite cures and 14 deaths. The volume treats of the life cycle of *Echinococcus granulosus,* the etiology and pathogeny of hydatid cysts, the pathological anatomy and symptoms of their formation, methods of examination, diagnosis, prognosis and treatment.—*H. W. Stunkard.*

7530. **HESS, WALTER N. Control of external fluke parasites on fish.** *Jour. Parasitol.* 16(3): 131-136. 1930.—Epidemics of external fish parasites of the genera *Ancyrocephalus, Dactylogyrus* and *Gyrodactylus* were successfully controlled by placing infected fish for 2 hrs. in large cement tanks containing 1 lb. $KMnO_4$ in 32000 gallons of water. The greater success of this method over the dip methods is attributed to longer exposure to a weaker solution. $KMnO_4$ was also very effective in controlling fluke epidemics on fish in open ponds. Since the chemical becomes ineffective due to oxidation in about 2 hrs. under such conditions, it does not permanently injure the fish. Hydrated lime was effective in killing those flukes and eggs left at the bottom of ponds after the ponds had been drained and the fish removed. Since the combined egg and larval stages of some of these flukes covered 9-18 days or longer, depending on weather conditions, the lime treatment was necessary following fluke epidemics if the ponds were

to be refilled and stocked with fry within the period referred to.—*W. N. Hess.*

7531. **HINDLE, EDWARD.** Further observations on Chinese kala azar. *Proc. Roy. Soc. London B* 103 (727): 599-619. 2 pl. 1928.—*Phlebotomus major* v. *chinensis* is the most favorable sp. for the development of *Leishmania.* The flagellates become attached to the lining of the mid-gut and grow forward until they reach the anterior part of the gut. Invasion of the pharynx usually takes 6 days, and under favorable conditions about 25% of the flies show a proboscis infection. *P. sergenti* is an equally favorable host for the early development, but the parasite remains confined to the broad posterior regions of the mid-gut, does not become attached to the lining of the gut, and never invades the proboscis. Infection depends on the presence of undigested food material and soon disappears when the gut is empty. Four out of 14 patients with kala azar gave positive results when sandflies were fed on them, but only about 5% of the flies became infected. Experiments with a large series of hamsters infected with Chinese kala azar show considerable variation (zero to practically 100%) in the proportion of sandflies showing development of flagellates after feeding on infected animals. In hamsters there is a marked correlation between the number of parasites in the skin and the proportion of flies becoming infected. No correlation was found between the presence of parasites in the circulating blood and infectivity to sandflies. A study of 5 human strains in hamsters showed the existence of varying degrees of virulence, ranging from a strain which was completely non-infective to sandflies, up to one highly infective both to hamsters and to sandflies. Both *P. major* v. *chinensis* and *P. sergenti,* infected with flagellates, gave negative results when fed on normal hamsters, and also when their contents were inoculated into the skin of hamsters. The intraperitoneal inoculation of the contents of 1 or more infected flies gave positive results in 7 out of 124 experiments with *P. major,* and 2 out of 41 with *P. sergenti.* There is evidence that Chinese kala azar may be congenitally transmitted, and also that a number of children recover from the disease without treatment.—*Author's summary.*

7532. **HOEPPLI, R.** Über Beziehungen zwischen degenerativen Gewebsveränderungen und Ausscheidungen parasitischer Nematoden. [Tissue degeneration and secretions of parasitic nematodes.] *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 177-183. 1927.—A review.

7533. **HOFFMANN, CARLOS C.** Über Onchocerca im Süden von Mexiko und die Weiterentwicklung ihrer Mikrofilarien in Eusimulium mooseri. *Arch. Schiffs- u. Tropen-Hyg.* 34 (9): 461-472. 5 fig., 1 map. 1930.—Hoffmann made a survey of onchocercosis in the southern part of the state of Chiapa. The infected regions are coffee-growing districts on the sierra slopes, about 400-1200 m. above sea-level, though isolated cases occur in the flat coast regions and on the mountains, presumably from migration of infected persons or insect carriers. On one plantation he found the characteristic nodules in 86% of the total population, microfilariae in the skin of the face and neck in 100%. Some nodules contained filariae of only 1 sex, and therefore no microfilariae. The microfilariae were found in the subcutaneous tissue in all parts of the body, but especially those exposed to the sun and air, like the cheeks and the nape of the neck. In many cases there were elephantiasis-like thickenings of the skin, especially of the ears; these, however, disappeared in part after operative removal of the nodules. Slight pain and transient disturbances of sight were present in a considerable number of cases, but Hoffmann saw no serious eye troubles and no blindness in those parts of Chiapa where the infection had existed for only 3-4 yrs. Blindness was observed only in neglected cases of at least 5-6 yrs. standing. The region was infested with 3 species of gnats, *Eusimulium ochraceum* Walker, the most abundant and universally distributed species, *E. mooseri* Dampf, which prefers shady places and forests, and *Simulium avidum,* a comparatively rare species, not obtained for study. Development of microfilariae after feeding on infected subjects was observed in *E. mooseri* but not in *E. ochraceum. S. avidum* is the only species of *Simulium* found in both of the Onchocerca-infected provinces of Mexico, Chiapa and Oaxaca. *Onchocerca volvulus* caecutiens (*O. c.*) (p. 471).

7534. [ЯКІМОV, V. L.] ЯКИМОВ, В. Л. К вопросу о паразитизме у пресноводных рыб. [Parasitism in fresh-water fishes.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med.*] 6 (10): 649-651. 1 fig. 1928.—The author found trypanosomes in *Esox lucius* from lake Pid'mozero. He supposes leeches are the carriers.

7536. **IYENGAR, M. O. T., and PANCHANAN SUR.** Seasonal variations of the spleen-rate. *Indian Jour. Med. Res.* 17 (1): 11-32. 1929.—A single spleen census may lead to erroneous conclusions regarding the actual conditions of malarial endemicity of a locality because the spleen size, in areas so affected, shows seasonal variations. The spleen-rate is lowest during the dry season and greatest at the close of the wet season. The high level is reached Oct.-Jan. From Feb. the curve declines gradually, reaching the lowest level in June and July. In low endemic areas, there is also a spring rise in March and April. These findings are borne out by fever incidence records.—*E. M. Watson.*

7537. **JAMES, S. P.** A note on the Shute technique for staining malaria parasites with Leishman's stain and on the stippling in infected red blood corpuscles which it reveals. *Trans. Roy. Soc. Trop. Med. and Hyg.* 23 (3): 269-278. 1 fig. 1929.—A new and unfailing technique for staining blood cells is described in detail which demonstrates an unnamed type of stippling in the erythrocytes infected with *Plasmodium malariae* and the presence of Schüffner's dots and Maurer's spots in corpuscles infected with *P. vivax* and *P. falciparum* in younger stages than with the older Leishman's stain.—*M. W. Kamm.*

7538. **JAMOT, E.** La maladie du sommeil au Cameroun. *Rev. Prat. Malad. Pays Chauds* 9 (7): 326-337. 1929.—After diagnosis has been made all patients receive 5 or 6 injections of atoxyl. Some months later they are given 10 injections with tryparsamide. Jamot confirms the findings of others that the latter is the only drug which influences the trypanosomes in the central nervous system. By these methods the annual mortality has been reduced from 50 to 6%, the number of organisms, and hence the danger of transmitting the disease has been lessened, and the birth rate has risen.—*R. W. Linton.*

7539. **JOHNSON, THURSTON L.** In vivo trypanolysis with special reference to zones of inhibition, relapse phenomena and immunological specificity. *Amer. Jour. Hyg.* 9 (2): 260-282. 1929.—Suitable doses of specific antisera injected intraperitoneally into mice infected with *Trypanosoma equinum, T. brucei* and *T. equiperdum* resulted in trypanolysis and delayed death. In the *T. equinum* and *T. brucei* series, graded dosage of the sera resulted in a zone phenomenon, which occurred, however, only with blood infections of certain intensities. Relapse strains were susceptible in a small number of cases to the lytic action of a 2nd dose of serum. In such cases the zonal effect occurred during degrees of infection differing from those necessary to produce the phenomenon in the original infections. The action of antisera was not specific for the homologous strain.—*L. J. Davis.*

7540. **JOHNSON, THURSTON, L.** The non-occurrence of the zone phenomenon in the curative action of drugs and normal human serum in Trypanosoma equinum infection. *Amer. Jour. Hyg.* 9 (2): 283-291. 1929.—The administration of trypanolytic drugs and of normal human serum in graded doses to mice infected with *T. equinum* failed to produce a zonal effect. All doses above the effective minimum destroyed the trypanosomes.—*L. J. Davis.*

7541. **KAMISAKA, T.** How to differentiate between

the eggs of Fasciola hepatica and Fasciolopsis buski. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 308. 71. 1930.—In *F. hepatica* the granules in the yolk cells accumulate around the nuclei; in *F. buski* they are equally distributed throughout the cell.—*E. C. Faust.*

7542. [KAZAKOV, P. T.] КАЗАКОВ, П. Т. К вопросу о распространении Hymenolepis nana в Ленинграде. [Hymenolepis nana in Leningrad.] [German summary.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 6(9): 588-597. 1928.—*H. nana* was found in 0.3% of cases. Invasion has increased since 1923. All ages and sexes are affected. Hemograms showed that *H. nana* chronically poisons the organism with hemolytic toxins. The author observed decrease of erythrocytes and hemoglobin, lymphocytosis, monocytosis, eosinophilia, and deviation of the leucocytic formula to the left.

7543. KOBAYASHI, HIDEKAZU. Studies on the development of Diphyllobothrium mansoni Cobbold, 1882 (Joyeux, 1928). II. On the conditions of development of the eggs of Diphyllobothrium mansoni. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 307. 61-62. 1930.—The author studied the influence of temp., chemicals, light, bacteria, toxicity and humidity on the development of the eggs.—*E. C. Faust.*

7544. KORKE, VISHNU T. The relation of ankylostome infestation to the physical features of an agricultural area in India and to the social and economic status of its population. *Far East. Assoc. Trop. Med. Trans. 7 Congr.* 3: 249-257. 1 map. 1927[1928].—There is correlation between the agricultural and economic conditions and the hookworm prevalence among the agricultural class in the Gaya district. The value of the correlation assumes a diagnostic significance. Moisture plays an important rôle in determining the hookworm conditions of an area. A mean degree of infection by 20 hookworms per person (or 2,000 ova per gm. of feces) would represent one unit of moisture; or fertility of the soil of the first degree (Grierson-Moore classification). The mean degree of hookworm infestation among persons residing on a sloped surface was less by half than that of a level surface. Under circumstances where establishment of a proper conservancy system is impracticable and where promiscuous defecation unaided by conservancy has to be accepted, as is for the present inevitable, the agricultural population may be encouraged to defecate on a dry sloped surface.—*Author's conclusions.*

7545. KORKE, VISHNU T. The correlation between ankylostome disease and haemoglobin value as obtained in regard to the physical features of an agricultural area in India and to the social and economic status of its population. *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 258-264. 1927[1928].—The predisposing factor of the ancylostome disease is in direct relation to the physical features of an agricultural area and to the social and economic status of its population, these conditions expressing the degree of resistance of the groups to the disease. The group resistance is expressed in the terms of mean Hb value, which is in direct relation to the economic condition prevailing in an agricultural area. A comparatively small degree of mean hookworm infestation sufficed to bring on the disease in a group whose resistance had been lowered by economic conditions. In the groups of agricultural population the landless labour class was first to succumb. There was no direct correlation between the mean degree of hookworm infestation and the disease in the agricultural groups of population except through the medium of the agricultural features and the social and economic status of its population.—*Author's conclusions.*

7546. KORKE, VISHNU T. Prevalence of filariasis in some areas in British India. *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 304-310. 1927[1928].—There is a considerable prevalence of filariasis in the different groups of population in Bihar and Orissa. 14% of cases showed microfilariae in the peripheral blood where filariasis was suspected on clinical grounds, and 6% where not suspected. The microfilariae were detected most readily during the night; 11% of cases showed them during the day. The notable clinical features were affections of the glands (chiefly inguinal) and the genitals. The predominant species was *Microfilaria bancrofti.*

7547. KRIJGSMAN, B. J. Biologische onderzoekingen aan het systeem: gastheer-parasiet. Deel 1: De ontwikkeling van Trypanosoma evansi in de muis. [Biological investigations on the host-parasite system. 1. Development of T. evansi in the mouse.] *Ned.-Indische Bladen Diergenecsk.* 42(6): 499-563. 1930.—This study comprises the first part of a proposed systematic study of *T. evansi* in different species of mammals. After carefully standardizing such technical methods as the isolation of single-cell strains, procuring a standard mouse by special feeding, counting trypanosomes in different inocula and making various statistical determinations on the parasites during infection, the author amassed a large amount of pertinent data. Detailed studies were made of the parasites and their curves of development throughout the course of infections. The relation of these data to the mode of infection and the number of parasites used to start the infection was also investigated. Among the conclusions drawn the following are of particular interest: Death is associated with a constant number of parasites in the blood. Various types of data are obtained indicating that the velocity of growth of the trypanosomes is typically rhythmical. The increase in numbers taken over the entire infection does not follow a geometrical progression, although for a portion of the time during the highest velocity of multiplication it does. Degenerative forms appear toward the end of the infection and parasites without blepharoplasts [parabasal bodies] are always present in varying numbers. Up to a certain point development of the parasites in the blood resembles the growth of bacteria in artificial media. The author believes that the development of *T. evansi* in the mouse is largely a problem of metabolism.—*W. H. Taliaferro.*

7548. LABERNADIE, V. G. F. Documents statistiques sur les helminthiases à Pondichéry. [Statistical data on the helminths of Pondichéry, French India.] *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 198-199. 1927 [1928].

7549. LEVIN, A. L. The problem of eradication of Strongyloides intestinalis. *Amer. Jour. Trop. Med.* 10 (5): 353-363. 1930.—A fair number of individuals in Louisiana and Mississippi, and most probably in other southern states, have an infection. No age is immune. Infection is prevalent among males, with greater preponderance among whites. There is definite evidence of a mild anemia and eosinophilia. Nearly all cases presented symptoms of a gastrointestinal disturbance with a fair background of a biliary toxemia. Gastric acidity ranges from achylia to a mild hyperchlorhydria. Severe infections only can produce diarrhea and colic; the average patient is constipated. Infection can be present in the human intestinal tract for many years; ordinary infection does not undermine human health. No form of treatment has any permanent value. A drug, by the intra-venous route, may probably lead to permanent eradication.—*Author's summary.*

7550. LEWIS, E. ANEURIN. An account of a survey of the parasitic helminths of some domestic animals in Mid-West Wales. *Jour. Helminthol.* 8(1): 1-18. 1930.—Gives tables showing the helminthic infection of sheep in the Aeron, Valley and Borth districts, the variation of the infection in those districts, the annual helminthic infection in the whole area, the number of parasites collected from individuals, and the seasonal incidence of cestodes. For sheep are recorded: *Monodontus trigonocephalus, Nematodirus filicollis, Trichostrongylus vitrinus, Cooperia oncophora, Trichuris ovis, Oesophagostomum venulosum, Chabertia ovina, Ostertagia circumcincta, O. trifurcata, Haemonchus contortus, Dictyocaulus filaria. Muellerius capillaris. Protostrongylus rufescens, Capillaria longipes, Moniezia* spp., *Cysticercus tenuicollis, Echinococcus* sp., *Coenurus cerebralis, Fasciola hepatica.* From cattle: *Fasciola hepatica, Moniezia*

spp., *Capillaria* spp., *Monodontus phlebotomus, Dictyocaulus viviparus.* From pigs: *Ascaris lumbricoides, Trichuris suis, Oesophagostomum dentatum, Metastrongylus elongatus, M. brevivaginosus* (Gedoelst, 1927), *Cysticercus tenuicollis, Fasciola hepatica.* From chickens: *Heterakis vesicularis, Capillaria* spp., *Ascaridea lineata, Syngamus trachea, Davainea proglottina.* From ducks: *Capillaria anatis, Polymorphus minutus, Echinocotyle rosseteri, Porrocoecum crassum.* From geese: *Heterakis dispar, Capillaria* spp. From pheasants: *Syngamus trachea, Heterakis vesicularis, Capillaria* spp. From guinea-fowls: *Heterakis brevispiculosum, Capillaria* spp. In each case observations on the frequency and periodicity of the parasite are given.—*F. J. Meggitt.*

7551. **McCOY, O. R. Experimental studies on two fish trematodes of the genus Hamacreadium (family Allocreadiidae).** *Jour. Parasitol.* 17(1): 1-13. 2 fig. 1930.—The life history of *Hamacreadium gulella** Linton, a parasite of the gray snapper, *Lutianus griseus,* was found to parallel exactly that of *H. mutabile* Linton, also parasitic in the gray snapper. Both cercariae are of the cotylocercous type, occur in the same snail host. *Astraea americana,* and encyst in various small fish. The bluehead, *Thalassoma bifasciatum,* and slippery dick, *Halichoeres bivittatus,* are apparently the natural second intermediate hosts. In cross-infection experiments both *H. mutabile* and *H. gulella* developed only in fish of the snapper family, Lutianidae, and failed to develop in numerous other species tested. A method is described for administering approximately equal doses of cysts to a series of fish and studying infections quantitatively. Cysts were not infective on the 1st or 2nd day after the cercariae had penetrated the fish; about ½ were infective on the 3rd day and all on the 4th. The infectivity did not increase or diminish for cysts up to 12 days of age. A heavy previous infection of snappers with either *H. mutabile* or *H. gulella* did not confer any very appreciable resistance against a 2nd infection. There is evidence, however, that with *H. gulella* the 2nd infestation in previously infested fish was not quite so great as in control fish. Snappers given an infestation of several hundred *H. gulella* lost practically all of the worms within 4 weeks. In a single experiment fish given only a light dose of cysts, 10-15, did not lose the worms. The rapid and in many instances complete loss of worms in heavily infested fish is apparently caused by some reaction of the fish against the parasite.—*Author's summary.*

7552. **MAGARINOS TORRES, C., e E. LIBANIO VILLELA. Nematodios immaturos, parasitos erraticos e desgarrados encontrados nos tecidos do homem. [Immature nematodes as unusual and accidental parasites in human tissues.]** *Mem. Inst. Oswaldo Cruz* 22: 161-167. 8 pl. 1929.—Larval forms of *Agamofilaria* (sp.?) from fibroid cysts on the the visceral peritoneum; larval forms of an unknown nematode (*Agamonematodum?*) from epididymal cysts; unrecognizable larval fragments from cysts in the uterine mucosa; and encapsulated eggs, possibly of *Ascaris lumbricoides,* were recognized during routine histological examination of post mortem tissues and are ascribed to abnormal migrations of the parasitic larvae or of eggs of such parasites.—*A. C. Walton.*

7553. **MELLO, FROILANO de. Etudes sur le sang de Manis pentadactyla, L.** *Arquivos Escola Med.-Cir. Nova Goa. Ser. A.* 1929(4): 512-516. 1929.—From the blood of the pangolin, commonly known as the goanese tyrio, *Plasmodium* tyrio is described. There were encountered also endoglobular bartonelliform elements intermediate between *Grahamella* and *Paraplasma;* the parasitic nature of these bodies is considered doubtful.—*M. F. Boyd.*

7554. **MIYAMOTO, TOSINOBU. Strongyloidosis intestinalis in the farrow of Formosa.** *Far East. Assoc. Trop. Med. Trans. 7th Cong.* 3: 686-698. 1927[1928].—The disease, locally known as "white diarrhoea," is extensively prevalent, but of a latent chronic character. Primarily, it arrests the development of innumerable young pigs, causing their death; the loss exceeds that from acute infectious diseases. Secondarily, it impairs resistance to other infectious diseases or to the ill effects of bad environment.

7555. **MORGAN, D. O. The helminth parasites of the goat in Britain, including an account of Skrjabinema ovis (Skrjabin, 1915) Werestchagin, 1926.** *Jour. Helminthol.* 8(2): 69-76. 6 fig. 1930.—Records *Cysticercus tenuicollis, Moniezia expansa; Muellerius capillaris* and *Dictyocaulus filaria* (lung), *Haemonchus contortus, Ostertagia circumcincta, O. trifurcata, Trichostrongylus extenuatus* (abomasum); *Trichostrongylus colubriformis, T. vitrinus, T. capricola, Capillaria longipes, Cooperia curticei, Nematodirus filicollis* (small intestine); *Oesophagostomum venulosum, Chabertia ovina, Trichuris ovis* (caecum and large intestine).—*F. J. Meggitt.*

7556. **O'ROKE, EARL C. The morphology, transmission, and life-history of Haemoproteus lophortyx O'Roke, a blood parasite of the California valley quail.** *Univ. California Publ. Zool.* 36(1): 1-50. 2 pl., 6 fig. 1930.—*Haemoproteus* **lophortyx** (p. 8) is transmitted by *Lynchia hirsuta* Ferris, a louse fly (Hippoboscidae). Oöcysts and sporozoites were found in flies taken on infected quail; attempts to transmit the parasite by the bite of flies failed owing to the small number of flies available. One case of transmission was accomplished by injecting sporozoites from an infected fly into the blood of a quail. Transmission was also effected by transplanting a lung of an infected quail into the body cavity of a susceptible quail. Sporozoites were found in oöcysts on the mid-gut, among the tissues of the haemocoele, and in the salivary glands of infected flies. Schizonts were found in the lungs, liver, and spleen of parasitized birds. Merozoites were found in endothelial cells of capillaries of the lungs, in epithelial cells of the liver, and, on rare occasions in acute cases, in the peripheral blood. Gametocytes were found in the red blood cells. Gametogenesis occurred on the microscope slide at room temp. In microgametogenesis, the gametes are fully formed inside the gametocyte and escape through rupture of the cell membrane. The microgamete is definitely polarized with its nucleus toward the anterior end. Development of the macrogametes is associated with the formation of 2 polar cells. Fertilization is accomplished in 15 seconds, the entire microgamete entering the macrogamete. A fertilization membrane appears to be formed immediately after the penetration of the microgamete. The zygote elongates into an oökinete on the slide. On one occasion an oökinete was observed to penetrate the wall of the gut of a fly. The effects on the host vary from infections which appear to be benign to those which are fatal.—*From author's summary.*

7557. **[PANOV, A. A.] ПАНОВ, А. А. Пораженность детей г. Мариуполи острицей (Enterobius vermicularis L. 1767) и сравнительная ценность методов употреблявшихся при обследовании на оксиуру. [E. vermicularis in children of Mariupol.]** [German summary.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 6(8): 525-528. 1928.—Perianal and subungual grattage of 319 children, aged 10-16, showed that 80.2% were positive for *E. vermicularis.*

7558. **PEARSE, A. S. The internal parasites of Nigerian rodents and insectivores.** *Jour. Elisha Mitchell Sci. Soc.* 45(2): 221-238. 1930.—The parasites of 29 species of small mammals were studied. Protozoa and strongylid nematodes were rare in insectivores, and cestode cysts were less common than in rodents; but tapeworms and types of nematodes which usually enter the host through the mouth with the food, rather than through the skin, were much more frequent. On the whole, parasites became fewer toward the desert as the climate grew dryer. This was largely due to the decrease in nematodes. The rodent which may be expected to have most parasites is large, eats both insect and plant foods, and lives on the ground among luxuriant vegetation in a climate which is not too wet or too dry.—*A. S. Pearse.*

7559. **PRITZE, FELIX. Beiträge zur Kenntnis des**

Balantidium coli. Das Balantidium des Schweines in seiner Beziehung zum menschlichen Balantidium und sein Verhalten unter natürlichen und künstlichen Bedingungen. *Zeitschr. Wiss. Biol. Abt. F, Parasitenk.* 1(3): 345-415. 47 fig. 1928.—A comprehensive account of occurrence, morphology, and reproduction, and of cultivation and infection experiments. Bode's "budding" is an involution phenomenon. No morphological differences in *Balantidium* can be established on the basis of occurrence alone; diversities in serological relations probably indicate different species. Of 400 swine examined, 67% showed *Balantidium*, 28.25% vegetative forms; the feces are formed, soft and mostly of undigested plant residue; the pH relations of the host feces give indication as to the presence of *Balantidium*, the optimum being about 6.4. Swine embryos do not carry *Balantidium*. Throughout encystment there is rapid rotation within the cyst; at the close of encystment the cilia apparently are resorbed; when much dried, appearances resembling plasmolysis are seen in the cysts. *B. coli* divides amitotically; the nuclear structure is not uniform and depends upon age. The fission rhythm seems dependent upon the activity of the host. Infection by mouth seems to occur only through cysts; vegetative forms can probably be carried over through the year; duration of life of *B. coli* is longer at 15° than at 38°. *B. coli* seems to be strongly anaerobic; the pH of the culture is indicative of the vitality of the parasite. In amniotic fluid at room temp. a maximum duration of life of 474 hrs. was observed.—*M. M. Metcalf.*

7560. **RUGE, REINHOLD.** Ein Beitrag zur Schwarzwasserfieber-Frage. *Arch. Schiffs- u. Tropen-Hyg.* 33(6): 328-330. 1929.—There are different strains of malignant malarial parasites (*Plasmodium falciparum*). The West African strain differs morphologically and ecologically from those in other parts of the world. It exerts greater hemolytic action and is often associated with blackwater fever.—*A. S. Pearse.*

7561. **SCHACHSUWARLY, M.** Über die Beeinflussung von Entamoeba histolytica in der Kultur durch die Konzentration des Mediums und durch Bakteriophagen. *Arch. Schiffs- u. Tropen-Hyg.* 33(3): 129-134. 1929.—Rapid raising or lowering of the NaCl content does not lead to encystment of *Entamoeba histolytica;* the lowest concentration for growth is 0.05% and the highest 1.5% for fluid media; the high concentration of salt increases the density of the endoplasm and a more coli-like habit in the organisms. Shiga-Kruse bacteriophage inhibits growth, while Flexner, Y and coli lysates are without effect.—*D. H. Bergey.*

7562. **[SCRĬABIN, K. I., and S. SCHULTZ.]** СКРЯБИН, К. И., и С. ШУЛЬЦ. Гельминтозы человека. [Helminth diseases of man.] 376p. 111 fig. Государственное Медицинское Издательство. (State Medical Publishing Society, Moscow) 1929.—This book is designed primarily for physicians and medical students, but also includes chapters on anatomy, biology, systematics and distribution of helminths which may prove of interest to the scientist. The 1st part deals with the rôle of helminths in pathology, and treats of trematodes and cestodes, with an anatomo-biological description of the diseases which they produce. The 2nd part deals with nematodes and the diseases caused by them, and, as a whole, with the elements of general medical helminthology. An extensive bibliography is given.

7563. **[SINEL'NIKOV, A. M.]** СИНЕЛЬНИКОВ, А. М. Гельминтологическое обследование железнодорожных школ г. Ашхабада. [Helminthological examinations in the railroad schools of Ashkhabad.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 6(10): 652-654. 1928.—Out of 332 boys, 24.42% were positive for worms; out of 390 girls, 29.02%. Infestation with *Hymenolepis nana* and *Trichuris trichiura* predominated; 2 cases of *Ancylostoma duodenale* and 2 of *Necator americanus* were observed.

7564. **STILES, C. W., and ALBERT HASSAL.** Key-catalogue of parasites reported for primates (monkeys and lemurs) with their possible public health importance; and key-catalogue of primates for which parasites are reported, by C. W. STILES, ALBERT HASSAL, and MABELLE ORLEMAN NOLAN. [*U. S.*] *Public Health Serv. Bull.* 152. p. 409-601. 1929.

7565. **SWEET, W. C.** Notes on a quantitative hookworm survey of Ceylon. *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 237-248. 1927[1928].—About 90% of the population is infected, the incidence being somewhat higher in the dry zone where tanks and irrigation are common and rainfall is confined to a short period. The wet zone has had 10 years of hookworm control work which may have resulted in the lower rates, but frequent and heavy rains may also be a deterrent. Quantitative estimations showed that the average Ceylonese had an intensity rate of only 2,200 eggs per gm. "basis formed faeces," approximately 100 hookworms. The long dry season of the north, the excessive rainfall of parts of the south, and the hookworm control work were possibly responsible for this, in varying proportions. The average egg-counts per gm. of the children from 7 to 14 yrs. were numerically equal to those found among adults, making it possible to estimate adult averages by examining school children, where no control work had voided the relationship. A study of the distribution of the infection in the population of 2 provinces in which the average rate was 2,800 eggs per gm. showed that but 53% of the people had what Smillie classified as hookworm disease, the remainder being merely carriers. The relatively high infection in the children, the habits and customs of the people, the fact that night-soil was not appreciably used as fertilizer, and the general lack of latrines, made it seem clear that the infection was acquired from pollution around the living quarters. Against this fact was the relatively high intensity of infection among adult males engaged in rice cultivation, about 35% higher than that of the surrounding peoples.—*From author's conclusions.*

7566. **THAPAR, GOVIND SINGH.** Preliminary observations on ankylostomiasis in pariah dogs. *Far East. Assoc. Trop. Med. Trans. 7th Congr.* 3: 265-267. 1927 [1928].—Note on the finding of *Ancylostoma duodenale* in the intestines of dogs in Lucknow.

7567. **[VASICH, E. A.]** ВАСИЧ, Е. А. Случай диспепсии у грудного ребенка на почве аскаридоза матери. [A case of infant dyspepsia due to ascaridiasis in the mother.] Русский Журнал Тропической Медицины. [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 6(9): 603. 1928.—The mother was apparently healthy, yet the child's dyspepsia continued for 2½ mo. and ceased only upon complete removal of ascarids from the mother.

7568. **VOLKMAR, FRITZ.** Capillariasis vesico-urethralis of silver foxes. *Vet. Med.* 25(12): 518-520. 1 fig. 1930.—*Capillaria plica* in silver foxes in N. Dakota and *Trichosomoides crassicauda* in the common rat are reported. The eggs (including both plugs) of *C. plica* measure 63-65 × 27-28 μ in fresh material and 58 × 32 μ after being embedded for 6 months.—*F. Volkmar.*

7569. **YOKOGAWA, SADAMU.** Results of comparative studies on oral and cutaneous infection of dogs with Ancylostoma caninum. *Hamburg Univ. Abhandl. Gebiet Austlandsk.* 26: 608-611. 1927.—See *Trans. Japanese Path. Soc.* 17: 218-224. 1927.

7570. **ZUCCARINI, J. A.** Estudio experimental sobre el "Trypanosoma cruzi." *Rev. Soc. Argentina Biol.* 6(4): 217-224. 1930.—Two human strains and 2 from *Triatoma* kept in mice were studied. In mice 1-5 days old infection is constant, incubation period 36 hrs.—5 days, death in 11-18 days. Trypanosomes in blood increase to 50-60 per field. Virulence as tested by inoculation in adults is not influenced by passage through young animals. In the heart, leishmaniaform nodules were found. Rabbits were infected 5-12 hrs. after birth, dying in 20 days. Six guinea-pigs were inoculated just after birth; 3 were infected, the disease following the same course as in adults. In mammals infection is more severe in the young.—*J. T. Lewis.*

FILTERABLE VIRUSES, BACTERIOPHAGE, ETC.

GEO. H. SMITH, *Editor*

(See also in this issue the subsection "Infectious Chloroses" in the section Phytopathology; and Entries 6404, 7162, 7215, 7360, 7365, 7390, 7392, 7433, 7489, 7491, 7561, 7639, 7640, 7649, 8271)

7571. ASHESHOV, IGOR N., Mrs. I. ASHESHOV, SARANJAM KHAN, and M. N. LAHIRI. Bacteriophage inquiry. Report on the work during the period from 1st January to 1st September, 1929. With appendix. Report on the treatment of cholera. *Indian Jour. Med. Res.* 17(3): 971-984. 1 pl. 1930.—Three types, A, B, and C, of cholera bacteriophage have been differentiated upon the basis that the secondary growth of the cholera vibrio, although resistant to the particular bacteriophage used, is still susceptible to the other types. Thus, secondary growth of A is susceptible to B or C; resistant growth of B, to A or C, and so on. Unknown types or mixtures of bacteriophage can be determined by testing against standard strains. Biologically, Type A is a quick-acting bacteriophage producing complete lysis within 2 hrs.; the majority of races of this type lose their virulence in a few days. Type B is less active and lysis is seldom produced in less than in 3 hrs.; this type is more stable and may be kept for several mo. Type C is slow-growing; lysis is rarely complete but the vibrio may be killed without visible lysis. Type A attacks the S variety only, but B and C attack both the S and R forms of the bacterium. For treatment, it is essential that the preparation be polyvalent, preferably with an excess of Type A, as it is imperative to destroy the vibrio as soon as possible. The value of the treatment has not been ascertained, but the fact that a bacteriophage producing complete and permanent lysis in a test-tube in less than 2 hrs. can not reach all the vibrios in the body and destroy them in less than 6 hrs., during which time the patient is being continuously poisoned, has led the authors to defer conclusion until further study. It does, however, arrest progress of the disease and shorten its course considerably, if given together with intravenous saline infusion. Further, it is believed to be effective for prophylaxis when the bacteriophage is distributed in wells during epidemic seasons.— *F. F. Tang.*

7572. BORREL, A. Die Ätiologie der bösartigen Geschwülste. *Zeitschr. Krebsforsch* 32(6): 646-671. 1 fig. 1930.—The author has long been a proponent of the infectious theory of cancer, and in this article he maintains the same attitude. His arguments may be briefly summarized as follows: the causation of malignant disease by the several definitely known cancerogenic parasites is best explained by assuming that they act as carriers of a specific virus, inasmuch as at best their cancerogenic action is capricious in character; the susceptibility of certain tissues he interprets as the result of excessive liability to infection with a virus; the phenomena of the Rous virus are best explained by the parasitic hypothesis. The paper presents a detailed description of the method of cover-glass preparations of tissue cultures, suited for detailed staining methods.— *H. E. Eggers.*

7573. EAGLES, G. H., and D. McCLEAN. Cultivation of vaccinia virus in a cell-free medium. *British Jour. Exp. Path.* 12: 97-102. 1931.—A neurotesticular virus was successfully cultivated in series in a mixture of kidney extract and Tyrode's solution, with or without serum. Kidney extract was made by mincing sterile rabbit kidney in Tyrode's solution and centrifuging at high speed for 20 min. The supernatant fluid is the extract, and examination in hanging-drop and smear preparations shows it to be cell-free. To be sure that a cell-free medium was used, some experiments were done in which the extract was filtered through Chamberland L_2 candles. Cultivation was successful in this medium also.—*J. Bland.*

7574. GLASER, ERHARD. Das Wesen des bakteriophagen Princips als Grundlage der pharmakognostischen Beurteilung. *Pharmaceut. Monatshefte* 11(9): 187-200; (10): 226-228; (11): 250-254. 1930.—More information concerning the nature of the bacteriophage principle is necessary to allow its evaluation in scientific medicine. From a review of available facts and statements, the author concludes that most investigators have turned away from the "living nature" view of d'Herelle and regard bacteriophagy as an enzymatic reaction. An extensive bibliography is appended.—*E. Glaser* (*transl. by J. B. Nelson*).

7575. GRAHAM, J. D. Recherches sur le bactériophage dans l'Inde Britannique. *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(10): 1882-1892. 1930.—This paper incorporates the reports of several workers. I. Studies made at Patna under the direction of IGOR ASHESHOV in collaboration with SARANJAM KHAN and M. N. LAHIRI. (See this issue, Entry 7571.) II. J. TAYLOR. Bacteriophage in cholera and dysentery. In 33 cholera cases (19 controls and 14 treated with bacteriophage), mortality was 53% for controls and 57% for treated cases. In 46 cases of bacillary dysentery (26 treated and 20 controls), 34 Shiga and 12 Flexner types, there were 2 deaths from dysentery among controls and 2 among treated patients. Taylor concludes that in neither cholera nor dysentery does bacteriophage influence the course. III. J. MORISON. Bacteriophage of cholera and dysentery. Report of 3 epidemics. IV. Bacteriophage of cholera. An investigation by R. H. MALONE into well-waters and flies in 33 Pendjab villages showed the presence of a virulent cholera bacteriophage in the flies or well-water, or both, of 13 of 24 villages when there was no cholera epidemic in 1927 or 1928; in 1 of 3 villages where cholera raged in 1927 but not in 1928; in 1 of 4 villages where there was cholera in 1928 but not in 1927; and in 1 of 2 villages where cholera broke out in 1927 and 1928. V. Investigation into cholera bacteriophage in well-water. In none of 8 villages (in 4 of which cholera had just broken out) was cholera bacteriophage found in the well-water by IYENGAR.

7576. GRUMBACH, A. Ueber Streptokokkenbakteriophagen und Dissoziationserscheinungen an Streptokokken. *Zentralbl. Bakt. I. Abt. Orig.* 118(3/4): 206-216. 24 fig. 1930.—Low magnification of isolated colonies of streptococci showed that more than 60% were flat types, and more than 80% variant types. Most of the streptococcus variants were apparently associated with a bacteriophage. The failure to ferment esculin, and to reduce litmus milk, and the presence of the hemolytic reaction with enterococcus, appeared to be related to the presence of bacteriophage.—*Author's summary* (*transl. by J. B. Nelson*).

7577. HELLERSTROM, S., et E. WASSEN. Étude du virus de la lymphogranulomatose inguinale. *Compt. Rend. Soc. Biol.* 106(10): 802-803. 1931.—A preliminary report. Human and animal material preserved in glycerin loses its virulence after 7 days. Positive results were obtained once (with 4 strains) after passing ganglionic substance through a Berkefeld filter.—*E. Weiner.*

7578. HOLST, PETER. L'encéphalite post-vaccinale en Norvège. *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(6): 1132-1147. 1 map. 1930.—From 1921 to 1929, 28 cases (15 fatal) of postvaccinal encephalitis, always occurring after a typical incubation period, have been observed in Norway. The author argues against identification of postvaccinal encephalitis (which occurs in summer and seldom in persons over 10 yrs. old) with either lethargic encephalitis (a typical winter disease) or poliomyelitis (an autumnal disease affecting adults as well as children). While the author emphasizes the causal connection of vaccination with this disease, he does not believe that encephalitis virus is contained in the vaccine, because in the Netherlands the imported

Danish vaccine causes as many cases of encephalitis as the Dutch vaccine, although no case of encephalitis has yet been observed in Denmark. He suggests that vaccination may stir into activity a latent virus.

7579. **HORMAECHE, ESTENIO, y FRANCK HUGHES.** Sobre la autolisis "in vitro" del bacilo de Koch. [In vitro autolysis of tubercle bacilli.] *Rev. Tuberc. Uruguay* 1(1): 47-51. 1930.—Shortly after the appearance of the first colonies on egg media planted with human material, a complete lysis of the whole culture sometimes occurs, leading to complete disintegration of the organisms, neither modified bacterial forms nor granules appearing. Washings of these autolyzed, sterile cultures failed to cause either typical or "filterable virus" tuberculous lesions in guinea pigs, thus proving a destruction of the bacilli differing from that associated with bacteriophagic actions.—*A. de Assis.*

7580. **HURST, E. W., and R. W. FAIRBROTHER.** Simultaneous infection of the monkey with the viruses of poliomyelitis and vaccinia. *British Jour. Exp. Path.* 12: 17-20. 1931.—In the monkey, infection with a highly virulent neurovaccine apparently has no power to modify the nerve lesions of poliomyelitis; this is equally true whether the vaccine is injected directly into the brain or inoculated intradermally. If both viruses are administered intravenously, the resulting vaccinal reaction does not suffice to permit invasion of the nervous system by poliomyelitis virus. It was impossible to demonstrate an activation effect of vaccinia on a weak poliomyelitis virus. It seems unlikely that, if postvaccinal encephalitis is due to the activation of a latent neurotropic virus by vaccination, any virus hitherto isolated and studied is responsible for the nervous disease.—*J. Bland.*

7581. **LEVADITI, C., et P. LÉPINE, (with collaboration of Mlle. SCHOEN).** L'encéphalite herpétique expérimentale du singe. *Acta Med. Scandinavica* 71 (1/2): 192-220. 2 col. pl. 1929.—In 66% of the animals inoculated, lesions of herpetic encephalitis were produced in monkeys (*Cercopithecus callithrix*) by multiple inoculations. The disease, in its chronic form, preserved a clinical picture comparable to that in human encephalitis. Infected brains of monkeys dead from herpetic encephalitis were virulent for rabbits. Varying types of microscopic lesions were found—some being characteristic of encephalitis in man; some, of the disease in rabbits. Frequently, lesions of both an acute and chronic nature were coexistent. This monkey can be used for study of human epidemic encephalitis.—*A. M. Woodruff.*

7582. **LEWTHWAITE, RAYMOND.** Experimental tropical typhus in laboratory animals. *Bull. Inst. Med. Res. Federated Malay States* 1930(3): (1-10). 1930.—Blood from patients and from organs of fatal cases of tropical typhus were injected into guinea pigs or rats, mostly by the intraperitoneal route. Guinea pigs gave rarely a febrile reaction; histologically, the brain showed inflammatory changes; the Weil-Felix was negative; and there was no scrotal reaction. Rats more frequently gave a rise in temp. Postmortems revealed pulmonary and lymphatic lesions, and a slight enlargement of the spleen. Histologically, lesions of the brain were noted. Typhus exanthematicus and tabardillo fever are certainly different from tropical typhus.—*E. Lagrange (transl.).*

7583. **McCLEAN, D., and G. H. EAGLES.** The conservation of vaccinia virus grown in vitro. *British Jour. Exp. Path.* 12: 103-107. 1931.—Tests were made with various types and strains of vaccinia virus. The protective effects of cysteine hydrochloride, glycerine, agar, gelatine, borax buffer solution, fresh minced tissue, Hartley's broth and "hormone" broth were studied. Tests were done at room temp., in the cold room, and frozen. The effect of oxidation and of anaerobiosis were also studied. Glycerine has little effect in conserving the virus, whether from culture or animal passage. No satisfactory way was found to preserve virus cultivated in the chick-embryo and plasma medium of Carrel and Rivers. Phenol (1%) may be used to free culture virus from bacterial contaminants without bad effect on the virus over long periods of storage, provided the medium is not frozen. Virus cultivated in the unfiltered, cell-free kidney extract survives without great loss of titer under anaerobic conditions in the cold room. Virus cultivated in Maitland's kidney medium survives still better. Filtered kidney extract is a less satisfactory medium than is the unfiltered, for preserving vaccinia culture virus.—*J. Bland.*

7584. **MARCANDIER, PLAZY, Le CHUITON, et R. PIROT.** Transmission au singe de la fièvre exanthématique observée à bord des navires de guerre à Toulon. Ses rapports avec le typhus exanthématique. *Bull. Acad. Méd. [Paris]* 105(24): 1012-1015. 1931.—In 3 of 4 monkeys intraperitoneally inoculated with blood from shipboard cases of exanthematic fever at Toulon, a febrile disease developed. The infection was successfully transmitted to 2 other monkeys by intraperitoneal injection. Crossed inoculation experiments indicated that the exanthematic fever at Toulon is an attenuated form of exanthematic typhus.

7585. **NATTAN-LARRIER, L., G. ELIAVA, et L. RICHARD.** Bactériophage et perméabilité placentaire. *Compt. Rend. Soc. Biol.* 106(10): 794-797. 1931.—Pregnant guinea pigs were injected intracardially with coli bacteriophage. The animals were killed at various times after inoculation and the maternal and fetal bloods were tested for bacteriophage, by the Grasset technique. In no case did fetal blood contain bacteriophage, and in 1 case it was absent in maternal blood 24 hrs. after inoculation. Grasset's results were confirmed; those of Blair and Reeves, contradicted.—*E. Weiner.*

7586. **OLMER, [D.].** La fièvre exanthématique. *Office Internat. Hyg. Publ.: Bull. Mensuel [Paris]* 22(8): 1494-1521. 1 col. pl., 1 fig. 1930.—The distribution, so far reported, is in southern France, especially Marseilles, where the first cases were observed, in Spain, Portugal, on the Mediterranean coast of Africa and possibly in other parts of Africa, in India, and the U. S. A. The author was unable to transmit the disease from infected to uninfected monkeys by means of lice allowed to feed on a 1st set of animals, then pulverized and inoculated into a 2nd. It is probable, though not proved, that the medium of transmission is a tick (*Ixodes ricinus*) common in the affected regions; that the reservoir of infection is the dog; and that the characteristic eschar is the point of implantation of the tick. The history and clinical features of the disease are also reviewed.

7587. **PESCH, KARL L., und H. SIEGMUND.** Untersuchungen über den Erreger der Psittakosis. *Arch. Hyg. u. Bakt.* 105(1): 1-14. 1931.—Blood, urine and sputum from 5 patients, and tissues (lungs, lymph-nodes, spleen), heart-blood, bile, and material from the large and small intestines from 2 cadavers, all infected with psittacosis, were injected into, and animal transfers made to, 123 parakeets and 6 paddy birds. Microscopic, histologic, and bacteriological examinations showed that no bacterium of the paratyphoid group, no streptococcus, or other visible bacterium was the cause of psittacosis. Transfer of the disease by both filtered and unfiltered material indicated a filterable virus etiology.

7588. **[PREDTECHENSKIĬ, S. N.]** ПРЕДТЕЧЕНСКИЙ, С. Н. К изучению бактериофагов речных вод. (Contribution to a study of the river water bacteriophages.) Вестник Микробиологии, Эпидемиологии и Паразитологии. (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(3): 261-263; English summary, 353. 1929.—The author obtained from water of the Dnieper in Dniepropetrovsk, a bacteriophage with rather strong lytic action (1: 18,250,000 according to d'Herelle's method) for *B. coli* strains from the Dnieper, a somewhat weaker action for other coli strains, and no action for other intestinal bacteria. The bacteriophages of river waters may be of importance in epidemiological problems. Presence of coli-bacteriophage indicates fecal contamination; and bacteriophages may possibly play a part in the self-purification of river water. Moreover, in bacteriological examination, bacteriophage should be taken into consideration, as it may cause the disappearance of bacteria,

or their transformation into atypical variants.—*Author's summary.*

7589. **SELLARDS, ANDREW WATSON. The behavior of the virus of yellow fever in monkeys and mice.** *Proc. Nation. Acad. Sci.* [*Washington, D. C.*] 17 (6): 339-343. 1931.—A strain of virus from a yellow fever monkey, maintained by repeated passage from brain to brain in mice, until it no longer infected monkeys (*M. rhesus*) by ordinary routes of injection, was compared with the original strain maintained in monkeys and mosquitoes. Monkeys inoculated into the brain with a suspension of infective mouse brain, developed regularly a typical fatal encephalitis, but without characteristic changes in the liver. Blood of such animals proved non-infectious for monkeys in 2 experiments, one test being made by direct inoculation and the other by means of mosquitoes. Direct inoculation from brain to brain through a series of 4 monkeys failed to restore the virulence of the strain. 2 monkeys injected intracerebrally with infective blood of monkeys, died characteristically of yellow fever, with necrosis of the liver and without encephalitis. Tests for cross-immunity were carried out by injecting normal monkeys intraperitoneally with mouse virus and subsequently testing them with typical yellow fever virus. Also, monkeys immunized to typical yellow fever were injected intracerebrally with infective mouse brains. Cross protection was very well marked, though it was not complete. Intraperitoneal injection of infective mouse brains proved to be a very convenient method of immunizing monkeys against a typical potent strain of yellow fever. Results of these cross-immunity tests are entirely consistent with the interpretation that the virus was that of yellow fever.—*Author's summary.*

7590. **SHERMAN, JAMES, and CLAIR E. SAFFORD. The occurrence of filterable forms of bacteria in nature.** *Science* 73 (1895): 448-449. 1931.—Using Hadley's methods, with slight variations, the authors demonstrated filterable microorganisms in soils, decomposing manure, hay infusion, fresh human feces and milk.

7591. **SIMIĖ, TICHOMIR V. Rolle des Bakteriophagen bei der Bildung von Bakterienvarianten in pathologischen Produkten. Beitrag zur Erklärung ihres Wesens und ihrer Ursachen.** *Zentralbl. Bakt. I. Abt. Orig.* 115 (1/2): 74-77. 1929.—A variant of *B. typhosus* was isolated from various loci in typhoid fever. Morphological and cultural characters were atypical on plain agar, but approached normal on addition of fresh blood or potato extract. The variant was shown to be a carrier of bacteriophage, by which the author believes it was produced from the normal type. It could be cultured free of bacteriophage by serial transfer, retaining still its atypical characters. The observations are believed to support the view that bacteriophage is a living organism. —*J. B. Nelson.*

7592. **URÍZAR, R. La rabia en el Paraguay.** *An. Inst. Nacion Parasitol.* [*Paraguay*] 4 (4): 13-20. 1931.—This is the first report of laboratory diagnosis and clinical study of rabies in Paraguay. An outbreak in June, 1931, is described.

LOWER ANIMALS

7593. **BIERBAUM, K., E. EBERBECK, K. RASCH, und W. KAYSER. Weitere Untersuchungen über Geflügelpocken.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39 (1/2): 141-149. 1931.—In agreement with earlier work, it appears that the fowl-pox virus may be adapted to pigeons by passage. In these studies, success was obtained only with a strain of fowl-pox virus which had formerly been bipathogenic and may have been mixed. This virus gave lesions only at the point of inoculation and in the mouth of chickens, and small lesions at the point of inoculation in pigeons. Histologically, the lesions in the fowls were not characteristic until about the 15th passage. After passage through 11 pigeons the virus was no longer pathogenic for fowls, and after a passage through 6 fowls it was no longer pathogenic for pigeons, passage increasing the virulence for homologous birds.—*L. D. Bushnell.*

7594. **MEYER, K. F., C. M. HARING, and B. HOWITT. Newer knowledge of the neurotropic virus infections of the horse.** *Jour. Amer. Vet. Med. Assoc.* 32 (3): 376-389. 1931.—The evidence thus far obtained in California indicates that the American encephalitis differs etiologically from the Moussu-Marchand type and from Borna's disease. Until further investigations are completed it must remain undecided whether the American disease is due to an elective neurotropic virus or whether it is an encephalomyelitis with organotropic properties of the virus, as, e.g., is the case in hog cholera, distemper, fowl pest, and yellow fever.—*Authors' conclusions.*

7595. **MURPHY, JAMES B., O. M. HELMER, ALBERT CLAUDE, and ERNEST STURM. Observations concerning the causative agent of a chicken tumor.** *Science* 73 (1888): 266-268. 1931.—Purification of the extract of a filterable chicken tumor was carried on by precipitation, and by adsorption. The active material is precipitated at pH 4.4-4.8. When the material was adsorbed on $Al(OH)_3$, the remaining supernatant fluid was much more active than was the original extract; the adsorbat, after release, was much less active. As far as could be determined, the former contained no protein. This purified fraction produced a high content of neutralizing bodies when injected into rabbits, but failed to produce precipitins or complement-fixing antibodies. When a tumor desiccate was repeatedly washed with water, both the water and the residue became more active with each successive washing, indicating that there existed, along with the active principle, an inhibitor, which was more soluble than the active factor. The fact that the supernatant fluid remaining after adsorption is so highly active, is also explained in this way.—*J. B. Murphy.*

7596. **SJOLLEMA, B., en L. SEEKLES. Borna-ziekte bij het paard en grastetanie bij het rund. [Borna's disease in horses, and grass tetany in cattle.]** [With German, French and English summaries.] *Tijdschr. Diergeneesk.* 58 (15): 809-812. 1931.—Because of the striking similarity of symptoms of grass tetany in cows and Borna-disease in horses, the authors examined the blood of a horse with Borna-disease. They found that a most important symptom of grass tetany—the characteristic disturbance in the mineral equilibrium of blood serum—did not occur in Borna-disease. Moreover, the instantaneous curative effect of an intravenous injection of $CaCl_2$ in grass tetany, makes its supposed infectious origin very improbable.—*Authors' summary.*

7597. **WEFRING, K. Fièvre aphteuse produite par l'inoculation du vaccin antivariolique chez les vaches.** *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22 (9): 1714-1716. 1930.—An outbreak of foot-and-mouth disease of Oslo followed small-pox vaccination. Sources of infection other than the vaccine were excluded, and further experiment indicated contamination of the vaccine virus. This vaccine is the same as that used in the vaccination of about 8,000 children, but in them no complication has been reported.

7598. **WINKEL, A. J. Iets over de stammen van het monden klauwzeervirus in Nederland gedurende de laatste drie jaren. [Types of foot-and-mouth disease in Holland during the last three years.]** [With German, French and English summaries.] *Tijdschr. Diergeneesk.* 58 (15): 793-801. 1931.—24 examinations were made by testing the serum (15 times by direct inoculation of guinea pigs immunized against both types A and O). In 1928 and 1929, the strains belonged to the A type; since the spring of 1930, only the O type has been observed. Experiment proves that injection with one type only may confer a heterologous immunity.—*Author's summary.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

MEDICAL

JAMES S. SIMMONS, *Editor*

(See also in this issue Entries 6574, 7156, 7191, 7192, 7195, 7210, 7220, 7236, 7237, 7287, 7288, 7308, 7344, 7353, 7371, 7385, 7392, 7399, 7587, 7665, 7674, 8055, 8056, 8060, 8078, 8079, 8080, 8092, 8263)

7599. AGOSTINI, A. Dermatomycose due à "Eurotium rubrum" Bremer. *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(1) : 24-25. 1931.—Symptoms of a case of scalp dermatomycosis, with description of the fungus isolated.

7600. BELEZKY, W. K., und R. M. UMANSKAJA. Die Recurrensspirochätose des zentralen Nervensystems des Menschen. *Zeitschr. Ges. Neurol. u. Psychiatr.* 129 (1/2) : 21-41. 6 fig. 1930.—In 3 of 5 of the authors' cases in which spirochaetes were found in various organs, they found Obermeier's spirochaetes in considerable numbers in the gray matter of the brain and medulla and in the pia. Finding of spirochaetes in the brain parenchyma is dependent on their great numbers in the blood stream, the spirochaetes penetrating directly into the central nervous system through blood vessel walls or through the subarachnoid space and overlying glial membrane. They spread diffusely in the central nervous system, especially in the superficial cortical layers, without relation to the vessels in limited portions of the parenchyma. Spirochaetes which have penetrated into the brain are destroyed by extracellular lysis and also by phagocytosis by the cell elements of the glia. Among the latter, the Rio-Hortega cells (mesoglia cells) seem to play the principal rôle. These cells function similarly to the histiocytes of the reticulo-endothelial apparatus and the blood macrophages of histiocyte origin. In the pia one finds some infiltration of monocytes, lymphocytes, plasma cells, and also of histiocytes with but little such infiltration in the vessel walls of the brain parenchyma. In man, lytic antibodies play a major rôle in overcoming *recurrentis* infection, by dissolving the spirochaetes both in tissues and blood stream. We must consider the phenomena of lysis and phagocytosis, which occur simultaneously in tissues and blood stream, as defense mechanisms in the reaction against *recurrentis* infection. Obermeier's spirochaetes can be present in considerable numbers in the central nervous system, even if they are to be found in very small numbers or not at all in other organs or in the blood stream. Morphological analysis of the defense apparatus of the central nervous system (phagocytosis and lysis) shows a weak and delayed functioning of that system in comparison with other organs.—*Authors' summary (transl. by H. E. Meleney)*.

7601. BIELING, R. Untersuchungen über die Erreger des undulierenden Fiebers. *Zeitschr. Hyg. u. Infektionskr.* 111(5) : 728-739. 1930.—While morphology, cultural methods, comparative agglutination of the various strains with monovalent sera, etc., furnish no trustworthy criterion for distinguishing human and bovine *Brucella* strains from central Europe and from the eastern Mediterranean basin, the author's agglutination-binding method, especially applied to supervalent sera, enabled him, in tests on 28 human and 27 bovine strains of various origin, to distinguish 2 great groups: (1) the Mediterranean human type, and (2) the Central European bovine type. Both types, however, may infect either man or animals; and, no matter what the type of infecting organism, human infection presents the picture of undulant fever; the animal disease, that of infectious abortion. It is improbable that the Mediterranean type occurs in Germany and adjacent countries. In Bulgaria it predominates among human infections, while the German bovine type dominates among animal infections. In Palestine the Mediterranean type seems to be solely responsible for human infection, but the German bovine type occurs among cattle, especially in imported animals.

7602. BLUMER, GEORGE. Undulant fever in the United States. *Ann. Internal Med.* 3(2) : 122-131. Map. 1929.—The author discusses the following aspects of the problem of undulant fever in the continental U. S. A.: incidence and distribution, origin, and best methods for detection. A map shows the distribution of the 856 cases hitherto reported.—*Alice C. Evans.*

7603. BORZONE, RODOLFO A. Transmisión en serie del bacilo de Hansen humano a cachorros de rata blanca. [Transmission of human bacillus of Hansen to the young of white rats.] *Quinta Reunion Soc. Argentina Patol. Reg. Norte* 1: 421-423. 1930.

7604. BRANHAM, SARA E., GEORGE W. McCOY, and CHARLES ARMSTRONG. Bacillus psittacosis Nocard, 1893. Failure to find it in the 1929-30 epidemic in the United States. [*U. S.*] *Public Health Repts.* 45 (37) : 2153-2160. 1930.—During the recent outbreak of psittacosis in the U. S. A., an intensive search for the *B. psittacosis* Nocard was made in the carcasses and droppings of parrots shipped to the National Institute of Health, in experimentally infected and in normal parrots and parrakeets, and in material obtained from human cases. No strain of *B. psittacosis* or of any other member of the *Salmonella* group was found. In 57 convalescent sera studied, agglutinins for *B. psittacosis* or other Salmonellas were not demonstrable in dilutions that could be considered significant. No evidence of the association of any member of the *Salmonella* group with psittacosis either in birds or in man was found.—*Authors' summary.*

7605. BRUCE, L. C. A suggested cause of nephrosis. *Lancet* 220(5605) : 26S. 1931.—The author suggests from his clinical observations that some cases of nephrosis are of bacterial origin. Urine in culture showed streptococci and colon bacillus (1 case), *Staphylococcus aureus* (3), colon bacillus (2), and *Micrococcus tetragenus* (1). When treated with autogenous vaccine all but the last case cleared up.

7606. CANN, L. W., and G. J. HOLLIS. A case of actinomycotic cerebro-spinal meningitis associated with aural actinomycosis. *Lancet* 220(5603) : 130-131. 1931. —The *Streptothrix* mycelium present in the cerebrospinal fluid could not be identified; it showed Gram-positive branching filaments. When incubated anaerobically in glucose broth, a granular sediment appeared after 5 days; this showed no branching filaments.

7607. CASTELLANI, ALDO. Tonsillomycoses: a brief general account. *Practitioner* [*London*] 1930(Jan.) : (2-16). 11 fig. 1930.—Fungi of the following genera have been isolated by the author as etiological agents in mycotic infections of the tonsils: *Cryptococcus, Saccharomyces, Debaryomyces, Monilia, Endomyces, Oidium, Hemispora, Willia, Trichosporium,* and *Nocardia.* A brief description of the methods of classification of the various genera, based on the occurrence of budding, mycelial and ascus production, is given. Tonsillomycoses are here classified from a clinical rather than an etiological basis, since many fungi of different genera may cause the same pathological picture. Diseases of the tonsils due to fungi run an acute or chronic course; follicular or diphtheritic inflammations comprise the acute types. *Monilia* spp. are the causative organisms in the majority of cases, but any of the above organisms may be isolated. In the chronic group, 3 types of lesions result: (a) tonsillar and peritonsillar abscesses from which *Nocardia* may be demonstrated, at times in the form of granules; (b) diphtheritic tonsillitis, giving rise to brownish membranes, occasionally spreading over the fauces (the author isolated *Hemispora,* but Otta found *Trichosporium* in this type of lesion); (c) tonsillomycoses spinulosa, with small white or grayish-white spicules in the crypts, from which *Oidium* can be cultivated. According to the author, diagnosis of tonsillomycoses

is made on the following grounds: finding of the specific fungus on smear; its isolation and identification by culture; absence of diphtheria bacilli; absence, or presence in very small numbers, of pyogenic cocci or the organisms of Vincent's angina; and, finally, presence of a membrane which is softer, less adherent, with less ulcerated base and with less tendency to bleed when removed, than that due to diphtheria bacilli.—*L. D. Michelson.*

7608. **CHAUSSINAND, R., et G. TEMPÉ. Contribution à l'étude de l'innocuité du BCG chez le nourrisson.** *Ann. Inst. Pasteur [Paris]* 45(1): 65-70. 1930.—A 7-months-old hydrocephalous monster, intraperitoneally injected with 2 mgm. BCG, presented no active tuberculous lesions at necropsy 4 months later; inoculation of guinea pigs with material from mesenteric ganglia was negative. The infant's death was attributed to the hydrocephalus or to a massive dose of vigantol. A normal infant, born of a tuberculous mother, received 60 mgm. BCG by mouth from the 4th to the 9th days after birth. At the age of 6½ mo. the child was well, weighed 6,480 gm., and the lungs showed normal in roentgenogram.

7609. **COHN, ALFRED. Verimpfung von Gonokokken auf Kaninchen.** *Dermatol. Zeitschr.* 60(1/2): 35-41. 1930.—After anesthetizing the eye, 0.2-0.25 cc. aqueous humor was aspirated from the upper limbus and 0.2-0.25 cc. gonococcal suspension injected. Of 54 rabbits so inoculated with 12 strains and 1 with a mixture of 11 strains, positive cultures were obtained in only 21 after 4-28 days. No strain was positive in all instances; 4 strains and the mixed suspension were entirely negative. In successful inoculation, the 7th to 13th days were best for removal of material. Inoculations into the testis and by suboccipital puncture were negative (2 tests each).

7610. **DAVANZO, I. Sulla batteriemia mestruale.** [Menstrual bacteriemia.] *Clin. Ostetrica* 32(11): 683-686. 1930.—Of 30 patients examined, 3 gave negative results during the premenstrual period, but bacteriemia (diplococci or streptococci) during menstruation; in 2 cases there was no clinical disturbance; in 1 there was high menstrual temp. The author believes it probable that bateria regularly present in the genital organs enter the circulation during the menstrual period.

7611. **DOLFINI, GIULIO. Contributo sperimentale sul potere patogeno del vaccino di Calmette.** [Pathogenic activity of Calmette's vaccine.] *Biochem. e Terapia Sperim.* 18(2): 41-49. 1 fig. 1931.—BCG when injected intravenously suspended in oil into guinea pigs does not acquire an increased virulence.—*M. Comel.*

7612. **DOULL, JAMES A., MARY HARDY, JANET H. CLARK, and NATHAN B. HERMAN. The effect of irradiation with ultra-violet light on the frequency of attacks of upper respiratory disease (common colds).** *Amer. Jour. Hyg.* 13(2): 460-477. 1931.—A group of 363 adult volunteers was kept under observation for 35 wks., and a vigorous effort was made to secure reports of all cases of upper respiratory disease. Approximately ½ were selected at random for irradiation, which was given over the first 31 wks. Mercury-vapor lamps were used and the intensity of erythema-producing rays was measured bi-weekly. The dosage was light to moderate, individuals being stripped to the waist and exposed, either on chest or back on each occasion, to that dose which, from previous experience with the subject, seemed likely to produce only a minimal erythema. Total incidence for the period was slightly higher for the irradiated (receiving more than 10 treatments) than for the controls. Also, cases of a more severe type, as evidenced by absence from duty and confinement to bed, by occurrence of fever, by productive cough or by long duration, were just as frequent in the irradiated as in the control group.—*Authors' summary.*

7613. **EINAUDI, MARIO. Contributo allo studio della constanza del potere emolitico del B. coli isolato durante interventi chirurgici. [Constancy of the hemolytic power of B. coli isolated during surgical intervention.]** *Lo Sperimentale* 84(4): 179-184. 1930.—The hemolytic power of 10 strains of *B. coli* isolated during surgical intervention was a constant property of the organism and not dependent upon environment or nutritional conditions. In order to insure uniform experimental conditions, however, it is advised that dog blood agar be used as culture medium.—*M. L. Menten.*

7614. **ELBERT, B., et S. GELBERG. Nouvelles contributions à l'étude expérimentale du BCG.** *Ann. Inst. Pasteur [Paris]* 45(1): 59-64. 1930.—Prolonged observations of a great number of guinea pigs inoculated with massive doses of initial BCG (50 mgm. peritoneally or 10 mgm. intratesticularly), and of 169 guinea pigs inoculated in the same doses with 25 different cultures from 10 successive passages, showed no increase of virulence over the original strain. BCG proved perfectly stable in all the authors' experiences.—*Authors' summary (transl.).*

7615. **ELKELES, GERHARD. Zur Klinik und Bakteriologie der E-Ruhr.** *Deutsche Med. Wochenschr.* 55 (10): 393-394. 1929.—On dysentery due to *Bacillus* E of Kruse.

7616. **[FIGATNER, R. I.] ФИГАТНЕР, Р. И. К методике выделения чистых культур. [Methods of obtaining pure cultures of tubercle bacilli.]** [With French summary.] Вопросы Туберкулеза. [*Voprosy Tuberkuleza*] 7(10): 1228-1231. 1929.—Sputa from 47 patients were sown both on egg medium after Hohn's method, and on the potato medium of Löwenstein and Sumiyoshi. Pure cultures were obtained by the latter method in 86%. In Hohn's method, 5 of 8 cases gave positive results. Egg medium is somewhat preferable, because it sometimes produces cultures sooner than the other, and also allows use of Hohn's method, which is much simpler than that of Löwenstein and Sumiyoshi.—*B. Van Rosen.*

7617. **FISCHL, RUDOLF, BERTHOLD EPSTEIN, und FRIEDRICH BREINL. Experimentelle Beiträge zur Erforschung der kongenitalen Syphilis.** *Arch. Kinderheilk.* 83(1/2): 44-56. 1928.—The authors inoculated material from syphilitic rabbit testes into scarified genitalia of female rabbits without producing infection. 2 pairs of syphilitic rabbits were mated; the living and dead offspring showed no signs of syphilis. 8 rabbits were infected in the anterior chamber of the eye; 1 developed local syphilitic manifestations, and 1 general manifestations. Syphilitic males mated with normal females produced syphilis neither in the female nor in its offspring. Intravenous and intracardial injections of emulsion of syphilitic testes into 3 rabbits produced no positive results. Repeated injection of blood from a congenital syphilitic woman into a male rabbit failed to influence the course of subsequent intratesticular inoculation. Efforts to infect female guinea pigs subcutaneously were followed by negative findings, both in the females and in their offspring.—*S. W. Becker.*

7618. **FLORENCE, LAURA. Viability and retention of virulence of a culture of Corynebacterium diphtheriae.** *Science* 73(1897): 495. 1931.—Cultures from chocolate agar transferred to bits of sterile filter paper in Wassermann tubes kept in vacuo in anaerobic Smillie jars retained virulence for long periods.

7619. **FOTHERGILL, LeROY D. Unusual types of non-lactose-fermenting, gram-negative bacilli from acute diarrhea in infants.** *Jour. Infect. Dis.* 45(5): 393-403. 1929.—An attempt was made to classify gram-negative, non-motile, non-liquefying, so-called atypical paratyphoid bacilli, isolated from 104 cases of intestinal disturbance and to show their possible causal relation to summer diarrhea. A table showing Weldin's classification of various known intestinal bacilli is given and discussion on this point is limited to this classification. Detailed cultural and serological reactions of 32 strains emphasize their heterogeneous nature. By cross-agglutination, less than 50% fall into 3 groups, one of which checks culturally with strains noted as fermenting sucrose. No group-agglutinins with the paratyphoid group were observed, indicating lack of common antigen. Serums from 18 cases were studied and agglutination was observed in 55.5% with strains of this sucrose-fermenting group. Following a brief discussion of the etiology of summer

diarrhea, the author concludes that the so-called atypical paratyphoid bacilli have no logical place in present classifications, and that as yet proof is incomplete as to their etiological relation to summer diarrhea.—*L. N. Batt.*

7620. **FREDRICH, E. Vergleichende Untersuchungen zum Nachweis von Tuberkelbacillen durch Tierversuche und mit dem Nährboden nach Hohn.** *Beitr. Klin. Tuberk.* 76(4/5): 489-492. 1931.—Of 54 specimens, 35 were positive: 5 on Hohn's medium only, 6 in animals only, 24 in both; cultures should be designated negative only after 60 days. Of the 28 specimens treated with antiformin, 2 were positive to Hohn only, 3 to animal only, 8 to both; of 26 treated with H_2SO_4 the positives were 3, 3, and 16, respectively.

7621. **GEIGER, RICHARD. Über den Nachweis und das Vorkommen von Spirochäten im Liquor bei Frühluetikern.** *Arch. Dermatol. u. Syph.* 162(3): 473-479. 3 fig. 1931.—Spirochaetes were found in 12 of 30 cases of early lues, using the silver agar method of Warthin and Starry. They were present in 2 seropositive cases of sclerosis, in all of 5 cases showing positive spinal fluid reaction, and in 7 of the 25 (inclusive of the 2 cases of sclerosis) with negative spinal fluid reaction.

7622. **GHEORGHIU, I. Un caz de Salmonela la om provocată de B. aertrycke.** [Human infection with Bacillus aertrycke.] *Rev. Med.-Chir. Iasi* [*Rumania*] 38(2): 26-27. 1927.

7623. **GOIFFON, R., et E. DONY. Relation entre la fréquence des blastocystis, des spirilles, des lamblias et des amibes du côlon avec les autres éléments coprologiques.** *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(7): 858-861. 1930.—The authors compare the frequency of coincidence of *Blastocystis*, spirilla, *Giardia intestinalis* and *Entamoeba coli* with acidity, excess ammonia, accelerated evacuation, etc., and find that there are merely differences in frequency of occurrence among the parasites in relation to the various conditions mentioned. No definite type of stool is an invariable condition of environment for any organism.

7624. **GORDON-TAYLOR, G., and LIONEL E. H. WHITBY. A bacteriological study of fifty cases of cholecystectomy with special reference to anaerobic infections.** *Brit. Jour. Surg.* 18(69): 78-83. 1930.—From observations on 50 cases and a review of the literature, the authors conclude that intestinal bacteria are the most frequent organisms in gall-bladder disease and that *Bacillus welchii* (found in nearly 9% of gall-bladders removed by operation and in the center of 13% of gallstones obtained from postmortems) is usually associated with the acute form of cholecystitis.

7625. **IVANIĆ, STEVAN, und V. DIMITRIJEVIĆ-SPETH. Beobachtungen bei der Prüfung unseres Schwärmverfahrens an Krankenstühlen.** *Zentralbl. Bakt. I. Abt. Orig.* 115(1/2): 78-79. 1929.—Results by this method (previously described) were compared with those by Müller's tetrathionate medium on 100 stools. The flocculation method gave better results with typhoid stools, but with paratyphoid B stools fewer positives were obtained. However, by Müller's method bacteria were obtained from healthy individuals, which exhibited the fermentative properties and agglutinability of paratyphoid B but differed in their slight ability to clump and in their failure to blacken lead acetate on Calmette's medium, thus rendering the diagnosis more difficult.—*G. H. Robinson.*

7626. **KADISCH, E. Das Sauerstoffbedürfnis der pathogenen Hautkeime und seine Bedeutung für den Dermatotropismus.** *Arch. Dermatol. u. Syph.* 162(2): 462-472. 5 fig. 1930.—Previous investigations indicated that dermatotrophism in the dermatophytes is due to the lower temp. of the skin. Since they rarely attack squamous epithelium except where there is more or less free access of air, O appears to be a factor in dermatotrophism. Agar plate experiments with more than 15 species of dermatophytes under anaerobic conditions, showed the necessity of O for growth. This was substantiated by other anaerobic, partially aerobic, and aerobic experiments in culture and in vivo with either *Ach*[*orion*] *gypseum* or *Ep*[*idermophyton*] *inguinale*. Peritoneal and pneumoperitoneal experiments with guinea pigs and frogs indicated that temp. is more determinant than O. Cultures on living and dead sections of *Cereus peruvianus*, temp. and O being constant, showed that the living cell contains factors not permitting growth of *A. gypseum*.

7627. **KAIRIŪKŠTIS, VLADAS. Kai-kurios plaučių tuberkuliozės savybės miesto ir kaimo gyventojams. (Plaučių tuberkuliozės apsikrėtimo teorijos pastebėtų faktu šviesoje Plaučių ligų lokalizacijos dėsningumas apskritai.) [Certain characteristics of pulmonary tuberculosis in urban and rural patients.]** [With German summary.] *Medicina* [*Kaunas, Lithuania*] 11(2): 95-101. 1930.—Study of 1155 ambulant patients and of various collections of roentgenograms indicated that the right lung is more frequently infected in city dwellers; the left, in peasants; there were also certain differences in the course of the disease. Various explanations offered for the greater receptivity of the right lung are insufficient, in the author's opinion, to explain the known facts. He explains the frequency of left lung infection in the country by the insanitary eating habits of the peasants: infection taken with food passes through the gastric wall into the lymphatic system by way of the thoracic duct which is closely connected with the lymphatic system of the left lung, just as gastric cancer metastasizes by way of the thoracic duct more frequently into the left lung than into the right.—*From author's summary (transl.).*

7628. **KENDALL, ARTHUR ISAAC, and SANFORD ROBINSON GIFFORD. Trachoma and avitaminosis.** *Arch. Ophthalmol.* 4(3): 322-325. 1930.—Vitamin A was removed from the diet of 3 series of white rats (36 in all) for various periods; some rats in each series were kept as controls, and the remainder inoculated with *Bacterium granulosis*. Results were negative. It is concluded that lack of vitamin A is not necessarily a factor in trachoma infection.

7629. **KLIGLER, I. J., und L. OLITZKI. Der Infektionsmechanismus bei der peroralen Gärtnerinfektion der Mäuse.** *Zeitschr. Hyg. u. Infektionskr.* 111(5): 711-727. 1930.—The course of infection in 516 mice, for a weakly virulent strain of *Bacillus enteritidis* Gärtner, orally introduced, was studied by examination of organs. In 175, all organs and glands were sterile. The sole route of infection was from intestines to glands, including passage of the bacteria into the blood stream and formation of bacterial foci in liver and spleen. The bacteria could be found in the intestines in all 3 stages of the disease. In the incubation stage, the majority of positive findings were in the lower intestinal sections; at the peak of infection, mostly in the upper intestinal segments; and at the stage of subsidence (carrier stage), only in the upper intestinal tract. Intravenous injection of the same strain into 18 mice showed that the liver and spleen absorb large numbers of the bacilli; in 5 animals all organs were completely sterile in 24 hrs. Hence, a primary sepsis proceeding from the intestines seems improbable. External factors such as temp. and atmospheric moisture had a distinct effect on severity and mortality, but apparently none on localization of the pathogenic agent.

7630. **KNEELAND, YALE, Jr. Studies on the common cold. III. The upper respiratory flora of infants.** *Jour. Exp. Med.* 51(4): 617-624. 1930.—30 normally delivered infants were studied from the time of birth to the age of 4-8 mo. At birth the upper respiratory tract is sterile. During the first 2 weeks of life the infant acquires a basal bacterial flora comparable to that of adults, not including the potential pathogens referred to below. During the ensuing months these potential pathogens, such as Pfeiffer's bacilli, hemolytic streptococci and pneumococci, which did not appear in the first 2 weeks, first made their appearance without apparently giving rise to respiratory symptoms. However, in infants with recurrent colds, pneumococci and Pfeiffer's bacilli seemed to play the part of secondary infective agents. None of the bacteria cultured from the respiratory tracts of these

infants semed to play the part of specific incitants of their first colds.—*G. S. Shibley.*

7631. **KUSAMA, SHIGERU, TOSHIHISA YOKOYAMA, and NARIYOSHI ITO.** Bacteriological studies of measles, Part 1. Bacteriological studies of the etiology of measles with Japanese monkeys. *Kitasato Arch. Exp. Med.* 7(3) : 217-225. 1930.—The authors cultivated a new bacillus by inoculating the kidney of Japanese monkeys infected with measles into ascites broth. Morphologically, it resembles the causative agent of typhus, which is cultivated by the same method. It is a facultatively anaerobic coccobacillus growing only in liquid media such as ascites or serum-broths and not on slants of various solid media. When cultivation is repeated, growth becomes easier and at last it grows aerobically in liquid media. In glucose agar stab media growth occurs along the stab line. It is difficult to produce strongly immune sera. Among domestic animals, horses are very susceptible to the virus.—*Authors' summary.*

7632. **LABERNADIE, V. Contribution à l'étude de la contagiosité de la lèpre.** *Rev. Méd. et Hyg. Trop.* 22 (3) : 114-137. 1930.—Leprosy affects 2.5% of the native half-breed population of French Guiana. In 1883 the 1st cases (2) were observed among the convicts of the penal settlements. Since then the number has risen to 80 and the proportion to 1.3-1.4%. As the convicts receive thorough medical examination before and after transportation, as intercourse with the natives is not difficult, and as the convict cases arise among those long in the country, and those who have earned a measure of freedom, the author regards the evidence for contagiousness as convincing. Incidentally, the conditions at the leper settlement are so far superior to those to which the mass of the convicts are subject, that it is regarded as a privilege to be pronounced leprous.

7633. **LANGE, BRUNO. Untersuchungen zur Klärung der Ursachen der im Anschluss an die Calmette-Impfung aufgetretenen Säuglingserkrankungen in Lübeck.** *Zeitschr. Tuberk.* 59(1) : 1-18. 1930.—The tubercle bacilli obtained from 3 infants dying of tuberculosis after ingesting inoculation material prepared in Deycke's laboratory, produced progressive tuberculosis in guinea pigs; the same was true of a culture from the tuberculous cervical glands of another child. Mesenteric glands, microscopically showing tubercle bacilli but macroscopically healthy, from a child who died intercurrently during a favorable period of inoculation, did not produce progressive tuberculosis. In repeated inoculations of 2 BCG cultures, one used during the period of many fatalities produced progressive tuberculosis in guinea pigs; the other, used during a favorable period, showed greatly weakened virulence, even in repeated transfer. The investigations would indicate a mixture of BCG culture with a pathogenic strain, probably one from Kiel, present in the laboratory at that time. The pathogenic strains from the infants as well as the strain sent from Kiel to Lübeck were both of labile virulence, which would account for many children surviving. Further investigations must be made to determine the type both of the Kiel strain and of those pathogenic to infants. The investigations revealed nothing to indicate that the fatalities were due to a spontaneous increase in virulence of BCG.

7634. **LASSEN, H. C. A. Om infektionsforløbet efter oral indgift af Bac. aertrycke (Breslau) hos mus paa B-vitaminfri kost. [Oral infection with Bacillus aertrycke Breslau of mice on a vitamin-B-free diet.]** *Hospitalstidende* 72(19) : 506-512. 1929.—20 mice on a B-vitamin-free diet showed, after a peroral dose of 16 drops of a 16-hr.-old Breslau culture, exactly the same duration of infection as 19 mice kept on a diet of moistened white bread and grain. It was impossible with the technique used to show any depression of resistance in white mice on a B-vitamin-free diet.—*K. C. Berthelsen.*

7635. **LEURET, E., et J. CAUSSIMON. Lésions consécutives à l'injection sous-cutanée de bacilles biliés de Calmette et Guérin (BCG) au cobaye. Tentatives infructueuses de réinoculation.** *Compt. Rend. Soc. Biol.* 98(17) : 1537-1538. 1928.—Attempts to reinoculate from guinea pigs inoculated with BCG were unsuccessful.

7636. **LEVIN, OSCAR L., and SEYMOUR H. SILVERS. The isolation of ringworm fungi from sweat.** *Arch. Dermatol. & Syphilol.* 23(6) : 1094-1099. 2 fig. 1931.—Cultures of apparently pathogenic fungi believed to belong to the Kauffmann-Wolff group, also bacteria, *Aspergillus niger* and yeast-like organisms, were obtained from the sweat of the feet in 5 of 8 patients (affection not stated).

7637. **LEWIS, C. J. Note on the Bacillus psittacosis.** *Birmingham Med. Rev.* 5(12) : 424-429. 1930.—Cultures and filtrate of broth cultures of *B. psittacosis* obtained from parrot feces were tested in 8 guinea pigs and 2 budgerigars by feeding; by subcutaneous, intra-thoracic, intra-muscular inoculation; and by instillation into the nostrils, with and without abrasion. Lungs and bone marrow were most affected. Since the definite relationship between *B. psittacosis* and human cases of psittacosis has not been established, the author recommends necropsy cultures of human bone marrow.

7638. **LUZZATO-FEGIZ, G. Studio istologico sulle reazioni provocata da un micobatterio tubercolare umano avirulento. [Histologic study of reactions produced by a human avirulent strain of Mycobacterium tuberculosis.]** *Bull. e Atti R. Accad. Med. Roma* 56(10) : 287-296. 1930.—Subcutaneous inoculation into guinea pigs of Puntoni's avirulent human strain of *M. tuberculosis* produced subcutaneous abscesses which healed spontaneously with no diffusion to glands or other organs. Intraperitoneal injection produces on the omentum large abscessed nodules inclosing all the germs injected. The abscesses are histologically very different from those produced by the common pyogenic organisms and persist for months as a "caput mortuus," without producing any diffusion to the rest of the organism. Healing is produced either by the disappearance of the little abscessed nodules or, in the larger ones, by thickening of the fibrous capsule of the abscess, which becomes sterile through gradual destruction of all the bacteria.

7639. **McKINLEY, EARL B. Failure to confirm Rosenow's work on encephalitis in its relation to green streptococcus.** *Proc. Soc. Exp. Biol. & Med.* 27(5) : 436-440. 1930.—Using Rosenow's technique, swabs from the tonsils of normal persons yielded green-producing streptococci; such swabs, injected intracerebrally into 50 rabbits, led to death in 40, with symptoms of typical encephalitis; green-producing streptococci were recovered from the brains of 35. Injections into 24 mice, 24 guinea pigs, and 3 monkeys showed but slight virulence of the streptococci for these animals. The author concludes from these and other evidences here presented that green-producing streptococci have no etiological relationship to encephalitis.

7640. **MOUTOUSSIS, KONSTANTIN. Befunde von rickettsiaartigen Gebilden und Einschlüssen in mit Denguefiebervirus infizierten Stegomyien.** *Arch. Schiffs- u. Tropen-Hyg.* 33(6) : 330-333. 1 pl. 1929.—During an epidemic in Greece, mosquitoes were fed on patients suffering from dengue fever. In the intestines of 15 such mosquitoes, but not in the salivary glands, Rickettsia-like bodies* were found.—*A. S. Pearse.*

7641. **MUSGER, ANTON. Zur Ätiologie der Nicolas-Durand-Favre'schen Krankheit, der sog. Lymphogranulomatosis inguinalis.** *Beitr. Path. Anat. u. Allgem. Path.* 80(2) : 257-269. 8 fig. 1928.—The author cultured bacteria and observed them microscopically from the gland and glandular tissue of the 1st case of Nicolas-Durand-Favre's disease in Vienna. The cultures were pathogenic for laboratory animals. In guinea pigs they produced alterations in the glands, which seemed macroscopically and microscopically identical with those in man. Vaccines prepared from the cultures produced positive skin reactions in sick persons. In view of these observations, it is concluded that the bacteria (Corynebacteria) have a distinct etiologic relationship to the disease. The same bacillus was isolated from the gland and the blood of a 2nd patient.—*P. G. Heineman.*

7642. **NÉLIS, P.** Sur l'absorption per os des bacilles de la fléole chez le cobaye et le lapin. *Ann. Inst. Pasteur* [*Paris*] 45(5): 581-595. 1930.—Absorption of timothy bacilli from the gastro-intestinal mucosae was studied for its bearing on oral administration of BCG, since timothy bacilli are acid-fast like tubercle bacilli, but have the advantage of being non-pathogenic and easily cultivated on artificial media. In 1 of 5 adult guinea pigs and in several of 15 adult rabbits the bacilli were recovered from the blood or organs 3-4 hrs. after ingestion, indicating that passage through the gastro-intestinal mucosae is possible, but irregular and difficult. In 22 guinea pigs aged 5 days or less and in 14 rabbits aged 8-10 days, given oral doses of the bacilli and killed at various intervals thereafter, of those killed 1-5½ hrs. after injecting the bacilli the large majority presented colonies in the blood or organs, indicating that in the young of these animals gastro-intestinal absorption of acid-fast bacilli is comparatively rapid, constant and abundant. In addition, 1 mgm. of a virulent bovine strain of tubercle bacilli was administered to each of 7 adult and 7 new-born guinea pigs; the young guinea pigs all gave a distinct positive intracutaneous reaction 1-2 mo. after ingestion, while 6 of the adult animals gave a negative reaction. At necropsy 4 months after ingestion, the adults were free from tuberculosis; the young showed a generalized tuberculosis.

7643. **NICKEL, ALLEN C., and E. STARR JUDD.** Cholecystitis: a bacteriologic and experimental study of three hundred surgically resected gall bladders. *Surg. Gynecol. & Obstetr.* 50(4): 655-662. 6 fig. 1930.—The majority of surgically resected gall bladders from patients with acute or subacute cholecystitis contain pathogenic bacteria; the majority from patients with chronic cholecystitis are sterile. The organisms are, according to their frequency, green-producing streptococci, gram-negative bacilli, and staphylococci. Streptococci isolated from grossly diseased gall bladders tend to reproduce the cholecystitis and cholelithiasis in experimental rabbits, when injected intravenously. The colon bacillus may have a selective action for the gall bladder. It is usually found with the streptococcus, and appears frequently in relatively acute cases or in cases in which there are stones in the common or cystic duct. Staphylococci were found to be non-pathogenic for gall bladders of rabbits when injected in pure culture.—*H. A. Austin.*

7644. **NINNI, G.** Résultats de l'inoculation de produits suspects de tuberculose dans les ganglions lymphatiques. *Ann. Inst. Pasteur* [*Paris*] 45(4): 433-438. 1930.—The author found that intraganglionic inoculation of guinea pigs rapidly enhances the virulence of tuberculous material and tends to purify the culture by destroying other bacteria. The method is thus superior to that of subcutaneous inoculation.

7645. **NOGAMI, T.** Ueber Kulturversuche von Mikroorganismen im trachomatösen Gewebe. *Klin. Monatsbl. Augenheilk.* 86(3): 313-316. 3 fig. 1931.—From 32 trachoma cases the author isolated Ochi's organism in 19, and from 9 he obtained pure cultures. It was both aerobic and anaerobic; the spores were first more or less conical, then oval; mycelia developed 1 mo. later. Serum agglutination tests (Ochi found the organisms phagocytized by polymorphonuclear leukocytes which migrated into the vessel lumina) on 30 trachomatous patients, 8 with healthy conjunctiva and 3 with catarrhal conjunctivitis, gave positive agglutination at 1:160 and sometimes at 1:320 in those with trachoma; controls were negative. (See also the following abstract.)

7646. **OCHI, S.** Ueber eine Art von Mikroorganismen im trachomatösen Gewebe. *Klin. Monatsbl. Augenheilk.* 86(3): 309-313. 1931.—From the conjunctiva of many trachomatous patients the author isolated an organism which could be transferred to man and again cultivated from the conjunctiva; transfers to monkeys, rabbits, guinea pigs, and rats were negative. In stained section the organism resembled *Cryptococcus farciminosus.* (See also the preceding abstract.)

7647. **OHUE, TOSHIO.** On a fungus found in the urine and the cerebrospinal fluid of a patient suffering from meningitis. *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5(1): 117-132. 3 pl., 2 fig. 1930.—From cultural and pathogenic characters, it seems that the fungus is identical to *Alternaria tenuis* Nees. The very marked and definite changes in the lungs and other organs of inoculated animals are considered sufficient evidence that it was pathogenic to them. Mortality rates were 67% in guinea pigs, 43% in rabbits and 23% in albino rats. The intraperitoneal injection of 0.5 cc. of the filtrate of bouillon cultures was fatal to mice and albino rats. By injection of sterilized culture of this fungus and of living cultures of *Alternaria* sp. collected from leaves of the poppy, no notable disturbance was observed, except slight congestion in various organs. Feeding of spores also caused no particular disturbance. Many spores were found in the urine, lungs, spleen, liver, gall-bladder and brain at varying periods after intraperitoneal and subcutaneous injections. The number of these spores was reduced with lapse of time, and after 1 mo. they were usually not found in any of the organs.—*Author's summary.*

7648. **ONORATO, RAFFAELE.** I micetomi in Tripolitania. [Mycetomas in Tripolitania.] *Arch. Ital. Sci. Med. Coloniale* 7(6): 97-110; (7/8): 137-152. 1926.

7649. **PANEK, K., et M. ZAKCHAROFF.** Pouvoir pathogène des cultures de formes filtrantes du bacille tuberculeux. *Compt. Rend. Soc. Biol.* 106(10): 854-857. 1931.—Using 12 races of the granular form of *Bacillus tuberculosis* obtained from rabbits and guinea pigs infected either with tubercular material or with pure cultures of the human or bovine types, 78 guinea pigs were inoculated and kept for varying periods up to 3 yrs., some being killed at intervals and examined. The pathogenic power of the filterable form is less than that of Koch's bacillus. Inoculated animals show no morbid signs for a long time. After several months, certain animals cease development, lose weight and die in a few weeks; post mortems show more or less extended tubercular lesions and the presence of Koch's bacillus. The pathologic alterations correspond to those of the chronic sclerous form. When the granular form is modified in the body of an inoculated animal into the acid-resistant bacillus form, its virulence is increased in proportion to the number of successive passages through new animals. —*E. Weiner.*

7650. **PEREIRA, Filho.** Sporotrichum fonsecai e o diagnostico differential dos esporotrichados. [Sporotrichum fonsecai and the differential diagnosis of the Sporotricales.] *Rev. Med. Cir. Brasil* 38(5): 163. 1930.—Detailed morphologic and cultural characteristics and analysis of the taxonomic position of the fungus, and numerous illustrations of microscopical and gross appearances are given. It may cause scattered, comparatively deep cutaneous lesions which do not follow the lymphatics as do those of *S. schencki* and *S. beurmanni.*—*F. D. Weidman.*

7651. **PITTMAN, MARGARET, and MERCY A. SOUTHWICK.** Studies on respiratory diseases. XXV. The pathology of pneumococcus infections in mice. *Jour. Bacteriol.* 19(5): 363-374. 1930.—When mice were inoculated with an extract of pneumococci produced by repeatedly freezing and thawing, they developed marked hemorrhagic lesions on all or a part of the external surface free from hair, and at autopsy hemorrhagic areas could be found in practically every tissue. When mice died after inoculation with extract, followed several hours later with a culture inoculation, they had more marked hemorrhagic lesions than any other group of mice studied. Fresh filtrates of virulent pneumococci produced very slight pathological reactions in mice, but, when the filtrates were inoculated with a culture of low virulence, 71% of the mice showed a fibrinopurulent pleuritis at autopsy. Pleuritis was twice as frequent in mice dying from infection with pneumococci that had grown in the presence of salts that lower the P.D. as it was in mice dying from the same strain grown in plain broth. Mice which died or were killed after in-

oculation of pneumococci or pneumococcus products, showed pathological lesions in the lungs, liver, respiratory muscles and possibly in the kidneys. The relation of the extract and filtrates to the pathogenesis of pneumococcus infections is discussed.—*Authors' conclusions.*

7652. **RANKIN, ADAM L. K.** Puerperal infection: a bacteriological study. *Lancet* 219(5578): 188-189. 1930.—The author records the results of bacteriological examination of 89 cases of puerperal infection. A blood culture and a culture from the uterus were taken in each case, and all were incubated under aerobic conditions. In 24 of the 89 cases, hemolytic streptococci were isolated from the uterus in pure culture; in 12 cases they were isolated together with other organisms. The latter included non-hemolytic streptococci, *B. coli*, gonococci, staphylococci and enterococci. In 8 of the cases giving a pure growth of hemolytic streptococci (*Strep. pyogenes*) from the uterus, the same organism was isolated from the blood; 7 of the 8 patients died.—*A. L. K. Rankin.*

7653. **REASONER, MATHEW A.** Experimental yaws and syphilis. *Amer. Jour. Trop. Med.* 9(6): 413-427. 1929.—Experiments with intratesticular inoculation of rabbits with the organisms of yaws and syphilis are reported, only a few animals being used in each. Clear-cut evidence of cross-immunity is shown, but the author thinks that "syphilis and yaws are totally different diseases."—*D. C. Smith.*

7654. **SCHNEIDER, OTTO.** Lepraerinnerungen aus Siam und China. *Arch. Schiffs- u. Tropen-Hyg.* 35(3): 145-159. 1931.—Clinical observations were followed by in vitro culture studies in which pleomorphic bacteria were grown. Experiments with a guinea pig and an anthropoid ape were negative.—*E. C. Faust.*

7655. **SCHUMACHER, C.** Über die Erzeugung von experimentell-luetischen Primäraffekten an der Rückenhaut des Kaninchens und des Meerschweinchens. *Dermatol. Wochenschr.* 89(33): 1210-1213. 1 fig. 1929.—Placing of intracutaneous material seems to be a feasible method of studying experimental syphilis in animals. Rabbits are especially suitable; guinea pigs also may be used; mice do not respond. By this method secondary symptoms may appear. Definite immunity is produced in rabbits against secondary intracutaneous inoculation. The material from one rabbit may be transferred to healthy animals, followed by primary symptoms.—*P. G. Heineman.*

7656. **SECHI, ELIO.** Sulla resistenza in vitro del gonococco e dei comuni germi dell'uretra allo stato normale di fronte ai preparati acridinici (tripaflavina). [In vitro resistance of gonococci and of the common microorganisms of the normal urethra to trypaflavin.] *Gior. Ital. Derm. e Sifil.* 71(5): 1708-1732. 1930.—Resistance in vitro to trypaflavin in various concentrations of 11 urethral microorganisms from 24 normal persons was compared to that of gonococci. The urethral flora was found to vary from one person to another, and from one portion of the urethral canal to another, the anterior portion being frequented by staphylococci and the posterior by streptococci and pseudodiphtheria bacilli. Of the 11 germs found, 8 were Coccaceae, 2 Bacteriaceae, and 1 Coccobacteria. *Staphylococcus albus* showed greatest resistance to trypaflavin (inhibited after the 6th hr. by 1:100,000 solution), and pseudodiphtheria bacilli least (inhibited in the 1st hr. by 1:600,000). Gonococci were among the more resistant organisms (inhibited by 1:200,000).

7657. **SECHI, ELIO.** Influenza reciproca degli estratti (tossine ed endotossine) dei comuni germi della flora uretrale sullo sviluppo proprio e sul gonococco. [Reciprocal influence of the extracts (toxins and endotoxins) of the common germs of the urethra on the development of each other and of the gonococcus.] *Gior. Ital. Derm. e Sifil.* 71(6): 2072-2079. 1930.—Experiments in vitro on 11 microörganisms commonly found in the normal urethra showed that certain exotoxins and endotoxins inhibit growth of certain other organisms, and that gonococci are inhibited by the products of a large number of these normal urethral inhabitants.

7658. **SEITZ, ARTHUR.** Bakteriologie für Zahnärzte: Einführung in die Mikrobiologie und Infektionskrankheiten. [Bacteriology for dentists; introduction to microbiology and infectious diseases.] 2nd ed. v+237p. 7 pl. Walter de Gruyter & Co.: Berlin, 1930. Price 10 M.

7659. **SPAGNOLI, B.** Ricerca della spirocheta nel cervello di paralitici trattati con la malarioterapia. [Attempt to find spirochaetes in the brain of general paralytics treated with malaria.] *Ateneo Parmense* 2(2): 93-98. 1930.—Of 2 general paralytics treated by malaria therapy, the brain of 1 was negative at necropsy; the other showed spirochaetes in the frontal cortex.

7660. **WEINBERG, M., et N. COMBIESCO.** Lésions hémorragiques causées par le B. perfringens. *Ann. Inst. Pasteur [Paris]* 45(5): 547-580. 20 fig. 1930.—The authors report intravenous injection of various doses of *Bacillus perfringens* into a series of 10 guinea pigs, and refer to a supplementary series of 5. Severe hemoglobinuria, hematuria, congestion and pigmentation of various organs, and hemorrhagic and necrotic foci were among the necropsy findings. In some cases small doses produced more severe lesions than doses 2.3 times larger produced in other guinea pigs, indicating marked difference in individual resistance. The intensity of congestion of the organs was not always in proportion to depth of pigmentation. It is concluded that *B. perfringens* produces 2 toxins, one an active hemolysin, the other producing necrosis of the vessels.

7661. **ZANZUCCHI, A.** Contributo sperimentale sul passaggio nel circolo sanguigno dei batteri a sede intestinale. [Passage of intestinal bacteria into the circulation.] *Ateneo Parmense* 2(5): 393-399. 1930.—To learn whether protracted intestinal contraction causes intestinal bacteria to enter the circulating blood, the author induced peristalsis in 8 dogs by injection of various drugs and meanwhile made cultures from the blood. All results were negative.

7662. **ZDANSKY, ERICH.** Über vergleichende Keimzahlbestimmungen im arteriellen und venösen Blute bei Endocarditis lenta. *Zeitschr. Ges. Exp. Med.* 76(3/4): 571-576. 1931.—In 10 cases of endocarditis lenta, 9 of 19 comparative bacterial counts of blood from the brachial artery and from a vein in the elbow showed a higher count in the artery; 9 showed similar counts; 1, lower in the artery than in the vein. The decrease in bacteria from artery to vein may be traced to the imprisoning and destroying action of the capillaries; the decrease was called the bacteria count deficit (expressed in terms of arterial count) and never exceeded 50%. It may be of value in estimating the defense reaction of the body.

7663. **ZDRODOWSKI, P., H. BRENN, et B. VOSKRESSENSKI.** Étude sur la fièvre ondulante en Azerbaidjan. Recherches spéciales sur le groupe Brucella melitensis-abortus. *Ann. Inst. Pasteur [Paris]* 45(6): 768-805. 1930.—Human infection in Azerbaijan runs parallel to infection in sheep and goats, especially the former. Contagious abortion is apparently not widespread among cattle there, though serologically the Azerbaijan strains of *Br. melitensis* are closely allied to *Br. abortus*. The authors studied 64 strains of Brucella of human and animal origin, from various countries. *Br. abortus* could not be distinguished from *Br. melitensis* by pathogenicity for guinea pigs, nor could human strains of *Br. abortus* be thus distinguished from strains of animal origin. *Br. paramelitensis* (6 strains, all "R" type) proved entirely avirulent for guinea pigs. Cultures of the "S" type were in general (29 of 31 strains) very virulent. All *Br. paramelitensis* cultures were of R type; this type was not found in 26 original cultures of human and bovine *Br. abortus*. Intermediary types between "S" and "R" were observed. Some "S" strains were stable; these were strains of *Br. abortus* and *Br. melitensis*, properly speaking. Others were labile, tending toward type R; these were strains of *Br. paraabortus*

and *Br. paramelitensis*. Serologically, some strains of *Br. melitensis* were differentiated from *Br. abortus;* others were not. This serologically non-differentiated type of *Br. melitensis* was the rule in Azerbaijan, although sheep and goats are the chief reservoir for human infection. Typical strains of *Br. paramelitensis* and *Br. paraabortus* were serologically clearly differentiated, but a labile strain of *Br. melitensis* or *Br. abortus*, assuming the "para" characteristics, would acquire also the serological peculiarities appertaining thereto. The authors believe that Evans' proposal to classify the Brucellas by serologic characters is arbitrary.

BACTERIOLOGY AND OTHER MICROBIOLOGY

PUBLIC HEALTH

I. S. FALK, *Editor*

(See also in this issue Entries 6310, 7156, 7191, 7192, 7195, 7388, 7404, 7405, 7455, 7462, 7471, 7481, 7586, 7588, 7592, 7602, 7604, 7706, 7714, 7717, 7718, 7720, 7721, 7824, 7826, 8501)

7664. **ANDO, K., K. KURAUCHI, and H. NISHIMURA. A new plague endemic area in the northeastern part of inner Mongolia. Plague studies I.** *Kitasato Arch. Exp. Med.* 8(1): 24-38. 1 map. 1931.—Considering the data as a whole, it seems justified to conclude that the animal playing the leading rôle in this plague epidemic in the new area might have been susliks (*Citellus mongolicus umbratus*); rats, though prevalent everywhere, seem to have taken no significant part in this epidemic and most of the infections seem to have been carried by the natives themselves.—*Authors' conclusion.*

7665. **BIJL, J. P., und G. KORTHOF. Über das Vorkommen der Weilschen Infektion in Holland während der Jahre 1924-1930.** *Arch. Hyg. u. Bakt.* 105(1): 29-34. 1 map. 1931.—About 20 cases occurred in Holland yearly, particularly in the areas where water is abundant. Patients' sera, in great dilution, would agglutinate or dissolve *Leptospira icterohaemorrhagiae* early in the disease. Contact with water (particularly some canals) was a special source of infection; 20% of rats were infected (37 of 167 examined). Epidemics of jaundice not showing signs of Weil's disease were negative bacteriologically and serologically.—*Authors' summary (transl.).*

7666. **BROMBERG, I. M., and R. COMAROFF. Epidemiology of typhoid fever. Incidence of typhoid carriers in a general population group.** *Jour. Hyg.* 29(2): 139-145. 1929.—In examining 869 specimens, the authors found 3 typhoid carriers among 484 inhabitants of Afule, Palestine. For this study, based on preliminary experiments, brilliant-green glycerin solution was adopted as the shipping fluid and brilliant-green-MacConkey agar as the plating medium. Since zinc loops were unsatisfactory because of the dissolving action of the shipping fluid, steel loops were used in the stoppers of the collecting bottles.—*G. E. Harmon.*

7667. **DOWNHAM, K. D. The examination of milk for the presence of tubercle bacilli.—A comparison between the cell group method and a method for the concentration of tubercle bacilli in milk.** *Vet. Rec.* 11(29): 756-758. 1931. —In 24 of 31 samples examined, tubercle bacilli were found more quickly by the cell-group method than by the concentration method. In 3 samples the latter proved more rapid; in 4, there was no appreciable difference. Preparation of a milk smear by the concentration method required 5½-6 hrs.; by the cell-group method, 20 min. Possibly the concentration method may be of value in examining milk from cows with tuberculous mastitis, which have suffered from other conditions of the mammary gland masking the tuberculosis lesions.—*Author's conclusion.*

7668. **DUDLEY, SHELDON F. Some lessons of the distribution of infectious diseases in the Royal Navy. Lecture II. Temporal and geographical distribution of respiratory infection.** *Lancet* 220(5611): 570-578. 1931.

7669. **EHLERS, VICTOR M., and ERNEST W. STEEL. Municipal and rural sanitation.** v+448p. 119 fig. McGraw-Hill Book Co.: New York, 1927.

7670. **ELLMS, J. W. Preammoniation of the filtered water supply of Cleveland, Ohio.** *Jour. Amer. Water Works Assoc.* 23(3): 400-407. 1 fig. 1931.—No chlorphenolic tastes were noted after application of the ammonia prior to chlorination. Chlorinous tastes from residual Cl have been eliminated. The bactericidal efficiency of the process is as high as, if not higher than, when Cl only is used. The prolonged inhibitory effect on bacterial growths is of great value in maintaining a water in its highest state of purity throughout an extensive distribution system.—*Author's summary.*

7671. **ESMARCH, E. von. Hygienisches Taschenbuch. Ein Ratgeber der praktischen Hygiene für Medizinal- und Verwaltungsbeamte, Ärzte, Techniker, Schulmänner, Architekten und Bauherren.** [Handbook of practical hygiene for medical and administrative officials, physicians, technicians, teachers, architects and builders.] 5th rev. ed. H. REICHENBACH, editor, with cooperation of B. BÜRGER, A. KAPPUS, A. KORFF-PETERSEN, and F. SCHÜTZ. 452p. Julius Springer: Berlin, 1930. Pr. 19.80 M.

7672. **FOLWELL, A. PRESCOTT.** Sewerage. 10th ed. 399p. Illus. John Wiley & Sons, Inc.: New York, 1929.

7673. **FUCHS, A. W., and H. A. KROEZE. Results of the operation of the standard milk ordinance in Mississippi.** [*U. S.*] *Publ. Health Repts.* 45(25): 1412-1421. 1930.—Excellent results were obtained after but 2 yrs.' experience with the standard milk ordinance recommended by the U. S. Public Health Service. By the end of 1929 there were 26 cities, containing over 75% of the State's urban population, enjoying a high-grade protection of their milk supplies, as against 6 cities formerly. Improvement in sanitary quality has been satisfactory. The rating of retail raw milk has improved 91%; of raw milk for pasteurization, 89%; and of pasteurization plants, 109%. Milk consumption has increased 23%. The number of cities having pasteurized milk has doubled, and the consumption of pasteurized milk has risen 117%. —*A. W. Fuchs.*

7674. **FRENKEL, H. S., en A. CLARENBURG. Bacillus suipestifer als oorzaak van vleeschvergiftiging.** [*B. suipestifer as cause of meat poisoning.*] [With German, English & French summaries.] *Tijdschr. Diergeneesk.* 58(6): 299-307. 1931.—An epidemic of meat-poisoning (acute gastro-enteritis) following ingestion of meat from a diseased pig is reported. From several pieces of salted and smoke-dried meat, paratyphoid B bacteria were cultivated, which culturally and serologically were dedetermined to be *B. suipestifer*. Bacteriological examination of the feces of one of the patients for paratyphoid bacteria was negative. The blood serum of one of the patients gave positive agglutination with *B. suipestifer* at 1:400. Contrary to the opinion of Uhlenhuth, *B. suipestifer* is to be considered as pathogenic to man.—*Authors' summary.*

7675. **HUSS, R., und K. ÖSTLING. Einige Erfahrungen betreffs Schicks Reaktion.** *Acta Med. Scandinavica* 70(5/6): 535-543. 1929.—In the beginning of the first year, the number of Schick-positive reactions is greatest; then, however, the trend is a decreasing one. It was found that the number of Schick-positives among active bacillus carriers is relatively lower than in non-bacillus carriers. That the pseudoreaction is an allergic one is in accordance with the findings. By use of the Schick test it has been determined that an epidemic is impossible through milk infection. Any definite answer

to the question concerning the spread of an epidemic is, however, not determinable by this means.—*K. C. Berthelsen.*

7676. KADISCH, E. Die Hitzeresistenz einiger Hefen. *Dermatol. Zeitschr.* 60(1/2): 48-51. 1930.—*Monilia tropicalis*, 4 strains of *M. albicans*, *Cryptococcus rubro-rugosus*, *Coccidioides immitis* and *Schizosaccharomyces hominis* were tested at 56°, 60°, and, in the case of the latter organism, at 70° C., over intervals of 3 min. to 3 hrs. The author concludes that the resistance for these yeast-like fungi is about the same as for hyphomycetes hitherto tested; only when relatively dry do they become more heat resistant. In general, 60° C. for 10 min. suffices. Benedek's Schizosaccharomyces was extremely resistant. Hence, present-day "lukewarm" laundering technique does not disinfect.—*F. D. Weidman.*

7677. KURAUCHI, K. The rodents of inner Mongolia. Plague studies. II. *Kitasato Arch. Exp. Med.* 8(1): 39-43. 1 pl. 1931.—Among 57,216 small mammals purchased in Cheng-chiatun were found: 48,328 mice, 8,741 wild rodents, 82 *Allactaga* (jumping hare), 27 mole-rats, and 37 hedgehogs. The majority of the mice were *Mus wagneri manchu;* only a few, *R. alexandrinus* and *R. norvegicus;* and none, *R. rattus.* Of the Sciuridae, only suslik (*Citellus*) was found. In South Russia, recently also in Transbaikalia, *Allactaga* is regarded as one of the reservoirs of human plague.—*Author's summary.*

7678. MONTGOMERY, B. E. The bactericidal power of viosterol. *Proc. Soc. Exp. Biol. & Med.* 28(5): 481. 1931.—Irradiated ergosterol (viosterol) in solution in corn oil was added to agar in various quantities, and compared with corn oil added to agar in the same concentrations; *Bacillus coli* and *Staphylococcus aureus* seeded on plates of such media showed no modification or inhibition of growth as compared with growth on plain agar controls.

7679. NITTA, Y. Die Wirkung von Farbstoffen auf Gonokokken in vitro und in vivo. *Zeitschr. Hyg. u. Infektionskr.* 111(1): 68-78. 1930.—The bactericidal action of various stains on gonococci was tested in test-tubes and in the abdominal cavity of white mice. None of those tried equalled the acridin stains. Those investigated and found entirely without action were the pyrazol, monazo and diazo, anthraoxyphthalein, diphenylnaphthylmethane, thiobenzenyl, chinoxalin, indulin and sulphur groups of dyes. Those found to act weakly were the oxyphthalein, oxazin, eurhodin, rosindulin and isorosindulin groups. Some members of the triphenylmethane and benzosafranin groups were efficient. Among the latter, distinct differences often occurred between bactericidal action against gonococci in vitro and in vivo.—*Author's summary (transl. by C. E. Gabel).*

7680. POE, CHARLES F. Differential tests for the colon-aerogenes groups. *Jour. Amer. Water Works Assoc.* 23(8): 1218-1226. 1931.—Over 350 organisms of these groups, representing a very wide distribution, were studied. Correlation of the uric-acid with the Voges-Proskauer and methyl red tests was unsatisfactory for the colon group. Correlation of the sodium-citrate with the Voges-Proskauer and methyl red tests was almost perfect for the aerogenes group and 77% perfect for the colon group. Eosine-methylene blue agar medium is excellent to differentiate the colon from the aerogenes group. There were a number of organisms for which the Voges-Proskauer and methyl red tests could not be made to correlate.—*Author's conclusions.*

7681. RAAB, FRANK. Taste and odor troubles in the Minneapolis water supply. *Jour. Amer. Water Works Assoc.* 23(3): 430-434. 1931.—Chlorine-ammonia treatment failed to remove moldy odor from the Minneapolis water supply. Pre-chlorination practically removed it, increased the filter runs from an average of 8 to an average of 28 hrs., and completely eliminated anaerobic gas fermentation in the finished water.—*Author's summary.*

7682. SINGER, ERNST. Die bakteriologische Untersuchung des Trinkwassers. [Bacteriological investigation of drinking water.] iii + 96p. Gustav Fischer: Jena, 1931. Price 5 M.

7683. STREETER, H. W., and C. T. WRIGHT. Prechlorination in relation to the efficiency of water filtration processes. *Jour. Amer. Water Works Assoc.* 23(1): 22-53. 1931.—From parallel experiments in rapid-sand water filtration, with and without raw water prechlorination, it was shown that a consistent improvement in quality of final effluent is obtained with prechlorination, though the efficiency of filtration and of post-filter chlorination is measurably reduced. Best results were obtained by prechlorination before sedimentation, with a residual Cl content of 0.05 p.p.m. or less after 6 hrs. of sedimentation and just prior to filtration. The bacterial content and biochemical oxygen demand of the filter sand were lowered by prechlorination.—*H. W. Streeter.*

7684. STREETER, H. W. Experimental studies of water purification. IV. Observations on the effects of certain modifications in coagulation-sedimentation on the bacterial efficiency of preliminary water treatment in connection with rapid sand filtration. [*U. S.*] *Public Health Repts.* 45(27): 1521-1571; (28): 1597-1655. 1930.—Observations with periods of sedimentation of 3-12 hrs. following coagulation indicated that bacterial efficiency is increased considerably with periods up to 8-9 hrs. and to a lesser extent up to 12 hrs. Double-stage coagulation-sedimentation showed no gain in efficiency over single-stage treatment, with similar dosages of coagulant and periods of sedimentation. The efficiency of coagulation was not affected materially by variations in pH of 5.6-6.9, but fell off decidedly with pH values greater than 6.9. A fairly consistent relation was shown between dosage of coagulant and resulting bacterial efficiency.—*H. W. Streeter.*

7685. THAYSEN, A. C., and L. H. WILLIAMS. On the bactericidal properties of ether, alcohol, chloroform and carbon bisulphide. *Zentralbl. Bakt. 2. Abt.* 84(8/14): 252-260. 1931.—Experiments on the efficacy of Wollney's method of sterilization by immersion in ether showed the method to be effective, but the prolonged time required for complete sterilization of wholemeal wheat flour caused drastic changes in chemical composition of such flour and for this reason the method is unsuitable. If the substance to be sterilized is first immersed in ether long enough to destroy non-spore-forming microorganisms (48 hrs.), then treated in such a way that spores may germinate, and finally immersed for a 2nd short time in ether, a method for sterilization of heat-labile substances is evolved, which is comparatively harmless to the protein of wholemeal wheat flour but effective in destroying all microorganisms. CS_2 and $CHCl_3$ were found inferior to ether for sterilization of thermolabile substances such as wheat flour.—*From authors' conclusions.*

7686. TONNEY, FRED O., and RALPH E. NOBLE. An improved ferrocyanide-citrate agar for direct enumeration of colon-aerogenes oganisms. *Jour. Amer. Water Works Assoc.* 23(8): 1202-1208. 1931.—With the changes in preparation and technic here described, cyanide-citrate agar now possesses advantages of simplicity and improved productivity over the medium as originally reported. The average number of colon-aerogenes colonies produced equals or slightly exceeds the corresponding plain nutrient agar counts made from the same titered suspensions. Immediately before use, 2 solutions containing the essential ingredients are added to the melted agar, and the medium is ready for plating. The basic fuchsin is now standardized by arrangement with the manufacturer. An illuminated chamber affording suitable lighting conditions to differentiate and count colon-aerogenes colonies, is described.—*Authors' summary.*

7687. TSCHURILINA, A. A. Epidemiologische Untersuchungen über die Pest. *Zeitschr. Hyg. u. Infektionskr.* 111(2): 198-209. 1930.—Bubonic plague was apparently kept going in Saratoff, Astrakhan and the Don provinces by ground squirrels ("Zieselmäusern"), though no cases

were found in other rodents. The organisms were identical with those of human plague. The possibility of flea transmission from ground squirrels to field mice was demonstrated experimentally. Ground squirrels infected in hibernation showed a slow chronic type of infection lasting as long as 5 mo.—*R. G. Perkins.*

7688. WALTHER, KARL. Züchtungsergebnisse und Abtötungsversuche mit dem Hohnschen Schwefelsäureverfahren. *Zentralbl. Bakt. I. Abt. Orig.* 115(3/4): 235-240. 1929.—In 17 cases where tubercle bacilli were demonstrable in the stained sputum preparation, positive cultures were obtained. In 80 cases with doubtful sputum findings, tubercle bacilli were demonstrated 4 times with antiformin and 13 times by the Hohn culture technique (digestion with 12% H_2SO_4 and culture on egg medium enriched with hematin). The Hohn method in general gives a quicker answer than animal inoculation. H_2SO_4 kills smegma, timothy hay, and similar bacilli, but does not kill "trumpeter bacilli" (found by Jacobitz and Kayser in the saliva of wind instrument musicians and in their horns). In cases whose history indicates the possible presence of these organisms, animal inoculation must be used.—*H. F. Smyth.*

7689. WOODWARD, F. L. Pollution studies of the upper Mississippi River. *Indust. & Eng. Chem.* 22(2): 189-192. Map. 1930.—Activities of the Minnesota State Board of Health and co-operating departments, in studying the pollution problem of the Mississippi River from Minneapolis and St. Paul, Minnesota, to La Crosse, Wisconsin (160 miles), are considered. During the winter, marked pollution was found as far as the outlet of Lake Pepin, about 160 miles, while during summer, pollution was in evidence at the head of the Lake, 70 miles below Minneapolis. Oxygen balance, i.e., dissolved O minus the 5-day biochemical O demand, is shown in charts, as are also total bacteria and coli-aerogenes per cc. for a 6-mo. period. During summer, odors are produced in the pool above Twin City Lock and Dam. Another dam is being constructed at Hastings, 30 miles down-stream, which is expected to bring about similar conditions in St. Paul and So. St. Paul.—*C. M. Hilliard.*

7690. ANONYMOUS. 1930 bacteriological examination of water. *North Dakota Office State Food Comm. & Chem. Bull.* 30. 62-65. 1931.—A list of 158 samples analyzed during the year, giving the laboratory report on each.

BACTERIOLOGY AND OTHER MICROBIOLOGY

FOOD AND INDUSTRIAL

E. B. FRED, *Editor*

(See also in this issue Entries 6529, 6532, 6562, 6573, 6576, 6578, 6579, 6596, 7674, 7685, 7742, 7766)

7691. BISHOP, L. R. The practical application of the results of research to the production of malt and wort. *Jour. Inst. Brewing* 37(7): 345-359. 1931.—Under normal English malting and standard mashing conditions the total "permanently soluble" N (p.s.n.) of the wort is, for 2-rowed barleys, about 33-35% of the original barley N. For 6-rowed barleys the corresponding figure is 28-29%. The % increases with increasing "modification" during malting, and vice versa. Amino, amide, peptide and residual "undetermined" N were estimated in the wort. The composition of the p.s.n. is fairly regular, and the increase with increasing total barley N is due mainly to increase in the "peptide" and "undetermined" N groups. The optimum mashing temp. for production of p.s.n. is 50° C. and this is due to an optimum production of peptide N at this temp. The optimum mashing temp. for maltose production is sharply defined at 60°; that for dextrin production is above 70°. The manner in which such results can be utilized in practice is foreshadowed.—*L. R. Bishop.*

7692. BODNÁR, J., und LADISLAUS BARTA. Zur Frage nach der Zersetzung von Nicotin im Tabak durch Bakterien. *Biochem. Zeitschr.* 233(4/6): 311-315. 1931.—According to the nicotine content, 2-5 gm. samples of tobacco with 5 times as much water were kept at 30° C., and nicotine and ammonia determined in the autolysate; the suspensions began to decompose on the 2nd day; on the 9th day there had been no reduction in nicotine. Samples allowed to dry in the air, after 4 days (antiseptics being added) showed little decrease in nicotine and that due to volatilization. Samples autolyzed with 1% glucose (some dried) showed no loss except that due to volatilization. Ammonia was the only volatile, basic product of decomposition present in more than insignificant traces. If nicotine under some circumstances should break down in the course of tobacco decomposition, the process would be very different from that occurring during fermentation.

7693. DIEUZEIDE, R., et A. ARGILAS. Essais de conservation temporaire de crustacés et de sardines. [Experiments in temporary preservation of crustaceans and sardines.] *Bull. des Trav. Publ. Stat. Agric. et Pêche de Castiglione* 1928(2): 115-125. 1 fig. 1928.—Temporary preservation of *Parapenaeus membranaceus* in sealed containers by sterilization in an autoclave, in brine composed of a 12% NaCl solution, gave the best practical results. Sale of the product is enhanced by artificial coloring with carmine. Another No. African crawfish, *Aristeus antennatus*, is not well adapted for temporary preservation. Sardines may be successfully preserved by frying in oil, covering with "Scabetche" sauce, and sterilizing in an autoclave in sealed containers. The frying could be replaced by drying in the sun or in an oven.

7694. FELLERS, CARL R. Pasteurized dried fruits. *Amer. Jour. Public Health* 20(2): 175-181. 1930.—The author found the number of organisms on dried fruits variable, being lowest in sulphured, somewhat higher in pasteurized, and highest in raw fruits. Of bacteria, anaerobes occurred in over ½ the samples; cocci were relatively abundant. Of 79 samples examined, only 8 showed lactose fermenters; none were *Escherichia coli* and several were probably *Aerobacter aerogenes*. Molds often outnumbered bacteria. *Aspergillus* was commonest; its spores often survived effective pasteurization. In 60 of the samples, yeasts failed to develop on nutrient agar. Dates, raisins, prunes and figs may be pasteurized without injury. Laboratory tests of various dried fruits proved that with humidities of 70-100% and holding for 30-90 min., temp. of 160-185° F. in the fruit are effective. *Escherichia coli* and *Eberthella typhi* were the test organisms used. Acid fruits, with their lower pH, may be pasteurized at lower temp.—*H. N. Parker.*

7695. FRENCH, J. M. Notes on the colorimetric method for determination of the preservative value of hops. *Jour. Inst. Brewing* 37(8): 436-439. 1931.—A simplified method for colorimetric determination of the preservative value of hops, based on that of Guthrie and Philip, is described. It gives practically identical results with those obtained by the original method, with economy in time and materials. Various grades of pure alcohol and industrial methylated spirit may be used without lack of accuracy, provided that standards are made up with the same alcohol. Solutions of ferric chloride are proposed for making up a series of standard solutions, based on an original series made with humulin. Owing to changes in the hop extract and in the colored solutions, all determinations must be made as rapidly as possible after extraction. The uranium salt solution must be kept in amber bottles.—*Author's summary.*

7697. LEA, COLIN H. Chemical changes in the fat of frozen and chilled meat. Part I. Frozen mutton and

lamb. *Chem. & Indust.* 50(25): 207T-213T. 1931.—Free acidity changes were comparatively slight, the maximum being 1.2% (as oleic acid) for external fat and somewhat less for kidney fat. In no case were signs of superficial oxidation of the fat observed during 24 hrs. precooling at ordinary temp., and no definite increase in susceptibility to oxidation during subsequent storage could be detected as a result of precooling treatment. Oxidation of the fat of carcasses held at −5° C. up to 7 mo. was very slight, and in no case did oxidation occur sufficiently to affect the flavor of the fat, when such carcasses were held for 3 days at ordinary temp. in not too powerful light. The effect of comparatively long periods of sweating on the free acid content of the fat was very small; on the other hand, sweating in presence of light exerts a deleterious effect on the keeping properties of the fat when held subsequently at ordinary temp. A storage at −5° failed to prevent growth of molds and yeasts, but no visible growth occurred at −10 or −20°.—*From author's conclusions.*

7698. **MARTÍNEZ, C. RUIZ. Contribución a la diferenciación histológica de los embutidos y a la investigación de gérmenes en los mismos. [Histologic differentiation of sausage constituents and of contained microorganisms.** *Rev. Higiene y Sanidad Pecuarias [Madrid]* 21(7/8): 439-450. 1931.—Methods of embedding, sectioning, and study are discussed.

7699. **MARVIN, GEORGE E. The occurrence and characteristics of certain yeasts found in fermenting honey.** *Biologist [Denver]* 10(1): 65-69. 2 pl. 1928.—5 apparently different types of yeasts were isolated from 4 samples of fermenting honey, by methods described. They all fermented glucose, levulose and mannose. Only 2 fermented sucrose and one of these also fermented maltose. Honey brought to 160° F. will resist fermentation as well as unheated honey stored below 52° F.

7700. **PORCHET, BERTHE. Contribution à l'étude de l'adaptation des levures à l'acide sulfureux.** *Ann. Agric. Suisse* 32(2): 135-154. 1931.—*Saccharomyces ellipsoideus* by numerous cultural passages in sulphurated must became adapted to cultures containing 0.3-0.4 gm. of K-metabisulphite per liter, an amount preventing multiplication of non-adapted yeasts. This character is transmitted; and adapted yeasts cultivated for several mo. on ordinary must have preserved their resistance to SO_2 for 200-350 generations. In the course of following generations the resistance weakened and disappeared. —*From author's summary (transl.).*

7701. **SAILER, LEONHARD. Beiträge zur Lösung des Problems der deckenlosen Gärung.** *Wochenschr. Brauerei* 48(13): 129-133; also in *Zeitschr. Ges. Brauwesen* 1931 (9): 72. 1931.—A description of a device for both clarifying and cooling the fermenting wort, consisting of a grid of flat pipes, of boat-shaped cross-section, connected to the cooling water supply and removable from the vat. The grid is partly immersed in the fermenting wort, and the scum borne up by the foam is deposited on, and adheres to, the exposed surfaces of the flat pipes; after fermentation is over the device may be removed and the accumulated deposit washed off.—*F. A. McDermott.*

7702. **SCHMID, WILLI. Einfluss von Temperatur und Feuchtigkeit auf das Bakterienwachstum auf gekühltem Fleisch.** *Zeitschr. Ges. Kälteindustrie, Beih.* 3(6): 1-30. 15 fig. 1931.—Within certain limits, lowering the temp. 1° increases the relative humidity about 5%. The concept that meat is a favorable nutrient medium for bacteria only above the dew point is erroneous. The development of bacteria varies more nearly exponentially with the relative humidity. Since bacteria develop well in a relative humidity of 90-100%, this degree of humidity should be avoided in refrigerators.—*From author's summary (transl.).*

7703. **SCHOEN, M. Les bases scientifiques de quelques nouvelles industries de fermentation.** *Chim. et Indust.* 25(3 bis): 96-110. 1931.—The author gives the history of the discovery of the acetone-butyl-alcohol fermentation and its theoretical basis. Observations on the mechanism of the simultaneous production of acetone and butyl alcohol are included. The 2nd part of this work is a general review of citric fermentation. This is regarded as a result of an incomplete oxidation of sugar by *Aspergillus niger.—M. Schoen (transl. by C. S. Pederson).*

7704. **SCHÖNBERG, F. Über die Fischfäulnis und ihre bakteriologische Diagnose.** *Berliner Tierärztl. Wochenschr.* 46(27): 429-435. 1930.—The bacterial content of decomposed fish is always high; it is large even in slight decomposition. The most important bacteria are gram-negative, slender, very motile rods which liquefy gelatin and grow best at room temp. Of secondary importance are the gram-positive micrococci, *Proteus,* colon bacilli and *B. mesentericus.* Anaerobes play a subordinate rôle. The organisms isolated produced decomposition in a short time when inoculated into fresh fish muscle.—*Author's summary (transl. by G. de Bord).*

7705. **SÉBASTIAN, V. Quelques réflexions et observations sur la levure apiculée objectif de la "superquatre."** *Progr. Agric. et Vit.* 93(24): 572-578. 1930.—The author discusses the characters of *Saccharomyces apiculatus,* commonly found in early wine fermentations, pointing out particularly its lower resistance to heat, to alcohol and to H_2SO_3, as compared to the ordinary *S. ellipsoideus.* Its sensitivity to H_2SO_3 is considered of great importance, in that it may be used at the rate of 10-15 gm. per hectoliter in fruit juices, to suppress growth of *S. apiculatus,* which is always present, without inhibiting growth of the selected yeast.—*C. S. Pederson.*

7706. **TRACY, R. L., Jr. Sterilization of fruit juice by electricity.** *Fruit Prod. & Amer. Vinegar Indust.* 10(9): 269-271. 1 fig. 1931.—Experiments are described which indicate that very probably electricity possesses germicidal properties, and that this property is no doubt a factor in sterilization by electricity. It has been shown also that electricity is an effective means for pasteurization of fruit juices when the lethal temp. of the contaminating organisms is maintained.—*Author's summary.*

7707. **VONDRÁK, JIRÍ. Berichte des Forschungs-Institutes der csl. Zuckerindustrie. Die Anzahl der Mikroben im Diffusionssaft.** *Zeitschr. Zuckerindust. Czechoslovak. Republ.* 55(46): 601-605. 3 fig. 1931.—Using the Petri-dish counting method and beet juice gelatine, the number of bacteria in the diffusion sap of 5 factories was found to be 800,000-1,000,000 per cc. In the counting, photographic shadow pictures of the Petri-dish cultures were used to advantage.—*Author's summary (transl.).*

7708. **W. Das Bier und seine Pasteurisierung. [Beer and its pasteurization.]** *Wochenschr. Brauerei* 48(36): 385-388; (37): 394-399. 1931.

BACTERIOLOGY AND OTHER MICROBIOLOGY

DAIRY

L. A. ROGERS, *Editor*

(See also in B. A. 6(2): Entries 4224, 4476, 4478, 4500, 4567, 4759; and in this issue 7395, 7667, 7673, 7876)

7709. **BARKWORTH, H. The keeping quality of afternoon milk.** *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 270-272. 1931.—Afternoon milk samples do not keep sweet as long as morning samples with the same total count. The difference on the basis of similar count is 9 hrs. Possible causes are examined. At least in part,

the loss is actual, due to factors not yet determined, but possibly connected with the uneven interval of milking time.—*Author's summary.*

7710. **BARKWORTH, H. Normal variations of keeping quality.** *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 273-277. 1931.—From data presented it is deduced that while keeping quality of milk cannot be used as an indicator of total count, a given total count is associable with a keeping quality which varies by 20%, corresponding to a total range of variation of approximately 1 day.—*From author's summary.*

7711. **DAHLBERG, A. C., and J. C. MARQUARDT. The creaming of milk pasteurized at high temperatures.** *New York State [Geneva] Agric. Exp. Sta. Bull.* 180. 1-26. 4 fig. 1931.—Report of a study to establish the relationship of high temp. pasteurization to the time that milk can be held hot before its creaming properties are impaired. The temp. studied were 150°-165° F.; the holding periods, less than 10 sec. to more than 5 min. Milk exhibited an irregular heat induction period, i.e., a period of varying time at which it could be held before creaming was impaired. There was considerable variation in total time required for milk to pass through the heating tubes and in time that milk was held above certain temp. during heating. These factors need to be considered in pasteurization of milk at high temp. Impaired creaming properties were most evident and differences generally greatest in the 2- and 4-hr. readings. Reduced cream layer volumes were caused by failure of the fat to rise into the cream layers.—*A. C. Dahlberg.*

7712. **FRAYER, J. M. The production of high quality milk. II. The influence of delayed cooling upon the quality of milk.** *Vermont Agric. Exp. Sta. Bull.* 313. 1-34. 17 fig. 1930.—The author found prompt cooling of milk to 50° F. or less necessary to obtain good milk with high keeping quality. Injury to milk quality was roughly proportional to length of time elapsing before cooling. Injury to quality due to delayed cooling was not always noticeable when the milk was received at the country plant, although the methylene blue test was apparently more sensitive to these differences in fresh milk than the plate count.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

7713. **HARDING, HARRY A., and ARCHIBALD R. WARD. Observations on effects of thermophilic bacteria in pasteurized milk.** *Ann. Rept. Internat. Assoc. Dairy and Milk Inspect.* 19: 135-143. 1930.—Observations are reported on the methylene blue reductase test of pasteurized milk at 145° F. instead of 100° F. The reduction times of milk before and after heating and holding for 30 min. or longer were compared. In 28 comparisons, the reduction time of milk held at pasteurizing temp. for 30 min. or more was lessened, and the longer the holding time the more pronounced the lessening. Most of the observations concerned milk pasteurized by the holding process in coil vats or glass lined tanks. 2 observations were made on the milk treated by an electric flash pasteurizer, and a slight shortening of the reduction time was observed after operating periods of 80 and 140 min., respectively. The shortening of the reduction time of milk by pasteurization is attributed to the activity of thermophilic bacteria.—*H. A. Harding.*

7714. **HERNS, FRANK. The septic tank method of disposing of cheese factory and creamery waste water.** *Ontario Dept. Agric. Bull.* 361. 81-83. 1930.

7715. **HOOD, E. G., and A. H. WHITE. Rancid flavour in Cheddar cheese.** *Canada Dept. Agric. Bull.* 146. 1-16. 1931.—During 1930, 0.85% of all cheeses graded in Ontario and 1.4% of all cheeses graded in Quebec were rancid or slightly rancid. Through introduction of undesirable bacteria into the cheese milk, typical rancid flavors were produced in experimental cheese. Butyric acid or rancid-producing bacteria in the milk are due to unsanitary conditions. Rancid flavors have never been found in cheese where the quality of the milk was right and good conditions of sanitation prevailed. A survey of troubled factories showed that much of the equipment was not properly sterilized and that many of the factory starters were inactive and highly contaminated with molds, yeasts and undesirable bacteria.—*Authors' summary.*

7716. **ILZHÖFER, HERMANN. Über den Nachweis stattgehabter Erhitzung der Milch.** *Arch. Hyg. u. Bakt.* 105(6): 319-321. 1931.—A color test is given by which previous heating of milk for ½ hr. to 63-65°, to 70°, to 75°, and for 1-2 min. to 83-85°, can be detected.

7717. **JOHNS, C. K. Farm sterilization of dairy utensils by hypochlorite.** *Ann. Rept. Internat. Assoc. Dairy & Milk Inspect.* 19: 236-244. 1930.—Furnishing of hypochlorite to 39 average farmers, with instructions for rinsing utensils, resulted in marked reduction in bacterial content of milk, as compared with results from previous control samples.—*C. K. Johns.*

7718. **JOHNS, C. K. The destruction of ropy and bitter milk organisms by hypochlorite.** *Scientific Agric.* 12(1): 38-42. 1931.—Relative efficiency of solutions of 3 hypochlorite products in the destruction of 5 ropy and 2 bitter milk organisms was studied. The less alkaline hypochlorites proved extremely effective against all 7 test organisms. Against the more alkaline product, however, the gram-positive spp. exhibited varying degrees of resistance. No marked differences in stability occurred in concentrated products stored at room temp. for 6 mo. —*Author's summary.*

7719. **KOCH, SVEND O. Sterilisation af Mælkeflasker. [Sterilization of milk bottles.]** *Maanedskr. Dyrlaeger. [Copenhagen]* 42(9): 231-235. 1 fig. 1930.—The usual mechanical methods of cleaning milk bottles in small dairies leave great numbers of bacteria. However, investigations have shown that bottles can be sterilized efficiently in zinc containers under steam for 10 min.—*S. O. Koch.*

7720. **KOHN, F. G., und E. KELMM. Die Schern-Gorlische Ringreaktion zur Unterscheidung von roher und erhitzter Milch.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(1/2): 82-93. 1931.—The test is recommended for control of pasteurization of milk and for identification of market milk which has been heated. The technique used is to prepare a suspension of red blood cells or animal charcoal in 0.5 and 1.0% suspensions in physiological saline. To 1 cc. of milk add a drop of the suspension, shake to mix thoroughly, and hold at 38° C. for 2 hrs. At the end of the period, raw milk had a heavy ring of this substance in the cream and a slightly colored sediment on the bottom of the tube, while pasteurized milk showed a slight ring in the cream and a much heavier sediment of the suspended material. Freezing or watering the milk did not affect the reaction. —*L. D. Bushnell.*

7721. **LERNER, M. Een colititer voor melk. [Coli titration of milk.]** [With German summary.] *Nederlandsch Tijdschr. Hyg. Microbiol. en Serol.* 6(2): 81-97. 1931.—Gersbach's indol test for water was used for milk. Controls show that with positive results, *B. coli* is always present. The dilution which still gives a positive indol reaction is a measure of the content of *B. coli* and of fecal impurities. It is easy to get milk from farms that shows the indol reaction when diluted 1/1000 cc.; in "hygienic" or model milk plants milk can be obtained that in the 1/100 cc. dilution still gives a negative indol reaction. The "Pegallac" method for determining *B. coli* is unsatisfactory. It often gives positive results when *B. coli* is absent and the gas formed is almost independent of the original number of *B. coli* present.—*Author's summary (transl.).*

7722. **PRICE, F. E. Cream and milk refrigerator experiments.** *Agric. Engin.* 11(1): 33-37. 1930.—Bacterial count, flavor, odor, and acidity were the basis of comparison between the following methods of cooling and storage of cream: (1) a 50° and 60° water tank changed twice daily; (2) a refrigerator box cooled by ice; (3) a refrigerator box cooled by mechanical-unit, dry-method, natural-baffle circulation; (4) a refrigerator box cooled by mechanical-unit, wet method; (5) a refrigerator box cooled by mechanical-unit, dry method, using a fan for forced circulation. Results for a 90 hr. period indi-

cate that bacterial growth was entirely stopped by the 4th method and effectively retarded by the 5th. The first 3 types of cooling allowed excessive bacterial growth but, with the exception of the 60° water tank method, all the cream graded as "1 sour." Temp. measurements were made with Cu-constantan thermo-couples and a type P Leeds-Northrop galvanometer. The wet methods were more rapid than the dry for cooling the cream. Results indicate that circulation of air within the refrigerated box had more influence on cooling the cream than stirring the cream in the cans. Experiments with the cooling and storage of milk in a dry box cooled with expansion cells, in refrigerated water, and in refrigerated water that was agitated indicated, as with the cream, that cooled or refrigerated water is more effective for rapid cooling. However, where precooling was used, dry refrigeration was satisfactory. Agitated water provided more rapid cooling conditions than the non-agitated. Any differences in bacterial counts due to these 3 methods were within the limits of error.—*L. A. Burkey.*

7723. **ROBERTSON, A. H., and J. M. FRAYER. Variability, accuracy, and adaptability of some common methods of determining the keeping quality of milk. I. Methods of comparison.** *Vermont Agric. Exp. Sta. Bull.* 314. 1-46. 12 fig. 1930.—The advantages of certain methods of determining the bacterial content of milk are considered. Conclusions are based on results obtained with 268 samples of milk analyzed by the reductase test and by actual agar plate counts. The geometric mean more nearly approached a satisfactory average than the arithmetic mean among bacterial counts obtained. The observation period extended from the initial bacteriological sampling to the time when the milk became unfit for use as a sweet milk beverage. The curve representing the arithmetic distribution of the observations was so far removed from the standard normal curve that calculations based on it appeared to be of small value. Because of the long range of geometrically increasing plate counts and the relatively short range of lineally decreasing reduction times the % variations and coefficients of variability between the highest and lowest counts in any series did not show relative variability and hence accuracy between the 2 methods. When used as an index of the keeping quality of milk, the observations suggested that the logarithmic values of plate counts were less variable in milk of low bacterial content, while the reduction times were less variable in milk of high bacterial content. One method appeared to be practically as accurate as the other over the entire range of keeping quality, and both were more accurate than the actual bacterial plate counts.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

7724. **ROBERTSON, A. H., RUTH I. MOODY, and J. M. FRAYER. Variability, accuracy, and adaptability of some common methods of determining the keeping quality of milk. II. Observations in sextuplicate.** *Vermont Agric. Exp. Sta. Bull.* 315. 1-39. 24 fig. 1930.—Each of 152 samples was divided into 6 parts; from these were prepared in duplicate agar plates, reductase tests and milk smears. From the 6th sample 5 similar series were also prepared in duplicate. The reductase test was more variable than the other tests, especially with milk containing but few bacteria. The degree of relationship between the reductase test and agar plate counts was greater than between the reductase test and microscopic counts. The microscopic method used was less accurate than the agar plate method.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

7725. **ROBERTSON, A. H., and J. M. FRAYER. Variability, accuracy, and adaptability of some common methods of determining the keeping quality of milk. III. Observations at different temperatures and at successive intervals on the same sample.** *Vermont Agric. Exp. Sta. Bull.* 316. 1-55. 18 fig. 1930.—Samples of milk were held at 50, 60, 70, and 80° F. until sour or otherwise unfit for beverage purposes. When the samples were received at the laboratory, and usually at successive 2-hr. periods after arrival, each sample was plated in triplicate, 2 microscopic preparations were made, 2 reductase tests were prepared, and the titratable acidity was determined. Determining titratable acidity was unsatisfactory for estimating keeping quality, especially when the milk was of excellent or medium quality. Normal milk must usually contain more than 1,000,000 bacteria per cc. before any appreciable increase in titratable acidity can be detected. Tests depending on bacterial numbers were characterized by a lag phase in fresh milk containing few bacteria. During the lag and positive accelerative growth phases, more rapid changes took place in the milk, as revealed by keeping quality, than was evidenced by the corresponding increase in numbers of bacteria. This condition was regarded as indicating a lack of sensitivity. The reductase test often showed milk to be of much poorer quality than was really the case, a condition regarded as too sensitive. The relatively few fields examined indicated that these counts showed a greater lack of sensitivity among milk samples containing less than 100,000 bacteria per cc. than did the plate counts. The periods of sensitivity and lack of sensitivity were more extended as lower temp. were used for holding the samples, the relationship between all tests being more consistent when the samples were held at 70-80°. The data indicated that the mean time required for a 100% increase in bacterial numbers at each respective temp. was 1½ hrs. at 80°, 2 hrs. 25 min. at 70°, 4 hrs. 10 min. at 60°, 8 hrs. 13 min. at 50°, and 39 hrs. 14 min. at 40°. There was a high degree of similarity and a small amount of variability in the bacterial growth relations when calculated from the values obtained by each of these methods. The combined results indicate that the reductase and microscopic tests can be used satisfactorily when rapid results are desired, and that the agar plate count offers the most accurate and practical method of determining the bacterial content of milk containing relatively few bacteria.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

7726. **ROBERTSON, A. H., and J. M. FRAYER. Variability, accuracy, and adaptability of some common methods of determining the keeping quality of milk. IV. Correlation studies.** *Vermont Agric. Exp. Sta. Bull.* 317. 1-154. 70 fig. 1930.—The data indicated that the logarithms of the individual microscopic counts showed a closer relationship to keeping quality of milk than the reductase test or the logarithms of either the clump or the agar plate counts. The reduction times were more closely related to the logarithms of the agar plate counts than to those of the microscopic counts. Agar plate counts when interpreted in terms of their logarithms, because they lend themselves more satisfactorily to straight line relationship throughout the entire range and because the method is adaptable to milk containing few bacteria, offer a more accurate and practical method for estimating the keeping quality of milk than either the reductase test or the microscopic method. While use of logarithms lacked strict accuracy in all of its ramifications as applied to milk in which the lag or accelerative growth phase persisted, their use so well fitted the data that their practical application could not be ignored, especially when the observations were made at 70° and 80°. For determining the method to be used, the authors suggest that where it is necessary to know only whether the milk is good, medium or poor, the reductase test will furnish the information; but for determining the cause of poor milk the microscopic method is best suited. When premiums are paid for quality milk the agar plate counts furnish most reliable information.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

7727. **ROBERTSON, A. H., and J. M. FRAYER. Variability, accuracy, and adaptability of some common methods of determining the keeping quality of milk. V. The broader aspects of variability.** *Vermont Agric. Exp. Sta. Bull.* 318. 1-54. 58 fig. 1930.—A summary of the results reported in the preceding 4 papers relative to variability.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

7728. **WOLF, C. H. Die Erkennung dauerpasteuri-**

sierter Milch. *Deutsche Tierärztl. Wochenschr.* 38(28): 443-446. 1930.—Tests by Hock's method for individual samples of raw milk and milk heated by the holding process, yielded amounts of serum deviating completely from the limiting values obtained by Hock. A single sample sometimes yielded marked variations, for which no explanation is forthcoming. Hock's method of detection of milk pasteurized by the holding process unfortunately does not seem adapted for a control measure.—*Author's summary (transl. by G. L. A. Ruehle).*

BACTERIOLOGY AND OTHER MICROBIOLOGY

SOIL

H. J. CONN, *Editor*

(See also in this issue Entries 6297, 6312, 6550, 8459)

7729. **BURK, DEAN, and HANS LINEWEAVER. The influence of fixed nitrogen on Azotobacter.** *Jour. Bact.* 19(6): 389-414. 11 fig. 1930.—The equilibrium concentration of rapidly available fixed N in the culture medium required to inhibit N fixation by *Azotobacter* is 0.5 mg. per 100 cc. The rate of growth as a function of concentration of rapidly available fixed N passes through a maximum at 0.5-1.0 mg. per 100 cc., falling off sharply at lower, but much less rapidly at higher, concentrations. The efficiency of growth in fixed N increases with rate of growth. Hence, although increases in rates of respiration may be used as a qualitative measure of amounts of growth occurring simultaneously, the ratio, growth: respiration rate increase, increases rapidly with rate of growth, which in turn may depend on pressure of N gas, concentration of fixed N, presence of humic acid, O concentration, age of inoculum, and time. The % composition of N in the dry matter of the cells varies little, whether the N supply is chiefly free or fixed. Fixation seems to be a function resorted to only in absence of sufficiently available fixed N. The various physiological functions of respiration, growth, efficiency, etc., of *Azotobacter* in free and fixed N is quite similar; hence no conclusion can be drawn concerning the chemical mechanism of N fixation.—*H. Lineweaver.*

7730. **CASTELLI, T. Développement symbiotique d'azoto bactéries et de clostrides azoto fixateurs sur les plaques de terre modelée. [Symbiotic development of Azotobacter and Clostridium on plaques of modeled earth.]** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 359-360. 1931.—Following Winogradsky's method, colonies of aerobic and anaerobic N-fixing bacteria developed at the surface. One prevails over the other according to the physical and mechanical conditions of the soil.

7731. **CHIRIȚESCU-ARVA, M. Rapport entre certaines propriétés physiques de quelques sols de types morphologiques différents et le nombre des bactéries contenus dans ces sols.** *Ann. Sci. Acad. Hautes Études Agron. Bucarest* 2: (3-11). 1930.—Studies on samples of Rumanian soils indicated that maximum hygroscopicity, high organic matter content and pH of 7.2-8.0 favor the greatest development of bacteria. Soils of the chernosem type, because of their superiority in hygroscopicity and organic matter and their favorable reaction, were found to contain greater numbers of bacteria than those of the podsols and dry land (soil of the steppes) types.—*M. Chiriţescu-Arva (transl. by L. T. Leonard).*

7732. **FIFE, J. M. Respiration studies on Azotobacter under controlled conditions.** *Science* 73(1898): 533-534. 1 fig. 1931.—Experiments with 1200 cc. of a 24-hr. culture proved that the rate of respiration remained constant at 78% O for 4½ hrs. O concentration was 60-90% for 6½ hrs. as shown by 8 CO_2 determinations. The O: N ratio (78% O) giving maximum rate of respiration is the same as that in the nitrate ion.

7733. **GUTSCHY, LJUDEVIT. Rezultati pokusa dubrenja leguminoza bakterijskim preparatima. [Experimental results of inoculating legumes with nodule bacteria.]** [With German summary.] *Gospod.-Šumarski Fakult. Sveučil. Kraljev. Jugoslavije u Zagrebu, Spomenica Fakult. Savjeta (Fac. Agron. et Forest. Univ. Roy. Yougoslave Zagreb, Mem. Cons. Fac.)* 1919-1929: 537-555. 2 fig. 1929.—Increased yields were obtained: for red clover 30%; for field vetch 34.6%. To learn the action of inoculation, studies were made of: (1) number of nodules on the roots; (2) formation of the root system, and (3) comparative rapidity of development of the inoculated and uninoculated plants; also whether all sorts of soils constantly harbor a sufficient number of organisms which could be brought into activity by a proper soil treatment, or whether certain types of soils are lacking in these bacteria. Certain types of soils (peats, compact loams, virgin soils, etc.) were found which contained very few nodule bacteria; in such soils even the most favorable mineral fertilization could scarcely bring the nodule bacteria to a sufficient development. Given proper conditions, in most cases results of inoculation are favorable. The most important conditions for successful use of inoculation are: presence of K and phosphates in the soil, a neutral reaction (by addition of lime), a proper moisture content, and good permeability for air and water.—*From author's summary (transl. by I. V. Shunk).*

7734. **JARACH, M. Streptothrix rubescens, n. sp.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(2): 43-45. 1931. —*Strep.* rubescens (p. 43) was isolated from soil.

7735. **PEROTTI, R., e F. MASTALLI. Studi microbiologici sui terreni della Maremma di val di Cecina. [Microbiology of the swampy soils near Cecina, Italy.]** *Boll. R. Ist. Sup. Agrar. Pisa* 3: 341-383. 4 pl., 1 map. 1927.

7736. **PHILLIPS, MAX, HERMAN D. WEIHE, and N. R. SMITH. The decomposition of lignified materials by soil microörganisms.** *Soil. Sci.* 30(5): 383-390. 1930. —The decomposition of 4 typical lignified plant materials—corn stalks, oat hulls, corn cobs and wheat straw—through the action of soil microorganisms was studied in 3 experiments, using a Czapek solution or a modified medium, treated with 10-25 gm. of oven-dried materials and inoculated with a soil infusion. After incubation, loss in wt. was determined and analyses were made for pentosans, cellulose, lignins, ash, methoxyl and N, using the best methods available for each determination. A rapid decomposition of pentosans and cellulose occurred. Lignins were decomposed by soil organisms, and under suitable conditions the rate of decomposition was about as rapid as that of cellulose.—*P. E. Brown.*

7737. **SANDON, H. A note on the microbiology of Wicken Fen soils with special reference to the protozoa.** *Nat. Hist. Wicken Fen Pt.* 4. 366-370. 1928.

7738. **WILLIAMS, P. H. Further studies of the microflora of certain tomato soils.** *Exp. & Res. Sta. Nursery & Market Gard. Indust. Devel. Soc. Turner's Hill, Cheshunt, Herts, Ann. Rep.* 16: 30-40. 1930(1931).—The numbers of bacteria in certain soils were determined at weekly intervals throughout the season. Changes in numbers could not be correlated with changes in soil temp. or humidity. Stable manure and hoof and horn increased the numbers markedly. The presence of organic N may possibly be the cause of the rapid fluctuations in numbers throughout the season.

GENERAL BACTERIOLOGY

R. E. BUCHANAN, *Editor*

(See also in this issue Entries 6356, 6360, 6382, 6387, 6532, 6537, 6562, 6563, 6576, 6578, 6579, 6643, 7395, 7400, 7469, 7576, 7590, 7591, 7613, 7618, 7619, 7620, 7631, 7680, 7686, 7707, 7729, 7732, 8046, 8059, 8079, 8263)

7739. ANTHONY, E. E., Jr. A note on capsule staining. *Science* 73(1890): 319-320. 1931.—Best results were obtained by use of 1% aqueous solution of crystal violet, 84% dye content.

7740. BROTZU, G. A propos des rapports entre le bacille de Bang et le Micrococcus melitensis. *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 2(6): 338-344. 1930.—Strains of *Brucella* from 3 sources were studied: bovine strains from districts where undulant fever did not exist; strains from goats in regions where undulant fever was endemic; and porcine strains. No test was found which would distinguish the groups with certainty; with every test a few strains of each group would be found to have characteristics belonging in general to another group. The writer considers that bovine strains are pathogenic for man only if resistance is lowered, if the inoculating dose is heavy, or if the strain is relatively virulent, as, e.g., if it has been recently transferred from goats to cattle.—*Alice C. Evans.*

7741. BUC, E. Procédé de culture du Bacille de Koch dans les épanchements pleuraux. *Compt. Rend. Soc. Biol.* 98(17): 1495-1497. 2 fig. 1928.—Glycerinated peptone to which had been added monobasic potassium phosphate gave excellent results.

7742. CORBET, ALEXANDER STEVEN. An organism found in the latex of Hevea brasiliensis. *Jour. Bacteriol.* 19(5): 321-326. 1930.—*Bacillus* pandora (p. 325) is found in abundance in coagulating *Hevea* latex samples from various parts of the Malay Peninsula; it differs from "Bacillus No. 1" of Dernier and Vernet only in being Gram-positive and in ability to digest albumin; the 2 may be identical. The organism is almost certainly responsible for the important change occurring during the natural coagulation of *Hevea* latex.

7743. CUNNINGHAM, A. The life-cycle of Bac. saccharobutyricus von Klecki. *Bact. Sect., Fifth Internat. Bot. Congr., Cambridge, Sect. B* p. 13-14. 1930.—An abstract. (See also following abstract.)

7744. CUNNINGHAM, ANDREW. The life-cycle of B. saccharobutyricus von Klecki. 2. The large rod, coccoid and short rod phases. *Zentralbl. Bakt. II. Abt.* 82(23/26): 481-494. 1 pl., 6 fig. 1931.—Pure cultures were submitted to systematic morphological and cultural studies, in which the methods described in pt. 1 were employed. A number of types of cocci and rods, differing morphologically and culturally from the parent strains, were obtained and classified as large rods, cocci, and short and slender rods. The morphological, cultural and biochemical characteristics of the large rods, cocci and short rods are described in detail, and the characterisation of the various types is discussed. The large rods include types similar to *B. ellenbachensis* Caron and *B. sphaericus* A. M. et Neide; the cocci consist of forms identical with *Micrococcus candicans* Flügge, *M. aurantiacus* Cohn. and *M. roseus* (Bumm) Lehm. et Neum.; the short rods are represented by *B. candicans* Frankland and a red form otherwise similar to it. Controlled experiments in which the forms referred to were secured from cultures of *B. saccharobutyricus*, are described.—*A. Cunningham.*

7745. EYRE, J. W. H. Bateriological technique. A laboratory guide for medical, dental, and technical students. 3d ed. 614p. 238 fig. Baillière, Tindall & Cox: London, 1930. Price 21s.

7746. GRAY, J. D. A. New lithium selective and enrichment methods for the isolation of Salmonella organisms. *Jour. Path. and Bact.* 34(3): 335-342. 1931.—Staphylococci, *B. faecalis alkaligenes* and *Salmonella* are resistant to lithium salts, which may be used to advantage for differential isolation media.—*A. E. Boycott.*

7747. HOLLANDE, A. CH., et G. CRÉMIEUX. Histochimie du Bacille de Koch. *Compt. Rend. Soc. Biol.* 98 (17): 1529-1530. 1928.—The authors conclude from staining reactions (vital, and on fixed material) that the Much granules are not oxidases, mitochondrial granules, Golgi apparatus or a vacuome, but that they appear to be supporting substances for lipoidal reserves, weakly acid in reaction, arranged on a protein substratum comparable but not similar to metachromatin.

7748. JOHNSON, TREAT B., and ALICE G. RENFREW. Carbohydrates in biological processes. Observations on fractions of the tubercle bacillus. *Amer. Rev. Tuberc.* 22(6): 655-663. 1930.—The evidence to date indicates that sugars probably are among the most important constituents of the bacterial cell. They function in all the independent fractions which the authors have thus far been able to separate according to present technique. As separated from these fractions, they are very impure, being contaminated with inorganic salts and nitrogenous material of protein nature.

7749. KAUFFMANN, FRITZ. Der Typus "Berlin" der Paratyphus C-Gruppe. *Zeitschr. Hyg. u. Infektionskr.* 110(3): 537-555. 1929.—A new cultural type of paratyphoid C ("Berlin") occurs as the cause of food poisoning in man. The paratyphoid C group may be divided into 5 cultural types, viz., America, Kunzendorf, Glässer-Voldagsen, Orient, and Berlin. The Berlin type ferments arabinose, dulcitol, mannite, maltose and inositol; it is the only C type attacking inositol. In Bitter's rhamnose whey and in Stern's glycerin-fuchsin bouillon, it causes, after 20 hrs., an intense reddening. Serologically the paratyphoid C group falls into 2 divisions, a diphasic (specific and non-specific) and a monophasic (non-specific) phase, already described by Andrewes, Savage and White. The non-specific phase of both di- and monophasic strains can be further subdivided into "relatively specific" and "non-specific" phases. The Berlin type belongs to the monophasic non-specific paratyphoid C group. In a recently diagnosed "Berlin" case, where the "Berlin" bacillus was obtained from urine and stool 3 times, the Widal was positive 1:320 for "Berlin" and other non-specific C strains, and negative for typhoid, Gärtner, Schottmüller, Breslau and Newport strains.—*Maud L. Menten.*

7750. KAUFFMANN, FRITZ. Zur Frage der Typ-Umwandlung von Paratyphus C in Gärtner-Bacillen. *Zeitschr. Hyg. u. Infektionskr.* 110(3): 556-566. 1929.—A strain composed of paratyphoid C (type Berlin) and Gärtner components was, after separation, grown as pure C and Gärtner strains. 7 Russian and Turkish strains belonged culturally and serologically to the Gärtner group. By means of arabinose, Bitter's rhamnose whey, and Stern's glycerin-fuchsin bouillon, the Gärtner strain can be divided into 2 types. The significance of the stem form, and the normal serologic variations within a type for the criterion of type limitation or type transformation, is discussed. The latter is left an open question.—*Maud L. Menten.*

7751. KEMP, H. A. Gram reaction in crushed yeasts. *Stain Technol.* 6(2): 53-56. 3 fig. 1931.—Thick smears of yeasts are dried, crushed between slides or coverslips, stained with anilin crystal violet for 1½ min., Lugol's iodine solution 2 min., decolorized in undiluted anilin oil, and counterstained with 1% aqueous safranin. Photomicrographs are given of crushed yeasts thus stained, which show a Gram-positive outer layer and a Gram-negative inner substance.—*Author (courtesy Wistar Bibl. Serv.).*

7752. KURAUCHI, K. Differentiation of B. pestis from allied organisms by means of their biological properties. On a plague bacillus-like strain isolated from a suslik. Plague studies III. *Kitasato Arch. Exp. Med.* 8(1): 45-59. 1931.—It is concluded from catalase content

and behavior on various media, that the strain isolated from suslik (*Citellus*) was *Bacillus pestis*.

7753. **LAGRANGE, E.** Sur quelques particularités des Vibrions cholériques. *Compt. Rend. Soc. Biol.* 98(17): 1526-1527. 1928.—4 cultures of cholera vibrio varied widely in their agglutination reactions; some were proteolytic, some coagulated proteins.

7754. **LESLIE, P. H., and A. G. SHERA.** A new serological type of Salmonella. *Jour. Path. and Bact.* 34 (4): 533-537. 1931.—A new type of Salmonella (Eastbourne type), is described; it was isolated from the blood of a patient with a typical attack of paratyphoid fever. This organism has been submitted to a detailed antigenic analysis, using the agglutinin absorption method. It is diphasic as regards flagellar agglutinins. In its specific phase it is closely related to the Newport and Reading strains; but its group phase is allied more closely to the Reading-suipestifer than to the aertrycke-Newport group. The somatic antigens are similar to those of *S. enteritidis* Gaertner.—*P. H. Leslie.*

7755. **LOGHEM, J. J. van.** Terminology of bacterial variability. *K. Akad. Wetensch. Amsterdam, Proc.* 34 (2): 309-311. 1931.—The following terms are proposed in behalf of the physiological conception (individuality theory) of bacterial variability given before by the author: Adaptates, Mutilate, Atropheont, and Degenerant.

7756. **MAGOON, C. A., and B. C. BRUNSTETTER.** A new vessel for the efficient aeration of bacterial cultures in liquid media. *Jour. Bacteriol.* 19(6): 415-422. 1930.

7757. **MERRILL, MALCOLM H.** Utilization of carbon compounds by mycobacteria in a synthetic medium. *Proc. Soc. Exp. Biol. & Med.* 28(5): 472-474. 1931.—Preliminary paper.

7759. **NAKATA, KAUGORO.** Accessory food substance in relation to growth of Bact. hyacinthi. [In Japanese, with English summary.] *Ann. Phytopath. Soc. Japan* 2(4): 339-349. 7 fig. 1931.—An accessory food substance was proved essential for growth of *Bact. hyacinthi* Smith. It is contained more in the bodies or staled solution of *Bact. solanacearum* and less in oryzanin, both being available to the organism. This substance was denatured by filtering through filter paper and destroyed by heating at 100° C. for 30 min. on 3 successive days. It is more soluble in water than in alcohol. The author is inclined to believe that it may be identical with vitamin D. The amount of this substance necessary for growth is fixed (3% in beef bouillon when oryzanin is used as source). An excessive amount had no noticeable influence on growth, but a low amount limited growth proportionally to the amount present. With excessive supply, final growth was always the same, though slightly increased at the beginning; this may be due to the population density of the organism.—*Author's summary.*

7760. **O'MEARA, R. A. Q.** A simple, delicate and rapid method of detecting the formation of acetylmethylcarbinol by bacteria fermenting carbohydrate. *Jour. Path. and Bact.* 34(4): 401-406. 1931.—A method is described whereby formation of even very small amounts of acetoin may be detected as a routine procedure, by addition of creatine. *Escherichia communior* (Durham) may be shown to produce acetoin; and it is suggested that it should be placed in *Aerobacter*. Acetoin formation may also be shown with such organisms as *Vibrio finkler-prior, Corynebacterium diphtheriae* and *Staphylococcus aureus.*—*R. A. Q. O'Meara.*

7761. **PETRAGNANI, G.** Premières recherches sur la culture des bacilles de Koch sur milieu préparé moyennant la "cire jaune." [Preliminary researches on culture of tubercle bacilli in medium prepared by means of "yellow wax."] *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(6): 302-303. 1931.

7762. **QUIROGA, RUPERTO.** Acción de la tripaflavina sobre los bacilos diftéricos. *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 391-403. 1930.—A 1/1,000,000 trypaflavin concentration in diphtheria bacillus cultures causes loss of virulence and of hemolyzing properties, as well as enabling them to grow thenceforth on oleate-agar.—*Author's conclusions* (*transl. by A. de Assis*).

7763. **REGENDANZ, P., et K. KIKUTH.** Sur la Bartonella muris ratti (Mayer). *Compt. Rend. Soc. Biol.* 98(17): 1578-1579. 1928.—Inability to infect splenectomized rats with *B. bacilliformis*, but with subsequent infection by *B. m. ratti*, is considered cause for maintenance of the specificity of the 2 forms.

7764. **SHOETENSACK, MARK.** A simple and practical method for the isolation of anaerobic microbes. *Kitasato Arch. Exp. Med.* 7(3): 310-313. 2 fig. 1930.—The author found that Na_2CO_3 crystals and pyrogallic acid placed above the cotton plug of the test tube and pushed down sufficiently to allow the tube to be corked, gave a strong enough absorption of O for anaerobiosis.

7765. **THOMAS, STANLEY.** Laboratory manual in bacteriology. ix+154p. McGraw-Hill Book Co., Inc.: New York; McGraw-Hill Publ. Co., Ltd.: London, 1930. Price 8s. 9d.

7766. **WILSON, P. W., W. H. PETERSON, and E. B. FRED.** The relationship between the nitrogen and carbon metabolism of Clostridium acetobutylicum. *Jour. Bact.* 19(4): 231-260. 1930.—*Cl. acetobutylicum* is able to use protein (wheat gluten and casein), peptone, and amino-acid mixtures (aminoids) as sources of N, with only slight changes in the ratio of solvents produced. There is evidence that it uses part of the amino-acids as such, without deaminization. In presence of aminoids, a large increase in synthesized protein takes place. While the organism cannot use ammonia N alone, it appears to utilize NH_4 salts preferentially in presence of protein nitrogen; the maximum utilization with complete fermentation was obtained with ammonium carbonate. NH_4 salts of mineral acids were utilized to a far less extent. Ammonia N is used less readily in presence of simple forms of organic N, such as peptone and amino-acids, than in presence of native proteins such as are found in corn. The ratio of solvents is changed if ammonium N is supplied, its effect being due to the acid liberated, which lowers the pH; there also appears to be a specific action of the acid. Nitrate N, as the K or NH_4 salt, is not used by the organism alone or in presence of undegraded protein N.—*M. W. Jennison.*

7767. **ZIKES.** Die Geisselfärbung. *Zentralbl. Bakt. II. Abt.* 81(8/14): 161-166. 1930.—A novel technique is presented for preparation and fixation of smears using the condensed vapor of a bacterial suspension, and for careful drying of the smears. Staining methods of Löffler, Bunge, L. Valentis, Gemellis, Petragni, Plimer & Peine, K. Imai & H. Hidaka, Peppler, van Ermengem, Hinterberger, and Zettnow are presented in detail. To these are added modifications and suggestions by the author.—*G. F. Gillen.*

7768. **ANONYMOUS.** Laboratory manual in general microbiology, prepared by the Laboratory of Bacteriology and Hygiene, Michigan State College. 3rd ed. xxvi+472p. 72 fig. John Wiley & Sons: New York, 1926.

ECONOMIC ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

(See also in this issue Entries (Technique) 6110, 6111, 6112; (Genetics) 6162, 6179, 6195, 6202, 6205, 6210, 6211; (Ecology) 6258, 6260, 6314, 6317, 6321, 6326, 6327; (Development) 6306; (Pollinators) 6260, 6261; (Plant disease vectors) 6359, 6363, 6368, 6369, 6370, 6371, 6372, 6377, 6398, 6413, 6414, 6417; (Growth) 6812, 6899; (Digestion) 6984; (Respiration) 7005; (Animal disease vectors) 7233, 7531, 7533, 7556, 7586, 7640, 7687, 7970; (Parasites) 7503, 7527, 7558, 8497; (Immunity) 7502; (Control) 7970, 7994; (Histology) 8429, 8431; (Distribution) 9051, 9056, 9057, 9061)

ECONOMIC ENTOMOLOGY

FRUITS

W. A. ROSS, *Editor*

(See also in this issue Entries 6372, 7802, 7825, 7840, 7843, 7847, 7848, 7849, 7970, 7994, 7996, 8767)

7769. **ALLISON, J. R. The use of spray oils on citrus fruit trees.** *California Citrograph* 16: 415, 437. 1931.—In recent years oil sprays have been of great value for the control of citrus pests, but certain scales have required a follow-up fumigation and even that does not always give satisfactory control. A description is given of the most satisfactory method of preparing oil sprays at the spray tank.—*C. S. Pomeroy.*

7770. **DANIEL, DERRILL M. The oriental peach moth [Laspeyresia molesta].** *New York State Hort. Soc. Proc. Ann. Meet.* 76: 8-10. 1931.—The peach moth is present in 19 counties of the state. 75% and 80% reduction in fruit infestation were secured, respectively, by ten applications of a sulphur-oil dust and six applications of a summer oil spray. The cost of treatment exceeded the profits therefrom. Nineteen colonies of *Macrocentrus ancylivora* were established in Niagara county. Eight per cent of twig-infesting larvae were parasitized in these colonies. In 7 colonies established in 1928-29, 50% of the twig-infesting larvae were parasitized.—*D. M. Daniel.*

7771. **[GERASIMOV, A. M.] ГЕРАСИМОВ, А. М. Огневка-плодожорка, Euzophera bigelia Zell. (Lepidoptera, Phycitini), новый вредитель яблок в Средней Азии. [E. bigelia, a new pest on the apple in Central Asia.]** Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(3/4): 179-181. 3 fig. 1930.—In 1928 an infestation of *E. bigelia** was found in apples near Old Bukhara running as high at 70-80%.

7772. **GRANDI, GUIDO. Le Hoplocampa dei Susini nell'Emilia. Nota preliminare. [The plum Hoplocampa in Emilia.]** *Ann. Tecnica Agraria* 1: 59-62. 1928.—Preliminary note on the biology of *H. minuta* Christ., *flava* L., and *testudinea* Kl., which live in the fruits of plum trees in Emilia, Italy. Life histories and habits are discussed and control measures are suggested.

7773. **GRANOVSKY, A. A. A new pest of the cherry.** *Amer. Fruit Grower Mag.* 1930(Feb.): 21. 1930.—In Wisconsin the case-bearer (*Coleophora pruniella*), which formerly fed on the leaves of the wild cherry, is becoming a serious pest in certain cultivated cherry orchards. The life cycle of this insect is described. It may be controlled, with difficulty, by oil emulsion sprays.—*W. S. Clarke, Jr.*

7774. **HODGKISS, H. E. The relation of insect control to the arsenic content of spray residues.** *Pennsylvania Hort. Assoc. News* 8(1): 18-27. 1931.—The effectiveness of a definite program of apple orchard insect control is illustrated by comparisons in 10 orchards over a 3-yr. period. Insects concerned in state wide operations are the rosy apple aphis, apple red bugs, leaf rollers, which are taken as a group, plum curculio, and codling moth. Suppression of these spp. during 1930 is discussed separately with supporting charts. State wide figures indicate comparative loss valuations under the Pennsylvania system of apple spraying service and the usual schedule spraying practice. Codling moth infestation was unusually large on account of extreme drought conditions in the more extensive commercial apple producing area. Under the system described, suppression was highly satisfactory. Analyses of residues from apple samples showed that the amounts of AS_2O_3 did not exceed the domestic tolerance in most instances. In the extreme drought area few samples exceeded the world tolerance for 1930. Cleaning of apples reduced the amount of AS_2O_3 per pound of apples somewhat. Residues rather than arsenic content are concluded to be the most important factors in conditioning apple fruits.—*H. E. Hodgkiss.*

7775. **HULL, FRANK M. Some possible means of control of the damage caused by the cotton leaf worm moth to the fig.** *Jour. Econ. Ent.* 22(5): 792-796. 1929.—Severe damage to fruits of the fig is caused by periodic settling of swarms of the cotton leaf worm moth (*Alabama argillacea*) and there follows a premature souring of the fruit caused by the feeding of the moths. A number of poison baits carrying sodium arsenite were tested and several gave promise of considerable success. Repellents were not found to be as effective. Experiments showed the time of greatest feeding of the moths to be just before dark and that the feeding is intermittent and lasts only a few minutes.—*W. P. Duruz.*

7776. **McGREGOR, E. A. Improvement in sulphur dusting for control of citrus thrips.** *California Citrograph* 16: 358, 386. Illus. 1931.—Citrus growers believe that a full dusting program is giving better protection than any previously known method. In addition it is significant that the majority of groves in central California that have been thoroughly dusted from 1 to 3 years are commercially free from citricola scale.—*C. S. Pomeroy.*

7777. **MASSEE, A. M. Note on plum leaf-hoppers.** *Ent. Month. Mag.* 65(784): 206-207. 1929.—The Jassids *Typhlocyba querqus* Fab. & *Zygina coryli* Collin emerged in May from the trunks and main branches of plum trees, principally *Prunus cerasifera* Ehr. They caused considerable damage to the host during the summer, and deposited eggs in the trunks and branches during Oct. A 7½% tar-distillate spray used in Jan. apparently had no effect on the eggs.—*H. M. Gilkey.*

7778. **ORCHARD, O. B. Red spider investigations on commercial nurseries.** *Exp. & Res. Sta. Nursery & Market Gard. Indust. Devel. Soc., Turner's Hill, Cheshunt, Hertz, Ann. Rept.* 15: 60-62. 1929(1930).—Extensive investigations in the laboratory and on commercial nurseries have, in all instances, failed to substantiate the theory that Red Spider Mite infestations result from the introduction of the mite in material such as straw, turf, and manure. In no instance has it

been found that the mite can survive until the spring in the soil of glasshouses.—*Author's conclusions.*

7779. [PUZANOVA-MALYSHEVA, E. V.] ПУЗАНОВА-МАЛЫШЕВА, Е. В. К биологии Eurytoma amygdali End., вредителя слив. [Biology of E. amygdali, a pest of plums.] [English summary.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24 (3/4): 166-178. 13 fig. 1930.—The author mentions other *Eurytoma* spp. known as plant pests, and reviews the literature on *E. amygdali*. [Chalcidoidea, Eurytomidae]. Adult ♂ and ♀ are fully redescribed, and all the stages of the life history are discussed and illustrated. Control measures are suggested. Three hymenopterous parasites were discovered: *Mesochorus nigripes*, *Ascogaster* sp., and *Sphalomaspis* sp.

7780. STANILAND, L. N., and C. L. WALTON. Progress report. Experiments on the control of pear midge (Contarinia pyrivora). *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 124-129. [1930].—The first test was to see if enough of the insects could be trapped in banding grease to reduce the damage to the fruits. Various aromatic substances were stirred into the grease. Nitrobenzene, oil of cloves, and oil of fennel seemed to attract the insects, but not in large enough numbers to reduce perceptibly the amount of damage in the orchard. Amyl acetate (commonly known as pear essence) did not seem to attract them at all. Calcium cyanide worked into the soil under the trees to a depth of 4 inches, at the rate of a half ounce or more to the square yard, was rather effective in reducing the amount of injury. Removing the soil under the trees to the same depth was effective. Tar oil washes applied to the soil under the trees were not effective. Nicotine and soft soap sprayed on the open blossoms caused a marked reduction in the amount of injury.—*W. H. Chandler.*

7781. VECHT, J. van der, en A. D. VOÛTE. Biologie en bestrijding der djeroekmot (Citripestis sagittiferella Moore). [Life-history of C. sagittiferella.] [With English summary.] *Landbouw* [*Buitenzorg*] 6(9): 881-886. 1931.—This pest, one of the severest for citrus culture in many parts of the Netherlands East Indies, in some cases destroys more than 50% of the fruits. Only *Citrus maxima*, *C. medica*, *C. aurantium* and their hybrids are infested. The eggs are deposited on the surface of the half-grown and ripening fruits and hatch 5 days later. The caterpillars burrow directly into the pulp, and when mature, some 14 days later, leave the fruit to pupate in the soil. Through the larval holes many secondary insects enter the fruits. The caterpillar constructs a cocoon of earth-particles about 1 cm. under the surface of the soil. After 10 days the moth appears. Total life-cycle requires about 1 month. Parasites are of no importance in Java. In a native garden, all infested citrus fruits were destroyed at 10-day intervals during several months but no decrease in infestation resulted, due apparently to continuous infestation from nearby gardens. Probably the moths cover long distances during their nocturnal flight. Fruits can be protected by paraffined paper bags when 6 cm. in diam.

7782. WORTHLEY, H. N. The control of the codling moth [Carpocapsa pomonella] with tree bands. (*Proc. State Hort. Assoc. 1931.*) *Pennsylvania State Hort. Assoc. News* 8(1): 13-17. 1931.—Single-faced corrugated strawboard bands 2 in. wide dipped in a mixture of 1 lb. β-naphthol and 1.5 pints red engine oil and placed about the trunks of well-scraped apple trees early in July prevented 98.8% of the expected emergence of moths of the summer brood and killed 92.2% of the 1st and 2nd brood larvae trapped, as compared with untreated bands. Double dipping and the addition of 0.5 oz. aluminum stearate increased the effectiveness of the bands. Examination of 5 well-scraped apple trees and the ground beneath in November showed 1.5% of the hibernating larvae to be on the ground, 1.66% on the tree trunk and branches, and 96.84% under the bands.—*H. N. Worthley.*

ECONOMIC ENTOMOLOGY

CEREAL, FORAGE, AND OTHER FIELD CROPS

(See also in this issue Entries 7775, 8767)

7783. AYYAR, P. N. KRISHNA. A new pest of rice in South India. *Bull. Ent. Res.* [*London*] 20(2): 173-178. 1 fig. 1929.—A change in the scheme of paddy cultivation in the area infested, which has insured an abundant and continuous supply of food for the insect throughout the yr., has encouraged the development of *Tetroda histeroides* Fabr.,—a comparatively unimportant insect until it occurred in outbreak numbers and caused much damage. Its life history is given, with descriptions of its various nymphal stages. Two parasites were reared—one possibly *Anastatus colemani* and the other possibly a Braconid. Various ineffective control measures are discussed and the one effective method of sweeping up the bugs by hand is described.—*W. H. Larrimer.*

7784. CHIAROMONTE, A. Considerazioni entomologiche sulla coltura del Cotone nella Somalia Italiana. *Bull. Agric. Congo Belge* 21(3): 739-743. 1930.

7785. COSTA LIMA, A. da. Uma nova praga do Algodoeiro no nordeste do Brasil. [A cotton pest new to northeastern Brazil.] *O campo* [*Rio de Janeiro*] 1 (9): 12-13. 7 fig. 1930.—Notes on the coccid, *Ferrisia virgata* (Cockerell) Fullaway, and on its predator, *Hyperaspis* (?) *noticollis* (Muls.).

7786. DINGLER, MAX. Die Griesheimer Heuschreckenplage. [Schluss.] *Anzeiger Schädlingsk.* 7(2): 19-20. 1 fig. 1931.—The abnormal increase of the grasshopper in 1930 was due to climatic conditions and failure to use the land. To prevent recurrence, thorough cultivation, tramping down, sheep raising, harrowing, or plowing under is recommended.—*G. A. Bieberdorf.*

7787. DUNNAM, E. W. Experiments on the relation between the location of cotton fields and the intensity of boll weevil infestation the succeeding season. *Jour. Econ. Ent.* 22(5): 750-756. 3 fig. 1929.—Data collected by the author during 1928 at Tallulah, Louisiana, following the floods of 1927, with attendant restriction of cotton culture, tend to show that there is no relation between the distribution of the boll weevil infestation in 1928 and the location of the cotton plantings in 1927.—*J. L. Webb.*

7788. GROSSMAN, EDGAR F. Winter survival of immature stages of the boll weevil. *Florida Ent.* 15(1): 13-14. 1931.—Records of survival of *Anthonomus grandis* stages in cotton squares and bolls in Florida, after various periods in low temp. incubator at 55° and 80 to 90% relative humidity. No larvae survived the shortest period of 69 days; no pupae survived beyond 92 days; one adult survived 131 days, but no stages beyond 138 days.

7789. GUMLEY, E. M. Frosted orange moth in Co. Antrim. *Irish Nat. Jour.* 3(11): 232. 1931.—Note on potato stem injury by *Ochria ochracea* in Ireland.

7790. KORIĆ, MIRKO. Jugoslavia: Serious sugar beet crop losses. *Internat. Bull. Plant Protect.* 5(8): 142-143. 1931.—Damage due to weevils and chrysomelids is discussed.

7791. MEER MOHR, J. C. van der. Entomologische aanteekeningen, 1. A. Over leemnestjes op tabaksbladeren. B. Over samenklontering van tabakszaad. C. Dinoderus minutus Fabr. in tabak. [A. Mudwasps on tobacco leaves. B. Clotting of tobacco seed. C. D.

minutus on tobacco.] [With English summary.] *Mededeel. Deli Proefstat. Medan-Sumatra* 71. 1-10. 3 pl. 1931. —A. Cells of *Eumenes* sp. may sometimes be found on the underside of tobacco leaves. The cells contained paralyzed caterpillars, of spp. not harmful to tobacco.—B. A peculiar clotting of tobacco seed, perhaps caused by mites, viz. *Tyrophagus putrescentiae* (Schrank 1781), is described.—C. Mild damage to fermented tobacco by the smaller bambo shot-borer, *Dinoderus minutus* Fabr. (Col. Bostrych.), is reported. The tobacco probably became infested in the curing barn, as in Deli tobacco leaves are put on bamboo laths, some of which may have been attacked by *Dinoderus*.

7792. **MENOZZI, CARLO.** Insetti dannosi alla barbabietola. (Osservazioni ed appunti preliminari.) [Insect pests of beets.] 98p. 1 map, 4 col. pl., 25 fig. Stabilimento Tipo-Litografia Narcisi & Co.: Genova, 1930.

7793. **MUNGOMERY, R. W.** The present status of control of some Queensland sugar cane pests. *Proc. Ann. Conf. Queensland Soc. Sugar Cane Techn.* 2: 230-236. 1931.—On insect pests.

7794. **PAASCH, E.** Die wirtschaftliche Bedeutung der Rübenfliegenbekämpfung. [Economic significance of beet fly control.] *Zuckerrübenbau* 13 (4): 56-63. 1931.

7795. **ROBERTS, J. ISGAER.** The tobacco capsid (Engytatus volucer, Kirk.) in Rhodesia. *Bull. Ent. Res.* [*London*] 21 (2): 169-183. 1 pl., 2 fig. 1930.—At the beginning of the 1928-29 season, work was started to study the transmission of tobacco mosaic in Rhodesia. Mosaic is very easily disseminated by contact of plants, by planters' hands and similar ways, so that it seems easy for all sucking insects to be vectors. The source of first infection is not clearly established but it is not transmitted with the seed. Several insects were found, but inasmuch as *E. volucer* was breeding on tobacco it was suspected as the vector. Experiments proved otherwise. This capsid causes a very distinct crinkling of the foliage formerly attributed to several agencies in the soil. Other spp. of *Engytatus* and *Dicyphus* cause feeding injury wherever tobacco is grown. Tobacco has been grown in Rhodesia for over 25 yrs. At present both Virginia and Turkish tobaccos are grown. The seed beds are made in fertile soils which are burned over from 12 to 14 hrs. Heat penetration sufficient to kill potent viruses is doubtful. The method of sowing the seed and the time of planting in the field are discussed, also the effect of climate. Mention is made of the characteristics of the plant with reference to insect feeding and the effect of different soils on plant growth. The descriptions of the adult capsid and of its nymphal stages are quite complete. Its life cycle is from 12 to 14 days at the beginning of the season and upwards to 22 days at the onset of cold weather. Eggs are found throughout the tobacco growing season, deposited mostly in the midribs of the leaf where the adults prefer to feed. The inflorescence is also a favored feeding place. No other host plants have been found, but *E. volucer* is both cannibalistic and carnivorous. The article presents a very complete description of copulation and anatomy of the parts engaged. *Anthocoris fasciculatus* when allowed to feed on mosaic plants, then on healthy ones, did not produce the disease on the latter. An Aleurodid, handled the same way, except no egg deposition, did not produce symptoms of the mosaic disease. *Empoasca facialis* Jac. produced no mosaic symptoms but did produce characteristic yellowing of the leaves where the insects were allowed to feed.—*M. P. Jones.*

7796. **SMITH, J. HAROLD.** Tobacco pests. *Queensland Agric. Jour.* 36 (2): 195-212. 6 pl. (1 col.) 1931.—Wireworms, cutworms (*Prodenia litura** Fabr.), nematodes, the budworm (*Heliothis obsoleta** F.) and other leaf-eating noctuids, the tobacco miner (*Phthorimoea operculella** Zell.), grasshoppers, and thrips are discussed.

7797. **STRICKLAND, E. H.** Relative susceptibility of wheat varieties to wireworm damage. *Scientific Agric.* 12 (2): 88-91. 1931.—Laboratory and field tests indicated varietal differences in susceptibility of wheat. Marquis and Reward are recommended in preference to Garnet for heavily infested fields.

7798. **WILDERMUTH, V. L.** Chalcid control in alfalfa-seed production. *U. S. Dept. Agric., Farmers' Bull.* 1642. ii-14. 12 fig. 1931.—This is a revision of and supersedes Farmers' Bulletin 636.—*Wm. A. Hooker* (*courtesy Exp. Sta. Rec.*).

7799. **WILLIAMS, FRANCIS X., (compiled by, with the assistance of R. H. VAN ZWALUWENBURG, and O. H. SWEZEY. Introduction by F. MUIR.).** Handbook of the insects and other invertebrates of Hawaiian sugar cane fields. 400p. 40 pl. (2 col.), 143 fig. Hawaiian Sugar Planters' Association: Honolulu, 1931.—Muir, in the introduction, considers the ecological conditions from the standpoint of the origin of the islands, and gives a review of the system of biological control adopted by the Sugar Planters' Association, the philosophy which guided their procedure, and the nature of the results. The influence of additional spp. on the numerical ratios is discussed. It is not always necessary to have a complete cycle of parasites, that is one for each stage, in order to obtain satisfactory control. The insects of the cane fields are taken up order by order, with brief discussions of the spp., many of which are illustrated. While most of the spp. reported have been discussed in bulletins of the station, this is the first complete assembling of the entomological fauna of the sugar cane fields. Several unidentified Thysanura (Lepismidae, Japygidae, Campodeidae) and Collembola (Entomobryidae and Smynthuridae) from the cane fields are illustrated, some being responsible for root pitting, and others occurring behind the leaf sheaths, etc. Nine spp. of Blattidae* are discussed. The egg cases of *Cutilia soror**, *Periplaneta americana**, *P. australasiae**, *Symploce hospes** and *Euthyrrhapha pacifica** are illustrated. Only 3 spp. of introduced mantids have been taken in Hawaii. The only Acrididae injurious in the fields are the introduced *Oxya chinensis** and *Atractomorpha ambigua**, the latter occurring because of weeds. Four Locustidae* are discussed, of which *Conocephalus saltator** is the principal cane pest. Its eggs* are deposited in the leaf sheath. The mole cricket, *Gryllotalpa africana**, injures the seed cane and young shoots, and is attacked in turn by *Larra luzonensis*, introduced from the Philippines. Three spp. of Gryllidae* are listed and 5 spp. of Dermaptera*. Four species of Isoptera occur in Hawaii, *Neotermes connexus**, *Kalotermes immigrans**, *Cryptotermes piceatus**, and *Coptotermes formosanus**, of which only the latter attacks sugar cane. The only Embiid is *Oligotoma insularis*, which is of no economic importance. Seven spp. of Psocidae* and 5 spp. of Odonata* are listed. The Thysanoptera on cane are *Kentronothrips hawaiiensis**, *Thrips saccharoni**, *T. panicus**, *Chirothrips mexicanus**, and *Scolothrips 6-maculatus**. In the cane fields the Pentatomidae are represented by *Oechalia kaonohi* and *O. griseus*, which are predators on caterpillars; the Cydnidae, by *Geotomus pygmaeus**, found at the roots of plants; and the predacious Reduviidae by *Zelus renardii**, *Reduviolus innotatus* and *R. capsiformis*. The eggs of the latter are parasitized by *Polynema reduvioli*. The predacious Anthocoridae are represented by *Triphleps persequens**, *T. pumilio* and *Physopleurella mundulus**; the Miridae, by the carnivorous *Fulvius peregrinator* and *Cytorhinus mundulus**, a valuable enemy of the eggs of *Perkinsiella*. The sugar cane aphids are *Aphis sacchari**, which is attacked by the coccinellid beetles *Coelophora inaequalis**, *C. pupillata**, *Olla abdominalis**, *Diomus notescens**, *Platyomus lividigaster**, and the syrphids *Simosyrphus grandicornis**, and *Allograpta obliqua**, and parasitized by *Aphelinus maidis*, and *Lysiphlebus testaceipes*; and the corn aphis, *Aphis maidis**, carrier of mosaic, which is rare on cane. The mealy bugs of cane are *Trionymus sacchari**; *T. boninsis**, which is parasitized by *Aphycus terryi** and destroyed by the fungus *Entomophthora pseudococci*; and *Pseudococcus brevipes**. Among the mealy bug enemies are the coccids *Crypto-*

*lacmus montrouzieri**, *Hyperaspis trilineata*, and the drosophilid fly, *Gitonides perspicax**. The principal delphacid enemy of cane is *Perkinsiella vastatrix**, against which several introduced parasites are of value. The introduced predatory hemerobiids, *Nesomicromus vagus** and *Micromus vinaceus**, are well established and valuable in control of aphids, as are also the introduced Chrysopidae, *Chrysopa lineata* and *C. microphya**. The Noctuidae are represented by the army worms *Cirphis unipuncta** and *Spodoptera mauritia**, in the control of which 9 spp. of parasites* have been satisfactorily introduced, as well as the fungus, *Metarrhizium anisopliae**. Of the Pyralidae, the sugar cane leaf roller, *Omiodes accepta**, is most important, and has quite a series of parasites*. The sugar cane bud moths, *Eucosmotis flavistricta** and *Opogona aurisquamosa**, attack the rind and buds. Various spp. of moths* are listed which occur in the fields, but all do not attack cane. Numerous cane field beetles are noted by families, with particular attention to the sugar cane wire worms, *Simodactylus cinnamomeus** and *Monocrepidius exsul**, whose larvae damage seed cane and destroy the eyes; *Gonocephalum seriatum** and its parasite *Epyris extraneus**; *Anomala orientalis** and its parasite *Scolia manilae**; the Chinese rose beetle, *Adoretus sinicus**, which sometimes defoliates the cane leaves; and especially *Rhabdocnemis obscura**, the New Guinea sugar cane beetle borer, and its valuable introduced parasite, *Ceromasia sphenophori**; and a fungous disease, a *Sporotrichum** from Celebes. A list of 27 cane field ants* is discussed. Many species of predatory and parasitic Hymenoptera* are discussed. Notable among the cane Diptera are *Phaenobremia meridionalis*, a predacious cecidomyid whose larva attacks the *Aphis sacchari;* and *Archytas cirphis**, an introduced tachinid enemy of the army worm. A short section deals with the enemies of nutgrass, *Cyperus rotundus*, especially the moth borer, *Bactra truculenta**, and the weevil, *Athesapeuta cyperi*. The next section deals with the millipedes*, centipedes*, scorpions*, spiders*, mites*, crustacea*, molluscs*, and planaria* of the cane fields. R. H. VAN ZWALUWENBURG discusses the soil population of cane fields, finding in the upper 9 inches, that, of all animal life except nematodes, 66.9% are insects, 25.2% myriapods, 7.7% arachnids, 0.08% crustaceans, and 0.04% worms. In another chapter he discusses the nematodes of sugar cane, especially *Tylenchus similis** and *Heterodera radicicola**, from an ecological standpoint. O. H. SWEZEY tabulates the records of successful and unsuccessful importations of beneficial insects. The bibliography is very extensive (pp. 378-389).

7800. WILLIAMSON, JUAN. El gusano de la caña del trigo. [The wheat culm grub.] *Argentina Min. Agric. Sec. Propaganda e Informes* 831. 169-172. 1931.—Damage produced by larvae of the curculionid beetle, *Prosaldius rufus* Hust., is described.

ECONOMIC ENTOMOLOGY

STORED PRODUCTS

R. T. COTTON, *Editor*

(See also in B. A. 6(2): Entries 4509, 4609, 4639, 4661, 4695, 4728, 4731, 5646; and in this issue 6921, 8724)

7801. COTTON, RICHARD T. The effect of light upon the development of the dark meal worm, Tenebrio obscurus Fab. *Proc. Ent. Soc. Washington* 32(4): 58-60. 1930.—By holding meal worm larvae at a temp. below normal they can be prevented from transforming at the normal time, and by use of light and warmth they can be induced to transform without passing through the normal hibernation period. Continuous exposure to light greatly accelerates transformation to the pupal state.

7802. HAGAN, HAROLD R. The fig-insect situation in the Smyrna fig district. *Jour. Econ. Ent.* 22(6): 900-909. 1929.—Brief notations are given regarding the principal insect pests (especially *Ephestia cautella* and *Plodia interpunctella*) of fig trees and fruit of the Smyrna fig in Turkey, with a summary of the economic phase of their attack, including actual infestation and contamination by disease organisms. Diseases carried by insects and direct attack of insects caused a loss of 8-37% of the figs examined. *Philotrypesis caricae* is considered a co-inquiline with *Blastophaga psenes* in caprifigs and has a similar life history. It does not assist in fig pollination.—*H. R. Hagan.*

7803. KILLINGTON, FREDK. J. Damage to woodwork in Salisbury cathedral by larvae of Tenebrio molitor L. (Col.). *Entomologist* [*London*] 63(804): 113. 1930.

7804. LAING, FREDERICK. The cockroach. Its life-history and how to deal with it. (2nd ed.) *British Mus. Nat. Hist. Econ. Ser.* 12. 1-23. 1 pl., 4 fig. 1930.

7805. PUSTET, und LIEBERMANN. Der Messingkäfer und seine Bekämpfung. [The brass beetle and its control.] *Flugbl. Förd. Pflanzenbaues u. Pflanzenschutzes* 54. 1-6. 1 col. pl. 1929.—A brief description of *Niptus hololeucus*, with notes on its biology and control.

7806. SMITH, ROGER C. Lasius interjectus Mayr (Formicidae), a household pest in Kansas. *Jour. Kansas Ent. Soc.* 1(2): 14-18. 1928.

ECONOMIC ENTOMOLOGY

FOREST AND SHADE TREES

J. M. SWAINE, *Editor*

(See also in this issue Entries 6398, 6414, 8007, 8767)

7807. DROSIHN, P. Die Kiefernspannerbekämpfung in Thüringen 1929. *Forstwiss. Centralbl.* 52(10): 478-492. 2 fig. 1930.—A total area of 350 ha. was dusted with 11,906 kgm. "forstesturmit" during the latter part of August, completely suppressing a threatened outbreak of the pine looper, *Geometra piniaria.—W. N. Sparhawk.*

7808. EIDMANN, H. Die Bekämpfung von Frostspanner und Eichenwickler durch Arsenbestäubung mittels Motorverstäuber. *Mitteil. Forstwirtsch. u. Forstwiss.* 1(4): 355-384. 9 fig. 1930.—Experiments in control of *Cheimatobia brumata* and *Tortrix viridana* on oak are described. A patented powder, "Meritol," containing 20% As_2O_5 was applied with a motor duster at the rate of 50 kgm. per ha. It quickly checked the infestation of *C. brumata* but was less effective with the leaf-roller.—*W. N. Sparhawk.*

7809. EIDMANN, H. Die forstliche Bedeutung der Ameisen. *Mitteil. Forstwirtsch. u. Forstwiss.* 1(4): 515-525. 4 fig. 1930.—Although some ants, such as *Camponotus herculeanus*, do considerable damage by hollowing out the stems of standing trees, others (as *Lasius flavus*) help to keep the soil in good condition by loosening it and mixing it with organic matter, or help to spread the seeds of various plants. The principal benefit is destruction of insect pests, especially by the red forest ant (*Formica rufa* and related forms). During a summer, a large colony of these ants destroys about

2 million insects, of which about ½ are harmful and only ⅛ useful. The red ant thus helps greatly in preventing epidemics of forest insects.—*W. N. Sparhawk.*

7810. **[FEDOROV, S. M.]** ФЕДОРОВ, С. М. Вредные насекомые лесов Крыма. [Insect pests in the forests of Crimea.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(3/4): 225-229. 1930.—Eleven spp. are listed as attacking *Pinus*, 23 on *Quercus*, 4 on *Fagus*, and 1 on *Carpinus*. There are notes on distribution and on the type and extent of the damage done.

7811. **FRIEND, ROGER B. The European pine shoot moth in red pine plantations.** *Jour. Forest.* 29(4): 551-556. 1931.—This insect (*Rhyacionia buoliana* Schiff.) was first reported on Long Island, N. Y., in 1914, and has since spread to 11 states, including Florida, Ohio, Illinois, Michigan, and the New England States, and to Nova Scotia, Ontario, and British Columbia. American hosts include *Pinus strobus, P. resinosa, P. ponderosa, P. taeda, P. palustris, P. banksiana*, and *P. contorta*, though not all have been attacked in America. The insect appears to be single-brooded in America. Data are given on damage to planted red pine in Connecticut, and on attempted control by spraying and by cutting out infested tips. Injury to red pine is serious, but infestations spread slowly and control seems feasible.—*P. C. Wakeley.*

7812. **GAILIŠ, L. Celmu mizošanas nozīme Latvijā.** [The importance of peeling stumps in forest operations in Latvia.] *Mežsaimniecības rakstu krājums* [*Riga*] 6: 85-104. [German summary, 136-141.] 1928.—The following conclusions resulted from the examination of over 1,000 pine and spruce stumps on a variety of sites: Unpeeled stumps of conifers are breeding places for bark beetles, especially on clear-cut areas or in selectively-cut pine stands. Except in mixed stands on low, moist, grassy sites, stumps over 5 cm. diam. should be peeled unless they can be pulled and utilized. This will destroy the broods of bark beetles as well as of *Hylobius abietis*. Tops and branches less than 2-3 cm. diam. may be left on the ground, but larger ones should be removed or burned, since they are breeding places for the small pine beetle (*Myelophilus minor*), one of the most widespread forest pests in Latvia.—*W. N. Sparhawk.*

7813. **MENZEL, R., and T. A. TENGWALL. Slakken op Hevea.** [Snails on Hevea.] *Arch. Rubbercult. Nederlandsch-Indie* 13: 239-243. 1929.—Snails about 1 mm. in diameter of shell, identified as *Pupisoma pulvisculum*, were found on trees badly attacked by mites. They were living in groups of 3 to 10 on the leaf scars below small lateral branches. They make wounds deep into the bark, through which the latex escapes. Figures show the anatomical changes caused by the injury.—*C. D. LaRue.*

7814. **[POLOZHENTSEV, P.]** ПОЛОЖЕНЦЕВ, П. К биологии Spondylis buprestoides L. [Biology of S. buprestoides.] [German summary.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 23(1/2): 48-59. 7 fig. 1929.—*S. buprestoides* lives in the roots of *Pinus silvestris* and *P. banksiana*, doing damage by its borings* to the trees. Among its enemies are the birds, *Motacilla alba* and *Erythropus vespertinus*, and the robber fly *Laphria.*

7815. **SCHWERDTFEGER, F. Anwendung von Kali und Kainit zur Kiefernspannerbekämpfung.** *Forstarchiv* 6(5): 81-84. 1930.—Kali and kainit were introduced into moss over soil in glass cylinders. Caterpillars of the pine looper (*Geometra piniaria* L.), ready to pupate, were introduced on the moss. The kainit caused a high mortality of caterpillars as they passed through the moss and of pupae in the soil. The effect of kali was slight. —*N. W. Hosley.*

7816. **TRÄGÅRDH, IVAR. Methods of investigating the fauna of tree-stumps.** *Bull. Ent. Res.* [*London*] 20 (2): 245-250. 1929.—Brief descriptions of the methods used and the results obtained, illustrated by diagrams and tables. Particular study of the pine weevil in Sweden indicates the desirability of avoiding large clean fellings which offer conditions particularly favorable to the insect.

7817. **WOLFF. Witterung und Ausschlüpfen von Kiefernspannerpuppen.** *Zeitschr. Forst.- u. Jagdw.* 62(5): 307-311. 1930.—Fluctuation in atmospheric pressure constitutes the immediate cause of emergence of the pine looper moth from its pupal case, in the opinion of well-informed authorities. An abrupt fall in temp. is accompanied by a pronounced decrease in the number of new moths flying from the litter. Schwerdtfeger concluded from his studies that emergence is not dependent on temp. (soil or air) or on precipitation. The danger of formulating conclusions on the basis of quantitative and graphic determinations, the scheme employed by Schwerdtfeger in his scatological observations, is pointed out. The value of direct observations is emphasized.—*J. Roeser, Jr.*

ECONOMIC ENTOMOLOGY

INSECTS AFFECTING ANIMALS

F. C. BISHOPP, *Editor*

(See also in this issue Entries 6306, 6984, 7191, 7531, 7556, 7640, 7687, 7850, 7852, 8632, 8718, 8727, 8728, 8742, 8749, 8876)

7818. **BOURGUIGNON, G. C. Myiase cutanée à Lucilia madagascariensis du canard domestique a Coquilhatville.** *Ann. Soc. Belge Med. Tropicale* 10(1): 81-83. 1 pl. 1930. —A domestic duck was observed to move about slowly but otherwise showed no symptoms of illness. A large wound was found near the tail which was filled with larvae all of which were about the same size. About 2 days later the duck died suddenly. The abdominal cavity and intestinal tract were not invaded. Notes are given on pupation and the emergence of the flies. All the flies proved to be *L. madagascariensis.—F. C. Bishopp.*

7819. **BOYD, MARK F. The cage rearing of Anopheles quadrimaculatus.** *Amer. Jour. Trop. Med.* 10(3): 165-175. 5 fig. 1930.—Describes in detail the technique by which fertile ova of *A. quadrimaculatus* were secured from cage reared stock, accounting for 3 lineal generations between the last of July and the middle of October. —*M. F. Boyd.*

7820. **BOYD, MARK F. Studies on the bionomics of North American anophelines. VI. Some observations on imagines.** *Amer. Jour. Hyg.* 12(2): 449-466. 1 fig. 1930. —*Anopheles quadrimaculatus* is, in this region [Edenton, North Carolina], an effective, and apparently the sole, transmitter of malaria. It shows a greater preference for the blood of man than do the other common species of the region. After engorgement it manifests considerable nocturnal restlessness, but continues to utilize diurnal shelters in the vicinity of its mammalian hosts until ready to oviposit. More individuals of the 3 local spp. examined had fed on the blood of cattle than on that of any other host. Some evidence is submitted to suggest that the nocturnal presence of cattle in the vicinity of human dwellings is associated with reduced malaria incidence. This is probably accomplished by a diversion of *quadrimaculatus* from man to cattle. *A. punctipennis* does not appear to be implicated in the local transmission of malaria. While showing a tendency to linger in the vicinity of their mammalian hosts until ready for oviposition, only a small proportion of *punctipennis* appear to have engorged themselves upon man. *A. crucians* does not appear to be implicated in the local transmission of malaria: it effects the maturation of its

ova in a feral environment. The *quadrimaculatus* imagines encountered during the late fall and winter months are in a state of hibernation. On the other hand, there is no protracted cessation or suspension of the activities of *punctipennis* during the winter period.—*Author's conclusions.*

7821. CAIUS, J. F. The toxicity of the venoms of Indian scorpions. *Jour. Bombay Nat. Hist. Soc.* 33(4): 952-953. 1929.—The author, stung by *Buthcolus melanurus*, Kessler, experienced a sharp burning pain for a few seconds followed by a dull throbbing pain, locally, for a few minutes. Discomfort lasted 1½ hrs. The scorpion is described.

7822. DUNN, LAWRENCE H. Rearing the larvae of Dermatobia hominis Linn. in man. *Psyche* [*Boston*] 37(4): 327-342. 1 pl., 1 fig. 1930.—In October, 1929, the author allowed himself to be infected with 6 larvae of *D. hominis* which were just emerging from eggs attached to the abdomen of the fly, *Limnophora*. He describes the development of the larvae in eruptions under the skin. This took from 46 to 52 days and was accompanied by itching, pricking and at times excruciating pain. After the larvae emerged, they were put into damp sand and sawdust where they pupated, emerging as adult flies after 22 to 24 days.—*C. W. Dawley.*

7823. HAMLYN-HARRIS, R. Mosquitoes breeding in tree cavities in Queensland. *Bull. Ent. Res.* [*London*] 22(1): 51-52. 1931.—A survey of 1299 trees in the Brisbane area yielded 64 out of 196 cavities containing *Aëdes notoscriptus*, *A. argenteus*, and *Culex fatigans*, with the first most common. The highest percentage of cavities with mosquitoes was in *Poinciana regia*, but there were more fig trees with potential breeding cavities.

7824. HOFFMANN, CARLOS C. Los mosquitos Anopheles, transmisores del paludismo en el Valle de Mexico. *Bol. Dept. Salubridad No. 2.* 11-23. 2 pl. 1929.—Malaria in this region is caused chiefly by *Anopheles pseudopunctipennis* and *A. quadrimaculatus*. For 8 or 9 weeks during the winter there is an interruption in the activity of *pseudopunctipennis*. Only larvae and adult ♀♀ survive the cold. This sp. breeds only in clear, clean water. *A. quadrimaculatus* may breed in stagnant water. It seems to be increasing in the district, probably due to imperfect drainage in new construction operations. It may breed all the year round. Suggestions are given for combating these 2 spp.

7825. ILLINGWORTH, J. F. The use of arsenic in mosquito control. *Proc. Hawaiian Ent. Soc.* 7(3): 414. 1931.—Paris green at the rate of one part to a million of water, used in greenhouses against mosquito *Aëdes aegypti*, destroyed the wrigglers but also injured the pineapple roots. Lead arsenate at the same strength gave perfect results and no injury.

7826. JACKSON, C. H. N. Contributions to the bionomics of Glossina morsitans. *Bull. Ent. Res.* 21(4): 491-527. Map, 3 fig. 1930.—The tsetse-fly *G. morsitans* was studied in Western Kondoa, Tanganyika Territory. Several lines of evidence seemed to show that flies live and breed in large woodland areas covered with *Berlinia* and *Brachystegia*, from which they emerge, when hungry, to feed on game animals. Such feeding grounds invariably occupy situations favored by frequent passage of game. The studies of the habits of the flies were facilitated by liberating and recapturing marked individuals. The causes of game movements also were studied, reactions of different spp. being correlated with such factors as presence and absence of water, long grass, and young grass.—*C. H. N. Jackson.*

7827. [KOROSTELEV, V.] КОРОСТЕЛЕВ, В. Дальнейшее наблюдение над ларвицидным свойством парижской зелени. [Further observations of the larvicidal properties of Paris green.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(4): 299-303. 1929.—The author spread Paris green powder over water reservoirs, to kill larvae of *Anopheles maculipennis*. Rapidity of death of the larvae was directly proportional to the temp. of the water and to the dose of the larvicide. Applied in necessary minimal doses, Paris green, under natural conditions, is not dangerous for animals. This was demonstrated by experiments on dogs. Dusting water surface with Paris green presents no danger to fish. Cloudy weather and rain do not prevent the larvicidal action of Paris green in natural environments. Water treated with Paris green is reinfested by mosquito larvae only after an interval of 3-4 weeks.—*B. Van Rosen.*

7828. NASH, T. A. M. A contribution to our knowledge of the bionomics of Glossina morsitans. *Bull. Ent. Res.* 21(2): 201-256. Map. 1930.—The flies, *G. morsitans*, emerge from their puparia during both the short and long dry seasons. During both rainy seasons emergence is extremely low. Fly density is greatest at the end of the heavy rains and least at the end of the long dry season, and during the light rains. The cold spell and the bush fires cause a great drop in density. Density remains steady at a medium high level throughout the heavy rains. The order of fly preference for the vegetational communities is as follows: *Brachystegia microphylla, Acacia usambarensis, Berlinia globiflora, Combretum savannah, Acacia spirocarpa, A. campylacantha* and *A. xanthophloea*, gall *Acacias* (*A. formicarum* or *drepanolobium*), open "Mbuga" (periodically moist alluvial sunklands), and extensive cultivated areas. Females only appear in their true numbers in open "Mbuga" country. These open areas are considered to be the feeding grounds to which both sexes resort for a meal. Having fed, they are believed to return to the shade of the woods. When savannah shrubs are green and umbrageous, the flies are scattered throughout the bush. When the vegetation is leafless, and later swept by fire, the surviving flies concentrate in their true habitats, the *Berlinia-Brachystegia* communities, and light thickets. Only large game movements cause noticeable effects upon the fly community. They invariably caused a marked increase in the percent of flies caught by man. Among puparia collected from the Kikori bush, 53% of the adults were ♀♀, and the percentage of parasitism by *Thyridanthrax abruptus* was 9.7. When game congregates around certain pools the flies concentrate there. After the pools have dried and the game has left, a concentration of flies continues. The individuals in these centers are ever changing, being recruited from the hungry fly population of the "Mbuga." The flies appear to hunt entirely by sight. The olfactory organs of the antennae are operative only over a very limited field. Olfactory stimuli are believed to produce the reflex of probing. If the antennae are rendered functionless, the fly is less ready to feed. The true habitats of *G. morsitans* coincide with the major breeding sites; they are characterised by perennial, though variable shade, and poor visibility. In the Eastern Kondoa Fly Belt, the *Berlinia-Brachystegia* woods and small thickets form such habitats. These woods are considered to be the centers from which the flies advance or to which they retreat, according to the season. At no season do the feeding grounds form a true habitat. Hungry flies leave the shade of the woods and rove through the open "Mbuga" searching for game. The good visibility of such country is well suited to insects which hunt by sight. It is believed that tsetse flies do not fly through the bush until attracted by a moving object, but that they hunt hosts, following paths and visiting recent haunts of game. Should there be no open country, a road may form a feeding ground. These areas can be recognized by the relatively high percentage of ♀♀ and their starved condition. Females are as abundant as ♂♂ in the true habitats, however they are inactive between meals, and hence are rarely met with. Males are considered to be attracted by movement alone, whereas ♀♀ need this tropism, and hunger also. No evidence can be found to show that a fly community is of a social nature.—*T. A. M. Nash.*

7829. **PAWLOWSKY, E. N., und A. K. STEIN. Experimentelle Untersuchung über die Wirkung des Bisses von Periplaneta orientalis auf die Menschenhaut.** *Arch. Dermatol. u. Syph.* 162(3): 611-620. 7 fig. 1931.—The bite of the upper jaws of *P. orientalis* destroyed the epidermis even as far as the corium. This was followed by dilatation of vessels, slight signs of edema, and foci of inflammatory infiltration. Approximately the same signs appeared after the skin was scarified and an emulsion of the salivary glands applied.

7830. **SHANNON, RAYMOND C. Observations on Anopheles pseudopunctipennis in Peru.** *Amer. Jour. Hyg.* 12(2): 442-448. 1930.—This sp. is apparently the only anopheline in the Rimac Valley and presumably, in view of the very similar topographic and climatic features of the region, the only one occurring, at least in any abundance, on the entire western slope of the Peruvian Andes. It is abundant in certain areas of the valley during certain seasons. The ♀♀ are highly domestic; many were found in the houses at San Bartolomé during Mar. In view of the foregoing, and also of the fact that *A. pseudopunctipennis* is known to be a highly efficient carrier of malaria in northwestern Argentina and has been shown to be a vector in Mexico as well, it may be concluded that this mosquito is probably the sole vector of malaria on the western slope of the Peruvian Andes, and the chief vector at certain altitudes on the eastern slope.

7831. **SHROPSHIRE, JAMES B., and JAMES ZETEK. Unusual Anopheles habitats in the Canal Zone.** *Amer. Jour. Trop. Med.* 7(5): 331-338. 4 fig. 1927.—*A. albimanus* and *A. tarsimaculata* are the chief vectors of malaria in the Canal Zone. Both spp. were found breeding in abundance in a small lake of high salinity. The lake had been formed by a sand barrier cutting off bay water. Larvae breed in the fruit of *Hippomane mancinella,* the "Manzanillo de Playa," the juice of whose leaves and fruit is used for killing fish. Larvae breed in swamps in which the dominant plants are the ferns *Acrosticum aureum* and *A. excelsum.* Occasionally mosquito larvae were found in crab holes. *Anopheles argyritarsis* breeds in tin cans hidden by tall grass. The optimum breding place for this mosquito is in brackish or fresh water, but it can develop in water which is over 50% sea water.

7832. **SPECHT. Mittelohr-, Labyrinth- und Hirnhautenzündung beim Kaninchen infolge Milbenerkrankung des Gehörganges. [Inflammation of the middle ear, labyrinth, and meninges in the rabbit resulting from mites in the auditory canal.]** *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 128(1/2): 103-114. 15 fig. 1931.—*Psoroptes cuniculi.*

ECONOMIC ENTOMOLOGY

BIOLOGICAL CONTROL

H. S. SMITH, *Editor*

(See also in this issue Entries 7770, 7779, 7785, 7799, 7809, 7814, 8497)

7833. **BREAKEY, E. P. Notes on the natural enemies of the iris borer, Macronoctua onusta Grote (Lepidoptera).** *Ann. Ent. Soc. Amer.* 22(3): 459-464. 1929.—Diptera bred from 100 caterpillars in outside cages were as follows: *Muscina stabulans* (Muscidae), most abundant; *Masicera senilis* (Tachinidae), second in abundance; *Muscina assimilis, Myiospila meditabunda* (Muscidae); *Sarcophaga cimbicis, S. latisterna* (Sarcophagidae). Predatory enemies are *Calosoma calidum* (Coleoptera); the robin, *Planesticus migratorius migratorius;* and insectivorous rodents.—*M. W. Boesel.*

7834. **BREMER, H., und O. KAUFMANN. Die natürlichen Feinde der Rübenfliege. [Pegomyia hyoscyami.]** *Arb. Biol. Reichsanst. Land.- u. Forstw.* 16(3): 520-555. 1 col. pl., 14 fig. 1928.—It is concluded that there are at present no possibilities of biological control of the beet fly. The egg parasite *Trichogramma evanescens* West., the larval parasites *Opius fulvicollis* Thoms., *O. nitidulator* Nees and *Phygadeuon pegomyiae* Haberm., and *Empusa muscae* attacking the adult, played a prominent rôle in the numerical fluctuations of the beet fly in the present situation. A total of 30 hymenopterous parasites is recorded, mostly from the literature. The *Trichogramma* infested 20-30% of the 2nd generation eggs, and was significant only where a miscellaneous stand of vegetation occurred in a relatively small area. *O. fulvicollis* reached a parasitism of 3.7-39.7% in the 3rd generation of the fly in 1924, and passed its life cycle 3 to 4 times in the yr. Eggs are laid in the maggots and adults issue from the puparia. The 1st instar larva is cyclopoid in form. *P. pegomyiae* has 3-4 generations per yr., and generally winters as a mature larvae in host puparia. A few parthenogenetic ♂♂ were reared. *E. muscae* becomes apparent near the end of the flight period of the fly. All the hymenopterous larvae in beet-fly maggots are endoparasitic, and tend to complete their development within the host puparia. *Opius* spp. prevail in the list of parasites. The Proctotrupid, *Trichopria lonchaeorum* Kieff., and the Staphylinidae, *Aleochara bipustulata* L. and *A. bilineata* Gy., were reared from host puparia. Some spp. of secondary parasites are reported. The smaller nymphs of *Lygus pratensis* L. fed on beet fly eggs under observation, and *Anthocoris nemorum* L. seems to prey on larvae as well as on eggs. An acarina and *Haplothrips aculeatus* F. also destroyed eggs. *Formica rufa* L. catches larvae that leave their mines and also inserts its mandibles into the mines and pulls the maggots out. The Anthomyid, *Coenosia tigrina* Fabr., frequently caught beet flies and sucked their blood. Various invertebrates, chiefly birds, destroyed various stages of the pest. These predators are polyphagous, and none are especially restricted to the beet fly. The reestablishment of the earlier ecological complex is scarcely possible but seems to be the only outlook at present for biological control of the beet fly.—*W. V. Balduf.*

7835. **GOURLAY, E. S. Parasites of the subterranean grass-caterpillar.** *New Zealand Jour. Sci. and Tech.* 12(6): 361-362. 7 fig. 1931.—The very injurious grass-caterpillars, *Porina despecta,* have been found to be parasitized by 2 spp. of native Tachinidae: *Hystricia lupina** and *Phorocera clathrata*. H. lupina* is larviparous, depositing the larvae in the sod. The larvae leave the host and pupate in the soil.

7836. **JACOB, C. T. Control of prickly pear by the cochineal insect.** *Nature* [*London*] 128(3220): 117-118. 1931.—Based on successful destruction of *Opuntia dillenii* in S. India by *Dactylopius tomentosus,* the writer suggests its use in S. Africa.

7837. **JAYNES, H. A. Notes on Paratheresia claripalpis Van der Wulp, a parasite of Diatrea saccharalis Fabr.** *Proc. Ann. Convention Assoc. So. Agric. Workers* [*U. S. A.*] 31: 420. 1930.—Abstract.

7838. **OSTERBERGER, B. A. Erax interruptus Macq., an interesting predator.** *Proc. Ann. Convention Assoc. So. Agric. Workers* [*U. S. A.*] 31: 422. 1930.—*E. interruptus* is of economic importance in sugar-cane areas as a predator of white grubs of *Euetheola rugiceps.*

7839. **SIMMONDS, H. W. Noxious weeds and their control in Fiji. Part 2. Biological control.** *Agric. Jour. Dept. Agric. Fiji* 4(1): 29-31. 1931.—Notes on the introduction and preliminary investigation of 3 insects, *Teleonemia lantanae, Liothrips urichi* and a Cecidomyiid, as seed-destroying agencies of *Lantana crocea, Clidemia hirta* and *Stachytarpheta indica,* respectively.

7840. **SMITH, HARRY S., and HAROLD COMPERE.**

An imported parasite attacks the yellow scale. *California Citrograph* 15: 328. Illus. 1931.—*Comperiella bifasciata* (Howard) was successfully established on *Chrysomphalus ficus* in California in 1924 by importation from the Orient but failed to breed successfully on the California red scale, *Chrysomphalus aurantii*. It has been recently found that this parasite will develop on the yellow scale of citrus, *Chrysomphalus citrinus* (Craw), and orchard tests are now in progress to determine the effectiveness of this parasitism.—*C. S. Pomeroy.*

7841. **THOMPSON, W. R. The principles of biological control.** *Ann. Appl. Biol.* 17(2): 306-338. 1930.—Organisms which have a direct specific action on certain others which they habitually injure or destroy may be considered as agents of biological control. Disease-producing organisms naturally become epizootic if conditions are favorable, but if not, the artificial distribution of the causative agent does not make them so. Among the invertebrate parasites and predators, entomophagous insects are the most effective and dependable of the organic checks to insect increase. The regulatory powers of birds and other vertebrates in relation to insect outbreaks are slight. Plant pests, to be controlled by phytophagous insects, must at least be made unable to reproduce or spread, whereas the action of the entomophagous insects need be much less intense in order to exert a perceptible effect as a controlling agent. Biological control has as its objects (1) the intensification of the action of natural enemies present in the area, and (2) the introduction of natural enemies absent from the area. (1) The host may be collected in large numbers and destroyed after the emergence of the parasites, or the population of the entomophagous insect may be artificially increased with the object of immediate reduction in damage by the host. Neither of these methods is likely, according to mathematical proof given, to produce results proportionate to the time and labor expended. (2) The attempt to accelerate the progress of an introduced parasite by liberating additional colonies yr. after yr. may have equally little effect. Parasites having the same effective rate of increase as the host can be helped by liberations but an enormous time is required before any perceptible effect is exerted. Spp. having a higher effective rate of increase than their hosts soon make the effect of repeated introductions negligible. We can encourage such beneficial insects as can be bred easily during periods when they are dormant in nature and their hosts are either dormant or not present in a stage attacked by the parasite or predator reared. Pests arriving from other regions have given rise to the introduction of natural enemies absent from the new home of the host. The establishment of all the primary parasites of an introduced species it is possible to obtain seems advisable. Reintroductions are justified where catastrophic factors have exterminated a beneficial insect. The entomologist may attempt to check a serious indigenous pest by introducing entomophagous insects attacking pests belonging to allied spp. which exist in other countries.—*W. V. Balduf.*

7842. [ZORIN, P. V.] ЗОРИН, П. В. К биологии Microgaster marginatus Nees (Hymenoptera). [Biology of M. marginatus.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(3/4): 220-224. 1 pl., 3 fig. 1930.—This sp. is being studied as a parasite for the control of the pests *Polia oleracea* and *P. suasa* in the Leningrad region. The egg, larval stages, and ♀ genitalia are described and figured. Under laboratory conditions, the ♀♀ each produced about 900 eggs in 2 weeks, and 1 ♀ may infect 10 or more individuals of the host.

ECONOMIC ENTOMOLOGY

INSECTICIDES AND APPARATUS

C. H. RICHARDSON, *Editor*

(See also in this issue Entries 6407, 7092, 7769, 7770, 7773, 7776, 7777, 7780, 7782, 7802, 7807, 7815, 7825, 7827)

7843. **ALLISON, J. R. Quantity of oil retained by citrus foliage after spraying.** *California Citrograph* 16: 481. 1931.—Lemon leaves retain more petroleum spray oil than orange leaves; the quantity of oil which may be safely retained is surprisingly small. In ordinary practise 1 cc. of oil is spread over 250 to 1000 leaves, or 1 drop spreads over a minimum area of about 8 × 8 inches.—*C. S. Pomeroy.*

7844. **ARIÉ, JACQUES. O uso da nicotina como insecticida.** *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 121-142. 1 pl., 5 fig. 1931.—A discussion of the composition and qualities of nicotine, and of the great increase in the use of nicotine sulphate and tobacco extract. Brazilian cord-tobaccos are rich in this alkaloid, many containing as much as 10%. The open vessel preparation of extract is condemned. Apparatus is figured and described for decoction in closed vessels.

7845. **BAIER, W. E. Research work on spray oil emulsion and emulsifier.** *California Citrograph* 16: 424-425. Illus. 1931.—Summary of an address. The research department of the California Fruit Growers Exchange has developed a type of jet pump using a specially designed nozzle which is very simple and effective in the "tank emulsification" of cheap petroleum oil or water soluble emulsifiers.—*C. S. Pomeroy.*

7846. **de ONG, E. R., and JOCELYN TYLER. Potassium xanthate as a soil fumigant. II.** *Indust. & Eng. Chem.* 20(9): 912-916. 1928.—Field and laboratory experiments with potassium xanthate as a soil fumigant were made on the beetle *Hippodamia convergens* Guerin and the root knot nematode, *Caconema radicicola* (Greef) Cobb. Potassium xanthate decomposes on exposure in an acid medium yielding CS_2 at varying rates, depending upon the concentration of acid present and the temp. In a neutral medium, decomposition is much slower and frequently fails to give toxicities sufficiently high to be considered practical. The advantages of xanthate over CS_2 alone lie (1) in the high solubility of the salt in cold water, thus permitting the solution to be carried downward into the soil by irrigation water or heavy rains; (2) in the graduated release of CS_2 from xanthate (based upon the formula used), permitting either quick evolution of gas or a slow release over a period of 10-12 days, while CS_2 volatilizes very quickly and dissipates at a corresponding rate except in heavy or in very set soils; (3) and in the greater safety with which potassium xanthate may be used as it has no explosive hazard. Xanthate solutions offer certain advantages over emulsions of CS_2 in that the latter are inconvenient to make and may break before penetrating deeply into the soil. Air samples drawn at varying distances from charges of xanthate and superphosphate showed measurable amounts of CS_2 15-46 cm. laterally, 3-5 days after the sample was placed in the soil. Similar amounts of CS_2 were recovered from the undisturbed sandy subsoil 13 cm. below the sample, but none from the undisturbed adobe subsoil immediately below the decomposed xanthate. Experiments with *H. convergens* showed the highest rate of mortality within the first 48 hr. exposure for a combination of xanthate and superphosphate ($CaHPO_4 \cdot 2H_2O$), the second highest being for combinations of xanthate, superphosphate and sulphur, while the lowest was for xanthate used alone. A gradual decline in toxicity to the beetles occurred when they were placed in the soil at intervals of 5, 10 and 15 days respectively, the mortality having dropped on the 15th day to from 5 to 10% for all experiments. Laboratory experiments with nematodes showed the possibility of 98 to 100% kill in 72-96 hrs. exposure where sufficient superphosphate or HCl had been used to decompose the xanthate. Field

experiments in the control of the root knot nematode gave better results with fall than with spring applications. The most satisfactory formula was 300 lbs. of potassium xanthate and 300 lbs. of superphosphate per acre. Test plants in this plot were 88.2% free from nematodes in comparison with the check showing 45% lightly infested and 36% heavily infested. Potassium xanthate may possibly be used as a practical soil fumigant on crops yielding high profits such as vegetables, citrus fruits and nursery stock. Eradication of nematodes cannot be expected but only varying degrees of control for 1 or 2 yrs.—*E. R. de Ong.*

7847. DUTTON, W. C. A method of modifying the lime-sulphur-lead arsenate spray to reduce foliage injury in the apple. *Proc. Amer. Soc. Hort. Sci.* 25: 332-333. 1928.

7848. GALLETTI, ALBIZZO CURINI. Metodo di ricerca dell'arsenico nelle ciliege trattate con soluzioni arsenicali per combattere il Rhagoletis cerasi. [Method of determining As in cherries treated with As preparations to combat R. cerasi.] *Italia Agricola* 68(8): 540-541. 1931.—A colorimetric method is described.

7849. HOUGH, W. S., and A. B. GROVES. Problems and experiences in removing spray residue from the 1930 apple crop. *Rept. Maryland Agric. Soc.* 15: 220-233. 1931.—Wiping machines (both cloth and brush types) removed 6-86% of the residue on apples. The average removal was only about ¼ of the total residue, which was not sufficient to bring all of the 1930 Virginia apple crop within the world tolerance of .01 gm. As_2O_3 per pound of fruit. Various methods of washing the fruit were employed in many Virginia orchards. When fruit was dipped by hand or floated, as in the paddle washers, in a bath of ½% HCl solution for 1 min., it was cleaned sufficiently to come within the world tolerance. Commercial washing machines equipped with the towel drying units were more satisfactory than machines equipped with air drying systems, because the former proved to be the only means of removing smears resulting from fungicides, dust and such insect residues as leafhopper specking or honey-dew from aphids. It was necessary to heat the acid bath by steam injection when fruit was washed in storage.—*W. S. Hough.*

7850. KOHTES, ROBERT. Chlorierte Kohlenwasserstoffe, Flit, Delicia und Dasselstäbchen in ihrer Wirkung auf die Hypodermalarven. [The effect of chlorinated hydrocarbons, "Flit," "Delicia," and "Dasselstäbchen" upon Hypoderma larvae.] 35p. Thesis, Tierärztliche Hochschule zu Hannover, 1929.

7851. KRÜGER, FRIEDRICH. Untersuchungen über die Giftwirkung von dalmatischem Insektenpulver auf die Larven von Corethra plumicornis. *Zeitschr. Angewante Ent.* 18(2): 344-353. 3 fig. 1931.—Dalmatian insect powder acts on the hypodermis, the muscles, and the nerve fibers. The injury to the nervous system is probably the essential point in the action of the pyrethrins, the toxic principles present in the powder.—*Author's summary (transl.).*

7852. LITTLE, V. A. Devil's shoe-string as an insecticide. *Science* 73(1890): 315. 1931.—Experiments show that aqueous suspensions of the powdered roots of *Cracca virginiana* have considerable promise as contact sprays for insect pests of plants; almost perfect results were obtained on various species of fleas and lice; and encouraging results were obtained on cattle grubs, *Hypoderma lineatum.*

7853. SPEYER, E. R. Tomato-moth caterpillar (Polia oleracea L.) *Exp. & Res. Sta. Nursery & Market Gard. Indust. Devel. Soc. Turner's Hill, Cheshunt, Herts, Ann. Rept.* 16: 69-70. 1930(1931).—The most satisfactory results in control were obtained with sodium fluoaluminate which exists in nature as cryolite.

7854. SUMMERVILLE, W. A. T. The control of the bronze orange bug. *Queensland Agric. Jour.* 36(2): 138-140. 1931.—A spray of resin, NaOH, fish oil, and water has been used successfully.

7855. YOUDEN, W. J. A nomogram for use in connection with Gutzeit arsenic determinations of apples. *Contr. Boyce Thompson Inst.* 3(3): 363-374. 2 fig. 1931.—A study was made from the biometrical point of view of arsenic determinations on apples. A nomogram was prepared showing the relation of sample size and number of samples to the final error for apple populations of different degrees of uniformity in As content.—*W. J. Youden.*

ANIMAL PRODUCTION

G. BOHSTEDT, *Editor,* General

M. A. JULL, *Associate Editor,* Poultry

(See also in this issue Entries 6175, 6177, 6181, 6182, 6185, 6189, 6192, 6194, 6197, 6198, 6201, 6204, 6213, 6685, 6806, 6811, 6816, 6828, 6838, 6846, 6928, 6937, 6957, 7365, 7366, 7377, 7711, 7786, 7874, 7933, 7941, 7966, 8413)

GENERAL

7856. BITSCHEFF, P. Камчийския конь. [The Kamtschia horse.] Годишникъ но Софийския университетъ, Ветеринарно-медицински факултетъ. (*Jahresber., Univ. Sofia, Vet. Med. Fak.*) 6: 49-78. 1930.—The Kamtschia horse is raised in the mountainous districts of eastern Bulgaria (the so-called Kamtschia region). It belongs to the group of the Arian ["Arieschen"] type, having a straight profile of head. This is a rather small but very strong mountain type of horse with much endurance, usually dark brown or dark red, measuring 126-137 cm. in height at withers, 121-34 cm. in height of back and 124 to 137 cm. in height of loin and 127-140 cm. in body length. The Kamtschia horse is an ideal work animal for mountain areas.—*A. Kalojanoff (transl. by A. H. Kuhlman).*

7857. BÜNGER, H., in Gemeinschaft mit P. BLÖCKER. Mastversuche mit Kälbern. *Züchtungskunde* 5(7): 312-325. 1930.—Fattened to about 100 kgm. live wt., drinking whole milk 3 times daily, 10 calves showed an average daily gain of 1.09 kgm. and required for each kgm. gain 10.9 l. milk. Whole milk yielded a return of 19.9 pfennig per l. Each kgm. of gain required: 0.38 kgm. digestible protein, 1.74 kgm. starch value, 1.40 kgm. milk dry matter. In the 2nd month of life the milk required for 1 kgm. of gain was about 40% higher than in the 1st. In the 1st 3 weeks of life 8 other calves were fed whole milk only and from the 4th week all but 5 l. of the whole milk was gradually replaced by buttermilk, to each l. of which 50 gm. "calf corn sugar" [Kälbermaiszucker] was added. The average daily gain to about 100 kgm. live wt. was 1.06 kgm.; the consumption of whole milk + buttermilk for each kgm. gain, 10.36 l. After subtracting the prices of buttermilk, "calf corn sugar," and the newborn calf, each liter of whole milk yielded a return of 27.5 pfennig. For 1 kgm. gain there was used 1.36 kgm. dry matter, 0.356 kgm. digestible protein, and 1.58 kgm. starch value. The buttermilk agreed with the calves very well. The quality at slaughter was the same as that from whole-milk fattening.—*H. Bünger (transl. by M. H. Keith).*

7858. BURNS, ROBERT H. Wool shrinkage determination by means of small samples. *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 141-203. 1930(1931).—The author concludes that small samples, taking representative handfuls from 50 fleeces, make satisfactory samples for shrinkage tests as far as can be determined by correspondence of duplicate samples. These samples

should always be taken in duplicate. The expectancy is that the duplicate samples will vary less than 2% in shrinkage. Larger differences in shrinkage between duplicate samples were associated with larger differences in commercial grading between the duplicate samples. There was no definite association of larger dirt differences between duplicate and larger shrinkage differences.—*Author's conclusions.*

7859. **CAMPBELL, K. W. D. Possible influence of the milker on the quantity and quality of milk of the individual cow.** *Agric Progress* 8: 114-120. 1931.

7860. **CROSS, WILLIAM E. El empleo de la Melaza en la alimentación de los animales. [Use of molasses for stock feed.]** *Vida Agricola* 6(66): 455-462. 1929.—Recommends using molasses as stock feed and describes different methods, giving formulas for daily rations for different animals; also treats of manufacture of molasses feed.—*W. E. Cross.*

7861. **DARLOW, A. E. Factors that affect the quality of wool.** *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 195-196. 1930(1931).—The author found a positive correlation between diam. and length of 0.10-0.55; a negative correlation between diam. and crimp of 0.05-0.87; a positive correlation between diam. and breaking strength of 0.25-0.82; a negative correlation between crimp and stretch and crimp and breaking strength; and a rather large positive correlation between stretch and breaking strength.

7862. **DESSOMVIELE, R. Veevoeding en productiewaardeeenheden. [Stockfeeding and productive value units.]** *Onze Ploeg [Louvain]* 9(10): 308-314. 1930.—A comparison of the various units of productive value of feeds, proposed during the last half century (Thaer's hay value; the Scandinavian "feed unit"; Wolff's carbohydrate value; Kellner's starch value; Hansson's milk value; Armsby's net energy value) indicates that, for stock feeding, 1 therm = 1.000 cal.; 1 feed unit = 1.650 cal.; 1 kgm. starch value = 2.365 cal.; and, for milk production, 1 feed unit = 2.100 cal.; and 1 kgm. milk value = 2.800 cal.—*R. Dessomviele.*

7863. **DUERDEN, J. E., and EVLYN BOYD. The blackhead Persian. A primitively-coated fat-rumped sheep.** *Union So. Africa. Dept. Agric. Bull.* 82. 1-46. 26 fig. 1930.—The Blackhead Persian, indigenous to Somaliland and Arabia, was introduced into South Africa recently where by selection it has become raised into a distinctive breed with fixed characteristics. The Stud Book qualifications are given. Its manner of introduction is traced and the general characters of the breed are given. The most distinctive are the pure black head and neck and the dull white body; also, the marked deposition of fat around the tail and hind parts of the body. The salient features of the farming of the Persian are described, and also experiments in crossing with the Merino and Suffolk. During the fetal stage the tail is long, with small pads of fat down each side, when it resembles that of the fat-tailed sheep, such as the Karakul, Afrikander and Woolled Persian. The fat-rumped condition is therefore a later development, but the fat-tailed stage reappears in the fetus of each individual. The covering of the Persian is primitive and ancestral, resembling that of wild sheep, and comprises an outer coat of coarse medullated fibers, the kemp, and an inner coat of fine wavy fibers, the wool. On account of its primitive nature it serves as a basis for a study of the evolutionary changes, which have taken place in the coat of the many different breeds of domestic woolled sheep. Four distinctive types of fibers occur in the coat: (a) Kemp, coarse and medullated; (b) Wool, fine and mostly non-medullated; (c) Heterotypes, kempy above and woolly below; (d) Gare, intermediate in thickness between kemp and wool and medullated. Kemp fibers constitute the definitive covering of the Persian, and are distributed over the whole body, varying in length in different regions. They are stiffly wavy in 1 plane, overlapping and inclined backwards, and give a smooth surface to the body. The wool occurs as an entangled irregular mass of fine wavy fibers round the lower part of the kemp, not grouped into tufts or staples as are the fibers in woolled sheep generally. It is best developed over the shoulders, back and sides and very sparse elsewhere, but varies in amount with climatic and other conditions. The individual fibers are approximately circular in section in contrast with the oval form of the kemp; some of the thicker fibers show a feeble discontinuous medulla. All fibers, both kemp and wool, have at first long solid tapering tips. Within a few months of birth these begin to break off in successive short fragments, leaving the fibers with smooth or jagged truncate ends. The small fragments fall away, not accumulating at the surface, as in the denser coat of the Merino. The coat undergoes complete seasonal shedding towards the end of the winter. The kemp fibers are mostly thrown off separately, while the wool as a whole forms a dense mat with some entangled kemp. Two stages are represented: the liberation of the fibres from the socket; and their passage to the surface. Prior to shedding a copius exudation of yolk takes place. The lamb is born with the kempy coat well developed and with only a small quantity of wool, and in the fetus the kemp fibers appear prior to the wool. The direction of the fibers is similar to that in the adult, the whorls on the sides of the body and in the axillary and inguinal regions being distinct. The coat of the lamb passes insensibly into that of the adult, no marked change in the nature of the constituent fibers taking place. The tapering tips of the fibers are angulated, giving a sickle- or whip-like appearance, due to the fact that the growing fibers do not emerge from the socket directly, the tip traversing the epidermal layer for some distance. The physiological readjustments consequent on birth and exposure leave an impress on the growing fiber, a slight narrowing taking place in the part grown immediately following on birth. In all woolled sheep the coat has undergone departures from the primitive condition represented in the Persian. In the main these consist in a reduction in the importance of the kempy coat and an increase in that of the woolly coat, though in the Mountain Breeds the heterotypes have increased in significance. The more primitive stage however tends to be repeated in the early lamb, the transformation taking place later. In the best-bred-Merinos the kempy coat may wholly disappear in the adult, the fleece then consisting of pure wool fibers. The evolutionary changes also involve a reduction in coarseness of the kemp fibers and an increase in the thickness of the wool, compared with those of the Persian and other wild sheep. Despite domestication for a long period, the coat of the Persian has in no way undergone any evolutionary change. The modifications in the domestic woolled sheep must be the result of germinal mutations, not of domestication in itself. Selective breeding in the woolled sheep aims at the complete elimination of kemp, and at the higher quality and greater uniformity of the wool. By contrast, selection in the Blackhead Persian is directed towards improvement in the conformation of the body, and has resulted in its recognition as a standardized breed.—*Authors' summary.*

7864. **FILIPOVIĆ, STJEPAN. Konstrukcija kravljeg vimena i omjer izlučenog mlijeka u prednjim i zadnjim njegovim čertvrtima. [Formation of the udder and the ratio of milk secreted in front and hind quarters.]** *Gospod.-Šumarski Fakult. Sveučil. Kraljev. Jugoslavije u Zagrebu, Spomenica Fakult. Savjeta (Fac. Agron. et Forest. Univ. Roy. Yougoslave Zagreb, Mém. Cons. Fac.)* 1919-1929: 532-536. 1929.—The udder of the cow is formed according to mathematical laws, especially the law of the geometric mean. This relation exists between the dimension of the two front and hind quarters and also between the breadth and height of the front half as contrasted to the rear half. The breadth of the front (s^1) and hind (s^2) quarter of the udder show the ratio $s^1 : s^2 = 5 : 3$. The height of the front quarter (v^1) and hind quarter (v^2) are in the relation $v^1 : v^2 = 5 : 3$, while the length of the same quarters vary in the ratio $d^1 : d^2 = 4 : 5$. The relative milk volumes are in the ratio $V^1 : V^2 = 4 : 5$. This is an average or general rule with many exceptions. As many as 16% of the cases showed less

secretion in the front quarters than in the hind and 5% of the cases showed the same amount of milk secretion in both. The fact that in a great majority of cases the 2 hind quarters secreted about 25% more milk than the fore-quarters is of considerable practical importance.—*Author's summary (transl. by J. L. Lush).*

7865. HANSSON, NILS, H. EDIN, och SVEN BENGTSSON. Betydelsen av majsens finfördelning och stöpning vid utfodring av gödsvin. [On importance of fine milling and steeping of maize for fattening pigs.] *Meddel. Centralanst. Försöksväs. Jordbruksområdet* 385. 1-42. 1930.—The bulletin reviews experiments concerning the ability of pigs, especially, to utilize grain ground to different degree of fineness and also soaked, cooked and fermented grain. Also, detailed account is given of very extensive Swedish experiments with corn. Crushed grain was utilized 5-6%, coarse ground grain 10-12 and fine ground grain 15-18% better than whole grain. Cornflakes seem to have the same value as fine ground corn. Soaking for 24-28 hrs. has not influenced the digestibility, nor has fermenting of the grain, whereas cooking has increased the digestibility a little but not to such a degree as to pay the expense. Even when the daily allowance of corn was gradually increased to 75% of the concentrates no bad influence on the firmness of the pork could be observed. Dairy offals were fed plentifully as a supplement. Fine ground dry corn was easier taken in by the pigs than coarse ground corn whereas soaking fine ground corn in warm dairy offals rendered the intake more difficult. Good agreement could generally be observed between the results of the digestibility trials and those of the practical feeding experiments, which fact enhances the confidence in the 2 methods for ascertaining the effect of feeding stuffs.—*N. Hansson.*

7866. HENRY, MAX, and E. A. ELLIOTT. Sheep lick trials at Glen Innes [N. S. Wales]. *Agric. Gaz. N. S. Wales* 42(5): 390-397. 1931.—Trials testing 3 kinds of licks were carried out with 4 lots of sheep of 80 Merino ewes each. As regards fertility, results were as follows: Group A—receiving Cystine Os, 80%; group B—receiving bone meal, 90.41%; group C—receiving iodine, 85.3%; and group D—receiving no lick, 80.54%. Group A gave the greatest percentage of samples showing change in growth with 88%, group D being least with 66%. In each group a certain amount of unsound wool was found. Group A showed the greatest amount of unsoundness. So far as the maintenance of weight of adult sheep is concerned, there is no advantage in providing any of the three licks when sheep are run under the conditions and on the country on which the experiment was conducted.

7867. HENSLER, KURT. Die Ziegenzucht in der Pfalz. Entwicklung und heutiger Stand. Volkswirtschaftliche Bedeutung der Ziegenzucht. *Landwirtsch. Jahrb. Bayern* 20(12): 738-747. 1930.—The goat utilizes feeds most economically of all domestic animals. Anemia from the use of goat's milk is due to excessive and unbalanced use. The social, industrial and agricultural (peasant farming) organization of the Palatinate is the basis for an extensive goat industry, and virtually makes goat raising a necessity. White hornless Saanen-type goats are most numerous. They are the result of crossing the native goat, representing the mixing of German, Celtic and Moor ("Torf") goats, and the original hornless Saanen goat. For a long time there was opposition to the goat in the Palatinate on account of its injurious effect on forests as is shown by government regulations of 1738, 1769 and 1791. Advancement in goat breeding began about 1890. The goat registry association of the Palatinate represents 60% of the industry. Approval of males used for breeding is compulsory. They are owned by the society and loaned to members. Prices of goats rose enormously during the world war and retarded progress about 10 years. Most of the growth of the ♀ is attained at the end of the first yr. and of the ♂ at 2 yrs. The goat of the Palatinate is not yet fixed in type and body measurements vary considerably. Well developed ♀♀ are 75-76 cm. high at the shoulders, have medium to strong rumps, strong constitutions, and good health. Milk yield is about 700-800 liters, and the dressing percentage is 56-58%. Deteriorations observed near the close of the 19th century were the results of faulty care and management, combined with inbreeding without selection. Improvement has been obtained through organization of the herd book, performance tests, development of the goat breeders' society, financial support of government, agricultural and community organizations, and information for the breeder on proper feeding, management and breeding.—*K. Hensler (transl. by A. H. Kuhlman).*

7868. HONCAMP, F., W. SCHRAMM, und H. STOTZ. Weitere Untersuchungen über die chemische Zusammensetzung und den Nährwert von Gelbhafer und Weisshafer. *Zeitschr. Tierzücht. u. Züchtungsbiol.* 11(3): 433-444. 1928.—Analyses and digestion experiments with sheep indicate no significant differences among the 4 kinds of oats examined. The feeding value was slightly higher when the oats were coarsely ground than when fed whole. Percentages of digestible nutrients reported for the 4 kinds of oats: Crude protein 9.12, 11.66, 7.63, 10.84; true protein 8.35, 10.71, 7.07, 9.81; N-free extract 53.57, 52.49, 55.82, 54.58; ether extract 5.57, 5.26, 5.24, 5.59; percentage of digestible nutrients in the crude fiber, 2.23, 4.09, 2.74, 3.12.—*M. H. Keith.*

7869. HUGHES, E. H. The relation of nutrition to necrotic enteritis in young growing pigs. *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 237-242. 1930 (1931).—Pigs fed the basal ration (rolled barley, 83%; tankage, 7%; linseed oil meal, 3%; chopped alfalfa hay, 5%; precipitated $CaCO_3$, 1%; NaCl, 1%) recovered rather quickly from a condition known generally among pork producers as necrotic enteritis. The addition of $CaCO_3$ (1%) to a ration of rolled barley and salt, which contains a high P content, resulted in this instance at least, in complete recovery.—*Author's summary.*

7870. IVANOW, ELIE. L'insémination artificielle des mammifères en tant que méthode scientifique et zootechnique. *Rev. Gén. Sci. Pures et Appl.* 41(3): 73-80. 1930.—A review of practice of artificial insemination. Description of laboratory in Russia for study of practical application of artificial insemination to horses, training of veterinarians to undertake methods, and proposed application to other animals.—*M. Goettsch.*

7871. KUROSAWA, R. Über die Frühdiagnose der Trächtigkeit bei der Stute durch vaginale Untersuchung, insbesondere durch Untersuchung von Scheidenschleim. [Early diagnosis of pregnancy in mares by investigation of the vagina, especially by investigation of the vaginal mucus.] *Tierärztl. Rundschau* 37(20): 345-348; (21): 361-365. 8 fig. 1931.

7872. LANDIS, J., und H. BURCKHARDT. Schweinemastversuche mit "Provendéine." *Landwirtsch. Jahrb. Schweiz* 44(3): 369-382. 1930.—Large claims in advertisements in the farm press have been made for "Provendéine," a supplementary feed preparation which is said to stimulate the appetite of pigs, to aid digestion, and to bring about rapid growth and fattening. It is claimed to have antirachitic properties and to stimulate remarkable development in both unthrifty and normal pigs. Special virtues were said to be due to enzymes present in this material, especially diastase, but also minerals and vitamins, the latter due to treatment with ultra violet light. "Provendéine" was found to be made up of rice and corn meal, dicalcium phosphate, and calcium carbonate, with additional aromatic principles. Enzymes were claimed to have been added and the whole material irradiated. The gross analysis proved to be 9.1% water, 32.0% ash, 8.5% crude protein, 6.8% fiber, 39.1% N-free extract, and 4.5% fat. On the basis of authors' investigations in which practical swine rations were supplemented with "Provendéine," it proved uneconomical and they are unable to recommend to swine growers the use of "Provendéine" as supplied to them by the manufacturers. The original firm meanwhile went into bankruptcy but the successors have announced that "Provendéine has recently been markedly improved and much smaller dosages are now permissible." This latest

product, sold under the same name, is to be tried out in a similar manner.—*G. Bohstedt.*

7873. **MANGOLD, E., und W. LINTZEL. Über die Jodfrage in der Tierernährung.** *Mitteil. Deutsch. Landw. Ges.* 45(28): 615-616. 1930.—In goitrous regions, human beings can best be protected by common use of iodized salt containing 0.5-1 gm. KI per 100 kgm., the amount being controlled by a central agency. Domestic animals might also be protected by use of salt containing the amount of I normally present in their feeds in non-goitrous regions, namely 1-2 gm. KI per 100 kgm. This should also be controlled by a central agency. The suggestion for increasing the milk production and the I content of the milk by feeding large amounts of I to dairy cows is opposed, because possibly dangerous to the cows and surely uncertain as to the amounts to be used and the results to be expected. Considering that even slight excess of I beyond the needs may work injuries, such milk of high I content might become a public danger.—*M. H. Keith.*

7874. **NORDBY, J. E. Quintuplet lambs, an unusually large family.** *Jour. Heredity* 19(9): 384. 1 fig. 1928.—A record of a Rambouillet × Cotswold cross-bred ewe which dropped 5 lambs at 1 birth, all alive and vigorous. She had previously given birth to twins.—*L. M. Dickerson.*

7875. **PAWSON, H. CECIL. Sheep breeding in Northumberland.** *Jour. Min. Agric.* [*Gr. Britain*] 36(12): 1152-1158. 5 pl. 1930.—About 1 sheep per acre of pasture is maintained. Border Leicester, Cheviot, and Scotch Blackface breeds are used. Border Leicester rams × Cheviot and Blackface ewes progeny are called "Half-bred" and "Mules" respectively. After using Oxford Down, Border Leicester, Ryeland, Hampshire, Suffolk, Oxford × Border Leicester and Suffolk × Border Leicester rams on these first cross ewes at Northumberland Experiment Station, the present practice is to use Oxford rams with Half-bred ewes and Suffolk rams with Mule ewes, all lambs being fattened and sold.—*B. L. Warwick.*

7876. **PORCHER, CH[ARLES]. Dry milk. (Transl. from the 2nd ed. of "Le lait desséché.")** 309p. Olsen Publ. Co.: Milwaukee, 1929. Pr. $6.—Of biological interest are the chapters dealing with the uses of dried milk in human and animal feeding; digestibility of dried milk and the microbiology of dried milk.

7877. **RAETZELL, HERMANN. Die Entwicklung der Rindviehzucht und Rindviehhaltung im Bezirk Hildesheim.** 126p. Dissertation, Landwirtsch. Hochschule zu Berlin, 1928.—Climatic and soil conditions, yield of leading crops, and size of farms in the district of Hildesheim, Hanover, have been favorable for the development of the livestock industry. The development during 1764-1864 indicates that considerable attention was given to feed utilization by the various types of cattle raised in the region, which were used for milk, meat and work. The effects of the World War exerted a tremendous influence on the cattle industry. From 1919 to 1925 consistent gains have been recorded in the number of cattle in all sections of the district. Comprehensive measures have been devised to encourage the production of better cattle for both beef and dairy purposes. These are concerned with the control and eradication of diseases, especially foot and mouth disease and tuberculosis, the introduction of good sires, the rigid selection of all breeding animals, the records of production for determining performance, the use of better rations, a better knowledge of type through judging demonstrations, the establishment of public shows and markets for breeding animals. —*A. H. Kuhlman.*

7878. **RICHTER, K., K. E. FERBER, und K. CHRZASZCZ. Ein weiterer Beitrag zur Frage der Roggenfütterung an Schweine.** *Mitteil. Deutsch. Landwirtsch.-Ges.* 45(38): 804-806. 1930.—The question whether rye is adapted for use as the sole grain for fattening swine only in combination with protein feeds was studied on 2 groups of 10 and 11 young fattening swine, of which one received potatoes, the other rye as the principal fattening feeds. Rye proved non-injurious; it was tolerated as the principal feed. The rye group was not quite equal to the potato group at slaughter, but the difference was within the limit of error. The additional slaughter tests showed that the swine fed rye yielded a very good quality of flesh and fat (lard, bacon(?)).—*K. E. Ferber* (*transl. by W. E. Joseph*).

7879. **SAITO, M. On the dialyzable nitrogen of fresh milk.** [In Japanese, with English summary.] *Bull. Myazaki Coll. Agric. & Forestry* 3. 1-7. 1931.—When the dialyzate is concentrated into syrup in vacuum at low temp., some unknown nitrogeneous substances (constituting 2.3-2.8% of total N of milk) can be precipitated by phosphotungstic acid. They show strong ninhydrin reaction, but no biuret reaction or ordinary protein reactions. Of this diffusible N, ¼ exists in amino-form and the remainder in combined form; very small amounts of free ammonia are present (0.02-0.06% of total N of fresh milk). When milk is heated to boiling for 30 min. the ammoniacal N increases relatively. When milk is subjected to lactic fermentation, the amount of the diffusible N increases at a very slow rate but the N distribution is completely changed in the dialyzate; the combined portion of N disappears, being decomposed into ammoniacal and amino N. Irradiation with ultra-violet for 2½ hrs. does not change the amount or distribution of diffusible N. When milk is coagulated by rennet, a part of its diffusible N is absorbed in the coagulum.—*From author's summary.*

7880. **SMITH, WILLIAM W. The elements of live stock judging.** 2nd ed., edited by KARY C. DAVIS. 151p. 82 fig. J. B. Lippincott Co.: Philadelphia, 1930.

7881. **SNAPP, ROSCOE R. Beef cattle: their feeding and management in the corn belt states.** (The Wiley Agricultural Series.) 2nd ed. rev. viii+494p. John Wiley & Sons, Inc.: New York; Chapman & Hall, Ltd.: London, 1930. Pr. 20s.

7882. **SPILDO, LARS S. Vurdering av melkekyr. En kort sammenligning av forskjellige maleenheter. [Evaluation of milk cows. Short comparison of various methods.]** *Nordisk Jordbrugsforsk.* 1930(6): 398-410. 1931.—The author begins with a review of the factors that have greatest influence on milk production. He divides them into 2 groups: The physiological, and the breeding or genetic. Two viewpoints, the economic and physiological, are, as a rule, unfortunately associated in practise. The milk value in human and stock feeding is based upon its content of energy and fat. The author draws comparisons among the different systems of expressing the milk value: those of Møllgaard, Sandmann and Overman, Gaines and Davidson, and the system used in Scandinavia. He discusses the suitability of these systems under the different conditions, in order to show the effect of the feed given to the cow. He finds that the only usable method for that purpose is that which expresses the energy content in the milk.—*L. S. Spildo.*

7883. **STOUTAMIRE, RALPH. Goats in Florida.** *Dept. Agric. Florida Bull.* 37. 6-28. 14 fig. 1930.

7884. **THOMPSON, C. P. Preparation of darso for fattening hogs.** *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 232-234. 1930(1931).—Tests with 6 lots indicated that grain sorghum heads can not be successfully fed to hogs and that grinding decreases rather than increases their feeding value, no doubt due to the fact that the heads contain an excessive amount of crude fiber which the hogs are unable to separate from the grain when finely ground.—*Author's summary.*

7885. **WASHBURN, R. M. Productive dairying.** (Lippincott's Farm Manuals, edited by K. C. DAVIS.) 4th rev. ed. 438p. 133 illus. J. B. Lippincott: Philadelphia, 1931.

7886. **WOOD, D. R., E. T. ELLING, and A. E. FLETCHER. The diphenylamine test for nitrates in milk as a means of detecting added water, and the effect of drenching cows with "nitre."** *Analyst* 56(661): 248-249. 1931.—No samples of genuine milk have been positive for nitrates, even after drenching cows with "nitre"; the test has detected as low as 5% of added water containing 0.5 part per 100,000 of N as nitrates.

7887. ZORN, W., K. RICHTER, und K. E. FERBER. Über eine Methode die Festigkeit eines Specksobjectiv festzustellen. *Züchtungskunde* 4(10): 457-462. 2 fig. 1929.—The Mangold sclerometer is described as used to measure the hardness of bacon. By means of a lever arm a scale shows the distance to which a rod penetrates the bacon under a given load. Uniform, perfectly rectangular blocks $6 \times 2.5 \times 2$ cm. were cut, always from the same part of the side of bacon, and tests were made at 16-18° with the block on its broad face and on its long side. In each position 5, 10, and 20 g. loads were applied 1 cm. from each end and midway between the ends. These values are reported for 56 samples together with the "hand grades," the I numbers, and the saponification numbers for the bacons. The "hand grades" are rather indefinite, but of the 3 objective methods of judging the hardness only the sclerometer method could replace them.—*M. H. Keith.*

7888. ANONYMOUS. Atlas international zootechnique. 1. Atlas international des bovins. Allemagne. Hongrie, Pays-Bas, Suisse. (International cattle atlas. Germany, Hungary, Netherlands, Switzerland.) Vol. I. Germany, p. 1-63. 18 fig., 1 map; Hungary, p. 1-56. 26 fig.; Netherlands, p. 1-45. 6 fig., 1 map; Switzerland, p. 1-47. 8 fig. Bestetti & Tumminelli: Rome, 1930.—The work consists of maps showing the distribution of cattle breeds, varieties and strains, and density of stocking in the various countries and continents, with text in English, French and German, discussing climate, soil, agriculture, cattle breeds, breeding and breeding conditions and economic factors for each geographic unit.

POULTRY

7889. ANGHI, CSABA GEYZA. Az "Y-O" hatása a baromfi fejlodésére. (The influence of the "Y-O" on the development of poultry.) [With English summary.] *Mezögazd. Kutat.* 2(9): 381-401. 1929.—"Y-O," a preparation containing vitamines A, B, and D, was added to the ration of 3 groups of poultry. One group (I) was maintained as a control, group (II) received 2% "Y-O," and group (III) 5% in the food. Groups I, II, and III, contained only normal birds. Group IV, which consisted of poorly developed birds, got 5% of "Y-O." At the end of the experiment, group III showed the best growth namely, a total increase of weight amounting to 4365 gm. The growth rate diminished with increasing age; but in spite of this the increase in weight of group III was 2220 gm. at the 2nd mo. of the experiment,—75 gm. more than in the 1st month. The growth rate was much greater in cocks than in hens. 5% of "Y-O" accelerated feathering very little. The body measurements expressed in % were the best in group I. The length of the thigh was greatest in the cocks and hens of group III. The food was utilized best in this group; this group ate the least food except the normal ones (12000 gm.), and gave the greatest increase. A dose of 2% of "Y-O" has only a slight effect on development. The development of group IV was bad at the beginning of the experiment. The influence of "Y-O" was considerable in this group. The development of the normal poultry growth is favourably influenced by giving 5% "Y-O" in the food.—*From author's summary.*

7890. ATWOOD, H. A study of the time factor in egg production. *West Virginia Agric. Exp. Sta. Bull.* 223. 11p., 1 fig. 1929.—172 White Leghorn pullets were trapped hourly beginning at 8 a. m. and ending at 5 p. m. during the month of August. 1 yr. later the same birds were trapped in a similar manner. The data showed: The longer the cycle the shorter are the intervals between the laying of successive eggs. The interval between the laying of the last 2 eggs in a cycle is usually greater than any other interval in the cycle. The intervals at or about the middle of the cycles are shorter than the intervals at either extremity. As the birds become older the intervals between the laying of successive eggs become longer. The shorter average intervals between the laying of successive eggs are usually associated with the better layers. The regularity with which birds lay later and later on successive days affords means by which trap nest records may be checked with a high degree of accuracy when the time of laying is recorded for each day.—*H. Atwood.*

7891. BUCKNER, G. DAVIS, J. HOLMES MARTIN, and W. M. INSKO, Jr. Some chemical factors governing egg formation in hens. *World's Poultry Congress* 4(Sect. B): 330-333; résumé sect. 40-41. 1930.—The conditions governing the formation of eggs in hens are briefly discussed and attention is called to some of the chemical reactions entering into the nutrition of the hen and the formation of eggs. The H ion concentration of the separate divisions of the alimentary canal and their contents are given and discussed. The percentage of calcium in the venous blood leaving the intestines of laying hens is larger than that of the arterial blood going to the intestines. The percentage of Ca in the blood of the left ventricle of the heart of the same hen is intermediate between these two values. When laying hens that were fed a yellow corn-skim-milk-calcium carbonate ration were deprived of the calcium carbonate, the average number of eggs laid, the average weights of the eggs and egg shells, and the average content of Ca in the blood became smaller as the experiment progressed. This decrease in the concentration of Ca in the blood may be associated with the lowered hatchability of eggs produced under the same conditions. The H ion concentration of the mucosae of the various sections of the oviduct, of the albumen found in the albumen-secreting section, and of the uterus was determined. The difference in the acidity of the mucosae of the various parts of the oviduct suggests an association with the secretion or formation of the shell membrane and egg shell. The possible means of depositing the calcium carbonate of the egg shell are discussed.—*Authors' summary.*

7892. ELMER, ROMA C., FRANK C. HILBERG, and PAUL E. HOWE. A study of squab and pigeon flesh particularly with regard to the distribution of protein. *World's Poultry Congress* 4(Sect. B): 278-284; résumé sect., 34-35. 1930.—The results indicate more nitrogen (protein) and less water in pigeon flesh than in squab. There is approximately the same amount of total soluble N and only a slightly higher amount of non-protein N in the case of the squab, therefore, a higher percentage of total soluble protein N (total soluble N minus non-protein N). A greater amount of insoluble N, i.e., connective tissue and outer layer of fibres, was found in the pigeon than in the squab. This difference was borne out by personal observations of the toughness of the breasts of pigeons, as compared to squabs. No definite differences in the distribution of the various protein fractions, para-myosinogen, myosinogen and albumin, was observed although the average results indicate a slightly higher proportion of globulin I and a lower proportion of globulin II in the squab. Data are also presented on the distribution of the various edible portions of the carcass of squabs and pigeons, which show that the percentage of breast muscle and of total edible material is lower in squabs than in pigeons.—*Authors' résumé.*

7893. HAGEDOORN, A. L. Different ways in which a geneticist can co-operate with poultry breeders. *World's Poultry Congress* 4(Sect. A): 116-119; résumé sect., 13-14. 1930.—The following lines of theoretical work are of interest to breeders; Genetical analysis of differences, including sex; correlation studies as an aid to selection for productivity; study of inbreeding and heterosis; inheritance of disease resistance; inheritance of differences in productivity and hatchability. The following are suggested as branches of practical work which might be done in cooperation with breeders: production of new breeds by adding a genetic factor to an established breed; establishing a new recessive variety of an established breed; experiments with hybrids and their progeny; teaching principles of genetics to breeders, journalists and official advisors; establishment of a consultation bureau for applied genetics; cooperation with

officials in devising improved systems of laying tests.—*Author's summary.*

7894. **HANSSON, NILS. The nutrition of egg-laying hens.** *World's Poultry Congress* 4(Sect. B): 268-277; résumé sect., 34. 1930.—The animal husbandry section of the Swedish Agricultural Experimental Station at Stockholm has found that Swedish limestone gravel is not a suitable substitute for imported mollusc shells as the source of mineral food for shell formation. Treatment of chickens with ultraviolet light increased their food consumption and growth, but increased the food consumption per kg. of growth (1% of cod liver oil was mixed with the ration). The general nutritive requirements of hens were shown to be dependent mainly on the intensity of egg production, but also upon the weight of the hens and the time of yr.—*Author's summary.*

7895. **HEUSER, G. F., and L. C. NORRIS. The influence of the protein level on the rate of growth in chickens.** *World's Poultry Congress* 4(Sect. B): 307-316; résumé sect., 38. 1930.—A study of the rate of growth of chickens shows that the % rates of gain begin very high, with an average of 40.4% for the first 4-week period, which decreases during the following 4-week periods to 22.9, 13.9, 7.0, 5.8, and 3.5% resp. At the end of 24 weeks, these birds had not yet reached maturity, but their rate of gain was small. In order to get maximum results in early growth in chicks, it is necessary to furnish a ration with a fairly high protein content. Conversely, by limiting the amount of protein, it is possible to restrict growth. The results of several experiments indicate growth up to 8 weeks in the expected order, according to the protein level, up to about 20%. Theoretical curves showing rates of gain up to 20 weeks portray normal growth as represented by a 2-moment parabola having the formula $y=a+bx+cx^2$. Early sub-normal growth may be compensated for and the same mature weight attained if the protein level later becomes adequate. There is probably a level of protein below which one cannot safely feed, because of such severe stunting that it is never entirely overcome. The chicks on lower protein rations do not show greater gains than the normal lots until the periods of greatest actual gain are past, in the present data (for pullets) at about 10 weeks of age. Growth and accompanying protein requirements may be divided into 3 periods. (1) the first 6-8 weeks, when growth is rapid and a high protein level needed; (2) from the end of the 1st period to 12-14 weeks, when growth is less rapid, and the protein level can be decreased; (3) from the end of the 2nd period to the end of the growing period, when growth is further decelerated, and the protein level can be again decreased.—*From authors' summary.*

7896. **KNANDEL, H. C. The confinement method of poultry and turkey management.** *World Poultry Congress* 4(Sect. B): 334-341. 2 pl.; résumé sect., 41-42. 1930.—From experimental data the following conclusions are drawn: Eggs from fowls reared and maintained in confinement for 3 generations hatch very satisfactorily. Chicks hatched from eggs laid by fowls reared and maintained in confinement make uniformly good growth. Mortality for chicks raised in confinement is low. All fowls possess deep yellow pigmentation throughout the rearing period and at maturity. When fowls are raised by this system, less land is required. No tape- or round-worm infestations in the intestines, but isolated cases of cecal worms, have been observed. The flesh of fowls reared in confinement is of excellent table quality. The mash and grain consumption per Single Comb White Leghorn and Barred Plymouth Rock pullet for the first 24 weeks was 19.67 lb. and 22.78 lb., respectively. The confinement method of rearing chicks is not advocated except in cases where poultrymen have experienced great difficulty in rearing chicks on range due to round- and tape-worm infestations. The rate of growth obtained in turkeys was greater than that reported by other investigators. The mash and grain consumption per bird for the first 24 weeks was 58.05 lb. and 56.12 lb. for the Bronze and White Holland varieties respectively. As the birds approached maturity, the pounds of feed required to produce a pound of gain increased from 2.56 to 7.71 lb. The protein intake remained at a high level until the 18th week, varying around 20%. From the 18th to the 24th weeks, the level decreased from 20.2% to 14.8%. More than 93% of all turkeys started were raised to market age. The loss from blood and feather dressing for males was 9.5%, for females 10.4%. The full drawn birds showed a shrinkage of 24.2 and 24.7% for males and females respectively. These differences are due to size, not to sex. Excellent market birds were produced in complete confinement.—*Author's summary.*

7897. **LOMAX, ERIC B. Some protein feeds for poultry.** *World's Poultry Congress* 4(Sect. B): 241-244; résumé sect., 28-29. 1930.—The value of several protein supplements for egg production by White Leghorn pullets was investigated. The feeds tested were meat meal, meat meal with minerals, extracted soy bean meal with minerals, decorticated extracted peanut (*Arachis*) meal with minerals, and fish meal. Tentative conclusions drawn from the 2 yr. work indicate that no statistically significant differences were obtained in egg production among the pens tested. Present indications lead us to believe that a variety of protein foods in rations for poultry gives more economical returns than those obtained from a single protein concentrate. This is attributed to the greater selection of amino acids upon which the fowl is able to draw for its needs.—*From author's summary.*

7898. **PRENTICE, J. H., R. G. BASKETT, and G. SCOTT ROBERTSON. The nutrition of the chick and its effect on growth, maturity, egg production and mortality.** *World's Poultry Congress* 4(Sect. B): 224-233. 1 graph.; résumé sect., 26-27. 1930.—Experimental work with White Wyandottes shows that the best growth and rearing results are obtained when a mash of mixed cereal feeds is supplemented by separated milk to drink, and that, compared with a similar mash, but with water to drink, the birds are more than twice as heavy when 13 weeks old, and mature at about 137 days, compared with 186 days in the latter case. Attempts to improve the ration of mixed cereals and separated milk to drink by the addition of protein-rich and mineral feeds resulted in no substantial increase in growth rates. A mixed cereal mash to which was added 18% of extracted soy bean meal and 3½% of a mineral mixture (based on the minerals in milk) in a number of trials gave results comparable to those obtained with the milk ration. The chicken-rearing mortality rate varies between 20 and 5%, depending upon the type of the ration. The higher the plane of nutrition, and as a consequence the quicker the rate of maturity, the lower the mortality. Pullets reared on a ration which induces most rapid growth and earliest maturity mature at the heaviest weights and give the best egg performance in their pullet year. Maturity is mainly a function of the mineral, and not the protein content of the ration. Withdrawal of the mineral portion of the ration slows down the rate of maturity while the complete withdrawal of protein-rich feeds has no influence on the age at maturity, but does lead to a reduction of weight then. The ration inducing the most rapid growth and maturity has the further advantage of enabling the surplus cockerels to be disposed of, fat, at a much earlier age.—*From authors' summary.*

AGRONOMY

CARLETON R. BALL, *Editor*
M. A. McCALL, *Associate Editor*, Crops
R. B. DEEMER, *Associate Editor*, Soils

(See also in this issue Entries 6119, 6120, 6123, 6133, 6137, 6138, 6139, 6142, 6143, 6151, 6152, 6168, 6169, 6170, 6171, 6172, 6173, 6174, 6292, 6297, 6301, 6302, 6341, 6390, 6405, 6447, 6449, 6466, 6473, 6481, 6519, 6545, 6592, 6626, 6628, 6650, 6651, 6655, 6921, 7786, 7795, 7797, 7798, 7799, 7839, 7846, 7868, 8118, 8131, 8167, 8524)

CROP SCIENCE (ARVICULTURE)

7899. **ÅKERMAN, Å. Några synpunkter att beakta vid valet av höstvetesort.** [Some ideas with regard to selection of winter wheat varieties.] *Landtmannen Tidskr. Landtmän* 13(33): 717-718. 1930.

7900. **[BARANOV, A. I.] БАРАНОВ, А. И. Опыт климатической характеристики новых хлопковых районов в Крыму.** [Climatic characteristics of new cotton regions in Crimea.] [English summary.] Бюллетень Государственного Никитского Опытного Ботанического Сада. (*Bull. Gov. Bot. Gard. Nikita, Yalta, Crimea*) 6. 5-34. 1930.—Cotton growing in Crimea and a critical survey of the climate of this country are discussed. Cotton can be grown successfully only in the southern parts of the peninsula at Kertch and in the coastal parts of Simferopol and Eupatoria regions. In the more northern parts of Crimea the temp. of early and mid-August is generally too low and the decrease of temp. in September and October is too rapid for successful cotton cultivation.

7901. **BORODIN, D. N. Russian field crops in the United States.** *Proc. Internat. Congress Plant Sciences, Ithaca, N. Y. 1926.* 1: 61-86. 9 fig. Geo. Banta Publishing Co.: Menasha, Wisconsin, 1929.—The history of plant immigration from Russia has had 3 distinct periods: (1) importation of seeds by Russian immigrants, (2) the sending of special expeditions to Russia for collecting Russian seeds and plants, and (3) selection and hybridization of Russian varieties at American Agricultural experiment stations. It would be difficult to estimate exactly the contributions made by immigrants and explorers. The author divides the field crops introduced into the U. S. A. into the following 10 groups and in many instances gives the origin, description, and adaptation of specific varieties and the extent to which they are grown in this country, (1) hard red spring wheats, (2) hard red winter wheats, (3) Durum wheats, (4) rye, (5) oats, (6) broom corn and proso millet, (7) flax, (8) Russian sunflower, (9) alfalfa, and (10) grasses.—*A. Anderson.*

7902. **BORODIN, D. N. Introduction of cultivated plants into the Union of Soviet Socialist Republics (Russia).** *Proc. Internat. Congress Plant Sciences, Ithaca, N. Y. 1926.* 1: 171-183. 2 maps. Geo. Banta Publishing Co.: Menasha, Wisconsin, 1929.—The earliest introduced plant from America was the sunflower. This was followed by tobacco, potatoes, and corn. Organized plant introduction, however, was not undertaken until after the Russian Revolution. This work is in charge of the Russian Agricultural Agency in America (formerly, Russian Bureau of Applied Botany of the Agricultural Scientific Committee). Up to the present time over 10,000 samples of various seeds and plants have been introduced.—*A. Anderson.*

7903. **BUYZE, D. De aardappelcultuur op "Schoonakker" te pengalengan (Java).** *Landbouw* [*Buitenzorg*] 5(11): 853-886; (English abstract, 887-890.) 1930.—A detailed account is given of methods of potato growing at an altitude of 4,500 ft. including a discussion of green manuring (*Crotalaria usaramoensis*) and disease control. Improvement of the crop by breeding has resulted in 5 new varieties obtained by the author.

7904. **CARVALHO e VASCONCELLOS, JOÃO de. Elementos para o estudo da classificação das aveias.** [Classification of oats.] *Ministeria Agric. Est. Agraria Nac. Nº* 5 Serie A. 1930.—After citing various classifications of cultivated oats by different botanists, the author presents a tentative dichotomous key for the general classification of oats. As the classifications cited do not present all the groups necessary to include certain types of oats cultivated in Portugal, a new group of varieties adjacent to *Avena sativa*, but with well defined characters, which is called *grandiglumis* is created; of which 3 varieties are described. One of these, called *vulgaris*, is the most commonly cultivated oat variety in Portugal. Aside from this, the principal varieties are *Avena byzantina* and, in the north of the country, *Avena strigosa.* —*J. de Carvalho e Vasconcellos.*

7905. **CILLIS, EMANUELE de. I limiti altimetrici della coltivazione dei cereali nel Mezzogiorno d'Italia.** [The altitudinal limits of the culture of cereals in southern Italy.] *Ann. Tecn. Agrar.* [*Roma*] 3(3): 356-365; Latin abstract, 458-459. 1930.—In southern Italy (peninsular and insular) the altitude limits of the culture of the cereals are not geographic but economic. The distribution of species is closely related to the ecological conditions in the coast regions. The influence of temp. increases from the coast to the uplands. The rainfall acts inversely. In comparison to wheat, rye, barley, oats and corn present a greater adaptability to different altitudes. The product per unit of area generally decreases with increasing altitude.—*E. de Cillis.*

7906. **CLARKE, S. E. Pasture investigations on the short grass plains of Saskatchewan and Alberta.** *Sci. Agric.* 10(11): 732-749. 5 fig. 1930.—There has been comparatively little research on pasture management in Canada. Need for conservation of grazing resources, and proper management of range lands, led to the establishment of the Dominion Range Experiment Station at Manyberries, Alberta. Projects under investigation there are: (1) Management of live stock on range, (2) botanical and chemical composition of native vegetation, (3) effects of different grazing practises upon the vegetation cover, (4) improvement and maintenance of range pastures, (5) forage crops for winter feed. After 2 yr. operation of this station, this preliminary report includes a study of the native vegetation of the short grass plains as to, (1) principal species and their palatability, (2) chemical composition of certain of these native pasture plants at different stages of growth, (3) plant succession studied by means of quadrats and transects established on areas representative of varying soil and climatic conditions, also on the pastures which are being subjected to various systems of management, as (a) total protection, (b) continuous summer grazing, (c) deferred and rotational grazing, (d) early spring grazing, (e) late fall grazing, (f) summer grazing with protection during spring months.—*L. Gano.*

7907. **COOK, L. J. Annual report on pasture improvement, Kybybolite, 1928-29.** *Dept. Agric. S. Australia Bull.* 238. p. 58-64. 1930.—Grazing results for 8 yr. are given in tables. The advantages of Subterranean Clover, Wimmera Rye Grass, and top dressing with phosphates are shown.

7908. **CUAYCONG, JOSE. D. I. 52 [sugar cane] outyields Badila and Negros purple at the Hawaiian-Philippine Company [Philippine Islands].** *Sugar News* [*Manila*] 11(1): 16-18. 1 fig. 1930.

7909. **DAVIS, R. L. P. O. J. 2878 [sugar cane] in Porto Rico.** *Sugar Cane* [*Manila*] 10(5): 342-343. 1 fig. 1929.

7910. **DILLMAN, A. C., and E. A. STARCH. Flaxseed production by power farming methods in the Northern Great Plains.** *U. S. Dept. Agric., Farmers Bull.* 1650. 16p. 1 map, 10 fig. 1930.

7911. DODDS, H. H., and P. FOWLIE. Experiments in the harvesting of burned cane. Part III. P. O. J. 213 cane. *S. African Sugar Jour.* 14(6): 407-411. 1930.—Continued investigations gave substantially the same results as those with Uba cane previously reported. Cane burned over to remove the foliage then cut and left in bundles in the field showed by single polarization of the juice a rise in sucrose content more marked than in the case of Uba cane, and maintained it over the first week, after which there was a decline. In the case of cane not burned over there was a decline in sucrose content from the 2nd day about 2½ times as fast as with Uba cane. The purity of the juice of the burned over cane showed no loss for about one week, whereas the juice of burned-over P. O. J. 213 cane decreased in purity about ¾ again as fast as the Uba cane previously reported. Cane burned over and left standing showed a smaller loss of sucrose than the harvested cane whether burned over or not. It showed no appreciable loss in purity for 12 days, after which there was an average daily loss of 1.5% for 10 days. The reducing sugars in general varied inversely with the purity.—*H. B. Cowgill.*

7912. EARLE, F. S. Sugar cane and its culture. 256p. John Wiley & Sons: New York, 1928.

7913. FLAKSBERGER, C. Wechselweizen. *Angewandte Bot.* 11(5): 553-562. 3 fig. 1929.—A group of wheats, designated "Wechselweizen" by Becker and others, has been so named because when sown either in spring or fall they have the capacity to produce a crop. A preliminary planting of 141 wheats in the spring by Flaksberger showed 66 to be true summer, and 75 to be true winter. The 75 winter wheat rows were 50% cut in the fall. The entire rows survived, the cut portions somewhat better due to better aeration in the spring. In another planting of 260 samples from various parts of Europe the true winter types were slightly injured and the true summer badly injured. Dates of heading were the same. At another point 231 samples were fall planted and in this instance all summer wheats, including a durum, came through with success. The plantings from which conclusions are drawn total 25,000, collected from all parts of the world. It was found that no summer wheat fails to survive provided the winters are not too severe. The conclusion is reached that the term "Wechselweizen" applied to a wheat group differing from the true winter and the true summer, is a misnomer as such a group does not exist. Examination of young seedlings of winter and summer sorts showed comparatively very early beginnings of stooling in the former. Half-winter races are recognized in some cases and these are to be looked for as native only in those districts which have been natural centers of dispersal such as Turkestan-Afghanistan-Transcaucasia for *T. vulgare.*—*L. R. Waldron.*

7914. FROST, J. Die Holländische Landwirtschaft. Ein Muster moderner Rationalisierlung. [Agriculture of Holland.] v+249p. 3 maps, 58 fig. Julius Springer: Berlin, 1930.

7915. GERHARDT, FISK. Commercial possibilities of the common milkweed. As indicated by its yield and composition. *Indust. & Eng. Chem.* 22(2): 160-163. 3 fig. 1930.—The milkweed plant has been propagated for the first time in sufficient quantities to determine the yield and composition of its various plant parts. Experimental data are presented which indicate a production of 30 bushels of seed, 280 lb. of floss, and 1 ton of air-dry stems per acre. The ratio in yield of pod to seed is approximately 12 to 1, while that of seed to fiber is 2 to 1. The seeds possess large amounts of N, oil, and P. New data are presented relative to their composition: 21% of the seed is composed of a semi-drying oil; 47% of the remaining meal is crude protein. Certain physical and chemical properties of the floss indicate its similarity to kapok. A comparison of its composition with that of several well-known fibers is included. Commercial application indicates that where fiber brittleness is not the determining factor, milkweed floss may be used especially in life-saving, insulating, and playground equipment. New data are presented for the tensile strength of the bast fibers, which approximate 10% of the weight of the stem. Like flax, their application should be found in the textile industry. The stem tissue contains 36.5% alpha-cellulose and compares favorably with many soft-woods in this respect, while its hydration capacity, fiber length, and strength are favorable to the production of a paper pulp of merit.—(*Courtesy Indust. & Eng. Chem.*)

7916. HARDENBURG, E. V., and A. G. V. BOUQUET. The relation of green sprouting to growth and yield of potatoes. *Proc. Ann. Meet. Potato Assoc. Amer.* 16: 73-82. 1930.—Green sprouting resulted in earlier emergence and more rapid gowth in the early growth period. Fewer stems per plant resulted from greening. In greenhouse trials the green weight of the crop was slightly higher from greened seed, as was also the number of larger sized tubers. Tuber-set per stem in the greenhouse was increased by green sprouting, but in the field there was no difference between greened or ungreened seed. The number of stolons per plant was increased by green-sprouting. Greening produced no significant effect on root growth. A period of greening from 4-6 wks. seemingly favored the production of a greater yield of U. S. No. 1 potatoes.

7917. HEIM de BALSAC, F. La fibre de "bontaka" de Madagascar. *Bull. Agence. Gen. Colon* 23(258): 600-616. 2 pl. (1 fold). 1930.—The plant, *Pachypodium rutenbergianum*, of the Apocynaceae, is called in Madagascar "Bontaka" or "Vontaka." While very common in the arid lands of northern Madagascar in the region of Dieto-Suarez, the use of the fiber is limited. Studies have been made in the laboratory on the value of the fiber for textiles and also for paper. The anatomy of the stem and fibers is described and illustrated. The white fibers about 150 cm. long are composed of a mass of ultimate cells isolated from each other and thus differing from flax or jute. The ultimate cells or fiber elements are 3-8 cm. long and 25-50 mm. in diam., some being elliptic. The lumen is small and the walls thick. The tensile and torsion strengths are less than those of the ultimate cells of flax or ramie. The fibers do not have good spinning qualities and are of little value for textile purposes. The plant gives a high yield of cellulose, 56%, but owing to difficulties in preparing and bleaching the material it is not regarded as promising for paper pulp.—*L. H. Dewey.*

7918. HENARES, HILARION G., and CATALINO G. AURELIO. The effect of diseased cane on the Java ratio. *Sugar News* [*Manila*] 10(5): 328-334. 2 fig. 1929.

7919. HOLMGREN, OSKAR. Svalöfs Solvete III. [Svalöf Sun wheat III.] *Sveriges Utsädesförenings Tidskr.* 39(3): 125-129. 1929.—Description of and report on trials with a new winter wheat variety selected from Sun wheat II. Sun III is more winter hardy and has better yield and straw stiffness.—*G. Nilsson-Leissner.*

7920. HOWARD, ALBERT, and GABRIELLE L. C. HOWARD. The application of science to crop-production. An experiment carried out at the Institute of Plant Industry, Indore. 81p. 12 pl., 7 fig. Oxford Univ. Press: London, 1929. Pr. $3.—This is a discussion of the principles and procedure underlying the founding of the Institute of Plant Industry, Indore, India, supported by various States of Central India and Jajputana, and by private funds. Founded in 1924, under the auspices of the Indian Central Cotton Committee, it is devoted to the problems of the cotton farmer, irrigated and nonirrigated, on the black soils. The fundamental problems are comparison and classification of the species, varieties, and forms of Indian cottons; the effect of soil environment on the cotton root system and on lint; and the relation of environment to fungous and insect pests. Some progress in solving them is recorded. Practical problems include replacing the present low-yielding mixture of species and varieties; 2 different or 1 single variety for the irrigated and non-irrigated areas; controlling competition of perennial grasses; preventing runoff and erosion and providing drainage; relieving colloidal

impermeability of the soil, and increasing the low content of organic matter. Good progress has been made in the improvement of culture. Simple tillage operations control the grasses; leveling and ditching prevent water-logging and erosion, and provide drainage; impermeability and denitrification are relieved by application of safflower and karanj cake or other easily fermentable substances to increase soil acidity; while manuring with all available crop residues, including cotton stalks, first shredded and used for bedding stock and thereafter composted, increases fertility and production, thereby in turn increasing residues. Peanuts are being introduced into the cotton and sorghum (juar) rotation, and making pit silage from sorghum and the growing of alfalfa carry stock through the hot dry season in good condition. The Institute functions also as a training school for agricultural leaders in the supporting States, through endowed scholarships and short courses, and through extension methods in promoting improved farm practices. It also acts as a sales agency for agricultural books, machinery, and seeds. A final chapter discusses the organization of agricultural research. The appendices include a list of 128 papers published on Indian crop production, and a program of cotton investigations.—*C. R. Ball.*

7921. **IVANOFF, IV.** Alfalfa seed in Bulgaria. *Ann. Univ. Sofia. Fac. Agric.* 6: 319-360. 1928.—This study of the quality of alfalfa seed produced in Bulgaria as compared with the imported seed, shows that the Bulgarian seed in many respects (germination power, absolute weight, etc.), is better than the imported.—*I. Kovachevsky.*

7922. **KLAPP, E.** Studien über deutsche Kartoffelsorten. [Studies on German potato varieties.] (*Mitt. Biol. Reichsanst. Land- u. Forstwirts., Heft* 35.) 291p. 7 fig. Paul Parey: Berlin, 1928. Pr. 10 M.

7923. **KONINGSBERGER, VICTOR J.** General remarks on cane cultivation and field observations in Java. *Sugar News* [*Manila*] 10(6): 398-400. 1929.

7924. **KRANTZ, F. A.** Relative productivity of certain types of potato seedling populations. *Proc. Ann. Meet. Potato Assoc. Amer.* 16: 56-63. 1930.—200 Irish Cobbler progenies gave a mean yield of 6.45 ± .11 lb. per seedling (total of 5 hills), while the mean of the Cobbler variety was 7.52 ± .12 lb. per group of 5 hills. The difference of the means, 1.07 ± .16 lb. is significant since the deviation is 6.7 times the probable error. It may be concluded that in respect to yield the Cobbler variety presents a genetic combination superior to the average of its progenies. The mean yield 6.87 ± .17 lb. of Triumph seedlings is practically equal to that of the parent, 6.93 ± .10, with a mean difference of only .06 ± .21 lb. per group in favor of the parent, which is not significant. Data presented show a relationship between maturity and yield. The mean yield of the 1st earlies was 4.67 ± .44 lb. per seedling, while that of the 6th earlies was 7.23 ± .27 lb., a mean difference of 2.56 ± .52 lb. per seedling in favor of the late group. Tabulated results on yield of inbred lines from an F_1 seedling of Keeper × Silverskin show that a reduction in yielding capacity occurs during the early generations of selfing. 57 inbred families gave the lowest average yield, 58.0 bu. per acre; the varietal families obtained from Triumph, Cobbler, Early Ohio, and Green Mountain, were intermediate in yield, giving an average yield of 75.5 bu. per acre; and 47 F_1 families gave the highest yield average of 93.2 bu. per acre. It is evident that the F_1 families offer better opportunities for selecting high yielding seedlings than other families.

7925. **KRISHNAMURTHI, RAO K.** Factors influencing the growth and sugar contents of cane. *Agric. Jour. India* 24(2): 91. 1929.—Cane growth starts at a mean temp. of about 68°F. and increases progressively with gradual rise of temp., reaching its maximum at a mean about 88°. Growth is arrested when the mean temp. falls to about 65°, and buds are injured at about 52°. Countries which enjoy a long humid and warm season during the growth period with an average mean temp. of 78° (range 68-88°) and a fairly dry cold season with an average mean temp. of 59° (range 52-65° F.) appear best suited for cane cultivation. Rainfall at the time of ripening affects the sucrose content adversely by inducing shooting. Localities with a heavy and continuous rainfall over a long period without a pronounced ripening season, are unsuitable for the development of sucrose. Saline soils containing much Cl render the cane juices highly saline and also lower the content of sucrose and glucose. NaCl in irrigation water is harmful; the concentration of this salt should be not more than 75 parts in 100,000 of water. Heavy applications of N manures retard the maturation of canes.—*R. K. Krishnamurthi.*

7926. **L., A. P. O. J. 2878** [sugar cane] outyields all other varieties at Hacienda Salamanca. *Sugar News* [*Manila*] 10(12): 885-889. 1929.

7927. **L., A. P. O. J. 2878** [sugar cane] outyields all other varieties at Hacienda Tanza. *Sugar News* [*Manila*] 10(12): 890-892. 1929.

7928. **L., J.** Tropical and subtropical agriculture. Present position of cotton cultivation in Africa. *Internat. Rev. Agric. Pt. 1, Month. Bull. Agric. Sci. & Pract.* 20(3): 104-110. 1929.

7929. **LOCSIN, CARLOS L.** The best distance between furrows for planting sugar cane in the Victorias District. *Sugar News* [*Manila*] 10(5): 312-316. 1929.—The results of experiments tend to favor narrow furrows, though in the low district of Silay the difference between a distance of 3 ft. 3.5 inches and a distance of 4 ft. 1.25 inches is insignificant. Perhaps a distance of 3 ft. as the minimum distance would have given better results.

7930. **LOCSIN, CARLOS L.** Cane variety test [on the Philippine Islands]. *Sugar News* [*Manila*] 10(10): 726-730. 4 fig. 1929.

7931. **LONG, H. C.** Weeds of arable land. 5. *Jour. Ministry Agric.* [*Gr. Britain*] 35(5): 443-451. 8 pl. 1928.—Field bindweed (*Convolvulus arvensis*), great bindweed or bearbine (*C. sepium*), persicaria or redshank (*Polygonum persicaria*), knotgrass (*P. aviculare*), black bindweed or climbing buckwheat (*P. convolvulus*), crow garlic or wild onion (*Allium vineale*), are described and illustrated and recommendations for eradication are given.

7932. **LORD, L.** The preliminary testing of pure line selections of rice. (Cont) Part III. *Ceylon Jour. Sci. Sect. A. Botany, Ann. Roy. Bot. Gard. Peradeniya* 11(3): 261-267. 1930.—In Parts I and II of this paper the preliminary testing of rice selections in rod-row plots was discussed. Yields of selections grown in rod-row plots were found to be comparable to the yields of the same selections grown in larger plots. In 1927 the mean increase in yield from the inner 3 rows of rod-row plots, replicated 10 times, for selections 1 CPY 15 and 1 CPY 19 over Hinati the control was 26 and 13%, respectively. In 1928 when grown in 1/200-acre plots, replicated 7 times, the increased yields were 27.43 and 9.38%, respectively. The increase in yield of 1 CPY 15 over the control (Hinati) in both years is significant, whereas the increase in yield of 1 CPY 19 is hardly so. For preliminary testing of rice selections rod-row plots can be used to advantage.—*J. W. Jones.*

7933. **LOW, WILLIAM.** Notes on intensive cultivation of grassland. *Trans. Highland & Agric. Soc. Scotland* 42: 113-117. 1930.—While results did not yield a commercial profit they showed that a greater number of cattle could be fattened in times of emergency.—*From author's conclusions.*

7934. **LYNCH, D. F. J., and MARSHALL J. GOSS.** Peanut-hull cellulose. *Indus. & Eng. Chem.* 22(8): 903-907. 2 fig. 1930.—An analytical study of peanut hulls to determine their possible commercial use agrees in result with those of other investigators in showing that this waste would be an uneconomical source for pentosans. The comparatively high crude-fiber content would indicate that the hulls might be used as a source for high-grade cellulose. The optimum conditions were determined for the production of cellulose from peanut

hulls by the soda method, the neutral sulphite method, and the sulphate method. Experiments indicate that the best results are obtained with the neutral sulphite method, which gave yields of 40-42% of unbleached pulp. A method is described for producing cellulose from this pulp which analyzes over 90% α-cellulose. There are collected annually at a few points in this country some 70,000 tons of peanut hulls available at a cost of $4-5 a ton, which might serve as a supplemental source for approximately 20,000 tons of α-cellulose.—(*Courtesy Indust. & Eng. Chem.*)

7935. **McINTOSH, A. E. S. Economic botany, report of the geneticist for period February, 1928–May, 1929.** *Rept. Dept. Sci. and Agric. Barbados* 1928/1929: 27-58. 1930.—Progress report on breeding, seedling selection, growth-recording, etc., of cotton; varieties, variety trials, and seedling work on sweet potato; variety yield trials and cultural procedures with tobacco; experiments on monopodial production and variety yield trials of cotton; tests of various economic legumes for green manuring; variety tests of soya beans; and tests of flax as an oil producer in Barbados.

7936. **MANGELSDORF, A. J. Cane breeding in Formosa.** *Hawaiian Planters' Record* 34(1): 11-15. 2 fig. 1930.—Sugar cane breeding at the Shinka Station (near Taiwan, Formosa) as part of the Central Research Institute of Formosa is described. Cross-breeding of sugar cane is mainly carried on in Java where climatic conditions are more favorable, and the crossed tassels when ripe are sent to Formosa for germination and selection. The selection procedure is similar to that practiced in Hawaii. The success of recent releases P. O. J. 105, 161, 36, and more recently 2725, and 2714 has led to great interest in seedling production. Several promising Formosa seedlings F 4 and F 19 are planted to the extent of 7,000 and 9,000 acres respectively. Other seedlings, F 49, 58 and 63 are thought promising. Low labor costs permit general use of the plant cane method which greatly expedites both selection work and the rapid change to a new superior variety, since almost the entire area is replanted each year.—*A. W. Skuderna.*

7937. **MENDES, CARLOS TEIXEIRA. Cultura da alfafa.** *Rev. Agric.* [*São Paulo*] 5(5/6): 179-194. 1930.—Gives general cultural instructions.

7938. **MIEGE, E. A propos de la "qualite" des blés marocains.** *Jour. Agric. Pratique* 1928(Décembre): (1-3). 1928.—Under direction of the Rabat Station of Plant Selection, impartial tests and analyses gave higher average for gluten content and superior grading in bread-making value to Moroccan wheats, as compared with those of Tunis, Algiers, and France.—*L. Gano.*

7939. **MOBERLY, G. S. A mathematical consideration of cane sampling.** *S. African Sugar Jour.* 14(4): 277-279. 1930.—A stalk forms so large a unit in any sample of sugar cane of manageable size taken to determine the sugar content of a field or a smaller parcel, and there are such large variations in size of stalks, that each stalk selected affects the results. The author considers that the minimum requirements of cane sampling are: (1) to take 40 stalks at random from a consignment; (2) halve these and take tops and bottoms of alternate stalks; (3) again halve the chosen halves and take alternate top and bottom quarters of alternate halves.—*H. B. Cowgill.*

7940. **NEIL, BERNIECE, and MARGARET WHITTEMORE. The relation between mealiness in potatoes and the amount of potash in the fertilizer.** *Amer. Potato Jour.* 7(10): 275-283. 1930.—A 4 yr. study was made of the effect of quantity and carrier of K in fertilizers on the mealiness of potatoes when boiled, mashed, baked, or made into chips. It was found that boiled, mashed, or baked potatoes were more mealy when fertilized with a high quantity of K, but the amount of K has little, if any, discernible effect on the quality of chips. When potatoes were treated with equal quantities of K in the form of muriate or sulphate, the value of the 2 forms seems to be equal in producing a mealy potato. The percentage of starch in the potato insofar as this study shows does not seem to affect mealiness. In 1928 and 1929 the more mealy potato contained less starch.—*Authors' summary.*

7941. **NELSON, ALEXANDER. The pasture problem in areas of periodic drought.** *Ann. Appl. Biol.* 17(4): 796-807. 1930.—The paper deals with areas under the Mediterrancan type of climate where periods of moisture supply and low temp. with lowered evaporation alternate annually with periods of low moisture supply and higher temp. with increased evaporation. The suggestions are made that in such areas where no system of economic production has already been evolved, permanent pasture formation for stock production on a system of extensive husbandry would be economic; that permanent pasture could be produced economically by a plant association capable of regenerating itself annually after the drought stress period owing to the production of a large number of seeds by its individual members; that the stock carried by such a pasture during its production period could be carried over the alternating drought period of low or nil production by a self-perpetuating grain crop along the lines adopted in West Australia using the lupin. Various difficulties and amendments of the system proposed are mentioned and discussed.—*Author's summary.*

7942. **NEYE, D. Lehrbuch der Pflanzenbaulehre. [Textbook of plant culture.]** 10th ed. 265p. Published by the author: Hildesheim, Germany, 1928. Pr. 4.80 M.

7943. **NODON, A. Utilisation des fibres de Yucca.** *Rev. Bot. Appl.* 10: 376-380. 1930.—The yuccas are native to America, but are cultivated and acclimated in nearly all tropical countries. The 2 species most widely distributed are *Y. aloifolia* and *Y. gloriosa,* which are arborescent species growing as far north as Cherbourg. Most French colonies have plants of rapid growth containing fibers of excellent quality suitable for numerous industrial applications. Yucca fibers from Isle de Reunion were shown at the expositions in Vienna in 1873 and Paris in 1875, but for lack of efficient methods for preparing the fibers the industry has not been developed. Recent studies have shown that if the leaves of yuccas are treated with weak caustic soda at boiling temp. and further treated with Cl they yield a strong, white, silky fiber. It is suggested that yucca leaves be crushed and the fibrous pulp dried in the colonies, then baled and shipped to France to be treated with chemicals and prepared for spinning. The waste, treated further to reduce it to the ultimate fibers, makes excellent paper pulp.—*L. H. Dewey.*

7944. **PINNER, L. Beiträge zur Kenntnis des Sinaigebiets. [Contribution to the knowledge of the Sinai region.] E. Weizen aus der Oase Feiran. [Wheat from Oasis Feiran.]** *Ergeb. Sinai-expedition Hebräis. Univ. Jerusalem* 1927: 129-132. 1929.—Description of 3 varieties of *Triticum vulgare* Vill.

7945. **PINNER, LUDWIG. Wheat culture in Palestine.** *Bull. Palestine Econ. Soc.* 5(2): 1-123. 1930.—This publication is the first and more general part of a monograph on the wheat of Palestine which will be published in full later. The present article includes a discussion on the yield of wheat per area unit, physical factors affecting growth, crop rotation, and fertilizing problems.

7946. **RINGLEBEN, O., O. VOIGHT, O. UNVERDORBEN, J. GRIMM, und K. SAMMET (bearbeitet von) W. KRÜGER, G. WIMMER, und H. LÜDECKE. Bericht über die fünfjährigen Zuckerrübensortenversuche der Anhaltischen Versuchsstation Benburg.** *Zeitschr. Vereins Deutsch. Zucker-Indust.* 80(Juli): 548-568. 1930.—The results may be summarized as follows: the classification of sugar beets into (a) those with high yields of roots, tops and sugar but relatively low percentage of sugar (b) those with low yields of roots, tops and sugar but with relatively high percentage of sugar is an arbitrary division. Sharp distinctions between the 2 groups cannot be made since the different sorts merge and the differences are not the same each year. High yield and low sugar content or low yield and high sugar content are not always correlated. The leading variety in yield in

every year but one, 1926, had a low sugar content. The variety with the highest average sugar content yielded considerably less than the high yielding variety in every year but one, 1926. However, all the other tested varieties did not show these relative tendencies. The yield and sugar content are much influenced by weather, soil and fertilization. They vary more or less with the different varieties in different years. The cultural practices may also have an influence.—*Authors' summary (transl. by T. E. Odland).*

7947. [ROBB, WILLIAM], J. W. GREGOR, and WILLIAM BLACK. Research program. B. Potatoes. *Scottish Soc. Res. Plant-Breeding, Rept. Direct. Res. Annual Gen. Meeting* 31st July, 1930. 13-17. 1930.—Progress report of potato-breeding investigations with results of trials of selections.

7948. ROMMEL, GEORGE M. Cellulose resources. II. Cellulose from field crops. *Indust. & Eng. Chem.* 20(6): 587-591. 4 fig. 1928.—Estimated yields of cellulose material which may be expected from American field crops, based mainly on records of agricultural experiment stations covering many years, are given. The average yield of corn stover in Illinois is 2,750 lb. per acre, and in Iowa about the same. Yields of 1,300 lb. dry weight per acre may be expected when corn is harvested from the stalk and 1,900 lb. when it is cured in the shock. The total annual production of corn stover in 9 principal corn-growing States in the Middle West which is available for manufacturing purposes is estimated at 50,000,000 tons, with a dry matter content of fully 33,000,000 tons. The total for the United States is estimated at 62,000,000 tons of bone-dry material, on a basis of 33⅓% moisture content at time of harvesting. The use of cornstalks for industrial purposes may help to offset the effects of the corn borer. Straw from small grains has less potential industrial importance. Sugar-cane bagasse is becoming more valuable as an industrial raw material on account of actual use and the extensive planting of P. O. J. canes.—*G. M. Rommel.*

7949. ROMMEL, GEORGE M. Cellulose resources. III. Cost of field crops for cellulose. *Indust. & Eng. Chem.* 20(7): 716-719. 3 fig. 1928.

7950. ROXAS, MANUEL L., and NICOLAS D. GRECIA. The use of a lime-magnesium solution for soaking cane points. *Sugar News [Manila]* 10(11): 815-820. 1929.—In tests in Luzon (Philippine Islands) sugar cane cuttings soaked before planting for 24 hr. in a lime-magnesium sulphate solution, yielded considerably higher than controls.

7951. ROXAS, MANUEL L., and NICOLAS D. GRECIA. The influence of spacing on the yields of cane and sugar per hectare under Luzon conditions. *Sugar News [Manila]* 10(11): 826-851. 1929.—A new method of planting sugar cane cuttings consisting of planting the same number of points as in the ordinary method but arranging them in hills of double points twice as far apart in the furrows as in the single point planting, and receiving per hill double the dose of fertilizers, gave substantial increases in yield over the single both in cane and in sugar per ha.—*From authors' summary.*

7952. SCHAFER, E. R., and F. A. SIMMONDS. Physical and chemical characteristics of hemp stalks and of seed flax straw. *Indust. & Eng. Chem.* 21(12): 1241-1244. 3 fig. 1929.—Hemp was found to be practically identical with seed flax in both physical and chemical properties. The possibility of growing hemp for paper manufacture on peat marsh land that has little value for the production of other crops is discussed. It is estimated that fiber may be produced for 7 cents per pound, provided a market exists for at least 1000 tons annually. —(*Courtesy Indust. & Eng. Chem.*)

7953. SCHNEIDER, G., und U. STAFFELD. Ein Beitrag zur Klärung der Getreide-Umpflanzungsfrage. *Deutsch. Landwirtschaft. Presse* 57(19/20): 257-258. 18 fig. 1930.—Transplanting experiments with winter and summer grains were carried out at Berlin-Dahlem and elsewhere to study the influence of planting distance and the age of seedlings on the grain and straw harvest of the transplanted, in comparison with sown, cereals. Planting distances were 33.3, 25, 20, 16.7 and 14.3, cm. apart, each way. Plants were distributed therefore 9, 16, 25, 36 and 49 per m^2, respectively. The more widely spaced transplanted plants gave a lower grain yield for winter rye and winter wheat than was secured from ordinary seeding; only with the narrow planting did the 2 yields become equal. With spring-sown grains all spaced transplantings showed lower yields than that given by the seedings. The higher grain yields have been obtained from the larger plant and culm number per unit area and with poorer stooling and lower yield per plant. The lower grain yields, on the other hand, have been secured from smaller plant and culm number per unit area and with strong stooling and high yield per individual plant. In future studies of cereal transplanting, consideration must be given to the fact that the method is not suitable to all regions, soils or varieties, but only under special climatic and soil conditions will transplanting be of value. Cereal varieties that stool strongly and have the capacity to produce high percentages of fertile culms will naturally have especial value, combined with favorable growth conditions perhaps not at present known.—*G. Schneider (transl. by L. R. Waldron).*

7954. SETHI, R. L. Root development in rice under different conditions of growth. *Mem. Dept. Agric. India. Bot. Ser.* 18(2): 57-80. 3 pl. 1 fig. 1930.—The root development of rice was studied in earthen pots, wooden boxes, and under field conditions. Plants were grown in pots containing gravel, sand, loam, clay, and a mixture of loam and clay. Certain pots containing loam were fertilized. In the field, rice was grown with different fertilizer treatments and different conditions of cultivation. 2 early- and 2 late-maturing rices were used in the experiments. The root systems were studied at intervals from 2 weeks after planting until maturity. 2 distinct types of roots were observed: (1) long, thin, flaccid, light brown roots with many branches; and (2) bold white comparatively short, almost unbranched roots. Root development was directly proportional to the amount of available nitrogenous plant food and soil moisture. At heading time the bold white roots, which previously had increased as the growing season advanced, were no longer present and the whole root system became weak and flaccid. The absorption of plant food is largely completed when the plants reach the flowering stage. Late varieties had better root development than early maturing varieties. Coarse grained varieties had coarser roots than fine grained varieties. Roots in pots containing clay were bright red, in pots containing loam fertilized with ammonium sulphate they were dull red, and under other conditions dull white or white. The average range in root penetration in pots was 2-4 ft. Most of the root system was found in the surface 1-2 ft. Roots penetrated deeper in pots than under field conditions. In most cases root development was proportional to shoot development. In soils fertilized with nitrogenous material the root system was nearer the surface than in unfertilized land. A better root system developed on plowed than on unplowed land. An anatomical study of rice roots showed that the old white roots resembled those of wheat, whereas the old flaccid roots are quite similar to those of the water hyacinth (*Eichornia crassipes*).—*J. W. Jones.*

7955. SMITH, D. C., and E. N. BRESSMAN. Some effects of seed treatment on the germination and subsequent growth of wheat. *Jour. Agric. Res.* 40(1): 25-36. 3 fig. 1930.—The effects of solutions of potassium thiocyanate, ammonium thiocyanate, trichloroethylene, ethylene chlorhydrin, ethylene chloride, ethyl bromide, and carbon disulphide, on 16 varieties of common wheat were studied. Chemical treatments were also combined with freezing. None of the treatments stimulated germination or the growth of plants subsequently produced. Ammonium thiocyanate was decidedly toxic. Ethyl bromide was slightly toxic. Pure water treatment

caused a stimulation which lasted until maturity.—*D. C. Smith.*

7956. SPENCE, H. L., Jr. Puncture vine, a new pest in Idaho. *Idaho Agric. Exp. Sta. Circ.* 60. 4p. 1 fig. 1930.—*Tribulus terrestris* is described, and control methods are outlined.—*H. M. Steece (courtesy Exp. Sta. Rec.).*

7957. STAHL, CHR. Forsøg med Opbevaring af Rødkløverfrø. *Nordisk Jordbrugsforsk.* [Copenhagen] Heft 4. 313-326. 1930.—Periodical germination tests of Red-clover seed samples stored under different conditions showed that the seed maintained germinating capacity better when stored in a dry, heated, laboratory than when stored by commercial seedsmen. In the laboratory the average germination, including hard seeds, was reduced during 2 yr. from 95% to 74%. In commercial samples the average germination during the same time was reduced to 44%. The result emphasizes the importance of dry storage. In the laboratory the average hard seed content increased during early storage from 4% to 10%, later remaining constant. As stored commercially the hard seed content did not increase, remaining low during the whole period. Seed which, after 2 yr. in commercial storage, showed a laboratory germination of 10-60%, germinated only 1-10% in the field under favorable conditions.—*C. Stahl.*

7958. STAPLEDON, R. G., and WILLIAM DAVIES. Experiments to test the yield and other properties of various species and strains of herbage plants under different methods of management. *Univ. Coll. Wales, Ser. H. No. 10.* 41p. 1930.—Continuing investigations to compare sustained yields, tillering, persistency, and leafiness, 210 1/400th acre plots, previously dressed with basic slag, were seeded, May 29, 1923, to 22 species and strains and 2 mixtures of grasses and clovers. During the following 4-5 yr., data were secured from these plots managed for pasture, hay, and sheep grazing. 13 weeks after seeding, commercial strains (except meadow foxtail, the seed of the tested indigenous strain being larger, heavier and more readily established) showed greater rapidity of development. Italian rye-grass alone and the hay mixture containing it, ranked first in produce. For 4 harvest yrs., 5 indigenous strains (perennial rye-grass, cocksfoot, timothy, tall fescue, meadow foxtail) yielded highest in pasture, for total and for leaf produce. The pasture mixture averaged higher than the hay mixture for total yield and for leaf yield. Indigenous timothy ranked 5th in whole yield and 4th in leaf yield. Rough-stalked meadow grass gave lowest yield. Montgomery red clover outyielded the 4 other clovers tested. "Top" grasses (such as perennial rye-grass, Italian rye-grass, cocksfoot, timothy, meadow fescue, tall oatgrass, meadow foxtail) outyielded "bottom" grasses (sweet vernal, crested dogstail, rough-stalked meadow, fine-leaved fescue) in total and in leaf produce. Weather and age of sward affect the results, but a progressive diminution of yield was generally noted, in part due to repeated defoliation and lack of fertilizer. Continued cutting tended to leafiness, compensating the loss in total yield by an increase in more nutritive leaf produce. Although the bulk of produce for all species tested was made in May and June, the indigenous strains showed a different seasonal persistency, with prolonged production and winter greenness. Clovers showed shorter growing season, little to no winter growth, but later (summer) production. A lenient system of cutting (pasturing), begun late (May 28th), with 4 cuts per season, gave more even production for 6 species tested, the September 10th yield averaging highest. In tiller production, indigenous strains (except perennial rye-grass) averaged higher,—rough-stalked meadow grass and fine-leaved fescue outranking, with indigenous timothy most persistent in tillering, this characteristic being useful in establishment and maintenance of weedless pastures. In palatability, timothy rates high. Maximum tillering for most species occurred in May and June, falling progressively under drastic cutting. Commercial strains of timothy rank high in stem production, thus making it a typical hay grass. In stem shoots, commercial strains of 6 grasses excelled, sweet vernal grass (a "sternny" hay) being highest, followed by Italian rye-grass, perennial rye-grass, commercial tall oat grass and commercial timothy. The hay yield also diminished progressively, in total bulk during the 4 harvest years, but the percentage due to aftermath generally increased. Indigenous and commercial timothy gave highest yields of aftermath in 1924, falling in total yield for 4 harvests to 2nd place. Indigenous tall fescue gave highest yield of any grass for aftermath and for pasture leafiness, but is not relished by sheep, though eaten by horses and cattle, nor is it easily established. In yield of aftermath the 2 mixtures averaged highest, and the 5 indigenous grasses averaged higher than their commercial strains in hay, pasture, and leaf yields.—*L. Gano.*

7959. TAMM, ERNST, und KARL GOEPP. Ueber den Einfluss von Saatzeit, Saatmenge und Saatpflege auf den Ertrag von Winterroggen bei verschiedener Stickstoffdüngung. *Landw. Jahrb.* [Berlin] 72(2): 293-334. 1930.—In experiments performed at the Berlin-Dahlem Experiment Station the best dates of seeding winter rye were September 25 to October 5. Yields decreased with delay in date of seeding. The date of emergence of seedlings stood in closer relationship to yield and development of the plants than the date of seeding. Nitrogen fertilization in fall gave no extra returns. The best rate of seeding was 80 kgm. per ha.; low rates of seedings gave good returns with very high applications of nitrogenous fertilizers. Special care of seed grain did not materially increase yields.—*K. Goepp (transl. by K. H. Klages).*

7960. VAVILOV, N. I. Geographische Genzentren unserer Kulturpflanzen, *Zeitschr. Indukt. Abstamm.- u. Vererb. Suppl.* 1: 342-369. 6 fig. 1928.—The great diversity of local races of Linnean species in certain regions led to a search for the centers of genesis or original home of a series of species. The center of morphogenesis of a Linnean species is identified as the central point of diversity of its races and plant characters. Numerous expeditions were sent into all parts of U. S. S. R. and many parts of the world to study plant diversity and to collect specimens. Determinations of centers of maximum density were arrived at through consideration of strict identity of the Linnean species, the region where the species was found, the racial composition of the species, distribution of heritable diversity and increase of diversity, including a similar study of other closely related cultivated and wild species and varieties. On these grounds the author considers that wheat has 2 centers of origin. The 42 chromosome "weak" wheats show their greatest diversity in southwest Asia, in southeastern and northern Afghanistan, about the foot of the Himalaya mountains, and in neighboring districts of India. The 28 chromosome "hard" wheats show their maximum diversity in the mountainous regions of East Africa in Abyssinia. Einkorn is concentrated principally in Asia Minor, and in southern Syria. Bearded barley is most highly diversified in Abyssinia and naked barley in southeastern Asia. Rye and oats probably originated from weed-like plants infesting the older or so-called primary cereals. The greatest racial concentration of rye occurs in Transcaucasia and eastern Asia Minor. A wealth of forms of cultivated oats was found in the areas of emmer culture in Spain, Bulgaria, Abyssinia, and elsewhere. With extension of emmer culture northward into moister regions, oats invaded the earlier cultures and became an independent crop. 5 principal centers of origin were recognized for a series of plants which includes most of our cultivated crops. These centers are the mountainous regions of southwest Asia, of southeast Asia, of the coastal regions of the Mediterranean and of the Spanish Peninsula, of northeastern Africa, and, in the New World, of Mexico and Central America, and Colombia and Peru in South America. Mountainous regions with their great variety of soil and climate provide the most favorable conditions for the genesis of plants. The whole process of geographical

evolution consists in the falling away of dominant characters. At the borders of the geographical extension of isolated cultivated plants, principally recessive forms were observed.—*V. H. Florell.*

7961. VIVARELLI, LUIGI, e CARLO BERTO CERONI. Campo di orientamento per razze di grano geneticamente migliorate. [Trial plots for varieties of grain genetically improved.] *Italia Agric.* 67(8): 3-13. 1930.—The authors experimented with 28 varieties of wheat in an attempt to show relationships between certain cultural practices and resulting morphological differences. They are not ready, without much more extensive data, to give any practical advice on the most suitable variety for cultivation. Tables showing their results are given.—*H. D. Hill.*

7962. VIVENZA, A. La coltivazione della Soja in Italia e nelle Colonie. [Cultivation of soy bean in Italy and her colonies.] *Atti Soc. Ital. Prog. Sci.* 1927: 375-393. 1928.—In Italy the soy bean cannot be grown as a 2nd crop following a cereal, but only as a principal crop, partially replacing maize, beets or beans. Irrigation is needed for best results in the arid conditions of southern Italy. The first crop of soy beans lacked root tubercles but these gradually appeared with successive crops. Little difference could be seen in the development of plants with and without the tubercles. The early varieties of soy bean are the only ones which can be grown in Italy, and the yield of these is rather low, 5-20 bu. per acre, depending on soil fertility. While the culture of the soy bean in Italy may sometimes be usefully substituted for that of maize or beans, no great hopes should be built on it. Hitherto very few experiments have been made of soybean cultivation in the Italian colonies. The indications are that it would succeed in Somaliland and on the Eritrean plateau. This is less probable for Libya, where the irrigated zone is limited and occupied by other more remunerative crops.—*A. Vivenza (transl. by H. S. Wolfe).*

7963. WASSING, A. Formation of water shoots and their influence on the yield of P. O. J. 2878. *Sugar News [Manila]* 10(6): 394-397. 1 fig. 1929. Reprinted from *Arch. Suikerindust-Nederland. Indie* 1(2): 54. 1929.—Only a very small part of the water shoots formed in a field of P. O. J. 2878 appear prior to harvesting. In practice only shoots having a length of 2.5 m. should be harvested. The formation of water shoots probably has a harmful influence on yield. It is advisable to prevent as much as possible the formation of water shoots.—*Author's summary.*

7964. WERNER, H. O. Some facts concerning the productivity of irrigated seed potatoes. *Proc. Ann. Meet. Potato Assoc. Amer.* 16: 120-131. 1930.—When spindle-tuber was present in seed stocks, irrigated seed potatoes degenerated as to productivity and quality of tubers much more rapidly than did dry land grown stocks. This deterioration of the irrigated seed stock increased progressively. Variation in the amount of irrigation water, or in the manner of applying it, did not alter the detrimental effect. With healthy seed stocks, or those free from spindle-tuber, irrigated and dry land grown seed potatoes were apparently of equal value wherever they were tested.—*Author's summary.*

7965. WHITE, J. W. Comparative returns in feed units from crop rotation and pasture. *Jour. Amer. Soc. Agron.* 21(6): 589-593. 1929.—A rotation of corn, oats, wheat and hay is compared with pasture, largely Kentucky blue grass with some red top and sweet clover, on 3 Pennsylvania soils with 4 fertilizer treatments. As a general average, pasture produced 10.9% more air-dry matter, 7.4% more digestible nutrients, and 189% more digestible crude protein than rotation. Manures increased nutrients as follows: K 29% and 43%, N 37% and 6%, respectively, on pasture and rotation. PKN exceeded reinforced manure (MP) 9% on pasture but MP was 9% more effective on rotation. Acre labor costs were, rotation $59.61, pasture $2.80. Rotation produced 799 lb. digestible crude protein and 10,096 lb. total digestible nutrients compared with 1986 and 8535 lb. respectively on pasture. Labor cost of one ton of digestible protein was $178.00 on rotation and $2.82 on pasture.—*A. C. Maxson.*

7966. WOODMAN, H. E. Pasture research. Recent pasture research in Great Britain. *Trop. Agric. [Trinidad]* 6(12): 331-336. 1929.—Results obtained at the School of Agriculture, Cambridge, show that frequently-mown pasture grass is easily digestible and highly nutritive. Roughly ¼ of the dry weight consists of proteins, a proportion maintained practically throughout the year. This proportion is about 2½ times as great as that found in hay, and there is also much less fiber. Under conditions of close cutting or heavy grazing, there is little difference in nutritive value between different species. Cuttings of young grass, steam-dried and compressed into cakes, can replace oil cakes in rations for dairy cows and fattening cattle. Drying does not impair digestibility. The protein content of the dried cuttings of grass mown at 1-, 2-, and 3-week intervals averaged 25, 23.5, and 21% respectively. Though the protein content falls off with the longer intervals, there is no loss of digestibility. Grass cut at 2-week intervals resists drought conditions better than that cut at 1-week periods. As animals grazing young flushes of herbage will be receiving an excess of protein, they should be given a supplementary ration of some carbohydrate-rich food.—*R. E. Hunter.*

7967. ANONYMOUS. Sugar beet experiments, 1927. *Ireland Dept. Agric. Jour.* 28(1): 37-66. 1929.—Of the 4 varieties of sugar beet included in the trials conducted during the 3 seasons, the Dutch (Kuhn & Co. P) and the German (Klein Wanzleben Original Z) varieties were superior both in yield and sugar content to the Danish (Scandinavian Seed Co.'s K 7866) and the French (Vilmorin's Improved Selection B) varieties. While the yield and sugar content of the Dutch and German varieties were practically identical, the Dutch variety was distinctly superior to the German variety as regards the tendency to bolt, and it is preferable for cultivation in Ireland. A top-dressing of nitrate of soda at the rate of 1 cwt. per acre, applied after the crop was singled, did not lower appreciably the sugar content of the beet. The increased yield resulting from this top-dressing depended largely on the condition of the soil and the growth of the crop at the time it was applied. Under favorable conditions of soil and growth, the top-dressing did not materially increase the yield, but in unfavorable seasons, or when the crop was attacked by pests or diseases, the top-dressing was the means of carrying the plants over a critical period. Top dressings of nitrate of soda in excess of 1 cwt. per acre slightly depressed the sugar content of the beet without producing any compensating increase in yield.—*Author's summary.*

7968. ANONYMOUS. An experiment in cane planting, using different amounts of seed cane per acre. *S. African Sugar Jour.* 14(5): 353-355. 1930.—In a single season's test 1/15 acre plots with rows 5 ft. apart were planted in quadruplicate (1) with a single row of stalks in each furrow, (2) with 2 rows of stalks in each furrow, and (3) with half the number of stalks needed for a single row spaced equally distant apart. Single-row planting and double row planting gave increased average yields of stalks over planting with the stalks spaced equally in the furrow. Double-row planting gave a slight increase over single-row planting, but not sufficient to compensate for the increase in quantity of seed cane used. Chemical analyses of the stalks from the various plots gave results of no significance.—*H. B. Cowgill.*

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 6125, 6126, 6127, 6158, 6160, 6162, 6166, 6261, 6273, 6378, 6380, 6408, 6462, 6489, 6490, 6564, 6585, 6588, 6590, 6608, 7847, 8020, 8025, 8118, 8146, 8404)

7969. **BARSS, ALDEN F.** Effect of moisture supply on development of Pyrus communis. *Bot. Gaz.* 90(2): 151-176. 11 fig. 1930.—An experiment was undertaken to determine the effect of varying amounts of water upon both the gross and the microscopical development of *P. communis*. 48 dwarf pear trees were divided into 4 lots which were treated uniformly except for watering. Flower clusters were more abundant on trees given more than the minimum amount of water. The number of flowers to each cluster averaged less when abundant water was supplied, due to the high percentage of axillary clusters produced. Abscission of blossoms and partly developed fruits was more pronounced where least water was available. The number of fruits matured by a tree in any one season appeared to have a greater effect on the size of the individual fruits and on the crop produced the following year than did the actual amount of water applied to that tree. With a small crop moderate watering was associated with production of full-sized, normal fruit. With a large crop, moderate watering was associated with production of much smaller and a poorer quality of fruit than when abundant water was applied. A pronounced shortage of water resulted in small fruits of poor flavor and quality. The value of thinning to secure increased size in case of water shortage is emphasized. There appeared to be a close qualitative and quantitative relationship between shoot growth and fruit development, regardless of the amount of water that a tree received. A large fruit crop seemed to make less demand on the water supply than did large shoot growth. The most pronounced difference in gross topography of the tissues is in the extent of the xylem area. As between a large, medium, and small amount of water, this stands in the proportion of 15 to 2 to 1 respectively. The cortex is largest in the moderately watered lot. A comparison of cells showed a number of definite differences in the cortex, phloem, and xylem cells in the different lots, especially as to number and size. The pith cells seemed practically identical in all lots, regardless of the amount of water applied. A great development of xylem may accompany increased water supply to pear trees in rich soil without resulting in succulence, but in a greatly increased volume of firm, sound wood. An attempted interpretation of the results secured suggests that, following changes in the water supply, alteration in the metabolic processes may be due to physical or nutritional causes or both.—*From author's summary.*

7970. **BECKWITH, CHARLES S.** Experimental work with cranberries in New Jersey. *Wisconsin State Cranberry Growers' Assoc.* 43: 17-23. 1929.—Data are presented showing the increases due to applications of plant nutrients on plots of savannah cranberry land in New Jersey for 10 yr. They indicate that on one acre 500 lb. of a mixture containing 75 lb. nitrate of soda, 75 lb. dried blood, 300 lb. rock phosphate and 50 lb. sulphate of potash can be used with profit. On other types of land the advantage is not assured. Further, the use of fertilizer is warranted only if increased vine growth is the factor required for the desired crop increase. The blunt-nosed leaf hopper, which transmits the virus of the false blossom disease, can be controlled in New Jersey by submerging the bogs between June 10 and 20.—*C. S. Beckwith.*

7971. **BERGMAN, H. F.** Respiration of cranberry plants in relation to water injury. *Proc. 60th Ann. Meet. Amer. Cranberry Growers' Assoc.* 21-25. Jan. 1930.—The injury to temporarily submerged plants is due to lack of O and not to poisonous substances in the water. O is available to the plants in water solution. The amount of O is limited by the temp. of the water and the amount of organic matter present that is undergoing decomposition. The plant's need for O increases with temp. and also with the growth rate of the particular part of the plant involved. The amount of O in water is increased during clear weather by photosynthesis.—*C. S. Beckwith.*

7972. **BREMER, A. H.** Sorts- og stammekontrollen av rot- og grønsakvokstrar. [Variety and strain control in root and truck crops.] *Selskapet Havedyrkningens Venners Medlemsskr.* 8(3): 70-78. 1930.—Laboratory testing of variety and strain in root and truck crops is not sufficiently exact with present available means. Many important characteristics do not appear until the plant has been grown a shorter or longer time with light. Imported seed should be tested by growing samples under electric light in the winter. For crops of which local strains and seed production exist, especially if the distinguishing characters are physiological, field plot testing is required. The Norwegian system with comparative strain trials and official support of elite stock seed production should be supplemented with control of the production and sale of the commercial seed.—*A. H. Bremer.*

7973. **BRYDEN, J. D.** Development in oranges. A study of the influencing factors. *Agric. Gazette N. S. Wales* 41(12): 919-928. 1930.—A correlation exists between soil moisture content and rate of development of orange fruits. The amount of moisture available to the tree is the most important factor influencing fruit size, although manurial treatment cannot be entirely disregarded as a factor. The more stable size of oranges grown under irrigation is due to the maintenance of an even soil moisture content. A relationship exists between the rates of development of oranges borne on the inside and those on the outside of Washington and Valencia trees. Deficient moisture during the period of development, especially if high temp. prevails, retards the rate of growth. Lack of available moisture causes a greater check during early development than when the fruits are more nearly mature. Oranges quickly recover from a check in growth where it is caused by a variation in the soil moisture content. The size of inner foliage fruits as compared with those borne on the surface foliage is controlled to a great extent by climatic conditions and water available immediately after setting.—*From author's summary.*

7974. **CECCARELLI, GIUSEPPE.** Manuale del viticultore moderno. Vol. I. La pratica della viticultura a base d'innesto. 236p. Vol. II. La teoria della viticultura a base d'innesto. 294p. Francesco Battiato: Catania, 1929.

7975. **CHACE, E. M., C. G. CHURCH, and D. G. SORBER.** Large-scale experiments in sulfuring apricots. *Indust. & Eng. Chem.* 22(12): 1317-1320. 2 fig. 1930.—The commercial process used for sulphuring apricots in California is described. Experiments were carried out in sulphuring fruit with liquid SO_2 in thermally controlled boxes. Under the conditions of the experiments, the appearance of dried fruit, with few exceptions, seems to be correlated with its SO_2 content. The concentration of SO_2 in the atmosphere in which the fruit is treated is a prime factor in controlling the amount of the gas retained. The length of the sulphuring period is also an important factor, although about 50% of the gas retained is fixed during the first half hour of treatment. Temp. is not important, but high temp. gives the product a reddish or cooked appearance. Fruit of good appearance and good keeping quality was obtained with 3% SO_2 in 2 hours at 100-110° F.—*E. M. Chace.*

7976. **CLAYTON, E. E.** Increasing stands from vegetable seeds by seed treatment. *New York State Agric.*

Exp. Sta. [*Geneva*] *Bull.* 554. 16p., 2 pl. 1928.—Supposedly healthy seed of cabbage, lettuce, radish, spinach, pea, corn, cucumber, tomato, and string bean were treated with organic mercury preparations, including Semesan, Uspulun, and Bayer Dipdust. Semesan was used both as a liquid and as a dust. Treated and untreated seed were sown at intervals from early spring to midsummer and records taken of germination period, percentage germination, and, in some cases, yield. With seed sown very early in the year the germination periods were long and the percentages of germination for untreated seed were low, owing chiefly to the decay of many seeds, some before sprouting and some very soon afterward. Seed treatment with the organic mercury preparations gave considerable protection against this decay and thereby increased the stands. With seed sown later, after the soil had become warm, the germination periods were shorter and the percentages of germination secured with untreated seed were much higher. Decay of seed was not a serious problem and seed treatment with the organic mercury preparations proved of little benefit. The yields recorded in a limited number of cases indicate increases somewhat greater than would be expected from the gains in germination only. Vegetable growers can very profitably treat seed that is to be sown early, while with midsummer sowings there is less need for this protection. In greenhouse tests seed treatment greatly increased stands from seeds sown in midwinter, during which period seed and seedling decay is a serious problem. Comparative sowings of similar lots of seed treated or untreated late in spring, however, showed little benefit from seed treatment.—*Author's summary.*

7977. **GEISE, F. W. Fertilizer studies and the production of sweet potatoes.** *Maryland Agric. Exp. Sta. Bull.* 311. 38p. 9 fig. 1929.—Fertilizer experiments conducted on sweet potato farms on both the eastern and western shores of Chesapeake Bay showed large increases in yield of sweet potatoes from potash and relatively small increases from phosphoric acid and nitrogen fertilizers. Lime was beneficial in one test on strongly acid soil. Cultural practices are expounded and variety descriptions given.—*J. Bushnell.*

7978. **GIRARDI, GIULIO. La peonia, varietà e coltivazione.** 57p. 7 fig. Francesco Battiato: Catania, 1929.—This popular monograph of the peony group discusses: (1) The variety indigenous to Europe, with *Peonia officinale* as its type, is described. Brief accounts, with 4 figures, of other varieties from Siberia, Portugal, and the Caucasus are given also. (2) The herbaceous, double-flowered peony from China is described and its cultivation and propagation is presented in considerable detail as it is the most important garden peony. 297 named varieties with single flowers and 41 named varieties with single flowers but with stamens transformed into petal-like growths are described. (3) Of the woody or shrubby type from China or Japan, 102 garden varieties with double flowers and 66 varieties of the Japanese peony with single flowers, as well as the cultivation and propagation of this woody type, are described briefly.—*B. F. Lutman.*

7979. **GRÉZAUD, FERDINAND, (avant-propos par LOUIS SOURSAC). Culture potagère.** 89p., 22 fig. (4 col.) L'Indépendant: Perpignan, France, 1928.—A handbook of vegetable culture, based on practices in southern France, containing general information on materials, tools, and equipment, detailed directions for growing most of the common vegetables, descriptions of varieties, tables of longevity of seed, numbers of seed in unit weights or volumes, temp. requirements of plants, etc., and a garden calendar by months.—*W. B. Mack.*

7980. **HINTON, J. C., and T. SWARBRICK. The shape and quality of apples in relation to their position in the fruit cluster. Progress report.** *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 67-72. 1 pl. [1930].—A large number of fruits on selected trees of the variety Allington Pippin were tagged just after the "June drop." Information was recorded concerning the type of wood which bore the fruit bud, the number of fruits carried by each cluster to the June drop, the rate of growth, the leaf area and amount of shade near each fruit, and the behavior of each apple in storage at room temp. This preliminary paper reports only the effect of the position in the flower cluster on the shape. Fruits from the terminal flowers of the clusters were oblong and, in some, the cavity was filled with flesh which extended part way down the stem, giving a "beaked" appearance. Fruits from lateral flowers were round to oblate, with normal cavities. Fruits from terminal flowers seemed to have more acid and retained more crispness and juiciness, when kept until December 20 at room temp., than fruits from lateral flowers, but they were not nearly so sweet or aromatic.—*W. H. Chandler.*

7981. **HORNER, JOHN M. A study of the composition of pineapple plants at various stages of growth as influenced by different types of fertilization.** *Univ. Hawaii Exp. Sta. Assoc. Hawaiian Pineapple Canners Bull.* 13. 1-34. 8 pl. 1930.—The growth rate on all plots was much the same, the plots receiving potash being slightly superior. The dry weight of green pineapple plants is approximately 17% of the green weight. Ash constitutes about 7% of the dry weight. Potash is the most abundant ash constituent, being approximately 37% of the total ash in the leaves, 32% in the stem, and 45% in the fruit. The ratio between total sugars and reducing sugars is nearly constant at all ages and the total amount seems to be correlated with the age of the plant. The total sugar content rises to a high peak as the fruit ripens. The ripe fruit contains approximately 10.5% total sugars and 6.8% reducing sugars. The ripe fruit contains about 87% water. The starch content of the pineapple plant is very variable. The pineapple plant has a fairly constant ratio between nitrogen and lime. Although influenced somewhat by soil and cultural conditions, the plants for any one general region have essentially the same ratio. Nitrogen fertilizers produce a good growth in the pineapple plant but this improvement is only apparent for about 6 months after the application. Phosphoric acid if applied within the limits of the basic requirements of the plant, i.e., 125-150 lb. per acre, may increase fruit size. The plants remove more potassium from the soil than any other constituent, taking an average of about 1456 lb. per acre of K_2O as against 111 lb. of P_2O_5 and 491 lb. of N. Fertilization practices supply far less than the amount removed by the plant.—*From author's summary.*

7982. **HOWES, F. N. Observations on bananas in Siam.** *Jour. Siam Soc., Nat. Hist. Suppl.* 8(1): 41-48. 1929.—In an attempt to find in south-eastern Asia, particularly in the Indo-Malayan region (presumably the original home of the banana), a variety suitable for the West Indies and resistant to the Panama disease (*Fusarium cubense*), the author traversed southern Siam. The Siamese varieties of seeded and seedless bananas found are described.

7983. **HOWLETT, FREEMAN S. Further experiments on the relative self-fruitfulness of apple varieties.** *Proc. Amer. Soc. Hort. Sci.* 26: 49-55. 1929 (1930).—The results of self and cross pollination experiments with the varieties Baldwin, Delicious, Gallia Beauty, Grimes, Jonathan, McIntosh, Rome Beauty, Stayman Winesap, Wealthy and Yellow Transparent in 1928 and 1929, and a summary of work on all varieties from 1924 to 1929 inclusive, are given. The method employed in 1928 and 1929 was the enclosure of limbs in cheesecloth bags. The conclusions are: (1) all varieties selfed failed to produce degrees of self fruitfulness equivalent to full commercial yields; (2) these varieties differed in their degree of self-fruitfulness. Those of the lowest degree were McIntosh, Rhode Island Greening, Stayman and Delicious. In an intermediate group were Jonathan, Grimes, Oldenburg, Wealthy, Baldwin and Yellow Transparent. Those of the highest degree were Rome Beauty and Gallia Beauty.—*F. S. Howlett.*

7984. **KAKIZAKI, YÔITI. A physiological interpretation of self-incompatibility in the common cabbage.** (In Japanese.) *Japanese Jour. Genetics* 5: 121-123. 1930.

—Self- and cross-incompatibility in cabbage are due to the slow rate of pollen-tube growth. Pseudofertility in bud-pollination, which is very conspicuous in this plant, is mainly due to insufficient action of the style to inhibit the pollen-tube growth, and, in addition, to the longer time duration for the growth of pollen tubes and the shorter distance to be traversed.—*Y. Kakizaki.*

7985. **KOPP, A. Les ananas. Culture, Utilisation.** [Pineapples. Their culture and uses.] Paul Lechevalier: Paris, 1929.

7986. **LONGLEY, L. E. Influence of various propagating media on the rooting of cuttings and layers.** *Proc. Ann. Meet. Amer. Plant Propagators Assoc.* 1930: 37-44. 1 fig. 1930.—4 types of peat of varying acidity and structure and 3 sands of varying fineness and acidity were used as propagating media, as well as various combinations. The data indicate that the acidity of the medium has some influence in promoting rooting, but this relation is not constant. However the acid sands usually showed uniformly good rooting results. An American peat of high acidity showed nearly as good results as a foreign peat of the same acidity and similar structure. There was a definite relation between prevalence of "damping off" fungi and the acidity of the media. In general the more acid media tended to decrease damping off, but with a few plants the reverse is true.—*L. E. Longley.*

7987. **LUNDEGÅRDH, H. Drivning av gurkor och jordgubbar med kolsyrebegasning.** [Effect of CO_2 fertilization on cucumbers and strawberries.] *Meddel. Centralanst. Försöksväs. Jordbruksområdet* [*Stockholm*] 384. 1-15. 10 fig. 1930.—Denatured alcohol was burned in simple open lamps, producing almost exclusively CO_2 and H_2O, in specially arranged glass houses. The 2 experiments on cucumbers were carried on with 4 parallels. CO_2 fertilization increased the number of the fruits as well as their weight. The increase in yield was 28.5-45%. The CO_2 content of the air was maintained at 3-4 times the normal. CO_2 fertilization also caused strawberries to ripen earlier than usual, and the number of fruits was increased 12%, although the weight was not influenced to the same extent.—*From author's summary* (*transl.*).

7988. **McDONALD, J. H. Coffee growing: with special reference to East Africa.** xx+205p. Illus. East Africa: 91 Great Titchfield St., London, 1930.

7989. **MANARESI, ANGELO. Contributo allo studio dei semenzai e dei vivai di gelso (Morus alba L.) dell'Emilia e della Romagna.** [Seeding and growing mulberry.] *Ann. Tecnica Agraria* [*Rome*] 3(2): 173-189 1930.—This is a study of nursery practice with the white mulberry in Italy. Seed is planted in June or July from fresh fruit, or in the next spring, using 2-18 gm. of seed per sq. m. Under favorable conditions 10-20% of the seedlings may be grafted the spring after planting, but frequently the seedlings are left in the seed-bed 18-20 months, or are transplanted into the nursery row, 21 × 33 cm. apart. The plants are thinned the winter after transplanting, and are grafted in the autumn with dormant buds, or in the spring with whip-grafts or with active buds. In the following winter the trees are further thinned and are first pruned for shaping. Shoots from whip-grafts will be 1.59-3.54 m. high in a year from grafting. Shoot development is progressively less from grafts by dormant buds, active buds and crown grafting. Sometimes it is possible to graft transplanted seedlings the same spring, saving a year.—*A. Manaresi* (*transl. by H. S. Wolfe*).

7990. **NAGAI, KEIZO, and IKURO TAKAHASHI. The "root-grafting" of citrus trees.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 2: 2014-2022. 1926 (1928).—The so-called "root-grafting" (Netsugi in Japanese) described is a special method of inarching which has apparently been in practice for at least 50 yr. in parts of Japan. It has been developed into a practical method at the Imperial Horticultural Experiment Station, Okitsu. Weakened trees can be strengthened, those grafted on unfit stocks freed from defects, and senile trees rejuvenated. Yuzu orange trees make the best stocks for root-grafting. The root-grafting can be done in any season, except late fall and winter; the best season is late March and April. Thomson navel orange trees grafted on trifoliate stocks are very weak, but their vigor and fruitfulness can be decidedly improved by root-grafting. The experiments on root-grafting with stocks of several varieties of declining Thomson navel orange trees worked on trifoliate stocks show that those inarched with the Yuzu orange gave the best results, the trees growing steadily, the crop being large and the quality excellent; those inarched with the sweet orange were second best but were susceptible to disease; those inarched with the sour orange and Japanese summer orange were vigorous but gave a small crop and the quality was poor.—*From author's English summary.*

7991. **NEBEL, B. R. A thumb test for distinguishing Mazzard (Prunus avium L.) and Mahaleb (Prunus Mahaleb L.) root-stocks.** *Amer. Naturalist* 65(696): 95-96. 1931.—In 4-10% aqueous solution of iron alum, small pieces of Mazzard roots cause darkening of the solution in a few minutes. Mahaleb causes no change. The reaction is ascribed to "differential quantitative presence of tannic substances."

7992. **NICOLAISEN, R., und O. ROLTE. Der Einfluss der Düngung auf die Eignung der Gurken für Konservierungszwecke.** *Mitteil. Deutsch. Landw.-Ges.* 45 (30): 656-658. 1930.—Artificial fertilizer, to some extent, can serve as a substitute for heavy applications of barnyard manure. The increased yield from the manure is compensated by the lower cost of the fertilizer. No injury to quality follows the use of artificial fertilizer. Omitting an essential nutrient is disadvantageous to the grower and also impairs the pickling quality. Unbalanced amounts of N affect both quality and yield. Different N compounds do not show different effects on either quality or yield. Increasing potassium beyond a certain limit results in decreased quality and yield, while increased amounts of phosphoric acid had a favorable effect on these. Detrimental effects on other characters were not established.—*Authors' conclusions* (*transl. by T. M. Currence*).

7993. **ROSSELLÓ, EDUARDO. Huertos y jardines: Tratado completo del cultivo de toda clase de hortalizas y de las flores en general.** [Orchards and gardens. Complete work on horticulture.] 151p. Francisco Puig: Barcelona, 1929.

7994. **SCOTT, JOHN M. The papaya, a fruit suitable for south Florida.** *Florida Dept. Agric. Bull.* 32. 1-40. 11 pl., 2 fig. 1929.—This article discusses: the cultivation of *Carica papaya*; its use as a food; the biology of the fruit fly, *Toxotrypana curvicauda*, with mention of its natural enemies and control by bagging of fruits; the prevention of nematode injury through soil selection and mulching; and the control of papaya leaf spot by spraying with 4-4-50 Bordeaux.

7995. **SCOTT, JOHN M. Blueberry culture in Florida.** *Florida Dept. Agric. Bull.* 33. 1-19. 10 fig. 1929.

7996. **SLATE, G. L. Filberts.** *New York State* [*Geneva*] *Agric. Exp. Sta. Bull.* 588. 32p. 3 fig. 1930.—This is a rather detailed account of the climatic and soil requirements of filberts, their planting, fertilizing, pruning, propagation, insect pests and diseases, harvesting, pollination, varieties. The information and recommendations are based on observations made over a period of 5 yr. in an extensive variety collection maintained by the Station.—*G. L. Slate.*

7997. **SPINKS, G. T. Self-fertility and self-sterility in cider varieties of apples.** *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 28-33. [1930].—With each variety some of the flowers were tagged and self-pollinated while others, in like positions, were tagged and left to be open-pollinated. 2 varieties set nearly as well when selfed as when exposed to open pollination, 7 varieties set enough from selfed flowers to be listed as slightly self-fertile, and 4 varieties set no fruit, or very few, from self-pollination. The records cover 4 yr.—*W. H. Chandler.*

7998. SWARBRICK, THOMAS. The nutrition of fruit trees. IV. Some observations upon the growth and seasonal cycle of food reserves in apple trees. *Ann. Appl. Biol.* 17(3): 681-686. 1930.—The observed growth phenomena of a plant are regarded an indices to a previous physiological condition. Yield considered as a primary criterion of a cultural treatment may give misleading conclusions and obscure significant diagnostic growth features. The seasonal starch cycle is shown to begin in February by a disappearance. Starch reappears in March and begins again to disappear when growth starts in spring. Subsequent reappearance is associated with falling off in shoot growth. All these phenomena occur in a basipetal direction. Internal condition is discussed in relation to external growth features. It is shown that in general, and for the variety, a long narrow leaf is indicative of a high carbohydrate or low N condition, whereas a broad short leaf is indicative of low carbohydrate or high N conditions.—*T. Swarbrick.*

7999. SWARBRICK, THOMAS. Root regeneration upon transplanted apple rootstocks. *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 40-46. 3 pl. [1930].—On October 15, 1928, 100 stocks of Malling Type 13 were removed from the stool beds, more than a month earlier than in nursery practice. The larger stocks were cut back to 20 inches, the smaller to 8 in. Leaves were not removed from the parts left, but fell within 14 days after planting. On half of the smaller and half of the larger stocks all the roots were removed to the bark. The other half received no root pruning. New root formation had begun by Nov. 15. Thick, white, fleshy roots had started from the stems of all stocks. Before January 18 the ground had frozen rather deep, but the number and length of new roots had increased considerably since November 15. By March 20, stocks from which all roots were removed had more new roots from the stem, but stocks that had no root pruning had small, thread-like, sharply-pointed roots growing from the old. At this date buds were still dormant. By May 28, root growth had become rapid. In addition to the elongated roots there were new slender pointed roots just starting from the older parts of the thick, white, fleshy roots. These fleshy roots were rounded at the apex. The stocks from which no roots were removed at transplanting still had fewer thick, fleshy roots from the stem, but enough thread-like roots from the old roots to make their total root systems considerably the larger.—*W. H. Chandler.*

8000. TANAKA, TYÔZABURÔ, and YUICHIRÔ TANAKA. Nippon ni okeru Kankitsu no Hanshoku. [Propagation of citrus fruits in Japan.] *Kankitsu Kenkyû* [*Studia Citrologica*] 3(2): 197-207. 1930.—The trifoliate orange (*Poncirus trifoliata*) and Yuzu (*Citrus junos*) are commonly employed as the rootstocks for commercial species of citrus fruits in Japan, the latter being more deep-rooted and non-dwarfing, but they are equally hardy and resistant to enemies. The former is earlier in germination and more rapid growing at the beginning, but its growth is greatly retarded within a few years from the start, causing much dwarfing of the top. The growth of the Thomson navel orange, Maltese blood orange, and the Hyûganatsu (*C. tamurana*) is greatly hindered by using the trifoliate orange as the rootstock, and this defect is proved to be overcome by approach grafting the Yuzu root on the side of the weakened plant. In the warm regions of Japan, the Yamamikan (*C. intermedia*) is successful as a rootstock, and the Sunki (*C. sunki*) is valued in Formosa as a stock for all kinds of citrus fruits. A table is appended to show the result of a congeniality test of 28 kinds of citrus fruits through reciprocal grafting.—*T. Tanaka.*

8001. UPSHALL, W. H. Investigations on the propagation of apples from root cuttings. *Proc. Amer. Soc. Hort. Sci.* 26: 80-81. 1929 (1930).—Apple variety root pieces which have given a poor stand of plants because of their frequent failure to form new roots have been induced to root more readily by grafting on them a piece of a 1 yr. apple seedling as a "nurse top." Activity of amylase and catalase is greater in the 1 yr. seedling roots than in the variety roots but no consistent differences in respiration and rate of disappearance of food reserves in propagation tests have been found. Gum forms quickly in the vessels and acts as a barrier to water conduction in these channels.—*W. H. Upshall.*

8002. VIANI, PIETRO. Trattato di orticoltura. [Horticulture.] Vol. 1. Orticoltura generale. Vol. 2. Orticoltura speciale. 1215p. 431 fig. Francesco Battiato: Catania, 1929.

8003. VIDAULT, A. La taille des arbres fruitiers mise à la portée de tous. Première partie. Les meilleures formes et leur conduite. 48p., 82 fig. A. Vidault: Lyon.

8004. [ANONYMOUS.] A new hybrid citrus. *Gard. Chron.* [*London*] 88 (2295): 507. 1 fig. 1930.—Brief mention of a hybrid, grapefruit × tangerine orange. It is intermediate in size between the parents; in form and color it resembles the tangerine; it combines the sweetness of the tangerine with the tartness of the grapefruit. As yet it is unnamed.

8005. ANONYMOUS. The Iris Year Book, 1930. 127p. Portrait. 21 pl. (1 col.), 7 fig. Iris Society: Tunbridge Wells, England, 1930.—Accounts of iris shows and awards, with articles on: "Growing irises in sand," "Iris species," "Planting irises for particular purposes," "The ideal iris," "Irises of now and then," "Notes on new irises," "Irises in Australia," "Irises in Germany," "Iris on the Riviera," "Iris species from seed," and "Dwarf iris" are given by prominent authorities.—*G. M. Tees.*

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 6144, 6271, 6281, 6385, 6412, 6414, 6585, 6588, 7809)

8006. AUSTIN, LLOYD. Breeding pines for more rapid growth. *Jour. Heredity* 19(7): 288-301. 7 fig. 1928.—The Eddy Tree Breeding Station was established at Placerville, California, in 1925 for carrying on long-time experiments in breeding and selection with timber trees, particularly pines and walnuts. To locate the individual trees of *Pinus ponderosa* that have the greatest inherent vigor, progenies of several hundred trees are being grown in the nursery, and seed from 800 individual trees widely scattered throughout the range of this species is being sought. Selections for vigor have been made in forest nurseries. Seed has been obtained of 87 species and important varieties of pines, and it is hoped to get the seed of about 30 other pines which occur in various parts of the northern hemisphere. Several seedlings have been secured of two species crosses, *Pinus ponderosa* × *P. sabiniana*, and *P. ponderosa* × *P. montana*. The set of cones resulting from the 1927 pollination work indicates that considerable seed will be harvested in the fall of 1928 from 18 or more species crosses, including crosses of *P. ponderosa* and *P. radiata* with most of the important timber pines of the Southern states. Pine pollen has been obtained from 23 states and from Canada, Mexico, Guatemala, and the Philippine Islands.—*L. Austin.*

8007. BARBEY, A. A travers les forêts de pinsapo d'Andalousie. Etude de dendrologie, de sylviculture et d'entomologie forestière. [Through the pinsapo forests of Andalusia.] 110p. Portrait. 41 pl. Libraire Agricole: Paris; Jules Duculot: Gembloux, Belgium; 1931.—This volume is published in memory of Edward Boissier, who nearly a century ago visited the forests of *Abies pinsapo* in the Sierra de las Nieves, northeast of Gibraltar. The preface, by L. Pardé, reviews Barbey's experiences in

the pinsapo region, dwelling especially upon the utilization of *A. pinsapo* as an ornamental tree. Unlike other *Abies* spp., the glaucous needles are arranged spirally. The seeds planted by Boissier at Geneva in 1838 have produced magnificent trees 20 m. high and 1.30 m. in diam. In Paris the tree is hardy, though sometimes killed back by frost, but farther north plantings suffered severely in the ice storms of 1928-1929. The species is not hardy in northern Europe. It should be especially valuable for the Mediterranean region. Except for the recently discovered var. *maroccana* Ceballos et Bolanos, the tree is confined to not more than 1200 ha. on the northeastern slopes of the Sierra Berneja, S. del Pinar, and S. de las Nieves in southwestern Spain. Browsing by goats and sheep,—added to the damage by autumn hurricanes, dry summers, inroads of charcoal-burners, and insects,—is causing rapid extinction of this valuable timber tree. The picturesque village of Ronda at the base of Sierra de las Nieves was visited by Boissier in 1837 and in retracing his grandfather's footsteps, Barbey gives us reminiscences of the famous botanist, including letters, extracts from Boissier's rare original account of *A. pinsapo*, facsimile pages of Bowles' "Introduccion a la historia naturel, y a la geografia de España" (1775), reproductions of Boissier's type specimen and of Heyland's illustrations of *A. pinsapo*. There are detailed accounts of the individual forests, and notes on the flowering plants covering the desolate lower mountain sides. The latter portion (p. 94-110) is devoted to forest entomology and to a bibliography. *Termes lucifagus** Rossi (Neuropt.) lives on the dead wood. The following species of Coleoptera occur on *A. pinsapo: Ergates faber** L., which lives primarily on resinous material and is unknown in the *A. pectinata* region of Central Europe; *Callidium bajulus* L., whose larvae feed on twigs; *Anthaxia sepulchralis** L.; *Ancylochira octoguttata** L. (?); *Buprestis flavoangulata* Fairm., frequent also in the cedars of Morocco; *Chrysobothris solieri* Lap.; *Cryphalus numidicus* Eich.; *Cryptturgus barbeyi* Strohm, the minute larvae of which perforate twigs and cause considerable damage; *Ips erosus* Woll.; *Rhyncolus elongatus** Gyll.; *Calopus serraticornis* L.; *Otiorhynchus jaenensis** St.; and *Brachyderes pubescens* Boh. The Hymenoptera *Sirex gigas** L. (Sericidae) and *Xylocopa violacea** L. (Anthophora) are noted. *Hypoclampa chrysorrhoea* Klug and *Perithous mediator* F. were also found but the hosts are unknown. Of the Lepidoptera (Pyralidae) the recently described *Dioryctria aulloi** Barb. infests the cones and severely injures or destroys the terminal buds. The insects of this area are decidedly different from those of the *Abies* forests of northern Europe and have much in common with those infesting the pines of the Mediterranean and the cedars of Morocco.—*H. K. Svenson.*

8008. BELYEA, HAROLD C. Forest measurement. 319p. John Wiley & Sons, Inc.: New York, 1931.—Textbook.

8009. BERTIN, A. Les bois du Gabon. (Mission Forestière Coloniale, Tome 2.) 2nd ed. 304p. 3 maps. 8 pl. Librairie Larose: Paris, 1929.—A list of proposed standard trade names is given for 90 spp., together with the scientific names, where known, and the other vernacular names. For 27 spp. that are relatively abundant and suitable for commercial exploitation, and for 22 others that are less abundant (comprising altogether 60-65% of the stand), there are listed trade, scientific and native names, and possible uses. Similar information is given for 22 spp. that are valuable chiefly for their seed, fruit, latex, or other by-products. Other lists show the first 49 woods classified according to use and also according to density and hardness. The physical properties of some 60 spp. are described, with notes on size of the trees and general appearance of their bark. For the present, attempts at exploitation should be directed toward the 71 trees that are listed, and the rest of the more than 1,000 woody spp. can be ignored.—*W. N. Sparhawk.*

8010. BRUTZKUS, BORIS. Rysslands skogsbruk. De naturliga och ekonomiska förutsättningarna för det ryska skogsbruket. [Russia's forestry. The natural and economic bases for Russian forestry.] *Skogen* 18(7): 157-164. 2 fig. 1931.—Russia holds 618 million has. of productive forest, or 3 times the forest area of the U. S. A. and 40% of the temperate zone forests. European Russia has 150 million has., and Asiatic Russia 468 million. From 62.5% in the northwest the percentage of forest land sinks to 4% in the southeast. Conifers predominate. Under the law of 1923 about 26 million has. were allotted to village communal forests. The more accessible forests are being very rapidly depleted, yet there is a great scarcity of wood, including fuelwood, in many parts of Russia.—*H. I. Baldwin.*

8011. BUSSE, J., C. FROMME, U. MÜLLER, V. SCHÜPFER, A. SCHWAPPACH, und HEINRICH WEBER. Handbuch der Forstwissenschaft. Bd. 3. Betriebslehre. [In: Lorey, Tuisko, Heinrich Weber, et al. Handbuch der Forstwissenschaft. 4. Aufl.] [Manual of forestry. 3. Management.] xii+643p. Illus. H. Laupp'sche Buchhandl.: Tübingen, 1927.

8012. EDGERTON, D[AISY] PRISCILLA. First steps in southern forest study. 30Sp. 131 fig. Rand McNally & Co.: New York, 1930. Price, $1.40.—This is a textbook of forestry, prepared for use in public schools of Mississippi.—*W. N. Sparhawk.*

8013. EDWARDS, J. P., (introduction by J. P. MEAD). Growth of Malayan forest trees, as shown by sample plot records, 1915-1928. *Malayan Forest Rec.* 9: 1-151. 1930.—Price, 4s. 6d.—The records are based on measurements of over 4,500 trees, representing the following spp.: *Balanocarpus heimii, Calophyllum wallichianum, Dryobalanops aromatica, Dyera* sp., *Hopea intermedia, Intsia bakeri, Mesua ferrea, Ochanostachys amentacea, Palaquium gutta, P. maingayi, P. rostratum, Scorodocarpus borneensis, Shorea acuminata, S. barbata, S. bracteolata, S. ciliata, S. curtisii, S. leprosula, S. macroptera, S. parvifolia, S. sericea,* and *Gordonia concentricicatrix.* As none of these produces annual rings, the growth was ascertained by means of successive measurements on marked trees, from which were computed the periods required to pass through each 12-inch girth class. Most of the spp. measured grow much faster than European trees on the best sites.—*W. N. Sparhawk.*

8014. HYDE, H. A. Welsh timber trees, native and introduced. iv+107p. 25 pl., 21 fig. National Museum of Wales and the Press Board of the University of Wales: Cardiff, 1931. Pr. 1s.—This book deals only with those trees whose timber is of commercial importance, including a number of introduced spp. The native woodlands belong to the plant association called Deciduous Summer Forest. Their origin and their decay through man's interference, and the development of forestry in Wales are sketched. The chief timber trees are described and figured, with notes on distribution, quality of the wood, and economic uses. Bibliography of 87 titles.

8015. JOLYET, A. Le dry-farming et le reboisement des friches dans la Haute-Saône. *Bull. Trimest. Soc. Forest. de Franche-Comté* 19(2): 55-68. 1931.—The greater part of the lands in need of reforestation in the Haute-Saône (France) are on exposed slopes or the undulating limestone plateau at elevations of 300-350 m. Stones are abundant on the surface and the lands are arid, owing to the shallow layer of soil, which is often less than 8 cm. deep. The principles developed in dry farming in the semi-arid United States are used as the basis for the following suggestions in reforestation practice: cultivate the soil, dig trenches 3 m. long at intervals of 1 m. along the contours, cultivate the planting holes as deeply as possible and add to the soil either $MgCO_3$ or Kainit, place stones around each planted seedling, protect the holes from solar radiation and consequent evaporation by small stone shelters or brush. —*J. Kittredge, Jr.*

8016. McCOMBS, T. H. Turpentines from pines. Turpentines from Pinus radiata and P. pinaster. *New Zealand Jour. Sci. and Tech.* 12(6): 333-337. 1931.—Yields of

gum turpentine are about ⅓ as great as from longleaf and slash pines in the U. S. A.; of wood turpentine, still less. Whether production would yield a profit is unknown. The 2 spp. are about equal in quantity and quality of turpentine yields; the product is 1st grade.

8017. MÅRN, L. MATTSSON. Bedömningsfelen vid höjd- och toppskottsmätning. [Errors in estimating height and leader length.] [German summary.] *Skogsvårdsför. Tidskr.* 29(2): 97-119. 5 fig. 1931.—A comparison of 8 men engaged in a forest survey in Central Sweden showed a maximum deviation from the mean of 19% in total height estimation for trees 12-16 m. tall, with an average variation of 0.9m. In estimating the length of the last 10 whorls for trees of the same height, the maximum deviations were ±2.6m. for spruce and ±2.1m. for pine, increasing with height of tree. The Christen hypsometer was used.—*H. I. Baldwin.*

8018. MATTOON, WILBUR R., and PARKER ANDERSON. Forest trees of Minnesota. A pocket manual describing their most important characteristics. *Univ. Minnesota Dept. Agric. Pamphl.* 17. 1-54. Illus. 1930.

8019. MELDERS, K. Neue Waldsaatmethode. (Vorläufige Mitteilung). *Suomen Metsätieteel. Seura Commentationes Forestales [Helsingfors] No.* 3. 1-16. 3 fig. 1929.—By this method the sowing is done without preliminary preparation of the ground. After the moss is moved aside, depression ½-1½ inches deep is made with a special spade, and the seed are placed in it. The seedlings grow faster and their condition is better than in ordinary sowings.—*K. Melders.*

8020. MEMMLER, K., et al. Handbuch der Kautschukwissenschaft. [Manual on rubber.] 766p. 246 fig. S. Hirzel: Leipzig, 1930.—Deals mainly with chemical and physical properties and methods of testing, but 161p. are devoted to botanical and cultural aspects, harvesting of the latex and its preparation for market.

8021. RECKNAGEL, ARTHUR B., and SAMUEL N. SPRING. Forestry: a study of its origin, application and significance in the United States. vii+255+xxxviip. 14 pl. F. S. Crofts Co.: New York, 1929. Pr. $3.00.—The book is intended not only as an introductory textbook on forestry, treated from the historical, economic and objective viewpoint, but also as a volume of interesting and useful information for the general public. It deals with the development of forestry and public forestry policy, the application and present status of forestry, and forestry research and education.—*W. N. Sparhawk.*

8022. SCHWAPPACH, A., H. GÖRCKE, und HEINRICH WEBER. Handbuch der Forstwissenschaft. Bd. 4. Forstgeschichte, Forstliche Rechtskunde, Forstpolitik. [In: Lorey, Tuisko, Heinrich Weber, et al. Handbuch der Forstwissenschaft. 4. Aufl.] [Manual of forestry. 4. History, legislation and policy.] xvi+770p. H. Laupp'sche Buchhandlung: Tübingen, 1927.

8023. STORY, FRASER (editor). The Empire forestry handbook 1931. 189p. Empire Forestry Association: London, 1931.—This manual contains articles on higher forestry education, research institutions dealing with Imperial forestry, forest resources of the Empire, arrangements for the investigation of Empire timbers, and trade names of Empire timbers.

8024. WAGNER, CHRISTOF. Der Neuaufbau der deutschen Forstwissenschaft: ein Mahnwort an die forstliche Welt. 40p. Paul Parey: Berlin, 1929. Pr. 2.50 M.—This book is primarily a plea for the restoration of forest management to the high plane it formerly occupied in the profession. The author thinks that it has become of secondary importance in the minds of foresters, is dominated by silvicultural considerations, and has degenerated into a matter of mere handicraft. He enlarges upon the importance of a fuller development of forest management on the theoretical and scientific bases without losing sight of practical considerations.—*L. J. Young.*

8025. WRIGHT, CHARLES HERBERT. Some modern aspects of rubber cultivation. 132p. 28 pl. Maclaren & Sons: London, 1928.—This survey of up-to-date practices in cultivating and harvesting rubber in the East Indies discusses rubber cultivation, soil treatment, including manuring and the effect of manuring on disease, cover crops, soil conservation and drainage, tapping, selection and propagation of high yielding trees by bud grafting, and the incidence of disease in bud grafts.—*L. G. Polhamus.*

8026. ANONYMOUS. The use of home-grown larch poles for transmission lines. *Bull. No. 8 of "Forest products research." Dept. Sci. & Indust. Research* iv+25p. 5 pl. H. M. Stationery Office: London, 1931, Pr. 2 s.

PHARMACOGNOSY AND PHARMACEUTICAL BOTANY

HEBER W. YOUNGKEN, *Editor*

(See also in this issue Entries 6343, 6508, 6521, 6525, 6530, 6531, 6546, 7081, 7118, 7135, 7886, 7935, 8016, 8164)

8027. AOYAMA, S. Ueber das Saponin der Camellia jap[onica] L. (Camellia-Saponin). [In Japanese.] *Jour. Pharmaceut. Soc. Japan (Yakugakuzasshi)* 50(4): 378-379. [German summary p. 59.] 1930.—As arabinose has been recognized in the *Panax* saponin, the sugar solution from the *Camellia* saponin was again subjected to hydrolysis and arabinose was found in it. Using the Bertrand method, di- and polysaccharides were also detected. The formula for the *Camellia* saponin, earlier proposed, $C_{47}H_4O_22 \cdot C_5H_{10}O_5$, is now corrected to $C_{51}H_{90}O_{23} \cdot 2H_2O$.—*O. F. Black.*

8028. CASSAMAGNAGHI, A., J. RIET, y F. CASSAMAGNAGHI. Intoxicación de las Gallinas por semillas de Arauja albens. [Poisoning of fowls by seed of Arauja albens.] *An. Escuela Vet. Uruguay* 1(7/8): 251-260. 1929.

8029. COLLIN, G., and T. P. HILDITCH. Dika fat (Irvingia butter). *Chem. & Ind.* 49(10): 138T-139T. 1930.—Analyses of the fats of the kernels of *Irvingia* spp.

8030. GATES, FRANK C. Botanical notes, 1928-1929. *Trans. Kansas Acad. Sci.* 33: 26-28. 1930.—Short notes on unusual botanical incidents near Manhattan, Kans., including a case of hog poisoning by *Rudbeckia laciniata.* —*F. C. Gates.*

8031. GEORGI, C. D. V., and E. A. CURTLER. The periodic harvesting of tuba root. (Derris elliptica Benth.) *Malayan Agric. Jour.* 17(9): 326-334. 1929.—The results show that, taking both the yield of root and the amount of ether extract into account, the optimum age for harvesting is when the plants are 25 months old.—*Authors' summary.*

8032. GOSWAMI, DHANRAJ PURI, and SIKHIBHUSHAN DUTT. "Margosin"—the alkaloid derived from Neem [Melia azedarach L.] leaves. *Allahabad Univ. Studies* 5: 85-86. 1929.

8033. JACOBS, WALTER A., and ELMER E. FLECK. Saponins. 5. The partial dehydrogenation of hederagenin. *Jour. Biol. Chem.* 88(1): 153-161. 1930.

8034. JERMSTAD, AXEL. Sur les constantes de l'huile retirée des graines de Ribes rubrum L. (petite groseille). [Constants of the oil from seed of R. rubrum.] *Jour. Pharm. et Chi.* 13(5): 243-244. 1931.

8035. KAKU, TENMIN, und TOICHIRO KONDO. Über das ätherische Öl von Asarum sieboldi var. seoulensis Nakai. (1. Mitteilung.) [Ethereal oil of A. s. var. seoulensis.] *Jour. Pharmaceut. Soc. Japan* 51(1): Japanese, 8-17; German summary, 3-7. 1931.—Chemical analysis of this ethereal oil.

8036. KUWATA, S. Studien über die gegen Diabetes verwendeten Volksdrogen. (IV. Mitteilung.) Über die Bestandteile der Rinde von Aralia chinensis L. var. glab-

rescens. (III). Eigenschaften des wasserlöslichen Saponins. [Popular drugs used against diabetes. IV. Constituents of the bark of A. chinensis var. glabrescens. III. Characteristics of the water-soluble saponins.] *Jour. Pharmaceut. Soc. Japan* 51(1): Japanese, 17-31; German summary, 7-11. 1931.

8037. ORECHOFF, A., und G. MENSCHIKOFF. Über die Alkaloide von Anabasis aphylla L. (1. Mitteil.) *Ber. Deutsch. Chem. Ges.* 64(2): 266-274. 1931.

8038. PENFOLD, A. R., and J. L. SIMONSEN. Note on the leaf oil from Dacrydium franklini, Hooker. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 95-101. 1929(1930).—Chemical studies on oil from leaves of *D. franklini* from Tasmania, reported in detail, show that the component described by Baker and Smith as dacrydene is identical with *d*-Δ^4-carene.

8039. PETITEAU, S. Manuel de Droguerie-Herboristerie. [Manual of drug plants.] 437p. 146 fig. J. B. Baillière et Fils: Paris, 1929.

8040. SCHRÖDER, M. J., en H. G. DE ZAAIJER. Handleiding bij het onderwijs in de receptuur. Pharmacognosie. [Manual of instruction in dispensing. Pharmacognosy.] 5th ed. 364p. Wolter's Uitgevers-Maatschappij: Groningen and Den Haag, 1928. 4.90 M.

8041. STEYN, D. G. Poisonous plants in South Africa hitherto unknown. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Net. Sect.* p. 234-246. 1929(1930).—The following plants, not recorded as toxic in the literature at the disposal of the author, were proved poisonous:—*Amaryllis belladonna* (referred to as *Nerine* sp. in original article), most probably causing heart failure; *Vallota purpurea* Herb. causing severe gastro-intestinal irritation; *Dimorphotheca calendulacea* Harv. causing prussic acid poisoning; *Geigeria aspera* Harv. and *G. zeyheri* Harv., both causing "vomiting-disease" in sheep; *Lotononis involucrata* Benth., containing prussic acid; *Elephantorrhiza burchelli* Benth., a severe gastro-intestinal irritant; *Strychnos henningsii* Gilg., an attack resembling strychnine poisoning; *Melia azedarach* L., causing symptoms of paralysis and gastro-intestinal irritation; *Melianthus comosus* Vahl, proved poisonous by H. H. Curson; *Zygophyllum microcarpum* Licht. causing general paralysis and severe gastro-intestinal irritation.—*D. G. Steyn.*

ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 6074, 6077, 6134, 6275, 6307, 6318, 6329, 8073, 8142, 8169, 8178, 8179, 8492, 8739)

8042. BERKELEY, C. The green bodies of the intestinal wall of certain Chaetopteridae. *Quart. Jour. Microsc. Sci.* 73(3): 465-476. 1 pl. 1930.—In the polychaetous annelids—*Mesochaetopterus taylori, Phyllochaetopterus prolifica* and *Lepidochaetopterus pottsi*—living near Nanaimo, Brit. Columbia, the intestinal cells have a green color due to contained organisms which experiments show may under certain conditions develop flagella and become motile. No nucleus, contractile vacuole or pyrenoids could be seen and the pigment is diffuse, not in chromatophores. These organisms seem to be similar to those that have been seen in *Chaetopterus variopedatus*. It is uncertain whether they are parasites or symbionts,—more probably the latter, for they could absorb waste matters of the animals and furnish the oil which is abundant in the intestinal cells. Since the annelids live in the dark, no photosynthesis takes place. The organism is tentatively classed as a member of the Chrysocapsinae with the name *Chrysocapsa* chaetopteri* (p. 475).—*A. L. Treadwell.*

8043. DEKKER, ERNST. Die Phylogenie des Phaeophyceen-Astes. *Bot. Arch.* [*Leipzig*] 27(1/2): 159-224. 1 fig. 1929.—Evidence reviewed in detail from the morphology of reproduction, from vegetative characters, and from here newly reported serological tests is in agreement in reconstructing the phylogeny of the Phaeophyceae. The class is derived from the Heterokontae. Progressive development of sexual organs and differentiation of generations take place, not once, but along each major line of evolution within the group. Sexual reproduction passes from isogamy through anisogamy to oogamy. There is a tendency toward suppression of one generation, either sporophyte or gametophyte. The reproductive cells are at first lateral on assimilatory filaments, which become reduced to paraphyses, and then tend to become associated in sori. Reduction of assimilatory filaments leads to the formation of a cortical parenchyma. The method of growth, primitively of the diffused type, becomes intercalary. The intercalary meristem tends to shift toward the apex and is replaced by an apical cell, or in another direction again becomes diffused (in Laminariaceae with a return to the intercalary position). Intercalary growth is often retained in hairs after it has been lost in the main thallus. Elaboration of new tendencies does not necessarily bring more satisfactory adaptations. At times the more complex types of vegetative and reproductive differentiation may be lost in a regression toward the simpler condition.—*I. F. Lewis.*

8044. FRÉMY, P. Myxophycées récoltées aux îles Chausey au cours de l'excursion du Laboratoire maritime de Saint-Servan du 25 Août 1926. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(5): 381-390. 19 fig. 1928.—An annotated descriptive list, including *Aphanocapsa* sesciacensis* (p. 383). *A. littoralis* is new to France.

8045. FRÉMY, P. Gloeocapsa polydermatica Kütz. var. duquesnayi n. var. *Bull. Soc. Linn. Normandie* 1: 92-93. 1928(1929).—From France.

8046. FRITSCH, KARL. Die systematische Gruppierung der Thallophyten. *Mitteil. Naturwiss. Ver. Steiermark* 66: 201-215. 1929.—The author maintains the primary separation of the plant kingdom into 2 "Regions"—Thallophyta and Cormophyta. His present classification of the Thallophyta, a modification of that adopted by him in his revision of Wiesner's "Elemente der wissenschaftlichen Botanik (1909)," divides the Thallophyta into 11 "Unterabteilungen": Schizomycetes, Cyanophyceae, Myxomycetes, Dinoflagellatae, SILICOPHYCEAE (n. n. for Bacillarieae or Diatomeae), Zygophyceae, Chlorophyceae, Charophyceae, Phaeophyceae, Rhodophyceae, Eumycetes. The Schizomycetes are divided into 2 classes, Eubacteria and Myxobacteria; the Eubacteria into 2 orders, Haplobacteria and Trichobacteria; the Haplobacteria into 3 families, Coccaceae, Bacteriaceae, and Spirillaceae; the Trichobacteria into 3 families, Chlamydobacteriaceae, Actinomycetaceae, and Beggiatoaceae. Except for Dinoflagellatae, an exception because of their animal affinities, names of all autotrophic "Unterabteilungen" end in "phyceae," of all heterotrophic in "mycetes." The classification here presented proceeds in general to the orders recognized, in some cases to the family.

8047. FUNK, GEORG. Die Algenvegetation des Golfs von Neapel nach neueren ökologischen Untersuchungen. *Publ. Staz. Zool. Napoli* 7 (Suppl.): 1-507. 20 pl. (1 col.) 50 fig. 1927.—The introduction (pp. 1-17) gives the history of algal studies at Naples and the relation of the projected work to a complete survey of the area. The topographic section (pp. 18-219) analyzes the various localities in groups according to their gross ecological character, assembling first on the basis of water depth and subdividing according to water circulation, salinity and similar factors. For each locality details of substratum, population, date—often for several spots and several dates of observation in a given locality—are given, with a general discussion involving seasonal or more extended and permanent floral changes. The algal flora of grottoes is presented in detail in relation to illumination. Dredging and hand sampling were employed

for shallow water. In water of moderate and of considerable depth dredging alone was available, the maximum samples being taken from about 150 meters. It appears that algae were practically absent below 100 m., and often disappeared at about 70 m. The general section (pp. 220-307) discusses the character of the vegetation under various headings, including especially gross morphology and distribution, the substratum, types of associations, periodicity and alterations in the flora. For the entire flora the Rhodophyceae constitute about 63.5%, the Phaeophyceae 22.5%, and the Chlorophyceae 14%. Tables give distribution in relation to light and depth, and the species in reproduction at various seasons. The systematic section (pp. 308-478) lists the species present, giving popular names, references to figures, types of association in which the plant is concerned, and some general notes on synonymy, distribution, and morphology. The following are reported as new (none of which are described or illustrated except as indicated): *Codiolum* dudresnayae W. Zimmermann n. sp. (descr. p. 309); *Bryopsis* monoica (Berthold Ms. 1880) nom. nov. = (*B. pulvinata* Oltmanns) (p. 332); *Derbesia* sirenarum n. sp. (p. 335); *D.* corallicola n. sp. (p. 335); PROTOTILOPTERIS (Tilopteridaceae), based on *P.* bertholdii (Berth.) gen. nov., nom. nov. (p. 359); *Gastroclonium* pygmaeum* n. sp. (p. 405); *Nitophyllum* gaiolae n. sp. (few words of description) (p. 409); *Dasya* corallicola* n. sp. (few words of description) (p. 457); *Seirospora* iridescens n. sp. (few words of description) (p. 468).—*W. R. Taylor.*

8048. **GHOSE, S. L. A curious method of reproduction in an aquatic species of Anabaena.** *Jour. Indian Bot. Soc.* 8(2): 129-130.—2 fig. 1929.—In an unidentified sp. common as "water-bloom" at Rangoon, separation of vegetative cells and even heterocysts occurs at many places in the filament, "with a jerk and rather forcibly." Division of the separated cells and segments to form new filaments is inferred. No spores were found.—*W. Dudgeon.*

8049. **GHOSE, S. L. Five more Myxophyceae from Burma.** *Jour. Indian Bot. Soc.* 10(1): 35-37. 1 pl. 1931.—Descriptions and localities of 5 forms not previously recorded from Burma: *Chamaesiphon filamentosa* Ghose; *Aulosira fertilissima* Ghose; *Rivularia natans* (Hedw.) Welw.; *Tolypothrix limbata* var. cylindrica* (p. 36), from Mandalay; and *Scytonema* leptobasis* (p. 36), from Maymyo.—*W. Dudgeon.*

8050. **KUSCHAKEWITSCH, SERGIUS. Zur Kenntnis der Entwicklungsgeschichte von Volvox.** *Arch. Protistenk.* 73(3): 323-330. 1 pl., 14 fig. 1931.—In the development of the parthenogonidia of *Volvox tertius, V. aureus* and *V. globator* a hollow cup of cells is first formed, and this turns inside out before closing over to form the characteristic hollow sphere. In *V. tertius* and *V. aureus* this happens by the turning back of the edges of the cup; in *V. globator*, by the turning out of the bottom of the cup through the open end. This is thought to indicate that the formation of parthenogonidia is homologous to a local invagination of the surface of the parent colony, reversing the normal surface relations and necessitating a turning inside out to bring the original external surface once more to the outside. Since the first secretion of jelly occurs at the same time as the turning inside out of the cup, it is believed that the 2 processes may be causally related in some way. The paper is a posthumous reprint of an earlier paper, with an introduction by N. CHOLODNY.—*L. E. Noland.*

8051. **MEYER, K. Über die Auxosporenbildung bei Gomphonema geminatum.** *Arch. Protistenk.* 66(3): 421-435. 2 pl. 1929.—This diatom is shown to be a diplobiont like other members of the Pennatae whose cytological changes have been studied. Individuals of 2 varieties of *G. geminatum* were used. Two gametes are formed in each cell. The 1st nuclear division in their formation is preceded by characteristic synaptic and diakinetic structures of the chromatic figures. Each new nucleus then contains 14 chromosomes. Division of the protoplast accompanies this first, heterotypic, division. Homoeotypic division of the nuclei follows; and a large and a small nucleus in each cell result, the latter usually disappearing but in a few instances persisting. The isogametes then unite: the cytoplasm of both mixes; but the nuclei remain separate, so that the zygote contains 2, or 3, nuclei. The zygote immediately enlarges; the large nuclei unite; and a thick wall is developed about the entire structure, or auxospore. This spore may further be distinguished from a vegetative cell by its asymmetric form and the presence of 2 chromatophores. By continuous increase in size, the protoplast bursts out of the wall as a vegetative cell of characteristic shape and with wall already formed.—*F. Drouet.*

8052. **NIELSEN, EINER STEEMANN. Einige Planktonalgen aus den warmen Meeren.** *Dansk Bot. Arkiv* 6(9): 1-13. 1931.—Diatomeae: *Bacteriastrum* tenue* (p. 2) and *Chaetoceros* pseudosymmetricus* (p. 4), Indian Ocean; *C.* malauensis* (p. 5), Celebes and Sunda Seas; *Rhizosolenia* blavyana (*Guinardia b.* Péragallo) (p. 7). Dinoflagellatae: *Diplopsalis* ostenfeldii* (p. 8), off north coast of New Zealand. Chlorophyceae: DANASPHAERA (p. 10), near *Pachysphaera,* type *D.* indica* (p. 10), Indian Ocean.

8053. **OLLIVIER, G. Sur les bromuques de divers Ceramiacees.** *Compt. Rend. Acad. Sci.* [*Paris*] 186 (18): 1232-1234. 1928.—The contents of these bladder-like cells, called bromuques by Sauvageau, give a red color (due to the presence of bromine) when treated with fluorescein. In *Antithamnion, Antithamnionella* and *Dohrniella* they are large and easily noticeable without a color test. This author has found these bromuques in many species of *Ceramium* (they are more plentiful than at first believed): *C. rubrum, C. circinatum, C. diaphanum, C. strictum, C. elegans, C. tenuissimum,* and *C. byssoideum.* They are lacking in *C. bertholdii, C. ciliatum, C. echionotum* and *C. clavulatum.*—*R. P. Hibbard.*

8054. **SCHREIBER, E. Über Reinkultur und experimentelle Auxosporenbildung bei Melosira nummuloides.** *Arch. Protistenk.* 73(3): 331-345. 1 pl., 2 fig. 1931.—This marine filamentous diatom was successfully cultivated on agar slants. Experiments on the effect of different light intensities on rate of cell multiplication show this diatom to be intermediate between the sun-adapted *Carteria* and the shade-adapted *Biddulphia mobiliensis.* Unfavorable external conditions of many sorts induce fragmentation of the filaments. Auxospore formation was inhibited by increased salt concentrations and induced by decreasing the salinity (e.g., from 4 to 1%, or from 6 to 4%) about cells that had reached the minimal size. Auxospore formation in *Biddulphia sinensis* (here described) in the North Sea in 1926 coincided with an unusual decrease in salinity.—*L. E. Noland.*

FUNGI

C. L. SHEAR, *Editor*

EDITH K. CASH, *Associate Editor*

(See also in this issue Entries 6074, 6134, 6190, 6293, 6296, 6345, 6355, 6511, 6532, 6593, 6595, 6596, 6608, 7599, 7626, 7647, 7648, 7650, 7700, 7751, 8046, 8142, 8652)

FUNGI

8055. **AGOSTINI, A. Glenosporella dermatitidis n. sp. comme cause de la dermatomycose de l'homme.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(1): 23-24. 1931.—*G.* dermatitidis* isolated from dermatomycosis of leg.

8056. **AGOSTINI, A. Bodinia abissinica n. sp. pro-**

voquant la teigne de l'homme en Erythrée. *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(3): 76-77. 1931.—*B. abissinica* (p. 76) from hair in a case of ringworm of the scalp.

8057. ALPINIS, ARV. Untersuchungen über die in Lettland gefundenen Saprolegniaceen nebst Bemerkungen über einige andere Wasserpilze. [Investigations upon the Saprolegniaceae found in Latvia, and observations on some other aquatic fungi.] *Acta Horti Bot. Univ. Latvienesis* 4(1/3): 201-241. 4 pl., 4 fig. 1929.—The author records or describes 41 spp. of aquatic fungi found in Latvia belonging mostly to Saprolegniaceae, but including also some Blastocladiaceae, Leptomitaceae and Monoblepharidaceae. Of these, 7 are recorded as new to Europe. *Saprolegnia* **latvica*** (p. 211), *S.* **papillosa** (*Achyia p.* Humphrey) (p. 218); *Protoachlya* **polyspora** (*Dictyuchus polysporus* Lindstedt) (p. 221), and *Pythiomorpha* **undulata** (*Pythium undulatum* Petersen) (p. 234). *S. monoica* var. *glomerata* Tiesenhausen is identical with *S. furcata* Maurizio. The author derives the Saprolegniales, the Zygomycetes and the Peronosporales from *Ectrogella*, the first two by way of *Aphanomycopsis*. He rejects the view that Pythiaceae and Ancylistaceae show reduction, but thinks that they form steps in an ascending series connecting Peronosporales with *Ectrogella*. The Leptomitaceae, regarded by some authors as related to Saprolegniaceae, differ from the latter and approach Peronosporaceae in the presence of a periplasm in their oogonia.—*A. W. Bartlett.*

8058. BOEDIJN, K. B. Beiträge zur Kenntnis der Pilzflora von Sumatra. *Rec. Trav. Bot. Néerlandais* 26 (2/4): 396-439. 17 fig. 1929.—Lists of the fungi (55) reported up to 1920; and of 142 spp. collected by the author and others since 1920. *Cookeina* **sumatrana** Boed. (p. 407); *Stropharia* **gracilis*** (p. 417); *Claudopus* **cyano-melaenus*** (p. 419); *Phomopsis* **heveae** (*Phylctaena h.* Petch) (p. 423); *Cephalosporium* **hypholomae*** (p. 425) on *Hypholoma fasciculare; Monacrosporium* **megasporum*** (p. 428) on *Elaeis guineensis; Helicoon* **spirale*** (p. 429); and *Camptoum* **palmarum*** (p. 432) on *Elaeis guineensis.*—*M. J. Sirks.*

8059. BRIERLEY, WILLIAM B. Variation in fungi and bacteria. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 2: 1629-1654. 1929.—An introductory survey presents the present position of the genetics of microorganisms. Following is a brief criticism of present ideas of genetic phenomena, concepts and terminology in groups of organisms outside bacteria and fungi; then a critical analysis of the phenomena of variation as applied to bacteria and fungi already described. These phenomena are classified from 2 points of view; first on the basis of morphological and physiological criteria,—an arrangement of the data in phenotypic values, and secondly according to the factors of their appearance and their mode of behavior,—an arrangement of the data in genetic values. A discussion of the correlation between the 2 systems follows. Types of variation in fungi and bacteria are classified on a genetic basis and treated in relation to processes of growth and reproduction in these groups; aberrant types of genetic phenomena are considered. Fungi and bacteria are compared with other groups of organisms in respect to the types of genetic phenomena exhibited, the interpretation and classification of these types, the genetic concepts which emerge and terminology adopted. Finally avenues and directions of genetic research on fungi and bacteria are considered with the possibilities and limitations of such research.—*L. Angst.*

8060. BUSCHKE, A., und A. JOSEPH. Die Sprosspilze. [Yeasts.] [In: W. KOLLE, und A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen. 3. Aufl. W. KOLLE, R. KRAUS, und P. UHLENHUTH. Bd. 5, Teil 1, Lief. 14] p. 321-400. 1 col. pl., 32 fig. (1 col.) Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin u. Wien, 1928.—With a 6½ page bibliography.

8061. BYL, P. A. van der. Die Suid-Afrikaanse Thelephoraceae. *Ann. Univ. Stellenbosch. Reeks A.* 7(3): 3-52. 3 pl. 1929.—*Stereum* **transvaalium*** (p. 40), Tzaneen, Transvaal, and *S. atrocinereum* (*Peniophora atrocinerea* Mass.) (p. 44). Keys to the genera as well as spp. are given.

8062. CEJP, K. Contribution to the knowledge of the Hydnaceae and Phylacteriaceae of Iowa. *Univ. Iowa Studies, Studies Nat. Hist.* 13(3): 3-5. 2 pl. 1931.—An annotated list. The following rare fungi are said to be new for North America: *Acia denticulata, A. uda, A. setosa, Mucronella aggregata,* and *Odontia corrugata.*

8063. CORNER, E. J. H. Studies in the morphology of Discomycetes. I. The marginal growth of apothecia. II. The structure and development of the ascocarp. *Trans. Brit. Mycol. Soc.* 14(3/4): 263-291. 11 fig. 1929.—I. The sterile tissue of the apothecium consists of 2 palisade layers, cortex and hymenium, and an intermediate medulla of radial and interwoven hyphae. Marginal growth is performed by a fascicle of hyphae between the cortex and hymenium. Every hypha in the growing point arises as a lateral 2-3μ wide, the growth-rate of which rises to a maximum, then falls, the fall being accompanied by branching in the proximal part and maturing of the distal part. The distal parts are transformed on the outside of the growing point into cortical hyphae, on the inside into paraphyses; the proximal parts form the medullary hyphae. The hyphal system is therefore a sympodium. The growth of the inner hyphae ceases on reaching the surface of the hymenium, but that of the outer hyphae continues for some time at a slow rate: "hairs" are cortical hyphae with a prolonged period of rapid growth. The hymenium is formed at the margin by the apposition of hyphae, the cortex by apposition and outward rotation. Paraphyses are specialized mucilage hyphae which are commonly pigmented. Cortical hyphae have no such pigment and are not mucilaginous; the enlargement of their cells forms characteristically a pseudoparenchyma supporting the hymenium. An explanation of the sympodium at the growing point is given on the assumption that the apices of the hyphae are fed from the medulla and eventually reach the limit of its nutritional range. Other points in the construction of the apothecium are considered. The hyphal system of the apothecium of *Rhizina inflata* is exceptional, for it is evidently a monopodium.—II. The chief processes in the development of the stipitate apothecium are upgrowth from the substratum, which defines the axis or stem, and marginal and intercalary hymenial growth which define the apothecium. The development of the stem is indirect in that cell-enlargement follows as a separate stage on cell formation. The tissue-pressures of cortex and hymenium are antagonistic and give rigidity to the apothecium. Likewise, in the sessile apothecium can be distinguished a primary period of upgrowth, from initiation of the apothecium to the formation of the hymenium, and a secondary period of marginal and intercalary growth. Helvelloid, cupular, lenticular, perithecioid and immarginate forms of ascocarp are interpreted developmentally, and 2 additional forms, described as turbinulate and cleistocarpic: both are angiocarpic sessile apothecia without a secondary period of development, the turbinulate with, and the cleistocarpic without, a definite hymenium. These forms are shown to constitute a developmental series. Certain series of Operculeae which are considered to be natural are briefly described.—*Author's summaries.*

8064. DASTUR, JEHANGIR FARDUNJI, and JIWAN SINGH. A new Nematospora on cotton bolls in the Central Provinces (India). *Ann. Mycologici* 28(3/4): 291-296. 22 fig. 1930.—*N.* **nagpuri*** Dast. (p. 295). Isolation, culture, and inoculation of healthy plants were successfully carried out.

8065. ENGELKE, K. Beiträge zu der Hannoverschen Pilzflora. I. Jahresber. Naturhist. Ges. Hannover, 1924/25-1928/29. No. 75. 1-36. 1930.—A list with hosts (or substrata) and localities of about 520 Ascomycetes, mostly plant parasites.

8066. GUINEA, EMILIO. Macromicetos de la Guinea Espanola recogidos por el Sr. Martinez de la Escalera.

[Macromycetes from Spanish Guinea collected by Sr. Martinez de la Escalera.] *Bol. Soc. Espan. Hist. Nat.* 31(4): 275-278. 1931.—List of about 14 fungi including *Fomes puberulum* var. microporus (p. 276).

8067. JACCOTTET, JOHN. (Deutsche Bearbeitung von A. KNAPP.) Die Pilze in der Natur. [Fungi.] 250p. 76 pl. A. Francke, A. G.: Bern, 1930.

8068. JOHNSON, MINNIE MAY. The Gasteromycetae of Ohio: Puffballs, bird's-nest fungi and stinkhorns. *Ohio Biol. Surv. Bull.* 4(7): 273-352. 1929.—This paper contains a list of the genera and spp. of the Gasteromycetae found or likely to be found in Ohio, complete descriptions for each of the genera and species with additional notes, and keys for their identification. Five orders, 28 genera, and 92 spp. are included. One genus, *Rhizopogon*, and 4 spp. (*R. roseolus, Geaster schmidelii Lycoperdon fuscum* and *L. tessellatum*), are new records for Ohio. *Pseudocolus* schellenbergiae. (*Colus schellenbergiae* Sumstine) (pp. 338-339).—*M. M. Johnson.*

8069. KALLENBACH, FRANZ. Die Pilze Mitteleuropas. *Die Röhrlinge (Boletaceae)* 1(11): 69-78. 3 pl. (2 col.) Werner Klinkhardt: Leipzig, 1930.—This part contains descriptions of *Boletus bovinus** Fr. and *B. tridentinus** Bres. with 2 colored plates, very complete descriptions and bibliography.—*C. L. Shear.*

8070. KELLEY, ARTHUR PIERSON. Mycorrhizal studies. 1. Mycorrhiza of Mont Alto nursery stock. *Jour. Forest.* 28(1): 34-41. 2 figs. 1930.—Descriptions are given of mycorrhiza found on *Picea abies, Larix kaempferi, Pinus strobus. P. rigida, P. resinosa, P. sylvestris, P. echinata, Juglans nigra, Quercus borealis maxima,* and *Fraxinus americana* grown in the forest nursery at Mont Alto, Pennsylvania. Both ectotrophic and ectendrotrophic forms were found. *Catalpa bignonioides* was without mycorrhiza.—*P. C. Wakeley.*

8071. KUSANO, SHUNSUKE. Observations on Olpidium trifolii Schroet. *Jour. Coll. Agric. Imp. Univ. Tokyo* 10(2): 83-99. 7 fig. 1929.—*O. trifolii* is an epidermal parasite on *Trifolium repens.* The article clarifies the taxonomy and takes up the details of structure and life cycle of the fungus. The fungus is typically dioecious as sexuality occurs between gametes originating from different gametangia. In gametangium and resting cell structure, and in the process of sexuality *O. trifolii* is scarcely different from *O. viciae,* but its gamete is smaller and the former will not infect the host of the latter and vice versa.—*V. O. Graham.*

8072. LUIJK, A. van. Variationsstatistische Untersuchungen an Ustilagineen. *Mededeel. Phytopath. Lab. "Willie Commelin Scholten"* 12: 36-52. 1928.—Length, width, size index (length × width) and form index (length: width) of 10,000 chlamydospores of *Tilletia tritici* were determined. The material was treated in such a way that it became possible to compare 4 formulae which indicate the importance of a difference between 2 fungi. These formulae are (1) $D/(M_1+M_2)$; (2) $D/(\sigma_1+\sigma_2)$; (3) D/mF; and (4) $D/(mF(n)^{\frac{1}{2}})$. The 4th gave very satisfactory results for length, width and size index, but not for form index. When a value of 3 or less is obtained the 2 forms compared are identical, when 6 or more is found the 2 forms are not identical, while between 3 and 6 there is uncertainty. The formula is especially important in comparing 2 fungi which developed on natural media.—*S. J. Wellensiek.*

8073. LUND, AAGE. A new species of Pleotrachelus with remarks on this genus. *Bot. Tidsskr.* [*Copenhagen*] 41(3): 240-243. 1 fig. 1930.—*P. petersenii** (p. 241), Denmark, in *Oedogonium* sp. This is apparently a first record of a *Pleotrachelus* parasitic on fresh-water algae, with the exception of *Olpidium oedogoniorum* (Sorok.) De Wildem.

8074. McCULLOCH, LUCIA, and CHARLES THOM. A corm rot of gladiolus caused by a Penicillium. *Science* 67(1730): 216-217. 1928.—*Penicillium* gladioli causing a rot of corms especially destructive between 12 and 23° C. Pathogenicity has been proved by inoculation, and the connection of the sclerotia with the *Penicillium* established.

8075. MELZER, V. Nové cesty při určování hub. [New ways of determining fungi.] *Veda Prir. Mes. pro Sir. a Pest. ved Prir.* [*Prague*] 8(5): 150-157. 1 pl. 1927.—In studying the higher fungi one should pay attention not only to the microscopic characters and to an examination of the hymenium but should also observe (1) the color changes of the flesh produced by treatments with certain chemicals as $FeSO_4$, analyin water, phenol, etc.; (2) the microscopic structure of the pellicle of the carpophore, whose cells, consisting of dermatocystidia, hairs, granules, etc., have been found to be of great importance in the classification of certain genera.—*V. Melzer (transl. by F. A. Wolf).*

8076. MÖRNER, CARL TH. Discomyceten Urnula craterium (Schw.) Fr.—en för Sverige ny storsvamp. [Urnula craterium; a discomycete new for Sweden.] *Svensk. Bot. Tidskr.* 24(2): 301-310. 1 fig. 1930.—*Urnula craterium,* although common in America, is less common in Hungary, Germany, and France, and is here reported for the first time from Sweden, probably on decayed branches of hazel.—*C. T. Mörner (transl. by G. B. Cummins).*

8077. MORQUER, F. Sur la biologie de Merisma giganteus. (Fr. ex Pers.) *Bull. Soc. Hist. Nat. Toulouse* 58(1): 51-61. 3 pl. 1929.—*M. giganteus* develops in cultures obtained from cuttings, and produces spherical chlamydospores protected by a thick brown membrane. It attacks wood by causing successively oxidation of the lignin, dissociation of the ligno-cellulose complex which frees the cellulose, and finally digestion of the cellulose. The author discusses its taxonomy and biology. *Celtis australis* is a new host.—*E. J. Gilbert (transl.).*

8078. NEGRONI, PABLO. Una nueva Mucedinaceae parásita del hombre. [A new Mucedinaceae parasitic in man.] *Rev. Soc. Argentina Biol.* 6(9/10): 653-663 8 fig. 1930.—From a case of epidermo- and onycomycosis a fungus* was isolated and cultivated. It is apparently a new sp. of *Cephalosporium.*—*J. T. Lewis.*

8079. NEGRONI, PABLO. Procedimiento para cultivo monocelular. [Monocellular cultures.] *Rev. Soc. Argentina Biol.* 6(9/10): 664-666. 1930.—Spores of fungi are diluted in gelatin broth at 35°-40° C. With a Pasteur pipette a small drop is placed on a glass slide which has vaselined borders; it is spread by means of a smaller slide, as if it were a blood film, and covered with a glass with a drop of sterilized water.—The preparation is then examined with a high power lens. If one spore is found in every 2-3 fields the dilution is adequate. The slide is then taken to the incubator to solidify the glycerin. The preparation is sealed with paraffin. Each cell is marked with a circle cut in the glass with a diamond.—After 24-48 hours colonies appear which have originated from one cell and can easily be transplanted. —*J. T. Lewis.*

8080. OGATA, S. Ueber den Pollaccischen Nährboden. [In Japanese, with German summary, p. 52.] *Japanese Jour. Dermatol. and Urol.* 30(5): 442-448. 10 fig. 1930.—Pollacci's medium is more favorable than Sabouraud's for the growth of trichophyta. *Trichophytum violaceum* and *T. purpureum,* which are violet or red on Sabouraud's medium, become dark brownish red on Pollacci's agar; *T. coccineum* becomes glistening dark gray instead of red; *T. fuligineum* becomes deep dark green and readily distinguishable from *T. glabrum* and *T. violaceum.*—*From author's summary.*

8081. OVERHOLTS, L. O. Research methods in the taxonomy of the Hymenomycetes. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 2: 1688-1712. 4 pl., 46 fig. 1929.—In addition to macroscopic features, internal, microscopical features must be considered in identification. Technique of preparing mounts is discussed. All measurements should be made immediately, to avoid shrinkage. Some of the microscopic features which may be helpful in the identification of the forms in which they occur are: cystidia, setae, gloeocystidia, vesicular cells, paraphyses, conducting cells, and hyphal pegs, diameter of hyphae, clamp connections, branching, septation, and incrustation. Tissue differentiation such

as zonation and gelatinization may sometimes be an important taxonomic feature; also the not uncommon accumulations of large crystals of inorganic matter imbedded in the tramal tissues.—*P. D. Strausbaugh.*

8082. **PAUNERO RUIZ, ELENA.** Algunos datos sobre mohos. [Some data on molds.] *Bol. R. Soc. Espan. Hist. Nat.* 31(2): 101-104. 2 fig. 1931.—Includes *Diplosporium* phoespotium* on *Pinus silvestris* (p. 102).

8083. **POEVERLEIN, HERMANN.** Die Gesamtverbreitung der Uropyxis sanguinea in Europa. *Ann. Mycologici* 28(5/6): 421-426. 1930.—The species is found in Germany, Switzerland, Netherlands, the Scandinavian countries, Latvia, Poland, Czechoslovakia, and France, and Scotland. Apparently *Mahonia aquifolium* is its only European host. The uredo stage is the most common, the aecial the least common.

8084. **RAMSBOTTOM, J.** Botanical nomenclature in relation to mycology. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 2: 1661-1666. 1929.—International rules are regarded as necessary, and should be enforced by control in the publication of only such articles that conform to the rules. Uniformity of usage can not be secured by the adoption of a standardized list of fungous names. The difficulties involved in the making and interpreting of rules can best be met by a committee appointed to deal with doubtful cases. The fungi imperfecti, cultural strains varying with the media employed, and physiological races present difficult problems for the mycologist. The author does not offer solutions but attempts to state the problems in order that the specific mycological difficulties may be more clearly recognized. He states that these "should not be rendered more difficult through the lack of a suitable nomenclature capable of expansion."—*P. D. Strausbaugh.*

8085. **RECHINGER, K. H.** Beitrag zur Kenntnis der Pilz-Flora von Aussee in Steiermark. I. Basidiomycetes. *Ann. Naturhist. Mus. Wien* 44: 279-317. 1930.—A list of 586 Basidiomycetes observed during 1912-1929.

8086. **SARTORY, A., R. SARTORY, et J. MEYER.** Etude d'un Acrostalagmus nouveau: Acrostalagmus cinnabarinus, variété minimus. *Ann. Mycologici* 28(3/4): 269-272. 1 pl. 1930.—*A. c.* v. minimus* (p. 269), on the feathers of a decomposing crow, in "la forêt de Neuhof." Cultural characters are given.

8087. **SARTORY, A., R. SARTORY, et J. MEYER.** Étude d'une nouvelle espèce de Sterigmatocystis: Sterigmatocystis albo-rosea. *Ann. Mycologici* 28(5/6): 358-359. 6 fig. 1930.—*S. albo-rosea** (p. 358), from banana skin; locality not stated.

8088. **SARTORY, A., R. SARTORY, et J. MEYER.** Étude d'une nouvelle espèce de Sterigmatocystis. Sterigmatocystis cameleo. *Ann. Mycologici* [*Berlin*] 28(5/6): 360-361. 4 fig. 1930.—*S. cameleo** (p. 360), on a dead beetle.

8089. **SARTORY, A., R. SARTORY, et J. MEYER.** Étude d'une nouvelle espèce d'Aspergillus: Aspergillus halophilus. *Ann. Mycologici* 28(5/6): 362-363. 4 fig. 1930.—*A. halophilus** (p. 362), from a specimen of cacao.

8090. **SĂVULESCU, TR., und C. SĂNDU-VILLE.** Die Erysiphaceen Rumaniens. [Erysiphaceae of Roumania.] 82pp. 25 pl. Tipografia "Bucovina" J. E. Toroutiu: Bucuresti, also publ. in *Ann. Sci. l'Acad. Hautes Etudes Agron. de Bucarest* 1: (5-82). 24 pl. 1929.—The work includes 8 genera and 34 spp. of Erysiphaceae on 175 host plants, and is based on material collected in Roumania by the authors. Measurements are given for perithecia, asci, ascospores, conidia, and in some cases for the appendages, of each sp.; and the variations in these measurements for various hosts are recorded. The descriptions are supplemented with camera lucida drawings of asci, ascospores, and conidia and with photomicrographs of perithecia. No new spp. or forms are described as such. With some few exceptions, the nomenclature of Salmon was followed. Synonymy of each sp. is given. A key to the genera of the Erysiphaceae, a description of the 3 general types of conidia of the family, an alphabetical list of the host plants, an index to the fungous names, and a bibliography of 6 pages are included.—*B. B. Higgins.*

8091. **SAWADA, KANEYOSHI.** On the scientific name of red rust of onions. [Japanese.] *Trans. Nat. Hist. Soc. Formosa* 18: 148-163. 1928.—The rust of onions in Japan has been erroneously identified as *Puccinia porri* (Sow.) Wint. It is actually *P. allii* (DC.) Rudolphi.—*Courtesy Japanese Jour. Bot.*

8092. **SERRA, G. M.** Nota al mio lavoro intitolato "Un caso di cheratomicosi da un micete non isolato finora dall'occhio." [Note on the article "A case of keratomycosis caused by a fungus not hitherto isolated from the eye."] *Ateneo Parmense* 2(5): 477-480. 1930.—Later studies by L. Maffei have differentiated the organism from previously known species; it is described as *Cephalosporium* serrae Maffei (p. 479).

8093. **SZULCZEWSKI, J. W.** Przyczynek do zimowej mykoflory Poznania i okolicy. [Winter fungous flora of Poznań and surrounding regions.] [German summary.] *Kosmos* [*Lwów*] 55(1/2): 233-248. 2 fig. 1930.—A list of 180, all groups represented, collected in or near Poznań, Poland, during the mild winter of 1927-1928.

8094. **TAI, F. L.** A new species of Uncinula on Acer trifidum Hook. & Arn. *Contr. Biol. Lab. Sci. Soc. China Bot. Ser.* 6(1): 1-4. 1 pl. 1930.—*U. nankinensis**, near Nanking; type in Univ. of Nanking.

8095. **UÑAMUNO, LUIS M.** Reliquiae Fragosoanae. *Bol. R. Soc. Espan. Hist. Nat.* 31(3): 197-199. 1931.—An annotated list of fungi including: Uredinales (5 spp.); Pyreniales (3); Sphaeropsidales (2); Hyphales (3). Many of these are new for the Spanish flora.

8096. **WESTON, W. H., Jr.** Sclerospora butleri, a new species from Nyasaland. *Phytopath.* 21(1): 125. 1931.—Abstract. On the wild grass, *Eragrostis aspera.*

8097. **YAKUSHIJI, E., und M. KUMAZAWA.** Isaria atypicola Yasuda und ihre neue Wirtsart, Latouchia japonica Kishida. (In Japanese.) *Bot. Mag. Tokyo* 44 (524): 464. 1930.—*Isaria atypicola*, endemic to Japan, was found distributed in Ishigaki Island of Loochoo. Its host is probably *L. japonica*, a trap-door spider, which has not been noted as a host of this fungus.—*M. Kumazawa.*

8098. **YOSSIFOVITCH, M.** Le mécanisme de la séparation des périthèces chez les Erysiphaceae et le rôle des fulcres. *Rev. Path. Végét. et Entom. Agric.* 16(4/5): 132-140. 1929.—Perithecia of *Uncinula*, *Microsphaera*, and *Podosphaera* stick to the leaves, even when dry, and are not blown away but are easily washed away by rain drops. They stick where they fall.—*J. Dufrenoy.*

MYXOMYCETES

8099. **SKUPIENSKI, F. X.** Sur la coloration vitale de Didymium nigripes (Fr.). Note preliminaire. *Acta Soc. Bot. Poloniae* 6(3): 203-213. 1 col. pl. 1929.—The author employed neutral red, methylene blue, and Janus green. *D. nigripes* grew well in the presence of a solution containing a mixture of equal parts of 1:5000 neutral red and methylene blue. The neutral red produced an intense color in the sporangia and methylene blue stained the stipes. This double staining of the parts in no way interfered with the production of fructifications. The vacuoles and metachromatic corpuscles absorbed the neutral red while the bacteria imprisoned within the vacuoles took the Janus green stain.—*F. X. Skupienski (transl. by F. A. Wolff).*

LICHENES

8100. **ALLEN, ARTHUR F.** Some Cladoniae from the valley of the Cap Chat River and vicinity, Gaspé Peninsula, Quebec. *Rhodora* 32(377): 91-94. 1 pl. 1930.—A list of species collected by author, with localities; it includes *Cladonia* conista Robbins (*Cenomyce fimbriata β conista* Ach.) and *C.* invisa Robbins (p. 93), Quebec. —*S. F. Blake.*

8101. **ANDERS, JOS.** Die Flechtenflora des Kummergebirges in Nordböhmen. *Naturwiss. Zeitschr. Lotos* 76(8/12): 315-325. 1928.—The author classifies the

lichens according to substrate, and into the following groups: soil, sod, bark, wood, and rock lichens, and parasites. Among the soil lichens, the most prevalent are the *Cladonia* spp. (66), *Cetraria* spp. (4), and the crustose lichens, *Lecidea uliginosa* Schrad., *L. granulosa* (Ehrh.) Schrad., and *Icmadophila ericetorum* (L.) A. Zahlbr. Among the sod lichens, the author lists 9 spp. of *Peltigera*, including 2 forms, and 4 spp. of *Cladonia*. Among the bark lichens, he lists 2 spp. of *Alectoria*, 2 of *Usnea*, 6 of *Parmelia*, 2 of *Parmeliopsis*, 3 of *Cetraria*, 2 of *Xanthoria*; and 3 of *Cladonia*. The older trunks and branches of trees were abundantly covered with lichens. Among the wood lichens, i.e., those found growing on old fence rails and decaying trunks, the most common was *Psora ostreata* f. *myrmecina* (Ach.) Schaer.; 11 other spp. occurred on wood. The rock lichens include 43 spp. on sandstone free from lime, and 22 on sandstone containing lime; among the latter, *Staurothele succedens* Rehm. Among parasites, he lists the lichens that grow on living mosses or on other living lichens, in the end destroying them; 4 spp. are listed, among them *Cladonia pyxidata* v. *pocillum* (Ach.) Fw. and *Icmadophilum ericetorum* (L.) A. Zahlbr.—*C. C. Plitt.*

8102. BACHMANN, E. Stereocladium tiroliense Nyl., eine selbständige Stereocaulonspezies. *Hedwigia* 66(2): 157-162. 8 fig. 1926.—*Stereocaulon* tiroliense (*Stereocladium t.* Nyl.) (p. 157), Erzgebirge (Czechoslovakia). The species is minutely described.

8103. CHOISY, M. Qu'est ce que Pseudoleptogium? [What is Pseudoleptogium?] *Arch. de Bot.* [*Caen*] 1: 139-141. 1927.—The author discusses the confusion existing in this genus.—*M. Choisy* (*transl*).

8104. CHOISY, M. Tératologie curieuse de Parmelia prolixa. *Arch. de Bot.* [*Caen*] 2: 82-84. 2 fig. 1928.—Parasitized by *Discothecium*.

8105. DIECKHOFF, H. Beiträge zu einer Flechtenflora von Wesermünde. [The lichens of Wesermünde, Germany.] *Schriften Ver. Naturkunde Unterweser, Beitr. Naturk. Nordwestdeutschlands,* Heft. 5. 41-54. 1931.—A list.

8106. GYELNIK, V. Revisio Peltigerarum Herbarii Achariani. [In German.] *Magyar Bot. Lapok* 29: 49-58. 1930.—Floristics.

8107. LYNGE, B. Cornicularia divergens Ach. found fertile in Europe. *Nyt Mag. f. Naturvidensk.* [*Oslo*] 67: 131-136. 1929.—The author found *C. divergens* fertile on the Dovre mountains in Norway. Fertile plants were formerly found only in Eastern Siberia and in Northern Sweden. The apothecia are described and compared with those of the Usneaceae and of the Parmeliaceae.—*B. Lynge.*

8108. PAULSON, ROBERT. Lichens. *Jour. Bot.* [*London*] *Suppl.* 64: 139-142. 1 fig. 1926.—Annotated list of 10 spp. from Sumatra, including *Anzia* **forbesiana*** (p. 139), and 3 spp. from Timor.

8109. VAINIO, E. Cladoniae Hungaricae a G. Timkó lectae. *Magyar Bot. Lapok* 29: 22-23. 1930.—*Cladonia japonica* f. **tatrana** and *C. magyarica* v. **pocilliformis** (p. 22).—*C. Schermann.*

8110. ZAHLBRUCKNER, A. Neue Flechten. X. *Ann. Mycologici* 29(1/2): 75-86. 1931.—*Dermatocarpon* (*Endopyrenium*) **kisovense** (p. 75), Japan; *Phaeographina* **chilena** (p. 75), Chile; *Graphis* **batavana** (p. 76), Java; *Phaeographina* **toxopaei** (p. 76), Boeroe Island; *P.* **alutacea** (p. 77), Singapore; *Chiodecton* **japonicum** (p. 77), Japan; *Dirina* **herrei** and *D.* **approximata** (p. 78), Galapagos Isls.; *Thyrea* **hondana** (p. 79), *Leptogium menziesii* var. **dissectum** (p. 79), and *Parmeliella* **subincisa** (p. 80), Japan; *Sticta sinuosa* var. **sumatrana** (p. 81), Sumatra; *S.* (*Stictina*) **leamii** (p. 81), New Guinea; *S.* (*S.*) *corilifolia* var. **nudata** (p. 81) and *Lecidea* **philippii** (p. 82), Chile; *Bacidia* **insularis** (p. 82), Galapagos Isls.; *Biatorella* **rappii** (p. 82), Florida; *Pertusaria* **chilena** (p. 83), *Lecanora* (sect. *Eulecanora*) **espinosae** (p. 83), *Parmelia* **ulcerosa** (p. 84), *P. sulcata* f. **aberrans** (p. 84), *P.* **tegulicola** (p. 85), *P.* (*Amphigymnia*) **alutacea** (p. 85) and *P. soredica* var. **purata** (p. 85), Chile; *Xanthoria parietina* var. **mandschurica** (p. 85), Manchuria; *Buellia* (*Eubuellia*) **crocata** (p. 86), Japan; *Physcia* **insularis** (p. 86), Galapagos Isls.

8111. ZAHLBRUCKNER, A. A new Haematomma from Florida. *Bryologist* 33(3): 31. 1930.—*H.* **rappii.**

BRYOPHYTA

A. LEROY ANDREWS, *Editor*

(See also in this issue Entries 6074, 6305, 8169)

8112. BLATTER, E., and J. FERNANDEZ. Waziristan mosses, with some new species described by H. N. Dixon. *Jour. Indian Bot. Soc.* 10(2): 145-153. 1931.—A list of about 60 spp., belonging to 31 genera and 12 families, collected in 1927 and 1931 at 2150-9000 ft., and identified by H. N. Dixon. Localities and habitats are given for all individual collections. The following are by Dixon: *Weisia* **amblyphylla** (*Hymenostomum amblyphyllum* Dix.) (p. 146); *Leptopterigynandrum* **brevirette** (p. 151); *Brachythecium* **microsericeum** (p. 153); *Stereodon cupressiformis* var. **vaucherianus** (p. 153).—*W. Dudgeon.*

8113. KASHYAP, SHIV RAM. A new species of Petalophyllum, Petalophyllum indicum Kashyap. *Jour. Indian Bot. Soc.* 7(1): 14. 1 pl. 1928.—From Lahore, India.—*W. Dudgeon.*

8114. KÖVESSI, FRANZ. Erläuterungen der Gesetzmässigkeiten im Ablaufe der Lebenserscheinungen lebender Wesen. Mitteil. IV. *Math. u. Naturwiss. Ber. Ungarn* 37: 73-104. 7 fig. 1930.

8115. LOESKE, LEOPOLD. Die Laubmoose Europas. II. Funariaceae. *Rep. Spec. Nov. Reg. Veg. Sonderbeiheft B* 1-120. 69 fig. 1929.—*Physcomitrella patens* (Hdw.) Br. Eur. is united with the genus *Physcomitrium* as *P.* **patens*** (*Physcomitrella p.* Hdw.) (p. 15). The genus *Physcomitrella* is eliminated. *Physcomitrella hampei* is named *Physcomitrium* **hampei*** Lsk. et Györffy in litt. (p. 21). *Physcomitrium eurystomum* f. **acuminatum** (*P. a.* Schleich.) (p. 32). *Funaria dentata* var. **mediterranea** (*F. m.* Lindb.), with f. **polygama** n. f. (based on *F. pulchella* Phil.), and var. **convexa** (*F. convexa* Spruce) Bott. in litt. (p. 61). The work being printed (but not published) in 1914, the author gives complementary "Nachträge 1915-1929." All European species of the Funariaceae are now described; also all the hybrid forms are described or at least mentioned.—*L. Loeske.* [A chapter by P. JANZEN, entitled "Die Entwicklung und Biologie von Funaria hygrometrica" (pages 72-111, and with 26 microscopic illustrations of parts) is included. It describes in detail the development of each part of the plant.]

8116. LUND, P. J. Bidrag til Vendsyssels mosflora [Denmark]. II. *Bot. Tidsskr.* [*Copenhagen*] 41(4): 304-309. 1931.—Lists of liverworts (25 spp.) and peat (15) and leafy (62) mosses. *Jungermannia heterocelpos* is new to Denmark.

8117. TIWARY, N. K. A preliminary note on the germination of the spores of Cyathodium sp. *Jour. Indian Bot. Soc.* 8(2): 139-143. 19 fig. 1929.—The plant was identified as *C. cavernarum* by Goebel and as *C. tuberosum* by Kashyap. Abundance of all stages of germination were found on the sides of a ditch at Benares in Aug. As the sporogonium does not dehisce, the spores germinate in situ. There is evidence of 2 or more germ pores; the germ tube emerges through one, and one or two rhizoids from others at the opposite end of the spore. This method of germination is taken as further evidence of close relationship with *Targionia*. The germ tube may give rise to a filament or to a cell mass. Sometimes the original germ tube grows out into a much elongated colorless cell, and develops a green cell mass at

the end; sometimes a colorless cell mass is produced first, and an elongated colorless cell grows out from it, producing a green cell mass at the end. A 2-sided apical cell arises earlier from a filament than from a cell mass; it is presently replaced by the mature Marchantiaceae type of initial cell. Attempts to germinate spores artificially failed, apparently because the spores must pass through a period of rest.—*W. Dudgeon.*

SPERMATOPHYTA

FRANCIS W. PENNELL, *Editor*

(See also in this issue Entries 6074, 6085, 6092, 6117, 6131, 6144, 6153, 6173, 6259, 6263, 6266, 6267, 6277, 6285, 6298, 7904, 7960, 8009, 8014, 8018, 8165, 8170, 8804)

GENERAL

8118. GUNDERSEN, ALFRED. An international list of genera of vascular plants. *Science* 70(1801): 15-16. 1929.

ANGIOSPERMAE (MIXED)

8119. BECHERER, A. Nomenklatorische Notizen. *Rep. Spec. Nov. Reg. Veg.* 28(751/755, paper 7): 53-59. 1930.—These notes deal principally with subspecific variations and transfers, some of which have been previously published. *Secale cereale* ssp. *eu-cereale* (*Triticum c.* Rasse *eu-cereale* Asch. et Graeb.) Bech.; *Silene vulgaris* ssp. *vulgaris* (Gaudin) Bech. (*S. inflata* ssp. *vulgaris* Gaudin). The author recommends that the generic name *Malachium* Fries (1828) be conserved over *Myosoton* Moench (1794) and *Malachia* Fries (1817). He lists 17 combinations in European plants, combs. not generally recognized. *Gagea saxatilis* (*Ornithogalum bohemicum* var. *s.* (Mert. et Koch)) J. A. et J. H. Schultes; the author is not "Koch." *Calluna vulgaris* (L.) Hull var. *hirsuta* (S. F. Gray) Hayek; the author is not "Presl." The name *Honckenya* used for an African genus of Tiliaceae is untenable because of priority (Ehrhart, 1788), and must be replaced by *Clappertonia* Meissner, 3 spp. of which are known: *C. ficifolia* Decne., *C.* **minor** (*H. m.* Baillon) (p. 58), and *C.* **polyandra** (*Cephalonema p.* K. Schum.) (p. 58). Among Gramineae *Phleum hirsutum* Honckeny (1782) (=*P. michelii* All. 1785) and *Festuca festucoides* (Bertol. 1804) Bech. (=*F. lachenalii* (Gmelin 1805)) Spenner.—*H. K. Svenson.*

8120. PAU, C. Nota sobre plantas de algún interés etimológico. [Plants of nomenclatorial interest from the Iberian Peninsula.] *Brotéria Ser. Bot.* 22(3): 107-123. [1]-[17]. 1926.—Extended notes on synonymy of *Ranunculus gregarious* Brotero; *Fumaria reuteri* Boiss.; *Arabis verna* L.; *Aethionema* **suffruticosum** (*Thlaspis.* Asso) (p. 109); *Iberis ciliata* var. **longipedunculata** (*I. tenoreana* v. *l.* Loscos & Pardo) (p. 110); *Cistus stenophyllus* Link; *Dianthus hispanicus* var. **tarraconensis** (*D. brachyanthus* v. *t.* Costa) (p. 111); *D. algetanus* var. **turolensis** (*D. t.* Pau) (p. 111); *Linum squarrosum* var. **jimenezii** (*L. j.* Pau) (p. 112); *Genista triacanthos* Brotero; *Ononis rosaefolia* DC.; *Anthyllis* **multicaulis** (*Genista m.* Lam.) (p. 114); *A.* **micrantha** (*A. rupestris* v. *m.* Willk.) (p. 115); *A. ramburei* Porta & Rigo; *Trifolium nevadense* Boiss.; *Spiroceratium bicknellii* H. Wolff; *Sedum aetnense* Tin. (=*S. erythrocarpum* Pau); *Fedia scorpioides* Dufr.; *Erigeron* **alpinoides** (*E. acris* v. *a.* Pau) (p. 117); *Pulicaria inuloides* DC.; × *Centaurea* **zubiae** (*C. lagascana* × *ornata*) (p. 117); *Carduus myriacanthus* var. **valentinus** (*C. v.* R. Br.) (p. 118); × *Centaurea* **subdecurrens** (*C. aspera* × *sonchifolia*); × *C.* **segobricensis** (*C. aspera* × *seridis*) (p. 118); *Echium salmanticum* Lagasca; *Nicotiana* **inodora** (*Triguera i.* Cav.) (p. 119); *Veronica* **nevadensis** (*V. repens* var. *n.* Pau) (p. 120); *Stachys arenaria* var. **mollis** (*S. m.* Willd.); × *Thymus* **henriquesii** (p. 121); *T. membranaceus* var. **murcicus** (*T. murcicus* Porta) (p. 121); *Teucrium angustissimum* var. **aragonense** (*T. a.* Loscos & Pardo) (p. 122); *Euphorbia diffusa* Duf.; *Phalaris arundinacea* var. *thyrsoidea* Willk.; *Koeleria flavescens* (Pour.) H. del Villar.

8121. STAPF, O. Plants from the Royal Botanical Gardens, Kew, and other botanical establishments and private gardens. *Curtis's Bot. Mag.* 153(2): Tab. 9173-9183. 1927(1929).—Hand-colored plates and descriptions are given for the following, each by Stapf unless otherwise stated: *Rhododendron calophytum** Franchet, by Stapf and F. B., China; *Gaultheria veitchiana** Craib, China, with key to distinguish it from *G. hookeri* Clarke and *G.* **rudis** (sub Tab. 9174), Szechuan; *Cyrtanthus* **rhododactylus*** (Tab. 9175), South Africa; **SIPHONOSMANTHUS**, based on *S. suavis** (*Osmanthus s.* King) (Tab. 9176), Himalaya, also *S.* **delavayi** (*Osmanthus d.* Franch.) (Tab. 9176); *Acacia rhetinodes** Schl., Australia, by Stapf and F. B.; *Salvia caerulea** Benth., S. America; *Eucnelia mooreana** Schl., Costa Rica, described with notes by V. S. SUMMERHAYES; *Cosmos diversifolius** Otto and *C.* **atrosanguineus** (*Bidens a.* Ortgies) (Tab. 9180), both from Mexico; *Briggsia amabilis** Craib, China; *Potentilla nepalensis** Hook., India; *Euonymus grandiflorus* f. *salicifolia,** China and India, described by Stapf and F. B.

8122. STAPF, O. Plants from the Royal Botanic Gardens, Kew, and other botanical establishments and private gardens. *Curtis's Bot. Mag.* 152(4): Tab. 9151-9161. 11 col. pl. 1926(1928).—Colored plates are given of the following, with descriptions by O. Stapf unless otherwise stated: *Tulipa lanata** Regel from central Asia; *Ozothamnus antennaria** Hook. from Tasmania, with critical notes on the genus; *Berberis hookeri** Lem. from India; *Solanum laciniatum** Ait. from Australia; *Paphiopedilum robinsonii** Ridley (description by Stapf and F. B.) from Malay Peninsula; *Rhododendron hippophaeoides** Balf. & Sm. (described by O. S. and F. B.) from southwest China; *Muscari armeniacum** Baker from Orient; *Cestrum* **psittacinum*** (Tab. 9158), from Central America; × *Saxifraga* **amabilis** (*S. stribrnyi* Podpera × [*S.*] *sempervivum* C. Koch.) (Tab. 9159) from southeast Europe; *Hypericum leschenaultii** from Malaya; *Guevina avellana** Molina from Chile.

MONOCOTYLEDONES

8123. PFEIFFER, HANS. Über 70 neue Namenkombinationen in einer einzigen Cyperaceengattung oder Aufnahme eines Gattungsnamens in den Index der "Nomina conservanda"? *Repl. Spec. Nov. Reg. Veg.* 27(726/733; paper 3): 85-91. 1929.—Kunth (1837) differentiated *Bulbostylis* as a genus "inter *Isolepidem* et *Fimbristylem*" with an excellent diagnosis. *Bulbostylis* has been taken up by many prominent botanists although it had been proposed (DeCandolle, 1836) for a genus of Compositae now recognized as *Brickellia*, and by Steven (1814) for a group of *Eleocharis* species. The name *Stenophyllus* (Rafinesque, 1825, and Séringe 1830) was not so well characterized, but has been accepted in several important treatments. The author shows in a tabular presentation that 5 spp. have been described under *Stenophyllus* alone, 21 under *Bulbostylis* for which combinations with *Stenophyllus* have already been made, and 74 under *Bulbostylis* alone. For this last group new combinations must be made under *Stenophyllus* unless *Bulbostylis* is conserved. The author recommends that *Bulbostylis* be conserved. The following nomenclatorial change is made: *Bulbostylis* **conspicua** (Boeck.) n. comb., vel *Stenophyllus* **conspicus** (Boeck.) n. comb., based upon *Fimbristylis conspicua* Boeck. (p. 90).—*H. K. Svenson.*

8124. SMITH, J. J. Notizen aus Reichenbachs Herbar. *Bull. Jard. Bot. Buitenzorg* 8(4): 353-369. 1927.—The au-

thor studied a number of Reichenbach's types of Orchidaceae in the Vienna Herbarium. The following are recognized, with synonyms in parentheses: *Zeuxine gracilis* Bl. (=*Monochilus zollingeri* Rchb. f.); *Hetaeria lamellata* Bl. (=*H. roseans* Rchb. f.); *Goodyera waitziana* Bl. (=*Salacistis novembralis* Rchb. f.); *Coelogyne salmonicolor* Rch. f., amended descr. (=*C. speciosa* v. *salmonicolor* Schltr. and *C. bella* Schltr.); *Pholidota imbricata* Lndl. (=*P. loricata* Rchb. f., *P. crotalina* Rchb. f.); *Dendrochilum zollingeri* Mig. (=*D. cobolbine* Rchb. f., *D. cobolbine* J. J. S. (nec Rchb. f.); *Phajus cupreus* Rchb. f. (=*Calanthe ceciliae* Rchb. f.); *Eulophia zollingeri* J. J. S. (=*E. macrorhiza* Bl., *E. sanguinea* Hook f., *E. papuana* J. J. S.); *Oberonia pumilio* Rchb. f. (=*O. treubii* Ridl.); *Podochilus* confusus n. sp. (p. 358); *Eria lamonganensis* Rchb. f. (=*E. jagoriana* Krzl., *E. tenggerensis* J. J. S.); *E. merapiensis* Schltr. (=*E. chrysantha* Schltr., *E. lutea* J. J. S., *E. lamonganensis* Krzl. (nec Rchb. f.), *E. chrysostachys* Ridl.); *E. flavescens* Lndl. (=*E. zollingeri* Rchb. f.); *E. pilifera* Ridl. (=*Trichotosia bracteolata* Krzl., *Dendrobium lamonganense* Rchb. f.); *Dendrobium angulatum* Lndl. (=*D. calopogon* Rchb. f.); *D. amblyornidis* Rchb. f.; *D. elongatum* var. *abbreviatum* J. J. S. (=*Bulbophyllum triadenium* Rchb. f.); *D. strebloceras* Rchb. f. (=*D. dammerboerii* J. J. S.); *D. mirbelianum* Gaud. (=*D. polycarpum* Rchb. f.); *D. rimannii* Rchb. f., emended descr.; *D. rumphianum* T. et B. (=*D. minax* Rchb. f., *D. burbidgei* Rchb. f., *D. antelope* Rchb., *D. bicaudatum* Krzl. (nec Lndl.)); *D. nudum* Lndl. (=*D. auroroseum* Rchb. f.); *D. secundum* Lndl. (=*D. heterostigma* Rchb. f.); *Bulbophyllum gibbosum* Lndl. (=*B. pangerangi* Rchb. f.); *B. unguiculatum* Rchb. f., emended descr.; *B. stelis* J. J. S., n. sp. (p. 365), Sumatra and Java; *Sarcochilus platyphyllus* F. v. Muell. (=*Thrixspermum indusiatum* Rchb. f.); *Chroniochilus* minimus (*Dendrocolla minima* Bl.) (p. 366); *Phalaenopsis hebe* Rchb. f. (=*P. deliciosa* Rchb. f.); *Luisia zollingeri* Rchb. f. (=*L. latipetala* J. J. S.); *Sarcanthus javanicus* J. J. S. (=*Echioglossum quartum* Rchb. f.); *S. termissus* Rchb. f. (=*S. josephii* J. J. S.); *Robiquetia spathulata* J. J. S. (=*Saccolabium borneense* Rchb. f.).—*J. J. Smith.*

8125. SOÓ, R. v. Orchideologische Mitteilungen. I-III. *Rep. Spec. Nov. Reg. Veg.* 26(16/23): 273-280. 1929.—(1) Additions to the author's "Revision der Orchideen Südosteuropas und Südwestasiens (1927)," with notes on synonymy and distribution, with *Serapias parviflora* ssp. hellenica (Renz) Soó, n. comb. (p. 274). (2) Systematics of the genus *Ophrys*. Under the author's system, *Ophrys* comprises 5 sections: *Musciferae* Rchb. f.; *Fuciflorae* Rchb. f.; *Araneiferae* Rchb. f. emend. Soó, with §§ *Euaraneiferae* Soó and §§ *Sprunerianae* Soó; *Apiferae* Rchb. f., with §§ *Oestriferae* Soó and §§ *Euapiferae* Soó; *Bombyliflora* Rchb. f. All of these divisions are fully described. (3) New forms and combinations in the genus *Ophrys*: *O. fuciflora* f. exilis Ruppt. (p. 278), Germany; *O. exaltata* f. toscanensis (p. 278), Italy; *O. araneifera* ssp. *atrata* f. istriaca (p. 278), Austria; *O. a.* sspp. aesculapii (*O. a.* Renz and helenae (*O. h.* Renz) (p. 273); *O. a.* ssp. renzii n. nom. (*O. aesculapii* ssp. *pseudoaraneifera* Renz, not Murr.) (p. 278); *O. a.* ssp. boissieri n. comb. (ssp. *mammosa* var. *boissieri*) (p. 279); *O. a.* ssp. *litigiosa* f. alsatica (p. 279), Germany; *O. araneifera* ssp. gigantea n. comb. (var. *gigantea* Fuchs) (p. 279); *O. a.* ssp. *macedonica* f. epirotica n. comb. (*O. araneifera* f. *epirotica* Renz) (p. 279); *O. ferrum equinum* ssp. *argolica* f. fallax (p. 279). Under *O. spruneri* Nyman the author gives a key, in which various forms are described, labelled new, but probably published previously: *O. spruneri* ssp. gottfriediana* (*O. g.*) (p. 279); *O. s.* ssp. *g.* fs. pseudo-ferrum equinum* and micrantha* (both p. 279); *O. picta* lus. pallescens (p. 279), France; *O. cornuta* lus. chlorosepala Ruppt. (p. 279), Jugoslavia; *O. apifera* ssp. friburgensis (*O. apifera* var. *f.* Freyhold) (p. 280); × *O.* pseudofunerea (*O. araneifera* × *O. fusca* ssp. *funerea*) (p. 280); × *O.* braun-blanquetiana (*O. araneifera atrata* × *O. fusca*) (p. 280); × *O.* pseudo-spruneri (*O. araneifera mammosa* × *O. spruneri*) (p. 280); × *O.* extorris (*O. araneifera* × *O. fuciflora* × *O. muscifera* (p. 280), Austria.

DICOTYLEDONES

8126. BERTRAM, PFARRER. Opuntia canterai Arechavaleta. *Monatschr. Deutschen Kakteen-Ges.* 1 (12): 239-241. 1 fig. 1929.—*O. canterai* from the La Plata states is described and its culture given.—*F. W. Pennell.*

8127. CHEVALIER, AUG. Notes sur quelques Acacia africains. *Bull. Soc. Bot. France* 74(9/10): 953-960. 6 fig. 1927(1928).—Anticipating the publication of a revision of the species of *Acacia* in N. Africa, the Sahara, and eastern and central Africa, the author calls attention to the following species and varieties, which are poorly known or new, and for which he summarizes the synonymy and indicates the distribution: *Acacia gummifera* Willd.; *A.* scorpioides (*Mimosa s.* L.) (p. 954), containing, following Bentham, 3 varieties found in Senegal and in Soudan: *A. s.* var. pubescens (Benth.) n. comb., var. nilotica (*A. n.* Delile), var. adstringens (*Mimosa a.* Sch. and Th.); *A. senegal* (L.) Willd.; *A. laeta* R. Br. (=A. *trentiani* A. Chev.); *A. mellifera* Benth. (=*A. gourmaensis* A. Chev.); *A.* chariensis (p. 958), Fr. Equatorial Africa; *A. sieberiana* var. villosa (p. 959), Fr. West Africa; *A. verugera* var. subinermis (p. 959), Fr. Eq. Africa; *A. etbaica* var. hirta (p. 959), Fr. Eq. Africa; *A. tortilis* var. pubescens (p. 960), Fr. W. Africa; *A. macrostachya* var. spinosissima (p. 960), Fr. W. Africa.—*A. Tronchet* (*transl. by J. P. Poole*).

8128. EKMAN, ELISABETH. Studies in the genus Draba. *Svensk Bot. Tidskr.* 23(4): 476-495. 1929.—Part I. The supposed origin of *Draba magellanica* Lam. var. *dovrensis* (Fries) E. Ekman and *D. m.* f. *genuina* E. Ekman. The author here argues for the hybrid origin of the 2 forms. Part II. Contribution to the *Draba* flora of Greenland. 1. Some high-arctic forms of *Leucodraba*, viz., *Draba cinerea* Adams; *D.* groenlandica (p. 486), Arctic America, Greenland, Svalbard; *D. g.* var. arctogena (p. 489), Arctic America, north and west Greenland; *D.* ostenfeldii (p. 491) and *D. o.* var. ovibovina (p. 492), Ellesmereland, East Greenland.—*E. Ekman.*

8129. GUILLAUMIN, A. Révision des Rubiacées de la Nouvelle-Calédonie. *Arch. de Bot.* 3(5): 1-48. 1929.—*Morierina montana* Vieill. (=*Dolichanthera neo-caledonica* Schltr. & Krause); *Bikkia macrophylla* var. obovata Brong. & Gris. in herb. (p. 3); *Gardenia* conferta (*Genipa c.* Baill. MSS.) (p. 5); *Gardenia* deplanchei Vieill. MSS. (*Genipa d.* Baill. MSS.) (p. 6); *Randia* artensis (*Gardenia a.* Montr.) (p. 8); *R.* baladica (*Gardenia b.* Montr. MSS., ex Guill. & Beauv.) (p. 8); *R.* lecardii (p. 8); *R.* sezitat (*Genipa s.* Baill. MSS.) (p. 9); *R.* pancheriana (p. 10); *Atractocarpus* (?) aragoensis (p. 11); *A.* (?) balansaeanus (p. 12); *A.* (?) longestipitatus (p. 12); *A.* platyxylon (*Gardenia p.* Vieill., ex Panch. & Seb.) (p. 13); *A.* sessilifolius (p. 13); *A.* vaginatus (*Genipa vaginata* Baill. MSS.) (p. 14); *Guettarda* artensis (p. 17); *G.* platycarpa (*Timonius platycarpus* Montr.) (p. 17); *G.* trimera (p. 18); *G.* vieillardii (p. 18); *Cyclophyllum* baladense (p. 21); *C.* calyculatum (p. 21); *C.* cardiocarpum (*Canthium c.* Baill.) (p. 21); *C.* henriettae (*Canthium h.* Baill.) (p. 21); *C.* ixoroides (p. 22); *C.* sagittatum (*Canthium s.* Baill.) (p. 22); *Ixora cauliflora* v. graciliflora (*I. g.* Schltr. & Krause) (p. 23); *I. collina* v. minor (p. 23); *I.* lecardii (p. 24); *I.* longiloba (p. 24); *I. oligantha* v. opuloides (*I. opuloides* Baill. MSS.) (p. 25); *Psychotria* artensis (*Delpechia a.* Montr.) (p. 27); *P.* baladensis (*Uragoga b.* Baill.) (p. 27); *P.* balansae (*Uragoga b.* Baill.) (p. 27); *P.* bourailensis (p. 28); *P.* brachylaena (*Uragoga b.* Baill.) (p. 28); *P.* calliantha (*Uragoga c.* Baill.) (p. 28); *P.* canalensis (*Uragoga c.* Baill.) (p. 28); *P.* coptosperma (*Uragoga c.* Baill.) (p. 29); *P.* deplanchei (*Mapouria d.* Beauv.) (p. 29); *P.* deverdiana (p. 30); *P.* ferdinandi-muelleri (p. 30); *P.* floribunda (*Delpechia f.* Montr.) (p. 30); *P.* gabriellae (*Uragoga g.* Baill.) (p. 30); *P.* goniocarpa (*Uragoga g.*

Baill.) (p. 31); *P.* **ligustrina** (*Uragoga l.* Baill.) (p. 31); *P.* **lycioides** (*Uragoga l.* Baill.) (p. 31); *P.* **macroglossa** (*Uragoga m.* Baill.) (p. 31); *P.* **nathaliae** (*Uragoga n.* Baill.) (p. 31); *P.* **nekouana** (*Uragoga n.* Baill.) (p. 32); *P.* **nummularioides** (*Uragoga n.* Baill. in herb.) (p. 32); *P.* **phyllanthoides** Schltr. nomen nudum, Guillaum. description (p. 33); *P. poissoniana* v. **brachypoda** (p. 33); *P.* **pseudo-microdaphne** (p. 33); *P.* **rubefacta** (*Cephaelis r.* S. Moore) (p. 34); *P. stricta* v. **ou-hinnae** (*P. salicifolia* v. *ou-hinnae* Schltr.) (p. 34); *P.* **saltiensis** (*Cephaelis s.* S. Moore) (p. 35); *Coelospermum* **fragrans** Baill. MSS. (*Figuiera fragrans* Montr.) (p. 41); *C.* **monticolum** Baill. MSS. (p. 41); *C.* **nigrecens** (*Olostyla n.* Krause) (p. 41); *Morinda candollei* v. **angustifolia** (p. 42); *M. c.* var. **villosa** (p. 42); *M.* **gatopensis** (p. 43); *M.* **kanalensis** Baill. MSS. (p. 43); *M.* **neo-caledonica** (*Lucinea n.-c.* S. Moore) (p. 44); *M.* **podocarpifolia** (p. 44); *M.* **velutina** (p. 45). Keys to tribes, genera, and species are given. Some remarks on distribution of the genera are included.—*A. Guillaumin* (*transl. by J. Cooper*).

8130. JOHNS, M. RAE. Heliantheae of Iowa. I. *Proc. Iowa Acad. Sci.* 36: 147-184. 1 pl. 1929 (1931).—Gives characteristics and distribution of 14 spp. in *Galinsoga, Eclipta, Actinomeris, Parthenium, Polymnia, Ambrosia, Iva* and *Xanthium*. The plates illustrate herbarium specimens and detailed drawings of 13 of these.—*H. S. Conard*.

8131. [KUZNETSOV, V. A.] КУЗНЕЦОВ, В. А. Материалы для определения важнейших кормовых клеверных по строению их листьев. (Determination of the most important forage Trifolieae by the structure of their leaves. [English summary].). Труды по прикладной Ботанике Генетике и Селекции. (*Bull. Appl. Bot., Gen., and Plant-Breed.*) 20: 155-168. 4 fig. 1929.

8132. LYKA, K. Schlüssel zur Bestimmung der in Schleswig-Holstein und angrenzenden Gebieten wachsenden Formen der Gattung Thymus. *Rep. Spec. Nov. Reg. Veg.* 28 (751/755, paper 8): 59-62. 1930.—A comprehensive key treatment of forms of *T. serpyllum* (L.) Briq., *T. rigidus* Wimm. & Grab., *T. parviflorus* Opiz and *T. chamaedrys* Fries. Hybrids and white-flowered forms are common within these species.—*H. K. Svenson.*

8133. MARSDEN-JONES, E. M., and W. B. TURRILL. Researches on Silene maritima and S. vulgaris: II, III, V. *Kew Bull. Misc. Inform.* 1929 (2): 33-38; (5): 145-175. 1929. 1931 (3): 118-145. 1931.—II. Details of the occurrence and descriptions of naturally occurring hybrids between the 2 spp. are given; these have now been found by the authors in Dorset, Hampshire, South Devon, and North Wales. Descriptions of probable parents found growing with some of the hybrids are also given. As previously shown, many viable seed are obtainable when the 2 spp. are crossed. The fertility on crossing the species is apparently often practically as high as that of intra-specific pollination and fertilization. Moreover, the range of variation within each species is as great, all characters considered, as the differences normally exhibited by the 2 spp. There seems thus no valid taxonomic or genetic reasons why the 2 spp. should not regularly interbreed and, indeed, amalgamate as one "polymorphic" species. And yet they have not done so, nor is there any indication that they will in the near future. Natural hybrids between them are relatively rare and occur only near the parents. Ecologically the 2 spp. are quite distinct. *S. maritima* occupies maritime habitats, especially shingle beaches and cliffs, or stony ground at considerable altitudes. *S. vulgaris* in Great Britain is an inland plant of grassy downs, arable land, roadsides, and broken ground. Hybrids occur only in the narrow zone where the species meet. It is concluded that the 2 spp. are ecologically separated and that physiological differences not obviously connected with their gross morphology keep them distinct.—III. Stock-plants of *S. maritima* used up to 1928 for breeding experiments are described, indicating that a great range of characters and character-combinations occurs in nature. An account is given of plants grown from wild seed. Intra-specific crossing largely accounts for the numerous character-combinations found in individuals of wild populations. Many characters are exhibited by the different organs within the one species; these occur in numerous combinations—indeed at present there is no reason for supposing that any theoretically possible combination does not occur in nature. Whatever linkage groups exist are apparently at times broken by crossing over. The impracticability of naming all the character-combinations (known or possible) as subspecies, varieties, forms, etc., is commented upon. For many of the characters it is impossible to assign valid reasons for accepting one or several as having superior taxonomic value over others. A tentative scheme is proposed for dealing with intra-specific variation within a polymorphic Linneon, involving the use of letters and arabic numerals. A summary account is given of the distribution of wild populations on the Chesil Beach and Overcombe Beach, in Dorset, and at Dawlish, S. Devon. Attention is called to a remarkable group of 1310 plants at the Portland end of the Chesil Beach. These form the most uniform wild population yet studied and with few exceptions agree in having a lax general appearance, narrow leaves, and much anthocyanin.—V. The descriptions, given of stock-plants of *S. vulgaris* used up to 1930 for breeding experiments, alone indicate that a great range of characters and character-combinations (here listed and considered) occurs in nature. As in *S. maritima*, there is no reason for supposing that any theoretically possible combination does not occur in nature. As for *S. maritima*, a scheme involving letter and figure symbols has been prepared and used with advantage for scoring character-combinations in wild populations. An account of wild populations growing near All Cannings Farm (Wilts), Potterne (Wilts), Barton Stacey (Hants), Guildford (Surrey), Shoreham (Kent), Bradfield (Berks), Windsor (Berks), and Chipperfield (Herts) is given.—*W. B. Turrill.*

8134. NEGODI, GIORGIO. Studio monografico sulla Silene angustifolia (Mill.) Guss. con particolare riguardo alle forme italiane. [Monograph of Silene angustifolia with special regard to Italian forms.] *Arch. Bot. Sist. Fitogeog. e Genet.* 4 (1): 40-71; (2): 138-153; (3/4): 217-277; 5 (1): 24-45; (2): 111-142. 8 pl. 1928-1929.—The species is treated broadly enough to include *S. vulgaris, S. thorei, S. alpina* and *S. maritima*. Chap. I takes up the systematic, genetic, anatomical and ecological principles which form the basis for the work, and all the criteria for delimiting the species proposed from Linnaeus to date are considered. Chap. II sets forth the results of bibliographic studies, of investigations in the herbaria and museums of Italy and elsewhere, of observations in nature, and of experimental cultivation of various forms to determine the value of the systematic entities. These are comprised in the systematic prospectus, containing descriptions of 56 entities. Chap. III discusses the genetic value of the numerous races, with especial reference to their constancy. Chap. IV deals with the behavior of F_1 and F_2 hybrids obtained artificially. Chap. V contains observations and considerations of anatomical, cytological, ecological and general nature on organs subject to polymorphism. In Chap. VI there is a full discussion of the phyletic, intracyclic and especially the distributive relations of some races. The final chapter presents some analogies between the polymorphism of *S. angustifolia* and of related species of the section *Behen*. There are recognized 4 subspecies, under which are many subdivisions each proposed as an "entita." Under *Silene angustifolia* ssp. *vulgaris* (Gaud.) Briq. appear: **vulgaris** (*S. v.* Moench) (p. 67); **pseudoleracea** (*S. venosa vulgaris* var. *p.* Graebn.) (p. 70); **leptophylla** (*Behenantha inflata l. parviflora* Schur.) (p. 71); **monticola** (*B. i.* f. *glaucescens monticola* Schur.) (p. 139); **rorida** (*S. inflata rorida* Schur.) (p. 142); **brachiata** (*S. b.* Jord.) (p. 143); **compacta** (p. 144); **luxurians** (*S. venosa vulgaris vescicaria* f. *l.* Graebn.) (p. 144); **cylindrica** (*S. venosa* v. *c.* Kuntze) (p. 145);

brachycalyx (p. 146); breviflora (*S. cucubalis* var. *b.* Rouy (p. 146); ovalifolia (*Behenantha inflata o. (vaccariaefolia)* Schur.) (p. 147); dolichopetala (*S. venosa f. d.* Zapal.) (p. 148); latilaciniata (*S. venosa f. l.* Zapal. (p. 148); quadrifida (p. 149); rubra (*S. inflata rubra* Ram.) (p. 149); rubristimmis (p. 150); macrocalyx (p. 152); angustissima (*Cucubalus angustissimus* Nocca & Balbis) (p. 153); alpestris (p. 217); zlatiborensis (*S. venosa* ssp. *vulgaris* var. *z.* Novak) (p. 219); boraeana (*S. cuculatus* f. *boracana+latifolia* Rouy & Fouc.) (p. 222); minutiphylla (*S. cucubalus boraeana* var. *angustifolia* Rouy & Fouc.) (p. 223); oreophyla (*S. venosa* var *o.* K. Maly) (p. 225); pubescens (*S. inflata p.* DC.) (p. 228); stenophylla (*S. vinosa bosniaca stenophylla* Beck) (p. 231); puberula (*S. inflata puberula* Huter, Porta & Riga) (p. 231); villosa (*S. cucubalis vesicaria pubescens* subv. *villosa* Rouy & Fouc.) (p. 232); pubigera (*S. venosa pubigera* Halacsy) (p. 232); pubiphylla (p. 233). Under *Silene angustifolia* ssp. alpina (*Cucubalus alpinus* Lam.) (p. 235) are listed: montana (*C. montanus* Vest) (p. 237); glareosa (*S. g.* Jord.) (p. 238); muscosa (p. 242); hirtiphylla (p. 242); roseo-punctata (p. 243); uniflora (*S. inflata uniflora* Otth.) (p. 243); marginata (*Cucubalus marginatus* Kit.) emend. (p. 244); microloba (*S. m.* Schott.) (p. 245); pilosula (p. 246); hirsutiuscula (p. 247); cryptopetala (p. 248). Under *Silene angustifolia* ssp. maritima (*Viscago m.* Hornem.) (p. 249) are listed: maritima typica (*S. maritima typica* Graebn.) (p. 250); lobata (*S. maritima* f. *l.* Salisb.) (p. 251); porphyrostigma (*S. m. f. p.* Nordtstedt) (p. 251); petraea (*S. inflata* var. *p.* Fries) (p. 252); tenella (*S. maritima t.* Rouy & Fouc.) (p. 253); gracilis (*S. m. f. g.* Almquist) (p. 254); bastardii (*S. b.* Boreau) (p. 254). Under *Silene angustifolia* ssp. thorei (*S. t.* Dufour) (p. 255) appear: thorei genuina (Duf.) n. comb. (p. 256); tenella (*S. cucubalis thorei tenella* Rouy & Fouc.) (p. 257).—*G. Negodi* (*transl. by H. S. Wolfe*).

8135. **OMANG, S. O. F. Die Hieraciumflora im Talgebiete Gudbrandsdalen [Norway]. II.** *Skrifter Norske Vidensk.-Akad. I. Mat. Nat.-Kl.* 1927 (2. bind, No. 4): 1-140. 1927 (1928).—This region lies in the central southern Norway and has no distinct barriers. It may be considered an extension of the Central-Swedish lowlands. The distribution of various groups of species within the region is discussed and the wider distribution of certain ones, together with the migration problems involved. It is concluded that the group shows here a high degree of endemism and that mutation has been important in producing new forms. There are recognized 441 species and varieties (a few hybrids) in the following groups: Piloselloidea, 64; Alpina genuina, 66; Alpina nigrescentia, 44; Cerinthoidea, 1; Oreada, 19; Silvatica, 140; Caesia, 24; Vulgata genuina, 33; Rigida, 9; Prenanthoidea, 31; Foliosa, 10. The last 5 are considered, together with additions and corrections to the others previously treated in Part I of the same work. An index is provided but there is no bibliography and the citations in the text are without dates. Included are the following: *H.* perichnoum (p. 24), *H.* anchirhomboides (p. 30), *H.* obtusulescens (p. 36), *H.* cineriticeps (p. 37), *H.* arizelum (p. 39), *H.* palleptum (p. 40), *H.* aegrotans (p. 41), *H.* connexuosum (p. 43), *H. ornatum* var. defiens (p. 46), *H.* poecilops (p. 50), *H.* meconopsis (p. 52), *H. subrigidum* var. exaltidens (p. 52), *H.* collettianum (p. 53), *H.* protenozum (*H. dissolutum* Dahlst., non Nägeli & Peter) (p. 55), *H.* anapsilon (p. 59), *H.* scolopodon (p. 59), *H.* chroocentroides (p. 61), *H.* furcelliferum (p. 63), *H.* basirhacum (p. 64), *H.* froesiense (p. 65), *H.* sphecodes (p. 66), *H.* epixanthoides (p. 67), *H.* megaphorum (p. 68), *H.* macripes (*H. prenanthoides* Vill. var. *parviflorum* Lindb.) (p. 70), *H.* phyllaceum (p. 71), *H.* fumatipes (p. 72), *H.* arrectulum (p. 73), *H.* lepidochnoum (p. 75) from Isfjordalen and Ormeim in Romsdal, *H. eurylophum* var. disfoliatum (p. 76), *H.* aepymetes (p. 77), *H.* parypheodes (p. 77) and var. lomianum (p. 78), *H.* carabodes (p. 79), *H.* phyllozum (p. 81), *H.* adeniscotum (p. 83), *H.* corosifrons (p. 83), *H.* sclerocomum (p. 84), *H.* lunnerense (*H. corymbosum* Fr. *flocciceps* Om.) (p. 86); *H. pilosella* sspp. psarodes (p. 88), niveotomentosum (p. 89), oblonguliceps (p. 89) and furvocanulum (p. 90); *H. lampranthum* var. sclerochaetum (p. 92), *H.* pyrrhopum (p. 92), *H.* anisadenium (*H. heteradenium* Om.) (p. 95), *H. stiptotrichum* var. fobergense (p. 96), *H. semicrispum* var. pammeces (p. 97), *H.* sinulosum (p. 97), *H. praematurum* var. euglossiforme (p. 99), *H.* haplophyllum (p. 100), *H. lithophilon* var. hjerkinnense (p. 101), *H.* coctile (p. 101), *H.* eriphalium (p. 103), *H.* psilozum (p. 105), *H. transientiforme* var. lomotocum (p. 106), *H.* euryclonum (p. 106), *H.* parapolium (p. 108), *H.* phelleiotes (p. 110), *H. saxifragum* var. latificum (*H. latifrons* Om.) (p. 111), *H.* orthohprixum (p. 112), *H.* acmaeophyton (p. 112), *H.* monolaephum (p. 115) from Opdal, *H.* amathophilon (p. 116), *H.* odontomeles (p. 117), *H.* chalarum (p. 119), *H.* argillosum (p. 120), *H.* nealolepis (p. 121), *H.* obliquans (*H. subdiminuens* Om.) (p. 123), *H.* scopelophyes (p. 123), *H.* eulissum (p. 125), *H.* multicium (p. 126), *H.* trilophum (p. 127), *H.* hypolizon (*H. subsparsidens* K. Joh. var. *spathuligerum* Om.) (p. 130), *H. lepistoides* var. argutifolium (p. 130), *H. mundulum* var. scobuense (p. 131), *H.* dombosense (p. 131), *H.* curtifrons (132), *H.* iconicum (p. 133), *H.* habrodes (p. 134), *H.* praevittatiflorum (*H. praevittatum* Om.) (p. 136), *H.* capnochroum (*H. capnodes* Om.) (p. 136), *H.* cathaemum (*H. acanthodon* Om.) (p. 136), *H.* exochum (*H. pseudorosulatum* Om.) (p. 136), *H.* plesicomum (*H. aricomum* Om.) (p. 136), *H.* loxodon (*H. craspedotum* Om.) (p. 136), *H. oblongulare* Om. is a synonym of *H. lyratum* Norrl., *H. melanoxanthum* Om. of *H. epixanthum* Om.; *H. poliobaptum* Om. and *H. crocydograptum* Om. probably are varieties of *H. oblaqueatum* K. Joh. *H. legnodes* Dahlst., *H. erectifrons* Zahn, *H. adenozum* Om., *H. chnootum* Om., *H. hemiodes* Om. and *H. sinulosum* Om. are described in full. *H. leucomelanides* Om. is referred to the *caesia* group instead of the *silvatica*. Other synonymy is indicated but it is not clear whether or not it has been published previously.—*O. A. Stevens.*

8136. **OMANG, S. O. F. Sogn Hieracier med en orientering i utbredelses- og vandringsforhold. [The Hieracium flora of Sogn, S. central Norway, with an orientation of the conditions of distribution and cultivation.]** *Nyt. Mag. Naturvidensk.* 67: 231-499. 1929.—This study, the result of 2 years' collecting, embraces 373 forms from Sogn. A distributional table is given. The flora is divided into 3 elements: the west-coast flora, the dale flora, and the lowland flora. A chapter is devoted to the Hieracium flora of the regions adjacent to Sogn, and one deals with the adventitiousness of *H.* in Sogn. Piloselloidea: *Hieracium pilosella* ssp. tanycranum (p. 259); *H. p. pilocanum* var. oblongoniveum (p. 260); *H. p.* sspp. albocanens (p. 260), artellum (p. 261), expolitum (p. 261), albofurcatum (p. 263), perniveum (p. 264), poliodes (p. 265), sanguineostriatum (p. 265), perpallidum (p. 266), nudiusculum, nitidulum (p. 268), and meruliceps (p. 269); *H. p.* ssp. *m.* vars. minutellum (p. 271) and olavi (p. 272); *H. p.* ssp. perflexile (p. 272) and f. sveioensis (p. 273); *H.* amblycolum (p. 275); *H.* hyperadenodes (p. 278); *H. croceum* var. semicroceum (p. 279); *H. scissicaule* var. caniusculum (p. 281). Archieracia: *H.* anemostrophum (p. 284); *H. platymeles* var. seltuftense (p. 286); *H.* tyrvenutense (p. 286); *H.* reinungense (p. 288); *H. scoliodon* var. nervosum (p. 290); *H.* capaciceps (p. 290); *H. stenomischum* var. contristatum (p. 291); *H.* allothigenes (p. 292); *H.* fascigerum (p. 295) and var. linearifrons (p. 295); *H. tumescens* var. tumidiusculum (p. 297); *H. radinum* var. exaetum (p. 298); *H.* macropodum (p. 299); *H.* ulotetodes (p. 301); *H.* subpulliceps (p. 302); *H.* tanysphyrum (p. 304); *H.* oligolophum (p. 305) and vars. pauperatum (p. 306) and fortunense (p. 307); *H.* cephalothales (p. 308); *H. schmidtii* sspp. praefloccellum (p. 310), ordalicum (p. 311), cuphodes and ambleanum (p. 312); *H.* chromorhantum (*H. tinctum* Dahlst. in sched.) (p. 314) and var. oxybelodes (p.

315); *H. saxifragum* ssp. leptophalium (p. 319) and f. aurlandica (p. 320); *H. s.* ssp. mischotum (p. 323); *H.* mischotopsis (p. 325); *H.* oreades var. aglaum (p. 327); *H.* pampsiloides (p. 328) and vars. gaupnense and pseudosympycnodes (p. 329); *H.* phyllopleon (p. 329); *H.* pernobile (*H. acutum* var. *p.* Blytt) (p. 330); *H. norvegicum* ssp. polymiantum (p. 332) and stibarum (p. 333). Vulgata: *H.* mjoemense (p. 336); *H.* phytomanum (p. 338); *H. glaucovatum* var. paratocoides (p. 340); *H.* neurosteptum (p. 343); *H.* larophyllum (p. 343); *H.* cuneolascens (p. 345); *H.* heibergianum (p. 348); *H.* subnorulum (p. 351); *H.* megethes (p. 352); *H.* cathaemactum (p. 354); *H.* praecurvescens (p. 356) and var. axiadenium (p. 357); *H.* aristrotum (p. 359); *H.* holophyes (p. 360); *H.* chlaniscotum (p. 361); *H.* leucocestum (p. 362); *H.* paramecolepsis (p. 363); *H.* parcicrinoides (p. 364); *H.* myurolepsis (p. 366); *H.* anaspilotum (p. 369); *H.* borgundense (p. 372); *H. dissimile* vars. norenense, actites (p. 375) and hoidalicum (p. 376); *H.* melannephes (p. 376); *H.* talariscodes (p. 378); *H.* pachylopum (p. 380); *H.* squamulare (p. 383) and var. eseense (p. 384); *H.* pantolum (p. 385); *H.* prophantum (p. 386); *H.* nitentiforme (p. 390); *H.* pardalotum (p. 391); *H.* paraloides (p. 392); *H. uncotum* var. extractum (p. 394); *H.* catoxyides (p. 395) and var. fuscisquamum (p. 396); *H.* grisellescens (p. 397); *H.* coniatum (p. 397); *H.* dilucidiusculum (p. 399); *H.* phyllophidum (p. 401); *H.* nitidicuspis (p. 402); *H.* extans (p. 403); *H. c.* var. jostedalicum (p. 404); *H.* epichloum (p. 404) and f. crispifrondiforme (p. 406); *H.* crispifrons (p. 406); *H* mitoclonum (p. 408); *H.* oblonguliferum (p. 409); *H.* confragosum (p. 410); *H.* denticulare (*H. angustatum* v. *elatum* Lindeberg) (p. 411); *H.* adetum (p. 412); *H.* turliense (p. 413); *H.* eulepodes (p. 415); *H.* leptocymatum (p. 417); *H.* semivulgatum (p. 418); *H.* hirtellosum (p. 420); *H.* mollifolium (p. 421); *H.* trichellosum (p. 422); *H.* pseudonanodes; *H.* congregarium (p. 424) and vars. dissociatum (p. 425) and hardbakkense (p. 426); *H. orarium* var. desidens (p. 426); *H.* schematodes (p. 429) and var. leikangerense (p. 431); *H.* ethnophyton (p. 431); *H.* anisoches (p. 433); *H.* aequabile (p. 434); *H.* lachnaeum (p. 437). Rigida: *H.* periphaulum (p. 439); *H.* cremnophyes (p. 440); *H.* charadrotes (p. 441); *H.* dolabratoides (p. 441); *H.* lapponiciceps (p. 443); *H.* pergracile (p. 444); *H.* mitophorum (p. 445); *H.* praevaricans (p. 446); *H.* fimreitense (p. 449); *H.* permodicum (p. 450); *H.* hafsloense (p. 451), Prenanthoidea; *H.* lamprochlorum (p. 455); *H.* brachyplectum (p. 457); *H.* nigardense (p. 458); *H.* manoclades (p. 459); *H.* pumiligerum (p. 460); *H.* sagaroyense (p. 463); *H.* boyumense (p. 464); *H.* cephalostictum (p. 465); *H.* phrixodes (p. 467); *H.* trichodorum (p. 468); *H.* farinatum (p. 470); *H. eurylophum* var. leptoscepes (p. 472); *H.* lissocladium (p. 472); *H.* araeopum (p. 474); *H.* machlodon (p. 477). Foliosa: *H. crocatum* var. actaeum (p. 478); *H.* phyllothames (p. 480); *H. angustum* vars. restricticeps and ampliusculum (p. 482).

8137. PELLEGRIN, FR. La flore du Mayombe d'apres les recoltes de M. Georges Le Testu. Deuxieme partie. *Mem. Soc. Linn. Normandie Sec. Bot.* 1(3): 1-83. 1 col. map, 6 pl., 13 fig. 1928.—Records spp. of the Gamopetalae (excluding Rubiaceae) and Apetalae, giving bibliography, descriptive notes, occurrence, and citation of specimens. The following are fully described (in French): *Mimusops africana* H. Lec., *M. le-testui** H. Lec., *Letestua durissima* H. Lec., *L. floribunda** H. Lec., *Gambeya nyangensis** Pellegr., *G. africana* v. oblongifolia (p. 14), *Diospyros le-testui** Pellegr., *D. nyangensis* Pellegr., *Maba mayombensis* Pellegr., *Clitandra le-testui** Pellegr., *Carpodinus* (?) *glandulosa* Pellegr., *Landolphia scandens* var. floribunda (p. 24), *Rauwolfia* mayombensis (p. 27), *R. tchibangensis** Pellegr., *Gabunia le-testui* Pellegr., *Brachystelma le-testui* Pellegr., *Strychnos ndengensis** Pellegr., *S. ngounyensis* Pellegr., *S. tchibangensis** Pellegr., *Prevostea mayombensis* Pellegr., *P.* klaineana Pierre ms. (p. 41), *Whitfieldia le-testui* R. Ben., *Crossandra gabonica* R. Ben., *Rungia le-testui* R. Ben., *R. obcordata* var. obtusa (p. 48), *Vitex ciliata* (Pierre msc.) Pellegr., *Dicliptera ripicola* R. Ben., *Sphaerothylax pygmaea* Pellegr., *Inversodicraca le-testui** Pellegr., *Tylostemon le-testui* Pellegr., *Cleistanthus* itsoghensis* (p. 60), *C.* ngounyensis* (p. 61), *Phyllanthus discoideus* var. glaber (p. 62); *Maesobotrya* tsoukensis (p. 64), *Croton dibindi* Pellegr., *Croton loukandensis** Pellegr., *C. tchibangensis* Pellegr., *Macaranga le-testui* Pellegr., *M. tchibangensis* Pellegr., *Dorstenia* le-testui* (p. 77), *D.* nyangensis (p. 78), *Trymatococcus* oligogyna (p. 79), UTSETELA (p. 80) (Artocarpaceae) based on *U.* gabonensis (p. 81). All the plants are from the region of the Mayombe, French Congo.—*F. Pellegrin.*

8138. PETCH, T. Campbellia cytinoides Wight. *Ceylon Jour. Sci. Sect. A. Bot., Ann. Roy. Bot. Gard. Peradeniya* 11(3): 269-275. 1 pl. 1930.—A re-description of the species of the Aeginetiaceae based upon fresh material or upon material preserved in alcohol is necessary before an accurate classification of the group may be made. The segregation of *Cliffordia* from *Christisonia* and of *Legocia* from *Campbellia* made by Livera in 1927 was based upon a study of pressed specimens and of paintings of the Ceylon species. Several of the generic differences given by Livera are seen not to exist when a study of fresh material is made.—*A. M. Ottley.*

FLORISTICS AND PLANT DISTRIBUTION

8139. ALMQUIST, ERIK. Floran inom Ängsö nationalpark. [The flora of Ängsö National Park, near Stockholm, Sweden.] *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* No. 13. 1-47. Map. 1930.—Contains a list of species from 62 families, occurring within the park (about 180 acres). Adventive species are so indicated in the list.

8140. ALSTON, A. H. G. Roxburgh's Hortus Bengalensis. *Ceylon Jour. Sci. Sect. A. Bot., Ann. Roy. Bot. Gard. Peradeniya* 11(3): 299-300. 1930.—A work, presumably edited by Carey, entitled "A Catalogue of Plants described by Dr. Roxburgh in his manuscript Flora Indica, but not yet introduced into the Botanical Garden," dated 1813 and usually regarded as a continuation of Roxburgh's Hortus Bengalensis, was actually written later than 1813. Some of the plants listed in it are briefly discussed as to validity.

8141. BEYLE, M. Seltene Früchte und Samen der norddeutschen Flora. *Verhandl. Ver. Naturwiss. Unterhalt. Hamburg* 20: 78-92. 1928(1929).—The author presents notes on numerous plants which rarely produce fruits or seeds in this region. Some bloom too early in the spring to be pollinated by insects. In some the anthers do not open because of too low a temp. at the time of flowering. Others are near the limit of their distribution and so do not find conditions favorable for their development.

8142. CHIOVENDA, EMILIO. Flora Somala. 437p. Map, 49 pl., 3 fig. Sindacato Italiano Arti Grafiche: Rome, 1929.—As stated in the preface by GIUSEPPE STEFANINI, this work considers primarily the plants collected by him and Nello Puccioni on an expedition through Somalia (Italian Somaliland) in 1924. But first Chiovenda presents (a) a sketch of the vegetation of Somalia, considered geographically and ecologically for Southern, Middle, and Northern Somalia; (b) the affinity of the Somalian flora, listing endemic species, and then under 18 other headings those shared with other portions of tropical Africa and Asia; and (c) wild plants used in Anglo-Italian Somalia. (In the preceding parts all species of the Somalian flora are included.) There now follows, for the main bulk of the work, a detailed enumeration of the plants collected by Stefanini and Puccioni: the Dicotyledones, Monocotyledones, and Pteridophyta written by Chiovenda; the Lichenes contributed by MARIA CENGIA-SAMBO; the Eumycetes and Myxophyceae by ORESTE MATTIROLO; the Bacillariales by G. FRENGUELLI; and the Rhodophyceae by RITA RAINERI. Indexes are given both

to Latin and indigenous names. The plates illustrate certain species, in detail of herbarium specimens or in landscape views, or for Bacillariales and Rhodophyceae giving photomicrographs and drawings. The map, prepared by G. STEFANINI, shows the routes of the principal travelers who have made botanical collections in the Somalian Peninsula, including all Italian and British Somalia. Included is the following new material. I. DICOTYLEDONES. Brassicaceae: *Diceratella sinuata* var. elliptica (p. 75), *D.* psilotrichoides (p. 76). Capparidaceae: **STEFANINIA**, related to *Buhsia* Bunge, based on *S.* telephiifolia* (p. 77); **PUCCIONIA**, related to *Dipterygium*, based on *P.* macradenia* (p. 78) (the systematic position of these four genera is shown on a Latin synoptical table); *Boscia* subtussulcata (p. 81); *Cadaba mirabilis* vars. glutinosa and hirtella (p. 82); *C. longifolia* vars. scandens (Pax) and frutescens (p. 82); *Macrua* hirtella (p. 83); *M.* macrocarpa (p. 84). Moringaceae: *Hyperanthera* borziana (*Moringa b.* Mattei) (p. 85); *H.* rivae (*M. r.* Chiov.) (p. 85); *H.* longituba (*Moringa l.* Engler) (p. 86), redescribed. Resedaceae: *Reseda* migiurtinorum* (p. 87); *R. amblycarpa* var. somala (p. 88); *R.* nogalensis (p. 88). Polygalaceae: *Polygala obtusissima* var. somalensis (p. 89). Dianthaceae: **HAFUNIA** (Pterantheae), based on *H.* globifera* (p. 90), with key to genera of the Pterantheae. Portulacaceae: *Portulaca* nogalensis (p. 91), with vars. atricha, homotricha, and heterotricha (p. 92). Tamaricaceae: *Tamarix* scebelensis* (p. 93). Malvaceae: *Pavonia* minimifolia (p. 96); *Serra incana* ssp. migiurtinorum (p. 97); *Hibiscus* minimifolius (p. 98); *H.* spartioides* (p. 99); *H.* baidoense [sic] (p. 100), with var. parvifolius (p. 101); **SYNODONTOS** (p. 101), n. subg. of *Cienfuegosia; Cienfuegosia* (*S.*) chiarugii* (p. 101). Sterculiaceae: *Melhania denhamii* var. benadirensis (p. 103); *M.* (*Hymenonephros*) parvifolia (p. 103); **TRIGYNELLA** (p. 104), n. subg. of *Melhania*, including *M.* coriacea* (p. 104). Tiliaceae: **RUMICICARPUS** (Triumfetteae) (p. 105), based on *R.* ramosissimus* (p. 106); *Microcos* (*Eumicrocos*) cerasifera* (p. 107); *Grewia tenax* var. erythraea (*Grewia e.* Schweinf.) (p. 109). Zygophyllaceae: *Zygophyllum simplex* var. herniarioides (p. 110); *Z.* migiurtinorum (p. 111); *Z.* prismaticum (p. 111); *Fagonia* charoides* (p. 112); *Kelleronia* eriostemon* (p. 113); *K.* quadricornuta (p. 114); *K. revoilii* var. macropetala (p. 115); *K.* obbiadensis (p. 115); *K.* macropoda* (p. 115); *Tribulus terrestris* var. nogalensis (p. 116), with outline of *Tribulus*, subgen. **EUTRIBULUS** (p. 116) for *T. terrestris* L., and subgen. *Kelleronia* (*Kelleronia* Schinz) with key to 9 species, including *T.* eriostemon (*K. e.* Chiov.), *T.* quadricornutus (*K. q.* Chiov.), *T.* nogalensis Chiov., *T.* obbiadensis (*K. o.* Chiov.), *T.* bricchetii and *T.* macropodus (*K. m.* Chiov.), *Nitraria retusa* sspp. euretusa (*Peganum retusum* Forsk.) and tridentata (*N. t.* Desf.) (p. 118); *Balanites* (*Agialida*) racemosa* (p. 119); *B.* (*Agiella*) scillin (p. 120). Ochnaceae: *Ochna inermis* ssp. rivae (*O. r.* Engler) (p. 121). Geraniaceae: *Monsonia* uniflora* (p. 121); *Pelargonium quinquelobatum* var. migiurtinorum (p. 122). Burseraceae: *Commiphora* sulcata (p. 123). Celastraceae: *Hartogia* agrifolium* (p. 125); *Gymnosporia* obbiadensis (p. 126). Vitaceae: *Cissus dysocarpa* var. gymnocarpa (p. 129); *C.* (*Cyphostemma*) crithmifolius (p. 129); *C.* (*Cyphostemma*) phyllomicron (p. 130), with *f.* eglandulosa (p. 130); *C.* (*Cyphostemma*) sarcospathula* (p. 130); *C.* biternata* (p. 131); *C.* (*Cyphostemma*) migiurtinorum (p. 132). Anacardiaceae: *Rhus* puccionii* (p. 132); *Odina* malifolia* (p. 133); *O.* cotoneaster* (p. 134); *O.* rivae (p. 135). Leguminosae Papilionaceae: *Crotalaria* gracillima* (p. 137); *C.* (*Oliganthae*) nogalensis (p. 138); *Indigofera subulata* var. microphylla (p. 138); *I.* sesquijuga (p. 139), with var. obbiadensis (p. 139); *I.* sparteola* (p. 140); *I. phillipsiae* a) erecta (p. 140) and b) prostrata (p. 140); *I.* viridiflora (p. 140); *Tephrosia* (*Brissonia*) sulphurea (p. 142); *T.* (*B.*) filiflora* (p. 143); *T.* (*B.*) obbiadensis* (p. 144); *Sesbania* sesban (*Aeschynomene s.* L.) (p. 145), with a) aegyptiaca and b) nubica (p. 145); *Taverniera* stefaninii* (p. 146); *Alysicarpus glumaceus* var. ludens (*A. rugosus* var. *l.* J. G. Baker), with a) glaberrima and b) pilosula (p. 148); *Cylista* (*Eucylista*) nogalensis* (p. 148); *C.* (*Blepharanthera*) microphylla* (p. 149); a key to the spp. of *Cylista* is given (the genus is divided into subg. **EUCYLISTA**, with series **AFROCYLISTA** and **ASIOCYLISTA**, and subg. **BLEPHARANTHERA** (p. 151)); *Vigna triloba* var. somalensis (p. 151); *Calpurnia* uarandensis (p. 152), which is placed in subg. **MICROCALPURNIA** (p. 153 and xiv); *Erythrina melanacantha* var. somala* (p. 153). Leguminosae Caesalpiniaceae: *Caesalpinia* (*Eucaesalpinia*) erianthera* (p. 155); *Cassia* puccioniana* (p. 159). Leguminosae Mimosaceae: *Acacia* obbiadensis; *A.* pseudosocotrana (p. 161); *A.* sarcophylla (p. 161); *A.* sultani (p. 162); *A.* erythraea (p. 163); *A.* humifusa* (p. 163); *A.* puccioniana* (p. 164); *A.* paradoxa* (p. 165); *A.* caraniana* (p. 166); *A.* zizyphispina (p. 167); *A.* cheilanthifolia* (p. 168) with var. hirtella (p. 169); *A.* unispinosa (*A. asak u.* Fiori). Saxifragaceae: *Vahlia* somalensis (p. 170). Combretaceae: *Combretum* minimipetalum (p. 173). Turneraceae: *Loewia glutinosa* var. microphylla (p. 175). Passifloraceae: **CARANIA** (p. 175), related to *Triphostemma*, based on *C.* berberoides* (p. 176). Achariaceae: **COLLENUCIA**, based on *C.* paradoxa* (p. 177). Cucurbitaceae: *Raphanocarpus* stefaninii* (p. 179) with var. membranosa* (p. 180), with synoptic summary of *Raphanocarpus* Hook. f., proposing subgenera **EURAPHANOCARPUS** (p. 181), **STEFANINELLA** (p. 181 and xiv), including *R. stefaninii* and *R.* ? membranosus (*R. s.* var. *m.*), and **RAPHANISTROCARPUS** (*Momordica* sect. *R.* Baill.) (p. 181), with *R.* boivinii (*M. b.* Baill.), *R.* asperifolius (*M. a.* Cogn.); *Momordica* somalensis (p. 181); *M.* brevispinosa (*Kedrostis b.* Cogn.) (p. 182); *M.* macrosperma (*K. m.* Cogn.) (p. 182); **CUCUMELLA** (p. 183), based on *C.* robecchii* (p. 184); *Cucumis* halabarda (p. 185); **CEPHALOPENTANDRA** (p. 187), based on *C.* obbiadensis* (p. 187). Umbelliferae: *Trachyspermum copticum* var. maritimum (p. 188). Rubiaceae: *Oldenlandia* saxifragoides* (p. 190); *O.* obbiadensis (p. 191); *Pentodon* laurentioides (p. 192); *Pentanisia* microphylla (*Knoxia m.* Franch.); *Pavetta* microphylla (p. 194). Compositae: *Vernonia* (*Lepidella*) aschersonioides (p. 195); *Pluchea* nogalensis (p. 197); *P.* sarcophylla* (p. 198); *Blepharispermum fruticosum* Klatt a) typicum, b) lanceolatum (*B. l.* Chiov.), and c) lapathifolium (p. 200); **SCLEROSTEPHANE** (*Inuleae*) (p. 200), related to *Calostephane*, based on *S.* discoidea* (p. 201) and *S.* adenophora* (*Pulicaria a.* Franch.) (p. 202); *Pulicaria* (*Platychaete*) migiurtinorum* (p. 202); *P.* (*Platychaete*) aualites* (p. 203); *Kleinia* polycotoma* (p. 205); *Senecio* nogalensis* (p. 206); *Launaea* hafunensis (p. 207); *L. benadirensis* var. caulescens (p. 208). Plumbaginaceae: *Statice* carinensis* (p. 210); *S.* nogalensis* (p. 211); *Bubania* migiurtina* (p. 212). Sapotaceae: *Mimusops* angel (p. 213). Apocynaceae: *Adenium somalense* vars. caudatipetalum and crispum (p. 217). Asclepiadaceae: *Cryptolepis* (*Eucryptolepis*) migiurtina* (p. 217); *C.* (*Ectadiopsis*) stefaninii* (p. 218); *C.* (*E.*) ruspolii (p. 219); *Caralluma* (*Bucerosia*) rivae (p. 222). Borraginaceae: **ARNEBIOLA** (Lithospermeae) (p. 227), based on *A.* migiurtina* (p. 227). Convolvulaceae: *Seddera* saturejoides (p. 228); *Convolvulus* stenocladus* (p. 229); *C. hystrix* f. inermis (p. 230); *Ipomoea* (*Leiocalyx*) stenophyton* (p. 231); *I.* nephrosepala* (p. 233); *I.* (*Xerophyta*) sultani* (p. 234); *I.* (*X.*) anemophoba* (p. 235); *I. incana* f. melanoclada (p. 236); *Astrochlaena* nogalensis (p. 236). Solanaceae: *Withania somnifera* var. macrocalyx (p. 237); *Solanum bifurcum* var. baidoense (*S. b.* Chiov.); *S.* cicatricosum* (p. 238); *S.* obbiadense (p. 239); *S.* nummulifolium* (p. 240); *S.* cymbalarifolium* (p. 241). Pedaliaceae: *Pterodiscus* purpureus (p. 244). Acanthaceae: *Ruellia* bracteophylla (p. 246); *R.* galactophylla* (p. 247); *R. carnea* var. cinerea (p. 248); *Dyschoriste* lycioides (p. 249); **PARSTAMINEA**, n. subg. of *Dyscho-*

riste, with *D.* **nummulifolia*** (p. 250); *Asystasia drake-brockmanni* forms **typica** and **lejogyna** (p. 251); *Neuracanthus* (*Leucobarleria*) **argyrophyllus*** (p. 252); *N.* (*L.*) **stolonosus** (p. 253); *N.* (*L.*) **cladanthacanthus*** (p. 254); **CARTHAMICEPHALUS** (p. 255 and xiv) n. sect. or subgen. of *Neuracanthus*, with *N.* **thymifolius*** (p. 255); Sects. **EUNEURACANTHUS** and **LEUCOBARLERIA** (Lindau) (p. 255) seem also to be new in this genus, though not so labeled; **GOLAEA** (related to *Neuracanthus*) (p. 257), with *G.* **migiurtina*** (p. 257); *Barleria quadrispina* var. **linearifolia** (*B. l.* Rendle) (p. 259); *B.* **puccionii** (p. 260); *B.* **iodocephala** (p. 261); *B.* **insericata** (p. 263); *B.* **migiurtinorum** (p. 264); a key to spp. to sect. *Somalia* of *Barleria* is given; **CHAMAEACANTHUS** (p. 266) (near *Ruspolia*), based on *C.* **pumilus*** (p. 267); *Justicia* **dodonaeifolia*** (p. 268). Globulariaceae: *Cockburnia* **somalensis** (p. 271). Verbenaceae: *Cyclocheilon eriantherum* var. **decurrens** (p. 272); *C.* **physocalyx** (p. 272); *Priva* **adhaerens** (*Ruellia a.* Forsk), with var. **forskalii** (*Verbena f.* Vahl) (p. 274). Labiatae: *Erythrochlamys* **niveus** (p. 275); *Orthosiphon* **obbiadensis** (p. 276); *Coleus* **sceheli** (p. 277); *C.* **burorum** (p. 278); *Ballota* **microphylla*** (p. 280); *Leucas* **minimifolia** (p. 281). Nyctaginaceae: *Boerhaavia* **stenocarpa** (p. 283); *B.* **reniformis*** (p. 283); *Selinocarpus* **somalensis*** (p. 284). Amarantaceae: *Aerva persica* var. **bovei** (*A. javanica b.* Webb); *Dasysphaera* **alternifolia** (p. 287); *Psilotrichum* **tomentosum** (p. 288); *P.* **ochradenoides** (p. 289); *Pleuropterantha revoili* var. **rhodoptera** (p. 290). Chenopodiaceae: **LAGENANTHA** (Salsoleae) (p. 292), related to *Salsola*, based on *L.* **nogalensis*** (p. 293), with var. **papillosa** (p. 294). Polygonaceae: *Polygonum senegalense* var. **semilanigerum** (p. 295). Euphorbiaceae: *Monadenium* **lunulatum** (p. 298); *M.* **subulifolium** (p. 298); *Euphorbia* **leucochlamys** (p. 299); *E.* **migiurtinorum** (p. 300); *E.* **longispina** (p. 302); *E.* **chamaecormos*** (p. 303); *E.* **turbiniformis** (p. 304); *Phyllanthus* **spinosus** (p. 305); *Jatropha villosa* var. **pelargoniifolia** (*J. p.* Courb.) (p. 306); *J.* **nogalensis*** (p. 306); *J.* **arguta*** (p. 307); *J.* **obbiadensis*** (p. 308); *Tragia* **rhoicifolia*** (p. 310); *Tragiella* **pavoniifolia*** (p. 310). Moraceae: *Ficus* **somalensis** (*F. chanquensis* v. *s.* Pamp.) (p. 313).—II. MONOCOTYLEDONES. Velloziaceae: *Vellozia schnitzleinia* var. **brevifolia** (p. 314). Commelinaceae: *Aneilema obbiadensis* var. **angustifolia** (p. 316); *Commelina albescens* var. **hirsutissima** (p. 317). Palmae: *Phoenix* **caespitosa** (p. 317); *Hyphaene* **migiurtina** (p. 318); *H.* **carinensis*** (p. 319). Cyperaceae: *Scirpus litoralis* a) **trigonus** (p. 326). Gramineae: *Chrysopogon* **fulvus** (*Pollinia fulva*) (p. 327), with var. **migiurtinus** (p. 328); **PSEUDOZOYSIA** (p. 329), related to *Zoysia*, based on *P.* **sessilis** (p. 329); *Digitaria pennata* var. **pilosa** (p. 331); *Melinis* **vestita** (*Eriochloa v.* Balf. f.) (p. 332); *Sporobolus* **senegalensis** (*Agrostis barbata* b *senegalensis* Pers.) (p. 333), with a) **glaucifolius** (Hochst.) n. comb., b) **podotrichus** (Chiov.), n. comb., and c) **microstachyus** (p. 334); *S. indicus* var. **microspicula** (p. 335); *Dactyloctenium* **ciliare** (*Cynosurus ciliaris* Rottl.) (p. 337); *D.* **robecchii** (*Eleusine r.* Chiov.) (p. 337); *Diplachne fusca* var. **alba** (*Diplachne a.* Hochst.) (p. 337).—III. PTERIDOPHYTA. *Adiantum capillus veneris* L. alone is listed.—IV. LICHENES. Extensive list for the region, including *Melaspilea proximella* var. **lactea** Cengia-Sambo (p. 348); and *Thermutis compacta* Nyl., *Pterygiopsis atra* Wainio and *Hassea bacillosa* Zahl., new for Africa.—V. EUMYCETES. List of about 15 forms, including *Montagnites* **somala** (*M. candollei* v. *somala* Baccarini) (p. 364), and accompanied by a bibliography of the mycology of East Africa.—VI. MYXOPHYCEAE. *Lyngbya maior* Menegh. is listed.—VII. BACILLARIALES. A list of collecting stations with tables of occurrence and prevalence thereat; giving a bibliography and record of species collected, including: *Coscinodiscus* **minimus** (*C. excentricus* f. *minima*) (p. 387); *Trigonium* **formosum** (*Triceratium f.* Bright.); *Denticula elegans* var. **thermalis** (*D. t.* Kütz.); *Orthoneis binotata* f. **minor** (p. 394); *Navicula* **crucialis*** (*N. bacillaris* var. *c.* O. Müller) (p. 396); *N.* **rostrata** (*N. sphaerophora* f. *r.* O. Müll. non Ehr.) (p. 399); *Mastogloia* **stefaninii*** (p. 401); *Amphora* **veneta** var. **somalica*** (p. 403); *Rhopalodia* **musculus** (*Cystopleura m.* (Kütz.) Kuntze); *R. gibberula* (*C. g.* (Ehr.) Kuntze); *Nitzschia* **stefaninii*** (p. 405); *Podocystis* **spathulata** (*Emphyllodium spathulatum* Shadb.).—VIII. RHODOPHYCEAE. *Archeolithothamnium* **stefaninii*** (p. 409) and *Porolithon* **somaliae*** (p. 412) are included. An index to the Latin and vernacular names is appended.

8143. HAYEK, A. Prodromus florae peninsulae Balcanicae. *Rep. Spec. Nov. Reg. Veg. Beih.* 30[1](7/8): 961-1193. 1927.—A continuation of descriptive flora, with synonymy, of the Balkan Peninsula, this instalment covering species Nos. 2766 to 3089, of the family Umbelliferae, and including also additions and corrections, and an index. The following are published: *Bupleurum ranunculoides* II. **gramineum** (*B. g.* Vill.) (p. 971); *B. sibthorpianum* β **montenegrinum** (*B. falcatum* ssp. *exaltatum f. m.* H. Wolff) (p. 972); *B. s.* γ **cernuum** (*B. c.* Ten.) (p. 972); *B. s.* B. **orbelicum** (*B. o.* Vel.) (p. 973); *B. s.* D. **diversifolium** (*B. d.* Roch.) (p. 973); *B. junceum* I. **wettsteinianum** (*B. j.* var. *w.* H. Wolff) (p 973); *B. commutatum* I. **eu-commutatum** (*B. c. typicum* H. Wolff) (p. 974); *B. c.* II. **glaucocarpum** (*B. gerardi* ssp. *g.* Borb.) (p. 975); *B. commutatum* III. **aequiradiatum** (*B. c.* β *a.* H. Wolff) (p. 975); *B. affine* B. **quadridentatum** (*B. q.* Wettst.) (p. 976); *B. gracile* β **sartorianum** (*B. tenuissimum* ssp. *g.* f. *s.* H. Wolff) (p. 977); *B. gracile* γ **transiens** (*B. tenuissimum* ssp. *g.* f. *t.* H. Wolff) (p. 977); *B. veronense* α **elatius** (*B. aristatum* var. *e.* Bartl.) (p. 980); *B. v.* β **elegans** (*B. variabile* α *e.* Bald.) (p. 980); *B. veronense* γ **pseudopacum** (*B. divaricatum* ssp. *aristatum* γ *p.* H. Wolff) (p. 981); *B. veronense* ε **humile** (*B. h.* Vest.) (p. 981); *B. lancifolium* b. **turcicum** (*B. protractum* var. *t.* David.) (p. 982); *B. l.* β **acuminatum** (*B. intermedium* β *a.* Briq.) (p. 982); *B. l.* B. **longifolium** (*B. perfoliatum* var. *l.* Desv.) (p. 982); *Trinia glauca* C. **durmitoreum** (*T. vulgaris* var. *d.* Rohl.) (p. 983); *T. g.* D. **carniolica** (*T. c.* Kern.) (p. 983); *Carum heldreichii* B. **grimburgii** (*C. g.* Hal.) (p. 991); *Bunium montanum* B. **tenerum** (*B. t.* Haussk.) (p. 992); *Freyera cynapioides* B. **montenegrina** (*F. m.* Bald.) (p. 994); *F. cynapioides* C. **balcanica** (*Biasolettia b.* Vel.) (p. 994); *F. parnassica* B. **pindicola** (*Biasolettia pindicola* Haussk.) (p. 994); *F. bornmülleri* (*Biasolettia b.* H. Wolff) (p. 995); *Pimpinella alpestris* b. **erythrocephala** (*P. saxifraga* ssp. *alpina* v. *e.* K. Maly) (p. 997); *P. polyclada* β **parnassica** (*P. tragium* var. *p.* Boiss. & Heldr.) (p. 998); *P. polyclada* β *parnassica* c. **sartorii** (*P. s.* Boiss. & Heldr.) (p. 998); *Seseli rigidum* b. **purpurascens** (*S. p.* Jka.) (p. 1003); *S. rhodopaeum* B. **validum** (*S. v.* Vel.) (p. 1004); *S.* **peucedanoides** (*Bunium p.* M. B.) (p. 1009); *S. p.* β **tenellum** (*Silaus tenellus* Vel.) (p. 1009); *Libanotis daucifolia* B. **nitida** (*L. n.* Vis.) (p. 1010); *L. d.* B. *n.* β **involucrata** (*L. montana* β *i.* Borb.) (p. 1010); *Oenanthe silaifolia* β **lanceolata** (*O. biebersteinii* β *l.* Simon) (p. 1012); *O. s.* b. **hungarica** (*O. biebersteinii* f. *hungarica* Simon) (p. 1012); *O. s.* B. *media* β **grandisecta** (*O. biebersteinii* f. *g.* Simon) (p. 1012); *O. s.* B. *m.* γ **montana** (*O. biebersteinii* f. *m.* Simon) (p. 1012); *O. s.* C. **brevisecta** (*O. biebersteinii* f. *b.* Simon) (p. 1012); *O. s.* D. **hetrophylla** (*O. media* var. *h.* Grec.) (p. 1013); *O. s.* D. *h.* β **divaricata** (*O. biebersteinii* f. *d.* Simon) (p. 1013); *Cnidium silaifolium* β **reichenbachii** (*C. r.* Hut.) (p. 1020); *C. silaifolium* γ **arcuatum** (*C. apioides* var. *a.* Vand.) (p. 1020); *Ligusticum seguieri* B. **balcanicum** (*L. lucidum* γ *b.* Thell.) (p. 1021); *Angelica brachyradia* B. **pancicii** (*A. p.* Vand.) (p. 1024); *Ferulago silvatica* B. **commutata** (*F. ferulago* b. *c.* Roch.) (p. 1029); *F. silvatica* C. **monticola** (*F. m.* Boiss. & Heldr.) (p. 1029); *Peucedanum ruthenicum* B. **rochelianum** (*P. r.* Heuff.) (p. 1032); *P. neumayeri* B. **serpentini** (*P. s.* Andras. & Jáv.) (p. 1035); *P. austriacum* C. **cnidioides** (*P. c.* Boiss. & Heldr.) (p. 1038); *Tordylium* **byzantinum** (*Ainsworthia byzantina* Azn.)

(p. 1045); *Laserpitium siler* I. **eu-siler** (p. 1047); *L. s.* I. *e.* β **macrophyllum** (*L. m.* Borb.) (p. 1047); *L. s.* II. **garganicum** (*Ligusticum g.* Ten.) (p. 1047); *L. s.* II. *g.* α **leve** (*L. g.* α *leve* Hal.) (p. 1047); *L. s.* II. *g.* β **glabrum** (*L. g.* β *g.* Hal.) (p. 1047); *L. s.* II. *g.* b. **balcanum** (*L. g.* var. *b.* Stoj.) (p. 1047); *Daucus pumilus* β **breviaculeata** (*Orlaya maritima* β *b.* Boiss. & Heldr.) (p. 1050); *D. guttatus* β **brachylaenus** (*D. setulosus* β *b.* Boiss.) (p. 1051); *D. gummifer* B. **hispanicus** (*D. h.* Gou.) (p. 1052); *Orlaya daucorlaya* B. **media** (*O. grandiflora* var. *m.* Hal. (p. 1053); *Torilis* **torgesiana** (*Caucalis t.* Haussk.) (p. 1056); *T. arvensis* I. **eu-arvensis** (p. 1057); *T. a.* II. **purpurea** (*Caucalis p.* Ten.) (p. 1057); *Chaerophyllum aureum* B. **balcanicum** (*Chaerophyllum b.* Vel.) (p. 1060); *C. bulbosum* B. **tenuissimum** (*C. b.* ssp. *t.* Vel.) (p. 1061); *Anthriscus fumarioides* γ **bosniacus** (*Cerefolium f.* var. *bosniacum* Beck) (p. 1063); *A. fumarioides* b. *glaber* β **leiocarpus** (p. 1064); *A. vulgaris* b. **psilactis** (*Cerefolium anthriscus* f. *p.* Beck) (p. 1065); *Scandix macrorhyncha* C. **brachycarpa** (*S. b.* Guss.) (p. 1066); *Nephrodium villarsii* II. *pallidum* a. **pinnatisetum** (*Aspidium rigidum* var. *p.* Milde) (p. 1076); *Euphorbia seguierana* γ **intermedia** (*E. gerardiana* var. *i.* Savul.) (p. 1078); *E. s.* δ **hohenackeri** (*E. gerardiana* v. *h.* Hochst. & Steud.) (p. 1078); *Dianthus deltoides* D. **oxylepis** (*D. myrtinervius* β *o.* Boiss.) (p. 1080); *Agrostemma* **thessala** (*Githago t.* Form.) (p. 1081); *Aconitum divergens* B. **ferdinandi regis** (*A. f. r.* Gáy.) (p. 1082); *Papaver strigosum* C. **angustilobum** (*P. commutatum* v. *a.* Fedde & Bornm.) (p. 1082); *Alyssum chalcidicum* B. **markgrafii** (*A. m.* O. E. Schulz) (p. 1084); *Brassica incana* a. **mollis** (*B. m.* Vis.) (p. 1085); *B. incana* b. **botterii** (*B. b.* Vis.) (p. 1085); *B. incana* c. **cazzae** (*B. c.* Ginzb.) (p. 1085); *Raphanus rostratus* β **pugioniformis** (*R. p.* Boiss.) (p. 1086); *Saxifraga marginata* B. *coriophylla* ε **maiuscula** (*S. coriophylla* var. *m.* Bornm.) (p. 1088); *S. m.* C. *karadzicensis* β **dionysiopsis** (*S. k.* f. *d.* Bornm.) (p. 1088); *Rosa deseglisei* γ **denticulata** (*R. collina* var. *d.* Borb.) (p. 1091); *R. glauca* I. *reuteri* ξ **bornmülleri** (*R. afzeliana* ssp. *vosagiaca* var. *complicata* f. *b.* Dingl.) (p. 1091); *R. g.* I. *r.* ξ´ **aciphylloides** (*R. afzeliana* subf. *a.* Dingl.) (p. 1091); *R. coriifolia* II. *subcollina* a **solstitialoides** (*R. afzeliana* ssp. *subcollina* var. *solstitialoides* Dingl.) (p. 1091); *R. c.* II. *s.* b **glabrior** (*R. afzeliana* ssp. *subcollina* subf. *g.* Dingl.) (p. 1092).—*P. C. Standley.*

8145. LINDLY, J. M. Flowering plants of Henry County, Iowa. III. *Proc. Iowa Acad. Sci.* 36: 185-188. 1929 (1931).—The last installment of the list, the families being arranged alphabetically, beginning in this paper with Liliaceae.—*H. S. Conard.*

8146. [MALEEV, V. P.] МАЛЕЕВ, В. П. Декоративные растения Крымской флоры. **(Ornamental plants of the Crimean flora.)** Бюллетень Государственного Никитского Опытного Ботанического Сада. (*Bull. Gov. Bot. Gard., Nikita, Yalta, Crimea*) 5. 3-67. 10 fig. 1930.—An annotated list.

8147. OPPENHEIMER, H. [Florenkatalog von Transjordanien.] [The flora of Transjordania, northwestern Arabia.] *Ber. Deutsch. Bot. Ges.* 48(1): 1-3. 1930.—Abstract.

8148. PARRY, C. C. From San Diego to the Bay of All Saints, Lower California, and back. Notes of a botanist visiting Mexican soil. *Madroño Jour. California Bot. Soc.* 1(15): 218-221. 1929.—Notes on vegetation and geography, written in 1882 but not previously published in any scientific journal.

8149. STANDLEY, P. C. Flora of the Panama Canal Zone. *Contr. U. S. Nation. Herb.* 27: [i]-x+1-416. 67 pl., 7 fig. 1928.—A brief treatment of the flowering plants of the Panama Canal Zone and adjacent territory, with keys to families, genera, and species, and running remarks on the species with especial reference to uses and vernacular names. Most of the cultivated plants are included. The accounts of several families have been contributed by specialists: Poaceae by A. S. HITCHCOCK and AGNES CHASE; Orchidaceae by OAKES AMES; Piperaceae by WILLIAM TRELEASE; Passifloraceae by E. P. KILLIP. The introduction treats the general features of the flora, under the following principal headings: physiography, flora of Atlantic and Pacific slopes and of Taboga Island, introduced plants, agriculture, vernacular names, Barro Colorado Island, history of botanical exploration. The plates, all reproduced from photographs, illustrate typical aspects of scenery and about 60 of the characteristic plants.—*S. F. Blake.*

8150. TORO, RAFAEL A. Una contribución a nuestro conocimiento de la flora de San Andrés y Providencia. (Segunda parte.) [Contribution to our knowledge of the flora of Saint Andrew and Providence (in the Caribbean Sea). Part 2.] *Rev. Soc. Colombiana Cienc. Nat.* 4(105): 56-58. 1930.—A list of 40 species.

8151. VACCARI, A. Notizie circa la collezione di piante Australiane e delle Isole di Tasmania e N. Zelanda donata al R. Istituto Botanico della Università di Modena dal M. Rev. Prof. D. Giuseppe Capra Salesiano. [Notes on the collection of Australian plants and plants from Tasmania and New Zealand, given to the R. Inst. Bot. of the Univ. of Modena by Giuseppe Capra.] *R. Accad. Sci. Lett. Arti Modena, Atti e Mem.* 2: 65-69. 1929.—The missionary Giuseppe Capra went to Australia in 1908, and collected extensively there and in Tasmania and New Zealand. His collection, consisting of spermatophytes and ferns, numbers 300 species.

8152. VIDAL y LÓPEZ, MANUEL. Materiales para la flora marroquí. 6. Plantas de la cabila de Beni Hassán. *Bol. R. Soc. Españ. Hist. Nat.* 29(7): 283-286. 1929.—A list of angiosperms with brief notes.

8153. VIDAL y LÓPEZ, MANUEL. Materiales para la flora marroquí. VIII. Más plantas de la cabila de Beni Hassán. *Bol. R. Soc. Españ. Hist. Nat.* 30(3): 159. 1930.—Brief list of angiosperms.

8154. WILLIAMSON, H. B. Some plants of the northern Mallee [Victoria]. Parts I, II, III. *Victorian Naturalist* 46(12): 243-244. 47(1): 4-8; (2): 23-25. 1930.—I. Notes on the occurrence and characters of *Leptorrhynchus panaetioides* and *Ixiolaena leptolepis*, with a key for their separation.—II. A list of about 20 species, with locality records and descriptive notes.—III. *Stipa platychaeta*, first records for Victoria. The flora of the saline Pink Lakes region is described.

8155. [WULFF, E. W.] ВУЛЬФ, Е. В. Флора Крыма. Однодольные. **(Flora Taurica. Monocotyledoneae.)** Флора Крыма. Народный Комиссариат Земледелия, Государственный Никитский Ботанический Сад. (*Flora Taurica. People's Comm. Agr., Nikita Bot. Gard.*) 1(2): 3-77. 1929.—An annotated list of species, with synonymy, local records, geographical distribution and taxonomic remarks. There are keys to families, genera and species, and a bibliography.

8156. ANONYMOUS. Nachträge und Verbesserungen zu den Europa-Karten. *Die Pflanzenareala* 2(8): 87-89. Map. 1930.—Additions and corrections, chiefly distributional, by the various authors who have contributed articles in this publication.

8157. ANONYMOUS. Report on three tours in the Provinces of Nakawn Sritamarat, Songkla, Satul and Patalung [Siam]. *The Record (The Jour. Bd. Commercial Development)* [*Bangkok*] 33: 30-41. 7 fig., 1 map. 1929.—Itinerary, with notes on the flora and agriculture of the region.

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in this issue Entries 6145, 6279, 6284, 6295, 6501, 6591, 6603, 6613, 6622, 7954, 8131)

8158. OGURI, S., and M. NARA. Microscopic and chemical examination of the tissue of the bamboo stalk. Original: *Jour. Soc. Chem. Ind., Japan* 33. 691. 1930. Abridgement: *Mem. Fac. Sci. & Engineer. Waseda Univ., Tokyo* 7. 119-121. 3 fig. 1930.

8159. PAMMEL, L. H., and C. M. KING. Germination of trees and shrubs. *Proc. Iowa Acad. Sci.* 36: 201-211. 15 fig. 1929 (1931).—This twelfth paper reports germination of 21 spp., of which 15 are illustrated: *Celtis laevigata, Tecoma stans, Melia azedarach, Brunnichia cirrhosa, Ribes vulgare, Leucaena glauca, Havardia brevifolia, Siderocarpos flexicaule, Citrus aurantium, C. mitis*, tangelo, *Sapium sebiferum, Acer platanoides, Colubrina americana, Fraxinus berlandieriani.*—*H. S. Conard.*

8160. PUJIULA, JAIME. Método de la tinción para la anatomía microscópica vegetal. [Staining method in microscopic plant anatomy.] *Bol. Soc. Ibérica Cienc. Nat.* 1928 (Mar.-Apr.): (1-4). 1928.—The usual difficulty in distinguishing stelar from cortical tissue in monocot stems may be overcome by using differentiating stains. A stain schedule for picric-fuchsin, used in mixture, is given.—*R. F. Daubenmire.*

8161. QUISUMBING, EDUARDO. A teratological case in Aërides quinquevulnerum. *Orchid Review* 39 (455): 131. 1 fig. 1931.

8162. RANGASWAMI, AYYANGAR, G. N., and N. KRISHNASWAMI. Polyembryony in Eleusine coracana, Gaertn. (Ragi). *Madras Agric. Jour.* 18 (12): 593-595. 1 pl. 1930.

8163. SAKISAKA, MITIDI. On the number of chloroplasts in the guard-cells of seed-plants. [In Japanese.] *Bot. Mag.* [*Tôkyô*] 43: 46-48. 1929.—In *Canna, Musa, Commelina, Tradescantia, Pharbitis, Dioscorea, Vicia* and *Dahlia* the number of chloroplasts in the guard-cells of leaves was calculated in June and July, the number per guard cell ranging from 3 to 24.

8164. SANTOS, JOSÉ K. Leaf and bark structure of some cinnamon trees with special reference to the Philippine species. *Philippine Jour. Sci.* 43 (2): 305-365. 21 pl., 12 fig. 1930.—The species studied were *Cinnamomum zeylanicum* Blm., *C. inérs* Reinw., *C. mercadoi* Vid., *C. cassia* Blm., *C. mindanaense* Elm. and *C. burmanni* Blm. Their leaves showed great variation in shape, size, thickness and texture but resemblance in anatomical structure. The structure of the bark was similar in all species. Secretory cells containing yellowish essential oil or sometimes mucilage occur in the mesophyll and midrib in leaves of all species and in the barks, which are further characterized by remarkable stone cells with one-sided thickening in the pericyclic region.—*H. D. Hill.*

8165. SAUNDERS, E. R. A chapter in floral evolution. *British Assoc. Advanc. Sci. Rept. 97th meeting* [*South Africa*]. 389-390. 1929 (1930).—The prevalent theory as to the morphology of the pistil has been that the carpels are of 1 uniform type, and "represent a leaf folded lengthwise and inwards, bearing the ovules on the conjoined margins." The author rejects this view and believes that pistils are polymorphic, and that 2 main types of carpels have been evolved: "(a) the valve or hollow type which is more or less extended laterally and, if fertile, bears the ovules either singly or in a single row on either margin; (b) the consolidated type which, if fertile, produces ovules either singly or in 1 to several rows on each flank of the midrib. The latter may show an appreciable lateral extension (semi-solid or pseudo-valve form), or it may consist merely of a column or radial plate of tissue (solid form). In ovaries of 1 carpel (e.g., *Anemone, Clematis, Potentilla, Rosa, Alisma*) the carpel is of valve form. In ovaries of more than 1 carpel, 2 kinds of carpel are usually present. Among exceptions to this generalisation may be cited *Nandina domestica* (Berberidaceae) (G2, rarely 3, of the valve type), *Fritillaria imperialis* (G3+3, all semi-solid). In the typical case one carpel type is fertile, the other sterile. Either the fertile or the sterile type, or both, may develop stigmas. When both carpel types are stigma-bearing the 2 sets of stigmas may be alike (occasional flowers in *Eschscholzia, Reseda*) or dissimilar (*Fumaria, Parolinia, Aphyllanthes, Aspidistra, Paepalanthus*). In *Aphyllanthes* both sets are functional, but as a rule this is not the case. In many instances carpel polymorphism appears to have arisen in association with considerable reduction in carpel number, as in Rosaceae (*Potentilla-Rosa* types *v.* other sections of the family), Phytolaccaceae (*Phytolacca-Ercilla* types *v.* Rivineae), Ranunculaceae (*Anemone-Clematis* types *v. Nigella*), *Alisma* v. *Butomus*. In some cases reduction has resulted in utilisation of persisting elements of those members which are suppressed in the construction of those which survive; these latter might therefore be said to arise by a process akin to synthesis. Transition from one carpel form to another may occur in allied forms (*Capsella bursa-pastoris* and *C. heegeri, Triglochin maritimum* and *T. palustris*, certain species of *Oxalis*, the median carpel pair in 2-valved and 4-valved ovaries of the Cruciferae)."

8166. SAUNDERS, EDITH R. On carpel polymorphism. IV. *Ann. Bot.* [*London*] 45 (177): 91-110. 45 fig. 1931.—This account deals with the Sterculiaceae. The author finds in the vascular anatomy a clue to various apparent anomalies in the floral structure and shows that a consistent principle underlies the variations in position of the several whorls in different genera. In all the types investigated the gynoecium is held to be composed of 2 carpel whorls, the outer carpels being solid and sterile, the inner, semi-solid and fertile. In certain Sterculieae premature longitudinal splitting results in the resolution, during the flowering stage, of the syncarpous gynoecium into separate ovaries, the individual ovary, which outwardly has the appearance of being monomerous, being, in reality, composed of $\frac{1}{2}+1+\frac{1}{2}$ carpels. It follows that the superficial likeness of the prematurely opened, flat, leaf-like ovary of *Sterculia* to a single dorsiventral leaf is not the result of morphological equivalence. On this interpretation the peculiar venation scheme ceases to be a difficulty. Genera with the full number of floral whorls were found to be consistently obdiplostemonous, this condition being due here, as in isomerous Geraniales and Ericales, to the dissimilar character of the two carpel whorls. In such sterculiaceous types sterile carpel cords, loculi and stigma rays as well as the fertile stamen members are antepetalous (*Theobroma, Dombeya, Pterospermum*). Where the perianth consists of only a single whorl of colored members (Sterculieae, *Thomasia, Fremontia*) these members are held not to be homologous with the sepals of a two-whorled perianth. Each such colored structure is regarded as corresponding to a sepal bordered on both sides by a half petal, in other words to $\frac{1}{2}+1+\frac{1}{2}$ members of a typical two-whorled perianth, and may be conveniently termed a tepal. The position of the staminal whorl(s) and of the sterile carpel cords, loculi and stigma rays is accounted for in the Sterculieae, *Fremontia, Cola, Thomasia* and *Hermannia*, which exhibit various differences in ground plan. Deduplication in the androecium of *Pterospermum* appeared to be due not to lateral branching but to successive bifurcation. Floral diagrams are given for *Theobroma cacao, Hermannia plicata, Dombeya burgessiae* and *Sterculia* (*Firmiana*) *platanifolia*.—*E. R. Saunders.*

8167. SINGH, T. C. N. Notes on the early stages in the development of the cotton-fibre and the structure of the boll and seed. *Ann. Botany* 45 (178): 378-380. 4

fig. 1931.—Contrary to Balls' findings, the number of fibers increases during the growth of the ovule.

8168. SINGH, T. C. N., and B. N. SINHA. Notes on the teratology of certain angiosperms. *Jour. Indian Bot. Soc.* 7(3/4): 99-104. 2 pl. 1928.—The paper describes: a fasciated leaf of *Boerhaavia repanda* Willd.; variation in number of floral parts in *Phlox drummondii;* 6 sepals, petals, and stamens in *Datura metel* L.; double fruits in *Trichosanthes dioica* Roxb.; a fasciated head in *Cosmos bipinnatus;* and a head of *Helianthus annuus* L. with leaflike structures in the center, regarded as highly modified florets.—*W. Dudgeon.*

8169. SINHA, B. N. The origin and evolution of the archegonium. *Jour. Indian Bot. Soc.* 7(3/4): 156-167. 1928.—The author criticizes briefly and rejects the views of GÖTZ and DAVIS, and proposes to derive the archegonium from the oogonium of *Coleochaete.* As the aquatic algae established themselves on land, a multicellular wall was produced by a process of "encapsulation" for protection against desiccation, and the primitive egg divided to produce the ventral and neck canal cells to meet the deficiency of water for the act of fertilization. Further evolution of the archegonium has been: embedding in the thallus in some Bryophyta, and reduction in number of neck and neck canal cells in Bryophyta and Pteridophyta; elimination of neck canal cells, reduction in number of neck canal cells, and progressively weak development of the ventral canal cell in Gymnosperms; and, finally, complete loss of all archegonium organization in *Welwitschia, Gnetum,* and Angiospermae. —*W. Dudgeon.*

8170. SMITH, CORNELIA MARSCHALL. Development of Dionaea muscipula. II. Germination of seed and development of seedling to maturity. *Bot. Gaz.* 91(4): 377-394. 36 fig. 1931.—The hypocotyl and primary root elongate, rupture the nucellar cap, and push aside the seed lid; the cotyledons partially emerge, turn green, and straighten up, carrying the seed with them; one cotyledon releases itself completely and the other remains attached by its tip, the 2 then diverging and young leaves appearing between them. The stem apex, which gives rise to leaves in spiral succession, gradually moves horizontally from between the cotyledons, forming a subterranean rhizome from the lower surface of which adventive roots arise; the cotyledons, hypocotyl, and primary root finally cease to function and are sloughed off the basal end of the rhizome of the now independent plant. The hypocotyl and the primary root are similar in structure, both having epidermis, cortex, endodermis, pericycle, and a diarch stele; there is no transition region in the hypocotyl, the vascular bundles being inverted where they enter the cotyledons; the cotyledons, with stomata and stellate hairs on both upper and lower surfaces, have a median collateral endarch vascular bundle from which 2 or more lateral branches extend. The rhizome appears to consist of an agglomeration of overlapping undiverged leaf bases with several vascular bundles coursing through them. The stele of the root of a young plant is usually tetrarch, whereas the stele of the root of a mature plant is most often octarch. The root hairs, which begin to form a few mm. behind the growing point, soon turn brown and become thick-walled, often persisting throughout the life of the root. Of the microchemical tests used to determine the composition of their cell walls, the chromic acid test for cutin alone gave positive results. They appear, therefore, to be vestigial structures. The evidence gained from a comparative study of the development of *Dionaea* and the plants closely related to it indicates that *Dionaea* should be placed in the family Droseraceae and in the order Sarraceniales.—*Author's summary.*

8171. SMITH, ORA. Factors associated with abortion and intersexual flowers in the eggplant. *Proc. Amer. Soc. Hort. Sci.* 27: 500. 1930(1931).—Abstract.

8172. SMITH, ORA. A study of the developing and aborting pistils of the tomato. *Proc. Amer. Soc. Hort. Sci.* 27: 501. 1930(1931).—Abstract.

8173. VENTURA, M. Contributo allo studio embriologico di una forma anomala di "Nicotiana silvestris" Spegazz. [Embryology of an anomalous form of N. silvestris.] *Ann. Bot.* [*Rome*] 18(2): 167-173. 1929.—A description of kinds of ovules present in this anomalous form.—*A. Biraghi.*

8174. VILHELM, JAN. Morfologická studie o některých abnormitách květu a plodu. [Morphology of some anomalies of flower and fruit.] *Rozpravy České Akad. Věd a Umění Tř. 2* 37(13): 1-27. 2 fig. 1928.—Study includes the following: partly green flowers of *Senecio vernalis* W. K.; partial greening and fasciation of *S. viscosus;* fasciation and greening of *Erigeron canadensis* L.; heads partially green and fasciated in *Matricaria discoidea* DC.; green pistils in the flowers of *M. inodora* L.; partial greening of the heads of *Taraxacum officinale* Web.; green flowers of *Verbascum phomoides* L.; partially green flowers of Anchusa *officinalis* L.; green and fasciated flowers of *Rosa;* flowers partially and entirely green in *Oenothera biennis* L.; flowers partially green in *Melandrium pratense* Roehl.; green stamens in *Narcissus pseudonarcissus* L.; syncarpy in *Solanum lycopersicum* L.—*J. Vilhelm* (*transl. by H. D. Hill*).

8175. WIGER, JOHAN. Ein neuer Fall von autonomer Nucellarpolyembryonie. *Bot. Notiser* 1930(5): 368-370. 4 fig. 1930.—Previous occurrences are briefly reviewed. The author's study of the process in *Sarcococca pruniformis* Lindl. is illustrated by figures showing the initial embryo cells and their development. A normal embryo sac is formed but all nuclei except the polar disintegrate. The latter unite to form endosperm. The plants are strongly protandrous; the pollen poor and early-developing.—*H. K. Svenson.*

PALEOBOTANY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 8181, 8184, 8189, 8193, 8200, 8203, 8206, 8207, 8208, 8210, 8214)

8176. BERRY, EDWARD W. Fossil plants from the Cypress Hills of Alberta and Saskatchewan. *Canada Dept. Mines Bull.* 63. p. 15-28. 2 pl. 1930.—Determinable materials are from the Estevan and Ravenscrag formations, correlated respectively with the Lance and Fort Union formations of the U. S. A. *Cercocarpus* **ravenscragensis*** (p. 23), *Leguminosites* **williamsi*** (p. 23), *Phyllites* **aquaticus*** (p. 28). Unnamed spp. represent the genera *Marchantites, Equisetum,* and *Paliurus* (?). *Populus cuneata* Newberry, *amblyrhyncha* Ward, *cyclomorpha* Knowlton & Cockerell, and *rotundifolia* Newberry are united as a single botanical species referred to the family Trochodendraceae and called *Trochodendroides* **cuneata*** (Newb.) (p. 20). Similarly *Populus speciosa* Ward and *xantholithensis* Knowlton are united as *Trochodendroides* **speciosa*** (Ward) (p. 22).—*E. W. Berry.*

8177. MACGREGOR, A. M. Geological notes on a circuit of the great Makarikari salt pan, Bechuanaland Protectorate. *Trans. Geol. Soc. So. Africa* 33: 89-102. Map. 1930(1931).—A fossil treetrunk, *Dadoxylon* sp., nearest *D. arberi* Seward, is recorded from the Kalahari sandstone (Tertiary) resting on denuded Karoo sandstone (Stormberg Triassic) from which it is almost certainly derived.

8178. RAMA, L. Occurrence of Lithothamnion in the South Indian Cretaceous. *Nature* [*London*] 128(3223): 225-226. 1931.—First record from the Cretaceous of India. One of the forms present is identified as *Archaeolithothamnion* sp.*

8179. WHITE, DAVID. Flora of the Hermit shale, Grand Canyon, Arizona. *Carnegie Inst. Washington Publ.* 405. vi + 219p. 55 pl. 1 fig. 1929. Pr. $2.50.—A general description of the rocks in the upper Canyon walls, in descending order, is given. The fossil plant remains from the Hermit shale, which embraces the upper part (250-300 ft.) of the great red beds series of the Canyon, are described and illustrated in detail, together with 2 types of borings, possibly made by worms, and indistinct impressions supposed to have been made by some crustacean. The land flora, composed mostly of pteridosperms and conifers, is unique in its composition, since it combines representatives of the cosmopolitan Permian flora of western Europe and eastern America, with representatives of the Gondwana floras of the Southern Hemisphere and of the mingled Gondwana and very late Lr. Permian or Up. Permian plant life of the Ural and central Asiatic regions. Several forms are directly connected with Uralian types; some are not only congeneric, but are specifically closely related to species found in Australia, S. Africa, and Argentina. No Pennsylvanian genus except *Sphenophyllum* has yet been found. One pteridospermic genus related to *Callipteris*, 2 genera possibly pteridospermic, and 1 coniferous genus are new, besides 2 new generic types of borings. The flora, a small one, is stunted, and rather distinctly xerophytic. On the basis of its characters and of the criteria afforded by the sediments, the conclusion is reached that the plants lived along a series of very shallow, low-gradient arroyos, traversing a great plain of red silts under a semi-arid climate, with torrential rains at times and hot dry seasons in which the water was greatly reduced. Molds of salt crystals are found associated with plant remains. No carbonaceous residues are present. In age, the Hermit shale and its flora are referred to a stage very high in the Lr. Permian, the belief of the author being that they do not long antedate the beginning of the Up. Permian (Zechstein) stage.—*Courtesy Carnegie Inst. Washington.*

Forms new to science include Algae, Cyanophyceae, *Rivularites* permiensis* (p. 41); Arthrophyta, Sphenophyllaceae, *Sphenophyllum* gilmorei* (p. 44); Pteridospermaphyta, Callipterideae, *Callipteris* arizonae* (p. 50); SUPAIA (p. 54), near *Callipteris*, related to the Gondwana floras, type *S.* thinnfeldioides* (p. 62); *S.* rigida* (p. 64); *S.* sturdevantii* (p. 65); *S.* merriami* (p. 67); *S.* compacta* (p. 69); *S.* anomala* (p. 71); *S.* linearifolia* (p. 72); *S.* breviloba* (p. 74); *S.* subgoepperti* (p. 75); *Brongniartites* ? yakiensis* (p. 79); *B.* ? aliena* (p. 84); YAKIA (p. 86), probably related to *Callipteris*, erected for *Y.* heterophylla* (p. 86); Taeniopterideae, *Taeniopteris* angelica* (p. 93); Coniferophyta, Araucariaceae, *Walchia* dawsoni* (p. 99); *W.* gracillima* (p. 100); *Voltzia* dentiloba* (p. 105); Taxales, PALEOTAXITES (p. 107), erected for *P.* praecursor* (p. 107); Pinales ?, *Brachyphyllum* arizonicum* (p. 109); *B.* tenue* (p. 110); *Pagiophyllum* dubium* (p. 111); and the following fruits of uncertain affinities: *Cyclocarpon* angelicum* (p. 112); and ELTOVARIA (p. 114), erected for *E.* bursiformis* (p. 114). Animals recorded from the Hermit shale include Vermes?, SCOYENIA (p. 115), erected for *S.* gracilis* (p. 115), and WALPIA (p. 117), erected for *W.* hermitensis* (p. 117). Types in U. S. Nat. Mus. A number of previously known fossil plants from the Hermit shale are redescribed and figured.

8180. [ZALESSKIĬ, M. D.] ЗАЛЕССКИЙ, М. Д. Распространение ископаемой флоры, родственной Гондванской, в пределах северной части Евразии. [Distribution of fossil flora, related to the Gondwanian, in northern Eurasia.] Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(9): 913-930. 11 fig. 1930.—Numerous new genera and spp. are listed, without descriptions. The following are named and figured but not described: *Isiolopteris* serrata (p. 915); *Petcheria* elongata (p. 916); *Rossovites* petchorensis (p. 916), *Ginkgoites* angaridensis (p. 917), *Ginkgophyllum* vsevolodi (p. 924), *Tchirkoviella* sibirica (p. 924), SITZIA, erected for *S.* kloki (p. 929), SITZOPTERIS, erected for *S.* superba (p. 929), *Rhipidopsis* elegans (p. 930).

PALEOZOOLOGY

(Abstracts of general papers only. Abstracts of systematic and morphological papers are grouped with those of a similar nature treating of living animals.)

B. F. HOWELL, *Editor*

JOHN R. SANDIDGE AND GLEN L. JEPSEN, *Associate Editors*

(See also in this issue Entries (Unclassified) 8179, 8577, 8581; (Protozoa) 8434, 8435, 8436, 8437, 8438, 8441, 8442, 8443, 8447, 8453, 8455, 8456, 8458, 8460, 8461, 8462, 8463, 8464, 8465, 8586; (Porifera) 8473; (Coelenterata) 8476, 8477; (Vermes) 8586; (Brachiopoda) 8625; (Bryozoa) 8473, 8586; (Echinodermata) 8530, 8531, 8536, 8537, 8538, 8543; (Mollusca) 8531, 8548, 8551, 8567, 8572, 8577, 8581, 8583, 8584, 8586, 8588; (Crustaceae) 8586, 8602, 8606, 8625; (Pycnogonida) 8667; (Insecta) 8856, 8857, 8858; (Vertebrata) 8586; (Cyclostomata) 8889; (Elasmobranchii) 8865; (Pisces) 8531, 8874, 8880; (Amphibia) 8903, 8908; (Reptilia) 9035; (Aves) 9018, 9035, 9055; (Mammalia) 9027, 9028, 9029, 9034, 9035, 9037, 9041, 9042, 9047, 9050, 9055)

8181. ABRARD, RENÉ. Comparaison des faunes continentales de Bois-Gouët, du Cotentin et du Bassin de Paris. *Bull. Soc. Géol. et Minéral. Bretagne* 8(1/4): 98-102. 1927(1930).—Lists and discusses the continental mollusks of Cotentin and Loire-Inférieure, notes the presence of the mammal, *Lophiodon parisiense*, and the plants, *Nerium vasseuri* and *Euphorbiophyllum*, at Bois-Gouët, and concludes that the beds at both localities are of Lutetian Eocene age.—*B. F. Howell.*

8182. AIGNER, GUSTAVA. Silurische Versteinerungen aus der Grauwackenzone bei Fieberbrunn in Tyrol. *Verhandl. Geol. Bundesanstalt* No. 10. 222-225. 1930.—Reports the occurrence of *Encrinurus beaumonti* v. *novaki* Frech and *Monograptus lobiferus* McCoy, both new to this locality. The 1st is known from zone E of the Silurian of Bohemia and the 2nd from zones 19 to 20 of the English section of Elles and Wood.—*G. Aigner (transl. by C. O. Dunbar).*

8183. ARKELL, W. J. A comparison between the Jurassic rocks of the Calvados coast and those of southern England. *Proc. Geol. Assoc. [London]* 41(4): 396-411. 1 pl., 1 fig. 1930.—Horizons and rich faunas are compared in detail.

8184. BAKER, CHARLES LAWRENCE. Geological cross-section of Isthmus of Tehuantepec. *Pan-Amer. Geol.* 53(3): 161-174. 1 fig. 1930.—Records from the Mesozoic and Cenozoic beds of this Mexican Gulf region, undescribed plant fragments, and the mollusks,

Crioceras, Hamites, Hoplites, Astieria, Spiticeras ?, Neocomites neocomensis ?, Monotis, and *Bangia cuneata.—D. J. MacNeil.*

8185. **BERRY, WILLARD. Evidence for the spread of East Indian forms to equatorial America during Eocene time.** *Bull. Geol. Soc. America* 41(3): 351-357. 1930.—Evidence is presented to show spread across the Pacific and to show where possible that the forms spread from the East Indies towards the West Indies and the west coast of South and Central America. Anthozoa, Arthropoda, and Mollusca are discussed. Foraminifera are treated more fully than the others, especially the so-called "larger Foraminifera." In all some 38 genera are treated. The organisms range from Eocene to recent.—*W. Berry.*

8186. **BIGOT, A. Sketch of the geology of Lower Normandy.** *Proc. Geol. Assoc.* [*London*] 41(4): 363-395. 2 maps, 3 pl., 4 fig. 1930.—The stratigraphical succession includes every geologic system above the Proterozoic. Fossils listed from the various formations indicate many rich faunal horizons.

8187. **BUSNEL, J. Découverte d'un gisement d'ampélites fossilifères dans la région de Médréac (Ille-et-Vilaine).** *Bull. Soc. Géol. et Minéral. Bretagne* 8(1/4): 112-114. 1927(1930).—Records the Silurian graptolites *Retiolites geinitzi, Monograptus,* and *Cyrtograptus* from this locality, and discusses their exact age.—*B. F. Howell.*

8188. **COLLIN, L. Étude géologique de l'île Longue. (Rade de Brest) [Brittany]** *Bull. Soc. Géol. et Minéral. Bretagne* 7(3/4): 216-224. Map. 1926(1929).—Lists the Devonian brachiopods, pelecypods, gastropods, cephalopods, trilobite, and ostracod found on this peninsula, and gives the age and distribution of their enclosing strata.—*B. F. Howell.*

8189. **CROOK, ALJA R. New plan illustrative of historical geology.** *Pan-Amer. Geol.* 53(2): 88-90. 1930.—Discusses the method employed in the Illinois State Mus. to illustrate the earth's history by use of the actual rocks and fossils in their proper sequence. The characteristic fossils of each geologic system are arranged with the dominant plants in one vertical column, other columns for coelenterates, echinoderms, mollusks, arthropods, and other invertebrates; followed by columns for fish, amphibians, reptiles, birds, and mammals. The arrangement shows the dominant types at the different times, the first appearance of the great zoological groups and the dates of maximum development.—*D. J. MacNeil.*

8190. **CURRIE, ETHEL D. The fossil fauna of the Samana Range and some neighbouring areas: Part II. The Albian Echinoidea.** *Mem. Geol. Surv. India, Palaeont. Indica* 15: 17-23. 1 pl. 1930.—Four forms (none specifically determined) are listed, with descriptions, figures, and taxonomic remarks.

8191. **DAVIES, L. M. The fossil fauna of the Samana Range and some neighbouring areas: Part I. An introductory note.** *Mem. Geol. Surv. India, Paleont. Indica* 15: 1-15. Map. 3 pl. 1930.—General description, structure, stratigraphy, including strata from Jurassic to possibly Eocene age, with mention of some of the fossils.

8192. **[DINGELSTEDT, N.] ДИНГЕЛЬШТЕДТ, Н. О находке нижне-силурийской фауны на Южном Урале близ Тирлянского завода. [Discovery of Lower Silurian fauna in the southern Urals, near the Tirlian factory.]** Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR.* [*Leningrad*]) 49(1): 119-124. Map. 1930.—The limestone fauna consists chiefly of crinoids and stromatoporoids with a few brachiopods, gastropods, corals, and orthoceroids.

8193. **FENTON, CARROLL LANE. A message from paleontology.** *Pan-Amer. Geol.* 53(4): 241-254. 1930.—Stresses the importance of organic evolution as a doctrine calling for analysis and rigorous synthetic research, discussing several major treatises on evolution and their significance in studying the historical development of organisms. States that the field of the invertebrate paleontologist is as important in this problem as is that of the vertebrate paleontologist, because fossils belonging to the non-chordate phyla are more abundant and represent a greater variety of structures and a greater period of time.—*D. J. MacNeil.*

8194. **FRIEDBERG, W. Studja nad formacja mioceńska Polski. Cześć VI. [Miocene studies in Poland. VI.]** *Kosmos* [*Lwów*] 55(1/2): 357-381. 2 fig. 1930.—This part consists of several separate studies. The author opposes the view of Kautsky that the Miocene (Helvetian) sea of North Germany was connected with that of the Vienna Basin by way of Poland. Many of the 56 mollusks of supposedly northern origin, listed by Kautsky from the Vienna Basin, were known earlier than the Helvetian from Mediterranean strata. In migrating from the north, the mollusks would have appeared in the Miocene of Italy at a later stage than in the Vienna Basin, but this is not the case. Little remains of the collection in Zürich that formed the basis for the work of Fr. Dubois de Montpérreux, "Conchologie fossile . . . . du plateau wolhynie-podolien." On the basis of such fossils as *Hydrobia punctum, Ervilia pusilla, Amussium galicianum,* and *Serpula gregalis,* the fauna of the vicinity Sandomierz is Tortonian, not Sarmatian. A number of Miocene mollusks are listed from Chomentów and Daszawa.—*From author's summary.*

8195. **GREGORY, JOHN WALTER, and ETHEL DOBBIE CURRIE. The geological collection from the south central Sahara made by Mr. Francis R. Rodd. I. General geology.** *Quart. Jour. Geol. Soc.* 86(343): 399-403. 1 pl. 1930.—Notes are given on the formations represented. The fossil record shows that the Cretaceous equatorial sea of West Africa was connected with the European seas past Aïr and across the central Sahara.—*M. A. Fenton.*

8196. **[IÔRDANSKIĬ, N.] ИОРДАНСКИЙ, Н. О силурийских отложениях Северного Урала (рр. Вишера и Косьва). [Silurian deposits of the northern Urals (Vishera and Kos'va rivers).]** Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, U. S. S. R.* [*Leningrad*]) 49(1): 137-139. Map. 1930.—A varied fauna, not specifically determined, is reported.

8197. **JONES, OWEN T. Episodes in geological history of Bristol Channel region.** *Pan-Amer. Geol.* 54(4): 241-274. 1930.—States that a former extension of the Lias westward into the Gower peninsula is indicated by the finding of several oysters, allied to *Ostraea irregularis,* in stalactitic deposits in caves in the Carboniferous limestone at Mumbles.—*D. J. MacNeil.*

8198. **[KIRICHENKO, G.] КИРИЧЕНКО, Г. Верхнесилурийские отложения на западном склоне Урала в районе Михайловского завода. [Upper Silurian deposits on the western slope of the Urals in the region of the Mikhailovsk factory.]** Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR.* [*Leningrad*]) 49(1): 130-135. 2 fig. 1930.—A few spp. are reported, chiefly brachiopods.

8199. **KOBAYASHI, TEIICHI. Cambrian and Ordovician faunas of South Korea and the bearing of the Tsinling-Keijô line on Ordovician palaeogeography.** *Proc. Imp. Acad.* [*Tokyo*] 6(10): 423-426. Map. 1930.—The Middle and Upper Cambrian faunas of South Korea are similar to those of North China and South Manchuria. A barrier seems to have been present during the Ordovician, for the Ordovician fauna of South Korea is closely related to the trilobite facies of Europe; while that of North Korea and South Manchuria shows an Arcto-American affinity. The Chikunsan (Ordovician) fauna includes 6 new species, named but not described.

8200. **LIEBUS, ADALBERT. Verzeichnis der geolog.-paläontologischen Literatur über das Gebiet von Böhmen, Mähren und Schlesien im Jahre 1929 mit Nachträgen aus früheren Jahren.** *Naturwiss. Zeitschr. Lotos* 78(2): 179-192. 1930.—About 286 titles.

8201. **[MASHKOVTSEV, S.] МАШКОВЦЕВ, С. К находке силурийской фауны по р. Лозьве на восточном склоне Северного Урала. [Discovery of Silurian**

fauna along the River Loz'va, on the eastern slope of the northern Urals.] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, U. S. S. R.* [*Leningrad*]) 49(1): 139-143. 1930.—A number of forms are listed, chiefly brachiopods and crinoids.

8202. MAZERES, R. Note sur la faune des Faluns du Quiou, de Saint-Grégoire et de La Chaussairie. [Fauna of the marls of Quiou, of Saint-Grégoire and of La Chaussairie.] *Bull. Soc. Géol. et Minéral. Bretagne* 8 (1/4): 20-22. 1927(1930).—Lists the gastropods, pelecypods, and brachiopods found in these Miocene deposits, discusses their age, and notes that Dollfus recorded fishes, gastropods, pelecypods, brachiopods, bryozoans, corals, and a foraminiferan from these beds in 1920.—*B. F. Howell.*

8203. [MEFFERT, B. F.] МЕФФЕРТ, Б. Ф. Юрские отложения Имеретии. Область Окриба и бассейн Риона и Цхенис-цхали. (Предварительная заметка.) (The Jurassic deposits of Imèrètia, west Georgia. Preliminary note.] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR.* [*Leningrad*]) 49(1): 9-26. 3 maps. 1930.—A study of fossils collected from this region for the first time, and used as a basis for stratigraphic determinations, results in a different conception of the subdivisions of the Jurassic from that of Simonovitch and Fournier. The "schistes" of the porphyritic series yielding *Perisphinctes* sp. and *Parkinsonia sub-arietis*, and the "schistes verts" containing *Parkinsonia parkinsoni, P. p.* var. *pseudoferruginea, Perisphinctes* sp., *Harpoceras* cf. *opalinoides, Stephanoceras* cf. *rectelobatum, Lytoceras* cf. *polyhelictum*, and [the Pelecypoda] *Posidonomya daghestanica, P. buchi, P.* cf. *alpina, Aucella* sp., and others, are referred to the Bajocian; the sandstone and "schistes grisâtres et feuilletés," and the coal beds of Tkvibouli containing numerous fossil plants, to the Bathonian; and the red beds to the Tithonian.

8204. NEAVERSON, E. The Carboniferous rocks around Prestatyn, Dyserth, and Newmarket (Flintshire). *Proc. Liverpool Geol. Soc.* 15(3): 181-212. Map, 1 pl. 1930.—Numerous fossils previously known, together with additions from the author's collections, are listed from several localities.

8205. [POTULOVA, N.] ПОТУЛОВА, Н. Верхнесилурийские отложения р. Белой (Южный Урал). [Upper Silurian deposits of the river Belaîa (southern Ural).] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR.* [*Leningrad*]) 49(1): 124-127. Map. 1930.—Several genera of brachiopods and corals are reported.

8206. RITTMANN, A. Geologie der Insel Ischia [Italy]. *Zeitschr. Vulkanologie, Ergänzungsband* 6: i-viii and 1-265. 2 maps, 12 pl., 55 fig. 1930.—A table of previously found fossils, with their synonyms, is given, showing their matrix rock, locality, and relative abundance. It includes 28 spp. of Foraminifera, 4 of Anthozoa, 5 of Echinoidea, 2 of Vermes, 1 of Bryozoa, 93 of Lamellibranchiata, 4 of Scaphopoda, 161 of Gastropoda, 3 of Pteropoda, 1 of Crustacea, and 2 of plants from the volcanic ash and related deposits. The author considers their age to be Pleistocene.

8207. RUEDEMANN, RUDOLF. Geology of the Capital District (Albany, Cohoes, Troy and Schenectady quadrangles). *New York State Mus. Bull.* No. 285. 1-218. 2 maps, 39 pl., 40 fig. 1930.—A popular account, with some technical chapters. The accompanying geologic map stars localities which have furnished fossils but which now, for any reason, no longer afford collecting. A chapter on glacial geology by JOHN H. COOK is appended. There are ecological notes on the plant life of the region. About half the volume is concerned with the extremely rich and varied faunas of the 27 formations (Lower Cambrian, Ordovician, Silurian, and Devonian) that are present. The region has afforded unusually fine collecting, and many lists of fossils from classic localities are given. Bibliography of about 100 titles.

8208. SARDESON, FREDERICK W. Rational delimitation of species in paleontology. *Pan-Amer. Geol.* 54(4): 281-286. 1930.—Stresses the importance of naming new spp. carefully, not hurriedly, and lists several cases where confusion might, with care, have been avoided, e.g., with the brachiopod, *Gypidula occidentalis*, and the trilobite, *Dikelloce phalus minnesotense*. Commends patience in collecting, particularly in regions of rare fossils.—*D. J. MacNeil.*

8209. SAVAGE, T. E. The Devonian rocks of Kentucky. *Kentucky Geol. Surv.* 33: 1-170. Illus. 1930.—Fossils are listed by localities from the Jeffersonville, Sellersburg, Boyle, and New Albany formations as well as from the undifferentiated Devonian. 17 common forms from the Jeffersonville and 18 from the Sellersburg are figured.

8210. SCHUCHERT, CHARLES. Outlines of historical geology. 2nd ed., rewritten. iv+348p. Illus. John Wiley & Sons, Inc.: New York, 1931.—The discussions of plants and animals are brought together in the first part of the book; emphasis is placed on living forms; and change and evolution, as the keynote of all geologic chronology and paleontology, are stressed more than in the previous edition.

8211. SMITH, BERNARD, R. L. SHERLOCK, C. T. TRECHMAN, D. M. S. WATSON, H. C. VERSEY, and E. NEAVERSON. Validity of Permian as a system. *Pan-Amer. Geol.* 54(3): 179-186. 1930.—A symposium. Contains the arguments submitted by these authors for maintaining the name "Permian," both from a stratigraphical and paleontological viewpoint. Asserts that in general the fauna of the European Permian system is scanty and exceptional; in England it contains only one fossil common to the Carboniferous and none to the Triassic. States that, to judge from the amount of evolution that goes on in Amphibia and Reptilia, the Permian was of considerable length. Maintains that this system should be redefined by means of the marine invertebrate faunas, known chiefly from Sicily, India, and Texas; and points out that the fossil assemblages from these places are distinct from those of the Carboniferous and Triassic. Refers especially to a peculiar characteristic of the Permian ammonites, i.e., the frilling of the sutural lobes.—*D. J. MacNeil.*

8212. STERNBERG, C. M. Miocene gravels in southern Saskatchewan. *Trans. Roy. Soc. Canada, Sect. 4. Geol. Sci.* 24(1): 29-30. 1930.—Fragments of a fish, a tortoise, and 9 mammals (none fully determined) are reported from the Wood Mountain gravels.

8213. TEILHARD de CHARDIN, P. Quelques observations biogéographiques en Chine. *Compt. Rend. Som. Soc. Biogéogr.* No. 60. 94-96. 1930.—A comparison of the fossil faunas of the Tung Gur (Lower Pliocene) formation in the Gobi Desert and of the Nihowan beds (Upper Pliocene) in Chihli shows marked variations among the Mammalia but a striking continuity among the Mollusca. This indicates, from the Miocene to the Pliocene) in Chihli shows marked variations among fauna from the Gobi toward the south and toward the ocean. The author remarks on the development of Pleistocene and Recent rodents of the genus *Siphneus* from the ancestral *Prosiphneus* in the Pontian. Fossil mammals found in Chihli suggest a migration from Indo-Malaysia during the Upper Pliocene.

8214. WILLIAMS, M. Y., and W. S. DYER. Geology of southern Alberta and southeastern Saskatchewan. *Canada Dept. Mines, Geol. Surv. Mem.* 163. 160p. 5 pl. 1930.—This report includes numerous lists of fossils, as follows: plants from the Milk River, Foremost, Edmonton, St. Mary River, Estevan and Ravenscrag formations; mollusks from the Palowki shale (marine), Foremost and Pale beds (fresh- and brackish-water), Bearpaw (marine), Fox Hills (marine), Edmonton (fresh- and brackish-water), St. Mary River (fresh-water), Paskapoo (fresh-water), and Ravenscrag (fresh-water) formations; vertebrates from the Pale beds, Edmonton, St. Mary River, Paskapoo and Cypress Hills formations.

These rocks are of late Cretaceous and early Tertiary age, with the exception of the Cypress Hills beds, which are early Oligocene.—*L. S. Russell.*

8215. [ZENCHENKO, T.] ЗЕНЧЕНКО, Т. Силурийские отложения восточного склона Урала в районе Каменской дачи. [Silurian deposits of the eastern slope of the Urals in the region of the Kamen estate.] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR. [Leningrad]*) 49(1): 127-130. 1 fig. 1930.—The fauna includes several genera of trilobites, brachiopods, and corals.

VERTEBRATE ANATOMY, HISTOLOGY, AND PHYSICAL ANTHROPOLOGY

Editors

WAYNE J. ATWELL, *Endocrine Glands, Genito-Urinary System;* ELIZABETH C. CROSBY, *Neurology;* ROBERT S. CUNNINGHAM, *Hematology, Adenoid Tissue, Reticulo-endothelium;* CHESTER H. HEUSER, *Technique;* DAVENPORT HOOKER, *Experimental Anatomy and Regeneration;* C. C. MACKLIN, *Alimentary System, Respiratory System;* PETER OKKELBERG, *Gross Anatomy (except Primate);* WILLIAM L. STRAUS, JR., *Physical Anthropology;* WALTER E. SULLIVAN, *Bones, Muscles, Joints, Fasciae*

STACY R. GUILD, *Advisory Editor*

(See also in this issue Entries 6060, 6102, 6106, 6110, 6112, 6226, 6231, 6243, 6685, 6707, 6727, 6728, 6739, 6774, 6783, 6791, 6809, 6838, 6887, 6893, 6894, 6895, 6901, 6990, 7001, 7006, 7027, 7056, 7193, 7196, 7208, 7217, 7226, 7234, 7327, 7471, 7863, 7864, 8377, 8380, 8381, 8382, 8387, 8390, 8391, 8396, 8399, 8401, 8405, 8406, 8417, 8425, 9040, 9042)

EXPERIMENTAL ANATOMY AND REGENERATION

8216. BADILE, L. P. L'importanza della sede degli innesti del pancreas. [Importance of the location of pancreatic grafts.] *Riv. Patol. Sperim.* 5(4/5): 285-289. 9 fig. 1930.—Total pancreatic explantations were grafted in different locations (spleen, liver, omentum, subperitoneal and subcutaneous connective tissue, and submucous connective tissue of stomach). The grafts "took" partially only in the last location, where groups of well preserved Langerhans' cells were found after 105 days. —*M. Comel.*

8217. FREY, SIGURD. Zur Autotransplantation der Niere. *Bruns' Beitr. Klin. Chir.* 152(2): 299-304. 1931. —In 1 rabbit and 2 dogs, the right kidney was decapsulated and freed of all attachments but the renal vein and artery, and the ureter; several incisions 1-1.5 cm. deep were then made in the kidney and it was enveloped in peritoneum; 3 mos. later the vein and artery were removed. When the left kidney was removed 2 mos. thereafter, it was greatly hypertrophied. The right was felt as a small dense tumor in the peritoneum, to which it was adherent by connective tissue strands. The animals died in 3-4 days of uremia. Most of the right renal parenchyma had undergone connective tissue degeneration. There were capillary anastomoses with the renal parenchyma but none of the larger vessels.

8218. HARABATH, RUDOLF. Über die Heilung von Schnittwunden der Haut bei Fischen. *Virchow's Arch. Path. Anat. u. Physiol.* 268(3): 794-815. 7 fig. 1928.—Skin wounds in fish heal rapidly, but even simple cuts tend to become infected by fungus spores or bacteria. The epidermis regenerates though the formation of club cells is arrested. The basal membrane is formed from fibrin. No true regeneration of the cutis takes place. Spaces in the cutis become filled with new cicatricial tissue in the formation of which the subcutaneous and interstitial connective tissue alone take part. Mitoses were not observed in the regeneration of the epidermal and connective tissue cells.—*Z. Cooper.*

8219. HUGGINS, C. B. The formation of bone under the influence of epithelium of the urinary tract. *Arch. Surg.* 22(3): 377-408. 1 col. pl., 25 fig. 1931.—The abnormal occurrence of bone in the urinary tract of the dog, rabbit and man has been recognized but incompletely understood. In dogs transplantation of connective tissue to the urinary bladder with transplantation of the ureters to the skin (thus eliminating urine as a possible cause of ossification) resulted constantly in the formation of bone in the fascia transplant in the bladder. The bone forms in the connective tissue underneath the epithelium only in the transplanted fascia, never in the muscular wall of the bladder. Transplantation of urinary bladder mucosa to the fascial sheets, subcutaneous tissue and striated muscle of the trunk and extremities results in the formation of an epithelium-lined cyst containing fluid with a high P and Ca content and a low pH, that is partially surrounded by bone. The bone is in the connective tissue, not in direct contact with the mucous membrane. It is true membrane bone with nutrient canals and hemopoietic marrow. This bone occurs in the dog constantly after the 18th day, provided the transplant survives. The kidney, spleen, peritoneum and bladder muscle wall do not ossify when exposed to the influence of the growing urinary bladder epithelium. The gastric, jejunal, gall bladder, and colic epithelia do not form bone in transplants to the parietal fascia. The ureteral and renal pelvis epithelia act in the same way as the bladder epithelium. Transplantation of the bladder epithelium to the parietal fascias in the rabbit or albino rat does not result in the deposition of bone.—*C. B. Huggins.*

8220. JOHNSON, ADELAIDE, and VICTOR JOHNSON. Attempted autotransplantation of the adrenal cortex. *Amer. Jour. Physiol.* 97(2): 392-395. 1931.—The authors were uniformly unsuccessful in attempts to autotransplant the adrenal cortex of 46 dogs to the thyroid, omentum, testis, kidney and liver.—*Authors' conclusions.*

8221. KOZELKA, A. W. Integumental grafting in the domestic fowl. *Jour. Heredity* 20(1): 2-14. 10 fig. 1929. —Secondary sexual structures from day-old chicks were transplanted onto various parts of the body of the same or of other individuals under 3 days of age. Autoplastic feather tissues developed normally on any part of body. Comb appeared to grow best in normal position, being usually somewhat smaller on other parts of the body. While normal symmetry was maintained in most cases, some of the grafted combs varied in shape from an irregular mass to a rosette. No nerves grew into the grafted portions. Normal differentiation of autoplastic ♀ spur took place only on scaly tissue of the shank, remaining partially or wholly juvenile elsewhere. In ♂♂ spur developed characteristically on any part of body, except in 1 case where it remained juvenile. Ovary appeared to have no inhibiting effect upon the development of ♂ spur. Of 13 homoplastic grafts with ♀♀ as recipients, 7 spurs from ♂ donors developed into characteristic ♂ spurs, while those from ♀♀ behaved like autoplastic spurs. This seems to indicate that there is a genetic difference between the spurs of the 2 sexes. The percentage of initial "takes" among homoplastic grafts is high but of the positive grafts, 74% are subsequently resorbed when unrelated birds are used. The percentage of resorption was reduced 20% by use of half and full brothers and sisters. Resorption takes place either by rapid disintegration, or by gradual replacement of the grafted tissue extending over several weeks. Usually

complete resorption takes place before the end of 2 mos. No replacement was noticed among the autografts.—*Author's abstract.*

8222. KROHN, ERNA. Fütterungsversuche an Tritonen. III. Die Veränderung der Kopfform des Teichmolches (M. vulgaris [taeniata]) infolge Muschelfleischfütterung. *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 121(4): 545-597. 19 fig. 1930.—Descendants of 2 pairs of salamanders, 356 and 162 larvae respectively, were divided into groups of 20 each, and at first 10 of each group (designated M) were fed on flesh of mussels, and the other 10 (designated Co) were fed on plankton; later fewer Co animals were used. The author confirms the earlier findings of Klatt that exclusive feeding with mussel flesh produces morphologic changes in the head of *M. vulgaris*. The head of the M animal was shorter, broader and higher, frequently with a relatively shorter lower jaw than that of the Co animals. The M animals develop a throat-sac; the tongue lies in the bottom of the mouth, and the eyes frequently project. These morphologic differences of the M head are caused by changes of its structures. Skull capacity and masticatory muscles are markedly increased, nasal cavities, ear vesicles, and intermaxillary glands markedly decreased. The increased skull capacity of the M salamander is necessitated by the great enlargement of the ventricles and of the brain, which again is apparently caused by an increase in ventricular fluid; an increase in fluids is also observed in other regions of the body. The hypophysis is much increased by M feeding; the thyroid is of normal size.—*From author's summary (transl.).*

8223. MOROSOW, B. D. Weitere Explantationsversuche an getrockneten Geweben der Wirbeltiere (Gehirn, Herz, Milz, Testikel und Haut). *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 10(2): 157-173. 4 fig. 1930.—Pieces of various tissues (spleen of 6 mos. *Rana temporaria* and fullgrown axolotl; testis, heart, and ciliated epithelium of oesophagus and tongue of young frog; skin of young frog and axolotl; brain of 1½-2 mos. old axolotl; heart of fullgrown axolotl; and cerebrum and heart of 7-9 day old chick embryos) were dried for 30 min.-3½ hrs. over H_2SO_4, then softened 1-3 hrs. in Ringers solution. 325 cultures were made of 1-3mm. fragments in plasma and embryonal serum. Growth occurred even after the following loss of wt.: frog spleen 67%, frog testis 75%, frog skin 43.2%, axolotl skin 44%, brain of young axolotl 80%, brain of chick embryo 90.7%, ciliated epithelium 65%. Frog and axolotl hearts placed in a glucose-Ringer hypertonic solution of 1 *M*, 1.5 *M*, and 2 *M* for 3 hrs., 2 hrs., and 44 min. respectively, and axolotl spleens of 1.5 *M* solution for 55 min., still grew in culture. Axolotl hearts and chick embryo hearts and brains were dried and kept at +4°C. in closed vessels. Axolotl hearts so kept for 100 hrs., chick embryo hearts for not more than 24 hrs., chick embryo brain (dried with a loss of wt. up to 76%) for 144 hrs. still grew. These experiments indicate the stability of biocolloids and the great resistance of the living cell to loss of water.

8224. PINKUS, HERMANN. Untersuchungen über das Verhalten des Hühnerpankreas in der Gewebezüchtung. *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation.*) 10(1): 1-42. 16 fig. 1930.—Pancreas tissue from 8-12 day old chick embryos and from chicks a few hrs. to several weeks old (largely day old unfed chicks) was grown by Fischer's cover glass method, using a mixture of heparine-chicken blood plasma and chick embryo extract. All cultures were transplanted every 3 days. Growth proceeded from the differentiated cells of the original material. The epithelium usually grew in the form of coherent bands and membranes, the cells of the excretory ducts and of the exocrine glands participating. In only 1 instance were cells from the islands of Langerhans observed. After the first few days, gland cells and duct cells could not be differentiated. The secretory granules disappeared in a few weeks, by sloughing of the portions of the cells containing them or by their own alteration and disappearance. Very few granules were formed in the cultures. Cell migration, cell enlargement, and cell multiplication contributed to the growth areola. Epithelial movement did not differ from that of other body cells. Cells multiplied by mitotic division; amitotic nuclear division appeared to lead only to multinuclear cells. The epithelial cells in the later stages were characterized by the capacity for fibrinolysis and the ability to form compact, gland-like structures. Pure cultures were obtained; the oldest lived 40 days. Under some conditions epithelial cells appeared isolated and ameboid. They were able to phagocytose, under some conditions taking the form of epithelial macrophages.

8225. PONSE, K. La notion de territoire et les excroissances digitales du crapaud. *Zeitschr. Wiss. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 121(4): 755-769. 13 fig. 1930.—E. Guyénot stated that "the adult organism is a mosaic of cellular territories with specific reactions." Testing this, 21 experiments on 13 adult ♂ toads (*Bufo vulgaris*) were performed, in which the digital or copulatory pads were removed from their normal positions, replaced by smooth skin from other parts of the body, and transplanted to the place from which the smooth skin had been removed. Each fragment of skin preserved its own characteristics in its new location. Observations are also reported on natural anomalies or mutilations of 13 toads and 1 artificial amputation on *Rana esculenta*, which indicate that abnormal position of the digital pads corresponds to skeletal abnormalities. General conclusions are that: the testicular hormone is incapable of calling forth a particular morphologic response (in this case, the development of digital pads) except where it finds a "specific receptor"; these specific receptors are localized in specific "territories"; after castration the warty condition diminishes, but, given the presence of the sexual glands, the location of the excrescences is determined by the local receptors. When the animal regenerates an amputed limb, it also regenerates, more or less completely, the "territories" containing the determining receptors.

8226. QUASTLER, H., und H. WEINGARTEN. Können Fische die Riechschleimhaut regenerieren? *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(4): 763-769. 1930.—The authors having cauterized the olfactory area in *Tinca vulgaris, Carassius carassius, Cobitis fossilis,* and *C. taenia,* believe it improbable and unproven that the primary sensory cells of the olfactory mucosa can be regenerated from general epithelium.

8227. THOMAS, J. W. TUDOR. On the return of sensitiveness in corneal grafts in rabbits. *Proc. Roy. Soc. [London] B* 108(757): 301-305. 1931.—In 29 cases of completely united corneal grafts in rabbits, 5 remained clear and insensitive, 1 had a central clear area and remained insensitive, and 21 out of 23 opaque grafts became vascularized and sensitive. Analysis of these experiments seems to show a clear correlation between the vascularization of a corneal graft and the invasion of it by the afferent nerve fibers upon which depends the return of sensitivity.—*Author's summary.*

GROSS ANATOMY (EXCEPT PRIMATES)

8228. AMANO, KAGEYAS W. The labyrinth of Bufo vulgaris japonicus larva. Especially, upon the morphologic study of the perilymphatic space, in connection with the membranous labyrinth and auditory capsule. *Jour. Morph. & Physiol.* 51(1): 207-242. 10 pl. 1931.—A morphologic study of the labyrinth (in a 45 day old larva, 24 mm. total length), especially on the perilymphatic space with its physiologic aspect. The perilymphatic space starts its development with the chondrification of the auditory capsule, and is completed by the end of the first third of metamorphosis. The author divides the whole spatium into 2 parts: the ductus perilymphaticus et diverticula and the pars spongiosa spati perilymphatici. The ductus perilymphaticus et diverticula may play an important rôle in carrying out the functions of both equilibrium and audition. The pars

spongiosa serves not only to fasten the membranous labyrinth to the capsular wall, but acts a a safeguard for the functions of both the membranous labyrinth and the ductus perilymphaticus et diverticula. The ductus system may have more important physiologic relations than does the membranous labyrinth in connection with the cranial cavity and spinal cord, as to change of pressure, transmission of vibrations, osmosis of fluids, etc.—*Author (courtesy Wistar Bibl. Serv.).*

8229. **BARBOSA SUEIRO, M. B. Annotations anatomiques. V. Note sur l'hyperextension et l'hypo-extension du coude chez d'autres mammifères que l'homme.** *Arquivo Anat. e Antrop.* [*Lisboa*] 12(1): 189-193. 1928.—The author examined 85 skeletons of mammals (monotremes, marsupials, edentates, sirenians, perissodactyls, artiodactyls, hyracidae, proboscidae, carnivores, pinnipeds, rodents, insectivores, prosimiidae, anthropoids) for the index-angle formed by the axis of the ulna and the extended vector (flèche prolongée) of the sigmoid notch of the bone. Hyperextension is extremely exceptional; the author noted it only in the elephant, orang, and chimpanzee; all others showed hypo-extension. There is not the slightest connection between hyperextension of the fore-arm and the existence of the olecranon perforation. The author found several animals with both olecranon perforation and hypo-extension; only 2 (orang and chimpanzee) showed both perforation and hyperextension.—*M. B. Barbosa Sueiro (transl. by E. W. Count).*

8230. **KARBOWSKI, B. Vergleichend anatomische Studien über den Aquaeductus cochleae und über seine Beziehungen zum Subarachnoidealraum des Gehirns.** *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(6): 687-715. 1 pl. (col.), 25 fig. 1930.—In guinea pig, rabbit, and dog there is a free communication between the perilymphatic space in the inner ear and the subarachnoidal space. An abundant exchange of fluid is possible between the subarachnoidal space and the ear in guinea pigs and rabbits. In all 3 animals an aquaeductus cochleae membranaceus (A.C.M.) is present which can be lifted directly from the arachnoidal sheath of the glossopharyngeal nerve or from its surrounding tissue and which continues into the bony aquaeductus cochleae (A.C.) lined with dura. In most cases the A.C.M. is a reticular, permeable strand of connective tissue; but often in guinea pigs and rabbits it is a hollow tube. In most cases a subdural space is present, but in some cases, the A.C.M. is intimately adherent to the dura. The anatomical relations in man are similar to those in animals in that the communication between the subarachnoidal space and the perilymphatic space of the inner ear is not equally wide and equally permeable in all cases. In some cases the canal is partially or entirely filled with a thick connective tissue strand which obliterates the lumen; often there is a free, wide, patent canal. In man free routes lead from the subarachnoidal space of the brain into the medullary space of the bone by means of perivascular, arachnoidal sheaths. An open connection is likewise possible between the subarachnoidal space of the brain and the subepithelial tissue of the paries jugularis, by interposition of the canal for the tympanic nerve.—*Author's summary (transl.).*

8231. **KLAAUW, C. J. van der. La région tympanique du crâne du Megatherium.** *Tijdschr. Nederl. Dierk. Ver.* 2(2): 77-82. 1930.—Additional remarks on this region in *Megatherium* with description of tympanic, entotympanic and neighboring skeletal elements. The entotympanic functions not only as a skeletal covering of the ventral wall of the tympanic cavity but it also, perhaps, affords surface attachment for muscles.—*C. J. van der Klaauw.*

8232. **KLAAUW, C. J. van der. La région tympanique du crâne du Scelidotherium.** *Tijdschr. Nederl. Dierk. Ver.* 2(2): 83-87. 1930.—Additional remarks on this region in *S. leptocephalum* and description of neighboring skeletal elements, the so-called ossiculum accessorium malleoli and the entotympanic (generic characters given which differ from those in *Glossotherium,* and in *Pseudolestodon* and *Lestodon*).—*C. J. van der Klaauw.*

8233. **[LIŪBITSKAĬA, A. I.]** ЛЮБИЦКАЯ, А. И. Изменение положения и функции полукружных каналов камбал как органа равновесия, в связи с асимметрией их тела. **[Change in position and functions of the semicircular canals of flounders as organs of equilibrium in connection with the asymmetry of their bodies.]** [German summary.] Известия Научного Института имени П. Ф. Лесгафта. (*Bull. Inst. Sci. Lesshaft*) 16(1/2): 19-53. 1 pl., 15 fig. 1930.—Observations were made on *Pleuronectes flesus, P. platessa, Rombus maeoticus,* and *Solea nasuta.* The horizontal semicircular canals of both labyrinths lie in a verticle position when the flounders are turned 90°, i.e., to a position normal for symmetrical fishes. The posterior vertical canal lies in a frontal vertical position at an angle of 90° to the horizontal canal. In the flounder, the angle between the horizontal canal and the parasphenoid is greater on the blind (under) side than on the other, whole in symmetrical fishes these angles are equal. In most cases the otolith of the lower labyrinth weighed more than that of the upper, while in symmetrical fishes the weight of the two otoliths is equal. Complete removal of the labyrinth from either side resulted in various movements, particularly in rotation along the horizontal axis. After removal of the labyrinth from the upper side, normal swimming movements were resumed after 48-60 hrs., while after removal of the labyrinth from the lower side normal swimming movements were resumed after 5-6 hrs. Removal of the labyrinths from both sides resulted in chaotic movements like those of symmetrical fishes similarly operated. Such flounders survived up to 34 hrs. without resuming normal swimming movements. Ligation of the vertical semicircular canals and simultaneous cutting of the nerves supplying the ampullae resulted in the absence of compensatory movements in the horizontal or vertical planes. A similar operation on the horizontal canals resulted in the absence of compensatory movements in the sagittal plane. Ligation of all the semicircular canals and the cutting of the nerves supplying the ampullae gave results similar to those obtained by a complete removal of the labyrinths. Electrical and mechanical stimulation of the ampulla of the anterior vertical canal of the upper side caused rotatory movements of the eye on the same side only. A similar stimulation of the blind (lower) side resulted in similar eye movements of this side only. Stimulation on both sides simultaneously resulted in similar rotatory movements of both eyes. Similar experiments on the posterior vertical canal on either side or both sides resulted in most cases in no response. Similar stimulation of the horizontal canal of the eye-side resulted in eye movements of this side; stimulation on the blind side gave no consistent results. Thermal stimulation of the ampullae of the canals gave no response of the eye.—*S. A. Corson.*

8234. **MOSKOFF, M. Eine Besonderheit der V. sperm. interna beim Hengst.** *Anat. Anz.* 71(21/22): 475-477. 1931.—In grown stallions shortly beyond the branching of the internal spermatic vein from the caudal vena cava, a branch passed directly along the plica vasculosa toward the internal inguinal ring; from it a few fine branches passed to the plica pampiniformis and to the lateral surface of the testis entering the epididymis and, mainly, the testis. In fetuses this branch, being much larger than the internal spermatic vein, apparently was the principal vessel. The branch was also larger in a left sided cryptorchid, and in several geldings when the plicae vasculosae had withdrawn into the abdominal cavity after castration. The flow of blood from the testis in the fetus seems to differ from that in the adult.

8235. **MÜLLER, RICHARD JOHANNES. Die Mechanik der syndactylen Zehen von Macropus und anderen Beuteltieren und ihre Verwendung als Putzorgan.** *Zeitschr. Wiss. Biol. Abt. A. Morph. u. Ökol. Tiere* 17(1/2): 154-218. map, 94 fig. 1930.—The fused 2nd and 3rd toes of the Macropodidae are not rudimentary or degenerate

organs, but are especially developed and adapted for the function of cleaning or combing. The leg and foot, with the exception of these toes, are arranged for a springing type of locomotion. That is, all joints below the knee are fixed so that they are immovable laterally; the 4th toe, much enlarged and rendered inelastic, forms with the calcaneus and the shank bone a much extended lever arm; and the 5th toe is spread laterally as a balancing organ. The 2nd and 3rd toes, on the other hand, are small, fused, and displaced somewhat laterally, and their joints are so arranged as to give motion only in latero-medial directions. The muscles, like the bones, are arranged in 2 separate systems, one concerned in the springing locomotion, the other in the lateral and medial flexion of the syndactyl toes. In the syndactyl elements the skin and the connective tissues are well innervated, the claws are specially remodeled, and in fact all the structures indicate a high type of developmental adaptation to the function of scratching or cleaning. These conclusions drawn from detailed morphological study of the feet of the Macropodidae of various species are supported by extensive comparative studies on the feet of other marsupials. The author has tried to arrange the marsupials in a phylogenetic series to show the evolution of syndactylia in the toes, taking into account both syndactyl and didactyl forms and both Polyprotodontia and Diprotodontia. He has also considered the parasites found on the various forms. Finally, the author includes some suggestions as to the ecological and geographical conditions surrounding the origin of syndactylia.—*F. W. Appel.*

8236. POHL, LOTHAR. Zur Morphologie der männlichen Kopulationsorgane der Säugetiere; insbesondere der Versuch einer vergleichend-anatomischen Studie über den Penis der Primaten, einschliesslich der Menschen. *Zeitschr. Ges. Anat. 1, Abt. Zeitschr. Anat. u. Entwicklungsgesch.* 86(1/2): 71-119. 3 pl., 8 fig. 1928.—The morphology of the mammalian penis and the fundamental types are discussed. Three types are recognized: (1) A form whose pars libera penis consists of a corpus penis and a pars intrapreputialis, composed only of a corpus fibrosum and a corpus spongiosum. This type is found in Monotremata, Edentata, Marsupialia, Cetacea, Ungulata, Rodentia, Carnivora, Insectivora, Chiroptera, and Primates. (2) A type similar to the first but with a terminal corpus cavernosum on the pars intrapreputialis, forming the caput penis. The form of the pars intrapreputialis varies greatly in this type and frequently presents a bony structure in the corpus fibrosum which rarely occurs in the first type. This type is found in the groups noted under type 1 (excepting Cetacea) and also in Sirenia, Pinnipedia, and Hominidae. (3) A type which includes a few cases which can not be classed with either of the first two because of morphological peculiarities that indicate secondary changes. It is found in some Insectivora and Chiroptera, and in the Canidae,—forms without a true preputium and those with a secondary terminal section produced by great vascularization of the preputium, and with a secondary preputial cavity. The second part of the paper deals with the penis of primates including man, and specific description is given of the organ in: *Lemur varius, Nycticebus tardigradus, Galago monteiroi, Ateles sp.?, Lagothrix lagotrica, Alouatta ursina, Hapale jacchus, Cebus capucinus, C. robustus, C. flavescens, Oedipomidas oedipus, Brachyteles arachnoides, Homo sapiens, Simia satyrus, Siamanga syndactylus, Hylobates leuciscus, Anthropopithecus troglodytes, Lophopithecus melalophus, Presbypithecus cephalopterus, Nasalis larvatus, Rhinosticticus cephas, Cercopithecus sabaeus, Erythrocebus pyrrhonotus, Mona mona, M. neglectus, Cercocebus aethiops, Zati sinicus, Z. cynomolgus, Nemestrinus nemestrinus, Macacus rhesus, M. heckii, Cynopithecus niger, Choeropithecus sphinx, C. porcarius, Hamadryas hamadryas.* The distribution of the various types of penis, the variations of the corpus fibrosum, and the various forms of the organ found in the different groups are discussed. Two general types are found in the primates and the conception of a diphyletic origin is not excluded. The os penis is characteristic of individual species of primates but the external form of the penis has no phylogenetic value. The corpus fibrosum exhibits a fibrous, a connective tissue, and a bony structure in different forms and since these stages also appear in the ontogeny it may have some phylogenetic significance. With reference to the structure and development of the penis, man appears to represent a connecting link between certain platyrrhine and catarrhine apes. Occasional ossifications in the penis of man can be thought of as the result of a developmental growth tendency extending beyond the usual end stage. Neither the form nor the structure of the penis of the chimpanzee can be correlated with the organ of the rest of the primates. Among the anthropoids, the penis appears to be the most primitive in the chimpanzee and man. The organ in man is closest to that of the Indrisinae of the Madagascar Prosimiae.—*H. F. Nachtrieb.*

8237. REESE, A. M. The ductless glands of Alligator mississippiensis. *Smithsonian Misc. Coll.* 82(16): 1-14. 3 pl. 1931.—The gross and microscopic structures of the following organs of *A. mississippiensis* are described: adrenal, thyroid, parathyroid, post-branchial body, thymus, hypophysis and spleen.—*A. M. Reese.*

8238. SMIRNOWSKY, B. N. Zur Morphologie der respiratorischen Muskulatur der Lacertilien. [Morphology of the respiratory muscles of the Lacertilia.] *Anat. Anz.* 70(1/4): 58-77. 8 fig. 1930.—The arrangement of the respiratory muscles in the following species were studied: Geckonidae—*Platydactylus* sp. and *Tarentola mauritanica;* Agamidae—*Agama sanguinolenta, A. stellio, Phrynocephalus mystaceus;* Iguanidae—*Iguana tuberculata;* Varanidae—*Varanus griseus;* Lacertidae—*Lacerta ocellata, L. agilis;* Scincidae—*Eumeces schneideri, Mabuja septemtaeniata.* In addition *Ameiva* of the Tejidae was partially studied. The M. obliquus externus varies in different Lacertilia: thus both layers (superficialis and profundus) are present in the Lacertidae and Iguanidae studied, the Scincidae have a completely developed superficialis and a subnormally developed profundus; in the Varanidae only the superficialis is present and in the Agamidae and Geckonidae studied only the profundus. The M. intercostalis externus can be either brevis or longus; in *Lacerta agilis* it forms the "mm. scalares externi." *Varanus* differs from all Lacertilia studied in the presence of the "Mm. serratoidei," analogous to the M. serratus dors. of mammals. —*W. Bloom.*

8239. VALLOIS, H. V. Nouvelles preuves de la non-dualité du prémaxillaire chez l'homme. *Ann. Anat. Path. et Anat. Normale Méd.-Chir.* 7(6): 748-753. 2 fig. 1930. —Leuckart inferred from a suture in the palatine portion of the premaxillary (intermaxillary) bone in certain fetuses that the bone was formed by the amalgamation of 2 pieces, internal and external, which Albrecht 30 yrs. later named endognathion and mesognathion. The author discusses the evidence from *Ornithorhynchus* and higher mammals, and concludes that all the evidence from comparative anatomy, embryology and teratology indicates that the premaxillary in man and other placental mammals is essentially a single bone.

8240. VILLIERS, C. G. S. de. Some features of the cranial anatomy of Hemisus marmoratus. *Anat. Anz.* 71(14/16): 305-331. 14 fig. 1931.—The skull is so specialized that its structure gives no indications as to its affinities. Some of the prominent "specializations" are the absence of the inferior prenasal cartilage, plica isthmi, nasolacrimal duct, quadrato-maxillary, vomers, palatines, cartilaginous taeniae, plectral apparatus, annulus tympanicus, processus basalis, middle ear and Eustachian tubes, and the "basicranial" portion of the chondrocranium. More positive features are: (1) presence of a nasal plug with its component solar osseous support containing a system of canals with erectile walls; (2) fusion of the nasals and the ethmoid portion of the os-en-ceinture (sphenethmoid); (3) almost total ossification of the mentomandibular, nasal capsule, sphenoidal

portion of the os-en-ceinture and otic capsule; (4) fusion of the pterygoid and paraquadrate, etc. No conclusive evidence is offered with regard to the ranid or brevicipitid affinities of *Hemisus*. "*Hemisus* occupies an isolated position within the Firmisternia and is to be looked upon as a case of extreme adaptation to a terrestrial, fossorial mode of life."—*P. L. Risley.*

8241. **ZIMMERMANN, A. Beiträge zur vergleichenden Anatomie des Kaninchenherzens.** *Állattani Közlemények [Budapest]* 27 (3/4) : 181-191. 1930.—With the assistance of F. Lootz, the author compared the rabbit's heart (*Oryctolagus cuniculus* L.) with that of the wild hare (*Lepus europaeus* Pall) to determine the influence of domestication and captivity on its size, weight, form and structure. Hearts of 10 rabbits of different ages and breeds and hearts of 10 hares of various sizes were used. The heart of the rabbit is distinguished from that of the hare principally in size and weight relationship; this peculiarity can be considered as the result of domestication. Remaining differences are of less significance.—*D. Fehér (transl. by M. Dresbach).*

HEMATOLOGY (INCL. RETICULO-ENDOTHELIUM)

8242. **ARRAK, A. Über die Identität der vitalgefärbten und polychromatischen Erythrocyten, zugleich ein Beitrag zur Frage der Alterspolychromasie.** *Zeitschr. Klin. Med.* 106 (5/6) : 640-650. 1927.—The number of polychromatophilic erythrocytes in blood averages 1.5 less than that of the vitally stained erythrocytes. In regenerating blood, there is a parallel increase in the number of vitally stained and polychromatophilic erythrocytes. The findings indicate that the vitally stainable substance in erythrocytes is practically indentical with the polychromatophilic substance, and that the former is a precipitate of the diffusely distributed basophilic substance. When blood is kept at incubator, room, or icebox temp. polychromatophilia does not develop.—*W. Bloom.*

8243. **BERG, JAN HARM van den. Haematologische Onderzoekingen bij het Paard, Tevens een Bijdrage tot de Kennis van het normale Bloedbeeld bij het Australische Paard in Nederlandsch Oost-Indië. [Hematological investigations on the horse, with a contribution to a knowledge of the normal blood picture of the Australian horse in Dutch East Indies.]** 132p. 2 fig. Drukkerij Fa. Schotanus & Jens: Utrecht, 1927.

8244. **BRATIANO, SERBAN, et ANTOINE LLOMBART. Nouvelles recherches sur l'histophysiologie du système réticulo-endothélial.** *Ann. Anat. Path. et Anat. Normale Méd.-Chir.* 7 (1) : 69-85. 1930.—The experiments (chiefly intravenous injections of India ink and lithium carmine) were made on several species of vertebrates (frogs, pigeons, palmipeds, dogs, cats, guinea-pigs and rabbits). The authors conclude that there are both a morphologically defined reticulo-endothelial system (reticulo-endothelial elements of the spleen, liver, bone-marrow and lymph nodes) and local reticulo-endothelial systems, of which some (lung, choroid plexus) are likewise morphologically defined, while others (limited skin-subcutaneous regions) arise out of physiologic or pathologic necessities. The specific functions of reticulo-endothelial systems acting as a group are the fixation and stabilization of colloids by intracellular storage, without morphologic or biologic change of cells or of their cellular territory. The experimental introduction of colloids demonstrates functions which are exercised under normal conditions. Blockage is a fact; it may be produced experimentally or physiologically, by products of cellular metabolism. Blockage of the cellular unit may be complete, but blockage of the entire reticulo-endothelial system is probably incompatible with normal life of the animal.

8245. **BRÜDA, B. E., und W. KREINER. Homoioplastik und Reticuloendothel.** *Deutsche Zeitschr. Chir.* 222 (3/5) : 285-301. 9 fig. 1929.—The time of survival of glands of internal secretion when transplanted varies even under similar conditions. In 30% of rats and rabbits subjected to x-ray, transplants survived for a longer period than in normal controls. This is attributed to a decreased functional activity of the reticulo-endothelial system in animals subjected to x-ray. In contrast to these results no effect could be demonstrated in the healing of homoplastic skin grafts after exposure to x-ray, injection of electro-negative colloids, and splenectomy.—*G. L. Muller.*

8246. **CAMPANACCI, D. Particolari elementi cellulari a granulazione basofila nel ratto e nel topo. [Certain cellular elements with basophil granulations in the rat and the mouse.]** *Ateneo Parmense* 2 (1) : 1-5. 1930.—These formations were found regularly in the medulla of the femur of the white mouse and rat; less regularly in the marrow of other bones; occasionally in the heart's blood and in the veins of the abdominal organs; never in the peripheral blood. In fresh preparations the cellular structure was evident, the protoplasm being crowded with granules as in eosinophil cells; the granulations were yellowish and not, as in eosinophils, refractive. In a diluted solution of methylene blue, fuchsin, gentian violet, etc., the small rounded nucleus stained before the granules. With a very dilute solution of Nile blue sulphate, the granules pass from bright violet to dark violet and finally dark blue; with a dilute solution of brilliant cresyl violet, from orange red to dark red and finally purplish red. The author believes that the granules do not represent granulations of primarily cellular material but are probably material taken up by macrophagic elements.

8247. **CLASING, CARL. Über den Abbau der Bluthistiocyten.** *Virchow's Arch. Path. Anat. u. Physiol.* 277 (1) : 143-158. 5 fig. 1930.—About 20 white mice received intravenous injection of India ink or cinnabar, and were killed at various intervals afterward. The ink was taken up by the endothelial cells of the liver, spleen, lungs, bone-marrow, suprarenals and intestine, which, laden with ink, then become detached wandering histocytes, and finally underwent dissolution in the liver and spleen. In the liver these histocytes became fixed, agglomerated, and finally decomposed in the capillaries of the edges of the lobules. The indigestible burden of ink or cinnabar remained in great lumps. In the spleen histocytes were taken up by the reticular cells, and in part destroyed in the meshes of the reticulum, where also lumps of ink remained. The lungs freed themselves very rapidly from ink-encumbered cells, and took no part in the destruction of the histocytes. The occasional lumps in the pulmonary capillaries which suggest the destruction of histocytes are rather to be regarded as emboli from the hepatic capillaries.

8248. **DELBET, PIERRE, et DAN BERCEANO. Le diacrisocyte.** *Ann. Anat. Path. et Anat. Normale Méd.-Chir.* 7 (8) : 909-918. 1 pl. (col.), 4 fig. 1930.—In the spleen and, to some extent, the bone-marrow of guinea-pigs vaccinated with "propidon" the authors found a leucocyte of a hitherto unknown description—a large ovoid cell with nucleus shaped roughly like a thick crescent. With Giemsa stain, the cytoplasm appeared to contain numerous granules, but later preparations with very rapid fixation and other stains indicated that the granular appearance was an artefact. The cell seemed to contain a ball shaped mass of albuminous material. The authors consider this inclusion body to be a secretion of a holocrine cell. They call this cell a "diacrisocyte," i.e., secretion cell.

8249. **FERRARI, RODOLFO. Sulla funzione fagocitaria dei megaloblasti nello sviluppo ontogenetico della rana. [Phagocytic function of megaloblasts in ontogenesis of the frog.]** *Boll. Soc. Ital. Biol. Sperim.* 5 (6) : 840-842. 1930.—In embryonic blood of the frog, histioid cells are present which show megaloblastic evolution and phagocytic activity. This activity is a nutritive one for the primitive migratory blood cell. It is shown not only by the hemohistioblastic cells, but also by the differentiated cells of the erythrocytic series.—*M. Comel.*

8250. **FUJIMOTO, TAKEHEI. Über die Verteilung von den ferrophilen sowie karminophilen Bindegewebszellen in den Lungen und in dem Verdauungstraktus**

beim Kaninchen. [In Japanese, with German summary.] *Mitted. Med. Ges. Tokio* 43(5): 721-730. 1 pl. 1929.—In adult rabbits 4% lithium carmine was injected intravenously and 4% "Eisensomatose," intraperitoneally. In others 4% lithium carmine was injected intraperitoneally and 4% "Eisensomatose" intravenously. The lungs of 2 of these showed large numbers of cells in the bronchial wall and adventitia which were filled with carmine granules. A few megakaryocytes were present. In localized areas of the cardiac and pyloric stomach of all rabbits were many enlarged elliptical connective tissue cells filled with carmine granules. Only in certain ones could elliptical connective tissue cells full of iron particles be found in the mucosa of the pylorus. The wall of the small intestine contained carmine-filled cells only in the basal part of the mucosa. In the caecum of many were large, free, iron-bearing connective tissue cells. These cells contained no carmine granules. In the large intestine, including the sigmoid flexure, there were large numbers of carmine-filled cells.—*H. W. Kaan.*

8251. **GELDEREN, CHR. van. Betrachtungen über die Entwicklung des Blutbildes des Menschen und über seine vergleichende Anatomie.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 87(5/6): 758-765. 1928.—The places of blood formation in man are in chronological order: embryonic structures, liver, spleen, bone-marrow. The series begins with those organs that are the blood-forming organs in the adult lower vertebrates. In various mammals the liver and spleen are the last to take part in blood-production. As early as the 4th fetal month non-nucleated erythrocytes predominate in the circulation, but some erythroblasts are present until after birth. As a result of the birth-noxa their number is temporarily increased. The white blood-picture of the fetus and young child is lymphocytic, as in the majority of mature mammals. The leucocytic blood-picture accordingly is a late ontogenetic and phylogenetic acquisition. A birth leucocytosis interrupts (without a phyletic analogue) the developmental lymphocytic continuity. The mature mammals and the human child are also phylogenetically and ontogenetically less advanced in the shifting of the white blood-picture to the left. In many respects the nursling corresponds to the ordinary mammal.—*Henry F. Nachtrieb.*

8252. **GOSS, CHARLES M. Microdissection of human polymorphonuclear neutrophiles.** *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation)* 10(2): 213-220. 3 pl. 1930.—Human leucocytes were prepared for micromanipulation by removing the clot from a drop of blood. The neutrophil showed no marked divergence from Chamber's description of the physical structure of cells in general: but the cell membrane, in this case, seemed more nearly a naked surface than he ascribed to most cells. This might be due to the fact that there could be no intercellular cement substance, and a protective covering was unnecessary in the circulating blood stream. The cytoplasm was more liquid than that of the monocyte and clasmatocyte, and the decrease in viscosity which followed mechanical agitation was particularly well shown.—*From author's summary.*

8253. **HEATH, CLARK W., and GENEVA A. DALAND. The life of reticulocytes: experiments on their maturation.** *Arch. Internal Med.* 46(3): 533-551. 5 fig. 1930.—Reticulocytes in vitro at 37° C. and in the pleural cavity of the rabbit decrease at a regular rate over a period of 1-4 days. This rate is analogous to a death rate or a maturation rate. The rate is similar for reticulocytes from bled rabbits, from those into which phenylhydrazine is injected, from cases of hemolytic jaundice and from cases of pernicious anemia. The rate is much slower at 23° C. or at 10° C. than at 37° C. Reticulocytes have been found in blood kept in the icebox for 6 mos. The decrease in the number of reticulocytes is not related to degenerative changes which may take place in the blood in vitro. As the reticulocytes decrease in number in vitro, cells with "granules" progressively increase. Reticulocytes having large amounts of reticular substance are less mature than those having small amounts of reticular substance and require a longer time to reach maturity. There is an undoubted analogy between the rate of decrease in the number of reticulocytes in vitro and of those in the blood stream. In both instances this is probably true maturation. Evidence in favor of this conclusion is given by studies on reticulocytes from the blood of patients with pernicious anemia during the reticulocyte responses following liver therapy.—*Authors' conclusions.*

8254. **HENRIQUES, V., und H. OKKELS. Das weitere Verhalten experimentell erzeugter Eisenablagerungen innerhalb der parenchymatösen Organe.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(1): 155-166. 7 fig. 1930.—The authors had previously found that colloidal Fe compounds were almost electively stored in the reticulo-endothelial system (R.E.S.), complex Fe salts [Na ferricitrate] predominantly in the hepatic cells. Rabbits on an oat, hay, and root diet were injected for 7-9 days with colloid Fe albuminatum or Na ferricitrate; 2-3 biopsy specimens of the liver were removed in the course of wks. or mos., the animals killed and sections of liver, spleen, and kidney examined. The animals treated with colloidal Fe often showed signs of late intoxication, the others did not. The Fe was taken up most quickly by the Kupffer cells in the R.E.S. but was given up in a few wks.; storage in the histiocytes occurred a little later, in time the dye was condensed in the perilobular histiocytes and only slowly freed. When the characteristic perinuclear Fe granules were first formed they persisted for several mos., the hepatic cells gradually losing the Fe after 6 mos. from within outward. Deposition here seemed much more stabile than in the R.E.S. The hepatic cells did not empty so completely as the Fe-containing Kupffer cells. After some months, however, storage in giant histiocytes was found perilobularly, particularly in the spleen. A great deal indicates that Fe is eliminated from the cytoplasm by chemical transformation. The final state of the Fe deposits occurred in the giant histiocytes of the spleen, from which the Fe could no longer be mobilized.

8255. **IKEDA, T. Untersuchungen über experimentellen Blutverlust. I. Bericht. Über Veränderungen des Blutbildes nach akutem Blutverlust.** [Investigations on experimental blood loss. I. Changes of the blood picture in acute loss of blood.] *Taiwan Igakki Zasshi [Jour. Med. Assoc. Formosa]* 308. 71-72. 1930.

8256. **KOMOCKI, WITOLD. Über die Bildung von Erythrocyten aus den Hämatoblasten im Blute von Amphiuma means und Batrachoseps [sic] attenuatus Esch.** [The formation of erythrocytes from the hematoblasts in the blood of A. means and B. attenuatus.] *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11 (3/4): 727-737. 29 fig. 1930.—Chiefly discussion of a series of illustrations.

8257. **LOEWENTHAL, N. Des variétés de globules blancs du sang chez Bombinator pachypus et Salamandra atra.** *Arch. Anat. Hist. et Emb.* 9(8): 469-508. 1 col. pl. 1928/1929.—Detailed histological description of the different types of leucocytes found in blood smears from *B. pachypus* are presented. The leucocytes are divided into 2 main groups: (1) with no granules or few non-specific azurophile granules, and (2) with specific granules. Under (1) are classed typical small lymphocytes and larger cells related to neutrophiles. These lymphocytic forms are completely separated from the small and large mononuclears, which are thought to be closely related to each other. Under (2) are described 3 varieties with specific granules, (a) neutrophiles, present in a great variety of forms; (b) eosinophiles; and (c) basophiles, of which 2 distinct types are described, the first with vivid blue-violet granules and the second with bluish-red granules. In all three groups a variety of forms was present which suggested the possibility of differentiation occurring in the blood stream. Differential counts compared with those from *S. atra* show in both a higher percentage of lymphocytes (50-70%), higher in *Bombinator* (60-70%), whereas the neutrophile count was higher in *Salamandra* (27-28%). The

basophile count was relatively high in both species, and in *Bombinator* a larger number of developmental forms was found. In mononuclears all variations leading from smaller to larger cells were seen. Azurophilic and pigment granules were found. The presence of vacuoles in larger cells indicated their regressive character.—*J. S. Latta.*

8258. **MAGLIULO, ALFONSO.** Influenza dello stato del sistema reticolo-endoteliale sull'attecchimento dell'innesto ovarico omoplastico sperimentale. [Influence of the state of the reticulo-endothelial system on the attachment of homoplastic ovarian transplants.] *Lo Sperimentale* 84 (5/6) : 393-429. 13 fig. 1930.—In the livers of young ♂ and ♀ rabbits, previously castrated, were engrafted ovaries from rabbits 20-35 days old. Such animals were repeatedly injected intravenously either before or after the grafting with a 10% soultion of saccharated iron oxide. The ovarian grafts grew and maintained their morphology for a limited period only.—*M. L. Menten.*

8259. **MAGRASSI, FLAVIANO.** Il tessuto reticolato del fegato degli Urodeli. (Contributo all'istologia e all'istogenesi delle fibre a graticcio e del reticolo linfoadenoide.) [The reticulated tissue of the liver of urodeles (histology and histogenesis of lattice fibers of the lymphadenoid reticulum).] *Arch. Ital. Anat. e Embriol.* 28 (1) : 86-102. 5 fig. 1930.—Histologic study of the liver in larvae of *Triton cristatus* showed that the reticular fibers exist within the capillaries and the hepatic capsule before the formation of the lymphoid reticulum and the lattice fibers. The lymphoid reticulum develops from fibrillae originally rectilinear, which end in the distinctly reticulated membrane of the hepatic capsule; the lymphoid reticulum develops much more rapidly than do the lattice fibers. The lattice fibers of the *Triton* liver are probably derived from the primitive fibrillar perivasal reticulum of the blood vessels or from their reticular adventitia. In the adult *T. cristatus* the reticulated tissue of the liver was represented by argentophil fibers and by cells many of which could be identified with the adventitial cells of the blood vessels; others probably belong to the reticulo-histiocytic system. In the cortical lymphoid stratum and in the deep lymphoid islands the reticulated tissue is represented by fibers but no cells can be distinguished which can be regarded as cells of the reticulum. The lattice fibers of the hepatic parenchyma are continuous with the reticular fibers of the cortical lymphoid stratum and of the deep lymphoid islands. The author holds that the reticular fibrillae and the lattice fibers are identical.—*From author's summary (transl.).*

8260. **MOSCZYTZ, NORB.** Hämatologische und kritische Studien zum Monozytenproblem. *Zeitschr. Klin. Med.* 106 (5/6) : 582-616. 4 fig. 1927.—The author believes that monocytes under some conditions are produced by the bone marrow, under others by the reticulo-endothelial system, and under still others by the lymphocytes.

8261. **NOEL, R., et H. PIGEAUD.** Le chondriome des éléments hématopoiétiques dans le foie du foetus humain. *Bull. Hist. Appl. Phys. et Path.* 7 (5) : 162-166. 3 fig. 1930.—Mitochondria of blood producing cells are characterized by a definite size, form, and grouping for each type of cell and these patterns are identical with those of azurophil granules by other techniques.—*J. G. Sinclair.*

8262. **PAOLUCCI, FRANCESCO.** Sul sistema reticolo-istiocitario o di Goldmann nel callo osseo (e sulla funzione fagocitaria dei megacariociti). (Ricerche sperimentali.) [The reticulo-histocytic system in bone callus and the phagocytic function of the megakaryocytes.] *Ann. Ital. Chir.* 9 (10) : 1012-1029. 7 fig. 1930.—Trypan blue was subcutaneously injected into rabbits, the left radius was fractured in each, and the callus formation was studied in preparations made at various intervals from the 2nd to the 60th day. The elements of the reticulo-histocytic (reticulo-endothelial) system were in evidence from the 48th hr. on, were more numerous in the 1st period of callus formation, and gradually disappeared in the 2nd period. The osteoblasts, the cartilaginous and osseous cells, and the megakaryocytes never contained granules of the dye and the author therefore excludes them from the reticulo-histocytic system.

8263. **PINUS, A.** Die Reaktion von Gewebekulturen auf Inokulation mit B. mallei. *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation)* 10 (1) : 109-112. 2 fig. 1930.—Tissue cultures of spleen of the white mouse grown in horse serum were placed for 15-20 min. in emulsions of *B[acillus] mallei* (conc. 60-100 bacilli in a visual field). Best growth was obtained on spleen from mice 1-2 days to 3 weeks old; 2 cultures on spleen from newborn white rats and from a guinea pig embryo did not give satisfactory growth; 1 culture from a pigeon embryo was luxuriant. Radial fibroblast growth appeared after 24-30 hrs. On the 4-6th day there was increased proliferation of cells of the macrophage type. Both macrophages and fibroblasts phagocytosed bacilli. Mitoses were abundant in both control and inoculated cultures.

8264. **PÓVOA, HELION.** Microglia e systema reticulo-endothelial. [Microglia and reticulo-endothelial system.] *Arch. Brasileiros Med.* 20 (7) : 296-299. 1930.—The author describes histologic results from blockage of the reticulo-endothelial system in 8 rabbits, from which he concludes that the microglia is the most important portion of the reticulo-endothelial system in the nervous tissues.

8265. **WINDFELD, PETER.** Über Blutplättchen-Zählung. *Acta Med. Scandinavica* 73 (1) : 10-18. 1930.—The author briefly reviews methods and difficulties of counting platelets and describes the application of Petri's method for rabbits for clinical laboratory use. In this procedure all glassware used in collecting blood was previously bathed in 6% olive oil-ether. About 2 cc. venous blood was collected and mixed with Na citrate in proportion of 1 : 10, then centrifuged 2-3 minutes at a rate of 1500. Clear plasma was pipetted off into a small reagent glass and, after standing for ½ hour, counts made in a closed Thoma-Zeiss counting chamber 1/20 mm. deep. A series of 10 counts showed an average variation of 33% from the mean.—*J. S. Latta.*

NEUROLOGY

8266. **BECCARI, NELLO.** I centri tegmentali nell'asse cerebrale dei Selacei. [The tegmental centers of the cerebrospinal axis of Selachii.] *Arch. Zool. Ital.* 14 (2/4) : 411-430. 1 pl., 5 fig. 1930.—This mémoire contains a complete illustration of the nuclei composing the tegmental center of the cerebral axis of the Selachii. Using the Cajal method on embryos of *Scyllium canicula* and *Pristiurus melanostomus,* the author finds a mesodiencephalic tegmental center (in which a pretrigeminal nucleus and a principal group are distinguishable), a metencephalic and a myelencephalic tegmental center. The pretrigeminal nucleus, the metencephalic principal group and the myelencephalic center correspond to the 3 reticular nuclei described by van Hoewell in *Raia.* —*Author's summary.*

8267. **BUSCH, E.** Studies on the nerves of the blood vessels, with especial reference to periarterial sympathicectomy. *Acta Pathologica et Microbiologica Scandinavica. Suppl.* 2. p. 1-186. 11 pl. 1929.—The author reviews the literature on the anatomy and physiology of the nerve supply to blood vessels. He describes the technic used and the results in his anatomical and physiological study on frog, guinea pig, rabbit, and man. A section is devoted to the literature on periarterial sympathicectomy and a résumé of the entire study in English, German, French and Danish.—*E. A. Baumgartner.*

8268. **CHRIST, HEINRICH.** Der Nervus vagus und die Nervengeflechte der Vormägen der Wiederkäuer, speziell der Haube. *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11 (2) : 342-374. 25 fig. 1930.—While it is well known that in cattle there is no clearly differentiated ganglion nodosum in its typical place on the vagus nerve, the author found, in all cases examined (16

cattle embryos, 6-8½ mos., 6 goats, 1 sheep, and 1 sheep embryo), a ganglionic thickening at the level of the 7th cervical vertebra, located just before the separation of the sympathetic from the vagus. In its entire structure it was strikingly similar to the ganglion nodosum of other animals. The author names this the cervical ganglion of the vagus. From it arises a part of the fibers which later separate from the vagus and constitute the "combined ventral" root. Exact investigations of the points of union of the vagus showed that no ganglion cells occur there. The dorsal branch of the vagus sends a large number of fibers to the dorsal part of the reticulum (Haube). In the intermuscular connective tissue of the reticulum is found a thick ganglionic network which is thickest in the region of its fundus and shows many similarities to the plexus myentericus of Auerbach. The intermuscular connective tissue of the psalterium contains a close ganglionic network which is denser than that of the reticulum, in contrast to the results given by Ellenberger and Marschall. In the paunch there is a wide meshwork of nervous tissue with ganglionic fields.—*Author's summary* (*transl. by J. M. Nielsen*).

8269. COGHILL, G. E. Correlated anatomical and physiological studies of the growth of the nervous system of amphibia. IX. The mechanism of association of Amblystoma punctatum. *Jour. Comp. Neurol.* 51 (2): 311-375. 14 pl. 1930.—A description of the differentiated neural system in the cerebrum and sensory or association part of the rhombencephalon and spinal cord in the 4 physiological stages of development: nonmotile, early flexure, coil, and early swimming stages. Throughout the system neuroblasts differentiate out of the neuro-epithelium before fibers grow into their vicinity from more or less distant neurones, and their primary polarity has reference to centers of differentiation; growth toward the receptor field is secondary, in sensory as well as motor elements. No evidence is found that ingrowing nerve fibers activate the differentiation of neuroblasts out of indifferent cells. The efferent system of the cerebrum is primary; the afferent, secondary. The general pattern of the association paths in the cerebrum is established before there is any evidence of conduction of nervous impulses into it, either from the receptor field or from below through the isthmus. Commissural association systems develop in the cerebrum before they do below the isthmus, there being none in the rhombencephalon and spinal cord when locomotion is established. In these parts the commissural fibers of the period arise within the motor system.—*Author* (*courtesy Wistar Bibl. Serv.*).

8270. COMINI, ADELE. Ricerche istologiche sui plessi coroidei dei mammiferi. [Histologic study of the choroid plexus in mammals.] *Riv. Sperim. Freniatria* 53 (3/4): 460-485. 6 fig. 1930.—The material studied comprised representatives (number not stated) of the following species: *Erinaceus europaeus* L., *Rhynolophus ferrum-equinum* Schreb., *R. euryale* Blas., *Lepus cuniculus* L., *Arctomys marmota* L., *Mus decumanus* Pall., *Cavia cobaya* Marcgr., *Felis domestica* Briss., *Canis familiaris* L., *C. vulpes* L., *Sus scropha* L., *Bos taurus* L., *Ovis aries* L., *Equus caballus* L., *Cercocebus lunulatus* Temm., *Homo sapiens* L. The epithelial cells constantly showed vibratile cilia; the nuclei were large, round, sac-like, and poor in chromatin, with no signs of division; the protoplasm was abundant, non-homogeneous, and presented inclusions of various types; the chondriome was generally abundant, usually in the form of short, slender chondriocontes; fats and lipoids, in some species particularly, were abundant in various forms; glycogen was present in some species, and sometimes a pigment, apparently hemosiderin; melanin was absent. The connective tissue in the choroid plexuses was usually considerable, and presented a variable amount of fundamental substance and of cellular elements of various types—granular cells of the type described by Sundwall, reticulo-endothelial elements of various forms, cells containing fats and lipoids, glycogen-bearing cells, etc.; melanin was rare.—*From author's summary* (*transl.*).

8271. DAVENPORT, H. A., S. W. RANSON, and E. H. TERWILLIGER. Nuclear changes simulating inclusion bodies in dorsal-root ganglion cells. *Anat. Rec.* 48 (2): 251-255. 1 pl. 1931.—Dorsal-root ganglia of dogs, cats, and turtles were immersed in hypertonic salt solutions and subsequently fixed in Zenker's fluid. The nuclear substance underwent condensation and formed an artefact which resembled the nuclear inclusions of virus disease. The clumping of the chromatin was not dependent upon a critical pH of the hypertonic solution, but not all hypertonic salt solutions caused it. The exceptions were KCl and urea.—*Authors* (*courtesy Wistar Bibl. Serv.*).

8272. HINES, MARION. Studies on the innervation of skeletal muscle. III. Innervation of the extrinsic eye muscles of the rabbit. *Amer. Jour. Anat.* 47 (1): 1-53. 6 pl., 4 fig. 1931.—Studied with methylene-blue-injection method, 4 morphologically distinct types of nerve endings, other than those on blood vessels, in the extra-ocular muscles of the rabbit are: terminaisons en grappe, naked endings, "accessory" terminations, and motor end plates. The grape-like terminations originate from heavily medullated nerve fibers, from non-medullated or thinly medullated nerve fibers, and from non-medullated axis cylinders sharing in common with the motor end plate a medullated nerve fiber. The naked endings are branches of medullated nerve fibers or continuations of non-medullated axis cylinders, which, coursing parallel to the muscle fiber, end nakedly upon it. The "accessory" terminals are accessory because they are nerve terminations upon a muscle fiber, innervated also by a motor end plate. These endings may be epilemmal or hypolemmal, and are characteristic of the middle-third. Unaccompanied motor end plates occur commonly in the origin-third. When the oculomotor nerve is cut at the base of the brain, these nerve endings and their supplying nerve trunks degenerate. If the cervical sympathetic trunk is ablated, the nerve terminals upon muscle fibers are undisturbed, but the innervation upon the smaller blood vessels is lost. A combination of these 2 experimental procedures completely denervates these muscles. Therefore, the innervation of the muscle fibers within the rabbit's extra-ocular muscles originates from the oculomotor nerve and that of the blood vessels, from both the third nerve and the cervical sympathetic.—*Author* (*courtesy Wistar Bibl. Serv.*).

8273. IDE, HIRO. On several characters shown by the cross-sections of the median and sciatic nerves of human males according to race. *Jour. Comp. Neurol.* 51 (2): 457-487. 1930.—Cross-sections from like levels of the median and sciatic nerves of 21 white males and 29 negro males were prepared and examined for the areas of the entire section, the number of fasciculi, the area of the fasciculi, and the area of the largest fibers. Each of these 4 measurements gave a higher value for the negro when compared on the basis of the entire series or with the data in 4 groups for each race. In 7 out of the 8 comparisons the differences are statistically valid. Between white males and negro males there is, therefore, a race difference in the characters of the median and sciatic nerves as here measured. The relations found for the 2 nerves studied are probably true for the spinal nerves as a class.—*Author* (*courtesy Wistar Bibl. Serv.*).

8274. IDE, HIRO. On several characters shown by the cross-sections of the median and sciatic nerves of human females and a comparison of these with the corresponding observations on the male nerves from whites and negroes. *Jour. Comp. Neurol.* 51 (2): 489-521. 1930.—The sectional areas of the median and sciatic nerves of man have been considered according to sex in the white and negro races. The characters studied were: the entire area, the number of fasciculi, the area of the fasciculi, and the area of the largest fibers. According to race: All measurements give higher values for the negro ♂ compared with the white ♂ and for the negro ♀ compared with the white ♀. According to sex: The

measurements for the ♀ are above those for the ♂ in both races, except in the case of the entire area where the ♀ gives values below those for the ♂. This is due to the smaller amount of connective tissue in the ♀ nerves. As compared with the median nerve, the sciatic is larger in the ♀ than in the ♂. The most significant differences here observed are in the areas of the fibers, and it is inferred that the conduction rate will be more rapid in those individuals with the larger fibers.—*Author* (*courtesy Wistar Bibl. Serv.*).

8275. IDE, H. On the sectional areas of the lumbar nerve roots and of the largest fibers in them, in the albino rat, according to sex. *Jour. Comp. Neurol.* 51(2): 441-456. 1 fig. 1930.—Having found that the sectional areas of the median and sciatic nerves and of the fibers in them are larger in the ♀ albino rat than in the ♂ of the same size, the author sought to determine whether the same relations held in the spinal roots of these nerves. In the present observations, limited to the roots of the 4th and 5th lumbar nerves, the dorsal root exceeds the ventral in sectional area. The area relations, according to sex, are the same for both roots and are similar to those previously found in the sciatic nerve. The sectional areas of the largest fibers are greater in the ventral than in the dorsal roots, but are related, according to sex, as are the areas of the roots. When the areas of the nerves, or their roots or the fibers in them, are determined for ♂♂ and ♀♀ of like age, it is found that the sectional areas are alike in the 2 sexes. Thus, the growth in sectional area is a function of age and independent of body size, according to sex.—*Author* (*courtesy Wistar Bibl. Serv.*).

8276. LASSEK, ARTHUR M., LESLIE W. DOWD, and ARTHUR WEIL. The quantitative distribution of the pyramidal tract in the dog. *Jour. Comp. Neurol.* 51(1): 153-163. 1930.—In studying degenerated pyramidal tracts of the dog stained by the Marchi, Pal-Weigert, and Weil methods, it was calculated that 55% of the tract in the spinal cord passes to cervical segments, 20% goes to thoracic segments, and 25% is distributed to lumbar and sacral segments. Cervical segments supply 40% of the musculature; thoracic segments, 25%, and lumbar and sacral segments, 35%. The number of pyramidal-tract fibers supplying different groups of spinal-cord segments was estimated, and from this number was computed the amount for 1 gm. of muscle: C_{1-4}, 104 fibers; C_5-T_2, 24; T_{3-12}, 21, and L_1-S_3, 22 fibers to every gm. Weil and Lassek ('29) found that the relative distribution of pyramidal-tract fibers within the spinal cord of man is the same as in the dog. The number of nerve fibers corresponding to 1 gm. of muscle is the same in the cervical and lumbar segments of man and dog. The discrepancy in the supply of musculature innervated by T_{3-11} in man and T_{3-13} in the dog (62 and 22 fibers, respectively) is explained by the fact that the weight of muscles in the thoracic region of man is only 6.8% of the total musculature innervated by the spinal cord, as compared with 24.2% in the dog.—*Authors* (*courtesy Wistar Bibl. Serv.*).

8277. LEWIS, DEAN, and WALTER E. DANDY. The course of the nerve fibers transmitting sensation of taste. *Arch. Surg.* 21(2): 249-288. 7 fig. 1930.—Pure isolated divisions of the 5th, 7th, and 9th nerves were performed subtentorially for the relief of surgical conditions; also combined division of the 5th and 7th. The 5th nerve was divided intracranially at the pons for trigeminal neuralgia. The subtentorial operation has the advantage of not disturbing the petrosal nerves or geniculate ganglion or any other cranial nerve. Division of the 7th nerve alone has occurred during the removal of tumors of the cerebellopontine angle. As yet it has been impossible to extirpate these tumors without dividing the 7th nerve. As the 5th and 9th nerves are usually pushed aside by these tumors, they may not be injured when the tumor is removed. There is also an instance of a pure lesion of the 7th nerve which was accidentally injured when the auditory nerve was divided for relief from Ménière's disease. There was no disturbance of the 5th or 9th nerve in this case. Intracranial division at the brain stem of the 9th nerve or of the sensory root of the 5th nerve or of both nerves was not accompanied by permanent loss of taste to the anterior $\frac{2}{3}$ of the tongue. Total loss of taste on the anterior $\frac{2}{3}$ of the tongue invariably followed intracranial division of the 7th nerve (at the pons) or of the peripheral portion at any point between its exit from the pons and the geniculate ganglion, from which point the fibers pursued a separate course. At times there might be a temporary loss or diminution in acuity of taste following operations on the gasserian ganglion or the sensory root of the 5th nerve, but later taste returned to normal. Initial loss of taste, with subsequent return, was noted by Köster and Cushing after operations on the gasserian ganglion. They assumed that another nerve had taken over the function of conducting sensations of taste in these cases. This assumption seems improbable to the authors in the present cases: they have no experimental or clinical observations which would warrant such an assumption.

8278. NODA, M., und G. YASUZUMI. Über die Frommann'schen Linien der Achsenzylinder der Nervenfasern. *Folia Anat. Japonica* 8(6): 439-456. 4 fig. 1930.—Since its discovery by Frommann in 1864, many investigators have studied this line. There are 2 theories regarding its nature: one theory assumes that the image must be an artifact; the other, that the line is a natural structure of the axis cylinder. In 1910, Retzius, finding a clearly coiled image, declared that the line is a natural product. The writers have discovered that "Frommann's line" is mathematically the same as the rhythmic deposit or the Liesegang's phenomenon, and they have also succeeded in forming the coiled image in a test-tube. They conclude, therefore, that the image is not a natural structure existing only in the axis cylinder, but an artificial product. Secondly, they believe that the "ports of infiltration" of $AgNO_3$ are cracks of the medullary sheath or Ranvier's node.—*Authors* (*courtesy Wistar Bibl. Serv.*).

8279. OKAMURA, CHOHNOSUKE. Über die Ganglienzellen in der Herzwand. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 89(3): 344-366. 10 fig. 1929.—Investigation of the nervous system of the heart with the Ag impregnation method, and methylene blue, hematoxylin eosin, and van Gieson's stains revealed 3 types of ganglion cells. The first type of neurons, belonging to the vagus, was 17-25 μ in diam., and was always oval or elliptical. All the processes of the cells communicated with the sympathetic nerve trunks or ganglion cells. These cells were found only in the trunks of the vagus and in the ganglia of Remak, Ludwig and Bidder. The 2nd kind was irregular, 5-20 μ in diam. The neurites communicated with the sympathetic nerve trunks or ganglion cells. These cells were in the epi- and endocardium (very rarely in the myocardium) from the sinus and auricle to the apex of the ventricle, and were therefore called sympathetic sensory ganglion cells. The 3rd type was chiefly fusiform, belonging to the sympathetic motor cells, and could be subdivided into large and small neurons, single or forming ganglia, and were not only in the subepicardium but in the myo- and subendocardium. Especially between all muscle fibers were many small ganglion cells which, with their processes, formed the plexus perimuscularis. These relations of the motor cells were the same from the sinus to the apex of the heart, but the dimensions of the cells gradually became less toward the periphery and in the apex only slender cells were found. At the boundary of the auricle and the ventricle were many nerve elements (related to both structures), which contained many strongly medullated and non-medullated nerve trunks, with ganglia and motor or sensory ganglion cells lying alongside them. In the Keith-Flack or Aschoff-Tawara bundles, the author found the same nervous structures as on the other muscle fibers of the heart, but the ganglia and ganglion cells were far more numerous.—*C. Okamura.*

8280. OKAMURA, CHOHNOSUKE. Über den Nervenapparat der Gefässwand. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 91(4): 528-537. 5 fig. 1929.—The author investigated with methylene blue and Golgi's Ag impregnation methods all blood vessels from the aorta and vena cava to the capillaries of the frog, toad, sparrow, hen, mouse, rat, guinea-pig, rabbit, cat, dog, swine, horse, cow and man. In the perivascular nerve-plexuses of all blood vessels many sympathetic motor-ganglia and ganglion cells, and sensory ganglion cells were found. These nerve-plexuses go into the media and there form plexuses again which have the same cell types but only a very few sensory cells. The processes of the cells twist round the muscle-fibers and from the "plexus perimusculares" with varicosities at their ramifications. These varicosities represent the endings of the motor-nerves in the course of this fine plexus on the sarcolemma. The sensory nerve-plexuses built up from ganglion-cells and their processes are disposed in the intima just as in the endocardium of the heart (see preceding entry). The nervous apparatus of the smallest blood vessels is very simple and has no sensory plexus in the intima. But the sensory ganglion-cells in the adventitia and the motor ganglion cells are always between all muscle-fibers. There are 2 nerve plexuses around a capillary. The inner plexus is formed by motor-ganglion-cells, and their processes twist round the endothelial cells of the capillary. The external plexus is composed of sensory ganglion-cells and their processes, and has here and there communications with the motor-plexus.—*C. Okamura.*

8281. PAPEZ, JAMES W. The brain of Sutherland Simpson, 1863-1926. *Jour. Comp. Neurol.* 51(1): 165-196. 18 fig. 1930.—Photographs and drawings of the surface anatomy of the brain together with a descriptive study of the gyri and sulci in its several regions are presented. The various lobes of the brain have been measured and indexed in such a way as to show their relative size and to make possible comparisons with other published papers. These measurements have been made in connection and comparison with those of 20 other men and 20 women. The length and depths of the principal sulci have been measured and tables of their total values have been compiled for the frontal, parietal, occipital, and temporal regions. The main features of this brain were its generally large size and a wealth of convolutional development in the parietal, occipital, and temporal regions. The outstanding feature was the exceptionally large size of the precuneus. The frontal region was of average size, but the inferior frontal convolution in its anterior part was strongly developed.—*Author (courtesy Wistar Bibl. Serv.).*

8282. PAPEZ, JAMES W., and G. LaVERNE FREEMAN. Superior colliculi and their fiber connections in the rat. *Jour. Comp. Neurol.* 51(2): 409-439. 3 pl., 1 fig. 1930.—Lesions were placed in the superior colliculi of 20 rats, and then the animals were tested in the light-discrimination maze. There is a rough correlation between the extent of injury to the tectum and to the following fiber tracts and the retardation in the maze. A Marchi study of the brains of these rats showed that the tectal region has 3 main efferent fiber connections, as follows: (1) The tectospinal tracts arise in the cortex of the colliculi and pass down to the lower centers of the spinal cord. (2) The tectopontal tracts arise in the posterior part of the tectum and pass ventrally into the tegmental region and into the lateral nucleus of the pons. They appear to form the first link in tegmental and cerebellar connections. (3) The fibers of the posterior commissure arise in the posterior nucleus of the thalamus and pass across to end in the interstitial nucleus and neighboring central gray matter. From the interstitial nucleus fibers pass down in the medial longitudinal fasciculus. The posterior nucleus of the thalamus and the nucleus of the posterior commissure send fibers into the internal capsule and thence to the medial occipital cortex. —*Authors (courtesy Wistar Bibl. Serv.).*

8283. PODESTA, E., e G. FORNARI. Ricerche sulle terminazioni nervose motrici nella siringe del gallo domestico. [Studies of the nervous motor endings in the syrinx of the cock.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 375-377. 1930.—The material was prepared by Ruffini's Au impregnation method. In the muscles of the syrinx of cocks 2 kinds of endings were present: "terminaisons en grappes" and sole plate endings. The first were more abundant, and were found in fibers with a rich sarcoplasma content, the others in fibers with abundant myofibrillae. In no muscle fiber were the 2 kinds of endings simultaneously present. Also epilemmal "terminaisons en grappes" were found. It is suggested that the "terminaisons en grappes" are concerned with muscle tonus and the sole plate endings with muscular contraction, whereas the epilemmal terminations are sensory endings.—*M. Comel.*

8284. RASMUSSEN, A. T. An aberrant (recurrent) pyramidal bundle in the cat. *Jour. Comp. Neurol.* 51(1): 229-235. 8 fig. 1930.—This crossed bundle of fibers separates from the pyramidal decussation in the lower part of the medulla oblongata and courses dorsally and then upward in the medial and then in the dorsal part of the dorsal nucleus of the vagus on the opposite side with reference to the pyramid from which it arises. As it ascends it breaks up into several strands which move laterally but remain close to the substantia gelatinosa centralis. As these fasciculi pass along the dorsal part of the medial vestibular nucleus, there is further separation into 7 or 8 smaller bundles which ultimately disappear in the region of the mesencephalic root of the trigeminus on a level with the upper pole of the chief sensory nucleus of the fifth cranial nerve. Another case (also in a cat) is on record which is surprisingly like this one in every respect, except that the bundle remained uncrossed. This could be ascertained with great certainty, because it was a Marchi series in which the internal capsule had been cut on one side and the abnormal bundle arose from the degenerated pyramid at the decussation. Similar and somewhat more deeply and laterally situated fibers are described also in man, but at least some of these are not recurrent in direction.—*Author (courtesy Wistar Bibl. Serv.).*

8285. RIOCH, DAVID McK. A note on the center median nucleus of Luys. *Jour. Anat.* 65(3): 324-327. 2 pl. 1931.—The material studied consisted of serial, transverse sections of the brains of *Cercopithecus, Cebus capucinus, Lemur catta, Canis familiaris* and *Felis domestica* stained by the Weigert-Pal method, and of *Phoca vitullina* stained by the Giemsa method. The center median lies in the caudal portion of the internal medullary lamina, at the level of the habenulo-peduncular tract. Caudo-medially, especially in lower mammals, it fuses with the nucleus parafascicularis. It is probably present in all mammals, but is larger and better differentiated in the higher forms.

8286. RODRIGUES, ALVARO. Communicating branches between the cervical sympathetic and the descendens cervicalis. *Jour. Anat.* 64(3): 308-318. 11 fig. 1930.—From dissections of 45 bodies, 26 adults (19 ♂♂, 7 ♀♀), 1 ♀ child 4 yrs. old, and 18 fetuses (12 ♂, and 6 ♀), the author declares communicating branches to be not rare but very common. He classifies them under 6 fundamental types: (1) branches from the superior cervical ganglion; (2) branches from the ramus communicans to C II; (3) branches from the ramus communicans to C III; (4) branches from a ramus communicans joining the loop between C II and C III; (5) filaments joining the loops between the cervical spinal nerves or joining these nerves close to the points whence arise the roots of the N. descendens cervicalis; (6) such close association between the ramus communicans to C II and one or more roots of the N. descendens cervicalis arising from C II that it may be regarded as assisting their formation.

8287. SCHLAEPFER, KARL. Weiterer Beitrag zur Frage der motorischen Innervation des Zwerchfelles. [Innervation of the diaphragm.] *Arch. Klin. Chir.* 164: 233-239. 7 fig. 1931.—Substantiating previous 136-day experiments on dogs, phrenicotomy in the intrathoracic

area in a dog led in 2 yrs. to complete atrophy of the entire half of the diaphragm. Had any portion been supplied by another nerve, intact or even hypertrophic muscle would have been present. The phrenic is the only motor nerve supplying the diaphragm of the dog.

8288. **SHANER, RALPH F. On the development of the nerves to the mammalian heart.** *Anat. Rec.* 46(1): 23-38. 3 pl. 1930.—The development of the cardiac nerves and plexuses to the calf heart, together with details of the innervation of the nodes, is followed from the earliest embryos to the adult. Three vagus branches on either side grow to the calf heart: (*a*) a nerve to the common cardinal vein, (*b*) a nerve to the pulmonary artery, and (*c*) a nerve to the ductus arteriosus and aorta. The earliest plexuses appear at the ends of the nerves. A twig from the nerve to the right common cardinal vein ramifies over the site of the sino-atrial node long before the node appears. A twig from the plexus covering the sinus venosus runs beneath the atrial septum to the atrioventricular node. The sympathetic nerve supply apparently follows the same general plan.—*Author (courtesy Wistar Bibl. Serv.).*

8289. **STARKIE, C., and D. STEWART. The intramandibular course of the inferior dental nerve.** *Jour. Anat.* 65(3): 319-323. 3 fig. 1931.—Until 2 yrs. ago, it was generally accepted by dental surgeons that the inferior dental nerve of 1 side overlapped as far, at least, as the canine tooth of the opposite side. Study of dissecting room subjects, supplemented by the mandibles of some of the commoner mammals, established that there are 2 definite plexuses: (a) a postero-internal alveolar plexus; (b) an antero-external incisor plexus. The molars and bicuspids receive their nerve supply from the alveolar plexus, the incisors from the incisor plexus, and the canines from either of them. The inferior dental nerves do not always extend across the symphysis and so overlap. If such an overlap is present it seldom extends beyond the central, and never beyond the lateral, incisors of the opposite side.

8290. **WOOLLARD, H. H. The innervation of the ocular muscles.** *Jour. Anat.* 65(2): 215-223. 2 fig. 1930.—From study of ocular muscles of cat, dog, rabbit and man, the author concludes that there are 2 types of nerve fibers concerned in the innervation of the eye muscles: the ordinary medullated type with motor terminal plates and a 2nd finely medullated or non-medullated, forming several claw-like endings, usually epilemmal, but occasionally hypolemmal. The medullated fibers are related to thicker muscle fibers, while the non-medullated are related to thinner muscle fibers. It has not been observed that the thinner muscle fibers also receive a medullated ending. This mode of innervation, if not peculiar to eye muscles, is at any rate restricted to a narrow group of muscles, and does not obtain in the trunk or appendicular muscles. The fibers composing this finer system leave the brain stem in the trunks of the ocular nerves as medullated fibers. They probably lose their myelin sheaths when nearing their final distribution. Evidence has been obtained that these fibers have their origin in the cranial extension of the tractus mesencephalicus of the 5th nerve where this is on a level with the 3rd nerve nucleus. The strong presumption that this special system, in its greater part at any rate, is the sensory supply of the eye muscles is made almost certain if this source from the mesencephalic root of the 5th is confirmed.—*Author's summary.*

GENITO-URINARY SYSTEM

8291. **CHIGI, CALLISTO. Contributo allo studio della parete dei tubuli seminiferi retti e delle lacune della rete testis. [Morphological studies on the wall of the tubuli seminiferi recti and of the lacunae of the rete testis.]** *Bol. Soc. Ital. Biol. Sperim.* 5(3): 346-347. 1930.—The author demonstrated the presence of a basal membrane in the wall of the tubuli recti as well as in that of the lacunae of the rete testis.—*M. Comel.*

8292. **FORAMITTI, C. Über das Schicksal von transplantiertem Hodenparenchym.** *Wien. Arch. Inn. Med.* 21(2): 315-318. 2 fig. 1931.—Biopsy specimens from an autotesticular (2½ yr.) and from a homotesticular (8½ mo.) pedicled graft (with later division of the pedicle) in man showed that the interstitial cells were preserved (with normal cell nuclei), the seminal tubules were greatly narrowed; Sertoli's cells were normal in the autotransplant, only partially retained in the homotransplant.

8293. **GLAS, RUDOLF. Über das Vorkommen von Fettzellen in der menschlichen Gebärmutter.** *Zentralbl. Gynäkol.* 55(12): 1128-1132. 2 fig. 1931.—Systematic examination revealed occasional fat cells in the lateral portions of the uterus in almost every instance. In children (4 mos.-12 yrs.) the fat lay as in adults about the vessels in the parametrium but did not penetrate into the uterus, appearing there with sexual maturity. The author advances the hypothesis that the fat cells are transformation products of connective tissue cells.

8294. **MOORE, ROBERT A. The total number of glomeruli in the normal human kidney.** *Anat. Rec.* 48(1): 153-168. 1931.—The normal kidney of man from birth to 40 yrs. of age contains 800,000 to 1,000,000 glomeruli, with occasional values as low as 600,000 and as high as 1,200,000. There is no proof that postnatal nephrogenesis occurs in man. There is a senile loss of glomeruli in man, analogous to that in the rat. The total number of glomeruli in the 7th decade equals ⅔-½ the adult count. The 2 kidneys of 1 individual contain approximately an equal number of glomeruli.—*Author (courtesy Wistar Bibl. Serv.).*

8295. **REESE, J. D. Cyclic variation in certain osmiophile granules in the rat uterus.** *Anat. Rec.* 48(1): 55-63. 1 pl. 1931.—Treatment of the uterus of the rat by Bell's method of osmication revealed in the epithelium certain osmiophile granules, supposedly lipoid in nature, which show cyclic variation in size, number, and distribution. While the uterus is distended they are entirely absent. As the animal passes into the stage typified by a vaginal smear of cornified cells only, they first appear as a small cluster of fine granules at the base of the cell. They augment in size and number during metoestrum, and are most abundant during the early interval. There is a gradual diminution in the fat-content of the cell as dioestrum proceeds. This change does not appear to involve the uterine glands in the rat. There is a clear correlation between morphological variation and physiological activity, one being expressed in the disappearance of the fat-granules and the other in the distention of the uterus with fluid.—*Author (courtesy Wistar Bibl. Serv.).*

8296. **TEHVER, J., und E. VAU. Über das Vorkommen des Flimmerepithels in der Tube der Haussäugetiere während der Trächtigkeit und Brunst.** *Eesti Loomaarstlik Ringvaade (Rev. Vét. Estonienne)* 7(4/5): 168-176. 1 pl. 1931.—Preliminary contribution. During pregnancy ciliated epithelium is demonstrable in all parts of the uterine tube of sheep, cow, dog and cat. In sheep and cow, cilia are strongly developed in the ampulla but difficult to demonstrate in the isthmus. In the dog the ciliary lining of the tubes does not entirely disappear during oestrus.—*Authors' summary (transl.).*

8297. **TINKLEPAUGH, O. L., and ERNEST VAN CAMPENHOUT. The vaginal cell content of the mature and immature chimpanzee.** *Anat. Rec.* 48(2): 309-322. 2 fig. 1931.—The vaginal secretions of 2 ♀ chimpanzees have been studied cytologically to determine the histological changes occurring during the oestrous cycle. In the immature animal menstruation is accompanied by a marked drop in the amount of epithelial cells. Five different types of epithelial cells are described: clear, granular, intermediate, cornified cells, and scales; the last type is found only during the mid-interval. These types are similar to the various layers of cells in the epidermis. The vaginal discharge of the immature animal shows a high proportion of leucocytes and few epithelial cells. During the 5 successive months of observation there was a progressive increase in the number of epithelial cells and a decrease in leucocytes.

Besides clear epithelial cells, small vacuolated elements were found during the first part of that period; they progressively disappeared, and at the same time the distinction of the various types of epithelial cells began. The amount of mononuclear leucocytes is rather high at the beginning and decreases progressively with increase of the percentage of granular leucocytes.—*Authors (courtesy Wistar Bibl. Serv.)*.

ENDOCRINE SYSTEM

8298. CHRISTENSEN, KERMIT. Effect of castration on the secondary sex characters of males and females of Rana pipiens. *Anat. Rec.* 48(2): 241-250. 8 fig. 1931.—Complete castration in the adult ♂ has no distinct effect on the oviducts which are normally present in ♂♂ of this species, but it causes a reduction in the size of the seminal vesicles and in the development of the thumb pads. Complete spaying in the adult ♀ causes a most decided regression in size of the oviducts in comparison with those of controls. These results on the oviducts confirm embryological findings that in the ♂ of *R. pipiens* the oviducts are self-differentiating, but that in the ♀, after a period of self-differentiation, the further growth of the oviducts is under ovarial influence.—*Author (courtesy Wistar Bibl. Serv.)*.

8299. HINTON, J. WILLIAM. Histologic studies of the thyroid gland. I. *Amer. Jour. Surg.* 11(2): 269-279. 26 fig. 1931.—A study of sections of thyroid from 98 persons dying of accident, including 9 still born, 8 infants from birth to 2 yrs., 12 children 2-12 yrs. old, 7 adolescents 12-18 yrs. old, 60 adults 18-60 yrs. old, and old persons 75, 61 and 83 yrs. old, furnished no uniform histological pictures permitting conclusions as to what is normal thyroid tissue for different ages. The author concludes also that it will be necessary to consider the different types of goiter merely as stages of a continuous disease and not definite clinical entities.

8300. HOERR, NORMAND. The cells of the suprarenal cortex in the guinea-pig. Their reaction to injury and their replacement. *Amer. Jour. Anat.* 48(1): 139-197. 7 fig. 1931.—By the use of improved methods it was possible to show that the so-called dark and light cells of the zona reticularis in the guinea-pig's suprarenal are 2 types of senescent cells; cells degenerate either by cytolysis, chondriolysis, and karyolysis, or by shrinking of the cytoplasm, pyknosis, and chondriomegaly. Cells are continually dying off in the zona reticularis and are replaced by cells produced by cell division in the outer levels of the cortex, mainly between the glomerular and fasciculate zones. By causing an experimental toxemia in guinea-pigs by the injection of diphtheria toxin and by chloroform narcosis, the cell destruction and proliferation can be greatly accelerated. If the dosage is heavy, severe lesions, hemorrhages, and focal necroses may result. But if the lesions are not very severe, repair is usually effected within a month. The removal of the dead cells is brought about mainly by macrophages, plasma cells, and lymphocytes, coming in part from the blood stream and perhaps also from the endothelium and reticulum cells. There is evidence that the so-called siderophile substances are of no cytological significance, most often being an artifact due to poor fixation. Mitochondria were studied in all the layers of the cortex; they are usually rods and threads in the zona glomerulosa and granules in the rest of the cortex.—*Author (courtesy Wistar Bibl. Serv.)*.

8301. JACKSON, JOSEPH L. The shape and size of the human thyroid follicle in health and disease. *Anat. Rec.* 48(2): 219-239. 1 pl., 2 fig. 1931.—The material used consisted of 44 human thyroid glands, of which 10 were normal, 17 were glands of Graves' disease, 14 were glands of colloid goiter, 2 were glands of fetal adenoma, and 1 of carcinoma. A portion of each gland was used for histological section, and the remainder was cut into small cubes and macerated in 75% HCl, thereby isolating the follicles. Random samples were taken and the length and breadth of 500 follicles of each gland were measured under the compound microscope with an eyepiece micrometer. The shape was also noted. In order to obtain an accurate expression of these dimensions in the different clinical groups, 8 normal glands were combined so as to form a 1st group, 8 glands of Graves' disease to form a 2nd group, and 12 glands of colloid goiter to form a 3rd group. The average length of the normal follicle was 163.24 ± 1.17 μ; of the follicles of Graves' disease, 168.78 ± 0.678 μ, and of the follicle of colloid goiter, 244.5 ± 1.60 μ. On a basis of size and shape of the follicle, these groups could be differentiated from each other and also shape varied with age.—*Author (courtesy Wistar Bibl. Serv.)*.

8302. KOLMER, W. Quergestreifte Muskelfaser in der Pars infundibularis der Affenhypophyse. [Transversely striated muscle fibers in the infundibular portion of the ape hypophysis.] *Anat. Anz.* 71(19/20): 443-444. 1 fig. 1931.

8303. MILLZNER, RAYMUND J. The normal variations in the position of the human parathyroid glands. *Anat. Rec.* 48(2): 399-405. 1931.—Parathyroids are found on the anterior and lateral thyroid capsule in approximately 30% of all thyroids and on the true anterior thyroid capsule in approximately 10%. These percentages are based upon a study of both surgical and cadavar material and represent a constant variation in position, uninfluenced by such factors as the size of the thyroid gland or the type of disease present in a goiterous gland. These variations affect the inferior parathyroids more frequently than the superior in about the ratio of 2:1. Atypical arrangements of the thyroid vessels are usually associated with these variations in parathyroid position.—*Author (courtesy Wistar Bibl. Serv.)*.

8304. ONOZAWA, TAKEO. Quantitative Studie des Nebennierenmarks und -rinde beim erwachsenen Kaninchen. *Folia Anat. Japonica* 9(3/4): 183-199. 1931.—Examining the suprarenal glands of 27 adult rabbits by means of paper-cutting-and-weighing methods, the author found that: The weight of the gland, which is not always proportional to that of the body, averages 0.436 gm. and is 0.1982 gm. per kilogram of body weight. Its specific weight is 1.0371. The weights are greater in the ♀ than in the ♂. The left gland is usually larger than the right (frequency 77.8%), and its average overweighing percentage (14.7%) is greater than that of the right (4.0%). The volume of the medulla is not always proportional to the gland volume and to the body weight. Compared with the gland and the cortex, the individual variation of the medulla volume is very small. The medulla is, on an average, 3.16% of the entire gland volume. The average medulla volume, absolute and per kilogram body weight, is 0.0094 cc. and 0.0043 cc., respectively. The medulla is ordinarily larger in the larger gland of the two (frequency 71.4%). Accordingly, the medulla of the left gland is usually larger than that of the right (26.6%), its frequency being 64.2%. The gland-medulla-index in inversely proportional to the gland size. The cortex comprises, on an average, 96.84% of the gland. The cortex of the left gland is usually larger than the right.—*Author (courtesy Wistar Bibl. Serv.)*.

8305. PENITSCHKA, WILFRIED. Paraganglion aorticum supracardiale. *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschr. Mikrosk.-Anat. Forsch.* 24(1/3): 24-37. 13 fig. 1931.—Studies on 3 fetuses in 6th mo., a newborn child, a 25 yr. old man; a full-term fetus and 2 adult hedgehogs (*Erinaceus europaeus*); an adult mole (*Talpa europaea*); a 3 mos. rabbit (*Lepus cuniculus*); an adult squirrel (*Sciurus vulgaris*); and a full-term guinea pig fetus (*Cavia cobaya*) showed a "paraganglion aorticum supracardiale" in the connective tissue between the aorta and the pulmonary artery, which corresponded in all important points with the carotid paraganglion. Like the latter its cells and cell nests were placed on and in a nervous reticulum containing ganglia and composed of sympathetic and cerebral nerves. Usually the cells did not stain with chromic salts. In this, these 2 paraganglia differ from the general sympathetic paraganglia whose principal properties are chromaffinity and

production of adrenaline. Both the carotid paraganglion, the extract of which as a rule did not increase blood pressure, and the supracardial paraganglion are located in the terminal area of the different "blood pressure regulators" ("sinus nerve" and "aortic nerve"). The assumption does not seem unfounded that they may participate in the action of these nerves.

8306. **STEIN, A. A. Experimentelle Untersuchungen über die Zellformen des interstitiellen Hodengewebes.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(3): 483-517. 6 fig. (5 col.) 1931.—After injection of various doses of trypan blue the testis was examined in rats (killed 24 hrs. later), rabbits, cat, guinea pigs, rats after bilateral ligation of the vasa deferentia (killed 3 days-9½ mos. later), rats after unilateral ligation and extirpation of the opposite testis (killed 3 days-10.5 mos. later), rats after unilateral ligation (killed 12 days-8 mos. later), rats with unilateral castration but no ligation as controls, rabbits which had had daily doses of 0.5 g. cholesterol for 2-3 mos., and rats, rabbits and cats after inflammation of the testis from injection of turpentine (rabbits and cats killed 2 days, rats 2-23 days after injection). The principal characteristics which differentiated the interstitial cells (I.C.) from the histiocytes were: structure of the nucleus and the protoplasm; reaction to vital staining and inflammatory reaction. Lipoid and pigment inclusions were not strictly characteristics of the I.C.; in rats both were absent in the normal. Vital storage altered the form of the histiocytes, which appeared as rounded "mobilized" forms. Since the I.C. were indifferent to vital staining and to cholesterol they cannot belong to the reticulo-endothelial system. Ligation of the efferent spermatic duct quickly led to atrophy of the spermatic epithelium and increase in the amount of lymphatic fluid in the interstitial tissue. Atrophic changes in the tubules were followed by an increase in amount of the I.C. in the interstitial testicular tissue. Vitally stained histiocytes were increased after ligation of the efferent spermatic duct, yet present in considerably less amt. (in long continued experiments) than the I.C. which did not, however, store vital stains. The division of the I.C. was amitotic. With the beginning of regeneration in the seminal tubules the amt. of I.C. increased. In rats only a very small amt. of lipoid appeared in the I.C. after ligation of the efferent ducts and atrophy of the seminal epithelium. During atrophy there was a gradual increase in body wt., improvement of the fur, and increased libido in rats. After turpentine injection into the testicular tissue, large numbers of vitally stained histocytes and polyblasts, in addition to the leucocytes, assembled in the granulation tissue. In the region of the necrosis the I.C. increased in amt. and size, but did not store vital stains. In the acute stage of inflammation many I.C. died; in part, however, they were difficult to differentiate from the fibroblasts of the granulation tissue. In the later periods of inflammation in the testicular tissue, typical I.C. again appeared, which proceeded from cell forms similar to the fibroblasts. The interstitial cells were completely differentiated cell elements which were capable of no great change in the local action in rats.

BONES, MUSCLES, JOINTS, FASCIAE

8307. **BADER, LUIGI, e GIORGIO CANUTO. I canali di Havers in rapporto all'età. [Haversian canals in relation to age.]** *Arch. Antropol. Criminale, Psichiatria e Med. Legale* 50(2): 232-241. 1930.—In the tibiae of 18 subjects (21-70 yrs.), the authors found no increasing diameter of the Haversian canals in correspondence with increase in age (theory of Balthazard and Lebrun). The av. diameter of the canals in the 21-yr. subject (49.9 μ) would have indicated an age of 85 yrs. by Balthazard's rule, and the av. diameter in the 70-yr. subject (41 μ) would, by the same criterion, have indicated an age of 37-38 yrs.

8308. **BLAVET DI BRICA, CARLO. Esperimenti di innesti di cartilagine fissata nell'osso. [Grafts of fixed cartilage into bone.]** *Arch. Sci. Med.* 54(1): 63-70. 4 fig. 1930.—Cartilage fixed in alcohol and introduced into a defect in cranial bone in 6 guinea pigs remained for more than 1 yr. It was surrounded at first by connective tissue border attached to the grafted tissue on one side and to the bone on the other; later, by a more or less perfect capsule and strands of bone tissue penetrating into natural or artificial holes in the grafted cartilage. The fixed cartilage did not calcify as a whole, but some fragments of it which had become sequestrated in the proliferated connective tissue tended to do so.—*M. Comel.*

8309. **GRANT, J. C. BOILEAU. Interarticular synovial folds.** *Brit. Jour. Surg.* 18(72): 636-640. 8 fig. 1930.—Dissecting-room experience indicates that all movable joints normally have at all ages extensive interarticular synovial folds.

8310. **HAM, ARTHUR W. A histological study of the early phases of bone repair.** *Jour. Bone & Joint Surg.* 12(4): 827-844. 13 fig. 1930.—In experimental fractures 24 hrs.—28 days in age, in the rib and fibula of 12 rabbits, the adult bone cell is distinguished from the osteogenic cell which lines the bone in the periosteum, the Haversian canals, and the endosteum. The adult bone cell takes no active part in the process of regeneration following fracture. The osteogenic cells proliferate and differentiate into bone and cartilage. Concerning the controversy regarding the existence of a specific osteogenic cell, the subject of metaplastic bone formation is reviewed. The usual method of bone repair is through the agency of these specific osteogenic cells and not by the metaplasia of fibroblasts. Two factors, the presence of a local deposit of Ca salt and a good blood supply, are of great importance in effecting the differentiation of the osteogenic cell into bone. Cartilage results from the growth of osteogenic cells in the absence of these 2 factors. In the repair of fractures, bone and cartilage formation result from the differentiation of osteogenic cells in different environments.

8311. **LI CAUSI, GAETANO. Studi sulla regione lombare laterale: il trigono lombare laterale ed il tetragono lombare. [A study of the lateral lumbar region: the trigonum lumbale and the tetragonum lumbale.]** *Monitore Zool. Ital.* 40(11/12): 507-509. 1930.—The trigonum lumbale (Petit): A bilateral study of 77 bodies showed that it was present in 15.6%. In a majority of the cases a fibro-tendinous lamina extended from the lateral border of the latissimus dorsi, covered the trigone and became continuous with the fascia covering the external oblique muscle and finally inserted in the iliac crest. Beneath this lamina were found, as a rule, the internal oblique muscle and the aponeurosis of the transversalis and not infrequently the external oblique muscle laterally and the quadratus lumborum medially and in a deeper plane. Owing to this stratification and to the absence of foramina for vessels and nerves, hernia through the trigone cannot occur under normal anatomical conditions. The tetragonum lumbale (Grynfeltt) (studied on the same bodies) was present in 83% of the cases. It may assume various shapes, triangular, pentagonal, hexagonal but the most common form is the tetragonal with unequal incurving sides more appropriately termed a trapezoid. In this region the abdominal wall consists of a single fibrous layer, the aponeurosis of the transversalis, covered by the latissimus dorsi. On account of this arrangement and the presence of numerous foramina for vessels and nerves the predisposing anatomical factors for hernia are present. The tetragonum is frequently crossed by accessory bundles of the external oblique muscle subdividing it into secondary areas and occasionally completely obliterating it. Several cases of lipoma originating from the retroperitoneal and pararenal fat were observed protruding into the tetragone through the foramina for the vessels and nerves. This confirms the possibility that perirenal abscess spreading through these foramina may invade the intermuscular connective tissue of the lateral lumbar region.—*G. Li Causi (transl. by J. DeCarlo).*

8312. **MARQUORT, WALTER. Zur Histologie der Synovialmembran.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(1): 34-52. 1930.—Microscopic examination was made of the elbow and knee of 8 adult and 2 young mice. The same joints of rabbits and dogs were also examined macroscopically. The synovial membrane was of a connective tissue nature; fibrillary, intercellular matter was seen; all cells had processes, so that the superficial cells were united to the deeper. The intima is thus to be considered a fibrocytic cell union in whose meshes the fibrillary intercellular substance is found; the occurrence of vessels passing through the membrane, covered only by a thin layer of intercellular substance, or lying free on the surface, indicate it is not epithelium. A further important argument for its connective nature is its vital staining with trypan blue: "The cellular transition of the synovial folds and villi showed storage increasing toward the interior of the joint. Here, too, the pronounced staining was undoubtedly made possible by the good vascular supply of the villi. The rest of the border of the interior of the joint was as strongly stained as this part." Neither histologically nor by vital staining was a sharp delimitation of the cartilage from the connective tissue of the synovial membrane possible. The cell-rich and cell-poor areas allow the possibility that during life such pictures of varying cell abundance arose by joint action. The abundance of cells in the region of the vessels was surprising. They were mostly histiocytic forms of adventitial cells, sometimes resting migratory cells with their lobed, cytoplasmic processes and free round cells. Yet the abundance of cells varied greatly in the various joints, which may be explained by the assumption that various conditions of irritation occur in the various joints.

8313. **MATWEJEW, D. N., und N. M. PAUTKIN. Die Gesetzmässigkeit im Bau des Schläfenknochens.** *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(8): 978-992. 8 fig. 1930.—From the temporal triangle it is possible to determine the position of the inner structures of the temporal bone by projection, since they all have a mathematical relationship to the triangle. The areas were determined within which lay the sulcus sinus petrosi superioris, the sinus sigmoideus, the bulbus venae jugularis, internal temporal artery, outer and inner auditory canals, facial nerves, semicircular canals, cochlea, fenestra ovalis, and fenestra rotunda.

8314. **MØLLER, JØRGEN. Le septum de Körner.** *Acta Oto-Laryngol.* 14(1/2): 213-220. 1930.—The development of the temporal bone from 2 different parts, the pars petrosa and the pars squamosa, involves the presence of 2 separate cell-systems, which, as shown in a series of 16 specimens, afterward may partially fuse together, but in most cases are distinctly separated from each other by the wall which Møller proposes to call the "septum of Körner."

8315. **MÜLLER, WALTHER. Über die Hemmung der Epiphysenverknöcherung unter dem Einfluss abnormer Belastung.** *Arch. Klin. Chir.* 162: 484-488. 3 pl. 1930.—In a large number of newborn rats, guinea-pigs and rabbits one hind limb was amputated at the knee. In the rat, unlike most other laboratory animals, a center of ossification in the head of the femur appears very late. After completion of growth the operated limb showed a well developed bony femoral head, while on the unoperated side no ossification was present in the head of the femur. This interference with the ossification of the epiphyses takes place only when the procedure is instituted while the epiphyses are still entirely cartilaginous.

8316. **NOPCSA, FRANZ. Über die Orientierung konvexo-konkaver Gelenkflächen.** *Anat. Anz.* 70(20/24): 401-416. 3 fig. 1930.—Such joints are classified as mesocoel when the concave surface looks toward the dorsal axis of the body, or as acrocoel when that surface looks towards the distal extremity of the appendages of the head (mandible), vertebral column (ribs), or trunk (limbs). Further they are classified as homotypic when the bones concerned are similar in form as in the metacarpo-phalangeal joints, or as heterotypic when they differ as in the shoulder and hip joints. A list is given of such joints as are known to be acrocoel or mesocoel and the conditions determining the occurrence of each type are discussed. 1. The joints of homotypic bones are permanently mesocoel. 2. Typical concavo-convex joints of heterotypic bones have no definite orientation. 3. Flat joints of this type may be transformed into mesocoel, in so far as their congruence permits. 4. Conversion of mesocoel into permanent acrocoel occurs only in the proximal carpal and tarsal joints of mammals (and some Theromorpha) and then only in association with a rotation of the arm or foot. Acrocoel joints between heterotypic bones may be explained on mechanical grounds and for such joints appear to be the more primitive type. Mesocoel joints between homotypic bones cannot at present be thus explained. In general it may be said that in all bones there is a tendency, originally perhaps individually acquired but later becoming hereditary, toward the formation of mesocoel joints, but this tendency is often suppressed in adaptation to the conditions of life.—*J. P. McMurrich.*

8317. **PETERS, NICOLAUS. Über eine Pseudoarthrose des Rothirsches.** *Zool. Anz.* 89(1/2): 62-64. 1 fig. 1930.—Description of a false joint (in a red deer) resulting from a gun shot fracture which did not knit, the ends developing callus and respectively concave and convex surfaces.

8318. **SANTOS, JOSÉ V. Changes in the head of the femur after complete intracapsular fracture of the neck: their bearing on nonunion and treatment.** *Arch. Surg.* 21(3): 470-530. 40 fig. 1930.—Of 14 cases of complete intracapsular fracture of the neck of the femur, in 6 the proximal fragment was nourished by the vessels of the ligamentum teres, and in 3 of these 6 cases reduction and fixation resulted in bony union. In 3 of the remaining 8 cases in which the head became necrotic, bony union was also obtained.

8319. **SHDANOW, D. A. Die Lymphgefässe des Tarsalgelenkes, des Kniegelenkes und des Hüftgelenkes des Menschen.** *Anat. Anz.* 69(7/12): 194-210. 5 fig. 1930.—100 joints were investigated by injecting Gerota's fluid into the cavity of the joint with the application of passive motions in the latter. The outflow of lymph from capsule and from cavity of the joints takes place through the same lymph vessels. The vessels are described in detail.—*From abstr. by D. A. Shdanow.*

8320. **SIGURDSON, LARUS ARTHUR. The structure and function of articular synovial membranes.** *Jour. Bone & Joint Surg.* 12(3): 603-639. 23 fig. 1930.—The structural histological studies were made on material from 6 fetuses aged 5-9 mos. and on bodies from the dissecting room (number not stated) aged mainly 50-80 yrs. Functional studies were made on animals, of which a cat, dog and an unspecified number of rabbits and guinea-pigs are mentioned. The inner surface of articular capsules is not formed by a distinct membrane, but by connective tissue modified as the synovial surface is reached. The cells here are more closely packed and the nuclei exhibit peculiar staining characteristics, but that does not seem to justify the use of the term membrane. The superficial synovial cells are not uniform in size or shape, some being quite small and round while others are large with branching processes. This type of cell is not confined to the surface. Synovial villi vary greatly in size and shape and are composed of connective tissue resembling the part of the capsule from which they arise. An excellent demonstration of variation in cell outlines on the synovial surfaces of articular capsules can be obtained by the use of Ag-impregnation methods. The intercellular substance is abundant, in contrast to that of the pleura and peritoneum; and the apparent cell outlines are much more irregular and do not resemble those of an endothelial or mesothelial layer. The presence of "stomata" in articular capsules is not confirmed. Carbon particles, when injected into the knee joints of guinea-pigs, evoke an inflammatory exudate in the joint

cavity, most marked on the 3rd day after injection. Some of these carbon particles are taken up by the lymphatic vessels and are deposited in the inguinal and lumbar nodes, while others are removed from the joint cavity by the action of phagocytic cells, some of which gain the lymphatic vessels while others remain in the subsynovial connective tissue for an indefinite period. Fe, in the form of ferric ammonium sulphate, disappears from joint cavities within 30 min. after injection by way of the lymphatics. I in the form of lipiodol diffuses slowly through the joint capsule, a period of at least 4 days being required for its complete removal, as judged by skiagrams. Immobilization of the tibiotarsal joints in rabbits over 53 days produced no marked structural changes in the joint capsule, but the amount of synovial fluid was considerably less.

ADENOID TISSUES

8321. ALTSCHUL, RUDOLF. Das Verhalten lymphatischer Organe bei Goldimprägnierung. *Anat. Anz.* **70** (18/19): 379-386. 3 fig. 1930.—In all preparations of lymphatic tissue the compact tissue is strictly "aurophobe," while the loose tissue reveals a distinct "aurophilia." The follicles of lymph nodes as well as the medullary cords, the malpighian bodies of the spleen, the tonsillar follicles, and the cortical substance of the thymic lobules remain unstained. On the contrary, the lymph channels of the lymph nodes, the splenic pulp, and the medulla of the thymus retain the Au reagent and appear darkly stained. The tonsils, which possess only the dense follicular tissue and do not contain a parenchyma rich in fluid, remain colorless. The conclusion is that it is the manner in which the tissue is arranged that determines the reaction, hence, a physicochemical condition and not a purely chemical state is involved.—*O. F. Kampmeier.*

8322. DABELOW, A. Reaktionsweisen des Lymphknotens beim Fetttransport. (Unter besonderer Berücksichtigung des Mesenterialknotens.) *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* **12** (2): 207-273. 23 fig. (15 col.). 1930.—Rats, mice, guinea pigs and 2 cats were given a fat diet, then killed after 1, 2 or 5 hrs. and the lymph glands examined in stained sections. During the absorption of fats the reticular cells of the mesenteric nodes become enlarged, proliferate both by mitosis and amitosis, store large amounts of fat and in many instances become free macrophages. The sinus endothelium reacts in much the same way. During starvation the cellular changes are largely reversed. There is proliferation of the germinal centers with feeding, while starvation may cause their complete disappearance. The passage of chyle may wash out many of the free cells and much of the fat. At times the intracellular fat is large during starvation. The passage of fat through the node changes its reaction to Sudan red and Nile blue. After injection of thyroxin the sinuses of the mesenteric nodes contained more fat and those of peripheral nodes less. Peripheral nodes showed no cellular changes during feeding.—*R. S. Cunningham.*

8323. FIESCHI, AMINTA. Ricerche sugli animali splenectomizzati. *Arch. Sci. Biol.* **13** (3/4): 341-352. 1929. —Researches were made on guinea pigs, 5-6 mos. after removal of spleen. Through vital staining with lithium-carmine an increased production of histiocytes is shown. Other elements, derived from reticulo-endothelial system, are found in the lymph follicles and in the trabecular framework of the medullary portion. In the splenectomized guinea pigs adrenalin caused, as in normal animals, leucocytosis with considerable lymphocytosis; therefore the spleen is not necessary for the induction of these changes.—*A. Jappelli.*

8324. LONGHITANO, A. Ricerche sul tessuto linfoide. Nota 2. Sulla struttura, funzione e rigenerazione delle linfoghiandole. [Studies on lymphoid tissue. 2. Structure, function, and regeneration of lymph glands.] *Sperimentale* **83** (4): 298-345. 9 fig. 1929.—Detailed histological studies on normal and pathological lymph nodes from various animals and man are given.—*Maud L. Menten.*

8325. MAMOLI, L. Il tessuto adenoide nella ghiandola lacrimale umana normale. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* **9** (1): 96-99. 1929.—Lachrymal glands were obtained from 15 operations and 16 post mortems. The ages varied from the 6th fetal month to 80 yrs. The cells of the lymphoid (adenoid) tissue are typical lymphocytes. The cells are arranged circularly around an area which resembles Flemming's germinating center. The lymphoid tissue is distributed about the periphery of the gland, the ducts, and the tubules.—*H. C. Stevens.*

8326. MENON, T. BHASKARA. Persistent thymus. *Indian Jour. Med. Res.* [*Calcutta*] **17** (1): 135-140. 1929. —Evidence is presented to show that a persistent enlarged thymus is found in a large proportion of cases of sudden death whether due to gun-shot wounds, fractures of the skull from accidents, multiple fractures of the ribs, subdural hemorrhage or chloroform anesthesia. In such medico-legal deaths, an apparent persistent thymus seems to be independent of the cause of death, but to be associated with the rapidity of it. The thymus has no causal bearing in these sudden deaths. Furthermore, death is so sudden that the gland has not had time to undergo atrophy or fat metamorphosis. According to the author's theory, chronic infections and protracted illness lead to atrophic changes in the thymus, acute infection to hyperplasia or no change at all, while sudden death has no influence on the gland. A possible interrelationship between the thyroid and the thymus is considered. Other theories of persistent thymus are discussed briefly.—*J. A. Dye.*

8327. SCATIZZI, IDA. La milza di "Tropidonotus natrix." [With French, English and German summaries.] *Arch. Zool. Ital.* **14** (2/4): 341-363. 1930.—In the connective tissue capsule of the spleen there are muscular, collagenous and elastic fibers. There is no clear distinction between white and red pulp, there being no follicles. The fixed elements of the pulp are represented by cells and a network of reticular fibers. The free elements are represented by lymphocytes, erythrocytes and leucocytes. Young lymphocytes and erythrocytes are found. Therefore in *T. natrix* the spleen has a lymphopoietic and erythropoietic function.—*Author's summary.*

8328. YOFFEY, J. M. Preliminary note on mammalian lymphoid tissue and its relation to the remainder of the haemopoietic system. *Jour. Anat.* **65** (3): 333-338. 1 fig. 1931.—The author assumes that all the blood cells are derived from cells closely resembling the small lymphocyte. He thinks the most probable course of events is that these cells are formed in lymphoid tissue, migrate to the bone marrow where they continue their maturation, and eventually return to the circulation as adult cells.—*R. S. Cunningham.*

PHYSICAL ANTHROPOLOGY

8329. BARBOSA SUEIRO, M. B. Annotations anatomiques. IV. Note sur l'hyperextension et l'hypo-extension du coude humain. [Anatomical Notes. IV. On the hyper- and hypo-extension of the human elbow.] *Arquivo Anat. e Antrop.* [*Lisboa*] **12** (1): 1-4. 1928.—In man and other mammals there is no relation between the hyperextension of the elbow and the existence of an olecranal perforation. The angle made by the axis of the ulna with the vector (flèche prolongée) of the sigmoid notch in normal human elbows varies from 115° to 125°; in cases with hypo-extension the angle was between 103° and 120°; and in cases with hyperextension it was over 128°. The position of the trochlea, with respect to the axis of the humerus, also causes variation of the amount of hyper- and hypo-extension.—*M. B. Barbosa Sueiro* (*transl. by J. P. McMurrich*).

8330. BLACK, DAVIDSON. Preliminary notice of the discovery of an adult Sinanthropus skull at Chou Kou Tien. *Bull. Geol. Soc. China.* **8** (3): 207-211. 9 pl. 1929. —The skull is apparently ♀, early adult or adolescent. There is remarkable development of the supraorbital

torus and crista sagittalis of the frontal bone. Frontal and parietal eminences are well-developed, the former exceeding that of *Pithecanthropus* to a marked degree. Parts about foramen magnum are not preserved in situ. The mastoid processes are of small size, yet massive; the left is somewhat the larger. The digastric fossa is relatively wide, long and deep. Crista supramastoidea is well-developed. The glenoid fossae are well-preserved on both sides; they are quite deep, and the post-glenoid processes markedly developed. A table of various measurements of hominid skulls is given with approximations for the *Sinanthropus* skull. *Sinanthropus* differs widely from *Pithecanthropus*, and is "a more generalized and progressive type." From its dentition, it probably is closely related to the common ancestor of Neanderthal man and *Homo sapiens*.

8331. **BONNEVIE, K. Recherches nouvelles sur les dessins papillaires des doigts humains. (Résumé des résultats.)** *Bull. Soc. Etude Formes Humaines* 7(3/4): 371-392. 1929.—"A short résumé of the main results, statistical as well as embryological, already published in previous papers (1923-29) with regard to the papillary patterns of human fingers."

8332. **GÜNTHER, HANS. Grundprobleme der Konstitutionsforschung.** *Würzb. Abh. N. F.* 6(3): 155-177. 1929.—A discussion of the principles of the science of human constitution. The author examines critically the underlying concept of this branch of human biology.—*H. Günther.*

8333. **KRUSE, WALTHER. Die Deutschen und ihre Nachbarvölker. Neue Grundlegung der Anthropologie, Rassen-, Völker-, Stammeskunde und Konstitutionslehre nebst Ausführungen zur deutschen Rassenhygiene. [The Germans and their neighboring races. New principles of anthropology, racial, folk-, and tribal information and constitutional studies with conclusions for German racial hygiene.]** xiv+640p. Georg Thieme, Leipzig. 1929. M. 41.

8334. **LOTH, E. Leçons d'anthropologie des parties molles (muscles, intestins, vaisseaux, nerfs périphériques).** *Bull. Soc. Morph.* No. 1/2. 53p.; *Bull. Soc. Etude Formes Humaines* 7(1/2): 82-132. 1929.—A series of lectures on the anthropology of the soft parts. After a short historical introduction, and a discussion of different categories of variations, and after defining the terminology of the subject, the author dealt with the muscles of the face, neck, trunk, upper and lower extremities, the alimentary and respiratory tracts, the genito-urinary apparatus, the vascular system, and the peripheral nerves. This represents the first attempt at the systematic treatment of these problems from the point of view of racial differences.—*E. Loth.*

8335. **NIPPERT, OLGA. Zur Morphologie der lateralen Orbitalwand.** *Verhandl. Schweizer. Naturforsch. Ges.* 110: 184-187. 1929.—The paper aims to collect the variations that recall the original unity of the orbit and the temporal fossa in Primates and especially in the various races of man. Author presents a statistical study of the width of the inferior orbital fissure, the number of zygomatic-temporal foramina, the perforations of the lateral wall and the intercalated bones along the sutures. —*O. Schlaginhaufen (transl. by R. F. Shaner).*

8336. **PARSONS, SUSANNE R. A statistical study of the incidence of contracted pelves in Chinese women and its relation to labor and the size of the newborn.** *Amer. Jour. Obstet. & Gynecol.* 18(3): 419-423. 1929.—Average pelvic measurements of 500 Chinese women delivered spontaneously in Shanghai fell below the usual white standards. 49.8% of the pelves were abnormal, nearly ⅔ of total pelves were funnel type. No rachitic or flat pelves occurred in this series. The babies were smaller than white babies. Comparing Chinese pelves with those of women (negro and white) in Baltimore, there were 13.66% contracted pelves in white women; 43% in negroes; 49.8% in Chinese and 9.2% in North American Indians.

8337. **PEI, W. C. An account of the discovery of an adult Sinanthropus skull in the Chou Kou Tien deposit.** *Bull. Geol. Soc. China* 8(3): 203-205. 1929.

8338. **PIJPER, ADRIANUS. The blood-groups of the Bantu.** *Trans. Roy. Soc. So. Africa* 18(4): 311-315. 1930. —Examination of 880 Bantu from all parts of the Transvaal, mostly patients in hospitals and clinics, was made by the test-tube method. 53.2% were O, 25.3% A, 19.2% B, and 2.3% AB. The index is 1.3. Of the subjects, 705 were Basuto, 64 Matabele, 47 Shangaan, 22 Zulu, 14 Swazi, and the Kosa, Bavenda, and Baralong tribes were represented. In the Basuto, distribution of the blood groups was about the same as in the total population. The high index (that of African negroes being below 1.0 and of American negroes 1.3), is considered, and leads the author to believe that the Bantu are "direct descendants of the Hamitic race, with perhaps a very slight admixture of negro blood."

8339. **PRATJE, ANDREAS. Die Anwendung stereoskopischer Methoden in der Anthropologie. [Application of stereoscopic methods in anthropology.]** *Zeitschr. Ges. Anat. Abt. 1. Zeitschr. Anat. u. Entwicklungsgesch.* 89 (4): 467-493. 6 pl., 15 fig. 1929.—Bones and most soft parts can be accurately measured through the use of a stereometer.—*A. Pratje (transl. by S. A. Weisman).*

8340. **SCHEIDT, WALTER. Annahme und Nachweis von Rassenvermischung.** *Zeitschr. Morphol. u. Anthrop.* 27(1): 94-116. 3 fig. 1928.—The author gives a critique upon the obscurity of usual race definitions, and he suggests the elimination of notions of "pure race," "race mixture," and "folk mixture" previously selected by the author in race definitions. Methods followed: Critique on the dispersion of masses for the determination of folk mixture and on the importance of the correlation of characters. One seldom expects genetic components in folk mixture. The grade of mixture is dependent upon circumstances and is influenced by assortative mating. The author proposes an "index of assortative mating." Evidence of partial folk mixture gives an "index of type variation," but above all, rarely, the indication of correlation of characters.—*W. Scheidt (transl. by R. B. Bean).*

8341. **SCHLAGINHAUFEN, OTTO. Die anthropologische Untersuchung an den schweizerischen Stellungspflichtigen, III. Bericht, 1929.** *Verhandl. Schweizer. Naturforsch. Ges.* 110: 168-173. 2 pl. 1929.—Third report on the study of the people of the military subdivisions of Switzerland, which is being carried out under direction of the author. This report includes 6934 individuals, and in the past 3 yrs. 20,000 individuals have been examined. In 1929 observations were made in the cantons of Obwalden, Nidwalden, Basel-Land, Basel-Stadt, Luzern and Aargau.—*O. Schlaginhaufen (transl. by C. H. Danforth).*

8342. **SHIROGGOROFF, S. M. Process of physical growth among the Chinese. [Il processo dello sviluppo fisico fra i Cinesi.]** Commercial Press: Shanghai, 1929.

8343. **SSUCHAREWA, G. E., und I. B. SCHENFIL. Der infantil grazile Körperbautypus und seine somatopsychischen Besonderheiten.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 119(4): 613-630. 1929.—Height does not characterize the infantile gracile type, but tall individuals may be found in the group. The essential features are gracility of build and child-like appearance such as smooth and tender skin and small bones. Tall individuals of similar appearance do not differ psychically from the small individuals belonging to this group. Graceful motions, vivid and changing but child-like facial expression are suggestive of the preponderance of extrapyramidal factors. The type is characterized particularly by its psyche, childish opinions and interests, superficiality, lability of emotions, accentuated suggestibility, and inclination to hysterical reactions. These peculiarities have been characterized by the term "hysteroid." The hysteroid character of individuals of the infantile gracile type justifies the conception that hysteria expresses a retardation of development on a more child-like level.—*M. A. Goldzieher.*

8344. **THOORIS, A. La morphologie de l'athlète.** *Rev.*

Antrop. [*Paris*] 39(10/12): 364-375. 7 fig. 1929.—The quadrupedal position favors the study of the proportions of the model and of the mimic. Athletes are short or tall (brevilinear or longilinear), round or flat (the former more massive, the latter more slight), they have more of form than function (preponderance of trunk) or more of function than form (preponderance of limbs). The principles of morphology are applicable to the diagnosis of athletic aptitudes and to the choice of specializations, by utilizing the segmental predominances.—*A. Thooris* (*transl. by J. P. McMurrich*).

8345. **WEIGNER, K. Le contrôle anatomique des résultats fournis par la percussion de la rate, du coeur et du foie. (Deuxième partie.)** *Arch. Anat. Hist. et Embryol.* 9(4/7): 387-427. 2 pl. 32 fig. 1928/1929.—The limits of the heart as studied by percussion and by x-ray examinations in 31 cadavers are illustrated by diagrams with data concerning age, sex, cause of death, position of nipple and measurements of the cardiac borders. Descriptions of the points of measurements and the percentage of cases falling within certain limits are given.—*E. A. Baumgartner.*

8346. **WOOLLARD, H., and J. B. CLELAND. Anthropology and blood-grouping, with special reference to the Australian aborigines.** *Man* [*London*] 29(11): 181-188. 1 pl., 1 map. 1929.—The evidence is presented for believing that the Australian Aboriginal in his pure state possesses only the Alpha iso-agglutinogen in his blood. The distribution and the inheritance of the blood groups is discussed; also their relation to what is known of the groups in anthropoids. It is suggested that the aboriginal inhabitants of Australia must have been derived from a few immigrants in order that the blood grouping should have obtained its present character.—*H. Woollard.*

TECHNIQUE

8347. **BUJARD, EUG. Une coloration strictement élective des granulations basophiles des mastocytes.** *Bull. Histol. Appl. Phys. et Path.* 7(8): 264-269. 1930.—Sections stained 30 sec. in acid fuchsin. Rinse in H_2O and treat with 0.8% Br in water 4-5 min. Rinse and decolorize in 92-95% alcohol or acid alcohol. Counterstain in Fe hematoxylin. Period in absolute alcohol must be very short.—*J. G. Sinclair.*

8348. **BUSSCHER, G. de. Sur quelques détails de technique de la culture cellulaire in vitro à irrigation continue.** *Bull. Histol. Appl. Phys. et Path.* 7(10): 333-336. 1930.

8349. **CARDILLO, FURIO. Modificazioni al metodo del carbonato d'argento per la colorazione della microglia. [Modification of silver carbonate method for staining microglia.]** *Riv. Patol. Nerv. e Ment.* 34(3): 409-415. 2 fig. 1929.

8350. **CHASE, SAMUEL W. Device for prolonged continuous change and agitation of fluids.** *Anat. Rec.* 46(1): 41-43. 1 fig. 1930.—A device for prolonged washing, fixing, or decalcification consists of a large flask with a delivery tube passing through a hole stopper inverted over a small Stender dish, so that the opening of the delivery tube is alternately sealed and opened by the rising and lowering of the fluid in the dish when the latter is drained by a capillary siphon or wick delivering at the desired rate. This rate can be varied to cause emptying of the flask in any time between a few minutes and several weeks by selecting the proper ratio of size between siphon and flask.—*Author* (*courtesy Wistar Bibl. Serv.*).

8351. **CORDIER, R., et L. LISON. Etude histochimique de la substance chromo-argentaffine de la cellule de Kultschitzky.** *Bull. Histol. Appl. Phys. et Path.* 7(5): 140-148. 1930.—The chromo-argentaffin granules of these intestinal cells show a positive reaction to the diazo test given here in detail. The color is varied at will and is highly specific. The structure of these phenolic granules with proof of OH groups in the first 2 positions and a complex oxidizable group in the para position is demonstrated in formalin fixed sections.—*J. G. Sinclair.*

8352. **DIETERLE, ROBERT R., and META NEUMANN. A new demonstration of Hortega cells.** *Arch. Neurol. & Psychiatr.* 24(6): 1154-1163. 6 fig. 1930.—The use of Kubie's solutions for the Bielschowsky (including the Perdray modification), Achúcarro (including the Klarfeld modification) and Hortega methods, in the authors' opinion, shows more of the protoplasmic structure of pathologic Hortega cells than any other method yet devised.

8353. **DOLFINI, GIULIO. A proposito del metodo Vastarini-Cresi per il glicogeno. [The Vastarini-Cresi method for glycogen.]** *Monitore Zool. Ital.* (*Firenze*) 40(4): 123-127. 1929.—The Vastarini-Cresi method is preferred to any other histo-chemical method for glycogen because it yields good results and is easy to handle. A modification is presented which hastens the reaction.—*G. Dolfini* (*transl.*).

8354. **FISCHER, A. Technik und Methodik der Gewebskulturen. [Technique and methods of tissue culture.] In: W. KOLLE, und A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen. 3. Aufl. W. KOLLE, R. KRAUS, und P. UHLENHUTH. Bd. 10, Lief. 37.** p. 617-636. 7 fig. Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin u. Wien, 1929.—With a 2½ page bibliography.

8355. **GLASUNOW, M. Beobachtungen an mit Trypanblau vitalgefärbten Meerschweinchen. III. Der Entfärbungsprozess.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(2): 365-381. 1930.—In 16 days each of 7 guinea pigs received 18 cc. of 1% trypan blue; they were killed 4, 10, 20, 30, 40, 70, and 160 days thereafter and the liver, spleen, cervical lymph nodes, kidneys, lungs, and connective tissue examined. In 4 days the hepatic cells, most of the Kupffer cells, and the cells of the biliary ducts were stained; the endothelium of the vena centralis contained only a little stain; some histiocytes in the interlobular connective tissue were also stained. All the kidney except the descending limb and the arched collecting tubules was strongly pigmented and these 2 slightly so. The dye was uniformly and abundantly present in the tissues of the lungs. The pulp cells of the spleen contained a large amt., only occasional reticular cells were stained, and there was almost no color in the endothelium of the sinuses. Both cortex and medulla of the lymph nodes contained many stained cells. The fibrocytes and histiocytes of the cervical connective tissue contained much dye, the endothelium of the vessels usually none. By the 160th day occasional blue vacuoles were present in the epithelium of the large biliary ducts and the fibrocytes of the interlobular connective tissue, but none in the hepatic or Kupffer cells. Dye was present only in the large collecting tubules and papillary ducts of the kidneys. In the lungs it was faintly noticeable in a few dust cells only; the spleen and the lymph nodes contained no pigment. Some of the fibrocytes and none of the histiocytes contained pigment. Decoloration occurred very irregularly. The dye was usually given up to the fluids surrounding the cell, the physical condition playing a large rôle, for dye in solution disappeared more quickly than that precipitated. One can assume 2 principal factors in decoloration: the proximity of the blood and the current passing through the cell. The internal characteristics of the cells also participated, for the histiocytes decolorized more quickly than the fibrocytes; to these also must be attributed the color changes in the reticulo-endothelial cells (blue to yellowish-brown or black), which, since no Fe reaction was obtained, must have occurred by intracellular splitting of the dye. Apparently there was a more or less general rule that coloration and decoloration are proportional.

8356. **HAGENS, E. W. Decalcification of temporal bones: the use of x-rays for determining when decalcification is complete.** *Arch. Otolaryngol.* 12(1): 14-17. 1 fig. 1930.

8357. **KNOLL, W. Eine Kombination der Palschen Markscheidenfärbung mit der Zellfärbung nach Nissl. [A combination of Pal's stain for medullary sheaths and Nissl's cell stain.]** *Jahrb. Morph. u. Mikrosk. Anat.*

Abt. 2, Zeitschr. Mikrosk.-Anat. Forsch. 23(1/2): 236-238. 3 fig. 1930.

8358. **KUBIE, LAWRENCE S., and DAVID DAVIDSON. The ammoniacal silver solutions used in neuropathology. Their staining properties, chemistry and methods of preparation.** *Arch. Neurol. & Psychiatry* 19(5): 888-903. 1928.—The ammoniacal Ag solution which is prepared from $AgNO_3$ and NH_3 alone is spoken of as the solution of "ammoniacal $AgNO_3$," with Na carbonate and NH_3 as "ammoniacal Ag carbonate," and with NaOH and NH_3 as "ammoniacal Ag hydroxide." The ammoniacal Ag ion which is formed in the 3 methods used for preparing Ag staining solutions is constant in formula, $Ag(NH_3)_2^+$. The activity of this ion varies in sensitivity, stability, rate and intensity depending on the ions with which it is associated. The ammoniacal Ag hydroxide, because of its extremely high hydroxyl ion concentration, is the most unstable—that is, it reduces most rapidly with tissue elements. The ammoniacal $AgNO_3$ solution is most "stable." The ammoniacal Ag carbonate solution is intermediate between the other 2. The ammoniacal $AgNO_3$ solution is only rarely useful. For most purposes, the ammoniacal Ag carbonate solution, because of its greater stability and its somewhat slower action, is more easily handled. Methods for preparing these solutions are described.—*From authors' summary.*

8359. **KUHN, MIGUEL J. Modificaciones al método de Medwedeff (preparados anatómicos en placas). [Modification of Medwedeff method of anatomical preparations.]** *Rev. Soc. Argentina Biol.* 6(9/10): 716-718. 1930.—See B. A. 4(6): Entry 18442.

8360. **LAIDLAW, GEORGE F. Silver staining of the endoneurial fibers of the cerebrospinal nerves.** *Amer. Jour. Path.* 6(4): 435-443. 2 pl. 1930.

8361. **LIENGME, A. Modification de la methode de coloration nucleaire en masse de Morel et Bassel.** *Bull. Histol. Appl. Phys. et Path.* 7(7): 233-236. 1930.—The alteration consists in using Boehmer's hematoxylin with a dilute acidified Fe perchloride for prolonged staining. —*From abstr. by J. G. Sinclair.*

8362. **NAVILLE, ANDRE. Mise en évidence de la mucine par une modification de la muchématéine de Mayer.** *Bull. Histol. Appl. Phys. et Path.* 7(7): 237-239. 1930.—This modification of Mayer's muchematin stain consists essentially in increasing the Al chloride to 5% and after 24 hrs. adding just enough NH_4OH to be completely used in precipitating Al hydrate.—*J. G. Sinclair.*

8363. **PENFIELD, WILDER. A further modification of del Río-Hortega's method of staining oligodendroglia.** *Amer. Jour. Path.* 6(4): 445-447. 1 pl. 1930.—The method (called Dockrill's modification of the silver carbonate method for oligodendroglia) is particularly reliable for staining the spinal cord, brain stem and cerebral white matter, where other methods are often less successful, and the oligodendroglia of the retina, nerve head and optic nerves.

8364. **POLICARD, A. Sur la fixation de poussières minérales dans le poumon humain.** *Bull. Histol. Appl. Phys. et Path.* 7(10): 337-353. 3 fig. 1930.—The method of studying sections in gelatin or water permits identification of many dust particles by refractive differences not apparent in balsam. Concentrated 50-60% perchloric acid placed in a drop on the section with precautions against explosion will destroy the organic matter completely, liberating lipoids progressively as it spreads. These may be identified to some degree. Inorganic particles and carbon dust of various kinds are left but their position is disturbed in the reaction. The same method may be applied to bits of lung in a test tube and centrifugal sediment may be tested optically and microchemically. No method is at hand for organic dust or ultramicroscopic dust. The dust is deposited among the connective tissues by phagocytes which later disappear. The process is a mild reaction which may, if intense, verge onto the pathological.—*J. G. Sinclair.*

8365. **POPOFF, NICOLAS. La méthode des colorations en masse appliquée à l'histologie normale.** *Bull. Histol. Appl. Phys. et Path.* 7(9): 300-302. 1930.—Small pieces 3-4 mm. thick are soaked 12-24 hrs. in dilute hemalum; may be left 10 days at 30-35° C. Wash in running water at least 10 min. Rinse in distilled H_2O and stain in 0.5% alcoholic eosin or erythrosin 6 hrs. Dehydrate in eosin alcohols 80% up, rinse in 3 changes absolute alcohol, clear, and embed.—*J. G. Sinclair.*

8366. **SCHMID, HARALD. Über physikalische Beeinflussung der vitalen Farbstoffspeicherung.** *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschr. Mikrosk.-Anat. Forsch.* 23(1/2): 1-8. 4 fig. 1930.—After intravenous injection of trypan blue, diathermy was applied bitemporally to the head in rabbits for 10-15 min. at 0.1 amp. In comparison with controls, there was an increase in dye in the choroid plexus and in histiocytes carrying the dye. In the epithelial cells it was present in droplets between the nucleus and the periphery, not as fine dust. Diathermy very probably increased the permeability of the plexus portion of the blood-spinal fluid barrier as seen from colored spinal fluid in moderate staining; the concentration of dye remained at a minimum, however, so that no signs of nervous irritation appeared.

UNCLASSIFIED

8367. **BLECHSCHMIDT, E. Zur Anatomie des Subkutangewebes.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(2): 284-293. 10 fig. 1930.—Frozen sections of the subcutaneous tissue (breast, buttock, abdominal wall, thigh) were stained heavily with methylene blue, bringing out the reticular structure for gross morphological study.

8368. **DAUVART, ANNA. Über die zyklische Gewichtsvariation des Vorderbeinskelettes des Frosches.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(1): 140-151. 2 fig. 1930.—In a previous article the author had studied seasonal variations in the weight of the bones of the foreleg of the ♂ frog. In this study data of such variations in 89 ♀ *Rana temporaria* and 46 *R. esculenta* var. *ridibunda* are compared with the previous figures. The conclusions are: The greater seasonal variation in weight of the bones of the foreleg of the ♂ frog than in that of the ♀ constitutes a typical cyclical secondary sex character. Comparison of the mean of the relative weights (always based on weight of femur + tibiofibula) of the bones of the foreleg of *R. temporaria* ♂ in spring and autumn shows that the spring mean (taken as 100) is about 10% greater than the autumn mean, but in the ♀ the difference is only 5%. This relation of means in *R. esculenta* ♂ resembles that in *R. temporaria*, but the ♀ shows an even smaller difference (4.2%) than the *R. temporaria* ♀. The mean of the relative weight of the bones of the foreleg of *R. temporaria* ♀ in spring reaches 70% of that of the ♂♂. In *R. esculenta*, it is 81.7%. Since in both species the comparison of seasonal differences in the ♂ with those in the ♀ shows a smaller ratio when expressed in percents than is the case with the means, the sex difference in the extent of seasonal variations must not be regarded as the direct expression of absolute weight differences (in the bones of the foreleg). The condition of the different development of seasonal variation in the 2 sexes of these frogs expresses rather precisely the same condition that is met in many other vertebrates, when a sex character strongly developed in the ♂ appears also in the ♀ sex even though to a lesser degree.—*Author's conclusions (transl. by A. M. Boring).*

8369. **LEVI, G., e G. C. DOGLIOTTI. Caratteri dello stroma detto reticolare in alcuni tessuti viventi. [Some characters of the so-called reticular stroma in living tissues.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 127-130. 1930.—The morphological constitution of the reticular stroma in living tissues was studied in very thin sections of fresh organs of rat kept in protracted fasting, the cuts being immersed in Ringer's solution. This method allowed a clear observation of the particularities of the

reticular stroma in liver, kidney, alimentary canal, heart, etc.—*M. Comel.*

8370. **MENNER, ERICH.** Über die Stützelemente in der Retina der Wirbeltiere. Zugleich eine Erwiderung auf die Arbeit von E. Murr in Band 10, Heft 2 Dieser Zeitschrift. *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(2): 414-428. 4 fig. 1930.—The assumption of Murr (see next entry) that it is not in accord with the facts that the limitans externa is not to be recognized in the eyes of various animals is refuted. An external limiting membrane does not in fact exist. The limitans externa is rather a portion of the supporting cells of the retina, never an independent structure. The supporting cells exhibit as many spaces upon their scleral aspect as there are visual elements present so that it would be better to call this border the limitans reticulata externa. If thick sections of 20 or more μ are examined as in Murr's investigation, a "membrane" is simulated, while in thin sections of 2.5-5 μ, the limitans reticulata externa does not appear.—*E. Menner (transl. by T. J. Putnam).*

8371. **MURR, ERICH.** Zur besseren Unterscheidung von Stäbchen und Zapfen in der Retina der Wirbeltiere. *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 10(2): 386-393. 1930.—Recently the difference between the nuclei of the visual cells has been recognized in vertebrates of almost all classes and has been employed as an indicator of the morphological duplicity of the visual cell layer in all cases where differentiation between rods and cones is difficult. A preliminary study of further cases reveals that while no statement has been proven concerning physiological duplicity, it seems possible in all cases of morphological duplicity of the nuclei to determine accurately a morphological duplicity of receptive external processes of the visual cells. The missing external limiting membrane could be demonstrated in all cases investigated and, at least in the cat, cones were also exhibited.—*E. Murr (transl. by P. A. Moody).*

8372. **ROLLET, J.** Recherches biomicroscopiques et histologiques sur le sort de l'encre de Chine injectée dans la cornée. *Bull. Hist. Appl. Phys. et Path.* 7(1): 21-30. 5 fig. 1930.—Chinese ink injected into the cornea by a fine needle and under great pressure spreads uniformly, largely at one level. It does not produce inflammation and if not so thick as to interfere with nutrition will not necrose tissue. Method has limited clinical use.—*J. G. Sinclair.*

8373. **SCAMMON, RICHARD E., and FRED L. ADAIR.** The geometric relationships of the frontal fontanelle in infancy. *Anat. Rec.* 46(4): 349-363. 6 fig. 1930.—A series of tracings of fontanelles of 325 infants under 1 yr. of age have been measured with respect to their areas and their mean oblique (Elsässer's) diameters. The relationships of the means of the 2 dimensions may be fairly well represented by the expression, $A = 1.24\ D^{2.12}$. The simple approximation $A = D^2$ has proved entirely unreliable as an expression of this relation, but the formula $A = 1.251\ D^2$, which is based upon a more elaborate geometric convention, gives a good fit to the observed central tendencies, particularly when these tendencies are measured by the medians rather than the arithmetic means of area for given intervals of fontanelle diameter.—*Authors (courtesy Wistar Bibl. Serv.).*

8374. **SCHEERER, RICHARD.** Zur Topographie des Sehnervenrandes im kurzsichtigen und im nicht kurzsichtigen Auge. [The topography of the border of the visual nerve in the near-sighted and not near-sighted eye.] *Graefe's Arch. Ophthalmol.* 124(1): 53-75. 1 pl., 17 fig. 1930.

8375. **STRAMPELLI, B.** L'umore acqueo di seconda formazione come mezzo per la cultura dei tessuti in vitro. *Boll. e Atti R. Accad. Med. Roma* 56(10): 305-313. 1 fig. 1930.—In view of its coagulating property the author finds that aqueous humor of second formation is an excellent and easily prepared culture medium for tissues in vitro.

8376. **WILSON, GORDON.** The utriculo-endolymphatic "valve." *Acta Oto-Laryngol.* 14(1/2): 276-282. 4 fig. 1930.—In the series of sections described, the striking appearance of the utricular fold, or "utriculo-endolymphatic valve," tends to support Bast's view that so definite a structure should have a definite function. Since, presumably, the usual movement of endolymph must be slow, possibly such a mechanism may, under conditions of sudden pressure-change, prevent abrupt fluid changes in the utriculus. The "valve" in this series is a much stouter structure than the thin epithelial vesicle against which it lies, and there is, it seems, no substantial wall to complete the valvular mechanism—unless it be assumed that the perilymph serves as a liquid support for the utricular wall.—*From author's summary.*

VERTEBRATE EMBRYOLOGY

CARL HARTMAN, *Editor*

C. F. DE GARIS, *Associate Editor*

(See also in this issue Entries 6178, 6180, 6196, 6197, 6198, 6199, 6200, 6204, 6206, 6207, 6216, 6219, 6221, 6226, 6243, 6253, 6688, 6887, 6897, 6902, 6989, 7126, 8222, 8223, 8224, 8228, 8234, 8251, 8259, 8261, 8266, 8288, 8375, 8376, 8867, 8885, 9043)

DESCRIPTIVE

8377. **ADAMSTONE, F. B.** A modification of the technic of handling chick embryos. *Stain Technol.* 6(2): 41-42. 1931.—The cover slip technic described gives ease of manipulation and rapidity of fixation.

8378. **BAST, T. H.** Blood supply of the otic capsule of a 150-mm. (C.R.) human fetus. *Anat. Rec.* 48(1): 141-151. 1 pl. (col.) 1931.—This account is based on a wax-plate reconstruction of serial sections, each 25 μ thick, of the petrous bone and surrounding structures of an 18½-weeks fetus. The following parts were modeled: periotic labyrinth, ossified portion of the otic capsule, nerves, arteries, veins, tensor tympani muscle, and stapedius muscle. However, only the arterial supply to the capsule as shown in this model is described. It consists of branches of: (1) the inferior tympanic artery, branch of the ascending pharyngeal artery; (2) the posterior meningeal artery, branch of the occipital artery; (3) the recurrent mastoid artery, branch of the occipital artery; (4) the stylomastoid artery, branch of the posterior auricular artery; (5) the accessory stylomastoid artery, branch of the auricular branch of the posterior auricular artery; (6) the subarcuate artery.—*Author (courtesy Wistar Bibl. Serv.).*

8379. **COTRONEI, GIULIO, e ALDO SPIRITO.** Costituzione zoologica e trapianti. II. Esperienze tra Anuri e Urodeli. III. Nuove esperienze tra Anuri e Urodeli. [Zoological constitution and transplants. Experiments on anurans and urodeles.] *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 11(4): 425-429; (9): 854-856. 1930.—II. The authors obtained, as in homoplastic grafts, positive results in the union of the optic vesicles of *R. esculenta* with those of *Triton;* of the brain of *R. esculenta* with the eye of *Triton;* of olfactory placodes of *R. esculenta* with those of axolotl. The authors also discuss the destructive processes which the heteroplastic transplants meet, as the host, having terminated its embryonal development (vitelline absorption), enters larval life; because only then new humoral relations are established (Cotronei) and, therefore, a new biochemical aspect exists. The authors also record a case of union, via an optic nerve, between the transplanted eye of *Bufo vulgaris* and the brain of axolotl.—III. Anlagen of the eye, of the olfactory

placode, and of the brain of embryos of *Triton*, transplanted to embryos of *Rana esculenta* or *Bufo vulgaris*, are rapidly destroyed shortly after the operation. This embryonal destruction differs from the larval destruction in the inverse transplants (described above) since in the former, the host immediately shows itself incompatible with the transplants, thus stopping their differentiation; while in the second case, the host becomes incompatible only when it has reached the end of embryonal development and is entering the larval stage. This has permitted a differentiation in the anlage of the transplanted organs. This embryonal incompatibility has not held true when anlagen of *Triton* have been transplanted into embryos of *Hyla arborea*, thus showing how, among related forms (various species of Anura), profound differences in biochemical constitution may exist.—*G. Cotronei* (*transl. by G. A. Bica and T. T. Job*).

8380. **DROOGLEEVER FORTUYN, A. B. (edited by).** A catalogue of the first 400 specimens of the human embryological collection in the Department of Anatomy of the Peking Union Medical College. *China Med. Jour.* 41(2): (Anat. Suppl.) 1-94. 11 pl. 1927.—The material was collected between 1919 and 1925 and includes specimens of the white race, Korean race, mixed races, and 2 Manchus but the majority (356) are Chinese, from various provinces. Protocols are given in a table supplemented by notes on special points and on methods. The Chinese material is divided into 2 groups. The normal group is analyzed for increase in weight (2 curves) and for age determination. The factors considered in the latter are, hair, finger nails, genitalia, separation of fused eyelids and disappearance of nasal plug. Specimens were examined for Mongolian spot, but it was concluded that since bluish discoloration occurring in the sacral region is often like that in all surface hollows, the skin of dead fetuses is unfavorable for the study of skin pigmentation. The pathological Chinese series is classified with brief discussion of the principal anomalies.

8381. **DUBINKIN, G., und A. MOTNENKO.** Über die Entwicklung der Menisken des Kniegelenks. *Arch. Klin. Chir.* 165(3): 539-552. 8 fig. 1931.—Examination of the meniscus in 16 fetuses (premature and mature) 9.5-71 cm. long showed that in the first the knee joint meniscus was barely indicated, in the last it was fully developed (about 2nd month post natal life).

8382. **FOLEY, JAMES O.** The cytological processes involved in the formation of the scalae of the internal ear. *Anat. Rec.* 49(1): 1-13. 2 pl. 1931.—In the pig embryo, as contrasted with human, the scala vestibuli slightly precedes the scala tympani in time of appearance as development progresses from basal to apical turns of the cochlea. Cytologically, the first step in the formation of the scalae is an enlargement of the mesenchymal spaces. Cavities thus initiated coalesce to form still larger areas. The initial process seems to consist of liquefaction accompanying attenuation, separation, and retraction of the mesenchymal strands, but this is soon followed by visible degeneration of these strands and the removal of granular débris by connective-tissue macrophages. The scalae thus enlarge through destruction of the mesenchyma. Measurements of the growing cochlea show that, during the period in which the initial formation of the scalae takes place, there is less growth in the main axial and basal planes than at any subsequent or preceding period. Therefore, it is believed that mechanical growth stresses play an insignificant part in the early formation of the periotic spaces. Indeed, the evidence obtained by other authors from experimental removal of the otocyst suggests that the degenerative changes that occur at the site of the periotic spaces and that initiate the formation of the scalae, as described in this article, arise in response to factors resident in the membranous labyrinth.—*Author* (*courtesy Wistar Bibl. Serv.*).

8383. **FUKUDA, YOSHINOBU.** Beiträge zur Entwicklungsgeschichte und Morphologie des Laryngotrachealskeletts von Megalobatrachus japonicus. *Folia Anat. Japonica* 9(2): 169-181. 1931.—The anlage of the laryngotracheal skeleton first appears in 20-mm. larvae on either side of the larynx as a rod-shaped body, the primitive arytenoid, which later sends from its lateral margins the slight processus muscularis. In 30-mm. larvae the pars arytaenoidea prolongs caudodorsally as the pars trachealis. In 80-mm. larvae the pars trachealis has been greatly elongated and fuses dorsally in its cranial part with that of the opposite side, forming the pars cricoidea. The whole cartilago lateralis now is composed of fibrocartilage, while the ventral part of the pars arytaenoidea and the caudal part of the pars trachealis show the character of juvenile hyaline cartilage. The pars arytaenoidea forms ventrocaudally the processus vocalis. In 179-mm. larvae the cartilago lateralis consists of the pars arytaenoidea, pars cricoidea, and pars trachealis. All these parts are connected with one another. The greater part of the ventral portion of the pars arytaenoidea and the caudal part of the pars trachealis have been differentiated into typical hyaline cartilage, the former gives off dorsocaudally the processus trachealis.—*Author* (*courtesy Wistar Bibl. Serv.*).

8384. **HARTMAN, CARL G., WARREN H. LEWIS, FRED W. MILLER, and W. W. SWETT.** First findings of tubal ova in the cow, together with notes on oestrus. *Anat. Rec.* 48(2): 267-275. 1 pl. 1931.—The first was in the 2-celled stage, removed 48 hrs. after mating. It measured in the living state 135.5 × 135 μ, inside zona, which was 15 μ thick. The egg refused to divide further in blood plasma. The 2nd egg, unfertilized, was removed 72 hrs. postcoitum. Of this egg the inside diameter of the zona was 145 × 140 μ. Photographs of the eggs taken in the living state are included in a plate. At 48 hrs. the uterine horns contained a thick viscid fluid with a pH of 9; at 72 hrs. this mass had been expelled into the vagina, and the meager uterine fluid had a pH of 7. A 3rd cow had not ovulated 72 hours postcoitum. The reproductive history of the 3 cows, including their oestrous cycles, is given.—*Authors* (*courtesy Wistar Bibl. Serv.*).

8385. **HILL, J. P., and J. FLORIAN.** The development of head-process and prochordal plate in man. *Jour. Anat.* 65(2): 242-246. 1 fig. 1931.—Study of a young human embryo (Dobbin embryo, 960 μ long) supports the conclusions that the head-process, which arises as a forward growth from Hensen's knot and is accompanied by forward extensions of the primitive streak mesoderm, becomes distinguishable during development (embryos "Dobbin," "Rossenbeck," "Ingalls") into 2 portions, a caudal part which early assumes the form of a typical chorda-canal and a cranial part which undergoes differentiation in the caudo-cranial direction into a median chorda-process (later transforming into a chorda-canal) and 2 lateral mesodermal bands ("gastral or archenteric" mesoderm). In all the stages studied the head-process passes into continuity at its cranial end with the mesoderm of the prochordal plate. Those stages have furnished no definite evidence of a participation of the prochordal plate in the formation of the chorda-canal.

8386. **LEIRI, F.** Über die Knorpelfuge vor dem ovalen Fenster. *Acta Oto-Laryngol.* 15(1): 74-84. 5 fig. 1931.—Study of 3 embryos (of 3, 5 and 6 mos.) convinces the author that, contrary to Eckert-Möbius, the formation of the synchondrosis found in the fetal labyrinth capsule from the 5th mo. on (and sometimes later in the form of the postembryonic cartilaginous rests) is not dependent on the presence of vessels; these do not precede but follow the laying down of the cartilage.

8387. **MOOKERJEE, HIMADRI KUMAR.** On the development of the vertebral column of Anura. *Phil. Trans. Roy. Soc. London B* 219(465): 165-196. 5 pl., 3 fig. 1931.—*Rana temporaria, Bufo melanostictus, Bombinator igneus* and *Xenopus laevis* are chosen as different types. The centrum is formed by a part of the perichordal tube formed by the skeletogenous layer which is very thin in the vertebral region, so that apparently the dorsal arcualia rest directly on the sheath of the notochord.

Intervertebral bodies are a part of this perichordal tube. There is no justification for dividing the intervertebral body into interdorsal and interventral. The intervertebral body divides into two as condyle and socket by the migration of a strand of connective tissue cells, the direction of which determines the nature of the vertebra, viz., the procoelous or the opisthocoelous type. As the centrum is not formed from the dorsal arcualia, the original types of formation of centrum and its classification cannot stand, viz., the epichordal and the perichordal types. In the first 2 types, the whole of the perichordal tube chondrifies and ultimately ossifies. In the latter 2 types, the dorsal portion of the perichordal tube chondrifies and ossifies, the rest degenerates into a membranous state. In *Xenopus laevis* there is a rectangular-shaped cartilage, formed by the chondrification of the mid-ventral portion of the perichordal tube throughout the whole of the vertebral column, which degenerates ultimately. Between the occipital arch proper and the atlas arch proper, there is an intercalated arch, the division of the 2 limbs of this arch forms the occipital condyles and the cups of the atlas. In *Bombinator igneus* and *Xenopus laevis* the 2nd, 3rd and the 4th vertebrae have long transverse processes which are formed not only from the transverse processes proper, but also from a fusion of the ribs, which lose their identity with ossification. In each of the 4 cases, viz., *Rana, Bufo, Bombinator* and *Xenopus,* the transverse processes of the 9th vertebra articulate on the side of the ilium a little below its tip.—*H. K. Mookerjee.*

8388. PANKRATZ, DAVID S. The development of the suprarenal gland in the albino rat, with a consideration of its possible relation to the origin of foetal movements. *Anat. Rec.* 49(1): 31-49. 12 fig. 1931.—The suprarenal gland in the albino rat appears first in the 13-day-old fetus. A slight thickening of the coelomic epithelium medial to the cephalic portion of the mesonephros marks the anlage of the suprarenal cortex. Growth at the time is rapid, and during the 15th-16th days the cortex forms an oval mass protruding into the dorsal coelomic cavity. About the 16th day, just before fetal movements begin, cells migrate from sympathetic ganglia toward the cortex. At the time (16 days or more) when fetal movements have been first observed by Swenson and by Angulo, a definite mass of sympathochromaffin cells is located among the medial cell cords of each cortex. This cell migration continues during the 17th and 18th days and possibly till birth. In the 17-, 18-, and 19-day fetuses nerve fibers which connect the gland with the sympathetic chain are observed with large ganglionic cells along their course. From the literature on different phases of suprarenal development and appearance of fetal movements in the chick, mouse, rabbit, cat, and man, the author concludes that in these animals a coincidence in development of gland and fetal movements exists similar to that in the rat.—*Author (courtesy Wistar Bibl. Serv.).*

8389. PATTEN, BRADLEY, M. The embryology of the pig. 2nd ed. 327p. col. frontispiece, 168 fig. (2 col.) P. Blakiston's Son & Co.: Philadelphia, 1931. Pr. $3.50. —The subject matter of this book is not essentially different from that of the 1st edition except for the inclusion of original data connected with the changes in the mammalian circulatory system at or near birth. The work is primarily a text for students with some zoological background, presumably including a course on the embryology of the frog and chick. The first chapter is a foreword to the student on the significance of the subject, particularly for those engaged in the study of medicine, while the second deals with the reproductive organs of the adult ♂ and ♀ pig, gametogenesis, sex-determination, and ovulation. Following this is a chapter on the sexual cycle and fertilization. This serves to introduce the definitely embryological phase of the subject, which begins with a discussion of cleavage and the origin of the primary germ layers. Following this is a chapter on the early development of body form and the establishment of the organ systems, and another on the extra-embryonic membranes and the relation of the embryo to the uterus. The external appearance of a pig of 10 mm. C. R. length is then taken up, together with a description of the condition, at this stage, of each of the organ systems whose origin was previously noted; there are separate chapters devoted to the further development of each of these systems. The histogenesis of bone, and the development of the skeleton, face and teeth are given special treatment in the last 2 chapters as particular illustrations of certain general cytological activities and method of differentiation.—*R. S. McEwen.*

8390. PECK, SAMUEL M. The melanotic pigment in the skin, hair and eye of the gray rabbit: its embryologic development and the question of the mesodermal origin of epidermal melanoblasts. *Arch. Dermatol. & Syphilol.* 23(4): 705-729. 14 fig. (3 col.) 1931.—Melanin formation began in the epidermis and hair matrix cells of the bulb in the 85-mm. embryo, while the cutis and papillae were entirely free from pigment. Pigment formation was autochthonous in the ectodermally derived melanoblasts of the epidermis and hair; the mesoderm played no part in this process. Del Rio-Hortega's conclusions about the mesodermal origin of the melanoblasts of the epidermis and hair were based on misinterpretations. The melanoblasts which seemed to lie in the cutis, and which he assumed to be mesodermal elements, have been shown to be peripherally situated melanoblasts belonging to the follicular epidermis and upper epidermal hair sheets. The Dopa reaction became positive with the beginning of pigment formation in the melanoblasts of the skin, hair, and eye. It was the 1st evident step in the process of pigmentation, and its duration and intensity were an index of the degree of pigment formation. From the beginning of pigment formation and throughout its active stages, the dendritic melanoblasts were much more numerous than the nondendritic ones; at the height of pigment production nearly all of the melanoblasts showed a dendritic form. The old pigment was cast off with the scales. Chromatophores did not take part in this process in the pigment formation described. —*Author's conclusions.*

8391. SONDERMANN, R. Beitrag zur Kenntnis der Entwicklung des Kammerwinkels und der angrenzenden Organe. *Graefe's Arch. Ophthalmol.* 126(1/2): 173-202. 29 fig. 1931.—Eyes, usually in serial sections, from about 140 human fetuses showed that the first anlage of the iris, the trabecula, and Brücke's ciliary muscle is uniform and is formed by capillaries interspersed with mesenchymal cells. Owing to the extending anterior chamber and the increasing thickening of the sclera the vessels surrounding the chamber angle become obliterated; the former process presses them laterally, toward the sclera on one side, toward the pigment epithelium on the other. Thus they form the first anlage of uveo-scleral trabecula and of the iris, and border the chamber angle. Capillary walls gradually disintegrate, while the mesenchymal cells become differentiated into various tissue fibers on which lie the released endothelial cells of the capillaries. Irido-scleral veins occur mostly in the closed tissue, though part of them are free in the chamber angle; if, through rarefaction, such a vein becomes split, the separate parts can organize and form on one side an iris nodule, and on the other the so-called anterior scleral ring. This origin is corroborated by the fact that the scleral ring is never present circularly, but always appears in isolated spots on or near the tip of the trabecula and in continuation of the irido-scleral vein which runs from Schlemm's canal to the anterior chamber and is undergoing obliteration. The first anlage of the "Skleralwulst" is in the scleral fibers which, owing to penetration of the irido-scleral vein into the sclera proper, lie on the inner side of the vein and of the sinus formed by it. Later they slowly protrude between the capillary fibers running backward from uveo-scleral trabecula. The greater development of the uveal stroma in many animals is due to the fact that in them

the irido-scleral vein or the first stromatic fibers formed in its place upon its obliteration are more strongly developed than in man. In rare human cases the same cause leads to a larger Fontana's space, which is to be regarded in man as atavistic. The stroma designated as scleral or corneo-scleral is formed without participation of the cornea, originating mostly from the uvea and, in less degree, from the sclera; therefore uveo-scleral stroma is a more fitting term. The inner canaliculi of Schlemm's canal originate from a lateral vessel of the irido-scleral vein.

8392. **STEINER, K. Über Hautbezirke mit starker Zellvermehrung bei menschlichen Embryonen.** *Arch. Dermatol. u. Syphil.* 162(3): 577-581. 4 fig. 1931.—A multiple layered, prismatic ectodermal epithelium on a cellular mesoderm poor in fibrillae is found during the 2nd and the beginning of the 3rd embryonic month in the region of the facial and branchial areas, the external genitalia, and the anlagen of the extremities. This is gradually replaced by several layers of cubical epithelium except in the region of the external genitalia and anus, where it is found in older embryos. The reduction of the areas is relative, their surface growth being slight, while the deep growth increases, giving rise to epithelial corns, cones, plates, sutures, and rolls. All these have a special histological structure. During later embryonal life and after birth special processes occur here which often explain disease phenomena due to local differences in the skin.

8393. **TAKAHASI, KEN. Pri la genezo de la papilo de nervo optika ĉe Sus scrofa domesticus. [Genesis of the papilla nervi optici in the eye of the pig embryo.]** *Folia Anat. Japonica* 9(2): 149-167. 20 fig. 1931.—The author used wax and gypsum models as well as sections. The stages studied are referable to No. 68-91 of Keibel's Normentafel. Transformation from the optic vesicle to the optic cup is completed when the chorioid fissure begins to appear in the ventral wall of the cup. At this stage the chorioid fissure comes to possess Szily's "dorsale Falte" in the space which is formed between the inner and outer layer of the cup, being wide especially at the insertion region of the optic stalk. Pari passu with the growth of chorioid fissure, the stalk groove (Stielrinne) appears on the ventral wall of the optic stalk to enclose the hyaloidal vessel. The chorioid fissure first closes in the middle region, and this process proceeds both distally and proximally. As the closure advances the stalk groove closes also successively from the distal end proximally, encircling the vessels in its center. The dorsal fold to which the stalk groove belongs now turns into a short cylindrical papilla nervi optici, surrounding the hyaloidal vessel in its center.—*Author (courtesy Wistar Bibl. Serv.).*

8394. **TREUTLER, KARL. Über das wahre Alter junger menschlicher Embryonen.** *Anat. Anz.* 71(10/13): 245-258. 1931.—The author gives a detailed description of 4 embryos 20, 27, 33, and 45 days old, the periods between cohabitation (conception) and curettage being known. A review of the theories of the period of conception is given.

8395. **WEISSENBERG, RICHARD. Grundzüge der Entwicklungsgeschichte des Menschen in vergleichender Darstellung.** 12th rev. and enlarged ed. 438p. 168 fig., 6 col. pl. Georg Thieme: Leipzig, 1931. Pr. 15 M.—This textbook of human embryology is the 12th edition of the treatise originally written by L. Michaelis. The subject is treated under the following sections:—The germ cells; fertilization; segmentation; gastrulation; formation of the mesoblast, intestine and medullary canal in *Amphioxus;* the mesoblast, chorda and medullary canal in the Amphibia; the germinal layers and first embryonic organs in fishes and birds; the germinal layers, first embryonic organs and egg membranes in mammals; the development of the chorion and placenta in the various mammalian orders. The development of the human ovum is then considered, then the development of the human placenta and decidua and then follow sections on organo-genesis, the systems being considered in the following order:—digestive, muscular, skeletal, the limbs, vascular, urogenital including the adrenal, nervous, the sense organs and the cutaneous. The penultimate section treats of the germinal layers and their relation to the various organs and tissues and the final section considers some results of experimental embryology.—*J. P. McMurrich.*

EXPERIMENTAL

8396. **BIJTEL, J. HUBERTHA. Beiträge zur Schwanzentwicklung der Amphibien.** *Anat. Anz.* 71(4/6): 87-93. 7 fig. 1930.—In development of *Amblystoma mexicanum* vital staining of the posterior portion of the medullary plate showed that the neural tube from root to tip of tail, the mesoderm of the tip, and some terminal somites developed therefrom. The chorda was never stained. A rectangular area excised from the medullary plate in *A. mexicanum* and *Triton taen[iatus]* was implanted at 180° or another neurula implanted in the abdominal ectoderm; in most cases a tail developed directed cranially or laterally; in the autogenous implant a 2nd tail appeared behind it, depending in size on the area between the caudal incision and the blastopore.

8397. **BOROVANSKÝ, LADISLAV. Srůsty druhého a třetího obratle krčního u člověka. (Přispěvek k mechanice Krční páteře.) [Synostosis between the 2nd and 3rd cervical vertebrae in man.]** *Rozpravy České Akad. Věd a Umění Tř. II.* 37(paper 25): 1-6. 1 pl. 1928.—The synostosis between the C_2 and C_3 (without any pathological processes) is much more frequent than between the other cervical vertebrae, which is explained by the minimum flexibility of the cervical spinal column between C_2 and C_3. (The human cervical spinal column is most flexible between the C_4 and C_5, or between C_3 and C_4.) The differences in the flexibility between different cervical vertebrae are characteristic for man.—*J. Florian.*

8398. **FILATOW, D. Entwicklungsmechanische Untersuchungen an Embryonen von Acipenser güldenstädtii und Acipenser stellatus.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(3): 546-583. 21 fig. 1930.—The author has extirpated the ear vesicle of the sturgeon at an early stage, and finds that although the ear capsule does not form, a concentration of mesenchyme cells takes place which gives rise to a cartilaginous structure in the ear region. If the ear vesicle be transplanted to the limb region, limb mesenchyme is attracted to it and surrounds the vesicle as does the rudiment of the auditory capsule. However, not enough limb mesenchyme is withdrawn to prevent the normal development of the limb rudiment. The author compares his results with those obtained on Amphibia.—*From author's summary (transl. by E. K. Hall).*

8399. **HELFF, O. M. Studies on amphibian metamorphosis. VII. The influence of the columella on the formation of the lamina propria of the tympanic membrane.** *Jour. Exp. Zool.* 59(1): 179-196. 1 pl., 1 fig. 1931.—A central area of the lamina propria of the anuran tympanic membrane directly over the tip of the columella becomes considerably thickened and characterized by yellow elastic fibrous elements during metamorphosis. Operations designed to throw light on the possible developmental influence of the columella on this issue were as follows: The columella was extirpated during early stages of development and the tympanic membrane removed and examined histologically, following metamorphosis. No traces of a yellow fibrous area were found in the lamina propria of the membranes. Columellae in various stages of development were extirpated and transplanted, autoplastically, beneath the pigmented membranous covering of the back musculature. In several cases typical histological yellow fibrous areas developed in the membrane directly over the end of the transplant. Annular tympanic cartilages, in fairly well-developed stages, were extirpated, attached columellae removed, and the former then transplanted, autoplastically, with their lateral covering of lamina propria,

to the back, which upon sectioning invariably lacked the yellow fibrous region of the lamina propria. The results indicate that normal development of the yellow fibrous region of the lamina propria portion of anuran (*Rana pipiens*) tympanic membrane is brought about by association and contact of the membrane with the distal end of the rapidly growing columella.—*Author* (*courtesy Wistar Bibl. Serv.*).

8400. MAY, RAOUL M. Répercussions de la greffe de moelle sur le système nerveux chez l'embryon de l'Anoure, Discoglossus pictus, Otth. *Bull. Biol. France et Belgique* 64(3): 355-387. 4 pl., 3 fig. 1930.—A piece of embryonic spinal cord, with the surrounding tissues, was transplanted homoplastically into the hind limb region in embryos of *D. pictus*, at the tail-bud stage. When the implanted spinal cord developed independently of the hind-limb on the same side, the autochthonous spinal cord and its ganglia had a symmetrical structure. But in certain cases the implantation completely inhibited the development of the homolateral hind-leg, while in 2 cases the grafted spinal cord gave rise to a large, well formed nerve, which usurped the functions of the normal lumbo-sacral plexus and innervated the homolateral hind-leg. In these cases of absence of innervation to a hind-limb from the autochthonous spinal cord, there was a reaction on the latter and its ganglia through a sensory and motor hypoplasia. The ganglia were very much reduced, and the lateral half of the spinal cord underwent a marked reduction of its white and gray matter, on the side and along the segments from which the lumbo-sacral plexus was absent. The spinal cord reduction was shown by the absence of the motor horn and by a marked asymmetry. There was also a repetition of the reduction in the neighboring segments. These results show that the hind-limb innervation plays a part in the development of both the sensory and motor neurones of the neuraxis.—*R. M. May.*

8401. MOMIGLIANO LEVI, G. Caratteri dei tenoblasti e comportamento delle fibre collagene nelle culture di tendine di embrione di pollo. [Properties of tenoblasts and collagen fibers in the cultures of tendon of chick embryos.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 321-324. 1930.—Explants of tendon of chick embryos have a long latent period preceding the migration of tenoblasts: the form of the latter differs in the early and late explants; the constitution of the migration zone and elements shows many peculiarities. Development of collagen fibers follows at a very early stage (it may begin in the 4th day of culture). The fibrillae are developed among the tenoblasts; in the 2nd week the formation of bundles begins.—*M. Comel.*

8402. MURRAY, P. D. F., and D. SELBY. Chorio-allantoic grafts of entire and fragmented blastoderm of the chick. *Jour. Exp. Biol.* 7: 404-415. 1930.—In chorio-allantoic grafts of entire unincubated blastoderms of the chick, the central nervous tissue was always tubular and was differentiated into grey and white matter. The endoderm was present as a series of tubes, probably histologically differentiated into intra- and extra-embryonic endoderm. In similar grafts of fragments of unincubated blastoderms the inhibition of differentiation is concluded to be a consequence of the fragmentation, i.e., it is the result of the isolation of the graft from the embryo as a whole.—*J. M. Robson.*

8403. PASQUINI, P. Equipotentiality of the amphibian eye primordia. *Nature* [*London*] 127(3196): 163-164. 1931.—Gives results of experiments in the transplantation of optic vesicles in *Rana catesbiana.*

8404. ROMANOFF, ALEXIS L. Cultivation of the chick embryo in an opened egg. *Anat. Rec.* 48(1): 185-189. 2 fig. 1931.—With the view of obtaining a suitable method of direct continuous observation of the developing chick embryo, under normal and adverse experimental conditions, eggs of various stages of incubation, from newly laid to 8 days, were opened by removing portions of the shell and shell membranes. The results show that it is possible to cultivate the embryo in an egg: opened before incubation—for at least 1 week; opened at from 1 to 6 days of incubation—up to the 19th day; and, opened after 6 days of incubation—up to normal hatching.—*Author* (*courtesy Wistar Bibl. Serv.*).

8405. SCHWIND, JOSEPH L. Heteroplastic experiments on the limb and shoulder girdle of Amblystoma. *Jour. Exp. Zool.* 59(2): 265-296. 8 fig. 1931.—The experiments were performed to study the behavior of portions of the girdle rudiment after heteroplastic transplantation between *A. punctatum* and *A. tigrinum*. In some cases whole or partial limb anlagen were also transplanted. A scapula and suprascapula transplanted to the other species do not keep their specificity of form. The experiments were not conclusive with respect to the ventral zone of the girdle. The presence of tissue from the donor species in one portion of the girdle has no effect on the growth of the remaining portion of the girdle formed from host tissue. The whole girdle rudiment lies anterior to a line formed by a projection of the 4th-5th somite boundary. The presence of a heteroplastic limb affects the size of the spinal ganglia supplying it but not the number of motor neurons in the spinal cord. A *punctatum* limb on a *tigrinum* larva differentiates more rapidly and becomes functional sooner than the normal limb of the host. Many limbs containing tissue from both species were obtained. The distribution of donor and host digits in these limbs showed that the material determined for the formation of digits is localized in anteroposterior direction and that the future radial border of the limb lies more ventrally and anteriorly than the future ulnar border.—*Author* (*courtesy Wistar Bibl. Serv.*).

8406. TWITTY, VICTOR C., and JOSEPH L. SCHWIND. The growth of eyes and limbs transplanted heteroplastically between two species of Amblystoma. *Jour. Exp. Zool.* 59(1): 61-82. 2 pl. 1931.—Eyes and limbs were grafted orthotopically between embryos (tail-bud stage) of *A. punctatum* and *A. tigrinum*. The nutrition was standardized by maximal feeding of both species, so that larvae of comparable size were always available for control. The heteroplastically grafted organs had the same growth rate as their normal controls on the donor species during the major portion of larval life, although differing greatly in size from the normal organs of the host. The experiments show that in transplantations between these two species the difference in size between the transplanted organ and the normal organ of the host species is due to differences in intrinsic growth factors. The close correspondence in size of the heteroplastically transplanted organ and its control on the donor species suggests a similarity in the organic environmental factors regulating the growth of the organ in the 2 forms. A résumé of the results of other investigators on heteroplastic transplantations is given and their relation to the present findings discussed.—*Authors* (*courtesy Wistar Bibl. Serv.*).

8407. WILLIER, B. H., and MARY E. RAWLES. Developmental relations of the heart and liver in chorio-allantoic grafts of whole chick blastoderms. *Anat. Rec.* 48(2): 277-301. 4 fig. 1931.—The differentiation of heart and liver has been studied in chorio-allantoic grafts of whole pellucid areas of chick blastoderms before and after the heart rudiments formed and in all cases before the liver primordium arose. Of 40 grafts examined, a heart developed in 32 and a liver in 24 cases. Both organs are histologically normal, but lack normal form. In 8 grafts the heart rudiment developed without the liver, showing its capacity to differentiate independently of the latter. The liver, however, appears to be dependent upon the heart, since it has differentiated very rarely in its absence. Contact of heart rudiment and entoderm seems necessary for the latter to differentiate into liver since when both heart and liver differentiate they are in contact (over 50% of cases) or in close association (separated by growth mechanics) and, when liver fails, gut tubes not in contact with heart are found. In 10 grafts 2 hearts have developed from each blastoderm. Except in 1 case, a liver has developed either in contact

or in close association with each heart. The entoderm originally in contact with each heart rudiment thus has the capacity to differentiate into liver. This indicates either that the entoderm in contact with each heart rudiment has the specific potencies of liver, or that any entoderm in contact with a heart rudiment may be induced to form liver.—*Authors* (*courtesy Wistar Bibl. Serv.*).

ANOMALIES, MONSTERS AND MARKED VARIATIONS IN DEVELOPMENT

8408. **ANDREUCCI, ARNOLFO.** Sopra un gallo mostruoso. [On a rooster monster.] *Atti R. Accad. Fisiocrit. Siena* 3(2/4) : 431-449. 4 fig. 1928.—In the first article the author describes the monstrosities in a chicken he dissected as completely as possible; a supernumerary foot, not articulated with the pelvis, but attached to the coccyx by ligaments; 2 cloacal apertures; various anomalous doublings and asymmetry in the region of the pelvic girdle and posterior vertebrae; incompletely doubled duodenum and doubled pancreas; 3 caecal appendages to the small intestine; doubling of the large intestine to correspond with the cloacae; some malformations and maladjustments in the urogenital system. The central nervous system apparently had no anomalies, which seem to have been confined to the posterior portion of the body.—*E. W. Count.*

8409. **ANDREUCCI, ARNOLFO.** Sulla diagnosi e la genesi delle mostruosita riscontrate in un gallo. [Diagnosis and origin of monstrosities in a rooster.] *Atti R. Accad. Fisiocrit. Siena* 3(2/4) : 451-464. 1928.—Discussing various types of double monsters, the author classifies this case as rare in manner of attachment of the supernumerary foot; as common in duplicities of that member; as unique in duodenal-pancreatic doubling and as unique in the particulars of this ischio-sacro-melus. The author cannot trace the probable embryonic origin of the anomalies. Granting the formation of 2 embryos, however they may have come about, the posterior ends apparently touched; in consequence of an external stimulus one grew more rapidly than the other, due to their disparate teratogenetic stages.—*E. W. Count.*

8410. **BISSONNETTE, T. HUME.** Tortoishell tomcats and freemartins. A note on the occurrence of fused placentae in cats. *Jour. Heredity* 19(2) : 87-89. 1928.—A preliminary report. A case of complete fusion of placentae in cats is reported. The determination is based on features of gross dissection and the histology of the placental tissue as shown in stained paraffin sections.—*L. M. Dickerson.*

8411. **DUBREUIL-CHAMBARDEL, LOUIS.** Les variations utéro-vaginales par cloisonnement longitudinal. *Ann. Méd et Chir.* 1(1) : 111-116. 9 fig. 1927(1928).—The author classifies the uterine malformations which result from various degrees of retention of the embryologic double uterus and vagina.

8412. **FISCHER, FRANZ.** Über die intraskleralen Ziliarnervenschleifen. (Mit einem Beitrag zur Entwicklungsgeschichte der Ziliarnerven des menschlichen Auges.) *Zeitschr. Augenheilk.* 66(1/2) : 59-78. 10 fig. 1928.—Nerve loops are found 2-3 cm. in front of the angle of the eye, perhaps most frequently on the lower surface. The summit of the loop is thickened by a separation of the fibers, but no neurofibroma exists. A branch from this loop runs anteriorly in the sclera. Blood vessels, from the posterior ciliary or episcleral arteries, are only occasionally associated with the loops, and can have no causal significance. Nor is there any embryological evidence that the nerve takes a false course and returns, thus forming the loop. It is suggested that the nerve grows too long, and that this length is compensated for by formation of a loop as the sclera develops.—*J. L. Bremer.*

8413. **FRANKENBERG, G. v. Vogeleier mit doppelter Schale.** *Zool. Anz.* 78(11/12) : 323-329. 4 fig. 1928.

8414. **HAMILTON, W. F., and MAUDE E. ABBOTT. Coarctation of the aorta of the adult type. I. W. F. HAMILTON, and MAUDE E. ABBOTT. Complete obliteration of the descending arch at insertion of the ductus in a boy of fourteen; bicuspid aortic valve; impending rupture of the aorta; cerebral death. II. MAUDE E. ABBOTT.** A statistical study and historical retrospect of 200 recorded cases, with autopsy, of stenosis or obliteration of the descending arch in subjects above the age of two years. *Amer. Heart Jour.* 3(4) : 381-421. 9 fig.; (5) : 574-618. 3 fig. 1928.

8415. **LATASTE, FERNAND.** Questions tératologiques. III. L'iliomélie et la pubimélie, deux monstruosités radicalement différentes, confondues sous la dénomination de pygomélie. *Bull. Soc. Zool. France* 53 : 90-96. 1928.—Pygomelia includes 2 types of monsters belonging to 2 different series,—iliomelia in the autosite series and pubimelia in the parasite series.—*C. V. Morrill.*

8416. **MOSKOFF, M.** Schistosoma reflexum при овче ембрио. [Schistosoma reflexum in sheep embryo.] [In Bulgarian.] Годишникъ на Софийския университетъ, Ветеринарно-медицински факултетъ. (*Jahresber. Univ. Sofia, Vet.-Med. Fak.*) 4 : 261-270. 2 fig. 1928.—A monstrosity of about 6.5 cm. C. R. length, described in detail, represents a partial schistosoma reflexum.—*A. Kalojanoff* (*transl. by J. W. Scott*).

8417. **PEYRON, A.** Les vestiges embryonnaires de la région sacro-coccygienne et leur rôle dans la production des kystes ou tumeurs d'origine congénitale. Deuxième démonstration. Les vestiges de l'intestin caudal. *Bull. Assoc. Franç. Étude Cancer* 17(8) : 613-632. 12 fig. 1928.—The topographic evolution of the caudal intestine in mammals and man is traced histologically in 10 cases (monkeys and pigs). No observations as yet indicate a neurenteric origin for the caudal intestine. Of the published cases of pelvic and pre-sacral cysts, those of Middeldorpf and Gallelty are the only ones the origin of which can probably be ascribed to the traces in the caudal intestine. The tumors with multiple tissues reported in the neurenteric canal seem to the author to represent unrecognized embryomata of a parasitic type.

8418. **SCHILLINGS.** Le rein en fer à cheval. [Horseshoe kidney.] 104p. 8 pl., 26 fig. Les Presses Universitaires de France, Paris, 1928. Pr. 11 Belges.

8419. **SZANIAWSKI, W.** W sprawie podwojenia serca u zarodków ptasich. [Diplocardia in bird embryos.] [French résumé.] *Kosmos* (*Lwów*) 53(4) : 798-807. 1 pl., 1 fig. 1928(1929).—The author describes 2 cases of diplocardia in bird embryos. The first is from a chick of 44½ hrs. incubation. The body was normal except for the noticeably doubled condition of the heart, the 2 parts of which lay to the right and left. Length of body —3.18 mm.; breadth of right heart—0.226 mm., length—0.211 mm.; left heart—0.226 mm. × 0.233 mm.; distance between hearts—0.181 mm. In the 2nd case (rook embryo, *Trypanocorax frugilegus* L.), the shape of the heart was highly complicated, but its double nature was beyond question. The embryo was platyneural, with 20 prs. of somites. The author believes that the first of his cases could also have survived for fairly long. These cases prove that each omphalomesenteric vein can produce the anlage of a separate heart. The author believes the artificial production of diplocardia to be quite impossible.—*Author's summary* (*transl. by E. W. Count*).

8420. **TAVARES, AMÂNDIO.** Variações do tubo digestivo e suas relações com a clínica. [Anomalies of the digestive tract.] *Arquivo Anat. e Antropol.* [*Lisboa*] 12(1) : 103-188. 16 fig. 1928.—The author observed a case of a clearly bilocular stomach in a ♀ fetus at term. He found Meckel's diverticulum in 5.1% of the cases. He studied the dolichocolon, presenting 2 cases of sigmoid dolichocolon, with other congenital anomalies of the digestive tract.—*A. Tavares* (*transl. by P. L. Risley*).

8421. **WILE, IRA S., and SAMUEL Z. ORGEL. Study of the physical and mental characteristics of Mongols.** *Internat. Clinics Ser. 38* 3 : 145-201. 5 pl. 1928.—This is a presentation of a study of 25 mongolian idiots in terms of their physical characteristics, their intellectual abilities, their educability and their social origins. The variations in the intelligence quotients are marked but

should not be employed too rigidly as the basis of judgment of educational development and industrial capacity. Approximately ⅓ of the monograph is devoted to an analysis of alleged etiological factors. The authors conclude on the basis of a large amount of carefully checked data that none of the present theories are adequate to explain mongolism. The common facies cannot be accounted for by arrest of fetal development, as premature 6 or 7 mos. infants do not have such a facial similarity and further develop later marked variations. The similarity of mental levels shows a definite inhibition of growth in intellect and interferences with association fibers and cerebral organization. The variety of congenital anatomical anomalies in development suggests influences hampering cellular development and possibly inherent in the fertilized ovum. The total pattern of mongolism suggests reversion to some earlier type but there is no evidence of direct inheritance. A bibliography of 102 items is supplied.—*I. S. Wile.*

INVERTEBRATE EMBRYOLOGY AND HISTOLOGY

See also in this issue Entries 6646, 8484, 8527, 8547, 8550, 8617, 8621, 8636, 8700)

8422. **BASSE, ÉLIANE. Pléopode de type femelle chez un crabe mâle sacculiné et trifurcation distale de cet appendice.** *Bull. Soc. Zool. France* 53: 145-148. 3 fig. 1928.—In a ♂ crab of medium size, the abdomen was feminized in its general form and in its ornamentation of marginal setae. In addition to the 2 pairs of copulatory stylets the abdomen bore, on the left side of the 5th somite, a supernumerary pleopod, of the abortive ♀ type, the exopodite of which was trifurcate at its distal extremity.—*C. Pérez (transl. by W. M. Tattersall).*

8423. **FLORY, WALTER S. Jr., and HIRAM M. SHOWALTER. The histology of the bursa copulatrix of the turbellarian Gyratrix hermaphroditus hermaphroditus Ehrenberg.** *Trans. Amer. Microsc. Soc.* 49 (1): 66-71. 1 pl., 1 fig. 1930.—The chitinous wall of the bursa contains large nucleated cells, extending into the lumen and containing sperm. Early stages in the development of these cells, showing thin walls and sperm within the cells, but no sperm in the lumen, are followed by the bursting of the cell wall and discharge of the cell content into the lumen. The remaining cell wall assumes the form of an empty spear-shaped structure, resembling the description of "appendages" in the bursa copulatrix as described by von Graff. The lumen of the bursa contains degenerating marginal cells surrounding a multinucleated protoplasmic mass in which discharged sperm masses are visible.—*C. H. Willey.*

8424. **HAFFNER, KONSTANTIN von. Die überzähligen Bildungen des Körperstammes von Lumbriculus variegatus Müll. und ihre kausale Analyse.** *Zeitschr. Wiss. Biol. Abt. D Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 123 (3/4): 649-681. 25 fig. 1931.—A lateral nick (Kerbschnitt) in the body of a worm injuring the axillary organs leads to the formation of a 2nd (lateral) anterior end in the anterior portion of the body, and, in the posterior, to a 2nd (lateral) posterior end; in the middle region of the body both a lateral anterior end and a lateral posterior end of varying development regenerate; the lateral posterior end always lies cephalad to the lateral anterior end. The causal analysis of the lateral supernumerary formations leads to the conception that they are undoubtedly regenerations of incomplete portions of the worm (not of the entire worm). Probably polarity exerts an influence on the type of supernumerary formation, in the anterior region of the body suppressing the formation of a lateral posterior end, and in the posterior region suppressing the formation of an anterior end. Polarity thus would be at least a partial antagonist of the potentialities in the worm parts incompletely isolated by the cut. Supernumerary formations on the trunk of animals of other groups are compared with those of *Lumbriculus* and apparently can be traced to similar causes.

8425. **MORETTI, GIULIO. Le cellule vescicolose dell'Helix pomatia L. e il tessuto connettivo. [Vesicular cells of Helix pomatia and the connective tissue.]** [French, English and German summaries.] *Arch. Zool. Ital.* 14 (2/4): 157-168. 1 col. pl. 1930.—The reticular connective tissue forms thin layers around the muscle fibers of *Helix* and consists of annular fibrils, sometimes forming a network. This structure is related to the structure of vesiculated cells and to the system of reticular fibrils which forms it support. Observations on the reticular fibrils and on their relations with the peripheral protoplasm of the vesicular cells are given, establishing the affinity between the vesiculated cells and fat cells.—*Author's summary.*

8426. **PENNERS, A. Entwicklungsgeschichtliche Untersuchungen an marinen Oligochäten. II. Furchung, Keimstreif und Keimbahn von Pachydrilus (Lumbricillus) lineatus Müll.** *Zeitschr. Wiss. Zool.* 137 (1): 55-119. 40 fig. 1930.—The egg of *P. lineatus,* without protoplasmic polar cap, displays a spiral type of cleavage resembling that of *Tubifex* with polar cap. Enormous somatoblasts form, teloectoblasts develop posteriorly mesoblastic elements and neuroblasts, the last named being in contact with the germ tract of the dorsal side. The mesoblastic bands unite ventrally, the divisions of the nervous system come in contact, and when 14 segments are present hatching occurs. Germ cells arise from primitive mesoblastic elements, and migrating ventrally become imbedded in the mesoblast of segments 9-11.—*Author's summary (transl. by H. Heath).*

8427. **PÉREZ, CHARLES, et ÉLIANE BASSE. Sur un monstre double de Sacculine.** *Bull. Soc. Zool. France* 53: 139-145. 5 fig. 1928.—In this *Sacculina,* observed on *Carcinus moenas,* the stalk was single, but the visceral mass was almost completely cleft, perpendicularly to the plane of symmetry of the crab, by a deep groove which divided it into 2 approximately equal halves. It was a double monster analogous to what one can imagine to happen by the proximal fusion of 2 *Sacculina* inserted at the same point.—*C. Pérez (transl. by W. M. Tattersall).*

8428. **SONNEBORN, TRACY M. Genetic studies on Stenostomum incaudatum (nov. spec.). 1. The nature and origin of differences among individuals formed during vegetative reproduction.** *Jour. Exp. Zool.* 57 (1): 57-108. 14 fig. 1930.—In studies on *S.* **incaudatum*** (p. 60), source unknown but probably eastern U. S. A., it was found that lead acetate had different effects on the anterior and posterior products of division. The present paper deals with the grounds for this difference. Series of only anterior products of division went through a continuous process of development, finally decreasing in rate of division, degenerating in structure, and dying. Such a series, therefore, has the characteristics of a single individual producing offspring from its posterior end. These posterior products of division have the characteristics of young, newly-formed individuals. A series of only posterior products of division ordinarily does not show continuity of development, decrease in rate of division, degeneration in structure, or death. Such a series is "potentially immortal." Among individuals (i.e., series of only anteriors) of a clone, there were 11 types differing in structure, development and length of life. Ten of these types—including, however, only 3% of the individuals produced—are derived only from parents undergoing structural degeneration. Within each type there is variation in the number, position, form and nature of the structures characteristic of advanced age, and in the sequence of the stages of degeneration. Differences in the structural endowment of the 11 types

of individuals are determined not merely by the age, but also by the structural condition of the parent. Some of the structures arising with age are at times transferred from parent to offspring. Differences in later development depend partly on the extent to which this occurs. Differences in length of life depend chiefly on differences in original structural endowment and on differences in the course these structures follow during development. Knowledge of these differences among individuals of a clone is important in understanding the effects of environmental conditions.—*T. M. Sonneborn.*

8429. **STAUDINGER, FRITZ. Heteromorphosen an Stigmen und anderen Gebilden bei Carausius (Dixippus) morosus Brunner. (Versuche und Naturfunde.)** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(2): 316-378. 36 fig. 1930.—Experiments on the regeneration of parts of the spiracular closing apparatus of *C. morosus* were undertaken to determine something of the mechanics of developmental processes of partially symmetrical structures. The experiments were suggested by the facts that: (1) when an eye is removed a structure resembling an abdominal spiracle is regenerated in its place, (2) no regeneration results upon removal of an entire closing apparatus, (3) enantiomorphism exists between the 1st and 2nd thoracic spiracular apparatus of the same side. Each spiracle has 2 dissimilar closing plates, the 2nd spiracle differing from the 1st in having the 2 plates in the reversed position. Three sets of regeneration experiments were performed on the 1st spiracle. When either the entire structure or only the anterior plate was removed no regeneration took place. With the removal of the posterior plate there might be (a) a reduction of the spiracle and adjacent parts of the pronotum with a possible closure of the stigmal orifice, or (b) modification of adjacent parts, or (c) heteromorphotic regeneration of the posterior plate whereby a plate is formed having the characters of the anterior plate but in mirror image, or 2 such plates are regenerated, in which case the spiracular cleft is surrounded by 3 similar plates. It is suggested that this type of development may be due either to a reversal in regeneration (proximal regeneration) or else to 2 regenerative potencies whereby either the one or the other may function. The occurrence of homoeosis and other abnormalities in other parts of the species under consideration has been observed, such as branched tarsi, reversed structures interpolated between 2 normal parts and antennae exhibiting interpolated leg structures which illustrate a similar type of development. In other experiments in which an eye was removed, a structure closely resembling an abdominal spiracle was developed. Eyes likewise were regenerated regardless of whether the optic ganglion was removed or left undisturbed.—*O. A. Johannsen (from author's summary).*

8430. **TEISSIER, GEORGES. Étude expérimentale du développement de quelques hydraires.** *Ann. Sci. Nat. Zool.* 14(1): 5-60. 23 fig. 1931.—Studies in the normal embryonic development* of *Amphisbetia (Sertularia) operculata**, which is analogous to that of many craspedote medusae, were facilitated by the presence of a yellow pigment accumulated in abundance at one of the poles. An axis with 2 poles can be recognized in the oocyte and followed through all stages of development. The yellow pole is that where the polar globules are emitted, where segmentation begins, and later gastrulation. It corresponds to the posterior extremity of the planula and the oral pole of the hydrarian and ought to be considered as the vegetative pole of the egg. The endoderm of the planula is derived from the vegetative half of the egg. The first planes are meridians and the third, equatorial, separates the ectodermal and endodermal blastomeres. At the fourth division the embryo acquires a bilateral symmetry and a transverse elongation which is later gradually effaced. The blastula, at first spherical, elongates on the morphological axis. Gastrulation is accomplished by unipolar immigration, and the planula thus formed fixes itself after a few days of pelagic life. Experimental studies show that any fragment of the egg (sufficiently large) from the blastomere of stages 2, 4, 8 or 16, or a fragment of the morula or blastula will give a complete planula. Sectioning stage 8 or the blastula equatorially results in 2 complete planulas, one formed from endoderm and one from ectoderm. By experimental grafting and staining it was proved that in the processes of regulation which can transform endoderm into ectoderm or vice versa, the polarity of the fragments is conserved. In *Hydractinia echinata** and *Dynamena pumila** the pole of segmentation corresponds to the oral region as in *Amphisbetia;* but they have the endodermal and ectodermal material of the egg disposed concentrically. Fragments of the planula of *D. pumila*, if large enough, can give rise to normal colonies, but if too small only a single normal individual will be produced. The vegetative pole of the oocyte and egg is the most sensitive to chemicals; but in the blastula stage the maximum sensitivity is at the animal pole.

8431. **YUNG-TAI, TCHANG. Recherches sur l'histogenèse et l'histophysiologie de l'épithélium de l'intestin moyen chez un lépidoptère. (Galleria mellonella L.)** *Bull. Biol. France et Belgique Suppl.* 12. 1-144. 6 pl., 19 fig. 1929.—The writer first studied the habits and development of *G. mellonella* at 30°-32° C. The period of development of each stage was determined and a curve for growth in length of the larva was drawn. Particular attention was paid to the morphological characters of the larva which made it possible to recognize the approach of the molts and so to study histological phenomena during ecdysis. More than 2000 larvae of various ages were studied histologically, as well as about 1000 embryos and as many pupae. In general the larvae were fixed at intervals of 2 or 3 hrs. from one molt to the next. The histological technic is described and particular stress is laid on the value of the staining method in which magenta, picric acid, and light green were used. The epithelium of the mid-intestine of the larva is composed throughout its life of 2 categories of functional cells (cylindrical and goblet) and of small basal cells. The same cells were found in the embryonic mesenteron. During each larval molt a new epithelium is formed from the basal cells. At the beginning of their differentiation 2 categories of basal cells exist which develop directly into cylindrical cells or into goblet cells. Both types of cells degenerate from time to time. The formation and regeneration of the striated border of the cylindrical cells are described. A membrane on the surface of the striated border is formed at the same time as the striated border itself. When it separates from the border, it becomes a layer of the peritrophic membrane. The normal food of *G. mellonella* contains or yields substances that are blackened by osmic acid when absorbed. Since bodies were found only in the mid-intestine and only in the cylindrical cells there, it was concluded that absorption takes place only in the cylindrical cells of the mid-intestine, which degenerate at the end of each phase of absorption. The goblet cells appear to have a secretory function only. The cylindrical cells also seem to secrete at certain periods as indicated by the presence and behavior in the cells of granules which stained with acid fuchsin. The secreting cylindrical cells degenerate in the course of the evacuation of their products of secretion. The writer believes that a cylindrical cell during its life functions in either absorption or secretion and can not assume both functions, and that generations of secreting cells alternate with generations of absorbing cells. Both secreting and absorbing cylindrical cells in the course of degeneration produce 3 types of formations at the expense of their cell substance; i.e., nipples, spherical corpuscles, and shortened cells. The shortened cells are those that have lost their apical portion. Sometimes they acquire a new striated border. The nipples and corpuscles are similar to the secretory vesicles described by other writers. The writer believes, however, that these bodies are simply part of the degenerating cell and have nothing to do with secretion. In studying

the changes in the mid-intestine during metamorphosis, the writer has described step by step the diminution of the volume of the mid-intestine, which is effected by the folding of the epithelium followed by the detachment of the folds formed. The epithelium is renewed following the detachment of the larval epithelium and the renewals of the epithelium continue during metamorphosis. Similar renewals occur in the epithelium of the adult. The goblet cells are absent after the renewal of the larval epithelium, all the cells then being cylindrical. The secretion and degeneration of these cells, as well as the evolution of the basal cells during the whole metamorphosis, are described. In considering the origin of the basal cells the writer finds that they are isolated in the embryonic mesenteron and are grouped in nidi in very young larvae. In each nidus there is generally only one cell capable of dividing, which is situated at the center of the nidus. This is called the initial cell. However, the number of nidi, and hence the number of initial cells, increases considerably during the larval stage. The author believes that the initial cells may divide at certain times to form 2 initial cells which start new nidi. The parallel increase in the number of basal cells and of functional cells shows that the activity of the basal cells reaches its maximum during the larval stage. The continuous partial renovation of the epithelium is interpreted as a physiological renovation, whereas the periodic complete renovation at the approach of each molt is considered hereditary. Finally, certain elements in the cytoplasm of the cylindrical cells appear to be endogenous cells. Many of the foregoing points were also studied in the larva of another species of bee moth, *Achroia grisella* F. An extensive bibliography is included.—*F. L. Campbell.*

PROTOZOA

D. H. WENRICH, *Editor*

(See also in B. A. 6(2): (Gen. Biol.) 3048, 3058, 3066; (Cytol.) 3195; (Ecol.) 3304, 3311, 3319, 3324, 3347; (Physiol.) 3552, 3598, 3808, 3809, 3831, 3914; (Pharmacol.) 4030, 4055, 4059; (Pathol.) 4090, 4151, 4152; (Immunol.) 4307, 4308; (Parasitol.) 4309, 4310, 4311, 4312, 4313, 4315, 4317, 4318, 4319, 4320, 4323, 4324, 4325, 4326, 4327, 4328, 4329, 4330, 4331, 4332, 4333, 4334, 4335, 4337, 4340, 4341, 4343, 4344, 4345, 4346, 4347, 4350, 4351, 4352, 4353, 4355, 4356, 4357, 4358, 4359, 4360, 4361, 4362, 4363, 4364, 4365, 4366, 4368, 4369, 4373, 4374, 4375, 4377, 4378, 4379, 4380, 4381, 4382, 4383, 4386, 4387, 4389, 4391, 4392, 4393, 4394, 4395, 4396, 4398, 4399, 4400, 4401, 4402, 4403, 4404, 4405, 4406, 4407, 4408; (Soil) 4527, 4530; (Entomol.) 4664, 4709; (Animal Production) 4765, 4789; (Algae) 4984, 5003, 5004; (Paleont.) 5233, 5255, 5256, 5259, 5265, 5267, 5271; (Syst. Zool.) 6048; and in this issue Entries (Gen. Biol.) 6075, 6105; (Genetics) 6134, 6190, 6203; (Plankton) 6318; (Pathol.) 7191, 7192; (Immunol.) 7463, 7503, 7504, 7505, 7506, 7507, 7508, 7509; (Parasitol.) 7511, 7512, 7517, 7520, 7525, 7527, 7528, 7531, 7534, 7536, 7537, 7538, 7539, 7540, 7547, 7553, 7556, 7558, 7559, 7560, 7561, 7564, 7570; (Bacteriol.) 7623, 7659, 7737; (Algae) 8050, 8052; (Paleozool.) 8185, 8202, 8206; (Miscel.) 8511, 8586, 9061)

8432. **BALOZET, L. Myxosporidie d'un poisson marocain.** *Bull. Soc. Sci. Nat. Maroc* 9(7/8): 203-207. 1 fig. 1929.—Description of a *Chloromyxum** from the muscles of *Temnodon saltator* in Morocco. It is compared with *C. clupeidae** and *C. quadratum**, and seems to be identical with them both, which are considered one species.

8433. **BANCROFT, L. Flagellates in certain Queensland plants. Preliminary notes.** *Proc. Roy. Soc. Queensland* 39: 22. 1927(1928).—A flagellate in *Sarcostemma australe* and *Hoya australis*, and other species in *Secomone elliptica* and in *Ficus scabra*. *Oncopeltus quadriguttatus* sucks the milky juices of *Sarcostemma* and *Hoya* and harbors flagellates in its intestines. The flagellate is a *Phytomonas*.

8434. **BERRY, E. WILLARD. The Foraminifera of the Restin shale of northwest Peru.** *Eclogae Geol. Helvetiae* 21(1): 130-135. 6 fig. 1928.—The author lists 26 Foraminifera as found in the Restin shale (Middle Eocene), including: *Ammodiscus* **restinensis*** (p. 131), *Bolivina* **restinensis*** (p. 131), *Cristellaria* **multiseptae*** (p. 132), *C.* **peruviana*** (p. 132), *Anomalina grossergosa* v. **peruviana*** (p. 134), and *A.* **restinensis*** (p. 134).—*W. Berry.*

8435. **BERRY, E. WILLARD. The smaller Foraminifera of the Middle Lobitos shales of northwestern Peru.** *Eclogae Geol. Helvetiae* 21(2:) 390-405. 27 fig. 1928.—Lists 75 different Foraminifera from the Saman shale (Eocene) of Peru and describes the following: *Rhabdammina* **samanica*** (p. 392), *Ammodiscus* **peruviana*** (p. 392), *Cyclammina* **samanica*** (p. 393), *Trochammina* **incai*** (p. 393), *T.* **peruviana*** (p. 394), *T.* **boggsi*** (p. 396), *T.* **samanica*** (p. 396), *Textularia* **brakei*** (p. 396), *Gaudryina* **samanica*** (p. 397), *Bolivina* **samanica*** (p. 397), *Lagena* **samanica*** (p. 398), *Nodosaria* **hopkinsi*** (p. 398), *N.* **samanica*** (p. 398), *N.* **spinosa*** (p. 399), *Cristellaria* **samanica*** (p. 399), *Discorbis* **peruviana*** (p. 400), *D.* **samanica*** (p. 400), *Truncatulina lobatula* v. **peruviana*** (p. 400), *T. refulgens* v. **samanica*** (p. 400), *T.* **samanica*** (p. 402), *Anomalina* **perversa*** (p. 402), *A.* **samanica*** (p. 402), *Rotalia* **beccaroides*** (p. 402), *Nonionina* **olssoni*** (p. 403), *N.* **samanica*** (p. 403), *Nummulites* **speciosa*** (p. 404).—*W. Berry.*

8436. **BERRY, E. WILLARD. Asterodiscocyclina, a new subgenus of Orthophragmina.** *Eclogae Geol. Helvetiae* 21(2): 405-407. 1 pl. 1928.—The new subg. is transitional between *Discocyclina* and *Asterodiscus;* type *O.* (*A.*) **stewarti*** (p. 406), from the Eocene, Peru.—*W. Berry.*

8437. **BERRY, WILLARD. Note on the Nodosaria affinis d'Orbigny in the Eocene of Maryland.** *Eclogae Geol. Helvetiae* 22(2): 166. 1929.—*Nodosaria affinis* v. **baggi***, from the Nanjemoy.—*W. Berry.*

8438. **BERRY, WILLARD. The larger Foraminifera of the Atascadero limestone of northwest Peru, South America.** *Eclogae Geol. Helvetiae* 23(2): 489-496. 2 pl. 1 fig. 1930.—The following are reported from the Saman shale (Eocene): *Lepidocyclina* **atascadero*** (p. 491), *L.* **columna*** (p. 492), *L.* **brightoni*** (p. 493), *L.* **carmani*** (p. 494), *L.* **nuttali*** (p. 494), *Operculina* **atascaderensis*** (p. 495), *O.* **peruviana*** (p. 496).—*W. Berry.*

8440. **BROWN, VIRGINIUS E. The neuromotor apparatus of Paramecium.** *Arch. Zool. Exp. et Gén.* 70(6): 469-481. 1 pl. 1930.—The neuromotor apparatus consists of longitudinal ciliary fibrils, transverse commissural fibrils, and internal neurofibrils; all connected in a definite manner to the basal granules of the cilia. The pellicle is definitely sculptured with hexagons and parallelograms. Dimples occur in the centers of these hexagons. The edges of the dimples form hexagons, rhombohedrons, and squares in the contracted condition. The basal granules of the cilia are connected by the longitudinal ciliary fibrils, which curve around on the ventral region so that they meet on the preoral and postoral sutures, and transversely by the commissural fibrils. The internal neurofibrils run from the basal granules into the endoplasm, are perpendicular to the peripheral fibrils and unite with each other and curve toward the region of the mouth. The neuromotor apparatus is composed of fibrils which have both motor and sensory functions.—*V. E. Brown.*

8441. **CHAPMAN, F., and W. J. PARR. Notes on new and aberrant types of Foraminifera.** *Proc. Roy. Soc.*

Victoria 43(2): 236-240. 1 pl., 1 fig. 1931.—**HERONALLENIA** (p. 236) (Rotaliidae), near *Discorbis*, type *H.* **wilsoni*** (*Discorbina w.* Heron-Allen) (p. 240), recent, also includes *H.* **lingulata*** (*D. l.* B. & H.) (p. 240), Oligocene, and *Discorbis kempii* Heron-Allen, recent, is also referred to the genus. **HOFKERINA** (p. 237) (Victoriellidae), type *H.* **semiornata** (*Pulvinulina s.* Howchin) (p. 238), Oligocene. An anomalous specimen of *Homotrema rubrum** is described.

8442. **CUSHMAN, JOSEPH A., and YOSHIAKI OZAWA.** A monograph of the foraminiferal family Polymorphinidae recent and fossil. *Proc. U. S. Nation. Mus.* 77(6): 1-185. 40 pl. 2 fig. 1930.—This study of the family Polymorphinidae is based upon extensive studies of many thousands of specimens. Wherever possible the types were studied in European and other museums, and where not available topotype material was studied. Most studies of this group are based upon side and apertural views, but the basal view gives the key to the development of the test. Both clockwise and contraclockwise arrangements of the chambers occur. In some species these seem to be fixed while in others both clockwise and contraclockwise arrangements occur in the same species. Fistulose outgrowths occur in many species, usually at the apertural end, but in some specimens extend over the whole surface, becoming very complex. Special names have been given such forms by earlier authors, but it seems that they should be grouped with non-fistulose forms of the same basal characters. Fistulose forms are often difficult to identify as the outgrowths may obscure the structure and arrangement of the chambers. The systematic classification of the family is based upon a study of the development and of the geologic sequence of forms. In the earliest Jurassic species the chambers form a loose spiral from which both biserial and tetraloculine forms develop and become extinct in the early Cretaceous. Quinqueloculine forms develop and give rise in later development to numerous groups of triloculine, biloculine, uniserial, and sigmoid forms. A number of new genera and many new species are described, the types of which are indicated: **EOGUTTULINA** (p. 16), type *E.* **anglica*** (p. 16), Cretaceous, England; *E.* **liassica** (*Polymorphina l.* Strickland) (p. 17), Liassic formation, England; *E.* **polygona** (*Polymorphina p.* Terquem) (p. 17), Lr. Lias, France; **QUADRULINA** (p. 18), type *Q.* **rhabdogonioides*** (*Polymorphina r.* Chapman) (p. 18); *Q.* **frondicularioides** (*Polymorphina f.* Chapman) (p. 19), "pebble bed, Littleton"; *Q.* **lagenalis** (*Polymorphina l.* Terquem) (p. 19), Lr. Lias; **PALEOPOLYMORPHINA** (p. 112), type *P.* **pleurostomelloides*** (*Polymorphina p.* Franke) (p. 112); *P.* **gatulina** (*Polymorphina g.* Berthelin) (p. 112), Lr. Carboniferous, France; *Guttulina* **bartschi*** (p. 23), "Albatross" D5178, off Romblon, Philippines; *G. irregularis* v. **nipponensis*** (p. 27), Up. Pliocene, Japan; *G.* **frankei*** (p. 28), Middle Oligocene, Germany; *G.* **hantkeni*** (p. 33), Eocene, Hungary; *G. regina* v. **crassicostata*** (p. 35), Lr. Pliocene, Victoria, Australia; *G. adhaerens* v. **cuspidata*** (p. 37), Cretaceous, England; *G.* **jarvisi*** (p. 39), Tertiary, lower marl, Cipero section, Trinidad; *G.* **lehneri*** (p. 39), Tertiary, lower marl, Trinidad, Brit. W. Indies; *G.* **yamazakii*** (p. 40), "Albatross" D4807, off Cape Tsiuka, Japan; *G.* **kishinouyi*** (p. 40), Up. Pliocene, Japan; *G.* **baileyi*** (p. 41), "Albatross" D2416, off southeastern coast of the U. S. A.; *G. lactea* v. **earlandi*** (p. 45), recent in Mediterranean, Pliocene (Crag) of Sutton and Selsey, England; *G.* **schafferi*** (p. 45), Miocene, Tortonian, *Amphistegina* marl of Grunes Kreuz, Austria; *G.* **woodsi*** (p. 45), Cretaceous, lower Gault, England; *G.* **paalzowi*** (p. 46), Up. Cretaceous of Maastricht, Holland; *Guttulina* **dawsoni*** (p. 47), Quebec; *G.* (*Sigmoidina*) **silvestrii*** (p. 51), Miocene (Janjukian), Victoria, Australia; *Pyrulina* **albatrossi*** (p. 58), "Albatross" D2160, off Cuba; *Globulina gibba* v. **verrucosa*** (p. 67), Lutetian, France; *G. g.* var. **fissicostata*** (p. 67), Up. Oligocene, Germany; *G. g.* var. **longitudinalis*** (p. 68), Pliocene, Italy; *G.* **glacialis*** (p. 71), Pleistocene clays, Canada; *G. inaequalis* v. **dollfussi*** (p. 76), Miocene, lower Burdigalian, France; *G. i.* var. **spinata*** (p. 76), Up. Oligocene, Germany; *G. lacrima* v. **ericia*** (p. 78), chalk marl of Saxon Cement Works, Cambridge, England; *G.* **flexa*** (p. 81), Up. Oligocene, Germany; *G.* **triserialis*** n. sp. (p. 88), Miocene, Helvetian, France; *Pseudopolymorphina* **suboblonga*** (p. 91), Up. Pliocene, Japan; *P. suboblonga* v. **jugosa*** (p. 91), Sea of Japan; *P.* **atlantica*** (p. 94), "Albatross" dredgings off eastern coast of the U. S. A.; *P.* **phaleropei*** (p. 95), Atlantic coast of Massachusetts; *P. rutila* v. **parri*** (p. 100), Miocene, Janjukian, Victoria, Australia; *P.* **paucicostata*** (p. 101), Eocene, Texas; *P.* **ovalis*** n. name (p. 103), *Amphistegina* marl of Grunes Kreuz, Vienna; *P.* **curta*** (p. 105), 32 fathoms, Casco Bay, Maine; *P.* **dollfussi*** (p. 106), Miocene, Burdigalian, France; *P. d.* var. **tenuistriata*** (p. 106) and *P.* **jonesi*** (p. 107), Miocene, France; *Polymorphina* **fornasinii*** (p. 114), recent of Tripoli; *P.* **longistriata*** (p. 115), Thanet beds of Pegwell Bay, England; *P.* **alleni*** (p. 116), Eocene, Isle of Wight, England; *P.* **schlumberger*** (p. 121), Miocene, Aquitanian, France; *P.* **howchini*** (p. 121), Lr. Pliocene, Victoria, Australia; *Sigmomorphina* **nuttalli*** (p. 124), Eocene, Trinidad, Brit. W. Indies; *S.* **lamarcki*** (p. 131), Eocene (Lutetian), France; *S.* **pearceyi*** (p. 132), Dry Tortugas, Florida, 18 fathoms; *S.* **schencki*** (p. 133), Oligocene (Keasey shale), Oregon; *S.* **kotoi** (p. 134), Up. Pliocene, Japan; *S.* **trinitatensis*** (p. 134), Eocene, Trinidad, Brit. W. Indies; *S.* **bornemanni*** (p. 134), Middle Oligocene, Germany; *S.* **galloway*** (p. 135), "Albatross" D4807, coast of Japan; *S.* **vaughani*** (p. 137), Eocene (Cooper marl), S. Carolina; *S.* **aliceae** (p. 139), "Albatross" D4805, off Japan; *Sigmoidella* **plummerae** (p. 142), Eocene, Texas; *S.* **margaretae*** (p. 142), Up. Pliocene, Japan; *Glandulina* **reussi*** (p. 144), Oligocene, Germany.—*J. A. Cushman.*

8443. **CUSHMAN, JOSEPH A., and JAMES A. WATERS.** Foraminifera of the Cisco group of Texas (exclusive of the Fusulinidae). *Univ. Texas Bull.* 3019. p. 22-81. 3 maps, 11 pl. 1930.—Field stations are described and the best collecting grounds are mapped. This upper Pennsylvanian fauna is primitive in character; even specialized types are not complex. Many previously known forms, some new to the Cisco group, are described and figured. *Hyperamminoides* **glabra** (*Nodosinella g.* Cushman & Waters) (p. 36); *Glomospira* **reversa*** (p. 42), Gaptank formation; *G.* **diversa*** (p. 42), Harpersville formation; *Endothyra* **pauciloculata*** (p. 47), Wayland shale of Graham formation; *Trochammina* **grahamensis*** (p. 68), South Bend shale member of Graham formation; *Globivalvulina bulloides* (H. B. Brady), type specimen; *Placopsilina* **ciscoensis*** (p. 74), Graham formation. Types in Cushman coll.

8444. **[DAGAEVA, V. A.]** ДАГАЕВА, В. А. Инфузории Соляного озера Круглой бухты близ Севастополя. **[Protozoa of the Salt lake of Kruglaia Bay, near Sevastopol, Crimea.]** [German summary.] Академия Наук СССР., Труды Севастопольской Биологической Станции. (*Acad. Sci. URSS., Trav. Sta. Biol. Sebastopol*) 2: 31-46. 1930.—Most of the protozoa of the lake are Black Sea forms, fresh water and typical salt lake forms completing the fauna. Higher temp. and a lower salt content favored the abundance of protozoan forms, the salt content being the more important factor.—*S. A. Corson.*

8445. **DENNIS, EMERY WESTERVELT.** The life history of Babesia bigemina in the North American fever tick. *Science* 73(1901): 620-621. 1931.—*Margaropus annulatus* (Say) is the obligatory vector of this protozoan parasite in N. Amer., and its life history, a one-host tick, makes the life history of *B. bigemina* inseparable from the developmental cycle of the tick. Sexual phenomena and sporogony take place in the tick. Details are given. The sporozoites are inoculated into the blood stream of the bovine host in the saliva of the feeding seed-tick, and soon set up an active infection of the erythrocytes of the host.

8446. **DOBELL, CLIFFORD.** Researches on the intestinal protozoa of monkeys and man. IV. An experimental study of the histolytica-like species of Entamoeba living naturally in macaques. *Parasitology* 23 (1): 1-72. 1931.—Detailed report of studies and experiments in inoculation of *Entamoeba histolytica* into *Macacus sinicus*, *M. rhesus*, and *M. nemestrinus*, and also kittens, leads the writer to conclude that the *Entamoeba* living naturally in the three species of monkeys is identical with *E. histolytica* of man. It is possible to isolate any strain of the organism and maintain in vitro for any required period, and to obtain at will any stage in its life history in vitro at any given moment; to introduce this strain into a natural host (*Macacus*), study its behavior therein and recover in culture whenever necessary; and to eradicate it from the host permanently by chemotherapeutic methods. *E. histolytica hominis* (= *E. h. macacorum*).

8447. **DRYDEN, A. L. Jr.** Glauconite in fossil foraminiferal shells. *Science* 74 (1905): 17. 1931.—The author reports 2 more cases.

8448. **GAJEVSKAJA, N.** Über einige seltene Infusorien aus dem Baikalsee. Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS, Cl. Sci. Phys.-Math.*) 1929 (9): 845-854. 4 fig. 1929.—*Dactylophrya* **collinii*** (p. 845), from Gammaridae, Lake Baikal, the genus having been known previously only from the Atlantic Ocean. *Acineta truncata** and *Burscllа spumosa** are also recorded.

8449. **[GRIGOROVA, O. P.]** ГРИГОРОВА, О. П. Малярийный плазмодий обезьян. [Malarial plasmodium of monkeys.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии. (*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*) 7 (10): 698-702. 1929.—Plasmodium found in *Cercocebus aethiopicus* has following characteristics: mature gametocytes were mostly in the form of macrogametocytes, with pale, greenish-blue, net-like protoplasm; the nucleus was situated at the periphery and contained a characteristic achromatic zone. The pigment was rather coarse, greenish-brown, distributed sometimes rather evenly, sometimes concentrated more centrally. In addition to mature macro- and microgametocytes, there were also found young and transitional forms. The blood was characterized by a considerable anisocytosis. Erythrocytes measured 2.6-6.0 μ. There were also polychromatophilia, slight poikilocytosis, and hypochromia. Outward manifestations of disease were very slight. Plasmodium found in *Papio sphinx* differed from the first as follows: young forms were encountered but rarely, usually in the later stage of schizogony, occupying a considerable part of the erythrocyte. Macrogametocytes were slightly larger than a normal erythrocyte, and contained a delicate greenish-blue, reticulated structure, with an evenly distributed delicate greenish-brown pigment. Pigmentation of microgametocytes was also more delicate than in the first case. Gametes were much larger. The author does not affirm that the parasites in the 2 cases belong to different species.

8450. **[GURVICH, V. F.]** ГУРВИЧ, В. Ф. Фауна простейших кишечника лягушек окрестностей Ташкента. [The protozoan fauna of the intestine of frogs in the environs of Tashkent.] [French summary.] Бюллетень Средне-Азиатского Государственного Университета (*Bull. Univ. Asie Centrale* [*Tashkent*]) 14. 47-61. 2 pl. 1926.—All classes of protozoans are represented in this fauna. The protozoans do not seem to be affected by changes in condition of the frogs, such as captivity or hunger. *Opalina elongata* is described in detail in its various phases*. Gametogeny and copulation of *O. elongata* may occur within adult frogs as well as within tadpoles. The systematic characters hitherto employed in the classification of *Opelina* are uncertain and need to be supplemented by cytological characters.

8451. **KARTCHNER, J. A., and ELERY R. BECKER.** Observations on Eimeria citelli, a new species of coccidium from the striped ground-squirrel. *Jour. Parasitol.* 17 (2): 90-94. 1 pl. 1930.—*E. citelli** (p. 94), from *Citelli tridecimlineatus*. Notes are given on host specificity as well as on the life history of the organism including the region of infection within the host. Artificial infections were produced to determine size variation throughout an infection. All infections proved to be self-limited. —*J. A. Kartchner.*

8452. **[KHEĬSIN, E. M.]** ХЕЙСИН, Е. М. К биологии паразитических инфузорий различных беспозвоночных озера Байкала. [Biology of infusorian parasites of various invertebrates of Lake Baikal.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930 (5): 121-126. 1930.—A table lists 55 spp. of invertebrates of various orders, with the number of different spp. of Infusoria found in each at various localities, and the text discusses the meaning of these statistics. The distribution of parasites in Lake Baikal is more or less even.

8453. **KOCH, RICHARD.** Tertiärer Foraminiferenkalk von der Insel Curaçao (Niederländisch West-Indien). *Eclogae Geol. Helvetiae* 21 (1): 51-56. 1 pl., 1 map. 1928. —The author records 13 spp. of larger Foraminifera, among them *Lepidocyclina* **curasavica*** (p. 54) and 6 kinds of smaller Foraminifera from the Oligocene rocks, northwest Curaçao. The map shows the localities.—*W. Berry.*

8454. **LESTOQUARD, F.** Existence de "corps en grenade" dans le cycle évolutif de Gonderia ovis. *Compt. Rend. Soc. Biol.* 100 (14): 1177-1178. 1929.—The existence of "grenade bodies" in *G. ovis* of smaller ruminants is reported. The author concludes that the genus *Gonderia* falls into synonymy with *Theileria*. *Gonderia ovis* becomes *Theileria* **recondita** (*Theileria ovis* being preoccupied) (p. 1178). The hematozoans of small ruminants are *Piroplasma ovis* (ss.), *Babesiella ovis, Theileria recondita, T. ovis, Anaplasma ovis.*

8455. **OZAWA, Y., and A. TOBLER.** Permian Fusulinidae found in Greece. *Eclogae Geol. Helvetiae* 22 (1): 45-49. 1 pl. 1929.—Nine spp. of *Fusulina* are reported from Hydra and Katakupho Isls., including *Sumatrina* **pesuliensis*** (p. 48), Pesulia, Katakupho Isl.—*W. Berry.*

8456. **OZAWA, Y.** A new occurrence of Schwagerina princeps in Sumatra. *Eclogae Geol. Helvetiae* 22 (1): 51-52. 1929.—*S. princeps* Ehrenb. is noted from the Productus limestone (Upper Permian of Meyer) of Telok and referred to the Permian-Carboniferous of the author; the occurrence of *Neoschwagerina craticulifera* Schwager and *Fusulina japonica* Gumbel is also noted.—*W. Berry.*

8457. **PAYNE, M. ANTHONY.** Metachaos granulosa in Kansas; third recorded appearance of Gruber's rare ameba. *Bull. Univ. Kansas, Sci. Bull.* 19 (2): 275-279. 1 pl. 1930.—The species is described and its history discussed.

8458. **PLUMMER, HELEN JEANNE.** Calcareous Foraminifera in the Brownwood shale near Bridgeport, Texas. *Univ. Texas Bull.* 3019. p. 5-21. 1 pl. 1930.—A discussion of the types of Pennsylvanian tests and their alteration precedes the systematic section. **EARLANDIA** (p. 12) (Hyperamminidae), near *Hyperammina*, erected for *E.* **perparva*** (p. 13); *Nodosinella* **perelegans*** (p. 14); *Endothyra* **watersi*** (p. 15); *Endothyranella* **armstrongi*** (p. 18); *Hemigordius* **regularis*** (p. 20); *Orthovertella* **sellardsi*** (p. 21). Types in Plummer coll. Several previously known spp. are also recorded. The transfer by Galloway and Hulton of various spp. to their genus *Endothyranella* is questioned.

8459. **SHIBUYA, MASATAKE.** Notes on two ciliates, Cyrtolophosis mucicola Stokes and Gastrostyla philippinensis sp. nov., found in the soil of the Philippines. *Proc. Imp. Acad.* [*Tokyo*] 7 (3): 124-127. 3 fig. 1931.—*C. mucicola** is described. The author "thinks it reasonable to deal with *C. major* as synonymous with *mucicola.*" *Balantiophorus elongatus* is deemed referable to *Cyrtolophosis*. **PINCHATIA** (p. 126) [no diagnosis; affinities not explicitly stated], erected for *Balantiophorus chaetophorae* Penard and *B. mucicola* Penard. *Gastrostyla* **philippinensis*** (p. 126).

8460. SILVESTRI, A. Sulla Conulites cooki del Carter. *Riv. Ital. Paleont.* 33(1/2): 23-36. 2 pl., 1 fig. 1927.—*C. cooki** is found in the Lr. Eocene of the Sind in Beluchistan, and Arabia. The name *Conulites* Carter is preoccupied by two usages in Mollusca and *C. cooki* was referred to *Dictyoconoides* by Nuttall, but the writer holds that *C. cooki* is incompatible with *D. conditi* Nuttall and is not willing to assign it to that genus. He redescribes the animal and illustrates for comparison with it, *Dictyoconus codon**, *D. pulbroeauensis**, *D. aegyptiensis**, *Orbitolina lenticularis**, and *Chapmania gassinensis**.

8461. TOBLER, A. Über Pseudocyclammina und Choffatella im Schweizerischen Juragebirge. *Eclogae Geol. Helvetiae* 21(1): 212-216. 1 pl. 1928.—After a discussion of the 2 genera the author describes *Pseudocyclammina* personata* (p. 213), from the Malm. The genus *Choffatella* occurrences are summarized.—*W. Berry.*

8462. TOBLER, A. Miogypsina dans le falun de Pontpourquey près de Saucats, Bordilais. *Eclogae Geol. Helvetiae* 21(2): 385-387. 1 pl. 1928.—From the presence of *Miogypsina* the author decides the age of the shell marl is upper Burdigalian and not Helvetian.—*W. Berry.*

8463. TOBLER, AUG. Maeandropsina im Tertiär von Ostborneo. *Eclogae Geol. Helvetiae* 20(2): 321-323. 1 pl. 1927.—Describes *Maeandropsina** sp. from the Lower Miocene of east Borneo.—*W. Berry.*

8464. TOBLER, AUG. Pellatispira im Priabonien von Lenk (Berner Oberland). *Eclogae Geol. Helvetiae* 22(2): 172-175. 1929.—The author states that *P. douvillé* Boussac is not the same as *Nummulites madaraszi* von Hantken and redescribes von Hantken's type as *P. madaraszi* von Hantken sp.—*W. Berry.*

8465. TOBLER, AUG. Alveolinenfunde im Eocän der nördlicher Kalkalpen. *Eclogae Geol. Helvetiae* 22(2): 175-180. 1929.—A discussion, accompanied by a table showing occurrence of the genus but without listing spp., is given of *Alveolina*, as portrayed by 9 authors.—*W. Berry.*

8466. TURNER, JOHN P. A simple apparatus for washing protozoa. *Science* 73(1908): 99-100. 1 fig. 1931.

8467. TUZET, ODETTE. Protistologica XXV. Une grégarine parasite de Bythinia tentaculata L., Gonospora duboscqui n. sp. Appareil de Golgi, mitochondries, vacuome. *Arch. Zool. Exp. et Gén. Notes et Rev.* 71(1): 16-20. 3 fig. 1931.—*G. duboscqui** (p. 16), near Montpellier, France. Studies of cytoplasmic structure are briefly reported, featuring the globose mitochondria, Golgi apparatus, and dictyosomes.

8468. WANG, CHIA-CHI. Notes on some new and rare species of hypotrichous Infusoria. *Contrib. Biol. Lab. Sci. Soc. China. Zool. Ser.* 6(2): 9-18. 10 fig. 1930.—Descriptions of *Urostyla* paragrandis* (p. 9), *Stichotricha* acuminata* (p. 11), *Oxytricha fallax** Stein, *O. caudata** Stokes, *Euplotes* novemcarinata* (p. 16), all from Nanking district.

PORIFERA

M. W. DE LAUBENFELS, *Editor*

(See also in B. A. 6(2): Entries 3319, 5259; and in this issue 6983, 9061)

8469. ARNDT, W. Lebensdauer, Altern und Tod der Schwämme. *Sitzungsber. Ges. Naturforsch. Freunde* 1928(1/3): 23-44. 1 fig. 1928.—Calcarea: spp. live 3 mo. to 1 yr. Triaxonida: no definite ages are known, but these are thought to live the longest of all sponges. Tetraxonida: 1 sp. is known to live at least 2 mo. Cornacuspongida: some are known to live more than 50 yrs. Fresh-water sponges live from a few weeks to more than 4 yrs. Causes of death include senescence, (especially in annual spp. and those producing gemmules), chemical and physical changes in the surrounding water, bacterial infections, and consumption as food by annelid worms, insect-larvae, and especially gastropods. Human agencies are often responsible for destruction to sponges.—*M. W. de Laubenfels.*

8470. ARNDT, WALTHER. Haltung und Aufzucht von Meeresschwämmen. In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden der Erforschung der Leistungen des tierischen Organismus.** Teil 5, Heft 4, Lief. 326. pp. 465-598. 40 fig. Urban u. Schwarzenberg: Berlin, 1930. Pr. 9 M.—A discussion of methods of obtaining marine sponges and of keeping them in the laboratory. Types of dredging equipment and aquaria used, lighting, condition of the water as to temperature, alkalinity, and salinity, together with the food and the enemies of sponges, are considered. A brief summary of methods of open sea sponge culture is given.—*T. C. Nelson.*

8471. BURTON, M. Additions to the sponge fauna at Plymouth. *Jour. Marine Biol. Assoc. United Kingdom* 16(2): 489-507. 9 fig. 1930.—Six spp. are added to the faunal list for Plymouth, collected by M. W. de-Laubenfels, types in the Brit. Mus. *Halichondria* bowerbanki (p. 489); *Mycale similaris* (Bowerb.); *Iophon hyndmani* (Bowerb.); *Endectyon* delaubenfelsi* (p. 492); *Hymedesmia* stephensi* (p. 494); *Myxilla* topsenti (p. 497); PACHAXINELLA (Axinellidae) (p. 503), type *P.* subdola* (*Halichondria s.* Bowerb.) (p. 504). A key to the spp. of *Endectyon* is given, and a key and some redescriptions from types of the 21 spp. of *Hymedesmia* recorded from the British Isles, including *H.* dendyi* (p. 496) and *H.* bronstedi* (p. 497); *H.* armiger (*Hymeniacidon a.* Bowerb.) (p. 499). The validity of *Hymedesmia acutostellata* Hanitsch is questioned.—*M. W. de Laubenfels.*

8472. BURTON, MAURICE. Mission Saharienne Augiéras-Draper, 1927-1928. Porifera. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 157-158. 1 fig. 1929.—A brief note on *Spongilla carteri* and *Potamolepis leubnitziae.*

8473. PELTZMANN, IDA. Amblysiphonella und Bryozoen aus dem Oberkarbon der Karawanken [Jugoslavia]. *Mitteil. Naturwiss. Ver. Steiermark* 67: 123-127. 9 fig. 1930.—*A. alpina** (p. 123); *Geinitzella crassa**; and *Rhombocladia delicata.*

8474. RENOUF, L. P. W. Some new records [of sponges] for the Clyde sea area. *Glasgow Nat.* 9: 65-66. 1919/1930(1931).

8475. WILSON, H. V., and J. T. PENNEY. A new variety of the hexactinellid sponge Rhabdocalyptus dawsoni (Lambe) and the species of Rhabdocalyptus. *Proc. U. S. Nation. Mus.* 76(8): 1-9. 2 pl. 1930.—*R. d.* var. alascensis* (p. 1), 100 fathoms, Cape Spencer, Alaska.—*M. W. de Laubenfels.*

COELENTERATA AND CTENOPHORA

P. L. KRAMP, *Editor*

(See also in this issue Entries 8182, 8185, 8192, 8202, 8205, 8206, 8215, 8430, 9059, 9061)

8476. [LIBROVICH, L. S.] ЛИБРОВИЧ, Л. С. К находке граптолитовой фации верхнего силура в Южном Урале. **(Discovery of a graptolitic facies of the Upper Silurian in South Ural.)** [English summary.] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR. [Leningrad]*) 49(1): 103-118. Map. 1930.—The author records 5 spp. of *Monograptus* suggesting the Ludlow (Silurian) stage, and *Archaeosigillaria* cf. *primaeva* of Upper Devonian age from strata in the Kuragan River. Their bearing on the problematical age of the igneous and metamorphic rocks of the region is of importance.

8477. **WALTHER, CONRAD.** Untersuchungen über die Mitteldevon-Oberdevongrenze (Schluss). *Zeitschr. Deutschen Geol. Ges. A. Abhandl.* 80(2): 97-152. 34 fig 1928.—A theory of septate coral cups is given, and descendants of the Lythophyllacea in the late Middle Devonian are described. **ENTELEIOPHYLLUM** (near *Dialythophyllum*) (p. 103), erected for *E.* **hagenense** (p. 106), and *E.* **sundwigense*** (p. 106); *Neostringophyllum** Wedekind, discussion; *N.* **praecursor*** (p. 111); *N.* **inchoatum*** (p. 112); *N.* **planum*** (p. 113); *N.* **simplex*** (p. 113); *N.* **concavum*** (p. 114); *N.* **complicatum*** (p. 115); *N.* **coniforme** (p. 116); *N.* **regressum** (p. 116); **TEMNOPHYLLUM** (Pexiphyllidae) (p. 120), with *T.* **latum*** (p. 123); *T.* **astrictum** (p. 124); *T.* **nodosum*** (p. 125); *T.* **inflatum*** (p. 126); *T.* **obliguum** (p. 126); *T.* **resupinatum** (p. 126); *T.* **tenue** (p. 127); *T.* **major** (p. 127); *T.* **clavatum*** (p. 128); *T.* **ornatum** (p. 128); **PEXIPHYLLUM** (Pexiphyllidae) (p. 128), with *P.* **primum** (p. 130); *P.* **rectum*** (p. 130); *P.* **altum*** (p. 132); *P.* **arcuatum*** (p. 133); *P.* **ultimum** (p. 133). From early Upper Devonian there are described **APOLYTHOPHYLLUM** (p. 135), with 6 spp.,—*A.* **gracile*** (p. 139); *A.* **cylindricum*** (p. 140); *A.* **brevissimum** (p. 142); *A.* **rectum** (p. 143); *A.* **tenuissimum*** (p. 143); *A.* **normale*** (p. 144). All from Germany. Fourteen zones are defined by these corals. The above are apparently n. spp., although not so labelled.—*L. F. Kindle.*

PLATYHELMINTHES AND MESOZOA

H. W. STUNKARD, *Editor*

(See also in this issue Entries 7512, 7514, 7516, 7519, 7521, 7523, 7524, 7529, 7541, 7542, 7543, 7550, 7551, 7555, 7562, 7564, 8423, 8428, 8490, 8511, 8575, 9061)

8478. **BRIGHENTI, DINO.** Materiali zoologici raccolti dalla spedizione Albertini nello Svalbard Nord-Orientale. IV. Descrizione di una nuova specie di Tetrabotride parassita delle Foche. *Boll. Zool. Unione Zool. Italiana* 2(4): 137-141. 1 fig. 1931.—*Tetrabothrius* **albertinii*** (p. 137) from duodenum of *Phoca maculata.*

8479. **BYCHOWSKY, BORIS.** Neue Dactylogyrus-Arten aus dem Aralsee. *Zool. Anz.* 95(9/10): 233-240. 8 fig. 1931.—*Dactylogyrus* **wunderi*** (p. 234), on gills of *Abramis brama,* Aral Sea, and on *A. brama* and *Blicca bjorkna,* near Leningrad; *D.* **propinquus*** (p. 236), on gills of *Abramis sapa; D.* **culwieci*** (p. 237), on gills of *Barbus brachycephalus* and *B. bulatmai; D.* **simplicimalleata*** (p. 239), on gills of *Pelecus cultratus.*

8480. **EJSMONT, L.** Über zwei Schistosomatidengattungen der Vögel. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B.: Sci. Nat. (II)* [*Zool.*] 1929(8/10): 389-403. 1 fig. 1929.—The genus *Dendritobilharzia* is redefined, based upon specimens of *D. pulverulenta,* the type species. **PSEUDOBILHARZIELLA** (p. 395), is described, type *P.* **kowalewskii** (p. 400), represented only by ♂♂ from an avian host. These specimens had been considered by some investigators to be immature ♂♂ of *Bilharzia polonica,* which had become greatly elongated after death. Ejsmont, however, states that these are mature and that the organs are well developed.—*W. A. Hoffman.*

8481. **HJORTLAND, ARTHUR LORIMER.** On the structure and life history of an adult Triaenophorus robustus. *Jour. Parasitol.* 15(1): 38-44. 1 pl. 1928.—Larval forms of this cestode from the musculature of *Leucicthys tullibee,* and larval and adult forms from the intestine of *Esox lucius,* both from Minnesota lakes, are redescribed. This cestode undergoes its earlier development in some plankton form, possibly a sp. of *Cyclops;* when the latter is eaten by *L. tullibee* the larvae migrate into the musculature and develop further. With the eating of *L. tullibee* by *E. lucius,* the larvae are released and complete their development in the intestine of the latter host.—*O. L. Williams.*

8482. **JOYEUX, C., and JEAN G. BAER.** On a collection of cestodes from Nigeria. *Jour. Helminthol.* 8(1): 59-64. 4 fig. 1930.—Records *Inermicapsifer arvicanthidis* from *Hybomys univittatus, Lemniscomys striatus, Mastomys erythroleucas,* and *Taterona kempi; Inermicapsifer guineensis* from *Arvicanthis rufinus, Cricetomys buchanani,* and *C. emini; Oochoristica herpestis* from *Atelerix spiculus* and *A. spinifex; Raillietina baeri* from *Funisciurus anerythrus, Malacomys edwardsi, Mastomys erythroleucas, M.* sp., and *Praomys tullbergi; R. trapezoides* from *Arvicanthis mordax, Lemniscomys striatus,* and *Taterona kempi; Hymenolepis scalaris* from *Crocidura* sp.; *H.* **pearsei*** (p. 60), from *Hybomys univittatus; H.* **uncinispinosa*** (p. 61), from *Hybomys univittatus, Mastomys erythroleucas; Catenotaenia lobata* from *Mastomys erythroleucas* and *Taterona kempi; Taenia taeniaeformis* from *Rattus rattus* (liver); *Duthiersia fimbriata* from *Varanus* sp. A table gives the differences between *Hymenolepis uncispinosa* and *H. globirostris.*—*F. J. Meggitt.*

8483. **LUCKER, JOHN T.** A new genus and new species of trematode worms of the family Plagiorchiidae. *Proc. U. S. Nation. Mus.* 79(19): 1-8. 1 pl. 1931.—**HAPLOMETRANA** (p. 1), type *H.* **intestinalis*** (p. 2), Washington, in U. S. N. Mus., from intestine of *Rana pretiosa.* A diagnosis is given of the subfam. Plagiorchiinae and the systematic position of the new sp. is discussed.

8484. **MARCU, O.** Über eine Missbildung von Cotugnia poliacantha Fuhrm. [Malformation in C. polyacantha.] *Bul. Fac. Stiinte, Cernauti* 1(1): 194-198. 1927.

8485. **NASONOV, N.** Vertreter der Fam. Graffillidae (Turbellaria) des Baikalsees. Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(8): 727-738. 7 fig. 1930.—**BAICALELLIA** (p. 727), based on *B.* **baicali*** (p. 729), with vars. **fasciata** (p. 730) and **bicornis** (p. 731); *B.* **albicauda*** (p. 731); *B.* **nigrofasciata*** (p. 732); *B.* **pellucida*** (p. 733); *B.* **maculata*** (p. 734) with vars. **coerulea** (p. 734) and **nigra** (p. 735); *B.* **ocellata** (p. 735); *B.* **posieti** (p. 736); *B.* **brevitubus** (*Provortex b.* Luther) (p. 737).

8486. **PERKINS, MICHAEL.** Cambridgeshire planarians (Tricladida) with a preliminary list of the Rhabdocoelida. *Nat. Hist. Wicken Fen* Pt. 4. 346-355. 1 fig. 1928.

8487. **ROBESON, J. M. Jr.** The macro- and microscopic anatomy of Dalyellia triangulata, nov. sp. *Zeitschr. Wiss. Biol. Abt. A, Zeitschr. Morph. u. Ökol. Tiere* 20(2/3): 599-612. 16 fig. 1931.—A short history of the genus *Dalyellia* is given. Methods for preparing these flatworms for study are set forth. *D.* **triangulata*** is new.—*J. M. Robeson.*

8488. **SINITSIN, D.** Studien über die Phylogenie der Trematoden. IV. The life histories of Plagioporus siliculus and P. virens, with special reference to the origin of Digenea. *Zeitschr. Wiss. Zool.* 138(3): 409-456. 15 fig. 1931.—[Trematoda: Digenea: Allocreadiidae] *Plagioporus* **siliculus** (p. 409), Oregon, pseudoparthenita and cercaria* in the liver of *Gonabiasis plicifera silicula;* adolescaria* in the abdominal muscles of *Potamobius* sp., marita* in *Salmo clarki;* the adolescaria in the crayfish are able to produce eggs; *P.* **virens** (p. 415), Oregon, pseudoparthenita and cercaria* in liver of *Fluminicola virens;* adolescaria in the liver of *F. virens* and in the cavity of trematode parthenitae of unknown sp. living in it, marita* in intestine of *Cottus* sp.(?). The development of the ovary, and the life cycle of the group Digenea is discussed and illustrated, with the miracidium and redia of *Fasciola magna.* In hypothetical diagrams the generalized anatomy of the Digenea miracidium (cupar-

thenita), redia (pseudoparthenita), and marita, are illustrated. The Digenea are not related to the Turbellaria or Cestoda, but show relations to the Rotatoria in cell constancy, hexactinian symmetry, certain features of the nervous system, excretory system, the intestine as represented in the rediae, and the ovary. The author places Dinophilea, Digenea, Rotatoria, and Crustacea within one phylogenetic group.

NEMATHELMINTHES AND NEMATOMORPHA

M. C. HALL, *Editor*

B. G. CHITWOOD, *Associate Editor*

(See also in this issue Entries 6179, 6190, 6364, 6365, 6366, 7510, 7511, 7512, 7514, 7522, 7533, 7550, 7552, 7555, 7562, 7564, 9061)

8489. **AUBERTOT, MAURICE. Nematodes d'Alsace. Observations sur le Rhabditis pellio Schneider.** *Bull. Assoc. Philomathique d'Alsace et de Lorraine* 7(3): 178-190. 6 fig. 1927 (1928).—Free-living nematodes from Strasbourg, resembling *R. pellio*, were studied for 5 years in a culture medium of potato soup. The author believes that he has a new strain or race of *R. pellio*. The worms are shorter than known forms and the post embryonic development is more rapid (about 48 hours at 18-20° C.). The 3rd-stage larvae encyst when without food; during dry periods, however, they stand perpendicular to the surface of the medium and cling to flies (*Drosophila*), thus being carried from the unfavorable environment.—*M. Aubertot (transl. by G. F. Otto)*.

8490. **BAYLIS, H. A. Some new parasitic nematodes and cestodes from Java.** *Parasitology* 21(3): 256-265. 9 fig. 1929.—Nematoda: *Spinicauda* **longispiculata*** (p. 256), in the intestine of *Gekko gecko;* **AUCHENACANTHA** (p. 261) (Oxyuridae, Oxyurinae), based on *A.* **galeopteri*** (p. 257), in the intestine of *Galeopterus variegatus,* with also *A.* **spinosa*** ♀ (p. 260), *A.* **corollata** (*Oxyuris corollatus* Schneider) (p. 262), and *A.* **coronata** (*Oxyuris c.* v. Linstow) (p. 262). Cestoda: Oochoristica **parva** (p. 262), in *Lygosoma chalcides; Dilepis* **jacobsoni***, in the intestine of *Eucichla cyanura; D.* **javanica*** (p. 264), in *Eucichla cyanura.*

8491. **CHANDLER, ASA C. New genera and species of nematode worms.** *Proc. U. S. Nation. Mus.* 78(23): 1-11. 2 pl. 1931.—**BOURGELATIOIDES** (p. 1) (Oesophagostominae), erected for *B.* **traguli*** (p. 2), Calcutta, from small intestine of *Tragulus javanicus; Cystidicola* **harwoodi*** (p. 3), New York, from stomach of *Salvelinus fontinalis;* **LITOMOSOIDES** (Filariidae, Filariinae) (p. 4), type *L.* **sigmodontis*** (p. 5), Texas, from thoracic cavity of *Sigmondon hispidus; L.* **circularis** (*Filaria c.* v. Linst.) (p. 6); *Filariopsis* **arator*** (p. 6), Illinois, from lungs of *Cebus* sp.; **FILARIOPSIDAE** (p. 8) (Filarioidea), type *Filariopsis* van Thiel. Types in U. S. Nation. Mus.

8492. **COBB, N. A. Marine free-living nemas. In: Australasian Antarctic Expedition 1911-1914, leader Sir Douglas Mawson.** *Sci. Repts. Ser. C—Zool. & Bot.* 6(7): 5-28. 14 fig. Alfred Kent, Government Printer: Sydney, 1930, Pr. 5 s.—Descriptions and figures of 15 spp. of marine free-living nemas from mud and about the holdfasts of brown algae in Commonwealth Bay, Adelie Land: *Anticoma subsimilis* Cobb, *Tripyloides* **vivipara*** (p. 9), *Monhystera* **naviculivora*** (p. 11), *M.* **neglecta** (p. 12), *M. septentrionalis* Cobb, *Cobbia* **mawsoni*** (p. 14), *Metalinhomoeus* **meridionalis*** (p. 15), *Parasabatieria* **antarctica*** (p. 16), *Chromadora* **dubia*** (p. 17), *Euchromadora meridiana* Cobb, *Spilophora* **aberrans*** (p. 19), *Monoposthia* **apiculata***, **HYPTIOLAIMUS** (p. 22) (near *Oncholaimus,* with *H.* **cephalatus*** (p. 22), *Axonolaimus* **antarcticus*** (p. 23), *A. polaris** Cobb. In the intestine of *Monhystera naviculivora* were many diatoms, chiefly *Navicula cancellata, N. aspera* v. *antarctica, N. gracilia* v. *antarctica,* and perhaps one or two *Achnanthes antarctica.—G. Thorne.*

8493. **CRAM, ELOISE B. A new nematode from the rat, and its life history.** *Proc. U. S. Nation. Mus.* 68(15): 1-7. 2 pl. 1926.—*Protospirura* **columbiana*** (p. 1), from stomach, esophagus and small intestine of rats, in Washington, D. C., type in U. S. Nation. Mus. Key to spp. of *Protospirura* is given. Development of encysted larvae was carried out in cockroaches, apparently reaching the infective stage in 41 days. Mature nematodes were developed in rats which were fed infected cockroaches, and required 115 days to reach the size of nematodes in natural infections. The fact that infection is confined to the vicinity of the Zoological Park suggests that one of the rodents there is the normal host.

8494. **CRAM, ELOISE B. Life histories of some roundworms parasitic in poultry.** *World's Poultry Congress* 4(Sect. C.): 529-534; résumé sect., 67-68. 2 pl. 1930.—The writer records experimental data on the life histories of 5 spirurids of poultry and game birds in the United States. For *Tetrameres americana**, the ♀ of which burrows into the glands of the proventriculus and becomes globular in shape and blood-red in color, grasshoppers (*Melanoplus femurrubrum* and *M. differentialis*) are the intermediate hosts. In the muscles of the grasshoppers, the larvae develop in 42 days, or sooner, to a stage infective for chickens. In the chicken, the immature parasites, after 14 to 16 days, burrow into the glands of the stomach, the ♀♀ preceding the ♂♂. Within 45 days eggs of the parasite are passed. For the gizzard worms, *Cheilospirura hamulosa,* of domestic poultry, and *C. spinosa**, of gallinaceous game birds, *Melanoplus femurrubrum* and *M. differentialis* serve as intermediate hosts, the larvae of *C. hamulosa* being infective for chickens after 22-67 days in the grasshopper. In the chicken, between the 20th and 25th days, the larvae burrow into the muscular wall. They become adults at the end of 76 days. *C. spinosa* does not burrow into the muscular wall, but lies between it and the horny lining. For *Dispharynx spiralis* of poultry and gallinaceous game birds, the sow-bug, *Porcellio scaber,* is intermediate host, the larvae developing to infectivity within 28 days in the sow-bug, and to maturity in 27 days in the bird host. A sp. of *Gongylonema* occurs as larvae in dung beetles, *Copris minutus* and *Phanaeus vindex,* and in chicken or rabbit develop to adults, identified tentatively as *G. ingluvicola,* which occurs in nature in chickens and turkeys.—*From author's résumé.*

8495. **GOODEY, T. On the presence of fats in the intestinal wall of nematodes.** *Jour. Helminthol.* 8(2): 85-88. 1930.—Spp. in which the fats have been demonstrated are: *Rhabditis aspera, R. pseudoxycerca, R. monhystera, Cephalobus rigidus, C. persegnis, Dorylaimus longicaudatus, Plectus granulosus, Diplogaster longicauda, Myolaimus heterurus, Aphelenchus parietinus, A. fragariae, Tylenchus robustus, T. dubius, T. pratensis, T. intermedius, T. musicola, T. hordei,* and *T. dipsaci.*

8496. **GOODEY, T. A new species of the nematode genus Cylindrogaster.** *Jour. Helminthol.* 8(2): 89-92. 3 fig. 1930.—*C.* **ulmi*** (p. 92) from bark of elm, England.—*F. J. Meggitt.*

8497. **GOODEY, T. On the nematode parasite of the frit-fly, Oscinella frit, L.** *Jour. Helminthol.* 8(3): 123-132. 1930.—Describes the morphology and life-history of a viviparous nematode (*Tylenchinema oscinellae*) present in the abdomen of the host and causing sterility. The larvae migrate from the body-cavity of the host to the gut and pass via the anus to the host plant (oats) of the fly, the place of deposition being in the vicinity of

frit-fly larvae hatched from eggs laid by normal flies.—*F. J. Meggitt.*

8498. KREIS, H. A. Freilebende marine Nematoden von der Nordwest-Küste Frankreichs (Trébeurden: Côtes du Nord). *Capita Zoologica* 2(7): 8-97. 8 pl., 4 fig. 1929.—Material collected by the author includes 485 specimens comprising 34 genera with 46 spp.: Chromadoridae, 49%; Monhysteridae, 29.8%; and Enoplidae, 21.2%. Leading forms are *Spirina parasitifera*, 30.4%; *Terschellingia communis*, 11.1%; and *Mononcholaimus elegans*, 11%. Enoplidae, Oxystominae: *Oxystomina* **glandulosa*** (p. 25); **ASYMMETRICA**, with *A.* **brevicauda*** (p. 26); *Acoma* **filicauda*** (p. 27); *A.* **brevicauda*** (p. 28). Enoplinae: *Enoploides* **dura pelle*** (p. 29). Oncholaiminae: *Viscosia* **parva*** (p. 32); *Mononcholaimus* **rusticus*** (p. 34); *Anoplostoma* **elegans*** (p. 37). Enchelidiinae: *Bolbella* **angusta*** (p. 40). Chromadoridae, Camacolaiminae: *Dermatolaimus* **trichodes*** (p. 42). Desmodorinae: **DELTANEMA**, with *D.* **parva*** (p. 44); *Spilophora* **minima*** (p. 47); *Monoposthia* **loricata*** (p. 48). Chromadorinae: **DICHROMADORA** (p. 51), with *D.* **microdonta*** (p. 52); **TRICHROMADORA** (p. 54), with *T.* **longicaudata*** (p. 54); *Chromadora* **exigua*** (p. 55); *Spilophorella* **papillata*** (p. 57); *S.* **gracilis*** (p. 58); **RICHTERSIACEAE** n. tribe (p. 59); **RICHTERSIELLA** (p. 62), with *R.* **tenuis*** (p. 62). Monhysteridae, Monhysterinae: *Monhystera* **gracillima*** (p. 63); *Theristus* **elegans*** (p. 64); *T.* **rusticus*** (p. 65); **MONHYSTERIELLA** (p. 67), with *M.* **gracilis*** (p. 67). Sphaerolaiminae: **CRASSOLAIMUS** (p. 69), with *C.* **conicaudatus*** (p. 69); *Sphaerolaimus* **bretonicus*** (p. 72); *S.* **papillatus*** (p. 73). Linhomoeinae: *Metalinhomoeus* **longiseta*** (p. 77); *Desmolaimus* **longicaudata*** (p. 81). Comesominae: *Sabatieria* **cobbi*** (p. 85); *Parasabatieria* **dodecas-papillata*** (p. 88); *P.* **longisetosa*** (p. 89). Changes in nomenclature: *Oxystomina elongata* Bütschli (=*O. pellucida* Cobb); *Mononcholaimus* **tasmaniensis** (*M. elegans* var. *t.* Allgén) (p. 34); *Bolbella* **attenuata**, n. comb., transferred from *Polygastrophora* de Man (p. 39); genus *Chromadora* Bastian, subdivided into *Dichromadora, Trichromadora, Chromadora* s.s., *Neochromadora, Chromadorella, Macrochromadora* and *Chromarina*; *Dichromadora* **cephalata** (*Chromadora c.* Steiner) (p. 51); *D.* **cricophana** (*Chromadora c.* Filipjev) (p. 51); *D.* **geophila** (*Chromadora g.* de Man) (p. 52); *D.* **parapoecilosoma** (*Chromadora p.* Micol., =*Neochromadora p.* Micol.) (p. 52); *D.* **sabulicola** (*Chromadora s.* Filipjev) (p. 52); *D.* **setosa** (*Chromadora s.* Bütschli, =*Spilophora s.* Bütschli) (p. 52); *Trichromadora* **natans** (*Chromadora n.* Bastian) (p. 54); *Parasabatieria* **longicaudata** (*Sabatieria l.* Filipjev) (p. 87); *Parasabatieria* **quadripapillata** (*Sabatieria q.* Filipjev) (p. 87).—*H. A. Kreis.*

8499. MAN, J. G. de. Beschreibung einer neuen Art der Gattung Craspedonema Richters, Craspedonema zeelandicum n. sp. *Arch. Hydrobiol.* 17(3): 507-514. 12 fig. 1926.—In September, 1925, one ♂ and 2 ♀♀ of this n. sp. were found in cow dung in a meadow not far from Ierseke (Zeeland, Holland).—*P. W. Bowman.*

8500. PAI, SITSAN. Die Phasen des Lebenscyclus der Anguillula aceti Ehrbg. und ihre experimentell-morphologische Beinflussung. *Zeitschr. Wiss. Zool.* 131(2): 293-344. 80 fig. 1928.—(1) The embryo is wormlike 2 days after fertilization and the egg hatches after 3 more days of intrauterine growth. The life period from fertilized egg to physiological death is 49 days for ♀♀ and 48 for ♂♂. The progressive phase averages, respectively, 20 and 30 days; the regressive, 2-3 days. (2) The anteroposterior axis is recognizable shortly before fertilization. The 1st plane of division divides the egg into an anterior (S_1) and a posterior (P_1) blastomere. Dorsoventral axis and median plane are determined in the 3-cell stage. Germ layers are established as follows: fertilized egg (P_0), primary ectoderm (S_1), entomesoderm (S_2) secondary and tertiary ectoderm (S_3, S_4), tertiary entoderm (S_5). Independent primary germ cell (P_2). (3) The S_1 group of cells yields about $\frac{4}{5}$ of the subcuticula with the 2 lateral rows of cells, the nerve and sensory cells, the excretory organ, vulva and spicula; S_2 group, midgut, pharynx, esophagus, body musculature and connective tissue; S_3 group, about $\frac{1}{5}$ of the subcuticula with the 2 lateral rows of cells of the tail; S_4 group, hindgut; S_5 group, somatic parts of the ovary, oviduct, uterus, and receptaculum seminis, and of spermary, vas deferens, vesicula seminalis, and ductus ejaculatorius. (4) "Cell constant" is applicable only to the fullgrown animal and includes constancy in number, form, size, and location. Animals whose development ends in cell constants are called "eutelic animals." They do not have the power of regeneration in any phase and have that of cytoplasmic repair only in the progressive phase. The cell constant of the midgut is reached 2 days after fertilization. The cell constants of other organs, excepting the subcuticula with the 2 rows of lateral cells, and the somatic parts of the reproductive organs, are reached soon after birth. The various organs and their cell constants are listed. (5) Full maturity is attained and growth ceases when the cell constant is reached. Ova 5 days overmature disintegrate; spermatozoa do not. Senility is indicated 2-3 days before death by decreased muscle tone, cessation of reproduction, decided decrease in digestive power, and histological degeneration of organs. (6) The pharynx of *A. aceti* is a digestive organ. The midgut is a simple tube with 18 large epithelial cells but no gland cells; it has become an absorption organ. The central nervous system has 8 ganglia; the peripheral, 5 nerve cords. (7) When the S_1 and P_1 blastomeres are separated, S_1 disintegrates but P_1 develops into an embryo. Amputation of the tail end, including a nucleus or nuclei, kills the animal. If the amputation does not include removal of the nucleus in growing animals, healing or cytoplasmic repair follows. Senile animals die immediately after the amputation. Four tables of amputation experiments are given. There is a summary and a bibliography.—*H. F. Nachtrieb.*

8501. PETERS, B. G. Some nematodes met with in a biological investigation of sewage. *Jour. Helminthol.* 8(3): 165-184. 22 fig. 1930.—The following nematodes from the zoogloeal film surrounding the sewage percolator stones at Brent (London) are described: *Diplogaster striatus**, *Diploscapter coronata**, *Dorylaimus* **saprophilus*** (p. 176); *Rhabditis* sp.*—*F. J. Meggitt.*

8502. RAUTHER, MAX. Zweiter Cladus der Vermes Amera, Nemathelminthes. Allgemeine Einleitung zur Naturgeschichte der Nemathelminthes. In: **Willy Kükenthal's Handbuch der Zoologie** 2(4): 1-7. 1 pl. 1929.—Search for a definition of the term Nemathelminthes shows that the Vermes here assembled as Nemathelminthes, namely, Rotatoria, Gastrotricha, Echinoderida, Nematoda, Nematomorpha, and Acanthocephala, all possess a similar type of organization, although they are not closely enough related to constitute a systematic or phylogenetic type sensu strictu. The history of the concept Nemathelminthes is elaborated.—*M. Rauther (transl. by E. C. Faust).*

8503. REITER, MATTH. Zur Systematik und Oekologie der zweigeschlechtlichen Rhabditiden. *Arb. Zool. Inst. Univ. Innsbruck* 3: (93)-(184). 105 fig. 1928.—The ecological occurrence and method of culture are described. Mold growths, gases, and especially bacteria are of more importance in culture than dryness, too great dampness, or poor food. A detailed account of anatomy, a list of primary and secondary specific criteria, and a key to spp. precede the detailed descriptions of 14 spp., including *Rhabditis* **longispina*** (p. 70); *R. pellio* v. **conica*** (p. 77), in garden soil, Germany; *R. maupasi* v. **gongyloides*** (p. 81), in decayed *Brassica gongylodes**, Germany.

8504. SCHMIDT, OTTO. Sind Rüben- und Hafer-Nematoden identisch? *Wissensch. Arch. Landw. Abt. A. Pflanzenbau* 3(3): 420-464. 9 fig. 1930.—By means of statistics of variation in the length of larvae of *Heterodera schactii*, the presence of 2 separate forms in central Germany was established. The beet nematode was identified as one, and the oat nematode as the other. The statistics show: average larval length, beet-form 0.47,

oat-form 0.575; standard of deviation, beet-form 0.035, oat-form 0.032; coefficient or variation, beet-form 7.5, oat-form 5.6. The two forms differ physiologically in feeding on different plants, in their reaction to stimuli, and in the rhythm of their life cycle. On the basis of morphological and biological differences the larger oat nematode is designated as *Heterodera schactii* spp. **maior** (p. 461); the smaller beet nematode, *H. s.* ssp. **minor** (p. 461). Larvae were measured inside the roots. *H. s. maior* lives on oats, barley, wheat, and rye; *H. s. minor* on Chenapodiaceae and crucifers. In reaction and hatching experiments both races were tested on root secretion of their host plants. In *H. s. minor*, beets and rape produced a very pronounced hatching, whereas oats and wheat had no effect. The reaction experiments with *H. s. maior* were mostly negative, as there was no hatching, and the physiological reaction is not yet clarified. In the past, the infestation of a field could be determined only by picking the cysts from the sediment obtained by washing the soil through sieves, the cysts being examined for their living contents. Now it is possible to determine and predict, on the basis of the length of the larvae, the races present and which plants will be menaced in a rotation. Studies of the geographic distribution of both forms have been made in central Germany and southern Sweden. Only a few cases were examined from the rest of central Europe. The result agreed with the criteria of races. A conclusion as to the crossing of the 2 races cannot yet be made. Apparently crossing does not take place. The fact that the beet nematode is not propagated through rotation on oats is economically important.—*O. Schmidt (transl. by B. G. Chitwood).*

8505. SCHNEIDER, GUIDO. Zweiter Beitrag zur Kenntnis der Brackwasser-Nematoden Finlands. II. *Acta. Soc. Fauna & Flora Fennica* 56 (7): 1-47. 6 fig. 1924-1927.—Redescriptions of 22 spp.; *Chromadora* **pachydema*** (p. 21); *Spilophorella* **dentata*** (p. 28); **DESMOLAIMINAE** n. subfam. (p. 35); *Desmolaimus* **fennicus** (p. 36); unnamed n. gen. and n. sp.* (p. 40); *Hypodontolaimus* **balticus** (*Chromadora baltica* Gui. Schn.) (p. 26). A table showing relative abundance of the 26 spp. is given.—*A. C. Walton.*

8506. SCHNEIDER, GUIDO. Dritter Beitrag zur Kenntnis der Brackwasser-Nematoden Finlands. *Acta Soc. Fauna & Flora Fennica* 56(10): 1-24. 6 fig. 1924-1927[1927].—Records of the occurrence of 37 free-living spp. of nematodes are presented. *Paracanthonchus caecus* v. **balgensis** (p. 8) and *Aphelenchus* **teres** (p. 20) are new; *Viscosia viscosa, Dorylaimus stagnalis, Chromadora macrolaima, Aphanolaimus pulcher*, Monhystera microphthalma, M. stenosoma,* and *Sphaerolaimus balticus**, are redescribed.—*A. C. Walton.*

8507. SCHUURMANS STEKHOVEN, J. H., Jr. Over Nemas en hun larven, IV. [Nemas and their larvae.] [English summary.] *Tijdschr. Plantenziekten* 35(3): 73-95. 3 pl. 1929.—The plant nemas *Aphelenchus fragariae* from begonia, *A. olesistus* v. *longicollis* from *Scilla campanulata* and *Colchicum,* and *A. ritzema-bosi* are described, particularly the head and the esophagus and its bulbus. The author concludes that *A. fragariae* R.B. is not identical with *A. ormerodis* R.B.—*D. L. Elze.*

8508. VOGEL, H., und E. G. VOGELSANG. Neue Filarien aus dem Orang-Utan und der Ratte. *Zentralbl. Bakt. Abt. I. (Orig.)* 117(7/8): 480-485. 4 fig. 1930.—Dissection of an old *Pongo pygmaeus* from Borneo disclosed in the right ventricle 2 ♂ filarids, similar to *Dirofilaria magalhaesi* and *D. immitis,* but specifically different; the authors call it *D.* **pongoi** ♂* (p. 480). The measurements of the new sp. are compared with those of the 2 other spp. of the genus parasitizing the heart of man and dog. A ♀ of another sp. was found in the thoracic muscles of another orang-utan, probably not a *Dirofilaria,* since it is oviparous. In a domestic rat from Java were found 1 adult ♂ and two adult ♀ filarids and numerous microfilariae, the adults apparently originating in the peritoneal cavity and the microfilariae infesting the blood. The authors call the species *D. bonnei** (p. 483).

8509. WEHR, EVERETT E. A new species of nematode worm from the sage grouse. *Proc. U. S. Nation. Mus.* 79(3): 1-3. 3 fig. 1931.—*Habronema* **urophasiana*** (p. 1), Montana, from gizzard of a sage grouse, *Centrocercus urophasianus.* Key to North American spp. of *Habronema* in birds.

8510. WEHR, EVERETT E. Description of a new genus and species of nematode worm occurring in the northwestern belted kingfisher, with a key to the genera of the subfamily Acuariinae. *Proc. U. S. Nation. Mus.* 79(5): 1-4. 5 fig. 1931.—**AVICULARIELLA** (p. 1) (Acuariinae), type *A.* **alcyona*** (p. 1), from gizzard of *Ceryle alcyon caurina,* Montana, in U. S. Nation. Mus.

8511. ANONYMOUS. *Jour. Parasitol.* 14(3): 197-203. 1928.—One hundred fourth meeting held April 16, 1927. E. W. PRICE: (1) Coyote, *Canis latrans texensis,* from Texas, a new host for *Oncicola canis* and *Oslerus osleri.* (2) The occurrence of *Ostertagia bullosa* in a prong horn antelope, *Antilocapra americana.* (3) The civet, *Bassariscus astutus flavus,* a new host for *Uncinaria lotoris.* J. A. SCOTT: In the dog, the normal host of *Ancylostoma caninum,* the number of larvae given per os which will develop varies from 80% in puppies to 1% in older dogs. In the rat, an abnormal host, none will develop; and in the cat from 0.1% to 0.5%. In every case a certain percentage remain as infective larvae. Such larvae recovered after 2 weeks were fed to susceptible puppies and in every case the usual percentage developed normally. Similar larvae when fed to kittens failed to develop, but when recovered 2 weeks later, and fed to puppies, the usual percentage grew. BENJAMIN SCHWARTZ: *Sarcocystis* sp. in the heart of an elk, *Cervus canadensis,* from Helena, Montana. G. F. WHITE: A method for obtaining infective nematode larvae from cultures. One hundred sixth meeting held Oct. 15, 1927. N. A. COBB: Discussed a new sp. of *Ascarophis* from the gills of the sting-ray (to be described in the Jour. Wash. Acad. Sci.). M. C. HALL: Apparently a residuum of anaplasmosis in cattle is being left behind the advancing wave of tick eradication. Diseased cattle from areas free from cattle fever ticks, are apparently not infested by ticks of any sort. This indicates that anaplasmosis is being transmitted by some vector other than fever ticks. One hundred seventh meeting held Nov. 19, 1927. E. W. PRICE: A list of helminth parasites occurring in Texas based on specimens from animals examined post mortem at the A. and M. College of Texas from 1919 to 1920, and on a small collection from local hospitals. The host animals are: horse and mule, cattle, sheep and goat, swine, dog, cat, man, rabbit, chicken, ostrich. BENJ. P. YOUNG: Infestation and prepatent period of *Eimeria avium* in chicks. CHARLES REES: Effects of rice starch on the growth and pathogenicity of *Endamoeba histolytica.* HERBERT RATCLIFFE: Relation of intestinal pH to the intensity of trichomonad infections in albino rats. EUGENE SCHUMAKER: *Iodamoeba* in a chimpanzee. ELIZABETH P. SANDERS: Infestation with 3 different spp. of Protozoa (*Trypanosoma equiperdum, Endamoeba histolytica,* and naturally acquired coccidiosis) cause characteristic changes in the blood of kittens. ROBERT W. HEGNER: The ingestion of red-blood corpuscles by trichomonads. E. B. CRAM: Fiber cells of the banana, passed by a child, and pulp vesicles of citrus fruit, passed by a dog, in the rôle of pseudoparasites. BENJAMIN SCHWARTZ: (1) A nodular disease of the intestine of the carabao in the Philippine Is. due to an undescribed sp. of the nematode genus *Cooperia.* (2) *Cysticercus cellulosae,* 4 days after feeding to dogs, showed some development, 10 days after feeding, considerable growth, but none were found 60 days after feeding. M. C. HALL: At Moultrie, Georgia, from 5,000 swine slaughtered, 19,000 lbs. of livers, kidneys, kidney fat, sweetbread, and casings were condemned on inspection for parasitism.—*J. R. Christie.*

SIPUNCULOIDEA

R. V. CHAMBERLIN, *Editor*

(See also in this issue Entry 9061)

8512. **FISCHER, W. Sipunculidae.** *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 139. 1931.—Collecting notes on 4 spp. taken on the Meteor Expedition.

8513. **HEATH, HAROLD. A connecting link between the Annelida and the Echiuroidea (Gephyrea armata).** *Jour. Morph. and Physiol.* 49(1): 223-250. 3 pl., 2 fig. 1930.—During the course of a hydrobiological survey of Monterey Bay, California, a series of pelagic organisms was taken at a depth of approximately 350 m., which appears to be a link connecting the Echiuroidea on the one hand and the polychaetes on the other. The range in body length is from 5 mm. to 27 mm.; and in an extended condition the anterior end of the body, with its palps and cirri, bears a close resemblance to a nereid. The supra-oesophageal ganglia and the ventral nerve cord, with eleven pairs of ganglia, are also strikingly annelidan in character. On the other hand, the spacious coelom, communicating with the exterior by a pair of anterior nephridia, allies it with the gephyreans. The same is likewise true of the gonad, which arises from the coelomic epithelium surrounding the genital vessel. The various systems are described in detail, and their resemblances to those of other annelids are indicated. The n. fam. **POEOBIIDAE** (p. 244), is erected for the genus **POEOBIUS** (p. 243), type *P.* **meseres** (p. 243). The family is considered, provisionally, to be a member of the class Echiuroidea (*Gephyrea armata*).—*Author (courtesy Wistar Bibl. Serv.).*

8514. **SATŌ, HAYAO. Report of the biological survey of Mutsu Bay. XV. Sipunculoidea.** *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5(1): 1-40. 4 pl., 15 fig. 1930.—Descriptions of all forms of Sipunculoidea found in Mutsu Bay with keys to genera and spp. The following are described: *Sipunculus nudus*; Siphonosoma* **mourense*** (p. 6); *Physcosoma japonicum*; P. scolops*; P.* **glaucum*** (p. 15); *Phascolosoma zenibakense*; Phascolion* **ikedai*** (p. 20); *Dendrostoma blandum*; D.* **hexadactylum*** (p. 28).—*R. V. Chamberlin.*

8515. **STEPHEN, A. C. A new sipunculid worm (Phascolosoma cluthensis, sp. nov.) from the Firth of Clyde.** *Scottish Nat.* 1931(188): 59-61. 2 fig. 1931.—*P.* **cluthensis***, 73 m., type in coll. Scottish Marine Biol. Assoc., Millport.

8516. **STIASNY, G. Verzeichnis der Echiuridae, Sipunculidae und Priapulidae des Naturhistorischen Reichsmuseums in Leiden.** *Zool. Mededeel.* [*Leiden*] 13(3/4): 204-223. 4 fig. 1930.—Data on the Museum material of 5 spp. of Echiuridae [Appendiculata, Echiuroidea], 23 spp. of Sipunculidae [Podoxonia, Sipunculoidea], and 3 spp. of Priapulidae [Podaxonia, Priapuloidea]. Echiuridae: descriptive notes on *Echiurus echiurus, Thalassema caudex,* and *T. fuscum.* Sipunculidae: descriptive notes on *Sipunculus inclusus, Physcosoma albolineatum, P. pelma, P. pectinatum, P. funafutiense, Phascolosoma eremita, P. margaritaceum, Phascolion strombi, P. hedraeum, Aspidosiphon steenstrupii. A. levis, Dendrostoma signifer*,* and *Cloeosiphon aspergillum*.* Bibliography.

ANNELIDA

J. PERCY MOORE, *Editor*

(See also in this issue Entries 6105, 8042, 8179, 8206, 8424, 8426, 8513, 8516, 8568, 9056, 9059, 9061)

8517. **ANNENKOVA, N. Zur Polychaetenfauna von Franz-Joseph-Land (Melinnexis gen. nov. arctica sp. nov.).** *Zool. Anz.* 95(9/10): 269-272. 4 fig. 1931.—Ampharetidae: **MELINNEXIS** (p. 269), near *Meliorna,* based on *M.* **arctica*** (p. 270).

8518. **ČERNOSVITOV, L. Zur Kenntnis der Oligochätenfauna des Balkans. I. Über die Oligochäten aus Bosnia.** *Zool. Anz.* 86(11/12): 319-333. 22 fig. 1930.—The relative poverty of the region in aquatic Oligochaeta is due to the high lime content of the mountain streams. *Henlea* (*Henlea*) **balcanica*** (p. 322); a list of 26 spp. is given, and anatomical notes are added on *Henlea* (*H.*) *nasuta, Fridericia aurita, F. ratzeli* with discussion of synonymy, *F. minuta** (p. 329), *Dendrobaena ganglbaueri* v. *annectens*.*—*J. Stephenson.*

8519. **ČERNOSVITOV, L. Zur Kenntnis der Oligochaetenfauna des Balkans.** *Zool. Anz.* 95(11/12): 312-327. 29 fig. 1931.—Records 11 spp. of Oligochaeta from Montenegro, and 12 spp. of Lumbricidae from south Serbia. *Fridericia bisetosa* and *Ilyodrilus prespaensis** descriptive notes; *I. p.* f. **scutarica*** (p. 317), Montenegro; *Dendrobaena ganglbaueri* v. *meledaensis*, D. attemsi*, Bimastus eiseni*,* and *Eiseniella tetraedra,* descriptive notes; *E.* **balcanica*** (p. 321), Serbia.

8520. **ČERNOSVITOV, LÉON. Communication préliminaire sur les Oligochètes récoltés par M. P. Remy pendant la croisière arctique effectuée par le "Pourquoi-Pas?" en 1926 sous la direction du J.-B. Charcot.** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 144-149. 4 fig. 1929.—Data on 15 spp. in Tubificidae, Enchytraeidae, and Lumbricidae. Enchytraeidae: *Henlea* **nivea** (p. 145), *H.* **groenlandica*** (p. 146) and *Bryodrilus* **diverticulatus*** (p. 146), Greenland, Lumbricidae: *Allolobophora* **remyi*** (p. 149), Faroe Isls.

8521. **CHEN, Y. On the terrestrial Oligochaeta from Szechuan, with descriptions of new forms.** *Contr. Biol. Lab. Sci. Soc. China. Zool. Ser.* 7(3): 117-171. 12 fig. 1931.—Records the occurrence of 11 spp. of *Pheretima,* 1 of *Allolobophora* and one of *Bimastus* with descriptions and notes on distribution of each. *Pheretima* **corrugata*** (p. 131), *P. paraglandularis* v. **omeimontis*** (p. 155), *P.* **szechuanensis*** (p. 160). Types in Mus. Biol. Lab. Sci. China.—*Y. Chen.*

8522. **GATES, G. E. Note on Perichaeta campanulata Rosa and Pheretima houlleti (E. Perr.).** *Ann. Mus. Civ. Storia Nat. Genova* 52: 227-231. 1925/1928.—*Pheretima houlleti* and *P. campanulata* (Rosa) (=*P. houlleti* var. *tortuosa* Gates), redefined.

8523. **[ĬAKUBOVA, L. I.]** ЯКУБОВА, Л. И. **Список Archiannelidae и Polychaeta Севастопольской бухты Черного моря. [List of Archiannelida and Polychaeta of the Bay of Sebastopol in the Black Sea.]** Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(9): 863-871. 1930.—A list, with notes on status and habitat, of 5 spp. of Archiannelida, 47 spp. of Polychaeta errantia, and 35 spp. of Polychaeta sedentaria, including **LYCASTOIDES** (p. 869), in Nereidae, based on *L.* **pontica** (*Lycastis* p. Bobretsky) (p. 869); and 16 spp. new to the Black Sea.

8524. **NAGORE, DANIEL. Las lombrices de tierra.** [Earthworms.] *Agricultura Rev. Agropec.* 3(27): 168-170. 5 fig. 1931.

8525. **OKA, ASAJIRO. Sur une nouvelle espèce d'Hemiclepsis, provenant de Chine.** *Proc. Imp. Acad.* [*Tokyo*] 7(3): 121-123. 1 fig. 1931.—*H.* **singularis*** (p. 121), on a frog taken at Hangchow.

8526. **PICKFORD, G. E. The Oligochaeta of Wicken Fen. Part I. Lumbricidae.** *Nat. Hist. Wicken Fen Pt.* 3. 215-232. 1 pl. 1926.

8527. **SUN, KUO HUA, and KARL C. PRATT. Do earthworms grow by adding segments?** *Amer. Naturalist*

65(696) : 31-48. 1931.—Studies of species characteristics, number of segments and length of worm, of *Helodrilus foetidus* at different developmental stages (emergence from cocoon, worms without clitella and mature worms) present no evidence of continued segmentation after leaving the cocoon. There is no statistically significant difference between the means for number of segments of the intermediate and mature stages but there is a 34.5% increase in length. There is a statistically significant difference (D. of M. ÷ P. E. of D. of M. = 7.06) between the means for number of segments in newly hatched and intermediate stages but the increase in segments is only 5.51% whereas the increase in body length is 78.62%. Since the range in segment number of newly hatched worms is greater than in later stages (some newly hatched worms have more segments than any mature worms) it seems probable that segment number at maturity is determined by selective environmental factors rather than continued segmentation.—*K. C. Pratt.*

8528. **TREADWELL, AARON L.** A new West Indian polychaetous annelid. *American Mus. Novitates* 461. 2p. 3 fig. 1931.—*Cirratulus* pallidus*, Montego Bay, Jamaica.—*A. L. Treadwell.*

8529. **WAGIN, W. L.** Chaetogaster limnaei K. Baer als Cercarienvertilger. *Zool. Anz.* 95(1/2) : 55-59. 2 fig. 1931.—This annelid is a parasite in the mantel cavity of pulmonates *Limnaea* spp., *Planorbis corneus, P. carinatus, P. planorbis, Stagnicola palustris,* and *S. peregriformis* in Neva Bay, each mollusk harboring 70-100 worms, sometimes up to 900, and yet the worms seem to occasion the host no harm. *Chactogaster* feed on various Infusoria, small Rotatoria, young Cladocera, diatoms, and cercaria* in great numbers. Among the cercaria eaten were *Cercaria stylosa,* a parasite of *Limnaea stagnalis,* which later seems to develop into a parasite of fishes and finally water fowls; and *Cercaria cristata,* which develops into *Sanguinicola,* a blood parasite of *Carassius carassius* and other Cyprinidae.

ECHINODERMATA

HUBERT LYMAN CLARK, *Editor*

(See also in B. A. 6(1): Entries 2156, 2180, 2183, 2188, 2192; 6(2): 3319, 3599, 3909, 5249, 5252, 5264, 5266, 5272, 5273, 5554, 5862; and in this issue 8190, 8192, 8206, 8568, 9059, 9061)

8530. **ADKINS, W. S.** Texas Comanchean echinoids of the genus Macraster. *Univ. Texas Bull.* No. 3001. p. 101-120. 2 pl. 1930.—A key is given to the 4 Texan genera of Brissidae, and to the 9 Texan spp. of *Macraster.* The systematic account includes synonymy and descriptive and taxonomic notes. *Macraster* kentensis* (p. 106), Duck Creek and Fort Worth formations; *M.* pseudoelegans* (p. 108), Denton (type) and Fort Worth formations; *M. elegans* (Shumard), emended description; *M.* obesus* (p. 116), Weno formation. Types in coll. of Texas Bureau of Econ. Geol. *Epiaster* washitae (*Macraster w.* Lambert) (p. 119).

8531. **DEHÉE, RENÉ.** La faune marine du terrain houiller inférieur de Merville. *Ann. Soc. Géol. du Nord* 52: 286-295. 1 pl. 1927.—From the lower coal beds at Merville (northern France, Carboniferous) are found fragments of 2 spp. of fish, 2 of gastropods, 3 of pelecypods, and an echinoid, *Archaeocidaris* meurevillensis* (p. 290).—*W. Berry.*

8532. **FISHER, W. K.** Report on the South American sea stars collected by Waldo L. Schmitt. *Proc. U. S. Nation. Mus.* 78(16) : 1-10. 8 pl., 2 fig. 1931.—This list (18 spp.) is based on material collected during 1926-1927, and includes synonymies, taxonomic notes, and a considerable discussion of the genus *Anasterias.* The range included is Peru, Chile, Juan Fernandez Is., Patagonia and Falkland Is.

8533. **GRIEG, JAMES A.** Echinodermata from the Palmer Archipelago, South Shetlands, South Georgia and the Bouvet Island, with description of a new species of the Molluscan genus Montacuta. *Norske Vidensk.-Akad. Oslo, Sci. Results of the Norwegian Antarctic Exp. 1927-1928 and 1928-1929.* No. 2. pp. 1-16. 1929.—The material contained 17 spp. (1 sea lily, 6 sea stars, 5 brittle stars, 2 sea urchins, and 3 sea cucumbers). Also the lamellibranch mollusk, *Montacuta* christenseni (p. 14), Shetland Is., in *Abatus cavernosus.*

8534. **JAKOVLEV, N.** Le genre Petschoracrinus et le passage des crinoïdes dicycliques aux crinoïdes monocycliques. Доклады Академии Наук. СССР. Сер. А. (*Compt. Rend. Acad. Sci. URSS. Sér. A.*) 1930(2) : 27-29. 2 fig. 1930.—A broken base of the chalice of this genus reveals a column so small as to border on atrophy. The transition from a dicyclic to a monocyclic base in this genus, by fusion of the basal and infrabasal plates, invalidates the use of such characters for separating subclasses.

8535. **JAKOVLEV, N.** Sur les pores primaires de Cystoblastus. Доклады Академии Наук СССР. Сер. А. (*Compt. Rend. Acad. Sci. URSS. Sér. A.*) 1930(2) : 30-32. 1 fig. 1930.—A madrepore and a gonopore in the upper extremity of the interradial area of *Cystoblastus kokeni* are described and figured.

8536. **JAKOVLEV, N.** Sur la découverte du proboscis anal chez le genre Cupressocrinus. Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(17) : 463-464. 2 fig. 1930.—The discovery of this feature* accords with the assignment by Bather and Jaekel of *Cupressocrinus* to the Cyathocrinidae.

8537. **JEANNET, ALPH.** Sur des Echinides tertiares du Venezuela et de la Trinité conservés au Musée d'Histoire Naturelle de Bâle. *Eclogae Geol. Helvetiae* 21(2) : 372-375. 1928.—Lists 9 spp. from the Priabonien (upper Eocene), 5 as new; 1 from the Oligocene; 3 from lower Miocene, 2 new; 2 from uncertain lower or middle Miocene; 20 from middle Miocene, 10 new. No descriptions. Notes first occurrence of *Heteroclypeus* in America.—*W. Berry.*

8538. **LERICHE, MAURICE.** Une Ophiure du "Panisélien" de la mer du Nord (Ophiurites eocaenus nov. sp.). *Bull. Soc. Belge Géol. Paléont. et Hydr.* 40(2) : 109-119. Map, 1 pl., 3 fig. 1931.—*O.* eocaenus* (p. 114), Eocene, type in Univ. Bruxelles.

8539. **LIVINGSTONE, ARTHUR A.** On some new and little-known Australian asteroids. *Rec. Australian Mus.* 18(1) : 15-23. 5 pl. 1930.—Goniasteridae: PSEUDOGONIODISCASTER (p. 15), near *Goniodiscaster* in Goniasterinae, type *P.* wardi* (p. 16), Queensland; *Nardoa* mamillifera* (p. 20), Torres Str. Types in Australian Mus. Illustrations and descriptions of specimens are given for *Tamaria tuberifera*, T. fusca*, and *Ferdina ocellata*.

8540. **LIVINGSTONE, ARTHUR A.** On the restriction of the genus Ferdina Gray (Asteroidea). *Australian Zool.* 6(4) : 305-309. 4 pl. 1931.—The author divides *Ferdina* into 2 genera and gives an emended diagnosis of the restricted genus, which includes *F. flavescens** and *F.* heffernanii* (p. 306), Santa Cruz Isl., Melanesia, type in Australian Mus. NEOFERDINA (p. 307), type *N.* cumingii* (*Ferdina c.* Gray) (p. 307), including also *N.* glyptodisca (Fisher), n. comb. (p. 307), *N.* kuhlii (*Scytaster k.* M. & Tr.) (p. 307), *N.* offreti (Koehler), n. comb. (p. 307), *N.* ocellata (H. L. Clark), n. comb. (p. 307), and *N.* cancellata (*Ferdina c.* Grube) (p. 307). The last is probably a synonym of *N. cumingii,* of which an emended description is given.

8541. **MATSUMOTO, HIKOSHICHIRÔ.** Outline of a classification of Echinodermata. *Sci. Rept. Tôhoku Imp. Univ. Sendai, Japan Geol. Ser.* 13(2) : 27-33. 1929.

—The following systematic changes are proposed: Subphylum **CRINOZOA** (p. 27), including class Cystidea, with 3 orders, Aporita Zittel, Diploporita Zittel, and Rhombifera Zittel; and class Blastoidea, with the new order **PROTOBLASTIDA** (p. 27) (Protoblastoidea Bather, in part) erected to include the Blastocrinidae, the order Codonoblastida Bather ("vel Mesoblastida mihi") (p. 28), and the order **EUBLASTIDA** (p. 28) (Eublastoidea Bather, in part), which includes the new series **PENTREMITIDA** (p. 28) (for the Pentremitidae of authors). Under the class Crinoidea and order Monocyclica Inadunata Bather, there is erected the new suborder **CALCEOCRINACEA** (p. 28) (Calceocrinidae auctt.); Crinoidea, order Monocyclica Camerata, contains 2 new suborders—**BATOCRINACEA** (p. 29) (for Batocrinoidea Bather, ext.), and **MELOCRINACEA** (p. 29) (for Melocrinoidea Bather, plus Platycrinidae). The subclass Dicyclica Bather is divided into 2 "grades," one new: **DICYCLICA TESSELLATA** (p. 29) (Tessellata auctt., pars). Under the order Articulata Müller, the suborder **ENCRINACEA** (p. 30) (Encrinidae auctt.), is new; under the 3rd suborder Pentacrinacea Newmayr, the family **ISOCRINIDAE** (p. 31) (Pentacrinidae auctt., pars) is new; and also the 4th suborder **HOLOPODA** (Holopodidae auctt., Holopida Clark).

8542. **MORTENSEN, TH. A monograph of the Echinoidea. I. Cidaroidea.** One volume text of 551pp. and 173 fig. one volume of 88 pl. C. A. Reitzel: Copenhagen; Humphrey Milford: London, 1928.—The work forms the first part of a planned monograph of the whole class of the Echinoidea, treating both the recent and fossil forms. The first volume, dealing with the Cidaroidea, comprises the families Archaeocidaridae and Cidaridae. The latter family is divided into the subfamilies Streptocidarinae, comprising some Triassic forms with more or less bevelled plates, the Diplocidarinae, comprising the forms with the pores arranged in double series (*Diplocidaris* and *Tetracidaris*), and the Stereocidarinae comprising all the numerous recent forms and the bulk of the fossil forms. A main point in the classification adopted is that the author does not accept the pluriseriate Palaeozoic forms (Perischoechinoidea) as a natural group in contradistinction to all the rest of the echinoids, from Trias to Recent. The Archaeocidaridae are regarded as closely related to and predecessors of the cidarids, the lepidocentrids as ancestors of the Diadematids. Further, *Bothriocidaris* is rejected as an echinoid genus, its ancestors being among the primitive edrioasteroids, like *Stromatocystis*. Of all the recent forms (about 150 spp. and vars.) detailed descriptions are given, with figures of structural details. Of the fossil forms all the genera are described and figures given of a few of the more characteristic spp. The general morphology of the cidarids—test, spines, pedicellariae, internal anatomy—is dealt with in an introductory chapter; their geographical distribution in a concluding chapter. No new names are introduced in this work, the names of the new genera, species, etc., having been given in a preliminary paper ("New Cidaridae," Vid. Medd. Dansk Naturh. Foren. Bd. 85. 1928).—*T. Mortensen.*

8543. **OPITZ, RUDOLPH. Seelilien aus den Dachschiefern des Hunsrücks.** *Natur u. Mus.* [*Frankfurt a/M*] 61(4): 163-168. 5 fig. 1931.—Illustrations of fossil *Agriocrinus frechi*, Thallocrinus hauchecornei**, and *Codiacrinus schultzei**.

8545. **PANNING, A. Zur Kristalloptik der Kalkkörper der aspidochiroten Holothurien.** *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 47-56. 17 fig. 1931.—A discussion of axial and plane symmetry of the calcareous spicules of the cutis, and the podial plates in *Holothuria grisea** and *Stichopus fuscus**.

8546. **PANNING, A. Die Gattung Holothuria. (1. Teil.)** *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 91-138. Map, 21 fig. 1929.—The first part of a monograph of the genus *Holothuria* with extensive bibliography, check list with synonymy, and redescriptions of 21 spp., 20 of which are illustrated.

8547. **RUNNSTRÖM, JOHN. Züchtung der Echinodermen. In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden.** Abt. IX. **Methoden der Erforschung der Leistungen des tierischen Organismus.** Teil 5, Heft 3. **Methoden der Meerwasserbiologie.** Lief. 278. p. 403-420. 2 fig. Urban & Schwarzenberg: Berlin, 1928.—Description of protoplasmatic maturation and of the methods of artificial fertilization of the eggs. This is simple in Echinoidea, even in forms with eggs with large yolks, but also can be effected in Asteroidea with small transparent eggs if sufficient alkalinity of the water is maintained. In Asteroidea, with eggs with large amounts of yolk, artificial fertilization has not been successful. In Ophiuroidea and Holothurioidea artificial fertilization has not been successful or has generally produced abnormal larvae. A detailed account is given of the rearing of the larvae and the methods used in obtaining suitable food. A short description is appended on the keeping of adults. —*C. R. Boettger.*

MOLLUSCA

H. A. PILSBRY, *Editor*

H. B. BAKER, *Associate Editor*

J. B. REESIDE, *Associate Editor,* Mesozoic and Paleozoic Mollusca

(See also in this issue Entries 6259, 7026, 7551, 7813, 8181, 8184, 8185, 8188, 8192, 8194, 8197, 8202, 8203, 8206, 8211, 8213, 8214, 8425, 8488, 8529, 8531, 8533, 9051, 9056, 9059, 9061)

8548. **ADKINS, W. S. New rudistids from the Texas and Mexican Cretaceous.** *Univ. Texas Bull.* 3001. p. 77-100. 7 pl. 1930.—The following spp. are reported from the Edwards (Albian) formation: *Eoradiolites,* emended description, with key to spp. and discussion of developmental stages and life habits; *E.* **quadratus*** (p. 80); *E.* **angustus*** (p. 83); *E. davidsoni* (Hill); *Praeradiolites* **edwardsensis*** (p. 92). From the Taylor and Mendez (Santonian) formations: *Durania* **terlinguae*** (p. 94), Austin chalk equivalent; *D.* **aquilae*** (p. 95), Mendez red foraminiferal clay, Tamaulipas, Mexico. *D.* **huasteca*** (p. 96) and *Sauvagesia* **morgani*** (p. 98), Mendez formation, Tamaulipas, Mexico. Austin chalk spp. *S.* aff. *degolyeri; S.* **acutocostata*** (p. 99). All forms from Texas unless otherwise stated. Types in Bureau of Econ. Geol., Univ. Texas.

8549. **AGUILAR-AMAT, J. B. de. Observaciones malacológicas. VI. Algunos moluscos de Cofrentes y de Játiva. [Mollusks of Cofrentes and Jativa, Spain.]** *Butl. Inst. Catalana Hist. Nat.* 8(8/9): 142-143. 1928.—An annotated list of 9 spp.

8550. **BARGMANN, HELENE E. The morphology of the central nervous system in the Gastropoda Pulmonata.** *Jour. Linnean Soc.* [*London*] *Zool.* 37(250): 1-59. 5 pl. 4 fig. 1930.—The gastropod central nervous system consists of paired buccal, cerebral, and pedal ganglia, with a chain of visceral ganglia. Primitively these ganglia are distinct, connected by nerve cords, and the spiral form of the body has produced a twisting of the visceral chain (chiastoneury). Specialization produces fusion of the ganglia and the chiastoneury may be lost. In pulmonate gastropods 8 types of arrangement of the visceral ganglia are found: (1) Basommatophoran (5 visceral ganglia slightly separated); (2) zonitoid (5 ganglia, touching but distinguishable); (3) orthurethran (4 ganglia, right parietal and abdominal being fused);

(4) heliciform (4 ganglia, left parietal fused with abdominal); (5) *Hygromia* (3 ganglia, left parietal fused with abdominal and right parietal with right pleural); (6) *Ennea* (3 ganglia, both parietals fused with abdominal); (7) *Onchidium* (3 ganglia, parietal fused with pleural); (8) *Vaginula* (all visceral ganglia fused). The groups belonging to each type are distinct when young as well as when adult, despite individual variation and obscuring of the relations by a connective tissue sheath. The identity of the ganglia can often be determined only by the distribution of the nerves, and some forms are difficult to classify. These groups fit only in a general way into Pilsbry's classification. The condition of the nervous system gives valuable evidence regarding relationships of families and genera, and the existing classifications based on one or 2 organ systems may involve serious contradictions.—*E. H. Craigie.*

8551. **BAUMBERGER, E. Beitrag zur Kenntnis der Garnierien aus der schweizerischen und französichen Unterkreide.** *Eclogae Geol. Helvetiae* 21(1): 218-226. 1 pl. 6 fig. 1928.—Seven species of *Garnieria* are described, including *G.* verrienensis* (p. 219), *G.* sequanensis* (p. 221), *G.* stenothalamia* (p. 222), and *G.* paradiscus* (p. 223).—*W. Berry.*

8553. **COOKE, C. MONTAGUE Jr., and HENRY E. CRAMPTON. New species of Partula.** *Bernice P. Bishop Mus. Occasional Papers* 9(11): 3-9. 1 pl. 1930.—*P.* cytherea* (p. 3), Tahiti; *P.* lanceolata* (p. 5), Fiji; *P.* thurstoni* (p. 6) and *P.* montana* (p. 7), Samoa.

8554. **COUTAGNE, GEORGES. La faune malacologique de la Tarentaise.** *Ann. Soc. Linnéenne Lyon* 74: 7-79. 1928(1929).—An annotated list is given of the mollusks which occur in the rather isolated valley which forms the basin of the Isère above Albertville, Savoie, France. —*H. B. Baker.*

8555. **EHRMANN, PAUL. Zur Kenntnis von Chondrina avenacea (Brug.) und ihren nächsten Verwandten.** *Arch. Molluskenk.* 63(1): 1-28. 1 pl. 1931.—Because Draparnaud's original specimens of *Pupa avena* are identical with Küster's *P. cereana*, the author decides that both are synonyms of *Chondrina avenacea* (Brug.) and replaces Küster's restricted *avenacea* with *C. clienta* (Westerlund). *C. avenacea* istriana (p. 23), Italy.—*H. B. Baker.*

8556. **FRASER, C. McLEAN. The razor clam, Siliqua patula (Dixon), of Graham Island, Queen Charlotte group.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24 (1): 141-154. Map, 5 pl. 1930.—Collections made in July in 8 different locations in a 17-mile stretch of sandy beach included specimens of each year class up to the 9-year class. The uniformity in growth rate in the different year classes indicates a greater uniformity in environmental conditions from year to year than is found in parts of the coast where other species of clams are obtained commercially. Spawning had started only at the western end of the beach on July 5, but was general throughout the whole length of the beach by July 21. The minimum temp. for spawning is about 13°. After a spell of cool weather when the temp. was considerably below 13°, it reached that point again on July 18 and continued at that temp. or higher for some days. No 2-year clams were matured or nearly maturing but 86.6% of the 3-year clams were. Those that were not were all the smaller members of the class. The Graham Islands clams are exploited only by 1 packing company that has been in yearly operation since 1924. The method of digging and collecting is not liable to be so injurious as the methods used in digging other clams.—*Author's summary.*

8557. **GAMBETTA, L. I Gasteropodi raccolti dall'Ing. C. Crema in Cirenaica. [Gastropods collected by C. Crema in Cirenaica.]** *Boll. Mus. Zool. ed Anat. Comp. R. Univ., Torino* 40(Paper 35): 1-6. 1925(1926).—A list of 13 spp. from 8 families, including *Clausilia* bengasiana Monts. (in sch.) (p. 4), and *Melania* (*Melanoides*) *tuberculata*, first record for Cirenaica.

8558. **GRIMPE, GEORG. Pflege, Behandlung und Zucht der Cephalopoden für zoologische und physiologische Zwecke.** In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden der Erforschung der Leistungen des tierischen Organismus. Teil 5, Heft 3, Methoden der Meerwasserbiologie.** Lief. 278. p. 331-402. 7 fig. Urban & Schwarzenberg: Berlin, 1928.—General and critical account of the methods, experiments, and observations in keeping and breeding Cephalopoda in captivity, based on personal experience and on that of others. Most of the forms which can be kept in captivity are littoral, especially benthonic species such as *Octopus*, *Eledone*, *Sepia*, *Sepiola*, etc., but also nectobenthonic neritic species as *Loligo*, *Sepioteuthis*, *Alloteuthis*, etc., which, however, are less easily kept. The technique of the aquarium and methods of keeping the animals are described and special directions for particular species discussed. *Octopus vulgaris* Lam., *Eledone moschata* Lam., and *Sepia officinalis* L., are more extensively treated. Directions are given for the rearing of cephalopods from the egg, including the rearing apparatus for eggs and larvae.—*C. R. Boettger.*

8559. **HATT, PIERRE. L'absorption d'encre de Chine par les branchies des Diotocardes. Existence d'un canal cilié particulier.** *Bull. Soc. Zool. France* 52: 179-184. 4 fig. 1927.—In *Trochocochlea turbinata* after 24 hrs. in sea-water containing Chinese ink, a row of black spots appear along the efferent face of the gill, one spot in each lamella. At this spot there occurs a short ciliated canal, with an exterior opening to which ciliated currents are directed by the cilia. The wall of this canal consists in part of ciliated and in part of non-ciliated cells; the latter take up the ink particles, also dyes. Similar ciliated canals in the gills were found in *Haliotis*, *Emarginula*, and *Fissurella*, and probably exist in general in the Diotocardia, especially in the Rhipidoglossa. They do not occur in a large number of Monotocardia examined.—*L. H. Hyman.*

8560. **HINARD, GUSTAVE, et LOUIS LAMBERT. Contrôle sanitaire ostréicole. Tableau de l'ostréiculture française.** *Rev. Trav. Office Pêches maritimes (Paris)* 1(3): 37-90; (4): 61-127. 35 fig. 1928.—Part I.—The basis of the technique of oyster culture. Discussion of the methods of breeding, raising and harvesting of oysters (*Oystrea edulis** and *Gryphaea angulata**). A résumé of recent scientific works with regard to their technical application. Pt. II.—Oyster culture establishments. Description and criticism of the principal types of French establishments. The apparatus varies according to the region and the particular situation (shaking, submerged, non-submerged, etc.), but general rules can be formulated especially for healthful installations. They must be protected from polluted water. Pollution is prevented by installing artificial oyster beds or basins removed from all sources of contamination either by elevating them and admitting free-flowing water, by purifying the water in reservoirs by decantation or by filtration. The final washing, storage, and packing necessitate great care and the methods used to escape contamination are described. The plan of a model oyster-culture establishment is given, showing arrangement recommended for the basins, washers, location of shipping points and accessories. The Office of Sea Fisheries controls all French establishments and prescribes rules for obtaining sanitation certificates required of all who ship oysters for human consumption. (Decree of July 31, 1923.) Pt. III.—Natural resources and their exploitation. Condition of natural oyster beds. Description of regions of oyster-culture. Most of the native oyster beds (*Ostrea edulis*) have suffered greatly in recent years from a disease of unknown cause. Some are recovering, but slowly. This recovery has been helped by severe regulation. At the present time only a few beds on the banks of the Morbihan are reasonably productive. The oysters anchor themselves on artificial tiles, are collected and reared in basins, then sent to centers for sorting or fattening (Marennes, Belon). The formerly prosperous oyster beds of Cancale, Brest, and Arcachon now furnish but small quantities. The beds of the Portuguese oyster (*Gryphaea angulata*) have suffered much less from natural causes, but they are in danger

of unreasonable exploitation and protective measures are needed. The productive area extends from La Rochelle to Arcachon; at present the basin of Arcachon is the greatest center of production thanks to the use of artificial tiles. The Portuguese oyster, at Arcachon and especially at Marennes, is well cared for by methodical cultivation in basins. The oyster basins (not considering the natural beds) comprise more than 5,000 hectares and are increasing every year. At the present time, there are about 25,000 establishments for cultivation and 700 shipping points. The areas given over to oyster-culture cover approximately 700 hectares in the Morbihan, 400 in the maritime region of La Rochelle, 3,000 in the region of Marennes and 1,050 in the basin of Arcachon. —*G. Hinard (transl. by E. R. Smith)*.

8561. **LAMY, EDOUARD. Quelques cas tératologiques chez des gastéropodes.** *Jour. de Conch.* 74(3) : 222-225. 2 pl. 1930.—Abnormal individuals of *Cypraea tigris**, *C. moneta**, and *Nassa reticulata**, and a sinistral shell of *Latirnculus japonicus** are discussed.—*H. B. Baker.*

8562. **MACHADO, ANTÓNIO. Sôbre os espermatóforos da Lula pota "Omastrephes coindeti" (Verany).** *Anais Fac. Sci. Porto* 16(2) : 78-79. 1930.—A mass, consisting of an agglomeration of spermatophores, was seen imbedded in the internal wall of the paleal cavity of the ♀, near the level of the sexual orifice, in *Omastrephes coindeti*. This is apparently the first observation on the fate of the spermatophores after fecundation.

8563. **MARI, JOSE GINER. Contribución al estudio del género Nassa, Lamarck. Parte I.** *Butl. Inst. Catalana Hist. Nat.* 8(8/9) : 133-142. 1 pl. 1928.—This paper is preliminary to a projected monograph of the genus. *N. (Phrontis) cinisculus* v. **beltrani*** (p. 134), Santa Catalina Isl.; *N. (Alectryon)* **dautzembergi*** [evidently in error for *dautzenbergi*] (p. 134), locality unknown, type in coll. Dautzenberg; *N.* (s. str.) **helleri** Preston (in sch.) (p. 136), Ceylon, type in coll. Dautzenberg; *N. (Niotha)* **labordei*** Jousseaume (in sch.) (p. 137), Aden, type in coll. Dautzenberg; *N. (Hebra) quadrasi** Hidalgo, redescribed; *N. (H.)* **solida*** Reeve (in litt.?) (p. 139), Philippine Isls.; *N.* (s. str.) **soror*** Preston (in sch.) (p. 141), Ceylon, type in coll. Dautzenberg.

8564. **MERMOD, G. Gastéropodes.** In: **Catalogue des Invertébrés de la Suisse.** Fasc. 18. pp. xii+1-583. 87 fig. Mus. d'Hist. Nat. Genève [Switzerland] 1930.—This descriptive catalog of the snails of Switzerland gives definitions of the major groups and notes on the shell, radula, and genitalia of most of the species. Many of the figures of radulae and genitalia are original. Synonymic and locality references are also included. An extensive bibliography and an index are appended.—*H. B. Baker.*

8565. **MÍNGUEZ, ALEJANDRO TORRES. Notas malacológicas. XII.** *Butl. Inst. Catalana Hist. Nat.* 8(7) : 117-120. 1 fig. 1928.—*Amalia* **santosi*** (p. 117), Canary Isls.

8566. **MOLL, F., and F. ROCH. The Teredinidae of the British Museum, the natural history museums of Glasgow and Manchester, and the Jeffreys collection.** *Proc. Malac. Soc. London* 19(4) : 201-218. 4 pl., 34 fig. 1931.—A list of species with descriptions, localities, and synonymy is given, including: *Teredo* **bataviana*** (p. 207), founded on Sowerby's *T. batava* (Spengler), Batavia; *T.* **murrayi** Moll* (p. 208), Christmas Isl.; *T.* **calmani** Roch* (p. 208), *T.* **robsoni** Roch* (p. 209), and *T.* **pocilliformis** Roch* (p. 209), S. Australia; *Bankia* **fimbriatula*** (*T. fimbriata* Jeffreys, not Defrance) (p. 213), *B.* **rochi** Moll* (p. 215), Christmas Isl.; *B.* **odhneri** Roch* (p. 215), Falkland Isls.; *B.* **campanellata*** (*T. campanulata* Sow., not Jeffreys) (p. 215), *Teredo* **pochhammeri** Moll* (p. 216), Colombo. Type of *B. odhneri* is in Manchester, others in Brit. Mus.—*H. B. Baker.*

8567. **NAGAO, TAKUMI. The occurrence of Anaptychus-like bodies in the Upper Cretaceous of Japan.** *Proc. Imp. Acad.* [*Tokyo*] 7(3) : 106-109. 2 fig. 1931.

8568. **OHSHIMA, HIROSHI. On Entovalva semperi Ohshima, an aberrant commensal bivalve.** [In Japanese, with English abstract.] *The Venus* [*Japan*] 2(4) : 161-177. 1931.—A further detailed description of the animal is here given. The synaptid *Protankyra bidentata* (Echinodermata), whose length may attain 30 cm., lives in a tube lying nearly horizontally about 8-10 cm. below the surface of the muddy bed. Usually only one *Entovalva* is found attached to the host, and from among 134 synaptids collected and examined, 53 of the commensals were found. The mollusk *Montacuta,* the crustacean *Hexapus,* and 3 spp. of polychaetous annelids are also often found living with this synaptid as commensals. Hakosaki near Fukuoka, of Hakata Bay of northern Kyushu, is added, besides Tomioka of Amakusa, as another habitat of this bivalve. *Entovalva semperi* in situ does not move actively, but if removed from the host it creeps about, often with a regular rhythm of contraction and extension of the foot and body. The whole surface of the creeping sole seems to act as sucker, but hardly any scar is left on the skin of the synaptid if forcibly detached from it. Internal anatomy of each organ as studied from sections is described in detail, and is compared with the accounts of *Entovalva mirabilis* and *perrieri* given by Voeltzkow, Malard, Anthony, Nierstrasz, etc. No individual with testis has yet been examined, so that it is not decided whether the animal really is hermaphroditic. Malard's suggestion that the food may be taken in through the byssal papilla, and Anthony's idea of incipient division of the siphonal orifice, are both disproved. The presence of teeth in the valves of *mirabilis* and *Devonia donacina* makes the interrelations of these allied forms rather intricate, but for the present the author prefers to retain the genus *Entovalva* to comprise the 3 species, *mirabilis, perrieri,* and *semperi.—Author's abstract.*

8569. **OSTERGAARD, J. M. Shellfish of Hawaii and the introduction of edible species.** *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 5(4) : 8-9. 1930.—A popular account.

8570. **PALLARY, PAUL. Revision du genre Yétus.** *Ann. Mus. Hist. Nat. Marseille* 22(3) : 53-77. 2 pl., 3 fig. 1930.—The author gives a historical review of the nomenclature of this genus. He divides it into 2 sections: *Yetus* (s.s.), with 7 spp., and *Cymba* Broderip, with 4 spp. The genus ranges only from Spain to Gabun. The systematic account includes synonymies, descriptions, distributional records, and taxonomic discussion. *Yetus porcinus* vars. **minor** (p. 61) and **ampla*** (p. 61); *Y. proboscidalis* vars. **producta** (p. 64) and **minor** (p. 64); *Y. cymbium* L. is discarded; *Y. gracilis* vars. **ampla** (p. 66), **modica** (p. 66), and **major** (p. 66); *Y.* **marocanus*** (p. 67), and *Y. m.* var. **dilatata** (p. 68), Morocco; *Y. productus* v. **major** (p. 70), type in Mus. de Marseille; *Y.* **turriculatus** (p. 70), Morocco; *Y. t.* var. **minor*** (p. 70); *Y. tritonis* var. **minor ponderosa** [sic] (p. 74); *Y.* **pachyus*** (p. 75), Cameroon, type in coll. Dautzenberg; *Y. p.* var. **minor*** (p. 75). A key to the spp. is given. [The forms listed above as new are presumably new, though not so labeled by the author. With one exception, the localities of the new varieties are not stated.]

8571. **PÉREZ, CHARLES. Anomalies de détorsion de la coquille chez la Turritelle et chez l'escargot.** *Bull. Soc. Zool. France* 54: 597-599. 2 fig. 1929.—Observations on a *Turritella communis* shell, the last coil of which is partially unrolled, and of a few scalariform snail-shells, (*Helix aspersa, H. nemoralis*), showing various degrees of detorsion.—*C. Pérez.*

8572. **PFEFFER, GEORG. Zur Kenntnis Tertiärer Landschnecken.** *Geol. u. Palaeontol. Abhandl.* [*Jena*] 17 (3) : 1-230. 3 pl. 1929.—The work offers a complete revision of the Tertiary superfamilies, Vitrinacea, Patulacea, Helicacea and Agnathomorpha in so far as these groups are accessible in the German and Brit. Mus. collections. Detailed descriptions especially of the sculpture are given for all genera, subgenera and species and comparison is made with the recent forms which they resemble. Seventy four Tertiary genera and subgenera are described and 124 spp. There is a table of general contents, a discussion of the value of anatomical char-

acters, and of the sculpture of the Helicacea, a section on the appearance in geologic time of the subfamilies and tribes of the Helicidae and one on the evolution of the Helicidae and finally several sections on the Glandinidae. Vitrinacea, Zonitidae: **SPHAEROZONITES** (p. 12), near *Grandipatula*, with *S.* **oppenheimi*** (p. 12), Paleocene; **PATULIZONITES** (p. 12), near *Grandipatula* and *Sphaerozonites*, with *P.* **gürichi*** (p. 12), Eogene; *P.* **planissimus*** (p. 13), Oligocene; *Palaeoxestina* **andreae** (p. 15), Eogene; *P.* **cossmanni** (p. 16), France, Eogene; *P.* **distinguenda*** (p. 16), Eogene; *Archaeozonites verticilloides* v. **pusillus** (p. 21), Germany; **METAZONITES** (p. 22) and **PARAZONITES** (p. 23) subgenera of *Archaeozonites;* **MIOZONITES** (p. 27), with *M.* **algirodies** (Reuss) (p. 27), *M.a.* var. **reussi** (Klika) (p. 27), and *M.a.* var. **deplanata** (Reuss) (p. 27), Czechoslovakia; *Hyalinia* (*Polita*) **coxii*** (p. 36), England, Oligocene. Patulacea, Endodontidae: **CALOGONIODISCUS** (p. 38), with *C.* **perelegans*** (Desh.) (p. 28); *Goniodiscus* **perpusillus** (p. 42), Czechoslovakia, Miocene; *G.* **wenzi** (p. 44), Oligocene; **NANOPATULA** (p. 44), with *N.* **sparnacensis*** (Desh.) (p. 45), Eogene; **COXIOLA** (p. 46), with *C.* **bembricensis*** (p. 46), Oligocene, England. Eulotidae: *Eulota* **hessleriana*** (p. 58), Germany; *Galactochilus* **aquense*** [Plate labelled *G. aquensis*] (p. 68), France; *Tropidomphalus* (*Pseudochlorites*) **gigas** (p. 76), Austria; *Klikia vectiensis* v. **filosa*** (p. 85), England, Oligocene; *K.v.* var. **quincuncialis** (p. 85), Oligocene; **WENZIA** (p. 93), type *W.* **ramondi** (Brongniart) (p. 93); *W.* **prisca*** (p. 95), Eogene; **JOOSSIA** (p. 96), with *J.* **insignis** (Zieten) (p. 96), Germany, Miocene; **TITTHODOMUS** (p. 98), with *T.* **koeneni** (Fischer & Wenz) (p. 98), Oligocene; **CYCLOMONILEARIA** (p. 100), type *C.* **lanzerottensis** (W. & B. von Lanzerote). Helicidae: **PSEUDOMONACHA** (p. 110), with *P.* **punctigera** (Tho.) (p. 111), Germany, Miocene also Oligocene; *P.* **zippei** (Reuss) (p. 112), Miocene; *P.* **homalospira** (Reuss) (p. 113), Miocene; *Leucochroopsis* **concinna** (p. 118), Germany, Oligocene; **ARCHYGROMIA** (p. 120), with *A.* **d'urbani** (Edw.), England, Oligocene; *A.* **edwardsii*** (p. 112), England, Oligocene; **PRAEFRUTICICOLA** (p. 122), with *P.* **morrisis*** (S. V. Wood) (p. 122), England, Oligocene; *Trichia* **bembricensis*** (p. 123), England, Oligocene; *Oestophora* **wenzi*** (p. 125), Eogene; **PRAEOESTOPHORELLA** (p. 126), with *P.* **phacodes** (Thomae) (p. 126), Germany, Oligocene; *P.* **tuchoricensis** (p. 127), Oligocene; **OESTOPHORELLA** (p. 126), with *O.* **buvignieri** Mich. (*asturica* Pfr.) (p. 126), Spain; **PARACANARIELLA** (p. 127) [Given as Praecanariella, p. 227], with *P.* **tropifera** (Edw.), England, Oligocene; **PACHYCAROCOLLINA** (p. 128), with *P.* **lapicidella** (Tho.) (p. 130), Germany, Oligocene; **CAESARELLA** (p. 129), type *C.* **lenticula** Fér. (p. 130), Mediterranean region; *Helicella* (*Striatella*) **cyclophoridea*** (p. 133), "Pleistocene possibly instead of Lr. Miocene;" **PRAECAMPYLAEA** (p. 134), with *P.* **margaritifera** (p. 135), Austria; **PRAEMURELLA** (p. 135), with *P.* **wenzii** (p. 135), France; **PLEUROTACHEA** (p. 143), subg. of *Palaeotachea;* **AUSTROTACHEA** (p. 143), with *A.* **austriaca** (Mühlf.) (p. 143), recent; **HYLOTACHEA** (p. 144), with *H.* **silvatica** (p. 144), recent; **ODONTOTACHEA** (p. 144 also p. 156), with *O.* **subglobosa** (Noulet) (p. 156), Germany, Oligocene; **HOLCOTACHEA** (p. 158), with *H.* **bohemica** (Bttg.) (p. 158), Miocene; *H.b.* var. **hortulanaeformis** (p. 159), Miocene; *H.* **kinkelini** (Bttg.) (p. 161); *H.* **malleolata*** (Sbd.) (p. 159); *H.* **elevata** (Berz. & Jooss) (p. 162), Miocene; *H.* **reinensis** (Gob.), Miocene; **MESOTACHEA** (p. 145), with *M.* **maguntiana** (Desh.) (p. 164), Germany; *M. m.* f. **emmingensis** (p. 166), Germany, Miocene; **PARATACHEA** (p. 145 also p. 167), with *P.* **eckingensis** (Sbd.) (p. 167), Oligocene; **PACHYTACHEA** (p. 146 also p. 169), with *P.* **dentula** (Quenst.) (p. 169) and *P.* **quenstedti** (p. 169); **MEGALOTACHEA** (p. 146 also p. 170), with *M.* **silvana** (Klein), Miocene; *M.* **gottschicki** (Wenz) (p. 175), Germany, Miocene; *M.* **silvestrina** (Schloth) (p. 178), *M.* **turonensis** (Desh.) (p. 180); *M.* **hoernesi** (Wenz), Germany, Miocene; **TRACHYTACHEA** (p. 147 also p. 180), with *T.* **apserula** (Desh.) (p. 189), Miocene, and *T.* **joossi** [joossii, page 229] (p. 184), Austria, Miocene; *Palaeotachea rugulosa* f. **globulus** (p. 149), Miocene; **PACHYDUPOTETIA** (p. 185), with *P.* **jobaeana** (Crosse) (p. 186), *P.* **dumortieriana** (Crosse) (p. 186), and *P.* **subsenilis** (Crosse) (p. 187), Algeria, Miocene; **PLATYOTALA** (p. 188), with *P.* **vanvincquiae** (Crosse) (p. 188), Algeria, Miocene; **METACHLORAEA** (p. 190), with *M.* **oxystoma** (Tho.), Germany, Oligocene; *M.o.* var. **depressa** (Klein), Miocene. Glandinidae: **METAGLANDINA** (p. 203), with *M.* **filholi** (Bourg.) (p. 206), Eogene; **PARAGLANDINA** (p. 204), with *P.* **confusa*** (p. 206), Oligocene; **TRACHYGLANDINA** (p. 205), with *T.* **convexa** (J. W. Taylor) and *T.* **brevis** (p. 205), England, Oligocene; *T.* **dietrichi*** (p. 213) [Spelled also dietrichii], Eocene; *Palaeoglandina* **succineoides*** (p. 209), Oligocene. Specimens upon which this revision was based are deposited in various museums in Europe (Germany, Czechoslovakia, Austria, France, England, etc.) and in the private collections of Wenz, Jooss, and Oppenheim.—*G. Pfeffer* (*transl. by J. Gardner*).

8573. PILSBRY, HENRY A. Studies on West Indian mollusks, II: The locomotion of Urocoptidae and descriptions of new forms. *Proc. Acad. Nat. Sci. Philadelphia* 81: 449-467. 5 pl., 8 fig. 1929.—Locomotion in *Urocoptis* and *Macrocceramus* is direct and monotaxic; the rapid muscular waves are narrowly localized and raise the sole in a thin, transverse line. The following are described: *Urocoptis* (*Idiostemma*) **miranda*** (p. 451), *U.* (*Cochlodinella*) *manzanillensis* Torre*, *U.* (*Gongylostoma*) *mayajiguensis fulva* Torre*, *U.* (*G.*) *bacillaris* ssp. **petrophila*** (p. 456) and ssp. **vivax*** (p. 457), *U.* (*G.*) **spirifer*** (p. 457), *U.* (*G.*) **turneri*** (p. 458) with ssp. **mercedesensis*** (p. 459), *U.* (*G.*) **rectaxis*** (p. 459) with ssp. **sculpturata*** (p. 460), *U.* (*G.*) *vignalensis* vars. **amoenivallis*** (p. 460) and **balnearum*** (p. 461), *Macrocceramus* **torrei*** (p. 461), *M.* **regis*** (p. 462), *M.* **vanattai*** (p. 463), *Microceramus* **mota*** (p. 464), *Micr.* **sublatus** Pilsbry & Torre* (p. 465) with ssp. **subelegans** Pils. & Torre* (p. 466), and *Micr. bermudezi* ssp. **florenciana*** (p. 466), Cuba. Several other species are discussed and figured. Types in Acad. Nat. Sci. Philadelphia.—*H. B. Baker.*

8574. PILSBRY, HENRY A. Results of the Pinchot South Sea Expedition. I. Land mollusks of the Caribbean Islands, Grand Cayman, Swan, Old Providence and St. Andrew. *Proc. Acad. Nat. Sci. Philadelphia* 82: 221-261. map. 4 pl. 10 fig. 1930.—Lists of species known from each island with discussion of the bearing of the faunas on paleogeography. Of the 29 spp. found on Grand Cayman, 6 are widely spread culture snails, 18 are Jamaican in their affinities, 2 are old relic forms. Swan Isls. have also a chiefly Jamaican fauna, while Old Providence and St. Andrew are Central American in their affinities. **CYCLAUCHEN** (p. 245) n. sect. of *Brachypodella*, type *B. insulaecygni* Clapp. Cyclophoridae: *Poteria* **caymanensis*** (p. 227), *P.* **laevitesta*** (p. 227). Pomatiasidae: *Colobostylus rosenbergianus* f. **boddenensis*** (p. 229), Helicinidae: *Lucidella* **caymanensis*** (p. 230), *Stoastoma* (*Blandia*) **atomus*** (p. 230). Sagdidae: *Lacteoluna* **summa*** (p. 231), *L.* **caymanensis*** (p. 232), *L.* **steveni*** (p. 232). Urocoptidae: *Brachypodella* **caymanensis*** (p. 233), *B.* **erratica*** (p. 234). Glandinidae: *Varicella* **pinchoti*** (p. 236), *Spiraxis* (*Volutaxis*) **caymanensis*** and *S.* **subrectaxis*** (p. 237). Strobilopsidae: *Strobilops* **wenziana*** (p. 238). All from Grand Cayman. *Spiraxis* (*Volutaxis*) **curvaxis*** (p. 237), Santo Domingo. Pomatiasidae: *Choanopoma* **cygni*** (p. 242). Helicinidae: *Lucidella pilsbryi* ssp. **indecora*** (p. 243), *Pyrgodomus* **fisheri*** (p. 243). Bulimulidae: *Drymaeus* **parvicygni*** (p. 245). Succineidae: *Succinea* **cygnorum*** (p. 246), Swan Islands. Helicinidae: *Helicina fasciata* **providentiae*** (p. 248). Polygyridae: *Giffordius pinchoti**, anatomy. Bulimulidae: *Drymaeus rufescens* ssp. **pinchoti*** (p. 252). Glandinidae: *Pseu-*

dosubulina **insularis*** (p. 255). Systrophiidae: *Miradiscops* **ridicula*** (p. 256). Pupillidae: *Strobilops* **piratica*** (p. 256), Old Providence. Pomatiasidae: *Parachondria* **pyrostoma*** (p. 259), St. Andrew Isl. Types of new species and subspecies in Acad. Nat. Sci. Philadelphia.—*H. A. Pilsbry.*

8575. [POPOV, K. K.] ПОПОВ, К. К. К распространению и экологии **Limnaea truncatula Müll.** на С. Кавказе. **[Distribution and ecology of L. truncatula in north Caucasus.]** [German summary.] Работы Северо-Кавказской Гидробиологической Станции. (*Trav. Sta. Biol. Caucase du Nord*) 3(1/3) : 155-164. 1930.—This species is abundant in the foothills and mountains up to 2000 m. It inhabits chiefly temporary bodies of water, also sluggish brooks. It occurs isolated or in company with other mollusks, *Planorbis planorbis* and *Pisidium casertanum*. When the water basins dry up, it attaches itself to water plants, and covers its oral aperture with a thin membrane, or bores into the mud without covering its oral aperture. Three periods of egg-laying were noted in the summer of 1929, the complements varying from 7 to 23. In one place used as a sheep pasture, 2 out of 200 dissected mollusks were infested with parthenogenetic forms of the trematode, *Fasciola hepatica.—From author's summary.*

8576. RENSCH, BERNHARD. Über einige aberrante Landschnecken und die Abgrenzung der Familien bei Pulmonaten. *Zool. Anz.* 92(7/8) : 181-187. 3 fig. 1930.—**ARIOPHANTOPSIS** (p. 181), near *Sasakina*, type *A.* **pseudoamphidromus*** (*Ariophanta p.* Rensch) (p. 183); **SASAKINA** (*Sasakia* Rensch, not Moore) (p. 182). A comparison of the characters of the genera *Ariophanta**, *Sasakina**, *Ariophantopsis**. *Pseudopartula**, and *Amphidromus** shows the difficulty of separating the families Pleurodontidae and Ariophantidae. *Sasakina* and *Ariophantopsis* are placed in a special group, **SASAKINAE** (p. 186), and referred provisionally to the Ariophantidae. The genera *Chloritis* and *Landouria* and their relatives are considered Eulotidae. More exact study of the genera and spp. of the Pulmonata must lead to a reduction of the limits of some of the families.

8577. RENZ, CARL von. Frechiellen, Leukadiellen und Paroniceraten im westgriechischen Oberlias mit tessinischen Vergleichsstücken. *Eclogae Geol. Helvetiae* 20(3) : 422-444. 1 pl. 10 fig. 1927.—Describes 2 spp. of *Frechiella* including *F. fulviae* v. **luganensis*** (p. 428) from Breggia Gorge, Switzerland; 2 spp. of *Leukadiella*, including *L.* **jeanneti*** (p. 432), Epirus, Greece; and 4 spp. of *Paroniceras.—W. Berry.*

8578. ROBSON, G. C. Notes on the Cephalopoda. 6. On Grimpella, a new genus of Octopoda, with remarks on the classification of the Octopodidae. 8. The genera and subgenera of Octopodinae and Bathypolypodinae. 9. Remarks on Atlantic Octopoda, &c. in the Zoölogisch Museum, Amsterdam. 10. On Octopus patagonicus, Lönnberg. 12. Observations on young octopods obtained by the "Dana" Expedition. *Ann. and Mag. Nat. Hist.* 2(7) : 108-114. 4 fig. 1928; 3(18) : 607-608, and 609-618. 3 fig. 1929; 5(26) : 239-240; (28) : 366-370. 1930.—For other parts in this series see B. A. 1(2/3) : entry 3837; (6) : entry 10560; 3(9/11) : entry 22231; 4(3) : entry 10064; (4) : entries 13305 and 13306; 5(6/7) : entry 18696; (8/9) : entry 21727. 6.—**BATHYPOLYPODINAE** (p. 109) (Octopodidae), to include *Bathypolypus, Benthoctopus,* and **GRIMPELLA** (p. 110), type *G.* **thaumastocheir** ♂* (p. 110), Port Lincoln, So. Australia. Type in Brit. Mus. The relationship of the 3 genera is discussed. 8.—A revised list of genera and subgenera recognized by the author, with citations of type species. Octopodidae: [*Octopus*] *Macrotritopus* [subg.] **equivocus** (*O. gracilis* Verrill, not Eydoux & Souleyet) (p. 607); **JOUBINIA** (p. 607), type *J.* **fontaniana** (d'Orb.), n. comb. (p. 607); **MACROCHLAENA** (p. 607), type *M.* **winckworthi** (Robson), n. comb. (p. 607); **HAPALOCHLAENA** (p. 608), type *H.* **lunulata** (Quoy & Gaim.), n. comb. (p. 608); **TERETOCTOPUS** (p. 608), type *T.* **indica** (*"Polypus pricei"* Massy, 1916, not Berry) (p. 608). 9.—The author lists specimens of 8 spp., with locality data, and gives descriptive notes on *Octopus vulgaris, O. rugosus,* and *O. macropus** (?). *O.* **briareus*** (p. 612), Caribbean; *Enteroctopus* **juttingi*** (p. 616), Patagonia. Types in Zoöl. Mus., Amsterdam. 10.—*Enteroctopus megalocyathus* [author ?] (=*Octopus patagonicus* Lönnberg) is considered distinct from *E. eureka* Robson. 12.—Descriptive notes on young specimens from the N. Atlantic and E. Pacific, belonging apparently to 5 different spp. of *Octopus,* but not determined specifically.

8579. SEKI, H. Identification on the larva of Ostrea denselamellosa Lischke. [Japanese, with English summary.] *Jour. Imp. Fisheries Exp. Station, Tokyo* 1(1, pt. 1) : 233-240. 2 pl. 1930.—This oyster has not yet been cultivated, owing to the impossibility of collecting spats. The author obtained many straight-hinged larvae from the adult and reared them from July to Sept. In August many were full-grown. The larval development was traced accurately, and means were found for distinguishing between the larvae of *Ostrea denselamellosa** and *O. futamiensis**.

8580. SETNA, S. B. The neuro-muscular mechanism of the gill of Pecten. *Quart. Jour. Microscop. Sci.* 73(3) : 365-391. 3 pl., 4 fig. 1930.—*Pecten* responds to all forms of stimulation by snapping the shell. Before the adductor muscle contracts, the gill shortens (but not if the branchial nerve is cut near its origin) so that it lies safely within the valve margins. The gill muscles relax immediately after the adductor. Excised gills continue very sensitive to stimuli for 2-3 days. If the gill is cut vertically along its length into several pieces, each piece responds like the entire gill. This is almost certainly due to a local nervous mechanism, presumably a nerve-net. If the gill is stimulated mechanically, the frontal surfaces of the 2 lamellae approach each other, the movement often being executed by the lamella which was not touched. Each principal filament is able to move the attached ordinary filaments. This flapping movement is due to the action of interfilamentary junctions. When weak, irritating solutions were applied to the regions of the osphradial ridge there was a slight response. Other parts of the gill were much less sensitive to stronger solutions. Sea water and star-fish extract induced no noticeable response. Thus it is evident that the gill is sensitive to chemical stimulation and by means of the osphradium capable of detecting slight changes in the surrounding medium. The axis and principal filaments have what appears to be a true nerve-net. The gills receive nerve-fibers from the visceral ganglion and also, through the hitherto unknown subsidiary branchial nerve, from the brain. The osphradium is much more extensive than has previously been supposed. Two sets of muscles (non-striated) at the base of the filaments are responsible for movements of the lamellae. The principal filaments are connected to the ordinary filaments by processes containing true muscle-cells and by these cells movements of the filaments are effected.—*J. S. Gutsell.*

8581. SPATH, L. F. A monograph of the Ammonoidea of the Gault. Vol. I, pt. V & VII. (Continuation & conclusion.) In: *Palaeontographical Soc. [London]* **79** (paper 1) : 187-206. Pl. 17/20, 8 fig. 1925(1927); **82** (paper 2) : i-x+267-311. Pl. 25/30, 16 fig. 1928(1930).—Old species are discussed and figured. Descriptions of new species in the text are in most cases supplemented by plate- and figure-explanations. *Epihoplites* **iphitus*** (p. 187), Devon, Up. Gault, type in Brit. Mus.; *Callihoplites catillus**; *C.* **patella*** (p. 192), Wilts, Up. Gault, type in M. P. G. (Mus. Practical Geol.); *C.* **strigosus*** (p. 194), Wilts, Malmstone, Up. Gault, type in B. M.; *C. s.* var. **cristata*** (p. 195), Wilts, Malmstone, type in M. P. G.; *C.* **formosus*** (p. 196), Wilts, Up. Gault, type in B. M.; *C. auritus**; *C.* **horridus*** (p. 200) and *C.* **variabilis*** (p. 202), Wilts, Up. Gault, type in M. P. G.; *C.* **potternensis*** (p. 203), same as the preceding, type in B. M.; *C.* **tetragonoides*** (p. 204), Oxford, Up. Gault, type in M. P. G.; *C.* **seeleyi*** (*Pleurohoplites s.* Spath) (p. 205); *Euhoplites subtabulatus**, *E. aspasia** and var. **cantiana*** (p. 269), Kent, Lr. Gault, type

in author's coll.; *E. loricatus* v. **meandrina*** (p. 271), Kent, Lr. Gault, type presumably in author's coll.; *E. pricei**, *E. subtuberculatus**; *E.* **opalinus*** (*Ammonites tuberculatus* J. Sowerby not Smith) (p. 274); *E. bucklandi**; *E. nitidus**; *E. proboscideus** and v. **intermedia*** (p. 282), Kent, type in author's coll.; *E. p.* var. **ultima*** (p. 282), Devon, Up. Gault; *E. armatus**; *E.* **trapezoidalis*** (p. 285), Norfolk, Red Chalk, probably base of Up. Gault, type in Sedgwick Mus.; *E. t.* var. **formosa*** (p. 285), Kent, Lr. Gault, type in author's coll.; *E. t.* var. **micheliniformis** (p. 286), locality not stated; *E.* **serotinus*** (p. 286), Kent, Up. Gault, type in author's coll.; *E. solenatus**, *E. ochetonotus** v. **nodosa** (p. 289) and *E. sublautus** v. **monacantha*** (p. 290), Norfolk, Red Chalk, Up. Gault, type in Sedgwick Mus.; *E. suberenatus**; *E.* **inornatus*** (*Ammonites crenatus* Sowerby not *crenata* Bruguière) (p. 293); *E. vulgaris**; *E. boloniensis**; *Discohoplites caelonotus**; *D. varicosus**; *D. subfalcatus*; *D. valbonnensis**; *D.* **anomalus*** (p. 304), Dorset, Uppermost Gault ("Upper Greensand"), type in Grimsdale coll.; *D.* (*Hyphoplites?*) **transitorius*** (p. 304), Dorset, Uppermost Gault) type in Grimsdale coll. The present paper concludes the descriptions of the hoplitid ammonites of the Gault, in 7 pts., comprising vol. I. Systematic and alphabetic indexes are given.

8582. TOMLIN, J. R. le B. On South African marine Mollusca, with descriptions of new genera and species. *Ann. Natal Mus.* 6(3): 415-450. 1 pl. 1931.—This is a continuation of a faunistic list, the last previous part of which appeared in the same journal in 1926. [See B. A. 2(3/5): entry 7831.] About 147 spp. are listed, with locality records and taxonomic remarks. Patellidae: *Patella granatina* L. is designated as the type of *Patellona* Thiele; *Patellopsis* Thiele is preoccupied by *P.* Nobre; *Patella variabilis* v. **polygramma** (*P. v.* var. *radiata* Krauss, not *P. r.* Born) (p. 418); *P. v.* var. **fasciolata** (*P. v.* var. *fasciata* Krauss, not *P. f.* Gmelin) (p. 418). Trochidae: *Oxystele variegata* (Anton) (=*Trochus impervius* Menke); *O. sinensis* (Gmelin) (=*Trochus merula* Lamarck); [*Calliostoma*] *fultoni* (Sow.) (=[*Trochus?*] *farquhari* Sow., *Trochus stenomphalus* Sow.). Turbinidae: *Phasianella* **tropidophora*** (p. 420), Cape Province. Littorinidae: *Littorina coccinea* (Martyn) (=*L. limax* Gray, *L. glabrata* Philippi, *L. laevis* Philippi, *L. obesa* Sow.). Rissoidae: *Alvania* **kowiensis** (*A. ima* Bartsch, 1915, not Bartsch, 1911) (p. 421); *A.* **outis** (*A. nemo* Bartsch, 1915, not Bartsch, 1911) (p. 421). Rissoinidae: *Rissoina* **leucophanes*** (p. 421) and *R.* **jeffreysiensis** (p. 422), Cape Prov. Cerithiopsidae: **SEILOPSIS** (p. 424), erected for *Cerithiopsis ? peilei* Smith. Triphoridae: *Triphora* **alexandri*** (p. 425), *T.* **hemileuca*** (p. 426), and *Euthymia* **latisinuata*** (p. 426), Natal. Turritellidae: *Turritella ferruginea*, of hitherto unknown locality, recorded from off Cape Prov., 30-250 fms. Calyptraeidae: *Calyptraea* **capensis*** (p. 428), Cape Prov. Buccinidae: [*Bullia ?*] *mozambicensis* Smith (=*Bullia pustulosa* Sow.). Fasciolariidae: *Latirus alboapicatus* Smith, emended description. Pyrenidae: *Pyrene* **retiaria*** (p. 436), Natal; *Anachis kraussii* Sow. (=*Columbella io* Bartsch, *C. alfredensis* Bartsch); the author points out that *Columbella adjacens* Smith, 1904, is a nomen nudum, and likewise, apparently, *C. capensis* Smith, as recorded by Bartsch, 1915. Turridae: *Clionella sinuata* (Born) (=*Buccinum phallus* Gmelin, *Pleurotoma buccinoides* Lam., *P. bornii* Smith, *Clionella turtoni* Bartsch); *C. caffra* (Smith) (=*Drillia praetermissa* Smith, *D. nivosa* Smith). Veneridae: *Tivela hartwigii* Dunker (=*T. rejecta* Smith). Cardiidae: **AFROCARDIUM** (p. 449), n. subg. of *Fragum*, type *F.* (*A.*) **shepstonense*** (p. 449), Natal.

8583. TOMLIN, J. R. le B. Some preoccupied generic names. III. *Proc. Malac. Soc. London* 19(4): 174-175. 1931.—**HANNAOCERAS** (p. 174), new name for *Smithoceras* Hanna (not Diener), type *Ammonites nasturtium* Dittmar; **DIAPHANOTEUTHIS** (p. 174), n. n. for *Leptoteuthis* Verrill (not Orb.), type *L. diaphana* Verrill; **HARMERIA** (p. 174), n. n. for *Lacunopsis* Harmer (not Desh.), monotype *L. obtusus*; **ALLOMACTRA** (p. 175) subg., n. n. for the subg. *Heteromactra* Cossmann (not Lamy), type *Mactra grateloupi* Desh.; **BOYCOTTIA** (p. 175), n. n. for *Donaldia* Perner (not Alluaud), type *D. altera* Pern.; **CYRTODONTULA** (p. 175), n. n. for *Whitella* Ulrich (not Spinola), type *W. obliquata* Ulr.; **PLATYCHELYNE** (p. 175), n. n. for *Platychilus* Wöhr. & Koken (not Yakobley), type *Platychilus wöhrmanni* Koken; **TRYPANOCOCHLEA** (p. 175), n. n. for *Verania* Koken (not Vérany), type *V. cerithioides* Koken; **TOROTEUTHIS** (p. 175), n. n. for *Hyaloteuthis* Pfeffer (not Gray).—*H. B. Baker.*

8584. TRAUTH, FRIEDRICH. Aptychenstudien. I. Über die Aptychen im Allgemeinen. II. Die Aptychen der Oberkreide. *Ann. Naturhist. Mus. Wien* 41: 171-259. 8 fig. 1927; 42: 121-193. 3 pl. 1928.—In Part I the history of the attempt to locate the aptychus systematically, culminating in the discovery that it is the operculum* of the ammonite shells, is discussed in detail. The aptychi are quite important in palaeontological research. The morphology is studied in detail and is accompanied by a glossary of synonymy of all descriptive terms used by other authors. The name *Aptychus* Meyer has been ranked as a genus since 1829. As in other groups where species are first known from a part or a developmental stage, a group of provisional generic names are introduced by Trauth under the name "typus" (n. typ.), and his new species under the name "formnamen" (n. f.). In referring an aptychus to its proper generic and specific position a notation such as "*Aptychus* ad: *Scaphites spiniger* Schlüt." is used. A complete new series of classificatory names is introduced as follows: **PALANAPTYCHUS** (p. 214) (ad: palaeozoic Goniatitidae); **PALAPTYCHUS** (p. 214) (ad: mesozoic Goniatitidae); *Anaptychus* Opp. (ad: *Arcestes, Psiloceras, ? Aegoceras, Arietites, Amaltheus*); **CORNAPTYCHUS** (p. 228) (group "Cornei" Voltz, ad: *Harpoceras, Hecticoceras, Sonninia, Dumortieria*); **LAMELLAPTYCHUS** (p. 228) (group "Imbricati" Voltz, ad: *Oppelia* pro parte, ? *Oecotraustes, Haploceras* p. p.); **PUNCTAPTYCHUS** (p. 228) (group "Punctati" Zitt., ad: ? *Oppelia* p. p., ? *Haploceras* p. p.); **GRANULAPTYCHUS** (p. 228) (group "Papillosi" Menegh. et Bornem., ad: *Stephanoceras, Perisphinctes, ? Holcostephanus*); **LAEVAPTYCHUS** (p. 228) (group "Cellulosi" Voltz, ad: *Aspidoceras*=*Waagenia* Neum., ? *Simoceras*); **PRAESTRIAPTYCHUS** (p. 230) (ad: *Parkinsonia, ? Cosmoceras, Kepplerites*); **PTERAPTYCHUS** (p. 232) (ad: ? *Desmoceras*), for *Aptychus numida* Coqu.; **SPINAPTYCHUS** (p. 232) (ad: ? *Mortoniceras*), for *Aptychus spinosus** Cox; **LISSAPTYCHUS** (p. 231) (ad: ? *Parapuzosia*), for *Aptychus leptophyllus**; **STRIAPTYCHUS** (p. 229) (group "Coalescentes" Zitt., ad: *Scaphites*); **PSEUDOSTRIAPTYCHUS** (p. 229) (ad: ? *Pachydiscus, Parapachydiscus*); **RUGAPTYCHUS** (p. 228) (group "Rugosi" Menegh. et Bornem., ad: *Baculites*); **CRASSAPTYCHUS** (p. 232), for *Aptychus crassus** Héb. *Aptychus lamellosus* Park. is referred to *Lamellaptychus* (p. 223), *A. carbonarius* Koen. and *A. gallienneanus* Orb. to *Palaptychus* (p. 235). The following names become established in part 1 (1927) as new names for figured aptychi in quoted works, and in part 2 are described with full synonymy and often illustrated: *Striaptychus cretaceus* v. **excentrica*** (p. 243); *S.* **cheyennensis*** (p. 243); *S.* **leopolitanus** (p. 243); *S.* **radiosus** (p. 243); *S.* (?) **ravnii*** (p. 244); *S.* **roemeri*** (p. 244); *S.* **schlüteri*** (p. 244); *S.* **sharpei** (p. 244); *S.* **spinigeri*** (p. 244); *S.* **strehlensis** (p. 244); *S.* **vinarensis** (p. 244). The following forms are transferred in part 1 and redescribed in part 2: *Striaptychus* **complanatus*** (*A. c.* Fr. et Schlg.) (p. 243); *S.* **cretaceus** (*A. c.* Münst.) (p. 243); *S. c.* var. **convexa*** (*A. convexa* Roem.) (p. 243); *S.* (?) **obtusus*** (*A. o.* Héb.) (p. 243); *S.* (?) **planus*** (*A. p.* Fritsch) (p. 243); *S.* **radiatus*** (*A. r.* Fric) (p. 243); *S.* (?) **simplex*** (*A. s.* Fritsch); *S.* (?) **verrucosus*** (*A. v.* Fritsch); *Lissaptychus* (?) **cretaceus***

(*A. c.* Gein. part.) (p. 244); *Rugaptychus* **rugosus** (*A. r.* Sharpe) (p. 245); *R. r.* var. **insignis*** (*A. i.* Héb.) (p. 245); *R.* **knorrianus*** (*A. k.* Diener); *R.* **flexus*** (*A. f.* Mobg.). Part 1 closes with a phylogenetic table of the families and new provisional genera (typi) and a long bibliography. The illustrations indicated above are in part 2. Part 2 (1928) contains the descriptions of all provisional genera (typi) and aptychus species (forms) with complete synonymy of each. The new forms and synonymy are as follows: *Rugaptychus rugosus** Sharpe (=*Aptychus stobaei* Diener); *Aptychus peramplus* is referred to *Rugaptychus* (p. 128); *Striaptychus cretaceus* v. **leopolitana** (*S. leopolitanus* Trauth) (p. 147); *S. c.* var. **sharpei** (*S. s.* Trauth) (p. 148); *S. c.* var. **radiosa** (*S. radiosus* Trauth) (p. 149); *Pseudostriaptychus* **pseudo-stobaei** (p. 168), aptychus of *Parapachydiscus pseudo-stobaei*; *Ps.* (?) **gollevillensis*** (*Aptychus g.* Sharpe) (p. 168); *P.* (?) **icenicus*** (*A. i.* Sharpe) (p. 170); *P.* (?) **portlocki*** (*A. p.* Sharpe) (p. 171); *Lissaptychus* **teplitzensis** (p. 178), Bohemia; *L.* **conchaeformis*** (*A. c.* Fr.) (p. 179). In addition the author mentions still other Up. Cretaceous fossils wrongly identified as aptychi, namely several lamellibranchs, and *Sidetes* Giebel, which is probably the upper maxilla of a cephalopod. By far the greater number of aptychi considered came from the European Up. Cretaceous, for the most part from the Senonian and Turonian of that region; and only occasionally from the Cenomanian (*Lissaptychus* (?) *cretaceus*). *Spinaptychus* has been recorded also from the Senonian of England and from Palestine. From America there are known only *Striaptychus cheyennensis* (Fox Hills group, Senonian, of Dakota) and *Striaptychus* f. 1 (Eagle Sandstone group, Senonian, of Wyoming).

8585. UTTERBACK, W. I. Phylogeny and ontogeny of Naiades. *Proc. West Virginia Acad. Sci.* 2: 60-67. 1928.

8586. VĂSCĂUȚANU, TH. Fauna argilelor sarmatice dela Ungheni. [The Sarmatian shale fauna of Ungheni.] *Anuar. Inst. Geol. Românici* 13: 85-120. 2 pl., 7 fig. 1928 (1929).—The author reports 4 Rhizopoda, 2 Vermes, 2 Bryozoa, 27 Lamellibranchiata, 15 Gastropoda, 2 Crustacea, and 2 Vertebrata, from the Neogene, including: (Lamellibranchiata) *Mactra* **cobalcescui*** (p. 90); *Cardium* **simionescui*** (p. 100); *C.* **ungheniensis*** (p. 103); *C.* **elisabetae*** (p. 103).

8587. VAYSSIÈRE, A. Étude zoologique et anatomique sur quelques Gastéropodes Prosobranches provenant des Campagnes du Prince Albert Ier de Monaco. *Résultats Campagnes Sci. Albert I Prince de Monaco Fasc.* 80. 3-26. 1 pl. 1930.—The author presents detailed anatomical studies of *Trophon dabneyi**, *Bela* **alberti*** (*Pleurotoma a.* Dautz. & H. Fischer) (p. 6), *Clionella* **richardi*** (*Pleurotoma r.* Dautz. & H. Fischer) (p. 7), *Turcicula alicei**, *Caecum trachea**, and *C. vitreum**. There is also some taxonomic discussion of these forms. *Clionella* Gray is raised from subgeneric to generic rank. Previous work on the genus *Sinusigera* is reviewed, and the following new spp. are described: *S.* **dautzenbergi*** (p. 24), *S.* **richardi*** (p. 25), and *S.* **sirventi*** (p. 26), all from near the Azores, at the surface; types in Mus. Océanog. Monaco.

8588. VINCENT, EMILE. Les Mytilidées des sables de Wemmel (Eocène supérieur). *Bull. Mus. Roy. Hist. Nat. Belgique* 6(17): 1-9. 3 fig. 1930.—The treatment of the following forms from Belgium includes synonymies, descriptions, and taxonomic discussion: *Modiola wemmelensis; Lithophagus* (*Botula*) **brabanticus*** (p. 2); *Modiolaria seminuda; M. hastata; Arcoperna nuculaeformis; Crenella* **cymbiola*** (p. 7); *C.* **humilis*** G. Vincent ms. (p. 8).

8589. WAGNER, HANS. Morphologische und anatomische Studien an Milax. *Zool. Anz.* 88(1/4): 39-57. 6 fig. 1930.—Color, skin, keel, foot, mantle, shell, radula, and sex organs of this snail genus are discussed. **MACROTYHLACUS** [also given as *Macrothylacus*], n. subg. of *Milax.* with *M.* (*Macrothylacus*) **jablanacensis*** (p. 46); *M.* (*Milax*) **schleschi*** (p. 48). Species of *Milax* are listed with keys to sections and subgenera, and to species found in Hungary and Austria, with a map of localities in Hungary.—*L. H. Hyman.*

8590. WOODWARD, ARTHUR. Shells used by the Indians in the village of Muwu. *Bull. Southern California Acad. Sci.* 29(3): 105-114. 1 pl., 2 fig. 1930.—Eighteen of the mollusks most frequently encountered in a midden excavation on the California coast are listed, with notes on their use as food, ornaments, etc.

MYRIOPODA AND ONYCHOPHORA

R. V. CHAMBERLIN, *Editor*

(See also in B. A. 6(1): Entry 2801; 6(2): 3328, 6043; and in this issue 6259, 8602)

8591. ATTEMS, C. Scolopendromorpha du Congo Belge. *Rev. Zool. et Bot. Africaines* 19(2): 287-294. 3 fig. 1930.—An annotated list of spp., including: *Cormocephalus brevicornis* ssp. **longipalpus*** (p. 289); *Otostigmus troglodytes* ssp. **intercessor** (p. 290); **DIGITIPES** (p. 291), near *Otostigmus*, for *D.* **verdascens*** (p. 292); *Rhysida* **ventrisulcus** (p. 294). Types in Congo Mus.

8592. CHAMBERLIN, RALPH V. A new milliped of the genus Fontaria from Mississippi (Chilognatha: Xystodesmidae). *Ent. News* 42(3): 78-79. 1931.—*F.* **lamellidens**, type in author's coll.

8593. CHAMBERLIN, RALPH V. On a collection of chilopods and diplopods from Oklahoma. *Ent. News* 42(4): 97-104. 1 pl. 1931.—List of 15 spp., including *Spirobolus* **oklahomae*** (p. 98), *Orthoporus* **wichitanus*** (p. 99), *Eurymerodesmus* **birdi*** (p. 101), and *E.* **mundus*** (p. 102). Types in author's coll.

8594. KISHIDA, KYUKICHI. A Japanese species of Pauropoda (Neopauropus niwai). *Annot. Zool. Japonenses* 11(4): 377-383. 7 fig. 1928.—**NEPAUROPUS** (p. 377), allied to *Stylopauropus*, type *N.* **niwai*** (p. 377), Honshiu, in author's coll. About 50 spp. of Pauropoda are previously known.

8595. REMY, PAUL. Description d'un nouveau Pauropode de la faune de France (Allopauropus sequanus n. sp.). *Arch. Zool. Exp. et Gén., Notes et Revue* 70 (3): 73-82. 10 fig. 1930.

8596. SCHUBART, OTTO. Über die Diplopodenfauna Pommerns und einiger der Küste vorgelagerter Inseln. *Dohrniana* [*Stettin*] 11: 241-279. 3 fig. 1931.—An annotated list of 32 spp. found in Pomerania, with additional notes on the diplopod fauna of 2 islands—Greifswalder Oie and Hiddensee.

8597. SCHUBART, OTTO. Einige neue Diplopoden von der Insel Korsika und aus Spanien. *Zool. Anz.* 94 (1/2): 2-12. 10 fig. 1931.—*Polydesmus* **corsicus*** (p. 4) and *Archiulus corsicus* ssp. **schulzei*** (p. 5), Corsica; *Polydesmus* **heroldi*** (p. 9), Spain.

8598. VERHOEFF, KARL W. Zur Kenntnis der Geographie und Ökologie der Diplopoden, besonders Nordwestitaliens. 115. Diplopoden-Aufsatz. *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 17(1/2): 219-261. 1930.—Diplopods were collected from 5 regions in northern Italy: the vicinity of Lake Maggiore; Biellan Alps and Turin Hills; southern Piedmont (Ceva, Mondovi, Cuneo); the Maritime and Ligurian Alps; the Riviera. Characteristic spp. are listed from each region. There are also comparisons with the faunas of the northeastern Alps and of Germany. Evidence as to the origin of these faunas is given.—*A. O. Weese.*

8599. VERHOEFF, KARL W. Pseudopolydesmus "im Wechsel der Zeiten." *Zool. Anz.* 94(11/12): 305-318. 7 fig. 1931.—Discusses the controversy over the separation of *Pseudopolydesmus* from *Polydesmus* and demonstrates

that the former should be suppressed because of identical characters.

8600. **VERHOEFF, KARL W.** Chilopoden der Insel Elba (Isopoden). *Zool. Anz.* 95(11/12): 302-312. 6 fig. 1931.—A list of 27 spp. of Isopoda and 21 spp. of Chilopoda from Elba, with collecting notes on the latter. [Chilopoda] *Lithobius* (*Alokobius*) **elbanus*** (p. 306); *L. microps**; *L. m.* vars. **burzenlandicus** and **ruinarum*** (p. 308); *Geophilus* **ruinarum*** (p. 310).

8601. **WORTHINGTON, E. B.** The Diplopoda and Chilopoda of Wicken Fen. *Nat. Hist. Wicken Fen* Pt. 4. 308-312. 1928.

CRUSTACEA

MARY J. RATHBUN, *Editor*

WALDO L. SCHMITT, *Associate Editor*

CHANCEY JUDAY, C. DWIGHT MARSH, H. A. PILSBRY, CLARENCE R. SHOEMAKER, CHARLES B. WILSON, *Assistant Editors*

(See also in this issue Entries 6183, 6311, 6328, 6332, 6889, 6970, 7799, 8182, 8185, 8188, 8201, 8206, 8215, 8422, 8427, 8488, 8568, 8586, 8600, 8658, 9061)

8602. **BROILI, FERDINAND.** Ein neuer Fund von ? "Megadactylus." *Sitzungsber. Math.-Naturwiss. Abt. Bayerischen Akad. Wiss.* 1930(3): 215-222. 1 pl., 1 fig. 1930.—Malacostraca. Syncarida, **BUNDENBACHIELLUS** (p. 219), n. nom. for *Megadactylus* Broili not Hitchcock, type *B. giganteus* (*M. g.* Broili) (p. 219), is transferred from Myriapoda to Crustacea, as an unnamed group in Syncarida; *B.* (?) **minor*** (p. 219), Lr. Devonian slate of Bundenbach, Hunsrück, Prussia.

8603. **BROOKS, STANLEY T.** List of types of Crustacea in the Carnegie Museum on January 1, 1931. *Ann. Carnegie Mus.* 20(2): 161-167. 1931.—The museum has type material of 25 spp.

8604. **BUSH, S. F.** Asymmetry and relative growth of parts in the two sexes of the hermit-crab, Eupagurus prideauxi. *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 123(1): 39-79. 16 fig. 1930.—After developing a method on 15, 64 ♀ and 56 ♂ hermit crabs were measured (64 measurements each; thoracic length and width, antenna 1-2, maxillipedes 3, pereiopods 1-5, uropods) and grouped by thoracic length to study asymmetry of the body, its changes during life, and the distribution of the "growth-potential" along the body. The greatest growth in the appendages occurred in the 3rd pereiopod; this grew more rapidly than the body, those in front and behind more slowly. The growth-gradient was the same for both sexes except that the relative speed of growth was less in most appendages in the ♀♀ than in the ♂♂ and that in both sexes (much more pronounced in the ♂♂) the regularity of the curve was interrupted by the very pronounced heterogony of the right chela, which showed a 2nd growth center. All appendages with the exception of the abdominal and of the last thoracic were larger on the right in both sexes than on the left. Graphically there was a right predominance, more abrupt in the ♂♂, which had its apex in the chela; in the ♂♂ the right predominance increased with the absolute size. The ♀♀ in all regions showed less right predominance, or more pronounced left predominance than the ♂♂. The change from the right to the left predominance in the ♀♀ occurred about a ½ segment farther forward than in the ♂. Graphic comparison of the ♂ to the ♀ appendages yields a gradient of ♂ predominance. This is negative for the eyestalk, the 5th pereiopod, and the abdominal appendages. In form it about agrees with the general growth gradient with the center at the 3rd pereiopod, but its regularity is interrupted on the right side by the heterogony of the right chela. The ♂ predominance in the head and thorax is greater on the right than on the left side. Every pereiopod shows a growth gradient with a center in the merus. The ♂ right chela begins its growth with a mode of the general pereiopod type, but of a definite size; in agreement with an increasing relative speed of growth of the entire limb the growth center shifts to the propus. This appears to be the unalterable site of the growth center in pronounced heterogonic crustacean limbs. The ♀ right chela showed a much less positive heterogony related to less increase in the speed of growth in the center of the propus. Regenerating chelae first show juvenile proportions, the adult proportions being restored by a rapid differential growth of the various segments.

8605. **CANNON, H. GRAHAM.** On the blood system of Parabathynella malaya, G. O. Sars. *Ann. and Mag. Nat. Hist.* 8(43): 109-114. 1 pl. 1931.—The chief interest in the blood system* lies in the occurrence of the first dorsal longitudinal muscles in the cavity of the vena dorsalis*. Contraction of these muscles must serve to dilate the cavity of this vessel. A rhythmical contraction of the series passing forwards would thus produce, in effect, a peristaltic wave which would suck in blood through the ostia and pass it forward to the heart.

8606. **[CHERNYSHEV, B. I.]** ЧЕРНЫШЕВ, Б. И. Новые Eryonidae с р. Вилюя. (New Eryonidae from Vilui River.) [English summary.] Известия Главного Геолого-Разведочного Управления. (*Bull. Geol. & Prospecting Service, USSR.*) 49(3): 103-111. 1 pl. 1930. —*Coleia* **sibirica*** (p. 106) and *Proeryon* **viluensis*** (p. 107), described from beds formerly considered Upper Jurassic, show them to be Liassic in age.

8607. **CHOPRA, B. N.** Pearl-like object found in a prawn. *Nature* [*London*] 126(3179): 502-503. 1 fig. 1930. —Description of a "pearl" from the abdominal region of a prawn (small peneid), apparently made of chitin.

8608. **COLOSI, G.** Lofogastridi nuovi. *Boll. Zool. Unione Zool. Italiana* 1(4): 119-125. 4 fig. 1930.—*Lophogaster* **erythraeus*** ♂ (p. 119), *L.* **affinis*** (p. 120), *Paralophogaster* **sanzoi*** ♂ (p. 122) and *P.* **microps*** (p. 123), all from the Red Sea.

8609. **CREASER, E. P.** The North American phyllopods of the genus Streptocephalus. *Occ. Papers Mus. Zool. Univ. Michigan* 217. 1-10. 2 pl. 1930.—A key, descriptions, synonymy and distribution of the 3 N. Amer. species (*Streptocephalus scalii, S. similis, S. texanus*) are given.—*E. P. Creaser.*

8610. **CREASER, E. P.** The Michigan decapod crustaceans. *Papers Michigan Acad. Sci., Arts & Lett.* 13: 257-276. 6 maps, 10 fig. 1931.—An illustrated key is given of the Michigan species of the genus *Cambarus*. *Palaemonetes exilipes** Stimpson is described. Ecological observations and distributional maps or lists are presented for all the Michigan decapods.—*E. P. Creaser.*

8611. **GRAF, HERBERT.** Der Fangapparat von Bosmina. *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 19(2/3): 381-396. 17 fig. 1930.—In *Bosmina*, which, like Daphnidae and Chydoridae, is unable to select its food, the thoracic legs act together as a closed pumping system producing suction and pressure. They form a food catching device equipped with filters to concentrate the material suspended in the water. The filtering areas are composed of setae. In the mechanism are a pump, filters, excurrent water channels, and devices for the transport of the filtration residue to the mouthparts. —*H. Graf* (*transl. by C. H. Blake*).

8612. **HELDT, H., et Mme. H. HELDT.** Des langoustines (Nephrops norvegicus Leach) dans les mers tunisiennes. *Stat. Océanogr. Salammbô, Notes* 16. p. 5-16. 2 pl. 1931.—*N. norvegicus** is recorded as new to the fauna of Tunisia. Its distribution in the N. Atlantic and

in the Mediterranean is reviewed. Its general habitat is muddy bottoms at depths of 30-800 or more m.; off Tunisia, at 100-150 m. In Tunisia ♂♂ average longer (130 mm.) than ♀♀ (115 mm.); egg-bearing ♀♀ are found in December. The authors suggest that trawling at greater depths and at night off Tunisia would result in larger catches.

8613. **KIEFER, FRIEDRICH.** Die Untergattung Tropocyclops der Gattung Eucyclops (Copepoda, Cyclopoida). *Zeitschr. Wiss. Zool.* 138(3): 487-514. 8 fig. 1931.—Key is given to spp. and forms of *Tropocyclops; E.* (*T.*) *prasinus* f. guwana* (p. 507), Java; *E. p.* ssp. jerseyensis, New Jersey, *E. p.* ssp. meridionalis, Uruguay, *E.* (*T.*) extensus* and *E. e.* f. longispina*, New Jersey, (all p. 508); *E.* (*T.*) *confinis** f. frequens (p. 509), Pondoland, S. Africa; *E.* (*T.*) parvus (p. 509), Guatemala.

8614. **KLIE, WALTER.** Ostracoden aus dem paraguayischen Teile des Gran-Chaco. *Arch. Hydrobiol.* 22 (2): 221-258. 40 fig. 1930.—Ostracoda were collected by G. S. Carter in the neighborhood of 2 mission stations in Paraguay: Makthlawaiya (58° 19′ W., 23° 25′ S.), and Nanahua (59° 30′ W., 23° 30′ S.). Investigations were also made of the great shallow swamps, partially dried up, though not entirely dry, and on the small uniformly drying up water holes. Only 1 species of Cytheridae and 10 spp. of Cypridae were found, including: *Physocypria* longiseta* (p. 222), *Heterocypris* reticulatus* (p. 228), *H.* hyalinus* (p. 230), *H.* affinis* (p. 233), *Chlamydotheca* calcarata* (p. 236), *Strandesia* carteri* (p. 240).—*W. Klie* (*transl. by W. L. Tressler*).

8615. **LOWNDES, A. G.** Living ostracods in the rectum of a frog. *Nature* [*London*] 126(3190): 958. 1930.—The species was *Pionocypris vidua* O. F. Müller, which was living in the same aquarium as the frog.

8616. **LOWNDES, A. G.** Some rare and little-known British fresh-water ostracods. *Rept. Marlborough College Nat. Hist. Soc.* 79. 82-112. 8 pl. 1930(1931).—A systematic account of 7 spp., with synonymies, detailed descriptions, taxonomic remarks, distributional records, and figures. *Herpetocypris brevicaudata**, new to England and Brit. Isles.

8617. **MANTON, SIDNIE M.** Notes on the segmental excretory organs of Crustacea. V. On the maxillary glands of the Syncarida. *Proc. Linnean Soc. London* 142. 52. 1929/30(1931).—Abstract.

8618. **MONTGOMERY, S. K.** Report on the Crustacea Brachyura of the Percy Sladen Trust Expedition to the Abrolhos Islands under the leadership of Professor W. J. Dakin, D.Sc., F.L.S. in 1913; along with other crabs from Western Australia. *Proc. Linnean Soc. London* 142. 14-15. 1929/30(1931).—Abstract.

8619. **NICHOLLS, G. E.** A new syncaridan from the west coast of Tasmania. *Proc. Linnean Soc. London* 142. 6-7. 1929/30(1931).—Described but not named.

8621. **RIESTER, ALBERT.** Muskulatur von Copilia Dana, mit einem Anhang über die Mundteile, die Ernährung und die Lebensweise. *Zool. Jahrb. Abt. Anat. u. Ontog. Tiere* 53(2): 317-404. 52 fig. 1931.—The whole muscular system of a copepod (*Copilia mirabilis*) is described with regard to the functional importance of each group of muscles, including: (1) the muscles of the body, of which the ventral longitudinal muscles and the muscles of the furcal rami, showing a number of complicated sinews, are of special interest; (2) the locomotory muscles of the appendages; (3) the muscles of the joints of the legs; (4) the muscles and sinews of the inner organs, especially those of the pharynx and esophagus of the ♂♂ as well as those of the genital opening of the ♀♀. The supplement treats particularly of the mouth parts of the ♂♂ and ♀♀ of the genus *Copilia;* those of the ♂♂ can easily be identified. A comparison is made with the locomotion of *Cyclops.—A. Riester.*

8622. **SCHIKLEJEW, S. M.** Einige interessante Arten der Eucopepoda aus den Gewässern des Talgebietes Manytsch (Nordkaukasus). *Zool. Anz.* 95(5/8): 142-148. 6 fig. 1931.—*Diaptomus bacillifer**, redescription; *Wolterstorffia blanchardi*, descriptive notes.

8623. **SCHMITT, WALDO L.** Trawling for crustaceans at Tortugas, Florida. *Smithsonian Inst., Explorations and Field-Work of the Smithsonian Inst. in 1930. Publ.* 3111. 103-106. 2 pl. 1931.—Includes notes on the rare *Bathynomus* and *Benthochascon.*

8624. **SHEN, CHIA-JUI.** The crabs of Hong Kong. Part I. *Hong Kong Naturalist* 2(2): 92-110. 7 pl., 11 fig. 1931.—A systematic account of 11 local spp., including synonymies, descriptions, habitat notes, statements of distribution, and figures.

8625. **SHERRARD, KATHLEEN.** Notes on a phyllocarid and a brachiopod found in the Lancefield zone of the Lower Ordovician rocks of Victoria. *Proc. Roy. Soc. Victoria* 42(2): 135-139. 1 pl. 1930.—Crustacea: *Hymenocaris* ornata* (p. 136). Brachiopoda: *? Siphonotreta* lancefieldensis* (p. 137). Types in Univ. of Melbourne.

8626. **SMIRNOV, S.** Zur Systematik von Diaptomus fischeri Rylov und Diaptomus acutulus Brian (Crustacea, Copepoda). Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A*) 1930(3): 55-60. 5 fig. 1930.—Emended descriptions, including first description of ♀ of *D. fischeri**.

8627. **SMIRNOV, SERGIUS.** Zur Synonymik von Eurytemora adleri Schiklejew. *Zool. Anz.* 95(11/12): 277-278. 1 fig. 1931.—*Eurytemora velox** Lillj. (=*E. adleri* Schikl.).

8628. **[SMIRNOV, S. S.]** СМИРНОВ, С. С. О двух новых формах Copepoda из Амурского края. [Two new forms of Copepoda from the Amur region.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A*) 1930(11): 281-286. 1 fig. 1930.—Descriptions are in both German and Russian. *Attheyella* borutzkyi* (p. 281); *Cyclops languidoides* v. gracilicaudatus* (p. 285).

8629. **STÅLBERG, GEORGES.** Eine Calanus-Form aus dem Telezker See im Altai. *Zool. Anz.* 95(9/10): 209-220. 13 fig. 1931.—*Calanus finmarchicus* v. telezkensis* (p. 218), Tomsk, Siberia.

8630. **TEISSIER, GEORGES.** Sur la faune des stations abritées, un facteur possible de la répartition des espèces sessiles. *Trav. Stat. Biol. Roscoff* 8. 187-189. 1930.—In the fish pond of the Roscoff Biol. Station are living *Balanus perforatus* and *B. crenatus* which ordinarily occur in very dense populations, while here they are not numerous, very scattered, and attain large size. The author reflects on the factors of stillness and agitation of waters, the difficulties experienced by the larvae in fixing themselves, and that the absence of a certain spp. from a certain place does not indicate that it cannot live there, but that perhaps it has not been able to get there.

8631. **WEISIG, STEPHAN.** Diaptomus atropatenus sp. nov. Mit einem Beitrag über die Diaptomidenfauna des östlichen Transkaukasiens. *Zool. Anz.* 95(9/10): 255-262. 2 fig. 1931.—*Diaptomus* atropatenus* (p. 255), Transcaucasia; notes are given on other spp. of *Diaptomus.*

ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

(See also in this issue Entries (Technique) 6110, 6111, 6112; (Genetics) 6162, 6179, 6195, 6202, 6205, 6210, 6211; (Ecology) 6258, 6260, 6314, 6317, 6321, 6326, 6327; (Development) 6306; (Pollinators) 6260, 6261; (Plant disease vectors) 6359, 6363, 6368, 6369, 6370, 6371, 6372, 6377, 6398, 6413, 6414, 6417; (Growth) 6812, 6899; (Digestion) 6984; (Respiration) 7005; (Animal disease vectors) 7233, 7531, 7533, 7556, 7586, 7640, 7687, 7970; (Parasites) 7503, 7527, 7558, 8497; (Immunity) 7502; (Control) 7970, 7994; (Histology) 8429, 8431; (Distribution) 9051, 9056, 9057, 9061)

8632. **BEQUAERT, J. Medical and economic entomology.** In: **The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard African Expedition 1926-27.** Vol. 2. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* no. 5) Part 3. XXXVI: Entomology. p. 797-1001. Map, 4 pl., 8 fig. Harvard Univ. Press: Cambridge, 1930.—This report on part of the Arthropoda collected covers the following orders: Linguatulida, Ricinulei, Acarina, Isoptera, Heteroptera, Dermaptera, Orthoptera, Diptera, Anoplura, Mallophaga, Siphonaptera, and Coleoptera. The systematic list of spp. includes synonymy, distribution, taxonomic remarks, and notes on habits and medical or economic significance, with numerous records of the hosts of parasitic spp. A number of unidentified Linguatulidae are recorded from known hosts. The genus *Ixodes* [Ixodidae] is recorded as new to Liberia. Fifteen spp. of Culicidae are recorded as new to Liberia. The treatment of Tabanidae is not restricted to the material of the Harvard African Expedition, but includes a synopsis of all spp. known from the Belgian Congo and critical remarks on classification of genera and subgenera, with a key to the genera found in the Ethiopian region. In contrast to Enderlein's 9 subfamilies, the author recognizes only 3 subfamilies.

8633. **COOK, WILLIAM C. Some influences of location upon light trap catches.** *Canadian Ent.* 62(5): 95-98. 1930.—Comparison of catches of 2 similar light traps, one in a field, the other in a 3rd-story window.

8634. **CRAMPTON, G. C. The basal structures of the wings of certain insects.** *Bull. Brooklyn Ent. Soc.* 23(3): 113-118. 1 pl. 1928.—The author points out that in certain "neopterygotan" insects, as well as in others, there occurs a basal wing fold with a corresponding pocket, apparently developed in connection with their ability to hold the wings along the top of the abdomen in repose. The alar ossicles and the notal structures connected with the articulation of the wings are also described.—*R. B. Friend.*

8635. **ECKSTEIN, KARL. Bilder aus dem Insektenleben.** 140p. Ullstein: Berlin, 1927. Pr. 85M.—A popular handbook on the habits and life-histories of German insects. The first chapter deals with insect structure. Other chapters discuss the habits and life-histories of common Coleoptera, Lepidoptera, Diptera, and Vespoidea, predators, parasites, gall insects, sap-suckers, and leaf-miners. The two final chapters treat of reproduction, development, and the factors affecting the life cycle. —*E. M. Du Porte.*

8636. **ELTRINGHAM, H. Histological and illustrative methods for entomologists. With a chapter on mounting whole insects, by H. BRITTEN.** pp. xi+139. 1 pl., 18 fig. Oxford Univ. Press: New York, 1930. Pr. $2.50.—Following an introduction, the chapters deal with apparatus, reagents, and materials; preparation of wing neurations, scales, etc.; genitalia preparation; fixing, embedding, and section-cutting; staining and other processes; making preparations of small whole insects; making drawings; coloring lantern slides and photographs; and making models.

8637. **FROST, S. W. A suggestion for relaxing small insects.** *Ent. News* 41(5): 152-153. 6 fig. 1930.—The making of small paper boxes to be placed in a single relaxing jar, as a means of keeping the records separate, is described in detail.

8638. **GRUHL, KURT. Neue Beiträge zum Problem der Lufttänze.** *Zeitschr. Ent.* 15(3): 1-13. 1927.—A discussion of the dances of Diptera as compared with those of Ephemerida, Trichoptera, and Lepidoptera.

8639. **HAYWARD, KENNETH J. Sobre migración de insectos, con referencia especial a la Argentina.** *Rev. Soc. Ent. Argentina* 2(5): 209-216. 1929.—The author suggests a standardized set of data to be noted, when possible, by observers of insect migration.

8640. **HEIKERTINGER, F. Einige ergänzende Bemerkungen zu F. Rüschkamps Worten über Präparation, Bezettelung und Kartei im Dienste der Insektenkunde. [Remarks on F. Rüschkamp's notes on preparation, labeling, and arranging in entomology.]** *Koleopterol. Rundsch.* 16(5): 167-171. 1930. [See also in this issue entry 8650.]

8641. **IMMS, A. D. Some methods of technique applicable to entomology.** *Bull. Ent. Res.* [*London*] 20(2): 165-171. 1929.—Various methods of technique used by the writer over a number of years are described, many of them not generally known. The majority are simple and easily used. Various mounting media, methods of staining chitin, dissecting and preserving fluids, and methods of rearing insects are described.—*A. D. Imms.*

8642. **LE CERF, FD. Une technique simplifiée pour la coloration des genitalia.** *Encyclop. Ent. Ser. B, Lepidoptera* 3(4): 147-152. 1929.—After many experiments the writer has settled on the following formula for staining insect genitalia: After passing through potash solution, place in ordinary copying ink, to which has been added 1/10 by volume of acetic acid crystals. Leave in this for from 5 to 20 minutes. Remove and place in water acetified to 1/10 at least, and agitate until the desired color is obtained. Remove and wash in 90% alcohol for 5 to 15 min. Mount directly in mastic resin dissolved in 90% alcohol. In an addenda the writer gives a modification of this formula for treating eggs to permit study of the minute structures. After the acetified water solution, place the eggs in an aqueous solution of eosine for 5 to 60 minutes. Mount directly in gum arabic of syrupy consistency in water. The slow evaporation permits the study under the microscope of the fine structures of the egg.

8644. **MARSHALL, JOHN F. A new form of apparatus for photographing insects.** *Bull. Ent. Res.* [*London*] 21(2): 139-140. 2 pl. 1930.—A modification of the apparatus earlier described by the author (Bull. Ent. Res. 15: 49.), with a greater focal length (hence better for photographing larger insects [than mosquitoes]) and with "distant control" devices to enable the operator to observe the image on the focussing screen while altering its size, focus, position, and illumination.

8645. **MICKEL, CLARENCE E. Descriptions plus types vs. descriptions alone.** *Psyche* 37(2): 118-131. 1930.—Discussions of Embrik Strand's views on type specimens, in cases of descriptions of new species.

8646. **NAVÁS, LONGINOS. Excursiones por la provincia de Gerona en Julio y Agosto de 1928.** *Butl. Inst. Catalana Hist. Nat.* 9(1/2): 27-48. 5 fig. 1929.—A list, with locality data, of 263 spp. of insects of various orders, which were collected in northeastern Spain.

8647. **REMY, PAUL. Quelques Arthropodes récoltés**

dans la region du Scoresbysund (Groenland oriental) au cours de la croisière arctique du "Pourquoi-Pas?" en 1926. *Meddel. om Grönland* 74(7): 83-95. 1 fig. 1928.—An annotated list of 7 Acarina; *Pediculus humanus* v. *capitis* de Geer from Eskimos; Hymenoptera (*Stenomacrus laticollis* Holmgr. and 2 spp. of *Bombus*); 7 spp. of Chironomidae; *Aedes alpinus* L.; *Tipula arctica* Curtis; 4 spp. of Brachycera; 5 spp. of Lepidoptera.

8648. **ROCCI, UBALDO.** Appunti polemici. *Boll. Soc. Ent. Ital.* 62(9): 163-172. 1930.—Includes a criticism of the rule proposed by the British National Committee on Entomological Nomenclature that the same subspecific or varietal name should not be used twice in the same genus. The author believes changes in nomenclature made on this basis are unfair to the original authors.

8649. **RÜSCHKAMP, F.** Arbeitsgemeinschaft Rhein. Coleopterologen. *Ent. Blätter* 25(1): 59-62. 1 pl.; (4): 204-205. 1929; 26(1): 42-43; (3): 138-141. 1930.—6th and 7th meetings at Bonn, Sept. 1928 and Jan. 1929 with group photograph and note on phylogeny and ecology of Histeridae by REICHENSPERGER. 8th meeting at Hinsbeck a. Niederrhein, May 1929 with list of 22 spp. collected. 9th meeting at Bonn, Sept. 1929, with list of 24 spp. collected. 10th meeting at Köln, Jan. 1930. 11th meeting at Kreuzberg, June 1930, with list of about 75 spp. collected.—*M. H. Hatch.*

8650. **RÜSCHKAMP, F.** Aus der Praxis des Käfersammlers XV. Einige Worte über Präparation, Bezettelung und Kartei im Dienste der Insektenkunde. [Methods of collecting Coleoptera XV. Preparation, labeling, and arranging.] *Koleopterol. Rundsch.* 16(5): 165-167. 1930.

8651. **SAZ, EUGENIO.** Costumbres de insectos observados en plena naturaleza. [Insect customs observed in nature.] Vol. 1. 104p. Vol. 2. 96p. Revista Iberica: Barcelona, 1930. Price: 2 pesetas each vol.

8652. **SHAFIK, M., and A. B. P. PAGE.** Control of mites attacking stocks of insects and fungous cultures. *Nature* [*London*] 126(3174): 311-312. 1930.—Pyridine and ammonia, recommended by Jewson and Tattersfield (Ann. Appl. Biol. 9: 213. 1922) for removal of mites from fungous cultures, were found to be harmful to insects and to their food. Cultures of various fungi were freed of mites by exposure to CCl_4 (0.5 cc. per liter) for 24 hrs. Fumigation of infested stocks of *Calandra granaria* in barley and maize, and of stocks of *Rhizopertha dominica* in maize, with CCl_4 at a concentration of 0.5 cc./litre for 4 hrs. killed the mites while, after thorough aeration, the bulk of the adult insects recovered. Trichlorethylene was effective at half that concentration in 24 hrs., but was more destructive to the insect cultures.

8653. **STEP, EDWARD.** British insect life: a popular introduction to entomology. Rev. ed. 264p. 40 pl. T. Werner Laurie, Ltd.: London, 1929. Pr. 25s.

8654. **TAKAHASHI, RYOICHI.** A general consideration on the insects of Jitsugetsutan (Lake Candidius.) [In Japanese.] *Trans. Nat. Hist. Soc. Formosa* 20(108): 145-156. 1930.—Annotated list.

8655. **TAVARES, J. S.** Cecídias de Zumárraga (Guipúzcoa, Espanha). *Brotéria, Ser. Zool.* 26(3): 113-119. 1930.—A list of 40 insect galls on 15 host plants, including galls of Aphididae, Rhynchophora, Acarina, Thysanoptera, Cynipidae, and Cecidomyidae. Descriptive notes are presented on the galls of *Aphis piri* on *Crataegus monogyna, Mikiola fagi* on *Fagus silvatica, Thrips* sp. on *Linum* sp. [a new gall], *Siphocoryne xylostei* on *Lonicera periclymenum, Perrisia populeti* on *Populus tremula, Eriophydarum* sp. on *Pteris aquilina, Diplolepis longiventris* and *Neuroterus numismalis* on *Quercus pedunculata,* and *Lasioptera rubi* on *Rubus* sp.

8656. **TORRE-BUENO, J. R. de la.** The type fetish. *Psyche* 37(1): 80-82. 1930.—A discussion of Embrik Strand's views on type specimens.

8657. **THORPE, W. H.** Biological races in insects and allied groups. *Biol. Rev. & Biol. Proc. Cambridge Philos. Soc.* 5 (3): 176-212. 1930.—A critical summary of recent literature, with an extensive bibliography.

8658. **VITZTHUM, H.** Die Präparation kleiner landbewohnender Arthropoden. *Mikrokosmos* [*Stuttgart*] 24 (2): 34-37. 1930/31(1930).

8659. **VOS, A. P. C. de.** Über die Verbreitung der aquatilen Insektenlarven in den Niederlanden. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 24(5/6): 485-506. 8 fig. 1930.—A list of aquatic insect-larvae found previously in the Netherlands: Ephemerida (23 spp.), Odonata (30 spp.), Plecoptera (3 spp.), Neuroptera (2 spp.), Trichoptera (77 spp.), and Lepidoptera (1 sp.); 3 aberrant forms (*Heptagenia* sp., *Agrion* sp. and *Hydropsyche* sp.), described and figured. Distributions within the country are indicated and short résumés given on the ecology of the most important spp.—*A. P. C. de Vos.*

8660. **WEBER, HERMANN.** Das Problem der Gliederung des Insektenthorax. Eine Antwort auf H. J. Feuerborns Beiträge zu diesem Thema. I., II. und III. Mitteilung. *Zool. Anz.* 65(9/10): 233-248. 2 fig.; 66 (1/4): 9-31. 4 fig.; (5/6): 115-132. 2 fig. 1926.

8661. **WISHART, GEORGE.** Some devices for handling insects. *Jour. Econ. Ent.* 23(1): 234-237. 4 fig. 1930. —The following are described: a catcher for small Hymenoptera and Diptera with the breath as power; a small catcher for Lepidoptera with the breath, with a filter to prevent the scales from entering the throat of the operator; a small catcher for Lepidoptera with atomizer bulbs; a device for use in catching and sorting large numbers of insects, with a vacuum sweeper as power.—*G. Wishart.*

ARACHNIDA (EXCEPT ACARINA)

ALEXANDER PETRUNKEVITCH, *Editor*

(See also in this issue Entries 7799, 7821, 8632, 8914, 9056, 9061)

8662. **BIRULA, A.** Über Galeodes armeniacus n. sp. *Zool. Anz.* 84(11/12): 273-282. 7 fig. 1929.—*G. armeniacus** (p. 273), Armenia, is about the same size and occurs along with *G. araneoides* Pallas, but differs from the latter in shape and coloring. The fact that the marginal spines on the last segment of the 4th pair of legs are wanting, establishes the affinity, as well as the taxonomic position, of the new species with *G. araneoides* and *G. arabs.* Up to the present *G. armeniacus* has been found in the Araxes valley only, whereas *G. araneoides* occurs not only in the valley itself but also high up in the mountains.—*H. Wiehle.*

8663. **BORELLI, ALFREDO.** Scorpioni nuovi o poco noti della Somalia Italiana. [New or little known scorpions from Italian Somaliland.] *Ann. Mus. Civ. Storia Nat. Genova* 52: 9-16. 1925/1928.—*Buthus* insolitus (p. 9) and *Parabuthus* mixtus (p. 13); types in Mus. Civ. Storia Nat. Genova. Seven other spp. are listed.

8664. **BORELLI, ALFREDO.** Risultati zoologici della Missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell' oasi di Giarabub (1926-1927). Scorpioni e solifughi. [Zoological results of the Mission sent by the Ital. R. Geogr. Soc. for exploring the Oasis of Jarabub (1926-1927). Scorpiones and Solifugae.] *Ann. Mus. Civ. Storia Nat. Genova* 52: 346-355. 1925/1928.—

A record of 11 Scorpiones and 1 Solifugae, with notes on each: *Buthus amoreuxi* v. *deserticola*, extended description of ♂ and ♀.

8665. **BRISTOWE, W. S.** A contribution to the knowledge of the spiders of South Wales. *Ann. and Mag. Nat. Hist.* 8(44): 173-177. 1931.—An annotated list.

8666. **BRISTOWE, W. S.** A contribution to the knowledge of Scottish spiders—Kirkcudbrightshire. *Scottish Nat.* 1931(191): 153-155. 1931.—A list of 84 Araneae and 4 Phalangidea.

8667. **BROILI, FERDINAND.** Über ein neues Exemplar von Palaeopantopus. *Sitzungsber. Math.-Naturwiss. Abt. Bayerischen Akad. Wiss.* 1930(3): 209-214. 1 fig. 1930.—Pycnogonida (Pantopoda): **PALEOPANTOPODA** (p. 209), a new [ordinal?] group erected for the Lr. Devonian *Palaeopantopus maucheri**.

8668. **[ERMOLAEV, V.]** ЕРМОЛАЕВ, В. К вопросу о распространении в Сибири тарантула Hogna (Trochosa) singoriensis (Laxm.). [Distribution of H. singoriensis in Siberia.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(3/4): 212-217. Map. 1930.—Previous records are reviewed and a distributional map, based on old and new records, is presented.

8669. **GRAVIER, CH.** L'appendice caudal des limules. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(1): 94-99. 2 fig. 1929.—A detailed description is given of the caudal appendage* of *Tachypleus tridentatus*. The structure of this appendage is the basis of a key differentiating *T. gigas**, *T. tridentatus*, *Xiphosura polyphemus*, and *Carinoscorpius rotundicauda*.

8670. **GUDGER, E. W.** More spider hunters. Accounts of arachnids which attack and devour vertebrates other than fishes. *Sci. Monthly* 32: 422-433. 9 fig. 1931.—Continuing previous articles on such habits of certain large and voracious spiders, some 20 accounts are given of spiders catching and eating amphibians, reptiles, birds, and mammals. In their work on spider poisons at Butantan, Brazil, Vital Brazil and J. Vellard state that they habitually feed their spiders on frogs, lizards, and snakes. Data set out in this and in previous papers, show that spiders, commonly supposed to feed on insects only, also catch and eat vertebrates of all phyla from fishes to mammals.—*E. W. Gudger.*

8671. **GUDGER, E. W.** Some more spider fishermen. *Nat. Hist.* [*New York*] 31(1): 58-61, 3 fig. 1931.—Three well attested cases (one directly from the observer) and 2 unverified ones are added to the 9 previously compiled of spiders catching fishes, definitely establishing the fact that certain large spiders catch and eat small fishes.—*E. W. Gudger.*

8672. **HADŽI, JOVAN.** Die europäischen Skorpione des Polnischen Zoologischen Staatsmuseums in Warszawa. *Ann. Mus. Zool. Polonici* [*Warsaw*] 9(4): 29-38. 4 fig. 1930.—Descriptive notes on *Euscorpius italicus mesotrichus*, *E. carpathicus polytrichus**, *E. c. mesotrichus**, *E. c. oligotrichus**, and *E. germanus mesotrichus*, with tables of comparative measurements of numerous specimens.

8673. **HADŽI, JOVAN.** Contribution à la connaissance des Pseudoscorpions cavernicoles (Chthonius spelaeophilus sp. n.; Chth. raridentatus sp. n.; Chth. cavernarum Elling.) [Text Serbo-Kroatisch; summary in French.] *Glas Srpske Kraljevske Akademije* 140: 113-148. 13 fig. 1930.—True cave inhabiting pseudoscorpions are derived from several groups; for example in the genus *Obisium* there occurs the cave inhabiting subgenus *Blothrus*, and in *Roncus* the cavernicolous subg. *Parablothrus*. In some other groups (*Chelifer*, *Chernes*) no extreme cave types have developed but there may be observed in them nevertheless the presence of single "cave characteristics," developed independent of the cave, which, in case of a change to cave life, would lead to the typical extreme developments. Some true cave types occur also in the genus *Chthonius*. From several caves in the western part of Karst (Carso) (now part of Jugoslavia) have come the 3 spp. noted in the title. Examples are given, described, and illustrated. Both new species are true, blind cave forms. *Chthonius* **spelaeophilus*** (p. 118) stands next to *cephalotes* Simon and of the Jugoslavian species to *dalmatinus* Hadži (previously *C. rayi dalmatinus* Hadži). *C. cavernarum* Ellingsen, which also lives outside of caves and occurs in countries neighboring to Jugoslavia, was re-diagnosed. Contrary to Beier's opinion, *C. troglodytes* Redikorzev came from a Bulgarian cave and *C. heterodactylus* Tömösváry is not identical with *C. cavernarum*. *C.* **raridentatus*** (p. 133) and other species possessing heterodactylous, sigmoidal pedipalpal chela fingers are thrown together in a new subgenus **SIGMODACTYLUS*** (p. 140). Types of new species, mounted in Canada balsam, are in Zool. Inst., King Alexander's Univ., Ljubljana, Jugoslavia.—*J. Hadži* (*transl. by J. C. Chamberlin*).

8674. **KÄSTNER, ALFRED.** Biologische Beobachtungen an Phalangiiden. *Zool. Anz.* 95(11/12): 293-302. 10 fig. 1931.—The possible functions of the long legs of the Phalangiidae, as illustrated by *Liobunum rotundum**, are discussed and the manner of grasping with the tarsus illustrated. A number of sketches illustrate the flexible structure of the articulation of the tarsi. In opposition to the old opinion that phalangiids are night animals, records of observations of several species active in the daytime are quoted. They are insectivorous.

8675. **LOMAN, J. C. C.** Addendum à la liste des Pycnogonides récoltés sur la côte Atlantique du Maroc par le Dr. J. Liouville et R. Ph. Dollfus. *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 71. 1929.—Records of 4 spp., one of which is a *Leonymphon*. This genus has previously been known only from arctic regions.

8676. **MELLO-LEITÃO.** Nota sobre Arachnideos Argentinos. *Ann. Acad. Brasil. Sci.* 2(4): 211-214. 1930.—Gonyleptidae: **APEMBOLEPHENINAE** (p. 212), new subf., based on *Apembolephaenus* and *Proampycus*; *Discocyrtus* **argentinus** ♂ (p. 212), type in Mus. de Buenos Aires; *Pucrolia* **grandis** ♀ (p. 213), type in Mus. Bernardino Rivadavia; **MICROGONIOSOMA** (p. 214) (Gonyleptinae), based on *M.* **fuscum** ♂ (p. 214), type in Mus. Bern. Rivad.

8677. **MEYERS, J. G.** Ethological notes on some New Zealand land spiders. 2. *New Zealand Jour. Sci. and Technol.* 9(3): 129-139. 1927.

8678. **NAKAJIMA, T.** (transl. by Ling Ping Huang). A list of spiders of Fukien Province, China. *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 2: 17-20. 1929.—One hundred and two spp. are listed.

8679. **PALLARY, PAUL.** Description de quatre scorpions nouveaux de la Berbérie. *Bull. Mus. Nation. Hist. Nat. Paris* 1928(5): 346-351. 1 pl. 1928.—*Heterometrus* **fuliginosus*** (p. 346). *Prionurus* **eburneus*** (p. 348), *Buthacus* **exilis*** (p. 349), and *Prionurus* (?) **tingitanus*** (p. 350). Types in Mus. Nation. Hist. Nat., Paris.

8680. **ROEWER, C. FR.** Drei neue Cosmetiden (Opilioniden) aus Mexiko. *Zool. Anz.* 95(9/10): 247-250. 3 fig. 1931.—*Cynorta* **skwarrae*** (p. 247), on *Aechmea bracteata*; *C.* **dampfi*** (p. 248), on *Aechmea mexicana*; *Cynortula* **wheeleri*** (p. 249), on *Aechmea mexicana* and *A. bracteata*, also on stem of banana and *Cocolapa*.

8681. **SCHENKEL, E.** Beitrag zur Spinnenkunde. *Zool. Anz.* 83(5/8): 137-143. 4 fig. 1929.—Following an examination of spiders from the Mecklenburg moors, the author describes the following species, the first 2 of which are cited as new but with an interrogation point: *Gonqylidiellum* **minutissimum*** (p. 138); *Centromerus* **pallidulus*** (p. 139); *Lephthyphantes* **rabeleri** (p. 140); *Gnaphosa leporina* (L. Koch) is reported as new to Germany. One adult ♀ *Tricca lutetiana* (Simon) examined differed, in the spines of the 2nd leg, from Dahl's description of this species.—*H. Wiehle.*

8682. **THOMAS, MAURICE.** L'instinct chez les araignées. XV, XVI, XVII, XVIII. *Bull. et Ann. Soc. Ent. Belgique* 70(6/8): 183-196. 1 fig.; (9): 229-249. 1930.—XV. Before mating the ♂ *Xysticus pini* Hahn surrounds the ♀ with several threads of silk in order to gain time for escape. Danger to the ♂ of being devoured after pairing is not general; not all the ♀♀ show the same

ferocity in this respect.—XVI. The nuptial dance. The mating of *Pardosa* (=*Lycosa*) *amentata* and *P. lugubris* proves that the nuptial movements are rigorously fixed for these spp. Among Attidae, the movements apparently merely express the excitement of the ♂. In the Lycosidae they aim to excite recognition by the ♀ and to charm her; for, in contrast to the Attidae, the Lycosidae ♀♀ take a great interest in the movements of their ♂♂ and seem to evince a certain emotion, which manifests itself in agitated trembling and in caresses of the dancing ♂♂ by means of the forelegs. The identity of movements within a sp. shows that instinct is, in a measure, independent of physiology and anatomy; for nothing, anatomically or physiologically, could possibly prevent the ♂♂ of one species from dancing or mating in the same fashion as a related species, which is not the case.—XVII. *Nephila madagascariensis*, unlike most European species, does not repair its web daily, but whenever it is damaged. Simple rents are repaired in the evening by means of irregularly fastened threads.—XVIII. *Arancus quadratus* Clerck, instincts. The hatch from 2 sacs of eggs consisted of 500-700 individuals. Rapidity of dispersal (1-8 days) depends on atmospheric conditions, being slow and in small groups if temp. is unfavorable, but rapid in good weather. It may begin several days to several weeks after hatching. The first webs are constructed without hesitation or experimentation. Instincts are not determined by somatic characters and environmental conditions. An instinct requires an appropriate mechanism, but the existing organ permits diverse uses among which the instinct chooses. Secretion of silk and presence of spinnerets are anatomical and physiological characters permitting manifestation of diverse instincts. But many hunting spiders secrete silk adequate in quality and sufficient in quantity to spin webs, yet the corresponding instinct is lacking. Moreover, the difference in the structure of webs does not find its explanation in physiological and anatomical differences; and again, spp. of very diverse habits inhabit the same environment. Instinct is therefore innate and not altered by the individuals. The orb-web is too complex to be invented by young spiderlings emerging from the egg; and even if they were to conceive a plan, not all would arrive at the same result. Instinct is therefore a real, innate heritable knowledge; it is a psychological character, not a physical or a chemical one. The fact that individuals of the same species, both in the New and Old World, have exactly the same habits, proves that instinct is throughout all time immutable.—*M. Thomas* (*transl. by R. A. Muttkowski*).

8683. THULIN, GUSTAV. Über die Phylogenie und das System der Tardigraden. *Hereditas* 11(2/3): 207-266. 28 fig. 1928.—A new classification is suggested for the Tardigrada. The 2 main groups (orders Heterotardigrada and Eutardigrada) proposed by Marcus are retained but are divided into families: **HALECHINISCIDAE** (p. 210), erected for *Halechiniscus, Batillipes, Bathyechiniscus,* and *Tetrakentron;* Echiniscidae, considered to include *Echiniscus, Echiniscoides, Parechiniscus, Pseudechiniscus,* and *Oreella;* Arctiscidae, considered to include only *Arctiscon;* and **MACROBIOTIDAE** (p. 228), erected for *Macrobiotus, Hypsibius,* and *Diphascon.* A general systematic review of the 2 major groups is given, together with a discussion of their phylogeny and relationships. Echiniscidae: **BRYODELPHAX** (p. 220), type *B.* **parvulus*** (p. 221), Canada, including also *B.* **intermedius** (*Echiniscus i.* Murray) (p. 221) and *B. i.* var. **hawaiicus** (p. 221), Hawaii; **HYPECHINISCUS** (p. 221), erected for *H.* **gladiator** (*Echiniscus g.* Murray) (p. 221). Macrobiotidae: **CALOHYPSIBIUS** (p. 238), type *C.* **ornatus** (*Macrobiotus o.* Richters) (p. 238), including also *C.* **verrucosus** (*Macrobiotus ornatus* var. *v.* Richters) (p. 239) and *C.* **scabrorus** (Murray), n. comb. (p. 239); **MICROHYPSIBIUS** (p. 239), erected for *M.* **truncatus*** (p. 247), Scotland; **ISOHYPSIBIUS** (p. 239), type *I.* **prosostomus** (p. 250) [Locality not stated], including also *I.* **undulatus*** (p. 249), *I.* **septentrionalis** (p. 250) and *I.* **granulifer*** (p. 251), Sweden, and *I.* **megalonyx** (p. 252) [Locality not stated]; *Hypsibius* **microps*** (p. 253), Sweden and Siberia; *Diphascon* **tenue*** (p. 255), Faeroe Isls.; *D.* **prorsirostre*** (p. 256), Sweden, Germany, and Scotland; *D.* **arduifrons*** (p. 257), Sweden and Siberia; *Macrobiotus* **luteus** (p. 257), Sweden; *M.* **spectabilis** (p. 259), Siberia.—*M. L. Hett.*

8684. VIRIEUX, A. Les araignées aéronautes. *Bull. Soc. Vaudoise Sci. Nat.* 57(223): 31-32. 1929.—The author briefly summarizes the work of his predecessors, claiming that the problem concerning ballooning of spiders is not yet solved. He analyzes the different phases of flight, maintaining that the spider accomplishes a voluntary act. To Blackwall's 4 species particularly adapted for flight, 2 are added from his own observation: *Lephthyphantes tenuis* and *Nematogmus sanguinolentus.*—*L. F. Pinkus.*

COLEOPTERA

ANDREW J. MUTCHLER, *Editor*

(See also in this issue Entries 6398, 7788, 7791, 7799, 7801, 7803, 7814, 7833, 8632, 8640, 8649, 8650, 8655, 8805)

8685. BOSQ, JUAN M. Contribución a la Entomofauna del Delta del Paraná. Coleópteros. [Coleoptera of the delta of the Paraná.] *Rev. Soc. Ent. Argentina* 1(3): 63-66. 1927.—A list of 110 spp. in 88 genera and 25 families, collected by the author from one locality on the Rio Abra Vieja.

8686. BRUCH, CARLOS. Athyreus chalybeatus Fairm. Descripcion del macho. [Description of the ♂ of A. chalybeatus.*] *Rev. Soc. Ent. Argentina* 2(1): 1-4. 3 fig. 1298.

8687. BRUCH, CARLOS. Descriptión de un género y de una nueva especie de Pseláfido mirmecófilo. *Rev. Soc. Ent. Argentina* 2(4): 157-160. 5 fig. 1929.—**NEOFUSTIGER** (p. 157), type *N.* **cochlearis*** (p. 159). This is the second record for Argentina of a sp. of Clavigeridae, and the first record of a sp. found living with the ant *Paratrechina.*

8688. CORPORAAL, J. B. Remarks on some South African Cleridae in the British Museum. *Tijdschr. voor Ent.* 69(3/4): 318-319. 1926.—*Gyponyx* **prasinus** (p. 318) and *Thriocera pectoralis* v. **turneri** (p. 319), both Cape Province, and types in Brit. Mus.

8689. DALLAS, E. D. Cefalomelia en un Galerita collaris, Latr. *Rev. Soc. Ent. Argentina* 1(1): 25-26. 1 pl. (col.), 1 fig. 1926.—Specimen* with an abnormal antenna is described.

8690. DALLAS, E. D. Un coleóptero hemigimnogastra. *Rev. Soc. Ent. Argentina* 1(1): 37-39. 1 fig. 1926.—*Diloboderus abderus** with an abnormal, undeveloped elytrum.

8691. DALLAS, E. D. Un caso interesante de mimetismo. [An interesting case of mimicry.] *Rev. Soc. Ent. Argentina* 1(2): 59-60. 1926.—The colors and markings of the curculionid, *Lithinus nigro-cristatus,* resemble almost exactly a lichen, *Lithinus* sp., on which it lives.

8692. DALLAS, E. D. Hemiterias. (Diversas deformaciones en coleópteros argentinos.) [Deformations in Argentine Coleoptera.] *Rev. Soc. Ent. Argentina* 1(2):

65-68. 1 fig. 1926.—Notes on anomalies of 5 spp., with figures. Deformations of several spp., and microsomia in *Diloboderus abderus* Sturm. are described.

8693. DALLAS, E. D. Fenestraciones elitrales en Coleópteros argentinos. [Elytral fenestrations in Argentine Coleoptera.] *Rev. Soc. Ent. Argentina* 1(3): 21-24. 1 fig. 1927.—Discussion and figures of perforations in the elytra of 5 spp.

8694. DALLAS, E. D. Sobre los diversos tipos de anomalías observadas en los coleópteros. [Types of anomalies observed in Coleoptera.] *Rev. Soc. Ent. Argentina* 1(3): 67-70. 1 pl. 1927.—Definition of terms used, with illustrations of various types of anomalies.

8695. DALLAS, E. D. A propósito de un caso de monstruosidad bilateral y simétrica en un coleóptero. (Comunicación preliminar.) [A case of bilateral and symmetrical monstrosity in a coleopteron.] *Rev. Soc. Ent. Argentina* 1(4): 67-69. 1 fig. 1927.—A specimen* with both front legs double.

8696. DALLAS, E. D. La colección de Staphylinidae de Félix Lynch Arribálzaga. *Rev. Soc. Ent. Argentina* 2(1): 17-20. 1928.—A description of this collection, in the Mus. Nac. Hist. Nat. Buenos Aires, with a list of about 35 spp. represented there by Lynch's types.

8697. DALLAS, E. D. Un tenebrionido con antena bifida (Nyctelia puncticollis Waterh.). [A tenebrionid with bifid antenna.] *Rev. Soc. Ent. Argentina* 2(1): 55-58. 5 fig. 1928.

8698. DALLAS, E. D. Descripción de un Ceroglossus chilensis monstruoso. *Rev. Soc. Ent. Argentina* 2(4): 193-194. 1 fig. 1929.—Descriptive notes and a table of dimensions for a specimen* with an abnormal second leg.

8699. DALLAS, E. D. Monstruosidad observada en un Calosoma retusum F. *Rev. Soc. Ent. Argentina* 2(4): 195-196. 1 fig. 1929.—Notes on a specimen* with an extra growth on one femur.

8700. DAVIAULT, LIONEL. Sur le développement post-embryonnaire de la bruche du haricot: Acanthoscelides obtectus Say. Suivi de considérations sur la signification phylétique de son dimorphisme larvaire. *Ann. Soc. Ent. France* 97(1/2): 105-132. 43 fig. 1928.—Full description and figures of the external anatomy of the adult and the two larval forms (stades); briefer descriptions and figures of the external and internal genitalia and pupa, and of egg and prepupal stage. It is considered that the active first larvae shows a significant likeness to the chrysomelid larva, and the later larva a superficial and less significant resemblance to the curculionid larva, probably due to convergence. There is a bibliography. —*W. T. M. Forbes.*

8701. DEAUTIER, ENRIQUE A. Un caso curioso de anomalía elitral. [A curious case of elytral anomaly.] *Rev. Soc. Ent. Argentina* 2(1): 39-40. 2 fig. 1928.—Two excrescences on an elytrum of a *Mecistomela thoracica* v. *quinque-notata.*

8702. EGGERS, HANS. Ein neuer Coccotrypes (Ipidae, Col.). *Tijdschr. voor Ent.* 71(1/2): 117-118. 1928.—*C.* **canariensis** (p. 117), Canary Is., type in author's coll.

8703. HELLÉN, WOLTER. Koleopterologische Mitteilungen aus Finnland VIII. *Notulae Ent.* [*Helsingfors*] 10(3): 74-79. 1930.—Discussion of 21 spp. of which the following are to be stricken from this author's list of Coleoptera from Finland: *Ophonus rotundicollis, Lomechusa sibirica, Atemeles paradoxus, A. emarginatus* v. *hirticollis,* and *Agathidium varians.* The following are described: *Pelophila borealis* ab. **rufescens** (p. 74); *Conosoma pubescens* Payk. (=*C. strigosum* Sahlb.); *Agathidium mandibulare* Strm. (=*A. pallidum* Gyll.); *Athous zebei* ab. **nigrescens** (p. 77); *Corticaria crenicollis* Mann. (=*C. polypori* Sahlb.); *Cryptophagus bimaculatus* Panz. (=*C. villosulus* Sahlb.); *C.* **sahlbergi** (*C. amplicollis* Sahlb. preoc.) (p. 78); *C. setulosus* Strm. (=*C. crassicornis* Sahlb.).

8704. HEYROVSKÝ, LEO. Pozoruhodné nálezy broukû Československé Republiky. [Remarkable find of Czechoslovakian beetle.] *Časopis Československé Společnosti Ent.* [*Prague*] 26(1/2): 37-38. 1 fig. 1929.—*Judolia erratica* ab. **prokši** (p. 37), from Prague, is new. *Strangalia arcuata, Phymatodes fasciatus, P. glabratus,* and *Purpuricenus koehleri* v. *nigricollis* are new to Bohemia. *Exocentrus punctipennis,* known formerly only from southern Europe, Asia Minor, Switzerland, Prussia, and Silesia, was found in two cases near Prague. *Dryocoetus hectographus* was collected in Bohemia, Moravia, Slovakia, and Carpatho-Russia. *Crypturgus hispidulus* has been found with *Polygraphus grandiclava* in pine and fir woods at approximately 1000 m. altitude on the Radhost (Moravian Beskiden) and in the giant mts., *P. grandiclava* found previously only on cherry and *Pinus cembra.*—*German abstract (transl. by H. G. Good).*

8705. KÔNO, HIROMICHI. Langrüssler aus dem japanischen Reich. *Insecta Matsumurana* 4(4): 145-162. 1930.—Keys to the Japanese genera and spp. of the tribes Tychiini, Gymnetrini, Cionini, Nanophyini, Erirhini, and Smicronychini are given, with list of the spp. New forms are: *Tychius* **ginsuji** (p. 145), *T.* **iwatensis** (p. 146), *Miarus* **kobanzo** (p. 148), *Cionus* **tamazo** (p. 149), and *C.* (*Stereonychus*) **ogasawarai** (p. 150), all 5 Japan; *Nanophyes* **chibizo** (p. 152), *N.* **formosensis** (p. 153), and *N.* **miwai** (p. 154), Formosa; *N.* **usuironis** (p. 152), *Dorytomus* **rufus** (p. 155), and *D.* **notaroides** (p. 156), Japan; *Notaris bimaculatus* ssp. **subcostatus** (p. 158), Kamtchatka; *N.* **funebris** (p. 158), Korea; *N.* **okunii** (p. 159), *Smicronyx* **madaranus** (p. 161), and *S.* **rubricatus** (p. 161), Japan. *Gymnetron* **matsumurai** (*Cocliodes pilosus* Mats.) (p. 147). Types in Ent. Mus., Hokkaido Imp. Univ.—*R. Takahashi.*

8706. MACHULKA, VÁCLAV. Eine vergleichende Studie über das Cephennium montanum Rttr. und ihm ähnliche Arten aus Nord-Italien. *Wiener Ent. Zeitung.* 74(1): 11-18. 5 fig. 1929.—The need for a revision of the group of palearctic *Cephennium* on the basis of ♂ genitalia is suggested. *C.* **jurečeki*** (p. 14) and *C.* **tirolense*** (p. 15), Tirol; *C.* **italicum*** (p. 16), Italy; *C.* **helveticum*** (p. 17), Switzerland. An analytic key is given.—*G. Maydell.*

8707. MARSHALL, GUY A. K. On two new species of Curculionidae (Col.) from the Canary Islands. *Tijdschr. voor Ent.* 71(1/2): 114-117. 1928.—*Microlarinus* **eliasenae** (p. 114) and *Apion* **spartocytisi** (p. 115), both types in Brit. Mus. *Apion cretaceum* Rosh. (=*A. senex* Woll.).

8708. MATA, A. B., and R. O. ARAVENA. Metamôrfosis de un coleópter odel género Gratiana. *Rev. Soc. Ent. Argentina* 1(1): 31-34. 1926.—Egg, larva, nymph, and imago of *G. spadicea* Boh. are described.

8709. OBENBERGER, JAN. Specierum generis Meliboeus H. Deyrolle diagnoses praeliminares (Coleoptera, Buprestidae). *Folia Zool. et Hydrobiol.* [*Riga*] 2(2): 202-219. 1931.—List of spp., including: *Meliboeus* **zuluanus** (p. 203), Natal; *M.* **gérardi** (p. 203), Belgian Congo; *M.* **komáreki** (p. 203), East Africa; *M.* **transvalensis** abs. **cyanicolor** and **catacaustus** (p. 204), Transvaal; *M.* **malvernensis** (p. 204), Natal; *M.* **angolanus** (p. 204), Angola; *M.* **gilli** (p. 205), Cape Province; *M.* **contortulus** (p. 205) and *M.* **hirsutus** (p. 206), Transvaal; *M.* **musculus** (p. 206), Cape Province; *M.* **sericeus** (p. 206), Eritrea; *M.* **niveiventris** (p. 207), Transvaal; *M.* **pistor** (p. 207), S. W. Africa; *M.* **mulanganus** (p. 207), Kenya Colony; *M.* **aethiopicus** (p. 208), Abyssinia; *M.* **pretoriae** (p. 208), Transvaal; *M.* **sutor** (p. 208), Kenya Colony; *M.* **hottentotta** (p. 209), S. W. Africa; *M.* **parachalceus** (p. 209), Tanganyika; *M.* **croesus** (p. 209), Abyssinia; *M.* **doddsi** (p. 210), Rhodesia; *M.* **flammicoxis** (p. 210), Kenya Colony; *M.* **toroënsis** (p. 211), Uganda Protectorate; *M. t.* ssp. **buarinus** (p. 211), Cameroons; *M.* **neavei** (p. 211) and *M. n.* ab. **sapphireus** (p. 212), Uganda; *M.* **burgeoni** (p. 212), Belgian Congo; *M.* **jakobsoni** (p. 212), Sierra Leone; *M.* **karnyi** (p. 213), Belgian Congo; *M.* **victor** (p. 213), *M.* **nonfriedi** (p. 213), *M.* **indignus** (p. 214), and *M.* **strandi** (p. 215), Burma; *M.* **uzeli** (p. 215), Ceylon; *M.* **lineola** (p. 216), India; *M.* **kalshoveni** (p. 216), Java; *M.* **scintilla** (p. 217), Burma; *M.* **jakovlevi** (p. 217), India; *M.* **tchitché-**

rini (p. 218), Burma; *M.* semenovi (p. 218), India; *M.* buddhaicus (p. 218), French Indo-China.

8710. **OCHS, GEORG. Über die Gyriniden Borneo's.** *Ent. Blätter* 24(3): 98-103. 1928.—The concluding portion of a monograph on this family, with keys to spp., including *Orectochilus* subsinuatus (p. 99).—*M. H. Hatch.*

8711. **ORCHYMONT, A. d.' Notes synonymiques sur le genre Laccobius Er. (Col. Palp.)** *Bull. et Ann. Soc. Ent. Belgique* 70(1): 33-40. 1930.—The spp. treated are *L. albipes* Kewert, *L. biguttatus* Gerh., *L. bipunctatus* Fabr., and *L. striatulus* Fabr.—*H. Dietrich.*

8712. **ORCHYMONT, A. d'. Nouvelles notes sur quelques Hydraena paléarctiques.** *Bull. et Ann. Soc. Ent. Belgique* 70(9): 218-228. 1 pl. 1930.—The author disagrees with G. V. Hudson on the use of the ♂ genitalia in the classification of Coleoptera states: (1) that the difficulty of figuring a complicated structure is overcome by the use of several figures of different aspects, the problem not being unique; (2) that in ignoring the morphology of these structures important characters and relationships may be missed; (3) that in the author's experience, the variability of the genitalia is not as great as Hudson supposes; and (4) that it is true that no identification of a living insect can be made by this method. *Hydraena emarginata* Rey, ♀ discussed; *H. truncata* Rey (=*H. emarginata* Rey ♂ (not ♀)); *H. samnitica* Fiori, notes on structure; *H.* saga ♂* (p. 225), Germany.—*F. C. Fletcher.*

8713. **PIC, M. Nouveaux Coléoptères de la République Argentine.** *Rev. Soc. Ent. Argentina* 1(3): 25-26. 1927. —*Anthicus* singularis (p. 25), type in coll. Bruch; *A.* myrmecophilus (p. 25); *Phrixothrix* bruchi (p. 26).

8714. **TREMOLERAS, J. Nuevos datos ecológicos sobre Buprestidos platenses. [New ecological data on Buprestidae of La Plata.]** *Rev. Soc. Ent. Argentina* 2(4): 185-186. 1929.—A list of 28 spp., with notes on distribution and habitat.

8715. **UHMANN, E. Hispinen von Sumatras Ostküste gesammelt von Herrn Dr. L. Fulmek, nebst biologischen Bemerkungen über zwei bekannte Arten (15. Beitrag zur Kenntnis der Hispinen (Col. Chrys.).** *Misc. Zool. Sumatrana* No. 41: 1-3. 1929.—An annotated list, containing *Monochirus moestus, Hispa armigera, Rhadinosa parvula, Dactylispa debilis, D. leonardi,* and *Platypria echinogale.*

8716. **UYTTENBOOGAART, D. L. Contributions to the knowledge of the Coleoptera-fauna of the Canaries. Gran Canaria.** *Tijdschr. voor Ent.* 71(1/2): 111-113. 1928.—*Asaphidion* delatorrei (p. 111).

8717. **VITALE, FRANCESCO. Fauna coleotterologica Sicula. Scaphiidae e Histeridae.** *Atti R. Accad. Peloritana, Messina* 33: 108-146. 1929.—Keys are given to the 2 families, and to the tribes, genera, and spp. known from Sicily. The systematic list of spp. includes locality records and ecological data. A bibliography of 69 titles is appended.

8718. **WIGGLESWORTH, V. B. Observations on the "Furau" (Cicindelidae) of northern Nigeria.** *Bull. Ent. Res.* [*London*] 20(4): 403-406. 1 fig. 1929.—In the "Furau," or tiger beetle larva of Nigeria, the digestion of the prey is mainly extra-intestinal. A dark brown slightly acid fluid, which is actively proteolytic and causes blackening of the tissues, is ejected from the intestine of the larva and dissolves the tissues of the prey. The resulting fluid is swept towards the mouth by the labium and reingested. The bites of the larvae had no effect upon the skin of a monkey or of man, and there is little doubt that the larvae have no relation to the inflammatory lesion of the foot of man, which also is called "Furau" in northern Nigeria.—*Author's summary.*

8719. **YEPES, JOSÉ. Algunas etiquetas de coleópteros para las playas de Juancho (Prov. de Bs. Aires). [Some Coleoptera from the beaches of Juancho.]** *Rev. Soc. Ent. Argentina* 2(1): 41-42. 1928.—A list of 49 forms, with notes on frequency.

DIPTERA

E. T. CRESSON, JR., *Editor,* Brachycera

O. A. JOHANNSEN, *Editor,* Nemocera

(See also in this issue Entries 6211, 6306, 6317, 6321, 6984, 7533, 7799, 7820, 7822, 7823, 7824, 7826, 7028, 7830, 7831, 7833, 7835, 8632, 8638, 8647, 8655, 8843)

8720. **ALDRICH, J. M. American two-winged flies of the genus Stylogaster Macquart.** *Proc. U. S. Nation. Mus.* 78(9): 1-27. 1930.—This paper contains keys to the spp. of the genus, a discussion of generic and specific characters and the adult habits, and descriptions of the 20 known spp. from North and South America, including 12 that are new. *Stylogaster stylata* Fabr. (=*S. biannulata* v. *argentina* Kröber); *S.* decorata ♂ (p. 16), Costa Rica, type in U. S. Nation. Mus.; *S.* currani (p. 16) and *S.* banksi (p. 18), both Canal Zone, and types in Amer. Mus. Nat. Hist.; *S.* breviventris (p. 19), Brit. Guiana, type in Canadian Nat. Coll.; *S.* fasciata ♂ (p. 20), Brit. Guiana, type in Mus. Comp. Zool.; *S.* apicalis (p. 21), Honduras and Canal Zone, type in U. S. Nat. Mus.; *S.* speciosa ♀ (p. 22), Canal Zone, type in Amer. Mus. Nat. Hist.; *S.* pectinata ♂ (p. 22), Honduras and Peru, type in U. S. Nat. Mus.; *S.* rectinervis (p. 23), Brit. Guiana and Costa Rica, type in Canadian Nat. Coll.; *S.* indistincta ♂ (p. 24), Canal Zone, type in U. S. Nat. Mus.; *S.* peruviana ♀ (p. 25), Peru, type in U. S. Nat. Mus.; *S.* panamensis ♀ (p. 26), Canal Zone, type in Mus. Comp. Zool.

8721. **ALEXANDER, C. P. The crane-flies of Jamaica.** [In: **C. C. GOWDEY. Catalogus Insectorum Jamaicensis.**] *Dept. Sci. and Agr. Jamaica, Ent. Bull.* 4(3): 19-29. 2 fig. 1928.—A complete list of the Tipulidae so far discovered in Jamaica, including *Limonia* basistylata ♂ (p. 19); *Diotrepha* flavicosta (p. 23); *Eriocera* cramptoni ♂ (p. 23); *Erioptera* (*Empeda*) nymphica ♀ (p. 24); *Teucholabis* (*Teucholabis*) gowdeyi* (p. 25), type in British Mus.; *T.* (*T.*) nebulipennis ♀ (p. 27); *Tipula* (*Tipula*) jamaicensis ♀* (p. 27), type in Amer. Mus. Nat. Hist. All other types are in the author's coll. *Dicranomyia* (n. subg. **NEOLIMNOBIA**) (p. 20), based on *D.* (*N.*) diva (*Limnobia d.* Schiner) (p. 20). A total of 22 spp. of Tipulidae are recorded from the island.—*C. P. Alexander.*

8722. **ALEXANDER, CHARLES P. New or little-known Tipulidae (Diptera). XLIV. Australasian species.** *Ann. and Mag. Nat. Hist.* 5(25): 136-156. 1930.—*Dolichopeza* (*Dolichopeza*) illingworthi ♂ (p. 136) and *D.* (*D.*) davidsoni (p. 137), Queensland; *D.* (*D.*) dorrigensis ♀ (p. 138), New South Wales; *Macromastix* (*Macromastix*) clitellaria (p. 139), Victoria, type in Wilson coll.; *M.* (*M.*) mathewsi (p. 141), W. Australia; *M.* (*M.*) clarkiana (p. 142), Victoria, type in Nat. Mus., Victoria; *Limonia* (*Geranomyia*) bogongicola (p. 143), and *L.* (*G.*) grampianicola (p. 144), Victoria, types in Wilson coll.; *L.* (*Limonia*) clarki (p. 145), W. Australia, type in Macleay coll.; *L.* (*L.*) tamborina ♂ (p. 147), Queensland; *L.* (*L.*) exosa ♂ (p. 148), New South Wales; *L.* (*Libnotes*) tayloriana ♂ (p. 149), Queensland, type in Australian Inst. of Trop. Med.; *L.* (*Dicranomyia*) dicksoniae (p. 150), Victoria, type in Wilson coll.; *L.* (*D.*) dorrigensis ♂ (p. 152), New South Wales; *L.* (*D.*) flavidella ♂ (p. 153), Victoria, type in Wilson coll.; *L.* (*Idioglochina*) perkinsiana ♂ (p. 154), Queensland, type in Univ. of Queensland; *Eurhamphidia* invenustipes ♂ (p. 155), W. Australia, type in Macleay coll. Types, unless otherwise stated, are in the author's coll.

8723. **ALEXANDER, CHARLES P. New or little**

known Tipulidae (Diptera). XLV. Australasian species. *Ann. and Mag. Nat. Hist.* 5(28): 370-388. 1930.—Part of a series of Victorian eriopterine crane-flies is discussed. *Molophilus* **janus** (p. 370); **titania** (p. 372); **perluteolus** (p. 373), **flavidellus** (p. 374), **arcuarius** ♂ (p. 375), **strix** (p. 376), **alpicola** ♂ (p. 377), **chloris** ♂ (p. 379), **tasioceroides** ♂ (p. 380), **extricatus** ♂ (p. 381), **grampianus** ♂ (p. 382), **spiculistylatus** ♂ (p. 383), **grandidentatus** ♂ (p. 384), **truncatus** (p. 384), **phyllis** ♂ (p. 385), **chrysopterus** (p. 386), and **decinctus** ♂ (p. 387).

8724. **BARNES, H. F.** Two gall midges (Cecidomyidae) found in stored products. *Bull. Ent. Res.* [*London*] 20(2): 119-122. 4 fig. 1929.—*Lestodiplosis* **raphani*** (p. 119), in stored seed of *Raphanus sativum* from Denmark and Germany, possibly feeding on mites; *Arthrocnodax* **farinicola*** (p. 121), in flour in Naples, probably feeding on mites.

8725. **BARNES, H. F.** A new thrips-eating gall midge, Thripsobremia liothripis, gen. et sp. n. (Cecidomyidae). *Bull. Ent. Res.* [*London*] 21(3): 331-332. 1 fig. 1930.—**THRIPSOBREMIA** (p. 331), intermediate between the bifila and trifila groups of Cecidomyinae, type *T.* **liothripis*** (p. 331), Trinidad, predacious on *Liothrips urichi*.

8726. **BAU, ARMINIUS.** Die Dipteren-Ausbeute der Sunda-Expedition Rensch. I. Diptera pupipara. *Zool. Anz.* 88(11/12): 289-291. 1930.—Five spp. are listed, with references to the literature, distributional records, and taxonomic remarks. *Cyclopodia macrura* is new to the Sunda Is., and *C. horsfieldi* is recorded as parasitic on *Pteropus hypomelanus lombocensis*.

8727. **BOREL, E.** Nomenclature des moustiques de la Cochinchine et du sud Annam. *Far East. Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 165-168. 1927 [1928].—A list of genera and spp.

8728. **BOREL, E.** Sur les moeurs des Anophèles en Cochinchine. *Far East. Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 168-171. 1927[1928].—A tabulation showing habits and ecological relations of *Anopheles* spp. in Cochin China.

8729. **BORGMEIER, TH.** Zur Morphologie und Biologie von Pseudohypocera nigrofascipes Borgm.-Schmitz (Dipt., Phoridae). *Zool. Anz.* 90(3/4): 92-104. 11 fig. 1930.—The larvae of this fly live in bee nests (*Apis, Melipona, Trigona*). The imago (sensory hairs on the legs, ♂ hypopygium, abdominal glands, terminal segments, and genitalia of ♀) is described, and the egg, larva, and pupa described and figured. In the opening of the puparium, one piece is detached in front, which is not split in two. Despite Goidanich's statement, the author maintains that the opening of the puparium of *Apocephalus schmitzi* takes place in the same way as in *Megaselia scalaris* and *rufipes*. Some biological observations made by Pickel are discussed. Probably, the larvae of *Pseudohypcoera* feed on pollen.—*T. Borgmeier*.

8730. **BORGMEIER, TH.** Über das Vorkommen der Larven von Hermetia illucens L. (Dipt., Stratiomyidae) in den Nestern von Meliponiden. *Zool. Anz.* 90(9/12): 225-235. 8 fig. 1930.—A large number of larvae* of this fly, together with *Pseudohypocera nigrofascipes*, were taken from nests of Meliponidae. Statements of authors concerning the same fly on bee-hives are discussed, and a detailed description of the larva is given.—*T. Borgmeier*.

8731. **BROMLEY, S. W.** A review of the genus Proagonistes, Loew (Diptera, family Asilidae), with descriptions of eight new species. *Ann. and Mag. Nat. Hist.* 6(32): 209-224. 1 pl., 2 fig. 1930.—The characteristics of the genus are given and a note on distribution and a key to spp. A total of 16 spp. are now known, including: *Proagonistes* **auripes** ♂ (p. 215), Malay Peninsula, type in Hamburg Mus.; *P.* **apicalis** (*Lamyra a.* Curran) (p. 216); *P.* **leoninus** (p. 216), San Thomé, type in British Mus.; *P.* **mystaceus** ♂ (p. 218), Kenya Colony, type in Brit. Mus.; *P.* **vulpinus** ♂ (p. 219), San Thomé, type in Brit. Mus.; *P.* **gigantipes*** ♀ (p. 219), Madagascar, type in Brit. Mus.; *P.* **rufibarbis** (*Laphria r.* Fabr.) (p. 220); *P.* **ufens** (*Laphria u.* Walker) (p. 220); *P.* **praeceps** (*Laphria p.* Walker) (p. 220); *P.* **saliodes** ♀ (p. 221), Nyasaland; *P.* **austeni** (p. 221), Nyasaland, type in Brit. Mus.; *P.* **neavei** (p. 223), Uganda, type in Brit. Mus.

8732. **COLE, A. C. Jr.** Muscina stabulans Fall. (Diptera: Muscidae) parasitic on Arachnara subcarnea Kell. (Lepidop.: Noctuidae). *Ent. News* 41(4): 112. 1930.—The host pupa appeared in the stalk of *Typha latifolia* at the end of its larval burrow, about 4 in. under the surface of the water. The author observed adult *Muscina stabulans* flying around *Typha latifolia* infested with *Arachnara subcarnea*, but egg-laying was not observed. Since the host larvae enter *Typha* leaves at the tip, it is possible that they are parasitized in this instar. This is probably the first recorded observation of distinct parasitism in *M. stabulans*.

8733. **COLLIN, J. E.** New species of Borboridae (Diptera). *Ent. Month. Mag.* 66(788): 18-21. 1 pl. 1930.—*Borborus* **similis*** (p. 18), *Limosina* **palustris*** (p. 19), and *L.* **spinosa** ♂ (p. 20), all 3 England, and types in author's coll.—*H. M. Gilkey*.

8734. **CRESSON, EZRA T. Jr.** Descriptions of new genera and species of the dipterous family Ephydridae. Paper 8. *Ent. News* 41(3): 76-81. 1930.—*Ditrichophora* **painteri** (p. 77), and *D.* **balsamae** ♀ (p. 77), Honduras; *Polytrichophora* **boriqueni** (p. 77), Porto Rico, type in New York Acad. Sci.; *Hecamedoides* **buccata** (p. 78), New Jersey; *Allotrichoma* **salubris** (p. 78), Brazil; *Axysta* **bradleyi** ♂ (p. 79), Georgia, type in Cornell Univ.; *Nostima* **quinquenotata** ♀ (p. 79), Maryland, *N.* **niveivenosa** ♀ (p. 80), Porto Rico, *Hydrina* **nigrescens** ♂ (p. 80), British Columbia, and *H.* **macquarti** ♂ (p. 80), Alaska, types of all 4 in U. S. Nation. Mus.; *Napaea* **halteralis** (p. 81), Washington; *Parydra* **incommoda** (p. 81), Idaho. When not otherwise specified, types are in Acad. Nat. Sci., Philadelphia.

8735. **CURRAN, C. H.** New Diptera belonging to the genus Mesogramma Loew (Syrphidae). *Amer. Mus. Novitates* No. 405. pp. 1-14. 3 fig. 1930.—A key to 48 spp. is given, the first published for *Mesogramma*. The author states that the Kertesz catalog is in error in placing *M. tridentatum* Giglio-Tos as a synonym of *M. duplicatus* Wied. *M.* **productus** (p. 5), Ecuador; *M.* **watsoni*** (p. 5), West Indies; *M.* **difficilis*** (p. 6), Porto Rico and British Guiana; *M.* **taenia*** (p. 7) and *M.* **lutzi** ♀ (p. 7), Canal Zone; *M.* **slossonae** ♂ (p. 8), Florida; *M.* **nitidiventris** ♂ (p. 9), Brazil; *M.* **norma** ♂ (p. 10), *M.* **purus** ♂ (p. 10), and *M.* **clara** (p. 11), Canal Zone; *M.* **panamensis** ♂ (p. 12), Panama; *M.* **mitis** ♀ (p. 13), Jamaica; *M.* **vierecki** ♀ (p. 13), Colombia.

8736. **GAVER, F. van, et J. TIMON-DAVIS.** Études sur les Diptères Brachycères des environs de Marseille. *Ann. Soc. Ent. France* 97(1/2): 1-17. 1928.

8737. **HAMLYN-HARRIS, R.** Notes on the breeding-places of Aëdes (Finlaya) notoscriptus, Skuse, in Queensland. *Bull. Ent. Res.* [*London*] 19(4): 405-409. 1929.—Observations have shown that this mosquito seeks alkaline waters, as a rule, and avoids acid waters.

8738. **HELLÉN, WOLTER.** Zur Kenntnis der sibirischen Arten der Gattung Chilosia Meig. (Dipt.) [In German.] *Notulae Ent.* [*Helsingfors*] 10(1): 26-29. 4 fig. 1930.—An annotated list of spp., including: *C.* **kamtschatica** ♀* (p. 26), Kamchatka; *C.* **albohirta*** (p. 28), Transbaikalia; *C.* **reniformis** ♂* (p. 28), "Jenisseisk"; *C.* **magnifica*** (p. 29), E. Siberia. Types in Zool. Mus. Helsingfors.

8739. **HOWLAND, L. J.** The nutrition of mosquito larvae with special reference to their algal food. *Bull. Ent. Res.* [*London*] 21(4): 431-439. 1 pl., 3 fig. 1930.—Algae are ingested by many spp. of mosquito larvae and appear to form an important part of the food of these larvae. The algae are digested in the gut, but the digestion is often by no means complete. It is quite possible that the rôle played by the algae may also be assumed by other forms of organic matter, for larvae may be reared to maturity in solutions containing little or no algae. Different algae react differently in the guts of the larvae, some being noticeably digested and some

hardly at all. Those algae which are digested the most are easily stained and are forms of low osmotic pressure. Cytological investigations revealed no character that indicates that algae are an especially nutritious diet.—*Author's summary.*

8740. JOHANNSEN, O. A. Notes on the synonymy of some New York state Chironomidae. *Jour. New York Ent. Soc.* 34(3): 273-277. 1926.—*Heteromyia flavipes* Meigen (=*Ceratopogon basalis* Walker); *Tanypus tricolor* Loew belongs to the genus *Coelotanypus; T. melanops* Wied. (=*Chironomus unicolor* Walker); *T. nigropunctatus* Straeger is distinct from the American spp. bearing this name; *Orthocladius* **atomarius** (*Chironomus a.* Zett.) (p. 274); *Chironomus sordidellus* Zett. belongs to the genus *Psectrocladius; C. atratulus* Zett. belongs to the genus *Metriocnemus; Chironomus gmundensis* Egger is a *Tanytarsus; Tanytarsus* **flavellus** (*Chironomus f.* Zett.) (p. 274); *C. pellucidus* Walker belongs to the genus *Tanytarsus*, with *T. exiguus* Joh. as a synonym; *C. trichomerus* Walker is a *Tanytarsus; C. albistria* Walker, descriptive notes; *Chironomus plumosus* L. (=*C. annularis* DeG.). The author agrees with Edwards that *C. ferrugineo-vittatus* Zett. is a pale variety of *C. plumosus* L.; *C. hilaris* Walker and *C. nephoterus* Mitch. are identical; *C. glacurus* Wied. (=*C. stigmaterus* Say).

8741. LEESON, H. S. Variations in the wing ornamentation of Anopheles funestus, Giles. *Bull. Ent. Res.* [*London*] 21(4): 421-428. 5 fig. 1930.—Nine distinct arrangements of the wing scales were observed in a random sample of 1,084 individuals. Nearly 9/10 of the specimens occurred in one group, in which there were dark and pale forms. Variations in wing markings are not solely related to sex or to habitat. The pale form was more prevalent in the wet season and the dark form in the dry season. It is suggested that further study may reveal whether the dark form is the hibernating variety and whether one form is more important as a carrier of malaria than the other, and that these details of wing ornamentation should be recorded in future.—*Author's summary.*

8742. MANALANG, C. Morphology and classification of the Philippine variety of Anopheles aconitus Donitz, 1902, and Anopheles minimus Theobald, 1901. *Philippine Jour. Sci.* 43(2): 247-260. 1 pl. 1930.—A brief review of the literature on the Philippine *A. funestus* group, and rulings on the nomenclature are given. Morphological study of a series of adult mosquitoes of this group and the larval skins from which they were bred is discussed. A consideration of the principal characters of the local mosquitoes and those described from Ceylon, Assam, Java, and Malaya shows that there exists a variety of *aconitus* (var. **filipinae**) (p. 258) in the Philippines which has heretofore been classified as a variety of *A. minimus*. The local *minimus* is believed to be identical with *A. funestus* (Giles, 1900) emended by Strickland, 1924.—*C. Manalang.*

8743. ROUBAUD, E., et C. TOUMANOFF. Sur une race physiologique suractive du moustique commun, Culex pipiens L. *Bull. Soc. Path. Exotique* 23(2): 196-201. 3 fig. 1930.—Roubaud had previously announced the existence of what he calls an "autogenous" strain of the species *C. pipiens*, distinguished by ability to dispense with hibernation and to lay eggs without having sucked blood. He here discusses the differences between the ordinary, "heterodynamic," strain, blood-sucking by necessity, and the "homodynamic" strain, which is only incidentally blood-sucking. Abdominal sections show that the ♀ of the latter strain possesses, as its sole distinction, a hugely developed mass of adipose tissue, in comparison with the ordinary strain. The ordinary, hibernating strain appears to be rural in its habitat; the autogenous, non-hibernating strain seems to be adapted to the artificial conditions of urban existence.

8744. SCHMITZ, H. Die Verwandtschaft und Abstammung der Phoriden. *Natuurhist. Maanblad* [*Limburg*] 15(6): 69-76. 4 fig.; (7): 82-84. 1 fig. 1926.

8745. SCHMITZ, H. Zur Anatomie der Phoriden. *Natuurhist. Maanblad* [*Limburg*] 15(8): 92-104. 10 fig. 1926.

8746. SCHUURMANS-STEKHOVEN, J. H. Jr. Tabanids collected in Celebes and adjacent isles. *Zool. Anz.* 92(3/4): 109-111. 1 fig. 1930.—A report on the following 3 spp. collected by A. Reyne: *Tabanus succurvus*, Sangi Archipelago; *T. reducens* and *T.* **aurantiacus** ♀* (p. 110), both Celebes.

8747. [STAKELBERG, A. A.] ШТАКЕЛЬБЕРГ, А. А. О нахождении Nycteribosca kollari Frfld. (Diptera, Streblidae) в Туркестане. [N. kollari in Turkestan.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 22(1/2): 133. 1928.—In the Bokarda cave near Askabad (Transcaspia] are found: *Nycteribosca kollari, Nycteribia schmidli*, and *Penicillidia conspicua*, all, for the most part, on *Miniopterus schreibersi pallidus.*—*G. Maydell.*

8748. TAYLOR, FRANK H. Notes on Australian Culicidae (Dipt.). *Bull. Ent. Res.* [*London*] 20(3): 271-277. 1 pl. 1929.—*Ficalbia elegans* ♀*, emended description; larva and pupa also described of this sp. and of *Mimomyia metallica**, [*Aëdes*] (*Chaetocruiomyia*) **wattensis** ♀ (p. 275), Queensland; [*A.*] (*C.*) **tulliae** ♀ (p. 275), Queensland; [*A.*] (*C.*) **moloiensis** ♀ (p. 276), Queensland; [*A.*] (*C.*) **elchoensis** (p. 276), Elcho Is., North Australia. Types are in Australian Inst. of Tropical Medicine, Townsville.

8749. TAYLOR, FRANK H. The Anopheles of the Australian region, their bionomics and their distribution. *Far East. Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 143-164. Map. 1927[1928].—The life-histories of most spp. are fairly well known; their range is not so well known. The spp. of the subg. *Anopheles* are shown to be fairly closely related; *annulipes* and *amictus* of the subg. *Myzomyia* still require considerable research before the status of the various forms is established. *Bironella gracilis* Theob. has for the present at least been retained as generically distinct from *Anopheles.* The definite relation of the various spp. to malaria has been shown to be entirely lacking, except in the case of *A. punctulatus* and its variety *moluccensis*, which were proved by Heydon to be natural vectors at Rabaul. The evidence concerning *A. annulipes*, though presumptive, is not convincing inasmuch as the blood of the patient had not been examined before he settled in the Sydney district (Money, 1926). The position of *A. amictus* and *A. bancrofti* is rendered even more obscure since *A. punctulatus* and var. *moluccensis* are both found in North Australia where both *amictus* and *bancrofti* occur in numbers, and where epidemics of malaria have from time to time occurred. In Queensland, and North Queensland in particular, apparently the prevailing sp. is *A. amictus* with a mixture of *A. bancrofti* and to a much less degree, if at all, of *A. annulipes.* The possibility of the presence of *A. punctulatus* and var. *moluccensis* can not be excluded. *Punctulatus* occurs well down the western side of the Gulf of Carpentaria as most probably also does its variety; it may therefore be found also on the Cape York Peninsula. Should they be so found, it would explain the epidemics which have occurred in the past. Malaria has practically disappeared from Cairns; this the writer thinks is due to the fact that all the important anopheline breeding-places in that locality have been filled in or destroyed in recent years. A map of Australia shows the known distribution of *Anopheles* spp.

8750. THIENEMANN, AUGUST. Chironomiden-Metamorphosen 1. *Arch. Hydrobiol.* 19(4): 585-623. 31 fig. 1928.—The Ceratopogoninae are divided into 3 sections on the basis of larval and pupal characters: (1) Ceratopogoninae genuinae, body of larva with conspicuous setae or spines; anterior and posterior prolegs well developed; pupae with at least 1 pair of slender thoracic processes, the prothoracic respiratory organs more or less piriform; (2) C. intermediae, body of larva with inconspicuous setae; a retractile caudal proleg present; pupae without long thoracic tubular processes;

prothoracic respiratory organ slender bandlike, or slender clavate. This section contains only *Dasyhelea* Kief. (*Pseudoculicoides* Mall., *Prokempia* Kief.) with the spp. divided into the groups *longipalpis, diplosis,* and *halophila;* (3) C. vermiformes, body of larva slender with inconspicuous setae, no prolegs present; pupae lacking tubular processes, the prothoracic respiratory organ more or less piriform. The 1st group of this section comprises the genus *Culicoides,* the 2nd group, such genera as *Bezzia, Probezzia, Palpomyia, Dicrobezzia Johannsenomyia,* and *Xylocrypta.* Keys to larvae and pupae are given together with a check-list of spp. of which the immature stages are known.—*O. A. Johannsen.*

8751. TRENSZ, F. Recherches sur l'index maxillaire de Anopheles maculipennis. (Note préliminaire.) *Bull. Soc. Path. Exotique* 23(1): 43-47. 1930.—On the basis of studies of 4,244 specimens from Algeria, Italy, and continental France, the author finds that the average index fails to support the theory of differentiation into types. [See also the following abstract.]

8752. ROUBAUD, E. Quelques remarques à propos de l'interprétation théorique des index maxillaires. *Bull. Soc. Path. Exotique* 23(1): 47-53. 1930.—The author's facts tend to show that the maxillary index is modified according to feeding habits [on man or on lower animals] of the mosquito in the given region. [See also the preceding abstract.]

8753. VAN DUZEE, M. C. Three new dolichopids from California and Colorado (Diptera). *Pan-Pacific Ent.* 6 (3): 123-126. 1930.—*Pelastoneurus* latifacies (p. 123), type in author's coll., and *Dolichopus* subcostatus (p. 124), type in California Acad. Sci., both California; *D.* nigroapicalis (p. 125), Colorado, type in California Acad. Sci.

8754. VAN DUZEE, M. C. The dipterous genus Sympycnus Loew in North America and the West Indies. *Pan-Pacific Ent.* 7(1): 35-47. 1930.—A history of the genus is given, with key to the ♂♂ of N. America, Mexico, and the West Indies. *Sympycnus* Loew (=*Nothosympycnus* Wheeler, *Gymnoceromyia* Bigot). The characters of the genus are given and the following described as new: *S.* aldrichi ♂ (p. 39), Indiana, type in U. S. Nation. Mus.; *S.* breviventris (p. 40), California, *S.* calcaratus (p. 41), Colorado and New Mexico, *S.* globulicauda ♂ (p. 43), Colorado, *S.* inaequalis (p. 44), California, *S.* laevigatus (p. 45), California, and *S.* latitarsis ♂ (p. 46), Utah, types of all 6 in author's coll.; *S.* montanus ♂ (p. 47), Idaho, type in U. S. Nat. Mus. The following are described as new in the key: *S.* thoracicus ♂ (p. 37), St. Vincent, W. I.; *S.* pulvillus ♂ (p. 38), Colorado; *S.* tripilus ♂ (p. 38), California; *S.* setosus ♂ (p. 38), Colorado.

8755. WIGGLESWORTH, V. B. The early stages of some West African mosquitoes. *Bull. Ent. Res.* [*London*] 20(1): 59-68. 7 fig. 1929.—Descriptions are given of the larvae and pupae of *Uranotaenia nigripes*, Hodgesia sanguinis*, H. malayi** (larva only), *Aëdes punctocostalis*, A. abnormalis*, A. tarsalis*,* and *Ficalbia malfeyti*. H. sanguinis* is remarkable chiefly for the structure of the respiratory trumpets of the pupa, each of which is cleft almost to the base in the form of two leaflets.—*From author's summary.*

HEMIPTERA AND HOMOPTERA

H. H. KNIGHT, *Editor,* Hemiptera

Z. P. METCALF, *Editor,* Homoptera

(See also in this issue Entries 7777, 7783, 7785, 7795, 7799, 8632, 8655, 8805, 9056)

GENERAL

8756. JENSEN-HAARUP, A. C., och HÅKAN LINDBERG. Halvvingar-Hemiptera, Homoptera. 8. In: Insektfaunan inom Abisko Nationalpark. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* No. 18. pp. 37-42. 1931.—List of 27 spp. of Hemiptera and 15 of Homoptera, with brief notes on locality and distribution.

8757. POISSON, R., et E. MONGUILLON. Notes biogéographiques. Documents sur la faune hémiptérologique des environs du Mans (Sarthe). *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 19-27. 1930(1931).—A list of Heteroptera and Homoptera collected, with distributional notes on *Psacasta conspersa, Ochetostethus nanus, Dyroderes umbraculatus,* and *Sehirus sexmaculatus* [Pentatomoidea]; *Chorosoma schillingi* [Coreidae]; *Macroplax fasciata* [Lygaeidae], *Micrelytra fossularum* [Coreidae]; *Neides aduncus* [Berytidae]; *Cixius venustulus* [Fulgoridae]; and *Aphrophora corticea* [Cercopidae].

HEMIPTERA

8758. CHINA, W. E. A remarkable mirid larva from Cuba, apparently belonging to a new species of the genus Paracarnus, Dist. (Hemiptera, Miridae). *Ann. and Mag. Nat. Hist.* 8(45): 283-288. 2 fig. 1931.—*P.* myersi* (p. 286), adults described, and a peculiar spined nymph* which is associated with this sp., found on coffee; for comparison *P. elongatus, P. grenadensis,* and *P. mexicanus* are illustrated and separated by key.

8759. DRAKE, CARL J. Neotropical Tingitidae (Hemiptera). *Ann. and Mag. Nat. Hist.* 8(45): 225-227. 1931.—*Teleonemia albomarginata*; T.* spectabilis* (p. 226), Peru, type in author's coll.; *T.* dispersa* (p. 227), Ecuador, type in Brit. Mus.

8760. DRAKE, CARL J. Notes on some Tingitidae from Cuba (Hemiptera). *Psyche* 33(3): 86-88. 1926.—Records of 8 spp., including *Leptopharsa* myersi (p. 87), type in author's coll.

8761. HADDEN, FRED C. The pelagic Halobates. *Proc. Hawaiian Ent. Soc.* 7(3): 457-459. 1 fig. 1931.—*H. sericcus** was captured in numbers on the shore of Waikiki Beach (Hawaiian Is.) during rough water. The sp. spends its entire life at sea, being able to jump out of the water, and to swim swiftly.

8762. HARRIS, HALBERT M. Notes on Philippine Nabidae, with a catalogue of the species of Gorpis (Hemiptera). *Philippine Jour. Sci.* 43(3): 415-422. 1 fig. 1930.—*Aristonabis reuteri* Bergr.; *Phorticus* variegatus (p. 415); *Alloeorhynchus* bakeri* (p. 417); *Gorpis sordidus** Reuter, described; *G.* flavicans (p. 420), type in author's coll.; *G.* philippinensis* (p. 420). Types in U. S. Nat. Mus., unless otherwise stated.

8763. KNIGHT, HARRY H. An European plant-bug (Amblytylus nasutus Kirschbaum) recognized from Massachusetts (Hemiptera, Miridae). *Ent. News* 41(8): 256-258. 1930.—First record for the United States. *A. nasutus* (=*A. affinis* Fieb., *A. vanduzeei* Blatchley).

8764. LAISNÉ, G. Contribution à l'étude des hydrocorises de Normandie. Insectes capturés aux environs d'Alençon et du Mesle-sur-Sarthe. *Bull. Soc. Linn. Normandie* 1: 97. 1928(1929).—Records on 10 spp.

8765. LAISNÉ, G. Note sur quelques Hétéroptères nouveaux à ma connaissance pour la région. *Bull. Soc. Linn. Normandie* 1: 98. 1928(1929).—Records on 3 spp.

8766. MILLER, N. C. E. Two new species of Malayan Rhynchota. *Bull. Ent. Res.* [*London*] 22(2): 195-197. 3 fig. 1931.—Coreidae: *Derepteryx* chinai* (p. 195) and *Ochrochira* rubrotincta* (p. 196), Federated Malay states. Types in Brit. Mus.

8767. MILLER, N. C. E. The bionomics of some Malayan Rhynchota (Hemiptera-Heteroptera). *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser.* 5. p. 1-142. 123 fig. 1931.—Life history data, and descriptions and figures of eggs, nymphal stages, and

adults of the following: *Brachyplatys subaeneus*, host plants *Glycine hispida, Canavalia ensiformis, Gliricidia maculata*, and *Vigna catjang; Eusarcocoris ventralis*, on *Oryza sativa, Scirpus erectus*, and *Sesamum indicum; Antestia degenera*, on *Oryza sativa, Scirpus erectus*, and *S. mucronatus; Eurydema pulchrum*, on *Brassica oleracea caulorapa* and *B. nigra; Nezara viridula*, found in Malaya on *Oryza sativa*, cotton, cowpea [*Vigna catjang*], *Crotolaria usaramoensis*, and *C. striata; N. v.* var. *torquata; Piezodorus rubrofasciatus*, on *Sesbania aculeata, Cajanus indicus*, and *Vigna catjang; Menida varipennis*, on rice, *Scirpus erectus*, and rarely *Gleichenia* sp.; *Pycanum ponderosum*, on *Lagerstroemia, Bougainvillea, Ixora*, and *Lettsomia maingayi; Tetroda histeroides*, on *Oryza sativa* and *Imperata arundinacea; Derepteryx* **chinai** (p. 77), Fed. Malay States, on *Rubus glomeratus* and *R. rosaefolius; Ochrochira* **rubrotincta** (p. 81), Fed. Malay States, on *Citrus limonum, Hibiscus, Cosmos bipinnatus*, and *Thea sinensis; Anoplocnemis phasiana*, on many food plants; *Acanthocoris scabrator*, on Solanaceae and Convolvulaceae; *Cletus punctiger*, on *Oryza sativa* and *Scirpus erectus; Cletus trigonus*, on *Oryza sativa, Celosia cristata*, and *Amaranthus spinosus; Riptortus linearis*, on many hosts; *R. pedestris*, mainly on Leguminosae and Cucurbitaceae. The plant hosts are arranged alphabetically.

8768. POISSON, R., et A. POISSON. Hémiptères de Normandie (suite). *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 15-19. 1930 (1931).—Ecological and host plant records of 101 spp. of Lygaeoideae are given.

8769. POISSON, RAYMOND. Contribution à la connaissance des Pentatomidae (Hémiptères-Hétéroptères) de Normandie. *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 57-83. 1 fig. 1928 (1929).—Distributional records and synonymy of *Sehirus luctuosus, S. biguttatus, S. dubius, Troilus luridus, Rhacognathus punctatus, Codophila varia*, and *Holcogaster fibulata; Jalla dumosa*, description of nymph; *Acanthosoma haemorrhoidale, Elasmostethus interstinctus, E. minor, Elasmucha ferrugata; E. grisea* ♂* ♀*, *E. picicolor* ♂* ♀*; *Cyphostethus tristriatus;* list of 14 Cydnidae, 1 Plataspidae, and 36 Pentatomidae taken in Normandy.

8770. SEABRA, A. F. de. Notas da sinopse dos Hemípteros Heterópteros de Portugal. III. *Mem. e Estud. Mus. Zool. Univ. Coimbra, Ser. 1.* No. 18. 1-3. 1 fig. 1928.—Generic and specific description of *Cyphostethus tristriatus** recently discovered in Portugal.

8771. SEABRA, A. F. de. Sinopse dos Hemípteros Heterópteros de Portugal. Série Onychiophora Reut. *Mem. e Estud. Mus. Zool. Univ. Coimbra, Ser. 1.* No. 1, Fasc. 5. 239-244. 2 fig. 1929.—Generic and specific description of *Pyrrhocoris apterus** and *Scantius aegyptius**.

HYMENOPTERA

S. A. ROHWER, *Editor*

(See also in this issue Entries 6195, 7772, 7779, 7791, 7799, 7806, 7809, 7834, 7842, 8647, 8655, 8687, 8730, 9056)

8772. ALFKEN, J. D. Eine neue Kegelbiene aus Tunis. *Konowia* 7 (2): 193-196. 1928.—*Coelioxys* **osmiae** (p. 193). This species apparently belongs to the *C. elongatus* Lep. group, and a key is given for separating the species belonging to the group.—*C. E. Mickel.*

8773. AURIVILLIUS, CHR. Vad menad Linné med Apis florisomnis? [What did Linnaeus mean by A. florisomnis?] *Ent. Tidskr.* [*Stockholm*] 48 (3): 143-144. 1927.—Comment on an article by J. D. Alfken. [ib. p. 137-143.]

8774. BORGMEIER, THOMAZ. Catalogo systematico e synonymico das formigas do Brasil. 2a. Parte. Subf. Pseudomyrminae, Myrmicinae, Formicinae. *Arch. Mus. Nacion. Rio de Janeiro* 29: 69-164. 1927.—An annotated list of Brazilian ants. Only the principal synonymy is indicated.

8775. BRAUNS, HANS. Beitrag zur Kenntnis afrikanischer Chrysididen (Hym.). *Ent. Mitteil.* 17 (6): 383-393. 7 fig. 1928.—**ODONTOCHRYDIUM** (p. 389), to include *O.* **trautmanni*** (p. 389), Malvern-Natal; **CHRYSIDIUM** (p. 390), to include *C.* **antiquum*** (p. 390) from Namaqualand; and the subg. of *Chrysidium,* **HETEROCHRYSIS** (p. 392) to include *C. (H.)* **braini*** (p. 392), Namaqualand; *Spintharis* **arnoldi** (p. 383), S. Rhodesia; *Allocoelia* **trautmanni** (p. 384), Namaqualand; *Tetrachrysis* **trautmanni*** (p. 385), Cape Colony; *T.* **arnoldi*** (p. 386) and *Hexachrysis* **dentipleuralis*** (p. 387), Namaqualand. *Holochrysis pleuralis* Mocs. is made a synonym of *Spintharis bispinosa* Mocs. Types in author's coll.—*C. E. Mickel.*

8776. BUGNION, E. Les organes bucco-pharyngés de la fourmi coupe-feuilles du Brésil "Atta sexdens" Lin. [Buccopharyngeal organs in the Brazilian leaf-cutting ant A. sexdens.] *Verhandl. Schweiz. Naturf. Ges.* 109: 200. 1928.—Abstract.

8777. CARR, L. A. The sawflies of the Lichfield District. *North Staffordshire Field Club Trans. and Ann. Rept. 1927-28* 62: 110-115. 1928.—In this extensive list, *Tenthredella flava* L. is reported new to Britain.

8778. COCKERELL, T. D. A. Descriptions and records of bees. 117 & 118. *Ann. and Mag. Nat. Hist.* 4 (19): 132-152. 1929.—*Habropoda* **sutepennis** ♂ (p. 132); *Callomelecta* **habropodae** ♂ (p. 133); *Nomia* **nanensis** ♀ (p. 133); *N.* **siamensis** (p. 134); *N.* **oryzae** ♂ (p. 135); *N.* **ladelli** ♂ (p. 136); *Nomioides* **nanensis** ♂ (p. 137); *Tetralonia* **siamensis** ♂ (p. 138); *Trigona* **aliceae** (p. 139); *T.* **ferrea** ♀ (p. 139); *T.* **hemileuca** ♀ (p. 140); *T.* **melanoleuca** (p. 140); *Ceratina siamensis* ssp. **nanensis** (p. 141); *Mesostrichia confusa* ssp. **mckeani** ♀ (p. 141), all from Siam; *Halictus* **semicyaneus** (*H. mesocyaneus* Ckll.); short notes are given on *Nomia strigata* v. *ridleyi, N. semiaurea, N. gilberti, Nomioides feai* Vachal (new to Siam), *Trigona ambusta, T. cambodiensis*, and *Ceratina binghami. Epimethea* **kuznetzovi** ♂ (p. 142), Tashkent; *Megachile gathela* ssp. **humida** ♀ (p. 144) and *M.* **nematocera** (p. 144), Siam; *Anthidiellum* **melanaspis** ♂ (p. 145), Thursday Isl.; *Heriades* **laosella** (p. 146), *Nomada* **sutepensis** ♂ (p. 147), *N.* **picticauda** ♂ (p. 148), *N.* **attenuata** ♂ (p. 148), *Allodape* **puangensis** ♀ (p. 149), *Ceratina (Ceratinidia) lepida* v. **sublepida** (p. 150), *C. l.* var. **sutepensis** (p. 150), *C. (C.)* **laosorum** ♀ (p. 151), and *C. (C.)* **corbetti** (p. 151), Siam.

8779. COCKERELL, T. D. A. Bees in the Queensland Museum. *Mem. Queensland Mus.* 9 (3): 298-323. 1929.—*Euryglossa aurescens* ssp. **obscura** ♀ (p. 298), N. S. Wales; *Pachyprosopis* **angulifera** ♂ (p. 298), Queensland; *P.* **georgica** ♀ (p. 299), W. Australia; **PSEUDHYLAEUS** (p. 299), based on *P.* **albocuneatus** (*Euryglossa albocuneata* Ckll.) (p. 299), including also *P.* **hypoleucus** (*Euryglossa hypoleuca* Ckll.) (p. 299); *Trigona* **wybenica** (p. 300), [locality not given]; *T. carbonaria* ssp. **hockingsi** (p. 301), Queensland; *Megachile* **alani** ♀ (p. 302), N. S. Wales; *M.* **chrysopygopsis** ♀ (p. 302), W. Australia; *M.* **dinognatha** ♀ (p. 303), *M.* **semiclara** ♀ (p. 303) and *M.* **batchelori** ♀ (p. 304), Queensland; *M.* **wilsoni** ♂ (p. 304), Victoria; *M.* **hardyi** ♂ (p. 305), N. S. Wales; a table is given, separating the spp. of *Megachile; Paracolletes* **friesei** ♀ (p. 306). W. Australia; *P.* **bicristatus** ♀ (p. 307), N. S. Wales; *P. advena* **worsfoldi** (*P. worsfoldi* Ckll.) (p. 308); *P. melbournensis* ssp. **clarki** ♀ (p. 308), *P.* **microdontus** ♀ (p. 309), *P.* **semilucens** ♀ (p. 309) and *P. nigroclypeatus* ssp. **hardyi** ♀ (p. 310), W. Australia; a discussion of the generic limits of *Paracolletes,* with reference to the validity of *Leioproctus* Smith and *Lamprocolletes* Sm., is given, with a list of the species in each genus, if *Leioproctus,* which has priority over *Lamprocolletes,* is recognized; *Hylaeus*

perconstrictus ♂ (p. 311), Victoria; *H. honestus* subhonestus ♂ (p. 312) and *H.* hobartiellus ♂ (p. 312), Tasmania; *H.* wynyardensis ♀ (p. 312); *H. simillimus* v. tasmani ♀ (p. 313), Tasmania; *H.* longmani (p. 313), Queensland; *H.* semipersonatus ♂ (p. 314), Tasmania; MEGHYLAEUS (p. 314) subgenus in *Hylaeus*, type *H. giganteus* and including *H. fijiensis*, emended description; *H.* perrufus ♀ (p. 314), Queensland; *Gnathoprosopis* aureopicta ♀ (p. 315), N. S. Wales; *Palaeorhiza*, subgen. of *Heterorhiza* with type *P. melanura* (Cock.); a key to the 4 spp. is given; *Parasphecodes* tooloomensis ♀ (p. 317), N. S. Wales; *Euryglossina flaviventris* vars. fuscescens ♀ and personata ♀ (p. 317), Queensland; *E.* semiflava ♀ (p. 318) and *E.* philoxantha ♂ (p. 318), Queensland; *Turnerella* pachycephala ♀ (p. 319); [location not given); *T.* globuliceps, *T.* nothula and *T.* atomaria, n. combs., formerly placed in *Euryglossella*. (p. 319); characters separating *Turnerella* and *Euryglossella* are given; *T. atomaria* v. fusciventris ♀ (p. 319), *T.* macrostoma ♀ (p. 320) and *T.* semiflava ♀ (p. 320), Queensland; ZALYGUS (p. 321), related to *Euryglossella*, type *Z.* cornutus ♀ (p. 321), Queensland; *Heterapis* hackeriella ♀ (p. 322), Queensland; MICRODONTURA (p. 322), related to *Euryglossina*, type *M.* mellea ♀ (p. 322), Queensland.

8780. COLLART, A. Notes sur un Hyménoptère chasseur d'araignées (Cyphononyx splendens?). [Notes on a hymenopteron (C. splendens?), predator of spiders.] *Rev. Zool. Africaine* 15(4): [95]-[97]. 1928.

8781. CRESSON, EZRA TOWNSEND. The types of Hymenoptera in the Academy of Natural Sciences of Philadelphia other than those of Ezra T. Cresson. *Mem. Amer. Ent. Soc.* 5. 1-90. 1928.—Posthumous work edited by E. T. Cresson, Jr., includes types as stated, excepting the types of Cynipidae described by H. S. Bassett.

8782. CUSHMAN, R. A. A revision of the North American ichneumon-flies of the genus Mesostenus and related genera. *Proc. U. S. Nation. Mus.* 74(16): 1-58. 8 fig. 1929.—A review of the N. Amer. spp. of what the author considers an unnatural group. Illustrated key to genera is treated, and keys to species are given. *Digonocryptus* tarsatus (*Mesostenus t.* Cresson) (p. 6, footnote); *D.* grenadensis (*Mesostenus g.* Ashmead) (p. 6, footnote); *D.* cressonii (*Mesostenus c.* Ashm.) (p. 6, footnote); AGONOCRYPTUS (p. 6), (related to *Monogonocryptus* Viereck and *Digonocryptus* Viereck), type *A.* discoidaloides (*Mesostenus d.* Vier.) (p. 7), hosts *Pseudobidion unicolor, Eupogonius vestitus; A.* chichimecus (*Mesostenus c.* Cresson) (p. 7); *A.* heathi (*Cryptus h.* Brues) (p. 7); MESSATOPORUS (p. 8), type *M.* discoidalis* (*Mesostenus d.* Cresson) (p. 9), hosts *Agenia petiolata, A. bombycisa, Ceropales fraterna, Pseudagenia mellipes; M.* rufiventris (p. 11), Maryland; *M.* compressicornis (p. 12), Pennsylvania; *M.* major* (p. 13), Florida; *Mallochia* strigosa (*Mesoleptus* ? *strigosus* Cresson) (p. 14); *Listrognathus albomaculatus* v. *albomaculatus* (Cresson) (=*Mesostenus leucocoxus* Ashm.); *L. a.* var. rufitibialis (p. 18), Maryland; *L. a.* var. multimaculatus (p. 18), Pennsylvania; *L. a.* var. nubilipennis (*Mesostenus n.* Cresson) (p. 19); *L. a.* var. sagax (*Mesostenus s.* Provancher) (p. 19); *L.* multicolor (p. 20), California; *L.* agnatus (p. 21), Illinois; *L.* paludatus (*Mesostenus p.* Cresson) (p. 22); *Crypturopsis texanus** (Ashm.) (=*C. dyari* (Ashm.)); *C.* audax* (*Mesostenus a.* Cresson,=*M. exaptus* Cresson) (p. 25); *C.* saundersi (*Mesostenus s.* Cresson) (p. 26); *C.* ? armatus (*Mesostenus a.* provan.) (p. 26); *C.* abdominalis* (p. 28), Ohio; *Diapetimorpha* orba* (*Crypturopsis orbus* (Say)) (p. 30); *D.* cinctiventris (*Mesostenus cressonii* Dalla Torre) (p. 32); *D.* rufigaster (p. 33), Virginia; *D.* confederata (p. 34), Texas; *D.* alabama (p. 34), Alabama; *D.* acadia (p. 35), Louisiana; *D.* introita* (*Mesostenus introitus* Cresson,=*M. dejectus* Cresson, *Cryptus armatus* Ashmead, not Lucas, *C. ashmeadii* Dalla Torre) (p. 36); *Mesostenus thoracicus* Cresson (=*M. erythrogaster* Ashm.), hosts *Phlyctaenia extricalis, Nephopteryx pergratiella; M. gracilis* Cresson (=*Nematopodius orbitalis* Ashm.), hosts *Dakruma coccidivora, Euzophera semifuneralis, Ozamia clarefacto; M. leucopus** Ashm., ♀ described for first time; *M. promptus* Cresson (=*M. americanus* Cresson); *M.* melanurus (p. 47), Alberta; *Derocentrus* macilentus* (*Mesostenus m.* Cresson,=*D. texanus* (Ashm.)) (p. 48); *Polycyrtidea* pusillus (*Mesostenus p.* Cresson) (p. 52); *P.* flavopictus (*Agrypon f.* Ashm.) (p. 52); *P.* limitis* (p. 52), Texas; ACERASTES (p. 53), near *Polycyrtidea* Viereck, type *A.* pertinax* (*Mesostenus p.* Cresson) (p. 54); *Polistiphaga* fulva* (*Mesostenus* ? *fulvus* Cresson,=*Polistiphaga arvalis* (Cresson)) (p. 55), host *Polistes; P.* zonata* (p. 56), Texas, host *Polistes maculata; Pezoporus* nigricornis (*Mesostenus n.* Provan.) (p. 57); *P.* nitidulus (*Mesostenus nitidus* Provan.) (p. 58); *Thysiotorus* triangularis (*Mesoleptus t.* Cresson) (p. 58); *Gambrus* canadensis (*Nematopodius c.* Provan.) (p. 58).—*R. A. Cushman.*

8783. DELMAN, R. Première liste de Symphytes des Pyrénées. *Bull. Soc. Hist. Nat. Toulouse* 56(3): 463-468. 1927.—A classified enumeration of several scores of Tenthredinini.

8784. EIDMANN, H. Weitere Beobachtungen über die Koloniegründung einheimischer Ameisen. *Zeitschr. Wiss. Biol., Abt. C Zeitschr. Vergleich. Physiol.* 7(1): 39-55. 2 fig. 1928.—The fertilized queen of *Lasius niger* L. overwinters in a burrow and begins egg-laying the following spring. First, a single larva is reared; after it pupates, other eggs develop. The 1st worker emerges 1 year after the isolation of the queen in her burrow, and opens a passage to the outside. Workers lay no eggs when a queen is present. Necessary conditions for the welfare of the workers are the presence of a queen in the nest and (of secondary importance) the exercise of the instincts for construction and for the care of the brood. The ♀ of *Lasius mixtus* Nyl., after her nuptial flight, has about 4 weeks in which to procure the aid of auxiliary ants for founding her colony. Polygyny in the nest of *Formica rufa* L. is brought about chiefly as follows: workers seize fertilized ♀♀ after their nuptial flight, drag them into the nest and retain them there as auxiliary queens. If, after having once founded her colony, the queen of *Myrmica rubra* L. be isolated, she is unable to repeat the process and soon dies; she does not lose her instinct of caring for the brood but she will not lay eggs unless workers are present.—*G. C. Wheeler.*

8785. EWERS, HANS HEINZ. The ant people. Transl. by CLIFTON HARBY LEVY. p. x+323. John Lane, The Bodley Head, Ltd.: London, Dodd Mead & Co.: New York, 1927. Pr. 8s 6d.

8786. FINZI, BRUNO. Nota sui Camponotus (Myrmentoma) lateralis, piceus, dalmaticus. *Folia Myrmecologica et Termitologica* 1(4/5): 51-52. 1927.—The 3 spp. are regarded as distinct; a key is given to distinguish them.

8787. FRERE, A. G. Notes on the life and habits of the common carpenter bee (Xylocopa amethystina). *Jour. Bombay Nat. His. Soc.* 32(1): 225-228. 1927.—The nest is completed in about 7-10 days. Average number of cells is 8.—*M. Sharif.*

8788. GIRAULT, A. A. Notes on, and descriptions of, chalcid wasps in the South Australian Museum. Concluding paper. [Previous part published in Records S. Austr. Mus., pt. III, 1927, pp. 309-338.] *Trans. and Proc. Roy. Soc. S. Australia* 53: 309-346. 1929.—*Eupelmus redini* v. argentilineus (p. 309), Tasmania; *Parooderella* goethei ♀ (p. 310), Queensland; *Eusandalum* longiannulum ♀ (p. 311) and *Matritia* hebes ♀ (p. 311), Tasmania; *Epicheiloneurus* cinctiventris ♀ (p. 311), S. Australia; *Anagyropsis* longistylus (p. 312) [location not given]; *Coccidoxenus* aeneoculex ♀ (p. 312), S. Australia; *Rhopalencyrtoidea* austrina ♀ (p. 313), Tasmania; *Epiblatticida* puparia (p. 313), Queensland; *Aphycus* nigrivarius (p. 313), Queensland and Victoria; *Cristatithorax* sublimus (p. 314), N. Australia; *Arhopoideus* semiargenteus ♀ (p. 314), Queensland; *Paraenasomyiia* feralis ♀ (p. 315), *Coelocybelloides* pulchra ♀ (p. 317) and *C.* nigrisetae ♀ (p. 317), S. Australia; *Platygerrhus* incola (p. 317), *P.* froudei (p. 318) and *P.* pallidicoxa ♀ (p. 318), Queens-

land; *Amerostenus* **varidentatus** (p. 318), S. Australia; *Pleistodontes* **semiruficeps** ♀ (p. 318), Lord Howe Isl.; *Spalangia* **punctulaticeps** ♀ (p. 319), Kangaroo Isl.; *Tomocera* **io** ♀ (p. 319), S. Australia; *Roptroceropseus* **citripes** (p. 320), S. Australia and Queensland; *Nasonia* **miltoni** ♀ (p. 320), S. Australia *Isoplatoides* **quadridentatus** ♀ (p. 320), N. S. Wales; *I.* **tripustulatus** ♀ (p. 321), S. Australia, type in Macleay Mus.; *Parerotolepsia* **unimacula** ♀ (p. 321) and *Systasis* **cecili** ♀ (p. 322), S. Australia; **ROPTROCERELLA** (p. 322), near *Roptroceropseus*, erected for *R.* **latipennis** ♀ (p. 322), S. Australia; *Toxeumoides* **poeta** ♀ (p. 322), S. Australia, type in Macleay Mus., Sydney; *T.* **silvensis** ♀ (p. 323), Queensland, type in Queensland Mus.; *Secodella* **io** ♀ (p. 323), S. Australia and Tasmania; *Pelorotelopsella* **rex** ♂ (p. 324), S. Australia; *Metacrias* **clara** ♀ (p. 324), Victoria, type in coll. F. Erasmus Wilson; *Rhicnopeltella* **sarah** (p. 324), S. Australia and Queensland; *R.* **faunus** ♂ (p. 324), Queensland; *R.* **depressa** ♀ (p. 325), S. Australia; **AUSTROLYNX**, similar to *Diaulinopsis*, erected for *A.* **flavitibia** (p. 325), S. Australia; *Euplectromorpha* **lucia** ♀ (p. 326), Victoria, type in coll. F. Erasmus Wilson; *Gyrolasella* **aenea** ♀ (p. 326), *Diaulomyiia* **nigroaenea** ♀ (p. 326), *Pseudiglyphus grotiusi* v. **io** ♀ (p. 326), *Neomphaloidella* **eucalypti** ♀ (p. 327) and *N.* **brevistigma** ♀ (p. 327), S. Australia; *N.* **parkmani** ♀ (p. 327), Queensland; *N.* **bilobata** ♀ (p. 327), *Tetrastichus* **perobscurus** ♀ (p. 328) and *T.* **pontiac** ♀ (p. 329), S. Australia; *Tetrastichodes* **fuscitibiae** ♀ (p. 329) and *Asyntomosphyrum* **limbus** ♀ (p. 329), Tasmania; *Quadrastichodella* **nova** ♀ (p. 329), S. Australia, type in Macleay Mus.; *Elasmus* **bellicorpus** ♀ (p. 330), Victoria; *Euryischomyiia* **setosa** ♀ (p. 331) and *Stilbula* **quadri-digitata** ♀ (p. 331), S. Australia; *S.* **albipennis** ♀ (p. 332), N. Australia; *S.* **albipetiole** (p. 332), Victoria and S. Australia; *S.* **octo-digitata** ♀ (p. 333), King George Sound, type in Macleay Mus.; *Epimetagea* **sanguiniventris** ♀ (p. 334), S. Australia; *E.* **flavifemora** ♀ (p. 334), N. S. Wales, type in Macleay Mus.; *E.* **aeneobrunnea** ♀ (p. 334), King George Sound, type in Macleay Mus.; *Chalcuroidella* **bispinosa** ♂ (p. 335), S. Australia; *Metagea* **punctulativentris** ♀ (p. 335), S. Australia, type in Macleay Mus.; *Eurytoma* **murrayi** (p. 336), Tasmania; *E.* **cecili** ♀ (p. 336), Kangaroo Isl.; *E.* **nigroculex** ♀ (p. 336), *E.* **striatifemur** ♀ (p. 337), *E.* **varivena** ♀ (p. 337) and *E.* **minutivespa** ♀ (p. 338), S. Australia; *E.* **leeuwenhoeki** ♀ (p. 338), N. Australia; *Megastigmus* **hilaris** ♀ (p. 339) and *M.* **cecili** ♀ (p. 339), S. Australia; *M.* **pallidiocellus** ♀ (p. 339), Queensland and S. Australia, type in Queensland Mus.; *M. sulcicollis* v. **walsinghami** (p. 340) and *Epimegastigmus* **banksiae** ♀ (p. 341), S. Australia; *Neomegastigmus* **leai** ♀ (p. 341), Kangaroo Isl.; *Podagrion* **metatarsum** (p. 341), Victoria; *P.* **flabellatum** (p. 342) and *Pachytomoides* **bicinctus** ♀ (p. 342), Tasmania; *Amonodontomerus* **montanus** ♀ (p. 342), S. Australia; **AUSTRALOMYMAR** (p. 343), near *Polynemoidea*, erected for *A.* **aurigerum** ♀ (p. 343), Victoria; *Chalcis* **decens** ♀ (p. 344), *C.* **redia** ♀ (p. 344) and *Xenarretocera* **murrayi** ♀ (p. 345), S. Australia; *Stomatoceras* **parvivespa** ♀ (p. 345), W. Australia; *S.* **disconiger** ♀ (p. 345), N. S. Wales; *S.* **vespella** ♀ (p. 346), S. Australia. Types presumably in S. Australian Mus., except where otherwise given. Distributional and taxonomic notes are given on numerous other spp.

8789. GOIDANICH, ATHOS. Reperti biologici e morfologici sul Crabro (Coelocrabro) podagricus Vander Linden. [Biological and morphological notes C. (C.) podagricus.] *Boll. Lab. Ent. Ist. Superiore Agrar.* [*Bologna*] 1: 96-106. 3 fig. 1928.—Descriptions are given of the nesting ♀, of the nest and the provisioning of it with Diptera (*Scatopse pulicaria* Loew). Morphology of the *Crabro* larva is given and compared with other known larvae of the genus.—*A. Goidanich* (*transl.*).

8790. GOURLAY, E. S. Notes and descriptions of New Zealand Hymenoptera. *Trans. and Proc. New Zealand Inst.* **59**(2): 368-373. 1 fig. 1928.—Notes are given on *Limnerium muelleri* Butler; *Aspicolpus hudsoni* v. **castanea** (p. 369); *Doryctes* **pallida** ♂ (p. 369); **NEOSOLINDENIA** (p. 370) (Encyrtidae), near *Solindenia*, type *N.* **cyanea** (p. 370), parasitic on *Limneria mulleri* Butl., type in Cawthron Inst.; *Polymoria* **barteli** (p. 371); *Thaumasura* **resplendens*** (p. 373), type in Hudson coll.

8791. HARUKAWA, CHUKICHI, and SABURO KONDO. Studies on the rush saw-fly. III. Relation of temperature to the development of the rush saw-fly. *Ber. Ōhara Inst. Landw. Forsch., Japan* 4(2): 181-198. 6 fig. 1929.—Investigations on the relation of temp. to egg development and also to growth of the rush saw-fly (*Tomostethus juncivorus* Rohwer), were carried out under constant as well as under variable temp. The initiation to egg development seemed to be slightly lower than 10° C.; the maximum temp., slightly higher than 30° C., and the optimum about 27° C. The minimum temp. for the growth of larva was about 12° C. and the maximum seemed to be 27-28° C. The temp. of the maximum velocity of growth lies at about 25° C., but the death rate of the larva was larger at this temp. than at 20° C. Two races of rush saw-fly were experimented upon and they were found to differ to some extent in their responses to temp.—*C. Harukawa.*

8792. HINGSTON, R. W. G. The habits of Oecophylla smaragdina. *Proc. Ent. Soc. London* 2(3): 90-94. 1928.—The nest and its construction and mode of capturing prey are described.

8793. KARAWAJEW, W. Ein Fall von lateralem Hermaphroditismus bei Ameisen und ein Fall defekter Körperbildung. *Folia Myrmecologica et Termitologica* 1(4/5): 45-47. 1 fig. 1927.—A specimen of *Bothriomyrmex communista* is described in which the left side of the head is ♂ and the right ♀, the eye however on the ♀ side is that of a worker. The thorax is partly hermaphroditic, the right side being characteristic of a worker; the gaster is entirely ♀. A specimen of *Megaponera foetens* from Africa is described which entirely lacks the petiole, which in all other respects is normal.

8794. KOSTYLEV, GEORG. Materialien zur Kenntnis der Vespidenfauna der östlichen Krim. *Ent. Mitteil.* 17(6): 398-407. 9 fig. 1928.—One species of Masaridae and 29 spp. of Eumenidae are recorded from this region. *Microdynerus* **wuczeticzi*** (p. 406); *Odynerus germanicus* v. **ponticus** (p. 402). A key is given to the spp. of *Odynerus* belonging to the so-called subg. *Lionotus* which includes 16 spp. *Hoplomerus melanopygus* Bir., *H. jacobsoni* Bir., and *H. mimeticus* Sch. & Fr. are treated as subspecies of *H.* (=*Paravespa*) *rex* Schulth. and Friese (p. 399). The author also states that *Odynerus vagus* Rad. is not a variety of *O. transitorius* Mor., but is a synonym of *O. jucundus* Mocs. *O. ephippium* Germ. (=*O. dubius* Sauss., = *O. opacus* Mor.). Types in Zool. Mus. Univ. of Moscow.—*C. E. Mickel.*

8795. KRAUSSE, ANTON. Einige myrmekologische Notizen. *Internat. Ent. Zeitschr.* 22(11): 118-119. 1928.

8796. KUTTER, H. Ein myrmekologischer Streifzug durch Sizilien. *Folia Myrmecologica et Termitologica* 1(7): 94-104; (8/9): 135-136. 1927.—Annotated list of 95 spp.

8797. [KUZNETSOV-UGAMSKII, N. N.] КУЗНЕЦОВ-УГАМСКИЙ, Н. Н. Материалы по мирмекологии Туркестана. [Contribution to the myrmecology of Turkestan.] (In Russian and German.) Русское Энтомологическое Обозрение. (*Rev. Russe Ent.*) 21 (1/2): 33-42. 16 fig. 1927.—Annotated list, with key to spp. of *Tapinoma, Cardiocondyla,* and *Leptothorax,* including *Tapinoma* **emeryanum*** (p. 35), Tian-Shan; *T. e.* ssp. **dagestanicum** (p. 36), Caucasus; *Cardiocondyla elegans* ssp. **gibbosa** (p. 37), Turkestan; *C. elegans uljanini* v. **clarior** (p. 38).

8798. MASI, L. Diagnosi di una nuova specie di Eunotus (Hymen. Chalcididae). *Boll. Soc. Ent. Italiana* 60(8): 128. 1928.—*E.* **festucae**, parasitic on *Eriopeltis festucae*, found in Italy, France, Austria, and Germany.

8799. MENOZZI, C. Note sulla mirmecofauna paleartica. [Palaearctic ants.] *Boll. Lab. Zool. Gen. e Agraria* [*Portici*] 21: 126-129. 1928.—(1) Ants collected

by Silvestri in the Dodecanese. (2) Systematic, biologic, and distributional notes on some Italian ants. An annotated and descriptive list of 11 spp.

8800. MENOZZI, C. Tre nuove formiche della Sumatra orientale. *Misc. Zool. Sumatrana* 30. 1-5. 1 pl. 1928.—*Acnictus* **idoneus*** (p. 1), *Dolichoderus furcifer* ssp. **brevithorax*** (p. 2); *Camponotus* (*Myrmotarsus*) **rufigaster*** (p. 2). Types in author's coll.

8801. MUKERJEE, DURGADAS. Notes on the occurrence of ovaries in the worker of Myrmicaria brunnea Saunders. *Jour. Dept. Sci. Univ. Calcutta* 8: 3. 1 pl. 1927.—Ovaries of comparatively large size were found in a worker of this species examined in June and of smaller size in a specimen examined in Sept.

8802. PÉREZ, J. Espèces nouvelles de mellifères recueillies en Syrie, en 1908 par M. Henri Gadeau de Kerville, et décrites par [l'auteur]. In: *Voyage Zoologique d'Henri Gadeau de Kerville en Syrie (Avril-Juin 1908)* 1: 289-306; & supplement: 307-315. 1926.—Reprint from *Bull. Soc. Amis Sci. Nat. Rouen* 46: 30-47 and 77-85.

8803. [POLÏAKOV, V. ÏA.] ПОЛЯКОВ, В. Я. **Большой лиственничный пилильщик (Nematus erichsonii Hrt.). [The large saw-fly (N. erichsonii).]** [German summary.] Труды Сибирского Института Сельского Хозяйства и Лесоводства. (*Trans. Siberian Inst. Agr. and For. Omsk, USSR.*) 9(1/5): 199-211. 2 fig. 1928.

8804. POULTON, [E. B.] The fertilization of orchids of the genus Ophrys by the males of Hymenoptera Aculeata. [To be cont'd.] *Proc. Ent. Soc. London* 2 (1): 31-32. 1927.—*Ophrys speculum* is fertilized by the scoliid, *Dielis ciliata* F., which carries the pollinia on its head. *O. lutea* is fertilized by *Andrena nigro-olivacea* Dours and *A. senecionis* Perez. *O. fusca* is fertilized by *A. trimmerana* Kirb. and *A. nigroaenea* v. *nigrosericea* Dours.

8805. REICHENSPERGER, A. Eigenartiger Nestbefund und neue Gastarten neotropischer Solenopsis-Arten. *Folia Myrmecologica et Termitologica* 1(4/5): 47-51. 1927.—From a nest of *S. saevissima tricuspis* found floating in the river Passa-Tres (Brazil), the following inhabitants were identified: *S. saevissima* in all stages from the winged and wingless ♀♀ to the youngest larvae. A number of *Loelaps*-like mites; over 400 specimens in all stages of the hemipteron *Neoblissus parasitaster;* 3 proctotrupid Hymenoptera sp. unknown; 18 *Myrmecosaurus gallardoi,* a staphylonid, and 5 specimens of species of *Myrmecochara. Myrmecochara* **tricuspidis** (p. 49), from a nest of *Solenopsis iheringi* and *M.* **santschi** (p. 50), both from Brazil; a key to the Brazilian spp. being given.

8806. ROMAN, A. Entomologische Ergebnisse der schwedischen Kamtchatka-Expedition 1920-1922. 10 Ichneumonidae, subfam. Ichneumoninae. *Arkiv Zool.* [*Stockholm*] 19A(2. No. 7); 1-19. 1927.—The author finds much in common between the ichneumonid fauna of Kamchatka and that of Scandinavia, and explains this on the theory that both originated in the region lying between. He finds very little in common between the fauna of Kamchatka and that of Alaska and the Kurile Isls., these being derived from more southern faunae. The list of spp. includes 39 previously described and 6 new spp. and 1 new variety. *Triptognathus uniguttatus fumigator* Grav. (=*Ichneumon figulus* Er.); *Ichneumon* **latitarsis** (p. 5); *I.* **malaisei** (p. 6); *I.* **kamtschaticus** (p. 8); *I. stigmatorius* Zett. (non Hgn. Thn.) (="*melanurus* W." Thn.); *I.* **modestus** (p. 10); *Stenichneumon homocerus* W. (=*Ctenochares slavonicus* Kiss); *Cratichneumon* **laevidorsis** (p. 13), Taporkoff Isl.; *C.* **verticinus** (p. 14); *Phaeogenes tegularis* v. **nigrifemur** (p. 17). Except where otherwise given, new spp. are from Kamchatka. Types of new forms in Stockholm Mus.—*R. C. Cushman.*

8807. SCHULTHESS, A. v. Zur Erforschung des Persischen Golfes. (Beitrag Nr. 11). Hymenoptera, Vespiden und Sphegiden. *Stettiner Ent. Zeit.* 88(2): 297-304. 9 fig. 1927.—Annotated list and descriptions of species including: *Ammophila* **horni*** (p. 297), Port Sudan; *Bembex* **persa*** (p. 299), Persia; *B.* **maidli*** (p. 302), Port Sudan.

8808. SCHULTHESS, A. v. Die von der Zweiten Deutschen Zentral-Afrika-Expedition 1910-1911 mitgebrachten Vespiden (Ins. Hym.). [Vespidae collected by the second German central Africa expedition, 1910-1911.] *Senckenbergiana* 10(3/4): 95-100. 1 fig. 1928.—An annotated list of 46 spp.

8809. SCULLEN, H. A. Bees belonging to the family Bremidae taken in western Oregon, with notes. [Continuation.] *Pan-Pacific Ent.* 4(3): 121-128. 1928.—An annotated list.

8810. SEYRIG, ANDRÉ. Notes sur les Ichneumonides du Museum National d'Histoire Naturelle [à suivre]. *Bull. Mus. Hist. Nat.* [*Paris*] 1928(2): 146-153. 1928.—*Amblyteles* **lustratorius** ♀ (p. 197), Ukraine. Descriptive notes are given on 18 spp.

8811. SEYRIG, ANDRÉ. Note sur les Ichneumonides du Muséum National d'Histoire Naturelle. (Suite, et à suivre.) *Bull. Mus. Hist. Nat.* [*Paris*] 1928(3): 200-207. 1928.—*Gelis* (*Thaumatotypidea*) **luceus** ♀ (p. 201), France; *G.* (*T.*) *cabrerai* v. **nigropetiolata** (p. 203), Algeria; *G.* (*T.*) **gallica*** (p. 204), France; *G. wesmaeli* v. **africana** (p. 206), Algeria; *Exetastes maurus* Desv. (=*E. benoisti* Seyr.).

8812. SEYRIG, ANDRÉ. Notes sur les Ichneumonides du Muséum National d'Histoire Naturelle. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(4): 259-265. 1928.—*Lathrolestes clypeator* v. **eriocraniae** (p. 259), parasitic on larvae of *Eriocrania;* F. Le Cerf's notes on the life history of *Eriocrania* and *Mnemonica* are quoted; *Orthocentrus protervus* Hlgr. is described; *Phtorima* **gaullei** (p. 263), France.

8813. [SHESTAKOV, A.] ШЕСТАКОВ, А. **Новые виды браконид из рода Iphiaulax Förstr. s. str. (Species novae Braconidarum generis Iphiaulax Förstr. s. str.)** Русское Энтомологическое Обозрение. (*Rev. Russe. Ent.*) 21(3/4): 202-211. 1927.—*I.* **jacobsoni** ♀ (p. 202), Turkestan; *I.* **tauricus** ♀ (p. 203), Taurida; *I.* **commiferus** ♀ (p. 204), Daghestan; *I.* **infuscatus** ♀ (p. 205); *I.* **carissimus** ♀ (p. 206); central Russia; *I.* **parvulus** ♀ (p. 207); Transcaucasia; *I. p.* ssp. **sibiricus** ♀ (p. 208), Siberia; *I.* **senex** ♀ (p. 208), eastern Siberia. A key to Kokuev's *Iphiaulax* s. str. is given.

8814. SKINNER, E. R. Xylonomus brachylabris Kr. (Hymenoptera, Ichneumonidae, Pimplinae) a species new to Britain. *Ent. Month. Mag.* 64(775): 277-278. 1928.—Found at Suffolk, associated with the larch longicorn beetle (*Tetropium gabrieli* Weise.).—*H. M. Gilkey.*

8815. STÄGER, ROB. Messor barbarus als Erteiler gemauerter Obernester oder Nestkuppeln. *Folia Myrmecologica et Termitologica* 1(2/3): 21-29. 2 fig. 1926.—*M. barbarus* can adapt itself to various conditions of the soil, climate, etc., the type of the nest being dependent upon these.

8816. STÄGER, ROB. Ein neuer Nesttypus bei der Ernteameise (Messor barbarus). [A new type of nest of the harvest ant (M. barbarus).] *Verhandl. Schweiz. Naturf. Ges.* 109: 198-199. 1928.—Abstract.

8817. STELFOX, A. W. Note on Kriechbaumer's Ischnocerus filicornis and I. seticornis. *Ent. Month. Mag.* 64(775): 278-279. 1928.—Dissimilarities in the 2 species are tabulated.—*H. M. Gilkey.*

8818. TORKA, V. Ichneumoniden Oberschlesiens. *Internat. Ent. Zeitschr.* 21(38): 347-352; (39): 363-364; (43): 411-414; (45): 436; (46): 446-448; (47): 461-462; 22(2): 21-24. 1928.—Annotated list of Ichneumonidae of upper Silesia.

8819. VIERECK, HENRY L. Descriptions of new bees of the genus Andrena in the collection of Pomono College. *Jour. Ent. and Zool.* 18(1): 1-5. 1926.—*A.* (*Andrena*) **caeruleonitens** ♂ (p. 1), *A.* (*A.*) **claremonti** ♂ (p. 2) and *A.* (*A.*) **subtilicornis** ♂ (p. 4), California. —*I. M. Cracken.*

8820. VIERECK, HENRY L. A preliminary revision of some Charopsinae, a sub-family of Ichneumonoidea, or ichneumon-flies. Part 2. *Proc. and Trans. Roy. Soc.*

Canada 20 (Sect. V) : 173-186. 1926.—An annotated list, with keys to species of *Viereckiana* Strand, *Pseudocasinaria, Amorphota,* and *Idechthis,* including: *Campoplegidea (Viereckiana)* **totalis** ♀ (p. 174), Quebec; *C. (V.)* **fuscitarse** ♀ (p. 175); *C. (V.)* **mimeticus** (p. 175), Quebec; *C. (V.)* **subtilis** ♀ (p. 176), Alberta; *C. (V.)* **woodi** ♂ (p. 177); *C. (V.)* **erythromera** ♀ (p. 177); *C. (V.)* **erythrosoma** ♀ (p. 177), Quebec and Ontario; *C. (V.)* **nigritibialis** ♀ (p. 178), Brit. Columbia; *C. (V.)* **curvata** ♀ (p. 179); *C. (V.)* **sessilis** ♂ (p. 179), *C. (V.)* **citripes** ♂ (p. 179) and *C. (V.)* **flavicoxa** ♂ (p. 180), Quebec; *C. (V.)* **varicoxa** ♂ (p. 180); *C. (V.)* **montrealensis** ♂ (p. 181), Quebec; *C. (V.)* **reticulata** ♂ (p. 181), Brit. Columbia; *Campoctonus* **fossatus** ♂ (p. 182), Manitoba; *Pseudocasinaria* **paenealia** ♂ (p. 182); *P.* **decorata** ♂ (p. 183); *Amorphota* **pacifica** ♂ (p. 184), Brit. Columbia; *A.* **bicoloripes** ♀ (p. 184), Manitoba; *Idechthis* **mimicus** ♂ (p. 185); *Zastenogastra* **graciliventris** ♀ (p. 186), Peru, type in U. S. Nat. Mus. Unless otherwise stated, species are from Ontario and types in Canadian Nat. coll., Ottawa.

8821. YANO, MUNEMOTO, and KAKU SATO. Two new species of Chalastogastra from Japan. *Kontyu* 2 (4) : 209-212. 1928.—*Acantholyda (Acantholyda)* **nipponica** (p. 212); *Janus* **kashivorus** (p. 212) (feeding on *Quercus acuta*); Tokyo.—*R. Takahashi.*

NEUROPTEROIDS

F. M. CARPENTER, *Editor*

(See also in this issue Entries 7005, 8429, 8638, 8659)

8822. [BARTENEV, A. N.] БАРТЕНЕВ, А. Н. Новые данные о стрекозах Закавказья, Персии и Туркестана. **[New data on the Odonata of Transcaucasus, Persia, and Turkestan.]** Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 23 (1/2) : 124-131. 1929.—Distributional data on 32 spp. and forms. *Orthetrum* **translatum** (p. 124), Armenia; *Sympetrum flaveolum flavcolum* var. **pishpeki** (p. 126), Semiryechensk; key to Russian spp. of *Orthetrum* and key to forms of *Sympetrum flavcolum.*

8823. [BARTENEV, A. N.] БАРТЕНЕВ, А. Н. О случаях определенной ориентировки стрекоз по отношению к странам света. **[Cases of a definite orientation of Odonata in relation to the cardinal directions.]** [German summary.] Русский Зоологический Журнал. (*Rev. Zool. Russe*) 10 (1) : 53-64. 1930.

8824. CALVERT, PHILLIP P. The generic characters and the species of Palaemnema (Odonata: Agrionidae). *Trans. Amer. Ent. Soc.* 57 (1) : 1-111. 21 pl., 2 fig. 1931.—Much more extensive material (364 ♂, 79 ♀) than was accessible to previous students justifies the publication of this paper. The types of *P. paulina* Drury 1773, *P. angelina* Selys 1860, *P. desiderata* Selys 1886, and *P. clementia* Selys 1886, are apparently lost; their history, as far as known, is given. Some data concerning the last 2 were obtained from colored drawings by de Selys preserved in the Brussels Mus., and drawings by Hagen of the appendages of, probably, the type of *angelina* Selys are at the Mus. Comp. Zool. Types of other spp. described previous to 1930 have been studied. Variations in the family, subfam., and generic characters, as found in the material of *Palaemnema* examined, are given in detail, often in percentages. Some of the venational variations* reproduce a normal character of the Old World *Alloneura, Nososlicta* and *Isosticta* and the New World *Protoneura* and allies. Special attention is paid to the penis as a specific character; it is believed that this organ retains its shape even when dried. The genus is now known from the State of Puebla, Mexico, 20° north, 98°W., to southern Peru, 10°S., and northern Venezuela, 67°W., and from sea level up to 2000 M. (6560 ft.) in Colombia; the species are all forest dwellers. No species has yet been reported from Salvador, Nicaragua, Ecuador, or northern Peru, and very few individuals have been found on the Pacific slope from Mexico to central Costa Rica. The collections examined from outside of Costa Rica were made in the months Jan. to July only. Special attention was given to the seasonal distribution of this genus in Costa Rica, during a year's continuous residence in that country, with the result that on the Atlantic slope, where no sharp distinction of wet and dry season can be made, owing to the frequent rains, imagoes (7 spp.) were found only between April 13 and August 10, with exception of a single ♂, Nov. 6. On the Pacific slope 2 spp. only were found on August 13-15, September 3, 4, and October 17; both spp. occur on the Atlantic slope also. All these dates from the Pacific slope fall in the wet season, which, on that slope, is quite distinctly marked from the dry season. Separate keys to the ♂♂ of 25 spp., and to the ♀♀ of 13 spp. are given. All species are described and figured in detail, and notes on habitats and habits are given under many of them. *P.* **paulirica*** (p. 32) and *P.* **distadens*** (p. 35), Costa Rica; *P.* **paulicoba*** (p. 45), *P.* **paulitoyaca*** (p. 47), *P.* **paulicaxa*** (p. 54) and *P.* **paulitaba*** (p. 56), Mexico; *P. angelina** Selys 1860 (=*P. paulina* Williamson 1915, *P. paulina* Kennedy 1917, *P. paulina* forma *b* Ris 1918); *P.* **mutans*** (p. 63), Venezuela; *P.* **gigantula*** (p. 72), Costa Rica; *P.* **brucei*** (p. 75), Panama, Colombia; *P.* **azupizui*** (p. 78), Peru; *P.* **reventazoni*** (p. 85), Costa Rica; *P.* **croceicauda*** (p. 96) and *P.* **edmondi*** (p. 99), Colombia; *P.* **chiriquita*** (p. 100), Costa Rica. Types of *paulirica, distadens, paulicoba, paulicaxa, paulitaba, gigantula, reventazoni,* and *chiriquita* are in Academy Nat. Sci. Philadelphia; of *paulitoyaca* in the Brit. Mus.; of *mutans, brucei, croceicauda,* and *edmondi* in coll. Univ. of Michigan Mus. Zool.; of *azupizui* at Cornell Univ.—*P. P. Calvert.*

8825. DESPAX, R. Leuctra occitana nov. sp. Plécoptère nouveau de la région Toulousaine. *Bull. Soc. Hist. Nat. Toulouse* 59 (1) : 171-176. 6 fig. 1930.—Plecoptera: *Leuctra* **occitana*** (p. 171), France.

8826. [KOLESOV, V. G.] КОЛЕСОВ, В. Г. Экология Odonata Московской губернии. **[Ecology of Odonata of the Province of Moscow.]** [German summary.] Записки Биологической Станции Общества Любителей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии. (*Bull. Sta. Biol. Soc. Amis Sci. Nat., Anthrop. et Ethnogr. à Bolchevo. Gouv. Moscou*) 4. 59-129. 2 pl. 1930.—The author gives an annotated list of 45 spp. of Odonata, with ecological details, such as flight, time of appearance, habitat, egg-laying, etc. The morphology of the eggs of *Sympetrum flaveolum, S. scoticum, S. vulgatum, Leptetrum quadrimaculatum, Cordulia aenea, Somatochlora metallica, Aeschna viridis, Lestes dryas, L. sponsa, Calopteryx splendens, Erythromma najas, Platycnemis pennipes,* and *Enallagma cyatigerum,* is discussed and illustrated.

8827. [KOLESOV, V. G.] КОЛЕСОВ, В. Г. Экология личинок поденок Московского округа. **[Ecology of larval Ephemerida of the Moscow district.]** [German summary.] Записки Биологической Станции Общества Любителей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии. (*Bull. Sta. Biol. Soc. Amis Sci. Nat., Anthrop, et Ethnogr. à Bolchevo, Gouv. Moscou*) 4. 130-151. 1930.—An annotated list of 20 spp. in the families Ephemeridae, Potamantidae, Leptophlebiidae, Ecdyonuridae, Caenidae, Siphlonuridae, and Ephemerellidae, with ecological details, such as habitat, food, cycle of development, and distribution.

8828. [KOLESOV, V. G.] КОЛЕСОВ, В. Г. Время лета поденок Московского района. **[Flight periods of Ephemerida of the Moscow district.]** [German summary.] Записки Биологической Станции Общества

Любителей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии. (*Bull. Sta. Biol. Soc. Amis Sci. Nat., Anthrop. et Ethnogr. à Bolchevo, Gouv. Moscou*) 4. 152-159. 1930.—An annotated list of 15 spp., divided into 3 groups: spring, summer, and spring-summer-fall spp., according to the flight period; and accompanied by ecological details as to habitat, manner of flight, life cycle, oviposition, etc.

8829. [KOLESOV, V. G.] КОЛЕСОВ, В. Г. Материалы по экологии насекомых группы Agnatha Московской губ. III. Экология Ordella horaria L. [Ecology of the Agnatha of the Province of Moscow. III, Ecology of O. horaria.] [German summary.] Записки Биологической Станции Общества Любителей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии. (*Bull. Sta. Biol. Soc. Amis Sci. Nat., Anthrop. et Ethnogr. à Bolchevo, Gouv. Moscou*) 4. 160-164. 1930.—This mayfly is one of the most frequent in this region. Flight period continues from the middle of May to October, the individual period being 5:30-9:30 P. M. Most ♂♂ are phototropic. Morning flight continues from dawn to 8:00 A. M. The ♀ dies after ovipositing. In one ♀ 1205 eggs were found. In aquarium, at 15° C., larvae develop within 15-20 days. Ecological distribution is given according to water reservoirs and vegetation.

8830. **LIEFTINCK, M. A. Contributions to the dragonfly-fauna of the Dutch East Indies. II.** *Treubia* 12(2): 135-166. 25 fig. 1930.—The following are new: *Rhinocypha* **mariae** ♂ (p. 136), Sumatra; *Caconeura* **corvina*** (p. 138), Java; *C.* **delicatula*** (p. 141), Java; *Teinobasis* **helvola*** (p. 155), Celebes; *Hemicordulia* **tenera*** ♂ (p. 159), Java; *Procordulia* **artemis*** (p. 159), Java. The following are redescribed: *Risioneura selysi**, *R. fruhstorferi**, *Agriocnemis? nana**, *A. minima**, *Procordulia sumbawana*. *Protosticta simplicinervis* Selys (=*P. annulata* Fraser); *Gynacantha basiguttata* Selys (=*G. javica* Fraser); *Platycantha dirupta* Karsch (=*Gynacantha reticulata* Fraser). There are keys to the spp. of *Caconeura* and *Risioneura*.

8831. **LIEFTINCK, M. A. Fauna Buruana; Odonata III. A review of the dragonfly-fauna of Boeroe, in the Moluccas, with descriptions of new or interesting species, and an account of their larvae.** *Treubia, Suppl.* 7(6): 305-330. 4 pl., 8 fig. 1930.—*Nannophlebia buruensis** and *Hemicordulia toxopei** are redescribed. *Anaciaeschna* **moluccana*** ♂ (p. 316). Includes an annotated list of the Odonata of Boeroe, and descriptions of larvae of several spp.

8832. **LUCAS, W. J. Notes on British Paraneuroptera in 1929.** *Entomologist* [*London*] 63(808): 204-207. 1930. —Collecting records of 26 Odonata.

8833. **LUCAS, W. J. Notes on British Neuroptera and Mecoptera in 1929.** *Entomologist* [*London*] 63(811): 269-272. 1930.—Records of 42 spp.

8834. **LUCAS, W. J. Further notes on the Orthoptera, Paraneuroptera, Neuroptera, etc., of Wicken Fen.** *Nat. Hist. Wicken Fen* 4. 329-333. 1928.

8835. **MOSELY, MARTIN E. Irish Trichoptera, Neuroptera etc.** *Entomologist* [*London*] 63(801): 30-34. 1930.—*Mystacides azurea* v. **albicornis** (p. 30), Ireland; *Leptocerus interjectus* and *Lepidostoma fimbriatum* are new to the British Isles. Collecting data are given 52 Trichoptera, 3 Ephemeroptera, 1 Plecoptera, 1 Neuroptera, and 1 Orthoptera.

8836. **NAVÁS, LONGINOS. Risultati zoologici della Missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell'oasi di Giarabub (1926-1927). Insectos de la Cirenaica. [Zoological results of the mission of the R. Ital. Geogr. Soc. for exploring the oasis of Giarabub. Insects of Cyrenaica.]** *Ann. Mus. Civ. Storia Nat. Genova* 52: 461-464. 2 fig. 1925/1928.—An annotated list of 3 Odonata, 4 Neuroptera and 2 Embiida, including *Nelees* **antii*** (p. 462) and *Chrysopa* **libera*** (p. 463); types in Mus. Civ. Genova.

8837. **NAVÁS, LONGINOS. Insectos del Museo de París. 6.ª serie.** *Brotéria, Ser. Zool.* 26(3): 120-144. 9 fig. 1930.—Continuation of the listing of the insects in the Paris Mus., including.—Neuroptera, Myrmeleonidae: **FURGA,** with *F.* **tunetana*** ♂ (p. 122), Tunisia; **MYRMECAELURINI** n. tribe (p. 125), type *Myrmecaelurus* Costa; **NEFTA** (p. 125), type *N.* **tunetana*** (p. 126), Tunisia; **AFROCLIMACIUS** (p. 128), type *A.* **dumontinus** (p. 129), Tunisia; *Creoleon* **neftanus*** (p. 131), Tunisia. Berothidae: **SPHAEROBEROTHA** (p. 133), near *Cycloberotha*, type *S.* **dumonti*** ♀; key is given to genera of the Berothidae. Embidae: *Haploembia* **algerica*** ♂ (p. 136), Morocco. Ephemerida; Ephemeridae: *Ephemera* **axillaris*** (p. 138), "China." Betidae: *Cloeon* **cambouei*** ♀ (p. 139), Madagascar. Polycentropidae: *Dipseudopsis* **benardi** ♀ (p. 141) and *D.* **langana** ♀ (p. 141), Tonking. Hydropsychidae: *Hydropsychodes* **atlantis*** ♀ (p. 142), "Tinmel, G. Atlas." Leptoceridae: *Triaenodes* **tinmelina*** ♂ (p. 143), same as the preceding sp.

8838. **NAVAS, LONGINUS. Insecta asiatica. IV. series.** [In Latin.] Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24(3/4): 194-196. 3 fig. 1930.—Neuroptera, Chrysopidae: *Chrysopa* **deficiens*** (p. 194); *C.* **distracta** (p. 195); *Cintameva* **sibirica*** (p. 195). Hemerobiidae: *Nusalala* **gradata*** (p. 195). New spp. from Siberia; types in author's coll.

8839. **NEVIN, F. REESE. A study of the larva of Calopteryx (Agrion) maculata (Odonata: Agrionidae).** *Trans. Amer. Ent. Soc.* [*Philadelphia*] 55(4): 425-448. 1 pl. 1929.—Eggs of *Agrion* (*Calopteryx*) *maculata* laid in the stem of *Lysimachia nummularia* obtained on July 4, 1928, near Philadelphia began hatching July 19th. Fed with various small ostracods and copepods some of these passed to the 5th instar. Death probably resulted from unnatural causes. Larvae in the sextult instar were obtained Sept. 15th. These transformed in early May. The following characters were more or less constant: First antennal joint long, second dark; eyes never approach one another; horn in post-ocular region; one movable hook on each labial palp; legs long and slender with 2 tarsal claws; legs more distinctly banded in successive molts; tracheal gills differed slightly in coloration and became distinctly 3-sided in later instars. Measurements on larvae of structures thought to be of taxonomic value were made microscopically. Feeding habits and locomotion are described for larvae and adults. Transformation of larva and mating habits of adults are also described. Summary of further changes: Antennae become more black and differently marked, antennal joints increase from 3 in first, 4 in second, 5 in fourth, to 7 in the quintult and succeeding instars; from 5th instar width of the mentum exceeds its length; notch in cleft distinct in 3rd instar; minute seta at base of the movable hook is not distinguishable in later instars; fixed hooks of the palps increase from 1 to 4; setae on the medium lobe are minute and gradually increase in length; wing-pads are first present in the sextult instar, the metathoracic reaches the 1st abdominal tergite in quintult and to 5th in the last; tarsus one-jointed in the first 2 instars, 2-jointed in the third and 3-jointed in following instars: abdomen became darker and different in color pattern later than originally; mandibular differences exist. A tentative key to larval instars is included.—*F. R. Nevin.*

8840. **[PLIGINSKII, V. G.] ПЛИГИНСКИЙ, В. Г. Новый вид рода Boreus Latr. (Neuroptera, Panorpidae.) [A new sp. of Boreus.]** Русское Энтомологическое Обозрение. (*Rev. Russe d'Ent.*) 24 (3/4): 230-231. 1930.—*B.* **semenovi** ♂ (p. 230), "Uisk mountain range," type in Zool. Mus. Acad. Sci. Leningrad. A key is given to the ♂♂ of the Palaearctic spp. of *Boreus*, and the distribution of the genus is discussed.

8841. **SHORTESS, S. IRVINE. Variations in wing reticulation and size of Erythrodiplax berenice with regard to geographical distribution (Odonata: Libellulidae).** *Trans. Amer. Ent. Soc.* 55(4): 415-423. 1929. —Specimens were examined from 21 localities along the east coast of the U. S. A., from Sachem Head, Connecticut, to Colon, Panama. Little variation was found in

length of wings and abdomen. A rather steady decrease was noted in the number of cells along the hind margin of the wings, in specimens collected from north to south. The group from Matagorda, Texas, showed marked similarity to the Connecticut group. No correlation was found between length of wing and wing reticulation. Variation in wing reticulation of specimens studied was not closely enough correlated with either mean annual temp. or precipitation, of their respective localities, to justify the opinion that either one is the sole factor leading to variation.—*S. I. Shortess.*

8842. **[UÉNO, MASUZO.] [Key to Japanese Mayfly nymphs (Ephemeroptera).]** [In Japanese.] *Trans. Kansai Ent. Soc.* 1. p. (27)-(36). 3 pl. 1930.—Nymphs of 18 genera are described in Japanese and 16 genera are illustrated.

8843. **[UÉNO, MASUZO.] [Mayfly nymph and chironomid larva.]** [In Japanese.] *Trans. Kansai Ent. Soc.* 1. p. (46)-(48). 2 fig. 1930.—*Trissocladius equitans* nymph* parasitized by *Rhithrogena* larva*; *Phaenocladius* nymph* parasitized by *R. aurantiaca**; *Ecdyonurus* nymph parasitized by a chironomid.

8844. **VALLE, K. J. Materialien zur Odonatenfauna Finnlands. I. Über Aeschna elisabethae Djak. in Finnland.** *Notulae Entomologicae* [*Helsingfors*] 9(1): 14-27. 4 fig. 1929.—A detailed description of *A. elisabethae** Djakonov based on 22 ♂♂ and 10 ♀♀ from Finland, and comparisons with *A. subarctica* E. M. Walker from N. Amer. and *A. juncea** are given. The Finnish and Russian *elisabethae* is held to be a separated, Old World race of *A. subarctica*, as the differences are slight and are chiefly in the lateral, thoracic stripes and in the ♂ appendages. *Elisabethae* is distributed over almost all Finland to 69° N. lat. Little is known of its habits; it appears to be a species of the moor waters.—*P. P. Calvert.*

8845. **WOOD, A. H. The Trichoptera of Wicken Fen.** In: *Nat. Hist. Wicken Fen.* 5. 479-487. 1929.

ORTHOPTEROIDEA

A. N. CAUDELL, *Editor*

(See also in this issue Entries 7799, 7804, 8632, 8834, 9056)

8846. **ALLARD, H. A. The occurrence of the crickets Anaxipha pulicaria Burm. and Cycloptilum trigonipalpum (Rhen and Hebard) in the vicinity of the District of Columbia, hitherto unreported here.** *Proc. Ent. Soc. Washington* 32(8): 144-146. 1930.

8847. **BEY-BIENKO, G. Some new or interesting Orthoptera from southern Transcaucasia.** *Bol. R. Soc. Espan. Hist. Nat.* 31(3): 221-228. 7 fig. 1931.—List includes *Metrioptera persica*, new record for U. S. S. R., *Paradrymadusa longipes** critical notes. *Tridactylus japonicus* new for U. S. S. R., *Dasyhippus* **pygmaeus*** (p. 223), *Chorthippus brauneri*, new to Transcaucasia, *Sphingonotus coerulans coerulipes*, new to U. S. S. R., and *Paratettix* **caucasicus*** (p. 226).

8848. **HEBARD, MORGAN. The races of Diapheromera veliei (Orthoptera, Phasmidae, Heteronemiinae).** *Ent. News* 42(3): 65-67. 2 fig. 1931.—*D. veliei* **mesillana*** (*D. m.* Scudder=*Bacunculus texanus* Brunner) (p. 65).

8849. **HEBARD, MORGAN. The Mogoplistinae (Orthoptera, Gryllidae) of the United States.** *Trans. Amer. Ent. Soc.* 57(2): 135-160. 2 pl. 1931.—*Cycloptilum*, key to spp.; *C. zebra**; *C.* **bidens*** (p. 147), Georgia (type), New York to Louisiana; *C.* **distinctum*** (p. 150), California; *C. comprehendens* ssp. **interior*** (p. 151), Utah (type) and California; *C. c.* ssp. **fortior*** (p. 153), Arizona (type) and Texas; *C. c. comprehendens**. Types in Acad. Nat. Sci., Philadelphia.

8850. **HSU, YIN-CHI. A revised list of known species of crickets from the China coast.** *Peking Soc. Nat. Hist. Bull.* 5(4): 17-25. 1931.—The list includes collecting records on 2 Gryllotalpinae, 3 Tridactylinae, 1 Mogoplistinae, 1 Scleropterinae, 11 Nemobiinae, 3 Brachytrupinae, 19 Gryllinae, 1 Oecanthinae, 1 Phalangopsiinae, 5 Trigonidiinae, 3 Podoscyrtinae.

8851. **LUCAS, W. J. Notes on British Orthoptera in 1930.** *Entomologist* 64(817): 121-123. 1931.—Collecting records of 4 Dermaptera, 3 Blattoidea, 1 Grylloidea, 7 Locustoidea, and 12 Acridioidea.

8852. **MIRAM, E. Beitrag zur Kenntnis der Orthopteren Transkaspiens.** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930 (9): 217-222. 9 fig. 1930.—Gryllidae: **PHILOBOTHRIINAE** (p. 217), new subfam. based on **PHILOBOTHRIUM** (p. 217), type *P.* **vlasovi*** (p. 219); *P.* **semenovi*** (p. 219); *Myrmecophila* **oculata*** (p. 221), in the nests of *Myrmecocystes setipes* v. *turcomanicus*.

8853. **REHN, JAMES A. G. On Melanoplus borealis in northern Labrador (Orthop.: Acrididae).** *Ent. News* 42(2): 33-35. 1931.

8854. **SCHOUTEDEN, H. Les Mantes ou Prieuses.** *Rev. Zool. et Bot. Africaines* 20(2) Supplement: (51)-(58). 1 pl., 3 fig. 1931.—Notes on *Mantis religiosa**, with illustrations of its egg case.

8855. **UVAROV, B. P., and B. N. ZOLOTAREVSKY. Phases of locusts and their interrelations.** *Bull. Ent. Res.* [*London*] 20(3): 261-265. 1929.—Gregarious and solitary phases of several economic species of locusts are discussed, and a uniform nomenclature for these and transitional forms is proposed. *Locusta migratoria* ssp. **rossica** (p. 263), central Russia.—*A. N. Caudell.*

FOSSIL INSECTA

F. M. CARPENTER, *Editor*

(See also in B. A. 6(2): Entries 5250, 5439, 6043, 6048)

8856. **OLIVEIRA, EUZEBIO de. Insectos Permianos do estado do Paraná.** *Ann. Acad. Brasil. Sci.* 2(4): 215-218. 1930.—A brief review of the advance in knowledge of fossil insects.

8857. **ZALESSKIJ, M. Sur deux représentants nouveaux des Paléohémiptères du Permien de la Kama et du Perebore dans le Bassin de la Pétchora.** Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(10): 1017-1027. 1 pl., 2 fig. 1930.—Palaeohemiptera, Prosbolidae: *Prosbole* **tchirkovaeana*** (p. 1018), Kazanian horizon; **PEREBORIDAE** (p. 1026), n. fam. based on **PEREBORIA** (p. 1021), type *P.* **bella** (p. 1021), Up. Permian, River Perebore, Petchora basin.

8858. **ZALESSKY, M. D. Sur un nouveau Protorthoptère du Permien de Kama.** *Ann. Soc. Géol. du Nord* 54: 20-26. 1 pl. 1929.—The insect wing described is placed in the new family **IDELIDAE** (p. 21) (order Protorthoptera), with **IDELIA** (p. 21), type *I.* **permiakovi*** (p. 21) from the Up. Permian of Fikkie Gory, Kama.—*W. Berry.*

CYCLOSTOMATA, ELASMOBRANCHII, AND PISCES

BARTON WARREN EVERMANN, *Editor*
H. WALTON CLARK, *Associate Editor*

(See also in this issue Entries 6316, 6702, 6742, 6816, 6824, 7006, 7530, 7534, 7551, 8202, 8212, 8218, 8226, 8233, 8398, 8432, 8479, 8481, 8488, 8529, 8531, 8671, 9061)

8859. BELLOC, G. Hydrographie et océanographie. La croisière de la "Tanche" en juillet-août 1928. *Rev. Trav. Office Pêches Maritimes* 2(1): 13-29. 17 fig. 1929.—Studies were made in the Gulf of Gascony to get data for a food fish map. Apparatus used: Marti and Langevin-Florisson apparatuses, and Lucas sounding machine. Charts are given of temp. at various depths; bathymetric and geographic charts of fishes; locality lists of fishes and crustaceans, and list of plankton abundant in the upper zones. The latter was particularly rich in *Leptocephalus* larvae and larval phyllostomes and amphipods, in contrast to 1927 results; also in larval scopelids and clupeids. *Scombresox saurus* was lacking; cephalopods only found as stomach content of tunnies. Depth trawling showed a coral reef at Lat. 45° 01′ 5″ N., 2° 26′ 8″ W., and a wreck, which were signalled to fishermen. Studies on the stock of fish showed numerous *Merlucius merluccius*, chiefly immature and tunnies (distributional map of tunnies and their food given), also many *Carcharias glaucus* and *Oxyrhina spallanzani* and a large number of cetaceans.—*F. LaMonte.*

8860. [BERG, L. S.] БЕРГ, Л. С. Классификация отряда Esociformes. [Classification of the order Esociformes.] Известия Академии Наук СССР., Отделение Математических и Естественных Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Math. et Nat.*) 1931(3): 461-462. 1931.—The author recognizes only 2 families in this order: Esocidae, with 1 genus of 8 spp., and Umbridae, comprising the genera *Umbra, Novumbra,* and *Dallia.* Diagnoses are given of these 2 families. The families Novumbridae and Dalliidae are placed in the synonymy of the Umbridae. Provisionally *Dallia* may be classed as a separate "subfamily," Dalliini [sic].

8861. [BERG, L. S.] БЕРГ, Л. С. Черноморская килька. [The Black Sea sprat.] Доклады Академии Наук СССР., Сер. A. (*Compt. Rend. Acad. Sci. URSS., Sér. A*) 1931(5): 123-126. 1931.—Black Sea specimens of *Spratella sprattus phalerica* are compared with Atlantic and Adriatic specimens. If distinct from the latter form (natio *papalina*), they should be named natio *sulinae* (*Clupea salinae* Antipa). Contrary to Antipa's statement, they spawn in winter, not in summer.

8862. BREDER, C. M. Jr. Fish notes for 1929 and 1930 from Sandy Hook Bay. *Copeia* 1931(2): 39-40. 1931.—Records of 13 spp.

8863. CALDERWOOD, W. L. Notes on flying fish. *Scottish Nat.* 1931(190): 121-123. 1931.—*Exocoetus* in the Arabian Sea seems to vibrate its pectoral fins rapidly in taking off from the water, the tips of the fins beating the surface and leaving a pattern. After leaving the surface, it planes with these fins extended and stationary. The flight may extend for 150 yards. During flight some individuals touch the surface and take off again in the usual way.

8864. CHAMBERLAIN, E. B. Note on the cusk-eel. *Copeia* 1931(2): 64-65. 1931.—Notes on attitudes and movements of *Rissola marginata* in South Carolina.

8865. CHAPMAN, FREDK. Note on chimaeroid fish remains from the Australian Tertiaries. *Ann. and Mag. Nat. Hist.* 8(43): 139. 1931.—Other localities are given for *Edaphodon sweeti.*

8866. FIRTH, F. E. A note on spawning rosefish, Sebastes marinus (Linnaeus). *Copeia* 1931(2): 65. 1931.—Spawning recorded in Gulf of Maine in April—an early record.

8867. FRADE, F. L'anomalie faciale du thon rouge et son importance pour l'étude des migrations. *Bull. Soc. Portug. Sci. Nat.* 11(2): 7-10. 1930.—A certain anomaly, consisting of grooves on the side of the head, has been found among red tunnies on the Portuguese coast; in one instance the ratio of anomalies to normal specimens was 14 in 1000. Determination of the presence or absence of the same anomaly among Mediterranean specimens may shed light on the disputed question of migration of the sp. through the Strait of Gibraltar.

8868. FRASER-BRUNNER, A. Some interesting West African fishes, with descriptions of a new genus and two new species. *Ann. and Mag. Nat. Hist.* 8(45): 217-225. 4 fig. 1931.—Distributional and descriptive notes on 20 spp., chiefly from deep water off shore. *Centropomus ensiferus,* new to African waters (Nigeria); *Odontostomias micropogon,* figure of young; **LUCIOSUDIS** (p. 220) (Sudidae), near *Chlorophthalmus,* erected for *L. normani** (p. 220), lat. 11° 5′ S., long. 3° 20′ E.; *Diaphus fulgens** redescribed; *Lampanyctus* **fraseri*** (p. 224), lat. 3° 18′ S., long. 5° 17′ E. Types of new spp. in Brit. Mus.

8869. GREELEY, J. R. Fishes of the Lake Champlain watershed. (II of A biological survey of the Champlain watershed.) *Suppl. to 19th. Ann. Rept. New York Conserv. Dept.* 1929. p. 44-87. 16 col. pl. 1930.—This report presents data on the distribution, relative numbers, economic importance, and life histories of the local fishes. Of the 82 spp. and sspp. recorded, 38 (including 5 introduced) are classed as food or game fishes. Both angling and commercial fishing are extensive. Tables list the native and introduced species, and those found by the present survey. The distribution of many of the species is explained on the basis of post-glacial geology. The introduction of yellow perch, pike, and bass in certain Adirondack lakes has been detrimental to the native fish fauna. The author sounds a general warning against the introduction of non-native species, and at the same time against attempts to exterminate such native predatory species as the ling, gar, and bowfin, which help to preserve a balance in the fauna. A chart shows the distribution of species in 18 subdivisions of the Champlain drainage. The systematic account of 78 spp. includes notes on distribution, relative numbers, habits, spawning, food, and economic status, together with suggestions in regard to control, artificial planting, and legal regulations. There are colored plates of 16 species.

8870. HAMLYN-HARRIS, R. A further contribution to the breeding habits of Mogurnda (Mogurnda) adspersus Castelnau: the trout gudgeon. *Australian Zool.* 7(1): 55-58. 1931.—In captivity there appears to be but little variation in breeding habits. Stimulative feeding tends to hasten oviposition, and to increase the number of eggs laid. Oviposition does not take place, however, unless the ♂ is sufficiently energetic in his attentions, which take the form of a constant display of nuptial colouring, and, in addition, a tendency to "knead" the body of the ♀ with his mouth. The will and the ability to deposit 120-200 eggs at a time seems dependent upon such attentions since fertilization of the eggs does not take place until after they have been fastened upon a secure foundation. Each batch of eggs requires on an average 6 days to mature, and with few exceptions the individual eggs hatch nearly simultaneously. As soon as one batch is disposed of, "courting" commences almost immediately and proceeds normally until the next batch of eggs is laid. Comparatively few young fish survive in confinement, due to the cannibalistic tendencies of the ♀ and ♂.—*From author's summary.*

8871. HARDENBERG, J. D. F. The fishfauna of the Rokan mouth [Sumatra]. *Treubia* 13(1): 81-168. 1 chart. 1931.—This locality in the Strait of Malacca has become one of the most important fishery areas in the

world. The chief products are fish, shrimps, and the so-called trassy. The industry is in the hands of Chinese. The area, its tidal currents, and the composition of the water are described. Fishing is carried on by means of traps and drift-nets. Brief notes on the general fauna are followed by a systematic list of 149 fish spp., with notes on local distribution and abundance, ecological relations, habits, variation in size, and economic importance. The chief food of the local fishes is a crustacean, *Sergestes*. No definite evidence of over-fishing was found. A list of Chinese and Malayan names of fishes is appended.

8872. HERRE, ALBERT W. Notes upon Datnia plumbea, or Ayungin, a Philippine theraponid. *Copeia* 1930(3) : 76-77. 1930.—This sp. is redescribed. The type locality was probably Luzon, instead of Java.

8873. GHOSH, EKENDRANTH. Local names of some fish from the Teesta River. *Jour. Bombay Nat. Hist. Soc.* 34(2) : 586. 1930.—Scientific and the accompanying local or possibly trade names are given of 10 spp.—*Evermann & Clark.*

8874. HEINTZ, ANATOL. A reconstruction of Stenognathus gouldi (Newberry). *Ann. and Mag. Nat. Hist.* 8 (45) : 242-249. 5 fig. 1931.—Most of the plates of the head and body are figured from a specimen in the Brit. Mus. Several plates previously unrecognized are noted. Comparison is made with *Dinichthys*.

8875. HEWER, H. R. Studies in colour-changes in fish. Part V. The colour-patterns in certain flat-fish, and their relation to the environment. *Proc. Linnean Soc. London* 142. 73-75. 1929/30(1931).

8876. IHERING, RODOLPHO von. Cyprinodontes Brasileiros (Peixes "Guarús") systematica e informações biologicas. I. *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 243-280. 4 pl., 20 fig. 1931.—A systematic revision of the 37 spp. of cyprinodont fishes of Brazil. Special attention is given to the characters of the gonopodium of the 13 viviparous genera. Five genera of oviparous Rivulidae are represented. Keys to Brazilian species are given for *Anableps*, *Poecilia*, and *Cynolebias*. Fifteen species are illustrated; special note should be made of the illustrations of *Poecilia vivipara**, *Lebistes reticulatus**, *Phalloceros caudimaculatus**. The systematic discussion is followed by general considerations on mosquito control by the smaller Brazilian fishes.

8877. KÄNDLER, R. Untersuchung der Jungfischbestände im Gebiet der Oderbank. *Mitteil. Deutsch. Seefischerei-Ver.* 46(10) : 474-482. 1930.—Investigations on flounders.

8878. KANERVA, REINO U. Om strömmingsstammarna ochfisket vid viborgska kusten samt en del faktorer, vilka inverka pa fangstens växlingar. [Races of the "small-herring" and the fishing along the coast of Viborg (Finland), with some factors affecting the variability of the catch.] *Finlands Fiskerier (Lantbruksstyr. Meddel. 208)* 11: 105-123. 6 fig., 1 map. 1931.

8879. KENDALL, WILLIAM CONVERSE. The questions of salmon (Salmo salar) feeding in fresh water and taking of bait. *Copeia* 1931(2) : 33-38. 1931.—A review of the literature indicates that salmon occasionally take some food or bait in fresh water. The feeding impulse becomes subordinated gradually to the breeding impulse, the rate of transition from one to the other differing according to conditions in different rivers.

8880. LAVERDIÈRE, J. W. Description d'une plaque dentaire de Dipneuste, Palaedaphus ferquensis nov. sp. du Dévonien supérieur du Boulonnais. *Ann. Soc. Geol. du Nord* 54: 94-99. 1 pl. 2 fig. 1929.—*Palaedaphus* **ferquensis*** (p. 95), Up. Devonian, France.—*W. Berry.*

8881. MONTILLA, JOSE. The ipon fisheries of northern Luzon. *Philippine Jour. Sci.* 45(1) : 61-75. 8 pl. 4 fig. 1931.—Devices used in catching ipon (fry of various spp. of gobies which spawn in the sea but spend most of their lives in fresh inland waters), economic importance of ipon, and conservation measures are discussed. The most important species in the industry are: *Sicyopterus lacrymosus, Ophiocara aporos, Glossogobius giurus, G. celebius, Chonophorus melanocephalus, Eleotris melanosoma,* and *Rhyacichthys aspro*.

8882. PELLEGRIN, JACQUES, et V. VLADIKOV. Sur les poissons du lac Baïkal appartenant au genre Cottus. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(5) : 316-318. 1928.—*C. kessleri, C. kneri,* and *C. sibiricus* redescribed, the last being recorded as new to Lake Baikal.

8883. PELLEGRIN, JACQUES. Sur un cichlidé du Musée de Vienne, le Chromis humilis Steindachner. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(6) : 443-444. 1928. —*Tilapia humilis* (Steind.), redescribed.

8884. PELLEGRIN, JACQUES. Mission Saharienne Augiéras-Draper, 1927-1928. Poissons. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2) : 134-139. 1 fig. 1929.—Of the 19 spp. here listed, 18 were collected in the upper Niger; 1, *Tilapia zilli,* from a lake in the Sahara. The systematic account consists chiefly of locality records and remarks on general distribution. The following are new to the Niger: *Gnathonemus stanleyanus; Nannocharax niloticus; Barbus anema; B. leonensis; Synodontis* augierasi* (p. 136), French Sudan, type in Paris Mus.

8885. [POPOV, A. M.] ПОПОВ, А. М. Тератологический материал по ихтиофауне Черного моря. [Teratological material from the ichthyofauna of the Black Sea.] [English summary.] Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(10) : 1053-1078. 15 fig. 1930.—The following cases are described: shortening of the frontal bones and those of the lower jaw in *Liza aurata** and *Mugil cephalus*;* monstrosity of the lower jaw in *Anguilla anguilla*;* incurvation of the body in *Liza aurata* and *L. saliens*;* deformity or incomplete development of fins in *Raja clavata*, Bothus maeoticus*,* and *Crenilabrus ocellatus*;* general abnormalities in *Liza aurata** and *L. saliens;* and pseudoalbinism in *Scorpaena porcus*.

8886. POPOV, A. M. Einige Bemerkungen über die Variationen der Seitenlinien bei Hexagrammus stelleri Till. (Pisces, Hexagrammidae). *Zool. Anz.* 95(1/2) : 51-55. 5 fig. 1931.—The lateral lines* of *H. stelleri* are subject to such great variation that they can scarcely be used as taxonomic characters.

8887. ROULE, LOUIS, et LÉON BERTIN. Les poissons apodes appartenant au sous-ordre des Nemichthydiformes. *The Danish "Dana"-Expeditions 1920-22 in the north Atlantic and the Gulf of Panama.* 4. p. 1-113. 9 pl., 57 fig., incl. 6 distributional maps. Gyldendalske Boghandel: Copenhagen; Wheldon & Wesley: London, 1929.—The first part of this study is devoted to the systematics of the "Dana" collection. A comparative table is given of the 6 families and 12 genera recognized. There are diagnoses of 6 genera represented in this collection, including **AVOCETTINOPS** (p. 30), erected for *A. schmidti** (p. 30), Gulf of Mexico, 1000 m., and **PLATURONIDES** (p. 48), erected for *P. danae** (p. 48), off Bahamas, 600 m. The spp. of *Nemichthys* are reduced to a single one, *N. scolopaceus** Richardson (=*N. acanthonotus* Alcock, *N. fronto* Garman, *N. mediterraneus* Ariola), of which an emended description is given. *Avocettina* consists probably of a single sp., *A. infans** (Günther), of which an emended description is given. *Serrivomer sector** Garman, emended description; the previously described *S. beani* Gill & Ryder and *Nemichthys richardi* Vaill. are probably synonyms. *Cyema atrum** Günther, emended description. In general, the above-mentioned spp. live at considerable depths, most of them below 1000 m.; several are widely distributed in the 3 principal oceans; the peculiar beak probably functions as a net, not as an organ for seizing; the animals are probably rapid swimmers, taking rather large and active prey. The following new families are proposed, only the French form of the names being given: **AVOCETTINIDÉS** (p. 58), including *Avocettina* and *Labichthys;* **AVOCETTINOPSIDÉS** (p. 58), including *Avocettinops;* **GAVIALICIPITIDÉS** (p. 58), including *Gavialiceps;* and **SERRIVOMÉRIDÉS** (p. 59),

including *Serrivomer, Spinivomer, Platuronides,* and *Stemonidium*. For the foregoing 4 families, together with the Nemichthydidae and the Cyematidae (hitherto placed in the series Congroidei), the authors propose a new series, which they name **NEMICHTHYDEI** or **NEMICHTHYDIFORMES** (p. 57) (this group being called a suborder in the title of the paper). A key is given to the 12 genera of this group.—The second part deals with the ontogeny of *Nemichthys scolopaceus*. Larval forms which have been described under various names (*Leptocephalus canaricus* Lea, *L. andreae* Schmidt, *L. curvirostris** Strömman, *L. tiluroides** Strömman, *L. polymerus** Lea, *Tilurella gaussiana* Papp.) are reviewed and all are referred to *N. scolopaceus;* they represent 4 distinct phases in the larval development of this sp., which are here described in detail from the "Dana" collection. It is found that the total number of myotomes increases, during development, from about 300 to 500. There is a larval migration of the anus posteriorly, followed by a postlarval migration anteriorly. The smallest larvae are found in the western Atlantic, where spawning takes place in late winter or early spring; the larger larvae are found towards the coasts of Europe, Africa, and America, where they have been transported by ocean currents.—In the third part the ontogeny of *Cyema atrum* is described in detail; it has a remarkable leaf-shaped larva, which has been taken at considerable depths in various parts of the north Atlantic.—Extensive bibliography.

8888. SCHMIDT, P. A list of fishes of the Riu-Kiu Islands, collected by K. Awaya in 1929. Известия Академии Наук СССР., Отделение Физико-Математических Наук. (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930 (6) : 541-558. 1930.—Of 44 spp. collected, the following are new to the Riu-Kiu Isls.: *Atherina tsurugae, Epinephelus dispar, Lethrinus miniatus, Mulloides vanicolensis, Xystaema erythrourum, Leptoscarus viridescens, Callyodon mutabilis, Hepatus lincatus, Balistapus verrucosus, Monacanthus pardalis,* and *Ostracion cubicus*. The systematic account includes local names, synonymies, and descriptive and taxonomic notes.

8889. STROMER, E. Neues über die ältesten und primitivsten Wirbeltiere, besonders die Anaspida. *Sitzungsber. Math.-Naturwiss. Abt. Bayerischen Akad. Wiss.* 1930 (2) : 107-119. 1 fig. 1930.—Chiefly a critique of the work of recent authors, including Jaekel, Kiaer, Raymond, Sewertzoff, Simpson, Stensiö, and Stetson. The Anaspida are regarded as standing in close relationship to the recent Cyclostomata.

AMPHIBIA AND REPTILIA

G. K. NOBLE, *Editor,* Amphibia

KARL PATTERSON SCHMIDT, *Editor,* Reptilia

(See also in this issue Entries 6259, 7001, 7105, 8212, 8225, 8228, 8240, 8257, 8259, 8327, 8368, 8379, 8405, 8406, 9035, 9051, 9056, 9057)

GENERAL

8890. BARBOUR, T., and A. LOVERIDGE. Reptiles and amphibians from Liberia. In: The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard African Expedition 1926-27. Vol. 2. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* no. 5) Part 3. XXXV: *Herpetology.* p. 769-786. 3 pl. (1 col., 1 partly col.) Harvard Univ. Press: Cambridge, 1930.—This is a report on 33 Amphibia and 41 Reptilia collected by G. M. ALLEN and associates. Among the 33 spp. recorded from Liberia for the first time are, Reptilia: *Kinixys homeana, Riopa dura,* and *Naja goldii*. Amphibia: *Bufo togoensis,* 6 spp. of *Arthroleptis, Megalixalus immaculatus, Hyperolius puncticulatus**, and *Leptopelis bocagii*. The systematic accounts include field notes by Allen, distributional records, and taxonomic remarks. *Rana occipitalis* Günther (=*Ranosoma schereri* Ahl, *Rana mwanzae* Loveridge); *Rana* L. (=*Pseudoxenopus* Barbour & Loveridge); *Megalixalus fulvovittatus* (Cope) (=*M. vittiger* (Peters)). A list of 27 Liberian reptiles and amphibians not collected by the present expedition is appended; also a list of 1 *Bufo* and 10 Ranidae from Liberia identified in the collections of the U. S. Nat. Mus.; and a bibliography of 14 titles.

8891. BARBOUR, T., and A. LOVERIDGE. Reptiles and amphibians from the central African lake region. In: The African Republic of Liberia and the Belgian Congo, based on the observations made and material collected during the Harvard African Expedition 1926-27. Vol. 2. (*Contr. Dept. Trop. Med. & Inst. Trop. Biol. & Med.* no. 5) Part 3. XXXV: *Herpetology.* p. 786-796. Harvard Univ. Press: Cambridge, 1930.—This is a report on 25 Reptilia and 13 Amphibia collected chiefly in the Lake Kivu region (Belgian Congo and Uganda). The systematic account includes distributional records, taxonomic remarks, and notes on food. *Chamaeleon johnstoni* Boulenger (=*C. graueri* Steindachner, *C. johnstoni affinis* Sternfeld, *C. ituriensis* Schmidt); *Rana fuscigula* and *Cacosternum boettgeri,* new to Uganda.

8892. DYMOND, J. R. The amphibians and reptiles of the Lake Abitibi region [Ontario]. *Univ. Toronto Studies Biol. Ser.* 32. 35-36. 1928.—An annotated list of 7 spp. (1 *Bufo,* 1 *Hyla,* 4 *Rana,* and 1 *Thamnophis*). An unusual red phase of *Thamnophis sirtalis* is described.

8893. KLINGELHÖFFER, W. Terrarienkunde. 575p. 17 pl. (6 col.), 560 fig. Julius G. G. Wegner: Stuttgart, 1931. Pr. 29.40 M.—The first 68 pages treat of the construction of terraria, their heating, fitting, and stocking. Detailed plans for construction are given, with full descriptions. Then follow extended sections on the terrarium management of lizards, crocodilians, turtles, snakes, and amphibia. The various species of each group which can be kept in confinement are described in detail, with full accounts of their habits; breeding habits are given for a large number of species. The work is valuable not only for its instructions as to the handling of the animals, but also for information regarding the natural history of a large number of European, Asiatic, African, and American species of reptiles and amphibia. Photographs and drawings accompany the descriptions of species. Some anatomical drawings and description introduce each order. Much material is supplied of value to beginners in the systematic study of the orders.—*L. E. Griffin.*

8894. LOGIER, E. B. S. A faunal investigation of King Township, York County, Ontario. IV. The amphibians and reptiles of King Township. *Trans. Roy. Canadian Inst.* 17 (2) : 203-208. 1930.—An account of 13 amphibians, 6 snakes, and 2 turtles, with notes on habitats, seasonal occurrence, and breeding habits. The eggs, larvae, and vocal activity of some of the amphibians are discussed.

AMPHIBIA

8895. AHL, ERNST. Zur Systematik der afrikanischen Arten der Baumfroschgattung Hyperolius (Amph. Anur.). *Mitteil. Zool. Mus. Berlin* 17 (1) : 1-132. 1931.—This paper is based upon the rich material of the Berlin Mus., and consists chiefly of a key and descriptions of new spp. Nearly all of the spp. were investigated osteologically. A more comprehensive treatment in a forthcoming monograph of the "Tierreich" is announced. *H.* **stenodactylus** (p. 21), Cameroon; *H.* **angolanus** (*Rappia platyceps* v. *angolensis* Ferreira, preoccupied) (p. 22);

H. **pygmaeus** (p. 22), Tanganyika Terr.; *H.* **petersi** (p. 23), Kenya; *H.* **vermicularis** (*Rappia vermiculata* Pfeffer, preoc.) (p. 24); *H.* **multifasciatus** (p. 24), Tanganyika Terr.; *H.* **brevipalmatus** (p. 25), Cameroon; *H.* **kivuensis** (p. 26), Lake Kivu; *H.* **bituberculatus** (p. 27), Belgian Congo; *H.* **acuticeps** (p. 29), Tanganyika Terr.; *H.* **guineensis** (p. 30), "Guinea"; *H.* **castaneus** (p. 31), NE. of Lake Kivu; *H.* **scriptus** (p. 32) and *H.* **albolabris** (p. 33), Tanganyika Terr.; *H.* **baumanni** (p. 34), Togo; *H.* **raveni** (p. 36), NE. of Lake Kivu; *H.* **ademetzi** (p. 37), Cameroon; *H.* **kwidjwiensis** (p. 38), Belgian Congo; *H.* **variabilis** (p. 39), Tanganyika Terr. (type) and Belgian Congo; *H.* **punctatissimus** (p. 41), E. Africa; *H.* **ipianae** (p. 43), "Ipiana"; *H.* **pictus** (p. 44), Tanganyika Terr. (type) and Kenya; *H.* **tornieri** (p. 45), Tanganyika Terr.; *H.* **simus** (p. 46), Belgian Congo; *H.* **pulcher** (p. 48), Cameroon; *H.* **asper** (p. 49), Kenya; *H.* **moseri** (p. 50), Togo; *H.* **oeseri** (p. 51), Liberia; *H. pincturatus*, description of tadpole; *H.* **albofrenatus** (p. 53), Tanganyika Terr.; *H.* **breviceps** (p. 54), Portuguese East Africa (type) and Kenya; *H. parallelus*, description of tadpole; *H.* **buchholzi** (p. 56), Gold Coast; *H.* **guttolineatus** (p. 57), *H.* **bitaeniatus** (p. 58) and *H.* **ngoriensis** (p. 60), Tanganyika Terr.; *H.* **depressus** (p. 61), Togo; *H.* **kandti** (p. 62), Lake Kivu; *H.* **schubotzi** (p. 63), Belgian Congo; *H.* **hildebrandti** (p. 64), Cameroon; *H.* **latifrons** (p. 65), Belgian Congo; *H.* **nyassae** (p. 66), Tanganyika Terr. (type) to Transvaal; *H.* **melanophthalmus** (p. 68), Zanzibar; *H.* **laticeps** (p. 69), Togo; *H.* **wettsteini** (p. 70), *H.* **phrynoderma** (p. 71) and *H.* **argentovittis** (p. 72), Tanganyika Terr.; *H.* **bergeri** (p. 73), Kenya; *H.* **karissimbiensis** (p. 74), Belgian Congo; *H.* **fuelleborni** (p. 75), Tanganyika Terr.; *H.* **coeruleopunctatus** (p. 76), Kenya; *H.* **marungaensis** (p. 77), Angola; *H.* **decoratus** (p. 78), Cameroon (type) and Angola; *H.* **microstictus** (p. 80), Cameroon; *H.* **albifrons** (p. 81), Africa; *H.* **rugegensis** (p. 82), "Rugege-Wald"; *H.* **argentophthalmus** (p. 83), locality unknown; *H.* **substriatus** (p. 84), Tanganyika Terr.; *H.* **mohasicus** (p. 85), Belgian Congo; *H.* **brachiofasciatus** (p. 87), French Equatorial Africa; *H.* **rubripes** (p. 88), "Kililana"; *H.* **discodactylus** (p. 89), "Rugege-Wald" (type) and west of Lake Edward; *H.* **obstetricans** (p. 90), life history, Cameroon; *H.* **maximus** (p. 91), British Cameroon (type) and "Guinea"; *H.* **pulchromarmoratus** (p. 92), Kenya; *H.* **multicolor** (p. 94), Belgian Congo; *H.* **macrodactylus** (p. 95), Lake Kivu; *H.* **flavoguttatus** (p. 96), Tanganyika Terr. (type) and Kenya; *H.* **udjidjiensis** (p. 97), Tanganyika Terr. (type) and Kenya; *H.* **thoracotuberculatus** (p. 98), Africa; *H.* **callichromus** (p. 99), Belgian Congo (type) and Tanganyika Terr.; *H.* **houyi** (p. 101), Tanganyika Terr.; *H.* **monticola** (p. 102), Ruanda; *H.* **oculatus** (p. 103), "Duki-Ufer und Golei-See"; *H.* **nigropalmatus** (p. 104), Cameroon; *H.* **rosaceus** (p. 105), Togo; *H.* **alticola** (p 106), Uganda; *H.* **ventrimaculatus** (p. 107), NE. of Lake Kivu; *H.* **dermatus** (p. 108), Portuguese E. Africa; *H.* **narinus** (p. 109), tadpole described, Togo; *H.* **scheffleri** (p. 111), Kenya; *H.* **togoensis** (p. 113), Togo; *H.* **stuhlmanni** (p. 113) and *H.* **irregularis** (p. 114), Belgian Congo; *H.* **renschi** (p. 115), Zanzibar; *H.* **adolphi-friederici** (p. 116), "Rugege-Wald"; *H.* **noblei** (p. 118), Tanganyika Terr.; *H.* **trifasciatus** (p. 119), Liberia; *H.* **decipiens** (p. 120), Belgian Congo; *H.* **koehli** (p. 121), Tanganyika Terr.; *H.* **unicolor** (p. 122), "Ipiana"; *H.* **spatzi** (p. 123), Senegal; *H.* **chabanaudi** (p. 124), French Equatorial Africa; *H.* **gularis** (p. 125), Angola; *H.* **hieroglyphicus** (p. 126), Cameroon; *H.* **quadratomaculatus** (p. 127) and *H.* **goetzei** (p. 128), Tanganyika Terr.; *H.* **bicolor** (p. 129), Angola; *H.* **acuticephalus** (p. 131), French Equatorial Africa; *H.* **graueri** (p. 131), Belgian Congo. Types in Berlin Mus.

8896. ANGEL, F. Sur une espèce nouvelle de grénouille du Tonkin, appartenant au genre Rana. *Bull. Mus. Nation. Hist. Nat. Paris* 1928(5): 319-320. 1928.—*Rana* (*Rana*) **delacouri** (p. 319), type in Paris Mus.

8897. CANNELLIER, PIERRE Le. Triton marbré. *Bull. Soc. Linn. Normandie* 1: 91. 1928(1929).—A record on *Molge marmorata.*

8898. FLORESCO, N. Locomotion de la grénouille. *Bul. Fac. Stiinte Cernauti* 3(1/2): 248-257. 1929.—The flat form of the frog acts like a plane on the surface of the water. The skin by its integrity and humidity preserves the general condition of the animal. The hind legs function for swimming and jumping; the fore legs for balancing and horizontal movement.—*N. Floresco* (*transl. by A. M. Boring*).

8899. GAIGE, HELEN T. Notes on Syrrhophus marnockii Cope. *Copeia* 1931(2): 63. 1931.—Range of this sp. extended to the Big Bend region of Texas. Notes on habits and voice are given.

8900. GRANT, CHAPMAN. A new frog from Porto Rico. *Copeia* 1931(2): 55-56. 1 fig. 1931.—*Eleutherodactylus* **karlschmidti*** (p. 55), type in author's coll.

8901. GRANT, CHAPMAN. Notes on Bufo marinus (Linnaeus). *Copeia* 1931(2): 62. 1931.—This introduced sp. has increased both on the coast and inland in Porto Rico. Notes on color, measurements, and habits are given.

8902. HORIKAWA, YASUITI. A list of frogs from Formosa. *Trans. Nat. Hist. Soc. Formosa* 21(114): 139-145. 1931.—25 spp. are listed.

8903. [KARPINSKII, A. P.] КАРПИНСКИЙ, А. П. О проблематическом ископаемом из палеозойских слоев Северного Урала. [A problematical fossil from the Paleozoic of the northern Urals.] Доклады Академии Наук СССР., Сер. A. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(15): 387-390. 1930.—Two scale-like fossils from the Lr. Carboniferous or Up. Devonian are believed to be related to the early amphibians, and the name *Proamphibia problematica* is suggested for them.

8904. MYERS, GEORGE S. Ascaphus truei in Humboldt County, California, with a note on the habits of the tadpole. *Copeia* 1931(2): 56-57. 1931.

8905. PARKER, H. W. Some brevicipitid frogs from Tanganyika Territory. *Ann. and Mag. Nat. Hist.* 8(45): 261-264. 1931.—**PROBREVICEPS** (p. 262) (Brevicipitidae), near *Spelaeophryne*, type *P.* **macrodactylus** (*Breviceps m.* Nieden=*B. usambaricus* Barbour & Loveridge) (p. 262); *P. m.* **loveridgei** (p. 263), Tanganyika Terr., type in Brit. Mus.; *P.* **uluguruensis** (*Breviceps u.* Loveridge) (p. 264).

8906. SLATER, JAMES R. The mating of Ascaphus truei Stejneger. *Copeia* 1931(2): 62-63. 1931.—Observation in State of Washington.

8907. TRAUTMAN, MILTON B. Another record of Scaphiopus holbrookii for Virginia. *Copeia* 1931(2): 63. 1931.

8908. WOLTERSTORFF, W. Über fossile Frösche aus der Papierkohle von Burgbrohl (Laacher See). *Jahrb. Preuss. Geol. Landesanst.* 49(2): 918-932. 2 pl., 4 fig. 1928(1929).—Lower Miocene, *Palaeobatrachus* cf. *diluvianus.* 29 specimens are described, ranging from adults to unmetamorphosed larvae. Notes are given on the systematics and biology of the genus.—*A. S. Romer.*

REPTILIA

8909. BURT, CHARLES E. The status of the spotted race-runner, Cnemidophorus sexlineatus gularis (Baird and Girard.). *Proc. Biol. Soc. Washington* 44: 73-78. 1931.—*Cnemidophorus sexlineatus sackii* (Wiegmann) (=*C. gularis* B. & G.).

8910. COOK, LORENZO H. Notes on an Arizona elegans occidentalis Blanchard. *Copeia* 1930(4): 158. 1930.—A specimen collected in California fed on lizards and mice in captivity.

8911. COTTE, J. Indigénat de la Tortue grecque en Provence. *Ann. Mus. Hist. Nat. Marseille* 22(4): 83-93. 7 fig. 1930.—The present distribution of *T. graeca* in Var and Bouches-du-Rhône and also fossil indicate that it is endemic, rather than intro

man. The marked variation in the plates of *T. graeca* and *T. ibera* and the tendency toward intergradation of their characters are discussed. If one regards them as 2 subspp. becoming more distinct, one may "create for them a conventional sp., called *Testudo* tyrrhenica" (p. 93), for which either *T. graeca* or *T. ibera* is suggested as "type."

8912. **ESTIVAL, G. Un cas de morsure par Cerastes vipera L.** *Arch. Inst. Pasteur Algérie* 7(2): 220-221. 1929.—Probably the first published case of poisoning by *C. vipera*, at least for northern Africa.

8913. **FLOWER, STANLEY S. The occurrence of the "black-and-white cobra," Naja melanoleuca, in the Sudan.** *Ann. and Mag. Hist.* 7(41): 499-500. 1931.

8914. **GERTSCH, WILLIS J., and LOWELL A. WOODBURY. Spiders found in the stomachs of Sceloporus graciosus graciosus (B. & G.) (Araneina).** *Ent. News* 41(10): 318. 1930.—A list of 7 species eaten by this lizard in Utah.

8915. **H[ERKLOTS], G. A. C. Varanus albigularis.** *Hong Kong Naturalist* 1(4): 193. 1930.—A *Varanus* previously reported from Hong Kong (*Ibid.* 1(2): 76-78. 1930) proves to be *V. albigularis*, evidently imported from Africa.

8916. **JENYNS, SOAME. The tortoise and the turtle in Kwongtung.** *Hong Kong Naturalist* 1(4): 161-163. 1930.—Chiefly history and folk-lore.

8917. **ROULE, LOUIS. Les lézards géants de l'époque actuelle.** *Rev. Gén. Sci. Pures et Appl.* 42(10): 295-296. 1931.

8918. **SMEDLEY, NORMAN. Ovoviviparity in sea-snakes.** *Nature [London]* 127(3192): 13. 1931.—There is no evidence to show whether the Hydrophiinae are viviparous or ovoviviparous. Both conditions are found in the Laticaudinae, perhaps within a single sp.

8919. **STEINHEIL, FRITZ. Die europäischen Schlangen; Kupferdrucktafeln nach Photographien der lebenden Tiere.** 9. pl. 41-45. Gustav Fischer: Jena, 1931. —The species figured are *Vipera ammodytes ammodytes*, *V. a. transcaucasiana*, and *Tropidonotus natrix persa*.

8920. **WITTE, GASTON FR. de. Description d'un Vipéride nouveau du Kivu (Atractaspis schoutedeni sp. n.).** *Rev. Zool. et Bot. Africaines* 19(2): 224-225. 3 fig. 1930.—Type in Congo Mus.

AVES

LUDLOW GRISCOM, *Editor*

(See also in this issue section Economic Ornithology; and Entries 6098, 6101, 6257, 6259, 6838, 7393, 8413, 8509, 8510, 9035, 9051, 9056, 9057)

GENERAL OR POPULAR

8921. **ALLEN, A. A., L. A. FUERTES, and M. D. PIRNIE. General ornithology laboratory notebook for the recording of observations made in the field and studies made in the laboratory on the birds of Eastern North America.** illus. Comstock Publishing Co.: Ithaca, N. Y. [1930] Pr. $4.

8922. **ALLEN, ARTHUR A. The book of bird life. A study of birds in their native haunts; with photographs by the author.** xix+426p. 1 col. pl., 275 fig. D. Van Nostrand Co., Inc.: New York. 1930.—This book is a guide to bird habits rather than an identification manual; it outlines the principles of ornithology and suggests methods of study. Part I deals with history, classification, distribution, ecology, migration, courtship, home life, plumage, and economic relations. There is a special discussion of the balance of nature and the conservation of wild life. Part II deals with methods of study, field trips, keeping of records, banding, methods of attracting birds, nests, photography, songs, birds as pets, and an outline for intensive study of a species. Much of the material has already appeared in the School Department of Bird-Lore. The book is profusely illustrated with photographs of wild birds by the author. At the end of each chapter are references to suggested reading.

8923. **CLARKE, HARRY. Birds killed by automobiles.** *Bird-Lore* 32(4): 271. 1930.—More than 1 dead bird per mile was found along Iowa roads. Red-headed woodpeckers were chief sufferers.

8924. **COLE, SANFORD D. Oil pollution.** *Royal Soc. Protect. Birds Ann. Rept.* 39: 37-40. 1929.—An address on the killing of birds by oil pollution of the sea and on preventive measures.

8925. **CORSAN, G. H. The W. K. Kellog bird sanctuary.** *Aviculture [Chicago]* 2(9): 216-219. 2 pl. 1930.

8926. **CRANDALL, LEE S. Three very rare Amazons.** *Aviculture [Chicago]* 2(9): 211-213. 1 col. pl. 1930.—Notes on the following 3 parrots: *Amazona imperialis**, *A. guildingi**, and *A. versicolor**.

8927. **DROST, RUDOLF. XI. Bericht der Vogelwarte der Staatl. Biologischen Anstalt Helgoland (1926-1928). [Eleventh report of the bird observatory of the State Biological Institution of Helgoland.]** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 2-13. 1930. —An account of the activities of this observatory. In the past 20 years the observatory and its collaborators have banded 102,095 birds belonging to 228 species, from which there have been 2119 return records.

8928. **DROST, R. Aufruf zur Schaffung eines internationalen Stationsnetzes zur Beobachtung des Vogelzuges an allen Küsten der Nordsee. [Call for the organization of an international chain of stations for the observation of bird migration on the coasts of the North Sea.]** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 43-45. 1930.

8929. **DROST, [R.]. Rückmeldung eines deutschen Rotrückigen Würgers (Lanius c. collurio L.) aus Aegypten. [Return record of a German red-backed shrike in Egypt.]** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 47-48. 1930.

8930. **DROST, RUDOLF. Zum Zug deutscher Stelzen (Motacilla L.).** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung.* 1(2): 86-88. Map. 1930.—Young birds of *Motacilla f. flava*, *M. c. cinerea*, and *M. a. alba*, banded in Germany, have been recovered in the fall in southwestern France. One record of *M. a. alba* indicates that it winters in Spain.

8931. **FEHRINGER. Die Vogelwarte Rappenwört, Karlsruhe (Baden).** *Ornithol. Monatsschr.* 55(2): 24-29. 1930.—The author discusses the steady decrease in bird life and human shortsightedness in judging birds on a merely utilitarian basis. As a means of public education on this subject, the city of Karlsruhe has established a bird observatory. Courses of instruction, economic investigations, and studies of migration are planned. Living birds are kept for observation.

8933. **GLEGG, WILLIAM E. A correction.** *Ibis* 6(2): 379. 1930.—Letter correcting a notice of his paper "The Thames as a bird-migration route" in the *Ibis* for Jan., 1930.—*W. W. Bowen.*

8934. **GREY of FALLODON. The habits and breeding of mandarin and North-American (Carolina) wood ducks.** *Nat. Hist. Mag. [London]* 2(16): 249-257. 5 fig. 1930.—Observations on protected and semidomesticated birds in England. The 2 spp. resemble each other in plumage and habits, but not in voice, and do not seem to hybridize. The mandarin* is a more alert, enterprising, and vital sp. than the wood duck*.

8935. **GROTE, H. Ueber den gegenwärtigen Stand der Vogelberingung in Russland.** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 40-43. 1930.—In late years 78,000 birds have been banded in Russia, from which there have been 295 recoveries of 38 species. Many

of them had wandered to foreign countries, including 5 *Corvus frugilegus* taken in Germany and France, 1 *Nycticorax nycticorax* in central Africa, 1 *Dafila acuta* in Egypt, and 2 *Larus argentatus* in Denmark and Norway.

8936. **HADLEY, ALDEN H. Oil pollution and sea-bird fatalities.** *Bird-Lore* 32(3): 241-243. 2 fig. 1930.—Great numbers of sea birds along the Massachusetts coast are killed by oil wastes on the water.

8937. **HENNINGS, H. Aus der Arbeit Vogelberingung.** *Aus der Heimat* 43(5): 155-156. 1930.—Recoveries of birds banded along the lower Elbe, Germany, are as follows: stork, in Poland, lapwings, in Portugal, Spain, France, and Italy; hen harriers, in Belgium, France, and Portugal. A swallow returned to the same nest for three years. A hen harrier and several lapwings have been observed in subsequent years in the area where originally banded.

8938. **HOFFMAN, E. C. Weighings of the northern form of the eastern song sparrow.** *Bird-Banding* 1(2): 80-81. 1930.—Late fall and early spring migrants in Ohio weigh more than the resident birds of this sp.

8939. **INGRAM, GEOFFREY C. S., and H. MORREY SALMON. Storm-driven birds in South Wales, December 1929.** *British Birds* 23(10): 276-277. 1930.—Records of numbers of sea birds that had succumbed to storm.

8940. **KIP, HERBERT Z. Concealment as a factor in nest-building.** *Bird-Lore* 32(3): 181-184. 1930.—That birds carefully and deliberately conceal their nests is, in the author's opinion, a myth.

8941. **KNORR, B. Auffälligkeiten am Kranichzug.** *Ornithol. Monatsschr.* 55(6): 81-83. 1930.—Sudden disorder in migrating flocks of cranes is discussed. Altered appearance of a familiar landscape, and search for the regular line of flight after straying, are among the causes suggested.

8942. **LANGE, HALFDAN. Bestemmelse af flyvende Fugle. [Identification of birds in flight.]** *Flora og Fauna [Copenhagen]* 1929(2): 41-62. 42 fig. 1929.—A key is given for part of the birds of Denmark, as a means of identifying birds in flight. Small birds and rare birds are not included.

8943. **LA TOUCHE, J. D. D. A handbook of the birds of Eastern China (Chihli, Shantung, Kiangsu, Anhwei, Kiangsi, Chekiang, Fohkien, and Kwangtung Provinces). Part V. (Containing families Motacillidae, Alaudidae, Zosteropidae, Nectariniidae, Dicaeidae, Pittidae, and Eurylaimidae.)** 1(5): xx+399-500. 2 pl. Taylor & Francis: London, 1930.—Part V concludes vol. I and the account of the Passeres. This volume includes 378 birds of 31 families from eastern China. The accounts of the various forms include English common names, synonymy, description, distribution, and notes on taxonomy, migration, and habits. Corrigenda and addenda and a systematic as well as an alphabetical index are supplied.

8944. **LONGSTREET, R. J. Chimney swift banding experiences in Florida.** *Florida Nat.* 3(4): 100-104. 1930.

8945. **MADSEN, HARRY. Quelques remarques sur la cause pourquoi les grands oiseaux au Soudan planent si haut au milieu de la journée.** *Vidensk. Meddel. Dansk Naturhist. For. København* 88: 301-303. 1929/1930.—At Timbuktu, in summer, the temp. from 11 a. m. to 4 p. m. rises to about 35-45° C. Small birds then remain in the shade. Large birds, such as *Milvus migrans parasiticus, Necrosyrtes monachus monachus, Corvus scapulatus,* and *Abdimia abdimii,* escape the strong radiation from the superheated ground by soaring at an estimated altitude of 700-1000 m. At 1000 m. the temp. is almost constant, and equal to that on the ground at sunrise.

8946. **MATHEWS, GREGORY M. Note on the dates of issue of the parts of G. R. Gray's "Birds" in the zoology of the voyage of H. M. S. "Erebus" and "Terror" during the years 1839 to 1843, and other bibliographical remarks.** *Ibis* 6(1): 120-123. 1930.

8947. **MICHAEL, ENID. Bird intelligence.** *Yosemite Nature Notes* 9(7): 69-70. 1930.—Note on blue-fronted jays.

8948. **MOREAU, R. E. On the age of some races of birds.** *Ibis* 6(2): 229-239. 1930.—For the purpose of this discussion "races" are assumed to be of genetical significance. On different lines of argument it appears that 2 races, *Galerida cristata nigricans* and *Columba livia dakhlae,* have developed in the last 10,000 years. *Galerida cristata brachyura* and *Prinia gracilis natronensis* have probably differentiated in less than 5000 yrs. The fact that no Passerine races have developed in Mesopotamia may indicate that the lower figure, namely 5000 yrs., is not far from the minimum required for the development of an ornithological race.—*From author's summary.*

8949. **NAUNDORFF, ELISABETH. Über einsichtiges Verhalten, Gemütsleben und Abrichtung einer Dohle.** *Zool. Garten [Leipzig]* 2(10/12): 299-303. 1930.—This captive jackdaw could speak a few words and tried to mimic every noise. It became tame under careful handling. It was trained to find hidden food and to do various tricks. Eventually it was allowed to fly in the open, and returned only at the sight or the call of the author. It was jealous and flew in the face of persons it disliked. It was frightened by a stuffed kite. It died, during a brief absence of the author, without visible cause.

8950. **NICE, MARGARET MORSE. Do birds usually change mates for the second brood?** *Bird-Banding* 1(2): 70-72. 1930.—Data assembled on 12 spp. of Passeres show that 7 pairs of 3 spp. changed mates in one season, while 20 pairs of 11 spp. did not. There is ordinarily no change of mates within a season when the 2 nesting cycles overlap. There is more apt to be a change when there is a longer interval between the 1st and 2nd broods.

8951. **PETERS, NICOLAUS. Über eine Hornbildung beim Jagdfasan.** *Zool. Anz.* 88(7/8): 221-223. 1 fig. 1930.—A pheasant in Germany was found with a hornlike process firmly attached to the basal part of the mandible. This malformation may have had its origin in an earlier fracture of the mandible.

8952. **REBOUSSIN, ROGER, with descriptions by J. RAPINE. L'oiseau chez lui. Livre couleur du temps.** (Continuation.) Fasc. 7. p. 49-54. 1 col. pl., 11 crayon sketches; Fasc. 8. p. 57-64. 1 col. pl., 9 crayon sketches; Fasc. 9. p. 65-72. 1 col. pl., 12 crayon sketches. Les Presses Universitaires de France: Paris, 1930.—Fasc. 7. Illustrations and descriptions are given of the following: Limicolae, Charadriidae: *Numenius arquata arquata* (L.), *Limosa l. lapponica* (L.), *Philomachus pugnax* (L.), *Charadrius hiaticula hiaticula* L., Passeres, Motacillidae: *Anthus spinoletta petrosus* (Montagu.). Fasc. 7 is concluded with a general discussion of dunes and their bird fauna. Fasc. 8. Laridae: *Sterna a. albifrons* Pallas. Charadriidae: *Charadrius apricarius altifrons* Brehm; *C. a. alexandrinus* L. Anatidae: *Tadorna tadorna* (L.). Motacillidae: *Anthus pratensis* (L.). Fasc. 8 is concluded with a general discussion of steppes and lagoons with their bird fauna. Fasc. 9 contains a general discussion of lagoons and their bird fauna.

8953. **SALZMANN, WALTER. Ardea p. purpurea L. in Hessen-Nassau.** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 46. 1930.—A young bird, banded in Holland in June, 1929, was captured the following Sept. in Germany.

8954. **SCHÜZ, E. Aufgaben der Vogelzugsforschung.** *Aus der Heimat* 43(5): 134-138. 2 map, 3 fig. 1930.—A discussion of bird-banding and other ways of studying migration in Germany.

8955. **SCHÜZ, E. Vom Zug des Blässhuhns, Fulica atra L., an Hand der Beringungsergebnisse.** *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 14-20. Map. 1930.—Fifty-two return records for the coot are detailed. In Britain, Switzerland, and Hungary the species seems largely non-migratory, but in north central Europe the migratory instinct is well marked. Birds nesting in Sweden winter in Spain and Austria; those of eastern and northern Germany winter in Austria, Switzerland, Netherlands, and northern France; those of Hungary go in part to Italy. The longest migration ascertained is from Sweden to Spain (2400 km.). Ap-

parently the species migrates to escape the cold. In certain cases the daily average distance covered in migration has ranged from 185 to 262 km. Some birds may fly over the Alps and the Sudetic Mts. In winter the coots often gather in great flocks on open water, especially near cities, where they are fed. The greatest age ascertained for a banded bird is 9 years, 1 month.

8956. SCHÜZ, E. Woher kommen unsere Winter-Saatkrähen? *Naturforscher* [*Berlin*] 7(1): 13-16. Map, 2 fig. 1930.—Returns from banded individuals of *Corvus frugilegus* show that breeding birds of central Russia winter in Germany and France, while those of England and France migrate comparatively short distances.

8957. STENHOUSE, J. H. Birds of historic interest in the Royal Scottish Museum. III. Birds of Franklin's overland expeditions. *Scottish Naturalist* 1930(183): 75-84. 1930.—Of about 80 spp. brought back by Richardson from the first expedition (1819-22), 40 specimens were presented to the Mus. of the Univ. of Edinburgh in 1823. Of these, only 2 specimens of *Pediocaetes* [sic] *p. phasianellus* are still extant. From the second expedition (1825-1827) about 325 birds were brought back, of which 58 are extant. A list of these is given. Included are type specimens of *Pyrgita* (*Pipilo*) *arctica* Swainson, *Picus* (*Apternus*) *arcticus* Swainson, *Tetrao* (*Lagopus*) *leucurus* Swainson & Richardson, *Larus franklinii* Richardson. The museum also contains probably the type specimen of *Tetrao franklinii* Douglas.

8958. STENHOUSE, J. H. Birds of historic interest in the Royal Scottish Museum. IV. Birds collected by Captain Sturt in 1830, on the "Banks of the River Murray." *Scottish Nat.* 1930(184): 101-104. 1930.—At least 9 of the original 18 birds sent from Australia are still extant, among them the type of *Ibis spinicollis* Jameson.

8959. STEVENS, O. A. Some secondary results of bird-banding. *Bird-Banding* 1(2): 67-69. 1930.—Data on banded birds (chiefly Harris's and White-throated Sparrows) in N. Dakota indicate a large number of repeat records on the day before a departing flight. Early migration records are secured better by trapping than by field observation.

8960. [TUGARINOV, A. Ya.] ТУГАРИНОВ, А. Я. Миграции птиц северной Азии. [Migration of birds of northern Asia.] Природа (Priroda [*Leningrad*]) 1930 (5): 507-543. 6 maps. 1930.—Based on literature and the author's personal observations, bird migration of the region cited is discussed. A list is given of the birds according to their migration routes. These routes are as follows: (1) Birds crossing the continent in various way; (a) in a general southerly direction; (b) converging from the entire northern width of the continent toward the Khingan Mts.; (c) passing through Turkestan to India, Afghanistan, Persia, Arabia, and Africa (this route is followed by the great majority of Asiatic birds); (d) passing to Arabia and western India, by a small group of central Asiatic birds. (2) Birds, frequently not ecologically related to the water, following sea shores in one of the following ways; (a) along the Arctic coast westward and southward to the Atlantic coast of Europe; (b) along the Asiatic coast of the Pacific; (c) along the American coast of the Pacific by way of Bering Sea. (3) A small group of birds not following the same route in spring and fall migrations, passing in spring from the coast of Japan across the Amur region to Yakutsk, in the fall going east to Bering Sea and along the coast to Japan.

8961. VÄLIKANGAS, ILMARI. Phänologische Beobachtungen über Raubvögel mit Hilfe eines Uhus. [Phenological observations on birds of prey with the aid of an eagle owl.] *Ann. Soc. Zool.-Bot. Fennicae, Vanamo* 8: (25)-(28). 1929.—Migration data on various species of hawks in Finland, based on individuals shot while attacking an eagle owl (either stuffed or captive).

8962. WENDEHORST. Erfolgreicher Säbelschnäblerschutz an der Nordseeküste. *Ornithol. Monatsschr.* 55 (6): 95-96. 1930.—These colonies of avocets are now protected.

8963. WITHERBY, H. F. The "British Birds" marking scheme. Progress for 1929. *British Birds* 23(10): 258-265. 1930.—Over 25,000 British birds were ringed in 1929, making a total of 258,791 for the period 1909-1929. A number of return records from various parts of Europe and Africa are mentioned.

8964. ANONYMOUS. Banded herring gull found with beak fastened shut. *Bird-Lore* 32(3): 250. 1930.—A bird banded in Maine found in Florida.

SYSTEMATICS

8965. BAKER, E. C. STUART. [Changes in nomenclature.] *Bull. British Ornith. Club* 50(342): 79. 1930.—*Muscicapella* Bianchi (=*Briania* Chasen & Kloss). *Chalcoparia singalensis rubinigentis* Baker (=*C. s. assamensis* Kloss).

8966. BOYD, A. W. Melanic nestlings of the lapwing. *British Birds* 24(4): 109. 1930.—Two out of 4 downy young *Vanellus vanellus* in Cheshire were melanic.

LIFE HISTORY

8967. BENTHAM, HOWARD. Black-throated diver in Surrey. *British Birds* 23(10): 277-278. 1930.—A *Colymbus arcticus* was seen to dive and emerge beneath a great crested grebe, besides attacking it otherwise.

8968. BOOTH, H. B. Night soaring of swifts. *British Birds* 24(4): 111. 1930.—*Apus a. apus*, after high vesper flights, returns to its roosting quarters.

8969. BRAUN, RUDI. Beiträge zur Biologie der Vögel von Angola. *Jour. Ornith.* [*Berlin*] 78(1): 47-49. 1930.—Notes on breeding and other habits of 11 spp.

8970. BROWN, R. H. Fledging-period of the barn-owl. *British Birds* 23(10): 274-275. 1930.—This period lasted from 64 to 68 days for *Tyto a. alba* in a case observed in Cumberland.

8971. BUTLER, A. L. Pigeons alighting on water to drink. *Ibis* 6(2): 383-384. 1930.—Between Senj and Fiume on the Adriatic coast the limestone rock falls abruptly to the sea; the water-shed is on the inland side of the range, and on the seaward side there is little or no fresh water excepting that which percolates through the sand at the foot of the range and bubbles up in numerous springs 30-50 yards out to sea. Pigeons regularly alight and drink, when the tides are fairly low, on these fresh-water areas in the sea.—*W. W. Bowen.*

8972. CHAFFER, NORMAN. The cicada bird. (Edoliisoma tenuirostre.) *Australian Zoologist* 6(3): 203-204. 1 pl. 1930.—Account of song and nesting.

8973. COLLENETTE, C. L. Hawfinch [Coccothraustes c. coccothraustes] building three nests in a season. *British Birds* 24(4): 103. 1930.

8974. COLTHRUP, C. W. Westward migration of swallows and martins in north Kent in autumn. *British Birds* 24(1): 28-29. 1930.—*Hirundo r. rustica* and *delichon u. urbica*.

8975. COMTE, A. Les ébauches de nids d'oiseaux. *Bull. Soc. Zool. Genève* 4(2): 152-154. 1930.—Many Swiss birds begin nests without finishing them, because they find the site unsuitable or for other reasons.

8976. DIETRICH, ERICH. Ueber die Begattung bei der Amsel, Turdus m. merula L. *Mitteil. Ver. Sächs. Ornithologen* 2(5): 232. 1929.—An account of the mating of this species, observed in Saxony.

8977. DOBBRICK, W. Fichtenkreuzschnabeldurchzug bei Oestl. Neufähr 1929. *Der Vogelzug* 1(2): 95-96. 1930.—The Crossbill migration near Danzig, 1929 from June to Nov., was chiefly toward the west.

8978. DROST, R. Schnepfenzug im Februar auf Helgoland. *Der Vogelzug* 1(2): 97-98. 1930.—Numbers of *Scolopax rusticola* appeared in early Feb., apparently driven by frost and snow from Scandinavia and Denmark.

8979. EDWARDS, V. C. WYNNE. Ecological studies of birds in Devon. *Bull. British Ornith. Club* 50(341): 65-67. 1930.—Summary.

8980. ELLIOTT, J. S. Cuckoo removing another cuckoo's egg from a nest and its sequel. *British Birds* 24(2): 53-54. 1930.—A *Cuculus canorus* while visiting a nest of *Motacilla alba yarrellii* to lay in it, evidently

devoured another cuckoo's egg already there. Later the second cuckoo's egg was destroyed, perhaps by the wagtail.

8981. **GARNETT, R. M.** Little gull feeding on earthworms. *British Birds* 23(10): 278-279. 1930.—*Larus minutus*, in a field being ploughed in England.

8982. **GREENAWAY, WM. HARRY.** Blackbird nesting on ground in Foula. *Scottish Nat.* 1930(184): 110. 1930.

8983. **HALDY, B.** Vogelbeobachtungen am Futterplatz. *Aus der Heimat* 43(1): 13-17. 1 fig. 1930.—Experiences in the winter-feeding of various birds in Germany.

8984. **HAMILTON, DAVID.** Linnets nesting among grass. *Scottish Nat.* 1930(184): 116. 1930.—In Haddingtonshire.

8985. **HOLLOM, P. A. D.** Number of young in nests of swallow and martin in Somerset. *British Birds* 23(9): 248-249. 1930.—In 38 nests of *Hirundo r. rustica* and 27 nests of *Delichon u. urbica* the average number of nestlings was, respectively, 4.48 and 3.1.

8986. **KUMMERLÖWE, H.** Schlafgemeinschaften von Schwalben. *Mitteil. Ver. Sächs. Ornithologen* 2(6): 288-289. 1929.—Thousands of swallows and sand martins roosting together in reed beds at Sempach, Switzerland, in Aug.

8987. **LACK, DAVID L.** Double-brooding of the Nightjar. *British Birds* 23(9): 242-244. 1930.—The author's observations in Norfolk indicate that *Caprimulgus e. europaeus* normally rears 2 broods during the summer. The ♂ begins brooding the chicks when they are 10-14 days old, at which time the ♀ has evidently begun to incubate a 2nd set of eggs.

8988. **MEIKLEJOHN, A. H.** Extraordinary display by a pair of hedge-sparrows. *British Birds* 23(9): 255. 1930.—Mating behavior.

8989. **PETTINGILL, OLIN S. Jr.** Observations on the nesting activities of the hermit thrush. *Bird-Banding* 1(2): 72-77. 3 fig. 1930.—In Michigan.

8990. **PITMAN, C. R. S.** Some notes on the breeding of the dwarf goose Nettopus auritus (Bodd.) in Uganda. *Oologists' Rec.* 10(2): 26-27. 1 fig. 1930.

8991. **PITMAN, C. R. S.** The eggs of the standard-wing Nightjar, Macrodipteryx longipennis (Shaw). *Oologists' Rec.* 10(2): 27-28. 1930.—Measurements and description of eggs are given.

8992. **PITMAN, C. R. S.** Additional notes on the breeding of the long-tailed Nightjar, Scotornis climacurus (Vieill.). *Oologists' Rec.* 10(2): 29-32. 1930.

8993. **POWELL, T. G.** Ringed plover's double brood. *British Birds* 24(4): 109. 1930.—*Charadrius h. hiaticula*, in Suffolk.

8994. **PREBLE, EDWARD A.** Our owls in fable and fact. *Nature Magazine* 15(3): 143-148. 1 pl. 11 fig.; 188-189. 1930.—Notes on the habits of 16 American spp.

8995. **QUANTZ, B.** Weiteres zur Gestalt des Flugloches der Schwarzspecht-Nisthöhle. *Ornithol. Monatsschr.* 55(6): 94-95. 1930.—The orifices of the black woodpecker's nest-hole tend to be circular in western Europe, more oblong in more eastern localities.

8996. **ROBIEN, PAUL.** Opfer des Vogelzuges an der Küste. [Casualties of bird migration on the coast.] *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 47. 1930.—A list of many birds, apparently victims of cold or stormy weather, which were found on the coast of Pomerania.

8997. **ROBINSON, H. W.** Starlings nesting in fork of tree. *British Birds* 23(9): 253. 1930.—In England.

8998. **ROTHSCHILD.** [Breeding of Grus antigone.] *Bull. British Ornith. Club* 50(341): 67-68. 1930.—In captivity.

8999. **RÜPPELL, WERNER.** Vom Frühjahrszug des Weissen Storches 1930. *Ornithol. Monatsschr.* 55(8): 116-118. 1930.—In this year the white stork, *Ciconia ciconia*, migrated in unusual numbers in west-east direction along the Kurische Hoff, East Prussia.

9000. **RUSSELL, G. R.** Flocks of cuckoos on migration. *Scottish Naturalist* 1930(183): 94. 1930.—In Scotland, April 27.

9001. **RYVES, B. H.** Late breeding of magpies. *British Birds* 23(9): 248. 1930.—On a Cornwall farm, where magpie nests are regularly destroyed, a brood did not leave the nest till about Nov. 10. This indicates the tenacity of the species in reproduction.

9002. **SERLE, WILLIAM.** Fly-catching action of skylark. *British Birds* 24(4): 105. 1930.—*Alauda a. arvensis* in Holland.

9003. **STADLER, HANS.** Die Stimme des Habichtskauzes (Syrnium uralense Pallas). *Ornithol. Monatsschr.* 55(8): 113-116. 5 fig. 1930.—A detailed study of the notes of the Ural owl in East Prussia, especially in comparison with those of the tawny owl.

9004. **STANBERY, C. B.** A strange nest. *Bird-Lore* 32(3): 202. 1930.—Bronzed Grackle nesting in a box, in Tennessee.

9005. **STEVENS, O. A.** "The white-throated sparrow." *North & South Dakota Hortic.* 2(9): 13-15. 1930.—Note on migration.

9006. **TALLIS, T. R.** Young kestrels killing smallest of brood. *British Birds* 24(4): 107. 1930.—*Falco t. tinnunculus*, in Breconshire.

9007. **THOMAS, EDUARD.** Fangballspiel einer Saatkrähe. *Aus der Heimat* 43(1): 29. 1930.—A rook in flight repeatedly tossed a small object from its bill and caught it again in the air.

9008. **WHARTON, WILLIAM P.** A white-throated sparrow return-4 W. *Bird-Banding* 1(2): 84. 1930.—A banded bird recorded for 5 successive winters at Summerville, S. Carolina.

9009. **W[HITTLE], C. L.** An old white-breasted nuthatch. *Bird-Banding* 1(2): 83. 1930.—A banded bird in New Hampshire at least 7½ yrs. old.

9010. **W[HITTLE], C. L.** A wood thrush return-1 S. *Bird-Banding* 1(2): 83. 1930.—A banded *Hylocichla mustelina* recorded in 2 different summers at New Haven, Connecticut.

9011. **WHITTLE, C. L.** A song sparrow return and recovery. *Bird-Banding* 1(2): 83-84. 1930.—A banded bird recorded in Massachusetts in late summer, 1925 and 1926, and in western New York in Sept., 1929.

LOCAL AND FAUNISTIC

9012. **CLELAND, J. B., et al.** [Notes on birds.] *S. Austral. Ornithol.* 10(4): 124-143. 1929.—Articles dealing with records of and notes on the birds of various localities in S. Australia and the Western District of Victoria, and on additions to the collection of the S. Australia Mus. A description is given of the flesh of the Yellow-nosed Albatross (*Diomedea chlororhyncha*) and measurements of Giant Petrels (*Macronectes giganteus*).—*J. B. Cleland.*

9013. **KÖHLER, RICH., und RUD. ZIMMERMANN.** Eine noch unbekannte Siedlung der Saatkrähe, Corvus fr. frugilegus L., in Sachsen. *Mitteil. Ver. Sächs. Ornithologen* 2(6): 283-284. 1929.—A recently discovered rookery, containing about 200-250 pairs, is the second one known at present in the lowland of northern Saxony.

9014. **KUBLI, HANS.** Zwei seltene Brutvögel im st. gallischen Rheintal. *Jahrb. St. Gallischen Naturwiss. Ges.* 64: 74-81. 1 pl. 1928(1929).—In recent years the author has found in the Rhine Valley in St. Gallen, Switzerland, several colonies of *Turdus pilaris**, which is extending its breeding range southward. Details of the nesting are given. *Sterna hirundo** has become quite rare, owing to the scarcity of nesting sites and frequent destruction of nests by floods.

9015. **[LORETS, V. F.]** ЛОРЕЦ, В. Ф. Список птиц окрестностей Сарепты. [An annotated list of the birds in the vicinity of Sarepta, southeastern European Russia.] Известия Саратовского Общества Естествоиспытателей. (*Ber. Saratower Naturforscherges.* [*Saratow*]) 3(1): 73-95. 1929.—Two hundred and seventy spp. are listed, common names in Russian, German, and Latin being given.

9016. **PETIT, L.** Observations ornithologiques faites

au cours de l'hiver 1929. *Bull. Soc. Zool. France* 54: 270. 1929.—The unusually cold winter of 1929 caused the death of thousands of small birds and drove various northern water birds into the interior of France.

9017. **PRINZ, H. Das Vorkommen der Wasseramsel, Cinclus c. aquaticus (Bechst.), als Brutvogel an der Roten und Wilden Weisseritz.** *Mitteil. Ver. Sächs. Ornithologen* 2(5): 194-201. Map. 1929.—A record of nesting dippers on these 2 streams in the years 1924-28.

9018. **SCHAUB, S. Über einen neuen Riesenvogel aus den Teredinasanden von Monthelon bei Epernay. [A new gigantic bird from the Teredina sands of Monthelon near Epernay.]** *Verhandl. Schweizer. Naturforsch. Ges.* 110: 195. 1929.—Descriptions of tarsal and toe elements, provisionally referred to *Diatryma*, Ypresian (Lr. Eocene).

9019. **SCHORGER, A. W. The birds of Dane County, Wisconsin.** [To be concluded.] *Trans. Wisconsin Acad. Sci. Arts & Lett.* 24: 457-499. 2 pl. 1929.—Introductory remarks on physiography, principal trees, life zones, and seasonal distribution are followed by a systematic list of spp., including notes on status, habits, food, voice, breeding, etc. The present instalment covers the families from Gaviidae to Picidae.

9020. **SCHOUTEDEN, H. Un genre de Ploceides nouveau pour la faune congolaise.** *Rev. Zool. Bot. Africaines* 17(3): 379-380. 1929.—*Ploceipasser superciliosus brunnescens* Grote was taken at Mahagi, on Lake Albert, and *P. rufoscapulatus* at Elizabethville, Katanga.

9021. **SCHÜZ, E. Vom Frühjahrs-Durchzug des Polar-Seetauchers, Colymbus arcticus L., auf der Kurischen Nehrung.** *Mitteil. Ver. Sächs. Ornithologen* 2(6): 289-294. 1 pl., 1 fig. 1929.—From May 19 to 25 migrating flocks of the black-throated diver passed over in late afternoon, chiefly in a northwesterly direction.

9022. **SEEMAN, ERNEST. A catalogue of the birds of Durham County, North Carolina.** *Jour. Elisha Mitchell Sci. Soc.* 45(1): 150-163. 1929.—The report is based upon observations made during a period of 31 years; 143 spp. and varieties are listed.—*R. E. Coker.*

9023. **SPENSE, REGINALD, S. H. PRATER, and SALIM A. ALI, editors. Migration of wildfowl.** *Jour. Bombay Nat. Hist. Soc.* 33(3): 719-720. 1929.—A note.

9024. **[VELIKOKHAT'KO, F.]** ВЕЛИКОХАТЬКО, Ф. Про деяких рідких птахів Білоцерківщини. **[Some rare birds of Bila Zerkva, Ukraine.]** [German summary.] Всеукраїнська Академія Наук, Труды Фізично-Математичного Відділу (Збірник Праць Зоологічного Музею ч. 7) (*Acad. Sci. Ukraine, Mém. Cl. Sci. Phys. et Math.*) (*Trav. Mus. Zool. No. 7*) 13(1): 195-202. 1929.—Notes on 20 spp.

9025. **VIETINGHOFF-RIESCH, A. Materialien zur Ornis der sächsischen und preussischen Lausitz.** *Mitteil. Ver. Sächs. Ornithologen* 2(6): 256-283. 1929.—Notes on the distribution and habits of numerous spp.

MAMMALIA

GERRIT S. MILLER, *Editor*

REMINGTON KELLOGG, *Associate Editor*

(See also in this issue Entries 6101, 6401, 7558, 7564, 7677, 8181, 8212, 8213, 8231, 8232, 8235, 8266, 8330, 8337, 8859, 9051, 9056)

9026. **CABRERA, ÁNGEL. Sobre el supuesto antropóideo de Venezuela. [The supposed anthropoid from Venezuela.]** *Physis* [*Buenos Aires*] 10(35): 204-209. 1930.—*Ameranthropoides loysi*, recently described by Montandon as a representative of a new family, is in reality a member of the Cebidae (subfamily Atelinae). It represents a new sp., and possibly a new genus, but contributes nothing new to the question of the phylogeny of the Primates, as supposed by Montandon.

9027. **CASTELLANOS, ALFREDO. Nuevos restos del hombre fósil. (Nota informativa.) [New remains of fossil man.]** *Physis* [*Buenos Aires*] 10(35): 175-181. 3 fig. 1930.—A mandible*, from the Middle Pleistocene(?) and presumably from the Province of Buenos Aires, is described. It provides further evidence of the existence of *Homo sapiens* in South America much earlier than in Europe.

9028. **DAL PIAZ, GIAMBATTISTA. Nuovo genere e nuove specie di Artiodattili dell'oligocene veneto. [New genus and new species of Artiodactyla from the Venetian Oligocene.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 12(1/2): 61-64. 1930.—**ANTHRACOCHOERUS** (p. 62), *A.* **stehlini** (type) (p. 63), and *A.* **fabianii** (p. 63), both from Lower Oligocene (Sannoisian), types in Mus. Geol. Padova. These forms show some resemblance to the Anthracotheridae and the Suidae, but apparently belong to some group distinct from either family.

9029. **EHRENBERG, K. Zur Frage der systematischen und phylogenetischen Stellung der Bärenreste von Hundsheim und Deutsch-Altenburg in Niederösterreich.** *Palaeobiologica* [*Wien*] 2(4/5): 213-221. 2 pl. 1929.—Investigation of the material in the Museum of Natural Sciences in Vienna, carried on with especial view to an analysis of dental components, led to the conclusion that the bear from Hundsheim, previously studied by Freudenberg, manifested individual spelaeoid features common to arctoid habits, whereas the bear from Deutsch-Altenburg should be classed as a typical *Ursus spelaeus* with distinct arctoid characteristics. In conclusion the work points to the concurrence of this fact with the opinion expressed elsewhere by the author on the phylogenesis of brown bears.—*K. Ehrenberg* (*transl.*).

9030. **GILLESPIE, ALEX. S. Some observations of the chamois. Rupicapra rupicapra Linn. (R. tragus Gray).** *No. Western Nat.* [*Scotland*] 5(3): 148-150. 1930.—Field note.

9031. **HATT, ROBERT T. The biology of the voles of New York.** *Roosevelt Wild Life Bull.* 5(4): 513-623. 17 pl. (1 col.) 1930.—An extensive review is given of the life histories of *Microtus pennsylvanicus, Clethrionomys gapperi, Pitymys pinetorum scalopsoides,* and *Synaptomys cooperi.* It is concluded that the voles are highly beneficial except where locally over-abundant. Adequate protection from the voles may be afforded by elimination of their habitats and encouragement of their enemies. Extensive bibliography.—*R. T. Hatt.*

9032. **HATT, ROBERT T. The relation of mammals to the Harvard Forest.** *Roosevelt Wild Life Bull.* 5(4): 625-671. 11 pl. 1930.—The Harvard Forest at Petersham, Mass., consists of various natural forest types and plantations which are chiefly pure stands. Red squirrels damage plantations of European larch, Scotch pine, Norway spruce. Porcupines injure larch, Scotch pine and hemlock. Microtines girdle Scotch pine in plantations. Deer feed on ash growing in natural stands. Injury has resulted chiefly from putting small plantations of tree species subject to mammal damage adjacent to natural forests in which the winter food supply is inadequate. The planting of pure stands has proved inadvisable as such stands have a high amount of mammal and insect damage and where there is extensive destruction of the trees the plantation becomes a total loss. Notes on other mammals of the Forest are recorded.—*R. T. Hatt.*

9033. **HUGUES, ALBERT. [Two local mammals.]** *Bull. Soc. d'Étude Sci. Nat., Nimes* 44: 155. 1926.—*Myotis nattereri,* new to Gard; beaver spreading up the Gardon River.

9034. **KELLOGG, REMINGTON. A new fossil toothed whale from Florida.** *Amer. Mus. Novitates* 389. 10p.

3 fig. 1929.—**KOGIOPSIS** with *K.* **floridana*** (p. 2), is based on the symphysial portion of the lower jaws, from land pebble phosphate deposits (Upper Miocene or Lower Pliocene) of Polk Co., Florida. This genus resembles *Kogia* in the implantation of the teeth, but differs in being of larger size, and in having a broader mandibular symphysis, which bears 6 instead of 8 teeth. *Kogiopsis* is referred tentatively to the Kogiidae.—*L. S. Russell.*

9035. MAXSON, JOHN H. A Tertiary mammalian fauna from the Mint Canyon formation of southern California. *Carnegie Inst. Washington Publ.* 404. 77-112. Map. 17 fig. 1930.—The fauna is probably near the Middle of the upper Miocene. It includes 2 Testudinata; a fragment of a bird; *Aelurodon* sp.* [Carnivora]; *Hypolagus* ? cf. *apachensis** [Lagomorpha]; *Trilophodon* sp.* [Proboscidea]; *Parahippus* ? aff. *mourningi**, *Merychippus sumani**, *M.* sp., *M. intermontanus**, *Protohippus* sp.*, *Hipparion* ? sp. *A**, *H.* ? sp. *B**, and *H.* ? aff. *mohavense** [Equidae]; fragment of a rhinocerotid; *Prosthennops* ? sp.* [Dicotylidae]; *Miolabis* **californicus*** (p. 106), type in Univ. of California, and *Alticamelus* ? sp.* [Camelidae]; *Merycodus* aff. *necatus** and antilocaprid indet. [Antilocapridae]; oreodont cf. *Merychyus** [Oreodontidae].

9036. MILLER, GERRIT S. Jr. A note on the skeletons of two Alaskan porpoises. *Smithsonian Misc. Coll.* 82(13) : 1-2. 1 pl. 1930.—The peculiarities in the skeleton of *Phocoenoides dalli** are pointed out, comparison being made with *Phocaena phocoena**.

9037. MILLER, GERRIT S. Jr. The supposed occurrence of an Asiatic goat-antelope in the Pleistocene of Colorado. *Smithsonian Misc. Coll.* 82(14) : 1-2. 2 pl. 1930.—The leg bones upon which *Nemorhoedus palmeri** Cragin was based prove to be those of *Ovis canadensis** Shaw.

9038. MILLER, GERRIT S. Jr. Three small collections of mammals from Hispaniola. *Smithsonian Misc. Coll.* 82(15) : 1-10. 2 pl. 1930.—Remains of 8 mammals were obtained in a crevice in Haiti, probably once the nesting place of the giant Haitian barn owl. *Rattus rattus* is the only introduced European rodent represented. Canines of *Nesophontes* exhibit sexual dimorphism, a condition perhaps unique among insectivores. Comparison of the skull of *Brotomys* with that of the mainland *Proechimys* shows that they are no more than generically distinct. A collection of 6 forms from caves on Gonave Is. includes most of the genera of extinct mammals found in caves of the Haitian mainland. The author also reports on 7 forms derived from owl pellets (probably of the small living barn owl) and on 6 forms (besides remains of 3 European mammals) from an Indian deposit in the Dominican Republic. The presence of remains of *Nesophontes*, *Brotomys*, and *Isolobodon* in fairly fresh owl pellets indicates that members of these supposedly extinct genera may be still alive. The presence of remains of *Cavia porcellus* in the Indian deposit raises the question whether this South American animal was introduced by early native trade or by the Spaniards.

9039. OGNEV, S. J. Übersicht der in der russischen Fauna einheimischen Springmäuse der Gattung Dipodipus. *Zool. Anz.* 91(5/8) : 207-216. 2 fig. 1930.—The author treats 4 subspp. of *Dipodipus sagitta*, giving synonymy, type locality, description, and geographic distribution of each. The sp. ranges from southern Russia to Turkestan and Siberia. *D. s.* **innae** (p. 207), southern Russia, type in author's coll.

9040. PARODI, RODOLFO. Contribución a la osteología de los grandes felinos vivientes de la Argentina. [Osteology of the large living cats of Argentina.] *Physis [Buenos Aires]* 10(35) : 74-84. 2 pl., 2 fig. 1930.—The author proposes to unite *Felis onca, F. leo,* and *F. tigris* in the subg. *Panthera*, but disagrees with Pocock's conception of the genus *Panthera* and subfamily Pantherinae. He gives a detailed description and comparison of the skulls of *F. onca** and *F. puma**, with a few notes on other skeletal parts. There are also brief remarks on the skulls of *F. concolor* and *F. pardalis.*

9041. REGAN, C. TATE. The evolution of the Primates. *Ann. and Mag. Nat. Hist.* 10th Ser. 6(34) : 383-392. 1930.—Five sub-orders are recognized: (1) Lemuroidea (Lemuriformes auct.); (2) Lorisoidea (Lorisiformes auct.+Omomyidae); (3) Tarsioidea; (4) Platyrrhina; (5) Catarrhina. The Lemuroidea include the Madagascar lemurs, and the Eocene Adapidae, which are the most generalized Primates known. The Catarrhina originated in Africa direct from Lemuroidea, which group also gave rise to the Lorisoidea, and these in turn to the Tarsioidea in Europe and to the Platyrrhina in South America. The structure and distribution of recent and extinct Primates is discussed.—*C. T. Regan.*

9042. ROMER, ALFRED S. A fresh skull of an extinct American camel. *Jour. Geol.* 37(3) : 261-267. 5 fig. 1929.—The author describes a skull of the camel, *Camelops hesternus**, found in a cave at Fillmore, Utah. No replacement of the bone has taken place; the ventral surface still retains traces of the rectus capitis muscles; the mastoid and paroccipital are seen to be closely united for much of their length, the glenoid is situated well up the side of the brain case, there are large post-temporal openings, and the specimen well illustrates the characteristic difference in position of the orbits in the extinct and the living genera. The author concludes from this evidence that a native American camel, supposedly extinct since the early Pleistocene, existed until recently in the Great Basin region.—*D. J. MacNeil.*

9043. RUSCONI, CARLOS. Sobre anomalías dentarias numéricas en algunos guanacos vivientes (Lama guanicoe Müller). [Supernumerary teeth in some living guanacos.] *Physis [Buenos Aires]* 10(35) : 199-203. 3 fig. 1930.—Two cases of supernumerary premolars* in *L. guanicoe* are described. This anomaly is interpreted as numerical rather than atavistic and reversional.

9044. ST. LEGER, J. A short description of two new species of Dendromus from S. W. Africa. *Ann. and Mag. Nat. Hist.* Ser. 10 6(35) : 622. 1930.—*D. mesomelas* **major** and *D. nigrifrons* **shortridgei** (p. 622), Ssanukanu Village, Grootfontein District. Types in Brit. Mus.

9045. SCHWARZ, ERNST. Die Wildkatze der Balearen. *Zool. Anz.* 91(5/8) : 223-224. 1930.—*Felis catus* **jordansi** (p. 223), type in Mus. König, Bonn.

9046. SODY, H. J. V. On some new or insufficiently known mammals from Java, Borneo and Celebes. *Natuurkundig Tijdschr. Nederlandsch-Indië* 90(2) : 258-273. 1 pl. 1930.—An annotated list containing notes and descriptions, as follows: *Pithecus aygula fredericae**, *Callosciurus nigrovittatus madsoedi, Crocidura minuta, Cynopterus brachyotis angulatus, Hipposideros galerita galerita,* new to Celebes, *H. a longicauda. Miniopterus* **ravus** ♀ (p. 271), Java, *M.* **witkampi** ♂ (p. 272), Borneo, and *M. medius.*

9047. TRATMAN, E. K. Report on excavations in Ireland in 1928. *Univ. Bristol. Proc. Spelaeolog. Soc.* 3(3) : 109-125. 3 pl., 4 fig. 1928(1929).—A cave at Kilgreany was occupied by man in the Neolithic period and in the bronze and iron ages. Remains of a late Pleistocene fauna, including a field vole new to Ireland, were found.

9048. [VINOGRADOV, B. S., and S. I. OBOLENSKII.] ВИНОГРАДОВ, Б. С. и С. И. ОБОЛЕНСКИЙ. Вредные насекомые и другие животные в СССР. I. Вредные грызуны. Данные по биологии и систематике. II. Борьба с грызунами в СССР. в 1925-1928 гг. **[Injurious insects and other animals in USSR. I. Habits and classification; II. Rodent control in USSR. in 1925-1928.]** [English summary.] Всесоюзная Академия С. Х. Наук им. Ленина. Труды по Прикладной Энтомологии (*Lenin Acad. Agric. Sci. Works of Appl. Ent. Leningrad*) 13(5) : 257-324. 1930—Paper 1 contains abstracts of various papers published during 1925-1928. Paper 2 is based on reports of Plant Protection Stations and Depts. of Agric. Among the rodent pests the following are mentioned: in the north, rats and mice in stores, water-rats, and rabbits in gardens; spermophiles and

field mice are common pests in the central region; spermophiles, mice, water-rats, rabbits and others are the best known pests in the Volga region, Ukraine and North Caucasus; spermophiles are absent in Transcaucasia, but mice are very noxious; in central Asia the *Nesokia, Hystrix, Spermophilopsis, Citellus,* and many spp. of mice and rats are common; in Siberia squirrels, water-rats, mice, *Myospalax,* hamster (*Cricetus cricetus*), and chipmunk are of economic importance; and in the Far East, the caraco-rat (*Rattus norvegicus caraco*) is very injurious to rice.

9049. WALLIS, C. W. K. Notes on British bats—with special reference to those of the Midland Plateau. *Proc. Birmingham Nat. Hist. and Philos. Soc.* 16(1): 1-12. 1930.—Eight spp. are recorded from the Midland Plateau, and 4 others are recognized on the British list. The author gives a brief description of each and detailed notes on flight, feeding, roosting, and other habits.

9050. YOUNG, C. C. On the mammalian remains from Chi Ku Shan near Chou Kou Tien. [Chinese summary.] *Geol. Surv. China. Palaeontol. Sinica* C 7(1): 5-19. 2 pl., 1 fig. 1930.—The following are described: *Canis** sp. and *Vulpes* **chikushanensis*** (p. 7) [Canidae]; *Meles* cf. *leucurus** [Mustelidae]; Muridae indet.; *Hystrix* sp. [Hystricidae]; *Lepus* cf. *oiostolus** [Leporidae]; *Cervus* sp. [Cervidae]. The Chi ku Shan deposits apparently correspond to the near-by *Sinanthropus* deposits. The location was probably a fissure, where rodents were brought in by carnivores. There is a bibliography of 12 titles.

SYSTEMATIC ZOOLOGY

(GENERAL)

9051. BANZHAF, WALTER. Zur Fauna der Greifswalder Oie. *Dohrniana* [*Stettin*] 11: 190-236. 11 fig. 1931.—A description of this small island off the coast of Pomerania is followed by annotated lists of insects, mollusks, amphibians, reptiles, birds, and mammals found during a visit in July.

9052. GRAHAM, DAVID. A collecting trip to Washan and Mount Omei. *Jour. West China Border Res. Soc.* 3: 30-33. 1926/29[1930].—Narrative of a zoological expedition to mountains of Szechwan in 1925.

9053. JOANNIS, J. de. Les règles internationales de nomenclature zoologique. *Amateur de Papillons* 5(13): 193-201; 5(14): 209-217; 5(16): 245-252. 1931.

9054. MacGINITIE, G. E. Notice of extension of range and of new species of various invertebrates. *Ann. & Mag. Nat. Hist.* 6(31): 68. 1930.—Of 14 spp. mentioned as occurring at Monterey Bay, 8 were known from other parts of California, one, *Phyllaplysia taylori,* had been known only from Brit. Columbia, and 5 have been recently described as new.

9055. MARR, J. E. Fossil vertebrates. *Nat. Hist. Wicken Fen* Pt. 4. 298-299. 1928.—In the fens of Cambridgeshire have been found skeletons of 12 birds, 7 ungulates, 2 rodents, 6 carnivores, and of man.

9056. MEER MOHR, J. C. van der. Notes on the fauna of Pulau Berhala. *Treubia* 12(3/4): 277-298. Map. 3 fig. 1930.—The topography and vegetation of this group of 2 small islands off the E. coast of Sumatra are briefly described. The various faunal elements are discussed, and lists are given of 4 mammals, 24 birds, 16 reptiles, 1 amphibian, 20 ants, 8 Hemiptera, 20 Orthoptera, 27 spiders, 4 Acari, 10 mollusks, and 5 Oligochaeta.

9057. MÜLLER, ARNOLD. Contribuţiuni la cunoaşterea faunei Insulei Şerpilor. [The fauna of Serpent Island (Black Sea).] *Intâiul Congr. Nat. Naturalişt. România* 1: 337-344. 1928(1930).—Two birds, 1 reptile, and 35 arthropods are listed.

9058. SCHULZE, F. E., W. KÜKENTHAL, K. HEIDER, fortgesetzt von R. HESSE, Schriftleiter: TH. KUHLGATZ. Nomenclator animalium generum et subgenerum. Band 3. 1939-2098. Preussischen Akademie Wissenschaften: Berlin, 1931.—Includes letters Macroglossap.—Microto.

9059. TOLMER, L. Notes sur la faune marine de la région de Luc-sur-Mer. Juillet-Septembre 1928. *Bull. Soc. Linn. Normandie* 1: 77-80. 1928(1929).—Records of collecting certain Coelenterata, Echinodermata, Vermes, Nemertea, Crustacea, and Mollusca.

9060. WOLFF, MAX, und ANTON KRAUSSE. Die wirbellosen Tiere. Eine systematische Uebersicht. [Invertebrate animals. A systematic review.] 350p. 337 fig. Gustav Fischer: Jena, 1930. Pr. 20 M.

9061. ANONYMOUS. Plymouth marine fauna. 2nd ed. Compiled from the records of the Laboratory of the Marine Biological Association. 371p. Marine Biological Assoc. of the United Kingdom: Plymouth, England, 1931. Pr. 2s. 6d.—The first section of this volume consists of a description of the grounds and of the physical conditions that obtain in certain typical areas of the Plymouth district, together with a brief characterization of the fauna of these particular areas. The second section contains a detailed list of the various species of animals (Protozoa, Porifera, Coelenterata, Ctenophora, Platyhelminthes, Nemathelminthes, Nemertea, Annelida, Rotatoria, Sipunculoidea, Gephyrea, Phoronidea, Crustacea, Pycnogonida, Insecta, Mollusca, Echinodermata, Bryozoa, Prochordata and Pisces) that have been recorded from the entire district. The information thus supplied in the 2 sections, when combined, furnishes for each species a general idea of the conditions under which it lives.—*C. Juday.*

9062. ANONYMOUS. Regole per la nomenclatura zoologica italiana. [Rules for Italian zoological nomenclature.] *Boll. Zool. Unione Zool. Italiana* 1(2): 83-88. 1930.

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 | APRIL, 1932 | NUMBER 4

Entries 9063-12066

BIOGRAPHY, HISTORY, AND BIBLIOGRAPHY

CARROLL W. DODGE, *Editor*

(See also in B. A. 6(3): Entries 6054, 6231, 6282, 7196, 8140, 8200, 8281, 8590, 8946; and in this issue 9174, 9195, 9297, 10746, 10755, 10930, 10956, 11024, 11027, 11184, 11535, 11549, 11709, 12004)

HISTORY AND BIBLIOGRAPHY

9063. **ADAMS, J. A bibliography of Canadian plant geography to the end of the year 1920; 1921-1925.** *Trans. Roy. Canadian Inst.* 17(2): 227-265, 267-295. 1930.—The present installments contain citations 1755-2765, arranged alphabetically, comprising the literature of 1911-1925. Citations on fungi, plant diseases, algae, and bryophytes are included.

9064. **BOTHA, C. GRAHAM. An 18th century ms. on agricultural improvement at the Cape.** *S. African Jour. Sci.* 27: 573-575. 1930.

9065. **BRAUER, LUDOLPH, ALBRECHT MENDELSSOHN-BARTHOLDY, et al. Forschungsinstitute, ihre Geschichte, Organisation und Ziele. [Research institutes—their history, organization, and aims.] Band 1 und 2. 470p. Paul Hartung: Hamburg, 1930. Pr. 80 M.**

9066. **CORNING, HOWARD (editor). (Foreword by RUTHVEN DEANE.) Journal of John James Audubon, made during his trip to New Orleans in 1820-1821. 234p.** The Business Histor. Soc.: Cambridge, 1929.—This journal covers the period from Oct. 12, 1820, to Dec. 31, 1821. On the former date Audubon embarked at Cincinnati on a flat boat bound for New Orleans, which was reached on January 7. As he himself states his situation: "Without any money My Talents are to be My Support and My enthusiasm my Guide in My Difficulties, the whole of which I am ready to exert to [meet] keep, and to surmount." The journal, which is published exactly as written, is not a continuous narrative but a series of jottings strung together practically without punctuation. The spelling is sometimes curious and by no means consistent. Notes of events and records and descriptions of birds are indiscriminately mingled, and the lack of punctuation often obscures the meaning. On the trip down the Mississippi frequent hunting excursions ashore were made, and there are many references to birds and animals seen. Many of the birds killed are carefully described and notes made of measurements, wt., food, and habits. There are many notes of birds now rare or extinct in that region; turkeys in abundance, ivory-billed woodpeckers common far north of their present range, and flocks of Carolina paroquets. In March, 1821, near New Orleans, he records the passage of millions of golden plover and the way they were being unmercifully hunted. After his arrival in New Orleans Audubon supported himself by giving drawing and music lessons. He complains frequently of being in low spirits, and also of the unappreciativeness of persons to whom he showed his drawings. As much time as possible was spent on his drawings, and the market was visited almost daily in search of birds. In June, 1821, he went to a plantation where he acted as drawing master to the family, remaining there or at similar places until Oct. After his return to New Orleans, the journal is principally a record of lessons given and anxiety for the arrival of his family; with references to money difficulties and birds obtained and drawn. Soon after the arrival of his wife and sons the journal ends. The whole gives a rather vivid picture of Audubon the man and of his work in preparing the "Birds of America."—*M. T. Cooke.*

9067. **CORNING, HOWARD (editor). (Foreword by FRANCIS H. HERRICK.) Journal of John James Audubon, made while obtaining subscriptions to his "Birds of America" 1840-1843. 173p.** The Business Histor. Soc.: Cambridge, 1929.—Audubon was at this time soliciting subscriptions for the octavo edition of the "Birds of America" and the "Quadrupeds," occasionally selling copies of the large work. For this purpose he undertook a series of journeys through New York, New England, Canada, and as far south as Richmond. Records of the books sold and money received are given as well as many interesting comments on persons visited, many of whose names are very familiar. While in Canada he was especially interested in obtaining specimens of animals new to him. The few comments on wild life deal mostly with mammals instead of with birds as heretofore, his interest being now centered on the preparation of the "Quadrupeds." The journal covers the period from Aug., 1840, when he was already in Boston, to Oct., 1842. In form it is quite different from the New Orleans journal, being a more connected record of events addressed to his family.—*M. T. Cooke.*

9068. **DUDYCHA, GEORGE J. Ideas of origin among the ancient Egyptians and Babylonians.** *Sci. Month.* 32(3): 263-269. 1931.—Although it is customary for writers who deal with the history of evolutionary thought to begin with the Greeks, there are the more ancient significant ideas of the Egyptians and Babylonians. Among the Egyptians Beb-er-tcher, the creator god, suggests "the boundless" of Anaximander; and Nu, the great watery abyss, in which all things are potential and to which all things return, suggests not only Anaximander but Augustine. They also emphasized the primacy of fire, the potentiality of all things in divine intelligence, and an epigenetic process through which souls pass on their way towards materiality. Among the Sumites and Semites water is considered the primal source of all things. The idea of conflict and subsequent triumph of the creator, which suggests Empedocles, was originated by the Semitic-Babylonians. Thus the Greeks were not the first to speculate about the origin of things.—*G. J. Dudycha.*

9069. **FULTON, JOHN F. A note on the origin of the term "physiology."** *Yale Jour. Biol. and Med.* 3(1): 59-62. 1930.—The word "physiologia" and its Greek original were used by classical writers as synonymous with "natural philosophy"—the study and description of all natural objects. The English derivative was used

in this sense down to the end of the 18th century. The first to employ the term "physiology," or its Latin original, in the more restricted sense, i.e., "the science of the normal functions and phenomena of living things," was apparently the French physician, Jean Fernel. In 1554 he published a volume entitled "Medicina" which, with a singularly modern air, was divided into 3 parts: "Physiologiae," "Pathologiae," and "Therapeutice." In the part devoted to physiology the structure and functions of the human body were set forth. Fernel's usage was taken up by other medical writers, and for a time the word was used to include the study of structure as well as function, and it was not until the beginning of the 19th century that "anatomy" and "physiology" were regularly used separately to designate different parts of a medical curriculum.

9070. **GUNDER, J. D. North American Institutions featuring Lepidoptera. XVII. Bishop Museum, Honolulu, T. H.** *Ent. News* 41(8): 249-252. 3 pl. 1930.

9071. **HÖFER. Der Einfluss von tierischen Erkrankungen auf Kriegsausgänge. Eine literarische Studie.** [Influence of animal diseases on the outcome of wars.] *Ergänzungsbände Zeitschr. Veterinärk.* Heft 2. 1-64. 1931.—A study from the Middle Ages to modern time, with bibliography.

9072. **[JULLY.] Communication sur les lettres adressées par Chapelier en mission à Madagascar au citoyen préfet de l'Ile de France (de Décembre 1803 à Mai 1805) extraites des archives de Port-Louis et annotées par M. Jully 1.** *Bull. Acad. Malgache* 4: 1-56. 1905/06(1928).—Several letters of Chapelier, who succeeded Michaux in natural history work in Madagascar, are printed. They include descriptions of new genera and sp. of plants, and notes on other branches of natural history. Apparently Chapelier made use of documents left by Michaux.

9073. **LABERNADIE, V. De l'ancienneté de la lèpre d'après les Védas.** *Bull. Soc. Path. Exotique* 24(3): 175-176. 1931.—Evidence is offered to show that (contrary to Jeanselme) leprosy is not mentioned in the most ancient of the Vedas, or before the Christian era.

9074. **LAMY, EDOUARD. Les conchyliologistes Bruguière et Hwass.** *Jour. Conchyliol.* 74(1): 42-59. 1930.—Biographic and historical notes are collated. The Hwass collection, which was utilized in preparation of the plates for the Encyclopédie Methodique, is now in the Geneva Museum.—*H. B. Baker.*

9075. **LEATHES, J. B. The Harveian oration on the birth of chemical biology.** *Brit. Med. Jour.* 2(3642): 671-676. 1930.—In the 17th century modern physiology was born with the work of Harvey and the work on respiration after Harvey's death by John Mayow [1643-1679], the all-but-forgotten author of "De respiratione." This tract corrected many of the current errors with regard to the physiology of respiration, defined a "something in the air" absolutely necessary for life which enters the blood in respiration (current theory taught that the air merely cooled the blood), and thereby anticipated Priestley and Lavoisier by more than a century in the recognition of the existence of O.

9076. **MATSUURA, HAJIME. A bibliographical monograph on plant genetics (genetic analysis) 1900-1925.** 499p. Tokyo Imperial University: Tokyo, 1929.

9077. **[MEIER, F. C., et al.] Report of the twenty-second annual meeting of the American Phytopathological Society.** *Phytopath.* 21(5): 561-576. 1931.—Report of the Cleveland, Ohio, meeting Dec. 30, 1930–Jan. 1, 1931, with biographical sketches (by the committee on necrology: **A. G. JOHNSON, G. P. CLINTON, and M. B. WAITE**) of William Allen Orton (p. 575), Emil Godfred Arzberger (p. 576), and Nathaniel Orson Howard (p. 576).—*W. A. Whitney.*

9078 **MINER, JOHN R. The cost of biological books in 1930.** *Quart. Rev. Biol.* 5(4): 490-492. 1930.

9079. **MONTEIRO, HERNÂNI. L'Institut d'Anatomie de la Faculté de Médecine de Porto: [Portugal].** *XVéme Congr. Internat. Anthropol. et Archéol. Préhist. Coimbre-Pôrto, September 1930.* 109p. 22 fig. Araüjo & Sobrinho: Pôrto, 1930.—History, organization, equipment, and work.

9080. **MONTESSUS de BALLORE, R. de. Index generalis 1931.** 2250p. French & English editions. Edition Spes: Paris, 1931. Pr. 225 fr.

9081. **NEUBURGER, MAX. Essays in the history of medicine.** Medical Life Press: New York, 1930. Pr. $5.

9082. **OFFORD, J. MILTON. Recollections of fifty years with the Quekett Microscopical Club.** *Jour. Quekett Microscop. Club* 16(97): 177-194. 1931.

9083. **PAGET, R. A. S. Mouth-posture forms of Phoenician cuneiform symbols.** *Nature [London]* 127 (3214): 850-851. 3 fig. 1931.—The interpretation by M. Virolleaud of the Phoenician cuneiform alphabet of Ras Shamra indicates that the symbols for the letters were roughly taken from representations of the position of the lips and tongue and confirms the writer's interpretation of the mouth symbolism in Sumerian cuneiform.

9084. **PAINTER, CHARLES F. The medical museum. Its rôle in the teaching of medical history.** *New England Jour. Med.* 204(20): 1047-1051. 1931.

9085. **PIRES de LIMA, J. A. Fora da aula.** [From the lecture halls.] 334p. Araújo & Sobrinho, Suc.: Porto, 1929.—This is a description of the progress of science in Portugal within the last 50 yrs., written in appraisal of the work done by a small group of men. The work of Portuguese scientists has been appreciated by France, So. America, Belgium, and has also found acknowledgement in the U. S. A. Good investigations have been made on tropical diseases, promoted more recently by contacts with scientists in African, French, and Portuguese colonies. At the close of the last century studies of anatomy, biology, histology, and surgery were in the foreground. As early as 1641 a surgeon worked at Porto, but political and economic difficulties stunted the growth of the sciences until within the last 30 yrs. The names luminescent among others are Ramón y Cajal; Ferreira da Silva; Carlos Ribeiro, and the geologist, Paulo Choffat.—*B. Bickel.*

9086. **POP, EMIL. Contributii la istoria botanicei Romanesti.** [History of Rumanian botany.] [With German summary.] *Bull. Grad. Bot. Muz. Bot. Univ. Cluj* 10(1/4): 185-196. 1930.—The first floristic researches in Wallachia begin with I. G. H. Kramer, who was a physician in Timişoara about 1720. He also described some plants collected during a journey through Oltenia. A later traveler, Abbate Domenico Sestini, described 30 plants from Wallachia and 46 collected while journeying through Siebenbürgen and the Banat. The first reliable floristic information we have from the Banat comes from Griselini in 1775-1776. He also describes drug and dye plants used by the natives. D. J. Leonhard (1786-1853), Professor in Sibiu (Hermannstadt), later preacher in Orăşti (Broos) gives, in his "Lehrbuch," an incomplete enumeration of the plants of Siebenbürgen, and also about 100 Rumanian plant names.—*Author's summary (transl. by B. S. Dodge).*

9087. **RAMSBOTTOM, JOHN. Aquatic fungi.** *Jour. Quekett Microscop. Club* 16(97): 151-166. 3 fig. 1931.—An address, dealing in a popular fashion with the early history of knowledge of aquatic fungi, particularly Saprolegniaceae, and with some facts regarding aquatic fungi, of interest chiefly to amateur microscopists.

9088. **SARTON, GEORGE. The history of science and the new humanism.** 178p. Henry Holt & Co.: New York, 1931. Pr. $2.00.—The common ground between humanism and science is the "new humanism" and its field of activity includes the history of science. This forms a natural bridge between the antagonistic literary and humanistic group which regards science as technique devoid of cultural values, and the scientific one which sees less value in the humanities, especially in the classics. Three chapters deal respectively with the history of science and the history of civilization, the East and the West, and the new humanism. In the 1st chapter the author notes the great significance of scientific discovery in diverting and moulding the course

of civilization. It has a permanence and continuity and therefore an aspect of progress not so clearly discernible in art, politics, or religion; but it also has an inseparable human quality which places it on a par with these other 3 aspects of human activity. It originates in curiosity and emerges in great scientific discoverers, whose ideas influence a multitude of others and thus permeate civilization. Opposition to a new idea is a measure of its destructive and constructive force and both useful and indispensable in its clarification and in giving it momentum. The 2nd chapter contrasts the contributions of the East and the West. "Ex oriente lux, ex occidente lex." From the point of view of experimental science in its present stage of development the opposition of the East and the West is extreme. However, historically the seed of science, including the experimental method and, in fact, the seed of all forms of science, came from the East. Greek science was sadly deficient in the experimental spirit, outside of medicine. Under the influence of Arabic alchemists and opticians and later of Christian mechanicians and physicists, it grew, though but slowly, until the 16th century. Four phases are distinguishable in the history of science: the empirical one of Egyptian and Mesopotamian knowledge; Greek rationalization; the period of mediaeval groping occupied by the pseudo-problems of the reconciliation of Greek philosophy with religious dogmas, during which science grew and then waned under Islamic influences; and the experimental period. Of these the 1st and much of the 3rd were oriental; the 2nd and 4th are western. The 3rd chapter is a defence of the cultural values of science as a factor in the new humanism. The intellectual conflict is not between romanticists and classicists, but between mystics and rationalists. Mysticism is sterile, but science not only conquers the material world, but reveals an immaterial one transcending that of poets and dreamers. Disinterestedness and humility characterize the scientific method. This method is of more importance than the discoveries made by it. The function of the history of science is to reveal the growth of this method. An outline of a proposed course in the history of science is given and its relations to a wider scheme for education incorporating the idea of the new humanism is discussed. The new humanism is thus a double Renaissance; a scientific one for men of letters, and a literary one for men of science.—*C. A. Kofoid.*

9089. SMOCK, J. C. The Greek element in English words. 2 parts: xiv+267p.; vi+356p. Macmillan: New York, 1931.—This book is a word register of above 130,000 English words derived (directly or indirectly) or coined (wholly or in part) from Greek. About 50,000 of these words are not accessible in general dictionaries and represent the newer terms in science. The 2 parts of the book are alphabetical lists: 1st, of the English words with their Greek originals beside them; 2nd, of these Greek words followed by columns of the English words formed from them. Thus under "genetic" are listed above 150 terms, chiefly from biology, chemistry, and medicine, and under the various forms of "gamos" about 300. Abbreviated labels designate the fields of thought in which the English scientific words are primarily current. Full entries of combining forms assist specialists seeking to coin new terminology and provide a clue to the meaning of future coinages. The meanings of the Greek words are supplied; or, when these meanings may be gathered from the English words, a Greek author's name is supplied to whose influence the use of the word is presumably due.—*E. F. B. Fries.*

9090. SWIFT, R. H. The sacred beetles of Egypt. *Bull. Southern California Acad. Sci.* 30(1): 1-14. 4 pl., 1 fig. 1931.—In Egypt, the habit of "keper," the beetle (*Ateuchus sacer*), of rolling the egg in dung until it becomes a great ball, later to incubate in the hot desert sun and bring forth young, led to "kheperā" meaning "he who turns" or "rolls," the personified symbol of the Sun. Since the dung ball became covered with clay, later to bring forth young, "kheperā" was the Creator, "he who creates all out of clay." The Sun's evident part in all growth soon elevated Kheperā to a primal part in the personification of life giving force. Emblems representing the scarab early came to be used as amulets and seals.

9091. TANNERY, PAUL (edited by A. Dies). Pour l'histoire de la science hellène: de Thalès à Empédocle. [History of Greek science from Thales to Empedocles.] [2nd ed.] xxiv+435p. Gauthier-Villars et Cie: Paris, 1930. Pr. 80 fr.

9092. THIENEMANN, AUGUST. Tjibodas, der javanische Berggarten. [Tjibodas, the Javanese alpine garden.] *Bericht Senckenbergisch. Naturforsch. Ges.* [*Natur u. Mus.*] 61(1): 40-48. 7 fig. 1931.—A sketch of the history, equipment, and surroundings of this institution.

9093. VERLAINE, L. L'âme des bêtes. Quelques pages d'histoire. 202p. Félix Alcan: Paris, 1931. Pr. 25 fr.—This is a summary of the development of the subject of animal behavior. The authors discussed, aside from those of the classical and mediaeval periods, are almost wholly restricted to the French or to those whose works have been translated into French. The work falls into 3 main subdivisions, treating respectively the classical, mediaeval, and modern periods. The classical period is dominated by the Aristotelean concept of the entelechy or soul with its vegetative, sensitive, and reasoning aspects. In the mediaeval period zoology was rehabilitated by Cantimpré, Beauvais, and Albert, the last named the teacher of Thomas Aquinas, to whose concept of the "estimative" is attributed the long prevalent idea of fixed and immutable instincts among the Neo-Thomistes. The modern period is regarded as beginning with Montaigne, Cardanus, and Bruno, and continued by Descartes and Malebranche. It was not until Leibnitz that there was a return to the ideas of Aristotle, but the influence of Thomas Aquinas continues through Reamur and Bonnet, down to Buffon. The precursors of transformism, Benoît de Maillet, Robinet, Bonnet, and especially La Mettrie, prepared the way for Condillac with his revolutionary ideas on the interrelations of habits and instincts, and the experimental method introduced by his pupil Leroy. Reactionary tendencies appear in the creationists represented by Virey, Fr. Cuvier, Flourens, Fée, and Fabre. Anthropomorphic interpretations are chargeable to Charles Darwin and his followers, Romanes and Espinas. A return to the fundamental ideas of Condillac involving the inheritance of habit is traced through Romanes, Edm. Perrier, and Espinas to Wallace, whose presentation meets the author's fullest approval. The modern experimental school; the theories of tropisms and trial and error; and Driesch's views are only briefly discussed.—*C. A. Kofoid.*

9094. WAYLING, H. G. The romance of science in bygone London. *Science Progr.* [*London*] 25(99): 476-486. 1931.

9095. WILBERT, R., et M. DELORME. "Pastoria," centre de recherches biologiques et d'élevage de singes, Institut Pasteur de Kindia, Guinée francaise. *Bull. Soc. Path. Exotique* 24(2): 131-149. 1931.—Description of the general appearance, habits and pathology of the monkeys studied at Pastoria, the Pasteur Inst. of Kindia, French Guinea, and of studies of various epizootics there.

BIOGRAPHY

9096. A., R. Eustace Ralph Bankes [1861-1929]. *Entomologists* [*London*] 63(801): 47-48. 1930.—British lepidopterist.

9097. ADAMETZ, L. Herrn Professor Dr. u. Dr. h. c. C. Kronacher zum 60. Geburtstage in Verehrung und Dankbarkeit gewidmet von seinen Schülern. *Zeitschr. Züchtung B, Tierzücht. u. Züchtungsbiol.* 21(1): 3-10. Portrait. 1931.—This German veterinarian as Professor and Director of the Inst. for Animal Breeding and Inheritance has distinguished himself as a teacher, investigator, and writer. A 3½-page bibliography is appended.

9098. AUDAS, J. W. The botanical activities of Max

Koch. *Jour. Roy. Soc. Western Australia* 15: 83-86. 1928/1929.—Koch (1854-1925), a native of Germany, settled in Australia in 1878, and became an industrious plant collector in South and Western Australia. About 30 institutions are listed as having received specimens from him. Numerous new sp. and varieties discovered by him are also listed.

9099. B., A. E. Prof. J. Lorrain Smith, F. R. S. [1862-1931]. *Nature* [*London*] 127(3212): 787. 1931.—British pathologist.

9100. B., J. A. C. John Hammond Teacher [1869-1930]. *Brit. Med. Jour.* 2(3648): 982-983. 1930.—A sketch of the life of this distinguished gynecological pathologist, the discoverer of the "Teacher-Bryce ovum No. 1," the earliest complete human ovum known.

9101. **BEESON, B. BARKER.** David Gruby [1810-1898]. *Arch. Dermatol. & Syphilol.* 23(1): 141-144. Portrait. 1931.—Gruby was the discoverer of the fungi which cause human ringworms and thrush.

9102. **BENEDICENTI, A.** Valentino Grandis. *Arch. di Sci. Biol.* 13(1/2): 262-263. 1929.—Obituary note.

9103. **BENJAMINS, C. E.** Le professeur Dr. H. Zwaardemaker Czn. (10 Mai 1857-19 Septembre 1930). *Acta Oto-Laryngol.* 15(1): 1-6. Portrait. 1931.—Zwaardemaker's first important contribution was on the physiology of the sense of smell; and by the rigorously scientific methods which he gave to it he became one of the founders of experimental phonetics.

9104. **C[ALMAN], W. T.** Prof. W. C. M'Intosh, F.R.S. [1838-1931]. *Nature* [*London*] 127(3209): 673-674. 1931.—This distinguished British zoologist, president of the Ray Society, was formerly prof. of natural history in the Univ. of St. Andrews, where, in 1881, he established the 1st marine laboratory in Great Britain. Among his publications is a monograph of British marine annelids.

9105. **COLOSI, G.** Enrico Sereni [1900-1931]. *Boll. Zool.* [*Napoli*] 2(2): 83-84. 1931.—Italian physiologist.

9106. **CRAMER, W.** The Late Prof. Yamagiwa. *Lancet* 218(5569): 1155. 1930.—A brief account of the researches of this pathologist.

9107. **CUNÉO, B.** L'oeuvre d'Ollier. *Lyon Chir.* 27(6): 773-777. 1930.—Léopold Ollier was the first to attempt to solve experimentally the question of osteogenic repair.

9108. **ELK.** Carl Fruwirth [1862-1930]. *Pflanzenbau. Pflanzenschutz u. Pflanzenzucht* 7(2): 33. 1930.—German agronomist and plant breeder.

9109. **EMERTON, J. H.** George Dimmock, 1852-1930. *Psyche* [*Boston*] 37(3): 299. Portrait. 1930.—This American entomologist was one of the founders of the Cambridge Ent. Club.

9110. **EVERMANN, BARTON WARREN.** David Starr Jordan, the man. *Copeia* 1930(4): 93-106. 5 portraits. 1930.—Reminiscences of an association of more than 50 yrs. with the dean of American ichthyologists.

9111. **F., J. C. F.** Alfred Harold Ruston [1856-1929]. *Entomologist* [*London*] 63(800): 24. 1930.—British entomologist.

9112. **FAYOL, AMÉDÉE (preface by LOUIS MADELIN).** La vie et l'oeuvre d'Orfila. 311p. Albin Michel: Paris, 1930. Pr. 15 fr.—Mathieu Orfila (1787-1853), to whom we owe modern toxicology, spent 46 yrs. in Paris (1807-1853) as student, physician, member, and later, dean of the Faculty of Medicine of Paris; ¾ of the work is devoted to this period, with chapters on the Faculty of Medicine and its reorganization, on Orfila's "General Toxicology," his critics, his philanthropies, and his final success. There are interesting sketches of the Balearic Isles (his native land), of Mediterranean voyages, journeys to Spain and to France, and an interesting chapter on the Parisian salons during this interesting period. Orfila's "General Toxicology in 2 volumes, original in material and method, was an outstanding contribution to medical science.—*D. J. Healy.*

9113. **FOURMARIER, P.** Notice sur Constantin Malaise, membre de l'Académie né à Liége le 11 novembre 1834, décédé à Gembloux le 24 avril 1916. *Annuaire Acad. Roy. Sci. Lettr. & Beaux-Arts Belgique* 97: 97-169. Portrait. 1931.—Life and works of this Belgian geologist and paleontologist, with a list of his publications.

9114. **FOWLER, HENRY W.** David Starr Jordan and ichthyology in the Pacific. *Copeia* 1930(4): 108-109. 1930.—A sketch of the work of Jordan and his associates on fishes of the Pacific, beginning in 1878.

9115. **OSBORN, HENRY FAIRFIELD.** Biographical memoir of Edward Drinker Cope. 1840-1897. (*Nation. Acad Sci. of U. S. of America. Biograph. Mem. vol. 18. 3rd. mem.*) 317pp. portrait. National Academy of Sciences; Washington, 1930.—A biography and appreciation of the famous American paleontologist. An annotated bibliography of Cope's works, prepared by Miss JANNETTE MAY LUCAS, is given.

9116. **ANONYMOUS.** Prof. A. A. T. Brachet, For. Mem. R.S. [1869-1931]. *Nature* [*London*] 127(3210): 713-714. 1931.—Belgian embryologist.

9117. **ANONYMOUS.** Thomas Vincent Campbell [1863-1930]. *Proc. Roy. Phys. Soc.* [*Edinburgh*] 22(1): 71-74. Portrait. 1931.—Born in Ireland, of Scottish descent, Campbell worked for many years as a medical missionary in India, where he supervised the building of 2 hospitals, and received the Kaisar-i-Hind Medal for eminent service. He built up a collection of some 15000 insects, now mostly in the British Museum. He was chiefly interested in Lepidoptera, later in Hemiptera.

9118. **ANONYMOUS.** Christiaan Eijkmann. *Lancet* 219(5591): 1097-1098. 1930.—Short account of the life of this student of deficiency diseases.

9119. **ANONYMOUS.** Prof. Jakob Eriksson [1848-1931]. *Nature* [*London*] 127(3216): 945-946. 1931.—Swedish botanist.

9120. **ANONYMOUS.** [Mr. Thomas Hebden, 1849(?)-1931.] *Nature* [*London*] 127(3201): 346. 1931.—British lichenologist.

9121. **ANONYMOUS.** Dr. Kishinoue dies in China. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 5(3): 16. 1930.—Japanese ichthyologist.

9122. **ANONYMOUS.** Prof. Felix Löhnis [1874-1930]. *Nature* [*London*] 127(3194): 99-100. 1931.—This distinguished bacteriologist, known chiefly for his books on agricultural bacteriology and for his work on life cycles in bacteria, since 1925 was Prof. of Agric. Bact. in Leipzig, and since 1929, Editor of Centralbl. Bak. II Abt.

9123. **ANONYMOUS.** John Yule Mackay, 1860-1930. *Lancet* 218(5563): 832-833. Portrait. 1930.—British anatomist and embryologist.

9124. **ANONYMOUS.** Constantin von Monakow. *Lancet* 219(5594): 1098. 1930.—Appreciation and review of the contributions of this Swiss neurologist.

9125. **ANONYMOUS.** James Lorrain Smith. *Lancet* 220(5617): 943-944. 1931.—His earlier work was largely in physiological research. Later he was demonstrator in pathology at Cambridge and prof. at Queen's College, Belfast, then at the Universities of Manchester and Edinburgh. He took part in founding the Path. Soc. of Great Britain and Ireland in 1906.

9126. **ANONYMOUS.** Katsusaburo Yamagiwa [1863-1930]. *Lancet* 218(5568): 1084. Portrait. 1930.—Pioneer in cancer research.

9127. **ANONYMOUS.** Prof. W. D. Zelensky [1880-1930]. *Nature* [*London*] 127(3210): 714. 1931.—Russian zoologist and specialist on leeches.

GENETICS

ORLAND E. WHITE, *Editor,* Plant

SEWALL WRIGHT, *Editor,* Animal

(See also in this issue Entries 9076, 9227, 9413, 9995, 10355, 10452, 10453, 10972, 11024, 11124, 11182, 11195, 11215, 11281, 11362, 11399)

GENERAL

9128. **BLAKESLEE, ALBERT F.** The genetic viewpoint. *Science* 73(1900): 571-577. 1931.—The establishing of fruitful viewpoints, not the amassing of facts, is the goal of advanced research. The genetic viewpoint is the most important biological contribution of the 19th and 20th centuries. Genetics would show the fallacy of the assumption that all men are equal, and emphasize the value of the exceptional individual in man as well as in economic plants and animals. It would help evaluate the relative influence of heredity and environment, direct attention to genetic causes of biological phenomena, and do away with many beliefs regarding inheritance of acquired characters. For biologists, it would teach the value of biological controls. A blending of viewpoints in cooperative investigations is suggested, and for the oncoming generation we can strive to strengthen genetic education.—*M. R. Salmon.*

9129. **MARCELLO, ALESSANDRO.** Il problema della eredità considerato dal punto di vista chimico-fisico. *Nuovo Giorn. Bot. Ital.* 37(2): 402-434. 1930.—Hereditary characters are dependent upon a necessary chemical condition, and heredity is the transmission of this condition of mobile equilibrium between reversible reactions, fluctuating and mutable under the action of modifying agents. It may be called chemical, or, more precisely, hereditary energy.—*From author's summary.*

PLANT

9130. **ANDERSSON-KOTTÖ, IRMA.** Variegation in three species of ferns. (Polystichum angulare, Lastraea atrata, Scolopendrium vulgare.) *Zeitschr. Indukt. Abstamm.- u. Vererb.* 56(2): 115-201. 2 pl., 5 fig. 1930.—Gametophytes of *P. angulare* var. *variegatum* are: green, pale non-viable, and two types of variegated, prothallia, one of which gives true-breeding green and variegated sporophytes behaving like parent. Phenotypical change from green to pale green coincides with a genotypical change. Breeding of the other 3 types has been observed. The mutated cell is oriented in regard to the actively growing point. The mutations are considered due to changes in the factor determining chlorophyll development, and this factor is assumed to exist in 7 states (C, c_1-c_6). Alteration in this gene is not quantitative and assumed to be periodic. *Lastraea atrata* shows variegation in sporophytes, but only dark gametophytes. The species is apogamous, both generations having the same number of chromosomes. *Scolopendrium vulgare* shows variegation in both generations. Dark gametophytes selfed or crossed give only green sporophytes which give dark gametophytes. Pale gametophytes selfed or crossed with any other pale or dark, give variegated sporophytes like parent sporophyte, and these again give dark and pale gametophytes. Reciprocal crosses are similar. Character of sporangium is not always determined by character of sporophytic tissue from which it arises. Each single sporangium gives but one kind of gametophyte. The mutation in sporophyte is reversible and probably does not occur later than the first archesporial cell.—*H. D. Hill.*

9131. **BRINK, R. A. A red-to-white mutation in maize. A probable somatic mutation of the gene for red pericarp in maize.** *Jour. Heredity* 20(7): 333-334. 1 fig. 1929.—An ear of maize with red pericarp and red cob, but showing a patch of white seeds and red cob, is described. The plant which produced the ear was a red-white heterozygote and was pollinated by white. In a progeny test the red seeds gave approximately equal numbers of reds and whites. Eleven seeds from the white patch gave all whites. The white area probably arose as a result of mutation in a vegetative cell of the gene for red pericarp.—*R. A. Brink.*

9132. **CHAUDHURI, H. Nutritive saltation in fungi.** *Jour. Indian Bot. Soc.* 10(2): 154. 1931.—Most saltations are nutritive phenomena due to cultivation on synthetic media, and can be made to revert to the original forms under proper conditions.—*W. Dudgeon.*

9133. **CLARK, CHARLES F. A Solanum hybrid resulting from a cross between Solanum fendleri and S. chacoense.** *Jour. Heredity* 20(8): 391-394. 1 fig. 1929.—A study was made of the F_1 generation. Dominance was clearly expressed in several of the characters which constitute the wide morphological differences between the parent species. These included habit of growth, color and pubescence of stems, pubescence of leaflets, shape of calyx and corolla lobes, color and shape of corollas, and size and taste of tubers. Hybrid vigor was very pronounced. A high degree of sterility was found in both ♂ and ♀ germ cells; which made an F_2 impossible.—*C. F. Clark.*

9134. **CONNORS, C. H. Further notes on peach breeding.** *Proc. Amer. Soc. Hort. Sci.* 25: 125-128. 1928.

9135. **DAVIES, P. A., and EDNA BENNETT. Abnormal branching in Ailanthus.** *Jour. Heredity* 20(7): 348-349. 1 fig. 1929.—In an abnormal branch from a normal tree, the branching is regular and from a flattened fan-shaped stem. The pith is continuous from stem to branch.—*L. M. Dickerson.*

9136. **DRAIN, BROOKS D. Some observations on mutations in deciduous fruits.** *Proc. Amer. Soc. Hort. Sci.* 24: 147-148. 1927.

9137. **HABER, E. S. Inbreeding the Table Queen (Des Moines) squash.** *Proc. Amer. Soc. Hort. Sci.* 25: 111-114. 1928.—It is possible to build up a pure line with fruits of uniform size, shape, and quality without diminishing their size. The next step is to secure uniformly high yielding strains. This will be comparatively easy since other desirable characteristics are already homozygous. Inbreeding may not necessarily decrease vigor and yielding capacity of the squash or pumpkin.—*Author's conclusions.*

9138. **HARLAN, HARRY V. The weedishness of wild oats.** *Jour. Heredity* 20(11): 515-518. 3 fig. 1929.—Observations on the extremely effective adaptability of wild oats.—*L. M. Dickerson.*

9139. **HARLAN, HARRY V., and MARY L. MARTINI. Earliness in F_1 barley hybrids.** *Jour. Heredity* 20(12): 557-560. 2 fig. 1929.—Earliness, measured by awn emergence, of 351 hybrids representing all but one of the possible combinations between 27 different parent strains was compared with the earliness of the parents. Wide variations were found, some being earlier and others later than the parental strains.—*L. M. Dickerson.*

9140. **HUBER, J. A. Vererbungsstudien an Gerstenkreuzungen. II. Zur Genetik der Gerstenähre.** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(3): 394-464. 11 fig. 1931.—Multiple allelomorphs are assumed for row number where $Z'Z'$ represents *deficiens*, ZZ *distichum* and zz *polystichum*. Four gene pairs, secondary to the foregoing, are concerned with formation of side spikelets but the data do not permit definite statements as to segregation. In awning, 1 gene pair, *Ar-ar*, is concerned

either with presence of awns or with "caput" formation. Barbing of the awns is due to 2 gene pairs with a cumulative effect. A gene, *Gw*, is suggested for deciduousness of awn. Ear density is conditioned by a series of 4 gene pairs, 3 of which, L_{1-3}, result in a loose ear when in a dominant condition. A gene, *Zeoc*, is responsible for the "zeocritium" head appearance, while another gene *Q* acts contrary to the foregoing in thickening the head in the distal portion. Three genes were worked out for glume color, *M* for black, *O* for orange and *P* for purple, all of which are paired with lack of color. At least 2 genes bring about kernel color; *Sch* colors the seed coat black while *Al* (and perhaps another) colors the aleurone layer blue. A gene, *N*, determines tightness of hull, the naked condition being recessive. A gene was found determining hairiness of the basal bristle and adjacent parts. Two genes, *G* and *G'*, acting together determine the toothed condition of the nerves upon the dorsal portion of the outer glumes; the toothed condition is dominant. Data are presented to show the existing of 2 genes, *Macr* and *Plat*, working independently which influence the width and ruggedness of the inner glumes. The segregation of one cross indicated a single gene, *V*, for branching of the head of certain varieties. Besides the genes indicated, others are listed which have been worked out by others; a few, previously listed by others, are given new terminology, and a modification of their reaction is noted. Most of the genes for which data are given are unifactorial.—A system of gene groupings is attempted, following the earlier ideas of Kuckuck. Four of the 7 possible groups are as follows: I. (8 genes) *Ar*, awn inhibitor; *Q*, thick head form; *Z*, number of head rows; *W*, side-spikelet inhibitor; *G*, outer glume serrations; *V*, branched head axes; *Macr*, broadening of inner glumes; L_3, looseness of ears. II. (4 genes) *M*, black glume color; *Sch*, black pericarp; *Gr*, serration of awns; *A*, pubescence of basal bristles. III. (7 genes) *T*, formation of side spikelets; *S*, extension of pubescence of the outer glume; *Zeoc*, 3-angled ears; *C*, ear thickness; *N*, tightness of glume; *Plat*, intensity of glume broadening; *G*, awn length. IV. (2 genes) *K*, "caput" glumes; *Al*, blue aleuron. The 2 genes L_2 and L_3 were not located.—*L. R. Waldron.*

9141. JENKIN, T. J. Inheritance in Lolium perenne L. III. Base-colour factors C and R. *Jour. Genetics* 22(3): 389-394. 1930.—Confirmatory evidence is presented that complementary factors *C* and *R* are concerned with the production of red base color in *Lolium perenne*. In the absence of either of these no red base-color is developed. —*R. J. Garber.*

9142. JENKINS, MERLE T., and MARTIN A. BELL. The inheritance, interactions and linkage relations of genes causing yellow seedlings in maize. *Genetics* 15 (3): 253-282. 1930.—Reports two new lethal factors, L_2l_2 and L_4l_4, for yellow seedlings in maize which interact with other chlorophyll factors similarly to L_1l_1. No indications were found of linkage of L_3 with certain genes of the *R-G, B-Lg, Y-Pl*, and *Ra-Gl*$_1$ groups. Gene L_4 showed linkage with 3 genes of the *R-G* group, the order appearing to be L_4-*R*-W_2-L_2, with L_4 probably some 36 units to the left of *R*.—*F. D. Richey.*

9143. JONES, DONALD F. Dioecious maize. *Science* 73(1894): 432. 1931.—A recessive gene, silkless, makes the pistillate inflorescence of maize sterile, but does not affect the staminate inflorescence. Such plants are functionally males. Another recessive gene, tassel-seed, changes the terminal inflorescence from a pollen to a seed-bearing structure. These plants are functionally females. Crossing tassel-seed by silkless produced normal hermaphrodites. In later generations double recessive plants were obtained, indistinguishable in appearance from tassel-seed plants. These double recessive females when pollinated by males homozygous for silkless and heterozygous for tassel-seed produced progenies having male and female plants only, and the union of these two types is expected to give only male and female plants in following generations. In this way an hermaphroditic organism has been changed to a separate-sexed organism.—*D. F. Jones.*

9144. KELLY, J. P. Single and semi-double flowers in Phlox. *Jour. Heredity* 20(12): 549-554. 4 fig. 1929.—Three single-flowered varieties of *Phlox drummondii* were each crossed with the same type of semi-double *P. drummondii*. The F_1 groups varied. There was complete dominance of the single-flower in one type of family, i.e., no extra petals were seen. The second F_1 group comprised plants whose floral average was roughly one extra petal, while the third F_1 group was intermediate between single and semi-double, since its floral average showed about 2.5 extra petals. The effect of units for semi-doubleness varied according to the complex of genes accompanying the singleness or depended possibly on the kind of singleness met with. F_2 descendants from these F_1 groups indicated that semi-doubleness (i.e., 4 or 5 extra petals per flower) rests on two independent pairs of genes acting quantitatively. Some singles may carry inhibitors of doubleness.—*J. P. Kelly.*

9145. KIESSELBACH, T. A. The use of advanced generation hybrids as parents of double cross seed corn. *Jour. Amer. Soc. Agron.* 22(7): 614-626. 1930.—An improved method of producing double cross seed corn is described which greatly reduces the time and labor required without affecting the performance of the hybrids. Although the 2nd and 3rd generations of single crosses are significantly less productive than the 1st, F_1's of double crosses between 1st, 2nd, or 3rd generation single crosses were found to be essentially equal in yielding ability and in vegetative development. Use of this information in commercial production of double-cross seed corn permits great simplification of field technique. The proposed advanced-generation-parent method consists of producing but once in several years the two single crosses which serve as parents of the double-cross seed; and the use of a single seed plot for double-cross seed annually. The single crosses are planted in alternating blocks and one of the parents is detasseled before pollination. The detasseled plants provide the double-cross seed, and the tasseled plants produce advanced-generation seed of the single cross. Seed produced by the ♂ parent one year serves as the female parent the next, and this is mated with 2-year-old seed of the other hybrid parent. The basic selfed strains need be grown only in occasional years to produce a new supply of uncontaminated single-cross seed stock.—*H. B. Sprague.*

9146. KLEMM, M. Vergleichende morphologische und entwicklungsgeschichtliche Untersuchung einer Reihe multipler Allelomorphe bei Antirrhinum majus. [English summary.] *Bot. Arch.* 20(5/6): 423-474. 187 fig. 1927.—The morphology of flowers in all stages of development from primordia to maturity was studied comparatively in normal *A. majus*, in the *A. majus* mutants *chlorantha, nicotianoides*, and *globifera*, and in the hybrids *chlorantha nicotianoides, chlorantha globifera*, and *nicotianoides globifera*. The deviations from the normal development of sex organs which are found in normal plants are essentially different from those deviations found in the mutants of the allelomorphic lines here discussed. Deviations (phyllody, enlargement) appear most frequently in the shape of the 5th stamen (staminodium). The form of the fertile stamens is changed more rarely. In the formation of the gynecium no other changes could be perceived. Variations in the development of sex organs in these mutants occur chiefly in ♂ organs. These variations are initiated by the various mutants in quite different stages of their development. While some mutants develop nearly normal stamens, in others it was not possible to find even the primordium of sporogenous tissues. The ♀ organs become changed in a few cases only (*globifera, nicotianoides globifera*). The phenocritical phase (that is, the period in which differences between normal and abnormal flowers first become evident), is dependent on the character of the variation, and on the development of the organs which are subject to the variation:

in a complete metamorphosis of ♂ organs into ♀ ones, the phaenocritical phase occurs earlier than in partial variations; in the variation of vegetative blossom organs, it occurs as a rule much later than in a metamorphosis of generative ones. It is not a case of dominance of an hereditary factor over the others, but of a more or less perceptible surpassing of one factor over the other. The variations of the floral organs here described (especially the pistilloidy of the stamens) have been previously observed on other plants (*Papaver, Sempervivum*). The similarity of the pistilloid forms to those occurring in *Digitalis* is especially noteworthy.—*Author's summary.*

9147. **LESLEY, J. W. A few-seeded bud sport of tomato.** *Jour. Heredity* 20 (11) : 531-533. 3 fig. 1929.—Bud-variant branches of tomato were found having nearly seedless fruits of inferior size and eating quality, smaller glandular hairs and fewer long trichomes than the normal. Partial sterility of the variant was due, mainly, to defective female organs. The variant was a chimera, of which the subepidermal layer probably was unchanged, but fertility was affected by the presence of a variant epidermal layer.—*J. W. Lesley.*

9148. **MARSDEN-JONES, ERIC M. The genetics of Geum intermedium Willd. haud Ehrh., and its back-crosses.** *Jour. Genetics* 23 (3) : 377-395. 1 map. 4 pl. (1 col.). 1930.—A description is given of the wild collected plants used in the research. On crossing *Geum urbanum* with *rivale* a generation was obtained quite indistinguishable from natural hybrids observed in the wild. It was impossible to obtain viable seed when *rivale* was used as the seed parent. Although *G. intermedium,* the natural hybrid of *G. urbanum* and *G. rivale,* appears intermediate between its parents, it is not really so. Twelve characters were studied, 3 only were as in *intermedium,* 6 were dominant *rivale* characters, in 2 the *urbanum* characters appeared in the majority of plants, and in 1 there was loss of a character. Taking all characters into account *rivale* is the more dominant parent. On selfing *intermedium,* segregation took place, in many cases not conforming to simple Mendelian expectation. Four distinct types of plants appeared. On crossing *G. intermedium* with *rivale,* a generation was obtained in which the *rivale* characters strongly predominated, no distinct types stood out as in the F_2 generation from the selfing of *intermedium,* and the appearance of the plants in the beds gave the impression that they were a batch of *rivale.* No segregation took place comparable with that resulting from back-crossing of *intermedium* with *urbanum.* Two groups were made on petal shape, 10 plants having obovate and 30 oblate petals. *G. intermedium* × *urbanum* and the reciprocal gave identical results. There were 2 plants of *urbanum* and 2 of *intermedium,* the remainder were superficially very like *urbanum,* but analysis showed much segregation. A new character appeared, viz., short plumose hairs. A plant of back-cross origin, *G. intermedium* × *rivale,* was selfed, no segregation occurring, only minor fluctuations such as are found within the range of a species. A study was also made of a *Geum* population in a wood at Bradfield, Berkshire; and without the data obtained from the experimental work it would have been impossible to interpret the parentage of the plants aright. *G. urbanum, rivale* and all the possible combinations were found, but the chief interest lay in the fact that in the wet part of the wood which should have been the *rivale* habitat, comparatively few plants of this sp. were found, the predominant population being the back-cross *rivale* × *intermedium.* From the examination of this *Geum* population, it would appear that, in that locality at least, the back-cross has become stabilised and very largely replaced *rivale,* an example of a wild population of a new type arising from inter-specific hybridisation.—*E. M. Marsden-Jones.*

9149. **MICHAELIS, P. Zur Kenntnis einiger Digitalis-Bastarde.** *Biol. Centralbl.* 51 (3) : 124-134. 16 fig. 1931. —In crossing experiments with *Digitalis purpurea, lutea,* and *ambigua,* reciprocal crosses were successful between *purpurea* and *lutea* only. The hybrids were reciprocally different, and the degree of difference is dependent on environmental conditions mostly, but on the origin of the maternal *D. purpurea* plants also. The reciprocal differences in size and form of cotyledons are conditioned only by the size of seed of the maternal plants. The matroclinous "false hybrids" reported by Haase-Bessel are regarded as due to error. The diploid chromosome numbers are: *D. purpurea, ambigua,* and their hybrids, 56; *lutea,* 96; and the hybrids of *lutea,* 76.—*P. Michaelis (transl. by N. A. Pettinger).*

9150. **MUTH, HEINZ. Untersuchungen über die Befruchtungsverhältnisse bei Vicia sepium L. (Zaunwicke) und Lathyrus pratensis L. (Wiesenplatterbse).** *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16 (3) : 465-504. 17 fig. 1931.—Seed of both species was obtained from an experimental field planted from the wild. *V. sepium* showed greater variation than *L. pratensis.* Both were easily propagated by rhizome cuttings and fairly so by slips in sand. Experiments in fertilization and seed production showed higher success from free-blooming, as compared with strictly guarded, plants, with guarded plants shaken daily, or with guarded plants artificially pollinated; this was especially true with *L. pratensis.* Among the various species of hymenopterous insect visitors, *Bombus terrestris* was perhaps most common. This bee tended to drive away other (pollen-gathering) insects; flowers were pierced and nectar secured illegitimately. Clones of the 2 species were given 5 treatments as to isolation and pollination. Individuals of *Bombus* were enclosed daily with isolated plants. Under free-blooming conditions of *V. sepium,* self-fertilization by means of insects is most common. Plants isolated with *Bombus* set less seed than when free-blooming; and this was true also when artificially cross-pollinated are compared with free-blooming plants. *L. pratensis* shows less inclination to self-fertility than *V. sepium.* Attempts made to cross *V. sepium* with other *Vicia* spp. were futile, as were similar attempts with *L. pratensis* and other *Lathyrus* species. Failure to cross was not due to faulty emasculation technique. Studies were made with *V. sepium* as to the relationship between seed setting and temperature and humidity. Plants were grown in the open and in cages variously screened. Fertile pods formed freely at a temperature of 14°C. but none set at 42.9°. In general, seed setting increased with a decrease of relative humidity although striking exceptions were found. Seed setting probably increased with decrease of absolute humidity. Self-fertilization in *V. sepium* did not result in decrease of vigor in the offspring, but such decrease did take place in *L. pratensis.* Seed setting in both is comparatively low. Possibilities of improvement in both seem excellent.—*L. R. Waldron.*

9151. **NEWTON, MARGARET, T. JOHNSON, and A. M. BROWN. A study of the inheritance of spore color and pathogenicity in crosses between physiologic forms of Puccinia graminis tritici.** *Sci. Agric.* [*Ottawa*] 10 (12) : 775-798. 1 pl., 2 fig. 1930.—Crosses were made between physiologic forms having abnormal colors. One with orange-colored urediniospores was crossed with 2 possessing grayish-brown urediniospores. The F_1 hybrids from both crosses were normal (red) in urediniospore color. The F_2 hybrids from one of the crosses were found to fall into 4 classes: red, greyish-brown, orange, and white. It is suggested, although not definitely proven, that two pairs of Mendelian factors determine this color inheritance. A study was made of inheritance of pathogenicity in these crosses. A cross between forms 9 and 36 produced an F_1 identified as form 17. 126 F_2 hybrids from this cross were identified as one or another of 7 physiologic forms, namely, 1, 11, 15, 17, 36, 57, and 85. Another cross, form 9 × form 15, produced F_1 hybrids identified as 9. F_2 hybrids from this cross were identified as forms 9, 15, 57, and 85. In many of the crosses, the inheritance of pathogenicity is governed by Mendelian factors. In some crosses, however, there is evidence that Mendelian, is supplemented by cytoplasmic, inheritance.—*T. Johnson.*

9152. NEWTON, W. C. F. Genetical experiments with Silene otites and related species. *Jour. Genetics* 24(1): 109-120. 1 pl., 1 fig. 1931.—When *Silene pseudotites* as ♀ parent is crossed to *S. otites* the F_1 consisted of 209 ♀♀, 4 ♂♂ and 4 hermaphrodites. The reciprocal cross gave a normal sex ratio of 1 ♂: 1 ♀. The F_2 of both crosses had an excess of males. No satisfactory hypothesis for the facts has been suggested. Both ♀ and ♂ parents carry a subsidiary factor for sex determination. Females of a similar origin give similar sex ratios with 1 ♂ and ♀♀ of dissimilar origin give dissimilar sex ratios. Different ♂♂ with 1 ♀ give different sex ratios. Reasons are given which indicate that the occurrence of intersexes depend on factors carried by *S. pseudotites*, perhaps by *S. umbellata* but not by *S. otites*.—*F. W. Sansome.*

9153. NOACK, KONRAD L. Über eine buntblättrige Form von Borrago officinalis. *Zeitschr. Indukt. Abstamm.- u. Vererbungsl.* 58(3/4): 372-392. 4 fig. 1931.—A description is given of a variegated *B. officinalis* the leaves of which are irregularly mottled with green and white up to the inflorescence, the degree of mottling being approximately uniform from the first foliage leaf to the flowers. The main mass of mesophyll consists of wholly green and wholly white cells intermingled with cells in which there are green and colorless plastids in all ratios. Both parents transmit the variegated patterns, and in their descendants varying numbers of green and variegated individuals appear. Pure white seedlings were not found. While the morphological observations and the results of selfing and crossing favor the plastid theory, the inconsistencies indicate that the origin of the variegations cannot be explained along these lines alone. It may be assumed that anomalies in the physiological exchange of materials may condition the observed appearances.—*Author's summary (transl. by I. Hein).*

9154. OEHLER, ERNST. Untersuchungen über Ansatzverhältnisse, Morphologie und Fertilität bei Weizen-Roggenbastarden. *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16(3): 357-393. 20 fig. 1931.—The wheats used were mainly varieties of *Triticum vulgare*, although forms of *T. spelta, T. compactum, T. turgidum, T. durum, T. polonicum, T. dicoccum, T. monococcum* and *T. aegilopoides* were utilized. Various cultivated ryes were used and also forms of *Secale cereale, vulpinum* and *fuscum*. During the 3 years of the work, 807 emasculated heads of *Triticum* were used, a total of 21,290 florets were pollinated with rye pollen and 1494 seeds harvested. The plants were grown in pots, either in cages or in culture houses. The *vulpinum* and *fuscum* pollen was as effective as that from cultivated ryes. The hexaploid wheats were by far the most successful parents. Germination of the F_1 generally was very poor. Detailed measurements and observations are given of the 3 filial generations, particularly of F_1. In general, F_1 plants inclined toward the wheat parent, in accord with the greater wheat chromosome complex. The F_1 plants were evidently all completely self sterile; F_2 seeds were obtained by natural or artificial back crosses with wheat; those with rye were ineffective. Only 10 seeds were obtained by artificial back-crossing of 12,625 florets, or 0.08%. About the same % of seed was obtained when plants were exposed to natural back-crossing in the open. With continuous back-crossing, the hybrids approached the wheat standard in morphology and fertility.—*L. R. Waldron.*

9155. PEEBLES, ROBERT H. Hairy bolls and nectaries in a hybrid cotton. *Jour. Heredity* 20(7): 340-347. 7 fig. 1929.—Segregates from Pima Egyptian × College Upland crosses having intra-carpellary hairs are described. Apparently two factors are involved in the inheritance.—*L. M. Dickerson.*

9156. RHOADES, MARCUS M. Cytoplasmic inheritance of male sterility in Zea mays. *Science* 73(1891): 340-341. 1931.

9157. ROBINSON, T. RALPH, and GEO. M. DARROW. A pink Poinsettia chimera. *Jour. Heredity* 20(7): 335-339. 3 fig. 1929.—Results of root-cutting experiments on *Euphorbia pulcherrima* indicate that the pink form is a chimeral sport of red. White is apparently a mutation from red.—*L. M. Dickerson.*

9158. SIEGLINGER, JOHN B. Tenuous kaffir plants. *Jour. Heredity* 20(12): 565-566. 2 fig. 1929.—The occurrence and description of grass-like, or tenuous, plants in a cross of Sunrise and Red kaffir (*Holcus sorghum* (L.)) is noted. The condition appears to be caused by a single recessive factor. The defective plants produced no pollen or seed.—*J. B. Sieglinger.*

9159. STUBBE, HANS. Untersuchungen über die experimentelle Auslösung von Mutationen bei Antirrhinum Majus. II. (Samen- und Keimlingsbehandlung mit Röntgenstrahlen und Chemikalien.) *Zeitschr. Indukt. Abstammungs- u. Vererbungslehre* 56: 202-232. 1930.—Seeds and seedlings of *Antirrhinum majus*—Races 2232 ($pal_{rhod}del$) and 2249 ($pal_{tub}del$) were treated with x-rays of various strengths and with chemicals of different inorganic groups. As a result of the treatments, mutations appeared in the F_1 which differed widely from the spontaneous mutations hitherto recorded for these plants. The mutations manifested themselves as marked deformation of foliage. Phenotypically some of these resembled the "radiomorphoses" described by Miss Stein. The percentage of induced exceeded that of spontaneous mutations. Under certain conditions, especially treatment with arsenic preparations, mutations appeared in the parental generation in small percentage, but after treatment with most substances and with x-rays the mutations first appeared in F_1 and without plan or clear relation to strength of dose. Within each of the races, the same forms (in general) appeared, no matter what the treatment. "Crisp"-like plants appeared only in F_1, only after irradiation of the seeds with x-rays and only in race 2249, no matter what the dosage. There appears to be no specific effect of any one stimulus, but the reaction of each race is specific; that is, each race reacts with a new form characteristic for that form after any stimulus. No conclusion can be drawn from these results as to the nature of the mutations. Radiomorph-like plants with extreme crisping of leaves were peculiarly analogous to those having the albo-maculatio character. A few mutations appeared to be linked.—*C. S. Gager.*

9160. TSCHERMAK, E. von. Über Xenien bei Leguminosen. *Rept. & Proc. Internat. Hort. Congr. London* 9: 340-347. 1930.—Under xenia are distinguished: (a) seed-xenia, viz., patroclinal modification of the color, shape, size and chemical constitution; (b) Fruit-xenia, or vegetative effects of fertilization, viz., increase in growth rate of the pods, as well as patroclinal modifications of the shape and chemical constitution of fruit. The following cases of seed-xenia are described and discussed: (1) color-xenia in peas, beans (*Phaseolus vulgaris* and *P. multiflorus*), lentils, bitter vetches, vetches, lupins, rye, barley and stocks; size-xenia, which occurs in crosses between certain bean races but is lacking in other, similar crosses. (2) Fruit-xenia in wallflowers, beans, cucumbers and melons. Stress is laid on the practical value of color-xenia and seed heterogeneity as an index for certain other seed qualities (apparently orange color and good flavor in lentils, possibly light color and low degree of bitterness in vetches and lupins, and yellow color and high brewing value in winter barley) and as an indication of the occurrence of cross-fertilization in spp. usually regarded as self-fertilized. The occurrence of secondary, along with primary, segregation in seed-color is recorded, and attributed to polymeric differentiation in catalytic-cumulative factors acting with a chief color factor. In a cross between certain races of beans, one combination gave size-xenia and consequent seed-heterogeneity, the reciprocal an F_2 segregation into plants of different seed size, constant for each individual plant. In other kinds of beans, such a result was obtained in both cases. A distinction is drawn between independent and dependent inheritance of seed characters. The latter is attributed to internal secretory

subordination or to a chemical determining influence, in which case a substance, originating anywhere in the plant-body, spreads through the latter and compels the ovules to attain the shape and size typical of the race and to remain uninfluenced by foreign pollen.—*Author's summary.*

9161. WEATHERWAX, PAUL. The morphological nature of teopod corn. *Jour. Heredity* 20(7): 325-330. 4 fig. 1929.—The various characteristics of this unusual type of variation are described in detail. Apparently 6 constant morphological structures and at least 5 more variable characters are controlled by this single dominant gene complex.—*L. M. Dickerson.*

9162. WELLINGTON, RICHARD, and LESLIE R. HAWTHORN. A parthenocarpic hybrid derived from a cross between an English forcing cucumber and the Arlington white spine. *Proc. Amer. Soc. Hort. Sci.* 25: 97-100. 1928.

ECOLOGY

W. C. ALLEE, *Editor,* Animal

GEO. D. FULLER, *Editor,* Plant

CHANCEY JUDAY, *Editor,* Plankton

(See also in this issue [GENERAL and ANIMAL ECOLOGY]: (Temperature) 9395, 9398, 9493, 9574, 9859, 9911, 9985, 9991, 10007, 10742, 10777; (Light) 9408, 9968, 10003, 10006, 10014; (Humidity) 10012; (Atmospheric pressure) 9493, 9502, 9522, 10377; (Electricity) 10002, 10013, 10016, 10022, 10023; (Salinity) 10011, 10941; (pH) 10722; (Symbiosis) 9929, 10862; (Parasitism) 10947; (Adaptation) 11327, 11583, 12042, 12060; (Regeneration) 10008, 10009; (Reproduction) 9991; (Food) 11755, 11878; (Sleep) 10068; (Circulation) 10135; (Zoogeography) 10599, 11557; (Palaeozoology) 11247, 11256; (Protozoa) 10017; (Nemathelminthes) 11476; (Annelida) 9929, 11494; (Mollusca) 11518, 11546, 11547; (Insecta) 9150, 10005, 10940, 10951, 11643, 11654, 11665, 11720, 11738, 11739, 11759, 11817, 11818; (Crustacea) 11569, 11574, 11581; (Arachnida) 11621; (Pisces) 11881, 11882, 11889; (Aves) 11967, 11999, 12019; (Mammalia) 12041, 12046, 12048, 12052, 12058. [PLANT ECOLOGY]: (Drought effects) 9246; (Drought resistance) 9256; (Water requirements) 9261; (Root growth) 9311; (Periodic growth) 9323; (Mycorhiza) 9322, 9335, 11198; (CO_2 concentration) 9327; (Dormancy) 9328, 9329, 9330; (Cold resistance) 9338, 11031; (Soil acidity) 11007; (Soil water) 11008, 11010; (Cold injury) 11025; (Pollination) 11026; (Origin of cultivated plants) 11027; (Ice storms) 11045; (Climatic factors of forests) 11051, 11052, 11056; (Plant indicators) 11053; (Cave plants) 11093; (Morocco vegetation) 11107; (Ceanothus, ecology of) 11164; (Libyan desert plants) 11188; (Rocky Mt. vegetation) 11191; (Symbiosis) 11197; (Ecology of coal measures) 11222)

GENERAL

9163. CHOPARD, L. Aperçu sur la flore et la faune des Açores. *Compt. Rend. Som. Séances Soc. Biogéogr.* 65: 34-36. 1931.—The comparative poverty of the Azores islands in endemic spp., and the marked affinities with temperate European flora and fauna favor the hypothesis of a former connection between the Azores and Europe, before the eruptions at the end of the Miocene, rather than an oceanic origin of the biota.

9164. EWALD, KARL, (transl. from the Danish by HERMANN KIY). Tiere unter sich. 9th ed. 158p. Franckh'sche Verlag.: Stuttgart, 1929. Pr. 5.60 M.—This selection from the popular natural history writings of the Danish author Ewald deals with spiders, bacteria, life on marine piling, animal visitors to the pond, mistletoe, eider ducks, plant lice, and the life of forest and heath.—*C. A. Kofoid.*

9165. GARDINER, J. STANLEY. Photosynthesis and solution in formation of coral reefs. *Nature* [*London*] 127(3214): 857-858. 1931.—Two primary biological forces are at work shaping coral reefs: photosynthesis, which gives an extraordinary biological efficiency to the reef building organism and causes an incredible rapidity of formation of limestone; and the solution of limestone by boring organisms. A few seaweeds such as *Halimeda* with precipitated lime in their fronds assist in forming deposits, but the main reef-builders are about 12 spp. of 5 genera of Lithothamnioneae, which possess dense skeletons of lime in the composition of which Mg up to about 20% may play a part. The sedentary animal builders are all Coelenterates. The special difficulties in respect to the nutrition of the coral-building sedentary animals are met by the symbiotic relations with unicellular green flagellates (*Zooxanthellae*) which produce the O needed by the corals, and consume the waste N and CO_2 of the animals. The boring process and solution of the lime is carried on both by animals and boring algae.

9166. LLOYD, HOYES. Water and water-fowl. *Trans. 16th Amer. Game Conference* p. 122-127. 1930.—Remarks on the relation of sunspots to tree growth, rainfall, migration of birds, abundance of varying hares, etc.

9167. MARTONNE, EMMANUEL de. Conditions physiques du peuplement des hautes montagnes. [Physical conditions of the population of high mountains.] In: *Peuplement des Hautes Montagnes. Mém. Soc. Biogéogr.* [*Paris*] 2: 7-11. 1928.

9168. MATHIASSEN, THERKEL. Contributions to the physiography of Southampton Island. *Rept. 5th Thule Exped. 1921-24.* [*Copenhagen*] 1(2): 1-30. 3 maps, 3 fig. 1931.—This report contains brief preliminary accounts of the flora and fauna of the island (Canada, lat. about 62° 50′-66° N., long. 80-87° W.).

9169. PARKER, ERIC. English wild life. [*The English Heritage Series.*] 180p. Longmans, Green & Co.: New York, 1929.

9170. PEARSE, A. S. Environment and life. 85p. English +104p. Japanese. 1 fig. Ryobundo: Tokyo, 1930. Pr. $1.60; 117p. C. C. Thomas: Springfield, Illinois, 1930. Pr. $2.00.—This is a popular book containing 6 chapters on Animals and environment; Where animals live; Interdependence of plants and animals; Environment and evolution; Man and environment; and Science, commerce, and religion.—*A. S. Pearse.*

9171. PEARSE, A. S. The beaches at Misaki. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 6(2): 3-6. 1931.—A general account of marine and maritime life about the Biological Station of the Univ. of Tokyo. Many spp. are mentioned, with notes on habits and habitats.

9172. THOMPSON, THOMAS G., ROBERT C. MILLER, GEORGE H. HITCHINGS, and SELDON P. TODD. Studies of the sea water near the Puget Sound Biological Station during the summer of 1927. *Publ. Puget Sound Biol. Sta.* 7(1): 65-99. Map, 1929.—An analytical study of tidal changes and interrelationships of certain physico-chemical conditions of sea water based on a series of hourly observations through a 25 hr. tidal cycle, and

supplemented by additional observations at flood and ebb tides at various localities in the San Juan Archipelago, showed that chlorinity, I number, temp., and pH are more or less correlated with tidal changes, while dissolved O and CO_2 are related primarily to rate of photosynthesis. In vertical section, surface to bottom, Cl and total CO_2 increase; while temp., dissolved O, and pH values decrease. Marked horizontal stratification occurs where sea water meets more dilute ebb water north of San Juan Island; at the surface a sharp line of demarcation of temp., chlorinity, CO_2, and pH was observed.—*H. B. Sewell.*

9173. **THOMSON, WALLACE A. The photo-electric measurement and photographic recording of daylight.** *Canadian Jour. Res.* 4(6): 559-564. 1931.—A method is described by which illumination intensities were measured by a photo-electric cell and galvanometer, and a continuous photographic record obtained of the variations of intensity over a period of time during which the ground was covered with snow. A remarkable increase in the illumination was caused by the presence of cloudiness with full sunshine, in many cases 20-30% and on one occasion as high as 40%. When there was a cloud over the sun, with most of the sky clear, the decrease in illumination varied up to 35%, depending on the density of the cloud, and on many occasions the increase in indirect illumination due to overhead cloudiness more than balanced the decrease of direct illumination when the sun was partly hidden. It is concluded that the intensity may be greater with the sun partly hidden than at the same time of day with a clear sky.—*Author's summary.*

9174. **WARDLAW, H. S. HALCRO. Some aspects of the adaptation of living organisms to their environment.** *Proc. Linnean Soc. N. S. Wales* 55(1): i-xxv. 1930.—This presidential address is preceded by a review of the work of the Society during the yr. and brief sketches of the lives of Prof. Walter Baldwin Spencer [1860-1929], biologist and anthropologist; and Arthur Andrew Hamilton [1855-1929], botanist and horticulturist.

ANIMAL

9175. **ALLARD, H. A. The chirping rates of the snowy tree cricket (Oecanthus niveus) as affected by external conditions.** *Canadian Ent.* 62(6): 131-142. 3 fig. 1930.—The history of the studies correlating the synchronous chirping of the crickets with temp. are reviewed. Original records corroborate earlier statements of increase of chirps per min. with increase of temp. at 55-70° F, and also show a slight correlation with increased humidity at 80-95%; but there are too many unsolved factors to permit the statement of a definite correlation factor.

9176. **ALLARD, H. A. The photoperiodism of the firefly Photinus pyralis Linn.; its relation to the evening twilight and other conditions.** *Proc. Ent. Soc. Washington* 33(3): 49-58. 1 fig. 1931.—Observations made from June 13th to Aug. 7th on the time of appearance of fire flies in the evening are correlated with open and shaded places, wind velocity, ground conditions, air temp. at grass level, and relative humidity. A distinct correlation is observed between time of arising and time of sunset. In the open or clear nights they rise 8.7 min. after sunset and in the shade 2.8 min. before sunset.

9177. **ALLEE, W. C. Animal aggregations. A study in general sociology.** 431p. 35 fig. Univ. of Chicago Press: Chicago, 1931. Pr. $5.—The book contains 20 chapters which are organized in 5 groups. The first 5 chapters, included under "Introduction," are largely theoretical and treat of the philosophy of classifying animal aggregations, the causes of their formation, and the general conditions obtaining in them. The next 3 chapters are grouped as "Harmful effects of aggregations" and treat of the effects of crowding upon growth; the retarding influence on the rate of reproduction; and the increased death rate. The 3rd group of chapters (IX-XVI), "The beneficial effects of aggregations," treats of the stimulation of growth; stimulation of rate of reproduction; effect of crowding on survival and O consumption; protection from toxic reagents; resistance to hypotonic seawater; relation between density of population and insect survival; communal activity of bacteria; and mass physiology of spermatozoa. The 4th group, "General effects of aggregations," treats of the influence of crowding upon sex determination; and of the morphological effects of crowding. The last 2 chapters (XIX and XX) are grouped under the heading "Conclusion" and are essentially philosophical; they treat of the animal aggregations and social life, and of the principles of co-operation.—*R. N. Chapman.*

9178. **ANDREWS, E. A. The mound-building ant, Formica exsectoides F., associated with tree-hoppers.** *Ann. Ent. Soc. Amer.* 22(3): 369-391. 5 fig. 1929.—Near Baltimore the ant feeds on living and dead insects and on honey-dew excreted not only by aphids but by coccids and membracids. Food associations are formed with *Eulecanium tulipiferum* on *Liriodendron tulipifera* and with *Vanduzea aquata* and *Thelia bimaculata* on *Robinia pseudacacia*. The membracids, chiefly when young, supply to the ants acid honey-dew from May into Oct., being attended day and night by them. The tree hoppers seem remarkably inert to the presence of the ants and make no exertion to gain their attention; they may live in the absence of ants and then cast off honey-dew with greater effort and more force. Rate of flow is increased by the presence of ants. It is suggested that the primary influence of membracids upon the ant is through some sort of skin exudation. Succursals made by the ants at the bases of small trees when used by *Thelia* are roofed over by the ants as tents that protect and to some extent limit the freedom of the young *Thelia* for a time. Ants attempt to maintain a monopoly of the tree-hopper honey-dew but several sugar flies obtain some by avoiding the ants: *Callopostromyia annulipes* licks up honey-dew that has fallen; *Rivellia quadrifasciata* drums very rapidly with the front legs before taking off honey-dew from the *Thelia* larvae.—*M. W. Boesel.*

9179. **ARTHUR, STANLEY C. Winter requirements of migratory waterfowl.** *Trans. 16th Am. Game Conference* 98-102. 1930.—Louisiana marsh lands that are left in a natural condition for the production of muskrats form some of the most important wintering grounds in the U. S. A. for ducks and geese.

9180. **BOWEN, EZRA. An hypothesis of population growth.** 238p. Columbia Univ. Press: New York; P. S. King & Son: London, 1931.—The book supports the thesis that the main forces operating upon the growth of human populations are wealth and living standards. The chapter headings are: A formula ("Populations tend to increase, directly with wealth, and inversely with prevailing levels of living standards"); Malthus, a revaluation; Critics of Malthus; The theories of East and Pearl; Other post-war theories; The life "struggle"—man appears; The struggle continues; Animal increase; Biology of population growth; Death rates; Migration; Birth rates; The dysgenic trend; In sum; In prospect.—*C. S. Gager.*

9181. **FOSBERG, F. RAYMOND. Preliminary notes on the fauna of the giant kelp.** *Jour. Ent. & Zool.* 21(4): 133-135. 1 fig. 1929.—The most interesting clinging animals found were the nudibranch, *Melibe leonina* Gould, and some isopods not yet determined.—*W. A. Hilton.*

9182. **GUNN, D. L. Temperature and humidity relations of the cockroach.** *Nature [London]* 128(3222): 186-187. 1931.—The cockroach loses water at a rate proportional to the drying power of the air. At 30° C. in dry air they lose daily an average amount of water equal to about 9% of their original wt. With reduction of % of water in the body, the roach goes toward lower temp.

9183. **HANDSCHIN, EDUARD. Die Temperatur als Faktor lokaler Tierwanderung im Boden.** *Verhandl. Naturforsch. Ges. Basel* 40(2): 486-504. 5 fig. 1929.—Experiments in an apparatus producing a temp. gradient in a column of soil 2-4 cm. thick showed that soil animals migrate from a region of 30° or above to one of 26-30°.

The migrants tend to congregate at this temp. Low temp. limit activity and hence migration; 26-30° is considered optimal. Daily and seasonal soil temp. changes cause vertical migrations. *Lumbricus terrestri* and Enchytraeidae were some of the forms used.—*G. W. Goldsmith.*

9184. **HENDRICKSON, GEORGE O. Subterranean insects of marsh grass (Spartina michauxiana Hitchcock).** *Canadian Ent.* 63(5): 109-110. 1931.—From 15 sq. ft. of sod, 8 in. deep, were collected 1 sp. of Neuroptera, 2 Orthoptera, 2 Homoptera, 13 Coleoptera, and 8 Hymenoptera.

9185. **JACOT, ARTHUR PAUL. Zoögeographical status of the North China plain.** *Peking Nat. Hist. Bull.* 5(3): 41-44. 1931.—The distribution of various amphibians and reptiles in this region shows that (in agreement with R. Mell) the Tsinling-Funiu Shan range is the divide between the Shansian and the Yangtzian life zones. Mell made the Yellow River the eastern boundary, but since the entire North China plain is the delta of this river, the boundary should be considered as the fringe of the Chili hills.

9186. **[KASHKAROV, D. N.]** КАШКАРОВ, Д. Н. Метод количественного изучения фауны позвоночных и анализа полученных данных. **[The quantitative method in the field study of vertebrate fauna and analysis of the data obtained.]** [English summary.] Труды Средне-Азиатского Государственного Университета, Сер. VIII-a. Зоол. (*Acta Univ. Asiae Mediae, Ser. VIII-a. Zool.*) 1. 3-24. 1927.—Principles are given for quantitative census of animals found in a given area. The unit of study is the association, which is broken up into smaller areas. The number of each sp. listed and its frequency with respect to other sp. and locality as well as its adaptation are determined. The association is then studied; its coefficient of community and the number of constant, usual, and accidental sp. are considered. This method of study is useful for ecological and genetical analysis.—*B. R. Weimer.*

9187. **KRÜGER, E. Ein Beitrag zur Mimikryfrage.** *Ent. Rundschau* 47(4): 13-14; (5): 17-19; (6): 22-24; (7): 27-28. 1 fig. 1930.—Studies in insect mimicry.

9188. **MacDONALD, RODERICK. The form of faecal pellets and specific identification.** *Nature* [*London*] 128(3219): 68. 1931.—By a special apparatus a bottom sampler withdraws a core of mud from the sea bottom. There is a distinct stratification in this core of identifiable fecal pellets derived from different sp., making possible a history of the nature of population in a specific area over a period.

9189. **MARTINI, E., und I. ACHUNDOW. Versuche über Farbenanpassung bei Culiciden.** *Zool. Anz.* 81 (1/4): 25-44. 7 fig. 1929.—The larvae of *Anopheles maculipennis, A. bifurcatus, Theobaldia annulata, Aëdes salinus,* and *Culex pipiens* reared in black or brown vessels are darker than those reared in green, white, or gray vessels. This difference is also noticeable in the early pupa and in the imago. *Corethra* larvae reared in a dark vessel are smoky colored, the pigment cells on the air sacs are fairly broad; 4-, 5-, or 6-angular cells cover the entire air sac. Larvae reared in white vessels appear a bright glassy color, and the pigment cells on the air sacs appear as small black pigmented granules and as pigment clumps. The head (except for the occiput, the teeth of the mandibles, and eyes) does not contain pigment cells. Changing the larvae from a black to a white vessel, and vice versa, results in a rapid redistribution of pigment cells. *Corethra* pupae also show color differences. The ♀ adult from a dark vessel has a darker dorsal surface, while the ♂♂ are dark from both vessels. The brain appears to play a part in this adaptation.—*D. Ludwig.*

9190. **MELL, R. Leitgedanken zu einer Ökologie südchinesischer Lepidopteren.** *Congrès Internat. Xe Zool. à Budapest 1927. Part 2.* 1053-1059. 1929.—Holo-arctic, Pacific-palaearctic, Indo-Malayan, Indo-Ethiopian, and eastern Himalayan elements are recognized. The number of generations in these respective groups; prevailing rhythm in the cycle of their development, i.e., whether continuous, alternating, or fractionary (where the development of a single individual of the same generation is accelerated or retarded); color of caterpillars; sculpture of tegument of pupae; physiological energy of the sexes in a case of decreased numbers of individuals, i.e., the predominance of one sex over the other; time of emergence and flying period; production of eggs; progressive and regressive development of morphological, physiological, and sensitive characters; the ability of the Lepidoptera to react to meteorological factors; and the fluctuation of sp. at the boundary of their habitats are also considered.—*C. Zeimet.*

9191. **SAVAGE, R. E. The influence of Phaeocystis on the migrations of the herring.** *Min. Agric. and Fish., Fishery Invest. Ser. 2* 12(2): 5-14. 4 fig. 1930.—Variations in amounts of herring expected on fishing grounds, or occurrence in unusual locations, caused investigations to be made to ascertain if any unusual distribution of the plankton might be correlated with these movements. Large areas of a gelatinous, colonial flagellate, *P. poucheti,* were discovered, in such amounts and position that they probably formed effective barriers to the movements of the migrating herring schools, and hence caused deflections of their courses. Position and extent of these *Phaeocystis* areas were determined by qualitative studies, and were plotted on charts, upon which also were indicated the probable course of herring migrations. These data supply most suggestive explanations for the observed phenomena.—*R. H. M'Gonigle.*

9192. **SCHADE, FR. Im Quellgebiet des Monday. [At the sources of the Rio Monday, Paraguay.]** *Ent. Rundschau* 47(2): 6-7; (3): 12; (4): 16. 1930.—Observations of insect and other animal life.

9193. **SKWARRA, ELISABETH. Die Ameisenfauna des Zehlaubruches.** *Schriften Phys.-ökon. Ges. Königsberg i. Pr.* 66(2): 3-174. 2 pl., 12 fig. 1929.—This monograph comprises a study of the ants of living sphagnum bogs and their vicinity. The distribution of the faunistically interesting sp. *Formica fusca-picea* Nyl and *F. uralensis* Ruzsky was established; in Siberia both inhabit the Steppes, but westward they become high moor sp. On the basis of distribution of ant sp., they can be divided into those absent from, those invading, and those limited to the bog habitat. The last 3 chapters deal with the nest ecology of the bog ants (similar terrains show a certain uniformity of nest structure), the methods of hibernation, and the relatively few inquilines found in the ant nests. An extensive bibliography is appended.—*E. Skwarra* (*transl. by H. G. Good*).

9194. **STADLER, HANS. Vorschläge zur zweckmässigen und einheitlichen Gestaltung örtlicher Avifaunen, erläutert an Beispielen aus der Vogelwelt Unterfrankens. Ein Wort an die Avifaunen schreibenden Zeitgenossen.** *Verhandl. Ornith. Ges. Bayern* 19(1): 110-148. 7 maps. 1930.—The treatment of local avifauna from an ecological point of view is suggested: the division of the whole area into its ecological subdivisions, with an account of other vertebrates and also invertebrates found in each; a discussion of climate and geological conditions, of changes in the fauna due to man or to other causes, and of distributional limits of various sp.; and a detailed account of migration. Finally, a systematic account of the sp. is indispensable. Numerous examples of this method of treatment are drawn from an area in the Main Valley of northern Bavaria.

9195. **SUNDSTROM, KURT-ERIK. Ökologisch-geographische Studien über die Vogelfauna der Gegend von Ekanäs [Finland].** *Acta Zool. Fennica* 3: 1-170. 17 maps, Portrait, 13 pl. 1927.—This paper is prefaced with an anonymous biographical sketch of the author (1900-1925) and a portrait. The 1st part includes a discussion of ecological factors and methods of determining the numbers of individuals of the bird fauna; a description of the area investigated (a portion of the reef-dotted coast of southwestern Finland) and of the 5 ecological

subdivisions of this area; and a review of previous work on the local avifauna. The systematic account treats of 179 sp., of which 116 were nesting; it includes technical and Swedish names, and notes on geographical and ecological distribution, frequency, details of nesting, song, migration, and general habits. Maps indicate the local distribution and frequency of many breeding sp. Censuses are given of the breeding birds of 25 selected areas of limited extent. Tables show the estimated bird population of the whole area (about 1000 sq. km.) by sp.; of the total of about 25,000 pairs, there are 10,000 pairs of *Fringilla coelebs*; 1,500 of *Phyllo-scopus trochilus*; and 700 each of *Sturnus vulgaris*, *Emberiza citrinella*, and *Turdus pilaris*.

9196. THOMAS, C. A. The predatory enemies of Elateridae (Coleoptera). *Ent. News* 42(5): 137-140; (6): 158-167. 1931.—This is a compilation of recorded predators on Elateridae, including Acarina, Pseudoscorpionida, Araneida, Hemiptera, Homoptera, Coleoptera, Diptera, amphibia, lizards, birds, and mammals. The bibliography contains 70 references.

9197. THOMPSON, WARREN S. Ratio of children to women, 1920. A study in the differential rate of natural increase in the United States. 242p. U. S. Government Printing Office: Washington, D. C. 1931.—This study throws light on the differential rates of increase in the city and the country, and the differences in contribution to population growth between the native and foreign born. On the whole, foreign born women have higher ratios of children than native women. In 1870, 19.9% of the population was 40 yrs. of age and over; and in 1920, 26.9% of the population was in this age group. A continuation of this trend will result in an age constitution approximating that of a stationary population. Whereas the 1920 ratios of children to women are in excess of "temporary replacement" needs among both native white and foreign born white women, but particularly among the latter, they are deficient for "permanent replacement" needs among the native white women (except in rural parts of the country). In the light of the increasing restriction upon immigration, the higher average age of the population, etc., it appears probable that population growth will show a rapid decline in the near future, and will become stationary within a few decades.—*W. S. Thompson.*

9199. UVAROV, B. P. Insects and climate. *Trans. Ent. Soc.* [*London*] 79(1): 1-247. 53 fig. 1931.—Data culled from over 1150 papers are presented on the influence of climatic factors on insects. Investigators interested in insect epidemiology should pay more attention to climatic factors and less to biotic relationships. Physiological studies in the laboratory are the basis for practical investigations in the field. The 1st part is a summary of such studies. The 2nd part contains a survey of the facts relating to the influence on insects of the natural climatic environment. A discussion of temp. occupies most of the 1st section, with shorter divisions on humidity, light, and atmospheric pressure. While an increase in temp. shortens the length of development, up to a certain point, a short exposure to temp. below developmental zero may have the same effect. Those who aim to express the relation between temp. and development by very exact formulae should not base their speculations on external temp., since these may differ considerably from the body temp. of the insects, and that difference is not constant. The 2nd section begins with weather and the activities of insects. Such examples are cited as the mass migration of locusts at high temp., the increase in the population of the herb stratum after a rain, and the influence of wind on the flight of insects. As to the cyclical phenomena, it is shown that the daily activities of the insects are directly dependent on the daily rhythm of the weather, and that they are to be explained not by any one factor but by combinations of several meteorological factors. Seasonal cycles, and the problems of diapauses, are discussed in detail. Moisture is of great importance in hibernation, and of governing importance in aestivation. Climate affects distribution and abundance. Wind is important in dispersal. Temp. affects dispersal through its effect on activity, and may also be a limiting factor, more at lower ranges than high. Temp. and humidity are much more important than any other factors in limiting distributions; ecoclimates and microclimates are more important than general meteorological conditions. Data on the control of numbers by climatic factors show that destruction of a high % of insects occurs at a given stage; the stage and governing factors vary greatly in different sp. The commonly accepted theory that fluctuations in numbers of insects are regulated by interrelation between the insect and its natural enemies, and that there is stable equilibrium, is severely criticised. Forecasts of outbreaks should be based on a thorough understanding of the physiological responses of the insect and the environmental factors to which it may be subjected. Control methods may be phenological, ecoclimatic, and by direct utilization of climatic factors.—*G. Shaw.*

9200. WARDLE, ROBERT A. Significant variables in the blowfly environment. *Ann. Appl. Biol.* 17(3): 554-574. 1930.—The environmental factors affecting the development of the blowfly, *Lucilia sericata*, include those which influence the biotic potential and the length of the developmental stages; those which influence the biotic potential but not the length of the stages; and those which influence behavior only. During the pre-imaginal stages of the insect, atmospheric and soil temp. outside the range 30-37° C. are of greatest importance. Relative atmospheric humidity values outside the range 90-100% and soil moisture content outside the range 40-60% are effective only during the season of adult activity. During the hibernation or aestivation period these values are 10-30° C. for temp., and 40-60% for soil moisture. Next to these factors in importance is the ratio between ♀ population and oviposition. Parasites and predators are less important factors. Formulae expressing the developmental rates for the different developmental stages of the insect separately and for the same stages taken as a unit, are presented; that for the entire pre-imaginal period is $y = 100/0.3x - 1.6$, where y denotes the length of the period and x the temp. Threshold temp., indicated by the reciprocals of the developmental curves, agree with the observations except in case of eggs above 14° C., where the indicated threshold is 9.5° C., obviously too high. A suggested explanation is that the velocity of development at this temp. is accelerated by the increased mass of atmospheric moisture per unit of saturated air.—*L. M. Peairs.*

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*

W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 9063, 9146, 9151, 9250, 9257, 9309, 9315, 9318, 9322, 9358, 10920, 10956, 10958, 11018, 11024, 11037, 11039, 11071, 11072, 11197, 11198)

DISEASES CAUSED BY FUNGI

9201. **BERGAMASCHI.** Une nouvelle maladie des fruits du prunier. *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(1): 25-26. 1931.—Preliminary report on *Microstroma tonellianum* causing a disease of fruits of *Prunus domestica.*

9202. **CARON, OMER.** The cucumber gall. *Ann. Rept. Quebec Soc. Protect. Pl.* 20(1927-1928): 69-70. 1928. [French version: *Rapport Ann. Soc. Québec Protect. Pl.* 20(1927-1928): 73-74. 1928.]—*Cladosporium cucumerinum,* first noted at Sorel, Quebec, in 1925, is inconspicuous on the leaves, but on the stems and young fruit dark spots with drops of a viscous fluid are formed, later becoming whitish and then green, due to the sporulation of the fungus. The organism has been obtained in pure culture and successful inoculations made.—*W. A. Whitney.*

9203. **HOPKINS, J. C. F.** A Phytophthora from Antirrhinum causing a stem rot of tobacco. *Proc. Rhodesia Sci. Assoc.* 30: 49-52. 1930/1931.—Cultivated *Antirrhinum* in Rhodesia is attacked by *P. parasitica,* causing collar rot and wilt. Experimental infection of tobacco was obtained. This is believed to be the first record of the fungus on *Antirrhinum.*

9204. **IKATA, SUEHIKO, and TSUYOSHI HITOMI.** A new leaf-blight disease of the grape-vine. [In Japanese, with English summary.] *Ann. Phytopath. Soc. Japan* 2(4): 357-373. 2 pl. 1931.—The disease and its causal fungus, *Acrospermum* viticola* (p. 372), are briefly described. The conidial stage belongs to the genus *Spondylocladium* on *Acrothecium.* On culture media the fungus grows well, constantly producing conidia; perithecia have never been found. By artificial inoculations with conidia or ascospores, infection is obtained on American varieties (*Vitis labrusca*) but not on European varieties (*V. vinifera*). Incubation period is about 15-20 days from inoculations with ascospores, 15-16 days in the case of conidia. Infection results only when the under leaf surface is inoculated. Penetration is through stomata by means of germ-tubes. The primary infection is perhaps solely due to ascospores, because the conidia do not survive beyond May. Production of perithecia begins in November, a sclerotioid body first being formed; ascospores are formed in June-July. Optimum growth of the fungus is at 20-25° C.—*Authors' résumé.*

9205. **LIESE.** Starke Schäden durch den Pappelkrebs. *Deutsche Forstzeitg.* 46(19): 465-466. 2 fig. 1931.—Canadian poplar in western Westphalia recently suffered extensive damage by *Nectria coccinea* var. *sanguinella,* and probably also by *N. galligena* var. *major.* This wound parasite is characterized by an unusually rapid development of cankers, which appear even on 2-3-yr. old twigs.—*W. N. Sparhawk.*

9206. **MAIRE, R.** Algeria: Rhizoctonia medicaginis. *Internat. Bull. Plant Protect.* 5(7): 113. 1931.—Disease on lucerne new to north Africa.

9207. **MENDIOLA, VICTORIA B.** The Fusarium disease of corn. *Philippine Agric.* 19(2): 79-106. 2 pl., 1 fig. 1930.—A summary of this disease of maize caused by *F. moniliforme,* with special reference to its history in the Philippine Is.

9208. **MULLER, H. R. A.** Voorloopige mededeeling over een schimmel, geïsoleerd uit instervende koffieboomen in Zuid-Sumatra. [A mold isolated from coffee trees in south Sumatra.] *Arch. Koffiecult. Nederlandsch-Indië* 3(3): 167-181. 7 fig. 1929.—A fungus was consistently isolated from coffee trees infected by the "top disease" as well as from trees attacked by a die-back disease. The latter malady affects the branches of older trees, but shows much resemblance to the top disease of young trees. The identity of the fungus isolated from young trees with that obtained from old trees indicates the probability of the 2 diseases having a common cause. No fructifications of the fungus have been seen, but from the mycelial characteristics it belongs to the genus *Rhizoctonia.—From author's summary.*

9209. **ZÖHRER, FRIEDRICH.** Die Schäden durch Holzrücken im Hochgebirge. *Forstwiss. Centralbl.* 53 (14): 481-498. 1931.—In getting logs out of thinned or partially-cut stands in the mountains many of the standing trees are wounded, and most of these are later attacked by fungi. The rate of vertical and horizontal spread of rot in several hundred spruce trees was investigated and correlated with crown classes and age of the wounds. The average vertical spread ranged from 16.4 cm. a year in suppressed trees to 22.5 cm. in dominants, and the horizontal spread ranged from 8.5 sq. cm. a year in suppressed trees to 17.6 sq. cm. in dominants.—*W. N. Sparhawk.*

DISEASES CAUSED BY BACTERIA

9210. **FOSTER, W. R.** Bacterial fruit blight of the loganberry. *Scientific Agric.* 11(8): 529-534. 5 fig. 1931.—For a number of years, a blight of the immature fruits of the loganberry caused considerable loss in British Columbia, especially in 1930. In many of the fields 50-80% of the fruits were blighted. The symptoms are a necrosis or a desiccated condition of the fruit. A bacterial organism was isolated and its pathogenicity proved by inoculation and re-isolation in the field and in the laboratory. The same organism was also isolated from the wild blackberry and thimbleberry. When immature fruits of the raspberry and thimbleberry were artificially inoculated, typical symptoms developed. The organism has the S. A. B. index number 5210, 32100, 1000. and has been named *Bacillus* desiccans* (p. 533).—*From author's summary.*

9211. **REID, D. W.** The diagnosis of fireblight in New Zealand. *New Zealand Jour. Sci. and Tech.* 12(3): 166-172. Map, 2 fig. 1930.—This discusses the distribution in New Zealand, symptomatology, morphology, and cultural relations of the causal organism, which is a peritrichiate rod, differing somewhat in size, number of flagella, and rate of gelatin liquefaction, from *Bacillus amylovorus* as currently described in the U. S. A. *Eriobotrya japonica* (loquat) and *Pyracantha angustifolia* are new hosts.

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

9212. **FUKUSHI, TEIKICHI, and HIDESAKU SAITO.** Angular leaf spot of Zinnia elegans Jacq. caused by eelworms. (Preliminary report.) *Tottori Nōgaku-Kwaihō (Trans. Tottori Soc. Agric. Sci.)* 2(1): 45-56. 1 pl. 1930.—This new disease, characterized by brown angular leaf spots bounded by small veins, occurs in the Province of Inaba and is caused by *Aphelenchus ritzema-bosi,* the chrysanthemum nematode, which also affects *Phlox drummondii* and *Dahlia cariabilis* in other countries. When artificially inoculated, it readily infests healthy

leaves of *Zinnia* and *Dahlia* and multiplies in the affected tissues. Results of inoculation experiments on chrysanthemum leaves are inconclusive, although a few naturally infested chrysanthemums were found growing near the affected zinnias.—*Authors' summary.*

9213. MARTIN, W. H. Brown ring disease of the sweet potato. *U. S. Dept. Agric. Bur. Plant. Indust. Plant Dis. Reptr.* 15(5): 41-42. 1931.—Summary of the disease, caused by *Tylenchus dipsaci*, as it has occurred in New Jersey since 1929.—*W. A. Whitney.*

9214. STEINER, G. Tylenchus dipsaci, the bulb or stem nema parasitizing strawberry plants in North Carolina. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(5): 42. 1931.—Records briefly the occurrence of a stem and fruit fasciation instead of the customary symptoms.—*W. A. Whitney.*

9215. STEINER, G. Rhabditis lambdiensis Maupas associated with a disease of mushrooms. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(5): 43. 1931.—This nema, associated with a pileus decay, is thought to carry decay-producing bacteria (perhaps *Bacterium tolaasi*) during sprinkling periods, and not to have any primary relation to the disease.—*W. A. Whitney.*

NON-PARASITIC DISEASES AND TERATOLOGY (INCLUDING DISEASES OF UNKNOWN CAUSE)

9216. FISHER, D. F., C. P. HARLEY, and CHARLES BROOKS. The influence of temperature on the development of watercore. *Proc. Amer. Soc. Hort. Sci.* 27: 276-280. 1930(1931).—Watercore of apples is a result of premature and non-uniform starch conversion that may be induced by the effect of comparatively high temp. on diastatic activity. High soluble sugar concentrations resulting from this hydrolysis apparently set up abnormal osmotic relationships, resulting in the guttation of the affected tissues with water.—*Authors' conclusion.*

9217. KOMURO, HIDEO. Über die Gewebeabnormität infolge von Riesenkern- und Riesenzellentstehung durch Tauchung in Kohlenteerlösung bei Pisum sativum-Wurzelspitze. [Tissue abnormality in consequence of the initiation of giant nuclei and giant cells by immersion of pea root tips in aqueous tar extract.] *Proc. Imp. Acad. [Tokyo]* 6(9): 375-378. 3 fig. 1930.

9218. [PINEVICH, L. M.] ПИНЕВИЧ, Л. М. Исследования над хлорозом табачных растений. [Chlorosis of tobacco.] Труды Детскосельской Акклиматизационной Станции при Ленинградском Сельско-Хозяйственном Институте. (*Bull. Sta. Acclim. Leningrad Agric. Inst. Detskoe Selo*) 4. 55-92. 8 fig. 1927.—In the experiments reported unavailability of Fe was the cause of chlorosis, and this disappeared when the plants were placed in an aqueous sol. of Fe salt. With distilled water favorable results were obtained when Fe was given in the form of ferric citrate, whereas with $FeCl_3$ the plants died, possibly because of excessive acidity. With Detskoje Selo tap water, which is rich in carbonates of Ca, good results were obtained with all the sources of Fe used. In the presence of carbonates of Ca, the solution of Fe salts is neutral or slightly alkaline, and the disappearance of chlorosis may be ascribed rather to the influence of Fe than to the acidity of the solution. The disappearance of chlorosis even when the reaction is slightly alkaline may be explained by the delayed hydrolysis of the Fe salts. In a solution of Fe salts in distilled water made alkaline by addition of NaOH up to pH 9.6, Fe may be discovered in the filtrate for many hours, the pH constantly decreasing. Plants that have recovered from chlorosis are again affected if transferred to neutral or alkaline Knop's solution. Chlorosis develops in alkaline Knop's solution and disappears when the solution is acid. In solutions of the same pH, the precipitation of Fe is considerably slower with Fe dissolved in water than in a complete nutrient solution. Chlorosis appears in plants grown in Knop's solution containing $CaCO_3$. The harmful influence of Ca carbonates is in direct proportion to their alkalinity and their buffer action, which maintains the solution at a more or less constant alkaline pH. The elimination of phosphates from a nutrient solution prepared with boiled water with the addition of $CaCO_3$ also induces chlorosis. Fe can not be found in an alkaline solution, containing soluble phosphates and Ca salts, but by eliminating one of these 2 components, Fe may be detected even in an alkaline solution for several hours. In Knop's solution made alkaline either by adding NaOH or $CaCO_3$ a colloidal precipitate of Ca phosphate is formed and removes dissolved iron. The decay and injury of the roots considered by some authors as the principal cause of chlorosis is not an essential condition, and there is no direct connection between the 2 phenomena. Often plants attacked by chlorosis possessed healthy roots, but in an acid reaction the plants remained green, even when the roots rotted severely.—*From author's summary.*

9219. SCHMIDT, ROBERT. Lettuce tipburn studies. *Proc. Ann. Convention Assoc. So. Agric. Workers [U. S. A.]* 31: 298-304. 1930.—In 1925 the heaviest injury occurred on the stiffer soils. Tipburn injury was not visibly influenced by fertilizer combinations, top dressings, organic or mineral nitrogen, or method of planting, except where growth was retarded, in which case the injury was less. Irrigation increased tipburn injury. Tipburn was severe in dense shade. The greatest injury occurred in periods of low evaporation immediately following periods of high evaporation. It is evident that field control of lettuce tipburn by cultural methods or fertilization is impossible. Injury can be reduced by methods which retard growth; but since this also gives a head of poorer quality, it is not desirable.—*Author's conclusions.*

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

9220. DUFRÉNOY, JEAN. Condition d'hypotonie des cellules affectées par la mosaïque. *Compt. Rend. Soc. Biol.* 98(17): 1499-1500. 2 fig. 1928.—Neutral red in 9% sugar solution is isotonic with the affected cells in mosaic diseases (of *Sida, Phytolacca,* celery), confirming their hypotonicity.

9221. FOLSOM, DONALD. Virus diseases of the potato. *Proc. Ann. Meet. Potato Assoc. America* 17: 83-101. 1930(1931).—A review of work done in the U. S. A. and Europe, principally from 1928-1930. A long bibliography is given.

9222. SMITH, KENNETH M. Composite nature of certain potato viruses of the mosaic group. *Nature [London]* 127(3210): 702. 1931.—Recognizing that there are several virus diseases of potato which may be present together, leading to complexity of the diseases produced, 3 techniques for their separation are outlined: (1) utilization of the selective relationship between the aphis vector (*Myzus persicae*) and the tobacco plant; (2) by use of "filter" plants, e.g., by passage of a mixed virus through a plant susceptible to one of its components and immune to others; and (3) by taking advantage of the unequal rates of movement of the constituent viruses within the plant host.

9223. STOREY, H. H. A new virus disease of the tobacco plant. *Nature [London]* 128(3222): 187-188. 1931.—A virus disease was found at Amani, Tanganyika, of which the characteristic symptom is leafy outgrowths from the veins on the lower surface of the leaf. It has been transmitted by grafting and by transfer of an undetermined aleyrodid from diseased to healthy plants.

9224. VINSON, C. G., and A. W. PETRE. Mosaic disease of tobacco. II. Activity of the virus precipitated by lead acetate. *Contr. Boyce Thompson Inst.* 3(1): 131-146. 1931.—In juice from frozen diseased plants of *Nicotiana tabacum,* tobacco-mosaic virus was not completely inactivated at pH 1.8-1.9; activity falls off abruptly at pH 9.2-9.5. Norit or talc suspended in diseased juice greatly increases the infective power. The basic lead acetate precipitate obtained on clearing diseased juice, washed with successive portions of water, yields highly active suspensions. Decomposed with

H_2S, the pH of the suspension becomes too alkaline for the stability of the virus. The virus could not be recovered from the precipitate with oxalate, sulphate, or CO_2. From a neutral lead acetate precipitate from diseased juice, by elutriation with phosphate buffer at pH 6.5 or aqueous Na_2CO_3 in the presence of amyl alcohol, highly active preparations are obtained. Phosphate buffer at pH 4.5 elutes pigment but little virus. Directions are given for the preparation of a clear aqueous solution of the virus. Dilute Na_2CO_3 elutriates at pH 6.5 show 1-3% of the solid material of the original juice. Crystals obtained from aqueous sol. are inactive. From dilute acetone sol. at low temp. an active crystalline product is obtained.—*A. W. Petre.*

DISEASE RESISTANCE AND PARASITISM

9225. **BERKELEY, G. H., G. O. MADDEN, and R. S. WILLISON.** Verticillium wilts in Ontario. *Sci. Agric.* 11(11): 739-759. 10 fig. 1931.—The resting condition in the genus *Verticillium* is discussed and one type (torulose resting mycelium) is considered to belong to the *V. albo-atrum* group and the other (pseudo-sclerotium) to the *V. dahliae* group. Cross inoculation studies of the 2 type cultures (*V. albo-atrum* and *V. dahliae* on snapdragon, tomato, and potato) have shown *V. albo-atrum* to be a much stronger parasite in every case. *V. dahliae* is unable to produce wilt on snapdragon whereas *V. albo-atrum* is an active parasite. On tomato *V. albo-atrum* produces definite wilt whereas *V. dahliae* generally causes a slight stunting with yellowing of the lowest foliage but no wilt.—*G. H. Berkeley.*

9226. **HAMILTON, J. M.** Some relations of environment to apple scab and its control. *New York State Hort. Soc. Proc. Ann. Meet.* 76: 185-189. 1931.—The season of 1930 was not a particularly severe one for apple scab development. On May 16 about $\frac{1}{3}$-$\frac{1}{2}$ of the ascospores were mature. In general, the discharge of ascospores began on May 14 and ended about June 6. The main infection period occurred immediately after petal fall. There were 6 infection periods. The disease was found on the foliage on May 27 and was prevalent during the 1st week in June. Lesions did not appear on the fruit in any quantity until the 1st week in July. The experimental plots showed clearly that, where the trees had been well cared for and scab kept under commercial control, the milder treatments [dry-mix and Cal-Mo-Sul (calcium monosulphide)] were as effective as lime-sulphur. However, where there was a heavy source of inoculum, the weaker treatment was entirely inadequate. For practical purposes lime-sulphur and lime-sulphur+dry-mix (half and half) are approximately equally effective where scab is extremely severe. Dry-mix did not compare with sprays containing lime-sulphur. Best results were obtained with lime-sulphur continued through the calyx spray and the substitution of milder treatments for subsequent sprays. Lime-sulphur applied after infection periods of 43-47 hr. may effectively control scab under these conditions. —*J. M. Hamilton.*

9227. **HOLTON, C. S.** Hybridization and segregation in the oat smuts. *Phytopath.* 21(8): 835-842. 4 fig. 1931. —*Ustilago avenae* and *U. levis* are perfectly inter-fertile. Monosporidial lines of opposite sex fuse in culture and also produce smut on the host, regardless of whether crosses are made inter- or intraspecifically. Sporidial fusions do not occur within a monosporidial line of either species and neither do they occur in intra- or interspecific combinations of monosporidial lines of similar sex. When such combinations are used for inoculation, no smut is produced on the host. Intraspecific crosses produced the loose type of smut in the case of *U. avenae* and the covered type in the case of *U. levis* while the smut produced by the interspecific crosses was of the loose type. Intraspecific hybrid chlamydospore markings were characteristic of the species, but the interspecific hybrid chlamydospores were echinulate. Primary sporidia isolated from promycelia of germinating interspecific hybrid chlamydospores would not develop in culture with but rare exceptions. However, primary sporidia isolated from promycelia of germinating intraspecific hybrid chlamydospores developed normally. A cross between 2 monosporidial lines that originated from interspecific hybrid chlamydospores produced a buff type of smut which is apparently a new and previously undescribed type. The chlamydospores of this type were smooth and apparently colorless, in contrast to the dark brown chlamydospores of the common type of oat smut. Segregation for sex factors in *U. avenae* and *U. levis* was found to be on a 2:2 basis. There is strong evidence that a delayed segregation of factors for certain cultural characteristics occurs in *U. avenae* and *U. levis* since monosporidial lines originating from the same segment of the promycelium often exhibit striking differences in cultural characteristics.—*Author's summary.*

9228. **LEWIS, I. M.** The inhibition of Phytomonas malvaceara in culture media containing sugars. *Jour. Bacteriol.* 19(6): 423-433. 1930.—*Phytomonas malvaceara* fails to grow in culture media containing glucose, maltose, lactose, galactose, or levulose and various nitrogenous compounds when sterilized at 122° C. for 15 min. This is not due to lack of ability to assimilate the various sugars but to chemical changes caused by the high temp. of sterilization. Inhibition depends on the amount of peptone, sugar, and phosphate present; the reaction of the solution during the heating period; and the temp. and length of the period of sterilization. It is not due to changes in pH during sterilization. Inhibition occurs in culture media which, in the absence of the sugars, are suitable for growth. It is concluded that inhibition is due to conversion of the nitrogen compound into a form which is not suitable for assimilation by some species of bacteria.—*Author's summary and conclusions.*

9229. **LIMBOURN, E. J.** Flag smut of wheat. Variety resistance tests, 1926 to 1930. *Jour. Dept. Agric. Western Australia* 8(2): 214-217. 1931.

9230. **LINFORD, MAURICE B.** Transpirational history as a key to the nature of wilting in the Fusarium wilt of peas. *Phytopath.* 21(8): 791-796. 2 fig. 1931.—By following transpirational histories of diseased and healthy plants preliminary data have been obtained indicating that Fusarium wilt (*F. orthoceras* var. *pisi*) of peas may result not from a diminished water supply but from an excessive loss of water from the leaves, pointing to loss of normal powers of water retention by leaf protoplasts.—*From author's summary.*

9231. **LINFORD, MAURICE B.** Studies of pathogenesis and resistance in pea wilt caused by Fusarium orthoceras var. pisi. *Phytopath.* 21(8): 797-826. 9 fig. 1931. —*F. orthoceras* var. *pisi* can infect the pea plant and cause disease without the aid of other microorganisms or of gross mechanical injury. Peas grown in culture tubes on sterilized soil or on agar become infected readily upon inoculation. Wounding the root system slightly delays the appearance of symptoms in susceptible plants but does not lower the resistance of resistant peas. Dilution of highly infective soil with steam-sterilized soil leads to a greater retardation of the disease than a corresponding dilution with non-infested raw soil. A search for soil toxicity by the action of the wilt fungus gave only negative results. In the characteristic development of pea wilt under conditions favorable for the disease, there are definite changes in the affected plants which precede wilting and leaf necrosis. Pronounced dwarfing is accompanied by increased rigidity of the entire shoot, hypertrophy of the lower stem internodes, and rolling of leaf laminae. Before wilting begins, diseased pea stems lose water more slowly upon exposure to drying and have a higher content of dry matter with a proportionately increased ash content, an increased osmotic value of the cell sap, and an increased capacity for regeneration. These symptoms do not indicate general starvation or desiccation but suggest unbalanced nutrition and failure of translocation. Filtrates from cultures of the wilt fungus on Richards sol. produce a type of rapid necrosis in cut pea stems which appears comparable to the sudden wilting of young plants in

the early development of this disease. Varieties of peas differ in susceptibility to toxic culture filtrates, but experiments with 10 strains and varieties failed to reveal any correspondence between this and the resistance or susceptibility of the same varieties to Fusarium wilt. A shortage of water induced directly or indirectly by the fungus may sometimes be a factor in the wilting of large plants but probably not in the early collapse of young seedlings. In the main pathogenesis is attributed to toxic substances from the fungus within the host plant which lead first to a derangement of metabolic and growth processes and finally to death of the tissues. Actual wilting or slow necrosis is the culmination of a long series of changes.—*From author's summary.*

9232. **LINFORD, MAURICE B. Wound inoculation in relation to resistance in the Fusarium wilt of peas.** *Phytopath.* 21(8): 827-833. 2 fig. 1931.—By inoculation of young pea plants with *F. orthoceras* var. *pisi* through wounds in aerial parts, symptoms were obtained which partially simulated those typical of the pea wilt disease. A higher percentage of infection was obtained in this way in the resistant variety, Horal, than in the susceptible variety, Badger, and the course of the resulting disease was similar in both varieties. The results are taken to indicate that the expression of varietal resistance is largely localized within the root system.—*Author's summary.*

9233. **MITTER, J. H., and R. N. TANDON. A cultural study of two fungi found in an Indian hill apple.** *Jour. Indian Bot. Soc.* 8(3): 212-218. 1 pl., 3 fig. 1929.—Isolations from a decayed apple (probably from Kúlú) revealed 2 fungi, "A" and a species of *Sphaeropsis* (? *malorum*). Cultures of the fungi on various media confirmed their distinctness. Behavior in culture is described. Apples inoculated with "A" were only slightly affected, but those inoculated with *Sphaeropsis* sp. were completely rotted. This seems to be the first record from India of *Sphaeropsis* attacking apples.—*W. Dudgeon.*

9234. **RAEDER, J. M., and W. M. BEVER. Spore germination of Puccinia glumarum with notes on related species.** *Phytopath.* 21(8): 767-789. 3 fig. 1931.—A higher percentage germination of urediniospores of *P. glumarum* occurred in tap water than in distilled or rain water. The opt. relative humidity and temp. for retention of germinability of urediniospores of *P. glumarum* were 49% and 9-13°C., resp., at which spores remained viable 88 days. Urediniospores of *P. graminis phlei-pratensis* and *P. graminis tritici* remained germinable under the same conditions for 120 and 128 days, resp. Those of *P. triticina* were viable 124 days at 3-11° and a rel. humidity of 49%. Transferring spores which had been held at 49% rel. humidity at 29-30°, after all germination had ceased, to 9-10° for 48 hr. resulted in renewed germination in all 3 rusts. The spores of *P. glumarum* germinated 6 days longer; those of *P. graminis tritici*, 11 days; and those of *P. triticina*, 8 days. In like manner, the urediniospores held at 0° and 49% rel. humidity were transferred, after they had ceased germinating, to 23-26° for 48 hr.; thereupon spores of *P. glumarum* germinated 4 days longer, those of *P. graminis tritici* and *P. triticina* 6 days longer. Germination of teliospores of *P. glumarum* was first obtained in September, 1926, from newly collected material. At temp. prevalent in an ordinary ice refrigerator, teliospores retained their germinability longer than simultaneously collected spores held at 28-30°C. Teliospores incubated under these conditions apparently had lost their ability to germinate by the following spring but were revived by various stimuli. Many teliospores seemed to be impermeable to water. Lack of uniformity in germination is probably due to the age difference in the spores. Various stimuli produced inconsistent results in attempts to revive the capacity for germination. Immersing the spore-bearing material in a 1% sol. of citric acid for 15 min. induced spores to germinate after they had apparently lost this ability. Boric, hydrochloric, nitric, chromic, oxalic, sulphuric, lactic, and acetic acids, in 1% or weaker sol., seemed to stimulate germination. Induced germination of teliospores was not the result of any certain pH value of the acids. Fresh teliospores collected in 1927 did not possess the same germinating power as did those collected in 1926. Results obtained with ammonium thiocyanate, ethyl bromide, ethylene dichloride, an ethylene-oxygen mixture, and H_2O_2 were not conclusive of induced germination of teliospores. Alternate wetting and drying of teliospores at ordinary temp. did not induce germination, nor did freezing under air-dry conditions. Exposing teliospores to a combination of high humidity and freezing temp. resulted in a marked increase in germination. Abundant sporidia developed when teliospores were germinated in an exposed drop of water on a slide.—*From authors' summary.*

9235. **RIVERA, VINCENZO, e ENRICO CORNELI. Ricerche sullo sviluppo delle ruggini sul frumento in agro di Perugia. Memoria prima. [Development of wheat rust in the vicinity of Perugia.]** *Ann. Tecnica Agraria* 1 2(5): 545-588. 3 pl. 1929.—A rust map showing the areas where rust was epiphytotic and where it was moderate was prepared. A study of this map shows that clay soil induces susceptibility; that plants grown in soil of fine texture are much more disposed to rust than those grown in a coarse soil; and that a humid, shady locality is favorable for the development of an epiphytotic. Some of the different varieties of wheat included in the examination could be classified as to rust susceptibility; but with others, conflicting results, amounting to inversion of their usual resistance, were obtained. The problem of hibernation of the fungus is complicated due to the fact that the alternate host, *Berberis vulgaris*, is not attacked by *Puccinia* in this locality, and the teliospores appear not to form basidia. —*F. Gioelli (transl. by C. Chupp).*

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, AND SPRAYING)

9236. **SMALL, T. Tomato leaf mould.** *Exp. & Res. Sta. Nursery & Market Gar. Indust. Devel. Soc. Turner's Hill, Cheshung, Herts, Ann. Rept.* 16: 40-56. 1930 (1931). —Most fungicides gave better control of *Cladosporium fulvum* with Agral 1 than with saponin as a spreader. Effective control was had on pot plants by spraying with ammoniacal copper carbonate, colloidal sulphur A, and salicylanilide; the 1st was useful for spraying diseased crops. The disease was controlled by ethylene dibromide, quinone and thymol, in laboratory experiments, and by quinone in trials in a small glasshouse. Sulphur fumigation with Campbell's apparatus protected only the upper side of the leaves from infection and failed to kill the spores on the under side of diseased leaves. Inoculation tests showed that infection may occur on either side of the leaf. Large empty glasshouses may be practically freed from infection by fumigation with formaldehyde or SO_2. The min., opt., and max. temp. for germination of the spores of *C. fulvum* are: below 38°, 72-77°, and 89° F., resp. It is shown that the germ tubes can withstand considerable drying. The thermal death point of the spores is 115°F. Spores on diseased leaves were not killed by exposure to high temp. on several successive days.—*From author's summary.*

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

9237. **FRÖHLICH, JULIUS. Die wichtigsten Krankheiten der Bäume und Fehler des Holzes im südosteuropäischen Urwalde. [The principal tree diseases and defects of timber in virgin forests of southeastern Europe.]** *Forstwiss. Centralbl.* 53(8): 277-285. 5 fig. 1931.

9238. **HOPKINS, J. C. F. A list of plant diseases occurring in Southern Rhodesia. (June, 1930, to May, 1931.)** *Rhodesia Agric. Jour.* 28(7): 663-669. 1931.—List arranged by common names of hosts.

9239. **LEEFMANS, S. Ziekten en plagen der cultuurgewassen in Nederlandsch-Indië in 1928.** *Mededeel. Inst. Plantenziekten* 75: 1-96. 1929.—During 1928 the weather was on the whole wet. Cacao was attacked by

Helopeltis. On old *Hevea* trees in Sumatra and East Java white root fungus (*Rigidoporus microporus*) was most injurious; in West Java the red fungus (*Ganoderma pseudoferreum*) was more prevalent and the white root fungus attacked younger trees. In Sumatra a non-parasitic die-back of young trees occurred. Mites were harmful in all places. Nematodes attacked *Coffea* and, during wet weather, *Corticium salmonicolor* was prevalent. Injury by *Stephanoderes hampei* and *Xyleborus coffeae* was locally severe. For the 1st time the basidial fructification of *Fomes lamaoensis* was developed in culture. The mosaic and sereh diseases of sugar cane are being reduced by cultivating the variety P. O. J. 2878, which is however susceptible to 2 minor diseases, *Fusarium* and red stripe. Gum disease was serious. Of animal pests *Scirpophaga intacta* and *Oregma lanigera* were most important next to *Colobathristes saccharicida* and rats. Cinchona suffered from Psychidae and from Limacodidae as well as from *Helopeltis*. Slime disease destroyed 9% of the beds of tobacco and up to 36% of the older plants. Tobacco mosaic is prevalent and other virus diseases, as Rotterdam B and Kroepoek, were reported. In Java *Phytophthora nicotiana* was rather severe. The moth *Gnorimoschema heliopa* was the most injurious pest. Complaints were received of root fungi (*Ganoderma pseudoferreum* and *Rosellinia arcuata*) injuring tea. *Helopeltis* was generally found but was surprisingly absent from Central Java. For the 1st time *Rigidoporus microporus* was found on oil palm trees. In Java slime disease destroyed up to 50% of the potato harvest. In Sumatra virus diseases were bad. Next to these, potatoes suffered from *Epilachna*. *Arachis* was attacked by gapong disease (cause unknown). *Aproaerema* and *Cicadellinae* were important pests. A rat (*Mus rattus rufescens*) was reported to have destroyed many coconuts. Through the wet weather *Sclerospora javanica* on maize was very prevalent, the losses amounting to 50% of the crop. Cabbage suffered from *Pseudomonas campestris*. It was generally a good year for rice, with few diseases, though root rot occurred in Java. *Thrips tabaci* injured onions.—*H. L. G. de Bruyn.*

9240. **MURRAY, R. K. S. Diseases of rubber in Ceylon, 1930.** *Rubber Res. Scheme (Ceylon) Quart. Cir.* 8(1): 1-4. 1931.—Includes root and collar, stem, nursery and leaf diseases.

9241. **OSTERWALDER, A. Krankheiten der Obstbäume und des Beerenobstes.** 201p. 76 fig. Huber and Co.: Frauenfeld, 1928.—The more important diseases of apple, pear, cherry, plum, peach, apricot, quince, walnut, currant, gooseberry, raspberry, and strawberry are treated primarily for the fruit grower. Approximately half the space is devoted to diseases of apple and pear. Diagnosis and control are emphasized. More general sections deal with sooty mold of foliage and chlorosis. A key of 15 pages is presented to aid in identification of diseases.—*H. E. Thomas.*

9242. **RIVERA, VINCENZO. Malattie delle piante. Parte generale. (Appunti sulle lezioni di introduzione al corso.)** [Diseases of plants (Brief introductory lessons to the course).] 108p. 7 fig. G. Bardi: Roma. 1930.—In the 1st chapter are summarized the effects of temp. and humidity of the air and soil as factors limiting or favoring the development of diseases in plants. Under each heading a number of examples of appropriate diseases drawn from a wide range of sources are discussed. That these conditions may affect both the host and the parasite is emphasized. A theory is stressed that plants are less resistant when wilted or lacking in turgor. In chapter 2 the Mendelian inheritance of resistance and susceptibility is discussed. In the 3rd chapter the nature of parasitism, saprophytism, resistance, and susceptibility are discussed, including chemotropism and various theories of the nature of resistance. Some of the outstanding work on each topic is cited.—*F. M. Blodgett.*

9243. **SANDERS, T. W. Garden foes.** 42 pl. (19 col.), 51 fig. **I. Flower foes.** 140p. **II. Fruit foes.** 106p. **III. Vegetable foes.** 109p. W. H. & L. Collingridge Ltd.: London, 1930.—A practical guide to the identification of the commoner injurious insects and plant diseases, divided into 3 parts, each treated as a separate book. Part I deals with the enemies of garden and greenhouse flowers, discussing also the garden friends, including birds, reptiles, amphibians and insects, and gives general advice on spraying machines and the use of insecticides, fungicides and fumigants. Part II includes a brief description of the biology of the commoner pests of apple, apricot, blackberry, cherry, currant, gooseberry, fig, loganberry, nuts, peach, pear, plum, raspberry, strawberry, and grape, with suggestions for their control, and also the use and care of spraying apparatus, use of bands on fruit trees, etc. Formulae are given for insecticides and fungicides. Part III describes the injurious insects and diseases occurring on garden vegetables and truck crops. Formulae for insecticides and fungicides and directions for soil sterilization are given. —*C. Zeimet.*

9244. **WERTH, E. Krankheiten und Beschädigungen der Kulturpflanzen in Jahre 1928.** *Mitteil. Biol. Reichsanst. Land- u. Forstw.* 41. 1-64. 2 fig., 27 maps. 1931. —A survey of Germany presenting data on injuries by frost, mollusks, insects, and vertebrate animals. The author also discusses diseases of cereals, potatoes, fodder, sugar beets, vegetables, fruit and forest trees.

9245. **ANONYMOUS. Italy: New observations.** *Internat. Bull. Plant Protect.* 5(7): 118-120. 1931.—Notes on important diseases and insect pests of crop plants for the winter and spring of 1931.

PLANT PHYSIOLOGY, BIOCHEMISTRY, AND BIOPHYSICS

B. M. DUGGAR, *Editor*

(See also in this issue Entries 9132, 9160, 9165, 9173, 9216, 9218, 9220, 9224, 9227, 9230, 9231, 9234, 9362, 9364, 9366, 9369, 9383, 9390, 9399, 9402, 9407, 9408, 9411, 9433, 9581, 9725, 10175, 10491, 10685, 10765, 10801, 10811, 10842, 10846, 10856, 10859, 10871, 10874, 10882, 10970, 11010, 11011, 11015, 11034, 11038, 11072, 11082, 11091, 11197, 11198, 11207, 11210, 11213, 11238)

OSMOSIS, PERMEABILITY, PHYSICO-CHEMICAL PHENOMENA

9246. **BECK, WILLIAM A. The effect of drought on the osmotic value of plant tissues.** *Protoplasma* 8: 70-126. 1929.—The effect of drought on the osmotic value at incipient plasmolysis (O_s) was studied in 14 different experiments, on the various tissues of the leaf of *Hedera helix*. In the 2nd part of the work the data collected are so arranged that the effect of drought and the accompanying factors can readily be detected for the different tissues. The initial value of a tissue was characteristic for that tissue. The O_s rarely remained constant for a given tissue throughout the course of an experiment. The variation of O_s under the influence of a given combination of factors was characteristic for the epidermal tissues, the guard cells, and the assimilating tissues.—The O_s variations of the epidermis show the least range, speed, and regularity in its response to the

imposed influences in general and to drought in particular. In certain cases the guard cells responded best, but in most cases the assimilating tissues manifested greatest regularity, speed, and degree of response, particularly to drought. The epidermal tissues were very irregular in their response, which seems to indicate that the influence of the accompanying factors easily predominates over the influence of the drought. The reluctance in the epidermal tissues to respond is in harmony with its function as a protective tissue. To a slight extent the epidermis might act as a reservoir of water for the assimilating tissues; the results do not refute such a possible function. Drought causes a marked and rapid increment of the O_2 of the palisade cells. Light is the most effective accompanying factor. Full water supply, 100% relative humidity in the atmosphere, and darkness cause a decrement. Drought causes a marked and rapid increment of the O_2 of the conducting parenchyma. Light is less effective in this tissue than in the palisade cells. Full water supply, 100% relative humidity in the atmosphere, and darkness cause a decrement.—*From author's summary.*

9247. BOAS, FRIEDRICH. Das phyletische Anionenphänomen. Ein Beitrag zur Hylergographie. 94p. 12 fig. Gustav Fischer: Jena, 1927. Pr. 6 M.—"Hylergography" is defined as the study of the effects of substances ("hyles") on the functional capacity of cells with a view to furthering knowledge of cell structure, and is the biological branch of dynamic physical chemistry. The selective effect of common anions on microörganisms (the "anion phenomenon") is one phase of this study. It is well shown in the case of fungi and bacteria, one or the other of which may be entirely suppressed in mixed cultures by proper choice of the anions present; only fungi grow in the presence of 0.2 M NaSCN or KSCN, while in 0.2-1.0 M Na_2SO_4 extremely vigorous growth of bacteria takes place. Iodides (0.3-0.4 M NaI) act like sulfocyanides. Anions may be arranged as to their effects on fungus and bacterial growth in graded series of ascending effectiveness: bacteriotropic → SCN, I, Br, NO_3, Cl, SO_4, P_2O_5 ← mycotropic. Growth of bacteria in yeast-water sugar media is inhibited by Na salts in about the following molar concentrations: 0.2 NaSCN, 0.4 NaI, 1.0 NaBr, 1.6 $NaNO_3$, and 1.6 NaCl; Na_2SO_4 in such concentrations does not inhibit. This is the order of decreasing penetrability into cells and of decreasing toxicity and ionic hydration. The effect of sulfocyanide is increased by caffeine, salicylate, $CaCl_2$, and $MgCl_2$. Guanidine sulfocyanide is especially active. Iodide and sulfocyanide are synergic. The anion phenomenon is regarded as due to inhibition of growth by colloidal swelling of cells caused by anions, and therefore dependent in part upon differences in permeability of fungus and bacterial cells to different anions. Gram positive and Gram negative bacteria are discussed, and also the effects of bile salts which resemble those of sulfocyanide.—*F. Boas (transl. by S. C. Brooks).*

9248. FERNALD, EVELYN I. Freezing point depressions of asparagus shoots determined by a thermoelectric method. *Contr. Boyce Thompson Inst.* 3(4): 483-498. 3 fig. 1931.—Copper-constantan thermo-couples were inserted 1 cm. deep into portions cut from asparagus shoots. The portions were usually 2 cm. long and 1 cm. in diameter. The range of values had a tendency to be high at the tip, decreasing to a point near the soil line, where there was a slight rise, which was followed first by a decrease and then by an increase near the crown. The greatest values for the freezing point depressions were found in the majority of cases in regions 1 cm. and 3 cm. from the tip of shoots still below the surface of the soil. A similar distribution of values was observed in the majority of shoots whose tips had emerged from the soil 1.5 to 3.7 cm. The distribution of maximum and minimum values was less regular in shoots whose tips were more than 5 cm. above the soil.—*E. I. Fernald.*

9249. FREY-WYSSLING, ALB. Theorie des Blutens. *Ber. Deutsch. Bot. Ges.* 47(7): 434-450. 4 fig. 1929.—Bleeding is explained in correlation with osmotic conditions as set forth by the method of Ursprung and Blum. When the vessels are cut the turgor falls to zero, but their absorbing power increases, since in the equation: Absorption power of the cell = absorption power of the cell contents − turgor, the right side increases very rapidly. By reason of the increased absorbing power of the cells they can withdraw water from the adjacent parenchyma cells, which flows out as "bleeding sap." The dead vessels possess no wall pressure, so that their turgor endures only by reason of the external pressure brought to bear on them by neighboring cells. The bleeding pressure can, therefore, be defined as the external pressure acting upon the vessels. But in the phenomena of bleeding this pressure seldom acts alone; it is generally eclipsed by root pressure, which is defined as an excess filtration pressure, by which certain cells of the root parenchyma force water into the vessels.—*A. Frey-Wyssling (transl. by P. D. Strausbaugh).*

9250. MOORE, J. C., R. G. REEVES, and R. M. HIXON. Electrodialysis as a means of studying biochemical differences in abnormal apple tissue. *Plant Physiol.* 2: 313-324. 6 fig. 1927.—The dialyzable electrolytes were separated from the peelings of Jonathan apples using the Mattson electrodialysis cell. The course of the separation was followed by periodic titration of the accumulated acids and bases in the anode and cathode compartments. The anthocyanin pigment migrates as a positive ion necessitating the electrolytic titration of the basic constituents. The results vary according to the conditions of the experiment but they consistently indicate a higher ratio of basic radicals, as compared with the acidic radicals, in the peel of those apples affected by Jonathan spot.—*R. M. Hixon.*

WATER RELATIONS, SAP MOVEMENT

9251. APPLEMAN, C. O., W. D. KIMBROUGH, and C. L. SMITH. Physiological shrinkage of potatoes in storage. *Maryland Agric. Exp. Sta. Bull.* 303. p. 159-175. 1928.—The decrease in wt. of potato tubers during storage is caused largely by loss of water in transpiration, the loss of solids calculated from the CO_2 respired being much smaller. Measurable fluctuations in rate of shrinkage are attributed to changes in rate of transpiration caused by changes in internal physiology. Fluctuations were determined by comparing the loss in wt. of tubers with the evaporation from an atmometer. The rate of transpiration was high immediately after harvest, reaching a low level during the winter, and increasing again when the tubers started to sprout. Differences in 16 varieties were manifested only during early and late storage. Potatoes dug before they were mature transpired about twice as rapidly for a few weeks after digging as those allowed to mature in the field. The removal, at weekly intervals, of the sprouts from tubers sprouting in storage reduced the loss of water below that of those allowed to develop sprouts normally. The actual loss in wt. during storage was higher at low temp. than at high.—*J. Bushnell.*

9252. HUBER, BRUNO. Untersuchungen über die Gesetze der Porenverdunstung. *Zeitschr. Bot. (Festschr. Oltmanns)* 23: 839-891. 14 fig. 1930.—Because of the retarding influence of stomatal movement on evaporation, model evaporation systems were constructed with perforated metallic foils to aid in stomatal transpiration studies. Pore density, expressed as "relative pore area" (ratio of total pore surface area to total system surface area), and pore size were varied in these systems. Constant pore size with an increasing pore area, and constant pore area with the area made up of more but smaller pores, both increased relative evaporation (all evaporation values were converted to a free evaporation surface of equal size). The increase in evaporation from increased pore area is not linear but hyperbolic, due to the increasing counteraction on evaporation by the pores (stomates). The quantitative counteraction can be determined mathematically. Stefan's diameter law, which states that evaporation increases proportionally to pore diam. (not pore area), is valid for evaporation from

pores of different diam. except the smaller ones, for which it gives relatively high results. It is uncertain for small pores and for pores far apart because of their considerable countermovements to evaporation, and can only be demonstrated by mathematical extrapolation on the evaporation from undisturbed pores. The actual output of such pore systems is considerable; pores 50μ in diam. with 5% pore area evaporate 92% as much as a free surface. In wind, evaporation is relatively less, i.e., it increases less through the pore system than from a free surface. The extent of this reduction depends primarily on the pore area and secondarily on pore diam. The output of the pore system is relatively less in dry than in moist air.—*B. Huber* (*transl. by N. A. Pettinger*).

9253. **MASKELL, E. J., and T. G. MASON. Studies on the transport of nitrogenous substances in the cotton plant. IV. The interpretation of the effects of ringing, with special reference to the lability of the nitrogen compounds of the bark.** *Ann. Botany* 44(174): 233-267. 2 fig. 1930.—This paper deals with evidence from short period ringing experiments as to the form in which the longitudinal transport of organic N takes place. Response to ringing consisted of accumulation of substances in bark above ring (or decrease below); in some cases the substance involved was mainly protein N, and in others mainly crystalloid N. Interpretation is complicated by the fact that rate of conversion of crystalloid to protein N, and vice versa, in the bark may be very rapid compared with rate of longitudinal transport of N. Three types of conversion were observed: (1) A conversion of protein to crystalloid N, highly correlated with the decrease in sugar concentration brought about by defoliation or by isolation from the foliage region, paralleled by behaviors of the N in the wood; (2) Conversion of crystalloid to protein N during desiccation, the actual concentration of crystalloid N not diminishing; (3) A rapid conversion, during the day, of crystalloid to protein N, usually occurring when the initial value of the crystalloid: protein N ratio is much above the average. This type of rapid change involves principally asparagine and amino acid N, the residual N fraction being less affected. It was observed only in the bark and not in wood or leaf. The lability phenomena suggest that all N fractions, including labile protein, may contribute to longitudinal adrenal within the sieve tube system; but that movement into and out of the surrounding tissues may be restricted to some crystalloid fraction (possibly residual N) that does not take part in the rapid fluctuations of crystalloid: protein ratio in the bark. The type of ringing response observed, i.e., whether crystalloid or protein N, appears to depend on time interval since ringing (effect of increased sugar concentration on protein: crystalloid ratio), and, when rapid change in the protein: crystalloid ratio is in progress, on the mean level of that ratio during the experiment and the direction of change. Thus character of response is liable to be determined by chemical changes subsequent to transport. In addition, the N response is not, like the sugar response, mainly confined to the region of the sieve tubes but there is considerable spread to surrounding bark tissue and to the wood.—*E. J. Maskell.*

9254. **MASKELL, E. J., and T. G. MASON. Studies on the transport of nitrogenous substances in the cotton plant. V. Movement to the boll.** *Ann. Botany* 44(175): 657-688. 7 fig. 1930.—Two phases of the subject were studied in 1 experiment on each: (1) Effect of removing bolls on N and carbohydrate compounds in leaf, bark, and wood in upper and lower regions of the plant; and (2) uptake of N and carbohydrates by the young boll and the effect of fertilization of the boll. Removal of bolls was followed by increase of N and carbohydrates in leaf, bark, and wood in both regions. The dry wt., less 5.7 times the wt. of N, considered as non-nitrogenous compounds, mainly carbohydrates, increased significantly only in the upper region, whereas the increase in total N was everywhere significant, and the N response was very much greater than the carbohydrate response, except in the leaves of the upper region, thus confirming Murneek's findings that the developing fruits cause a bigger drain on the N than on the carbohydrate supplies of the plant. Polysaccharides accounted for a large part of the carbohydrate response. Protein N increased particularly in the leaves and upper region of the bark, whereas crystalloid N increased in all regions and in general more than protein N. Nitrates remained unchanged in the leaves but decreased in bark and wood of upper region. In general, removal of bolls gave results somewhat similar to those obtained by ringing the stem near its base. The pH value of the sap showed no significant changes on removal of bolls. In the 2nd experiment a marked difference in the uptake of N and carbohydrates by the fertilized and unfertilized bolls became apparent in both ovules and carpels on the 4th day after anthesis, as well as a definite divergence in the march of sap concentrations of certain compounds. No distinction could be drawn, however, between the effect on carbohydrate uptake and the effect on N uptake. Increased rate of utilization and increased rate of entry are 2 types of change that may account for the increased uptake by the fertilized bolls.—*M. C. Merrill.*

9255. **MYBURGH, W. S. Ein selbsttätiger Wasserzuführungsapparat für Topfversuche. [An automatic water supplying apparatus for pot experiments.]** *Zeitschr. Pflanzenernähr. u. Bodenk. A, Wiss. Teil* 15(1): 1-5. 3 fig. 1929.

9256. **NEWTON, R., and W. M. MARTIN. Physicochemical studies on the nature of drought resistance in crop plants.** *Canadian Jour. Res.* 3(4): 336-383; (5): 385-427. 4 pl. 1930.—Hydrophilic colloids bind water and increase the concentration of aqueous solutions, as shown by freezing-point determinations. Dextrose is less effective than sucrose in demonstrating this phenomenon. Concentration, quality, and state of dispersion or coagulation of colloids affect the degree of water binding. The hydrolysis of sucrose added to plant juice in the bound-water determination was shown not to introduce serious errors. Storage of leaf tissue or press juice for a few hrs. even at 0° C. leads to changes in colloidal properties, but errors from this source are avoided by prompt handling. Cylindrical dialyser sacs of 100 cc. capacity required about 48 hrs. for dialysis of plant juice at 3° C., with the water changed every hr. A gradual partial coagulation of colloids took place during dialysis, as shown by a decrease in refractive index, by an increase in gold number, and by sedimentation when centrifugalized. Hydration and dispersion were not always related, though both were affected by pH value and salts. Acid and alkaline salts stimulated hydration less because of the opposing "salt effect." In the presence of the natural crystalloids, hydration was usually greater than in dialysed juice. The osmotic pressure of the tissue fluids of crop plants varied with physiological scarcity of water, but was not a reliable index of drought resistance. Bound-water content was more dependable; the cultivated wheats and several grasses have been on this basis satisfactorily arranged in the order of their drought resistance. The contrasting behavior of 2 poplar sp., with reference to leaf fall and frost resistance, has also been explained. The separation of the colloids by dialysis and the determination of their gold number have been used as aids in interpreting the bound-water values. The method of measuring imbibition pressure by direct pressure on masses of leaves proved unsuitable. The rates of water loss by evaporation from cactus segments and detached leaves of 2 grasses, under controlled humidity conditions, proved the remarkable ability of the cactus to retain moisture, but in the grasses showed no relation to drought resistance.—*R. Newton.*

9257. **[RICHTER, A. A., E. I. DVORETSKAĬA, and A. I. GRECHUSHNIKOV.]** РИХТЕР, А. А., Е. И. ДВОРЕЦКАЯ, А. И. ГРЕЧУШНИКОВ. О факторах устойчивости культурных растений. I. Транспирация

и дезассимиляция инфицированных грибком организмов. [Perseverance of cultivated plants. I. Transpiration and katabolism of organisms infected with fungous diseases.] Журнал Опытной Агрономии Юго-Востока. (*Jour. Exp. Landw. Südosten Eur. Russlands*) 7(2): 99-114. [German summary p. 150.] 1929.—Fungous infection leads to a noteworthy decrease in life processes of the infected plants by strongly influencing transpiration and respiration. Under similar external conditions, water excretion is more rapid in infected than in healthy plants. Results obtained in the measurement of transpiration (potometer method) correspond well with data obtained in studying the changes in the stomata. In infected plants the stomata showed a noticeable tendency toward excessive opening. A potometer study on diseased leaves showed a decreased internal ventilation. The katabolic processes in diseased organs are usually strongly accelerated and lead to an excessive excretion of CO_2. The decreased respiration observed in various badly diseased plants is apparently due to a prolonged deficiency of food stuffs. The "biological resistance" of plants infected by fungi is greatly diminished.—*Authors' summary (transl.)*.

9258. SCARTH, GEO. W. Sinkage studies IV. The mechanism of the absorption of water by wood blocks. *Canadian Jour. Res.* 3(2): 107-114. 1930.—Uniform blocks of white pine wood were allowed to absorb water under various conditions of external and internal pressure, and in the presence and absence of air. The results (shown graphically) give some idea of the quantitative relation existing between penetration of water into wood and the various forces operating. It is concluded that the rate of penetration of water into an immersed block of coniferous heartwood is fixed by the rate at which the air in the block can dissolve and diffuse out. Applied to log sinkage, these findings show that under most conditions the limiting factor is the rate of escape of air from the log.—*Author's abstract.*

9259. SEYBOLD, A. Die pflanzliche Transpiration. 2. *Ergebnisse Biol.* 6: 559-712. 40 fig. 1930.—This part treats of the physiological components of transpiration: the dependence of the transpiration system on water content, temp., light, wind, and wilting; the influence of chemical agents; correlation processes; transpiration and guttation. In addition, the most important ecological articles on the measurements of transpiration are critically compiled with a comprehensive citation to literature.—*A. Seybold (transl. by A. D. Moinat).*

9260. [STUL'NIKOV, M.] СТУЛЬНИКОВ, М. Влияние ассимилятов на интенсивность транспирации. [The influence of the assimilate on the intensity of transpiration.] [German summary.] Известия Саратовского Общества Естествоиспытателей. (*Ber. Saratower Naturforscherges.*) 2(2): 64-80. 1928.—Experiments were undertaken to determine the relationship between the intensity of transpiration and the accumulation of plastic constituents in leaves. The method employed was the comparison of evaporation of excised leaves and branches. Some were kept up to the time of the experiment under conditions favoring the accumulation of assimilate (in light in favorable surroundings and in sugar solutions); similar leaves were kept under conditions favoring a loss of assimilate (in darkness and in media deprived of CO_2). Leaves of various plants deprived of starch kept in darkness and then placed in diffused light lost less water by evaporation during the first hrs. than those which were kept in light prior to the test. In succeeding hrs. the intensity of transpiration of the 2 sets tended to become equal. Leaves which were kept for 2 days in light and in a medium deprived of CO_2 increased the intensity of their transpiration 2-3 times as much as leaves which have been kept in darkness. Leaves which for 2 days before the experiment had been kept with their petioles or with their surfaces in contact with 0.5% sucrose solution, varied the intensity of their transpiration to a certain degree. In such experiments, leaves of such plants as *Syringa vulgaris, Pelargonium,* and *Panicum miliaceum* transpired on the average 1½ times as much as similar leaves which had been kept in water prior to the experiment. The leaves of such other plants as *Amaranthus retroflexus* and *Solanum nigrum* lost considerably less by evaporation. Ringed branches (*Syringa vulgaris*), excised 9 days after ringing, lost by evaporation 2-3 times less than similar branches which had not been ringed. In experiments with ringed branches kept in darkness, the same phenomenon was observed; normal branches kept in light before the experiment evaporated more than ringed branches. It is concluded that there is no close relationship between the intensity of transpiration and the presence of plastic constituents in the leaves.—*Author's summary (transl.).*

9261. VALMARI, J., ja VILJO KANERVO. Kasvien vedenkäyttö ja säätekijät. [Water consumption of plants in relation to the weather.] [German abstract.] *Valtion Maatalouskoetoiminnan Julkaisuja* [*Helsinki*] 26: 1-90. 1930.—This is a general account of some significant water relations together with some original observations. The transpiration coefficients of different cultivated plants with a complete fertilizer are given. The comparison is difficult because the data are from different yrs., and the fertilizer is not constant. However, the transpiration coefficient of peas is distinctly smaller than that of barley, although the peas were given less N fertilizer. The relative consumption of water by oats, however, is greater than that of barley under the same conditions.—*From author's conclusions (transl. by H. H. Clum).*

MINERAL NUTRIENTS, SALT RELATIONS

9262. AITKEN, H. A. A. Sulphur in organic and inorganic combination in pasture grasses. *Biochem. Jour.* 24(2): 250-256. 1930.—A method was devised for the estimation of sulphate-S in grass or green leaves.—*E. B. Carmichael.*

9263. BERTRAND, GABRIEL, et M. ROSENBLATT. Le potassium et le sodium dans les algues marines. *Compt. Rend. Acad. Sci.* [*Paris*] 187(5): 266-270. 1928.—Sp. of *Fucus, Pelvetia, Ascophyllum, Cystoseira, Himanthalia, Laminaria,* and *Padina* were investigated, and it was found that K is present in *Fucus,* that in marine algae there is not ordinarily a strong predominance of Na over K content, and that some algae lose their salts more readily than others when subjected to a series of washings in fresh water.—*D. Doubt.*

9264. DANGEARD, PIERRE. Action favorisante de l'iodure de potassium sur l'iodovolatilisation. *Compt. Rend. Acad. Sci. Paris.* 187(24): 1156-1158. 1928.—KI in 0.1% sea water solution causes an intense I emission in *Laminaria* and the Fucaceae. The use of iodide made it possible to observe iodovolatilization in several Rhodophyceae (*Gracilaria, Calliblepharis*).—*P. Dangeard (transl.).*

9265. HAAS, A. R. C. Boron as an essential element for healthy growth of citrus. *Bot. Gaz.* 89(4): 410-413. 1930.—Grown in water cultures containing Na, K, Ca, Mg, Fe, NO_3, Cl, SO_4, and PO_4 in the following proportions (in parts per million): 7, 185, 159, 54, 1, 718, 10, 216, and 105, growth was poor, and there was noted a curling of the leaf along the midrib, accompanied by yellowing, a corky appearance of the veins, progressive (basipetal) fall of affected leaves, multiple bud formation, splitting of the bark of internodes, and gum flux through the splits in the bark. Addition of traces (0.2 p.p.m) of Al, I, Ti, Br, Sr, Li, Mn, NH_3, and B, to the culture medium, avoided and corrected these symptoms and good growth was obtained. An attempt was made to determine which of the above 9 elements or radicals was effective in overcoming the deficiency by setting up a series of experiments in which all but 1 were present in each culture. In these experiments the omission of B was found responsible.

9266. KŌKETSU, RIICHIRO, und HIROSI KOSAKA. Bestimmung des "spezifischen Pulvergewichtes" verschiedener gehüllten Reiskörner mittels der "Pulvermethode" und ihre Bedeutung. [In Japanese.] *Proc. Crop*

Sci. Soc. Japan 2: 7-12. 1928.—Using Koketsu's powder method, it was found that specific powder wt. of rice grains gradually increases as maturity progresses, is smaller for grains from plants grown on fertile soils as compared with infertile soils, and is also smaller for grains from plants grown on saline swamp soils as compared with ordinary swamp soils.—*Author* (*courtesy Japanese Jour. Bot., transl. by N. A. Pettinger*).

9267. **NIETHAMMER, ANNELIESE.** Über die verschiedenen Möglichkeiten der Beeinflussung des Wachstums von Aspergillus niger durch abgestufte Mengen von Zink- und Mangansalzen. *Beitr. Biol. Pflanzen* 17 (1): 51-71. 1929.—This paper is largely polemical, but data are also presented on the variation in growth of *A. niger* with variation in concentration of the nutrients (especially Zn, Mn, and sugar) and length of growth-period.—*R. A. Steinberg.*

PHOTOSYNTHESIS, CHLOROPHYLL

9268. **BERGAMASCHI, MARIA.** Sull'assorbimento del biossido di carbonio per opera delle radici e sulla sua utilizzazione nella fotosintesi clorofilliana. Nota preliminare. [Absorption of CO_2 by roots and its use in photosynthesis.] *Atti Ist. Bot. "Giovanni Briosi" e Lab. Crittogam. Italiano Univ. Pavia* 1: 89-94. 1929 (1930).

9269. **KRASNOSSELSKY-MAXIMOV, T. A.** Zur Methodik der Bestimmung von Assimilation und Bewegungen der Spaltöffnungen in natürlichen Verhältnissen. *Ber. Deutsch. Bot. Ges.* 47 (5): 313-320. 2 fig. 1929.—A 99% efficient absorption tube suitable for either field or laboratory use is described. It consists of a glass tube *A*, 16mm. wide and 55cm. long, which widens at the upper end into tube *B*, 38mm. in diam. and 20cm. long. To the lower end is fused a thick-walled tube *C*, 7mm in diam. and with a bore of 2mm. *C* is bent back along *A* to a height of 30cm. and the free end bent at a right angle. A perforated German-silver disc is cemented into *A* at the point where it tapers into *C*. There are 25 0.15-0.20mm. holes in the plate which were made with the aid of an ocular micrometer. Smaller holes become clogged and larger ones decrease the efficiency of the apparatus. *B* is closed with a 1-holed rubber stopper into which is inserted a glass plug and *C* is closed with a short piece of rubber tubing and a clamp. The absorbing agent used was $Ba(OH)_2$ and the titration, carried on within the tube, was made with oxalic acid using phenolphthalein as an indicator, after the manner of Boysen-Jensen. The necessary solutions are admitted through the hole in the rubber stopper of *B* by means of a fine pipette. When the solutions within the tube are being mixed during a titration, the rubber tubing on *C* should be gently pinched while the apparatus is being held upside down so as to dislodge any unmixed liquid below the plate. A few suggestions in regard to the leaf chamber and aspirator are also made. The use of the Kley model Opak-Illuminator supplied by the firms of Leitz and Reichert is highly recommended for studying the stomata under natural conditions.—*W. H. Michaels.*

9270. **POLLACCI, GINO, and MARIA BERGAMASCHI.** **Dimostrazione con la dimetilidroresorcina della formazione di aldeide formica in piante vive durante la fotosintesi clorofilliana. Nota preliminare. [Demonstration, by means of dimethylhydroresorcin, of the formation of formaldehyde in the living plant during photosynthesis.]** *Atti Ist. Bot. "Giovanni Briosi" e Lab. Crittogam. Italiano Univ. Pavia* 1: 157-160. 1929 (1930).

9271. **VORLÄNDER, D.** **Der angebliche Nachweis von Formaldehyd bei der Assimilation der Kohlensäure.** *Zeitschr. Wiss. Biol. Abt. E. Planta* 6 (4): 684-686. 1928.—The reagent dimedon was used some 3 yrs. ago by Klein and Werner to show that formaldehyde was the intermediate product in the formation of carbohydrates from CO_2 and H_2O during photosynthesis. This reagent belongs to the same group (dimethylhydroresorcins) as methon, which Vorländer used many yrs. ago. This reagent itself gives formaldehyde through the oxidation of the group CO. CH_2CO, so that the controversy concerning formaldehyde as an intermediate product is still unsettled.—*R. P. Hibbard.*

BIOCHEMISTRY, METABOLISM (GENERAL)

9272. **BALDWIN, M. E.** **Separation and properties of the two main components of potato starch.** *Jour. Amer. Chem. Soc.* 52 (7): 2907-2919. 1930.—This method for fractionating potato starch effects the separation of the outer envelope of the grains (α-amylose) from the inner more soluble portion (β-amylose). It is based on difference in solubility and consists of subjecting gelatinized grains to freezing and extraction carried out under experimentally established conditions. A sharp separation is indicated by the contrasting and antithetical properties of the amyloses: β-amylose represents $16 \pm 1\%$ of the starch; α-, $84 \pm 1\%$; β- is "P-free," α- contains 0.076% P; β- gives with I a blue color, free from violet; α-, a red-violet, free from blue; β- is precipitated by alcohol and by I, α- is not precipitated; β- retrogrades, α- does not.—*M. E. Baldwin.*

9273. **CLARK, GEORGE L.** **Cellulose as it is completely revealed by x-rays. Special application to the growth and classification of cotton, the structure of wood and the manufacture of rayon.** *Indust. and Engineer. Chem.* 22 (5): 474-487. 28 fig. 1930.—The data include the size of the unit crystal cell, the presence of long primary valence chains in bundles, the size of the colloidal micelles, and their orientation with respect to the fiber axis. Utilizing this definite structure, rational explanation is given for many of the physical and chemical properties of cellulose fibers. Great improvements in x-ray technic as used in the study of cellulose are outlined. The growth of cotton fibers from the root hairs to the mature fiber is presented to show the various stages in the botanical process. X-ray patterns are also utilized as a possible method of classification of grades of cotton. Diffraction patterns are used to obtain information upon 7 classes of facts as regards wood. These include comparison of wood structure; comparison of tangential, radial, and cross sections; wood swelling; the variation in structure upon the leaning side of trunks and the under side of boughs; extension to studies of wood pulp; and fundamental measurements on specimens representing various grades of disintegration down to the "fusiform bodies" discovered by Ritter.—*G. L. Clark.*

9274. **DADSWELL, H. E., and L. F. HAWLEY.** **Chemical composition of wood in relation to physical characteristics.** *Industr. and Engineer. Chem.* 21 (10): 973-975. 1929.—This research has shown that a certain type of brash oak has slightly higher lignin content and slightly lower cellulose content than tough wood of the same sp., and that compression wood has considerably higher lignin content and lower cellulose content than the normal wood of the same sp. taken from relatively close positions in the same tree. The dense summerwood bands isolated from redwood compression wood have higher lignin content than the springwood bands from the same annual growth rings. These differences are contrary to those generally found in the analyses of the springwood and summerwood of normal wood of any sp. No general conclusions can be drawn on the effect of lignin on strength without knowing the portion of the wood structure in which the variations in lignin content occur.—*Authors' summary.*

9275. **DISCHENDORFER, OTTO, und OSKAR POLAK.** **Untersuchungen auf dem Gebiete der Phytochemie. V.** *Akad. Wiss. Wien. Math.-Naturwiss. Kl. Abt. 2B Sitzungsber.* 137 (10): 995-1010. 1928.—Betulin, a substance found in the European white birch, does not readily form derivatives, reverting into waxy products, but by gentle oxidation, it may be changed to allo-betulin, an isomeric form, which yields easily purified crystalline compounds. A study of the preparation and constants of a number of such derivatives throws much light on the chemistry and constitution of betulin and allobetulin.—*O. F. Black.*

9276. **GRUN, ADOLF, und WILHELM HALDEN.**

Analyse der Fette und Wachse. Band 2. Systematik, Analysenergebnisse, Bibliographie der natürlichen Fette und Wachse. [Analyses of fats and waxes.] xv+806p. Julius Springer: Berlin, 1929.

9277. **HARLOW, WILLIAM M., and LOUIS E. WISE. The chemistry of wood. I. Analysis of wood rays in two hardwoods.** *Industr. & Engineer. Chem.* 20(7): 720-722. 5 fig. 1928.—The larger wood rays were isolated from fine shavings of white oak, *Quercus alba*, and of Australian flame she-oak, *Casuarina inophloia*. Chemical analysis shows the rays to be higher in lignin and lower in cellulose than is the total wood.

9278. **HASSELBRING, HEINRICH. Carbohydrate transformations in carrots during storage.** *Plant Physiol.* 2: 225-243. 1927.—Carrots stored at 39-40° C. lost about 26% of their wt., and stored at 32-35° C. about 7%. This loss is mainly water, as the loss in solids is only about 1% for the 22 weeks of storage. The 2 main transformations in the carbohydrates are of sucrose to reducing sugars, and of polysaccharides to simple sugars. These processes go on more rapidly at the higher than at the lower storage temp. At the higher temp. 43% of the sucrose and 33% of the polysaccharides disappear during the 1st 10 weeks of storage, as compared to 28 and 20%, respectively, at the lower temp. Under constant conditions the transformations reach a sort of equilibrium within 10 weeks, after which the changes are much slower. Since the flavor of carrots depends on the sucrose content largely, canning and cooking quality is highest just after they are dug.—*C. A. Shull.*

9279. **HÖNL, VIKTOR. Über die Energiespeicherung der Pflanzen mit Berücksichtigung ihres Kohlenstoff- und Stickstoffgehaltes. II.** *Biochem. Zeitschr.* 225(1/3): 94-114. 7 fig. 1930.—With all of the plants investigated, calories, C, and also N content per gm. of ash-free dry substance decreased gradually during development. These decreases were definitely greater with nonlegumes (buckwheat, corn, turnip) than with legumes (lupines, peas). Accordingly the C/N ratio in the latter remained almost constant in the course of their development while with nonlegumes in general it increased. The mineral portion of the plant material changed only a little with legumes but with the others it began to decrease in the early stages of growth. These fluctuations in ash content have great influence on the course of the curves for calories and C for the ash-containing material. Nourishment has less influence than age on energy accumulation and on C and N content. With a lessening N and P_2O_5 supply the C content and the calories of the final harvest (oats) decreased. The C/N ratio first increased then decreased with increasing N additions, but with increasing P_2O_5 additions it fell steadily.—*Author's summary* (*transl. by L. T. Leonard*).

9280. **KAMIYA, DENYA. Biochemical studies on apples.** [Japanese.] *Rikwagaku-Kenkyū-Jo Ihō* (*Bull. Inst. Phys. & Chem. Res.*) 9(8): 629-636; English abstract in *Abstr. from Rikwagaku Kenkyū-Jo Ihō* (*Bull. Inst. Phys. & Chem. Res.*) p. 62. 1930. [Appendix to *Sci. Papers Inst. Phys. & Chem. Res.* 14(262/263). 1930.]—The seasonal variations in form, size, and chemical constituents of the Jonathan apple produced in Hokkaido were studied June–Nov., 1928, the constituents considered being those related to carbohydrates and also the water and ash content. The polysaccharides, which are formed with the growth of the fruit, not only are transformed into cellulose, pectin, and other substances, but also supply the energy for the growth of the apples. The growth ceases in Oct., after which the polysaccharides change to mono- and disaccharides. The quantities of P, Mn, and K vary throughout the season. —*Author's summary.*

9281. **KOSAKA, HIROSI. Beziehung zwischen dem Langenwachstum und der Anthozyanbildung bei Abutilon avicennae.** [In Japanese.] *Proc. Crop Sci. Soc. Japan* 4: 22-26. 1929.—The extent of growth of the stem and the production of anthocyanin pigment were in inverse relationship to one another; the greater the growth, the less the amount of pigment formed. This close relationship held both in space and time.—*Author* (*courtesy Japanese Jour. Bot., transl. by V. R. Boswell*).

9282. **LINGGOOD, F. V. The decarboxylation of pectin.** *Biochem. Jour.* 24(2): 262-265. 1930.—The pectin was dissolved in water and heated under pressure. The decarboxylation took place only when the CO_2 was removed from the system.—*E. B. Carmichael.*

9283. **NORMAN, A. G., and F. W. NORRIS. The oxidation of pectin by Fenton's reagent and its bearing on the genesis of the hemicelluloses.** *Biochem. Jour.* 24(2): 403-409. 1930.—Pectin may readily be oxidized by means of Fenton's reagent if the temp. is kept at 30-35° C. The reaction is strongly exothermic and if the temp. rises above 35° the yield of alcohol precipitable products is lowered. The products obtained resemble hemicelluloses or polyuronides.—*E. B. Carmichael.*

9284. **RABATE, J. Sur l'hexacosanol, nouvel alcool de la série grasse, au C^{26}, retiré de l'écorce de l'Amelanchier vulgaris Moench.** *Bull. Soc. Chim. Biol.* 12: 758-764. 1930.—After preliminary extraction with 60% alcohol, the powdered bark is extracted with boiling 95% alcohol. From the products of the extraction, hexacosanol has been isolated and its mol. wt. and properties determined. It has not previously been found in plants.—*J. S. Caldwell.*

9285. **REILLY, J., REINHOLD WOLTER, and P. P. DONOVAN. Study of the polysaccharides. III. Acetamide as a polysaccharide solvent.** *Sci. Proc. Roy. Dublin Soc.* 19(40/47): 467-473. 1930.

9286. **SEBELIEN, JOHN. Det gamle furutömmer i Kong Öisteins havneanlegg ved Agdenes.** [The old fir logs of King Öistein's (Norway) pier construction at Agdenes.] *Arhandl. Norske Videnskaps-Akad. Oslo, I. Mat.-Nat. Kl.* 1929(4): 1-14. Map. 1929.—King Öistein of Norway built a wooden pier at Agdenes, just at the mouth of Trondhjemsfjord, about 800 yrs. ago. In spite of the long contact with sea water in a very severe climate, the wood has scarcely been attacked by *Teredo*, and it shows only a very weak reaction with the ordinary reagents for lignin (HCl with phloroglucine or aniline). It is, therefore, concluded that the lignin has disappeared and a purer cellulose is left.—*J. Sebelien.*

9287. **SHERRARD, E. C., and E. F. KURTH. Occurrence of pinite in redwood.** *Indust. & Eng. Chem.* 20(7): 722-723. 1928.—Pinite, $C_6H_5OCH_3(OH)_5$, occurs in the heartwood of *Sequoia sempervirens*. Methods of extraction are given.

9288. **STURA, MARIA BARGONI. La maturazione dei frutti di alcune diospyracee (D. kaki, lotus e virginica).** [Ripening of persimmons.] *Natura* [*Milano*] 17 (2): 64-75. 1926.—Maturation of persimmons takes place in 2 stages. In the 1st there is an accumulation of reserve materials, together with a small amount of tannin, which in the free state retards the development of the 2nd stage. On the disappearance of the free tannin there is a transformation of pectose to pectin, whose swelling occludes the intercellular spaces and thereby leads to anaerobic respiration, fatty degeneration, formation of traces of alcohol, and destruction of middle lamellae, all of which constitute the 2nd phase. The free tannin is partly disposed of by oxidation, but this is incomplete in Italy because of the low temp. during ripening. Instead, the cold causes the cells to precipitate out the tannins on the plasma proteins, thus removing them from inhibiting pectoclasis.—*Author's conclusions* (*transl. by H. S. Wolfe*).

9289. **[SUKHORUKOV, K. T.]** СУХОРУКОВ, К. Т. **Содержание дубильных начал в некоторых растениях Нижне-Волжского края. [Tannin content in some plants of the Lower Volga region.]** [German summary.] Журнал Опытной Агрономии Юго-Востока. (*Jour. Exp. Landw. Südosten Eur. Russlands*) 7(2): 89-97. 1929.—Roots of *Statice latifolia* contain 19.29% tannin; of *S. gmelini* 16.07%. Excepting *S. suffruticosa*, leaves and stems of all the sp. of *Statice* contain lower %. Roots of *Statice* collected at the close of the vegetative season showed a greatly diminished tannin content. Young branches of 2 spp. of *Tamarix* gave up to 12%

tannin. Fruits of *Rheum rhaponticum, R. accumum,* and *R. undulatum* contained 6.5-10.5%. Extraction of tannin from 2 spp. of *Statice,* according to Meno's method, gave very low figures.—*From author's summary (transl.).*

9290. **THOMAS, R. C. Composition of fungus hyphae. II. Sclerotinia.** *Amer. Jour. Bot.* 17(8): 779-788. 1930.—The hyphae of *Sclerotinia duriaeana, S. erythronii, S. intermedia, S. minor, S. sclerotiorum,* and *S. smilacina* were unreactive toward dyes, dilute acids, and alkalies, because of the protective influence of fatty substances present in the walls. When such substances had been removed the hyphae could be resolved into their component parts. The outer covering was determined to be an acidic carbohydrate which responded to callose tests. Underlying the callose was a basic skeleton of chitin. The acidic character of the callose was due to an ethereal phosphate which could not be removed by dialysis. Upon hydrolysis the carbohydrate portion yielded glucose, which was identified by its specific rotation as an oxidation product of saccharic acid. It formed a phenylosazone melting at 206°C. Lecithin was separated from the fatty material. The action of bromine was very effective in breaking up the carbohydrate-fatty acid combination.—*R. C. Thomas.*

9291. **WEITZEL, WILLY. Das Rätsel des Pflanzenblutes. Enhält die Pflanze neben den Vitaminen noch andere lebenswichtige Nährstoffe? [The riddle of plant sap. Do plants contain other important life-giving nutrients besides vitamins?]** 52p. Emil Pahl Verlag f. Angew. Lebenspflege: Dresden, 1929.

9292. **WISE, LOUIS ELSBERG, and FLOYD C. PETERSON. The chemistry of wood. II. Water-soluble polysaccharide of western larch wood.** *Industr. and Engineer. Chem.* 22(4): 362-365. 1930.—The water-soluble ε-galactan of western larch, described by Schorger and Smith, yields 11.95% arabinose and 84.6% galactose on complete hydrolysis and appears to be an arabo-galactan. Over 70% of the galactose present, as indicated by analysis, could actually be separated in crystalline form. The arabinose was identified through its benzylphenylhydrazone and the diphenylhydrazone. Van der Haar's modification of Tollen's mucic acid method gives a fair approximation of the galactose content in ε-galactan hydrolysis mixtures. A modification of the Neuberg-Wohlgemuth method for arabinose furnishes a convenient proximate means of estimating this sugar. The excellent thiobarbituric acid method for furfural devised by Dox and Plaisance is admirably suited to the accurate determination of arabinose in the presence of galactose.—*Courtesy Ind. & Eng. Chem.*

BIOCHEMISTRY, METABOLISM (NITROGEN RELATIONS)

9293. **BACH, D. La nutrition azotée des Mucorinées. Assimilation des sels ammoniacaux.** *Compt. Rend. Acad. Sci. [Paris]* 184(12): 766-768. 1927.—Experiments were carried out on a large number of sp., with pH of the medium under control. Ammonium salts of strong mineral acids constitute a poor source of N, due to intense acidification of the medium. Addition of a buffer, such as Na-citrate, permits regular development of the fungi.

9294. **BJÖRKSTÉN, JOHAN, und INTO HIMBERG. Spielt Ammoniak eine direkte Rolle bei der Eiweisssynthese höherer Pflanzen?** *Biochem. Zeitschr.* 225(4/6): 441-446. 1930.—Leaves of wheat seedlings were tested for ability to form ammonia from various amids with which they were infiltrated. The quantity of ammonia split off by the parenchyma cells of the leaves was independent of the concentration of the infiltrated carbamid solutions. By etherization the ammonia produced from carbamid increased, a result to be expected from the work of Bernard, Butkewitsch, Mothes, Höfler, and Weber. Under similar conditions no ammonia was split off from acetamid and butyramid. Since as an N source for protein synthesis by wheat seedlings acetamid and butyramid are as utilizable as carbamid, it is held that ammonia does not need to play a direct rôle in the protein synthesis of higher plants; as a working hypothesis it is assumed that pyroracemic acid reacts in a special way with amids to form alpha aminoacryl acid. The presence of urease could not be demonstrated in the expressed sap or dry material of the wheat seedlings.—*Authors' summary (transl. by L. T. Leonard).*

9295. **PRIANISCHNIKOW, D. Zur Frage nach der Ammoniakernährung von höheren Pflanzen. (Vorläufige Mitteil.)** *Biochem. Zeitschr.* 207(4/6): 341-349. 1929.—Experiments were made with sugar beets, corn, and oats grown in sand to determine the effects of concentration of H^+ and of Ca and other cations on utilization of ammonia by the plant. The nutrient solution (based on Hellriegel's mixture) was kept constantly flowing through the sand, or NaOH or H_2SO_4 was frequently added to maintain a constant pH. With a neutral reaction $(NH_4)_2SO_4$ gave better growth but with an acid reaction $NaNO_3$ gave better results. Increased concentration of Ca ions in the solution increased the efficiency of the ammonia but often decreased that of the nitrate. The relative efficiency of ammonia and nitrate N is not fixed but varies with a number of external and internal factors.—*W. W. Garner.*

9296. **THOMAS, WALTER. Nitrogenous metabolism of Pyrus malus L. IV. The effect of sodium nitrate applications on the total nitrogen and its partition products in the leaves, new and one year branch growth throughout a year's cycle.** *Plant Physiol.* 2(3): 245-271. 7 fig. 1927.—These studies are an extension of the partition investigations on 2 Stayman Winesap trees of the same age, growing on sod in a homogeneous soil. One of these trees was treated in 2 applications with 20 lbs. of $NaNO_3$ and the other left untreated. In general, the present findings confirm the conclusions drawn in the previous studies and in addition indicate that the total N content of the 1-yr. (1923) branch-growth of the fertilized tree from the period of full bloom to the end of Sept. increased 10%, but the total N of the 1-yr. branch-growth of the unfertilized tree decreased 35% during this period. This lower plane of N metabolism of the untreated tree as compared with the treated tree is also indicated by the total N results of the leaves, new (1924) branch-growth, and older branch-growth. The period of most rapid absorption of the NO_3 ion is characterized by a large increase in the total water-soluble and non-protein N, concomitant with which is an increase in the amino, amide, basic, and "rest" N fractions of the fertilized as compared with the unfertilized tree in the leaves, 1-yr. (1923), and new (1924) branch-growth. From the course of the curves for total water-soluble N, non-protein N, or amino N of the fertilized as compared with the unfertilized tree it can be deduced that the 1st application of $NaNO_3$ on April 20 took 3 weeks to reach the 1-yr. branches. The same curves show that the absorption and translocation of the NO_3 ions of the 2nd application on June 6 are much more rapid, taking about 1 week only to get to the more metabolically active parts of the tree. The total water-soluble N and non-protein fraction is much higher in the more metabolically active parts of the treated tree as compared with the untreated tree throughout the whole cycle. These differences correspond to the relative vigor of the trees and must be associated with differences in enzymatic activity. The fact that the amino acid N parallels the total water-soluble curve throughout the whole cycle suggests a simplification of the N distribution problem in practical horticulture. N is stored in the fall as "amide" N and "rest" N compounds, and, as indicated by the % present during this period, is much higher in the fertilized than in the unfertilized tree. The "rest" N compounds form an important connecting link in the synthesis and degradation of proteins and there is a need for an investigation into the nature of these "unclassified" compounds whose rôle in metabolism seems so important.—*W. Thomas.*

9297. **VICKERY, HUBERT BRADFORD. Some aspects of the chemistry of green leaf cells.** *Sci. Monthly* 31(5): 408-421. 2 portraits, 1 fig. 1930.—This is a lecture,

reviewing recent work and present knowledge of the chemical composition of leaves. Particular attention is given to the proteins and nitrogenous bases, and to the work of T. B. Osborne (portrait) and of his predecessor, S. W. Johnson (portrait), on their extraction and isolation. The early history of this research, particularly in the Connecticut Agric. Exp. Station, is touched upon.

BIOCHEMISTRY, METABOLISM (ENZYMES, FERMENTATION)

9298. BOYLAND, ERIC. Phosphoric esters in alcoholic fermentation. II. Pyrophosphate in yeast preparations. *Biochem. Jour.* 24(2): 350-354. 1 fig. 1930.—Pyrophosphate accounts for about ¼ of the total P of yeast. Fermenting zymin hydrolyzes pyrophosphate to orthophosphate. Further evidence is given to show that pyrophosphatase is distinct from hexosephosphatase.—*E. B. Carmichael.*

9299. BRIDEL, M., et C. CHARAUX. Les produits d'hydrolyse de l'oroboside: glucose et orobol. *Bull. Soc. Chim. Biol.* 12: 765-772. 1930.—Hydrolysis of oroboside, isolated from *Orobus tuberosus*, with 5% H_2SO_4 yields glucose and a crystallizable nonglucosidal substance, orobol. Emulsin effects the same hydrolysis but action is extremely slow. The elementary analysis and properties of orobol were determined.—*J. S. Caldwell.*

9300. HARDEN, A., and M. G. MacFARLANE. Fermentation by yeast preparations. *Biochem. Jour.* 24(2): 343-349. 2 fig. 1930.—It was possible to reduce the rate of fermentation about 80% by means of grinding while the yeast acquired the power to respond to phosphate. Kieselguhr adsorbed the active material. The effect of various reagents on the fermentation is described.—*E. B. Carmichael.*

9301. MALYSCHEV, N. Über die vermeintliche Salzhydrolyse der Stärke. *Biochem. Zeitschr.* 206(4/6): 401-409. 1929.—Freshly prepared dilute solutions of pure potato starch or Kahlbaum's "amylum solubile" mixed with salt solutions (phosphates and chlorides) of varied concentration were placed in test tubes and kept in a thermostat at 37-45°, some of the preparations first being sterilized at 100° C. In some instances air or O was bubbled through the solutions. Progress of the hydrolysis was measured by testing at intervals with dilute I solution. In no case was a breaking down of starch observed in the sterilized solutions; in the unsterilized solutions there was some breaking down in a very few instances. Mineral salts are considered to function not as a diastatic ferment but as a co-ferment or complement.—*W. W. Garner.*

9302. MANN, P. J. G., and B. WOOLF. The action of salts on fumarase I. *Biochem. Jour.* 24(2): 427-434. 6 fig. 1930.—*B. coli communis*, washed and suspended in distilled water, produced *l*-malic acid from fumaric acid at a linear rate for the greater part of the reaction until equilibrium was established. Side reactions were inhibited by 2 or 4% propyl alcohol. The range of activity was pH 5-7.7 in the absence of added salts, with an optimum at about 6.4. Phosphates accelerated the activity at pH 6-8.8, and the optimum activity was 6.9 for *M*/5 solutions. Citrates act similarly to phosphates but have a slightly higher optimum, pH 7.1. Sulphates had a retarding effect and the optimum was about pH 6.2.—*E. B. Carmichael.*

9303. ORESTANO, G., e C. ZUMMO. Fluidificazione e saccarificazione dell'amido da parte del l'amilasi dei semi di soja. [Hydrolysis and saccharification of starch by amylases of soy beans.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 246-249. 1 fig. 1930.—Amylase is inactivated when heated for ½ hr. at 150° C. Heated at a temp. below 100°, its action rises with the temp., diminishing then gradually for temp. higher than 100°. The existence in the soy beans of 2 different enzymes, one for liquefaction, the other for the saccharification of starch, seems improbable.—*M. Comel.*

9304. ORRU, A. Azione del latice del Ficus carica sull'amido. [Action of the latex of F. carica on starch.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 176-182. 4 fig. 1930.—A diastase active upon starch occurs in the sap of *F. carica*. The optimum activity is at 50° C., and at the 2 pH values 5.3 and 6.5.—*M. Comel.*

9305. SHOJI, KENJIRO. The polarographic studies on the fermentation-products. 5. [Japanese] *Rikwagaku-Kenkyū-Jo Ihō (Bull. Inst. Phys. & Chem. Res. [Tokyo])* 9(8): 621-628. 1930; English abstract in *Abstr. from Rikwagaku-Kenkyū-Jo Ihō (Bull. Inst. Phys. & Chem. Res.)* 61-62. [Appendix to *Sci. Papers Inst. Phys. & Chem. Res.* 14(262/263). 1930.].—The quantities of reducible substances contained in "kōji" (made by growing *Aspergillus oryzae* on polished rice for the purpose of fermenting "saké") as well as in absolute alcohol, were determined by means of the polarograph. "Kōji" contains a minute quantity of acetaldehyde and also probably a very small quantity of fumaric acid.

9306. STASTNY, J. Vitaminová zkouška kvasných octů. [Vitamins of fermented vinegars.] [French summary.] *Věstník Českoslov. Akad. Zem.* 6(6/7): 611-619. 1930.—Experiments to date justify the statement that vinegar from alcoholic fermentation produced at the same time as rectified alcohol, raw or synthetic, possesses a certain amount of substances capable of influencing and activating alcoholic fermentation in a medium lacking in vitamins. The amount of these substances is proportional to the acid formed, due to the fermentation activity of vinegar bacteria. The fermentative intensity of a certain species of yeast (Logos) in a suitable seeding of cells, is a general index of the amount of this substance (Bios) present. The activity of yeasts may be better determined by measurement of the CO_2 formed, this being entirely suppressed in a medium lacking in vitamins. Fermentation tests give a negative result, however, in the presence of substances toxic to yeast, even if the latter are not toxic to the activity of vinegar bacteria. To simplify the nomenclature and method of determination of the substances produced by vinegar bacteria, substances formed equally in sterile media as well as in the other synthetic media for yeasts, these substances are called vitamin D, and the above method is considered a test for the amount of the vitamin in vinegars from alcoholic fermentation.—*Author's summary (transl. by L. O. Leuton).*

BIOCHEMISTRY, METABOLISM (RESPIRATION, OXIDATION)

9307. HAAS, A. R. C. Oxidation-reduction indicators as a means of determining overheating in walnuts during dehydration. *Bot. Gaz.* 89(2): 200-204. 1930.—A simple and delicate method is described for the detection of "overheating" in walnuts during dehydration, in which oxidation-reduction indicators are used in buffers of approximate neutrality.—*A. R. C. Haas.*

9308. KOZŁOWSKI, ANTONI. Redukcja błekitu metylenowego przez drożdże. I. Wpływ koncentracji jonów wodorowych i temperatury. [Reduction of methylene blue by yeast. I. The influence of pH and of temp.] [With English summary.] *Acta Soc. Bot. Poloniae* 7(2): 157-163. 1930.—The reduction of methylene blue by fresh yeast is accelerated by raising the temp. to 55° C. and by increasing the pH value from 5.0 to 10.0. The optimal temp. of that reduction is near 50° C. in a neutral solution. The reducing system of yeast is affected very distinctly at 70° C., although not so markedly at 55° C. The reduction progresses very slowly and is almost indiscernible at 1-10° C.—*Author's summary.*

9309. LABROUSSE, F., et J. SAREJANNI. Recherches physiologiques sur quelques champignons parasites. *Phytopath. Zeitschr.* 2(1): 1-38. 1930.—Certain fungi, including *Thielavia basicola*, were cultivated on gelatin media to which were added suitable indicators, to demonstrate the phenomena of oxidation-reduction and changes in reaction. Some fungi develop an alkaline, others an acid reaction in the culture medium. Alkalization never coincides with the production of ammonia. The former is the resultant of strong alkalization passively developed by the fungus, entirely without

metabolic phenomena, and a slight acidification corresponding to the utilization of carbohydrates in the medium. The fungus mycelium which acidifies the medium has no passive influence on the reaction of the latter. The acidity developed depends on the nature of the carbohydrates of the medium. A fungus incapable of breaking down a carbohydrate does not change the reaction. *Thielavia basicola*, while manifesting an oxidizing power towards many of the indicators used, does not oxidize guaiacol. The order in which the indicators are reduced, with increasing difficulty, corresponds to the order of their oxidation-reduction potentials. This generalization does not hold for the fungi which alkalize the medium in their development. An abundant and dense aerial development is expressed by a more intense reducing power than a loose and reduced aerial development or than an internal development. No relationship exists between the reduction of dyes and the reduction of nitrates. The reduction of nitrates to nitrites is a characteristic common to all the alkalizing fungi studied. It does not seem possible to establish a relationship between this characteristic and pathogenicity. Changes in reaction and the phenomena of oxidation-reduction established by this technique may serve as a means of physiologically distinguishing between related sp.—*Authors' summary (transl. by T. G. Major)*.

9310. **REGEIMBAL, L. O., G. A. VACHA, and R. B. HARVEY. The effect of ethylene on the respiration of bananas during ripening.** *Plant Physiol.* 2(3): 357-359. 1 fig. 1927.—Ethylene doubles or trebles the rate of respiration of bananas for a short time, and the rate subsequently falls off below the rate of untreated fruit under similar conditions of temp. and moisture. The data seem to indicate an increase in the oxidation rate rather than simply an increase in the permeability of the cell, allowing for the more rapid diffusion of the CO_2 already present.—*L. O. Regeimbal.*

9311. **ZIMMERMAN, P. W. Oxygen requirements for root growth of cuttings in water.** *Amer. Jour. Bot.* 17 (8): 842-861. 8 pl. 1930.—Salvia cuttings formed roots at the base of the stems that were placed in 2 in. of water. Similar cuttings in 5 in. of water had a tendency to root along the stems toward the surface of the water. Cuttings in water 7 in. deep were either slow to respond or did not root at all. Cuttings aerated with O produced basal roots in shallow and deep water alike. A thin film of paraffin oil on the surface of the water prevented rooting by interfering with absorption of O from the air. Cuttings in water covered with a thin film of paraffin oil formed roots readily when the water was aerated with O. *Salix pendula* cuttings formed roots at the base of the stems when in shallow water, but when placed in deep water (8 in. or more) roots formed on the stems near the surface of the water. Cuttings in aerated water formed roots at the base of the stems and practically none at the surface of the water. A deficiency of O at the bottom of a deep water column disturbed the natural polarity of willow cuttings. Analyses indicate that willow cuttings will form roots in water if the O is 1 p.p.m. or more, this being the amount frequently found at the surface of a deep water column where roots were growing. Practically no O could be found at the bottom of a 15 in. column of water in which 10 cuttings were growing. Analyses of aerated water showed 20-30 p.p.m. at all depths. Hypertrophied lenticels were produced more abundantly in non-aerated than in aerated water. As with roots, excrescences varied from the surface of the water, becoming less and less toward the bottom of the column where the O was practically depleted. Running water was in effect equal to aeration due to the fact that the normal O content of tap water was higher than the optimum amount required by the different sp. used. English ivy required a higher O supply for root growth than willow. Where the O was 4 p.p.m. the root growth was less than where the supply was 20 p.p.m. The O supply in non-aerated water surrounding tomato cuttings varied with the depth of the water column and also with exposure to light. Cuttings in cylinders wrapped with black paper soon depleted the water of O while those in cylinders exposed to light aerated the water through photosynthesis. Tomato cuttings in deep water disintegrated readily if the cylinders containing the water were wrapped with black paper or the whole lot was kept in a dark room. Callus formed on Dorothy Perkins rose cuttings in shallow water but not in deep water. Oxidizing agents such as H_2O_2 and K-permanganate increased the amount of rooting but were not so effective as aeration.—*Author's summary.*

ORGANISM AS A WHOLE

9312. **BERKNER, F., und W. SCHLIMM. Physikalische und chemische Untersuchungen über den Einfluss der Ernte in den verschiedenen Reifestadien auf die wertgebenden Bestandteile des Getreidekorns.** *Landw. Jahrb. [Berlin]* 72(2): 269-291. 1930.—This work deals with the effect of stage of maturity on the physical and chemical characteristics of rye, wheat, barley, and oat grains. The amount of imbibitional water necessary to swell seed to the point of root emergence shows that there is no relation between specific gravity and volume of the swelled seed. Grains in the milk stage have a higher requirement for water of imbibition and show a large increase in volume during imbibition. An increase in dry matter content per 1000 grains and translocation of starch to the grains were observed as maturity progressed. The crude fat content of immature oat grains was very low, due to a lack of embryo development. All cereals studied showed a marked increase in protein content as maturity progressed. This increase was not due to the higher 1000-grain wt. of the mature stages, for it was apparent as % of dry matter.—*Authors' summary (transl. by N. A. Pettinger)*.

9313. **[BLAGOVESHCHENSKII, A. V., et al.] БЛАГОВЕЩЕНСКИЙ, А. В., и др. Опыт изучения физиологии опадения завязей у хлопчатника. [Physiology of shedding of cotton bolls.]** [English summary.] Труды Средне-Азиатского Государственного Университета, Сер. VIII-b. Бот. (*Acta Univ. Asiae Mediae, Ser. VIII-b. Bot.*) 10: 1-53. 1929.—The physiological differences between the top and the bottom of the cotton plant and between the external and internal parts were investigated. The water content of upper leaves is 61-76% of that of lower leaves. The ratio of succulence of upper leaves is also smaller than that of lower ones (0.86-0.99 and 1.00-1.12). The differences in osmotic values between internal and external parts of the cotton plant are small, but the tendencies toward increasing these values in external parts, to the end of the vegetation period, accord with a greater shedding of bolls at this time. The viscosity of sap, expressed from leaves, is greater for the internal leaves, but the differences are insignificant: 1.24 for external and 1.34 for internal. The determinations of transpiration rate by the Co paper method of Livingston gave the same results for internal as for external leaves. The mean of short diam. of stomatal aperture for internal leaves is 0.86 μ and for external 1.05 μ. The intensity of assimilation of CO_2 (Sachs-Thoday method) is greater for the external leaves in comparison with the internal (100: 46.8). The carbohydrate and N content of external leaves is greater than that of internal ones. Ringing retards the loss of carbohydrates from the upper part and on the storage of N compounds above the ring. The C/N ratio is greater above the ring. This ratio is twice as great in shedded bolls as in developing ones. This increase of the C/N ratio is caused by diminishing the N content (developing bolls 2.31-2.78%, shed bolls 1.26-1.46% of dry wt.). The invertase in external parts is less active than in internal. Oxidising ferments were not found. The physiological differences between the top and bottom and between the external and internal parts of the cotton plant are, consequently, very numerous and great and Zaitzev's hypothesis on the close relation between the shedding of bolls and their nutrition has new support.—*Author's summary.*

9314. FATTAH, M. T., and W. V. CRUESS. Factors affecting the composition of dates. *Plant Physiol.* 2: 349-355. 1927.—Mesopotamian dates were higher in sugar content than the same varieties grown in California, on the dry basis. The Deglet Noor variety was higher than other varieties in sucrose. All varieties when unripe were high in sucrose, most of which became inverted during ripening. During dehydration at 120° F. the sucrose in unripened (but mature) dates was rather rapidly inverted. Dehydration at 120° F. was the most satisfactory means of ripening dates as it not only induced loss of astringency and inversion of the sucrose but also improved the texture and appearance. Ripening was readily induced by storage in various gases and by incubation at 110-120° F. Ripening involved a rapid decrease in % of soluble tannin.—*W. V. Cruess.*

9315. FRATEUR, J. Studie op breekbaar rooggestroo. [Lodging of rye straw.] *Natuurwet. Tijdschr.* 1930(1): 2-5. 1930.—This study, which was made on an extremely brittle hybrid variety of rye, shows that the extractive substances in general, among which the pentosans predominate, incrusting the cellular membranes of the straw, are the cause of the extreme fragility of these tissues.—*J. Frateur (transl. by A. G. Plakidas).*

9316. JENSEN, P. BOYSEN. Über neue Apparate zur Messung der Kohlensäureassimilation, der Respiration, der Öffnungsweite der Spaltöffnungen und der Beleuchtungsstärke. *Zeitschr. Wiss. Biol. Abt. E. Planta* 6(3): 456-472. 7 fig. 1928.—The rate of respiration is determined by titration of $Ba(OH)_2$ solutions which are introduced into the small chamber containing the plant material. The width of stomatal opening is measured by means of the pressure required to infiltrate with water a leaf from which the air has been removed in a vacuum. Light intensity is determined for the red-yellow part of the spectrum by exposing special photographic paper, sensitive to such wave lengths, for a certain time. The standardization of this method is effected by exposing like strips of paper to light of known intensities.—*C. J. Lyon.*

9317. LEE, H. ATHERTON, and D. M. WELLER. Length of life of seed-piece roots of sugar cane and progress of the roots in the soil at different ages of growth. *Plant Physiol.* 2: 337-347. 4 fig. 1927.—During the 1st mo. of growth from the seed-piece, sugar cane obtains its nutrients from the seed-piece, and 97% of the roots developed on it are seed-piece roots and less than 3% are derived from the new stalk. At the end of 2 mo., the new roots have developed until they make up over 77% of the total, while the seed-piece roots now constitute only 22.7%. In 3 mo., the root system of the aerial shoot makes 98.8% of the total, and seed-piece roots only 1.2%. A comparison of the wt. of roots at different levels in depth was also made. During the 1st mo. 85% of the roots were in the upper 8 in. of soil. During the 2nd mo. this % drops until 50-75% of the roots are found in this layer.—*C. A. Shull.*

9318. LILIENSTERN, MARIE. Physiologische Untersuchung über Cuscuta monogyna Wahl. *Ber. Deutsch. Bot. Ges.* 46(1): 18-26. 1928.—Colorimetric and electrometric determinations of the pH of the cell saps of dodder and of various host plants led to the conclusion that the pH of normal dodder plants is 6.2-6.4. One dodder stem which had remained for 3 weeks in the dark had a pH of 5.8. Seedlings also show an acidity somewhat higher than the adults (pH 5.8-6). Various plants were tested with the view to determining whether the dodder would attack them as hosts or not, and to ascertain reasons for this. The pH of tissues of *Populus nigra* (a common host) averages 6.5. The pH of dodder used for the experiment was 6.4. Similar results were obtained with *Ribes nigrum, Polygonum hydropiper, Mentha piperita,* on all of which dodder becomes parasitic and thrives. On the contrary, sp. of *Balsomine, Echeveria, Pelargonium, Begonia rex,* and *B. primadonna,* whose tissues have cell saps of pH 6-2.6, were not attacked, and died in the attempt to parasitize them. Attempts to determine the quantity of chlorophyll in dodder were also made, employing the microspectrocolorimetric method of Lubimenko, proving that the statements of earlier authors are correct: dodder is able to develop a certain amount of chlorophyll when insufficiently nourished by the host. Peroxidase determinations (Bach and Sbarsky method) show that in parts of the stem nearest the host both enzymes are more abundant and more active than in more remote parts of the parasite. Seedlings contain more of both ferments than the older plants. The production of these 2 ferments is apparently in inverse proportion to the chlorophyll content.—*G. J. Peirce.*

9319. MIROV, T. N. Turpentining experiments with western yellow pine in northern California. *Jour. Forest.* 28(4): 521-532. 2 pl. 1930.—Analyses of oleoresin yields obtained by different methods of tapping *Pinus ponderosa* Laws. in extreme northeastern California are given, together with effects which site, form of tree, and climatic factors exert on yield. The physical constants of oleoresin from individual trees used in this study are compared with those of samples previously studied by Schorger.—*P. C. Wakeley.*

9320. STOKLASA, JULIUS. Theories of the synthesis of organic matter in crop plants. *Internat. Rev. Agric. Pt. 1. Month. Bull. Agric. Sci. & Pract.* 21(2): 41-47. 1930.—This is a general review, including the author's studies and a list of his papers.

GROWTH, DEVELOPMENT, REPRODUCTION

9321. DELLEPIANE, G., e F. GIOELLI. Su di una presunta azione ormonica esercitata sull'accrescimento di vegetali da estratti endocrini. [An asserted hormonal influence exercised upon growth of plants by extracts of endocrine glands.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 243-245. 1930.—No difference in growth was observed, as compared with controls, in wheat seed upon which, before germination, aqueous solutions of extracts of endocrine glands (ovary, adrenal glands, hypophysis, etc.) had acted. Seed of various plants (e.g., legumes) transplanted after germination in media containing aqueous solutions of various endocrine glands showed less growth than controls, and but rarely the same or an increased growth. The inhibition seemed to vary with the application used. Hyacinth bulbs kept in water containing the principles of various endocrine glands showed a slower growth of roots and leaves. An hormonal specific action of the endocrine glands on the plants seems, therefore, not to exist.—*M. Comel.*

9322. KNUDSON, LEWIS. Flower production by orchid grown non-symbiotically. *Bot. Gaz.* 89(2): 192-199. 3 fig. 1930.—A *Laelia-Cattleya* hybrid, germinated aseptically (i.e., in the absence of mycorrhiza), was raised to maturity on agar in a large flask, and flowered when 8 yrs. old. Although the culture became contaminated, none of the characteristic mycorrhiza was found in the medium or in the roots, which were green and well developed.

9323. MacDOUGAL, DANIEL T. Lengthened growth periods and continuous growth. *Proc. Amer. Philosoph. Soc.* 69(6): 329-345. 1930.—Tree cambial tissue shows no seasonal rhythm. Continuous activity is possible and may be expected in evergreen trees. Growth extending continuously through more than 1 season has been observed, by means of the dendrograph, in the Monterey pine, in which growth does not take place at a cambial temp. below 8° C. *Juglans major,* native to a region with short summers and severe winters, transplanted to a place with equable climate, favorable to activity, shows a period of leaf survival and growth activity 2-3 times as long as in the original habitat. The seasonal morphogenic program in the new location shows an overlapping of activities as compared with that in the original habitat. The development of inflorescences during leaf-formation in the equable climate and long-season location suggests early attainment of high C:N ratio. Dislocation of the morphogenic program is accompanied by anatomical variations in the nut.—*F. W. Haasis.*

9324. REID, MARY E. The influence of nutritive

conditions of seeds and cuttings upon the development of roots. *Gard. Chron.* [*London*] 88(2289): 392-393. 1930.

9325. **ROBERTS, R. H. Relation of composition to growth and fruitfulness of young apple trees as affected by girdling, shading, and photoperiod.** *Plant Physiol.* 2: 273-286. 4 pl., 1 fig. 1927.—The growth of young apple trees was not correlated with the external environment, but with their internal composition. The relative amounts of such materials as carbohydrates and N compounds rather than the total amounts appear to determine the growth type and fruitfulness of the trees. Practically, the character of the growth should be used as a basis for determining cultural needs.—*R. H. Roberts.*

9326. **SIGMOND, HANS. Die Entfaltung der Blütenknospen zweier Oenothera-Arten. I & II.** *Beih. Bot. Centralbl. Abt. 1.* 46(3): 479-488; 47(1): 69-138. 8 fig. 1930.—The 1st part of the paper describes external appearance, internal constitution, and development of the buds of *O. biennis* L. and *O. lamarckiana* Sér. Blossoming may be divided into 2 periods, the 1st having to do with the slow opening and the 2nd with a series of rapidly succeeding opening movements which end in the downward bending of the calyx to the corolla. An abscission layer is formed above the ovary. The 2nd part of the paper concerns effect of light and atmospheric moisture on progress of the unfolding. Darkening 24 hrs. previous to expected time of opening restricted the process; darkening but a few hrs. previous had no effect. An exposure of 4-5 hrs. to increased humidity hastened the opening and duration of the process. Rhythmic light changes appear to be important in completion of the unfolding process, but light is not necessary as a stimulus immediately previous to opening. Lowering of temp. with correlated increased humidity, as occurs naturally in the evening, causes turgor pressure changes resulting in movements of opening.—*H. D. Hill* (*from abst. by H. Sigmond*).

9327. **WHITE, H. L. Carbon dioxide in relation to glasshouse crops. V. An analysis of the response of the tomato crop to an atmosphere enriched with carbon dioxide.** *Ann. Appl. Biol.* 17(4): 755-766. 1930.—Data are given showing that the process of enriching the atmosphere with CO_2 affects the tomato plant slightly in many different ways, the sum of these tending to an increased yield of fruit. These effects include shortening of the period between opening of the flower and picking of the fruit, high % of blossom developing into fruit, lower % of fruit retarded in ripening, better development of the truss normally most poorly developed, earlier development and ripening of trusses in the later part of the season, better swelling of the fruit at the end of the season. Conclusions are drawn that the results of an increased concentration of CO_2 are most beneficial to the plant at periods of low fruit-production. The greatest % increases in wt. of fruit of the treated plants over the controls are shown by fruits picked from trusses which develop at such periods in the life of the plant.—*Author's summary.*

GERMINATION, DORMANCY, RENEWAL OF ACTIVITY

9328. **DAVIS, W. E. Primary dormancy, after-ripening, and the development of secondary dormancy in embryos of Ambrosia trifida.** *Amer. Jour. Bot.* 17(1): 58-76. 4 fig. 1930.—The embryos of fruits of *A. trifida* are dormant at maturity; they after-ripen slowly in dry storage, but much more rapidly and completely in a saturated condition at low temp. (0°-10° C.). The time required for the after-ripening of freshly harvested fruits at the optimum low temp. (5° C.) is about 3 mo. While the fruits are at low temp. there is a slight rise in the acidity together with a pronounced rise in the catalase content of the imbibed embryos over those of air-stored fruits. If the embryos after-ripened in either dry storage or at low temp. fail to germinate when placed at high temp., due to enveloping membranes that interfere with the gaseous exchange between the embryos and the external atmosphere, they revert to the dormant condition and must again be after-ripened before germination will take place. The time required for the development of secondary dormancy in the after-ripened embryos is 30-60 days. The same embryos of fruits may be repeatedly made dormant and after-ripened by alternating periods at high temp. with sub-minimal O supply and with periods at low temp. with adequate O supply in water imbibed condition. The cause of secondary dormancy in embryos of *A. trifida* appears to be the restricted respiration at high temp., the cause of which is the low permeability to O of the membranes which envelop the embryo. The restriction of the gaseous exchange is due mainly to the influence of the nucellar membrane, consisting of a single layer of living cells immediately enveloping the embryo. While the development of dormancy is associated with restricted or incomplete respiration, the presence of a supply of O seems necessary to its development. Embryos of fruits embedded in agar, in order to reduce further the O supply to the embryos, developed dormancy more slowly than embryos of fruits at the same temp. but free from agar. During the period in which the embryos become dormant, both the respiration and the catalase activity are reduced. At the germination temp. employed, the catalase activities of fruits, seed, and naked embryos bear about the same relation to one another as does the respiratory capacity of each of these to the other.—*Author's summary.*

9329. **DAVIS, W. E. The development of dormancy in seeds of cocklebur (Xanthium).** *Amer. Jour. Bot.* 17(1): 77-87. 5 fig. 1930.—At maturity naked embryos of *Xanthium* seed exhibit no dormant tendencies. In intact seed, dormancy can be induced, at temp. suitable for germination, by imbedding seed in clay or agar, thus assisting seed coats to reduce gaseous exchange; 2 to several mo. of this treatment are required. Development of dormancy is accompanied by a fall in catalase activity and respiration intensity. Upon removal of seed coats, dormant seed under germination conditions responded variously, perhaps due to differences in seed coat permeability. Dormant seed gradually lose dormancy when kept moist at 5° C. There is a rise in catalase activity and respiration rate with loss of dormancy. In nature, seed in wet soils develop dormancy during the summer and lose it during the following winter and spring.—*A. H. Larson.*

9330. **DENNY, F. E. Chemical treatments for controlling the growth of buds of plants.** *Industr. & Engineer. Chem.* 20(6): 578-581. 5 fig. 1928.—A discussion is given of the use of certain chemicals (Na-thiocyanate, ethylene chlorohydrin, et al.) for breaking the rest period of potato tubers; of the effect of soaking tubers in thiourea, which causes the development of an unusually large number of sprouts from a seed piece, leading to an increase in the number and a decrease in the size of the tubers in the crop—a condition favorable for production of potato tubers for "seed"; of the forcing of flower buds of woody ornamentals (crab apple, lilac, *Deutzia*) in winter by chemical treatment; and of the use of chemicals (ethylene, chlorohydrin, et al.) in breaking the rest period of gladiolus bulblets.

9331. **DENNY, F. E. Sucrose and starch changes in potatoes treated with chemicals that break the rest period.** *Amer. Jour. Bot.* 17(8): 806-817. 1930.—Freshly harvested potatoes were treated with ethylene chlorhydrin, Na-thiocyanate, and thiourea, the concentrations of the chemicals being decreased from the optimum in a graded series. Press-juices from the treated potatoes obtained from the various lots at a subsequent interval, usually 4-7 days before sprouting became visible, were compared with juices from the checks with reference to sugar content. Sucrose was higher in the treated than in the check lots, and varied with the concentrations of chemicals used. No such consistent effect of the treatments on the reducing sugar content was found. When samples were taken at intervals of 24, 48, 72, etc., hrs. after treatment, the time at which the sucrose con-

tent of the treated lots became higher than that of the checks varied from 24 to 72 hrs. Samples of entire tissue which had been dried, powdered, and analyzed for starch showed that concentrations of chemical favorable for breaking the dormancy of the sprouts caused decreases in the starch; with low concentrations of chemical, however, the differences were small and of doubtful significance.—*Author's summary.*

9332. **GUTHRIE, JOHN D. The effect of various chemical treatments of dormant potato tubers on the peroxidase, catalase, pH, and reducing properties of the expressed juice.** *Contr. Boyce Thompson Inst.* 3(4): 499-508. 2 fig. 1931.—Dormant potato tubers were treated with ethylene chlorhydrin, potassium thiocyanate, thiourea, ethyl alcohol, acetaldehyde, HCN, methyl thiocyanate, acrolein, KCN, KCl, KCNO, urea, sodium chloracetate, and ethylene cyanhydrin. Peroxidase, catalase, pH, power to reduce methylene blue, and power to reduce I in acid solution were determined on the expressed juice of the tubers. No good correlation could be found between the effect of the chemical on these properties and its power to break dormancy. Those chemicals that increased the pH of the juice also increased the power of the juice to reduce I in acid solution. This increased reducing power of the juice is probably a result of the increased pH. The chemicals found to be most effective in breaking dormancy were either sulphur compounds or compounds which increased the power of the juice to reduce I in acid solution. An increase in sulphydryl compounds is probably involved in this increased power to reduce I.—*J. D. Guthrie.*

9333. **JOSEPH, HILDA C. Germination and vitality of birch seeds.** *Bot. Gaz.* 87(1): 127-151. 5 fig. 1929.—The germination of freshly harvested seed of *Betula lenta* was poor, but improved with dry storage. Air-dried seed had a narrow temp. range for germination, the minimum being 30° C. for *B. lenta*, and 20° C. for *B. populifolia*, *B. papyrifera*, and *B. lutea*. The optimum temp. for all sp. was 32° C. or 15-32° C. alternating. After-ripening proceeded best at 0-5° C. and caused a lowering of the minimum temp. required for germination. Stored moist at this temp. 4-6 weeks was sufficient to bring about excellent germination at 15° C. After a storage of 5-6 mo. at 0° C. germination occurred at 0° C. Freezing was ineffective or injurious. Germination was not affected by degree of acidity, light intensity, CO_2 concentration, or partial pressure of O. *B. papyrifera* was the first to lose viability on storage. Its optimum H_2O content for storage was 0.6%, that for *B. populifolia* 5.2%, while *B. lenta* kept well in all but very humid conditions. Viability was retained better when stored in an ice chest, irrespective of moisture content. The best time for harvesting was after the catkins had dried on the tree, but before they had opened. In making the tests, wings were removed from the seed. Conclusions are based on tests of about one million seed. The importance of after-ripening treatment in enabling the seed to germinate promptly in the early spring is pointed out.—*H. I. Baldwin.*

9334. **JOZEFOWICZ, MARY. The effect of certain treatments on the germination of tomato seeds.** *Ann. Appl. Biol.* 17(3): 504-513. 1930.—Good seed (germination power 98-99%) withstood solutions of formaldehyde, not stronger than 2% for 10 min., and not stronger than 1% for 15 min., followed by drying at 15-18° C. A 5% solution for 10 min., which was without effect when seed were sown wet, retarded the germination after drying but did not affect the vitality. Seeds of an inferior quality (80% germination) withstood solutions of formaldehyde not stronger than 1% for 5 min. when sown wet, and were affected even by 0.1% formaldehyde for 5 min. when dried after treatment. 100, 50, 35, 10, 5 and 1% solutions of H_2O_2 for 10 and 30 min., followed by drying, retarded germination, which was more pronounced with stronger solutions, the vitality of the seed being practically unaffected. An 0.05% $HgCl_2$ solution for 10 min. proved harmless, but higher concentrations and longer treatment either checked the germination of dried seed or retarded it markedly. The vitality of seed was not affected by $CuSO_4$ solutions as follows: 10% for 15 min., 5% for 20 min., 2% for 50 min., 1% for 100 min. and 0.5% for 200 min., but the germination in some cases was markedly retarded. A 5% solution for 10 min. proved practically harmless. Good air-dried seed withstood hot water at 35-46° C. for 15 hrs. and at 50.5° C. for 1 hr. without any important injury. Higher temp. decreased the % germination markedly even after 10 min. soaking. Air-dry seed were not affected by exposure to dry heat of 30-50° C. for 72 hrs. They withstood dry heat up to 79.5° C. even for 72 hrs., the germination, however, being more retarded as the temp. and time of exposure increased. Temp. above 79.5° C. proved very injurious at 10 min. exposure.—*Author's summary.*

9335. **La GARDE, ROLAND V. Non-symbiotic germination of orchids.** *Ann. Missouri Bot. Gard.* 16(4): 499-514. 1 pl. 1929.—Seed of 3 *Cattleya* hybrids were germinated in Erlenmeyer flasks on agar to which nutrient solutions of salts and sugars had been added. A new combination of salts in the solution was found superior to those formerly used. Of 4 sugars investigated, maltose gave best results, levulose, glucose, and saccharose ranking next in the order named. A pH of 4.8-5.2 was most favorable. At pH 6.0 or over, germination did not take place, or chlorosis and death followed rapidly. Reasons for the superiority of the new solution are discussed.—*H. B. Sifton.*

9336. **NIETHAMMER, ANNELIESE. Die Charakteristik der Lebenskraft verschiedenen Samenmaterials auf chemischer, physikalischer und rechnerischer Grundlage.** *Gartenbauwiss.* 1(6): 593-614. 1929.—Microchemical, histochemical, and quantitative chemical tests, determination of enzyme content, and the use of u.-v. rays, dyes, and certain mathematical formulae in judging the germination power of seed are discussed. A few of these methods were applied with negative results. It is concluded that none of these procedures are as valuable in determining the vitality of seed as ordinary germination tests.—*A. E. Murneek.*

9337. **TABATA, KIYOMITSU, RIITI KIKUTI, und ZIN'EI SASAKI. Ueber die Keimungsversuche des Pollens der Gramineen.** (Japanese.) *Proc. Crop Sci. Soc. Japan* 4: 64-76. 1 fig. 1929.—Experiments were carried out on sp. of *Hordeum*, *Triticum*, *Oryza*, *Avena*, *Secale*, *Zea*, *Setaria*, *Andropogon*, *Panicum*, *Coix*, and *Euchlaena*. Sugar (15-45%) in a dilute agar solution proved best for germination of grass pollen. Addition of stigma extract generally favored germination and increased growth of the pollen tubes. The % germination of grass pollen is low. The pollen tubes are short; their growth in length is greatest about 2 hrs. after pollination and continues for 5 hrs. There is no growth after 24 hrs.—(*Courtesy Japanese Jour. Bot. Transl. by W. Crocker.*)

TEMPERATURE RELATIONS

9338. **HARVEY, R. B. Time and temperature factors in hardening plants.** *Amer. Jour. Bot.* 17(3): 212-217. 2 fig. 1930.—The hardiness of cabbages was determined after exposure to various continuous hardening treatments and after alternation between high and low temp. The threshold value for producing hardiness in Early Jersey Wakefield cabbage was at about 5° C. Alternate equal exposures, 12 hrs. at 0° and 12 hrs. at 10° or 20°, produce greater hardiness than exposure continuously at the average of these temp. The effect of short exposure (1-4 hrs. per day) at 0° C. overbalances the effect of longer exposures (23-24 hrs.) at 10° and 20° C.—*Author's summary.*

9339. **JOZEFOWICZ, MARY. Some observations on tomato plants from seed submitted to high temperatures.** *Ann. Appl. Biol.* 17(3): 514-521. 4 fig. 1930.—The results of pre-drying seed prior to heating at high temp. and a description of abnormalities in tomato seedlings caused by heat are given. Commercial tomato seed withstood 90° C. and 88-100° C. for 1 hr. better when previously dried at lower temp., their germination being, however, markedly retarded. Part of the heated seed germinated

abnormally, and the developing plants were more or less abnormal. The primary root did not develop; the cotyledons were misshapen; and the plumule failed to develop into a normal shoot. The longer the period of pre-drying, the higher the rate of germination, and the less the degree of abnormality. The basal growing point of a tomato embryo is least resistant to heat, the apical growing point, the hypocotyl, the inner and, lastly, the outer cotyledons following in order of resistance. Embryos unable to push through the seed-coats can grow for a certain period within them and develop chlorophyll.—*Author's summary.*

9340. [SALTYKOVSKIĬ, M. I.] САЛТЫКОВСКИЙ, М. И. По вопросу о зимостойкости озимых хлебов. [Cold resistance of winter cereals.] [English summary.] Журнал Опытной Агрономии Юго-Востока. (*Jour. Exp. Landw. Südosten Eur. Russlands*) 7(2): 181-218. 17 fig. 1929.

9341. **SCHUBERT, K. Über Temperaturmessungen an der Blüte von Vinca minor.** *Ber. Deutsch. Bot. Ges.* 46 (10): 653-666. 1929.—The temp. on the upper side of the flower at times varies markedly from that on the under surface.—*S. P. Nichols.*

RADIANT ENERGY RELATIONS, PHOTOPERIODISM

9342. **CORTESE, FRANZ. Colture di actinomiceti alla luce di Wood.** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 423-425. 1930.—Some sp. of Actinomyces produce, if kept in nutritive media containing meat extract, a peculiar substance, which shows a rose-red fluorescence when exposed to u.-v. light. The production of the fluorescent substance is influenced by temp.; the optimum was at 15-20° C. The red fluorescence is to be observed from the 10th day from the sowing of the culture, its intensity increasing till a maximum is reached in the 2nd mo., and thereafter slowly disappearing. The fluorescent substance was extracted, but not yet isolated.—*M. Comel.*

9343. **HIGGINS, GEORGE M., and CHARLES SHEARD. Germination and growth of seeds as dependent upon selective irradiation.** *Plant Physiol.* 2: 325-335. 2 fig. 1927.—A series of experiments was carried out on the germination and growth of seed (cucumber) using a quartz Hg lamp and vitaglass, ordinary window glass, and ultra-glass (Corning 586 A W) as filters. Data with direct irradiation by the quartz Hg lamp and on controls (no irradiation) were also obtained. The results indicate that: shorter wavelengths in general appear to stimulate while the longer wavelengths inhibit germination; wavelengths of 320-390 mμ are particularly effective in inducing growth; wavelengths of 270-320 mμ appear to inhibit, delay the time, and lessen the rate of growth; and shorter wavelengths of light act as stimulating agents which modify the control of endogenous processes and accelerate germination.—*C. Sheard.*

9344. **HUTCHINSON, A. H., and M. R. ASHTON. The effect of radiant energy on growth and sporulation in Colletotrichum phomoides.** *Canadian Jour. Res.* 3: 187-199. 1 pl., 11 fig. 1930.—The lines of the Hg arc spectrum were grouped into 3 classes on the basis of their effect on the growth of *Colletotrichum*: those which caused constant retardation; those which caused constant stimulation; and those which caused primary retardation followed by stimulation. On the basis of the effect on the production of spores, there were 2 classes of lines in the spectrum: those which hastened spore development and those which had no apparent effect. Spore production is generally hastened by monochromatic light causing retardation or extreme stimulation of growth, and is apparently not affected by light which moderately stimulates growth; moreover an optimum duration is shown for the illumination causing the accelerated development of spores. Evidence is given that the effect of monochromatic light is upon the protoplasm and not the culture. There is a marked similarity in the effect upon the growth of *Colletotrichum*, yeast, and *Paramecium*.—*T. C. Scheffer.*

9345. **MARTIN, M. T. The influence of ultra-violet radiation upon some plant cells.** *Jour. Exp. Biol.* 7: 293-307. 1930.—Very brief doses of short wave lengths of light can induce the browning of leaf surface in a variety of plants, the effect appearing after a short latent period which varies with the intensity of exposure. The effect resembles the pigmentation of the human skin on exposure to u.-v. radiation in its time relations and dosage. In the human epidermis erythema and pigmentation are produced without killing of the cells and the pigmentation is due to a protective deposition of melanin. In the plant epidermis, on the contrary, pigmentation is due to death of the epidermal cells and can be produced equally well by other agents, e.g., heat, injury, chloroform. The killing of plant epidermis is due to rays of wave length less than 2900 Å, whereas the pigmentation in the human epidermis is induced by rays of 2900-3300 Å. Moreover, the human skin reactions vary with the temp. of irradiation, whereas temp. has little effect on the response of the epidermis of *Pulmonaria* to irradiation. The experiments indicate that 2 phases are involved in *Pulmonaria:* an initial photolysis caused by the direct action of the u.-v. rays absorbed by the protoplasm and having a very low temp. coefficient, and secondary reactions thereby induced which end in the death and browning of the cell and have a high temp. coefficient.—*J. M. Robson.*

9346. **MAXIA, CARLO. Conferma dell'esistenza delle radiazioni mitogenetiche del Gurwitsch dimostrata sui blastomeri di Paracentrotus lividus. [Confirmation of the existence of mitogenetic rays demonstrated on the blastomeres of P. lividus.]** *Monitore Zool. Ital. (Firenze)* 40(4): 115-123. 1929.—Artificially fertilized eggs of *P. lividus* and roots of 5 plant spp. were used in the dark, in orange light, or diffuse daylight. In the presence of growing root-tips in appropriate positions at very short distances eggs of *P. lividus* segmented more rapidly.—*C. Maxio (transl. by J. F. McClendon).*

9347. **NAVEZ, A. E. On the alleged effect of polarized light on films of starch.** *Science* 72(1853): 13. 1930.—The author was unable to verify the results of Miss Semmens, who reported that a beam of moonlight produced perceptible hydrolysis of boiled starch. Both artificial and moonlight were used.

9348. **PORTER, C. L., and H. W. BOCKSTAHLER. Concerning the reaction of certain fungi to various wave lengths of light.** *Proc. Indiana Acad. Sci.* 38: 133-135. 1928.—*Colletotrichum lindemuthianum, Cephalothecium roseum,* and 2 *Sclerotinia* sp. were extremely sensitive to changes in quantity as well as quality of light in the visible spectrum. Ultra violet light caused greater material changes than the visible spectrum.—*H. J. Sax.*

9349. **SCAGLIA, G., e O. BUSINCO. Effetti delle irradiazioni Roentgen sull'accrescimento di Hyacinthus orientalis. [Effect of x-rays on growth of H. orientalis.]** *Arch. Fisiol.* 29(1): 48-87. 2 fig. 1930.—When bulbs were irradiated with increasing dosages of x-rays, 1 or more examples out of every group showed a greater development than the controls. The magnitude of the increase was related to the dosage employed, but the same dosages were able, acting on other subjects of the same group, to prevent or greatly delay their development and growth. The possibility of a hypersensitivity of plant protoplasm to x-rays is admitted.—*M. Comel.*

9350. **SCHWARZ, F. K., und OTMAR SCHELLENBERG. Die biologische und bakterizide Wirkung des Phosphoreszenzlichtes.** *Zentralbl. Bakt. I. Abt. (Orig.)* 116(2/3): 122-131. 3 fig. 1930.—Phosphorescent substances can absorb radiant energy in the form of short light waves and give it out in the form of cold light. Such a substance is a peculiar combination of a sulphide of an alkaline earth fused with a colorless salt (NaCl, CaF_2) and traces of a heavy metal. Various phosphorescent substances had diverse effects on the growth of plants. Plants (sprouted cress seed) subjected to phosphorescent light showed stronger growth than those kept in complete darkness; but comparison with controls in daylight was not made. Various phosphorescent sub-

stances showed different bactericidal properties for a number of bacteria, some substances being bactericidal for one bacterium or group of bacteria and not for others.

9351. [STRELIN, G. S.] СТРЕЛИН, Г. С. Действие индукции дрожжевыми культурами (митогенетических лучей) на прорастание и развитие мицелия Rhizopus nigricans и размножение Nadsonia fulvescens. [The influence of mitogenetic rays (induced by yeasts) on germination of R. nigricans and on multiplication of N. fulvescens.] Вестник Рентгенологии и Радиологии. (*Ann. Roentgenol. Radiol., Leningrad, URSS.*) 7(3): 191-197; German summary 249-250. 6 fig. 1929.—Some hanging drop cultures of *R. nigricans* on quartz cover-slips were exposed to the influence of yeast growing on agar cultures. The lengths of the hyphae were measured by means of a camera lucida, and the average determined for each phase. The hyphae exposed to any rays emitted by the yeast were approximately 25-35% longer than in the case of the controls. A total of 1391 measurements of length was made in 7 experiments, all of which gave positive results. Similar experiments were performed with cells of *N. fulvescens*, sown in hanging drop cultures. The multiplication of cells of *Nadsonia* seems to be accelerated at first, and then the effect seems to disappear. All the experiments gave a positive result, the average acceleration in multiplication of cells being 16.5%.—*A. W. Bartlett.*

9352. SUSSMANOWITSCH, HELENE. Erschöpfung durch mitogenetische Induktion. *Zeitschr. Wissens. Biol. Abt. D. Roux' Arch. Entwicklungsmech. Organ.* 113(4): 753-758. 2 fig. 1928.—Induction of an increased number of mitoses by means of mitogenetic rays causes exhaustion of reserve materials. If irradiation is prolonged beyond the necessary time for stimulation, a decrease in the number of mitoses is brought about. Using onion root as detector and yeast cells as source of mitogenetic rays, exposures of 12-26 hrs. caused a decrease of about 20% of mitoses. Fractions of a minute exposure to u.-v. light produced the same effect. The effect could be counteracted by local warming of the stimulated root, to increase its supply of reserve material.—*R. Emerson.*

HYDROGEN-ION CONCENTRATION, ELECTRICAL PHENOMENA

9353. COLLA, S. Nota sull'azione della concentrazione degli idrogenioni sulle correnti protoplasmatiche. [Action of pH on protoplasmic currents.] *Protoplasma* 5(2): 179-190. 7 fig. 1928/1929.—Protoplasmic currents in the internodal cells of *Chara crinita* L. exposed to solutions of varying pH, show variations in velocity with 2 maxima (at pH 5.3 and 7.1). The intermediate minimum currents occur in cells immersed in liquids of pH 6.2. The greatest velocity is at pH 5.3, which is almost the same as that of the cell sap. During the first 20 min. the currents in algae immersed at pH 3.2, 4.2, and 5.3 generally increase more or less gradually to a maximum before stopping completely; while at pH 6.2, 7.1, and 8.1 there is a temporary cessation during the first 5 min. after which movement again begins and increases to a maximum before ultimate cessation and death of the protoplasm. Certain variations in behavior also seem to depend upon the age and state of etiolation of the cells.—*Oran Raber.*

9354. DORRIES, W., und L. W. HAASE. Über den Einfluss der Wasserstoffionenkonzentration auf das Wachstum von Leptomitus lacteus in künstlichen Nährlösungen. *Kleine Mitteil. Mitglieder Ver. Wasser-, Boden-, u. Lufthygiene* 6(7/10): 240-244. 5 fig. 1930.—From experimental results it seems that *Leptomitus* prefers an acid reacting medium, which confirms the findings of earlier investigators. Under the conditions chosen, the pH range for its growth was pH 2.5-7.5, with the optimum 2.9-5.4. These results refer to cultures under artificial conditions, and the behavior of the fungus under natural conditions is not necessarily in absolute harmony with them. In nature, various forces affect one another and may influence growth in still another manner than that here assumed. Systematic pH measurements during the growth period of the fungus in its natural habitat seem indispensable before one can judge conclusively in practice its resistance to acids and bases. —*Authors' conclusions (transl. by W. S. Bourn).*

9355. OSTERHOUT, W. J. V., and S. E. HILL. Salt bridges and negative variations. *Jour. Gen. Physiol.* 13 (5): 547-552. 10 fig. 1930.—A negative variation in *Nitella* is unable to pass a spot killed by chloroform but can set up a negative variation beyond this spot when a salt bridge is put around it. It can likewise set up a negative variation in a cell of another plant if connected to it by 2 salt bridges.—*Authors' summary.*

9356. REIFENBERG, ADOLF, und LEA FRANKENTHAL. Über den Einfluss von Phosphatlösungen verschiedener Wasserstoffionenkonzentration auf die Atmung und Keimung von Samen. (Beziehungen zwischen Bodenreaktion und Wachstum.) *Biochem. Zeitschr.* 220 (4/6): 473-486. 1930.—Especially in green peas, and also in sugar peas, phosphates cause an increase in CO_2 output; no decline takes place until the reaction becomes strongly acid. Barley and wheat are also stimulated by phosphates, the latter only when the reaction is strongly acid. Phosphates prevent both oxidation and the release of CO_2 in oats. An increase in oxidation takes place in green and yellow peas only near the neutral point. In sugar peas both strongly acid and weakly alkaline reactions hinder the binding of O; the same is true of barley, which, however, tolerates a still stronger acid reaction. An increase in oxidation takes place in wheat only in the presence of a very weakly acid reaction; otherwise always a decrease. The optimal zone of oxidation in presence of phosphates for green seed peas is pH 6.5-7.2; for barley, pH 6.5-6.8; for oats, 3.9-6.8; and for wheat, 5.2-6.9. The respiration coefficient of peas and the grains is much raised by the application of phosphates. Although in general phosphates stimulate respiration and retard germination, the optimum for both life processes lies at the same pH of the environment, and this is in general practically identical with the optimal pH for the soil previously determined by other investigators for the given plants.—*From authors' summary (transl.).*

TOXIC ACTION

9357. BETHGE, H. Beiträge zur Frage der Empfindlichkeit von Blättern gegen schweflige Säure. *Kleine Mitteil. Mittglieder Ver. Wasser-, Boden-, u. Lufthygiene* 6(7/10): 224-226. 1 fig. 1930.—The sensitive limit of the moss lies at a concentration of about 1: 1,000,000 when this concentration persists for a day. On the other hand 1: 200,000 for several hrs. is endured without injury. For the seedlings investigated the sensitive limit thus appears to lie at a greater concentration than 1: 500,000. Moss leaves are accordingly a little more sensitive than seedlings of parsley. Generalization of these values should not be attempted until additional investigations have been made on the proportions in the air.—*Author's conclusions (transl. by L. T. Leonard).*

9358. NIETHAMMER, ANNELIESE. Die Beinflussung der Pollenkeimung unserer Nutz- und Ziergewächse durch die verschiedensten Giftstoffe, die im Pflanzenschutzdienste angewendet werden. *Gartenbauwiss.* 1(5): 471-478. 1929.—1% solution of certain spray materials was added to glucose and (less often) sucrose media in which pollen of the following plants was germinated: hazelnut, alder, *Evonymus vulgaris,* birch, *Cornus mas, Forsythia suspensa,* willow, poplar, orange, wild plum, apricot, magnolia, maple, cherry, red currant, apple, pear, chestnut, plum, lilac, azalea, peony, goldenrod, *Crataegus punctata,* and rose. "Maag," "Sulikoll," lime-sulphur, and nicotine-soap preparations did not affect germination. With few exceptions, "Dendrin," "Neodendrin," and "Thomilon" were very harmful, and lead-arsenic and "Solbar" very frequently injurious.—*A. E. Murneek.*

9359. THORNTON, NORWOOD C. Carbon dioxide storage in fruits, vegetables, and flowers. *Industr. & Engineer. Chem.* 22(11): 1186-1189. 5 fig. 1930.—Fruits

and vegetables held in storage 3-7 days withstood, without apparent injury, concentrations of CO_2 of 6-83% depending upon kind and variety. The concentration of CO_2 tolerated by each fruit and vegetable was determined at 6 storage temp. varying from 0° to 25° C. The tolerance to CO_2 was influenced by the ripeness, firmness, and freshness of the plant organ. In general, the presence of an excess of moisture in the storage chamber is undesirable. The CO_2 treatment prolonged the life of the flowers by retarding the opening of the buds. Rose-buds, when removed to warm air after a period of storage in 15% CO_2 for 7 days at 3.3° or 10° C., lasted as well as untreated roses which had been in cold storage without CO_2 for 3 days. This treatment gave a possible gain of 4 days.—*Author (courtesy Industr. & Engineer. Chem.).*

ANIMAL PHYSIOLOGY

GENERAL

(See also in B. A. 6(3): Entries 6050, 6065, 6567, 6896, 8345)

9360. **ABDERHALDEN, EMIL [herausgegeben von].** Biochemisches Handlexikon Bd. 12 (5. Ergänzungsband) bearbeitet von HERBERT MAHN, ERNST ROSSNER, u. HANS SICKEL. Harnstoff und Derivate. Guanidin. Kreatin. Kreatinin. Amine. Basen mit unbekannter und nicht sicher bekannter Konstitution. Cholin, Betain. Neurin. Muscarin. Stachydrin. Indol und Indolabkömmlinge. Aminosäuren, die im Eiweiss vorkommen. Biologisch interessante Aminosäuren, die im Eiweiss nicht vorkommen. Abbauprodukte von solchen und von im Eiweiss vorkommenden aminosäuren Polypeptiden. Diketopiperazine. [Urea and derivatives. Guanidine. Creatine. Creatinine. Amines. Bases with unknown and little known constitution. Choline. Betaine. Neurin. Muscarine. Stachydrine. Indol and indol derivatives. Amino acids occurring in albumin. Biologically interesting amino acids, not occurring in albumin. Decomposition products of the latter, and amino acid polypeptids occuring in albumin. Diketo-piperazin.] 1103p. Julius Springer: Berlin, 1930.

9361. **ATZLER, EDGAR.** Aufgaben der Arbeitsphysiologie. *Tabulae Biologicae Periodicae* 1(3): 305-320. W. Junk: Berlin, 1931.—The demands of all the trades and professions as to eye, ear and labyrinth, the various methods of exercising and of muscular development, influence of exercise on size of heart, etc., are tabulated.

9362. **GREGORIO-ROCASOLANO, ANTONIO de.** Tratado de bioquimica. [Text of biochemistry.] 612p. Gambón: Zaragoza, 1929. Price 30 M.

9363. **LUMIÈRE, AUGUSTE.** Quelques réflexions d'un vieil expérimentateur. *Arch. Internat. Pharmacodyn. et Thérapie* 38: 349-358. 1930.—The author points out the necessity of teaching beginning experimenters to conduct research methodically, eliminate errors and interpret facts carefully in the formulation and use of hypotheses, theories and dogmatic principles.—*R. C. McCardle.*

9364. **MALISOFF, WILLIAM MARIAS, ERNEST M. MARKS, and FRED. G. HESS.** A study of mercaptan chemistry. *Chem. Rev.* 7(4): 493-547. 2 fig. 13 page bibliography. 1930.—The subject is treated under the following headings: 1) Physical Characteristics, 2) Chemical Characteristics, 3) Method of Preparation and Purification, 4) Detection and Determination, 5) Special Interest Attaching to the Substances, 6) Suggested List of Research Problems. Under 5) the importance of the -SH group in biology is discussed.—*T. O. Stevens.*

9365. **SCHMITT, F. O.** Ultrasonic micromanipulation. *Protoplasma* 7: 332-340. 1 fig. 1929.—High frequency sound waves produced by quartz crystals were conducted by fused quartz micromanipulation needles into living cells. Amoeba protoplasm can be churned up by the instrument and still form pseudopodia. Other reversible changes take place but too severe treatment leads to injury and death. If the needle touched the nucleus for a short time granules, threads and knots made their appearance. Some cases of irreversible gelation of the cytoplasm in localized areas were observed. Starfish eggs showed a whirling motion of the cytoplasmic granules around the needle and subsequent collection on the boundary of the disturbed area. This boundary underdoes violet Brownian movement indicating a highly lowered viscosity. The nucleolus can be made to describe an orbit in the nucleoplasm at varied speeds, indicating an unattached condition.—*L. Moyer.*

9366. **WILLIAMS, ROGER J.** Introduction to biochemistry. 501p. Illus. D. Van Nostrand Co. Inc.: New York, 1931. Price $4.00.—This textbook represents, in a way, a revolt against the conventional treatment of physiological chemistry which, as the author points out, is a "direct descendant of medical courses in clinical chemistry." The author has the point of view that there is much of fundamental importance to the biochemist to be obtained from a study of the chemical physiology of all types of living organisms. The scope of this book is unusually broad, embracing a discussion of the composition of not only mammals and the higher plants, but also of yeasts, molds, bacteria and unicellular animals, together with a consideration of the chemistry involved in the life processes of these organisms. The nutritional requirements of the various groups are pointed out and the mechanisms whereby food materials are rendered available are described. The subject matter is presented in a clear and cogent manner. The nature of the discussion is essentially descriptive and, as might be expected in view of the enormous mass of material surveyed, the treatment is not very detailed. Considering the worthy plan and alluring theme of this textbook, the advanced student will probably be disappointed in its admittedly "outline" character. However, the references at the end of each chapter are a valuable supplement to the discussion in the text.—*A. H. Smith.*

9367. **WILLMER, E. N.** Tissue culture from the standpoint of general physiology. *Biol. Rev. & Biol. Proc. Cambridge Phil. Soc.* 3(4): 271-302. 1928.—A review, dealing with: methods of tissue culture, and apparatus; cytological observations—character of mitochondria, fat globules, Golgi bodies, vacuome, nucleus, mitosis, etc., in tissue culture; factors governing cell size; nature of the relationship or connection between cells of a tissue (protoplasmic connections); processes of cellular differentiation, as studied in tissue culture; interconvertibility of cell types; cellular behavior and physiology as studied in tissue culture—phagocytosis, secretion by gland cells, response to drugs, etc.; and metabolism and growth, and the factors governing these processes. The bibliography includes 129 citations.

9368. **WISHART, G. M.** Groundwork of biophysics. 344p. G. Bell & Sons Ltd.: London, 1931. Price, 12s 6d.—Written to give to physicians, medical students, and others similarly handicapped, a working knowledge of physical sciences. Nearly half the book is devoted to strictly physical topics ranging from atomic structure through the physical chemistry of solutions to colloids and enzymes; the remainder is devoted to such topics as the cell, secretion, excitability, energy exchanges, work and efficiency, and certain special senses. The treatment is extremely condensed, and directed especially toward the solution of the practical problems which arise in the use of the principal physical tools of medico-physiological research. It should be useful principally as a practical guide and elementary reference book. The electrolytic dissociation of salts is discussed without reference to modern theories of complete dissociation.—*S. C. Brooks.*

9369. **REED, LOWELL J., and EMERY J. THERIAULT.** The statistical treatment of reaction-velocity

data. II. Least squares treatment of the unimolecular expression $Y=L(1-e^{-kt})$. *Jour. Phys. Chem.* 35(4): 950-971. 1931.—It was shown in a previous paper that the usual methods of calculating velocity constants are inadequate and that the least-squares procedures which have been proposed are inapplicable to unimolecular data. A statistical treatment is developed which permits of the ready derivation both of the experimental constants and of their precision values, proper allowance being made for constant errors.—*T. O. Stevens.*

ANIMAL PHYSIOLOGY

ENZYMES AND CATALYSTS

K. G. FALK, *Editor*

(See also in B. A. 6(3): Entries 6191, 6575, 6576, 6689, 6771, 6778, 6862, 6864, 6906, 6974, 6980, 7088, 7307, 7329, 7330, 7333, 7363, 7480; and in this issue 9406, 9471, 9555, 9665, 9766, 9770, 9787, 9809, 9818, 10226, 10272, 10811, 10830, 11581)

9370. **ABDERHALDEN, EMIL, und WALTER SCHAIRER. Über das Verhalten von Dipeptiden, an deren Aufbau m- bzw. o-Tyrosin bzw. p-Nitrotyrosin bzw. Phenyl-β-alanin beteiligt ist, gegenüber n-Alkali, Erepsin und Trypsin-Kinase.** *Fermentforsch.* 12(3): 295-312. 1931.—Normal alkali had only slight action on the dipeptides investigated but quickly split a halogen acyl compound like chloracetyl-nitrotyrosine. Erepsin attacked none of the dipeptides studied whereas trypsin-kinase, free of erepsin, was effective upon glycyl- and *dl*-leucyl-*l*-*p*-tyrosine. Storage of the trypsin-kinase preparation induced certain changes in its action; *dl*-leucyl-*l*-*p*-tyrosine was more rapidly split by a 24 hr. old enzyme preparation than by a fresh one but glycyl-*l*-*p*-tyrosine was less completely converted. Such observations indicate that trypsin-kinase is an enzyme complex and unstable. The remaining halogen acyl and dipeptide compounds investigated were not attacked by trypsin-kinase.—*E. McCoy.*

9371. **ABDERHALDEN, EMIL, und EDGAR HAASE. Fortgesetzte Studien über die Abspaltbarkeit von Halogen aus Halogenacylaminosäuren und -polypeptiden durch verdünntes Alkali.** *Fermentforsch.* 12(3): 313-328. 1 fig. 1931.—The speed of cleavage of halogen from some 20 bromacetyl-amino acids and polypeptides is given. Comparison of isomeric compounds like bromacetyl-glycyl-*dl*-valine and bromacetyl-*dl*-valyl-glycine showed important differences, cleavage of the former being much more rapid. Comparison of bromacetyl-*dl*-alanyl-*dl*-leucine, -glycyl-*dl*-alanyl-*dl*-leucine, and -diglycyl-*dl*-alanyl-*dl*-leucine showed that the speed of liberation of halogen increased with the length of the polypeptide chain.—*E. McCoy.*

9372. **ABDERHALDEN, EMIL, und OTTO ZUMSTEIN. Weitere Studien über das Verhalten von Prolin enthaltenden Polypeptiden gegenüber dem Erepsin- und Trypsin-Kinase-Komplex.** *Fermentforsch.* 12(3): 341-349. 1931.—Erepsin attacked *dl*-propyl-*dl*-leucine, *dl*-propyl-*dl*-leucyl-glycine; *dl*-propyl-diglycine and *dl*-propyl-*d*-alanine only slightly; and *dl*-propyl-glycine and *dl*-leucyl-*dl*-propyl-*dl*-leucine not at all. Trypsin-kinase acted upon none of the polypeptides mentioned. Normal alkali attacked propyl-glycine and propyl-alanine but not propyl-leucine, or leucyl-propyl-leucine. From the specificity of the above reactions it is concluded that enzymes do not merely accelerate reactions but are specifically responsible for their initiation.—*E. McCoy.*

9373. **ABDERHALDEN, EMIL, und FRIEDRICH SCHWEITZER. Studien über das Verhalten von Polypeptiden, an deren Aufbau Lysin, in α- und ε- Stellung substituiert, beteiligt ist, gegenüber n-Alkali, Erepsin und Trypsin.** *Fermentforsch.* 12(3): 350-375. 1931.—Of some 25 compounds of the type in question erepsin attacked only ε-benzoyl-α-*dl*-alanyl-*dl*-lysine, ε-benzoyl-α-(*dl*-leucyl-*dl*-alanyl)-*dl*-lysine and α, ε-di-*dl*-alanyl-*dl*-lysine. To judge by the extent of the observed splitting, only the acid amide linkage in the α-position was attacked. Trypsin-kinase split ε-benzoyl-α-(*dl*-leucyl-*dl*-alanyl)-*dl*-lysine and α, ε-di-*dl*-leucyl-*dl*-lysine. Here it was obviously the leucyl group in the α-position that was attacked. Dilute alkali hydrolyzed without exception the compounds tested. In no case was the group in the ε-position attacked by the enzymes, a fact which suggests that in proteins, lysine is combined only by virtue of the amino-group in the α-position.—*E. McCoy.*

9374. **ABDERHALDEN, EMIL, und ELLA von EHRENWALL. Über das Verhalten von aus Glykokoll und Alanin aufgebauten Polypeptiden gegenüber Polypeptidasen und n-Alkali.** *Fermentforsch.* 12(3): 376-410. 1931.—Erepsin split all of the di-, tri-, and tetra-peptides tested but not such derivatives as phenylisocyanate, benzoyl-, and β-naphthalenesulfo compounds. Of the halogen acyl derivatives the following were attacked: chloracetyl-*d*-alanine; chloracetyl-*dl*-alanyl-glycine, *dl*-α-brompropionyl-glycyl-*dl*-alanyl-glycine, chloracetyl-glycyl-*d*-alanine, *dl*-α-brompropionyl-glycyl-glycyl-*d*-alanine, and chloracetyl-*dl*-leucine. An entirely trypsin-free preparation, however, attacked only chloracetyl-*d*-alanine and chloracetyl-*dl*-leucine. Trypsin-kinase split *dl*-alanyl-glycyl-*dl*-alanyl-glycine and *dl*-alanyl-glycyl-glycyl-*d*-alanine but not glycyl-*d*-alanyl-glycyl-*d*-alanine or any of the di- or tri-peptides. On phenylisocyanate and β-naphthalenesulfo derivatives there was no action. Crude extract of pancreas, however, readily attacked many polypeptide and amino acid compounds; it is therefore probable that it represented an enzyme complex. Alkali split the di-, tri-, and tetra-peptides but with differing speeds of reaction. The benzoyl- and phenylisocyanate compounds were even more quickly split than the corresponding free polypeptides. The halogen acyl derivatives were also hydrolyzed.—*E. McCoy.*

9375. **ABDERHALDEN, EMIL, und ELLA von EHRENWALL. Beitrag zur Frage der Einheitlichkeit von nach dem Verfahren von Waldschmidt-Leitz hergestellten Trypsinlösungen.** *Fermentforsch.* 12(3): 411-420. 1931.—Glycerin in the ratio of 2:1 of trypsin solution was a satisfactory stabilizing agent, effective over a number of mo. and at 1-37°C. The test substance was *dl*-leucyl-glycine, which appeared to be split by an enzyme complex. Inactivation of trypsin with time may have been due to fixation of the complex or a part of it by accessory substances in the enzyme preparation itself or to an autolytic process. With chloracetyl-*dl*-leucine and chloracetyl-*dl*-tyrosine the action of old enzyme was as strong as ever; chloracetyl-*d*-alanine was not split.—*E. McCoy.*

9376. **ABDERHALDEN, EMIL, und ERNST SCHWAB. Beitrag zum Problem der spezifischen Einstellung der Polypeptidasen.** *Fermentforsch.* 12(3): 432-461. 1931.—A polypeptidase is an enzyme for whose action an amino acid with an amino group in the α-position in the polypeptide seems to be necessary in the substrate. The erepsin complex is thus a polypeptidase. Since erepsin acted upon chloracetyl-*d*-alanine and chloracetyl-leucine it is evident that a free amino group is not essential to the action of the erepsin complex; the same was true of its action on β-naphthalenesulfo-glycyl-tyrosine. Erepsin is thus a complex of amino-polypeptidase and carboxy-polypeptidase. The same is true of trypsin and trypsin-kinase. Splitting of polypeptide isobutyl- and isoamyl-esters and the -OC-NH-linkage by trypsin-kinase are also reported.—*E. McCoy.*

9377. **BORSOOK, HENRY, DOUGLAS A. MacFADYEN, and HARDOLPH WASTENEYS. The substrate in peptic synthesis of protein.** *Jour. Gen. Physiol.* 13(3): 295-306. 1930.—Experiments are described in which the yield of protein synthesized by pepsin from a given peptic digest was highest when the hydrolyzing action of the pepsin was stopped as soon as all the protein had disappeared from the solution; the longer the digest was permitted to contain active enzyme the more the yield diminished. Exposure of the digest to pH 1.6 in the absence of active enzyme, did not diminish the amount of protein which could be synthesized from that digest. Synthesis could be effected also in concentrated solutions of isolated fractions of a peptic digest, i.e., of proteose and of peptone. The yields were approximately the same as in similar concentrations of the whole digest, though the proteins so synthesized differed in some respects from those obtained from the whole digest. The cessation of synthesis in any one digest was due to the attainment of equilibrium and not to the complete utilization of available synthesizable material. The amount of the equilibrium yield, on the other hand, depended on the amount of synthesizable material in the digest. It is concluded that the synthesizability of a given mixture of protein cleavage products by pepsin depends upon its possession of a special complex in these products. This complex appears as a result of the primary hydrolysis of the protein molecule by pepsin and is decomposed in the slow secondary hydrolysis which ensues as digestion is prolonged.—*Authors' summary.*

9378. **CALDWELL, M. L., L. E. BOOHER, and H. C. SHERMAN. Crystalline amylase.** *Science* 74(1906): 37. 1931.—From buffered alcohol-water solutions of pancreatic amylase, freshly purified, crystals were obtained which showed enzymic activity almost as high as the maximum observed in the highly purified preparations previously prepared and studied. The crystalline amylase was obtained as very minute isotropic elongated crystals which exhibited slight double refraction.

9379. **HEMMI, FUMIWO, and GORO INAMI. Studies on the specific properties of protease and amylase from the standpoint of the adsorption phenomena. III. The relative observation between the enzymic power of purified enzyme solution prepared by the enzyme adsorption of aluminium hydroxide and the nitrogen content of the same solution.** *Bull. Agric. Chem. Soc. Japan* 7(1/3): 19-21. 1931.—Abstract of a Japanese paper in *Jour. Agric. Chem. Soc. Japan.*

9380. **KASE, KYOJI. Untersuchungen über die Harnstoffbildung. II. III.** *Biochem. Zeitschr.* 233(4/6): 258-282. 1931.—II. Dogs and rabbits were fasted 24 hrs., bled from the carotid, the liver perfused and washed with Ringer's solution, the large veins removed from the liver and other organs, and each reduced to a pulp. The optimum for urea formation by autolysis of the liver and from amino acids was pH 5.9. It was formed in the liver pulp by addition of amino acids (more easily from anhydride and peptide compounds than from the simpler acids); after heating the pulp, urea was not formed, but it was also formed with dialyzed liver pulp.—III. O_2 favored urea synthesis from amino acids; defibrinated blood instead of O_2 had little effect. No urea was formed from amino acids by kidneys, suprarenals, spleen, pancreas, lungs, heart, cerebrum, muscle, blood, and serum. Arginine was not decomposed. Taka-diastase and enzymes of the pancreas and intestine did not take part in urea formation, nor did it appear to be formed from ammonia in the experiments with liver pulp. Liver cells are assumed to contain an enzyme by which urea is formed from amino acids.

9381. **KOEBNER, HANS. Untersuchungen über Speichellipase.** *Zeitschr. Ges. Exp. Med.* 76(5/6): 792-803. 1931.—The saliva of a turtle, *Testudo viridis,* contained a lipase with optimal action at pH 8.2. In saliva of herbivora (sheep and cattle) the lipase was likewise demonstrable with the optimal effect in the alkaline region. These experiments again corroborate Scheer's and Fuhrberg's statement that the optimum action of lipase coincides with the pH of the saliva. Investigations were made of various physiological conditions in man. Values for the action of salivary lipase in old age were similar to those already established for infants, children, and middle aged adults. The titer of salivary lipase rose with comparative constancy in pregnancy up to delivery (more than 20 cases) and remained above normal during lactation. In patients with metabolic diseases, lipase titer decreased in diabetes mellitus (7 cases) showed no deviation from normal in a case of acetonemic nausea nor in 5 cases of various hepatic diseases (icterus catarrhalis, liver cirrhosis, calcareous occlusion, carcinoma, and Ni poisoning). No relation could be proved between salivary lipase and blood serum lipase. Results obtained with patients with metabolic disorders indicate a difference between salivary lipase and intestinal lipase.

9382. **LEVENE, P. A., and J. H. HELBERGER. Crystalline pepsin of Northrop.** *Science* 73(1897): 494. 1931.—From a study of the products of hydrolysis of Northrop's crystalline pepsin, it is concluded that in the main it is an individual substance but probably contains a small admixture of an extraneous protein.

9383. **MÜHLBAUER, M. Ein Modell für die räumliche Trennung von Ferment-Substrat (Diastase-Stärke) in der Zelle.** *Fermentforsch.* 12(3): 273-294. 9 fig. 1931.—It is proposed that the immunity of starch to diastase in the living cell is due to coating of the particles of both enzyme and substrate with surface-active substances such as sodium oleate, lecithin, bile salts, and cholesterin. Such a coating confers upon each unit of enzyme and substrate an electric charge, equal and repellent. The mechanism of covering and release of the system is reversible and is effected by change of H- or OH-ion concentration or the appearance of alcohol and probably other substances within the cell. The case of starch-diastase is to be taken merely as a model; the particular surface-active substances investigated were without effect in the casein-pancreatin system.—*E. McCoy.*

9384. **NORTHROP, JOHN H., and M. KUNITZ. Isolation of protein crystals possessing tryptic activity.** *Science* 73(1888): 262-263. 1931.—A crystalline protein was isolated from commercial preparations of "trypsin" which digested casein and gelatin in neutral solution.

9385. **OSHIMA, KOKICHI. Enzyme in den Eingeweiden vom Haliotus giganteus Gm. [Enzymes in the viscera of H. giganteus.]** *Bull. Agric. Chem. Soc. Japan* 7(1/3): 17. 1931.—Abstract of a paper in Japanese in *Jour. Agric. Chem. Soc. Japan.*

9386. **OSHIMA, KOKICHI. Über die Entdeckung eines Alginsäure spaltenden Enzymes und seine Eigenschaften. I. [Discovery of an alginic acid cleaving enzyme (alginase) and its properties. I.]** *Bull. Agric. Chem. Soc. Japan* 7 (1/3): 17-18. 1931.—An alginase was prepared from viscera of *Haliotus giganteus* and *Sphaerechinus pulcherrimus.*

9387. **PRÁWDICZ-NEMINSKI, W. W. Über die periodischen Veränderungen im Organismus. 1. Die physiologischen Schwankungen der Katalase im Blute des Menschen. [Periodic changes in the organism. Physiological variations of catalase in human blood.]** Українська Академія Наук Труди Фізично-Математичного Відділу (*Acad. Sci. Ukraine Mém. Cl. Sci. Phys. et Math.*) 6(1): Збірник Праць Біологічного Інституту. (*Trav. Inst. Biol.*) 2: 155-177. 1927.—Determinations of the catalase index in a single sample of blood gives no clue as to the relationship between it and hemoglobin content; also, there is no regularity in the catalase variations over several days. By determinations made every 15-20 min. a correlation with the contracting empty stomach can be demonstrated. In one day the catalase index may range from 0 to 16.7. The zero indices cannot always be discovered by random determinations but are frequent in some cases. Zero values correspond to continuous contractions of the "acid" character. In connection with Kolzow's hypothesis of hereditary groups on the basis of catalase indices, repeated deter-

minations on an individual would place him in any or all groups. Catalase content of blood can only be interpreted after a number of successive determinations. The variations in other enzymatic secretions must be studied as well. The hemoglobin content is stable during these variations.—*W. M. Sandstrom.*

9388. RONA, P., und R. ITELSOHN-SCHECHTER. Über die Spaltung des Milchsäureäthylesters durch Leberesterase. *Biochem. Zeitschr.* 203(1/6): 293-297. 3 fig. 1928.—The esterase of swine liver hydrolyzed ethyl-*d*-lactate more rapidly than the *l*-lactate or the racemic *dl*-lactate.—*O. Bodansky.*

9389. RONA, P., und R. AMMON. Asymmetrische Esterifizierung durch Schweinepankreasesterase. *Biochem. Zeitschr.* 217(1/3): 34-41. 1 fig. 1930.—Experiments in which solutions of *d*-, *dl*- and *l*-lactic acids (about 0.06*M*) were each warmed in sealed tubes with 40 cc. amyl alcohol and 0.6 gm. pancreas powder for various periods, showed that the amyl ester of *d*-lactic acid was formed more quickly than that of the *dl*-acid and that that of the *l*-acid formed most slowly.—*A. M. Smith.*

9390. RONA, P., R. AMMON, und M. WERNER. Die stereochemische Spezifität der Takaesterase. *Biochem. Zeitschr.* 217(1/3): 42-49. 1 fig. 1930.—The dissociation constant of the compound of taka-esterase with *d*-mandelic acid-methyl ester was 0.00,289 ($10^{-3.26}$); with the *l*-ester it was 0.000,556 ($10^{-2.64}$). The ratio between the hydrolysis dissociation constants was about 1:2.09. Taka-esterase had about 5 times the affinity for the *d*-ester as for the *l*-ester. The rate of hydrolysis of the *l*-ester-enzyme compound was about twice as great as that of the *d*-ester-enzyme compound. The optical specificity of taka-esterase action was exhaustively discussed since the individual hydrolysis reactions of *d*- and *l*-ester in the decomposition of the racemate are quantitatively obtained from the 4 dissociation and reaction velocity constants found.—*N. M. Payne.*

9391. ROSENTHAL, OTTO. Untersuchungen über Milchsäuregärung von Warmblutergeweben. II. Einfluss der Kalium- und Calciumionen auf das Zustandekommen der Extragärung von Speicheldrüsen- und Lebergewebe der Ratte. *Biochem. Zeitschr.* 211(4/6): 295-322. 12 fig. 1929.—K and Ca ions exerted essentially the same effect on the occurrence, in both hepatic and salivary gland tissue of the rat, of extrafermentation [defined in a previous article as the excess fermentation obtained by submitting the organ to aerobic conditions for 1 hr. at 37.5°, before depriving it of O, over what was obtained if the tissues were deprived of O immediately on removal from the body]. Absence of K and Ca during the aerobiosis either nullified or greatly limited the occurrence of extrafermentation. The cation effect was reversible; both cations were concerned in it. The only difference between the 2 tissues in this respect was that, with liver, Ca produced a more abundant extrafermentation than K; with salivary gland tissue the 2 cations produced the same average amount of fermentation, but after treatment with Ca the initial rapidity of fermentation was greater and the decrease sharper than after K. The parallelism of the cation effect on the liver and submaxillary gland suggests a like mechanism of extrafermentation in both tissues, and contradicts an earlier hypothesis that the extrafermentation of liver tissue is due to the splitting of an especially unstable intermediate sugar formed during aerobiosis, while extrafermentation of salivary gland tissue is due chiefly to an increase of fermentability during aerobiosis. The most probable explanation of the phenomenon in both involves an activation of fermentative capacity which has nothing to do with the substrate (cellular carbohydrate in the liver, glucose in the submaxillary). This was apparent from the fact that aerobiosis in salivary gland tissue, even in an optimal medium (so far as its ionic composition was concerned) did not reach its extreme activity without addition of glucose. Hence it may be deduced that the regular non-occurrence of extrafermentation in the liver of starved rats was due in part to the ineffectiveness of aerobiosis caused by the lack or the decrease of the substrate. Hitherto it was believed that enzyme activation took place in starved rats but could not produce an effect for lack of enzyme material. The influence of glucose on the occurrence of extrafermentation of salivary gland tissue certainly cannot be due to the production during aerobiosis of a more readily fermenting intermediate sugar from glucose. If glucose action is due to the formation of an intermediate sugar (a possibility which cannot be excluded), such intermediate is to be regarded only as an enzyme activator, not as a substrate.—*Author's summary (transl. by H. J. Vonk).*

9392. SCHAEFFER, YVONNE. Études sur les processus fermentatifs. Action de l'amylase. *Compt. Rend. Soc. Biol.* 98(17): 1491-1494. 2 fig. 1928.—Graphs of the rate of action of dialyzed salivary amylase on amylose show 2 maxima. The addition of NaCl or amino acids tends to eliminate the initial drop in the rate of sugar formation.

9393. SEN, KSHITISH CHANDRA. Note on the action of neutral salts in enzymatic processes. The effect of bromides on salivary amylase. *Jour. Indian Chem. Soc.* 5(2): 245-249. 1928.—Using a phosphate buffer, the optimal pH of salivary amylase was found to be about 6.7. At low concentrations, bromides had a depressing effect on the amyloclastic and saccharogenic actions of salivary amylase, a result which had been obtained by Thomas using malt amylase.—*V. G. Lava.*

9394. SUZUKI, BUNSUKE, and TSUTOMU MARUYAMA. Glycerophosphoric acid synthesized by glycerophosphatase. (On the reversibility of enzyme action, Part III.) *Proc. Imp. Acad.* [*Tokyo*] 6(2): 67-70. 1930.—Glycerophosphatase of takadiastase synthesized equal amounts of α- and β-glycerophosphate at pH 8.4.—*S. M. Field.*

ANIMAL PHYSIOLOGY

LIGHT AND HEAT

E. NEWTON HARVEY, *Editor*

(See also in 6(3): Entries 6575, 6645, 6664, 6673, 6677, 6678, 6723, 6734, 6750, 6835, 6894, 7353, 7457, 7464, 7612, 7801; and in this issue 9176, 9344, 9345, 9350, 9352, 9493, 9501, 9556, 9563, 9582, 9583, 9589, 9670, 9968, 9985, 10005, 10006, 10127, 10147, 10397, 10680)

9395. ALDRICH, L. B. A study of body radiation. *Smithsonian Misc. Coll.* 81(6): 1-54. 9 fig. 1928.—The "melikeron" previously described was used to determine the radiation from the unclothed surface of the body and from the clothes, while simultaneous temp. determinations of these areas were obtained with a thermocouple. The author concludes that "the radiation from the skin and clothing is approximately that of a black body or perfect radiator." Heat loss of a clothed subject at rest indoors at usual temp. with no air movement is distributed thus: evaporation 24%, radiation 46%, convection 30%. At a distance of 30 cm. the heat of the body has no effect on the thermocouple. Loss by radiation increases about 2 fold when room temp. is lowered from 26 to 15°. The effect on radiation of normal fluctuations of humidity is negligible.—*B. McGlone.*

9396. BARCROFT, J., and J. J. IZQUIERDO. The effect of temperature on the frequency of heart and

respiration in the guinea-pig and cat. *Jour. Physiol.* 71(4): 364-372. 1931.—Using 14 cats (1.6-3.4 kgm.) and 3 guinea pigs (400-600 gm.), some deeply, the others lightly anesthetized, the authors conclude that between 25 and 41° C. in deeply anesthetized cats the pulse rate and respiration rate rise gradually with the temp. In lightly anesthetized cats: (a) The same is true at low temp. about 33 ± 1.5° C. Between that temp. and 38.5 ± 1.5° C. there is a region in which the relation of the pulse rate to the temp. is irregular. There is often a fall of pulse rate as the temp. rises and vice versa. The respiration rate reacts frequently in the same way. (b) In the region between 38.5 ± 1.5° and 41° C. the pulse rate rises with the temp. and the respiration rate rises very rapidly. (c) The irregularities of the pulse rate are not abolished by doses of atropine sufficient to paralyse the vagal nerve endings in the heart. (d) These irregularities are coincident with and are probably associated with shivering and the general syndrome of "sham rage." To that extent there is evidence of their being associated with the sympathetic supply of the heart.

9397. **COBLENTZ, W. W., R. STAIR, and J. M. HOGUE. The spectral erythemic reaction of the human skin to ultraviolet radiation.** *Proc. Nation. Acad. Sci. U. S. A.* 17(6): 401-405. 1931.—Radiation from a quartz Hg lamp was passed through a large monochromator, and through an exit slit so adjusted as to allow isolation of a narrow band of wave lengths. Erythemic response of human skin to various wave-lengths in the U.-V. spectrum was measured by adjusting the slit so as to allow the radiation from a particular region of the U.-V. spectrum to fall on the untanned skin of the arm, just long enough to produce a perceptible and brief (24 hrs.) erythema. Readings of the minimum time of exposure required to produce such an erythema, at different wave-lengths, give a curve which shows that the erythemic response is nil at below 313 mμ; increases rapidly with decrease in wave-length, reacting a maximum (taken as 100) at around 297 mμ, and falling sharply to a minimum at around 280 mμ; to this point, the present data agree admirably with those of Hausser and Vahle and of Luckiesh, Holladay, and Taylor; at wave-lengths shorter than 280 mμ, the erythema response increases rapidly with decrease in wave length, but the present data show a much more gradual increase of sensitivity, and a lower value at 250 mμ, than the data of the other investigators. Reducing the intensity (by a glass filter) to ¼ when exposing 4 times as long gave, at 279 mμ, substantially the same effect as the standard intensity and duration. To produce minimum perceptible erythema on 1 sq. cm. of untanned skin, using monochromatic radiation of 297 mμ, required about 500,000 ergs. The authors comment on the need and difficulty of devising a standard unit of radiation, and an inanimate dosage-meter.

9398. **EFIMOFF, W. W., P. P. MITROFANOFF, M. N. SARCH, A. I. LEWINA, A. P. KRJUTSCHKOWA, N. A. ITINA, und W. A. POCHWALENSKY. Die physiologische Rationalisierung der Arbeitsordnung bei verschiedenen Berufen. I. Untersuchungen über den physiologischen Einfluss von physischer Arbeit bei sehr hoher und bei mässiger Umgebungstemperatur, besonders bezüglich der Arbeitszeit.** *Arbeitsphysiologie* 3(3): 207-217. 1930.—The problem was to investigate the influence of the extraordinary external temp. (70-135° C.) upon the workmen who were engaged in cleaning the furnaces at night of the Moscow street railroad stations. The pulse rose to 216 per min., the maximum blood pressure to 165 mm. Hg, the minimum blood pressure to 0, and the body temp. to 38.4°. The length of the recovery period to normal values required 25-45 min. By allowing the furnaces a longer time to cool before beginning the cleaning, it was possible to lower all of the physiological values and to shorten the periods of recovery. The moderate temp. of the furnace after the longer cooling was usually under 60° whereas the higher temp. was 100° or over. The best methods for the study of the workers under conditions of high external temp. were measurements of pulse frequency, maximum and minimum blood pressure, blood viscosity, and body temp. The best arrangement of work and recovery periods was for high temp. 5 min. work and 25 min. recovery; for moderate temp., 15 min. work and 15 min. recovery.—*T. M. Carpenter.*

9399. **FARDON, J. C. Infra-red absorption spectra of biological materials.** *Bull. Basic Sci. Res. [Univ. Cincinnati]* 2(1): 72-81. 8 fig. 1928.—Infra-red absorption spectra of cod-liver oil, aniseed oil, lemon oil, cinnamon oil and gelatin were obtained and the absorption curves plotted. These show in every case a decided absorption peak at 3.5 μ supposedly due to the CH_3-groups present.—*J. L. Cameron.*

9400. **FEDERIGHI, H. Temperature and the heart beat in Nereis virens Sars.** *Jour. Exp. Zool.* 56(4): 393-406. 1930.—The temp. characteristics for the frequency of heart beat are μ=8,300, 11,400, 13,700, 16,400, 21,900, and 24,300 calories. These different values for μ obtained from animals apparently alike indicate that there exists some modification in the pacemaker mechanism of the separate animals. Furthermore, all these characteristics (μ) are interrelated in that they are similar to those already reported as commonly associated with respiratory processes. Two critical temperatures are reported: 10° C. and 13° C.—*Author (courtesy Wistar Bibl. Serv.).*

9401. **GAERTNER, OTTO. Die Durchlässigkeit der menschlichen Haut im Gebiete von 0.3-2.0 μ.** *Strahlentherapie* 40(2): 377-382. 1931.—With 0.8 mm. sections of cadaver skin permeability was greatest at 1.5-0.7 μ and little dependent on wave length. The permeability decreased more rapidly above 1.5 μ than toward the violet. In violet and ultraviolet there were pronounced individual differences, while between 1.5-0.7 μ the behavior was, in general, the same.

9402. **GUERRINI, GUIDO. Sull'azione della luce filtrata attraverso schermi colorati. [Action of light filtered through colored screens.]** *Arch. Fisiol.* 29(3): 356-368. 1931.—Light filtered through transparent colored screens, especially red and yellow, increased the hemolysis by saponin. Long wave spectrum radiations also stimulated glucose fermentation by *Saccharomyces,* the activity being stronger when longer wave rays were filtered through the screens.—*M. Comel.*

9403. **KARTSCHAGIN, W. A., und G. S. WARSCHAWER. Die Stärke des äusseren photoelektrischen Effects des menschlichen Körpers in Abhängigkeit von der spektralen Zusammensetzung der einwirkenden Strahlung.** *Strahlentherapie* 40(1): 174-188. 1931.—By a special method the authors investigated the photoelectric effect of the human body during irradiation with a mercury-vapor lamp. Rays filtered through ordinary glass produced no photoelectric effect; with rays filtered through blue uviolglass it was slight; during irradiation with unfiltered U.-V. rays it amounted to 0.65 of the same effect of iron under similar irradiation. Furthermore, the photoelectric effect of the skin from U.-V. rays filtered through blue uviolglass was equal to 0.51 of the iron effect with similar rays filtered through uviolglass. The photoelectric effect of Fe with rays from the quartz lamp filtered through uviolglass was equal to only 0.017 of the same effect of Fe irradiated with unfiltered rays of the quartz lamp. The external photoelectric effect of the human body irradiated with quartz lamp rays filtered through uviolglass was equal to 0.009 of photoelectric effect of iron with similar, though unfiltered rays; it was only 0.014 of the similar photoelectric effect of the human body under the influence of unfiltered rays of the mercury-vapor lamp.

9404. **KAWAKAMI, TOKIJI. Veränderungen im Kohlehydratstoffwechsel. II. In: LUDWIG PINCUSSEN. Über Veränderungen des Stoffwechsels unter Bestrahlung. V.** *Biochem. Zeitschr.* 208(1/3): 185-190. 1929.—A significant increase in the glycogen contents of the liver and muscle of rats with a corresponding decrease in the lactic acid contents was obtained after irradiation.

This confirms previous work on the changes observed after irradiation in the glycogen, blood sugar, and lactic acid values. No change was noted in the glycogen and lactic acid contents of the heart and skeletal muscle when exposed in the form of thin sections to the action of the Hg arc lamp.—*L. G. Wesson.*

9405. KELLER, PHILIPP. Die lichtbiologischen Grundlagen einer Ultraviolett-Lichtdosimetrie. *Strahlentherapie* 34(1): 129-142. 4 fig. 1929.—The complexity of the biological relationships makes the determination of U.-V. dosage especially difficult. Although the U.-V. erythema by no means accurately parallels the other effects either quantitatively, that is with respect to dosage, or qualitatively, with respect to the effective wave lengh band, it must be accepted as being the easiest and most exact of the observed phenomena fundamental for the determination of dosage. However, it cannot be possible that the Hausser-Vahle sensitivity curve for the determination of the skin sensitivity can be analogous to a method of measuring dosage, since the effect of certain wave lengths on the skin varies with the thickness of the horny layer as well as with the time in which the erythema is observed and with its intensity. The intensity of the erythema is a factor insofar as greater heightening of the erythema is produced by smaller changes of intensity of the longer waves as compared to the shorter. Of the methods of dosimetry available at the present time, the iodide method modified by Keller, the paraphenyl method of Saidman, and the cadmium cell with suitable filters in some measure parallel the erythema production of light. The ionization method is suitable for the short waves, the method of fluorescence for the long waves.—*P. Keller (transl. by H. S. Mayerson).*

9406. KOEPPE, HANS. Licht und Katalase. *Strahlentherapie* 34(3): 598-604. 1929.—Since light and catalase alike have the property of breaking up H_2O_2 into H_2O and free O, Koeppe sought to measure (1) the intensity of U.-V. irradiation and (2) the response of blood, by the action of the rays in the one case and the blood catalase in the other on H_2O_2. A suitable concentration of H_2O_2 solution was found to release in a given unit of time under a given irradiation a constant amount of free O. Thus, a single burner of a quartz mercury lamp which at a distance of 35 cm. irradiated a surface of 4 cm² of 30% H_2O_2 solution for 50 min. released 1.8 cc. of O every 5 min. This, after calculation of the value of the short wave rays used (in this case, less than 400 mμ), permitted a reckoning of the intensity of the action of the rays. The difference between the action of U.-V. rays and catalase on H_2O_2 is that the catalase acts only for a limited time; otherwise the effect is the same. The author concludes that catalase is an accumulator, a storage battery, as it were, for radiant energy, and that, instead of being oxidized and destroyed by high H_2O_2 concentrations, the energy content of the catalase is exhausted. The so-called guaiacol test, in which a rose-colored ring is produced in a weak guaiacol solution either by a blood solution with a few drops of H_2O_2 solution or by U.-V. rays, would support this hypothesis if blood and catalase were the same. Catalase alone, however, will not oxidize guaiacol, but peroxidase (which is also present in the blood) will. The theory must therefore be enlarged. Only certain ferments, and certain rays, have the power to break down H_2O_2; these rays transform a certain substance, which has the power to store radiant energy, into a certain ferment. Likewise, only certain rays and certain ferments have an oxidizing action. Possibly some rays have both actions.

9407. LEA, COLIN H. The effect of light on the oxidation of fats. *Proc. Roy. Soc.* [*London*] B 108(756): 175-189. 7 fig. 1931.—A new method for determining the active O content of fats is described. To the fat (1 gm.) is added powdered KI (1-2 gm.) and glacial acetic acid-chloroform mixture (2:1 by volume, 19 cc.). The air is displaced by N and the tube heated until chloroform vapor issues from the hole in the rubber stopper. A glass plug is inserted, the tube cooled, the contents poured into dilute KI and titrated against $N/500$ thiosulphate. It is advisable to carry out the determination by artificial light. Using the above and a quantitative modification of the Kreis test the oxidation of beef fat was shown to be sensibly accelerated by weak artificial light, while exposure for a few min. to direct sunlight was sufficient to produce rancidity. The reaction is autocatalytic and even brief exposure to light accelerated subsequent oxidation. Bleaching of the yellow pigment appeared at a comparatively early stage of the oxidation. The relationship between response to the Kreis test and the active O content of the fat varied with the temp. To compare the relative susceptibilities of fats to oxidation the samples are irradiated by the same lamp (100 watt at 3 ft. distance) in a constant temp. room at 25° C. and the oxidation followed as above.—*C. H. Lea.*

9408. LUDWIG, FRITZ, und JULIUS von RIES. Über den Einfluss der Rot- und Blaustrahlen auf das Wachstum. *Strahlentherapie* 39(3): 485-489. 1 fig. 1931.—Previously it had been shown that red light is the antagonist of U.-V. light. An unstated number of pregnant rats (that young might be continuously subjected to one kind of light) were placed in cages to which blue or red light only was admitted (controls under window glass). The young under red light showed accelerated development (80 gm. heavier than controls); those under blue glass developed faster than the controls but were much inferior to those under red glass. Using the same cages over plants, similar results were obtained. Accidentally an ant hill was found under the red glass; when covered with the blue glass, the ants migrated the following day to the red cage. Red light may have a bearing on the growth vitamin.

9409. MENNESHEIMER, ALOIS M., und R. MATTHAEI. Beobachtungen über die Pigmentierung der Haut. *Strahlentherapie.* 35(2): 339-352. 1 pl., 3 fig. 1930.—The authors studied the pigmentation of a definite skin area under the influence of solar radiation. The resulting pigments were defined according to Oswald's scheme by an exactly described method which uses a rotating color disk, by which each shade between the standard colors could be assigned its place in the Oswald system. Massaging of the skin in remote areas increased the pigment formation in the observed skin area. Thus it was demonstrated that the ability of the skin to form pigment can be enhanced by therapeutic treatment not directed on the irradiated area.—*A. M. Mennesheimer (transl. by H. S. Mayerson).*

9410. RENTSCHLER, L. B. The effects of ultra-violet light on Paramaecium. *Science* 73(1896): 480-481. 1931.

9411. SCHNEIDER, HERMAN, and GEORGE SPERTI. The quantum theory in biology. *Bull. Basic Sci. Res.* [*Univ. Cincinnati*] 1(1): 7-33. 11 pl. 1926.—Reasonably stable ultra-violet filters with sharp absorption limits ranging at small intervals from 2030-3660 Å were prepared by use of the proper concentrations of solutions of the following compounds: $(NH_4)_2SO_4$, $SrCl_2$, $CaCl_2$, acetic acid, lead acetate, $CuSO_4$, $CuCl_2$, and $AlCl_3$ with $CuSO_4$. By use of these it was found that certain inorganic and organic compounds are formed or decomposed, and bacteria and protozoa are killed, at frequencies equal to or greater than certain critical frequencies of ultra-violet. Critical wave-lengths were found to be as follows: for the decomposition of KI, 3340 Å; the formation of ozone, 1860 Å; the inactivation of the enzymes rennet and pepsin, 2370 Å; the inactivation of invertase, 2480 Å. Within the accuracy of the filters used, all the living materials studied (the bacteria *B. coli communis* and *B. subtilis,* and the protozoa *Uroleptus mobilis* and *Blepharisma arisma euglena*) were destroyed at the same critical wave-length, 2750 Å. This indicates the possibility that the same compound in all was attacked. The quantum theory, or at least a very similar theory, is applicable to the biological effects of radiations. Critical frequencies afford a means of stating these biological effects mathematically.—*J. L. Cameron.*

9412. SCHULTZER, POUL. Über die substituierenden Eigenschaften langdauernder Ultravioletbestrahlung bei experimenteller Rachitis. *Biochem. Zeitschr.* 211 (4/6) : 445-453. 2 fig. 1929.—Daily irradiation for 10 min. with an U.-V. lamp at 1 meter distance prevented rickets in rats fed on McCollum's diet number 3143. The non-irradiated controls developed the rachitic symptoms of swollen costal cartilages, deformed thorax, wide epiphysial lines, low serum phosphorus, high water content of the tibia and low body weight. The irradiated rats showed no bone deformation, narrow epiphysial lines, normal serum phosphorus and water content of the tibia, while some showed a slight histological osteoporosis. —*A. Hemingway.*

9413. STANLEY, WILLARD F. The effect of temperature on vestigial wing in Drosophila melanogaster, with temperature-effective periods. *Physiol. Zool.* 4 (3) : 394-408. 1931.—An unselected inbred strain of the vestigial-winged mutant was raised under controlled conditions at 11 constant temps. ranging from 15 to 31° C., and the temp. effective period for wing length determined for 17° and 27° C. by the method of transfers at short intervals. The length of vestigial wing varies directly with the temp., but not in exact proportion. The sexual dimorphism of wing length is not consistently in one direction, but is dependent on the specific temp. The critical temp. for wing length, as determined by extreme changes in wing length and by range of variability, occurs between 29.5 and 30.3° C. for the ♂♂ and between 30.3 and 31° C. for the ♀♀. At these temps. there are manifested also changes in wing width, in the carriage of the wings, and in the angle of elevation of the postscutellar bristles. The temp. effective period for wing length occurred during early larval life, and at the temps. used the length of this period was approximately proportional to the larval period and to the entire developmental period.—*Author (courtesy Wistar Bibl. Serv.).*

9414. STEINER, KARL. Über die Wirkung kombinierter Röntgen- und Ultraviolettlichtbestrahlung. (Experimente an der Hornhaut von Salamanderlarven.) *Strahlentherapie* 39 (3) : 500-506. 1931.—Three series and 38 groups of experiments were done on the salamander cornea: I. preliminary x-ray irradiation, followed by U.-V. irradiation: II. irradiation with U.-V. followed by x-ray irradiation: III. as controls, irradiation with U.-V. alone. In I and II 1 H, 4 H, and 12 H were used, always with ½ mm. Al; 3 min. U.-V. was given at 60 cm., or 5 min. at 30 cm. The after-irradiations with x-rays were done at various times and intervals; with preliminary x-ray irradiation, early and late periods of the secondary reaction were taken into consideration. Ordinarily 2 larvae at a time were fixed at periods of 15, 30, 45 min., 1, 2, 4, 6, 8 hrs., 1, 2, 4, 8, 16, 30, and 60 days after the last irradiation. It was found that the 2 reactions occurred concomitantly, never having a cumulative effect (sensitization), but only one of summation.

9415. VOGT, ALFRED. Eine neuartige experimentelle Starform: Isolierter hinterer polarer Rindenstar des albinotischen Kaninchens, erzeugt mittels kurzwelligem Ultrarot. [A new, experimental form of cataract: isolated, posterior, polar, cortical cataract in albino rabbits produced by infra-red light.] *Klin. Monatsbl. Augenheilk.* 86 (3) : 289-295. 1931.

ANIMAL PHYSIOLOGY

BIOCHEMICAL, BIOPHYSICAL AND PHYSIOLOGICAL METHODS AND APPARATUS

C. H. FISKE, *Editor,* Biochemical and Biophysical

S. E. POND, *Editor,* Physiological

(See also in 6(3): Entries 6102, 6103, 6106, 6111, 6461, 6479, 6491, 6510, 6524, 6554, 6612, 6665, 6675, 6679, 6703, 6708, 6719, 6738, 6741, 6774, 6781, 6788, 6789, 6796, 6802, 6825, 6828, 6868, 6871, 6927, 6941, 6948, 6963, 6964, 6965, 6966, 6995, 7008, 7010, 7042, 7048, 7068, 7299, 7339, 7428, 7716, 7870, 8404; and in this issue 9285, 9365, 9407, 9507, 9530, 9540, 9544, 9553, 9617, 9653, 9686, 9696, 9777, 9809, 9811, 9814, 9820, 9829, 9830, 9834, 9840, 9848, 9862, 9864, 9869, 9874, 9880, 9884, 9898, 9900, 9904, 9905, 9918, 9957, 10030, 10043, 10058, 10086, 10096, 10098, 10105, 10128, 10130, 10132, 10144, 10152, 10167, 10968, 11413, 11429, 11431)

BIOCHEMICAL AND BIOPHYSICAL

9416. BARRENSCHEEN, H. K., und KARL BRAUN. Farb- und Fällungsreaktionen des Methylglyoxals. [Color and precipitation reactions of methylglyoxal.] *Biochem. Zeitschr.* 233 (4/6) : 296-304. 1931.

9417. BARRENSCHEEN, H. K., und MIKLÓS DREGUSS. Eine kolorimetrische Mikromethode zur Bestimmung des Methylglyoxals. [Colorimetric micromethod of determining methylglyoxal.] *Biochem. Zeitschr.* 233 (4/6) : 305-310. 1931.

9418. BODE, OTTO. Das Elektrohysterogramm. [The electrohysterogram.] *Arch. Gynäkol.* 146 (1) : 123-128. 1931.—Using Edelmann's string galvanometer with 2 needles placed subcutaneously in the side of the abdomen, the current of the parturient uterus toward the end of the 1st phase was found to rise to an apex during a pain, then decrease. The curves obtained agreed with those previously obtained with a mechanogram.

9419. DISCHE, ZACHARIAS. Nachweis und Bestimmung der Thymonukleinsäure (sowie der durch ihren Zerfall entstehenden Mononukleotide und Nukleoside) mit Hilfe charakteristischer Farbreaktionen. [Detection and determination of thymonucleic acid, as well as its constituent mononucleotides and nucleosides, by means of characteristic color reactions.] In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. V. Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus. Teil 2, Heft 16, Lief. 355. p. 1829-1834. Urban & Schwarzenberg: Berlin, 1931.

9420. DREGUSS, MIKLÓS. Eine kolorimetrische Bestimmung des Kaliums in kleinsten Mengen biologischer Flüssigkeit. *Biochem. Zeitschr.* 233 (4/6) : 375-380. 1931.—The method is based on the principle of precipitation of K as potassium sodium cobaltinitrite, the precipitate being analyzed as nitrite with the Griess-Ilosvay reagent. Using only 0.05-0.1 cc. serum the results varied by only 2.5% from those obtained by the Kramer-Tisdall method.

9421. ELLINGER, PHILIPP, und AUGUST HIRT. Mikroskopische Untersuchung an lebenden Organen. I. Mitteil. Methodik: Intravitalmikroskopie. *Zeitschr. Ges. Anat. I. Abt. Zeitschr. Anat. u. Entwicklungsgesch.* 90 (5/6) : 791-802. 7 fig. 1929.—The organ is coloured by injecting 0.1-1.0 mgm. of trypaflavin or the Na salt of fluorescein, in 1/1000 Ringer's solution, into lymph sac, subcutaneous cellular tissue or blood vessel of the anaesthetized animal. Ultraviolet light from an arc lamp, filtered to give a band of wave length 350-410 mμ, is reflected, by a prism within the microscope, down through a water immersion objective on to the organ under examination which is irrigated by a physiological

salt solution. The fluorescence emitted is filtered to retain any reflected light and observed at the eye piece. A detailed description is given of the kidney and liver of *Rana temporaria, Bufo vulgaris* and the white mouse. —*A. M. Smith.*

9422. **EVERETT, MARK R. Total sugar of blood and urine. 3. The reducing action of glutathione.** *Jour. Biol. Chem.* 87(3): 762-765. 1930.—In reducing the Folin-Wu blood sugar reagent, glutathione has a glucose equivalent of 0.20. In the case of the Folin reagent the equivalent is 0.10, while Benedict's and Sumner's reagents are reduced only very slightly by glutathione, contrary to the claims of Benedict and Newton. The hydrolyzable sugar of blood filtrate is not an artifact dependent upon the presence of glutathione. Tungstic acid filtrates contain, apparently, all the glutathione added to original blood, while the Zn filtrates of Somogyi contain none. These Zn filtrates also contain less hydrolyzable sugar.—*M. R. Everett.*

9423. **FISCHER, ALBERT. Ein neuer Blutgerinnungsapparat.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 737-739. 1 fig. 1930.—The method is recommended, not for clinical but for experimental use.

9424. **FÜRTH, OTTO, und KARL SINGER. Über die quantitative Bestimmung kleiner Urobilinogen- und Urobilinmengen in den Faeces. Eine Modifikation der Terwenschen Methodik.** *Zeitschr. Ges. Exp. Med.* 69(1/2): 152-158. 1929.—In Terwen's original method the urobilinogen in 2 cc. of a stool filtrate is extracted with ether in the presence of tartaric acid, treated with paradimethylamido benzaldehyde and HCl, the resulting red color extracted from the ether with sodium acetate solution and compared with a suitable phenolphthalein standard. For the smaller amounts of urobilinogen sometimes encountered it is possible to employ much larger volumes of the original stool filtrate, provided acetic acid be substituted for the tartaric acid in the ether extraction. With this modification, a few hundredths of a milligram of urobilinogen per 1.0 gm. of stool may be accurately determined.—*M. H. Power.*

9425. **GÄRTNER, STEFAN. Ein einfaches photometrisches Verfahren zur Bestimmung des Eiweissgehaltes des Liquor cerebrospinalis.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(5): 641-647. 1930.—The protein of the fluid is precipitated with alcohol and the protein content estimated by the degree of translucency of the turbid fluid with the Pulfrich graduated photometer.

9426. **HENNING, NORBERT. Eine neue Apparatur zur endoskopischen Photographie der Magenschleimhaut. [New apparatus for endoscopic photography of the gastric mucosa.]** *Arch. Verdauungs-Krankh.* 50(1/2): 27-33. 11 fig. 1931.

9427. **HENRIQUES, O. M. Die Dissoziationskonstanten der Gallensäuren.** *Acta. Path. et Microbiol. Scandinavica Suppl.* 3: 141-149. 1930.—A simple colorimetric method has been developed for titration of acids and bases which are soluble in alcohol but sparingly soluble in water. Titration is performed in mixtures of water and alcohol; from data obtained in this way the dissociation constants are calculated and the values for pure water extrapolated. The following values for pK water (18° C.) were found: glycocholeic acid, 2.46; glycocholic acid, 2.78; taurocholeic acid, 2.93; and taurocholic acid, 3.23.—*O. M. Henriques.*

9428. **HOFMAN, J. J., en J. de KEUNING. Suikerbepaling in urine met den glukophot. [Determination of sugar in urine with the glucophot.]** *Pharmaceut. Weekblad* 68[e](26): 584-589. 1931.—A volume of urine is boiled in a tube in a water bath with a certain volume of a 7% solution of NaOH. The yellow-brown colour is compared with a scale of yellow to brown liquids in the apparatus. Solutions of glucose, samples of urine containing glucose, and samples of urine containing glucose and albumin were examined in this way. The method was compared with the titrimetric and polarimetric methods. It is concluded that the glucophot is usable but the titrimetric and polarimetric methods are more exact.—*J. J. Hofman.*

9429. **INGRAM, W. WILSON, and G. V. RUDD. The estimation of urea in blood.** *Med. Jour. Australia* 1(25): 775-776. 1928.—To prepare urease, wash 3 gm. "permutit" with 2% acetic acid and twice with water. To moist "permutit" add 100cc. 15% ethyl alcohol and 5 gm. jack bean meal. Shake continuously for 15 min., filter. Filtrate contains urease which gives accurate results. Keep in ice box. Myers' and Maclean's methods for urea were used. Urea values were compared to N. P. N. of normal and nephritic bloods.—*M. R. Freeland.*

9430. **ITANO, ARAO. Investigation on antimony electrode for determination of hydrogen ion concentration. I. Standardization of an antimony electrode in buffer solutions and calculation of pH.** *Ber. Ōhara Inst. Landw. Forsch. Japan* 4(2): 273-277. 1 fig. 1929.—A comparative study was made of H and Sb electrodes in Clark's and Kolthoff's buffer solutions. A formula, $pH = (E - 0.104)/0.054$, based on Franke and Willaman equation ($E = 0.050 - 0.054$ pH, at 25° C.) can be used satisfactorily for the chain and conditions noted previously. The Sb electrode used in this investigation gave readings close to those obtained by the H electrode in both Clark's and Kolthoff's buffer solutions. Somewhat larger variations were noted in alkaline solutions, which will be investigated further together with other factors as manner and duration of shaking, and condition of the electrode. In general, with shaking by hand an equilibrium was obtained at the end of 1 min.—*Author's summary.*

9431. **JENSEN, H., and A. DeLAWDER. Studies on crystalline insulin. IX. The adsorption of insulin on charcoal.** *Jour. Biol. Chem.* 87(3): 701-712. 1930.—The treatment of several insulin preparations—pyridine ppt. (Squibb's), crystalline insulin, pig insulin—by Dingemanse's procedure of adsorption on charcoal and extraction with phenol, failed to give a product more active than crystalline insulin. Dingemanse's work was repeated using the same insulin (organon) and the same charcoal (medicinal supranorit) and in no case was a product more active than crystalline insulin obtained. Dingemanse's report that her final product from organon insulin is unstable in solution or dry form was substantiated; however, crystalline insulin loses none of its activity on similar standing. The authors can offer no explanation of Dingemanse's findings except perhaps a failure to make an absolute comparison in standardization.—*H. Jensen.*

9432. **KADRNKA, SILVIJE. Hepatosplenographie. Röntgenologische Darstellung des Parenchymas der Milz und Leber durch ein neues in die Blutbahn eingebrachtes kolloidales Kontrastmittel (Thorotrast).** *Fortschr. Geb. Röntgenstrahlen* 44(1): 9-15. 10 fig. 1931.—Thorotrast (25% thorium dioxide solution containing 22% thorium metal) was diluted at least 10 times with 5% glucose and injected intravenously in increasing doses of 0.10 or 0.05 gm. thorotrast per kgm. followed by x-ray examinations 24 hrs. later; usually 0.80 gm. was sufficient to make the liver and spleen visible, or ½-¾ of that if only the margins were desired. The negative colloidal thorium particles were stored in the reticular cells of the splenic medulla and in the Kupffer cells; storage occurring in the bone marrow and lungs and after heavy dose in the suprarenals was too scant to leave a shadow. With these doses animal experiments showed no cell changes within a limited period. Hemoglobinuria observed in rabbits was not observed in man; there was a slight, transient decrease in erythrocytes.

9433. **KILPATRICK, MARTIN, Jr., and ELWYN F. CHASE. The electrometric and catalytic determination of hydrogen-ion concentration. The mean activity coefficients of the ions of benzoic acid in potassium chloride solutions.** *Jour. Amer. Chem. Soc.* 53(5): 1732-1744. 3 fig. 1931.—The pH of a series of benzoatebenzoic acid buffers in KCl solutions was determined by 2 independent methods. The catalytic method gave results which agree with those obtained by the quinhydrone electrode. In both cases a proper consideration of "electrolyte (salt) effects" is necessary. From these determinations,

the solubility of benzoic acid in water and the values for the dissociation constant of benzoic acid at zero electrolyte concentration, and the mean activity coefficients of the ions of benzoic acid have been evaluated. The results in KCl solutions are compared with those in NaCl solutions.—*M. Kilpatrick, Jr.*

9434. **KLAUER, H. Bestimmung von Alkohol in Blut und Gehirn.** *Deutsche Zeitschr. Ges. Gerichtl. Med.* 17 (2): 89-91. 1931.—The author gives a simple method of obtaining a very pure distillate, even of old blood, urine, and brain, for use in the usual methods of alcohol detection; and a modification of the method of determining alcohol by $K_2Cr_2O_7$ in Schwarz' modification of Nicloux method, heating being eliminated and the end point made more distinct.

9435. **KUTTNER, THEODORE, and LOUIS LICHTENSTEIN. Micro-colorimetric studies. 2. Estimation of phosphorus: Molybdic acid-stannous chloride reagent.** *Jour. Biol. Chem.* 86(2): 671-676. 1930.—The method, which is described in detail, is specific for inorganic P in solutions containing between 0.25 and 1.0 mgm. P per 100cc. From 0.01 to 0.03% of $SnCl_2$ reagent is optimum for color production. The color production does not require heat, but below room temp. the time required for color production increases as the temp. falls.—*D. J. Healy.*

9436. **LeVESCONTE, AMY, J. H. BUCHANAN, and MAX LEVINE. The biological estimation of glucose. II. The relation between glucose concentration and the pH change in media.** *Iowa State Coll. Jour. Sci.* 4(4): 451-557. 1930.—A method for determining sugar in concentrations between .01 and .04% by the rate of pH changes is described. The accuracy of the method is stated to be from .001 to .025%. Glucose and fructose produce acid at the same rate under the conditions of the determinations. A biological method of determining sugars seems feasible.—*D. J. Healy.*

9437. **LOONEY, JOSEPH M. The determination of blood urea nitrogen by direct Nesslerization.** *Jour. Biol. Chem.* 88(1): 189-195. 1930.—The author uses a concentrated urease solution and "stabilizes" the complex ammonium-mercuric iodide by means of gum ghatti.—*M. R. Freeland.*

9438. **PAVIOT, J., R. CHEVALLIER, et L. REVOL. Nouveau procédé colorimétrique de dosage de minimes quantités de fer. [New colorimetric method for estimating minute quantities of iron in bronchitic sputa.]** *Compt. Rend. Soc. Biol.* 99(35): 1749-1750. 1928.

PHYSIOLOGICAL

9439. **ABDERHALDEN, EMIL. Handbuch der biologischen Arbeitsmethoden. Abt. VI. Teil. A. Methoden der reinen Psychologie. (a) Individuelle Psychologie.** 1174p. 2 pl. (1 col.), 164 fig. Urban u. Schwarzenberg: Berlin u. Vienna, 1927. $16.28.—WILHELM WIRTH. Spezielle psychophysische Massmethoden. [Special psychophysical quantity methods.] 475p. 38 fig. KURT GOLDSTEIN. Methoden zur Untersuchung der Hautsinne. [Methods of experiment on skin sensitivity.] 70p. 29 fig. KARL L. SCHAEFER. Psychologische Akustik. [Psychological acoustics.] 79p. 18 fig. HANS HENNING. Psychologische Studien am Geschmackssinn. [Psychological studies of taste sensitivity] 113p. 6 fig. HANS HENNING. Psychologische Studien am Geruchssinn. [Psychological studies of smell sensitivity.] 94p. 11 fig. AUGUST KIRSCHMANN. Psychologische Optik. [Psychological optics.] 285p. 2 pl. (1 col.), 60 fig. ADALBERT GREGOR. Das psychogalvanische Phänomen. [The psychogalvanic phenomenon.] 26p. 2 fig. Index.

9440. **DELAUNAY, H. A la recherche d'un liquide physiologique pour le traitement des hémorragies graves.** *Arch. Internat. Pharmacodyn. et Thérap.* 38: 296-299. 1930.—The requirements of such a solution are enumerated, and recent experiments with various solutions are reviewed.

9441. **DRAGSTEDT, LESTER R. Gradual obliteration of the portal vein as a substitute for eck-fistula.** *Science* 73(1890): 315. 1931.—For study of problems of the physiology of the liver and organs whose venous blood drains into the portal system, this method is accomplished by 2-stage operation in the dog, cat, goat, rabbit or rat: the portal vein is isolated and 2 strong linen threads are introduced around it above the entrance of the pancreatic-duodenal branch; one is then tied sufficiently to produce a constriction of the vein to about ½ of its diam. A slight congestion of the intestines may occur which rapidly disappears. The ends of the second thread are then fastened to the abdominal wall so they may be readily found at the second operation. The 2nd operation may be done 2-3 weeks later.

9442. **DVORAK, HAROLD, and M. H. MANSON. Technique of spinal anesthesia in the dog.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 344-347. 2 fig. 1930.—Report of finding definite inter-spinous aperture between superior and inferior surfaces of any 2 adjacent lumbar vertebrae, which are increased in size with arching of the spine. In this way the authors were able to establish spinal puncture so as to secure satisfactory injection and diffusion for anesthesia. Spinal fluid was obtained in test procedures. Injections of anesthetic in 16 of 37 lumbar punctures were successful.—*S. E. Pond.*

9443. **ESTABLE, C., et A. VAZ FERREIRA. Méthode pour l'examen microscopique in vivo du coeur des vertébrés.** *Compt. Rend. Soc. Biol.* 106(10): 847-850. 2 fig. 1931.—The method described allows for the examination of the heart of small vertebrates (frogs, small cats, etc.) in vivo and in situ.—*E. Weiner.*

9444. **FLEISCH, ALFRED. Vergleichende Untersuchungen über Pneumotachographen. [Comparative studies on pneumotachographs.]** *Pflüger's Arch. Ges. Physiol.* 227(3): 322-342. 1931.—Fleisch and Hochrein instruments are discussed.

9445. **GRÖNBERG, ALBERT, und ÅKE LUNDBERG. Quantitative systematische Urobilinbestimmungen als Herzfunktionsprobe vor Operationen. (Einige Erfahrungen bei Morbus Basedowii).** *Acta Med. Scandinavica* 74(2): 129-147. 1930.—The test is objective and analyses can be repeated daily even though the patient be bedridden. The analytical method was that of Salen and Enocksson (disappearance of fluorescence on dilution). The 24-hr. urobilin output in Basedow's disease was found normal in 4 cases with normal heart action but was increased in 5 with heart disturbances just as in other cardiac diseases without thyroid involvement. In one case with cardiac insufficiency, pre-operative improvement upon medication was paralleled with return to normal of urobilin output. A marked post-operative rise in urobilin elimination, not yet satisfactorily explained, onset 3-15 days after operation, duration 3-5 days, invariably occurred.—*W. A. Peabody.*

9446. **HARMAND, J. Modèle de cardiographe réglable pour le coeur "suspendu" de grenouille.** *Compt. Rend. Soc. Biol.* 106(10): 819-820. 1 fig. 1931.—New apparatus for registering the contractions of 2 hearts or other organs simultaneously is drawn and described, with directions for using it. Double inscriptions are facilitated by this apparatus, which consists essentially of a fork supporting 2 movable pieces, one of which moves backwards and forwards and the other in a circular direction.—*E. Weiner.*

9447. **HELLER, ROBERT. Ein Kymographion mit automatischer Zeilenverschiebung. [A kymograph with automatic line shift.]** *Pflüger's Arch. Ges. Physiol.* 225 (2/3): 298-302. 2 fig. 1930.

9448. **JOHANSSON, HARRY. Eine Vorrichtung zur Beibehaltung der Homogenität der Suspension bei Methylenblauversuchen mit Gewebs- und Bakteriensuspensionen.** *Skand. Arch. Physiol.* 61(6): 271-276. 2 fig. 1931.—Constant shaking reduces the time of decolorization, the effect being more noticeable the longer the experiments must run. A shaking instrument is described.—*W. J. Meek.*

9449. **KING, JOSEPH T. An "Activated" Extract for Coagulating Heparin-Plasma.** *Arch. Exp. Zellforsch. Bes. Gewebezücht (Explantation)* 10(4): 467-473. 1931.—Addition of a few drops of heparin-plasma to tissue

extract gave an "activated" extract which coagulated with heparin-plasma more rapidly than untreated extract. With such extracts the use of higher concentrations of heparin is possible, thus avoiding loss of materials and the uncertainty which has attended the clotting of plasmas containing high concentrations of anticoagulant with weak tissue extracts.

9450. **KROETZ, CHRISTIAN. Messung des Kreislaufminutenvolumens mit einem neuen Kohlensäureverfahren.** *Zentralbl. Inn. Med.* 51(15): 275-286. 1930.—A modification of the original method of Brocklehurst, Haggard, and Henderson is given; the arterial CO_2 and the venous alveolar CO_2 tension are determined simultaneously, obviating errors in the varying respiratory middle position.

9451. **MARKOWITZ, J., and HIRAM E. ESSEX. Observations on the preparations and activities of a visceral organism.** *Amer. Jour. Physiol.* 92(1): 205-213. 1930.—By a simplified modification of Carrel's method it is possible to prepare a visceral organism which includes the heart and lungs, gastro-intestinal tract, spleen, pancreas, suprarenal glands, liver, kidneys, ureters, and bladder, which under favorable conditions may survive for several hrs. Artificial respiration, an incubator to maintain a normal temp. and occasional transfusions are necessary. Arterial transfusions are particularly useful in keeping up the coronary blood flow. The heart rate in the visceral organism is about 120 to 200 a minute; the blood pressure may be as high as 90 mm. of Hg. Peristalsis in the gastro-intestinal tract is intensely active, the upper segments particularly demonstrating marked rhythmic contractions. Food is absorbed from the intestine and chyle appears in the lacteals. The kidneys secrete urine and polyuria often depletes the volume of blood. The liver and pancreas retain their normal appearance throughout. The life of the organism is limited by the appearance of edema in the abdominal viscera and due to this fluid loss, repeated transfusions are necessary. The cause of death is chiefly cardiac. There is often pronounced autodigestion of the gastro-intestinal tract.—*A. M. Snell.*

9452. **SANO, MACHTELD, and LAWRENCE W. SMITH. A simplified method for quantitative tissue culture in vitro.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 282-284. 1930.—A combination of technics and adaptation of principles used in cover slip method of Maximov, as well as apparatus of Carrel and Borel flash. The authors' device consists of petri dish, sheets of mica and a glass ring.—*S. E. Pond.*

9453. **SERENI, ENRICO. Un preparato per la circolazione crociata negli octopodi.** *Boll. Soc. Italiana Biol. Sperim.* 3(10): 1304-1309. 1928.—To study certain phenomena of blood correlation, 2 methods have been developed of obtaining preparations with cross circulation among Cephalopods. With the 1st there is only a brief survival, but with the 2nd there is a survival of 10-12 hrs. In the 2 animals united, many functions (as coloration) tend to become uniform rapidly, showing that these functions are regulated at least in part by blood factors. When the animals united are of different spp. the survival is shortest. This shows that survival is limited by biological factors.—*S. Sereni (transl. by S. A. Watson).*

9454. **SOKOLOWSKI, A., et M. KUBICZEK. Recherches cliniques et histologiques sur la valeur de la méthods de compression de Kylin dans la mesure de la pression sanguine dans les capillaires.** *Ann. Méd.* 29(4): 410-422. 3 fig. 1931.—Kylin's method (compressing the finger immediately behind the ungual fold) really measures the pressure in the afferent arterioles of the subcutaneous tissue, especially the arteriole of Spalteholz. The values so obtained are therefore higher than those of pressure in the capillaries and precapillaries.

ANIMAL PHYSIOLOGY

BLOOD AND BODY FLUIDS

V. C. MYERS, *Editor*

FRANKLIN C. BING, *Assistant Editor*

(See also in this issue Entries 9387, 9423, 9437, 9580, 9584, 9598, 9600, 9619, 9620, 9641, 9700, 9715, 9721, 9727, 9730, 9739, 9743, 9745, 9748, 9749, 9775, 9820, 9821, 9932, 9954, 9975, 9988, 9997, 10056, 10089, 10103, 10126, 10154, 10169, 10170, 10232, 10321, 10325, 10326, 10329, 10368, 10373, 10375, 10376, 10391, 10397, 10492, 10505, 10515, 10519, 10523, 10533, 10545, 10546, 10547, 10548, 10565, 11281, 11282, 11283)

9455. **BARKAN, GEORG. Zur Frage des Blutfarbstoffzerfalls durch verdünnte Säuren.** *Biochem. Zeitschr.* 224(1/3): 53-62. 1930.—Supplementing earlier investigations, the colorimetric behavior of acid hematin solutions from HbO_2, HbCO and from blood has been studied. Contrary to the conclusion of Lintzel and Radeff, dilute acid does not split Fe from oxyhemoglobin. The results are in harmony with the earlier conclusion of Barkan as to the nature of the loosely combined Fe of blood.—*Author's summary (transl. by D. B. Dill).*

9456. **BENCSIK, F., A. GÁSPÁR, F. VERZÁR, und A. ZIH. Weitere Untersuchungen über die Wirkung von Bilirubin auf die Zahl der roten Blutkörperchen.** *Biochem. Zeitschr.* 225(4/6): 278-285. 3 fig. 1930.—In 5 mice it was possible as a rule to produce erythropoiesis through single doses of 0.01 to 0.02 mgm. of bilirubin; larger doses (0.2 mgm.) gave erythropenia. The same was possible on 8 rats: 1-2 mgm. resulted in erythropoiesis, above 2 mgm. in erythropenia. By means of daily feedings of very small doses of bilirubin (0.005 mgm. in 1 mouse, 0.05 to 0.1 mgm. in 6 rats) one can raise the number of red blood cells appreciably for a month. If the dose is discontinued there is a return to the original value. When the number of red cells is altered by bilirubin the refractive index of the blood serum is unchanged. Since the bilirubin effect is proven on the rabbit and man as on the mouse and rat and since it is so outstanding that small doses bring about erythropoiesis and large doses the reverse, since it is possible to produce a month long increase of the red blood cell number and since the serum concentration is not altered thereby, it follows that the bilirubin itself has a powerful effect on red blood cell formation. This supports our hypothesis that the bilirubin continually formed during blood destruction is an essential regulator of red blood cell number.—*Authors' summary (transl. by P. C. Foster).*

9457. **BERKHOUT, P. J. TEDING van. Determination of rest-nitrogen in the blood of inhabitants of the tropics.** *Mededeel. Dienst Volksgezondheid Nederlandsch-Indie* 19(1): 30-43. 1 pl., 1 fig. 1930.—Altogether the investigation of 12 healthy male and 2 healthy female Europeans (Nos. 1 and 3) yielded 31 colorimetric and as many titrimetric figures, and that of 21 healthy natives 43 and 40 figures by the two methods respectively. The mean results obtained with 19 natives by both tests, carried out at the same time and in duplicate, amounted to: colorimetric 32.0 mgm. % (maximum, 37.7; minimum, 28.0); titrimetric 31.8 mgm. % (maximum, 36.9; minimum, 28.2) with a standard deviation of ± 2.26 and a probable error of ± 0.35; and with 14 Europeans: colorimetric 31.46 mgm. % (maximum, 36.5; minimum, 25.3); titrimetric 30.96 mgm. % (maximum, 36.5;

minimum, 25.7) with a standard deviation of ±3.04 and a probable error of ±0.55. Consequently both methods gave well-nigh identical results for Europeans as well as for natives. These results agree with those obtained by the author in 1924 with Europeans and natives and in 1927 with natives only, and do not point to a difference between the percentages rest-N of Europeans and natives. The same holds for the percentage of uric acid, which was read simultaneously with that of the rest-N of a certain number of the test-individuals, Benedict's method being employed. Results of the same magnitude were obtained as those found in 1924 for 10 Europeans and natives.—*Author's summary.*

9458. BEZNÁK, A. VON. Die Wirkung der Parathyreoidectomie auf die Senkungsgeschwindigkeit der rotem Blutkörperchen. *Biochem. Zeitschr.* 225 (4/6): 312-317. 2 fig. 1930.—Studies were made on 6 dogs and 3 rabbits. If the parathyroids are removed from rabbits and dogs the sedimentation rate of the red blood cells is increased. From these observations it may be assumed that there is a diminution in the content of the blood of the negatively charged Ca-complex.—*Author's summary (transl. by P. C. Foster).*

9459. BINET, LÉON. La Rate. Organe réservoir. 116p. 1 col. pl., 12 fig. Masson et Cie: Paris, 1930. Pr. 20 fr.—Finding in 1926 that the transient polycythemia of asphyxia was absent in splenectomized animals (Barcroft's reservoir function), the author planned a number of studies, which are here reported as follows: 1, the hematological effects of acute asphyxia in the normal and splenectomized dog, the splenic origin of asphyxic polycythemia, etc.; 2, the contractions of the spleen during exercise and the results produced; 3, the contraction of the spleen following hemorrhage and the paradoxical polycythemia following a small hemorrhage; 4, the splenic reservoir during digestion, and the excitomotor effect of secretion on the spleen; 5, splenic contraction following emotion and the stimulation of sensory nerves; 6, the blood of the splenic vein and the capacity of the splenic reservoir; 7, the histophysiology of splenic contraction; 8, the humoral and nervous mechanisms of splenic contraction. The results confirm and in some cases amplify Barcroft's elucidation of this one of several functions of the spleen.—*E. B. Krumbhaar.*

9460. BLANKENSTEIN, ALFRED, und ANTON FISCHER. Untersuchungen über die chemische Konstitution der Serum- und Gewebseiweisskörper. II. *Biochem. Zeitschr.* 224 (1/3): 211-222. 1930.—On the basis of further analysis of serum protein (human), it is possible to separate both pseudoglobulin and acid-albumin into 2 fractions which differ definitely in their content of amino acids. The separation of pseudoglobulin is accomplished by means of precipitation in a ⅓ saturated $(NH_4)_2SO_4$ solution, with the acetate buffer solution present in the proportions 10:3. The acid-albumin is obtained by precipitation in the acid-globulin filtrate with a saturated $(NH_4)_2SO_4$ solution in the proportion 10:2; or in case no precipitate results, in the proportion 10:7.5. Researches on tissue protein, with the method described, allow the proteins of the different organs to be distinguished; wherefore it is not probable that serum and tissue protein are identical. Studies on the separated protein portions of the skeletal- and heart-muscles show that the muscle protein in all probability consists of 3 chemically different fractions. None of these fractions is identical with any protein of blood serum.—*L. S. Godfrey.*

9461. BONOMO, V. Ricerche sperimentali sugli effeti della narcosi sulla riserva alcalina e sul pH del sangue. [Experimental researches on effect of narcosis on alkaline reserve and pH of blood.] *Arch. ed Atti Soc. Ital. Chir.* [*Roma*] 34: lxi. 1927 [1928].

9462. BORGHI, BRUNO. Ricerche sulla riserva alcalina nei conigli trattati con iniezioni di quantità massime di glucosio. [Researches on alkaline reserve in rabbits treated with maximum doses of glucose.] *Biochem. e Ter. Sperim.* 15 (3): 90-107. 1928.—The figures for the alkaline reserve in rabbits injected with massive doses of concentrated solutions of glucose present some variations, which though slight, deserve comment. With a single injection of glucose the diminution of the alkaline reserve is closely related to the acid producing effect of a sudden entrance of glucose into the circulation with disturbance of the intermediate metabolism and formation of fixed organic acids. Small oscillations of the alkaline reserve were observed in the rabbits during the day. The author always found a diminution, small but definite, after a glucose injection. This diminution becomes attenuated after repeated injections as though the organism adapts itself to the disturbance in the acid base equilibrium. A constant reduction of the alkaline reserve does not take place. In rabbits 1 and 3 of Series 1 there was even an increase which may not be due to the treatment but as Hawkins points out occurs normally in rabbits and guinea pigs (variations of pH from 7.26 to 7.58). The H-OH iso-ionic balance is evidently less perfect in these animals than in man and variations are difficult to appraise. No permanent compensatory acidosis can be produced in rabbits by massive injections of glucose, nor can the loss of glycogen in the organism be explained by this mechanism.—*Author's summary (transl. by P. Hillkowitz).*

9463. BRECHER, LEONORE. Die anorganischen Bestandteile des Schmetterlingspuppenblutes (Sphynx pinastri, Pieris brassicae). Veranderungen im Gehalt an anorganischen Bestandteilen bei der Verpuppen. *Biochem. Zeitschr.* 211 (1/3): 40-64. 1929.—Determinations of inorganic components of pupal blood of *Sphinx pinastri* gave as averages: K 137.8 mgm., Ca 33 mgm., Mg 56 mgm., Cl 57.5 mgm., P 66 mgm. %; Na in too small amounts to measure by human blood methods. No differences between ♂ and ♀ in content of K, Ca, Mg and inorganic P; Cl being in doubt. An excess of bases (0.050 gram-equivalents per liter, i.e., 0.096 vs. 0.046) presumably combined with organic acids. In comparison with human blood serum, there is very little Na but much more K, Ca, P, and especially Mg, much less Cl. Determinations in *Pieris brassicae* before, during, and after pupation gave an increase in K and decrease in Ca in the successive stages: (1) mature larva still feeding, (2) wandering prepupa with red intestinal content, (3) suspended prepupa, (4) pupa. Mg in the feeding larva much exceeds that in the prepupa and pupa; Cl in the larva is somewhat higher than in the pupal stages, which show no differences inter se. The total P (including organic) in the first prepupal stage is less than in the feeding larva, but increases in the suspended prepupa and is much higher in the pupa than in the feeding larva.—*Author's abst. (transl. by J. H. Gerould).*

9464. BUCKNER, G. DAVIS, J. HOLMES MARTIN, and W. M. INSKO, Jr. The blood calcium of laying hens varied by the calcium intake. *Amer. Jour. Physiol.* 94 (3): 692-695. 1930.—A $CaCO_3$ supplement to the grain-skim milk ration was administered to 9 laying hens, 9 others of the same breed, age and laying conditions receiving no such supplement. In the lot receiving $CaCO_3$ the average egg production, average weight of dry shell and average weight of egg contents increased, the average Ca content of the blood serum was not diminished and the physical condition of the hens remained good. In the hens receiving no supplementary $CaCO_3$ the Ca of the serum diminished; so did egg production and weight of egg and shell, while physical condition deteriorated. In previous experiments no such decrease in Ca of blood serum occurred in cocks or non-laying hens deprived of a $CaCO_3$ supplement.

9465. CANTO, A. Variaciones de las proteínas del plasma por la hepatectomía. [Variations in plasma proteins after hepatectomy.] *Rev. Soc. Argentina Biol.* 6 (3): 188-197. 1930.—Ten dogs were hepatectomized (Markowitz and Soskin's technique in 7 and Kepinow and Petit-Dutaillis in 3). They survived from 2 h. 50 min. to 4 h. 30 min. Blood always clotted but usually with delay after hepatectomy. Total plasma protein diminished 28%, albumin 35%, fibrinogen 36%, glo-

bulins 17%; the ratio albumin: globulin diminished always, from 1.28 to 1.03 (average figures in all cases). Non protein N increased slightly in most cases, but diminished in others. Controls anesthetized, abdomen opened and liver massaged gave no significant variations.—*J. T. Lewis.*

9466. CHARIPPER, HARRY A. Hemolysis of the erythrocytes of Amphibia. *Amer. Jour. Physiol.* 94(2): 278-284. 1 pl. 1930.—Time-dilution curves are given for the hemolytic action of saponin, sodium taurocholate and sodium oleate on the erythrocytes of 3 different species of Amphibia: *Siren lacertina, Necturus maculosus* and *Rana catesbeiana.* Resistance values for the red cells of each of the animals are given for the 3 lysins. All 3 lysins produce hemolysis in each animal. Sodium oleate also causes karyolysis. Microscopic observation of the nucleated red cell in the presence of the lysins, for all 3 forms studied, show changes similar to those reported for the nucleated red cell of chicken blood and the non-nucleated red blood cell of mammals.—*Author's conclusions.*

9467. CIACCIO, C. Sui fattori determinati e sulla natura della reazione leucocitaria alimentare. [Determining factors and nature of the alimentary leucocytic reaction.] *Arch. Sci. Biol.* [*Napoli*] 12: 211-230. 1928.—Tschishikow holds that following the giving of protein beside a primary leucocyte increase connected with gastric secretion, there may be a second and later one in connection with the absorption of the products of protein digestion. The fundamental and constant phenomenon of the alimentary leucocytic reaction is in intimate connection with the activity of hemopoietic tissues, the periodic function of which, like others occurring during the period of digestion, is determined essentially by the passage of gastric HCl into the intestine and is incidental to and probably follows the absorption of protein during a later phase. There are 3 possibilities to be considered relative to the intermediary mechanism: the influence of the liver, the pancreas and the reticulo-endothelial system. With regard to the latter and particularly the hemopoietic tissues, it is demonstrable: 1) that the cytolytic activity is to be explained extrinsically during the digestive period and is in response to the same factors that determine the functional state of the hemopoietic tissues; 2) that extracellular cytolysin follows that of intracellular origin; 3) that a cytogenetic activity is coincidental with cytolytic processes. Such results suggest that the r.e.s. intervenes in some way explanatory of the digestive, leucocytic reaction and that there may be an intimate relation between cytolytic and cytogenetic phenomena. Accordingly the following possibility is advanced: Cells metabolically intermediate, or r.e. cells, elaborate ferments that at first produce an intracellular leucolysin and then set free an extracellular one. Both act especially on elements of advanced maturity. The same ferments or the products of cytolysin act as stimuli on the young elements which proliferate, mature and enter the circulation.—*Author's summary* (*transl. by J. G. Edwards*).

9468. COLSON. Régénération du sang après la saignée chez le Boeuf. *Rec. Méd. Vét. École d'Alfort* 106 (8): 476-481. 1930.—Since young and adult animals show hematological differences, comparisons should be made with animals of about the same age. An animal bled once, reëstablishes both the red and white counts within 4-6 days; a marked hyperleucocytosis always occurs in the first 6-24 hrs. A young healthy animal endures a large number of bleedings without change in amount of red or white cells, excepting the transient variations following each bleeding. The numbers are normal within a week after the last withdrawal. An old animal in average condition regenerates its leucocytes in 12-15 days but its erythrocytes require 2 mos. or longer. Hence these animals require prolonged rest between different series of bleedings, and verification of the value of their serums is indicated.—*Author's conclusions* (*transl. by W. A. Peabody*).

9469. CONDORELLI, LUIGI. Das elektrolytische Gleichgewicht des Blutes. Einfluss des zentralen Nervensystems. *Zeitschr. Klin. Med.* 107(1/2): 1-33. 27 fig. 1928.—Previous work by C. has shown a very rapid mechanism for regulating the electrolytes in the blood when salts are injected. In the present work lesions were made in various regions of the brain of dogs under morphine-ether anesthesia. A considerable disturbance of the electrolyte equilibrium occurred in 5 out of 6 animals in which the lesion was in the thalamus. The most usual changes in these animals were decreased Ca, and increased K and inorganic P, but they depended a great deal on the exact placing and extent of the lesion. The maximum change occurred in 24 hrs., and the concentration returned to normal only after several days.—*R. S. Anderson.*

9470. COUPIN, FERNANDE. Les formations choroïdiennes des poissons et la question de l'origine du liquide céphalo-rachidien. *Schweizer Arch. Neurol. u. Psych.* 26(2): 227-229. 1930.—From experiments made with fishes no definite conclusion can be drawn. The results obtained by Grynfelt and Euzière and by Pettit and Girard are not sustained. One can only affirm that the plexus plays a rôle in the movement of the ventricular fluid. On taking particular precautions for fixation, one sees that, everywhere, the choroid cells have a brush-like border of very large and numerous cilia; on examination of the plexus in physiological saline, or, better, in the serum of an animal, one can follow the very delicate and regular movements of the cilia establishing some currents in the ventricular fluid the rôle of which is unknown to us. One understands, moreover, that there can exist in pathological conditions a change in the choroid cells, as has been shown by M. von Monakow and his students, for many cases of dementia (atrophy, hypoplasia, microphasia). The knowledge of the rôle of the choroid plexus in the movements of the ventricular fluid, does not, however, exclude other functions. In the actual state of our knowledge we are not permitted to consider the c.s.f. as a product of the choroid plexus; the c.s.f. must rather be a dialysate comparable to the other fluids of the organism such as the pericardial fluid, the aqueous humor, synovial fluid, pleural, amniotic fluid, etc., of which the mechanism of formation is still to be explained.—*From author's article* (*transl. by M. R. Freeland*).

9471. DEMUTH, FRITZ, und ILSE von RIESEN. N-Stoffwechsel in vitro gezüchteter Gewebe. *Arch. Exp. Zellforsch. bes. Gewebezücht.* (*Explantation*) 6: 146-151. 2 fig. 1928.—Tissues were grown in a medium containing hen plasma plus chick embryo extract. Rous sarcoma cells contain a heat stable substance which can activate the fibrin liquefying factor of plasma. This substance is released in the culture medium when the cells die. Fibrin is not split in the liquefying process.—*W. N. Berg.*

9472. DIERYCK, JOSEPH. Recherches expérimentales sur les épreuves fonctionnelles du système réticulo-endothélial. L'épreuve au Rouge-Congo de Adler et Reimann. *Rev. Belge Sci. Med.* 1(8): 685-752. 8 fig. 1929.—In 174 experiments on rabbits great individual differences appear in the rapidity with which Congo-red injected into the blood disappears from circulation, but the rate of elimination remains approximately the same for the individual; the results are due in the main to the pigment-fixing activity of the reticulo-endothelial cells. Gestation produces, first a slight delay, then a marked increase (disappearing after delivery) in the elimination of Congo-red. Splenectomy is followed by acceleration of elimination which may last for months, but which tends generally to return to normal. Injections of India ink, collargol, iron saccharate, and caseosan produce a stimulating or blocking effect according to the dose injected and the interval between injections. Thyroxine stimulates, epinephrine, ephetonin, pilocarpine, acetylcholine, ergotamine, atropine and histamine retard the disappearance of Congo-red. Ligation of the bile-duct and extirpation of the greater part of the liver

cause considerable retention of the dye. Bengal rose is eliminated by the liver much more rapidly than is Congo-red; it is more readily affected than Congo-red by an India ink blockage. Its elimination may be accelerated by injection of caseosan and thyroxine, or temporarily prevented by splenectomy. While Bengal rose is an excellent test of hepatic permeability, it may be considerably influenced by temporary modifications in the permeability of Kupffer's cells. In the chromagogic function of the liver there are 2 distinct mechanisms: (1) a mechanism of filtration and concentration, which operates only for crystalloid dyes; (2) a Kupfferian mechanism, of segregation, which places electro-negative colloids in temporary storage.—*From author's abstract (transl.)*.

9473. **DUKES, H. H., and L. H. SCHWARTE. The hemoglobin content of the blood of fowls.** *Amer. Jour. Physiol.* 96(1): 89-93. 1931.—Study of the Hb content of the blood of 23 chickens and a number of wild pheasants, ducks, geese, brants, swans, peafowls, and turkeys by the Newcomer method (with correction applying to the "Improved Newcomer Model" hemoglobinometer for the turbidity of acid hematin solutions prepared from bird blood) indicates that the Hb content of the blood of wild fowls is higher than that of the blood of chickens.

9474. **EATON, PAUL, and F. L. DAMREN. A method for determining the life duration of the erythrocyte: II. The rate of red cell production after hemorrhage.** *Southern Med. Jour.* 23(5): 395-402. 1930.—Reticulocyte counts were made on more than 100 blood smears made over a period of 30 days from a rabbit which had lost 25% of its blood: 56 of these smears were made at intervals of 1½ hrs. over the 1st 100 hrs. of the experiment. The preoperative level of reticulocytes was established by averaging 19 counts made over a period of 30 odd hrs. 2 days before bleeding. A series of spontaneous anemias was indicated by high reticulocyte counts on the 10th, 18th, and 26th days after bleeding; following the highest count of 8% on the 2nd day. The interpeak values were comparable with the preoperative level. The most important finding seems to be the fact that the ratio between 2 readily distinguishable types of reticulocytes furnishes the most delicate and precise measure of activity of the erythropoietic system. Its indications are the more important and valuable in that they relate to what has been happening in the red cell producing system in the 3 hrs. immediately preceding the test.—*Authors' summary.*

9475. **EISLER, M., und F. FRIZA. Über den Verlauf der Hämolyse an narkotisierten Erythrocyten.** *Zeitschr. Ges. Exp. Med.* 74(5/6): 625-635. 1930.—Mixtures of isotonic solutions of ethyl-, propyl-, butyl-, and amyl-alcohols are used in such concentrations with rabbit or sheep blood that no marked changes occur after long observation; after standing 10 min. at 36° C. in 0.45-0.55% NaCl solution, these tests reveal delayed hemolysis. The various alcohols act for the most part alike. If the alcohol is separated after 10 min. by centrifuging lysis appears at practically the same time as in the controls. Urethane acts in a similar manner. The same treatment of the blood with ethyl and propyl alcohol likewise effects a delay in hemolysis caused by "Kadikojtoxin." Butyl alcohol delays hemolysis with rabbit blood but not with sheep blood. Amyl alcohol is ineffective with rabbit blood and with sheep blood promotes lysis. Four varieties of urethane studied also inhibited the toxin hemolysis of rabbit or sheep blood, nevertheless the higher members of the series are somewhat less effective than the lower. This inhibition is eliminated by removal of the urethane. Sometimes lysis occurs earlier under these circumstances than in the controls. —*G. D. Smith.*

9476. **ETTISCH, G., und W. EWIG. Zur Elektrodialyse des Serums.** *Biochem. Zeitschr.* 195(1/3): 175-188. 2 fig. 1928.—In the work presented, there are (1) the conditions outlined by which an ideal, minimal fractioning of serum globulin through electrodialysis must take place. These conditions hold good in: (a) conversion of undiluted serum; (b) avoidance of far-reaching change in reaction; (c) maintenance within the physiologic limits of temperature (under 36°); (d) more rapid fractioning; (e) the most thorough precipitation of albumin. (2) It is shown in how far the methods presented do not satisfy these strict conditions. (3) An albumin-collodion membrane is described which—as an anodal membrane—together with a parchment membrane presents a combination by means of which it is possible to satisfy the conditions stated. (4) It is shown that the above mentioned membrane cannot be replaced by a simple collodion membrane.—*Authors' summary (transl. by M. M. Wintrobe)*.

9477. **FÄHRAEUS, ROBIN. The suspension stability of the blood.** *Physiol. Rev.* 9(2): 241-274. 2 fig. 1929.—A general review. Discussed under following divisions; Historical, Clinical significance of stability reaction, Causes of increased rouleaux formation, Rouleaux formation as a physico-chemical phenomenon, Erythrocyte aggregation in streaming blood, Flow of suspensions through narrow tubes, Blood in vascular system as a streaming suspension, Biological significance of reduced suspension stability, Pathological consequences of reduced suspension stability. Bibliography of 64 papers. —*M. R. Freeland.*

9478. **FORSSMAN, J., TH. WADSTEIN, und G. FISCHER. Der Einfluss verschiedener Salzkonzentrationen auf die Hämagglutination.** *Lunds Univ. Årsskr. Sect. 2. Med. Mat. Naturvetensk.* 26(paper 4): 1-7. 1930.—The NaCl concentration causing the most marked agglutination is 3% for sheep blood, 5 for ox blood and 1 for pig blood. In the 2 former species agglutination results up to 10 or even 15% salt concentration. There are 2 agglutinative types of human blood, one of which is characteristic for the A-group-anti A-serum. Venesection in the sheep often increases the agglutinative stability of the corpuscles. On the whole alkali and alkaline earth salts in isotonic concentrations have the same effects as NaCl. The results indicate that the potential difference between blood corpuscles and the fluid is not decisive in agglutination by specific anti-sera but that other influences turn the scale.—*Authors' summary (transl. by D. B. Dill)*.

9479. **FREMONT-SMITH, FRANK, TRACY J. PUTNAM, and STANLEY COBB (with the technical assistance of MARY E. DAILEY, MARGARET A. CARROLL, and CAROLINE STEPHENSON). Forced drainage of the central nervous system. Its effect on the blood and on the cerebrospinal fluid.** *Arch. Neurol. & Psychiat.* 23(2): 219-227. 1930.—A modification of Kubie's method of forced drainage of the central nervous system and the results of its use in 16 patients (multiple sclerosis and others) are reported. Pituitary extract is injected so as to delay diuresis which would otherwise result from the forced fluids given by mouth. The consequent dilution of the blood caused a dilution of the cerebrospinal fluid as shown by an estimation of the freezing point and of the Cl and Na contents. There was also a change in the protein and cell count.—*W. Malamud.*

9480. **GOODALL, EDWIN. Blood-cholesterol during the menstrual and epileptic cycles.** *Lancet* 1(5504): 384-386. 1929.—The experiments were made to test the statement of Robinson, Russell Brain, and Kay [*Lancet* 2: 325. 1927] that the blood-cholesterol is markedly decreased at or about the menstrual period. The patients (12 mentally disordered women, aged between 22 and 47; 10 quiet, deluded patients of the chronic class, 2 quiet mental defectives) were placed on a diet of, as closely as possible, 17 calories per lb. of body-weight, composed of bread, butter, milk, meat and potatoes. Each was kept in bed for not less than 3 days before the withdrawal of blood. The 12 patients were examined for cholesterol in 2 phases of the menstrual cycle—intermenstrual (all patients in bed and on the diet for 3 days before the 1st estimation), and intra-menstrual (same conditions observed for 3-10 days before the 1st estimation). Two series of estimations were made (72 in each

series) and the mean results of the 2 were in most cases in agreement to within about 10% (in ½ the cases to within 5%): the agreement was somewhat closer in the inter-menstrual than in the intra-menstrual results; the amount of cholesterol present in the blood is the same in the inter-menstrual as in the intra-menstrual period. The author also examined the whole blood of 6 cases (3 ♂ and 3 ♀) of long-standing epilepsy, with dementia to a greater or lesser extent. In each case 3 estimations were made in the inter-paroxysmal and 3 in the pre-paroxysmal phase (36 in all). In 5 out of the 6 cases the blood-cholesterol in the inter-paroxysmal phase was fairly constant over the 3 days on which estimations were made; in the 6th case one of the values was considerably higher than the other 2. In 4 out of 6 cases the blood-cholesterol in the pre-paroxysmal phase was fairly constant over the 3 days; in the 2 remaining cases the variation was more marked. The mean value for the blood-cholesterol in the pre-paroxysmal phases is not markedly different from that in the inter-paroxysmal phases. The variations from the mean tend to be greater in the former.

9481. **GOSSMANN, H. P. Zur Morphologie des Lymphknotens in ihrer Beziehung zur Funktion. Untersuchungen an der Leberpfort- und Gekröselympfknoten.** *Virchow's Arch. Pathol. Anat. u. Physiol.* 272(2): 383-399. 1929.—Lipid substance was found in ⅔ of all sectioned material from mesenteric lymph nodes of 150 cases and mesenteric and portal nodes of 100 cases. Mesenteric nodes were more favorable. Staining pictures indicative of absorption were found in the reticulo-endothelial cells and the reticulum of the parenchyma, even in the secondary nodules, but not in the parenchyma itself. With a rapid inflow of fat, the sinuses showed the greatest absorption. With a slower inflow, it showed in the sinus first and in the reticulum later. The fat is completely digested, making a contrast with the indigestible pigment in these cells.—*From abst. by P. Caffier (transl. by C. M. Goss).*

9482. **GRANIT, RAGNAR, BENGT EDELMANN, und PEHR MALM. Über die Einwirkung der Vagusreizung auf die Wasserstoffionenkonzentration des Herzpunktates. (Vorläufige Mitteilung.)** *Skand. Arch. Physiol.* 59(5/6): 226-230. 1930.—The pH values were determined by Mislowitzer's method using a gold electrode. Blood from the left heart of rabbits became more acid when there was a marked vagus effect and was least effected in hypodynamic hearts.—*Authors' summary (transl. by D. B. Dill).*

9483. **GUSSAROW, I. I. Ca-Spiegel in Blutserum bei experimentellen Knochenfrakturen.** *Arch. Klin. Chir.* 155 (1): 39-50. 9 fig. 1929.—In cases of bone injury and subsequent callus formations, there is a displacement of the otherwise stable Ca equilibrium which is shown by its increase in blood serum. The increase of the Ca content of serum beginning with the separation of Ca in the osteoid callus continues until complete consolidation has occurred. There follows a gradual diminution in the Ca content. The original rise in Ca content appears to depend upon the hyperfunction of epithelial cells as a result of which a mobilization of Ca from the bone system takes place.—*J. M. Johlin.*

9484. **HAWKINS, W. B., K. SRIBHISHAJ, F. S. ROBSCHEIT-ROBBINS, and G. H. WHIPPLE. II. Bile pigment and hemoglobin interrelation in anemic dogs.** *Amer. Jour. Physiol.* 96(2): 463-476. 1931.—A severe experimental anemia due to bleeding may be combined with a renal-bile fistula and enable the investigators to follow simultaneously new Hb production and bile pigment output under carefully controlled conditions. Dogs can be kept in perfect physical condition with normal activity and uniform weight under these conditions provided care is taken to insure suitable diet intake. Under such conditions the base line control output of bile pigments per 24 hrs. is much less than during non-anemic periods. This bile pigment output does not fall as low in proportion as does the anemia level—for example, with an anemia level of ⅓ normal Hb, a bile pigment output level of ½ normal was observed. This pigment paradox reads about as follows—from the injected Hb comes a quantitative return of new Hb in red blood cells removed by bleeding. At the same time there is almost a quantitative return from the same Hb injection in the form of bile pigment. Whatever pigment is accepted as the end product of the introduced Hb, there remains the necessity of explaining the other pigment formation. The authors suggest that from the injected Hb is split off the pyrrole nucleus to form bilirubin and from the globin fraction or parts of it may come much of the new Hb which appears in the circulating red cells. If this is true it appears that the body can synthesize the pyrrole nucleus in considerable amounts in an emergency due to anemia.—*Authors' summary.*

9485. **HENSEL, SIEGFRIED. Über den Indikangehalt im Serum am Ende der normalen Gravidität bei Mutter und Kind.** *Zeitschr. Geburtsh. u. Gynäkol.* 98(2): 276-290. 1930.—The indican content of the serum at the end of normal pregnancy is not higher than about 0.8 mgm. % (in 30 cases). The results with non-pregnant women of child-bearing age (10 cases), whose blood indican values reached about 1 mgm. %, do not indicate an increase in blood indican above the normal in pregnancy. There is no evidence for the existence of a "physiological hyperindicanemia of pregnancy." The blood of the fetus contains more indican than that of the mother. The level lies between about 0.3 and 1.5 mgm. %. Immediately after birth no indican is eliminated in the urine. It does not appear for several hours after birth. The indican of the fetus appears to be formed through the active intermediary metabolism of protein.—*Author's summary (transl. by B. S. Walker).*

9486. **HINTNER, H. Zur Frage des Einflusses von abnormen Resorptionsvorgängen im Genitalapparat auf den Blutlipasegehalt.** *Pflüger's Arch. Ges. Physiol.* 226 (2): 292-293. 1930.—The power of the blood of the rabbit to split tributyrin is not changed during normal pregnancy or after artificial destruction of the fetuses. —*M. H. Jacobs.*

9487. **HOCHREIN, M., J. MICHELSEN, und H. BECKER. Schlaf, Schlaflosigkeit und körperliche Arbeit in ihrem Einfluss auf den Blutchemismus.** *Pflüger's Arch. Ges. Physiol.* 226(2): 244-254. 1930.—The effect of sleep on the organism was studied in 2 normal subjects by comparing the effect of standardized exercise upon the blood chemistry in the morning before breakfast following a normal night's sleep and following a night during which the subject lay recumbent but without sleeping. In the morning while fasting, blood pressure and pulse rate were taken and a 60 cc. sample of venous blood drawn without stasis from the arm. The exercise consisted of a 5 min. run on a treadmill at 8 Km. per hr. following which within 2 min. blood pressure and pulse rate were again measured and a 2nd sample of blood taken. A 2nd 5 min. run at 11 Km. per hr. was then performed and immediately blood pressure, pulse rate and a 3rd sample of blood were taken. One such experiment after sleep and one after a sleepless night on each of the subjects was performed and is reported. The blood analyses included O capacity, CO_2 content of blood, plasma CO_2 at 40 mm., total base of plasma, Cl of blood and plasma, blood lactic acid, blood sugar, blood cell volume, and water content of blood and plasma. In all 4 experiments the definite changes following exercise consist of rise in blood pressure and pulse rate, fall in plasma bicarbonate, rise in blood lactic acid, slight increase in blood cell volume and slight fall in water content of blood and plasma and in blood sugar. The authors note a slight fall in O capacity and in plasma bases after the 1st run and a slight rise in both after the 2nd run but these changes are small. The consistent differences between the 2 experiments following sleep and the two following the sleepless night are limited to slightly lower cell volume, slightly higher water content of plasma and slightly higher blood and plasma Cl following the sleepless night

both before and after exercise and to greater lactic acid increase and greater fall in bicarbonate following exercise after the sleepless night.—*J. H. Austin.*

9488. **HOLZAPFEL, MAX. Untersuchungen über die wirksame Substanz bei dermographischen Erscheinungen.** *Zeitschr. Ges. Exp. Med.* 72(1/2): 269-281. 3 fig. 1930.—In Dermographia elevata, after mechanical stimulation of the skin a substance is produced which enters the circulation and is demonstrable in the serum by the fact that intracutaneous injection of this serum produces larger wheals with wider hyperemic borders than normal serum. Comparison of the action of this substance with the action of histamine makes it improbable that the 2 are identical.

9489. **HORWITZ, S. Acidose und Mikrocytose.** *Zeitschr. Klin. Med.* 113(3/4): 395-403. 1930.—The designation "macro- and microcytosis" refers only to erythrocyte diameters, not to their volumes. Increase of erythrocyte vol. with change from disk shape to globe shape, thus shortens the diam. In experimental acidosis, addition of four 10 cc. doses of dilute HCl produces microcytosis, i.e., erythrocytes with large vols. and smaller diams. Similarly microcytosis was produced by administration of other mineral acids equivalent to 135 cc. of normal solution per day.—*S. Horwitz (transl. by W. A. Peabody).*

9490. **JACOBS, M. H. Osmotic properties of the erythrocyte. I. Introduction. A simple method for studying the rate of hemolysis.** *Biol. Bull.* [*Woods Hole*] 58 (1): 104-122. 1 fig. 1930.—A simple method is described by which it is possible to measure with accuracy the rate of hemolysis where the time involved exceeds approximately 1 sec. If the duration is 10 sec. or more, a complete graphic record of the entire process up to an apparent degree of hemolysis of between 80 and 90% may be obtained. The method may also be used for the accurate determination of the relative numbers of erythrocytes in different suspensions and assuming a satisfactory definition for the expression "percentage of hemolysis," for the rapid estimation of the latter, within the range most useful for experimental purposes, with an error of no more than 1 or 2%.—*M. H. Jacobs.*

9491. **KAFKA, V., und K. SAMSON. Die Eiweissrelation des Liquor cerebrospinalis. IV. Die Beziehungen der Ergebnisse der Eiweissrelation zu den übrigen Liquorbefunden.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 119(1): 153-162. 1929.—The upper limit of cells in the cerebrospinal fluid does not exceed 8/3 in a cu. mm. Fluids presenting 8/3 to 15/3 cells in a cu. mm. are to be classed as abnormal. The Wassermann reaction was always coincident with changes in the albumin relation. —*S. Katzenelbogen.*

9492. **KAISER, OTTO. Über den Einfluss temporärer Einschränkung des blutbereitenden Gewebes durch Gefässklemmung.** *Zeitschr. Ges. Exp. Med.* 72(1/2): 211-227. 5 fig. 1930.—The problem was whether a longer or shorter exclusion of a part of the bone marrow from circulation would produce degenerative cell injuries the products of which would affect blood production. It was studied in 5 guinea-pigs by repeatedly occluding with a clamp, for periods varying from ½ hr. to 5 hrs., daily in some and at longer intervals in others, the right femoral artery in its crural segment. Brief occlusion produced transitory lymphocytosis, indicating not increased production but a disturbance of cellular equilibrium. A protracted occlusion produced, by the formation of products of destruction of myeloid cells, a neutrophil blood reaction, generally with increase of mononuclears, sometimes also of eosinophils. The erythrocytes showed no typical reaction. A transient lengthening of the precipitation time followed each occlusion. The results tend to support the theory of the productive and functional opposition between the lymphatic and the myeloid cell systems, and of a quantitative equilibrium of the cell products entering the blood.

9493. **KAULBBERSZ, GEORGES. L'influence de la fatigue dans les montagnes et dans la plaine sur l'échange de l'eau dans l'organisme.** *Jour. Physiol. et Pathol. Gén.* 26(4): 616-623. 1 fig. 1928.—In 3 men observed during exercise in the mountains, at the beginning of fatigue dilution of the blood occurred, with fall in Hb, erythrocyte count, proteins, and to a less extent of density and solids of the blood; then followed a rapid concentration, then a secondary dilution by a protein-containing liquid from the tissues, salts, Hb and erythrocytes being diminished. The temp. remained stationary during dilution of the blood, but rose during concentration. Hence Kaulbersz agrees with Barbour in regarding increase of fluid in the peripheral vessels of the body as a temp.-regulating function.

9494. **KENNEDY, WALTER P., and W. A. R. THOMPSON. Studies on the Arneth count. XIII. The deviation of the count by various autacoids and animal extracts.** *Quart. Jour. Exp. Physiol.* 19(4): 377-379. 1929.—A left-handed deviation of the Arneth count in rabbits is produced by various gonad extracts as well as by pituitrin, adrenalin, and insulin.—*W. P. Kennedy.*

9495. **KLINKE, K. Experimentelle Hämolysestudien. II.** *Biochem. Zeitschr.* 197(4/6): 381-403. 1 fig. 1928.—According to the author's observations, the hemolysin (amboceptor) is absorbed by the red corpuscles and by affecting the lipid complex brings about a loosening of the structure of the membrane in a way which makes possible the action of the lysin. This consists in an adsorption by the loosened membrane of the euglobulin fraction of the serum. Alterations in the colloid chemical properties of the euglobulin interfere with the actual lysin. This is the manner in which salt inactivation, the addition of homologous serum and of caffein exert their effects. The hemolysin may act independently, so that cells treated with inactivated, non-hemolytic serum will hemolyze on the subsequent addition of the euglobulin fraction of the hemolytic serum. A similar process is indicated in the case of the antitoxic effects of suitable sera.—*M. Bodansky.*

9496. **KOVÁCS, EDMUND [with the assistance of ST. LUDESCHER, und L. ZAJÁCZ]. Beiträge zur Kenntnis des leukozytären Blutbildes im Säuglingsalter.** *Jahrb. Kinderheilk.* 128(3/4): 244-257. 1930.—Studies of 25 normal, 10 prematurely born, 24 exudative infants and 10 with acute catarrhal affections of the air-passages.

9497. **KOZUKA, KISHIRO. Über die Lävulose des Bluts und der Lymphe.** *Tohoku Jour. Exp. Med.* 15 (3/4): 398-418. 1930.—Levulose is present in the blood of normal rabbits, pigs, and dogs, averaging 7.2, 4.6, and 7.2 mgm. % respectively. After administration by mouth the blood levulose increases over 100%, while the blood glucose simultaneously increases moderately. In levulosemia the portal blood is highest in levulose followed in order by the lymph from the thoracic duct, and the blood of the carotid, jugular, and femoral veins. The blood of the left ventricle usually contains more levulose than that of the right. Adrenaline cannot mobilize levulose; insulin decreases the blood levulose. The increase in the blood sugar after levulose administration is much less than after an equivalent amount of glucose. Feeding an animal with either sugar causes no great differences in glycogen formation in the liver, and in skeletal and heart muscle.—*K. Kozuka (transl. by M. H. Power).*

9498. **KRAUSE, A. C., and A. M. YUDKIN. The chemical composition of the normal aqueous humor of the dog.** *Jour. Biol. Chem.* 88(2): 471-477. 1930.—The refractive index of normal aqueous humor taken from the eye of the dog under cocaine anesthesia showed a range of values from 1.33478 to 1.33532. The NaCl varied from 540 to 676 mgm., the inorganic sulfate as S from 0.24 to 0.50 mgm., the inorganic phosphates as P_2O_5 from 0.83 to 1.5 mgm., the CO_2 from 58.4 to 62.5 volumes %, the total N from 27 to 55 mgm., the protein N from 5 to 26 mgm., the non-protein N from 12 to 40 mgm., the urea N from 11 to 15 mgm., the amino acid N from 8.2 to 10.3 mgm., and the creatinine from 1.0 to 1.9 mgm. per 100 cc. of aqueous humor. Amytal anesthesia produced no change in the concentration of the creatinine, glucose, NaCl, total N, protein N, non-protein N or

refractive index of the aqueous humor of the dog. Ether anesthesia caused no variation in the amount of creatinine, protein N, and non-protein N. The refractive index was slightly, and the glucose content was greatly increased. Local irritation of the eye by ether vapor resulted in an increase of refractive index and protein. The analysis of aqueous humor, spinal fluid, and whole venous blood of the dog under amytal anesthesia showed the concentration of the NaCl was lowest in amount in the spinal fluid and the non-protein N content was the greatest in the whole venous blood.—*Authors' summary.*

9499. KUGELMASS, I. NEWTON, and EMMA LOUISE SAMUEL. Dietary protein and blood-clotting function. *Amer. Jour. Dis. Children* 41(1): 48-52. 1931.—Experiments on 24 rats and 4 dogs, and clinical observations indicate that prolonged feeding of a diet containing high protein increases the coagulability of the blood, maintaining the clotting factors at a higher level. Injury of the tissues by surgical intervention induces an overproduction of blood fibrinogen and hence an increased coagulability of the blood. The introduction of heterologous protein into the vascular system increases the blood-clotting function transiently, with a rapid return to normal.

9500. LASCH, FRITZ. Über den Leukozytensturz nach intrakutaner Injektion im höheren Lebensalter, ein Beitrag sur Biologie der Haut. *Wien. Arch. Inn. Med.* 20(3): 343-350. 1930.—Lasch and others had previously shown that intracutaneous injection of various fluids (albumin, salt solution, etc.), produces in 40-60% of young subjects a temporary fall of the leukocytes in the peripheral blood, the neutrophil elements alone disappearing. In the present study, intracutaneous injection of 0.9% NaCl solution produced a fall in leukocytes in 13 out of 32 subjects aged 61-94 yrs., the positive reaction appearing up to the 90th yr. In 7 out of the 32 cases a leukocytosis (affecting chiefly the neutrophil elements) appeared instead of a leukopenia, a phenomenon not yet observed in younger patients.

9501. LEITNER, J. Die Wirkung der Röntgen- und Ultravioletttstrahlen auf die Blutsenkungsreaktion. *Fortschr. Geb. Röntgenstrahlen* 41(4): 743-747. 1930.—In 43 experiments in vitro, Leitner observed no clear effect on sedimentation rate or regularity in the marked disturbances of the blood corpuscles following either ultraviolet or x-ray irradiation.

9502. LINTZEL, W., und T. RADEFF. Über die Wirkung der Luftverdünnung auf Tiere. III. Wirkung von Luftverdünnungen verschiedenen Grades. *Pflüger's Arch. Ges. Physiol.* 226(2): 307-318. 3 fig. 1930.—White rats were kept for 3 weeks in ventilated chambers at reduced atmospheric pressure in 5 groups as follows: 8 at 760 mm., 7 at 590 mm. (2000 m.), 5 at 460 mm. (4000 m.), 11 at 358 mm. (6000 m.), and 9 at 280 mm. (8000 m.). Two in each of the last 2 groups were given extra Fe with their food. Body weight at the beginning and body weight minus contents of the gastro-intestinal tract at the end were recorded. At the end of the experiment the authors measured the hemoglobin content of the whole body, the erythrocyte count and hemoglobin concentration of blood from the tail, the Fe of the liver not due to hemoglobin as a measure of the reserve Fe and the weight of the heart. Mean values for the 5 groups taking the value of the first control group as 100 follow. Erythrocyte count: 100, 110, 128, 128, 134. Hemoglobin concentration in tail blood: 100, 111, 131, 136, 133. Total hemoglobin per kgm. final body weight: 100, 136, 173, 210, 229. Blood volume calculated from two preceding data: 100, 121, 132, 154, 172. Heart weight per kgm. final body weight: 100, 98, 103, 142, 151. The rise in erythrocytes and hemoglobin is rapid at the lower altitudes approaching a level above 4000 m., with almost constant color index. The increase in blood volume and total body hemoglobin is noted throughout the series. The increase in heart weight is observed only in the last 2 groups when increase in hemoglobin concentration and erythrocyte count had ceased and is interpreted as evidence of increased minute volume output as a compensating factor at these altitudes. The iron analyses showed depletion in the reserves in some animals of the last 2 groups but no correlation between this and the hemoglobin values leading to the view that lack of Fe is not the cause of the diminishing increment of erythrocyte count and hemoglobin concentration at higher altitudes. The delayed rise in heart weight as compared with hemoglobin concentration argues against the increase in heart weight being a consequence of increased viscosity of the blood. —*J. H. Austin.*

9503. LIU, SCHAU-KUANG, und R. KRÜGER. Über die Regulation der Wasserstoffionenkonzentration im Blute. VII. Beiträge zur Frage der respiratorischen Regulierung der Wasserstoffionenkonzentration im Blute. *Zeitschr. Ges. Exp. Med.* 61(5/6): 787-793. 1928.—Injection of small quantities of dilute acids or alkalies produces only a transitory change in pH. The normal reaction is restored in 1 or 2 min. because of the high buffer value of blood and change in rate of carbonic acid excretion. Within normal physiological limits acid formation is nearly parallel to acid excretion. It is concluded that the respiratory stimulus depends on the pH.—*Author's summary (transl. by D. B. Dill).*

9504. LIU, SCHAU-KUANG. Über die Regulation der Wasserstoffionenkonzentration im Blute. VIII. Studien über die Wirkung von Säure, Basen und anderen toxischen Stoffen auf das Säure-Basengleichgewicht des Blutes. *Zeitschr. Ges. Exp. Med.* 61(5/6): 794-807. 1928.—The theory that H-ion controls the respiratory center is elaborated. So long as acid or alkali injections do not harm the respiratory center, breathing regulates the blood reaction. But when poisoning of the respiratory centers occurs, breathing becomes weaker and death supervenes. The danger of acidosis arises from possible paralysis of the respiratory center.—*Author's summary (transl. by D. B. Dill).*

9505. LUCK, JAMES MURRAY, and LEONARDE KEELER. The blood chemistry of two species of rattlesnakes, Crotalus atrox and Crotalus oregonus. *Jour. Biol. Chem.* 82(3): 703-707. 1929.—Compared to mammals, the bloods of 2 spp. of rattlesnakes, *Crotalus atrox* and *Crotalus oregonus,* contain only traces of urea. Amino acids, inorganic phosphates and chlorides are present in greater, and reducing sugar and cholesterol in smaller quantities than in mammalian blood. The non-protein N, creatine, creatinine, and liquid P values are of the same magnitude in *Crotalus* and mammalian blood.—*H. C. Koser.*

9506. LUNEDEI, A., e F. FORTI. Variazioni della velocità di sedimentazione delle emazie da alterazioni provocate di circolazione. [Variations of the velocity of sedimentation of erythrocytes following alterations induced in the blood flow.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 663-667. 3 fig. 1930.—Following stasis, ischemia, or both, increased as well as decreased and unchanged velocity of sedimentation was observed. The variations are attributed to changes in the blood plasma.—*M. Comel.*

9507. LUSTIG, B., und K. FÜRST. Zur Bestimmung der einzelnen stickstoffhaltigen Bestandteile im Blut und in serösen Flüssigkeiten auf dem Wege fraktionierter Sublimatfällung. *Biochem. Zeitschr.* 215(4/6): 286-292. 1929.—From serum filtrates the purine bodies are precipitated by sublimate at pH 5.6. Ammonia and creatinine are precipitated together by adding ¼ vol. of 50% sodium acetate to the resulting filtrate. They are then separated and determined singly. Amino acids and urea are precipitated from the 2nd filtrate by neutralization to phenolphthalein. The precipitate is dissolved in dilute acid, Hg removed with H_2S, and the amino acids determined colorimetrically or titrimetrically. Provision is also made for the estimation of creatine. The scheme of analysis is applicable to 2-5 cc. of serum, and 92-100% of the non-protein N is accounted for.—*M. H. Power.*

9508. LUSTIG, B. Zur Kenntnis der Unterfraktionen der Globuline und Albumine im Serum. *Biochem. Zeitschr.* 225(4/6): 247-263. 1930.—Globulins soluble in

water and in solutions of NaCl, Na_2CO_3 and NaOH were identified and shown to vary markedly from each other in their properties and COOH- (method of Obermeyer and Willheim) and NH_2-indices. For most serum proteins the NH_2 : COOH ratio falls within narrow limits. This apparent multiplicity (in agreement with Freund-Joachim) of albumin and globulin subgroups may explain the variety of their functions in the blood. Further studies will deal with the chemical composition and biological differences of these protein fractions.—*E. Pomerene.*

9509. MADON, VITTORIO FILIPPO. Ricerche ematologiche nel neonato prematuro nelle prime settimane di vita. [Hematological studies on premature new-born, during the first weeks of life.] *Arch. Sci. Med.* 54(10): 698-716. 1 fig. 1930.—In premature new-born, Hb percentage, number of erythrocytes and reticulocytes, the cell volume and especially the diameter and average surface of erythrocytes were greater than in mature new-born, whereas the Hb contents per unit of surface was much reduced. The refractometric values and number of leucocytes were less than those of mature new-born.—*M. Comel.*

9510. MALAMUD, WILLIAM, und EMELINE P. HAYWARD. Über die Verteilung der Bromionen in Blut und Liquor und ihre Bedeutung für das Problem der Blut-Liquor-Schranke. *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 295-302. 1930.—Seven cases of the transfer of bromine from the blood stream to other body fluids were studied. These experiments involved the disadvantage of using pathological fluids, since serous fluids aside from cerebrospinal fluid are not practically obtainable. No parallelism nor even relationship was found between the bromine distribution quotient and the protein quotient of blood and pathological fluids. While the protein content of pleural fluid was but $\frac{1}{5}$ that of blood the bromine quotient was somewhat greater than 1.0. Equally small quotients between blood and cerebrospinal fluids were found in case of atherosclerosis, even in cases where the protein content of the cerebrospinal fluid was but 1/400 that of the blood. The bromine distribution between blood and cerebrospinal fluid is first of all dependent on the constitution and condition of the membrane which separates these fluids. Clinical, histopathological, and chemical investigations confirm the conclusion that the amount of bromine is dependent on the condition of these membranes. The assumption of bound bromine in the blood has not been demonstrated. In view of the present knowledge of the laws of dialysis there is no justification for considering cerebrospinal fluid a pure dialysate of blood.—[*From authors' article*] (*transl. by J. M. Johlin*).

9511. MARKOWITZ, CECILE, and FRANK C. MANN. Studies on the physiology of the liver. XXI. The rôle of the liver in the formation of lymph. *Amer. Jour. Physiol.* 96(3): 709-712. 1931.—Under ether anesthesia a cannula was inserted into the thoracic duct of healthy, fasting dogs (number not stated) which 2 hrs. previously had received abundant water. No difference was observed in the flow of lymph from the thoracic duct before and after ligation of the periportal lymphatics or in the lymphagogic action of peptone in normal etherized dogs before and after ligation of the periportal lymphatics. Removal of the liver by the usual technic did not diminish the flow of lymph. The intravenous injection of peptone into a dehepatized dog was followed by the usual lymphagogic effect.

9512. MASSA, MARIO, e SALVATORE MAUGERI. Sulla presenza nel sangue di una sostanza ipoglicemizzante. [The presence in the blood of a substance producing hypoglycemia.] *Pathologica* [*Genoa*] 21(449): 138-143. 1929.—A substance was isolated from human and dog's blood by a method similar to that used by Baker, Dichens, and Dodds for the extraction of insulin from tissues. This substance when prepared from healthy human blood and administered intravenously caused a slight transitory hyperglycemia followed by severe hypoglycemia in both rabbits and guinea pigs, appearing as effective as commercial insulin. When prepared from diabetic blood there was no resulting hypoglycemia in one guinea pig. The severity of this hypoglycemia was roughly proportional to the quantity of blood employed.—*J. Vaughan.*

9513. MOGILNICKI, R. Über den Einfluss der Kombinationen von Erdalkalichloriden mit NaCl auf die Hämolyse durch Urethane. *Protoplasma* 8: 215-221. 1929.—The checking influence of alkali earth ions in combination with the Na ion in the neighborhood of the Cl ion influences urethane hemolysis. The checking maximum lies at about an equal concentration of both cations. Neither the increase nor the decrease of pH changes the type of influence of these salts. The acid reaction and also an increased CO_2 content of the blood delays urethane hemolysis while the alkaline reaction speeds it up.—*L. Moyer.*

9514. MORACCI, E., e G. ARAGONA. Sulle variazioni numeriche degli eritrociti e dei leucociti circolanti per effetto dell'asfissia. [On the numerical variations of erythrocytes and leucocytes following asphyxia.] *Arch. Fisiol.* 29(1): 1-18. 1930.—Among 24 animals (dogs, rabbits, pigeons) submitted to experimental asphyxia, polycythemia followed in 16, the increase in the erythrocytes being 0.5-5.2 millions per cmm. In these animals the observed polycythemia disappeared after several experiments with asphyxia, and was followed sometimes by a diminution reaching subnormal values. Decreased red counts were also observed in some animals which never showed increased red cells, the diminution being 0.7-1.4 million erythrocytes per cmm. In all experimental animals the asphyxia was followed by leucocytosis, the increase of the number of leucocytes being 1000-15800 per cmm. blood. The hyperleucocytosis persisted after several experiments with asphyxia; only in a third of the animals did it disappear after numerous experiments.—*M. Comel.*

9515. MYERSON, ABRAHAM, and ROY D. HALLORAN. Studies of the biochemistry of the brain blood by internal jugular puncture. *Amer. Jour. Psychiatry* 10(3): 389-406. 1930.—Introduction of the internal jugular method has made it possible to study brain metabolism directly, especially if it is combined with the puncture of the carotid artery and, for comparison with the arm by a puncture of the brachial artery and basilic vein. Specific gravity, sedimentation rate, urea N, nonprotein N, phosphates, Ca, and Cl content of the blood in the internal jugular vein, carotid artery, brachial artery, and basilic vein are substantially the same. Sugar disappears in the transit between the carotid artery and the internal jugular vein in much the same way as in the transit between the brachial artery and the basilic vein. What the authors call brain consumption of sugar, is quantitatively as great and, in the main, tends to be greater than arm consumption of sugar. O disappears in the transit between the carotid artery and the internal jugular vein and CO_2 content increases in the same transit. The authors found no significant difference in the few cases that they have studied between the brain consumption of O and production of CO_2 and the arm production and consumption of CO_2. In 4 cases studied during anesthetization it was found that the sugar content of the blood rose very decidedly. Before anesthetization, however, there was a decided difference between the carotid sugar content and jugular sugar content. This difference tended to disappear during anesthetization.—*Authors' summary.*

9516. NEUSCHLOSZ, S. M. Über den Lösungszustand des Cholesterins im Blutserum. I. Untersuchungen an Künstlichen Lipoid-Eiweissgemischen. II. Über die Alkoholextrahierbarkeit des Cholesterins aus dem Blutserum und eine auf derselben beruhende Bestimmungsmethode für freies und esterifiziertes Cholesterin. III. Über die Beziehungen zwischen Cholesterin und Eiweisskörpern. *Biochem. Zeitschr.* 225(1/3): 115-122. 5 fig.; 123-129; 130-140. 1930.—I. Solubility of cholesterol in aqueous mixtures of albumin and lecithin increases with a rise in the concentration of both substances, but there

is an antagonism in their action since the presence of lecithin reduces and reverses the effect of albumin. Ether extractibility of lecithin from known aqueous mixtures falls with increased albumin concentrations and rises upon the addition of lecithin. Adsorbability of cholesterol upon animal charcoal depends only upon the amount of albumin present, decreasing with raised concentrations. Lecithin has no apparent effect upon this process.—II. Precipitation of 1 vol. of blood serum with 19 vol. of alcohol yields a filtrate, half of which contains practically ½ the serum cholesterol. Warming of the mixture during the extraction and the addition of ether do not yield higher results. A colorimetric method based on these observations is given for the determination of free and esterified cholesterol.—III. The cholesterol protein compound described by Troensgard and Koudal is detected only when the protein-precipitant is not a fat solvent and not when serum is precipitated by alcohol. The amount of cholesterol bound to protein varies, even in the same serum, with the method of protein removal. Pure globulin precipitates fix more cholesterol than those of albumin or of both proteins. Fixation of cholesterol results when a synthetic mixture of albumin and cholesterol is precipitated with saturated $(NH_4)_2SO_4$.—*E. Pomerene.*

9517. NICOLETTI, FERDINANDO. La cristallizzazione dell'emoglobina nelle varie età dell'uomo. [Crystallization of human hemoglobin at various ages.] *Arch. Antropol. Criminale, Psichiatria e Med. Legale* 50(3): 386-399. 7 fig. 1930.—Crystals of hemoglobin do not vary in accordance with the fresh, coagulated or dried state; but from study of hemoglobin from 45 embryos and fetuses and an unspecified number of subjects of various postnatal ages, Nicoletti finds that the hemoglobin of embryos, fetuses, and new-born and very young infants is distinguished by acicular shape or that of very slender, sometimes pointed, rectilinear tablets, from the hemoglobin of later life, in which the crystals are comparatively broad rectangles.

9518. NOTA, G. Nuove ricerche sulla reazione del bicromato potassico (di Taccone) nel liquido cefalorachideo. [Further studies on Taccone's K bichromate reaction in the cerebro-spinal fluid.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 33-35. 1930.—Taccone's reaction is, for its sensitivity and constancy, best adapted to determine the normality or abnormality of cerebro-spinal fluid.—*M. Comel.*

9519. OKEY, RUTH, JEAN M. STEWART, and MARY L. GREENWOOD. Studies of the metabolism of women. 4. The calcium and inorganic phosphorus in the blood of normal women at the various stages of the monthly cycle. *Jour. Biol. Chem.* 87(1): 91-102. 1930.—Figures for before breakfast values for serum Ca and P determined 3 times weekly in 12 women for periods averaging 5 weeks each are reported, together with similar figures for 6 men. A similar series of observations on plasma Ca in 14 women is also discussed. While the changes in concentration of serum Ca at any phase of the monthly cycle are not outstanding, there is some tendency to low values for Ca a few days previous to the onset of menstruation and to higher values from the 8th to the 15th days following the onset of menstrual bleeding. Day to day variations of serum Ca are smaller for men than for women. Variations in serum P are less consistent but our data at least suggest that the period of greatest proliferation of uterine mucosa preceding menstruation may be associated with a using up of inorganic P from the blood and that some extra inorganic P may be thrown into the blood stream following menstrual destruction of endometrial tissue.—*Authors' summary.*

9520. ORÍAS, O. La cantidad de hemoglobina sanguínea en hombres y mujeres adultos sanos en la Republica Argentina. [Blood hemoglobin content of normal men and women in Argentina.] *Rev. Soc. Argentina Biol.* 6(7/8): 395-409. 1930.—Newcomer's method previously controlled by Van Slyke's was used. Samples taken from finger and elbow veins give the same figure within 1% variation. Average figures were 13.38 and 14.06 gm. per 100 cc. blood for women in two different localities and between 14.32 and 15.69 for different groups of men (soldiers and students) in 4 different localities. Individual variations were great.—*J. T. Lewis.*

9522. ORÍAS, O. Factores que influencian la cantidad de hemoglobina de la sangre. [Factors modifying blood hemoglobin.] *Rev. Soc. Argentina Biol.* 6(7/8): 410-425. 1930.—Hb content is higher in ♂♂; in the newly born this sexual difference is not present. During pregnancy Hb diminishes; the decrease is accentuated by parturition, a rapid increase following so that the Hb content is higher than before pregnancy. In the new-born high figures are found, a rapid decrease occurring during the first days of life; after the 18th year, age exerts no influence. Up to 700 m. above sea level no significant differences are found; at 1200 m. the figures are significantly above normal. Military maneuvers entailing great muscular exertion produce a decrease; a rapid recovery follows. University students, army officers and non-commissioned officers have higher figures than conscripts. Weight, height and nationality of parents have no influence of the Hb content.—*J. T. Lewis.*

9523. PHILIPSBORN, E. von. Untersuchungen über den Erregungszustand der Leukozyten gesunder und kranker Menschen. *Deutsches Arch. Klin. Med.* 168 (3/4): 239-243. 1930.—Philipsborn briefly describes the technique he has used in 7 yrs.' study of neutrophile leukocytes and outlines his main conclusions. In healthy human beings the neutrophile leukocytes retain a certain normal form and structure and middling response to stimulus. In disease the leukocytes may become either less or more active, phagocytosis and agglutination (which run parallel with each other) being either increased or decreased. In the latter case the leukocytes are either paralyzed or exhausted. Excitability, paralysis and exhaustion of the leukocytes, in Philipsborn's opinion, corresponds to as many distinct forms of reaction of the organism: as excitability at the outset of a severe acute infection, paralysis in a septic infection, exhaustion during convalescence.

9524. PHILIPSBORN, E. von. Untersuchungen über die Klebrigkeit der lebenden Leukocyten gesunder und kranker Menschen. *Folia Haematologica* 41(1/2): 31-54. 10 fig. 1930.—A medium degree of adhesiveness of the vital leucocytes was present in healthy individuals. Before and after menstruation there was a decrease while during this period the adhesiveness was increased. In mild infections a high normal was noted while at the beginning of severe infections a low normal was found. In chronic nephritis the adhesiveness exceeded the normal limits.—*E. v. Philipsborn (transl. by G. D. Smith).*

9525. PHILIPSBORN, E. von. Die amöboide Beweglichkeit der Leukozyten. [Ameboid motility of the leucocytes.] *Folia Haematologica* 43(1/2): 142-191. 9 fig. 1930.—The author discusses the literature, describes his method of study, and illustrates the morphology and structure of the active leucocytes. He also reveals the influence of physical and chemical stimuli upon their motility. The deductions are: there is a normal ameboid motion of the leucocytes in the body and in vitro in health. The study of a single function of a cell is not enough; the structure, consistency, degree of sensitivity, rapidity of the ameboid action, resistance in cover glass preparations, and phagocytosis must be determined.—*E. von Philipsborn (transl. by G. D. Smith).*

9526. PLONSKIER, M. Zur Methodik der Blutausstriche und Differentialzählung der Leukocyten. *Zeitschr. Klin. Med.* 113(5/6): 753-758. 1930.—Discussion of the Goldmann and Schilling methods.

9527. PONDER, ERIC. The effect of variations in the cell content of haemolytic systems. *Proc. Roy. Soc. [London] B* 106(747): 532-542. 1 fig. 1930.—On the hypothesis that simple hemolysins act only at the surfaces of the cells of hemolytic systems, equations which describe the effect of varying the number of such cells are developed in this paper. The resulting expres-

sions are in general similar to those published in 1927; in this investigation, however, their validity is tested over a much greater experimental range and for hemolytic systems containing saponin, sodium taurocholate, and digitonin together with the cells of the ox, the sheep, the rabbit, and man.—*E. Ponder.*

9528. PONDER, ERIC. The form of the frequency distribution of red cell resistances to saponin. *Proc. Roy. Soc.* [*London*] *B* 106(747): 543-559. 1930.—A simple method is described whereby the resistances of red cells to a lysin such as saponin can be found without involved calculation. The distributions of red cell resistance obtained present a variety of forms, some being moderately skew, and some being almost J-shaped. Considerable variation is met with if the cells of different animals are used, and even with the cells of the same animal at different times. Most distributions, however, are characterised by a long "tail" in the direction of the upper extreme, to the presence of which much of the skewness of the integrated form of the curve is due. The results obtained by this method are shown to be in agreement with those given by other methods, and it is shown that similar results can be obtained from the data of several other observers.—*E. Ponder.*

9529. PONDER, ERIC, and GEORGE SASLOW. The measurement of the diameter of erythrocytes. IV. The effect of anticoagulants and of variations in drying and fixing. *Quart. Jour. Exp. Physiol.* 19(4): 319-328. 2 fig. 1929.—It is shown that the mean diameter of cells in plasma is the same whether hirudin, heparin, or oxalate is used as an anticoagulant. The mean diameter in serum is the same as in plasma. The statement of several observers that human red cells do not shrink on drying is shown to rest upon a technical error. The mean diameter of dried cells is not altered by variations in the manner of drying, nor by the use of fixatives after drying is complete.—*E. Ponder.*

9530. PONDER, ERIC. The measurement of the diameter of erythrocytes V. The relation of the diameter to the thickness. *Quart. Jour. Exp. Physiol.* 20(1): 29-39. 2 fig. 1930.—A photographic method is described for measuring the thickness of erythrocytes suspended in serum or plasma. Results of measurements of diameter, greatest thickness, least thickness, etc., are given for the red cells of man, rabbit, and sheep. The figures obtained indicate that the ratio of length to greatest thickness, and of length to least thickness are quite different in the three species of animals examined, and also that, in any one animal, there is quite a low correlation (about 0.4) between the length of the cell and its greatest or least thickness. The thickness of a cell in a rouleau is considerably less than that of the cell floating freely in plasma (1.7 μ instead of 2.4 μ), while the diameter is slightly greater (about 8.8 μ instead of 8.6 μ).—*E. Ponder.*

9531. PONDER, ERIC, and GEORGE SASLOW. The measurement of the diameter of erythrocytes VI. The diurnal variation and the effect of exercise. *Quart. Jour. Exp. Physiol.* 20(1): 41-50. 1930.—No evidence has been obtained of a "diurnal variation" or of an increase in diameter after exercise, in the case of dried human red cells. All differences which have been observed are such as might arise by chance from differences in drying, etc., and are not reproducible under controlled conditions.—*E. Ponder.*

9532. POVORINSKIJ, J. A., und W. N. FINNE. Der Wechsel des Zuckergehalts des Blutes unter dem Einfluss einer hypnotisch suggerierten Vorstellung. *Zeitschr. Ges. Neurol. u. Psychiatr.* 129(1/2): 135-146. 1930.—Experiments made with 12 sonomulists gave positive results in all cases except those which were discontinued for technical reasons or at the patient's request. In each the normal blood sugar following fasting was first determined. After feeding about 400 grams (3 gm. per kgm. body weight) of sugar or honey the blood sugar was determined at 15 min. intervals for 3 hrs. Several days later, after another period of fasting, the patient was brought into a deep hypnotic state and the suggestion made that he was receiving an equal amount of sugar or honey of similar taste. In some cases the suggestion was made to patients in a post hypnotic condition. The following conclusions were made: 1) Two possibilities are established: a) the suggestion of administering honey or sugar causes a rise in the blood sugar; b) the usual effect of sugar administration can be diminished by the suggestion of the absence of sugar actually administered. 2) Apart from any suggestions, a deep hypnotic state in itself tends to diminish blood sugar. 3) An experiment with a patient of high suggestibility shows that a change in blood sugar may be brought about while awake. 4) Results show that a participation of the sympathetic nervous system in this suggestion adds to their explanation. Even in cases of great suggestibility an increase in blood sugar is always accompanied by extreme excitation of the sympathetic nervous system through stimulations having their origin in the brain cortex. 5) In one case the suggestion of sugar administration brought on a faster increase in blood sugar than actual sugar administration. 6) Results warrant further investigation under conditions where all effects influencing the central nervous system, as shown by Cannon, are eliminated.—*J. M. Johlin.*

9533. PRAKASH, SATYA, and N. R. DHAR. Reversal of charge of serum and its coagulation and gelatinisation with acids. *Jour. Indian Chem. Soc.* 7(8): 723-732. 1930.—It has been observed that there are 2 distinct points of coagulation, when serum is coagulated by acids or salts of polyvalent cations. The first point is obtained by using dilute acids, and the second by concentrated acids. The coagulating power of concentrated acids for the second point is in the following order:—Trichloracetic > nitric > sulphuric > hydrochloric > hypophosphorous > monochloracetic > acetic > formic. When serum is coagulated by concentrated acids, it behaves abnormally toward dilution, as it has a high tendency to absorb similarly charged ions from the acids. It has been shown that in the presence of small quantities of acids, serum is sensitised, and is easily coagulated by ammonium sulphate. This is partly due to the fact that the hydrolysis of serum is checked by acids and partly because the charge on serum is reversed by the adsorption of H-ions. It has been shown that charge reversal of serum takes place near pH 5.3-5.0, when serum is coagulated by acids. It is the globulin portion of serum exclusively which is precipitated by dilute acids near the first coagulation point, while at the second coagulation point, serum albumin is also thrown down. When serum is coagulated by dilute acids, the precipitated mass is flocculent, while with concentrated acids, a gelatinous mass is obtained. Under suitable concentrations of acids, jellies of serum can also be obtained. Very stable translucent jellies of serum undergoing no marked syneresis are obtained when serum is coagulated by concentrated solutions of acetic, monochloracetic, formic and hypophosphorous acids and solid oxalic acid. Hydrochloric, nitric, sulphuric and trichloracetic acids yield opaque stable jellies of serum. The concentrations of acids necessary for the preparation of jellies are in the following order:—Trichloracetic < nitric < sulphuric < hydrochloric < monochloracetic < hypophosphorous < acetic < formic. As the concentration of serum increases, the amount of acid required to gelatinise serum in a definite time decreases.—*Authors' summary.*

9534. PRÜFER, J. Histohämorenale Verteilungsstudien. 9. Harnstoffverteilung beim Menschen und beim Hunde. *Zeitschr. Klin. Med.* 114(3): 293-308. 1930.—After intravenous injection of urea, examination of the blood and organs (in 4 men, 7 dogs) showed a gradual elimination of the urea from the blood over a period of 24 hrs., which was the same for men as for dogs. An unusually great affinity for urea was manifested by the musculature which may retain over ½ of the injected quantity. The skin is next in order as an important depot for urea, while the liver is the third. The concentrating function of the kidney closely parallels the urea

concentration in the urine. It is greatest at the time when the organ concentration is highest, and after 2 hrs. declines, though the urea elimination continues to rise. The above series of organ concentration and blood urea values indicate, without doubt, that the theory of simple diffusion of urea into the tissues from the blood, as Marshal & Davis believe they have established, cannot be entertained. The release from the tissues takes place slowly, from liver and muscle only after 12 hrs., from the skin after 24 hrs. On this basis can be explained the sustained high blood concentration. The release, however, occurs without increase in the blood content. No interval excretion in the bile could be demonstrated. In the first 30 min. the urea could not be detected in the tissues. It cannot be decided, whether the fixation of the urea is to be explained by unaccounted tissues, which cannot be weighed (musculature) or by some particular unknown mechanism. Comparison with similarly tested substances shows full agreement with results obtained with phenolphthalein; that there exists no proportion between blood and tissue concentration. The slow elimination of urea from the body is similar to the retention of indol as shown by Olivet.—*Author's summary (transl. by M. Lederer).*

9535. PUPILLI, G. Sul comportamento di alcune sostanze coloranti di fronte ai globuli rossi di diversi animali. [Behavior of certain dyes toward erythrocytes.] *Ateneo Parmense* 2(6): 573-583. 1930.—Three basic (methylene green, methyl green, and rosaniline) and 1 acid (tropeolin) dye were used. Arranged in descending order according to the capacity of a given mass of the respective erythrocytes to absorb basic coloring matter, the experimental animals used are: rabbit, guinea pig, dog, white mouse, horse, hog, cat, ox, goat and ram. The descending order for ability to take up tropeolin is: hog, ram, goat, ox, cat, rabbit, white mouse, dog, guinea pig and horse, which is the same as the descending order for lipid content.

9536. RADICE, L. Il comportamento della riserva alcalina e del pH del sangue nelle emorragie e nelle trasfusioni. [Behavior of alkaline reserve and blood pH in hemorrhage and in transfusions.] *Arch. ed Atti Soc. Ital. Chir. [Roma]* 34: 473-474. 1927[1928].—Experiments on the dog. Method of Van Slyke and Cullen used.

9537. RAY, G. B., and G. H. PAFF. A spectrophotometric study of muscle hemoglobin. *Amer. Jour. Physiol.* 94(3): 521-528. 5 fig. 1930.—Muscle pigment was studied in situ, by a method based on determinations of the refraction curves from uninjured muscle immediately after removal from the animal (dog and rat), which had been perfused until the perfusing fluid (0.9% NaCl) was practically colorless. The results show that muscle hemoglobin is distinct from blood hemoglobin, in that the absorption curves of reduced and oxyhemoglobin both show a characteristic shift (not due to fermentation, since occurring in situ in fresh muscle) toward the red end of the spectrum. Kundt's rule does not hold in this case, since if it did the comparatively high concentration of optically active substances in the muscle should cause a more marked shifting of the spectrum toward the red end, as compared with the effect of the dilute extract, which is not true, since the α and β bands occur at the same wave length in both extract and in situ. The shift in the position of the α band resulting from carboxyhemoglobin formation (3 mμ instead of 6 mμ) is not the shift one would predict if the pigments were identical with blood hemoglobin. Without doubt, the authors say, the pigment fraction of both hemoglobins is the same, but the protein fraction is different.

9538. RIEBELING, CARL. Über das Vorkommen von präformiertem Ammoniak im Liquor cerebrospinalis. *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 475-477. 1930.—In 17 clinical cases, including epilepsy, paralysis, microcephalia, congenital syphilis, skull trauma and cerebral cyst, preformed NH_3 varied from 0 to 0.5 mgm. %, the findings being especially high in 2 cases of epilepsy with frequent attacks. In 4 cases in which the fluid of different spaces was drawn different NH_3 content was found in the fluids of the different regions.

9539. RODERICK, LEE M. A problem in the coagulation of the blood. "Sweet clover disease of cattle." *Amer. Jour. Physiol.* 96(2): 413-425. 1931.—The feeding of damaged sweet clover hay and silage to cattle results in fatal hemorrhage preceded by a characteristic delay in the coagulation of the blood. This paper deals with a consideration of the alterations in the blood which are concerned in the coagulation process. Analytical work on the blood of a series of animals fed on damaged sweet clover indicates that there may be some depression in the blood fibrinogen during the feeding trials, yet the values obtained were within the probable error of a series of determinations on normal cattle. This work shows that the delayed coagulability of the blood in sweet clover disease involves a reduction in the prothrombin and that the diminution parallels the delay in the coagulation time. No experimental evidence has been found to indicate that the delay in coagulation is due to increase of an inhibitory principle of the nature of heparin or antithrombin. Estimation of the blood Ca together with other studies show that this condition is neither caused by nor does it involve a deficiency in the metabolism of Ca. The progressive decrease in the quantity of available prothrombin in the blood of animals fed on the damaged sweet clover seems to be quite independent of the number of platelets present which remains at about the normal level until hemorrhage occurs. The treatment of many animals which have developed serious hemorrhage by the intravenous injection of freshly defibrinated normal bovine blood has resulted in a large proportion of recoveries.—*Author's summary.*

9540. RONA, P., und W. FABISCH. Untersuchungen über den Blutzucker. II. *Biochem. Zeitschr.* 227(1/3): 205-220. 1 fig. 1930.—The concordance in results previously reported for sugar in normal human blood with the Hagedorn-Jensen and colorimetric methods was again secured. The same agreement in results between the above methods was obtained in studies on experimental adrenaline hyperglycemia in rabbits. In case of human diabetics the difference between the values obtained by the two methods was frequently greater than could be explained by any experimental error. The difference did not definitely indicate a predominance in the direction of one method over the other. The blood sugar of rabbits in hypoglycemic shock indicated a predominance in favor of the Hagedorn-Jensen method. Experimental errors can be excluded.—*Authors' summary (transl. by E. G. Schmidt).*

9541. ROSENBLUM, D. E., und K. MENDJUK. Veränderungen in der Reticulocytenzahl im Menschenblute bei bis zur Ermüdung geführter Muskeltätigkeit. *Arbeitsphysiologie* 2(5): 395-408. 1930.—The reticulocytes in 200 fields were counted in blood taken at intervals from subjects at rest before immediately following and during the recovery periods after various forms of muscular activity. An increase in the number was nearly always found, depending upon the strenuousness of the work. The greatest increase was from 182 before to 482 after a 15 km. ski run with a load of 10 kgm. The next in order was before and after boxing with untrained subjects (6 min.) with a change from 197 at rest to 455 after boxing, and 50 mins. later 215. Walkers and load carriers in the sanitary division showed but slight changes. In general the return to the normal level was complete in 3 hrs.—*T. M. Carpenter.*

9542. SAMSON, KURT. Der normale Liquor cerebrospinalis im ersten Lebenstrimenon. *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 494-503. 1930.—The spinal fluid in the newborn shows unusual features in the cell-count and the values for protein and sugar. The mastic reaction is negative. A positive mastic reaction is indicative of intracranial injury at birth (if other causes can be ruled out). Protein content is higher than normal, approaching the normal throughout the first 3 mos. In premature infants the approach to normal is slower. The

determination of the protein ratio is more objective and more useful than the simple protein reactions, the interpretation of which is rather subjective. The gold sol and Takata-Ara reactions are not suitable.—*B. S. Walker.*

9543. **SATO, KAORU. Zur Frage der Funktion des reticulo-endothelialen Systems als Abfangsorgan der im Blute zirkulierenden Fette.** *Tohoku Jour. Exp. Med.* 14(4): 341-358. 1929.—The fatty acids and lecithin in the blood of rabbits remain unchanged after both single and repeated injections of "elektrocollargol" and India ink. The cholesterol, however, decreased in the blood after "elektrocollargol" but remained unchanged after India ink. The level of lipids in the blood after intravenous injection of a fat emulsion was not influenced by various degrees of so-called "blocking" of the reticulo-endothelial system or by splenectomy. The author concludes that the reticulo-endothelial system does not participate in the removal of lipids from the blood.—*G. L. Muller.*

9544. **SCAGLIONI, C. Sulla differenziazione fra trasudati ed essudati. Nota di tecnica. [Differentiation of transudates and exudates.]** *Ateneo Parmense* 2(5): 455-456. 1930.—A modification of D'Allocco's technique, substituting denatured or methyl alcohol for ethyl alcohol.

9545. **SCHERINGER, W. Beitrag zur Kenntnis des Blutjodspiegels beim Weibe unter physiologischen Bedingungen. [Iodine level of the blood in women under physiological conditions.]** *Arch. Gynäkol.* 143(2): 319-337. 1930.—The I level of the blood on an I-poor diet was found to be stable at about 25% decrease after 2 days (5 ♂, and 5 ♀ in the intermenstrual period). During menstruation the I level in the blood is about 25% higher than during the intermenstrual period (15 cycles were followed in 8 ♀♀).

9546. **SCHMITZ, ADOLF. Zur Struktur des Hämocyanins.** *Naturwissenschaften* 18(37): 798. 1930.—Note.

9547. **SCHÖNFELD, HERBERT. Über den Einfluss der Ernährung auf die Blutmilchsäure und den Blutzucker des Säuglings.** *Jahrb. Kinderheilk.* 128(5/6): 351-393. 1930.—Observations on a number of series of infants indicate that in repose the blood lactic acid is about the same on natural and artificial food. Very young infants on human milk show perhaps a somewhat higher blood lactic acid. After feeding with lactic acid milk the blood lactic acid in repose shows (generally but not invariably) a tendency to rise. With HCl milk feeding there is a tendency to slight fall of blood lactic acid. Under continued feeding with lactic acid milk there is a distinct tendency for the fasting blood-sugar to fall while the blood lactic acid rises. After feeding with HCl milk the fasting blood sugar tends to rise. There is no clearly recognizable connection between blood lactic acid and hunger hypoglycemia. The hunger hypoglycemia occurring after 12-hr. interval between feedings falls to a lower point if the previous feedings have been with acidified milk (lactic acid and HCl) than if with non-acidified milk. Addition of large amounts of sugar increases the rise in blood lactic acid observed on feeding with lactic acid milk.

9548. **SCHRETTER, G., und H. NEVINNY. Der Blutzucker in den ersten Lebenstagen.** *Zeitschr. Geburtsh. u. Gynäkol.* 98(2): 258-276. 1930.—The blood sugar after fasting was determined during the first week in the case of 38 newly born children. 196 determinations show, in general, remarkably low results. 48% were less than 0.070 gm. % and were distributed among 36 of the 38 cases investigated. 15 determinations distributed among 14 cases showed 0.045 gm. % or less, falling into that zone where pronounced hypoglycemia would be indicated in a normal individual. Few cases of exceptionally high values were found. The variation from day to day in individual cases was generally considerable. The blood sugar after fasting was exceptionally low at the beginning, but after a week generally reached the average, and showed the average variation, of a normal individual. Various explanations for these findings are taken into account. Special significance is attributed to the behavior of the endocrine system of the newly born. The first nourishment taken often appears to have a definite effect on the change which occurs. An increase in the fasting blood sugar appears to precede an increase in weight.—*Authors' summary (transl. by J. M. Johlin).*

9549. **SCHWARZ, KARL, und EGON MEZLER-ANDELBERG. Untersuchungen über die Beziehung des Blutzuckergehaltes zur Milchproduktion bei Kuhen. [Blood sugar content and milk production in cows.]** *Biochem. Zeitschr.* 194(4/6): 362-375. 1928.—Even with good feeding the blood sugar in 200 lactating cows was lower than in non-lactating cows. The average blood sugar content for the latter was 82 mgm. per 100 cc., measured by the Hagedorn and Jensen method. In 5% of the lactating cows blood sugar values were 40-50 mgm.; 20%, 50-60 mgm.; 45%, 60-70 mgm.; 20%, 70-80 mgm.; 10%, over 80 mgm. No relation was found between blood sugar and amount of milk produced, but the blood sugar increased as lactation advanced. No connection was found between hypoglycemia and coma after calving and the inception of lactation.—*S. A. Asdell.*

9550. **SIMMERS, MAURICE H. An investigation of the physical structure of fibrin by x-ray crystal methods.** *Amer. Jour. Physiol.* 94(3): 497-500. 2 fig. 1930.—Experiments were undertaken to answer the question: Does the fibrin of a fibrin gel exist in a crystalline condition? The x-ray diffraction pattern method was used to answer this question because it furnishes the most rigid test for crystallinity. The fibrin of a normal blood clot gives no diffraction pattern. "Fibrin" formed by adding $CaCl_2$ to oxalated plasma gives a diffraction pattern. This pattern can be caused by adding $CaCl_2$ and K oxalate to dry powdered fibrin from a normal clot which itself gives no diffraction pattern. Fibrin prepared by adding $CaCl_2$ to citrated plasma gives no diffraction pattern. The experiments clearly show that the fibrin, whether it be taken from a normal blood clot or from a clot formed by adding $CaCl_2$ to citrated or oxalated plasma, has not itself a definite space lattice, although under certain conditions crystalline material may be associated with it. Fibrin, therefore, is not a crystalline substance.—*Author's summary and conclusions.*

9551. **SPICER, A. The vermiform appendix of the ram.** *Vet. Rec.* 10(12): 255. 1930.—Twenty ram lambs were castrated. Distinct evidence that the filiform appendix had begun to atrophy was found 2 mos. afterward.

9552. **SRIBHISHAJ, KHUN, WILLIAM B. HAWKINS, and GEORGE H. WHIPPLE. I. Bile pigment and hemoglobin interrelation in normal dogs.** *Amer. Jour. Physiol.* 96(2): 449-462. 1931.—The renal type of bile fistula permits bile pigment observation during long periods with the dog in perfect condition. In the authors' hands this type of fistula [4 experiments] gives bile pigment secretion figures which must approximate physiological normalcy. The bile pigment output per 24 hrs. falls slightly below the figures recorded in the literature (av. 4-6 mgm. per kgm.). The individual dog has its own total bile pigment output level which under uniform conditions shows a remarkably constant average value from month to month. This total output is not changed following gain or loss of weight but obviously the mgm. per kgm. must change. Dog Hb solutions given intravenously under carefully controlled conditions show an increase in bile pigment elimination corresponding to 90-95% of the expected increase if there were a quantitative transformation of Hb to bile pigment. Theoretically 1 gm. Hb is equivalent to 40 mgm. bilirubin. The closed sterile bile fistula [3 experiments] is carried as control to the renal-bile fistula. This closed fistula shows a bile pigment increase due to Hb injection which is less than the renal fistula and averages 75-80% of the theoretical return.—*Authors' summary.*

9553. **SSYSGANOW, A. N. Zur Untersuchungstechnik des Lymphsystems. [The technique of the study of the lymphatic system.]** *Anat. Anzeiger* 70(13/17): 288-293. 2 fig. 1930.

9554. **STEWART, G. N. The conductivity of erythro-**

cytes compared with that of serum. *Amer. Jour. Physiol.* 90(1): 194-209. 1 fig. 1929.—The author describes method for determining k_1/k in defibrinated rabbit's blood (k_1=specific conductivity of serum; k sp. cond. of sediment). Fig. 1 shows the relationship between k_1/k and p; cc. of serum in 100 cc. blood p is calculated from the formulae: $p=k/k_1$ [174-k(5°)]; $k_1/k+\frac{1}{2}=174/p-3/100\text{-}p$; $k_1/k+\frac{1}{2}=175/p-p/400$. The last formula can be written $k_1/k+\frac{1}{2}=(7\text{-}p^2)/4p$, where p is the proportion of 1 cc. of the blood which consists of serum. The graph shows values down to $p=11.5$; $k_1/k=127.3$, the highest value measured. Results with the electrical and hematocrit methods are compared with the colorimetric method and Hoppe-Seyler's. Specific conductivity of well centrifuged sediments was found to be considerably less than 0.01 that of blood. (1/103.6, 1/123, 1/127.3, 1/111.) In two it was 1/80, 1/88.6. There is no reason to believe that lower values than those measured can be obtained for sediments. In the best separated sediments some serum is present so that k for erythrocytes is less than that measured in any sediment. 1.3% serum in sediment would account for its k. This amount of serum would be more than furnished by a film of serum 0.01 μ around the cells; would be 1.7% serum. At the other end of the curve from $k_1/k=1$, 100% serum as k_1/k increases curve approaches the abscissa asymptotically. When hemolysis occurs k_1/k increases due to increased conductivity of sediment with practically no change in serum content. Viscosity of sediment also diminishes. Addition of trace of saponin to sediment increased conductivity 20 X and diminished viscosity.—*M. R. Freeland.*

9555. **STUBER, BERNHARD. Die Blutgerinnung als kolloidchemisches Problem.** *Kolloid Zeitschr.* 51(1): 144-152. 3 fig. 1930.—Previous papers on this subject by the author and his associates are summarized. The thrombin-fibrinogen coagulation is an artificial system and thrombin, as prepared, is an artificial substance. Thrombokinase is no activator but has a physico-chemical mode of action modified by pH and surface activity. Natural blood-coagulation is initiated by glycolysis and associated acid formation. Flocking is favored by the resulting neutralization of charges on plasma proteins and by surface-active substances such as thrombokinase. Agents which check coagulation check glycolysis and usually stabilize the colloid-chemical state of blood proteins. Calcium has only a physico-chemical rôle since it acts in harmony with its position in the Hofmeister ion series. The author believes the enzyme theory of coagulation must be abandoned.—*B. Stuber* (*transl. by D. B. Dill*).

9556. **SUHRMANN, RUD. Quantitative Untersuchungen im Absorptionsspektrum des Blutes und seiner Bestandteile.** *Physik. Ztschr.* 30: 959-965. 8 fig. 1929.—A résumé is presented of the author's work with collaborators, previously published in *Biochem. Ztschr.* 184: 216. 1927; *Strahlentherapie* 27: 572. 1928; *ibid.* 30: 145. 1928; *ibid.* 32: 389. 1929, on the ultraviolet absorption spectra of plasma and of hemolyzed blood corpuscles from human beings of different sexes, ages and conditions of health and from healthy, rachitic and xerophthalmic rats. The absorption spectra of the human bloods were identical regardless of the nature of the source but those of the rat bloods varied in a characteristic manner with the condition of the animal. These variations are attributed to a change in the constitution of hemoglobin in the case of rickets and to a change in the make-up of the plasma in the case of xerophthalmia.—*C. V. Shapiro.*

9557. **TAKEDA, MASAO. The influence of the intravenous infusion of Ringer-Locke's solution on the coagulability of the blood and the cause of the change in the blood coagulability.** *Folia Pharmacol. Japon.* 9(2): In Japanese, 65-74; English summary, 7. 1929.—Ringer-Locke's solution was infused into veins of rabbits at body temp., and at the rate of 10 cc. per kgm. per min. in various quantities, viz. 50, 100 and 200 cc. per kgm., and the clotting time of the blood as well as the quantity of fibrinogen, thrombin, thrombokinase and Ca in it was determined. Blood coagulability was augmented by the infusion of Ringer-Locke's solution. This augmentation was greatest immediately or 15 min. after the infusion. The greater the quantity infused, the longer the augmentation of the blood coagulability lasted, and the more marked it became. The fibrinogen content in the blood showed no evident changes whereas the thrombin and the thrombokinase content were, in general, augmented with the increase in the blood coagulability. The blood Ca was scarcely increased by the infusion.—*From author's abstract.*

9558. **TORYU, YOSHIYUKI. Changes in the blood picture, and in the oxygen capacity of the blood haemoglobin of the carrier-pigeon following splenectomy.** *Sci. Rept. Tôhoku Imp. Univ. 4th. Ser. Biol.* 5(2): 391-402. 1930.—Removal of the whole spleen from the adult carrier-pigeon usually produces at once a decrease in the number of erythrocytes. In about a week they begin to increase and in about 7 weeks are usually more numerous than before the operation. The erythrocyte decrease is associated with a considerable polychromatophile increase during the first 2 weeks, suggesting increased hemopoiesis. The hemoglobin content in every instance after splenectomy shows lower values than would correspond with the total erythrocyte counts. Removal of the whole spleen in the adult pigeon produces an increase in the number of leucocytes, suggesting a postoperative leucocytosis. They return to normal after about 2 weeks. There are noteworthy changes concerning the differential leucocyte count: The number of lymphocytes decreases progressively after splenectomy, while the pseudoeosinophiles show a reverse change. Splenectomy in the adult carrier-pigeon causes the appearance of a non-oxygen-carrying hemoglobin varying in amount from 1 to 25% of the total blood hemoglobin. This inactive hemoglobin seems to be associated with the appearance of polychromatophile cells.—*Author's summary.*

9559. **VERZÁR, F., und A. von KÚTHY. Die physiologische Bedeutung der Hydrotropie.** *Biochem. Zeitschr.* 225(4/6): 267-277. 1930.—The hydrotropic action of bile acids includes the power to make water solutions of fatty acids, quinoline, camphor, diphenylamine, cholesterol, etc. Not only is the solubility of the substances in water raised but they are found in greater dispersion and become more diffusible. Hydrotropic action is not of a general nature; fatty acids can not be brought into solution by all hydrotropic salts. Diffusion experiments show that some organs contain hydrotropic substances other than bile acids. This indicates an explanation of the way in which substances insoluble in water can circulate in the organism. The hydrotropic power of intestinal juices plays an especially important rôle in the absorption of these insoluble substances.—*Authors' summary* (*transl. by C. M. Goss*).

9560. **VILLA, LUIGI. Sull'origine dell'emoglobina. [On the origin of hemoglobin.]** *Arch. Fisiol.* 28(2): 233-236. 1930.—At an early phase of maturation of hemoglobin cells there exists a primitive endonuclear affinity for acids. The author derives therefrom the hypothesis of an origin of hemoglobin by way of an endonuclear synthesis.—*M. Comel.*

9561. **VOGT, E. Studien zur Biologie des Liquor cerebrospinalis. III. Untersuchungen über den Gehalt des Liquor cerebrospinalis an Chlornatrium bei gesunden und kranken Frauen. IV. Untersuchungen über die Wasserstoffionenkonzentration des Liquor cerebrospinalis bei der gesunden und kranken Frau.** *Arch. Gynäkol.* 143(2): 430-433; 434-437. 1930.—III. To determine a possible ovarian influence on the NaCl content of the cerebrospinal fluid, examinations were made of material obtained during spinal anesthesia from 105 women with the most varied obstetrical and gynecological conditions. The NaCl content in healthy women showed great variations (0.725-0.800%). Normal and pathological pregnancy and the menstrual cycle did not influence the NaCl content. It showed no characteristic changes in the most important diseases of the reproductive organs.—

IV. Electrochemical examinations of the cerebrospinal fluid with the quinhydrone electrode showed that the pH in the healthy woman is between 7.4-7.6. In investigations on 244 women [pregnant, parturient, puerperal and women with various diseases of the reproductive organs, especially tumors of the uterus and the ovaries], the pH was not changed.

9562. **WALTER, FR. K. Die "Blut-Hirn-Schranke."** *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 580-586. 1930.—A theoretical discussion in which Walter supports the views of Mendel that altered cerebral permeability is not the result of a disturbed barrier function, but merely of altered adsorptive relations of the cell elements themselves.

9563. **WARBURG, OTTO, und ERWIN NEGELEIN. Über die photochemische Dissoziation von Eisencarbonylverbindungen (Kohlenoxyd-Hämochromogen, Kohlenoxyd-Ferrocystein) und das photochemische Äquivalentgesetz.** *Biochem. Zeitschr.* 200(1/6): 414-458. 9 fig. 1928.—A study of the relationship between light absorption and photochemical dissociation, for carbonmonoxide-pyridine-hemochromogen and for carbonmonoxide-ferrocysteine. Six wave lengths of light were employed—366 (ultraviolet), 405 (violet), 436 (blue), 492 (blue green), 546 (green), 578 (yellow) mμ. It was found that the photochemical dissociation per calorie absorbed increases with the wave length. In the case of each compound studied an absorbed light quantum was found to split 2 Fe-carbonyl groups. From the mathematical relationship between photochemical action and wave length it is possible to calculate the absorption coefficient.—*J. M. Johlin.*

9564. **WARBURG, OTTO, und ERWIN NEGELEIN. Grünes Haemin aus Blut-Haemin. [Green hemin from blood-hemin.]** *Ber. Deutsch. Chem. Ges.* 63(7): 1816-1818. 1930.

9565. **YANKOVSKY, W. D. Sur les propriétés physiologiques de l'héparine Howell.** *Jour. Physiol. Path. Gén.* 28(3): 579-586. 1930.—Howell's heparin is a good and harmless preservative of blood in vitro, and is recommended for perfusion experiments. Its action is destroyed by tripaflavine, rivanol and quinidine. The minimal stabilising dose for the rabbit, in vivo, is 0.1 of a unit per kgm. body-weight. The blood regains its coagulability in 3-4 hrs., but the duration of action may be increased by vascular disconnection of kidney, pancreas, spleen and alimentary tract.—*W. R. Fearon.*

9566. **YEAGER, J. FRANKLIN. Studies on the acceleration and inhibition of hemolysis. II. The effect of sugar solutions on the resistance of hypotonic hemolytic systems.** *Amer. Jour. Physiol.* 96(2): 484-493. 1931.—*M*/3.6 solutions of sucrose, levulose, rhamnose, maltose, lactose, and, in general, dextrose, produce an increase in the resistance of the hemolytic system, when added to the system as component (a). *M*/3.6 solutions of galactose and some samples of dextrose, produce a decrease in the resistance of the hemolytic system, when added as component (a). Sucrose, levulose, rhamnose, dextrose, and galactose produce a relative decrease in the resistance of the hemolytic system, when added as a portion of the red cell suspension medium, as compared to the increase or decrease of resistance, produced when solutions of these sugars are added as component (a). Maltose and lactose produce a relative increase in the resistance of the hemolytic system, when added as a portion of the suspension medium, as compared to the increase of resistance produced when they are added as component (a). Within limits, the greater the quantity of sugar added to the hemolytic system the greater the immediate or the prolonged effect that is produced. A number of experiments are described which show that changes other than the entrance of water into the red cell occur in the process of hypotonic hemolysis.—*Author's summary.*

9567. **ZEIDBERG, LOUIS D. A quantitative determination of the changes in hemoglobin concentration, volume of red cells, and basophilia in the blood of rabbit fetuses at various stages during the last third of pregnancy.** *Amer. Jour. Physiol.* 90(1): 172-183. 2 fig. 1929.—The general plan in the present investigation was to determine the hemoglobin content of the blood by Kennedy's method, using a Du Boscq colorimeter. This colorimetric estimate was checked by histological examination of the red cells in smears prepared by Jenner's modified Romanowsky stain, and the proportion of basophilic red cells was counted. Further verification of the hemoglobin concentration was obtained by hematocrit determinations giving the volume of red cells per unit volume of blood. In all cases the blood of the mother was studied, as well as of the fetuses. Observations were made on 87 fetuses of 19 rabbits during the last 3rd of gestation. It was found that the hemoglobin concentration increased from an average of about 8 gm. per 100 cc. of blood at 22 days to about 12 gm. per 100 cc. of blood at term, or roughly an increase of 50%. The volume of red corpuscles increased from about 28 volumes % at 22 days to about 42 volumes % at term, or roughly an increase of 50%. The percentage of basophilic red cells in histological preparations decreased from about 28% at 22 days to about 4% at term.

9568. **ZIH, A. Die hämopoetische Wirkung von verfütterter Milz.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 736-748. 6 fig. 1928.—Rabbits bought in the general market were fed a basic diet of hay, oats, and turnips. The rabbits were kept for 1 wk. under as uniform conditions as possible. Red blood cell counts were made by Bürker's method. Normal rabbits showed variations from 4.31 million to 7.72 million erythrocytes per cmm. The reaction of rabbits to spleen feeding depended on the constitution of the rabbit. In general, however, large doses of spleen increased red blood cell production, and small doses decreased it. In animals with a red blood cell content of less than 5.70 million the decreasing action of spleen at all dosages is very slight; the hemopoietic action very marked. Hemolysis in anemic rabbits could be produced only when the largest doses of spleen that could be tolerated were used, and even then hemolysis was not always produced. In rabbits with high blood counts spleen feeding in large doses produced marked decrease in red blood cell number, in small doses it had a weak or no hemopoietic action. Experiments conducted with men showed that spleen feeding increased blood formation in anemic patients, but did not influence the blood cell count greatly in normal individuals. There may be 2 substances in spleen, 1 a hemolytic and the other a hemopoietic. In large doses the action of the hemolytic substance is more marked than that of the hemopoietic, and conversely, in small doses the action of the hemopoietic is more marked than the hemolytic.

9569. **ZIH, A. Untersuchungen über den auf die Blutbildung wirksamen Stoff des anämischen Serums.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 613-619. 3 fig. 1930.—No bilirubin was found in the serum of [5] animals [rabbits ?] rendered anemic by bleeding. Hemoglobin was demonstrable in the serum of 9 only out of 20 anemized animals 24-36 hrs. afterward; only those sera that contained dissolved hemoglobin had a hematopoietic effect. The sera of normal animals (apparently 6) also had this effect if hemolysis was produced in taking the blood.—*From author's summary (transl.).*

9570. **ZIH, A. Einfluss des Chlorophyllgehaltes vom Futter auf die Blutkörperchenbildung.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 728-736. 4 fig. 1930.—Of 11 rabbits, 5 received chlorophyll-free food; the others were fed green food. Oral administration of chlorophyll in both groups produced erythropoiesis, with marked individual variations as to size of effective dose, attributable, as indicated by 5 other experiments, to variations in the chlorophyll content of the food. Increase of the chlorophyll dose beyond a certain point, however, did not increase and might even decrease erythropoiesis. Change from green food to chlorophyll-free diet almost always caused erythropenia; addition of chlorophyll or change back to green food reversed the blood change.

ANIMAL PHYSIOLOGY

NUTRITION, DIET, VITAMINS, GENERAL METABOLISM, GROWTH

J. R. MURLIN, *Editor*

H. A. MATTILL, *Associate Editor*

E. F. ADOLPH AND R. G. SINCLAIR, *Assistant Editors*

(See also in this issue Entries 9364, 9367, 9380, 9395, 9404, 9408, 9464, 9483, 9499, 9512, 9515, 9519, 9543, 9547, 9568, 9570, 9755, 9762, 9783, 9792, 9795, 9819, 9824, 9840, 9844, 9856, 9870, 9871, 9878, 9886, 9889, 9901, 9913, 9915, 9926, 9936, 9939, 9942, 9947, 9969, 9978, 9983, 9987, 9997, 10017, 10094, 10147, 10158, 10159, 10212, 10219, 10228, 10245, 10259, 10278, 10293, 10394, 10404, 10407, 10419, 10421, 10447, 10472, 10572, 10573, 10661, 10843, 10986, 10991, 10994, 11004, 11272, 11343, 11872)

ENERGY METABOLISM

9571. **BENEDICT, FRANCIS G., and CORNELIA GOLAY BENEDICT.** The energy requirements of intense mental effort. *Proc. Nation. Acad. Sci.* 16(6): 438-443. 1930.—With the helmet and spirometer type of respiration apparatus the O consumption or the energy needs of 5 men and 1 woman were measured during periods of mental repose and mental activity. The mental effort consisted in the solution, without aid of paper and pencil, of a number of problems in multiplication and addition. To rule out the influence of excitation or "attention," the metabolism was likewise measured during periods of response to a flashing light or an electric buzzer, the subject lightly tapping a telegraph key whenever the stimulus occurred. Simultaneous graphic records were obtained of the heart rate, the respiration rate, and the ventilation of the lungs. The results of this investigation show that with intense, sustained mental effort, such as in multiplication, there is a noticeable increase in the heart rate, a rather considerable change in the character of the respiratory movements, an increase in the volume of air passing through the lungs, a small increase in CO_2 production, a smaller increase in O consumption, and consequently a slight increase in the apparent respiratory quotient. The increase in O consumption, which may be taken as the best index of energy transformations, is such as to suggest that the increase in heat production as a result of intense mental effort of this type can hardly be of the order of more than 3 or 4%. In view of the sense of extreme, almost overpowering fatigue in both mind and body following sustained mental effort, it is surprising that mental effort has such an insignificant effect upon the general metabolism or level of vital activity.—*E. A. Wilson.*

9572. **BENEDICT, FRANCIS G., and JOSEF M. PETŘIK.** Metabolism studies on the wild rat. *Amer. Jour. Physiol.* 94(3): 662-685. 4 fig. 1930.—Numerous measurements of the basal metabolism of the albino rat have been made. They are not wholly uniform. Even in the researches in which the Nutrition Laboratory has coöperated measurable differences in the basal metabolism of this animal have been noted. Thus, Horst, Mendel, and Benedict conclude that the basal metabolism of adult ♀, albino rats, living at an environmental temp. of 26° C. but measured at 28° C., about 24 hr. after food, is from 600 to 700 calories per sq. meter of body surface per 24 hr. Benedict and MacLeod conclude that a standard value for ♀ albino rats would be 720 calories and for ♂ rats 800 calories. In the authors' series of wild rats the basal metabolism at 28° C. was in all cases distinctly high. The average of all the basal measurements is 942 calories and the average of those obtained only on the 1st day of measurement is 1010 calories. Here it is a question whether domestication has a rapid and pronounced influence, or whether it is a matter merely of adjustment of the wild rat to a new environment with less fright. The authors believe that the terror did not obtain, even in these 1st day's measurements, for the extraordinarily quiet repose of these animals astonished them. The basal heat production of the wild rats per 200 gm. body weight per 24 hr. was likewise higher in the 1st measurement than in subsequent measurements, but averaged 27 or 28 calories as compared with an average of about 20 calories found with the albino rats measured at 28° C. On either basis of computation, therefore, the wild rat has a perceptibly higher metabolism than the albino rat.

9573. **BORGSTRÖM, H., E. ELFVENGREN, C. O. LÖVEGREN, und C. SUNDSTRÖM.** Der Stoffwechsel beim Billardspiel. *Skand. Arch. Physiol.* 60(5/6): 244-246. 1930.—The study was made on 5 players, each of whom played twice, both times alone. The total exhaled C per hr. ranged from 14.97 to 20.82 gm. and averaged 18.08 gm. There was also considerable variation in the C production in different hours by individual subjects, the differences ranging from 1.20 to 4.70 gm. The total metabolism per kgm. per hr. varied between 2.3 and 3.2 cal. with an average of 2.9.

9574. **BORRA, EVA.** La perspiratio insensibilis in rapporto con la temperatura della cute. [Perspiratio insensibilis and temperature of the skin.] *Arch. Fisiol.* 28(3): 490-502. 3 fig. 1930.—The perspiratio insensibilis and the temp. of the skin were simultaneously recorded in limited areas of the skin, over which the temp. of air was modified. The temp. of air and of skin coincide at 33.5°-34° C.; below these values the temp. of the skin is higher than that of air. Above the said values the temp. of the skin grows higher following the rise of that of air. As long as a positive thermic gradient exists between skin and blood, the temp. of the skin is lower than that of blood; otherwise it is the same. The perspiratio insensibilis is constant if the skin temp. varies from 29.7° to 32.5°. When higher temps. are reached it is rapidly increased: the rates are 7 times higher at 33.5°. The evaporation is to be considered, under these conditions, as given by 2 factors, one being the perspiratio insensibilis, the other the sweating. The former is, within the limits studied, independent of the temp. and secretory activity of the skin. The sweating is on the contrary an exponential function of the temp. of the skin, which function does not follow Van't Hoff's law, and is probably acted upon by influence of the temp. on the secretory processes as well as by vasomotor variations.—*M. Comel.*

9575. **BORSOOK, HENRY, and HOWARD M. WINEGARDEN.** On the free energy of glucose and of tripalmitin. *Proc. Nation. Acad. Sci.* 16(9): 559-573. 1930.—The theoretical maximum amount of work obtainable from the oxidation under physiological conditions of glucose, and of tripalmitin, is computed from the standard free energies and heats of combustion of these compounds. Such computations show that the theoretical difference in efficiency, i.e., the ratio of the theoretical maximum work obtainable to the total energy change, is little different for glucose and for tripalmitin. Similarly it is calculated that the conversion of tripalmitin into glucose involves a release of energy approximately equivalent to 20% of the theoretical maximum work available from the oxidation of tripalmitin. Since experimental evidence in the literature indicates that the difference in efficiency between fat and carbohydrate as fuels for muscular work is much less than 20%, it follows either that fat is burned as such in the provision of energy for muscular work, or that the energy released

in the hypothetical conversion of fat into carbohydrate is not dissipated as heat, but is used for work; and the efficiency of utilization of this energy is little different from that in the consumption of carbohydrate. The process of conversion of glucose into tripalmitin probably exerts a considerable "specific dynamic action" on metabolism. The evidence in the literature on plants and animals is in accordance with these thermodynamic predictions.—*H. Borsook.*

9576. BRENDLE, EUGENIE. Gaswechsel und Körperzusammensetzung. *Pflüger's Arch. Ges. Physiol.* 226(1): 108-112. 1930.—Adult rats were fed either on a diet poor in protein and fat or in one rich in these foodstuffs. The O consumption was determined and also the specific dynamic action of mince meat and cheese. The animals were killed, the total N of the body was determined and (in 10 animals) the total fat content; with these values the gaseous exchange was compared. The smaller animals had a higher basal metabolism (per kgm.) than the larger. The fatter the animals, the lower the values for basal metabolism and specific dynamic action. The N content of rats of different size was proportionally the same, so that no correlation was observed between O usage per kgm. and N content.—*H. C. Bazett.*

9577. CAREDDU, G. Studi su bambini normali ed ipotrofici nel primo biennio di vita in rapporto con lo sviluppo della superficie corporea direttamente misurata. II. Metabolismo basale. [Studies on normal and hypotrophic infants during the first two years of life in relation to the increase in body surface directly measured. II. Basal metabolism.] *Riv. Clin. Pediatr.* 28(7): 553-573. 1930.—The basal metabolism (B.M.) of the newborn is very low; in 9 newborn infants the av. was about 520 cal. per sq. m. per 24 hrs. It increases rapidly with increase in food intake. The B.M. of 12 normal infants during the 1st yr. of life, referred to the body surface directly measured, corresponded more closely to the figures of Talbot than to those of Aub and DuBois. The B.M. of individual normal infants of the same age varied within wide limits corresponding to their customary food intake. The higher values of the B.M. in normal infants occurred with a food ration sufficient to produce a regular increase in weight, although in all cases the B.M. test was made after a fasting period of not less than 8 hrs. Study of 14 hypotrophic infants showed that, when undernourished, the B.M. was less than that of normal infants of the same age, but when they could take a ration sufficient to produce increased weight, the B.M. was always higher than that of normal infants of the same age. The B.M. was not always the same for each individual, but, in spite of the fast preceding each test, varied with the customary food intake of normal or hypotrophic infants.

9578. EFIMOFF, W. W., O. A. SALZGEBER, P. P. MITROFANOFF, M. N. SARCH, A. P. KRJUTSCHKOWA, N. A. ITINA, und A. J. LEWINA. Die vergleichende physiologische Wirkung der Arbeit beim individuellen, beim manipulationsweisen und beim Konveyorsystem. *Arbeitsphysiologie* 3(3): 218-229. 1930.—The purpose of the study was to determine the comparative energy expenditure in the ironing by hand of men's shirts in a laundry in Moscow in which the work was carried out by 3 different systems: 1, in which all parts of the garments were ironed by one worker: 2, in which the work was divided into 5 manipulations, each one being performed by a separate person who passed the garment on to the next worker; and 3, in which the shirt was ironed by separate workers in manipulations but conveyed from one to another by a moving belt. The maximum number of shirts was ironed when the conveyor system was used, and the minimum when a shirt was ironed entirely by one person. The average O consumption throughout the working day varied from 325.7 ccm. per min. with the conveyor method to 377.5 ccm. by the separate manipulation method. The O absorption per piece of work varied from 5487 ccm. with the conveyor system to 9181 cc. by the individual system. The O debt measured by 12 min. of recovery was lowest with the conveyor system. The conclusion was that the conveyor system for this type of work did not exert any special physical influence upon the organism.—*T. M. Carpenter.*

9579. ENGELMANN, B. Anhaltende Grundumsatzverminderung durch Wärmeeinwirkung. *Arbeitsphysiologie* 2(5): 387-394. 1930.—Male guinea-pigs of 600-800 gm. in weight were studied by means of a Rubner respiration apparatus before and after a 4 to 5½ weeks' stay in a room kept practically constant at 33° C. There was a lowering of the basal metabolism as much as 24%, and this lowering was not only in total metabolism but also on the basis of surface, per gm. of body weight and per gm. of body protein.—*T. M. Carpenter.*

9580. FUJITA, AKIJI. Über den Stoffwechsel der Körperzellen. *Biochem. Zeitschr.* 197(1/3): 175-188. 1 fig. 1928.—The author determined the O consumption and the aerobic and anaerobic glycolytic rate of several kinds of mammalian cells by the Warburg manometric method, immersing the cells in serum instead of Ringer's solution. The following cells were studied: adrenal cells of rats, mice, and guinea-pigs; hypophyseal of rats and mice; testicular, spleen, embryonic lung, embryonic lens, and white bone marrow cells, and sperm, leucocytes, and blood platelets of rats; ovarian, placental, and adult lens cells of mice; epithelial and sympathetic ganglion cells of rabbits. Values for Q_0 at 38° C. ranged from 0 to 13 cu. mm.—*M. Dann.*

9581. GÈNEVOIS, L. Metabolisme et fonctions des cellules. Esquisse d'une physiologie des réactions productrices d'énergie dans la cellule vivante. 120p. Masson et Cie: Paris, 1931. Pr. 26 fr.—Cell metabolism is discussed from the standpoint of the "Pasteur-Meyerhof" reaction; namely, lactic acid and alcoholic fermentations. The first two chapters are a general consideration of this reaction and the remainder of the book is taken up with the metabolism of various animal and vegetable cells including a chapter on tissue culture. Oxidation-reduction mechanisms are not included.—*F. Bernheim.*

9582. GESENIUS, HEINRICH. Über Stoffwechselwirkungen von Gurwitsch-strahlen. *Biochem. Zeitschr.* 225(4/6): 358-367. 1 fig. 1930.—In 68 out of 102 experiments in 4-hr. "mitogenetic irradiation" of the anaerobic fermentation of fluid yeast culture, with yeast-agar culture as indicator, in an N-CO_2 atmosphere, the fermentation was distinctly accelerated; the metabolism was unchanged within the limits of error in 30 experiments, and depressed in 4. In 40 out of 54 experiments the respiration of yeast cells in an O atmosphere (fermentation excluded by the conditions of experiment) was inhibited in a 4-hr. irradiation with yeast-agar culture as inductor; respiration was unchanged within the limits of error in 13 experiments and increased in 1. This seems to testify against a promotion of growth by "mitogenetic irradiation." The question was further tested in 17 experiments by irradiation of yeast cultures which were both respiring and fermenting; both respiration and fermentation were lessened in 16 out of the 17. Yeast ferments were inhibited, in 28 out of 30 cases, by blood from healthy human subjects as inductors.

9583. GIAJA, J. Sur la production de chaleur de quelques homéothermes dans la lutte extrême contre le refroidissement. [In Serbian, with French summary.] *Bull. Acad. Roy. Serbe Sci. Arts, Belgrade* 135(64): 23-31. 1929.—From a certain number of comparative measurements of the peak and basal metabolism of animals, both mammals and birds, of varying size, the following conclusions may be drawn: The peak metabolism is no more directly proportional to body mass than is basal metabolism, but varies inversely therewith. In relation to body surface the peak metabolism exhibits differences between species that are often quite marked, but less marked than those that are found when peak metabolism is related to body mass. Although it is not possible to formulate a law governing the relationship between body surface and peak metabolism it is plain that surface area is one of the most important factors governing this upper limit of metab-

olism. The same conclusion is thus reached as in a previous memoir on basal metabolism. The ratio between the peak and basal metabolism of different animals varies generally within fairly narrow limits. From this it follows that the peak metabolism is not related to the ability of the homeotherm to resist cold. Similar values were found for the swallow, the sparrow and the duck. The hedge-hog has a peak metabolism of the same order as other non-hibernating homeotherms, showing that hibernation does not influence thermogenic capacity.—*From author's summary (transl. by J. R. Earp).*

9584. GLOVER, EUGENE C., GENEVA A. DALAND, and HENRY L. SCHMITZ. The metabolism of normal and leukemic leukocytes. *Arch. Internal Med.* 46(1): 46-66. 1930.—For the study of O consumption of the white blood cells, white blood specimens from 14 patients with myelogenous leukemia, 8 patients with lymphatic leukemia, suspensions of leukocytes from 18 patients with myelogenous leukemia, 10 patients with lymphatic leukemia, 6 patients with leukocytosis from various causes and 7 normal persons were studied. For the study of glycolysis, suspensions of leukocytes in plasma were prepared from blood specimens of 16 patients with myelogenous leukemia, 15 patients with lymphatic leukemia, 4 patients of an unclassified type of acute leukemia, and 11 persons with normal blood. The leukocyte metabolism of the leukemic blood was found to vary according to the degree of maturity of the cells. The O consumption is greater, the more mature the cells, whereas the sugar consumption (glycolysis) tends to be smaller. When calculated on the basis of weight, the rate of sugar consumption of lymphatic white blood cells does not differ from that of myelogenous cells of approximately the same degree of maturity. The metabolism of normal white blood cells is similar to that of relatively mature cells from patients with leukemia, but more active, as regards both O and sugar consumption. Slight degrees of cell injury exert a marked effect on the rate of O consumption, much less on the rate of sugar consumption. When measured under aerobic and anaerobic conditions (in the presence of 95% O and 95% N, respectively) the sugar consumption of normal white blood cells and mature myelogenous cells from leukemic blood resembles that of cancer tissue, whereas the sugar consumption of immature myelogenous cells and of both mature and immature lymphatic cells is of the type considered characteristic of embryonic tissue.

9585. GROEDEL, FRANZ M., und RUDOLF WACHTER. Über den Gasstoffwechsel im Süsswasser-, Sole-, Luft- und kohlensaurem Wasser- und Gasbad. *Veröffentl. Zentralstelle Balneol.* Neue Folge Heft 16. 56p. 8 pl. Richard Schoetz: Berlin, 1929. Pr. 4 M.—The technic of determining O consumption in the various baths is given. Numerous curves illustrating the results of O used, CO_2, respiration and respiratory quotient in healthy people are shown, as well as tables giving the effects of the baths. There is a discussion of the results, a brief discussion of the literature and extensive summary. There is a short section on the effects of these baths in patients with circulatory disturbances.—*E. A. Baumgartner.*

9586. HAHN, AMANDUS, und W. HAARMANN. Über Dehydrierungsvorgänge im Muskel. *Zeitschr. Biol. [München]* 89(6): 563-572. 1930.—*In vacuo,* and without the addition of an H acceptor, it has been shown by experiments with muscle-brei of warm-blooded animals that succinic, fumaric, malic, lactic and citric acids are dehydrogenated to pyruvic acid. Whence it is concluded that H acceptors exist naturally in muscle. The dehydrogenations take place also in the presence of HCN, a fact which excludes the possibility that they are the results of O remaining behind in the muscle preparations.—*A. Hahn (transl. by C. D. Snyder).*

9587. HEILMEYER, LUDWIG. Klinische Farbmessungen. VIII. Mitteilung. Die Harnfarbstoffausscheidung beim Morbus Basedow, sowie im Thyroxinversuch, zugleich ein Beitrag zur Frage der Beziehungen zwischen Stoffwechsel und Harnfarbe. *Zeitschr. Ges. Exp. Med.* 72(5/6): 545-560. 1 fig. 1930.—In 12 cases of Basedow's disease the urinary coloration was determined, and, in 3 cases (which also showed enlarged liver or other signs of thyrotoxic circulatory damage), was found above normal. No relation could be established between urinary coloration and heightened metabolism. Even cases with +130% heightened metabolism showed no increase in urinary coloration so long as circulation remained normal. Thyroxin and thyroidin in therapeutic and distinctly effective doses produced no change in urinary coloration or in the fecal or urinary urobilin. Thus these observations do not sustain Drabkins' hypothesis of a relation between heightened metabolism and increased urinary coloration.

9588. IRVING, LAURENCE, and H. C. FOSTER. The respiratory quotient of resting mammalian muscle as shown by the eviscerated decapitated cat. *Amer. Jour. Physiol.* 95(2): 429-445. 1930.—After evisceration of a decapitated cat there is a tendency toward over-ventilation. When the ventilation is reduced, the preparation may be kept in a state of balanced CO_2 equilibrium with R.Q. near 0.80. The balance of the CO_2 equilibrium can be controlled only by establishing the fact that the CO_2 content of muscles does not change. Arterial and venous blood are not reliable indicators of CO_2 balance in the eviscerated preparation. The R.Q. is not much greater than that of the entire animal, and shows that resting muscle oxidizes about the same substances. Intravenous administration of glucose causes a slight elevation of R.Q. to an average level about 0.85. The tendency toward over-ventilation is relieved, and the muscles even gain CO_2. With massive doses of insulin and glucose the tendency toward CO_2 retention in the muscles is more marked. The average observed R.Q. was 0.88, and the correction for CO_2 retained in the muscles raised the R.Q. to 0.94, indicating diversion of oxidation to the principal use of carboyhydrate. The correction of the R.Q. for the amount of CO_2 lost from muscle during slight over-ventilation indicates that only muscle is appreciably altered in CO_2 content. The action of insulin and glucose, in addition to increasing carbohydrate oxidation and glycogen storage, affects the CO_2 equilibrium of muscle, probably by increasing its capacity.—*Authors' summary.*

9589. JAKOWENKO, W. A. The effect of sun and air and air baths on the respiratory gaseous exchange in man. *Amer. Jour. Hyg.* 10(1):165-182. 1929.—The height of the respiratory gaseous exchange in man during sun baths and air baths depends upon temperature, humidity, air movement and intensity of solar and skylight radiation. Rate of air movement is of greatest importance. Climatic factors may be divided into 2 groups according to their effect on the gaseous exchange in man, (1) those increasing the gaseous exchange, such as low temperature and air movement, and (2) those factors which decrease the gaseous exchange such as high air-temperature, absence of air movement and excess of heat produced by solar radiation.—*W. C. Russell.*

9590. KAGAN, E. M., und P. M. KAPLAN. Untersuchung der dosierten und maximalen Arbeit bei Personen von verschiedener physischer Leistungsfähigkeit. *Arbeitsphysiologie* 3(1/2): 61-119. 5 fig. 1930.—The object of the investigation was to determine in what manner limited and maximum work would give knowledge of the differences in the physical capacity for work. Three groups were studied, porters, mental workers and an intermediate group. The work consisted of lifting a load of 20 kgm. from a level of 0.5 meters to a height of 1.5 meters 16 times per min. The respiratory exchange was determined with Douglas bags and analyses of the expired air by the Haldane method. The first series was a study of work of 1200 kilogram-meters in 3 min. and 20 sec. The respiratory exchange was measured during the period of work and during the recovery periods of 1.5, 1.5, 3, 3, 6, 6, min. successively and until recovery was complete. In the 2nd series the

same rate of work was continued to complete fatigue. The 3rd series was the same as the 2nd but the work as well as recovery was measured in fractions. The duration of the working period to complete fatigue averaged 25 min. with the trained porters and only 6.4 min. with the untrained mental workers. With the work of 1200 kilogrammeters the O debt was 31.5% of the total O required for the work with the porters and 38.1% with mental workers. In work to complete fatigue the O debt was 9.9 and 37.8% of the O requirement in the 2 groups respectively. The duration of recovery with 1200 kilogrammeters was 15 min. with porters and 26 min. with mental workers. With work to complete fatigue the recovery period was 35 and 45 min. respectively and in relation to the period of work was 1.97 and 7.50 times as long. A man without training spent 23% more energy in the work of 1200 kilogrammeters and 54% more in work to complete fatigue than did the porters. The efficiency fell off with the untrained worker whereas with the trained worker the efficiency remained unaltered or increased when the work was carried to complete fatigue. The R.Q. rose during the work after a preliminary fall with the porters to a higher level, which however did not reach unity, and remained at this level during the work. With untrained subjects the R.Q. continued to rise during the entire period of work going occasionally above 1.0 when the time of work was long. During recovery the R.Q. rose in the first min. over 1.0 and with the untrained workers went as high as 2.0. The R.Q. then fell to below the rest value and continued so even when the O was reestablished at the original level. The total R.Q. of the work and recovery period and also the R.Q. of the excess metabolism was higher than that in the resting condition and with mental workers higher than with load carriers. It rose with the latter when the work lasted longer.—*T. M. Carpenter.*

9591. KÚTHY, A. von. Resorption, Blut NH_2-N und spezifisch dynamische Wirkung nach Fleischnahrung. *Pflüger's Arch. Ges. Physiol.* 225(4): 567-571. 1 fig. 1930.—In experiments on 18 ♂ rats a close connection appeared betwen rapidity of resorption of raw meat, increase of the NH_2-N of the blood and the increase of O-consumption or specific-dynamic action. The O-consumption rose and fell parallel with the change in NH_2-N content, furnishing evidence for the rôle of amino-acids as the cause of specific-dynamic action.

9592. LIPMANN, F., und O. MEYERHOF. Über die Reaktionsänderung des tätigen Muskels. *Biochem. Zeitschr.* 227(1-3): 84-109. 1930.—By manometric methods it has been shown that under anaerobic conditions the reaction of muscle is conditioned by the splitting of creatin phosphate on the one hand and by lactic acid production on the other; eventually there is also a slight effect due to ammonia production, esterification, etc. During the first part of the anaerobic fatigue period there is a general shift toward a greater alkalinity, which is followed by a greater acidity. In the iodoacetic acid poisoned muscle there is only the alkalinization. Both in the normal and in the poisoned muscle the chemical and the manometric methods of establishing the change in the acid-base balance agree.—*Authors' summary (transl. by M. B. Visscher).*

9593. LUCIA, P. de. Ricerche sul metabolismo dell'acido ossalico. VIII. L'eliminazione dell'acido ossalico nel digiuno e nella rialimentazione. [Studies on oxalic acid metabolism. VIII. The elimination of oxalic acid during fasting and re-alimentation.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 473-475. 1930.—Oxalic acid is eliminated even after 2 weeks of absolute fasting. During re-alimentation the oxalic acid is increased. When the diet has a rich protein content the increase is almost double that with carbohydrate diet. The increase seems to be less with a mixed diet than with unbalanced diets. —*M. Comel.*

9594. MATTERS, REGINALD FRANCIS. The influence of menstruation on gaseous metabolism. *Australian Jour. Exp. Biol. & Med. Sci.* 6(2): 133-135. 2 fig. 1929.—Observations on 2 subjects confirmed the findings of previous investigators that a rise in the basal metabolism occurs immediately before menstruation followed by a fall during the period.—*M. Dann.*

9595. MEYER, FRITZ. Über die vermehrte Produktion spezifisch-dynamischer Wärme im Anschluss an muskuläre Höchstleistungen. (Nach Versuchen am Hunde.) *Arbeitsphysiologie* 2(5): 372-386. 2 fig. 1930.—The measurements were made by means of a Benedict respiration apparatus. The effect of the ingestion of 500 gm. of raw beef containing 3% N and 2.4% fat was to increase the metabolism 47 calories over that found at rest with no food. After an 8.5 hr. run of 35 km. at 9° 30′ grade, the same amount of meat resulted in an increase in metabolism of 72% over that found with the same amount of meat after rest. The author's interpretation is that the greater specific dynamic action after work was due to the extra chemical work which the organism performed in order to transform the ingested protein into materials suitable for the metabolism of the muscles.—*T. M. Carpenter.*

9596. MASSONOV, DIMITRY. Über den Einfluss der Oxydationsprozesse auf die Verteilung von Vitalfarbstoffen in der Zelle. *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(1): 179-217. 1 pl., 15 fig. 1930.—Frog intestine was used for all experiments recorded. Duodenal epithelial cells of a summer frog contain numerous protein granules which have become infiltrated with inorganic ferrous and ferric salts. Other parts of the intestine (except the rectum) do not have any permanent inclusions. The mucous membrane of all regions contains numbers of macrophages, which are packed with Fe-containing granules. The acid and basic dyes (neutral red, methylen blue, Janus green acid fuchsin, trypan blue) could be made to accumulate in the cells in the same way. In the epithelial cells they form new structures; in the macrophages on the other hand they stain preformed granules. If a frog is placed in an atmosphere of H the intestinal mucous membrane assumes a pH of 12-13, this is shown by a reddening of the Janus green particles and a partial fading of the methylen blue. When O is lacking vital stains are differently distributed than under normal conditions. Normally the dye is condensed in granules in the cytoplasm, leaving the nucleus unstained; the phagocytic inclusions are strongly stained. When O is lacking no dye granules are formed; the cytoplasm and phagocytic inclusions are diffusely and the nucleus deeply stained. This stain distribution may be fixed by formalin. Vital staining of the nucleus is a reversible reaction; when O is added the color disappears and cytoplasmic granule formation begins. Cells whose nuclei have been vitally stained do not lose their function; they are able to absorb fat. The raising of permeability of the nuclear membrane in a H atmosphere cannot be explained by a change of its properties. Nuclear staining is associated with a reversible gel formation. The results given suggest a possible "physiological" and "physical" division of material in the cell. The former is present during periods of energy expenditure and O abundance; when O is lacking a physical division of cell material takes place. Energy is required for the formation of heterogeneous plasma granules, but no energy is required to maintain this condition. The cytoplasm-nucleus heterogeneity, however, requires energy of maintenance. Energy which serves to form and maintain heterogeneity in a cell may be designated as "energy of distribution."—*Author's summary (transl. by F. R. Hayes).*

9597. OKSIUSOW, W. Über den Einfluss der Sauerstoffeinatmung auf die Nahrungsausnutzung bei Tuberkulosekranken in Sanatorien. Vorläufige Mitteilung. *Zeitschr. Tuberk.* 57(4): 240-252. 1930.—In 1928, 437 patients under O treatment were observed, and in 1929, 361; the weight curves and other data are given for 33. Oksiusow concludes: The inhalation of pure O through a respirator in the suggested dose according to the method we have worked out increases in many in-

stances the assimilation of food by tuberculous patients who suffer from undernutrition and who can not assimilate the often unnecessarily large sanatorium diet. Such a method of treatment should be continued during a 2-3 week period of observation of the patient and certainly with those who are not gaining weight under the sanatorium régime. The treatment with O inhalations is not technically difficult and can readily be carried out in any sanatorium. By such a procedure for fighting the undernutrition of the tuberculosis patient in the sanatorium, the conviction of the patient can be strengthened that the diet in the sanatorium is to be considered a therapeutic measure. It is felt that if instead of the enormously large ration which all patients in the sanatorium are given without choice, the question of the alteration of the diet in the sense of its content of fat, carbohydrate and protein according to the assimilability of each were considered, the allowance of food might be decreased. Probably the inhaled O stimulates the islet-apparatus so that the patient rapidly develops a hypoglycemia. This causes an increase in the function of the islet-apparatus. The variations of the blood sugar value of tuberculosis patients are within normal limits. It would be desirable to test these observations on a larger number of sanatorium patients. —*Author's conclusions (transl. by G. T. Lewis).*

9598. PRIKLADOWIZKY, S., und A. APOLLONOW. Muskeltätigkeit und chemische Blutveränderungen. II. Mitteilung: Gesamte CO_2 und Zucker im Blute (reduzierte Stoffe). *Arbeitsphysiologie* 3(4): 322-329. 2 fig. 1930.—Four adult dogs were caused to run, 6-18 hrs. after previous feeding, 6.6 kms. on a treadmill in 30 min. Blood samples were taken from the femoral artery before and 1, 30, and 90 min. after the run. Control experiments at rest resulted in no changes in the blood CO_2 and sugars. There was a drop of total CO_2 and a rise in the blood sugar at 1 min. after the run. The sugar rose from 100 mgm. per 100 cc. of blood before the run to 129 mgm. maximum at 1 min. Both total CO_2 and sugar returned to nearly normal at 90 min. after the run. The injection of 250 cc. of isotonic NaCl solution produced no noticeable changes in either total CO_2 or sugar. The injection of 10 cc. of lactic acid in 250 cc. of isotonic NaCl solution and of 250 cc. of 2% HCl produced even more marked lowering of the total CO_2 and rise in sugar than did the muscular activity. One of the essential factors in the production of hyperglycemia as the result of strenuous muscular activity of short duration is the decrease in the alkalinity of the blood due to the accumulation of acid products in the organism.—*T. M. Carpenter.*

9599. RADLOFF, ELLEN M. The oxygen pulse in athletic girls during rest and exercise. *Amer. Jour. Physiol.* 96(1): 126-131. 1931.—O consumption during rest and exercise correlated with the pulse rates in 20 athletic girls showed 2 or 3 times as much O used per systolic discharge of the heart during exercise as compared with rest. The stroke volume was distinctly increased during exercise. After 2 min. of maximal or nearly maximal exercise, the pulse returned to the resting rate by the end of 5 min. The rate of O consumption was also nearly that of the previous rest period within 5 min. A close correspondence exists between the values for the O pulse of the girls during the exercise and those of men at similar pulse rates when doing 500 kgm.-m. work per min.

9600. ROESE, H. F. Ammoniakbildung und Zuckerverbrauch des künstlich durchbluteten Säugetierdarmes. *Pflüger's Arch. Ges. Physiol.* 226(2): 190-197. 1930.—The denervated heart-lung-intestine was used, 15 experiments being made. When the bowel was empty (animal previously starved) ammonia content of perfusing blood rose steadily, exceeding 3 times its initial value at the end of 2 hrs. Amino-acid content of blood remained unchanged or rose slightly. Addition of glycocoll to blood did not accelerate the rise in NH_3 content; after introduction of glycocoll into the lumen of the bowel similar negative results were obtained, though absorption was proved by estimations of amino-acid content of blood. Urea content of blood fell steadily during course of perfusion, but not in proportion to the rise in NH_3; urea was probably retained by the bowel wall, not transformed into NH_3. The increase in NH_3 during the course of perfusion is therefore referable to bacterial activity in the lumen of the bowel. Sugar consumption was calculated by applying to observed values the known sugar consumption by the heart-lung preparation, giving average figures of 1.75 gm. dextrose per kgm. intestine per hr. for 30 min. perfusion, and 1.94 gm. per kgm. per hr. at 90 min., the error probably not exceeding 10%. Applying these to figures for O consumption it is calculated that at least 80% of the glucose presented to the bowel wall becomes available for other uses.—*C. F. Schmidt.*

9601. ROSENBLUM, D. E. Fehler der respiratorischen Gaswechselmethode bei dosierter Muskelarbeit. *Zeitschr. Klin. Med.* 111(2): 191-197. 1929.—A human subject lifted a 5 kgm. weight from the shoulders to a height of 0.55 meters, 20 times per min. during an experimental period of 3 min. O consumption was measured during the work and recovery periods. From 7 to 10 days' training were required to bring the energy requirement for this work down to a constant minimum. Failure of other investigators to include training effects and data of recovery periods has lead to errors in indirect calorimetry.—*W. N. Berg.*

9602. ROSENBLUM, D. E. Zur Frage der Beständigkeit des Grundumsatzes. *Zeitschr. Klin. Med.* 111(2): 198-204. 1929.—Basal metabolism was determined in 3 young men from 5 to 8 times in 45 days and found not to vary by as much as 10% from the usual tables.—*L. Irving.*

9603. RUOTSALAINEN, ARMAS. Zur Kenntnis der Kohlensäureproduktion bei finnischen Mädchen im Schulalter. *Skand. Arch. Physiol.* 60(5/6): 225-243. 1930.—CO_2 production of 150 girls, while sitting and reading, was determined. In girls 9-19 yrs. old, CO_2 production increased with age. The averages, per person, per 2 hrs., were for 9 yr. olds, 10.7 gm., and for 18 yr. olds, 15.1 gm. CO_2. Corresponding values obtained by Olin were 11.6 and 17.6 gm. CO_2 production per kgm. body weight, per 2 hrs., was at 9 yrs., 0.39 gm. and at 18 yrs., 0.26 gm. Per sq. m. body surface, per 2 hrs., the CO_2 production was at 9 yrs., 9.76 gm.; and at 18 yrs., 7.71 gm. Corresponding figures by Olin on boys are a trifle higher.—*Author's summary (transl. by W. N. Berg).*

9604. [SHATERNIKOV, M. N., O. P. MOLCHANOVA and M. TH. TOMME.] ШАТЕРНИКОВ, М. Н., О. П. МОЛЧАНОВА и М. Ф. ТОММЕ. К вопросу о дыхании жировой ткани. [Respiration of fatty tissue.] [German summary.] *Jour. Biol. et Méd. Exp. [Moscow]* 7(18): 375-384. 1927.—See B. A. 3(4/6): Entry 5910.

9605. SHATTUCK, GEORGE C., and FRANCIS G. BENEDICT. Further studies on the basal metabolism of Maya Indians in Yucatan. *Amer. Jour. Physiol.* 96(3): 518-528. 1931.—During a medical expedition to Yucatan in 1930 the basal metabolism was measured of a group of 26 ♂ Mayas at Chichen Itzá. These observations were made to supplement the earlier measurements on Mayas by Williams in 1927, and in 9 instances the same subjects were studied that had been measured during the earlier expedition. The respiration apparatus employed was especially devised for racial studies in the field. These 2 separate expeditions have both presented data that suggest that the Mayas may have a high basal metabolism associated with low heart rate and low blood pressure. In those cases in which observations were repeated on the same subject there was a general, although not invariable, tendency for the metabolism to be slightly lower in the 2nd measurement. This fact suggests that by repeated observations a metabolism figure might be reached that could not be considered abnormally high, although evidence in general shows these people to be quiet, phlegmatic, and nontemperamental. There was no indication, so far as the

pulse rate was concerned, of psychic disturbance.—*Authors' summary.*

9606. SILANDER, O., und H. VIRI. Der Stoffwechsel beim Barrenturnen. *Skand. Arch. Physiol.* 60(5/6): 247-250. 1930.—The subjects were all young men of 20 to 22 yrs., first yr. students in the gymnastic institute of the university. Subjects I and II were particularly good, III, IV and V were good gymnasts. The average figure was 566 calories per hr. The highest value was 697 calories (subject I); the lowest value 480 calories (subject II); the variation of the results was, therefore, considerable. In the same subject the values varied, e.g. subject I, one observation 697 calories, and another 522, a difference of 175 calories. Since the average weight of the subjects was relatively small (65.0 kgm.), the increase of the metabolism was extraordinarily great. The metabolism at complete rest was 1 calorie per kgm.-hour and rose during exercise upon the parallel bars to 8.7 calories per kgm.-hour. The highest value was 10.6 calories and the lowest 7.5 calories, a difference of 3.1 calories. The values in the same individual (subject I) also varied considerably, the range in several experiments being 2.6 calories.—*Author's summary (transl. by I. I. Lemann).*

9607. SOKHEY, S. S. Normal basal metabolism of Indians. *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 321. 1928[1928].

9608. WANG, CHI CHE, SOLOMON STROUSE, and EDITH SMITH. The metabolism of obesity. VII. The after-effect of muscular exercise on the production of basal heat. *Arch. Internal Med.* 46(1): 40-45. 1930.—A total of 41 experiments consisting of 4 tests each were conducted on 35 women, 13 of whom were obese, 15 normal and 7 underweight. The average values for the production of heat 15 min. after muscular exercise were +6.5, +3.1 and +6.8% above the basal value for the obese, normal and underweight subjects, respectively. The corresponding values 30 min. after the exercise were +0.9 and +0.8 and −0.1%. The lowered production of heat after exercise was accompanied by a lowered respiratory quotient. Based on the authors' observations, a 30 min. rest is an adequate fore-period in measuring basal heat production.—*Authors' summary.*

WATER BALANCE

9609. BOSCH, OSKAR. Über den Einfluss der Nahrung auf Wasserhaushalt und Wasserausscheidung im Säuglingsalter. *Zeitschr. Kinderheilk.* 50(1): 96-112. 1930.—Healthy ♂ infants (number not stated) in the 4th and 5th month, weighing about 5 kgm. were placed first on a normal diet, then on one of high H_2O content, and one of low. When no food was given renal and extrarenal excretions were reduced; when the diet was high in H_2O, extrarenal and renal excretions were increased; when low the extrarenal excretion was increased and renal decreased; the highest renal excretion occurred at night. Carbohydrates led first to a reduction in excretion by both routes, followed by an increase which resembled that following the high water diet. Protein led to less diuresis and increased extrarenal outgo, resembling the dehydration type of excretion. Since this type was never attained with a carbohydrate or a normal diet it would appear that the dehydration form of exc. is due to the protein content of the food. Partial replacement of protein by sugar mitigated the specific protein reaction.

9610. CALDWELL, G. T. Studies in water metabolism of the cat. The influence of dehydration on blood concentration, thermoregulation, respiratory exchange, and metabolic water production. *Physiol. Zool.* 4(2): 324-359. 1 fig. 1931.—Cats acclimated to the semi-arid conditions of Tucson, Arizona, were dehydrated by water deprivation in circulating air from which all moisture had been removed. Acute starvation was prevented by feeding lean, cooked meat at 12 hr. intervals. Determinations were made of all water received by the animals from food and all water given up by the animals. The average water intake-output ratio was 1: 4.78 and the negative water balance averaged 26.8% of the original body weight. Dehydration increased the blood concentration 45% for all experiments, and an increase of 75% was recorded without fatal results. The variations in body temperature of the dehydrated cats did not exceed the variations of control cats kept at room temperature; there was no indication that a reduction of free water results in an increase in body temperature. At certain stages of dehydration the average respiratory exchange of the cats was increased 30%. The minimum metabolic water production averaged 5.94 gm. per kgm. per day. Increased severity of dehydration had no appreciable effect on metabolic water production.—*Author (courtesy Wistar Bibl. Serv.).*

9611. JACKSON, C. M., and V. D. E. SMITH. The effects of deficient water-intake on the growth of the rat. *Amer. Jour. Physiol.* 97(1): 146-153. 1931.—Of 12 young rats 23-47 days old (1 litter of 5 ♀ albinos, 1 of 4 ♂ hybrids and 1 of 3 ♀ hybrids), 2 were used as normal controls, receiving unrestricted food and water, and remaining active and healthy throughout the 223 days of experiment. The 7 experimental rats were held at nearly constant body weight for several mos. by a restricted water intake, food being unrestricted. The water requirements decreased up to the 2nd or 3rd mo. of the experiments, after which they tended to increase slightly; the food consumption was roughly parallel with the water intake. These rats became emaciated and the organs became dehydrated and dystrophic. The remaining 3 rats were used as "restricted food controls," being given the same amount of food as that voluntarily consumed by the corresponding experimental rats, but unrestricted water; they gained 33-98% in weight; they became emaciated and dehydrated, but to a less degree than the corresponding test rats, thus demonstrating the importance in growth of the water intake, independent of the food consumption.

CARBOHYDRATE METABOLISM

9612. ARNOLDI, WALTER. Der Glykogengehalt der Leber nach Zufuhr einer Glauberquelle. *Zeitschr. Ges. Exp. Med.* 73(3/4): 452-457. 1930.—Of 13 rabbits, 7, and of 20 rats, 11 received Na_2SO_4 water, while the remaining rabbits and rats received plain water. The glycogen content of the liver tended to rise in both rabbits and rats on Na_2SO_4 water, the difference between experimental animals and controls increasing with continued treatment, and also with feeding to the experimental animals of a carbohydrate-rich (instead of a protein and fat-rich) diet.

9613. BAUKE, E.-E. Wird Milchzucker von der Haut resorbiert? (Ein Beitrag zur Frage der perkutanen Ernährung.) *Deutsche Med. Wochenschr.* 56(44): 1869-1870. 1930.—Stejskal has reported resorption of lactose through the skin, evidenced by demonstration of mucic acid in the urine after rubbing a lactose salve on the skin. Bauke was unable to find mucic acid in the urine of any subject (presumably human, number not stated) after application of 160 gm. lactose to the skin as salve. After subcutaneous injection of 5 cc. of a 20% lactose solution, however, the lactose and mucic acid resulting from the oxidation of lactose were demonstrated in the urine. Bauke concludes that the skin is altogether unadapted to the resorption of nutrient material.

9614. BLOCH, JOSEF, und MARIA WEISZ. Reflex- oder Resorptions-hyperglykämie? *Zeitschr. Ges. Exp. Med.* 69(3/4): 453-461. 1930.—The rise in blood sugar after oral administration of galactose is due at first to dextrose which is discharged from the liver as a result of reflex action. Later the hyperglycemia is due in part to the galactose absorbed. When galactose enters the blood, the discharge of dextrose from the liver decreases so that the dextrose level with galactosemia becomes lower than in the fasting state. With slight liver damage there may be increased discharge of dextrose into the blood. Galactosemia begins earlier and reaches a higher level. If the liver is seriously damaged, the reflex discharge of dextrose may not appear because of

the low glycogen storage: there may be higher galactosuria with less hyperglycemia.—*F. N. Allan.*

9615. BORNSTEIN, SIEGBERT. Über den Einfluss der intravitalen Speicherung auf den Kohlenhydratstoffwechsel. *Zeitschr. Ges. Exp. Med.* 66(5/6): 810-816. 1929.—11 rabbits were intravenously and intraperitoneally injected with diluted india ink, using in some cases 50 injections during 17 weeks. Fasting blood sugar values after these injections and those obtained after the ingestion of glucose were compared with the corresponding values obtained with 7 uninjected controls. No appreciable differences could be observed. The blood sugar values after the administration of insulin were obtained, and here likewise there was no appreciable difference between the 2 groups, thus indicating that storage of the carbon particles did not change the capacity of the liver cells to store glycogen.—*L. G. Wesson.*

9616. CAMPANACCI, D., e C. NEGRI. Glutatione e ricambio idrocarbonato. *Ateneo Parmense* 2(3): 184-187. 1930.—In the venous blood of non-diabetics glutathion was found in the proportion of 16 mgm. %; in diabetics, 13 mgm. %. To forestall the objection that this change might be due to anemia (since all the glutathion in the blood is contained in the erythrocytes) he adds that in non-diabetic and non-anemic persons the glutathion/erythrocyte quotient in normal persons and that in diabetics are as 4:3. In necropsy on a diabetic the glutathion was found lowered in almost all the organs below the figures for non-diabetics. In 12 non-diabetic pancreases no remarkable or constant differences were found between the glutathion content of the head, body and tail of the pancreas; but in the 1 case of diabetes examined the reduction of glutathion was greater in the pancreas (1/7) than in any other organ, while the glutathion in the tail was ½ that in the head.

9617. COLWELL, A. R. **The use of constant glucose injections for the study of induced variations in carbohydrate metabolism. I. Methods and controls. II. The effects of insulin, pancreatectomy and nervous manipulations of the pancreas.** *Amer. Jour. Physiol.* 91(2): 664-678; 679-689. 1930.—I. When cats under the uniform influence of amytal anesthesia are supplied continuously with glucose by vein at constant rates, the chief characteristics of their response are as follows: (1) Abnormal glycosuria occurs on the average when the rate of supply exceeds 0.35 gm. per kgm. per hr., increases with advancing rates of supply and tends to approach but not exceed 50% of the supply with administration rates above 1.5 gm. per kgm. hr. The response of any individual animal may vary as much as 15% either way from these averages. With any individual injection rate the glycosuria is fairly constant, after a preliminary period of 2 or 3 hrs., for as long as 19 hrs. and probably longer. The blood-sugar concentration bears no such definable relation to the supply or the excretion of sugar in various animals. In any individual animal under constant conditions (especially of water supply) it is very constant. Increased muscular activity (shivering), with consequent increased consumption of sugar, is reflected ultimately as a distinct reduction in the quantity of sugar excreted. It may be concluded, therefore, that the use of these experimental conditions constitutes a reliable method for estimating the total utilization of sugar in acute experiments on unconscious animals.—II. The administration of insulin diminishes, and of epinephrine increases, the excretion of sugar resulting from the constant injection of glucose by vein. With proper dosage these responses may occur with no corresponding changes in the blood-sugar concentration. Complete removal of the pancreas causes virtually all of a constant supply of glucose to be excreted in the urine. The effect appears gradually over a period of 4-8 hrs. Under amytal anesthesia the ability to utilize glucose is not impaired by stimulation of the major splanchnic nerve after removal of the corresponding adrenal gland and section of the hepatic nerves, by denervation of the pancreas, or by bilateral vagus section.—*Author's summaries.*

9618. CORKILL, A. B., and H. P. MARKS. The effect of adrenaline on muscle glycogen. *Jour. Physiol.* 70(1): 67-85. 1930.—The spinal cat was used, with the abdominal alimentary tract and the kidneys removed, the liver being excluded from circulation though its vessels were still open to the inferior vena cava through the hepatic veins. Satisfied, in a number of control experiments, that it was possible to obtain a balance within fairly narrow limits, and that the muscle glycogen remained practically constant, while the lactic acid showed no tendency to rise, the authors proceeded to experiments in which adrenalin was administered. In 8 complete experiments the epinephrine caused a discharge from the resting muscles of glycogen, none of which appeared in the form of glucose, and only a part as lactic acid, while the sum of the lactic acid so formed and the glucose equivalent of the O used (carbohydrate accounted for) was substantially less than the total of carbohydrate disappearing from the system. In 7 of the 8 experiments the last carbohydrate unaccounted for amounted to 1.6-2.5 gm. A similar discrepancy was observed in experiments in which insulin and epinephrine acted together. It is suggested that the "lost carbohydrate" in the action of insulin on the normal animal is, in part, due to a secondary action of adrenalin.

9619. EGGLETON, M. GRACE, and C. LOVATT EVANS. Lactic acid formation and removal with change of blood reaction. *Jour. Physiol.* 70(3): 261-268. 1930.—Experiments of the authors called for data as to whether changes in the lactic acid content of the blood, consequent on its changes in H-ion concentration, could also be effected by other tissues, particularly by the muscles. Some experiments to answer this question were carried out on heart-lung preparations, 1 on the isolated perfused lung, and the remainder on isolated hind legs, perfused with oxygenated defibrinated blood at 37° C. by the Dale-Schuster pump [1928]. All the experiments were performed on the tissues of dogs. Results with the heart-lung preparation agreed with those of Anrep and Cannan, that the lactic acid content of the circulating blood could be caused to rise and fall with its pH. The experiment with isolated lungs further showed clearly that the lungs alone, even in the presence of a considerable concentration of CO_2, were not competent to reverse, or even completely to check, the accumulation of lactic acid, presumably due to glycolysis in the blood. Perfusions of hind-limb-lung preparations, however, showed that these behaved in very much the same way as the heart-lung preparation, the lactic acid rising and falling with the pH of the blood. It is presumed that the lactic acid removed by the muscles is dealt with in the same manner as that removed after exercise. The importance of avoiding over-ventilation in experiments in which variations in the lactic acid content of the blood are being studied is emphasized.

9620. EGGLETON, M. GRACE, and C. LOVATT EVANS. **The lactic acid content of the blood after muscular contraction under experimental conditions.** *Jour. Physiol.* 70(3): 269-293. 1930.—The experiments were performed on dogs and cats, some decerebrate, others anesthetized. While the average lactic acid content of superficial venous blood runs closely parallel to that of the arterial blood, yet individual samples show variations, the direction or magnitude of which cannot be foreseen or readily explained. The lactic acid content of tissues in general is somewhat less than that of the blood plasma, both at rest and during recovery from exercise, this difference being less readily observable in muscle owing to production of lactic acid during the removal and killing of the tissue. Up to about 10% difference, this could be accounted for on the basis of the higher water content of the plasma. The lactic acid content of muscles which have been given a short period of severe exercise does not come into equilibrium with that of the blood and other tissues until at least 10 min. after the end of the exercise. In the equilibrium then reached

the muscle lactate is lower than the arterial blood lactate. The lactic acid content of the venous blood returning from muscles which have been contracting remains higher than that of the arterial blood throughout recovery, while that from unexercised muscles is lower. The lungs play no part in the removal of lactic acid during recovery. The blood returning from the liver contains less lactic acid (av. 12 mgm. per 100 cc.) than the arterial blood, throughout recovery. Hence the liver removes lactic acid from the blood. Under the conditions of experiment the average rate of disappearance of lactic acid from the blood during recovery was about 2 mgm. per 100 cc. per min. In the eviscerated animal this rate was reduced only to about ½ of that value; hence the liver is not solely responsible for lactic acid removal. The lactic acid content of the blood of the resting eviscerated animal does not rise during the 4 hrs. following the evisceration. Glycogen re-synthesis occurs to a considerable extent in muscles during recovery from exercise, using amytal as anesthetic. The recovery is almost as great in the eviscerated as in the intact preparation. The source of the glycogen is uncertain. Amytal anesthesia as compared with decerebration has no depressing influence on the uptake of lactic acid by the liver during recovery from exercise, nor on the rate of disappearance of lactic acid from the blood stream in general. In the resting condition the blood sugar and lactic acid content of the blood are normal in the animal under amytal anesthesia, but abnormally high in the decerebrate preparation. Perfusion of the hind limbs of frogs with lactate led to no appreciable synthesis of glycogen by the muscles.—*Authors' summary.*

9621. **GLASS, JERZY, und IS. BEILESS. Chlorhaushalt und Kohlenhydratstoffwechsel. I. Einfluss hypertonischer Kochsalzlösung auf den Blutzucker bei Diabetes.** *Zeitschr. Ges. Exp. Med.* 73(5/6): 801-816. 1930.—The influence on the blood sugar of the intravenous and oral administration of NaCl was studied on 16 diabetic and 3 healthy persons. The injection of 20 cc. of 15-20% NaCl solution caused in diabetes a fall which was most marked in the first 2 hrs. This averaged 47 mgm. % for all the cases, which represents, when compared with the normal blood sugar, a percentile fall of 25. The hyperglycemic curve following ingestion of glucose was similarly influenced by hypertonic NaCl. In healthy persons these depressing effects of NaCl were less marked (20 mgm. %). Oral administration of 12 gm. NaCl to 2 diabetics also depressed the blood sugar and retarded the hyperglycemia due to glucose ingestion. Dilution of the blood could not be responsible for these effects on its sugar percentage, since the extent to which this could lower the latter is much less than that actually observed. Lack of correspondence between the curves for sugar and NaCl in the blood showed that osmotic phenomena were not responsible. It appears as if the hypoglycemic effect is due to the Cl-anion rather than the Na-kation.—*Authors' summary (transl. by J. J. R. Macleod).*

9622. **HAYASAKA, ENAJI. Über die Störung der Milchsäureresynthese bei nebennierenlosen Tieren.** *Tohoku Jour. Exp. Med.* 14(4): 359-384. 1929.—The lactic acid and CO_2 in the blood of 22 decapsulated rabbits, as well as their O consumption, was followed for a week after operation. Seventeen animals received injections of Ca lactate intravenously, 2 animals protracted injections of adrenin, and 3 both treatments together. Decapsulation is followed by increased lactic acid in the blood. This excess is reduced by adrenin injections. Adrenin is, therefore, an essential factor in lactic acid metabolism and the fatigue toxin in the blood of decapsulated animals is lactic acid.—*J. C. Donaldson.*

9623. **HIMWICH, H. E., and M. A. ADAMS. Studies in glandular metabolism. I. The source of the lactic acid produced on incubation of the testicle and the submaxillary gland.** *Amer. Jour. Physiol.* 91(1): 172-177. 1929.—After having observed that the percentages of total carbohydrates were approximately the same in each of 3 pairs of testicles and 4 pairs of submaxillary glands of dogs, a study was made of the effect of incubation on the glycogen, intermediary carbohydrate, and lactic acid contents of these glands. Sixteen pairs of excised testicles and 4 pairs of excised submaxillary glands were compared, 1 gland being subjected to glycolysis and the other frozen immediately upon removal. In most instances there was no change in intermediary carbohydrates following glycolysis. Experiments (5), however, offer evidence that incubation may increase the intermediary carbohydrate content to a slight though definite extent. In 5 cases a quantitative relationship was found between the decrease of glycogen and the production of lactic acid; in 9 experiments the decrease of glycogen, though marked, was less than the increase of lactic acid; in 4 other observations the glycogen, which was low in both glands, was unchanged on incubation; and in 2 cases the loss of glycogen was even greater than the increase of lactic acid. The fact that most of the observations showed a decrease of glycogen indicates that this substance is the source of part if not all of the lactic acid formed on the incubation of the testicle and the submaxillary gland.—*Authors' summary and conclusions.*

9624. **JOLLIFFE, NORMAN. The tolerance of normal subjects to levulose. Factors influencing the variations in rise in blood sugar.** *Jour. Clin. Investigation* 9(3): 363-380. 1930.—Levulose tolerance tests (91) and 12 glucose tolerance tests were performed on normal subjects under a variety of conditions. Results have been tabulated according to the fasting blood sugar level with the following conclusions: In normal subjects the maximum blood sugar following administration of 30-50 gm. (based on body weight) of levulose by mouth rarely exceeds 115 mgm. %. A rise in blood sugar to 125 mgm. % or over should be considered an abnormal response to the oral administration of levulose. In the group of convalescent subjects included in this study the levulose tolerance was the same as in the normal subjects studied. Triplicate levulose tolerance tests performed on normal subjects 7 or more days apart show no significant variation in their blood sugar curves. In normal subjects the rise in blood sugar above the fasting level following the oral administration of levulose varies inversely with the height of the fasting blood sugar level. It seems probable that there is a level of blood sugar varying from 95 to 110 mgm. %, which when exceeded stimulates the sugar storage mechanism to clear the blood rapidly of its excess sugar. A period of 10-15 min. elapses after this excitatory ceiling is reached before the sugar storage mechanism begins to cause a significant fall in blood sugar. The rise in blood sugar above this level depends upon the rapidity of absorption of the sugar administered. The rapidity with which the blood sugar falls from its peak probably depends upon the glycogen forming ability of the sugar tested.—*Author's summary and conclusions.*

9625. **KIMURA, KOTARO, und KATSUTAKA KATO. Über den zeitlichen Verlauf der Milchsäureresynthese nach Muskelarbeit.** *Tohoku Jour. Exp. Med.* 14(5/6): 569-579. 2 fig. 1930.—The time course of the resynthesis from lactic acid was studied in relation to the changes in O consumption, blood velocity and blood sugar in the dog gastrocnemius in situ, by measurements on an artery to and a vein from the muscle, before, after, and at periods of 5, 20, and 30 min. following a 5 min. period of electrical stimulation through the nerve. (See following abstract.) In 3 of 5 dogs, the O and sugar consumption, blood velocity, and lactic acid output of the muscle, which definitely rose at the end of the work period, decreased strikingly after 5 min., and again increased at the 20 min. period, while at 30 min. they tended to return to the resting values. The lactic acid output thus showed a parallelism to the oxidation curves of Barcroft and Kato. The 2 maxima in the various quantities are ascribed to effects of a transient local acidosis. The muscles of 2 of the 5 dogs used failed to exhibit the 2nd maximum.—*F. F. Heyroth.*

9626. KIMURA, KOTARO. Milchsäureumsatz im Muskel bei Nierenschädigung. *Tohoku Jour. Exp. Med.* 15 (1/2): 153-176. 1930.—The blood velocity and O consumption rate in the gastrocnemius in situ, together with the sugar and lactic acid content of an artery supplying and a vein draining it, were determined in resting normal dogs and again immediately and 30 and 60 min. after a 5 min. period of electrical stimulation at a rate of 150 contractions per minute. The observations of Hayasaki and others that stimulation increases blood velocity in, O and sugar consumption, and lactic acid output of the muscle, were confirmed. The normal state was restored in 60 min. Forty hours after bilateral nephrectomy, while both the vein and arteries showed greatly increased lactic acid, the difference between these values was subnormal. O consumption by resting muscle was increased, but blood sugar utilization was practically unaltered. Activity increased O consumption and lactic acid output of the muscle less than in normal dogs; the increase in blood velocity was very small. Increased sugar utilization in the muscle was lacking, indicating a disturbance of the carbohydrate metabolism of the muscle. Even after 60 min. the resting state was only approximated. In uremia, the lactic acid produced by muscular activity enters the circulation only slowly and the course of the resynthesis from the lactic acid is disturbed. Similar results were also obtained 60 hrs. after bilateral ureteral ligation, but at 42 hrs. after the ligation there was only a slight deviation from the normal. In nephropathy due to cantharidin, the resynthesis from lactic acid formed by muscular activity was considerably retarded. After uremic poisoning there was no outspoken deviation of intermediary lactic acid metabolism from the normal.—*F. F. Heyroth.*

9627. LISS, G., C. PI-SUÑER BAYO, und T. OSUKA. Weitere Untersuchungen über den Einfluss der Fütterung mit Hefe auf den Ernährungszustand von Muskel und Leber beim Training. *Zeitschr. Ges. Exp. Med.* 74 (5/6): 750-756. 1930.—Of 18 rats on a corn-wheat-casein-glucose diet and subjected to daily exercise, 9 received yeast and 9 did not. The dry weight of liver and muscle, the liver glycogen content, and the lactic acid and P of liver and muscle were considerably higher in the yeast-fed rats than in the controls; there was little difference between the muscle glycogen of the 2 series.

9628. LOEPER, M., et J. TONNET. Production d'acide oxalique par le Taenia. *Compt. Rend. Soc. Biol.* 106(9): 716-717. 1931.—*Taenia* (washed) were tested for glycogen, oxalic acid and glucose content before and after incubation for 24 hrs. The oxalic acid and glucose content increased while the glycogen decreased.

9629. LOEPER, M., R. DEGOS, et J. TONNET. La formation d'acide oxalique dans certaines tissus glycogènes. *Compt. Rend. Soc. Biol.* 106(9): 717-718. 1931.—Two rabbit livers were tested for oxalic acid content, incubated for about 24 hrs. with aseptic precautions, and then retested. Oxalic acid was found before treatment. It increased after incubation proportionately with increase in glucose and is due to the destruction of glycogen. Fresh calf heart gave a similar result.

9630. MASAYAMA, TATSUNORI, und OTTO RIESSER. Über die Beziehungen des Glykogens zu Kreatin und Kreatinphosphorsäure im Kaninchenmuskel. *Biochem. Zeitschr.* 234(1/4): 323-340. 1931.—The ratio phosphagen: glycogen in per cent was the same for the identical animal (rabbit) in different skeletal muscles (white and red), although the absolute values might differ considerably. If within a few days the absolute values of glycogen and phosphagen changed, the quotient remained unaltered. Isolated muscles in an O-containing Ringer's solution lost considerable phosphagen and glycogen when irritated till fatigued. Here, too, the quotient phosphagen: glycogen remained the same. Without addition of O, the isolated muscles decreased their phosphagen content more than the glycogen, lowering the quotient. Fasting animals, especially when treated with epinephrine, lost more glycogen than phosphagen, thus increasing the quotient. Tetrahydro-β-naphthylamine and caffeine caused, within a short period, a great loss of glycogen, while phosphagen underwent little or no decrease. Always the creatine content of the muscles was raised. Under the action of the above mentioned toxins the per cent of total creatine which was bound to phosphoric acid decreased more or less markedly. On the average, in normal muscles 55% of creatin is bound to phosphoric acid; in the muscles of intoxicated animals, 31%.—*From author's summary (transl.).*

9631. MISCHNAT, H., H. SCHOENEN, und P. JUNKERSDORF. Untersuchungen über die chemische Zusammensetzung der Lunge; ein Beitrag zur Stoffwechselphysiologie der Lunge. *Pflüger's Arch. Ges. Physiol.* 226 (3): 448-463. 1930.—Analyses were made of lungs from dogs kept either with constant diet, varying diet, starved or treated with phloridzin, phloridzin and insulin or with adrenalin. Estimations were made of the relative weight of the lungs in proportion to body weight, and of water, glycogen, fat, total N, total P, lipid P and Ca content. The weight of the lungs was between 0.82 and 1.05% of the body weight except with starvation of long duration when it rose (highest 1.93%). The weight of the right lung was some 24% greater than that of the left. Water content was between 77.31 and 79.77% except after long starvation. Glycogen content was very low—mean 0.137%. The highest averages were seen in starved phloridzinised dogs 0.176% and in starved phloridzin-insulin animals 0.174%; the lowest values 0.09% after adrenalin. The greatest variations were seen in the starved animals. The fat content was on the average 12.27% (excluding starved animals); a value of 4.71% was obtained after starvation for 43 days. In animals fattened on carbohydrates the glycogen content of the lungs was somewhat raised, the fat content somewhat lowered. The total protein content was about 12%. Total P estimated as P_2O_5 was 0.777% and lipid P 0.105%. Calcium content was on the average 0.042%.—*H. C Bazett.*

9632. MIYAMOTO, DENZABURO. Über den Einfluss wiederholter Zufuhr überschüssiger Glucose auf den N-Stoffwechsel, die Zuckertoleranz und die Zuckerausscheidungsschwelle. *Japanese Jour. Med. Sci. IV. Pharmacol. Trans.* 4(3): 249-259. 1930.—Repeated daily oral administration of excess of glucose to rabbits causes a decrease in N excretion and an increase in sugar tolerance. The process of deamination as well as that of urea formation is also disturbed. When the daily excess of glucose is given by subcutaneous or intravenous injection, the tolerance for sugar is at first increased but then decreases, the sugar threshold becoming gradually lower. Later still, the sugar tolerance again rises until finally the animal dies. Histological changes in the islets of Langerhans (hyperplasia) are described after the excessive sugar administration.—*J. J. R. Macleod.*

9633. NÉMETH, L. Untersuchungen über die Wirkung der Brenztraubensäure auf die Drosophila melanogaster. *Biochem. Zeitschr.* 231(4/6): 385-392. 1931.—Pyroracemic acid on sugar-free agar in the presence of yeast was an adequate source of food and energy, since the entire life cycle was completed in the plates. The animals soon died on agar without sugar or pyroracemic acid. Similar experiments with chemical combinations chemically and biologically related to pyroracemic acid and the products of intermediary carbohydrate metabolism (acetic, tartaric, formic, lactic, and succinic acids) did not give comparable results. Pyroracemic acid is thus a specific source of food and energy for *D. melanogaster.*

9634. NIELSEN, NIELS A. Die Wirkung des Insulins auf den Glykogengehalt der perfundierten Kaninchenleber. *Biochem. Zeitschr.* 230(4/6): 259-268. 1931.—In perfusion of rabbit livers with defibrinated blood without insulin, a gradual decrease in the amt. of glucose in the perfusion blood occurred, with a corresponding deposition of glycogen in the liver. After perfusion the glycogen was very unevenly distributed. The addition of ½-20 international units of insulin produced a rise of the glucose in the perfusion blood and a decrease of glyco-

gen in the liver. No action occurred with less than this amt.

9635. **OCHIAI, KUNITARO. Über das Kernglykogen im Herzmuskel von Bufo vulgaris japonicus.** *Nagoya Jour. Med. Sci.* 5(2): 125-147. 1 fig. 1931.—Among 40 toads nuclear glycogen was found in the form of distinct granules in the cardiac muscles of 31, both in the ventricular and the auricular walls, but somewhat more frequently and abundantly in the former. It was found most frequently in summer; the other seasons presented no difference as to frequency. Injection of insulin had no influence on the presence of nuclear glycogen in cardiac muscle. The chromatin and nucleoli disappeared, in the glycogen-containing nucleus, only from the sites of the glycogen; the remainder of the nucleus showed no abnormal changes. No relation could be traced between the presence of nuclear glycogen and the fat content of cardiac muscle. Glycogen was as plentiful in the sarcoplasm of cardiac muscle fibers the nuclei of which contained distinct granules of glycogen as it was in other fibers. The nuclear glycogen in these toads was apparently formed from protein bodies by some chemical non-pathologic process the biologic significance of which remains to be explained.—*Author's summary (transl.)*.

9636. **SCHEIFF, W. Untersuchungen über die chemische Zusammensetzung der verschiedenen Leberlappen. Ein Beitrag zur Stoffwechselphysiologie der Leber.** *Pflüger's Arch. Ges. Physiol.* 226(4/5): 481-499. 1931.—The individual lobes of the liver in dogs, rabbits, and turtles, were studied in respect to their contents of water, glycogen, fat, total N and rest N. The different lobes of the same liver as well as the same lobes of different livers show considerable irregular variations in composition. The periphery of a lobe was generally slightly higher in glycogen than the interior. These variations suggest that doubt may be raised concerning conclusions drawn from analyses of portions of the liver in perfusion experiments. The variation in composition of the different lobes is thought to be due to functional variations in the lobes brought about by differences in the composition of the blood entering them.—*D. Wright Wilson.*

9637. **SCOZ, G. Ricerche sul metabolismo dei grassi. VII. Contenuto in glicogeno del tessuto adiposo dei ratti in varie condizioni di alimentazione. [Glycogen content of adipose tissue of rats in various conditions of alimentation.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1037. 1930.—As formerly shown in dogs, in rats no marked difference is present as to the glycogen content of subcutaneous adipose tissue and of omentum. Re-alimentation after fasting is followed by a marked increase of glycogen—*M. Comel.*

9638. **TSUKADA, S. Über den Zuckergehalt in Haut und Blut bei normal gefütterten Kaninchen.** [In Japanese, with German summary, p. 58-59.] *Japanese Jour. Dermatol. and Urol.* 30(6): 561-568. 1 pl. 1930.—The skin sugar content in 25 ♂ and 20 ♀ white rabbits on ordinary diet was calculated from 9 pieces of skin simultaneously snipped from the back of each; samples of blood, 6 in all, were taken from the ear vein of each rabbit at 2-hr. intervals. No sexual differences were found. The values obtained were: skin, min. 73-164 mgm. %, av. 133 mgm. %; blood, 84-139 mgm. %, av. 105 mgm. %; the averages are fairly close to those obtained by Urbach. Apparently he is right in declaring that the skin plays an important part in carbohydrate metabolism.—*From author's summary (transl.)*.

9639. **WIERZUCHOWSKI, M. [et al.]. Intermediärer Kohlenhydratstoffwechsel. VI. M. WIERZUCHOWSKI, W. PIESKOW, und E. OWSIANY. Zuckerassimilation, Phosphor- und Wasserstoffwechsel bei intravenöser Dauerinjektion der Glykose, Fructose und Galaktose. VII. M. WIERZUCHOWSKI, und M. ŁANIEWSKI. Milchsäureproduktion bei intravenöser Dauerinjektion der Glykose, Fructose und Galaktose. VIII. M. WIERZUCHOWSKI. Respiratorischer Gaswechsel der Glykose, Fructose und Galaktose bei ihrer intravenösen Injektion.** *Biochem. Zeitschr.* 230(1/3): 146-172; 173-186; 187-224. 1931.—VI. The total reduction in deproteinized blood ("blood sugar") of 3 well-nourished, fasting dogs was 91-104 mgm. %, of which 54-67 mgm. % was glucose, and 34-40 mgm. % residual reduction. In continuous glucose injection for 3 hrs. (2 gm. an hr.), the amt. of glucose in the blood rose during the 1st hr. to about 300 mgm. %; in the 2nd hr. it sank. Such a 2-phase reaction was found with no other hexose injected. Two hrs. after the injection ended, the glucose sank below its original value and only traces were present in the urine. During the experiment 10.50% of the quantity injected was excreted in the urine, the glycosuria and the glycemia curve showing the 2 phases. With injection of fructose, the concentration rose from hr. to hr. It disappeared from the urine 2 hrs. after injection ceased; 10.3% was excreted. The galactosemia curve rose rapidly during injection, attaining 800 mgm. %. Only 9 hrs. after injection were blood and sugar free; 69.6% was excreted in the urine. The 2-phase glucose reaction disappeared when insulin was given; assimilation was slightly increased. Fructose assimilation was not increased. Galactose with insulin disappeared from the blood more rapidly, and only 58.0% was excreted. During fructose or galactose injections the glucosemia did not increase. When insulin was also injected the glucose concentration of the blood decreased; the simultaneous fructosemia or galactosemia increased. The residual reduction was unchanged during the injection of glucose or fructose. Only that sugar which was being injected showed an increase in the blood. There was apparently no relation between the blood and urine phosphates and the sugar metabolism. The blood was most diluted with galactose, least with fructose. Insulin had an anhydremic action in those cases where it increased assimilation. The amt. of urine was related to the amt. of hexose excreted.—VII. The lactic acid content of the blood in fasting dogs was 7-25 mgm. %; the amt. excreted in the urine hourly was 1.4-5.1 mgm. With injection of each of the 3 sugars, as in VI, the lactic acid curves were characteristic, and the excretion in the urine was similar. Under the influence of insulin, excretion was greater with all 3 sugars. Lactic acid production was as high during sugar injection as during heavy, muscular work. There was also agreement between the drop in the CO_2-combining power of the blood and the increase in lactic acid concentration.—VIII. The av. increase of respiratory, non-protein, quotients during the sugar injection without insulin was: glucose 0.23, fructose 0.24, galactose 0.13; with insulin it was 0.26, 0.30, and 0.18 respectively. The specific dynamic action was 9.7, 13.8 and 17.3% respectively of the caloric content of the assimilated sugar. The greatest increase in heat occurred during the 2nd and 3rd hrs. of injection, being 51, 63 and 32% over basal. Divided into hyperglycemic periods, with insulin the caloric production rose 21, 38, and 23% in comparison to similar periods without insulin, the greatest increases being 57, 85 and 32%. In the hypoglycemic periods in the 7th and 8th hrs. of the experiment, the heat was increased 36%. One half gm. per kgm. was the most sugar an animal could oxidize in an hr. Of the total amt. assimilated, 34% of the glucose, 41% of the fructose, and 56% of the galactose underwent oxidation. Carbohydrate calories furnished the source of specific dynamic increase in heat, giving up to 32% in glucose experiments, 41 in fructose, and 37 in galactose. When 1 mol sugar was oxidized 235 cal. were obtained in each. The oxidation quotient was 3.04 for glucose, 2.48 for fructose, and 1.82 for galactose. On the basis of the first 4 hrs. it was 3.98 for all glucose and fructose experiments. In controls with physiological saline the increase was only 1.87 kgm.-cal. above the average basal metabolism. The heat and the increase in the respiratory quotient during the 2nd and 3rd hrs. were inversely proportional to the concentration of the hexoses injected into the blood. Thus the period of excess sugar in the tissue juices and the specific dynamic action were in general parallel. In many instances the heat curve and the lactic acid in the blood were not

parallel. The specific dynamic action and the oxidation seemed to be greater, the more lactic acid formed.—*From authors' summaries (transl.).*

FAT METABOLISM

9640. **ANDRÉ, EMILE, et HENRI CANAL.** Contribution à l'étude des huiles d'animaux marins. Recherches sur l'huile du Centrophore granuleux (Centrophorus granulosus Müller et Henlé). *Bull. des Trav. Publ. Stat. Agric. et Pêche de Castiglione* 1928(2): 47-64. 1928.—The oils of the egg and of the livers of the fetal, young and adult animals were analysed. The unsaponifiable portion of the oil increases gradually from 50% in the egg to 91% in the liver of dog-fish adults and is composed of highly unsaturated hydrocarbons. Study shows these hydrocarbons to have their origin from glycerides containing fatty acids of the clupanodonic series. The alcohols of the cholesterol group appear to be an intermediate stage as they are much more abundant when the glycerides are present in greater quantity. This agrees with previous studies made upon the livers of young and adult peregrine falcon. This biological reaction is reversed when the oil passed from the liver of the gravid female to the egg.—*Authors' summary and conclusions (transl. by A. G. Mulder).*

9641. **BECKMANN, KURT.** Leber und Mineralhaushalt. V. Die Wasser- und Ionenabgabe der Leber an das Blut bei Blockierung des Retikuloendothels und nach Cholesterinfütterung. *Zeitschr. Ges. Exp. Med.* 67(1/2): 175-186. 1929.—Rabbits were injected with collargol on several days before the experiment; this compound accumulated chiefly in the stellate cells of Kupffer without observable functional damage to the liver. Cholesterol was fed in sunflower seed oil for 4 mos. before the experiment; fat then accumulated in the Kupffer cells without cirrhosis. The concentrations of protein, water, 3 cations and 3 anions were determined in serum drawn before, and 2 min., 10 min., and 15 or 20 min. after, the injection of 20 cc. of an isotonic solution of some one salt into the portal vein. As compared with control rabbits, no differences in blood dilution were found, but various ions appeared to exchange with the liver more or less quickly. Considerable anion deficits were set up in the serum. It is concluded that the reticuloendothelium, as well as the liver parenchyma, is concerned in the regulation of ionic concentrations by the liver.—*E. F. Adolph.*

9642. **BEUMER, H., und F. HEPNER.** Zur Frage der Herkunft des Ergosterins im Organismus. *Biochem. Zeitschr.* 222(1/3): 204-210. 1930.—The results here given are based on "repeated" studies on rats, guinea-pigs and mice. Experiments on 24 mice are tabulated, and a protocol of an experiment on 5 mice given. The animals were fed ergosterol in one or another of 3 ways: dissolved in oil, melted with cholesterol and dissolved in oil, or dissolved in oil with cholesterol and cholic acid. After being fed with cholesterol in one of these forms for 6 days, the animals were killed. The ergosterol in the body was estimated chemically and biologically. The chemical method, based on the fact that irradiated ergosterol loses the power to precipitate digitonin, was carried out by separating the animal extract into 2 portions, one of which was exposed to strong sunlight, the other not, and both then tested against digitonin, the differences in precipitability, affording a basis for estimating the ergosterol content. The results indicated the resorption of ½ the part of the combined ergosterol, but less than 1/300 of the ergosterol fed alone. Analysis of the feces by the difference method showed excretion of large amounts of unresorbed ergosterol though not enough to account for the difference between ingested and resorbed ergosterol, a fact which may, in the authors' opinion, be accounted for either by loss of feces or destruction of ergosterol. This method was not, however, sufficiently delicate to exclude the possibility of the resorption of exceedingly small amounts. For this purpose the extract of an ergosterol fed animal was activated by irradiation and fed to a rachitic rat, in quantity such that, assuming the resorption of 1 mgm. of ergosterol, an anti-rachitic action must have been seen in the rat; no such action was ever seen in repeated experiments. The question remains open whether ergosterol is drawn from the nutrition of the body or is synthesized within it. Until this is answered, Beumer and Hepner believe, the discussion as to whether rachitis is an avitaminosis or not is an empty argument over words.

9643. **BILLS, CHARLES E., and FRANCIS G. McDONALD.** Further studies on the isomerization of ergosterol. *Jour. Biol. Chem.* 88(1): 337-346. 1930.

9644. **BLOOR, W. R., and RUTH H. SNIDER.** The neutral fat of beef liver and other tissues. *Jour. Biol. Chem.* 87(2): 399-413. 1930.—The neutral fat of beef liver was found to be considerably more unsaturated than the fat of the fat depots or of the other organs examined. This finding is in agreement with that of Kennaway and Leathes and supports Leathes' conception of the liver as a desaturating organ for the fatty acids. However, the possibility cannot be excluded that the presence of more highly unsaturated fats in this organ may be due to selection of these substances from the blood, possibly as part of the protective function of the liver. The percentage of fat in most of the livers examined was variable and small both absolutely and in relation to the phospholipid content, and for this reason the phospholipid to fat ratio was high (average about 86: 14). Occasional high fat values in normal samples of all tissues emphasize the normal variability of the fat of the liver and other organs. While the fat content of the organs was variable the phospholipid content was quite constant for each organ and characteristic of the organ. The I number of the liver phospholipid was lower than that of the other organs examined.—*Authors' summary.*

9645. **BOUCKAERT, JEAN J., and E. SOLOMON.** Beta-tetra-hydro-naphtylamine hyperthermia and fat metabolism. *Amer. Jour. Physiol.* 95(2): 417-421. 1930.—No constant relation was discovered between the fat content of the liver and the hyperthermia induced by injection of β-tetra-hydro-naphtylamine in dogs. In some cases the fat content is increased, in other cases it is decreased and in some experiments it does not change. The exchanges of fat between the liver and the tissues thus seem to be independent of the hyperthermic reaction of the animal. Consequently the animals which are poor in glycogen do not use up the stored liver fat to increase their caloric production during the β-tetra-hydro-naphtylamine hyperthermia. It is probable that the increase of metabolism in this condition is due to using up of the protein after the carbohydrates have been depleted.

9646. **BROWN, J. B., and A. L. RAWLINS.** Effect of feeding whale oil on the depot fat of the white rat. *Proc. Soc. Exper. Biol. & Med.* 26(8): 704-705, 1926.—Rats were fed on diets containing 10% and 20% of whale oil for from 2 to 10 weeks. Equilibrium between the food fat and the depot fat is established within 4 to 6 weeks. The highly unsaturated fatty acids of whale oil, including acids with 4, 5, and 6 double bonds, are apparently deposited as such in the depots. When once stored, these highly unsaturated fatty acids are removed only slowly.

9647. **BROWN, J. B., and S. G. MORRIS.** The effect of varying amounts of menhaden oil in the diet on the composition of the body fat of the white rat. The storage of highly unsaturated fatty acids. *Jour. Nutrition* 2(5): 509-515. 1930.—The characteristic highly unsaturated fatty acids of menhaden oil are deposited in the body fat of the white rat when these acids are included in the diet. Diets containing 5-30% of menhaden oil resulted in a deposition of highly unsaturated acids from 9.7-17.2%. In the diets studied, the content of highly unsaturated acids of the depot fat was always higher than that of the diet. The highly unsaturated acids deposited were more unsaturated than those from the original menhaden oil.—*Authors' summary.*

9648. BURR, GEORGE O., and MILDRED M. BURR. On the nature and rôle of the fatty acids essential in nutrition. *Jour. Biol. Chem.* 86(2): 587-621. 1930.—In a previous paper the authors described a disease due to the absence of fatty acids from the diet. This disease is accompanied by impaired growth and the rat declines in weight until death supervenes, usually caused by kidney degeneration. In the present paper it has been shown that the saturated fatty acids fail to cure the sick animals. Those fats which contain no appreciable amount of acids more unsaturated that oleic also fail. Butter and coconut oil represent this type of fat. It would seem, therefore, that oleic acid is also valueless as a cure. All fats which contain much linolic acid (lard, olive oil, corn oil, linseed oil, egg lecithin) readily cure the animals when doses of 100 mgm. daily are fed. Pure methyl linolate is likewise an effective cure, but the whole oils seem to be somewhat better. When the curative oil is fed rapid gains in weight take place and much new fat is deposited. From this and other evidence in the literature, it is concluded that warm blooded animals do not synthesize linolic or linolenic acids and they are dependent on plants for these essential body constituents.—*G. O. Burr.*

9649. CANNAVÒ, L. Contributo allo studio del metabolismo intermedio dei grassi. Influenza della somministrazione di alcuni acidi grassi della serie alifatica sulla chetogenesi e sull'equilibrio acido-basico dell'organismo nei diabetici e negli epato-pazienti. [Influence of some aliphatic fatty acids on ketogenesis and acid-base balance in diabetes and liver diseases.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 805-810. 1930.—Almost all fatty acids produced acidosis, whereas only those with even numbers of C atoms stimulated ketogenesis. Acidosis was accompanied by ammoniuria.—*M. Comel.*

9650. CANNAVÒ, L., e A. ROMANO. Sulla reazione glicemica a minime quantità di adrenalina somministrata per via endovenosa. [Glycemic reaction to minimal amounts of adrenalin intravenously administered.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 810-813. 1930.—The reaction is different in different subjects. In some an initial hypoglycemia was observed. A minimal dose of adrenalin (1/400 mgm.) may alter the blood glucose.—*M. Comel.*

9651. CANTONI, O. Ricerche sulla pretesa esistenza della lipodieresi polmonare. [Studies on the alleged existence of a pulmonary lipodieresis.] *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 10(9): 446-450. 1929.

9652. COSTA, ANTONIO, e GIANCARLO PARENTI. Ricerche sulla partecipazione delle vie sanguigne del polmone e del fegato all'assorbimento di grassi dalle cavità sierose del corpo. [Participation of blood vessels of lungs and liver in the absorption of fat from the serous cavities of the body.] *Lo Sperimentale* 84(4): 257-285. 3 col. pl. 1930.—After injection of vaseline or vegetable oil into the pleural or peritoneal cavities of rabbits the serosal cells showed no phagocyted granules or particles of fat but following a transitory exudation of granulocytes an intensive reaction of histiogenic origin. While the lymph channels mainly were active in absorbing the injected fat some of this was also taken up by the blood vessels since injections into the right pleura gave rise to thrombosis in some branches of the pulmonary arteries of both lungs and in the right bronchial veins, and injections into peritoneum resulted in the presence of fat in branches of the portal vein. The authors discuss the functional significance of lipid phagocytosis by the mesenchymal elements and especially the histiocytes of the lung. They believe that true destruction of fat takes place only in the liver and that the fat found in the other organs is merely arrested and fixed there but not destroyed.—*M. L. Menten.*

9653. DAM, H. Die Bestimmung von Cholesterin nach der Digitoninmethode, besonders in Hühnereiern und Hühnchen. *Biochem. Zeitschr.* 215(4/6): 468-474. 1929.—Upon heating cholesterol with other lipids at 109° the quantity of free cholesterol falls. Upon warm saponification in vacuo and subsequent drying of the saponified extracts at temperatures below 50°, one cannot determine any loss of cholesterol. It is important in determining total cholesterol in hen's eggs and chicks that the fluid be made to 60% KOH concentration before shaking out with ether since one thereby may effect a complete splitting of the cholesterol esters. In the process of splitting sterindigitonins with boiling xylol it must be borne in mind that certain specimens of xylol give non-volatile substances upon long heating.—*H. Dam (transl. by M. B. Visscher).*

9654. DAM, H. Cholesterinstoffwechsel in Hühnereiern und Hühnchen. *Biochem. Zeitschr.* 215(4/6): 475-492. 1929.—It is not definitely known whether or not the cholesterol content of hen's eggs changes during incubation. In agreement with J. H. Mueller it was found that the ester cholesterol increased from 10% to 40% of the total cholesterol during incubation. As a result of feeding cholesterol palmitate (3 gm. daily) the ester ratio increased in one experiment from 0.08 to 0.16, with a fall to 0.12 on discontinuing. Of the cholesterol in egg yolk at most a trace is so bound to protein that it can be extracted with ether only after coagulation or hydrolysis of the protein. In 2 chicks raised to an age of 2 mos. on a diet of known sterol content, the difference between the sterol in the animal and feces, and in the food consumed was more than twice the sterol content of the egg. The Lifschutz reaction for oxycholesterol was either negative or only faintly positive with sterol from eggs or 20 day old chick embryos.—*H. Dam (transl. by M. B. Visscher).*

9655. DAM, H. Cholesterinbilanz des Hühnchens in den ersten zwei Lebenswochen. *Biochem. Zeitschr.* 232 (4/6): 269-273. 1931.—Half of each of 2 hatchings of chicks were killed at once, the others in 11-19 days after normal or special diet, and the cholesterol ester and cholesterol determined. The ester ratio decreased; the total cholesterol decreased, partly by excretion as sterols, partly by internal transformation or by change of the cholesterol in the lumen of the intestine.

9656. DAS GUHA, KARUNA, T. P. HILDITCH, and J. A. LOVERN. The composition of the mixed fatty acids present in the glycerides of cod-liver and certain other fish-liver oils. *Biochem. Jour.* 24(2): 266-290. 1930.

9657. DAVIS, RUSSELL E. The metabolism of tributyrin. *Jour. Biol. Chem.* 88(1): 67-75. 1930.—The average digestibility of tributyrin as determined by 7 trials with 5 hens was 86.9%. If two trials are excluded the average of the first trials was 91.9%. The toxicity of tributyrin is believed to be the cause of the decrease in digestibility when the same hen is used for a second trial. There was some storage of tributyrin in the depot fat when it was injected subcutaneously or intraperitoneally. The saponification number of the depot fat from injected rats was about 285, that from control rats was 195. No tributyrin was stored in the depot fat after tributyrin was fed. It is believed that the fat was transformed in part as it passed through the intestinal wall. The remainder probably was oxidized rapidly. The amount of acetone bodies excreted by both normal and phlorhizinized rats increased when carbohydrate was removed from the diet. When tributyrin was fed the excretion of acetone bodies increased, provided the diet used was very low in carbohydrate; otherwise tributyrin had no such effect. These facts are in agreement with the theory of β-oxidation of the fatty acids and the antiketogenic effect of carbohydrate metabolites. The quantitative relations between carbohydrate oxidation and fat oxidation that fix a maximum ketogenic-antiketogenic ratio for man beyond which acetone bodies appear in the urine in large amounts do not hold at all for the rat.—*Author's summary.*

9658. GAISSINSKY, B. E. Entnervung der Leber und Cholesterin der Galle. *Zeitschr. Ges. Exp. Med.* 62(5/6): 678-687. 1928.—In 2 dogs a bile-duct fistula was produced which diverted all the bile from the digestive tract to the outside through a canula; in a 3d dog a partial fistula was produced. In all 3 the sympathetic innerva-

tion of the liver was severed. In a 4th dog a complete bile-duct fistula was produced and the hepatic vagus communications severed. The collection of daily bile excretion began 5-8 days after operation. In the 3 dogs in which the sympathetic communications were severed the cholesterol content of the bile underwent sharp daily fluctuations not present in normal dogs nor in the one with the hepatic vagus innervation severed. There appeared to be no consistent relation between the cholesterol content of the blood and that of the bile; a lowered cholesterol content might exist in the blood along with a bile containing increased cholesterol, or an unchanging cholesterol content of the blood on days showing wide fluctuations in the cholesterol content of the bile. This fact bears on the question whether the section of hepatic nerves has a local or a general effect. In the dog with hepatic vagus innervation severed, the cholesterol fluctuations of the bile were approximately normal, the total amount being slightly below normal.

9659. GLUSKER, DAVID. Plasma lipid levels in normal dogs in the post-absorptive state and in fasting dogs. *Jour. Biol. Chem.* 88(1): 381-387. 1930.—In each of 10 dogs the 15 hr. postabsorptive plasma levels varied for total fatty acid by the standard deviation of ± 7.0%. The total cholesterol varied by the standard deviation of ± 6.0%, and the ratio between total fatty acid and cholesterol by a standard deviation of ± 5.8%. The total fatty acid plasma levels in each of 10 dogs over a period from the 15th to the 23rd hr. postabsorptive varied by the sigma of ± 4.1% and the total cholesterol by a sigma of ± 3.7%. The total fatty acid plasma levels in 10 dogs under controlled conditions varied from 205 mgm. % to 348 mgm. % with a mean of 271 mgm. % ± 13.0%. The total cholesterol plasma levels varied from 68 mgm. % to 188 mgm. % with a mean value of 115 mgm. % ± 28%. The highest values for total fatty acid and total cholesterol were obtained from an old dog, and the lowest values were given by young dogs.—*Author's summary.*

9660. MACALLUM, A. B. The significance of ketogenesis. *Canadian Med. Assoc. Jour.* 22(1): 3-11. 1930.—A concept of ketogenesis is presented based on the Knoop theory of β-oxidation of fatty acids. Hydroxy- and oxy-acids are produced step by step in the breakdown of the chain, but none are diffusible until the butyric molecules are reached. Hence, these only are found in the blood. The oxidation of glucose is "anti-ketogenic" only in the sense that it consumes the available O to such an extent that only a small part of the fatty acids are burned, not too much to be completely oxidized. When sugar is unoxidizable, or is wanting, "nearly all the O of the metabolizing cells is devoted to the oxidation of fats, and relatively large amounts of the 2 ketone acids are formed, the diffusion pressure of which is so great that they pass into the blood and eventually into the urine."—*W. W. Herrmann.*

9661. MARKOWITZ, CECILE, and FRANK C. MANN. The rôle of the lung in the metabolism of fat. *Amer. Jour. Physiol.* 93(2): 521-527. 1930.—Experiments were performed on dogs in an attempt to evaluate the rôle of the lung in the metabolism of fat; the analysis for fat in the blood was carried out by Bloor's method and for fat in the blood and tissues by Leathes' method. Specimens of lung were removed for analysis under aseptic conditions, and the experiments were performed after the animal had fully recovered. The fat administered was a measured amount of 30% cream, which the animals drank voluntarily. In some experiments, jejunostomy was performed aseptically at the time the specimen of lung was removed, and the fat was administered through the stoma after the animal had recovered from the immediate effects of the operation. To ascertain whether the fat was actually absorbed, the amount of fat in the lung and bowel was estimated at necropsy; the fat in the lung had not increased, nor was there any appreciable difference in the amount of fat in the blood proximal and distal to the lung, as stated by various previous workers. The results were checked histologically. It was not possible to demonstrate that the content of fat in the lung increased following the intravenous injection of citrated chyle obtained from a dog fed on fat. However, in 1 experiment, in which a highly emulsified preparation of fat was injected intravenously, there was a huge increase of fat in the lung, and a definite diminution of fat in the blood from the femoral artery as compared with blood removed from the right ventricle. The results do not support the supposition that the lung plays an especial rôle in the metabolism of fat.—*Authors' summary.*

9662. MEYER, ALICE. Vergleichende Gesamtsterin- und Sterinesterbestimmungen der Haut des wachsenden und erwachsenen Organismus. [Total sterol and sterol ester determinations in the skin of the growing and mature organism.] *Zeitschr. Kinderheilk.* 50(5): 596-607. 1931.—Skin from 36 cadavers examined for sterols with Windaus' digitonin method showed a pronounced percentage decrease with age (in other tissues there is a percentage increase). In the fetus 100 gm. dry skin contained an av. of 1.2 gm. total sterol; in the newborn, 0.65 gm.; in children, 0.49 gm.; in adults, 0.37 gm.; desquamation from scarlet fever, 0.83 gm. Of this 8.2-40.3%, usually 20%, was present as ester, without relation to age. The absolute sterol of the skin increased with age; a premature infant of 1115 gm. wt. showed only 0.19 gm. total sterol, a newborn of 3300 gm. wt., 0.58 gm.; by estimation, a 6 yr. old child had 1.7 gm., a 70 yr. old adult 4.5 gm.

9663. MORUZZI, G. Contributo allo studio dei meccanismi regolatori della colesterina esogena nell'organismo animale. [Mechanisms regulating exogenous cholesterol.] *Ateneo Parmense* 2(6): 629-646. 1930.—Cholesterol was intravenously injected into 15 normal and 15 splenectomized dogs and 1 normal rabbit. Neither in the normal nor in the splenectomized dogs did increase in blood cholesterol follow the injection (which indicates that the spleen is not the repository or regulator of cholesterol); but when (in 5 splenectomized dogs) the reticuloendothelial system was blocked with colloidal Ag or with saccharated Fe oxide, 26.6-65% of the injected cholesterol appeared in the blood of 4 of the 5 dogs.

9664. MOSSE, KARL, und R. BUSSEL. Der Einfluss der Ernährung auf die Zusammensetzung des Fettpolsters. III. Der Einfluss des Ernährungszustandes auf den Eiweissgehalt des Fettgewebes. *Jahrb. Kinderheilk.* 130(3/4): 166-171. 1931.—The fatty tissue of 31 infantile cadavers (along the linea alba) was examined for water, N, and P. By estimation per gm. dry wt., N was found to be constant at 4.1-5.8 mgm.; toxicoses or the nutritive status did not influence it. The decomposition of fat in illness did not alter the proportion of fat to fatty supporting tissue. The water could not be determined accurately because of postmortem evaporation. P was negative in all but 2 cadavers.

9665. NAIR, JOHN H. Lipase in raw, heated, and desiccated milk. *Indust. & Eng. Chem.* 22(1): 42-45. 1930.—A true lipase is a normal constituent of raw cow's milk, as indicated by increase in titratable acidity of high butterfat cream preserved with sucrose and by the development of rancid odors. Pasteurization inactivates lipolytic enzymes, the completeness of destruction depending on the time and temperature of holding. No lipase could be detected in powdered whole or skim milk desiccated by a drying system in which the fluid milk had undergone a preliminary pasteurization at 63-64.5° C. for 30 min. Rancid odors and flavors may be expected to develop in manufactured milk products if the fluid milk is not subjected to sufficient heat treatment for inactivation of lipase.—*Author's summary.*

9666. NESDWEDSKY, S. W., und A. K. ALEXANDRY. Das Verhältnis der verschiedenen Organe zu dem Cholesterin, dem Fett und den Lecithinen nach Versuchen an angiostomierten Hunden. *Pflüger's Arch. Ges. Physiol.* 219(5/6): 619-625. 1928.—The adrenals of fasting dogs of average size produce about 8 mgm. % of cholesterol. After feeding milk and egg-yolk the

transformed cholesterol is held back from the blood by the adrenals. The adrenals do not participate in fat metabolism to any extent. The kidneys do not take up fat. Since the blood from the hepatic vein shows the highest content of any venous blood, it is concluded that the formation of lecithin takes place in the liver.—*Authors' summary (transl.)*.

9667. **NOMURA, TOSHIHARU.** Experimentelle Studien über intravenöse Fettinfusion unter besonderer Berücksichtigung parenteraler Ernährung. IV. Mitteilung. Kraftwechsel nach Fettinfusion. *Tohoku Jour. Exp. Med.* 13(1/2): 51-64. 1929.—The metabolism of rabbits was determined by the Haldane technique. Five hours after intravenous injection of a fine emulsion of fat into animals fasted for 1 day neither the heat production nor the R.Q. showed any change. In animals starved for 4-9 days the R.Q. fell after the fat injection and an N-sparing action became apparent.—*G. T. Cori.*

9668. **PAGE, IRVINE H., und EUGEN MÜLLER.** Über ein neues Sterin im menschlichen Gehirn. (Vorläufige Mitteilung.) *Naturwissenschaften* 18(41): 868. 1930.—A new sterol with the formula $C_{26}H_{44}O$ was isolated.

9669. **PFEIFFER, G.** Die Cholesterine im Strukturverbande des Protoplasmas. IV. Mitteilung: Untersuchungen an der Rinderleber. *Biochem. Zeitschr.* 222(1/3): 214-220. 1 fig. 1930.—Studies on the cholesterol composition of several livers of year-old cattle show a high content of oxycholesterol and esterified cholesterol, ascribed to the excretory function and the esterifying ferments of the liver. Among the various sources of liver cholesterol is that set free by the normal destruction of erythrocytes.—*Author's summary (transl.)*.

9670. **PINCUSSEN, LUDWIG.** Über Veränderungen des Stoffwechsels unter Bestrahlung. IV. Untersuchungen über den Fettgehalt der Organe. Von Eugen Zuckerstein. *Biochem. Zeitschr.* 207(4/6): 426-431. 1929.—Guinea pigs on a mixed diet were radiated with a mercury arc lamp for varying lengths of time when the stomach was empty, and killed 30 min. later, the percentage of ether-soluble substances of the serum was thereby increased over that of controls (from 0.355 to 0.548%); that of the heart and liver was decreased (2.60 to 1.55% and 6.16 to 2.03% respectively); while that of the kidneys and muscles was not greatly affected (2.58 to 2.34% and 0.86 to 0.89% respectively). The cholesterol content of the liver and kidneys was increased by radiation (0.185 to 0.226% and 0.208 to 0.300% respectively); while that of the serum, heart, and muscles was not changed. An appreciable increase in blood esterase was found after radiation. The effect of the injection of eosin prior to radiation was also studied in each of these cases with an inconstant result.—*L. G. Wesson.*

9671. **REED, LUCILLE L., FUMIKO YAMAGUCHI, WILLIAM E. ANDERSON, and LAFAYETTE B. MENDEL.** Factors influencing the distribution and character of adipose tissue in the rat. *Jour. Biol. Chem.* 87(1): 147-174. 4 fig. 1930.—In every case more fat was stored by rats ingesting rations rich in fat than by those on a diet rich in the carbohydrate, corn-starch. The proportionate distribution of the stored fat was similar for rats of the same sex and weight, regardless of the type of diet fed. As the rats of both sexes upon both diets increased in body weight, they stored more fat in proportion to body weight (with the single exception of rats of 150 gm. body weight ingesting the corn-starch diet which showed no increase over the rats of 50 gm. body weight). The proportion of subcutaneous fat was largest in small rats (50 gm. body weight). Male rats of 250 gm. body weight stored more fat in the perirenal fat depot than female rats; the latter tended to store more fat in the genital fat depot. The distribution of reserve fat in the ♀ rat of 180 gm. body weight, selected as representing the end of the period of most rapid gains in weight, was approximately: Subcutaneous, 50% of total fat; genitalia, 20%; perirenal fat, 12%; mesenteric fat, 10%; intermuscular fat, 5%; omental fat, 3%. The distribution of reserve fat in a normal rat was independent of the type of diet fed; however, the amount of fat stored by a rat was greatest in rats fed a ration rich in fat. No change in the distribution of fat was observed under any condition except forced exercise, voluntary running at night, and undernutrition. Forced activity and nocturnal activity increased the proportion of intermuscular fat. A decrease in the proportion of genital fat in the rats ingesting the starch diet followed either forced activity or undernutrition. The degree of saturation of the stored fat was dependent upon the diet of the rat. Fat stored in different depots showed slight variations only in degree of saturation; differences in chemical nature were not coincident with the location of the fat. In general, the chemical nature of the fat in any one depot was not changed by activity or the amount of food eaten. The single exception was the group of rats ingesting the coconut oil diet, fasted until their body weight decreased 30%.—*Authors' summary.*

9672. **REWALD, B.** Über den Phosphatidgehalt der Organe bei Verfütterung grosser Mengen von Phosphatiden. II. *Biochem. Zeitschr.* 208(1/3): 179-184. 1929.—The feeding of 30 gm. of phospholipid per day for 15 mos. to a dog resulted in an increase in the phospholipid content of the organs over the normal but in no further increase over the values found in a dog fed these large amounts of phospholipid for 6 mos. The phospholipid was completely absorbed.

9673. **REWALD, B.** Über Lipoide. VI. Lipoidgehalt in Fischorganen. Lipoide in Heringen. *Biochem. Zeitschr.* 206(4/6): 275-281. 1929.—Acetone is not adapted to the quantitative separation of the phospholipids from other lipids of fish oil because of the solubility of the phospholipids in acetone. Ethyl acetate is to be preferred. Herring muscle contained 3.6% phospholipid; roe, 13.9%; milt, 10.3%; liver, 12.6%, calculated on a dry basis.—*L. G. Wesson.*

9674. **RIBADEAU-DUMAS, L., et [E.] ANDRÉ.** De l'emploi de l'aleurone des graines oléagineuses dans l'alimentation de l'homme. *Bull. Acad. Méd.* [*Paris*] 101(18): 620-623. 1929.—The press cake of oily seeds is considered. A representative analysis, that of the aleurone of helianthus, is given. Ash content is high. Feeding trials with human infants were made. The aleurone can meet the body's need for protein. It is not a perfect food, however, but requires supplementing with a source of vitamin A, cod liver oil being used in these experiments.—*G. R. Cowgill.*

9675. **ROSENTHAL, SANFORD M., and RALPH D. LILLIE.** Functional and histologic studies of the effect of fat ingestion upon the normal and damaged liver. *Amer. Jour. Physiol.* 97(1): 131-141. 3 fig. 1931.—Experiments on 13 dogs show that lipemia (spontaneous or experimental) causes a slight impairment of liver activity as shown by a retention of bromsulphalein in the blood. This amounts to 5-11% 15 min. after injection of the dye. There is no increase in urobilinogen excretion in the urine and no elevation of bilirubin in the blood. If lipemia is produced in a dog whose liver has been previously damaged with chloroform or CCl_4, the retention of bromsulphalein amounts to 20-40%. Splenectomy and reticulo-endothelial cell blockade produce negligible disturbances in the removal of bromsulphalein from the blood. This is further evidence that this dye is removed from the blood almost entirely by the liver. Varying degrees of sustained lipemia were produced by feeding large amounts of cream to 8 dogs for 1-20 days; no appreciable amount of fat was taken up by the Kupffer cells. There are normally present in dogs considerable accumulations of fat in the biliary epithelium, both in the intrahepatic ducts and in the gall bladder. No correlation could be made between the quantity of fat in the bile duct epithelium and diet, in dogs on a high fat diet, dogs on a low fat diet, or dogs starved for 1-4 days.

9676. **SCHÖNHEIMER, R., H. v. BEHRING, und R. HUMMEL.** Über die Hydrierung des Cholesterins im

Organismus. [Cholesterol hydrogenation in the organism.] *Naturwissenschaften* 18(7): 156-157. 1930.—The cholesterol taken in food appears, in part, in the feces in the form of 2 hydrogenated isomers, koprosterol and dihydrocholesterol. A new and more sensitive method of detection reveals the presence of these hydrogenated sterols in cholesterol preparations, from all organs tested. The hydrogenated sterols in the feces are believed to arise thus, since they were not found in the sterols from the thoracic duct. Dogs in which the small intestine was severed from the large, and caused to void through an anus praeternaturalis, the large intestine leading, as a blind organ, to its own anus, excreted the hydrogenated sterols through the large intestine.

9677. SCHUETTE, H. A., and RALPH W. THOMAS. The composition of the fat of the silver black fox. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 25: 113-116. 1930.—A quantitative analysis is reported (from animals bred in captivity). Glycerides of palmitic, stearic, oleic and linoleic acids are present. The fat has a composition similar to, but not identical with, that of the wild fox.

9678. SCOZ, G. Ricerche sul metabolismo dei grassi. V. Il glicogeno nel connettivo sottocutaneo e nell'omento. [Studies on fat metabolism. V. The glycogen content of subcutaneous connective tissue and of the omentum.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 472-473. 1930.—During fasting and feeding with carbohydrates and fats the glycogen content was found to vary correspondingly in the subcutaneous connective tissue and in the omentum.—*M. Comel.*

9679. SCOZ, G. Ricerche sul metabolismo dei grassi. VI. Il contenuto in glicogeno del tessuto adiposo sottocutaneo di animali alimentati con carne. [Studies on fat metabolism. VI. Glycogen content of subcutaneous adipose tissue in animals fed with meat.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 479-481. 1930.—The glycogen content of adipose tissue of dogs kept fasting or on a low diet did not vary with the kind of food. On overfeeding or refeeding with bread, the glycogen content was 500-3000 mgm. per 100 gm. tissue, whereas it was less than 200 mgm. if the dogs were fed with meat. The glycogen content shows thus an increase during alimentation when bread is given but not with a meat diet.—*M. Comel.*

9680. SINCLAIR, ROBERT GORDON. The metabolism of the phospholipids. 1. The influence of diet on the amount and composition of the phospholipid fatty acids in various tissues of the cat. *Jour. Biol. Chem.* 86(2): 579-586. 1930.—The degree of unsaturation of the phospholipid fatty acids in the liver, heart, kidneys, smooth and skeletal muscle, intestinal mucosa, and probably the brain was consistently higher when cats were fed on an exclusive diet of beef kidney than when fed on hashed beef muscle. This fact may indicate either that phospholipid is intermediary in the metabolism of fat or that the tissue phospholipids undergo continual wear and tear and replacement at the expense of food fat. The amount of phospholipid fatty acids in all tissues except the liver was the same for both diets; in the liver there was a greater content of phospholipid when beef kidney was fed than when the diet consisted of beef muscle.—*Author's summary.*

9681. SINCLAIR, ROBERT GORDON. The metabolism of the phospholipids. 2. The influence of growth of the phospholipid (and cholesterol) content of the white rat. *Jour. Biol. Chem.* 88(2): 575-587. 1930.—A study of the content of phospholipid fatty acids and unsaponifiable material in the entire bodies of white rats during the first 4 mos. of life has shown: That the phospholipid content, expressed in relation to the tissue solids, decreases rapidly after birth, the period of most rapid decline in the phospholipid content coinciding with the period of most rapid growth. On account of the rapid decrease in the water content of the tissues of the rat as a whole during the first few weeks of postnatal life, the phospholipid content of the moist fat-free tissues increases rapidly after birth, reaches a maximum in about 3 weeks, and then declines throughout the remainder of the period studied. The ratio phospholipid fatty acids: unsaponifiable material remains practically constant during the first 3 mos. of life.—*Author's summary.*

9682. STIRPE, GIULIO. Sulle variazioni del tasso colesterinico del siero di sangue nell'uomo nel regime alimentare ipercolesterinizzante in condizioni normali e patologiche. [Cholesterol content of human blood serum, normal and pathologic, during the use of a high cholesterol diet.] *Policlinico [Sez. Pratica]* 37(45): 1625-1630. 1930.—A high cholesterol diet, given in the form of 4-8 eggs a day for 4-10 days to each of 30 persons (10 normal, 10 hypertonics, 10 with hepatic calculi) produced no perceptible changes in blood serum cholesterol. The 20 pathologic cases were more or less distinctly hypercholesterolemic.

9683. SUSSO, BIONDI G. Sull'incapacità dell'organismo degli uccelli di condensare l'urea coll'acido glicerico. [Inability of birds to conjugate urea with glyceric acid.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 980-981. 1930.—Administration of glyceric acid and glycerol per os to chickens and geese was not followed by increased uric acid excretion, even when in the meantime urea was administered. Most of the urea was excreted as such, a minimal portion being converted into ammonia.—*M. Comel.*

9684. TAKAHASHI, W. Über die Tributyrinspaltung im Blute und Serum verschiedener Tiere. *Pflüger's Arch. Ges. Physiol.* 225(1): 42-48. 4 fig. 1930.—The method of Rona and Michaelis was used. With the defibrinated bloods of animals the following series was obtained, in order of their hydrolyzing power: rabbit, cat, horse, man, dog and ox. This order does not agree with that obtained by Galehr and Plattner for acetylcholin. In cat and horse blood the serum contained all of the hydrolyzing power while in the other animal bloods studied the formed blood constituents contributed to this power. Urethane anesthesia decreased this hydrolytic power of rabbit blood.—*Author's summary (transl. by A. G. Mulder).*

9685. TERROINE, E. F., et P. BELIN. Formation des graisses aux dépens des proteiques et autolyse aseptique du sang. *Arch. Internat. de Physiol.* 26(3): 295-300. 1926.—Dog blood, drawn aseptically and preserved in hermetically sealed tubes at 37° for about a year, showed no change in either total fatty acids, unsaponifiable, or cholesterol.

9686. THIERFELDER, H., und E. KLENK. Die Chemie der Cerebroside und Phosphatide. viii+224pp. (Bildet Bd. 19 der "Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere.") [(Vol. 19 of "Monographs of the entire field of plant and animal physiology.")] J. Springer, Berlin, 1930. M. 19.60.

9687. TIMON-DAVID, J. Recherches sur les matières grasses des insectes. *Ann. Fac. Sci. Marseille* Sér. 2. 4(2): 29-207. 4 pl. 1930.—This work is a comparative biochemical study of the composition of the fats in a number of species of insects, of the metabolism of these fats, and of the factors that may influence the latter. The fatty substances were extracted with ether or petroleum ether. Oils, liquid at ordinary temperatures, were obtained from *Pyrausta nubilalis* Hübn. and *Ergates faber* L., solid fats from *Rhynchophorus palmarum* L., and "butters" with a crystalline aspect from *Pemphigus utricularius* Pass. and *Aphis rumicis* F. The waxes were left entirely out of consideration. The fat content of a species is constant, but varies greatly among species of different groups. In larvae the fat content is sometimes considerable. On a live weight basis *Pyrausta nubilalis* Hübn. yields 26.5% fat, *Balaninus elephas* Gyll. 28%, *Cossus ligniperda* F. 27.5%. In other species the yield is less; e.g., 13% in *Ergates faber* L. In still others it is low; e.g., 1.5% in *Lymantria dispar* L., 0.94% in *Lycophotia margaritosa* Haw. The chemical properties of the substances extracted vary considerably. The iodine number ranges from 164.5 in *Saturnia pyri* Sch. to 7.5 in *Pemphigus*. Intermediate values are 112 in *Thaumetopoea pityocampa* Sch., 80.8 in *Pyrausta*

nubilalis Hübn., 39.8 in *Rhynchophorus palmarum* L., and 16.2 in *Aphis rosae* L. The saponification numbers are remarkable in the aphids where 255 is reached in *Pemphigus utricularius* Pass., and 265.7 in *Aphis rumicis* F. The content of unsaponifiable matter is generally low, being in no case as high as in the waxes. By Leys' method 0.75% was found in *Ergates faber* L., 1.68% in *Pyrausta nubilalis* Hübn., 8.5% in *Thaumetopoea pityocampa* Sch., and 10% in *Pieris brassicae* L. The content of non-saturated acids ranged from 82% in *Pyrausta nubilalis* Hübn., to 40.5% in *Rhynchophorus palmarum* L. It could not be determined in aphids, but it is certainly very low. Raising the temperature appears to lower the iodine number. The character of the food of the insect has a great influence on the fat content and on its chemical composition. The larvae that are richest in oil are those that feed largely on glucids (*Balaninus elephas* and *Cossus ligniperda* F.) or on lipids (*Docus oleae* and *Pachymerus acaciae*). In the latter case the composition of the oil depends partially on that of the oil ingested. Hibernation in *Pyrausta nubilalis* Hübn. does not lead to any diminution of the reserve of oil accumulated by the beginning of winter, but metamorphosis is accompanied by a considerable disappearance of fat. Saturated and non-saturated fatty acids are lost equally in *Pyrausta nubilalis* Hübn., but in *Pieris brassicae* L. the non-saturated acids suffer the greater loss. The fat content of females is often greater than that of males. The fats of species of the same family are generally of similar composition, which is explained in most cases by the similarity of their food. —*J. Timon-David* (*transl. by F. L. Campbell*).

9688. VERNE, JEAN. Démonstration histochemique de la formation de corps a fonctions aldéhydiques aux dépens des enclaves graisseuses et lipidiques. *Compt. Rend. Soc. Biol.* 99(22): 266-269. 1928.—Oxidation of the visible lipids of cells (stainable with Sudan) causes the formation of bodies which give the Schiff reaction for formaldehydes.

9689. ZAGAMI, V. De la cétogenèse en fonction de la nature de l'alimentation chez le porc. *Arch. Internat. Physiol.* 33(2): 159-172. 1930.—From experiments of which 3 are detailed Zagami concludes that on strict glucide diet, the pig excretes an abundance of ketone compounds; when either a strict protein or a strict fat diet (especially the latter) is substituted, the excretion of ketone bodies increases, the increase affecting only β-oxybutyric acid in the case of the protein diet, but involving all the ketone compounds in the case of the fat diet. Ammonia excretion is not parallel with that of the ketone bodies, being higher on a protein than on a fat diet, while ketone production is higher on the fat diet. Ammonia production depends both on the degree of acidosis and the amount of N metabolism.

9690. ZAKOLSKA, ZENOBJA. Badania histochemiczne nad ciałem tłuszczowem larw i poczwarek Tenebrio molitor. [Histochemical researches on the adipose tissue of larvae and nymphs of T. molitor.] [With French résumé, p. 794-797.] *Kosmos* [*Lwów*] 53(4): 779-797. 2 pl. 1928(1929).—This tissue surrounding the alimentary tract may contain neutral fats, fatty acids, albuminoid substances and glycogen; the peripheral fat body lacks albuminoids. The granules of the cells are termed albumino-fatty granules for they react as albumins as well as fatty acids. Neutral fats appear in very large amounts in the young larva (0.5 cm.) while only traces of fatty acids and albumins are found. These increase with the growth of the larvae. Maximum neutral fats are present in the pupa while the fatty acids and albumins reach their peak in the fully grown larva. Contrary to other writers, the quantity of albumino-fatty granules seems to remain constant during histolysis. There is a diminution in the amount of the granules present in certain cells at the close of metamorphosis. Glycogen appears in the larva of 0.7-0.9 cm. and reaches its peak in the larva with a length of 2.8-3 cm. It is reduced to a mere trace at the beginning of pupation, in the peripheral fat body and in the hypodermal cells, a diminution believed to be due to the reduction of metabolic processes. The reduction of glycogen in the adipose tissue is unquestionably due to the increase of reserve material in the oöcytes. Glycogen also has a specific rôle in molting for, while absent from the hypodermal cells prior to molting, it is present afterward. Its fluctuation in quantity is of significance in the formation of chitin.—*Author's summary* (*transl. by H. R. Hagan*).

MINERAL METABOLISM

9691. ARNOLDI, WALTER. Der Einfluss verschiedener Ernährung auf die Glauberquellwirkung. [Effect of different diets on the action of mineral (Na_2SO_4) water.] *Zeitschr. Ges. Exp. Med.* 73(3/4): 458-463. 1930.—Of 6 rats 3 were kept on a fat-and-protein diet and 3 on a carbohydrate-rich diet. During a preliminary period of 2-3 wks. the fat-and-protein diet increased weight more than the carbohydrate-rich diet. The administration to all the rats of Na_2SO_4 water reversed the relations. The rats on fat-and-protein now decreased in weight, and excreted more Ca, P and "Vakat-O." The rats on carbohydrate-rich diet tended to increase in weight, the urinary Ca and P excretion did not increase so much, and the oxidative processes judged by the "Vakat-O" were only slightly affected.

9692. BACHARACH, A. L. Effect of added iron on the haematopoietic properties of dried milk. *Lancet* 219 (5592): 957-958. 1930.—Hart, Steenbock technique was used on albino rats of the Wistar Institute Tyler strain; hemoglobin estimations were made on a Dare hemoglobinometer. Controls (3 ♂♂ and 2 ♀♀) were given unlimited fresh cow's milk; experimental animals (likewise 3 ♂♂ and 2 ♀♀) received dried milk plus Fe, reconstituted with 7 times its weight of water. The hemoglobin index was almost constant and normal in animals fed dried milk, but was rapidly lowered in control series. The food intake was found to be almost constant, above 40 gm. milk per rat per day. The controls grew more rapidly, average increases in weight in 60 days being 28 and 35 gm. Raw milk had 1.5-2.0 Fe and 0.4 Cu: dried milk 5 Fe and 0.23 Cu parts per million of liquid milk used. The author concludes "that the recognised low hematopoietic properties of milk solids can be materially enhanced by drying in the milk appropriate quantities of a suitable Fe salt, and that in this way a dried milk may be prepared containing sufficient Fe and Cu to allow normal hemoglobin formation in the young growing albino rat."

9693. BERTRAND, GABRIEL, et VORONCA-SPIRT. Recherches sur la présence et la répartition du titane chez les animaux. *Ann. Inst. Pasteur* [*Paris*] 45(1): 102-106. 1930.—Ti was found in tissues of the horse, calf, sheep, pig, rabbit, chicken, whiting, mackerel, carp, smelt, turtle, shrimp, snail (2 species), Portuguese oyster and 3 other shellfish.

9694. BERTRAND, GABRIEL, et Y. BEAUZEMONT. Sur les variations de la teneur en zinc des animaux avec l'âge: influence du régime lacté. [Variations in the zinc content of animals with age: influence of milk diet.] *Ann. Inst. Pasteur* [*Paris*] 45(2): 247-250. 1930.

9695. BETHKE, R. M., D. C. KENNARD, and C. H. KICK. The availability of calcium in calcium salts and minerals for bone formation in the growing chick. *Poultry Sci.* 9(1): 45-50. 1929.—Calcium in the form of carbonate, sulphate, lactate and phosphate salts, or as the commonly used minerals: limestone, steamed bone meal, rock phosphate, phosphatic limestone or oyster shells, was found to be equally available for bone formation in the growing chick. Best calcification was observed in one experiment in which $CaCO_3$ was used when the Ca level of the ration was 0.858% and P 0.442%.—*F. E. Mussehl.*

9696. BISHOP, WILFRID B. S. The occurrence of lead in the egg of the domestic hen. Part III. *Med. Jour. Australia* 1(24): 792-806. 13 fig. 1929.—Weights of eggs from a Black Orpington hen and a white Leghorn hen averaged, over 6 and 9 mos., 59.58 gm. and 55.70

gm. respectively, with an average loss during incubation of 0.573 gm. and 0.438 gm. The weights of embryos from White Leghorn eggs were found to be in good agreement with previous results as were also the ashes of the embryos. Absorption by the embryo of the Pb naturally present in the egg and of injected Pb compounds was studied. From 31.5 kgm. of yolk material, 0.0106 gm. of a twice precipitated substance which analysis suggests to be a lead lecithin compound, and 0.2860 gm. of lead oleate were obtained. Schemes for the separation of these substances are given.—*W. B. S. Bishop.*

9697. BOYCOTT, A. E., and G. R. CAMERON. Manganese in foodstuffs. Its possible relation to cirrhosis of the liver. *Lancet* 219(5592): 959. 1930.—Since Mn salts have been shown (Hurst) to be effective in producing cirrhosis of the liver (rabbits), a condition which is associated with but apparently not directly due to chronic alcoholism (man), the authors conjectured that in chronic alcoholism, abnormal appetites might lead to selection of a diet high in Mn. Shell fish, condiments, tea, coffee and cocoa were analyzed and were found in general to contain only traces or small quantities of Mn. It is concluded that "a vegetarian teetotaler will probably take in more Mn than a heavy drinker."

9698. BOYD, O. F., and J. F. LYMAN. Utilization of calcium soaps by the white rat. *Proc. Soc. Exp. Biol. & Med.* 27(8): 871-873. 1930.—Male rats, about 35 days old, on a diet consisting of: casein, 18%; mineral salts, 3%; sucrose, 35%; starch, 36%; various Ca soaps, 4 or 8%; yeast, 0.2 gm. daily; and cod-liver oil, 2 drops daily, utilized Ca palmitate to the extent of 38-66%; Ca oleate, 90%; Ca stearate, 25-45%; and mixed Ca soaps from lard, 70-75%.

9699. CHARIT, A. J. Phosphorstoffwechsel im Intermediärgebiet nach Versuchen an angiostomierten Hunden. *Pflüger's Arch. Ges. Physiol.* 218(5/6): 642-646. 1928.—Five organs take part in intramediary P metabolism. The intestine absorbs the inorganic P from the chyme; the liver holds back part and uses part of its P in forming compounds in response to hormones from the pancreas and the adrenals; the P that passes through the liver is in part held by the kidney and in part excreted.

9700. COMPERE, EDWARD L. The effect of phosphorus in rickets. II. Chemical changes in the blood in rickets following administration of phosphorus. *Amer. Jour. Dis. Children* 40(6): 1177-1192. 1930.—In the 2 papers of this series, Compere has reported the roentgenographic changes in the bones and the chemical changes in the blood of 10 rachitic infants and 1 nonrachitic patient following the administration of cod liver oil, elementary P or a combination of the 2. The results parallel roentgenographic studies. The reaction of the blood serum is not important in the healing of rickets in infants. P alone does not cause any significant change in the Ca or P content of the blood serum, or in the product of the 2, when administered in minute doses in cases of severe rickets in which there has been no initial stimulation from ultraviolet light or from the administration of cod liver oil, nor does it cause healing of the rickets. Cod liver oil administered alone to infants with severe rickets causes a definite increase in the product of the Ca content and P content of the blood. When P was administered together with cod liver oil the product of the Ca and P increased rapidly. The combination of P and cod liver oil appears to produce more prompt and more certain healing of rickets.

9701. DELBET, PIERRE, et PIERRE BRETEAU. Vieillissement et magnésium. *Bull. Acad. Méd.* [*Paris*] 103(10): 256-266. 1930; also in: *Rev. Internat. Med. et Chir.* 41(3): 30-35. 1930.—The ameliorating effect of halogen salts of Mg in certain diseases associated with old age suggested the possibility that Mg diminishes in the body with advancing age. The Mg: Ca ratio was therefore studied in the testicle and in the brain. In the testicle (number of subjects not stated) the Mg: Ca ratio in infants of 1 mo. and 3 mos. was 1, in adults (35-45 yrs.) 0.8, and in old people (over 65) 0.34. In 5 brains the ratios were 0.65 (40 yrs.), 0.8 (45 yrs.), 0.36 (68 yrs.), 0.2 (74 yrs.), 0.33 (75 yrs.). The absolute figures of Ca and Mg were more variable, but the ratios appeared to sustain the theory of a comparative accumulation of Ca and loss of Mg with advancing years.

9702. DUBUISSON, M., et J. van HEUVERZWYN. Nouvelles recherches sur la répartition du manganèse chez les mollusques. *Arch. Internat. Physiol.* 33(1): 86-91. 1930.—The lamellibranchs examined (*Tapes, Avicula, Mytilus, Pinna*) were relatively poor in Mn as compared with another mollusk of the same group, *Anodonta cygnaea*, in winter. In *Pinna* (as also in *Anodonta*) marked individual variations were found. The branchiae of *Mytilus* and *Pinna* (like those of *A. cygnaea*, in winter) were richer in Mn than the other tissues. The gastropods examined had variable Mn contents even when gathered at the same time and in the same submarine region. The high proportion of Mn in *Cerithium vulgatum* Brug and *Turitella communis* Risso is under histologic investigation.—*From authors' summary (transl.).*

9703. FOWEATHER, F. S., and C. J. POLSON. Iron storage in splenectomised rabbits. *British Jour. Exp. Path.* 11: 362-368. 1930.—Parallel experiments were done on intact and splenectomised rabbits. These were given 160 mgm. of Fe intravenously in divided doses and were killed in pairs at intervals ranging from 1 day to 2 mos. after the last dose. A series of controls not receiving Fe was also done. The organs of all the animals were examined chemically and histologically; iron was determined by the authors' method. The absence of the spleen does not affect the storage of Fe, its principal center being the liver. Failure to find a reservoir of Fe in the lungs precluded the possible function of the spleen in the transference of Fe from the lungs to the liver. The presence of a pigment was noted and yielded the staining reactions ascribed to hemofuscin by Mallory. Since the only new factor recognized in these experiments, repeating similar ones in which this pigment was not found, was the addition of mangels to the diet, these may be responsible for the pigment.—*J. Bland.*

9704. HAAM, EMERICH. Zur Frage des Einflusses der Milz auf den Eisenstoffwechsel. V. [Influence of the spleen on iron metabolism.] *Zeitschr. Ges. Exp. Med.* 73(1/2): 83-91. 1930.—The feces of 2 dogs, a ♂ and a ♀, were analyzed before and after splenectomy; also the feces of a ♀ non-splenectomized control. Contrary to the findings of Asher and Nakajama, but in agreement with the majority of authors, splenectomy did not increase the Fe in the feces.

9705. HASTINGS, A. BAIRD, and ARTHUR H. STEINHAUS. A new chart for the interpretation of acid-base changes and its application to exercise. *Amer. Jour. Physiol.* 96(3): 538-540. 1931.

9706. KALBERMATTEN, RUDOLF. Das Verhalten des Eisenstoffwechsels bei normalen und milzlosen Tieren in der Unterdruckkammer. (LEON ASHER. Beiträge zur Physiologie der Drüsen. Nr. 122.) *Biochem. Zeitschr.* 226(4/6): 429-440. 3 fig. 1930.—That the spleen is an organ concerned with Fe metabolism, has been amply demonstrated. Other organs (the liver or reticulo-endothelial system) may take over this function after the spleen has been removed. The author's plan was to ascertain the amount of Fe excreted in the feces of normal and splenectomized guinea-pigs when placed in a chamber under reduced pressure (300 to 350 mm. Hg). A description of the method, apparatus used, and the method for determining the Fe is given. In 3 animals there was an increase of 46, 30, and 10% in the excretion of Fe per day immediately after extirpation of the spleen. A second experimental period, 8 to 10 days later, showed an increase of 80, 12, and 0% in the excretion of Fe for the same animals respectively. The results for the 3rd animal demonstrate that some other

tissue in the body had compensated completely for the spleen in regulating Fe metabolism. In the 2nd guinea pig there was some compensation, while in the 1st the compensatory mechanism failed. These experiments uphold the theories that the spleen is an organ of Fe metabolism and that other body tissues gradually assume this function after splenectomy.—*P. E. Claus.*

9707. **LABBÉ, M., M. FABRIKANT, et JUSTIN-BESANÇON. Données récentes sur le métabolisme du phosphore. [Recent contributions on phosphorus metabolism.]** *Arch. Mal. de l'App. Digest. et Mal. de la Nutrition* 21(2): 129-181. 1931.

9708. **LOEW, O. Das Calcium im Leben der Haustiere.** 64p. O. Gmelin, Munchen, 1930.—This monograph treats chiefly the application of $CaCl_2$ to the promotion of physiological functions and to the prevention and curing of various diseases of domestic animals. Calcium chlorid is directly useful as long as the urine of the animals shows an alkaline reaction. When, however, the feeding of animals is such that the urine becomes *acid* as is, e.g., the case with hogs fed chiefly on seeds of various kinds, $CaCl_2$ can have a favorable effect only when at the same time provision is made for raising the blood alkalinity necessary for Ca assimilation. Such is the case also when cows are fed with a great excess of protein in order to increase the yield of milk. Of special interest is the promotion of fertility by feeding $CaCl_2$. The author proposes a classification of food articles as physiologically acid or alkaline.—*O. Loew.*

9709. **LUNDSGAARD, EINAR. Weitere Untersuchungen über Muskelkontraktionen ohne Milchsäurebildung.** *Biochem. Zeitschr.* 227(1/3): 51-83. 1930.—The failure of lactic acid formation to occur during work by muscles poisoned by monoiodoacetic acid was confirmed. The ratio between phosphagen splitting and work during single twitches and tetany (expressed as $K_{mP}-$ and $K_{zP}-$) was determined. Simultaneous curarization does not alter the $K_{mP}-$ and $K_{zP}-$ values of muscles so poisoned. The chronaxie of iodoacetic acid-poisoned muscles was found normal and on simultaneous curarization was increased to the same extent as by curarization alone. Anaerobic phosphagen resynthesis does not occur after poisoning by iodoacetic acid. Muscles only moderately poisoned performed in O more work with a lesser diminution in phosphagen content than in N, indicating the occurrence of oxidative phosphagen resynthesis. The time course of the esterification as well as the nature of the esters formed was investigated. A splitting of pyrophosphate during work and rigor development was demonstrated.—*Author's summary (transl. by F. F. Heyroth).*

9710. **McCARRISON, R. Effect of manganese on growth.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India.* 3: 343-344. 1927[1928].—Manganese dioxide ingested by young rats to the extent of 0.889 mgm. daily, representing a concentration of 1 part of Mn to 12,600 parts of the food eaten, exercised a progressively retarding influence on growth. This retarding action was manifested only after 32 days' consumption of the salt, and appears to have been cumulative. Manganese chloride when ingested by young rats to the extent of 0.0327 mgm. daily, representing a concentration of 1 part of Mn in 617,700 parts of the food eaten, exercised a markedly favorable influence on growth. The conclusion appears justified that concentrations of Mn of the former order are harmful to the animal organism; while concentrations of the latter order are beneficial. And since a diet containing a fair proportion of whole wheat provides a concentration of Mn of the latter order, it may be concluded that the growth-promoting properties of whole wheat are in part due to the content of Mn in this cereal.—*Author's results.*

9711. **McCLENDON, J. F., and JAMES R. SANFORD. Iodine in Maryland waters in relation to goiter.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 263-264. 1928.—Preliminary paper. In 3 counties in western Maryland, where goiter is prevalent, the I content of drinking water was low.

9712. **MALLON, MARGUERITE G., RUTH JORDAN, and MARGARET JOHNSON. A note on the calcium retention on a high and low fat diet.** *Jour. Biol. Chem.* 88(1): 163-167. 1930.—Experiments on 2 subjects showed: on a high fat diet, a shift of the Ca balance from positive to negative, or vice versa; on low fat diet, slight change in Ca balance, with a tendency towards attainment of equilibrium. It is concluded that "the fat per se cannot be said to have exercised a definite influence upon the Ca retention."

9713. **MARINE, DAVID, EMIL J. BAUMANN, and BRUCE WEBSTER. Occurrence of antigoitrogenic substances in plant juices.** *Proc. Soc. Exp. Biol. & Med.* 27(9): 1029-1031. 1930.—Preliminary paper.

9714. **MATTERS, REGINALD FRANCIS. A study of calcium metabolism in the human female.** *Australian Jour. Exp. Biol. & Med. Sci.* 6(2): 119-125. 1929.—Calcium was determined in the blood, during various stages of the menstrual cycle, in 70 patients, 30 of whom were studied consecutively enough to give conclusive data. The blood Ca was highest 5 days before menstruation, falling rapidly until about the 3rd day of menstruation, and then rising gradually. Allowing for errors in the sampling and in the analysis, the variation was at least 5%.—*M. Dann.*

9715. **MELLI, GUIDO, et GUGLIELMO TASSO. Sur le sort du chlorure de sodium et d'autres sels injectés par voie intraveineuse.** *Rev. Belge Sci. Méd.* 2(3): 209-225. 1930.—A dose of NaCl several times the content of the entire blood mass was rapidly injected into the carotids of rabbits. In some the renal pedicles were tied, in others the stomach was excised, in still others both gastrectomy and ligature of the renal pedicles was performed, while in the last group nearly all the abdominal organs were removed. Some were bled to death in 5 min. after the end of the injection and the NaCl of the blood and organs determined; most of those not so killed survived for several hrs. with normal heart-beat and respiration. In all 4 groups the injected NaCl disappeared from the circulation as a rule in 5-10 min. It was evidently not eliminated, since the results were not influenced by removal of the stomach and kidneys, the principal chlorid emunctories. A rise of NaCl content was observed in the various organs and tissues, but particularly in the skin. The blood was found highly concentrated after injection of heavy doses of NaCl, apparently owing to the abstraction of water by the NaCl fixed in the tissues. The NaCl content of the blood returned almost to normal soon after the NaCl injection; but for some days there was a slight elevation of NaCl content, which may represent NaCl in transit from the organs and tissues to be eliminated. Exceptionally, in some animals, NaCl injection was followed by death in convulsions; in these animals a high NaCl content of the blood persisted for several min. Whether death was due to the inability of the organs and tissues to remove the NaCl from the blood, or whether the approach of death prevented the fixation of NaCl in the tissues is uncertain. Other chlorides (KCl, $CaCl_2$) behaved like NaCl. Therapeutic intravenous injections of NaCl in man gave a similar blood picture.

9716. **MORRIS, NOAH, and OLIVE MacRAE. Metabolic reactions to acidosis produced by ammonium chloride.** *Arch. Dis. Childhood* 5(27): 207-228. 6 fig. 1930.—The effect of prolonged administration of NH_4Cl on the metabolism was studied in 4 apparently normal children, in none of whom was produced any clinical manifestation of acidosis. The CO_2 content of blood was reduced; the reduction almost always reached its maximum early in the administration of NH_4Cl. The Cl content was moderately increased, but the increase did not exactly balance the deficiency in CO_2. The fixed base remained within normal limits except in 1 case where it was reduced by 15 milli-equivalents. Ca was slightly increased and P slightly diminished. Non-protein N was slightly increased but within normal limits. There was an increased output of Ca both by urine and feces and consequently a decreased retention. Evidence is adduced

in favor of the excretion of Ca through the bowel wall. There was an increased excretion of P by urine and feces and a diminished retention. There was a slightly increased retention of Cl. There were usually 2 peaks in the excretion of chloride: they occurred about the 2nd and 6th days. The 2nd peak usually coincided with the maximum output of NH_3. There was an increased excretion of fixed base both by urine and feces; the extra fecal base consisted chiefly of Ca. The metabolic reactions of acidosis are discussed, and it is suggested that the increase in the output of Ca and P is the result of the response of the osseous tissues and forms a reaction of prime importance in preventing acidosis.—*Authors' summary.*

9717. **MORRISON, DEMPSIE B., and THOMAS P. NASH, Jr. The copper content of infant livers.** *Jour. Biol. Chem.* 88(2): 479-483. 1930.—Analyses of the livers of 25 infants gave an average of 24.0 mgm. of Cu per kgm. of fresh tissue or 6 times the average value for 7 adults. The highest value for an adult was lower than any of the values for the infants, with the exception of 1 infant case with severe anemia.—*Authors' summary.*

9718. **MURDOCH, GEORGINA. A study of phosphorus absorption in normal and rachitic children.** *Arch. Dis. Childhood* 2(11): 285-301. 1927.—The level of the inorganic P in the serum in normal and rachitic children was followed for several weeks, during which alterations were made from time to time in the intake of Ca and P. The 1st part of the study was conducted on 3 rachitic children from 1¼ to 1¾ years of age and on 8 non-rachitic children from 5 mos. to 10 years old. A diet poor in Ca and rich in P gave rise to an increase in the P content of the serum, though not beyond normal limits. Subsequent addition of Ca in excess to the diet induced a fall in the serum P, more marked in the rachitic than in the normal children. The P absorptive power, as indicated by the rise in the inorganic P of the serum following the ingestion of 4 gm. of NaH_2PO_4, was separately investigated in 11 children, of whom 5 were normal, 4 had active and 2 healing rickets. It was found that in the cases of active rickets the average absorption was the same as in the healthy children, while in those with healing rickets it was abnormally high.—*T. C. Hempelmann.*

9719. **MUSSEHL, F. E., R. S. HILL, M. J. BLISH, and C. W. ACKERSON. Utilization of calcium by the growing chick.** *Jour. Agric. Res.* 40(2): 191-199. 8 fig. 1930.—It was found that the utilization of Ca in normal bone growth seemed to depend upon two factors, its assimilation, and its fixation in the bone cell itself. Adding 0.5% of Mg in the form of carbonate and sulphate to the basal mixture of corn, wheat, and milk proteins did not markedly affect the rate of growth of chicks, but rickets resulted from the $MgCO_3$ additions.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

9720. **NATHAN, E., und FR. STERN. Über den Mineralgehalt der Haut unter normalen und pathologischen Bedingungen. VI. Über Schwankungen im Kalium-, Kalzium-, Chlor- und Wassergehalt der Kaninchen- und Meerschweinchenhaut bei gleichmässiger Ernährung und bei Hunger und Durst.** *Dermatol. Zeitschr.* 60(5): 299-313. 1931.—In 14 rabbits and 11 guinea pigs kept on a uniform diet and under identical conditions frequent examinations of small skin fragments, taken at various intervals, revealed more or less considerable fluctuations in the K, Ca, Cl, and H_2O content of the skin. In 4 rabbits fasted for 7 days, 7 guinea-pigs fasted for 4 days, 9 fasted for 3 days, and 3 fasted and thirsty for 3 days, the skin of most animals lost minerals and H_2O. The few exceptions indicate an exchange between the skin and other water and mineral reservoirs of the organism (subcutaneous cellular tissue, musculature, and bones). Considering the functional significance of the ionised part of the minerals in question, one must assume, in spite of the considerable mineral variations found in the skin, that the ionised part is more constant than the total, for otherwise regulation of the tissue's vital processes could not exist.

9721. **NEDSWEDSKY, S. W. Verhältnis zwischen Kalium, dialysierbarem und undialysierbarem Calcium im Intermediärgebiet nach Versuchen an angiostomierten Hunden.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 647-654. 1928.—K is absorbed faster than Ca by the intestine from mixtures of the 2. In the intestinal wall the absorbed Ca and part of the Ca that is present in the circulating blood is believed to be bound in colloidal form. The method of angiostomy has uncovered the Ca-binding function of the intestine. The quantitative relation between the dialyzable Ca is the reverse in the liver of what it is in the intestine. There the Ca that is in colloidal form is transformed into free Ca and with the K of the general circulation passes to different organs. During its passage through the intestine a part of it is again bound in colloidal form. The greater part of the K is excreted in the kidney; the quantity excreted (3.5 mgm. %) is nearly the same as the amount resorbed (3.9 mgm. %); the Ca excreted is very small (trace to 0.3 mgm. %) and comes entirely from the dialyzable fraction. The spleen holds back part of the K that the intestine furnishes but does not alter blood Ca.

9722. **NEWCOMB, CLIVE, and GANAPATI SANKARAN. A note on iodine metabolism.** *Far East Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 329-334. 2 graphs. 1927[1928].

9724. **OEHME, C., M. OEHME, und H. WASSERMEYER. Über Gesetzmässigkeiten des Mineralstoffwechsels.** *Deutsch. Arch. Klin. Med.* 154(2/4): 107-130. 1927.—The organism regulates its physiologically specific ionic balance just as it regulates the acid-base balance. In 2 diets of known mineral composition, addition of various salts (NaCl, KCl, $NaHCO_3$, $KHCO_3$), brings on antagonistic alterations of the added as well as of other ions present. There is evident antagonistic action between the kations (Na,K) and the anions (Cl,HCO_3). The deposition of Ca and P due to the intake of NaCl is dependent not only on the ionic mixture, but also on the absolute magnitude of the Ca and P intake, when this does not coincide with the absolute minimum. KCl may bring on a deposition in the presence of a diet deficient in Ca and P while NaCl produces a negative balance. The specific action of neutral salt ions interferes to a certain extent with the acid-base balance; it appears under certain circumstances to control it. According to the diet, NaCl influences the acid-base balance in different (opposite) directions. The same feature is at least probable in the case of KCl, although the conditions under which an acidotic or alkalotic effect appears are not yet clear. The action of $NaHCO_3$ and $KHCO_3$ on the Cl balance depends in the first place on the Na content of the food, that is, the magnitude of the quotient Na/K. The results permit an insight into the rules according to which the ionic mineral-exchange takes place in the body. The rôle played by the intestinal tract is briefly discussed. These balance reactions were observed on 3 persons, and were supplemented by findings from the literature. They depend on the pre-experimental period. The assumption is made that the ionic mixture of the trans-mineralisation stream of the food regulates all elements coordinated in mineral metabolism. From this a few conclusions are drawn regarding possible goals of a general mineral therapy.—*Authors' summary (transl. by A. Bolliger).*

9725. **ORR, J. B., and I. LEITCH. Iodine in practical agriculture.** *Internat. Rev. Agric. Pt. 1. Month. Bull. Agric. Sci. and Pract.* 21(6): 197-208. 1930.—This review of work on the influence of I on plant and animal nutrition shows a mass of conflicting data. There is little doubt however that under certain conditions and on certain diets, the administration of I to animals may be beneficial.

9726. **PARKER, HAYWOOD Jr., and FRANK C. VILBRANDT. The iodine content of shrimp waste.** *Jour. Amer. Chem. Soc.* 53(2): 633-635. 1931.—The wastes of shrimp fisheries showed a content of 16.9 parts per mil-

lion of I calculated on the dry basis. Alcohol extraction indicated that 44.14% is organic; ether extraction that 55.86% is lipid I. No thyroxine chould be detected in the extract of shrimp waste when tested by the Kendall method.—*Authors' summary.*

9727. **PECCO, RENZO.** Riserva alcalina, calcio e fosforo nel sangue di animali con completa derivazione della bile. [Alkaline reserve, calcium and phosphorus in the blood of animals in which the bile is completely diverted.] *Arch. Ital. Chir.* 28(2): 163-174. 1931.—External cholecystostomy was performed on 4 dogs; 3 survived for 100-178 days and the 4th was killed 186 days after operation. X-ray examination showed an osseous decalcification. Blood examination showed a progressive acidosis, diminution of P and a normal Ca level, agreeing with the findings in human and experimental rachitis.

9728. **RASK, O. S., and E. V. McCOLLUM.** The biological significance of aluminum. *Jour. Maryland Acad. Sci.* 1(1): 38-42. 1930.—Aluminum is probably not a constituent of living material, and is therefore not essential to life. On the other hand, aluminum in the diet is not harmful when present in such concentrations as result from the use of aluminum-containing baking powders. —*O. S. Rask.*

9729. **RICE, HUGH A., and ARTHUR H. STEINHAUS.** Studies in the physiology of exercise. V. Acid-base changes in the serum of exercised dogs. *Amer. Jour. Physiol.* 96(3): 529-537. 1931.—From analyses of blood samples drawn from dogs [number not stated] and man before, during, and after various forms of exercise, the following conclusions are drawn: During strenuous exercise on a 22% grade, motor driven treadmill the serum of dog's blood shows a more alkaline pH coincident with reduction in the bicarbonate and CO_2 tension. These changes are related in time and degree to a gradually mounting body temp. Exhaustion in this form of exercise is characterized by alkalosis and overheating. Dogs exercised by swimming in water at temp. of 20° and lower show rising CO_2 tensions, more acid pH and lowering of the bicarbonates of the serum. An otherwise steady body temp. drops below normal as the animal nears the exhaustion point. While swimming at water temp. between 25°-30° C. a minimum of disturbance is noticed in the dog's acid-base balance and body temp. until just before the correspondingly postponed fatigue point is neared. Over-heating without exercise and swimming in water with temp. around 40° C. produce serum changes in dogs' blood similar to those found in treadmill running. The blood changes in man during ergometer exercise though quite opposite to those of the dog exercised by running, parallel closely those of the dog swimming in water at moderate temp. The greatest caution is needed in attempting to translate the results gained from the study of exercised dogs into human physiology unless the differences here described have been given full consideration. Therefore, swimming seems preferable to treadmill running when dogs are used in exercise experiments.—*Authors' summary.*

9730. **ROSSI, ALESSANDRO.** Distribuzione degli elettroliti nel latte e nell'ultrafiltrato. [Distribution of electrolytes in milk and its ultrafiltrate.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 475-479. 1930.—Up to 60% of the Ca in milk is in non-diffusible form; more than 60% of the P is also in non-diffusible form. 18% of the K is bound to colloids, whereas Cl is completely diffusible. Fresh milk does not differ from pasteurised milk in physico-chemical properties and in distribution of electrolytes; and only slight variations of pH were observed.—*M. Comel.*

9731. **SALTER, WILLIAM T., and JOSEPH C. AUB.** Studies of calcium and phosphorus metabolism. IX. Deposition of calcium in bone in healing scorbutus. *Arch. Path.* 11(3): 380-382. 1 pl. (col.) 1931.—Young adult guinea pigs were fed a diet deficient in vitamin C, the subsequent deposit of bone being marked by intramuscular injection of alizarin red. The animals died in the 4th week unless given orange juice. The results indicated that Ca fails to be deposited in bone when the diet, though adequate in Ca, is deficient in vitamin C. The subsequent addition of vitamin C to such a diet allows Ca to be rapidly deposited. This deposit is largely at the epiphyseal ends of the bone and in the trabeculae; hence the reserve supplies of Ca are involved by the pathologic changes in the bone cells.

9732. **SCHIERONI, CESARE, e GINO VIANELLO.** Il ricambio azotato e minerale nei cani alimentati esclusivamente con carne autoclavata, od integrata con lievito di birra. [N and mineral metabolism of dogs kept on an exclusive diet of autoclaved meat, and with addition of beer yeast.] *Biochim. e Terapia Sperim.* 18(5): 146-169. 1931.—Dogs kept on exclusive autoclaved dog or horse meat developed anatomical and functional lesions of the intestinal tract. The dogs showed a complex of symptoms due to intoxication and avitaminosis, and died after loss of body weight. The N metabolism showed variations only during the terminal stage of the illness; the balance of N being then negative. This was due in part to vomiting. The P and Ca metabolism showed on the contrary an early disturbance. The autoclaved meat with beer yeast added supported the dogs in good condition for a year, the N, P and Ca balances being then positive. The development of intestinal lesions is attributed to the local action on the intestine of toxic products formed in the autoclaved meat. The alleviating effect of yeast is interpreted as a double action: first, supplying partly the vitamin needs, and second, equilibrating the cellular metabolism.—*M. Comel.*

9733. **SCHNITZER, KARL LUDWIG.** Über ein Kalkdepot. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 705-709. 2 fig. 1930.—In an x-ray study of 1064 specimens of *Rana fusca,* 692 ♂ and 372 ♀, from Jan. 1, 1929 to March 15, 1930, no correlation was found between the size of the lime sacks and either sex or season of the year. In an unspecified number of frogs taken in summer, removal of the thymus caused, as shown by x-ray examination, dwindling or almost complete disappearance of the lime sacks, indicating that this structure is a store for Ca for the uses of the general organism.

9734. **SHERMAN, HARTLEY EMBREY, and TSAN CH'ING WANG.** Calcium, iron and magnesium content of 16 Chinese foods. *Philippine Jour. Sci.* 38(1): 81-82. 1929.—The Ca, Fe and Mg content of some dry seeds, green beans, mung beans, wild rice, rape, chrysanthemum, kohlrabi and squash and of the seeds sprouted in hydrant water and in distilled water, are tabulated.

9735. **SMITH, ARTHUR H., and ROBERT V. SCHULTZ.** Effects of diet poor in inorganic salts on certain organs and blood of young rats. *Amer. Jour. Physiol.* 94(1): 107-117. 1930.—The following experimental rations were used: Diet 1, casein 18%, starch 51%, lard 27%, salts 4%; Diet 2, casein 18%, starch 55%, lard 27%; Diet 3, casein 35%, starch 27%, lard 30%, salts 8%; Diet, 4, casein 45%, starch 13%, lard 32%, salts 10%. The plan was to compare measurements and composition of the various organs in the group given the low salt ration with other groups of animals of the same age or body weight but with different nutritive history during the experimental period of 40 days. The "low salt" group, consisting of 26 rats weighing from 41 to 49 gm., was given diet 2 without added salts at weaning and in all but 1 case the body weight was maintained at 45 ± 5 gm. throughout the experimental period. Occasionally the weight of a rat in this group dropped below the 40-gm. limit but administration of the control diet containing salts always raised the weight level above 40 gm. within two days. The "physiological" control group comprising 20 animals was killed and autopsied at weaning when they weighed 40-45 gm. These were normal rats of the same body weight as that maintained in the "low salt" group. The "chronological" control group consisted of 12 rats which had been given diet 1 at weaning and which grew normally on this ration for 40 days. There were thus available normal animals of the same age as that of the experimental group. The "low calorie" control group including 10 rats maintained at the weaning weight of 40 to 45 gm. for the 40-day experimental

period by limiting the quantity of diets 3 and 4 which are so adjusted that, in spite of the decrease in total calories provided when 1 to 2.5 gm. of the food are fed, the absolute quantity of both the indispensable protein and salts is adequate for normal growth of a rat weighing 40-45 gm. At the beginning of the experimental period this group required about 2.5 gm. of food per day and diet 3 was used; later the energy requirement for maintenance of body weight decreased to approximately that furnished by 1 gm. of food and then diet 4 was fed; both rations yield about 5 calories per gm. This group served as a control on the effects of stunting per se, apart from any qualitative deficiency in the ration. The "low salt" splenectomized group comprised 10 rats, splenectomized at weaning and maintained thereafter on diet 2 during the 40-day experimental period. Young rats maintained for 40 days on an experimental ration deficient only in ash do not increase in body weight. The body and tail lengths of such rats at the end of the experimental period are greater than those of normal rats of the same body weight. The leg bones are heavier than those of normal rats of the same weight, the increase being largely accounted for by the higher content of organic residue. The fresh weight of the kidneys of the experimental animals is strikingly greater than that of normal rats of the same weight. The concentration of moisture, ash and organic solids of the kidney is similar to that of normal rats of the same weight rather than age. The fresh weight of the spleen is diminished and this organ is more like that of the normal weight controls than age controls. There is a polycythemia, the cells being smaller than normal and the total hemoglobin of the blood less than normal.

9736. TAYLOR, N. B., and A. FINE. The excretion of calcium through the intestine. *Amer. Jour. Physiol.* 93(2): 544-553. 1930.—Observations on 18 normal cats showed a small but constant excretion of Ca through the small and large intestines. Ca injected into the veins of animals kept upon the usual diet of meat scraps and biscuit practically disappears from the blood within 3 hrs.; this cannot be accounted for by excretion through the bowels or kidneys, and apparently the excess Ca does not leave the body. The excretion of the injected Ca through the large and the small bowels is several times greater in parathyroidectomised than in normal animals. Administration of parathyroid extract was without significant effect upon the excretion of Ca through the bowel during a 6-hr. period.

9737. TELFER, S. V. Mineral metabolism in infancy. III. The substitution of cow's milk for human milk in infant feeding. *Glasgow Med. Jour.* 114(6): 265-284. 1930.—In 5 breast-fed infants 7-11 mos. old a balance experiment was conducted to determine the retention of Ca and Fe immediately before weaning. After a fortnight during which the infants were accustomed to ingest an equivalent amount of undiluted cow's milk sweetened with cane sugar (the intake of Ca, Mg and P being thus quadrupled while the intake of Fe was practically unaltered) the balance experiment was repeated. The percentage retention of the mineral elements was reduced. The amount of the bone-forming elements retained was considerably increased. The amount of Fe retained was markedly diminished. The composition of the feces was widely altered, the percentage of total fat and of all the mineral components except Fe being much increased. The fecal weight was considerably increased.

9738. TOVERUD, KIRSTEN UTHEIM, og GUTTORM TOVERUD. Undersøkelser over mineralstoffskiftet under svangerskap og diegivning, med saerlig henblikk på rakitt- og kariesprofylakse. II. Undersøkelser på hunder. III. Praktisk betydning av de eksperimentelle undersøkelser. [Studies on the mineral metabolism during pregnancy and lactation and its special bearing on the disposition to rickets and dental caries. II. Experiments on dogs. III. Practical application.] *Norsk Mag. Laegevidensk.* 91(1): 53-81. 16 fig.; (3): 286-303. 6 fig. 1930.—Experiments (27) were performed on 9 women in order to study the mineral metabolism of pregnancy and lactation. Total intake and output of Ca, P and Mg were determined for periods of 4 days during the last 2-3 mos. of pregnancy; in 1 woman during the 3rd mo. They were given a common Norwegian diet. Negative Ca and P balances were found in 21 of 27 experiments in pregnancy; the balance could be made positive by increasing the Ca and P intake to a certain level: for Ca to 1.7 gm., for P to 1.6 gm. daily; this was done by giving Ca as a special Ca-lactate preparation and by increasing the quantity of milk in the diet. In a few experiments an addition of cod liver oil to the usual diet without increasing the Ca intake turned the balance in a positive direction, but in the majority of experiments cod liver oil did not affect the negative balance at all. Of the 11 metabolism experiments performed during lactation on 5 women, 5 gave a negative and 6 a positive Ca and P balance. The Ca content of breast milk in 14 lactating women on the same diet was below normal, and could be increased by increasing the Ca intake in the diet. To determine what effect a diet low in Ca, P and vitamins might have on the mother and young, experiments on dogs were started. A bitch was given a diet low in Ca, P and vitamins A and D before and during pregnancy and during lactation. By metabolism experiments on Ca, P and Mg, performed in 3 day periods every week throughout the whole pregnancy, it was found that the bitch suffered a very great loss of Ca (about 10% of its original Ca content). During the lactation period, 8 days after delivery, the mother developed tetany with a serum Ca of 5.15 mgm. per 100 cc. and a serum P of 2.92 mgm. per 100 cc. Chemical analyses of metatarsal bones resected just before and after pregnancy and lactation showed a great loss of Ca and P in the bone resected after the end of lactation. The young which after 6 wks. of lactation were given the same diet as the mother showed very early signs of rickets with marked deformities of the extremities. The rickets in these puppies was more pronounced and appeared earlier than in puppies born and nursed by a mother given the experimental diet from the day of delivery. These last puppies showed a more marked rickets than puppies born and nursed by a mother on a normal ration but given the experimental diet after weaning. Chemical analyses of the bones from these 3 different litters of puppies performed at the same age showed a Ca and P content corresponding to the difference in development of rachitic symptoms. X-ray pictures of the jaws of the puppies revealed a similar difference in tooth calcification and development. Ground specimens of permanent teeth showed the same steps in calcification of enamel as well as of dentin. X-ray pictures taken of the newborn of the experimental bitch revealed no changes from normal; neither did microscopic examination of these bones. By chemical analyses however a lowering was found of Ca and P content of the femur as well as of the whole body. Thus the predisposition to rickets is developed as a result of insufficient nutrition of the mother during pregnancy. The great difference in disposition to rickets and dental caries in cases where the postnatal care has been alike may be explained on the basis of insufficient nutrition of the mother during pregnancy; particularly a low Ca and P and vitamin A and D intake will, during the last 2 months of pregnancy when the calcification of bones and teeth is going on in the fetal organism, predispose the infant to these 2 diseases.—*From authors' summaries.*

9739. WACHSMUTH, W. Über die Blutzuckerregulation bei partieller Leberausschaltung. (Gleichzeitig ein Beitrag zur Frage der Leberfunktionsprüfung.) *Zeitschr. Ges. Exp. Med.* 73(5/6): 659-677. 1930.—It was shown in a previous paper that the curve of increase in glucose concentration in the blood after the giving of glucose is higher and flatter in an Eck-fistula dog than in a normal dog. The alkali reserve of an Eck-fistula dog is normal. The giving of $NaHCO_3$ does not change the form of the alimentary hyperglycemic curve in a normal dog, but it changes that of the Eck-fistula dog to normal.

The Eck-fistula dog has very little resistance to the giving of acids, and it is believed, therefore, that the abnormal glycemic reaction of the Eck-fistula dog is due to the inability of the liver to maintain a proper acid-base equilibrium. There is also a relationship between the response to alimentary hyperglycemia and the amount of pigment estimated in the urine by Hielmeyer's photometric method. This method appears to be of decided value in estimating liver function.—*W. C. Alvarez.*

9741. **WEISER, ISTVÁN, és ARTUR ZAITSCHEK. A jódetetés jelentösége az állattartásban. [Iodine metabolism in milch goats.]** [German summary.] *Kisérletügyi Közlemények [Budapest]* 33(1): 112-117. 1930.—Of a daily average of 37.9 mgm. I fed as KI to 2 milch goats, there was excreted 4.85% in the feces, 34.7% in the urine, and 24.02% in the milk, whilst 36.43% remained in the organism. The average daily milk yield of the 2 goats was practically the same,—1.81 and 1.85 l. The milk from one goat contained 3.82 mgm. I per liter, that from the other 6.25 mgm. per l. The milks of 2 control goats, which received the same feed but without KI, contained 0.025 and 0.026 mgm. I per liter.—*Authors' summary (transl. by E. O. Whittier).*

9742. **WESTERLUND, A. A contribution to the knowledge of Ca-metabolism. II. The relative fecal outgo of Ca in growing pigs fed exclusively on grain products. III. The relative fecal outgo of Ca in dairy cows. IV. The relative fecal outgo of Ca in children.** *Skand. Arch. Physiol.* 60(1/4): 204-220; (5/6): 251-263; 264-272. 1930.—II. A study of the relative fecal outgo of Ca in its dependence on certain experimental factors, viz. Ca-Si-ratio, Ca-fat-ratio, body weight of experimental animals, Ca-P-ratio, Ca-Mg-ratio, K-Na-ratio, relationship of inorganic base equivalents to acid ones in the food ash, and Ca-consumption. The experimental data of the present investigation are those which have been obtained by E. B. Forbes and co-workers (1921) in a series of 35 mineral balances of growing pigs. Assuming that the variations of Ca-consumption have no traceable influences, Westerlund concludes that limiting factors for the utilization of Ca in the experiments analyzed, are a deficiency of Na, P, fat and basic equivalents, and an excess of Si in the food of the animals. III. The object was to learn how a series of different factors affect the "disposal" of catabolized Ca, given numerically by the values of the relative fecal outgo of Ca, by computing net regression coefficients referring to the separate covariations of these factors and the relative outgo. Westerlund concludes that the difficulty in keeping lactating cows in Ca equilibrium on the feeds used is chiefly due to unsuitable values of those factors which have proved to be important controllers of Ca disposal. Among these controlling factors there are dietary constituents (Ca, P, fat, silage and Na), the average supply of which has been too scanty to guarantee the animals a maximum utilization of Ca. On the other hand, other food constituents (Si and Mg) were too plentiful in proportion to the Ca consumed. Controllers of an internal kind belong here also, such as the milk yield. The analysis has shown that the more copious the milk flow, the smaller the relative fecal outgo of Ca, other factors being equal. IV. This paper deals with material from Ca balance determinations of 6 young boys. The object was to learn how a series of different factors affect the fecal outgo of Ca. Westerlund concludes that the value of the relative fecal outgo of Ca has been reduced if the consumption of K, Mg and fat has been more restricted, and that of P more liberal than has been the case, other factors being unchanged. Also, it is concluded, that a use of Ca, more restricted than the average, would reduce the relative value of the fecal output but increase the absolute value of the difference between income and absolute fecal outgo, other factors being equal, thus reducing Ca retention.

9743. **WHEELON, HOMER. Geographical factor in calcium metabolism.** *Endocrinology* 13(4): 363-366. 1929.—425 partially selected young adults showed average blood Ca 10.34 mgm. %; extremes 4.0-16.6. Normal limits should be 8.5-12.4 mgm. %. 19, or 50%, of his series below 8.5 mgm. were clinically diagnosed spasmophilia. Water analysis of 2 rivers in Washington state showed average 11.2 parts Ca per million parts against 81 parts per million for 16 rivers of Missouri river basin. Western slope land and foodstuffs of the Cascade Mountains are deficient in lime. The deficiency of Ca in the Puget Sound Basin of Washington may be compared with the I deficiency in goitre regions and the disturbed Ca metabolism of that region may have its etiology in geographical factors.—*L. Gunther.*

9744. **WILLE, OTTO. Über den Jodgehalt deutscher Seefische und Seefischprodukte. [Iodin content of German seafishes and seafish products.]** *Mitteil. Deutsch. Seefischerei-Ver. [Berlin]* 45(10/11): 418-419. 1929.

9745. **WU, J. H. Thymus-Milz-Implantation und Kalkstoffwechsel beim Kaninchen.** *Jahrb. Kinderheilk.* 129(1/2): 88-97. 1930.—In 8 experiments with young rabbits a distinctly greater drop in serum Ca showed in 7, after implantation of spleen and thymus, than after the control implantation of liver or kidney. The 3 youngest animals showed a greater reaction from the spleen-thymus implantation (1 death from tetany) than the half grown. This series of implantation experiments gave no proof of phosphorus lowering.—*Author's summary (transl. by O. D. Abbott).*

VITAMINS

9746. **SAIKI, SANETOSHI. On the liver function of animals fed on vitamin-deficient diets.** *Acta Scholae Med. Univ. Imp. Kyoto.* 12(2): 157-175. 1929.—Matsuo's chromodiagnostic method of studying liver function, consisting of intravenous injections of dye and subsequent measurement of the amount excreted in the bile, was applied to animals on vitamin-deficient diets. Vitamin C-deficient guinea pigs exhibited a greatly increased capacity and a tendency toward increased ability for dye excretion from the liver, indicating that vitamin C may control liver function. Vitamin B-deficient fowls showed decreased capacity for liver excretion. Vitamin A-deficient rats showed a marked decrease in the excretory capacity of the liver, while vitamin A-deficient monkeys showed a decrease in both capacity and ability. The functional disturbance was much greater in A-deficient than in B-deficient animals.—*M. Collins.*

ANIMAL PHYSIOLOGY

DIGESTIVE SYSTEM AND DIGESTIVE SECRETIONS

A. J. CARLSON, *Editor*

(See also in this issue Entries 9370, 9381, 9389, 9392, 9399, 9427, 9467, 9484, 9552, 9699, 9727, 9739, 9857, 9868, 9918, 10056, 10083, 10106, 10162, 10233, 10400, 10403, 10464, 11581)

9747. **APPERLY, FRANK L., and JOAN H. NORRIS. The automatic regulation of gastric acidity.** *Jour. Physiol.* 70(2): 158-168. 1930.—Dilute HCl (250 cc.), mixed with some indifferent substances which could easily be estimated, was placed in the empty stomach of fasting subjects. The strength of acid employed varied from 0.080 N to 0.128 N and the indifferent substance varied also in different cases, the substances

being glucose, phenol-sulphone-phthalein dye, urea, or ferric chloride. In all, 57 people were examined by this method, 22 healthy students, 24 hospital patients with no gastric symptoms, and 11 dyspeptics. The authors conclude that when acid above a certain concentration enters the normal stomach, whether secreted or artificially placed there, in most cases the concentration is reduced mainly by dilution, but partly by neutralization. The diluting fluid is derived partly from the gastric wall and partly from the duodenal fluids. In a few cases no alkali appears in the duodenal fluids, and in a few others gastric acid is secreted even in the presence of a foreign acid. There was evidence of early duodenal regurgitation in 72% of 46 cases examined.

9748. BALL, ERIC G. The composition of pancreatic juice and blood serum as influenced by the injection of acid and base. *Jour. Biol. Chem.* 86(2): 433-448. 1930.—The pH of the juice varies with its rate of flow. Juices secreted rapidly are the more alkaline, containing large amounts of bicarbonate and small amounts of chloride. In slowly secreted juices a lower alkalinity is found with large concentrations of chloride and small concentrations of bicarbonate. The sum of the bicarbonate and chloride concentrations is nearly constant regardless of the rate of flow. Intravenous injections of HCl cause but little change in the pH of pancreatic juice, regardless of the effect on the serum. Lowered bicarbonate values for serum are manifested quantitatively though not proportionally in the juice. Intravenous injections of sodium carbonate solution, causing an alkaline swing in the serum, produce remarkably little change in the reaction of the juice. However, the increased concentration of bicarbonate and sodium in the serum appears quantitatively in the juice. The possible significance of these findings and their relation to other studies of a similar nature is discussed.—*Author's summary.*

9749. BALL, ERIC G. The composition of pancreatic juice and blood serum as influenced by the injection of inorganic salts. *Jour. Biol. Chem.* 86(2): 449-462. 1930.—Pancreatic juice and blood serum have identical osmotic pressures. Concentrations of Na and K expressed per kgm. H_2O are similar in the 2 fluids. The injection of these ions into the blood stream increases their concentrations in both fluids to the same degree. It is therefore concluded that the pancreatic tissue is freely permeable to Na and K. Calcium, Mg, and phosphate were found in pancreatic juice in concentrations 1/20-1/4 those in blood serum. The intravenous injection of salts yielding these ions in amounts sufficient to increase greatly their concentrations in the serum caused but little increase in their concentrations in the juice. It is concluded that the pancreas is but slightly permeable to Ca, Mg, and phosphate ions. The concentration of total organic matter in the juice appears to depend upon the state of activity of the gland previous to the secretion of the juice.—*Author's summary.*

9750. BAXTER, HAMILTON. The composition of the saliva in different phases of the secretion and by repeated stimulation. *Amer. Jour. Physiol.* 91(1): 132-142. 1929.—The parotid saliva of a dog with a permanent salivary fistula secreted during stimulation varied in composition from that of the different phases of the after-flow. The percentage of organic matter in parotid saliva obtained by different stimuli was higher in the 2nd min. after-flow than in the secretion collected during the 1st min. of feeding. The organic and inorganic content of the after-flow of the successive 5 min. was greatly reduced. The content of organic substances in the parotid saliva of the 2nd feeding was greater only when the interval between the 1st and 2nd feeding was less than 1 min. There was no exact proportionality between the amount of organic substances in the dog's submaxillary saliva and its viscosity. Certain improved methods of determining the organic and salt fraction were employed.—*Author's summary.*

9751. BAXTER, HAMILTON. Changes in composition of parotid saliva in the dog after section of the sympathetic nerve in the neck and after extirpation of the superior cervical sympathetic ganglion. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 207-211. 1930.—In normal dogs with permanent salivary fistulae, saliva secreted after stimulation with bread and meat powder, HCl, etc., was studied before and after section of the sympathetic. The author concludes: "That trophic impulses (in Heidenhain's sense) as well as secretory impulses are transmitted from the central nervous system through the parasympathetic innervation. The sympathetic nerve supplies the salivary glands with vasoconstrictors. There are probably a few secretory fibres but these play a negligible part in normal conditions because the amount of saliva secreted from any stimulus was practically the same after section of the sympathetic nerve. It seems probable that the sympathetic nerves send special motor fibres to the salivary glands which press out their contents. These data permit a provisional classification of the fibres in the parasympathetic and sympathetic nerves to the salivary glands, adopted by the author's laboratory. Parasympathetic: (1) Secretory, (2) Trophic, (3) Vasodilator. Sympathetic: (1) Secretory, (2) Motor, (3) Vasoconstrictor."

9752. BAXTER, STEWART G. Pancreatic secretion in rabbits. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 213-215. 1930.—There is a long-continued secretion in the rabbit, with uniform enzyme content which is continuous after the pylorus and bile duct are tied. It is increased by injection of HCl, and especially a mixture of acid, peptone and bile. Removal of the whole gastro-intestinal tract does not abolish the spontaneous secretion. The vagus in the rabbit has the same action as in other animals and contains secretory, trophic and inhibitory fibres.—*Author's summary.*

9753. BLISS, THEODORE L. The acid-base composition of gastric juice during the secretory cycle. *Ann. Internal Med.* 3(8): 838-849. 1930.—Gastric secretion was collected from two healthy laboratory workers, one patient, and a dog with a Pavlov pouch. The fasting juice was collected and then histamin was given. Study was made of the amount of acid, chlorides, total base, Na, K and Ca. During the secretory cycle the concentration of base varies inversely as the concentration of acid. Sodium seemed to be the most important of the individual bases, both in regard to the amount and the way in which it varied during the secretory cycle. The concentration of K was 3-5 times greater in the gastric juice than in the blood serum. The concentration of the other ions studied was less in the gastric juice than in the blood.—*W. C. Alvarez.*

9754. BROWN, G. L., B. A. McSWINEY, and W. J. WADGE. The sympathetic innervation of the stomach. I. The effect on the stomach of stimulation of the thoracic sympathetic trunk. *Jour. Physiol.* 70(3): 253-260. 1930.—In spinal and decerebrate cats and dogs the stomach was divided at the incisura, and records were made of the effects of stimulation of the thoracic sympathetic trunk upon the movements of the stomach. The effects on the stomach depended on the type of stimulation employed. Stimulation at a frequency of 1 per sec. caused contraction of the body of the stomach, while stimulation with a tetanizing current brought about relaxation. The movements of the cat's pyloric antrum were inhibited by all forms of stimulation. The antrum of the dog, although usually inhibited, occasionally showed an augmentor response to sympathetic stimulation. The motor responses were abolished by ergotoxine. Adrenaline did not reproduce the effects of sympathetic stimulation, an inhibition of both parts of the stomach being the invariable result of injection of the drug.—*Authors' summary.*

9755. BRUNTON, CHARLES E., and M. C. G. ISRAËLS. Interrelations of respiration and gastric secretion. *Jour. Physiol.* 70(2): 184-194. 1930.—The authors deal with two questions only: (1) Assuming that the alveolar CO_2 tension rises during gastric secretion, is there a reduction of min. vol. of expired CO_2 and of pulmonary ventilation to allow for a parallel

retention of CO_2? (2) Does the tension of CO_2 in the alveolar air vary as described during the secretion of acid by the stomach, the secretion being produced in various ways? Three forms of gastric stimulation were used: ordinary meals, test meals (Ewald and gruel) and drugs (caffeine and histamine). 1. Results show clearly that, whatever the effect of gastric secretion on the blood, the loss of acid into the stomach does not decrease the volume of expired air, or the volume of CO_2 expired per min. In 23 experiments (9 normal meals, 5 test meals, 9 with drugs), 3 showed decreases of pulmonary ventilation after the meal. In 13 experiments (5 normal meals, 8 with drugs) 1 showed a decrease of min. excretion of CO_2 (obtained from the 10-min. samples) concurrently with gastric acid secretion. 2. Of 20 experiments (9 normal meals, 4 test meals, 7 with drugs), 8 showed a rise of alveolar CO_2 tension after the meal; the rise reached its maximum in about 90 min. No subsequent fall was regularly found, even after 2 hrs. In 3 experiments where water was administered, 1 showed a rise of alveolar CO_2 tension. The pulmonary ventilation was found to increase with meals, but not when drugs were used. Similar changes were observed in the min. excretion of CO_2. No constant rise of alveolar CO_2 tension concurrent with, or varying pari passu with, gastric acid secretion was found. No fall of alveolar CO_2 tension was found after meals concurrent with possible pancreatic secretion, even up to 2 hrs. after. It is argued that any possible excess of alkali resulting from the secretion of volumes of acid normally produced might be expected to be dealt with without necessarily causing a measurable rise in alveolar CO_2 tension. The authors believe that the use of the changes in alveolar CO_2 tension after meals as an indication of the activity of gastric acid or pancreatic secretion is unjustifiable.

9756. CARLSON, H. A., H. J. DVORAK, F. W. LYNCH, C. BORMAN, and O. H. WANGENSTEEN. Value of X-ray evidence of bowel obstruction in various states of intestinal stasis. *Proc. Soc. Exp. Biol. & Med.* 28(3): 343-344. 1930.—"Although x-ray evidence of gaseous distention is an early and valuable sign of simple intestinal obstruction it is distinctly of less value in strangulation obstruction or in stasis due to mesenteric vein occlusion. Gas shadows are also observed early as a rule in peritonitis."

9757. CORBEILLE, CATHERINE. Changes in volume of the kidney in response to acoustic stimulation. *Amer. Jour. Physiol.* 91(2): 507-512. 1930.—The method and the experimental conditions were the same as in the previously reported experiments on the spleen. Simultaneous tracings were made of the responses of the kidney and the spleen (in dogs) to acoustic stimulation. The kidney responses followed definite types dependent on the mode of stimulation: sudden contraction with the onset of stimuli, slow contractions during the continuance of the stimuli, sudden contractions at the cessation of the stimuli, slow contractions after cessation of the stimuli and delayed contractions and dilatations. In the animals in which simultaneous observations were made of both kidney and spleen it is noted that the responses do not always parallel each other, but occur sometimes independently in one organ or the other, sometimes in the same direction in both organs and sometimes simultaneously but in opposite directions. The anatomic possibilities for the origin and paths of the visceral acoustic reflexes are discussed briefly.—*Author's summary.*

9758. DAVIES, DANIEL T., and T. G. ILLTYD JAMES. An investigation into the gastric secretion of a hundred normal persons over the age of sixty. *Quart. Jour. Med.* 24(93): 1-14. 1930.—Of 100 persons aged 60-95 yrs., 43 showed a normal secretion of HCl, 13 a hypersecretion, 12 a diminished secretion, and 32 no free HCl. Small volumes of juice and an inhibition of secretion during the first 1-1½ hrs. were common findings. Achlorhydria, by the use of histamine, could be divided again into as many apparent as true, true achlorhydria being about 15%. The ferment content of the gastric juices varied in the majority, and bore little relationship to HCl secretion. In none of the cases of achlorhydria was pepsin completely absent. Histamine stimulated pepsin production in addition to HCl secretion. Pepsin secretion occurred in the absence of demonstrable HCl secretion, but no case was encountered possessing free HCl without pepsin. The secretion of HCl appears to be more susceptible to outside factors than that of pepsin, in that it is more easily inhibited or more quickly deranged. Anemia was more commonly found in those possessing a diminished gastric secretion than in those with abundant secretion. Anemia, though slight in degree and indeterminate in type, was more common in those possessing a low ferment content of the gastric juice than in those with a high ferment content. Atrophic changes of the mucous membrane of the tongue were more frequent in those cases showing a diminished secretion of gastric juice than in those with a normal secretion.—*Author's summary.*

9759. DUTHIE, R. J. The action of histamine on the chloride content of the stomach. *Quart. Jour. Med.* 23(92): 447-449. 1930.—The stomach contents of 14 patients were examined both before and after the subcutaneous injection of 0.25 mgm. of histamine. There was an increase in total chloride concentration in all 14 cases, with no evidence of duodenal regurgitation, indicating that regulation of acidity occurs in the stomach. In 8 cases the increase in total chloride was less than the increase in chloride that could be accounted for by the increased acidity, the change in proportion of HCl and the neutral chloride in the gastric secretion apparently resulting from the action of histamine in stimulating the secretion of the Cl ion as HCl and diminishing the secretion of the ion as neutral chloride. In other words, the increase in HCl after histamine injections takes place at the expense of neutral chloride.

9760. EURA, SHIGENARI. Studien über die Muskulatur des Ösophagus verschiedener Tiere. *Japanese Jour. Med. Sci. III. Biophys.* 1(1): 1-51. 28 fig. 1927.—Spontaneous movements, action of drugs and reaction to electrical stimulation were studied in muscle strips and in the entire esophagus. The esophageal wall contains different proportions of smooth and striated muscle in the cat, dog, rabbit, guinea-pig and domestic fowl; smooth muscle alone in frog and turtle, striated muscle in the eel. Those parts of the organ containing only striated muscle, after removal of the mucosa, show no spontaneous movements, even if Auerbach's plexus is present. At places where spontaneous movements occur there is always found smooth muscle, and the magnitude of the movement is proportional to the amount of smooth muscle. Such movements persist after removing almost all of Auerbach's and Meissner's plexuses and all nerve cells from the smooth musculature, hence they appear to be independent of nerve cells and plexuses. The cross-striated muscle of the esophagus is as insensible to adrenalin, pilocarpine, atropine, nicotine, acetyl-choline and Ba as skeletal muscle. The smooth muscles, however, are very sensitive to these drugs, as are those of the intestinal tract. Adrenalin acts, as on the intestine, to inhibit the smooth muscle of the esophagus or the entire organ in the guinea-pig, rabbit, hen, frog and turtle, but it stimulates the smooth muscle parts of the esophagus in the dog and cat. The cross-striated musculature reacts to induction shocks as does skeletal muscle, giving twitches with single and tetanus with rapidly repeated shocks. Latency and duration of twitch are similar to those of skeletal muscle. A part of the esophagus containing smooth and striated muscle together reacts to single shocks diversely according to the relative amount of each kind of muscle; and in general two forms of contraction can be distinguished, one rapid due to striated muscle, the other slower as for smooth muscle. The esophageal striated muscle does not differ materially from skeletal; and the smooth muscle shows spontaneous movements,

and reacts to drugs and electric shocks in the main, like the smooth muscle of the intestine.—*H. S. Hopkins.*

9761. **FAULEY, GORDON B., and A. C. IVY.** The effect of exclusion of pancreatic juice on gastric digestion. *Amer. Jour. Physiol.* 89(2): 428-437. 1929.—Ligation of the pancreatic ducts in 7 Pavlov pouch dogs decreased gastric secretion for a few days, followed in most cases by a hypernormal secretion (due to an unexplained increase in the intestinal phase of gastric secretion) sometimes persisting as long as 6 mos., or declining to normal in 3 or 4 wks. Alkalies increased the secretion in 2 dogs and had no effect in 2 others. The emptying time of the stomach was decreased by ligation of the pancreatic ducts (4 dogs), but more decreased by total pancreatectomy (4 dogs). It is believed that hunger, or polyphagia, is the factor principally concerned in the causation of this decrease. The decrease in emptying time following ligation of the pancreatic ducts or pancreatectomy shows that acidity of the duodenum as a controlling factor of the rate of emptying of the stomach is very minor in importance when compared to the hunger, or polyphagia factor, or other unknown factors.

9762. **FITZHUGH, GREENE, MILTON L. MILLER, GRANTLEY W. TAYLOR, and JOSEPH C. AUB.** Studies of calcium and phosphorus metabolism. XB. The effect of intravenous calcium chloride on peristalsis following intestinal obstruction in dogs. *Amer. Jour. Physiol.* 97(1): 142-145. 1931.—In observations on dogs, including effect on simple intestinal obstruction, on the stimulating effect of eserine, and on the production of chronic Pb intoxication, no demonstrable change in either peristalsis or intestinal muscle tone could be seen after the intravenous injection of small or large doses of $CaCl_2$.

9763. **FLOREY, H.** The secretion of mucus by the colon. *British Jour. Exp. Path.* 11: 348-361. 1930.—In cats and dogs, stimulation of the nervi erigentes over a short space of time does not cause any detectable secretion of mucus from the intestine. In the great majority of experiments no secretion occurs after stimulation for prolonged periods. In one case quantities of mucus at last appeared. If the nerve supply does influence secretion it is only after the most prolonged stimulation. Experiments with pilocarpine support this. A single large dose causes inappreciable colonic secretion and it is only after repeated doses acting over a long time that any is caused. It is improbable that pilocarpine causes mucus secretion by stimulating nerve endings. Other evidence is offered against any effective nervous control of the goblet-cells of the colon:—(a) Secretion of mucus goes on in apparently normal fashion after section of all extrinsic nerves. (b) The secretion of mucus in a Thiry fistula of the colon is small and appears to occur at a constant rate. (c) Tissue cultures from chicken gut show that goblet-cells develop and produce mucus which is discharged. Here no organised nerves are present. (d) Histologically nerve cells have never been demonstrated to serve goblet-cells. Application of agents capable of causing cell damage calls forth a secretion from the goblet-cells of the colon. This might be caused either by direct action of the noxious agents on the goblet-cells or by the liberation of some chemical substance which stimulates them. Tests with histamine, acetyl choline, adenosine and peptone solutions failed to show stimulation of mucus secretion from goblet-cells. Extracts of colonic mucosa did not have any observable effect. It appears therefore that goblet-cells directly react to the insult of the noxious agent.—*J. Bland.*

9764. **FORSGREN, ERIK.** 24-Stunden-Variationen der Gallensekretion. *Skand. Arch. Physiol.* 59(5/6): 217-225. 5 fig. 1930.—The secretion of bile in man and animals exhibits during the 24 hrs. rhythmical variations which have no obvious relation to meals.—*From author's summary (transl. by R. J. Brocklehurst).*

9765. **GIANOTTI, M., e S. GOLDBERGER.** Influenza della fatica sulla secrezione gastrica. [Effect of fatigue on gastric secretion.] *Boll. Soc. Ital. Biol. Sperim.* 5(2): 119-124. 1930.—Fatigue following protracted walking induces a marked diminution of the amount of HCl and pepsin secreted by the gastric mucosa. Individual differences were noted.—*M. Comel.*

9766. **GOLDSTEIN, BORIS.** Zur Physiologie des isolierten Pankreas. II. Über die fermentbildenden und sekretorischen Prozesse im isolierten Pankreas. *Zeitschr. Ges. Exp. Med.* 65(3/4): 411-426. 2 fig. 1929.—Ferment formation and secretory processes in the pancreas are independent. The principal stimulus to ferment formation comes through the vagus. The principal stimulus for secretion is secretin. The secretion of pancreatic juice following stimulation of the vagus is to be looked on as a process secondary to the formation of ferment. Parallel studies were made of the external secretion of the isolated pancreas and the amount of ferment which goes into the Ringer solution perfused through the vessels.—*W. C. Alvarez.*

9767. **GREENE, CARL H., WALTMAN WALTERS, and CLYDE H. FREDRICKSON.** The composition of the bile following the relief of biliary obstruction. *Jour. Clin. Investigation* 9(2): 295-310. 1930.—The composition of the bile following the relief of biliary obstruction was studied in 9 cases. The total daily output of bilirubin was more or less constant and was not related to the other factors studied. The concentration varied inversely with the volume of the bile. One or 2 patients showed some evidence of a washing out of retained pigment, but if this occurred in all it took place so slowly as not to be apparent in observations of short duration. Biliary obstruction inhibits the formation of bile acids. If the liver is not too greatly injured there is a relatively rapid return to normal; otherwise the return is greatly delayed. This was true both with regard to the concentration and total amount of bile acids. The concentration of chlorides in the bile is slightly greater than that in the blood serum. With cholerrhagia, the resultant loss of salts becomes so great as to be of clinical significance. The loss of fluids by this channel may also be so great as to cause diminution in the output of urine. The concentration of urea in the bile apparently varies directly with that in the blood. Ordinarily this pathway of elimination is not significant, but in 1 case there was considerable loss of urea through the fistula.—*Authors' summary.*

9768. **HARTZELL, JOHN B.** The effect of section of the vagus nerves on gastric acidity. *Amer. Jour. Physiol.* 91(1): 161-171. 1929.—Experimental work on the effect on gastric acidity of section of the vagus nerves has been largely inconclusive for 3 reasons: (1) the preoperative normal state has not been adequately determined; (2) the observations often were made on animals that had been operated on for the production of fistulas and pouches, and (3) the period of postoperative observations has been too brief. The present study, which was carried out on 8 dogs, is concerned only with the effect of section of the vagus nerves on the degree of acidity of the gastric content during that portion of the normal digestive cycle which begins with the ingestion of a meal and which ends when the stomach is empty. It was found necessary to train each animal for 1-6 wks. in order to have it thoroughly accustomed to the procedure. In the beginning, any psychic upset, even intubation, was sufficient to cause a marked decrease in acidity. Only at the end of the period of training did the acidity begin to show a uniform curve. Section of the vagus nerves then was performed. In some experiments the large anterior and posterior vagal trunks were cut just above the diaphragm; in others, the vagal branches were cut in the abdomen, care being taken to cut the pyloroduodenal nerve which descends from the vagal branch to the liver. In those dogs in which the vagus nerves were sectioned in the thorax, there was marked reduction in both free and total acidity, and the highest postoperative curve was lower than the lowest preoperative curve. There was 1 exception: in 1 animal the concentration after operation was the same as before, and at necropsy it

was found that the posterior vagal trunk had been missed. In those animals in which the branches of the vagus nerves were cut in the abdomen the amount of free HCl occasionally continued to rise to the same height as before operation. However, the secretory curve was shorter, so that the stomach was empty of all food and gastric juice 1-2 hrs. sooner than before operation.—*Author's summary.*

9769. **HAYASHI, INOSUKE, und YOSHIHARU KITAKOJI. Studien über die Funktionen der Gallenblase und des Oddischen Muskels in Bezug auf die Absonderung der Blasengalle. III. Über den Einfluss von gallenaustreibenden Substanzen auf die Funktionen der Gallenblase und des Oddischen Muskels.** *Nagoya Jour. Med. Sci.* 5(2): 75-78. 1931.—Administration of such substances as egg yolk (2 experiments on dogs cited) led to a primary reflex contraction of the gallbladder and bile duct, and a secondary pressure of excreted bile and relaxation of the sphincter of Oddi.

9770. **HOBSON, R. P. Studies on the nutrition of blowfly larvae. I. Structure and function of the alimentary tract.** *Jour. Exp. Biol.* 8: 109-123. 1931.—The mid-gut in *Lucilia* can be divided into 3 distinct regions. Histologically the anterior and posterior segments are similar. In a feeding larva the cells are highly vacuolated and contain fat; in a starved larva the cells are deeply staining and non-vacuolated. In the middle segment the cells are always deeply staining and free from vacuoles and fat, whatever the state of nutrition. The pH varies along the gut and with the nature of the food. It is on the acid side in the middle segment and on the alkaline side in the other segments. It is suggested that the acidity in the middle segment may be due to an acid secretion, the most likely component being phosphoric acid. The alkaline reaction in other parts of the gut is probably caused by ammonia. Tryptase, peptidase and lipase are present in the mid-gut, the enzymes being concentrated in the anterior and posterior segments. Carbohydrate splitting enzymes are absent except for a feeble secretion of amylase in the salivary gland. It is suggested that food is stored unchanged in the crop and, passing into the mid-gut, is rapidly forced into the middle segment. Some absorption of water and simple products of bacterial action occurs along the anterior segment, the concentration of the food being completed in the middle segment where the acidity prevents digestion. The food then passes into the posterior segment, dissolves in the alkaline fluid and is digested and absorbed.—*J. M. Robson.*

9771. **HUNTER, J. E., A. J. DURANT, and A. G. HOGAN. Studies on the pathology and physiology of the cecal pouches of turkeys. II. The utilization of food by turkeys with abligated ceca.** *Missouri Agric. Exp. Sta. Res. Bull.* 136. 12p. 1930.—The authors conclude that the data give no evidence of a lower digestibility of rations as a result of cecal abligations.

9772. **IVY, A. C., and GORDON B. FAULEY. The effect of hunger on the emptying time of the stomach.** *Amer. Jour. Physiol.* 91(1): 206-209. 1929.—In 59 out of 60 tests on 7 dogs, and in 13 out of 17 tests on 17 men, hunger decreased the emptying time of the stomach.

9773. **JAUBERT de BEAUJEU, A. Sur quelques points de la physique physiologique de l'estomac, application à l'oesophage.** *Jour. Physiol. et Path. Gén.* 28 (4): 822-832. 4 fig. 1930.—By x-ray photograms from different angles, the volume of the empty and the full stomach has been calculated. Average values are: (1) resting capacity, 850-1000 cc. (2) maximal capacity, 1500-1800 cc. The pressure at the cardiac region can vary from 0 to 12 cm. of water which indicates the force that may be developed by the contracting esophagus.—*W. R. Fearon.*

9774. **JOHNSTON, CHARLES G., and ERIC G. BALL. Variations in inorganic constituents of the pancreatic juice during constant drainage of the pancreatic ducts.** *Jour. Biol. Chem.* 86(2): 643-653. 1930.—A study of pancreatic juice excreted by 5 dogs with permanent pancreatic fistulae reveals a marked variation in the concentrations of Cl, bicarbonate, and Ca. The concentrations of Cl and Ca decreased as drainage progressed. With the fall in Cl the bicarbonate concentration in the juice rose, the total anion concentration remaining nearly constant. The total cation concentration closely paralleled the anion concentration. The pH of the pancreatic juice varied between 7.16 and 8.04.—*Authors' summary.*

9775. **JUNG, FREDERIC T. Effects of ligating the bile duct in the rat.** *Proc. Soc. Exp. Biol. & Med.* 27(5): 362-364. 1930.—Ligation of the bile duct in ♂ white rats was followed in 12 hrs. by appearance of a yellow color in urine and a yellow tint in the ears. No gross changes were found in the teeth, nor were such changes found in the teeth of 5 rats simultaneously ligated and thyroparathyroidectomized.

9776. **KIRSTNER, A., und S. LURJE. Über den Einfluss von Hochfrequenzströmen auf die sekretorische und evakuatorische Magenfunktion.** *Arch. Verdauungskrankh.* 48(5/6): 366-382. 1930.—Observations were made on 36 patients with different functional (secretion and evacuation states) of the stomach. In normal and hypersecretion, the secretion of the stomach was reduced under the influence of diathermy. In hyposecretion, diathermy exerted no marked influence on secretion. The evacuation of the stomach was accelerated in all secretion-types; this was clearly demonstrated where the evacuation before diathermy was slow. Under the influence of diathermy the different disorders of the stomach disappeared quickly. The influence of diathermy depends not only on the heating action but also on the specific action of high frequency currents (electrical effect). An essential preliminary condition of the healing effects of diathermy is the proper placing of the electrode over the gastric region.—*Authors' summary (transl. by K. W. Buchwald).*

9777. **KITAKOJI, YOSHIHARU. Studien über die Funktionen der Gallenblase und des Oddischen Muskels in Bezug auf die Absonderung der Blasengalle. I. Über den Einfluss von Nervengiften auf die Funktionen der Gallenblase und des Oddischen Muskels. II. Über den Einfluss von faradischen Nervenreizungen auf die Funktionen der Gallenblase und des Oddischen Muskels.** *Nagoya Jour. Med. Sci.* 5(1): 24-29, 30-33. 2 fig. 1930.—I. Apparatus for studying the functions of the gall bladder and the sphincter of Oddi simultaneously in the living subject by a modified Reach method the isolated sphincter of Oddi by a modified Terasaka method, and the isolated surviving gall bladder by a modified Ishiyama method, are described. Muscarine, acetylcholine, pilocarpine, physostigmin increased the tonus and produced contractions both of the sphincter of Oddi and of the gall bladder, isolated and in the living animal. Atropine and scopolamine relaxed both the sphincter and the bladder; atropine acted more powerfully than scopolamine on the sphincter in the living animal, more weakly on the isolated sphincter. Epinephrine produced no consistent effect on the sphincter; it relaxed the walls of the gall bladder. Nicotine and morphine contracted the sphincter of Oddi. They produced no contraction in the gall bladder in the living subject, but raised the tonus in the isolated gall bladder. II. Stimulation of the intact vagus, or of the peripheral stump of one side after unilateral or bilateral section, almost invariably produced contraction of the gall bladder, with contraction of the sphincter of Oddi and consequent decrease or cessation of discharge. Stimulation of the peripheral stump of the sympathetic nerve produced relaxation of the gall bladder and of the sphincter of Oddi. These effects show that the gall bladder and sphincter of Oddi, like the intestine, are influenced by the sympathetic and parasympathetic systems.

9778. **KITAKOJI, YOSHIHARU. Über das Verhältnis zwischen der Entleerung des Darms und der Darmbewegungskurve. [The relation between the evacuation of the bowel and the curve of intestinal movement.]**

Nagoya Jour. Med. Sci. 5(2): 165-166. 1931.—Parallel records.

9779. **KOLDA, J. Motorická činnost střeva in vitro. I. Methodika a hybnost isolovaného tenkého střeva koně a skotu a tlustého střeva kočky.** [Peristaltic action of the intestines in vitro. I. Behavior and movement of the isolated small intestine of horses and cattle and of the large intestine of cats.] [With German summary.] *Biol. Spisy Vysoké Školy Zvérolékařské Brno* (*Publ. Biol. École Véterinaires*) 5: [45]-[88]. 15 fig. 1926.—The motility of the intestine was studied by a modified Trendelenburg method. The paper presents extensive data, but little that is new.—*A. J. Carlson.*

9780. **KRIMBERG, EUGENIE. Über die autosekretorische Eigenschaft des Magensaftes.** *Pflüger's Arch. Ges. Physiol.* 226(6): 816-818. 1931.—The author states that he has performed experiments which show that a phosphotungstic precipitate of gastric juice, when redissolved and injected into dogs, leads to an increased rate of secretion of gastric juice. Essential details of these experiments are not reported.—*M. H. Friedman.*

9781. **LOCKEMANN, GEORG, und WERNER ULRICH. Ueber die Bedeutung des Rhodangehaltes des Magensaftes.** *Deutsche Med. Wochenschr.* 56(45): 1900-1920. 1930.—To ascertain whether the small sulphocyanate content of the gastric juice has any germicidal action, the effect of solutions of HCl in 0.01, 0.02 and 0.1 N strength (representing the varying acidity of the stomach) was tested on *Bacterium coli*, both alone and with 3 different additions of NaSCN in 0.0001, 0.001 and 0.01 N strength, at 18° and 37°. The 0.02 N solutions of HCl, which came nearest the acidity of the normal stomach, required 1½ hrs. at 18° to kill the bacteria without reenforcement; with addition of NaSCN of 0.0001 N, the time required fell to 5 min.; NaSCN of 0.001 N reduced the time to 45 sec., and NaSCN of 0.01 N made it 10 sec. At the temp. of 37° and at the other acid strengths the addition of NaSCN likewise reduced the sterilizing time. Tests of 60 gastric and duodenal juices showed that even such slight traces as 0.0012% and 0.0163% NaSCN, with the free H ions of the gastric juice, may exercise a high germicidal power, thus explaining the general sterility of the gastric contents at their entry into the duodenum.

9782. **[LUR'E, G. S., and B. A. TEMPER.] ЛУРЬЕ, Г. С., и Б. А. ТЕМПЕР. К вопросу о влиянии катионов на желудочную секрецию.** [Influence of cations on gastric secretion.] [German summary.] Одеський Медичний Журнал. (*Odessaer Med. Zeitschr.*) 5(3/5): 261-264. 1930.—Experiments were conducted on patients and healthy subjects (19 in all). Contents were extracted from the fasting stomach, and then every 10 min. after the test-breakfast, consisting of 300 cc. distilled water, with a trace of caffein and methylene blue. Following conclusions were reached: intravenous injection of 5 cc. of 10% solution of $MgSO_4$ augments both general acidity and free HCl. Hyperacid cases show greater increase of acidity than the hypoacid ones. In 3 cases of achylia, $MgSO_4$ exerted no influence.—*B. Van Rosen.*

9783. **MacARTHUR, EDITH H. Fat metabolism. 1. A study of the rate of digestion of fats as determined by the chylomicrons of the blood.** *Jour. Biol. Chem.* 87(2): 299-305. 1930.—The subjects on which the studies were based were healthy white rats and college women in good physical condition, who were without food for 12-15 hrs. preceding the experimental period. The rate of digestion was determined by counting the chylomicrons in the blood using the dark field microscope. Butter from cow milk was absorbed faster than butter from goat milk or butter from cow milk when eaten with bran.—*E. H. MacArthur.*

9784. **McCANN, JAMES C. Studies on the control of the acidity of the gastric juice.** *Amer. Jour. Physiol.* 89(3): 483-496. 1 fig. 1929.—The author devised a method for doing fractional gastric analysis on the normal dog. Histamine and a test-meal of meat and water were used to stimulate the secretion of acid. The uniformity of the results gave value to the method. In the 1st stages, 7 dogs underwent surgical duodenal drainage whereby all the duodenal alkalis were shunted away from the pylorus into the distal portion of the ileum. Post-operative fractional analysis did not show variations from the curves found before operation so far as they represented the chemistry of digestion, or the control of the acidity of the juice. The addition of carbohydrate and fat to the protein meal showed the same alterations of the curves from a meal of meat and water in normal dogs and in operated dogs. The final control of the acid was not altered. Regurgitation of the duodenal alkalis is not, therefore, the essential mechanism for controlling the acidity of the gastric juice, but is probably an associated phenomenon. The results showed that after the acid has stopped combining with the food, the mechanism for controlling the acidity of the juice consists probably of 2 factors capable of bringing the juice to complete neutralization: (1) a gradual reduction of an established high rate of secretion of the acid to a low rate; (2) the capacity of the constant basal secretion of mucus to combine with a constant fraction of the changing volume of acid secreted. This mucus is probably derived from the adjacent mucus-secreting glands in the fundus. When the rate of secretion of acid has fallen to the low basal rate of the resting stomach, the amt. secreted apparently is so small that it completely combines with the basal mucous secretion, giving a combined acid and a neutral (base) chloride.—*Author's summary.*

9785. **McCANN, JAMES C. Studies on the emptying of the stomach.** *Amer. Jour. Physiol.* 89(3): 497-507. 3 fig. 1929.—Normal dogs (no. not stated) were used in 2 series of studies. In the 1st series x-ray examinations of the stomach were made to determine the rate of emptying and the type of motor activity at different times in the course of digestion. In the 2nd series, the influence of certain factors associated with the process of emptying, namely, free HCl, fluidity, and products of digestion, was investigated to determine whether any one of them might be the essential factor which controlled the emptying of the stomach. Combined use of fractional analysis and of roentgenograms has allowed close correlation between the changes in the motor activity of the stomach and the parallel changes in the chemical status of the gastric contents. It has permitted a comparative study of the influence on the motor state of the stomach of various factors which control the mechanism of emptying. The rate of emptying increases progressively from early digestion until the process is complete. It depends on progressive relaxation of the pars pylorica of which the sphincter is the most efficient segment. The mechanism for control does not appear to be a specific stimulus to relaxation of the segment by free HCl or the products of digestion. Rather the activity of the antrum seems to depend on its irritability, and, in these studies, on the stimulating action of raw protein to vigorous tonic and persistent contraction. With the gradual disintegration of the protein to the products of digestion late in the 1st phase of the digestive cycle, there is apparently a graded reduction on the intensity of the stimulus to the antrum and consequently a progressive relaxation of the antrum with more rapid emptying. The parallel change of the meal to a fluid state probably facilitates the emptying of the stomach.

9786. **McCAUGHAN, JOHN M. Experimental studies on the external secretion of the pancreas with special reference to the effect of its complete loss by permanent pancreatic fistula. I. The coincident changes in the chemistry of the blood. II. The mechanism of death.** *Amer. Jour. Physiol.* 97(3): 459-466. 1931.—Total drainage of pancreatic juice by fistula was fatal to a dog in 8 days, producing characteristic metabolic alterations, particularly anhydremia with moderate elevations of urea preceding death. Subtotal pancreatic drainage was without lethal effect on 2 dogs in 14 and 32 days. In a dog with total pancreatic drainage, daily intravenous injection of

physiologic NaCl solution prolonged life until the 34th day after operation (juice injected the 14th day), the blood chemistry being unaffected. Of 2 other dogs with pancreatic fistulae, 1 which received dialyzable (crystalloid) fraction of pancreatic juice orally died on the 5th day after operation; the other received non-dialyzable (colloid) fraction of pancreatic juice and died on the 12th day. Of 2 dogs with total pancreatic drainage, 1 was early given non-dialyzable fraction of pancreatic juice by mouth; on the 9th day, practically moribund, it was given 200 cc. whole juice intravenously and died. The other dog was given whole juice intravenously beginning with the 5th day, rapidly grew worse, but made a spectacular recovery within a few hrs. on receiving whole juice by mouth, and later died when non-dialyzable portion was substituted for whole juice. The essential cause of early death following total drainage of pancreatic juice is not entirely clear. In general, the loss of salts, water and proteins by way of the pancreatic juice and gastric vomitus must play an important rôle. However, the comparatively slight disturbances in blood chemistry and the improvement in the condition of a moribund dog after oral administration of whole pancreatic juice leave much to be explained.

9787. MACCIOTTA, G. Les activités enzymatiques du pancréas chez le nourrisson. *Rev. Franç. Péd.* 6(1): 72-94. 1930.—The trypsin, amylase and lipase of the pancreatic juice, and the amylolytic, lipasic and antitryptic power of the blood serum were determined in 36 infants, 1 day to 2 yrs. old. The pancreatic juice was found abundant at birth. During the 1st wk. of life the quantity secreted in ½ hr. was about 6-10 cc.; in the 1st month, 8-15 cc.; later 15-30 cc., with proportionally greater values in infants fed on cow's milk. Lipase and trypsin were present in traces in the gastric juice of the new-born; amylase in somewhat higher amount. Trypsin increased during the 1st mo. to about 2-2.5 tryptic units, 3-5 by the end of the 6th mo., 8-12 by the end of the yr. Lipase (measured by cc. of n/10 NaOH) reached a value of 0.15-0.17 in the 2nd wk., 0.2-0.3 the 1st mo., and about 0.5-0.7 after the 2nd mo. Amylase reached 6-8 diastatic units by the end of the 1st wk., 15-20 in the 1st mo., 25-35 in the 3rd, 30-50 up to the end of the 8th, 70-80 later, and still more after the 1st feeding of starchy foods. There appeared to be no necessary or normal mutual relation between the development of the production of the various ferments, but a close relation between each of the ferments and feeding. The lipasic power of the blood serum increased from 0.06-0.1 ccm. soda solution in the first days of life to 0.25-0.35 in the 1st months and 0.35-0.5 toward the end of the yr. The amylolytic power of the serum increased from 0.6 in the new-born to 1-3, rarely 4, during the 1st yr., with an especially accented increase after the 1st month. Both amylolytic and lipasic powers undergo marked individual variations. No close relation, such as could be used for diagnostic purposes, appeared between the diastatic and lipasic powers of the blood and that of the pancreatic juice in the infant.

9788. McDONALD, FRANCIS G., and WALTER C. RUSSELL. The effect of calcium citrate and carbonate upon the evacuation of a protein from the stomach of the albino rat and the pH of the contents. *Amer. Jour. Physiol.* 97(2): 386-391. 1931.—The extent of the evacuation of coagulated egg white from the stomach was significantly greater in the absence of the Ca compounds. Both compounds reduced the amt. of the evacuation when fed either at a high or low level. When the coagulated egg white was fed without the addition of a Ca compound the pH of the contents was 5.3. Upon incorporating 10% and 1.92% Ca citrate in the food the higher level lowered the pH to 4.4, whereas the lower level had no effect. Ca carbonate introduced into the test meal instead of the citrate, in quantities equivalent in Ca content to that of the citrate, increased the pH of the contents to 7.0 in the case of the higher level, whereas the smaller dosage of Ca carbonate raised the value only 0.6 pH over that of the control. The evacuation of the material from the stomach took place to approximately the same extent when a pH of 7.0 was obtained as when a value of 4.4 was observed.—*Authors' summary.*

9789. MAC KAY, MARGARET E. Motor reactions of the small intestine to histamine. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 197-198. 1930.—To study, in the whole animal, the influence of histamine on intestinal motility, dogs and cats, in which a segment of the gut from the duodenum, jejunum, and ileum had been exposed, were given intravenous injections of histamine. In the 3 exposed loops, there was first a strong initial contraction, due to shortening of the longitudinal layer; it was greatest in the ileum, least in the duodenum. Then there was a period of inhibition in all 3 segments; finally, return to normal. Subcutaneous and intra-intestinal injections of histamine were ineffective. After paralysis of the parasympathetic system by atropine, these effects of histamine are diminished but not abolished.

9790. MACLEOD, J. J. R., H. E. MAGEE, and C. B. PURVES. Selective absorption of carbohydrates. *Jour. Physiol.* 70(4): 404-416. 1930.—The existence of some degree of selective diffusion of sugars through the isolated surviving intestine of rabbits, rats and cats is confirmed. This property is manifested when equal volumes of the sugar solutions are placed in separate segments of intestine, each immersed in its own bath of Tyrode solution at body temp. This selective diffusion cannot be demonstrated when, under the above conditions, mixtures of sugars are used in place of separate solutions of each sugar. Selective absorption is manifested when mixtures of sugars are fed to living rats. That selective diffusion of glucose through the excised intestine occurs most rapidly when the concentration of glucose is about 3M/4 is confirmed. When sugar solutions in concentrations above 3M/4 are fed to rats they are rapidly diluted to about this level by secretion from the gastric glands before being discharged into the intestine. If for any reason they reach the intestine in higher concentrations, congestion of the duodenal mucosa may be produced. The rate of discharge of sugar solutions through the pylorus varies inversely as their concentrations. The concentration of sugar in the intestinal contents depends on the concentration of the sugar solution fed and on the rate of absorption of the sugar. There is some evidence that both of these factors may govern the motility of the pyloric sphincter. Sugars are absorbed in the intestine and not, to any appreciable extent, in the stomach.—*Authors' summary.*

9791. McNEALY, R. W., and J. DANIEL WILLEMS. The absorption of dextrose from the colon. II. A study of the effects of chemical excitants and of stimulants on dextrose enema. *Arch. Surg.* 22(4): 649-657. 1931.—It had previously been shown that a 5% solution of dextrose is not appreciably absorbed from the colon, but that tap water and physiologic NaCl solution are rapidly and efficiently absorbed by the colon. In 6 dogs, a small amt. of dextrose was absorbed by the colon from a mixture of equal parts 5% dextrose and 0.9% NaCl solutions, the NaCl influencing the absorption of the dextrose. In 3 dogs no appreciable amt. of dextrose was absorbed by the colon from a similar mixture of 5% dextrose and 1.5% $NaHCO_3$. In 4 dogs, practically no dextrose was absorbed by the colon from an equal part mixture of 5% dextrose and 6% ethyl alcohol; the alcohol was absorbed, producing hyperglycemia. The authors decide that there is no evidence of any nutritive value in the dextrose enema.

9792. McROBERT, G. R. Observations on the hydrogen-ion concentration of the alimentary canal of the albino rat. *Indian Jour. Med. Res.* 16(2): 545-552. 2 fig. 1928.—The measurements were made with the quinhydrone electrode. In normal rats the pH increases below the duodenum to a maximum of about 8 at the lower end of the ileum. In the cecum the pH is lower

by 2 or 3 units. Starvation or lack of Vitamin D increases the region of high pH.—*R. S. Anderson.*

9793. **MAYO, CHARLES 2nd, and CARL H. GREENE. Studies in the metabolism of the bile. IV. The rôle of the lymphatics in the early stages of the development of obstructive jaundice.** *Amer. Jour. Physiol.* 89(2): 280-288. 1929.—In 3 series of 5 dogs each biliary obstruction was produced by ligation of the cystic and common bile ducts, 1 series being kept as a control for the effect of the obstruction alone, a thoracic duct fistula being established and the lymph drained externally in a 2nd series, and in a 3rd series the thoracic duct being ligated at its point of entrance into the jugular vein. The experiments showed that bilirubin and bile acids rapidly accumulate in the blood after the experimental ligation of the cystic and common bile ducts. The lymph shows an even more rapid accumulation of these 2 biliary products and the external drainage of the lymph through a fistula of the thoracic duct delays the changes in the blood stream, but does not prevent the development of icterus. Ligation of the thoracic duct may delay the entrance of bile into the blood stream slightly but not to so great an extent as does a lymphatic fistula. The results indicate that bile resorption in obstructive jaundice may occur through both vascular and lymphatic channels, although the latter possibly are the more active during the 1st few hrs. of obstruction.

9794. **METTIER, STACY R. The reaction of human duodenal contents to acid and alkaline meat mixtures.** *Jour. Clin. Investigation* 8(4): 561-567. 4 fig. 1930.—Predigested beefsteak (200 gm.) adjusted to pH 3 or 3.2 was fed to 3 patients with achylia gastrica and to 2 patients with a normal gastric secretion. On a subsequent day a similar amount of beefsteak was adjusted to pH 8 and fed to the same individuals. Simultaneous fractional duodenal and gastric analyses showed that the acid meal was an effective means of rendering the gastroduodenal contents acid, over a range of pH 4 or under, and the alkaline meal rendered the contents alkaline, pH 7.8 to 8. The alkaline pH was maintained almost constant for 2 hrs. in the stomach and duodenum of patients with free HCl in their gastric secretion and for 2-3 hrs. in patients with achylia gastrica. The acid pH was maintained almost constant for 1½-2 hrs. in patients with a normal gastric secretion, and 3-4 hrs. in patients with achylia gastrica. The predigested beefsteak meal may be used experimentally in the study of the relation of pH of the upper intestinal tract to inorganic metabolism.—*Author's summary.*

9795. **MIRVISH, L., G. SACKS, and T. SCHRIRE. The absorption of calcium from the gall-bladder.** *Jour. Physiol.* 70(4): 434-440. 1930.—Dogs were used for most of the experiments, but some experiments were also made on cats and rabbits. The volume of bile found in the gall-bladders of 37 dogs ranged from 3 to 21 cc. (av. 11.3 cc.); the gall-bladder was never found empty but was absent in 1 instance. The Ca content of the cystic bile were 29.5-68 mgm. % (107 mgm. in 1 instance; av. 40.5 mgm. % in ♂♂ and 49.2 mgm. % in ♀♀). In 3 dogs the gall-bladder was emptied and washed out; then Ca was administered, duodenally or intravenously. After a certain interval the gall-bladder contents were again removed and the Ca content estimated. It was found that no Ca passes into the gall-bladder from the blood stream, either normally when the gall-bladder is allowed to remain empty, or when it is filled with saline, or when Ca is administered to the animal intravenously or duodenally. In 24 dogs the gall-bladder was emptied, washed and refilled, 9 with $CaCl_2$ solution, 2 with bile plus $CaCl_2$, 7 with cystic bile, 2 with cystic bile in saline solution and 4 with hepatic bile. In nearly all cases the Ca content of the gall-bladder fluid was found definitely lowered 1-2 hrs. later. This demonstration that Ca can be absorbed from bile (probably along with other biliary constituents) seems to indicate the presence of a "Ca circle" in the liver. The Ca taken by mouth is absorbed from the small intestine, taken by the portal vein to the liver, from which a portion passes into the general circulation (via the hepatic veins), and a portion is excreted into the bile. The Ca from the bile is again absorbed in the gall-bladder either by the lymphatics into the portal circulation, or again from the duodenum into the portal circulation. In either case the increased accumulation of Ca in the liver that thus occurs is capable of raising the blood Ca of the general circulation. In the maintenance of the extremely constant concentration of Ca in the blood the endocrine glands, especially the parathyroids, play the largest part; they regulate the storage of excess Ca in the bones, and its liberation from these stores into the tissues when the Ca intake is insufficient. But a simpler and more rapid mechanism seems also to be present, and that is the steady and long-continued supply of Ca to the general circulation from the liver, which is maintained long after the absorption of the meal (containing Ca) is complete.

9796. **NEALE, A. V., and T. G. KLUMPP. The action of histamine on the pancreas.** *Jour. Clin. Investigation* 9(2): 197-208. 1930.—In a study of the action of histamine on pancreatic secretions into the duodenum in about 30 cases, chiefly children of different ages, histamine caused no increase in either the volume or the enzyme activity of pancreatic secretion. An increase in the alkalinity of the duodenal contents (alkaline tide) accompanied the secretion of acid into the stomach in response to histamine.

9797. **PAFFRATH, HANS, und ALFONS KAEHS. Untersuchungen über die Kohlehydratverdauung des Säuglings. VIII. Beiträge zur Verdauungsphysiologie der Malzextrakte.** *Zeitschr. Kinderheilk.* 50(5): 553-563. 1931.—The chemical composition of malt extract was determined for fresh and old extract; no marked difference was found. Absorption experiments, using the small intestine of a rabbit and a Thiry-Vella fistula in a dog, were carried out to compare the rate of absorption of malt extract with that of a dextrin-maltose mixture. For short periods of time the rate is the same, both being absorbed very quickly. In 2-hr. experiments 10-20% of malt extract was not yet absorbed while only a small percentage of dextrin-maltose mixture remained unabsorbed. With malt extract the brown colored colloidal condensation products are practically not absorbed at all. Malt extract was absorbed 3 times as fast as lactose. Caramelized cane sugar is absorbed more slowly than malt extract. It also stimulates secretion. The substances responsible for these effects were shown not to be either the colored or the colloidal substances present. The chemical constitution of the substances responsible is not determined but is probably the same as those of malt extract. To the unabsorbed carbohydrates of malt extract belongs pentosan which constitutes 1.72% of the extract as well as other non-colored and non-colloidal substances of unknown chemical composition. The laxative actions of malt extract are due to the fact that small amounts reach the large intestine and here encourage fermentation whereas the laxative effect of lactose is due to fermentation in the small intestine. It depends upon the ability of the small intestine to absorb lactose and occurs when lactose is present in very large amounts.—*A. C. Ivy.*

9798. **POLLAND, W. SCOTT, and ARTHUR L. BLOOMFIELD. The diagnostic value of determinations of pepsin in gastric juice.** *Jour. Clin. Investigation* 9(1): 107-113. 1930.—The concentration and total output of pepsin were studied in 40 determinations on 36 patients, 21 essentially normal, 5 with duodenal ulcer, 1 with gastric ulcer, 5 with gastric cancer, 2 with pernicious anemia, 1 with sprue and 2 with unexplained anacidity. In normals the maximum 10-min. volume of stomach juice digested from 16,900 mgm. to 112,400 mgm. of edestin. The ulcer cases fell within the same general range. In pernicious anemia, cancer of the stomach, and severe gastritis, the pepsin output was diminished, in some cases to extremely small amounts, but in only 1 case was pepsin completely undemonstrable. No correlation was found between pepsin output and acidity

and it is suggested that the secretory mechanisms of the 2 are independent. Finally, it seems that very low pepsin output is a more delicate index of gastric damage than low acid values.

9799. **QUIGLEY, J. P., [et al.].** The action of insulin on the motility of the gastro-intestinal tract. II. R. D. TEMPLETON and J. P. QUIGLEY. Action on the Heidenhain pouch. III. J. P. QUIGLEY and R. D. TEMPLETON. a. Action on the pyloric pouch. b. Action on the stomach following double splanchnicotomy. IV. [Same authors.] Action on the stomach following double vagotomy. V. J. P. QUIGLEY and E. I. SOLOMON. a. Action on the human duodenum. b. Action on the colon of dogs. *Amer. Jour. Physiol.* 91(2): 467-474; 475-481; 482-487; 488-494. 1930.—II. In dogs fasting 14-40 hrs. intravenous or subcutaneous injections of 8-80 units of insulin inhibit the motility and depress the tone of the Heidenhain pouch at the same time that the tone and motility of the main stomach is being augmented. Intravenous injections of 2-50 gm. dextrose (50% solution) are usually without effect on the motility of the pouch. Feeding dextrose to the animal inhibits the pouch motility.—III. The motility of a pouch made from the pyloric portion of the stomach was not appreciably altered by injections of 16-80 units of insulin or the intravenous injection of dextrose up to 30 gm. The action of insulin and of dextrose on the gastric motility in double splanchnicotomized dogs while fasting is similar to but slightly greater than that displayed by normal animals.—IV. In dogs having the vagi sectioned insulin inhibits gastric hunger contractions while intravenous injections of dextrose are practically without effect on the motility of such a stomach. The mechanism by which insulin and glucose modify gastric motility is considered.—V. Duodenal activity has been followed in man by the double balloon method and has been related to gastric activity. Subcutaneous injection of 12-20 units of insulin was followed by an increase in duodenal activity similar to that which occurred in the stomach. Duodenal hunger contractions can occur in the absence of gastric motility and this duodenal activity can give rise to hunger sensations. Since the duodenal response to insulin preceded that of the stomach it may have given rise to sensations which enabled a subject to predict that a gastric response was about to occur. The response of the duodenum as well as of the stomach has been inhibited by the subcutaneous injection of atropine or the oral administration of cane sugar which is allowed to enter the intestine. Insulin injections produced in dogs an increase in colonic activity which closely paralleled that exhibited by the stomach.—*Authors' summaries.*

9800. **RASENKOW, J. P., und A. N. PTSCHELINA.** Über die humorale Natur der Nervenerregbarkeit. I. *Pflüger's Arch. Ges. Physiol.* 226(6): 786-793. 1931.—Experiments are reported in which blood secured from the veins of the stomach or pancreas, during or after vagus stimulation produced augmented flow of gastric or pancreatic juice when transferred to a second dog. The experiments were done under ether-chloroform anesthesia. If the authors took care to perform the necessary and obvious controls, they have neglected to mention them in this report.—*M. H. Friedman.*

9801. **RAVDIN, I. S., and J. L. MORRISON.** Gall-bladder function. I. The contractile function of the gall-bladder. *Arch. Surg.* 22(5): 810-828. 4 fig. 1931.—Rhythmic tonic contractions are believed to have been observed fluoroscopically in a human gallbladder, respiration having been temporarily checked. The isolated gall-bladders of a dog, a guinea pig and a rhesus monkey responded by rhythmic contractions to stimulation by various drugs. The authors failed to find bile pigment in the lymphatics or blood vessels draining the gall-bladder. Hence they conclude that although certain constituents of the bile are removed by the lymphatics or blood vessels, concentrated bile leaves the gallbladder, as a result of its contraction, by the cystic duct.

9802. **REWBRIDGE, ALLAN G., MILTON T. HANKE, and BÉLA HALPERT.** Further observations on the function of the gall bladder. Experiments with methylene blue on the dog. *Amer. Jour. Physiol.* 95(3): 511-518. 1930.—Four series of experiments were performed: (1) acute experiments with injection, 4 dogs; (2) feeding experiments on 18 dogs; (3) injection experiments on 42 dogs; (4) injection experiments with ligation of a hepatic duct. Methylene blue given intravenously (in doses of 20 mgm., i.e., 2 cc. of a 1% solution per kgm. body weight) to dogs anesthetized with ether, appears in the bile within 30 min., and attains its highest concentration of 1:220 to 1:1,200 within 1-2 hrs. The dye also appears in the saliva, and the gastric and duodenal secretions. In intact dogs, methylene blue ceases to be present in the bile of the liver about the 36th hr. following its intravenous administration; from the content of the gall bladder it usually vanishes 6-24 hrs. after the liver has ceased to produce bile containing the dye. After oral administration, methylene blue disappears from the bile of the liver at about the 30th hr., and from the gall bladder some time between the 30th and 48th hr. after ingestion. Exchange of the content of the gall bladder occurs within about 24 hrs.; this process is retarded when feeding is unsatisfactory.

9803. **REWBRIDGE, ALLAN G., and BÉLA HALPERT.** Roentgen-physiological studies on the gall-bladder: experiments with lipiodol and brominol-light on the dog. *Amer. Jour. Roentgenol.* 24(6): 634-639. 1930.—Normal healthy dogs (26) were laparotomized: 2 cc. of lipiodol was introduced into the gall-bladders of 20, and brominol-light into 6 of the dogs, after 3 cc. of bile had been withdrawn. Following the operation the animals were offered their usual diet. Roentgenograms were taken 6 hrs. after the operation and subsequently once daily until the shadow had vanished or remained stationary for several days. In the latter case, a meal (raw chopped meat and 2 eggs) was fed, and a roentgenogram taken 3 hrs. later and 1 the following day. In the experiments with lipiodol, the shadows on the 1st films averaged about 3.5 by 1.5 cm. The shadow disappeared completely in 3 dogs by the end of the 2nd day, in 5 dogs on the 3rd and 4th days, in 6 between the 5th and 10th days, and in 1 on the 17th day. In the remaining 5 dogs the shadow diminished to about 30% its original size and remained nearly unaltered until the experiment was concluded (8-26 days after operation). In the experiments with brominol-light, the shadows on the 1st films averaged about 2.8 by 2.1 cm. The shadow disappeared completely by the 4th day in 4 of the 6 dogs. At necropsy, droplets of lipiodol or brominol-light were found in the content of the gall-bladder in most of those dogs in which the shadow had disappeared. The exit of lipiodol and brominol-light occurred spontaneously whenever the orifice of the cystic duct became the lowermost point of the viscus. In dogs in which this did not happen the lipiodol remained in the gall-bladder almost indefinitely. The above observations justify the conclusion that complete emptying of the dog's gall-bladder does not occur with each meal; it seems probable that complete evacuation never takes place in the dog.—*Authors' summary & conclusions.*

9804. **ROZEN, JOSEF SAMUEL, and GEORGE LOUIS PERUSSÉ, Jr.** The effect of calcium and magnesium ions on the gastric hunger contractions. *Amer. Jour. Physiol.* 91(1): 298-304. 1 fig. 1929.—From experiments on 5 dogs it is concluded: (1) Mg salts given orally cause an inhibition of hunger contractions that can be counteracted by giving Ca salts. Ca administration per se has no effect on hunger contractions. (2) Central effects caused by injections of Mg and Ca salts may mask any true effect of these salts on hunger contractions. Cessation of hunger contractions and loss of tone were the effects observed. Very small doses of Ca have no effect on hunger contractions. A Ca injection following Mg injection does not diminish the depressive action of the Mg on the hunger contractions. (4) Mg depresses rhythmical contraction of gastric muscle

strips. Ca enhances gastric strip contraction. Ca after Mg depression allows contraction to return to normal more quickly than does bathing with the original Locke's solution. In bathing with Ca and Mg solutions simultaneously, the Ca effects predominate.—*Authors' conclusions.*

9805. **ROUX, JEAN-CHARLES. L'équilibre entre les fermentations et les putréfactions dans le côlon. Ses variations et leur valeur séméiologique.** *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(4): 401-442. 1930.—During several thousand fecal examinations Roux has found that in normal feces there is a fairly stable equilibrium between acids and ammonia, the acidity fluctuating around 15 cc. per 100 gm. feces and the ammonia between 2 and 4 cc. The ammonia is volatile and readily absorbed by the intestinal mucosa; the amount in the feces at the time of their discharge is therefore in proportion to the length of their sojourn in the intestine. The amount of acids normally present is regulated (particularly in the colon) by various factors, including bacterial proteolysis, secretion of alkaline bases by the mucosa of the large intestine, and absorption of the acids and their soluble salts during their passage through the colon. A disturbance of this acid-ammonia equilibrium is in general indicative of disease. A decrease in organic acidity (with or without increase in ammonia) generally accompanies high intestinal putrefaction. An increase in organic acids (with or without decrease in ammonia) may produce a diarrhea, which is an attempt of the organism to protect itself against a disturbed equilibrium. Hyperacidity of the feces may also stimulate the formation in the colon of soaps from the bases secreted by the intestinal wall. Increase of ammonia is the exception rather than the rule in feces deficient in acids. High acidity is freqently accompanied by decrease in ammonia and in putrefactive processes, but may coexist with high ammonia, e.g., (1) when excess of acid production in the cecum and ascending colon irritates the descending colon into production of an albuminous secretion causing secondary putrefactions; or (2) when in certain enteritides, from imperfectly understood causes bacterial decomposition is not maintained at its normal level, and excessive putrefaction and fermentation exist side by side. In certain persons the intestinal flora never becomes stabilized, and acid diarrhea alternates with putrid diarrhea.

9806. **RUDD, G. V. Observations on the acidity and chloride content of the gastric juice.** *British Jour. Exp. Path.* 11: 240-244. 1930.—A comparison was made of the gastric secretory response to a meal of gruel and to one of cream. A fractional analysis of the gastric contents was done and total and neutral chloride and total acidity estimated in the samples. The total chloride content of the gastric secretion remains approximately constant whilst the total acidity and neutral chloride show wide variations. The theory of the formation of neutral chloride by the neutralization of gastric acid by duodenal fluid is incapable of explaining these results. The variations in the composition of the gastric contents are due to changes in the amounts of HCl and neutral chloride being secreted by the gastric mucosa. In an estimation of the secretory activity of a stomach the total chloride is the significant quantity.—*J. Bland.*

9807. **SCHWEZOFF, S. W. Experimentelle Studien zur Frage der Leberfunktionsprüfung.** *Zeitschr. Ges. Exp. Med.* 73(3/4): 285-292. 1 fig. 1930.—Phenoltetrachlorphthalein intravenously injected into the peripheral blood stream (11 tests on 11 animals, cats and a dog) was always found in the internal veins (hepatic and portal) in 10-15 min., but with some quantitative irregularities: in 22% of the cases more tetrachlorphthalein was found in the portal vein, in 78% in the hepatic vein. Bilirubin, intravenously injected into the peripheral blood-stream (21 experiments on 21 cats) was likewise always found in the hepatic and portal veins in 10-15 min., but with quantitative regularity, less bilirubin being found in the hepatic and more in the portal vein. Schwezoff concludes that the bilirubin test is physiologically better founded than the phenoltetrachlorphthalein test.

9808. **SMIRNOV, N., A. BOGDASSAROV, et Z. TCHOUKANOVA. De la sécrétion gastrique a jeun.** *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(3): 296-309. 1930.—More than 450 aspirations were made on 143 fasting patients including chiefly sufferers from gastric affections and also some with no disease of the stomach. The quantities withdrawn varied from 2 to 60 ccm. (av. 35 ccm.). The total acidity of the first fluid obtained was 5-60 (av. 30); free acid, 20. In some cases, but not consistently in all, there was a relation between the quantity and the acidity of the first sample. The acidity of the later secretion was generally greater than that of the earlier; it was 30-80 (av. 60); free HCl 50. The quantity of later secretion for a unit of time was not constant during a single aspiration; the quantity obtained during ½ hr. varied generally from 15 to 45 ccm. The fasting acidity was in 70.7% of the cases lower than after a test meal, showing that the fasting test cannot replace the test meal. The best results were obtained by aspiration immediately after awaking, eliminating psychic complications.

9809. **SMITH, GEOFFREY H. Factors affecting the deposition of dental calculus.** *Australian Jour. Exp. Biol. and Med. Sci.* 7(1/2): 45-77. 1 pl. 1930.—Experiment indicates that loss of CO_2 from saliva is of slight importance as a cause of dental calculus deposit. The pH of saliva is not influenced by different types of diet, nor does it correspond with changes of urinary pH, which can be readily produced by such alteration of the diet. The pH curve for saliva takes approximately the same course each day, irrespective of the diet and the urinary pH. Probably the pH of saliva does not show large enough variations from the normal to exert any marked influence on calculus. A method for the estimation of phosphoric acid in saliva is described, and values of organic and inorganic phosphates are given. There is no observable relation between the amount of organic phosphates present in saliva and a tendency to calculus deposit. The presence of a phosphatase in saliva has been confirmed; it is contained in the desquamated epithelial cells, which are normal constituents of the saliva, and increases the free phosphate by its action on the organic phosphate compounds in the saliva. It exerts a similar hydrolytic action on sodium glycerophosphate. The optimum reaction for the salivary phosphatase is about pH 5.5. The organic phosphate in the saliva is probably of the nature of a phosphoric acid ester. The phosphatase content in different persons depends largely upon the conditions of the gums and oral mucous membrane. The use of the toothbrush diminishes the amount of phosphatase in saliva, and shows the importance of brushing the gums as a prophylactic measure against calculus formation. A deposition of Ca phosphate in the epithelium of the gums has been produced in vitro. Attempts to show that such a deposit occurs in epithelium taken directly from the mouth have not been successful.—*Author's conclusions.*

9810. **TSCHUKITSCHEFF, J. P. Über den Mechanismus der Hungerbewegungen des Magens. I. Einfluss des "satten"- und "Hunger"-Blutes auf die periodische Tätigkeit des Magens.** *Pflüger's Arch. Ges. Physiol.* 223 (3): 251-265. 5 fig. 1929.—On dogs each with a gastric (fundal) fistula, 41 transfusions were performed with blood from fasting and recently fed dogs. "Satiated" blood (from recently fed dogs) inhibited the periodic motor activity of the stomach, the greatest effect being produced by blood from a dog fed with meat, which produced a lowering of tonus of gastric contractions in 2-4 min. after the beginning of the transfusion, and a complete cessation of contractions in 5 min. (the gastric juice becoming acid soon after the beginning of transfusion). Hunger blood produced one or the other of 2 opposed effects: in most cases in increased gastric activity (the gastric juice being alkaline before and after the transfusion), but in some cases an inhibition like that produced by "satiated" blood. The difference be-

tween the results from "satiated" blood and hunger blood points to differences in physicochemical composition. The more difficult question of the same results obtained with blood from fasting and recently fed dogs was studied by transfusion with blood taken during different periods of the hunger contractions; the author believes that results show that blood taken at moments of periodic contraction must be regarded as in effect hunger blood.

9811. VILLARET, M., L. JUSTIN-BESANCON et A. MARCOTTE. Technique d'enregistrement des mouvements rythmiques de la vesicule biliaire. *Compt. Rend. Soc. Biol.* 106(9): 720-722. 1931.—Apparatus and method are described which simplify the method of Ischiyama. Normal, spontaneous contractions were of 3 kinds: feeble, medium, and strong. In the 2 min. interval between strong contractions come small, rapid, secondary ones. The duration and amplitude of the strong contractions are very variable. Strong contraction resulted with the smallest doses of pilocarpine and various mineral waters, and relaxation with atropine.

9812. VINEBERG, ARTHUR M. The activation of the different elements of gastric secretion by variations of vagal stimulation. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 189-191. 1930.—By applying weak and strong rhythmic stimulation to the vagi in the neck, different types of secretion could be obtained from the gastric glands of the dog. Hence it may be supposed that the vagi have different secretory fibers which have relation to the different secretory elements of the peptic glands.—*Author's conclusions.*

9813. WEBSTER, D. R. The mucus of the gastric juice and its variations. *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 199-200. 1930.—A note.

9814. WELKER, D. H., and O. BERGEIM. Protein digestion in the human stomach. *Proc. Soc. Exp. Biol. & Med.* 28(4): 383-384. 1931.—The ratio of soluble to insoluble protein in gastric contents of 24 normal men was followed by analysis of material aspirated from the stomach at 15 min. intervals after the meal. The test meal consisted of 80 gm. of bread made from flour containing 0.25% red iron oxide; it is assumed that the oxide adhered to the undissolved portion, and that the ratio of undissolved protein: iron is an index of the amount of protein digestion. The method gave good results.

9815. WESTPHAL, K., F. GLEICHMANN, und Gg. SOIKA. Tierexperimentelle Beobachtungen über nervös bedingte Resorptionsschwankungen der Gallenblase mit teilweiser Berücksichtigung des Lebergallenflusses. *Pflüger's Arch. Ges. Physiol.* 227(1): 204-219. 1 fig. 1931.—The concentrations of various constituents of the gall-bladder contents was studied after ligation of the cystic duct without impairment of the vascular and nerve supply; concentration of all constituents except chlorid was observed. Following peripheral stimulation of the severed cervical vagus changes in concentration of bilirubin, solids and ash of similar order of magnitude and in same direction occurred, but the chlorid concentration decreased in only 2 of 4 experiments reported, and the cholesterol concentration showed no marked increase. Acidity increased from about pH 6.5 to pH 6.0 in 150′ interval. Employing injection of suprarenin (5 mgm. in 100-150 c. c. physiological NaCl solution) as a means of stimulating the sympathetics, the increase in bilirubin content is much reduced, as is that of the solids. Changes in chlorid, cholesterol and ash concentration are variable and of small order of magnitude. Continued injection of suprarenin over a 5 hr. period gave more marked results. The authors conclude that vagal stimulation increases the concentration, while the sympathetic effect is an inhibition of concentration. They claim that increased motility parallels increased concentration. Decrease of motility is frequently correlated with arrest of reabsorption, it is not always absolute as shown by the use of atropine. Bile from hepatic ducts is practically isotonic with bile of gall bladder and with blood. On vagal stimulation, this bile flowing from the liver exhibited inverted changes in most constituents (chlorid, noteworthy exception) when compared with simultaneous observations of biliary concentration in gall bladder; it became also more alkaline. Vagal stimulation expedited the secretory process in a control dog but inhibition resulted in an animal without water. The authors conclude that fluctuations in reabsorption in the gall-bladder may be nervous in origin, and in addition to the physical-chemical processes they assume a vital one also.—*B. McGlone.*

ANIMAL PHYSIOLOGY

ENDOCRINOLOGY

W. W. SWINGLE, *Editor*

J. J. PFIFFNER, *Associate Editor*

(See also in B. A. 6(3): Entries 6735, 6744, 6745, 6756, 6759, 6790, 6844, 6855, 6857, 6968, 7075, 7083, 7090, 7098, 7109, 7128, 7131, 7153, 7213, 7250, 7269, 8220, 8221, 8225, 8258, 8298, 8326, 8388; and in this issue 9321, 9431, 9494, 9512, 9618, 9622, 9634, 9713, 9714, 9726, 9736, 9780, 9799, 9800, 9872, 9883, 9963, 9972, 9974, 9989, 10010, 10073, 10103, 10133, 10174, 10188, 10192, 10194, 10235, 10241, 10277, 10279, 10281, 10304, 10361, 10386, 10393, 10405, 11387)

9816. ABDERHALDEN, EMIL. Die Hormone. French translation by YVES LE LAY, in supplement, p. 123-132. *Scientia* 49(228-4): 281-292. 1931.—A review.

9817. ABDERHALDEN, EMIL, und SEVERIAN BUADZE. Über das Auftreten der Abderhaldenschen Reaktion nach parenteraler Zufuhr des Hypophysenpräparates Prähormon und des Ovarialhormons Follikulin (Menformon). *Fermentforsch.* 12(2): 262-272. 1930.—After subcutaneous injection of "Menformon" or prehormone into normal and castrate male and female dogs, the urine sediment can be shown to contain antiferments for ovarian, hypophyseal, and testicular substances. Such evidence of the Abderhalden Reaction in response to injection of the substance of internal secretions has not before been recognized. Its bearing upon cases under hormone treatment or upon cases of hypersecretion should be studied. It is conceivable that test of the output of hormone by the ovary and especially by the corpus luteum would show relation with the menstrual cycle.—*E. McCoy.*

9818. ABDERHALDEN, EMIL, und ERNST WERTHEIMER. Über das Auftreten von Proteasen im Blut bzw. Harn nach parenteraler Zufuhr von Thyroxin, Adrenalin und Insulin. *Fermentforsch.* 12(3): 421-431. 1931.—Following parenteral introduction of the above mentioned hormones, there appear in the blood and urine of dogs proteases, specific for the organ substrate if the dosage has been small, and non-specific if large. The reaction with adrenalin and thyroxin particularly tends to be non-specific. Specific reaction for the thyroid may appear even in a dog devoid of thyroid gland. The specific proteases continue to appear and are detectable by the Abderhalden reaction for a week after the original introduction of hormone.—*E. McCoy.*

9819. ANSELMINO, KARL JULIUS, und FRIEDRICH HOFFMANN. Nachweis einer acetonkörpervermehrenden Substanz (Schilddrüsenhormon) im Blute von Schwangeren. *Arch. Gynäkol.* 145(1): 95-103. 1931.—Five injections of 2.5 cc. each at 12 hr. intervals of non-pregnant (human) serum were made in 6 ♂ rats; of preg-

nant serum (2nd-10th mo. of normal pregnancy) in 12 rats; of parturient, and 2nd and 6th day puerperal, serum in 2 rats each; of maternal and fetal serum in 2 each; and of pure 10th mo. serum, its ultrafiltrate, and the precipitate from the ultrafiltrate (4 rats); 2 untreated rats served as controls. Graduated doses of thyroxine (5 times 0.025-0.07 mgm.) were given 4 rats for comparison. The rats were killed 12 hrs. after last injection. A substance, identified as thyroid hormone, which increased the rat acetone bodies, was present in pregnant serum only. Appearing in the 1st months, at the end of pregnancy there was enough to double the normal amount of acetone bodies. The hormone decreased rapidly during the puerperium, only traces being present on the 6th day; it was not found in fetal serum. At term 1 cc. serum was equivalent to 10 γ thyroxine. The author believes the substance arises from increased thyroid activity during pregnancy; this leads to increased mobilization and oxidation of carbohydrate, and decreased glycogen in the body and thus, by attacking the fat reserves, to increased acetone bodies.

9820. AOMURA, TETSUTARO. Comparison of the epinephrine content of the suprarenal vein blood of rabbits, dogs, goats and badger determinable by means of the rabbit intestine segment and of the cat paradoxical eye reaction. *Tohoku Jour. Exp. Med.* 14(4): 291-315. 1929.—Determinations of epinephrine in the venous blood collected from the cava of rabbits, dogs, goats and badger and in extracts of the suprarenals of such animals were performed. The standard used was adrenalin chloride. Several colorimetric methods were employed and compared with the rabbit intestine strip and the cat paradoxical eye methods. The latter 2 methods yielded higher figures than the former. A tentative explanation is offered.—*M. Sahyun.*

9821. AOMURA, TETSUTARO. On the epinephrine in the blood of the suprarenal vein and in the suprarenal extract from the rabbit during pregnancy. *Tohoku Jour. Exp. Med.* 14(4): 316-334. 1929.—Determinations of epinephrine in venous blood removed from the cava of pregnant rabbits during various stages of pregnancy were made, also of the extracts of their suprarenals. In the case of venous blood of non-pregnant rabbits, the rabbit intestine strip method and the cat paradoxical eye method showed a ratio of 1:1.5, while a ratio of 2.2:1 was obtained with the venous blood of pregnant rabbits. The author believes that there is a greater secretion of epinephrine during pregnancy in rabbits. —*M. Sahyun.*

9822. BENEDETTO, ELENA di. Acciôn de la floridcina sobre los sapos hipofisoprivos. [Phlorhizin in hypophysectomised toads.] *Rev. Soc. Argentina Biol.* 7(2): 196-202. 1931.—After extirpation of the pituitary, or only of the anterior lobe, phlorhizin usually does not produce glycosuria; it produces hypoglycemia convulsions and high mortality. Lesions of the infundibulum produce a slight decrease in the effects of phlorhizin due to inhibition of the pituitary. Implantation of anterior lobe in operated animals restores the usual effect of phlorhizin, there is glycosuria and the blood sugar values approximate those of normal phlorhizinized animals.—*J. T. Lewis.*

9823. BOSE, J. P. Inter-relationship of some of the important endocrine glands, with special reference to the part they play in influencing the colour and texture of the skin. *Indian Jour. Med. Res.* 18(1): 227-248. 1930. —The action of adrenalin and insulin on the blood-sugar of rabbits, of the white, brown, and colored varieties, was investigated. It was found that, whereas the blood-sugar rise per 0.1 mgm. of adrenalin was 62% in the albino rabbits, it was only 13.8% in the brown variety. Also, whereas insulin caused a fall of 29.7% of blood-sugar per P. R. Unit in the albino, it caused a fall of 36.6% in the brown variety. That the thyroid takes a leading part in influencing the relation between the action of adrenalin and insulin was shown by the fact that the adrenalin response causing a 62% blood-sugar rise in the albino rabbits dropped to 34.2% after thyroidectomy; also that the insulin response causing a blood-sugar fall of 29.7% increased to 47.1% after the operation. In human subjects suffering from diseases influencing the pigmentation of the skin responses to adrenalin and insulin fall into the following groups:—(*a*) Leucoderma, albinism—loss of pigmentation; and (*b*) Chloasma, kala-azar—increased pigmentation. A group of normal healthy Indians were treated as controls. Adrenalin caused a much higher rise in blood-sugar and also of systolic pressure in the leucoderma cases than in group (*b*) or in normal subjects. Insulin caused a greater reduction of blood-sugar in the pigmented cases than in the leucoderma or the normal cases. Cases of leucoderma and albinism behaved like the albino type of rabbits as regards the adrenalin and insulin responses, while cases showing increased pigmentation behaved like the pigmented rabbits. A group of cases of kala-azar of varying degrees of severity which gave a very poor adrenalin response before treatment were next selected, and adrenalin and insulin response were tested again after a course of injection of Sb compounds to see if these responses would be influenced thereby. While adrenalin caused a rise of 14.5% of blood-sugar and 7.2% of systolic pressure before treatment, these values rose to 29.5% and 12.5% respectively after treatment, definitely indicating an improvement in the function of the supra-renal glands. Also, whereas before treatment, insulin caused a greater fall (34.8%) in the blood-sugar, the fall was reduced to 19.5% after treatment, showing that the improved adrenal function caused a greater release of sugar from the glycogen storehouse of the liver, which, to a large extent, neutralized the action of insulin on blood-sugar.—*J. P. Bose.*

9824. BRAIER, BERNARDO. Metabolismo nitrogenado de los perros hipofisoprivos en el ayuno. [Protein metabolism of fasting hypophysectomised dogs.] *Rev. Soc. Argentina Biol.* 7(2): 140-157. 1931.—Hypophysectomised dogs on ample diet have a normal N excretion. Creatinin is somewhat reduced (9-18%). Fasting hypophysectomised dogs eliminate 30-35% less N and creatinin than the controls, their glycemia falls markedly and they often have hypoglycemic convulsions which, if not relieved by glucose injection, may cause death. Dogs with extensive lesion of the tuber behave as normal animals.—*J. T. Lewis.*

9825. CASTILLO, ENRIQUE B. del, y C. J. CALATRONI. Ciclo sexual periódico y foliculina. *Rev. Soc. Argentina Biol.* 6(2): 108-133. 1930.—Daily injections of 0.1-2 units were given to rats during several months. A latent period, summation of effect, after-discharge, and tendency to periodicity more marked with time, were observed. In castrates in spite of continued injections periodic oestrus is observed. Ovary and corpus luteum are not indispensable for periodicity of cycle. Uterus and vagina have a periodic activity, autonomous or governed by an unknown factor, which is manifest in the presence of folliculin.—*J. T. Lewis.*

9826. CAVAZZI, FRANCESCO. Le système glandulaire et vues nouvelles en médecine. 45p. Gaston Doin et Cie: Paris, 1930. Pr. 14 fr.

9827. CAVAZZI, FRANCESCO. On peut rajeunir. 68p. 21 fig. Gaston Doin et Cie: Paris, 1930. Pr. 25 fr.—This is supplemental to Cavazzi's "Le Systeme Glandulaire."

9828. COREY, E. L., and S. W. BRITTON. Effects on the gonads of cortico-adrenal extract. *Science* 73 (1908): 101-102. 1931.—It is concluded that extracts of the adrenal cortex, which contain, according to recent observations, the hormone of the cortical tissues, produce precocious sexual maturity in the albino rat. The effect is most pronounced and first produced in the female.—*Authors' conclusions.*

9829. DODDS, E. C., A. W. GREENWOOD, and E. J. GALLIMORE. Note on a water-soluble active principle isolated from the mammalian testis and urine, and its relation to oestrin. *Lancet* 18(5561): 683-685. 1930.—A method of testing an active substance extracted from testes and urine by observing its effect on comb growth

in capons is described. The active principle may be obtained in a water-soluble form, and its chemical properties are briefly reviewed. Its similarity to the oestrus-producing hormone as prepared from placenta and the urine of pregnant women is noted.

9830. DOISY, EDWARD A., CLEMENT D. VELER, and SIDNEY THAYER. The preparation of the crystalline ovarian hormone from the urine of pregnant women. *Jour. Biol. Chem.* 86(2): 499-509. 1 pl., 1 fig. 1930.—The crystalline follicular hormone was prepared by the following process: Extraction of the hormone from the urine with olive oil; extraction of the hormone from the olive oil with ethyl alcohol; by a series of fractionations in which butyl alcohol, petroleum ether, ethyl ether, sodium hydroxide and ethyl alcohol are used, the crystalline follicular hormone is obtained. The potency of these crystals is 3,000 rat units per mgm.—*E. A. Doisy.*

9831. EHRHARDT, KARL, and BRUCE T. MAYES. Beitrag zum Hormongehalt des menschlichen und tierischen Hypophysenvorderlappens. *Zentralbl. Gynäkol.* 54 (47): 2949-2952. 1930.—Injection of extract of anterior lobe from 32 non-pregnant patients gave positive pregnancy reaction in 30 cases; that from 8 pregnant or puerperal women was negative. With anterior lobe extract from 12 of 16 pregnant and 8 of 10 non-pregnant cows, 2 pregnant rabbits, and 2 pregnant rats, the reaction was positive. Detailed determinations from small sections in 3 bovine hypophyses showed hormone only in a small portion of the anterior lobe.

9832. FAELLI, C. Sur les adipositès hypercriniques. *Rev. Franc. Endocrin.* 8(3): 261-272. 1 fig. 1930.—Obesity in a 10 yr. old child with no signs of hyperinsulinism or of hypophyseal or thyroid disturbance but with hyperplasia of the thymus.

9833. GUTMAN, MARTIN. Vergleichende Hormonstudie über die Verteilung des Ovarialhormons im Organismus der Säugetiere. *Monatsschr. Geburtshülfe u. Gynäkol.* 79(6): 433-439. 1928.—The content of the oestrus-producing hormone in various tissues was studied by implanting the tissues in female mice. Oestrin can be thus demonstrated in human corpora lutea up to the middle of pregnancy. Human placentae and amniotic fluid are good sources of oestrin. The lower mammals are not comparable to man in this respect. Oestrin was demonstrated in mouse placenta but not in placentae from other species. In all species the hormone is present in follicular fluid and walls. It may be that this method was not sufficiently sensitive to show the presence of small amounts of hormone and that the distribution may not be so widely different. If the results are correct Gutman points out a practical application, that human placenta is a good source of oestrin, but that cow placenta can not be so used. The urine of pregnant women is also a good source of oestrin.—*E. W. McHenry.*

9834. HARINGTON, CHARLES ROBERT, and SYDNEY STEWART RANDALL. Observations on the iodine-containing compounds of the thyroid gland. Isolation of dl-3:5-diiodotyrosine. *Biochem. Jour.* 23(3): 373-383. 1929.—The authors present a detailed procedure for the isolation of thyroxine and *dl*-3:5-diiodotyrosine from desiccated thyroid gland. Evidence is given to support the view that all of the acid-soluble I is present as diiodotyrosine while all of the acid-insoluble I probably belongs to thyroxine.—*R. G. Turner.*

9835. HARROP, G. A., J. J. PFIFFNER, A. WEINSTEIN, and W. W. SWINGLE. Further studies on the adrenal cortical hormone. *Science* 73(1903): 683-684. 1931.—Preliminary report of metabolism studies on adrenalectomized dogs with and without treatment with Swingle-Pfiffner cortical hormone extract.—*G. A. Harrop.*

9836. HARTMAN, FRANK A., and K. A. BROWNELL. The preparation of adrenal extract. *Science* 73(1901): 620. 1931.—Details of their method of preparing a non-toxic extract.

9837. HARTWICH, ADOLF, und GEORG HESSEL. Der Einfluss der Blutdruckzüglerausschaltung auf den Adrenalingehalt des Blutes. *Zeitschr. Ges. Exp. Med.* 76(1/2): 263-289. 1931.—The aortic and sinus nerves in rabbits were eliminated by cutting, tying, clamping, and saturation with 5% phenol. The vasoconstrictor power of blood from the vena cava above the adrenal veins is almost always increased, but that of arterial blood not regularly so. Comparison of the effects of adrenal extirpation and ergotamin and atropin poisoning show that in part of the cases the increase in vasoconstrictor power of the blood is due to epinephrine, and in others to non-specific constriction. Epinephrine probably does not play a rôle in the increased blood pressure after the elimination of the aortic and sinus nerves since it only rarely reaches a magnitude in arterial blood which is sufficient to increase the blood pressure.—*L. K. Alpert.*

9838. HOUSSAY, B. A., L. GIUSTI, y J. M. LASCANO GONZÁLEZ. Implantación de hipófisis e hiperfeminización de los cobayos con injerto ovárico. [Implantation of pituitary and hyperfeminization of guinea pigs with ovarian grafts.] *Rev. Soc. Argentina Biol.* 7(2): 103-114. 1931.—Homologous pituitary implantation in normal and castrated guinea pigs is favorable to the development of a grafted ovary and to its stimulating action on the mammary gland. The ovarian graft (intrarenal) always had a great number of fully developed follicles but no corpora lutea, both in normal and castrate male guinea pigs; in castrates which had received pituitary, hemorrhagic follicles and corpora lutea were sometimes found.—*J. T. Lewis.*

9839. HOUSSAY, B. A., L. GIUSTI, y J. M. LASCANO GONZÁLEZ. La acción del injerto de ovario en machos sobre las vesículas seminales. [Action of ovarian graft in males on the seminal vesicles.] *Rev. Soc. Argentina Biol.* 7(2): 115-124. 1931.—Ovarian grafts in adult male guinea pigs produce considerable hypertrophy of the seminal vesicles. In castrates ovarian grafts do not delay atrophy of vesicles, therefore they act through the testes. Implantation of pituitary also produces enlargement of seminal vesicles in intact animals but not in castrates. Daily injections of folliculin (oestrin) during 35 days produce hypertrophy of the mammary gland but have no effect on the testicles and seminal vesicles. The ovarian graft possibly stimulates the production of pituitary sex hormone which in turn acts on the testicle and by this mechanism the seminal vesicles are hypertrophied.—*J. T. Lewis.*

9840. JORPES, ERIK. On the chemical composition of the islands of Langerhans in the Monkfish (Lophius piscatorius, L.). *Jour. Biol. Chem.* 86(2): 469-476. 1930.—The present study was undertaken with the view of comparing the islet tissue with the normal pancreatic tissue in the selachian fishes. As experimental material the islet tissue of the monkfish (*Lophius piscatorius,* L.) was chosen. The corresponding glands from the summer flounder (*Paralichthys dentatus,* Girard) were also analyzed. The nucleic acid content of the fresh glands and their lipid-free dry substance were analyzed for P and pentoses. In *Lophius,* where the islands form large separate organs, these do not have the typical composition of the pancreatic tissue. The content of nucleic acid is much lower than in the normal pancreas of selachian fishes and of mammals. On the other hand the content of phospholipids is higher.—*I. I. Lemann.*

9841. KALLAS, H. Parabiose, Geschlechtsdrüsen und geschlechtsspezifischer Antagonismus. *Endokrinologie* 6 (3): 188-198. 7 fig. 1930.—Injection of anterior pituitary into one of a pair of parabiotic rats gave rapid increase in the ♀ gonads of recipient, and some development but not nearly so marked in the other. Ovarian tissue was transplanted into a normal male, which latter was placed in parabiosis with a castrated ♂ or in some cases with a ♀. Using mammary glands as a check, decided changes became evident within 3 weeks in the castrated animal. This does not occur in the parabiotic ♂ where recession of gonad and accessory glands occur. However, in simple transplantation of an ovary into a normal ♂, examination of testicle, seminal vesicles and prostate show them to be enlarged rather than reduced. Microscopic examination showed spermatogenesis in full sway. The ovary

transplant, which had been placed in the kidney, showed typical conditions. The author believes there is an antagonism between the ♂ and ♀ sex glands.—*B. Cunningham.*

9842. KLEIN, W., G. PFEIFFER, und G. HERMANN. Der chemische und histologische Nachweis der Jodspeicherung in der Schilddrüse. *Biochem. Zeitschr.* 225 (4/6): 344-351. 4 fig. 1930.—In 2 ♂ dogs, after a preliminary period on I-poor diet, 1 lobe of the thyroid of each was removed and analyzed; then both were given daily doses of organic I (Iodtropon) for 7 days, after which the remaining lobe was removed and analyzed. The I content of the 2nd lobe in each amounted to 5 and 5½ times respectively that of the 1st lobe. In a similarly treated dog fed inorganic I (KI) only a small amount of I was stored. Histologically, however, the thyroid in the 3d dog appeared to be in a condition different from that of the thyroid in the 2 others, being perhaps inhibited in its storage activities by hormones from other endocrine glands.—*R. G. Turner.*

9843. KOJIMA, TAKEO. The effect upon the life of rabbits of the removal of the main suprarenals and the accessory suprarenal cortical tissue. *Tohoku Jour. Exp. Med.* 13(5/6): 357-378. 1929.—Total extirpation of the main suprarenals and the accessory cortical tissue was accomplished by a 4-stage operation which was successful in most cases. 70% of the animals died within 14 days and the longest survival was 35 days. Congestion and hemorrhage of the intestinal tract was the outstanding pathological change in rabbits having total cortical extirpation, severity differing from case to case. These changes were not so marked in doubly suprarenalectomized rabbits presenting accessories at autopsy. The remaining main gland hypertrophies markedly when accessories and one gland are removed. Removal of both main glands and some accessories seems to accelerate hypertrophy of remaining accessories. Accessory cortical tissue was found in 70% of normal rabbits.—*A. G. Eaton.*

9844. KOJIMA, TAKEO. The effect of the removal of the main suprarenals and accessory cortical tissue upon the basal metabolism of rabbit. *Tohoku Jour. Exp. Med.* 13(5/6): 379-404. 1929.—The metabolic rate of rabbits after double suprarenalectomy fell slightly after the operation, due to the operation itself, but soon returned to the preoperative level. In animals which had survived 1-2 yrs. the metabolic rate was not different from the normal. Accessory cortical tissue was found in these animals and was markedly hypertrophied in those surviving for long periods. When the main suprarenals and all accessory cortical tissue was removed the metabolic rate began to fall a few days before death and fell more rapidly during the last few days.—*A. G. Eaton.*

9845. KUGA, S. Studies on Zondek-Ascheim's pregnancy reaction. II. The distributions of the so-called hormone of the frontal lobe of the hypophysis cerebri. [In Japanese, with English summary, p. 57.] *Jour. Oriental Med.* 14(6): 1931.—Hormone of the anterior lobe of the hypophysis was found in the blood of a pregnant woman, the urine of a woman 7-8 days after delivery, the urine of a patient suffering from chorioepithelioma malignum (more than in the urine of pregnancy, and increasing with severity of symptoms), decidua, placenta, hydatidiform mole, urine of a 5-6 day old infant, saliva of a pregnant woman (very little), vaginal secretion of a pregnant woman (very little, but more than in the saliva).

9846. LENDEL, E., und J. N. DUTT. Die Beeinflussung der interferometrischen Abbaukurve der Drüsen mit innerer Sekretion durch erhöhte Temperatur. *Fermentforsch.* 12(3): 333-340. 5 fig. 1931.—In cases of febrile diseases which have certainly no endocrine disturbance, a marked increase in the suprarenal values is noted. This has been previously observed in connection with the fever treatment of exophthalmic goitre following injection of animal blood; it appears to be due to the fever alone. The values for other internal secretions (of the hypophysis, thyroid glands, ovary and testis) are normal or only slightly increased by fever.—*E. McCoy.*

9847. [LINTVAREVA, N. O.] ЛИНТВАРЕВА, Н. О. О влиянии экспериментального гипертиреоидизма на беременность у морских свинок. [Effect of experimental hyperthyroidism on pregnancy in guinea pigs.] [English summary.] Труды Лаборатории Экспериментальной Биологии Московского Зоопарка. (*Trans. Lab. Exp. Biol. Zoopark, Moscow*) 5: 107-119. 1929.—Experiments were conducted on 20 ♂ and 55 ♀ guinea pigs, of which 40 were fed thyroidin and 15 kept as controls. All ♀♀ were separated from the ♂♂ after 4 days. In the 1st series ♀♀ were fed thyroidin immediately upon separation; those receiving doses above 0.025 gm. remained sterile; half of the controls and those fed doses 0.025 gm. became pregnant. In the 2nd series some ♀♀ were fed thyroidin for 1, 2, 3, 5 days; only those fed for 1-2 days became pregnant. In the 3rd series thyroidin was fed on the 3rd, 5th, and 7th day after separation from the ♂♂; pregnancy always appeared independently of the length of feeding and amt. fed. Thyroidin caused premature degeneration of corpora lutea and cystic regeneration of ovaries. The author explains sterility provoked by thyroidin by the impossibility of egg implantation in the uterine wall due to degeneration of corpora lutea. This sterility was temporary, disappearing with the cessation of thyroidin feeding.

9848. MacARTHUR, C. G. A new posterior pituitary preparation. *Science* 73(1895): 448. 1931.—Preparation is described of a product, apparently a polypeptide containing labile S, which acts strongly on blood vessels and isolated uterus but not on frog melanophores.

9849. MAHNERT, A. Weitere Untersuchungen über die Beziehungen zwischen Hypophysenvorderlappen und Ovarium. Zugleich ein Beitrag zur Frage der hormonalen Sterilisierung. *Zentralbl. Gynäkol.* 54(46): 2883-2887. 3 fig. 1930.—In 3-14 days after injection of 2-2½ rabbit units of corpus luteum extract, 12 of 15 rabbits had coitus; 8 were killed 24 hrs. thereafter; in only 1 was there any rupture of the follicles. The other 4 proved not to be pregnant. Two rabbits each received 120 mouse units folliculin or 2 rabbit units prolan; in none was rupture of the follicles prevented. Prevention of rupture shows that the corpus luteum hormone has an action opposite to that of the anterior lobe.

9850. MONAUNI, JOSEF. Untersuchungen am quergestreiften Muskel epinephrektomierter Tiere. I. und II. *Arch. Exp. Path. u. Pharmakol.* 140(5/6): 306-327; 328-339. 1929.—I. The muscle membranes of guinea pigs from which adrenals had been removed showed an increased permeability to water. The number of mgm. of KCl in 1 gm. of muscle in operated animals ranged from 2.89 to 3.6 and in controls from 3.6 to 4.2 when perfused with KCl. The mgm. of Ca per gm. of muscle ranged from 0.63 to 0.80 in operated animals and from .71 to .96 in controls when perfused with $CaCl_2$. These changes apparently were due to the function of the adrenal itself and not merely to injury caused by its removal.—II. In Trendelenburg frog preparations, removal of the adrenals gives rise to edema. This edema is dependent on changes in the blood vessel endothelium and changes in muscle permeability. The osmotic pressure of the muscle cells decreased when the adrenals were removed. The K content decreased and the Ca content of muscle increased.

9851. PENAU, H., L. BLANCHARD, et H. SIMONNET. Le problème des glandes à sécrétion interne. Les propriétés physico-chimiques et pharmaco-dynamiques des hormones. I. L'hypophyse. (Les Problèmes Biologiques. Vol. 12.) 249p. 9 fig. Les Presses Universitaires de France: Paris, 1929. Pr. 45 fr.—A summary of the literature on the physiology of the hypophysis, without original observations. The 2nd part, on the posterior lobe, is the more extensive, and gives a summary of many biological methods used in preparing and testing

posterior lobe extract. No attempt is made to cover pathological or clinical problems.—*T. J. Putnam.*

9852. **SAITO, ISAO. Parathyreoidektomierte Kaninchen und Trächtigkeit.** *Tohoku Jour. Exp. Med.* 15 (3/4): 333-354. 1930.—Two parathyroid glands were removed from each of 5 rabbits, which were later mated. The changes in the N content and distribution of the blood and urine were studied. Tetany did not develop but 3 of the rabbits died during the period of pregnancy and the other 2 aborted. The non-protein N and urea content of the blood increased slightly after the operation and more markedly during the first 10 days of pregnancy. The latter change was accompanied by smaller increases in the amino-acid and uric acid content. Thereafter, all these values returned to the normal. The N distribution in the urine showed no significant change other than a marked decrease in the amount of uric acid after the operation. There were no control experiments, either upon normal pregnant rabbits or upon non-mated parathyroidectomized rabbits. —*I. Greenwald.*

9853. **SCHOELLER, W., M. DOHRN, und W. HOHLWEG. Die perorale Wirkung des Follikelhormons. [Peroral action of follicular hormone.]** *Wien. Arch. Inn. Med.* 21(2): 323-328. 1931.—Using aqueous and oil preparation of follicular hormone, 20,000-8,000,000 mouse units per gm. (in 6 doses of 0.2 cc. each to castrated ♀ rats), the effect was inversely proportional to the purity of the preparation (58 rat units of the pure crystallized hormone and 6 rat units of 1/50 this purity produced estrus in 50%). When substances promoting resorption were added to dragées 3.5 rat units had the same effect as 8.5 rat units otherwise. A dose of 7 rat units divided into 7 aliquots produced estrus in 50% of the rats; given as a single dose, in only 15%.

9854. **STEINACH, E., und H. KUN. Luteingewebe und männliche Geschlechtscharaktere.** *Pflüger's Arch. Ges. Physiol.* 227(3): 266-278. 15 fig. 1931.—X-radiation of ♀ guinea pigs produced complete luteinization of the ovaries accompanied by enlargement of clitoris, urethral elevations into a preputium, and masculine attitude toward other ♀♀. After 50-100 rat units anterior lobe hormone had been injected daily into ♀ guinea pigs for 17-24 days the same occurred; the first changes appeared on the 6th day; ovaries removed a few weeks after injections began were luteinized like those of irradiated animals. Masculine attitude developed. It would appear that the lutein cells contain an incretion corresponding to the ♂ sexual hormone, which will cause the development of ♂ sexual characteristics in ♀♀ if present in sufficient quantity. Castrated females 8 mo. old were given daily injections of 0.1-0.2 cc. corpus luteum extract. Masculine attitude appeared. Daily injections of 0.1 cc. corpus luteum extract into infantile, castrated ♂ rats for 12 days caused the corpus cavernosum to develop, the typical penis being present in 18 days. Thus, in addition to the hormones specific for the ♀ sex, the ovaries develop one acting specifically for the ♂, located in the lutein tissue.

9855. **STILL, EUGENE U. Studies on the physiology of secretin. I. On the preparation and isolation.** *Amer. Jour. Physiol.* 91(2): 405-408. 1930.—A method is described for making a very potent secretin preparation, which, so far as tested, has no effect upon the body except to stimulate the flow of pancreatic juice and bile. —*E. U. Still.*

9856. **STSCHEDROWITZKY, S. G., und S. A. SELTZER. Über die regulierende Rolle der Milz im intermediären Stoffwechsel.** *Zeitschr. Ges. Exp. Med.* 76(3/4): 369-379. 1931.—Metabolic tests on 11 dogs for 1-2 yrs. after splenectomy showed that thyroid function rose, judging by the serum-atropine reaction. A permanent lymphocytosis appeared. The reserve alkali of the blood was elevated for months; the blood sugar level decreased and remained so for the duration of observation. The blood cholesterol was high for 2-3 mos., then decreased to the preoperative level. The blood Ca rose; it decreased in both normal and splenectomized dogs when spleen was fed. The blood cholesterol and sugar were not influenced in normal dogs by feeding spleen; in the splenectomized they approached or attained preoperative values. The authors believe that the spleen produces a true hormone and is intimately associated with all true incretory glands.

9857. **TADA, SABURO. Wirkung des Nebennieren-, Pankreas- und Hypophyseninkrets auf die Bewegungen des überlebenden Darms von Kaninchen mit Funktionsstörung der Schilddrüse.** *Tohoku Jour. Exp. Med.* 14 (4): 400-414. 1929.—Rabbit intestine was suspended in Tyrode solution; Magnus' method was used in studying intestinal movements. A solution of adrenalin of 10^{-7} to 2×10^{-7} still inhibited the intestine of normal rabbits, whereas solutions of 5×10^{-7} to 10^{-6} were required for intestines of thyroid-fed rabbits. Intestine from thyroidectomized rabbits showed the same sensitiveness to adrenalin as normal intestine. Insulin had less effect on the intestine of thyroid-fed than of normal rabbits, whereas the opposite was found for pituglandol. Thyroidectomy caused no change in the reaction of the intestine to these two hormones.—*G. T. Cori.*

9858. **TADA, SABURO. Wechselbeziehungen zwischen Nebennieren-, Pankreas- und Hypophysenhormonen in ihrer Wirkung auf den überlebenden Kaninchendarm.** *Tohoku Jour. Exp. Med.* 15(1/2): 50-69. 1930.—Insulin augments the inhibitory action of adrenalin on the isolated intestine of rabbits. Pituglandol antagonizes the inhibiting action of adrenalin. Pituglandol stimulates the contractions of the isolated intestine; this effect is antagonized by insulin.—*G. T. Cori.*

9859. **ZAVŘEL, JAN. Untersuchungen über den Einfluss einiger Organextrakte auf Wachstum und Entwicklung der Chironomiden.** *Zeitschr. Wiss. Biol. Abt. D. Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 121 (4): 770-799. 6 fig. 1930.—The normal development of *Chironomus clavaticrus* lasts a whole year in central Europe, the parthenogenetic ♀♀ appearing from June to September. In England, according to Edwards, there are 2 generations a year, 1 in May and the other in August, the latter with a shorter (2½-3 mos.) developmental period. Zavrel produced changes in growth and development by thyroid and thymus feeding, and by increased temperature (25°-30°). Young or medium-sized larvae fed with dried thyroid or thymus grew more rapidly than the controls, especially at the beginning of the experiment, but metamorphosis was not noticeably hastened. Early summer larvae fed with thyroid or thymus extract (or kept at a high temperature) grew very rapidly, and metamorphosis was hastened by 1 or 2 months. Late summer or autumn larvae, fed with thyroid or thymus extract or kept at a high temperature, grew more rapidly at the beginning of the study than did the controls, but the winter arrest of growth was not thereby warded off. The embryo development of fresh-laid eggs was greatly delayed by thyroid extract, but, placed in fresh water, the embryos soon recovered, and the growth of the larvae from such sometimes exceeded that of the controls. Meat extracts had little stimulating effect or none.—*From author's abstract (transl.).*

ANIMAL PHYSIOLOGY

KIDNEY, URINE, AND EXTERNAL SECRETIONS

A. N. RICHARDS, *Editor*

J. M. HAYMAN, *Associate Editor*

(See also in B. A. 6(3): Entries 6702, 6729, 6753, 6850, 6881, 6916, 7139, 7182, 7318, 7351, 7457, 7854; and in this issue 9445, 9574, 9626, 9676, 9699, 9715, 9736, 9987, 10168, 10227, 10291, 10387)

9860. [ASRATÎAN, ESRAS.] АСРАТЯН, ЭЗРАС. Утомляемость почек. [Fatigue of the kidneys.] [German summary.] Известия Научного Института имени П. Ф. Лесгафта, СССР. (*Bull. Inst. Lesshaft, URSS.*) 16 (1/2): 243-271. 1930.—Half of one kidney of a dog was extirpated about a year before the experiment. When the kidney had fully recovered from the operation, addition of water to a normal diet was found to lead through a phase of polyuria to a marked difference in the diuresis of the kidneys, the half kidney being deficient. Similar results were obtained with chlorides and urea added to any diet. In this phase (which lasted for 1-2 hours) the urine of the kidney which had been operated on was characterized by high concentrations of chlorides, creatin, urea, and abundant precipitates and albumins. Addition of urea to a normal diet presented an exception; the urine, while having a high creatin content, showed a lower concentration of urea than the urine of the control kidney, especially if NaCl was administered at the same time. A milder form of the same phenomenon was observed after some time in the control kidney also. Addition of water to a diet low in chlorides showed no difference in the diuresis of the kidneys, the control kidney showing even some decrease in diuresis. These facts lead to the conclusion that the kidneys can be fatigued.—*S. A. Corson.*

9861. **BASCH, FELIX. Die kapillare Resistenz.** *Zeitschr. Kinderheilk.* 49 (4): 446-453. 1930.—Diuresis is greater, as shown by 2-hr. tests, when the subject is in bed than when upright, because in the standing posture the hydrostatic pressure on the capillary walls, which promotes escape of fluid from the blood into the tissues, corresponds to the height of the individual, while in the horizontal position this pressure is reduced to the minimum. The difference between the orthostatic and horizontal diuresis is not great in normal subjects, because of the normal resistance of the capillary walls; but in renal patients the weakening of the capillary walls leads to edema and lessened diuresis. Basch makes these facts the foundation for a study of the pathogenesis of anaphylactoid purpura. On 2 successive days 400-600 cc. of warm tea with saccharin was administered to the subject, and the urinary excretion within the next 2 hrs. measured. On 1 of these test days the 2 hrs. were spent in bed; on the other day in the upright position. The test was given to 12 subjects, 2 normal, 1 with urticaria, 1 with leukemic myelosis and 8 with purpura; on some the test was repeated. The normal controls showed the slight difference mentioned between orthostatic and horizontal diuresis; all the others showed the marked difference characteristic of damaged capillary function, except after cure, which was signalized by the normal slight difference.

9862. **BAYLISS, L. E., and ARTHUR M. WALKER. The electrical conductivity of glomerular urine from the frog and from Necturus.** *Jour. Biol. Chem.* 87 (3): 523-540. 1 fig. 1930.—A cell has ben designed which enables accurate estimation of electrical conductivity of fluids in volume as small as 0.5 c. mm. Comparisons have been made between the electrical conductivities of blood plasma and ultrafiltrates and between those of blood plasma and glomerular urine obtained from the frog and from *Necturus maculosus.* These comparisons show that in respect of total electrolyte concentration the glomerular urine from both species is indistinguishable from an ultrafiltrate of plasma.—*Author's summary.*

9863. **BIEDERMANN, W. Vergleichende Physiologie des Integuments der Wirbeltiere. 5 Teil. Die Hautsekretion.** *Ergebnisse Biol.* 6: 427-545. 33 fig. 1930.—The secretory processes in the integument of vertebrates are manifold and of great interest. Their variability is due not only to differences in external living conditions (water or land life), but depends above all on the diverse functions of the skin secretions. In many fish the skin secretions are present as a well developed mucous membrane protective in nature. In amphibia (toads and salamanders) a poisonous secretion is often produced by the skin. A relatively small rôle is played by the skin secretions in the Sauropsidia. In mammals, however, the sweat glands take part in the process of heat regulation and also protect certain parts of the skin from drying. Skin secretions also serve for oiling the hair, for the production of specific odoriferous materials, and finally for the production of milk.—*Z. K. Cooper.*

9864. **BIETER, RAYMOND N., and ARTHUR D. HIRSCHFELDER. The rôle of the glomeruli as the preferential route for excretion of phenolsulphonephthalein in the frog's kidney.** *Amer. Jour. Physiol.* 91 (1): 178-200. 3 fig. 1929.—[Experiments on 16 frogs.] Injection of the glomeruli through the renal portal vein in the frog is easily accomplished, and, on an average, shows about a 30% glomerular injection in the whole kidney, in some cases reaching twice that figure. The observation that phenolsulphonephthalein, when added to the renal portal blood or perfusate, is eliminated in the urine, as first demonstrated by Rowntree and Geraghty, is confirmed. The mechanism of this elimination parallels the accessibility of the glomeruli to renal portal blood, and it is absent when the renal portal blood does not enter the glomeruli, as shown by simultaneous renal portal india ink injections. The accessibility of the tubular capillaries to the renal portal blood flow appears to have no marked relation to the excretion of phenolsulphonephthalein injected as described above. A new technique for the study of kidney function in the frog is described, by which substances injected into 1 or the other blood supply can then reach more or less of the glomeruli in the 2 halves of the kidney and thus result in varying secretions. The frog's kidney submitted to this procedure is able to concentrate phenolsulphonephthalein at least for 15-20 min., thus indicating that the kidney is functioning in a manner close to normal during this time. These results tend to confirm the conception of Nussbaum, that in the tubular capillaries a complete mixing of renal arterial and renal portal venous blood occurs, and it is still further confirmed by Richards and his co-workers (1927-28). These results also confirm Adami's criticism of Nussbaum's experiment; namely, that after ligation of the renal arteries in the frog, the glomeruli may still obtain blood, probably from the renal portal vein. Glomerular elimination of phenolsulphonephthalein in the frog's kidney appears to be the method of preferential excretion.—*Authors' conclusions.*

9865. **BIETER, RAYMOND N. The effect of the splanchnics upon glomerular blood flow in the frog's kidney.** *Amer. Jour. Physiol.* 91 (2): 436-460. 1 fig. 1930. —Intermittency of glomerular blood flow and intermittency of capillary flow within the glomerulus in the normal frog's kidney, as first reported by Richards (1922) is again confirmed. Immediately after splanchnic section in the frog, this intermittency, for the most part, disappears. At 3 hrs. after splanchnic section in 2 cases

intermittency was again seen in several small fields of glomeruli, but the rest periods were no longer than 30 sec. Section of the splanchnics, as an acute effect, results in an increase of glomeruli showing active blood flow. Various measures such as pinching the ureter, applying an irritant locally, both externally and internally, and edema fluid let into the general circulation, result in reflex arrest of glomerula flow. This is prevented by splanchnic section and cocainization of the part stimulated. The reflex arrest produced by $HgCl_2$ in the ureter and collecting ducts appears more pronounced than the reflex arrest coming from within the kidney tubules. These experiments show the marked effect of the splanchnics upon glomerular blood flow and in part explain how local anesthesia and section of renal nerves produce beneficial results in reflex oliguria and anuria.—*Author's conclusions.*

9866. BIETER, RAYMOND N. The reabsorptive function of the tubule in the frog's kidney. *Amer. Jour. Physiol.* 93(2): 574-587. 1930.—A technique of injecting various substances, by means of the ureter, into the tubules of the frog's kidney for studying reabsorption, is described. Using Richards' method of direct observation, changes produced in the solutions in the lumina of the tubules and in the epithelium can be noted. As pyelo-venous backflow does not occur within the normal frog's kidney, it is thought to be safe to use this method for intratubular injections. Phenolsulphonephthalein when injected into the proximal and distal convoluted tubules in the normal frog's kidney is reabsorbed. At least a part of this reabsorbed dye is excreted by the opposite kidney. Phenolsulphonephthalein when injected into the ureter and larger collecting ducts also shows this reabsorption and resulting excretion by the opposite kidney, but to a much less extent. Sodium indigosulphonate, indigocarmine and trypan blue, injected in a similar manner, are reabsorbed to only a very slight degree. When a solution of 1 of the above dyes is injected into the distal convolutions, concentration begins immediately. Precipitation of the dye particles within the tubular lumen from solutions of 0.25-0.05% begins in 5-20 min. With solutions of 0.25% the precipitation is almost complete in 20-30 min. This undoubtedly occurs primarily from reabsorption of water. During this process of concentration, the diameter of the tubular epithelium appears increased, as if the cells were taking up some substance to increase their bulk. $HgCl_2$ in dilute solutions inhibits the concentration of the dyes within the lumen of the tubules described above. Following the application of this salt, precipitation from a solution of 0.25% begins in 25-35 min. and in some cases is not complete in 90 min. $HgCl_2$ again injected into the convoluted tubules produces a marked inhibition of what appears to be reabsorption of water and phenolsulphonephthalein. The inhibition of tubular reabsorption of both water and dyes produced by $HgCl_2$ tends to confirm the findings of Lepine and his students, carried out on mammalian kidneys, and possibly also those of Bainbridge, Collins and Menzies obtained through a different route. The present results fit into and support Cushny's "modern theory of kidney function" more satisfactorily than they do any alternative theory. —*Author's conclusions.*

9867. BIETER, RAYMOND N. The secretion pressure of the aglomerular kidney. *Amer. Jour. Physiol.* 97(1): 66-68. 1931.—Experiments on 7 toad fish show that in the aglomerular kidney the secretion pressure taken in the ureter can be greater than the dorsal aortic blood pressure.

9868. BILLI, A. Alterazioni istologiche e funzionali dell'intestino nella soppressione della funzione renale. [Histological and functional alterations in intestine following suppression of renal function.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 595-597. 1930.—Alterations of the intestinal mucosa, especially in the cecum, are accompanied by an abnormally increased intestinal impermeability in rabbits and rats after nephrectomy or bilateral ligation of ureters.—*M. Comel.*

9869. BOHN, HANS. Die Adsorption von Wasserstoff- und Hydroxylion an Tierkohle. II. Mitteil. Zur Messung der Wasserstoffionenkonzentration des Harns. *Arch. Exp. Path. u. Pharmakol.* 140(1/2): 118-128. 7 fig. 1929.—Decolorizing urine with charcoal changes the pH in a complex manner. Appreciable errors in its determination may occur if the CO_2 factor is not considered, particularly if the urine reaction is alkaline. In this case the reaction and buffering of the urine resembles that of blood. The daily maximum fluctuation of the pH in health is smaller than usually believed for the H-ions of dissolved CO_2 depress the alkaline peak.—*E. M. MacKay.*

9870. BRAND, ERWIN, MEYER M. HARRIS, and SOL BILOON. Cystinuria. The excretion of a cystine complex which decomposes in the urine with the liberation of free cystine. *Jour. Biol. Chem.* 86(1): 315-331. 1930.—The mechanism of cystinuria is studied by a new approach to the problem. Using the Sullivan reaction for quantitative estimation of cystine in cystinuria urine evidence is presented which indicates that in this condition a cystine compound is excreted and this compound decomposes in the urine with the liberation of free cystine. A case is reported in which a urinary calculus was diagnosed as being composed of cystine. Free cystine in the urine is not essential to the diagnosis of cystinuria and the term cystinuria should be restricted to cases with transient high neutral S excretion.—*J. H. Barach.*

9871. BROWN, MARION, and C. G. IMRIE. The influence of creatine on the excretion of phosphates by the kidney. *Jour. Physiol.* 71(2): 222-228. 1931.—Creatine dissolved in caffeine citrate, introduced into the duodenum of 10 cats under chloralose, and creatine in normal saline intravenously injected into 6 decerebrate cats (normal saline alone in 2 controls), was followed by a temporary reduction in the output of phosphates by the kidney, the reduction being most marked when larger quantities of creatine were retained (more than 100 mgm./kgm. of body wt.). The concentration of P in the blood may be above the normal when the phosphates in the urine are absent.

9872. BRULL, LUCIEN. Polyurie expérimentale. *Rev. Belge Sci. Méd.* 2(2): 121-153. 13 fig. 1930.—Experiments were carried out on 57 dogs (35 hypophysectomized, 17 with lesion of the tuber, of which 5 lesions preceded hypophysectomy, 10 controls). There were 2 unsuccessful experiments (cases in which hypophysectomy had induced hemorrhage interrupting the experiment). Immediately following or within the next few hrs. after hypophysectomy, an intense polyuria with arrest of chlorid excretion was provoked in narcotized dogs. This phenomenon could not be reproduced by cauterization of the tuber. Injection of pituitrin suspended the effects of hypophysectomy. The fact that all or part of the pars tuberalis is not removed in hypophysectomy goes to show that the latter plays a compensatory secretory rôle in the absence of other parts of the gland. The lesions produced have been anatomically controlled.

9873. BYKOW, K. M., und I. A. ALEXEJEW-BERKMANN. Die Ausbildung bedingter Reflexe auf die Harnausscheidung. II. Bedingte Reflexe bei denervierter Niere. *Pflüger's Arch. Ges. Physiol.* 227(3): 301-308. 1931.—A conditioned reflex of diuresis was established by injection of water into the rectum (1 dog, ureters opening on the abdomen); after the reflex had disappeared, the right kidney was denervated, the left serving as control. Denervation exerted no noticeable influence on diuresis, on the presence or disappearance of the conditioned reflex, on its reestablishment, or on the effect of inhibitory process due to external agents (presence of cat, loud sound). The reflex route of the conditioned diuresis has a nervous and a humoral component.

9874. CANNY, A. J., E. B. VERNEY, and F. R. WINTON. The double heart-lung-kidney preparation. *Jour. Physiol.* 68(4): 333-347. 2 fig. 1930.—The 2 kidneys of a dog are perfused by 2 heart-lung preparations so arranged that the blood of the 2 circulations may mix

freely or be completely separated as desired. Measured by blood flow, urea, and chlorides, the response of the 2 kidneys is closely similar. Complete separation does not interfere with parallel response either to changes of perfusion pressure or to addition of caffeine or pituitary extract. The parallel response, indicating the same physiological state, makes it possible to express quantitatively the effects of any given change in perfusion conditions. —*F. P. Knowlton.*

9875. CHABANIER, H., C. LOBO-ONELL, et E. LÉLU. Étude sur les diurèses aqueuses et salines. I. Essai sur le méchanisme de l'élimination de l'eau. *Jour. Physiol. et Path. Gén.* 28(4): 841-853. 1930.—In the rabbit, a sudden diuresis tends to raise the urinary pH, and, conversely, arrest of the diuresis is accompanied by a decreased urinary pH. This is explained by the retention of acids or bases, respectively, by the renal cells, and is associated with alterations in the iso-electric point of the proteins of the kidney tubules.—*W. R. Fearon.*

9876. CHABANIER, H., C. LOBO-ONELL, et E. LÉLU. Études sur les diurèses aqueuses et salines. II. La sécrétion de l'eau dans les théories de la sécrétion rénale. Essai synthétique sur la sécrétion rénale de l'eau. *Jour. Physiol. et Path. Gén.* 29(1): 52-61. 1931.—Two factors are recognizable in polyuria however produced: a tubular effect, depending on alterations in the hydration-capacity of the proteins of the tubule, and a glomerular effect, due to increase of osmotic pressure within the capsule. This latter condition is seen in water diuresis, and is ascribed to acid-retention by the kidney, since it is characterised by the shifting of the urinary pH towards alkalinity. The extension of the theory involves the recognition of tubular secretion as well as absorption, and glomerular secretion as well as filtration.—*W. R. Fearon.*

9877. CHABANIER, H., C. LOBO-ONELL, et E. LÉLU. Études sur les diurèses aqueuses et salines. III. Aperçu critique sur les théories de la sécrétion rénale en général. *Jour. Physiol. et Path. Gén.* 29(1): 62-71. 1931.—During physiological spontaneous secretion, the activity of the tubules is much greater than that of the glomeruli in the production of the urine. Any sudden load on the kidney, due to the normal urinary constituents, is met by secretion on the part of the tubules. All changes in the iso-electric point of the tubular proteins towards acidity tend to provoke a retention of anions and a resultant glomerular polyuria. The relationship of these conclusions to the older theories of renal secretion is discussed.—*W. R. Fearon.*

9878. CHASKIN, L., und G. NIGMANN. Ändert sich der Oxydationsquotient des traubenzuckerfreien Harns infolge der beim Aufbewahren eintretenden Zerstetzungen? [Does the oxidation quotient of glucose-free urine change upon standing?] *Biochem. Zeitschr.* 205(4/6): 473-480. 1929.—Answered in the negative.—*C. F. Cori.*

9879. CONDORELLI, LUIGI, e EWARS. [J. G. EDWARDS.] Ricerche sulla fisiologia dei reni di alcuni pesci. [Physiological studies of the kidneys of some fish.] *Boll. Soc. Ital. Biol. Sper.* 3(1): 126-134. 1928.—Comparative studies of renal function in teleosts whose kidneys are entirely, almost and partly aglomerular. These studies involve determinations of the osmotic pressure and quantitative analyses of the constituents of blood and urine. The urine in all instances is hypotonic with respect to the blood. Mg and Ca exist in greater amounts in the urine than Na and K. Na is minimal. There is no significant difference in the composition of the urines from the kidneys of the various fish studied.—*L. Condorelli (transl. by J. G. Edwards).*

9880. CRAWFORD, A. MUIR. Urinary creatinine as a test of renal efficiency. *Lancet* 219(5596): 1177-1179. 1930.

9881. EBBECKE, U. Über Gefässreaktionen der Niere und den Antagonismus von Glomerulus- und Tubulusdurchblutung. *Pflüger's Arch. Ges. Physiol.* 226(6): 761-773. 4 fig. 1931.—Freshly excised kidneys of frogs (*Rana temporaria*), injected and examined by the fluorescent method of Ellinger, show 3 types of blood supply: (1) pale kidney, with few or no injected glomeruli and only major vessels patent; (2) glomerular kidney, with practically all glomeruli injected, but other vessels no more abundant than in pale kidney; (3) hyperemic kidney, with entire tubular vasculature injected but glomeruli visible only as shadows if at all. Pale kidney is the resting state: it is usual in frogs kept cool and dark, but it is sometimes seen even after injection of hypo-, iso-, or weakly hypertonic solutions. Glomerular kidney is more usual finding after such injections. Only after strongly hypertonic solution is hyperemic kidney found. Urea, caffeine, $HgCl_2$ yield either glomerular or hyperemic type, with tendency to the former with smaller doses or briefer time of action. Dry frogs always show hyperemic picture. Results point to rhythmic alternation between glomerular activity (ultrafiltration) and tubular (concentration), so as to permit time for latter process to be completed. Regulation is probably chemical, through liberation of histamine from tubular cells when concentration of absorbed materials has become high enough to cause irritation; alternation of glomerular and tubular circulation is probably dependent upon axon reflexes. Experiments on mice, guinea-pigs, rabbits, cats and dogs indicate the same sort of mechanism in mammals, but picture is not as clean-cut. Diabetes insipidus may be due to loss of regulation of glomerular circulation so that time for concentration in tubules is not allowed.—*C. F. Schmidt.*

9882. EBBECKE, U. Über den Flüssigkeitstransport in den Harnkanälchen mit Beobachtungen über die Flimmerbewegung in den Nephrostomen der Froschniere. *Pflüger's Arch. Ges. Physiol.* 226(6): 774-780. 1931.—Ciliary activity in nephrostome of ventral surface of frog's kidney continues for hours after excision of kidney: it is inhibited (reversibly) by N/200 KCN and by 1% urethane, concentrations which are known to interfere with urine formation. Since cilia are present in frog's tubules; it is probable that they propel fluid, thus lowering pressure in Bowman's capsule, or emptying tubule if glomerular filtration ceases. In mammals smooth muscle of papillae exerts a similar influence though cilia are absent. Consequently if tubular cells continue active when the glomerulus rests and the tubular lumen is empty, they cannot be reabsorbing at this time.—*C. F. Schmidt.*

9883. EDERER, STEPHAN. Untersuchungen über den Harnkohlenstoff des Säuglings. III. Herkunft. Hormonale Beinflussung. Pathologische Veränderungen bei Rachitis. *Monatsschr. Kinderheilk.* 36(1): 57-64. 1927.—With the suckling an increase in food-fat leads to an increased C/N quotient and is generally accompanied by an absolute increase in carbon excretion. Increase of carbohydrate alone does not have this effect. In rickets the quotient is extraordinarily increased, to between 3-10. Increase in food fat affects the quotient of the rachitic infant more than that of the normal. Insulin lowers the quotient.—*Author's summary (transl. by M. E. Collett).*

9884. EDWARDS, J. GRAHAM. The renal tubule and glomerulus. *Amer. Jour. Physiol.* 95(2): 493-510. 3 pl., 1 fig. 1930.—Data are presented showing the locus of concentration of dyes and Fe salts within the lumen of the distal convolution of the renal tubule of 3 classes of vertebrate kidneys. The site of water reabsorption is indicated by the presence of these substances in highly concentrated form only in the lumen of this convolution. Special methods were devised to show convincingly the locus of this concentration, and the precise conditions under which this concentration occurs or may be induced are set forth. Kidneys whose visible glomeruli are inactive, permitting the lumina of tubules connected with them to become filled with concentrated substance, are quickly washed free of it by reactivating these glomeruli. The significance of the rapid release of fluid from the glomerulus is suggested and its effect on the relative patency of the lumen of the tubule is shown. The rate of excretion by the tubule is relatively slow and uniform with or without continuous glomerular activity as shown by the careful inactivation of a single glomeru-

lus in a highly functional kidney. New methods are described for inactivating a given glomerulus as well as in part for studying segmentally, without sectioning, the tubule with which the inactivated glomerulus is connected. Mechanical distention with fluid of the lumen of the tubule flattens the epithelium comparably with that observable in a diuretic kidney. The functional significance of this alone is doubtful. Certain experiments on the frog involving ureteral injections indicate possibilities for a pyelovenous backflow.—*Author's summary.*

9885. **ELAUT, L. J. S.** Bijdragen tot de urologie van zwangeren. [Urologic data of pregnancy.] 127pp. 2 pl. Thesis—University of Amsterdam, 1929. Pr. 4.30 ure.

9886. **EMBDEN, G., und H. SCHUMACHER.** Über die Ammoniakbildung in der Niere. *Pflüger's Arch. Ges. Physiol.* 223(4/5): 487-495. 1929.—After rapid cooling in liquid-air, the normal ammonia-content of rabbit kidney is 2 mgm. %. Kidney tissue, disintegrated in liquid-air, on keeping at 37°C. in 2% Na_2CO_3, increases in ammonia-content up to 14-18 mgm. %, after 3.5 hrs. Ammonia-formation ceases within 2.5 hrs. After destruction of deaminising enzymes, a varying amount of this ammonia (av. 60%) is liberated on addition of an enzyme that liberates ammonia from muscle-adenylic acid only. Caffeine diuresis markedly diminishes the content of ammonia precursors, but restitution takes place in 1-2 days.—*W. R. Fearon.*

9887. **FARKAS, G. von, [et al.].** Nierenstudien. I. [G. v. FARKAS, und C. SELLEI.] II. Über die Wirkung harnfähiger Substanzen und deren Konzentration auf die Quellung der Nierenzelle. III. [G. von FARKAS, und F. von BORBÉLY.] Über die Wirkung der Wasserstoffionen auf die Quellung der Nierenzellen. *Zeitschr. Ges. Exp. Med.* 70(5/6): 696-707; 708-719. 3 fig.; 720-724. 2 fig. 1930.—I. An introduction, with discussion of the toxicity of urinary substances and the changes in their concentration on the renal parenchyma. The study of mouse and guinea-pig renal tissue in Warburg's apparatus in various media showed that urea, $CaCl_2$ and Na_2SO_4, even in concentrations much lower than those in urine, were highly toxic; the duration of life of the pieces was much shortened and the respiratory quotient sank. The displacement of the H toward the acid side was also toxic for renal tissue; in a medium of pH 5.36 it lived only 50 min., less than half its survival in pH 7.35 (pure normosal). The cessation of respiration was not of the nature of narcosis but an irreversible process leading to the death of the renal cells. The duration of life of hepatic and muscular tissue in the Warburg apparatus was much shorter than that of renal tissue; in solutions of half and double isotonic concentration the life span of liver and muscle contracts strongly, that of kidney only slightly. Hence it appears that renal cells are distinguished, (1) by their great resistance to changes in osmotic pressure and (2) great sensitiveness to urinary constituents. It seems probable, therefore, that urea and the ions studied, H^+, SO_4^{--}, Ca^+, Cl^- and Na^+ are concentrated outside of the renal cells, and it is possible that the fluid streaming abundantly through the renal cells is approximately constant in composition and highly variable only in osmotic pressure.—II. These studies were made on the kidneys of "many" rabbits and a few cats and dogs. Isotonic solutions of urea, NH_4Cl, KCl, Na_2CO_3, dextrose, NaCl, normosal, NaH_2PO_4, $CaCl_2$, and $MgCl_2$ produced swelling of the renal cortex of the 24-hr.-fasting rabbit in 2 hrs.; NaH_2PO_4 and Na_2SO_4 produced a shrinkage. The greatest swelling was produced by distilled water and urea; the amount of swelling caused by the other substances was in descending order. Henle's loops and the medulla also swelled in these solutions, but less than the cortex; but in Henle's loops the order of activity was different, the swelling in urea and dextrose being less, in KCl, $CaCl_2$, and NaCl greater than would correspond to the swelling of the cortex in these same media. This swelling cannot be caused by the death of the tissue, since, on the one hand, it is marked in the non-toxic solutions of NaCl and normosal, and, on the other, in the toxic solutions of urea and Na_2SO_4 it varies from +90% to −3%. The swelling of the kidney in isotonic solution is explained by its varying permeability for the various substances in question. The renal cortex is capable of absorbing 60-70% of its original weight in normosal solution without losing its vitality, a result contrasting with the toxicity of solutions producing swelling of spleen, liver or muscle. —III. Solutions of pH varying from 8 to 3 produced, on renal cortex of various animals, a swelling in certain concentrations (pH 4-4.5) and a shriveling with increasing acidity. This occurred in all media except Ca and PO_4 solutions, in which between 6 and 4 a marked swelling was observable. With all other ions a decrease in weight occurred, especially noticeable beyond pH 3. These phenomena become marked only at pH 4.5 or less, which is an acidity never reached in the blood or the urine; hence conclusions drawn from these observations as to renal physiology must be very guarded. It had already been shown, however, that even pH 5.36 is very injurious to the renal cortex. Hence it is concluded that the concentration of H ions takes place outside of the protoplasm of the renal cells, and that the cell-membrane of the lumen of the tubuli is impermeable for H ions. Hence only the very slight physiologic variations of pH appear in position to exercise any influence on the swelling of the parenchyma; and the results of these researches are even more difficult to interpret in their bearing on the renal medulla.

9888. **FREEMAN, BENJAMIN, A. E. LIVINGSTON, and A. N. RICHARDS.** A second series of quantitative estimations of the concentration of chlorides in glomerular urine from frogs. *Jour. Biol. Chem.* 87(3): 467-477. 1930.—The chloride concentration of glomerular urine from frogs was analyzed by the nephelometric method of T. W. Richards and compared with the chloride concentration of the fluid (perfusion fluid or plasma) from which the urine was derived. In 19 perfusion experiments the concentration of the two fluids proved to be substantially the same, and in only 7 of the 20 experiments with intact circulation was the glomerular urine hypertonic to the plasma by an amount which exceeded the error of the method (10%). The infrequency with which this difference was found, the discovered likelihood that the glomerular urine might have evaporated during its manipulation, and the results of other comparisons between glomerular urine and plasma published in sequence with this paper, make it seem unlikely that the glomerulus possesses the power to "secrete" chlorides.—*A. M. Walker.*

9889. **FØLLING, A.** On the site of the ammonia production. A note. *Skand. Arch. Physiol.* 61(1/3): 23-26. 1931.—More evidence is presented to show that as long as the urine is on the acid side of pH=7.8, more ammonia is found in the urine than is filtered from the blood in the same time. This is not due to a diffusion from alkaline blood into acid urine for the concentration of undissociated ammonia is about 10 times greater in the urine than in the plasma.—*W. J. Meek.*

9890. **FREY, E. K.** Die Kreislaufwirkung eines neuen von der Niere ausgeschiedenen Stoffes. *Arch. Klin. Chir.* 148: 634-650. 11 fig. 1927.—A substance prepared from urine when injected intravenously (1/100 mgm. per kgm.) increases the pulse rate and decreases diastolic pressure, even after section of the cardiac nerves. It speeds up a slow heart and makes an irregular heart regular. It causes an increased pressure in the pulmonary circuit and a decreased pressure in the systemic. The kidney volume parallels the carotid pressure, the volume of the legs and arms varies inversely as the carotid pressure. This substance is absent from urine in uremia and produces edema of the lungs and brain. It is not histamine.—*M. E. Collett.*

9891. **GEDDA, LUIGI, e GIUSEPPE CHIESA.** La diuresi diatermica. [Diathermic diuresis.] *Arch. Sci. Med.* 54(10): 717-732. 12 fig. 1930.—Following diathermic applications on the kidney region, the immediate response is a rise of diuresis, the urine being more dilute. The urine eliminated in 24 hrs. in some

cases was more concentrated, in others more dilute, in others showed fluctuations.—*M. Comel.*

9892. GOIFFON, R. Variations du pH urinaire par modifications du rapport entre l'ammoniaque et l'acidité de titration, dans les émissions fractionnées. *Compt. Rend. Soc. Biol.* 106(10): S0S-S10. 1931.—Plotting the pH against the ratio acidity/NH_3, determined from hourly samples of urine from 6 normal subjects, showed an indirect inverse relation between these quantities. The pH is not a good index for the effort of the kidneys in acid elimination. The urinary pH can be used to indicate the direction of modifications but not as their measure. Since the pH is the most variable element of urinary acidity in the course of a day, the alkalinity or acidity of a single sample taken at random is meaningless.—*E. Weiner.*

9893. GOLDBERG, MARGARETE. Der Einfluss des vegetativen Nervensystems auf die renale Glykosurie. [The influence of the vegetative nervous system on renal glycosuria.] *Zeitschr. Ges. Exp. Med.* 59(3/4): 468-473. 1928.—The action of atropine and ergotamine on the phloridzin glycosuria, considered to be of renal origin, was studied. Both these drugs proved to have an inhibitory effect. The inhibition was more pronounced when the vegetative drugs were given with phloridzin simultaneously. This study, carried out on 9 men, demonstrates that renal glycosuria is influenced by the vegetative system. It also suggests reservation with regard to the subdivision of the vegetative system into 2 antagonistic components; for ergotamine depressing the sympathetic, and atropine inhibiting the vagus, and thus supposed to induce, respectively, vagotonia and sympathicotonia, had an identical pharmacological effect. —*S. Katzenelbogen.*

9894. GRAFFLIN, ALLAN L. Urine flow and diuresis in marine teleosts. *Amer. Jour. Physiol.* 97(4): 602-610. 1931.—Evidence from work on the sculpin and toadfish indicates that the normal urine flow is below 4 cc. per kgm. per 24 hrs., much lower than older figures. The normal urine of these 2 species was almost invariably free from chloride and relatively high in total N. Injury to the skin was identified as a principal factor in causing the abnormally high flows encountered under experimental conditions, associated with a marked rise in chloride concentration in plasma and urine. Diuresis typically increased to a peak, then decreased with approaching death, the low chloride and high total N concentrations present in the urine in the early stages becoming rapidly reversed.—*Author's summary.*

9895. GREMME, A. Zur Physiologie der oberen Harnwege in der Schwangerschaft. (Untersuchungen über die Farbstoffausscheidung im Vergleich mit dem intravenösen Pyelogramm.) *Arch. Gynäkol.* 145(1): 132-149. 8 fig. 1931.—In 6 women in 2-4 mo. of pregnancy and in 34 in 5-10 mo. chromocystoscopy and the pyelogram showed passive dilatation and delay in emptying of the upper urinary tract caused by compression of the ureter between the psoas and the uterus which becomes possible only after hypotony of the ureter. The effect is usually overcome by active ureteral peristalsis or displacement. In the dilated renal pelvis and ureter above the point of compression there is accumulation of urine which is emptied usually in the form of marked hypersecretion when compression yields or there is sufficiently strong peristalsis.

9896. GRUBER, CHARLES M. The uretero-vesical valve. *Jour. Urol.* 22(3): 275-292. 3 fig. 1929.—The uretero-vesical orifices were studied in the excised bladders of human, pig, dog, cat, rabbit and monkey. The intra-vesical ureter was found to serve as a true valve. It is not a sphincter dependent upon muscle tone or muscle contraction, but acts passively. Cutting away the uretero-vesical valve (intra-vesical ureter) was found to permit reflux of fluid from the bladder into the ureter in all bladders tested, except in one human bladder with very thick wall. In urinary bladders in which the valves were normal (not sclerosed, edematous, partly destroyed or inflamed) regurgitation did not occur in man, cat, dog, pig and monkey, unless the injection pressures were excessive and the volume of fluid injected exceeded that found normally in the bladder. Stretching the bladder mucosa by injecting into the bladder excessively large amounts of fluid under high pressure shortened the valves and in many instances rendered them incompetent. Contraction of Bell's muscle simultaneously pulls the uretero-vesical valve toward the urethra and opens the internal urethral sphincter. —*C. M. Gruber.*

9897. HALLAUER, C. Klinische und experimentelle Untersuchungen über den Lysozymgehalt im Bindehautsack und in der Tränenflüssigkeit. *Arch. Augenheilk.* 103(1/2): 199-215. 1930.—In 120 clinical cases the lysozyme content of the tears was estimated; a. in clinically normal conjunctivae, and b. in chronic and acute inflammation of the conjunctiva and cornea. It was only diminished in acute inflammatory conditions of the anterior segment. The amount of the lysozyme in the tears depended upon the activity of the lacrimal gland. Atropine diminishes the secretion of tears and leads to an increase in the lysozyme content while pilocarpine increases the secretion and leads to a fall in the amount of lysozyme. The significance of this substance as a protection against bacteria is discussed and its therapeutic possibilities suggested.—*F. H. Adler.*

9898. HEILMEYER, LUDWIG. Zur spektralen Harnfarbanalyse mit dem M. Weiss'schen "Spektrometer." [Fundamentals of the method of spectral urine color analysis with the "spectrometer" of M. Weiss.] *Deutsches Arch. Klin. Med.* 168(3/4): 244-250. 3 fig. 1930.

9899. HEILMEYER, LUDWIG, und WILLY OTTO. Klinische Farbmessungen. IX. Die Analyse des Harnrestfarbstoffs, ein Beitrag zur Klärung der Urochromfrage. *Zeitschr. Ges. Exp. Med.* 74(3/4): 490-513. 1930. —The predominant urinary coloring matter of normal urine designated by most authors as "urochrome," is not a single compound. By saturating the urine with $(NH_4)_2SO_4$ it can be separated into 2 parts, Urochrome A and B which can be differentiated with certainty by the absorption spectrum. Further analysis of Urochrome A showed that this pigment portion is not individual, since it consists of two fractions, one easily soluble, the other poorly soluble in butyl alcohol. Both of these fractions of Urochrome A are extraordinarily susceptible to acids. Changes due to oxidation consist in that the typical pigment curve rises to a higher level, and is flatter in its descent. It is therefore not a simple new production of pigment from chromogen, but rather a simultaneous transformation of the pigment with oxidation of Urochrome B; no increase in color occurs; there occurs only a flattening of the curve, which appears to the naked eye as fading. The distribution of both Urochromes in the urinary pigment concentration, is Urochrome A about 26-42%, Urochrome B—50-74%. Urochrome B appears to be the predominant pigment in normal urine. Spectrophotometric controls of the differentiating tests with lead acetate indicate that this method is useful for quantitative as well as qualitative estimations of the normal urinary pigment. Further investigations of Urochrome B are being made, especially as to whether it is a single pigment or a mixture of pigments.—*Authors' summary (transl. by M. Lederer).*

9900. HEMINGWAY, A. Some observations on the perfusion of the isolated kidney by a pump. *Jour. Physiol.* 71(2): 201-213. 2 fig. 1931.—In the apparatus described the perfused kidney (dog) was supplied with blood by a pump, the perfusion rate being measured while venous blood was collected and perfused under hydrostatic pressure through isolated lungs. In 10 experiments the lungs were removed from the perfusion circuit after a steady renal blood flow had been established, without development of toxic properties. Over 40 experiments were performed in which the kidney excreted typical urine.

9901. HIMWICH, H. E., and M. A. ADAMS. Studies in glandular metabolism. II. The carbohydrates of resting and secreting submaxillary glands. *Amer. Jour.*

Physiol. 93(2): 568-573. 1930.—The anaerobic cleavage of glycogen as a possible source of energy for the secreting submaxillary gland was studied, in 4 series of experiments on dogs under amytal anesthesia. In the 1st and 2nd series, the carbohydrate balance of the glands was studied. The 3rd and 4th series consisted of studies made of the blood and saliva of resting and stimulated glands. Since it was impossible to demonstrate an increased production of lactic acid during secretion of the submaxillary gland, the authors were forced to the conclusion that glycolysis does not serve as a source of glandular energy. It is to be noted, however, that if the lactic acid produced by glycolysis was entirely reconverted to glycogen or oxidized as soon as it was formed, it could not be detected by the authors' method.

9902. HÖBER, R., und G. ORZECHOWSKI. Über die Harnbildung in der Froschniere. XXI Mitteilung. Beobachtungen an den Cilien im Halsabschnitt der Harnkanälchen. *Pflüger's Arch. Ges. Physiol.* 226(1): 164-170. 1930.—In perfusion experiments on the frog's kidney, when the aorta is perfused with appropriate concentrations of a narcotic (such as phenyl-urethane) or of KCN, the authors have observed a cessation of urine formation which they attributed to an effect upon the secretory activity of the glomerulus. In their present article they consider the alternate possibility that this cessation of urine flow may be due to damage inflicted by their drugs upon the cilia located in the proximal tubule near to the glomeruli. They describe methods for the observation of the activity of these cilia under normal circumstances, and find that an apparently normal degree of activity (the observations are qualitative in nature) persists in these cilia after they have been exposed to concentrations of narcotics or KCN which were sufficient to arrest urine formation.—*K. A. Elsom.*

9903. HOLTON, SYLVIA G., and R. R. BENSLEY. The functions of the differentiated parts of the uriniferous tubule in the mammal. *Amer. Jour. Anat.* 47(2): 241-273. 1 pl. (col.) 1931.—Observations on the excretion of Fe and of indigocarmine in the rabbit at low blood pressures and in the dehydrated animal showed that secretion of these substances continues at levels of blood pressure at which glomerular filtration is impossible and that it is a function exclusively of the proximal convoluted tubule. The secretion so produced is small in amount and high in concentration. It flows along the tubule into the descending limb of Henle's loop, rarely, in long experiments, enters the ascending loop, and may even reach the distal convoluted tubule. The dehydration experiments show that the concentration of the urine by resorption of water occurs in the ascending limb of Henle's loop and in the distal convoluted tubule. In these experiments there is no evidence of further concentration in the ducts. The capsule of Bowman remained free from Fe or indigocarmine in all experiments, indicating that the excretion of these substances in the rabbit is, under the conditions of our experiment, an exclusively tubular function.—*Authors (courtesy Wistar Bibl. Serv.).*

9904. HUGHES, B., und T. PÉTERFI. Der Nachweis von Uroselektan im Glomerulus der Froschniere. *Zeitschr. Urol. Chir.* 31(3/4): 146-152. 2 fig. 1931.—Male frogs (number not stated) were injected with 2 cc. of 2.5-3% urethane solution, the abdominal skin incised, 0.5 cc. of 40% uroselectan injected into a vein, the point of injection washed with physiological saline, and the kidneys exposed. They should be of a reddish-brown color; if darker or anemic the glomeruli are more difficult to distinguish. The testes were excised, the bladder emptied, and a kidney elevated and padded with cotton soaked in physiological saline. The frog was placed under the microscope and sufficient fluid kept on the body so that the kidney was slightly submerged. Micropipettes filled with physiological saline, inserted into the glomeruli, took up any uroselectan. One half hr. after injection 0.003-0.006 mgm. I, corresponding to 0.0071-0.0142 mgm. uroselectan, was recovered; control punctures gave no I. (I was determined quantitatively within 0.003 mgm. limit of error.) By calculation the kidneys would excrete 28 mgm. in ½ hr. and the total amt. injected in 5 hrs.

9905. HUTTER, KARL, und MAX SGALITZER. Zur röntgenologischen Darstellung der Nieren und Harnwege durch intravenöse Injektion von Uroselektan. *Fortschr. Geb. Röntgenstrahlen* 41(6): 919-935. 23 fig. 1930.—Uroselectan is a pyridin derivative with 42% I in organic combination. Intravenously injected, it is excreted through the kidneys, about 95% of the I being eliminated with the urine in 6-8 hrs. if the kidneys function normally; the I is not split off in the organism. After using it in 110 cases, the authors pronounce it suitable for use in cases in which catheter pyelography is impracticable.

9906. IRVING, J. T. A note on the permeability of the kidney cell to glucose. *Guy's Hosp. Rept.* 80(3): 343-347. 3 fig. 1930.—While, during studies of the osmotic relationship of the rabbit's kidney, considerable increases in weight were easily obtained in hypotonic solution, a decrease in weight in hypertonic solution was much more difficult to observe; this suggests some renal mechanism for counteracting the effects of high osmotic pressures, which might be expected from the normal function of the kidney. When the effects of glucose solutions were investigated, this last fact was found to operate still more strongly. It was early seen that the cell membrane was impermeable to glucose, but satisfactory decreases in weight could not be observed even when strong solutions were used. The effects of glucose were therefore observed in 2 ways: (1) the inhibition of swelling in glucose solutions of increasing strengths; (2) the changes in weight obtained by placing kidney tissue first in a hypotonic solution and then in glucose solutions of varying concentrations. By the 1st method, kidney tissue was placed in a phosphate buffer 0.05 *M*, pH 8, and glucose added to bring to concentrations of the required amounts. The tissue in buffer alone swelled rapidly; that in 0.28 *M* (5%) and 0.56 *M* (10%) glucose swelled much more slowly. That in 0.83 *M* (15%) glucose did not change in weight, and the addition of more glucose to bring the concentration from 0.83 *M* to 1.11 *M* (20%) produced no further changes. By the 2nd method, 4 specimens were made up and incubated for 1½ hrs. without glucose. The increases in weight were approximately equal. Glucose in concentrations of 0.28 *M*, 0.56 *M*, 0.83 *M*, and 1.11 *M* was then added to the respective tubes, and the kidney tissue weighed at half-hourly intervals. All save the sample in 0.28 *M* glucose fell markedly in weight, the fall being in proportion to the strength of the glucose present. The kidney in its much-diluted condition was presumably isotonic with 0.28 *M* glucose. It is concluded that the cell membrane is not permeable to glucose. Probably the factor responsible for the degradation of glucose is situated on the cell surface.

9907. JORES, A. Perspiratio insensibilis. II. Über die Beziehungen zwischen renaler und extrarenaler Wasserausscheidung. *Zeitschr. Ges. Exp. Med.* 74(5/6): 757-768. 1930.—Water metabolism normally bears no relation to the water output of the skin. Under basal conditions there is no increased extrarenal water excretion in disturbances of water metabolism. On increased water administration a transitory increase was seen in 3 cases. A diminution of extrarenal excretion occurs in edema and in great water loss. Euphyllin produces an increased skin output of water, salyrgan does not; there are exceptions to both these statements. Fluctuations of weight loss are influenced by fluctuations in skin water output. Loss of water by the lungs is of no significance in water metabolism. Increased skin water output depends upon increased sweat gland activity. The insensible perspiration, in the strict sense, is not increased. It is concluded that the skin output of water is of no significance in water regulation. From a regulatory standpoint the extrarenal excretion becomes important; its extent is apparently dependent upon the water con-

dition of the organism.—*Author's summary (transl. by H. L. White).*

9908. KNOLL, W. Zur Frage der Eiweissausscheidung bei sportlicher Arbeit. *Arbeitsphysiologie* 3(5): 409-414. 1930.—The urines of a man during a period of 3½ mos. training in horseback riding were collected immediately after the periods of riding and examined for albumin and microscopically. Albumin was found at the beginning, disappeared after weeks of training and returned whenever the training was unusually severe due to learning new performances or when an untrained horse was being taught. The appearance of albumin was limited to the urines collected at the end of the riding periods; it was not found in subsequent urines. Formed elements and cylinders were never found. The type of albumin elimination is parallel to orthostatic albuminuria and has no connection with inflammatory processes in the kidneys.—*T. M. Carpenter.*

9909. KUBO, HISAO. Über den Einfluss des Phosphors auf die Lage des Kohlenstoff- und Oxydationsquotienten des Harns. *Virchow's Arch. Pathol. Anat. u. Physiol.* 272(2): 504-530. 1929.—The ratios of C to N and of "Vakat-O" to N were determined in a series of 13 rabbits, before and after administration of varying doses of P subcutaneously in oil. No definite effects were noted with small doses. Lethal doses caused a decrease in the ratios, attributable to increased N elimination. Sub-lethal toxic doses caused a lowering of the ratios, followed by a return to normal or higher accompanying recovery. The experiments are tabulated, with further data on sugar, albumin and chlorides in the urine; these are not elaborated in the text.—*B. S. Walker.*

9910. KUNO, YAS. The significance of sweating in man. *Lancet* 218(5565): 912-915. 1930.—Translation of a lecture given at the annual meeting of the Jap. Assoc. for the Adv. of Science. Sweating was induced by increase of room temp., by local heating, by mental stress (psychical sweating as opposed to physiological). Regional differences were determined by a method described in some detail. The conclusions are that the sweat glands function for:—regulation of body temp.; the facilitation of physical work; and the protection of the skin.

9911. KUO, K. W. On mental sweating at high atmospheric temperature, including a paradoxical phenomenon in sweating on the palm of the hand. [In Japanese, with English summary, pp. 33-34.] *Jour. Oriental Med.* 14(4): 1931.—Sweating was provoked in 6 young men by mental effort (arithmetic) and by increase in room temp. While under ordinary conditions mental exertion produced sweating on the palm and in the axilla, at high external temp. sweating due to mental effort became more profuse in the axilla but did not occur on the palm.

9912. LEVI, M., ed E. SAPEGNO. La perspiratio insensibilis dopo il bagno di mare. [Perspiratio insensibilis following sea baths.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 297-299. 1930.—The perspiratio was studied by means of special devices (absorbing capsules). In all cases a conspicuous increase of the perspiratio insensibilis was observed following the sea bath. Individual differences were recorded. The increase persisted usually more than 1 hour after the bath. The increase is not to be explained by a water imbibition by the keratin layers of the skin, it being observed also when a direct contact between skin and water was avoided.—*M. Comel.*

9913. LONDON, E. S., N. KOTSCHNEFF, A. CHOLOPOFF, T. S. ABASCHIDZE, und A. K. ALEXANDRY. Die Bildungsstätte, das Schicksal des Harnstoffes im Organismus des Hundes und die Beziehung zwischen Harnstoffbildung und Retention der Aminosäuresubstanzen und des Ammoniaks in der Leber mittels der Angiostomiemethode untersucht. *Pflüger's Arch. Ges. Physiol.* 219(2): 238-245. 1928.—During digestion the amount of urea eliminated from the liver is increased 2½ times. It is at present not known whether other organs also eliminate urea. The intestines receive some urea from the blood. The various amino acids react differently as regards the amount of urea eliminated from the liver. Some like arginine and tyrosine apparently inhibit urea formation, alanine and cysteine are most effective in increasing the amount while cystine has scarcely any effect.—*E. S. London (transl. by A. Spohn).*

9914. LUBLIN, ALFRED. Gaswechseluntersuchungen beim Menschen über die Beteiligung der Niere am Gesamtumsatz. *Verhandl. Deutschen Gesellsch. Inn. Med.* 40(Kongress): 100-102. 1928.—Under proper experimental conditions it is possible to demonstrate an effect of the work of the kidney on the respiratory quotient of man. The experimental conditions are attained by restriction of water excretion during the concentration of urine, or the reverse. The indirect method for determination of the respiratory quotient does not give absolute values for the part contributed by the kidney. According to my results the work of water excretion as also that of concentration represents 8 to 10% of the total metabolism.—*Author's summary (transl. by R. A. Moore).*

9915. LUCKE, HANS. Beiträge zur Physiologie und Pathologie des menschlichen Harnsäurestoffwechsels. I. Über Schwankungen des endogenen Harnsäurestoffwechsels des Normalen und deren Regulation. II. Der Harnsäurestoffwechsel bei den entzündlichen und vasculären Nierenerkrankungen. III. Die Wirkung und Bedeutung des Aderlasses für die Störung des endogenen Harnsäurestoffwechsels der entzündlichen und vasculären Nierenerkrankungen. [Physiology and pathology of human uric acid metabolism. I. Fluctuations in endogenous uric acid metabolism in normal people and their regulation. II. Uric acid metabolism in inflammatory and vascular kidney diseases. III. Effect and importance of venesection in the disturbances of endogenous uric acid metabolism in inflammatory and vascular kidney diseases.] *Zeitschr. Ges. Exp. Med.* 56(1/2): 251-261. 5 fig.; (5/6): 721-733. 9 fig.; 57(3/4): 366-379. 6 fig. 1927.

9916. MACDONALD, A. D., and E. D. M'CREA. Observations on the control of the bladder. The effect of nervous stimulation and of drugs. *Quart. Jour. Exp. Physiol.* 20(4): 379-391. 1930.—The view that the nervous control of the bladder in the cat is compounded of sympathetic inhibition and parasympathetic excitation is inaccurate. Evidence is provided to show that in the cat and the dog the sympathetic and parasympathetic nerves are each both excitor and inhibitor. The effects produced by stimulation of a vesical nerve depend upon at least 2 factors: muscle tonus and the nature and the degree of the anesthesia. These observations are confirmed and expanded by comparison with the actions of appropriate drugs.—*A. D. Macdonald.*

9917. MACHADO, ANTÓNIO. Do modo simples de observar o funcionamento dos nefrídeos nos vermes anelados. [A simple means of observing the functioning of the nephridia in annelids.] *Anais Fac. Sci. Porto* 16(2): 76-77. 1930.—Microscopic observation of functioning nephridia is possible in the transparent Oligochaete, *Nais elinguis* Müll. Pulsations and ciliary movement can be seen.

9918. MAC KAY, EATON M. Use of phenol red in the Addis test of renal function. *Proc. Soc. Exp. Biol. & Med.* 27(9): 1039-1041. 1930.—Preliminary paper.

9919. MAINZER, FRITZ, und ANNA JOFFE. Zur Analyse des Säurebasengleichgewichts im Harn. *Biochem. Zeitschr.* 203(1/6): 50-87. 1928.—Convalescents were kept on standardized diet and water intake, were given bicarbonate and NH_4Cl. The 24-hr. urines were analyzed for: pH, total N, total base, NH_3, Cl, phosphates, total CO_2 (after equilibration with an atmosphere of 40 mm. CO_2 pressure), titratable acidity (phenol red pH 7.4), organic acids. All analytical results are given in extensive tables. Simultaneous increase in the excretion of acid and ammonia does not necessarily indicate an

acidosis, but in many cases an alkali-sparing tendency, measurable by the equation

$$\frac{100\ (NH_3 + \text{titratable acidity} - \text{bicarbonate})}{\text{Total nitrogen}}$$

with quantities expressed in milliequivalents. Administration of NH_4Cl tends to increase the numerical value of this expression; bicarbonate ingestion gives it a low or negative value. The numerator of the above expression, divided by the total base, serves as an expression for the alkali-sparing effect. The use of these expressions in the interpretation of urinary acidity measurements is discussed in detail. The regulation of acid-base elimination independently of the excretion of solids, by means of variations in the excretion of NH_3 and CO_2, is demonstrated. The presence of unknown organic bases in the urine is suggested.—*B. S. Walker.*

9920. **MARSHALL, E. K. Jr. A comparison of the function of the glomerular and aglomerular kidney.** *Amer. Jour. Physiol.* 94(1): 1-10. 1930.—A comparison of certain functions of aglomerular as opposed to glomerular kidneys of fish has been made. The goosefish and toadfish have been studied as having aglomerular kidneys, while the sculpin, flounder, carp, and eel have served as representatives of marine and fresh water fish with glomerular kidneys. The composition of the urine of marine teleosts is found to be essentially the same in both types of fish. The threshold phenomena shown by the glomerular kidney are exhibited by the purely tubular kidney; chloride and phosphate may disappear from the urine under some conditions and under others may be present in large amounts. The aglomerular kidney differs from the glomerular one in showing a specificity in the elimination of foreign bodies. Thus, the aglomerular kidney eliminates phenol red, but fails to eliminate the highly diffusible ferrocyanide. Glycosuria is easily produced in fish with glomerular kidneys, but only a trace of glucose ever appears in the urine from an aglomerular kidney, even when the blood sugar is high and phlorhizin has been given.

9921. **MARX, HELLMUT. Diuresis by conditioned reflex.** *Amer. Jour. Physiol.* 96(2): 356-362. 1931.—In experiments on 4 dogs reflex diuresis was obtained as a result of psychic stimuli. Marx believes this to be: (1) evidence for the importance of cerebral mechanisms in the regulation of diuresis, and (2) provision of a method for the study of psychic mechanism whereby it is possible to obtain a quantitative measure of the effects produced.

9922. **MILONE, SEBASTIANO. Sul processo di ipertrofia compensatoria nel rene scapsulato. [On the process of compensatory hypertrophy in the decapsulated kidney.]** *Arch. Sci. Med.* 54(9): 639-651. 1 fig. 1930.—In the hypertrophy of the decapsulated kidney of albino rats two stages follow: a first (10 days after operation) during which the decapsulated kidney is heavier than the hypertrophied non decapsulated one. In a following stage the weight of the decapsulated kidney, although increasing, is less than that of the hypertrophied intact kidney. The compensatory hypertrophy is less pronounced in the decapsulated kidney following probably circulatory defects.—*M. Comel.*

9923. **NICCOLINI, P. M. Di una curiosa proprietà dei prodotti opoterapici a base di corticale renale. [An interesting property of opotherapeutic preparations of kidney cortex.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 582-584. 1930.—When kidney cortex was administered together with diuretics, a fall of the diuresis resulted.—*M. Comel.*

9924. **NIKOLAJEV, O. W. Über die Wirkung von K- und Ca-Ionen auf die Funktion der isolierten Speicheldrüse mit degenerierten Nerven.** *Pflüger's Arch. Ges. Physiol.* 226(6): 689-693. 1 fig. 1931.—Under local anesthesia the chorda tympani nerves and the periarterial sympathetic nerves to the submaxillary gland were sectioned in each of several dogs. After intervals of 6-30 days, the dogs were killed and the glands removed for the perfusion experiments. Increasing the Ca concentration of the perfusion fluid resulted in an increase in the rate of flow of saliva. An increase of K in the perfusion fluid had the opposite effect. An increase of either K or of Ca, however, produced vasoconstriction. These results are identical with those obtained under similar conditions with glands taken from animals in which the nerves had not been severed.—*M. H. Friedman.*

9925. **ORZECHOWSKI, GERHARD. Über die Harnbildung in der Froschniere. XX. Über den Mechanismus der Ausscheidung von Säurefarbstoffen.** *Pflüger's Arch. ges. Physiol.* 225(1): 104-117. 1930.—A large number of acid dyes have been studied to see whether, when brought to the second section of the tubule of the frog's kidney by way of the renal-portal vein, they can penetrate the walls of the tubules and then be excreted in high concentration. The results are as follows: 1. There is a group of dyes for which the wall of the tubule is impermeable, which are insoluble in Nirenstein's oil mixture and to which erythrocytes are impermeable. 2. The dyes of a 2nd group are soluble in Nirenstein's oil mixture, permeate blood corpuscles and are excreted by the tubule in concentrated form. 3. A 3rd group is insoluble in Nirenstein's mixture and in blood corpuscles but is excreted in concentrated form. Members of group (3) are excreted in higher concentration than are members of group (2).—*Author's summary.*

9926. **ÖSTBERG, OTTO. Der Citronensäuregehalt des Harns bei Acidose und Alkalose.** *Biochem. Zeitschr.* 226 (1/3): 162-163. 1930.—Östberg had previously found a daily average citric acid excretion of 0.23-1.85 gm. in 25 normal persons. He now finds in 200 normal persons a daily average of 0.2-1 gm.; in pathologic conditions (renal insufficiency, chronic uremia, diabetes, etc.) subnormal citric acid values, and an increase in citric acid after oral administration of $NaHCO_3$, even when all other factors were unchanged. Simultaneous determinations of NH_3 and citric acid in the urine show rise of one coinciding with fall of the other and vice versa. Hence Östberg concludes that citric acid is one factor, though a small one, in the regulation of the acid-base equilibrium of the body.

9927. **OTTOW, B. Das funktionelle Verhalten des vesikalen Ureterostiums nach vorausgegangener Nephrektomie oder tiefer Harnleiterdurchschneidung.** *Zentralbl. Gynäkol.* 55(11 a): 767-781. 1 fig. 1931.—Cystoscopic observations in 17 patients showed that if the residue of the ureter was not injured normal functional movements continued even for yrs. after the operation but at much greater intervals.

9928. **PACHUR, REINHOLD. Die Talgabsonderung auf der menschlichen Hautoberfläche.** *Arch. Dermatol. u. Syph.* 162(2): 253-259. 1930.—In 180 analyses on 40 patients it was found that in healthy persons a forehead area of 4 sq. cm. has a fat content of 0.4-0.48 mgm. This is higher during puberty, lower during old age. In most persons with eczema, acne vulgaris, and folliculitis the secretion of sebum is increased, 0.61-1.72 mgm. being found; in patients with pronouncedly dry seborrhea and acrodermatitis atrophicans it was reduced; psoriasis was not characteristic. When washed off, sebum is usually replaced in 5 min. If dissolved with petroleum ether or benzine it returns slowly. By estimation, the sebum content of the skin in healthy man is 1.6-1.8 gm.

9929. **PANDAZIS, GEORG. Zur Frage der Bakteriensymbiose bei Oligochäten.** *Zentralbl. Bakt. I Abt. Orig.* 120(7/8): 440-452. 5 fig. 1931.—In the nephridia of many oligochetes occurs a bacterium with stable morphological and biological features. The bacteria (always highly localized in a segment of the adult organ) infect the embryo, but have no pathogenic effect on the adult nor the embryo; the relation appears to be a symbiotic one. The celom fluid of the terrestrial oligochetes contains protein which enters the nephridia together with the urine and is split in the ampullae by proteolytic enzymes into albumoses and peptones through the action of the bacteria inhabiting this segment of the nephridia; probably this renders possible the resorption of the

protein from the wall cells of the ampulla and of the proximal part of the glandular canal. The nephridial fluid contains uric acid, purin bases, ammonia, and chlorides; the last are excreted by the proximal parts of the nephridial canal, while the N-containing metabolic waste matter is excreted in the distal parts of the segmental organ. Urea and sugar are not present in the urine. Reaction of the nephridium contents was acid.

9930. PRIBRAM, HUGO. Über das Harnadialysat. *Biochem. Zeitschr.* 211(4/6): 412-419. 1929.—Human urine was dialyzed against water or N/10 H_2SO_4. The non-dialyzable residue contains a water insoluble precipitate and a water soluble fraction. Treatment of the latter with alcohol-ether gives a precipitate which can be purified to an ash content of 11%. The adialysate gives some protein reactions, causes miosis and sleep in rabbits. The effective dose was about the equivalent of 27 cc. urine per kgm. of rabbit, but was variable. The adialysate from urine in 2 cases of Bright's disease had these biological effects; that from another case with N retention did not. The effect of the adialysate from 2 cases of diabetes mellitus was less than normal. The adialysate of urine is a product of protein metabolism and is eliminated from the blood by the kidney (vide Pribram and Herrnheiser, Biochem. Zeitschr., 111: 30, 1920). It will be interesting to study the quantity and biological effects of the adialysates of urine in all diseases characterized by disturbance of protein metabolism.—*H. Pribram.*

9931. PÜTTER, AUGUST. Die Sekretionsmechanismen der Niere. 235p. 17 fig. Walter de Gruyter: Berlin, 1929. Pr. 17.50 M.—This work, an extension of the author's "Dreidrusentheorie der Harnbereitung," presents experimental evidence that the kidney is an aggregation of secretory mechanisms of different types, each of which elaborated in definite ratio a specific product and its characteristic attendant substance (Schleppersubstanz). The mechanism acts as a gland in accordance with the law of "all or none"; the composition of the elementary secretion is independent of the secretion rate. Analyses of many urines of man, rabbit, cat, sheep, ox, elephant and frog were made both under normal conditions and in water, salt and urea diuresis and subjected to statistical analysis to determine the types of secretory mechanisms and their products. He concludes that the mechanism for the secretion of purine bodies together with, and in definite ratio to, a polysaccharide is present in all vertebrates. Water "glands," the output of which can be measured by the concomitant hippuric acid (40 mgm./100 cc. H_2O) and colloidal chondroitin sulfuric acid (40 mgm./100 cc. H_2O) are apparently located in Bowman's capsule. Mechanisms for the secretion of Na, K and NH_3 together with a S-free, N-containing substance, urea which is accompanied by a colloidal, protein-like substance, and Cl together with a colloidal substance apparently identical with Salkowski's complex N-containing carbohydrate, are identified. In addition to those substances elaborated by the secretory mechanisms, urine contains material present by virtue of the action of purely physical processes and not due to energy expenditure by the kidney. Some of the urine urea (73 mgm./100 cc.), Cl, Na and K are thus accounted for. Uric acid and Ca "flooding out" are not detectable; creatinine "flooding out" is noted only in the rabbit. Studies of night and day human urine show that the water and salt glands are less active in the elaboration of night urine. There is a discussion and criticism of Cushny's theory of urine secretion, a chapter on gland physiology and one on methods and data.—*E. Pomerene.*

9932. QUAGLIARIELLO, G., e E. TRIA. L'equilibrio acido-basico nei cani in seguito al taglio dei vaghi. [Acid-base equilibrium in dogs following vagotomy.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1016-1019. 1930.—Vagotomy is not followed by marked alterations of the acid-base balance of blood, only a slight acidosis occurring, probably due to an increased blood CO_2 tension due to a diminished pulmonary ventilation. The bicarbonate content of blood diminished, as did the alkali reserve, the bicarbonate content of urine being on the contrary much increased. Ammonia is also much increased in urine of vagotomised dogs. A possible modifying action of vagotomy on the composition of urine is pointed out. —*M. Comel.*

9933. RABINOWITCH, I. M. The origin of urobilinogen: a clinical experiment. *Arch. Internal Med.* 46 (6): 1014-1017. 1930.—In a patient suffering acute abdominal pain excessive urobilinogen appeared in the urine while the blood bilirubin was normal. At operation a large ovarian cyst was found filled with sterile blood. That the mass of blood in the cyst was the source of the excessive urobilinogen appears obvious from the fact that in a specimen of urine obtained 12 hrs. after operation, i.e., after the removal of the mass of extravascular blood, the quantity of urobilinogen was normal. This appears to demonstrate that urobilinogen may not only be formed in the body outside the intestinal tract, but also in the absence of bacteria as reducing agents.

9934. RALESCU, C. GH. Consideratiuni asupra refluxului ureteral. [Considerations on the ureteral reflux.] *Rev. Med.-Chirurgicală din Iași.* 38(6): 539-553. 1927.—The bladder-kidney or bladder-ureteral reflux constitutes a syndrome determined by a free communication between the bladder and the superior urinary tract. This syndrome previously considered to be the result of various causes, congenital or acquired, presents always a fundamental character, physiological incompetence of the ureteral sphincter. As a result of numerous clinical observations, verified through cystoscopy, and some through radiography (cystography, pyelography), I consider this syndrome to appear frequently during vesical or renal affections, of widely various pathogeny. All the pathogenic causes, usually believed to determine it (mechanical, inflammatory, nervous), can be reduced to a single essential factor, microbic infection, which determines by the direct action of the microorganisms, or their toxins, the paresis of the ureteral sphincter.—*C. Gh. Ralescu.*

9935. REID, W. L. The effect of intravenous injections of distilled water on the kidney. *Amer. Jour. Physiol.* 90(1): 168-171. 10 fig. 1929.—Injection of 0.5-1 c.c. dist. H_2O per kgm. produced marked but brief decrease in renal volume. The norm was regained in 1 to 2 min. Bl. press. was not affected. The decrease in vol. was due to the osmotic effect of dist. H_2O. The action is specific for the kidney and the mechanism is peripheral for similar results were obtained on denervated kidneys. Dist. H_2O caused specific vasoconstriction of renal vessels due to periph. stim. Inj. of laked bl. made hypertonic with NaCl had the same effect as dist. H_2O. Cells and plasma of normal bl. were separated and treated with dist. H_2O and injected, after being made hypertonic with NaCl. Injection of plasma gave no decrease in vol. Injection of cells produced a marked decrease. R. concludes that decrease in volume is due to some substance produced by distilled H_2O injuring the erythrocytes and which causes specific vasoconstriction of renal vessels.—*M. R. Freeland.*

9936. RESNITSCHENKO, MICHAEL S. Die aktuelle Reaktion des Harns und deren Beziehung zur Ermüdung. *Biochem. Zeitschr.* 210(4/6): 393-402. 5 fig. 1929.—Healthy men 22-23 years old (3 strong and 2 weak) were obliged to (1) walk 15 km. with a 27-kgm. load in 3 hrs.; (2) walk 8 km. with the same load up a 7° incline; (3) creep on the earth with the same load for 10 min.; (4) proceed at 5 km. per hour (with same load) without rest until completely exhausted. Exhaustion was reached after 16.2-27 km. Blood cH, gaseous metabolism, state of the leucocytes, etc., were determined. After hard labor with heavy load the cH of the urine increased. In persons in good training the cH did not increase and sometimes diminished. The variation of the cH corresponded to the intensity of the work.—*H. Přibram.*

9937. RESNITSCHENKO, MICHAEL S. Über die absolute Menge der Wasserstoffionen im Harn beim Marsch und Laufen. *Biochem. Zeitschr.* 210(4/6): 403-

413. 6 fig. 1929.—A march of 10 km. with load increased the elimination of H-ions in the urine. In strong persons the elimination was first diminished and then increased. After short intense labor (running 500 and 700 m.) the H-ions in the urine increased. The variation of the H-ions in the urine corresponds to the character of the labor. The absolute quantity of the eliminated H-ions in the urine was dependent upon the degree of fatigue.—*H. Přibram.*

9938. RICHARDS, A. N., and ARTHUR M. WALKER. Quantitative studies of the glomerular elimination of phenol red and indigo carmine in frogs. *Jour. Biol. Chem.* 87(3): 479-498. 1930.—Following the subcutaneous injection of phenol red and indigo carmine into a frog, fluid was collected from a glomerular capsule and its dye content analyzed by placing it in a small glass capillary tube and comparing the visible color with that of standard dye solutions placed in capillaries of similar bore. The dye content of specimens of plasma taken during the course of a glomerular collection was similarly estimated. When the color is completely developed by preliminary alkalinization, and a proper background is used, it becomes easily possible, for example, to distinguish a solution containing 3 mgm. per 100 cc. from one containing 4 mgm. per 100 cc. by this method. 25 experiments were performed. When suitable precautions were observed (obstructing the proximal tubule with a blunt glass rod) to prevent contamination by tubular contents, the dye content of the glomerular fluid was found identical with that of an ultrafiltrate of the plasma from which it was derived; both glomerular fluid and ultrafiltrate containing less color than plasma by virtue of the adsorption of dye upon plasma proteins. The process of filtration was therefore held sufficient to explain the glomerular elimination of these dyes. In two subsequent papers of this series comparisons were made of the total molecular concentration (Barger's method) and electrical conductivity of glomerular fluid and plasma; in both instances these properties of glomerular fluid were also identical with those of an ultrafiltrate of plasma.—*A. M. Walker.*

9939. RIOCH, DAVID McK. Water diuresis. *Jour. Physiol.* 70(1): 45-52. 1930.—Large dogs (12-36 kgm.) in good condition were used, and their urine tested for albumin and casts. Blood samples (approximately 10 cc. each) were taken from the femoral artery or from the left heart. The urine was collected by catheterization, and the volume measured with an accuracy of 2%, care being taken to empty the bladder each time. One or more control experiments were run on each dog in exactly the same way as the experiments on diuresis, except that no fluid was given, and only 3 samples of blood were taken. Administration of isotonic saline solutions to 4 dogs perorally constantly gave a low delayed diuresis with slight concentration of the blood serum electrolytes, and considerable dilution of the total solids of the blood serum. Following administration of water perorally (10 experiments on 8 dogs), marked variations in reaction were found, especially in the degree of dilution of the total solids. The curve of diuresis, however, followed the changes of the electrolytes. There was a constant lag of 15-20 min. of the diuresis behind the changes of concentration of the electrolytes in the blood. The dilution of the electrolytic concentration of the blood was probably the responsible factor in instigating a water diuresis.

9940. ROST, F. Über Blasen- und Nierensteine im Tierversuch. *Arch. Klin. Chir.* 162(Kongressbericht): 701-708. 1930.—A discussion of methods, successful and unsuccessful, used by Rost and others to produce calculi in experimental animals.

9941. SALKIND, S. J., (with appendix by A. ANIKIN). Farbstoffausscheidung in den malpighischen Gefässen der Insektenlarven. *Zeitschr. Wiss. Biol. Abt. C., Zeitschr. Zellforsch. u. Mikrosk. Anat.* 10(1): 53-72. 11 fig. 1929.—*Chironomus* larvae were placed in solutions of basic dye stuffs (neutral red, toluidin-blue, and nile-blue sulphate) and acid dyes (trypan-blue, trypan-red, and indigo-carmin); the solutions were of .003%-.00075% in case of basic dyes, or .001%-.003% in case of acid dyes for 30-40 larvae. Larvae were removed from the solutions at times varying between 15 min. and 96 hrs., sectioned, and their malpighian tubules studied. In as short a time as 15 min. traces of neutral red could be found in the malpighian tubules. The intensity of the coloring was least at the distal end of the cells and greatest at the apical. At the end of 40 hrs. the cells were filled with fine colored granules except for a clear place in the middle of the cell. Taking up of dye by the malpighian cells did not appear to be a function of dye concentration after a certain threshold concentration of dye had been reached. Different dyes were taken up in different ways. Gentian violet appeared in the malpighian cells as odd shaped granules of considerable size, neutral red appeared as fine dots, toluidin-blue was generally inclosed in round vacuoles in which the dye was present on the edges. The granular inclusions of dye appeared to be not only dye, but also in part compounded from the cell proteins themselves. After the dye was taken into the cells lining the tubules it was first gathered up into vacuoles and then excreted into the canal lumen. The dyes in the canal were present in smaller particles than in the cells. Narcotized *Chironomus* larvae excreted dye granules in from 1 hr., 15 min. to 1 hr., 50 min.; unnarcotized animals in from 30-40 min. Low concentrations of chloretone increased the permeability of malpighian tubules to dye. This increase in permeability was reversible. Higher concentrations produced an irreversible change in permeability, followed by death. Mixtures of .2% and .3% chloretone with dyes were excreted normally. Mixtures of .4% and .6% were not excreted. *Corethra* larvae tolerated a greater concentration of dye than did *Chironomus*. Excretion of dyes was never observed in situ in the malpighian tubules of *Corethra*. Dyes were absorbed in the intestinal cells when injected. Malpighian tubules could be plasmotized. Experimental conditions similar to those of oliguria and polyuria could be produced in them. In the appendix A. ANIKIN defends his work on excretion of dyes in the rat kidney. He obtained marked tanning of the epithelial cells of 1 kidney, without any staining of the other. He also found no evidence of filtration of dye through the glomerulus.

9942. SATO, KAORU. Über den Wasser- und N-Haushalt der Gewebe nach Glukoseinfusion. II. Mitteilung. N-Haushalt der Gewebe nach Infusion hypertonischer Glukoselösung. *Tohoku Jour. Exp. Med.* 13(5/6): 553-567. 1929.—The intravenous injection of hypertonic solutions of glucose into male rabbits causes an excessive excretion of urea, parallel with an excess of N and P. The N is that of urea, ammonia, and creatinin. This condition was accompanied by the presence of a decreased amount of extractable N in the tissues without affecting the amount of their protein N. The leaching of extractable N not only concerns the nitrogenous products of metabolism but also in a higher degree those constituents precipitable by phosphotungstic acid. The increased excretion of P is also accompanied by a diminution of extractable P in the tissues.—*J. M. Johlin.*

9943. SATO, KUNIO. Further study on the real nature of vital staining. *Folia Anat. Japonica* 8(6): 391-400. 2 fig. 1930.—A further study to elucidate the real nature of vital staining gave the following results. If a rabbit is injected with KCl before vital staining, the epithelium of the renal tubules takes up more stain than does the epithelium of a normal rabbit. On the other hand, stain granules deposited in the epithelium readily escape when a vitally stained animal is subsequently injected with KCl. A reverse result follows treatment with $CaCl_2$. If trypan blue is injected with KCl, the animal excretes blue urine; red urine is discharged if the stain is injected with $CaCl_2$. The color of the excreted urine coincides with that of stain granules appearing in the epithelium after vital staining with trypan blue in combination with K or Ca. The author's interpretation of these results is that the renal

protein from the wall cells of the ampulla and of the proximal part of the glandular canal. The nephridial fluid contains uric acid, purin bases, ammonia, and chlorides; the last are excreted by the proximal parts of the nephridial canal, while the N-containing metabolic waste matter is excreted in the distal parts of the segmental organ. Urea and sugar are not present in the urine. Reaction of the nephridium contents was acid.

9930. PRIBRAM, HUGO. Über das Harnadialysat. *Biochem. Zeitschr.* 211(4/6): 412-419. 1929.—Human urine was dialyzed against water or N/10 H_2SO_4. The non-dialyzable residue contains a water insoluble precipitate and a water soluble fraction. Treatment of the latter with alcohol-ether gives a precipitate which can be purified to an ash content of 11%. The adialysate gives some protein reactions, causes miosis and sleep in rabbits. The effective dose was about the equivalent of 27 cc. urine per kgm. of rabbit, but was variable. The adialysate from urine in 2 cases of Bright's disease had these biological effects; that from another case with N retention did not. The effect of the adialysate from 2 cases of diabetes mellitus was less than normal. The adialysate of urine is a product of protein metabolism and is eliminated from the blood by the kidney (vide Pribram and Herrnheiser, Biochem. Zeitschr., 111: 30, 1920). It will be interesting to study the quantity and biological effects of the adialysates of urine in all diseases characterized by disturbance of protein metabolism.—*H. Pribram.*

9931. PÜTTER, AUGUST. Die Sekretionsmechanismen der Niere. 235p. 17 fig. Walter de Gruyter: Berlin, 1929. Pr. 17.50 M.—This work, an extension of the author's "Dreidrusentheorie der Harnbereitung," presents experimental evidence that the kidney is an aggregation of secretory mechanisms of different types, each of which elaborated in definite ratio a specific product and its characteristic attendant substance (Schleppersubstanz). The mechanism acts as a gland in accordance with the law of "all or none"; the composition of the elementary secretion is independent of the secretion rate. Analyses of many urines of man, rabbit, cat, sheep, ox, elephant and frog were made both under normal conditions and in water, salt and urea diuresis and subjected to statistical analysis to determine the types of secretory mechanisms and their products. He concludes that the mechanism for the secretion of purine bodies together with, and in definite ratio to, a polysaccharide is present in all vertebrates. Water "glands," the output of which can be measured by the concomitant hippuric acid (40 mgm./100 cc. H_2O) and colloidal chondroitin sulfuric acid (40 mgm./100 cc. H_2O) are apparently located in Bowman's capsule. Mechanisms for the secretion of Na, K and NH_3 together with a S-free, N-containing substance, urea which is accompanied by a colloidal, protein-like substance, and Cl together with a colloidal substance apparently identical with Salkowski's complex N-containing carbohydrate, are identified. In addition to those substances elaborated by the secretory mechanisms, urine contains material present by virtue of the action of purely physical processes and not due to energy expenditure by the kidney. Some of the urine urea (73 mgm./100 cc.), Cl, Na and K are thus accounted for. Uric acid and Ca "flooding out" are not detectable; creatinine "flooding out" is noted only in the rabbit. Studies of night and day human urine show that the water and salt glands are less active in the elaboration of night urine. There is a discussion and criticism of Cushny's theory of urine secretion, a chapter on gland physiology and one on methods and data.—*E. Pomerene.*

9932. QUAGLIARIELLO, G., e E. TRIA. L'equilibrio acido-basico nei cani in seguito al taglio dei vaghi. [Acid-base equilibrium in dogs following vagotomy.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1016-1019. 1930.—Vagotomy is not followed by marked alterations of the acid-base balance of blood, only a slight acidosis occurring, probably due to an increased blood CO_2 tension due to a diminished pulmonary ventilation. The bicarbonate content of blood diminished, as did the alkali reserve, the bicarbonate content of urine being on the contrary much increased. Ammonia is also much increased in urine of vagotomised dogs. A possible modifying action of vagotomy on the composition of urine is pointed out. —*M. Comel.*

9933. RABINOWITCH, I. M. The origin of urobilinogen: a clinical experiment. *Arch. Internal Med.* 46 (6): 1014-1017. 1930.—In a patient suffering acute abdominal pain excessive urobilinogen appeared in the urine while the blood bilirubin was normal. At operation a large ovarian cyst was found filled with sterile blood. That the mass of blood in the cyst was the source of the excessive urobilinogen appears obvious from the fact that in a specimen of urine obtained 12 hrs. after operation, i.e., after the removal of the mass of extravascular blood, the quantity of urobilinogen was normal. This appears to demonstrate that urobilinogen may not only be formed in the body outside the intestinal tract, but also in the absence of bacteria as reducing agents.

9934. RALESCU, C. GH. Consideratiuni asupra refluxului ureteral. [Considerations on the ureteral reflux.] *Rev. Med.-Chirurgicală din Iași.* 38(6): 539-553. 1927.—The bladder-kidney or bladder-ureteral reflux constitutes a syndrome determined by a free communication between the bladder and the superior urinary tract. This syndrome previously considered to be the result of various causes, congenital or acquired, presents always a fundamental character, physiological incompetence of the ureteral sphincter. As a result of numerous clinical observations, verified through cystoscopy, and some through radiography (cystography, pyelography), I consider this syndrome to appear frequently during vesical or renal affections, of widely various pathogeny. All the pathogenic causes, usually believed to determine it (mechanical, inflammatory, nervous), can be reduced to a single essential factor, microbic infection, which determines by the direct action of the microorganisms, or their toxins, the paresis of the ureteral sphincter.—*C. Gh. Ralescu.*

9935. REID, W. L. The effect of intravenous injections of distilled water on the kidney. *Amer. Jour. Physiol.* 90(1): 168-171. 10 fig. 1929.—Injection of 0.5-1 c.c. dist. H_2O per kgm. produced marked but brief decrease in renal volume. The norm was regained in 1 to 2 min. Bl. press. was not affected. The decrease in vol. was due to the osmotic effect of dist. H_2O. The action is specific for the kidney and the mechanism is peripheral for similar results were obtained on denervated kidneys. Dist. H_2O caused specific vasoconstriction of renal vessels due to periph. stim. Inj. of laked bl. made hypertonic with NaCl had the same effect as dist. H_2O. Cells and plasma of normal bl. were separated and treated with dist. H_2O and injected, after being made hypertonic with NaCl. Injection of plasma gave no decrease in vol. Injection of cells produced a marked decrease. R. concludes that decrease in volume is due to some substance produced by distilled H_2O injuring the erythrocytes and which causes specific vasoconstriction of renal vessels.—*M. R. Freeland.*

9936. RESNITSCHENKO, MICHAEL S. Die aktuelle Reaktion des Harns und deren Beziehung zur Ermüdung. *Biochem. Zeitschr.* 210(4/6): 393-402. 5 fig. 1929.—Healthy men 22-23 years old (3 strong and 2 weak) were obliged to (1) walk 15 km. with a 27-kgm. load in 3 hrs.; (2) walk 8 km. with the same load up a 7° incline; (3) creep on the earth with the same load for 10 min.; (4) proceed at 5 km. per hour (with same load) without rest until completely exhausted. Exhaustion was reached after 16.2-27 km. Blood cH, gaseous metabolism, state of the leucocytes, etc., were determined. After hard labor with heavy load the cH of the urine increased. In persons in good training the cH did not increase and sometimes diminished. The variation of the cH corresponded to the intensity of the work.—*H. Přibram.*

9937. RESNITSCHENKO, MICHAEL S. Über die absolute Menge der Wasserstoffionen im Harn beim Marsch und Laufen. *Biochem. Zeitschr.* 210(4/6): 403-

413. 6 fig. 1929.—A march of 10 km. with load increased the elimination of H-ions in the urine. In strong persons the elimination was first diminished and then increased. After short intense labor (running 500 and 700 m.) the H-ions in the urine increased. The variation of the H-ions in the urine corresponds to the character of the labor. The absolute quantity of the eliminated H-ions in the urine was dependent upon the degree of fatigue.—*H. Přibram.*

9938. RICHARDS, A. N., and ARTHUR M. WALKER. Quantitative studies of the glomerular elimination of phenol red and indigo carmine in frogs. *Jour. Biol. Chem.* 87(3): 479-498. 1930.—Following the subcutaneous injection of phenol red and indigo carmine into a frog, fluid was collected from a glomerular capsule and its dye content analyzed by placing it in a small glass capillary tube and comparing the visible color with that of standard dye solutions placed in capillaries of similar bore. The dye content of specimens of plasma taken during the course of a glomerular collection was similarly estimated. When the color is completely developed by preliminary alkalinization, and a proper background is used, it becomes easily possible, for example, to distinguish a solution containing 3 mgm. per 100 cc. from one containing 4 mgm. per 100 cc. by this method. 25 experiments were performed. When suitable precautions were observed (obstructing the proximal tubule with a blunt glass rod) to prevent contamination by tubular contents, the dye content of the glomerular fluid was found identical with that of an ultrafiltrate of the plasma from which it was derived; both glomerular fluid and ultrafiltrate containing less color than plasma by virtue of the adsorption of dye upon plasma proteins. The process of filtration was therefore held sufficient to explain the glomerular elimination of these dyes. In two subsequent papers of this series comparisons were made of the total molecular concentration (Barger's method) and electrical conductivity of glomerular fluid and plasma; in both instances these properties of glomerular fluid were also identical with those of an ultrafiltrate of plasma.—*A. M. Walker.*

9939. RIOCH, DAVID McK. Water diuresis. *Jour. Physiol.* 70(1): 45-52. 1930.—Large dogs (12-36 kgm.) in good condition were used, and their urine tested for albumin and casts. Blood samples (approximately 10 cc. each) were taken from the femoral artery or from the left heart. The urine was collected by catheterization, and the volume measured with an accuracy of 2%, care being taken to empty the bladder each time. One or more control experiments were run on each dog in exactly the same way as the experiments on diuresis, except that no fluid was given, and only 3 samples of blood were taken. Administration of isotonic saline solutions to 4 dogs perorally constantly gave a low delayed diuresis with slight concentration of the blood serum electrolytes, and considerable dilution of the total solids of the blood serum. Following administration of water perorally (10 experiments on 8 dogs), marked variations in reaction were found, especially in the degree of dilution of the total solids. The curve of diuresis, however, followed the changes of the electrolytes. There was a constant lag of 15-20 min. of the diuresis behind the changes of concentration of the electrolytes in the blood. The dilution of the electrolytic concentration of the blood was probably the responsible factor in instigating a water diuresis.

9940. ROST, F. Über Blasen- und Nierensteine im Tierversuch. *Arch. Klin. Chir.* 162(Kongressbericht): 701-708. 1930.—A discussion of methods, successful and unsuccessful, used by Rost and others to produce calculi in experimental animals.

9941. SALKIND, S. J., (with appendix by A. ANIKIN). Farbstoffausscheidung in den malpighischen Gefässen der Insektenlarven. *Zeitschr. Wiss. Biol. Abt. C., Zeitschr. Zellforsch. u. Mikrosk. Anat.* 10(1): 53-72. 11 fig. 1929.—*Chironomus* larvae were placed in solutions of basic dye stuffs (neutral red, toluidin-blue, and nile-blue sulphate) and acid dyes (trypan-blue, trypan-red, and indigo-carmin); the solutions were of .003%-.00075% in case of basic dyes, or .001%-.003% in case of acid dyes for 30-40 larvae. Larvae were removed from the solutions at times varying between 15 min. and 96 hrs., sectioned, and their malpighian tubules studied. In as short a time as 15 min. traces of neutral red could be found in the malpighian tubules. The intensity of the coloring was least at the distal end of the cells and greatest at the apical. At the end of 40 hrs. the cells were filled with fine colored granules except for a clear place in the middle of the cell. Taking up of dye by the malpighian cells did not appear to be a function of dye concentration after a certain threshold concentration of dye had been reached. Different dyes were taken up in different ways. Gentian violet appeared in the malpighian cells as odd shaped granules of considerable size, neutral red appeared as fine dots, toluidin-blue was generally inclosed in round vacuoles in which the dye was present on the edges. The granular inclusions of dye appeared to be not only dye, but also in part compounded from the cell proteins themselves. After the dye was taken into the cells lining the tubules it was first gathered up into vacuoles and then excreted into the canal lumen. The dyes in the canal were present in smaller particles than in the cells. Narcotized *Chironomus* larvae excreted dye granules in from 1 hr., 15 min. to 1 hr., 50 min.; unnarcotized animals in from 30-40 min. Low concentrations of chloretone increased the permeability of malpighian tubules to dye. This increase in permeability was reversible. Higher concentrations produced an irreversible change in permeability, followed by death. Mixtures of .2% and .3% chloretone with dyes were excreted normally. Mixtures of .4% and .6% were not excreted. *Corethra* larvae tolerated a greater concentration of dye than did *Chironomus*. Excretion of dyes was never observed in situ in the malpighian tubules of *Corethra*. Dyes were absorbed in the intestinal cells when injected. Malpighian tubules could be plasmotized. Experimental conditions similar to those of oliguria and polyuria could be produced in them. In the appendix A. ANIKIN defends his work on excretion of dyes in the rat kidney. He obtained marked tanning of the epithelial cells of 1 kidney, without any staining of the other. He also found no evidence of filtration of dye through the glomerulus.

9942. SATO, KAORU. Über den Wasser- und N-Haushalt der Gewebe nach Glukoseinfusion. II. Mitteilung. N-Haushalt der Gewebe nach Infusion hypertonischer Glukoselösung. *Tohoku Jour. Exp. Med.* 13(5/6): 553-567. 1929.—The intravenous injection of hypertonic solutions of glucose into male rabbits causes an excessive excretion of urea, parallel with an excess of N and P. The N is that of urea, ammonia, and creatinin. This condition was accompanied by the presence of a decreased amount of extractable N in the tissues without affecting the amount of their protein N. The leaching of extractable N not only concerns the nitrogenous products of metabolism but also in a higher degree those constituents precipitable by phosphotungstic acid. The increased excretion of P is also accompanied by a diminution of extractable P in the tissues.—*J. M. Johlin.*

9943. SATO, KUNIO. Further study on the real nature of vital staining. *Folia Anat. Japonica* 8(6): 391-400. 2 fig. 1930.—A further study to elucidate the real nature of vital staining gave the following results. If a rabbit is injected with KCl before vital staining, the epithelium of the renal tubules takes up more stain than does the epithelium of a normal rabbit. On the other hand, stain granules deposited in the epithelium readily escape when a vitally stained animal is subsequently injected with KCl. A reverse result follows treatment with $CaCl_2$. If trypan blue is injected with KCl, the animal excretes blue urine; red urine is discharged if the stain is injected with $CaCl_2$. The color of the excreted urine coincides with that of stain granules appearing in the epithelium after vital staining with trypan blue in combination with K or Ca. The author's interpretation of these results is that the renal

cells loosened by K allow the less diffusible blue substance in trypan blue to pass through the cell bodies as readily as the highly diffusible red one, so that both are discharged in a large quantity and the color of urine becomes blue. At the same time, much storage of stain takes place in the epithelium. Reverse results occur if the cells are condensed by Ca. The author maintains that the agglutinative deposition of the stain in the living cell depends upon the intracellular concentration of the stain molecules and, in turn, on the permeability of the cell.—*Author (courtesy Wistar Bibl. Serv.)*.

9944. SCHERSTÉN, BERTIL. Kommt Zitronensäure im Menschenschweiss vor? *Skand. Arch. Physiol.* 59 (3/4) : 92-97. 1 fig. 1930.—Ten attempts have been made to determine by Thunberg's method the concentration of citric acid in human sweat collected in warm dry air. The smallest concentration which can be determined by the method under the conditions imposed is 5 mgm. per liter. In no sweat has the citric acid content reached this value. The citric acid content of the sweat probably amounts to only 1 to 2 mgm. per liter. The action of NaCl upon the citricodehydrogenase was studied; in 0.1 molar NaCl solution the activity of the enzyme is reduced about 10%. Urea and uric acid do not affect the enzyme. The significant negative result is of special interest in view of the abundance of citric acid in human urine.—*Author's summary (transl. by H. L. White)*.

9945. SCHMIDT, CARL F., and J. M. HAYMAN, Jr. A note upon lymph formation in the dog's kidney and the effect of certain diuretics upon it. *Amer. Jour. Physiol.* 91 (1) : 157-160. 1929.—In 6 experiments on dogs with sulphate diuresis the results showed loss of renal fluid unaccounted for by the urine. In 9 experiments on dogs measurement of urine, blood and lymph flow from the left kidney (the other abdominal viscera having been removed or tied off) showed that diuretics uniformly increased lymph flow along with increase in urine and blood flow. Additional injection experiments with diffusible dye confirmed the conclusion that fluid can leave the blood within the kidney to enter lymphatics as well as ureter, and that escape through both channels is augmented by the same agents, i.e., by diuretics.

9946. SHINOBU, CHIKARA. On the reaction of the skin capillaries of the palm and the dorsal region of the hand to mental and thermal causes. [In Japanese, with English summary, p. 15.] *Jour. Oriental Med.* 14 (2) : 1931.—Experiments on 7 young men and 1 young woman showed that sweating due to mental stress is restricted to the palm of the hand, the sole of the feet, and the armpit, while an increase in the surrounding temp. provokes sweating over all the rest of the body surface, thus dividing the surface of the body into 2 areas. Mental arithmetic performed for 5-10 min. produced dilatation of the skin capillaries of the palm, but did not affect the capillaries of the back of the hand. Immersion of a foot or of one hand in cold water (4° C.) for 20-30 min. produced in the other limb initial hyperemia, followed by constriction (4-5 min. in the palm, about 30 min. in the dorsal region) and later dilatation, with gradual fall of temp. on both sides of the hand, interrupted in the palm by a transitory tendency to rise about 10 min. after beginning of cooling. Application of heat (hand or foot placed in water at 46° C. for 20-30 min.) produced dilatation of skin vessels of dorsum and palm, followed in the palm by constriction and congestion, temp. rising in proportion to dilatation, i.e., continuously during application of heat on the dorsum, but transitorily, with later fall, in the palm. Shinobu concludes that the reaction of the skin vessels to different causal agents varies in different parts of the body surface. Whenever a part of the skin is made to perspire, there is an arterial congestion. This is the case in the palm during mental stress, and in the dorsal region of the hand during the application of heat. Therefore, the above classification of the body surface with regard to its ability to perspire may probably be applied also to the reaction of the skin vessels.

9947. SMITH, HOMER W. (with the assistance of NICHOLAS FARINACCI and ANNE BREITWEISER). The absorption and excretion of water and salts by marine teleosts. *Amer. Jour. Physiol.* 93 (2) : 480-505. 1930.—It is shown that marine teleosts swallow relatively large quantities of sea water which subsequently undergoes absorption. Most of the ingested water, Na, K and Cl are absorbed from the intestine, leaving a residue rich in Mg and SO_4 and approximately isotonic with the blood. The salts of the urine consist primarily of Mg and SO_4, with only traces of K and small quantities of Na and Cl, the solution being isotonic or hypertonic to the blood. It is shown that the intestinal Mg and SO_4 come from ingested sea water, and that the urinary Mg and SO_4 come from alimentary absorption of these substances. Quantitative analysis of the composition of the ingested sea water, the intestinal residue and the urine lead to the following conclusions: 1) The osmotically dilute nature of the intestinal residue and urine elaborated from sea water shows that the marine fish is doing osmotic work at some point other than in the kidneys and gastro-intestinal tract. 2) The fact that Mg and SO_4 occur in greater concentrations in both the intestinal residue and the urine than in the ingested sea water from which these fluids are derived shows that part of the water absorbed from the alimentary tract is excreted by some route other than the kidneys. The fact that relatively more Na, K and Cl are absorbed from the alimentary tract than Mg and SO_4, while less Na, K and Cl are excreted in the urine than Mg and SO_4 shows that a large part of the absorbed NaCl and KCl is being excreted by some route other than the kidneys. By considering these 3 processes as identified with a single process, it is inferred that the marine fish excretes by some extrarenal route a solution of NaCl and KCl which is hypertonic to the ingested sea water and thus leaves part of the absorbed water free for the formation of the osmotically dilute urine and intestinal residue. The extrarenal excretion of water is demonstrated in *Anguilla* and *Myoxocephalus* by the addition of phenol red to sea water and the quantitative, simultaneous determination of the quantity of water ingested and the quantity of urine excreted in a given time. The extrarenal excretion of salts is demonstrated in the catadromous eel, *Anguilla*, when kept in fresh water. The greater part of the NaCl and KCl absorbed from the alimentary tract is excreted by the extrarenal route, while essentially all the Ca, Mg, SO_4 and PO_4 are excreted by the kidneys. In the absence of other salts, SO_4 takes Na into the urine with it, and Mg and Ca take Cl. Reasons are given for believing that the extrarenal excretion of salts and water and the extrarenal performance of osmotic work are attributable to the gills. The water for the formation of urine in fresh water fish is not absorbed from the stomach or intestine, but probably from the oral membranes. The water cycle in marine fish is of such a nature as to reduce the quantity of water excreted as urine to a small fraction of that excreted in fresh water fish. It is suggested that this relative anuria is the principal causative factor in an evident tendency for the glomeruli to disappear in the kidneys of strictly marine teleosts.—*Author's summary*.

9948. SNAPPER, I., en A. GRÜNBAUM. Melkzuuruitscheiding in de urine en in het zweet bij verschillende soorten sport. [Lactic acid excretion in urine and sweat during various sports.] *Nederlandsch Tijdschr. Geneesk.* 73 (11) : 1358-1365. 1929.—During heavy sports (football, rowing, running) lactic acid, formed in the muscles, is chiefly excreted with the sweat. During a football match (duration 2¾ hrs.) amounts of 1-2 gm. lactic acid are excreted through the skin. Runners attain a steady state in about 9 min. Swimmers and waterpolo players did not attain the steady state within 15-20 min. Albuminuria is rare at the end of the match, except after swimming in which case it is frequent. Glycosuria after a match is rare.—*J. W. Langelaan*.

9949. SPADAFINA, LUIGI. Ricerche sperimentali sulla ipertrofia del rene in seguito a nefrectomia

unilaterale e incapsulamento artificiale del rene residuo. [Experimental studies on the renal hypertrophy following unilateral nephrectomy and encapsulation of the residual kidney.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 369-371. 1930.—Unilateral nephrectomy preceded by encapsulation of the heterolateral kidney with gauze is followed by a compensatory hypertrophy of the latter, which involves all its tissues. The hypertrophied cortex grows outside the gauze, through its holes. Round the encapsulated kidney a new connective tissue capsule is formed, which does not interfere with further hypertrophy.—*M. Comel.*

9950. SPADAFINA, L., e A. FRIGGIANI. Sugli effetti che ha l'estirpazione del plesso celiaco nella ipertrofia renale da nefrectomia. [The effects of extirpation of the celiac plexus on renal hypertrophy following nephrectomy.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 371-374. 1930.—Extirpation of the celiac plexus, executed simultaneously with unilateral nephrectomy in rabbits, does not modify the compensatory renal hypertrophy following the latter.—*M. Comel.*

9951. SPERANZA, UMBERTO. Su di un semplice metodo di calcolo per determinare il quantitativo di urea che dovrebbe venire escreta per una cifra data dell'azoto residuo nel sangue. [A simple method of determining the quantity of urea which ought to be excreted for a given figure of the residual nitrogen in the blood.] *Policlinico* [*Sez. Med.*] 37(12): 557-561. 1930.

9952. STEFFANUTTI, PIETRO. Der Verlauf der Entmischung von Farbstoffgemischen durch die gesunde und die vergiftete Niere. *Pflüger's Arch. Ges. Physiol.* 226(1): 148-163. 1930.—Diffusible dyes are excreted by the perfused frog's kidney, either by the glomeruli or by the tubular epithelium; in the latter case they are concentrated, in the former they are not (Höber). In intact frogs and rabbits the author finds essentially the same differences: Phenol Red (a "tubule dye") was excreted more rapidly and in much higher concentration than Cyanol (a "glomerular dye") following intravenous injection of a mixture of the two in equal concentration. Mixtures of other "tubule" and "glomerular" dyes behaved similarly, excepting lipid-soluble "tubule" stains (Orange R, Neutral Red), which, while concentrated by the perfused frog kidney, did not appear at all in the urine of the intact frog and were excreted only in traces by the intact rabbit; this discrepancy is attributed to taking up of such substances by other tissues. When two "glomerular" dyes were injected (Acid Fuchsin and Cyanol) both were excreted in approximately equal concentration. Parallel experiments on frogs and rabbits poisoned with uranium nitrate showed that "tubule" dyes are excreted more slowly and in lower concentration than in normals, while lipid-soluble "tubule" dyes or mixtures of "glomerular" dyes show no differences from the normal. The functional capacity of the renal tubules is therefore manifested in more rapid excretion and higher concentration of "tubule" dye than of "glomerular" dye, when both are injected simultaneously.—*C. F. Schmidt.*

9953. STEPPUHN, O., und A. TIMOFEJEWA, (unter Mitarbeit von N. NAUMOWA). Neue Vorstellungen in der Ketonkörperfrage. Bedeutung lokaler Säuerungsherde für den intracellulären Proteinumsatz. *Zeitschr. Ges. Exp. Med.* 74(3/4): 467-481. 1930.—The appearance of local centers of acidification on protein particles (surface of contact between protein and plasma) must have a decisive significance for the initiation of proteinolysis by pepsinase (kathepsin). This is demonstrated in experiments on a model. The ketonic compounds which are formed automatically in glycogen depletion in the liver are certainly not to be considered as intermediate stages of a fat-carbohydrate metamorphosis for it is shown by direct experiments that addition of fatty acid never results in increase of glycogen. The substitution of lost glycogen by protein-carbohydrate metamorphosis is a physiological process and the formation of ketonic compounds is to be interpreted as a process physiological in its quality and pathological only when excessive. This metamorphosis goes on in the liver which is an accumulator for protein. The protein-carbohydrate metamorphosis which necessarily accompanies glycogen depletion may perhaps be caused by accumulation of "fermentcapital"; i.e., amount of enzyme plus specific activators (zoökinase). But the appearance of local centers of acidification as affording conditions for the action of pepsinases may be of importance. At the very moment of protein-carbohydrate metamorphosis we notice the appearance of sometimes enormous amounts of acids (β-oxy-butyric acid and acetoacetic acid). The origin of these acids in the liver under determined conditions of glycogen decrease is not comparable to any other production of acids. The contraction of muscle is caused, in spite of probable appearance of other acids, only at the expense of the lactacidogenic acid; in the same way perhaps the protein-carbohydrate metamorphosis is incited specifically by the ketonic acids under certain determined conditions. We formulate the probable scheme as follows: a) Glycogen decrease of the liver (from any cause). b) Immigration of fat from the periphery into the liver and formation of ketonic compounds. c) Flaring up of local centers of acidification at certain reserve protein particles. d) Increase of proteinolysis by enzymes acting around acid centers. e_1) Formation of carbohydrate from protein debris to replace lost glycogen. e_2) Emigration of the ketonic compounds to places of excretion.—*Authors' summary (transl. by J. F. Wiedemann).*

9954. TALBERT, G. A., A. K. SAIKI, R. C. CARPENTER, J. BERGMEYER, H. STAFF, C. BORMAN, and D. FREEMAN. Simultaneous study of the constituents of the sweat, urine and blood, also gastric acidity and other manifestations resulting from sweating. VIII. Blood changes. *Amer. Jour. Physiol.* 97(3): 426-431. 1931.—Profuse sweating was provoked by moist heat (temp. 40-42 C.) generated by electric current, the subject being seated, 20-50 min. at a time, in the sweat cabinet with the head only protruding and arms and torso completely enclosed in a rather thick rubber dam jacket belted around the waist. The 54 subjects reported 3 times a wk., at 6:30, 8 and 10 o'clock respectively. There was a fairly good correlation between rise in body temp. and increase in blood concentration; in only 36 out of 320 experiments was there no concentration. Under the given conditions there was a fairly uniform decrease in CO_2 combining power (160 out of 212 experiments) and rise in blood pH (110 out of 134 observations). Further evidence is offered that the rise of body temp. provokes greater ventilation and thereby increases the blood pH.

9955. TANNENBERG, JOS., und WINTER. Experimentelle Nierenuntersuchungen. I. Beobachtungen bei der Injektion von Trypanblau in den Glomerulusraum der lebenden Froschniere. *Frankfurter Zeitschr. Path.* 37(1/2): 1-17. 6 fig. 1929.—Trypan blue, 1% in Ringer's solution was injected into the glomerular capsules of frogs and the tubular epithelium studied 5 min. to 48 hrs. later. Forty eight hrs. after injection dye granules were seen in the tubule cells; earlier there were no granules but a diffuse coloring. Intermittence of glomerular capillary flow was observed.—*H. L. White.*

9956. TRUC, EUGÈNE. Contribution à l'étude de l'histophysiologie du rein. Elimination rénale des substances fluorescentes; épreuve fluoroscopique.—Appareil de Golgi de la cellule rénale; ses variations morphologiques dans la sécrétion rénale.—Élimination rénale des sels de plomb et de fer. *Arch. Malad. Rein. et Org. Genito-Urin.* 5(1): 1-48. 1 pl. (col.), 2 fig. 1930.—In normal human subjects 30-50 yrs. old (number not stated) the elimination of trypaflavin, determined by fluoroscopy, began 5-15 min. after intravenous injection, and continued, decreasing after 30-60 min., up to 48 hrs. In cats and guinea pigs (number not stated) injected with neutral red and killed 3 hrs. later, the kidney treated by Cajal's method was found secreting and the Golgi apparatus of the renal cell appeared granular. In other animals, examined when the kidney

was not secreting, the Golgi apparatus was granular. Hence there appears to be a morphologic variation in the renal Golgi apparatus according to the secretory phase of the kidney. Salts of Fe and Pb, administered to cats and guinea pigs, were found to occupy first a basal, then an apical situation in the cells of the convoluted tubules, finally filtering by dialysis into the lumina of the tubules.

9957. **VOIT, K. Beitrag zur quantitativen Eiweissbestimmung im Harn.** *Zeitschr. Ges. Exp. Med.* 72(5/6): 760-761. 1930.—Scherer's method and determination of coagulable N gave closely corresponding values in 2 cases of nephrosis and 1 of glomerulonephritis.

9958. **WALKER, ARTHUR M. Comparisons of total molecular concentration of glomerular urine and blood plasma from the frog and from Necturus.** *Jour. Biol. Chem.* 87(3): 499-522. 1930.—A study has been made of Barger's microscopic method of estimating molecular weights as used by White in comparing the total molecular concentrations of glomerular urine and blood plasma from *Necturus*. White's belief in its usefulness for this purpose was confirmed. In 25 comparisons of glomerular urine and blood plasma from frogs, the total molecular concentrations of the 2 fluids were found to be the same within the limits of permissible experimental error. In 8 experiments in which differences in concentration were greater than could be ascribed to permissible error, the differences were not consistently in one direction and in all but one could be attributed to identified flaws in experimental technique. In 6 experiments, phenol red was injected and its concentration in the 2 fluids also determined; in 7 others electrical conductivity was also measured. The results of these additional estimations agreed well in showing that glomerular urine has the composition of a protein-free filtrate from plasma. Twelve similar comparisons were made of the total molecular concentrations of glomerular urine and blood plasma from *Necturus maculosus*. The results were like those on the frog. In 4 instances they were supported by the concordant results of electrical conductivity measurements. The outcome of these experiments conflicts with that of 12 experiments made by White on *Necturus* which seemed to show that the glomerular urine is more concentrated than the plasma from which it is derived. Our experience suggests that it easy to underestimate the importance of dangers of evaporation.—*Author's summary.*

9959. **WATZADSE, GIORGY. Über die Harnbildung in der Froschniere. XIV. Über die Bedeutung der Aminosäuren für die Nierentätigkeit.** *Pflüger's Arch. Ges. Physiol.* 219(5/6): 694-705. 1928.—Absence of glycine from perfusion fluids decreases the arterial blood flow through the frog kidney, and may stop it entirely. This causes cessation of production of urine, which often fails to start again after renal circulation has been reestablished by addition of glycine to the perfusate. Glomerular function appears to be affected by lack of glycine directly as well as indirectly through the circulation. This is inexplicable on a filtration theory. The chloride-content of urine is increased by glycine in the perfusate. Glycine also influences the vessels of the frog intestine and liver, but has no effect on the vessels of the limbs. Other amino-acids and some amido compounds have an effect similar to glycine.—*W. R. Fearon.*

9960. **WIGGLESWORTH, V. B. Excretion of uric acid.** *Nature [London]* 128(3220): 116. 1931.—A study of the excretory system of the blood-sucking bug *Rhodnius prolixus* leads to the formulation of a theory that the upper parts of the 4 Malpighian tubes secrete a solution of acid urates from the blood into the lumen, and that in the lower parts water and base are reabsorbed, leading to a precipitation of the insoluble uric acid. Thus there is continuous circulation of water and of base.

9961. **WINTON, F. R. The influence of increase of ureter pressure on the isolated mammalian kidney.** *Jour. Physiol.* 71(4): 381-390. 1931.—The influence of increase of ureter pressure has been studied by comparing its effects on 1 kidney with those of a decrease in arterial pressure of a 2nd kidney, in experiments in which both kidneys were isolated and perfused with defibrinated blood from the same heart-lung circulation, and in which both secreted urine of approximately the same composition and at the same rate under the same initial conditions. When the rates of urine flow are thus reduced equally in the 2 kidneys, the changes in the urea and chloride contents of the urines are also equal. No regular change in the blood flow through the isolated kidney was detected as a result of increase of the ureter pressure up to a value (e.g., 20 mm. Hg) which almost abolished the flow of urine. It is inferred that an increase of ureter pressure increases the pressure of the fluid in Bowman's capsule, and so retards the rate of production of the intra-capsular fluid. No direct influence on the activity of the tubular epithelium has been detected. The applications of this hypothesis to the measurement of changes in the glomerular pressure, the permeability of the glomerular membrane, and the effective osmotic pressure of the plasma proteins, are indicated.—*Author's summary.*

ANIMAL PHYSIOLOGY

REPRODUCTION AND LACTATION

OSCAR RIDDLE, *Editor*

(See also in 6(3): Entries 6121, 6134, 6179, 6828, 6891, 6898, 6930, 7109, 7123, 7175, 7276, 7367, 7864, 7870, 7871, 7890, 8236, 8295, 8296, 8297, 8298, 8306, 8384, 8394, 8562; and in this issue 9152, 9418, 9480, 9486, 9519, 9522, 9524, 9545, 9567, 9594, 9665, 9714, 9817, 9819, 9821, 9825, 9828, 9831, 9833, 9839, 9841, 9847, 9849, 9852, 9853, 9854, 9885, 9895, 10010, 10174, 10231, 10304, 10386, 10564)

9962. **ALBANESE, ANDREA. Sull'esistenza, sull'origine e sul significato del cosidetto colloide luteinico. [The existence, origin and meaning of the so called lutein colloid.]** *Arch. Ist. Biochim. Ital.* 2(2): 269-280. 4 fig. 1930.—The rubin-red coloration method is not a specific one for colloid substance. The presence of the so-called colloid substance is not sufficient to declare the presence of a gravidic corpus luteum. Such colloid is present in the menstrual as well as in the gravidic [illegible] as luteum, and is but a substance derived by transduration of blood; such a transformation follows the hand [illegible]e phenomena which accompany the atrophy of above cited luteum itself.—*M. Comel.*

MAGIÀ, M. Sulle cause che determinano il its ability [illegible] the reaction [illegible]arto. [The causes which precipitate labor.]

9947. **SMI**[illegible]32(3): 129-135; (4): 203-213. 1930.—Autolyzed fetal substance produced in pregnant guinea pigs near term abortion or premature labor; repeated injections into non-pregnant animals produced changes in the hypophysis characteristic of pregnancy. The serum of parturient guinea pigs, injected into other pregnant guinea pigs near term, produced abortion or premature labor; added to Ringer's fluid in which a pregnant guinea pig uterus was suspended, it produced contractions, but it had no effect on the virgin uterus so suspended. The serum of animals injected with autolyzed homologous fetal substance acquired the same ecbolic property as the serum of parturient ♀♀. Almagià concludes that labor is induced by a substance which toward the end of pregnancy passes from the fetal to the maternal circulation, stimulating contractions.

9964. **BAKER, JOHN R. The stimulation of sperma-**

tozoa by drugs. *Nature [London]* 127(3210): 708. 1931.—Experiments on the chemical stimulation of the sperm of the guinea pig indicate marked stimulation by strychnine hydrochloride at 1/64% with equal stimulation by brucine hydrochloride at 1/16%. Chloral hydrate at 1/16% had far less stimulating value.

9965. **BECKER, R. B., and P. C. McGILLIARD.** Measuring the influence of hormone and mechanical stimulation by means of a non-fecund lactation. *Jour. Dairy Sci.* 12(5): 372-379. 2 fig. 1930.—Comparing lactation curves of 3 normal and 1 non-fecund lactation by a Holstein-Friesian cow, and from literature review, it was concluded that maximum daily milk yield was attained later in lactation, rate of decline in milk flow was less rapid, and persistency of production was not affected in non-fecund milk production. When induced by mechanical stimulation alone, maximum daily milk yield was 20-30% of that observed in lactations following normal reproduction.—*R. B. Becker.*

9966. **BENAZZI, MARIO.** Contributo alla istofisiologia dell'utero di mammiferi con particolare riguardo alla conoscenza delle cellule pigmentate. [Histophysiology of the mammalian uterus, particularly the pigmented cells.] *Arch. Ital. Anat. e Embriol.* 28(2): 163-210. 1930.—Benazzi had previously called attention to peculiar accumulations of interstitial cells rich in a yellowish pigment in the uterine connective tissue of mice, especially in the mesometrial region. This study is on the origin of these pigmented cells and the relation of the phenomenon to the pigment reported by others as formed in connection with estrus. Benazzi found these pigmented cells in ♀ mice at all stages of the sexual cycle, in bilaterally castrated ♀♀ and in ♀♀ which had ceased to present estrus. In the virgin ♀♀ of 2 litters of laboratory bred mice, killed and examined at various stages of the sexual cycle, however, the yellowish cells were found only in insignificant numbers; nor were any accumulations of yellow cells found in 2 primiparous mice killed during gestation, or in a primiparous mouse killed 24 hrs. after delivery. In 5 mice killed 3½ to 50 days after delivery pigmented cells and extracellular pigment were found. The formation of pigment is therefore ascribed to the lysis of blood cells from postpartum hemorrhages; the frequency of the occurrence, to the long persistence of the pigment. Thus, pigment found in a gravid uterus is explained by a previous parturition. The fact that the yellow pigment was not found in any quantity during estrus is accounted for by the infrequence of uterine bleeding in the mouse during heat. In guinea pigs, dogs and cats pigmented cells were not found regularly.

9967. **BICKEL, L.** Über die experimentelle Beeinflussung des Endothelsymptoms bei Frauen. *Zentralbl. Gynäkol.* 55(14): 1250-1257. 1931.—Rumpel-Leede's phenomenon has been found to occur during the last premenstrual days, the climacterium, and in ovarian dysfunction. Using 3 min. congestion at 20 mm. Hg above the diastolic pressure, the effect of drugs was tested on 174 women, results on 148 being reported. Using ovarian hormones (120 experiments "Unden," Hogival, "Progynon") doses of 100, 200, and 300 mouse units were given on 3 successive days perorally (superior to parenteral) and the test read on the 4th. Blood points up to 5 were considered negative, 5-15 weakly positive, 15-30 positive, 30-100 double positive, 100-200 triple positive, 200 and more 4-positive; only when positives had been present could the hormone be said to have suppressed it. Of 60 patients in the climacterium 8 showed no decrease, 28 a distinct decrease and 24 disappearance of the reaction. In 24 with anomalies of flow, 600 mouse units had no effect in 6, reduced the reaction in 3, and suppressed it in 15. In 13 patients, gynecologically healthy, 9 were unaffected; in 3 the reaction was decreased, and in 1 erased (carcinoma of the vagina with pronounced acro-asphyxia). Cases have been observed where a pronounced reaction disappeared spontaneously after a few days. Thyroxine produced no change in 6 of 9 cases, in 1 the endothelial permeability was made normal. After large doses of bromural for 3 days the reaction was erased in 6, reduced in 4. In 9 women the reaction was erased in 1, reduced in the others by 2 gm. cholesterol in 40-60 gm. oil on each of 3 days. Oil alone reduced it in 2 women, did not affect it in 2 others. In 4 cases 6 gm. cholesterol in 60 gm. oil was given and the reaction tested at the end of 4 hrs.; in 3 patients it had disappeared, in 1 been reduced. It would appear that the sexual hormone acts by way of the blood cholesterol.

9968. **BISSONNETTE, THOMAS HUME.** Studies on the sexual cycle in birds. IV. Experimental modification of the sexual cycle in males of the European starling (Sturnus vulgaris) by changes in the daily period of illumination and of muscular work. *Jour. Exp. Zool.* 58(1): 281-319. 3 pl. 1930.—In male starlings between December and May prolonging daily light rations increased the spermatogenic activity in testes, unless at complete spermatogenesis, whether this condition had resulted from previous experimental treatment or naturally without it. Shortening light rations caused regression in testes not already at minimal activity. Relative, not absolute, light ration at any time appears to condition the direction of reaction of germ cells. Results suggest that testes may be maintained at stages of partial regression by constant daily light and exercise rations for at least one month. Experimentally induced germ-cell changes resemble natural ones, except in time and speed of reaction. Prolonging "work" rations failed to cause progressive germ-cell changes, but increased intertubular pigment and caused an initial lag of light-induced changes followed by faster reaction, whether progressive or regressive. As in nature, interstitial cells were most numerous and typical during regression and early progression of germ cells, and, like fibroblasts, changed to connective-tissue-type cells during advanced germ-cell activity with its tension and pressure. No "fat-laden," "luteal," or "glandular" type interstitials were observed, nor evidences of interstitial secretory activity. Results suggest possible control, or modification at will, of male sexual cycles by controlled daily light periods or manipulation with electric-light bulbs emitting little or no ultraviolet.—*Author (courtesy Wistar Bibl. Serv.).*

9969. **BOKELMANN, O., und W. SCHERINGER.** Beitrag zur Kenntnis der Schilddrüsenfunktion und des Jodstoffwechsels in der Gestation. *Arch. Gynäkol.* 143(3): 512-536. 1931.—It was found in 19 blood I determinations on 43 women, as well as in continuous determinations in several women, in all periods of pregnancy, partus, and the puerperium that the I begins to rise in the 2nd-3rd mo., rises abruptly to the 7th mo., remains at that level until the 9th when it decreases slightly, is little affected by partus, decreases gradually during the puerperium, but in the course of several wks. does not reach the level of normal, nonpregnant women. No uniform relations were found between the I concentration of the blood and the basal metabolic rate, or carbohydrate assimilation.

9970. **BROWKIN.** Dr. Manoiloffs Reaktion zur Feststellung der Schwangerschaft (am klinischen Material). *Arch. Gynäkol.* 143(3): 688-692. 1931.—After 159 preliminary determinations, the author made more than 500 observations: 210 in normal pregnancy (1-10 mo.), 5 in hyperemesis gravidarum, 27 in the puerperium, 59 in nonpregnant subjects, 7 in children, 31 in men, 5 in the climacteric, 22 in gynecological diseases, and 16 in abortion. During pregnancy the positives were 90%, only 33 of 45 being positive before the 12th wk., however; the toxicoses were positive. During the 1st 14 days of the puerperium the reaction was positive, thereafter negative. The reaction was positive in 10 nonpregnant women and 5 children, negative in the others and in men. In the cases of abortion the reaction was positive twice, in gynecological diseases, 7 times.

9971. **CANDELA, NICOLÒ.** Acetonuria e peptonuria in ostetricia. [Acetonuria and peptonuria in obstetrics.] *Rass. Ostetr. e Ginecol.* 39(10): 598-620; (11): 667-683. 1930.—The urines of 50 women were examined. The

acetone bodies were: in 10 cases of normal pregnancy (later months) 19.6-32.7 mgm. %, av. 26.05 mgm. % (peptone never present); in 10 cases of physiologic puerperium, 38.5-57 mgm. %, av. 49.11 mgm. % (peptone present in 4 cases); in 10 cases of abortion, 38.3-60.4 mgm. %, av. 49.41 mgm. % (peptone in 4 cases); in 10 cases of retained placenta, 41.8-61.5 mgm. %, av. 50.41 mgm. % (peptone in 4 cases); in 10 cases of dead fetus, 46.3-71.3 mgm. %, av. 59.74 mgm. % (peptone in 7 cases). Simultaneous occurrence of acetonuria and peptonuria does not indicate, in Candela's opinion, a causal connection between the two. Rather, both phenomena are due to a single cause, the passage into the maternal circulation of products of the decomposition of fetal tissues.

9972. CLAUBERG, CARL. Experimentelle Untersuchungen zur Frage eines Mäusetestes für das Hormon des Corpus luteum. *Zentralbl. Gynäkol.* 19: 1154-1164. 1930.—Studies were made by the author of the state of the uterine and vaginal mucous membrane of the mouse immediately following oestrus. He demonstrated the existence of a special corpus luteum phase which reaches its peak 5 days after fertilization. This phase of the cycle is characterized by the absence of leucocytes in the vaginal mucous membrane and can only be demonstrated by careful histological studies. The vaginal smear method does not suffice. This phase can be called forth by the corpus luteum hormone (prepared according to the method of Corner and W. M. Allen). Castrated mice were brought into heat by means of injections of follicular fluid hormone. Six days after the appearance of the cornified epithelial cells (oestrus) the uterus and vagina atrophied if injections were discontinued. If the injections were continued the typical proliferation took place. Clauberg injected corpus luteum hormone into a series of mice immediately after the appearance of oestrus. Six days later uterus and vagina showed early gravid changes. These studies in more than 100 mice present further evidence of a second sex hormone which the author calls "luteohormone." The changes produced by luteohormone cannot be obtained with injections of follicular fluid hormone. Prolonged injections of follicular fluid hormone resulted in a pathological proliferation analogous to the disease entity known as "glandular hyperplasia" in the human. This pathological proliferation is fundamentally different from the pre-gravid and gravid transformation resulting from injections of luteohormone. The most suitable test animal for demonstrating the presence of luteohormone is the rabbit, since it has the most easily recognizable and striking corpus luteum phase.—*C. Clauberg (transl. by H. C. Mack).*

9973. DIERKS, KLAAS. Über die Verwendbarkeit der Manoiloffschen Schwangerschaftsreaktion. [Manoiloff's pregnancy reaction.] *Monatsschr. Geburtsh. u. Gynäkol.* 87(3): 285-293. 1931.

9974. DOUGLASS, MARION. Corpus luteum of pregnancy; persistence of pregnancy after excision of the corpus luteum in the early weeks. *Surg., Gynecol. and Obstetr.* 52(1): 52-55. 4 fig. 1931.—Removal of a corpus luteum during tubal sterilization failed to interrupt the course of a previously unsuspected pregnancy which terminated by spontaneous abortion 4 mos. later (about 5 mos. pregnancy), showing that human pregnancy, once its duration exceeds about 4-6 wks., is independent of the hormone supplied by the corpus luteum of pregnancy.

9975. FAUVET, EGON. Über das weisse Blutbild im Wochenbett unter besonderer Berücksichtigung der Lymphozyten. [The white blood cells, particularly lymphocytes, in the puerperium.] *Zeitschr. Geburtsh. u. Gynäkol.* 99(1): 58-71. 1930.—Samples of blood from 10 normal patients, 1 taken 30-45 min. and 7 between 18-168 hrs. postpartum, showed a leukocytosis beginning with acidosis directly after delivery. There is a predominance of polynuclears, usually showing a pronounced shift to the left; lymphocytes and eosinophils are greatly decreased. This polynucleosis decreases in the following days and the eosinophils reappear. By the 4th day the neutrophils and lymphocytes reach normal. At the same time there is a parallel fall in the alkaline reaction of the blood. From the 5th day the reaction is normal and there is a pronounced lymphocytosis for some days, caused by involutionary processes in the uterus which, in the sense of inflammation, make increased demands on the mesenchyme and therefore on the lymphocytic elements of the peripheral blood.

9976. FREY, SIGURD. Experimenteller Beitrag zur Entstehung der akuten und chronischen Entzündungen des Nebenhodens und Hodens. *Deutsche Zeitschr. Chir.* 218(1/6): 333-365. 8 fig. 1929.—Experimental production of movements of the seminal vesicles of the rabbit by electrical and pharmacologic stimuli in 22 series of rabbits (no. not stated) and by electric stimulation in 2 men indicated that movements of the seminal vesicles are not responsible for inflammations of the epididymis and testicle. Where no local uropoietic cause is demonstrable, Frey believes that hematogenous infection produces epididymitis. Anatomic considerations forbid ascribing urethral orchitis to infection through the epididymes; Frey believes the lymphatics to be the only possible channels of infection.

9977. GENTHER, IDA T. Irradiation of the ovaries of guinea-pigs and its effect on the oestrous cycle. *Amer. Jour. Anat.* 48(1): 99-137. 2 pl. 1931.—Long exposures with filtered x-rays and 40% of the cases of short exposures with unfiltered x-rays produced degeneration of both large and small follicles and their egg cells, usually without ovulation and without formation of a typical corpus luteum, but with hypertrophy of the theca-interna cells to form interstitial gland. Primordial follicles continued to mature partially or completely, but without any regularity; subsequently they underwent degeneration. Oestrous cycles continued, but were irregular in length; often the oestrous period was greatly prolonged. A large follicle (not necessarily mature) was present whenever oestrus had occurred. In the absence of corpus-luteum action, the cycle depended on the maturation of the follicles only—therefore their irregularity and frequent prolongation of oestrus. The genital tract and mammary gland showed typical oestrous changes; when oestrus was prolonged, the activity seemed abnormally intense. In 45% of the cases of short exposures with unfiltered x-rays, connective-tissue atresia of all the follicles occurred, except of some primordial ones. Uninjured primordial follicles developed subsequently to small follicles, which degenerated as soon as formed; thus no medium-sized or large follicles were ever present. Oestrous cycles were absent and the entire genital tract was in a continuous resting conditions.—*Author (courtesy Wistar Bibl. Serv.).*

9978. GIERHAKE, E., und H. NASSE. Über das Vorkommen von Arginase in menschlichen Hoden und Ovarien. (Ein Beitrag zur Frage nach den Beziehungen zwischen intermediärem Arginin-Stoffwechsel und Geschlechtsfunktion.) *Arch. Gynäkol.* 143(3): 592-597. 1931. Organ pap from 12 testes and 6 ovaries was added to 2% arginin solution at 37°. The testes showed much more active digestion (mean 28.9-29.46%) than the ovaries (mean 5.25-5.69%). The authors conclude that high arginin metabolism is a specific characteristic of the ♂ and apparently predominantly related to the genital function. Of 7 ♂♂ (newly born-3½ mo.) only 2 showed arginin metabolism; none of 4 ♀♀ (newly born-14 mo.) showed any. Thus the intermediate arginin metabolism of children differs from adults. Creatinine in the urine seems to show a similar dependence on sexual glands: abundant in children and eunuchs, absent in healthy adult men.

9979. HARTMAN, CARL G., and JOSEPHINE BALL. On the almost instantaneous transport of spermatozoa through the cervix and the uterus in the rat. *Proc. Soc. Exp. Biol. & Med.* 28(3): 312-314. 1930.—Preliminary paper.

9980. HARTMANN, H. Experimenteller Beitrag zur Frage der Placentarpermeabilität. (Übergang von Farb-

stoffen vom Fetus zum Muttertier.) *Zeitschr. Ges. Exp. Med.* 74 (5/6) : 709-712. 1930.—Dyes which are excreted by the kidneys were injected, after laparotomy of 9 pregnant guinea-pigs and 5 pregnant rabbits, through the uterine wall into the fetuses. The wound incision was closed and the excretion of dye by the mother observed, or, if none appeared, the animal was killed and the bladder and kidneys examined. Indigocarmin in 0.4% solution (used in 3 guinea-pigs) and "Patentblau" in 1:100 (1 guinea-pig) and 1:500 (1 guinea-pig), but not in 1:1000 (1 guinea-pig) passed from fetus to mother; cyanol (2 rabbits, 3 guinea-pigs) and trypan blue (4 rabbits) did not pass.

9981. HILL, H. GARDINER, and J. FOREST SMITH. The relation of fatness to sterility. *Jour. Obstet. and Gynaecol. Brit. Emp.* 37 (2) : 256-271. 1930.—The 198 cases of obesity in married women fall into 3 main groups: (1) those with a family tendency to obesity, i.e., hereditary or constitutional obesity, who are either fat from birth (28%) or who develop the condition in early life especially about the time of puberty (18.7%); (2) those who become fat in later life at times other than childbirth (21.6%); (3) those in whom obesity dates from childbirth (30.9%). In the 1st group primary sterility was rare, but when found was associated with amenorrhea. It is not shown by statistics, however, to be especially common in the constitutionally fat. In a certain proportion of these constitutional cases in later life there was a tendency to develop secondary sterility with hyperthyroidism. In the 2nd group sterility was common, especially among patients who became obese immediately after marriage. In the majority there was amenorrhea or mild hypothyroidism with regular menstruation throughout. In the 3rd group subsequent sterility was rare. This appears to be a form of simple obesity seldom associated with amenorrhea or hypothyroidism. Hence obesity developing subsequent to pregnancy is not liable to be associated with absent or diminished fertility. Obesity per se is not a cause of sterility. When the 2 conditions occur together, sterility is usually the result of amenorrhea, or occasionally of hypothyroidism.

9982. HOCHLOFF, A. W. Zur Kolloidchemie der Vernix caseosa. *Zentralbl. Gynäkol.* 55 (14) : 1281-1285. 1931.—Vernix caseosa (V.C.) (10%, 20%, and 30%) was mixed with 3% gelatine solution (3% gelatine as control) and the diffusion of $N/10$ and $N/5$ H_2SO_4, $N/25$ and $N/10$ HNO_3, $N/10$ CH_3COOH, $N/10$, $N/20$ and $N/50$ NaOH, $N/10$, $N/20$ and $N/50$ KOH, 5% and 10% $CuSO_4$, 0.1 and 0.5% methylene blue and 1% novocaine in mm. using Congo-red, neutral red or, with 1 novocaine test, Lugol's solution as indicators. V.C. delayed diffusion markedly and in proportion to its concentration. Small blocks of 10% gelatine and solidified gelatine and V.C. (10, 20, 30%) were dried; when immersed in distilled water, $N/100$ HCl, or $N/100$ NaOH the action was greater on pure gelatine; acid and alkali had the same type of action. The V.C. is a natural colloid protection against abnormal drying or swelling of the skin.

9983. HOFFMANN, FRIEDRICH, und KARL JULIUS ANSELMINO. Über den Milchsäureumsatz in der Schwangerschaft und seine Beziehungen zum Kohlehydratstoffwechsel, zur Leber- und Schilddrüsenfunktion und zum Kreislauf. II. Über die Ursachen der vermehrten Milchsäurebildung im Schwangeren-Muskel. *Arch. Gynaekol.* 142 (2) : 310-323. 2 fig. 1930.—Muscle in pregnancy doing moderate (measured) work gives off considerably more lactic acid to the blood than muscle in non-pregnant cases under the same conditions. Two main causes of increased lactic acid production may be (1) deficient O consumption (2) change of regulating mechanism of carbohydrate metabolism. Determinations on 3 pregnant and 3 non-pregnant women eliminated the first, but similar measurements of anaerobic lactic acid production in muscles of 10 pregnant and 10 non-pregnant rats gave an indeterminate result, as the increase lay within the limits of experimental error. A series of physiological and clinical investigations lead to the conclusion that the demonstrated increase of lactic acid production in pregnancy muscle is to be ascribed to increased thyroid activity. The conclusion rests on facts that thyroxin increases lactic acid production, and that heightened thyroid action is certainly found in pregnancy, and further the work- and resting-lactic acid values in exophthalmic goitre completely correspond to those of pregnancy. The question of increased carbohydrate consumption as a cause of greater lactic acid production is left open.—*W. P. Kennedy.*

9984. KNIBBS, GEORGE H. Proof of the laws of twinbirths. *Jour. & Proc. Roy. Soc. New South Wales.* 61: 347-353. 1927 (1928).—From a study of data taken from the Bureau of Census of the Australian Commonwealth, formulae have been developed which give separately the numbers of uniovular and diovular twins. The results show that, in 3 out of every 1000 maternity cases, regardless of the age of the mother, twins are produced by the division of a single fertilized ovum; and that the frequency with which 2 ova are effectively fertilized increases linearly with age until about 37, and then decreases. Over the entire child-bearing period, the uniovular cases for each year of age equal the sum of the cases of 2 ♂♂ and 2 ♀♀, less the cases of ♂ and ♀. —*H. C. McPhee.*

9985. LASOWSKY, J. M. Beobachtungen über die Wirkung hoher Temperatur der Aussenwelt auf die Hoden von weissen Mäusen. (Experimentell-morphologische Untersuchung.) *Virchow's Arch. Path. Anat. u. Physiol.* 280 (1) : 311-324. 10 fig. 1931.—Entire litters of white mice were subjected to continuous temp. of 32-35° C. (absolute humidity 25.6-30.9, relative—72-74%); usual diet. After 2-45 days the animals were killed or 1 testis removed. The action of high temp. was found to be dependent upon the season. In fall and in winter it caused pronounced degeneration of seminal epithelium; usually spermatocytes and spermatids degenerated first, appearing to be most sensitive to high temp., while they were more resistant to x-rays than the spermatogonia. Degeneration of seminal epithelium was followed by regeneration, which usually ended with a complete restoration of the testes to normal. High temp. had no influence upon regeneration. In spring and in summer the testes, in spite of continuous heating of the animals, remained either entirely unchanged or (in isolated cases only), there was a great degeneration of spermatocytes and spermatids. Different sensitivity of testes to high temp. in various seasons seemed to be due to specific peculiarities of these organs.

9987. LEWIN, H. Die Lage des Oxydations-quotienten des Harns bei der Menstruation. *Arch. Gynaekol.* 140 (1) : 191-201. 5 fig. 1930.—Coincident with menstruation there is N retention, and a less complete oxidation of foodstuffs, as measured by the O necessary to oxidize the organic matter in the urine to completion. This oxygen is called Vakat-O. Normally the ratio Vakat-O/N equals 0.9. During menstruation it rises to 1.6.—*F. Bernheim.*

9988. MALFATTI, J., und J. BURTSCHER. Die Beeinflussung der Alkalireserve des Blutes durch Schwangerschaft, Geburt und Wochenbett, sowie ihr Verhalten beim Neugeborenen. *Arch. Gynäkol.* 143 (2) : 272-309. 1930.—Investigations were made on 14 women with samples of blood obtained during pregnancy, 1-2 times during the 1st stage, directly after the birth of the child, the day following partus, the day after the appearance of lactation, and on the 6-8th day, before the patient left her bed. Samples were obtained from the infants directly after birth from the umbilical vein, thereafter from the sagittal sinus. In healthy pregnant women the recognized acidotic state of the alkali reserve (A.R.) was found.. During partus there is a further decrease of the A.R., more distinct in primiparae than in multiparae; during the 1st 3-4 days of the puerperium there is a rise of the A.R. which, however, does not reach normal. Lactation influences the CO_2 combining power

of the blood, decreasing the A.R. if the blood is sampled more than 12 hrs. after the appearance of lactation; thereafter the non-pregnant normal is not attained even by the 12th-21st day of the puerperium. In 1 case of hyperemesis of pregnancy and in 1 of nephropathia gravidarum with high albumin in the urine, the A.R. was lower than for healthy pregnant women. Septic conditions produce an especially low A.R. The A.R. of the newly born in the blood of the umbilical vein is lower than that of the mother at the same time, and during the 1st 21 days the infant shows an acidosis which is usually more pronounced than the maternal. No typical influence on the A.R. in the newly born could be found by the physiological loss of weight or the transition from colostrum to milk.

9989. MANZI, LUIGI. Azione diretta del liquido follicolare sulla motilità tubarica. [Direct action of follicular fluid on the tubal motility.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1020-1025. 2 fig. 1930.—Follicular fluids acted on human tube preparations increasing the height of movements, which become more regular. In some experiments addition of follicular fluid to the Ringer's solution was followed by the occurrence of a hitherto absent rhythmical motility of the tubes.—*M. Comel.*

9990. MAURIZIO, EUGENIO. Azione dell'urina di gravida sugli organi genitali degli animali da laboratorio. [Action of the urine of pregnancy on the genital organs of laboratory animals.] *Rass. Ostetr. e Ginecol.* 39 (10): 591-595. 1930.—Guinea pigs were substituted for mice with satisfactory results in the Aschheim-Zondek and Brouha-Hinglais-Simonnet tests for pregnancy (the latter in 18 cases).

9991. MILLS, C. A., and F. A. SENIOR. Does climate affect the human conception rate? *Arch. Internal Med.* 46(6): 921-929. 1930.—Birth statistics of cities, states and countries were obtained. The numbers of births in each month for a number of yrs. were taken, the mean for each month obtained, and the 12 months equalized to a 31 day basis for comparison. Where the population changed more than 1% a yr. during the period covered by the statistics used, correction was made. The corrected monthly births were then transposed to conception times by counting back 9 months and 10 days, and these "conceptions resulting in live births" were plotted. The graphs show that human fertility, as indicated by the conception rate, is highest in any given population at about 65 F., and that it is reduced during the low temp. of the northern winter and by mean summer temp. above 70° F. The summer depression is roughly proportional to the rise in the mean temp. above 70 F. These changes in conception rate are not dependent on changes in the marriage rate or sexual activity of the population, and must therefore represent actual variation in human fertility.

9992. MINAMIKAWA, K. Experimental investigation of the effect of the nervous system on the function of the genital organs. Relation between sympathectomy and parasympathetic poison, and pregnancy. *Japanese Jour. Obstetr. & Gynecol.* 13(4): 433-436. 1930.—Periarterial sympathectomy was performed on the right hypogastric artery in non-pregnant ♀ rabbits (number not stated), pregnancy was induced, and in 27 or 28 days the uteri were removed and the fetuses on each side weighed and compared. No difference was found between the number, development and mortality of the fetuses on the sympathectomized and those on the normal side.

9994. NICOTRA, ANTONINO. Ricerche istologiche sulla mucosa uterina dopo la castrazione radiologica. (Nota preventiva.) [Histologic study of the uterine mucosa after x-ray sterilization.] *Arch. Radiol.* 6(1): 268-282. 1 fig. 1930.—Nicotra calls attention to the fact that the 1, 2 or 3 menstruations which may follow roentgen sterilization are precisely the same in number as the menstruations which may follow surgical oöphorectomy or occur during the 1st 3 mos. of pregnancy; they also correspond to the number of ova brought to maturity at once by the human ♀. Nicotra believes that by simultaneous irradiation of the ovaries and hypophysis in 4 cases and of the ovaries, hypophysis, thyroid and mammary glands (followed by 1 menstruation in 2 cases and by 2 menstruations in the 3 others) he has excluded the possibility that the post-operative menstruation may be due to a vicarious action of some of the parasexual organs. Nicotra offers the hypothesis that the death of the non-fecundated ovum is due to the hormone of the corpus luteum, which permits the maturation of new graafian follicles. When the ovary has been removed or its function suspended by irradiation, there are no longer corpora lutea and no possibility of the maturation of new follicles, and hence no agent destructive of ova. This theory would attribute the menstrual periods after operation, irradiation or fecundation to the ova last liberated, each of which, presumably, would have lived long enough, in the absence of corpora lutea, to produce a menstruation.

9995. PEARSON, MARGARET, and KARL PEARSON. On the relation of the duration of pregnancy to size of litter and other characters in bitches. *Biometrika* 22 (3/4): 309-323. 1931.—In Pomeranians, Pekinese and crosses between them, the mean duration of pregnancy is about 60 days, and the standard deviation about 3 days. The correlation of size of litter with duration of pregnancy is $-.45 \pm .05$; with order of pregnancy, $-.05 \pm .05$; with age, $-.17 \pm .06$. In the first case, size of litter is probably the causal factor and hastens the end of gestation. The correlation of duration with order of pregnancy is $+.18 \pm .06$; the regression is non-linear, the correlation ratio of duration on order being .38. The correlation of age with order of pregnancy is $+.80 \pm .02$; with duration, $+.15 \pm .06$. None of the factors considered explains the variation in duration. "Can it be that this duration is individual and possibly an inherited character? If so it would be of evolutionary importance."—*J. R. Miner.*

9996. PINCUS, GREGORY. The transplantation of mouse ovaries into the rat. *Anat. Rec.* 49(1): 97-101. 1931.—Twenty out of 40 spayed rats receiving transplants of mouse ovaries gave evidence of ovarian function as judged by vaginal smears and the occurrence of copulation. Oestral smears were observed from 1 mo. to 2½ mos. after transplantation. In several instances ovarian tissue present was probably derived from unexcised ovarian fragments, but in other cases the functional tissue was undoubtedly derived from the transplanted mouse ovaries. A litter of rats was produced by a female with a "regenerated" ovary. No rat-mouse hybrids were obtained.—*Author (courtesy Wistar Bibl. Serv.).*

9997. PORCHER, CH., et L. MAYNARD. La graisse du sang et la graisse du lait pendant la lactation. *Lait* 10: 601-613, 765-782. 1930.—A study is reported of the total fatty acids and unsaponifiable matter in the blood plasma of dry and milking cows. These constituents exhibit only small variations from day to day and at different hrs. in the same day. While the values for fatty acids and unsaponifiable matter vary for different individuals, the ratio between them tends to remain const. There is a parallel increase in both these lipids following parturition. Variations of 100% and more frequently occur in the percentage of fat in the milk obtained in consecutive milkings. Despite these large variations the blood lipids studied rarely vary more than 20% and the average variation is much smaller. No correlation is evident between the percentage of fat in the milk and the level of blood lipids at the time the milk is being secreted.—*L. A. Maynard.*

9998. SCHMERLING, S. Die Schwangerschaftsdauer beim Menschen und das Gesetz ihrer individuellen Veränderlichkeit. *Arch. Frauenk.* 16(4): 314-321. 1931.—Investigations of the duration of pregnancy in 931 wives showed an average period of 277.3 ± 0.4 days. The individual duration varied according to Quetelet's law of individual variation of biological characteristics. The greater the deviation from the average in the duration of individual pregnancies, the more infrequent the cases

deviations of 6 wks. and more being extremely rare (0.3%).

9999. WHITEHEAD, GEORGE. Birth control: why and how. iii + 174p. John Bale, Sons & Danielsson, Ltd.: London, 1929. Pr. 6s.

10000. WITTENBECK, FRANZ. Ovulationstermin und Konzeptionsfähigkeit bei der Frau. *Arch. Gynaekol.* 142(2): 446-473. 11 fig. 1930.—Knaus has no exact and reliable observations on the human to support his theory of the limited conception period in woman, but he has been forced to devise hypotheses based upon findings in animals. Nor do his observations on time of ovulation controvert the practical lesson that cohabitations at all times of the cycle can result in conceptions. Therefore, one can not place any dependence on his statement that there is a physiological sterility before the 11th and after the 17th day of the cycle. His investigations and observations show that in many cases an alteration in the function of the uterine musculature follows the cyclic changes of the ovary; his conclusions, however, go too far. Deductions made from the results gained by his method can under certain circumstances lead to serious confusion, because the uterus in its functional relationships is, according to my observations, not dependent upon the ovary alone. Of course, if we take into consideration the condition of the follicle described by R. Meyer as a special one, for which, however, the case published by Stieve furnishes a very plausible explanation, still, it has not been demonstrated that the condition of the uterine musculature (in the sense of the corpus luteum effect) is a proof of a closely preceding follicle rupture, because a corpus luteum can form without rupture of the follicle. On the other hand the rupture of the follicle can really occur much earlier. On these grounds, neither the location of the ovum nor the time of ovulation can be recognized with absolute certainty from experimental deduction.—*Author's summary (transl. by G. L. Kelly).*

10001. YAMASE, KAN. Ueber den Gehalt von Kreatin in den glatten Muskelgeweben der weiblichen Geschlechtsorgane des Kaninchens. [The creatin content of the smooth muscle in the female genitalia of rabbits.] [Japanese.] *Keio Ig.* 7(8): 1927.

ANIMAL PHYSIOLOGY

REACTIONS OF THE ORGANISM AS A WHOLE

E. J. LUND, *Editor*

(See also in B. A. 6(3): Entries 6892, 6902, 7273, 8604, 8682; and in this issue 9093, 9189, 10063, 10938, 11445, 11451, 11744, 12048)

10002. ANDREJEWA, E. W. Die elektrische Ladung und die Bewegungsgeschwindigkeit der Infusorien Paramaecium caudatum. *Kolloid Zeitschr.* 51(3): 348-356. 1930.—The external surface of *Paramecium* is negatively charged and this charge is of the adsorption type. Increase and decrease of speed varies directly with the increase or decrease in the surface charge, as is the case with colloid particles when there is a change of charge.—*Author's summary (transl. by L. E. Noland).*

10003. BELLISAI, IOLE. Variazioni nella fototassi di Artemia salina. [Variation in phototaxis of A. salina.] *Pubbl. Ist. Biol. Marina Tirreno* [Cagliari] 16. pp. 227-230; also in *Monitore Zool. Ital.* 40(8): 227-230. 1929.—*A. salina* has one eye to the metanauplius stage and is positively phototropic; with complete development of the visual apparatus it becomes negatively phototropic. Its phototaxis varies with the conditions of intensity of light, with adaptation to solar light or to darkness or to colored light, with temp. and the chemical composition of marine water.—*I. Bellisai (transl. by R. A. Muttkowski).*

10004. BETHE, A., und A. SALMONSON. Beziehungen zwischen Bewegungsfrequenz und Grösse des Ausbreitungsgebietes der Erregungen. (Versuche an Würmern und Myriapoden.) *Pflüger's Arch. Ges. Physiol.* 226(6): 749-760. 6 fig. 1931.—A cinematographic method was adapted for measuring the rate of movement in worms particularly of the myriapod *Julus,* in which the movements of the feet were investigated. The waves started in the hind end of the animal whether the whole animal or the front end of one cut in half was investigated. The rate of transmission of the waves and their rhythm were both increased by the sectioning of the animal. The results are discussed in relation to the size of the animal as affecting the rhythm of its movements and the conclusion is reached that rhythmical movements progress more rapidly the smaller the area in which the stimulation spreads.—*H. C. Bazett.*

10005. BODENHEIMER, F. S., und H. Z. KLEIN. Über die Temperatur-abhängigkeiten von Insekten. II. Die Abhängigkeit der Aktivität bei der Ernteameise Messor semirufus E. André von Temperatur und anderen Faktoren. *Zeitschr. Wiss. Biol. Abt. C. Zeitschr. Vergleich. Physiol.* 11(3): 345-385. 17 fig. 1930.—The general biology of the harvest ant, *Messor semirufus,* in Palestine is briefly described. Its activity is strongly bound with temp. and annually has 2 maxima, in April and December; and 2 minima, in January-February and August. From November to March, activity is stopped by cooler temp. and in summer and autumn by warmer temp. The optimum for the worker lies between 17-19° C. Temp. of 24° C. and above are tolerated only a short time. In winter the greatest number of individuals are active during the noon hours; in spring, during the evening; in summer, during the entire night; and in autumn, during the first half of the night. The preferred temp. for the different varieties was found to be between 18.4-20.3° C. Within each month the average velocity of running per second at different temp. formed an equilateral hyperbola. These hyperbolas are different in separate seasons, probably modified by physiological changes in the ants. No relation of activity to rain, dew, moonlight and wind could be established.—*H. Klein (transl. by D. Ludwig).*

10006. BUDDENBROCK, W. von. Untersuchungen über den Schattenreflex. *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13(1): 164-213. 20 fig. 1930.—*Balanus* reacted only to darkening, *Hydroides* also to illumination and to the movement of the observer. *Branchiomma* and *Arca* did not react to darkening although they showed the shadow reflex on movement. The reaction time of *Balanus,* which the animal spent in its shell after darkening, depended on temp., on the intensity and duration of the shadow, and on the size of the illuminated surface. It was independent of the condition of adaptation. The minimal duration of the shadow which was necessary to initiate the reaction was less, the greater the intensity of light and the intensity of the shadow. The sensitivity with which *Balanus* responded to the shadow stimulus depended, whether or not the state of adaptation remained the same, upon the number of stimulated light sensory cells, and on the duration of exposure to the shadow; it was independent of temp. *Balanus* follows Weber's law with the limitation of von Puetter and Hecht. The sensitivity was greatest in moderate intensity, much less with very strong and very weak light. The shadow stimulus to which *Balanus* responds can be summated in various ways, 1st with other shadow stimuli, 2nd with mechanical stimuli. Subminimal shadow stimuli can be made effective by summation with other stimuli. The adaptation from dark to bright follows other laws than hitherto supposed. The sensitivity first sank to a minimum, and then increased gradually to the final value. After long

darkening *Balanus* and *Hydroides* were insensitive for a time to all light stimuli. This period was the greater in *Balanus* the smaller the final light and the smaller the original light. *Balanus* soon ceased to respond to rapidly succeeding shadow stimuli. This failure to respond appeared sooner the smaller the stimulus. *Balanus* reacts to all types of light visible to man and to ultraviolet.—*Author's summary (transl.)*.

10007. CHALKLEY, H. W. On the relation between the resistance to heat and the mechanism of death in Paramecium. *Physiol. Zool.* 3(4): 425-440. 1930.—Paramecia were exposed in saline solutions of different pH and inorganic salt balance to a temp of 40° C. The resistance of the organisms to this temp. is a function of both the pH and the saline constituents of the surrounding media. When resistance is expressed as a function of pH, the relation is bimodal with maxima in the alkaline and acid ranges and a minimum at neutrality. The positions and magnitude of the maxima and the magnitude of the minimum depend on the salt balance of the medium. Under these conditions, the mechanism of death varies (from cell coagulation to cell dissolution), probably as a result of changes in the cell membrane and rate of water intake which result from the changes in both pH and inorganic salt balance, superimposed upon changes of purely thermal origin.—*Author (courtesy Wistar Bibl. Serv.)*.

10008. FITZPATRICK, F. L., and S. L. STOLBA. Segmentation in earthworms, resulting from inability to regenerate a portion of the ventral nerve cord. *Proc. Iowa Acad. Sci.* 36: 361-363. 1929 (1930).—The nerve cord was severed just posterior to the clitellum. For about 3 weeks after the operation there was a pronounced lack of "dominance" of the anterior over the posterior end of the body. After about 3 weeks the anterior ends began to recover their "dominance." In a 2nd series in which 2 mm. of the nerve cord was removed segmentation occurred in the region of operation in those worms where regeneration of the nerve cord did not take place. In worms in which the nerve cord did not regenerate there was a continued loss of "dominance" of the anterior end.—*F. A. Stromsten.*

10009. FITZPATRICK, F. L. Relative ability of anterior and posterior ends of the body to regenerate in earthworms. *Proc. Iowa Acad. Sci.* 36: 365-366. 1929 (1930).—25 specimens were bisected near the middle of the body. The anterior halves survived in the majority of the cases, while all the posterior halves eventually died.—*F. A. Stromsten.*

10010. GALTSOFF, PAUL S. The rôle of chemical stimulation in the spawning reactions of Ostrea virginica and Ostrea gigas. *Proc. Nation. Acad. Sci.* 16(9): 555-559. 1 fig. 1930.—The discharge of eggs or sperm of the oyster is stimulated by the presence in the water of sexual products of the opposite sex. In the ♀ oyster the latent period varies from 6 to 38 min. and is independent of the concentration of sperm. The spawning reaction of the ♀ is followed by a refractory period lasting 2-5 days. In the ♂ the latent period varies from 5 to 12 sec.; the reaction is not followed by a refractory period. The active principle of sperm suspension does not pass through the collodion membrane, and is destroyed by heating for 15 min. at 55° C. The active principle of egg suspension is soluble in the sea water and withstands boiling for 10 min. The chemical stimulation is influenced by the temp., which determines the lowest limit (20° for *O. virginica*) below which the ♀♀ fail to spawn, and supplies initial stimulus for the spawning of the ♂.—*P. S. Galtsoff.*

10011. HAYES, FREDERICK RONALD. The physiological response of Paramaecium to sea-water. *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13(1): 214-222. 1930.—Cultures of *P. caudatum* were made in various media, most satisfactory being 0.025% beef extract and turnips. All were made up in fresh water and salinities of 0.2, 0.4 and 0.6% secured by adding sea water; additional sea water was added up to 1.6% but paramecia did not thrive above 1.0%. Tests were made in bacteria-free pond-, or pond and salt water; O was expressed either as O consumption per unit time (microscopic count) or consumption per unit N per unit time (micro-Kjeldahl determinations on 3 cc. suspension). The animals reacted to changes in salinity in at least 4 ways: alteration in body shape, change in volume, variation in the proportion of water, and deviation from normal rate of respiration. The rate of O consumption decreased with increasing salinity to the point of isotonicity, after which respiration increased; the curve was thus U shaped.

10012. HOWELL, W. H. Humidity and comfort. *Science* 73(1895): 453-455. 1 fig. 1931.—The paper gives the results of observations made upon the sense of comfort of a class of 40-45 persons in the School of Hygiene and Public Health of the Johns Hopkins University during the fall and winter of the session of 1930-1931. The class met once weekly for an hr. in a lecture room with a capacity of 16000 cu. ft. which was controlled by an air conditioning apparatus. The temp. of the room was kept constant at 70° F., but the humidity was varied at different times between a low of 15-20% and a high of 55-60%. Votes of the class were recorded at each meeting on a designated scale of comfort. The main result was that for winter conditions when the dry bulb was kept at 70° F., and adequate renewal of air was provided, the great majority of the group (91-97%) found the conditions comfortable (comfortable or comfortably warm or comfortably cool) irrespective of the humidity within the ranges designated.—*W. H. Howell.*

10013. KAMADA, TAKEO. Control of galvanotropism in Paramecium. *Jour. Fac. Sci. Imp. Univ. Tokyo, Zool.* 2(2): 123-139. 1929.—The anodal galvanotropism of *Paramecium* may be induced by regulating the galvanic stimulation and by changing the kind and concentration of electrolytes of the surrounding medium. Cations may be divided into 2 groups according to their mode of bringing about the anodal galvanotropism: Ca and Sr belong to one group and Li, Na, K, Rb, Cs, NH_4, H, Ba, Mg, and Al to the other. In general anions do not seem to modify the property of the cations above described.—*Author's summary.*

10014. LÉPINEY, J. de. Note préliminaire sur le rôle de la vision ocellaire dans le comportement des chenilles de Lymantria dispar L. *Bull. Soc. Zool. France* 53: 479-490. 2 fig. 1928.—The attraction of caterpillars of *L. dispar* to forest trees is the result of visual impressions alone, to the exclusion of all other sensory reactions. By substituting for trees various silhouettes the forms and shadows of which could be varied, caterpillars were found to be attracted from a distance by relatively tall and straight forms, and not by objects that are broad and only slightly elevated. The extreme limits of the apparent dimensions within which attraction is produced are in the neighborhood of: height 9°, width 3°. Dark silhouettes are most attractive; very light ones either do not attract at all or repel, while those not too bright but lighter than the background may also attract.—*J. de Lépiney (transl. by D. L. Collins)*.

10015. MAIN, ROLLAND J. Stereotropism and geotropism of the salamander, Triturus torosus. *Pysiol. Zool.* 4(3): 409-422. 5 fig. 1931.—A positively stereotropic reflex, produced by rubbing the belly of a labyrinthectomized salamander, is inhibited in the normal animal by the presence of the labyrinths; whereas an inhibition of the normal leg-clasping reflex may be produced by stimulation of tactile sense organs other than those involved in the reflex. The normal animal, when placed on its back, orients itself through a stereotyped righting reflex in which the head is bent backward, rather than lifted, as is generally the case. This reflex is abolished by bilateral labyrinthectomy, to be replaced by a response to differential stereotropic stimuli. Responses to rotation are very similar to those of other animals, except for an absence of head and eye nystagmus. Unilateral labyrinthectomy produces tilting, dragging

of the feet of the injured side, and rolling movements if strongly stimulated when swimming. Animals lacking both vestibules no longer orient the head, show disturbances in walking, and are completely unoriented when swimming, although soon righting upon reaching the bottom. The eyes seem to be of no importance in equilibrium. Repetitive mechanical stimulation of the spinal column produces a strong opisthotonus, which may be explained as due to direct stimulation of the linearly arranged motor neurones of the cord. The elicitation of this opisthotonic reflex is greatly facilitated by the injection of strychnin.—*Author (courtesy Wistar Bibl. Serv.).*

10016. NICOLAI, LUDWIG. Über Elektrotaxis und Elektronarkose von Fischen. *Pflüger's Arch. Ges. Physiol.* 224(2): 268-277. 2 fig. 1930.—Direct and alternating currents of variable frequency, when gradually increased, induce in succession (a) initial effects, (b) electrotactic effects and (c) electronarcotic effects.—*E. J. Lund.*

10017. PANTIN, C. F. A. On the physiology of amoeboid movement. V. Anaerobic movement. VI. The action of oxygen. VII. The action of anaesthetics. *Proc. Roy. Soc.* [*London*] *B* 105(740): 538-555. 6 fig.; 555-565. 2 fig.; 565-579. 5 fig. 1930.—Studies are reported on a marine *Limax* amoeba.—V. In the absence of O, gradually diminishing amoeboid movement continues for 6-12 hrs. The amoeba then abruptly passes into an inactive condition. Anaerobic activity is accompanied by morphological changes. There is a definite relation between the velocity of movement and the duration of anaerobiosis. Movement continues not only when O is completely absent, but when the external medium has considerable reducing power. Evidence is given that the energy of amoeboid movement is supplied by an anaerobic process, which allows movement to continue in the absence of O. O is required for recovery after anaerobiosis; this recovery occurs even after 48 hrs., but anaerobic inhibition of movement is ultimately irreversible. It is concluded that the anaerobic processes of amoeboid movement are normally accompanied by an oxidative recovery process. Recovery is progressively delayed as the period of anaerobiosis is increased beyond about 6 hrs. Delayed recovery occurs in 2 stages; the amoeba is at first inactive, and then suddenly resumes activity, as in immediate recovery. The delay is caused by increase in duration of the inactive phase. Delay in recovery increases long after all activity in the anaerobic amoeba has ceased, and is therefore not altogether dependent on activity. The delay may be related to the accumulation of an "oxygen debt."—VI. With a limited O supply, movement diminishes and ceases. But its duration is greatly prolonged when a trace of O is present as compared with the duration under complete anaerobiosis. The duration of movement increases with the O pressure. After complete anaerobiosis, O is required for recovery; prolonged activity in the presence of a trace of O may therefore be due to this recovery process operating to a limited extent. After a given duration of O deficiency, the greater the deficiency has been, the greater is the time required for the amoeba to recover in aerated sea-water. The efficiency of the recovery process during O deficiency therefore diminishes with the O pressure. As an O pressure of 30-40 mm. Hg is approached the activity of the amoebae increases. Above this critical pressure movement is maintained as long as in controls in aerated sea-water.—VII. The morphological changes and other effects of cyanide in amoebae (below 10^{-1} *M*) resemble those of O deficiency. Activity progressively falls to zero; "Limax" movement is maintained till inhibition occurs. Inhibition is reversible even after 40 hrs. in 10^{-4} *M* cyanide. The effects of cyanide on the amoebae are characteristic of its action on a respiratory mechanism. The minimal effective concentration lies between 10^{-5} and 10^{-6} *M*. Increasing the concentration to 10^{-4} *M* only slowly increases the effect. The effect of sulphides on the marine amoeba closely resembles that of cyanides. Alcohols and chloretone cause inco-ordination of amoeboid movement. At a certain liminal concentration movement becomes irregular, and it is inhibited by about 10 times this concentration. The effects do not resemble O deficiency. The effectiveness follows the series methyl < ethyl < butyl and chloretone < amyl. In the absence of O, cyanides do not affect the behavior of the amoebae. This agrees with the supposition that cyanides act upon the respiratory mechanism in the amoeba. Alcohols are even more effective in the absence of O than in its presence. Those anaesthetics (cyanides and sulphides) which induce effects resembling O deficiency in the amoeba are those which inhibit the cytochrome respiratory mechanism. It is suggested that the adverse effects produced by the anaerobic processes causing amoeboid movement are normally removed by an oxidative recovery process, which involves some respiratory mechanism similar to cytochrome.—*C. F. A. Pantin.*

10018. PATRICK, DOROTHY M. Some effects produced by the hooding of birds. *British Jour. Exp. Biol.* 4(4): 322-326. 1 pl. 1927.

10019. RADEMAKER, G. G. J. Das Stehen. Statische Reaktionen, Gleichgewichtsreaktionen und Muskeltonus unter besonderer Berücksichtigung ihres Verhaltens bei kleinhirnlosen Tieren. vii+476p. 296 fig. Julius Springer: Berlin, 1931. RM 69.60.

10021. RIZZO, CARLO. Sui movimenti dei teleostei in rapporto con lesioni sperimentali degli apparati periferici di moto e di senso. [Movements of teleosts as related to experimental lesions of the peripheral motor and sensory apparatus.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1026-1028. 1930.—Unilateral blinding is followed in *Julis vulgaris* and *J. giofredi* by an irregular bending of the tail and a homolateral bending of the body. Bilateral blinding causes the animals to keep in contact with the basin walls. No rotation or other movements were noticed.—*M. Comel.*

10022. SCHEMINZKY, FERDINAND. Weitere Untersuchungen über die Galvanotaxis von Echinodermen. *Pflüger's Arch. Ges. Physiol.* 226(3): 354-365. 2 fig. 1930.—A study of the galvanotactic response of a series of echinoderms. *Strongylocentrotus lividus, Asterias tenuispina, Astropecten bispinosus, Astropecten spinulosus, Asterina gibbosa, Asterias glacialis* and *Echinaster sepositus* all showed a response to the electric current although Nagel had previously reported that the last two give no reaction. *S. lividus* gives a monophasic anodal response; all the others display a diphasic type of galvanotaxis. The smaller forms require a greater current density for stimulation. The author points out the possibility of explaining the phenomena observed in galvanotaxis on the basis of permeability changes analogous to those resulting in electrically stimulated excised frog muscle, e.g., local cathodal fatigue, anodal recovery, etc.—*D. W. Bronk.*

10023. SCHEMINZKY, FERDINAND. Zur Analyse der zweiphasischen Galvanotaxis der Echinodermen. *Pflüger's Arch. Ges. Physiol.* 226(3): 366-376. 2 fig. 1930.—Certain echinoderms, e.g., *Solaster,* give a diphasic galvanotactic response, moving first toward the cathode, then after a pause toward the anode. The paper is devoted to an analysis of this spontaneous reversal of movement, previously observed by the author. The mechanisms of these two phases of the movement are fundamentally different. The 1st is due to direct action of the current on the organs of locomotion or to a local reflex in the individual arms. The 2nd or positive phase is essentially a reflex movement of the whole animal and is of the nature of an escape movement. In support of this view the author presents experiments which show that following transection of the nerve ring or partial asphyxia only the movement toward the anode is suppressed.—*D. W. Bronk.*

ANIMAL PHYSIOLOGY

NERVOUS SYSTEM

ALEXANDER FORBES, *Editor*

(See also in B. A. 6(3): Entries 6748, 6790, 6819, 6829, 6831, 6968, 6979, 6989, 6992, 6996, 6997, 7008, 7011, 7014, 7016, 7020, 7031, 7033, 7037, 7045, 7047, 7048, 7057, 7066, 7087, 7094, 7096, 7099, 7146, 7150, 7151, 7157, 7171, 7172, 7187, 7311, 7327, 8267, 8269, 8277, 8280, 8283, 8305; and in this issue 9439, 9469, 9479, 9515, 9571, 9686, 9751, 9752, 9754, 9757, 9763, 9768, 9812, 9815, 9873, 9911, 9916, 9921, 9932, 10004, 10015, 10019, 10023, 10113, 10114, 10123, 10124, 10150, 10178, 10205, 10209, 10211, 10234, 10251, 10311, 10378, 11288, 11446)

10024. **ADRIAN, E. D., and F. J. J. BUYTENDIJK. Potential changes in the isolated brain stem of the goldfish.** *Jour. Physiol.* 71(2): 121-135. 11 fig. 1931.—The goldfish was chosen because of the large size of its brain stem compared with that of the frog and also because of the greater activity of the respiratory centers. It was possible to record rhythmic potential waves of long duration (up to ¼ sec.), recurring at intervals of 1-3 sec. The respiratory movements have the same range of frequency, and the potential waves presumably coincide with the activity of the respiratory centre. Each wave is caused by the vagal lobes developing a negative potential with respect to other parts of the brain stem. The change is usually monophasic and of smooth contour, but small oscillations are occasionally present. Potential waves of various form may occur in the mid-brain. Some of these are of smooth contour, but often there are rapid oscillations (10-20 a sec.) superimposed on a much slower change. The oscillations resemble those obtained from a nerve trunk when a number of fibers are discharging rhythmically and more or less in unison. The slow potential waves may be due to nerve fibre discharges, but their form makes it more probable that they represent a slow change in the nerve cells or dendrites. It is pointed out that, if the nerve cells become depolarized when they are excited, a slow development and decline of the excitatory state would be accompanied by potential waves of the type described, and the axon discharge would rise and decline in frequency. The rhythmic activity of the respiratory centre in the goldfish can occur in the entire absence of sensory impulses.

10025. **ALTSCHUL, RUDOLF. Contributo biologico allo studio della patoclisi. [Biologic contribution to the study of pathoclisis.]** *Bull. e Atti R. Accad. Med. Roma* 55(7): 147-151. 1929.—"Pathoclisis" is the term which sums up the theories of Ehrlich and C. and O. Vogt as to the differing physico-chemical properties of the different nervous systems. Altschul draws on these theories to explain a differential Au staining of the dentate nucleus and the surrounding cerebellar substance.

10026. **AMBERSON, WILLIAM R., ARTHUR PARPART, and GERTRUDE SANDERS. An analysis of the low-voltage elements of the action-potential wave in nerve.** *Amer. Jour. Physiol.* 97(1): 154-179. 1931.—By a direct method of analysis the low-voltage elements of the action-potential wave in nerve were studied, and the voltage and duration of the negative after-potential were approximately determined. The main observations were: (1) In resting nerve the low-voltage elements are very much reduced or absent; after activation of the tissue by a period of repetitive stimulation they become highly developed so that the electrical discharge from the negative after-potential may be 4-10 times as great as that from the initial high-voltage "spike." (2) The negative after-potential and the "after positivity" are very much reduced at low temp. (5° C. or below), even though the nerve is continually activated by repetitive stimulation. (3) During O-lack the low-voltage elements, both positive and negative, disappear after 1-2 hrs., so that the action potential wave consists of the high-voltage phase alone. The latter may continue for more than an hr. after the suppression of the low-voltage phase. Upon readmission of air the low-voltage elements soon reappear, and become very highly developed, often rising far above the values previously observed in the fresh nerve. The high-voltage phase shows no such behavior, merely returning to, or nearly to, its original value. (4) Direct analysis of the electrical discharge from 2 waves, separated by an interval (10 σ) just longer than the relative refractory period, shows that while the high-voltage phases of the 2 waves come through without diminution, the low voltage elements interfere over all, or nearly all, of their extent, so that the electrical discharge from the negative after-potentials of the 2 waves together is less than double that given by a single wave alone. The differing behaviors of these 2 elements of the action potential wave are interpreted to mean that they are the electrical signs of 2 separate processes. It is concluded that the low-voltage after-potentials are the electrical sign of an active second process, restorative in nature, which builds the nerve back to its original state, possibly by replenishing the stock of some material whose breakdown is responsible for the high-voltage phase. This first process, underlying the high-voltage phase, is relatively anaerobic, and slightly affected by various physical and physiological changes. The second process is relatively aerobic, and is sensitively related to a variety of factors. This conception is similar to the idea long ago proposed by Hering in explanation of the "after-positivity" after repetitive stimulation, but differs from that suggested recently by Levin, who believes that the after-potentials arise from an accumulation of chemical metabolites during activity. The authors believe that the mere presence of such products has no effect upon the action potential wave, although they may affect the injury potential, but that the after-potentials arise only when these substances are being removed, or, more probably, when a new store of precursor substance is being formed, by direct chemical action. A possible relationship between such chemical changes and the physical state of the membrane is suggested, according to which fluctuations in the pH of the tissue affect the dissociation state of an ampholyte near its isoelectric point, and so alter the value of the membrane potential by changing the membrane charge.—*Authors' summary.*

10027. **BABKIN, B. P., and MARGARET E. MacKAY. Concerning the motor mechanism of the salivary glands.** *Amer. Jour. Physiol.* 91(2): 370-376. 1930.—Motor phenomena under the influence of the stimulation of nerves and action of histamine could be observed in the submaxillary gland of both dogs and cats. No smooth muscles could be found either in the ducts or elsewhere in the gland. The possibility of contraction of other histological elements is discussed. The cervical sympathetic nerve besides secretory fibres possesses motor fibres for the submaxillary gland. No adequate explanation can be given at present for the motor effect produced by the stimulation of the chorda tympani.—*Authors' summary.*

10028. **BACQ, Z. M. The action of abdominal sympathectomy on the growth of the albino rat and the weight of the genital organs.** *Amer. Jour. Physiol.* 95(3): 601-604. 1930.—Removal of the 2 abdominal chains from young albino rats has no influence on the later growth of the tail and hind limbs. An increased weight of epididymides, seminal vesicles and prostate was observed in 4 sympathectomized ♂♂; the weight of the ovaries, uterus and tubes in 2 sympathectomized ♀♀ was also much above the normal.—*Author's conclusions.*

10029. **BARDENSTEIN, SARA. Über nervöse Wechselbeziehungen der Nebennieren und des Paraganglion**

abdominale mit den anderen Organen der Bauchhöhle bei der Katze. *Anat. Anzeiger* 71(1/3): 37-54. 1 fig. 1930.—In 30 cats Bardenstein found that the abdominal paraganglion and the suprarenal, as in man, had "short" routes of nervous connection with some sections of the gastro-intestinal tract and its large glands, with the sexual glands, the kidneys, the diaphragm, the vascular system, the peritoneum, and the peritoneal cellular tissue. The "short" nerve routes of the suprarenals varied from barely pronounced to complete. Those of the abdominal paraganglion showed those constants which appear usual for the autonomic nervous system.

10030. **BISHOP, GEORGE H.** The reactance of nerve and the effect upon it of electrical currents. *Amer. Jour. Physiol.* 89(3): 618-639. 10 fig. 1929.—The "capacity" of nerve is discussed in terms of the polarizability of its interfaces to ions. A network of capacity and resistance is described which in 1 arm of a Wheatstone bridge balances the reactance of nerve in the opposite arm, when the Pb electrodes are in contact with intact tissue. The distribution of polarizability in nerve is inferred to be different from the distribution of the reactance in this network, but to involve more than 1 component, such that no single unit of 1 capacity and resistance will compensate nerve in a bridge. By means of the visible cathode ray oscillograph record it is feasible to measure the reactance of a stretch of nerve mounted on electrodes with a galvanic current of short duration, to differentiate qualitatively between its different components of polarizability, and to measure its resistance to direct current, and to alternating currents of (practically) infinite frequency. The reactances of nerve trunks, and of roots with thin connective tissue sheaths, are found to be similar in distribution. The effect of the sheath is chiefly due to its resistance, in series transversely, and in shunt longitudinally, to the nerve fibers. The effect of injury under 1 or both electrodes, by heating, by crushing, or by repeated electric shocks, is to reduce 1 component chiefly of the nerve's reactance, with little effect on the others. Injury in the interpolar stretch reduces a different component. The action potential is decreased to extinction, and the threshold is raised, progressively, through injury by electrical shocks, considerably before the transverse polarizability of the nerve under the electrodes is abolished; further injury by shocks of the same strength then further reduces the polarizability to approximately zero at the region injured. Certain apparatus suitable for the measurement of resistance and capacity with the oscillograph as a null instrument is described in an appendix.—*Author's summary.*

10031. **BLIER, ZACHARY.** Physiology of the sphenopalatine ganglion. *Amer. Jour. Physiol.* 93(2): 398-406. 1 fig. 1930.—The vasomotor reactions in the nasal mucosa were measured by the method of Tschallussow, which depends upon changes in volume of the nasal cavity. It was found that in the dog vaso-constrictor fibers for the nasal mucous membrane travel as follows: the preganglionic fibers run in the cervical sympathetic and synapse in the superior cervical ganglion. The post-ganglionic fibers go to the internal carotid nerve; the major portion of them join the posterior nasal nerve and reach the nasal mucous membrane with this nerve. A small number reach the deep petrosal, go to the Vidian nerve, traverse the sphenopalatine ganglion, and reach the nose by way of the posterior nasal nerve. In the dog vaso-dilator fibers for the nasal mucous membrane travel in 2 ways: a) from the facial nerve the preganglionic fibers travel in the major superficial petrosal to the sphenopalatine ganglion, where they undergo a synapse. The post-ganglionic fibers enter the posterior nasal nerve and go to the nose. b) Vaso-dilators run in the cervical sympathetic and probably synapse in the superior cervical ganglion. From here they travel in the internal carotid nerve, to the posterior nasal nerve, and reach the nasal mucous membrane. No antidromic vaso-dilators are present in the posterior nasal nerve of the dog. Sensory nerves for the nasal mucous membrane are visceral and somatic. The visceral fibers run through the sphenopalatine ganglion to the Vidian nerve to the greater superficial petrosal nerve to the facial nerve. The somatic fibers run in the posterior nasal nerve of the trigeminus. Both sets of fibers are capable of producing respiratory, cardiac, ocular, facial, and lingual reflexes. Reflex vasomotor changes in the nasal mucous membrane can be evoked by stimulation of the Vidian nerve, posterior nasal nerve and others. There are no sensory fibers in the cervical sympathetic of the dog. These findings on the dog do not seem to help in explaining effects reported from cocainizing the sphenopalatine ganglion in man.—*Author's conclusions.*

10032. **BRJUSSOWA, S. S., und W. W. LEBEDENKO.** Zur Schmerzleitungsfähigkeit der Gefässe. *Zeitschr. Ges. Exp. Med.* 69(1/2): 29-40. 1929.—This research has been done in order to settle the dispute between the anatomists and physiologists as to whether the innervation of the vessels is through branches of the spinal nerves or long periarterial branches in the walls of the vessels. Previous varying results have been due to the acute experimentation. The authors measure the pain by the crying and movements of the animal, the pulse, blood pressure, and respiration. Electrical, mechanical, or chemical stimuli (injection of 5% $BaCl_2$) are employed 2-7 days following the operation instead of in an acute experiment. After section of the spinal nerves sending fibers to the vessels complete anesthesia results; this is in opposition to the view that there are long periarterial paths and also not in accordance with the work of Foerster on patients. Cutting the posterior roots eliminates pain, but it is essential that a sufficient number be cut. Hemisection of the cord weakens the pain reaction. The writers conclude: there is no pain conduction on section of all the mixed peripheral nerves, or the posterior roots, or bilateral section of the proximal cord. —*W. H. Gantt.*

10033. **BRODMAN, KEEVE, and McKEEN CATTELL.** Heat versus tension in relation to the problem of plurisegmental innervation. *Jour. Physiol.* 70(3): 205-217. 1930.—In the gastrocnemius muscle of the frog, preparations in which the sum of the tensions (T) resulting from the separate stimulation of the 8th and 9th nerve roots (T_a+T_b) considerably exceeds the value obtained from their simultaneous stimulation (T_{a+b}) give values for the initial heat (H) such that (H_a+H_b) approximates (H_{a+b}), as was observed by Katz. On the other hand, if the excess tension $(T_a+T_b)-(T_{a+b})$ is low, the heats measured for the separate roots (H_a+H_b) fail to equal the value obtained when the whole nerve is stimulated at once (H_{a+b}). This suggests that a smaller proportion of the heat produced is recorded when both roots are stimulated together, and consequently that heat measurements do not serve as a reliable criterion of doubly innervated muscle fibers. The indicated proportion of plurisegmentally innervated fibers $((T_a+T_b)-(T_{a+b}))$ becomes smaller as the observations are repeated, i.e., as fatigue develops. In 1 group of experiments the average number was reduced to less than ½ the original indication, during a period which resulted in a reduction of the power of the muscle (T_{a+b}) to about ⅓. This result can be accounted for on the basis of the functional loss of a chance distribution of neuro-muscular junctions, and it undoubtedly explains many instances in which a low proportion of plurisegmentally innervated fibers has been indicated by tension. The change in the value of the excess tension $((T_a+T_b)-(T_{a+b}))$ which may occur in a given preparation, as well as the wide differences observed between different preparations, rule out the suggestions advanced by various workers that the excess tension can be wholly accounted for by a decrease in the proportion of tension registered when both roots are stimulated together (T_{a+b}). These results indicate that tension records give a reliable approximation of the proportion of fibers in a muscle having functionally active nerve endings from both nerve roots.—*Authors' summary.*

10034. **BRONK, D. W.** The initial and recovery heat

production of vertebrate nerve. *Jour. Physiol.* 71(2): 136-144. 1931.—Recent improvements in thermopile and galvanometer design have been employed in a determination of the course of the heat production of frog's nerve. Many of the essential findings of the earlier workers have been in large part confirmed. An analysis of the course of the heat production resulting from a 9- to 15-sec. stimulus shows a progressive increase in the rate of heat production during the period of stimulation. This is the sum of the heat associated with the conduction process and that accompanying the recovery therefrom. The recovery heat production has a maximum rate immediately following the end of stimulation, and continues for some min. at a decreasing rate. The duration of this recovery phase is largely dependent upon the temp. At 19° C. it was about 11 min. and at 24°-25° C. about 7½ min. From 7 experiments comprising about 70 individual determinations the initial heat production has been found to be 8.9% of the total. This is compared with the earlier determinations of 11% for frog's nerve and Hill's recent value of 2.25% for crustacean nerve.—*Author's summary.*

10035. BROWN, GEORGE E. Observations on the surface capillaries in man following cervicothoracic sympathetic ganglionectomy. *Jour. Clin. Investigation* 9(1): 115-137. 6 fig. 1930.—Quantitative studies on the capillaries of the skin of human beings have been made both before and after cervicothoracic sympathetic ganglionectomy. Nine cases of advanced Raynaud's disease, 4 of vasomotor forms of scleroderma, 4 of primary scleroderma, 2 of thrombo-angiitis obliterans, and 1 of arthritis of the hands have been studied. The operation did not cause dilatation of the capillaries (the usual physiologic effect) in any case. On the contrary, there was consistent narrowing of the dilated atonic capillaries in Raynaud's disease, and an increase in the number of visible capillaries. This could be explained on the basis of a diminished concentration of a theoretic chemical dilator substance in the tissues. Following sympathetic ganglionectomy in 8 cases of vasomotor and primary forms of scleroderma, there was definite reduction in the caliber of the capillaries. The number of open capillaries for each sq. mm. of skin increased. There was quantitative evidence of arteriolar dilatation and lessened response on the part of these vessels to cold. Clinical improvement of some degree occurred in every case. In the cases of thrombo-angiitis obliterans and arthritis, in which the capillaries were of fairly normal caliber and tonus, following operation no change in the width of the capillaries was noted. The intermittent slow flow of cyanotic capillary blood changed to one that was rapid, regular, and of normal color. The number of open capillaries was increased. The major effect of sympathetic ganglionectomy is exerted on the arterioles. There is a sharp, maintained increase in the surface temp. of the skin of the hand in every case. These studies add some confirmation to the opinions of those who hold to the importance of chemical factors in modifying tonus in the capillaries of the skin of human beings. Chemical control of these vessels seems, under certain conditions, more effective than nervous control.—*Author's summary and conclusions.*

10036. BURGET, G. E., and W. K. LIVINGSTON. Pathway for visceral afferent impulses from the forelimb of the dog. *Amer. Jour. Physiol.* 97(2): 249-253. 1931.—Injection of 5% lactic acid into the brachial artery of a dog gave rise to afferent impulses which apparently were painful to the animal. This reaction is dependent upon changes in the vessel wall rather than upon secondary changes in somatic tissues. Removal of the stellate and 2nd thoracic ganglia on one side did not alter the response of the animal to injection of lactic acid into the brachial artery of that side. These visceral afferent impulses enter the cord largely by way of the posterior roots of the 7th and 8th cervical and 1st dorsal nerves. —*Authors' conclusions.*

10037. CANNON, WALTER B. Bodily changes in pain, hunger, fear and rage: recent researches into the function of emotional excitement. 2nd ed. 404p. Appleton & Co.: New York, 1929. Pr. 12s. 6d.

10038. CANNON, WALTER B. The autonomic nervous system: an interpretation. *Lancet* 218(5569): 1109-1115. 1930.—A lecture.

10039. CATTELL, McKEEN, and KEEVE BRODMAN. The influence of the number of active fibres on the heat-tension ratios of striated muscle. *Jour. Physiol.* 70(2): 195-203. 1930.—The relative amount of heat and tension measured, as the result of the application of a short tetanic stimulus to the gastrocnemius muscle of the frog through its nerve, changes as the strength of the current is varied between its threshold and maximum value. In 7 preparations the average value of the heat-tension ratio increased more than 50% as the tension increased from a low value to the maximum. Since the muscle was always stimulated through its nerve, this result is not due to a primary influence of the current strength on the physiological response of the muscle, but rather to the changing number of active fibres. Various factors which might account for the increasing value of the heat-tension ratios as more fibres are involved are discussed, and it is suggested that the explanation lies in the difficulty in measuring a constant proportion of the tension or heat produced when a changing number of fibres are active.—*Authors' summary.*

10040. CHILOW, K. L. Über einige Indikatoren bei der Untersuchung der reflektorischen Nasenfunktion. [Some indicators in the investigation of reflex nasal function.] *Beitr. Anat. Ohres. Nase u. Halses* 28(2): 124-137. 1930.—The action of increasing intensities of odor (geraniol, citral, chinolin, pyridin, acetone, and toluol in the order given) on the respiratory and cardiovascular reflexes was tested on 12 surgically prepared rabbits. Mechanical stimulation by pure air produced no cardiovascular reflex in the nasal mucosa. In the odor experiments the cardiovascular reflex was a secondary phenomenon, dependent on the respiratory reflex. All the odors produced slowing or standstill of respiration while the olfactory bulb was in situ; thereafter only toluol and acetone produced a reaction. Another series of aromatics was also without action after extirpation of the olfactory bulb. When the Gasserian ganglion was also removed acetone and toluol had no effect. Individual degrees of sensitivity were found but all rabbits responded to toluol with respiratory standstill.

10041. CLEMINSON, F. J. Limb responses to semicircular canal stimulation in man. *Acta Oto-Laryngol.* 15(2/4): 393-397. 3 fig. 1931.—A patient with total deafness of the left ear following mumps, tested 3 wks. after onset of the disease for equilibrium-maintaining reflexes, gave reactions exactly corresponding to those described by Tait and McNally in the case of frogs in which the left anterior and posterior semicircular canals had been destroyed. After 11 wks. more, though hearing and caloric tests showed no recovery of the labyrinth, no difference was found between the responses of the right and left limbs. Apparently in some way compensation had been established.

10042. COATES, A. E., and O. W. TIEGS. Further observations on certain alleged effects of sympathetic nerves on skeletal muscle. *Australian Jour. Exp. Biol. and Med. Sci.* 71(1/2): 37-40. 1930.—In the brachial plexus of the pigeon the sympathetic ganglia are so intimately associated with the spinal nerves that postural effects following upon removal of these ganglia may be ascribed to unavoidable injury of spinal nerves, and not to removal of the ganglia alone. The histological structure of the interosseus muscles of a dog was not visibly affected by deprivation during a year of the sympathetic supply nor was there a change in thickness of the fibers. Contrary to Royle, the authors found that the sympathectomized limb of a goat did not behave differently from the normal limb on injection of ephedrine into the jugular vein. Apparent lack of tone in the sympathectomized limb, occurring in 1 out of 10 goats in which the left sympathetic trunk was removed and allowed to

degenerate for 3 mos., seemed to be due to trauma, and not to removal of sympathetic nerves.

10043. **COOK, D. D., and R. W. GERARD. The effect of stimulation on the degeneration of a severed peripheral nerve.** *Amer. Jour. Physiol.* 97(3): 412-425. 2 fig. 1931.—A method for the continued stimulation of nerves in situ in living animals by means of buried electrodes was used on dog sciatics to study the course of degeneration of the peripheral portion of a severed nerve under stimulation. A cut nerve lost its ability to conduct more rapidly when stimulated than when at rest. Data on irritability and muscle response lead to the conclusion that individual axones fail in temporal sequence. In each axone the threshold rises, and conduction is probably depressed, until it has passed a critical value at some point along the fiber, when conduction is blocked. Degeneration of a nerve process isolated from its cell body might be due to lack of impulses conducted by it or of necessary substances spreading along it. The evidence considered favors the 2nd possibility.—*Authors' summary.*

10044. **CORBEILLE, CATHERINE, and EDWARD J. BALDES. Changes in volume of the spleen in response to acoustic stimulation.** *Amer. Jour. Physiol.* 91(2): 499-506. 1930.—In dogs and in 1 cat the changes in volume of the spleen were studied by the plethysmographic method of Hargis. Environmental conditions of the animals were carefully controlled. External evidences of emotional response were not noted at any time. The splenic responses to acoustic stimuli followed certain definite types: sudden contractions with the onset of the stimuli, delayed sudden contractions occurring during the stimuli, sudden contractions following cessation of the stimuli, slow contractions during the stimuli, and persistent contractions and dilatations. These reactions have some of the characteristics of general reflexes described by Sherrington.—*Authors' summary.*

10045. **CRILE, GEORGE W. An electro-chemical interpretation of memory.** *Proc. Amer. Phil. Soc.* 69 (6): 359-369. 3 pl. 1930.—A theory is advanced which seeks to explain the faculty of memory on the basis of an electrical balance of the K-phospho-lipins of the nerve cells and their fibers. Due to stimuli received from the outside, electrical changes are produced along afferent nerves. These are carried to the nerve cells of the infant and condition a "secretion" of the neurofibrils. Experiments are reported in which elements that can be shown to be chemical components of brain substance when subjected to electrical stimulation tend to arrange themselves in a fashion which the author considers to be similar to the neurofibrils in the brain. The author considers his experiments as proof of the fact that memory and other intellectual faculties are based on these electrical properties of brain tissue.—*W. Malamud.*

10046. **DALE, H. H., and J. H. GADDUM. Reactions of denervated voluntary muscle, and their bearing on the mode of action of parasympathetic and related nerves.** *Jour. Physiol.* 70(2): 109-144. 1930.—For experiments on denervated voluntary muscles with their natural vascular supply the authors have used the musculature of the tongue and the gastrocnemius of cats and dogs. The apparent difference between the actions of epinephrine on "drug contractures" and "nervous contractures" of denervated muscles was investigated and explained. It was found that eserine greatly enhances the contractures produced by stimulating vaso-dilator nerves and those produced by choline esters, but leaves unchanged those produced by analogous non-esteric substances (tetramethyl ammonium salts). Atropine paralyses the effect of acetylcholine and similar drugs, applied directly to denervated mammalian muscle. The evidence removes discrepancies and produces new concordances, supporting the view that the vaso-dilator effects of parasympathetic nerves and of sensory fibres stimulated antidromically, and the contractures of denervated muscles accompanying these actions, are due to the peripheral liberation of acetylcholine.

10047. **DWORKIN, S., and M. FLORKIN. The effect of temperature upon chronaxie and recovery period of nerve.** *Amer. Jour. Physiol.* 95(1): 139-141. 1930.—The effect of cooling the nerve upon least interval for muscular summation and duration of chronaxie has been studied in the sciatic-gastrocnemius preparation of *Rana pipiens.* Both processes are prolonged in a fairly uniform manner; a ratio of 6 to 1 appears to hold at any given temp. Making use of the data of Amberson, a ratio of 4 to 1 between absolute refractory period and chronaxie is disclosed. The significance of these relationships is not discussed.—*Authors' summary.*

10048. **ENGERTH, GOTTFRIED, und HANS HOFF. Ein weiterer Beitrag zur Lehre von der Stirnhirnfunktion.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 129(3/4): 332-341. 1 fig. 1930.—Other investigators had shown that dogs in which the pyramids had been sectioned, dogs from which the cerebellum had been removed, and animals from which the cerebrum but not the thalamus had been removed, preserved the normal rhythm in walking (in dogs, either a trot with diagonal extremities advanced, or a gallop). In 6 dogs from which large parts of the cerebrum had been removed, Engerth and Hoff found that a cut in front of the corpora quadrigemina anteriora produced spastic gait ["Laufkrämpfe"], while a posterior cut did not, even though it severed the nucleus ruber completely from the brain stem. In a 2nd experiment the basal portion of the brain stem was cut in an anterior-posterior direction, and thereby the crossed fibers from the nucleus ruber to the spinal cord were severed. One of the 2 dogs used died; the survivor could not walk. It could move its legs, but correlation between the 2 sides was completely lost. The authors conclude that the nucleus ruber is an important center regulating quadrupedal walking, but that the gait is modified (probably differently for the various animal species) by the higher centers. That the frontal lobes affect the human quadrupedal gait was indicated by several series of experiments. First, a "large number" of healthy persons were made to walk on all fours, with knees bent and palms and soles flat on the ground. The arm and leg of first 1 side and then the other were advanced. Is this ambling gait congenital or acquired during development? Children just beginning to walk were observed to advance simultaneously the left foot and right hand, then the right foot and left hand, until the 2nd yr. of life, when the gait changed to that previously observed in adults. Engerth and Hoff believe that they have observed signs of a connection between this change and the development of the faculty of speech: children who are backward in learning to talk retain the primitive trot gait longer than children whose speech development is normal. The authors conclude that the development of the human walk depends on a switching of control from the deep centers to the superficial motor centers in the frontal lobes of the cerebrum. In 2 patients with lesions of the frontal lobes Engerth and Hoff were able to demonstrate a reversion of the quadrupedal gait to the primitive crossed advance. They explain the ambulation apraxia observed by Gerstmann and Schilder as probably due to incomplete destruction of the frontal centers, so that what remained was enough to prevent the deep centers from assuming control, but not enough itself to regulate the act of walking.

10049. **[ERSHOV, V. A.] ЕРШОВ, В. А. Экстензорная корковая ригидность и функции предлобных долей головного мозга. [The extensor cortical rigidity and functions of prefrontal lobes of brain.]** [English summary.] Клинический Журнал Саратовского Университета (*Klin. Zeitschr. Univ. Saratow*) 8(4/5): 211-228. 1 fig. 1929.—The author's experiments were conducted on 14 dogs. Prior to operation, dogs were deprived for an entire day of food and water. 30-60 min. before the operation, solution of morphine chloride was injected subcutaneously. The animals were anesthetized with chloroform-ether. Motor areas of the cerebral cortex and prefrontal lobes of the brain (in front of *sulcus cruciatus*) were removed together or separately. In animals No. 2-5, extirpation was performed on the left

side; in No. 6-8, 10-13—on the right; No. 1, 9, 11—only frontal lobes were removed. Dogs were observed after the operation from 2-5 days to 3-5 weeks. In all cases there was paralysis of legs on the opposite side, and derangement of cutaneous and deep sensitivity, persisting for 2-3 weeks. No. 1, 3, 8 showed cutaneous hypersensitivity (scratch reflex) on the side of operation. There was also observed extensor rigidity of limbs—especially of forelegs—on the opposite side. This rigidity remained for about 35 days, although decreasing gradually after 7th-8th day. Its intensity depended on the position of the animal's head in relation to the body. Removal of prefrontal lobes alone resulted in profound depression, circular movement towards the side of lesion, and, in many cases, in scratch reflex on the ipsilateral side. Distinct extensor rigidity, especially in the forelegs, was marked on the opposite side. The author concludes that the motor areas and prefrontal lobes of the brain share the function of supreme control of the static and stato-kinetic reflexes (postural reflexes).—*B. Van Rosen.*

10050. **FENG, T. P., and R. W. GERARD. Mechanism of nerve asphyxiation: with a note on the nerve sheath as a diffusion barrier.** *Proc. Soc. Exp. Biol. & Med.* 27(9): 1073-1076. 1930.—Preliminary paper.

10051. **FORBES, A., H. DAVIS, and E. LAMBERT. The conflict between excitatory and inhibitory effects in a spinal center.** *Amer. Jour. Physiol.* 95(1): 142-173. 3 fig. 1930.—The balancing of excitatory and inhibitory central effects in the extensor center has been studied by isometric recording of contraction in the knee extensor, vasto-crureus, in the decerebrate cat. The effective strength of the inhibitory stimuli has been controlled by simultaneous recording of action currents in the ipsilateral afferent nerve. Maximal stimulation of the ipsilateral (peroneal or popliteal) nerve causes complete inhibition of the strongest crossed extension reflex. Submaximal stimulation causes complete inhibition of weak crossed extension reflexes, but as the strength of the excitatory stimulation is increased, the amount of inhibition passes through a maximum and then decreases, in this respect resembling the relation found by Creed and Eccles with the crossed inhibition of flexors. Increasing the excitatory background against which the the submaximal inhibitory stimulus operates, not merely adds more motor neurones to the number previously involved, but robs the inhibitory stimulus of the power to inhibit as many motor neurones as it did when acting against the weaker excitatory background. Weak stimulation of the popliteal nerve, which causes inhibition against a weak excitatory background, sometimes, in the presence of a strong excitatory background, gives instead additional excitation. The authors' observations of the rebound contraction which follows strong inhibitory stimuli, tend to support the interpretation of this phenomenon, proposed by Sherrington and Sowton, as the delayed expression of activity of excitatory fibers in the ipsilateral nerve. The threshold of these fibers is relatively high. Evidence is also adduced for the presence of inhibitory fibers of high threshold in the contralateral sciatic nerve. The balance between excitatory and inhibitory influences is rarely steady. One or the other usually tends to dominate. The intrinsic tendency of the spinal centers to exhibit a spontaneous alternation between extension and flexion, even in the absence of proprioceptive impulses, demands some postulate other than the simple grading of opposed excitatory and inhibitory states, acting like chemical substances. Evidence at present known, pointing to the view that central excitatory and inhibitory effects are qualitatively different from those associated with peripheral nerve impulses, is discussed and shown to be compatible with an interpretation based on known functions of peripheral nerve. Sherrington's theory, which assumes a "central inhibitory state" of undetermined character, requires fewer subsidiary hypotheses and is simpler in this respect, but must still be regarded as merely a working hypothesis.—*Authors' summary.*

10052. **FULTON J. F., E. G. T. LIDDELL, and D. McK. RIOCH. The influence of experimental lesions of the spinal cord upon the knee-jerk. I.—Acute lesions.** *Brain* 53(3): 311-326. 10 fig. 1930.—One of the major physiological symptoms of spinal shock is an increased susceptibility to inhibition. The knee-jerk, for example, may be inhibited for a period of several sec. by applying a single break-induction shock to a sensory nerve of the hind-limb. In the intact animal, or in a decerebrate preparation, it is exceedingly difficult and often impossible to inhibit a knee-jerk by a corresponding stimulus. The present paper records experiments in which the attempt was made to determine the pathways responsible for the differences between the decerebrate and spinal condition, as judged by the inhibition of the knee-jerk. Acute lesions were made at levels ranging from D.8 to L.1, after which knee-jerks were examined by means of a frictionless torsion-wire myograph of high natural vibration frequency, with simultaneous registration of the electrical response according to the technique described by Ballif, Fulton and Liddell. Complete lateral semisection of the spinal cord causes the knee-jerk on the side of the semisection to assume "spinal" characteristics, while the jerk on the opposite side remains "decerebrate." The dorsal $\frac{2}{3}$ of the spinal cord may be cut through without causing the knee-jerk to become "spinal" in type on either side. In acute preparations isolated transections of the ventral quadrant of the spinal cord on 1 side cause the knee-jerk on the same side to become "spinal." From these observations the authors conclude that the descending pathways responsible for the differences between the "decerebrate" and "spinal" conditions pass in the ventral quadrant of the spinal cord, probably in the medial $\frac{1}{2}$. The vestibulospinal tracts therefore suggest themselves since they are the most important descending fibres in this area. Transection of the spinal cord caudal to the knee-jerk centers causes great enhancement in their activity, diminution in susceptibility to inhibition, and, in a "spinal" preparation, the prompt reappearance of the stretch reflex.—*Authors' summary.*

10053. **FULTON, J. F., E. G. T. LIDDELL, and D. McK. RIOCH. The influence of unilateral destruction of the vestibular nuclei upon posture and the knee-jerk.** *Brain* 53(3): 327-343. 3 fig. 1930.—Experiments on cats indicate that experimental lesions of the vestibular nuclei in normal animals cause hypotonia on the side of the lesions with forced rolling movements to that side. If decerebrated after an interval of 3 wks., the rigidity and stretch reflexes are greatly diminished on the injured side, and the knee-jerk is more readily inhibited. Marchi staining of the cord in such animals has shown extensive degeneration of the homolateral vestibulospinal pathway and slight degeneration in the crossed vestibulospinal tract. Acute lesions of Deiters' area after decerebration also cause great diminution of rigidity on the same side and increased susceptibility of the knee-jerk to inhibition. The authors conclude that the nucleus of Deiters and the direct spinal pathway to which it gives rise are chiefly responsible for the differences between the decerebrate and the spinal condition, and hence its integrity is essential for preventing spinal shock.—*Authors' summary.*

10054. **GALANT, JOHANN SUSMANN. Über den Fusssohlengreifreflex der Säuglinge.** *Arch. Kinderheilk.* 92(3/4): 304-305. 1931.—Stimulation of the sole of the foot in infants produces grasping movements of the foot and toes similar to the pathological Babinski reflex in adults.

10055. **GELLHORN, E., H. GELLHORN, and J. TRAINOR. The influence of spinal irradiation on cutaneous sensations. I. The localization of pain and touch sensations under irradiation.** *Amer. Jour. Physiol.* 97(3): 491-499. 1931.—In 8 subjects for experiments with pain points and 4 for experiments with touch points, the localizations of pressure and pain points underwent characteristic changes when a spinal irradiation was brought about by pinching up a small area on the forearm. The accuracy in localization of pain points was

improved while the localization of touch points was impaired. These changes were not produced by changes in threshold since they were independent of the intensity of the stimulus. The experiments indicate that an alteration of the sensory part of the spinal cord is inadequately described by hyper- or hypo-esthesia, because qualitative changes in the sensations which lead to quantitative deviations in the accuracy of localization are not taken into account. The importance of the experimental results for the physiology and patho-physiology of the spinal cord is briefly discussed.—*Authors' summary.*

10056. **GLEY, E., et H. JANKOWSKA. Relation de dépendance entre la teneur du sang en calcium et l'action inhibitrice du nerf splanchnique.** *Jour. Physiol. et Path. Gén.* 28(4): 789-799. 8 fig. 1930.—The inhibitory effect of the splanchnic nerve on the movements of the intestine depends, like its vasomotor effect, on the Ca content of the blood. Hypocalcemia causes a great decrease and often temporary suppression of the inhibitory action of the nerve, which is rapidly regained by injections of $CaCl_2$ into the blood stream. In some animals the two functions of the splanchnic nerve can be differentiated by varying the Ca content of the blood.—*W. R. Fearon.*

10057. **GRIFFIN, ALBERT M., and WILLIAM F. WINDLE. The relation of the level of transection of the brain stem to the occurrence of decerebrate rigidity in newborn rabbits.** *Amer. Jour. Physiol.* 97(3): 397-404. 1931.—In 29 rabbits aged 1 hr.-9 days the cerebral hemispheres were removed and the brain stem sectioned, in different animals, at 3 principal levels. Decerebrate extensor rigidity occurred if the brain-stem was transected in a plane passing through the superior colliculi and the rostral ⅓ of the pons; the red nuclei and associated centers in the mesencephalon were separated from the functional portion of the central nervous system by such an operation. If the plane was slanted forward to the infundibulum or mammillary bodies, the red nuclei remained intact and marked decerebrate rigidity did not occur; instead, prolonged movements of progression characterized the experiment. It is evident that the postural reaction in young rabbits is independent of the red nucleus. Successful locomotion in these animals seems to require that this structure and possibly others in the hypothalamus remain intact. When the level of transection was made through the hind brain in the region of the nuclei of the 8th nerve, extensor rigidity disappeared and it was usually replaced by a marked flexor rigidity. Hence it is concluded that the occurrence of decerebrate rigidity in young rabbits is more dependent upon the level of transection of the brain-stem than upon the age of the animal.

10058. **HEINBECKER, PETER. The functional analysis of a sympathetic ganglion of the turtle by the cathode ray oscillograph.** *Amer. Jour. Physiol.* 93(2): 384-397. 2 pl. 1930.—Conduction through the cervical sympathetic ganglia of the turtle of the fiber types present in this nerve was studied in *Chrysemis picta, C. marginata* and *Pseudemys concinnata.* The nerve lacks the 1st component of fibers characteristic of somatic nerves. The 1st, or B_1, potential of this nerve when present pre- and postganglionically conducts through the ganglion in both directions without apparent delay. This fact, together with the evidence that the fibers giving rise to it have physiological and histological characteristics similar to those of fibers considered to be afferent in autonomic and somatic nerve trunks, seems to warrant the conclusion that the fibers of the B_1 potential are afferent. The major portion of the fibers of the B_2 potential and all fibers giving rise to the C potential synapse in the superior sympathetic ganglion. The action potentials of such fibers do not conduct toward the central nervous system through the ganglion. In turtles having 1 or more proximal ganglia besides the customary superior a small number of B_2 fibers conduct through the superior cervical ganglion in both directions without delay. These fibers have synapsed in the more proximal ganglia. Postganglionically they conduct more slowly than the rest of the B_2 fibers. No evidence of afferent C fibers has been obtained. In the turtle superior cervical ganglion, preganglionic myelinated or B_2 fibers are found to synapse with postganglionic myelinated or B_2 fibers, and unmyelinated C preganglionic fibers to synapse with unmyelinated C postganglionic fibers. In fresh preparations the synapse time as determined by delay in conduction rate and by absolutely refractory period times varies from 8 to 15 σ for the B_2 potential and from 20 to 30 σ for the C potential. These times are proportional to their respective thresholds and conduction rates. A method for determining the presence of a synapse in a ganglion by the use of CO_2 is described.—*Author's summary.*

10059. **HENDERSON, V. E., and T. A. SWEET. On the respiratory centre.** *Amer. Jour. Physiol.* 91(1): 94-102. 1929.—Experiments (of which 5 are cited) on decerebrated cats indicate that the respiratory centre is located in the lower part of the medulla. Respiration is affected by the increase in tonus caused by the activity of the medullary tonus centres when the impulses from the red nucleus are cut off but not deleteriously as long as the vagus nerves are functional. Cutting off of the impulses from the red nucleus and from the lungs by cutting the vagi leads to apneustic respiration. The work of the authors shows no evidence for more than 1 respiratory centre.

10060. **HERREN, R. YORKE, and HAROLD R. FOSSLER. Achilles and crossed flexion reflex time in the intact rat.** *Amer. Jour. Physiol.* 97(2): 282-285. 1931.—In 6 mature ♂ rats weighing 170-200 gm. light dosages of caffeine citrate lengthened Achilles reflex times but did not affect crossed flexion reflex times. Heavy dosages of caffeine citrate gave an Achilles reflex time similar to the normal but greatly shortened crossed flexion reflex time. Light dosages of alcohol shortened Achilles reflex time but did not affect crossed flexion reflex time. Heavy dosages of alcohol lengthened Achilles reflex time and also greatly lengthened crossed flexion reflex time.

10061. **HEWER, E. E., and G. M. SANDES. An introduction to the study of the nervous system.** 104p. William Heinemann: London, 1929. Pr. 21s.

10062. **HINSEY, J. C., S. W. RANSON, and E. A. DOLES. Reversal in the crossed extension reflex in decerebrate, decapitate and spinal cats.** *Amer. Jour. Physiol.* 95(3): 573-583. 1930.—Contralateral reflexes have been examined in the muscles acting at the ankle joint, in 14 decerebrate, 4 decapitate and 19 spinal cats. The state of neural balance in the spinal centers is a very important factor in determining the type of reflexes present. Reversals have been seen in a great many of these preparations. Weak stimuli usually elicit extension reflexes and stronger ones tend to bring in flexion. Changes in reflex type were found on changing the nerve stimulated. The saphenous nerve gave crossed extension in the anemic decerebrate preparations while the tibial at the ankle and the femoral at times showed flexor involvement either as contraction, alternate contraction or pure crossed flexion. Similar reversals were seen in decapitate and spinal animals but in the latter the tibial sometimes gave extension responses and the saphenous flexion. In the decerebrate preparations, rapid faradic stimulation sometimes showed flexor participation in the response while slower stimulation of the same strength gave crossed extension alone. This frequency reversal was not seen in decapitate and only once in spinal animals.—*Authors' conclusions.*

10063. **HOU, C. L., und E. TH. BRÜCKE. Reizversuche an Vorticellen. (Alles-oder-nichts-Gesetz, Dekrement der Erregungsleitung in der Narkose, Chronaxie.)** *Pflüger's Arch. Ges. Physiol.* 226(3): 411-417. 1 fig. 1930.—The response of the stalk muscle of *Vorticella* to stimulation by condenser discharges has been investigated. The authors conclude that the myonomes or contractile elements of healthy uninjured specimens obey the all-or-none law. Under anesthesia, as in a solution of 1.5% urethane, there is a decrease in the tonus of the stalk, a conduction of excitation with decrement and a variation

in the magnitude of excitation with the strength of the stimulus. Values for the chronaxie of a number of forms are given.—*D. W. Bronk.*

10064. HOU, CHUNG LIEN. Über die Veränderungen der Reizzeit-Spannungs-Kurve durch Narkose, Kälte und Veratrin. *Pflüger's Arch. Ges. Physiol.* 226(4/5): 676-688. 5 fig. 1931.—The first experiments were performed with the same pendulum as used by Kodera (Pflüger 219 & 220), and the curves showed the same large number of kinks. This was found to be due to a faulty closing contact, which when rectified gave smooth curves. For the rest of the work condenser discharges were used, the discharge rates being converted to seconds by Lapicque's factor .37 CR which was verified. The observations of former workers were confirmed as to the effect of narcotics (urethane and piscain) and temperature alteration. The changes are reversible, a rise in rheobase and shortening of chronaxie being produced by the action of narcotic or rise of temperature. Kodera and Brücke are confirmed in that veratrine poisoning of the curarised gastrocnemius gives rise to two quite different strength duration curves from direct excitation depending upon whether the twitch or contracture is taken as index of efficacy of stimulus. The chronaxie of the latter is 20 times as long as that of the former, and the thresholds are considerably higher.—*W. A. H. Rushton.*

10065. JACOBSON, EDMUND. Electrical measurements of neuromuscular states during mental activities. I. Imagination of movement involving skeletal muscle. *Amer. Jour. Physiol.* 91(2): 567-608. 2 fig. 1930.—The present conclusions relate to a simple act of imagined flexion of the forearm frequently repeated to secure statistics of measurements. (1) When the subject, lying relaxed with eyes closed, imagined that he was steadily bending his right forearm, action potentials were led off from a suitable electrode placed over the right biceps, with a 2nd electrode at a relatively indifferent point on the right arm. (2) No such potentials were recorded under the same conditions, including the same signal sounds, when the subject continued to relax and did not engage in imagination. Likewise the results were negative when the subject engaged in imagining that he was performing acts with other parts of his body, such as bending the left foot or bending the left arm, or when he actually bent the left foot or the left arm very slightly. The records secured during imagination are identical in type with records secured when the subject has been instructed to make slight actual muscular contraction, excepting only that the microvoltage is considerably less in the former instances. It is therefore concluded that the total physiological activity present when there is imagination of voluntary movement includes neuromuscular processes in the locale comprised in the imaginary act. A method of objectively measuring these neuromuscular processes is presented, and the possibility of the development of a branch of study analogous to physical chemistry, which may appropriately be called physical psychology, is herewith opened. The action potentials that occur during imagination of motion are very different from the psychogalvanic reflex. Relaxation of the neuromuscular processes characteristic of the occurrence of mental activities is generally accomplished within 1.5 sec. in the present experiments, when the motor imagination disappears. This is a confirmatory instance of the previous finding that diminution of mental activities can be brought about by muscular relaxation.—*Author's summary.*

10066. JACOBSON, EDMUND. Electrical measurements of neuromuscular states during mental activities. III. Visual imagination and recollection. IV. Evidence of contraction of specific muscles during imagination. *Amer. Jour. Physiol.* 95(3): 694-702; 703-712. 1930.—III. Electrical records can be secured characteristic respectively of looking to the right, left, up and down. These can generally be distinguished from frowning, winking, and convergence. During visual imagination and recollection electrical records are secured from the ocular muscles, producing photographic patterns like those following instructions to look in directions specified. As shown by these records, eye-movements characteristically occur during visual imagination and recollection. When the trained subject is requested to relax his eye-muscles, the curve becomes relatively horizontal and straight, characteristic of relaxation, and the visual imagination or recollection disappears, according to his report. Likewise, during control periods, when the subject has been instructed to keep his eye-muscles relaxed, he reports the absence of visual imagination or recollection. Reaction and relaxation times, except for minor differences, tally for tests following the instruction to imagine or recollect as compared with the instruction to look in a particular direction.—IV. Contraction of specific muscles takes place following the instruction to imagine an act performed with the voluntary musculature. The movement usually is of microscopic extent and generally confined within the group of muscles whose contraction would be required for the actual performance of the voluntary act. Imagination of a particular act performed by some portion of the body fails to occur if at the same time the muscles of this portion are completely relaxed. This supports the view that the contraction of specific muscles is essential to the occurrence of at least certain mental activities. The conclusion drawn by previous investigators that action-potentials from muscles always are associated with actual contraction is here extended to include a range of extremely low voltages. Evidence is conclusive that the electrical records ($V_{2m}{}^{c}$) during imagination, recollection and other mental activities are not psychogalvanic reflex phenomena.—*Author's conclusions.*

10067. JACOBSON, EDMUND. Electrical measurements of neuromuscular states during mental activities. VII. Imagination, recollection and abstract thinking involving the speech musculature. *Amer. Jour. Physiol.* 97(1): 200-209. 1931.—Into the muscular tissues of 7 subjects (6 more or less trained to relax) pointed electrodes of fine platinum-iridium were inserted about 1-2 cm. deep at the test regions. The click of a telegraph key was the signal to the subject to engage in a mental activity previously agreed on; a 2nd click was the signal to relax. In 5 of the 7 subjects, when the electrodes were connected in the speech musculature, the string shadow was practically quiet during relaxation. But promptly after the signal was sounded to engage in mental activity, marked vibrations appeared, indicating action-potentials. Soon after the signal to relax the vibrations ceased, and the string returned to rest. The series of vibrations during the mental activity occurred in patterns evidently corresponding with those present during actual speech. During the period of imagination, there occasionally appeared 1 or more series of action-potentials approximately equal in microvoltage to those which appeared during muscular movements visible to the naked eye. On the evidence previously considered, it is assumed that action-potentials in electrodes connected in muscle tissues signify the occurrence of contraction of fibers. The author concludes that while the muscular contractions occurring as a specific part of the physiologic process during imagination are generally microscopic, they are at times grossly visible.

10068. JOHNSON, H. M., and T. H. SWAN. Sleep. *Psychol. Bull.* 27(1): 1-39. 1930.—In this review the authors offer a searching analysis of (1) attempts to determine the depth of sleep by one type of sensory stimulation (papers by Kohlschütter, Mönninghof and Piesbergen, Michelson, Czerny, de Sanctis Neyroz); (2) studies of rest and activity based on registration of changes in bodily position (papers by Szymansky, Karger, Kreidl and Herz, Guttmann, Van Leeuwen); (3) measurements of O consumption upon awakening from sleep of variable duration (paper by Laird and Wheeler); (4) histological changes in the nervous system resulting from prolonged wakefulness (papers by Bast et al.); and (5) miscellaneous papers not falling

into the above classifications. These criticisms should be of interest to all students of the physiology of sleep.—*N. Kleitman.*

10069. KATO, G., T. HAYASHI, T. OTA, M. NAKAYAMA, H. TUMURA, M. TAKEUCHI, K. KANAI, and S. MATSUYAMA. Explanation of Wedensky inhibition. I. II. Explanation of "paradoxes Stadium" in the sense of Wedensky. *Amer. Jour. Physiol.* 89(2): 471-481. 6 fig.; (3): 692-714. 11 fig. 1929.—I. Six kinds of experiments were made to determine the point in the narcotized nerve at which the series of subnormal impulses vanishes. All gave the same result, viz., that the subnormal impulses are extinguished, not by decrement as supposed by Lucas, but at the beginning of the narcotized area, about 3-5 mm. inside the upper wall of the narcotizing chamber.—II. It was shown that the recovery curve of the narcotized part approached, as narcosis deepened, a horizontal line, indicating prolonged absolute refractory period and heightened threshold in the relative refractory period. To know the depth of narcosis necessary to produce complete inhibition, the least intervals were determined at A (normal part outside) as well as at B (narcotized part) through the whole course of narcosis. In the early stage of narcosis the least interval at A increased more slowly than that at B, and from certain stages the former increased more rapidly and overtook the latter. Therefore the curves A and B cross. Complete inhibition could never be produced until this stage of narcosis at which the curves cross, however frequent the tetanic stimuli might be. Curves A and B cross because the 2nd impulse started from A vanishes in the narcotized area by falling into the relative refractory period left by the 1st impulse. For the production of complete inhibition such a depth of narcosis is necessary that the 2nd impulse shall be extinguished on account of the heightened threshold in the relative refractory period due to the 1st impulse. This 2nd impulse, although itself extinguished, leaves behind an "after-effect" which lasts long enough to inhibit the 3rd, and so on. The duration of the inhibitory "after-effect" left by the 2nd (extinguished) impulse was measured. Similar experiments were made to measure the inhibitory "after-effect" left by the 3rd (extinguished) impulse. Furthermore, experiments are described in which the narcotized part was directly stimulated during the relative refractory period, with a stimulus which was below the threshold at the moment. The inhibitory "after-effect" left by such an apparently ineffective stimulus falling actually in the relative refractory period was measured. It was sufficiently long, in an advanced stage of narcosis, to account for the "after-effect" left by the extinguished impulse. The conditions necessary to produce complete inhibition are that curves A and B cross and that the 2nd impulse falls in the shaded area between AA and BB.—*From authors' summaries.*

10070. KING, C. E., E. A. BLAIR, and W. E. GARREY. The inspiratory augmentation of proprioceptive reflexes: a study of the knee jerk and the Achilles reflex. *Amer. Jour. Physiol.* 97(2): 329-342. 1931.—Experiments on men, dogs and cats demonstrate that with each inspiration in normal breathing the knee jerk and the Achilles reflex are augmented. The augmentation is not demonstrable in all subjects and animals, nor in the same ones at all times. The conditions, favorable and unfavorable, are discussed. The phenomenon is not a reflex from the respiratory tract or muscles, but is dependent upon the discharge of impulses from the respiratory center. There is no increase in the knee jerk during normal expiration, but during forced breathing there is some evidence of a slight increase. By forcing the respiratory effort the effects of inspiration are increased. The inspiratory augmentation is demonstrable through the whole range of intensity of stimulation, from threshold to maximal, but is best shown in the weak and medium range. Within the limits tested, the augmentation bears no relation to the rate of stimulation. The existence of a true refractory state is not essential for its production. The inspiratory augmentation of the reflexes studied is attributed to the irradiation of impulses from the respiratory center. The exact mechanism involved is not clear, but the possibilities have been stated, and the lines of work necessary for further clarification pointed out.—*Authors' summary.*

10071. KLINKE, J. Modelversuche zu einer capillarelektrischen Erregungstheorie. *Pflüger's Arch. Ges. Physiol.* 227(1/2): 110-131. 11 fig. 1931.—Changes in ionic concentration at phase boundaries in electrolytes, due to the passage of a current, were studied. The current was passed through strips of gelatine or collodion, either in air or immersed in an electrolytic solution, and the changes in concentrations of H and Cl ions observed. As was to be expected, these changes occur most where the current across the phase boundary is densest, and secondary anodes and cathodes may arise. The bearing of these results upon nerve and muscle excitation is considered.—*W. A. H. Rushton.*

10072. KNOWLTON, F. P., and C. J. CAMPBELL. Observations on peripheral inhibition in arthropods. *Amer. Jour. Physiol.* 91(1): 19-26. 1929.—In vertebrates all inhibition of skeletal muscle has its seat of action in the central nervous system. Therefore the study of inhibition is complicated by the intricacy of central nervous organization. In certain invertebrates the conditions are simpler. Stimulation of the claw of the crayfish has been shown to cause opening or closing, depending on the strength of stimulus applied, the phenomenon involving a reciprocal inhibition. The authors studied this type of inhibition on the lobster (*Homarus*), the blue crab (*Callinectis*) and the spider crab (*Libinia*). It does not appear to have been previously recognized that the selective excitability and reciprocal inhibition is not limited to the claw muscles but is general in the appendages of arthropods. At least as far as the authors have examined, the various joints which are moved by antagonistic flexor and extensor muscles may each be flexed or extended depending on the character of the stimulus. Peripherally produced summation, rhythm, delay, arrest, reversal and alternation, rebound and after-contraction, are described. Superficially, at least, these resemble similar phenomena associated with central conduction in vertebrates.

10073. KRAUS, WALTER M. The hypothalamus: a segmental structure and a regulator of glandular activity and metabolism. *Arch. Neurol. and Psych.* 25(4): 824-828. 2 fig. 1931.—The theory here advanced is that as the pituitary gland was originally a gland of external secretion that emptied its secretions into the alimentary canal and has developed into a gland of internal secretion, and as it regulates all metabolic processes rather than any single metabolic process, the most cephalic end of the segmental nervous system which controls the pituitary is an extremely primitive and altered segment of the central nervous system regulating metabolism in general. The remaining glands having fewer functions are regulated by the less cephalad segments of the central nervous system. The hypothalamus thus regarded is the guiding segment of that part of the segmental central nervous system which is concerned with visceral functions.

10074. KUBIE, LAWRENCE S. A theoretical application to some neurological problems of the properties of excitation waves which move in closed circuits. *Brain* 53(2): 166-177. 6 fig. 1930.—The hypothesis is offered that the brain is composed of 2 types of tissue, the "active" (consisting of neurone systems so intimately and directly related to the rest of the body that passage of an impulse along any of them always registers in some way in the body economy) and the "silent" (consisting of tissues through which impulses may circulate indefinitely without any external registration of their passage). Under normal conditions impulses impinge upon the active system only or chiefly from stimuli arising without the central nervous system. Abnormal (pathological) conditions may divert into active channels ordinarily impotent impulses, normally

circling through silent pathways, thereby causing spontaneous movement (chorea, athetosis, epilepsy, etc.), sensation or vegetative alteration. These speculations imply modification but not necessarily abandonment of the neurone theory: (a) Not all neurones must necessarily be organized for through-and-through conduction, with irreversible synapses. Those of the silent system may be organized for more circuitous and diffuse conduction systems. (b) Even within the active system it is conceivable that conduction in closed circuits may play some normal rôle—and certainly it must be reckoned with as one of the possible explanations of abnormal functions. (c) The excitation wave in dendrite and neurone may not be identical with the axonal impulse, as is usually assumed. The laws of conduction within the neurones of the central nervous system must, therefore, be studied as intensively as has been done in the peripheral axone. (d) The circling excitation wave may be closely related to the excitatory agent which Sherrington has found it necessary to postulate, and inhibition may find its mechanism, as Keith Lucas suggested, in some expression of the refractory phase; to which the suggestion is added here that it may be of the refractory phase, or some other fundamental attribute, of the circling excitation wave.

10075. LAFON, G., et F. COULOUMA. Considérations sur l'excitabilité neuro-musculaire en fonction du temps et de l'intensité du courant excitant. *Jour. Physiol. et Path. Gén.* 29(1): 72-76. 3 fig. 1931.—The excitability of a neuro-muscular preparation is inversely proportional to the chronaxie for a given value of the rheobase, and inversely proportional to the cube of the rheobase for a given value of the chronaxie.—*W. R. Fearon.*

10076. LANGWORTHY, ORTHELLO R., and CURT P. RICHTER. The influence of efferent cerebral pathways upon the sympathetic nervous system. *Brain* 53 (2): 178-193. 4 fig. 1930.—Using the galvanic skin response as a measure of sweat-gland activity, the controlling influences from the cortex, brain-stem and spinal cord were investigated [in 36 cats, first etherized and later decerebrated]. Definite galvanic skin responses were obtained from faradic stimulation of 2 areas adjacent to the motor cortex, from the floor of the 3rd ventricle, from the cortico-spinal and rubro-spinal tracts, from the vestibular nuclei, from the posterior column nuclei and from the posterior columns of the cervical cord. It is concluded that the same cerebro-efferent pathways which influence somatic motor cells also control preganglionic sympathetic cells; this cerebral control is predominantly an inhibitory one. Any cerebral centres influencing lower centres seem to exert final control through well-known cerebro-efferent pathways.—*Authors' summary.*

10077. LASAREFF, PETR PÉTROVIC. Physikalisch-chemische Theorie der Tätigkeit der Nervenzentren. [Physico-chemical theory of the activity of nerve-centers.] 11p. M. Niemeyer: Halle, 1928. Pr. 1.20 M.

10078. LEARMONTH, JAMES R., and J. MARKOWITZ. Studies on the function of the lumbar sympathetic outflow. I. The relation of the lumbar sympathetic outflow to the sphincter ani internus. *Amer. Jour. Physiol.* 89(3): 686-691. 1929.—The sphincter derives a certain amt. of motor innervation through the lumbar sympathetic outflow. The majority of the fibers concerned are postganglionic fibers arising in the inferior mesenteric ganglion. A few motor fibers are not interrupted in the inferior mesenteric ganglion. Inhibitory fibers from the lumbar sympathetic outflow pass to the sphincter by way of the hypogastric nerves.—*Authors' summary and conclusions.*

10079. LINDBERG, ALEXANDER. Über die Wirkung von Lecithin auf die Grosshirnrinde. I. Einfluss chronischer subkutaner Einverleibungen von Lecithin auf die höchste Nerventätigkeit. *Jour. Psychol. u. Neurol.* 42 (5/6): 465-476. 1931.—A dog with left parotid gland fistula was subjected to various stimuli for 2 yrs.; and after reaction time to the conditioned reflexes had been determined 2 cc. of 1% emulsion of egg lecithin was injected daily subcutaneously. The lecithin increased the response to stimuli. Increased irritability of the central nervous system was not observed; instead, the central nervous system was strengthened, its resistance increased, in the shift from "stimulatory weakness" to normal activity.

10080. LULLIES, HANS. Über die Polarisation in Geweben. II. Die Polarisation im Nerven I. III. Die Polarisation im Nerven II. *Pflüger's Arch. Ges. Physiol.* 225(1): 69-86. 7 fig.; 87-97. 4 fig. 1930.—II. The resistance and polarization magnitude of the frog's nerve were measured with alternating currents of varying frequencies (30-300,000 d. v.). In relationship to these functions the nerve behaves like a polarization magnitude c with an unpolarized short-circuit w_1 in a series containing an additional resistance w. The polarizable layers consist of two parts, one of which has the character of non-reversible, the other of reversible electrodes. Measurements at different points along the course of the same nerve show that the polarization magnitude and the increase in resistance do not depend upon distance, which means that they are chiefly centralized at the point of entrance. The polarization begins in the outermost layers of the nerve but is not restricted to them as is shown by the relationship between the magnitude and the short circuit w_1. The effects of unpolarized short-circuits along the course of the nerve can be detected at very short distances, especially with low frequencies. III. In the determination of the resistance of the sciatic nerve of the frog to alternating currents of different frequencies it is found that both the effective and the unknown resistances are decreased as the measuring currents begin to exceed the threshold values. The amount of this decrease with currents of different strength, depends upon the intensity of the negative fluctuation of the residual current in the nerve itself. The effect diminishes with increased frequency and at 500 d. v. it cannot be demonstrated any more, probably because of fatigue phenomena. This effect is probably due to processes that occur at the stimulation of the nerve and that are accompanied by a decrease in polarization. Both effective and unknown resistance of this nerve contained in a moist chamber will decrease in the course of time. These changes were followed for several days and a graphic presentation of the relationship of this decrease to frequency and time is included. After 4-24 hrs. at room temp., the original polarization of the nerve practically disappeared and the irritability was extinguished. The high frequency resistances behave somewhat differently. After a period of time a new increase of resistance can be demonstrated. It is not dependent upon the frequency and shows no change of polarization.—*Author's summaries (transl. by W. Malamud).*

10081. LYONS, L. VOSBURGH, and RICHARD M. BRICKNER. Physiologic differences between generic and individually acquired automatic associated movements. *Arch. Neurol. and Psych.* 25(5): 998-1002. 4 fig. 1931.—Observation of a patient with typical epidemic encephalitis, presenting an extreme picture of parkinsonism, who still retained the ability to catch and throw a ball with a grace and ease acquired during a previous career as a star pitcher, suggests that, while phylogenetically associated automatic movements are seriously impaired in Parkinson's syndrome, there is a group of individually acquired automatic associated movements that may escape. This is added evidence that both groups depend on some type of anatomic patterning. Therefore, the rigidity alone cannot account for the impairment of movement in parkinsonism, which tends to show that the patterning of phylogenetic automatic associated movements is a striatal function. The patterning of the individually acquired movements is presumably a function of some part of the cortex.

10082. MACGREGOR, R. G., and S. PEAT. An investigation into a possible nervous mechanism involved in the liberation of histamime. *Jour. Physiol.* 71(1): 31-35. 1931.—In an investigation on 18 cats and 1 dog

into the reason for the relatively large amount of histamine in extracts of lung tissue, the authors removed the left lung of each animal as a control, subjected the right lung to the required experimental conditions, then removed the right lung, worked up both lungs by the method of Best, Dale, Dudley, and Thorpe to determine the amount of histamine present per unit weight of lung tissue, and compared the quantities in the 2 lungs. The method used determined the histamine content with not more than 20% error. Neither direct faradic stimulation of the nerves supplying the lungs (in 10 cats) nor perfusion with adrenalin, pilocarpin or physostigmin produced any detectable change in their histamine content.

10083. McSWINEY, B. A., and J. M. ROBSON. The sympathetic innervation of the stomach. II. The effect of stimulation of the peri-arterial nerves on the stomach and small intestine. *Jour. Physiol.* 71(2): 194-200. 1931.—Isolated strips of the smooth muscle of the stomach and small intestine innervated by peri-arterial nerves were prepared. The reaction of the gastric muscle depended on the type of stimulation employed. Stimulation of the nerves with frequencies of 1-12 break induction shocks per sec. caused contraction of the muscle; with 20-50 shocks per sec. relaxation was obtained. Reversal effects were also recorded by varying either the strength of current or the duration of faradic stimulation. The motor response was abolished by addition of ergotoxine or atropine. The movements of the intestine were inhibited by all types of stimulation. The latent periods of contraction and relaxation were recorded and compared with the latent periods obtained on stimulation of the vagus nerve. Evidence is put forward to show that the motor and inhibitor response is due to stimulation of sympathetic fibers conveyed in the peri-arterial nervous network.—*Authors' summary.*

10084. MANSON, J. S., and FERGUS R. FERGUSON. "Decerebrate rigidity" in man. *Brit. Med. Jour.* 2(3644): 769-771. 1930.—A clinical case is described in which the patient lay motionless and speechless during the greater part of 10 yrs., with his arms adducted and flexed at the elbows and wrists, and his legs rigidly extended—in the position regarded by Walshe and others as the physiological counterpart of experimental decerebrate rigidity. At necropsy a firm, rounded, apparently endotheliomatous subdural tumor about 2 inches in diameter was found in the right pre-Rolandic area growing from the falx cerebri.

10085. MARINESCO, G., et A. KREINDLER. Les réflexes du sinus carotidien en pathologie nerveuse. *Jour. Physiol. et Path. Gén.* 29(1): 77-92. 10 fig. 1931.—In addition to the 3 recognized carotid-reflexes (cardiac inhibitory, respiratory, vaso-motor), a 4th is reported, and is shown by a fall in the level of the plethysmograph-curve during compression of the carotid sinus. In epilepsy the carotid reflex is diminished, thus accounting for vaso-motor instability accompanying the disease. Compression of the carotid sinus is effective in controlling the convulsions in some cases of epilepsy and encephalitis. Phenylethyl-malonyl-urea sensitizes the sinus, which may explain the beneficial action of the drug in epilepsy. The respiratory carotid-reflex is altered in Parkinsonian encephalitis, and the vaso-motor reflex is diminished in myasthenia and in adrenal insufficiency.—*W. R. Fearon.*

10086. MATTHEWS, BRYAN H. C. The response of a single end organ. *Jour. Physiol.* 71(1): 64-110. 2 pl. 1931.—A method is described of making a muscle preparation containing a single nerve ending (lying in the centre of the muscle, where histological preparations reveal a single muscle spindle) responding to stretch. The response is recorded with a moving iron oscillograph and is found to be extremely constant for any given tension. If the muscle is kept in a small quantity of Ringer for some time the response in the nerve is first depressed and then disappears, but returns to its initial magnitude when the Ringer is changed. Frequency of response is roughly proportional to the logarithm of the load. When the muscle is loaded rapidly the interval between the impulses set up is little greater than the absolute refractory period of the nerve fibers concerned, and the time relations of the action currents of these impulses are modified, showing that they are travelling in an incompletely recovered nerve fibre. It seems possible that these rapid discharges may be due to continuous rather than intermittent excitation of the nerve fiber. The viscosity of the end organ may account for the discontinuities in the response when small loads are applied rapidly. The interval between the impulses at the highest frequency recorded varies with temp. in much the same way as does the refractory period of a nerve trunk. Behavior of the end organ is greatly modified by the ionic composition of the surrounding fluid. In NaCl frequency of discharge remains high for some min.; addition of either Ca or K alone reduces the response below that obtained in Ringer, Ca and K appearing to have an antagonistic action. Rhythmic discharge of grouped impulses occurs when the preparation is kept at 25° in NaCl: the response can be modified by passing a steady current through the muscle, change in response depending on the direction of current flow. HCN causes a transient increase in the response later followed by extinction of the discharge. Adaptation is examined, and it is found that there is an after effect lasting several sec. after the stimulus is removed. This adaptation remainder has been measured quantitatively and is found to develop as stimulation is prolonged and vanish in a few sec. after the stimulus is removed. The adaptation remainder is found to be a function of the total stimulation, i.e., the magnitude of the load and the time it has been acting. A hypothesis is suggested to account for the observed behavior of these end organs.—*From author's summary.*

10087. MIXTER, WILLIAM JASON, and JAMES C. WHITE. Pain pathways in the sympathetic nervous system. Clinical evidence. *Arch. Neurol. and Psych.* 25(5): 986-997. 5 fig. 1931.—Severe pain was relieved by interruption of the dorsal sympathetic fibers in 31 cases, suggesting that there may be definite sensory fibers running in the dorsal sympathetic chain.

10088. MONTGOMERY, MARY F., and ARNO B. LUCKHARDT. Studies on the knee jerk. VIII. The effects of acutely raised intracranial and intraspinal pressures upon the knee jerk. *Amer. Jour. Physiol.* 91 (1): 210-219. 1929.—Of 17 dogs used, 15 produced useful records. The intracranial pressure was raised a total of 132 times, the intraspinal pressure 31 times, on these animals. Increasing the intracranial pressure to a point where it approaches the carotid arterial blood pressure leads to a fairly abrupt diminution in the height or abolition of the knee jerk preceded in some instances by a few jerks of increased amplitude. If the cord has been cut above the knee jerk center, the knee jerk is not affected until the respiratory and vasomotor centers have been paralyzed. The abolition of the knee jerk then seen is due to asphyxia of the center, and perhaps also to inadequate circulation through the center. Increase in the intraspinal pressure following transection of the cord above the knee jerk center, results in a temporary but marked increase in the amplitude of the knee jerk, followed by a complete abolition of the reflex. These results are attributed to cessation of the blood flow through the cord (asphyxia), for ligation of the abdominal aorta in the upper lumbar region gives similar results.

10089. MOSER, KURT. Zur Frage eines zentral-vegetativen Blutregulationszentrums. *Deutsche Med. Wochenschr.* 56(29): 1209-1211. 1930.—In about 30 cases of encephalitic Parkinsonism leukocyte values on the upper normal level were strikingly frequent and in part a distinct hyperleukocytosis; similar values were seen in 4 cases of arteriosclerosis with paralysis agitans and in 3 tumors of the region of the brain stalk, all pointing to the existence of G. Rosenow's vegetative blood-regulating center.

10090. MUSSEN, AUBREY T. The cerebellum: the

influence of the cortical reactions on the classification and the homology of the lobes and fissures in the cat, monkey and man. *Arch. Neurol. and Psychiatr.* 24(5): 913-920. 1930.—After discussing the confused nomenclature and the homology of the cerebellar lobes in man, the cat and the monkey, Mussen proposes a new classification of these lobes, equally applicable to all 3 animals, based on the reactions of the individual lobes to stimulation. The idea, he admits, is contrary to the views of most leading authorities; the method of investigation on which he bases his classification has never before been tried in the same precise manner: the experiments of Horsley and Clarke, which are largely responsible for the view that the cerebellar cortex was inexcitable, were not entirely negative, for they also reported movements in the head, eyes and extremities, though not localized. In many instances the reactions to stimulation are entirely supported by operative results and developmental conditions. After several years of experimentation on the cerebellum, the reason why so many investigations have proved fruitless is fairly clear. The usual method of free exposure for either stimulation or destruction may be accompanied by severe hemorrhage which lowers its activity and greatly weakens the animal; precautions against hemorrhage by the temporary constriction of the vessels are not satisfactory, for they reduce the excitability of the cortex; this manner of operating cannot be recommended. Another obvious cause for the absence of localizing symptoms in experimental lesions is the fact that in almost every instance the destruction of tissue has been far too extensive, involving lobes of different functions and producing results that were naturally confused.

10091. MUSSEN, AUBREY T. The cerebellum: comparison of symptoms resulting from lesions of individual lobes with reactions of the same lobes to stimulation: a preliminary report. *Arch. Neurol. and Psychiatr.* 25(4): 702-722. 10 fig. 1931.—The author previously offered evidence that the cortex of the individual lobes of the cerebellum showed localized reactions. As conclusive proof he has now undertaken localized destruction of individual lobes in cats. Results indicate that the interior vermis is definitely associated with the maintenance of forward balance, the posterior vermis with backward balance, and the middle lobe of the vermis with rotation movements of the head. The loss of forward balance from a lesion in the anterior vermis, the loss of backward balance from a lesion in the posterior vermis and the rotation of the head to the opposite side when ½ of the middle lobe of the vermis was injured have shown that the vermis is divided into 3 lobes each with a distinctive function; the same 3 divisions also apply to the hemispheres and consequently to the cerebellum as a whole. The function of the individual lobes, as indicated by the stimulation experiments, does not mean that the lobe is concerned only with that particular activity, but suggests that the lobe is responsible for whatever coordination is necessary to assure the proper performance of the act with which it is especially associated; e.g., the anterior lobe of the vermis gives reactions in the posterior muscles of the neck, the principal function of which is the maintenance of forward balance. When forward balance is disturbed this function is called into action and the first evidence of cerebellar activity is the posterior neck reflex, which provides for the necessary readjustment to take care of the threatened loss of equilibrium. This indicates that cerebellar activity may be considered to be composed of 2 distinct reactions: (1) the primary reflex, the nature of which depends on the particular lobe involved, and (2) the secondary response, which integrates the synergic activity set in motion by the primary reflex. The normal cerebellum always acts as a whole.

10092. NEMOTO, MAMORU, and HIROSHI SATO. Über die Folge der Erwärmung des Karotidenblutes auf die Atmung beim Kaninchen, dem das Corpus striatum entfernt oder der Kältestich ausgeführt ist. *Tohoku Jour. Exp. Med.* 14(2/3): 109-134. 8 fig. 1929.—When blood of animals thus treated was warmed tachypnea appeared although usually (but not always) in less marked degree than in normal animals. This result thus fails to confirm the view that the higher brain centers take part in producing tachypnea whenever the blood undergoes a rise of temperature.—*C. D. Snyder.*

10093. NEMOTO, MAMORU. Sur la relation du temps écoulé entre les premières mises en action des excitants conditionnels et non-conditionnels combinés pour développer le réflexe conditionnel. *Tohoku Jour. Exp. Med.* 14(5/6): 466-486. 1930.—From experiments on dogs it is concluded that in order to develop a conditional reflex, the conditioned stimulus must precede the unconditioned by some seconds, e.g., 5 to 10 sec. This time, preceding the conditioned reflex, will perhaps vary somewhat with the individuality of the subject.—*C. D. Snyder.*

10094. PAGE, IRVINE H., und WILH. MENSCHICK. Über das Vorkommen von Ergosterin im menschlichen Gehirn. [Ergosterol in the human brain.] *Biochem. Zeitschr.* 231(4/6): 446-459. 1931.—The absorption spectra of purified sterol fractions from fetal, newborn, infant, and adult brains appeared in the 1st 3 absorption maxima at 294, 283, and 250 mμ. The maxima 294 and 283 mμ belong to ergosterol, which decreases from 0.05% in the fetus to 0.01% in the child of 1½ yrs. The band at 250 mμ is entirely unaccounted for. The absolute amt. of ergosterol reaches its maximum of less than 1 mgm. before the end of the 1st yr., decreasing considerably thereafter.

10095. PATRIZI, M. L. Rivendicazione di priorità: I componenti somatici della sensazione e della rappresentazione, e in genere dell'atto intelletuale. [Statement of priority: The somatic factors of sensation and representation and generally of intellectual activity.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 359-361. 1930.—In 1912 Patrizi had studied, with the plethysmograph, the somatic factors of the sensation and representation, and further the object of the autoscopic attention and the localisation of its motor expression. The studies of Patrizi on the somatic factors of intellectual activity are prior to those of Jacobson (Chicago).—*M. Comel.*

10096. PORTER, EUGENE L. Evidence that the postural tonus of decerebrate rigidity increases in amount by the successive innervation of single motor neurones. *Amer. Jour. Physiol.* 91(1): 345-361. 1 fig. 1929.—A method is described by which a small muscle in the tail is used in the study of postural tonus in the decerebrate cat. With this as a nerve muscle preparation gradually increasing single shocks are applied to the motor-nerve; the response of the muscle is by contraction occurring in steplike groups with no intermediate gradation. Each group step represents, presumably, the activity of a single motor neurone and the muscle fibers innervated by it. Tonic contraction may be induced or increased in the tail muscle by various measures which are described, or it may occur spontaneously. By whatever means produced the increase in contraction height is never smooth and uniform but always by sharp steps. The steplike increments in tonic contraction height are approximately the same size as the steps in a nerve-muscle record from the same muscle. The inference is drawn that in producing an increase in postural tonus the central nervous system throws into action one motor neurone after another. The all-or-none contraction of all muscle fibers innervated by each neurone produces the steplike increase in contraction height. In certain records when the tonus is spontaneous and self-perpetuated, steps may be seen to drop out from the record and reappear again while the general level of contraction remains fairly constant. This is taken as evidence of rotation of activity of single neuromuscular units of contraction. This supports the theory that the apparent lack of fatigue in postural tonus depends on such rotational activity (Forbes, 1922). The fact that steps of an all-or-none character corresponding in size to nerve-muscle steps may be demonstrated both in the

spinal flexion reflex and in postural tonic contraction is regarded as favoring the view that the same mechanism on the motor-side is operative in both cases.—*Author's summary.*

10097. POSNANSKAJA, INNA B., und W. W. EFIMOFF. Der Einfluss der geistigen Ermüdung auf die bedingt reflektorische Tätigkeit des Menschen. *Arbeitsphysiologie* 3(6): 456-467. 2 fig. 1930.—The experiments were carried out in a divided room in one part of which the experimenter operated the various combinations and recorded the results while in the other part the subject sat and responded to the various combinations by pressing a small rubber ball. Seven different kinds of combinations were used, conditioned reflex to a 75 c.p. white lamp, to a synthetic sound signal of 4 tones, synthetic light signal of 4 colors, inhibition to differentiated synthetic sound signal, inhibition to differentiated synthetic light signal, simple conditioned sound inhibition of reflex to the synthetic light signal, and a delayed reflex to a sound signal. The 35 subjects were first put through a practice period of several days to have the conditioned reflexes and inhibitions thoroughly established. They then went through the procedures as usual on a given day and then went into an adjoining room and hung tegs, marking each one, upon a circular conveyor for 1 hour. The subjects returned to the experimental room and the same order of reflexes were tested as before the work. Under the influence of fatigue a disturbance of the equilibrium of the inhibiting and excitation processes of the cortex resulted. The intensity of the change of the conditioned reflex activity due to the work was individually very different. In a number of the subjects no alterations took place, that is after one hour's uninterrupted work on a conveyor no indications of mental fatigue were observed. Three kinds of fatiguing influences were noted: a) the inhibiting, b) the stimulating, and c) a mixture of both. A certain relationship was found between the type of reaction of the individual and the influences of fatigue. The method of investigating the conditioned reflexes with men furnishes the approach to a professional physiological selection of persons with specially stable nervous systems difficult to fatigue for occupations more or less fatiguing to the nervous system. This requirement grows more pressing in the present extended mechanization of work.—*T. M. Carpenter.*

10098. PRITCHARD, E. A. BLAKE. Central mechanism of the reflex arc. A description of a ballistic model in terms of which to unify explanations of spinal reflex activity and certain changes in the voluntary electromyogram in man. *Brain* 53(4): 431-448. 2 fig. 1931.—The behavior of this model (representing the nervous mechanism discussed by the author (*Brain* 53(3): 344-375. 1930)) subjected to units of equal and opposing forces (representing the impulses supplied along an afferent nerve) agrees with the observed facts of spinal reflex activity. It is inferred that the suggested localization of the site of origin of the changes in the voluntary electromyogram is not inconsistent with the observed facts of spinal reflex activity.

10099. RENQVIST, Y., V. LESKINEN, und S. PARVIAINEN. Die Bedeutung des Parameters a der Weiss-Hoorwegschen Reizformel. *Skand. Arch. Physiol.* 61: 113. 1931.—The formula considered is $V = a/t + b$ where V is the voltage of the stimulating current, t its duration, b the rheobase, and a is the quantity of electricity (current $\times$ time) at the point where the graph of Vt as plotted against time cuts the ordinate. The rheobase b is the value of the asymptote parallel to the horizontal axis of the rectangular hyperbola formed when V is plotted against t for a liminal stimulus. The ratio a/b represents the chronaxie, when V is given double the rheobase value. Then $2b = a/t + b$ or $t = a/b$. Further, if the chronaxie is represented by τ, $a/b = \tau$, or $a = b\tau$; the product of the rheobase and the chronaxie is invariant. Experimentally, using different muscles of the hind leg of the frog, stimulated through the sciatic nerve, the authors find that the values of b and τ vary in different muscles. The product however is constant, so long as the same nerve supply is stimulated. The invariance of a is not found when the muscle fibers are stimulated directly or when the same muscle is stimulated by different nerves. It thus appears to have different values depending upon the groups of fibers stimulated, being smallest when the muscle is stimulated through its nerve. These findings are explained on the basis of a grouping of nerve fibers within the sciatic nerve which show the same effective capacity for stimulation notwithstanding the fact that they may innervate different muscles.—*J. A. E. Eyster.*

10100. SCHALTENBRAND, GEORGES, and STANLEY COBB. Clinical and anatomical studies on two cats without neocortex. *Brain* 53(4): 449-488. 23 fig. 1931.—Two cats without neocortex are described clinically and anatomically. In the 1st both cerebral hemispheres were removed anterior to the thalamus; this animal lived for 9 days after the 2nd operation. It exhibited states of waking and sleep, and when awake it made purposeless circus movements. It did not eat spontaneously. In the other animal the rhinencephalon and striatum were left intact; this animal was kept alive for 5 mos. after the 2nd operation. Immediately after the 2nd operation it showed much more activity and a greater variety of movements and of reactivity than the thalamus cat. It reached and ate its food spontaneously, and for a time it had polydypsia, polyphagia and polyuria, which were probably due to destruction of the right nucleus filiformis. Immediately after the operation the animal developed a well-marked shaking reflex of the extremities; this was shown to be an exaggeration of the normal shaking reflex which serves to clean or dry the paws. The animal cleaned its fur spontaneously. Its motor activity, when recorded in an "activity cage," was found to be much greater than that of a normal cat. This excessive activity was excited by noise, and increased during infection by nematodes and mange. Rotational nystagmus and after-nystagmus were studied on a rotating wheel, and were shown to follow the same rules as in intact animals and in man. As long as the speed and the amount of rotation were kept within physiological limits, the number of jerks depended chiefly on the degree of rotation. On longer rotation the after-nystagmus assumed the characters of a reaction to acceleration. Electrical stimulation, immediately before the animal was killed, of those portions of the brain which remained revealed 2 points which were definitely excitable. The 1st proved to be the anterior commissure; stimulation of this produced movements relating to smelling and eating, as puckering of the nose, licking, moving the whiskers and chewing. The 2nd point lay above a small comma-shaped nucleus in the velum medullare; stimulation of it gave rise to urination and changes in the respiratory rhythm. The anatomical examination showed that, on the whole, the aim of the operation had been attained; the few portions of the neocortex which had been left had no fibre connections with the brain-stem. The anterior and lateral parts of the thalami had undergone severe atrophy. This atrophy was more marked on the left side on which the striatum had been damaged.—*Authors' summary.*

10101. SCHMITT, FRANCIS O. On the nature of the nerve impulse. I. The effect of carbon monoxide on medullated nerve. *Amer. Jour. Physiol.* 95(3): 650-661. 1930.—For the study of the effect of CO on the O uptake of resting nerves the Warburg manometric technique was employed. The respiration of nerve is inhibited in the dark by CO-O mixtures. This inhibition may be fairly complete, the degree depending on the partial pressure of the CO and upon conditions of diffusion in the nerve. Light markedly decreases this inhibition, the decrease stopping when the illumination is discontinued. The maximum height of the action potential as measured by the cathode ray oscillograph is reduced in CO-O mixtures in the dark, and ultimately to zero, the time required for extinction depending on the partial pressure of the CO. Intense illumination of the nerve

during the period of the failure causes the height of the action potential to rise to, and in some cases to exceed somewhat the normal level. When illumination is discontinued, the action potential does not drop immediately to the original extinction curve, but does so gradually after a period of time. This period of after-effect of light is of fairly constant duration and usually lasts 25 to 30 min. These facts are interpreted to mean that the action potential whether aerobic or anaerobic requires an oxidation or oxygenation of substances in nerve and that activation of the O by a respiratory enzyme similar to that of Warburg is essential. The mechanism of this oxidation system is briefly discussed. —*Author's summary.*

10102. **SCHMITT, FRANCIS O., and OTTO H. A. SCHMITT. The nature of the nerve impulse. II. The effect of cyanides upon medullated nerves.** *Amer. Jour. Physiol.* 97(2): 302-314. 1931.—Experiments here summarized indicate that the O consumption of resting nerves of the green frog may be practically completely inhibited by cyanides, whether the nerve is suspended in Ringer solution or in phosphate or bicarbonate buffer, and whether the measurements are made under physiological CO_2 tension or at zero CO_2 tension. The action potential is abolished in N/100 NaCN about as rapidly as in pure N, i.e., in about 100 min. N/5000 NaCN is still capable of abolishing the action potential, although more dilute solutions act much more slowly and never completely block it. Cyanided nerves stained in methylene blue fail just as rapidly as do unstained cyanided nerves. The possible catalytic action of the dye is discussed.—*Authors' summary.*

10103. **SCHTSCHERBAKOW, S. A., W. S. SIMNITZKY, A. A. WISCHNEWSKY (Jun.), und W. R. DIMITRIJEW. Der Einfluss des Schmerzreizes auf die Nebennierensecretion und den Blutzucker.** *Pflüger's Arch. Ges. Physiol.* 224(5): 670-677. 4 fig. 1930.—The experiments were carried out on cats and dogs. It was found that the stimulation of the sciatic nerve with a faradic current caused an increase in the blood sugar. This occurred only when the adrenals were intact. When the adrenal veins were tied off, or when the splanchnic nerves were cut, the stimulations caused a decrease instead of an increase in blood sugar. Blood taken from the adrenal vein at the time of stimulation and injected into the veins of another animal caused an increase of the blood sugar in the latter. This means that a pain-stimulus excites an internal secretion reflex arc which reaches the adrenals by way of the splanchnic nerves and causes the production of a secretion which when released into the blood stream increases blood sugar.—*W. Malamud.*

10104. **SHARPEY-SCHAFER, E. The nomenclature of the autonomic nervous system.** *Jour. Physiol.* 71(4): 362-363. 1931.—In using the anatomical term "sympathetic" to express a particular nervous action we unintentionally include 2 antagonistic effects (excitation and inhibition). Physiological effects should be denoted by purely physiological terms, the anatomical terms being reserved for the fibers which convey the nervous impulse.

10105. **SHERRINGTON, C. S. Notes on the knee extensor and the mirror myograph.** *Jour. Physiol.* 70 (1): 101-107. 2 fig. 1930.—Stretch reflexes are recorded for knee and ankle extensors in the decerebrate frog. From observations on rectus femoris an estimate is outlined for the contraction tension of the extensors of knee and ankle (cat). The arrangement and construction of a myograph suitable for mammalian observations are described.—*Author's summary.*

10106. **STAVRAKY, GEORGE. The action of partly degenerated sympathetic nerve on the submaxillary gland in the dog.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 193-195. 1930.—The experiments reported "show that in the submaxillary gland of the dog there is some contractile tissue which is under the control of the sympathetic innervation, and which may be stimulated by histamine. The preganglionic nerve fibers to this contractile tissue are more stable than the vasoconstrictor and presumably the secretory sympathetic fibres. The augmented secretory effect obtained by stimulation of the partly degenerated sympathetic nerve is chiefly due to the presence of these motor fibres in the nerve."

10107. **STEIN, JOHN BETHUNE, and JOSEPH TULGAN. Reciprocal reaction in the cat as a possible local mechanism. III. The reciprocal reaction of the biceps brachii and the triceps brachii.** *Amer. Jour. Physiol.* 95(1): 174-177. 1930.—At the shoulder-joint of the cat there appears to be a nervous mechanism for the reciprocal reaction of the biceps and the triceps,—evidently local, because cutting the brachial plexus does not abolish the reciprocal reactions of the 2 muscles. The reciprocal reactions of the 2 muscles in this case could be reversed, i.e., no matter which of the 2 muscles in question was made the protagonist, its antagonist relaxed. Is this local mechanism a mediate agency in correlating the chronaxies of the protagonistic and antagonistic muscles?—*Authors' conclusions.*

10108. **WEISS, PAUL. Das Resonanzprinzip der Nerventätigkeit, dargestellt in Funktionsprüfungen an transplantierten überzähligen Muskeln.** *Pflüger's Arch. Ges. Physiol.* 226(4/5): 600-658. 21 fig. 1931.—The author restates his resonance theory with a minor modification and cites a series of experiments involving transplantation of muscles in the toad with functioning connection with a selected peripheral nerve. The results are interpreted as evidence in support of his theory.—*G. P. McCouch.*

10109. **WENNER, W. W., and A. B. TAYLOR. The effect of changes in acid-base equilibrium on reflex time.** *Amer. Jour. Physiol.* 91(2): 365-369. 1930.—The patellar tendon reflex time of [6] normal unanesthetized dogs was determined and compared with the reflex time of the same dogs after administrations of NH_4Cl and $NaHCO_3$. From results obtained the authors believe that with an increase in H ion concentration there is a decrement created at the synapse or the motor end plates or perhaps both neural and neuro-muscular factors are involved. This would probably block out the higher cortical centers and thus shorten the reflex arc and thus account for the decreased reflex time. It would seem probable then that an increase in OH ions produces an effect opposite to that of H ions, that is, the decrement at the nerve endings would be decreased. If such is the case then the passage of the nerve impulse would be facilitated and the reflex time decreased. In this condition the reflex arc is not shortened.

10110. **WINDLE, WILLIAM FREDERICK. The relation of the level of transection of the brain-stem to the occurrence of decerebrate rigidity in young animals.** *Jour. Comp. Neurol.* 48(2): 227-245. 2 fig. 1929.—Decerebration was performed on cats and dogs, most of which varied in age from a few hours to several days after birth. In some cases the knife was passed through or just cephalad to the superior colliculi dorsally and through or just cephalad to the optic chiasma ventrally, leaving the hypothalamus and red nuclei intact. These animals retained the ability to right themselves and progress spontaneously by crawling. Alternate progressive movements could be elicited by mild stimuli (tactile), and the animals responded more vigorously than normal unoperated controls. Extensor rigidity was sometimes observed between periods of active progression. Other animals were decerebrated by passing the knife through the cephalic border of the superior colliculi and the cephalic border of the pons, thus removing the red nuclei. In these animals righting and progression responses were absent and decerebrate extensor rigidity appeared. The fore legs always showed marked hyperextension, while the hind legs, head, and tail varied somewhat in the degree of rigidity present. While unoperated animals did not voluntarily support their body weight upon their legs, it was not infrequently found that after decerebration at the low level they were able to do so. It is believed, therefore, that a mechanism

for the production of extensor hypertonus is present in the cat and dog at birth.—*Author (courtesy Wistar Bibl. Serv.)*.

10111. WOLF, HANS JULIUS. Ein Fall von isolierter Glossopharyngeuslähmung durch Blutung in der Medulla oblongata. *Deutsche Zeitschr. Nervenheilk.* 120(1/2): 80-86. 1 fig. 1931.—Intramedullary hemorrhage in the region of the glossopharyngeal root indicated that the nerve was the sensory supply of the pharynx, and mediated sensations of taste from the posterior third of the tongue and in part, apparently, from the anterior portion; it was the motor supply of the mm. stylopharyngeus, palatopharyngeus, palatoglossus, levator veli palatini, and constrictor pharyngis superior; it exerted a secretory influence on the parotid gland.

10112. WORONZOW, D. Über die Erregungsleitung im narkotisierten Nerven. *Pflüger's Arch. Ges. Physiol.* 227(1/2): 132-159. 12 fig. 1931.—An analysis of the nerve action potential led from stretches of normal nerve and nerve under cocaine narcosis recorded by means of a string galvanometer. The author interprets his results as supporting the theoretical views of Wedensky and contradicting the theory of decrementless conduction as stated by Kato.—*D. W. Bronk.*

ANIMAL PHYSIOLOGY

VASCULAR SYSTEM

(See also in 6(3): Entries 6694, 6703, 6707, 6986, 6996, 6997, 7032, 7059, 7065, 7071, 7079, 7091, 7093, 7094, 7119, 7146, 7163, 7176, 7179, 7199, 7349, 7457, 7536, 8267, 8280, 8605; and in this issue 9361, 9396, 9398, 9400, 9445, 9446, 9450, 9454, 9487, 9502, 9599, 9605, 9837, 9874, 9890, 9946, 10035, 10205, 10212, 10229, 10231, 10237, 10244, 10264, 10324, 10387, 10388, 10392, 10411, 10415, 11267, 11287, 11288, 11289)

10113. ARMSTRONG, PHILIP B. Functional reactions in the embryonic heart accompanying the ingrowth and development of the vagus innervation. *Jour. Exp. Zool.* 58(1): 43-67. 3 pl., 1 fig. 1930.—The embryonic *Fundulus* heart beats for several days before there is any physiological indication that vagus nerves have reached the heart. During this aneural stage the heart differentiates from a straight tube to essentially the adult condition. Vagus effects can be obtained only after this differentiation is finished. By mechanical methods the developing vagus nerves can be reflexly stimulated. If the embryo is left undisturbed, beat initiation and transmission are the same as in the aneural stage. The vagus responses only gradually involve the various parts of the heart, so that, including the aneural stage, there are 5 physiological stages in its development. The auricle, auricular-canal anlage and ventricle, and the sinus venosus are successively involved in the vagus response, and their functions are negatively affected. The vagus effects are abolished by atropin, a vagus depressant. The reestablishment of normal rhythm from the inhibited condition always takes place in the reverse order of its ontogenetic development. During the development of the physiological effects of the nerves on the heart there is no indication of transposition of automaticity and conductivity from the heart muscle to the cardiac nervous system. Throughout all stages beat initiation remains myogenic and beat conduction myodromic. The development of nervous responses in the heart is compared to the development of swimming reactions in *Amblystoma* as described by Coghill.—*Author (courtesy Wistar Bibl. Serv.)*.

10114. ASHMAN, RICHARD, and ROBERTA HAFKESBRING. Unidirectional block in heart muscle. *Amer. Jour. Physiol.* 91(1): 65-82. 5 fig. 1929.—By means of asymmetric pressure applied to the middle of a ventricular strip from the turtle heart, it is possible, in the greater number of cases, to produce irreciprocal conduction in the direction desired. An impulse passing from normal to a narrow region of strongly compressed muscle may pass on to a less strongly compressed region and thence into normal muscle. If the process is set up at the opposite end of the strip, so that it must traverse the less before reaching the more strongly compressed region, it may fail to pass the region of compression. Under similar conditions, before irreciprocal conduction appears, the impulse will usually traverse the strip more rapidly in the direction from stronger to weaker compression than the opposite.—*Authors' summary.*

10115. BARCROFT, H. Cardiac output and blood distribution. *Jour. Physiol.* 71(3): 280-291. 2 fig. 1931.—The systemic output of the heart has been measured in dogs [number not stated] with the mechanical stromuhr. Complete occlusion of the thoracic aorta increases the systemic output after section of the vagi. This is due to a transference of blood from the vessels supplied by the thoracic aorta to the remainder of the vascular system. Simultaneous occlusion of the thoracic aorta and inferior vena cava causes increase in the blood-pressure and in the flow through the brachiocephalic artery, due to the transference of a quantity of blood from the cardiopulmonary system to the remainder of the vascular system.—*Author's summary.*

10116. BECKMANN, RENATA. Die Wirkung der Wasserstoffionenkonzentration auf überlebende Venen. *Pflüger's Arch. Ges. Physiol.* 223(1/2): 561-581. 8 fig. 1929.—This article discusses the veins as a factor in the regulation of the volume output of the heart and especially the effects of changes in C_H on the contraction and dilatation of circular strips cut from 5 different veins of the ox. About 170 strips were placed in Ringer's solution (Fleisch formula) at 37° C. A decrease in pH from 7.4 to 7.3 was sufficient to cause contraction in specimens from vena saphena, cephalica and iliaca and a change from pH 7.3 to 7.4 resulted in relaxation; whereas strips from v. jugularis and mesenterica were comparatively uninfluenced. Not all specimens from any one region were equally affected. There was some relation between the intensity of reaction and amount of change in pH, and a latent period averaging 2½ to 5 min. was noted. The experiments did not locate the exact seat of the vasoconstrictor action nor decide whether in vivo it is the pH of circulating blood or of tissue fluids which is the main factor in this action, which must be important in the regulation of the heart's stroke volume. Epinephrine may be a factor in the sensitivity of the veins to pH increase. 39 references.—*M. Dresbach.*

10117. BERGAMI, GINO. La conduzione dell'eccitamento nel miocardio ventricolare. [Conduction of excitation in the ventricular myocardium.] *Arch. Sci. Biol. [Napoli]* 12: 586-594. 5 fig. 1928.—When an electric stimulus was applied to one end of a strip of the right ventricle of a dog's heart, after sectioning the endocardium, the effect was manifest at the other end, beyond the cut. The conclusion is that the stimulus is not transmitted by Purkinje fibres, but either by muscular or by differentiated tissues of the myocardium. —*P. Popenoe.*

10118. BRANDT, FRITZ, und GERHARD KATZ. Über die paradoxen Atemschwankungen des Venendrucks beim Menschen. *Zeitschr. Ges. Exp. Med.* 76 (1/2): 158-161. 1931.—A local obstruction to venous circulation caused by costal movement in the clavicular region was responsible for paradoxic pressure in the cubital vein (rise in pressure during inspiration, drop during expiration); it could be eliminated if the arm was in pronounced abduction (based on 64 patients).

10119. BUCCIARDI, GIULIO, et VINCENZO BISCEGLIE. Modifications de l'activité contractile et de la structure de fragments isolés du coeur embryonnaire de poulet par les variations quantitatives de la composition

du liquide nutritif. *Arch. Internat. Physiol.* 31(3): 272-309. 11 fig. 1929.—A balanced physiological saline increases the activity of fragments of chick embryo hearts more than the addition of chicken plasma. Slightly larger amounts of $CaCl_2$ and KCl further increase the activity of the fragments for about 2 hrs., but activity is actually lost sooner than in the controls. Isotonic solutions plus .1% KCl increase the contractility for 30 to 60 min. but standstill appears earlier than in the controls. Isotonic solutions plus .085, .1 and .125% $CaCl_2$ bring about a rapid but transitory increase in contractility. Hypotonic solutions also increase contractility of the fragments. Uranium acetate in .85% NaCl shows excitation if the concentration is .2% or lower. This salt dissolved in H_2O or hypotonic solutions produces depression rather than excitation. Culture of heart fragments in plasma and hypertonic solutions containing excess of $CaCl_2$ and KCl is difficult for the cell elements are reduced in volume and irregular in form. An excess of KCl does not stop migration or multiplication of cell elements but it does determine a vacuolisation of the cytoplasm. The fragments, however, may recover and be transplanted. The addition of $CaCl_2$ does not affect rate of growth or form of the myoblasts. Hypotonic solutions have no effect except an expansion of the cytoplasm. Uranium acetate prevents a culture from developing migration. If migration is in process then uranium brings about profound changes, such as the formation of vacuoles and fat droplets and nuclear changes which rapidly destroy the culture.—*W. J. Meek.*

10120. COPE, OTIS M. The effect of exercise on ventricular minute-output time. *Amer. Jour. Physiol.* 94(1): 140-143. 2 fig. 1930.—Carotid pulse tracings were taken from 8 individuals during work on a stationary bicycle. The effects of light and heavy exercise on the cycle length and minute output-time were thus recorded. It is shown that the heart adjusts itself to increased demands not only by increased rate but also by relative increase in its ejection phase, and that this adjustment takes place more rapidly and therefore more efficiently than the heart-rate changes when the work ceases.—*Author's summary.*

10121. CORUZZI, CESARE. Eccitazioni cutanee e pressione sanguigna. [Cutaneous stimulation and blood pressure.] *Clin. Med. Italiana* 61(1/2): 57-75. 1930.—Various means of cutaneous stimulation were used repeatedly on 3 subjects, by preference hypodermic injection of physiologic solution. Fall or rise of arterial pressure was observed according to the stimulated region, the most pronounced fall occurring after stimulation of the region corresponding to the projection of the heart on the thorax, and rise to the umbilical region. Later studies, in which physiologic solution was replaced by neurotropic substances, indicated that variations of arterial pressure in response to cutaneous stimulus (in particular, injection of various substances into the cellular tissue) are due to stimulation of the sympathetic nervous system in which the heart is involved through the thoracal cardiac nerves of sympathetic origin.—*From author's summary (transl.).*

10122. DANIELOPOLU, D., und I. MARCU. Reflexogene Zonen der Carotis. V. Respiratorischer Tonus des Sinus caroticus. *Zeitschr. Ges. Exp. Med.* 75(3/4): 347-352. 1931.—Experiments on dogs and cats showed that bilateral occlusion of the common carotid often produced changes in respiratory rhythm (increase or decrease) and increase in blood pressure. This was much more distinct after bilateral vagotomy. It was caused by suppression of the respiratory tonus in the carotid sinus; alterations in respiration from stimulation of the carotid sinus were caused by the sino-carotid reflex; these frequently succeeded the alteration due to occlusion of the carotid, the rush of blood acting as a stimulus. The change in rhythm was not due to cerebral anemia.

10123. DANIELOPOLU, D., I. MARCU, et G. G. PROCA. Inhibition cardiaque provoquée par la suppression fonctionelle du sinus carotidien après l'interception des filets sympathiques du coeur. *Compt. Rend. Soc. Biol.* 106(9): 731-733. 1931.—Functional suppression of the carotid sinus was studied in chloroformed dogs. Two ligatures were made in the posterior wall of the left ventricle to produce local alterations in the cardiac muscle. Tracings were made before and after the bilateral extirpation of the first thoracic ganglion. When the myocardium and the nerves of the heart are intact, suppression produces a rise in blood pressure and an acceleration of the pulse. When the common carotids are occluded, after the sympathetic nerves of the heart have been cut, excitation of the sinus or its functional suppression produce inhibitory results (slowing of the pulse, etc.). Functional suppression of the sinus produces cardiac inhibition only when the contractility is destroyed. If the myocardium is strong, inhibition does not occur, even if the sympathetic nerves are cut. Survival of patients having angina pectoris who have had the stellate ganglion removed depends on the condition of the myocardium.—*E. Weiner.*

10124. DUKES, H. H., and L. H. SCHWARTE. The blood pressure of the pig and the influence of non-nervous and nervous factors on the cardiovascular apparatus. *Jour. Amer. Vet. Med. Assoc.* 32(1): 37-62. 21 fig. 1931.—Mean blood pressure in the ligated carotid artery of 14 pigs under local anesthesia was determined, the average for the group being 169 mm. Hg. The effect of gravity on blood pressure was similar to the effect reported by others for certain other animals. Compression of the abdomen caused a rise in blood pressure as did asphyxia, but ligation of both carotid arteries had little or no effect. In a pig under local anesthesia, ligation of both carotid arteries appeared to impair but did not abolish consciousness. The action of adrenalin and pituitrin on blood pressure in the pig was similar to their action in other species, and indications are that vagus tone is fairly well developed. Cardiac inhibitory action was better developed in the right vagus nerve than in the left. In a pig no evidence was found of the existence of accelerator fibers in the cervical vagus nerve (right). Stimulation of the central end of the vagus nerve or of the central end of the sciatic nerve caused a rise of blood pressure more often than a fall. Acceleration and augmentation of the heart beat followed stimulation of the cardiac plexus of the pig. Stimulation in the region of the sino-auricular node caused cardiac acceleration. Stimulation of the peripheral and central end of the splanchnic nerve caused a rise of blood pressure, and also stimulation of the central end of the sympathetic trunk (right) opposite the fourteenth rib. —*From authors' summary.*

10125. EAST, C. F. T., and C. W. C. BAIN. Recent advances in cardiology. 335p. P. Blakiston's Son & Co.: Philadelphia, 1930. Pr. $3.00.

10126. FIELD, MADELEINE E., and CECIL K. DRINKER. The permeability of the capillaries of the dog to protein. *Amer. Jour. Physiol.* 97(1): 40-51. 1931. —Experiments on dogs showed that the capillaries of the subcutaneous tissues permit the passage of protein through their endothelial walls, the protein being detected in the cervical lymph 1 to 2 hrs. after injection. Normal serum, injected subcutaneously, is rapidly absorbed by the lymphatics, as shown by a concentration of the lymph and by the presence of foreign serum which can be detected serologically. The absorption is not due to puncture of the lymphatic vessels at the time of the injection. Fat is absorbed by the subcutaneous lymphatics but much more slowly than protein. The lymphatics of the peritoneal cavity which enter the thoracic duct take up protein even more readily than do those of the subcutaneous tissues. The blood capillaries of the subcutaneous tissues are not normally concerned in the absorption of protein. The blood capillaries of the peritoneal cavity are capable of absorbing extravascular protein. The omental vessels are probably most concerned in this absorption.

10127. FISCHER, M. H. Reizversuche mit "Wärmestrahlung" am Zentralnervensystem. *Zeitschr. Ges. Exp. Med.* 68(1/4): 139-144. 1929.—With a simple irradiation

method the sinus, atria, ventricle and atrioventricular junction of isolated frog hearts in Gaskell suspension were heated locally. Isolated irradiation of the sinus slowed the atria and weakened their contraction. An A-V block set in, which finally became complete. Long continued sinus irradiation produced arrest of the ventricle, atria and finally the sinus. The effects are attributed to a gradual decrease in the capacity of the sinus to originate excitation, resulting finally in complete "heat paralysis." Local irradiation of the atria or of the ventricles provoked a gradually spreading heat paralysis of the irradiated muscle, accompanied by a decrease in the extent of contraction therein. Local irradiation of the A-V junction produced A-V block, with idioventricular rhythm and extrasystoles in the atria which were beating in sinus rhythm. All the phenomena described are completely reversible on withdrawal of the irradiation.—*M. H. Fischer (transl. by W. J. Meek).*

10128. **FRANK, O. Der Ablauf der Geschwindigkeit in der Aorta.** *Sitzungsber. Ges. Morph. u. Physiol. München* 38: 1-7. 2 fig. 1927/28(1928).—The author describes his latest apparatus for determining the velocity of blood flow, which makes use of the principle of Pitot's tubes and the differential manometer. The velocity of aortic flow rises rapidly during the ejection period and then rapidly falls. The rise is preceded by a brief negative period due to the descent of the cardiac base and the beginning of contraction. At the time of the incisura there is also a brief back flow.—*W. J. Meek.*

10129. **FRANK, O. Der arterielle Puls. Zweite Mitteil.** *Sitzungsber. Ges. Morph. u. Physiol. München* 38: 32-35. 1927/28(1928).—A brief report of the effects of amyl nitrite, adrenalin, exercise and holding the breath on the central and peripheral pulses. Low blood pressure from amyl nitrite results in a decreased pulse wave velocity and a consequent delay in the appearance of the larger waves, especially the carotid. Muscular exercise, like amyl nitrite, results in a dicrotic pulse. The effects of adrenalin, 0.75 mgm. for man, are slight. Air transmission may be improved by using lighter gases, such as hydrogen or helium in the tubes.—*W. J. Meek.*

10130. **FRANK, OTTO. Theorie des Kardiographen.** *Zeitschr. Biol.* 89(3): 289-291. 1 fig. 1929.—A short mathematical discussion of the statics, dynamics and efficiency of the transmission cardiograph, derived from the theory of the transmission sphygmograph published in the same number of the above Zeitschrift.—*M. Dresbach.*

10131. **GÉRAUDEL, ÉMILE (translated, with an introduction by LOUIS FAUGÈRES BISHOP, and LOUIS FAUGÈRES BISHOP, Jr.). The mechanism of the heart and its anomalies.** 266p. 200 fig. Baillière, Tindall & Cox: London, 1930. Price 45s.

10132. **GLEY, PIERRE, et D.-M. GOMEZ. La détermination de la pression moyenne par la méthode oscillométrique.** *Jour. Physiol. et Path. Gén.* 29(1): 38-41. 1 pl., 2 fig. 1931.—By "mean dynamic pressure" is meant the constant pressure that will maintain the same head of circulation as that due to the variable vascular pressure. It is equivalent to the "pression efficace intra-artérielle" of V. Pachon, and must be distinguished from the mean pressure obtained by arithmetical calculation from the observed maximum and minimum pressures. When measured in the living animal by a Marey compensation-manometer, it is found that the mean dynamic pressure corresponds closely to the point of maximal oscillation as observed in clinical sphygmomanometry.—*W. R. Fearon.*

10133. **GORJAJEW, N. K., M. SERGIJEWSKY, und J. ZWETKOW. Zur Frage des Ursprungs der Traube-Heringschen Wellen.** *Pflüger's Arch. Ges. Physiol.* 227 (1/2): 45-56. 8 fig. 1931.—The authors consider these waves to have a peripheral origin and to be at any rate partly dependent on variations in activity of the adrenals. When these glands are removed, the waves are no longer seen. They are not interfered with by section of the vagi, of the splanchnic nerves or of the sympathetic chain.—*H. C. Bazett.*

10134. **GOTTHARDT, PAUL PETER. Herz und Sport.** *Münchener Med. Wochenschr.* 76(27): 1117-1120. 1 fig. 1929.—This is a condensed preliminary report and deals with the question whether or not strenuous athletic exercise of certain types leads to enlargement (work hypertrophy) of the heart. Various difficulties peculiar to the problem are discussed at length. X-ray measurements of the transverse cardiac diameter (with some blood pressure and pulse rate determinations) were made on 467 skiers and a total of 156 runners, acrobats, boxers, swimmers and rowers. If certain important precautions are observed, on a large enough number of subjects, it can be shown that the transverse diameter of the heart is not often increased by the types of athletics mentioned. In some individuals, e.g., boxers, it even decreases. Under the circumstances, the terms "increased filling" and "thickening of the heart wall" are preferable to "dilatation" and "hypertrophy," which have a pathologic significance.—*M. Dresbach.*

10135. **GREENBURG, LEONARD. Changes produced in the distribution of the blood supply of the skin and the upper respiratory tract by the application of localized drafts of air.** *Yale Jour. Biol. and Med.* 3(4): 341-354. 1931.—In 26 experiments on 7 nude human subjects, exposed to drafts on the head and feet (remainder of body shielded by a screen), temp. observations of the skin, of the mucous membranes of the nose and throat, and of body temp. were made by a thermoelectric system. The environmental conditions were studied and the cooling power expressed on a basis of effective temp. It is concluded that skin temp. under any set of conditions is characteristic of the individual and varies with the effective temp. at which the body is exposed. At high effective temp. the skin tends to possess a uniform temp., while at lower effective temp. the temp. of the skin of the extremities falls below that of the remainder of the body. Exposure of an extremity (head or foot) lowered the temp. of that extremity. Exposure of the feet to a draft produced a fall of temp. of the head in approximately 65% of the experiments; after cessation of the draft, there was a slow return of the original temp. in the head and feet. Exposure of the head to draft is followed by a slow return of temp. to the feet and a rapid return of temp. to the head. The temp. of the nasal mucosa was lowered in 75-80% of these experiments on the exposure of the subject to a draft, whereas the temp. of the palatine tonsils was lowered in 60% of the experiments. Glatzel mirror studies indicate that the breathing space of the nose was increased in 50-64% of the experiments. It is rather difficult to reduce the temp. of the human body by exposure to cold to the extent practiced in these experiments, the av. change of temp. being a fall of 0.13° on exposure to a draft. The temp. studies of the nose and throat, as well as observations on the size of the nasal breathing space, the Glatzel mirror records, and the color of the mucous membranes all agree in indicating the production of a shrunken, pale mucosa of a lower temp. than that existing before the application of the localized draft.—*From author's summary and conclusions.*

10136. **GROLLMAN, ARTHUR. Physiological variations of the cardiac output of man. VIII. The constancy of the cardiac output from day to day throughout the year.** *Amer. Jour. Physiol.* 93(2): 536-543. 1930.—Results on a healthy ♂ subject showed that, under strictly basal conditions, the cardiac output of man is constant from day to day and is not subject to daily or seasonal variations.

10137. **[GRUZIN, A. I.]** ГРУЗИН, А. И. К вопросу о колебаниях артериального кровяного давления в зависимости от некоторых факторов. **[Dependence of arterial blood pressure on certain factors.]** [German summary.] Одесский Медицинский Журнал (*Odessaer Med. Zeitschr.*) 4(8/10): 529-540. 1929.—Persons with normal cardiovascular system and at rest gave comparatively slight oscillations of blood pressure (10-20 mm. Hg). Strenuous work together with unfavorable environment (high temp., air impurity, vapors, etc.), and

sports (volley ball and football) as well as serious psychic traumas produced even in persons with normal cardiovascular system large blood pressure oscillations (40-50 mm. Hg). In essential hypertonia, too, these oscillations were quite considerable. Large oscillations which, due to industrial conditions, are repeated daily over a period of many years, finally lead to permanently increased blood pressure, resulting in secondary phenomena, such as arteriosclerosis. Curves of maximal and minimal oscillations in many cases may be typical for certain diseases (glomerulonephritis, arteriosclerosis, hypertonia).—*B. Van Rosen.*

10138. HAMPERL, H. Zur Fragmentatio myocardii. *Beitr. Pathol. Anat. und Allg. Pathol.* 82(3): 597-601. 2 fig. 1929.—The author found that fragmentation of the heart muscle could not be produced definitely by experiment. In the human heart fragmentation was found only in necrotic regions. The position of the cross striations changed in contraction. These cross striations may represent boundaries between regions of different hydrogen ion concentration.

10139. HARTMAN, CARL G., R. R. SQUIER, and O. L. TINKLEPAUGH. The fetal heart rate in the monkey (Macacus rhesus). *Proc. Soc. Exp. Biol. & Med.* 28(3): 285-288. 1930.—The maternal pulse ranged from 160 to 240, the fetal from 100 to 180, at periods from 3 to 32 days prior to parturition and at a copulation age of 129 to 163 days. The rapid pulse of the pregnant monkey is explained as due to the excitement and vigorous exercise attending capture and subsequent struggles to escape.

10140. HOOKER, D. R. On the recovery of the heart in electric shock. *Amer. Jour. Physiol.* 91(1): 305-328. 2 fig. 1929.—Methods heretofore suggested for the recovery of the heart in electric shock have not been found efficacious. The new method here described calls for the central carotid injection of the remedial solutions, saturated with O and warmed to body temp., at a pressure of 150 mm. Hg. The arterial pressure being practically at 0, the solutions thus injected readily find their way into the coronary arteries. The first solution (KCl 0.5%, NaCl 0.9% plus heparin 0.25 mgm. per cc.), about 13 cc. per kgm., establishes K inhibition and the heart is allowed to rest for 1 min. The 2nd solution ($CaCl_2$, 0.023%; NaCl, 0.9%), about 25 cc. per kgm., washes the excess of K out of the coronary bed and substitutes a relative excess of $CaCl_2$, the effect of which is to stimulate a normal cardiac rhythm. This effect is enhanced by the coincident injection of 1 cc. of 1:1000 adrenalin chloride. In 12 experiments on dogs (of which 3 were killed) the heart was in fibrillation 1½-18½ min.; recovery was complete in 4 dogs, in 2 of which the heart had been in fibrillation for 5 min.

10141. KAHN, R. H., und FRANZ POLLAK. Die aktive Verengerung des Lumens der capillaren Blutgefässe. *Pflüger's Arch. Ges. Physiol.* 226(6): 799-807. 8 fig. 1931.—The contraction of capillaries has been studied in the nictitating membrane in the frog. The tissue has been excised so that variations secondary to changes in blood pressure can be excluded. Excellent photomicrographs are reproduced which strongly support the hypothesis that constriction of the capillaries can be of two kinds—one a diminution in the lumen as a result of the swelling of the endothelial cells, particularly their nuclei, and a second type in which adventitious cells lying outside the capillary exert pressure on the wall, changing the lumen and producing longitudinal folds in the vessel wall.—*H. C. Bazett.*

10142. KATZ, LOUIS N., and MORTIMER L. SIEGEL. The importance of the variable capacity of the aorta in averting "back pressure" in the right heart and pulmonary artery. *Amer. Jour. Physiol.* 89(2): 417-427. 1929.—An analysis of the effects of stenosis at the root of the aorta on the pulmonary circuit and right heart was made on the basis of optically recorded pressure pulses from these chambers (9 experiments reported). The following changes were noted immediately after a moderate stenosis of the aorta was made: (a) progressive rise in the pressure of the left auricle and pulmonary veins and a smaller rise in the vena cava after a short lag during which the pressure fell; (b) rise in the pulmonary arterial diastolic and systolic pressures; (c) increased pulse pressure in the pulmonary artery; (d) rise in initial pressure and in pressure amplitude in the right ventricle; (e) systolic vibrations in the left auricular pressure curve; (f) shift in the peak of the pulmonary arterial and right ventricular curve toward the latter part of ejection; (g) no significant changes in the duration of the cycle and systolic phases. The effects of changes in coronary flow which follow stenosis at the root of the aorta were evaluated by comparing the results of experiments in which the coronary return flow to the right heart was free with those of experiments where it was interrupted more than 60%. The coronary flow was interrupted either by occlusion of the sinus near its opening into the right auricle or by severing the sinus and allowing it to bleed freely. Except for the occasional absence of an increase in pulse pressure, no difference was noted in the 2 types of experiments, indicating that the changes in coronary flow play an unimportant part. The effects found are caused primarily by "back pressure" per se. The results indicate that moderate stenosis of the aorta leads to a damming back of blood in the pulmonary artery and right ventricle adequate in amt. to raise the pressure within them and augment the discharge of the latter. The additional capacity of the aorta is necessary to accommodate the excess blood and avert "back pressure." Compensatory changes follow very quickly. Evidence is given to show that they depend primarily on an increased discharge of the left ventricle which results from its increased distention with blood held back by the stenosis. The effect of aortic stenosis on the right heart varies with its degree. A greater degree of stenosis is needed to produce changes in the right heart than in the left. When the degree is excessive—the extent varying with the condition of the heart—a decrease in the pressure levels and pulse pressure eventually ensues because the right ventricle is distended beyond the physiological limit and its discharge decreased.—*Authors' summary.*

10143. KISCH, BRUNO. Der Calciumalternans. Ein Beispiel des Alternans bei systolisch disponiertem Herzen. *Zeitschr. Ges. Exp. Med.* 64(5/6): 666-679. 6 fig. 1929.—Total hyposystole is not found in Ca alternation. The increased duration and strength of systole appearing in the frog heart after excess Ca may lead to an alternating partial adiastole which may be expressed only by an alternation in the position reached by the bottom of the curves. In hearts with a systolic predisposition alternation is not preceded by weaker contractions. They may even be higher than normal. Alternation in hypodynamic hearts is to be referred to a disturbance in the assimilatory processes and a resulting decrease in energy output during systole, but in hearts with a systolic predisposition it is to be referred to an increase of the energy yielding processes during systole accompanying a more or less marked shortening of diastole. Negative inotropic substances such as acetaldehyde or Mg salts may abolish alternation in hearts with a systolic predisposition, while positive inotropic substances such as Ca salts may abolish it in hypodynamic hearts. Ca therefore aids both energy yielding and recovery processes. In man alternation appears mostly in cases with high blood pressure because in such hearts the systole is lengthened and the diastole shortened. Fundamentally every influence on the heart which increases the exhaustion processes during contraction and lessens the following recovery processes will lead to alternation as soon as the condition of luxus recovery is encroached upon.—*W. J. Meek.*

10144. KINSMAN, J. MURRAY, [et al.] Studies on the circulation. I. J. MURRAY KINSMAN, J. W. MOORE, and W. F. HAMILTON. Injection method: physical and mathematical considerations. II. JOHN WALKER MOORE, J. M. KINSMAN, W. F. HAMILTON, and R. G. SPURLING. Cardiac output determinations: comparison of the injection method with the direct Fick

procedure. *Amer. Jour. Physiol.* 89(2): 322-339. 6 fig. 1929.—I. Evidence is presented showing that it is possible to calculate accurately the flow of water through a system of tubes and bulbs, simulating the cardio-vascular apparatus of animals. The calculation is based upon the av. concentration and time relations of consecutive samples of the stream into which a dye has been injected. These samples serve equally well whether taken through large or small needles or from large or small branches of the stream. Curves obtained in experiments in which the water recirculates are similar to those in animal experiments. The confusion introduced by re-circulation is avoided by plotting the curve on semi-logarithmic paper. The descending limb of the primary wave is then a straight line and when prolonged serves to differentiate once-circulated from twice-circulated dye.—*Authors' summary.*—II. For the 1st time the accuracy of a method for calculating the cardiac output in man has been established by checking it in 6 experiments on 3 dogs against a reliable method, the direct Fick procedure. The results of 4 human experiments are included.

10145. [KUZNETSOV, V. P.] КУЗНЕЦОВ, В. П. Определение функционального состояния сосудов кожи. [Determining the functional condition of skin vessels.] [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(3/5): 277-280. 1930.—The author describes a special dermograph which permits quantitative and qualitative calculation of the functional condition of the skin vascular-nervous apparatus. Irritation which produces the first reaction (white or red) is termed J_1. As the second limit is taken the force of irritation at which the reaction becomes opposite, and this force is termed J_2. Difference J_2-J_1 represents the dermographic index of the tonus of the skin vessels. This index is negative if the primary reaction was white, and positive if it was red. $J_2/J_1=J_{lim}$, and shows the limits of irritation, below which the reaction remains normal, and above which it becomes edematous.—*B. Van Rosen.*

10146. LEVY, J. ROBERT. Les anomalies du complexe ventriculaire électrique. 178p. Masson et Cie: Paris, 1929. Pr. 30 fr.

10147. MARSCHAK, M. E. Hauttemperatur bei dynamischer und statischer Arbeit. *Arbeitsphysiologie* 3 (1/2): 168-178. 4 fig. 1930.—The skin temperatures of students, 24-28 years of age, were measured by means of a thermoelement in a room at 18-21°C. The dynamic work was raising and lowering weights, 5 to 20 kgm., for 2 to 6 min., stationary running 2 to 3 min., raising and lowering forearm, and bending thumb. The skin temperatures over the active muscles were always higher in the 3 successive periods during 5 min. after the work ended than before the work began. The temperatures of the skin over other parts of the body either remained unaltered or were lower after than before the beginning of the activity. The author concludes that the rise in temp. of the skin over the active muscles was due to an increased blood flow. The static work consisted of holding weights 4 to 20 kgm. with slightly bent arm or completely outstretched arm 1 to 5 min., holding weights while sitting, and holding body bent in a forward position. The temperatures of the skin over the contracted muscles fell during the exertion, and after the work ceased rose to nearly or above the prework level. The author concludes that the lowering of the skin temperature in static work was due to the hindrance to the blood flow.—*T. M. Carpenter.*

10148. MOORE, ROBERT M. The volume of the spleen in traumatic shock. *Amer. Jour. Physiol.* 89(3): 508-514. 1929.—The state of contraction of the spleen in cats in various stages of traumatic shock was studied in 10 experiments. In every instance the spleen was so extremely constricted that its cut surface did not bleed; its weight was 0.18-0.35% of the body weight, averaging 0.25%. These weights are similar to the lowest post mortem values obtained by Barcroft, Harris, Orahovats and Weiss in cats, and correspond to the minimum weight of the completely contracted spleen. Evidently, then, a dilated spleen is not a factor in the production of the decreased blood volume characteristic of traumatic shock. The close relationship between the contracted state of the spleen and of the splanchnic vascular bed is discussed. It is concluded that, as regards its smooth muscle, the spleen may be looked upon as a large and modified splanchnic blood vessel the volume of which serves as an index of the state of contraction of the splanchnic vascular bed as a whole. The occurrence of an extreme constriction of the spleen in traumatic shock is interpreted as supporting the observations of others to the effect that the splanchnic vasoconstrictor mechanism becomes highly active in shock in an attempt to maintain an effective blood pressure in the presence of a rapidly diminishing blood volume.—*Author's summary.*

10149. NI, TSANG-G. Does muscular contraction affect the local blood supply in the absence of lactic acid formation? *Jour. Physiol.* 71(4): 356-361. 1 fig. 1931. —Experiments on frogs with the spinal cord transected below the medulla showed that when the formation of lactic acid is prevented by poisoning with monoiodoacetic acid, muscular contraction can still increase the local blood supply by opening up more capillaries. Evidently lactic acid from the muscle is not an essential part of the mechanism which regulates the peripheral blood flow. Whether a humoral intervention of a substance other than lactic acid exists, is not discussed.—*Author's summary.*

10150. PUPILLI, G. Sui meccanismi vasomotori del polmone. I. Effetti di sezioni del tronco encefalico sui riflessi vasomotori polmonari. [The vasomotor mechanisms of the lung. I. Effects on the pulmonary vasomotor reflexes of section of the encephalic trunk.] *Ateneo Parmense* 2(3): 188-207. 1930.—From experiments on 6 dogs Pupilli concludes that in dogs decerebrated at the level of a plane passing immediately back of the caudal boundary of the colliculi posteriores it is no longer possible by stimulation of the central head of the crural nerve or stimulation of an intercostal nerve to elicit the pulmonary vasoconstriction reflex, though vasomotor reflexes can still be produced in the systemic circulation. Section of the central axis at a higher level (in the plane between the colliculi anteriores and posteriores) produces no appreciable modification in the vasomotor reflexes of the lung.

10151. RACHMILEWITZ, M., und D. SCHERF. Über extrasystolische und automatische Tätigkeit der Zentren. *Zeitschr. Klin. Med.* 114(6): 785-798. 1930.—In patients with auricular fibrillation who develop extrasystoles under digitalization it is found not infrequently that the beats which come after the post-extrasystolic pause arise from the same center as the extrasystole itself. Occasionally the extrasystoles are combined with these post-extrasystolic beats. The same thing is found under certain conditions without digitalis and without fibrillation both in the ventricle and in the auricle. Moreover, this phenomenon may be brought about experimentally. The fact that the same center produces successively automatic beats and extrasystoles raises the question whether the two types of impulse are identical or fundamentally different. It may be concluded that while many similarities exist between the automatic and extrasystolic stimuli, identification is not yet allowable, and the necessity for sharp separation remains.—*H. E. Jordan.*

10152. ROBB, JANE SANDS. Galvanometer tracings obtained in a physico-chemical schema simulating an electrocardiogram, and the influence of membranes on these records. *Proc. Soc. Exp. Biol. & Med.* 28(5): 482-483. 1931.—Preliminary paper.

10153. SKRAMLIK, EMIL von. Das Verhalten der Überleitungsgebilde zwischen Vorhof und Kammer gegenüber recht- und rückläufig übertragenen Antrieben. *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13(3): 626-638. 1930.—The conducting structure between auricle and ventricle shows a certain polarity. In fish hearts (*Scyllium canicula* L.) it was found that currents of a given frequency from the ventricle are carried to

the auricle, but not from the auricle to the ventricle. Every contraction of the ventricle was followed later by one from the auricle. If, on the contrary, the auricle was stimulated with the same frequency, the stimulated structure responded but the ventricle responded to every second stimulus. In the frog heart (*Rana esculenta* L.) conditions were reversed. The conducting structure carried impulses of definite and uniform number per min. from the auricle to the ventricle, but not from the ventricle to the auricle. If the auricle was stimulated with frequent, rhythmical stimuli, it responded to every stimulus with a contraction, which was followed in a corresponding interval by one from the ventricle. If the ventricle was stimulated the auricle responded only to every second ventricular contraction. Since the transmission of stimulation in the fish heart occurred more slowly from the ventricle to the auricle than from the auricle to the ventricle, while in the frog heart, on the contrary, normal conduction of stimulation required shorter time than the retrograde, it can be said that the functions of the transmitting structure with regard to the rapidity of transmission of a stimulus and its response to 2 successive stimuli within a short period of time parallel one another.—*Author's conclusions (transl.)*.

10154. SPADAFINA, LUIGI. Ricerche sperimentali sulla influenza che esercita sulla pressione arteriosa il plasma sanguigno in confronto delle emazie. [Influence of blood plasma on arterial pressure as related to that of erythrocytes.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 829-832. 1930.—Diluting the blood with water until only ½ the number of erythrocytes were present had no marked effect on blood pressure. The same result was obtained by reducing the erythrocytes by pyrodine administration.—*M. Comel.*

10155. THÖRNER, WALTER. Beobachtungen über peripheren Kreislauf und Melanophoren unter dem Einfluss von Degeneration und Kationenwirkung in Durchspülungsversuchen am Frosch. *Pflüger's Arch. Ges. Physiol.* 222(1/2): 52-70. 1 fig. 1929.—Experiments are reported on the behavior of the capillaries and of the melanophores of the skin of the frog 2 to 3 mos. after excision of the right sciatic plexus. The results which are observed under a comparison microscope show a diminished tonus of the vessels. The diminished tonus was evidenced by better circulation, greater speed of blood flow and greater mass of blood transmitted. Perfusion experiments show that K causes an increased tonus of the vessels which is greater on the degenerated than on the normal side. The locus of action is the arteries. Calcium causes a smaller increase in tonus which has its seat in the capillaries. Sodium increases blood flow and diminishes normal tonus. Calcium produces contraction of the melanophores and K an expansion.—*H. C. Stevens.*

10156. TUTHILL, C. R. Hypertension in relation to the blood vessels of the medulla oblongata. *Arch. Path.* 11(5): 760-765. 2 fig. 1931.—The blood vessels of the region of the obex of the medulla oblongata were studied in 24 cases of hypertension of varying duration and in 35 cases of normal blood pressure. In 12 cases of hypertension, arteriosclerosis of the vessels of the medulla oblongata was found, but in the other 12 cases slight or no arteriosclerosis of these vessels was present. Among the cases of normal blood pressure, 6 showed arteriosclerosis of the vessels of the medulla oblongata. However, in none of the cases was arteriosclerosis confined solely to the vessels of the medulla. No proof was found that hypertension is the result of arteriosclerosis of the vessels of the medulla oblongata.—*Author's summary.*

10157. WARBURG, ERIK J. Über den Coronarkreislauf und über die Thrombose einer Coronararterie. I. Anatomie, Physiologie, und Historik. *Acta Med. Scandinavica* 73(5): 425-459. 4 fig. 1930.—A preliminary paper reviewing the background of the disease theory of thrombosis in a coronary artery. The author denies the validity of the conception implied by the term, "Myomalacia cordis." His interest is in the frequency of lung complications. The present paper describes the anatomy of capillary circulation, and the physiology of coronary circulation. The author has calculated the rate of the coronary circulation, using the relative sectional area of the aorta, the amount of work done by the heart, and with full consideration of previous studies on metabolism, the O capacity of the blood, and the efficiency of the heart muscle. During rest, the minute-volume of the coronary circulation is ¼ of a litre, as compared to 5 litres for the heart; and during maximum work the flow is 1 litre as compared to 30 litres for the heart. The paper reviews the literature on ligation of a great branch of a coronary artery, on coronary thrombosis, and on various aneurysms. The bibliography will be given in a 2nd paper.—*F. W. Appel.*

10158. WERTHEIMER, ERNST. Beitrag zur Frage des Stoffumsatzes beim Schlagen der Kaltblüterherzen. II. *Pflüger's Arch. Ges. Physiol.* 227(1/2): 100-109. 1931.—Strips of heart continue to beat when placed in Ringer's solution containing monobrom-acetic acid. This indicates that carbohydrate splitting is not of primary importance in relation to the muscle contractions. No significant changes in the concentrations of the various types of phosphoric acid were found to occur as the result of activity of heart strips.—*D. W. Wilson.*

10159. WHITE, ADAM CAIRNS. Über die Verteilung verschiedener Phosphorsäurefraktionen auf die einzelnen Herzabschnitte. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 183(4/6): 184-190. 1929.—With few exceptions, the amount of total P in the heart chambers increases in this order: right atrium—left atrium—right ventricle—left ventricle. Ventricles contain a greater proportion of phosphoric acid, phosphatid P and dry substance than atria (fresh beef hearts used). These points deserve study in pathological hearts.—*M. Dresbach.*

10160. WILSON, FRANK N., and GEORGE R. HERRMANN. Relation of QRS-interval to ventricular weight. *Brit. Jour. Surg.* 15(2): 135-140. 1930.—Comparison of the QRS-interval and the ventricular wt. [in 49 cases] indicates that the length of this interval increases in av. value with the cube root of the ventricular wt. Comparison of the QRS-interval and the thickness of the left ventricular wall shows a similar increase in the av. value of this interval with an increase in muscle thickness. QRS-intervals which exceed 0.10 sec. should not in general be ascribed to increased size of the heart or to increased thickness of the left ventricular wall alone, but to retarded intraventricular conduction.—*Authors' summary.*

10161. WOLFERTH, CHARLES C., and ALEXANDER MARGOLIES. The influence of auricular contraction on the first heart sound and the radial pulse. *Arch. Internal Med.* 46(6): 1048-1071. 1930.—A series of 7 cases with varying auriculoventricular relationships all showed inequalities of the 1st heart sound which could be related to the lengths of the intervals between auricular and ventricular systoles. These time relations tended to be characteristic for each case, although the degree of inequality varied and exceptionally could not be recorded. The inequalities of sound are easily detected by auscultation and furnish a valuable clinical test of dissociated beating of the auricles and ventricles (complete heart block and ventricular escape). The absence of inequality of sound does not rule out the possibility of dissociated beating. In 2 cases (both having complete heart block) inequalities in the size of the pulse waves were recorded. When the amplitude of the waves recorded was compared with the lengths of intervals between auricular and ventricular systoles, a definite relation was revealed. In both cases the curves showed similar time relations. In 1, inequalities in amplitude seemed to vary from day to day, and occasionally no differences could be recorded. In 3 other cases tracings of the pulse waves failed to reveal changes in the amplitude of the waves that could be related to the auriculoventricular intervals. Simultaneous records of changes in the intensity of sound and amplitude of the pulse waves showed that either comparatively loud or faint sounds may be associated with comparatively large or small pulse waves. It was therefore con-

cluded that while both types of changes were dependent on phenomena resulting from auricular systole, the factors concerned were not identical. It is suggested, principally on the basis of work by Wiggers and Gesell and some indirect evidence obtained by the authors, that the changes observed in the amplitude of the pulse waves are due principally to the effects of auricular systole on ventricular filling and initial tension. The provisional hypothesis is adopted that inequalities of the 1st heart sound observed are due principally to variation in the position of the mitral leaflets at the beginning of ventricular contraction.—*Authors' summary.*

PHARMACOLOGY

ERWIN E. NELSON, *Editor*
RALPH G. SMITH, *Assistant Editor*

(See also in this issue Entries 9360, 9402, 9434, 9440, 9461, 9466, 9472, 9475, 9494, 9497, 9504, 9513, 9527, 9528, 9557, 9565, 9566, 9585, 9612, 9617, 9618, 9621, 9634, 9645, 9650, 9691, 9713, 9715, 9754, 9760, 9763, 9777, 9788, 9789, 9799, 9804, 9815, 9818, 9822, 9823, 9836, 9837, 9853, 9857, 9865, 9871, 9881, 9882, 9886, 9890, 9893, 9897, 9904, 9916, 9945, 9959, 9964, 10015, 10017, 10046, 10050, 10060, 10082, 10101, 10129, 10140, 10143, 10374, 10410, 10462, 10471, 10585, 10591, 10598, 10628, 10695, 10753, 10801, 10874, 11872)

10162. ALLODI, ANGELO, ed ENRICO MUSSO. Ricerche sul chimismo gastrico di alcune sostanze somministrate per via rettale. [Action on gastric function of some substances administered per rectum.] *Arch. Sci. Med.* 54(9): 621-638. 1 fig. 1930.—Administration per rectum of various liquids or of alkaline salts, sometimes also of water, may be followed by modifications of gastric secretion. The more stimulating substances are alcohol and peptone: the former is assumed to act directly on the gastric glands, the latter by a chemical and hormonal action. Sugar may act through insulinemia. Oil and water may act mechanically and through reflexes.—*M. Comel.*

10163. ALMEIDA, A. G. de. On the plant poisons of the natives of Mozambique. *S. African Jour. Sci.* 27: 296-302. 1930.—In several cases reported in some detail, the viscera of natives who had died after administration of native remedies yielded an alkaloid giving the reactions characteristic of colchicine.

10164. AMAKO, T. H. Über die bakterizide Wirkung des Jodipins gegenüber Tuberkelbazillen und anderen Bakterien. *Zeitschr. Tuberk.* 58(3): 178-183. 1930.—Iodipin 20% (iodized sesame oil) has but little bactericidal action against the tubercle bacillus in vitro. Young cultures appear more resistant than old ones. It seems likely that what tuberculocidal action it possesses is due to the oil vehicle.—*M. I. Smith.*

10165. BABES, A. Arrêt de la croissance chez le lapin obtenu par les injections de goudron. *Jour. Physiol. Path. Gén.* 28(3): 567-578. 5 fig. 1930.—Injection or dermal application of tar, if the dose is sufficient, causes hypoplasia of thymus and spleen in the rabbit, and death in 5-10 days, with accompanying changes in liver, lymphoid tissues and ductless glands. If the period of tar administration is extended over a long time (80 days), growth is retarded. This is ascribed to hypoplasia and decreased activity of pituitary, thyroid and thymus.—*W. R. Fearon.*

10166. BELÁK, A., und A. KLAMARTSIK. Über den gegenseitigen Einfluss des Adrenalins und Pilocarpins auf den Blutzucker. *Zeitschr. Ges. Exp. Med.* 74(3/4): 324-328. 1930.—1 mgm. of pilocarpine per kgm. in rabbits had no effect on the blood sugar or lowered it slightly; unexpectedly this same dose was found to increase markedly the action of epinephrine on the blood sugar. This observation can not be explained by the accepted theory of vegetative functions.—*Authors' summary (transl. by G. T. Cori).*

10167. BENIGNI, RENZO. Contributo sperimentale alla farmacologia delle aconitine. Nota II. Nuovo apparecchio. Indagini sul meccanismo d'azione della japaconitina A sull'intestino isolato. [A new apparatus. Studies on the action of japaconitin A on isolated intestine.] *Arch. Fisiol.* 29(2): 245-255. 6 fig. 1930.—A simple apparatus is adopted for studying the action of japaconitin A on isolated intestine. The action is exerted on the parasympathetic system, and especially on the vagus. The pendular movements of the intestine are controlled by the vagus, the static function or tonus may be controlled by the sympathetic system.—*M. Comel.*

10168. BENOIT, W. Über die Guajacolvergiftung des Kaninchens unter besonderer Berücksichtigung der Veränderungen an den Nieren. *Zeitschr. Ges. Exp. Med.* 62 (5/6): 585-613. 6 fig. 1928.—In the large doses used, guaiacol is a definite kidney poison. In the first 24 hrs. after administration almost the entire dose was excreted by the kidneys in the combined or conjugated form. Clinical symptoms included albumin, casts, and hemoglobin in the urine. The tubules were the site of injury, as with $HgCl_2$ and cantharidin. The glomeruli were injured but not to the same extent. Formation of granuloids as described by Kosugi in $HgCl_2$ poisoning was also noticed, but the expulsion of granuloids was not complete. The injured epithelial cells of the tubules exhibited characteristic droplets of albumin which may be regarded as a defense reaction. The union of such droplets gives rise to the albumin casts or cylinders in the urine. Retrograde extrusion of some of these cylinders into the glomeruli causes anuria due to mechanical factors. The hemoglobinuria is due to its filtration through the glomerulus into the lumen of the tubule where partial resorption by the tubule epithelium takes place. Results in acute guaiacol poisoning are additional support for the Ludwig-Cushny theory of kidney function in terms of filtration and retrograde resorption.—*W. N. Berg.*

10169. BERNHEIM, ERNST. Histohämorenale Verteilungsstudien. III. Tierexperimentelle Studien am Hunde. (Phenolsulfophthalein.) *Zeitschr. Klin. Med.* 104(1/2): 240-254. 1926.—Phenolsulphonephthalein was intravenously injected, after catheterization, into ♀ dogs (apparently 11), with and without narcosis, and the dogs unilaterally nephrectomized and killed at varying intervals after operation. Determination of the amount of dyestuff in the blood, the urine and the tissues at these various times showed that large quantities disappeared from the blood and were stored in the tissues before appearing in the urine, and that consequently excretion involves the tissues before it does the kidneys.

10170. BIANCALANA, LUIGI. Effetti delle iniezioni di soluzioni ipotoniche ed ipertoniche sul sistema cefalorachideo. [Effects of injection of hypotonic and hypertonic solutions on the cerebrospinal fluid.] *Arch. Sci. Med.* 54(6): 385-400. 1930.—Intravenous injections of great amounts of distilled water are not followed in dogs by any increase in cerebrospinal fluid pressure, nor by marked variations of the water content of the brain. Injections of hypertonic NaCl solutions are followed by a noticeable diminution of pressure, and by a slight diminution of the water content of the brain. In dogs in which a diminished pressure was artificially induced, injections of distilled water were followed by a rise of cerebrospinal pressure.—*M. Comel.*

10171. BIJLSMA, U. G. Solbrol (para-oxybenzoesaurer Methylester). *Arch. Internat. Pharmacodyn. et Thérap.* 34(2): 173-179. 3 fig. 1928.—The amount of methyl p-hydroxybenzoate (solbrol) necessary to give

retardation of growth of bacteria and of mycoderma is about equal to that of salicylic acid. The general toxicity is not high and its use as a preservative involves no danger. No observations have been made of danger to health, but the taking of large quantities cannot be serious, judging by experiments on young rats, where continuous administration of either solbrol or salicylic acid lowered the resistance to untoward external conditions. Without these conditions, up to 4 gm. per kgm. per day was borne without incident. Although both substances behave alike in retarding growth of micro-organisms and in influence upon young rats, solbrol had a significantly smaller influence on nitrogenous exchange in dogs. On the other hand, experience with solbrol has been very limited. A maximum dose of 250 mgm. for adults, corresponding to that for salicylic acid, would give only 54 mgm. of methyl alcohol and would certainly cause no trouble. This amount of solbrol would have an extraordinarily high value.—*E. V. Lynn.*

10172. BISCHOFF, FRITZ, and M. LOUISA LONG. Depletion of muscle sugar by adrenalin. II. *Amer. Jour. Physiol.* 95(2): 403-411. 1930.—The fall in muscle sugar below the resting level is observed during the recovery period following a subcut. or continuous intraven. dose of adrenalin. The effective subcut. and continuous intraven. muscle sugar lowering doses of adrenalin are the same. The minimum muscle sugar lowering dose of adrenalin is greater than the minimum hyperglycemic dose. A physiological rate of injection over a long period of time reduces the muscle sugar below normal. When the muscle sugar was observed to be low following the action of adrenalin, the muscle glycogen was also low, but normal or high muscle sugar values were found with low muscle glycogen values. Under conditions in which blood sugar, muscle sugar, and muscle glycogen were affected by adrenalin, the polysaccharide sugar of the muscle was unaffected.—*Authors' summary.*

10173. BLUMGART, HERRMAN L., DOROTHY ROURKE GILLIGAN, and JACOB H. SWARTZ. The elimination of ethyl iodide after inhalation and its relation to therapeutic administration. *Jour. Clin. Investigation* 9(4): 635-650. 1931.—In more than 200 patients it was found that after 1.0-3.0 cc. of ethyl iodide are introduced into the inspired air, an average of 45% is immediately exhaled during the period of treatment, an average of 9% is exhaled during the 1st 2 hrs. after treatment and 31% is excreted by the kidneys. This accounts for 85% of the total dose given, the other 15% being excreted in all probability by the intestines, skin, and in the sputum. Of the ethyl iodide excreted as iodide in the urine, approximately 85% is excreted within the 1st 24 hrs. and approximately 97% is excreted by the end of 48 hrs. Within the range of therapeutic dosage, the percentage of ethyl iodide retained in the body is independent of the size of the dose, of the length of time taken for inhalation and of the fluid intake and output.—*From authors' summary and conclusions.*

10174. BOURNE, ALECK, and J. H. BURN. The dosage and action of pituitary extract and of the ergot alkaloids on the uterus in labour, with a note on the action of adrenalin. *Jour. Obstetr. & Gynaecol. Brit. Emp.* 34(2): 249-272. 1 pl., 15 fig. 1927.—A dose of 2 units in 1 cc. of pituitary extract may be expected to produce an effect which should be useful in hastening the course of a sluggish labour, provided it is not administered before the os is about ½ dilated. A dose of 2 units may be given with safety at any stage provided that there is no mechanical obstruction. The least interval at which any dose can be usefully repeated is 1 hr., but often the effect of 2 units has lasted longer than this. The action of the separate ergot alkaloids has been examined by the authors. It has been found that tyramine has no value in obstetrics. Histamin in a dose of 2.0 mgm., when injected under the skin, produces a powerful but short lived effect; it appears to exhaust the uterine activity. The specific alkaloid of ergot (ergotamine or ergotoxin) exerts a very prolonged action, and appears to be an ideal agent for use after delivery. Adrenalin, injected into a vein, inhibits uterine contraction before delivery; ether has a similar effect.—*From authors' summary.*

10175. BRÜDA, B. E., und W. M. KREINER. Über Oligodynamie. *Deutsche Zeitschr. Chir.* 228(6): 415-421. 1930.—Oxygen is not essential for the occurrence of oligodynamic action. Since, according to Kernst, it can be proven analytically that metals can go into solution directly, i.e., without previously forming a salt, ionic action on the part of the metals may be assumed. Ionic action is a physico-chemical phenomenon which satisfactorily explains the partially contradictory reports occurring in the literature. Oligodynamic action is a physico-chemical process involving free metallic ions.—*Authors' conclusions (transl. by B. S. Levine).*

10176. BRUNELLI, BRUNO. Schok arsenobenzolico. Crisi globulinolitica. [Shock from arsenobenzene. Globulin crisis.] *Arch. Sci. Med.* 54(10): 733-773. 10 fig. 1930.—The administration of arsenobenzenes with semi-colloidal constitution into the blood stream of individuals with altered colloidal stability of plasma induces a lysis of seroglobulins and thrombocytes. The proteolysis is shown by increase of non coagulable N and of reducing substances, by decrease of refractometric index, by modification of the ultramicroscopic structure of plasma, by the appearance in the plasma of histamine-like substances, by positive Abderhalden and Fehling reactions in the dialysate of plasma. The cause of shock from arsenobenzene may be the setting free of histamine-like substances. The faculty of provoking proteolysis is shown by arsenobenzenes as well as by all substances which behave as colloids or semi-colloids with electro-negative polyvalence. The proteolytic crisis is due to the introduction into the blood stream of colloidal or semi-colloidal substances and by the existence in the given subject of a colloidal lability of plasma.—*M. Comel.*

10177. CAIUS, J. F. The toxicity of the venom of Indian scorpions. *Jour. Bombay Nat. Hist. Soc.* 34(3): 788-789. 1930.—The toxicity of the venom in a male specimen of *Buthus alticōla* Pocock is here recorded. A description of the specimen is also given.—*S. Ribeiro.*

10178. CERUTI, G. L'eccitabilità riflessa nel diabete florizinico e nell'iperglicemia. [Reflex excitability in phloridzin diabetes and hyperglycemia.] *Arch. Fisiol.* 29(2): 234-244. 1930.—Ablation of the pancreas is followed in rabbits by a diminution of the reflex excitability, which develops at the same time as hyperglycemia. When the latter is decreased following regeneration of some fragments of pancreas, the reflex excitability is increased. Also alimentary hyperglycemia, and that induced by glucose injections, are followed by a diminution of reflex excitability. In phloridzin diabetes a diminution of reflex excitability is accompanied by hypoglycemia, the diminution probably being due to a direct action of phloridzin on the nerve-centers.—*M. Comel.*

10179. CHIARIELLO, ALFONSO GIOVANNI. Le variazioni della lipemia nelle narcosi cloroformica ed eterea. [Variations in the blood lipids in chloroform and ether narcosis.] *Ann. Ital. Chir.* 9(9): 853-864. 1930.—In 6 experiments with chloroform and 4 with ether on dogs, blood samples were taken every ½ hr. In both forms of narcosis a hyperlipemia (alternating with periods of depression) was predominant. In the chloroform narcosis free cholesterol and neutral fats were chiefly responsible for the hyperlipemia; in the ether narcosis the fact that the cholesterol ethers are more abundant than free cholesterol, would indicate a more pronounced reaction of the antitoxic mechanism (suprarenal cortex) of the organism.

10180. CHIODO, A. Action combinée du camphre et du salicylate de sodium. Influence du salicylate sur l'action pharmacologique de l'hexetone. *Arch. Internat. Physiol.* 31(2): 89-120. 10 fig. 1928.—The M. F. D. of

camphor, sodium salicylate and hexetone has been determined for the frog. In addition the minimal active and minimal arrest dosage of these compounds has been determined for the isolated heart and the character of the cardiac reaction described. In general, camphor has a negative inotropic and chronotropic action on the heart in all active concentrations. In toxic dosages a distinct depression of the nervous system occurs. Salicylate has a positive inotropic and chronotropic action on the heart. Hexetone acts like camphor. Salicylate antagonizes the depressive effects of camphor on the heart, but camphor also tends to antagonize the cardiac reaction to toxic salicylate concentration. Salicylate toxicity is enhanced by small dosages of camphor on simultaneous administration. Salicylate also seems to antagonize the toxic effects of camphor on simultaneous administration. The reaction of the frog to salicylate and camphor or hexetone, i.e., whether a summation, antagonism or potentiation occurs, depends on the ratio between the administered dosages of the 2 compounds. The theory of action is discussed.—*O. W. Barlow.*

10181. **CHISTONI, A. Ricerche farmacologiche sulla canfora della "Meriandra benghalensis." [The camphor of M. benghalensis.]** *Ateneo Parmense* 2(6): 611-613. 1930.—The essential oil of *M. benghalensis* and the camphor obtained from it possess pharmacologic properties identical with those of the camphor from *Cinnamomum camphora.—Author's summary. (transl.).*

10182. **CHISTONI, A. Intorno al meccanismo di azione del cloruro di bario. [Mechanism of the action of $BaCl_2$.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 786-788. 1930.—The intensity of purgative action of $BaCl_2$ is related to the reactivity of the parasympathetic tonus of intestine; by increasing vagal tonus with pilocarpine, a smaller dose of $BaCl_2$ may exert a purgative action.—*M. Comel.*

10183. **CHOPRA, R. N., K. S. GREWAL, J. S. CHOWHAN, and G. S. CHOPRA. Addiction to "post" (unlanced capsules of Papaver somniferum) in India.** *Indian Jour. Med. Res.* 17(4): 985-1007. 1930.—With present restriction of poppy cultivation, addiction is practically limited to Punjab districts. Analyses of unlanced capsules show that as compared with opium, they contain much less morphine, but much more codeine, narcotine and papaverine. These latter alkaloids have a weaker depressant action on the psychical areas and a weaker analgesic effect, in fact some of them actually act as excitants. The symptoms, therefore, differ somewhat from those produced by opium indulgence, and resemble in some respects those produced by cocaine, though on a much milder scale. An analytic study of 530 cases of addiction to poppy heads or "post" has been carried out, and different factors in connection with its causation, dosage, symptoms and effects produced have been recorded.

10184. **CHOPRA, R. N., and PREMANKUR DE. The action of a sympathomimetic alkaloid in Sida cordifolia (Brela). (Indigenous drugs series no. 24.)** *Indian Jour. Med. Res.* 18(2): 467-475. 3 pl. 1930.—The active principle of *Sida cordifolia* (Brela) is an alkaloid with well-marked sympathomimetic action. A detailed study of the pharmacological action of this alkaloid on various tissues and organs shows that its action closely resembles ephedrine. Further work on its chemistry is in progress to determine if the alkaloid is ephedrine or a closely allied compound.—*Authors' summary and conclusions.*

10185. **CHOPRA, R. N. (In collab. with GURBAKSH SINGH CHOPRA). Cocaine habit in India. (Drug Addiction Series, no. 8.)** *Indian Jour. Med. Res.* 18(3): 1013-1046. Map. 3 pl. (2 col.). 1931.—The cocaine habit is of comparatively recent origin in India. The earliest records of its use are not more than 40 to 45 yrs. old. *Erythroxylon coca* has never been grown in India on a large scale; so far as is known no other varieties of *Erythroxylon* which bear cocaine and grow in India in a state of nature are cultivated. There is no ground whatever for the belief that cocaine is secretly manufactured in India. The leaves of *E. coca,* which have been largely indulged in by the inhabitants of S. America for several hundred years, have never been used in India for their euphoric effects. It is the alkaloid cocaine which was and is still used. The habit was prevalent in many towns in India at the beginning of this century when the evil effects produced by it came to the notice of the medical profession and the authorities. Restrictions were at once placed on the import, sale, possession, transport and use of the alkaloid and preparations containing it. Yet the habit spread from Calcutta to large towns along the 2 main railway routes through the United Provinces into the Punjab and the North-West Frontier Province. From Bombay it spread to some large towns in that presidency. The drug is smuggled into India in large quantities through sea ports particularly Calcutta and is distributed to different parts of the country by the smuggling organizations. For some time past the Far East has driven the European and American manufactured product out of the market, Japan being the chief source now. The drug is illicitly brought by crews of various lines of mercantile marine running between Japan and Calcutta. The habit is chiefly prevalent among the betel leaf chewing population of north-western portions of India (including Bengal, Bihar, United Provinces and the Punjab). It is estimated that about a half to 1 million cocaine eaters belonging to different strata of society exist in India. The habit is not only present among the well-to-do population but a large number of the artisan class in large towns are also its victims. Cocaine sold in India is very heavily adulterated, the chief adulterants used being phenozone, phenacetine, caffeine citrate, acetyl salicylate and KNO_3. Two hundred addicts have been carefully studied and analytical data regarding the causes leading to the habit, the duration of addiction, occupation of the addict, dosage, sex incidence, its effects on sexual functions and fecundity, association of cocaine habit with other drug habits, etc., have been discussed. Of the main causes leading to addiction, association with other addicts is an important factor accounting for 66.0% of cases in this series, luxury and pleasure account for 21%, fatigues, worry and strain for 6.5%, curiosity and fancy for 4.5% and disease for 2%. The habit is chiefly confined to individuals whose psychic condition is unstable. The most common method of taking cocaine in India is by putting it in a "pan" or betel leaf. The drug is either mixed with the spices which are usually put in the leaf, or some of the addicts place the alkaloid on the dorsum of the tongue and then chew the leaf afterwards. Addicts of long standing generally put cocaine on the tongue and follow it up by a little lime and catechu, dispensing with the the betel leaf. This is said to enhance the action of the drug. The method of taking the drug by injection or in the form of snuff is unknown in this country. The symptoms produced by cocaine eating as observed from a study of 200 cases have been described in detail and the deleterious effects of the habit on the physical, mental and moral condition of the addict have been discussed. Diagnosis of cocaine habit and its treatment have been described. The appearance of the addicts is typical. They are emaciated individuals with a sallow complexion, sunken eyes, wrinkled face and dilated pupils. They have a dark chocolate colored deposit on the teeth and the tongue which is considered to be pathognomic.—*Authors' summary and conclusions.*

10186. **CIAMBELLOTTI, EDOARDO. Il comportamento dell'uricemia, glicemia e cloremia dopo somministratione di Calcio. [Effect of the administration of calcium in uremia, glycemia and chloremia.]** *Arch. Ital. Dermatol. Sifilogr. e Venereol.* 3(1): (1-32). 9 fig. 1927.—The results of the intraven. administration of inorganic and organic Ca in the stated conditions were beneficial and permanent. Improvement in dermatoses was parallel with the change in blood findings. Ca acts not only in mobilizing K and Na, but involves a col-

loidoclasia. Case histories with charts and bibliography are included.—*A. E. Taft.*

10187. CIAMBELLOTTI, E. Studio di un sale organico di stronzio. I. Ricerche storiche, farmacologiche, fisiologiche e biologiche. [An organic salt of strontium. I. Historical, pharmacologic, physiologic and biologic studies.] *Gior. Ital. Derm. e Sifil.* 71(1): 96-140. 1930.—The salt studied is "418 Sr," a hexose oxypropionate of Sr, said to be only slightly toxic, suitable for either intraven. or intramusc. administration; the Sr ion constitutes the active portion. Studies on 3-11 patients showed, after administration of "418 Sr," a more or less constant increase in blood urea, a varied response, with predominance of increase, of blood sugar, a marked fall in alkaline reserve, sometimes amounting to acidosis, negative results on basal metabolism, absence of circulatory disturbances and of toxic action on the kidneys, and an effect on the vegetative nervous system equal to that of Ca.

10188. CLARK, G. A. The selective vaso-constrictor action of adrenaline. *Jour. Physiol.* 69(2): 171-184. 9 fig. 1930.—Epinephrine in amount great enough to raise the blood-pressure in cats and rabbits causes a prolonged vaso-constriction in skin vessels, but an increase in the volume of blood present in voluntary muscle and in the intestine. The results in cats have been obtained on animals anesthetized with chloralose, amytal and urethane and after decerebration. The observed vaso-dilatation in the intestine is produced partly by reflex nervous means, but is also seen when all possibility of such reflexes is removed by section of vagi and splanchnic nerves; the dilatation can be diminished by electrical stimulation of the splanchnic. When a rise of blood-pressure is prevented epinephrine constricts the intestinal vessels, but the constriction is of a more transient and feebler nature than that seen in the skin. Back pressure from the portal system plays little part in the vaso-dilatation of the gut. It seems that the rise in portal venous pressure following an injection of epinephrine must to some degree be enhanced by the increased blood flow through the splanchnic area.—*Author's summary and conclusions.*

10189. CLEMENTI, A., e R. PISTORIO. Sulle condizione in cui si manifesta l'attività antibatterica e antitossica della bile. Nota III. Variazione della tossicità delle soluzioni di alcaloidi per acidificazione in presenza di bile. [Antitoxic action of bile and alkaloids.] *Arch. Sci. Biol.* 13(3/4): 320-330. 1929.—If an acid be added to a mixture containing both bile and alkaloids, bile acids are precipitated, a portion of the alkaloids being adsorbed by the flocculate. In this way diminution or loss of toxicity may occur.—*A. Jappelli.*

10190. CLEMENTI, A., e G. De GAETANI. Sulle condizioni in cui si manifesta l'attività antibatterica e antitossica della bile. Nota IV. Diminuzione della tossicità dei liquidi contenenti tossine batteriche o tossine vegetali per acidificazione in presenza di bile. [Antitoxic power of the bile.] *Arch. Sci. Biol.* 13(3/4): 331-340. 1929.—Acid addition to mixtures containing bile and toxins caused bile acid precipitation; subsequently also toxins were partially precipitated through formation of adsorption compounds. Therefore the toxicity of the liquid was diminished or lost.—*A. Jappelli.*

10191. COMEL, M. La riduzione del m-dinitrobenzolo quale episidio del ricambio gassoso dei tessuti, studiata in funzione del pH in varie condizioni sperimentali. [Reduction of m-dinitrobenzene, respiratory metabolism and pH.] *Arch. di Sci. Biol.* 13(1/2): 158-184. 4 fig. 1929.—Reduction of m-dinitrobenzene to m-nitrophenylhydroxylamine by frog muscle depends on pH of medium; the optimum is near neutrality. The reduction is diminished on the acid side. The rate of reduction is proportional to the length of the experiment but not to the gaseous exchange; the slowing can be referred to the poisonous action of m-nitrophenylhydroxylamine. —*A. Jappelli.*

10192. CORI, C. F., and K. W. BUCHWALD. Effect of continuous intravenous injection of epinephrine on the carbohydrate metabolism, basal metabolism and vascular system of normal men. *Amer. Jour. Physiol.* 95(1): 71-78. 1930.—Epinephrine was injected intravenously into [9] normal men [in 17 exps.] for a period of 30 min.; 0.00005 mgm. per kgm. per min. proved to be the lowest rate of injection which still caused a rise in blood pressure, blood lactic acid and basal metabolism; 0.000025 mgm. per kgm. per min. was still able to increase pulse rate, respiration and blood sugar. After the epinephrine administration pulse rate, respiration and blood pressure returned to the original level in 5-10 min., basal metabolism in 15-30 min., while generally more than 30 min. were required for blood sugar and blood lactic acid.—*Authors' summary.*

10193. CORI, G. T. Effect of epinephrine on sugar utilization in animals under amytal anesthesia. *Amer. Jour. Physiol.* 95(2): 285-291. 1930.—Amytal anesthesia, which in itself has but a slight effect, greatly intensified the depressive action of epinephrine on glucose utilization.

10194. CORI, GERTY T. The mechanism of epinephrine action. VII. Changes in the glycogen, lactic acid and phosphate content of muscle. *Amer. Jour. Physiol.* 94(3): 557-563. 1930.—The glycogen content of the right and left gastrocnemius muscle, when extirpated at 30 min. intervals from rats under amytal anesthesia (6, and 6 controls), was found to be of the same magnitude. When after extirpation of the 1st muscle epinephrine was injected either subcutaneously or by means of an intravenous infusion at a constant rate, a definite reduction in the glycogen content of the 2nd muscle was always encountered (6 experimental rats and 6 controls). Twenty and 40 min. after epinephrine injection the phosphocreatine content of muscle was practically unchanged, the inorganic phosphate showed a slight decrease and the lactic acid content of muscle and of blood was markedly elevated.—*Author's summary.*

10195. CORTELLA, EMILIO. Nuove ricerche sulle alterazioni del sistema nervoso centrale nella intossicazione da acetato di tallio. III. Le alterazioni delle fibre dell'encefalo, delle fibre e delle cellule del midollo spinale. [Changes in the central nervous system from thallium acetate intoxication. III. Changes in the fibers of the brain and in the fibers and the cells of the spinal cord.] *Gior. Ital. Derm. e Sifil.* 71(5): 1661-1672. 1 pl. 1930.—Of 25 rats used 13 received a heavy total divided dosage of Tl acetate; 8 received various multiple but individually infinitesimal doses (minimum 0.047 μgm., maximum 5 μgm. Tl), while 4 received each a single dose, resp. strong, medium and weak. Even small doses produced clinical symptoms and corresponding pathologic changes. The alterations in the central cerebral fibers consisted in thinning and circumscribed thickening of the myelin sheath, sometimes forming detached, irregular beads, and in local tortuous and fiber-like swellings of the axis-cylinders, forming twisted appearances like a skein of wool. In the fibers of the spinal cord similar phenomena were present, and, in addition, small hemorrhagic foci, especially in the white substance. The cells of the spinal cord were spheroidal, and the nucleus was deformed and displaced toward the periphery. The condition is diagnosed as encephalomyelitis with degenerative neuritis.

10196. CZIKE, ANTON von. Lungenvolumenuntersuchungen unter Einwirkung von Atropin, Adrenalin und Strophantin. *Zeitschr. Ges. Exp. Med.* 74(1/2): 20-31. 1930.—The lung volume can be altered by the action of drugs on the respiratory center or on the autonomic endings. These changes are due to the activity of the autonomic system. In healthy persons no relation between changes in lung volume and circulatory changes was found. After atropine the vital capacity was smaller, due to a considerable decrease in expiration. Inspiration is somewhat greater. After epinephrine the vital capacity yielded higher values, explained by more complete expiration. The extent of inspiration varies, and generally falls slightly. The volume relationships in asthma can not be studied during the

attack because of air hunger; after injection of epinephrine they are in accord with the known physiological and pharmacological actions of epinephrine. The increase in volume due to epinephrine can be prevented by atropine, and vice versa. After injection of strophanthin the vital capacity is raised slightly, due to deeper inspiration. The expiration varies but slightly. The effect of strophanthin on the vital capacity can be inhibited by atropine; there then appears the characteristic atropine effect on expiration, that is, the supplemental air is low, while the striking increase in inspiration can be attributed to the combined action of both drugs. Hypophyseal extracts have no effect on the lung volume.—*Author's summary (transl. by B. R. Lutz).*

10197. **DOLFINI, GIULIO, e GIUSEPPE ZANETTIN. Modificazioni ematologiche da olio di croton colloidale.** [Hematologic modifications induced by colloidal croton oil.] *Arch. Sci. Med.* 54(5): 337-351. 1930.—Intravenous administration of a colloidal solution of croton oil is followed in rabbits by an intensive irritative action on the reticulo-endothelial system, which may lead to necrosis. If India ink is previously administered the injection of croton oil is followed by discharge into the blood stream of great numbers of endothelial cells, monocytes and granulocytes, which are loaded with ink granules.—*M. Comel.*

10198. **DUCRET, S. Die Reaktion der Coronararterie auf Adrenalin.** *Pflüger's Arch. Ges. Physiol.* 225(5/6): 680-685. 5 fig. 1930.—Epinephrine has a consistent dilator action on the coronary arteries. In order to obtain a maximum epinephrine effect the coronary vessels must be in a special condition of tonus, which corresponds to a load of 0.2 gm. per mm.² of the wall (media and adventitia), or 0.13 gm. per mm.² of the muscular layer. The dilatation is influenced by the following factors. It is dependent on the Ca content of the nutritive solution. An acid as well as an alkaline medium decreases the dilatation. By lowering the temp. an epinephrine dilatation can be prevented. Oxygen has a tonic influence on the vessels. The dilatation is less on coronary vessels of old animals and on vessels kept a long time. The coronary vessels contract with $BaCl_2$.—*Author's summary (transl. by B. R. Lutz).*

10199. **DUKE-ELDER, W. S., and P. M. DUKE-ELDER. The contraction of the extrinsic muscles of the eye by choline and nicotine.** *Proc. Roy. Soc.* [*London*] B 107(751): 332-343. 9 fig. 1930.—Choline, acetylcholine and nicotine produce a slow, tonic contraction of the normal extrinsic muscles of the eye. This is the only recorded example of this type of contraction occurring in the non-denervated voluntary muscles of mammals. In this respect the ocular muscles of mammals resemble the voluntary muscles of species below mammalia, or the other voluntary muscles of mammalia before they have received their motor nerve supply or after they have been deprived of it. The contraction is unaffected by atropine, increased by adrenaline, and abolished by nicotine and curare. The morphological basis of this unique behavior of these muscles is discussed.—*W. S. Duke-Elder.*

10200. **FILIPPIS, V. de. A proposito di un tentativo di chemioterapia della rabbia.** [Chemotherapy of rabies.] *Ateneo Parmense* 2(6): 603-610. 1930.—Small repeated doses of aqueous solution of Pb acetate were injected into 10 rabbits, which, together with 2 controls, were subcutaneously inoculated (15 days after the end of the Pb treatment) with rabies; 1 experimental animal and 1 control died. Reinoculation (intramuscular) was without result, but intraocular reinoculation caused the death of the remaining control. Filippis concludes that small repeated doses of Pb acetate increase somewhat the rabbit's resistance to rabies, probably by increasing the defensive function of the reticulo-endothelial system. Large doses of nucleoprotein extracted from the nervous system of rabbits preventively treated with Pb acetate seemed to increase the susceptibility of 2 normal rabbits to rabies, but small doses in a 3rd rabbit appeared to be protective.

10201. **GERLÓCZY, GÉZA, und GÁBOR BERENCSY. Der Einfluss der peroralen Verabreichung von $NaHCO_3$ und von NH_4Cl auf die $CaCl_2$-Resorptionsverhältnisse. II.** *Zeitschr. Ges. Exp. Med.* 73(5/6): 715-719. 1930.—Studies were made on 20 patients with slight maladies. Administration of 200 gm. $NaHCO_3$ within 3 days previous to administration of 10% $CaCl_2$ solution in dosage of 0.15 gm. per kgm. body weight raised the blood Ca on the average about 88% more than the same dose of $CaCl_2$ given without previous alkalinization but otherwise under the same conditions. When 24 gm. NH_4Cl was given during the 72 hrs. preceding the dose of $CaCl_2$, the blood Ca rose, on the average, about 1.83 less than when given without NH_4Cl. $CaCl_2$ given in physiologic NaCl solution was followed by a 43.4% higher Ca concentration, when given after alkalinization, and 22.7% higher when given after NH_4Cl, than the control experiments.

10202. **GIACOMO, UMBERTO de. Ulteriori dati sull' azione della bulbocapnina.** [Action of bulbocapnin.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 757-758. 1930.—In some cases cataleptic symptoms without muscular hypertony followed administration of bulbocapnin.—*M. Comel.*

10203. **GIAJA, J., et X. GHAHOVITCH. Sur l'influence de l'alcool sur la puissance thermogène de l'organisme.** [With French résumé.] *Glas. Srpska Kralevska Akademija* [*Belgrade*] 1926(122): 61-67. 1926.—Ethyl alcohol subcut. or per os decreases the rate of summit metabolism in the rat even in small doses, which do not affect basal metabolism. Thus, in doses of 0.9, 2.7 and 3.0 cc. per kgm., alcohol lowered summit metabolism resp. 5.6, 18.0 and 11.4%, whereas these same doses did not alter the rate of basal metabolism. In stronger, intoxicating doses (4.2 cc. per kgm.), alcohol decreases both summit and basal metabolism, the former however more than the latter, and the value of the metabolic quotient is thus decreased. At no time does alcohol increase the heat forming capacity of the organism, but on the contrary lowers it, even in moderate doses.

10204. **GIANOTTI, MARIO. La reazione all'adrenalina del territorio vasale dei tessuti infiammati.** [The reaction to epinephrine in the vascular area of inflamed tissues.] *Arch. Sci. Med.* 54(8): 515-541. 3 fig. 1930.—With a new graphic method it was possible to determine the intensity of vasoconstriction from the results obtained with the Rieschbieter-Bissemsky's method. Epinephrine exerts a vasoconstrictor action on the vascular area of inflamed tissues. Such action is less pronounced than that on uninjured tissues. The hypothesis of a possible alteration of the contractile elements and that of a possible rise of the threshold value for excitability of the neuro-muscular junctions are pointed out. *M. Comel.*

10205. **GOLD, HARRY. (In collaboration with PATRICK L. GRYZWACZ, and WALENTINE A. NOWICKI.) Electrocardiographic studies in the actions of drugs. 1. The vagus in ether anesthesia.** *Amer. Heart Jour.* 4(3): 336-345. 7 fig. 1929.—These exps. were performed on dogs to determine, by electrocardiographic examination, the effect of ether on vagus susceptibility to morphine stimulation. Within limits ether and morphine are found to be mutually antagonistic. Ether depresses the vagus and abolishes partially or completely the stimulating effect of morphine. After large doses of morphine, ether narcosis may abolish vagus effect on the sinus but not on conduction.—*M. Easby.*

10206. **GORDONOFF, T., O. SCHÜTZ, und W. SPYCHER. Pharmakologische Untersuchungen des Natrium citricum.** *Zeitschr. Ges. Exp. Med.* 74(3/4): 415-433. 1930.—Isolated frog's heart was paralyzed with Na citrate. The action begins at 1:1 million; 1:1000 stops the heart irreversibly. The action appears to be muscular. Small doses increased tone and peristalsis in isolated rat intestine; the same concentration paralyzed rabbit intestine. The rabbit reacted with a slight diar-

rhea the day after injection of large amounts of Na citrate. Intravenous doses in large amounts caused a transient lowering of blood pressure, followed by increases in 60-80 min. to a point higher than before the experiment. Intravenous doses of Na citrate cause a deepening of breathing, and in many cases a retardation. After the initial effect breathing becomes rapid and superficial. Intravenous doses larger than 150 mgm. per kgm. of body weight cause dyspnea, muscle spasms, unrest, diarrhea, deepening of breathing, at first a slight decrease in rate and then an increase. The erythrocytes are not changed in either form or size. In the blood stream large doses considerably diminish the number of thrombocytes. After overcoming the initial intoxication the rabbit acquires a temporary tolerance. A greater toxicity was not observed after an interval of 1-3 days. In equal amounts the toxicity is greater, the more rapid the injection and the higher the concentration. The urine of rabbits on a diet of oats and water contained no citrate. The amount of citrate found in the urine of rabbits given doses of 400 mgm. per kgm. of body weight, amounted to 4.39-6.15% if the injection was made in 3 periods of a total of 15-17 min. Normal human urine contains citrate. The amount is very variable. Since citrate can be detected in human urine it is difficult to differentiate between the amount of citrate in the food consumed and that used experimentally. The values found lie within the normal limits. —*Authors' summary (transl. by R. W. St. Clair).*

10207. GRABBE, CARL. Untersuchungen über Oxychinolin (Chinosol). *Arch. Exp. Path. u. Pharmakol.* 137(1/2): 96-115. 1928.—The author studied 8 hydroxyquinoline potassium bisulphate, 8 hydroxyquinoline sulphate and mono-iodo 8 hydroxyquinoline sulphonate (Yatren). Estimation of the substances was made either by a gravimetric method, using the ether extract of tissue fluids with bromine water, giving the insoluble dibromide or the colorimetric method using the color obtained with $FeCl_3$. The colorimetric method seems more sensitive than the gravimetric one. 8 Hydroxyquinoline is rapidly absorbed from the intestine of a normal dog and eliminated rapidly through the kidneys and gall bladder. Thereby it is transformed almost completely into the sulphuric acid ester, a change which occurs partially in the lumen of the small intestine. A small portion of the hydroxyquinoline remains free, and can be freed from its ester under the conditions in the organism. 8 Hydroxyquinoline has a distinct action upon the metabolism, demonstrated by increased urinary N elimination. This action occurs only 1-2 days after administration and reaches its maximum when the main portion of the drug has been excreted. In experiments with starved dogs, the increased formation of decomposition products is much more lasting and greater with hydroxyquinoline than with salicylic acid. Animals treated in the beginning of a fast with one dose of 8 hydroxyquinoline will show an early premortal protein decomposition. The starved animal eliminates 8 hydroxyquinoline much more slowly than the fed animal (in contrast to salicylic acid). If such an animal after a prolonged hunger period is fed, considerable quantities of 8 hydroxyquinoline appear in the urine.—*F. R. Greenbaum.*

10208. GULLOTTA, S. Influenza della bulbocapnina sulla calcemia e potassiemia. [Influence of bulbocapnin on Ca and K contents of serum.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 768-770. 1930.—The Ca contents of serum decreased after administration of bulbocapnin, while the K content showed variable values.—*M. Comel.*

10209. HABERLANDT, L. Untersuchungen über einen Erregungsstoff im Centralnervensystem. *Med. Klinik* 25 (51): 1961-1964. 2 fig. 1929.—On the theory that the nervous system elaborates a substance analogous to a hormone, emulsions of brain and spinal cord of frogs and guinea pigs were injected into frogs, using 260 animals, including controls. In 48 hrs. or less the treated animals, regardless of sex, were considerably more active and seemed to have better reflexes. No such result was given by nerve tissue, muscle, liver, or milk. The hormone-like substance is soluble in water, but not in alcohol or ether, and is dialyzable. It is fairly stable but destroyed by brief boiling. Given orally, the same results were obtained more gradually. The clinical possibilities in nervous diseases are discussed.—*E. V. Lynn.*

10210. HALPERT, BÉLA, MILTON T. HANKE, and GEORGE M. CURTIS. The problem of sodium salicylate excretion in the bile. *Jour. Clin. Investigation* 9(2): 359-362. 1930.—Three patients, 2 with drainage tubes in the common hepatic duct following cholecystectomy, and 1 with a cholesystostomy, were given a single dose of Na salicylate (20 mgm. per kgm. of body weight), and the bile and urine collected for a period of from 12 to 64 hrs. following the administration. The data obtained indicate that the urinary tract is the principal route of elimination, and that salicylate does not appear in the bile, following oral administration of a medicinal dose to patients with diseases of the biliary system. These observations are in accord with data obtained in healthy rabbits.—*Authors' summary.*

10211. HANDOVSKY, H., und P. A. THIESSEN. Röntgenographische Untersuchung von unbehandelten und narkotisierten Nerven. (Vorläufige Mitteilung.) [X-ray studies on untreated and narcotized nerves. Preliminary note.] *Nachrichten Ges. Wiss. Göttingen, Math.-Phys. Kl.* 1930(2): 147-148. 1930.

10212. HARRIS, KENNETH E. Observations upon a histamine-like substance in skin extracts. *Heart* 14(2): 161-176. 4 fig. 1927.—As measured by the depressor effect on the cat, human skin contains an average of 10 mgm. of a histamine-like substance per kgm. of tissue. It is extracted by alcohol. The epidermis contains 6 times as much as the dermis. Frozen or burnt skin contains as much as normal. Some of the histamine-like substance in blister fluid may come from the skin.—*F. Bernheim.*

10213. HEČKO, IVAN. Niektoré pokusy s natriumthiosulfátom. [Some experiments with thiosulphate of sodium.] *Bratislavské Lekárske Listy* 9(5): 299-307. 1929.—For estimation of the therapeutic value of $Na_2S_2O_3$ the position of the S_2O_3 anion in the Hofmeister series was studied. This position differs according to the method used. Measuring the nephelometric effect on a 1/10 dilution of serum, the position of the thiosulphate after 2-4 hrs. is: Na citrate, $NaNO_3$, NaBr, $Na_2S_2O_3$, NaSCN, Na salicylate. After 24-48 hrs. it is: NaCl, $NaNO_3$, Na salicylate, $Na_2S_2O_3$, NaBr, NaSCN. The effect of the salts on viscosity of the serum is displayed in the order observed: after 4-6 hrs. Na_2SO_4, Na salicylate, Na acetate, $Na_2S_2O_3$, NaF, Na formate: after 26-30 hrs. this becomes NaCl, $NaNO_3$ . . . . the position of the NaF and Na formate is interchanged, etc. Other series are given following the influence of the salts on flocculation of serum with ethyl alcohol, heavy metal salts, etc. In particular with $CuSO_4$ and $HgCl_2$, besides formation of complex salts, there is shown a precipitation-preventing influence of the $Na_2S_2O_3$ in parallel with its concentration. The highest possible thiosulphate concentrations must be used if one is to hinder the local precipitation of heavy metals which are administered for therapeutic use in the organism.—*I. Hečko (transl. by C. S. Leonard).*

10214. HENRIQUES, V., und HARALD OKKELS. Histochemische Untersuchungen über die Ablagerungsweise von Gold und Blei innerhalb des Organismus. *Pflüger's Arch. Ges. Physiol.* 225(2/3): 364-371. 6 fig. 1930.—Hydrosols and complex compounds of Pb and Au and ionized Pb salts were injected intraven. into an unstated number of rabbits. The Au compounds showed a tendency to histographic deposition like the corresponding types of Fe compounds. This means that the hydrosol was selectively absorbed in the reticulo-endothelial system, while the complex salts just penetrated the parenchyma cells. After the addition of Na-aurothiosulphate appreciable quantities of Au were found in the proximal convoluted tubules. The Pb compounds in ionized and in the colloidal state exhibited in general

similar relations. Colloidal Pb was deposited mainly in R.E.S., and complex Pb compounds were also found in R.E.S., but preponderately in the parenchyma cells and especially in the kidneys as grains of medium size. Pb acetate was also deposited in the kidney. Pb and Au combinations judged from the kidney findings show a difference in the failure of the Pb compounds to exhibit corresponding depositions. It is difficult to evaluate these results, because Pb salts in the organism easily decompose and become somewhat effaced. Also the lead poisoned animals show pathological symptoms which are likely to influence the deposition picture. With the limitations stated, the results show that in the accumulation of Au and Pb in the parenchymatous organs a selection actually took place which was limited by the type of cell and by the physical-chemical character of the metal compounds.—*Authors' summary (transl. by L. T. Leonard).*

10215. HESS, LEO, und JOSEF FALTITSCHEK. Zur Physiologie der vegetativen Zentren. *Wien. Klin. Wochenschr.* 43(16): 488-492. 1930.—On the basis of experiments by Pick on the point of action of hypnotics the effects of various hypnotics on the autonomic system of man are examined. After the elimination of the mesencephalon by medinal no change of gastric secretion occurs. The blood sugar and blood pressure do not change. After elimination of the cortex cerebri by paraldehyde gastric secretion and blood sugar do not change while the blood pressure falls. These paradoxical observations are consistent with the symptoms of people sick with encephalitis with an anatomical destruction of the mentioned parts of the brain. The autonomic action of the organs can be regulated without the intervention of these parts. Their influence on automatic functions is produced indirectly. The hypotony after paraldehyde is probably analogous to that in ordinary sleep. To explain the indirect action of the autonomic centres on the innervation of the organs special exps. were made. After medinal the vagotropic effect of atropine on the gastric secretion is considerably increased which is also in accordance with the observation on anatomical lesions of these centres in Parkinson's disease. Paraldehyde does not change the atropine action. The epinephrine effect is similarly influenced. The exps. show that the mesencephalon has an influence on the irritability of the sympathetic and parasympathetic nerves. The action of paraldehyde is probably on the cortex cerebri.—*E. Polák.*

10216. HOLTZ, PETER. Einige pharmakologische Wirkungen bestrahlter Eiweisskörper und Eiweissspaltprodukte. *Pflüger's Arch. Ges. Physiol.* 226(4/5): 559-577. 12 fig. 1931.—Solutions of proteins or amino acids were placed in quartz glass or open vessels and were irradiated with a mercury vapor lamp at 20°. Tests were then made for alterations in the rate of flow when these solutions were used for perfusion of frogs, for changes in mean blood pressure when they were injected intravenously in cats anaesthetized with urethane and for changes in motility in surviving smooth muscle preparations. pH was measured and controlled. Irradiation produces vasodilator substances in euglobulin, glycocoll, leucin, histidin and tyrosin. If diluted serum (1 in 100) was irradiated, vasodilator substances were found in the protein free ultrafiltrate. If this was distilled they were found in both distillate and remainder; in the former formaldehyde and acetaldehyde were both found, and both have vasodilator actions; the dry residue gave Pauli's imidazo reaction, and histamine or a similar substance was probably present. The irradiated dilute serum stimulated contraction of the intestine. Irradiated histidin showed properties typical of histamine, which was apparently produced by irradiation.—*H. C. Bazett.*

10217. HÖST, H. F. The influence of insulin on physiologic, alimentary increase of the blood sugar. *Acta Med. Scandinavica* 74(2): 186-190. 1930.—Six tests on 3 healthy individuals proved that insulin influences physiological, alimentary hyperglycemia, and that appropriate quantities of insulin may completely prevent a rise in blood sugar.—*Author's summary.*

10218. HUBBS, CARL L. The high toxicity of nascent oxygen. *Physiol. Zool.* 3(4): 441-460. 1930.—Minnows may be killed by available nascent O in the dilution of 1 part to more than 30,000,000 of water or by only slightly more than 2 units of nascent O to 100,000 parts of their own weight. The effect of nascent O is cumulative. The effect (on minnows) is irreversible beyond the stage of first loss of equilibrium, but is generally reversible until that stage is reached. The least stable nascent-O-yielding chemical tested (ozone) is toxic in much lower concentrations than the most stable one (H_2O_2). Different individuals of the same species show marked variation in their susceptibility to this poison. Some fishes, as the basses and sculpin (Micropterus, Aplites, and Cottus), are much more resistant than the minnows (Cyprinidae). The effect of the nascent O is apparently not on the blood pigments. Fishes are irritated by dilutions of ozone too weak to detect iodimetrically (doubtless less than 0.01 p.p.m.). The symptoms of the poisoning are not those of asphyxiation: there is no lapping at the surface. The effects of nascent O irrespective of its chemical source, are in turn irritation, increased and irregular respiration, loss of equilibrium, wild rolling and dashing, tetanus, death. Death is accompanied by an edematous swelling of the skin.—*Author (courtesy Wistar Bibl. Serv.).*

10219. HUFFMAN, L. D. Metabolic studies in the treatment of polycythemia vera with phenylhydrazine. *Arch. Internal Med.* 39(4): 656-672. 1927.—The chemistry of blood and urine was studied on 4 cases of polycythemia vera kept on a standard diet and treated with phenylhydrazine HCl (0.3 gm. daily by mouth) to reduce erythrocytes and blood volume. Evidence of blood destruction began 7 days after administration of drug, accompanied by increased excretion of N which is accounted for by erythrocyte destruction. Increased N excretion was mainly in the form of urea and some creatine. The changes in the blood consisted in decrease in total N of whole blood proportional to decrease in erythrocytes, increase in non protein N and urea, increase in creatinine in one case. Amino acids were reduced to normal levels by phenylhydrazine. Serum bilirubin increased with slight icterus. Fructose tolerance and phenoltetrachlorphthalein tests showed no hepatic injury. Basal metabolic rate was not affected.—*O. O. Stoland.*

10220. ITALLIE, L. VAN, en U. G. BIJLSMA. Toxicologie en gerechtelijke scheikunde. [Toxicology and legal chemistry.] Centen: Amsterdam, 1928. 9 fl.

10221. JANSSEN, S., A. LOESER, und P. NOETHER. Ueber die Wirksamkeit der Handelspräparate des Hypophysenvorderlappens. *Arch. Exp. Path. u. Pharmakol.* 151(3/4): 175-187. 3 fig. 1930.—Various German preparations, e.g., Anteglandol, Extr. hypophysis cerebri partis anterioris pro injectione, Extr. hypophysis cerebri feminin., Extr. hypophysis cerebri masculin., Extr. hyp. cerebri pars anterior, Glandular part of hypophysis, Hypotanthin, Hypototal, Praehypophen have no stimulating effect on the ovary of the rat nor any inhibitory action on the ovary of fowl. Most of them lower the blood pressure of cats,—not the case with active preparations.—*H. Graf.*

10222. KANFOR, J. S. Wirkungsmechanismus des Emetins. *Zeitschr. Ges. Exp. Med.* 74(3/4): 385-395. 1930.—Subc. injection of emetine causes lowering of CO_2 tension of alveolar air and increase in excretion of NH_3 in urine, indicating displacement of acid-base balance in the organism, with accumulation of acid ions in the blood and lessening of the alkali reserve. Emetine HCl causes disturbance of balance in the vegetative nervous system through strong stimulation of its parasympathetic section. The duration and depth of these actions are different in individuals and apparently depend upon varying tonus of the vegetative-endocrine system. This important displacement of acid-base balance and the change of tonus in the nervous system

suggest that the therapeutic action of emetine in so many dissimliar diseases can be explained by marked modification of vegetative reactions.—*Author's summary (transl. by E. V. Lynn).*

10223. **KAPLUN, B. J., und J. M. MOREINIS.** Versuch der experimentellen Sensibilisierung gegen Salvarsan, bei Menschen und Tieren. *Acta Dermato-Venereol.* 11(4): 295-304. 1930.—Intradermal injections of neosalvarsan were made on 151 patients, dose 0.1 gm. of a sol. containing 0.15 gm. neosalvarsan to 100 gm. physiological saline. In the cases giving positive results in 7-15 days, some spontaneous reaction could be noticed, following local inflammatory manifestations (infiltrates). In none of the patients who had previously undergone salvarsan treatment was any positive result obtained. Of 84 patients who had never had salvarsan treatment before, positive results were obtained in 9. The appearance in these 9 cases of local dermatoses where the salvarsan administrations had been made, as well as in 3 other cases the appearance of a generalised dermatosis following the ordinary intraven. injections of salvarsan, is considered to prove the sensibility of those individuals to that agent. Corresponding experiments were made on [114] guinea pigs. On the whole, the results, both of these and of the human experiments, confirm the data obtained by Frei, Nathan and Munk. It is evidently possible, in certain cases, by intradermal injection of minimal doses of neosalvarsan to produce, both in human and animal subjects, manifestations of an increased susceptibility to that agent.—*Authors' English summary.*

10224. **KAWAI, HASHIME.** Studies on the hematoporphyrin hemolysis. *Jour. Biochem.* [*Tokyo*] 10(2): 325-350. 1929.

10225. **KEEFER, CHESTER S., K. K. HUANG, and C. S. YANG.** Liver extract, liver ash and iron in the treatment of anemia. *Jour. Clin. Investigation* 9(3): 533-554. 1930.—The response of the blood in anemia was studied in 55 patients, 14 on liver, 10 on liver ash, and 31 on various doses of Fe. Liver extract was of demonstrable value in increasing the regeneration of hemoglobin in some of the obscure nutritional anemias of childhood, in some of the anemias associated with dysentery, hookworm infestation, and pregnancy. In some cases its effect could be enhanced by Fe. Liver ash, when given in amounts equivalent to 300 gm. of whole liver, was of little demonstrable value in increasing hemoglobin regeneration. In some cases there was a slight increase in the reticulocytes, hemoglobin, and erythrocytes, but the results were never as conspicuous as those obtained with liver extract or large doses of Fe. Fe was effective in the treatment of various forms of anemia. Large doses were more effective than small ones. In many instances the effect of Fe exceeded both liver, liver extract, or liver ash, and in some cases a favorable response did not occur until Fe was added. When recovery from the anemias followed either liver extract or Fe there was an increase in the reticulocytes of the circulating blood. The lower the erythrocyte count before treatment, the higher were the reticulocytes at the peak of the rise.

10226. **KISCH, BRUNO, und J. LEIBOWITZ.** Die Beeinflussung der Gewebsatmung durch Omega und durch Chinon. *Biochem. Zeitschr.* 220(1/3): 97-116. 1930.—Respiration of kidney tissues of different species of animals (rats, guinea-pigs, rabbits, field hares, dogs, cats and baboons) was studied with the Warburg apparatus. The kidney from ♀ albino rats, colored rats, guinea pigs, rabbits, cats and dogs had a higher O consumption than did the ♂. The highest values were obtained from gravid animals. Rats, guinea-pigs and rabbits showed small individual differences in respiration; dogs, cats and field hares had considerable variation. In the same nutrient medium at pH 7.4 the order of the quantity of O consumed was as follows: rats > guinea-pigs, field hares > rabbits, dogs > cats. The optimum pH for respiration of kidney tissue of various species was as follows: rats and dogs, 7.1-7.4; cats, 7.4; and rabbits and field hares, 7.7-8.1. More alkaline sols. than these were not studied. Freshly prepared adrenalin in concentrations of 10^{-4} to 10^{-14} when added to the nutrient sol. produced no increase in O consumption. Omega in concentrations of 10^{-4} to 10^{-10}, added to nutrient solutions, increased the O consumption of all species of tissue. Freshly prepared para- and orthoquinone in large doses (10^{-4}-10^{-5}) checked tissue respiration; in smaller doses (10^{-6}-10^{-11}) they increased tissue respiration very markedly. Like concentrations of pyrocatechol and hydroquinone had no apparent action. The order of magnitude of effective concentrations of para- and orthoquinone and of omega is the same on tissue respiration. Both omega and quinone decrease in activity on exposure to light and O.—*Authors' summary (transl.).*

10227. **KLEE, PH., und S. PETROPULIADES.** Bedingungen und Menge der Cholinausscheidung im Harn. *Arch. Exp. Path. u. Pharmakol.* 137(3/4): 129-142. 1928.—Choline in the urine was determined as acetylcholine. The urine was treated with acetone, filtered, and taken up by purified quartz; then acetylchloride was added and the whole warmed to 70° C. for 24 hrs. The acetylcholine formed and quartz were dried and shaken with isotonic Ringer's solution; with this solution isolated frog hearts were perfused. The heart was sensitive to 0.002 gm. in 1000 cc. urine. Choline is continuously excreted, its quantity depending on diet, especially its lecithin content. Diseases with large autolysis of tissues give high quantities in the urine. The content is not increased by oral or intestinal introduction of choline chloride, but a marked increase followed intravenous or rectal administration.—*H. Graf.*

10228. **KLEIN, F., und R. WEISS.** Die Wirkung des Adrenalins auf den respiratorischen Stoffwechsel. *Endokrinol.* 1(4): 264-271. 1928.—Intravenous injection of epinephrine (1-3 gamma per min. per kgm.) raises the respiratory quotient in both lightly and deeply narcotized rabbits, but does not alter heat production. Large doses of epinephrine (0.8 mgm.) raise the R. Q. in deeply narcotized animals. The total metabolism undergoes a decrease in most cases. The metabolic effect of epinephrine, both excitatory and inhibitory, is a complex process which may be resolved into single components. Small physiological doses of epinephrine raise the gaseous metabolism in normal animals and in man. In narcotized animals this rise is lacking both in light and in deep narcosis, obviously because the metabolism is already under the influence of the output of epinephrine accompanying narcosis. The metabolic effect of large doses of epinephrine depends upon the metabolic effect of the mobilized carbohydrate. In fasting animals (low carbohydrate supply) or in deep narcosis (absence of the metabolism raising effect of the carbohydrate) the gaseous metabolism falls; in lightly narcotized well fed animals there is a rise of gaseous metabolism because the metabolism raising effect of the carbohydrate plethora outweighs the original metabolism depressing effect of the large dose of epinephrine. —*Authors' summary (transl. by B. R. Lutz).*

10229. **KÖNIG, WILLY.** Herzarbeit ohne Sauerstoff. III, Mitteilung: Herzmittelwirkung am Warmblüterherzen. *Arch. Exp. Path. u. Pharm.* 127(5/6): 349-365. 12 fig. 1928.—The isolated guinea pig heart was perfused with Ringer's solution at 30-32° C. at which temperatures it will beat several hrs. in the absence of O. Oxygen is an important factor in the action of digipuratum, strophanthin and cardiazol; glucose is not. If either O or glucose is omitted the action of caffeine is markedly reduced; it is entirely prevented when both are omitted. Epinephrine action is similarly altered under these conditions but it lasts 2-5 min. when both O and glucose are absent. Coronary vessel effects are discussed and certain important precautions in this type of work are pointed out. Literature.—*M. Dresbach.*

10230. **KUNIKA, TETSUSABURO.** Über die Pharmakologie des Belladonnins und des Tropins. [In Japanese.] *Nagasaki Igaku Kwai Zasshi* 5: 763-774. 1927.—In the rab-

bit's intestines isolated belladonnine produces, besides paralysis of the parasympathetic endings, muscular stimulation which later passes over into paralysis. In the uterus muscular paralysis is dominant; so that the paralysis of the parasympathetics is demonstrable only with difficulty. Tropine resembles atropine in its effect, though its action is much weaker and displays in the rabbit's intestine as well as in the uterus a parasympathetic paralysis and also a muscle-stimulating effect. The instillation of 10% tropine solution in the eye produces maximum dilation of the pupil.—*Author (courtesy Jap. Jour. Med. Sci.) (transl. by I. H. Pierce).*

10231. **KÜSTNER, HEINZ, und HEINZ SIEDENTOPF. Untersuchungen über die Biologie und Pharmakologie der Placenta. III. Mitteilung. Reaktionsfähigkeit der Placentargefässe auf biologische und pharmakologische Mittel.** *Arch. Gynaekol.* 140(2/3): 298-312. 7 fig. 1930.—By means of special apparatus described, for perfusing the placental vessels, the contraction and dilatation of the vessels was measured in terms of the rate of flow and pressure required to maintain it, contraction diminishing the flow and increasing pressure, while dilatation increased the flow and lowered the pressure. The substances experimented with were 3 products of internal secretion (epinephrine, thyroxin and hormone of the posterior lobe of the hypophysis) and 3 pharmacologic preparations (secale, atropine and caffeine). Epinephrine produced strong contraction; thyroxin had no effect nor had the hormone of the posterior lobe of the hypophysis—a singular fact, in view of the known powerful contracting influence of the last-named hormone on the musculature of the intestine and uterus. Since the placental vessels are not provided with nerves, the effect of epinephrine must be ascribed to direct action on the muscle-cells of the vessels. Secale (ergot) produced brief but distinct contractions; atropine had no effect; caffeine produced a very transitory vascular dilatation. The most important conclusion drawn from these studies is that, since epinephrine contracts and caffeine dilates the placental vessels, and since previous researches have shown such effect to be dependent on the presence of Langley's receptive substance, this substance must be present in the placental vessels.

10232. **KYLIN, ESKIL. Zur Frage der Adrenalinreaktion. [The significance of K and Ca ions for the epinephrine blood sugar reaction.] XIII.** *Zeitschr. Ges. Exp. Med.* 59(1/2): 230-231. 4 fig. 1928.—The influence of epinephrine intraven. before as well as after the intraven. administration of $CaCl_2$ (10 ccm. of 10% sol.) or KCl (2 ccm. of 10% sol.) on the fasting sugar level of patients was studied. Results were variable; a fall occurred in one of 4 groups. Ca or K appeared of little significance in relation to the epinephrine blood sugar changes.—*O. W. Barlow.*

10233. **LAMSON, PAUL D. Results from pharmacological studies of normal and pathological liver conditions.** *Southern Med. Jour.* 23(2): 93-97. 2 fig. 1930.—When there is obstruction to the portal flow, the rise of portal pressure causes an escape of fluids from the vessels, with a resulting acute polycythemia. Upon the ability of the liver to pick out specific substances from the blood stream, and excrete them in the bile depend many liver-function tests. These, however, do not indicate the degree of pathological changes in the liver. That diet plays an important rôle in the prevention and treatment of liver disturbances is shown by the efficacy of Ca to prevent or to correct the fall in blood sugar, the increase in blood guanidine, the tetany and convulsions caused by CCl_4 administered in doses sufficient to produce gross pathological changes in the liver.—*S. N. Blackberg.*

10234. **LÁNCZOS, ANNA. Giftgewöhnung der Nervenfaser.** *Arch. Exp. Path. u. Pharmakol.* 141(3/4): 248-255. 1929.—The sciatic nerves of frogs exhibited recovery in urethane sols. of narcotic threshold concentration, and habituation when the preparation was repeatedly denarcotized in Ringer's fluid and replaced in the urethane sol.; habituation was also attained by preliminary treatment with concentrations below the threshold of narcosis. No recovery or habituation was perceptible in the motor nerve end apparatus—a qualitative difference in addition to the quantitative difference already known.—*Author's summary (transl.).*

10235. **LANWER-DE HAAN, MARTHA. Über Tagesschwankungen der Adrenalinwirkung beim Menschen.** *Zeitschr. Ges. Exp. Med.* 64(3/4): 534-539. 3 fig. 1929.—In the literature concerning the individual sensitivity to adrenaline and the changes of the adrenaline reaction after various diets and remedies, nothing is said of the variability of the adrenaline reaction in the different parts of the day. The author finds that in healthy and ill persons the action of adrenaline (upon the pulse, the blood pressure and the hemogram) is more prompt in the afternoon than in the morning, but in the morning it is more intensive. It is possible that the low starting point in the morning favors the development of a marked reaction. In the variability of its action adrenaline is unique.—*E. Polák.*

10236. **LEFEUVRE, C., et F. GRÉGOIRE. Action de quelques eaux distillées aromatiques sur le coeur isolé.** *Jour. Physiol. et Path. Gén.* 28(4): 833-840. 10 fig. 1930.—Cardiograph tracings show the inhibitory effect of cherry laurel water, orange flower water, dilute HCN, and benzaldehyde, on the perfused frog heart. From comparison it is concluded that the effect of cherry laurel water is due to benzaldehyde while the effect of orange flower water is due to methyl anthranilate. Comparable results were also obtained with the aqueous distillates from mint and from rose leaves.—*W. R. Fearon.*

10237. **LE GOFF, J. M. Cobalt as vaso-dilator.** *Jour. Pharmacol. & Exp. Ther.* 38(1): 1-9. 1930.—The hypodermic injection of 2 to 5 cgm. $CoCl_2$ in 72 human beings varying in age from 15 to 70 yrs. resulted in dilation of the vessels of face and ear in 71 cases. The single exception was a case of splenic anemia. Of 4 tested all showed a fall (10 mm. Hg) in blood pressure 3 min. after injection. A maximum of 122 injections through a period of 3 yrs. failed to develop toxic symptoms. In the dosage used $CoCl_2$ is not toxic to man.—*O. O. Stoland.*

10238. **LEHMANN, FRITZ. Ueber Konstitution und Wirkung. Untersuchungen an aromatischen Fluorverbindungen.** *Arch. Exp. Path. u. Pharmakol.* 130(1/4): 250-255. 1928.—On frogs it was found that toluol and meta-toluidine are rendered more active by F and Cl substitution in the side chain, the F derivatives being more toxic. The trifluortoluol becomes most active by the introduction of the NH_2-group, less so with introduction of NO_2 and COOH groups. The compounds act on the central nervous system; the NH_2 group also has a cardiac paralysing effect. Only the substitution of H by halogens yields depressant products; all substitution products of NH_2 and COOH are excitants. Trifluortoluidine is a useful narcotic for the frog.—*H. Graf.*

10239. **LEHMANN, HANS. Die Wirkung des Kohlenoxyds auf den menschlichen Organismus und ihre Bedeutung für die öffentliche Gesundheitspflege.** *Kleine Mitteil. Mitglieder Ver. Wasser-, Boden- u. Lufthygiene* 6(7/10): 199-215. 1930.—Three points are important in the study of the effect of gaseous impurities in the air of large cities and industrial centers on man: the quantitative determination of CO in the blood stream, the possibility of a reaction of the blood-forming organs to the stimulus of the continuous breathing of gases caused by combustion, the establishment of the effect of such impure air upon the pulmonary system especially of growing children.—*Author's conclusions (transl. by E. K. Borman).*

10240. **LEVY, MAX M., et ERNA M. LEVY. Étude des modifications humorales produites par la sécrétion gastrique déclenchée par l'histamine.** *Arch. Malad. Appar. Diges. et Malad. Nutrit.* 20(2): 137-183. 1930.—Several series of experiments on 16 patients indicate that gastric secretion is subject to individual variations. The quantity of Cl secreted in the form of HCl is variable and by no means in proportion to the total Cl

secreted. Very frequently histamine produces a slight rise in blood urea and an increase in the urea secretion constant which may amount to 44%. These changes seem more frequent and more noticeable in patients in whom the constant was previously high. Histamine may have the opposite action, depressing the constant. The gastric secretion does not modify the alkaline reserve noticeably or consistently. During gastric secretion the plasma and corpuscle Cl may rise as well as fall. The ratio of corpuscle to plasma Cl may increase or decrease, in accordance with variations in the corpuscle Cl. During gastric secretion the threshold of Cl secretion varies in parallel with the blood Cl. Histamine has important effects on diuresis, sometimes producing polyuria, but more frequently oliguria. The relation of alkaline urine to HCl secretion is very irregular; if gastric HCl secretion has any effect on the variations in the pH of the urine, the effect is slight. The 2 other factors which appear to have a preponderating influence on the variations in urinary pH are the urinary Cl debit, and still more the diuresis, which appears to be the principal factor. During the gastric Cl secretion induced by histamine the urinary Cl debit may be either diminished or increased; these variations have no relation to the gastric function. The figures here given indicate that the source of gastric Cl is not the body fluids but probably the tissues.

10241. LÖWENSTEIN, ARNOLD. Über die Entstehung von kleinen melanotischen Knötchen durch Adrenalinzufuhr beim Menschen und beim Kaninchen. [Production of small melanotic nodules in man and rabbits by administration of epinephrine.] *Arch. Dermatol. u. Syph.* 162(1): 180-188. 8 fig. (2 col.) 1930.—Daily instillation of epinephrine into the eye of a man for a long period, and subconjunctival injections into the eye of a rabbit subsequent to instillation produced melanotic nodules. In the rabbit these proved to be subconjunctival melanoblasts as well as accumulations of pigment. These cases are related to the cutaneous and mucosal pigmentation in Addison's disease.

10242. LUKAS, ARTHUR. Über Alkoholausscheidung im Magensaft nach rektaler Alkoholzufuhr. *Arch. Verdauungs-Krankh.* 48(5/6): 332-345. 1930.—The experiments were carried out on fasting patients. The gastric juice was aspirated by stomach tube, measured, and the acid value determined. Immediately afterwards the patient received 300 cc. of alcohol (5%) rectally. Half an hour later the gastric juice was again aspirated, measured, and the acid value determined. The procedure was repeated at intervals of 15 min. until 75 min. after the administration of alcohol. The gastric juice was analyzed for alcohol after distillation, 5 cc. of the pure distillate being used to carry out the analysis. With one exception, in 8 cases alcohol was excreted in the stomach parallel with acid secretion. The quantity excreted was always definite, but quite small, amounting to only a few mgms. It is believed that alcohol is carried by the blood stream to the gland cells of the stomach and from there is excreted into the lumen. This was pointed out some years ago by Bongers, Frouin and Molinier in exps. with dogs given alcohol by rectum.—*R. W. St. Clair.*

10243. MacKAY, MARGARET E. The action of histamine on the motility of different parts of the intestinal tract. *Amer. Jour. Physiol.* 95(3): 527-536. 1930.—Since histamine, which exerts a powerful stimulating action on all smooth muscle with the single known exception of turtle esophagus, may be formed in the intestine, its action on smooth muscle of the alimentary tract is an important problem. Experiments were performed on dogs and cats (number not stated) indicating that histamine when injected intravenously in doses of ¼-½ mgm. in the intact animal activates a quite characteristic motor response in different parts of the intestine. Its effect is most marked in the ileum and decreases towards the duodenum. Local application to a histamine solution to the outside of the gut evokes the same reactions in different portions of the intestine which are seen after intravenous injection of the drug. After paralysis of the parasympathetic nervous system by atropine the characteristic action of histamine on the different parts of the intestine is diminished but not abolished. This inhibitory effect is most marked in the duodenum and least in the ileum. Subcutaneous injection of 1 mgm. of histamine produced no change in the normal rhythm of the intestine. Injection of a solution of histamine containing amounts as large as 50 mgm. of the drug into the lumen of different parts of the intestine did not activate a motor response. Histamine in concentration of 1/100,000 has a greater stimulating action on isolated strips of ileum than on isolated strips of jejunum or duodenum. Atropine does not abolish this effect.

10244. MAJOR, RALPH H., and C. J. WEBER. The relationship of potassium to the depressor effect of liver extract. *Jour. Lab. and Clin. Med.* 15(3): 229-233. 3 fig. 1929.—The active depressor substance in the liver extract with which the authors have worked is not KH_2PO_4, since the liver extract in the doses employed does not contain enough K ions to produce the depressor effect which is obtained. The fall in blood pressure obtained with 20% solutions of KH_2PO_4 is due to what physiologists have long described as "K inhibition" of the heart and has no close analogy with the fall produced by the authors' liver extract. Such sols. of KH_2PO_4 contain at least 20 times as much K as the sols. of liver extract used.—*Author summary.*

10245. MARGINESU, P. Ricerche sperimentali sulla' azione dell'ergosterina irradiata nella profilassi del rachitismo. [Action of irradiated ergosterol in the prophylaxis of rickets.] *Ateneo Parmense* 2(2): 74-92. 1930.—No toxic action was observed from very large doses of ergosterol in 16 young rats (8 on normal diet, 8 on a rachitic diet) intravenously and orally, or in a pregnant rat or her young.

10246. MATTEI, P. Di. Azione della apomorfina e della santonina sui centri iridei. [Action of apomorphine and santonin on the iris.] *Boll. Soc. Ital. Biol. Sperim.* 2(4): 293-297. 1927.—Acts as myotic. Injection of apomorphine into the conjunctival sac caused vomiting in the animals used (dog, cat, rabbit and pigeon) and after injection the pupil no longer reacted to light. Santonin injected into the conjunctival sac of the rabbit (1 gm. per kgm. of body weight) acted as depressant and myotic. From 1 to 1½ gm. per kgm. produced nervous reactions tending to convulsions with dyspnea. Injection of santonin in animals did not affect pupillary reactions.

10247. MAYER, RUDOLF L. Die Ueberempfindlichkeit gegen Körper von Chinonstruktur. *Arch. Derm. u. Syph.* 156(2): 331-334. 4 fig. 1928.—Pellidol and close related azo-coloring matters, certain developers used in photography such as Metol as well as pelt-dyes from the Ursol group have chemical properties in common. The skin irritation of the Pellidol and of azo-coloring matters is closely related. In the skin azo-coloring matter is reduced, with the formation of an aminophenol or Ursol, then these split-products are likewise oxidized to the corresponding quinone. In those people, who are hypersensitive toward quinone, a skin-irritation occurs. The hypersensitivity could be transferred in a passive manner to guinea pigs. The cause of the hypersensitivity is that the quinone, so formed, acts as an antigen toward proteins combined with bodies of the hydro-quinone type. The application is, that one must not give Pellidol to those who are hypersensitive towards Ursol.—*R. L. Mayer (transl. by F. Werner).*

10248. MENCARELLI, LUDOVICO. Iperplasie epiteliali cutanee da ittiolo. [Cutaneous epithelial hyperplasias from ichthyol.] *Arch. Sci. Med.* 54(8): 542-548. 4 fig. 1930.—Repeated pencil strokes with ichthyol were followed in mice and rabbits by marked hyperplasia of cutaneous epithelium, without hyperkeratosis, but sometimes atypical.—*M. Comel.*

10249. MENKE, WILHELM. Versuche zur Abtötung von Paratyphusbacillen im Darm. *Zeitschr. Hyg. und*

Infektionskr. 110(4): 681-696. 1929.—A study was made of the disinfecting properties of iodin-carbon ("Jodkohle" C bearing a deposit of 15% metallic I suspended in physiologic NaCl sol.), Argocarbon (C with 0.5% Ag) and Silargel (AgCl + silicic acid gel). Exps. in vitro showed that the bacteriocidal effect of all these substances was greatly enhanced by acid media and weakened by alkaline. In animal exps. (mice) it was first determined that an acid diet (yoghurt or the A. Adam diet with a milk basis) does not in itself free the intestine of paratyphoid bacilli. Iodin-carbon and Argocarbon, fed with yoghurt or the Adam diet, were toxic to mice and without appreciable effect on the excretion of paratyphoid bacilli. In exps. on 6 mice infected with paratyphoid A bacilli, and fed exclusively on yoghurt (6 controls likewise infected being fed with oats and bread), administration of Silargel freed the feces completely of bacilli. Examination of the organs (2 of the experimental mice having died and the 4 others having been killed for examination) showed the presence of bacilli in liver, spleen and heart, or 2 or 1 of these organs. It is believed that this is the first time that the stools have been rendered non-infective under such circumstances.

10250. MØLLER, EGGERT, CHR. N. J. GRAM, and S. A. SCHOU. Quantitative clinical and spectrophotometrical comparison between natural and synthetic thyroxin. *Acta Med. Scandinavica* 74(1): 85-103. 1930.—Synthetic thyroxin (Hoffmann-La Roche) and natural thyroxin (from Harington's laboratory) gave identical spectrophotometrical curves, had the same I content (65%) and produced the same increase in the basal metabolism of patients with myxedema. The latter effect was studied by means of intravenous injections of 10.5 mgm. of thyroxin. With the synthetic preparation 3 injections were given to 3 patients, with the natural preparation 2 injections to 2 of these same patients. The basal metabolism was followed by frequent determinations during at least 50 days after each injection. The total increases produced in the basal metabolism during this period were identical within the limits of error to be expected from the method. To 3 patients 4 injections were given with another preparation of natural thyroxin (B. D. H.), which proved to be of inferior strength. This result was obtained both by metabolic, chemical and spectrophotometric observations. The preparation contained only 75% thyroxin. The general therapeutic effect of the intravenous injection of large doses of thyroxin was in no way superior to that which could be expected in similar cases to follow the oral administration of the equivalent amount of desiccated thyroid gland substance, divided into small doses to be given daily for the same length of time during which the metabolic effect of the intravenous injections persisted, i.e., about 60 days. The description given by Plummer, Boothby and others of the changes in the basal metabolism during the weeks following the intravenous injection of large doses of thyroxin in myxedematous patients is on the whole confirmed, although the declining parts of the curves did not show any marked tendency to be of logarithmic shape. The description by Abderhalden and Rossner of the spectrophotometrical curve common for natural and synthetic thyroxin is confirmed.—*Authors' summary.*

10251. MOLTENI, P. Sull'influenza dell'adrenalina, della pilocarpina e dell'atropina sul riflesso patellare. [Effect of epinephrine, pilocarpine and atropine on the patellar reflex.] *Arch. Sci. Biol.* 13(3/4): 407-420. 7 fig. 1929.—Graphic records were made of the reflex after intravenous injection of the drugs. The diminished responses following epinephrine, pilocarpine and atropine cannot be cited in favor of the view that skeletal muscle tonus is maintained through the autonomic system. On the other hand, the diminution induced by epinephrine is probably due to anemia of reflex centers. The same result, obtained by pilocarpine in high dosage, may be due to a lowered excitability of the same centers. The diminution or temporary disappearance of the reflex after atropine is caused by stimulation of the cerebral cortex and its inhibitory centers.—*A. Jappelli.*

10252. MOORE, ROBERT A., SAMUEL GOLDSTEIN, and AARON CANOWITZ. The mitochondria in acute experimental nephrosis due to mercuric chloride. *Arch. Path.* 8(6): 930-937. 4 fig. 1929.—Retention of N in the blood occurs in nephrosis due to $HgCl_2$ in the white rat before there are demonstrable changes in the morphology of the kidney. There are definite changes in the cytoplasm and nucleus of the proximal convoluted tubule before the mitochondria show any qualitative change. It is suggested that $HgCl_2$ produces nephrosis by adsorption on the surface of the mitochondria, "poisoning" the interface and later killing the cell.—*Authors' summary.*

10253. MORELLE, JEAN. Étude radiographique de l'influence de l'ergostérol irradié sur la reconsolidation des fractures expérimentales. (Note préliminaire.) *Rev. Belge Sci. Méd.* 2(3): 226-228. 2 pl. 1930.—A fibula was fractured in each of 18 ♂ rats, of which 1 group received 0.001 mgm. ergosterol daily, a 2nd 0.1 mgm. (about 3-4 times the human therapeutic dose) and the 3rd 2-4 mgm. The fracture knit more rapidly in the rats receiving 0.1 mgm. than in the controls; the larger doses produced an abnormally exuberant callus.

10254. MOTOMURA, SUSUMU. Über den Einfluss verschiedener Pharmaka auf die experimentelle Anaphylaxie. [Japanese.] *Osaka Igaku Kwai Zasshi* 26: 2072-2122. 1927.—Intracardiac injection of 0.1 cc. of horse serum into guinea-pigs weighing 200-300 gm., which had two weeks previously received a subc. injection of 0.01 cc. of the same serum, causes the development of typical anaphylactic shock. In order to study their effect on this shock, various drugs were injected intraperitoneally 1 hr. before the 2nd dose. Pilocarpine and physostigmine always inhibit the anaphylactic shock, epinephrine is uncertain in action and atropine produces no effect. Cardiac tonics, such as digalen, camphor, hexeton, caffeine and diuretin, also produce some inhibition of the anaphylaxis; with the first 3 the action is lasting, but with the latter 2, it is transient. Narcotics, such as urethane, morphine and alcohol, also inhibit the anaphylaxis, urethane having the most powerful action, morphine slightly less and alcohol least. Quinine, lobeline and "secacornin" also act as anti-anaphylactics. Barium chloride always inhibits the anaphylaxis, $MgSO_4$ is uncertain in its effects and $CaCl_2$ and $Na_2S_2O_3$ have no action. Physiological salt solution and hypertonic solution of glucose always act as anti-anaphylactics, but gum solution does not, while with gelatin solution the effect is uncertain. Peptone, casein, "electrargol" and lecithin sometimes show marked inhibition of the anaphylaxis. Pituitrin acts as an anti-anaphylactic in female but not in male animals. Thyraden, a preparation obtained from the thyroid gland, has an inhibitory effect. Spermatin, a preparation from the testis, and oöphormin, an ovarian preparation, increase the anaphylactic shock. Biosterin, a preparation containing vitamin A, and paranutrin, a preparation containing vitamin B, always show marked inhibition.—*Author (courtesy Japanese Jour. Med. Sci.) (transl. by J. M. Watt).*

10255. NARAHARA, K. Experimentelle Untersuchung über den Hautzucker. II. Der Zuckergehalt der Haut unter Beeinflussung von verschiedenen Medikamenten. [In Japanese.] *Japanese Jour. Dermatol. & Urol.* 30 (11): 1113-1128. [German summary, 117-118.] 1930.—In a previous communication [Journal Kumamoto Med. Soc.] it had been shown: (1) that the average cutaneous blood sugar value in the rabbit is about 111 mgm.%, the blood sugar value about 105 mgm. %; (2) that the values of both blood and skin sugar may vary in parallel with nutritional conditions; and (3) that the same parallelism obtains in the blood and skin sugar changes following oral or intravenous administration of sugar. In this study the substances (autonomic drugs, various ions, heavy metals, insulin, salvarsan and

$NaNO_2$) were given either intravenously, intramuscularly or subcutaneously. Epinephrine, pilocarpine, eserine and diuretin raised the skin sugar; ergotoxin varied; atropine was indefinite in its effects. Of the various ions, Ca always and Na frequently raised the skin sugar content; K and Mg were indefinite in effect. Novasurol generally raised, electrargol depressed the skin sugar; the effect of "casbis" was not clearly recognized. The salvarsan preparation "neo-ehramisol" and $NaNO_2$ tended to raise the skin sugar; insulin depressed it to the minimum. The blood sugar and skin sugar curves were almost always parallel under the administration of any drug, except in the agonal stages of death from the drug; then the blood sugar rose abruptly and the skin sugar fell to the minimum.—*From author's summary (transl.).*

10256. OKA, NOBUWO. Über die Ascaridolvergiftung. *Japanese Jour. Med. Sci. IV. Pharmacol.* 3(3): 201-233. 3 pl. 1929.—The ascaridol fraction is the constituent of oil of chenopodium detrimental to the hearing organ. Principal changes are: degeneration in cells of the spiral ganglia and nerves and in the auditory cells. The first point of attack of the poison is the spiral ganglion cell; the Nissl bodies are changed as to staining qualities, size and number. None of these effects were demonstrable with the terpene fraction of oil of chenopodium. A histologically detailed comparison is made between the effects of detonation and of ascaridol upon the organ of Corti and related structures. The degenerative changes in spiral ganglia cells may be demonstrated in intoxicated animals that still show the Preyer ear muscle reflex.—*Author's summary (transl. by W. N. Berg).*

10257. OSTROWSKI, STANISLAW. Eine einfache Methode die Nebenerscheinungen nach Gebrauch der Arsenobenzole vorzubeugen. [In German, with English summary.] *Acta Dermato-Venereol.* 11(3): 245-253. 1930.—Alimentary hyperglycemia prevented symptoms of intolerance to arsenobenzol in 15 clinical cases, probably owing to chemical or nervous action on the liver.

10258. OTA, M[ASAO]. Étude expérimentale sur le venin de la punaise des lits. [In Japanese.] *Japanese Jour. Dermatol. & Urol.* 30(9): 966-976. [French summary, 100-102.] 1 fig. 1930.—Intraperitoneal injection of an aqueous extract of bedbugs in saline solution proved capable, in suitable dosage, of killing a mouse (immediately or after some hrs.), and of producing vomiting followed by death in ½ day in a dog. The active material was not affected by heating for ½ hr. to 65°, or by pepsin-HCl or by trypsin, but seemed to be diminished by heating for ½ hr. to 80° or even 70°, and by ultraviolet irradiation. This aqueous extract, intracutaneously injected, produced intense erythema, urticaria and itching in most men; subjects, however, differed greatly, some not reacting at all. Alcoholic extracts, even in large amounts, did not kill a mouse; they produced erythema, urticaria and itching in men, but less intense than when caused by aqueous extracts. Ethereal extract produced neither death in animals nor itching in men, but merely a faint and transient erythema. The aqueous extract had no hemolytic action on the erythrocytes of the sheep, rabbit, white rat or man. Fixation, using the aqueous extract as antigen, was obtained with the serum of rabbits which had been sensitized by this antigen, but not with the serum of unsensitized rabbits. Human sera gave a positive or doubtful reaction in 3 cases out of 10. Antibody seemed capable of neutralizing the fatal toxicity of the antigen. Mice injected with aqueous extract in more than fatal dosage survived if treated with immune serum; it did not, however, prevent the production of the cutaneous reaction in man.—*From author's summary (transl.).*

10259. PAASCH, G., und H. REINWEIN. Studien über Gewebsatmung. V. Mitteilung: Der Einfluss von Thyroxin, Adrenalin und Insulin auf den Sauerstoffverbrauch von überlebenden Rattenzwerchfell. *Biochem. Zeitschr.* 211(4/6): 468-474. 1929.—No increase in rate was found, with any of these substances, for O consumption in vitro. Such positive effects as have been reported by others are regarded as secondary to changes in permeability of the cells.—*H. S. Hopkins.*

10260. PETZETAKIS, M., et G. VLACHLIS. Étude électrocardiographique de l'action vagotrope de l'adrénaline en injection intraveineuse. *Arch. Malad. Coeur, Vaisseaux et Sang.* 23(5): 333-338. 1930.—The authors believe that epinephrine in intravenous injection shows a predominant vagotropic stage, manifested by a retarding of the rhythm, accompanied by auriculo-ventricular dissociation.

10261. POLLAND, W. SCOTT. The effect of atropine upon gastric secretion after histamine stimulation. *Jour. Clin. Investigation* 9(2): 319-332. 1930.—Curves are presented comparing the course of gastric secretion after histamine with that after histamine and atropine [in 7 patients]. The volume of secretion, titratable acidity, concentration of pepsin, total output of acid and total output of pepsin have been studied. Atropine dissociates the normal response to histamine, producing a marked decrease in the volume of secretion, and in the concentration and total output of pepsin. The titratable acidity rises as a result of the only slight inhibitory effect of atropine on the total output of acid. The results suggest that water, acid and pepsin may have different mechanisms of secretion.—*Author's summary.*

10262. POPOW, N. A., P. K. DENISSOW, und A. A. KUDRJAWZEW. Ueber den Einfluss der Magnesiumionen auf das Speichelzentrum des Hundes. *Arch. Exp. Path. u. Pharmakol.* 151(3/4): 161-167. 1930.—Dogs with transected brain stem spontaneously show a permanent salivation. Irritation of the lingual nerve and introduction of $CaCl_2$ and $MgCl_2$ produce a series of stimulating and inhibiting effects on the salivary center. Generally, Ca acts as a stimulating, Mg as an inhibiting ion.—*H. Graf.*

10263. POTICK, DORA. Acción de las ponzoñas sobre las substancias grasas del plasma sanguíneo. [Snake venoms on blood lipids.] *Rev. Soc. Argentina Biol.* 6(5/6): 358-362. 1930.—Venoms of *Lachesis neuwiedii* and *Naja tripudians* were studied. Lipid P diminished 61%; total fatty acids diminished 22%, possibly due to action of phosphatidase of venom. Total fats diminished in 4 out of 5 experiments. Total nonsaponifiable and free and combined cholesterol varied irregularly.—*J. T. Lewis.*

10264. PREOBRASCHENSKY, A. M., A. P. NIFONTOW, und A. I. SKRYPNIK. Materialien zur vergleichenden Pharmakologie des Gefässsystems. (Über die Wirkung von Giften auf die Ohrengefässe des Schafes.) *Arch. Exp. Path. u. Pharmakol.* 122(3/4): 198-206. 1927.—An isolated vessel from the sheep's ear, when perfused with Locke's solution, shows periodic changes in size of lumen. Suprarenin, 1:1 million, causes a slowing of the perfusion rate, which gradually comes back to normal when washed with Locke's. Histamine, 1:1 million, produces no effect. Strychnine is inactive at 1:20,000, but dilates the vessel at 1:1,000. Nicotine causes a contraction for a short time, but the flow returns to normal and is not affected by further perfusion. Cocaine, 1:1,000, dilates the vessel; weaker concentrations have no effect. Suprarenin previously does not alter the cocaine action. Chloroform causes contraction, 1:10,000-1:1,000. Weak chloral hydrate constricts, strong dilates. Barium chloride constricts, caffeine and sodium nitrite relax.—*C. Reynolds.*

10265. RABBENO, A. Ricerche sull'azione farmacologiche dell'acqua di mare. Nota II. Sulla dose letale minima immediata del cloruro di sodio introdotto per vena. [Pharmacological action of sea water. Fatal dose of NaCl.] *Arch. Sci. Biol.* 13(3/4): 399-406. 2 fig. 1929.—Sodium chloride, when introduced at various rates into the veins of a rabbit, is less toxic than sea water containing NaCl in the same concentrations.—*A. Jappelli.*

10266. REDISCH, WALTER, und B. M. BLOCH. Einfluss der Resorptionsgeschwindigkeit auf die Insulinwirkung. *Endokrinol.* 1(4): 241-250. 1 fig. 1928.—The experiments of Betram, concerning the prolongation of insulin action by the admixture of albumin, were confirmed. It was further shown that this prolongation of

action can also be achieved through the addition of a 5% solution of acacia to the insulin. The delay is therefore not dependent on the protein nature of the material admixed. In experiments with dead membranes the gummy insulin mixtures dialyzed decidedly more slowly than pure insulin. On the other hand, with the albumin-insulin mixture the active ingredient is held back, with the albumin, by the membrane.—*Author's summary (transl. by H. C. Wood, Jr.)*.

10269. **REINHARD, M. C., and K. W. BUCHWALD. No lead in tumor tissue after intravenous injection of colloidal lead.** *Jour. Cancer Res.* 13(3): 239-241. 1929.—Spectroscopic and chemical examination of material from mouse tumors after the intravenous administration of colloidal Pb failed in every case to show evidence of Pb in these tissues.—*H. S. Wells.*

10270. **RIDLEY, H. N. On the action of the poison of the Upas-tree (Antiaris toxicaria Bl.).** *Jour. Trop. Med. & Hyg.* 33(13): 185-186. 1930.—The pure latex, which is sticky and probably absorbed slowly, injected into the abdominal wall of a dog, produced no permanent ill effect. Mixed with a decoction of *Strychnos ovalifolia*, it formed a fluid drug which, injected as before into a dog, produced hard, rapid breathing, vomiting and convulsion; the dog was killed. In toads injection of the latex produced slight convulsions, violent peristalsis, first acceleration and later retardation of the heart-beat, local contraction of capillaries and death.

10271. **RIES, FERD A., and EUGENE U. STILL. On the toxicity of purified bile preparations. II. The neuromuscular system.** *Amer. Jour. Physiol.* 91(2): 609-617. 1930.—Experiments on frogs indicate that bile salts are only slightly toxic to muscle and do not materially affect conduction through the nerve fiber, and that the neuro-muscular junction and the reflex centers of the cord are the structures most susceptible to such toxic effects.

10272. **ROBBINS, BENJAMIN H. A proteolytic enzyme in ficin, the anthelmintic principle of leche de Higueron.** *Jour. Biol. Chem.* 87(2): 251-257. 1 fig. 1930.—Leche de Higueron (the latex of *Ficus laurifolia* according to Hall and Augustine, 1929, and to Chandler, 1928; of *F. glabrata*, according to Paez, 1914-1915) produces on ascaris immersed in it small blisters or ulcers which perforate and cause the death of the ascaris. The active component of the latex was extracted by precipitation from aqueous solution by 3 parts of acetone or 5 parts of alcohol. The purified protein so obtained, named ficin, contained free amino groups, 16% N, 1.05% S. The ficin was exposed to various temp. between 40° and 97° C. for 5 min., cooled, and incubated at 35°, ascaricidal activity being determined; the preparations heated to 75° or above had been inactivated. Coagulated egg albumin was digested and casein hydrolyzed by ficin. Ficin is destroyed in 1½ hrs. at pH 2-3, hence largely destroyed by passage through the stomach; is active over the range pH 4-8.5. Evidently, the active principle is a proteolytic enzyme of the trypsin type, different from trypsin and papain; possibly more than one enzyme is concerned.

10273. **RONDONI, PIETRO. L'azione inibente della digitonina sullo sviluppo dell'adenocarcinoma del topo. [Inhibiting action of digitonin on the development of adenocarcinoma of the mouse.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 722-723. 1930.—Treatment with digitonin is followed by a slackening of the development of adenocarcinoma in mice, the rate of growth of the neoplasm diminishing by half as compared with control animals. More marked necrosis, and activation of the reticulo-endothelial system were observed. The author thinks that a union between digitonin and cholesterol in vivo is responsible for the observed delay in development of adenocarcinoma in mice.—*M. Comel.*

10274. **SAITO, J. Über hautreizenden Giftstoff eines japanischen Giftschmetterlings, Euproctis flava Bremer. [In Japanese.]** *Japanese Jour. Dermatol. & Urol.* 30(3): 230-243. [German summary, 29-30.] 1 pl. 1930.—The hairs of the caterpillars produce an itching, twitching dermatitis; whether by mechanical or toxic irritation has been disputed. A water- and glycerol-soluble poison can be extracted from the hairs which possesses the same properties as *E. flava*. The poison is soluble in normal salt sol. and glycerol, but not in ether, $CHCl_3$, alcohol, benzene or toluene. The method for extracting the venom is described. If the venom sol. is applied to the skin of the forearm no reaction is observed; but if a drop be placed on the skin and then brought under the epidermis by means of a fine needle, a red swelling appears in 30 min. which after 6 to 7 hrs. becomes more pronounced and extensive, and after 24 hrs. is spread over the whole forearm and accompanied by lymphangitis. The venom is fairly stable to heat, gives no protein reaction, and also no hemolytic action on the red blood-cells of rabbits and sheep. The lethal dose is very great with *Rana japonica*, mouse, and rabbit. It causes no albuminuria, but appears to have certain diuretic properties. It showed an increase in blood-pressure in the rabbit, but no effect upon the respiration. —*Author's summary (transl. by L. W. Butz)*.

10275. **SAKEL, M. Theorie der Sucht.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 129(3/4): 639-646. 1930.—An attempt is made to advance a cellular-hormonal interpretation of somatic morphine addiction. Exceedingly favorable results in stopping the abstinence phenomena by the use of insulin as the chief therapeutic agent are also reported.—*Author's summary (transl. by W. Malamud)*.

10276. **SANTESSON, C. G. Kupferstudien.** *Skand. Arch. Physiol.* 61(1/3): 79-112. 7 fig. 6 pl. 1931.—CuS was injected subcut. in rabbits in doses of 1.1-1.35 gm. Seven to 8 doses were given in a period of 40-55 days. The animals were killed with $CHCl_3$ and sections taken for microscopic study. Local necrosis was produced with granules of CuS in phagocytes. There was sulphide necrosis in the large and small intestines and some in the liver. The lungs in 2 cases were hyperemic and showed hepatization. With $CuSO_4$ injections there was a more rapid subacute poisoning. The pathology was similar to that of CuS. One rabbit was injected with Bi salicylate (0.4 gm. subcut. for 16 days), with results similar to that for Cu.—*R. P. Herwick.*

10277. **SCHEINER, GEORGE. The influence of adrenaline on the activity of the kidneys.** *Acad. Tcheque Sci. Bull. Internat. Rés. Trav. Présentés Cl. Sci. Mat. Nat. et Méd.* 28: 174-181. 1927.—To ascertain the influence of adrenaline on the activity of the kidneys, the Strauss water test (1000 ccm. of liquid at once) and the diuretic test (100 ccm. of weak tea and 50 ccm. milk given every hour) were employed. The subject was requested to urinate every hr. Adrenaline was introduced either subcut. (1 mgm.) or intraven. (0.05 mgm.) with the same effect. In the Strauss water test adrenaline stimulated, in the diuretic test it slackened the diuresis. The variation of the blood-pressure after the injection had no connection with the diuretic effect. The cases of nephroses gave the same effect as healthy persons. The injection had no influence on the excretion of NaCl and of N compounds.—*H. Přibram.*

10278. **SCHIFF, ALICE. Die durch Vigantol erzeugbaren Gefässwandveränderungen und ihre Rückbildungsfähigkeit im Tierversuch.** *Virchow's Arch. Path. Anat. u. Physiol.* 278(1): 62-83. 6 fig. 1930.—Vigantol may produce certain changes in the media of blood vessels, namely, degeneration, proliferation and calcification. The aorta suffers the greatest changes. The carotids are affected with almost equal frequency, the iliacs somewhat less often. In cats the coronaries and the pulmonary arteries are the most frequent visceral vessels; the kidney vessels are somewhat less frequently affected. In rabbits the renal arteries are most frequently affected. (10 out of 14 cases.) The arteries of the brain and liver were never involved and only once was a small branch of the splenic artery affected. There is no definite parallelism between the amount of vigantol and the degree of change produced. At the beginning of the disease there occurs a swelling of the substance between the

fibres. Superimposed on this swelling there occurs a change in the course of the elastic fibres, a granular disintegration of the swollen substance, a disintegration of the characteristic fibres, calcification, a proliferation of histiocytes, finally also small hemorrhages. Eventually there may be secondary thickening of the intima and collections of cells in the adventitia. The changes which are observed may be divided into 2 definite arrangements, a band form and a focal form. The expected retrogression of these changes in the blood vessels could not be demonstrated with certainty. More pronounced formation of granulation tissue could not be found in animals in which vigantol administration had been long discontinued than in those that were still receiving the preparation. When very small amounts of vigantol are administered there occurs, likewise, no healing. On the contrary, in these animals the damage due to vigantol develops further and eventually may lead to death. The clinical manifestations of disease and the severity of the changes in the blood vessels do not run parallel. Thus, it is possible to find severe calcification in the blood vessels in animals that are clinically well.—*B. Kramer.*

10279. **SCHMIDT, A. A. Über die Wirkung des Insulins in Abhängigkeit von der Anwendungsmethode.** *Zeitschr. Ges. Exp. Med.* 73(5/6): 599-607. 1930.—Only 1 of 15 rabbits went into convulsions following a single intraven. injection of 3 units of insulin per kgm., a transient hypoglycemia being observed. The same dose given subc. produces an intensive hypoglycemia accompanied in most cases by convulsions. The same dose given intraven. in divided intermittent fractions through an hr. produces a more pronounced hypoglycemia with an increased incidence of convulsions than a single injection. It is inferred that the tissues remove and inactivate insulin given intraven. so that little reaches the muscles. When given subc., a more proportionate assimilation by the tissues takes place, so that an increased activity in the muscles follows.—*F. E. Bischoff.*

10280. **SCHOENE, GERHARD. Zur Wirkung der Muzilaginosa.** *Arch. Exp. Path. u. Pharmakol.* 131(3/4): 186-199. 1928.—Gum arabic, tubera salep, tragacanth, carrageen, gelatina animalis, radix colombo, radix althaeae, agar-agar, lichen islandicus, sago and rice lengthen the reflex time in the spinal frog; gum arabic, althaea and colombo root were most active. The effect cannot be attributed to increased viscosity; it is due to the adsorption of HCl on the colloidal particles. Titrations of mixtures of the mucilages and acid show that 10% of HCl is chemically bound while 40% is loosely fixed. The actual acidity of the mucilage-acid mixture is only 5-15% that of the original.—*H. Graf.*

10281. **SCHREIBER, G. L'azione del calcio sulle ghiandole endocrine. [Ca action on endocrine glands.]** *Arch. Sci. Biol.* 13(1/2): 127-157. 1 pl. 2 fig. 1929.—Since P. Enriques and his collaborators showed an endocrine interrelation in the changes following bone fractures, and suggested that Ca salts discharged into the circulation by osteolysis can exert a stimulating influence on the endocrine system, $CaCl_2$ was injected into guinea pigs. Weight increase in the thymus of young animals and histological evidence of overactivity as after a fracture were observed. The weight of the adrenal glands was diminished in young subjects, increased in old ones; histologically the volume increase could be seen in reticular zone of the cortex. The thyroid showed also a slight increase.—*A. Jappelli.*

10282. **SCHÜBEL, K., und W. TESCHENDORF. Zur Methodik der Uterus pharmakologie.** *Arch. Exp. Path. u. Pharmakol.* 128(1/2): 82-98. 8 fig. 1928.—After the uterus of rabbits and cats was filled with 10% Iodipin oil, its movements were registered roentgenologically by a series of pictures and graphically by means of Marey's tambour recording from the tube where the contrast liquid was introduced. No surgical operative procedure was necessary. The experimental animals (cats) were anesthetized for 24-30 hrs. with ether, lying on the back, untied, between two bags of sand. This narcosis had no influence on the movements of the uterus. Roentgenological registration is superior to the graphic, as very often graphic registration fails, particularly when one portion of the uterus contracts and another relaxes. The close agreement of the uterine movements with those of the intestine is quite visible in the roentgen picture. Changes in the position of the entire organ are plainly visible, the tonus and the rabbit's uterus demonstrated well the course of the peristaltic waves. The pharmacologic examination of a uterus filled with oil or a Ringer solution represents a method which permits the study of the processes of pregnancy and abortion. This method on account of its great simplicity is suitable for lecture demonstration.—*Authors' summary (transl. by F. R. Greenbaum).*

10283. **SCHULZ, HUGO. Vorlesungen über Wirkung und Anwendung der deutschen Arzneipflanzen.** 2nd ed. 310p. Georg Thieme: Leipzig, 1929. 14 M.—The author gives brief descriptions of German medicinal plants and of their drug products. Histology is not included. The approach is more from the point of view of pharmacology than from that of pharmacognosy. Extensive data are included on folk medicine. About 40 pages of botanical origins with common synonyms are appended.—*R. W. St. Clair.*

10284. **SCHÜTZ, ERICH. Beitrag zur Kenntnis der Herzwirkung des Cardiazols.** *Zeitschr. Ges. Exp. Med.* 65(1/2): 147-152. 3 fig. 1929.—Cardiazol on the Langendorff heart of the dog and cat produced increased force and frequency of heart-beat, especially if the heart had been weakened. Just after the injection of cardiazol there was a decrease in the height of the heart's contractions due to the washing out of the heart in the Langendorff preparation. Two cases of "spontaneous" cardiac delirium were restored to strong, regular beats by cardiazol; but electrically induced delirium cordis was not affected.—*E. Schütz (transl. by Clyde Brooks).*

10285. **SCHWARZ, H. Calendula.** *Heil- und Gewürz-Pflanzen* 12(1): 21-22. 1929.—Note on pharmacological use of flowers and leaves of *Calendula officinalis.*

10286. **SECHI, ELIO. Sulla resistenza del gonococco isolato dall'individuo sottoposto alla cura acridinica (tripaflavina). [Resistance of the gonococcus isolated from a patient during acridin (trypaflavin) treatment.]** *Gior. Ital. Derm. e Sifil.* 71(6): 2080-2089. 1930.—The maximum and minimum limits of resistance of the gonococcus to trypaflavin having been established, 8 injections were performed (3 in a wk.) on the patient, the resistance in vitro being tested 48 hrs. after each injection. The resistance was the same after the last injection as at the beginning of the treatment. Trypaflavin has neither direct nor indirect effect upon the gonococcus. Its action is simply antiseptic.—*Author's summary (transl.).*

10287. **SEEL, HANS. Pharmakologische Untersuchungen über natürliches und synthetisches Menthol.** *Arch. Exp. Path. u. Pharmakol.* 122(5/6): 338-353. 1927.—Natural optically active menthol was compared with various isomeric synthetic menthols among which were Isomenthol, Neomenthol and Neo-Isomenthol. There was a difference only in the degree of pharmacological effect. The nature of the action was similar. The toxic symptoms consisted of a transient increase of irritability, increased respiratory and pulse frequency, gradually increasing paralysis, ataxia, disappearance of all reflexes and finally tetanic convulsions. The natural optically active menthol is about twice as toxic as the synthetic inactive preparations with the exception of Neo-isomenthol which possesses approximately the same toxicity as the natural menthol. The menthol of commerce does not always have a uniform composition. The toxicity of menthols in general is slight. With the frog's heart it requires high concentrations to produce diastolic standstill. The hemolytic effect is very slight with the exception of Neo-isomenthol. Injury to the blood or irritation of the kidneys was not observed. The synthetic inactive menthol cannot be differentiated

from the natural menthol of commerce by odor or taste. On the other hand, Iso-neo and Neo-isomenthol have a more or less camphor like odor and taste. With reference to the medical application of crystallized, synthetic, inactive menthol of a melting point of 35-36° C., it is less poisonous than some of the natural menthols of commerce.—*Author's summary (transl. by B. Kramer).*

10288. **SEHESTEDT, HANS. Über den Einfluss von Somnifen auf den Gasstoffwechsel von Kindern.** *Zeitschr. Ges. Exp. Med.* 72(3/4): 514-521. 3 fig. 1930.—Studies on 12 children aged 5-15 yrs.

10289. **SIEDENTOPF, HEINZ. Untersuchungen über die Wirkung des Thyroxins in der Schwangerschaft.** *Monatsschr. Geburtsh. u. Gynäkol.* 85(5/6): 325-341. 1930.—The author established the limit of non-injurious dosage of thyroxin as 2 injections each of 2-3 cc. for the normal non-pregnant guinea-pig. In 2 pregnant guinea-pigs, 2 successive injections of 2 and 3 cc. respectively induced slightly premature birth, the young being born alive and capable of growth. In 4 other pregnant guinea-pigs, single injections each of 2 cc. thyroxin induced subnormal growth in the fetuses, which were born alive but much under normal weight. Observations on 16 clinical pre-natal cases revealed no pathologic change in the fetal heart action from a dose of 1-2 cc. thyroxin injected into the mother. Repeated daily intravenous injections of 1-2 cc. thyroxin in cases of edema of pregnancy in most cases produced no important change in water excretion or reduction of edema, indicating that subnormal function of the thyroid is at least not a frequent cause of edema of pregnancy. Doses of 2 cc. thyroxin given every other day for 2 mos. before parturition to 17 pregnant women with narrow pelves were followed by the birth of normal children weighing and measuring slightly less on the average (200 gm. and 1.7 cm. less) than the average children born of untreated mothers.

10290. **SIMONIN, CAMILLE. L'empoisonnement alcoolique aigu de l'adulte et de l'enfant. Coefficient d'imbibition alcoolique mortelle. (2e Mémoire.)** *Jour. Physiol. Path. Gén.* 38(3): 624-631. 1930.—The toxic dose of alcohol for the guinea pig is about 8.5 cc. per kgm. body-weight. Death is never very rapid, and may occur 12 hrs. after ingestion. In delayed poisoning the alcohol content of the blood at the time of death may be low, showing the power of the tissues to abstract alcohol. The action of insulin on blood-sugar appears to be unaffected by the presence or absence of alcohol. —*W. R. Fearon.*

10291. **SORGE, G. Modificazioni delle soglie renali durante la terapia insulinica nei diabetici. [Variations of renal threshold during insulin treatment of diabetes.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 762-764. 1930.—Rise of renal threshold values for glucose, water and chloride was observed.—*M. Comel.*

10292. **SPAGNOL, G. Fixierung von Suspensionskolloiden durch anästhesierende und narkotische Stoffe.** *Arch. Exp. Pathol. u. Pharmakol.* 137(3/4): 250-256. 1 fig. 1928.—After intraven. injection of some colloidal dye suspensions, they are found to be fixed in the skin and underlying tissues about the area of application of chloroform. Only those colloids bearing electronegative charges are so fixed, and the greater the degree of diffusibility of the colloid the more complete the fixation. The phenomenon is due to a change of the capillaries, allowing the colloid to pass out of the vascular system and accumulate especially in the reticuloendothelial network. A possible therapeutic application of the observations is suggested.—*C. Reynolds.*

10293. **SSENTJURIN, B. S. Über den Einfluss des Adrenalins auf den Eiweissstoffwechsel isolierter Organe.** *Arch. Exp. Pathol. u. Pharmakol.* 133(3/4): 233-241. 1928.—The non-protein and protein N contents of a Ringer-Locke sol. after perfusion through the blood vessels of the testicle of the bull, or the liver or kidney of the cat, were determined by Borodin's method. On continued perfusion the non-protein N gradually decreased. The protein N usually decreased during the first 2 hrs., but after 3-4 hrs. an increase was characteristic, the total quantity being always greater than the quantity of non-protein N. Epinephrine (1 in 1 million to 1 in 100 million) increased the non-protein N 79% on the average, but had no constant effect on the protein N. The epinephrine effect is believed to be due to an increase in protein metabolism of the tissues. —*B. R. Lutz.*

10294. **STANLEY, ROBERT F., and DONALD A. LAIRD. The effects of massive doses of sodium bromide on mental and motor control in normal human beings.** *Med. Rev. of Rev.* 36(12): 753-756. 1930.—For the purposes of experimentation, 10 Colgate University students were tested every Wednesday and Friday afternoon for a period of 10 wks. At noon on each test day, the subjects took orally either 75 grains NaBr or a control dose of the same amount of NaCl. Preliminary tests giving central tendencies for a group rather than individual differences show that amounts of NaBr as used in the experiment have most marked and significant effects upon such mental functions as lag of attention, speed of addition, and speed of cancellation, in the normal individual. The effects on motor coordination are not as marked or uniform. Respiration and cardiovascular functions show some slight effects. This preliminary experimentation should give encouragement for a systematic study of the effects of NaBr in a wider range of test functions and under different dosages with normal individuals as well as for individual differences. The present preliminary experiments suggest that beneficial effects observed in mental patients from the use of massive doses of NaBr are associated to a large extent with the speeding up of mental functions and to some extent with improved motor co-ordination.

10295. **[STEPPUN, O. A.]** СТЕППУН, О. А. О препаратах наперстянки, их стандартизации и стандартных титрах. **[Digitalis preparations, their assay and biological effectiveness.]** [German summary.] Труды Научного Химико-Фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 80-98. 1926.—A historical review of the development of the chemistry of digitalis is given. The advantages of the galenic over the so-called pure or purified glucosides are depicted, and also the disadvantages which come from incomplete dosage. The possibilities of quantitative estimation by bioassay are described, and assay methods are treated critically. The author sees great advantages in the use of purified and pharmacologically controlled preparations which, however, keep to the features of the galenic preparations (Digipuratum etc.). The best known preparations were classified and critically treated, and the corresponding Russian preparations are given.—*Author's summary (transl.).*

10296. **[STEPPUN, O. A.]** СТЕППУН, О. А. О биологических методах определения ценности лекарственных средств. **[Biological methods of determining the value of certain drugs.]** Труды Научного Химико-Фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 99-105. 1926.—The general principles are discussed.

10297. **[STEPPUN, O. A.]** СТЕППУН, О. А. О биологической оценке сердечных средств. **[Biological value of cardiac drugs.]** [German summary.] Труды Научного Химико-Фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 106-109. 1926.—General principles of assay of cardiac drugs are treated and the assay methods are critically discussed.

10298. **STOLL, ARTHUR; SYDNEY SMITH, and G. M. TIMMIS; and H. H. DALE. The alkaloids of ergot.** *Lancet* 219(5595): 1148-1150. 1930.—Polemic. The letters deal with the questions of whether ergotoxin and ergotamine exist together, or independently, in ergot of rye; and which is the active principle. Dale deplores the lack of clinical experience with the former.

10299. **TERAUCHI, KOJIRO. Über die sogenannte Kurarewirkung verschiedener Substanzen.** *Tohoku Jour.*

Exp. Med. 12(5/6): 505-513. 1929.—Of the so-called curare-like substances $MgSO_4$, tetraethyl-ammonium chloride, piperidine, coniine, sparteine, nicotine, lobeline, camphor and Mokuren-curare paralyse the motor nerve-endings while pyridine, quinoline, strophanthin, saponin and Tetrodon-poison paralyse the motor axons and not the nerve-endings. It is possible that there are other curare-like substances with the same action as the latter group.—*Author's conclusion (transl. by J. W. Watt).*

10300. **TESTONI, P. Azione dell acetato di tallio sul sangue.** [Action of thallium acetate on the blood.] *Bull. e Atti R. Accad. Med. Roma* 56(1): 3. 1930.—Because thallium acetate poisoning, and even the use of thallium acetate as a depilatory, produced a marked pallor lasting for some time, the question arose if Tl produces blood changes similar to those induced by Pb. Systematic research showed that acute or chronic thallium acetate poisoning produced no lesions and no basophilic granulations in the erythrocytes.

10301. **TESTONI, P. Il tallio. 2. Acetato talloso ed ematoporfirina.** [Thallium. 2. Thallium acetate and hematoporphyrin.] *Bull. e Atti R. Accad. Med. Roma* 56(8/9): 217-224. 1930.—To learn whether the numerous analogies between Tl and Pb extend to the production of hematoporphyrinuria by Tl as by Pb, therapeutic and toxic doses of Tl acetate were given to dogs and rabbits (number not stated) but no trace of hematoporphyrin was found in the urine.—*Author's summary (transl.).*

10302. **TRACHTENBERG, F. Ephedrinwirkung auf die Magen-Darmtätigkeit.** *Arch. Verdauungs-Krankh.* 48(1/2): 69-95. 4 fig. 1930.—In observations on 27 patients, presenting various types of gastro-intestinal disorders, the action of ephedrine on the tract was found to correspond to its action in animal experiments. The immediate effect, as shown by the fluoroscope, is a stimulation of gastric motility lasting 8-10 min. This is followed by inhibition, with prolongation of the time for emptying and for passage through the intestine, an effect which lasts 3-4 hrs. Gastric acidity is not usually affected, and when changed at all is lowered. The concentration of neutral chloride in the secretion is increased. The particular cells and innervation involved in this function of secretion of neutral chloride are not known. As atropine also causes an increase in this secretion it might be assumed that the sympathetic provides augmentor, the parasympathetic, inhibitor fibers to the cells responsible.—*H. S. Wells.*

10303. **TRENDELENBURG, PAUL. Grundlagen der allgemeinen und speziellen Arzneiverordnung.** [Basis of general and specific medical prescription.] F. C. W. Vogel: Leipzig, 1926. 15 M.

10304. **TROPEA, UGO. L'estratto biglandolare associato di timo-ipofisi (tymophysin) e l'azione di esso sulle contrazioni dell'utero.** [The combined biglandular thymo-hypophyseal extract and its action on uterine contractions.] *Riv. Ostetr. e Ginecol. Prat.* 11(7): 21-41; (8): 9-22. 12 fig. 1929.—Experiments on the isolated and in situ uterus of the guinea pig, using a Pugliese apparatus and a combined extract of thymus and hypophysis, gave in a high percentage of cases positive results as well in clinical as in experimental tests. In women the preparation is capable of exciting typical physiological contractions of almost normal rhythm and excursion and continuing for various periods. From this it is concluded that the biglandular extract of Temeswary can be regarded as specific in overcoming inertia in the relaxed period,—a circumstance that makes for optimum service in that contingency.—*U. Tropea (transl. by J. G. Edwards).*

10305. **TRUFFI, G. Azione biologica dell'acetato di tallio.** [Biological action of thallium acetate.] *Arch. Sci. Biol.* 13(3/4): 271-319. 4 pl. 1929.—Alopecia from thallium acetate must be referred to a direct influence upon the hair, not through the neuroendocrine apparatus. In fact, the neuroendocrine lesions are not characteristic of thallium; they are caused also by other poisons, which do not produce falling of hair. Moreover, these lesions fail in case of small doses of thallium acetate, even sufficient to cause alopecia. Hence thallium cannot be considered as an endocrino-sympathetic poison. —*A. Jappelli.*

10306. **TU, TSUNGMING. Über die Wirkung von Exzitantien auf Atemmechanik und Gaswechsel des normalen Menschen.** *Arch. Exp. Path. u. Pharmakol.* 125(1/2): 1-15. 1927.—The Zuntz-Geppert method was used. Lobelin caused increases in lung ventilation and basal metabolism not to be accounted for by altered respiratory mechanics alone. Ephedrine had an effect similar to that of lobelin, but of longer duration. Caffeine caused increased lung ventilation as with lobelin and ephedrine, without appreciably influencing basal values. Strychnin after several hours caused increases in respiration and metabolism barely above experimental error. Hexeton increased lung ventilation by 10-20% without altering basal values. Cardiazol caused slight increases in lung ventilation and basal metabolism partly due to the pain of the intramuscular injection. Atropine was without effect.—*Author's summary (transl. by W. N. Berg).*

10307. **UFLAND, J. M. Über die Wirkung starker Phenollösungen auf die sensorischen Rückenmarkelemente des Frosches.** *Arch. Exp. Path. u. Pharmakol.* 122: 247-256. 1927.—Local application of 4% phenol sol. to the sensory elements of the spinal cord of spinal frogs did not kill the elements, but increased their irritability.—*J. C. Munch.*

10308. **VIALE, G., L. NAPOLEONI, e D. ROSSELLI. Eliminazione di acido ossalico nella glicosuria florizinica.** [Oxalic acid elimination in phlorhizin glycosuria.] *Arch. Sci. Biol.* 13(1/2): 206-210. 1929.—Phlorhizin, administered to dogs fed meat or mixed diet, has no definite action on oxalic acid output. This is easy to understand, because phlorhizin has chiefly a renal action. Nevertheless phlorhizin can sometimes injure the pancreas; in that case, as in adrenalin glycosuria and in experimental diabetes, the urinary output of oxalic acid may be increased.—*A. Jappelli.*

10309. **VIOLLE, P.-L., et A. GIBERTON. Propriétés anti-toxiques du calcium vis-à-vis du sulfate de sparteine.** *Compt. Rend. Acad. Sci.* [*Paris*] 188(18): 1181-1182. 1929.—Guinea pigs treated with mixtures of $CaCl_2$ and lethal doses of sparteine sulphate survived indefinitely. Those treated with sparteine sulphate followed by doses of $CaCl_2$ also survived indefinitely. In animals previously treated with Ca death following administration of the alkaloid was delayed. Experiments with diphtheria toxin proved negative.

10310. **WEESE, H. Digitalisverbrauch und Digitaliswirkung im Warmblüter. I. Die Effectivdosen verschiedener Digitalisglykoside für das Herz.** *Arch. Exp. Path. u. Pharmakol.* 135(3/4): 228-244. 1928.—Cats' hearts were separately perfused (Starling heart-lung method) with a known amount of digitoxin, strophanthin and scillaren, in a definite quantity of blood-Tyrode mixture. The minimal fatal doses (contractions recorded graphically) were compared with those by the Hatcher-Brody method. 4.5-9% of the glucoside is fixed in the heart, the rest being bound in other organs and tissues, as no excretion can occur in the perfusion experiments. The heart can detoxicate a glucoside solution completely (hydrolysis). This does not occur appreciably in blood, scillaren excepted. The reaction velocity in the heart is a simple, linear function of glucoside concentration.—*M. Dresbach.*

10311. **WEIL, ARTHUR. Veränderungen in dem histologischen Bilde und dem Lipoidaufbau des Zentralnervensystems in der Äthernarkose.** *Pflüger's Arch. Ges. Physiol.* 223(3): 351-363. 7 fig. 1929.—In 4 out of 5 etherized dogs and 3 out of 5 etherized cats, diffuse staining of the Nissl bodies was observed in the cells of the anterior horn of the spinal cord, also a distension of the sheath of the spinal cord due to increase of fluid within it. The lipins were determined by the Maclean method of fractional extraction. The acetone-soluble fractions showed increase, the

alcohol soluble fractions decrease, and the lipins precipitable from the alcohol extract were diminished, only the lecithin fraction showing a relative increase. The changes in the lipin content of the gray substance were more marked than those in the white substance or the spinal cord, corresponding to the double or treble physiologic increase in metabolism in the cortex. The morphologic and chemical changes began about the 2nd hr. and quickly reached a maximum, remaining almost constant between the 3rd and 5th hr.

10312. WINOGRADOW, A. P. Zur Pharmakologie des Pilokarpins. *Arch. Exp. Path. u. Pharmakol.* 122(3/4): 207-210. 1927.—Tests were conducted to determine the effect of pilocarpine upon the rate of flow of bile from a Pawlow-fistula dog. In general no effect was observed during digestion, although a rhythmic flow was obtained before or after meal time. The action was due to an effect upon the autonomic nervous system, similar to the action upon the urinary bladder.—*J. C. Munch.*

10313. WYMAN, LELAND C., and BRENTON R. LUTZ. The action of adrenaline and certain drugs on the isolated holothurian cloaca. *Jour. Exp. Zool.* 57(3): 441-453. 1930.—The effects of adrenaline and of certain drugs on the isolated cloaca of *Cucumaria frondosa* and *Stichopus moebii* were determined. The effective dose of adrenaline chloride produced a progressive decrease in tone, amplitude, and rate, with a final cessation of beat. Adrenaline caused a marked acceleration of the beat of the intestinal blood vessel of *Stichopus*. Adrenaline, therefore, has both inhibitory and excitatory effects on invertebrate tissues. Physostigmine, nicotine, and histamine produced a progressive increase in tone and a decrease in amplitude and rate. Curare, strychnine, and atropine produced a cessation of beat, usually preceded by a decrease in amplitude and rate. The tone was unaffected or slightly decreased by these drugs. Pilocarpine was generally ineffective. Adrenaline produced the typical inhibitory effect after doses of curare or histamine, but was ineffective following physostigmine or nicotine. Following cocaine, ergotoxine, or an ineffective dose of atropine there was evidence of a reversal of the inhibitory effect of adrenaline. Cocaine and ergotoxine produced no visible effect when used alone.—*Authors (courtesy Wistar Bibl. Serv.).*

ANIMAL PATHOLOGY

MORBID ANATOMY

E. W. GOODPASTURE, *Editor*

C. EUGENE WOODRUFF, *Assistant Editor*

(See also in this issue Entries 9459, 9496, 9526, 9632, 9731, 9868, 9905, 10157, 10165, 10197, 10211, 10248, 10252, 10256, 10276, 10311, 10386, 10399, 10414, 10447, 10465, 10472, 10574, 10587, 10607, 10608, 10662, 10697, 10717, 10729, 10876, 11263, 11280, 11299, 11302, 11410, 11420, 11426, 11429, 11431, 11447)

10314. BARBÁRA, MARIO, (preface by MICHELI). La costituzione degli eredotuberculosi, studio clinico costituzionalistico sulla eredopredisposizioni alla tubercolosi. [Constitution of hereditary tuberculosis and clinical study of hereditary predisposition.] L. Cappelli: Bologna, 1929.

10315. BARLARO, PABLO. Estudio etiológico-histórico sobre los reumatismos. En especial lo referente a su orígen infeccioso. [Etiology of rheumatism.] *Prensa Méd. Argentina* 15(30): 1303-1316. 1929.—Review of recent literature.—*E. A. Molinelli.*

10316. BENTIVOGLIO, G. L'anemia di Biermer nell'infanzia. *Haematologica 1. Arch.* 10(6): 531-564. 1 pl., 3 fig. 1929.—Author describes 2 cases of cryptogenetic pernicious anemia in infants (5-6 mos.) characterized by augmentation of hemoglobin index and megalocytosis. One case was cured with liver medication, the other was fatal after 48 hrs. While leukopenia and thrombocytopenia may be lacking in infantile pernicious anemia, they usually appear later, although to a less degree than in the adult. The paper has an exhaustive literature on infantile hematology, especially as regards grave anemias.—*N. A. Michels.*

10317. BIEDERMANN, W., und K. HÖFER. Ergebnisse der Züchtung von menschlichem Xanthomgewebe in vitro. *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 10(1): 93-100. 8 fig. 1930.—Material from a case of xanthomatosis of the dura mater and bones of the skull (in Christian's syndrome) was explanted on chicken plasma followed by transfer to a base of chicken plasma and chick embryo extract 10: 1, and covered with a mixture of patient's serum, chicken plasma, and chick embryo extract 5: 1. The cultures lived 18 days. Mature cells showed double refraction similar to xanthoma cells in histologic section. Their form, type of movement, presence of numerous long, fine cell processes, as well as an almost homogeneous sphere in the neighborhood of the nucleus, pointed to a reticulo-endothelial origin. The latent period of 5-7 days showed by the culture was relatively short when compared to embryonic tissue on the one hand and mature on the other; it indicates a highly potent group of cells.

10318. BÜCHNER, FRANZ. Die Histologie der peptischen Veränderungen und ihrer Beziehungen zum Magenkarzinom. [Histology of peptic changes and their relation to stomach carcinoma.] 2 pl., 37 fig. Gustav Fischer: Jena, 1927. Pr. 12 M.

10319. BURRUANO, CALOGERO. Rapporto dell'ovaio e della tromba con l'appendice. [Relations between ovary, tube and appendix.] *Monitore Zool. Ital.* 40 (11/12): 538-540. 1930.—In 35% of 160 women observed, the appendix had a decidedly pelvic position. In 40 cases its length was more than 10 cm., in 16 cases more than 14 cm. In such cases the appendix was touching the right ovary and tube. Ligaments directly connecting tube and appendix were never found. The association of diseases of appendix and tube is to be explained generally by the contact between the 2 organs, not by the existence of special connections of lymphatic vessels or of ligaments and plicae.—*E. Padoa.*

10320. CAPECCHI, EGISTO. Teratoma mammario in sede inguinopubica. [Mammary teratoma in the inguinopubic region.] *Arch. Ital. Chir.* 26(4): 485-496. 12 fig. 1930.—The tumor, in a man of 68, had within 3 yrs. become considerably enlarged and secreted a fluid resembling fetid milk. Histologic examination on removal indicated its nature as a mammary teratoma.

10321. CATTANEO, L. Sul comportamento dei megacariociti nell'infezione vaccinica sperimentale. [Behavior of megakaryocytes in experimental vaccinal infection.] *Haematologica 1. Arch.* 11(4): 257-266. 5 fig. 1930.—Neurovaccine (from the Institute Pasteur of Athens) inoculated into rabbits produced an intense megakaryocytosis characterized by the appearance of young forms (polykaryocytes). With inoculations of dermovaccine only a slight increase of megakaryocytes was noted.—*N. A. Michels.*

10322. CHIARI, HERMANN. Zur Pathologie und Histologie der generalisierten Torulose. (Blastomykose.) *Arch. Dermatol. u. Syph.* 162(2): 422-441. 10 fig. 1930.—The author reports the autopsy findings on the patient (reported by Urbach and Zach) who died from bronchopneumonia caused by pneumococcus. Small abscesses in the kidney containing almost exclusively eosinophils, leucocytes and yeast cells were interpreted as the earliest blastomycetic lesions. This destruction of the tissue was soon followed by proliferation of fixed connective tissue cells predominantly from the adventitia of the smaller

arteries. The giant cells form from adventitial elements by amitotic division. Thus a granulation tissue is formed from young epithelioid-like fibroblasts and giant cells, with a few lymphocytes and plasma cells. Yeasts are found in these granulomas almost entirely in giant cells or large mononuclear cells. The form and size of the yeast cells vary and degenerated forms are evident. This granulomatous tissue may then be replaced by a larger abscess preceded by a sort of caseation. The oldest lesions, as those in the lung, mouth, stomach and intestine, as well as in the lymph nodes, no longer show characteristic granulation tissue elements. These are replaced by tissue rich in collagen fibers with a few lymphocytes and plasma cells. A few yeast cells can still be seen. A large amount of iron-containing pigment is present and some of the veins are dilated. The authors believe that the various stages in the tissue reaction depend on the variability of local allergy and anergy.—*S. W. Becker.*

10323. CHORONSHITZKY (CHORĄŻYCKI), B. Sr. Topographie und Mechanik der Gaumenmandeln. *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 63(10): 1058-1074. 31 fig. 1929.—From review of literature and his own clinical experience, the author concludes that the tonsillar anlage, when embedded in a deep tonsillar recess, develops under heightened positive pressure, which causes the peritonsillar tissue to form in concentric layers, constituting the rudiments of the capsule of the deeply buried tonsil. The pedunculated tonsil has no capsule. Pathologically the 2 types of tonsils, the pedunculated and the capsulated, are distinguished by the fact that the former can of course have no subcapsular abscess and discharges the tonsillar content much more easily than the encapsulated. A bilobate tonsil is the result of the persistence of the embryonic intratonsillar fold. The capsule covers the upper and under surfaces of the tonsil like a cap, which extends over the fossa supratonsillaris also; the edge of the cap divides the mucosa of the lateral pharyngeal wall from the mucosa covering the tonsillar recess ("Mandelbucht"). Owing to this cap the enucleated tonsil in frontal section has the outline of an arabic 6, on the back of which a subcapsular abscess forms an excrescence of varying size.

10324. CONDORELLI, LUIGI. Sull'importanza delle lesione infiammatorie del plesso sottoepicardico dell' orecchietta destra nella patogenesi di alcune turbe del ritmo cardiaco. [Inflammatory reactions of the subepicardial plexus of the right atrium in the pathogenesis of some disturbances of cardiac rhythm.] *Riforma Med.* 44(21): 613-616. 4 fig. 1928.—A study of the distribution and topography of the subepicardial ganglia in the region surrounding the sulcus terminalis. In clinical cases with auricular fibrillation and nodal rhythm, there exist extensive inflammatory lesions circumscribed by these ganglia. Possibly some disturbances of cardiac rhythm, especially auricular, can result from anatomical alterations in the ganglia.—*L. Condorelli (transl. by J. G. Edwards).*

10325. COOKE, W. E., and C. F. HILL. Microscopical studies in pernicious anaemia. I. *Jour. Roy. Microsc. Soc.* 50(4): 427-432. 2 pl. 1930.—The erythroblast, a term comprising normoblasts, megaloblasts, and microblasts, may be found in the blood stream as a first or second generation cell. The first generation cells undergo mitosis and are found in various stages from the resting nucleus to late telophase and daughter cells. After reconstruction the second generation nucleus disappears by simple karyolysis, or by pycnosis and karyolysis, or by pycnosis, karyorrhexis and karyolysis combined. Nuclear remains in the form of Howell-Jolly bodies and Cabot's rings, and a third type—that of irregularly shaped particles of chromatin—are described. Chemical inadequacy of the red cells is suggested by the active phagocytosis of them by the reticulo-endothelial cells of the marrow, the almost complete absence of rouleaux formation, the frequency of auto-agglutination and the so-called endoglobular degeneration or vacuolation. By dark ground illumination the red cells in pernicious anemia are not all bi-concave; some appear biconvex and some almost globular in shape.—*W. E. Cooke.*

10326. CROSETTI, L. Il reperto ematologico negli stati di ipertiroidismo. [Hematological findings in states of hyperthyroidism.] *Haematologica 1. Arch.* 11(4): 283-320. 1930.—In 19 cases of Basedow's disease the author found augmented regeneration of red cells, the ratio of circulating reticulocytes (granulophilocytes) varying from 14 to 35%. Globular values of the red cells and of hemoglobin percentage were likewise above normal. Aside from an increase of lymphocytes, the white blood cells showed no appreciable variations. Augmented erythropoiesis is ascribed to increased thyroid secretion by virtue of which the maturation of the red cells is hastened. This thesis was substantiated by obtaining reticulocyte increases in 2 pernicious anemia patients (10-32%, 45-75%), in rabbits (25-47%), and in guinea pigs (25-36%) with injections of thyroxin. The paper cites an extensive literature on reticulocytes (granulophilocytes).—*N. A. Michels.*

10327. CZYGAN, EVA. Kavernöse Phthise im frühesten Säuglingsalter und ihr histologisches Bild. (Ein Beitrag zur Frage der exsudativen und produktiven Tuberkulose.) *Arch. Kinderheilk.* 87(2/3): 208-222. 2 fig. 1929.

10328. DALLA PALMA, M. Sul significato delle ombre nucleari di Gumprecht. [Significance of the nuclear shadows of Gumprecht.] *Haematologica 1. Arch.* 11(4): 321-336. 1930.—Morphologically altered leucocytes known as nuclear shadows, nuclear remains, free nuclei, smudges, plaques reticulées, the diameters of which varied from 25 to 35μ, do not exist as such in the circulating blood. Their presence in smears is due to artifact, i.e., traumatic manipulation. Varying from 0 to 8% in normal smears, the structures are of greater frequency in blood of myeloid leukemia; in lymphatic leukemia they may be encountered in ratios of 18-70%. The intense production and destruction of leucocytes characterizing leukemia accounts for these high percentages in the sense that excessive maturation as well as excessive immaturity may be the cause of the lability of the leucocytes in question. Production of these leucocytic variations may be avoided by the large drop method commonly used in the study of malarial parasites. With this method smudges are entirely absent or reduced to a minimum. In ordinary smears nuclear shadows have no diagnostic or prognostic value except when they are extremely numerous; they then indicate abnormal lability of the leucocytes and the existence of grave hemopoietic lesions.—*N. A. Michels.*

10329. DOLFINI, G. Lo stadio precollageno dell'organizzazione del trombo (con due microfotografie). [Precollagen stage in the organization of a thrombus.] *Arch. Sci. Med.* 53(2): 120-128. 2 fig. 1929.—In the process of thrombus organization the collagen fibers are preceded by a reticulum, of variable rate of development, which may be demonstrated by the Del Rio Hortega method for reticular fibers, and partly also by the Mallory method for connective tissue. This precollagenous reticulum is closely related to the newly formed capillaries.—*G. Dolfini (transl. by A. M. Sala).*

10330. ERDMANN, R. Änderungen morphologischer, histologischer und physiologischer Natur des späteren Tumorträgers durch die verschiedenen Methoden, experimentellen Krebs zu erzeugen. *Zeitschr. Krebsforsch.* 32 (6): 628-631. 1930.—The author studied the changes in rats (susceptible and resistant strains) injected with tumor-producing filtrate used in earlier experiments. Immediately after the inoculation splenic congestion with occasional hepatic congestion occurred, and within a week a pronounced hemosiderosis in the spleen, and at times deposition of fat, especially in the peripheral follicles. The kidneys showed similar degenerative changes. Liver changes were more specific: innumerable and persistent areas of minute necrosis, which were the more numerous the less the tendency to tumor development. In addition there were proliferation of the

tissues of Glisson's capsule and infiltration (of endothelial cells?). The significant difference between potentially tumorous animals and resistant ones was the persistence in the latter of a far-reaching mobilization of the reticulo-endothelial system throughout the liver. In animals with tumors appearing in vitamin deficiency, in addition to marked degenerative changes (largely of fat deposition), there was localized overgrowth of the reticulo-endothelial system, which may be the site of later tumor development.—*H. E. Eggers.*

10331. ERDMANN, R. Wirkung von tumorzellfreiem und tumorzellhaltigem Material auf Leber, Milz und Niere von konstitutionell geeigneten und ungeeigneten Tieren. *Zeitschr. Krebsforsch.* 33(3): 189-218. 1 fig. 1930(1931).—In exceptional cases the author reports successful sarcoma induction by injection of cell-free material. After such injection, a common type of reaction was observed in liver, spleen, and kidney. In the liver there was a marked hyperplasia of the reticulo-endothelial cells, large accumulations of them being formed, with later necrosis in these areas. Later, there were hyperplasia of Glisson's capsule and cellular infiltration. In the spleen there were first congestion, later fatty degeneration of the pulp and occasional necrosis of the follicular cells. In the kidney there were early cloudy swelling, epithelial desquamation, and at times eosinophilic infiltration. With the appearance of tumor the changes of the reticulo-endothelial system, except the necrosis, disappeared; the difference between susceptible and insusceptible animals seemed to rest in the persistence in the latter of a stimulated reticulo-endothelial system which prevented the accumulation in sufficient amount of the tumor-causing agent; an additional indication of this reticulo-endothelial alteration was found in the form of fat deposition in the Kupffer cells of the livers of resistant animals, which was followed by extensive fatty infiltration of the parenchymatous cells. The author regards splenic changes as of essentially the same character. It was impossible to determine whether the renal changes were merely of accessory or of primary importance.—*H. E. Eggers.*

10332. FONTANA, LUIGI. A proposito dei cosidetti "eritroconti" descritti da Schilling nell'anemia perniciosa. [So-called "erythrocontes" described by Schilling in pernicious anaemia.] *Arch. Sci. Med.* 53(2): 65-78. 1929.—In many cases studied to control Schilling's findings both in cases of pernicious anemia and other blood diseases, the author noted that a distinction, which Schilling fails to make, must be made between certain extremely rare tiny rods, demonstrable in the dry preparation with the Giemsa stain, and other much less rare tiny rods demonstrable with basophilic vital stains (Nile blue). At any rate both kinds of rods must be considered as peculiar formations of the pathologic globular structure and not pathognomonic for any blood disease, being met only inconstantly in pernicious anemia and, on the other hand, being present in other blood conditions. Therefore the author denies these erythrocontes the importance attributed to them by Schilling.—*L. Fontana (transl. by A. M. Sala).*

10333. HENKE, F., und O. LUBARSCH. Handbuch der speziellen pathologischen Anatomie und Histologie. Band 6, Teil 3. 913p. Julius Springer: Berlin, 1931. Pr. 184M.

10334. HENSCHEN, FOLKE. Die Reaktion der fixen Mesenchymzellen bei der Entzündung. *Acta Path. et Microbiol. Scand. Suppl.* 5: 10-13. 1930.—Fibroblasts are transformed into epithelioid cells and giant cells. Regeneration of fat cells and mesothelial cells is reported. Different reactions of the histiocytes as well as the development of the histiocytes into epithelioid cells, giant cells and monocytes are treated. Changes of endothelial cells of the blood vessels are pointed out.—*M. Silberberg.*

10335. HILL, L. G. Lymphangioma of the abdomen. *Lancet* 219(5591): 897-899. 2 fig. 1930.—Case in boy 8 yrs. of age. Microscopic findings are given and attempts to explain the origin of such tumors are reviewed.

10336. INNES, J. R. M. Arterio-sclerotic kidney (primary contracted type) and secondary contracted kidney in the dog. *Vet. Rec.* [*London*] 10(31): 698-702. 6 fig. 1930.—Of 2 cases of nephritis described, one shows extreme sclerosis of the arteries in the boundary zone and the cortex, with much calcification and abundant connective tissue proliferation. The other shows atrophy of the cortex with but little of the normal structure of the cortex remaining. The arteries were well defined and showed no traces of sclerosis.—*L. W. Goss.*

10337. JONESCU, P. Über das Vorkommen von Geschwulstzellen im strömenden Blut von Tieren mit Impftumoren. *Zeitschr. Krebsforsch.* 33(3): 264-280. 1 fig. 1930.—In mice with successfully implanted sarcoma, the author found in blood withdrawn from the heart of living animals, with great frequency, atypical cells with lipoidal granulations, and with very frequently mitotic nuclei, the counterparts of which were absent in normal animals. Inasmuch as tumor massage increased their numbers, Jonescu interprets them as detached tumor cells which have entered the circulation.—*H. E. Eggers.*

10338. KELLER, HANS. Beitrag zum qualitativen Blutbild bei der Tuberkulose. 29p. Dissertation, Univ. Zürich, 1928.—Comparison of 12 cases having a good prognosis and showing a proliferative reaction with 12 cases (confirmed at autopsy) having an exudative reaction and intestinal involvement revealed that the neutrophiles undergo toxic changes in tuberculosis as in other infectious diseases. Nuclear changes, i.e., reduction in the number of segments and clumping of the chromatin, were found in all cases but were more prevalent in the exudative type. The principal cytoplasmic change, "toxic granulation," occurred in relatively few cells in proliferative cases but was present in a large percentage of the neutrophiles in exudative cases. This "toxic granulation," characterized by the presence of large, irregular, deeply staining granules in the cytoplasm of the neutrophiles, had a direct relationship with the type and severity of the cases.—*C. M. Goss.*

10339. KIMURA, REN. Züchtung von Hühnermyxosarkom in vitro. II. *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 10(2): 174-177. 1930.—The author grew 142 generations of myxosarcoma in only 27 of which was it necessary to add heart tissue. Much mucus appeared in vivo and in vitro; after the 7th passage there was thickening in the middle of the culture, central necrosis, vacuole formation, and increase in refraction which decreased with the addition of heart tissue or after the 40th generation; the later generations produced as much mucus in vivo, however, as did the earlier more mucous generations, or as in chick to chick transfer. In the 1st generation the growth of round cells was pronounced, and they could phagocytose carmine or trypan blue; they did not appear after 1-2 generations, but reappeared for 2-3 generations after any addition of heart tissue. Spindle cells appeared in the 1st generation, were not phagocytic, and soon constituted the entire culture; there were no demonstrable differences between these cells and fibroblasts except that the former underwent pronounced vacuole formation and growth ceased in time; mitotic figures were observed sometimes. Chickens (13) on whom the cultures were tested for malignancy usually died within a month. No metastases to internal organs occurred. No relation between malignancy of tissue and its round cells was found.

10340. KLINKE, K., und H. PAHLKE. Dysostosis cleidocranialis. Bericht über 2 Fälle. *Arch. Kinderheilk.* 91(1/2): 46-54. 8 fig. 1930.—The authors describe 2 cases and suggest that in the fully developed aspect of the disease it is a question of a primary disturbance of membranous ossification, analogous to osteogenesis imperfecta, which is limited to bones formed from cartilage. Close relationship to the hypophyseal "geographical" skull, or to fibrous osteitis, cannot be demonstrated. Anti-rhachitic measures are useless.—*A. Ehrenfried.*

10341. KRAUS, ERIK JOHANNES, und OLGA TRAUBE. Über die Bedeutung der basophilen Zellen der menschlichen Hypophyse. *Virchow's Arch. Path. Anat. u. Physiol.* 268(2): 315-345. 1928.—Examination for basophil cell content of the anterior lobe in 232 human hypophyses from normal and pathological subjects indicated that normal persons with medium constitution (mesosthenic habitus) in normal nutritional conditions possess a certain constant quantity of basophil cells. A marked increase of these cells occurs in normal persons with hypersthenic habitus, and also in patients suffering from diseases which primarily affect hypersthenic constitutions (high blood pressure, vascular sclerosis, renal cirrhosis, etc.). Most asthenics (persons with diabetes mellitus, pulmonary tuberculosis, or cancer cachexia) and patients with hypoplastic, atrophic, or badly damaged adrenals show a diminution in basophil content. Cases showing large adrenals with much doubly refracting lipoid generally have an increase in basophil cells. These facts warrant the hypothesis that there are certain relations between the basophil cells of the hypophysis and the constitutional type, as well as blood pressure and the amount of blood or adrenal cholesterol. —*P. Vonwiller.*

10342. MACDONALD, G., A. P. PIGGOT, and F. W. GILDER (with note on the chemical examination of the lung by FRANCIS ARNALL, and E. A. RUDGE). Two cases of acute silicosis, with a suggested theory of causation. *Lancet* 219(5590): 846-848. 1930.—Two fatal instances of pulmonary silicosis are reported in women employed in packing a cleaning powder containing ground silica. The deaths occurred after a relatively short period of exposure to the substance and from this the authors constructed the theory that the alkali in the cleaning powder hastened the process by converting the silica, when taken into the lungs, into a colloidal state. Chemical analysis of the lungs of the patients for the silica content and the state in which it existed indicated "the presence in the affected lung of: combined silica, free silicic acid derived from combined silica, and original crystalline silica. The amount of iron in the lung was sufficient to satisfy the combined silica present." These findings seem to prove the theory advanced. Cleaning powders containing alkali, soaps and silica, should be made by the wet process. The presence of alkali dust is always dangerous when combined with that of silica.—*C. J. Bucher.*

10343. MARINESCO, G., und STATE DRAGANESCO. Beiträge zum Studium der primären infektiösen diffusen Neuritiden. (Versuche einer Entgliederung der Gruppe der Polyneuritiden.) *Deutsche Zeitschr. Nervenheilk.* 112 (1/3): 44-74. 11 fig. 1930.—A woman, aged 45 yrs., presented for several months the symptoms of polyneuritis with ataxia. Histological examination revealed inflammation of the peripheral nerves, muscles, and suprarenal capsules, and to a lesser degree of the central nervous system. This case belongs to the group of diffuse infectious polyneuritides—produced by a neurotropic virus—which are true "septineuritides" (Nicolau). Pathologic study of 10 rabbits, intracerebrally inoculated with a neurovaccine, showed extension of the virus into the peripheral nerves.—*G. Marinesco (transl. by A. M. Woodruff).*

10344. MAUSS, KARL. Zahnanomalien bei Idioten und Imbezillen. *Deutsche Zahnärztl. Wochenschr.* 32 (18): 1-31. 1929.—The incidence of hypoplasia of the enamel, true (primary) diastema, abnormally high palatine arch, and certain types of malocclusion in 130 imbeciles and 51 idiots was 4 or 5 times greater than in the general population. The incidence of certain other anomalies was also high. The author concludes that these anomalies are to be regarded as stigmata of degeneracy etiologically ascribable to disturbance of the endocrine apparatus, particularly the hypophysis and parathyroids.—*S. W. Chase.*

10345. MAY, CHARLES H. Manual of the diseases of the eye. For students and general practitioners. 13th ed. rev. 461p. 23 col. pl., 374 fig. Wm. Wood & Co., Inc.: New York, 1930. Pr. $4.

10346. MEISSEL, M. N. Über die Wirkung der Röntgen- und Radiumstrahlen auf das Nervengewebe. I. Reaktion der Hautnerven bei Röntgen- und Radiumbestrahlung. *Virchow's Arch. Path. Anat. u. Physiol.* 276(1): 77-94. 7 fig. 1930.—Irradiation of the skin of 35 white mice produced hyperplasia of the epithelium and enlargement of the subepithelial and intraepithelial nerves. Changes in the hair follicles were connected with important changes in the hair nerve apparatus. The circular fibers of this apparatus proliferated and new fibers penetrated the epithelium until the proliferating portion of the nerve was completely reconstructed. The palisade portion of the apparatus did not proliferate, but sometimes degenerated. Atypical epithelial growths, bulbous or cystic, were all supplied with nerves which penetrated between the individual cyst cells. A large number of Langerhans' cells were observed in the proliferated epithelium. Similar changes were observed in connective tissue which had undergone inflammatory changes. Subcutaneous application of radon produced marked changes in the tissues and nerves with degeneration at the periphery of the radon tube. Large doses of radon caused tissue necrosis, similar to that caused by nerve section, with rapidly following regeneration. The epithelial layers regenerating the injured region are supplied with nerves which turn in the direction of the new growth and run to its end. Frequently, excessive nerve supply in the regenerating epithelium gives an atypical appearance to the nerve net and branches of the intraepithelial nerves. Mitoses occurred most frequently in new-formed epithelium in the neighborhood of the nerve. After irradiation, regenerating nerves in the region of necrosis often exhibited irregular branching. The peripheral nerve formations are to be regarded as structures in unstable equilibrium which change with the changes in the surrounding tissues.

10347. MENDOLA, GIUSEPPE, e GIUSEPPE AGOSTA. Lesioni articolari sperimentali da "Monilia tropicalis Castellani." *Arch. ed Atti Soc. Ital. Chir.* 34: 645-653. 1927[1928]; also in *Morgagni* 70(15): 721-741. 1928.—Injection of this organism into the articular cavity in guinea pigs caused an acute reaction lasting 10-15 days, and a permanent functional disturbance. Miliary nodules were found consisting of lymphoid cells, leucocytes and new vascular spaces between the lining and the underlying tissue; also, proliferation of the endothelial cells of the synovia and formation of new tissue here, which may protrude into the sac. The lesion is exudative and proliferative, causing thickening and adhesions. There is intense proliferation of the cartilage cells, necrosis, then new growth of the epiphyseal bone, and a proliferative reaction distally between muscle and tendon. Injection into the vascular stream may kill the animal in 20 days.—*E. A. Baumgartner.*

10348. MENON, T. BHASKARA. A technique for making a more or less complete post-mortem examination through an incision in the upper abdomen. *Indian Jour. Med. Res.* 15(4): 907-908. 1928.

10349. MEURMAN, Y. Beobachtungen an diffuseiternden und nekrotisierenden Innenohrentzündungen mit besonderer Berücksichtigung der Pathologie der Schneckenwasserleitung und der Nervendurchtrittsstellen. *Acta Soc. Med. Fennicae "Duodecim"* [*Suomalaisen Lääkäriseuran Duodecim'in*] 13[Ser. B](1): 1-118. [Art. 2] 21 fig. 1930.—In 16 of 18 human cases of otitis interna studied, the ear not primarily affected was also histologically examined. The inner ear was infected (in rabbits) either directly or indirectly from the middle ear after chemical injury to the membranes of the fenestrae. A collection of slides from the inner ear of intrameningeally infected dogs were also examined. All these seem to show that a necrosis of the inner ear can result from different factors (hydrops, direct action of bacteria and toxins, and vascular injury). The human material seemed to show that meningitis of labyrinthine origin more often proceeds from a suppurating than from a

necrotized inner ear. Although a certain amount of necrosis develops after suppuration, meningeal inflammation more often takes place at a suppurative stage and does not require more penetrating necrosis. Animal experiments indicated that even with a severe necrosis the infection may be limited to the inner ear through the copious exudation of leucocytes, due to necrotizing bacterial action. In suppurating otitis interna, after fenestral infection, the nearest avenues of infection may be more exposed. In otitis interna due to arrosion of the labyrinthine capsula, those parts nearest the original spot of infection do not appear to become infected earlier. In diffusely necrotizing inflammation all the "performed avenues" are generally rather equally diseased. In most of the human cases the inflammation proceeded toward the meninges through the modiolus, secondly through the nerve canals of the vestibule, especially through those of the area maculae sacculi and lastly by way of the aquaeductus cochleae. In many cases many of the preformed avenues were simultaneously affected. In adults, owing to the anatomic structure of the canal, pathogenic germs rarely wander from the inner ear through the cochlear aqueduct to the meningeal spaces. In children the aquaeductus cochleae has a greater pathologic significance, as the narrow section of the canal is shorter. In occasional adult cases in which the lumen of the canal is open throughout, infection of the meninges may take place through the canal, as indicated also by some of the animal experiments. In the human cases examined the source of the inflammation from the meninges to the inner ear of the secondarily affected side is most frequently through the canal of the modiolus, then the aquaeductus cochleae, rarely by way of the canals of the vestibular areae foraminosae. Contrary to human pathology, the germs in rabbits and dogs are frequently conducted through the aquaeductus cochleae. —*From author's summary.*

10350. **MONTEIRO, HERNÂNI, e AMÂNDIO TAVARES. Sesamoideus e corpos estranhos articulares. [Sesamoid and extraneous articular bodies.]** *Arquivo Anat. e Antrop.* [*Lisboa*] 13(1/2): 157-172. 6 fig. 1929 1930.—The authors report several cases of intra-tendinous sesamoids, among which there is one of the left rhomboid. In 1 case the close connections of the foreign articular bodies with the capsular sheath were actual capsular incrustations. These concretions are osseous neoformations related to the sesamoids found in some muscles, and representing simple pathological productions of small posttraumatic osteomas in relation with a metaplasia of the interstitial connective tissue.—*H. Monteiro* (*transl. by P. L. Risley*).

10351. **[OMOROKOVA, L. I.] ОМОРОКОВА, Л. И. К патологической анатомии хронического энцефалита с резко выраженной липоидой дегенерации и появлением особых продуктов обмена (ателa) и включений. [Pathological anatomy of chronic encephalitis with lipoid degeneration, α bodies, and infiltrates.]** Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 78: 143-181. 1926.—An excised fragment of the cerebral cortex in a case of Kozhevnikov epilepsy showed changes in ganglial cells and fibers, in glia, and vessels. Minute crystalline formations around the nuclei led the author to suppose that the nuclear region gives rise to α bodies. The patho-anatomical process was characterized by sharply degenerative changes of ganglial cells, destruction of neurofibrillae, break-up of the lipoids of protoplasm, liberation of decay products of fats and fatty acids. Sheaths and vessels were severely affected with endoarteritis, hyalin transformation and infiltrations, and lymphoid elements. The author concludes that the toxic elements came from the vascular system.

10352. **PIRES de LIMA, J.-A. Tumeur congénitale de la région frontale.** *Ann. Anat. Path. et Anat. Normale Méd.-Chir.* 7(3): (1-2). 1 pl. 1930.

10353. **POMMER, G. Mikroskopische Untersuchungen über Gelenkgicht. [Microscopical investigations of articular gout.]** 168p. 102 fig. Gustav Fischer: Jena, 1929. Pr. 12 M.

10354. **REDAELLI, PIERO, e MARIO TIMPANO. Sulla presunta natura micosica delle splenomegalie granulomatose siderotiche. [The alleged mycotic nature of siderotic granulomatous splenomegaly.]** *Boll. Soc. Ital. Biol. Sper.* 3(6): 777-778. 1928.—Comparative histopathological and microchemical observations on 4 human cases and on considerable experimental material from laboratory animals into which *Aspergillus fumigatus, Antennaria* sp. and *Macrosporium commune* had been introduced to cause true mycosis, indicated that the characteristic formations described in the walls of the splenic vessels and in the nodular centers of the human spleen (nodules of Gamna) are not of mycotic nature, but degenerated formations of elements of the mesenchymal system, impregnated with Fe and Ca.—*P. Redaelli* (*transl. by A. E. Taft*).

10355. **SCHREIBER, ERNST. Über hereditäre, multiple, cartilaginäre Exostosen.** 48p. Dissertation, Univ. Zürich, 1927.—Five persons in 3 generations of one family were affected. In addition to the exostoses, they showed retardation of growth, due to hypofunction of epiphyseal cartilages, and involving, besides the long bones, the metatarsals, phalanges and metacarpals in most of the cases. The condition is not rachitic, but is a system disease sui generis.—*E. Schreiber* (*transl. by R. C. Whitman*).

10356. **SCHROFF, JOSEPH. Fundamentals of pathology.** 109p. 40 illus. Wm. A. Broder: New York, 1929. Pr. $2.50.

10357. **SCHUBACK, A. Ein Kollisiontumor des Magens.** *Zeitschr. Krebsforsch.* 33(1/2): 126-132. 1 fig. 1930. —A case of associated gastric carcinoma and lymphosarcoma, the latter also apparently primary in the stomach. —*H. E. Eggers.*

10358. **SCHÜRCH, O. Studien über Präcancerosen mit besonderer Berücksichtigung des experimentellen Röntgencarcinoms. II, III.** *Zeitschr. Krebsforsch.* 33(1/2): 1-34; 35-75. 1 fig. 1930.—II. Precancerous changes in the rabbit's ear as brought about by the x-ray are described. Induction of cancer by this means in this animal was not easy, 2 or more years were required, and a relatively massive dosage, precaution being necessary, however, that no single dose was sufficient to produce tissue necrosis. Properly calibrated dosage alone was not sufficient, since in over 20 instances even with this, no cancer developed. Up to the point of actual tissue defect, there were no differences in the reaction type. But at this time there were evident differences in reaction in the case of the lesions which eventually became cancerous. In the non-cancerous ones, there eventually appeared a central perforation, which was preceded by the appearance of small but typical warty lesions. In some instances there was no evidence of preceding atrophy, while in others this was prominent; in the former type the warts continued to grow during the period of exposure but did not become cancerous. In still other cases there was early, extensive, but delimited necrosis. In those lesions which proved to be precancerous the course of events was atrophy, perforation, and apparent repair, but with the successive and continued appearance of small erosions, with final hyperplasia at these points and the usual, but not invariable, development here of cancer. In these cases the cancer did not form as a regular part of the peculiar inflammatory reaction, but only through a peculiar evolution of this. So that x-ray dermatitis in general is to be regarded as precancerous only in the practical sense; cancer in these circumstances appears as a secondary, non-essential change; and in a morphological sense the precancerous lesion would be restricted to the secondary erosive changes described here. III. In a general discussion and summary of the phenomena, the author takes the position that precancer does not represent so much a condition of an actual definite disease type, as an intermediate phase between a normal organ and one that is cancerous. This phase is characterized

morphologically by proliferative epithelial changes, with atypical arrangement of these and abnormally formed cells and nuclei, accompanied by reactive changes in the underlying connective tissue. Even these changes are not necessarily precancerous, since even here they are of distinctly reversible character. Just as important in the conception of precancer is the history, as concerns character of the irritant, the terrain irritated, in the widest sense,—race, localization, nature of tissue, heredity, possible metabolic or endocrine functions,—and the the details of action of the irritant.—*H. E. Eggers.*

10359. **SCOTT, H. H. Tuberculosis in man and lower animals.** *Privy Council Med. Res. Council [Gr. Britain] Spec. Rep. Ser.* 149. p. 1-270. 1930.—This study is based on 150 autopsies on animals from the Zoological Gardens of London and 300 post mortem findings in subjects dying from tuberculosis. A relative absence of this disease is due to relative isolation and consequent freedom from exposure to infection. This also holds true for wild animals. In cattle, tuberculosis may remain localized, or the serous membranes may demonstrate the typical "pearl"—or "grapes"—formation. The anatomical characters of tuberculous lesions in dogs are quite peculiar, often revealing whitish, circumscribed tumors in lungs, liver and kidneys, without the usual histological picture of giant cells, epithelioid or small lymphoid cells. The infection of all examined cats was the bovine type, no infection with human type could be found. While the lesions of liver, spleen, lymph glands and lungs in gallinaceous birds are due to the avian type, parrots and canaries are susceptible to both the avian and the mammalian types. The existence of tuberculosis in wild animals under natural conditions is highly improbable. Tuberculosis in captive wild animals takes a rapid course as those animals have little power of resistance, not having been previously in contact with infection. Monkeys, and especially the New World Cebidae, show almost no resistance to infection. As the respiratory tract acts as the commonest portal of entry and the lymphatic system provides the principal channel for the distribution of tuberculosis, the author studied the arrangement of plexuses and the lymphatic drainage by injecting every drainage system. While the theory of hereditary transmission of constitutional predisposition to tuberculosis is fading more and more, the occurrence of congenital infection via the placenta, the umbilical vein or during labor can not be denied. Almost 70% of the 300 autopsies performed show that mouth and nasal passages were the primary portals for infection; the number of infected children below the age of 10 years was 225. The presence of tuberculous mediastinal glands not only indicates a pulmonary focus but also the side where the focus should be found. Only 32 cases were definitely of alimentary origin and 24 died of meningeal tuberculosis. Of these cases with terminal meningitis 4.4% were children and 20% adults. Involvement of the urinary tract alone is as rare as the tubercular infection of the internal genitalia. The author stresses Cummins' classification of tuberculosis in "natural" and "modified" types. Natural tuberculosis, or the action of tubercle bacillus in man or animal not immunized against the toxin of the bacillus, is the character of tuberculosis in young people and children, while the modified type usually is a secondary infection or reinfection, characterized by fibroid changes around the lesions, and mainly local in its spread. Pulmonary hemorrhages occur only in the modified disease. In tuberculous septicemia, miliary tuberculosis is the predominating type, but the typho-bacillosis of Landouzy is not uncommon. The 3rd group, the transient tuberculous bacillemia, where the bacillus can be found in the blood, may yield some 20-25% positive cases. Wild birds in captivity show the alimentary tract as the common portal of entry for the bacillus. The subperitoneal tissue, the mucous membrane and the duodenum are first in the line of organs demonstrating infiltrations and ulcerations, the liver and spleen come second and the lungs third on the list. Reptiles and all the poikilothermic animals may show 3 types of tubercle bacilli: the ordinary saprophytes, the human type, and the piscine tubercle bacillus, highly pathogenic for reptiles, fish, frogs, adders, and slowworms. In regard to mycosis in mammals, the author found that when tuberculosis and mycosis are associated in man, it is usually an implantation of the latter on the former. Mycotic infection is not usually associated with emaciation and the wasting is rare, even when tuberculosis and actinomycosis exist simultaneously.—*P. J. Trudel.*

10360. **SEGA, A., e A. BRUSTOLON. Leucemia monocitica o reticulo-endoteliosi leucemica?** *Haematologica 1. Arch.* 10(6): 471-506. 2 pl. 22 fig. 1929.—The authors report the histopathologic findings in a case of acute leukemia characterized by a remarkable increase of leucocytes (38.193) of which nearly 50% were monocytic elements. That the latter were derived from the reticulo-endothelial system was indicated by the numerous transition stages and by the existence of a generalized hyperplasia of the reticulo-endothelial cells. Presence of a small proportion of immature red corpuscles (2%) gave evidence of a primary lesion in the erythropoietic system. The case is accordingly classified as an erythro-leukemia, type acute monocytoid leukemia. The paper has an extensive literature on the monocyte, on monocytoid leukemia, and on endotheliosis.—*N. A. Michels.*

10361. **TAYLOR, J., D. STIVEN, and E. W. REID. Haemochromatosis in a depancreatised cat.** *Jour. Path. and Bact.* 34(6): 793-797. 2 pl. 1931.—In a chronic diabetic cat, depancreatised and not supplied with insulin, killed at 32 weeks after depancreatisation, intense deposits of hemosiderin were found in the liver parenchyma, and slighter deposits in spleen, lymphatic glands, and kidney. In addition, the testis showed complete aspermia.—*E. W. Reid.*

10362. **TSCHERNJAWSKI, JOHANN. Chromoblastomycosis.** *Arch. Dermatol. u. Syphil.* 157(1): 196-206. 6 fig. 1929.—The various phases of this essentially tropical disease are reviewed, followed by the author's case, originating in Leningrad. A source of the infection in nature is suggested since in this case infection followed injury by underbrush while riding horseback. The lesion was a small one on the leg, resembling tuberculosis. The histology is described in detail, the distinctive feature being the large size of the parasite as seen in sections. In culture the organism was brownish-black. The disease was reproduced in a rat upon subcutaneous inoculations but did not extend to the viscera. The mycologic examination was inadequate for accurate classification of the fungus. It may belong to the genus *Acrotheca.*—*F. D. Weidman.*

10363. **VIVALDO, JUAN CARLOS, y ARÍSTIDES BARRANCOS. Estudio anátomo-histológico del cerebro de una frenasténica mongólica. [Pathology of brain in mongolism.]** *Prensa Méd. Argentina* 15(6): 274-278. 8 fig. 1928.—In the temporal, occipital, and part of the parietal lobe a subcortical hemorrhage was found, bilateral and reaching in depth towards the posterior segment of the lateral ventricle; microscopically, atrophy and rarefaction of cortical cells.—*E. A. Molinelli.*

10364. **WALLGREN, AXEL. Über die Entzündungszellen.** *Acta Path. et Microbiol. Scand. Suppl.* 5: 4-10. 1930.—Discussion concerning the different inflammatory cells from morphological standpoint. Structure of the nuclei, chromatin, cytoplasm (chondriosomes, Golgi apparatus) of the granulocytes, plasmacells, macrophages and mastcells are also treated.—*M. Silberberg.*

10365. **WARREN, SHIELDS, (foreword by ELLIOTT P. JOSLIN). The pathology of diabetes.** 212p. 2 col. pl., 83 fig. Lea & Febiger: Philadelphia, 1930. Price $3.75.—Insulin has thoroughly convinced us of the truth of the insular hypothesis as etiologic explanation of diabetes. It is striking that any lesion found in the diabetic pancreas can be duplicated in the nondiabetic, whether it be hyalinization, fibrosis, lymphocytic infiltration, or hypertrophy of islet tissue. Hydropic degeneration of islet cells, hemorrhage into them, and pyknosis of their nuclei

are probably post-mortem artefacts. 28% of the 259 diabetic pancreases studied showed no demonstrable lesion. Insulin causes glycogen deposition in those areas in which it is normally found but from which the diabetic process has caused its disappearance. The disturbance in fat metabolism leads particularly to the deposition of lipoids in the reticulo-endothelial cells, increased frequency of gall-stones, and atheromatous changes in the arterial intima. The latter is to be distinguished from medial calcification of the Mönckeberg type, thromboangiitis obliterans, and endarteritis of the terminal arteries which are not of diabetic origin. Acidosis renders the intimal ground substance permeable to lipoid-laden blood; lipoid droplets remain behind, gradually accumulating to form the atheromatous plaque. There is limited but definite evidence that islet tissue regenerates. In 23 persons having diabetes for more than 15 yrs. the only striking change was in the degree of arterial sclerosis. The observation of cases of hyperinsulinism gave the final proof to the insulin origin of diabetes. Only a very rare patient dies of an overdose of insulin. The autopsy methods of the Palmer Memorial Hospital are described.—*B. Y. Glassberg.*

10366. WARWICK, W. TURNER. Valvular defect in relation to varicosis. An investigation of the valvular mechanism of the venous return from the lower limbs. *Lancet* 219 (5598) : 1278-1286. 8 fig. 1930.—Varicose veins are of congenital origin. The factor responsible is either weakness of the vessel walls or valvular deficiency. Observations and experiments made in support of the former view are unfruitful. The author records experiments in support of the primary valvular defect and considers the venous system of the lower limb. Observations on the bodies of 30 young subjects below the varicose age are grouped into (1) The congenitally non-varicose type—normal; in 75% of young subjects the valving is perfect throughout all systems. (2) The congenitally varicose: (a) In the internal saphenous type, some of the main perforating veins have no valves, so that muscular contraction drives blood into the superficial veins as well as up the leg. (b) In the external saphenous (muscular) type, the main perforating veins join muscular trunks, some of which are congenitally unvalved. There may be also isolated valvular defect in a muscular branch not connected with perforating veins. (c) Of the deep type, the important femoral valve beneath Poupart's ligament may be absent; the valves of the main venae comites below the knee may be absent over a considerable length. (d) In the superficial type, no defect of valves in superficial veins apart from their perforating veins could be made out. With each type of inherited primary valvular defect, the secondary factors responsible for increase of abnormal refluxes into superficial veins produce the corresponding lesion by the end of the 2nd decade of life.—*W. T. Warwick.*

10367. WASSILJEFF, ALEXANDER A. Hodenveränderungen bei Lepra. *Zeitschr. Urol. Chir.* 30 (5/6) : 375-391. 1930.—The material from 8 cases of leprosy is separable into 2 main groups: (1) the chiefly interstitial type of leprous orchitis shows: In type A, infiltration of the lepra bacillus in the interstitial tissue of the testis, with development of inflammatory infiltrations composed of lymphocytes, plasma, and lepra cells, which at once affects spermatogenesis, so that formation of spermatozoa stops and marked degenerative changes occur in the tubular epithelium. In type B, intense proliferation of the interstitial leprous granulation tissue but with development of a sufficient number of collagen fibers; spermatogenesis ceases and the canals are filled with degenerated epithelial cells the protoplasm of which sometimes contains lepra bacilli. This type resembles the picture in common interstitial or syphilitic orchitis. In type C, besides the hyalinization with thickening of the membrana propria of the tubules and atrophy of the tubular epithelium, there occur canals with a somewhat similar epithelial lining, but with a more marked proliferation of the interstitial cells than is observed after the Steinach operation. These interstitial cells proliferate in the regions in which the canals are not completely atrophic. In type D, complete replacement of the testicular elements by leprous granulation tissue. (2) The chiefly degenerative type shows: In type A, primary degeneration of the epithelium of the seminiferous tubules on the basis of a general intoxication with much less inflammatory change in the interstitial connective tissue. In type B, complete destruction of the epithelium. The seminiferous tubules are replaced by hyaline masses which preserve only their contour. The interstitial tissue is likewise thickened and hyalinized.—*G. Milles.*

10368. WÄTJEN, J. Morphologie und Funktion des lymphatischen Gewebes. *Virchow's Arch. Path. Anat. u. Physiol.* 271 (2) : 556-571. 1929.—The interpretation of morphological findings in postmortem material must be carried out with reserve when it concerns lymphatic tissue. This is particularly true of the so-called "germinal centers." If nuclear or cellular destruction is observed here, it does not necessarily imply that in such localities there are physiological foci of lymphocyte destruction. Every marked indication of cellular dissolution in the germinal centers is the result of endogenous or exogenous toxins.—*J. Wätjen (transl. by O. F. Kampmeier).*

10369. WEIDMAN, FRED D., and JOHN H. BESANCON. Histologic differences in a "syringoma" of the face and shoulder. Employment of wax reconstruction. *Arch. Dermatol. and Syphil.* 21 (2) : 279-293. 11 fig. 1930.—Syringoma is the effect of hyperplastic embryonal vestiges in the skin. The authors' case was unique in that the face lesion could be referred to hair apparatus and that of the shoulder to the sweat glands. In the latter, certain cells were of the apocrine type seen in the axilla; other portions had undergone adenomatous hyperplasia. None of the apparatus communicated with the surface (wax reconstruction); due to the extreme complexity of its coils and branches, a single sweat unit could eventuate in a comparatively gross tumor.—*F. D. Weidman.*

10370. WEINER, W., und P. KAZNELSON. Über die zellige Zusammensetzung des Knochenmarkes nach Erfahrungen mittels der Sternalpunktion nach Seyfarth. *Folia Haematol. Arch.* 32 (3) : 233-261. 1926.—Only in blood disease are there significant alterations in the cellular composition of bone marrow. Myeloblastic marrow occurs exceptionally in myeloid leukemia, lymphoid marrow in a few cases of lymphatic leukemia, and erythroblastic marrow in severe anemia and polycythemia. The appearance of megalocytes and erythrogonia in greater numbers is characteristic of pernicious anemia. Both disappear at the remission. In symptomatic blood changes only insignificant changes occur in the cellular composition of marrow.—*Authors' summary (transl. by T. S. Eliot).*

10371. WERNER, CARL. Veränderungen der Zungenschleimhaut bei perniziöser Anämie. *Beitr. Anat., Physiol., Path. u. Ther. Ohres, Nase u. Halses* 23: 8-21. 1926.—Five cases are presented showing histological findings. In all inflammation of the tongue to a marked degree was present. One case of secondary anemia was of interest because the tongue gave the same picture as in the pernicious anemia patients.—*M. E. Winters.*

10372. WINGE, Ö. Zytologische Untersuchungen über die Natur maligner Tumoren. II. Teerkarzinome bei Mäusen. *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk.* 10 (4) : 683-735. 52 fig. 1930.—Taking as his point of departure an earlier work in which he had shown that in the crown gall of sugar beets the cells possess a tetraploid instead of the normal diploid number of chromosomes, the author made a chromosome count in the cells of tar carcinomata in mice. The number of chromosomes in the normal cells of the mouse is 40. A series of 86 chromosome counts on old and young tumors gave a curve with 2 peaks, the maximum of one peak being about 38, or a little under the diploid count, while the maximum of the other was about 68, or a little less than double this count. The young tumors

(papillomata) gave the small chromosome counts; the large chromosome counts occurred in the old, malignant tumors, the author regards malignant tumors as comprised of cells descended from cells which have received an abnormal number of chromosomes through local stimulus, increased demand for nutrition and intensity of growth and disturbed metabolism producing here and there a loss of certain chromosomes and finally a doubling of others. The duplication of chromosomes coincides with an increased tendency to growth and malignancy; it is no accident, the author maintains, that the young papillomata have a relatively small chromosome count, while the highly developed carcinomata have a large chromosome count.

ANIMAL PATHOLOGY

FUNCTIONAL

(See also in this issue Entries 9217, 9381, 9412, 9415, 9438, 9445, 9480, 9488, 9491, 9523, 9524, 9538, 9544, 9556, 9561, 9569, 9585, 9597, 9616, 9621, 9626, 9649, 9664, 9697, 9703, 9711, 9713, 9718, 9756, 9767, 9793, 9798, 9805, 9808, 9823, 9832, 9883, 9915, 9926, 9928, 9976, 10081, 10084, 10085, 10118, 10138, 10140, 10148, 10151, 10156, 10157, 10160, 10178, 10204, 10227, 10241, 10245, 10252, 10269, 10273, 10275, 10316, 10318, 10324, 10326, 10330, 10331, 10334, 10345, 10433, 10494, 10546, 10594, 10608, 10676, 10721, 10725)

10373. AIELLO, GIUSEPPE. Ricerche quantitative sui prodotti di scissione dell'albumina nel liquido cefalorachidiano. [Studies on protein derivatives in cerebrospinal fluid.] *Biochim. e Terapia Sperim.* 17(10): 414-418. 1930.—In tubercular meningitis the N content of cerebrospinal liquor was 0.41-2.4 (normal values, 0.40-0.60), but no relation existed between N content and severity of the meningeal affection.—*M. Comel.*

10374. ALOSI, B. I veleni emolitici e le alterazioni del fegato. [Hemolytic poisons and changes in the liver.] *Haematologica* 10(4): 379-404. 10 fig. 1929.—The following experiments were performed on dogs: 1) Sole ligation of the bile duct for a month. 2) Rapid death by acute hemolytic poisoning (55 cc. of 4% sol. of toluylendiamin, repeated injections, death—30 days, or 13 cc. of pyrodin, 4% sol. 2 injections, death—5 days; or 16 cc. of tellurium 2‰, death—1 day). 3) Production of chronic anemias by slight doses (2%) of one of the above poisons. 4) Poisoning followed by ligation of bile duct. 5) Ligation of bile duct with subsequent poisoning. The most common morphological changes effected were leucocytic infiltrations in the lobular centers, necrosis, fatty degeneration of hepatic cells, gorging of Kupffer cells with bile pigment, increase of connective tissue. Large doses of any of the 3 poisons caused an intense erythrocateretic (destroying) activity in all organs (Kupffer cells, spleen, bone marrow, lymph nodes). With small doses the hemolytic activity was intensified only in the Kupffer cells. Severest degree of icterus was developed by toluylendiamin, less potent were pyrodin and tellurium. With ligation of the bile duct changes in hepatic cells were less extensive than with toluylendiamin poisoning, icterus was likewise decidedly less developed. If ligation followed poisoning (e.g., with tol.) icterus was markedly increased with correspondingly pronounced changes in the hepatic cells. If ligation preceded poisoning, icterus was very intense, even after a single injection. The author contends that the degree of icterus is proportional to structural changes in the hepatic cells, that the coloring matter of the bile (fabricated in the Kupffer cells) passes into the bile capillaries by way of the hepatic cells, which amid other functions are the primary pathways of bile excretion. If the hepatic cells are destroyed through the toxic action of poisons or structurally altered through chemical action of the bile, the coloring substance passes into the blood stream directly or by way of the lymph stream.—*N. A. Michels.*

10375. ANTONIOLI, G. M. Ricerche sulla coagulazione del sangue in vitro e sul tempo di emorragia nei malati di tumori maligni. *Minerva Med.* 9(45): 735-738. 1929.—No characteristic differences were found either in blood coagulation time in vitro or in time of coagulation between patients with malignant tumors and normal persons.

10376. ASHE, BENJAMIN. The hemoglobin percentage and the red blood cell count in Bright's disease, myocardian insufficiency and hypertension. *Arch. Internal Med.* 44(4): 506-530. 1929.

10377. BEJARANO, JORGE. Le syndrome de l'hypotension artérielle à Bogota. *Rev. Méd. et Hyg. Trop.* 21(6): 178-180. 1929.—Bogota, situated on the Andes, is about 2,650 meters above sea level and has a temp. varying from about 12 to 20 [C], according to the season. Cases of hypotension are frequent there, particularly among women. Several types occur among young girls. The most frequent form of idiopathic hypotension is observed among girls from 13 to 16, and is accompanied by acrocyanosis and Martinet's hyposphyxia, and, in cases of long duration, by trophic alterations of the nails and even deformity of the fingers (thickening of the terminal phalanx). The aspect of infantilism is striking. Bejarano refers to work by Umaña on the basal metabolism of inhabitants of the plateaus of Bogota and Boyaca, tending to show a retardation of nutrition; and the work of Calderon of Bogota (1913) which calls attention to the frequency of pluriglandular insufficiency among the women of the region.

10378. BELLONI, JEAN-BAPTISTE. À propos des "tremblements d'action" et des "tremblements de repos." *Jour. Neurol. et Psychiatrie* 29(3): 137-145. 4 fig. 1929.—On the basis of personal investigation, the author dissents from the ideas proposed by De Jong, Kleist and Froment, who deny that the tremors of paralysis agitans are rest tremors. He finds from tracings of voluntary movements in dementia paralytica and paralysis agitans that tremors, in the former, accompany all the phases of a muscular contraction, while in the latter, the tremor appears during extension or during tetanic contraction. He has also observed that the tremor of paralysis agitans ceases with the application of the Esmarch bandage, above the proximal insertion of the muscle or muscles in question, while in dementia paralysis it persists. The cessation of the tremor in paralysis agitans in absolute repose is bound up with modification of the muscular tone and it is, therefore, not an action tremor. The pyramidal clonus is interpreted by the author as a phenomenon of spinal automatism, and the intention tremor of multiple sclerosis as a mixture of cerebellar ataxia and pyramidal clonus.—*J. Belloni (transl. by P. Hillkowitz).*

10379. BIER, ARTUR. Der Blutmilchsäurespiegel beim Morbus Basedow in der Ruhe und während der Arbeit. *Klin. Wochenschr.* 8(28): 1306-1309. 1929.—Persons with a hyperactive thyroid consume an excessive amount of O while resting, fatigue easily and consume an enormous amt. of O upon the slightest exertion. Recovery from exertion is very slow. The lactic acid concentration of the blood parallels the O consumption, i.e., it is above normal during rest, increases tremendously on the slightest exertion, and remains high long after the return to rest. The prolonged fatigue noted by these patients may well be due to the high lactic acid concentration in the blood.—*M. Hanke.*

10380. BRÜDA, BOTHO E., und VIKTOR KOSZLER. Über den Einfluss des Serums anämischer Tiere auf das Tumorwachstum. *Klin. Wochenschr.* 8(26): 1223-1224. 1929.—Tumor cells grow more rapidly in serum from anemic animals than in normal serum (cf. compare

article by Carnot, Itami and Tadenuma), and more rapidly in anemic than in normal rats.—*M. Hanke.*

10381. **BRUNI, GAETANO.** L'Ittero nel corso della polmonite. Ricerche sul ricambio emoglobinico nella polmonite. [Icterus in pneumonia: researches on the hemoglobin exchange in pneumonia.] *Clin. Med. Italiana* 60(3): 205-218. 1929.—Studies of hemoglobin metabolism were made in 18 pneumonia cases. The author believes that the results give renewed support to the theory that excessive destruction of red corpuscles is the primary cause of pneumonic icterus.

10382. **BURGESS, NORMAN.** Calcium metabolism in diseases of the skin. *Guy's Hosp. Rep.* 78(3): 350-361. 1928.—Urticaria, especially that associated with marked dermographism, prurigo of the Besnier type, total alopecia areata, light sensitization of the adult type, and eczema usually showed a content below normal of serum Ca precipitable by ammonium oxalate. In some cases of acroasphyxia and of erythema pernio there was decreased precipitable serum Ca; in other cases it was normal. Cases of urticaria, prurigo, eczema, and those cases of acroasphyxia and chilblains with a low serum Ca were improved by treatment with Ca and parathyroid. Only 1 case of psoriasis showed a decreased precipitable serum Ca. Two out of 5 cases of seborrheic dermatitis had a lowered serum Ca, these cases being accompanied by a marked secondary infection. In 1 case of erythema multiforme, serum Ca was slightly decreased. In a case of Darier's disease and of acrodermatitic continua serum Ca was normal. In most of the skin diseases studied total serum Ca was normal, even if the precipitable Ca was lowered. The author attributes the lowered serum Ca to an increased irritability of the sympathetic nervous system. The increased irritability is probably of endocrine origin.

10383. **CUTLER, ELLIOTT C.** Studies in the experimental production of abscess of the lung. *Jour. Coll. Surg. Australasia* 2(2): 201-216. 12 fig. 1929.—There is no agreement concerning the etiology of pulmonary abscess. The 2 divergent views as to the mechanism which leads to the production of abscess of the lung are: (1) aspiration and (2) embolism. Attempts were made to produce pulmonary suppuration by aspiration. In no case was a definite abscess produced. Then experiments utilizing an infected embolus were initiated. Artificial emboli were constructed of a small excised segment of vein tied off at both ends and filled with the desired bacteria. When sufficiently virulent organisms were introduced walled off abscesses resulted in about 90% of the attempts. Experiments were then set up in which the animal's immunity was built up by vaccination with the same organism later used in an infected clot; in these experiments the lesion varied with the resistance of the host. More recently experiments in chronicity have been carried out. After abscesses were well established by the use of vein segment emboli, coughing was produced by the use of an irritant gas. The abscesses increased in size and remained active up to 4 or 5 weeks. Next the rôle of mouth organisms was investigated. A large number of insufflation experiments and intrabronchial bronchoscopic placements were performed with material swarming with spirochaetes and freshly obtained from the gum margins of a patient with pyorrhea alveolaris. In none of these experiments were abscesses produced. In the next series of experiments scrapings from the gum margins of the patient with pyorrhea alveolaris were placed in a vein segment embolus and freed into the venous circulation. Abscesses were produced with almost universal regularity; they were comparable with those in the human being and one remained active for 101 days. In another series of experiments clots formed in test tubes were infected with the same material from gum margins and then freed into the venous circulation; again abscesses which became chronic were produced.—*E. C. Cutler.*

10384. **DAVIS, LOYAL, and LEWIS J. POLLOCK.** Experimental convulsions: a crucial experiment to determine the convulsive site. *Arch. Neurol. and Psychiatry* 20(4): 756-763. 2 fig. 1928.—The authors decerebrated animals by ligating the basilar and carotid arteries. They demonstrated that tonic convulsions can be produced in these animals by injecting picrotoxin. They conclude that the character or degree of the tonic convulsive seizure is dependent not on the level of the decerebration but on the presence in the particular animal of certain tonic reflex patterns prior to the administration of the convulsive drug. The complete pattern of a convulsion necessitates the background of normally distributed tone and motor function. The clonic element of experimentally produced toxic convulsion, although permitted to appear by the integrity of the central nervous system, is not due to any toxic stimulation of the cerebral cortex. Lastly, typical tonic and clonic convulsions can be produced in an animal in which the cerebral cortex is intact but in which the brain stem alone is stimulated by the picrotoxin.—*W. F. Jacobs.*

10385. **DIAS, ANNES.** Azotémie chloropénique. *Presse Méd.* 38(30): 500-502. 1930.—Chloropenic azotemia is not a disease but an important syndrome which may be due to various causes, such as severe diabetes, dehydrating diseases, overfeeding or inanition, hemorrhagic pancreatitis, duodenal occlusion, etc., which produce a protein disintegration in the system. The main features of the syndrome are deficiency of NaCl, fixation of Cl in the tissues, azotemia and azoturia, frequently accompanied by hyperglycemia, and often by rise of the alkaline reserve as the Cl of the blood falls. The disintegration of protein (favored by lack of salt), attracts toward the tissues the salt which protects them; the azotemia induced by the lack of salt is not a protective reaction to raise molecular concentration and osmotic pressure but the result of autophagy. The chloropenia may be either the result of a diet poor in NaCl or of the fixation of chlorides in the tissues. KCl and chlorides of other bases will not serve to replace NaCl in the treatment of acute chloropenic azotemia.—*From author's conclusions (transl.).*

10386. **EISELT, RUDOLF.** Problémy stárí. [Problems of age.] [With French, German, and English summaries.] *Bratislavské Lekárske Listy* 9(9): 644-674. 1929.—The work is divided into biology, clinical aspects and pathology of age. In the 1st part, is discussed the physical chemistry of colloidal matter, the theory of protoplasmic hysteresis (Růžička), and the opinions of Lumière. In the 2nd part, the changes brought about by disturbances of internal secretions are discussed. In advanced yrs. hypothyroidism predominates, yet a decided myxedema is relatively seldom observed. The insufficiency of the parathyroid seldom leads to pronounced tetany; as a rule, only an augmentation of the mechanical nervous irritability is observed. The influence of the parathyroid is often shown in the metabolism of Ca which often amounts to osteoporosis. The hypophyseal changes show themselves mostly in acromegaly which often occurs in older women. In senility, the hypofunction of the genital glands is of first importance, i.e., hypofunction of the interstitial gland in ♂ and of the corpus luteum in ♀. Whether the operations according to Steinach and Voronoff rejuvenate, stimulate, or really regenerate the function of the internal secretion of the genital glands, has not yet been indisputably proved. We do not yet know what influence this rejuvenation has on the length of a man's life, or whether, by elimination of some troubles, it only makes life more bearable. In the 3rd part, diseases to which old age is most subject and which influence the general constitution of individuals are discussed. To this category belong, first of all, atheroxerosis and atherosclerosis which cause 52% of the deaths. Disturbances of the vegetative nervous system and vasomotor cramps lead to dyspragia and Raynaud's disease; atheroma of the vessels leads to embolism and thrombosis, which in turn lead to senile gangrene. The weakness of the heart is the cause of gradual diminution of blood-pressure which gives rise to disturbances in the

nourishment of various organs, as of the central nervous system. Tuberculosis of the lungs often appears in old age and causes 20% of the deaths. Clinically it is characterised by a poverty of the physical symptoms, immuno-biologically by diminution of the allergy; only 48% of senile cases react to tuberculin. These immuno-biological changes may be connected with the dispersity of the colloids. Pulmonary tuberculosis in old age has often the same character as stage II according to Ranke. Tuberculosis of articulations and bones, and insufficiency of the liver are often observed in old age. Hypocholia is a symptom typical of senile insufficiency of the liver. —*From author's summary.*

10387. ELFVING, A. R. Über Blutdruck und Nierenfunktion der Prostatiker. *Acta Soc. Med. Fennicae "Duodecim"* 9(1-2): 1-299. 1928.—The author examined the blood pressure and the renal function of 102 cases of prostatic disease and arrived at the following conclusions: A single functional test (with the exception of the water- and the concentration test and then only when they show the renal function to be good) is not sufficient for appraising the renal function in prostatic disease, when the question at issue is to decide whether to operate. By aid of 3 tests, i.e., the indigo carmine test, the water- and concentration-test and the residual N method, it is possible to determine the indications for all operations in prostatic disease and to prevent sudden death from uremia. A detailed discussion is given of the significance of these tests.—*A. R. Elfving.*

10388. ENKE, GERTRUD. Kreislaufstudien bei Infektionskrankheiten. II. Mitteilung: Blutdruckmessungen bei akuten Infektionskrankheiten. *Zeitschr. Klin. Med.* 111(3/4): 349-356. 3 fig. 1929.—Typhus, erysipelas, diphtheria, tonsillitis, Vincent's angina, and scarlet fever are all featured by a fall of blood pressure, systolic and diastolic, under the usual individual level beginning during lysis and lasting into convalescence. The mechanism involved is unknown.—*W. T. Dawson.*

10389. FABOZZI, S. Sul ricambio della melanina nel melanosarcoma. *Riv. Med.* [*Napoli*] 7(1): 16-18. 1 pl. 1930.—In 3 series of experiments small fragments of melanosarcoma, living and killed, were grafted into the subcutaneous connective tissue of guinea-pigs. The grafts did not survive, but the living grafts induced the appearance of nodules of pigment-forming cells, the pigment being apparently melanin. The killed grafts and controls of normal pigment-forming tissue (guinea-pig or rabbit choroid), coloring matter (sepia) and artificial melanic substance produced no such response.

10390. GIAUME, CESARE, e ADA RANNO. Sulle alterazioni dell'ossificazione condrale nel rachitismo sperimentale dei ratti. [Alterations of cartilaginous ossification in experimental rickets in rats.] [With French summary.] *Riv. Clin. Pediatr.* 27(11): 829-837. 1929.—The author used a rickets producing diet on young rats. He studied bone formation in these rats, killing them at different stages, and examining bone sections. He found the usual irregular and retarded bone growth, and concludes that this irregular ossification is caused by a lack of timely stimulation for the cartilage cells. In other words, ultra-violet or vitamin D acts as an essential cartilage stimulant.

10391. GIORDANO, CESARE, e LUIGI GRIVA. Sull'influenza di alcuni aminoacidi (l-prolina ed l-ossiprolina) nella ricerca della bilina e del bilinogeno. [The influence of certain amino-acids (l-prolin and l-oxyprolin) on bilin and bilinogen elimination.] *Arch. Sci. Med.* 53(12): 784-790. 1929.—This study was undertaken to test the conclusions of Fischer and Meyer-Betz that the unstable pyrroles (which include the known derivatives of crystallized hemoglobin and of bilirubin) are transformed in the organism as well as in the test-tube into urobilin. In the first experiments 2 dogs were fed for a preliminary period of 5 days on a diet of rice and sugar (rice is almost entirely free from amino-acids with a pyrrole nucleus), for which gelatin (which contains 9.5% of l-proline and 14.1% of oxyproline) was then substituted, the feces and urine being analyzed for bilin and bilinogen; both fell slightly instead of rising. The bilin and bilinogen elimination in a patient with jaundice was also studied on ordinary diet and with gelatin; in the latter case there was little change in bilin and urobilin elimination. In later experiments the isolated amino-acids proline and oxyproline were used. One dog was fed rice, milk and sugar for 6 days; then a mixture of proline and oxyproline was added to the diet. No increase of urobilin or urobilinogen occurred in feces or urine. Another dog fasted 24 hrs.; then a solution of proline and oxyproline was injected intramuscularly; the urobilin and urobilinogen were determined immediately before and 45 min. after; showing an increase after injection. The authors conclude that substances with pyrrole nucleus, given by mouth, cannot be utilized by the organism for the synthesis of the urobilin molecule.

10392. GÖNCZY, VITÉZ ISTVÁN VON, JOSEF KISS, und ZOLTÁN ENYEDY. Über den Venendruck und dessen Tagesschwankungen. *Zeitschr. Ges. Exp. Med.* 70(1-2): 236-250. 1930.—Venous pressure, diastolic and systolic pressure, pulse amplitude and pulse frequency were measured simultaneously on 60 patients suffering from various diseases. Determinations of venous pressure were also made on 7 normal individuals. These showed a fluctuation of about 1 cm. sometimes in one direction and sometimes in the other. In 3 cases of neurasthenia and bronchial asthma the venous pressure fluctuated more than normal. In the neurasthenic the diurnal fluctuation was 3 cm. The increased fluctuation was probably due to vasomotor disturbances associated with the climacteric. Results of measurements in hypertonic diseases could be divided into 3 groups. In 6 cases of hypertonia with stasis the venous pressure was proportional to the severity of the stasis; the diurnal fluctuation was between 0.5 and 5.8 cm. In 2 cases of chronic nephritis complicated with a beginning of cardiac stasis or a functional disturbance of climacteric origin the venous pressure was increased (maximum was 20.5 cm.). Diurnal fluctuation was between 2.8 and 3.5 cm. In a case of nephrosclerosis with cardiac stasis the venous pressure was 12.4 cm. The diurnal fluctuation was 2.1 cm. In a case of pure climacteric hypertonia, increased venous pressure and a certain irregular diurnal fluctuation in pressure were observed. Although the arterial pressure fluctuated in paroxysms the venous pressure remained normal. The diurnal fluctuation in venous pressure was 3.5 cm. In heart and vascular diseases with mild cardial decompensation the venous pressure barely reached 12 cm.; in a case of marked decompensation it was 21 cm. but in both conditions the diurnal fluctuation was between .5 and 6.8 cm. Exercise increased diurnal fluctuation of venous blood pressure, in a case of chronic tonsillitis, neurasthenia, and degenerated myocardium. Venesection decreased the amount of blood, but increased the rate of circulation and in the heart and kidney conditions studied increased venous pressure. —*From author summary (transl.).*

10393. HANNON, R. R., E. SHORR, W. S. McCLELLAN, and E. F. DuBOIS. A case of osteitis fibrosa cystica (osteomalacia ?) with evidence of hyperactivity of the parathyroid bodies. Metabolic study I. *Jour. Clin. Investigation* 8(2): 215-227. 4 fig. 1930.—An officer of the merchant marine who had been 6 feet 1 inch tall and well proportioned, shortened to 5 ft. 6 in. in about 8 yrs. Coincident with the shortening he developed pigeon breast, protruding jaw, and excessive bone fragility. This man required 0.7 gm. of Ca to keep him in Ca balance instead of 0.4 gm., the usual amount. His blood P was very low, varying between 1.1 and 3.3 mgm. per 100 cc. Administration of parathyroid preparation increased his pain. The symptoms which this man presented resembled those in experimental animals given overdoses of parathyroid. Tumors of the parathyroid were found. This is one of the few metabolic studies performed on this type of disease.

10394. HAYNE, JAMES A. Endemic goiter and its relation to iodine content of food. *Amer. Jour. Public*

Health 19(10): 1111-1118. 1929.—A survey of 17,600 individuals in 20 counties in So. Carolina gives a goiter incidence of 3.8% compared to about 10 times that percentage in the goitrous states. An analysis of 15 So. Carolina vegetables gives high I contents as compared to analyses from other states by McClendon. The I content of So. Carolina potatoes averages 211 parts per billion, about twice the content of potatoes from Idaho, Maine, Michigan, Minnesota, and North Dakota. Iodine content of potatoes from the coast is less than from inland. Iodine analysis of various waters from So. Carolina is given. It is assumed that people eating fruits and vegetables from this state may reasonably expect not to have goiter.—*L. Seed.*

10395. HORSTERS, HANS. Studien über den Diabetes mellitus. II. Mitteilung. Über die Beeinflussung des Blutzuckers durch Gallensäuren. (Ein experimenteller Beitrag zur Frage der Bindung zwischen innerer und äusserer Sekretion der Bauchspeicheldrüse.) *Zeitschr. Ges. Exp. Med.* 66(1/2): 129-142. 1929.—The author concludes that the internal and the external secretion of the pancreas are closely connected. Staub came to the same conclusion through researches along a different line. By this explanation of the close connection of the inner and outer secretion the close relation between the carbohydrate intake and its utilization can be simply explained. Through study of the action of bile salts and their effect on the external pancreas secretion, the problem of hormonal connection of the inner and outer secretion of the pancreas can be approached and the metabolic disturbance in its theoretical as well as practical aspect clarified.—*H. Horsters (transl. by H. J. John).*

10396. HOUCK, G. J., and G. A. BENNETT. Polypoid fibroma of the left auricle (so-called cardiac myxoma) causing a ball-valve action. With report of a case. *Amer. Heart. Jour.* 5(6): 787-794. 6 fig. 1930.

10397. JEWTEJEWA, W. A., und W. W. OPPEL. Zur Charakteristik der alimentären glykämischen Kurve. III. Zur Frage der glykämischen Kurve bei Fieber (Abdominaltyphus). *Zeitschr. Ges. Exp. Med.* 64(1/2): 177-184. 4 fig. 1929.—During continual hyperthermia protracted and also somewhat higher curves with a long plateau are found. The increase of blood sugar begins only 15-30 min. after ingestion. Towards the end of the hyperthermia the curves—though still protracted—show no plateau. Defervescence beginning, low and short curves are found. Curves and fever show no constant parallelism. A disturbance of glycogenosis is supposed to exist at the height of the malady.—*Sz. Donhoffer.*

10398. KNAUER, HANS. Ist die Nephrose eine Nierenerkrankung? *Med. Klin.* 23: 862-866. 1927. Also in *Jahresber. Schlesisch. Ges. Väterländische Kultur* 1927 (2): 18-29. 1928.—The author presents the hypothesis that nephrosis is a metabolic disease with secondary changes in the kidney rather than a primary renal disturbance. There is in these individuals an elevation of the lipid content of the blood; an alteration of serum albumin tending to water retention in the tissues; a displacement of the K:Ca ratio with increase of K and decrease of Ca; the blood pressure is usually low and does not react normally on the injection of adrenaline. Similar disturbances are tied up with alterations in function of the thyroid gland, the adrenal and also during the toxemias of pregnancy. It is pointed out that the post-mortem findings in the kidneys of patients dying of acute nephrosis are strikingly mild. The kidney eventually suffers and the patient becomes uremic as the result of injury incident to the elimination of retained substances from the blood.—*W. W. Herrmann.*

10399. LEWIS, W. C. M. Some physico-chemical and biochemical aspects of malignant neoplasms. *Jour. Cancer Res.* 11(1): 16-53. 1927.—The various subjects touched upon are: electrical properties and permeability of cell contents and membranes; the rôle of Ca, of phosphatides, and of cholesterol in relation to reversible permeability; pH of tissue and blood in malignancy and its probable significance in connection with Pb ion concentration; protein content of tumor and neighboring tissue; antitryptic activity of blood in malignancy and the probable rôle of phosphatide or phosphatide-protein complexes; the digestibility and autolysis of tissues normal and malignant; the dual rôle of phosphatide and irreversible permeability produced by acid; prominence of glycolysis in malignant tissue and the chorion; possible rôle of phosphatides in glycolysis; the effect of Pb and certain other metallic ions of glycolysis; the phenomenon of infiltration and conclusion of Bierich regarding the special function of lactic acid; oxidation in malignant tissue; lipolytic and esterase activity in malignancy in relation to the excessive lecithin/cholesterol ratio. A brief account is given of the nature of the Pb suspension employed in the treatment of cancer. After the lapse of an hr. (or less), the material is converted in the serum mainly into phosphate. It is suggested that the ultimately effective agent is the Pb ion, Pb^{++}, which is presumed to act by retarding or bringing about cessation of one or more enzymic processes upon which the activity of the malignant cell depends.—*W. C. M. Lewis.*

10400. LOEWY, GEORGES. Expériences sur la production d'ulcères duodénaux par dérivation isolée de la bile. *Bull. et Mém. Soc. Nat. Chir. Paris* 56(7): 243-249. 4 fig. 1930.—Total drainage of bile was practiced on 7 dogs; in 3 cases the bile reestablished its course into the intestine. In the 4 experiments in which complete drainage continued to the end, the periods varied from 19 to 47 days. Necropsies showed gastro-intestinal inflammation in the earlier stages and duodenal ulcer, comparable to human ulcer, originating after the 36th day.

10401. McIVER, MONROE A., and JAMES L. GAMBLE. Body fluid changes due to intestinal obstruction. *Jour. Amer. Med. Assoc.* 91(21): 1589-1594. 1928.—Observations were limited to animals with simple blockage of the bowel lumen high in the intestinal tract and possible free drainage of secretions back into the stomach. Analysis of the digestive secretions and comparison with other body fluids, indicate that continued loss of digestive secretions causes rapid withdrawal of fixed base (chiefly Na) and of chloride from the body, with correspondingly extensive depletion of blood plasma and interstitial fluids. Depending upon the relative losses of Na and chloride ions, there also occurs alkalosis or acidosis. Progressive dehydration and distortion of acid-base structure is regarded as sufficient cause for symptoms and death in such cases with continued loss of secretions. The hypotheses of an absorbed toxin or the loss of some vitally important organic substance seem unnecessary. The type of obstruction discussed here is rarely present alone clinically, but forms only a part of the picture in most cases of intestinal obstruction. —*B. C. Russum.*

10402. MADSEN, JØRGEN. Variations in the hydrogen ion concentration and ammonia value of the urine in epileptics, with special reference to the "dysregulatio ammoniaci." *Acta Med. Scandinavica* 73(4): 337-398. 1930.—The material comprised 20 cases of epilepsy—cryptogenetic and organic—and 20 control individuals, all examined under uniform experimental conditions. The epileptics differed from the controls as follows: Frequent high values of pH or ammonia value or both, resulting in high regulation values. Almost constantly —but not specifically—greater variations in pH and ammonia value, that is: high scattering coefficients. Cryptogenetic epilepsy is almost constantly associated with greater variations of the regulation value, that is: higher μ (infraction of the Hasselbalch hyperbola regulation). Organic epilepsy is associated with great variations of the regulation value in but half the cases.—*Author's summary.*

10403. MAYR, JULIUS K. Zur Pathologie der Psoriasis vulgaris. *Arch. Dermatol. u. Syph.* 159(3): 598-604. 1930.—Normally there may be considerable variation in pH of the saliva during the day. In 1 normal individual

it varied from 6.7 to 7.1. In a patient with psoriasis it varied from 6.9 to 8.4, with most of the values lying on the alkaline side. In 25 cases of psoriasis vulgaris pH of saliva varied from 6.7 to 8. In 1 case of eczema impetiginosum, in which determinations were made every hour from 10 A. M. to 3 P. M., pH varied from 6.3 to 7.4. Most of the values were on the acid side. High pH generally occurred in the morning.

10404. **MELLANBY, EDWARD.** The relation of diet to health and disease. *Brit. Med. Jour.* 1(3614): 677-681. 1930.—After referring to the work of May Mellanby and C. L. Pattison in demonstrating the calcifying effect on the teeth of vitamin D and the anticalcifying effect of cereal, Mellanby goes on to describe his own results in working out the effects of diet on the central nervous system. Dogs showing severe incoordination of movement, often associated with weakness of the hind legs, and a scattered degeneration of the cord, were found as a rule to have been fed on much cereal, particularly the embryos of the grain; the degenerative changes occurred only in animals receiving a diet poor in fat-soluble vitamins. Since ergot of rye produces degenerative changes in the cord, ergot was used in the diet in an effort to clear up the problem. The degenerative nervous changes in experimental ergotism were found to depend on the absence of a protective diet factor—not vitamin D, which is present in ergot itself—but substances rich in vitamin A or a closely associated vitamin, such as egg-yolk, butter, codliver oil, mammalian liver oil and cabbage. This explains why nervous ergotism attacks the poor in times of famine; not only is the rye ergotized, but poverty prevents the use of protective foods such as milk, eggs and green vegetables. It also offers a probable explanation of the apparent capriciousness with which nervous ergotism attacks some members of a family and leaves others untouched; if a person has abundant stores of vitamin A in the liver and other organs, he will not be subject to attack by nervous ergotism until those reserves have been consumed. In studying the effect of grain embryo, it was found possible to produce the nervous degeneration of ergotism from the unergotized rye germ; that is, the nerve toxin present in ergot was present in small and apparently irregular amounts in the normal rye germ; the manifestation of nervous degeneration, however, seems to be in dogs dependent in part on individual susceptibility or resistance. This "toxamin," or toxin which may be antagonized by vitamin, is found in most cereals, most abundantly in the germ, yet present even in white flour, from which the embryo has been removed. The application is suggested of these facts to the study of other conditions characterized by combined subacute degeneration of the cord, such as lathyrism, pellagra and pernicious anemia. H. N. Green and Mellanby had previously reported experimental results on recovery induced by vitamin A from infections in rats. Mellanby here reports favorable results in the arrest of puerperal septicemia by the administration of vitamin A in a small group of clinical cases.

10405. **MERZ, WERNER.** Beitrag zur Frage der Entstehung der hypophysären Kachexie. (Ergebnisse zweier ungewöhnlicher Fälle.) *Frankfurter Zeitschr. Path.* 40(3): 452-476. 8 fig. 1930.—In both cases the anterior pituitary was not entirely destroyed; some remnants of functional tissue were found. Eosinophil cells were reduced in number and changed in appearance. The first case was chronic, the second acute. Etiology: In the first case, noxa associated with angina and colloid cyst; in the second, lymphatic sclerosis induced by cytotoxins (after Basedow) with pronounced symptoms of anterior pituitary deficiency.—*Author's summary (transl. by R. A. Muttkowski).*

10406. **MOULONGUET, P., et G. MIHAILESCO.** Recherches expérimentales sur la pathogénie des arthrites déformantes. *Presse Méd.* 38(27): 453-455. 6 fig. 1930. —Pulverized fresh or sterilized bone of various species was injected into the knee-joints of rabbits (number of experiments not stated). The animals were killed on the 5th, 10th and 20th days respectively and the articular tissues examined. By the 10th day all the bony debris in the articular cavity had been engulfed in the synovial membrane; some sequestra were being attacked by macrophages, and others were being reduced to masses of calcareous salts. Sections of tissues taken on the 20th day show a constructive activity at work alongside the destructive, resulting in the formation of free foreign bodies and the resuscitation of the particles of dead bone injected. The origin of the bone, whether heterogenous, homogenous or autogenous, seemed indifferent. The results are held to support Arbuthnot Lane's opinion that pressures and traumatisms are the principal, if not the only, cause of arthritis deformans.

10407. **MOURIQUAND, GEORGES.** Sur les états de précarence. *Presse Méd.* 38(10): 145-146. 1930.—All the avitaminoses may manifest an incomplete symptomatology, preceding the typical symptoms but not necessarily terminating therein. These latent avitaminoses may be due to dietary deficiencies alone, or to digestive troubles. A diet which would produce in guinea-pigs a chronic scorbutus comparable to the human disease (not produced by the Holst-Frölich diet) was sought, and found in a daily ration of barley, hay and sterilized lemon-juice. The latter was experimentally shown to check scurvy if used as the quantities of raw lemon-juice required for the same purpose. The barley-hay-sterilized-lemon-juice diet, then, is poor in vitamin C but not entirely devoid of it. On this diet typical scorbutic symptoms would generally appear toward the 80th day, but would, as a rule, tend toward spontaneous recovery, or at least remission—for relapses, with intervals of 30 to 300 days between, were frequent, though generally followed by recovery. If, from this vitamin-poor diet, the hay was withdrawn, the barley being increased to maintain the same number of calories, in most cases the scurvy appeared toward the 40th instead of the 80th day. It was as if the unstable balance maintained by the original diet were so disturbed by the withdrawal of the N, mineral salts, vitamin A, etc., contained in the hay, that the small doses of vitamin C contained in the lemon-juice could no longer ward off scurvy. As a rule, restoration of the hay to the diet caused disappearance of the scurvy symptoms. An explanation was sought through experiment of the clinically observed facts that the greater number of scorbutic children were of normal, and sometimes over normal, weight at the outset of the disease, and that typical, clearly defined scurvy was seldom observed in hypotrophics except in presence of an infection or other factor capable of turning the scale from latent to patent avitaminosis. A ration of 30 units of barley+15 units of hay+1 cc. sterilized lemon juice, given to guinea-pigs of the same weight and age, invariably produced scurvy toward the 15th or 20th day. If the diet were reduced to 10 barley+5 hay+1 cc. sterilized lemon juice, scurvy did not make its appearance; but if, toward the 20th day, the barley and hay ration were increased, typical scurvy would be produced in 3 or 4 days. The foregoing experiments, made during the winter, were resumed during the summer; and now the puzzling fact appeared that scurvy was produced in the animals on the 10+5+1 diet as well as in those on the 30+15+1 diet. Reduction of the summer ration to 5+5+1, however, sufficed to prevent scurvy. The explanation appears to be that the needs of the body for vitamin C increase with the body weight. A diet which increases the body weight, while offering no increased supply of vitamin C, turns the scale toward scurvy. The 10+5+1 diet had prevented scurvy during winter because it was insufficient to prevent a slow decline in weight. Fewer calories are necessary to maintain a constant level of body weight in summer than in winter, however; therefore the same diet maintained the weight stationary in summer and permitted a development of scurvy. This is offered as an entirely new observation in regard to scurvy; it is analogous to the classic fact that a liberal diet is necessary as a

foundation for experimental beriberi and rachitis. (Number of experiments not stated.) Clinically, the cases of outspoken scorbutus are few in proportion to the number of children on diets poor in vitamin C. Latent avitaminoses, however, are frequent, and frequently unrecognized. They are due, not to complete lack but to partial deficiency of vitamin C. A diet relatively poor in calories as well as in vitamin C may produce a condition of latent avitaminosis, which a more liberal diet (still lacking in vitamin C) will transform into scurvy.

10408. **MYGIND, S. H., and DIDA DEDERDING. Studies on some cutaneous and subcutaneous phenomena and their relation to the labyrinthal alterations in Mb. Menièri.** *Acta Oto-Laryngol.* 13(4): 474-488. 1929.—Menière's disease is not a morbus sui generis, according to the authors, but a characteristic, though changeable, complex of symptoms, by which the ear in predisposed individuals, like an extremely sensitive manometer, indicates any change in the general vasomotor and, especially, capillomotor state and in the water metabolism of the body. It is a matter of course that corresponding processes of water deposit also take place in other parts of the body. In nearly all the authors' Menière-patients different pathological phenomena in all parts of the body were observed, appearing and disappearing in sympathy with the ear troubles.—*From authors' summary.*

10409. **NAGEL, A. Untersuchungen über die Vitalfärbung in vitro gezüchteter Fibrozyten erwachsener Kaninchen. II. Die Beziehungen zwischen Fettablagerung und Deponierung von Neutralrot und Methylenblau. [Vital staining of fibrocytes of the adult rabbit grown in vitro.]** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 10(4): 744-755. 7 fig. 1930.—The process by which vital stains are deposited in the cell is shown as altogether comparable to that of fatty infiltration. Both fat and stain are deposited in preformed vacuoli; and in mitosis both are indifferently distributed to the daughter cells. Both processes are fully reversible. The fat in the cells of tissue in vitro is apparently formed, not from the living substance of the cells, but from the culture medium.—*From author's summary (transl.).*

10410. **NATHANSON, G. Des processus pathologiques occupant l'appareil olfactif chez les personnes ayant subi une intoxication aiguë, involontaire, par l'oxyde de carbone.** *Acta Oto-Laryngol.* 13(4): 409-418. 4 fig. 1929.—In the winter of 1928-1929 there were numerous accidents in Stockholm from illuminating gas and coal gas. In view of Gruber's experiments (which showed that the characteristic odor of illuminating gas is perceived with a concentration corresponding to 0.003% of CO and that toxic effect is felt in man only at concentrations of 0.02-0.05% CO), the author questioned why waking adults did not perceive the danger before the process became fatal. In 3 out of 4 necropsies on persons dying of gas poisoning, pathologic processes involving a weakened olfactory sense were demonstrable, and their presence in the other case was possible. Nathanson suggests that an epidemic of influenza may have contributed to the number of persons exposed by blunted sense of smell to the danger of gas poisoning.

10411. **REVOLTELLA, GIOVANNI. Ricerche sull' istamina nell'eclampsia puerperale. [Studies on histamin in puerperal eclampsy.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 377-380. 1930.—During eclampsia or in the preeclamptic stage unusual amounts of histamine were found in the placenta, in the fetal blood and in blood of the mother, in the fetal organs and in urine of the the mother. In the normal pregnant woman no histamine, or very small amounts of it were found in blood.—*M. Comel.*

10412. **RICHON, et GEORGE. Le "paradiabète" de la pneumonie.** *Rev. Méd. Est.* 57(18): 601-604. 4 fig. 1929.—A comparison of the glycemic curves in diabetes before and after treatment on the one hand, and in the febrile and convalescent periods of pneumonia on the other.

10413. **SAGER, W. WARREN, and ALLEN C. NICKEL. Localization of bacteria in tissues of lowered resistance.** *Arch. Surgery* 19(2): 1086-1089. 1929.—In a study of postoperative wound infection, abscesses which were produced by subcutaneous injection of $AgNO_3$ into rabbits originally found free of blood infection remained sterile but became infected secondarily following the intravenous injection of bacteria.

10414. **STEFKO, W., und M. TSCHEROKOWA. Veränderungen und Struktur des endokrinen Systems bei Tuberkulose.** *Beitr. Klin. Tuberk.* 73(6): 791-798. 1930.—The aim of the study was to define the pathologic-anatomic changes in the individual organs; and also to discover the general structure or formula imposed on the endocrine constellation by the individual constitutional types of tuberculosis. The material studied included necropsies on 530 cases of tuberculosis; in 68 of these all the endocrine glands were removed to give an opportunity for an impression of the endocrine changes as a unit. The glandular changes described in detail are those of the hypophysis, the thyroid, the pancreas and the suprarenals. While apparently the endocrine glands are the most resistant of all organs to tuberculosis, this study shows that they undergo very essential changes, the peculiar character of the tuberculous process being especially marked in the thyroid. Apart from this, the general endocrine structure in the thoracalasthenic group of patients (in which among adults, pulmonary tuberculosis prevails) shows the predominating influence of the thyroid and of the anterior lobe or Pars intermedia of the hypophysis, with marked insufficiency of the suprarenals and of the insular apparatus of the pancreas.

10415. **TEPLOFF, J., und A. KOSCHEWNIKOWA. Über den Gehalt an Elektrolyten im Blutserum bei Herz- und Gefässkrankheiten.** *Klin. Wochenschr.* 8(26): 1222-1223. 1929.—The Ca and K content of the blood serum is not changed in cases in which there is no circulatory insufficiency. The Ca, Cl and P are below normal in patients with cardiac decompensation. The K/Ca ratio is usually elevated in patients with cardiac insufficiency, particularly in patients with a cardiosclerosis.—*M. Hanke.*

10416. **TOULOUSE, E., L. MARCHAND, et A. COURTOIS. L'encéphalite psychosique aiguë azotémique.** *Presse Méd.* 38(30): 497-500. 3 fig. 1930.—A condition affecting chiefly women, mostly young, fatal in 14 out of 15 cases, is described. Clinically, it comprises a prodromal period, sometimes 4 wks. long, sometimes lacking; an active period of 5-8 days, with fever, agitation and mental confusion; a 3-5 day lull; and a terminal period with 2-4 days of progressive torpor and a few hours of coma preceding death. The urea content of the blood and cerebrospinal fluid rises markedly. Histologically, the nervous system lesions were those of an acute encephalitis, with evidence of toxic infection, satellitosis and perivascular lymphocytic reactions localized especially in the subcortical regions of the frontal lobes and the medulla oblongata. In 9 cases the liver, kidneys and spleen were histologically examined and found greatly congested, with fatty degeneration of the liver in many cases (sometimes necrosis). The cause has not been discovered; an infectious toxin seems probable, but the authors insist upon the differences between this condition and epidemic encephalitis. They suggest that more than 1 infectious agent may be concerned in their cases.

10417. **TRASK, JAMES D., CHARLES O'DONOVAN, Jr., DOROTHEA M. MOORE, and AGNES R. BEEBE. Studies on pneumonia in children. I. Mortality, blood cultures, and humoral antibodies in pneumococcus pneumonia.** *Jour. Clin. Investigation* 8(4): 623-653. 3 fig. 1930.—This study was made on 163 pneumonia cases, 73 in children and 90 in adults. The conclusions are: (1) Fixed type pneumococci cause a large proportion of the cases of lobar pneumonia in childhood, and are uncommon in cases of broncho-pneumonia during this period. (2) Pneumonia due to Types I and III pneumococci has a much lower mortality in children than in adults. (3) Heavy blood stream invasion in chil-

dren with pneumococcus pneumonia is rare. (4) Protective bodies appear in children with pneumococcus pneumonia, as in adults, about the time of recovery. Type specific agglutinins similarly appear in children, but their appearance is less frequent than in adults, and apparently less frequent in younger than in older children. (5) The marked pneumococcemia seen in fatal cases of lobar pneumonia in adult man suggests a special reactivity on his part towards the pneumococcus different from that of the child.—*Authors' conclusions.*

10418. VILLA, LUIGI. Alterazioni del ricambio colesterinico nella epatiti ipermegaliche infettive e considerazioni sui fattori di regolazione di detto ricambio. [Factors regulating changes in cholesterin metabolism in hypertrophic infective hepatitis.] *Boll. Soc. Med.-Chir. Pavia* 42(3): 439-453. 1928; also in *Pensiero Med.* 1928(14): (3-15). 1928.—The author deals first with the results of 3 cases of hypertrophic chronic infective hepatitis in 2 of which, luetic in nature, were found signs of altered cholesterol metabolism, (increase in blood, diminution in bile, xanthelasma), second, with ex- and endogenous cholesterol, and third, with various manifestations of changes in the liver, kidneys, etc. A concept is formulated that these diverse manifestations may be considered together as disturbances of a single metabolic syndrome contributed to by various organs with functions not yet entirely known.—*L. Villa (transl. by J. G. Edwards).*

10419. WEECH, A. A. Association of keratomalacia with other deficiency diseases. *Amer. Jour. Dis. Children* 39(6): 1153-1166. 2 fig. 1930.—Attention is called to the type of diet eaten by the average Chinese, to the high incidence in China of deficiency diseases in general and to the possibility of several deficiency diseases coexisting in the same patient. A study of 13 children with keratomalacia is presented, in which particular pains were taken to establish the presence or absence of other deficiency diseases. In some instances keratomalacia was associated with rickets, while in others it was not; previously active rickets may be healing when keratomalacia becomes active. Reasons are given for the belief that the lack of association of rickets and keratomalacia in some patients is due to exposure to sunlight rather than to dietary factors. No definite association of keratomalacia with beriberi was observed. However, the history of 1 infant is presented who exhibited moderate cardiac hypertrophy in association with rickets and keratomalacia. The size of the heart decreased following the addition of yeast to the diet. No definite association of keratomalacia with scurvy was observed, although 2 patients presented purpura of obscure etiology. The relation of edema to deficiency diseases in general is discussed. Five of the 13 patients with keratomalacia showed edema, believed to be in most instances a manifestation of some dietary fault distinct from that which caused the keratomalacia. Anemia was present in some of the patients and marked undernutrition in the entire group. The inference is drawn that their diets were not only qualitatively but also quantitatively insufficient.—*Author's summary.*

10420. WILLIAMS, J. LISLE. The uric acid increase in the blood of patients with cardiac decompensation. *Jour. Lab. and Clin. Med.* 15(1): 13-17. 1929.—Williams states that no systematic study (except his own) of blood uric acid in patients with heart disease but without nephritis is to be found recorded. He here reports a study of 22 patients with cardiac decompensation but without nephritis, 14 ♂ and 8 ♀, aged from 8 to 70 yrs. The results indicate that this condition is associated with a marked increase in concentration of blood uric acid and a moderate increase in urea and non-protein N. Improvement in cardiac efficiency was followed by marked decrease in uric acid and moderate decrease in urea and non-protein N of the blood, with a diminution in the size of the liver and decrease in edema. The results tend to support the view that the liver is an important organ in uric acid metabolism.

10421. WILLS, LUCY, and MANECK M. MEHTA. Production of pernicious anaemia (Bartonella anaemia) in rats by deficient feeding. *Brit. Med. Jour.* 1(3625): 1167-1168. 1 fig. 1930.—The dietetic survey of various classes of women in Bombay suggested that the disease occurring in pregnant women known as "pernicious anemia of pregnancy" was closely connected with a relative deficiency of vitamins A and C in their diet. In this connection a series of experiments was carried out at Coonoor in which diets relatively deficient in these vitamins led to the production of a severe anemia in intact albino rats, especially in the ♀ animals; it was further shown to be a true "Bartonella anemia." The term "Bartonella anemia" is used to describe the well-known anemia of rats which occurs after splenectomy in infected stock, and is associated with the appearance of Bartonella "organisms" in the red cells; it is used without prejudice as to the exact nature of these small bodies. A severe anemia, more severe and more frequent in ♀♀ than in ♂♂, has been produced in rats by feeding them on diets low in vitamins A and C. Blood examination revealed the presence of *Bartonella muris* in the red cells of the anemic rats. Splenectomy experiments showed that all the Coonoor rats were infected with Bartonella. Liver, spleen, and vitamin A concentrate failed to protect the rats from this anemia after splenectomy.—*Authors' summary.*

10422. ZALLOCCO, A. Il riflesso oculo-cardiaco nella infezione tbc. dell'infanzia. [The oculo-cardiac reflex in the tuberculosis of childhood.] *Minerva Med.* 9(43): 655-659.—The oculo-cardiac reflex was found normal in 24 out of 50 children affected with tuberculous tracheobronchial adenopathy, abolished in 4 cases and inverted in 22. The frequency of the inversion is attributed by the author to the degree of intoxication, which sensitizes the sympathetic and makes its action prevail over that of the vagus.

ANIMAL PATHOLOGY

INFECTIOUS AND OTHER DISEASES OF LOWER ANIMALS

F. S. JONES, *Editor*

R. W. GLASER, *Associate Editor*

(See also in this issue the subsection "Lower Animals" in the sections Immunology and Filterable Viruses; and Entries 9071, 9539, 10336, 10349, 10359, 10604, 10608, 10654, 10668, 10670, 10674, 10675, 10680, 10693, 10694, 10700, 10701, 10708, 10714, 10715, 10720, 10728, 10729, 10743, 10747, 10752, 10766, 10781, 10789, 10790, 10791, 10814, 10840, 10862, 10876, 10935, 10937, 10987, 11083, 11502)

10423. AELLIG. Ikterus gravis beim Hunde. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(3): 169-210. 1931.—The author studied an outbreak in Bern, with 90% of fatalities; 38 animals were observed. The clinical symptoms are lack of appetite, somnolence and icterus, with slight increase in temp. The dogs are emaciated and strongly icteric. Various writers have reported that the cause is a Leptospira similar to those of the rat and of Weil's disease. It is difficult to demonstrate but may be found in the kidney by the Levaditi method, without pyridin. The author produced symptoms similar to those in dogs by injection of material from kidneys of sick dogs. In some cases he demonstrated a spirochaete in the blood and organ extracts of guinea pigs by dark field examination. These animals exhibited the characteristic icteric and hemorrhagic condition, especially of the

lungs. The mode of infection in dogs is unknown. Considerable space is given to a discussion of the relation of this disease to disease in man. While guinea pigs are easily susceptible to Weil's disease, adult dogs are quite resistant, although young dogs are reported to be somewhat susceptible. It is reported that convalescent serum is of some value in protecting susceptible animals; various trials at chemotherapy failed.—*L. D. Bushnell.*

10424. ARNBERGER, ANTON. Über das Vorkommen von Paratyphus-Enteritis-Bakterien bei Darmerkrankungen der Pferde. *Tierärztl. Rundschau* 37(39): 689-692. 1931.—From 53 cases of horses with alimentary diseases of varying severity, it is concluded that, at least in Vienna, paratyphoid bacteria are comparatively rare in alimentary diseases of horses and only in the severest cases can they be found. This is supported by the investigations of Savic.—*From author's summary (transl.).*

10425. ARNDT, H. J. Kommt Kropf bei wildlebenden Tieren vor? *Berliner Tierärztl. Wochenschr.* 47(41): 669-670. 4 fig. 1931.—While cases of goiter in domestic animals are not uncommon, cases among wild animals are very rare if not unknown. There is considerable difference between the thyroids of domestic animals and their wild relatives.

10426. BAARS, G. Über Gärtnerbakterien und -infektionen bei Rind und Ratte. *Miessner-Festschrift* p. 1-33. Fritz Eberlein: Hannover, 1930.—*Bacterium enteritidis* Gärtner does not represent a single entity but can be divided into several types biochemically, and probably also serologically and epidemiologically. First a division into 2 types seems logical. One comprises those in cattle; the other those frequently found in man after food poisoning and which are included in the so-called "rat poisons." In 476 fecal examinations and 360 blood tests, 3 healthy cattle were found excreting Gärtner bacteria in the feces. The agglutination titer of the blood of these cattle was 2,000-10,000; the author regards a titer over 500 as suspicious. In one cow, Gärtner bacteria were excreted in feces for 10 mo. Bacteria were also found in the milk, which was contaminated from the feces. No bacteria were found in urine, vaginal secretion, or liver. Four 1-wk.-old calves and a young bull were fed contaminated milk; 2 of the calves died. The bull and 1 calf did not become ill even after 1 mo. of such feeding. In their blood specific agglutinin was not demonstrated. The bacteria were not killed by spontaneous heating of manure piles. In 247 dead rats (wild), no Gärtner bacteria were found in heart blood, liver, or intestines. Feeding rats with various trade preparations of Gärtner bacteria (Ratin and Antiratol) gave no pronounced infections of wild rats.—*Author's summary (transl.).*

10427. BANG, OLUF, and H. CHR. BENDIXEN. The number of abortion bacteria in milk from cows that have calved. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 124-125. 1931.—A summary.

10428. BERGE, RUDOLF. Die Pulloruminfektion der Hühner. *Miessner-Festschrift* p. 35-53. 1 fig. Fritz Eberlein: Hannover, 1930.—This disease is seen in both young and mature fowls. Focal changes in the lungs of chickens up to 3 weeks old, that have succumbed, are typical signs. Hens may acquire the acute septicaemic as well as the chronic form of the disease. Roosters are also susceptible. *B. pullorum* is regarded as identical with the agent of Klein's fowl typhoid. 15.4% of the brooding eggs from + agglutinating hens were infected, but *B. pullorum* tests on fresh eggs were always −. Sound hens were not infected when kept with infected ones (♂ absent). Exchanging the ♂ from sick to normal hens also gave negative results. The test tube agglutination method was a good method for determining pullorum infected hens (+ titer 1:100). A blood test given 4 times during the first yr. to about 400 pullets gave at the 3rd test no more + agglutinating birds.—*Author's summary (transl.).*

10429. BILLINGTON, S. G., E. LEAMINGTON SPA, W. TRIGGER, and H. S. CALDWELL. A preliminary note on a six years' investigation of canine distemper. *Vet. Med.* 25(5): 180-185. 3 fig. 1930.—Canine distemper is described as one of the "specific fevers." The blood yielded an organism called the distemper leptothrix, with a complex life cycle in which *Bacillus bronchisepticus* and a filterable virus are stages. The large leptothrix form grown on agar had therapeutic efficiency; other forms did not. In naturally immune animals an antigenic element was found associated with the globulin and then, when split off, the globulin was as effective a therapeutic agent as the leptothrix. Therapeutic inoculations were made with various bacteriological preparations representing stages in the life history of the streptococcus, such as coccoid bodies from red cells, the leptothrix, coccoid bodies from the leptothrix and *B. bronchisepticus*. Therapeutic treatments were also carried out with compound globulin-serum fractions and disintegration compounds. These preparations have shown marked curative results but are of slight prophylactic value.—*R. G. Green.*

10430. BOHL, B. K., und J. J. JAKOWLEW. Die pathologische Anatomie der Katzenleber bei Opistorchis felineus. *Virchow's Arch. Path. Anat. u. Physiol.* 279 (3): 724-730. 6 fig. 1931.—Of 12 livers of cats infested with *O. felineus*, some showed glandular epithelial proliferation; in others the infestation was accompanied by increase in bile ducts. The 2 conditions may not appear alone and one may seemingly be transformed into the other. Glandular proliferation is sometimes papillomatous and sometimes adenomatous in character, but these are frequently mixed. In the canals with the glandular proliferation, intense development of the smooth musculature is observed. The cystic type of spreading bile ducts sometimes dominates the pictures. At times the lesions are those of obturative (biliary) cirrhosis. This is faint except near the border of the liver, where it may be well developed. Overgrowth of the epithelium of the bile ducts may be taken as evidence of their regeneration. Glandular proliferation of the epithelium of the bile ducts, development of the bundles of smooth muscle and extensive growth of immature connective tissue are to be conceived as tissue development approaching the growth of tumors.—*Authors' summary (transl. by I. E. Newson).*

10431. BRUNETT, E. L. Transmission of Bacterium pullorum infection among mature chickens. *Rept. New York State Vet. Coll. Cornell Univ.* 1928/1929: 98-110. 1930.—17 mature, non-reacting hens were kept in a pen with 20 reacting hens for 7 mo. Testing the blood serum by agglutination with *Bact. pullorum* antigen, failed to reveal evidence of transmission. Non-reactors remained so during the entire period, and reactors maintained their titers throughout. Addition of 3 non-reacting mature male birds resulted in a number of the non-reactors becoming reactors. ½ of the surviving original non-reactors were found to harbor *Bact. pullorum* in the ovaries. Male birds did not react to the agglutination test or show evidence of infection on autopsy. A pen composed of 3 mature, reacting, male birds and 26 non-reacting, mature hens failed to demonstrate transmission. The high titer of the blood serum in the males indicated an infection. This was not proved, although the pericardial lesions suggested a localization about the heart. This is a common site for *Bact. pullorum* infection in males. If this tissue alone harbored infection, the experiment demonstrates the inability of such birds to transmit it to others.—*Author's summary.*

10432. BURGGRAAF, H. Paratuberculose op de oostkust van Sumatra. [Paratuberculosis on the east coast of Sumatra.] [With German and English summaries.] *Ned.-Indische Blad. Diergeneesk.* 43(4): 359-362. 1931.—This disease of cattle often runs a more acute course than in Europe, viz., 1-4 weeks. 6 suspected animals were tested, with dubious results, by subcutaneous injection of 10 cc. of 20% avian tuberculin solution.—*Author's summary.*

10433. CARLSTROM, BIRGER. Ueber die Ätiologie und Pathogenese der Kreuzlähme des Pferdes. *Skand.*

Arch. Physiol. 62: 1-69. 5 fig. 1931.—Since the blood may contain abnormal metabolites which are either causes or results of the muscle changes found in azoturia, it was necessary to make as many biochemical determinations as possible on this fluid. Bloods of lean and well nourished horses, both before and after exercise, were compared with each other in regard to corpuscle volume, sugar, amino-acids, creatin, total N, Ca, pH, dry weight and sedimentation. No characteristic differences were found. In azoturia there was an increased red cell volume which prolonged the sedimentation time. Blood sugar generally rose. Amino-acids remained quantitatively normal. Late in the disease total N increased. Creatin was somewhat increased. Total Ca was unchanged, while dry weight tended to be larger. With the exception of the increase in creatin and total N, the blood in azoturia resembled that from an animal after exertion. Lowering of pH was noteworthy. In normal horses lactic acid content of blood was 9-10 mgm. %; this was increased but slightly by exercise. In azoturia lactic acid content rose in proportion to severity of disease (16.1-182 mgm. %). Intravenous injections of lactic acid into horses, however, did not produce symptoms resembling azoturia. On the assumption that the increased lactic acid in the blood of azoturia cases might come from changes in the muscle, the muscle content in lactic acid and glycogen was investigated. The lactic acid content of affected muscles was found to be above normal. The glycogen content on the whole was increased, although it was relatively less in the affected muscles. If the glycogen accumulation in muscle is related to the muscle injury, it is most likely because of the increased lactic acid formation and subsequent CO_2 production. This might be brought about by O deficiency.—*W. J. Meek.*

10434. DAVID, HANS. Ein Beitrag zum Vorkommen von Paratyphus B-Schottmüller-Bakterien beim Rind. [Paratyphoid B bacteria in cattle.] *Deutsche Tierärztl. Wochenschr.* 39(39): 613-614. 1931.

10435. DAVID, HANS. Über Versuche mit dem Bact. psittacosis Nocard bei Wellensittichen. *Wiener Tierärztl. Monatsschr.* 18(2): 34-45. 1931.—Bacteriological and serological studies of 2 strains of *Bact. psittacosis* Nocard from the Kràl Museum (Vienna) demonstrated that this organism is identical with *Bact. enteritidis* Breslau and *Bact. aertrycke.* Feeding these organisms to 3 parrots produced a fatal disease in one of the orally-infected birds and in 4 placed with it, clinically and pathologically resembling true psittacosis. The parenteral injection of filtered extracts of internal organs of parrots dying as the result of an aertrycke infection produced no disease in 4 experimental parrots; hence it appears that the disease caused in parrots by the Nocard bacillus differs fundamentally from the more severe psittacosis in man, from which no bacteria have been isolated. According to the author's observations, the fatal intestinal diseases of parrots can be divided into 3 groups: (1) bacteriologically negative, non-infectious enteritides, frequent in old birds in captivity; (2) bacteriologically negative, infectious enteritides, producing psittacosis by means of a filterable virus and transmissible to man; (3) bacteriologically positive enteritides, usually caused by Breslau bacilli (aertrycke), for which transmission to man has not been positively demonstrated.—*H. David (transl. by W. W. Herrmann).*

10436. DURIN, GEORGES, et GEORGES UNGLAS. L'hématurie essentielle des Bovidés. Essais de traitement. *Rev. Path. Comp. et Hyg. Gén.* 31(421): 1025-1029. 1931.

10437. [DVIZHKOV, P. P.] ДВИЖКОВ, П. П. К патологической анатомии экспериментальной туляремии. **[Morbid anatomy of experimental tularemia.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9 (2): 169-185; German summary, 281. 9 fig. 1930.—Patho-anatomical studies of 40 water rats with spontaneous tularemia, and 18 guinea pigs infected with pure culture of *Bact. tularense,* were conducted. The guinea pigs were infected by rubbing into the skin emulsions of the spleen of infected water rats. Natural and artificial infection led to an acute septicemia characterized by acute vascular derangements, such as hyperemia and hemorrhages at the point of infection and in all internal organs, especially in the spleen and lymphatic glands. Development of bundles and larger foci of granular tissues mainly in the spleen and lymphatic glands was noted. Such lesions resemble tubercles but differ from them in polymorphism of cells. Under the influence of multiplication of *Bact. tularense,* the tissues undergo necrobiotic and later necrotic changes. Formation of granular lesions is more pronounced in guinea pigs than in water rats.—*G. A. Lebedeff.*

10438. EDGAR, GRAHAME. Studies in infectious ophthalmia of sheep. *New South Wales Dept. Agric. Vet. Res. Rept.* 6(1/2): 22-35. 1 pl. 1931.—The author reproduced this disease by instillation of a drop of lachrymal secretion from an affected into the eye of a healthy sheep. Other species tested were not susceptible. It was also readily transmitted when affected and healthy sheep grazed together on long grass, but not on short pasture. The disease was infective at all stages after earliest appearance of symptoms. Lachrymal secretion kept at 40° F. was non-infective after 48 hrs.; drying on paper destroyed its infectivity. A strong local immunity developed in recovered sheep. Treatment of affected eyes with 2.5% $ZnSO_4$ proved efficacious. None of the various bacteria isolated caused any abnormality when inoculated. Filtration tests failed to reveal a virus, but a virus etiology was not fully disproved. The immunological observations favored the theory that a virus is involved.

10439. EMMEL, M. W. Ueber bakteriologische und pathologische Befunde bei 500 Fällen von Kükenruhr. *Arch. Geflügelk.* 5(9): 278-284. 1931.—Except in acute forms of pullorum disease in baby chicks, the author believes that the lesions are sufficient for diagnosis. Essentially they consist of gray and brown foci, petechiae, and hemorrhagic areas in the liver; gray foci, pneumonia, and congestion are the lesions found in the lungs; firm, nodular, gray foci may appear in the musculature of the heart. Combinations of any of the lesions of the liver or lungs may occur. Lesions of the liver, heart and lungs were associated in 32.4% of the chicks, and liver and lung lesions in 39.6%; liver lesions alone occurred in 15% of the chicks. The causal organism was isolated from the livers of 84.2% and from the hearts of 74% of the 500 chicks studied.—*Author's conclusions.*

10440. FOWLER, ALEXANDER B., and NORMAN C. WRIGHT. Reactors in tuberculin-tested (licensed) herds. *Hannah Dairy Res. Inst. Bull.* 2. 1-51. 1931.—From 1923 to 1929, 28,221 official tests of herds in Scotland were recorded and 428 reactors found, representing an annual loss of 3 reactors per 100 of milking stock. Loss during the 1st yr. amounted to 5 reactors per 100, falling to 1 per 100 by the 5th and 6th yrs. It is shown that not more than 3 in every 10,000 animals in such herds can be considered as actively dangerous, i.e., 1 each yr. in the whole of the licensed tuberculin-tested herds in Scotland. The proportion of reactors infected from individual sources was as follows: Infected bought-in stock, 34.0%; infection through contact with other reactors or untested stock, 24.5%; infection from contaminated premises and pastures, 11.5%; miscellaneous and multiple sources of infection, 19.25%; anomalous tuberculin tests, 4.5%; source of infection not traced, 6.25%. Less than 10% of the reactors contracted infection from sources outside the control of the owner.

10441. FRIEDE, K. A., und N. N. SHUKOW-WERESCHNIKOW. Über den Einfluss der Aussentemperatur auf den Verlauf des Infektionsprozesses bei Kaltblütern. *Zeitschr. Immunitätsforsch.* 63(1/2): 93-106. 1929.—Frogs held at 20° C. succumb more quickly to infection with *B. septicemia ranarum* than at 10°. More rapid multiplication of organisms at 20° is not the cause of the more rapid death, since injection of a killed culture has the same effect. The normal protective mechanism does not seem to be impaired by a temp. of 20°.

so that this can not account for the phenomenon. The authors explain the results by the action of the higher temp. on the colloids of the cell, which are in a more labile state and can be more readily disturbed by the presence of another harmful colloid, such as the bacterial toxin, than would be the case at lower temp.—*C. M. Downs.*

10442. **GARCIA, ONOFRE. Carbohydrate and serological determinations of the bipolar gas-forming and non-gas-forming organisms isolated from lymph glands of slaughtered cattle.** *Philippine Jour. Sci.* 43(4): 565-575. 1930.—Both gas-forming and non-gas-forming bipolar organisms, morphologically alike, were isolated from lymphatic adenitis of slaughtered cattle. The gas-forming organism fermented glucose, galactose, levulose, maltose, sorbitol, dulcitol, inulin, and mannose. The other fermented glucose, galactose, levulose, maltose, sucrose, sorbitol, mannitol, inulin, and mannose. Therefore, the organism was identified as *B. bovisepticus.* Neither type grew on eosin-methylene-blue-lactose agar; each gave definite and distinct biochemical and serological reactions of its own; both were pathogenic for rabbits and guinea pigs. Some immunological phenomena, like the early appearance of immunity before antibodies are demonstrable, commonly noted by some workers with hemorrhagic septicemia organisms, were likewise observed in animals injected with the gas-forming bacteria.—*Author's summary.*

10443. **GASTHUYS, P. La destruction des rongeurs.** [Destruction of rodents.] *Bull. Agric. Congo Belge* 21 (4): 1048-1057. 1930.—Directions for use of poisons and bacterial infections for this purpose.

10444. **GEOFFROY, M. P. La tuberculose du bétail à Madagascar.** *Rec. Méd. Vét. Exot. École d'Alfort* 3 (Avril/Juin): 76-83. 1930.—The author reviews the history of the attempts to control tuberculosis in native cattle and hogs of the island, in considerable detail.—*G. L. A. Ruehle.*

10445. **GIERKE, ALFRED GUSTAV. Bacterial flora of the bovine pregnant uterus.** *Rept. New York State Vet. Coll. Cornell Univ.* 1928/1929: 61-74. 1930.—Of the 12 gravid uteri cultured, bacterial growth from the uterine mucosa was obtained in 5. In some instances the growth no doubt represented contamination, as in most cases when bacteria were found, 4 of the 5 inoculations remained sterile. Cultures from other parts of the genital tract above the internal os, together with those of the fetus and fetal fluids, were uniformly sterile. In 1 case *Staphylococcus albus* was isolated from the unsealed cervical canal. No microscopic evidence was found to support the theory that some of the fetal cotyledons are occasionally detached at some time during pregnancy, leaving the remainder to successfully function until normal termination. As a chorion is seldom found without a necrotic tip, its presence has not been described as abnormal. Cultures from these were always sterile. The evidence suggests that pathogenic and pyogenic bacteria are not harbored in the pregnant uterus under physiological conditions; and that they are not present for an appreciable time without detrimental effect on mother or fetus. Probably the majority of infections are carried to the pregnant uterus by the blood stream, and may localize in the uterine walls or fallopian tubes for an indefinite period before appearing on the surface of the endometrium.—*From author's summary & conclusions.*

10446. **GILMAN, HERBERT L. Further studies on the relation of the milk agglutination titre to the elimination of Bact. abortus from the udder of the cow.** *Cornell Vet.* 21(3): 243-251. 1931.—Milk from all 4 quarters of 113 cows was examined for agglutinin content and inoculated into guinea pigs. 108 of the 113 had a blood titer of positive at 1:80 or higher; 5 showed a lower titer. *Bact. abortus* was recovered from the milk of 62.9% of cows with a positive (1:80) blood titer, and of 78% of those with a positive (1:80) milk titer in 1 or more quarters. It was recovered but 5 times from milk showing a titer of less than positive at 1:80. The organism was recovered from 165 quarters—36.9% of all the quarters examined or 66.9% of those with a complete reaction at 1:80 or higher. Probably quarters showing agglutinins at 1:80 or higher are actively infected with the organism and may eliminate it at any time. Quarters showing agglutinins under 1:80 contain or eliminate the organism only in rare instances. However, if this be true, 85% of the animals in this series were udder-infected, inasmuch as 87 of the 108 positive cows showed agglutinins at 1:80 or higher in 1 or more quarters. Milk to be used for agglutination work must be from individual quarters. There seems to be considerable correlation between agglutination titer of milk and presence in it of *Bact. abortus.*—*Author's summary.*

10447. **GOETTSCH, M., and A. M. PAPPENHEIMER. Nutritional muscular dystrophy in the guinea pig and rabbit.** *Jour. Exp. Med.* 54: 145-165. 2 pl., 8 fig. 1931.—A generalized and apparently primary degeneration of the entire voluntary muscular tissue was induced in guinea pigs and rabbits when given a diet of rolled oats, wheat bran, skim milk powder, casein, lard, cod liver oil, NaCl and $CaCO_3$, with daily supplements of orange juice. Rats did not seem to be susceptible. The first diet employed had been treated with ethereal $FeCl_3$ to destroy vitamin E, but was complete in other known requirements. Later addition of vitamin E failed to prevent onset of the disorder, nor was treatment with $FeCl_3$ responsible. The lesions were not due to inanition, infection or scurvy; apparently some still unknown nutritional factor is concerned. The diet led to a progressive, highly selective and ultimately fatal dystrophy of the voluntary muscles, without other pathological lesions. The small intermuscular nerves and motor end plates remained intact. Guinea pigs developed lesions after 2-3 mo. on the diet, although 1 survived for 218 days. In very young rabbits, the disorder was apparent after 2-3 wks.—*M. Goettsch.*

10448. **GRAAF, C. de. Het bacteriologisch onderzoek van Z. G. Vleknieren van Vette Kalveren.** [With German, English and French summaries.] *Tijdschr. Diergeneesk.* 58(20): 1081-1097. 2 fig. 1931.—Bacteriological examination of 24 cases of nephritis maculosa alba in fat calves yielded *B. coli* in 7 instances. The calves examined were free from umbilical affections and arthritis. On the average, nephritis maculosa alba was found in 2% of the fat calves slaughtered. Most cases were encountered from Feb. to Aug.—*Author's summary.*

10449. **GRÄUB, E. Über die Bekämpfung der Tuberkulose unter den Rindern.** *Schweizer Arch. Tierheilk.* 73(7/8): 331-363. 1931.—The control measures employed in various countries for tuberculosis in cattle are critically reviewed, and recommendations are made for the special problems of Switzerland.

10450. **GREGORIO, SEGNI. Ricerche del virus brucellare nel siero di sangue degli ovini da macello della Toscana. (Contributo allo studio sulla distribuzione del virus brucellare fuori dell'organismo umano.) [Brucella infections in the blood of slaughtered sheep in Tuscany. A study of the distribution of Brucella outside the human organism.]** *Lo Sperimentale* 83(2/3): lvi-lvii. 1931.—The author carried out a serological investigation with melitensis and abortus antigens, separately and combined, on sera from 450 sheep. 15 were definitely positive, 21 doubtfully positive, and 9 suspicious.—*Maud L. Menten.*

10451. **[HALLER, O.] ГАЛЛЕР, О. Экспериментальная чума кошек. [Experimental plague in cats.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9 (2): 139-154; German summary, 277-280. 1930.—3 cats infected with plague virus by subcutaneous injection and by feeding, became ill but recovered. In other experiments, cats injected intraperitoneally and subcutaneously with more virulent cultures succumbed or developed plague and recovered. Other experiments indicated that adult cats are more resistant than the young. Infection of cats by feeding with infected milk

and meat in most cases gave negative results, except when bones were mixed with the food. Infection also occurred by means of contact with diseased cats, through discharges and lice. The author concludes that cats should be killed during plague epizooties in rodents.—*G. A. Lebedeff.*

10452. **HARE, TOM.** The pathology of follicular cysts of canaries: Hypopteronosis cystica. *Veterinary Record* 11(40): 1009-1011. 2 pl. 1931.—The clinical appearances, pathology and pathogenesis of the disease of canaries known to fanciers as "lumps" are described. The lesion is a cyst, single or multilocular, of a feather follicle, which arises during one of the moults. It is suggested that the disease be termed "Hypopteronosis cystica," its pathology being similar to Hypotrichosis cystica of swine. The disease appears to be an inherited defect of epithelium.—*Author's conclusions.*

10453. **HILL, CHARLES L.** Bang's disease control. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 102-109. 1931.—The campaign to eradicate contagious abortion from Wisconsin is conducted largely through local veterinarians by blood testing, separation of positive from negative cattle, and, by sanitation and care, breeding herds free of the disease. Many large herds have been entirely freed of the disease.

10454. **HINDMARSH, W. L.** Infectious pneumonia of sheep. *New South Wales Dept. Agric. Vet. Res. Rept.* 6(1/2): 11-21. 1931.—Mortality occurred in 2 flocks of sheep on widely separated properties. Symptoms indicated that animals dying were affected with pneumonia. Post-mortems showed pneumonia and pleurisy. From pneumonic portions of the lungs an organism similar morphologically and culturally to Friedländer's bacillus was isolated. The disease was reproduced in guinea pigs, rabbits and sheep by intrathoracic and intravenous injection of cultures, and the bacillus was recovered.—*From author's summary.*

10455. **HUBER, F. L., en F. C. KRANEVELD.** Over de diagnose van miltvuur in Ned.-Indië, mede in verband met de wijze van opzenden van het ziektemateriaal. [Anthrax demonstration in the Dutch East Indies and the effect on it of the method of sending material.] [With German and English summaries.] *Ned.-Indische Blad. Diergeneesk.* 43(4): 333-348. 1 pl. 1931.—Although results were not uniform, probably due to faulty collecting of material in the field (too rapid drying of medium; collecting of blood too long after death), it seems that when properly handled, blotting paper and cotton-wool are as good a medium as chalk. A description is given of alterations of the anthrax-bacillus in carcasses under tropical conditions.—*From authors' summary.*

10456. **JUNGHERR, ERWIN.** Lechuguilla fever of sheep and goats; a form of swellhead in West Texas. *Cornell. Vet.* 21(3): 227-242. 1931.—The principal etiological theories of swellhead are photosensitization, infection and toxemia. Experiments proved that the prevailing form of swellhead in the Trans-Pecos country of west Texas is a plant toxemia called lechuguilla fever. By feeding *Agave lechuguilla* to sheep and goats, lechuguilla fever can be reproduced in its principal, clinical, and pathological manifestations.

10457. **KARRAS, WALTHER.** Künstliche Euterinfektionen (Streptokokken und Pyogenesbakterien). Gleichzeitig ein Beitrag zur forensischen Beurteilung der ersten Entzündungserscheinungen. *Tierärztl. Rundschau* 37(37): 653-655; (38): 676-679; (39): 692-696. 12 fig. 1931.—The inflammation begins by a hardening at the base of the teat, which occurs in ½-3½ hrs. after infection. The udder then enlarges and hardens, becoming painful. The amount of swelling then decreases and is determined only by measurements. This condition, known as inflamed udder and characterised by inflammation, swelling, and higher temp., was observed in 1-4 hrs. Macroscopic changes in the milk are not directly related to the seriousness of the tissue symptoms of the udder, but are determined by the kind of infective organism. The long chains found in chronic inflammation represent an adaptational form of streptococci occurring in animals.—*Author's summary (transl.).*

10458. **KÖBE, K.** Pyogenes-Infektion des Herzbeutels beim Schwein. *Miessner-Festschrift* p. 87-93. 5 fig. Fritz Eberlein: Hannover, 1930.—*B. pyogenes* may cause an inflammation of the pericardium, which has the characters of pericarditis serofibrinoso.—*Author's conclusions (transl.).*

10459. **KRUPSKI, ANTON.** Weitere Untersuchungen über die Pferde-Anämien. *Schweizer Arch. Tierheilk.* 73 (9): 435-442. 1931.—Colts, when treated intravenously, subcutaneously, etc., with culture filtrates of hemolytic streptococci, developed glanders-like symptoms but failed to develop anemia. Subcutaneous injection of living hemolytic streptococci was often attended by anemia and leucocytosis. The author comments on the variable results of his attempts to produce a solid immunity.

10460. **LÉGER, L.** Obstruction stomacale chez la truite par une formation mycétogène d'origine alimentaire. *Ann. Univ. Grenoble, Sci.-Med.* 6(1): 79-85. 2 pl., 6 fig. 1929.—In trout previously infected with the fungus, *Ichthyophonus intestinalis*, certain indigestible foods such as pieces of tanned skins, of which they are fond, give rise to bodies (by mycelial development of the fungus) which dilate and then almost completely obstruct the stomach. [See also following entry.]—*L. Léger (transl. by R. H. M'Gonigle).*

10461. **LÉGER, L.** Sur la nature et l'évolution des "sphérules" décrites chez les Ichthyophones Phycomycètes parasites de la truite. *Ann. Univ. Grenoble, Sci.-Med.* 6(1): 133-137. 1 pl. 1929.—The "spherules" described from the trout [see also preceding abstract], produced by the parasitic fungus of the *Ichthyophonus* type, were successfully cultivated on fish bouillon. Conjugation and the formation of oospores were obtained, which permit the placing of this fungus in the group, Entomophthoraceae.—*L. Léger (transl. by R. H. M'Gonigle).*

10462. **LENTZ, W.** Die Bekämpfung der Streptokokken-Mastitis im Lichte neuer Forschungsergebnisse. *Miessner-Festschrift* p. 113-117. Fritz Eberlein: Hannover, 1930.—Fundamental causes of Streptococcus mastitis are mistakes in care and feeding of milch cows; the streptococci are secondary. Daily doses of 50 gm. of calcidigal are helpful.—*Author's summary (transl.).*

10463. **LERCHE.** Können sich erwachsene Hühner mit Kükenruhr infizieren? *Tierärztl. Rundschau* 37(29): 511-513. 1931.—8 pullets hatched from eggs of positive reactor hens were placed with 4 pullets from healthy hens. In the following year, two 1½-yr.-old hens were added to this flock. In the course of the following month the majority of the pullets showed a positive serological reaction and laid infected eggs. Both adult hens were also infected. It is therefore possible for pullorum infection to be transmitted between mature hens. Fowls thus known to be carriers of infection should be either slaughtered or maintained in isolation.—*Lerche (transl. by H. Bunyea).*

10464. **MERCIER, L.** Aegagropiles de la souris blanche. *Bull. Soc. Linn. Normandie* 3: 24-25. 1930 (1931).—Felty concretions are described in the stomach of white rats dissected to observe the carcinogenetic effect of intraperitoneally injected tar.

10465. **MICHAILOW, B. N.** Pathologisch-histologische Veränderungen im Ganglion n. vagi, im Ganglion cervicale supr. sympathici, im Ganglion intervertebrale der Lendengegend und im Ganglion solare bei der Tollwut der Hunde. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(4): 272-306. 1931.—The author briefly reviews the literature of the histo-pathological changes in the various ganglia in rabies of dogs and rabbits. A study of fixed and stained material revealed that cell increases noted in the lesions resulted from a proliferation of the connective tissue cells (fibrocytes, fibroblasts, etc.), the reticulo-endothelial cells (reticulocytes, endothelial cells, etc.) and other cells (epithelial, muscle, nerve). The changes are described as progressive-exudative and regressive-exudative in form; the former is most com-

mon. In early stages there appeared a mild inflammatory reaction of the tissues, the blood vessels were congested and there was swelling of the tissues and proliferation of the cells of the blood vessel walls. Around the vessels there is an accumulation of lymphoid cells, other cells with intensively stained nuclei, and cells of an epithelioidal character. There is also an increase in neutrophilic leucocytes. This proliferation is followed by a change in the ganglion cells, as indicated by disintegration of nuclei and protoplasm, and loss of staining reaction. These cells are wholly or partly replaced by proliferating cells which have migrated to this area. The changes may even involve the capsules of the nerve fibers. Similar changes were observed in other ganglia. It is concluded that the specificity of the changes is not sufficient for diagnostic purposes except when considered with clinical symptoms. The lesion of the exudative-progressive form is due to proliferation of the capsule cells of the reticular connective tissue of the vessel and to accumulation of neutrophilic leucocytes. The regressive exudative form is due to proliferation of epithelioidal and lymph cells. Both types of proliferation lead to destruction of ganglion cells.—*L. D. Bushnell.*

10466. **MITCHELL, CHAS. A. Bovine infectious abortion or Bang's disease of cattle.** *Canada Dept. Agric. Bull.* 150. 1-15. 2 pl. (1 col.). 1931.—A handbook on the disease.

10467. **MÜLLER, JOH., und J. BECK. Schwanz- und Sphinkterenlähmung (Neuritis caudae equinae) bei Kühen.** *Deutsche Tierärztl. Wochenschr.* 39(39): 609-613. 3 fig. 1931.—3 cases are described of tail and sphincter paralysis in cows, known previously only in horses. These were in cows 3½ yrs. old in the 4-6 mo. of pregnancy. Injections of 20 cc. of a 1‰ solution of strychnine between the 1st and 2nd tail vertebrae had no apparent effect.—*From authors' summary (transl.).*

10468. **MURIE, OLAUS J. An epizootic disease of elk.** *Jour. Mammalogy* 11(2): 214-222. 2 pl. 1930.—In the elk herd at Jackson Hole, Wyoming, there is a considerable loss each winter from necrotic stomatitis, due to *Bacillus necrophorus* which commonly obtains entrance to the tissues by injuries to the mucous membrane of the mouth made by the awns of squirrel-tail grass (*Hordeum*). It is estimated that in 1928 the winter loss was 5.8% of the herd. Loss was heaviest in the calves, 18.4% dying.—*L. R. Dice.*

10469. **NEGRO, G. À propos du microbisme latent.** [Latent microbism.] *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 467. 1931.—Microbism in guinea pigs was found to depend on environment and food.

10470. **OSTERTAG, R. von. Veterinary milk inspection, especially the treatment of milk infected with tuberculosis, epidemic abortion, streptococcus-mastitis, and with bacteria of the paratyphoid-enteritis group.** *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 98-101. 1931.—A summary.

10471. **OXSPRING, G. E. Bovine nasal granuloma.** *Jour. Roy. Army Vet. Corps* 2(4): 179-182. 1931.—This disease causes lesions in the nasal mucous membrane, especially in the septum nasi. Later, yellowish-red granular masses appear, accompanied by purulent discharges. The causal organism seems to belong to the streptothrix group and is very similar to *S. actinomyces*. Both horses and cattle are affected (mature animals only), but not water buffaloes. The period of incubation seems to be at least a yr. and after the appearance of the nodules, 2 mo. are required for them to become mature granulations. Tartar emetic injected intravenously seems to be a specific.

10472. **PAPPENHEIMER, A. M., and M. GOETTSCH. A cerebellar disorder in chicks, apparently of nutritional origin.** *Jour. Exp. Med.* 53: 11-26. 3 pl., 9 fig. 1931.—Upon simplified foods diets, consisting of casein, cornstarch, lard, skim milk powder, salts, paper pulp, yeast and cod liver oil, white leghorn chicks developed a disorder, accompanied by characteristic symptoms and by uniform and well-defined lesions of the cerebellum. Symptoms pointing to a derangement of function in the central nervous system appeared suddenly after the chicks had been 3-4 weeks on the diet, and were followed usually by death, although there were cases of recovery, followed by normal development. Symptoms included ataxia, tremors, head retraction, clonic spasms of the legs and stupor. Definite lesions, consisting of edema, necrosis and hemorrhages, were found in the cerebellum, occasionally in the cerebrum. The disease could not be transmitted to chicks maintained on the stock natural foods diet, by subdural inoculation. That it is a true nutritional deficiency disease is suggested.—*M. Goettsch.*

10473. **PALLASKE, G. Studien zum Ablauf, zur Pathogenese und pathologischen Anatomie der Tuberkulose des Schweines.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(3): 211-260. 10 fig. 1931.—In primary infection with tubercle bacilli the author considers 2 types of lesions of the lymph nodes in swine: (1) chiefly exudative; (2) chiefly productive. The 1st appears macroscopically as a more or less radiating caseation, due to the irregular structure of the lymph nodes. These areas exhibit centers of swollen cells surrounded by bands of coagulated fluids, fragments of leucocytes and hyperemic capillaries. Little fibrin is present and the oxydase reaction is especially marked at the periphery, where accumulation of epithelioid and giant cells is to be seen. The 2nd type is more diffuse and appears earlier. The lesions vary in size and the affected lymph nodes may become greatly enlarged. Histologically, the lesions vary from a diffuse regressive change to one of cell hyperplasia. Variations in these types may be great or the 2 may intergrade. In the productive form in the lymph glands of the neck, lymphoid tissue may be almost entirely replaced by tuberculous tissue. In such glands may be seen islands of isolated lymphoid tissue and irregular groups of epithelioid cells with fibrin between. In swine, one of the characteristics of the regressive stage of the tubercle is the excessive collection of leucocytes. This is due to the strong chemotactic nature of the degeneration products of the lesion, often causing the contents of the lymph gland to assume the appearance of pus. This lesion is commonly surrounded by a zone of epithelioid and giant cells, within a fibrous capsule arising chiefly from granulation tissue from the capillaries. Calcification and organization of the lesion appear early and regularly. Tissue destruction in the lymph nodes of swine is not so marked as, and the calcification of granulation tissue is greater than, in human tuberculosis. Generalization of tuberculosis in swine is common. The process is extended by formation of new tubercles at the periphery of the primary tubercle by growth. In these lesions secondary caseation appears. After formation of the secondary lesions, the organisms in the primary lesion appear to lose their toxicity and to act as foreign bodies. An immunity reaction (positive allergy) results from this lesion. Spread of the organisms to other tissues is through entrance to lymph channels or transfer by leucocytes to the blood stream. A generalization by way of the thoracic duct has not been demonstrated, although the disease is spread to all parts of the body. The miliary form in swine is similar to that in man. However, the primary type of lesion is not the same; in swine it is most commonly in the lymph nodes of the neck and not in the lungs. Generalization of bovine infection in swine appears to be a protracted condition with metastasis to few organs at a time and an extension from these points to adjacent tissues. A description of the histological changes due to bovine and avian tubercle bacilli in different organs of swine, is included.—*L. D. Bushnell.*

10474. **PIACCO, R. La dermatomicosi Saprolegniacea. Caratteri botanici delle Saprolegniacee dei pesci.** [Dermatomycoses of fish due to Saprolegniaceae.] *Giornale Risicolt.* 20(2): 26-29. 2 fig. 1930.—The botanical characters of *Aclya* and *Saprolegnia* are reviewed and the lesions produced on fish are described. Fish should be kept in clean water, frequently changed. In case of

attack, $NaClO_3$ and $KMnO_4$ (1 gm. in 100 liters) are recommended.

10475. POENARU, I. Recherches sur le rachitisme expérimental chez les poissons. Maladie par carence. [Experimental rickets in fishes.] *Arch. Vet.* [*Bucharest*] 21(5/6): 159-163. 2 fig. 1930.

10476. POENARU, I. Un procédé rapide d'isolement du Trichophyton chez les animaux. *Arch. Vet.* [*Bucuresti*] 22(3/6): 96-98. 2 fig. 1930.—According to the author's method, to different glucose or maltose media are added 10-15 drops of 30% KOH per tube; infected scales and hairs are held in KOH solution for 4-5 hrs. and some of this mixture is spread on the media and held at room temp. In 10-12 days a pure culture has developed.

10477. SCHECHTEL, EDWARD. Puchlina wodna u leszcza (Abramis brama L.). [Ascites in bream (A. brama).] [With German summary.] *Roczniki Nauk i Leśnych* (*Polish Agric. & Forest. Ann.*) 18(1): 81-84. 2 fig. 1927.—The body cavity of a bream contained about 750 cc. of fluid. The condition was due to a lesion in the lower wall of the swim-bladder. Through this lesion had penetrated an imperfect fungus (Dematiaceae) which had covered with black hyphae considerable portions of the swim-bladder wall.—*Author's summary* (*transl.*).

10478. SCHOOP, G. Das Vorkommen pathogener anaerober Bazillen beim Pferd ohne Vorliegen eines Gasödems. *Miessner-Festschrift* p. 187-195. Fritz Eberlein: Hannover, 1930.—In horse cadavers, pathogenic anaerobes are occasionally found shortly after death. Normal wounds (healing) of the horse frequently contain anaerobes as well as aerobes. Novy's bacillus was identified in 21% of the cases examined, parasymptomatic anthrax bacilli in 7%, Fraenkel's gas bacillus in about 29%, *Bacillus amylobacter* in 21%, and *B. putrificus verrucosus* in 7% of the cases; however, no gas edema occurred, so that determination of the presence of pathogenic anaerobes is not sufficient for such a diagnosis.—*Author's summary* (*transl.*).

10479. SCHOUPPE, KARL. Sind die Spirillen die Erreger des sogenannten Hufkrebses? *Wiener Tierärztl. Monatsschr.* 18(19): 592-594. 1931.—It is concluded that spirilla are not the cause of "hoof cancer," since they were not found in increased numbers in newly attacked regions and were found only in the surface layers of infected tissue. They are thus regarded as saprophytes living in diseased tissues and exudates.

10480. SCHÜTT, G. Ein Beitrag zur Ätiologie der Eileitererkrankung des Huhnes. *Miessner-Festschrift* p. 195-206. Fritz Eberlein: Hannover, 1930.—Oviduct disease (dropsy) in chickens arises from overfeeding. The young hens become too fat and the passage of the egg through the oviduct causes inflammation. In heavy producers, the mechanism may become damaged and result in oviduct illness. In birds with a weak constitution, irregularities and injuries may appear in the egg apparatus.—*Author's summary* (*transl.*).

10481. SEELEMAN, M. Recent results in the field of mastitis-research, especially the combating of the streptococcus-mastitis. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 123-124. 1931.—Summary of a paper reporting results of studies at the Prussian Dairy Institute at Kiel.

10482. STROZZI, PIERO. Lesioni renali da bacillo piocianeo in un bovino. [Renal lesions produced by B. pyocyaneus.] *Clinica Vet.* [*Milano*] 54(9): 670-678. 1931.—In the kidneys of a slaughtered cow a focal nephritis produced by *B. pyocyaneus* was observed. The uniformity of the lesions in both kidneys and the multiple cuneiform inflammations showed that the bacilli had entered by the blood vessels.—*Author's conclusions* (*transl.*).

10483. SUSTMANN. Harnsteinbildungen bei Pelztieren. [Urinary calculus in fur animals.] *Deutsche Tierärztl. Wochenschr.* 39(42): 655-656. 1931.

10484. SVANBERG, V. Tutkimuksia sioissa esiintyvästä tuberkulosista Suomessa. [Types of tubercle bacilli in swine tuberculosis in Finland.] [With German summary.] *Suomen Eläinlääkärilehti* (*Finsk Vet.-Tidskr.*) 37(10): 231-245. 1931.—The author investigated the bacillus types in 27 cases of the, in Finland, rather infrequent swine tuberculosis by inoculating material into guinea pigs and rabbits. In 16 cases tubercle bacilli were demonstrated—4 of bovine and 12 of human type; the avian form was not encountered. These results correspond with the relative abundance of tuberculosis found there in man, cattle and fowls. The negative cases were apparently due to non-bacterial changes resembling tuberculosis.—*Author's summary* (*transl.*).

10485. WEINBERG, et P. FORGEOT. Épidémie de tétanos d'origine interne (traumatose interne) chez le boeuf. [Epizootic of tetanus of internal origin in cattle.] *Bull. Acad. Vét. France* 4(7): 335-339. 1931.

10486. YAKIMOFF, W. L., und S. N. NIKOLSKY. Zur Frage der Spirochäten bei der pustulösen Stomatitis der Pferde. *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(4): 307-310. 1 fig. 1931.—In 1930, Yakimoff and Rastjapin described a spirochaete from the mouths of horses, which they named *Spirochaeta carpanoi*. The present authors studied a spirochaete from cases of stomatitis in horses, which differs from it. It measures $4.07\text{-}14.67 \times 0.3\text{-}0.54\ \mu$, and is provisionally named *Spirochaeta stomatoequi*. It is closely associated with a fusiform organism, but the writers have not determined its significance in stomatitis, which they consider as due primarily to a filterable virus.—*L. D. Bushnell.*

10487. ZEEUW, F. A. de. Overzicht van de verschillende pluimveeziekten in Nederland. [Poultry diseases of Holland.] [With German, English and French summaries.] *Tijdschr. Diergeneesk.* 58(19): 1047-1058. 3 fig. 1931.—From post-mortems of 1737 hens it appeared that death resulted from the following diseases: 17.2%, inflammation of the oviduct and peritonitis; 8.5%, bacillary white diarrhea; 8.5%, coccidiosis; 6.7%, leukemia; 6.5%, intestinal worms (*Davainea, Heterakis, Ascaridia, Capillaria*); 4.6%, neurolymphomatosis gallinarum (polyneuritis); 5.5%, fowlpox (diphtheria); 5.9%, coryza infectiosa; 5.7%, tuberculosis; 6.5%, metabolic diseases, especially gout; 3.2%, hemorrhages without specific cause (in most cases of hepatic origin); 0.8%, fowl cholera; 5.8%, enteritis; 6.7%, tumors, especially sarcomata; 1.7%, fowl typhoid (Klein's disease).—*Author's summary.*

ANIMAL IMMUNOLOGY

GENERAL AND BACTERIAL

S. BAYNE-JONES, *Editor*

(See also in this issue Entries 9478, 9495, 9533, 9817, 9897, 10254, 10321, 10417, 10423, 10429, 10431, 10436, 10440, 10441, 10442, 10444, 10446, 10450, 10453, 10567, 10570, 10637, 10640, 10641, 10644, 10646, 10650, 10651, 10652, 10663, 10680, 10685, 10704, 10705, 10710, 10712, 10718, 10722, 10723, 10724, 10725, 10742, 10748, 10755, 10774, 10789, 10872, 10876, 10878, 10937, 11399)

GENERAL

10488. BAIRD, DUGALD, and ROBERT CRUICKSHANK. The Dick test in pregnancy and its relation to puerperal sepsis. *Lancet* 219(5593): 1009-1012. 1930.—Dick tests were done on 600 pregnant women and 500 were followed through labor and puerperium. 25% of primiparae and 21.5% of multiparae were positive. Reactions were strongest in primiparae, showing no change

in advancing age groups, while reactions became less intense with age in multiparae. High sensitivity to Dick test did not indicate increased susceptibility to puerperal sepsis and negative reactors showed as many infections as positive reactors. Difficult labor and ill health were most important causes of puerperal sepsis.—*J. H. Black.*

10489. BAJ, L. Recherches cliniques et immunologiques sur la gonoréaction. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 458-459. 1931.—The gonoreaction is almost always negative in all except syphilitic individuals (2% positive). The reaction is of little value in cases of acute gonorrhea (8% positive). It gives good results in chronic gonorrhea and especially in cases of gonorrheal arthritis (85% positive), where it may be a valuable diagnostic method.

10490. BERGER, H. C. L. E., et H. S. FRENKEL. Vaccination antituberculeuse avec le BCG: État actuel de la question. *Off. Internat. Épizoot. Bull. Mens.* 3(6): 784-797. 1930.

10491. BLACK, J. H. A soluble specific carbohydrate of ragweed pollen. *Jour. Allergy* 2(3): 161-163. 1931.—Evidence is presented as showing the presence of a complex carbohydrate in ragweed [*Ambrosia trifida*] pollen. This substance reacts specifically in the skin and nasal mucosa of ragweed-sensitive individuals.—*Author's summary.*

10492. BREITNER, B. Die Bedeutung der Blutgruppen. *Naturwissenschaften* 16(45/47): 849-856. 1928.—The author presents a general review on blood groups, stressing the point that the rule of the 4 groups holds regularly and that the group property of the blood is not subject to environmental influences. Brief mention is made of the heredity of blood groups, their application to forensic medicine and anthropology, and their rôle in transfusion and transplantation. The possible relationship of blood groups with several pathologic conditions is also discussed.—*P. Levine.*

10493. BURGER, GEORGE N. Antigenic value of vaccines produced from ultra-violet killed bacteria. *Bull. Basic Sci.* [*Univ. Cincinnati*] 2(1): 55-59. 1928.—4 vaccines against *B. paratyphosus B* were prepared, using filtered or unfiltered ultraviolet light, formalin, or heat, respectively, as agents for killing the bacteria. The light filter used in the first case was a solution of lead acetate in acetic acid, of the proper concentration to cut off all rays shorter than 2700 Å. The antigenic values were compared by titrating sera obtained from rabbits injected with these vaccines. The vaccines containing bacteria killed by filtered ultraviolet or by formalin gave higher titers than did those prepared by use of unfiltered ultraviolet or of heat.—*J. L. Cameron.*

10494. CACCIA, GIACINTA. Essudati provocati ed immunità antineoplastica. [Provocative exudates and antineoplastic immunity.] *Sperimentale* 84(5/6): 505-514. 1930.—The leucocytic exudate produced by intraperitoneal injection of either Grübler's Nutrimon or minced adenocarcinoma of mice, caused in cancer mice no decrease in rate of tumor growth. Amyloidosis of spleen and liver was present. In the exudate produced in rabbits some hrs. after peritoneal injection of minced mouse cancer were found many cancer cells which had resisted the action of the leucocytes and were capable of giving rise to new tumors on injection.—*Maud L. Menten.*

10495. CALMETTE, et GUÉRIN. Vaccination antituberculeuse par le B.C.G. Le B.C.G. peut-il reprendre la virulence? *Rec. Méd. Vét. École d'Alfort* 107(9): 530-533. 1931.—"Not a single one of hundreds of scientists and practitioners who have used BCG with cattle, even in those only a few days old, giving intravenous or subcutaneous inoculations in doses of 50-100 mgm., has observed or cited a single case where the inoculation with BCG has caused tubercular lesions which could lead one to believe in a recuperation of virulence by the inoculated vaccine."—(*Transl.*)

10496. CANTANI, F. Sur la préparation d'antigènes pour la déviation du complément dans le typhus, moyennant des extrait alcooliques de foies septicémiques. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 441-444. 1931.—On antigens for complement deviation in typhoid.

10497. CARVALHO, ALVIMAR de. Observações sobre a allergia tuberculinica das crianças vaccinadas pelo BCG por via oral, segundo Calmette. [Observations on tuberculin allergy among newborn infants vaccinated orally with BCG.] [With English abstract.] *Brasil-Med.* 45(28): 639-641. 1931.—From intracutaneous and cutaneous tuberculin tests on children vaccinated by BCG after birth and living thereafter in non-tuberculous environments, it is concluded that the former is by far the most delicate and that it is particularly adequate to demonstrate tuberculin allergy following BCG vaccination. Large doses of a reliable old tuberculin (1 mgm.) are to be employed. No definite influence could be detected from diluting original old tuberculin in glycerin, as it is usually found in commercial preparations.—*Author's abstract.*

10498. CHALIAPINA, K., und C. ELISSUJSKI. Scharlach-Streptokokken-Anatoxin und seine vakzinierenden Eigenschaften. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 61(1/2): 121-130. 1929.—Streptococcus filtrate kept with 0.5% formalin at 39.5° for 8 wks. yielded anatoxin with only 3-5% of the original toxicity. 2 successive vaccinations with anatoxin in children gave, on the average, 70% Dick immunity. Ease of immunization varied inversely with intensity of previously obtained skin reaction. Good sera can be obtained by immunizing horses with anatoxin. Filtrates containing much protein (blood) were detoxicated by formalin with greater difficulty than others. The anatoxin produced varied considerably in vaccinating power. Flocculation tests may be used as a control to ensure production of good anatoxin.—*L. W. Butz.*

10499. DAVANZO, I. Recherches sur le pouvoir bactéricide du sang. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 463-465. 1931.—In the complex phenomenon of bactericidal action of blood, the aspecific cellular factor, i.e., phagocytosis, predominates under normal conditions, while the humoral factor is secondary and acquires a fundamental importance only under special (pathologic) conditions.

10500. DIENES, L., and E. W. SCHOENHEIT. Certain characteristics of the infectious processes in connection with the influence exerted on the immunity response. *Jour. Immunol.* 19(1): 41-61. 1930.—The tuberculin type of sensitiveness is produced in guinea pigs when egg white is injected into the testicle 24 hrs. after a large dose of a special strain (R1) of the organism has been injected at the same site. The typical tissue reaction of tuberculosis is not a prerequisite of the development of the tuberculin type of sensitiveness. This type of sensitiveness may be produced also by injecting egg white into the testicles of guinea pigs infected with smallpox vaccine. The immunity response of the animals is not influenced by inflammatory processes produced by infusorial earth, tapioca, turpentine, or with the antigenic lipoid substances or the soluble substances of tubercle bacilli.—*L. A. Barnes.*

10501. DIVELEY, REX L. Anterior poliomyelitis. A study of the acute stage with special reference to the early diagnosis and treatment. *Jour. Bone & Joint Surg.* 11(1): 100-122. 12 fig. 1929.—78% of the 85 cases in the Kansas epidemic (1923) showed good recovery from paralysis with proper treatment during the 1st and 2nd stages, as against 20% with poor treatment. Cases treated with Rosenow serum in the Kansas City, Missouri, epidemic (1925) showed a more rapid recovery, with paralysis less profound and extensive than untreated cases. The acute symptoms abated almost immediately after spinal drainage and only appeared when the spinal pressure was again raised above normal. The death rate in the treated series was much smaller than in the untreated. Experiments with monkeys showed that human convalescent serum and antistreptococcic, poliomyelitic serum of Rosenow neutralize the virus, can be used to immunize monkeys for a short period, not lasting over 6 mo., and are highly specific in treat-

ment of poliomyelitis. Better results were obtained when serum was given early. Convalescent serum was more potent.—*G. N. Ludwig.*

10502. DUCRET, SIEGFRIED. Experimentelle Untersuchungen über den Prausnitz-Küstnerschen Antikörper beim Heufieber. 15p. Inaugural-Dissertation, Universität Zürich, 1928.—After a brief discussion as to the possible identity between idiosyncrasy and anaphylaxis, the author takes up the question of the Prausnitz-Küstner tests. Positive Prausnitz-Küstner tests were obtained with hay fever sera and the commercial non-protein "pollen toxin No. 312" (Kammann) as antigen. Tests were also positive when serum and antigen were mixed and injected immediately, but were negative when the mixture was allowed to stand before injection. Inverse Prausnitz-Küstner tests were positive when the interval between injection of antigen and serum was less than 15 min. The author states that the experiments were too few for definite conclusions.—*H. L. Gruehl.*

10503. FARAGÓ, FRANZ. Nitrogenfreies Agar als serotoxinbildende Kontaktsubstanz. *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 109-111. 1931.—No difference in Bordet's agar-serotoxin formation was observed when N-free instead of commercial agar was used in injected solution; 6 guinea pigs received 5 cc.; 1, 3 cc.; and 7, 5 cc. made with commercial agar (5 cc. guinea pig serum to 1 cc. agar solution made by adding 0.5 gm. agar to 100 cc. physiological saline).

10504. FORAN, FRANCIS L., and MEYER R. LICHTENSTEIN. A study of the reactions in nonsensitive skin of mixtures in vitro of reagin and atopen. *Jour. Allergy* 2(4): 291-292. 1931.

10505. FÖRSTER, R. Ein Beitrag zur Technik der Blutgruppenbestimmung bei serologischen Reihenuntersuchungen ("Kreuzkontrolle"). *Zeitschr. Immunitätsforsch.* 57(1/2): 130-139. 1928.—The author describes at length his modification of the method of blood grouping.—*P. Levine.*

10506. FREUND, JULES. Influence of age upon antibody formation. *Jour. Immunol.* 18(4): 315-324. 1930.—In rabbits less than 20 days old, formation of agglutinins against typhoid bacilli, of hemolysins against sheep cells, and of precipitins against horse serum and egg white is strikingly less intense than in adults immunized in the same way. A definite Arthus' phenomenon can not be produced in young rabbits immunized with horse serum or egg white. This might be due to the insufficient amount of precipitins and to the fact that the skin of young animals does not react so intensely to irritants as the skin of adults.—*J. Freund.*

10507. FROBISHER, MARTIN, Jr. An improved antigen for the complement-fixation test in yellow fever. *Amer. Jour. Hyg.* 14(1): 147-148. 1931.—Dry fat-free residue of ether-extracted livers of monkeys dying of yellow fever.

10508. GREENWOOD, M. The vaccination problem. *Jour. Roy. Statistical Soc.* 93(2): 233-270. 1930.—Though Jenner did not prove that cowpox is biologically akin to smallpox, this has since been done. The lower fatality rates from smallpox of the vaccinated are not due to different age distributions and probably only in part to differences in social class. Vaccination has been shown to confer some protection against the risk of dying from smallpox. A mathematical relation between recovery rates of vaccinated and unvaccinated is derived, which fits the observed data roughly. Vaccination "has been one of the factors, but not the sole, perhaps not the most important, factor in modifying the epidemiological history of smallpox during the last hundred years."—*J. R. Miner.*

10509. HOOKER, SANFORD B., and EDNA M. FOLLENSBY. The influence of hypersensitiveness to horse serum on the duration of local passive antitoxic immunity in man. *Jour. Immunol.* 20(4): 269-289. 1931.—The duration of local passive immunity was studied in human subjects classified according to skin reactions to scarlatinal antitoxin. The method used was that of local passive antitoxic immunization and subsequent periodic testing of the successive protected areas with toxin. The advantages of this method over those previously used in studying duration of passive immunity are discussed. 10 or 20, and in 1 case 100, neutralizing doses of antitoxin were used. The negative and delayed serum reactors held locally at least 1 neutralizing dose of antitoxin for more than 24 hrs., whereas in all immediate reactors injected with comparable doses of antitoxin, less than 1 neutralizing dose remained at 4 hrs. Evidence is offered to show that the accelerated disposal of antitoxin in the "immediate serum" reactors is an immunologic, rather than a non-specific physiologic, effect.—*E. M. Follensby.*

10510. JAFFÉ, R. H. The reticulo-endothelial system in immunity. *Physiol. Rev.* 11(3): 277-327. 1931.—Review.

10511. JAMIESON, W. A., and H. M. POWELL. Merthiolate as a preservative for biological products. *Amer. Jour. Hyg.* 14(1): 218-224. 1931.—Experiment indicated that merthiolate causes a minimum of injury to labile antigen and antibody fractions. Bacterial cultures devitalized with, and culture filtrates prepared with, merthiolate have high antigenic values.

10512. [KANEVSKAÏA, S., P. KUPERSHTEIN, A. REZNIKOVA, and L. SHTEINBERG.] КАНЕВСКАЯ, С., П. КУПЕРШТЕЙН, А. РЕЗНИКОВА, и Л. ШТЕЙНБЕРГ. Внутрикожная реакция при роже. [Intracutaneous reaction in erysipelas.] [German summary.] Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 221-229.; German summary, 239. 1930.—Experiments were made on 232 patients, of whom 28.4% had had erysipelas more than once. Toxin injected during the acute stage gave positive results in 81%; in convalescents, in 73.6%. Heated toxin gave positive results in 53.4%. In healthy subjects results were positive in 11.8%. In typhoid fever patients, 25% gave positive reaction; in scarlatina, 30%. Toxic substances in the blood in the acute stage were obtained in only 29.7%. Erysipelas patients, especially those with repeated infection, showed greater sensitivity to introduction of erysipelas toxin than healthy subjects and other patients.

10513. KATO, N. Cross-inoculation experiment with syphilis and framboesia. [In Japanese, with English summary.] *Acta Dermatol.* 17(5): 374-384. 5 fig. 1931.—In 10 rabbits immune to frambesia, syphilis inoculation (apparently subcutaneous) on the back was uniformly successful. In 9 rabbits cured of frambesia, intravenous inoculation with syphilis produced generalized lesions.—*From author's summary.*

10514. KIMURA, R. Weitere Versuche über aktive Immunisierung per os gegen Pneumokokken. *Zeitschr. Hyg. u. Infektionskr.* 107(2): 390-395. 1927.—Following oral administration of large amounts of killed pneumococci to 98 adult mice, a large number (69.5% after doses of 200 cc. to 19.1% after doses of 2-6 cc.) became actively immune to infection with small, though definitely, lethal doses (as high as 100 and occasionally 1000 M.L.D.).—*Author's summary (transl. by A. B. Sabin).*

10515. KOSONEN, O. A. Isoagglutinationsuntersuchungen in Nord-Karjala. [Isoagglutination studies in North Carelia.] *Acta Soc. Med. Fennicae "Duodecim." [Suomalaisen Lääkäriseuran Duodecim'in.]* 13[Ser. A.] (3): 1-22. [Art. 8]. 1931.

10516. KRAH, ERNST. Zur Serologie und Typeneinteilung der Influenzabazillen. *Zentralbl. Bakt. I. Abt. Orig.* 116(2/3): 101-113. 1930.—Results of agglutination tests on influenza and other diseases showed that the agglutination tests using patient's serum and influenza bacilli could not be relied upon for diagnosis. The author comments on the inconstancy of morphological and serological types shown by Pfeiffer's bacillus. This inconstancy is apparent in small epidemics and in familial cases. The organisms could not be typed in any regular fashion, due to this instability.—*C. M. Downs.*

10517. KRITSCHEWSKY, N. L., und A. J. NEWLER. Über die Beziehungen zwischen den serologischen Syph-

ilisreaktionen von Bordet-Wassermann und Bruck. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 57(1/2): 93-102. 1928.—Dilution of antigen 1:7 gives similar results to the original Bruck reaction. In 94.9% of the tests, results were the same or nearly so. Cholesterin was added to the Bruck extract in quantity of 0.2-0.3% and dissolved by heating in a waterbath or in an incubator. This combination was 91.5% equal to Bruck antigen. These reactions have been termed hetero-antigenic or hetero-extractive serologic reactions for syphilis.—*P. G. Heineman.*

10518. LATTES, LEONE, e CARLO CREMA. Sui rapporti tra fenomeno di Thomsen e la panemoagglutinazione da freddo. [Relation between Thomsen's phenomenon and the cold panhemagglutination reaction.] *Boll. Soc. Italiana Biol. Sper.* 3(1): 52-55; also in *Zeitschr. Immunitätsforsch.* 57: 287. 1928.—No essential difference was found between Thomsen's reaction and cold agglutination; the reactive agglutinin was the same in both. The conclusion of Thomsen that bacterial growth has no effect other than to increase the erythrocyte sensitivity for normal agglutinins active in the cold, is confirmed.—*Author's summary (transl. by J. B. Nelson).*

10519. LEHMANN, KARL. Untersuchungen über die Konstanz des menschlichen Isoagglutinintiters bei Gesunden und Kranken. *Acta Path. et Microbiol. Scandinavica* 5(2/3): 155-169. 1928.—Blood tests made at daily intervals for 1 mo. and at longer intervals over several yrs. on a healthy individual, showed no fluctuation in isoagglutinin titer. 34 patients with chronic diseases tested in part daily, in part at longer intervals, showed no fluctuation, nor did 95 of 100 patients with surgical conditions, in part acute suppurative inflammations, upon daily testing. 3 patients with phlegmon of the extremities, and more particularly pyosalpingitis and puerperal fever, showed a slight increase in titer.—*Author's summary (transl. by J. B. Nelson).*

10520. LEVITAN, I., D. LOKHOFF, et V. KOSMODEMIANSKI. De l'influence des injections de BCG sur les animaux infectés de tuberculose virulente. *Ann. Inst. Pasteur [Paris]* 45(6): 740-753. 1930.—In experiments on 130 guinea pigs, 42 rabbits and 2 monkeys (including controls and some animals which died of intercurrent conditions), the authors found no modification of tuberculous lesions in animals treated with BCG as compared with controls; but the average period of survival was relatively longer, and the pathologic processes tended to assume a fibrous character, particularly in the lymphatic ganglia and liver.

10521. LOEWY, ERNA. Erfahrungen mit der neuen Meinickeschen Klärungsreaktion (MKR). 6p. Dissertation. Univ. Köln, 1929.—The Meinicke clarification reaction checked with the Wassermann and with the Meinicke flocculation reaction in 89.6% of 653 sera. It was more sensitive than the Wassermann in 8.6% of cases with past histories of syphilis. Syphilis was present in all positives; the reaction is therefore specific. The test is simple and largely independent of extraneous influences, and should be preferred to the Meinicke flocculation reaction. It is recommended for laboratory practice in addition to the Wassermann.—*E. Loewy (transl. by A. F. Reith).*

10522. MELA, B. Recherches sur l'état de défense des tissus anesthésiés dans les rapports avec l'infection. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 467-468. 1931.—Experiments showed that it is easier for infection to pass anaesthetised than normal tissue.

10523. [MELKIKH, A. A.] МЕЛКИХ, А. А. О кровяных группах у западных бурят. [Blood groups among western Buriats.] Иркутский Медицинский Журнал [*Irkutsk Med. Jour.*] 7(3): 5-7. 1929.—Study of 1602 Buriats (including 319 children, aged 3-15 yrs.) showed the following distribution of isoagglutinative groups: 33.3%, 20.9%, 37.5%, 8.3% for groups O, A, B, and AB, respectively. Racial index was determined as 1.8. Among women, there was a very slight preponderance of groups A and AB at the expense of O and B.

10524. MUNCE, THOMAS W., and H. A. HOFFMAN. Vaccination shock in young pigs. *N. Amer. Vet.* 11(6): 35-49. 1930.—Symptoms of shock similar to those occasionally following injection of anti-hog cholera serum in young pigs may be induced by use of clear hog serum heated to 60° C. Suckling pigs are more susceptible to shock than pigs that have been weaned. The experimental shock failed to cause death in any instance.—*R. R. Spencer.*

10525. NORDMANN, MARTIN. Local reactions in sensitized animals: Arthus phenomenon, "hyperergic inflammation." *Physiol. Rev.* 11(1): 41-62. 1931.—A critical review of literature.

10526. PARKER, JULIA T. Differentiation between some toxic substances in anaerobically produced autolysates of pneumococci (types I and II). *Jour. Exp. Med.* 49(4): 695-700. 1929.—The identity of the necrotizing and toxic properties of anaerobic autolysates of pneumococci for the lungs of young guinea pigs, was investigated. Both properties are destroyed by heating to 60° C. for 5 min. and by short exposure to O; both effects are prevented by neutralization with immune serum. However, absorption of the autolysate with red cells, which does not influence the necrotizing effect, does remove or inactivate the toxic action on the lung. Pneumococcus hemotoxin differs in that it rarely causes lung involvement when injected intratracheally.—*L. C. Havens.*

10527. PEIPERS, A. Eosinophilie und Allergie. Klinisch-experimentelle Untersuchungen über ihre Beziehungen. *Deutsch. Arch. Klin. Med.* 169(1/2): 65-74. 1930.—Of 113 asthmatics, eosinophilia (more than 4% eosinophile cells) was demonstrated in 71 cases; of these, the skin reaction was positive in 56, negative in 15. Eosinophilia was absent in 42 cases; of these, the skin reaction was positive in 27, negative in 15. An exogenous allergic asthma demonstrated by a positive skin reaction is not necessarily accompanied by eosinophilia. Rather, eosinophilia is one of the clinical manifestations of allergy and frequently even the preparation for an attack. On the other hand, in many clinically latent cases the skin reaction is positive, so that only a restricted parallelism of both symptoms can be drawn. With a negative skin reaction, eosinophilia suggests further search for an allergic etiology by other methods. Even in true allergic diseases, that diagnostically valuable symptom may be absent. Type and number of disturbing allergens apparently has no influence on eosinophilia. The author was unable to demonstrate any accumulation of eosinophile cells in positive skins. Attempts to prove the reliability of the skin reaction by eosinophilia appearing after injection of specific allergen were unsuccessful.—*H. L. Gruehl.*

10528. PHISALIX, M. Vaccination contre le venin de vipère et la rage expérimentale par les mélanges virus-venin avec virus en excès, puis par le virus rabique. *Bull. Mus. Nation. Hist. Nat. [Paris]* 1928(6): 448-450. 1928.—Vaccination against viper venin and experimental rabies by virus-venin mixtures with virus in excess, then with rabies virus.

10529. POVITZKY, OLGA R., assisted by ERLA JACKSON, and MINNIE EISNER. Diphtheria toxoid. Preparation and dosage. *Jour. Immunol.* 20(3): 247-253. 1931.—A short review is given of Ramon's results in immunization against diphtheria with toxoid during 5 yrs. As a result of intensive study of comparative results between toxin-antitoxin and toxoid in preventative work against diphtheria, toxoid has been introduced by Park in the New York City Health Department, for immunization against diphtheria in smaller children. To obtain a uniform, strong product the author is using at present a preparation of Bacto-veal (Difco Laboratories), containing also beef heart muscle and proteose peptone, in preparation of diphtheria toxin. The stronger the original toxin from which toxoid is prepared, the more antigenic units will there be per cc. of resulting toxoid. The Ramon flocculation test is used to indicate whether the toxin should be converted into toxoid. This is done only when the pooled product gives a

reaction with standard antitoxin, in ½-¾ hr. in the water bath at 55° C. U. S. P. solution of formaldehyde is added in 0.4% to the toxin. This is filtered through paper pulp and incubated 4-6 weeks at 38-39.° The more antigenic units per 1 cc. of toxoid, the smaller could be the quantity given (thus, less reaction) and the smaller the number of injections (2 instead of 3). The toxoids on the market and in different laboratories necessarily vary. To arrive at uniform results, the author advocates standardization of toxoids by the Ramon flocculation test, for the number of antigenic units per 1 cc. The vials containing the product should be so labelled and the dosage administered by antigenic units instead of by quantity of an unknown product.—*O. R. Povitzky.*

10530. POWELL, H. M., and W. A. JAMIESON. Antimeningococcic serum, with special reference to the Shwartzman reaction. *Amer. Jour. Hyg.* 14(2): 470-476. 1931.—Shwartzman neutralization tests of a group of horses treated to produce the usual antimeningococcic (agglutinating) serum showed some individuals moderately good, some very poor, and a few intermediate. By special combined immunization, i.e., by subcutaneous as well as by intravenous injection, antiserum containing a high titer of Shwartzman antibody may be obtained. In absence of critical clinical comparison on a proper group of severe cases, no adequate evidence is yet available as to the value of the Shwartzman antimeningococcus antibody in meningitis. However, there are indications that this antibody contributes to the alleviation of the toxic conditions in meningitis.—*Author's summary.*

10531. RATNER, BRET, and HELEN LEE GRUEHL. Comparison of methods used in the study of anaphylaxis. *Jour. Lab. and Clin. Med.* 16(11): 1069-1079. 1 fig. 1931.—Comparison of the intraperitoneal, respiratory and uterine strip, respectively, by the intravenous route for demonstration of anaphylaxis, was made by utilization of the "double-shock method." A modification of the Dale method for uterine strip reaction is described (animal anesthetized instead of killed). Negative or suggestive anaphylactic reactions obtained by the intraperitoneal respiratory or uterine strip methods are shown in certain instances to be positive by the intravenous method. The authors believe that the intravenous shock method properly performed is superior to all others for accurately determining a state of hypersensitiveness in guinea pigs, as well as in other animals.—*Author's summary.*

10532. REYNOLDS, FRANÇOIS H. K., JAMES STEVENS SIMMONS, and JOE H. ST. JOHN. The use of tetanus anatoxin in the protection of horses against infection by Chlostridium [sic.] tetani. *Philippine Jour. Sci.* 43(4): 611-625. 1930.—Immunization of guinea pigs against tetanus infection was easily accomplished by injection of anatoxin prepared by Ramon's technique. Precipitating, drying, and pulverizing of anatoxin resulted in complete loss of immunizing properties. Tetanus anatoxin is harmless in large doses when given to large or small animals. Results of investigation of the protection afforded horses and mules by injection of anatoxin were conflicting. In the 1st series, 2 of 3 animals were protected for at least 1 mo., 1 of 3 animals for about 6 mo., while all of 4 animals tested 1 yr. after anatoxin administration were protected and 1 developed slight symptoms of infection, but recovered. In the 2nd series, 7 horses died following injection of tetanus spores, 5½ mo. after anatoxin administration.—*Author's summary.*

10533. ROSENTHAL, L. The staining of blood-grouping sera for preservation and identification. *Jour. Lab. and Clin. Med.* 16(11): 1123-1124. 1931.—Addition of dyes protects hemagglutinating sera from bacterial contamination without affecting specificity or potency. By selecting dyes of different colors, it is easy to mark sera of various groups.—*Author's summary.*

10534. SALVIOLI, G. Action de l'éther sur la toxique tétanique libre ou liée à un tissu nerveux. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 448-449. 1931.—Ether in contact with tetanus toxin for a sufficient time, makes it lose a large part of its toxicity. Ether mixed with nerve tissue and then evaporated, modifies the tissue so that it can reject from liquids containing the toxin a much greater amount of toxin than normal tissue.

10535. SCHÖBL, OTTO. The duration of antitreponematous immunity in Philippine monkeys originally conveyed by immunization with killed yaws vaccine. *Philippine Jour. Sci.* 43(4): 599-601. 1930.—Antitreponematous immunity in vaccinated monkeys that have been proved immune to skin inoculation with yaws and syphilis is of as long duration as immunity induced by infection accompanied by specific skin lesion.—*Author's summary.*

10536. SIMMS, H. S., and F. S. JONES. Lactenin—a bacteriostatic substance in milk. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 27-28. 1931.—The name "lactenin" is applied to the substance in milk which inhibits growth of bacteria; it is not utilized by bacteria while their growth is being inhibited. Lactenin was prepared in concentrated form, and also as a dried material 200-500 times as active as dried skim milk; it retains its activity for several months if kept cool and neutral. The material contains protein and it is only with difficulty that it is obtained free from Ca and phosphate, which render it insoluble. Lactenin resists mild action with trypsin, but is easily killed by heat above 65° C.—*Author's summary.*

10537. SMYTH, FRANCIS SCOTT. The toxic fraction in certain eczema serums. *Jour. Allergy* 2(3): 173-176. 1 fig. 1931.—On intracutaneous injection, the sera from certain infants with eczema give an immediate wheal formation. In about 30 patients with eczema, studied by passive transfer, 10 showed this phenomenon. This toxicity is not related to enteral absorption of offending allergens or to alteration of colloidal properties by heat or cold. It resembles the effect of the theoretical "histamine-like" substance described by Lewis in studying the skin response to trauma; but other conditions in which there was extensive skin injury failed to show similar toxicity in the serum.—*Author's summary.*

10538. SMYTH, FRANCIS SCOTT, and KATHERINE BAIN. A study of the allergic skin-test substance. *Jour. Allergy* 2(3): 177-180. 1931.—Treating the serum from patients giving positive skin tests, with saturated $(NH_4)_2SO_4$, the essential antibody fraction is precipitated with globulins. The albumin fraction is without sensitizing power, as judged by passive transfer; precipitated globulins, when dialyzed and redissolved, are potent. While passive transfer offers a poor means of estimating the titer of this antibody, it is apparently possible to concentrate the substance. It is found associated with pseudoglobulin, not with euglobulin, and the non-essential lipoidal substances may be eliminated by prolonged cold-storage of the serum before treatment with $(NH_4)_2SO_4$. In many respects the antibody substance behaves like the antitoxin of diphtheria, save in its relative heat lability.—*Author's summary.*

10539. SMYTH, FRANCIS SCOTT, and KATHERINE BAIN. Enteral absorption of the antigen and the apparent failure of antigen secretion in human milk. *Jour. Allergy* 2(4): 282-284. 1931.

10540. SONAK, MELARAM. Die Beziehungen zwischen entwicklungshemmenden Stoffen für Tuberkelbazillen und der Tuberkulinallergie. *Zentralbl. Bakt. I. Abt. Orig.* 115(3/4): 173-177. 1929.—Using a slightly modified technique of Wright's method of growing tubercle bacilli in blood within capillary pipettes, it was found that the blood of Pirquet-positive tuberculous individuals exerts a distinct inhibitory influence on the growth of tubercle bacilli. In the blood of Pirquet-negative children during or soon after measles, growth of the bacillus was enhanced.—*M. B. Lurie.*

10541. STSCHASTNY, S., und L. TSCHERTKOFF. Über die Beziehung der Zieselmaus (Spermophylus guttatus sin. Citellus suslica) zum Tetanustoxin. *Zeitschr.*

Immunitätsforsch. 61(5/6): 383-386. 1929.—The suslik, a European burrowing rodent, is proposed as test animal in mass experiments. The M.L.D. of tetanus toxins was determined, using 200-gm. susliks and 300-gm. guinea pigs. Susliks were 6 times less susceptible per gm. wt. than guinea pigs, placing the suslik with the mouse in regard to susceptibility to tetanus toxin.—*G. I. Steffen.*

10542. **STUART, G., and K. S. KRIKORIAN.** Appearance and persistence in rabbits' blood of rabicidal antibodies produced by various methods of anti-rabies immunisation. *Jour. Hyg.* 31(3): 414-422. 1931.—In immune sera of 5 rabbits treated with killed, etherized-fixed virus, rabicidal antibodies made an earlier appearance, were present in greater amount, and persisted longer than in immune sera of 5 rabbits treated with equal quantities by wt. of fresh-fixed virus or in sera of 5 rabbits treated with killed carbolized virus.

10543. **TASMAN, A., and A. C. BRANDWIJK.** Removal of serum protein by means of electricity. *Jour. Lab. and Clin. Med.* 16(11): 1087-1089. 1931.—Turner's method removed only 25-30% of protein (instead of 100% reported by Turner) and is therefore incapable of purifying antitoxic sera.

10544. **TAUB, SAMUEL J., and CLEVELAND WHITE.** Urticaria due to grass pollen. *Jour. Allergy* 2(3): 186-188. 1 fig. 1931.—Case report.

10545. **THOMSEN, OLUF.** Om Muligheden af phaenotypisk Undertrykkelse af et dominant Blodtypeanlaeg. [Possibility of phenotypical suppression of a dominant blood-group gene.] *Hospitalstidende* [*Copenhagen*] 71 (28): 727-743. 1928.—A discussion of whether the blood-corpuscle receptor (A or B) depending on the blood-group genes A or B, can be suppressed in the phenotype. The cases of an AB-mother with O-offspring or of an O-mother with AB-offspring quoted in literature, are subjected to examination. It must be supposed that all these cases are due to erroneous grouping and not to absence of receptor development. Still, now and again are found "defective groups," such as, for instance, Oα or Oβ, although, according to familial investigations, this is a question of agglutinin defect and not of B- or A-receptor.—*O. Thomsen.*

10546. **THOMSEN, OLUF.** Über die Beziehungen zwischen den Landsteinerschen isoagglutinatorischen Blutgruppen und Krankheit. *Seuchenbekämpfung* 6(4): 209-214. 1929.—The author discusses the work of Amsel and Halber who report that the Wassermann reaction under therapy becomes negative more readily in luetics of group O than in those of other groups. He then presents a criticism of the claims of the Hirszfelds on the conjoined inheritance of blood group and susceptibility or immunity to diphtheria or scarlatina.—*P. Levine.*

10547. **THOMSEN, OLUF.** Immunisering af Mennesker med artseget Blod af andre Typer. [Immunization of man with specific blood of other types (groups).] *Ugeskr.-Laeger* [*Copenhagen*] 91(38): 776-778. 1929.—The author endeavors to determine whether rise in agglutinin titer of recipient may be brought about by repeated (5-8) parenteral (subcutaneous or intramuscular) injections of human blood of groups A or B on individuals of another group. This was not the case, hence the author has his doubts as to the genuine antigenic nature of A- and B-receptors. Now and again there is a rise in titer of isolysin, though unspecifically, for the lysin titer increases both for α and for β in O-individuals who have been treated either with A- or B-erythrocytes.—*O. Thomsen.*

10548. **TINGVALD, GÖTA.** Beiträge zu den Blutgruppenuntersuchungen bei Westfinnen. [Blood group studies among the West Finns.] *Acta Soc. Med. Fennicae "Duodecim."* [*Suomalaisen Lääkäriseuran Duodecim'in.*] 13 [Ser. A.] (3): 1-14. [Art. 7.] 1931.

10549. **TORRES, SYLVIO.** A raiva no Brasil. Seu diagnostico pela fixação da alexina. [Rabies in Brazil. Diagnosis by complement fixation.] [With French summary.] *Rev. Zootech. e Vet.* [*Rio de Janeiro*] 17(2): 148-157. 1931.—Serum from rabbits vaccinated by fixed virus neutralizes the virus of Saint Catherine, and vice versa. Animals inoculated by trepanation with virus or with normal virus-serum died; those inoculated with virus-serum mixture from immunized rabbits lived.—*Author's summary* (*transl.*).

LOWER ANIMALS

10550. **BERGER, H. C. L. E., et H. S. FRENKEL.** Vaccinations antituberculeuses des bovidés au BCG aux Pays-Bas. [Antituberculosis vaccinations of cattle with BCG in the Netherlands.] *Off. Internat. Épizoot. Bull. Mens.* 3(6): 841-864. 1930.

10551. **CURASSON, G.** Essais de vaccination contre la "blue tongue" par virus tué. *Bull. Acad. Vét. France* 4 (7): 324-328. 2 fig. 1931.—6 Merinos given ground spleen (formalin-treated) from a sick sheep, later resisted a virulent inoculation; 3 controls contracted the malady in a grave form.—*Author's conclusions* (*transl.*).

10552. **DUNKIN, G. W.** Dog distemper antiserum. *Veterinary Med.* 26(11): 432-437. 2 fig. 1931.—From experimental results and a review of the literature, the author concludes that simultaneous inoculations of serum and virus promise well for protection of susceptible dogs. The duration of the immunity thus secured is, as yet, unknown, but it is considered that it should be as good as that from vaccine followed by virus. Specific treatment of distemper by antiserum (at any rate in the early stages) has come forward as a practical measure.

10553. **GEIGER, W.** Impfversuche bei Virusschweinepest. *Miessner-Festschrift* p. 71-85. Fritz Eberlein: Hannover, 1930.—Results show that in recently infected cases of hog cholera, vaccination with double serum doses leads to a cure or to immunity in $\frac{2}{3}$ of the cases. Simultaneous vaccination of fever-free hogs under infected conditions works better the earlier it is carried out. Virulent virus, especially, causes quick and active immunity with slight losses. Simultaneous infection of sick hogs should be done with a higher serum dose than ordinary; this seems to aid production of antibodies. Simultaneous vaccination of fever-free hogs is preferable, but even in sick hogs it is not disadvantageous if the dose is sufficient, if the virus is highly virulent, and if the hogs are free from other infections, such as pneumonia.—*From author's conclusions* (*transl.*).

10554. **GERLACH, F.** L'emploi, en Autriche, du vaccin Carbozoo (Mazzuchi) dans les vaccinations préventives contre le charbon bactéridien. *Office Internat. Épizooties Bull.* 5(2): 289-290. 1931.—Preliminary report on favorable results from tests of this new vaccine against anthrax.

10555. **IKEDA, TAKEO.** Die Nachpruefungsergebnisse der serochemischen Diagnostik von Makimura für infectiöse Blutarmut des Pferdes. [In Japanese, with German summary.] *Jour. Jap. Soc. Vet. Sci.* 10(3): 269-272. 1931.—1 of 32 sera from anemic horses and 5 of 57 sera from normals or those immunized by diphtheria toxin, gave a + reaction. It is thus concluded that this method is not usable.—*Author's summary* (*transl.*).

10556. **KARSTEN.** Über die Feststellung des seuchenhaften Verkalbens durch den Nachweis von Agglutininen und komplementablenkenden Ambozeptoren im Milchserum der Kühe. *Deutsche Tierärztl. Wochenschr.* 39 (36): 561-567. 1931.—In the milk serum of infected cows, specific antibodies are generally present—agglutinins and complement-fixing amboceptors. Experiments show that an agglutination titer of 1:10 is to be considered positive; 1:5, doubtful. Cows whose milk serum completely binds (or almost so) complement in amounts of 0.3 cc. must be considered as infected. Milk serum which is sour or not entirely clear is unsuited for the complement-fixation method. Curdled milk hindered the determination of agglutination. Milk samples to be used for the test can be preserved by a small addition of formalin or boric acid, but are not quite so good. If the serum agglutinates abortion bacteria, the cows are infected.—*From author's summary* (*transl.*).

10557. **KONNO, T.** Über agglutinatorisches Verhalten von Stämmen des Bact. bronchisepticum, welche aus

Hunden, Kaninchen und Meerschweinchen isoliert wurden. *Miessner-Festschrift* p. 103-112. Fritz Eberlein: Hannover, 1930.—39 strains were examined, using 3 series of immune sera. All the strains could be considered as a unit when fresh cultures were agglutinated with the sera, but when agglutination was carried out with heated cultures, they fell into 4 types.—*From author's summary (transl.)*.

10558. KÖSER, A. Die Bedeutung der Agglutination beim seuchenhaften Verfohlen. *Miessner-Festschrift* p. 95-102. Fritz Eberlein: Hannover, 1930.—Specific agglutinins for *Bact. abortus equi* can appear as the result of vaccination or infection. These agglutinins are demonstrable in the blood of many animals at least 8-12 mo. after infection.—*Author's conclusions (transl.)*.

10559. MICHALKA, J. Über die Auswirkungen der Simultanimpfung gegen Schweinepest in Zucht- und Mastbeständen. Zugleich ein Beitrag zur Frage der Virusträger bei der Schweinepest. *Arch. Wiss. u. Prakt. Tierheilk.* 63(6): 529-542. 1931.—It is concluded from experiments and observation that simultaneous vaccination is the most reliable method to check an epizootic. It is better adapted to save fattening stock than breeding stock, since the breeding value, because of the large number of virus carriers, is distinctly lessened. At the simultaneous vaccination, all animals must be vaccinated, including pregnant and nursing sows as well as sucking pigs. Sometimes the pregnant ♀♀ abort, but generally they bear at normal time. Occasionally there is a late reaction 3-4 mo. after. In 76% of immunized animals, cholera virus was found in the lymph nodes up to 10 mo. after infection. This large number of virus carriers indicates that immunity in hog cholera is an infection immunity.—*From author's summary (transl.)*.

10560. MULLER, MAX. Zur Verwendbarkeit von Flockungsreaktionen bei der Diagnose der Rinder- und Geflügeltuberkulose. *Tierärztl. Rundschau* 37(40): 705-707. 1931.—Researches show that neither the Matefy precipitation reaction with $Al_2(SO_4)_3$ nor the Daranyi precipitation reaction with alcohol are suitable for diagnosis of tuberculosis in living cattle and poultry, since they failed in about 20% of the cases; and in animals not tuberculous, but parasitized, gave a + reaction in ⅓-¾ of the cases.

10561. SAINT MOULIN, L. de. À propos de la maladie du jeune âge du chien. *Ann. Méd. Vét.* [*Bruxelles*] 75 (8/9): 373-390. 1930.—The author conferred what seems to be a certain degree of immunity to distemper in puppies by use of a formol vaccine prepared by the method of G. Ramon for production of diphtheria and tetanus anatoxins. Results confirm the findings of Laidlaw and Dunkin, whose article on distemper (*Vet. Jour.*) is also here reprinted in French.—*L. de Saint Moulin (transl. by C. S. Gibbs)*.

10562. SCHUMANN. Massnahmen zur Bekämpfung der Kükenruhr. *Deutsche Tierärztl. Wochenschr.* 38(42): 669-670. 1930.—For the diagnostic agglutination test for white diarrhea of chicks, the test suspensions should be prepared from a large number of agglutinable strains preserved with 0.1% formalin and not over 8 days old. The tubes should be inoculated for 20 hrs. and the reaction determined with the agglutinoscope. A titer of 1:40 is regarded as positive.—*Author's conclusions (transl. by J. B. Nelson)*.

10563. SCHUMANN. Die Impfung in Abortusherden mit lebenden Kulturen und die angebliche Gefahr der Übertragung der Bang-Infektion auf den Menschen. *Deutsche Tierärztl. Wochenschr.* 39(36): 567-569. 1931.—From experimental work it is concluded that milk and milk products can become infected from infected herds and at times from those apparently sound. The most important source of infection is aborting cows, therefore it is important to avoid infection of the uterus. Immunity can be obtained only by vaccinating with living organisms; if properly done, it did not increase the danger of milk infections and decreased the average annual abortions from 22% to 2.2%. A prerequisite for success is a systematic vaccination of the herd when not pregnant as well as careful observance of hygienic measures.—*Author's summary (transl.)*.

10564. SMITH, THEOBALD. The immunological significance of colostrum. III. Intranuclear bodies in renal disease of calves. *Jour. Exp. Med.* 51(4): 519-529. 2 pl. 1930.—In the experiments reported, newborn calves were fed several times with cow serum, usually mixed with cow's milk, in place of colostrum. When necropsies were done, intranuclear bodies were seen both in an otherwise still normal kidney and in the organ markedly altered. In the latter, the renal lesions were chiefly the result of obstructive processes. In all cases these intranuclear bodies were made up of roundish disc-like units, 1-2 μ in diam., fused together in irregular masses. Sometimes these bodies were formed of as many as 12 such discs. They were not materially affected by weak acids or alkalies and for the most part occurred in the epithelium of Henle's loops, less frequently in the convoluted tubules.—*F. W. Hachtel*.

10565. THOMOFF, ZWETAN. Die Blutgruppen des Pferdes. *Arch. Wiss. u. Prakt. Tierheilk.* 61(5): 433-444. 1930.—In horses, as in man, 4 blood groups are demonstrable: O$\alpha\beta$, Aβ, Bα, and ABo. Agglutinogens do not vary, but isoagglutinins and isohemolysins have a lower titer, and it is often difficult or impossible to demonstrate them by the usual methods. Of 100 horses of various races examined in Sofia, 12% belonged to group O, 70% to A, 5% to B, and 13% to AB. The β agglutinin could be demonstrated in 67% of group O bloods and in 77% of group A bloods. The α agglutinin, on the other hand, could be demonstrated in 100% of group O bloods and in 80% of group B bloods. The blood group of a horse can be determined with the aid of 2 potent normal sera of groups Aβ and Bα. Attempts to produce test sera by immunization did not succeed, because of the appearance of non-specific agglutinins.—*Author's summary (transl. by A. S. Wiener)*.

10566. WYNOHRADNYK, VL. Un moyen rapide de diagnostic post mortem de la typhose aviaire. *Arch. Vet.* [*Bucureşti*] 22(3/6): 101-104. 1930.—The author found that the agglutination test made with 1 drop each of pericardial fluid and avian typhoid antigen establishes a rapid (5 min.) diagnosis of avian typhoid, and is clear, reliable and practical.—*Author's conclusions (transl.)*.

ANIMAL IMMUNOLOGY

PARASITOLOGICAL

W. H. TALIAFERRO, *Editor*

(See also in this issue Entries 10560, 10606, 10619)

10567. DENNIE, CHARLES C., HARRY M. GILKEY, and SIDNEY F. PAKULA. The antisyphilitic action of the malarial parasite in other than central nervous system syphilis. *Amer. Jour. Syphilis* 15(3): 320-332. 18 fig. 1931.—Malaria treatment with improvement is reported in 2 cases of bone and joint syphilis, 3 of syphilitic interstitial keratitis, and 1 of leproid syphilis; in 2 of these the malaria produced no fever, yet the benefit was pronounced. The authors believe that the malarial parasite itself (and not the hyperpyrexia) antagonizes *Spirochaeta pallida* by stimulating production and action of macrophages.

10568. McCOY, O. R. Immunity reactions of the dog against hookworm (Ancylostoma caninum) under conditions of repeated infection. *Amer. Jour. Hyg.* 14(2): 268-303. 1931.—18 dogs were given repeated infections

with *A. caninum*, and the infections followed by egg count, hemoglobin content of blood, and recovery of adult worms from feces. In the 6 cases of heavy infection, the egg count rose rapidly during the first 3 months to a peak of several million eggs per day. The dogs became very anemic, hemoglobin dropping as low as 25%; 2 dogs died, but in 4 others a crisis occurred and the egg count suddenly dropped to a comparatively low level, though large doses of larvae were still being given, while large numbers of adult worms were passed in the feces and the hemoglobin gradually rose to normal. The fact that at the height of infection, these dogs not only resisted development of more larvae but also threw off the majority of worms already established, is interpreted as an immunity reaction. It was not absolute because 2 of the dogs, after losing their infections, were subsequently given 2nd and even 3rd infections which were thrown off in the same manner as, and more rapidly than, the 1st. In light infections, it was difficult to separate acquired immunity from age resistance, but previous infection apparently conferred some degree of immunity. In all cases tested, worms were still present in the intestines. 6 cats repeatedly infected with a cat strain of *A. caninum*, also showed increased resistance, apparently distinct from age effect. Egg production per ♀ worm in 10 of the resistant dogs autopsied at the end of the experiment, averaged 5,360 ± 313 eggs per day, or only about ⅓ the normal figure. Apparently, the conditions in the host preventing development of larvae and causing loss of the majority of worms, also greatly decreased egg production in those persisting. Nearly 2,600 worms were recovered from the feces of 7 dogs during the experiments, and the evidence from correlation with drop in egg count indicates that this figure represented approximately ½ of the worms actually lost. Occurrence and degree of eosinophilia were variable and could not be directly correlated with development of resistance.—*Author's summary.*

10569. McCOY, O. R. Immunity of rats to reinfection with Trichinella spiralis. *Amer. Jour. Hyg.* 14(2): 484-494. 1931.—Rats given sublethal doses of *T. spiralis* (known quantities of larvae) developed immunity, strikingly shown in an experiment in which 10 of 11 previously infected rats survived a test dose of larvae which killed 9 of 11 controls. Previously infected rats withstood more than twice the dose of larvae proving lethal to the majority of controls. The proportion of larvae developing to the adult stage in controls was approximately 10 times that in previously infected rats. Furthermore, the few worms developing in "immune" rats were lost from the intestine before new infection of the muscles was accomplished.

10570. TALIAFERRO, WILLIAM H., PAUL R. CANNON, and SARA GOODLOE. The resistance of rats to infection with Trypanosoma lewisi as affected by splenectomy. *Amer. Jour. Hyg.* 14(1): 1-37. 1931.—In 35 young, *Bartonella*-free rats, splenectomy from 7 days prior, to 41 days after, infection with *T. lewisi* did not markedly affect reproduction of trypanosomes as compared to that in 20 non-splenectomized controls. In decided contrast, splenectomy in a similar series of 33 young, *Bartonella*-infected rats sometimes markedly affected the normal cycle of trypanosome reproduction, so that it was longer or recurred. In general, the effect of splenectomy was slight when performed 6 days prior to infection, was more marked when performed on the same day, was pronounced when performed 5-10 days afterwards, and was very slight or nil when performed 21-58 days after infection. A series of 20 old *Bartonella*-infected animals gave results similar to those with young rats. In general, there was some effect when the operation was performed 4 days and 1 day prior to infection, and 5 days after infection; there was no demonstrable effect when the operation was performed 10-23 days after infection, but a pronounced effect when performed 41 and 60 days afterwards. Within the limits of the series, age of host per se apparently did not influence the effectiveness of splenectomy. The authors conclude that when the antibody titer which inhibits reproduction of the trypanosomes is high, the effect of splenectomy may be obscured, since the higher the titer the greater the "margin of safety" in macrophage balance. Once the balance between activity of the macrophage system and infection is disturbed by splenectomy, *Bartonella* infection, paratyphoid infection, India ink blockade, and gestation may affect formation of the reproduction-inhibiting antibody. Splenectomy influences formation of the trypanocidal antibody associated with termination of the infection, as shown by length of infection. This effect is probably more marked when there is a concomitant *Bartonella* infection. Castration performed with about the same operative trauma as splenectomy, is without demonstrable effect on *T. lewisi* infections. Infection with *T. lewisi* in *Bartonella*-free rats produces a significant increase in spleen size and demonstrable histological increase in cellular activity. Splenomegaly is more pronounced in rats with *Bartonella* alone than in those with *T. lewisi* alone, and more pronounced in rats with both infections together than in those with either alone. Increase in spleen size resulting from *T. lewisi* infection occurs within the 1st few days of infection, after which there is no progressive change in size. In those rats which died during infection with *T. lewisi*, death could be correlated with a *Bartonella* or paratyphoid infection, without assuming any pathogenicity of the trypanosomes.

10571. WHARTON, DENIS R. A. Skin reactions in rabbits infected with the larval form of Taenia serrata. *Amer. Jour. Hyg.* 14(2): 477-483. 1931.—Of 182 stock rabbits examined, 81 were found naturally infected with *Cysticercus pisiformis*, the larval form of *T. serrata* usually in the omentum and with little ill effect on the host. Of 16 artificially infected rabbits, many display liver involvement; passage of young larvae through the liver frequently caused mechanical obstruction or injury to the ducts and vessels, or pollution of the blood stream with products of metabolism, and death. Skin tests were performed on 30 rabbits with 0.1 cc. of the supernatant fluid from a 1% extract of the powder of various worms in saline after incubation at 37° C. for ½ hr. and at room temp. for 15 min. Of 18 rabbits either naturally or experimentally infected with the larval form of *T. serrata* but with no other worm, 13 gave + and 5 — reactions to the larval form of the specific antigen, and 15 + and 3 — reactions to the adult form. 2 of the 3 — reactions occurred in rabbits heavily infected that they may have been desensitized. Failure to react to either larval or adult forms of the specific antigen was observed in only 1 infected rabbit which contained a single larva in the liver. When several of these rabbits were tested with *Moniezia, Cysticercus fasciolaris*, or *Macracanthorhynchus*, they gave uniformly — tests. Uniformly — tests were obtained with these antigens in 12 uninfected rabbits.

PARASITOLOGY (ANIMAL)

R. W. HEGNER, *Editor*

W. W. CORT and F. M. ROOT, *Associate Editors*

(See also in this issue Entries 9628, 10233, 10430, 10487, 10568, 10769, 10940, 11414, 11423, 11457, 11458, 11462, 11463, 11464, 11465, 11466, 11467, 11470, 11471, 11472, 11473, 11474, 11481, 11483, 11484, 11485, 11558, 11566, 11572, 11612, 11680, 11688)

10572. ACKERT, JAMES E., MARIAN FISHER McILVAINE, and NAOMI ZIMMERMAN CRAWFORD. Resistance of chickens to parasitism affected by vitamin A. *Amer. Jour. Hyg.* 13(1): 320-336. 1931.—White leghorn chickens (60) 7-8 wks. old in 2 preliminary tests and 127 chickens 4-7 wks. old in 4 experiments were used to ascertain whether resistance to *Ascaridia lineata* (Schneider) was affected by vitamin A (from cod-liver oil) in the diet, the criteria being the numbers and the lengths of worms remaining in the intestines at the close of the experiment. During the 5-wk. periods of the experiments the characteristic avitaminosis A eye disease, ophthalmia, occurred repeatedly among the chickens on the vitamin A-deficient diet but was wholly absent from those on the diets adequate for this vitamin. Significantly larger numbers of *A. lineata* remained in the chickens of group I (diet deficient in vitamin A) than in those of groups II and III (diets adequate for vitamin A). The average total worm length per chicken was significantly greater in group I than from the chickens of groups II or III. The larger numbers of *A. lineata* remaining in the chickens of group I was attributed in part to evidence of weakened peristalsis observed in most of the chickens on the vitamin A-deficient diet, thus making it less difficult for the young worms to withstand the rigors of peristalsis. Concerning lengths of worms, if bacteria constitute a regular portion of the diet of *A. lineata*, the sluggish intestines of the vitamin A-deficient chickens should afford richer bacterial cultures, and thus possibly facilitate more rapid growth.

10573. ACKERT, JAMES E., and L. O. NOLF. Resistance of chickens to parasitism affected by vitamin B. *Amer. Jour. Hyg.* 13(1): 337-344. 1931.—Groups of chickens given the same number of embryonated eggs of *Ascaridia lineata* (Schneider) had more worms when their diets lacked vitamin B than did similar groups of chickens whose rations contained adequate amounts of this vitamin (from baker's yeast). The larger numbers of worms are attributed in part to partial paralysis of the intestine due to lack of vitamin B, the greatly weakened peristalsis probably aiding the worms in remaining in their habitat. Larger specimens of *A. lineata* were found in those chickens whose diet contained yeast than in those lacking it. It is suggested that the yeast may contain a factor favorable to the growth of the worms.—*From authors' summary.*

10574. [ALFEEVA, S. P.] АЛФЕЕВА, С. П. К вопросу о миграции аскарид и остриц в ткани кишечной опухоли у человека. (On the question of the migration of Ascaris and Oxyuris into the tissues of intestinal tumors in man.) Вестник Микробиологии и Эпидемиологии (*Rev. Microbiol. et Épidémiol.*) 6(4): 423-432. [English summary, p. 476.] 1927.—In a case of acute perforative peritonitis, autopsy revealed an *Ascaris* in the peritoneal cavity. In the wall of the ileum was found a leiomyoma. In the peripheral parts of the tumor (up to 2-3 cm. thick) were passages of various standing—old ones, pigmented and filled in with scar tissue, and more recent with distended blood vessels going along the passage, with a slight cellular infiltration of the tissue of the tumor, even with fibrinous deposit in some places. One passage, bearing features of acute inflammatory process on its walls, came up to the surface of the tumor and communicated with the peritoneal cavity. Inflammatory alterations of the peritoneum in the vicinity of this passage as compared with its more remote parts supported the surmise that this was the place where the *Ascaris* found in the peritoneal cavity had passed and where the exudative peritonitis had begun. In one of the passages was discovered *Oxyuris vermicularis*, in another the remains of a dead calcified parasite, probably *Ascaris*.

10575. [ANANIAN, S. A.] АНАНЯН, С. А. К вопросу о тениидозах населения Армении с анализом морфологической изменчивости элементов их возбудителей. [Taeniasis of the Armenian population and morphological analysis of the parasites.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(9): 604-609. 1929.—Statistics show a cestode incidence in 11.9% out of 3000 observations. *Taenia solium* was found in 0.46% of all cases. *Taeniarhynchus saginatus* in 44.54%. Morphological studies were made, with special attention to the comparative sizes of scolices and proglottides. In *Taeniarhynchus saginatus* the small rudimentary proboscis, an atavistic vestigial organ, was found in 20% of all specimens examined. Pigmentation of the scolices was found in 37%. *Taenia solium* grew less intensively and was usually much smaller than *T. saginatus*.

10576. [BADANIN, N. V.] БАДАНИН, Н. В. К обнаружению Gastrodiscoides hominis—паразита человека у дикого кабана. [Gastrodiscoides hominis in a wild boar of Kazakstan.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(8): 514-516. 2 fig. 1929.—*G. hominis* was found in the large intestine; it is the first record of this parasite in U.S.S.R. A detailed description is given of the egg and of the 3 specimens. Since, as a rule, whenever this parasite has been discovered in swine it has been found also in humans of the locality, there is reason to suppose that it may be found also in the population of Kazakstan.

10577. BAYLIS, H. A. Notes on some parasitic worms from Norwegian rodents. *Ann. and Mag. Nat. Hist.* 7 (38): 175-176. 1931.—First record of *Protospirura muris* in a vole, *Evotomys rutilus*. Some hosts were collected at Finmark, Immerfoss, Upper Reisendal and Tromsö Province; as human habitations here are very few and miles apart, some other insect than the usual *Tenebrio* may act as intermediate host. A cysticercus, "*Cysticercus innominatus hypudaei*," was found on the liver of *Evotomys rufocanus;* and a cestode, probably a species of *Paranoplocephala*, was found on 2 occasions in the intestines of *Microtus ratticeps*, at Finmark.

10578. BEDERKE, OTTO. Qualitative und quantitative Analyse der Helminthenfauna im Dickdarm des Pferdes. [Qualitative and quantitative analysis of helminth fauna in the large intestine of the horse.] *Berliner Tierärztl. Wochenschr.* 47(10): 149-150. 1930.

10579. [BOGOÏAVLENSKIÏ, N. A., S. N. KARLENKO, and G. K. SHKHÏAN.] БОГОЯВЛЕНСКИЙ, Н. А., С. Н. КАРЛЕНКО, и Г. К. ШХЯН. К вопросу о кокцидионосительстве у овец Казахского уезда (в Азербайджане). [Coccidia carriers among the sheep of Kazakh district, Azerbaijan.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(2): 102-105. 2 fig. 1929.—In 127 out of 300 sheep, fecal examination revealed coccidia—*Eimeria faurei* and *E. intricata*. Only 2.3% showed pure coccidial invasion, the rest had it combined with worms. Since anamnesis revealed no pathological symptoms, the authors consider this a case of coccidia carriers, and not of coccidiosis.

10580. [BUDYLIN, V. G., and V. V. ANDREEVA.]

БУДЫЛИН, В. Г., и В. В. АНДРЕЕВА. Материалы к характеристике гельминтофауны Азербайджана. [Helminth fauna of Azerbaijan.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(6): 390-393. 2 pl. 1929.—Fecal examinations were made in the Transcaucasian district of Agdam, using the Fülleborn method. No perianal grattage could be performed, thus rendering data about *Enterobius vermicularis* and *Taenia saginata* only relatively correct. Of 2162 persons, 1517 were infected, *Trichocephalus trichiurus* predominating (1315 cases). Altogether 9 species were discovered. Double and triple invasion was very frequent, and there were several hosts harboring 4 and even 5 species at once. *Trichostrongylus* was found in 9.8%.

10581. **CARPANO, MATTEO.** Sulla trasmissione della febbre della costa orientale (theileriosi da Theileria parva) a mezzo del sangue circolante e qualche considerazione sulla differenziazione della Theileria parva dalla Theileria annulata. [Transmission of Oriental coast fever (Theileria parva theileriasis) by means of circulating blood and some considerations upon the differentiation between T. parva and T. annulata.] *Clinica Veterinaria* 53(5): 261-268. 2 fig. 1930.—The author obtained for the first time (1912) experimental transmission of Oriental coast fever of bovine cattle. The same transmission has been observed in French N. Africa, by Sergent, Donatieu, Parrot, Lestoguard and Plantureau (1926), and in S. Africa by Theiler and Du Toit (1928). The success of the experiment is ascribed to the presence of the plasmatic bodies of Koch in the circulating blood. The gravity of the experimental disease seems to depend on the peculiar sensibility of the inoculated animal. *Theileria parva* and *T. annulata* differ in morphology and in geographic distribution. Other similar affections, such as that produced by *Theileria dispar* are distinct.—*M. Carpano* (*transl. by A. Agramonte*).

10582. [CHERKASOV, A. V.] ЧЕРКАСОВ, А. В. К вопросу о распространении глист среди детского населения г. Киева по данным клиники за 1922-26 г. [Helminthiasis among children in Kiev in 1922-26.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(5): 332-337. 1929.—Helminthological examination was conducted from 1922 to 1926 on 506 boys and 361 girls, infection being 72.31% and 81.44% respectively. These data do not include children who entered the clinic with helminthological complaints, but are taken from the normal pediatrical division. Double and triple invasion was rarer than single. *Ascaris lumbricoides* was found in 57.32%; *Trichocephalus trichiura* in 36%; *Enterobius vermicularis* in 17.64%; Cestoda in 1.5%. Eosinophilia (above 6%) was found in 371 cases; decrease of hemoglobin in 91 cases. Majority had more or less pronounced leucocytosis; true leucocytosis was found in 13 cases. Lymphocytosis was present in 442 cases (66%). No particular stool disorders, due to helminthiasis, were noticed.

10583. [DANIL'CHENKO, A. T.] ДАНИЛЬЧЕНКО, А. Т. К вопросу о возможности заражения некоторыми видами глист посредством овощей с одесских полей орошения. [Possibility of helminthological infection through vegetables from the irrigation fields of Odessa.] [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 88-106. 1930.—Feces of 200 persons dwelling or working in the vegetable-growing fields irrigated with sewage waters from Odessa were investigated; 95.5% contained *Trichuris trichiura*, 30% *Ascaris lumbricoides*, and 5% *Hymenolepis nana*. Living quarters and conditions were highly insanitary, not counting the practically direct contact with the sewage waters. These waters were examined by a special method, since neither Telemann nor Fülleborn methods proved quite adequate. Strong solutions of Fe_2Cl_6 and Na_2CO_3 were added to sewage water, and a few hours later the sediments were extracted and examined after Fülleborn and Telemann methods. As a rule, in each preparation were found 18-20 eggs of *T. trichiura*, less often 1-2 eggs of *A. lumbricoides*, and even more seldom those of *H. nana*, *Taenia solium* or *Taenia saginata*. According to published data, eggs of these parasites survive 12-16 weeks. Therefore, both the general infection of the workers and the high egg contents of the sewage waters corroborate the author's hypothesis that the high percentage of *T. trichiura* invasion among the natives of Odessa is largely due to the wide use of vegetables from the irrigation fields.

10584. [DIMITRIU, E. A.] ДИМИТРИУ, Е. А. К изучению глистных инвазий среди рабочих Победенского рудника. [Helminthiasis among Pobedenski miners.] Русский Журнал Тропической Медицины [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7 (2): 137-139. 1929.—488 miners were examined (Fülleborn method and smear) and 73.5% found positive for worms: *Ascaris lumbricoides*, 55.5%; *Trichuris trichiura*, 20.2%; *Enterobius vermicularis*, 10%; *Hymenolepis nana*, 2.6%; Taeniidae, 1.6%; *Rhabditis* sp., 0.4%; *Dicrocoelium lanceatum*, 0.2%. Invasion among surface workers, 58.3%; among underground workers, 75.2%. Out of 150 members of miners' families, 60.6% were positive for worms. Conditions of work and water supply were highly insanitary.

10585. **EHLERS, G. H.** The anthelmintic treatment of infestations of the badger with spirurids (Physaloptera sp.). *Jour. Amer. Vet. Med. Assoc.* 31(1): 79-87. 1931.—Arecolin hydrobromide, santonin, oil of chenopodium, and CCl_4 seemed to be ineffective. Tetrachlorethylene in large dose was 100% effective, but also killed the badger; in a 10-minim dose it was not effective. CS_2 was very effective, the badgers improving very promptly; postmortems were not made immediately following treatment to determine whether it was 100% effective; there were no fatalities among the 54 badgers treated.

10586. **FAUST, ERNEST CARROLL.** Animal parasites of wild and domestic mammals and their relationship to human welfare. *Sci. Month.* 32(3): 228-234. 1931.

10587. **FENG, L. C.** Studies on tissue lesions produced by helminths. *Arch. Schiffs- u. Tropen-Hyg.* 35 (1): 1-10. 1931.—Lesions were studied produced by the cestodes *Hymenolepis erinacei* from *Erinaceus dealbatus*, *Hymenolepis nana* from *Cricetulus griseus*, an undesignated worm from *Phoenicopterus roseus*, *Rallietina echinobothrida* from *Gallus gallus*, and the plerocercoid of *Diphyllobothrium latum* from *Lota vulgaris*; by the trematodes *Cotylurus platycephalus* from *Larus ridibundus*, *C. cornutus* from *Anas boschas*, and *Chaunocephalus* sp. from *Ciconia* sp.; and by the nematodes *Physaloptera clausa* from *Erinaceus dealbatus* and *P. caucasica* from *Hamadryas hamadryas*. These include types with intra- and extra-intestinal digestion of the host tissue.—*E. C. Faust.*

10588. **FÜLLEBORN, FRIEDRICH.** Wanderung der Nematodenlarven im Körper des Wirtes. *Naturwissenschaften* 19(4): 79-82. 1931.—The larvae of the hookworm, *Strongyloides stercoralis*, and *Ascaris* penetrate the skin or the walls of the gastro-intestinal tract to go to the lungs by the blood stream and pass from there by way of the trachea to the esophagus and the gastro-intestinal tract, where they become sexually mature. More seldom they pass out of the lungs, through the lung veins, to the left heart with whose blood they form emboli in all the organs. After the larvae get into the circulation their transportation is purely mechanical since the anatomy of the host determines their course; also the ascent in the trachea is brought about by the ciliated epithelium of the host. An attempt was made to explain these migrations phylogenetically. *Oxyuris* larvae obviously do not migrate. Observations on the special clinical symptoms of *Ascaris* larval migration are included.—*H. E. Essex.*

10589. **GOIFFON, R.** L'Entamoeba coli, signe de stagnation colique droite. *Arch. Malad. Appar. Digest. et*

Malad. Nutrit. 20(8): 964-968. 1 fig. 1930.—For 10 yrs. Goiffon has found his diagnosis of stagnation of the colon, based on the presence of *E. coli*, confirmed by other means whenever made.

10590. [GORDINA, R. V.] ГОРДИНА, Р. В. Быстрота всплывания и оседания яиц некоторых видов глист при исследовании кала по методу Фюллеборна. [Time element in the process of flotation and sedimentation of some tapeworm eggs in Fülleborn's method of stool analysis.] [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 175-186. 1930.—Eggs of *Hymenolepis nana* and *Trichuris trichiura* remain on the surface even after standing for several days in the salt-saturated solution. Number of eggs of *Ascaris lumbricoides* increases in the surface film for at least a month. In negative cases, a repeated analysis 6-12 hrs. later may reveal eggs of *A. lumbricoides*, which accumulate more and more as time goes on. Thus, in *T. trichiura*, the number of eggs on the surface after 96 hrs. is hardly equal to that after 2 hrs., whereas with *A. lumbricoides* the number 96 hrs. later is almost twice the number seen after the first 2 hrs. Eggs of *Enterobius vermicularis* reached their highest accumulation in 2 hrs., then steadily decreased, practically disappearing from the surface 72 hrs. later. However, they are not deposited at the bottom, and their fate as well as their disappearance are unexplained. Eggs of all the aforementioned spp. appear on the surface within 10 min. The author observed repeatedly the tendency of the eggs to gather at the periphery of the surface, and, therefore, advises taking samples from the periphery, not from the center.

10591. GOUREVITSCH, D. Zur Frage der Pathogenität der Lamblien und Trichomonas bei Kindern und der Therapie mit Myosalvarsan. *Arch. Schiffs- u. Tropen-Hyg.* 35(1): 26-36. 1931.—*Lamblia* and *Trichomonas* are pathogenic in children, producing for the most part gastroenterologic symptoms. Myosalvarsan, because of its power to activate the cells and its parasito-tropic properties, is curative.—*E. C. Faust.*

10592. GRAWERT, und EICHMAN. Halogenierte Kohlenwasserstoffe als Leberegelmittel für Rinder. [Halogenised hydrocarbons as remedy against flukes in cattle.] *Tierärztl. Rundschau* 36(40): 679-682; (41): 693-697; (42): 714-716. 5 fig. 1930.

10593. [GROMASHEVSKII, L. V.] ГРОМАШЕВСКИЙ, Л. В. Опыт массовой гельминтологической работы в Одессе. [Helminthological mass investigation in Odessa.] [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 5-22. 1930.—This investigation included 4478 people—1500 adults (about 1% of the total adult population) and about 3000 children (2-3% of Odessa's children); 75.9% were found infected. Eight spp. of parasites were discovered: *Trichuris trichiura*, 71.5%; *Ascaris lumbricoides*, 10.9%; *Enterobius vermicularis*, 10.4%; *Hymenolepis nana*, 6.3%; *Ancylostoma duodenale*, 0.6%; *Taenia saginata*, 0.4%; *Taenia solium*, 0.2%; *Dibothriocephalus latus*, 0.2%. The last 4 spp. were found in isolated cases only, or else in the non-indigenous groups, e.g., 43 Chinese from Shanghai with 67.4% of invasion. *T. trichiura* is the most widely distributed parasite among the residents of Odessa—90%. Ascaris predominates among peasants and Red Army soldiers (mostly of peasant origin). *H. nana* is prevalent among children. The comparatively small percentage of *E. vermicularis* is probably due to the method of investigation (Fülleborn), which alone is insufficient to demonstrate this species; with the perianal grattage method in 269 cases, it was found in 54.6%. The distribution of the parasites supports the author's hypothesis that the predominance of *T. trichiura* among the city population is due to the use of vegetables and greens from fields irrigated with sewage.

10594. [GRUBER, L. I.] ГРУБЕР, Л. И. К вопросу об изменении крови при глистоношении. [Alteration of blood in helminthiasis.] [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 107-118. 1930.—Blood and feces were examined from 112 children aged 4-17. 53 harbored 1 sp. each, distributed as follows: 5 with *Enterobius vermicularis*, 9 with *Hymenolepis nana*, 14 with *Ascaris lumbricoides*, and 25 with *Trichuris trichiura*. 44 children carried 2 spp. simultaneously, in various combinations; 6 were hosts of 3 spp. at once; 9 were completely free of infection and served as controls. In the 1st group (1 species hosts) the erythrocytes were below normal in 18.9%; leucocytosis in 35.9%; decreased haemoglobin in 58.5%. Alterations in leucocytes were much more marked: neutropenia in 98.1%, eosinophilia in 84.9%, and lymphocytosis in 94.3%. The greatest changes were found in cases with *H. nana*, the smallest in those with *A. lumbricoides*. The smallest changes in leucocytes were produced by *E. vermicularis*. The hosts with 2 spp. (in which the combination with *T. trichiura* predominated) showed the same changes as the first group, only deviation from the normal was more pronounced. The 3rd group was too small to reveal any characteristic peculiarities. The control group showed normal erythrocyte and leucocyte counts; decrease of hemoglobin was found in 3 cases only, and deviation was very slight (69% in 2 cases, 66% in 1). The white elements showed very little deviation. Eosinophilia was noticed in 2 cases only, of which one suffered with bronchial asthma. The author cites 7 cases in which the helminthological examination was negative; blood examination indicated helminthiasis, which was corroborated by fecal examination.

10595. HENRARD, CONSTANT. Quelques protozoaires parasites des larves de Simulium congolais. *Rev. Zool. et Bot. Africaines* 19(2): 226-230. 1930.—*Thelohania multispora* Strickland, *T. fibrata* Strick., *T. bracteata* Strick., and *Coelomycidium simulii* Deb. were found in *Simulium* sp. larvae in Belgian Congo. The parasites and the tumors they cause are briefly described.

10596. HENTSCHEL, C. C. On the correlation of the life-history of the acephaline gregarine, Gonospora, with the sexual cycle of its host. II. Gonospora (Kalpidorhynchus) arenicolae. *Parasitology* 22(4): 505-509. 1930.—In general there is a correlation between the life-history of *G. arenicolae* and the sexual cycle of its host, *Arenicola ecaudata*, similar to that between *G. varia* and *Audouinia tentaculata*. In *G. arenicolae* the correlation is not so definite and the life-history of a generation of parasites does not necessarily coincide with a sexual cycle of the host. This is complicated by the double annual spawning of the host. The formation of sporocysts is simultaneous with the sexual maturity of the worm. It is suggested that, as in *Audouinia*, a secretion produced by the gonads stimulates the development of the gregarine. Ejection of the sporocysts with the gametes was observed. It is suggested that phagocytosis may be the cause of the rupture of the gametocysts in this species.—*Author's summary.*

10597. HONNA, F. Appendicitis caused by Endamoeba histolytica. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 309. 87. 1930.—First report of a case of primary involvement of this pathogen in appendicitis in Japan. —*E. C. Faust.*

10598. HOROWITZ, A., J. SAUTET, et G. TERRIAL. Remarques sur le rôle pathogène de quelques protozoaires parasites intestinaux de l'homme. *Arch. Malad. Appar. Digest. et Malad. Nutrit.* 20(5): 582-599. 3 fig. 1930.—The evidence for and against the pathogenicity of certain intestinal protozoa is based on 5 cases. In 1 (a persistent, periodic diarrhea), the stools before treatment (emetine and stovarsol) contained *Entamoeba coli, Endolimax nana, Chilomastix mesnili* and *Giardia intestinalis;* after treatment and clinical cure they still contained numerous cysts of the last. In a 2nd case (indigestion and abdominal pain) the feces contained *E. coli, E. nana, Pseudolimax bütschlii, G. intestinalis,* blastocystis and yeasts; after treatment and clinical cure, the same organisms were found with the exception of *P. bütschlii.* In a 3rd case vegetative forms of *E. coli* and cysts of *G. intestinalis* and blastocystis were found before treatment but not afterward. In these 3 cases the clinical symptoms were

insignificant in comparison with the heavy intestinal infestation. In 2 other cases all the clinical symptoms of amebic dysentery were present but no parasites were found. The authors remark that the pathogenicity of a protozoan intestinal parasite is difficult either to prove or to disprove; that the supposedly pathogenic parasites are in the minority in the intestinal flora and fauna, and that when intestinal protozoa are injected into an experimental animal, the associated bacteria, yeasts, chemical substances and possible invisible viruses are injected with it.

10599. [ÏAKIMOV, V. L., V. S. BELAVIN, E. F. RASTEGAEVA, and S. N. NIKOL'SKIĬ.] ЯКИМОВ, В. Л., В. С. БЕЛАВИН, Е. Ф. РАСТЕГАЕВА, и С. Н. НИКОЛЬСКИЙ. Географическое распространение пироплазм и клещей крупного рогатого скота на Северном Кавказе. [Geographical distribution of piroplasma and mites on large horned cattle in North Caucasus.] Русский Журнал Тропической Медицины [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7 (1) : 34-35. 1929.

10600. [ÏAKIMOV, V. L., and D. B. KOLMAKOV.] ЯКИМОВ, В. Л., и Д. В. КОЛМАКОВ. О пироплазмозе северного оленя. [Piroplasmosis of Tarandus rangifer.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7 (9) : 610-614. 1 fig. 1929.—A comparative morphological study of the parasite found in *Tarandus rangifer*, and called by Kerzelli *Piroplasma tarandi rangiferis*, and of other Piroplasmas, e.g., *Piroplasma bigeminum, Babesiella bovis, B. karelica, Françaiella colchica, F. caucasica, F. occidentalis, P. ovis*, and *F. ovis*, showed that *P. tarandi rangiferis* is characterized by: (1) central location; (2) obtuse angle of divergence of the double pear-like forms; (3) size, smaller than the radius of the erythrocyte; (4) chromatin mass, 1. From this the parasite belongs to *Babesiella*, Mesnil, 1928, although, judging by the number of its pear-like and ring-like forms, it stands halfway between this and *Françaiella* Yakimoff, 1926. And since its size is usually less than the radius of the erythrocyte, and seldom equals the latter, its place is between *Babesiella* s. str. and *Françaiella*. It is concluded that the parasite of *T. rangifer* should be known as *Françaiella tarandi rangiferis* Kerzelli, 1908.

10601. [ÏAKIMOV, V. L.] ЯКИМОВ, В. Л. К вопросу о паразитизме у пресноводных рыб. Chlamydophrys у плотвы (Rutilus rutilus.) [Parasitism in fresh water fishes. Chlamydophrys in Rutilus rutilus.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7 (10) : 702-705. 1 fig. 1929.—In smears from the liver of *Rutilus rutilus*, from lake Pid'mozero, the author found *Chlamydophrys*, which is described. It approaches most *C. stercorea* and *C. minor*, but is about twice as large. Although found in the liver, the author supposes that originally it was located in the intestine.

10602. ILLINGWORTH, J. F. Manson's eye-worm distributed by English sparrows. *Proc. Hawaiian Ent. Soc.* 7 (3) : 461. 1931.—*Oxyspirura mansoni* is a major pest of young chicks in Hawaii, when they are allowed to run on the ground and feed on the burrowing cockroach, *Pycnoscelus surinamensis* (the intermediate host). The English sparrow [*Passer domesticus*] was also found to be a host.

10603. [ISAICHIKOV, I. M., and G. A. SHUSTER.] ИСАЙЧИКОВ, И. М., и Г. А. ШУСТЕР. К характеристике глистных заболеваний населения Омского исправдома. [Worm invasion in the reformatory inmates of Omsk.] Русский Журнал Тропической Медицины [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7 (2) : 140-142. 1929.—Of 300 inmates examined by Füllebornʼs method, 39.66% were positive. Natives of Siberia showed the lowest percentage. Next were persons temporarily living in Siberia. Highest average was shown by the exiles from European Russia, especially in *Trichocephalus trichiurus*. Ascarids predominate among temporary inhabitants, *Enterobius vermicularis* among the natives. The latter also show the highest percentage of *Taenia saginata*—due to use of raw meat.

10604. JÍROVEC, OTTO. Notizen über parasitische Protisten I. *Zentralbl. Bakt. Abt. I. Orig.* 118 (1/2) : 77-80. 5 fig. 1930.—Descriptions of parasites either insufficiently known or found in novel situations, including: *Spirochaeta noelleri* in the larvae of *Simulium reptans; S. culicis* in *Culex* larvae; spirochaetes in *Anopheles* larvae; *Cytamoeba bacterifera*, in the blood of *Rana esculenta; Lamblia ardeae* from *Podiceps nigricollis*.

10605. [KARIBOV, N.] КАРИБОВ, Н. Предварительные данные по обследованию глистных инвазий среди некоторых групп населения г. Тифлиса. [Worm infestation in Tiflis, Georgia.] Русский Журнал Тропической Медицины [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7 (1) : 45-46. 1929.—Of 189 house workers and 220 children 82.9% showed worms. The smear method was used. One parasite was found in 223 cases; 2 in 105; 3 in 10; 4 in 1. *Trichocephalus trichiuris*, 71.1%; *Ascaris lumbricoides*, 34.2%; *Enterobius vermicularis*, 2.2% (must be higher, since out of 108 perianal grattages 55.5% were positive); *Taenia*, 3.1%; *Hymenolepis nana*, 0.9%; *Strongyloides stercoralis*, 0.2%; *Ancylostoma duodenale* (first record in eastern Georgia), 1.2%; *Fasciola hepatica*, 0.7%; *Macracanthorhynchus hirundinaceus*, 0.2%. Highest percentage of infestation was in individuals under 10 years of age; lowest, over 20.

10606. KITAMURA, K. Experimental studies on dermatitis caused by hookworm larvae. [In Japanese, with English summary, p. 37-39.] *Japanese Jour. Dermatol. and Urol.* 30 (4) : 279-317. 2 pl., 12 fig. 1930.—Histologic study of the development of 5-8 day old encysted larvae of *Ancylostoma caninum* experimentally applied to the skin of dogs, and of the invasion of the dogs' skin by the larvae. They were found extended and coiled, in the horny layer, the Malpighian layer, the hair follicles, and the sweat and sebaceous glands and ducts.—*From author's summary.*

10607. KOBAYASHI, HIDEKAZU. Studies on the development of Diphyllobothrium mansoni (Cobbold, 1882) Joyeux, 1927. (Third report.) Experimental studies on the mode of infection by the mature procercoid. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 30 (1) (no. 310) : 3-8. 31 fig. 1931.—Experiments were conducted on frogs, white mice, white rats, rabbits, cats, and man. In the frog the larvae when inoculated by mouth remain some time in the stomach and intestinal wall, but eventually escape into the abdominal cavity and migrate to the femoral muscles (32 days); in the mouse at the end of 25-30 days they have migrated via the abdominal and thoracic cavities to the adipose tissues of the neck. When inserted into the vagina of the mouse they migrated anteriorward through the subcutaneous tissues to the neck; when placed in the conjunctival sac they became lodged in the subcutaneous tissue on the temporal side of the posterior canthus. When placed on the unmodified, shaved, scarified or blistered skin of the mouse they penetrated into the subcutaneous tissue and at times into deeper layers. In man they reached the subcutaneous tissue, where they multiplied. Pathologic changes were principally found in the subcutaneous layers, where an infiltration of eosinophiles and other leukocytes was demonstrated around the tunnels and paths of migration.—*E. C. Faust.*

10608. KOCH, JOS. Ueber die Cellula cancrosa specifica s. parasitaria. 5. Mitteilung über die parasitäre Entstehung des Krebses. *Zentralbl. Bakt. Abt. I. Orig.* 118 (5/6) : 241-277. 3 col. pl. 1930.—In cancer alveoli there exists a second sort of cell, which in contrast to the homologous cells of the host, can only be heterologous. Its disparity is shown by its parasitic and malignant behavior. It grows within as well as without the epithelial cell itself and is nourished by the latter, which it destroys. The intracellular are chiefly the smaller and spherical forms, the extracellular have a variety of

shapes. The morphology of the supposed parasite is described. Pending the more exact terms of a classification as pathogenic protozoa, the parasites of human and animal cancer, since they are closely related, are suitably grouped as Cellula cancrosa specifica s. parasitaria, subspecifically muris, ratti, canis. The human form resides preferably in old diseased or physiologically inferior epithelial tissue; this explains the age incidence of cancer, and cancer in scars, fistulae, x-ray burns; on smokers' lips, on tongue and cheek from defective teeth; makes intelligible its residence in cogenital nevi and warts, in fetal misplacements which lead to stomach and pyloric cancer. Metaplasia in erosion of the portio uteri creates a locus minoris resistentiae. The breast and uterus tissues after the menopause are physiologically inferior and superfluous, hence the frequency of cancer here after loss of fertility.—*M. C. Marsh.*

10609. **KOFOID, CHARLES A., and HERBERT G. JOHNSTONE.** The oral amoeba of monkeys. *Univ. California Publ. Zool.* 33(18): 379-392. 2 pl. 1930.—Of 5 monkeys of the *Macacus cynomolgus* type (all from China), and of 34 of the *M. rhesus* type (4 from Java, 2 from Hongkong, 28 from India) examined, all of the *cynomolgus* and 21 of the *rhesus* monkeys were found infested with *Endamoeba gingivalis.* The organism, as observed in slides of gingival exudate and in cultures, is described in detail; it is indistinguishable from that of man. The intensity of the pyorrhea conditions observed roughly parallels the number and size of amoebae present. Since the animals were examined a few days after arrival, contamination by human oral amoebae is thought improbable.

10610. **KUDO, R.** Studies on Microsporidia parasitic in mosquitoes. VIII. On a microsporidian, Nosema aedis nov. spec., parasitic in a larva of Aëdes aegypti of Porto Rico. *Arch. Protistenk.* 69(1): 23-38. 2 pl. 1930.—A general review of microsporidian parasites infecting mosquitoes belonging to the genus *Aëdes.* The description of the new species includes later stages of schizogony, sporogony and spore structure.—*B. D. Reynolds.*

10611. **[KULAGIN, S. M.]** КУЛАГИН, С. М. Транзитные яица трематод в кишечнике человека. [Passage of trematode eggs through human intestines.] [French summary.] Русский Журнал Тропической Медицины [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(2): 131-136. 1929.—With exception of 2 cases, persons in whose feces were found eggs of *Fasciola hepatica* and *Dicrocoelium lanceatum* showed no clinical symptoms of hepatic distomiasis. Repeated fecal analysis (Telemann's method) revealed that these eggs were present in the feces of individuals or whole families after eating boiled liver of infested animals. Having found prior to the experiment that his feces were free of parasites, the author ate liver containing their eggs, and during next 3 days found the eggs in the feces. In all cases the eggs preserved their original structure despite cooking and boiling.

10612. **Le ROUX.** A brief review of the literature dealing with the kidney-worm (Stephanurus dentatus Diesing, 1839) of swine, together with suggestions for its control and ultimate eradication. *Union So. Africa Dept. Agric. Pan-African Agric. and Vet. Conf. Papers Vet. Sect.* p. 112-118. 1929(1930).

10613. **LINTON, RICHARD W.** Blood changes during trypanosome septicemia. *Amer. Jour. Path.* 6(5): 627. 1930.—Abstract.

10614. **[LIŪBIMOV, M. P.]** ЛЮБИМОВ, М. П. Опыты определения времени всплывания и осаждения яиц некоторых видов кишечных паразитов в насыщенном растворе NaCl (по Fulleborn'y). [Determination of time element in surface floatation and sedimentation of some intestinal parasite eggs in saturated NaCl solution (after Fülleborn).] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(7): 450-456. 1929.—The experiments seek to determine: (1) the minimum time necessary for the first eggs to rise to the surface of the solution; (2) the optimum (most convenient) time for the preparation of smears, when (after the minimal period of sedimentation) the maximal number of eggs can be taken from the surface; (3) the influence of the saturated NaCl solution upon the eggs. Eggs of the following were used: *Ascaris lumbricoides, Parascaris equorum, Toxascaris limbata, Toxocara mystax, Trichocephalus crenatus,* and some undetermined species of equine Strongylidae. Eggs were taken either from fresh feces or directly from the parasites. With the dilution 1:15-20, the time-minimum required for the eggs to float was 1-5 min.; at 1:7, floatation is delayed up to 10 min. With the dilution 1:15-20, and with large quantity of eggs (up to 1000), the optimum time is 5-20 min.; with smaller number of eggs (up to 200), the optimum is lowered to 5-10 min. Plasmolysis of the eggs was the only influence exerted by saturated NaCl solution. All spp. yielded the same results.

10615. **MOGAN, D. O.** The entozoal parasites of the goat in Britain. *British Goat Soc. Year Book* 1930: 32-34. 2 pl. 1930.—A study was made of 36 goats from various parts of the country. With 2 exceptions, *Skrjabinema ovis* and *Trichostrongylus capricola,* the worms found are also common parasites of sheep in this country.

10616. **MÖNNING, H. O.** Epizootology of worm infection. (With special reference to worms of domestic animals.) *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria, Papers Vet. Sect.* p. 94-101. 1929(1930).

10617. **NEVZAT, BAYTAR A.** Bir ördegin guddevi midesinde husuî evsafta bir nevi Tropidocerca. [Peculiar Tropidocerca in the gizzard of the domestic duck.] [In Turkish.] *Baytarî Mecmua. (Rev. Vét. Constantinople)* 7(2): 54-59. 1929.

10618. **NIIMI, D.** On the outbreak of black-head in Japan. [Japanese, with English abstract.] *Jour. Jap. Vet. Sci.* 9(3): 256-263. 2 pl. 1930.—According to the author's observations this disease has been occurring among chickens in summer for several years, though mistaken for coccidiosis. Many young chickens 2-3 months old have been destroyed, mortality being 50%. The observations of Th. Smith and others were confirmed in the liver and caecum of all cadavers, permitting definite diagnosis of blackhead.

10619. **[NIKOLAEV, B. P., and V. V. YAKOVLEVA.]** НИКОЛАЕВ, Б. П., и В. В. ЯКОВЛЕВА. О судьбе половых форм Pl. vivax в полости желудка комаров рода Culex, Theobaldia и Aedes. [Sexual forms of Plasmodium vivax in the abdominal cavity of Culex, Theobaldia and Aedes.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(9): 577-582. 1 fig. 1929.—*C. pipiens, T. alaskaensis,* and *Aedes salinellus,* all immune to malarial infection, were allowed to feed on the same malarial patients simultaneously with *Anopheles maculipennis.* Digestion of the asexual forms proceeded with the same rapidity as in *Anopheles,* but the sexual forms of *Plasmodium vivax* were not digested either by *Anopheles* or the other 3 species. The gametes were fecundated and formed the ookinetes, and even "mature" oocysts, as in the abdominal cavity of *Anopheles.* But whereas *A. maculipennis* showed the complete cycle of development, with the ookinetes leaving the abdominal cavity and entering the stomach wall, in *C. pipiens, T. alaskaensis,* and *A. salinellus* neither oocysts nor sporozoites were ever seen in the stomach wall, and the further destiny of the "mature" ookinetes in this case is still unknown. Since the sexual forms are not digested, the immunity of these mosquito species depends, apparently, not upon the digestive properties of their alimentary juices in respect to gametocytes, but upon the conditions of introduction of ookinetes into, and the development of oocysts in, the stomach wall.

10620. **NISHIMURA, FUKUTARO.** On the development of Gongylonema orientale Yokogawa in the final host. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. For-*

mosa] 308. 73-79. 3 pl. 1930.—Development is divided into 3 stages. The 1st parasitic or 3rd larval stage covers the period from invasion of the host (rat) until the 1st moult, 4-9 days later; structural changes in the larva are discussed. The 2nd parasitic or 4th larval stage includes the time between the 1st and 2nd moults, a period of 8-10 days, with a slightly longer time in the ♀. The organs now begin to differentiate, so that circumoral nerve ring and ganglia, cervical and cephalic glands, lateral line, the genital primordia and the external and internal reproductive organs of the ♂ and ♀ can be readily studied.—*E. C. Faust.*

10621. [OLEINIKOV, S. V.] ОЛЕЙНИКОВ, С. В. К вопросу о диагностике и эпидемиологии энтеробиоза. [Diagnosis and epidemiology of enterobiasis.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(6): 393-402. 1929.—Helminthological investigation in Ufa, involving 5130 perianal and anal grattages (Ruotsolainem's method), yielded positive results in 3399 cases. *Enterobius vermicularis* was found in 3042 cases, other parasites, e.g., *Ascaris lumbricoides, Taenia* sp., etc., being present in very few cases. The author believes that the main method of infection with *E. vermicularis* is through breathing dust containing eggs. The egg-laying process as observed by him differs considerably from that described by Wilhelmi and others.

10622. PICARD, W. K. Pluimveeziekten in Nederlandsch-Indië. [Poultry diseases in Dutch East Indies.] [With German and English summaries.] *Ned.-Indische Blad. Diergeneesk.* 43(1): 24-29. 2 fig. 1931.—On West-Java poultry-farms the author diagnosed an intensive infection with *Davainea proglottina,* starting with loss of appetite, anaemia and haemorrhagic diarrhoea; the animals die in a paralytic and cachectic state.

10623. PURVIS, G. B. Setaria labiato-papillosa (Alessandrini, 1838) or Setaria digitata (von Linstow, 1906). *Vet. Rec.* 11(19): 528-529. 4 fig. 1931.—From Malayan material from water buffalo and ox, the author concludes that the latter is a synonym of the former. The prevailing impression is that these worms are harmless, but this is not always the case, as a post-mortem examination of 1 ox showed a patch of hemorrhagic inflammation on the visceral peritoneum, which coincided with presence of 6—8 *S. labiato-papillosa.* On another occasion, *Setaria* sp. was extracted from fibrinous peritoneal exudate; on another, *S. labiato-papillosa* from the same type of lesion and, on another, calcified material of similar appearance was obtained.

10624. REGENDANZ, P. Der Zuckerverbrauch der Trypanosomen (nach Versuchen in vitro bei 37° C.) und seine Bedeutung für die Pathologie der Trypanosomeninfektionen. *Zentralbl. Bakt. Abt. I. Orig.* 118 (3/4): 175-186. 1930.—The author studied the decrease in sugar content of serum-blood mixtures containing trypanosomes and incubated at 37° C., using *T. rhodesiense, T. congolense* and *T. lewisi.* The loss of sugar in these mixtures is caused mostly by the metabolism of the trypanosomes; no loss takes place when the trypanosomes are dead or dying. The utilization of sugar by trypanosomes in vitro at 37° C. is considerable. No difference could be observed between the amounts of sugar consumed in vitro after 15 minutes incubation at 37° C. by pathogenic trypanosomes and *T. lewisi.* The author emphasizes the significance of the sugar utilization by trypanosomes for the pathology of trypanosome infections.—*R. Dubos.*

10625. [SHNEERSON, A. A.] ШНЕЕРСОН, А. А. Степень распространения Hymenolepis nana среди детского населения Одессы. [Distribution of Hymenolepis nana among the children of Odessa.] [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 53-64. 1930.—Out of 556 boys, 68.9% were positive for worms, 6.7% for *Hymenolepis nana.* Out of 694 girls, general infection was found in 71%, *H. nana* in 5.8%. The parasite was comparatively seldom found alone (18.2%), mostly in combination with *Trichuris trichiura* and other species. As to age, 4 to 8 years showed the greatest percentage of *H. nana* infection; starting with 8, infection decreases steadily. No infection was found under 1 yr. of age. Among children from the less sanitary districts, *H. nana* is met more frequently. Out of all children examined (1250), it was found in 6.2%; but taking into account the biological peculiarities of *H. nana* (closed uterus), and the defects of the fecal method, the real infection average must be rather higher.

10626. SILVA, FLAVIANO, e EDUARDO de ARAUJO. Leishmaniose experimental. (Nota prévia.) *Brasil-Med.* 44(36): 997-999. 1 fig. 1930.—The authors transmitted American leishmaniosis of man to a *Macacus rhesus.* An emulsion made from the material in the human lesion was injected intradermally in the nasal region of the monkey. Incubation was 81 days.—*C. Dawley.*

10627. SMIT, H. J., en R. ROTOSOEDIRO. Acuaria hamulosa (Dies.). [With German and English summaries.] *Ned.-Indische Blad. Diergeneesk.* 42(6): 607-610. 1 fig. 1930.—From the intestines of a chicken (Leghorn × indigenous) the authors report *Acuaria hamulosa* in Dutch East Indies, known heretofore only from America, Europe and Australia.

10628. SZIDAT, L., und R. WIGAND. Über Fuadinwirkung bei Bilharziella-Enten. *Arch. Schiffs- u. Tropen-Hyg.* 35(3): 159-171. 1931.—Experiments were carried on to determine the potency of this antimonyl compound on *Bilharziella polonica* Kow., a blood fluke of the subfamily Bilharziellinae. Each ♀ has a single egg in the uterus, which is laid into the portal vein and works its way through the intestinal mucosa into the feces. The miracidium, which hatches when the feces are diluted with water, invades the snail *Planorbis corneus* L., where the sporocysts and cercariae develop. The latter emerge from the snail and become attached to the feathers of ducks swimming in the water. Either via the skin route or by artificially feeding in crumbs the larvae reach the mesenteric veins and become mature in about 3 weeks. A dosage of fuadin 10 times as large as that utilized in human schistosomiasis had no effect on the infection or on the blood picture of the ducks.—*E. C. Faust.*

10629. THOMAS, J. ANDRÉ. Sur le Sporozoaire (Coccidie) parasite de Nereis diversicolor O. F. M. *Compt. Rend. Soc. Biol.* 104: 138-140. 1 pl. 1930.—A description of the principal developmental stages and of microgametogenesis of a new coccidium*, probably belonging to *Caryotropha.* [No name is proposed.]—*J. A. Thomas (transl.).*

10630. VILJOEN, P. R. The East Coast fever problem in the Union. *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf.* [*Pretoria*] *Papers Vet. Sect.* P. 145-157. 1929(1930).—A discussion of recent outbreaks and eradication methods.

10631. [VINOGRADOV.] ВИНОГРАДОВ. Глистные заболевания русского и самоедского населения тиманской тундры. [Helminthiasis among Russians and Samoyeds of the Timan tundra.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(5): 329-332. 1929.—From fecal examinations of 334 persons, *Diphyllobothrium latum* was found in 74% of Russians and 95-100% of Samoyeds. This high percentage is ascribed to the use of raw meat and fish. Conditions are highly insanitary. Other parasites, e.g., *Enterobius vermicularis* and *Ascaris lumbricoides,* are exceedingly rare.

10632. VOLKMAR, FRITZ. Trichomonas diversa n. sp. and its association with a disease of turkeys. *Jour. Parasitol.* 17(2): 85-89. 1 fig. 1930.—*T. diversa* occurs in the upper digestive tract of turkeys and is pathognomonic for a new disease characterized by peculiar excrescences of the esophageal mucosa. The flagellate measures 14 × 9 inches in the active stage (drop-form) and 13 × 13 inches in the resting phase. The axostyle, measuring 14-16 inches is capable of active flexibility.

The center is connected with the opposite side of the nucleus by a fibrilla. The forward flagellae number three; the axoneme is detachable.—*F. Volkmar.*

10633. **WALLACE, FRANKLIN GERHARD. Lung flukes of the genus Paragonimus in American mink.** *Jour. Amer. Vet. Med. Assoc.* 31(2): 229-234. 1931.—*Paragonimus kellicotti* is reported. Diagnosis is most easily made by fecal examination. In most cases the ova are so numerous that they are readily detected by the direct smear method. The eggs are distinctive in appearance and can be identified by the prominent operculum and the thickening of the shell at the opposite end. *P. kellicotti*, like its Asiatic congener, uses the crayfish as second intermediate host. The author succeeded in heavily infecting cats with cysts from the pericardial region of *Cambarus immunis spinirostris*. There is little chance for pen-raised animals to become infected, as they are seldom fed these crustaceans. None of the cases reported have been in animals definitely known to be pen-raised. Furthermore, subsequent examinations of 143 carcasses, nearly all young animals bred in domestication, revealed no cases of *Paragonimus*. It is suggested that mink-buyers insist on strictly pen-raised stock, and secure fecal examinations to determine possible infections.—*From author's conclusions.*

10634. **ANONYMOUS. Estado actual del estudio de la oncocercosis en México. [Present state of the study of onchocerciasis in Mexico.]** *Bol. Oficina Sanitaria Panamericana* 9(11): 1290-1301. 2 maps. 1930.

10635. **ANONYMOUS. Transmission of Leishmania donovani.** *Nature [London]* 127(3200): 308. 1931.—Lieut.-Col. Shortt announces successful transmission of *Leishmania donovani* to Chinese hamster by bites of artificially infected *Phlebotomus argentipes.*

FILTERABLE VIRUSES, BACTERIOPHAGE, ETC.

GEO. H. SMITH, *Editor*

(See also in this issue the subsection "Infectious Chloroses" in the section Phytopathology; and Entries 10330, 10331, 10343, 10429, 10438, 10451, 10465, 10486, 10508, 10524, 10559, 10659, 10677, 10693, 10699, 10709, 10723, 10937)

GENERAL

10636. **ALTERTHUM, HANS. Beiträge zur Frage des Herpes zoster varicellosus.** *Monatsschr. Kinderheilk.* 40(4): 330-343. 18 fig. 1928.—Study of the relation of herpes zoster to chickenpox, based on 36 cases of herpes zoster in the children's hospital, Berlin, during 1920-1928, showed that a majority (23) of the zoster cases either were followed by, or in turn followed, cases of chickenpox occurring within the same hospital ward. The number of cases of zoster was not always proportional to the number of cases of chickenpox, frequency of zoster cases being greater in certain yrs. 6 of 7 cases of zoster associated with treatment with arsenic or bismuth showed unquestioned connection with cases of chickenpox. Recovery from zoster associated with chickenpox does not always give immunity to chickenpox, and vice versa.—*M. L. Earle.*

10637. **BOURGUIGNON, D. C. L'alastrim est-il une forme allergique de la variole?** *Ann. Soc. Belge Méd. Tropic* 11(2): 127-130. 1931.—Since the virus is of the same nature, alastrim seems to be an atypical form of smallpox. It is possibly of an allergic nature, i.e., an attenuated form of smallpox of benign character which appears in epidemic zones in subjects which have been sensitized by a former contact with smallpox virus.

10638. **GORDON, M. H. Virus studies concerning the aetiology of psittacosis.** *Lancet* 218(5570): 1174-1177. 1930.—Passage of the parrot virus through the mouse rapidly increases its virulence. As a rule, the unfiltered virus kills more surely and quickly than the Seitz filtrate. Exposure for 30 min. to 55°C. attenuates the virus for mice. Exposure to 80 and 100° appears to inactivate the parrot virus completely. The parrot virus offers considerable resistance to desiccation and to certain disinfectants. Apparently the virus was more abundant in the spleens of mice than in their blood. The papular eruption produced by the parrot virus when injected intracutaneously into rabbits closely resembles that excited under similar circumstances by certain strains of herpes virus of human origin. Rabbits injected intracerebrally with parrot virus showed evidence of meningitis, the exudate being chiefly composed of lymphocytes and the meninges being slightly thickened at places. In 2 rabbits there was also some evidence of encephalitis. Thus far, virus from human cases has not displayed the same degree of pathogenic stability for mice as that from parrots.—*J. A. Kennedy.*

10639. **GILDEMEISTER, E., und GEORG HEUER. Über den Nachweis von Herpesvirus im Blute bei experimentell infizierten Kaninchen und über experimentellen Hautherpes. [Demonstration of herpes virus in the blood of experimentally infected rabbits, and experimental herpes.]** *Deutsche Med. Wochenschr.* 55(22): 905-907. 1 fig. 1929.

10640. **HERRMANN, OTTO. Lyssavirus im menschlichen Speichel.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 58(3/4): 384-388. 1928.—Saliva from a boy with pronounced rabies was found infective for rabbits. This is contrary to the claim of von Salvioli and others who were unable to demonstrate the virus in human saliva. In light of the positive evidence, protective antirabic inoculation should be given to all persons bitten by rabid humans.—*R. R. Hyde.*

10641. **INO, SHIGERU. Beitrag zur Kenntnis des Antibakteriophagenserums.** *Zentralbl. Bakt. I. Abt. Orig.* 112(3/4): 252-263. 1929.—Lysis in a culture containing bacteria and bacteriophage was inhibited by antibacteriophage serum, when the serum was added to a culture not more than 24 hrs. old. The antilytic effect of serum increased with its content of antibodies. The antiserum inhibits, but does not destroy, bacteriophage. Absorption of antiserum with killed bacteria failed to influence the antilytic effect. The experiments allow no conclusion as to the genetic relationship of bacteriophage and bacterium.—*R. Koch.*

10642. **McKINLEY, EARL B. The bacteriophage.** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(1): 21-32. 1929.—A review.

10643. **NOVI, IVO. Il cosidetto invecchiamento del virus rabbico di laboratorio. (Nota sperimentale.) [So-called attenuation of rabies virus in the laboratory.]** *Rend. Ses. R. Accad. Sci. Ist. Bologna Cl. Sci. Fis.* 32: 119-122. 1927-1928 (1928).—Contrary to the frequently expressed opinion that the fixed virus strain originally employed has lost its virulence, the author has seen no such degenerative change with his strain carried by serial passage since 1889. Subdural inoculation at present kills rabbits after 3 days' incubation, i.e., $\frac{1}{3}$ of the original period. When injected subcutaneously, incubation is protracted, and the period increases in subsequent subcutaneous passages, but it returns to normal after a few subdural passages. After desiccation at 20°C. over $CaCl_2$, for 6 days, the spinal cord still kills rabbits after 12 days. Since after desiccation for 3 days there is a similar period of incubation, it is considered safe in the later stages of treatment to employ cords dried for 2 days. The original strain and method of Pasteur are still effective, and it would appear dangerous to employ a fresh strain which has not entirely lost its virulence for man. —*C. Prausnitz.*

10644. **PIKKARAINEN, JORMA. Die Spezifität der Bakteriophagen, ihre Haltbarkeit und Wirkung in der Paratyphusgruppe.** *Acta Soc. Med. Fennicae "Duodecim" [Suomalaisen Lääkäriseuran Duodecim'in]* 13[Ser. A.]

(3) : 1-16. [Art. 11.] 1931.—3 races of paratyphoid bacteriophage were tested on 32 paratyphoid strains by Bergstrand's titration method. 7 of the strains yielded colonies of the G and R types. The R strains were more susceptible to lysis than were the G derivatives. All of the strains were agglutinated by 3 immune sera, the R strains more easily than the G strains.

10645. VEDDER, A. Een bacteriophaag voor erysipelas-streptococcen. [A bacteriophage for erysipelas streptococci.] *Nederlandsch Tijdschr.-Hygiëne, Microbiol. en Serol.* 6 (1) : 62-70. 3 fig. 1931.—Of strains of erysipelas streptococci, only those which yield smooth colonies are susceptible to bacteriophagy; rough-colony strains are resistant. The smooth-colony dissociants of rough, resistant strains are susceptible. Changes in resistance can be correlated with growth characteristics.—*From abstract by A. Vedder.*

LOWER ANIMALS

10646. DALLING, T. Distemper in the fitch. *Vet. Record* 11 (42) : 1051-1052. 1931.—From experimental work and a review of the literature, the following conclusions are drawn: Distemper of the fitchet, ferret, and dog is caused by the same filterable virus. Symptoms in the fitchet are similar to those in the ferret. Fitchets can be successfully immunized by injection of vaccine, followed in 10-14 days by a small dose of living distemper virus. Hyperimmune dog serum may be of some value in preventing development of distemper in the fitchet or ferret if injected soon after exposure.

10647. DRESCHER, LUDWIG. Die intraperitoneale Übertragung der Maul- und Klauenseuche auf das Meerschweinchen. *Miessner-Festschrift* p. 55-69. Publ. by Fritz Eberlein: Hannover, 1930.—A high % of guinea pigs can be infected intraperitoneally with a virus of high virulence. The minimum dosage is 0.1 cc.; 0.2 cc. was very satisfactory. If the absolute amount is diluted with a physiological saline, infection results more readily Addition of glycerin to the virus aids infection. Scarification has no effect on results of inoculation or on incubation period.—*Author's summary (transl.).*

10648. LIPSKA, IRÈNE. D'Herelle's phenomènon in milk. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 97-98. 1931.—A summary.

10649. MENDELSOHN, WILLIAM, C. E. CLIFTON, and M. R. LEWIS. Ultrafiltration studies on the active agent of the chicken tumor no. 1. *Amer. Jour. Hyg.* 14 (2) : 421-425. 1931.—The active principle of chicken tumor no. 1 readily passed through 0.5%, 1%, 2%, and 3% collodion membranes. In 1 case it passed the 5% membrane. Filtrates passing the 4% and 5% membranes were free from demonstrable action. The particle size of the active agent of chicken tumor no. 1 was found to be less than 50 mμ and possibly less than 15 mμ.—*Author's summary.*

10650. MEYER, K. F., C. M. HARING, and B. HOWITT. The etiology of epizootic encephalomyelitis of horses in the San Joaquin Valley, 1930. *Science* 74 (1913) : 226-227. 1931.—The infective virus has thus far been demonstrated in the central nervous system by experimental inoculations from 2 field cases. Guinea pigs were found regularly susceptible and the most suitable of any animals tested for experimental study. Not only intracerebral injections, but intranasal instillations of brain emulsions successfully transmitted the virus to guinea pigs and rabbits, but not to horses. In 1 experiment the virus in 50% glycerine at 4° C. survived for 31, but not for 105 days. It is filterable through Berkefeld V and N candles and retains its activity at dilution of 1 : 1000. Sera of spontaneously recovered or resistant horses fail to neutralize the virus, while the sera of recovered rabbits, guinea pigs and monkeys may contain antiviral substances.

10651. RUPPERT, FRITZ. Über Virulenzschwankungen des Virus der Schweinepest. *Miessner-Festschrift* p. 167-173. Fritz Eberlein: Hannover, 1930.—Great variations exist in the virulence of hog cholera virus. An immunity brought about by a weak virus can be overcome by a strong virus. The virulence variations may appear very suddenly and are to be explained by the action of bacteria or their decomposition products.—*Author's summary (transl.).*

10652. STAMO, V. Contributiuni la studiul difteroido-variolei paserilor. [Avian diphtheroid-variola.] [With French summary.] *Arch. Vet. [Bucureşti]* 23 (1/2) : 1-57. 3 fig. 1931.—The various forms of avian diphtheroid-variola may be produced experimentally by different routes of inoculation with virulent products from any of the forms. The disease is easily transmitted from fowl to fowl, and those recovering develop a solid immunity. Pigeons can not be infected with fowl pox but they are readily infected with pigeon pox virus, after which a solid immunity develops. Pigeon pox is transmissible to fowls, in most cases producing a benign form conferring immunity. Attempts to infect pigeons with sheep pox or vaccinia failed. Fowl diphtheroid-variola was transmitted by the brain or liver of affected fowls, and a phenolized vaccine prepared from these organs produced immunity but gave a large % of infections. Vaccine from brain or scabs, prepared by the Verge technique, and formolized vaccine prepared from brain, also gave unsatisfactory results. Antidiphtherin had no immunizing action. Vaccine from unmodified brain and scabs of pigeon pox immunized fowls against fowl pox virus. Injections of hexamethylenetetramine were without therapeutic effect in the 60 cases tried. Glycerine-iodine compresses, accompanied by local washing with boric acid, after removal of scabs, gave good results. —*From French summary (transl.).*

BACTERIOLOGY AND OTHER MICROBIOLOGY

MEDICAL

JAMES S. SIMMONS, *Editor*

(See also in this issue Entries 9350, 9805, 10249, 10286, 10315, 10347, 10349, 10354, 10359, 10362, 10413, 10417, 10426, 10435, 10437, 10450, 10476, 10488, 10526, 10540, 10563, 10740, 10741, 10755, 10763, 10767, 10768, 10769, 10773, 10790, 10813, 10858, 10871)

10653. ANDREWS, EDMUND, and LEO HRDINA. Hepatogenous cholecystitis. *Arch. Surg.* 23 (2) : 201-214. 11 fig. 1931.—In 25 dogs, biliary stasis was produced by ligation: in 12, of the cystic duct; in 5, of the common duct near the duodenum; in 6, of both the common and cystic ducts; and in 2, of the common duct, with bilateral nephrectomy. The dogs were killed 24 hrs. to 2 mos. after operation and the gall-bladder studied. In 22 of the 25, the gall-bladder was infected with characteristic hepatic anaerobes, by direct extension from the liver.

10654. ARAUJO, EDUARDO de. Diagnostico experimental de sodoco. [With English summary.] *Brasil-Med.* 45 (40) : 924-928. 1931.—Rat-bite fever was transmitted from a child to mice and guinea pigs. Blood taken from a girl about 1 yr. old, during the febrile stage, was inoculated into mice previously examined to make certain that no spirilla existed in their blood. Blood transfers were subsequently made to young guinea pigs; one of the 1st series developed signs of experimental sodoku (loss of hair and of wt.), dying about 1 mo. later. All guinea pigs inoculated in the serial passage of blood have shown in their blood organisms morphologically like *Spirillum minus* Carter.—*Author's summary.*

10655. **BARCO, PAOLO.** Granuloma del polso a sede sottocutanea da micete del genere Halobyssus Zukal. [Subcutaneous granuloma of the wrist due to a fungus of the genus Halobyssus.] *Arch. Ital. Chir.* 29(3): 257-274. 13 fig. 1931.—This fungus is referred to *Halobyssus*, of which *H. moniliformis*, found in sediments of water rich in NaCl, is the only species known. Whether the organism is a new sp., as might be inferred from its parasitic existence, has not been determined.

10656. **[BEINISOVICH, N. M.]** БЕЙНИСОВИЧ, Н. М. Ассоциация кишечных бактерий при брюшном тифе. [Association of intestinal bacteria in typhoid fever.] Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 183-188; German summary, 236. 1930.—Fecal examination of 12 patients showed 3 groups of intestinal microflora: (1) normally encountered—e.g., *B. coli commune, Streptococcus faecalis, B. lactis aerogenes;* (2) putrefactive microbes—*Sarcina flava, B. pyocyaneus, Corynebacterium flavum, C. pseudodiphthericum, Alcaligenes faecalis, Micrococcus candidus, Kurthia zopfii, Flavobacterium alcaliaromaticum, Rhodococcus roseus, B. subtilis,* and *B. mesentericus;* (3) pyogenic group—*Staphylococcus aureus* and *Staph. albus.* The putrefactive flora predominated at the beginning and end of the ulcerative process.

10657. **BENEDEK, T.** Über Schizosaccharomykose. Eine Synthese. *Se Congr. Internat. Dermatol. et Syphiligr.* Copenhague 5-9 août 1930.—This fungus [*Schizosaccharomyces hominis*] appears to be indigenous to man, being recoverable in the blood (17.48%). In the fluid from experimentally induced blisters, it was found in 66.55% of cases, independently of any kind of pathological process. The parasite is transmitted from placenta to offspring. It affects internal organs, e.g., the liver. On the skin, it produces either violent expressions (pompholyx, pityriasis rosea), or more subacute ones like seborrheic eczema.—*F. D. Weidman.*

10658. **BENEDEK, T.** Syphilis and pityriasis rosea of Gibert. *Urol. & Cutaneous Rev.* 35(4): 3. 1931.—The author amplifies the considerations of his previous work (see preceding abstract) by indicating more precisely how the organism becomes pathogenic in the direction of inducing skin lesions. Thus, in the case of *Schizosaccharomyces hominis,* indigenous to the blood stream of man, it is normally restrained from pathologic effects by the liver,—particularly by its reticulo-endothelial system. In the presence of liver disease, the reticulo-endothelial system becomes blockaded, permitting the microorganism to be arrested in the skin and the efflorescences of pityriasis rosea to become developed. In view of the notorious pathologic effects of syphilis on the liver, this explains the frequent occurrence of pityriasis rosea in syphilitic subjects.—*F. D. Weidman.*

10659. **BIANCALANA, L., et M. BOGETTI.** Sur l'étiologie de l'hydrocèle essentiel. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(9): 565-568. 1931.—The authors inoculated and later reinoculated through 3 passages, a total of 65 guinea pigs with fluids and filtrates from 10 definite cases of this type of hydrocele. Post-mortems have never shown the presence of lesions of the classical tuberculous type or of those due to a filterable virus. Smears have always been negative for acid-fast bacilli. These results, while not permitting the exclusion of a tuberculous pathogenesis, indicate it to be at least rather rare.—*Authors' résumé (transl.).*

10660. **BIGGER, JOSEPH W.** Brucella abortus in relation to man in Ireland. *Vet. Jour.* [*London*] 87(8): 387-392. 1931.—Of 500 sera examined, 100 showed the presence of agglutinins in a dilution of 1-20, 22 in a dilution of 1-50 and 10 at 1-125, none going higher. No clinical survey was made of the persons furnishing the blood. It is concluded that clinical undulant fever is a rare disease in Ireland.—*I. E. Newsom.*

10661. **BLUMENBERG, WALTER.** Tuberkulose und Ernährung. Physiologische Tatsachen und experimentelle Untersuchungen. *Zeitschr. Tuberk.* 59(5): 305-321. 1931.—The effect of diet (alkaline, acid, normal) was tested on 60 ♂ guinea pigs (wt. 330-390 gm.) in 3 groups of 20 each. At the end of 9 mo., increase in weight was 41.5%, 25.8%, and 48.7%, respectively. The alkali reserve (A.R.) was high in animals on alkaline diet and low in those on acid diet; no changes could be found in the hemogram. Animals in excellent general condition were next infected with 1/10,000 mg. of a human strain of tubercle bacillus of moderate virulence in a homogeneous suspension in Na oxalate, a dose which induced progressive but not abrupt infection. The primary lesion appeared in all on the 10th to 12th days, in 3 wks. there was a nodule, in 5-7 wks. a fistula, and in 8-10 wks. a defect with undermined edges. Cultures of pus showed progressive diminution of acid-fast bacilli. Swelling appeared in the inguinal glands in 12 days, was the size of a pea in 3 wks., and that of a bean in 8-10 wks. Animals on alkaline diet lived 105.6 days; on acid diet, 64.4 days; and on normal diet, 99.4 days. This quite parallels the previous relative gain in wt. Necropsy showed that lesions in animals on acid diet were no more extensive or malignant than on the others. It was thus the unfavorable diet, not the severity of infection, which caused death. Since 2 normal and 1 alkali animal died early of pneumonia not related to tuberculosis, the picture is still less favorable to acid diet. These results were tested on 60 more guinea pigs inoculated after 24 days on the test diet, so that the effect on the A.R. was established. Animals on normal diet lived 99.7 days (6 killed at 118 days); on alkaline diet, 99.5 (6 killed at 118 days); and on acid diet, 58.8 days (all died spontaneously). Diet had no effect on the form and course of tuberculosis or on the hemogram in guinea pigs; but it did affect the A.R. Acid diet appeared to lower the resistance, so that early death, not in direct relation to tuberculosis, appeared.

10662. **BORSALINO, GIUSEPPE.** Stato setticemico e lesioni renali. [Septicemic condition and renal lesions.] *Arch. Ital. Anat. e Istol. Patol.* 1(6): 945-952. 2 col. pl., 2 fig. 1930.—Injection into young rabbits of a suspension of *Streptococcus haemolyticus* produced degenerative changes in the renal tubuli and congestive and inflammatory changes in the glomeruli, showing that a single pathogenic agent may produce changes of different character and intensity in different parts of the renal parenchyma.

10663. **BROADHURST, JEAN, and LEILA L. GIVEN.** Bacteriology applied to nursing. A combined textbook and laboratory guide in microbiology. 498p. 290 fig. (2 col.). J. B. Lippincott Co.: Philadelphia, 1930. Price $3.—Bacteria and all related subjects are treated scientifically according to the needs of nurses. This textbook covers the nurse's immediate needs as an individual, and supplies the information necessary for care and protection of patients. Also, it includes sufficient additional material to aid in interpreting bacteriological principles, and to insure their intelligent application and modification. It is a general reference book of bacteriology in a broad sense. Laboratory exercises are included for each topic, emphasizing the features most applicable to nursing. Valuable chapters are included on vaccines, antisera, anaphylaxis and tests for immunity and disease, besides those treating bacteria and other topics ordinarily included in the field of bacteriology. The scheme followed is to give preliminary or foundation material in the beginning chapters. These are followed by chapters giving definite information regarding bacteria, protozoa, and other microorganisms. The 3rd part treats of the rôle of bacteria as a part of the general environment, next microorganisms as directly related to disease. Anaphylaxis and bacteriological tests comprise the closing chapters.—*Annie M. O'Donnell Brady.*

10664. **BUCHANAN, J. ARTHUR.** The occurrence of fungi in patients with malignant disease. *Arch. Dermatol. and Syphilol.* 21(5): 757-760. 1930.—Gastric contents, stools and saliva were cultured, and tests for alcohol and other products of fungus metabolism were made by the bichromate test. Saliva of 48 patients with malignant disease was positive for fungi; in only 2 cases

was it negative; this pertains both to cultures and to chemical tests. The authors make no attempt to discriminate between pathogenicity and non-pathogenicity of the organisms recovered. The urinary findings were probably most valuable, because they showed fermentative processes in stomach and intestines.—*F. D. Weidman.*

10665. **CARSON, WILLIAM J. Ascending urinary infection. An experimental study.** *Arch. Surg.* 23(1): 74-84. 5 fig. 1931.—Experimental infection of adult rabbits in the lower end of the ureter or wall of the bladder, passed upward through the perivascular lymphatics to the kidneys.

10666. **CASAGRANDI, CARMELITA. Sur la présence de basidioboles dans l'homme.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 399-400. 1931.—This fungus develops under conditions not previously demonstrated, related to those under which the mycoses develop. This is the 1st case of a human infection due to a *Basidiobolus*. While noting its resemblance to *B. lacertae*, the author calls it *B. hominis* (not described here as n. sp., however). For the 1st time a conidial form is observed in the infection caused by this fungus, and it is suggested that the fungus exists under very different forms from those previously known.

10667. **CIFERRI, RAFAELLE, and BAILEY K. ASHFORD. Two strains of Pullularia pullulans (De Bary) Berkhout isolated from the human skin.** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(2): 188-195. 1 pl 1929.

10668. **CLARENBURG, A. Voedselvergiftigingen door bacterien uit de Salmonellagroep. [Food poisoning due to bacteria of the Salmonella group.]** [With German, English and French summaries.] *Tijdschr. Diergeneesk.* 58(20): 1098-1111. 1931.—The author critically reviews the work on milk and meat poisoning due to the *Salmonella* group, and emphasizes the importance, for diagnosis, of examination of feces and serum from suspected cases and per os inoculation of mice with suspected material.

10669. **CLAUBERG, K. W. Zur Praxis der bakteriologischen Typhus-Paratyphus-Diagnostik.** *Zentralbl. Bakt. I. Abt. Orig.* 114(1/2): 115-118. 1929.—Comparison of enriching with malachite-green, brilliant green and tetrathionate for typhoid-paratyphoid diagnosis showed superiority of the first. In proportion to amount of enrichment, the number of positive reactions increases. Lange's polytrope culture medium can take the place of the colored media. It simplifies cultural examinations and abbreviates the time for the test.—*P. G. Heineman*

10670. **CRUVEILHIER, A., X. LECLAINCHE, et P. RINJARD. Enquête sur les rapports que présentent, en France, la fièvre ondulante de l'homme et l'avortement épizootique des bovidés.** *Office Internat. Épizooties, Bull.* 5(2): 281-288. 1931.—From a year's study, including comparison of the amount of human infection by *Brucella abortus* with the amount and wide distribution of animal infection, it is concluded that this *Brucella* has a low pathogenicity for man in France, attacking only those with lowered defense mechanism. The sporadic appearance and benign character of the undulant fever due to this organism here are the outstanding points from the inquiry.

10671. **DIMITRIJEVIĆ-SPETH, V., und LJUBOMIR JOVANOVIĆ. Krupp- und Nichtkruppstämme als gesonderte Typen der Diphtheriebakterien und ihre ungleichen Leistungen in der Kultur und im Kranken.** *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 64-71. 1931.—Using a broth of low nutritive value, such as Hottinger-Süssmann's digestive broth, at pH 7.8-8.2, 48 freshly isolated strains of diphtheria bacillus from 10 croupous patients gave a turbid growth; 53 colonies from 21 non-croupous, pharyngeal diphtheria patients gave a clear growth. The ability of croupous strains to cloud this alkaline broth was only transiently hindered by growth in weakly alkaline sugar broth, specific serum, or at lower temp.; never could a permanent, clear-growing strain be produced. The croupous strains penetrated agar-gel to an agar content of 1:3000, with diffuse clouding; the non-croupous remained clear in the stab. A migration occurred on the surface of agar-gel in the course of a few days, even with an agar content of 1:400.

10672. **EDWARDS, LUCY L. Notes on a case of rat bite fever occurring in Chattanooga.** *Jour. Tennessee Acad. Sci.* 2(3): 29-31. 1927.—The case was probably due to *Treponema morsus muris*. Its course is described.

10673. **ESTABROOK, BERT U., and JOHN F. NORTON. Studies on the immunology of meningococci isolated from epidemic cerebrospinal fever in Detroit.** *Papers Michigan Acad. Sci., Arts and Let.* 12: 339-346. 1929(1930).—A report is made of an outbreak of epidemic cerebrospinal fever in Detroit during 1928-1929, with a mortality rate of 70%. 60% of the cases were among children under 10 yrs. old. A Group III meningococcus was found in the majority of cases examined and in more than ½ of the contact carriers.—*R. R. Spencer.*

10674. **FINNOFF, WILLIAM C., and PHILLIPS THYGESON. Bacterium granulosis in trachoma.** *Arch. Ophthalmol.* 5(4): 527-557. 1 pl., 3 fig. 1931.—A minute gram-negative, motile rod, apparently identical with that described by Noguchi as *Bacterium granulosis*, was recovered from 5 of 13 white persons, and from 1 Japanese, with advanced trachoma. The objections raised by Lindner regarding the original Indian cases studied by Noguchi cannot be applied here, because of the presence of pannus and advanced scarring in all but 2 cases. *Bact. granulosis* was recovered also from 2 of 14 trachomatous Indian children. It is either rare or absent in non-trachomatous diseases of the conjunctiva. *Bact. granulosis* may be considered more characteristic of trachoma than the inclusion bodies of Prowazek or the initial bodies of Lindner, since it can be recovered from patients in advanced stages, at a time when inclusion bodies and initial bodies are usually absent. Failure of others to discover the organism was probably due to use of unsuitable media and failure to cultivate at the optimal temp., 30° C. The bacterium was not agglutinated by serum from a single case of trachoma. Skin tests with *Bact. granulosis* antigen have been negative, with 1 exception. Bacteria morphologically identical with *Bact. granulosis* have been seen on and in the epithelial cells in smears taken from trachomatous patients and from animals having the experimental disease. Inoculation of *Macacus rhesus* with suspensions of *Bact. granulosis* produced a granular conjunctivitis identical with that described by Noguchi and also with that resulting from injection of human trachomatous material. Contact infection occurred in 1 of 2 monkeys exposed. The bacterium was successfully recovered from 2 advanced cases in animals. Since trachoma in monkeys is not identical with that in man, it may be necessary to use human inoculations to prove or disprove conclusively the etiologic relationship of *Bact. granulosis.* —*Authors' summary.*

10675. **FONSECA, OLYMPIO da, and A. E. de ARÊA LEÃO. Chromoblastomycosis.** *Rev. Med.-Cir.* [*Brazil*] 38(6): 216-236. 3 pl. 1930.—Full English translation. Chromoblastomycosis includes chronic granulomatous dermatoses morphologically resembling tuberculosis verrucosa cutis, but produced by hyphomycetes with colonies that are black in culture. The lesions are similar in morphology to those produced by *Leishmania, Coccidioides*, and *B. tuberculosis*. A detailed account is given of the history and geographical distribution of the disease. Of the various fungus organisms claimed by different authors, the North American species is one (*Phialophora verrucosa* Thaxter 1915), and the Brazilian another (*Hormodendron pedrosoi* Brumpt 1921 = *Acrotheca* Fuckel 1869). Questionable cases are cited for the batrachian, *Leptodactylus pentadactylus*, and hints of its presence on branches of plant life and in cattle are given. An analysis is made of the synonymy, involving *Acrotheca pedrosiana, A. verrucosa* and *Trichosporium*. The original case of Medlar and Lane from the U. S. A. is

abstracted in extenso, with critique; followed by a 2nd section describing the disease and organism found in Brazil—17 cases in all.—*F. D. Weidman.*

10676. FUKUDA, TOKUSHI, und KÔ ITABASHI. Über die Hyperglykämie bei der experimentellen Infektion. *Zeitschr. Ges. Exp. Med.* 76(5/6): 756-759. 1931.—Blood counts were made at 20 min. intervals after injection of the toxin from the protein of *Bacillus coli communis* into the ear vein of 26 normal and 8 splanchnectomized rabbits. There was rise in temp. but no hyperglycemia on injection of 0.1-0.3 mgm. toxin; with 1-3 mgm. there was rise in temp. and 50-100% rise in glycemia. Hyperglycemia did not appear in the splanchnectomized animals. The author considered hyperglycemia to be a sign that the infection was moderately severe, but that the body had sufficient resistance to overcome it; in very slight and in very severe infections it did not appear. Thus the infection hyperglycemia was due to the central action of the bacterial toxin on the sugar center, rather than to a peripheral action on the suprarenals or liver.

10677. GENGOU, O. Signification des substances toxiques élaborées par les staphylocoques et conditions favorables à leur production. *Arch. Internat. Méd. Exp.* 6(2): 211-218. 1 fig. 1931.—The author briefly summarizes new work confirming a previously expressed opinion that staphylococci produce, both in vitro and in vivo, a substance capable in vitro of lysis of cells and in vivo of toxic action. This secretion is not due to degeneration, but is a result of normal activity.

10678. GUILLERY, H. Neue Giftwirkungen der Tuberkulose an der Leber, und ihre Beziehungen zu den bisher ermittelten tuberkulotoxischen Fernwirkungen. *Virchow's Arch. Path. Anat. u. Physiol.* 281(3): 801-810. 4 fig. 1931.—Implantation in the abdominal cavity in 12 guinea pigs of little sacs containing tubercle bacilli, produced tuberculosis in only 1, in which the sac had become permeable; in the other 11, tuberculoid periportal foci of granulation tissue in the liver and perivascular foci in the eye, fatty tissue, muscles and skin. Others have extracted from tubercle bacilli substances which, injected into the organism, produce similar lesions.

10679. HAASE, W. Untersuchungen operativ entfernter Gallenblasen auf ihren Keimgehalt. *Bruns' Beitr. Klin. Chir.* 152(2): 305-309. 1931.—Of 75 gallbladders removed operatively, 36% were free of germs; 32% contained *Bacillus coli;* 24%, various cocci (more than ¾ enterococci). Apparently, bacterial infection from the intestine is more frequent than from the blood stream.

10680. HARDY, MARY, and JEANNETTE CHAPMAN. Ultra-violet radiation and resistance to infection; intranasal infection with the pneumococcus and with Bacterium lepisepticum in the rabbit. *Amer. Jour. Hyg.* 13(1): 255-280. 1931.—The rabbit may be poorly adapted to experiments of this type, as its rapid rise in temp. in direct sunlight makes it probable that the animal never receives any considerable amount of ultra-violet radiation under normal circumstances. Radiation was given several times a wk. for many wks. before inoculation (dose from a suberythemal level to a heavy dose causing a severe burn). Average results of 5 experiments with radiation from a mercury arc and intranasal inoculation with pneumococcus type I, showed no difference in attack or mortality rates between irradiated and control groups. Leukocytic reactions of irradiated and control groups among animals escaping infection, showed no definite differences. Irradiated animals contracting the disease showed a slightly higher and more rapid leukocytosis than did infected controls, with a less marked decrease in lymphocytes. The average of 3 experiments with exposure to direct sun or north sky light through vitaglass showed that both % of infection and mortality rate after inoculation with pneumococcus type I, were higher in irradiated animals than in a control group kept inside. Similar experiments with mercury arc radiation and infection with *B. lepisepticum* showed that radiation had no effect on susceptibility to infection, although mortality rate was somewhat lower in the irradiated group. Variation in amount of ultra-violet, from a marginal erythema to a heavy but subulcerating dose, had no correlation with resistance to respiratory infections used. In the pneumococcus infection experiments, the average complement-fixation titer for irradiated rabbits was slightly higher than for controls; but in the *B. lepisepticum* experiments, the average titer for the 2 groups was the same. There was no relation between titer and amount of radiation given. In rabbits immunized with killed pneumococci, radiation failed to accelerate antibody production or to increase the amount above normal.—*From authors' summary and conclusions.*

10681. HERRMANN, OTTO. Bakteriologische Blutuntersuchungen bei Endocarditis lenta und anderen septischen Krankheiten. *Zentralbl. Bakt. I. Abt. Orig.* 120 (7/8): 399-402. 1931.—Blood cultures were made on 33 cases with septic symptoms. 7 had characteristic symptoms of endocarditis lenta. From one of these, *Streptococcus viridans* was recovered; from 2, pneumococci. From the other cases a non-hemolytic streptococcus was found in 1 case; meningococci, in 2. The author urges that blood cultures be made repeatedly in all cases with septic symptoms, and that various culture media be used.—*E. C. L. Miller.*

10682. HESSE. Zur Bakteriologie der chronischen Mittelohreiterung. *Zeitschr. Hals-, Nasen- u. Ohrenheilk.* 29(2/5): 360-368. 1931.—In 159 cases of chronic otitis media, a mixed infection was generally found; staphylococci, *Proteus vulgaris,* diplo-streptococci and pseudo or avirulent diphtheria bacilli occurred frequently. In complicated cases, especially acute acerbations, diplostreptococci were especially frequent. *Proteus* was demonstrable in 44% of intracranial complications (50% of sinus thromboses).

10683. HOFFMANN, HEINRICH. Über Differenzen von Trichophytonpilzen aus Haut und Lymphdrüse. *Arch. Dermatol. u. Syph.* 155(Kongressber.): 212-224. 8 fig. 1928.—From attempts on 6 patients, the author isolated *Trichophyton gypseum* once from the glands regional to fungus infection of the skin. The original lesion was a suppurative ringworm of the scalp; there were no distant cutaneous metastases, such as are known as trichophytids, nor were they elicited by application of x-rays or by injection of trichophytin. No fungus was demonstrable in direct preparations. Cultures from scalp and lymph nodes were morphologically the same, but on guinea pigs the lesions induced by the scalp strain were much more extensive and virulent than those from the lymph nodes. Even after passage on guinea pig skins (3 series of animals) it was still possible to detect this difference in virulence; in the 4th and 5th series, virulence of the 2 strains became approximately equal. The author maintained the strain for 9 mo. on maltose agar, and on repeating the test, including passage through the 5 series of animals, found that the differences in virulence were still maintained. It did not hold good, however, further than the 1st passage animal; in the 2nd, 3rd and 4th passage animals the highly virulent strain from the skin became reduced to the same level of virulence as the strain from the lymph nodes.—*F. D. Weidman.*

10684. JADASSOHN, J. Lepra. [In: **W. KOLLE, und A. v. WASSERMANN. Handbuch der pathogenen Mikroorganismen. 3. Aufl. W. KOLLE, R. KRAUS, und P. UHLENHUTH** Bd. 5, Teil 2, Lief. 25.] P. 1063-1232. 4 col. pl. Gustav Fischer: Jena; Urban & Schwarzenberg: Berlin u. Wien, 1928.—With a 16½ page bibliography.

10685. JADASSOHN, WERNER. Versuche über Pilzzüchtung auf Organen. *Arch. Dermatol. u. Syphilis* 155 (Kongressber.): 203-207. 7 fig. (1 col.) 1928.—The author approaches the problem of variation and peculiarity in susceptibility of tissues to infection; it is only circumlocution to dismiss the impasse with "either the fungi are not pathogenic for internal organs or the internal organs are not receptive for the fungus infection." He points out that there are many analogies between fungus disease and tuberculosis, and intimates that findings in regard to

fungus disease could be made to apply in principle to the more important one, tuberculosis. He began with the hypothesis that certain definite substances must be present in the economy if the fungus is to endure; and seizes upon keratin as the necessary substance for such fungi as *Achorion quinckeanum*, *Microsporon audouini* and *Trichophyton gypseum*, which are practically confined in their parasitism to the skin. He tested the hypothesis by determining their growth in vitro as follows: (1) Skin (sterilized human and sterilized guinea pig skin; aseptic, unheated guinea pig fetus). (2) Internal organs (aseptic guinea pig liver, muscle, kidney, spleen). All organisms tested grew well on both groups of materials; therefore the exclusive involvement of the skin in certain mycoses is not referable to keratin content. He concludes that the fact that certain organs and species of animals are shunned by certain mycoses can be explained in vivo on the basis of some restraining influence. Such restraint may depend either on a restraining substance which disappears as such after death, or upon some mechanism of living cells. A 2nd possible explanation is to assume that some fungus-promoting substance is lacking in vivo, which, on the other hand, develops post-mortem as the result of chemical alterations. —*F. D. Weidman.*

10686. **JONES, JACK W., and HERBERT S. ALDEN. Maduromycotic mycetome (madura foot). Report of a case occurring in an American negro.** *Jour. Amer. Med. Assoc.* 96(4): 256-260. 8 fig. 1931.—A short history of madura foot is given, followed by the case report,—a negro who had always lived in Alabama, and who gave the usual history of going barefoot and being traumatized with thorns and splinters. The disease was 15 yrs. in duration. After amputation, tissues were examined histologically and cultures of *Scedosporium sclerotiale* obtained. A detailed mycological report is given, including the finding of ascus-like structures which appear to be new for this organism. Animal inoculation resulted negatively. It appears that this was the 2nd report of this organism as a cause of human disease.—*F. D. Weidman.*

10687. **JONTOFSOHN, KURT. Versuche zur Züchtung von Tuberkelbazillen aus dem Blute bei Tuberkulösen.** *Zeitschr. Tuberk.* 61(1): 35-41. 1931.—Löwenstein blood cultures were made in 41 cases of pulmonary and in 9 of surgical tuberculosis; an atypical growth of tubercle bacilli appeared in only 3. Even in severe cases, apparently only a few bacilli circulate in the blood, and those perhaps are attenuated.

10688. **KESTEN, BEATRICE M. Observations on skin diseases in Porto Rico.** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(2): 185-187. 1929.—560 cases are classified as to kind and as to nature of causal agents. Exclusive of banal pigment anomalies, 51% were of fungous etiology.

10689. **[KHINCHUK, A. G.] ХИНЧУК, А. Г. Bacillus prodigiosus, выделенный при пиэлите. (B. prodigiosus isolated in pyelitis.)** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 112-113; English summary, 137. 1930.—From urine of a 3-yr.-old child with pyelitis, bacteria were isolated, which by morphological, cultural, serological and biochemical properties were typical *B. prodigiosus*. Emulsions from live or heat-killed cultures, in various concentrations, injected ventricularly into guinea pigs, gave negative results. Injection of 2 cc. of this emulsion intraperitoneally, and also of 0.2 cc. intraepidermally, caused at the point of injection slight hardening which rapidly disappeared. Post mortems revealed no changes in internal organs; smears were sterile.—*G. A. Lebedeff.*

10690. **KLIENEBERGER, E. Influenzabazillen bei Gesunden nach einer Epidemie.** *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 72-75. 1931.—Throat smears (365) from 107 healthy children and 100 healthy adults during the first 7 mo. following a mild influenza epidemic, gave 131 positive smears from children and 81 from adults; of these positives, 97 and 31, respectively, were indol-positive. Hemolytic pseudoinfluenza bacilli were found in 7 children and in 18 adults. During the following 12 mo., 257 smears were made from 81 children and 176 adults; 61 and 51, respectively, were positive and of these, 37 and 22 were indol-positive; 1 child and 27 adults showed hemolytic pseudoinfluenza bacilli. The bacilli persisted for 1 mo. in 2 persons experimentally inoculated; they could not be cultivated in the cat's pharynx, showing that these are not ordinary saprophytes but are commensal in the human pharynx. The author concludes that no significance, medical or theoretical, can be attached to the presence of influenza bacilli in the nasopharyngeal space.

10691. **KOMIS, ALEXANDER. Über die Möglichkeit, den abgeschwächten Bazillus Calmette-Guérin durch Gärung in einen pathogenen umzuwandeln.** *Zeitschr. Tuberk.* 61(6): 419-422. 1931.—A 21-day culture (0.2 cgm.) of BCG was added to 10 gm. of normal serum and 10 gm. of Hansen's fluid no. 2, and 3 drops of wine yeast were added; the mixture was kept for 16 days at 38°, and for 29 days at room temp., when the bacilli and yeast had formed a precipitate. Animal inoculation (2 passages) showed that the culture had become pathogenic.

10692. **[KOROBKOVA, E. I., and S. V. MITIN.] КОРОБКОВА, Е. И., и С. В. МИТИН. К вопросу об экспериментальной скарлатине у животных. [Experimental scarlatina in animals.]** [French summary.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 7(1): 45-56. 1928.—Experiments were made on 35 rabbits and 5 dogs. Hemolytic streptococci or pharyngeal mucus and its filtrates from the throat of a scarlatina patient were injected into the eyes, larynx, and pharynx after preliminary sensitization of these organs with ox bile. All the dogs and 23 of the rabbits died; 3 rabbits resisted infection. Scarlatinous symptoms were present only partially: temp., angina, adenitis, rarely exanthema and polynucleosis. Symptoms were the same, whatever the infectious material used. Streptococci were found in vivo at the point of infection in 100%.

10693. **KUCZYNSKI, MAX H. Magenveränderungen durch eine Sekundärinfektion mit B. enteritidis Gärtner bei gelbfieberinfizierten Meerschweinchen.** *Virchow's Arch. Path. Anat. u. Physiol.* 281(2): 422-429. 8 fig. 1931.—In guinea pigs infected with yellow fever a secondary infection with *B. enteritidis* Gärtner produced severe gastric inflammation unlike anything produced by yellow fever infection, but essentially resembling symptoms occasionally seen in the corresponding human paratyphoid infection.

10694. **LEHMANN, JOACHIM. Experimentelle Untersuchungen an der Ratte zur Frage der Entstehung der männlichen Genitaltuberkulose.** *Bruns' Beitr. Klin. Chir.* 152(1): 139-156. 8 fig. 1931.—A suspension of tubercle bacilli was injected into the left ventricle of the heart in 7 anesthetized ♂ rats; the animals were killed 5 hrs. to 12 days later, and 140 sections made of the genitalia of each. In 2, bacilli were found in the left seminal vesicle and left epididymis on the 5th day and in the prostate on the 6th, some in the lumen of the canaliculi, some beneath the epithelial lining of the lumina, some in the interstitial tissue beside very fine capillaries. Tubercles were found in the left seminal vesicle on the 9th and 10th days, and in the lungs and kidneys after 5 days. Tubercle bacilli circulating in the blood can thus invade the interstitial tissue.

10695. **LONG, ESMOND R., and ARTHUR J. VORWALD. An attempt to influence the growth of the tubercle bacillus in the animal body by modifying the concentration of a growth-promoting substance (glycerol) in the tissues.** *Amer. Rev. Tuberc.* 22(6): 636-654. 1930.—Glycerol, fed or injected over long periods of time into 14 tuberculous rats, appeared to enhance the growth of tubercle bacilli in lesions, and to increase the extent of the disease, reproducing to some extent in vivo the conditions of growth in vitro. In an attempt to produce the opposite effect (reduction of amount of free

glycerol in tissues available for bacillary growth), palmitic acid was administered in the largest amounts tolerated, on the theory that excess fatty acid would force a synthesis of some of the free glycerol present with the fatty acid administered, to form neutral fat, which does not support growth of tubercle bacilli. Results were not perfectly consistent, but in the majority of cases in 3 series of tuberculous guinea pigs, the extent of tuberculosis was less in 24 animals treated with palmitic acid than in 11 untreated controls. Fatty acid in the amounts fed was deleterious to the general health of the animals. The number of visible acid-fast bacilli increased in the palmitic-acid animals, in spite of a decrease in the extent of the tuberculosis.—*From authors' summary & conclusions.*

10696. **LUMIÈRE, AUGUSTE. Tuberculose: Contagion, hérédité.** 301p. 23 fig. Léon Sézanne: Lyon, 1930. Price 25 fr.—The main object of this book, as stated, is to counteract the effect of dogmatism. The author outlines the history of medical opinion, from Hippocrates to the present day, concerning contagion and heredity in tuberculosis. He gives numerous statistics and quotes extensively from recent and near-recent authors (mostly French). He holds that the discovery of the tubercle bacillus and the experimental production of the disease in laboratory animals, with a dosage relatively much more massive than occurs naturally in human contacts, have obscured the importance of congenital infection and of hereditary and acquired predisposition. Medical dogmatism has accepted the laboratory demonstrations and has denied equally important clinical facts. Most human tuberculosis, in his opinion, results from infection in utero, or from post-natal infection imposed upon inherited susceptibility. The relative infrequency of frank congenital disease is explained by the idea that in many cases the strongly resistant embryonic tissues convert the usual type of acid-fast bacillus into a non-acid-fast form or into ultramicroscopical forms of relatively low virulence. These escape detection and lie latent perhaps for years, but finally may revert to the acid-fast, disease-producing type. When the fetal tissues do not produce this change, death occurs early in infancy; but the majority of children of tuberculous parents escape active disease during infancy and childhood, only to develop it in late adolescence or early adult life, when their latent bacilli regain virulence at some time of lowered resistance. Much emphasis is laid upon alcohol as a cause of lowered resistance; to this is attributed the fact that in France tuberculosis is so much more common in men than in women.—*J. B. Bullitt.*

10697. **LUSENA, MARCELLO. Splenomegalie con micosi.** (Splenomegaly with mycosis.) *Riforma Med.* 44(48): 1549-1560. 4 fig. 1928.—From a study of 2 cases of thrombophlebitic splenomegaly it is concluded that the numerous nodules of Gamna are mycelial in nature. The nodule represents the result of a localization of virus capable of affecting the entire spleen, principally aided by circulatory changes.—*F. Garofalo (transl. by G. H. Robinson).*

10698. **MELLO, FROILANO de. Some remarks on medical mycology and the large field it offers for research work in India.** *Arq. Escola Méd.-Cirurg. Nova Goa Ser. B Fasc.* 3. 619-631. 1930.

10699. **MORALES-OTERO, PABLO, and E. B. McKINLEY. Experimental measles in monkeys (Macacus rhesus).** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(1): 36-39. 1929.—6 cases of measles in the 1st and 2nd day of eruption were cultured for the non-hemolytic streptococcus reported in measles cases by others. It was not found. Monkeys injected intraperitoneally with 5 cc. of citrated blood from 5 of these cases developed a measles-like rash 14-17 days later. Coincident with, and shortly preceding appearance of, the rash, there was a rise of 1-2° C. in temp. Cultures of blood of monkeys during the first 3 days of eruption were negative for the streptococcus and other bacteria. 2 monkeys (controls) injected intraperitoneally with 5 cc. of normal citrated human blood failed to develop rash. Blood cultures from these animals were also negative. Citrated blood from measles cases was injected intraperitoneally into 2 of the monkeys which had previously received measles blood and had developed rash. Both were immune to the 2nd injection of measles blood. Results are interpreted as direct evidence against the streptococcus etiology of measles.

10700. **MORALES-OTERO, PABLO. Experimental infection of Brucella abortus in man. Preliminary report.** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(2): 144-157. 1929.—5 normal persons were fed different strains of *Brucella melitensis abortus* in pasteurized milk and closely observed. Only 1 case developed symptoms and signs resembling undulant fever, and this case was fed 2 cultures of *B. melitensis abortus* porcine strain. The experiment was repeated in 2 more cases by feeding repeated cultures of a bovine and a porcine strain, until the organism could be isolated from the feces. Only 1 case developed symptoms resembling undulant fever, viz., the case fed the porcine strain. Blood cultures of both cases developing the disease were positive, one on the 5th and the other on the 7th day of the disease. All other cases had negative blood cultures. Agglutination reactions were negative in all cases except in 1 which agglutinated 1:100 after 17 days of intermittent fever. The author believes it has been possible to produce a disease similar to undulant fever by feeding cultures of *B. melitensis abortus* (porcine). Failure to produce a similar condition with bovine strains is evidence against the bovine variety being the etiological factor in undulant fever, but this evidence should not meanwhile be considered conclusive.—*Author's summary & conclusion.*

10701. **MÜLLER, H. Der Erreger des seuchenhaften Verwerfens (Baz. Bang) und seine Übertragbarkeit auf den Menschen.** *Mitteil. Deutsch. Landwirtsch. Ges.* 44 (42): 943-944. 1929.—Communication is effected through the discharges from cows which have aborted. The disease may be communicated by contact, through food, or the bull may be responsible. It was believed until recently that man was not susceptible. In a study of 25 cases, it was determined that 6 were caused by direct contact, while 19 were caused by consumption of infected milk. The subject requires considerable additional observation.—*P. G. Heineman.*

10702. **NASTASE, GH. Impetigo contagiosa Tilbury-Fox, cu manifestari bucale.** [Impetigo contagiosa with buccal manifestations.] *Rev. Med.-Chirurg. Iasi [Roumania]* 38(2): 138-141. 1927.

10703. **NEGRONI, PABLO. Datos estadísticos sobre 157 casos de micosis estudiados en Buenos Aires.** [Statistics on 157 cases of mycosis in Buenos Aires.] *Rev. Soc. Argentina Biol.* 7(3/4): 275-282. 1931.—Most cases were produced by dermatophytes of the following genera: *Tricophyton, Microsporum, Epidermophyton* and *Achorion.* Besides the 8 cases of actinomycosis, 5 cases of blastomycosis, 4 of tinia versicolor due to *Malassezia furfur,* and a few others were observed.—*J. T. Lewis.*

10704. **NICHOLLS, EDITH E., and WENDELL J. STAINSBY. Streptococcal agglutinins in chronic infectious arthritis.** *Jour. Clin. Investigation* 10(2): 323-335. 1931.—Of sera from 110 cases of chronic infectious arthritis, 103 gave a strong specific agglutination with "typical strains" of streptococci recoverable from blood and joints of patients with this disease. Of 218 controls, some gave no agglutination; others, weakly positive. Chronic infectious arthritis can be differentiated from degenerative arthritis and from chronic polyarthritis following rheumatic fever, by the agglutination reaction. The agglutination reactions suggest different etiologies for the 3 forms of arthritis. A close antigenic relationship between "typical strain" streptococci and the hemolytic streptococci from scarlatina and erysipelas is established.

10705. **NICHOLLS, EDITH E., and WENDELL J. STAINSBY. Streptococcal agglutinins in rheumatic fever.** *Jour. Clin. Investigation* 10(2): 337-344. 1931.—

Streptococcal agglutinins were demonstrated in 46 of 59 sera from rheumatic fever patients, sustaining the theory that streptococci of the non-hemolytic type are important etiologic agents in rheumatic fever. Chronic progressive polyarthritis following rheumatic fever, although presenting a clinical picture similar to primary chronic infectious arthritis, gives evidence by agglutination reactions of being etiologically different. Further evidence is presented of the etiologic relationship between rheumatic fever and subacute bacterial endocarditis.

10706. [OSIPOVA, Z. A., and A. F. UKHIN.] ОСИПОВА, З. А., и А. Ф. УХИН. К вопросу об экспериментальной гонорее. [Experimental gonorrhea.] Вестник Микробиологии и Эпидемиологии (*Rev. Microbiol. et Épidémiol.*) 6(1): 86-89; English summary, 133. 1927.—Experiments were conducted on 11 rabbits and 1 cat infected with gonococci direct from human patients or with passage strains. The clinical picture of specific urethritis developed by rabbits, differed from human urethritis; it was short, and there was no profuse discharge from the urethra or acute inflammation of the mucosa. Examination revealed an acute inflammatory process, partly diffuse, partly limited to spread in the epithelial layer and in the subepithelial connective tissue. The urethral mucosa contained diplococci morphologically similar to gonococci.

10707. PERONI, ACHILLE. Considérations sur l'étiologie de l'ozène. (L'ozène est-il une maladie infectieuse?) *Arch. Internat. Laryngol. Otol.-Rhinol. et Broncho-Oesoph.* 9(8): 940-950. 1930.—In 27 cases of ozena examined, the author only once found the Perez-Hofer bacillus, sometimes regarded as the causal organism. In all cases the Abel-Loewenberg bacillus was found, but it is also frequently found in other conditions, including simple rhinitis. He believes that ozena is a constitutional disease and the bacillus a saprophyte.

10708. PHOTINOS, PANAGIOTIS B. Experimentelle Untersuchungen über die syphilitische Lymphdrüsenerkrankung von Affen. *Dermatol. Zeitschr.* 61(1/2): 27-30. 1 fig. 1931.—A monkey (*Cercocebus*) was inoculated subscrotally with material from a rabbit chancre and from secondary genital papules of a human patient; 22 hrs. later the inguinal glands were extirpated and implanted subscrotally into both testes of a rabbit. In a few days there was a local reaction; after 8 wks., 2 primary lesions. These were extirpated and examined in dark field, and numerous living *Spirochaeta pallida* found, which were then transferred to another monkey (results to be reported later). Various serological tests, particularly Meinicke's clearing- and micro-reactions, were made during the incubation period; *Cercocebus* became gradually positive; a positive reaction was obtained in 2 other monkeys which had been inoculated months before and had shown no signs of infection. From another monkey with rabbit chancre implanted subscrotally, the inguinal glands were transferred to the testis of a rabbit after 5 hrs.; after 40 days, syphilitic orchitis appeared and *S. pallida* was present.

10709. PINKERTON, HENRY, and KENNETH F. MAXCY. Pathological study of a case of endemic typhus in Virginia with demonstration of rickettsia. *Amer. Jour. Path.* 7(2): 95-104. 2 pl. 1931.—Study of a fatal case of endemic typhus in Virginia established the complete pathological identity of the disease with European typhus. Characteristic brain lesions were fully as numerous as in the average European case, and many of them were unusually acute. Involvement of the tunica vaginalis and scrotum was no more marked than in European typhus. *Rickettsia prowazeki* was easily and clearly demonstrated in the endothelial cells of the vascular lesions in the brain, but was not found in macrophages or neuroglial cells. A technique is described for demonstration of rickettsias in formalin-fixed brain. Demonstration of *R. prowazeki* in this material is to be added to the already overwhelming evidence in favor of its etiological relationship to typhus.—*Authors' summary*

10710 [PLEVAKO, E.]. ПЛЕВАКО, Е. Monilia как возбудитель onychomycosis и paronychia. [Monilia as cause of onychomycosis and paronychia.] Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 230-232; German summary, 239-240. 1 pl. 1930.—Observations on 7 patients showed *Monilia pinoyi* in all cultures. 7 strains were obtained and the virulence of each was tested on 3 rabbits—intravenously in large and small doses, and subcutaneously. Rabbits of the 1st series (0.3 cc.) died in 4-5 days of acute septicemia, with typical granulomatosis of liver and kidneys; *M. pinoyi* could be cultivated from all organs. In the 2nd series (0.03 cc.), the rabbits died in 21-35 days. Subcutaneous injection (3rd series) always resulted in local infiltration only. Autovaccination of patients gave favorable results.

10711. POMALES, AMÉRICO. Bacteriologic study of normal throats, pathological throats and tonsils removed at operation in Porto Rico. A preliminary report. *Porto Rico Jour. Publ. Health & Trop. Med.* 5(2): 196-210. 1929.—The bacteriological findings in 100 normal throats, 75 pathological throats and 65 pairs of excised tonsils are reported. Gram-negative cocci and non-hemolytic streptococci constituted the normal basic throat flora from Feb. to May. *Staphylococcus aureus* and Gram-positive cocci were common transients. Pneumococci were only occasionally encountered. Hemolytic streptococci were isolated from 26% of the normal throats, but true β hemolytic streptococci were isolated but once. Both hemolytic streptococci and hemolytic *Staphylococcus aureus* were limited to the region of the tonsils in most cases. Hemolytic *Staph. aureus* was isolated from pathological throats (tonsillitis) in 14 of 50 examined. Hemolytic streptococci were cultured in 32%; in 14% they were of the β type. Hemolytic *Staph. aureus* was the predominating organism in the crypts and the interior in a series of 65 pairs of tonsils examined. β hemolytic streptococci ranked 2nd. Simple swabbing of the surface of the tonsils, even if carefully done, is not a very reliable index of the organism predominating in the crypts.—*Author's summary and conclusions.*

10712. ROSENTHAL, L., and VERA B. DOLGOPOL. The lysis of tubercle bacilli in sputum. *Amer. Rev. Tuberc.* 24(3): 351-362. 1931.—A certain degree of lysis occurred in 40 sputa (from 36 patients) kept at room temp. 10-15 days. An initial increase in number of bacilli, followed by evident lysis in 10 days, occurred in 20 sputa kept at 37° C. for 15 days; in a few cases the bacilli finally disappeared completely. Of 205 sputa (from 102 patients) kept at 48° C., 141 showed signs of disintegration (apparently after 5-7 days); sputa of 26 patients kept at 60° C. underwent disintegration. These temp. proved best for lysis; higher temp. were less destructive. The concomitant flora of the sputum does not affect the staining ability of the tubercle bacilli. The lytic agent is probably the product of autolysis of the leukocytes.

10713. RUSSKICH, W. N., und E. S. KRYLOWA. Über einen Fall von primärer Gehirnaktinomykose. [A case of primary cerebral actinomycosis.] *Virchow's Arch. Path. Anat. u. Physiol.* 281(3): 797-800. 1931.

10714. SCHEUNEMANN, KARL. Untersuchungen über das Vorkommen von Tetanusbazillen im Stuhl nicht tetanuskranker Menschen. *Arch. Hyg. u. Bakt.* 105 (5): 287-299. 1931.—Microscopic, cultural, and animal inoculation studies of stools of 50 non-tetanus patients revealed no tetanus bacilli and tetanus-like rods in only 4. The human intestine is apparently a less favorable habitat for tetanus bacilli than the animal intestine.

10715. SCHULTZ, CARL. Über den Nachweis von Tuberkelbakterien im Lungenschleim. *Deutsche Tierärztl. Wochenschr.* 39(35): 545-547. 1931.—Enrichment of tubercle bacilli in bronchial sputum with 1:500 $K_2Cr_2O_7$ solution or distilled water is as good as with glycerin. Bichromate solution has an advantage over glycerin and distilled water in that the accompanying bacteria are suppressed within 24 hrs. and guinea pigs can be inoculated with the preparations without other preliminary

measures. The viability of the bacteria is not impaired by the bichromate. H_2SO_4 (5 and 10%) can not be used to kill the accompanying bacteria, since tubercle bacilli are also injured.—*Author's summary (transl.)*.

10716. **SENGENHOFF, A.** Abweichungen von der physiologischen Darmflora bei mit Frauenmilch ernährten Frühgeborenen. [Deviation of the physiological intestinal flora in the prematurely born nourished with mother's milk.] *Monatsschr. Kinderheilk.* 40(3): 263-269. 1928.

10717. **SETTI, CARLO.** Discomycosi di Rivolta (actinomycosi di Harz). (Studio storico, morfologico, fisiologico.) *Gior. Batteriol. e Immunol.* 4(7): (1-96). 48 fig. 1929.—The author reviews and presents in a systematic way the contributions, including his own, on the morphological and physiological characteristics of Rivolta's discomycosis (actinomycosis of Harz).—*N. Colosi.*

10718. **SMALL, JAMES CRAIG.** The rôle of streptococci in the rheumatic diseases. *Jour. Lab. & Clin. Med.* 14(12): 1144-1156. 1 fig. 1929.—The author reviews the recent literature on rheumatic fever. He then reiterates his belief that *Streptococcus cardioarthritidis* is the specific cause in children, and that the "destructive" and "proliferative" lesions so important in producing the cardiac damage are caused by the toxin of this streptococcus. He advances the hypothesis that the later "exudative" joint lesions are not entirely specific but represent a hypersensitization to the proteins of various concomitant streptococci. Chronic arthritis is presented as an allergic disease, the hypersensitive state of the patient being due to a protein allergen contained in streptococci without regard to a particular type. In the treatment of rheumatic fever, he gives antitoxic serum against *Strep. cardioarthritidis* during the initial, acute, toxic stage and later he treats the cases by desensitization during the "exudative" phase. For desensitization, extremely minute doses of streptococcal filtrates are given, amounting for the first dose to only 1/20th part of the exudate from a single streptococcus, or 1/20 cc. of a 1:100 million dilution of the filtrate. The treatment of chronic arthritis is concerned largely with the elimination of foci harboring streptococci, and with adequate desensitization. Stock extracts of streptococci may be employed in this desensitization, and because their dosage requirements may be the better determined through extensive clinical application, they are preferable to autogenous preparations.—*D. Thomson.*

10719. **SMITH, E. C.** Cultivation of the spirochaetes associated with tropical ulcer. *Proc. Roy. Soc. Med.* 24(2): 217-221. 1931.—Spirochaetes from cases of tropical ulcer were cultured in a modified Wenyon medium, and have now been successfully passed through 32 subcultures. A pure culture has not yet been obtained. In 5 inoculation experiments described, it is shown that the spirochaetes and fusiform bacilli, in mixed culture, are capable of proliferation and of producing ulcerated lesions in natives.—*Author's summary.*

10720. **STREMPEL, RUDOLF.** Frühzeitiger Spirochätennachweis in skrotalen Impfherden von Kaninchen nach Einimpfung von Poplitealdrüsen latent syphilitischer Kaninchen. *Dermatol. Zeitschr.* 61(1/2): 1-6. 1 fig. 1931.—In a preliminary report, the author states that 12 days after inplantation of popliteal glands of rabbits with latent syphilis into the scrotum of rabbits, it was possible to find normal spirochaetes in the surrounding tissue, though the transfer itself was free. Only after 35 days were the forms and variations described by Levaditi found.

10721. **TAKIGAWA, K.** Ueber Sycosis lupoïdes Brocq. [In Japanese, with German summary.] *Acta Dermatol.* 17(4): 245-290. 14 fig. 1931.—In 8 cases of sycosis lupoïdes Brocq. (ulerythema sycosiforme Unna), the author was able to cultivate *Staphylococcus pyogenes* (*albus* in 1 case and *aureus* in the other 7), which produced sycosis lupoïdes in biologic experiment. The vegetative nervous system of the patients showed more or less marked abnormal excitability. There was a partial disturbance of sugar metabolism. Blood picture, sedimentation rate of erythrocytes and roentgenogram of the sella turcica showed nothing noteworthy. S. Chikano's adrenaloid substance showed some increase over that in normal blood.—*From author's summary.*

10722. **TAYLOR, J., and AMAR NATH GOYLE.** Leptospirosis in the Andamans (with an appendix on the present knowledge of leptospiral infections). *Indian Med. Res. Mem.* 20. 1-190. 2 pl., 3 maps (1 col.), 1931.—In the Andaman Islands (India), one of the authors (A. N. G.) studied 64 cases of jaundice, the leptospiral nature of which was confirmed by blood culture and other methods. A detailed account of the clinical and laboratory findings is given. The cases varied in severity from the mildest non-icteric type to severe fatal cases showing all characteristics of Weil's disease. Mortality was 18.7%. Blood culture in serum-water-agar medium (rabbit serum 1 cc., distilled water 7 cc., agar 0.5 cc.) proved to be the most reliable method of laboratory diagnosis, if carried out between the 3rd and 6th days of illness. Leptospiras were found in the urine from the 12th day onwards, in 1 case up to the 44th day. Serological diagnosis was often obtainable after the 15th day; inoculation of guinea pigs with blood or urine was of little assistance. Leptospiras were seldom found in the organs of fatal cases, either by dark field examination of emulsions or in stained sections. There is usually in the early stages a definite leucocytosis with relative increase in number of polymorphonuclears. Leptospiras isolated from cases belonged to 2 serological groups. Of 28 strains studied, 24 were serologically identical and non-agglutinable by antisera prepared against a series of strains of known type, obtained from different parts of the world; this group is designated "Andamans A." These 24 strains were isolated from cases of varying degrees of severity, including fatal hemorrhagic cases. The remaining 4 strains were agglutinated by antisera prepared against cultures of the Akiyami A group, and in addition showed a specific agglutination with their own antiserum. Cultures of the Andamans A group were of low pathogenicity fo[r] adult guinea pigs. Young guinea pigs of ± 100 gm. wt. could be infected by intraperitoneal doses of 3 cc. of a rich culture. Virulence for guinea pigs was increased by sub-passages using liver emulsions, and adults could then be infected. The Andamans strains related to Akiyami A group were found non-pathogenic for young guinea pigs. Epidemic jaundice in the Andamans has a definite seasonal prevalence during the south-west monsoon. Cases are practically confined to adult males engaged in outdoor occupations which involve working in water and mud for prolonged periods. Samples of standing water from paddy fields, swamps, etc., in different parts of the Settlement were examined for pH. Leptospiras were found in most water samples at pH 6.9 or over, and were absent from those with a more acid reaction than pH 6.9. The reaction of soil and water in parts of the Settlement appears to be that which has been found suitable for persistence of leptospiras and associated with the occurrence of leptospiral infections in other parts of the world. Infection is widely scattered and not as a rule of marked intensity in any one area. Occasional concentrated outbreaks may occur. In 1 outbreak, onset of the first case 6 days after commencement of work in swampy ground and the occurrence of the last case 8 days after work was stopped, determines the incubation period and definitely associates the disease with conditions involving prolonged immersion in mud and water. Rats, considered to be possible carriers, were absent from the paddy fields during the epidemic season in the monsoon. A small number obtained from certain areas showed no leptospiras in their kidneys. Suggestions for prophylaxis are made.—*J. Taylor.*

10723. **TSURUMI, MITSUZO.** Études sur la fièvre scarlatine. *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(5): 929-931. 1930.—These notes are based on 10 yrs.' work by **T. TOYODA** at Dairen, Manchuria,

where a scarlatina epidemic occurs nearly every year. Toyoda concludes that in the culture filtrate of the streptococcus isolated from scarlatina (Dick toxin) there is a mixture of thermolabile and thermostable toxins. The pure thermolabile toxin contains no N and is easily destroyed by heating to 80° for 30 min.; it is responsible for all the symptoms of onset of scarlatina. Used intracutaneously, it produces a very strong reaction in non-immunized persons, but no allergic reaction. The thermostable toxin is unaffected by heating to 100° for 2 hrs.; used intracutaneously, it often produces an allergic reaction in persons immunized against scarlatina. Uniform and exact results with the Dick test are obtainable only by using the thermolabile toxin. Intracutaneous test with thermolabile toxin indicates the exact degree of a person's susceptibility to scarlatina; the parallel test with thermostable toxin indicates clearly the degree of a person's immunity. The thermostable toxin gives intracutaneous results identical with those of the endotoxin extracted from the streptococcus on alkali-acetic acid treatment. Streptococci are present in the throats of 14% of healthy persons giving a positive Dick test; the number of colonies and the proportion of toxin are not the same. The scarlatinal streptococcus is distinguished from other hemolytic streptococci only by its toxic productivity, superior to all others except that of erysipelas. Toyoda has produced scarlatina experimentally in man by inoculation with the scarlatinal streptococcus. He rejects the theory of a filtrable virus, and also the theory that there is another active factor besides the streptococcus.

10724. VERROTTI, G. Ricerche sperimentali di superinfezione sifilitica nell'uomo. [Syphilitic superinfection in man.] *Boll. Soc. Ital. Biol. Sperim.* 3(5): 572-573. 1928.—Experiments were made on 2 patients, 1 with exogenous, the other with both exogenous and autogenous material. The exogenous inoculations were successful, the autogenous were not. The character of the lesions was that of the stage of the disease in the inoculated patient. *Treponema pallidum* was found in the experimental lesions of one patient but not in those of the other. It is suggested that in the latter the *Treponema* may have taken another than the spiral form. In one patient the spontaneous lesions near the experimental lesions healed on full development of the latter, suggesting the elaboration of a vaccinating substance.

10725. WERMEL, E. M. Reaktion der Zellen auf Tuberkelinfektion in den Gewebskulturen. *Virchow's Arch. Path. Anat. u. Physiol.* 281(2): 297-315. 15 fig. (10 col.) 1931.—The cultures used were splenic tissues from an adult guinea pig and endocardial tissue from a guinea pig embryo 25 mm. long. Only histoid cells and polymorphonuclears were actively and in important numbers engaged in phagocytosis of BCG; neither lymphocytes nor connective tissue cells took part. The polymorphonuclears and a part of the histiocytes which engulfed BCG perished. If the cells were able to conquer the infection, BCG formed clumps in the cell body, became surrounded by a vacuole and were transformed into a dark-yellowish brown pigment which later became blackish brown and granular. He concluded that the epithelioid cell is not a specific kind of cell but an overgrown macrophage, which may be called an epithelioid macrophage. Epithelioid cells, like giant cells, are readily formed on infection of cultures with tubercle bacilli. The formation of giant cells can not be regarded as a specific reaction. Infection of tissue cultures with tubercle bacilli may have either one of 2 possible results: The engulfed bacilli may destroy the cells and supplant the culture, or the cells may destroy the bacilli and work them up into pigment. Only one author (Fischer) has yet observed a protracted coexistence of both elements.

10726. WHERRY, W. B. Cultivation of an acid-fast bacillus from leprosy. *Philippine Jour. Sci.* 43(4): 577-581. 1 pl. 1930.—An acid-fast bacillus was grown in a semisolid medium composed of equal parts of nutrient agar, and hen's ovomucoid and yolk, prepared by boiling in 3-6% glycerin, when there was added to this 1-2 drops of oleic acid and 1-2 drops of 10% dextrose solution for each cc. of medium. Multiplication occurred best at 35-37° C., with little O but with CO_2 present. Examination after 4-6 wks.' incubation showed numerous microscopic colonies. Growth was obtained from 3 cases. From 2 of the primary cultures, subcultures were obtained at a time when the primary cultures were 3½ mo. and 1 mo. old, respectively. Like the lepra bacilli in smears from cases, the cultivated bacilli do not stain by the acid-fast method if they are first treated with xylol and alcohol.—*Author's summary.*

10727. WOLFF, L. K. Ueber die Virulenz von Bakterien. I. Die Virulenz von Staphylokokken. *Zeitschr. Immunitätsforsch.* 62(1/2): 1-27. 1929.—When staphylococci are inoculated into rabbit corneas they produce effects which vary with, and are characteristic of, their virulence. When the infection goes on to panophthalmitis the bacteria gradually increase in virulence. By taking cultures at successive intervals from the resulting abscess in the vitreous humor of such eyes, the author obtained a series of cultures varying in virulence, as determined by inoculation into rabbit corneas. The more virulent cultures lose their power to hemolyze rabbit and human blood and to liquefy gelatine. They are more resistant to the bactericidal action of serum, even the immune serum of rabbits. Increase in virulence is not due to lessened susceptibility to phagocytosis or to increase in amount of leukocidin produced; it is thus probably due to increased resistance to lysis. Cultures from various pathologic conditions vary but little in their effects on the eye, but a culture from normal skin was less virulent both by in vivo and in vitro tests.—*E. C. L. Miller.*

10728. WOLTERS. Über den Nachweis von Tb.-Bakterien in Lungenschleim- und Milchproben durch Züchtung. *Deutsche Tierärztl. Wochenschr.* 39(35): 547-548. 1931.—From animal sputum and milk samples with microscopically positive reaction, tubercle bacilli were always cultured; frequently also from microscopically negative material. Therefore, suspected cases should be tested by the culture method, even though microscopically negative. For demonstration of avian tuberculosis in sputum and milk samples, the culture method also is very important.—*Author's summary (transl.).*

10729. [ZABOLOTNOV, P., and B. SHMIDT.] ЗАБОЛОТНОВ, П., и Б. ШМИДТ. К морфологии экспериментальной легочной чумы. **[Experimental pulmonary plague.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 155-168; German summary, 280. 1930.—10 guinea pigs were infected by inoculation of plague bacillus emulsion and killed on the 1st, 2nd, 3rd and 4th days following. The lungs, after 24 hrs., showed slight hyperemia, with swelling of the alveolar epithelium; no plague organisms were found. After 48 hrs., a more pronounced hyperemia, exfoliation of the epithelium of the bronchial tubes and bronchioles, and the appearance of very small pneumonic foci with hyperemia and accumulation of serous exudation, were observed; plague bacilli were not numerous. After 3 days, pneumonic foci of considerable size were observed, and the alveolae contained plague bacilli, this being the first evidence of pulmonary plague. After 4 days were noted general plague infection, and also primary catarrhal plague pneumonia, as in the previous case. In all cases, when lymphatic knots appeared, they were of secondary bubonic character. After the infection of the lungs, changes in the liver and spleen were also observed. The general picture of plague differed slightly from that in man. Intracardial infection, in general, gave the same results.—*G. A. Lebedeff.*

10730. ZEISS, HEINZ. Die pestähnlichen Lymphdrüsenentzündungen in Russland 1876/79 und ihre Beziehungen zur Tularämie in der Sowjetunion 1921/28. Eine seuchengeschichtliche Untersuchung. [Plague-like

inflammations of the lymph glands in Russia (1876-1879) and their relation to tularemia in Soviet Russia (1921-1928).] *Arch. Hyg. u. Bakt.* 105(4) : 210-228. 1931. —The disease picture of tularemia in U. S. S. R. is showing more and more similarity to that of true plague.

10731. **ZOON, J. J.** Tierversuche mit Monilia fioccoi. *Dermatol. Zeitschr.* 61(4) : 232-238. 5 fig. 1931.—Intraperitoneal injection of human tissue emulsion, from which *M. fioccoi* had been isolated in pure culture or culture suspension, into about 50 rats, into mice, 4 guinea pigs, and into rabbits, produced no local inflammation or metastatic foci; small amounts disappeared entirely, larger quantities were encapsulated by the omentum; the microorganisms lived for a long time and formed mycelia. 1 intratesticular and 1 subcutaneous injection into rats and 1 intravenous injection into a rabbit were negative. A positive culture on glucose agar was obtained from an encapsulation in a rat injected 10 wks. previously with a living suspension; animal transfers of this gave the same result as the original injection.

BACTERIOLOGY AND OTHER MICROBIOLOGY

PUBLIC HEALTH

I. S. FALK, *Editor*

(See also in this issue Entries 10164, 10175, 10451, 10470, 10508, 10563, 10583, 10593, 10663, 10670, 10672, 10673, 10690, 10709, 10711, 10728, 10729, 10825, 11606)

10732. **ARMSTRONG, CHARLES.** Psittacosis: epidemiological considerations with reference to the 1929-30 outbreak in the United States. [*U. S.*] *Public Health Repts.* 45(35) : 2013-2023. 1930.—169 cases with 33 deaths (exclusive of 16 laboratory infections) are noted from 15 states and the District of Columbia. The affection followed exposure to parrots, parrakeets and canaries in 55, 4 and 3 foci, respectively. Incriminated birds came from Brazil, Colombia, Cuba, Nicaragua, Honduras, Germany, Trinidad, Salvador, Mexico and Japan. Several cases followed exposure to apparently well birds. Intervals from first exposure to onset of symptoms were 6-8? days. Incubation periods are given as 6-15 days; 63% of the cases were females. No deaths were reported among 35 cases under 30 yrs. of age; 24% over that age died. Phlebitis was the commonest complication.—*C. Armstrong.*

10733. **AYYAR, C. V. RAMASWAMI.** Biological oxidation of sulphur, Part IV. Influence on ammonification and nitrification in activated sludge. *Jour. Indian Inst. Sci.* 13A(14) : 165-171. 4 fig. 1930.—The effect of sulphur-oxidation on ammonification and nitrification in suspensions of activated sludge is discussed. The suspensions contained in jars were maintained under vigorous aeration, using compressed air. Changes in reaction, and in type and number in the microflora, were studied and correlated with these observations. Results indicate that in presence of S, nitrification is completely inhibited (pH 5·8), but ammonification, brought about largely by fungi, proceeds vigorously almost to the end. The possible bearing of these observations on their application to the purification of sewage, with special reference to the conservation of plant nutrients in the sludge, is indicated.—*C. V. R. Ayyar.*

10734. **BALLANTYNE, E. N.** On certain factors influencing the survival of bacteria in water and in saline solutions. *Jour. Bacteriol.* 19(5) : 303-320. 1930.—Various bacterial emulsions remained viable for 5-32 mo. in 0.85% NaCl at various temp., and 14-32 mo. in distilled water. The bacterial concentration required for survival of *B. typhosus* in emulsion in distilled water or in 0.85% NaCl for a given time at a given temp. can be approximately determined. This varies greatly with temp. and emulsifying fluid employed. Distilled water is a more favorable medium for survival than 0.85% NaCl for *B. typhosus, B. coli, B. tuberculosis, B. diphtheriae, Strep. hemolyticus, Strep. viridans,* etc. Prolonged survival of *B. typhosus* in distilled water and in 0.85% NaCl is associated with a late period of comparatively low death rate. In *B. typhosus* at 37° C., onset of a period of low death rate may be detected after about 3 weeks. The fact that *B. typhosus* in distilled water survives so much longer at room temp. than at 37° C. points to low temp. as a factor of considerable importance in production of winter river typhoid in temperate climates. Washing *B. typhosus,* either in 0.85% NaCl, or in distilled water, shortens its survival period when resuspended in these fluids. The supernatant fluid removed in washing prolongs the survival period of the relatively few bacteria inevitably present. Great dilution of an emulsion of bacteria appears to be almost equivalent to washing in its effect. 10-20% plain nutrient broth diluted with 0.85% NaCl is the optimum concentration for prolonged survival of *B. typhosus* at 37°; 0.1% is sufficient definitely to prolong survival. 0.85% NaCl appears to be toxic to certain organisms when stored in nutrient media at 37°. Reduction in concentration of NaCl in culture media might assist in preservation of cultures of certain delicate organisms. Room temp. appears to be more favorable for survival of most organisms in distilled water and in 0.85% NaCl than 0°-8°. Streptococci and *B. diphtheriae* are exceptions. Duration of survival of several of the Gram-negative bacilli appears to be more uniformly long in distilled water and in NaCl solutions than on solid media.—*Author's summary & conclusions.*

10735. **BARKWORTH, H.** True time required for sterilization. Hot air and flowing steam. Time and temperature combination required for sterilization in the hot air oven, and a note on the time required for media to reach 100° C. in the steamer. *Zentralbl. Bakt. II. Abt.* 84(15/18) : 353-357. 1931.—The temp. recorded by the ordinary thermometer was unrelated to that of glassware within closed containers. Growth of *B. subtilis* spores was used as a criterion of sterility. When glassware was packed in closed tins, the minimum exposure required was 2 hrs. to reach 160° C., followed by 1 hr. at 160°; but if the lids of the containers are left off, the time could be reduced by 1 hr., i.e., 1 hr. to reach 160° C. followed by ½ hr. at 160° C. For routine work, an extra ½ hr. should be added to the holding period. The temp. on the shelf is significantly lower than that attained on the bottom. In an ordinary steam sterilizer, the liquid (3 liters) did not attain 100° C. until 25 min. after the surrounding steam.—*From author's summary.*

10736. **BLUMENFELD, FELIX.** Wetter und Erkrankungen der oberen Luftwege. *Folia Oto-Laryngol. I. Abt. Orig.* 19(2) : 185-193. 2 fig. 1930.—The author points out the futility of statistical studies of the relation of diseases to single phases of weather, e.g., temp. or humidity. Under the conditions in Middle Europe, the polar, tropical, maritime and continental air-bodies are important in studies of the effects of weather on health. Characteristics of each are given. Invasions by tropical or polar air-bodies are especially important. Observations of others are reviewed.—*W. A. Sawyer.*

10737. **BOYÉ.** Les relations entre la peste pulmonaire et la température. *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(2) : 274-276. 1930.—Pulmonary plague is frequent in the cold plateaus of Madagascar and extremely rare (never endemic) in the hot coastal regions. No epidemics have ever been observed in regions of Madagascar where the absolute minimum of temp. is not maintained for several days at a time below 16°.

10738. **BREWER, C. M., and G. L. A. RUEHLE.** Limitations of phenol coefficients of coal-tar disinfectants. *Indust. and Engineer. Chem.* 23(2) : 150-152. 1931.—

Tabulated data on 172 coal-tar disinfectants and 34 cresol compounds are given. *B. typhosus* phenol coefficients of coal-tar disinfectants (0.66-19.5) were 2-20 times greater than the corresponding *Staph. aureus* coefficients; with cresol disinfectants, 1-2.5 times the *Staph. aureus* coefficients. This demonstrates the impossibility of calculating germicidal efficiency of coal-tar disinfectants against other types of microorganisms, from the *B. typhosus* phenol coefficient.—*C. M. Brewer.*

10739. **BROMBERG, I. M., and R. COMAROFF.** Epidemiology of typhoid fever. Incidence of typhoid carriers in a general population group. *Jour. Hyg.* 29(2): 139-145. 1929.—Of 484 inhabitants of a village in Palestine, 0.62% were carriers. Prevalence was not influenced by season. Brilliant-green-MacConkey agar was most satisfactory for plating of feces, brilliant-green-glycerine for shipment, and Kligler's lead-acetate-triple-sugar medium for differentiation. Zinc loops in shipment bottles inhibited growth after 24 hrs.—*A. L. Stoughton.*

10740. **BRUHNS, C., und A. ALEXANDER.** Mykologische Beiträge. *Dermatol. Wochenschr.* 91(33): 1250-1253. 2 fig. 1930.—An atypical form of *Epidermophyton inguinale* (*Trichophyton interdigitale*), non-pathogenic for animals, is described. The source and distribution of dermatophytes in nature are discussed. Sporotrichums are abundant around Mount Blanc; *Actinomyces* spp. occur on grain. This saprophytic life is confirmed by demonstrations that the dermatophytes can exist in cultures on dry wood, awns of grains, dung and garden earth. Animals are also a source; 13 fallow deer in a park in Padua were found affected with trichophytosis. A patient who handled straw in packing wine bottles developed trichophytosis of the nail. The authors secured a culture of *Achorion schoenleinii* from a cicada from Berlin; this points to the grass, grain and stagnant water constituting the environment of this insect as a source in nature for this fungus. Ciferri is quoted as having found a *Grubyella* from a gnat; *Achorion schoenleinii* again is a member of the genus *Grubyella*.—*F. D. Weidman.*

10741. **BRUHNS, C., A. ALEXANDER, und E. KADISCH.** Zur Kenntnis der Infektionsquellen bei Pilzerkrankungen der Haut. *Med. Klinik.* 25(46): 1769-1771. 4 fig. 1929.—Whereas most of the fungus diseases common during the war were of deeply invasive type, such as folliculites, at present the superficial ones exemplified in dermatophytosis are the problem. In addition to such intertriginous positions as fingers and toes, the authors have seen submammary involvement. The commonest causes are *Trichophyton interdigitale, Epidermophyton inguinale,* and the thrush fungus ("Soorpilz"). Tissue changes induced are of the same order regardless of exciting agent. Since bathing houses have been suspected as a source of infection, the author tested whether associated materials could support growth of dermatophytes. The substrates employed were silk, wool, leather, straw, feathers, wood, earth, turf, hay, rubbish and manure. The species tested were as follows: *Trichophyton cerebriforme, T. radiolatum, T. interdigitale, Epidermophyton inguinale, Achorion quinckeanum,* and *A. gypseum.* While there were differences in luxuriance, in general the substances named were adequate to support growth. The authors comment on the ease with which the center of a bundle of laundry can escape disinfection and on the problem of disinfecting silk and wool, which is even more difficult of solution. A further factor favoring recurrences is the superficiality of the affection, which is not calculated to call forth immune body production. Incidentally, the optimum temp. for these organisms (27° C.) approximates that of bathing establishments, in which the disease appears to be contracted.—*F. D. Weidman.*

10742. **BÜRGERS.** Studien zum Erkältungsproblem. *Schrift. Königsberg. Gelehrt. Ges., Naturwiss. Kl.* 6(3): 81-100; also publ. by Max Niemeiger: Halle a. S., 1929. Price 2.40 M.—The extensive literature on the relation of exposure to cold with incidence of respiratory infections is reviewed, and 42 references are quoted. Original experiments are also described. 49 guinea pigs orally injected with pseudotuberculosis were exposed to cold for 1 hr. at a time (air −7° to +9.5°). These exposed animals lost weight and 13 died of pneumonia; 14 injected controls not so exposed to cold showed no such lowered resistance to other organisms. Exposure to cold of normal guinea pigs or of others which had lost weight by being fed a diet low in vitamins, very rarely gave rise to pneumonia. Another series of 36 guinea pigs was inoculated nasally with 2 types of pneumococci; 18 were exposed to cold and the others were used as controls. Pneumonia was not seen. Experiments on man were undertaken, degree of cooling being estimated from thermometer measurements of surface temp. on fingers and toes. Local cooling of hands or feet was obtained by water baths, wind on wet stockings, or by snow; general cooling, by variations in the room temp. Local cooling gave skin temp. as low as 14-22°, which might persist for 45 min. or longer after local cooling was discontinued, if the room temp. was low. Metabolism was measured and intense local cooling was found to be much less effective in producing increase in metabolism than weaker cooling applied to the whole body surface. However, local cooling produced vasomotor changes in other areas, with fall of surface temp. Exposure produced a considerable diuresis. General cooling was associated with a shrinking of the nasal mucosa; warming, with a swelling and decreased or increased secretion. The effect appears to depend on direct exposure of the nose to cold. Such exposures were not followed by bronchial infections; a bronchitis and slight nephritis in one case and an increase in sciatica in another, which followed exposure, are ascribed to chance. Opsonic measurements were made both on man and on rabbits. In rabbits, cooling gave a lowered opsonic index, but the bactericidal power of the serum was unchanged. Results indicate that infection depends on a decrease in protective substances, probably through changes in the nasal mucous membrane and its secretion.—*H. C. Bazett.*

10743. **CAZANOVE.** Recherches sur les causes de la persistance de la peste au Sénégal. *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(11): 2103-2107. 1930.—Fleas (*Xenopsylla cheopis*) from mice infected with plague, ground up into an emulsion and subcutaneously injected into other mice, transmitted plague. The author concludes that fleas as well as rodents may be reservoirs of plague in Senegal.

10744. **DOUBROWINSKY.** La tularémie dans l'Union des Républiques Soviétistes Socialistes (1921-1929). *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(10): 1911-1921. 1 map. 1930.—The author holds the water rat (*Arvicola amphibius* L.) chiefly responsible for the occurrence of human tularemia in the U. S. S. R., though he admits that the part which may be played by other rodents as reservoirs of the virus is as yet uncertain. Epidemics follow the opening of the water rat hunting season; they cease after its end. The river basins (almost exclusively the ♂ population 10-30 yrs. old) are the regions affected; but Saratoff, where the water rat is not hunted, has never known a case of tularemia. The dried skins of the rat do not appear to convey infection.

10745. **ELDRIDGE, E. F., and W. L. MALLMANN.** I. Influence of diluting water on the biochemical oxygen demand. II. Digestion of sludge from strawboard waste. *Michigan Engineer. Exp. Sta. Bull.* 39. 1-14. 1931.—I. A bacteriological and chemical study of diluting waters for biochemical oxygen demand (B.O.D.) determinations showed that a synthetic water containing the mineral salts common to natural waters was superior to distilled, bicarbonate, carbonate and phosphate waters. Both tap-water and synthetic water gave much higher B.O.D. results and bacterial counts than the others mentioned. A marked lag phase both in B.O.D. and bacterial activity was found in distilled, carbonate, bicarbonate and phosphate waters. The curves produced by plotting the B.O.D. values paralleled those made by plotting the bacterial counts. The phosphate water gave trouble be-

cause of its effect on iodine liberation in the dissolved oxygen determination, thus rendering accurate results difficult. 2 limiting factors were found—pH value and mineral salt content. II. Strawboard sludge was mixed with sewage sludge and the rate of digestion, as indicated by gas production, was studied. 1:1 mixture of the 2 sludges gave the largest volume of gas per unit weight of sludge, with the exception of the sample containing sewage sludge alone. The volatile matter decrease was about the same in all mixtures. Rate of gas production was prolonged according to proportion of straw sludge added. The 1:1 mixture was about optimum for rate of digestion.—*Authors' summaries.*

10746. GAFAFER, W. M. The inhabitants of the island of St. Kilda and acute upper respiratory disease. *Human Biol.* 3(3): 437-441. 1931.—This paper consists of excerpts dealing with upper respiratory disease epidemiology from K. Macaulay's rare 18th century "History of St. Kilda." The title-page of the work is reproduced, and adequate footnotes are added.—*W. M. Gafafer.*

10747. [GAISKIĬ, N. A.] ГАЙСКИЙ, Н. А. Вопросы эпидемиологии и эпизоотологии чумы в связи с особенностями природы Казакского Края. **[Epidemiology and epizootic of plague in connection with peculiarities of natural conditions in Kazakstan.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 1-9; French résumé, 125-126. 1930.—The marmot, being widely distributed beyond the boundaries of the endemic region, becomes a dangerous carrier of plague only under definite geographical, climatic and soil conditions.—*G. A. Lebedeff.*

10748. GARRIDO-MORALES, E., and O. COSTA MANDRY. Mechanism of natural immunity to diphtheria. Preliminary report of experiments in Porto Rico. *Amer. Jour. Hyg.* 14(1): 89-98. 1931.—Schick tests of 642 children in one of the larger public schools in San Juan showed higher proportions of Schick-negatives than usually found at corresponding ages in New York, Baltimore, and other cities in northern U. S. A. This accords with previous observations in the tropics. Bacteriological examinations made at the time of the first Schick tests (March 1930) showed 1-4% to be carriers of virulent, and 5.8% to be carriers of avirulent, diphtheria bacilli. Carrier infections with both virulent and avirulent organisms were somewhat more frequent in Schick-positive than in Schick-negative children. Bacteriological examinations of 194 originally Schick-positives, repeated weekly for 3 mo. (March-June, 1930), showed a total of 26 carriers of virulent, and of 42 carriers of avirulent, diphtheria bacilli. All carrying virulent organisms were previously or later found to harbor avirulent bacilli. During the 3 mo. of observation, negative Schick reactions developed in 85% (22 of 26) of the demonstrated virulent carriers, in 12% of those carrying only avirulent organisms, and in 9.5% of those showing no positive cultures. Of the 4 demonstrated carriers of virulent organisms remaining Schick-positive at the end of June, 2 showed negative, and 2 positive, reactions, when retested the following September. 20 of the 22 known carriers of virulent bacilli who had developed negative Schick reactions before June 30, were retested 3-5 mo. later. 16 of the 20 were still Schick-negative; the remainder were positive. The completeness and durability of the negative Schick reaction developing after demonstrated infection with organisms classed as virulent, showed some relation to degree of toxicity of cultures.—*Author's summary.*

10749. GRAHAM, R. R. The farm water supply, wells and their construction, springs, cisterns, pumps, hydraulic ram; and water supply, plumbing and sewage disposal systems for farm homes. *Ontario Dept. Agric. Bull.* 361. 1-72. 58 fig. 1930.

10750. GREENWOOD, M., W. W. C. TOPLEY, and J. WILSON. The mortality of a herd of mice under "normal" conditions. *Jour. Hyg.* 31(3): 403-405. 1931.—Absolute numbers (329), and mortality (56) in 7 mo., 3 wk. of a herd of normal mice, with calculations of expectations of life.

10751. HALE, FRANK E. Successful superchlorination and dechlorination for medicinal taste of a well supply, Jamaica, N. Y. *Jour. Amer. Water Works Assoc.* 23(3): 373-386. 1931.—Medicinal taste with chlorination developed in a well supply, caused by organic substance possibly extracted from the ground by leaking gasoline from a garage. *Crenothrix* was a possible source. Coal and coke were eliminated. Experiments proved that the taste was prevented by boiling before chlorination, by oxidation as by H_2O_2, by long standing, partially by aeration, by addition of 0.2 p.p.m. of NH_3 prior to 0.4 p.p.m. of Cl, by superchlorination, and by activated charcoal. Superchlorination of wells and dechlorination by SO_2 in the pump well was adopted because of quick application, little additional equipment needed, and ease of control. Residual Cl, 0.03 p.p.m. by orthotolidin test, was maintained in the station discharge. Superchlorine dose was 1.6 p.p.m. and SO_2 dose, 0.6 p.p.m.; effective superchlorine contact 5-10 min.; total possible Cl contact 26-34 min.; average station discharge 3½ m.g.d. The treatment was entirely successful over 8 mo.—*F. E. Hale.*

10752. HASLEY, D. E. Brucella abortus in certified milk. *Jour. Infect. Dis.* 46(5): 430-434. 1930.—In an effort to determine the feasibility of using plating methods to detect the presence of *Br. abortus* in market milk, the authors examined 230 samples of certified milk as sold by 5 dairies in Detroit, Michigan. *Br. abortus* was isolated and identified in 4.3% of the samples analyzed. Milks from 3 of the 5 dairies were shown to contain the specific organisms. It was later found that 1 of the 2 dairies from which negative results were obtained, had previously eliminated all abortion reactors. The average number of organisms of the *Brucella* group found in these samples was 2 per cc.; the highest, 8. The comparatively low numbers are probably due to use of mixed herd milk for the samples.—*A. C. Fay.*

10753. HERRMANN, E. Carvasept und seine Verwendbarkeit. *Pharmazeut. Zentralhalle Deutschland* 72 (39): 613-614. 1931.—"Carvasept" (nomochlorcarvacrol) is 130 times as effective against staphylococci as phenol. In a dilution of 1:5,000 it kills *Spirochaeta pallida* in 2 min. Prophylactic salve preparations are equally efficient. It is also an anthelmintic and is recommended for skin infections.

10754. HEYMANS, J. F. Sur la désinfection par l'eau oxygénée additionnée d'acide cyanhydrique comme anticatalyseur. [Disinfection by H_2O_2 with hydrocyanic acid as antienzyme.] *Arch. Internat. Pharmacodyn. et Thérap.* 37(2): 196-198. 1 fig. 1930.

10755. HILLIARD, CURTIS M. The prevention of disease in the community. 193p. Frontispiece, 25 fig. McGraw-Hill Book Co., Inc.: New York, 1931. Pr. $1.75. —Written for college students, this book traces the history of, shows the necessity for, and the effectiveness of, public health activities. It discusses bacteria, modes of infection, and disease prevention by immunization, isolation, proper disposal of wastes, pure air, water and food supplies, insect control and health organizations.—*G. N. Ludwig.*

10756. JÄCKEL, R. Praktische Entseuchungsversuche mit "Alkalysol" und "Sagrotan." [Practical experiments with "Alkalysol" and "Sagrotan" as disinfectants.] *Prakt. Desinfektor* 23(6): 177-184. 1 fig. 1931.

10757. JONES, D. H. Bacterial action in the septic tank system of sewage disposal, and bacteria and the water supply. *Ontario Dept. Agric. Bull.* 361. 74-76. 1930.

10758. JORDAN, H. E. Factors contributing to quality of public water supplies. *Indust. & Eng. Chem.* 21(2): 152-156. 1929.—In the average American city, close to 100 gal. of water are used per person per day. Of this amount a little over 30 gal. are for domestic purposes. Only 0.5 gal. per person is taken internally. However, this relatively small amount is by far the most important single influence in determining the quality

of a public water supply. An analysis of the requirements to obtain the demanded quality shows that 5 factors must be considered. The most important of these is that of safety. Using the figure of 100 to represent the ideal quality, 51 points should be allowed for safety. In general, American public water supplies meet this requirement. The next 2 important factors are those of taste and "chemical balance," to which 22 and 20 points, respectively, should be assigned. Appearance should receive 5 points and temp. 2. Those engaged in furnishing water to the public would do well to take such a rating seriously.—*J. F. Norton.*

10759. **JOST, A. C., and NEIL E. McKINNON. Epidemiology and vital statistics.** *Canad. Publ. Health Jour.* 19(1/2): 234-237. 1928.—The authors, reviewing the report for the city of Hamilton for the preceding 2 yrs., emphasize the marked decline in mortality and morbidity rates of diphtheria, following the active immunization against diphtheria started in 1922,—over 60,000 inoculations being given in 1927. In the Province of Ontario, rabies has increased and is considered a serious problem. 136 rabies vaccine treatments were given during the year and 7 heads positive for rabies were found. The outbreak is not confined to one area, but several scattered foci have been demonstrated.—*C. H. Halliday.*

10760. **KADISCH, E. Über die Desinfektionswirkung einiger Waschmittel auf pathogene Hautkeime.** *Dermatol. Wochenschr.* 90(15): 514-517. 1930.—In view of the widespread use of the lukewarm laundry technique for wool and silk clothing, assisted by special soaps like Lux, the author tested the susceptibility of *Achorion gypseum, Trichophyton interdigitale, T. granulosum,* and *T. asteroides* in presence of Lux and Persil (the latter is probably a proprietary German washing powder). 3 of the species were killed at 56° C. in 3 min. The author concludes that in spite of the greater susceptibility of fungi for heat as compared with many pathogenic bacteria, and in spite of the associated influences of these laundry agents, neither the lukewarm nor the cold techniques kill the organisms. There is therefore the possibility that clothing such as stockings are genuine sources of re-infection in dermatophytosis. Detailed protocol is given of the results at the following temp.: 20°, 30°, 35°, and 56°, and over graded periods of 3-30 min.—*F. D. Weidman.*

10761. **KÄLIN, A. Ueber Hydrargyrum oxycyanatum und Compressi Hydrargyri oxycyanati.** *Pharmaceut. Acta Helvetiae* 6(8): 159-170. 1931.—A 0.5‰ solution of Hg-oxycyanide kills *Staphylococcus pyogenes aureus* in a water suspension within 30 min. A 1‰ solution kills them within 15 min. Addition of NaCl diminishes these times to 15 min. and 5 min., respectively. When suspended in 1% peptone water, the 0.5‰ solution did not kill in 1 hr., while the 1‰ solution killed within 30 min. Here the addition of NaCl is of no effect. For treating wounds and for disinfection of the hands and instruments, a 1‰ water solution is recommended.—*From author's summary (transl.).*

10762. **KHAN, SARANJAM, and MAHENDRA NATH AGARWAL. On the duration of the life of vibrios in the Ganges and Jumna river water.** *Indian Jour. Med. Res.* 16(4): 993-1008. 1928.—Water from these 2 rivers and from a well in Mela was used. Each sample was divided into 4 parts: (1) untreated, (2) boiled 5 min., (3) filtered through filter paper, (4) filtered and boiled. 2 vibrio cultures, one agglutinable and the other inagglutinable, were added to different portions of each sample. The flasks were kept at room temp. and cultures made on bile-salt-agar plates at regular intervals. Variations were noted in length of time cholera vibrios remained alive in different experiments, but in general the inagglutinable strain survived in unboiled water from the Jumna for 3.25 days; from the Ganges, for 7.25 days; from the well, for 3.62 days. When the water was boiled, the time was lengthened to 10.87 days for the Jumna; to 9.12 for Ganges; and to 8.75 for the well water. In each case, the agglutinable strain disappeared in a shorter period.—*T. G. Hull.*

10763. **KJER-PETERSEN, R. Tuberkuloseproblemer. I lys af 10 aars tuberkulosestationsarbejde. [Tuberculosis problems, in the light of 10 years' investigations at the tuberculosis station in Copenhagen.]** 125p. V. Thaning & Appel: Copenhagen, 1929. Pr. Kr. 3.50.

10764. **KLIEWE, H., und K. LANG. Über den Keimgehalt von Mineralwässern.** *Arch. Hyg. u. Bakt.* 105(2): 124-131. 1931.—Of 30 mineral waters tested, 3 were free of bacteria, 11 contained less than 100 per liter, the others up to 55,000. Most of the organisms were soil and water types; some indicated contamination by human and animal excreta. When held at 37° for 24 hrs., the bacterial content decreased markedly; at 17-22° there was an increase, followed by a gradual decrease.

10765. **KNAYSI, GEORGES. Disinfection. I. The development of knowledge of disinfection. II. The manner of death of certain bacteria and yeasts when subjected to mild chemical and physical agents. III. The taking up of iodine by yeast cells. IV. Do bacteria die logarithmically? V. Some properties of frequency curves and their use in studies of disinfection.** *Jour. Infect. Dis.* 47 (4): 293-333. 1930.—I. A review of the most important literature on the mechanism of disinfection. II. Disinfection curves were constructed for *Bacterium coli* in 1-1,000 aqueous solutions of methylene blue, in 1-1,000,000 aqueous $HgCl_2$ and in 75% glucose solutions. Similar curves were also constructed for *Schizosaccharomyces pombe* in 1-1,000 methylene blue. It is concluded that both organisms die in a similar manner and that in all cases the curves are more or less sigmoid in shape, belonging to the chance type. III. The cells of *Saccharomyces cerevisiae* take up iodine from its aqueous solutions according to the adsorption isothermal. IV. The so-called reaction constant k varies during the same experiment with a given culture, with cultures as much alike as is possible to have, and may be greater at a given temp. with a given culture than with a similar one at a higher temp. From this and other considerations it is concluded that bacteria and yeasts do not die logarithmically, as was assumed by Chick. V. The author worked out theoretical disinfection cases. Assuming that bacteria die according to the frequency distribution of their resistance, he constructs survivors' curves and finds that if obtained when the distribution curve of resistance is of the very skew or extremely skew types, they resemble very much the survivors' curves usually obtained by direct experiments.—*G. Knaysi.*

10766. **[KNYAZEVSKIĬ, A. N., and V. A. BERDNIKOV.]** КНЯЗЕВСКИЙ, А. Н., и В. А. БЕРДНИКОВ. О длительности сохранения вируса туляремии в шкурках грызунов. **[The length of time B. tularense remains active in the pelts of rodents.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 68-71; English summary, 132. 1930.—The pelts of house mice, rats, and guinea pigs dead from tularemia, were kept in a room at 7-8° C. and in a thermostat at 32-33°. 0.2-0.4 cc. of emulsion of 70 pelts kept at 7-8° was injected subcutaneously into house mice; emulsion of almost all pelts kept less than 26 days caused tularemia, as shown by patho-anatomical examination and by the presence of *B. tularense* in smears from the organs of dead mice. Emulsion from pelts kept 26-40 days gave a significantly lower % of infection; after storage for more than 40 days the organism apparently dies. When the pelts were kept in an incubator, the period of activity of the organism was significantly shorter; positive results with injected emulsion were obtained from pelts 2-5 days old; results were negative from pelts more than 5½ days old. There were no differences in results from emulsions made from pelts of house mice and guinea pigs.—*G. A. Lebedeff.*

10767. **[KOROBKOVA, E. I., S. V. MITIN, and I. V. RUBIN.]** КОРОБКОВА, Е. И., С. В. МИТИН, и И. В. РУБИН. Роль скарлатинозных носителей гемолити-

ческого стрептококка в эпидемиологии скарлатины. [Rôle of scarlatina carriers of hemolytic streptococcus in the epidemiology of scarlatina.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 217-224; French résumé, 283-284. 1930.—*Streptococcus haemolyticus* was found in the mouths of all of 181 scarlatina sufferers during the most acute period of illness. In all cases, except one, the illness was caused by infection from other members of the family. Examination of 78 recovering patients showed that on the 22nd to 28th day the virus was present in 22-27% of the cases; on the 29th to 36th days in 19-24.3%; and on the 37th to 42nd days in only 15-19%. Examination of 83 families, to which 152 recovered patients had returned, showed that of the 100 recovered who harbored no streptococci on leaving the hospital, in only 1 case was there an illness in the family; while of the 52 who had streptococci on leaving the hospital, 3 cases of infection in the family occurred.—*G. A. Lebedeff.*

10768. **LEVINTHAL, WALTER.** Das Vorkommen des Pfeifferschen Influenzbacillus bei Gesunden. *Zeitschr. Hyg. u. Infektionskr.* 109(1): 93-95. 1928.—In cultures from throats of normal individuals, summers of 1927 and 1928, Pfeiffer's bacillus was found in 15 of 77 cases in the 1st series; in the 2nd series it was found in 32 of 75 individuals.—*W. W. Herrmann.*

10769. **MAXWELL, J. L.** The diseases of China, including Formosa and Korea. 2nd ed. 530p. 176 fig. H. K. Lewis & Co.: London, 1929. Price 20 s.

10770. **MINKEWITSCH, I. E.** Über einige Bodenstämme des B. coli und ihre sanitäre Bedeutung. *Zeitschr. Hyg. u. Infektionskr.* 111(1): 58-67. 1930.—Studies were made of *coli-aerogenes* bacteria isolated from 704 samples of earth collected at various latitudes of Russia from Kola (Arctic zone) to Batum (subtropics). Among the varieties of *B. coli-aerogenes* in soil cultures, *B. aerogenes* appeared no more often than in cultures of intestinal contents of man or animals. The anaerobic fermentation test apparently can serve as an indication of fecal soil pollution, as it gives positive results just where such pollution is demonstrable.—*W. A. Sawyer.*

10771. **MINKEWITSCH, I. E.** Die Grundtypen der Bacteriengruppe Coli-aerogenes und ihre Herkunft. *Zeitschr. Hyg. u. Infektionskr.* 111(2): 180-190. 1930.—255 specimens of common diptera, mostly mosquitoes and house-flies, were collected between Murman and Leningrad and examined culturally for bacteria of the *coli-aerogenes* group. Such bacteria were present in only 2% of the mosquitoes and in 8% of the flies (*Musca domestica*), and the strains peculiar to these insects would not interfere with the testing of water for colon bacilli, as such strains do not produce fermentation at 46° C. and can be differentiated from *B. coli* of fecal origin by Bulir's test or by Koser's citrate test. The gas-producing intestinal bacteria of lower vertebrates, such as fishes and frogs, have the same differentiating characteristics as those of insects. The origin in nature is stated for 5 basic types of the *coli-aerogenes* group.—*W. A. Sawyer.*

10772. **PACIATTI, C.** Relazione sull'esperimento di fermentazione e trasformazione delle immondizie provenienti dalla nettezza domestica e stradale nelle celle zimotermiche Beccari-Valtancoli per l'impianto della città di Patrasso, Grecia. [Fermentations and transformations produced by dirt from house and street cleanings in the zymothermic cells set up by the city of Patras, Greece.] 11p. G. Ramella & Co.: Florence, 1928.

10773. **PAUL, JOHN R., and ROBERT SALINGER.** The spread of rheumatic fever through families. *Jour. Clin. Investigation* 10(1): 33-51. 1931.—Study of 15 families suggests that an infection is involved, in which the rôle of environment and hereditary predisposition are unknown. The sudden appearance of apparently primary and secondary outbursts in certain individuals was frequently accompanied by recognizable forms of the disease in other members of the family group, and not infrequently by the simultaneous appearance of non-specific illnesses, e.g., bronchitis, bronchopneumonia, skin rashes and rheumatoid arthritis. Not only do several cases seem to be initiated simultaneously, but periods of recurrent activity of the disease seem to sweep through a family in synchronous waves, during which time new cases may also appear.

10774. **PAUL, JOHN R.** Age susceptibility to familial infection in rheumatic fever. *Jour. Clin. Investigation* 10(1): 53-60. 1931.—In a selected population (99 members of 14 families in which 2 or more individuals had suffered with evidences of rheumatic fever), the disease spread particularly to the younger members of the family, and was largely distributed throughout the age group 5-12, reaching its peak at about the age of 7. Among children 5-12 yrs. old, who apparently had not previously suffered from any manifestations of the disease, rheumatic fever was acquired in association with familial exposure, at the rate of 25-35%. Among children 5-12 yrs. old, who had survived an initial attack, recurrences were noted in association with familial exposure at the rate of 35-60%, decreasing as age increased, but representing a markedly enhanced susceptibility during adolescence.

10775. **PIERAERTS, GEORGES.** Notes cliniques sur la "fièvre rouge congolaise." *Ann. Soc. Belge Méd. Tropic.* 11(2): 189-204. 1931.—The symptoms of red Congo or pseudo-dengue fever are given in detail. Endemo-epidemic in the Congo region, it appears to proceed by small, local thrusts, manifesting itself successively in the form of an epidemic of the household, of the quarter, and of the village,—2 successive cases in the same house generally being spaced about 10 days apart. A seasonal incidence exists but is not absolute. The most numerous cases occur in the rainy season; those occurring in the dry season in a group, however populated, have not given rise to epidemic proportions. From the theoretic viewpoint, the disease merits study from its possible relations to Central African dengue; practically, this study shows it to be a definite clinical entity among the numerous acute tropical fevers.

10776. **[PLAVSKAĬA, E. V.]** ПЛАВСКАЯ, Е. В. Эпидемия гриппа в Балхашском районе зимой 1929 г. [Grippe epidemic in Balkhash, Khirgiz SSR., winter of 1929.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 225-230; English summary, 284-285. 1930.—76% of the population became ill, of which 11% died (mainly children and elders) during the epidemic among the Cossack population. Death in most cases was due to complications (pneumonia, pleuro-pneumonia, enteritis), explained by the unsanitary conditions, insufficient food and absence of immunity. Microscopic and bacteriological investigation of 12 cases showed, besides staphylococci, Fraenkel's diplococci; in no case was Pfeiffer's bacillus found.—*G. A. Lebedeff.*

10777. **[REZHABEK, ĬA. V.]** РЕЖАБЕК, Я. В. К вопросу о выборе в районе Зеленого острова места забора воды для строящегося Ростово-Нахичеванского водопровода. [Choice of site for the drawing of water for the new Rostov aqueduct.] [German summary.] Известия Государственного Микробиологического Института в Ростове на Дону (*Ber. Mikrobiol. Staats-Inst. Rostow-am-Don*) 4. 5-54. 1929.—13 chemical and 37 bacteriological analyses of water from 4 points of the Don River near Rostov were made Feb. 13 to June 24. The samples were taken 50 m. from the shore and at a depth of 2 m. Suspended matter at all 4 points varied from 7.1 mgm. per liter in Feb. to 77.84 toward the end of March, then diminishing to 44.0 toward June. These variations were found also for other constituents: Organic matter, 1.6 mgm. per liter in Feb., increasing to 141.6 toward the end of March, decreasing to 1.88 toward the middle of June; O content, 2.69 mgm. per liter, increasing to 5.88, decreasing to 3.33; dissolved O (at 0° C. and 760 cm. pressure), 6.12 mgm. per liter, increasing to 10.71, decreasing to 6.05; absorbed O, 0.76 mgm. per liter, increasing to 8.99, decreasing to 1.03. Loss through heating of dry matter varied from 119.4

mgm. per liter in Feb. to 50.0 toward June. Combined Cl varied from 75.24 mgm. per liter in mid-Feb. to 20.10 at the end of March, and again increased to 42.31 mgm. toward the middle of June. Bacteriological analyses were limited to bacterial counts and coli titer. During the period of freezing over (Feb. 15–March 15), total count in 1 cc. of water from all 4 points was 84-758; March 15–June 10, 6564-34,140; after the spring freshets (June 10-20), 166-1170. Coli titer was 1.0-0.01 on March 19 and 100-10 on March 27, showing that there are conditions other than seasonal changes which determine coli titer. The data are considered valuable only when all other conditions are taken into consideration, e.g., freezing over, flooding, rate and direction of flow, direction and velocity of wind, precipitation, topography, and general sanitary conditions.—*G. A. Lebedeff.*

10778. RIVIÈRE, R. D. de la, E. ROUX, et F. CAVALLIER. Pouvoir bactéricide, sur le méningocoque, du bleu de méthylène irradié ou non irradié. *Compt. Rend. Soc. Biol.* 106(10): 799-802. 1931.—The bactericidal power of 10 samples of methylene blue was tested by putting each in contact with an emulsion of meningococci for 3 hrs. Cultures were then made and incubated, being observed after 1, 2 and 3 days. Emulsions of meningococci were cultured on agar and incubated in the same way to see if they retained their vitality. The same procedure was followed for each sample after irradiation for 20 min. The bactericidal power, good without irradiation, was better after exposure to ultraviolet (active at a dilution of 1: 150,000 before irradiation and of 1: 300,000 after). Addition of cholesterin diminished the antiseptic power and produced no difference between irradiated and non-irradiated products. Neither amount of Fe in the dye nor of ozone generated by the ultraviolet apparatus affected the antiseptic power. 2 lots of rabbits and guinea pigs received an emulsion of meningococci intraperitoneally. One was then given 1 cc. of a 1% solution of medicinal methylene blue. After 15 min., samples of peritoneal fluid were cultured. Those from animals receiving only the bacteria were positive; the others were negative. Medicinal methylene blue is recommended as a treatment for meningococcus infections.—*E. Weiner.*

10779. ROCHAIX, A. Recherches sur la persistance et la disparition des germes pathogènes dans l'eau d'égout. *Ann. Hyg. Pub., Indust. et Soc.* 8(12): 669-675. 1930.—Sewage containing no acid or alkaline, toxic or antiseptic products was sterilized, placed in flasks, and inoculated with cultures of various pathogenic organisms, preserved at laboratory temp. and tested at various intervals by inoculation on peptonized bouillon. In the 1st experiment, typhoid bacilli, paratyphoid A and B, cholera vibrios and *Bacillus pyocyaneus* were alive at the end of 7 mo. 14 days; paratyphoid B and *B. pyocyaneus*, at the end of 20 mo. 8 days. In 2d and 3d experiments, cholera vibrios and typhoid bacilli survived in sterilized sewage water only 3 mo. 7 days, while in sterilized distilled water they lived for 6 mo. 23 days; in a 4th experiment, paratyphoid B survived for 112 days in sterilized sewage, while in sterilized distilled water it lived for 8½ mo. In the remaining 4 experiments, paratyphoid B, cholera vibrios and typhoid bacilli were tested in sterilized sewage water, survival of each by itself being compared with its survival in a mixed culture of saprophytic organisms. In each case the pathogenic organism lived longer in pure than in mixed culture, and in mixed culture the saprophyte survived the pathogen. These results indicate that, while sewage is in itself a good culture medium for pathogenic organisms, the "vital concurrence" of saprophytes must play a large part in the disappearance of the pathogens.

10780. [ROMANOV, P. V.] РОМАНОВ, П. В. Химико-бактериологическое обследование реки Воронежа в районе г. Воронежа. [Chemico-bacteriological study of the River Voronesh in the neighborhood of the city of Voronesh.] Воронежский Государственный Институт, Бюллетень Общества Естествоиспытателей (*Bull. Soc. Nat. Voroneje*) 2(3/4): 95-120. 1929.—31 chemical and 22 bacteriological analyses of the water taken from 8 localities in the river, covering 6 km., of which 14 were within the city limits, were made, and revealed the wide variations occurring in the different seasons of the year.—*G. A. Lebedeff.*

10781. RUSSO, CANIO. Recherches expérimentales sur l'épidémiogenèse de la peste bubonique par les insectes. *Office Internat. Hyg. Publ.: Bull. Mensuel [Paris]* 22(11): 2108-2120. 1930.—The author finds that dead rats are visited by different species of insects, not at random but in a regular order: first by the common fly (*Musca domestica*) and the blue fly (*Calliphora vomitoria*). When the fat begins to grow rancid, coleoptera of the genus *Dermestes* appear, and, at the beginning of brown liquefaction, those of the genus *Hister*. After destruction of most of the liquid products of putrefaction, other parasites of the genus *Tenebrio* and acarids of the genera *Glyciphagus* and *Tyroglyphus* attack and destroy the dissected ligaments, tendons and bones. The author proved that almost all of these insects (flies and acarids, but not *Dermestes* and *Hister*), after such infected meals, harbor living virulent plague bacilli. His next study was on the infectivity of insects fed on infected cereals. A pile of maize on which a rat had died of plague was found invaded by acarids, which, being killed in alcohol, and applied to the shaven abdominal skin of 2 guinea pigs, produced death by plague. These acarids, however, were nearly immobile and apparently would not migrate far. Larvae of the weevil, *Sitophylus granarius*, and of *Tenebrio molitor* proved susceptible of laboratory infection. Plague bacilli were isolated from ants which had fed on infected maize. Hence, it appears that a large number of insects are capable of conveying plague bacilli, though their infectivity is of short duration, both because the insects themselves are short-lived and because the bacilli soon disappear from their bodies.

10782. RUTH, EDWARD D. The elimination of taste and odor in the water supply of Lancaster, Pennsylvania. *Jour. Amer. Water Works Assoc.* 23(3): 396-399. 1931.—Equal parts of anhydrous NH_3 and Cl gas in the amount of 0.18 p.p.m. are being fed to the water, the anhydrous NH_3 being fed to the raw water before coagulation with $AL_2(SO_4)_3$, and the Cl to the finished water after filtration, results being extremely low bacterial counts, complete absence of taste or odor, and elimination of algal growths in the reservoirs.—*E. D. Ruth.*

10783. [SLAPIK, V. K.] СЛАПИК, В. К. О бациллоносительстве обслуживающего здорового персонала брюшнотифозных отделений. [Carrying of bacilli by the healthy personnel handling typhoid patients.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(4): 413-418; French résumé, 482. 1929.—In the feces of 1 of 24 employees bacteriologically studied, and on the handle of a bed pan out of 14 articles examined in the typhoid hospital, bacilli were found that resembled Eberth's bacillus, but differed in somewhat heavier growth and in relation to glycerine. Agglutination of these cultures with paratyphoid A and B agglutinating sera was negative; agglutination with typhoid-immune serum was positive. By immunization of 2 rabbits with vaccine of these cultures, previously killed by heating to 58° C. for 1 hr., agglutinating sera were obtained after 7 days. It is concluded that employees and fomites may serve in spreading typhoid.—*G. A. Lebedeff.*

10784. SMIT, JAN. De moeilijkheden van het bacteriologische drinkwateronderzoek. [Difficulties in bacteriological water analysis.] *Nederl. Tijdschr. Hyg., Microbiol. en Serol.* 6(1): 19-39. 1931.—The difficulties in interpretation of *B. coli* tests in water analysis are emphasized, when the results do not correlate with the known properties of *B. coli;* and stress is laid on the fact that the types of *B. coli* which can be cultivated from fermenting media often do not correlate with those present in the water under investigation, so that characterisation of the water according to types of *B. coli* isolated may give false results. The way-out of these

difficulties seems to lie in the adoption of the bacteriological methods of Clemesha, by which the quantities of water are estimated, that cause acid- and gas-fermentation in glucose and lactose broth at 37° C. Addition of Eijkman's test at 45° C. seems to be a very important improvement on this procedure, inasmuch as the widening of the acid-and-gas line in glucose and lactose is very much slower in Europe than in the tropics, but biological purification is strong enough to cause marked reduction of fermentation in glucose at 45° (Eijkman's test) in about 1 week. Pathogenic organisms are certain to have disappeared when the water shows this divergence of the Eijkman-line against the line of glucose and lactose, and the water may be considered safe. This view has proved correct in many instances.—*J. Smit.*

10785. **SOBERNHEIM, G., und E. DIETRICH. Über die Frage der Nachentwicklung von Bakterien im gechlorten Trinkwasser der Stadt Bern.** *Arch. Hyg. u. Bakt.* 105(2): 71-87. 1931.—The Cl added to drinking water in Bern (usually 0.1 mg. per liter) kept it bacteria-free or almost so for several days, even at room temp. If bacteria developed, it was only after the Cl was no longer of bactericidal strength (α-naphthoflavon test negative). Usually they appeared no earlier in samples protected from air than in those exposed. Water standing in the pipes was usually Cl-free and with abundant bacteria. The bacteria surviving chlorinization were harmless water types; in no instance was *B. coli* found. Typhoid bacilli were killed, as shown by some samples artificially infected with 3 million per cc.—*From author's summary (transl.).*

10786. **SPLITTGERBER, ARTHUR, und ERNST NOLTE. Untersuchung des Wassers. [Investigation of water.] [In: Handbuch der biologischen Arbeitsmethoden. Hygiene. Abt. 4. Angewandte chemische und physikalische Methoden. Teil 15, Heft 3, Lief. 358.]** P. 385-589. 25 fig. Urban u. Schwarzenberg: Berlin & Vienna, 1931.

10787. **STOCKS, PERCY. The mechanism of a measles epidemic.** *Lancet* 218(5563): 796-802. 1930.—A detailed statistical study of a measles epidemic in one of the London boroughs shows that as the epidemic spreads through the streets of an urban area, the first sign of its approach to any given district is a sudden rise of infectiousness in the cases which occur there. This signalizes the upset of balance between activity of the virus, seasonal influences, density and circulation of the population and the "communal immunity" of the child population at the moment. It is suggested, though the evidence is still inconclusive, that the last of these factors is rendered the most powerful in determining the interval between epidemics and also in bringing epidemics to a close, by virtue of a temporary latent immunization of most of the children who escape manifest attack, such immunity gradually waning and disappearing after about 2 yrs.—*P. Stocks.*

10788. **[SUVOROV, S. V.] СУВОРОВ, С. В. Опыт применения хлора и сероуглерода для дезинсекции и дезинфекции жилых помещений при чуме. [Disinfection of plague-infested dwellings with Cl and CS_2.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 5 (3): 143-145; German summary, 232. 1926.

10789. **THOMSEN, AXEL. Om Kalvekastningsfeberens (Svingefeberens) Forekomst hos danske Dyrlaeger. [Occurrence of undulant fever in Danish veterinarians.]** *Maanedsskr. Dyrlaeger* 43(2): 46-56. 1931.—Up to April 1931, diagnosis of undulant fever had been made in only 6 cases among veterinarians in Denmark. All were young men who were taken ill shortly after they had commenced practising on cattle in abortus-infected stables. That the disease has not been ascertained among older veterinarians is quite in keeping with the fact reported by the author (and later confirmed by others) that nearly all veterinarians (ca. 94%) who had practised on cattle for more than 1 yr. have specific antibodies against *Bacillus abortus* Bang and are presumably immune. On the basis of the author's examinations, it is warrantable to regard undulant fever as a disease unknown in Denmark prior to 1925. The author discusses conclusions that may be drawn from this material, as to pathogenicity of *B. abortus* for man.—*A. Thomsen.*

10790. **[TIKHOMIROVA, M. M., and S. M. NIKANOROV.] ТИХОМИРОВА, М. М., и С. М. НИКАНОРОВ. Клещи - носители чумы. (Ticks as plague carriers.)** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 60-61; English summary, 129-130. 1930.—In 1929, in Kazakstan, 8 ticks (*Rhipicephalus schulzei* Ol.) were taken from a marmot (*Citellus pygmaeus* Pall.) dying of plague. 4 drops of emulsion of these ticks in physiological saline were injected into the abdominal region of a guinea pig, which died within 50 hrs. Post mortem examination showed pathological changes in the internal organs, typical of plague: in smears of all organs many bipolar rods were found, and culture gave an abundant growth of plague bacilli. Also, emulsion from 3 ticks (*Ixodes autumnalis* Leach) taken from an *Arctomys bobac* dying of experimental plague, when injected into the abdominal region of a guinea pig, caused its death within 3 days. Post mortem revealed an acute experimental plague. Cultures from the tick emulsion and from the organs of the dead guinea pig both gave *B. pestis.* The authors emphasize the importance of this newly discovered factor of plague endemia.—*G. A. Lebedeff.*

10791. **[VORONKOVA, M.] ВОРОНКОВА, М. Обследование на туляремию водяных крыс (Arvicola amphibius) в Астраханском районе. [Examination of water rats (A. amphibius) for tularemia in the Astrakhan region.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(4): 433-434; English summary, 484. 1929.—258 water rats were caught in 1929 in 2 places near Astrakhan, where there was a severe epidemic of tularemia in 1926. Rats from both places showed enlargement and hyperemia of the spleen, enlargement of glands, and necrotic regions in the liver. Inoculation of guinea pigs and mice with extracts of organs from the rats caused typical tularemia in one case and negative results in another. Thus it is considered possible that the epidemic in 1926 was due to rats.—*G. A. Lebedeff.*

10792. **WEFRING, KARL WILHELM. L'existence de la tularémie en Norvège.** *Office Internat. Hyg. Publ.: Bull. Mensuel* [*Paris*] 22(10): 1908-1910. 1930.—Until 1929 tularemia had not been reported in Norway. In that year Thjotta discovered the 1st known case, and later, 11 others; infection seemed generally to come from rabbits. The author suggests, however, that the so-called "lemming fever" presents in man clinical features resembling tularemia. This fever occurs in the years when lemmings (*Myodes lemmus*) descend in myriads from the mountains into the valleys, polluting the streams and other waters with their cadavers and excreta. The intestinal tract of the lemming contains abundant bacteria of the paracoli and paratyphoid groups; but the organs show no tularemia-like changes. Because of the clinical picture in man, however, the author thinks that the lemming should be suspected until cleared, as a possible tularemia carrier.

10793. **WILHELMI, J. Zur Frage der Abschaffung bzw. Einschränkung der Desinfektion bei Diphtherie und Scharlach. [Discontinuance or limitation of disinfection in diphtheria and scarlatina.]** *Zeitschr. Desinfektions- u. Gesundheitswesen* 23(9): 381-398. 1931.

10794. **WILLIAMS, JESSE FEIRING, and DELBERT OBERTEUFFER.** Industrial hygiene for schools. 280p. McGraw-Hill Book Co., Inc.: New York, 1930.—This book describes in elementary form industrial health practices. The first 4 chapters are a brief résumé of Williams' textbook: "Personal hygiene applied"; 10 chapters are devoted to industrial hygiene. Chap. V deals with the changes made by the machine age in living and working habits, especially the effects of fatigue and monotony on the worker. Chap. VI calls attention to

general health hazards in industry, especially poor ventilation, poor lighting, unsanitary toilet facilities, improper seating, and overtime work. Specific health hazards such as dangers from anthrax, glanders, high air pressures, organic and inorganic dusts, lead and other industrial poisons are outlined in Chap. VII. Chap. VIII tells in an elementary fashion of the prevention of diseases. Chap. X outlines proper home hygiene. A very brief outline as to home care of sick is included. The organization of the industrial health service is described in Chap. XI, also its aims and scope. Simple first aid suggestions are given. Chap. XII states why regulation by the State of conditions of labor in industry is necessary to properly protect workers; 3 groupings of legislation are given. Recreation and leisure time activities are necessary, as is shown in Chap. XIII. The concluding chapter shows the worth of health in terms of production and individual happiness. Appendix A gives the New York State Department of Labor's health suggestions for working girls. Appendix B gives Emerson's weight-height tables from 6 to 18 yrs.; and the average, 7% under average, and optimum wts. for heights from 20 in. up. Appendix C lists the occupations exposed to lead; D, the health hazards of benzol; E, the industries most in need of accident prevention work; and F, the industries in which workers need eye protection.—*M. L. Ilsley.*

10795. **WILSON, W. JAMES, and E. M. McV. BLAIR. Further experience of the bismuth sulphite media in the isolation of Bacillus typhosus and B. paratyphosus B from faeces, sewage and water.** *Jour. Hyg.* 31(2): 138-161. 1931.—By the Old Standard Bi sulphite [Fe-containing] medium, *B. typhosus* was cultivated 44 times out of 50 examinations of stools of 50 typhoid patients and convalescents. By the same medium, *B. paratyphosus B* was cultivated 22 times out of 27 examinations of stools of 27 cases of paratyphoid. In 13 examinations of Belfast sewage in different months during 1928 and 1929, by the Old Standard sulphite media, *B. typhosus* was isolated on 10 occasions. In 2 examinations of Lisburn sewage *B. typhosus* was isolated. Although no special search for *B. paratyphosus B* was undertaken, this organism was isolated on 2 occasions from Belfast sewage. The viability of *B. typhosus* and *B. paratyphosus B* in sewage is longer than was suggested by work of previous observers. It has been possible to cultivate *B. typhosus* and *B. paratyphosus B* from the deposit of sewage stored in a bottle at room temp. for 3 wks. *B. typhosus* was once found alive at the end of 5 wks. For isolation of *B. enteritidis* Gaertner the media gave good results in examinations of feces from cases of food-poisoning. Details for preparation of the media and of various modifications are given. Addition of 4 cc. of a 1:10,000 solution of perchloride of mercury to every 100 cc. of the Bi media tends to inhibit growth of *proteus* strains and certain other organisms which develop from sewage and interfere with isolation of *B. typhosus*. With the fluid media described here *B. typhosus* has been cultivated 17 times out of 17 stools from typhoid patients, and 3 times out of 5 specimens of sewage.—*Author's summary.*

10796. **WIRGIN, GERMUND. Der Einfluss der Temperatur der äusseren Luft auf die Desinfektionswirküng von Formaldehyddämpfen in geschlossenen Räumen.** *Acta Path. et Microbiol. Scandinavica Suppl.* 3: 491-498. 1930.—A calculated concentration of 2 gm. formaldehyde per cu. m. was used with 6 strains of recently isolated pyogenic staphylococci as test objects. The practically empty room was steam heated and was kept at an average of 20.6° (18° at the lowest). The northern and eastern walls were external. In summer, when external and room temp. were nearly equal, disinfection was good. In colder mo., when temp. differences were greater than 10-15°, disinfection was very poor. Condensation of formaldehyde on the cold external walls is probably the explanation.—*B. Cohen.*

10797. **WOLTERS, K. L., und H. DEHMEL. Ueber das Kulturverfahren zum Nachweis von Tuberkelbakterien, besonders in Gesamtmilchproben.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(1/2): 102-114. 1931.—The sample is placed in 2 15-cc. centrifuge tubes and centrifuged at 200 r. p. m. for 15 min. The cream and supernatant milk are poured off and the sediment is shaken. To the sediment add 10 cc. of 15% HCl; close the tube with a rubber stopper and shake vigorously for 10-15 min., and again centrifuge as above. The acid is poured off, the tube inverted on filter paper, and the sediment drained. For animal inoculation the sediment is injected subcutaneously into the inner surface of the foreleg. For culture examination, the authors employ 2 tubes with 10 cc. of malachite-green-Besredka bouillon. To one of these add 1% glycerin. Through use of fluid media, the authors had in view the possible premature concentration of the organisms so that there might be an early diagnosis by microscopic examination of the sediment. Not so much acid was developed in liquid as in solid media. After 4, 6, and 8 wk. at 37° C., the supernatant fluid of the culture is removed and the sediment stained for tubercle bacilli. If there has been growth the bacteria are present in the sediment in increasing numbers. The authors report a fairly close correlation between cultural findings and animal inoculations, although they do not recommend substituting the former for the latter method. They report finding avian type tubercle bacilli in 9 of 400 examinations.—*L. D. Bushnell.*

10798. **ANONYMOUS. Instrucciones para el envio de muestras de investigación a los laboratorios biologicos. [Instructions for sending samples to biological laboratories.]** *Cuba Secret. Agric. Com. y Trab. Secc. Indust. Animal Bol.* 14. 1-31. 10 fig. 1931.—Instructions are given for securing and sending samples of blood, exudations, pus, urine, feces, cerebrospinal fluid, milk, skin, parasites, poisonous plants, tissues and organs for biopsy and autopsy, and also material concerning special diseases (rabies, tuberculosis, mastitis, etc.).

BACTERIOLOGY AND OTHER MICROBIOLOGY

FOOD AND INDUSTRIAL

E. B. FRED, *Editor*

(See also in this issue Entries 9305, 9306, 10426, 11069)

10799. **BEHRE, A., und G. ULEX. Über Konservierungsmittelversuche bei Fischdauerwaren.** *Zeitschr. Untersuch. Lebensmittel* 62(1/2): 58-81. 1931.—Various preserving materials were tried on different commercial fish; results are tabulated.

10800. **BONNEFOY. La fabrication de l'alcool à base de manioc. [Manufacture of alcohol from cassava.]** *Produits Coloniaux et Matériel Colonial* 1931(88): 132-139. 1931.

10801. **GABEL, G., und G. KIPRIANOFF. Der Gehalt an Pektinsäure und Methylalkohol im russischen Tabak.** *Biochem. Zeitschr.* 212(4/6): 337-346. 1929.—Others have shown that tobacco always contains pectin and methyl alcohol, the latter present in an easily liberated form, and during smoking for the most part absorbed from the mouth unaltered. The pectin is the mother substance from which methyl alcohol is derived. The authors found 13-20% pectic acid in cigarette tobacco, increasing as the quality decreased. In unfermented tobacco, methyl alcohol is found as a dimethyl ester, and after fermentation as a monomethyl ester of pectin. Thus comparison of methyl alcohol with pectin is a prac-

tical method for determining the progress and completion of the fermentation of cigarette tobacco. The content of methyl alcohol reaches 0.945%, about 5.5-6.4% of the pectic acid. In fermenting Russian cigarette tobacco, the content of methyl alcohol falls to 0.411-0.717%, or 2.9-3.2% of the pectic acid. The content of methyl alcohol in cigarette tobacco is 0.228-0.401%, or 1.2-2.6% of the pectic acid. In pipe tobacco, the methyl alcohol content is usually 0.074-0.158%, or 0.4-0.7% of the pectic acid. The methyl alcohol content of Machorka is 0.323%, placing this midway between pipe and cigarette tobacco. The methyl alcohol content of the various sorts of Russian tobacco falls within similar ranges, as found by Neuberg and his colleagues in tobacco from other provinces.—*H. F. Smyth.*

10802. HANZAWA, JUN, and SH. TAKEDA. On the reddening of boned codfish. *Archiv Mikrobiol.* 2(1): 1-22. 2 col. pl. 1931.—The reddened and the so-called sound salted codfish were examined chemically and microbiologically. Indol and skatol were present in small quantity, but ptomaines were absent in the reddened codfish. H_2S was not evolved from the latter, but it was seen in the so-called sound codfish. *Torula wehmeri, Micrococcus albus-translucens, M. lutulentus,* and *Bacterium zopfii* were isolated from the reddened codfish. From the so-called sound codfish, *M. albus-translucens* and a H_2S-producing *Bacillus* were isolated. Reddening of the salted codfish is caused by *T. wehmeri,* which produces red pigment on culture media. Other isolated microorganisms did not produce red color. Indol is detected in pure cultures of *T. wehmeri* and *Bact. zopfii.* Putrefaction of the salted codfish is attributed to the microorganisms mentioned. None of the organisms isolated was pathogenic to guinea pigs.—*Authors' summary.*

10803. MAMELI, EFISIO, e VIRGILIO BOLCATO. Azione di alcune sostanze organiche sulla fermentazione lattica. [Action of some organic substances on lactic fermentation.] *Atti Congr. Naz. Chim. Pura ed Appl.* 3: 496-498. 1929 (1930).

10804. PAGNINI, UGO. Contributo alla tecnica dell'esame batteriologico delle carni. Modificazione del terreno di Gassner. [Bacteriological examination of meat. Modification of Gassner's medium.] *Clinica Vet. [Milano]* 54(9): 708-711. 1931.

10805. ROBERTSON, MADGE E. A note on the cause of certain red colorations on salted hides and a comparison of the growth and survival of halophilic or salt-loving organisms and some ordinary organisms of dirt and putrefaction on media of varying salt concentrations. *Jour. Hyg.* 31(1): 84-95. 12 fig. 1931.—Experiment indicated that certain brick-red stains on salted hides are produced by growth of "halophilic" or salt-loving organisms which come from marine salt used in curing the hides. There are probably many varieties of these organisms, their common characteristic being that they flourish best in high concentrations of salt, and will not grow when the concentration falls beneath 6%. The organisms of dirt and putrefaction examined, though certain of them survived for a considerable time at a salt concentration as high as 30%, did not multiply when it was above 8%. The non-halophilic cocci examined survived at high salt concentrations much better than did the non-halophilic bacilli.

10806. SERGER, H., und K. CLARCK. Konserven und Konservierung von Lebensmitteln. [Conservation and preservation of foods.] *Zeitschr. Ernähr.* 1(8): 256-261; (9): 271-292. 1931.—A review.

10807. STOCKHAUSEN, F., und R. KOCH. Wirken elektrische Ströme auf die Gärung? *Wochenschr. Brauerei* 48(38): 403-407; (39): 419-423. 2 fig. 1931.—If a Cu solution is present, either direct or alternating currents (galvanic or stray) harm the yeast and hinder fermentation. To detect injuries resulting from stray currents, it is advisable to investigate the Cu content of wort, vats, and yeast, in addition to making current measurements. Also, investigation of the yeast in drop cultures and of corrosion appearances in the vats and cooling coils, can give useful hints.—*Authors' summary (transl.).*

10808. TAKAHASHI, TEIZO, and TOSHINOBU ASAI. On glucuronic acid fermentation. *Zentralbl. Bakt. II. Abt.* 84(8/14): 193-195. 1931.—The acetic bacterium previously isolated by the authors from dried persimmon, *Bact. industrium* var. *hoshigaki,* produces gluconic, oxygluconic, and l-glucuronic acids from glucose in a medium containing yeast water (1000 cc.), glucose (100 gm.), and $CaCO_3$ (25 gm.), cultivated 30 days at 26°-29° C. The l-glucuronic acid was identified by a number of tests, including color reactions, specific rotation of Ca salt $((A)_D^{23} = -24.0°)$, specific rotation of free acid $((A)_D^{23} = -18.5°)$, melting point and the N content of phenylosazone (M. P. = 131°-132° C.; N = 15.30%), melting point and N content of para-nitrophenylhydrazone (M. P. = 209°-210° C.; N = 13.82%), melting point of para-bromphenylosazone of the Ba salt (M. P. = 204°-207° C.), and melting point of brucine salt (M. P. = 178°-179° C.). The bacterium also forms l-glucuronic acid from Ca gluconate.—*H. J. Gorcica.*

10809. WINDISCH, FRITZ. Zweiteilung des Bewegungs-Effektes bei der Bier-Gärung in Lüftungs-Faktor und "spänende Wirkung." *Wochenschr. Brauerei* 47(9): 94-96. 1930.—Movement in itself does not promote fermentation of beer. The apparent effect can be analyzed into surface (increasing the reacting cell surface) and aeration factors.

BACTERIOLOGY AND OTHER MICROBIOLOGY

DAIRY

L. A. ROGERS, *Editor*

(See also in this issue Entries 10427, 10470, 10536, 10648, 10728, 10752, 10797, 10990)

10810. BARKWORTH, H. Keeping quality of milk and the age on testing for total bacterial count. *Jour. Hyg.* 31(3): 373-374. 1931.—Tests of nearly 6000 samples of milk over a 7-yr.-period at Wye, showed an average keeping quality of 9 hrs. less for afternoon than for morning milks of the same bacterial count.

10811. BARTHEL, CHR., and E. SANDBERG. Occurrence of enzymes in press-juice of cheese. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 46-49. 1931.—The authors examined 3 Västerbotten, 3 Emmenthal, 2 Cheddar, 1 Household, 1 Edam, 2 Limburger, 2 Stilton, 1 Roquefort, and 1 Gorgonzola cheese. Catalase was present in all except 1 Cheddar, varying between 0.0 and 106.5 cc. O. The highest values were found in moldy and in Limburger cheeses. Peroxidase was demonstrated in 7; Emmenthal and Limburger were negative. Amylase or aldehyde reductase were not demonstrated in any sample. Rennin was demonstrated in all except Emmenthal and ripe Limburger. Apart from catalase, which in this instance is derived from microorganisms, Emmenthal and Limburger cheeses contain none of the enzymes the author tried to demonstrate, whereas all the other cheeses proved to contain at least some of these enzymes.

10812. BOEKHOUT, F. W. J., en J. van BEYNUM. Roode vlekken op beschimmelde boter. [Red-spotted molded butter.] [With English summary.] *Verslag. Land. Onderzoek. Rijkslandbouwproefsta.* 36: 5-14. 3 pl. 1931.—Molded butter generally has black-green spots caused by *Cladosporium herbarum.* There sometimes also appear red spots ascribed to *Epicoccum heterochroum* (?). The latter does not form spores on the usual media,

but does so on a medium of distilled water + 2½% agar. Growth is very poor, but after 7-14 days conglomerates of blackish spores develop. Peptone (Witte) and levulose are preferred. Lactose is useful as a source of C, but fails to give so intensive a red coloring as dextrose and galactose. Heating at 48° C. for 10 min. killed the spores. This mold is more sensitive to salt than *C. herbarum*, which requires 16% of salt to inhibit growth; 11% was sufficient for the present mold. The opposite is the case with lactic acid.—*From authors' summary.*

10813. CHRISTIANSEN, M. Investigations of a factor in the milk fat with inhibiting action on the growth of pathogenic streptococci. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 119-120. 1931.—A summary.

10814. COPELAND, LYNN, and T. M. OLSON. The bacterial flora of normal cow's udder. *So. Dakota Agric. Exp. Sta. Bull.* 218. 1-20. 1926.—Milk drawn aseptically from each quarter of 40 cows gave an average bacterial count of 1,541 per cc. Cell counts of the udders showed an average of 657,000 per cc. Bacterial and cell counts compare closely. The coefficient of correlation between bacteria and cell counts was +0.6379 + 0.03364. Lactation exerted no appreciable effect on bacterial content of the udder, nor did age of cow, except in older cows past maturity, when bacterial and cell counts greatly increased. Fore milk contained more bacteria than middle milk or strippings. Strippings contained fewer bacteria than middle milk. Colostrum, usually high in bacterial and cell content, varied considerably. Bacteria of the udder are usually gram-positive micrococci; they ferment sugar without forming gas, and may or may not liquefy gelatin. Udder cocci gave uniformly low total and volatile acidities. In some cases, curdling of the milk was accomplished by an enzyme. Digestion of the curd was noted in several instances. Milk from different cows varied in germicidal power. Cultures of bacteria artificially introduced into the udder do not survive over a few days.—*Authors' digest.*

10815. CUNNINGHAM, ANDREW. Formation of an aroma resembling that of amyl alcohol in milk. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 1-5. 1931.—Development of this aroma was associated with growth of white and orange micrococci. The taint was observed when cows were housed, but disappeared when they were put out to grass. Evidence supported the view that the source of these micrococci was the floor of the byre.—*Author's summary.*

10816. DEMETER, KARL J. The influence of catadyne silver on the microflora of milk. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 118-119. 1931.—Summary of a preliminary report.

10817. DORNER, W. The reliability of Burri's spreading method for counts of microorganisms in milk and its limitations. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 44. 1931.—A summary.

10818. GORINI, COSTANTINO. On the work performed to promote a hygienic milk production in various countries. Preliminary report. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 58-59. 1931.—A summary.

10819. GRIMES, M. Microbiological analysis of butter in relation to flavor score. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 5-10. 1931.—135 samples of butter graded as excellent (5), good (70), fair (53), and bad (7), were examined for acidity, total bacterial count, liquefying bacteria, yeasts and molds. No correlation was found between results of microbiological analysis of butter and flavor score of butter 2 weeks old.—*From author's summary.*

10820. HANSEN, A. P., and JOHS. JENSEN. Studies of development of volatile acids in the use of starters. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 60-71. 1931.—The work confirmed earlier findings that starters contain, besides true lactic acid bacteria, those producing aroma, and characterized mainly by production of CO_2 and other volatile acids, especially acetic. The ability of the "aroma" forms to produce volatile acids is markedly enhanced when in symbiosis with lactic acid bacteria. This production took place evenly throughout fermentation. The curve resembles the acidity curve, but apparently the maximum production of lactic acid and of the volatile acids (determined by distillation) is reached earlier than the maximum CO_2 content. If production of volatile acid is connected with development of aroma, it seems that there is no particular advantage in using especially high or low temp. in acidifying, as high temp. at the same acidity does not enhance production of volatile acids more than a temp. around 20° C.; and very low temp. has not been proved to give the aroma bacteria more favorable conditions.—*From authors' summary.*

10821. HENNEBERG. Spoilage organisms in milk, butter, and cheese, most common in Germany. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 87. 1931.—A summary.

10822. HOOD, E. G., and A. H. WHITE. An a-typical Escherichia coli producing bitter milk. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 19-24. 1931.—Pure cultures inoculated into sterile milk produced typical bitterness in 24 hrs. at 25° C. The organism exhibited minor differences from *E. coli* in its behavior in milk, lack of indol production, and in its failure to produce acid and gas in raffinose, dulcite, and dextrin. Morphology and cultural and physiological characteristics are described.

10823. HOSTETTLER, H. Analytical determinations of the gases in cheese. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 127-128. 1931.—A summary.

10824. IWANOWSKI, WACLAW. Experiments with regulation of cheese mellowing by alteration of the conditions of unrestricted air-supply. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 94-95. 1931.—A summary.

10825. KLIMMER, M. Bietet der Anschluss der Vorzugsmilchbestände an das freiwillige Tuberkulosetilgungsverfahren genügend Sicherheit dafür, dass die Vorzugsmilch frei von Tuberkelbazillen ist, und wie kann das genannte Verfahren ergänzt oder ersetzt werden, damit die Förderung des Freiseins der Vorzugsmilch von Tuberkelbazillen erfüllt wird? [With discussion by **H. RAUTMAN** and reply by **M. KLIMMER.**] *Tierärztl. Rundschau* 37 (42): 737-746. 1931.—It is concluded from laboratory studies that certified milk can be guaranteed free from tubercle bacilli only if the cows are free from tuberculosis. Diagnosis failures in clinical bacteriological studies are considerable.—*From author's summary (transl.).*

10826. KOESTLER, G., und H. HOSTETTLER. Untersuchungen über die Natur des bei sog. "Nachgärungen" im Emmentalerkäse auftretenden Gases. *Landw. Jahrb. Schweiz* 45 (4): 446-465. 7 fig. 1931.—Gas from eyes of Swiss cheese during the main fermentation normally contains less than 1% of H. Gas arising during the "after" fermentation does not differ essentially from the former, and it is concluded that it is due to a recurrence of propionic acid fermentation. It is not a question of avoiding contamination, but of avoiding a recurrence of the same factors which caused the main fermentation.—*From authors' summary (transl.).*

10827. KRAMER, Y. M. Experiences in the systematic improvement of milk hygiene in Holland. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 45. 1931.—A summary.

10828. KRENN, JOSEF. The value of the measurements of the conductivity of milk to its chemical and hygienic testing. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 93. 1931.—A summary.

10829. LAXA, OTAKAR. The classification of yoghourt. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 3): 95. 1931.—A summary.

10830. OSOLS, P. Contributions to a closer knowledge of catalase in butter. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 94. 1931.—A summary.

10831. RÜDIGER. Konservierung von Milch für die Untersuchung. *Zeitschr. Untersuch. Lebensmittel* 62 (1/2): 198-202. 1931.—For preserving milk for testing, 0.07% paraformaldehyde solution proved best.

10832. RUMMENT, JULIUS. Dairy water and the keeping quality of butter. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 3) : 97. 1931.—A summary.

10833. SEELEMANN, M. Massnahmen zur hygienischen Qualitätsverbesserung der Milch. [Hygienic measures for improving the quality of milk.] *Milchwirtschaftliche Zeitfragen* 1. 69-88. M. & H. Schaper: Hannover, 1931.—A review.

10834. SKAR, OLAV. The reductase examination. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 87-88. 1931.—A summary of experimental results with this test for bacterial contamination of milk.

10835. STABLER, SALLY HAMILTON. The electrical process of milk pasteurization. *Amer. Jour. Hyg.* 14 (2) : 433-452. 1 fig. 1931.—Experiments indicated that electrical pasteurization at 73° C. is as efficient, both in reduction of bacterial count and in kinds of organisms destroyed, as the commercial holding method at 62°; and that, at 62°, while it destroys the same kinds of organisms, it does not reduce the bacterial count of milk to so great an extent as the commercial holding method at 62°. It diminishes the rate at which cream rises, so that the milk seems to have more cream after 24 hrs., whereas the holding method increases this rate. Both kinds of pasteurization result in milk showing the same cream volume after 144 hours.—*Author's summary.*

10836. STARK, C. N. The source of ropy milk bacteria in nature. *Papers & Proc. Ann. Conv. New York State Assoc. Dairy & Milk Inspectors* 8: 56-57. 1930.—The author reports studies of 7 types of bacteria causing ropiness, isolated from raw and pasteurized milk and from places in and around dairy barns. Of about 500 isolations studied, at least 75% were gram-negative rods producing acid and gas in lactose broth. More than 100 samples of feeds showed alfalfa hay, clover hay, chaff, soy bean meal and cottonseed meal to contain thousands of ropy-milk bacteria per gm.; other feeds examined contained small numbers or none.

10837. STARK, C. N. Some observations in the bacterial control of pasteurized milk. *Papers & Proc. Ann. Conv. New York State Assoc. Dairy & Milk Inspectors* 8: 58-60. 1930.—Bacterial counts (standard agar plate method) on all raw milk delivered to a number of milk plants in Ithaca, New York, and vicinity, showed 60-85% to contain less than 30,000 bacteria per cc. On the basis of numbers of bacteria surviving heat treatment, the holder method of pasteurizing milk was more efficient than the electropure process.

10838. VAN SLYKE, L. L. The chemistry of sour milk. *New York State [Geneva] Exp. Sta. Tech. Bull.* 140. 14p. 1928.—A review of previously published work of Van Slyke and associates on problems dealing with souring of milk. The author discusses lactic acid formation and its reaction with other milk constituents, particularly the calcium phosphates and caseinates. Usually less than 20% of the lactic acid formed is found in the free state. The first perceptible flavor characteristic of souring milk is not due to lactic acid or to a change in pH, but to some volatile substance.—*J. R. Haag.*

10839. VEALE, P. O. The grading of milk for cheese-making in New Zealand. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 4) : 1-9. 1931.

10840. VEENBAAS, A. H. Inspection of milk for industrial purposes and sanitary inspection of cattle. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 59-60. 1931.—A summary.

10841. VIRTANEN, ARTTURI I. Butter defects caused by water bacteria. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 126-127. 1931.—A summary.

10842. VIRTANEN, ARTTURI J. The proteolytic enzymes of the lactic acid bacteria and the mellowing of cheese. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 128-129. 1931.—A summary.

10843. WILLIAMS, R. STENHOUSE. The importance of a complete study of nutritional value of milk. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 109-118. 1931.—A critical review of published work on changes in milk when heated, and discussion of their possible importance to human nutrition.

BACTERIOLOGY AND OTHER MICROBIOLOGY

SOIL

H. J. CONN, *Editor*

(See also in this issue Entries 10733, 10770, 10871, 11482)

10844. BAUMGÄRTEL, TRAUGOTT. Zur Kultur von Bodenprotozoen. *Arch. Protistenk.* 70 (2) : 491-496. 3 fig. 1930.—The difficulties usually encountered in culturing soil protozoa are avoided by growing *Azotobacter chroococcum* Beijerinck according to the method recommended by Beijerinck. Soil protozoa are found actively feeding on the bacteria in the surface film of the culture. Addition of $(NH_4)_2SO_4$ to the media results in gas formation, which breaks up the membrane, while K_2SO_4 favors surface membrane formation. Particularly good cultures can be made from soils which have been fertilized with K. The method offers a rapid means of gaining a glimpse of the biological characteristics of the soil and also may be modified for the pure culture of protozoa.—*G. W. Goldsmith.*

10845. BAZAREWSKI, STEFAN. Badania nad bakteroidami. [Bacteroids.] [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 17 (1/2) : 1-34. 1927.—Acidity of medium and presence of purine bases strongly influence transformation of rods of nodule bacteria into bacteroids, the structure of which does not indicate an organization superior to that of the rods. Generally the bacteroids do not multiply, but sometimes very young bacteroids are transformed into simple bacteria. The bacteria of the nodules can fix considerable quantities of free N when in artificial media, during the active multiplication of the cells. The albuminous substance produced in cultures of nodule bacteria is not the result of N fixation. Bacteroids are involution forms incapable of multiplying and probably they can not fix free N.—*Author's summary (transl.).*

10846. BURK, DEAN, and HANS LINEWEAVER. The influence of calcium and strontium upon the catalysis of nitrogen fixation by Azotobacter. *Archiv Mikrobiol.* 2 (1) : 155-186. 5 fig. 1931.—The chemical mechanism of N fixation by *Azotobacter* requires either Ca or Sr in relatively large concentrations, 25-50 p.p.m. in the customary culture medium giving normal rates of fixation in 2-day cultures, and 1-5 p.p.m. giving relatively inappreciable rates of fixation. All soluble non-toxic Ca compounds (about 16) and all Sr compounds (about 8) investigated are suitable sources. Ca and Sr can not be replaced by other elements, some 50 having been tested with entirely negative results. It is shown from 5 sources of evidence that Ca and Sr exert their effect per se, and not by virtue of any contained impurity. Ca and Sr are not required for normal growth of *Azotobacter* in fixed N, providing certain other elements, such as Mg, Ba, or Gl, are present in sufficient concentration. The effect of Ca and Sr on N fixation may be shown, under suitable conditions, i.e., with Ca-starved cells, to be exerted immediately on addition to the culture medium. i.e., within 30-60 min. On the other hand, with Ca-rich cells, the effect of suddenly decreasing the Ca-concentration in the medium is not prominent until after a number of hrs. In free N, *Azotobacter* shows to a marked extent a phenomenon often presented by other organisms, namely, rate of growth is

markedly dependent on concentration of organisms, due, in *Azotobacter*, to the fact that when fixing N the ratio, concentration of organisms: concentration of Ca in the medium, is very important. In fixed N, the effect of concentration of organisms on rate of growth is normally not observed. No understanding has been reached as to the nature of the effect of Ca and Sr, except that it is exerted inside and not outside the cell. There are indications that the relatively large concentrations of Ca are not very efficiently employed directly in fixation, but that a great proportion of the Ca is diverted to ordinary metabolic purposes. This would imply that the Ca used directly in fixation, being actually of very small amount, is truly catalytic, and not directly concerned merely in phenomena of antagonism, solubility effects, etc.—*From authors' summary.*

10847. CORBET, A. S. A bacteriological study of the decomposition of soil organic matter and its bearing on the question of manuring. *Jour. Rubber Res. Inst. Malaya* 3 (1) : 5-27. 9 fig. 1931.—The low bacterial population of Malayan soils renders the plate count method unsuitable for comparing their biological activities, and hence the fertilities of different soils; moreover, accurate values can not be expected of this method where only a proportion of the total organisms present are cultivated. Such accurate values, however, can be obtained from a method described, entailing estimation of the CO_2 yield of soils in the laboratory. This method depends on the fact that after an initial transitory period, the equation, $y=Ft^m$ is followed, where y is the yield of CO_2 in time t, and F and m are constants. This formula has been investigated through observation of glucose fermentation by a single organism. The constant F (fertility constant) is concluded to be a measure of the daily yield of CO_2 by any given soil in the field. As yet the constant m has not been fully interpreted, but it represents a retardation in rate of gas evolution. Manuring of rubber by chemical fertilisers is generally connected with the effects on soil microorganisms. By the CO_2 method, the effect of different fertilisers on soil fertility can be assessed, and hence the type and quantity of fertiliser required to increase biological activity on any given soil can be determined.—*Author's summary.*

10848. DEMOLON, A., et G. BARBIER. Influence de la constitution physique des sols sur l'allure des phénomènes microbiens dont ils sont le siège. *Ann. Agron.* [*Paris*] 1 (4) : 531-535. 1931.—The struggle between soil and microorganisms for soil water is influenced by mineral colloids (clay) which affect the mobility of the organisms (adsorption) and the diffusion of their secretions and soluble products. Sandy soils are more like liquid media and present a large surface to the air; clay soils behave more like solid media. This explains the irregular distribution of nitrates and H-ions at neighboring points in an apparently homogeneous section, the activation of biological processes by tillage, and the difficulty experienced at times in soil inoculations.—*From authors' summary (transl.).*

10849. FEHÉR, DÁNIEL. Vizsgálatok az Erdötalaj N-Anyagcseréjéröl. [N metabolism of forest soils.] [With German abridgement.] *Mat. és Természettud. Értesitö (Math. u. Naturwiss. Anz. Ungarischen Akad. Wiss.)* [*Budapest*] 46: 171-200. 1 pl. 1929.

10850. FEHÉR, DÁNIEL. Vizsgálatok az Erdötalaj biológiai Tevékenységének Idöszaki Változásairól. [Sequence of bacterial life in forest soils.] [With German summary.] *Mat. es Természettud. Értesitö (Math. u. Naturwiss. Anz. Ungarischen Akad. Wiss.)* [*Budapest*] 46: 201-234. 1929.

10851. ITANO, ARAO, and SATIYO ARAKAWA. Investigation on Winogradsky's Azotobacter test as to its applicability to some rice-field soils in Japan. *Ber. Ohara Inst. Landw. Forsch.* 4 (3) : 365-369. 2 pl. 1930.—The Azotobacter test was applied to 9 different soils from rice fields of known productivity. As a whole, no agreement between productivity and results of the test was reached. This is probably due to the acidity, which is generally high in rice fields where good crops are obtained even at pH 4.0; *Azotobacter* growth is very limited at such acidity.—*A. Itano.*

10852. ITANO, ARAO, and SATIYO ARAKAWA. Investigation on cellulose decomposition in soils. 1. Re-examination of some stock cultures. *Bull. Agric. Chem. Soc. Japan* 7 (4/8) : 42. 1931.—*Cellulomonas* produces enzymatic zones on cellulose agar medium. The kind of medium plays an important rôle and organic N is the best source of N, especially digested casein and yeast extract. All cultures retained their activity after yrs. of storage, although *C. uda, C. fima,* and *C. gelida* manifested more ability to decompose cellulose than *C. cellasea.*—*Authors' conclusions.*

10853. KOFFMAN, M. De egentliga jordprotozoerna. Deras ställning till andra jordmikroorganismer och deras roll vid de mikrobiologiska processerna i jorden. [The true soil protozoa. Their relation to other soil microorganisms and the part they play in the microbiological processes of the soil.] [With English summary.] *Meddel. Centralanst. Försöksväs. Jordbruksområdet* 391. 1-67. 3 pl. 1931.—Protozoa exist in normal soil, but they form an insignificant part of the micropopulation in regard to number, species, and volume. Thus true soil protozoa would not seem to exercise any appreciable effect in normal soil on the number of bacteria or on other soil microorganisms. Figures relating to the abundance of species and individuals in a soil of normal moisture content must depend on application of indirect methods, in which there takes place a development of cysts of aquatic protozoa that do not belong to the active inhabitants of the soil. Direct study of the metabolism of the soil under various physiological conditions and normal moisture content confirmed the view that the microfauna of the soil exercises but an insignificant influence on the microbiological processes in the soil. Finally, vegetation experiments have also shown that the improvement in soil fertility following sterilization of the soil is due, not to the killing of the protozoa, but to other factors. This does not exclude the possibility that in abnormal conditions, e.g., in waterlogged soil or soil irrigated with sewage, as also in the use of artificial substrates, results may be attained indicating that protozoa check the development of bacteria and are important for metabolism. From both theoretical and practical points of view, however, this is of minor importance in its bearing on the problems connected with the true soil protozoa and the fertility of normal soil.—*Author's summary.*

10854. THORNTON, H. G. Lucerne "inoculation" and the factors affecting its success. *Great Brit. Imp. Bur. Soil. Sci. Tech. Commun.* 20. 1-39. 12 fig. (2 maps). 1931. —A review of the problem is followed by a discussion of results in Great Britain, Canada, South Africa, New Zealand and Australia.

10855. VERONA, O., et G. LUCHETTI. La dissolution du phosphore par l'effet de l'activité des microbes de la "ryzosphère." *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3 (6) : 201-203. 1931.—Studies were made of the numbers of microorganisms in soils on which a legume (bean), a grain crop (corn), or a cruciferous crop (*Diplotaxis erucoides* or false rocket) had been grown for 3 yrs., and of the influence of the organisms in these soils on production of available P from tricalcium phosphate in solution cultures. The greatest numbers of organisms developing on bean agar were found in soil under the legume; the smallest numbers, in soil under the crucifer. After 10 days in the culture tests, there was the greatest production of soluble P by the legume soil; but after 20 days, soil from the area on which crucifers had been grown showed the greatest effect. This is believed to be correlated with the greater ability of crucifers to utilize the P from tricalcium phosphate.—*P. E. Brown.*

10856. WAKSMAN, SELMAN A., and ROBERT L. STARKEY. The soil and the microbe. An introduction to the study of the microscopic population of the soil and its rôle in soil processes and plant growth. xl + 260p. 85 fig. John Wiley & Sons: New York; Chapman and

Hall: London, 1931.—The following are the chapter headings: The soil and the plant; The microbe and its activities; The soil population and its distribution; Rôle of microbes in the decomposition of organic substances in the soil; Transformation of nitrogen by soil microbes; Transformation of mineral substances in soil through the direct or indirect action of microorganisms; Interrelationships between higher plants and soil microorganisms; Modification of the soil population; Importance of microbes in soil fertility. This is an introductory treatment of the subject, in which are discussed the organisms comprising the soil population, factors affecting their development, relationships of these microorganisms to decomposition of organic materials, formation of soil organic matter, changes of mineral substances in soils, and the relationships of microorganisms to plant development. A limited list of selected references is given at the end of each chapter. The volume is intended to suit the needs of students with some chemical and biological background, who are commencing the study of soil microbiology. It should serve a useful purpose for more advanced students who wish a brief survey of the field.—*R. L. Starkey.*

10857. ZIEMIĘCKA, JADWIGA. Rozkład pentozanów przez mikroorganizmy gleby. Studja nad mikrobiologia gleby, cz. V. [Destruction of pentosans by microorganisms.] [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest Ann.)* 25(2/3): 313-332. 5 fig. 1931.—From soils, straw, and manure was isolated by the direct method a homogeneous group of bacilli which can attack xylan in an aerobic and non-acid medium. This species, *Bacillus* **xylanophagus*** (p. 320), is a rod 1 × 3-5 μ. It is motile, with rounded ends when young, and forms terminal or subterminal spores, during which time the cell is often swollen as in *Clostridium pasteurianum*. It is strictly aerobic, needs mineral N, reduces nitrates, forms granulose in media with xylan and pentoses, grows somewhat on hexoses, starch and peptone, but not on cellulose. Optimum temp. is 28-30° C. It is most frequent in plant residues. Both pure and impure cultures actively decompose xylan. The ratio between xylan decomposed and mineral N assimilated or liberated is 100: 3-5. Furthermore, xylan as such is not an accessible source of energy for free N fixation.—*Author's summary (transl.).*

GENERAL BACTERIOLOGY

R. E. BUCHANAN, *Editor*

(See also in this issue Entries 9210, 9211, 9228, 9302, 9366, 9411, 9448, 9929, 10442, 10486, 10503, 10516, 10526, 10557, 10604, 10669, 10671, 10677, 10691, 10695, 10696, 10722, 10733, 10734, 10739, 10779, 10795, 10797, 10842, 10845, 10857)

10858. ANDERSON, J. S., F. C. HAPPOLD, J. W. McLEOD, and J. G. THOMSON. On the existence of two forms of diphtheria bacillus—B. diphtheriae gravis and B. diphtheriae mitis—and a new medium for their differentiation and for the bacteriological diagnosis of diphtheria. *Jour. Path. and Bact.* 34(5): 667-681. 1 col. pl. 1931.—There exist 2 well-defined forms of the diphtheria bacillus, at least as distinct as the typhoid and paratyphoid bacilli. To these it is proposed to give the names *B. diphtheriae* f. gravis (p. 669) and *B. diphtheriae* f. mitis (p. 670). The former has a flat colony, lacking lustre and with spreading irregular margin; it grows in bouillon with pellicle and granular deposit, and actively ferments polysaccharides, dextrin, starch and glycogen. It is associated with the more severe and toxic cases of diphtheria, which are difficult to control by serum. The latter has a rounded, shining colony with irregular margin; it grows in broth with uniform turbidity and fails to ferment starch and glycogen. It is associated with the milder cases of diphtheria, more easily controlled by serum, and is probably chiefly dangerous through causing laryngeal obstruction. There is a smaller group of intermediate forms to which the Park-Williams 8 strains belong. A blood agar medium is described, prepared with slightly-heated broth sterilized by filtration, and containing 0.04% K tellurite, which permits determination of the presence or absence of *B. diphtheriae* at sight in 90% of cultures from throat swabs after 18-24 hrs. incubation. It also gives, with the gravest types of diphtheria—those associated with *B. diphtheriae gravis*, a picture so characteristic that it is not likely to be confused with anything else.—*J. W. McLeod.*

10859. ANDERSON, LUCILE R. A study of bacilli of the genus Hemophilus with regard to the X- and V-growth factors under aerobic and anaerobic conditions. *Amer. Jour. Hyg.* 13(1): 164-200. 1931.—Study of 6 strains of *Bacillus influenzae* indicates that both X- and V-factors are required, under aerobic conditions for both hemolytic and non-hemolytic strains. The 4 types of hemophilic bacilli studied do not require the X-factor for growth under anaerobic conditions, but do require the V-factor. Judging from cultural reactions, influenza bacilli carry on a normal existence in media containing only the V-factor, under anaerobic conditions. None of 13 anaerobes tested reacted positively to the benzidine test for peroxidase; of 44 aerobes tested, all but 4 strains, 2 of which were streptococci, gave a positive reaction. *B. influenzae,* hemolytic and non-hemolytic, and *Hemophilus canis* do not produce peroxidase. *Bacillus para-influenzae* produces peroxidase under both aerobic and anaerobic conditions. Banana reacts positively to the benzidine test for peroxidase. All evidence appears to substantiate Fildes' view that the X-factor is associated and identical with peroxidase. Evidence is submitted supporting the idea of Davis that there is interaction of the X- and V-factors.

10860. ANDERSON, R. J., and E. GILMAN ROBERTS. Concerning the carbohydrates associated with the ether-soluble lipoids of tubercle bacilli. *Amer. Rev. Tuberc.* 22(6): 664-668. 1930.—The phosphatide from the avian tubercle bacillus yielded about 47% water-soluble material, determined as Ba glycerophosphate, mannose phenylhydrazone, inositol, and glucosazone. The phosphatide of the bovine bacillus (which, unlike the avian phosphatide, was very stable and hydrolyzed with great difficulty) yielded about the same % of water-soluble constituents as the foregoing, determined as mannose phenylhydrazone, inositol and other as yet unidentified carbohydrates. The purified wax from the human bacillus yielded nearly 40% water-soluble material as glycerophosphoric acid, reducing sugars giving pentose color reactions and including *d*-arabinose, other as yet unidentified carbohydrates, and glucosamine insufficient in amount to account for the N present in this as in other phosphatides examined. In none of the phosphatides was any nitrogenous base found. The authors emphasize the great complexity of the compounds formed by these organisms, and suggest that the carbohydrates associated with the lipoid fractions may form the important link by means of which the fatty acids are combined in the molecules of these compounds, in which case the bacillary lipoids would represent new types of chemically and biologically interesting chemical compounds.

10861. ANDRESEN, P. H., et REIDAR SCHROEDER. Recherches sur la formation d'acide dans une culture du bacille de la diphtérie. *Acta Path. et Microbiol. Scandinavica, Suppl.* 3: 41-51. 1930.—The authors corroborate the finding that diphtheria bacilli can produce acid in a carbohydrate-free medium and that acid production is dependent partially on amount of O present. They distinguished, in general, 3 types of organisms

designated by Spronck as: (a) those cultures which form acid and remain acid; (b) those which become alkaline; and (c) those which form acid and then become alkaline. Reaction of individual culture depends on experimental conditions.—*L. Baumgartner.*

10862. **ASCHNER, MANFRED. Die Bakterienflora der Pupiparen (Diptera). Eine Symbiosestudie an blutsaugenden Insekten.** *Zeitschr. Wiss. Biol. Abt. A. Zeitschr. Morph. u. Ökol. Tiere* 20(2/3): 368-442. 5 pl., 5 fig. 1931.—The relationship between 10 species of Diptera and the bacteria and rickettsias inhabiting them, are studied by means of bacteriological staining methods and in-vitro cultures. The latter gave negative results, except for certain extracellular rickettsias. Histological and morphological characteristics are given in detail. The inhabitants of each dipteran species are morphologically distinguishable. All organisms resembling *Rickettsia melophagi* morphologically are considered rickettsias. Infection of the larvae from the parent is found to take place through the secretions of the nutritive glands rather than through invasion of the ovaries, except in the case of certain intracellular rickettsias. The author considers the insect-microorganism relationship to be symbiotic rather than host-parasitic. Larvae of *Stegomyia fasciata*, fed on sterile blood from suitable hosts, were unable to complete their development except when bacterial culture of filtrate was added. A literature list of 42 titles is cited.—*L. M. Dickerson.*

10863. **BAKER, FRANK. Preliminary note on the rôle of coccoid micro-organisms in the disintegration of cell-wall substances.** *Zentralbl. Bakt. II. Abt.* 84(19/22): 452-454. 3 pl. (2 col.) 1931.

10864. **BARTELS, HENRY A. Outline of bacteriology.** 128p. 47 illus. Wm. Albert Broder: New York, 1929. Price $2.

10865. **[BEZSONOVA, A. A., and M. G. LOKHOV.] БЕЗСОНОВА, А. А., и М. Г. ЛОХОВ. Пигментообразование у чумной палочки. (A case of pigment production by plague bacilli.)** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 109-112; English summary, 137. 1930.—In the Kalmyck region, during a plague epizootic (1929), a culture from the blood of a dead marmot, after 2 mo. on agar, gave several large wrinkled colonies of R type, which became dark violet in the center (secondary colony). With the exception of the pigmented ones, colonies lost their viability; plantings from pigmented colonies grew but were without pigment. Pigmented cultures gave a positive agglutination reaction with anti-plague serum. Smears were typical for plague, but guinea pigs infected with these cultures survived. This strain differed from that described by Preisz, in that it was formed from a culture obtained freshly from a marmot, and also in that the pigmented culture was morphologically atypical.—*G. A. Lebedeff.*

10866. **COUDRAY, GEORGES. Contribution à l'étude de la coloration de Gram. Étude critique de la coloration de Gram. Essai sur la modification de Gottstein. Essai de stabilisation de la solution colorante de violet de gentiane phénique.** 104p. Berger-Levrault: Nancy, 1929.—This thesis, presented at the University of Nancy, is divided into 2 sections, the 1st containing a critical discussion of the Gram stain; the 2nd, the writer's personal investigations. Pt. I is fairly detailed, discussing the history of the technic, various factors to be controlled in carrying out the procedure, principal modifications of the Gram stain (omitting American work, however), and theories of the reaction involved. In the 2nd part, results of 2 main lines of investigation are discussed. One of these was to determine whether different kinds of bacteria can be distinguished by the speed of decolorization in the Gram technic; no marked success was obtained. The 2nd line of investigation was an attempt to make the carbol gentian violet more stable by addition of various chemicals designed to prevent precipitation. In this also the writer was unsuccessful. —*H. J. Conn.*

10867. **CUNNINGHAM, ANDREW. The life-cycle of B. saccharobutyricus von Klecki. III. The slender rod phase and secondary transformations.** *Zentralbl. Bakt. II. Abt.* 83(1/7): 1-21. 1 pl. 1931.—The morphological, cultural and biochemical characteristics of the slender rods obtained from cultures of *B. saccharobutyricus* and the characterisation of the various types are discussed. The slender rods include strains identical with *B. circulans* Jordan, *Pectinobacter amylophilum* Makrinov, *B. brevis* Migula, *B. globigii* Migula, *B. putrificus* Bienstock, *B. sporogenes* Metchnikoff, and *Clostridium putrificum* as described by Reddish and Rettger. The controlled experiments in which the slender rods were secured from cultures of *B. saccharobutyricus* (primary transformations) are described, and experiments in which cultures of the large rods (other than *B. saccharobutyricus*), cocci, short rods and slender rods described in these papers yielded other forms included in these groups (secondary transformations), are summarised. A slow decomposition of cellulose was observed when tubes of Omelianski's mineral-salt-filter-paper medium were inoculated with whole potato cultures of the *Pectinobacter amylophilum* type, and incubated anaerobically.—*A. Cunningham.*

10868. **CUNNINGHAM, ANDREW. The life-cycle of B. saccharobutyricus von Klecki. IV. Special morphology and methods of reproduction.** *Zentralbl. Bakt. II. Abt.* 83(1/7): 22-32. 5 pl. 1931.—Detailed studies indicate that, in addition to multiplying by binary fission, *B. saccharobutyricus* is capable of producing specialized reproductive organs. In certain cells (gonid angia)—which may be similar in size and shape to the normal vegetative cells of the organism or may be of an enlarged spherical, pear-shaped or spindle-shaped type—gonidia may be formed. The latter may appear as minute, intensely-stained granules or as larger bodies not colored by weak stains. Both types escape from the gonidangia when these undergo dissolution, but they may also be liberated by budding. The free gonidia are actively motile and many are so minute that their presence can only just be detected when cultures are examined at the usual magnifications. Gonidia are capable of multiplying by fission and in a few cases they have been grown in pure culture. In such instances they formed, on solid media, a delicate scarcely visible growth, similar in character to the dwarfed growths of Löhnis and Smith. Gonidia have been observed to grow into regenerative bodies—spherical cells about the size of ordinary micrococci. They may also produce rods. When gonidia grow into rods while still within the gonidangia, branched forms are produced. In certain cases gonidia are capable of developing into spores within the gonidangia; in this way endospores are formed. However, when gonidia attached to rod-shaped cells as buds develop into spores, exospores are produced. Microcysts have been observed, and appearances similar to those referred to by Löhnis and Smith as indicating conjunction and regeneration from the symplasm have also been seen. The mechanisms of the transformations referred to in parts 2 and 3 are discussed.—*A. Cunningham.*

10869. **CUNNINGHAM, ANDREW. The life-cycle of B. saccharobutyricus von Klecki. V. Confirmatory evidence.** *Zentralbl. Bakt. II. Abt.* 83(8/14): 219-232. 1931. —The author presents the results of studies made on cultures, obtained from various type culture collections, of strains similar to those secured from *B. saccharobutyricus*. In certain cases the cultures proved to be distinct from those originally deposited in the collections, but similar to certain of the other forms cultivated from *B. saccharobutyricus*, and so furnished important evidence in support of the conclusions already arrived at. A study of the literature also showed that certain of the observations made in the investigation receive support from results of previous workers. In a general discussion of results, attention is drawn to the facts that the observed changes in morphological and cultural characteristics almost all took place during 3 short periods; that, when first isolated, the new types

were often extremely unstable; and that certain of them occur comparatively rarely in nature. These facts support the view that the changes observed are in reality transformations. It is also pointed out that the author's results exhibit a striking general similarity to those obtained by Löhnis and Smith on *Azotobacter* and by Haag on *B. anthracis*.—*A. Cunningham.*

10870. GUNDEL, M. Das biologische System der Streptokokken. *Zentralbl. Bakt. I. Abt. Orig.* 115(1/2): 44-66. 1929.—The author divides streptococci into 7 sections, on the basis of action on blood agar and other media: (1) The green-producing streptococci of the oral cavity, giving their relation to viridans and lactic acid streptococci, and to enterococci; and their pathogenic significance. (2) *Streptococcus lanceolatus* (pneumococcus) in its relation to the mouth and lactic acid streptococci, and to the enterococci, with a contribution to its diagnosis. (3) The enterococci. These are divided into 2 types on the basis of differences in growth on agar and in aesculin media, in thermolability, and in ability to ferment raffinose. (4) The viridans streptococci. Under this section he classes those occurring as etiologic agent in endocarditis lenta. They are closely related to Type A enterococcus. This organism is recognized as the true viridans streptococcus. The principal differences between viridans streptococci and Type A enterococcus consist in the pathogenicity of the former for mice and in the absence of fermentation of raffinose. (5) The lactic acid streptococci. These are differentiated from the other green-producing forms by their reaction in litmus milk and by their thermostability. (6) Transitional forms. These could not be classified satisfactorily. The author gives the following division of the streptococci into groups: Group A. Stable races: I. *Strep. pyogenes haemolyticus;* II. *Strep. viridans;* III. *Strep. lanceolatus* (pneumococcus); IV. Obligate anaerobic streptococci. Group B. Labile races: I (V). Pleomorphic streptococci—(a) mouth streptococci, (b) enterococci Types A and B, (c) milk streptococci (Type A, *Strep. lactis;* Type B, *Strep. acidi lactici*); II (VI). The group of anhemolytic streptococci. 7. Differential diagnoses of the streptococci are given, the differential characters being tabulated.—*D. H. Bergey.*

10871. JENSEN, H. L. The genus Micromonospora Örskov, a little known group of soil microorganisms. *Proc. Linn. Soc. N. S. Wales* 55(3): 231-248 1 pl. 1930.—10 strains (designated by number) of the *Streptothrix chalcea* type from soil, were studied in culture; morphology, cultural relationships, O requirements, temp. relationships, heat resistance, resistance to various dyes and to acidity, and ability to utilize various N compounds and to decompose cellulose being reported in detail. The evidence justifies entirely the establishment of this group of microorganisms as a separate genus *Micromonospora,* as suggested by Orskov. Their vegetative thallus is composed of long, delicate, branching hyphae. The mode of spore formation resembles the formation of bacterial ectogonidia: short lateral branches sprout from the main hyphae, each bearing a single terminal spore, oval to spherical, highly refractive, and staining deeply with anilin dyes and haematoxylin. Spores and mycelium are gram-positive, but not acid-fast. Spores show a somewhat higher thermo-resistance than vegetative hyphae. The organisms are strictly aerobic, mesophilic, and very sensitive to acidity and to organic dyes. Their proteolytic and diastatic activities are rather weak. Free N is not fixed; some strains reduce nitrate to nitrite. Cellulose is decomposed actively by several strains They may occur in considerable numbers in the soil, occupying 5-8% of the total numbers of colonies of Actinomyces type. Their abundance seems to be increased by addition of cellulose or lignin to the soil. The author refers to this genus (but does not formally publish the new comb.), the organism isolated by Williams from pericarditic exudate (*Jour. Med. Res.* 27: 157-161. 1912).

10872. KUHN, J. Príspevek k biologii, pathogenite a serologiisvítících bakterií. [Biology, virulence and serology of photogenic bacteria.] *Biol. Spisy Vysoké Skoly Zverolékarské Brno (Publ. Biol. École Véter.* 6: (137-143). 1927.—The phosphorescence of photogenic bacteria was diminished or completely lost by passage through mice, but was greatly increased by passage through frogs, for which the strains studied possessed a high degree of virulence. The strains were non-pathogenic for white mice, rats, guinea pigs or rabbits. Precipitating and agglutinating serum is easily produced in rabbits, following injections of the organisms.—*L. C. Havens.*

10873. MacLEOD, [J. W.] Variations in the periods of exposure to air and oxygen necessary to kill anaerobic bacteria and their bearing on the theory that the oxygen intolerance of anaerobes is due to peroxide formation. *Acta Path. et Microbiol. Scandinavica Suppl.* 3. 255-267. 1930.—It has been shown recently that, in bacteriological media exposed to O, oxidation-reduction potentials are developed more positively than is compatible with the growth of anaerobic bacteria. The explanation that H_2O_2 formation by the bacteria is a factor in anaerobiosis has therefore been considered superfluous. Those who adopt this point of view have failed to realize that the phenomenon of anaerobiosis includes the rapid death of anaerobic bacteria in the presence of O, as well as their inability to grow. It has been found that when care is taken to eliminate sporing forms by using very young cultures, the period of free exposure to O compatible with continued life of anaerobic bacteria varies from 30 min. to 24 hrs. The variation is due to differences in the medium in which the bacteria are exposed, in the method of exposure, and in the type of bacteria used. Those forms inhibited in their growth most readily by traces of O, the strictest anaerobes, are those which die off most rapidly on exposure. All anaerobes produce a pink zone around their surface colonies when grown on heated blood agar; but some, especially certain gram-negative bacilli recovered occasionally in cases of septic meningitis, develop a green coloration which replaces the pink within 30 min. after exposure of the plate to O. When the centrifuged sediment of a 24-48-hr. culture of such bacteria in fluid medium is rapidly oxygenated with an air or O current, it is possible to obtain faint but distinct positive tests with the usual chemical reagents for H_2O_2. With several characteristic anaerobes, however, peroxide reactions are not obtained when their cultures are examined in this way. The explanation of this discrepancy is obscure, but it seems likely that H_2O_2 is the agent responsible for the observed rapid death of anaerobes when exposed freely to O.

10874. MURTO, J. A. Über die Oligodynamie. *Acta Soc. Med. Fennicae "Duodecim" [Suomalaisen Lääkäriseuran Duodecim'in]* 13[Ser. A.](2): 1-26. [Art. 3] 1930.—A surface of dry agar on which the bacteria to be examined were spread out on a revolving table furnished the most exact results in oligodynamic studies. The zooglea content of a culture rendered bacteria more resistant to oligodynamic effect, which is propagated also through the air. Each of the elements affects the bacteria differently. Contrary to previous investigators, the author finds that inactivation and regeneration are not characteristic of oligodynamy. He believes that the oligodynamic effect consists in the discharge of atoms from an element; the action may be either favorable (discharge negative) or injurious (discharge positive) to bacterial growth. The atoms discharged by a positive element, by union with electrons torn from the element or by leaving their paths, may become negative and thus promote a marginal growth; e.g., in the system Sb and Cd plus *Mycobacterium phlei,* when the reaction reverts to positive, a ring of feeble growth is formed outside the margin, and later, a new outer marginal growth when the electrons unite with the atom. Oligodynamic diffusion, the place in the periodic system of elements having different actions, and parallelism of the other physical qualities of the elements, are among the considerations leading to the adoption of this theory.—*From author's summary (transl.).*

10875. PESCH, KARL L., und ELISABETH KRÄMER. Ernährungs-physiologische Typen bei Gärtner-Bakterien. *Zentralbl. Bakt I. Abt. Orig.* 118(3/4): 136-144. 1930.—Separation of types of Gärtner bacilli by their decomposition of arabinose and rhamnose in different nutrient solutions, as stated by L. Bahr, has been confirmed by subsequent tests on 200 Gärtner strains. A few more strains, besides the 4 Gärtner types described by Bahr, do not ferment either arabinose or rhamnose; these strains can be put into a special group. The authors differentiate the rare ammonia-strong from the more common ammonia-weak Gärtner bacilli by growth or lack of growth on synthetic NH_4Cl agars. Combination of Bahr's with the authors' results leads to differentiation of types of Gärtner bacilli according to the following scheme: The paratyphoid (Neukirch) C_1 strains (F. Weigmann, F. Kauffmann) which are similar serologically to Gärtner strains, agree in their dissimilation processes (Pesch-Kortenhaus) with the ammonia-positive Gärtner bacilli described in this work. Both the Bitter-Weigmann-Habs test and the demonstration of acid from arabinose are useless for identification of a doubtful strain as a Gärtner bacillus. A recognition, depending on the physiology (by means of the dissimilative metabolism), is possible only by use of different NH_4Cl agars (e.g., with dextrose, citrate, rhamnose and arabinose as sources of C).—*Authors' summary (transl. by O. B. Williams).*

10876. SCHLINGMAN, A. S. Notes on Bacillus welchii. *Jour. Lab. and Clin. Med.* 16(12): 1175-1184. 7 fig. 1931.—Considerable gas is evolved and there is cloudiness when *B. welchii* is seeded in Hibler medium and incubated at 37° C. Maximum growth follows 8-24 hrs.' incubation. Acid is produced (cultures pH 6.0-6.4, although initial may have been pH 7.6 or even more alkaline). In shake cultures in 2% agar medium containing 2% glucose, sufficient gas may be evolved to shatter the agar. The colonies are essentially lenticular and, if the seeding has been heavy, are small. With light seeding, colonies are larger and often appear broken along 1 edge. Pigeons are for the most part uniformly susceptible to *B. welchii* and its toxin. Crepitant swellings with a collection of edematous fluid follow intramuscular injection of pure cultures. Death may follow in 2-24 hrs. after administration of a virulent culture. Postmortem reveals degeneration and necrosis of the muscle tissue, which is discolored and may be torn apart by gas. Collections of edematous fluid in the subcutaneous connective tissue occur. Injections of sterile toxin are followed by practically the same changes as when whole cultures are injected, but no gas is produced. The appearance of the organisms in Hibler medium changes with age; they are on the whole smaller and strongly gram-positive when young, but larger in older cultures; in the latter, a greater % may be gram-negative. No reduction in activity of fluid toxin was noted after 5½ mo. storage at 2-3° C. in sealed amber bottles. Potency of antitoxin can be measured with great accuracy, the variable being as small as 0.00025 cc. per 350 gm. of the pigeon used for test.—*Author's summary.*

10877. SCHMIDT, ADAM. Vergärungsuntersuchungen an Typhusstämmen Jugoslawischer Herkunft. *Acta Path. et Microbiol. Scandinavica Suppl.* 3: 369-375. Map. 1930.—Fermentation tests of 13 sugars were made with 160 typhoid strains from Jugoslavia. Maltose, levulose, sorbite and arabinose gave variable, xylose constant, results. 112 strains fermented xylose; 48 did not. Xylose-positive strains predominated in the northeastern, xylose-negative strains in the northwestern, part of the country; this distribution seemed to be influenced by prevailing traffic conditions. In another well defined region, near the main highways, xylose-negative strains predominated; in other regions the 2 types were equally distributed.—*A. F. Reith.*

10878. [SHTIBEN, V., and M. MAKSIANOVICH.] ШТИБЕН, В., и М. МАКСИАНОВИЧ. К вопросу о культуральных и серологических признаках паратифа N. [Cultural and serological properties of paratyphoid N.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) (8)3: 229-247; German summary, 351-352. 1929.—On the basis of the literature and a study of 38 cultures of *Bacterium paratyphi N*, the authors conclude that not all cultures described as paratyphoid N appear to be identical with the cultures of paratyphoid C described by German authors, and with Ivaschenzev's paratyphoid N. Positive cultures of paratyphoid N and C in their turn belong to 2 different types of *Salmonella*, one of which—$N_1=C_2$—by its properties may be considered as a variant of *Bact. suipestifer*. The other type—$N_2=C_1$—resembles types of *Bact. enteritidis* Gärtner. Paratyphoid $N_2=C_1$ differs culturally from $N_1=C_2$ by its action on rhamnose, having no effect on dulcit during the first 24 hrs., and causing acid formation on Bitter's medium. Also, the reaction to different carbohydrates, Bitter's reaction, serological properties, and pathogenicity for mice, definitely differentiate paratyphoid $N_2=C_1$ from $N_1=C_2$, and from *Bacterium paratyphi A, B,* and Breslau, *Bact. typhi murium,* and *Bact. enteritidis* Gärtner. 3 cultures of *Bact. paratyphi N* or *C* which had all the cultural and serological properties of both N_1 and N_2 were finally separated, and cultures of N_1 and N_2 were obtained. The question as to whether N_1 and N_2 are variants of a basic type—N—can not be answered at present.—*G. A. Lebedeff.*

10879. [SHTIBEN, V., and M. MAKSIANOVICH.] ШТИБЕН, В., и М. МАКСИАНОВИЧ. О типовой принадлежности паратифа N_1 и N_2. [Type allocation of Bact. paratyphi $C_1=N_2$ and $C_2=N_1$.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol. Épidémiol. et Parasitol.*) 9(1): 77-82; German summary, 133. 1930.—Comparison of cultural properties of many cultures of paratyphoid N and other types of the *Salmonella* group, showed that paratyphoid N_2 resembles the suipestifer type, and paratyphoid N_1, by its properties, could be differentiated from the Glässer, Voldagsen, and *Bact. suipestifer* strains. Cultural properties of the Newport and Stanley strains are exactly the same as those of the Breslau strain. Complete absence of agglutination of paratyphoid N_1 in Newport serum, and vice versa, showed that the paratyphoid N_1 and Newport strains are not identical; also, cross agglutination of paratyphoid N_1 and N_2 with the Stanley strain, showed that they differ serologically from the Stanley strain. On this basis, contrary to Bruce White and also to Aoki and Kurooda, the authors dispute the allocation of one of the types of paratyphoid N to the Newport type and consider paratyphoid N_2 as an independent type of the *Salmonella* group. Also, they confirm their previous (1929) conclusion that paratyphoid N_1 is serologically identical with, but culturally different from, the Glässer Voldagsen type. The authors suggest using the name *Bact. paratyphi C* for *Bact. paratyphi* $C_2=N_1$, and *Bact. paratyphi N* for *Bact. paratyphi* $C_1=N_2$.—*G. A. Lebedeff.*

10880. TROTZKY, W. L. Untersuchungen über die Länge der Bakterien. I. Die Bakterienlänge, ein individuelles Merkmal jedes Stammes. *Zentralbl. Bakt. I. Abt. Orig.* 112(3/4): 266-273. 1929.—The author sought to determine whether variations in length seen in a given smear are matters of chance or follow some law, like Quetelet's. Smears (stained with fuchsin) were projected through a microscope onto a ground glass screen, and the projected bacteria were measured at 1: 5000 magnification. The organisms studied were chiefly *Bacillus typhi abdominalis* and *B. dysenteriae* Shiga. It is concluded that bacterial length is not a matter of chance but an individual and constant characteristic of every strain,—sometimes the only characteristic by which strains otherwise identical can be distinguished. It is determined by inheritance, but may be altered (though not permanently) by animal passage, change of temp., etc.—*J. W. Churchman.*

10881. VERNONI, GUIDO, e S. FICHERA. Osservazioni sulla morfologia di un particolare spironema non

patogeno ottenuto e trapiantato in coltura pura. [Morphology of a non-pathogenic Spironema obtained and transplanted in pure culture.] *Boll. Soc. Italiana Biol. Sper.* 3(8): 1057-1064. 1928.—Detailed description of a spirochaete isolated from a mesenteric lymphatic gland of a goat. In the cycle of development of this microorganism, there is a granular phase: the spirochaetes disappear from the culture and only minute granules are discernible, which, in new sub-cultures, regenerate spirochaetes. Special spherical elements are observed, capable of movement, and unusual forms similar to flagellates. Many of the forms observed correspond exactly to analogous unusual forms described in the *treponema* of syphilis. The spirochaetes, in view of these observations, seem to constitute a group by themselves, similar in some points to protozoa and in others to bacteria.—*G. Vernoni.*

10882. **WILSON, G. S. The gaseous requirements of B. abortus (bovine type).** *British Jour. Exp. Path.* 12: 88-92. 1931.—*Bacillus abortus* bovine type requires both O and CO_2 for development, optimum concentrations are 20% O and 5-10% CO_2, the remainder of the atmosphere being some inert gas such as N or H. Contrary to frequent statements, lowered O pressure is less favorable to growth than is that of the air. The rôle of CO_2 in promoting growth is discussed, with the conclusion that it acts, not by altering the acidity of the medium, but by virtue of its power of diffusing rapidly through the intact cell wall and of giving rise to an increase in intracellular H-ion concentration.—*J. Bland.*

ECONOMIC ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Associate Editor*

(See also in this issue Entries (History) 9070, 9109, 9117; (Pollinators) 9150, 11026; (Ecology) 9175, 9176, 9177, 9178, 9182, 9184, 9187, 9189, 9190, 9192, 9196, 9199, 9200, 10005; (Plant disease vectors) 9222, 9223, 9239, 9243, 9244, 9245; (Plant injury) 11202; (Physiology) 9408, 9941, 9960; (Genetics) 9413; (Nutrition) 9633, 9687, 9690, 9770; (Growth) 9859; (Animal disease vectors) 10451, 10635, 10743, 10755, 10771, 10781, 10790; (Parasites) 10595, 10602, 10604, 10610; (Immunity) 10619; (Paleontology) 11247; (Embryology) 11453)

10883. **BEFFA, G. DELLA. Ortotteri della regione alpina nocivi ai prati, ai pascoli e ad altre colture di montagna.** [Alpine Orthoptera as pests in fields, pastures, and other mountain cultivations.] *Boll. Lab. Sperim. Fitopatol.* [*Torino*] 28(1): 3-6. 1931.—Descriptions and local notes on Phasgonuridae in this region.

10884. **FRYER, J. C. F. Some beneficial insects.** (Formerly Misc. Publ. no. 37.) (Ministry of Agriculture and Fisheries, Bull. 20.) 3rd ed. v+14p. 2 col. pl. Ministry of Agriculture and Fisheries: London, 1930. Pr. 4d.—The text of this edition has been completely revised but the colored plates are as in the first 2 editions. A brief popular account of the value of predators and parasites.

10885. **GLASGOW, ROBERT D. Injurious insects in 1930.** *New York State Hort. Soc. Proc. Ann. Meet.* 76: 10-19. 1931.—Includes pests of orchard and small fruits and of ornamental trees and shrubs in New York State.

10886. **GRADOYEVITCH, MICHAËLO. Yugoslavia: Crop pests.** *Internat. Bull. Plant Protect.* 5(7): 121. 1931.—Notes on insect pests for 1930 and early 1931.

10887. **HYSLOP, J. A. United States of America: Outstanding entomological features.** *Internat. Bull. Plant Protect.* 5(7): 116-118. 1931.—Notes on important insect pests of crop plants in the U. S. A. in 1931 up to April.

10888. **ISAAC, P. V. Report of the Imperial Entomologist.** *Sci. Repts. Imp. Inst. Agric. Res. Pusa* 1929-30: 72-79. 1 col. pl. 1931.—Progress report on economic investigations in India.

10889. **SWEZEY, O. H. Miscellaneous notes.** *Proc. Hawaiian Ent. Soc.* 7(3): 483-484. 1931.—*Agromyza virens* [Diptera. Agromyzidae] has been reared from stems of sunflower. *Mestolobes minuscula* [Lepidoptera] was reared from a larva at the roots of sugar cane.

10890. **WILSON, ANDREW. Insects and their control.** 342p. 184 fig. Andrew Wilson, Inc.: Springfield, N. J. 1929. Pr. $2.50.—A concise account of the more common insect pests, giving the essentials of their life history, habits and methods of control. "Prepared with the idea of helping the home owner to learn more about the habits of insects, stimulating his interest in their control and advertising the products of Andrew Wilson, Inc., wherever they can be used." Part I gives general information on insect activity and control; Part II, under a list of plants, arranged alphabetically, treats of the insects attacking them.—*H. Fox.*

10891. **[ZNAMENSKII, A. V.] ЗНАМЕНСКИЙ, А. В. Пособие для производства обследования энтомофауны почвы.** [Guide to investigation of insect fauna of the soil.] Труды Полтавской С.-Х. Опытной Станции [*Trans. Poltava Agr. Exp. Sta.*] 51: 5-57. 72 fig. 1927.—A manual for the determination of harmful soil insects, written especially for the forest steppe region of the Ukraine and partially for the humus soil region of central Russia. Keys for determination of the most important insects of the Ukraine are given.—*G. A. Lebedeff.*

10892. **ANONYMOUS. Common names of insects approved for general use by American economic entomologists. Fifth supplement to list appearing in Volume 18, p. 521-545. 1925.** *Jour. Econ. Ent.* 23(3): 639. 1930.

ECONOMIC ENTOMOLOGY

FRUITS

W. A. ROSS, *Editor*

(See also in this issue Entries 9244, 10885, 10946, 10954, 10958, 10960)

10893. **BOURNE, A. I.** Insect pests of Massachusetts orchards in 1930. *Mass. Fruit Growers' Assoc., Inc.* 37: 123-129. 1931.

10894. **COTTERELL, G. S.** The occurrence of Sahlbergella spp. and other pests of cacao in Fernando Póo, San Thomé and the Belgian Congo. *Gold Coast Dept. Agric. Bull.* 20. (2nd Conf. W. African Agric. Officers vol. 2.): 162-171. 1930.

10895. **FRANZ, E.** Der Erdbeerstecher. [Strawberry weevil.] *Natur u. Mus.* [*Frankfurt a/M*] 61(5): 218. 3 fig. 1931.—A brief description of the injury* of *Anthonomus rubi** and *Phyllobius oblongus** to strawberries.

10896. **GRASSÉ, PIERRE P.** Un ravageur des arbres fruitiers: La Zeuzère. *Prog. Agric. et Vit.* 92: 544-547. 1929.—The life cycle, distribution, habits and food plants of *Zeuzera pyrina* L. and *Z. aesculi* L. are described. Control or eradication may be effected by proper application to soil or tree of CS_2, $Ca(CN)_2$, ethyl acetate, benzine or paradichlorobenzene or by the use of light traps.—*K. S. Markley.*

10897. **ILLINGWORTH, J. F.** Pests of pineapple in Hawaii. *Proc. Hawaii Ent. Soc.* 7(2): 254-256. 1929.—The pests are listed as (a) affecting the root system, and (b) affecting the fruit, stem and leaves, with notes on the damage they cause.

10898. **JARY, S. G.** A note on the strawberry and raspberry bud weevil, Anthonomous rubi (Herbst). *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 147-152. 5 fig. 1931.—Description, life history, habits, and control measures.

10899. **LEONARD, M. D.** Further experiments with nicotine-oil for the control of the codling moth in the Pacific Northwest. *Jour. Econ. Ent.* 23(1): 61-75. 1930. —40% nicotine sulphate, ½ pt., and lubricating oil emulsion, ¾-1¼ gals. to 100 gals. water gave varying results in control of the codling moth [Carpocapsa pomonella], but in most cases results equalled or bettered those obtained with lead arsenate, 2 lbs. to 100 gals. It is suggested that a satisfactory spray schedule would be 1 or 2 sprays of lead arsenate, followed by 1 or 2 of lead arsenate plus oil emulsion, finishing with 2 or 3 of nicotine sulphate plus oil emulsion. Control of other pests with the nicotine, particularly aphids, is mentioned.—*E. J. Newcomer.*

10900. **MACKIE, D. B.** The biological balance. *Pacific Rural Press* 122: 131. 1931.—Overproduction of canning peaches in California the past few seasons resulted in many acres being unharvested and furnished good conditions for the development of the peach twig borer, *Anarsia lineatella.* The spray program has been omitted in many orchards recently due to the financial depression and a very heavy borer infestation is expected next season unless extra control measures are adopted.—*C. S. Pomeroy.*

10901. **MONASTERO, SALVATORE.** Il Ficus carica L. infestato dal Cossus cossus L. *Bull. Ist. Zool. R. Univ. Palermo* 2(2/3): 41-44. 1930.—*Cossus cossus* observed on *Ficus carica* near Palermo. There are brief notes on its habits.

10902. **NEWMAN, L. J., and B. A. O'CONNOR.** Fruit fly (Ceratitis capitata). A further series of trapping or luring experiments. *Jour. Dept. Agric. Western Australia* 8(2): 316-318. 1931.—As a result of tests the authors recommend Clensel 1: 30 in water as luring agent, with renewal in cool weather every 10-12 days. The most effective time for trapping is July-December, with 2 as the minimum number of traps per tree.

10903. **WALKER, MARVIN H.** The story of the Mediterranean fruit fly. 39p. Col. frontispiece. 6 fig. Florida Grower: Tampa, 1929.

ECONOMIC ENTOMOLOGY

CEREAL, FORAGE, AND OTHER FIELD CROPS

(See also in this issue Entries 9244, 10949, 11039, 11630, 11849)

10904. **CORBETT, G. H.** The bionomics and control of Leptocorisa acuta Thunb. with notes on other Leptocorisa spp. in Malaya. *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser.* 4. 1-40. 6 pl. (2 col.), 1 fig. 1930.—Five species of *Leptocorisa* occur in Malaya, of which *L. acuta* is responsible for most of the damage to rice. Its economic status, seasonal history, and developmental period according to host grass is discussed. Keys to Malayan spp., of *Leptocorisa,* and descriptions of several, with notes on their life history, are given. An unidentified chalcid egg parasite is described. *Euagoras plagiatus* and *E. sordidatus* are predators of minor importance. Uniformity of variety and planting season in a given area would reduce damage. *L. acuta* swarms to flowering grasses, before attacking the rice, and they can be captured in large numbers by various devices which are described.

10905. **GROSSMAN, EDGAR F.** Biology of the Mexican cotton boll weevil. V & VI. *Florida Ent.* 14(3): 45-52; (4): 66-71. 1930.—Of 20,000 boll weevils (*Anthonomus grandis*) placed in hibernation quarters, individuals emerged daily from March 1st to the middle of July every yr., regardless of climate. When the boll weevil is physiologically prepared to quit hibernation, it does so, daylight, temp. increases, and rainfall hastening the process but slightly.

10906. **GROSSMAN, EDGAR F.** Biology of the Mexican cotton boll weevil [Anthonomus grandus] VII: The boll weevil in artificial hibernation quarters. *Florida Ent.* 15(2): 21-27. 1 fig. 1931.—The reliability of data generally obtained from hibernation cages is so questionable that the general use of cages as indicators of probable weevil distribution and population is unwarranted. A new type of cylindrical cage for holding Spanish moss, permitting determination of the percentage of weevils actually hibernating, indicated that of 20,900 weevils placed in 24 cages only 30.84% actually entered hibernation. The weevils sought the higher and moister places. Survival based on total number placed in cages ranged from 5.4 to 29.7%; on number actually hibernating, from 50.5 to 85.9%.

10907. **KÖRTING, A.** Ueber die Entwicklung der grauen Gerstenminierfliege (Hydrellia griseola Fall.) bei verschiedener Ernährung. *Zeitschr. Pflanzenkrank. (Pflanzenpath.) u. Pflanzenschutz* 41(7): 321-333. 3 fig. 1931.—When fed on oats the insects were smaller and ate less and more slowly than when on barley. Only 42% of the larvae pupated on oats as against 100% on barley.

10908. **JOHNSTON, H. B., and R. C. MAXWELL-DARLING.** On the occurrence in the Sudan of Locusta migratorioides, Rch. & Frm., and its associated phases. *Bull. Ent. Res.* [*London*] 22(3): 399-416. 1931.—Swarms of *L. migratorioides* arrived in the Sudan unexpectedly in the summer of 1930. It seems to have a cycle of phases. Phase *solitaria* equals *L. danica,* and is non-

migrant; phase *transiens* is non-migrant; phase *congregans* is transitional; phase *gregaria* equals *L. migratoria*, and is probably non-migrant; *L. migratorioides* is regarded as the extreme of phase *gregaria;* phase *dissocians* occurs after the breaking of a swarm. Data are presented on the incubation period of egg-pods laid by immigrant swarms, description of larvae from known *L. migratorioides* parents, and data on the transformations from one phase to another.

10909. KUWAYAMA, SATORU. The principal insect pests of the rice plant in Hokkaido. [In Japanese.] *Bull. Hokkaido Agric. Exp. Sta.* 47. 1-107. Illus. 1928.

10910. LEAN, OWEN B. On the recent swarming of Locusta migratorioides, R. & F. *Bull. Ent. Res.* [*London*] 22(3): 365-378. 9 maps. 1931.—A study was made of the swarming and flights by periods from June 1928 to January 1931. The swarming phase develops at most in 3 localities, probably only in 1: the lake region of the middle Niger, being the principal permanent breeding ground. Lake Chad is probably a secondary breeding ground. Control should be directed at the permanent breeding grounds, which are all located in the Savannah belt.

10911. LEPLAE, EDM. Le ver rose du coton dans la région du lac Kivu. [Pink boll worm north of Lake Tanganyika, Belgian Congo.] *Bull. Agric. Congo Belge* 19(2): 262-270. 1 pl., 4 fig. 1928.—*Pectinophora gossypiella* is described and its recent establishment in Belgian Congo is recorded.

10912. MESNIL, L. Contribution à l'étude de trois Coléoptères nuisibles aux céréales. *Ann. Epiphyties* 16 (3/4): 190-208. 5 pl., 7 fig. 1930(1931).—Descriptive comparisons of adults* and larvae* of *Lema cyanella** and *L. melanopus**, and of the biology and damage* done to the foliage by each. *Lema cyanella* attacks wheat, and rarely barley, while *L. m.* attacks oats and barley. *Chaetocnema aridula* burrows as a larva in the basal portions of the stem* of oats, and rarely wheat. Its larva* and adult* are described.

10913. MILLER, N. C. E., and H. T. PAGDEN. Preliminary observations on Sogata spp. pests of padi. *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser.* 3. 10-14. 1930.—*Sogata* sp. probably *pallescens* is at times a serious pest in the rice fields. Notes are presented on its life history.

10914 SITOWSKI, LUDWIK. Roztocze jako szkodniki traw zbozowych. [Acarina as grain pests.] [With German summary.] *Roczniki Nauk i Leśnych* (*Polish Agric. & Forest Ann.*) 17(3): 427-429. 1927.—*Pediculopsis graminum* was observed as a pest of rye on low soils, where about 50% of the grain was damaged. The ♀♀ were found inside the culms. In the body cavity 27 eggs were found (Kaufmann found 500). This discrepancy is explained by assuming that *P. graminum* is partly viviparous and partly oviparous.—*Author's summary* (*transl.*).

10915. TAYLOR, JOHN SNEYD. Notes on the biology of Laphygma exempta Walk. and L. exigua Hbn. (Lep., Noctuidae). *Bull. Ent. Res.* [*London*] 22(2): 209-210. 1931.—*L. exempta* occurs as an army worm in Transvaal, its outbreaks occurring at uncertain and irregular intervals. The egg period is 3-8 days, larva 18-24 days, pupa 12-36 days. Its enemies include *Disophrys iridipennis* and *Chelonus erythropus*. *Laphygma exigua*, the false army worm, attacks many plants, especially *Amarantus paniculata*. The egg stage is 3-12 days, larva 17-20 days, pupa 9-48 days. There are several enemies.

ECONOMIC ENTOMOLOGY

TRUCK AND GREENHOUSE CROPS

J. E. GRAF, *Editor*

(See also in 6(3): Entries 6162, 7778, 7853, 8767; and in this issue 9243, 11018)

10916. CAESAR, LAWSON. Insects attacking vegetables. *Ontario Dept. Agric. Bull.* 359. 1-67. 47 fig. 1931.—A handbook on vegetable insects and their control. A statement is given on the reasons for using different insecticides, together with formulae, methods of application and spray equipment. Pests are listed under the various crops affected and there is a discussion of those with general feeding habits. Each insect is described in general terms, and the life history, food plants, nature of injury and control are described briefly in each case.—*J. E. Graf.*

10917. CHERIAN, M. C. Life-history notes on Lamprosema indicata (Pyralidae), a caterpillar pest of Chrysanthemum. *Jour. Bombay Nat. Hist. Soc.* 33(4): 857-860. 1929.—The caterpillars generally attack the leaves only, but have been reported to destroy the flowers also and to have sometimes brought about complete defoliation. The pest appears about the time of flowering. Description is given of the eggs, the larvae, and the adult moths. The eggs are generally laid under the surface of the leaves, 2-3 days after emergence; 9 ♀♀ laid 2,966 eggs, averaging 330 per moth, maximum 499. The larvae undergo 4 moults in all, the 1st instar taking 3 days, the 2nd, 3rd, and 4th, 2 days each. Cocooning takes about 2 days, the pupal period lasts 6 days, and the whole life cycle covers 23-30 days. A small Elasmid wasp, *Elasmus indicus*, parasitizes the caterpillars, although not in sufficient numbers to check the pest. Lead arsenate and Paris Green were effective in controlling the pest—the former used as a spray at the rate of ½ oz. to a gallon of water being the more effective. Tables of records are given of egg laying, life history, and longevity of adult moths.—*M. Sharif.*

10918. HOFFMANN, WILLIAM E. A Pentatomid pest of growing beans in South China. *Peking Soc. Nat. Hist Bull.* 5(3): 25-26. 1 pl. 1931.—*Holyomorpha picus* does considerable damage in the region of Canton to the flowers, leaves, stems and pods of *Vigna sesquipedalis* and *Phaseolus lunatus*, the fruit of *Solanum nigrum*, stems of *Celosia argentea*, and *Basella rubra*, and flowers of *Hibiscus rosa-sinensis*. Injury is by both nymphs and adults. The adults are found from early April until late October. The first generation is completed before the middle of June. There are at least 4 generations a yr. in Kwang Tung Province. The destruction of nightshade plants will help materially in the control of this species. The eggs, nymphal stages and adult are figured.

10919. JHAVERI, T. N. India: Notes on Thrips tabaci (Heliothrips indicus), a pest of onion and chillies. *Internat. Bull. Plant Protect.* [*Rome*] 5(4): 55-56. 1931.—Brief notes on the author's results in control of thrips on onion by cultural, remedial and preventive measures; and on the technique of finding thrips ova in the leaf tissues of chillies.

10920. KINGSBURY, JEANNETTE A. A new dahlia pest. *Bull. Amer. Dahlia Soc.* 12(57): 31. 1931.—Report on observations (3 yrs.) on damage by a leaf hopper, *Entylia carinata* (Forst), which is frequently mistaken for dry weather injuries. A pyrethrum product for controlling both sucking and chewing insects is recommended.

10921. P[RING], G. H. Glue as a control for red spider. *Missouri Bot. Gard. Bull.* 19(2): 39-40. 1 pl. 1931.—Successful control of red spider in the garden was obtained by spraying with 1 lb. powdered glue for 4 or 5 gallons of water. The glue is first dissolved by heating and then poured into cold water and agitated until thoroughly mixed. In a few days the glue peels off taking the mites with it.*

10922. RAMACHANDRA RAO, Y. A preliminary note

on the successful treatment of the jasmine bug (Antestia cruciata) by dusting calcium cyanide. *Madras Agric. Jour.* 18(1): 2-5. 1930.—Report of preliminary studies of life history and control. The principal injury is caused by adults feeding on the tender shoots and flower buds. Dusting with $Ca(CN)_2$ was effective in dropping the bugs from the plants but owing to the recovery of a portion of the insects, it is advisable to pick up all the insects dropped from the plants.

10923. **SILVA, A. ALVES da. Como se comportaría la Phthorimaea operculella en el Uruguay.** *Rev. Facult. Agron. [Montevideo]* 4. 57-73. 7 fig. 1931.—A discussion of the life history including duration of the various stages, distribution and control measures of the potato tuber worm in Uruguay.

10924. **STANILAND, L. N., and C. L. WALTON. Notes on some agricultural and horticultural pests in Bristol Province. 1. The beet carrion beetle (Blitophaga opaca) and its control.** *Jour. Bath & West & Southern Counties Soc.* 5: 174-176. 1 pl. 1930/1931 [1931].—Note on an outbreak. The beetles occur in the vicinity of woodlands. Mangolds were heavily injured, other plants were not affected. The larvae hide in galleries in the soil when alarmed. Experiments showed that infestation can be prevented or held in check by arsenate of lead dust early in June.

10925. **WALTON, C. L. Notes on some agricultural and horticultural pests in the Bristol Province. III. Notes on a serious tomato pest (Scutigerella immaculata).** *Jour. Bath & West & Southern Counties Soc.* 5: 178-181. 1 pl. 1930/1931[1931].—*S. immaculata* appears to be the cause of a characteristic failure of crop. It feeds on the root hairs of the plants. The plants growing in a range of glasshouses were seriously stunted. Since the pest may be found at a depth of 3 feet, control will be difficult.

ECONOMIC ENTOMOLOGY

FOREST AND SHADE TREES

J. M. SWAINE, *Editor*

(See also in this issue Entries 9244, 10885, 10947, 10951, 11602, 11675, 11698)

10926. **BAGNALL, RICHARD S. Some insects of the buckthorn.** *London Naturalist* 1930: 75-76. 1931.—Notes on 2 gall-midges (*Perrisia rhamni* and *Contarinia frangulae*) on *Rhamnus frangula,* being first British records; an unnamed gall-midge on *R. catharticus;* and briefer notes on various other insects of buckthorn in England.

10927. **CHEN, H. T. A chrysomelid skeletonizer of bamboo.** *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 1: 39-43. 1928.—An undetermined chrysomelid beetle is described, with notes as to the injuries produced on bamboo, and as to its natural enemies.

10928. **CLARK, ARTHUR F. Paropsis dilatata Er. in New Zealand. Preliminary account.** *New Zealand Jour. Sci. and Technol.* 12(2): 114-123. 8 fig. 1930.—*P. dilatata* is an Australian Chrysomelid, first recorded in New Zealand in 1916. A detailed survey of the Eucalypt plantations in 1928 showed that the insect is a serious pest of several species. Eggs are laid on the leaves, and both adults and larvae feed on the edges of the foliage. Pupation takes place in the ground. Pre-adult stages last 50-60 days. Hibernation is in the adult stage beneath the bark. The number of generations is uncertain at present, at least 2 being likely. The insect is restricted to the East of the South Island of New Zealand. There are no practicable silvicultural or mechanical methods of control, and the importation of parasites from Australia is recommended.—*A. F. Clark.*

10929. **FELT, E. P. The Norway maple Nepticula (Lepidoptera).** *Proc. Ent. Soc. Washington* 32(8): 146-149. 1930.—*Nepticula sericopeza,* probably recently introduced from Europe, occurs in New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey and Pennsylvania on the Norway maple. Data are given on the injury to leaves and seed, activity of moths, characters of larva and cocoon.

10930. **FELT, E. P. Protection of trees from insects.** *Ann. Rept. Quebec Soc. Protect. Plants* 21: 43-48. 1928-1929(1929).—Brief biographical data are given for 4 early New York entomologists, namely, Fitch, Lintner, Comstock and Slingerland, and these are followed by short accounts, with indications of their economic status, of a long series of insects occurring on shade trees. Some of the more important of these are: forest tent caterpillar, *Malacosoma disstria,* white-marked tussock moth, *Hemerocampa leucostigma,* bagworm, *Thyridopteryx ephemeraeformis,* elm leaf beetle, *Galerucella leuteola,* willow leaf beetle, *Plagiodera versicolora,* Japanese beetle, *Popillia japonica,* satin moth, *Stilpnotia salicis,* sugar maple borer, *Glycobius speciosus,* leopard moth, *Zeuzera pyrina,* hickory bark beetle, *Scolytus quadrispinosus,* Norway maple aphid, *Chaitophorus lyropicta,* San Jose scale, *Aspidiotus perniciosus,* elm scale, *Gossyparia spuria,* golden oak scale, *Asterolecanium variolosum* and the cottony maple scale, *Pulvinaria vitis.*—*E. P. Felt.*

10931. **MARELLI, CARLOS A. La plaga de los gorgojos de los eucaliptos. [Eucalyptus weevils.]** *Rev. Soc. Ent. Argentina* 1(1): 14-22. 4 pl. (1 col.), 2 fig. 1926.—**DACNIROTATUS bruchi*** and *D.* **platensis** are described as new although previously so described in Mem. Minist. Obras Pub. Buenos Aires 1924-1925. Larvae and nymphs of *D. bruchi* are described and figured, with discussion of habits. Measures taken to combat the pest, which is extremely destructive to eucalyptus in Argentina, are described in detail.

10932. **MOZNETTE, G. F. How some factors limit efforts for artificial control of the pecan nut case-bearer in the Southeast.** *Nation. Pecan Assoc. Bull.* 4(1): 40-45. 1930.—The author discusses the possibilities and limitations in control of *Acrobasis caryae* Grote observed during experimental work. He stresses the importance of coating the eggs of the first generation with contact sprays to destroy the embryo.

10933. **SALMAN, K. A. Notes on the immature stages and biology of a birch case-bearer.** *Ann. Ent. Soc. Amer.* 22(3): 480-488. 1929.—*Coleophora salmani,* which has seriously injured white and gray birches in Bar Harbor, Maine, has 1 generation a yr. Eggs are laid in mid-July on the lower surface of leaves of *Betula alba, Corylus americana,* and *Alnus;* they hatch the 1st week of August. The 1st-instar larva mines in the leaves and does not form a case. The 2nd- and 3rd-instar larvae form cases and the latter stage hibernates on twigs. Most 5th-instar larvae have pupated in their cases by the 1st week in July. In addition to the 3 fall host plants mentioned above, spring larvae attack *Betula populifolia, Salix* spp., and *Quercus rubra,* especially the first. Most adults do not emerge till the 2nd week in July. Adult ♀♀ live 7-10 days, adult ♂♂ 6-8 days. *Trombidium* sp. feeds on the moth eggs. *Hemiteles tenellus, Itoplectis conquisitor,* and *Orgilus* sp. were reared from pupae. The egg, larval instars (except 4th), 4 types of cases, and the pupa are described.—*M. W. Boesel.*

10934. **SCHOEVERS, T. A. C. Bladwesp-eieren in wilgetwijgen. [Saw-fly eggs in willow twigs.]** *Tijdschr. Plantenziekten* 37(4): 91-92. 1 pl. 1931.—The egg pockets of *Pteronidea (Nematus) miliaris* Pz. found on willow twigs are described.—*H. L. G. de Bruyn.*

10935. **SCHWERDTFEGER, F. Die Ermittlung der Mortalität von Raupen während einer Insektenepidemie.**

Ein Beispiel für die Anwendung von Kotfängen zur Behandlung epidemiologischer Probleme, zugleich ein Beitrag zur Epidemiologie des Kiefernspanners. [Determination of the mortality of caterpillars during an insect epidemic. An example of the use of excrement measurements in dealing with problems in epidemiology, with account of the epidemiology of Ennomos lituraria]. *Anz. Schädlingsk.* 7(8): 85-90. 6 fig. 1931.

10936. **TAYLOR, RAYMOND L.** A new host record for the white pine weevil. *Jour. Econ. Ent.* 23(3): 640. 1930.—*Pissodes strobi* on *Pinus montana*. The fly *Lonchaea corticis* Taylor is recorded on the weevil.

ECONOMIC ENTOMOLOGY

INSECTS AFFECTING ANIMALS

F. C. BISHOPP, *Editor*

(See also in this issue Entries 9200, 9770, 10258, 10451, 10599, 10602, 10619, 10635, 10755, 10781, 10788, 10790, 11599, 11607, 11614, 11616, 11766, 11858)

10937. **BLANC, GEORGES, et J. CAMINOPETROS.** La transmission des varioles aviaires par les moustiques. *Rev. Gén. Méd. Vét.* 39(464): 456-465. 2 fig. 1930.—*Culex pipiens* can transfer avian variola in either chickens or pigeons, for periods of over a month, probably for the life of the mosquito. The disease is normal in course and sub-clinical attacks may occur, as shown by development of immunity.—*R. G. Perkins.*

10938. **[BOGOÏAVLENSKIĬ, N. A.]** БОГОЯВЛЕНСКИЙ, Н. А. Из наблюдений над флеботомусом в г. Казахе. [Observations on Phlebotomus in Kazakh, Azerbaijan.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(7): 461-469. 1929.—In summer and fall numerous specimens were caught and their habits and reactions observed. They showed a decided preference for white; yellow seemed to attract least. Artificial light proved very attractive,—in direct ratio to its intensity. Very few specimens were caught in spider webs, and although *Scutigera coleoptrata* is considered a natural foe, no attacks were observed. Copulation was observed in 3 cases. Sounds emitted were, contrary to Brack's statement, short and low, not high and monotonous as in Culicidae. Only ♀♀ bite; no ♂ was every noticed even to alight on man. The time of biting is mostly at night, towards morning, light being an unfavorable condition. In general, *Phlebotomus* is not so annoying as are Culicidae. The most delicate skin regions are preferably chosen for biting. During the bite, which may continue for 4-5 minutes, ♀♀ are remarkably indifferent to outside stimuli. Subjectively, the bite is sharply painful and causes skin irritation, which disappears in 7-8 days. Maximum aggressiveness was shown in the last third of July. Larval mites observed as parasites; this is of interest since mites may, possibly, participate in the spread of infections by *Phlebotomus*. Repeated attempts to find eggs or larvae of *Phlebotomus* failed as usual. Although several eggs were laid in captivity, the author failed to observe the process; none of the eggs under observation hatched. Eggs were pale-yellow, 361.5 × 102μ in size. Duration of life in captivity was 3-7 days for ♀♀, 4 days at most for ♂♂.—*B. Van Rosen.*

10939. **FLETCHER, T. BAINBRIGGE, and S. K. SEN.** A veterinary entomology for India. XIII. *Jour. Central. Bur. Animal Husb. & Dairy. India* 4(4): 127-138. 5 pl. 1930.—A discussion of warble flies (Oestridae) of India. *Hypoderma lineata* (most common), *H. bovis* (chiefly attacking cattle), and *H. crossii* (chiefly attacking goats) are described. Warble flies are for the most part restricted to Western India, being absent in moister areas such as Madras, Assam, Burma, and Ceylon. The proportion of animals infested is 5-90%. Life histories, treatment of infested animals, and control measures, are quoted, chiefly from other sources.—*G. W. Rawson.*

10940. **HANCOCK, G. L. R.** Some records of Uganda mosquitoes and the ecological associations of their larvae. *Bull. Soc. Roy. Ent. Egypt* 14(1): 38-56. 5 pl. 1930.—Uganda is favourably situated for the study of the biology of inland waters, temperatures varying from that of thermal springs to glaciers; both fresh and salt water lakes occur. The almost complete absence of Anopheline larvae from waters covered with an oily scum is confirmed, they are rarely found in natural swamps when the concentration of ferric iron exceeds 10 parts Fe''' per million. Preliminary confirmatory experiments were inconclusive. The range of pH within which Anopheline larvae occurred was between 5.6 and 7.1. The pH range of the waters containing high concentrations of iron was 6-6.9. A few predaceous enemies of mosquito larvae are recorded including fishes *Barbus* sp. and *Haplochilus* sp., a species of *Haplochromis* is of doubtful value. The mosquito fauna of artificial containers is dominated by *Aedes argenteus*, the occurrence of Anophelines in such situations being negligible. Tree-hole forms have been inadequately studied; rock pool records include *Anopheles gambiae, Aedes vittatus* and *Aedes nigeriensis*. Swamps, ditches and water-holes (including pits dug for clay) are the main breeding places of Anopheline larvae. A richer fauna of such swamp species as *Anopheles mauritianus* is indicated when the microflora is rich. A few examples of typical swamps are given with genera of Algae found. A summary of the breeding places of Anopheline larvae indicates abundance of *A. gambiae* in exposed pools, being replaced as density of shade increases by *A. funestus* and *A. mauritianus*. *A. implexus* is recorded only from dense shade such as under clumps of palm trees. 16 spp. of Culicines are listed from swamps, ditches and water-holes. The mosquitoes noted in dwellings were *Anopheles gambiae, A. funestus, A. transvaalensis, A. marshalli* and *A. theileri*. A doubtful record of *A. implexus* is included. *A. mauritianus* is noted from a tent but without evidence of having fed. Culicines recorded from dwellings are *Aedes argenteus, Taeniorhynchus fuscopennatus, Culex fatigans, C. univittatus* and *C. horridus*. A high malarial infection rate of *A. gambiae* (*costalis*) and *A. funestus* is indicated and *A. theileri* has been found infected. 12 spp. of *Anopheles* and 76 spp. of Culicines are listed in an appendix. Photographs are included of typical breeding places.—*G. L. R. Hancock.*

10941. **LA FACE, LIDIA.** Sulla resistenza delle larve degli anofelini alla salinità. [Resistance of anopheline larva to salinity.] *Riv. Malariologia* 7(1): 18-30. 1928.—Laboratory experiments have shown that *Anopheles elutus* tolerates a greater concentration of NaCl than *A. maculipennis*. The resistance of *A. superpictus* to the salt content is intermediate. The gradual adaptation to an increase of the salt concentration differs according to each species.—*Author's abstract.*

10942. **ROUBAUD, E.** Cycle autogène d'attente et générations hivernales suractives inapparentes chez le Moustique commun, Culex pipiens. *Compt. Rend. Acad. Sci. Paris* 188(10): 735-738. 1929.—In France, *C. pipiens* dies at the approach of winter, except for fertilized ♀♀ of the autumn brood which have not begun ovipositing. These hibernate during the cold weather, but are unable to deposit their eggs until they have fed on blood. Recent observations show that there may be exceptions to the foregoing rule. In a Parisian cellar warmed all winter to above 20° C. and containing open water, a continuous succession of generations of mosquitoes was observed from November to February, the ♀♀ not having

had access to blood or any substitute organic fluid.—*M. K. Chapin.*

10943. **ROUBAUD, E. Nouvelle contribution à l'étude du Zootropisme anophélien (Anopheles maculipennis).** *Bull. Soc. Path. Exotique* 24(3): 229-246. 7 fig. 1931.—Roubaud here elaborates his view that the races of *A. maculipennis* which attack man are the poorly armed strains which tend to become eliminated because less abundantly nourished and therefore less fecund.

10944. **ROUBAUD, E., et H. GASCHEN. Sur l'adaptation zoophile de l'Anopheles maculipennis. (Rapports entre la différenciation maxillaire et la fécondité.)** *Bull. Soc. Path. Exotique* 24(3): 203-209. 1 fig. 1931.—Comparing ♀ *A. maculipennis* from Morocco captured in dwellings (strains living on any animal, including man), mosquitoes from Jugoslavia (strains with a similar undifferentiated diet) and mosquitoes from La Vendée, southern France, and Marmorta, northern Italy (strains which feed on domestic animals alone), the authors found that the dietary change involved, when man ceased to serve as a host, had been accompanied by an increase in the maxillary dentition of the ♀ mosquitoes, and also by an increase in the number of eggs laid, the more abundant food supply permitting a greater fecundity. The indirect advantage to the human race is the result of a more direct advantage to the mosquito.

ECONOMIC ENTOMOLOGY

BIOLOGICAL CONTROL

H. S. SMITH, *Editor*

(See also in this issue Entries 9196, 10884, 10917, 10927, 10928, 10933, 11737)

10945. **BALACHOWSKY, A. Observations biologiques sur les parasites des Coccides du Nord-Africain.** *Ann. Epiphyties* 14(4): 280-312. 18 fig. 1928.—A discussion of the distribution, prey (or hosts), and effectiveness in control of numerous coccidophagous insects (mostly Coleoptera and Hymenoptera, with mention of a few Diptera, Lepidoptera, and Neuroptera).

10946. **BRIAND, L. J. Notes on Chrysopa oculata Say and its relation to the Oriental peach moth (Laspeyresia molesta Busck.) infestation in 1930.** *Canadian Ent.* 63(6): 123-126. 1931.—The larvae of *C. oculata* and *C. albicornis*, due to scarcity of aphids in the Niagara peninsula in 1930, began to attack the eggs and larvae of *Laspeyresia molesta*, and were of great importance. The egg stage lasts 4-11 days, larval stage 14-28 days, and pupal stage 8-22 days. Two larvae, fed exclusively on eggs, consumed 613 and 620 eggs each. At the peak of the 2nd moth generation, various counts showed 50-60% of the moth eggs sucked by chrysopid larvae. The larvae destroyed a considerable number of eggs parasitized by *Trichogramma minutum*, but, on the other hand, this parasite destroyed many chrysopid eggs.

10947. **GRAHAM, A. R. The present status of the Larch sawfly (Lygaeonematus erichsonii Hartig) in Canada, with special reference to its specific parasite, Mesoleius tenthredinis Morley.** *Canadian Ent.* 63(5): 99-102. 1931.—In 1912 introductions of *M. tenthredinis* were made from England to Manitoba, and in 1916 to Quebec and Ontario. At Treesbank, Manitoba, parasitism in 1916 was 19%, in 1917 22%, in 1919 40%, in 1920 66%, in 1927 88%. Parasites have been recovered at points 200 miles from the point of release. The infestation in centers of parasite release have been greatly reduced. Parasitization under laboratory conditions is reported.

10948. **HOWARD, L. O. Aphelinus mali and its travels.** *Ann. Ent. Soc. Amer.* 22(3): 341-368. 1929.—A compilation of the known data concerning this North American chalcidid parasite of the woolly aphis (*Eriosoma lanigerum*), especially as regards its introduction into various parts of the world. The details of the various introductions, including some personal experiences and the substance of the author's correspondence, are given. The parasite is well established in Argentina (introduced 1921, from Uruguay), Chile (intr. 1922, from Uruguay), France (intr. 1920, from U. S. A.), Holland (intr. 1924, from France), Italy (intr. 1921, from France and Uruguay), and New Zealand (intr. 1921, from U. S. A.). It is perfectly established in Uruguay (intr. 1920, from U. S. A.). It is doing some good work in Australia (intr. 1922-1923, from New Zealand), South Africa (intr. 1920, from U. S. A.), and Spain (intr. 1926, from Italy and Uruguay). In England, conditions have proved unfavorable for it (intr. 1923, from France). Failure apparently has resulted also in Japan (intr. 1926, from U. S. A.). Introduction has been indifferently successful in Germany (1923, from Uruguay). Information from the following countries is insufficient or lacking: Austria, Belgium, Poland (intr. 1928, from England), and Switzerland (intr. 1923, from Germany).—*M. W. Boesel.*

10949. **IMMS, A. D. Observations on some parasites of Oscinella frit Linn. Part 1.** *Parasitology* 22(1): 11-36. 14 fig. 1930.—The stem of infestation of *O. frit* in England is attacked by at least 2 spp. of hymenopterous parasites of considerable importance, *Halticoptera fuscicornis* Walk. (Chalcidoidea) and *Rhoptromeris eucera* Htg. (Cynipoidea). It is also parasitised to a much lesser degree by *Loxotropa tritoma* Thoms. (Proctotrypoidea). These 3 spp. are described and figured in detail. They have been reared by the writer from host puparia obtained in the Harpenden district; they have also been reared in the Leeds and Oxford districts by others. They attack the host in the larval stage of the latter and emerge from the puparia. All 3 spp. are characteristic parasites of cyclorrhaphous Diptera. In the Harpenden district a parasitism of 27% was observed in 1926 and of 37% in 1927, *R. eucera* being the dominant parasite. Evidence is brought forward which appears to indicate that the parasites, collectively, become more abundant as the season advances, with the result that *O. frit* affecting late sown oats suffers markedly heavier parasitisation than when it attacks oats sown earlier. The time of maximum emergence of *O. frit* in out-of-door rearing cages during the years 1926 and 1927 coincided very closely with its period of greatest abundance in the field, as recorded by Cunliffe.—*A. D. Imms.*

10950. **JAMES, H. C. Methods for the biological control of the common coffee mealybug.** *Kenya Colony & Protect. Dept. Agric. Bull.* 1930: (1-16). 6 fig. 1930.—Four practical methods to be used by the coffee planter are described: The trees may be banded with kresotow to bar the ants, thus favoring the enemies of the mealybug; large numbers of the coccinellid, *Chilocorus angolensis** Crotch may be collected by boys and stored in preparation for the chief mealybug crises which usually occur at the principal flowerings. (The caged beetles live on a mixture of: hen's egg, 2 parts by weight; butter, 2 parts; and honey, 1 part.) Because an infestation of mealybugs is generally patchy, some beetles may be transferred to the infested parts from areas already clean or becoming so; and quantities of *C. angolensis* may be bred to prevent the extension of small outbreaks of mealybug. The breeding process consists essentially of infesting potato sprouts with mealybug and allowing the ladybird to feed and breed on them in suitable cages. Full directions are given for constructing the equipment and for breeding and subsequent liberation of the predator. The method is similar to that evolved in California for producing

Cryptolaemus montrouzeri Muls. Research into the adaptation of this method to other ladybeetles is in progress.—*W. V. Balduf.*

10951. **TAYLOR, RAYMOND L. The biology of the white pine weevil, Pissodes strobi (Peck), and a study of its insect parasites from an economic viewpoint.** *Entomologica Americana* [*Brooklyn*] 9(4): 167-246. 1 folding insert. 1929; 10(1): 1-86. 10 pl. 1929(1930).—In part A, the host, the author presents an historical summary of previous work on the bionomics and control of *P. strobi*. The reported size of the egg is corrected. The position of the food supply, not positive geotropism, is, apparently, the primary reason for the downward mining of the leaders by the larvae. Some data on the rate of mining are given. It is estimated that 80-90% of the young larvae die from starvation. The optimum time for parasitism is discussed, and evidence is presented that the weevil may fly or be wind-blown long distances. From dissection of 3009 leaders (mostly from eastern Massachusetts) it was found that the average number of mature weevil larvae per leader was about 12, of which about half emerge successfully, the remainder being destroyed by parasites and predators, and by mechanical injuries. Part B, the insect parasites, dealing with the result of the 1926-1929 investigations chiefly with material from eastern Massachusetts, is divided into 3 parts: (1) breeding methods, apparatus, and data secured; (2) biologies of each parasite sp., with a brief account of predators (clerids and the lepidopteron, *Dioryctria* n. sp.), and of nematodes found under the elytra of *Pissodes* and in the frass of weeviled leaders. In this section, for each of the primary or secondary parasites of *P. strobi*, data are given under the subheadings, introduction, synonymy, history, distribution, description (of all stages obtained), life cycle, habits, and effectiveness. The primary parasites obtained, in order of importance and with the approximate % of mature weevil larvae attributed to them, were: *Eurytoma pissodis* Gir., 5.9%, *Lonchaea corticis* Taylor, a facultatively parasitic dipteron, 5.4%, *Microbracon pini* Mues., 2.7%, *Eupelmus pini* Taylor, .9%, *Rhopalicus pulchripennis* (Cwfd.), .7%, *Cocloides pissodis* (Ashm.), .3%, *Calliephialtes nubilipennis* (Vier.), and *Spathius* sp. Secondary parasites obtained were: *Pleurotropis* n. sp. and *Eucoila* sp. (on *Lonchaea corticis*), and *Hemiteles humeralis* Prov. Based on emergence counts, these parasites, collectively, were credited with the destruction of about 16.4% of the mature weevil larvae. An annotated list of 26 spp. of parasites obtained from similar material (not necessarily parasites of *P. strobi*) by other investigators is given; an annotated list of 19 spp. of parasites bred incidental to the study, but probably not associated significantly with *P. strobi*, is also given. (3) A discussion of the feasibility of applied parasite control of *P. strobi*. Only *Eurytoma*, *Lonchaea*, and *Microbracon* were considered sufficiently effective to merit consideration in this respect. Their potentialities were "measured" with the aid of H. S. Smith's outline. It was concluded that, with present knowledge and conditions, control of this weevil by its native parasites is not feasible. Possibly parasites of certain other *Pissodes* spp. in the western U. S. A. and in Europe (a list of spp. from European *Pissodes* is given) might profitably be introduced. There is an extensive bibliography. —*R. L. Taylor.*

ECONOMIC ENTOMOLOGY

INSECTICIDES AND APPARATUS

C. H. RICHARDSON, *Editor*

(See also in this issue Entries 9358, 10788, 10896, 10899, 10902, 10917, 10920, 10921, 10922, 10924, 10932, 10950)

10952. **CHARLIERS, N. Dispositif pour l'obtention de jets insecticides finement divisés.** *Congr. Internat. Appareils Lutte Ennemis Cult. Tenu à Lyon Compt. Rend. Serv. Agric. Cie. P. L. M., Paris* 1929: 85-87. 1930. —The author describes a simple apparatus consisting of an ordinary household atomizer in which the piston has been removed and the body of the pump is connected to a steam valve giving about 28 lbs./sq. in. pressure. A finely divided warm mist (22-23°C.) is obtained which condenses on all parts of the plant even beyond the trajectory of the spray of the insecticide. This results in economy of the active product and offers possibilities to spray, in the cold, liquid insecticides which would lose their properties upon heating.—*N. Charliers* (*transl. by J. M. Ginsburg*).

10953. **DARRAGH, W. H. Fumigation of seed maize.** *Agric. Gaz. N. S. Wales* 42(5): 377-378. 1931.—Samples of seed maize were fumigated with CS_2 at different temps., and different rates for 24, 48, 72 and 96 hrs. Germination of the treated seed was compared with that of untreated seed. Practically no loss in germination occurred in the controls up to 96 hrs., even in the sample with the highest moisture content. However it is recommended that if maize containing a higher % of moisture must be fumigated, only the ordinary dosage of CS_2 (5 lb. per 1,000 cubic feet) should be employed for not more than 48 hrs., preferably on a cool day or over-night. Fumigation should be followed by thorough aeration of the seed.

10954. **JOHANSSON, EMIL. Försök med karbolineum- och oljeemulsioner vid vinterbesprutning.** [Tar-distillates and oil emulsions as winter washes.] *Sveriges Pomologiska Förenings Årsskr.* 31(4): 198-206. 1930. —The tar-distillates Carbosol, Monarch 30, and Mortegg used at the rate of 8%, had much the same effect as egg killing washes against insects, but they did not destroy the winter eggs of the Fruit Tree Red Spider (*Paratetranychus pilosus* (C. and C.) Volck. A commercial oil emulsion killed most of the eggs of this spider mite, but it is too expensive. Mineral oils, emulsified with cresol soap and used at 10%, were very effective against this mite. A combined spray containing 5% of a tar-distillate and 5% of a mineral oil was effective against insects and the mite as well. None of the washes used entirely prevented the hatching of the eggs of the mite. All the tar-distillates tried were effective at 5% against the Gooseberry Red Spider (*Bryobia ribis*, Th.).—*E. Johansson.*

10955. **MEIER, K. Arsen- und Bleirückstände auf Früchten von unbespritzten Obstbäumen. Ergebnisse der Versuche des Jahres 1930.** *Schweiz. Zeitschr. Obst.- u. Weinbau.* 40(5/6): 125-129. 1931.—The treatment of stone fruits with sprays containing Ca arsenate and Pb arsenate, mixed with 2.5% lime sulphur (the mixture of Ca arsenate amounting to 0.4%, that of Pb arsenate to 1.5-2%) showed that even when 3 applications of Ca arsenate were made after blossoming, the As residue was not high (0.17 mgm./kgm. fruit). The As residue from 2 applications of Ca arsenate made after blossoming was the same as that from one application of Pb arsenate, the Pb arsenate residue in this case being 0.45 mgm./kgm. fruit. Small fruits show the largest quantity of As residue. Ca arsenate acts more efficiently against mites on windfalls than does lead arsenate. Similar results were obtained with cherries. In dry and warm regions, Ca arsenate seems to cause more burning of the leaves than Pb arsenate. The causes of these phenomena are unknown.—*K. Meier.*

10956. **METCALF, C. L. Progress in spraying and dusting methods during the past seventy-five years.** *Trans. Illinois State Hort. Soc.* 64: 287-307. 1930(1931). —An address.

10957. **RICHARDSON, HENRY H. An insecticidal method for the estimation of kerosene extracts of pyrethrum.** *Crop Protection Digest* 32. 1-105. 1 pl., 2 graphs. 1931. also in *Jour. Econ. Ent.* 24(1): 97-105. 1931.—A method for evaluating pyrethrum extracts is described. Different strengths of pyrethrum extracts vary directly in the speed with which they paralyze house flies. (*Musca domestica* L.). A series of similarly performed tests indicated that the reproducibility of the results is great, especially the values for speed of paralytic action. The % mortalities produced by such a series extended over a wider range but statistical analysis indicated that this variation was well within the limits of errors due to random sampling. Typical paralytic curves are shown and the value of the 50% paralytic point (the time when 50% of the insects are paralyzed) for making comparisons is pointed out. For a series of various concentrations of pyrethrum extracts the differences in mortality were not very large. This criterion of toxicity can be used only for diagnosing differences between extracts which differ widely in concentration. Differences in speed of paralytic action between a ¾ pound and a 1 pound extract of a fairly powerful grade of pyrethrum powder (0.26% pyrethrum I) were easily distinguishable and were found to be clearly significant as indicated by statistical analysis. The differences in % mortality, analyzed similarly, were not significant.—*Author's summary.*

10958. **ROBERTS, O. C., and A. I. BOURNE. A test of certain spray materials.** *Mass. Fruit Growers' Assoc. Inc.* 37: 64-71. 1931.—There was not sufficient increase in the control of pests when Ca caseinate was added to the lime sulphur-lead arsenate mixture to warrant its use for that purpose alone; neither did it entirely prevent burn. Ca arsenate gave no better control of pests than Pb arsenate, and when combined with lime sulphur, is much more likely to burn the foliage. For this reason Ca arsenate is not recommended for general use on fruit trees unless aluminum sulphate is also added to the mixture in which case the efficiency of the combination may be materially reduced. CaS is an efficient fungicide and safe, but has a strong tendency to cause excessive wear on the machinery. Flotation S is efficient in the control of pests, does not cause injury to the foliage and its chief objection as a fungicide is the difficulty with which it goes into solution. It is at present one of the most promising substitutes for lime sulphur.—*Authors' summary.*

10959. **SCHMITT, N. Derris elliptica Benth., ein vegetabilischer und ungiftiger Insecticidlieferant. [D. elliptica, a vegetable and non-poisonous insecticide-yielding plant.]** *Angewandte Bot.* [*Berlin*] 12(6): 453-463. 5 fig. 1930.—The growing objection to the use of lead and potassium arsenates as insecticides has prompted a search for non-poisonous substitutes. Tropical arrow and fish poisons were suggested, and the root of *D. elliptica* was studied as a representative. The plant and root are described and methods are given for the use of the root against insect pests of animals and plants. It is concluded that such preparations are better than those of potassium arsenate or nicotine for similar purposes.—*R. D. Bienfang.*

10960. **THIEM, H., und L. KALANDADZE. Petroleum als Reblausbekämpfungsmittel. Zugleich ein Beitrag über das Ausbreitungsvermögen von Insektiziden.** *Zeitschr. Angewandte Ent.* 18(2): 319-343. 1931.—The action of petroleum on *Phylloxera* is independent of temp. and time. When wet with petroleum the insects and some of the eggs die only after some days. A portion of the eggs, petroleum wet, still remain capable of developing. Watering infected roots hinders the action of petroleum on the eggs. Insects from eggs treated with petroleum can develop on sound roots but not on roots sprinkled with petroleum. Because of the low surface tension of petroleum, it penetrates the ground well and thus moistens the roots. Petroleum has greater spreading power than other materials such as dendrin, florium, cuprex, and Turkey red oil. The spreading capacity of the emulsion depends on the kind and quantity of the insecticide as well as on its method of preparation. Petroleum emulsions, which have much less spreading capacity than undiluted petroleum, excel the carbolineum emulsions, dendrin and florium in this respect. The petroleum-soap-emulsions behave much more like undiluted dendrin.—*Authors' summary (transl.).*

ECONOMIC ENTOMOLOGY

APICULTURE

E. F. PHILLIPS, *Editor*

(See also in 6(3): Entries 6359, 6403, 6470, 6816, 7699; and in this issue 11026, 11591, 11729, 11730)

10961. **[ARENS, L. E.] АРЕНС, Л. Е. Очерк истории культуры медоносных растений на русской почве. [History of cultivation of nectar secreting plants on Russian soil.]** Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot., Gen. and Plant Breed.*) 22(5): 3-78. 1929/1930.

10962. **ARMBRUSTER, L., und G. OENIKE. Die Pollenformen als Mittel zur Honig-Herkunftsbestimmung.** 116p. 23 pl., 309 fig. Karl Wachholtz Verlag: Neumünster in Holstein, 1929.—An extended discussion of the morphological forms of pollens of spp. of plants from which honeybees sometimes collect either nectar or pollen, some of these spp. being important sources of nectar from which commercial honey crops are produced. The purpose of these descriptions and illustrations is to enable officials engaged in the control of foods to determine the floral source of honeys examined, and in some cases to determine indirectly the country of origin. The chief purpose is to determine whether such honeys are of German origin or have been imported, and 4 plates of foreign pollens are given. There is a partial review of previous literature in this field (p. 7-30). Observations are first listed under generic and specific names of plants, arranged alphabetically, with an illustration of the pollen of the species in each instance. Following this, the pollens are grouped as to families (43), the families being arranged alphabetically, and finally the pollens are arranged according to their morphology, to facilitate identification of pollens encountered in honeys. 306 spp. are included in the study, chiefly of German origin, although some foreign pollens are included. Since the forms of pollens vary according to the medium in which they are preserved, the medium used is indicated.—*E. F. Phillips.*

10963. **BALDENSPERGER, J. Bienenzucht und krankheiten im Orient und Nordafrika. [Apiculture and bee diseases in the Orient and North Africa.]** *Arch. Bienenkunde* 10(8): 293-300. 1929.

10964. **BELIAVSKY, A. G. Methods of shipment of bees and queens.** *Bee World* 12(5): 51-53. 3 fig. 1931.—Descriptions of several types of cages with recommendations for the comb or section cage so constructed as to permit the use of liquid feed. This provides a natural environment.

10965. **BERNARD, FR. Leçons élémentaires d'apiculture.** 286p. Maison de la Bonne Presse: Paris, [1930].

10966. **CALAMIDA, DANTE, ed EMILIO NAVONE. Apicoltura razionale. Guida pratica dell'apicoltore. (Nuova Enciclopedia Agraria Italiana parte 6a.)** 176p. 151 fig. Unione Tipografico-editrice Torinese: Torino, 1930.

10967. **CRÈVECOEUR, AD. À propos des ouvrières**

pondeuses dans les ruches d'abeilles. Remarques bibliographiques. [Bibliographical remarks on laying workers in bee-hives.] *Lambillionea* 30(2): 27-30. 1930.

10968. DANGEL, R. Couveuse électrique pour l'élevage des reines. [Electrical brooder for rearing queen-bees.] *France Apicole* 1931 (April): 75-76. 1 fig. 1931.—A temperature of 34° gave best results. The apparatus is described.

10969. DUNHAM, W. E. A study of hive temperatures in different areas by hourly readings. *Gleanings in Bee Culture* 59(6): 369-370. 1931.—The curve representing the hourly temperatures in the outer brood area shows that the temperatures most nearly approach those of the central brood area when the environmental temperatures to which the colony is subjected reach their highest level. The temperatures recorded hourly in the broodless area are the lowest of any region of the hive.

10970. ELSER, ERNST. Die chemische Zusammensetzung der Nahrungsstoffe der Biene. I. Der Pollen. II. Der Futtersaft der Königin. *Märkische Bienen-Zeit.* 18 (9): 208-221. 8 fig. 1928; 19(9): 210-215; (10): 232-235; (11): 248-252. 7 fig. 1929.—I. Microchemical studies of pollen indicated the following components: Water, fat, protein, invert sugar, cane sugar and dextrin. The studies were carried out on the pollen of *Picea excelsa, Campanula medium,* grass, *Taraxacum officinale, Aesculus hippocastanum, Anthriscus vulgaris,* and *Pinus silvestris,* the pollen being taken partly from the plant and partly from the pollen baskets of the bee.—II. The larval food of queens from 5 hives was examined daily during the period of larval growth. Data taken included the weight of the larva, the weight of the larval food, water, dry matter, fat, protein, invert sugar, cane sugar, pH and pollen. Microchemical analyses verified Langer's discovery that the larval food is a true glandular product.—*E. Elser.*

10971. ELSER, E. Die chemische Zusammensetzung der Nahrungsstoffe der Biene. [Continued.] *Deutsche Biene* 12(1): 5-13. 7 fig. 1930.—See preceding abstract.

10972. GÖTZE, G. Variabilitäts- und Züchtungsstudien an der Honigbiene mit besonderer Berücksichtigung der Langrüsseligkeit. *Arch. Bienenkunde* 11(5/6): 185-279. 4 pl., 11 fig. 1930.—I. Exact measurements were made to determine theoretical types as a basis for breeding races of bees. Measurements were made chiefly upon: head breadth, thorax breadth, wing-length and venation, breadth of the metatarsi and hairiness. The east Asiatic and African bees are broad-headed (type megacephala), the central European bees have relatively small heads compared to the thorax. The Egyptian and Syrian bees occupy an intermediate position. II. As in Russia, the bees in northern central Europe average larger and are shorter tongued than those in the south, but the regularity is often disturbed by importations. In determining the proboscis length, only the 2nd segment of the labial palpus was measured and the total length of the proboscis was computed from it. A peculiar correlation between proboscis length and certain indices in the wing-veins (positions where the discoidal cross-veins join the 3 cubital cells) serves for the selection of the fully sexed bees for breeding, in which measurement of the proboscis length is not feasible. This striking correlation appears to prevail throughout central Europe. III. Breeding experiments with long-tongued forms from lower Austria showed that the long-tonguedness is retained also in Landsburg/Warthe. For carrying on experiments in crossing a mating-station was situated where there were no bees for 4.5 km. around. The isolation of long-tongued lines through selection and inbreeding from native material was unsuccessful. Crossing a long-tongued selected queen with a short-tongued selected drone in the F_1 generation yielded short-tongued worker offspring. In the F_2 (inbred) generation, besides short-tongued and long-tongued forms, intermediate forms also appeared. Consequently the tongue length behaves entirely as a genotypic character. Whether it thereby behaves only as an after effect which gradually diminishes and finally wholly disappears, as has occasionally been surmised, could not be determined in these limited investigations. Even the longest tongued bees hitherto known are not fully adapted to red clover. With each elongation of the proboscis red clover increases in usefulness, and of course is raised in increasing amounts. However, for attaining this objective, plant-breeding and bee-breeding must work together. Breeding forms of red clover now on hand, as the Danish "bee-clover," are workable theoretically by the longest tongued bees known, in excess of 50% efficiency.—*G. Götze (transl. by G. E. King).*

10973. HARRIS, W. V. A short note on the races of honey bees in Tanganyika territory. *Bee World* 12 (8): 90-91. 1931.—The author lists 3 races, *Apis mellifica unicolor, A. m. intermissa,* and *A. m. adansoni,* the last mentioned being the most common and abundant.

10974. KELLOGG, CLAUDE R., and TANG CHUNG CHANG. The Chinese honey bee (Apis indica). *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 1: 59-62. 1928.—*Apis indica* is described, with notes on its varieties, enemies, and folk-lore.

10975. KRAMER, U. Die Rassenzucht der Schweizer Imker. 7th ed. 208p. Portrait. 74 fig. H. R. Sauerländer & Co.: Aarau, 1930.—The edition is revised by the officers of the Verein Deutsch-Schweizerischer Bienenfreunde, after the well known book of Kramer. The purpose is to instruct beekeepers in methods of queen-rearing and to encourage them to improve their stock through the queen mating stations fostered by the Verein. The first part of the book deals with the theoretical considerations of breeding, the second with practical methods.—*E. F. Phillips.*

10976. LABAND, L., W. BARTELS, und A. FAUTH. Beitrag zur Beurteilung von Honig. I. *Zeitschr. Untersuch. Lebensmittel* 61(1): 56-69. 1931.—The diastase-number (Göthe) was retested and found useful for both the inspection and judging of honey. The diastase-numbers in domestic and foreign honeys were determined. On the basis of the results of the investigation the diastase-number 8.3, corresponding to an enzyme strength of 17%, was proposed as the lower limiting-number. With the cherry-red color appearing in the Fiehe reaction, standard colors cannot always be used as proof of the presence of manufactured invert-sugar, because the same colorations are also observable in highly heated unadulterated honeys.—*Authors' summary (transl. by G. E. King).*

10977. LAWSON, J. A. Diagrams by AUDREY LAWSON. Honeycraft in theory and practice. 22Sp. 19 pl. and numerous fig. Chapman and Hall, Ltd.: London, 1931. Price, 6 s.—A brief guide book, especially adapted to British conditions. The hive recommended is that devised by Stoney-Archer, in preference to the standard British hive, the W. B. C. Adequate explanations are given as a basis for the rules laid down for the beekeeper. Many American practices are endorsed.—*E. F. Phillips.*

10979. LEUENBERGER, FRITZ. Die Biene; gemeinverständliche Darstellungen über den Körperbau und das Leben der Honigbiene. [Comprehensive data on the body structure and life of the honeybee.] 2nd enlarged ed. 190p. 126 fig. H. R. Sauerländer & Co.: Aarau, 1929.

10980. MILUM, V. G. Brood rearing temperature and variations in developmental periods of the honeybee. *Ann. Rept. Illinois State Beekeepers' Assoc.* 29: 72-95. 3 fig. 1929 (1930).—The literature is reviewed, and observations published earlier (See B. A. 5(5): entry 14989) are presented, with additional observations on stimulation of brood-rearing. In colonies wintered outdoors, brood-rearing is usually stimulated by the activity of a flight period when brood nest temp. increases to 91-92° F., after a mid-winter quiescent period of no brood-rearing, but continuation depends on the ability of the colony to secure necessary supplies of nectar, pollen and water. Lower temps. in the brood nest, even 85°, were not uncommon in the early spring, although 90°-95° was the general rule, with the bees tending to hang outside at temps. above 95°.—*V. G. Milum.*

10981. NESCHUMOFF, W. Bienenzucht und Bienenzucht-Kooperation in der Union der sozialistischen Sowjet-Republiken. [Apiculture and apicultural cooperation in the U. S. S. R.] *Arch. Bienenkunde* 10(8): 278-292. 1929.

10982. NIETHAMMER, ANNELISE. Die mikroskopische Pollenanalyse böhmischer Honigsorten. [Microscopical pollen analysis of Bohemian honeys.] *Zeitschr. Untersuch. Lebensmittel* 61(1): 105-107. 1931.

10983. PELLETT, FRANK C. American honey plants. 3rd ed. 419p. 205 fig. American Bee Journal: Hamilton, Illinois, 1930. Pr. $3.—In the 3rd, as in the previous editions, the honey plants of No. America including those valuable to the beekeeper for pollen are arranged in alphabetical order under their vernacular or English names, the scientific names being given in cross references. Numerous related subjects, as nectar secretion, poisonous honey, honeydew, propolis, weather and honey production, and descriptions of the honey floras of the different states are also included in proper alphabetical order. In the case of the comparatively few plant species on which commercial beekeeping is dependent, extended descriptions are given of their distribution, time of blooming, nectar secretion, quality of the honey, and the conditions of soil and climate, under which nectar is secreted most freely. But many plants, which are of minor importance as sources of honey and pollen, but are helpful in stimulating broodrearing and in the support of the colony after the main honey-flow is over, are brought to the attention of beekeepers. Much new material has been added to this edition concerning honey plants previously described, and many new plants are discussed for the first time. The honey flora of the southwestern United States has received special attention. Most of the photographs are by the author, but a number have been taken from articles which have appeared in the American Bee Journal.—*J. H. Lovell.*

10984. PHILLIPS, E. F. Bees for the orchard. *Jour. Econ. Ent.* 23(1): 218-223. 1930.—The rapidly increasing demand for honeybees as supplementary pollenizing agents in orchards intensifies certain beekeeping problems. The more important are: Danger to bees from insecticidal dusts; the necessity of having strong colonies early in the spring; and the spreading of American foul-brood by possible movement of infected colonies by the careless or uninformed. Criteria for the evaluation of the rental value (for pollination) are discussed with a suggested value of $10 placed upon a colony containing 10 frames of brood (not eggs). Possible ways of using package bees for pollination are outlined.—*R. Hutson.*

10985. SOUDEK, ŠTĚPÁN. Hltanové zlázy vcely medonosné. (Apis mellifica.) [The pharyngeal glands of the honeybee.] [With English summary.] *Bull. École. Sup. Agron. Brno* 1927(C-10): 1-63. 3 pl., 15 fig. 1927.—A detailed cytological study of the pharyngeal glands*, tracing their histological development. These glands consist of 2 ducts to which many round compact bodies are closely attached. They lie in the head rolled up around the optical lobes of the brain. In young bees they are empty and small, but develop with feeding. Pollen-substitutes failed to cause proper development. The writer believes that the brood-food is prepared in these glands.

10986. STABE, HENRY A. The rate of growth of worker, drone and queen larvae of the honeybee, Apis mellifera Linn. *Jour. Econ. Ent.* 23(2): 447-453. 1930.—The maximum weight of worker larvae is attained between 114 and 122 hrs.; of queen larvae between 122 and 134 hrs., and of drone larvae between 164 and 184 hrs. The rate of growth of worker larvae varies greatly during a given instar, being greatly reduced just previous to, during, and after a moult. The rate of growth of worker and queen larvae is nearly identical during the first 48 hrs.—*F. B. Paddock.*

10987. TODD, FRANK E. California contra foulbrood. *Rept. Iowa State Hort. Soc.* 65: 407-410. 1930[1931].—The burning method was adapted to eradicate this disease from the State.

ANIMAL PRODUCTION

G. BOHSTEDT, *Editor,* General

M. A. JULL, *Associate Editor,* Poultry

(See also in this issue Entries 9464, 9551, 9689, 9695, 9708, 9719, 9725, 9741, 9965, 10472, 10487, 10562, 10565, 10833)

GENERAL

10988. BRÖDERMANN, E. A., und G. FREYER. Der Werdegang des deutschen weissen Edelschweines, seine Züchtung, Beurteilung und Verbreitung. Heft. 373. 88p. 51 fig. Deutsche Landwirtschafts-Ges.: Berlin, 1930.—The origin and development of the German Edelschwein, or white hog, is traced by periods since 1887 when the classifications used at swine shows of the German Agric. Society began to require increasingly purer breeding, resulting in a more uniformly superior type of hog exemplified by the present day Edelschwein. Show classes for individuals and groups are given for the successive yrs.; also a list of Edelschwein breeding associations in Germany that have fostered the improvement of this breed. Criteria for a utility type of hog are that it yield: (1) pig roasts of a high quality, (2) fresh smoked meat, sausage, and fresh meat for city demand, where pigs weigh from 90-110 kgm., (3) superior cuts of cured meat. These demands are held to be more easily satisfied by a medium large white Edelschwein than a larger heavier one, that would with difficulty combine size with a skeleton meeting these requirements of quality. The points of a hog, fancy, utility, body proportions, are described toward which the breeding program is directed. Extended pedigrees are given of noteworthy members of this breed of hogs. During the yrs. 1928 and 1929 boars and sows that were entered in the German Agricultural Society expositions had measurements taken of 8 body dimensions in addition to weight, which data have been tabulated.—*G. Bohstedt.*

10989. BÜNGER, H. Fütterungsversuche mit rohen Kartoffeln an Milchkühen. [With English summary.] *Tierernährung* 2(6): 467-481. 1931.—Fresh, uncut potatoes were readily eaten, with no ill effects on digestion and condition. The diminished volume of feed caused by substitution of 25 kgm. potatoes for 40 kgm. of beet-roots necessitated 1-2 kgm. of straw as a supplement. There were no differences in the palatability of the 2 varieties of potatoes used. When substituting 15 kgm. potatoes for 40 kgm. of beet-roots, milk-yield diminished a little (2.5% with the variety "Preussen," 5.2% with the variety "Pepo"). Milk fat decreased a little on feeding potatoes. The further diminution of milk fat after the feeding of potatoes was discontinued is supposed to be an unfavorable after-effect of feeding potatoes, but this cannot be positively affirmed. The effect of the 2 varieties of potatoes on the quantity of milk fat was the same. Feeding of potatoes had no more unfavorable effect on the condition of the cows than the feeding of beets. With regard to gains of weight, the variety "Preussen" seems to be a little superior to the variety "Pepo."

10990. ECKLES, CLARENCE HENRY, WILLES BARNES COMBS, and HAROLD MACY. Milk and milk products, prepared for the use of agricultural college students. 379p. 92 fig. McGraw-Hill Book Co., Inc.: New York, 1929. Pr. $3.50.—Although primarily a text

book for an introductory course in dairying such as is generally given to students during the 1st or 2nd yr., this book is sufficiently complete to give rather comprehensive and useful information about milk and milk products to readers who are not specializing in dairying. The authors discuss in detail the constituents of milk, its properties and the factors influencing the composition of milk. Considerable attention is given to bacterial development and its relation to milk. Discussions of the common dairy processes, cream separation, pasteurization and homogenization are included in one chapter. Separate chapters deal with such topics as market milk, butter, cheese, ice cream, condensed milk, dry milk and milk by-products. The application of simple mathematics to practical problems is shown by typical cases which arise in practical dairy operations. Specific directions for making the various tests of milk, cream and other dairy products are included. In addition to its use as a text the book should be valuable for reference purposes as well as a source of general information for anyone not engaged in the dairy industry who is interested in milk and the food products made from it.—*A. H. Kuhlman.*

10991. EDIN, H. Itaminfodrets smältbarhet och fodervärde vid användning till kalvar. [Digestibility and feeding value of "Itamin-feed" for calves.] [German summary.] *Kungl. Landtbruks-Akad. Handl. och Tidskr.* [*Stockholm*] 68(2): 164-183. 1929.—Tests are reported of "vitamin feed," a fat emulsion intended to be added to skimmed milk, as a substitute for butter fat in calf rearing. Experiments on digestibility were carried out according to the author's qualitative methods which are described in detail in report No. 309, of the Zentralanstalt. The preparation, of which the fat is said to consist of 90 parts soy-bean oil and 10 parts cod liver oil, showed the following average percentage composition: dry matter 97.1%, crude protein 10.1%, crude fat 68.1%, carbohydrate 16.0%, and ash 2.8%. The Itamin-feed was mixed with skimmed milk and water, 40-50 gm. of Itamin-feed and 820 gm. of skimmed milk included in each kgm. of artificial milk. When the daily feeding of this mixture was increased so that it could replace a still larger quantity of whole milk, digestive disturbances occurred when the quantity of Itamin-feed exceeded 300-350 gm. per 100 kgm. of live weight of the calves. The digestibility of the fat was slightly less than that of whole milk, being about 92-95% compared with 98.6-99.8% for the whole milk. In the present form therefore, the Itamin-feed is not a complete substitute for butterfat.—*Author's summary (transl. by J. L. Lush).*

10992. MARQUARDT, J. C., and A. C. DAHLBERG. The volume of the cream layers forming on Holstein and Jersey milk. *Jour. Dairy Sci.* 11(5): 409-419. 1928.—The comparative creaming properties of milk may vary according to the procedure followed in making the tests. For greatest uniformity and the exclusion of unknown factors the milk was set for creaming within a few min. after milking in ice water at 2.8°-4.4°C. The cream layers of different samples showed variations in the cream layer volume and the distinctness of the cream line after 2 or 4 hrs. which were less pronounced after 24 hrs. The mean depth of the cream layers forming on normal milk from Holstein and Jersey cows was directly proportional to the percentages of fat which they contained. The percentage which the cream layer represented of the total volume of milk was about 4.1 times the percentage of fat. The variations in the cream layer volumes forming on individual samples of Jersey milk were greater than those for Holstein milk. The difference was especially noticeable after 2 and 4 hrs. of creaming. The milk from an individual cow did not possess uniform creaming properties from milking to milking although there was a tendency for the milk from certain cows to give either large or small cream layer volumes or a high percentage of no layer cases. The cream layer volumes on the samples of milk used in these tests were not affected by the season of the yr. in which the milk was produced. The milk from Holstein cows remained most uniform throughout the yr. Variations in specific gravity of milk were not related to changes in creaming properties.—*Authors' summary.*

10993. ROADHOUSE, C. L., and G. A. KOESTLER. Contribution to the knowledge of the taste of milk. *Jour. Dairy Sci.* 12(6): 421-437. 1929.—The taste of milk, as this word is commonly used, is the sensation perceived when milk is taken into the mouth. The term "flavor," as used here, is a combination of the sensations of taste, perceived in the mouth, with those of smell, produced through the medium of the inner nasal passages. It has aided in precision to confine the term "taste" to those sensations which are perceived only in the mouth. The primary taste of milk has been designated as the sum of all of the taste impressions coming from normal milk, and not influenced by feed or the secretion of abnormal milk. The secondary taste includes that which is added to the primary taste from different sources, such as feed and products of disease. It is necessary to eliminate these secondary influences in order that primary tastes can be properly determined. The chloride-lactose relation is one of the most important bases of milk taste. Milk samples with a high chloride-lactose ratio were judged less favorably than those of like origin where the chloride-lactose ratio was low. The primary taste of skim milk is practically equal to that of the whole milk from which it is separated. By dialysis, it was possible to separate the milk into 2 parts (dialyzate and residue) with extreme differences in taste. Nearly all of the milk components producing the primary taste were present in the dialyzate, while the components remaining in the residue could be designated as free from taste. Dialysis shows, further, that fat and protein substances, as well as certain difficultly dialyzable salt components, which go to make up a large percentage of the milk content, take only a subordinate part in the primary taste of the milk. The dialysis of milk containing a pronounced feed taste showed that the feed taste was found very largely in the residue, and appeared to be either not dialyzable or combined with milk fat or with other non-dialyzable materials.—*Authors' summary.*

10994. WATSON, S. J. Investigations into the intensive system of grassland management. By the Agricultural Research Staff of Imperial Chemical Industries, Limited. IV. The digestibility and feeding value of artificially dried grass. V. The digestibility and feeding value of grass silage made in a tower, and the digestibility and comparative yield of artificially dried grass obtained from the same source. VI. The digestibility and feeding value of grass silage made in a stack. VII. The digestibility and feeding value of grass silage made in a pit. *Jour. Agric. Sci.* 21(3): 414-424; 425-441; 452-457; 469-475. 1931.—IV. Trials with sheep on a sample of dried grass and a grass meal, both artificially dried on an experimental band drier, showed that the digestibility of the 2 samples is high. The sheep gained weight during both trials and there was a retention of N and mineral matter. The dried grass apparently contains adequate available Ca, P and K for the plane of nutrition at which it was fed. The high digestible crude protein content and narrow nutritive ratio of the dried grass and grass meal prove the material to be superior to excellent hay despite the fact that both samples had a lower crude protein content than would normally be obtained under conditions of intensive treatment. A feeding trial with dairy cows in which most of the production ration was replaced by the dried grass showed that artificially dried grass was readily eaten and produced the quantity of milk for which the nutrients it supplied were theoretically capable.—V. Experiments showed that it is possible to make ensilage of high digestibility from grass in a tower silo. The loss by drainage is negligible and the losses due to fermentation are not high. All silage except the uppermost protective layer was eaten readily. The milk yield is not affected when the silage replaces the whole of the hay in the maintenance ration.

The artificial drying of grass results in the production of a material of high digestibility. The artificially dried grass from 1000 lbs. of fresh grass contains somewhat more starch equivalent and digestible crude protein, and considerably more digestible true protein, than the silage from the same amount of fresh grass.—VI. It is concluded from a trial that the making of stack silage is useful in conserving surplus grass, particularly of the aftermath type, when good haymaking weather may not obtain. Though no actual feeding trials were carried out with the silage, it was fed to stock with satisfactory results and formed a large proportion of their winter ration.—VII. Silage was made satisfactorily in a pit from grass cut at the flowering stage when it was impossible to make hay. The digestibilities of all the constituents compare favorably with meadow hay with the exception of the protein, which shows a depression. The silage is richer in starch equivalent than meadow hay if compared on a dry matter basis, and equal in digestible protein content to poor meadow hay though not to good meadow hay. It is therefore better to make grass silage when weather conditions are bad rather than attempt to make hay which, under such conditions, would be of poor quality. The silage was used within 4 weeks of being made and was eaten readily by dairy cows on grass.—*From author's summaries.*

10995. **WOOD, T. B., and L. F. NEWMAN. Beef production in Great Britain.** 67p. 1 pl., 13 fig. R. Silcock & Sons, Ltd.: Liverpool, 1928.—The beef cattle situation of Great Britain is discussed in a concise manner. Statistics of, and general system of beef production on, pasture and in dry lot, are given. For indoor feeding, home-grown roughages and roots are made use of extensively, together with the minimum of required protein concentrates. The margin of profit from beef production is frequently narrow, but other considerations, especially the production of manure, warrant a continuation of beef production on many farms. Possible increases in returns are pointed out by improvement in quality, by organization in the matter of store or feeder cattle movements, by baby beef production and intensive grassland culture. Baby beef production is limited through the fact that it requires about twice as much expensive concentrated feed for each pound of beef produced, as compared with 3-year-old beef which utilizes pasture to better advantage. Cambridge investigations extending over 3 yrs. are reported presenting data of standard cuts from beef cattle of known age and feeding. Each of 14 cuts was weighed and dissected into lean, fat, bone and waste. Each item was analyzed with respect to protein, fat and water after having been reduced to pulp in a rotary cutting machine. A detailed account is given of the methods used. The results obtained are presented in tables of composition of carcasses and cuts from animals of different types.—*G. Bohstedt.*

10996. **WOODMAN, H. E., A. W. MENZIES KITCHIN, and R. E. EVANS. The value of tapioca flour and sago pith meal in the nutrition of swine.** *Jour. Agric. Sci.* 21(3): 526-546. 1931.—Feeding trials (the ration of the bacon pigs from 140 lb. liveweight to slaughter included 40% of tapioca flour) confirmed earlier conclusions that tapioca flour exerts a favorable influence on the color and texture of the carcass fat and on the quality of the bacon. Sago pith meal may be introduced into the rations of bacon pigs, as a substitute for barley meal, up to 20% of the ration without depressing the rate of gain of live-weight. If the replacement is increased to 40% of the ration, the effect of sago pith meal is distinctly less than that of barley meal. Digestion trials suggest that the apparent lowering of the efficiency of sago pith meal as the amount in the ration is increased beyond 20% is due to a depressing influence which it exerts on the digestibility of the other foods in the diet, particularly the protein. Sago pith meal appears to contain no digestible protein; plus a small allowance of bran it has been found an efficient substitute for middlings for bacon pigs of more than 100 lb. live-weight, provided the sago pith meal amounts to not more than 20% of the ration. Of 29 carcasses from pigs given rations containing sago pith meal in partial replacement of barley meal, 27 were graded as "prime."—*Authors' conclusions.*

10997. **ZORN, W., und K. RICHTER. Ersatz von Vollmilch durch Itaminmilch bei der Ernährung der Kälber.** *Mitteil. Deutsch. Landw. Ges.* 44(25): 567-569. 1929.—Ten calves were raised on a ration in which Itaminmilch was substituted for ¾ of the whole milk. Slaughter data were obtained upon 3 of these calves. According to their appearances while growing up, their growth in weight, and the slaughter results, this method was satisfactory. 6 control calves were grown on whole milk. The change from whole milk to Itaminmilch was made gradually beginning at 7 days of age. The investigators find no objection to the use of this preparation in feeding animals which are to be slaughtered. At prevailing prices a distinct saving can be effected by its substitution for whole milk. Caution is to be observed in applying these results to calves intended for breeding purposes since there has not yet been any experimental test of whether this treatment will influence the future production of animals so reared.—*K. E. Ferber (transl. by J. L. Lush).*

POULTRY

10998. **ARNDT, MILTON H. Battery brooding. A complete exposition of the important facts concerning the successful operation and handling of the various types of battery brooders.** 323p. 74 fig. Orange Judd Publ. Co.: New York, 1931. Pr. $2.00.—The principles of feeding and of battery brooder operation including the factors, temp., ventilation and humidity as well as the various uses and limitations of battery brooders, are discussed. Suggestions are given for building and equipping battery rooms. Various commercial makes of batteries are described. Suggestions are also given for the prevention and remedy of such difficulties as cannibalism, crowding, poor feathering and hock trouble.—*L. E. Card.*

10999. **GÜNTHERBERG, KLAUS. Versuche über die Fettverdauung beim Huhn.** *Wiss. Arch. Landw. Abt. B. Tierernähr u. Tierzucht.* 3(2): 339-367. 1930.—As the present knowledge of fat digestion in fowls is contradictory the digestibility of nutritive fat by hens was studied. Natural fat and pure fat (neutral fat and cholesterol) were determined both in the food and in the excrement. Trials were made with 12 hens. By feeding very little fat an increased excretion of fat in proportion to the intake was obtained, but this could not be detected after about 8 days. Evidently the presence of crude fat and ether-soluble substance in the feces indicates fat cleavage by the intestine or by bile. The amounts of these 2 kinds of fat were greater with larger intakes of fat, but with smaller doses were too small to be considered as separate factors. These experiments show that the hen is well able to digest fat. Since it has been shown that fat cleavage occurs in the small intestine, one must assume the presence of an intestinal fat-splitting enzyme. Of the cereals the fat of maize is the most digestible, that of oats next, with barley and wheat fats less so. In crushed cereals the fat is somewhat more digestible. The differences in digestibility are attributed to different melting points of the fats. The digestibility of fat increases somewhat if the feed becomes insufficient for maintenance, and the reverse is true with more generous feeding. Abnormal fat excretion occurs in sick birds. By adding rape seed to oats and maize the optimum efficiency of digestion and a maximum fat ingestion of 4.7 gm. fat daily was obtained. After this optimum was exceeded, there was a fairly proportionate decline in digestibility. When meat meal is added to barley in small amounts digestion of its fat is almost complete, and the digestibility of the barley fat is increased in comparison with its utilization when barley is fed alone. With larger doses this favorable effect declines until digestibility is reduced below the

original level, although the amount of fat contained in the basal ration also plays a part. By comparing the coefficients of fat digestion in single feeds by fowls, swine and cattle, it is concluded that hens are not inferior in ability to digest fat but are actually better able to digest the fat of certain feeds.—*Author's summary (transl. by F. B. Hutt).*

11000. SCHMIDT, J., und J. ZÖLLNER. Über den Einfluss des Alters der Hennen beim Legebeginn auf Eigewicht, Eierproduktion und Körpergewicht. *Züchtungskunde* 5(8): 352-356. 1930.—In studies with 270 White Leghorns hatched in 1927, and 137 hatched in 1928, it was found that almost half of all the birds began to lay at 22-25 weeks of age. The later the fowls began to lay, the greater was the average weight of the first 10 eggs and of those for the whole 1st yr. production. The maximum egg weight attained was independent of the age at 1st egg. The earlier the birds began to lay, the greater was the total production in their pullet yr. Age at 1st egg had no significant effect on body weight of the fowls.—*E. Lauprecht (transl. by F. B. Hutt).*

11001. SHEEHY, E. J. The optimum concentration (starch equivalent) of the meal mixture for chickens and growing pullets fed an all-mash diet. *World's Poultry Congress* 4(Sect. B): 255-261; résumé sect., 31-32. 1930.—Week-old chicks were divided into 4 groups and fed an all-mash ration which varied in bulk and concentration in the different groups. The starch equivalents per 100 lb. of the mixtures were 56, 60, 63, and 66 respectively. The rate of growth of the chickens increased progressively as the concentration of the mash was raised; and the weights of the birds after 12 weeks on experiment, especially of the cockerels, showed definitely the advantage of the most concentrated mash fed. The weights of the pullets from the 4 groups suggested that, with pullets as with chicks, there is an optimum mash for the production of greatest weights; in this experiment the highest concentration of mash did not exceed the optimum. The more concentrated mash conduced to greater egg production in the pre-winter period than did the less concentrated one. Early production is desirable provided it does not interfere with the growth of the pullet or with the ultimate size of egg, and provided also a temporary early winter moult is not thereby induced. Conceivably the consumption of a mash which contains the optimum starch equivalent, that is which provides for the maximum intake of nutriment, would provide for extensive production and at the same time promote normal growth in the adolescent pullet, thus preventing the adverse consequences of early sexual development.—*Author's summary.*

11002. TITUS, HARRY W., and WALTER A. HENDRICKS. The early growth of chickens as a function of feed consumption rather than of time. *World's Poultry Congress* 4(Sect. B): 285-292; résumé sect., 35. 1930.—In 2 experiments, in which several pens of chicks were fed at different levels of feed-intake, it was found that up to about 1 lb. or even somewhat more, the average live-weight of the chicks in all the pens could be considered a function of feed consumption alone. A possible explanation is that the maintenance requirement of the young growing chick is only a small fraction of the total amount of feed consumed. It is desirable, when comparing 2 or more diets for growing chicks, to feed them at the same level of feed-intake, even if this level is appreciably lower than the "normal" level. In cases where the feed consumption is not the same, a comparison of the diets should be made by plotting the live-weights against feed consumption.—*Authors' résumé.*

11003. WAITE, ROY H. Poultry science and practice. ix+433p. 337 fig. McGraw-Hill Book Co. Inc.: New York, 1929. Pr. $3.50.—This is a practical treatise on poultry raising and the marketing of poultry products. The first 18 chapters are devoted to the various phases of the chicken industry; Chap. 19 is devoted to turkeys, ducks, and geese; Chap. 20 is devoted to domesticated game birds. There is a useful appendix.—*M. A. Jull.*

11004. WIERZCHOWSKI, ZENON. O czynnikach strawności sktadników pokarmowych u ptactwa domowego. [Factors influencing the digestibility of foodstuffs in poultry.] *Pamiętnik Państ. Inst. Nauk. Gospod. Wiejskiego w Puławach* 9(2): 388-462. 1929.—The quantitative composition of N in the urine of fowls and pigeons being almost identical, Katayama's equations can also be applied to investigations on foodstuff digestibility in pigeons. The principal components of wheat, wheat-flour and bran were assimilated to almost the same degree by pigeons as by fowls. The digestibility of crude wheat protein in fowls varied from 81.3-87.4%; average 84.1%; in pigeons the range was from 75 to 85%, average 79.43%. An average of 90.2% wheat carbohydrates was digested by cocks and 87% by pigeons, with small variations from 88.4 to 91.3% and from 85.6 to 90.1% respectively. The cocks digested from wheat bran 57.6% of protein and 66.2% of carbohydrates, the pigeons 56.4 and 64.4% respectively. Wheat flour as the only food was usually well utilized by both fowls and pigeons. The coefficient of crude protein for fowls and pigeons had the same average value 80, whereas the coefficient of carbohydrates was in pigeons 93.15, in the cock 95.30. In comparison with mammals, fowls and pigeons did well on the principal wheat components. With wheat meal the only food, the digestibility of carbohydrates is several percent higher in fowls than in pigeons. Improvement of mechanical digestion in pigeons and fowls had no effect on the digestibility of carbohydrates and proteins of wheat. Digestibility of fat, on the contrary, was much higher in ground than in entire grain. Drying wheat at 120° C. greatly reduced the digestibility of crude protein. Neither fowls nor pigeons profited from crude fibre, but eliminated it after different intervals, during which a certain amount of digestibility in certain periods and a negative one in others was ascertained. In pigeons the lack of vitamine B in the food-stuff had no direct or indirect influence on the digestibility of food. Feeding with wheat devoid of vitamines for 2 months did not impair digestion. Dried wheat deprived of vitamines, and especially its protein, was less digestible than normal wheat, which is attributable to desiccation, not to absence of vitamines, and the addition of vitamine extracts did not improve its digestibility although it cured sick pigeons and induced increase in body weight. Forced feeding did not impair the digestibility of the principal components. Each foodstuff applied separately was, as a rule, digested in a different manner than mixed feeding stuffs. When 2 foodstuffs were mixed the digestibility of protein and carbohydrates underwent considerable changes. Mixing 2 foodstuffs of low coefficients of digestibility may produce a well digested food. The fowls fared worse or better on the same foodstuff applied in several different mixtures, according to the nature of the 2nd component of the mixture; e.g., bran with wheat, bran with meal, potato starch with wheat, potato starch with bran, casein with wheat, casein with meal. In consideration of this the coefficients of digestibility of a certain foodstuff, which have been obtained in experiments with one combination only, can not be applied without qualification when administering the foodstuff in various combinations. The digestibility of albumin from animal origin reached 100%, and this albumin improved the digestibility of plant protein. Vegetable albumin (pure gluten) was poorly digested. Clover hay fed alone was of little value, but improved the digestibility of foodstuffs in mixtures. Pure potato starch was poorly digested regardless of the composition of the food mixture. This low digestibility is due neither to the softness of this starch nor to the lack of amylolytic enzymes. The coefficient of digestibility of potato starch can be raised from 30 to 59% by increasing the crude fibre content. —*From author's summary.*

AGRONOMY

CARLETON R. BALL, *Editor*
M. A. McCALL, *Associate Editor*, Crops
R. B. DEEMER, *Associate Editor*, Soils

(See also in this issue Entries 9131, 9138, 9139, 9145, 9150, 9154, 9251, 9266, 9320, 10568, 10854, 10961, 10994, 11026, 11027, 11124, 11131, 11150, 11194, 11201)

CROP SCIENCE (ARVICULTURE)

11005. MENDEZ, CARLOS TEIXEIRA. Cultura do arroz. [Rice culture.] *Rev. Agric.* [*São Paulo*] 5(7/8): 275-284. 1930.—The author made a comparative and experimental study of 3 principal varieties of rice cultivated in São Paulo (Brazil). The variety "Dourãdo" produces a product of higher quality than the others. On less moist and less fertile soils it is preferable to any other variety. For very favorable conditions, the variety "Jaguary," also gives a good product. As evidence of the advantages of selection, yields of more than 4000 Hilos net per ha. without any artificial fertilizer are noted.—*C. T. Mendez (transl. by L. Gano).*

11006. [ORLOV, A. A.] ОРЛОВ, А. А. Ячмени Абиссинии и Эритреи. [The barleys of Abyssinia and Eritrea.] [English summary.] Труды по прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot., Genet. and Plant-Breed.*) 20: 283-345. 31 fig. 1929.—The barleys of Abyssinia and Eritrea represent a sharply marked ecological group strikingly different from others of Asia and Europe. The most characteristic features are: a long tillering period; increased tillering; long, narrow leaves of milky green color; a trapezoid-shaped ligule; open flowering and elongated large grain, the weight of 1000 grains being 50 gm. and more. The chief varieties of many-rowed and 2-rowed barleys occur, as well as greatly varying forms of subsp. *intermedium* Körn. The many-rowed barleys, *Hordeum vulgare*, are represented by varieties of the *pallidum, parallelum,* and *pyramidatum* groups; and the 2-rowed barleys (*H. distichum*) by *nutantes, deficientes, erectum,* and *zeocritum*. In these groups are found varieties: (1) hulled and hull-less; (2) with narrow and with broad empty glumes; (3) with dentate and with smooth awns; (4) with grain of yellow, black, green and purple color. Curious anomalies also occur, e.g., the main ears of a plant show characters of one variety, while the other ears of the same plant exhibit characters of another variety. Variations have been noted as follows: (1) the main ear with smooth awns, other ears with dentate awns; (2) the main ear with dentate awns, the other ears with smooth awns; (3) the upper part of the ear characteristic of var. *parallelum,* the lower var. *pallidum;* (4) the main ear, characteristic of var. *parallelum,* the other ears, var. *pallidum;* (5) overlapping varieties with regard to density and ear shape are met with, as *pallidum-parallelum, coeleste-revelatum.* Abyssinia and Eritrea constitute one of the main centers of distribution of the forms or varieties of *H. sativum;* 38 varieties were found (34 in Abyssinia, 19 in Eritrea, 15 common to the 2 regions), of which 19 are endemic (15 for Abyssinia, 4 for Eritrea). The following new varieties of *H. sativum* are described: From Abyssinia, **aethiopicum*, amaricum*, djimmaicum,** and **asmaricum*** (also in Eritrea); from Eritrea, **glabriparallelum, erythraeum*,** and **meneliki.** Abyssinia is the principal center of origin and diversity of the varieties: *pallidum, nigrum, nigripallidum, duplinigrum, deficiens, steudeli,* and *abyssinicum.* From here these varieties have spread far beyond the limits of their native country. The hull-less barley varieties of Abyssinia, as *coeleste, revelatum, sublatiglumatum* and *nudideficiens* differ sharply as to their morpho-physiological characters, from the same varieties occurring in Asia. The hull-less barleys of Abyssinia are, in all probability, of a different genetic origin than those of Asia. In Abyssinia and Eritrea, barley is grown at an altitude of 1800-3000 m. The varieties of 2-rowed barley are grown chiefly in agricultural regions of less altitude. They do not occur higher than 2400 m. Hull-less barley is chiefly grown on mountain plateaus at an altitude of 2800-3000 m. The same distribution may be recorded for the different forms of the subsp. *intermedium,*—Abyssinia and Eritrea (the latter in a lesser degree) being the chief geographical center where the whole diversity of its different forms may be found. These barleys of Abyssinia and Eritrea are characterized by strong straw, absence of lodging, and under field conditions are relatively immune from mildew and different species of rust. Early forms occur. In semi-humid and dry regions they show a high protein content, 20% or more, while in moist regions e.g., the Western and North-Western regions of U.S.S.R., the protein content is low. —*Adapted from author's summary.*

SOIL SCIENCE (EDAPHOLOGY)

11007. ALBRECHT, WM. A., and E. M. POIROT. **Fractional neutralization of soil acidity for the establishment of clover.** *Jour. Amer. Soc. Agron.* 22(7): 649-657. 2 fig. 1930.—Field trials of amounts of lime as small as 300 lb. of 30-mesh material per acre combined with inoculated soil and drilled with the clover seed demonstrated by trials of 3 yr. that this treatment was as effective as 5,000 lb. of 10-mesh limestone broadcast for establishing the clover crop on a lime-deficient soil (Gerald silt loam). The use of small amounts of fine lime drilled with the seed was effective in establishing both red and sweet clovers. On account of defective sweet clover seed, this crop was included in only 2 yr. of this study. The fine lime produced crops of sweet clover as good as those produced by the heavy applications of the 10-mesh stone, while the crops of red clover were usually superior under the treatments with the 30-mesh stone. The use of the finer lime hastened the development of thorough inoculation on the roots of the clovers and served to establish them more quickly through this aid on this soil of depleted fertility. The results of this study raise doubt as to whether it is necessary to neutralize completely the acidity of the surface soil for the successful growth of clover and suggest that it may be necessary to provide only certain limited areas of limed soil accessible to the clover roots.—*Authors' summary and conclusions.*

11008. **BRÜNE, F. Grundzüge der Regelung der Wasserwirtschaft bei Moorböden.** *Mitteil. Vereins Förder. Moorkultur Deutsch. Reiche* 48(10): 173-181. 1930.—Plants can not thrive in marshy soils because of the presence of excessive amounts of water and lack of O. If drained too much the soil loses its power to absorb water. In the flat northwestern plains of Germany the virgin meadows are drained to a depth of 40-50 cm., the pastures 60-70 cm. and cultivated land 70-80 cm. On high marsh lands deeper drainage is more dangerous than on low lands because in the former a strong root zone exists at a depth of 20-25 cm. In dry summers the level of the water must be raised and capillary action must be maintained by rolling the ground surface. The frequency of drainage depends upon the depth of the bog, its flora, the permeability of the upper peat strata and upon the nature of the surroundings. Drainage by open ditches is preferred. Where the ground surface is too dry a top dressing of sand or a sand mixture is recommended.—*F. Brüne (transl. by F. F. Halma).*

11009. **GOY, S., P. MÜLLER, und O. ROOS. Über das Verhältnis von leicht und schwer mobilisierbarer Säure in der Bodenzone der Austauschsäure und die Bedeutung des Pufferungswertes für diese.** *Zeitschr. Pflanzenernähr*

Düng. u. Bodenk. A, Wiss. Teil. 18(2): 104-114. 1930.—In the course of the work the pattern or form and the relative mass of the base holding space of a soil is constructed. The proportion of easily soluble acid and that which is soluble with difficulty in the realm of the replaceable acid is determined for different kinds of soil, and it is shown that in organic soils, below pH 5.5, much more of the acid that is soluble with difficulty comes under the head of replaceable acid than is the case with mineral soils. An absolute exchange value is constructed for each soil. This exchange value is employed for the differentiation of mineral soils from organic or humus ones. This exchange value limits the employment of the electrometric titration method for the determination of exchangeable acid to mineral soils of normal constitution, those soils lying outside these limits to be treated as organic or humus soils.—*Authors' summary (transl. by J. H. Barron).*

11010. **GRADMANN, HANS. Untersuchungen über die Wasserverhältnisse des Bodens als Grundlage des Pflanzenwachstums. II.** *Jahrb. Wiss. Bot.* 71(5): 669-782. 14 fig. 1929.—The author states that most previous methods for the determination of the mobility of water in soils have been very inefficient. The author used evaporation methods. In one case a U-tube containing water was attached to a tube filled with soil. In another series of tests the soil was placed in a glass tube, about 80 cm. long with cross sectional area approximately 2 sq. cm., which was placed perpendicularly with the lower end resting in the center of a closed cylindrical glass vessel about 3.5 cm. in diam. The upper end of the tube passed through the stopper of an inverted similar glass vessel. The bottom of the lower vessel was covered with a shallow layer of dist. water and the inner wall was lined with moist filter paper. The upper glass vessel was filled with $CaCl_2$ up to the top of the tube which terminated in the center of the vessel. In a 3rd series of tests a specially designed metal desiccator was used, $CaCl_2$ being the absorption medium. In this case the various soils were each tested in tubes of different lengths. In addition to these methods the rate of evaporation from soils in open glass tubes 10 cm. long, placed in the open air or in drying chambers, was compared with the rate of evaporation from an evaporimeter having a similar-shaped evaporation surface. By the methods used it is stated that a constant suction or absorption force was being exerted on the soils at all times, thus making possible the measurement of the mass of water that passed a unit of distance in a given unit of time. It is maintained that by these methods the exact rate of movement of water toward the root can be more accurately determined.—*E. T. Bartholomew.*

11011. **LEMMERMANN, O., W. JESSEN, H. ENGEL, H. BORTELS, v. SCHMELING, und W. LESCH. Die Bedeutung des Kohlenstoff-Stickstoff-Verhältnisses und anderer chemischen Eigenschaften der organischen Stoffe für ihre Wirkung.** *Zeitschr. Pflanzenernärch. Düng. u. Bodenk. A. Wissensch.* 17(6): 321-355. 1930.—Through the decomposition of organic matter in the soil, both the chemical and biochemical action of the soil is changed. The physiological value of a substance depends upon (a) the C:N ratio, (b) the N content, (c) the degree of humification, and (d) the pentosan content. The determination of the energy content of an organic substance merely by measuring the CO_2 production leads to unsatisfactory results. When such research is undertaken with microorganisms, one must be sure that enough N is present for their nutrition. If the C:N ratio in organic substances (straw, etc.) is kept at 20:1 or less, the decomposition of the substance is so advanced that there is a loss of about 50% of the dry substance. In this case the N content of the organic substance is generally 2% and more. The injurious action of such organic substance ceases when the C:N ratio is about 20:1 and the N content is 2% or more of the dry substance. The degree of humification (as determined by the NH_3) seems to be more than 30%. The pentosan content of such organic materials is less than 12%. An experiment carried out in the laboratory under a given light exposure in the winter showed that a fairly advanced degree of decomposition of straw or straw manures is necessary to eliminate its N-fixing action. This should be considered more in field practise, since straw is often placed on the ground in spring in a very unsatisfactory stage of decomposition, to be of value. With this fertilizer, N fertilization can never give complete satisfaction.—*Author's summary (transl. by M. A. Joslyn).*

11012. **McLEAN, W. The carbon-nitrogen ratio of soil organic matter.** *Jour. Agric. Sci.* 20(3): 348-354. 1930.—The average C/N ratio for 50 British soils from widely distributed areas approximates to the figure 10:1 given by other investigators. The range of variation is from 6.5 to 13.5:1. 16 foreign samples gave C/N ratios varying from 2.0 to 23.0:1. Soils from limited areas, whether high or low in organic C, give approximately constant ratios, but these ratios vary from place to place according to soil, climate, etc. It is suggested that the C/N ratios may be specific. The C/N ratios of arable soils do not differ appreciably from those of grassland soils. The percentages of C and N are somewhat higher in soils of high fertility than in poor soils in the same area. The author suggests that the total organic C or the total N might be used as an index of fertility in the examination of crop-bearing soils in the same area. For routine work, the C determination is to be preferred both for rapidity and ease of manipulation. The C/N ratio decreases in descending a profile. The high ratio in the top layer is, no doubt, due to the presence of plant remains.—*Author's summary.*

11013. **MALHERBE, I. de V. Some outstanding facts relating to the fertility of South African soils.** *So. African Jour. Sci.* 26: 125-130. 1929.—This is a brief review, very general in scope. The rainfall distribution and the origin of the principal soils are noted. Grain soils are generally in need of P but not K, except the sandy soils of humid areas. N is needed but not over 10 lb. of available N per acre should be used, due to the high straw:grain ratio resulting. Mild acidity, limited benefit and relatively high price restrict the use of lime. Water shortage is the most limiting factor. The author recommends that (a) grain soils should not be plowed too deeply, and (b) the plow be discarded in favor of the spring tooth cultivator in preparing the seedbed of summer fallowed lands. Orchard and vineyard soils are much more diverse in character. Conservation of moisture is esential. P, K and, where needed, lime should be applied regularly in autumn. Quick acting N fertilizer is urged where N is needed. A good cover crop is essential and the common "glousblom" (*Cryptostemma calendulaceum*) is recommended.—*H. A. Lunt.*

11014. **MOOERS, C. A. Some observations from liming investigation.** *Science* 71(1830): 81-84. 1930.—This is a report of work at the Tennessee Station on the effects of lime on certain chemical changes in the soil. The shallow tank lysimeter has been used in these tests, and for this purpose is considered superior to lysimeters which include subsoil. Liming with burnt lime accelerated the drainage loss of N and the oxidation of humus for a few years, after which there was little difference between the limed and unlimed soil. When 2 tons of burnt lime were used maximum carbonation took place within 5 days and complete silication within 10 days. Mg carbonate was converted to silicate even more rapidly than was $CaCO_3$. The general conclusion is drawn that the effects of an ordinary liming with burnt lime are derived primarily from silicates. Silicates of Ca and Mg produced greater clover crops than their corresponding carbonates. Light applications of lime accelerated the outgo of SO_4. Heavy applications of burnt lime retarded the outgo. Liming was found to depress the liberation of K. Liming increased the outgo of Ca and depressed the outgo of Mg. Mg oxide or carbonate increased the loss of Mg, but depressed the Ca loss. The author believes that the soil solution is the source of all the nutrients taken up by the roots of plants. In this case lysimeter findings

should be of much value in determining the effects manurial treatments are likely to have on plant nutrition.—*F. L. Duley.*

11015. NĚMEC, ANTONÍN. Über den Einfluss löslichen Kieselsäuregehalts der Böden auf die Resorption der Phosphorsäure durch die Pflanze. *Biochem. Zeitschr.* 190 (1/3): 42-56. 1 fig. 1927.—The amount of soluble silicic acid in different soils was estimated by extracting 30 gm. of soil with 100 cc. of water for 1 hr. 3 types of soils were used: (1) clay and loam-containing clay; (2) clay-containing loam and loam; (3) clay-loam containing sand and sand. The amount of soluble silicic acid decreases with decrease of clay. Heavy clay-containing soils do not show an optimum capacity for the liberation of soluble silicic acid. Clay-containing loams and loams consisting of 80-90% of soil granules under 0.05 m. diam. give off the largest amounts of soluble silicic acid. In clay-containing sand soils and loamy sand soils, the silicic acid decreases with the increase of sand. Therefore, the finer particles (0.1-0.05 mm.) of the loam-containing soils are the main source of silicic acid. Most soils containing 40-50% granules of this size contain sufficient soluble silicic acid except the heavy clay soils. If lime is added a decrease in soluble silicic acid can only be observed if it is added in large quantities and then only after 14 days. If soils are partly dried, the solubility of both phosphoric and silicic acid is increased. A soil extracted several times with water, after drying and again keeping moist for 14 days, contains the original amount of silicic acid. The influence of the presence of soluble silicic acid in the soil on the phosphoric acid assimilation was tested on growing rye plants. Those grown in soils of highest silicic acid content contain the largest amounts of phosphoric acid. Plants grown in soil poor in silicic acid show a negative phosphoric acid absorption. Only ionized silicic acid is considered. The effect of complex silica compounds is not known.—*M. G. B. Brandwijk.*

11016. PAASCH, E. Veränderungen der Bodenazidität unter besonderer Berücksichtigung der Heinrichauer Böden. *Zeitschr. Pflanzenernähr. Düng. u. Bodenk. B. Wirtsch. Prakt. Teil* 9(7): 309-326. 1 fig. 1930.—Determinations on 35 fields were made twice during a period of 2-4 yr. Since each field was divided in approximately 6 individual plots, the data consist of determinations from about 300 soil areas. The maximum change was about 1.0 pH to the acid or alkaline side. The acidity changes were not arbitrary, but on a series of fields of the same soil type and weathering conditions, varied with the addition of organic or inorganic fertilizers. The following conclusions are given: Fields limed during the interim became more alkaline; increase in alkalinity with liming, but without green manuring, was about 0.9-0.4 pH greater than with green manuring, in which case it was 0.3-0.0 pH. A heavy green manuring causes acidification which can be neutralized by about 3-4 zentners caustic lime per ¼ ha. on the above soils. If liming occurred shortly previous to the final sampling so that secondary effects were still present, the soils maintained their acidity level. If lime was applied early the soils became appreciably more acid. If the soils received alternating physiologically acid and alkaline fertilizers, soil acidity increased 0.1-0.5 pH during this period. With only physiologically acid fertilizers, the acidity increase was greater. With green manuring in addition to alternating additions of physiologically acid or alkaline fertilizers, the increase in acidity was 0.6-1.0 pH. Stable manure produced no acid formation.—*Author's summary (transl. by O. C. Magistad).*

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 9134, 9136, 9137, 9147, 9162, 9280, 9307, 9327, 9330, 9358, 9359, 10984, 11048, 11193, 11213, 11215)

11017. BEAR, P. K. (edited by A. J. MACSELF). Simple fruit growing. 130p. Illus. W. H. and L. Collingridge, Ltd.: London, 1930. Pr. 2s. 6d.—This book is written from the standpoint of the English gardener as indicated by discussions of insects and diseases and varieties of fruits common to English gardens, and the detailed treatment of dwarf trees and wall and garden training. Designed primarily for the amateur and small home gardener, it is characterized by simple exposition and explanation of vital points often overlooked in treatises on fruit culture.—*H. B. Tukey.*

11018. BRISCOE, T. W. (edited by A. J. MACSELF). Orchids for amateurs. 138p. Illus. W. H. & L. Collingridge, Ltd.: London, 1930. Pr. 5s.—Out of long experience as an orchid grower, the author has produced a book especially for amateurs. Part I, of 66 pages, is devoted to general questions of housing and culture, including temp., ventilation, watering and atmospheric moisture. Emphasis is placed on maintaining hygienic conditions in the control of pests and diseases. Propagation, hybridization, and seed handling are fully discussed. A section deals with the classification of orchids into species and varieties, and illustrations facilitate the recognition of the principal genera and some of the important varieties. The book is designed mainly for English conditions.—*T. H. McHatton.*

11019. CHEVALIER, AUG. Les caféiers du globe. Fascicule I. Généralites sur les caféiers. (Encyclopédie Biologique V.) 196p. 32 fig. Paul Lechevalier: Paris, 1929.—This volume discusses the origin of coffee and the beginning of its use and commerce; culture of coffee in the 18th century, especially in the French Colonies; coffee from the botanical and biological points of view and the principles of tree culture applicable to coffee trees.

11020. COUTTS, J., A. EDWARDS, and A. OSBORN. The complete book of gardening. 768p. 96 pl. (16 col.) 65 fig. Ward, Lock & Co.: London, 1930.

11021. COX, E. H. M. Wild gardening. 124p. Illus. Dulau & Co., Ltd.: London, 1929.

11022. DAKERS, J. B. (edited by A. J. MACSELF). Simple greenhouse management. 130p. Illus. W. H. and L. Collingridge, Ltd.: London, 1930.—This is a concise, practical book for the amateur and small gardener. Although directed to the increasing number of English suburban gardeners who are adding small greenhouses to their equipment, it contains much information which may be applied to American conditions. It discusses small greenhouses with and without heat, greenhouse culture of vegetables and flowering plants, and propagation in general.—*H. B. Tukey.*

11023. DARNELL, A. W. Orchids for the outdoor garden. A descriptive list of the world's orchids that may be grown outdoors in the British Isles, for the use of amateur gardeners. xx+467p. 22 pl. L. Reeve & Co., Ltd.: Ashford, Kent, 1930.—This gives concise botanical descriptions, comments from the horticultural standpoint, habit notes, and cultural suggestions for 977 spp. For numerous spp. not yet under cultivation, the probable cultural requirements are deduced from what is known of their natural behavior. Species illustrated are *Calypso bulbosa, Acianthus caudatus, Brownleea caerulea, Caladenia patersonii, Caelogyne corymbosa, Cypripedium montanum, Disa cooperi, Diuris sulphurea, Eulophia hians, Gastrodia sesamoides, Habenaria tetrapetala, Holothrix orthoceras, Liparis liliifolia, Ophrys speculum, Orchis provincialis, Pleione hookeriana, Pogonia ophioglossoides, Pterostylis obtusa, Satyrium membranaceum, Serapias cordigera, Thelymitra longifolia.* Rank as "probably the finest and most

desirable of all the hardy Orchids" is given to the moccasin flower, *Cypripedium reginae*.—*S. S. Berry.*

11024. **DILLISTONE, GEORGE (compiled and edited by). Dykes on irises. A reprint of the contributions of the late W. R. Dykes, L-es-L., to various journals and periodicals during the last 20 years of his life.** 294p., Portrait. 18 pl. C. Baldwin: Tunbridge Wells, England, 1930. Pr. 21s. 6d.—This reprint of contributions made to journals and periodicals opens with a brief account of Dykes' life and works. Besides detailed notes on species and hybrids, the origin, raising, diseases, cultivation, hybridization, and classification of irises are treated.—*G. M. Tees.*

11025. **DODE, L.-A. Enquête sur les effets des froids de l'hiver 1928-1929.** *Bull. Soc. Dendrol. France* 1930 (73, 74): 10-23; 39-46. 1930.—All the injurious effects of heavy freezes are noticeable only after the passage of considerable time. The effects of the winter of 1928-29 could not be definitely estimated until the autumn of 1929, when the September drought aggravated the frost injuries. In some cases plants which were apparently lost began to sprout again vigorously from the base. The reports from different parts of France give in detail the species which survived and those which were more or less injured or killed.—*A. Rehder.*

11026. **EWERT, RICHARD. Blühen und Fruchten der insektenblütigen Garten- und Feldfrüchte unter dem Einfluss der Bienenzucht.** 150p. 48 fig. J. Neumann: Neudamm, 1929.—The author describes the pollination of numerous garden and field plants. The 1st part of the book deals with pollination and fertilization in general and with the methods of research; the 2nd gives particulars of the floroecology of the more common fruit trees, berry bushes, grape, strawberry, cucumber, and various field crops such as clovers, alfalfa, vetch, lupine, and others. A brief account of the wind-pollinated hazelnut, chestnut, and walnut is included. The pear may be taken as an illustration of the method of treatment: A discussion is given of the flower structure and manner of pollination, the results of crosses between different varieties, the percentage of fertility, the blooming time of different varieties and the effects of frost, insects and other factors on the production of viable seed. A bibliography is included.—*J. H. Lovell.*

11027. **FRANÇA, CARLOS. Subsídios para a história de algumas plantas cultivadas. [Further evidence on the history of some cultivated plants.]** 63p. 9 fig. Araujo y Sobrinho: Porto, 1928.—From a study of Portuguese and other writers of the Renaissance period the author has found new evidence on the origin and dispersal of 11 cultivated plants. The sweet potato is native to America and was introduced into Africa by the Portuguese as shown by the records of Gandavo, Anchieta, Oviedo, de Soto, and Ficalho. The potato, native of Chile, spread to Colombia before the discovery of America and appeared in Italy about 1587, spreading thence through central Europe (Clusius). Raleigh introduced it into Ireland from the Antilles, not Virginia (Bauhin, Strachey). It was not cultivated in Portugal until after the 17th century, probably due to its being considered poisonous (Bauhin). Tobacco was introduced into Portugal by Luis de Goes and appeared in Spain about the same time. Nicot brought it to France from Lisbon, not directly from America. The cashew was first described by Thevet in 1558. Anchieta, Gandavo and Cardim also preceded the formerly accredited Sousa in noting it. It is evidently a native of Brazil whence it was carried to Central America. Peanuts are native to America as shown by Sousa and the fact that all wild species of *Arachis* are American. Gabriel de Sousa distinguished 2 closely allied plants, the pacoba of America and the banana of Asia. The records of Garcia da Horta and the Tupi Indian traditions also indicate the existence of a pacoba or native American banana. Later crossing of the 2 in both the New and Old World obliterated the traces of the original kinds. The pineapple was originally restricted to Brazil (Gandavo, Costa) and spread thence to other parts of America and to the Old World, where it was well established in the 2nd half of the 16th century (Orta, Costa). The sour orange (*Citrus bigarada*) has been known in Portugal since the Moorish occupation. The sweet orange (*C. aurantium*) was brought to Portugal by Vasco de Gama, and early established in Brazil (Nobrega, Navarro). The Chinese orange (*C. aurantium sinensis*) was brought to Portugal in 1635 by Mascarenhas, and rapidly supplanted all others throughout the world. By 1518 sugar cane was already well established in Brazil (Herrera). Since Indian corn was already well known to the Portuguese when they discovered Brazil, little attention was given it by Cabral and his companions. Though the Spanish discovered corn and brought it to Europe they were much slower to develop it than the Portuguese. These facts account for Europeans, other than the Portuguese, giving greater attention to corn in their records of discovery. The work of Campos Novaes on the transition from *Euchlaena viridis* to corn and the early familiarity of the Portuguese with corn, break down the main arguments for its Old World origin. The writings of Gabriel de Sousa indicate that the bean (*Phaseolus vulgaris*) is a native of the New World. It was introduced into the Old World early in the 16th century and soon supplanted all other types of beans.—*L. B. Smith.*

11028. **GUILLAUMIN, A. Les fleurs de jardins. Tome II. Les fleurs d'été.** 175p. 64 col. pl. Paul Lechevalier: Paris, 1929. Pr. 36 fr.

11029. **HART, J. N. [Edited by]. Rose growing.** 128p. Illus. Ward, Lock & Co. Ltd.: London, 1929.—A manual of rose culture, primarily for English growers. The viewpoint is mainly that of the amateur. Varieties and classes of roses are discussed for English conditions. The book contains instructions for propagation by budding, cuttings, layering, grafting and division. The construction of rose hedges is treated. Pruning directions for different types of roses are given separately.—*C. G. Bowers.*

11030. **HOLMES, EBER. Rose garden primer.** 20Sp. 62 fig. A. T. DeLa Mare Co., Inc.: New York, 1930. Pr. $1.75.—This is a practical guide to the culture of outdoor roses, including origin, history and classification together with planting, pruning, winter protection, propagation, diseases, insects. There is a brief chapter on growing roses under glass. The author presents a classification of roses, with examples of the varieties in each class.—*C. E. Wildon.*

11031. **HUKILL, W. V., and R. C. WRIGHT. Preventing the freezing of cut flowers in transit.** *Florists' Exchange* 74(15): 9, 11. 1930.—Various methods of thermal insulation were tried. Packages containing water, in the form of wet wrappings of newspaper or wet cotton pads surrounding the flowers, cooled much more slowly than others and the temp. remained at 32° F. for a relatively long time before dropping. 32° is well above the freezing point for most flowers. The wet wrappings must be between the flowers and each surface of the box, so that heat transfer will take place through the water in the wrappings. A paraffined box is desirable.—*C. G. Bowers.*

11032. **JACOBS, HOMER L. Fertilization of shade trees. Part 2. Chemical fertilizers for conifers?** *Davey Inst. Tree Surgery Res. Dept. Bull.* 5 (1-15). 1930.—500 Norway Spruce trees were divided into 2 groups for treatment. The carriers used ranged from urea and ammonium sulphate to purely organic, mild and slowly available materials such as bone meal and cottonseed. Results at the end of 2 yr. gave no indication of harmful effects from the use of fertilizers. On the other hand they indicated a consistent improvement both in growth and color of the fertilized over the unfertilized trees.—*From author's summary.*

11033. **JONES, HENRY ALBERT, and SAMUEL LEONARD EMSWILLER. The vegetable industry.** 431p. 154 fig. McGraw-Hill Book Co., Inc.: New York, 1931. Pr. $2.25.—This book is planned primarily for high school students. The first 8 chapters (45 pages) deal

with problems confronting the vegetable grower: soils, planting, insects and diseases and control measures, exhibiting and judging. One chapter is devoted to culture of vegetable plants under glass. Vegetables are classified botanically according to families. Chapters X-XLIX deal with the culture of the important vegetable crops. 12 families are represented by 49 crops. The work concludes with a chapter on fields of work in truck crops other than production. Here the authors include a brief discussion of vegetable breeding, disease control, insect control, teaching, marketing, and inspection service.—*G. W. Woodbury.*

11034. KOBEL, FRITZ. Lehrbuch des Obstbaus auf physiologischer Grundlage. 274p. 63 fig. Julius Springer: Berlin, 1931. Pr. 16 M.—This work is intended to explain the physiological processes of most immediate importance in fruit production. These are, the author states, blossom bud formation and fruit development; accordingly the greatest space is given these processes. Following 33 pages of general physiology of fruit trees, 31p. are devoted to blossom formation, including normal development and the influence of various practices. Fruit development, comprising unfolding of blossoms, pollination, fertilization, sterility, parthenocarpy, June drop and ripening, is discussed in 129p.; of these, 22 are given to cytologically determined sterility. The 4th section (20p.) is devoted to a discussion of the relationship between vegetative growth, blossom formation and fruit formation. The author here presents his own classification of conditions (vigor and fruitfulness) into which trees may fall, and suggests treatments according to these conditions. The classes are recognized as grading into one another. Effects of root stocks are discussed at this point. The 5th section (24p.) treats of the raising of new varieties. The final 13p. contain literature citations, grouped alphabetically by sections. Of the citations for section 1, 41 are to papers by authors writing in English, 19 to papers in German and 3 to papers in French. Nearly all the illustrations are original.—*F. C. Bradford.*

11035. KORTLEVE, IR. A. Bemestingsproeven in de theecultuur. [English translation p. 120-135.] *Arch. Theecultuur Nederl. Indië* 2: 88-135. 1930.—Fertilizers applied to tea bushes resulted in an increased yield of 10-20%. Fertilizer was applied at the base of the plant. Ammonium sulphate, superphosphate and potassium sulphate were used on the basis of 30 lb. N, P and K per acre. The greatest increase of yield was from the addition of N.—*C. Yampolsky.*

11036. LAURIE, ALEX. Fertilizing ornamentals. *Minnesota Horticulturist* 59(1): 3-5. Portrait. 1931.—For nurseries, the substitution of peats for manures is recommended, since experimental work has shown that nutrients in peats can be made readily available through the addition of very small amounts of manure which contains cellulose-decomposing bacteria. Complete commercial fertilizers analyzing 4-12-4 are recommended for general purposes, but for trees, shrubs and evergreens 10-6-4 is more suitable. 2 applications should be made during the season—one in the spring and one in midsummer. Fall applications are not advised unless the soil contains much humus to retain the minerals until they may be of use in the spring.—*A. Laurie.*

11037. RUSCHMANN, W. Banane. In: **WOHLTMANN-BÜCHER'S** *Monographien zur Landwirtschaft warmer Länder.* Vol. 8. 146p. 35 fig. Deutscher Auslandverlag: Berlin-Charlottenburg, 1929.—In this handbook on banana cultivation the treatment of structural characteristics, reproduction, and taxonomy is brief: the discussion of chemical constitution of the fruit is even more limited. The chapter on cultivation contains sections on climate, soil, planting-material, planting-distances, methods of transplanting, manuring, catch-crops, etc. Harvesting and transport of the fruit are discussed, with a brief treatment of sea-transport. Diseases and pests are given a chapter of 16 pages. Other chapters deal with: profits, value of the banana as food for man, and for domestic animals; production of fiber; banana-products; statistics of production. A bibliography of the most important works on the banana is presented.—*C. D. LaRue.*

11038. SAYRE, C. B., J. J. WILLAMAN, and Z. I. KERTESZ. Factors affecting the quality of commercial canning peas. *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 176. 1-76. 8 fig. 1931.—Tenderness was the principal quality factor investigated. The effect of potash fertilizers on peas was studied. Great differences in the mineral content of peas and ratios of minerals were obtained, but the organic constituents varied but slightly. Large differences in the inorganic content of the leaves and stems may be produced, but very little in the seeds and particularly the seed coats. All lots were canned under commercial conditions, and the quality of the canned product judged by experts. 3 deleterious changes occur if peas are not canned within a few hours after shelling: increased toughness, increased calcium in the seed coat, and enzymic changes in the CH and N constituents. Differences in the proportion of Ca and K in the nutrient solution can cause an organic base exchange in which Ca is partially replaced by K, and vice versa. The K and Ca content of peas was altered slightly by the application of the respective compounds to the soil. Potash fertilizers tend to reduce toughness of peas, and KCl is not injurious. However, $CaCl_2$ applied to the soil made peas tougher. Changes in peas (ovules) as they mature include increases in dry matter, starch, and protein-non-protein nitrogen ratio, and the migration of Ca to the seed coat, all of which tend to make the peas tougher. These changes can be measured by mechanical tests and indices of maturity which indicate canning quality. The use of a mechanical "quality index" is proposed to determine when fields should be harvested to obtain maximum yield and quality.—*C. B. Sayre, J. J. Willaman and Z. I. Kertesz.*

11039. THOMPSON, H. C. Vegetable crops. 2nd Ed. 560p. 60 fig. McGraw-Hill Book Co. Inc.: New York, 1931. Pr. $5.—This is designed as a textbook for college and university students. The author presents interpretations of previously published results of technical studies on the growth and physiology of vegetable crop plants, soil management, cultural methods, nutrition, and insect and disease control, emphasizing scientific evidence and basic principles upon which practical recommendations are made. A limited amount of experimental data is presented but most of the approximately 500 citations to literature involve only a brief summary and interpretation as related to the specific point under consideration. In the first 15 chapters are discussed: vegetables as food, vegetable classification, phases of the industry; the basic principles underlying the fertilizing, manuring, improvement and preparation of soils; crop rotation; growing of seeds, growing of plants for transplanting; planting, cultivation, mulching, irrigation, insect and disease control; marketing and storage. In the latter 12 chapters 68 vegetable crops are arbitrarily grouped for convenience of study and discussion, a chapter being devoted to each group, as: Perennial crops, pot herbs or greens, salad crops, root crops. Each crop is discussed with reference to its botanical characteristics, propagation, varieties, economic importance, history, climatic requirements, soil preferences and soil preparation, the use of manures and fertilizer, methods of planting, cultivation and care, harvesting, storing, preparation for market. The important diseases and insect pests attacking the crop are briefly described and the accepted control measures. The 2nd edition is amplified appreciably over the 1st edition (1923).—*V. R. Boswell.*

11040. WISTER, JOHN C. Bulbs for American gardens. xxv + 278p. 53 pl. 17 fig. The Stratford Co.: Boston, 1930.—The introduction, giving definitions, examples of uses, and sources of supply, is followed by 18 chapters on culture, types of bulb gardening, the better-known bulbs for the spring garden, bulbs for the rock garden (3 chapters), bulbs in the wild garden, hyacinths, daffodils (history), daffodils (species, varieties, classification),

daffodil culture, tulips (history and cultivation), tulips (garden varieties), late blooming bulbs, lilies, gladiolus, half hardy summer flowering bulbs, and tender bulbs. Appendix A is a list of named varieties of tulips, and Appendix B is a list of named varieties of daffodils.—*C. S. Gager.*

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 9209, 9274, 9277, 9292, 9319, 9333, 10849, 10850, 11025, 11032, 11072, 11108, 11133, 11191)

11041. **ALMEIDA, HUMBERTO de.** O mais velho exemplar vivo dos eucalyptos plantados no Brasil. [The oldest living eucalypt in Brazil.] *Revista Florestal* 1(11): 7-8. 1 fig. 1930.—A *Eucalyptus globulus* planted near Rio de Janeiro in 1867 is believed to be the oldest living specimen of *Eucalyptus* in Brazil.—*W. N. Sparhawk.*

11042. **ASSIS IGLESIAS, FRANCISCO de.** O crescimento das essencias florestaes brasileiras. [Growth of Brazilian forest trees.] *Revista Florestal* 2(1): 5-10. 6 fig. 1930.—Height and diameter growth of several Brazilian trees, mostly in botanical gardens.—*W. N. Sparhawk.*

11043. **DISSEL, E. D. van.** L'état et la sylviculture en Hollande. 18p. 2 pl. Administration Forestière de l'État Néerlandais à Utrecht (Staatsboschbeheer), 1931. —The wooded area of Holland has increased from 169,000 ha. in 1833 to 254,138 ha. in 1930, while the area of idle land has decreased from 889,000 ha. to 378,225 ha. The forest has gradually shifted from the better soils, which have been cleared, to those unsuited for cultivation. At the same time, broad-leaved trees (81% of area in 1833) have been replaced by conifers (60% in 1930), chiefly *Pinus silvestris.* Methods of afforestation are described.—*W. N. Sparhawk.*

11044. **DUBOSC, A.** Études sur les produits de la distillation des bois algériens. *Bull. Sta. Rech. Forest. Nord de l'Afrique* 1(7): 257-274. 1926.—The sources, chemical composition, methods of production, prices and probable value of the products from the distillation of gum, "light wood" (including waste and stump wood), and from pine needles, of various tree species in the U. S. A. and North Africa, are outlined. *Cedrus libani* var. *atlantica* is considered the most abundant and promising source of such products in N. Africa.—*J. Kittredge, Jr.*

11045. **DUFAY, M.** Le verglas de mars 1931. *Bull. Trimest. Soc. Forest. de Franche-Comté* 19(2): 88. 4 pl. 1931.—The terrible ice storm caused irreparable damage to coniferous plantations in the valley and plateau of the Doubs and in a part of Haute-Saône. The damage to *Pinus sylvestris* was greater in the 1898 plantations than in the older and younger ones. The Haguenau variety suffered much, the Scotch variety still more, and the stands of the Riga variety were almost destroyed. *P. austriaca* was up-rooted but not broken. *P. strobus* was damaged hardly at all. *Pseudotsuga taxifolia* suffered no damage.—*J. Kittredge, Jr.*

11046. **ESCHENLOHR, H.** Verjüngung heidekranker Föhrenbestände auf oberem Keupersand. *Forstwiss. Centralbl.* 53(16): 573-588; (17): 593-609. 1 fig. 1931.—A special technique is necessary in planting pine on dry, sterile, sandy soil which is poor in lime, colloids, and plant foods, and which is generally covered with heather. Best success is obtained by planting on clear-cut strips 30-40 m. wide, working from the northwest side of the stand. The heather should be cut and removed along with any excessive accumulation of raw humus and ground $CaCO_3$ should be applied at the rate of 5-8 tons per ha. The soil should then be plowed, birch seed sown in the fall, and 1 or 2-yr. pine and 2-yr. larch planted in the following spring. Perennial lupine should then be sown or alder seedlings planted between the rows, to enrich the soil.—*W. N. Sparhawk.*

11047. **FORS, ALBERTO J.** Cultivo de los Eucaliptos en Cuba. *Rev. Agric. Comerc. y Trab.* 11(10): [misprint for 12(4): ?] 39-42. 3 fig. 1931.

11048. **FORS, ALBERTO J.** Sobre la propagación, siembra y utilidades de los arboles del género Eucaliptus. [Propagation, sowing, and uses of eucalyptus trees.] *Rev. Agric. Com. y Trab.* [*Cuba*] 13(2): 34-37. 1931.—Soil preference and uses are given for 22 spp.

11049. **GEIGER, RUDOLF, und HANS AMANN.** Forstmeteorologische Messungen in einem Eichenbestand I. *Forstwiss. Centralbl.* 53(7): 237-250. 6 fig. 1931.—This paper describes the construction of towers 27 and 28 m. high, and the instrumental equipment for meteorological measurements below, in, and above the crowns of oak stands, one of which had beech understory and the other none.—*W. N. Sparhawk.*

11050. **GRISR, D. H.** Caoutchoutiers. [Rubber trees.] *Ann. Gembloux* 37(8): 232-237. 1931.—A review of the history and methods of rubber culture in the Malay States with notes on the methods of treatment of the latex and cost of production.

11051. **HACKMANN, GEORG.** Die forstlich wichtigsten Klimazahlen von Deutschland. [German climatic data most important for forestry.] *Mitteil. aus Forstwirtsch. u. Forstwiss.* 2(3): 503-519. 8 maps. 1931.

11052. **HARTMANN, F. K.** Grundlagen für eine natürliche Waldeinteilung und Waldbehandlung in Mitteleuropa. *Mitteil. aus Forstwirtsch. u. Forstwiss.* 2(3): 529-536. 1931.—Forest classification and management should be based on the natural factors that govern forest distribution and growth, viz.: climatic factors, determined by numerous measurements over a considerable period; and kinds and stage of development of soil, for which comprehensive maps are needed. Natural forest associations, changed little or not at all by human intervention, should be correlated with climate and soil.—*W. N. Sparhawk.*

11053. **HESSELMAN, HENRIK.** Tyska undersökningar över markvegetationens användning för skogsmarkens bonitering. [German investigations of the use of ground vegetation for estimating site qualities of forest soils.] *Skogsvårdsför. Tidskr.* 29(2): 164-169. 1931. —Attempts to apply Cajander's vegetation types in Germany have led to the conclusion that vegetation of the forest floor offers valuable indications for silvicultural treatment, but forms a poor basis for site classification.—*H. I. Baldwin.*

11054. **KUHLMANN, J. G.** Arvores que, na flora do Districto Federal, florescem nos mezes de Abril e Junho. [Trees of the Federal District (Brazil) which bloom from April to June.] *Revista Florestal* 2(1): 47-48. 1 fig. 1930.

11055. **KUHLMANN, J. GERALDO.** Uma Rhamnacea de cerne magnifico. [A species of the Rhamnaceae with excellent heartwood.] *Revista Florestal* 2(1): 54-55. 1 fig. 1930.—*Rhamnidium glabrum,* a small Brazilian tree, has fine-grained light yellow heartwood, which turns bronze-colored on exposure to air, polishes well, and is suitable for cabinet work.—*W. N. Sparhawk.*

11056. **POLANSKÝ, BOH.** Příspěvky ke studiu ekologické a fysiologické povaky lesních dřevin. (I.) Nároky sosnových a smrkových semenáčků na vlâhu. [Ecology and physiology of forest trees. (I.) Moisture requirements of pine and spruce seedlings.] [In Czech and German.] *Vestník Československ. Akad. Zem.* 7(1): 38-44. 5 fig. 1931.—Seedlings of *Pinus sylvestris* require more moisture than those of *Picea excelsa.* It is impossible to state whether this fact is due to differences in internal nutritional requirements or to differences in root systems. Probably it is because superficial moisture

cannot be used by pine to the extent that it can by spruce, which occasionally has the capacity to draw necessary moisture from the atmosphere. Thrifty spruce has an inherent tendency to put out numerous secondary branches in early life. Many failures in natural and artificial seeding of pine can be avoided, if it is recognized that this tree needs considerable actual precipitation and is not at all adapted to make use of atmospheric humidity and meager condensations therefrom.—*G. S. Perry.*

11057. **SARACHO, FRANCISCO.** Algunos datos sobre el vivero local de Monterrey, Estado de Nuevo León. [The Monterrey nursery, State of Nuevo León.] *Mexico Forest.* 9(7/8): 147-150. 1931.—Notes on the germination and 1st yr's. growth of various species of forest trees.—*W. N. Sparhawk.*

11058. **SCHWAPPACH, A.** Die Akazie in Nordostdeutschland. *Deutsche Forstzeitg.* 46(37): 883-884. 1931.—*Robinia pseudoacacia* was extensively planted in northeastern Germany in the last part of the 18th Century. The climate is too severe for it to do well, and further planting is not recommended.—*W. N. Sparhawk.*

11059. **SKUCE, THOMAS W.** Some problems of natural and artificial reforestation arising from West Virginia's cut-over timber land. *West Virginia Univ. Proc. West Virginia Acad. Sci.* 3: 48-62. 1929.—General statistics of the present and past forestry situation in West Virginia are cited, together with an outline of a program for future forestry activity and research in the state.—*W. R. Adams, Jr.*

11060. **STREHLKE.** Die russische Forstwirtschaft. *Deutsche Forstzeitg.* 46(34): 817-821; (35): 839-841. 6 fig. 1931.—The organization of forest administration and exploitation in Russia is described, with especial reference to the Ural region. Virgin spruce and fir stands, 150-200 yrs. old, seldom yield more than 220 cu. m. per ha., and 250-350-yr.-old pine forests ordinarily yield less than 250 cu. m. Silvicultural measures consist of little more than selecting the stands to be cut and in some instances of designating seed-trees. All merchantable timber is cut, and much material is wasted. Timber is transported to the rivers over iced roads by teams or tractors. Efforts are being made to build up a large technical personnel, and research is being pushed forward on a broad scale. An institution is being built near Moscow in which 2,000 research workers are to be employed after 1932.—*W. N. Sparhawk.*

11061. **WELCH, M. B.** Some mechanical properties of Australian grown Pinus insignis (P. radiata). II. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 111-121. 1929 (1930).—The comparative strengths of *P. insignis* grown in New S. Wales, Victoria and S. Australia were tested in conformity with the standard practice for testing small clear specimens adopted by the Forest Products Laboratory at Princes Risborough and elsewhere. The wood is by no means weak and brittle, and although considerable variation in the mechanical and physical properties occurs, there is no reason why much of the imported softwood should not be replaced by *P. insignis.*—*M. B. Welch.*

11062. **WELCH, M. B.** Some properties of Red Satinay, Syncarpia hillii. *Jour. & Proc. Roy. Soc. N. S. Wales* 63: 122-130. 2 pl. 1929 (1930).—Red Satinay (Myrtaceae) is a reddish colored, close textured wood, without natural figure, but often with a high degree of accidental figure. It is practically confined to Fraser Island, off the Queensland coast. The wood is inclined to be brittle and to fail suddenly without warning. Static bending and impact tests indicate a comparatively low energy absorption. The wood is remarkably fire resistant and is also very durable against both insect and fungal attacks.—*M. B. Welch.*

11063. **WIEDEMANN, E.** Starke Durchforstung und Schnellwuchsbetrieb. [Heavy thinning and management for rapid growth.] *Zeitschr. Forst- u. Jagdw.* 62 (11): 795-797. 1930.—A reply to Gehrhardt and Swart in the controversy involving the effect of this particular type of management upon growth.—*J. Roeser, Jr.*

11064. **WIEDEMANN, E.** Die Brauchbarkeit des verglichenen Durchmessers als Weiser für die Standortsgüte. *Zeitschr. Forst- u. Jagdw.* 62(11): 797-805. 1 fig. 1930.—A reply to Reinhold's theory of comparable diameter as the only useful indicator of the influence of site and of stand treatment on similarly-aged stands subjected to various methods of treatment. The increment on the Bavarian and Prussian experimental thinning plots showed no appreciable difference between moderate- and heavy-understory thinning for spruce, pine or beech. The mechanical concept of comparable or relative diameters, which disregards natural factors, cannot be accepted as a criterion for measuring variations in quality of site.—*J. Roeser, Jr.*

11065. **WITTICH.** Ueber die Ergebnisse einiger neuerer bodenkundlicher Untersuchungen in ihrer Bedeutung für die ostdeutsche Kiefernwirtschaft. *Deutsche Forstzeitg.* 46(32): 773-777; (33): 795-800. 1931.—The correlation between growth of forests and soil conditions is closer than has been realized. The deeper layers, down to 4-5 m., may have more influence than the surface layers, through their relation to water supply. Volume yield can not be influenced by silvicultural measures to the extent that many have believed, but quality and value yields can be. Reproduction of pine under shade is possible only on certain sites, especially where there is abundant soil moisture and little root competition.—*W. N. Sparhawk.*

11066. **ANONYMOUS.** O problema do reflorestamento. Quaes são as melhores madeiras do nosso paiz? [Reforestation. What are our best woods?] *Revista Florestal* 1(12): 9-11. 1930.—The following are recommended for planting in São Paulo, Brazil: (a) Fast-growing softwoods suitable for interior construction, boxes, etc., include *Araucaria brasiliana, Schizolobium excelsum, Cedrela* spp., *Enterolobium timboúva,* and *Chorisia speciosa;* (b) slower-growing trees with harder wood, suitable for exposed construction, railway ties, etc., include *Esenbeckia leiocarpa, Aspidospermum polyneuron, Caesalpinia peltophoroides, Machaerium* spp., *Dalbergia* spp., *Myrocarpus frondosus,* and *Toluifera peruifera;* (c) cabinet woods include *Phoebe porosa, Centrolobium robustum, Ocotea* spp., *Nectandra* spp., *Balfourodendron riedelianum* and *Jacarandá brasiliana.* —*W. N. Sparhawk.*

FUNGI

C. L. SHEAR, *Editor*

EDITH K. CASH, *Associate Editor*

(See also in this issue Entries 9063, 9087, 9132, 9151, 9225, 9227, 9233, 9234, 9290, 9351, 9354, 10460, 10461, 10474, 10476, 10477, 10655, 10666, 10667, 10675, 10686, 10717, 10740, 10812, 11097, 11198)

FUNGI

11067. **BOSE, S. R.** Polyporaceae of Bengal. VIII and IX. *Jour. Dept. Sci., Calcutta University* 9: 27-44. 19 pl. 1928.—Detailed descriptions are given of 24 spp., with plates showing the upper surface and the hymenial surface of almost all of them. Geographic distribution is recorded.—*S. R. Bose.*

11068. **CAYLEY, D. M.** Sex in fungi. *Nature [London]* 125(3153): 527. 1930.—A distinction is drawn between true sex heterothallism (haplo-synoecism) and

physiological heterothallism. The heterothallic Hymenomycetes are considered to be potentially bi-sexual, the so-called multi-polar behavior of certain spp. being attributed to the operation of negative sterility factors, as suggested by Brunswick. In *Humaria granulata* the mono-ascospore mycelia are to all appearances ♀, but when mated together fall into 2 definite groups in a 1:1 ratio. This is regarded as a form of physiological heterothallism determined by 1 self sterility factor.—*W. F. Hanna.*

11069. **HENLEY, A. T.** Involution cultures of yeast. 2. *Jour. Inst. Brewing* 37(4): 239-240. 2 fig. 1931.—A cultural study of *Saccharomyces intermedius* with special reference to concentration of wort-gel.

11070. **HIRATSUKA, NAOHIDE.** On some Japanese species of the Melampsoraceae. I. *Tottori Nagaku-Kwaiho (Trans. Tottori Soc. Agric. Sci.)* 2(1): 61-63. 1930.—This article treats of the synonymy and distribution of *Melampsora laricis* Hartig, *Hyalopsora aspidiotus* (Peck) P. Magn. and *Thekopsora sparsa* (Wint.) P. Magn. *H. aspidiotus* is previously unrecorded in Japan. The teleuto-stage of *T. sparsa* is reported for the first time in Japan.

11071. **KUSANO, SHUNSUKE.** The life-history and physiology of Synchytrium fulgens Schroet., with special reference to its sexuality. *Japanese Jour. Bot.* 5(1): 35-132. 19 fig. 1930.—A very detailed study was made of *S. fulgens,* which was found to belong to the section (Tobler's subgenus *Pleiochytrium*) in which the life cycle includes both a resting spore and a sorus of sporangia, and these phases were shown to correspond to the sexual and asexual phases respectively. A parallel development having previously been shown by Curtis in *S. endobioticum,* the author postulates as a general rule in this section of the genus that the resting cell is a sexual product and that the zoospore (gamete) is also capable of parthenogenetic development, giving rise to the summer sporangial phase.—*S. fulgens* is parasitic on *Oenothera lamarckiana* and *O. biennis,* invading the epidermal cells of leaves and stems, producing (1) an orange-colored sorus, about 100 μ in diam., containing typically about 50 gametangia; or (2) a resting cell, usually but 1 in each host cell, about 50-60 μ in diam. Either type of body ultimately gives rise to pear-shaped gametes, about 5 μ long, each provided with a single orange oil drop, and a long posterior cilium. All gametes are morphologically similar. When 2 gametes copulate and fuse a zygote is formed, which, after penetrating a host cell, develops into a resting spore; in the absence of copulation a single gamete may penetrate a host cell, whereupon it enlarges to fill the entire cavity of the host cell (which also enlarges), then the whole body undergoes endogenous segmentation, producing the gametangial sorus. On maturation of the sorus the wall of the host cell is broken and the gametangia become free, being moist and coherent at first, later dry and pulverulent; later they are dispersed. The resting cell germinates by the extrusion of a spherical sac, which is transformed into a gametangial sorus (exogenous) of the same size as the resting cell. Gametes derived from either type of gametangium sorus—the resting or winter stage, or the summer stage—may pair and produce zygotes, or undergo parthenogenetic development, giving rise to either a resting cell or a summer sorus respectively. At the time of copulation one of the gametes is typically sedentary, having lost its cilium and rounded up; the other gamete remains ciliated and pear shaped. Fusion is complete, including the nuclei, but the oil drops remain distinct, whereby a zygote can be distinguished from an encysted gamete. Copulation may take place between gametes derived from the same summer gametangium; thus the fungus is monoecious. Any external or internal condition favorable for the germination of the gametangium and for the activity of the gamete favors zygote formation, and vice versa. The gametes derived from a single gametangium differ in the inherent length of the swarm period, some coming quickly to rest, others remaining active for 1-2 hr. Likewise some gametangia produce gametes most of which come to rest after a short swarm period, and other gametangia produce typically long-swarming gametes. Each gamete behaves as a ♂ during the early and active period, and as a ♀ during the later and sedentary period. As the fundamental condition for copulation is that 1 gamete is sedentary, the other active, the contemporaneous germination of several gametangia affords increased opportunities for zygote formation. Temp. is the principal external factor in zygote formation, 20° C. being about the optimum. Lower temp. causes uneven germination of the gametangia, and supraoptimal temp. causes sluggish motion of the gametes.—Among the zygotes and azygotes entering the same host cell, competition for development occurs. When the host cell is low in vitality the zygotes survive, otherwise the azygotes succeed in developing into summer sori.—Gametangia from both summer and winter sori remain viable for 3 months if the temp. is low (4-5° C.) and if protected from desiccation. The resting cells stored air dry remain viable for 7 yr., and those kept in water remain dormant for half this time. They can however be brought to germination without overwintering or exposure to drought within 3-4 weeks of their formation, but germination of resting cells which remain inclosed within the host cells is greatly delayed.—*F. Weiss.*

11072. **LAGERBERG, T., G. LUNDBERG, and E. MELIN.** Biological and practical researches into blueing in pine and spruce. *Svenska Skogsvårdsföreн. Tidskr.* 25(2): 145-272; (4): 561-739. 2 col. pl. 93 fig. 1927.—Sixteen spp. and forms of Swedish fungi were isolated and investigated; 5 of them belong to Ceratostomataceae, 3 to Sphaeropsidaceae and 8 to Hyphomycetes. *Penicillium biforme* Thom, isolated from wood, causes a distinct blueing. Sphaeropsidaceae: *Sclerophoma* **entoxylina*** (p. 209); *Discula* **pinicola** (*Ligniella p.* Naumov) Petrak (p. 211). Hyphomycetes: **HORMONEMA** (p. 233), type *H.* **dematioides*** (p. 233); *Trichosporium* **tingens*** (p. 238); *Hormodendrum* **microsporum*** (p. 247); **LEPTOGRAPHIUM** (p. 257), type *L.* **lundbergii*** (p. 257); **CADOPHORA** (p. 263), type *C.* **fastigiata*** (p. 263). The influence of environmental factors (water and O content, temp., specific quality of the wood) on the growth of the fungi in the wood was investigated, and practical tests were made to find the most suitable methods of storing timber so as to prevent the occurrence of blueing.—*T. Lagerberg.*

11073. **MOESZ, G. v.** Neue Pilze aus Lettland. *Magyar Bot. Lapok* 29: 35-38. 1930.—The following are described by Moesz and Smarods: *Diplodina* **lini** (p. 35) on *Linum usitatissimum; Hendersonia* **sorbi** (p. 35) on *Sorbus aucuparia; Pleurophoma* **latvica*** (p. 36) on *Galium; Ramularia* **coriandri*** (p. 37) on *Coriandrum sativum; Stagonospora* **ophioboli*** (p. 38) in perithecia of *Ophiobolus* on *Galium. Septoria* **smarodsii*** (p. 37) on *Amaranthus adscendens.*—*C. Schermann.*

11074. **PETRAK, F.** Mykologische Beiträge zur Flora von Spanien, Portugal und der Insel Madera. *Ann. Mycologici* 29(1/2): 107-128. 1931.—*Anthostomella* **maderensis** (p. 107), on dead leaves of *Aloe* sp., Madeira; *Cucurbitaria quercina* Ell. and Ev., on *Quercus lusitanica* v. *jaginea,* described; *Entodesmium* **nevadense** (p. 109), on decaying stems of *Carduus granatensis,* Spain; *Mycosphaerella* **hepaticae** (p. 110), on dead branches of *Hepatica hispanica,* Spain, and associated with it, *Asteromella pycnidia; M.* **lygei** (p. 111), on dead leaves of *Lygeum spartium,* Spain, apparently part of the Formenkreis of *M. tassiana; M.* **monserratica** (p. 113), on dead branches of *Aphyllanthes monspeliensis,* Spain; *M.* **stipina** (p. 113), on dead leaves of *Stipa juncea,* Spain; *Pleospora echiicola* Pet., 2 forms of perithecia described; *P. mauritanica* Maire, described; *P.* **nevadensis** (p. 116), on dead stems of *Ptilotrichum spinosum,* Spain; *P. paronychiae* Cke., described; *P. permunda* (Cke.) Sacc., described from various hosts, with reference to its belonging to *Pleospora* or *Pyrenophora; Gloniella* **adianti** (*Hysterium a.* Kze), described; *Asco-*

chytella maderensis (p. 121), on dead branches of *Globularia salicina*, Madeira; *Asteromella* adeana (p. 122), on decaying leaves of *Viburnum tinus*, Spain; *Coniothyrium* jaenense (p. 123), on dead stems of *Rebania sphaerocarpa*, Spain; *C.* maderense (p. 124), on dead stems of *Teucrium betonicum*, Madeira; CYTODISCULA (p. 125) [apparently *Zythiaceae*], based on *C.* carnea (p. 125), on dry rotten wood of *Laurus canariensis*, Madeira; *Hendersonia opuntiae*, described; *Phoma* andryalina (p. 127), on dead stems of *Andryala ragusina*, Spain.

11075. PICBAUER, RICH. Additamentum ad floram Jugoslaviae mycologicam. *Glasnika Zemaljskog Muz. u Bosni i Hercegovini* 41(1): 29-34. 1 fig. 1929. Also: *Opera Inst. Phytopath. Brunae* (*Brno in Czechoslovakia*) No. 87. 29-34. 1 fig. 1929.—An annotated list of Myxomycetes; Phycomycetes; Ascomycetes; Basidiomycetes, including *Gymnosporangium* malýi* (p. 32) on *Crataegus monogyna*, type in Malý coll.; and Fungi Imperfecti.

11076. RAMSEY, G. B. Oospore stage of Peronospora viciae on peas. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(6): 52-53. 1931.—[Mimeographed.]

11077. SAWADA, KANEYOSHI. Descriptive catalogue of the Formosan fungi. Part V. [In Japanese.] *Dept. Agric. Govt. Res. Inst. Formosa, Rept.* 51. 1-131. 5 pl. 1931.—The following are published, apparently with descriptions in Japanese: *Phytophthora* cyperi-iriae* (p. 13) on *Cyperus iria*; *Plasmopara* chrysanthemi-coronarii* (p. 15) on *Chrysanthemum coronarium*; *Meliola* acaciae-confusae* (p. 16) on *Acacia confusa*; *Zukaliopsis* gardeniae* (p. 23) on *Gardenia florida*; *Aleurina* nigrodisca* (p. 30); *Nectria* citricola* (p. 32) on *Citrus tankan* f. *koshotankan*; *N.* pterospermi* (p. 33) on *Pterospermum acerifolium*; *Melampsora* salicis-warburgi* (p. 47) on *Salix warburgi*; *Phakopsora* circumvallata* (p. 49) on *Artemisia*; *Triphragmium* formosanum* (p. 52) on *Koelreuteria bipinnata*; *Uredo* milletiae* (p. 55) on *Milletia reticulata*; *Septobasidium* parlatoriae* (p. 57) on *Parlatoria zizyphus*; *Exobasidium* pieridis-ovalifoliae* (p. 65) on *Pieris ovalifolia*; *Anellaria* ochroleuca* (p. 83); *A.* planiuscula* (p. 84); *Armillaria matsudake* var. formosana* (p. 90) on *Pinus taiwanensis*; *Phoma* lebbek* (p. 102) on *Albizzia lebbek*; *Hendersonia* citricarpa* (p. 104) on *Citrus unshu*; *Sphaceloma* batatas* (p. 105) on *Ipomoea batatas*; *Glocosporium* hibisci-tiliacei (p. 106) on *Hibiscus tiliaceus*; *Cylindrosporium* phalaenopsidis* (p. 108) on *Phalaenopsis aphrodite*; *Cladosporium* sclerotiophilum* (p. 112); *Helminthosporium* citri* (p. 113) on *Citrus* spp.; *Spondylocladium* tremae (p. 114) on *Trema orientalis*; *Thyrospora* solani (*Stemphylium s.* Weber) (p. 115); *Alternaria* americana "n. sp." (*A. solani* (Ell. & Mart.) (Jones & Grout) (p. 117); *Alternaria* macrospora (*A. brassicae* var. *m.* Sac.) (p. 123); *Cercospora* lagerstroemiae-subcostatae* (p. 129) on *Lagerstroemia subcostata*; *C.* panici-miliacei* (p. 131) on *Panicum miliaceum*.

11078. SIBILIA, CESARE. Un nuovo genere di Demaziacee didimospore. [A new didymosporic genus of the Dematiaceae.] *Boll. R. Staz. Patol. Veg.* 8(4): 445-448. 2 fig. 1928.—ARTHROBOTRYELLA, near *Arthrobotrys*, with *A.* hernica, from rotting wood, Italy.—*L. R. Tehon.*

11079. SOUZA da CAMARA, MANUEL de. Proposta de divisão do género Stemphylium Wallr., fungo da ordem das Hyphales (Mart.) em. Sacc. et Trav. [Proposed division of the genus Stemphylium Wallr.] [Text in Portuguese and French] 21p. 8 fig. Emprêsa do Anuario Comercial: Lisboa, 1930.—*Stemphylium* dendriticum* (p. 12) is found on the spots of the *Fusicladium* sp. which attack apple and Japanese medlar in Portugal. The author considers spore formation a character sufficiently important for generic distinction, and therefore proposes a division of the genus retaining the name *Stemphylium* for those spp. with acrogenous conidia and designating as SOREYMATOSPORIUM (p. 18) those in which the conidia are pleurogenous.—*M. de Souza da Camara.*

11080. UNAMUNO, LUIS M. Contribución al estudio de los hongos microscópicos de la provincia de Salamanca. *Bol. R. Soc. Espan. Hist. Nat.* 31(2): 85-96. 1931.—Annotated list of: Uredinales (26); Ustilaginales (4); Oomycetes (1); Pyrenomycetes (6); Discomycetes (2); Sphaeropsidales (17) including *Septoria bromi* var. septulata (p. 92) on *Bromus maximus*, *Stagonospora* caricicola (p. 93) on *Carex*, and *Camarosporium* armeriae (p. 93) on *Armeria littoralis*; Hyphomycetes (13).

11081. WAKEFIELD, E. M. Fungi exotici: XXVII. *Kew Bull. Misc. Inform.* 1931(4): 201-206. 4 fig. 1931.—The following are new: *Merulius* miniatus (p. 201), New Zealand, *Aleurodiscus* peziculoides (p. 201), New Zealand; *Uromyces* rhodesicus (p. 202) on *Bauhinia*, Tropical Africa; *Aecidium* hederae (p. 202) on *Hedera helix*, India; *A.* lophopetali (p. 203) on *Lophopetalum wightianum*, India; *Sphacelotheca* sclerachnes (p. 203) on *Sclerachne punctata*, Siam; *Septoria* cotyledonis (p. 203) on *Cotyledon orbiculata*, So. Africa; *Septogloeum* punctatum (p. 204) on *Eugenia cordata*, So. Africa; *Beltrania* (?) malaiensis (p. 205) on *Dichopsis gutta*, Malaya; *Cercospora* didymochitonis (p. 205) on *Didymochiton richii*, Fiji; *Pucciniopsis* caffra (p. 206) on *Erica caffra*, So. Africa; *Pucciniopsis* quercina (p. 206) on *Quercus dilatata*, India.—*A. D. Cotton.*

11082. YONEMOTO, SEIITI, and HUZIO KATO. Factors influencing the perithecial formation of Aspergillus glaucus Link. *Bull. Miyazaki Coll. Agric. & Forestry* 3. 59-94. 1931.—Perithecial formation is most vigorous at about 28°C.; it never occurs below 15°C. Light and ultraviolet rays have no effect. Presence of water influences development on solid media; on liquid media the perithecia also form abundantly. Dextrose, glucose, maltose, sucrose, levulose, glycerin and galactose promote formation of perithecia; inulin, glycogen, raffinose and corn starch have no noticeable effect. N compounds are less favorable than carbohydrates. The presence of 5% salt favors perithecial growth; presence of other fungi appears to check it.

11083. YAKUSHIJI, E., und M. KUMAZAWA. Eine auf Käfern parasitierende Pilzgattung Tilachlidiopsis aus Japan. [In Japanese.] *Bot. Mag. Tokyo* 44(524): 461-463. 4 fig. 1930.—The 3rd sp. of the genus, *T.* nigra (*Isaria n.* Yakus & Kumaz) (p. 461), occurs on adults or larvae of a beetle, *Carabus insulicola* Chaudoir, in Japan (Koishikawa Botanical Garden).—*M. Kumazawa.*

MYXOMYCETES

11084. MEYLAN, CH. Recherches sur les Myxomycètes en 1927-28. *Bull. Soc. Vaudoise Sci. Nat.* 57(223): 39-47. 1 fig. 1929.—Notes on 15 spp. from the Jura Mts. and Alps are given. The diameter of the spores from normal sporangia is believed to vary within narrow limits for a species and to serve as a very safe criterion for the separation of species. *Didymium* nivicolum (p. 40), Alps, and *Lamproderma* splendens (*L. sauteri* Rost. pro parte) (p. 44), Jura, are described as new spp. *Comatricha* brachypus (*C. nigra* var. *brachypus* Meyl.) (p. 41), Jura, and *Trichia* crenulata* (*T. contorta* var. *crenulata* Meyl.)—*F. L. Howard.*

LICHENES

11085. GALLØE, OLAF. Natural History of the Danish Lichens. Original investigations based upon new principles. Part II. 84p. 128 pl. H. Aschehoug & Co.: Copenhagen, 1929. Pr. 54 Kr.—Description and figures of individual specimens of the following genera as previously given for Part I (See Biol. Absts. 2, no. 18702, 1928), *Psora, Catillaria* (including *C.* chroolepus, and *C.* graminicola n. sp.), *Bilimbia* (including *Bilimbia* subsphaeroides* (*B. sabuletorum* var. *s.* Nyl.) (p. 53); *B.* melaenida* (*B. sabuletorum* f. *m.* Nyl.) (p. 56); *B.* ternaria* (*B. milliaria* f. *t.* Nyl.) (p. 59), and *Bacidia.*—*O. Paulsen.*

11086. GALLØE, OLAF. Natural history of the Danish lichens. Original investigations based upon new principles. Part III. 114p. 127 pl. H. Aschehoug & Co.: Copenhagen. 1930.—Description and figures of individual specimens of the following genera as previously given for Part I (see Biol. Absts. 2, no. 18702, 1928): *Lecanactis, Arthroraphis, Microphiale, Pachyphiale, Bryophagus, Biatorella, Mycoblastus, Blastenia, Catocarpon, Rhizocarpon* (including *R.* **danicum**), and *Diplotomma*.—*O. Paulsen.*

BRYOPHYTA

A. LE ROY ANDREWS, *Editor*

(See also in this issue Entries 9063, 11187)

11087. ALLORGE, PIERRE. Notes sur la flore bryologique de la Péninsule Ibérique. IV. Sur quelques Muscinées intéressantes de la vallée de Bidassoa. V. Le Riccinia perennis (Steph.) Trabut en Algarve. *Rev. Bryologique* 3(1/2): 80-87. 1 map. 1930.—IV contains notes on 5 Hepaticae and 8 Musci.—V records the occurrence of *Riccinia* (originally *Riccia*) *perennis* in Portugal, previously known only from Algeria and Italy. —*A. LeRoy Andrews.*

11088. ALLORGE, PIERRE. Notes sur la flore bryologique de la Péninsule Ibérique. VIII. Additions à la flore Portugaise. *Rev. Bryologique* 4(1): 32-36. 1931. —An annotated, critical list.

11089. BIZOT, MAURICE. Contribution à la flore bryologique de la Côte d'Or [France]. *Rev. Bryologique* 4(1): 17-31. 1931.—An extensive annotated list of mosses and hepatics, including *Neckera crispa* v. julacea (p. 26).

11090. CLARK, LOIS, and T. C. FRYE. Hepaticae new to some Northwestern States. *Bryologist* 34(4): 54-55. 1931.—24 spp. not before reported for the section are listed from Montana, Idaho, Washington, and Oregon. —*A. M. Taylor.*

11091. FLEISCHER, MAX. Bemerkungen über "Morphologische Untersuchungen über die Phylogenie der Laubmoose" von W. Stepputat und H. Ziegenspeck (Königsberg). *Ann. Bryologici* 3: 89-96. 1930.—A critique of the serodiagnostic method of establishing relationships in mosses versus the morphological.

11092. GARDET, G. Trois Muscinées intéressantes du "Roc-de-Chère," Lac d'Annecy (Haute-Savoie). *Rev. Bryologique* 4(1): 40-41. 1931.

11093. GROUT, A. J. Bryology by automobile. *Bryologist* 34(4): 51-53. 1931.—Of several spp. found in Florida and northward, the most interesting was *Fissidens incurvus* var. *exiguus* growing in the Grand Caverns of West Virginia in the glare of electric lights.—*A. M. Taylor.*

11094. HILLIER, LOUIS. Sur deux hépatiques peu répandues dans le Jura. *Rev. Bryologiques* 4(1): 38-40. 1931.—*Frullania fragilifolia* Tayl. and *Reboulia hemisphaerica* Raddi.

11095. MARQUAND, C. V. B. A new species of Exormotheca from South Africa. *Kew Bull. Misc. Inform.* 1930(6): 237-239. 3 fig. 1930.—*Exormotheca* **megastomata*** (p. 237), Transvaal. This liverwort is remarkable for its powers of drought resistance, doubtless assisted by the large hyaline stomata on the dorsal surface. *C. V. B. Marquand.*

11096. MINKEVIČIUS, ANT. Pradmenys Lietuvos samanų florai tirti. [Study on the Lithuanian moss flora.] [With German summary.] *Vytauto Didžiojo Univ. Mat.-Gamtos Fak. Darbai* 5(2): 290-325. 1930/1931.—An annotated list of 207 spp. and many forms, with localities and habitats, based on the author's collections (1925-1928) and on the rich collection in the Univ. of Lithuania.

11097. PITMAN, EVADEL M. Mosses of Orr's Island, Maine. *Bryologist* 34(4): 57-58. 1931.—Several mosses, 1 hepatic and 1 lichen are mentioned.—*A. M. Taylor.*

11098. POTIER de la VARDE, R., et I. THÉRIOT. Recherches sur les affinités du genre Acanthocladiella. *Rev. Bryologique* 3(1/2): 5-11. 1 pl. 1930.—*Acanthocladiella*, proposed by Fleischer in 1914 for a moss of Madagascar, to which several African spp. have since been added, is of uncertain affinity, as shown by the divergent views of bryologists. The present authors agree with Fleischer that the genus belongs in the subfamily Heterophylloideae of the family Sematophyllaceae and hold that its species should be included in the genus *Heterophyllium*. Three n. combs. result: *H.* **flexile*** (*Microthamnium f.* R. & C.), *H.* **kilimandscharicum*** (*Acanthocladiella kilimandscharica* Broth. & P. de la V.), *H.* **transvaaliense*** (*A. transvaaliensis* Thér. & Dix.). All are figured, together with several other closely related species of *Heterophyllium*.—*A. LeRoy Andrews.*

11099. REIMERS, H. Über Orthodicranum allorgei Amann et Loeske, Dicranum canariense Hpe. und D. scottianum Turn. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(99): 943-945. 1930.—*O. allorgei* Amann & Loeske and *D. canariense* Hpe. are merely the ssp. *canariense* (Hpe.) Corb. (as var.) of *Dicranum scottianum* Turn. emend Reim. The members of this subspecies are restricted to Spain, Madeira, the Canaries, and the Azores. *Dicranum scottianum* ssp. **anglicum** (p. 944) is new; to it belong plants from Denmark, Norway, Great Britain, France, and Spain (?).—*A. M. Johnson.*

11100. REIMERS, H. Bericht über die auf dem Herbstausflug des Vereins in die Gamensee-Rinne am 19. Oktober 1930 beobachteten Moose. *Verhandl. Bot. Ver. Prov. Brandenburg* 73(1): 84-89. 1931.—The mosses observed are listed and discussed.

11101. SARRASSAT, CL. Quelques Muscinées nouvelles pour la Corse. *Rev. Bryologique* 4(1): 37-38. 1931.—A critical list.

11102. SVIHLA, RUTH DOWELL. Notes on Buxbaumia piperi in western Washington. *Bryologist* 34(4): 56. 1931.—Widely distributed throughout the region. —*A. M. Taylor.*

11103. VERDOORN, FR. Hepaticae selectae et criticae, series I. (1930). Series II. (1931). *Ann. Bryologici* 4: 122-139, 140-150. 12 fig. 1931.—The author, assisted by Ch. Douin and Th. Herzog, discusses the morphological characteristics, habitats and other ecological data for 24 liverworts (geographical ranges, synonyms and literature citations of special significance are given in many cases): *Cryptomitrium himalayense* and *Grimaldia dichotoma*, India; *Mittenia zollingeri*, Java; *Jamesoniella sonderi*, Tasmania; *Plagiochila confundens* v. **alpinoides** Herzog (p. 126), Panama; *Lophoziella integerrima, Evansia dentata, Prionolobus turneri, Cephaloziella striatula* and *C. gracillima* f. *rubra*, France; *C. rappii*, N. America; *C. hampeana* v. *elongata* and *C. curnowii*, France; *Lepidozia ulothrix*, Tasmania; *Madotheca chilensis*, Chile; *Jubula hutchinsiae* ssp. *javanica, Frullania campanulata* and *F. microauriculata*, Java; *F. nepalensis*, Celebes, Malay Penins.; *F. sinuata, F. claviloba, F. junghuhniana* and *Metzgeriopsis pusilla*, Java; *Bryopteris tenuicaulis*, Panama. II. The author, assisted by G. Chalaud, W. E. Nicholson and V. Schiffner, similarly treats the following: *Pallavicinia radiculosa*, Java; *Makinoa crispata*, Japan; *Treubia insignis*, Java; *Sewardiella tuberifera*, India; *Fossombronia cristula* v. **verdoornii*** Chal. and *Calobryum blumei*, Java; *C. rotundifolium*, Japan; *Marsupella vulcanica, Haplozia stricta* v. *radicellifera, Jamesoniella microphylla, J. ovifolia, Anastrophyllum piligerum, Chiloscyphus asselliformis* and *Zoopsis argentea*, Java; *Frullania moniliata*

ssp. *breviramea*, Sumatra, Java; *F. orientalis*, Java; *F. nigricaulis*, Sumatra, Jáva; *F. integristipula*, Java; *F. nodulosa*, Java, Borneo.—*A. J. Sharp.*

11104. **WILLIAMS, R. S. Blindia roerichii, sp. nov.** *Bryologist* 34(4): 49-51. 1 pl. 1931.—From the Himalayan mountains.—*A. M. Taylor.*

PTERIDOPHYTA

C. A. WEATHERBY, *Editor*

(See also in 6(3): Entries 6074, 6259, 8118, 8142, 8151, 8169; and in this issue 9063, 9130, 11144, 11148, 11206, 11209, 11222)

11105. **JACOT, ARTHUR PAUL. Asamushi hillside ferns.** *Lingnan Sci. Jour.* 10: 1-4. 1931.—13 spp. are recorded from northern Nippon. To account for the unequal geographical distribution though the spores are so easily transported, it is suggested that perhaps a symbiotic organism, probably of the soil, spreads much more slowly or precariously.—*A. P. Jacot.*

11106. **OGATA, MASASUKE. Icones filicum Japoniae.** [Text in Japanese, with scientific names in Latin.] 3 vols. 150 pl. Publ. Sansyusya: Tokyo, 1928-1930. Price 33 yen.—A selection of 150 Japanese ferns; 50, arranged alphabetically, per volume. Hymenophyllaceae (5), Polypodiaceae (145). Preface, introduction and descriptive text in Japanese; scientific names, synonymy and index in Roman type; explanation of plates in English. Each species has a page of description and a plate 10 × 15 in. illustrating the complete plant and about 15 enlarged details made from drawings by the author, assisted in some cases by NOBUKO OGATA. The material for illustration was collected in an area extending from Hokkaido to Formosa.—*A. N. Leeds.*

SPERMATOPHYTA

FRANCIS W. PENNELL, *Editor*

(See also in this issue Entries 9063, 9072, 9148, 9153, 10963, 11018, 11023, 11024, 11054, 11217)

GENERAL

11107. **EMBERGER, L., et R. MAIRE. Matériaux pour la flore marocaine. Fascicule 1.** *Mém. Soc. Sci. Nat. Maroc* 21/22. p. 21-53. 1929.—This paper treats of about 140 new or little-known plants, from both French and Spanish Morocco, with descriptive, taxonomic, and distributional notes. *Myosurus minimus* v. **brevipes** (p. 22); *Fumaria reuteri*, new to Africa; *Hesperis laciniata* v. **rifana** (p. 23); *Brassica* **desnottesii** (p. 23); *B. saxatilis* ssp. *nudicaulis* v. **brevisiliqua** (p. 24); *B. fruticulosa* ssp. **dolichocarpa** (p. 24); *Erucastrum leucanthum* v. **luteum** (p. 24); *Rytidocarpus moricandioides* v. **stenocarpus** (p. 25); *Halimium umbellatum* v. **villosissimum** (p. 25); *Dianthus gaditanus* ssp. **atrosanguineus** (p. 26); *Silene heterodonta* v. **platycalyx** (p. 26); *S. mesatlantica* v. **macrotricha** (p. 27); *Arenaria grandiflora*, new to Morocco; *Spergularia pitardiana* v. **villosa** (p. 27); *Paronychia kapela* ssp. *serpyllifolia* v. **hirta** (p. 27); *P.* **pseudo-aretioides** (p. 27); *P. capitata* v. **longistyla** (p. 28); *Linum suffruticosum* ssp. *eu-suffruticosum* v. **matris-filiae** (p. 28); *L. austriacum* ssp. *gaetulum* subv. **albo-violaceum** (p. 29); *Lotononis* **bullonii** (p. 29); *Genista scorpius* ssp. **mesatlantica** (p. 30); *Cytisus catalaunicus* v. **intermedius** (p. 30); *Anthyllis vulneraria* ssp. **matris-filiae** (p. 30); *Astragalus ibrahimianus* v. **mesatlanticus** (p. 31); *Coronilla valentina* ssp. *glauca* v. **zaianica** (p. 32); *Hedysarum humile* vars. **speciosum, subspeciosum** and **mesanthum** (p. 32); *Vicia glauca* v. **mesatlantica** (p. 33); *V.* **delmasii** (p. 33); *Potentilla caulescens* v. *petrophila*, new to N. Africa; *Rosa micrantha* v. **perglandulosa** R. Keller (p. 34); *Alchemilla cornucopioides*, new to Africa; *Pirus mamorensis* v. **brevipes** (p. 34); *Oenanthe crocata* L. (=*O. apiifolia* Brot.); *Caucalis bifrons* v. **subtuberculata** (p. 35); *Fedia cornucopiae* v. **hirsuta** (p. 35); *Oldenlandia capensis* v. **inconstans** Maire (*O. i.* Pomel) (p. 36); *Scabiosa graminifolia* v. **condensata** (p. 36); *Anthemis punctata*, new to Morocco; *Leucanthemum* **mesatlanticum** (p. 38); *L. fontanesii, Artemisia absinthium* and *Senecio delphinifolius*, new to Morocco; *Echinops bovei* v. **glabrescens** (p. 38); *Centaurea* **eriosiphon** (p. 39); *C. lagascae*, new to Morocco; *C. boissieri* v. **transmalvana** (p. 39); *C.* **theryi** (p. 39); *Onopordon* **mesatlanticum** (p. 40); *Scorzonera graminifolia*, new to Africa; *Hieracium lawsonii* ssp. *flocciramum* v. **atlanticum** Maire & Zahn (p. 41); *H. phlomoides* ssp. **mesatlanticum** Maire & Zahn (p. 41); *H. pseudopilosella* ssp. *tenuicaule* forms **subeglandulosum** Zahn and **pilosicaule** Zahn (p. 42); *Erica terminalis*, new to Africa; *Armeria villosa* v. **zaianica** (p. 42); *Convolvulus* **mazicum** (p. 43); *Veronica rosea* v. **virgata** (p. 44); *Thymus serpyllum* ssp. *atlanticus* v. **leiodontus** (p. 45); *Sideritis* **matris-filiae** (p. 45); × *Marrubium* **humbertii** (*M. ayardii* × *multibracteatum*) (p. 46); *Teucrium musimonum* v. **matris-filiae** (p. 46), with f. **albo-roseum** (p. 47); *T. m.* var. **mesatlanticum** (p. 47); *T.* **zaianum** (p. 47); *Chenopodium crassifolium*, new to N. Africa; *Laurus nobilis* v. **rotundifolia** (p. 47); *Euphorbia* **mazicum** (p. 48); *Carex nitida*, new to Africa; *Juniperus communis* v. *hemisphaerica*, new to Morocco; *J. thurifera* v. *africana* f. **pyramidalis** (p. 52).

GYMNOSPERMAE

11108. **FITSCHEN, JOST. Die Gattung Tsuga.** *Mitteil. Deutsch. Dendrol. Ges.* 41: 1-11. 4 fig. 1929.—A description of 15 spp. of *Tsuga* with their varieties. The principal ones under cultivation are: *T. canadensis, T. heterophylla, T. diversifolia, T. sieboldii, T. caroliniana* and *T. pattoniana. T. canadensis* is often mistaken for *T. heterophylla* and *T. diversifolia* for *T. sieboldii.*—*J. C. Th. Uphof.*

11109. **HICKEL, R. Taxacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1062-1071. 1 fig. 1931.—*Taxus* (1 sp.), *Cephalotaxus* (2 spp.), *Podocarpus* (4 spp.) and *Dacrydium* (1 sp.) are described.—*E. D. Merrill.*

11110. **HICKEL, R. Araucariacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1071-1073. 1 fig. 1931.—A single representative, *Cunninghamia sinensis** R. Br.—*E. D. Merrill.*

11111. **HICKEL, R. Abiétacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1073-1079. 3 fig. 1931.—*Keteleeria davidiana* and 4 spp. of *Pinus* (with key) are recognized.—*E. D. Merrill.*

11112. **HICKEL, R. Cupressacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1079-1085. 2 fig. 1931.—*Cupressus*, with 2 spp., and *Fokienia, Biota, Libocedrus* and *Juniperus*, each with 1 sp., are recognized.—*E. D. Merrill.*

11113. **LEANDRI, J. Gnétacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1054-1062. 2 fig. 1931.—Six spp. of *Gnetum* (with keys) are recognized and described.—*E. D. Merrill.*

11114. **LEANDRI, J. Cycadacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1085-1092. 1931.—Eight spp. of *Cycas* are recognized with keys, including

C. pectinata var. **elongata** (p. 1091) and *C.* **chevalieri** (p. 1092).—*E. D. Merrill.*

11115. **PEARSON, H. H. W.** Gnetales. vi+194p. 3 pl., 1 portrait, 90 fig. Cambridge University Press: Cambridge, 1929.—When Pearson died in 1916, this book was nearly written but needed some revision. A. C. SEWARD of Cambridge and Mrs. THODAY completed the work, which was the result of Pearson's extensive studies in the field and in the laboratory. There are five chapters: I. Habit, distribution, ecology, taxonomy. II. Vegetative morphology and anatomy. III. The inflorescence and flower. IV. Reproduction. V. Theoretical. The book presents a full résumé and discussion of previous work and contains an extensive bibliography. The author's own contribution is strongest in the descriptions of field conditions, structure and development. The general conclusion states that the interrelationships of the three genera, *Ephedra, Gnetum* and *Welwitschia,* are as vague as before; but the evidence indicates that, in spite of the occurrence in them of some angiospermous characters, they are essentially gymnosperms.—*C. J. Chamberlain.*

11116. **PILÁT, A., et J. SV. PROCHÁZKA. L'if, surtout dans les régions de la Tchécoslovaquie.** [Taxus in Czecho-Slovakia.] *Sborník Československe Akad. Zěmědelské (Ann. Czech. Acad. Agric.)* 3: 299-384. 1928. —In Czecho-Slovakia, *Taxus* is no longer uniformly distributed. In the Carpathians it is found quite frequently. It is curious that in western Czecho-Slovakia it is the lowland type up to 700 m., whereas in the east it is the subalpine type up to 1300 m. In the Carpathians its occurrence is not strictly local as in Bohemia, Moravia and Silesia, the forests of the Carpathians being for the most part in a primitive state. In Slovakia, *Taxus* is found chiefly on limestone containing about 80% $CaCO_3$. *A. Pilát (transl. by J. Kittredge, Jr.).*

11117. **PRICE, W. R. On the distribution of Pseudolarix fortunei, the golden larch.** *Kew Bull. Misc. Inform.* 1931(2): 67-68. 1931.—Gives an up to date account of the distribution in China.—*A. D. Cotton.*

ANGIOSPERMAE (MIXED)

11118. **BOLUS, L. Novitates Africanae.** *Jour. Bot.* 66(781): 9-15; (787): 195-200. 1 fig.; (788): 229-233. 1928.—Oxalidaceae: *Oxalis* **crassipes** (p. 9); *O.* **pageae** (p. 10); *O.* **subsessilis** (p. 10). Aizoaceae: *Mesembrianthemum* **pachyphyllum** (p. 11); *M.* **longifolium** (p. 196); *Delosperma* **lavisiae** (p. 11), Orange Free State; *D.* **parviflorum** (p. 230); *Ruschia* **albiflora** (p. 12); *R.* **parvifolia** (p. 12); *R.* **dyeri** (p. 230); *R.* **framesii** (p. 231); *R.* **triquetra** (p. 231); *R.* **inconspicua** (p. 232); *Aridaria* **serotina** (p. 196); *Leipoldtia* **uniflora** (p. 13); *Cephalophyllum* **rigidum** (p. 198); *Hereroa* **fimbriata** (p. 198); *H.* **latipetala** (p. 199); *H.* **calycina** (p. 200); *H.* **concava** (p. 200); *H.* **teretifolia** (p. 229). Iridaceae: *Gladiolus* **robertsoniae** Bolus f. (p. 13), Orange Free State; *G.* **patersoniae** Bolus f. (p. 14). Liliaceae: *Aloe* **pillansii** L. Guthrie (p. 15); *A.* **karasbergensis** Pillans (p. 233), South West Africa and Cape Province. Umbelliferae: *Hermas* **pillansii*** C. Norman (p. 195). Portulacaceae: *Portulacaria* **pygmaea** Pillans (p. 195). Orchidaceae: *Cynorchis* **glandulosa** (p. 232), Transvaal. All are from Cape Province unless otherwise indicated.—*A. L. Grant.*

11119. **BOLUS, L. Novitates Africanae.** *Jour. Bot.* 67(797): 132-139. 1929.—Iridaceae: *Gladiolus* **louwii** (p. 132), Kenya Colony; *G.* **vogtsii** (p. 133), Transvaal; *Tritonia* **atrorubens** (*Gladiolus a.* N. E. Br.) (p. 133); *Ixia* **rochensis** (*Tritonia r.* Ker.) (p. 133); *Watsonia* **stanfordiae** (p. 133); *W.* **starkeae,** with var. **rubra** (p. 134); *W.* **socium** Mathews & Bolus (p. 135), Natal; *Watsonia* **cooperi** (*Tritonia c.* Baker) (p. 135); *Lapeyrousia* **graminifolia** (*Tritonia g.* Baker) (p. 135). Amaryllidaceae: *Gethyllis* **multifolia** (p. 135); *G.* **unilateralis** (p. 135); *G.* **linearis** (p. 136); *G.* **grandiflora** (p. 136); *G.* **longituba** (p. 136); *G.* **campanulata** (p. 137); *Forbesia* **galpinii** (p. 137), Orange Free State. Liliaceae: *Haworthia* **variegata** (p. 137). Ericaceae: *Erica* **salteri** (p. 138); *E.* **phillipsii** (p. 138). From Cape Province unless otherwise stated.—*A. L. Grant.*

11120. **BOLUS, L. Novitates Africanae.** *Jour. Bot.* 69(817): 10-15; (818) 48-50. 1931.—Liliaceae: *Liriothammus* **adamsonii** R. H. Compton (p. 10). Iridaceae: *Homeria* **britteniae** (p. 11); *H.* **bobartioides** (p. 12); *Syringodea* **leipoldtii** (p. 12); *Romulea* **autumnalis** (p. 12); *R.* **framesii** (p. 13); *Hesperantha* **buhrii** (p. 13); *Antholyza* **vandermerwei** (p. 14); *Gladiolus* **socium** (p. 14); *G.* **strictiflorus** (p. 15), Orange Free State. Oxalidaceae: *Oxalis* **dilatata** (p. 48); *O.* **framesii** (p. 48); *O. strumosa* v. **brevipes** (p. 49); *O.* **zonulata** (p. 49). Crassulaceae: *Crassula* **watermeyerii** R. H. Compton (p. 49), Nieuwoudtville. Compositae: *Gamolepsis* **speciosa** Pillans (p. 50). From Cape Province unless otherwise specified.—*A. L. Grant.*

11121. **FISCHER, C. E. C., et al. Decades Kewenses plantarum novarum in Herbario Horti Regii conservatarum. Decas CXXV.** *Kew Bull. Misc. Inform.* 1931(1): 41-46. 1931.—*Impatiens* **nilgirica*** (p. 41), India; *Millettia* **nepalensis** R. N. Parker (p. 42), West Nepal; *Sonerila* **collina** R. N. Parker (p. 42), Burma; *Stapelia* **youngii** N. E. Brown (p. 43), Southern Rhodesia; *Hornstedtia* **sulfurea** R. N. Parker (p. 44), Burma; *Cryptocoryne* **albida** R. N. Parker (p. 44), Burma; *Fimbristylis* **aggregata** (p. 44), India; *F.* **contorta** (p. 45), S. India; *F.* **narayanii** (p. 46), India; **SPATHICHLAMYS** R. N. Parker (Rubiaceae) (p. 42), based on *S.* **oblonga** R. N. Parker (p. 43), Burma.—*A. D. Cotton.*

11122. **FISCHER, C. E. C., et al. Decades Kewenses plantarum novarum in Herbario Horti Regii conservatarum. Decas CXXVI.** *Kew Bull. Misc. Inform.* 1931 (2): 96-105. 1 fig. 1931.—*Bersama* **rosea*** Hoyle (p. 97), Tanganyika Territory; *Coelidium* **cymbifolium** C. A. Sm. (p. 98), Cape Province; *Dissotis* (*Heterotis*) **mirabilis** Bullock (p. 99), Uganda; *Begonia* **hypolipara** Sandwith (p. 99), Honduras; *Eriocephalus* **aromaticus** C. A. Sm. (p. 100) and *E.* **tenuipes** C. A. Sm. (p. 101), Cape Province; *Cyphocarpus* **innocuus** Sandwith (p. 102), Chile; *Anguloa* **sagittata** Summerhayes (p. 102), Colombia?; *Scirpus* **jacobi** (p. 103), India; **ASCOPHOLIS** (Cyperaceae) (p. 104), based on *A.* **gamblei** (p. 105), India.—*A. D. Cotton.*

11123. **SANDWITH, N. Y. Contributions to the flora of Tropical America, V. Saprophytes collected by the Oxford University Expedition to British Guiana, 1929.** *Kew Bull. Misc. Inform.* 1931(1): 54-61. 1931.—*Voyria* **rhodochroa** (p. 55); *Voyriella* **oxycarpha** (p. 56); *Miersiella* **aristata** (p. 59); *Cymbocarpa* **saccata** (p. 60); *Miersiella* **costata** (*Dictyostega c.* Miers) (p. 59).—*N. Y. Sandwith.*

MONOCOTYLEDONES

11124. **COLLINS, G. N. The phylogeny of maize.** *Bull. Torrey Bot. Club* 57(4): 199-210. 1930.—Discusses methods of tracing phylogeny and points out that man is the most important factor in evolution of maize. The differentiating characters of the genera *Tripsacum, Euchlaena* and *Zea* are given. Arranged in the order of their affinities with maize the series of related forms is: Mexican *Euchlaena,* Florida *Euchlaena, Euchlaena perennis,* and *Tripsacum.* The possible origin of domesticated maize is considered under: mutation, selection from *Euchlaena,* evolution from a form independent of *Euchlaena,* and hybridization between *Euchlaena* and some member of the Andropogoneae. None of the proposed methods is in complete accord with the facts, but the theory of hybrid origin is considered the most plausible.—*G. N. Collins.*

11125. **DANDY, J. E. Some new names in the Monocotyledones.-I.** *Jour. Bot.* 69(818): 53-55. 1931.—*Protolirion* **sakuraii** (*Miyoshia s.* Makino) (p. 53); *Manisuris* **sulcata** (*Peltophorus sulcatus* Stapf) (p. 54); *Hypogynium* **virgatum** (*Andropogon virgatus* Desv.) (p. 54); *Dybowskia* **dybowskii** (*Andropogon d.* Franch.) (p. 54); *Leucophrys* **psammophila** (*Panicum psammophilum* Welw.) (p. 54); *Urochloa* **mosambicensis** (*Panicum* **mosambicense** Hack.) (p. 54); *Acroceras* **zizanioides**

(*Panicum oryzoides* Sw. not Arduino) (p. 54); **OTTOCHLOA** (*Hemigymnia* Stapf, not Griff.) (p. 54); *O.* nodosa (*Panicum multinode* Presl, not Lam.) (p. 55); *O.* arnottiana (*Panicum arnottianum* Nees) (p. 55); *O.* fusca (*Hemigymnia f.* Ridl.) (p. 55); *O.* malabarica (*Poa m.* L.) (p. 55); *Cyrtococcum* chaetophoron (*Panicum c.* Roem. & Schult.) (p. 55). A full list of synonyms is given for each sp.—*A. L. Grant.*

11126. **FERNALD, M. L. Some rare plants of Scotland.** *Jour. Bot.* 69(817): 8-10. 1931.—Two plants unusual in Great Britain were found on a trip to Loch Maree. *Eriophorum opacum* (Björnstr.) Fernald had not been recorded from Great Britain, and *Scirpus hudsonianus* (Michx.) Fernald had been collected only from 1 station. Status of these spp., with notes on distinguishing characteristics and relationships, are included.—*A. L. Grant.*

11127. **JUMELLE, HENRI. Les Neophloga palmiers de Madagascar.** *Ann. Mus. Colonial Marseilles* 6(3): 5-47. 1928.—The author gives the distinguishing characteristics of the genus, a key based on spadix and leaf characters, and taxonomic descriptions of 22 spp. of *Neophloga*, including: *N.* integra (p. 13), *N.* simianensis (p. 13), *N.* lucens (p. 15), *N.* occidentalis (p. 24), *N.* montana (p. 29), *N.* lutea (p. 32), *N.* betamponensis (p. 33), *N.* mangorensis (p. 34), *N.* littoralis (p. 41), and *N.* lanceolata (p. 45).—*L. K. Henry.*

11128. **LOUSLEY, J. E. The Schoenoplectus group of the genus Scirpus in Britain.** *Jour. Bot.* 69(822): 151-163. 1931.—An extended account of the relationships, geographical distribution in Great Britain and hybrids within the group.—*A. L. Grant.*

11129. **PRAIN, D., and I. H. BURKILL.** Dioscorea: section Stenocorea. *Kew Bull. Misc. Inform.* 1931(2): 88-91. 1931.—A general account of the section, with a key to the 5 spp. included and a plan showing their geographical distribution. *D.* sumatrana (p. 90), Sumatra, is new.—*C. Fischer.*

11130. **SOÓ, RALPH. A new Himalayan Orchis.** *Jour. Bot.* 66(781): 15-17. 1 fig. 1928.—*Orchis* graggeriana (p. 15), India; *O. hatagirea* vars. schlaginweitii (p. 17), Tibet, doniana (p. 17), Tibet, and afghanica (p. 17), Afghan.—*A. L. Grant.*

11131. **STAERK, EBERHARD. Anleitung zur Bestimmung von Gräsern.** 36p. 32 pl. P. Parey: Berlin, 1926. Price, M 2.50.—The work is designed for the determination of grasses not in flower. A brief introduction and glossary is followed by a key to the principal economic grasses of Germany, using vegetative characters only. Each species is illustrated by an enlarged photograph showing sheaths, ligules, and blades. A second key is given to the common grasses of Germany, without illustration.—*A. Chase.*

11132. **TUTIN, T. G. Two Madeiran grasses.** *Jour. Bot.* 69(819): 80-81. 1931.—*Imperata cylindrica* Beauv. and *Agrostis olivetorum* Gren. & Godr. are reported for the first time from Madeira.—*A. L. Grant.*

DICOTYLEDONES

11133. **ANDRÉJEFF, W. Über die homologen Reihen der Formen der Stieleiche, Traubeneiche und Flaumeiche. [Homologous groups of forms of Quercus robur, Q. sessiliflora and Q. lanuginosa.]** *Mittzeil. Deutsch. Dendrol. Ges.* 41: 186-206. 17 fig. 1929.—A number of extensive descriptions are presented concerning variations of fruits, leaves, petioles, shape of the acorn, time of leaf- and flower development.—*J. C. Th. Uphof.*

11134. **BAILEY, CLARA MAURIE. The genus Peperomia in northeastern South America.** *Trans. Illinois State Acad. Sci.* 20: 41-55. 1927.—21 spp. are mentioned as having been reported from one or more of the three Guianas. Of these, the report of the occurrence of *P. circinata* is based on a specimen actually collected in Brazil, and the type specimen of *P. piperea* is not a Peperomia, but consisted of a spike of some *Piper* and leaves of an aroid. The other 19 spp. are fully described, and 2 keys, one based on vegetative characters and one on fruit characters, are provided. There is a bibliography containing all works referring to plants of this genus from the Guianas and an index to the spp. mentioned.—*T. D. Howe.*

11135. **BRANDT, TH. En för Sverige ny Cirsium-hybrid. [A Cirsium hybrid new to Sweden.]** *Bot. Notiser* 1930(6): 507. 1930.—*C. canum* × *oleraceum* in Malmöhus.—*H. K. Svenson.*

11136. **BULLOCK, A. A. The genus Kraussia.** *Kew Bull. Misc. Inform.* 1931(5): 254-257. 1931.—A history of the genus, which has been confused with *Tricalysia*, from which it is distinguished by a key. A key to the spp. of *Kraussia* follows, with an enumeration of the 3 spp., including *K. incerta* (p. 256), Transvaal, and *K.* speciosa (p. 256), Tanganyika Territory. A list of excluded spp. follows, with 3 of *Tricalysia* and 1 of *Tarenna.* —*A. A. Bullock.*

11137. **BUROLLET, P. A. Remarques sur quelques Synanthérées adventices.** *Bull. Soc. Bot. France* 76 (7/8): 758-764. 1929.—Discusses the appearances in France of *Galinsoga aristulata* Bicknell, *G. brachystephana* Regel, *G. parviflora* Cav., and *Siegesbeckia orientalis* L.—*J. P. Young.*

11139. **CAMUS, AIMÉE. Bétulacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1033-1041. 1 fig. 1931.—*Carpinus*, 3 spp., with key, *Betula alnoides* and *Alnus nepalensis.*—*E. D. Merrill.*

11140. **CANBY, MARGARET L. The genus Corethrogyne in Southern California.** *Bull. Southern California Acad. Sci.* 26(1): 8-16. 1927.—A revision of the varieties of *Corethrogyne filaginifolia* (H. & A.) Nutt. in Southern California, based on field studies and on material from Pomona, Harvard, Univ. of California, and other herbaria. The 11 varieties described include peirsoni (p. 14), typica (*C. f.* (H. A.) Nutt.) (p. 10), brevicula (*C. b.* Greene) (p. 12), incana (*C. i.* Nutt.) (p. 14), and sessilis (*C. s.* Greene) (p. 15). A key is given, and specimens cited.—*E. E. Stanford.*

11141. **CONARD, H. S., and CORNELIA CLARKE. The pubescence of Lithospermum canescens and L. gmelini.** *Proc. Iowa Acad. Sci.* 35: 111-112. 1928(1930).—By enlarged photographs of identical magnification (12×) the characteristic hairs are shown.—*H. S. Conard.*

11142. **CRAIB, W. G. Contributions to the flora of Siam. Additamentum XXX.** *Kew Bull. Misc. Inform.* 1931(4): 206-221. 1931.—*Gilibertia* siamensis (p. 206); *Viburnum* kerrii Geddes (p. 207); *V.* sessiliflorum Geddes (p. 207); *Nauclea* brunnea (p. 208); *Adina* dissimilis (p. 208); *A.* polycephaloides (p. 209); *Uncaria* glaucescens (p. 210); *Wendlandia* nobilis (p. 210); *Greenea* oblonga (p. 211); *G.* siamensis (p. 211); *Argostemma* condensum (p. 212); *A.* dispar (p. 213); *A.* fuscum (p. 213); *A.* lobulatum (p. 214); *A.* saxicolum (p. 215); *A.* septatum (p. 215); *Clarkella* siamensis (p. 216); *Hedyotis* betongensis (p. 216); *H.* corymbiformis Geddes (p. 217); *H.* cytisoides (p. 217); *H.* dawsoniana (p. 218); *H.* decora (p. 219); *H.* densa (p. 219); *H.* diversifolia Geddes (p. 220); *H.* garrettii (p. 220); *H.* geddesiana (p. 221).—*A. D. Cotton.*

11143. **CRAIB, W. G. Contributions to the flora of Siam. Additamentum XXXI.** *Kew Bull. Misc. Inform.* 1931(5): 275-280. 1931.—*Hedyotis* impedita (p. 276); *H.* lychnidifolia (p. 276); *H.* pitardiana (p. 277); *H.* punicea (p. 277); *H.* ridleyana (p. 278); *H.* sarmentosa (p. 278); *Chasalia* chartacea (p. 279); *C.* membranacea (p. 280); *C.* microphylla (p. 280).—*A. D. Cotton.*

11144. **EXELL, A. W., et al. Notes from the British Museum Herbarium.** *Jour. Bot.* 69(820): 98-102. 1 fig. 1931.—*Xylopia* talbotii (Annonaceae) (p. 98), Nigeria; *X.* otunga (p. 99), Cameroons; *Tisonia* whitei (Flacourtiaceae) (p. 99), Madagascar, and *Sarcosperma* kachinensis (*Combretum kachinense* King & Prain) (Sapotaceae) (p. 100) are described by Exell. *Eryngium* dorae* C. Norman (Umbelliferae) (p. 100), Uruguay. *Cyclophorus* lanceolatus Alston (*Acrostichum lanceolatum* L.) (Polypodiaceae) (p. 102).—*A. L. Grant.*

11145. **EXELL, A. W. The genera of Combretaceae.** *Jour. Bot.* 69(820): 113-120; (821): 121-128. 1931.—An

artificial key to the genera is given and a key to the genus *Quisqualis*. The latter is divided into 4 sections: COMBRETOPSIS (p. 120), CAMPYLOGYNE (p. 120), SPHALANTHUS (p. 121), EUQUISQUALIS (p. 123). *Quisqualis* hensii (*Combretum h.* Engl. & Diels) (p. 120); *Q. h.* var. genuina (p. 120), Belgian Congo; *Q. h.* var. pyriformis (*Combretum pyriforme* DeWild.) (p. 120); *Q.* exannulata (*Cacoucia e.* O. Hoffm.) (p. 121); *Q.* mussaendiflora (*Combretum mussaendiflorum* Engl. & Diels) (p. 121); *Q.* latialata (*Combretum latialatum* Engl.) (p. 121); *Q.* pellegriniana (*Combretum pellegrinianum* Exell); *Q.* littorea (*Cacoucia l.* Engl.) (p. 121); *Q.* conferta (*Sphalanthus confertus* Jack) (p. 122); *Q.* thorelii (p. 122), Indo-China; *Q.* parviflora (*Q. densiflora* var. *p.* Ridley) (p. 123).—*A. L. Grant.*

11146. **FRANCIS, W. D. Two Rutaceae from Queensland and New Guinea.** *Kew Bull. Misc. Inform.* 1931(4): 188-191. 1931.—The species passing under the name of *Evodia accedens* Bl. in Queensland is *E. elleryana* F. Muell. Of this are recognised: var. pilosa (*E. tetragona* var. *p.* Lauterb.) and var. tetragona (*E. t.* K. Schum.) (p. 189). The 1st variety is widely spread in Queensland and also occurs in New Guinea; the 2nd is frequent in New Guinea. The species known as *E. muelleri* Engl. was based on a mixture, the fruits being obtained from a sp. of *Acronychia;* it consequently becomes *Acronychia* muelleri n. comb. (p. 190), and an emended description is furnished. A table contrasts *Evodia elleryana* and *Acronychia muelleri.*—*V. S. Summerhayes.*

11147. **FRÖDERSTRÖM, HARALD. The genus Sedum L. A systematic essay. I.** *Acta Horti Gothoburgensis* 5(Suppl.): 1-75. 28 pl., 304 fig. 1930.—*S. primuloides* var. pleurogynanthum* (*S. pleurogynanthum* Hand.-Mzt.) (p. 24); *S. dumulosum* var. rendlei (*S. r.* Hamet) (p. 28); *S. quadrifidum* vars. fastigiatum* (*S. f.* Hook. f. & Thoms.), himalense* (*S. h.* D. Don), tibeticum* (*S. t.* Hook. f. & Thoms.) and bouvieri (*S. b.* Hamet) (p. 30-32); *S. crassipes* vars. stephani (*S. s.* Cham.) and cretini (*S. c.* Hamet) (p. 36); *S. roseum* vars. atropurpureum* (*S. a.* Turcz.) and polygamum* (*S. p.* Rydb.) (p. 39-40); *S. bupleuroides* vars. rotundatum (*S. r.* Hemsl.), discolor* (*S. d.* Franch.) and purpureoviride (*S. p.* Praeg.) (p. 44-45); *S. populifolium* var. notarjanni* (*S. n.* Ten.) (p. 58); *S. populifolium* × *ewersii** n. hybr. (p. 58).

11148. **FRÖMAN, INGMAR. Phyllitis, Helichrysum och Eryngium på Gotland. [Phyllitis, Helichrysum and Eryngium in Gotland, Sweden.]** *Bot. Notiser* 1930(3/4): 225-232. 3 fig. 1930.—The literature on the occurrence of *Phyllitis* in Sweden is briefly reviewed. At Ekese in Gotland the plants are very few in number and found only in fissures on inaccessible calcareous cliffs. Two photographs are included. Formerly the plant was more abundant, but all accessible specimens have long since been removed for garden planting. *Helichrysum arenarium,* supposed to be extinct in Gotland, was found in 1926 in Alskog parish. *Eryngium maritimum**, known previously from a few stations on the west coast, appeared in 1929 near Ljugarn on the east coast.—*H. K. Svenson.*

11149. **GAGNEPAIN. Pédaliacées.** In: **H. LECOMTE. Flore Gén. Indo-Chine** 4(5): 607-608. 1930(pars).—Two genera, *Pedalium* and *Sesamum.*—*E. D. Merrill.*

11150. **GATES, F. C., and DOROTHY J. CASHON. Star-thistle (Centaurea picris Pall.) a new weed in Kansas.** *Trans. Kans. Acad. Sci.* 31: 50. 1929.—Noting the appearance of *Centaurea picris* from the Caspian region into northeastern Kansas in 1921.—*F. C. Gates.*

11151. **GREENMAN, J. M. A new variety of Senecio aureus L.** *Ann. Missouri Bot. Gard.* 16(4): 405-406. 1 pl. 1929.—*Senecio aureus* var. ashei, Virginia (type) and Tennessee.—*B. McAvoy.*

11152. **HALL, L. B. Short notes.** *Jour. Bot.* 66(781): 24-26. 1928.—*Erica cinera* var. rendlei (p. 25), England.

11153. **HU, H. H. Notulae systematicae ad floram sinensem, III.** *Jour. Arnold Arboretum* 12(3): 151-156. 1931.—The hitherto unknown fruit of *Fagus lucida* Rehd. & Wils. is described, and the following from the province of Kwangsi proposed: *Hydrangea* kwangsiensis (p. 152), *Citrus* kwangsiensis (p. 153), *Acer* angustilobum (p. 154), *A. oblongum* v. macrocarpum (p. 154), *Rhododendron* minutiflorum (p. 155). *Porana sinensis* Hemsl. (=*Vatica cordata* Hu).—*A. Rehder.*

11154. **HUBER, ALWINE. Veronica L. I. Die Sektionen Pseudolysimachia Koch und Veronicastrum Benth. und die Gattung (Sektion) Leptandra Benth.** *Pflanzenareale* 2(4): 29-34. 9 maps. 1929.—Section *Leptandra* includes *Veronica virginica, V. sibirica* and *V. tubiflora* in eastern N. Amer. and eastern Asia; the disjunctional distribution shows the relatively great age of the group. Section *Pseudolysimachia* includes *V. grandis, V. laeta, V. pinnata, V. incana, V. spuria, V. spicata,* and *V. longifolia* with coherent distributions indicating that this is evidently a recently developed group. A composite range-map portrays the main area of distribution from the N. Balkan States through S. W. Russia to the Pacific Ocean. Section *Veronicastrum* includes 5 subgroups so strongly differentiated and of such wide and disjunctional distribution as to indicate the great age of the section. Stations for the 22 spp. are in Japan, western U. S. A. and Canada, east Canada, Greenland, Europe, central Asia, and isolated spots in central Africa. —*J. W. Gillespie.*

11155. **HUTCHINSON, J., et al. Tropical African plants: VIII.** *Kew Bull. Misc. Inform.* 1931(5): 270-275. 1931.—*Ricinodendron* tomentellum Hutch. et Bruce (p. 270), Kenya; *Dichapetalum* keniense Hutch. et Bruce (p. 270), Kenya; *Crotalaria* (*Simplicifoliae*) unicaulis Bullock (p. 271), Northern Rhodesia; *Loranthus* (*Longicalyculati*) acacietorum Bullock (p. 271), *Cussonia* jatrophoides Hutch. et Bruce (p. 273), *Lagynias* pallidiflora Bullock (p. 273), *Tecomaria* rupium Bullock (p. 274) and *Leucas* (*Astrodon*) pododiskos Bullock (p. 275), all from Tanganyika; *Aporrhiza nitida* Gilg, amplified description; *Lagynias* lasiantha Bullock (*Pachystigma lasianthum* Sond.) (p. 274); *Mimulopsis* glandulosa Bullock (*Epiclastopelma glandulosum* Lindau) (p. 275).—*A. D. Cotton.*

11156. **JÁVORKA, ALEXANDER. Hungarian species of Onosma.** (English translation by C. C. Lacaita.) *Jour. Bot.* 66(781): 1-9. 1928.—A translation of a paper appearing in *Ann. Mus. Nation. Hungaricii* in 1906.

11157. **KLOOS, A. W. Jr. Het Geslacht Thymus in Nederland. [The genus Thymus in Netherlands.]** *Verslag. en Mededeel. Nederlandsche Bot. Ver.* 1925: 276-337. 14 fig. 1926.—A synopsis of the genus. A brief discussion of the characters is followed by a detailed one of ancient literature and synonyms, especially on the names *T. serpyllum, T. chamaedrys,* and *T. pulegioides.* A key is provided to the Dutch forms of *T. serpyllum* L. (sens. ampl.) arranged in 2 well-defined spp.: *T. chamaedrys* Fr. and *T. angustifolius* Pers. and their hybrid *T. celakovskyanus* M. Schulze. Other sections of the paper deal with: (1) *T. chamaedrys* Fr. and its forms (*ovatus* Mill., *glaber* Mill., *praelongus* Briquet and *confusus* Briquet); (2) *T. angustifolius* Pers. and its forms (*silvicola* W. et Gr., *linearifolius* W. et Gr., *curvifolius* W. et Gr., *rigidus* W. et Gr., *ericoides* W. et Gr., and *empetroides* W. et Gr., of each of which a photograph is reproduced); (3) *T. celakovskyanus* M. Schulze; (4) some monstrosities; (5) cultivated and introduced forms such as *T. lanuginosus* Mill., *T. splendens* Hort., *T. britannicus* Ronn., *T. vulgaris* L., *T. citriodorus* Pers. (with photographs of the specimen in Herb. Persoon). The last section gives a summary with 2 maps of the localities where *T. chamaedrys* and *T. angustifolius* are found in the Netherlands.—*A. W. Kloos, Jr.*

11158. **LABRIE, J. "Rosa gallica" et ses sous-espèces en Gironde.** *Actes Soc. Linn. Bordeaux, Proc.-Verb.* 80: 31-36. 1 fig. 1928.—The author discusses the distinguishing characters and the distribution of local forms of *Rosa,* none of which are considered indigenous.

11159. **LEANDRI, J. Cératophyllacées.** In: **H. LECOMTE. Flore Générale Indo-Chine** 5(10): 1052.

1 fig. 1931.—A single species, *Ceratophyllum demersum** L.—*E. D. Merrill.*

11160. **LECOMTE, H.** Sapotacées. Flore Générale Indo-Chine 3(7): 877-915. 1930.—Ten genera are recognized, the largest being *Sideroxylon* with 11 spp. *Mimusops elengi* v. poilanei (p. 880); *Manilkara* hexandra (*Mimusops h.* Roxb.) (p. 881); *Eberhardtia krempfii* v. magnifica (p. 884); *Sideroxylon wightianum* v. ballansae (p. 887); *S.* racemosum (*Planchonella racemosa* Pierre) (p. 888), and var. subracemosum (p. 889); *S.* baranense (p. 889); *S.* clemensii (p. 890); *S.* annamense (*Planchonella annamensis* Pierre) (p. 892); *S. ferrugineum* v. poilanei (p. 893); *S. hookeri* v. mekongense (p. 893); *S. cambodianum* v. thorelii (p. 894); *S.* bonianum (*Planchonella boniana* Dubard) (p. 894); *S.* eburneum A. Chev. (p. 895); *Donella roxburghii* var. tonkinensis (p. 898); *Palaquium* poilanei (p. 900); *P.* annamense (p. 900); *Bassia* alpina A. Chev. (p. 907); *Payena* annamensis (p. 909); *P.* floribunda (*Dasyaulus floribundus* Pierre) (p. 910); *P.* cambodiana (p. 912); *P.* elliptica (*Dasyaulus ellipticus* Pierre) (p. 913); *Sarcosperma* tonkinense (p. 914).—*E. D. Merrill.*

11161. **LECOMTE, HENRI.** Ébénacées. Flore Gén. Indo-Chine 3(7): 915-987. 11 fig. 1930.—Two genera are admitted, *Diospyros* with 64 and *Maba* with 7 spp., for which keys to genera and species are provided. *Diospyros ehretioides* vars. aho and harmandii (p. 925); *D. oocarpa* var. attopeuensis (p. 929); *D. eugenii* vars. laotica and tonkinensis (p. 934); *D.* bejaudii (p. 936); *D. odoratissima* vars. oblonga and pseudoebenoides (p. 940); *D. cordifolia* var. oblongifolia (p. 941); *D. nitida* var. peralata (p. 942); *D.* magnifica (p. 942); *D.* fleuryana A. Chev. (p. 948) and var. coriacea H. Lec. (p. 948); *D. dasyphylla* var. oblongifolia (p. 950); *D. eriantha* vars. balansae, fragrans, conica and latifolia (p. 952); *D.* cambodiana (p. 953); *D.* phanrangensis (p. 956); *D. embryopteris* var. siamensis (p. 958) and var. thirung (p. 959); *D. decandra* vars. laosiana and tigrina (p. 962); *D. baranensis* v. thoreliana (p. 964); *Maba* nebulorum (p. 978).—*E. D. Merrill.*

11162. **MACBRIDE, J. FRANCIS.** Various spermatophytes. *Field Mus. Nat. Hist. Publ. 244. Bot. Ser.* 4(5): 99-124. 1927.—The following new species, varieties, form and combinations are by Macbride unless otherwise stated and the new plants are Peruvian except where a different locality is indicated: *Parosela* trichocalyx (*Dalea t.* Ulbrich) (p. 102); *P.* exilis (*Dalea e.* DC.) (p. 103); *P. microphylla* var. brevis (p. 103); *P.* vicina (p. 103); *P.* galbina (p. 104); *P.* calocalyx (*Dalea c.* Ulbrich) (p. 104); *P.* sulfurea (*Dalea s.* Ulbrich) (p. 104); *P.* weberbaueri (*Dalea w.* Ulbrich) (p. 105); *P.* sericophylla (*Dalea s.* Ulbrich) (p. 105); *P. humifusa* var. anatona (p. 105), Ecuador; *P.* catatona (p. 105); *P.* peruviana (p. 106); *P. boliviana* var. herrerae (p. 106); *P.* pennellii (p. 107); *P.* azurea (*Psoralea a.* Phil.) (p. 107); *P.* hofstenii (*Dalea h.* Fries) (p. 108); *P.* myriadenia (*Dalea m.* Ulbrich) (p. 108); *P.* onobrychis (*Dalea o.* DC.) (p. 108); *P.* eosina (p. 109), Bolivia; *P.* onobrychoides (*Dalea o.* Griseb.) (p. 109); *P.* elegans (*Dalea e.* Gillies) (p. 109); *P.* astragalina (*Dalea a.* HBK.) (p. 109); *P.* nova (*Dalea n.* Ulbrich) (p. 110); *P.* killipii (p. 110), Ecuador: *P.* fieldii (p. 111); *P.* rubricaulis (*Dalea r.* Ulbrich) (p. 112); *P.* kuntzei (*Dalea k.* Harms) (p. 112); *P.* jamesonii (p. 112), Ecuador; *Psoralea* remotiflora (p. 113); *Calacinum* axillare (*Polygonum a.* Hook. f.) (p. 115); *C.* complexum (*Polygonum c.* A. Cunn.) (p. 115); *C.* diclinum (*Polygonum d.* F. Muell.) (p. 115); *C.* ephedrioides (*Muehlenbeckia e.* Hook. f.) (p. 115); *C.* platycladum (*Polygonum p.* F. Muell.) (p. 115); *C.* fruticulosum (*Polygonum f.* Walp.) (p. 115); *C.* volcanicum (*Polygonum v.* Benth.) (p. 115); *C.* sagittifolium (*Coccoloba sagittifolia* Ort.) (p. 116); *C.* hastulatum (*Rumex hastulatus* Smith) (p. 116); *C.* chilense (*Muehlenbeckia chilensis* Meisn.) (p. 116); *C.* tamnifolium (*Polygonum t.* HBK.) (p. 116); *C.* leptobotrys (*Muehlenbeckia l.* Meisn.) (p. 116); *C.* tiliaefolia (*Muehlenbeckia t.* Wedd.) (p. 117); *C.* peruvianum (*Muehlenbeckia peruviana* Meisn.) (p. 117); *Malesherbia* ardens (p. 117); *M.* turbinea (p. 118); *Allocarya* kunthii (*Anchusa k.* Walp.) (p. 119); *A.* pygmaea (*Anchusa p.* HBK.) (p. 119); *A.* congesta (*Eritrichium humile* var. *congestum* Wedd.) (p. 119); *Liatris scariosa* f. benkei (p. 124), Indiana. The publication consists of 6 papers: The Perennial South American Paroselas; Further Peruvian Psoraleas; An Earlier Name for *Muehlenbeckia;* New Peruvian Malesherbias; A Defense of *Allocarya;* and Notes on *Cucumis, Palafoxia, Liatris.* The 1st is a revision of this group of *Parosela,* with an artificial key to spp., descriptions of new spp. and varieties and references to earlier described spp. The 3rd gives the author's reasons for taking up *Calacinum* in place of *Muehlenbeckia* and makes the necessary n. combs. The 5th is a detailed presentation of the author's arguments for maintaining *Allocarya* as a genus distinct from *Plagiobothrys* and gives a key for the separation of the two genera. The titles of the other papers indicate their contents.

11163. **MACKLIN, E. D.** The Casuarina distyla complex. *Kew Bull. Misc. Inform.* 1931(3): 145-151. 1931.—A short discussion of previous work on the group is followed by a key to the 7 spp. recognized, which are enumerated with citations of all specimens seen, including all those at Kew and at the British Museum. *C.* paradoxa (p. 150), Australia, is keyed out and placed in the enumeration; complete description and citation of records will follow.—*V. S. Summerhayes.*

11164. **McMINN, HOWARD E.** A geographic and taxonomic study of the California species of the genus Ceanothus. *Contr. Dudley Herb. Stanford Univ.* 1(4): 121-147. Map. 1 pl. 1930.—An account of 35 spp. with descriptive key, 3 phylogenetic charts of the *Euceanothus* section, a geographical and phylogenetic chart of the *Cerastes* section in California, indicating the probable origin and migration of the various species, and plate showing character differences between the *Euceanothus* and *Cerastes* sections. No new spp. are described. All doubtful forms are listed under the heading variations, there to remain until further results from field and transplant experiments are obtainable. Cross section preparations from leaves of all spp. of the *Cerastes* section show the stomata located in sunken pits on the under side of the leaves while sections of leaves of the *Euceanothus* sections show the stomata in the lower epidermis. The distribution of spp. is listed by counties. —*H. E. McMinn.*

11165. **MARQUAND, C. V. B.** New Asiatic gentians II. *Kew Bull. Misc. Inform.* 1931(2): 68-88. 1931.—An outline of the author's reclassification is given. The genus *Crawfurdia* is sunk in *Gentiana,* which latter is limited by the segregation as a separate genus of *Gentianella,* so that the following are included: *Gentiana* heleni n. nom. (*Crawfurdia trailiana* Forrest) (p. 69); *G.* fratri n. nom. (*C. delavayi* Franch.) (p. 70); *G.* khamensis n. nom. (*C. thibetica* Franch.) (p. 70); *G.* fascicularis n. nom. (*C. fasciculata* Wall) (p. 70); *G.* kingdonii n. nom. (*C. wardii* Marquand) (p. 70); *G.* confusa n. nom. (*C. affinis* C. B. Clarke) (p. 70); *G.* golowninia n. nom. (*C. japonica* Sieb. et Zucc.) (p. 70); *G.* speciosa (*C. s.* Wall.) (p. 70); *G.* angustata (*C. a.* C. B. Clarke) (p. 70); *G.* bulleyana (*C. b.* Forrest) (p. 70); *G.* campanulacea (*C. c.* Wall. et Griff.) (p. 70); *G.* luteoviridis (*C. l.-v.* C. B. Clarke) p. 70; *G.* eurycolpa (p. 71); *G.* discoidea (p. 72); *G.* crawfurdioides (p. 72), Tibet, with var. macrophylla (p. 73), Tibet and Burma; *G.* bomareoides (p. 73), Burma; *G.* sinkuensis (p. 73), Burma; *G.* iochroa (p. 74), Tibet; *G.* curviflora (p. 74); *G.* semialata (p. 75); *G.* membranacea (p. 75), Burma; *G.* pricei (p. 75); *G.* sessiliflora (p. 76); *G.* nienkui (p. 76); *G.* dimidiata (p. 77); *G.* cordata (p. 77); *G.* caudata (p. 78); *G. golowninia* var. oblonga (p. 79); *G.* dendrologi (p. 79); *G.* wutaiensis (p. 80); *G.* wasenensis (p. 80); *G.* subocculta (p. 81), China and Tibet; *G. hexaphylla* var. caudata (p. 81); *G. arethusae* vars. delicatula (p. 81), Tibet, and rotundatolobata (p. 82); *G.* emergens (p.

82); *G. trichotoma* var. brevicaulis (p. 82); *G.* chingii (p. 83); *G.* gilvostriata (p. 83), Burma; *G. handeliana* var. brevisepala (p. 84), Burma; *G. veitchiorum* var. caelestis (p. 84); *G. sino-ornata* var. punctata (p. 84), Burma; *G.* choanantha (p. 85); *G. pedicellata* var. chingii (p. 85); *G.* macraucena (p. 85), Tibet; *G.* moniliformis (p. 86), Tibet; *G.* parryae (p. 86), India; *G.* subuniflora (p. 87); *G.* radiata (p. 87); *G.* anisostemon (p. 88). New material is from China if not otherwise stated.—*C. V. B. Marquand.*

11166. MOSS, C. E. Pleiosepalum, a new genus of Caryophyllaceae. *Jour. Bot.* 69(819): 65-67. 1 pl. 1931.—PLEIOSEPALUM (Polycarpeae) (p. 65), genotype *P.* mosambicinum* (p. 65), from near Lourenco Marques, Portuguese East Africa.—*A. L. Grant.*

11167. PELLEGRIN, F. Lentibulariacées (Utriculariacées). In: H. LECOMTE. Flore Générale Indo-Chine 4(5): 467-487. 3 fig. 1930.—A single genus (*Utricularia*) with 26 spp., including *U.* evrardii (p. 476); *U. delphinioides* v. minor (p. 477); *U. hirta* v. elongata (p. 480); *U. brevilabris* v. parviflora (p. 481); *U. filicaulis* v. papillosa (p. 486). Key to spp. is given.—*E. D. Merrill.*

11168. PELLEGRIN, F. Gesnéracées (Cyrtandrées). In: H. LECOMTE. Flore Gén. Indo-Chine 4(5): 487-565. 6 fig. 1930.—22 genera are admitted, the larger ones being *Aeschynanthus* (12 spp.), *Didymocarpus* (10), *Chirita* (18), and *Boea* (14). *Aeschynanthus* hosseusii (*A. macrocalyx* Hosseus, non Clarke) (p. 498); *Lysionotus* petelotii (p. 503); *Didissandra* annamensis (p. 509); *D.* evrardi (p. 510); *D.* petelotii (p. 511); *D.* clemensiae (p. 511); *Oreocharis aurea* v. nana (p. 513); *Boeica* confertiflora (*Didissandra c.* Drake) (p. 517); *Didymocarpus* poilanei (p. 523); *Chirita* geoffrayi (p. 528); *C.* annamensis (p. 530); *C.* semicontorta (p. 531); *C. poilanei* v. villosa (p. 534); *Boea* martini H. Lév. (p. 543); *B. multiflora* v. villosa (p. 549); *B.* evrardii (p. 550); *Petrocosmea* condorensis (*Didymocarpus c.* Pierre) (p. 555) *Damrongia* kerrii (*Petrocosmea k.* Craib) (p 556).—*E. D. Merrill.*

11169. PITARD, J. Myrsinacées (fin). In: H. LECOMTE. Flore Générale Indo-Chine 3(7): 808-887. 3 fig. 1930.—The genera *Ardisia* with 77 spp. and *Aegiceras* with 1 sp. are considered. Included are: *Ardisia* myrsinoides (p. 809); *A.* argentea* (p. 810); *A.* nigropilosa (p. 810); *A.* ramondiaeformis (p. 812); *A.* velutina (p. 813); *A.* albomaculata (p. 813); *A.* glauca (p. 814); *A. kteniophylla* v. microdonta (p. 815); *A.* sylvestris (p. 816); *A.* micranthera (p. 817); *A.* tinctoria (p. 817) with v. microcarpa (p. 818); *A.* psychotriaephylla (p. 818); *A.* garcinifolia (p. 819); *A.* pseudo-pedunculosa (p. 820) with vars. cochinchinensis, montana and macrocarpa (p. 821); *A.* viburnifolia (p. 821); *A.* lecomtei (p. 822); *A.* melastomoides (p. 822); *A.* calophylloides (p. 823); *A.* cambodiana Pierre mss. (p. 824); *A.* evrardii (p. 825); *A.* quinquegona vars. latifolia, linearifolia and micrantha (p. 827); *A.* incrassata (p. 832); *A.* graciliflora (p. 832); *A.* florida (p. 833); *A.* capillipes (p. 834); *A.* lauriformis (p. 835); *A.* splendens (p. 836); *A. rigida* v. chevalieri (p. 838); *A.* poilanei (p. 838); *A.* chevalieri (p. 840); *A.* macrosepala (p. 840) with v. crenata (p. 841); *A.* smaragdina (p. 841); *A.* sauraujaefolia (p. 842); *A.* recliniflora (p. 842); *A.* ixoraefolia (p. 843); *A.* expansa (p. 844); *A.* maxima (p. 845); *A.* helferiana v. septentrionalis (p. 846); *A.* albiflora (p. 847); *A.* villosula (p. 847); *A. humilis* v. parvifolia (p. 849); *A.* penduliflora (p. 849); *A. amherstiana* v. annamensis (p. 851); *A. oxyphylla* v. cochinchinensis (p. 851); *A.* dinhensis (p. 852); *A.* mirabilis (p. 858); *A.* harmandii Pierre ms. (p. 859); *A.* annamensis (p. 859); *A.* nemorosa (p. 860); *A.* aciphylla (p. 861); *A.* stellifera (p. 863); *A.* mouretii (p. 864); *A.* evonymifolia (p. 865); *A.* roseiflora (p. 866); *A. virens* v. annamensis (p. 868); *A.* thorelii (p. 869) with v. latifolia (p. 870); *A.* miniata (p. 870); *A.* incarnata (p. 871); *A.* pseudocrispa (p. 871); *A. patens* v. tonkinensis (p. 872); *A.* rubescens (p. 873).—*E. D. Merrill.*

11170. RIDLEY, H. N. Additions to the flora of Borneo and other Malay islands. *Kew. Bull. Misc. Inform.* 1931(1): 33-39. 1931.—Enumerates 4 spp. not reported previously from these islands and describes the following: *Olax* rosea (p. 33); *O.* multiflora (p. 34), Celebes; *O.* laxiflora (p. 34), Kei Islands; *Ilex* orestes (p. 35); *Euonymus* castaneifolius (p. 36); *E.* moultoni (p. 36); *Microtropis* rigida (p. 36); *Lophopetalum* sessilifolium (p. 37); *L.* subsessile (p. 37); *L.* havilandii (p. 37); *L.* rigidum (p. 38); *L.* multinervium (p. 39); *L. beccarianum* Pierre; *Ochanostachys amentacea* v. rufa (p. 35); *Iodes reticulata* v. glabrescens (p. 35). All are from Borneo unless otherwise stated.—*C. Fischer.*

11171. ROBYNS, W. Vangueriae Gossweilerianae. *Jour. Bot.* 69(822): 165-172; (823): 185-191. 1931.—*Fadogia* punctulata (p. 166), *F.* caespitosa (p. 167), *F.* variifolia (p. 167), *F.* olivacea (p. 168), *F.* flaviflora (p. 169), *F.* oblongo-lanceolata (p. 170), *F.* gossweileri (p. 171), *Tapiphyllum* gossweileri (p. 185), *T.* fulvum (p. 186), *T.* molle (p. 186) and *Canthium* apiculatifolium (*Plectronia apiculatifolia* DeWild.) (p. 190), all from Angola; *Rytigynia* mayumbensis (p. 187), *R.* gossweileri (p. 188) and *Vangueriopsis* gossweileri (p. 189) from Portuguese Congo. *Fadogia punctulata* was collected by d'Anchieta, the others by Gossweiler.—*A. L. Grant.*

11172. ROUSH, EVA M. FLING. A synopsis of Robinsonella. *Jour. Arnold Arboretum* 12(1): 49-59. 7 fig. 1931.—Seven spp. are recognized and described, with full citation of literature and of specimens examined. A key precedes the descriptions. The figures represent outlines of leaves.—*A. Rehder.*

11173. SANDWITH, N. Y. Contributions to the flora of Tropical America. IV. The Baromallis of British Guiana. *Kew Bull. Misc. Inform.* 1931(1): 46-61. 1931.—2 spp. of *Catostemma* which have been passing under the Arawak vernacular name *Baromalli* are fully described and the differences discussed at length. One of the two is *C.* commune (p. 51).—*N. Y. Sandwith.*

11174. SMITH, C. A. Further notes on Lachnopylis. *Kew Bull. Misc. Inform.* 1931(1): 39-41. 1931.—*L.* flocculosa (p. 40), Angola; *L.* compacta (p. 40), Anglo Egyptian Sudan; *L.* scytophylla (p. 39), Madagascar—*A. D. Cotton.*

11175. SMITH, C. A. A new Harveya from the Transvaal highveld. *Kew Bull. Misc. Inform.* 1931(2): 65-67. 1 pl. 1931.—*Harveya* anisodonta*.—*A. D. Cotton.*

11176. SMITH, C. A. Palmstruckia of the Flora Capensis. *Kew Bull. Misc. Inform.* 1931(3): 154-156. 1931.—This is shown to be an invalid name; THLASPEOCARPA (Cruciferae) n. nom. (p. 155) (*Palmstruckia* Sond., not Retz.) is proposed to replace it. *T.* capensis (*Palmstruckia c.* Sond.) (p. 155) is made for this monotypic genus, and full synonymy is given. Confusion with *Peltaria capensis* Linn. f. is pointed out and for the latter *Heliophila* capensis n. comb. (p. 155) is proposed.—*A. A. Bullock.*

11177. SMITH, C. A. Suggested conservation of Pollichia. *Kew Bull. Misc. Inform.* 1931(4): 198. 1931.—*Pollichia* Dryand. (1789) has been maintained in many standard works, for the last 140 years, in preference to *Meerburghia* Moench. (1802), and *Pollichia* Medic. (1783) is rejected in favor of *Trichodesma* R. Br. It is therefore proposed that *Pollichia* Dryand. be conserved.—*A. A. Bullock.*

11178. SPRAGUE, T. A. The botanical name of "Tara." *Kew Bull. Misc. Inform.* 1931(2): 91-96. 1931.—"Tara" is a small tree or shrub, the legumes of which are used in tanning. It is a native of Peru, Bolivia, Ecuador, Colombia and Venezuela, and is cultivated in Chile. It is commonly known under the synonyms *Caesalpinia tinctoria* (H. B. K.) Taub. or *C. pectinata* Cav., but its name under International Rules is *C. spinosa* (Mol.) Kuntze.—*T. A. Sprague.*

11179. STEARN, W. T. Notes from the University Herbarium, Cambridge, 1. A new Rhodesian Kalanchoe. *Jour. Bot.* 69(822): 164-165. 1931.—*Kalanchoe* aleurodes (p. 164).—*A. L. Grant.*

11180. STEENIS, C. G. G. J. van. A revision of the

Queensland Bignoniaceae. *Proc. Roy. Soc. Queensland* 41: 39-58. 2 fig. 1929.—This account of the Australian Bignoniaceae includes geographic relations, synonyms, descriptions of the genera and spp., keys to genera and spp., and distribution of the spp. (cited materials). **HAUSSMANNIANTHES** (p. 50), n. n. for *Haussmannia* F. v. M., not Dunker, with *Haussmannianthes jacunda* (*Haussmannia j.* F. v. M.) (p. 51), is proposed.—*C. G. G. J. van Steenis.*

11181. **TADULINGAM, C., and K. CHERIYAN JACOB.** A new species of Senecio. *Jour. Indian Bot. Soc.* 9(1): 40-41. 2 pl. 1930.—*Senecio* **ansteadi*** (p. 40), closely allied to *S. corymbosus**, from the Tinnevelly Hills (3000 ft.), S. India.—*W. Dudgeon.*

11182. **TURESSON, GÖTE.** Zur Frage nach der Spontaneität von Betonica officinalis L. in Schweden. *Bot. Notiser* 1930(6): 495-506. 2 fig. 1930.—Four series of plants raised from seeds from south Sweden were compared with 3 similar series from middle Europe (Munich, Vienna, and Agram) and a transplantation series from Moscow. Two of the south Swedish groups showed hereditary dwarfness and early-flowering as compared with the middle European series; the other series from south Sweden had comparative tallness and was late-blooming. The moscow series combined hereditary tall growth and early-flowering. Turesson 1930 showed that many identical species of summer-blooming plants of Europe have dwarfed early-flowering biotypes in the north and taller late-blooming biotypes in southern Europe. Since the Stehag-Kungsmarken (Sweden) series of *B. officinalis* showed the hereditary dwarfish early-flowering combination characteristic of south Sweden, while the Malmö-Tapperöd series was tall and late-flowering as in the middle European type, it is concluded that the former series is spontaneous, the latter series introduced from middle or south Europe. It also is important to recognize that the south Swedish *Betonica officinalis* as represented by the Stehag-Kungsmarken series represents the north-European ecotype of the species.—*H. K. Svenson.*

11183. **VAN ESELTINE, G. P.** A preliminary study of the unicorn plants (Martyniaceae). *New York State* [*Geneva*] *Agric. Exp. Sta. Tech. Bull.* 149. 1-41. 15 fig. 1929.—A systematic study of the family Martyniaceae, based largely on the collections of the U. S. Nat. Herb. and those of the Missouri Bot. Gard. Five genera are recognized: *Craniolaria, Holoregmia, Proboscidea, Ibicella,* and *Martynia.* Several new names result: *Proboscidea* subg. **DISSOLOPHIA** (p. 12), and subg. *Eu-Proboscidea* Stapf, emended description; *Proboscidea* **confusa*** (p. 12), Mexico; *P.* **peruviana*** (p. 17), Peru; *P.* **sinaloensis*** (p. 24), Mexico; **IBICELLA** (p. 31), (*Proboscidea* sect. *Ibicella* Stapf.); *I.* **nelsoniana*** (*Martynia lutea* var. *n.* Barb.-Rodr.) (p. 32); *I.* **lutea*** (*Martynia l.* Lindl.) (p. 34) (genotype). Keys to genera, subgenera, and species are given. *Proboscidea jussieui* Keller is shown to be the tenable name for the common unicorn plant. Notes on uses of the various species and directions for their culture are included.—*G. P. Van Eselline.*

FLORISTICS AND PLANT DISTRIBUTION

11184. **ARDAGH, J. Paul Hermann's Ceylon herbarium and icones.** *Jour. Bot.* 69(821): 137-138. 1931.—A short historical account of one of the most interesting of the old botanical collections in the Department of Botany, British Museum.—*A. L. Grant.*

11185. **BAUMANN, EUGEN. Beiträge zur Flora des Bodensees und des Rheingebietes.** *Mitteil. Thurgauischen Naturforsch. Ges.* 27: 145-154. 1928.—Because of the unusually warm season in 1928 the conditions were most favorable for the development of aquatic plants. The paper is largely devoted to an enumeration and discussion of various species, varieties, and forms from the standpoint of local distribution.—*E. D. Merrill.*

11186. **FISCHER, C. E. C. Contributions to the flora of Burma. IX.** *Kew Bull. Misc. Inform.* 1931(1): 26-29. 1931.—Lists 17 known spp. new to Burma, redescribes a hitherto little known species, *Ophiorrhiza erubescens,* and proposes *Vallaris* **anceps** (*Trachelospermum a.* Dunn & R.) (p. 28).—*C. Fischer.*

11187. **HASSLOW, O. J. Några ammärkningsvärda växtfynd från de senaste åren. [Noteworthy plants found in Sweden in recent years.]** *Bot. Notiser* 1930 (6): 508-509. 1930.—*Sanguisorba minor* Scop. and *Euphrasia suecica* Murb. & Wettst. in Öland; *Medicago minima* Desv., *Hirschfeldia pollichii* and *Arctium* hybrids (*A. nemorosum* × *tomentosum, A. minus* × *nemorosum*) in Skåne. An additional locality for the liverwort *Jungermannia confertifolia* (Schiffn.) Arn. is noted in Jämtland. *Grimmia stirtonii* Schimp., a new moss sp. for Sweden, was found by the late S. Medelius near Malmö.—*H. K. Svenson.*

11188. **HUTCHINSON, J. The flora of the Libyan Desert.** *Kew Bull. Misc. Inform.* 1931(4): 161-166. 1931.—A short account of the vegetation of the area covered by the itinerary Cairo-Baharia-Owenat-Selima-Halfa-Kharga, contained in a letter to Kew from W. B. K. Shaw, who accompanied Major R. A. Bagnold's 1930 expedition; this is followed by a list of the spp. he collected, with notes on their distribution. 21 spp. of angiosperms and gymnosperms, representing 14 families, are included. All are comparatively well-known plants of Engler's North African and Indian Desert Region.—*A. A. Bullock.*

11189. **HUTCHINSON, J. General Smuts' botanical expedition to Northern Rhodesia, 1930.** *Kew Bull. Misc. Inform.* 1931(5): 225-254. 3 maps., 6 fig. 1931.—A general account of the country traversed by the expedition, through Rhodesia, with some mention of the more interesting plants met with; the maps indicate distribution of *Copaifera mopane** Kirk, *Pteronia,* including *P.* **smutsii*** (p. 250), and *Parinarium curatellaefolium* Planch. Other n. spp. are: *Artabotrys* **collinus** (p. 245); *Nymphaea* **primulina** (p. 245); *N.* **divaricata*** (p. 246); *Monotes* **cordatus** (p. 246); *M.* **glandulosissimus** (p. 246); *M.* **lukuluensis** (p. 246); *M.* **obliquinervis** (p. 247); *M.* **oblongifolius** (p. 248); *M.* **tomentellus** (p. 248); *Ochthocosmus* **gillettae** (p. 249); *Faurea* **argentea*** (p. 249); *Cryptosepalum* **fruticosum** (p. 250); *Pteronia* **smutsii*** (p. 250); *Aster* **brevipedunculatus** (p. 250); *Cineraria* **monticola** (p. 251). A key, and enumeration of the 13 Rhodesian spp. of *Monotes* concludes the paper.—*A. A. Bullock.*

11190. **INGWERSEN, W. E. TH. Plant hunting on the Thessalian Olympus.** [Concluded.] *Gard. Chron.* [*London*] 87(2248): 68-69. 2 fig. 1930.

11191. **KIRKWOOD, JOSEPH EDWARD. Northern Rocky Mountain trees and shrubs.** xvii+340p. 35 pl., 87 fig. Stanford University Press: Stanford University, California. 1930.—Pr. $7.50.—A non-technical book, on the woody flora of the region from the Yellowstone Park north and west through Montana, Idaho, and the Canadian Rockies, primarily designed for the general public but also planned to serve the technical botanist and forester. The non-cultivated woody plants of the area treated include 27 families, 79 genera, and 248 species. Of these the gymnosperms (2 families, 9 genera, 24 species—less than 10 per cent of the species) constitute nearly all the forests of the region. Keys are given to families, genera, and species. The specific descriptions are largely based upon the field observation of the author. The characters of each genus are illustrated in original figures, while there are photographic reproductions of a number of species. The general distribution of each species is indicated with mention of a few localities in the region. Outstanding features and the general utility of each species are discussed. There is a short appendix on botanical terminology (illustrated).—*W. C. Muenscher.*

11192. **McATEE, W. L. Seventh supplement to the flora of the District of Columbia and vicinity.** *Proc. Biol. Soc. Washington* 43: 21-54. 1930.—Additions and corrections to the floral record since 1919.—*W. L. McAtee.*

11193. **WALKER, EGBERT H. Fifty-one common orna-**

mental trees of the Lingnan University campus. *Lingnan Sci. Jour.* 6(1/2): 1-166. 54 fig. 1928.—The descriptions of the 51 spp., chiefly subtropical or tropical, are preceded by chapters on the morphology of trees with illustrations, on the planting of trees, by a key to the genera and a systematic list of all trees on the campus. Each species is fully described, with additional general remarks chiefly on its economical uses, and is illustrated by drawings of flowering and fruiting branches with analytical figures (except the palms, of which habit figures are given). A glossary and indices conclude the paper.—*A. Rehder.*

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in this issue Entries 9135, 9143, 9146, 9161, 9323, 9326, 11141, 11217, 11223, 11226, 11227, 11423)

11194. AYYANGAR, R. L. NARASIMHA. A note on the determination of the area of surface of cotton seeds. *Madras Agric. Dept. Year Book* 1929: 7-15. 1930.—The calculation of the area of surface either from the volume or weight of the seed has been shown to be defective. Cotton seeds were immersed in liquid paraffin for 5 min. and centrifuged for 10 min. to remove excess of liquid. The increase in weight, other things being equal, should be proportional to the area of surface of the seeds. The error has been found to be low.

11195. BIRAGHI, A. Impollinazioni tra Nicotiana rustica var. brasilia ♀ e Petunia sp. ♂ e loro effetti. [Pollinations between N. rustica var. brasilia ♀ and Petunia sp. ♂ and their effects.] *Ann. Bot.* [*Rome*] 18 (2): 216-222. 1929.—Pollen of *Petunia* germinates normally on *N. rustica* and the tubes enter the sac more slowly than *N. rustica* pollen tubes. One of the sperm-nuclei fuses with a polar nucleus and albumen is formed in 90% of cases. Fertilization of the egg cell has not been observed but in 2 cases degenerated embryos have been found, surrounded by albumen cells. In other cases nucellar embryos were observed. The fruits never contained normal seeds.—*A. Biraghi.*

11196. BONVICINI, M. Spiga ramificata in un grano tenero (Triticum vulgare Host). [Branched spike of wheat.] *Italia Agric.* 68(3): (1-7). 4 fig. 1930.—There is described a spike of *Triticum vulgare* which had two spikelets transformed into true spikes, with complete spikelets replacing the individual florets.—*M. Bonvicini (transl. by H. S. Wolfe).*

11197. CHAUDHURI, H., and A. R. AKHTAR. The coral-roots of Cycas revoluta, Cycas circinalis and Zamia floridana and the algae inhabiting them. *Jour. Indian Bot. Soc.* 10(1): 43-59. 4 pl. 1931.—Material was obtained from cultivated plants at Lahore. Coral roots are dichotomously branched, and are formed from the ends of rootlets, or sometimes from the sides of roots. The coral branch system is rather compact in *C. circinalis*, less so in *C. revoluta*, and is loose in *Zamia*. Larger cells containing bacteria occur scattered through the cortex and stele. They are abundant in roots of *C. revoluta* which do not form coral, and which appear to be normal. The alga, *Anabaena cycoideae* [*cycadeae* ?], is restricted to a cylinder 2 cells thick about the middle of the cortex. The cylinder does not extend into the root tip, and is interrupted beneath the rather numerous lenticels. Pure cultures of the alga were obtained. Best growth took place in diffuse light and moderate temp. Cultures showed little growth when exposed to direct sunlight, and some were decolorized in the hot season (Apr. and May). Cultures in flasks buried at various depths in the soil gave maximum growth at 15-20 cm. depth. Cultures made from soil at various depths in the vicinity of *Cycas* plants showed that *Anabaena* does not occur below 25 cm. In cultures, heterocysts were more abundant than in coral roots, and "the cells were found to form spores." Infection of roots apparently is through the lenticels by means either of spores or filaments. "Young rootlets and root hairs never showed the presence of the alga, and root tips dipping into a culture of *Anabaena* failed to get infected." Corals formed by bacteria and by *Anabaena* are different, and the former cannot be regarded as a first stage in the formation of the latter. Only alga corals are negatively geotropic, and come out of the soil. If not actually beneficial to the roots, the alga certainly is not harmful.—*W. Dudgeon.*

11198. CHAUDHURI, H., and A. R. AKHTAR. A study of the root-tubercles of Podocarpus chinensis. *Jour. Indian Bot. Soc.* 10(2): 92-99. 2 pl. 1931.—Tubercles from cultivated trees at Lahore were 500-675 μ in diam., contained a vascular cylinder extending to about the middle, and were surrounded by 3-4 layers of cortical tissue of the parent root. Tubercles were sterilized externally, crushed, and cultured. 3 spp. of fungi were isolated: *Fusarium* sp., *Aspergillus* sp., and 1 undetermined. The hyphae of the last resembled those observed in the bark and cortex of the roots, and in the tissues of the tubercles. No *Podocarpus* free from fungi could be found for inoculation experiments. Inoculation of *Cycas* and *Casuarina* roots was successful, but tubercles were not produced. The undetermined fungus showed N fixation when cultured in Beijerinck's solution.—*W. Dudgeon.*

11199. EMBERGER, LOUIS, (préface de R. MAIRE). Éléments de morphologie florale. 102p. 45 fig. Le François: Paris, 1931.—The well known facts of the external morphology, relations to reproduction, and importance in plant classification are treated in a fashion of interest to the elementary student of plant morphology.

11200. EXBRAYAT-DURIVAUX, CHARLES. Notes sur la germination des Moringa malgaches. *Ann. Mus. Colonial Marseille* 8(2): 5-21. 3 fig. 1930.—*Moringa hildebrandtii* and *M. drouhardi* of Madagascar both bear their cotyledons above the soil while those of *M. pterygosperma* and *M. aptera* are buried. On *M. hildebrandtii* they are well elevated while on *M. drouhardi* they remain quite near the soil surface. Both exhibit tuberization during the germination period while *M. pterygosperma* and *M. aptera* do not. The hypocotyl region only is affected in tuberization, and this region is not developed in the latter species which have subterranean cotyledons. The entire length of the hypocotyl of *M. drouhardi* shows tuberization while *M. hildebrandtii* exhibits it only on the lower part. The main root participates but little in this tuberization and only in the immediate region of the union with the stem. The lower part of the epicotyl of *M. drouhardi* shows a slight thickening which is not observed in *M. hildebrandtii*. Tuberization is due essentially to development of secondary xylem and phloem tissues which remain thin-walled and which become packed with starch grains. No medullary gum canals were observed in seedlings of these 2 Madagascar spp. when grown in the greenhouse.—*L. E. Miles.*

11201. FARR, WANDA K. Cotton fibers. I. Origin and early stages of elongation. *Contr. Boyce Thompson Inst.* 3(3): 441-458. 4 fig. 1931.—Early stages of elongation of fibers from the seed coat of *Gossypium hirsutum* in mounts of fresh material show wide variation in fiber length. The appearance of the cytoplasm indicated that growth initiation had taken place more recently in the shorter than in the longer fibers. The 32-fold increase in surface area of the seed during the first 20 days from the date of flowering, in comparison with 2-fold increase in length of transverse axes of epidermal cells during the same period, shows that cell enlargement is not alone responsible for the tangential extension of the epidermal layer of the seed coat. Many dividing cells in the epidermal layer from the date of

flowering to the 12th day following reveal the chief method of extension of the epidermal covering. Early stages of fiber elongation from epidermal cells which were apparently daughter cells of recent divisions furnish evidence that fibers may originate from cells which are not yet formed upon the date of flowering. Median sections of bases of fibers in all stages of development show neither extreme attenuation nor extreme constriction. Bolls in all stages of development failed to reveal the presence of any liquid or semi-liquid substance in the boll cavity. The nutrition of the fiber in any other fashion than through its basal connection with the seed is unlikely.—*W. K. Farr.*

11202. **FIGDOR, WILHELM. Über tütenförmige Blätter und die ungeschlechtliche Vermehrung von Bryophyllum proliferum Bowie.** *Akad. Wiss. Wien Math.-Naturw. Kl. I. Abt.* 137(10): 817-824. 4 fig. 1929.—Correction is made of "*B. calycinum* Salisb." of previous article to *B. proliferum* Bowie. Ascidia were formed usually from terminal leaflets. The cause is not clear; in many cases lice were present, and claims for artificially produced ascidia can be made only when experimental plants are kept free from plant and animal injury. Asexual reproduction by adventitious buds which occur on ascidia is discussed.—*L. M. Snow.*

11203. **FRANCIS, W. D. The anatomy of the Australian bush nut (Macadamia ternifolia).** *Proc. Roy. Soc. Queensland* 39: 43-53. 1 pl., 10 fig. 1927(1928).—A description of the external and internal anatomy, embryo, and qualitative composition of the nut of *Macadamia ternifolia* and comparison of the seed with related species.

11204. **GUARD, ARTHUR T. Development of floral organs of the soy bean.** *Bot. Gaz.* 91(1): 97-102. 16 fig. 1931.—The mature flower of *Soja max* consists of a calyx tube with 5 unequal lobes, 5 distinct petals, 10 stamens (9 united and 1 free), and 1 carpel. Both unicellular and multicellular trichomes are found on the calyx and pistil. The flower primordium appears first as a protuberance in the axil of a bract. The order of emergence of the floral organs is sepals, petals, outer cycle of stamens, inner cycle of stamens, pistil. The order of emergence within each cycle is from the anterior to the posterior side of the receptacle. Development of the petals is slow at first, but later becomes rapid. The stamens are free at first; later 9 become united leaving 1 of the inner cycle free. The 1-4 campylotropous ovules develop simultaneously, and the micropylar end is directed toward the distal end of the ovary.—*Author's summary.*

11205. **HAYATA, B. On the systematic anatomy of the genus Sasa Mk. et Shib.** [In Japanese.] *Bot. Mag. [Tokyo]* 43(505): 23-44. 1929.

11206. **HAYATA, B. A new theory on the construction of polycyclic steles.** [In Japanese.] *Bot. Mag. [Tokyo]* 43(511): 340-354. 52 fig. 1929.—According to the prevalent theory polycyclic steles, though seeming generally to possess very complicated structure, are in the case of dictyosteles composed of several meristeles arranged on several imaginary concentric cylinders. Consequently, when observed in section, the meristeles are considered to be disposed on certain concentric imaginary rings which correspond to the sections of the cylinders just mentioned. The author, by observing the so-called polycyclic stele, isolated by a special method from the rhizome of *Angiopteris evecta*, inclines to a very different interpretation. He has found that the same stele should be interpreted as composed of many imaginary conical wedges surrounded by meristeles. These wedges are inserted between each two ridges of an imaginary spiral. The stele is not regarded as consisting of several concentric cylinders, as the word "polycyclic" indicates. The reason for considering a wedge as an element composing the stele is that the rhizomes generally possess the form of a cone of which the apical portion alone exists, the remaining being weathered out. If they are, on the other hand, columnar in shape, one would expect a small cylinder in place of a wedge. According to the author's wedge theory, in the section of a rhizome there exists a certain number of the smaller sections of the imaginary wedges disposed on the fundamental spiral, resembling an Archimedian or a logarithmic spiral, as the case may be, each of the wedges bearing to one another the same mathematical relation as in phyllotaxis. The meristeles seen in the section of the rhizome are so arranged as to make several sets, each belonging to one of the smaller sections of the imaginary wedges, and the meristeles of each set are disposed on each smaller ring which answers to the smaller section of the wedges; these rings exactly correspond to leaf-gaps of the stele. To test the wedge theory the author has tried to interpret by it the figures of the so-called polycyclic steles appearing in the literature, such as those given by Shove, West, Kuhn and Bower on the steles of *Angiopteris, Danaea, Kaulfussia, Thysopteris* and *Saccoloma,* and has found that not only may all such figures be easily elucidated by the new theory, but also a very clear mathematical significance may be given in respect to their otherwise quite disorderly arrangement of meristeles.—*Author (courtesy Japanese Jour. Bot.).*

11207. **KANAMARU, KISOU. Studies on the mechanism of dyeing of cellulose. I. On the dyeing of cellulose with basic dyes (preliminary paper). Some known facts which are consistent with the electrical adsorption theory of dyeing.** *Cellulose Indust.* 7(7): 42. 1931.—Abstract.

11208. **KASHYAP, SHIV RAM. Some peculiar cones and microsporophylls of Cycas circinalis.** *Jour. Indian Bot. Soc.* 9(4): 187-189. 4 pl. 1930.—All staminate cones examined have small scales at the base which sometimes pass over gradually into the sporophylls; but usually between the scales and the sporophylls there is a naked stalk with occasionally 2 or 3 scattered scales. Cultivated plants at Lahore have produced cones with larger groups of scales at the base, the uppermost bearing sporangia. A few cones had the basal area as large as the upper normal portion, so that they seemed to consist of two equal parts separated by a naked stalk. The alternate tracts of scales and sporophylls in the staminate cones are regarded as homologous with the similarly alternating tracts of scale leaves and foliage leaves on the vegetative stems. Under certain conditions the area of scales at the base of the cones may become greatly enlarged, and the upper scales then bear sporangia and behave like sporophylls. A few staminate sporophylls, always from the base of the distal or true cone area, were more or less deeply divided into two equal lobes, and often their tips were again once or twice dichotomized. This dichotomy is regarded as a reversion to a very ancient ancestral condition.—*W. Dudgeon.*

11209. **KASHYAP, SHIV RAM. Some abnormal cones in Equisetum debile.** *Jour. Indian Bot. Soc.* 9(4): 240-241. 1 pl. 1930.—Three shoots found at Lahore each bore 2 cones, one above the other, with 1 or 2 whorls of leaves intervening. In one lower cone the upper whorl was transitional between leaf and sporophyll; and in one upper cone some of the lobes of the annulus bore sporangia, and the leaf whorl below it was somewhat like an annulus. This seems to confirm the idea that the annulus and the sporangiophore whorls are homologous with ordinary leaf whorls.—*W. Dudgeon.*

11210. **KISSER, JOSEF. Methodik der Herstellung pflanzlicher Aschenbilder und Kieselskelette sowie von Anthrakogrammen.** In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden.** Abt. XI. **Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze.** Teil 4, Heft 2, Lief. 353. p. 193-236. 1 pl., 2 fig. Urban & Schwarzenberg: Berlin, 1931.—A thin section of plant tissue carefully heated to destroy organic matter leaves the ash in its original position and sometimes unaltered. Such an outline of the plant ash constituents is called a spodogram. If the heating is continued only

long enough to carbonize the tissue, the resulting object is called an anthracogram. The distribution of minerals can be presented with a fair degree of accuracy in single cells as well as the general distribution of minerals in plant tissues. E.g., in *Spirogyra*, after incineration, there is very little ash in the region of the central sap, the cell wall contains more, while most of the ash is present in a spiral arrangement like that of the original chloroplast. In the nucleus of pollen grains of *Vicia faba*, the minerals are mostly contained in the chromosomes. Silica alone is unaltered by incineration. Calcium salts, usually present as the oxalate, are changed to the carbonate without altering the form of the original crystals. All kinds of plant materials can be used—either fresh or dried. Thick leaves must be sectioned, 20-30 μ gives best results. Wood contains few crystals and may be sectioned thicker. Bark and cortex are usually full of crystals and should be cut as thin as possible. The epidermis, usually silicified, is best used alone. In tissues containing alkaline salts with silica, heating causes the silica to melt and change its form. Alkalies may be removed by preliminary treatment with mineral acids, followed by washing in water. For incineration, plant sections on a slide are placed in a quartz tube externally heated by a coil of resistance wire; a rheostat in the circuit controls the temp. The material is heated gently until carbonized, then to a dull red heat for ½-1½ hrs. Sections may also be heated on a sheet of platinum over a bunsen burner; in this case the ash must be transferred without alteration to a slide coated with celloidin. The sticky celloidin takes up the crystals, which sink into the celloidin if the slide is held inverted over a vapor of alcohol-ether. On drying, the thin sheet of celloidin with the crystals embedded may be removed from the slide with a razor blade, and mounted in balsam or a water medium. Thin sections of coal may be incinerated in the same way to produce skeleton pictures of the ash constituents. During the carbonization of plant sections protected with a coverglass, the color of the tissue changes from yellow to red, brown, and finally black. By heating only to the red-brown stage, the material is in the best condition for photomicrographs.—*W. H. Emig.*

11211. KISSER, JOSEF. Die Anfertigung von Dünnschliffen von rezenten pflanzlichen Materialien. [In: EMIL ABDERHALDEN: **Handbuch der biologischen Arbeitsmethoden.** Abt. XI. **Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze. Teil 4, Heft. 2. Ernährung und Stoffwechsel der Pflanzen, Lief. 353.**] p. 237-252. 2 fig. Urban & Schwarzenberg: Berlin, 1931.

11212. LANZONI, F. Ancora su un caso di fasciazione totale di Digitalis purpurea L. [**Total fasciation in D. purpurea.**] *Arch. Bot. Sistemat., Fitogeogr. e Genet.* 5(1) : 18-19. 1929.

11213. PFEIFFER, NORMA E. A morphological study of Gladiolus. *Contr. Boyce Thompson Inst.* 3(2) : 173-196. 3 pl., 7 fig. 1931.—The life history of *Gladiolus*, studied with chief reference to Halley and Alice Tiplady corms treated in the fall, showed development in the varieties to be similar except for differences in time relations. Mitotic divisions were numerous in 12-18 days after treatment, when there was external evidence of growth. The structure of the leaf and contractile root and the development of the stem with the production of a terminal flower spike are described. In the flower the order in ontogeny is stamen, perianth, and carpel sets. The development of microsporangia and ovules with their respective spores is characteristic for monocotyledons as is the embryo sac except for conspicuous synergid beaks. The fertilized egg produces an embryo at first massive, later elongating, which is surrounded by endosperm cells with thick hemicellulose walls. Data are given for the time required by the main varieties for the different stages described.—*N. E. Pfeiffer.*

11214. SINHA, B. N. On a peculiar abnormality of capitula in Tagetes erecta L. *Jour. Indian Bot. Soc.* 9(4) : 244-247. 2 pl., 1 fig. 1930.—Stalks bearing small heads were found growing from ordinary heads. In some instances the small heads again produce a few little stalks and miniature heads. Some of the stalks were fasciated.—*W. Dudgeon.*

11215. WOODROOF, J. G., and NAOMI C. WOODROOF. Abnormalities in pecans. I. Abnormalities in pecan flowers. II. Abnormalities in pecan nuts. [By] **J. G. WOODROOF.** *Jour. Heredity* 21(1) : 39-44. 5 fig.; (2) : 91-96. 5 fig. 1930.—I. Studies of the normal development of staminate and pistillate flowers of *Hickoria pecan* revealed 4 types of abnormal arrangement and structure: (a) "perfect-flower-clusters," found on the Beveridge variety for 5 successive years; (b) a second type of "perfect-flower-cluster," found on vigorous shoots of the Jerome variety; (c) an excessive number of catkins in certain groups on the Jerome and Indiana varieties; (d) less than the normal number of catkins in groups on several varieties. None of these abnormalities is considered of economic importance, but they suggest that the flowering habit is genetically unstable. —II. Three types of nut abnormalities are pointed out: (a) variations in number of cotyledons of certain varieties, (b) variations in number of divisions of the shell or endocarp, (c) twinning in which the seed, endocarp and exocarp are abnormal in shape. Variations in the number of segments of the exocarp and in the number of nuts per cluster are considered differences of degree rather than of kind and so not abnormal.—*J. G. Woodroof.*

PALEOBOTANY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 11210, 11211, 11246, 11247, 11252, 11254, 11255, 11256, 11259, 11261, 11262, 11526)

11216. AIROLDI, M. Di alcune Corallinacee fossili delle Canarie. [**Some fossil Corallinaceae from the Canary Isls.**] *Atti R. Accad. Nazion. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 13(6) : 439-442. 1 fig.; (7) : 532-535. 3 fig. 1931.—Descriptive and taxonomic notes are given on *Lithophyllum fortunatum; Mesophyllum* **navarroi*** (p. 440); *Porolithon* **inaspectum*** (p. 532); and *Melobesia* (*Lithoporella*) *melobesioides** from the Miocene. A similarity between these Miocene terrains and those of the Mediterranean countries is noted.

11217. BANDULSKA, HELENA. On the cuticles of some recent and fossil Myrtaceae. *Jour. Linn. Soc. London, Bot.* 48(325) : 657-671. 2 pl., 24 fig. 1931.—General form and anatomical characters of the leaf are discussed, with minute attention to epidermis, in *Rhodomyrtus* and *Tristania*. *R.* **sinuata** (*Dicotylophyllum sinuatum* Bandulska) (p. 659); *Tristania* **bournensis*** (p. 666), Bournemouth Eocene Beds, England; *T.* **toscana*** (p. 668), Eogene, Italy, type in Brit. Mus. There is a strong family resemblance between the cuticles of *Rhodomyrtus* and *Tristania*, but the latter more frequently has isodiametric stomata and a larger number of narrow and very distinctive girdling cells encircling the guard-cells. There is, moreover, relatively less parenchyma and there are more stomata per unit of area in *Tristania* than in *Rhodomyrtus*.

11218. CARPENTIER, ALFRED. Empreintes de fructification trouvées en 1929 dans le Westphalien du nord de la France. *Rev. Gén. Bot.* 41(488) : 469-473. 1 pl., 2 fig. 1929.—Microsporophylls attributed to *Neuropteris gigantea* bear microsporangia arranged in small groups or sori, not united into synangia, and recalling

the genus *Plinthiotheca* Zeiller. Certain seeds enclosed in cupules, referable to *Lagenostoma kidstoni* Arber, are closely associated with *Sphenopteris striata* (Gothan). The sori of *Corynepteris sternbergi* (Ett.) are composed of 5 or 6 sporangia, united at first, but separating from their tips downwards at maturity.—*W. N. Edwards.*

11219. CARPENTIER, ALFRED. Observations sur quelques empreintes du Westphalien du Nord de la France. *Rev. Gén. Bot.* [*Paris*] 42(499) : 385-390. 1 pl. 1930.—Seeds resembling *Trigonocarpus* were found in association with *Alethopteris serli.* These are large (65 mm. long) and with long micropylar beaks. They resemble those assigned by Kidston to *Neuropteris heterophylla.* Fronds resembling those of *Sphenopteris* were found in which the terminal branches bear specialized pinnules with sporangia resembling those of *Rhodea.*—*C. A. Arnold.*

11220. CARPENTIER, ALFRED. Observations sur deux types d'inflorescences trouvés dans les schistes permiens du Bou Achouch. (Maroc Central). *Bull. Soc. Geol. France* 30(3/4) : 191-194. 2 pl. 1930.—Two inflorescences from the Permian schist of central Morocco are described: (1) Male inflorescences, identical with those described by Goeppert in 1864 from the Permian of Bohemia and Silesia under the name *Dictyothalamus schrollianus**, the microsporophylls of which show characters similar to those of the genus *Potoniea* Zeiller; (2) a ♂ disc furrowed with radial grooves with sinuous borders, apparently related to the "androphylls" which Renault attributed to his *Dolerophyllum berthieri.*—*W. Berry.*

11221. CROOKALL, R. Petrified plants from the Pennant rock. *Summary Progr. Geol. Surv. Gr. Brit. and Mus. Pract. Geol.* 1930(2) : 52-59. 1 pl. 1931.—The presence of numerous petrified plant-remains in the Pennant Rock of the S. Wales and the Bristol and Somerset coalfields is noted. The horizon (Staffordian Series) is of considerable importance as lying about midway between the older British (Lanarkian) and the younger French (Permo-Carboniferous) plant-beds. An example of a medullosan petiole (*Sutcliffia*) has already been described, and specimens of *Psaronius*, Mesoxylon*, Dadoxylon** and *Calamites** are here dealt with. The flora is thus shown to include members of the Filicales, Equisetales, Pteridospermeae and Cordaitales.—*Author's summary.*

11222. DAVIES, DAVID. Correlation and palaeontology of the coal measures in east Glamorganshire. *Phil. Trans. Roy. Soc. London* B 217(442) : 91-153. Map. 7 pl. 1929.—An ecological study of Welsh Westphalian, Staffordian, and Radstockian floras based on percentage analyses, with numerous charts and tables, of 390,000 specimens collected from 29 successive horizons. Physical conditions, due to elevation and depression of land surfaces, determined the distribution and relative proportions of various groups of plants. Dominance of Filicales and Pteridosperms indicates a dry flora and an episode of elevated land surface; Lycopodiales indicate a swampy episode (wet flora). The former is accompanied by greater variety of species of the different classes of plants, and depression of land surface is followed by a decrease in the number of species. Intermediate floras are dominated by Equisetales and Cordaitales, which perhaps grew at a height of 20-100 ft. above sea level. On horizons where Lycopodiales are dominant, shell bands generally occur, suggesting a deltaic or brackish water rather than a marine habitat. The wet flora probably developed at a height of 0-20 ft., and the dry flora at 100-300 ft. Five dry episodes (4 in the Westphalian) alternated with 4 wet episodes (3 in the Westphalian). Half the horizons examined show dominance of intermediate flora, and only 13% dominance of wet flora. No portions of drifted plants are found in the underclay, though they may occur in shales overlying the seams, and this is held to confirm the growth *in situ* theory, with the corollary that each seam must have been submerged after its formation, prior to the formation of a subsequent seam. Split seams indicate local subsidence. In the Westphalian the Equisetales are dominant over other classes of plants; in the Staffordian and Radstockian the Filicales and Pteridosperms are dominant. Of the fern-like plants *Neuropteris* is the most abundant throughout; *Mariopteris, Pecopteris, Sphenopteris,* and *Alethopteris* may be either well represented or absent altogether. Seeds of *Trigonocarpus* are always associated with *Alethopteris,* but no single instance of connexion has been observed. *Cordaites* is associated with *Samaropsis. Sphenophyllum* is found mainly with the fern-like plants, and was therefore probably a dry-flora climber. Three new species are mentioned but not described (*Mariopteris daviesi* Kidston, *Samaropsis cambrica* Kidston, and *Stigmaria* sp.); 18 species are new to Britain. Other fossils tabulated with their respective horizons include annelids, arachnids, insects, mollusks and a few fish scales.—*W. N. Edwards.*

11223. EVANS, W. P. A fossil totara found under the vitric tuff at Arapuni. *New Zealand Jour. Sci. and Tech.* 13(1) : 11-17. 4 pl., 1 fig. 1931.—The wood block, of which there are several photomicrographs accompanied by detailed descriptions of wood structure, is believed to have been preserved in the first dust shower, and subsequently covered by the vitric tuff, the weight of which crushed it transversely. It is "practically, if not absolutely, identical with the *Podocarpus totara** of today."

11224. FORTI, ACHILLE. Alghe del Paleogene di Bolca (Verona) e loro affinità con tipi oceanici viventi. Conferme di una analogia esistente tra la flora terziaria mediterranea e l'attuale indo-pacifica. [Algae of the Paleogene of Bolca and their affinity with living oceanic types. Confirmation of an analogy between the Tertiary Mediterranean and the present Indo-Pacific flora.] In: *Mem. Ist. Geol. R. Univ. Padova* 7: 1-19. (separately paged.) 5 pl., 1 fig. 1926.—**POSTELSIOPSIS** (p. 7), erected for *P.* **caput-medusae*** (*Zonarites* ? *c.-m. A.* Massal.) (p. 7), and **AVRAINVILLEOPSIS** (p. 15), erected for *A.* **cyatiformis*** (*Cylindrites c.* A. Massal.) (p. 15).

11225. FOX, CYRIL S. The Raniganj-Panchet boundary near Asansol, Raniganj coal-field. *Rec. Geol. Surv. India* 60(4) : 365-366. 2 pl. 1928.—The only silicified wood horizon in the Lower Gondwanas, from which *Dadoxylon,* described by Sahni, came, does not belong to the Panchet beds, but is of uppermost Raniganj age. It is suggested that this horizon be designated the Kumarpur sandstone.

11226. GERTZ, OTTO. Undersökningar över den fossila kutinsubstansens mikrokemi. Tillika några växtanatomiska iakttagelser å fossilt material. [Researches on the micro-chemistry of the fossil cutin-substance, with some anatomical observations on fossil material.] [German summary.] *Botaniska Notiser* 1928(2) : 129-155. 1 fig. 1928.

11227. HAGENE, PH. Sur la structure des crêtes de la stèle dans quelques Sigillaires. *Ann. Soc. Geol. du Nord* 52: 56-65. 5 fig. 1927.—The stelar protuberances described in *Sigillaria* d'Hardinghem exist in other species of the same genus, and show the distinction between the genera *Sigillaria* and *Lepidodendron.* This structure is partly developed in *S. spenulosa* and complete in *S. menardi.*—*W. Berry.*

11228. JURASKY, KARL A. Die Schliffmethoden in der Paläobotanik. [Sectioning methods for paleobotany.] [In: **EMIL ABDERHALDEN: Handbuch der biologischen Arbeitsmethoden. Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze.** Teil. 4, Heft 2. **Ernährung und Stoffwechsel der Pflanzen,** Lief. 353] P. 253-284. 1 pl., 7 fig. Urban & Schwarzenberg: Berlin, 1931.

11229. JURASKY, KARL A. Die Macerationsmethoden in der Paläobotanik. [Maceration methods for paleobotany.] [In: **EMIL ABDERHALDEN: Handbuch der biologischen Arbeitsmethoden. Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur**

Untersuchung des Bodens und der Pflanze. Teil 4, Heft 2. Ernährung und Stoffwechsel der Pflanzen, Lief. 353.] P. 331-353. 2 fig. Urban & Schwarzenberg: Berlin, 1931.

11230. **KISSER, J. G.** The preparation of anthracograms from thin sections of fossil plants. *Jour. Indian Bot. Soc.* 10(1): 60-62. 1 pl. 1931.—Thin sections of petrified plant material in which there is insufficient color to differentiate cell walls and other details may be much improved by passing them through alcohol and benzol, and boiling them in liquid paraffin under a large cover glass for 1 min. or more. Traces of organic matter in the cell walls are carbonized, and appear first yellowish, then reddish-brown, and finally blackish. When the desired degree of carbonization is reached, the slide is cooled, the paraffin is dissolved out, and the section is mounted in the usual way.—*W. Dudgeon.*

11231. **KUBART, BRUNO.** Einige Bemerkungen zur Frage des Nachweises der Lauraceen-Gattung Umbellularia in den tertiären "Redwood"-Beständen Nordamerikas. [The genus Umbellularia of the family Lauracea in the Tertiary period of redwood forests in North America.] *Biol. Generalis* [*Vienna*] 3(5/8): 585-594. 3 fig. 1927.

11232. **[LEPCHENKO, Ya.]** ЛЕПЧЕНКО, Я. Про копалинні рослини на долішньо-третинних пісковиках Волині. Попередній звіт с дослідів 1927-1928 p. p. (On the fossil plants in the Lower Tertiary sandstones of Volhynia. A preliminary report of investigations in the years 1927-1928.) [English summary.] Труди Українського Науково-дослідчого Геологічного Інституту (*Abhandl. Ukrain. Wiss.-Forsch. Geol. Inst.*) 3: 159-185. 8 pl. 1929.—The author reviews the literature and appends a list and figures of 20 spp. from his own collections.

11233. **MATTIROLO, O.** La Juglans bergomensis Bals. Crib. testè ritrovata in Piemonte. [Juglans bergomensis B. Cribelli recently discovered in Piedmont.] In: *Mem. Ist. Geol. R. Univ. Padova* 8: 1-7. (separately paged) 1 fig. 1930.

11234. **MAURY, CARLOTTA J.** Correlation of Antillean fossil floras. *Science* 72(1862): 253-254. 1930.—In Porto Rico south of Cidra rocks containing *Nilssonia* have been referred to Lr. Cretaceous because of corals in the rocks above the *Nilssonia*. Due to foraminiferal evidence the rocks suggest Up. Cretaceous age. In Porto Rico and other of the islands *Archaeolithothamnium* shows affinity to species of the genus found in the Oligocene and in Up. Cretaceous. Palms and dicotyledons abundant in the Rio Collazo of Porto Rico, have been referred to Oligocene. In Trinidad the flora has been described as of Miocene age. In Dominican Republic certain fossils have been referred to Middle Miocene while certain younger fossils have been referred to Miocene or to Pliocene. In Porto Rico a post Pliocene walnut has been found. The fossils indicate that the climate of the West Indies has remained unchanged from Oligocene to the present time. A fossil manatee from Oligocene time has been found in southern Porto Rico.—*B. McAvoy.*

11235. **[PERSIDS'KIĬ, D. Ya.]** ПЕРСИДСЬКИЙ, Д. Я. Про відбитки рослин на третинних пісковиках Аджамки. (Some plants of Tertiary sandstone near Adjamka, western Ukraine.) [English summary.] Вісник Українського Відділу Геологичного Комітету (*Bull. Sect. Ucraine, Com. Géol.*) 13. 125-128. 1 pl. 1929.—*Dryophyllum furcinerve*, Quercus paleovirens**, and *Cinnamomum subrotundum** are described, the last 2 recorded from this formation for the first time. The sandstone is correlated with the Kharkov layer.

11236. **[PIMENOVA, N.]** ПИМЕНОВА, Н. Матеріяли до третинної фльори Коростенщини. [Tertiary flora of the Korosten' region.] [English summary.] Труди Українського Науково-дослідчого Геологічного Інституту (*Abhandl. Ukrain. Wiss.-Forsch. Geol. Inst.*) 3: 186-188. 1 fig. 1929.—The author gives a preliminary list of fossil plants from 9 localities.

11237. **[PIMENOVA, N.]** ПИМЕНОВА, Н. Відбитки рослин з пісковиків Зінов'ївської округи. [Fossil plants in the sandstones of Zinovievsk district.] [English summary.] Труди Українського Науково-дослідчого Геологічного Інституту (*Abhandl. Ukrain. Wiss.-Forsch. Geol. Inst.*) 3: 189-195. 3 pl. 1929.—Four spp. are added to the 3 previously known from the village Adjamka, and 12 spp. reported from Arsenivka, 100 km. distant. All are figured. The enclosing strata are tentatively assigned to the Lower Oligocene.

11238. **PULT, ANTONIO.** Lignina e carbogenesi. [Lignin and coal formation.] *Atti Congr. Naz. Chim. Pura ed Appl.* 3: 529-532. 1929(1930).—From the chemical nature of the substances concerned it is concluded that while the solid products of the decay of wood come from lignin and make up the characteristic part of coal, i.e., the part not soluble in ordinary solvents, the volatile parts of coal come from cellulose. But research shows that a small part of the cellulose, however, is carbonized into solid portions, while a small part of the lignin is volatilized and is soluble in ordinary solvents.—*From author's conclusions* (*transl.*).

11239. **RAINERI, RITA.** Dasycladaceae nel "Liburnico" del Colle di Medea (Friuli). In: *Mem. Ist. Geol. R. Univ. Padova* 8: 1-11. (separately paged) 3 fig. 1930.—Descriptions of *Cympolia* paronai* (p. 4), *C. elongata**, and *Neomeris* sp.

11240. **REID, ELEANOR M.** Tertiary fruits and seeds from Saint Tudy (Finistère). Collected by the late M. Henri du Laurens de la Barre. *Bull. Soc. Géol. et Minér. Bretagne* 8(1/4): 36-65. 3 pl., 1 fig. 1927 (1928).—This study of very refractory materials results in the conclusion that the flora shows certain Malayan characters, is probably Eocene in age, and indicates a sandy bush delta assemblage. The new forms, several of which represent genera not hitherto found fossil, are: *Limnocarpus* sp.* (p. 41), *Corypha* minima* (p. 43), *Ilex* multicostata* (p. 44), *Nyssa* oviformis* (p. 45), *Rhodomyrtus* sp.* (p. 48), *Aralia* laevis* (p. 49), *Dendropanax* gallicum* (p. 50), *Dulaurensia* pulchra* (p. 52), *Prismatomeris* corisopitensis* (p. 55). Eight kinds of *Carpolithus* of unknown affinities, a leaf fragment and 2 other unknown objects not certainly of a vegetable nature are mentioned.—*E. W. Berry.*

11241. **ROSENDAHL, FRITZ.** Die Entstehung der Kohle im Lichte der chemischen und biologischen Forschung. *Naturwissenschaften* 19(13): 281-289. 1931.—The origin and processes of coal formation from plant remains and the geological and biological interrelationships are accepted facts. Based on results of chemical research, it is concluded that lignin and not cellulose is the basic substance in coal formation. Biological research shows that peat formed from woody material broken down by bacteria, is the first stage in coal formation, likewise that subsequent changes are also wrought by bacteria. Taylor's theory that the building of peat into brown or hard coal depends to a great extent upon the nature of the strata overlying the peat, is cited.—*F. Rosendahl* (*transl. by B. McAvoy.*)

PALEOZOOLOGY

(Abstracts of general papers only. Abstracts of systematic and morphological papers are grouped with those of a similar nature treating of living animals)

B. F. HOWELL, *Editor*

JOHN R. SANDIDGE AND GLEN L. JEPSEN, *Associate Editors*

(See also in this issue Entries (Unclassified) 9115, 11225; (Coelenterata) 11524; (Annelida) 11222, 11502; (Brachiopoda) 11524; (Echinodermata) 11497, 11499, 11501, 11502, 11504, 11505, 11507, 11526; (Mollusca) 11222, 11508, 11512, 11513, 11515, 11520, 11524, 11525, 11526, 11527, 11528, 11535, 11544, 11545; (Crustacea) 11524, 11526, 11576; (Arachnida) 11222; (Insecta) 11222, 11723, 11864, 11865, 11866; (Cyclostomata) 11886; (Arthrodira) 11868, 11871; (Elasmobranchii) 11526, 11874; (Pisces) 11222, 11524, 11526, 11873, 11876; (Reptilia) 11526, 11918, 11922, 11926; (Mammalia) 11234, 11398, 12031, 12032, 12033, 12036, 12039, 12043, 12054, 12056, 12062, 12066)

11242. **DECKER, CHARLES E. Simpson Group of Arbuckle and Wichita mountains, Oklahoma.** *Bull. Amer. Assoc. Petrol. Geol.* 14(12): 1493-1505. 1930.—Records from this Ordovician formation the graptolites *Didymograptus bifidus* and *D. artus*, and the brachiopod *Rafinesquina minnesotensis*.—*D. J. MacNeil.*

11243. **DYER, W. S. Paleozoic geology of the Albany river and certain of its tributaries.** *Ann. Rept. Ontario Dept. Mines* 38(4): 47-60. Map, 5 fig. 1929 (1930).—Records crinoid stems, 2 brachiopods, and 2 pelecypods from EoOrdovician rocks; 37 spp. of corals, crinoids, brachiopods, and cephalopods, a trilobite, and an ostracod from the MesoSilurian Pagwa River Formation; 53 spp. of corals, brachiopods, and a gastropod from the MesoDevonian Abitibi River Formation; and 7 spp. of pelecypods and 1 sp. of gastropod from Pleistocene Champlainian marine clay of this region southwest of Hudson Bay.—*B. F. Howell.*

11244. **FRANCHI, S. La serie dei terreni dal Priaboniano al Norico nei dintorni di Albenga. [The stratigraphic section from the Priabonian to the Norian in the vicinity of Albenga.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. fis. mat. e nat.* 7(1): 26-31. 3 fig. 1928.—Records the presence in this part of Liguria, northern Italy, of Triassic strata containing crinoids, and the cephalopods *Arietites* cf. *spiratissimus* and *Belemnites;* and of Priabonian Eocene beds, some of them referable to the *Helminthoida labyrinchthica* Zone, and others containing radiolarians and the foraminiferan *Nummulites perforatus*.—*B. F. Howell.*

11245. **FREBOLD, HANS. Untersuchungen über die Fauna, die Stratigraphie und Paläogeographie der Trias Spitzbergens.** *Skrifter om Svalbard og Ishavet (Kgl. Dept. Handel, Sjöfart, etc.)* [*Oslo*] No. 26. 1-66. 5 maps, (col.) 3 pl., 6 fig. 1929.—Records from the Triassic of Spitzbergen the brachiopods *Spirifer* sp. and *Terebratula* sp., the pelecypods *Posidonomya mimer, Posidonia tenuissima*, Myalina, Anodontophora wittenburgi*, Daonella dubia, D.* cf. *lindstromi, Lima biarata, Gervilleia löwenighi, Macrodon, Pseudomonotis clarai, P. ochotica* var. *densistriata,* some gastropods, and the cephalopods, *Flemingites* sp.?*, *Meekoceras* sp.?*, *Keyserlingites* cf. *subrobustus*, Ammonites* sp.?*, *Hollandites* sp.?*, *H.* cf. *organi*, H.* aff. *montis bovis, Ceratites trinodosus, C. laqueatus, C. nathorsti, C. humboldtiensis, C.* sp.?, *Protrachyceras americanum, Nevadites whitneyi, Ptychites euglyphus, P. lundgreni, P. nordenskiöldi, P. trochleaeformis P. latifrons, Nathostites lenticularis*, N. lindströmi*, Parapopanoceras verneuili, Eutomoceras* aff. *laubei*, Arctoceras,* and *Ophiceras?**.—*D. J. MacNeil.*

11246. **GETZENDANER, F. M. Geologic section of Rio Grande embayment, Texas, and implied history.** *Bull. Amer. Assoc. Petrol. Geol.* 14(11): 1425-1437. Map. 1930.—Records from this Mesozoic-Cenozoic locality some fruits of the stonewort *Chara;* the Foraminifera *Orbitulina texana* and *Nodosaria texana;* the pelecypods *Exogyra texana, E. ponderosa, E. costata, Inoceramus, Ostrea tasex,* and *Unio;* poorly preserved gastropods; the cephalopod *Sphenodiscus lenticularis;* and a few ostracods.—*D. J. MacNeil.*

11247. **GILES, ALBERT W. Pennsylvanian climates and paleontology.** *Bull. Amer. Assoc. Petrol. Geol.* 14(10): 1279-1299. Map. 1930.—Reviews the biological reasons for assigning tropical or sub-tropical conditions to the Pennsylvanian. Maintains that adaptations during the time subsequent to the Pennsylvanian can account for the characters preserved in organisms from that period, without the assumption of a warm climate. Discusses the rapid development of the insects during the period, referring to the dragon-fly, *Meganeura moneyi.* This and allied insects were the ancestors of the present day Blattoidea, Odonata, Orthoptera, and related forms, representing about 12 orders. Contends that their development was not dependent on climate, this factor not being significant in the rapid specialization of the Tertiary titanotheres, zeuglodon whales, and amblypods, nor in the Mesozoic reptiles, and the birds of the early Tertiary. Lists as the important Paleozoic reef builders, Stromatoporoidea, Tabulata, and Tetracoralla; while those of today, living as far as 71 N. latitude, are, *Lophohelia, Amphihelia* and *Dendrophyllia.* Contends that the amphibians of the orders, Salientia, Lysorophia, Lepospondyli, Temnospondyli and Stereospondyli, show remarkable changes in size and differentiation during the Pennsylvanian, before the close of the period certain groups having evolved into the primitive orders of reptiles, Protorosauria, Cotylosauria and Theromorpha. Refers to the first appearance of spiders, land snails, and fresh-water gastropods during the Pennsylvanian, and to the decrease in number of the corals and crinoids, and the rarity of cystoids, asteroids, echinoids, eurypterids, and trilobites, while among the mollusks there was a decrease in nautilids and an increase in complexity of suture among the ammonoids. Interprets certain plant characteristics of the Pennsylvanian as meaning that the climate was temperate, referring especially to the structure of *Calamites, Lepidodendron,* and *Sigillaria.*—*D. J. MacNeil.*

11248. **GILES, ALBERT W., and EUGENE B. BREWSTER. Hale Mountain section in northwest Arkansas.** *Bull. Amer. Assoc. Petrol. Geol.* 14(2): 121-138. 2 fig. 1930.—Records from this Mississippian formation the echinoderm *Pentremites* and the bryozoan *Archimedes.*—*D. J. MacNeil.*

11249. **GOULD, CHAS. N. Fossil bones and artifacts at Frederick.** *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 90-92. 1929.—Human artifacts have been found in gravels in asociation with extinct, presumably Pleistocene, mammal bones. The artifacts are believed to be of Aftonian (Pleistocene) age.—*B. F. Howell.*

11250. **GREPPIN, ED., und AUG. TOBLER. Zur Geologie und Paläontologie des Flexurgebietes von Stetten-Lörrach.** *Verhandl. Naturforsch. Ges. Basel* 40(2): 536-587. 1 pl., 6 fig. 1928-29(1929).—A study of the stratigraphy and structure of the region between the towns of Stetten and Lörrach, near Basel, Switzerland, where faulted Triassic, Jurassic, and Tertiary strata are

exposed. Detailed descriptions of the outcrops are given, together with fossil lists, including the following new Bajocian spp. (not described): (Pelecypoda) *Trigonia badensis;* (Gastropoda) *Pleurotomaria alemanica;* (Cephalopoda) *P. badensis, Belemnites subrhenanus.*—*J. R. Sandidge.*

11251. HENNY, GERARD. McLure shale of the Coalinga region, Fresno and Kings counties, California. *Bull. Amer. Petrol. Geol.* 14(4): 403-410. Map, 2 fig. 1930.—Records from the Miocene of this region an echinoderm *Astrodapsis* sp., with prominent raised petals; the pelecypods *Pecten estrellanus, P.* cf. *crassicardo bifurmatis, P. raymondi, Chione semiplicata, Solen perrini,* and *Phacoides annulata;* the gastropods *Thais carisaensis, T. kettlemanensis,* and *Calyptrea* cf. *martini;* and the crustacean *Tamiosoma gregaria.*—*D. J. MacNeil.*

11252. [KASSIN, N. G.] КАССИН, Н. Г. Общая геологическая карта Европейской части С. С. С. Р. Лист 107-й. Вятка-Слободской-Омутнинск-Кай. [General geological map of the European part of U. S. S. R. Sheet 107. Viatka-Slobodskoĭ-Omutninsk-Kaĭ.] [French résumé.] Труды Геологического Комитета; Ленинград (*Mém. Com. Géol. Nouv. Sér., Leningrad*) 158 (pt. 1). 1-268. Map. 1928.—Records from the Permian and Triassic of this region the pelecypods *Palaeomutela krotowi, P. inostranzevi, Oligodon latus, Nayadites* sp., and *N. verneuili;* the fishes *Palaeoniscus tuberculatus, P. costatus, Acrolepis rhombifera, Platysomus biarmicus,* and *Amblypterus* cf. *orientalis;* reptilian bones, including *Melosaurus uralensis;* and the skull of a *Rhinesuchus volgo-dwinensis;* and also the plant *Phyllotheca* sp. From the Jurassic the brachiopod *Terebratula* sp.; pelecypods *Inoceramus retrosus, Avicula* sp., *Gryphaea,* and many spp. of *Aucella;* the cephalopods, *Perisphinctes* sp., *P. panderi,* and *Virgatites* cf. *scythicus,* and many *Belemnites;* and the reptile *Ichthyosaurus trigonus.* From the Cretaceous many pelecypods of the genus *Aucella,* and the cephalopods *Polyptychites* cf. *anabarensis, P. keyserlingi,* and *Belemnites subquadratus.*—*D. J. MacNeil.*

11253. KELLUM, LEWIS BURNETT. Similarity of surface geology in front range of Sierra Madre oriental to subsurface in Mexican South fields. *Bull. Amer. Assoc. Petrol. Geol.* 14(1): 73-91. 3 fig. 1930.—States that Foraminifera are plentiful in the Upper Cretaceous of this region, and records the pelecypod, *Inoceramus.* From the Middle Cretaceous is recorded the foraminiferan, *Miliolina* and the pelecypod, *Kingena wacoensis.* Remarks that there are also some gastropods in the fauna of this formation.—*D. J. MacNeil.*

11254. McCLENNAN, HUGH W. Subsurface distribution of Pre-Mississippian rocks of Kansas and Oklahoma. *Bull. Amer. Assoc. Petrol. Geol.* 14(12): 2 maps, 1 fig. 1535-1556. 1930.—Records from the Pre-Mississippian formations of Kansas the bryozoans *Escharopora* and *Rhinidictya* cf. *mutabilis.* The Mississippian of Kansas yielded the plant spores *Sporangites huronense;* and the Pennsylvanian the foraminiferan *Fusulinella haworthi.*—*D. J. MacNeil.*

11255. MILOJKOVITCH, M. Notes sur le terrain houiller de la Bosnie-Herzegovine. *Congrès Avancement Études Stratigraphie Carbonifère, Heerlen Compte Rend.* 1927. pp. 487-491. 1928.—Records from the Carboniferous of Bosnia and Herzegovinia plants, a crinoid, a bryozoan, brachiopods, pelecypods, gastropods, cephalopods, ostracods, and a trilobite.—*D. J. MacNeil.*

11256. MOORE, RAYMOND C. Environment of Pennsylvanian life in North America. *Bull. Amer. Assoc. Petrol. Geol.* 13(5): 459-487. 3 fig. 1929.—States that the study of plant and animal fossils to determine environmental conditions is based chiefly on observations of the influence of environment upon the present-day flora and fauna. The large, thin-walled cells of the woody plants of the Pennsylvanian of North America, and the absence of growth rings, indicate equable climatic conditions. Stresses the importance of the lime-secreting algae *Chara, Halimeda,* and *Osagia* in the formation of Pennsylvanian limestones; asserts that bacteria are also important in interpreting the environmental conditions of that period, and that the formation of oolites in several horizons may be attributed to them. The significance of the presence of such fresh-water pelecypods as *Naiadites, Anthracomya,* and *Carbonicola,* as well as every type of marine invertebrate, is treated in detail. Points out that some wide-spread deposits are characterized by a fauna with peculiarities not common to types found in the preceding or succeeding beds; for example, the occurrence of the brachiopod *Marginifera splendens* in the Brownville bed. Vertebrate remains are not common in the marine rocks of this period, but selachian teeth and a few ichthyodorulites are found. Fish remains, when found, are usually in limestones.—*D. J. MacNeil.*

11257. NIGHTINGALE, W. T. Geology of Vermilion creek gas area in southwest Wyoming and northwest Colorado. *Bull. Amer. Assoc. Petrol. Geol.* 14(8): 1013-1040. 3 maps, 3 fig. 1930.—Records from the Eocene series of this region vertebrate bone fragments, and the mollusks *Unio, Viviparus, Goniobasis,* and *Ostrea.*—*D. J. MacNeil.*

11258. ØDUM, HILMAR. Vort sydligste Danium. [Our most southerly Danian.] [German summary.] *Meddel. Dansk. Geol. Foren.* 7(3): 201-214. 1928.—Lists from different Danian horizons of Denmark a large number of fossils—an anthozoan, Hydrozoa, Vermes (Chaetopoda), Crinoidea, Asteroidea, Brachiopoda, and Pelecypoda.—*F. Anderegg.*

11259. ROTH, ROBERT. Regional extent of Marmaton and Cherokee mid-continent Pennsylvanian formations. *Bull. Amer. Assoc. Petrol. Geol.* 14(10): 1249-1278. Map. 1930.—Records many brachiopods, cephalopods, gastropods, and ostracods from the Pennsylvanian of Oklahoma, Kansas, and Nebraska. Stresses their utility in correlating the different formations, referring especially to the foraminiferan *Fusulinella* sp., an undescribed "new sp." *F. hartvillensis,* and the brachiopod *Chonetes* sp. States that plant remains are also present.—*D. J. MacNeil.*

11260. SHEPPARD, GEORGE. Geology of southwest Ecuador. *Bull. Amer. Assoc. Petrol. Geol.* 14(3): 263-309. Map, 21 fig. 1930.—Records from the Quaternary of this region the pelecypods *Arca* and *Cardium,* and the gastropod *Turritella;* states that the Tertiary contains radiolarians, and lists from it the foraminiferans *Discocyclina, Nummulites, Operculina, Orthophragmina peruviana* (?), and *Lepidocyclina* cf. *peruviana,* and the pelecypods *Inoceramus roemeri, I. plicatus, Cyprina* (?), and *Phacoides subpennsylvanicus.*—*D. J. MacNeil.*

11261. STEWART, ROSCOE E., and KATHERINE C. STEWART. "Lower Pliocene" in eastern end of Puente Hills, San Bernardino County, California. *Bull. Amer. Assoc. Petrol. Geol.* 14(11): *map.* 1445-1450. 1930.—Asserts that this formation is Lower Pliocene rather than Upper Miocene, as mapped by a previous author. Submits a list of Lower Pliocene micro-fauna in support of this statement, including 44 spp. of Foraminifera; 2 of which, *Frondicularia advena* and *Bolivina subadvena,* are new varieties to be named, described, and figured in a subsequent paper. States that diatoms and echinoid spines are also present.—*D. J. MacNeil.*

11262. VON ESTORFF, FRITZ E. Kreyenhagen shale at type locality, Fresno County, California. *Bull. Amer. Assoc. Petrol. Geol.* 14(10): 1321-1336. 5 fig. 1930.—Lists 27 spp. of Foraminifera from Tertiary formations of this region; remarks that Radiolaria belonging to the sub-order Spumellaria are plentiful; and records 13 spp. of mollusks, only 1 of which, *Pecten interradiatus,* was found in the shale. States that fish scales are common, and refers to the occurrence of an undescribed fossil leaf. Includes an incomplete list of genera of Foraminifera from west coast Eocene, Oligocene, and Miocene formations.—*D. J. MacNeil.*

VERTEBRATE ANATOMY, HISTOLOGY, AND PHYSICAL ANTHROPOLOGY

Editors

WAYNE J. ATWELL, *Endocrine Glands, Genito-Urinary System*
ELIZABETH C. CROSBY, *Neurology*
ROBERT S. CUNNINGHAM, *Hematology, Adenoid Tissue, Reticulo-endothelium*
CHESTER H. HEUSER, *Technique*
DAVENPORT HOOKER, *Experimental Anatomy and Regeneration*
C. C. MACKLIN, *Alimentary System, Respiratory System*
PETER OKKELBERG, *Gross Anatomy (except Primate)*
WILLIAM L. STRAUS, JR., *Physical Anthropology*
WALTER E. SULLIVAN, *Bones, Muscles, Joints, Fasciae*

STACY R. GUILD, *Advisory Editor*

(See also in this issue Entries 9079, 9367, 9481, 9483, 9494, 9509, 9523, 9529, 9530, 9531, 9558, 9596, 9652, 9671, 9751, 9752, 9760, 9896, 9904, 9905, 9922, 9943, 9949, 9966, 9975, 9977, 9996, 10027, 10028, 10029, 10031, 10033, 10058, 10061, 10073, 10087, 10090, 10104, 10106, 10111, 10141, 10157, 10316, 10319, 10323, 10325, 10326, 10328, 10329, 10332, 10338, 10341, 10344, 10346, 10350, 10360, 10364, 10368, 10370, 11441, 12042, 12060)

GENERAL

11263. BRITES, GERALDINO. O ensino da morfologia humana. Notas colhidas numa viagem de estudo (22 de Janeiro-12 de Abril de 1928). [Instruction in human morphology. Notes collected during a travel study, January 22 to April 12, 1928.] 208p. 9 fig. Imprensa de Universidade: Coimbra, 1929.—The author visited the medical schools and various biological institutes of Paris, and the medical schools of Bordeaux, Strassbourg, Tours, Nancy, Salamanca, Valladolid, Brussels, and Prague on a tour of observation and conference on aims and methods in the study of human anatomy, gross, microscopic, and pathologic. The opening chapter is a summary of opinions, largely published in the last quarter century, by others than anatomists on the exhaustion and futility of morphological, i.e., anatomical instruction and research. This is followed in chapters 2 and 3 by many authorities and by full consideration from different points of view of the interdependence of anatomy, sensu latu, with physiology, pathology, surgery, and clinical medicine. The 4th chapter discusses the future of anatomy, histology, embryology, and pathology, with examples giving current trends. Chapter 5 is a detailed discussion of content of courses, equipment, and methods in the institutions visited. The 6th chapter is an extended account of methods and preservatives used in the preparation of macroscopic museum material in anatomy and pathology. A closing chapter describes and illustrates the new Institutes of Histology and Embryology and of Pathology of the Medical School at Prague.—*C. A. Kofoid.*

11264. BROOM, ROBERT. The origin of the human skeleton. An introduction to human osteology. 164p. 2 pl., 46 fig. H. F. & G. Witherby: London, 1930. Pr. 10s. 6d.

11265. CHEESMAN, J. E. Baillière's synthetic anatomy. I. Upper arm and shoulder. II. Forearm. III. Hand. IV. The thigh and hip. V. The leg. VI. The foot. VII. The thorax. VIII. The abdomen. IX. Head and neck. IXa. Pterygo-maxillary region. 60p. 120 pl. Thomas Nelson & Sons: New York, [1928?].—Each part contains "a series of drawings on transparent sheets for facilitating the reconstruction of mental pictures of the human body." A set of 12 plates represents consecutive layers through the region represented; these are correlated by an ingenious system of coördinates, and, viewed together, give the appearance of a transparent reconstruction. Mimeographed instructions accompany the series.—*H. B. Baker.*

11266. CHEESMAN, J. E. Atlante sintetico di Anatomia. I. Braccio e spalla. II. Avambraccio. III. Mano. IV. Testa e collo. [Synthetic atlas of antomy. I. Arm and shoulder. II. Forearm. III. Hand. IV. Head and neck.] 48 pl. Sperling e Kupfer: Milan, 1928, Pr. 15 lire.—See preceding abstract.

11267. KOCH, WALTER, und WILHELM WIECK. Anatomische Analyse des Röntgenbildschattens des Herzens und der Interlobärspalten der Lungen. [Anatomical analysis of roentgenogram shadows of the heart and of the interlobar fissures of the lungs.] 127p. 32 roentgenograms, 46 sketches, 2 fig. Gustav Fischer: Jena, [1929]. Pr. 24 M.

11268. STÖHR, PHILIPP (W. v. MÖLLENDORFF, editor). Lehrbuch der Histologie und der mikroskopischen Anatomie des Menschen. [Histology and microscopic anatomy of man.] 22nd ed. 522p. 446 fig. Gustav Fischer: Jena, 1930. Pr. 21 M.

11269. TERRY, ROBERT JAMES. An introduction to the study of human anatomy. 346p. Macmillan Co.: New York, 1929. Price $3.50.—The book is based upon a series of mimeographed laboratory directions used for many years by classes at the Washington University, School of Medicine. The object of the book, besides serving as a guide in dissection, is to stimulate an increased interest in the study of anatomy and to offer the beginner in medicine a broad view of the field and of investigations in progress in anatomy. To this end attention is called to studies of human structure pursued in laboratories of embryology, anthropology, genetics, and other biological fields. Emphasis is laid on verification and research—verification by subsequent study of textbooks and other sources of information; research by the introduction of simple problems bearing on the subject of dissection. The directions given are based upon the examination of one part of the body at a time and not upon the simultaneous study of several parts. The book is divided into 5 sections dealing respectively with the lower limbs, the upper limbs, the back and thorax, the abdomen, and the head and neck. In each case the order of study is as follows: integument, subjacent soft parts, special preparations of muscles and viscera, the articulations, the skeleton, and the surface anatomy of the living body. The central nervous system is omitted. Bibliographical and biographical references are included in every section. The Basle Anatomical Nomenclature in both Latin and English is used throughout. The directions accompanying the early dissections are extensive but are gradually reduced as the student gains more experience. There is an index of personal names and also a complete subject index.—*P. Okkelberg.*

11270. WARREN, JOHN (text by ROBERT M. GREEN, and drawings by H. F. AITKEN). Warren's handbook of anatomy. Adapted for dissecting and clinical reference. xiv+384p. 324 fig. Harvard University Press: Cambridge, 1930. Pr. $12.50.—The book is divided into 8 parts, dealing respectively with the gross structures of the following regions: (1) head and neck, (2) trunk, (3) upper extremity, (4) lower extremity, (5) thoracic cavity, (6) abdominal cavity, (7) pelvic cavity, (8) perineal region. The illustrations are original and made from actual dissections under the direction and observation of Warren. They aim to show all the main anatomical features in their actual positions and relations to other parts. The text is brief but

adequate and is designed to make the volume usable as a handbook for dissection in a first year course in human anatomy and as a reference book for the surgeon and general practitioner. For the illustrations the Basle Nomina Anatomica are used and in the text the Latin equivalent of each English term appears at least once. There is a separate and complete index of English and Latin terms used.—*P. Okkelberg.*

EXPERIMENTAL ANATOMY AND REGENERATION

11271. ĀBOLIŅŠ, LEO. Die Regeneration der am Fibularrande verstümmelten Beine bei Triton cristatus Laur. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(2): 213-229. 8 fig. 1930.—Fifty *T. cristatus* were operated upon as follows: in 10, fibula and fibular region were excised (series B); in 10 the 5th toe and corresponding part of the tarsus (the fibulare, the partially or wholly fused 4th and 5th tarsals) were excised (series C); in 10, the whole fibular side, from knee-joint to 5th toe inclusive, was removed (series D); in 10, only the 5th toe (series E), and finally in 10, the fibula was excised and the 5th toe removed (series F). Series A, of normal animals, was used as a control. When the fibula with its whole surrounding region was removed, a long fibula-like bone regenerated in over 50% of the cases; a result directly opposed to that secured when the bone alone is extirpated without injury to the fleshy parts of the extremity. Such restitution excludes the possibility of super-regeneration. In the other 50% of cases the fibula is replaced by an abnormal distal regenerant of half the normal cross-section arising from the knee. A typical leg, of half diameter, may arise as a distal regenerant from the knee if only the fibula and surrounding soft parts are excised and the whole primary foot is left untouched; although development of the distal regenerant is greatly stimulated by removal of the primary foot. An otherwise complete and skeletally typical limb, growing as a distal regenerant from the knee region, shows only a reduplicated element. Whether a typical foot can result as a lateral regenerant from the tarsus and the region of the fibula remains unanswered. The results of the experiments would tend to support this assumption, especially for the tarsus; further experiments are necessary. A distal regenerant predominates over a possible proximal regenerant in all regions of the reduplicated or primary foot. Regeneration of the toes can be suppressed by the other regenerative processes. Typical triple-reduplication could be produced experimentally on the reduplicant and the tarsus by excision of the corresponding parts of the edge of the fibula.—*From author's summary (transl. by E. W. Count).*

11272. CRACIUN, E. C. Glycogénie et régénération des muscles volontaires. (Glycogenesis and the regeneration of voluntary muscles.) *Arch. Roumaines Path. Exp. et Microbiol.* 2(2/3): 313-324. 1929.—1500 gm. rabbits (1) received in thigh muscles 0.5 cc. 50% alcohol—1% formalin—India ink (controls received dist. H_2O), or (2) had thigh muscles surgically damaged. Histological examination of sections after 1, 2, 4, 9, 11, 16, 28 days showed glycogen in muscle bundles (wide variations being normal) but not in sarcoblasts or granulated tissue. The author believes the elements regenerating striated muscles do not have a positive carbohydrate balance, since they have no free glycogen reserve. A brief review of the subject is included.—*S. M. Field.*

11273. GAETANI, G. de. Innesto di tessuto pancreatico nelle ghiandole salivari. [Grafts of pancreatic tissue in salivary glands.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 773-775. 1930.—Pancreatic tissue grafted into the salivary glands of 4 dogs underwent rapid dissolution, the regressive processes being complete after 10 days, and connective tissue replacing the pancreatic tissue. In 4 other dogs, grafted with pancreases which had previously undergone atrophy of the exocrine portion through ligature, the same results were obtained.—*M. Comel.*

11274. MIDANA, ALBERTO. L'influenza dell'età sulla rigenerazione dei nervi periferici. [Influence of age on regeneration of peripheral nerves.] *Arch. Sci. Med. [Turin]* 54(11): 774-780. 2 fig. 1930.—Regeneration of peripheral nerves, especially the first stage, proceeded more rapidly in 10 rats during the period of development and growth; but regeneration occurred also in 8 mature and 10 senescent rats.—*M. Comel.*

11275. PERACCHIA, GIAN CARLO. Il "sistema-reticolo-endoteliale" nel processo di riparazione delle fratture. [The "reticulo-endothelial system" in the repair of fractures.] *Rev. Sud-Americana Endocrinol.-Immunol. Quimioter.* 11(8): 519-553. 23 fig. 1928.—From the results of his experiments on the fractured bones of the left foreleg of 12 rabbits the author concludes: at the site of fracture the osteoblastic elements replace the active macrophagic elements. The osteoblasts appear blue due to the presence of granules of trypan blue, used as a stain. These cells lose the stain when they develop definite functional and morphological characters, hence vital staining with trypan blue is a characteristic of the specific elements of transforming tissue, not of mature tissue. In healing fractures, both the intra-cartilaginous and intramembranous types of ossification are found, although at first only the latter type seems to be present. The cartilage cells appear at a later stage. The healing process starts in the resting embryonal elements of the "subperiosteal marrow" and in the Haversian Canals.—*N. Colosi.*

11276. SCIACCHITANO, IGINIO, PAUL WEISS, und HANS PRZIBRAM. Die Regeneration der am Tibialrande oder median verstümmelten Beine bei Triton cristatus Laur. und eine Heteromorphose des langen Knochens nach Ausschneidung des Fibularrandes. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(2): 300-315. 37 fig. 1930.—17 series of operations were performed in all. The tibia of an adult, excised with the whole of the tibial region, was not regenerated even after 2 mos. Feet and toes arose as distal regenerants, after excision of the tibia and of the surrounding soft parts, from the transverse cut surfaces at the knee. No reduplicated element replaced the tibia. Lateral mirror-image reduplication from the fibula was not found; the lateral toes arising at the end of the fibula are in most cases not distinguishable as definite parts of the foot, the symmetry of which is uncertain. Distal regenerants from a transverse knee cut had in most cases fewer toes than the toe-groups arising laterally from the longitudinal tarsal cut after the same operation. 1 or 2 toes regenerate normally after simple transverse removal. Typical partial 3 fold growth could be experimentally produced in the reduplicant and the tarsus by excision of the corresponding tibial border. While simple transverse amputation, at its base, of the middle toe led to its regeneration without change, a reduplication of the toe occurred when the transverse cut was split even as far as the reduplicant. When deep cleavage is combined with removal of one of the longitudinal halves thus produced, lateral parts of the foot were formed at the tarsus and a distal regenerant, from the knee cut. This work, and that of Āboliņš, shows that the symmetry of partial 3-fold reduplication follows Bateson's rules if, between 2 distally growing surfaces, a proximally directed cut surface is interpolated, but not otherwise. One of Weiss' cases, in which, after the excision of the fibular side including the 5th toe, an undoubted tibia (apparently the mirror-image of the original) was formed in place of the fibula, is important in understanding the symmetry of a laterally developing limb-bud. This establishes the occurrence of such regenerative reduplication, which moreover includes the foot and toes; and the drawings of Āboliņš of long bones regenerated in place of the excised fibula point in the same direction.—*Authors' summary (transl. by G. L. Purser).*

11277. VIZIOLI, FRANCESCO. Osservazioni sulle ferite cerebrali degli animali neonati. [Cerebral wounds in new-born animals.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1028-1031. 1930.—Cerebral wounds are followed

in new-born animals by repair processes different from those of adult animals. More phagocytic cells are described in wounds of the white than in the gray matter. In wounds of the gray matter cells with granular and fatty contents are lacking, while phagocytic elements from the blood stream are present.—*M. Comel.*

HEMATOLOGY (INCL. RETICULO-ENDOTHELIUM)

11278. **BLOUNT, W. P. Studies on comparative haematology: 1. The differential and polynuclear counts of veterinary students.** *Vet. Jour.* [*London*] 87(5): 215-222. 1931.—14 "physiologically healthy" students presented a differential count of: neutrophils, 62.23; eosinophils, 3.2; basophils, 0.72; lymphocytes, 28.75; monocytes, 5.1. The weighted mean (Arneth counts) of these students averaged 2.02. This variation from Cooke's average of 2.70 is due to: improved nuclear staining with increased definition of chromatin filaments; the adoption of a more clearly defined "standard" filament; the exclusion of "hidden lobes." Evidence is produced which shows that the weighted mean may be altered by exercise to a considerable extent; this does not concur with Ponder's statement concerning the "steady state" of the "Arneth" count.—*Author's summary.*

11279. **FERRARI, R. Sulla divisione diretta degli eritrociti circolanti della rana.** [Direct division of circulating erythrocytes in frog.] *Boll. Soc. Ital. Biol. Sperim.* 5(1): 11-14. 1930.—In the perfused frog a very active process of proliferation through amitosis may be experimentally induced in the circulating erythrocytes. The erythroblasts proliferate, however, through karyokinesis. The amitosis is not due to senescence or to cellular degeneration; in the erythrocytes the faculty of reproduction is perfectly conserved and takes place by amitotic division. It does not interfere with proliferation and maturation of the erythroblastic series as they depend on karyokinesis. The phases of amitotic reproduction of erythrocytes of perfused frogs are identical with those observed under normal conditions in erythrocytes of fishes.—*M. Comel.*

11280. **FERRARI, R. Ricerche ematologiche sulla rana salata. Eritropoiesi ed eritremia sperimentale.** [Hematological research on salined frog. Experimental erythropoiesis and erythremia.] *Haematologica* 12(1): 19-44. 2 pl., 16 fig. 1931.—By perfusing frogs with diluted (½) Ringer's solution through the abdominal vein a severe anemia was produced which lasted for several months. Red cells were reduced from 400,000 to 3-6,000 per cu. mm., the vast majority being in an immature stage. The white corpuscles showed anisocytosis with micro- and macro-leucocytosis of neutrophils. Despite a marked hyperplasia of the erythropoietic tissue in the bone marrow, spleen, liver and kidney, the red cells were unable to reach maturity—a phenomenon explained on the basis that frogs, deprived of their normal nutrition, seek to construct the hemoglobin molecule from their own tissues.—*N. A. Michels.*

11281. **GLATZEL, HANS. Der Anteil von Erbanlage und Umwelt an der Variabilität des normalen Blutbildes.** *Deutsches Arch. Klin. Med.* 170(4): 470-489. 1931.—By comparison of uniovular (U.T.) and biovular (B.T.) pairs of twins the author determined the rôle played by inheritance and environment in variability. Material consisted of 44 U.T., 37 like-sexed B.T. and 11 unlike-sexed B.T., all healthy. The Hb content, the number of erythrocytes and leucocytes and the differential count were determined under physiological conditions. For every pair of twins an average percentage deviation for each of the 3 groups was determined. This deviation of B.T. differed from that of U.T. and was greater in respect to Hb, red cells, neutrophils and monocytes. A less marked difference was found in lymphocytes; there was no difference in total white cells or in eosinophils or basophils. The variability concerning the participation of environment in the characteristics of B.T. was determined in percentage of total difference of B.T. These were: 42 Hb, 49 red cells, 92 total leucocytes, 63 neutrophils, 68 lymphocytes, 61 monocytes, 85 eosinophils and 88 basophils. From the ratio of discordant U.T. and B.T. the influence of inheritance and environment on blood picture was calculated. This environmental factor expressed in percentage difference of B.T. was 23 Hb, 43 red cells, 70 total white cells, 41 neutrophils and 37 lymphocytes. The divergence of the values mentioned above is explained by the fact that methodical errors are charged to the environmental factor. In the inheritance investigations, therefore, the Hb content is particularly serviceable but the total number of red cells and the relative number of lymphocytes and neutrophils are also of use. For this purpose the relative number of other leucocytes and the total white count are of little or no use.

11282. **KATZENSTEIN, RUTH. Untersuchungen über die Umwandlungsfähigkeit der Lymphzellen.** *Virchow's Arch. Path. Anat. u. Physiol.* 281(1): 172-190. 6 fig. 1931.—Maximow's celloidin chamber was introduced into the intermuscular abdominal connective tissue of rabbits. Development of inflammatory cells was studied in the fissures of the chamber and the surrounding tissue. Leucocytes and lymphocytes appeared very early. While later leucocytes disappeared, lymphocytes changed into polyblasts and assumed macrophagic qualities. Later on polyblasts were not to be found and only fibroblasts and histiocytes were seen on the inflammatory field. Buffy coat of the blood of adult rabbit was explanted into plasma of the same animal without addition of extract. After growth of ½ hr. to several days the explants were studied in vivo, by supravital-staining with Janus green and Neutral red or in serial sections. Leucocytes and lymphocytes moved into the plasma, leucocytes degenerated, lymphocytes and the few monocytes developed into large macrophagic cells, polyblasts, which finally became typical fibrocytes.—*R. Katzenstein.*

11283. **KINDRED, J. E., and E. L. COREY. Studies on the blood of the fetal albino rat. II. The hemoglobin content of the blood as related to the differential erythrocyte count.** *Physiol. Zool.* 4(2): 294-301. 1931.—The concentration of the hemoglobin in grams per 100 cc. of whole blood was determined in fetal albino rats ranging in crown-rump length from 15.4 mm. to 43 mm. (birth). Also total counts of the red blood corpuscles per cu. mm. and differential counts of the different types of red corpuscles were made on each rat. The total number of red blood corpuscles per cu. mm. increases from the youngest stage to birth. The hemoglobin content shows major fluctuations correlated, not with the increase in the number of corpuscles, but with the degree of polychromasia of the blood. Normoblasts and erythroblasts decrease in incidence toward the end of gestation and are numerically insignificant after the fetus is about 35 mm. long. There is no correlation between the red-blood-corpuscle count or the hemoglobin content of the blood of the pregnant albino rat and the number or size of the fetuses in utero.—*Authors* (*courtesy Wistar Bibl. Serv.*).

11285. YAMAGUCHI, M. Zytologische und histologische Untersuchungen von Milzkulturen der eben geborenen Ratte. *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation).* 10(1): 43-72. 16 fig. 1930.—The spleen of a newborn rat was cultivated in plasma and plasma with spleen extract and with bone marrow extract, after the method of Erdmann. Cultures were examined either fresh, stained in toto, or in celloidin serial sections stained with eosin-azure. The newborn rat spleen was not yet wholly differentiated; it consisted of dark fields, in which erythropoiesis, granulopoiesis, and lymphopoiesis were recognizable, and of light fields with thick mesenchyme cells and reticular cells near the vessels. A few fibrocytes were seen in the capsular tissue. With advance in culture life, the granulocytes and agranulocytes gradually degenerated; phagocytosis by reticular cells and transplantation gradually removed them from the explant. From the 1st day on, the reticular cells became rounded and swollen, wandered in the surrounding plasma medium and within the newbuilt tissue, where they phagocytosed many disintegrated elements in the old tissue fragments and in the zone of migration. In the old and in the newbuilt tissue the reticular cells did not assume such strongly ameboid or elongated forms, but were usually round; on the other hand, on the rim of the tissue and in the fibrin they assumed a very different aspect by extending their pseudopodia; on the upper surface of the cover glass they became hypertrophied and often formed polynuclear giant cells. The mesenchymal cells of the tissue always multiplied; at first they clothed the explant like a capsule and from there grew directly into the growth zone; on the upper surface of the medium they were extended, while in the interior of the culture or on the cover glass they were membranous, or syncytial in shape. By the 6th day the explant contained only mesenchymal and reticular cells. Throughout these experiments the mesenchymal and reticular cells remained distinct and no transitions between reticular cells and fibrocytes were observed. —*Author's summary (transl.).*

11286. ZALKA, EDMUND von. Blutkörperchenzahl und Organveränderungen nach Luftverdünnung und das reticuloendotheliale System. *Zeitschr. Ges. Exp. Med.* 76(1/2): 120-135. 6 fig. 1931.—The reticulo-endothelial system of 5 guinea pigs was blocked with 8-36 cc. 10% Fe saccharatum solution intraperitoneally; 6, with 5.5-7.5 ccm. 5% lithium carmin; 3 rarefaction controls; all but injected controls were subjected to an atmosphere of 300-320 mm. Hg (representing an elevation of 7000 m. and 8-9% O). Fe guinea pigs were killed after 3 days rarefaction, the carmin after 2-4 days, controls after 3 days. A decrease in red blood cells occurred in blocked animals after rarefaction, while the untreated showed increase; this was not caused by the block itself. Histologic examinations of liver, spleen, and medulla of femur were made of all blocked and treated animals, 4 controls treated but not blocked, and 2 which came from an elevation of 106 m. In the femurs (compared with those from 106 m.) a pronounced proliferation of the medulla was found, both in blocked and control animals; little difference was found in the spleens, nucleated red blood cells, mitoses, and megakaryocytes being present; in the liver no pathologic alterations were found in the animals injected with Fe. The author suggests that the fluids injected produced a thickening of the capillary endothelium so that the excess red blood cells, formed in the bone marrow under the influence of rarefaction, could not be carried away.

VASCULAR SYSTEM (INCL. LYMPHATICS)

11287. DENTICI, LORENZO. La struttura delle vene cave nelle varie età dell'uomo. [Structure of the human vena cava at different ages.] *Monitore Zool. Ital.* 40(11/12): 570-571. 1930.—The middle muscular layer is wanting in the new-born and in children; it is always present in adolescence and youth and then diminishes, so that it is always absent in old age. The connective tissue of the adventitia increases with age and the elastic tissue increases up to about 50 yrs., when it begins to lessen.—*E. Padoa (transl. by J. P. McMurrich).*

11288. KAHN, R. H. Die Blutdruckregler. *Zeitschr. Ges. Exp. Med.* 68(1/4): 201-215. 16 fig. 1929.—The term "pressure regulators" is suggested for those afferents arising from receptors in the walls of the aorta and carotid bulbs, the function of which is to reduce blood pressure changes in the aorta to a physiological minimum. The aortic regulators run in the vagi and the carotid regulators in the glossopharyngeals or possibly adjacent systems.—*W. J. Meek.*

11289. PATTEN, BRADLEY M. The closure of the foramen ovale. *Amer. Jour. Anat.* 48(1): 19-44. 7 fig. 1931.—Hearts of over 160 infants from birth to 2 yrs. were studied. Measurements of the functional orifice of the foramen ovale at ages from birth to 9½ mos. are given in a table. The postnatal abandonment of the foramen ovale in man is not immediate and abrupt, but is a gradual process paralleling increase in pulmonary circulation and decrease in the bore of the ductus arteriosus. While the events leading toward closure form a continuous sequence, 3 phases of the process may be distinguished: (1) Reduction of fullness of valvula with concomitant diminution in size of effective interatrial orifice. These changes are indicative of gradual cessation of compensatory interatrial blood flow, and culminate in "functional closure" of the foramen about 1 month after birth. Then follows, (2) a period from the 2nd to 8th or 9th month in which rapid connective-tissue growth (±600% increase) reflects the conversion of the formerly movable valvula into a passive septal structure. This phase merges into, (3) the period of fibrous adhesion of the valvula to the septum. There is great variability in the age at which final incorporation of the valvula as an integral part of the septum occurs. As a rule, adhesion is completed during the latter part of 1st or beginning of 2nd year. In many instances it is delayed beyond this period, and in approximately 25% of all individuals fusion is never absolutely completed. A small "probe-patency" persisting beneath a competent valvula causes no functional difficulties and should be regarded as a variant of the normal rather than as pathological.—*Author (courtesy Wistar Bibl. Serv.).*

11290. POPA, GREGOR, and UNA FIELDING. The vascular line between the pituitary and the hypothalamus. *Lancet* 219(5579): 238-240. 2 fig. 1930.—Preliminary note. See B A. 5(11): Entry 29203.

11291. SHDANOW, D. A. Die Lymphwege des peripherischen und Zentralnervensystems. I. Die abführenden Lymphgefässe von Nervenstämmen der Extremitäten des Menschen. [The lymph routes of the peripheral and central nervous system. I. The efferent lymph vessels of the nerve trunks of the extremities in man.] *Anat. Anz.* 71(10/13): 231-245. 5 fig. 1931.—An anatomical description of 23 upper and lower extremities of children and adults.

11292. TANIGUCHI, TORATOSHI. Beitrag zur Topographie der grossen Äste der Bauchaorta. *Folia Anat. Japonica* 9(3/4): 201-214. 1931.—The author examined statistically in 88 ♂ and 12 ♀ adult cadavers of Japanese the height of the large arteries arising from the aorta abdominalis in relation to the vertebral column, and also measured the distances between arteries, comparing the results with those of other races. As to height of branching, there is no marked difference between Japanese and other races, but distances between bifurcation of the aorta abdominalis and the A. coeliaca and that of A. mesenterica inferior are somewhat greater in Japanese. The right renal arteries frequently arise higher than the left.—*Author (courtesy Wistar Bibl. Serv.).*

11293. ZIMMERMANN, A. Zur vergleichenden Histologie der Aorta. [Comparative histology of the aorta.] *Congrès Internat. Xe Zool. à Budapest* 1927. Part 1. 713-716. 1929.

SKIN AND ITS APPENDAGES

11294. BRUHNKE, JOHANNES. Ueber den Mechanismus des Pferdehufes. [Mechanism of the horse hoof.] *Berliner Tierärztl. Wochenschr.* 47(30): 485-487. 12 fig. 1931.

11295. ERICKSON, THEODORE C. The postnatal development of the caudal integument in the rat. *Amer. Jour. Anat.* 47(1): 173-193. 2 pl. 1931.—In a macroscopic and microscopic study in a series of rats from birth to maturity 2 strains (Wistar strain of *Mus norvegicus albinus* and Long-Evans strain of hybrid (pied) rats) were used. The first hairs ("middle hairs" of Römer), which appear on the tail at about 6 days after birth, are arranged in equidistant rings around the tail. The "first collateral hairs" appear at 10 or 12 days and the "second collateral hairs," in the 3rd week. After development is complete the most common number of hairs emerging from under each scale is 5 in the proximal and 3 in the distal part of the tail. The formation of scales is secondary to that of the hairs. The total number of scales in the adult tail is about 3000. Coincident with a decrease in mitoses there is a decrease in thickness of the stratum germinativum from birth to maturity. The caudal epidermis of the newborn rat contains a very prominent stratum granulosum which later disappears. In the newborn there are no visible nuclear remnants in the stratum corneum, while in the adult there are flattened pycnotic nuclei. Arterioles and precapillaries with a lumen of not more than 8μ in diam. have a definite elastic lamina similar to that in the larger vessels. Elastic tissue is abundant in the internal and external elastic lamina in the larger arteries, but is entirely absent from the media.—*Author (courtesy Wistar Bibl. Serv.).*

11296. FRASER, DORIS A. The winter pelage of the adult albino rat. *Amer. Jour. Anat.* 47(1): 55-87. 1 pl., 7 fig. 1931.—The ratio of weight of the winter pelage of the mature albino rat to body weight is 15.7 mgm.: 1 gm., and to body surface, 9.64 mgm.: 1 sq. cm. In all hairs the ratio of breadth of shaft to medulla is 1.6-1.4: 1. The follicles are aggregated mostly into 2 types of groups, those with and those without a central follicle, the latter being more plentiful. Follicles contain 1-5 hairs. The hairs in groups with a central follicle average 13.9 on the dorsum and 17.2 on the venter, distributed in 6.05 and 7.4 follicles, respectively. Hairs in groups without a central follicle average 8.7 on the dorsum and 9.7 on the venter, distributed in 3.8 follicles in both cases. There are 7.7 groups, 35.75 follicles, and 85.65 hairs to an average sq. mm. of dorsal skin and 11.5 groups, 54.7 follicles, and 152.6 hairs to an average sq. mm. of ventral skin. It is estimated that the body hairs number 5,028,303 in the ♂ albino rat of 230 gm. of body weight. After clipping areas on the dorsum always a few hairs grew to the usual length of hairs on this surface within a month. The large hairs which could be identified day after day averaged nearly a millimeter growth per day.—*Author (courtesy Wistar Bibl. Serv.).*

11297. FUKUI, KEN-ICHI. The definite localization of the color pattern in the goldfish. *Folia Anat. Japonica* 8(3/4): 283-312. 29 fig. 1930.—The mode of spreading of pigment of the goldfish is similar in both the black and red patterns. According to their distribution they can be divided into the dorsal, lateral and ventral patterns. The dorsal pattern of the head is separated into 2 parts. The snout pattern spreads from its center on the jaw, but is restricted to the snout. The head pattern spreads from its center at the intersection of the dorsal median line and the boundary between the head and the back; it is always restricted by the junction of bones of the skull underneath. The largest covers the whole surface of the skull. The dorsal pattern of the trunk is usually limited to the dorsal side of the lateral line, and is separated into 4 definite parts. The neck pattern spreads caudally from the same center as the head pattern and covers the anterior part of the back anterior to the dorso-ventral (transverse) scale line (Dvl) 7. The back pattern accompanies usually the neck pattern; its center lies before the anterior end of the base of the dorsal fin and it covers the middle part of the back between Dvl 7 and Dvl 16-19. The tail pattern has its center behind the posterior end of the base of the dorsal fin and spreads over the posterior part of the back posterior to Dvl 16-19. The terminal pattern, produced on the dorsal margin of the base of the caudal fin, sometimes accompanies the tail pattern and sometimes does not. The extension of each dorsal pattern often corresponds to the arrangement of each part of the dorsal musculature such as D.1, D.2 and D.3. (Dorsal muscles, D.1 being the long. muscle nearest mid-dorsal line, etc.) The lateral pattern in the head is limited to the opercular pattern; it is divided into 3 parts: the dorsal, restricted to the superior part of the operculum (Sop); the lateral, on either side of the junction between middle part of the operculum (Op) and subopercular (Sbb); and the ventral, along the ventral part of both operculum and Sbb. The lateral pattern in the trunk is limited to the flank pattern. Its center lies at the point where the ventro-caudal (oblique) scale line (Vp-Obl) 7 and ventral (longitudinal) scale line next to the scale line bearing the lateral canal system (Val) or ventral (longitudinal) scale line next to Val (Vbl) cross each other. It spreads over the abdominal bulge, being limited cranially by Vp-Obl 6, caudally by the furrow behind the abdominal bulge, dorsally by the lateral line and ventrally by the line drawn through the bases of 3 fins along the ventral median line. The ventral pattern, limited to the trunk, consists of 3 different parts. The pectoral pattern has its center on the base of the pectoral fin and is limited to the surface of the pericardial cavity. The abdominal pattern has its center on the base of the ventral fin and is limited to the surface of the musculature of that fin. In its dorsal extension it covers the abdominal bulge corresponding to the surface either of the peritoneal cavity or of both the peritoneal cavity and the retroperitoneal organs. The anal pattern has its center on the base of the anal fin and spreads over the surface of the furrow behind the abdominal bulge. Thus each color pattern of the goldfish has its own center and spreads to certain restricted areas of the body. The spreading takes place always along the parts of loose subcutaneous tissues and is prevented by the close attachment of the skin to the substratum.—*Author's summary.*

11298. LI, WIN RANG. Über die Wurzelfestigkeit der Japanerhaare. [In Japanese, with German summary, p. 80-81.] *Japanese Jour. Dermatol. & Urol.* 30(7): 768-774. 3 fig. 1930.—The attachment of hairs from various parts of the body was tested in 100 Japanese (70 ♂, 30 ♀) with the Basler apparatus as modified by Sasakawa. It was strongest at the back of the head (av. 57.3 gm.), less at the crown of the head (av. 48.3), least on the lower leg (av. 41.2) and the forearm (av. 20.7). Individual variations but no sexual differences were apparent. For the hair of the head the firmness of attachment seemed about the same as in Chinese but much stronger than in Europeans (32.7 gm. according to Basler), while for the forearm and lower leg the root strength of the hairs was about equal in the Japanese and Europeans but stronger than in the Chinese (according to Basler, 13.5 gm. forearm, 28.9 gm. lower leg). —*From author's summary (transl.).*

11299. MANGANOTTI, GILBERTO. Osservazioni sulla così detta membrana basale e sul tessuto reticolare del derma nella cute normale ed in alcune dermatosi. Ricerche sui rapporti dermo-epidermici. I. [The so-called basal membrane and the reticular tissue of the corium in normal skin and in certain dermatoses. Relations between corium and epidermis.] *Gior. Ital. Derm. e Sifil.* 71(6): 1901-1916. 3 pl. 1930.—Study of the junction between epidermis and corium in 58 subjects, 12 normal and 46 affected with various dermatoses, failed to show a continuous thick stratum between the 2 tissues or any interlocking of connective fibrillae with epithelial cells. Instead, in contact with the basal stra-

tum of the epidermis was a layer of reticular tissue belonging to the dermal mesenchyme, not constituting a true membrane, but probably a particular arrangement (paralleled in many other parts of the body) of intercellular colloids with reference to the epidermis. In pathologic conditions this reticular layer sometimes ceased to be argentophil and became collagenized or hyalinized, and sometimes apparently increased in thickness by the packing on it of reticular fibrillae present in dermal infiltrates. While normally the reticular tissue (outside of the reticular layer) is limited to circumscribing the sudoriferous glands and the pilo-sebaceous and capillary follicles, in diseased conditions it is distributed abundantly among the cells of the infiltrates, giving rise to different structural types corresponding, not to particular forms of disease, but to various cytologic types of the mesenchymal cells.—*From author's summary (transl.).*

11300. NAKANISHI, K. A contribution to the histological study of fine nerve fibers in the sebaceous gland and the arrector muscle of hair of the human body. [In Japanese, with English summary, p. 119-120.] *Japanese Jour. Dermatol. and Urol.* 30(11): 1134-1137. 1 pl., 1 fig. 1930.—The author, using a modification of the impregnation method of Ramon y Cajal with the skin of the axilla (osmidrosis casea) and of the healthy scalp of patients undergoing operation, found that the sebaceous glands are served by their own nerve fibers. The ramifying nerve fiber bundle, derived from the subcutaneous gross nerve bundle nets, throws out branches partly to the hair follicles to make nets surrounding them and partly to the sebaceous glands. The fibers reaching the sebaceous glands make rough nets in the periglandular connective tissue, and their slender branches penetrate into the interlobular connective tissue. Here they break up into very fine fibers, making very complicated nets on the membrana propria glandis. These very fine nerve fibers sometimes end with a knot-like swelling, but sometimes bcome so attenuated as to be scarcely visible. No ending of the fine nerve fibers can be seen between or within the gland cells themselves. The arrector pili muscles are also cared for by their proper nerve fibers which pass through the muscle fibers spirally but nearly parallel to them and are traceable as fine spiral endings in the muscle fibers. Those nerve fibers distributed to the hair follicles, sebaceous glands and arrector pili muscles show intercommunication.—*From author's summary.*

11301. SHARPEY-SCHAFER, E. Observations on the relative rate of growth of the nails of the right and left hands respectively: on seasonal variations in the rate, and on the influence of nerve-section upon it. *Proc. Roy. Soc. Edinburgh* 51(1): 8-13. 1930/31.—In nearly every case the rate was faster in summer than in winter and faster on the right hand than on the left. But the thumb nails grew faster on the left hand than on the right both in summer and winter. The slowest rate of growth occurred in the nail of the little finger of the left side. The cutaneous nerves (ulnar) of this finger had been severed, and, with the exception of those which subserve pain, had not shown functional recovery. It is therefore probable that a trophic influence is exercised through the nerves upon the growth of the nail; the probability being supported by the fact that the little-finger nail on the left or de-nervated side not only exhibits a slower rate of growth but is distinguished from the corresponding nail on the normal side by being more flattened in form, rougher on the surface, and more brittle in texture.—*Author's summary.*

11302. SZODORAY, LEWIS. The structure of the junction of the epidermis and the corium. *Arch. Dermatol. and Syphilol.* 23(5): 920-925. 5 fig. 1931.—Observations of Ag-impregnated preparations convince the author that a complete and firm connection exists between epidermis and corium as manifested under physiologic and pathologic conditions.

11303. TANIGUCHI, TORATOSHI. Quantitative Untersuchung der Anhangsorgane der Haut bei dem japanischen Neugeborenen. *Folia Anat. Japonica* 9(3/4): 215-265. 1931.—The author determined the quantity of sweat glands, of sebaceous glands, and of mm. arrectores pilorum, and also counted the number of sweat glands in 15 regions of the body by means of the paper-weighing method, converting them into those of 1 sq. cm. of skin area. The sweat glands are most abundant on the flexor side of the leg (8.859 cu.mm. in 1 sq.cm.) and least on the abdomen (2.704 cu.mm.). The average number of sweat glands per sq. cm. varies from 2321 on the flexor side of the leg to 1018 on the chest. The average individual volume of a sweat gland is greatest in the skin of the lateral side of the thigh (0.004553 cu.mm.) and least in the abdomen (0.002589 cu.mm.). The sebaceous glands are most abundant on the vertex (2.601 cu.mm.) and least on the leg (0.084 cu.mm.). The largest individual sebaceous glands are in the skin of the vertex and the smallest in the leg. The individual volume of sebaceous glands and that of M. arrector pili vary according to the number of hairs forming a hair group. The Mm. arrectores pilorum are most abundant in the skin of the vertex (2,841 cu.mm.) and least in the abdomen (0.210 cu.mm.).—*Author (courtesy Wistar Bibl. Serv.).*

11304. TROTTER, MILDRED, and HELEN L. DAWSON. The direction of hair after rotation of skin in the guinea-pig: an experiment on hair slope. *Anat. Rec.* 50(2): 193-196. 2 fig. 1931.—In 15 guinea-pigs an area of skin in the middorsal region approximately 2 sq.cm. in size was rotated so that the cephalic and caudal poles were interchanged. Consequently, the direction of the hair on this area was reversed and in a position ideally adapted to test the hypothesis of Kidd and F. Wood-Jones. The animals were kept under as normal conditions as possible, which included both active and passive manipulations of the hair in a caudad direction. All were subjected to the experiment for 14 mos. and some are now in their 3rd year. The results are uniform; the hair has maintained its original direction, responding in no way to external, mechanical influences.—*Authors (courtesy Wistar Bibl. Serv.).*

BONES, MUSCLES, JOINTS, FASCIAE

11305. ANDRES, J. Variation der Phillips'schen Sehne. (Beitrag zu den atavistischen Aufteilungserscheinungen des Musculus extensor digitalis communis und seiner Sehne beim Pferd.) *Anat. Anz.* 72(1/3): 23-30. 1 fig. 1931.—The Philipps' tendons in a horse had a special fascial layer from the carpus which only distally or in the middle of the metacarpus is united with the abnormally developed lateral extensor tendon: on the left by taking up a fine branch of this tendon, on the right by complete fusion with it.

11306. [BALABAI, P. P.] БАЛАБАЙ, П. П. До гістологічної будови зябрових мускулів миноги. [Histologic structure of the gill muscles of the lamprey.] [German summary.] Записки Київського Товариства Природознавців (*Mém. Soc. Nat. Kiew*) 27(4): 28-45. 1 pl., 4 fig. 1929.—Gill muscles of *Lampetra planeri, L. fluviatilis,* and *Petromyzon marinus* show a high degree of differentiation, consisting of smooth and striated muscle. The latter consists of 2 types of fibers: so-called compact fibers rich in fibrils, and so-called "empty" fibers with fibrils only at the periphery. Both types of fibers of the gill muscles of *L. fluviatilis* have more fibrils than the corresponding fibers of *L. planeri.* This fact is correlated with the greater muscular activity of the gills of *L. fluviatilis* so as to supply more O_2 demanded by this larger organism. The constrictor of the gill slits of *L. planeri* and *L. fluviatilis* presents the most complicated structure. On the dorsal and ventral sides of the muscle the lateral part consists of compact fibers, the median of "empty" fibers; but at a distance from the dorsal and ventral sides of the muscle both types interlace and cross each other so that in the middle part of the muscle the position of the compact and "empty" fibers is reversed. Often a definite correlation was established between the function and histological structure of the separate muscles. The presence of so-

called empty fibers is taken as an indication of primitive traits.—*S. A. Corson.*

11307. **BAUER, C. Kann im Experiment parostaler Callus durch Einwirkung der Synovia erzeugt werden?** *Arch. Orthop. u. Unfall-Chir.* 29(2): 181-183. 2 fig. 1931.—The author perforated the joint capsule on the flexor side of 10 dogs, closed the wound, and injured the musculature of the thigh at once in 5, after the incision healed and later, in the others. In 8 others the joint capsule was opened by a cross incision and the corners sutured back to leave a window in the superior recess; 4 were injured immediately, 4 after 8 wks. At the end of 10 wks. roentgenograms revealed no callus. Necrotic muscle was then inserted through the windows into the flexor musculature in the region of the capsule; no calluses developed. Apparently a parosteal callus cannot be produced by contusion of the musculature and the action of the synovial fluid on it.

11308. **[DOLGO-SABUROV, B. A.]** ДОЛГО-САБУРОВ, Б. А. Роль мышц в морфогении скелета. (Сообщение 1-е). **[The rôle of the muscles in the morphogeny of the skeleton. (1st communication.)** [German summary.] Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft*) 16(1/2): 123-159. 14 fig. 1930.—Histological examinations revealed that the morphology of the bone surface depends on the method of muscle attachment. A connection by means of tendon or fascia results in a local, concentrated pull on the point of attachment of the bone. This develops a protuberance, outgrowth, comb, or roughness of the bone. A direct attachment of the muscle on the periosteum gives a broad origin or insertion. This results in a concavity, indentation, or a smooth surface of the bone.—*S. A. Corson.*

11309. **FECI, LORENZO. Guarigione delle cavità ossee da svuotamento. (Studio sperimentale-clinico-radiologico.) [Repair of artificial bone cavities.]** *Arch. Ortopedia* 45(3): 351-408. 31 fig. 1929.—Cavities were produced in the head of the tibia in 10 rabbits, of which 1 died of infection; the others were killed 9, 18, 30, 35, 50, 60, 72, 82, and 97 days, respectively, after the operation. The bones were found to repair the cavities spontaneously, by growth of fibrous tissue derived from the medulla, the fibrous tissue later returning to a medullary structure. Growing and epiphyseal cartilage when removed from or near artificial cavities is not replaced in its original form but undergoes premature ossification. Radiographic studies in 5 clinical cases support the same conclusions.

11310. **GOFF, BYRON H. An histological study of the perivaginal fascia in a nullipara.** *Surg., Gynecol. and Obstetr.* 52(1): 32-42. 18 fig. 1931.

11311. **GRAHE, KARL. Beitrag zur Entwicklung der Nasennebenhöhlen.** *Acta Oto-Laryngol.* 15(2/4): 141-160. 16 fig. 1931.—In 6 rabbits the molars of the left side of the lower jaw were nipped off every 8 days from the 6th wk. on. The animals were killed after 4 mos., and the skulls of 3 macerated and the other 3 skulls decalcified and embedded in celloidin for histological examination. In all skulls, the left side was less developed than the right, especially in the region of the maxillary bone; histologically the bone was porous and the turbinals thickened; the right nostril of one was inflamed. In 5 other young rabbits, 1 nostril was sutured. No difference was found in the development of 4; the 5th was discarded because of suppuration. In both rabbits with inflamed nasal mucosa, the development of pneumatization was checked on the affected side.

11312. **INGALLS, N. WILLIAM. Observations on bone weights.** *Amer. Jour. Anat.* 48(1): 45-98. 1931.—The observations recorded are based on the dry weights of all the bones of the body, either individually or in functional groups, from a series of 100 adult white ♂♂ 19-78 yrs. old. Although there is much variation in the behavior of different bones, the tendency is for the weight to rise to what may be called the peak of development, decline then, and rise a second time as early age changes add to the weight, and finally subside in the atrophy of old age. Considerable differences are encountered not only in the reactions to age, but also in the variability of different bones. Upper and lower extremities are contrasted as well as the variations between right and left. Certain features may vary with race or sex and in many cases hereditary, phylogenetic influences appear to be at work.—*Author (courtesy Wistar Bibl. Serv.).*

11313. **JAZUTA, KONSTANTIN. M. glutaeus medius accessorius.** *Anat. Anz.* 72(1/3): 10-11. 1 fig. 1931.—In an adult man a true accessory median gluteal muscle was found, its base directed upward and forward, extending for 5.5 cm. along the outer surface of the ilium below the origin of Mm. tens. fasc. latae and glut. med.; backward and downward it extended to the trochanter major. The tendons divided, one fusing with that of the glut. med., the other attaching itself directly to the trochanter major. The muscle was about 10 cm. long, 1 cm. thick.

11314. **[KOTIKOVA, E. A.]** КОТИКОВА, Е. А. О деятельности M. serratus posticus inferior. **[Function of M. serratus posticus inferior.]** [German summary.] Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft* 16(1/2): 111-121. 3 pl., 2 fig. 1930.—Twelve human cadavers of both sexes and various ages were studied. Contraction of the muscle dilated the lower part of the thoracic cavity in 3 directions simultaneously, thus assisting inspiration.—*S. A. Corson.*

11315. **[LEBEDEVA, M. V.]** ЛЕБЕДЕВА, М. В. Соотношение между окраской и строением поперечнополосатых мышц в связи с их деятельностью и возрастом животного. **[Correlation between color and structure in striated muscle in connection with muscular activity and the age of the animal.]** [German summary.] Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft*) 16(1/2): 213-236. 13 fig. 1930.—In the cat and rabbit striated muscles of different color and structure develop from the pale muscle which forms all the musculature of the newborn but which is structurally very different from white muscle of the adult. The color change does not begin simultaneously in all the muscles; but the intensity of the color increases with age at a rate directly proportional with the activity of the muscle. Often in dynamic and static muscles the color does not coincide with the structure, "red" muscle having the structure of "white" muscle and vice versa. All dynamic muscles consisting of long parallel fibers in adult animals have the typical structure of white muscle regardless of the color, while static muscle, consisting of short fibers, exhibits mostly a typical structure of red muscle. Identical muscles of different animals of the same species in most cases have the same color and structure. Identical muscles of animals of different species often exhibit different color and structure.—*S. A. Corson.*

11316. **MEYER, A. W. Our inadequate terminology concerning the anterior palatine region.** *Anat. Rec.* 49(1): 19-30. 1931.—A study of the incidence, structure, and origin of cysts in the anterior palatine region of the maxilla and of the region itself revealed the inadequacy of our present terminology. Most of the difficulty will be obviated if we speak of major and minor anterior palatine canals; of a common anterior palatine canal; of an anterior palatine fossa and foramen, and of superior and inferior foramina of the major and minor anterior palatine canals. Excerpts from current and past anatomical literature are included in the discussion.—*Author (courtesy Wistar Bibl. Serv.).*

11317. **ODGERS, P. N. B. Two details about the neck of the femur: (1) the eminentia, (2) the empreinte.** *Jour. Anat.* 65(3): 352-362. 2 pl. 1931.—The material studied consists of 52 prs. of fresh femurs of known age and sex. The eminentia articularis colli femoris is a ridge of bone, which runs from the superior tubercle of the intertrochanteric line to the head of the femur; it is much better marked in ♂ than in ♀ bones and is not seen in the anthropoids. In over ¼ of ♂ femurs its medial portion is covered by fibrocartilage, which extends onto it from the articular margin. The eminence

acts as a pulley bar for the anterior portion of the capsule in extension of the hip joint. The empreinte of Poirier or the cervical fossa of Allen commences as a depression on the medial end of this eminentia: as this deepens, the fibrocartilage is destroyed and the bone is eroded. It is more often seen in ♂ than in ♀ bones, and, with some exceptions, the older the individual, the deeper will be the empreinte. The circular fibers of the hip-joint capsule—the zona orbicularis—are well marked anteriorly. These are in contact with the medial end of the eminence and are responsible for the appearance of a depression or an erosion in this situation.—*Author's summary.*

11318. **SACERDOTE, G., e G. OSELLADORE. Modificazioni circolatorie provocate nelle epifisi dall'impianto di caviglie ossee. [Circulatory changes produced in the epiphyses by implantation of bone pegs.]** *Arch. Ital. Chir.* 28(6): 648-655. 4 fig. 1931.—In dogs, implantation of bone pegs in the femoral and tibial epiphyses produced an increase in the vascular web (often an increase also in the caliber of the vessels) which attained its maximum 2-3 weeks after the operation, but was still manifest after 3 mos.

11319. **YAMASHITA, KENJI. Über die Schläfenbeinzellen. I. Die Porosität des mazerierten Schläfenbeins.** *Folia Anat. Japonica* 9(3/4): 311-314. 1 fig. 1931. —The author has studied the porosity of macerated temporal bone by a method of estimation of specific gravity, 23.24%-46.88%. The porosity in various parts of the temporal bone is: in the apex of petrous bone, 56.05%; the inner ear and its surrounding, 23.96%; the antrum mastoideum and its surrounding, 50.29%; the outer side of the mastoid process, 38.31%; the zygomatic arch, 24.28%; the posterior portion of the sinus sigmoideus, 20.53%; and the squamous portion, 10.24%. —*Author (courtesy Wistar Bibl. Serv.).*

ADENOID TISSUE

11320. **FÉRESTER, M. Sur la greffe des ganglions lymphatiques.** *Compt. Rend. Soc. Biol.* 106(10): 789-791. 1931.—In 48 guinea pigs 1½-3 mos. old, the small lymph nodes from the hyoid region were transplanted, either wholly or in fragments, under the skin of the thigh or between the muscles of the abdominal wall; 100 grafts were examined. After a phase of necrosis during which the lymphocytes suffer especially, the graft, whether a whole node or a fragment, tends to reconstruct itself. Lymphocytes are formed in situ; the marginal sinus is rebuilt, and often the germinal centers, exactly like those found in the normal node, are formed.—*E. Weiner.*

11321. **KELEMEN, GEORG. Explantationsversuche mit Tonsillengewebe. IV. Beeinflussung des in vitro-Wachstums von Embryonalgeweben durch Tonsillensubstanz. [Effect of tonsil substance on the growth in vitro of embryonic tissue.]** *Acta Oto-Laryngol.* 15 (2/4): 199-209. 6 fig. 1931.—The tissues used (from 8-day chick embryos) were heart muscle and iris, the first because viability is verifiable through pulsation, the second because the migrating chromatophore cells are easily observed. The 4 series were: (1) heart + autogenous plasma: (2) heart + plasma + tonsil extract; (3) iris + plasma; (4) iris + plasma + tonsil extract. Each series comprised 60 cultures, and the whole group of experiments was carried out 4 times; altogether more than 1,100 cultures were used. The tonsil extract either prevented the growth of fibrocytes or reduced it to a minimum, an action coinciding with that of another organ belonging to the reticulo-endothelial system, the liver, and contrasting with that of leucocyte extract. Addition of embryonic extract often decreased this growth-inhibiting action but did not neutralize it.

11322. **SHIMIZU, SADAO. Sur le ganglion cystique.** *Folia Anat. Japonica* 9(2): 79-80. 1931.—The author made statistical observations on the lymph node on the cystic duct which is reported to swell and indurate in acute or chronic diseases of the bile tract. The afferentia of this gland were also studied. Observations made on 50 cadavers of Japanese (37 fetuses, 2 infants, 3 children, and 8 adults) showed: (1) The gland is situated on the first section of the cystic duct. (2) There is never more than 1 gland and its length in adults is about 1 cm. (3) No gland was found in 3 out of the 50 cases examined (6%). (4) The gland collects most of the lymph from the gall bladder.—*Author (courtesy Wistar Bibl. Serv.).*

11323. **TEITEL-BERNARD, ALFRED. Über die Blutzirkulation in der Hundemilz.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(3): 544-558. 13 fig. 1931.—Specimens were removed from spleens (in various conditions of filling or emptying according to the action of epinephrine, choline, pilocarpine, atropine, and insulin) of anesthetized dogs and from an anesthetized control, fixed, and stained (Regaud's Fe hematoxylin, Azan, Giemsa, hematoxylin-eosin-orange, or Perl's Fe reaction) in 3, 4, and 6μ serial sections; intra-arterial injections with ink were also made. Schweigger-Seidel's cortex had a spongy structure and was intimately related to the venous capillaries. The red blood cells left the arterial route through the spaces and canals of this cortex and passed into the pulp, mainly into the venous capillaries. At the point of passage the red blood cells lost a part of their body in the interior of the arteries as "hematic granules" which remained attached to the arterial wall. By special staining methods numerous erythrocytes which had passed from the pulp into the venous capillaries were found, most frequently in the contracted spleen. At these points of passage, too, the erythrocytes deposited hematic granules, this time outside the vessel. The club shaped ends of the pulp arteries, designated as end chambers, are only the cortex itself impregnated by the injection.

PHYSICAL ANTHROPOLOGY

11324. **ADACHI, SH. Über die Form Parotis der Wilden in Formosa.** *Taiwan Igakki Zasshi [Jour. Med. Assoc. Formosa]* 30(1) (no. 310): 1-3. 1931.—In 21 parotids from 12 individuals, the shape did not differ from that of other races, but the capacity (av. 17.5 cc.) was greater than that of Europeans and Japanese. Detailed measurements are given for the several topographic and anatomic parts of the organ and its duct.—*E. C. Faust.*

11325. **ALLIOT, H. Présentation de deux jumeaux bivitellins.** *Bull. Soc. Étude Formes Hum.* 6(1/2): 188-191. 1928.—The author presents description and photographs (front, back, profile) of a boy and girl of 16 yrs., twins but apparently 4 or 5 yrs. apart. Measurements: for the girl, height 153.5 cm., chest circumference 73-76 cm., weight 51 kilos; for the boy, height 136.5 cm., chest 66-68.5 cm., weight 30 kilos. The girl conformed to the usual muscular type. The boy (less than half his sister's weight at birth) had feeble musculature, was physically underdeveloped in every way, and was mentally much below his age. Several cases of twin pregnancy had previously occurred in their mother's family. —*H. Alliot (transl. by J. B. Bullitt).*

11326. **ARNOLD, A. Ein Beitrag zur Anthropologie der deutschen Frau und zur Frage der Einwirkung planmässiger Leibesübungen auf den weiblichen Körper.** *Zeitschr. Ges. Anat. Abt. 2, Zeitschr. Konstitutionsl.* 15(5): 651-663. 1930.—Detailed measurements on 25 women, aged 21, before and after a course of gymnastic training showed that a portion of the subcutaneous fatty tissue was lost; the musculature of the extremities was not greatly affected. Thus the rounded form frequently designated as sexual differentiation can be changed into the more slender type.

11327. **ASHLEY-MONTAGU, FRANCIS M. On the primate thumb.** *Amer. Jour. Phys. Anthrop.* 15(2): 291-314. 1931.—185 hands of 185 *Primates* were measured to determine the relative length of the thumb in the various groups. This number was insufficient to provide a reliable index of the average relative length of the thumb in the groups examined. The figures obtained, however, were sufficient to indicate that the functionally

tailless lorises possess the highest pollical index, man the next highest, then the lemurs, New-World monkeys, Old-World monkeys, and, finally, the anthropoids. Differences in the index were found to exist between the races of man. The evolution of the opposable thumb seems to be correlated with the decline in the functions of the tail. The short thumb seems to be produced by an overspecialized arboreal life. The terrestrial *Primates* possess long thumbs. The thumb of the anthropoids would appear to have undergone a reduction since their divergence with man from the common ancestral stocks; that of man, an elongation. In the terrestrial gorilla the thumb has undergone a secondary elongation consequent upon its adaptation to the demands of terrestrial life. With few exceptions, the tendency of the thumb is to increase in length with age.—*Author (courtesy Wistar Bibl. Serv.).*

11328. **BAEYER, H. von. Der lebendige Arm.** [The living arm.] 46p. 15 pl. Gustav Fischer: Jena, 1930.

11329. **BARBOSA SUEIRO, M. B. Anotações anatômicas. VII. Segunda nota sôbre a apôfise supra-epitroclear (processus supracondyloideus, BNA).** [VII. Second note on the supra-epitrochlear apophysis (processus supracondyloideus, BNA.).] *Arquivo Anat. e Antrop* [*Lisboa*] 13(1/2): 143-156. 2 fig. 1929(1930).—A report of 3 cases of the occurrence of the apophysis. In 1 case, a ♀, the apophysis was unilateral, in the left arm, and there was an anastomotic vas aberrans extending from the brachial to the ulnar artery and passing through the osteo-fibrous arch together with the median nerve. In a living man, 47 yrs. of age, the apophysis was bilateral and was demonstrated both by palpation and by radiography. A diagnosis of the apophysis may be important in ligation of the brachial artery and it may be mistaken for an enlarged supra-epitrochlear node. It may be recognized with certainty by radiography. The records are at present insufficient for determining whether it is more frequent in the insane and criminal than in normal persons. It is a congenital structure, inheritable and atavistic.—*M. B. Barbosa Sueiro (transl. by J. P. McMurrich).*

11330. **BASLER, ADOLF. Der Schwerpunkt der lebenden Menschen. Schwerpunktwage und Schwerpunktpendel.** 100p. 45 fig. Sun Yatsen-Universitaet: Canton, 1931.—A treatise of the history and technique of the determination of the center of gravity of the human body. The historical part is followed by an extensive consideration of the gravity line in the standing, horizontal, and squatting positions. This center of gravity is constantly changing in the living, breathing and pulsating body. Variations in the activity of different muscle groups affect the curve of horizontal movements of the gravity point. Further are discussed the results of measuring precisely the vertical distance of the center of gravity from the sole of the foot. The author suggests new and more delicate apparatus for getting the height of the point of gravity. Chiefly Chinese subjects have been used.—*C. B. Davenport.*

11331. **BLOCH, ADOLPHE. Sur le physique des indigènes de Taiti, lors de la découverte de l'île, et ce que nous croyons de leur origine.** *Bull. Soc. Anthrop. Paris* 8(4/6): 211-216. 1927.—The author gives a brief verbatim account from the works of the first explorers of Tahiti, of the physical characteristics of the natives (Wallis 1767, Bougainville 1768, Cook 1769, Forster 1772, Lesson 1822, and the resident physician Gros). These accounts concur in the observation of characteristics ascribable to the Melanesian and Caucasian races with the probable priority of the former, the latter being distinguished by blond and even red hairs and a lighter pigmentation, while nose, lips and mouth are large. They also differ in stature, although representing on the whole tall human varieties with individuals attaining even 194 cm.—*B. Oetteking.*

11332. **BONIN, GERHARDT von. Der Koeffizient der Rassenähnlichkeit und seine Anwendung am Lebenden.** *Anthrop. Anz.* 7(1/2): 82-102. Map. 1930.—Explains the mathematical deduction leading up to the usual form of the "Coefficient of Racial Likeness" (C. R. L.) given by Karl Pearson. The method is applied to the material provided by Alette Schreiner from Northern Norway, by Roth-Lutra from the Palatinate, and by Hannesson from Iceland. The biometric constants of these series are discussed and their racial affinities determined by the C. R. L. They agree closely with those arrived at by other methods.—*G. v. Bonin.*

11333. **BOYD, EDITH, RICHARD E. SCAMMON, and DONOVAN LAWRENCE. The determination of surface area of living children.** *Proc. Soc. Exp. Biol. & Med.* 27(5): 445-449. 2 fig. 1930.—A plaster of Paris cast of the body is made and covered with adhesive tape. The tape is stripped off, cut into flat pieces and the outline of each piece was traced with a knife on "Kodaloid No. 3"; the area of the pieces of Kodaloid was determined by weighing. This process gives body surface area with an error of only about 2%.

11334. **BRINK, VERNON H. A comparative study on the sacrum of the Griqua.** *Trans. Roy. Soc. So. Africa* 18(4): 287-293. 1930.—The Griqua were a people, now virtually become extinct by further intermarriage, whose ancestors were of widely divergent anthropological character. Certain features of the sacra here reported seem to illustrate this fact. There is considerable numerical variation in the sacral segments, and sacra grouped on this basis showed features closely comparable with those already found by Wetzel in Australian sacra similarly classified. On the whole no one type of numerical abnormality could be said to accompany other sacral characteristics which were clearly of more primitive type than those of normal Griqua sacra. On empirical measurements, the Griqua sacrum approximated fairly closely to the European and more particularly to the Bantu (especially the Griqua ♀)—yet in proportions the sacrum of the Griqua was reminiscent far more of sacra of Bush and Hottentot. As only 14 sacra in all were reported upon, conclusions are unjustifiable, but the following suggestions emerge:—(1) The high numerical variability in Griqua sacra is eloquent of the hybrid parentage of the people. (2) Certain features, e.g., length and breadth of the sacra, can be interpreted as being marks of Bantu and European blood—others which obviously are not, but which Bushman blood would conveniently explain, e.g., shallowness of the sacrum. (3) Classification of the sacra according to numerical variations in the vertebral column as a whole seems logical and suitable.—*V. H. Brink.*

11335. **BRYN, HALFDAN. Der nordische Mensch. Die Merkmale der nordischen Rasse mit besonderer Berücksichtigung der rassischen Verhältnisse Norwegens.** 166p. 10 maps. 126 fig. J. F. Lehmann: München, 1929. Pr. 9 M.—A summary of the developmental characters of Nordic man—blondness and tall stature. An account of Scandinavia and its relation to the ice age, the retreat of the glacier and immigration into it as source of Nordic people. The percentage of blue eyes is given in different sections of Norway and of Europe. The distribution of body size and head index throughout Norway is given and the relation of these features to pigmentation is discussed. A chapter is devoted to individual characters in the Nordic race, including form of nose, bridge and tip from frontal, lateral and caudal aspects. The pinna and other characters are also treated. Sections are devoted to the intellectual characters of the Nordic race and to Nordic women. The presence of brachycephalic blondes is also discussed and the osteological characters of Nordic men are considered. A bibliography of 112 items is added, the books cited being largely in the Norwegian language. The book is abundantly illustrated with maps and portraits.—*C. B. Davenport.*

11336. **BRYN, HALFDAN. Die blonden Brachykephalen in Norwegen.** *Anthrop. Anz.* 6(3): 231-248. 1 fig. 1930.—Author discusses the various opinions regarding the status of blond brachycephals. These are to be found everywhere in Norway. Where few in number they are homogeneous and may be taken for a variety of Nordic.

But in some regions they are quite unlike the Nordics. The author investigated the population of Jaeren, southwest Norway, where a relatively dark-haired, dark-eyed and dark-skinned type prevails which has been called the "Jaeren type." He notes a high correlation between darker hair and brachycephaly which bespeaks interdependence of the two. The evidence indicates a crossing between a blond dolichocephalic and a dark brachycephalic race. They have the general features of the Alpine race as Ripley first suggested. They do not, however, represent an independent race but a mixture of Alpine and Nordic. They are dark only in a relative sense, when compared to the other elements of Norway. They may be classified as blonds; hence the designation blond brachycephals.—*C. J. Connolly.*

11337. [BUNAK, V. V.] БУНАК, В. В. Черепа железного века из севанского района Армении. [Iron age skulls from the Sevan District (Armenia).] [English summary.] Русский Антропологический Журнал (*Jour. Russe Anthrop.*) 17(3/4): 64-87. 1929.—The skulls described are dolichocranic, chame-orthocranic, leptoprosopic, leptorhinic and mesoconchic. Their type is definitely European. They show much closer resemblance to Swedish Iron age skulls than to Minoan age skulls of Crete. This fact furnished a craniological confirmation for the theory of the migration of the North European type to the south during prehistoric times.—*V. V. Bunak.*

11338. **CAVE, A. J. E. The craniopharyngeal canal in man and anthropoids.** *Jour. Anat.* 65(3): 363-367. 4 fig. 1931.—Report of a case in man and of findings in 56 chimpanzees (found 36 times), 57 gorillas (20), 44 orangs (6), and 26 lower primates (6). The author concludes that neither age nor sex has any direct bearing upon the incidence or the features of the canal, which is much commoner in the orang than in man, 3 times more common in the gorilla, and commoner still in the chimpanzee.

11339. [CHISTĬAKOV, G. A.] ЧИСТЯКОВ, Г. А. К вопросу о корреляциях размеров тела. [Correlations between bodily dimensions.] [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 3: 98-111. 1927.—The author presents measurements of 504 Ukrainian peasants, aged 23, from Kharkov and Soumy. Tables show coefficients of correlation between stature and various dimensions and indices; these are arranged according to Pearson's classification (1-.75 high, .75-.50 considerable, .50-.25 moderate, .25-0 low). Some of these correlations are as follows: Stature to sitting height = .73, to length of trunk = .57, to spread of arms = .77, to length of upper extremity = .68, to length of lower extremity = .84, to size of pelvis = .52. Length of upper extremity to length of arm = .76, to length of forearm = .65, to length of hand = .60. Length of upper extremity to length of lower extremity = .75. Length of lower extremity to length of thigh = .78, to length of leg = .72, to length of foot = .62. Height of forehead to length of face = .70. Only moderate correlation exists between stature and head dimensions (.25-.35), between length and diameters of the trunk (.25-.45), and between length of trunk and length of extremities. Practically no correlation exists between stature and cephalic index, between length of trunk and thoracic index, between length and circumference of extremities, length and breadth of face, length of face and breadth of nose or mouth. The author believes that study of the degree of interdependence of bodily dimensions in various ethnic groups may reveal anthropological differences. —*J. B. Bullitt.*

11340. **CLARK, GRACE. A method of computing the cross-section of the chest for children at seven, eight, and nine years.** *Human Biol.* 2(4): 539-546. 1930.—An empirical formula for finding the area of a transverse segment of the chest was derived from 3 measurements: width, depth, and circumference. By means of lead taps the shape of the chest in 7-, 8-, and 9-yr.-old children was found to resemble a parallel octagon. The measurements of the chest were then substituted in the empirical formula for this figure, and the results were compared with the true area derived by measuring the area of the traced shape with a Coradi disc planimeter. —*G. Clark.*

11341. **CLEMENTS, FORREST. Racial differences in color-blindness.** *Amer. Jour. Physical Anthrop.* 14(3): 417-432. 1930.—A review of the conclusions reached by the philological researches of Geiger, Magnus, and Rivers indicates that differences in color terminology may be connected with differences in color vision. Inspection of earlier work on color-blindness among primitive peoples shows that, even when these results are discounted on the basis of faulty technique, imperfect tests, and errors of sampling, there remains enough evidence to lend weight to the assumption of racial differences. It is believed that the Ishihara test for color-blindness is a good diagnostic instrument for most practical work. This test gave an incidence of 8.0% among 3734 white ♂♂ and 0.43% among 3000 white ♀♀. The percentage among 624 American Indian ♂♂ was 1.9%, and no case occurred among 200 Indian ♀♀. The same test gave an occurrence of 3.7% among 323 American negro ♂♂. Taken in connection with the earlier work, these results leave little doubt that racial differences in color-blindness do exist.—*Author (courtesy Wistar Bibl. Serv.).*

11342. **COLE, FAY-COOPER. Recent trends in anthropology.** *Proc. Amer. Philosoph. Soc.* 69(6): 385-390. 1930.

11343. **COUPIN, F. La croissance chez les anthropoides et chez l'homme.** *Rev. Scientifique* 66(23): 726-732. 6 fig. 1928.—After having reviewed classical conceptions of growth of stature and weight in man, and having expounded some new ideas (level of curves for weight and height, interruption of growth, difference in growth of the various parts of the body), the author gives hitherto unpublished figures, especially of a new-born chimpanzee and 2 young gorillas the age of which is known almost exactly (♀ 2 yrs. and 5 mos.; ♂ 3 yrs. and 1 mo.). Two provisional conclusions are to be drawn: (1) man is born relatively heavier than chimpanzee (1/22 instead of 1/45); (2) during early infancy man grows more rapidly than the anthropoids, except for the brain, which attains its ultimate weight sooner in anthropoids than in man. The adult proportions do not seem to be gained at corresponding stages by anthropoids and man; the former reach their final proportions much sooner. In the fetus of gibbon, for instance, the arms are relatively as long as those of the adult gibbon (Schultz). The brain also is an exception, as in man it reaches its final form earlier. These few facts do not permit confirmation of the thesis put forth by Bolk, of fetalization of human morphogenesis, or that of Reicher, who considers the anthropoids older than man, since they reach their final proportions earlier. The author indicates the importance of a large number of figures for anthropoids and appeals for the collaboration of all who are studying them. —*F. Coupin (transl. by B. Bickel).*

11344. **CUMMINS, HAROLD. Dermatoglyphics in Indians of southern Mexico and Central America.** *Amer. Jour. Physical Anthrop.* 15(1): 123-136. 1930.—Palmar main lines, palmar patterns, apical finger patterns, and the configurations of the 4 distal plantar areas are analyzed in 37 Indians of southern Mexico (Chiapas) and Central America (Guatemala, San Andres Peten). Racially significant trends of variation are as follows, the figures being percentile and stating the averages of the occurrences in right and left members: proximal terminations of line A (positions 1 and 2) are frequent (25); line B terminates commonly (88) in the ulnar border positions, 4, 5′, and 5″; line D terminates most frequently in position 9 (56) and in position 7 (28); the most common main-line formulae are 9.7.5—(49) and 7.5.5—(29); palmar hypothenar patterns very rare (5); thenar/first interdigital patterns exceptionally common (49); second interdigital patterns wanting; third interdigital patterns infrequent (16); fourth interdigital patterns very abundant (77); among apical patterns

whorls are abundant (42), and on digit I they are approximately equally represented in right and left hands; digit II reverses the typical bimanual distribution of radial loops, these patterns being here more abundant in left hands (possibly of no significance, in view of the rarity of the pattern and the small size of the collection); the A type of hallucal pattern is most common (74), and in the plantar interdigital areas the characteristic configurations (in tibiofibular order) are O (76), U (70), O (84).—*Author (courtesy Wistar Bibl. Serv.)*.

11345. **DAVENPORT, C. B., and BLANCHE M. MINOGUE. The intelligence quotient and the physical quotient; their fluctuation and intercorrelation.** *Human Biol.* 2(4): 473-507. 1930.—After a lengthy historical review indicating present state of our knowledge of the subject, the authors present the results of their study of physical and intellectual changes of 78 boys (5-20 yrs. old) at Letchworth Village for the Feeble-Minded, measured repeatedly during 5 or 6 yrs. The mental measurement was by the Terman revision of the Binet-Simon test. The physical measurement was based on a combination of departures from standards, for age, of tooth dehiscence, tooth eruption, development of permanent pubic and axillary hair, vertex height, relative span, relative sitting height, increments in total body weight. The physical quotient is that derived by dividing average physical age of the boy by his chronological age. The correlation between mental age and physical age thus determined increases from 0.24 at 9th yr. to 0.48 at 13th yr. The coefficient of correlation between the physical quotient and intelligence quotient also increases from 0.29 in 1924 to 0.49 (for about the same boys) in 1928. It appears, then, that the correlation between physical and mental development is about the same as correlation in stature between 2 brothers, namely, under the best of conditions about 0.50. The IQ tends in these feeble-minded boys to decrease with age. The physical quotient also decreases with age, but less than the IQ.—*C. B. Davenport.*

11346. **DONICI, ALEX. Note sur quelques crânes Scythes.** *Rev. Anthrop.* [*Paris*] 40(7/9): 233-236. 1930.—7 skulls found in Bessarabia show 2 entirely different human types. The 5 ♂ skulls are dolichocephalic and leptoprosopic, and the 2 ♀ skulls are brachycephalic and chamaeprosopic. Like the neolithic skulls of the same region they are extremely different from those of the actual inhabitants.—*A. Donici.*

11347. **DUNCAN, GEORGE S. Prehistoric man. An introduction to anthropology.** 143p. Stratford Co.: Boston, 1931. Pr. $1.50.—The book gives a brief description of the universe and earth; remains, origin and birthplace of man; the condition and religion of prehistoric man. —*K. S. Chouke.*

11348. **FISCHER, MAX. Die Formung der menschlichen Nase in der Pubertät.** *Arch. Frauenkrankh.* 16(2): 113-117. 1930.—General observation indicates that during puberty the soft parts of the nose undergo changes in size and shape which are not proportional to those elsewhere in the body. Systematic investigations may show this to be a secondary sex characteristic.

11349. **FRASSETTO, FABIO. Standardisation des méthodes anthropologiques. I. Nouveau procédé d'ajustement pour sériations binomiales symétriques.** *Rev. Anthrop.* [*Paris*] 40(7/9): 221-228. 3 fig. 1930.—The author explains elsewhere (See B. A. 4(4): Entry 10859) his procedure for the standardization of data which follows the binomial curve in distribution, and proposes here a new type of apt adjustment to render comparable all symmetrical or nearly symmetrical binomial curves, obtained without regard to the method of assembling the data, when the total area is equal to 100 cm.^{2} This new type of adjustment, which reduces to a minimum the use of calculations, consists essentially in replacing the empiric curve by a more regular curve, of which the frequency is calculated in a table. The same adjustment permits the easy classification (senary and trinary) and the bisexual deviation of characters without the aid of calculations.—*F. Frassetto (transl. by R. B. Bean).*

11350. **GEORGE, RUGGLES. Human finger types.** *Anat. Rec.* 46(2): 199-204. 1 fig. 1930.—An examination of 620 hands of white adults shows that in ♂♂ the ring finger is generally longer than the index finger. In ♀♀ the reverse is found. This is so both for the right hand and for the left hand.—*Author (courtesy Wistar Bibl. Serv.).*

11351. **GEYER, EBERHARD. Das frühbronzezeitliche Reihengräberfeld bei Mainburg-Teichtal. IV. Die anthropologischen Funde.** *Mitteil. Anthrop. Ges. Wien* 60(2/3): 98-140. 22 fig. 1930.—Skeletons of individuals of the Wieselburg culture are as yet almost unknown. Among the 13 reported in this paper 4 are definitely short headed. Of these 2 are hyperbrachycranial with high, sharp profiles, and 2 are brachycranial with lower and flat profiles. The first 2 may be identified as beaker-makers of the late stone or early bronze age, the second as related to East European or mongoloid skulls. The remaining, meso- and dolichocranial skulls are varied, but different from those of the neighboring station in Stillfried.—*E. Geyer (transl. by C. H. Danforth).*

11352. **GREGORY, WILLIAM K. Reply to Professor Wood-Jones's note: "Man and the anthropoids."** *Amer. Jour. Phys. Anthrop.* 12(2): 253-256. 2 fig. 1928.—The author reaffirms his acceptance of Wood-Jones's view that the alisphenoidparietal articulation at the pterion and the mesethmoid-presphenoid articulation in the anterior fossa are characteristic of adult modern man and that the opposite conditions are frequently found in adult apes. He continues, however, to dissent from Wood-Jones's evaluations of these facts in their bearing on the phylogeny of man. He calls attention to the variability of these contacts in the anthropoids as a whole and reaffirms that young gorilla and chimpanzee skulls examined by him retain the mesethmoid-presphenoid articulation as a narrow isthmus underneath the down-growing and overlapping processes from the frontal. Wood-Jones objects that the skull of the human child figured by Gregory does not represent the normal conditions of the presphenoid-mesethmoid articulation, since it shows small descending processes from the frontals which appear to meet in the midline. He therefore reproaches Gregory for not warning the reader that this is not a normal condition. The author's answer to this is that the illustration abundantly shows all that was claimed for it in the text, namely, the fundamental identity in plan between young gorilla and human skulls, in the aspect figured by him, in spite of admitted differences in details.—*Author (courtesy Wistar Bibl. Serv.).*

11353. **HESCH, M. Die Photographie in der Anthropologie. In: Photographisches Praktikum für Mediziner und Naturwissenschaftler,** edited by **A. HAY.** pp. 114-147. Springer: Wien, 1930.

11354. **HRDLIČKA, ALEŠ. Anthropological work on the Kuskokwim River, Alaska.** *Smithsonian Inst., Explorations and Field Work of the Smithsonian Inst. in 1930.* Publ. 3111. 123-134. 6 pl. 1931.—Studies on skeletons of Eskimos of the period before the Russian occupation showed a body form and cranial dimensions about the same as those today. Fractures were rare, indicating scarcity of warfare and violent sports; traces of tuberculosis, cancer, tumors, inflammation, syphilis, rachitis, and scurvy were not found. Various types of arthritis were found.

11355. [IVANOV, K. N.] ИВАНОВ, К. Н. **Размеры головы и рост студентов в зависимости от их социального происхождения и в связи с вопросом о корреляции величины мозгового отдела и интеллектуальных способностей. [Dimensions of head and growth of students in relation to their social descent and in connection with correlation of the size of the brain and intellectual abilities.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 3: 163-186. 1927.—The author completes the findings of his

preceding article by a study of the measurements of 1745 Kharkov students from 1887-1904, whose social origin differed considerably from that of the present day students. These include 259 Ukrainians, 380 Russians, 129 mixed Ukrainian-Russian, 770 Jews, 57 Georgians, 79 Armenians, 71 Poles. Social classification: peasants, artisans, merchants, priests, intellectuals. Tables give length, breadth, circumference of head, cephalic index and stature. Ukrainians show greater head length and circumference than Jews, but less than Russians. Ukrainians had the broadest heads, Armenians the shortest. Ukrainians were the tallest, Jews the shortest. Students were taller than peasants and artisans of the same nationality. Differences in relation to the social status of their parents were insignificant and uncorrelated, perhaps because most individuals examined came from the leisure classes. In spite of the difference in social distribution of students of the past and of the present, the measurements of the 2 groups are nearly the same.—*J. B. Bullitt.*

11356. [IVANOV, K. N.] ИВАНОВ, К. Н. Некоторые данные о размерах головы и о росте студентов медицинского факультета Харьковского университета, исследованных в периоде 1887-1904 г. г. [**Size of head and growth of students in the Medical Faculty of the Kharkov University, in the period of 1887-1904.**] [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 3: 187-197. 1927.—In a recent study Nicolaeff finds that the dimensions of the heads of 507 Russian, Ukrainian and Jewish students exceed those of other individuals of corresponding age, race and social status. This points to a correlation between head size and intellectual capacity, but it might be questioned whether the real relation is merely a larger head on a larger body. The present author studies Nicolaeff's material and adds data on 534 similar students, a total of 1041, of whom 80.97% were 21-25 yrs. old. Social classification: peasants, artisans, intellectuals. In each of the social classes students show higher averages for general stature, for circumference, height and breadth of head and for height of forehead than do other persons of the same class and age. The differences, which are beyond the range of probable error, are most marked among peasants, least marked among intellectuals. Russians have larger heads, with lower cephalic index, than Ukrainians, but among both the index diminishes with social elevation. Extensive tables and graphs show detailed comparisons. Careful calculations show that in each social class of each racial group the larger head dimensions of students as compared with others of the same class is proportionately greater than their increased stature. The reverse should be true if the larger heads were merely accompaniments of larger bodies. This indicates a real correlation between cranial size and intellectual ability.—*J. B. Bullitt.*

11357. **KLEIN, ALBERT D., and RICHARD E. SCAMMON. Relations between surface area, weight and length of the human body in prenatal life.** *Proc. Soc. Exp. Biol. & Med.* 27(5): 456-461. 1930.—Surface area of the body was determined in 12 fetuses ranging from 2.68 to 31.98 cm. C. R. length and from 1.26 to 2463. gm. in weight, using, with slight modifications, the technique described by Boyd, Scammon, and Lawrence (Proc. Soc. Exp. Biol. & Med. 27(5): 445-449. 1930), and substituting the data into the formula which expresses the relation of surface area (S), to length (L), $S=aL^b$, or $\log S=\log a+\log L\cdot b$ where a and b are constants, b being close to 2; to determine the value of these constants. The following values were obtained: with data for crown-heel length, the values of a and b are, respectively: for crown-heel length, 0.2808 and 2.278; and for crown-rump length, 0.4545 and 2.401. The theoretical relationship of surface to weight is: $S=aW^b$, or $\log S=\log a+\log W\cdot B$. [$W$ being in gms.] The values of a and b, from the data obtained, are: $a=5.188$; $b=0.55$.

11358. **SCAMMON, RICHARD E., and ALBERT D. KLEIN. Surface area and age in prenatal life.** *Proc. Soc. Exp. Biol. & Med.* 27(5): 461-463. 1930.—For 12 fetuses [reported on by Klein and Scammon, see preceding abstract] ranging from 2.68 to 31.98 cm. in C. R. length and from 1.26 to 2463 gm. in weight, the surface area was related to the age of the fetus (expressed in lunar months after the last menstruation). Data are given.

11359. **KLIMEK, STANISŁAW. Przyczynek do kranjologji Indjan amerykańskich. [Craniology of the American Indians.]** [German summary.] *Kosmos [Lwów]* 53(4): 809-829. 1928(1929).—After a review of Siemiradzki's summary of the anthropological affinities of American aborigines, the results of an analysis of the 22 skulls of Virchow's publication are presented. In spite of the paucity of material the series should give a fair view of the typical craniological forms of the primitive American peoples since the skulls were selected by Virchow from a large amount of material. Special methods devised by Czekanowski were used, involving differential diagnoses and a method for determining similarity. The statistical analysis substantiates perfectly the views of Siemiradzki. The following 4 elements were distinguished: (1) the Lapponoid type, a variant of the central Asiatic race which is identical with the Tupi-Guarini types; (2) Paleo-American type, identical with the Mongoloid type; (3) the arctic type, identical with the Eskimoid type; and (4) the Pacific type, identical with the Caribbean type. The Mountain type could not be distinguished. This is not surprising since this type is similar to the Caribbean race in head and facial features. All of the above types are of Asiatic origin. The Lapponoid type forms the anthropological basis for the central Asiatic Mongolian and Turkish races; the Pacific type forms the basis for the inhabitants of North China, Manchuria, and Korea; the Arctic type is recognizable in numerous traces in North and Middle Asia; the Paleo-American type, however, has not yet been discovered in Asiatic material. It may undoubtedly be considered as a branch of the yellow race. The above classification approaches the Cuvierian system. Whether other Asiatic elements may be present in the American primitive populations can be answered only after a more comprehensive study of further material.—*From author's summary (transl. by P. Okkelberg).*

11360. **KROGMAN, W. M. Studies in growth changes in the skull and face of anthropoids. I. The eruption of the teeth in anthropoids and Old World apes. II. Ectocranial and endocranial suture closure in anthropoids and Old World apes.** *Amer. Jour. Anat.* 46(2): 303-313; 315-353. 1930.—I. The sequence and rate of the eruption of the teeth have been studied in the skulls of 707 anthropoids and Old-World apes. The deciduous teeth, completely erupted, according to Keith, by the end of the 2nd year in the anthropoids, erupt, variably, in the order of central and lateral incisors, 1st and 2nd molars, and canine. The 1st molar is the first permanent tooth to erupt, presumably at or shortly before the age of 4 yrs. There follows a period of even growth followed by eruption (possibly at 5 or 6 yrs.) of central and lateral incisors, premolars, and 2nd molars in rapid succession. The premolars and 2nd molars tend to erupt together, premolars first in *Gorilla* and *Pithecus;* 2nd molars first in *Pan, Pongo, Hylobates,* and *Papio.* After an interval, the 3rd molar and canine erupt. The canine has the longest eruptive period of the permanent teeth. There is a tendency, in ♂ anthropoids, for the 3rd molar to compete its eruption first. This constitutes the sole observed sex difference in tooth eruption. A study, in both anthropoids and man, of the relation of epiphyseal union to the eruption of the teeth demonstrates fundamental similarity in growth pattern, with a tendency for the entire growth process in the anthropoids to be consummated in a much shorter period.—II. Ectocranial and endocranial suture closure was studied in detail in 707 skulls of anthropoids and Old-World apes. The sutures of the vault close first, with a tendency, except in *Pongo* and *Pan,* for the lamb-

doid to close earlier. The circummeatal sutures and the spheno-occipital close soon after the vault sutures. By the time of the eruption of the 3rd molar the cranium is almost completely united, the masto-occipital remaining patent until adult life. The sutures of the face close after an interval. The craniofacial sutures close last, exhibiting an instability in keeping with their function as "buffer" sutures between skull and face. There seems to be no sex difference in the closure pattern. The sequence and rate of endocranial suture closure are the same as those of ectocranial closure. There is a tendency, best exemplified in the coronal suture, for a reversal in direction of closure. A correlation of the unpublished Western Reserve University data upon epiphyseal union with the pattern of suture closure emphasizes the early and rapid closure of the sutures as contrasted with the human pattern. There is a transition from early complete cranial closure in the Old-World ape, through early vault closure in the Gibbon, and selective regional vault closure in the great anthropoids, culminating in relatively long-enduring patency of the lambdoid region in man.—*Author (courtesy Wistar Bibl. Serv.)*.

11361. **LAUENER, P. Normale Körperformen und einige Beziehungen zu den Leibesübungen.** *Körpererziehung [Bern]* 8(2): 33-38; (3): 72-75. 1930.—The forms of the body, which, of course, are not yet definitely marked in children, however strongly marked in the juvenile, are of importance in athletics. The qualification for the athletic activity differs according to the type of the body form (athletic, asthenic, pyknic and a medium type). Often the desire of a child for a certain sport already indicates the future form of his body. The choice of sports by a nation is influenced by its particular body form. Thus the differences in kinds and desires of sport in the various states.—*P. Lauener.*

11362. **LEIPOLD, HERMANN (foreword by Eugen Matthias). Körperbaustudien an den Wettkämpfern des bayrischen Turnfestes (Bamberg).** 53p. Otto Gmelin: München, 1928. Pr. 3.25 M.—The following measurements were recorded: body height and weight; length of trunk, leg and arm; girth of chest during ex- and inhalation, of leg and arm. The measurements furthermore occasioned proportional and correlational calculations, the results of which are condensed in special diagrams. It has been shown that the skeleton is functionally reactive, in such a way, however, that uninterrupted pressure causes retardation of osseous growth and even resorption of osseous matter, while pressure and relaxation in some sort of an alternating order increase osseous growth. Besides the general phenotypical effects of athletic practices it appears that the more genotypically selective qualities of body size and weight are, at least to some extent, likewise influenced by such practices, so that the differentiation into athletic types seems to be phenotypically and genotypically conditioned.—*B. Oetteking.*

11363. **LESTER, P. Contribution à l'anthropologie des Somalis.** *Bull. et Mém. Soc. Anthrop. Paris* 8(4/6): 175-188. 2 pl., 4 fig. 1927.—Quite in contrast with the more numerous somatological investigations upon the Somalis, the osteological and particularly the craniological investigations lag far behind. The number of crania recorded in literature, according to the author, is 28, of which 18 are ♂, 4 ♀ and 6 juvenile. This number is augmented by 5 adult ♂ crania recorded in the present paper. The study from the point of average revealed rather large capacities, dolichocrany, hypsicrany, a large forehead, meseny and prognathy, equal amounts of chamae- and hypsikonchy, and chamaerrhiny and mesorrhiny. The facial morphology suggested to the author the mixed racial conditions obtaining in the Somalis which, as previously Puccioni has done, could be distinguished as dolichohypsicranial, dolichochamaecranial and brachyhypsicranial, each, with their specific characteristics. The measurements of the 5 crania are collected in table 1, while table 2 contains the proportional measurements of 22 Somali crania from different authors including the 5 studied by the author.—*B. Oetteking.*

11364. **LI, JU-CHI. A study of variation and correlation in the physical measurements of Tsing Hua and Yenching students.** *Bull. Dept. Biol. Yenching Univ. [Peping]* 93-104. (Frequency and correlation tables p. 105-117). 1930.—It was found by the variation studies that the northerner is decidedly taller, thicker in chest capacity and heavier. On the other hand, the southern Chinese has a slightly longer leg in relation to the total height and has proportionally slightly wider shoulders. But on the whole, the northern type blends so imperceptibly with that of the south that it is hardly justifiable to separate them on geographical grounds except for the purpose of comparison as herein used. The results of the correlation studies show that there are varying degrees of interdependence between the different parts of the body, as for instance width is dependent upon height and girth upon width, etc.—*From author's summary.*

11365. **LORENTZ, F. H. Die Konstitutionsindices des wachsenden Menschenkörpers.** *Zeitschr. Ges. Anat. Abt. 2. Zeitschr. Konstitutionsl.* 14(6): 648-661. 1929.—Indices are based upon study of the average values of weight and height of 1,000,000 investigations taken from literature. The 4 new body indices (height expressed in cm., weight in kg. are: (1) Infantile index: birth-2½ yrs., height − weight + 65 − (height − 34) · 0.75 = 100. (2) Pre-school index: 2½-6 yrs., height − weight − (height − 123) · 0.7 = 100. (3) High school index: 6-14 yrs., height − weight − (height − 125) · 0.5 = 100. (4) Post-school index: 14-18 yrs., height − (weight − 10) = 100. Normal index is 100, index over 100 expresses underweight, under 100 expresses overwight. It is possible to compare children from birth to adult life and to study the effect of social differences, differences in feeding, occupation and body exercise, as well as racial differences. —*L. M. Hejinian.*

11366. **LOTH, EDWARD. C. I. R. P. Comité international des recherches sur les parties non osseuses (molles).** [In Polish and French.] *Folia Morphologica* 1(1): 9. 1929; [in German] *Zeitschr. Morph. u. Anthrop* 28(3): 360-374. 1930; the same in English by A. KEITH in *Jour. Anat.* 64: 99-103. 1929.—At the joint Congress of the Association des Anatomistes and the Anatomical Society of Great Britain and Ireland in 1927 there was established the "Comité international des recherches sur les parties non osseuses (molles)" for short called C. I. R. P. After some years this Committee has been organized as follows: president: Sir Arthur Keith (London); vice presidents; Anthony (Paris), E. Fischer (Berlin), Livini (Milano), Pires de Lima (Porto); secretary general: E. Loth (Warsaw). The Committee unites about 50 scientists from different parts of the world, with representatives of all medical schools of exotic countries. The Committee has published 3 questionnaires concerning the researches on living men, on cadavers, and on the methods of preservation and sending material to scientific laboratories. In addition, attempts are made to assure the collaboration of the Institut International de la Cooperation Intellectuelle, which is an institution of the Society of Nations. The first 4 works of the Committee have been already published. Other works are in preparation.—*E. Loth.*

11367. **MAHALANOBIS, P. C. A statistical study of certain anthropometric measurements from Sweden.** *Biometrika* 22(1/2): 94-108. 1930.—An analysis, by the coefficient of racial likeness, of measurements of 46,983 soldiers and sailors of 20-22 yrs., classified according to birthplace on 2 bases: (a) geographical, (b) occupational. Some characters—cephalic index, stature, suprasternal height—show markedly significant territorial differences but no occupational sequence within the territories; others—morphological, face height, bi-acromial index—show no territorial differences but a markedly significant occupational sequence within the territories; others are intermediate or unrelated to either variable. The Swedes are markedly homogeneous, but there has

been some mixture—strongest in the North—of East Baltic stock with the predominant Nordic type.—*J. R. Miner.*

11368. **MARINESCO, G., (with the collaboration of A. BRUCH, et G. BUTTU).** Recherches sur l'architecture des capillaires en rapport avec la constitution somato-psychique. *Bull. Acad. Méd.* [*Paris*] 103(22): 596-601. 1930.—Using Kretschmer's classification of constitutional types and the terminology of Jaensch and Hoepfner for the classification of capillary types, the author and his associates found, in 45 asthenics, 65.8% neocapillaries, 3.2% hypoplastic capillaries, 31.6% mesocapillaries; in 30 pyknics, 77.8% neocapillaries, 5.5% hypoplastic capillaries, 16.7% mesocapillaries; in 20 dysplastics, 11.1% hypoplastic capillaries, 11.1% mesocapillaries, and 77.8% archicapillaries; i.e., neocapillaries predominate in asthenics and pyknics, archicapillaries in dysplastics.

11369. **MOMMSEN, F.** Statischer Ausgleich von Fehlformen nach Untersuchungen am Biesalskischen Drei-Ebenen-Körpermessapparat. *Zeitschr. Orthrop. Chir.* 53(3): 344-366. 11 fig. 1930.—Description of an apparatus for measurement of the human body in 3 dimensions.

11370. **NAÑAGAS, JUAN C.** Contribution to the craniology of the Filipinos. II. On the cranial dimensions and indices. *Philippine Jour. Sci.* 42(3): 347-409. 1 pl. 1930.—This study is based on 461 crania of the low social and intellectual stratum of the Filipino race. Of these 438 are ♂♂ and 23 are ♀♀; 30% are within the ages of 26 and 35, and 35% are between 21 and 40 yrs. The mean antero-posterior diameter of the crania in the ♂ is 175.5 mm. and in the ♀ is 167 mm. The range of variation in this diameter is very limited. The mean transverse diameter is 146 mm. in the ♂ and 138 mm. in the ♀. This diameter is slightly more variable, absolutely and relatively, in the ♀ than in the ♂. The range of variation of this diameter is twice that found for the antero-posterior diameter. The mean length-breadth index is 84.8 in the ♂ and 82.5 in the ♀. This index shows more variability in ♂♂ than in ♀♀ of the race, absolutely and relatively. The greatest frequency of this index falls under the brachycephalic type. The mean basilo-bregmatic diameter is 140.5 mm. for the ♂ and 132 mm. for the ♀. The length-height index of this series of crania is 79.9 in the ♂ and 78.9 in the ♀. This index is more variable in the ♂ than in the ♀; its greatest frequency is found under the hypsicephalic type. The mean breadth-height indices for the ♂ and ♀ groups are 94.8 and 95.8 respectively. The highest frequency of this index is found under the metriocephalic classification. The mean sagittal arc of the Filipino crania in the ♂ is 370.2 mm. and in the ♀ is 369 mm. The mean transverse arc is 320.5 for the ♂ and 308.6 mm. for the ♀. The latter arc is more variable, absolutely and relatively, in the ♀ than in the ♂, a condition quite the reverse of that for the sagittal arc. The mean horizontal circumference of the crania is 505.3 mm. for the ♂ and 486.1 for the ♀; it is more variable in the ♀ than in the ♂ in this series. The mean auriculo-bregmatic heights in these skulls for the ♂ and ♀ cases are 115.5 mm. and 113.1 mm. respectively. The mean minimum frontal diameter is 95.4 mm. in the ♂ and 90.8 mm. in the ♀. The mean bimastoid diameters are respectively 122.5 mm. and 119.4 mm. Comparisons are made of these different diameters, circumferences and indices of the Filipino crania with those reported for the other Asiatic and Pacific Islands races. Some interesting findings were observed. Similar comparisons were followed between the findings and those of several European cranial measurements and the results are also presented in this paper.—*J. C. Nañagas.*

11371. **[NEDRIGAÎLOVA, O. V.]** НЕДРИГАЙЛОВА, О. В. Изменения физических признаков украинок при старении. **[Changes of physical characteristics in ageing Ukrainian women.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 3: 112-154. 9 fig. 1927.—The following indicators of age were studied in 198 Ukrainian working women 56-98 yrs. old.: white hair, abundance of hair, moustache and beard, eyes, mastication, skin, climacteric and menstruation, stature, thorax, size, cephalic index, and perimeters. Abundance of hair is a better index of age than whiteness; moustache occurred in 16.3%, and moustache and beard in 18.2%, with indications of masculinity in some. Eyes were deep in orbit, with arcus senilis, and yellow sclera. There was atrophy of the mechanism of mastication. Teeth were absent in 10.7% between 55-65 yrs., in 25.0% over 85. There was increased wear of teeth with age. Changes in skin were progressive: (1), fine lines at angle of eyes, transverse on forehead and vertical over glabella; (2) oculo-malar and mento-malar lines and lines at the root of nose; (3) naso-labial and vertical lines on neck; (4) radial lines about eyes, mouth, deep across back of neck; (5) fine meshes all over face. In 44% of the lines were equal in all parts of face, in the remainder 16.4% were frontal, 8.2% mandibular, 4.6% nasal. The cachectic type is more frequent in the old than gross or plump, and lines differ. The cachectic type looks older because lines are more numerous with pigmented plaques on face and hands. In the plump or gross type lines are deeper but less numerous, with few pigmented plaques. Menstruation disappears in 14.2% before the age of 40, 55.3% survive 41-50, 26.3% survive 51-60, 4.2% later. The duration of the period which separates nubility from the climacterium is 21-40 yrs., in 11.4% it goes beyond 40. There was a feeble correlation between beginning and end of menstruation. Stature decreases in 2.1% between the ages of 56-65, in 3% from 66-75, in 3.4% after 75. The index of spinal curvature was 93.5 at 56-65 yrs., 92.1 at 66-75; and 89.6 after 75. The curve has less value in the cachectic type than in the plump. Antero-posterior diameter of thorax increases 23 mm. between 56-65, 36 mm. from 66-75; transverse diameter decreases; thoracic index in the young is 135.7 at 56-65 yrs. it is 117.7, at 66-75 yrs. 109.2, and at 76 is 106.2. The curve of spinal column and thoracic index are closely correlated. The perimeter of thorax decreases 21 mm. from 60-75 yrs. There is a decrease in size of shoulders, arms, legs, and weight. Curves of deviation are greater for other characters than for perimeters. Size decreases more in the cachectic than in the plump or gross type in relation to stature. These facts are only approximate and errors are possible.—*R. B. Bean.*

11372. **[NEDRIGAÎLOVA, O. V.]** НЕДРИГАЙЛОВА, О. В. Национальные и социальные различия в мышечной силе и в процентных отношениях право- лево- и обоеруких. **[National and social differences in muscular strength and in division into right-handed, left-handed and ambidextrous.]** [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 2: 66-76. 1926.—Measurement was made by means of dynamometer of Collin of muscular strength of pressure of right and left arms of 5740 recruits (3652 Ukrainian, 1380 Great Russian and 708 Jewish) classed according to social status and profession into 5 groups; peasants, day laborers, specialized laborers, technical workers, and intellectuals. The Jews have been divided into 3 groups only: laborers, technical workers, intellectuals. Very clear national differences are noticeable between mean values of muscular strength of Ukrainians and Great Russians and that of Jews. Jews possess in all social groups a mean strength less than that of the two other nationalities. Considerable differences exist in muscular strength of representatives of diverse social groups. Mean muscular strength of the 2 arms increases with rise in social status. Faculty of coordination of muscular contractions and capacity for realizing greater psychometric impulse are relatively greater with intellectuals. From this can be explained, in the opinion of the author, social differences in muscular strength. Difference between mean values of muscular strength of right arm and of left arm increases as social status rises.

Very clear national differences are noticeable with regard to right and left-handedness, the percentage of left-handed persons being more than twice as large with Jews than with Ukrainians and Great Russians. Number of left-handed persons decreases as social status rises. —*H. M. Allyn.*

11373. [NEDRIGAILOVA, O. V.] НЕДРИГАЙЛОВА, О. В. Социальные различия в росте, весе и некоторых размерах таза у женщин в связи с вопросом о корреляции между размерами матери и новорожденного. [Social differences in growth, weight and measurements of the pelvis in women in relation to the dimensions of the mother and new-born.] [French résumé.] Материалы по Антропологии Украины (*Anthrop. Ukraine*) 3: 198-210. 1927.—Differences are found for the following classes of Ukrainian and Russian women: peasants, houseworkers, skilled workers, technical workers, and intellectual women. The stature increases from the first to the last group: 152.9, 154.6, 155.2, and 157.0 cm., omitting intellectual women. The weight likewise increases. The pelvic dimensions change from 19.6 to 19.3 cm. for the conjugata externa from the peasant to the intellectual woman. The relation of the conjugata vera to the pelvic width at the iliac crests changes from 72.3 in the peasants to 71.7 in the intellectual women. The breadth of the iliac crests increases as the social status rises. Adipose tissue increases around the pelvis with age. The coefficient of correlation between mother and newborn is greater in stature between the mothers and sons, and in weight between the mothers and daughters. The correlation is greater in weight than in stature. The coefficient of correlation between height of mother and that of child is $+0.159 \pm 0.031$ for sons and $+0.096 \pm 0.032$ for daughters; for body length of mother and weight of child $+0.156 \pm 0.029$ for boys and $+0.139 \pm 0.029$ for girls; for body weight of mother and child the correlation is $+0.333 \pm 0.028$ for boys and $+0.345 \pm 0.028$ for girls.—*R. B. Bean.*

11374. **NOBACK, CHARLES V. Growth of infant male gorilla.** *Amer. Jour. Phys. Anthrop.* 14(2): 165-176. 7 fig. 1930.—An infant ♂ gorilla, estimated to be 20 mos. old, was received by the New York Zoological Society on October 31, 1928. Its weight was recorded at intervals of from 2 weeks to 1 mo. October 31, 1928, 7.84 kg.; April 15, 1930, 20.45 kg. At approximately 24 mos. of age, a full set of milk teeth was found. First permanent molars appeared at approximately 3 yrs. of age. 5 carpal bones present on radiographic examination at the time of arrival—multangular minor (trapezoid), capitatum (magnum), hamatum (unciform), triquetrum (cuneiform) and naviculare (scaphoid). The capitatum and hamatum were very definite, the naviculare very faint. On March 10, 1929, at 24 mos., the same bones were present, but all were much more definite, especially the naviculare. One year later, the multangular major (trapezium), pisiforme, and lunatum (lunar) were present in addition to the above. Centrale was present distal to the naviculare, in process of fusion with it. From observations on dentition and appearance of carpal bones, the rate of growth and development of the dental and osseous systems during the first 2½-3 yrs. of a ♂ gorilla's life seems to be 2-3 times as rapid as that of a ♂ human infant.—*Author (courtesy Wistar Bibl. Serv.).*

11375. **NOBACK, CHARLES V. Digital epiphyses and carpal bones in the growing infant female gorilla with sitting height, weight and estimated age.** *Zoologica [New York]* 11(5): 117-151. 16 pl. 1930.—9 carpal bones in each wrist of "Janet Penserosa," a living ♀ gorilla at the New York Zoological Park, were present before the 4th yr. One other ♀ gorilla, about 5 yrs. old, has been radiographed and all of its 8 carpal bones were present. The appearance and development of the carpals in the gorilla is very rapid in comparison with the human hand where the carpal bones are not normally present until about the 10th-12th yr. The epiphyses of the bones of the hand appeared very early. Fusion had apparently begun to take place between the metacarpal bones and their distal epiphyses at about the 3rd yr., the same time that the 1st permanent molars appeared. The order of appearance of the epiphyses, etc. appears to be the same as in the human subject, but the development is much more rapid. The 1st permanent molar teeth (6-yr. molars of man) appeared at about the 3rd yr. The total body weight of the living infant ♀ gorilla increased steadily from 7.84 kg. on October 31, 1928, to 24.09 kg. on October 20, 1930. Its weight on arrival was less than the average weight of a 1-yr. old human ♀ but after 2 yrs., the weight was greater than the average weight of an 8-yr. old child.—*C. V. Noback.*

11376. **NYESSEN, D. J. H. The races of Java. A few remarks towards the acquisition of some preliminary knowledge concerning the influence of geographic environment on the physical structure of the Javanese. (Indisch Comité voor Wetenschlappelijke Onderzoekingen IV.)** 122p. 28 fig. 1929.

11377. **OETTEKING, BRUNO. Primitive traits in the American aboriginal population.** *Inst. Internat. Anthrop. Ses. Amsterdam* 1928: (1-4): 1928.—A small selection of primitive traits serves to illustrate and justify a much more extended future investigation of the entire skeleton. Certain primitive features can be listed as follows: Exceptionally low cranial capacity is found not rarely, particularly in ♀♀; with this goes smallness of absolute dimensions. Low forehead occurs occasionally. Postorbital constriction is sometimes found, but usually not combined with strong supraorbital development except in Fuegians. Prognathism, especially of the alveolar region, and frequent occurrence of the torus occipitalis are noteworthy. The most primitive racial residua have been recovered in South America, as represented by the Lagoa Santa and Botocudo varieties, to which the Fuegians seem to be related. Excepting the archaic forms of South America it may be stated tentatively that in spite of the primitive characters the American Indian represents a more refined variety of the recent species of man, not only in the general sense but also within the Mongolid family.—*H. M. Allyn.*

11378. **OETTEKING, BRUNO. Some points in the morphologic evaluation of the American Indian.** *Proc. 23rd Internat. Congress Americanists (New York)* 1928: 853-855. 1930.—Morphological evaluation of human anatomical traits carried on from comparative angles must refer either to ancestral forms, or to variations of the same race, or to other races altogether, i.e., must deal either with the vertical or horizontal aspects of physical research, or both. As regards the American Indian, there are in his anatomy a number of morphologically and somatologically primitive features in spite of which he represents on the whole a more refined variety of the recent species of man, not only in a general sense but also in his racial domain, the mongoloid group of mankind.—*B. Oetteking.*

11379. **PARIN, B. W. Die Blutgruppen bei den Ostfinnen.** *Zeitschr. Rassenphysiol.* 2(4): 179-183. 1930.—In general the people of East Finland are characterized by a high incidence of group B, varying in different localities from 24.0 to 35.7. Groups O and A varied from 32.6 to 44.4 and 25.3 to 32, respectively. In contrast to these results the inhabitants of other parts of Finland have a lower incidence of B, about 17%.—*B. Levine.*

11380. **PICKERING, S. PRYOR. Correlation of brain and head measurements, and relation of brain shape and size to shape and size of the head.** *Amer. Jour. Physical Anthrop.* 15(1): 1-52. 2 fig. 1930.—29 crania of dissecting-room cadavers were measured, and corresponding measurements were taken on the brain of each specimen. Arc measurements were used on the brains between points which separate lobes that are functionally different. Points were chosen on the external vault which are known to lie closely superficial to the brain points, and like measurements recorded from the crania as from the brains. Volumes were taken and calculated. The cranial fossae were measured. The cranial measurements were then correlated with the brain mea-

surements and showed a positive relation between brain and cranial form. The correlation between the horizontal lengths of the lobes of the brain and the lengths of the cranial fossae gave an average figure of +.56. The correlation of cranial and brain volumes indicated that the brain was the major factor in influencing head size. Correlation of simple measurements showed that the brain exercised a controlling influence of 28 ± 10% on head form, the remaining percentage being controlled by other factors, such as size of face, muscular development, air sinuses, and ossification of the cranial base. Cranial capacity was greatest in brachycephalic heads. Dolichocephalic heads have longer but narrower brain lobes. A table is included from which the size of the brain parts can be calculated from head size.—*Author (courtesy Wistar Bibl. Serv.).*

11381. PITTARD, EUGÈNE, et JUAN COMAS. L'angle condylo-diaphysaire (angle de divergence) des fémurs des Boschimans, Hottentots et Griquas. *Compt. Rend. Séances Soc. Phys. Nat., Genève* 47(2): 98-100. 1930.

11382. PRIESEL, RICHARD, und RICHARD WAGNER. Gesetzmässigkeiten im Auftreten der extragenitalen secundären Geschlechtsmerkmale bei Mädchen. *Zeitschr. Ges. Anat. Abt. II, Zeitschr. Konstitutionsl.* 15(3): 333-352. 32 fig. 1930.—Studies of 113 girls for a period of yrs. showed that the extragenital sexual characteristics appear in the following overlapping order: rounding of the hips, development of breasts, pubic hair, axillary hair. The variant was the precipitate appearance of the last. Apparently the succession is related to the varying response of the recipient organ to the sexual hormone, whether one or several. The menarche is not the end of pubertal development but, under physiological conditions, it is never an early sign.

11383. RISAK, ERWIN. Über die verschiedenen Arten der männlichen Genitalbehaarung. *Zeitschr. Ges. Anat. Abt. 2, Zeitschr. Konstitutionsl.* 15(2): 164-176. 4 fig. 1929.

11384. RITT, ESTELLE FINE, and RUTH OTIS SAWTELL. Growth studies by Roentgen ray. *Amer. Jour. Phys. Anthrop.* 14(1): 1-8. 1 fig. 1930.—The amount of distortion constant in every film of a given part of the body made at a standard distance from the tube was calculated, and comparison was made between the measurement on the film minus this error and the measurement on the child. 700 records of the forearm of young children measured at the same time on individuals and on their roentgenograms showed that although theoretically the small constant elongation on the film represented the difference by which it exceeded the diameter on the living, actually measurements on the living were slightly greater, due to the thickness of the skin. In practice, then, measurements of long bones from roentgenograms can be substituted for analogous measurements on the living, and, because of greater accuracy, should be preferred.—*Author (courtesy Wistar Bibl. Serv.).*

11385. ROSENSTERN, J. Über die körperliche Entwicklung in der Pubertät (auf Grund von Individualuntersuchungen). *Zeitschr. Kinderheilk.* 50(1): 1-25. 11 fig. 1930.—Examinations were made on about 250 children, aged 9-15 yrs., 34 boys and 32 girls under observation for more than 1 yr. Measurements of height; wt.; circumference of neck and chest; width of shoulder and hips; sitting height; conjugata externa; length of arms, legs, and hands; and fatty deposits on cheek, abdomen, hips, and thigh were determined. Distribution of hair, size of thyroid, mammary glands, respiratory type, pulse, and blood pressure were noted. Martin's technic was used. This 1st report deals with the lengthening and coarsening of the face during puberty, attributable to the hypophysis.

11386. [RUBASHKIN, V. IA., and L. I. LEIZERMAN.] РУБАШКИН, В. Я., і Л. Э. ЛЕЙЗЕРМАН. Изогемоагглютинаційні групи и показники конституцийй у червоно армійців родом з Украіни. [Isohemoagglutination groups and constitution indexes in Ukrainian Red Army Soldiers.] [German translation.] *Ukrainisches Zentralbl. Blutgruppenforsch.* 4(3): 144-155. 17 pl. 1930.—Investigation embraced 2438, of whom 2075 were aborigines of Ukrainia. Aim was to determine distribution of blood groups among the Ukrainian population, and the possible correlation between blood group and constitutional type. Blood groups were distributed as follows: O—31%; A—39.4%; B—22%; AB—7.6%. The following correlations were observed: Group O: predominantly persons of "strong" constitution, normal chested and narrow chested, well nourished, brachycephalic, broadshouldered, "weak" and "wide chested"—in smaller numbers, likewise mesocephalics. Group A: strong, broad chested, with normal shoulder measurement; also, dolicho- and mesocephals in a somewhat larger percentage than on the average. Group B: "Strong" constitutions are met here in smaller number than on the average; "weak," in larger number. Somewhat more frequent are persons less well nourished, predominantly hyperbrachycephals. Narrow shouldered are twice as rare as on the average. Group AB: the constitutional types are considerably less "strong," "weak" types predominate. Here are more meso- and brachycephals, fewer hyperbrachycephals; broadshouldered types are twice as rare as on the average.

11387. SALLER, K. Die Grundlagen und die Ordnung der menschlichen Konstitutionen. *Endokrinologie* 6(4): 241-248. 1930.—The author concludes that a constitution type as related to species, race, family, sex or age, is based upon a natural scientific foundation, but that the idea of a "constitution type" as related to the norm is unscientific and based only on conventional agreement. Incidentally, he believes that hormones may effect the individual but not the species.—*B. Cunningham.*

11388. SALLER, K. Leitfaden der Anthropologie. [Manual of anthropology.] iv+284p. 128 fig. Julius Springer: Berlin, 1930. RM. 24 and 25.80.

11389. SALLER, K. Eine neue Augenfarbentafel. [A new eye color card.] *Zeitschr. Ges. Anat. Abt. 2, Zeitschr. Konstitutionsl.* 15(5): 674-678. 1 col. pl. 1930.

11390. SANKAS, S. H. Relation of cranial module to capacity. *Amer. Jour. Phys. Anthrop.* 14(2): 305-315. 1930.—The object of the research was to test further the difference in the module-capacity relation in the 2 sexes which Hrdlička reported in Science of February 4, 1927. The work was carried on on 400 undeformed adult Peruvian skulls, ♂ and ♀, in the U. S. National Museum. These skulls are from Pachacamac, Chicama, and Chilca. The utmost effort was made to assure the proper sexing of the specimens. The measurements made were: the standard length, breadth, and basiobregmatic height, the mean of which gives the cranial module, and the capacity (Hrdlička's method). The capacity was taken twice on each skull, the mean being recorded. The percental relation of the module to capacity was then ascertained. The results, while showing some group peculiarities, corroborate Hrdlička's findings; besides which there are interesting individual conditions.—*Author (courtesy Wistar Bibl. Serv.).*

11391. SCAMMON, RICHARD E. The ponderal growth of the extremities of the human fetus. *Amer. Jour. Physical Anthrop.* 15(1): 111-121. 1930.—An analytic study of the ponderal growth of the extremities of the human fetus based on a series of determinations made by Corrado some 30 yrs. ago. The study shows that the growth of each of the extremities and each segment thereof may be approximated by an expression representing a coefficient of the total or crown-heel length of the body raised to a power ranging, in the series, from about 3.6 to 3.8. The absolute velocities of growth of these parts of the body increase in the order of 100-fold during the fetal period. The relative velocities of growth decline markedly during the same interval. The weight of the upper extremity increases with respect to that of the lower extremity, and the weight of the hand increases with respect to the weight of the entire upper extremity, in the fetal period. But the weight of the foot decreases both with respect to the weight of the entire lower ex-

tremity and with respect to the weight of the hand.—*Author (courtesy Wistar Bibl. Serv.).*

11392. SHAPIRO, H. L. Old New Yorkers. A series of crania from the Nagel Burying Ground, New York City. *Amer. Jour. Physical Anthrop.* 14(3): 379-404. 2 fig. 1930.—A small series of 15 ♂ crania from the Nagel Burial Ground in New York City and dating approximately from the 18th century were studied. A comparison of this group with various English and Scotch crania revealed the fact that this series of Old New Yorkers appears to be a sampling from a population typified by 3 17th-century London groups and one from the Lowlands of Scotland. The evidence, although insufficient for a final interpretation, warrants the tentative hypothesis that the generalized colonial type to be found in New York in the epoch just prior to the Revolution was essentially similar to the average Englishman of the period. Furthermore, in all probability, it may be assumed until more data are forthcoming that the English immigrants to this country were not a selected group. In addition, the stature of the Nagel series, reconstructed from measurements on the femur, furnishes subsidiary confirmation to the general belief that stature has been increasing in the Old American stock. Finally, by estimating cephalic means from the cranial averages of the Nagel series, a cursory comparison with living Old Americans was possible. Recognizing the error inherent in such a procedure, it is interesting to note that, even after a century, apparently the Old Americans have remained similar to their Colonial ancestors of New York.—*Author (courtesy Wistar Bibl. Serv.).*

11393. SIDHOM, GIRGIS, and D. E. DERRY. The dates of union of some epiphyses in Egyptians from x-ray photographs. *Jour. Anat.* 65(2): 196-211. 1 pl., 2 fig. 1931.—Examination of over 400 Egyptians aged 14-22 yrs. was undertaken to learn whether the alleged earlier maturity of Egyptians as compared with Europeans is corroborated by earlier union of the epiphyses. The results appear to show that Egyptian ♂♂ are definitely earlier than English in the union of at least some of the epiphyses of the upper limb. At the same time the wide divergence in results as between the authors and the observers they have quoted, as well as between those observers themselves, seems to illustrate the unreliability of results obtained even from x-ray photographs.

11394. SILVA CORREIA, ALBERTO GERMANO. Les Lusos—Descendants de l'Inde Portugaise. (Étude anthropologique.) *Arquiv. Escola Méd.-Cirurg. Nova Gôa. Sér. A, Fasc.* 2: 87-216. 1928.

11395. SITSEN, A. E. The scapula of the Malay. *Mededeel. Dienst Volksgezondheid Nederlandsch-Indie* 19(1): 1-22. 1930.—The ♂ scapula is smaller in Malay than in European. The difference in length amounts to 7% and is principally, perhaps entirely, explained by the shorter build of the Malay, as is true also for width. The difference in width is 14%. The scapular index (Martin) is larger in Malay than in European; the scapula therefore is relatively wider in Europeans. When reducing the width of the scapula to its 2 components, a difference in the supraspinal groove seems doubtful. The supraspinal index (Frey) is 40.2 in European, 41 in Malay. Infraspinal index (Frey) shows a distinct difference, amounting to 117 in European and 109 in Malay. The upper groove is therefore the same in both, whereas the lower groove is relatively narrower in Malay. This is clearly apparent in the spinal groove index (Frey), which is 34 for European, 38 for Malay. In comparing the variation-range of the infraspinal index of European and Malay, there seems to be little difference (99-136 in European, 93-139 in Malay). This shows that there is not an innate difference, but that it is due to some external influence. The higher indices so often occurring in Europeans are rare in the Malay. If the higher values are considered as due to heavy labor, it is reasonable to attribute the narrower scapula of the Malay to less muscular labor. The number of straight and scaphoid scapulae is small in the Malay; this also may be due to less heavy labor. The scapula of the ♀ Malay is smaller than that of the ♂ in all directions. The difference in width is 12%. Since the Malay ♀ is 6% shorter than the Malay ♂, the ♀ bone is 4% shorter and 6% narrower than the ♂. This difference is also seen in the supra- and infraspinal grooves, with sexual differences of 7% and 5%. The minima of the variation-range in both sexes are the same for both ♂ and ♀, although the maxima of the ♂ exceed those of the ♀. The infraspinal index in ♀♀ is 91-120, in ♂♂ 93-137. The supraspinal index is 32-45 in ♀♀, 31-52 in ♂♂. The same is found in a comparison between European and Malay. This phenomenon leads us to ascribe this difference to the lighter labor performed by woman. The scapular width-length angle (Martin) was 85° (75-95) in Malay ♂♂, 85° (73-93) in Malay ♀♀. For the Papuan, Van den Broek also obtains 85° (82-89). In the European the value is almost the same. The build of the bone is more sharply defined by the size of the supra- and infraspinal angles. These appeared to have about the same average for both sexes: the variation-range however shows that the wider spinal grooves also change the whole shape of the scapula.—*Author's summary.*

11396. ŠKERLJ, B. Beiträge zur Anthropologie der Slowenen. I. Farbenkomplexionen an 416 Schulkindern der achtklassigen Volksschule in Ljubljana-Moste. *Zeitschr. Morph. u. Anthrop.* 28(3): 213-237. 1930.—In this investigation it was found that the correlation between eye- and hair-color is not high (about ½). The Slavonians belong to the light-colored peoples of Europe and are clearly distinguished in this regard from Croatians and Serbians, while they approximate more closely the Northern Slavs (especially Czechs, cf. Škerlj, '27 and '28). The author has established the fact that the hair darkens but little, the eyes not at all, but rather become somewhat lighter. Red hair is regarded as anomalous. It is apt to appear in combination with freckles. The author can not at present express exactly by an index a correlation between erythrism and ephelides although it is more than probable, in fact almost certain, that such exists. Most clearly are revealed sex differences in complexion which appear in relatively small children. In this respect the differences in the correlation indices are especially noteworthy and, to the knowledge of the author, have not hitherto been established.—*B. Škerlj. (transl. by C. J. Connolly).*

11397. SLOBOSIANO, HORIA, et P. HERSCOVICI. Étude sur le poids, la taille et le buste des foetus et des nouveau-nés à terme. *Nourrisson* 17(3): 133-144. 7 fig. 1929.—The author studied 125 newborn children (78 of premature birth), and a number of fetuses of 6-9 mos. The latter had to be calculated by their lengths as the most reliable factor to which different weights corresponded, giving rise to hypo- and hypertrophical fetal weight conditions. Further investigations were carried on according to Quetelet's, Manouvrier's and Pirquet's proportional calculations of weight, trunk length and length of the lower extremity in their various combinations.—*B. Oetteking.*

11398. SMITH, G. ELLIOT. The significance of Peking man. *Nature [London]* 127(3197): 202-204. 2 fig. 1931.—A discussion of *Sinanthropus** and its relationships to *Eoanthropus* and *Pithecanthropus*. The bones of the skull are exceptionally thick as in the Piltdown skull, and both belong to the Lower Pleistocene; but the skull has great projecting eyebrow ridges as in *Pithecanthropus*, which it resembles in other ways. *Sinanthropus* occupies a position between the other 2 genera.

11399. SNYDER, LAURENCE H. The "Laws" of serologic race-classification. Studies in human inheritance IV. *Human Biol.* 2(1): 128-133. 1930.—In order to bring the anthropologic applications of the blood groups to a definite status, the following laws of serologic race classification are offered, with evidence for each: (1) Any people whose blood group distribution is being studied may be expected to show blood group frequencies similar to those of other peoples known to be related to it. (2) If any people shows blood group frequencies different from those to be expected based on the frequencies

of other peoples known to be related to it, the conclusion may be drawn that the former has undergone racial crossing of some sort which the latter have not undergone, or vice versa. (3) If any people shows blood group frequencies similar to a group of peoples not known to be related to it, the conclusion may be drawn that the former traces back to the latter somewhere in its ancestry, or else that the former has undergone crossing with the latter group or some similar people. (4) If any people lacks one or both of the blood group mutations, as evidenced by an extremely low value of p or q, it may be assumed that this people became isolated from the rest of mankind before the respective mutations took place, or before they spread very far.—*L. H. Snyder.*

11400. STEVENSON, PAUL H. Anthropometry in China: an extended outline of research. *China Med. Jour.* 40(2): (1-33). 11 fig. 1926.—Emphasizes necessity of equipment, program of investigation and cooperation for racial anthropometric study. Anthropometric plane, spreading caliper, sliding compass, tape, and weighing scale are described. 15 measurements constitute a minimum requirement: Stature, sitting height, span, chest girth, weight, maximum head length and breadth, head height, face length (from gnathion below to nasion above), full face length (including forehead), minimum frontal breadth, maximum bizygomatic breadth, bigonial breadth, nose length and breadth. 10 optional measurements: Hand length and breadth, foot length and breadth, girth biceps, maximum and minimum girth forearm, girth thigh, maximum and minimum girth leg. Visual observations: Skin color, hair, form, color and distribution, eye color, form and direction palpebral fissure, direction eye slit, epicanthic fold, teeth. Team work and special prepared record blanks necessary.—*S. A. Weisman.*

11401. STEVENSON, PAUL HUSTON. Adaptation of Hrdlička's compass for direct head-height measurements. *Amer. Jour. Phys. Anthrop.* 13(3): 469-475. 2 fig. 1930.—This describes a simple attachment to the Hrdlička compass, which eliminates intermediate steps in taking the head-height measurement. The device consists of a vertical graduated rod; it is attached to the scale bar of the Hrdlička compass and reaches from the scale bar to the compass tips; it can move horizontally and up and down on the scale bar. The head-height measurement is read on this graduated vertical rod.—*Author (courtesy Wistar Bibl. Serv.).*

11402. SULLIVAN, LOUIS R. (prepared for publication by CLARK WISSLER). Observations on Hawaiian somatology. *Bayard Dominick Expedition Publ.* 13. 76p. 5 pl. 1927. Pr. $2.—Anthropometric measurements and quantitative somatic observations were made upon adults of Hawaiian descent, living in Hawaii; approximately 200 ♂♂ and 175 ♀♀ regarded as pure Hawaiian, and varying numbers of Hawaiian-White and Hawaiian-Chinese mixtures. Almost the entire paper is taken up with the data, given by individuals in full. The averages and deviations for each measurement have been calculated first in 5-yr. age-groups, revealing progressive age changes in the proportions of the head and face, as: the width of nose increases to the age of 60, the minimum frontal diam. of the head decreases between 30 and 60. The gross tabulations for the Hawaiian adults are under 2 age-groups, 20-59 and 60 plus. The other groupings are Hawaiian-Chinese, Hawaiian-S. European and Hawaiian-N. European. Comparisons between mixed and pure Hawaiians place the former in an intermediate position to the respective parent stocks. Comparisons are made with other Polynesian peoples, suggesting that the Hawaiians are nearer to the Tongans and Marquesans than to the Samoans and other Polynesians.—*L. R. Sullivan.*

11403. TODD, T. WINGATE. Age changes in the pubic bone. VIII. Roentgenographic differentiation. *Amer. Jour. Phys. Anthrop.* 14(2): 255-271. 3 pl. 1930.—Roentgenographic examination can give general information regarding the stage of differentiation of the symphysial face, but the method of observation precludes exactitude in diagnosis sufficient to identify age with that precision attainable on examination of the bone itself. No sex- or stock-linked features are discernible in the differentiation by roentgenographic methods. Distinctions in differentiation ascertainable from the bones themselves are slight and, it may be, equivocal. Gross estimation of age as a check upon evidence from other skeletal observations may be extremely helpful, and specific data are given in the text.—*Author (courtesy Wistar Bibl. Serv.).*

11404. TODD, T. WINGATE, and BARBARA TRACY. Racial features in the American negro cranium. *Amer. Jour. Physical Anthrop.* 15(1): 53-110. 22 fig. 1930.—A detailed study of the American negro ♂ skull and a comparison of it with both African and white series demonstrates but a single type of negro cranium of characteristic features, some of which are more readily modifiable than others by hybridization. There is nothing characteristic of stock in suture pattern, but the cranium, in its growth, passes through certain definite successive phases, and the interruption of growth at one or other of these stages gives the clue to a particular adult form.—*Authors (courtesy Wistar Bibl. Serv.).*

11405. TORII, RYŪZO. Fossil species of man and their culture. [In Japanese.] *Jour. Geogr. [Tokyo]* 42 (500): (592)-(598). 1930.

11406. TROTTER, MILDRED. The form, size, and color of head hair in American whites. *Amer. Jour. Physical Anthrop.* 4(3): 433-445. 1930.—Sex and age comparisons for hair-index measurements, cross-section area of the hair shaft, and color of hair samples were made in order to determine possible changes in the form, size, and color of the hair with increasing age. Measurements consisting of the greatest and the least diameters of the shaft at a given point were obtained on 10 hairs from each sample of 340 individuals. The color determinations were made with the "Haarfarbentafel nach Fischer-Saller." The difference in hair index between ♂ and ♀ groups as a whole was so slight that it is probably insignificant, although there was some variation between the subdivisions—the most conspicuous of these existing between the youngest groups. In the ♀ group the youngest individuals presented the lowest index, while in the ♂ group the youngest individuals presented the highest index. No difference was found between adult ♂ and ♀ groups in the areas of cross-sections of the hair shaft (obtained by the following formula: greatest diameter/2 $\times$ least diameter/2 $\times \pi$). However, young ♂♂ present areas equal to those of the adult at a slightly earlier age than do ♀♀. The incidence of the darker tones increased with the increasing age periods. Gray hairs exceeded in area their largest pigmented neighbors in about ¼ of the cases.—*Author (courtesy Wistar Bibl. Serv.).*

11407. TROTTER, WILFRED. The functions of the human skull. *Nature [London]* 123(3101): 533-537. 1929.—Report of a lecture giving anthropological and general evolutionary conclusions based on the study of the physiology and pathology of the brain and skull. The brain is an encapsuled organ, its capsule being the skull. Organs may be classified in 3 groups according to the rigidity of their capsules; in (1) the capsule is freely extensible, in (2) the capsule is only slightly extensible, in (3) (including only the brain) the capsule is inextensible to all physiological forces. These conditions have important effects on the mechanics of the circulation. In any tissue the flow of blood must be continuous; in organs of the first 2 groups this is made possible by the extensibility and elastic recoil of the capsule. In the case of the brain the mechanism is different; it expands with each pulse, but as the skull is unyielding, room must be made at each pulsation by the expulsion of a corresponding volume of the low pressure intra-cranial fluids. The low pressure outflow that must accompany each arterial pulsation is chiefly in the form of venous blood. Therefore flow of blood in the veins must be quite free. But the venous pressure is low so that any abnormal swelling of the brain causes collapse and obstruction of a greater or less venous territory. The

rigidity of the skull is therefore the reason why, apart from purely destructive processes, all cerebral symptoms are of circulatory origin. The brain, when bruised, must return to its normal size or its circulation will be permanently disturbed. This it does very slowly, one of the most important functional effects of its rigid encapsulation. The protective function of the modern European skull is very imperfect. Under external violence it readily sustains disortion which frequently leads to bruising of the brain. The liability of the skull to distortion under violence is greatest in the modern European. In other races, e.g., the negro, external violence less easily produces contusion of the brain. The European therefore has lost some of the protective strength of skull that other races possess. However much more of its protective massiveness it may lose, the skull must always maintain enough rigidity to preserve its form, since one of its most important functions is to support the brain. If the low strength of the European skull produces a high susceptibility to disabling minor injuries it may be expected to have some corresponding advantage. This probably lies in freeing the cranium as far as possible from any functions but those of skeleton and capsule of the brain. If the cranium has other functions than these to fulfil, its freedom to vary exactly with the brain must be, in however slight degree, limited. Since free variability of the brain through a small range is probably of value in fitting man for civilization it is possible that the freeing of the cranium from accessory functions has been a factor in human evolution. The anterior end of the segmental animal was the natural site for the chief nucleus of a centralized nervous system. The same region was inevitably annexed for the entry to the respiratory and digestive tracts. The consequent crowding of function into 1 extremity reveals 2 tendencies in conflict—the tendency on the one hand for the brain skeleton to be made use of for functions connected with other systems, and the tendency of the brain to struggle for freedom from such burdens. When for example the cranium has been involved in the apparatus of defence and attack such as horns, antlers, fangs and tusks, the progress of the brain has been checked. The ancestors of man with the steady avoidance of specialization to which he so largely owes his zoological position, kept their crania free from such encumbrances and made possible the progressive evolution of the brain. The apparent tendency now visible towards a continued reduction of the strength of the skull seems to be a manifestation of the same process.—*W. Trotter.*

11408. TSUKAHARA, Y. Schädelmessungen am Lebenden, mit besonderer Berücksichtigung der Augengegend, angestellt an Formosa-Chinesen und Japanern in Formosa. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 309. 83-84. 1930.—About 30,000 persons were studied craniologically. At birth all of the measurements were greater in the Chinese. Around the 10-15-yr. period the Japanese index surpasses that of the Chinese. In both races the figures for the ♂ generally exceed those for the ♀, but at adolescence the ♀ index equals or even exceeds that of the ♂. These values parallel weight and body size.—*E. C. Faust.*

TECHNIQUE

11409. BEZECNY, RUDOLF. Neue Darstellungsart der Langerhansschen Zelle. *Arch. Dermatol. u. Syph.* 162 (3) : 792-794. 1 fig. 1931.—Langerhans' cells appear blackish blue due to the formation of Fe-hematin lac. The fine processes also appear and the melanoblasts are colorless.

11410. BUSLIK, ALICE (unter Mitarbeit von ELISE WOLFF). Histologie. (Repetitorien für technische Assistentinnen. Hft. 4.) 65p. 35 fig. C. F. Pilger und Co.: Berlin, 1930. Pr. 4.50 M.—The volume is intended as a guide during the period of instruction of technical assistants in medical institutes and also for practical use later.

11411. BRICE, ARTHUR T., Jr. Notes on a combined peroxidase Wright's stain for blood films. *Stain Tech.* 5 (3) : 101-102. 1930.—Oxydase reagent. Dissolve 0.3 gram of benzedine base in 100 cc. ethyl alcohol. Add 1 cc. of a saturated aqueous solution of Na nitroprusside. This reagent should keep from 8 mos. to a year. Thin films should be made and dried in air. The slide or cover-slip is first flooded with the oxydase reagent, which is allowed to act for 1-1½ min. An approximately equal portion of a freshly made 1/1200 hydrogen-peroxide solution is then poured on the slide and allowed to act for 3 min. The slide is then washed thoroughly under the tap and dried. The film is then stained by Wright's method according to the usual technic.—*Author* (*courtesy Wistar Bibl. Serv.*).

11412. CALHOUN, M. LOIS. Technic for the isolation of epithelium. *Stain Technol.* 6 (2) : 65. 1931.—The tissue is washed in saline and then in 1.5% aqueous Na bicarbonate. It is then put in Muller's fluid dissociator for 36 hrs. When the tissue is removed from the fluid, lightly brush the surface of the epithelium with a small brush. Transfer the cells to a microscopic slide and dry slightly. Fix in methyl alcohol, rinse in distilled water, and stain with Harris's hematoxylin and eosin. Mount in balsam.—*Author* (*courtesy Wistar Bibl. Serv.*).

11413. CLARK, E. R., H. T. KIRBY-SMITH, R. O. REX, and R. G. WILLIAMS. Recent modifications in the method of studying living cells and tissues in transparent chambers inserted in the rabbit's ear. *Anat. Rec.* 47 (2) : 187-211. 8 fig. 1930.—The method of introducing transparent chambers into the rabbit's ear has reached a stage in which approximately standardized types of chambers are available for most investigations in which the use of the method is desirable. Four types of chambers are described in this article and directions given for making them and inserting them in the ear. The "bay type" chamber is suitable for long-continued observations of newly growing capillaries and of blood cells which are free from the motion attendant on variations in the tissue tension. It may be adapted for studies concerning the effect of chemical solutions, gases, etc., on living tissues. The round-table chamber is used for general studies of newly formed blood vessels and lymphatic vessels and for detailed cytological studies. This type may be adapted for transplanting tissues and foreign substances into the vascularized area. The "preformed-tissue" chamber enables one to study the vessels already present in the ear and is suitable for physiological and pharmacological studies on such vessels. By making slight changes in this last type, the so-called combination chamber is formed which enables the investigator to study the original ear vessels and new-growing vessels in the same specimen. A brief résumé is given of the types of problems being investigated in this laboratory by this means.—*Authors* (*courtesy Wistar Bibl. Serv.*).

11414. CONN, H. J. The history of staining. The staining of blood and parasitic protozoa. *Stain Tech.* 5 (4) : 127-134. 1930.—This paper, the 7th of the series on the history of staining, takes up the stains used primarily for blood and blood parasites. Chief attention is given to compound stains of the Romanovsky type; but other kinds of blood stains, especially the vital stains for blood, are also discussed.—*Author* (*courtesy Wistar Bibl. Serv.*).

11415. DAVENPORT, H. A. Block staining of nervous tissue with silver. Studies of fixatives, lipid solvents, and reducing solutions. *Stain Tech.* 5 (4) : 139-147. 1930.—Silver stains of the Cajal type, made on spinal cord of cats, were studied to determine the limits of favorable ammonia concentration in alcohol as a fixative and the comparison of ammoniated alcohol with alcohol-chloroform and alcohol-pyridine mixtures. Such material subsequently extracted with various lipid solvents showed staining of a generally similar character. More intense staining was seen after the alkaline fixatives, and best penetration of stain into the blocks after the most thorough extraction of lipids. Experiments with reducing solutions which contained various proportions of pyrogallic acid and formalin indicated that pyrogallic acid is the essential ingredient. Postmortem autolysis up

to 5 hrs. caused no change in fiber staining.—*Author (courtesy Wistar Bibl. Serv.)*.

11416. DAVENPORT, H. A. Block staining of nervous tissue with silver. II. Trichloracetic acid, sulfosalicylic acid, Hofker's and Carnoy's fluids as fixatives. *Stain Technol.* 6(2): 37-40. 1931.—Alcoholic solutions of sulphosalicylic acid, trichloracetic acid, and Hofker's solution fixed mammalian spinal cord with less shrinkage than ammoniated alcohol, but during the necessary alkalinization, washing, and silvering, the acid-fixed specimens shrunk more than those fixed in the alkaline alcohol. Specimens fixed in Carnoy's fluid shrunk most. Successful silver stains were obtained after all these fixatives.—*Author (courtesy Wistar Bibl. Serv.)*.

11417. ERDMANN, RHODA, und A. LLOMBART. Die Anwendung des de Haanschen Durchströmungsverfahrens auf Carrelsche Dauerkulturen von Geweben. [Use of de Haan's method of perfusion on Carrel's permanent tissue cultures.] *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation)* 10(4): 474-487. 1 pl. (col.), 5 fig. 1931.

11418. FOLEY, JAMES O. Studies in stain technique. III. A cytological method for staining with the Ehrlich-Biondi mixture. *Anat. Rec.* 49(1): 15-17. 1931.—Testicular and ovarian tissues can be stained with a modified Ehrlich-Biondi mixture if they are fixed in an osmicated fluid or mordanted in aqueous solutions of osmic acid. This stain is of value not only in differentiating sharply between the germ cells and the surrounding stroma, but also in securing finer cytological detail than is obtained with the usual differentiating stains.—*Author (courtesy Wistar Bibl. Serv.)*.

11419. FRANCESCON, A., e R. CAMPOS. Metodo per la decolorazione dei preparati impregnati col metodo fotografico del Cajal. [A method for decoloration of preparations impregnated with Cajal's photographic method.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 780-781. 1930.—The decoloration of preparations impregnated with Ag proceeds quickly and completely by means of Lugol's solution.—*M. Comel.*

11420. GESCHICKTER, CHARLES F. Fresh tissue diagnosis in the operating room. *Stain Tech.* 5(3): 81-86. 1930.—A polychromatic stain giving color reactions closely simulating hematoxylin and eosin, without overstaining and obscuring the finer detail of the cell, is as follows: To 4 parts of 1% aqueous azure A (azure I) which has been filtered, add very rapidly 1 part of filtered 0.5% aqueous Erie garnet B. The mixture is immediately filtered to prevent precipitation. Occasional refiltering may be necessary if the mixture has been standing a month or more. Float tissue slices from a freezing microtome directly into distilled water; pick them up with a glass rod and immerse into the stain in a small section dish. Staining time varies with different tissues, but 10-15 seconds usually gives the most satisfactory results. Lift sections from the stain, still on the glass rod, float through 2 changes of distilled water, and transfer to a clean glass slide. Place a large drop of 40% glucose on a clean cover-slip and immediately invert over the section. Allow ½-1 min. for it to clear. It is best to employ an intense artificial light for illumination (an ordinary 40- or 60-watt bulb is sufficient).—*Author (courtesy Wistar Bibl. Serv.)*.

11421. GOUGH, J. Acetaldehyde as a fixative for neuroglia. *Jour. Path. and Bact.* 34(4): 419-421. 1931.—A 20% aqueous solution of acetaldehyde used as a fixative for nervous tissue, is a selective agent for the demonstration of fibrous astrocytes in animal and human material. After 6-24 hrs. fixation, frozen sections are cut and stained by means of ammoniacal silver carbonate or Cajal's gold-sublimate solution. The method has the advantage of requiring only a short period of fixation.—*J. Gough.*

11422. GROSS, LOUIS, and EUGENIE LESLIE. Paraffin infiltration of hearts. *Amer. Heart Jour.* 6(5): 665-671. 5 fig. 1931.—This simple method can be used with some modifications for other organs.

11423. HEARD, OSBORNE O. A photographic method of orienting serial sections for reconstruction. *Anat. Rec.* 49(1): 59-70. 5 fig. 1931.—The orientation of paraffin serial sections is obtained by the use of photography during the process of cutting. A special camera carrying standard moving-picture films is mounted over the microtome and vertical illumination is provided. Each undisturbed potential section is photographed in relation to the camera aperture before the knife cuts it from the block. The finished orientation film is projected into a fixed master frame coinciding with the enlargement of the reconstruction, to reestablish the original relationship of the specimen and camera aperture. Serial photomicrographic records made on bromide paper at the required magnification are superimposed on the projected film image, and right-angle orientation lines are transferred to the records.—*Author (courtesy Wistar Bibl. Serv.)*.

11424. LANDAU, E. Saulėžolin-nauji dažai histologijos technikoje. [Saulezolin, a new dye for histologic use.] [In Lithuanian, with German summary.] *Medicina [Kaunas, Lithuania]* 11(1): 30-31. 1930.—The black husks of sunflower seeds yielded on boiling a brownish violet dye similar in appearance to hematein and changed by mixture with alum or $Al_2(SO_4)_3$ to dark violet (while hematein is changed by alum to blue violet). Since "helianthin" has already been given to another dye, Landau calls this dye by the Lithuanian equivalent, "saulezolin."—*From author's summary.*

11425. LARSON, EDITH E. Further experimentation with a new differential staining method for connective tissue combined with the ordinary hematoxylin-eosin stain. *Stain Tech.* 5(2): 73-74. 1930.—Tissues fixed in any of the more common fixing fluids and embedded in either paraffin or celloidin may be used. Sections are stained in a solution made up like Delafield's hematoxylin except that hematein is used and ripening is omitted. After treating with tap-water the sections are stained with eosin B (0.5% in 25% alcohol) for 1 min. or longer; then run up to 95% alcohol and treated with orange G (0.5% in 95% alcohol) for 15 sec. or less; finally dehydrated with absolute alcohol, cleared, and mounted.—*Author (courtesy Wistar Bibl. Serv.)*.

11426. MAINLAND, DONALD. A study of the sizes of nuclei in ovarian stroma. *Anat. Rec.* 48(2): 323-340. 1931.—Measurements have been made of the longitudinal and transverse axes of 1000 nuclei in the projected, magnified image of the cortical stroma of a paraffin section from a formalin-fixed human ovary. At the magnification used (1824) the mean longitudinal axis is 14.028 mm.; standard deviation of series: ±5.42. The mean transverse axis is 4.812 mm.; standard deviation of series: ±2.45. Coefficient of correlation of these 2 axes: +0.27. An index, viz.: transverse axis/longitudinal axis, has been calculated for each nucleus. Regression equations and analysis of variance show that the mean index increases proportionately to the transverse axis as this axis increases from 0.1 to 6 mm.; but as the axis increases from 6.1 mm. to 16 mm., the mean index remains unchanged. These 2 classes correspond, respectively, to: (1) cylindrical or fusiform, "fibroblastic" nuclei and, (2) flat, pale, mottled "lamellar connective tissue" nuclei. The nuclei of over 6 mm. transverse axis occur irregularly in clumps at varying intervals.—*Author (courtesy Wistar Bibl. Serv.)*.

11427. MILLER, WILLIAM SNOW. The use of blotting-paper for reconstructions. *Anat. Rec.* 48(1): 191-196. 4 fig. 1931.—Some of the advantages and disadvantages of wax and blotting-paper for reconstruction purposes are considered and new mechanical aids for use with blotting-paper are described.—*Author (courtesy Wistar Bibl. Serv.)*.

11428. NARAYANA RAO, A., and L. S. RAMASWAMI. Vegetable juices as fixatives. *Nature [London]* 127(3212): 779-780. 3 fig. 1931.—Preliminary statement of the value of juices of onion (*Allium cepa*), green mango (*Mangifera indica*), green tamarind (*Tamarindus indica*), gooseberry (*Philanthus emblica*), and sour milk, uric acid, and vegetable juices with formic acid and formalin in demonstrating nerve endings.

11429. POLICARD, A., und H. OKKELS. Die Mikroveraschung (Mikrospodographie) als histochemische Hilfsmethode. In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. V. Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus, Teil 2, Heft 16, Lief. 355. p. 1815-1828. Urban & Schwarzenberg: Berlin, 1931.—A general account of methods as applied to sections and their application in animal histophysiology, histopathology, and histochemistry. A substantial bibliography is appended.

11430. RETTIE, T. A new method of applying Nile blue as a fat stain. *Jour. Path. and Bact.* 34(4): 595-596. 1931.—Nile pink is prepared from nile blue by boiling with sulphuric acid; it is used in combination with nile blue.—*A. E. Boycott.*

11431. TARRAS-WAHLBERG, B. Giemsa staining with buffer solution. *Acta Dermato-Venereol.* 11(2): 168-173. 1930.—Using phosphate buffer solutions, the author stained blood films with the Giemsa stain in series of pH 5.2-pH 8.0, obtaining the following pH values, corresponding to the specific affinity for the stains of the morphological details, viz.: For the eosinophil granules, pH 5.2-pH 7.5; for neutrophil granules, pH over 6.4. The iso-electrical point of the neutrophil granules and of the thrombocytes (after denaturing with methyl alcohol) was determined at just below pH 5.4 and at pH 5.2-5.3 respectively. A phosphate buffer solution with a concentration of $M/15$ and with a pH value of 6.7 is recommended as best suited for ordinary hematological practice.—*Author's summary.*

11432. THARALDSEN, C. E., L. J. BOYD, and D. ANCHEL. An improved method for the collection of rat plasma for tissue culture. *Anat. Rec.* 46(2): 173-177. 2 fig. 1930.—A method for the collection of rat plasma in which the abdominal aorta is used for cannulization, the essential features of which method are a special cannula and a double-necked tube for collection and storage of the plasma. Advantages of this method are the greater amount of plasma obtained, facility of collection, better asepsis, and less danger of hastening clotting.—*Author (courtesy Wistar Bibl. Serv.).*

11433. TURKEWITSCH, B. G. Zur Methodik der Anfertigung der das knöcherne innere Ohr betreffenden Präparate. Die Korrosion mit Dammaraharz (Gummi Dammara). [Preparation of specimens of the bony inner ear. Corrosion with gum dammar.] *Anat. Anz.* 72(1/3): 42-45. 2 fig. 1931.

11434. TURNBULL, H. M. A Jenner stain for sections. *Jour. Path. and Bact.* 34(2): 277-279. 1931.—Particulars are given for staining paraffin sections of tissue fixed in formaldehyde, preferably buffered isotonic formaldehyde, with a solution of Jenner's stain in methyl alcohol, differentiating with ethyl alcohol and mounting in Gurr's medium. The resulting colors are comparatively simple and clean. Increasing degrees of basophilia of cytoplasm are indicated by deepening shades of blue. Nucleoli are stained pink. Neutrophil granules are pink. Eosinophil granules are brick-red in leucocytes and ripe myelocytes, but have a more carmine tinge in pro-myelocytes. Basophil granules are blue-purple metachromatic to red in tissue mast cells, but a purple that is less blue in leucocytes and particularly myelocytes. Azurophil granules are not stained. As the cytoplasm becomes hemoglobinated in ripening erythroblasts it passes from blue through shades of purple to pink.—*H. M. Turnbull.*

11435. ZIFFERBLATT, ARNOLD H., and HENRY K. SEELAUS. Improved method of refrigeration of whole blood for centrifugation. *Anat. Rec.* 47(2): 229-238. 3 fig. 1930.—The improved method for refrigeration of whole blood during the process of centrifugation entails but a slight change in the standard centrifuge accessories. The unit method of refrigeration insures a degree of frigidity impossible of attainment with the system heretofore employed. When the individual unit is once assembled, it requires no further attention, except the replacement of paraffined centrifuge tubes and refilling of the trunnion cup with water. Under conditions necessitating the recentrifugation of a quantity of blood, a replacement unit is employed from which the brass tube used in its preparation is withdrawn, leaving a cylindrical channel in the ice jacket for the insertion of the centrifuge tube containing blood. The refrigeration obtained by use of the improved unit is lower and better conserved.—*Authors (courtesy Wistar Bibl. Serv.).*

11436. ZIFFERBLATT, ARNOLD H., and HENRY K. SEELAUS. Embryo-chick plasma. The introduction of a growth-activating medium for the cultivation of embryonic-chick tissue in vitro. *Anat. Rec.* 48(2): 367-377. 4 fig. 1931.—The observed rapidity of the embryonic development of the chick has led to the conclusion that the growth-stimulating substances contained in embryo blood must be present in far greater quantity than in the blood of the adult fowl, particularly in advanced age. Hence embryonic plasma, when employed for the cultivation of embryonic tissue in vitro, should furnish a medium both nutritive and isotonic to the explant. Embryo blood is collected from the extra-embryonic circulatory apparatus of the chick in the following manner: An egg of the proper incubated age (16 days) is opened and the vitelline vessels or sinus terminalis are located. A modified aneurysm needle is passed beneath the selected blood vessel to a point calculated to carry the vessel across the grooved director of the instrument. The blood flow is diverted from its customary channel by partially opening the vessel at a point coinciding with the center of the wide end of the V-shaped groove. Through this opening in the vessel wall the escaping blood flows down the groove in the director to the collecting vessel. Care of the embryonic blood to preclude premature coagulation is in all respects identical with that employed in the care of adult chicken blood. —*Authors (courtesy Wistar Bibl. Serv.).*

11437. ZINRAM, KURT. Eine neue Methode zur Darstellung von Hohlräumen im Knochen. *Anat. Anz.* 71(19/20): 401-419. 10 fig. 1931.—Using centrifugal force the author was able to make satisfactory bone casts with Wood's metal.

INVERTEBRATE EMBRYOLOGY AND HISTOLOGY

(See also in this issue Entries 9346, 9413, 9452, 9770, 9859, 10008, 10009; 10620, 11584)

11438. CRABB, EDWARD D. The origin of independent and of conjoined twins in fresh-water snails. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 124(2): 332-356. 14 fig. 1931.—Polyvitelline eggs were found in *Viviparus malleatus, V. contectoides, Campeloma decisum, Lymnaea palustris, L. stagnalis appressa, Physa ancillaria, P. sayii, P. gyrina* and *Planorbis (Gyraulus) umbilicatellus.* The development of eggs having naturally fused or experimentally fused vitelli, and the vitelli fragmented, or otherwise injured by ultraviolet rays, centrifugal force or glass needles, was studied in *P. gyrina, P. ancillaria, L. s. appressa* and *L. palustris.* In one case 2 naturally fused *L. palustris* trochophores were cultured 71 hrs. until they developed into definitely fused embryos of heart-beat stage. In another *L. palustris* egg having 2 separate vitelli, the migratory movements of these vitelli were recorded, by projection, from the 2-cell stage through fusion to death, at 70 hrs. In *P. gyrina* eggs one primary blastomere survived destruction of the other by a glass needle, 167 hrs. Minute injury with the glass needle to a primary blastomere in another egg was followed by formation of only 3 micromeres, characteristic double segmentation cavity and death. Following injury or complete destruction of one primary blastomere, the other commonly survives 40-70 hrs. in *Lymnaea* and

Physa. Injury to a blastomere of 4-cell eggs resulted in death without further cleavage. Since the normally or experimentally fused, injured, or fragmented vitelli all died before reaching the hatching stage, and usually before the control egg, the writer concludes that the chances for monozygotic twinning to occur in these snails are very nearly nil.—*E. D. Crabb.*

11439. **DANIEL, R. J. The abdominal muscular systems of the Zoëa and Mysis stages of the shrimp (Crangon vulgaris Fabr.) and their bearing on phylogeny.** *Rept. Lancashire Sea-Fish. Lab.* 38. 95-108. 2 pl. In: *Proc. & Trans. Liverpool Biol. Soc.* 44: 1929/1930.—The abdominal muscular systems of the Zoëa and Mysis stage of *Crangon vulgaris* are similar to the complicated systems in the adult form, and very unlike the corresponding series of muscles in an adult Mysid as represented by *Praunus flexuosus*. Since the Mysis stage in higher Crustacea is accepted as representing a Schizopod ancestry it might be expected that the larva would show certain characteristics peculiar to the musculature of a modern Schizopod form like *Praunus*. Under such circumstances the presence of the complete *Crangon* systems in both the Zoëa and Mysis forms is regarded as an example of the anticipation of adult organs during the larval periods.—*R. J. Daniel.*

11440. **GAVRILOV, KONSTANTIN. Ein Fall von Duplicitas cruciata bei Limnodrilus hoffmeisteri Clap.** *Zool. Anz.* 96(1/2): 31-35. 2 fig. 1931.

11441. **GEORGE, W. C. The histology of the blood of some Bermuda ascidians.** *Jour. Morph. and Physiol.* 49(2): 385-413. 5 pl. 1930.—On the basis of studies with both the supravital technique and the section method, the structure of the blood cells is described for the following species of ascidians: *Phallusia nigra, Ecteinascidia turbinata, Clavelina oblongata*, and *Symplegma viride*. Subject to considerable variation in cytological detail, the following types of cells were found in all these species: (a) green cells, (b) orange cells (except in *C. oblongata*), (c) coarsely granular amoebocytes, (d) amoeboid compartment cells with or without colored or colorless granules in the vacuoles, (e) vesicular cells with or without colored or colorless granules, (f) small finely granular amoebocytes. Other evidence and the presence of what appear to be intermediate stages between the finely granular amoebocyte and the more specialized types of cells suggest that the finely granular amoebocyte is the parent cell or the cell most closely related to the common-stem cell.—*W. C. George.*

11442. **GRANDORI, R. Studi embriologici sulle razze polivoltine del bombice del gelso. [Embryological study on the polyvoltine race of silk-worms.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 8(12): 717-722. 1 fig. 1928.—The embryonal streak (Keimstreifen) is much longer than in eggs of annual races. The yolk cells are less individualized than in the annual eggs. The bivoltine eggs are full of symbiotic organisms which are more numerous than in the annual eggs.—*M. Tirelli.*

11443. **KANAJEW, J. Zur Frage über die Wiederbildung der Fussscheibe bei Hydra.** *Zool. Anz.* 81(1/4): 89-93. 4 fig. 1929.—Regeneration of the basal disk of *Pelmatohydra oligactis* was studied in both apical and basal pieces that lacked interstitial cells. Normal and complete basal disks were formed. It is concluded that interstitial cells are not necessary for the regeneration of the basal disk, that both endodermal and ectodermal cells are involved in the process, and that the gland cells are derived from the ectoderm.—*J. W. Buchanan.*

11444. **KOCIAN, VOJ. Un cas d'hétéromorphose chez Argulus foliaceus L.** *Arch. Zool. Exp. et Gén. Notes et Rev.* 70(1): 23-27. 2 fig. 1930.—The regeneration of the amputated abdomen in a parasitic type took the form of "plurimorphosis," i.e., the appearance of supplementary organs which, while typical as to morphological structure, size, and physiological function, occupy an abnormal position. The portion regenerated bore 2 prs. of appendages, of which the 2nd pair, with numerous joints in the exopodite and the endopodite, shows an analogy with the furca of copepods from the functional viewpoint and even by its topographical position. Between the 2 prs. of regenerated appendages there developed a spherical organ which, from its topographical position and its chitinization, must be regarded as the regenerated ovary.—*W. M. Tattersall.*

11445. **KORSCHELT, E. Zur Frage der morphogenetischen Induktion nach Transplantation.** *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 117: 1-20. 6 fig. 1929.—The author states that the conception of the kind of influence active in transplantation experiments has undergone (especially in the last decade) an essential change since he considered the influence of the components in transplantations (1908). He reviews the results and interpretations recorded for transplantation experiments and cites the results of the experiments of Rutloff (1908) and of Leypoldt (1910) on several species of earthworm as entirely free from objections. In one a piece composed of segments 5-8 was reversed and segment 5 was attached to segment 5 of an anal portion; in the other a piece composed of segments 4-7 was reversed and segment 4 attached to segment 27 of an anal piece. A typical head developed at each end. "These results show that a practically normal head was developed at the anal end of the transplant and formed a unit both morphologically and physiologically with the reversed transplant and the recipient. It is noteworthy that the result is the same whether the union takes place near the head end or far behind it. Undoubtedly the host portion of the body had an especially effective influence in the completion of the body by overcoming the polarity in the regeneration of the head. The morphodynamic field, the action of which Mutschellor accepts, can at present be of little service in explaining these cases. An induction is observable but its nature is obscure. In this respect the results of these experiments on invertebrates coincide with the more thorough experiments on vertebrates."—*H. F. Nachtrieb.*

11446. **LUCAS, ALFRED M. The distribution of the branchial nerve in Mytilus edulis and its relation to the problem of nervous control of ciliary activity.** *Jour. Morph. and Physiol.* 51(1): 195-206. 1 pl. 1931.—The branchial nerve of *M. edulis*, traced by means of serial sections, is limited entirely to the epithelial and connective tissues bordering the axis of the gills. Most of its numerous branches extend posteriorly and lie close to the interfibrillar matrix of the connective tissue which supports the epithelium of this region. Fibers of these nerves have been traced to this epithelium. The chitinous supporting structures of the gills lie in close proximity to these nerves, yet neither nerves nor nerve fibers have been observed to penetrate them. Moreover, a careful study of the gill tissues fails to reveal the presence of structures which might be interpreted as nerves or nerve fibers. Since no innervation of the gills has been demonstrated, it seems probable that the ciliary activity of the gill epithelium is not regulated by means of fibers connected with the central nervous system.—*Author (courtesy Wistar Bibl. Serv.).*

11447. **MALOWITSCHKO, EUGENIE. Über entzündliche Entstehung des Bindegewebes bei Actinien.** *Virchow's Arch. Path. Anat. u. Physiol.* 280(2): 476-486. 8 fig. (4 col.) 1931.—Observations from ½ hr. to 70 days were made on actinians through which silk thread had been passed. The development of inflammatory connective tissue followed the same course as in higher animals. Migratory cells (at first eosinophils) capable of phagocytosis collected about the foreign body; blood is lacking in actinians, being replaced by intracellular fluid which was probably the source of most of the migratory cells which flow from the fissures between the epithelial cells toward the trauma. The eosinophils were engulfed at the injury and disintegrated. Later amebocytes surrounded the injury by a syncytium, intermingled with the silk thread, and gave rise to fibrous connective tissue. The process was slow and not ended in 70 days, for large numbers of amebocytes, united to uninterrupted symplasts, were present from which, by

analogy with other animals, collagen fibers and permanent connective tissue cells would be formed. The delay can be explained by continuous infection, among other things, since microorganisms (e.g., unicellular algae) were often found entering on the silk threads from the water.

11448. MASSAL, LOUIS-PIERRE. Recherches sur la formation du calcaire dans les glandes de Morren des Lombriciens. *Bull. Soc. Zool. France* 54: 46-61. 4 fig. 1929.—The author studied *Eisenia foetida, Allolobophora caliginosa*, and *Lumbricus herculeus*. The secretory epithelium of the glands consists of 3 regions: an anterior, transmissive only, containing mucous cells; a middle, secretory, the epithelial layer disintegrated at its free border, the interlamellar cavities filled with calcareous particles; and a posterior, where the epithelial layer is normally intact and there are no calcareous particles in the cavities. The nuclei of the secretory region are some basal, smaller, with denser chromatin, capable of amitotic division; and some near the free edge of the cells, which may be detached and thrown off along with a thin coating of cytoplasm. This is a normal process, the layer being renewed by the division of the deeper nuclei. There is no passage of nuclei from the interior of the blood-sinus into the secretory layer, as stated by Harrington. The chondriome is abundant, resistant, in the form of elongated rodlike chondrioconts disposed obliquely to the basal membrane. The protoplasmic layer near the free border of the cells is hyaline, without chondriome, and contains calcareous granules of various sizes, which appear in situ and have no relation to chondriome or nucleus. The vacuome consists of isolated vacuoles, fairly regularly distributed in the basal third of the layer, near the basal membrane. Golgi bodies were not discovered. The calcareous corpuscles, 5-8 μ in maximum diameter, are refringent spheroliths, consisting of a stroma probably derived from the protoplasm of the cells, in which are needles of calcium carbonate radially arranged; the form of the carbonate, known as vaterite, changes into calcite on exposure to water vapor at 50°; some transformation into calcite takes place in the gland, before the expulsion of the corpuscles into the oesophagus. The corpuscles are evacuated by antiperistaltic contractions of the muscular coat of the oesophagus, which envelops the glands. —*J. Stephenson.*

11449. MEYER, A. Urhautzelle, Hautbahn und plasmodiale Entwicklung der Larve von Neoechinorhynchus rutili (Acanthocephala). (Ein Beitrag zur Entwicklungsmechanik gebahnten Organbildung.) *Zool. Jahrb. Abt. Anat. u. Ontog. Tiere* 53(1): 103-126. 1 pl., 29 fig. 1931.—The polarity of the egg with the polar bodies on the vegetative pole coincides with the polarity of the egg of *Macracanthorhynchus hirudinaceus* (= *Gigantorhynchus gigas*), with the exception of a slight concentration of the protoplasm in the animal region in *N. rutili*. In the course of the cleavage, which follows in general the quadrant- and quartet-type, the posterior cell D differs from the other quadrants A, B and C owing to its protoplasmic density and proves to be a primary skin cell, i.e., the mother-cell of the whole skin of the trunk. Later on the descendants of the A, B and C-quadrant become plasmodial and give rise to the "embryonic nucleus"; the descendants of the primary skin cell, the skin-bahn, divide up to 6 nuclei and, after having become plasmodial, envelop the "embryonic nucleus" (plasmodial gastrulation). The development is traced up to a stage of 50 normal and 6 skin "cells" (nuclei) with the subsequent histological differentiation of the larva and the larval shells. This is, so far as is known, the first case of a cellular organ-bahn of a somatic organ. The difference from the eggs with organ-forming substances, e.g., *Styela*, is given in the fact, that in *N. rutili* the skin-forming plasma of the egg separates as an individual cell (D) from the remaining part of the embryo and takes its course separately. —*H. Heath.*

11450. PIERANTONI, UMBERTO. Origine e sviluppo degli organi simbiotici di Orizaephilus (Silvanus) surinamensis L. [Origin and development of the symbiotic organ of O. surinamensis.] *Rend. Accad. Sci. Fis. e Mat. Cl. Soc. R. Napoli* 36(7/12): 141. 1930(1931).—Abstract.

11451. PORTMANN, ADOLF. Dedifferenzierung bei Seeanemonen und ihre Bedeutung für das Problem der Axialgradienten. *Rev. Suisse Zool.* 34(2): 161-164. 1927. —In 1/10,000 to 1/30,000 KCN the sea anemone *Aiptasia carnea* disintegrates beginning at the tips of the tentacles, proceeding to their bases, and then involving the oral disk, until only body wall and pedal disk remain. If returned to sea-water in this condition, complete regeneration occurs. Histological study shows that disintegration begins in the ectoderm; the gland cells and supporting cells become amoeboid and phagocytic. The ectoderm is more susceptible than the entoderm everywhere, in respect to both epithelial and muscular elements. Similar histological changes occur in the pedal disk although these are not evident by gross inspection. The effect aborally is therefore much greater as shown by histological inspection than would be suspected from macroscopic examination. The esophagus is very resistant although it is an oral structure. In the septa the walls are more susceptible than the mesenterial filament. Thus while macroscopically there appears to be a regular antero-posterior disintegration, histologically the KCN is seen to affect certain tissues and organs, no matter where they occur with reference to the axis, more than others. The author suggests that disintegration studies should be accompanied by histological examination.—*L. H. Hyman.*

11452. WINTREBERT, P. Les courants plasmiques corticaux décelés par les figurations pigmentaires à la surface de l'oeuf fécondé indivis de Discoglossus pictus Otth. *Compt. Rend. Soc. Biol.* [*Paris*] 106(10): 784-788. 6 fig. 1931.—One to 3 hrs. after fertilization the dorsal surface of the egg shows pigmented striations radiating outwards from the animal pole, chiefly toward the dorsal side. These rays result from currents of cortical plasm which flow toward the animal pole and carry grains of pigment with them. The flow ventrally and laterally is checked in part by the sperm aster. The resulting pattern is complicated by an accompanying rotation of the egg downward on the ventral side.—*F. G. Gilchrist.*

11453. SHULL, A. FRANKLIN. Order of embryonic segregation in intermediate aphids not reversed by low temperature. *Amer. Naturalist* 65(700): 469-473. 1931. —Previous experiments have shown that aphids (*Macrosiphum solanifolii*), intermediate between parthenogenetic and gamic, possess the same characteristics regardless of the direction of the change in which the intermediates were produced. If the intermediates owe their composition to the order in which their differential structures are embryonically determined, that composition should be different for the 2 directions of approach to the intermediate condition. One of 3 suggested explanations of the identity of the 2 classes of intermediates, referred to above, was that the high and low temperatures used to induce opposite changes had also caused reversed orders of embryonic determination. Now, however, a considerable number of intermediates demonstrate a close correlation between the time of determination of wings and the time of determination of hind tibiae. Wings had been previously shown to be determined late, hence tibiae must also be determined late. Since these intermediates were obtained at low temp., the hind tibiae should, if low temp. reversed the order of determination, have been determined early. Apparently, therefore, low temp. did not reverse the order of determination.—*A. F. Shull.*

11454. UBISCH, L. von. Über die Determination der larvalen Organe und der Imaginalanlage bei Seeigeln. *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 117: 80-122. 40 fig. 1929.—"(1) Germs of *Echinocyamus pusillus* in the 8-cell stage were divided equatorially. The animal half developed

into a blastula only, but the vegetative half gastrulated and developed into a small pluteus. (2) Germs placed in a Li solution after fertilization, divided equatorially at the 8-cell stage and were left in the solution to the blastula stage: (a) Animal half: After the addition of 2% of a 3.7% solution of Li to the water the animal half did not develop beyond the blastula; after addition of 3% of the solution there was typical formation of entoderm but no invagination; after addition of 3.5% typical gastrulae were formed; after addition of 4% the animal halves died at or before the blastula stage. (b) Vegetative halves: After addition of 2% of a 3% sol. of Li these halves gastrulated but were much more perishable than those developed in normal sea water or those that had been separated in the blastula stage; after addition of 3.5% of the sol. these halves at best reached only the stage of the mesenchyme blastula; after addition of 4% of Li sol. only the blastula stage was reached. (3) Embryos of 8 cells were divided equatorially and then placed in the Li sol. up to the blastula stage: (a) After addition of 3% of the Li sol. about ¼ of the animal halves gastrulated and after the addition of 3.5% of the sol. about ⅔; these gastrulae could develop into plutei with larval processes, mouth, and skeleton. (b) The vegetative halves could reach the blastula stage. In general they developed better than those halves which had been in the Li sol. before the operation. (4) The facts of 3a show that the formation of entoderm and gastrulation may occur without the influence of a possible local organization center in the vegetative half of the complete germ. (5) In Ca-free sea water the 8 mesomeres of the 16-cell stage arranged in 2 rings of 4 each. Vital staining shows that the 4 near the animal pole develop the zone of the ciliary tuft. If this zone is removed in the 16-cell stage the remaining ¾ develops into an harmonious pluteus. Evidently part of the presumptive entomesoderm becomes differentiated into ectoderm. (6) Runnström's hypothesis that the ciliated-tuftzone contains an entoderm-limiting center is not confirmed. (7) Amphibian and sea urchin germs agree in that morphologically and physiologically distinguishable zones can be determined in the unsegmented egg. Germ layer determination is a result of self-differentiation. (8) The observations of Hörstadius can not be used in support of the view that the determination of germ layers, of gastrulation and of the larval organs in the sea urchins is influenced by an organization center in the vegetative half. (9) Organizer and wholefactor (Ganzfaktor) are not identical, rather operate antagonistically. Organization center and regulation center are not identical concepts. Regulation by the "whole-factor" can be restricted through the counteraction of organizers, the absolute or relative want of an organ-forming germ substance of specific nature. (10) There is no reason for the hypothesis that the formerly most vegetative portion of the sea urchin germ acts as an organization center after the division of the germ. (11) After the conclusion of gastrulation in the sea urchins: (a) The foregut in all probability has an inducing influence on the formation of the mouth. (b) Primary mesenchyme and ectoderm influence each other in their formation. (c) The hydrocoele induces the formation of the neural anlage, in the proper or wrong position. (12) After gastrulation the development of amphibia and sea urchins is similar in that:—The entomesoderm underlies the ectoderm. The median portion of the entomesoderm particularly induces formation of the neural system. The development and relative position of the gut, coelom, chorda, neural tube, epidermis are decidedly similar. The hydrocoele of the sea urchin fills out the place of the chorda."—*Author's summary (transl. by H. F. Nachtrieb).*

PROTOZOA

D. H. WENRICH, *Editor*

(See also in this issue (Physiol.) 9365, 9410, 9411, 10002, 10007, 10011, 10013, 10017, 10063; (Immunol.) 10567, 10570; (Parasitol.) 10579, 10581, 10589, 10591, 10595, 10596, 10597, 10598, 10599, 10600, 10601, 10604, 10608, 10609, 10610, 10613, 10618, 10619, 10624, 10626, 10629, 10630, 10632, 10635; (Soil) 10844, 10853; (Paleozool.) 11244, 11246, 11253, 11254, 11259, 11260, 11261, 11262; (Technique) 11414)

PLATYHELMINTHES AND MESOZOA

H. W. STUNKARD, *Editor*

(See also in this issue Entries 10575, 10576, 10590, 10603, 10605, 10607, 10614, 10628, 10633, 11470, 11471, 11575)

11455. BEAUCHAMP, P. de. Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 2. Turbellariés Triclades. *Arch. Zool. Exp. et Gén.* 71(3): 317-331. 9 fig. 1931.—**SPHALLOPLANA** (p. 321), based on *S.* percaeca* (*Dendrocoelum percaecum* Packard) (p. 321), redescribed, anatomically and histologically, from specimens from Mammoth Cave, Kentucky.

11456. CARTER, J. S. Observations on Rhabdocoeles of Albemarle County, Virginia. *Trans. Amer. Microsc. Soc.* 48(4): 431-437. 1929.—A list of 15 genera of rhabdocoeles found in the neighborhood of the Univ. of Virginia, is given. Detailed observations have been made upon 5 representative spp. *Stenostomum leucops* was fond to survive egg-laying, contrary to the observations of previous workers. Observations upon *Microstomum* led to agreement with Gamble that this genus is dioecious. The presence of gonads retards but does not inhibit fission. *Prorhynchus applanatus* may be either protandrous or protogenous. This form also displays polyembryony. It displays a regeneration-power, but not that of fission. *Rhynchomesostoma rostratum* appears in cycles and the members of each cycle vary greatly depending upon the food supply. *Phaenocora agassizi* is capable of either self-fertilization or of parthenogenetic development. It produces summer and winter eggs.—*W. A. Kepner.*

11457. HORSFALL, MARGERY WASHBURN. Studies on the structure of Cercaria infracaudata n. sp. *Jour. Parasitol.* 17(1): 43-48. 1 pl. 1930.—*C.* infracaudata* (p. 43) is a monostome cercaria, host *Goniobasis livescens tricta.—M. W. Horsfall.*

11458. JOHRI, L. N. A new cestode from the grey hornbill in India. *Ann. and Mag. Nat. Hist.* 8(45): 238-242. 3 fig. 1931.—*Paruterina* megitti* (p. 239), in *Lophoceros birostris,* India.

11459. KEPNER, WM. A., and C. M. GILBERT. Observations on a North American variety of Castrella truncata Abildg. *Zool. Anz.* 96(7/8): 169-177. 5 fig. 1931.—A variety of this turbellarian* is recorded from Pennsylvania, the first authentic N. Amer. record. The "bursa copulatrix" is a discrete organ, separated from the atrium by a muscular neck. Its function has not been satisfactorily explained. The major part of the development of the egg takes place in the genital atrium.

11460. KOBAYASHI, HIDEKAZU. Studies on the structure of the reproductive organs of the Trematoda. I. On the male genital organs of Fasciolopsis buski and Fasciola hepatica. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 308. 66-71. 8 fig. 1930.—Differential

features in these 2 spp. are found in the cirrus, cirrus canal, prostate, and cirrus sac.—*E. C. Faust.*

11462. **MEHRA, H. R.** Two distomate trematodes from Indian reptiles. *Allahabad Univ. Studies. Sci. Sec.* 7: 31-52. 6 pl., 2 fig. 1930 (1931).—*Ommatobrephus lobatum** Mehra (=*O. folium* Thapar & Farzand Ali), from *Zamenis mucosus* and *Varanus bengalensis*, full description; *O. lobatum* v. **najii** (p. 38) from *Naja tripudians*; emended description of Ommatobrephidae on basis of critical examination of *Ommatobrephus lobatum* and *O. singularis*; *Encyclometra caudata** (Polonio) from *Tropidonotus piscator* and *Zamenis mucosus*, critical descriptive notes; genus *Encyclometra*, critically discussed, especially as regards its systematic position, which seems to be intermediate between the Lepodermatidae and Ommatobrephidae.

11463. **PINTNER, THEODOR.** Wenigbekanntes und Unbekanntes von Rüsselbandwürmern. *Akad. Wiss. Wien Math.-Naturw. Kl. Sitzungsber. I Abt.* 139 (7): 445-537. 25 pl. 1930.—The article deals first with the subfamily **SPHYRIOCEPHALINAE** (p. 462), in the cestode fam. Bothriocephalidae, based on the genera *Sphyriocephalus* and *Dibothriorhynchus*, defining the characteristics of each genus, and discussing fully *S. tergestinus** and *S. viridis**; detailed studies of *Tetrarhynchus megacephalus**, *T. grossus*, *T. attenuatus**, *Lacistorhynchus planiceps**; *Stenobothrium*, key to spp., with discussions of morphology of *S. linguale**, *S. herdmani**, and *S. perideraeum*; *Dibothriorhynchus* **sphyraenaicus*** (p. 500), from *Sphyraena commersoni*, Ceylon; *Rhynchobothrium crassicolle**, morphological study.

11464. **RAŠÍN, KAREL.** Beitrag zur postembryonalen Entwicklung der Amphilina foliacea (Rud.), nebst einer Bemerkung über die Laboratoriumskultur von Gammarus pulex (L.). *Zeitschr. Wiss. Zool.* 138 (4): 555-579. 11 fig. 1931.—The cestoid *Amphilina** is a parasite of the fish *Acipenser ruthenus* and has as an intermediate host one of the amphipods *Dikerogammarus haemobaphes*, *Gammarus platycheir*, *G. pulex*, *Corophium curvispinum*, *Carinogammarus roeseli*, or the mysid, *Metamysis strauchi*. Describes the artificial infection of *Gammarus* and *Carinogammarus* with eggs of *Amphilina*; the development and growth and completely developed stadium of the latter; and the relation between parasite and host.—*M. J. Rathbun.*

11465. **TUBANGUI, MARCOS A.** Trematode parasites of Philippine vertebrates, II: Two echinostome flukes from rats. *Philippine Jour. Sci.* 44 (3): 273-283. 2 pl. 1931.—In the examination of rats (*Mus norvegicus*) for intestinal and other parasites, two echinostome flukes were obtained: *Euparyphium* **ilocanum** (*Echinostoma ilocana* Garrison), and *Euparyphium* **guerreroi*** (p. 280). *E. ilocanum* was first recorded in native Filipinos from Ilocos Sur, Luzon, and subsequently in natives of the neighboring province of Zambales. Its presence in a Manila rat may mean that this human parasite has a wider field of distribution than has formerly been supposed and that rats are a factor in its dissemination. Its diagnosis is emended.—*Author's summary.*

11466. **TUBANGUI, MARCOS A.** Trematode parasites of Philippine vertebrates, III. Flukes from fish and reptiles. *Philippine Jour. Sci.* 44 (4): 417-423. 1 pl. 1931. —**ORIENTOCREADIUM** (p. 417), Allocreadiidae, resembling *Plesiocreadium typicum* Winfield, type *O.* **batrachoides*** (p. 417) from intestine of *Clarias batrachus*, Luzon, type in Philippine Bur. of Sci.; *Mesocoelium meggitti** Bhalerao from intestine of *Mabuia multifasciata* Kühl. [new host], Luzon. **EUPARADISTOMUM** (p. 420), Dicrocoeliidae, resembling *Paradistomum*, type *E.* **varani*** (p. 420) from gall bladder of *Varanus salvator*, Luzon. Types in Philippine Bur. of Sci.

11467. **TUBANGUI, MARCOS A.** Trematode parasites of Philippine vertebrates, IV. Ectoparasitic flukes from marine fishes. *Philippine Jour. Sci.* 45 (1): 109-117. 3 pl. 1931.—*Ancyrocephalus* **manilensis*** (p. 109) on gills of *Teuthis virgata* (type host), *Lutianus lioglossus*, and *Anyperodon leucogrammicus*; *Tetrancistrum* **lutiani*** (p. 112) on gills of *Lutianus lioglossus*; *Microcotyle* **virgatarum*** (p. 114) on gills of *Teuthis virgata*. All from Manila, P. I., and types in Philippine Bur. of Sci.

NEMATHELMINTHES AND NEMATOMORPHA

M. C. HALL, *Editor*

B. G. CHITWOOD, *Associate Editor*

(See also in this issue Entries 9212, 10573, 10574, 10577, 10588, 10602, 10603, 10605, 10606, 10614, 10617, 10620, 10621, 10623, 10627)

11468. **ALLGÉN, CARL.** Über einen Fall von Viviparität beim Cyatholaimus (Paracanthonchus) coecus (Bastian). *Zool. Anz.* 77 (1/2): 36-39. 2 fig. 1928.

11469. **ALLGÉN, CARL.** Neue oder wenig bekannte freilebende marine Nematoden von der schwedischen Westküste. *Zool. Anz.* 77 (11/12): 281-307. 10 fig. 1928. —*Halaphanolaimus* **longisetosus*** (p. 287); *Halichoanolaimus* **microspiculum*** (p. 291); *Monhystera* (*Theristus*) **parasetosa** (p. 300); *Conolaimus* **longisetosus*** (p. 303). Thirty-six species are reported, and notes on their morphology and distribution are given.

11470. **BENNETTS, H. W.** The helminths of Western Australian stock. Recorded and unrecorded species. *Jour. Roy. Soc. Western Australia* 13: 49-60. 4 fig. 1926-1927 (1928).—Previous lists were given by Sweet (1908) and by Filmer (1926). The author gives the following additional records: *Choanotaenia infundibuliformis* and *Davainea* sp. from fowl; *Dipylidium caninum* from dog; *Trichuris suis* from pig; *Strongylus equinus*, *S. edentatus*, *S. vulgaris*, *Trichonema longibursatum**, and *T. tetracanthum** from horse; *Ostertagia ostertagi* from heifer; *Ostertagia* sp. from sheep; *Oxyuris equi* from horse; *Toxocara canis* from dog; *Ascaridia lineata** and *Heterakis vesicularis* from fowl; *Habronema microstoma*, *H. muscae*, and *Onchocerca** sp., from horse.

11471. **BENNETTS, H. W.** Further contributions to the helminths of Western Australian stock. *Jour. Roy. Soc. Western Australia* 14: 57-59. 1927-1928 (1928).—The author records *Davainea echinobothridia* from fowl; *Anoplocephala perfoliata*, *Triodontophorus brevicauda*, *T. minor*, *Trichonema poculatum*, and *Gyalocephalus* sp. from horse; *Oesophagostomum venulosum* from sheep; and *Onchocerca cervicalis* from horse. Most of these appear to be new records for Australia.

11472. **BOULENGER, C. L.** Report on a collection of parasitic nematodes, mainly from Egypt. Part IV. Trichostrongylidae and Strongylidae. *Parasitology* 18 (1): 86-100. 28 fig. 1926.—Parts I-III of the reports on the Molteno Inst. coll. dealt with Ascaridae, Heterakidae, Oxyuridae, Camallanidae, etc. The present installment gives descriptions of new spp., notes on other forms, and a list of determinations of material. *Histiostrongylus* **spinosus*** (p. 88) from intestine of *Taphozous perforatus*; note on *H. paradoxus* from the small intestine of bat; *Epomidiostomum* **querquetulae*** (p. 91) from stomach-wall of *Querquetula crecca*; *Amidostomum* **skrjabini*** (p. 94) from *Vanellus cristatus*; **PSEUDAMIDOSTOMUM** (p. 95), erected for *P.* **loossi*** (p. 96) from stomach-wall of *Fulica atra*.

11473. **BRUG, S. L.** Filaria malayi n. sp., parasitic in man in the Malay Archipelago. *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 279-298. 1 pl., 7 fig. 1927 [1928].—*Filaria* **malayi*** (p. 281), microfilaria from blood; adults not described.

11474. **COBB, N. A.** Ungella secta n. gen., n. sp.; a nemic parasite of the Burmese oligochaete (earthworm),

Eutyphoeus rarus. *Jour. Washington Acad. Sci.* 18(7): 197-200. 4 fig. 1928.—**UNGELLA** (p. 197), resembling *Diplogaster,* type *U.* secta* (p. 197).

11475. **COBB, N. A., and G. STEINER.** [Need for a more careful and intensive study of certain Aphelenchi.] *Jour. Parasitol.* 14(1): 68. 1927.

11476. **[KULAGIN, N. M.]** КУЛАГИН, Н. М. К биологии пшеничной угрицы (Tylenchus scandens Schn.). [A note on the biology of T. scandens.] Доклады Академии Наук СССР. (*Compt. Rend. Acad. Sci. URSS.*) A. No. 2: 35-36. 1928.—*T. scandens* lives only in the galls which it produces in the pistils of wheat. Galls placed in the earth in the fall gave rise to young worms in the spring, the temperature of the soil being at that time 10° C. Galls covered with water and kept at room temp. gave off young worms in 2½ months; placed in moist soil, under the same conditions, they produced young worms in 3½ months. There is no change in the anatomy of dried-up worms, save for some shrinkage of tissue. The worms, dried by degrees, are able to survive 88° C., but wet, they die at 50° C. in 15-20 min. Successive drying and reviving 6 to 8 times during 6 days, kills the worms. Worms from dried-up galls live longer than those from the watered galls. The worms reach the leaves by way of the stem of the plant or directly from the air.—*D. Sinitsin.*

11477. **LIEBERMANN, ANTONIA.** Die freilebenden Nematoden der Flussbingen der Moldau bei Bráník. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 20(5/6): 409-429. 6 fig. 1928.—Studies of the nematode fauna and its annual cycle, are reported for the region. An annotated descriptive list of the spp. taken is presented. *Dorylaimus* corii* (p. 420), is new.

11478. **MAN, J. G. de.** Das Männchen der Rhabditis monhystera Bütschli. *Zool. Anz.* 70(1/2): 51-57. 5 fig. 1927.—Diseased spots on potato roots from Wijkbij Duurstede, were found to contain *Tylenchus dipsaci* (Kühn) in great numbers and, in addition, numerous individuals of a sp. of *Cephalobus* (probably *C. rigidus* A. Schneider) and of *Rhabditis monhystera* Bütschli. The last named consisted of both ♂♂ and ♀♀. That these are the true ♂♂ of *R. monhystera* is shown by the fact that no other sp. of *Rhabditis* was present, and by the close morphological resemblance of these ♂♂ to the ♀♀. It is concluded that *R. monohystera* as used by Cobb, A. Tysowski, and A. Schneider, and *R. simplex* of Cobb, are not the same as *R. monhystera* Bütschli. *R. monohystera* of A. Schneider is believed to be *R. teres* (A. Schneider).—*J. R. Christie.*

11479. **MAN, J. G. de.** Sur quatre espèces de Nématodes libres observées aux environs de Caen dans un canal d'eau saumâtre à Quistreham. *Bull. Soc. Zool. France* 53: 96-103. 1 pl. 1928.—*Theristus acer, Axonolaimus** sp., *Adoncholaimus thalassophygas,* and *Chromadora viridis* are recorded, with morphological notes.

11480. **MÜLLER, JUSTUS F.** The cuticula of the Nemathelminthes. *Jour. Parasitol.* 14(2): 131. 1927.—Abstract.

11481. **PETROW, A. M.** Addition to the explanation of systematics of nematodes parasitic in the frontal sinus and lungs of Mustelidae. *Ann. Trop. Med. and Parasitol.* [*Liverpool*] 22(2): 259-264. 2 fig. 1928.—Descriptive and historical notes are given, to permit the differentiation of *Filaroides bronchialis** and *Skrjabingylus nasicola**.

11482. **STEINER, G.** The nemic population of the soil. *Proc. First Int. Congress Soil Science* 3: 360-366. [1927] 1928.—A general discussion.

11483. **ŠVÁBENÍK, JAN.** Aus dem Leben der Paramermis contorta (v. Linstow). *Zool. Anz.* 77(9/10): 259-267. 4 fig. 1928.—During winter and spring about 30% of the larvae of *Chironomus thummi* were found infected with *Paramermis contorta.* When fully grown the parasites force their way out near the posterior end of the host, usually through the anal foot. Molting, copulation, and egg laying follow immediately. Eggs hatch after a developmental period of 4-30 days, depending on the temperature. When placed in cultures of mud and water, larvae will live 18-20 days after hatching. They bore their way into young *Chironomus* larvae, the anal foot being a favored point of entrance. They rarely enter old *Chironomus* larvae. Should the host die 2 days after the parasites enter, the latter will emerge from the dead body and are capable of infecting a second host. In one case a *P. contorta* larva was observed to molt simultaneously with its entrance, leaving the shed cuticle attached to the outside of the host. A molt takes place about 10 days after entering. The parasitic development is completed before the host pupates; in only 2 cases were *Chironomus* pupae found infected.—*J. R. Christie.*

11484. **THIEL, P. H. van.** On some Filariae parasitic in Surinam mammals, with description of Filariopsis asper n. g., n. sp. *Parasitology* 18(1): 128-136. 17 fig. 1926.—In the present paper the term Filaria is used in its widest sense. Descriptions are given of forms parasitic in monkey, tiger-cat, and "pakira," collected by C. Bonne in Surinam. **FILARIOPSIS** (p. 129), type *F.* asper* (p. 129), from the lungs of a "roaring-monkey," *Mycetes seniculus.* Also *Filaria gracilis** Rud. from the peritoneal cavity of a sp. of *Cebus, F. acutiuscula** Molin from the subcutaneous tissue of the "pakira," *Dicotyles torquatus,* and *F. striata** Molin from the subcutaneous tissue of *Felis pardalis,* are redescribed.

11485. **VOGEL, H.** Beiträge zur Anatomie der Gattungen Dirofilaria und Loa. *Centralbl. Bakt. etc. Abt. 1. Originale* 102(1/3): 81-89. 2 pl. 1927.—A morphological study of *Dirofilaria immitis* and *D. repens.* The only distinguishing differences found between these 2 spp. are the structure of the spicula and the form, number, and arrangement of the ♂ papillae. Filarids from a South American monkey, *Ateles paniscus,* proved to be a South American variety of the African *Loa papionis,* here designated as *L. p.* var. st. pauli*.—*J. R. Christie.*

SIPUNCULOIDEA

R. V. CHAMBERLIN, *Editor*

11486. **SCHULZ, ERICH.** Kurze Notiz zur Biologie von Priapulus caudatus Lam. *Zool. Anz.* 96(1/2): 61-63. 1931.

ANNELIDA

J. PERCY MOORE, *Editor*

(See also in this issue Entries 9183, 9400, 9917, 9929, 10008, 10009, 10596, 10629, 11222, 11258, 11440, 11445, 11448, 11474, 11556)

11487. **ANNENKOVA, N.** Beiträge zur Kenntnis der Polychaeten-Fauna der USSR. [Contributions to a knowledge of the polychaete fauna of the USSR. I. Pectinariidae and Ampharetidae.] Ежегодник Зоологического Музея Академии Наук Ленинград (*Ann. Mus. Zool. Acad. Sci. Leningrad URSS.*) 30(3): 477-500. 1929.—This paper is based upon extensive material in the Zool. Mus. Acad. Sciences, Leningrad, including

the collections of various expeditions to the Arctic and Pacific Oceans and the Caspian, Black, and Azov Seas. There is an account of 26 forms, with synonymy, locality records, and taxonomic discussion. *Pectinaria* (*Amphictene*) moorei* (p. 482), east coast of Siberia, 132-159. 7 m.; *P.* (*Cistenides*) soldatovi* (p. 486), Japan and Ochotsk Seas, 26-62 m.; *Ampharete goësi* ssp. bražnikovi* (p. 492), Ochotsk Sea, 21.3-25.5 m.; *A.* crassiseta* (p. 493), Ochotsk Sea, 17.6-21.3 m.; **ASABELLIDES** (p. 494) erected for *A.* orientalis* (p. 494), Ochotsk and Japan Seas, 32-55 m.; *Amphicteis* mederi* (p. 499), Ochotsk Sea, 372.7 m.

11488. **BERE, RUBY.** Leeches from the lakes of northeastern Wisconsin. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 26: 437-440. 1931.—A list of 11 Glossiphonidae, 2 Ichthyobdellidae, 2 Hirudinidae, 4 Erpobdellidae. *Placobdella rugosa* was taken on human beings, and on the blue gill sunfish; *P. montifera* on yellow perch and rock bass; *P. pediculata* on the sucker; *Piscicola punctata* on yellow perch, small-mouthed black bass, and blue gill.

11490. **ČERNOSVITOV, L.** Note sur les Oligochètes des grottes de Sante-Reine près de Toul. *Arch. Zool. Exp. et Gén., Notes et Rev.* 71(2): 62-66. 6 fig. 1931.—A record of *Eiseniella tetraedra* and a detailed study of *Enchytraeus buchholzi**.

11491. **ČERNOSVITOV, L.** Eine neue Lumbricus-Art aus der Umgebung von Prag. *Zool. Anz.* 96(7/8): 201-204. 2 fig. 1931.—*Lumbricus* bohemicus* (p. 201), Bohemia, is compared in tabulation with 9 other spp.

11492. **HARDING, W. A.** Hirudinea. Part 21 of Results of an expedition to Korinchi Peak, 12,400 ft., Sumatra. *Jour. Fed. Malay States Mus.* 8(3): 221-225. 2 fig. 1931.—**ACRABDELLA** (p. 222) (Erpobdellidae), type *A.* sumatrensis* (p. 222).

11493. **MONRO, C. C. A.** On a collection of Polychaeta in the Raffles Museum, Singapore. *Bull. Raffles Mus.*, 5. [33]-[46]. 12 fig. 1931.—A report on 16 spp., chiefly from the vicinity of Singapore; a few are from the Malay Arch. and the China Sea. The systematic account includes references to the literature, distributional records, and descriptive and taxonomic notes. The heteronereids of *Perinereis singaporiensis**, *P. nancaurica**, and *P. cultrifera* v. perspicillata* (*P. p.* Grube) (p. 41) are described for the first time. The range of *Pseudonereis variegata* is extended from the Atlantic Ocean to the China Sea.

11494. **MOSZYŃSKI, A.** Répartition quantitative des Enchytraeidae dans différents milieux. *Ann. Mus. Zool. Polonici* 9(7): 65-125. 1930.—The depth at which Enchytraeidae are found depends upon soil properties and, to a certain degree, on the size of the worms. Their distribution is very unequal and varies even within the space of a dm. The density of population varies from 0 to 1000 and their volume from 0 to 600 mm.^{3} per dm.^{3}; the relation of total volume of animals to soil volume may be as high as 1: 1000 under optimum conditions, with a mean of 1: 5000-1: 20000. Most species have the ability of adapting themselves to widely varying conditions, a change from one medium to another being characterized by a quantitative rather than a qualitative change in fauna. In brackish media not directly influenced by the sea the population is generally the same as in ordinary environments, but in brackish soils directly influenced by sea water the population is greater and its qualitative composition quite different. *Pachydrilus* is found only in brackish media. *Enchytraeus albidus* is ubiquitous.—*A. Moszyński* (*transl. by A. O. Weese*).

11495. **TREADWELL, A. L.** New species of polychaetous annelids from California, Mexico, Porto Rico and Jamaica. *Amer. Mus. Novitates* 482. 1-17. 22 fig. 1931.—*Lumbrinereis* singularisetis* (p. 1), California; *Oenone* brevimaxillata* (p. 1), Mexico; *Hipponoe* elongata* (p. 3), Porto Rico; *Nainereis* mutilata* (p. 5) and *Goniada* teres* (p. 6), Jamaica. Types in Amer. Mus. Nat. Hist. *Nereis* largoensis (*N. brevicirrata* Treadwell, preocc.) (p. 3); *Scoloplos* cirrata (*Aricia c.* Treadwell) (p. 4).—*A. L. Treadwell.*

11496. **UDE, H.** Oligochaeta. In: **Friedrich Dahl's** Die Tierwelt Deutschlands Teil 15. 1-132. 165 fig. Gustav Fischer: Jena, 1929.—A brief account of the morphology, propagation, mode of life and nutrition, with keys to the families, genera, and species of German Oligochaeta; synonymy, diagnostic descriptions and geographical distribution of species. Supplement gives descriptions of foreign species occurring in Germany. Systematic index and bibliography are included.—*G. E. Pickford.*

ECHINODERMATA

HUBERT LYMAN CLARK, *Editor*

(See also in this issue Entries 11243, 11244, 11248, 11251, 11255, 11258, 11261, 11526)

11497. **DAVIES, L. M.** Remarks on the known Indian species of Conoclypeus, with descriptions of two new species from the Eocene of North-West India. *Rec. Geol. Surv. India* 59(3): 358-368. 2 pl. 1926.—*C.* pilgrimi* (p. 359), Alveolina Limestone level of the Indian Laki series, and *C.* warthi* (p. 363), probably from the same horizon. Types in Geol. Surv. India.

11498. **HEROUARD, EDGARD.** Holothuries de la côte Atlantique du Maroc et de Mauritanie. *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 36-70. 1 pl., 5 fig. 1929.—Notes on 21 spp., including *Cucumaria* mauritanica* (p. 38), Mauritania; *C. koellikeri**; *C. elongata**; **HEMIOEDEMA** (p. 45), (Cucumariidae), near *Thyone,* type *H.* gruveli* (p. 45); *Holothuria arguensis**; *Mesothuria verrilli**; and *Epitomapta roseola**. The bibliography contains 61 references.

11499. **JAKOVLEV, N.** Notes sur les Crinoïdes paléozoïques. Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(9): 907-912. 1 pl., 1 fig. 1930.—*Hexacrinus,* new diagnosis; *H. patereformis**, additional description; *Monobrachiocrinus* siciliensis* (p. 909) and *Agassizocrinus* (?) striatiferus* (p. 909), both Sicily, Permian, and types in Univ. of Padua; *Allagecrinus* donetzensis* (p. 910), Ukrainia.

11500. **JOHNSON, MARTIN W.** Notes on the larval development of Strongylocentrotus franciscanus. *Publ. Puget Sound Biol. Sta.* 7: 401-411. 2 pl. 1930.—Eggs were fertilized and cultured in dishes kept cool by running water in the laboratory. The larvae were kept alive and studied for 62 days. In structure the larvae were characteristic of those of the family Echinidae. The body rods were club shaped, recurrent rods were present, but no posterior transverse rods appeared. Both anterior and posterior ciliated epaulettes were developed. Metamorphosis was begun in about 28 days, and was not complete at 62 days. Diatoms were utilized as food for the larvae.—*M. W. Johnson.*

11501. **LAMBERT, JULES, y MARIO SÁNCHEZ ROIG.** Nuevas especies de equinodermos fosiles Cubanos. [New spp. of Cuban fossil echinoderms.] *Mem. Trab. Realiz. Inst. Nacion. Invest. Cien. y Mus. Hist. Nat.* [*Habana*] 1: 141-150. 2 pl. 1929(1930).—*Leiocidaris* cojimarensis* (p. 144), Miocene; *Amblypygus* douvillei* (p. 145), Lower Oligocene; *Progonolampas* sanchezi* Lambert (p. 148), Miocene; *Brissoides* stefaninii* (p. 148), Oligocene; *Echinodiscus* crustuloides (*Scutella c.* Morton) (p. 144). The genera *Amblypygus, Progonolampas,* and *Echinodiscus* are new to Cuba.

11502. **MERCIER, JEAN.** Note sur un radiole de Cidaris calloviensis Cot. parasité. *Bull. Soc. Linn. Normandie* 1: 16-17. 1928(1929).—A radial was found in the Callovian in a quarry in Orne, France. It was deformed by a gall caused by a sp. of myzostomous worm.

11503. MERCIER, JEAN. Notes échinologiques. III. *Bull. Soc. Linn. Normandie* 1: 76-77. 1928 (1929).—Data on *Polycyphus normannus, P. jauberti,* and *P. corallinus.*

11504. MERCIER, JEAN. Notes échinologiques. VII. Sur quelques Echinides rares du Bathonien de Normandie. *Bull. Soc. Linn. Normandie* 3: 46-48. 1930 (1931).—The following are recorded as new to the Bathonian of the western Paris Basin: *Plegiocidaris briconensis, Paracidaris babeaui, Pseudocidaris drogiaca, Acrosalenia pulchella, A. berthelini, Pseudopedina bakeri, Polycyphus textilis,* and *Pygaster peroni.*

11505. MERCIER, JEAN. Notes échinologiques. VIII. Rhabdocidaris bigoti (Cidaridae, Stereocidaridae, Rhabdocidarinae), espèce nouvelle du Bathonien supérieur de la Sarthe. *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 94-97. 1 fig. 1930 (1931).—*Rhabdocidaris* bigoti* (p. 94), from ferrugineous oolith of Upper Bathonian at Saint-Benoît (Sarthe), France.

11506. MORTENSEN, TH. On the postlarval development of some cidarids. *Kgl. Danske Vidensk. Selsk. Skrifter Naturvidensk. og Math. Afd. Scr. 8.* 11(5): 367-387. 21 fig. 1927.—A series of very young specimens of *Eucidaris metularia**, living in clusters of *Acanthogorgia* sp. in association with small crustaceans, worms, mollusks, and echinoderms, was obtained from Banda Is., East Indies, by a diver. The author considers that a study of the corona and peristome proves definitely "that the interradial plates of the peristome in cidarids have nothing to do with the interambulacral plates of the corona, but represent a new element, corresponding to the irregular plates occurring in varying number on the peristome of most regular echinoids." Indication of a supposed bothriocidarid ancestry is not clear. Curiously, the pore of the madreporite is not discernible in the younger stages. The supposed existence of a single, primary, large anal plate covering the whole periproct is disproved. Both primary and secondary spines are quite different in appearance from those of the adult. They do not develop into the adult form, but are either lost or resorbed as the plates bearing them are resorbed at the peristomal edge or pass into the peristome. The plates that develop later bear spines of the more advanced type. The pedicellariae are of the adult type, and suggest that transformation in their shape probably never takes place, any change being in the nature of a replacement. An embryonic stage of *Goniocidaris umbraculum** from New Zealand is described, as well as a young stage of *Aporocidaris milleri* from the "Panamic Deep Sea Expedition, 1891" of the "Albatross."

11507. RAVN, J. P. J. De irregulaere Echinider i Danmarks kridtaflejringer. [Irregular Echini of Denmark's chalk beds.] *Kgl. Danske Videnskab. Selsk. Skrifter, Naturvidensk. og Math. Afd. Ser. 8.* 11(4): 307-355. 5 pl., 5 fig. 1927.—A list, with descriptions of the 29 spp. (13 genera), including: *Pseudopyrina* subovalis* (p. 319), *P.* subcircularis* (p. 321), *Cassidulus* faberi* (p. 327), *Galeaster* carinatus* (p. 342), and *Cyclaster* brünnichi* (p. 345), all from the Danian series. Keys are given to genera and spp.

MOLLUSCA

H. A. PILSBRY, *Editor*

H. B. BAKER, *Associate Editor*

J. B. REESIDE, *Associate Editor,* Mesozoic and Paleozoic Mollusca

(See also in this issue Entries 9074, 9181, 9385, 9386, 9453, 9702, 11222, 11243, 11244, 11245, 11246, 11247, 11250, 11251, 11252, 11253, 11255, 11256, 11257, 11258, 11259, 11260, 11262, 11438, 11446, 11581, 11599)

11508. ABRARD, RENÉ. L'equivalent de la zone à Streblites tenuilobatus dans l'est du bassin de Paris. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 166-170. 1929.—The author remarks on 2 zones of the Kimeridgian (Jurassic), the lower characterized by *Streblites tenuilobatus* and the upper by *Aulacostephanus pseudomutabilis.* Characteristic species found in these beds in Haute-Marne, Meuse, and Ardennes are listed. The *Streblites* zone is associated with the Pterocerian, and the presence of *Pterocera* dates this deposit.

11509. BARTSCH, PAUL. A new shipworm from Venezuela. *Proc. U. S. Nation. Mus.* 79(8): 1-3. 1 pl. 1931.—Description of *Teredo* (*Neoteredo*) healdi* (p. 2) which becomes the 3rd species in this subgenus; type in U. S. Nat. Mus. Emended description is given of *T.* (*N.*) *miroflora* Bartsch.

11510. BARTSCH, PAUL. A new pearl oyster from the Hawaiian Islands. *Proc. U. S. Nation. Mus.* 79(12): 1-2. 2 pl. 1931.—*Pinctada* galtsoffi* (p. 1), type in U. S. Nat. Mus.

11511. BARTSCH, PAUL. Further explorations for mollusks in the West Indies. *Smithsonian Inst., Explorations and Field-Work of the Smithsonian Inst. in 1930. Publ.* 3111. 91-102. 4 pl. 1931.—Account of a cruise among the southern Bahamas and the islands off the south coast of Cuba, with general notes on mollusks and other forms of animal life met with.

11512. CORSIN, PAUL. Découverte d'une goniatite dans les schistes rouges de Fiennes (Boulonnais). *Ann. Soc. Geol. du Nord* 53: 283-286. 2 fig. 1928.—Discusses the finding of *Gephyroceras intumescens* Beyrich in the Devonian of Boulonnais, northern France.—*W. Berry.*

11513. COX, L. R. New lamellibranch genera from the Tethyan Eocene. *Proc. Malac. Soc. London* 19(4): 177-187. 2 pl. 2 fig. 1931.—Vulsellidae: **EUPHENAX** (p. 177), type *E.* jamaicensis* (*Pseudoheligmus* (?) *j.* Trechmann) (p. 178), from Jamaica. Veneridae?: **BLAGRAVEIA** (p. 183), type *B.* corrugata* (p. 184), from Sind, India.—*H. B. Baker.*

11514. DAUTZENBERG, PH., et **G. DOLLFUS.** Les planches de coquilles du R. P. Barrelier. *Jour. de Conch.* 74(4): 297-307. 6 pl. 1931.—These reproduced plates were prepared by the French naturalist, Jacques Barrelier (1606-1675) and were first published in 1714 by Jussieu. The authors discuss the species represented in the figures, many of which were cited by Linné.—*H. B. Baker.*

11515. DEHÉE, RENÉ. Observations sur les rudistes des terrains crétacés du nord de la France. *Ann. Soc. Geol. du Nord* 52: 36-50. 1 pl. 2 fig. 1927.—Five rudistids are described including *Durania cornupastoris* v. godoni* (p. 44), from the Turonian. A table shows the stratigraphic position of the rudistids in the region.—*W. Berry.*

11516. GASCHOTT, OTTO. Bemerkungen über einige Mollusken der Südalpenseen. *Arch. Molluskenk.* 63(1): 28-39. 1931.—A topical list of mollusks from lakes in south Alps.

11517. GEYER, D. Kurze Mitteilung. *Arch. Molluskenk.* 63(2): 92. 1931.—Winter-killed *Helix aspersa.*—*H. B. Baker.*

11518. GEYER, DAVID. Schnecken in Not. *Arch. Molluskenk.* 63(3): 129-131. 1931.—*Limnaea stagnalis* in ponds choked by vegetation becomes amphibious.—*H. B. Baker.*

11519. I[REDALE], T. The Waterhouse collections. Shells. *Australian Mus. Mag.* 4(4): 113-114. 1930.—An account of a fine collection of Mollusca presented by Mrs. M. J. Waterhouse to the Australian Mus.

11520. JOLEAUD, L. Transport par le vent de coquilles de Céphalopodes (Spirules) sur les côtes du Maroc. *Compt. Rend. Som. Soc. Biogéogr.* 61. 3-4. 1931.—The author reports shells of *Spirula* transported by wind for 100 meters from the shore, and cautions

geologists as to drawing conclusions from the association of such shells with those of terrestrial mollusks.

11521. **KIMAKOWICZ, RICHARD von. Alopia-Sammelreise 1930.** *Arch. Molluskenk.* 63(1): 39-42. 1 pl. 1931.—*Alopia* **mariae*** (p. 40), *A.* **hildegardae*** (p. 41), *A.* **occulta*** (p. 41), and *A.* **fortunata*** (p. 42), are described from Rumania.—*H. B. Baker.*

11522. **KINOSHITA, T., and S. KINOSHITA. On some muricid shells as enemies to the oyster.** [In Japanese.] *The Venus [Japan]* 2(4): 190-198. 19 fig. 1931.

11523. **LAIDLAW, F. F. On a new sub-family** Dyakiinae of the Zonitidae. *Proc. Malac. Soc. London* 19(4): 190-201. 6 fig. 1931.—**DYAKIINAE** is proposed for the following genera: *Dyakia,* including *D.* **godwinausteni** (p. 191), founded on Godwin-Austen's *D. striata* (Gray) var. from Siam, and *D. hugonis* (anatomical notes); *Staffordia;* **KALAMANTANIA** (p. 193), type *K.* **whiteheadi*** (*Helicarion* (?) *w.* Godwin-Austen), from Borneo (anatomical notes); and *Everettia,* including *E. subconsul** (anatomical notes).—*H. B. Baker.*

11524. **McLELLAN, ROY DAVIDSON. The geology of the San Juan Islands.** *Univ. Washington Publ. Geology* 2: 1-185. Map. 22 pl., 10 fig. 1927.—Lists the existing species of plants of these Pacific coast islands; describes the ammonoids, *Holcodiscus??* **stantoni*** (p. 115), and *Phylloceras* **spiedenensis*** (p. 116), and the pelecypods *Pleuromya* **thor*** (p. 116), *P.* **typa*** (p. 117), and *Lima* **spiedenensis*** (p. 117) from Lr. Cretaceous beds of Spieden Is.; the new gastropods, **CONDONELLA** (p. 131) resembling the fresh water *Planorbis,* with *C.* **suciensis*** (p. 131), type in U. S. Nation. Mus., and the pelecypods *Glycimeris* **suciensis*** (p. 131) and *Cucullaea* **suciensis*** (p. 132) from Up. Cretaceous beds of Sucia Isl. Types in Univ. Washington Paleontological Coll., unless otherwise stated. Tabulates, in a complete faunal list of the Nanaimo series of each island, 1 fish, 9 crustaceans, 28 cephalopods, 46 gastropods, 68 pelecypods, 3 brachiopods, and 1 anthozoan. Bibliography.—*F. Anderegg.*

11525. **MATHEWS, ASA A. L. The lower Triassic cephalopod fauna of the Fort Douglas area, Utah.** *Walker Mus. Mem.* 1(1): 1-46. 11 pl., 1 fig. Univ. of Chicago: Chicago, 1929.—Lists 19 cephalopods and describes the following species: *Pseudosageceras intermontanum**, *Cordillerites* **compressus*** (p. 3), *Ophiceras* **matheri*** (p. 4), *Xenodiscus* **hannai*** (p. 5), *X.* **douglasensis*** (p. 5), *Meekoceras* **davisi*** (p. 6), *M.* **hertleini*** (p. 6), *Anasibirites* **kingianus*** (*Sibirites k.* Waagen) (p. 8), *A.* **discoides** (*Sibirites d.* Waagen) (p. 9), *A.* **ceratitoides** (*Sibirites c.* Waagen) (p. 9), *A.* **salisburyi*** (p. 9), *A.* **angulosus** (*Sibirites a.* Waagen) (p. 10), *A.* **madisoni*** (p. 11), *A.* **johannseni*** (p. 12), *A.* **whitei*** (p. 12), *A.* **blackwelderi*** (p. 13), *A.* **fisheri*** (p. 13), *A.* **emmonsi*** (p. 14), *A.* **welleri*** (p. 14), *A.* **powelli*** (p. 15), *A.* **whitfieldi*** (p. 16), *A.* **crickmayi*** (p. 16), *A.* **veranus*** (p. 17), *A.* **ketchumi*** (p. 18), *A.* **perrini*** (p. 18), *A.* **weaveri*** (p. 19), *A.* **wardi*** (p. 19), *A.* **ibex** (*Sibirites i.* Waagen) (p. 20), *A.* **pseudoibex*** (p. 21), *A.* **mcclintocki*** (p. 22), *A.* **bifurcatus*** (p. 22), *A.* **alternatus*** (p. 23), *A.* **romeri*** (p. 23), *A.* **dieneri*** (p. 24), *A.* **clarki*** (p. 25), *A.* **bretzi*** (p. 25), *A.* **vanbuskirki*** (p. 26), *A.* **rollini*** (p. 27), *A.* **edsoni*** (p. 27), *A.* **bassleri*** (p. 28), *A.* **guyi*** (p. 28), *A.* **gibsoni*** (p. 29), *A.* **hyatti*** (p. 30), *A.* **mojsisovicsi*** (p. 30), *Goniodiscus typus**, *G.* **americanus*** (p. 32), *G.* **walcotti*** (p. 32), *G.* **utahensis*** (p. 33), *G.* **shumardi*** (p. 33), *G.* **slocomi*** (p. 34), *G.* **ornatus*** (p. 34), *G.* **butleri*** (p. 35), *G.* (?) **varians*** (p. 35), *Kashmirites subarmatus**, *K.* **wasatchensis*** (p. 37), *K.* **thornei*** (p. 38), *K.* **gilberti*** (p. 38), *K.* **resseri*** (p. 38), *Keyserlingites* **seerleyi*** (p. 39), **WASATCHITES** (p. 40), type *W.* **perrini*** (p. 40), *W.* **meeki*** (p. 41), *W.* **magnus*** (p. 41), *W.* **quadratus*** (p. 42), **GURLEYITES** (p. 42), to include *G.* **smithi*** (p. 43), *G.* **bastini*** (p. 44), *G.* **chamberlini*** (p. 44), *G.* **milleri*** (p. 45), and *G.* **boutwelli*** (p. 45).—*F. Anderegg.*

11526. **MAURY, CARLOTA JOAQUINA. O Cretaceo da Parahyba do Norte.** [In Portuguese and English.] *Minist. Agric. Industr. e Comm., Serv. Geol. e Min. Brasil, Monographia* 8. p. 4-305; Album das Estampas da Monographia, p. XXIII. Map, 35 pl. 1930.—Part I reviews the geology of the State of Parahyba do Norte. Correlation tables are presented comparing the principal fossils in the various Brazilian states with foreign zones. Palmae: *Palmocarpon* **luisi*** (p. 67), in *Sphenodiscus* zone gray limestone, Maestrichtian stage of Up. Cretaceous. Reptilia, Crocodilia: *Goniopholis hartti**, Maestrichtian. Pisces, Selachii: *Lamna serra**; *Corax pristodontus**. Ganoidei: *Palaeobalistum* **dossantosi*** (p. 89), *Sphenodiscus* zone, Maestrichtian. Teleostei: *Enchodus* **oliveirai*** (p. 97), *Sphenodiscus* zone, Maestrichtian. Crustacea: *Zanthopsis cretacea**; *Z.* **brasiliana*** (p. 111), *Sphenodiscus* zone, Maestrichtian; *Z.* **rathbunae*** (p. 113), Up. Eocene, Basal Oligocene, Venezuela. Echinodermata, Echinoidea: *Cyphosoma riograndensis* v. **parahybensis*** (p. 113), Maestrichtian; *Coelopleurus* **castroi*** (p. 115) and *Pyrina* **parahybensis*** (p. 117), *Roudairia* zone, Campanian; *Hemiaster jacksoni**. Asteroidea: *Henricia* **parahybensis*** (p. 121), *Sphenodiscus* zone, Maestrichtian. Mollusca, Cephalopoda: *Parapachydiscus* **parahybensis*** (p. 133), *P.* **dossantosi*** (p. 137), *P.* **gettyi*** (p. 139), *P.* **euzebioi*** (p. 141), *P.* **arionis*** (p. 143), *P.* **albuquerquei*** (p. 143), *P.* **brasiliensis*** (p. 145), *P.* **reedsi*** (p. 147), *P.* **eurydice*** (p. 149), *P.* **orpheus*** (p. 149), *P.* **bruneti*** (p. 151), *P.* **williamsoni*** (p. 153), *P.* **sumneri*** (p. 155), *P.* **poseidon*** (p. 155), *P.* **endymion*** (p. 157), *P.* **hermes*** (p. 159), *P.* **athena*** (p. 159), *P.* **psyche*** (p. 161), *P.* **hera*** (p. 163), *P.* **perseus*** (p. 163) and *P.* **oceanus*** (p. 165), *Pseudophyllites* **amphitrite*** (p. 167), *P.* **nereidideditus*** (p. 169), *Canadoceras* **riogramamense*** (p. 169), *C.* **andromeda*** (p. 171), *Sphenodiscus* **brasiliensis*** (p. 173), *S.* **parahybensis*** (p. 177), *Glyptoxoceras* **brasiliense*** (p. 183), and *G.* **parahybense*** (p. 185), all Maestrichtian. Pelecypoda: *Pinna* **regina-maris*** (p. 191), *Inoceramus* **dominguesi*** (p. 193), *Pecten* **gramamensis*** (p. 197), *Cypraea* **parahybensis*** (p. 203) and *Volutomorpha* **brasiliensis*** (p. 203) (Gastropoda), all of the *Sphenodiscus* zone of the Maestrichtian. Pelecypoda: **EUSEBIA** (p. 207), near *Cucullaea,* based on *E.* **stantoni*** (p. 209), *Trigonarca* **jessupae*** (p. 211), *Cucullaea* **isolda*** (p. 215), *C.* **freia*** (p. 217), *C.* **erda*** (p. 217), *Venericardia* **marisaustralis*** (p. 219), *Cardium* **riogramamense*** (p. 221), *Roudairia* **brasiliensis*** (p. 225), *Pholadomya* **parahybensis*** (p. 229), *Corbula* **lyra*** (p. 231), *Plicatula* **parahybensis*** (p. 233), and Gastropoda: *Natica* **parahybensis*** (p. 235), *Turritella* **totium-sanctorum*** (p. 239), *T.* **antigona*** (p. 241), *T.* **arethusa*** (p. 241), *T.* **brunnhilda*** (p. 243), *Campanile* **brasiliense*** (p. 245), all from the *Roudaria* zone of the Campanian. All of above, except as noted, are from the State of Parahyba do Norte. Cephalopoda: *Eutrephoceras* **pernambucense** (*Nautilus sowerbyanus* White not d'Orbigny) (p. 249), Lr. Eocene, State of Pernambuco; *Actaeonella* **lucianoi*** (p. 257), *A.* **pompei*** (p. 259), *A.* **tamandarensis*** (p. 261), *Lima* (*Plagiostoma*) **fazendaestivica*** (p. 265), all Up. Turonian to Emscherian, State of Pernambuco; *Elobiceras bahiaense**, Up. Albion of Lr. Cretaceous, Bahia. The cephalopods of the State of Sergipe are discussed; *Puzosia* **garajauana** (*Ammonites hopkinsi* (?) White not Forbes) (p. 289). The relations of *Lopatina, Pseudocucullaea* and *Eusebia* are discussed.

11527. **MISCH, PETER. Pseudorthoceras knoxense Girty im Karnischen Oberkarbon.** *Mitteil. Naturwiss. Ver. Steiermark* 67: 121-122. 1 fig. 1930.—First time reported from Europe.

11528. **MOORE, E. W. J. Species of the genus Dimorphoceras in the Bowland shales.** *Geol. Mag.* 67(790): 162-168. 2 fig. 1930.—The genotype and several other species and varieties of *Dimorphoceras* are described: *D. gilbertsoni** (Phillips) and an unnamed variety*; *D. discrepans** Brown; *D. looneyi** (Phillips); *D.* spp. *a** and *b**; *D.* aff. *denticulatum** (Schmidt); *Neodimorphoceras* **hawkinsi*** (p. 168). Types in Brit. Mus.—*M. A. Fenton.*

11529. **NICHOLLS, A. G. On the breeding and growth-**

rate of the black-lip pearl oyster (Pinctada margaritifera). *Rept. Great Barrier Reef Committee* 3: 26-31. 2 pl. 1931.—On Low Isles, Queensland, spawning occurs in November and May, at 25-28.4° C. Young specimens nearly double their width and length in a year. Notes on habits and habitat are given.

11530. ÖKLAND, FRIDTHJOF. Bemerkungen zu S. Jaeckel's Mitteilung "Zur Molluskenfauna Norwegens." *Arch. Molluskenk.* 63(2): 70-72. 1931.—Several criticisms are made.—*H. B. Baker.*

11531. OOSTINGH, C. H. Mollusca from Sibolga (Tapanoeli). *Misc. Zool. Sumatrana* 53. p. 1-4. 1931.—A list of 54 spp. of marine and submarine mollusks.

11532. ORTON, J. H. Transplantation of Portuguese oysters into South African waters. *Nature* [*London*] 127(3204): 485-486. 1931.—Transplantation of *Ostrea angulata* to So. Africa would probably be highly beneficial. The south-east coast of Natal has conditions of climate, etc., such that transplantation would probably be successful.

11533. PEILE, A. J. Sinistrality in Bacillum. *Proc. Malac. Soc. London* 19(4): 187. 1931.—*B. cassiacum.*—*H. B. Baker.*

11534. PETRBOK, JAR. Zebrinus detritus Müll. in Böhmen. *Arch. Molluskenk.* 63(2): 86-92. 1931.—Northern specimens are usually dwarfed.—*H. B. Baker.*

11535. PETRBOK, JÁR. Bedeutung der Mollusken für die prähistorische Archäologie. *Arch. Molluskenk.* 63(3): 131-132. 1931. Land snails in graves of ancient Thuringians (Czechoslovakia) indicate the use of plants for burial decorations.—*H. B. Baker.*

11536. PFEIFFER, KARL L. Die Murellen Westsiziliens. *Arch. Molluskenk.* 63(3): 93-116. 3 pl. 1931.—The relationships of the species are discussed, with descriptive notes, tables of dimensions and figures of most of them. [*Helix*] *globularis* ssp. transiens* (p. 103) and [*H.*] *platychela* ssp. excelsa* (p. 105).—*H. B. Baker.*

11537. SCHILDER, F. A. Zwei neue Trivia (Cypraeacea: Eratoidae). *Arch. Molluskenk.* 63(1): 42-44. 1 pl. 1931.—*Trivia* (*Niveria*) hybrida* (p. 42) and *T.* (*Pusula*) *sanguinea* ssp. circumdata* (p. 43) are described without locality.—*H. B. Baker.*

11538. SCHREITMÜLLER, WILHELM. Die Donauschwimmschnecke und die Fluss-schwimmschnecke. *Das Aquarium* 1931(Jan.): 13-15. 4 fig. 1931.—Popular description of *Neritina danubialis**, *N. fluviatilis**, and *N. transversalis**.

11539. STRECKER, JOHN K. The distribution of the Naiades or pearly fresh-water mussels of Texas. *Baylor Univ. Mus., Spec. Bull.* 2. 1-71. 1931.—The Texas fauna of Naiades includes 59 spp. and varieties, based on collections in 81 counties. Records and synonymy are given for each species, and then lists are presented for each river and drainage system.

11540. TAKI, ISAO, and IWAO TAKI. Studies on Japanese chitons (5). [In English, with Japanese summary.] *The Venus* [*Japan*] 2(4): 178-185. 8 fig. 1931.—*Ischnochiton* (*Stenoplax*) venustus* (p. 178), Japan, type in authors' coll. A list of the 9 known spp. of the section *Stenoplax*, with synonymies, is appended.

11541. TETENS, ARNOLD. Sammelgeräte für den Konchyliologen. *Arch. Molluskenk.* 63(3): 123-128. 1 pl. 1931.—A dredge and hand-rakes, with and without bags, are described for the collection of bivalves.—*H. B. Baker.*

11542. TOMLIN, J. R. le B. Reports on the marine Mollusca in the collections of the South African Museum. V. The Scaphopoda. *Ann. South African Mus.* 29(2): 337-340. 1 fig. 1931.—*Dentalium* subterlineatum (p. 337), Cape Point; *D. strigatum* Gould (=*D. belcheri* Sowerby); *D.* (*Fissidentalium*) salpinx (p. 338), near Cape Point; *D.* (*F.*) platypleurum (p. 339), off Natal coast; *D.* (*Compressidens*) capense (p. 340), off Cape Point. Types in S. African Mus.

11543. VERCO, JOSEPH C., and BERNARD C. COTTON. The spermatophore of Sepioteuthis australis (Quoy & Gaimard). *Proc. Malac. Soc. London* 19(4): 168-170. 2 pl., 1 fig. 1931.—The mechanics of its rupture are discussed.—*H. B. Baker.*

11544. WENZ, W. Süsswassermollusken aus den Mediterranablagerungen des Mecsekgebirges (Südwestungarn). *Arch. Molluskenk.* 63(3): 116-122. 1 pl. 1931.—*Congeria* böckhi* (p. 117) and *Bulimus* vadászi* (p. 118), with sspp. vadászi* (p. 118) and tylopomoides* (p. 120) from the Helvetian.—*H. B. Baker.*

11545. WEYL, RICHARD. Über einen grossen Findling von Holsteiner Gestein, gefunden am Kaiser-Wilhelm-Kanal bei Kiel. *Zeitschr. Geschiebeforsch.* 7(1): 7-15. 2 fig. 1931.—This block of sandstone, excavated from the Kaiser-Wilhelm Canal at Kiel, contains a rich molluscan fauna (38 spp. are listed), which indicates the Up. Miocene age of the country rock, hitherto known only from small fragments.

11546. WINCKWORTH, R. Mollusca from Pulicat Lake. *Proc. Malac. Soc. London* 19(4): 188-189. 1 fig. 1931.—The fauna of this brackish water lagoon near Madras, India, is discussed.—*H. B. Baker.*

11547. ZIMMERMANN, KLAUS. Zur Kenntnis von Agriolimax reticulatus (Müll.) und A. agrestis (L.). *Arch. Molluskenk.* 63(1): 51-52. 1931.—Notes on ecology and distribution are given.—*H. B. Baker.*

11548. ZIMMERMANN, STEPHAN. Orcula fuchsi n. sp. *Arch. Molluskenk.* 63(1): 44-46. ½ pl. 1931.—*O.* fuchsi*, Austria.—*H. B. Baker.*

11549. ANONYMOUS. Literatures of Japanese conchology (1930-1931). *The Venus* [*Japan*] 2(4): 201-208. 1931.—One hundred and sixty-three titles, largely in Japanese.

MYRIOPODA AND ONYCHOPHORA

R. V. CHAMBERLIN, *Editor*

(See also in this issue Entry 10925)

11550. BROLEMANN, H. W. Myriapodes recueillis par M. le Dr. H. Gauthier en Algérie. *Bull. Soc. Hist. Nat. Afrique du Nord* 22(4): 121-134. 17 fig. 1931.—A record of 11 Diplopoda and 16 Chilopoda. Diplopoda: *Archiulus* Berlese (=*Schizophyllum* Verh.); *A.* aumalensis (*Schizophyllum fusco-unilineatum aumalense* Brol.) (p. 121); *A.* albosignatus (p. 123); *A.* gauthieri* (p. 123); *Cylindroiulus* (*Phalloiulus*) distinctus* (*Iulus d.* Lucas) (p. 125); *C. d.* ssp. gauthieri* (p. 127).

11551. LAWRENCE, R. F. A new peripatopsid from the Table Mountain caves. *Ann. S. African Mus.* 30(1): 101-107. 3 fig. 1931.—*Peripatopsis*, key to 8 spp.; *P.* alba* (p. 103), a blind cavernicolous sp., Cape Province.

11552. LOHMANDER, HANS. Caspiopetalum, eine neue Diplopoden-Gattung aus dem russischen Zentralasien. *Arkiv. Zool.* [*Stockholm*] 22B(2, No. 1): 1-6. 1 pl. 1931.—CASPIOPETALIDAE n. fam. (p. 5) [suborder Lysiopetaloidea], erected for CASPIOPETALUM (p. 1), type *C.* schestoperovi* (p. 5), S. W. Turkestan; *C.* serratum* and *C.* nodifrons* (p. 5), Bokhara.

11553. RÉMY, PAUL. Un nouveau type de Pauropode: Decapauropus cuenoti, nov. gen., nov. spec. *Arch. Zool. Exp. et Gén., Notes et Rev.* 71(2): 67-83. 1931.—DECAPAUROPUS (p. 67), near *Allopauropus*, type *D.* cuenoti ♀* (p. 67), France. The adult* has 10 pairs of ambulatory legs, and certain intermediate stages* have 9 pairs, as in *Allopauropus sequanus**. The Pauropodidae are redefined.

CRUSTACEA

MARY J. RATHBUN, *Editor*
WALDO L. SCHMITT, *Associate Editor*
CHANCEY JUDAY, C. DWIGHT MARSH, H. A. PILSBRY, CLARENCE R. SHOEMAKER, CHARLES B. WILSON, *Assistant Editors*

(See also in this issue Entries 9181, 10072, 10633, 11243, 11246, 11247, 11251, 11255, 11259, 11439, 11444, 11464, 11524, 11526)

11554. ABRAHÁM, AMBROSIUS, und ALEXANDER WOLSKY. Über die Nerven und Nervenendigungen der Antennen einiger Landisopoden. *Zool. Anz.* 84(11/12): 316-323. 4 fig. 1929.

11555. ANDREWS, E. A. Spermatophores of an Oregon crayfish. *Amer. Naturalist* 65(698): 277-280. 1931.—A detailed account of the diffuse distribution of the spermatophores of the crayfish *Potamobius trowbridgei*, in which a greater number of sperms are transferred than in the genus *Cambarus*, which uses a special receptacle. It is inferred that natural selection might have aided in formation of the more specialized and parsimonious method of sperm transfer of *Cambarus* from the more primitive and wasteful methods such as found in *Potamobius*.—*E. A. Andrews.*

11557. BENNETT, E. W. Notes on New Zealand Brachyura and related crustaceans. *Rec. Canterbury Mus.* 3(4): 255-261. 4 fig. 1930.—New Zealand *Petrolisthes elongatus* inhabiting smooth, water-worn stones of intertidal zone resembles such stones in color and texture; *Paralomis hirta* of Australia is equally well concealed among rough, coarse-grained granites, each sp. reflecting a prominent difference in the coastal rocks of the 2 countries; both spp. are abundant in intertidal zones. The conspicuous reddish *Petrochele spinosus* of the same zone is rare. *Petrolisthes novae-hollandae* is admitted to the fauna of N. Zealand. *Porcellana rupicola* is placed in a hypothetical list. The type of *Stenorhynchus fissifrons* Haswell is located in the Australian Mus., Sydney. *Portunus* borradailei* (p. 246), "New Zealand," type (small ♂) in Macleay coll., Sydney Univ. The author postulates that *Marestia mawsoni* Rathbun = megalopa of *Plagusia chabrus* L. A paper by W. Maxwell Young (1929) on crabs of Chatham Isls., is reviewed. Bennett announces his work monographing the Hymenosomidae and solicits loan of specimens. He discusses an "alleged southern element" in N. Zealand fauna, and concludes that "evidence from Brachyura is negative, except that *Halicarcinus planatus* demonstrates the possibility of dispersal of marine organisms throughout the Antarctic under present geographical and climatic conditions." A bibliography of 10 titles is given.—*A. H. Norton.*

11558. BERE, RUBY. Copepods parasitic on fish of the Trout Lake region, with descriptions of two new species. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 26: 427-436. 2 pl. 1931.—Data are presented on the number of Wisconsin fishes examined, the number parasitized, and the chemical conditions of the lakes from which the fish were taken. *Argulus* biramosus ♀* (p. 428), on body of yellow perch; *Ergasilus* confusus ♀* (p. 431), ♀* on yellow perch, wall-eyed pike, rock bass, small-mouthed black bass, lake trout, cisco, and white fish. Types in U. S. Nat. Mus. *Achtheres coregoni* was taken on the cisco and *A. micropteri* on black bass.

11559. BERG, KAJ. A faunistic and biological study of Danish Cladocera. *Vidensk. Medd. Dansk Naturhist. Foren.* 88: 31-112. 3 pl. (1929) 1930.—Sixty-three species (none new to science, 8 new to Denmark) are listed, together with ecological notes, distribution, types of habitats, and reproduction. A brief review of Danish literature on Cladocera is given. The species new to Denmark are: *Daphnia atkinsoni* Baird, *Iliocryptus agilis* Kurz, *Streblocerus serricaudatus* (S. Fischer), *Alonopsis ambigua* Lilljeborg, *Kurzia latissima* (Kurz), *Alonella excisa* (Fischer), *Chydorus gibbus* Lilljeborg, *Anchistropus emarginatus* G. O. Sars.—*F. A. Stromsten.*

11560. BIGELOW, ROBERT PAYNE. Stomatopoda of the southern and eastern Pacific Ocean and the Hawaiian Islands. *Bull. Mus. Comp. Zool. Harvard Coll.* 72(4): 105-191. 2 pl., 9 fig. 1931.—Descriptive and distributional studies in 85 spp. of *Gonodactylus*, 2 of *Odontodactylus*, 3 of *Pseudosquilla*, 1 of *Lysiosquilla*, and 3 of *Squilla* J. C. Fabricius (*Chloridella* Miers). The latter name is treated in its long established sense, and not in the sense of Gronov (1760) or Müller (1776), and a ruling has been requested to suspend the rules and establish this usage. *Squilla* mauiana* (p. 177), Hawaii, type in U. S. Nat. Mus. Several spp. are illustrated. The report is based on collections made by D. S. Jordan in Samoa for the U. S. Fish Commission in 1902; by the steamer "Albatross" in Hawaiian Isls. and vicinity in the same year; and by the Agassiz Expedition of the "Albatross," 1904-1905 (1 specimen only). One specimen of *Squilla polita* from Monterey Bay, not a part of the preceding expeditions, establishes a northern record for the species.

11561. BOONE, [PEARL] LEE. Notes on the West Indian crabs of the genus Actaea. *Bull. Amer. Mus. Nat. Hist.* 61(3): 117-127. 8 fig. 1930.—The author considers *Actaea bifrons* a synonym of *A. setigera* and also does not admit the validity of *A. rufopunctata nodosa* as a subspecies. *A. acantha** H. Milne Edwards, *A. setigera** H. Milne Edwards, *A. palmeri** Rathbun, and *A. rufopunctata nodosa** Stimpson are described and their known distribution given.—*M. W. Smith.*

11562. BOONE, [PEARL] LEE. Scientific results of the cruises of the yachts "Eagle" and "Ara," 1921-1928, William K. Vanderbilt, commanding. Crustacea: Anomura, Macrura, Schizopoda, Isopoda, Amphipoda, Mysidacea, Cirripedia, and Copepoda. *Bull. Vanderbilt Marine Mus.* 3: 1-221. 83 pl., 5 fig. 1930.—Ninety-two species from 4 different areas, W. Indies, Labrador-New England, tropical American Pacific, and Mediterranean. Each species is described at length and most are figured. *Porcellana* rosamondae* (p. 79), Panama; *Alpheus* vanderbilti* (p. 163), Florida.—*M. J. Rathbun.*

11563. BRIAN, ALESSANDRO. Copepodi dei laghi albanesi di Ochrida e di Malik. [Copepods of the Albanian lakes Ochrida and Malik.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 21: 47-50. 1930.—A list of 6 spp. taken in the plankton.

11564. BRIAN, ALEXANDRE. Description d'une nouvelle espèce de Caligus (Copépode parasite) de la Méditerranée. *Bull. Soc. Hist. Nat. Afrique du Nord* 22(4): 119-120. 1 pl. 1931.—*Caligus* argilasi* (p. 119), on *Mugil auratus*, Algeria. Illustrations are given of the furcula sternalis of other spp. of *Caligus*.

11565. CAROLI, E. La fase "microniscus" di "Ione thoracica" (Montagu), ottenuta per allevamento sui Copepodi. [Microniscus stage of I. thoracica obtained by raising on copepods.] *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 8(7/8): 321-327. 1928.—For the first time the development of an epicaridian larva is followed from emergence from the marsupium until it is in the act of attachment to the final host. As soon as they emerge, the larvae of *I. thoracica* attach themselves to calanoid copepods, usually the ♀♀ of *Acartia* (*clausi* or *verrucosa*). After about 3 days they begin to enter the microniscus stage. The author calls the intermediate stage "praemicroniscus." There are 4 microniscus stages, the last of which shows resemblances to the succeeding cryptoniscium stage. This last stage is free swimming and goes in quest of the final host. The

micronisicus is held to be nonparasitic and to use the calanoids only as a means of dispersal.—*G. Colosi (transl. by H. L. and C. H. Blake)*.

11566. **DANTAN, J.-L.** Recherches sur le Nereicola ovata Keferstein. *Ann. Inst. Océanograph.* 7(4): 175-197. 20 fig. 1929.—*N. ovata* was found parasitic on *Platynereis dumerilii* and *Nereis rava* from the Bay of Algiers. A complete redescription, with figures, is given of the external morphology and appendages. The internal anatomy is also described. The effects of the parasite on the host are noted. In *P. dumerilii* the parapodia of parasitized individuals of both sexes are reduced and, in the ♂, the lobes of the pygidial rosette are reduced or disappear. In *N. rava*, the parasitized ♂ is little affected save by a slight reduction in the parapodia, the pygidial rosette being quite unaffected. In the ♀, on the other hand, the parapodia are profoundly affected and reduced. The author discusses these effects and their causes.—*W. M. Tattersall.*

11567. **GAUTHIER, HENRI.** Mission saharienne Augiéras-Draper, 1927-1928. Cladocères, Ostracodes, Phyllopodes anostracés et conchostracés. *Bull. Mus. Nat. Hist. Nat. [Paris]* 2(1): 92-116. 12 fig. 1930.—Species collected are enumerated, and a systematic study made of the following spp.: *Camptocercus rectirostris** Schödler; *Eurycercus lamellatus** (Daday); *Acocypris capillata** Vávra; *Cyprinotus incongruens** (Ramdohr). *Macrothrix capensis* v. **monodi** (p. 95); *Stenocypris* **monodi*** (p. 101); *Leptestheria cortieri* Daday unnamed var. figured but not described.—*H. Gauthier (transl.)*.

11568. **GAUTHIER, HENRI.** Phyllopodes et Cladocères de la collection de l'Institut scientifique chérifien. *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 72-76. 1 pl., 1 fig. 1929.—Enumeration of the spp. examined. Description of an aberrant form of *Daphnia magna** Straus.—*H. Gauthier (transl.)*.

11569. **HEROLD, WERNER.** Beiträge zur Kenntnis der Trichonisciden. I. Die Untergattung Spiloniscus Racovitza in Deutschland und im Ostbaltikum. *Zool. Jahrb., Abt. Syst. Ökol. u. Geogr. Tiere* 57(3/4): 215-252. 10 fig. 1929.—The author summarizes his findings as follows: (1) The exopodites of the 1st pleopods of the ♂ of the German and east Baltic representatives of the subg. *Spiloniscus* furnish the only reliable specific characters; (2) the form of the endopodite of the 1st pleopod of the ♂ is more constant, showing characters of specific value, though the relationships of certain species of *Spiloniscus* may be traced through it, as in the *muscivagus* group in the southeast; (3) of the 2 related species, *Trichoniscus rhenanus* Graeve and *T. elisabethae** Herold, the first is the western form, the second the eastern; (4) *T. pygmaeus* v. *horticola* Graeve represents a species distinct from *pygmaeus* and must be designated as *T.* **horticolus*** (Graeve) (p. 234); as a result *T. pygmaeus** has not yet been recorded from Germany; (5) *T. batavus** likewise is not to be recorded as German, the determination of a mid-German *Trichoniscus* ♂ as this species not being substantiated; (6) *T. verhoeffi** Dahl is not only insufficiently described but is unrecognizable as well; (7) heretofore all north German and east Baltic and also, apparently, the Swedish ♂♂ of *Spiloniscus* have been found at ecologically optimal localities, thus making it appear that the development of purely parthenogenetic races ("caelek-races") are determined by conditions unfavorable for normal reproduction; (8) the number of offspring of like sized *Spiloniscus* ♀♀ seasonally augments toward spring, and especially in a northern and an eastern direction; (9) the German ♀♀ become sexually mature earlier than those from east Baltic; (10) in July the total number of offspring of equal numbers of ♀♀ of all sizes increases in a northern and an eastern direction; (11) the reproductive period in north Germany lasts from about the beginning of April to the middle of October, in the east Baltic it appears to be about 1½ months shorter. The author particularly deals with 10 spp. of *Trichoniscus*, in most cases figuring the particular characters discussed in detail.—*W. L. Schmitt.*

11570. **KLIE, WALTER.** Zwei neue Arten der Ostracoden-Gattung Candona aus unterirdischen Gewässern im südöstlichen Europa. *Zool. Anz.* 96(7/8): 161-168. 12 fig. 1931.—*Candona* **puteana*** (p. 161), Jugoslavia; *C.* **trigonella*** ♀ (p. 165), Austria.

11571. **MONOD, TH.** Über einige indo-pazifische Decapoden der Meeresfauna Syriens. *Zool. Anz.* 92(5/6): 135-141. Map, 7 fig. 1930.—The following Indo-Pacific Decapoda from the coast of Syria and Palestine are added to the Mediterranean fauna: *Penaeus semisulcatus**, *P. japonicus**, *Penacopsis monoceros**, *P. stebbingi**, *Neptunus pelagicus**, *Charybdis (Goniosoma) merguiensis**, and *Myra fugax**.—*M. J. Rathbun.*

11572. **MONTE, OSCAR.** Os tatusinhos. [Armadillidium and other Isopoda.] *Bol. Agric. Zootech. e Vet. [Minas Geraes]* 4(1/3): 63-64. 1 fig. 1931.—Description and control.

11573. **PARENZAN, PIETRO.** Nota sui Cladoceri dei grandi laghi dell'Albania orientale. [The Cladocera of the great lakes of eastern Albania.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 21: 75-80. 1930.—A list of 14 spp., with notes.

11574. **PARENZAN, PIETRO.** Cladocerofauna autunnale ed invernale di alcuni laghi dell'Alto Adige. [Fall and winter Cladocera of some lakes of the high Adige.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 21: 81-107. 1930.—An ecological study of 18 spp. in 6 families, arranged according to lakes, altitudes, and seasonal occurrence.

11575. **PEARSE, A. S.** Parasites of Fukien crabs. *Proc. Nat. Hist. Soc. Fukien Christian Univ.* 3: 10-16. 2 pl. 1930.—Foods and parasites of crabs at the mouth of the Min River are described. Land crabs have more parasites than aquatic spp. Four new parasites are described: A trematode, **PARAGONO** (p. 11) (Troglotrematidae), type *P.* **kelloggi*** (p. 11); two isopods, *Leidya* **ucae***, *L.* **sesarmae*** (p. 13), and a mite, *Tyroglyphus* **eriocheir*** (p. 14).—*A. S. Pearse.*

11576. **REED, F. R. COWPER.** A review of the Asaphidae. Part I. *Ann. and Mag. Nat. Hist.* 5(27): 288-320. 1930.—Of the 66 genera of trilobites ascribed by various authors to the Asaphidae, 28 may still be allowed without serious doubt, 3 with some question; 18 genera may be ascribed to the subfam. Ogygiocarinae, viz., *Asaphellus, Barrandia, Bellefontia, Hemigyraspis, Homalopteon, Homoglossa, Megalaspis, Nileoides, Niobe* (partim), *Ogyginus, Ogygiocaris, Ogygopsis*, ? *Platypeltis, Ptychocheilus, Rhinaspis, Symphysurina*, ? *Vogdesia, Xenostegium*. 14 genera may be ascribed to the subfamily Asaphinae, viz., *Asaphus, Basilicus, Brachyaspis, Ectenaspis*, ? *Gerasaphes, Homotelus, Isoteloides, Isotelus, Megalaspides, Niobe* (partim), *Ogygites, Onchometopus, Pseudasaphus, Ptychopyge*. The genera *Asaphelina, Symphysurus, Illaenurus, Nileus, Hyboaspis*, and others often referred to the Asaphidae should be removed.—*J. H. Bradley, Jr.*

11577. **SHEN, CHIA-JUI.** The crabs of Hong Kong. Part II. *Hong Kong Naturalist* 2(3): 185-197. 3 pl., 12 fig. 1931.—Descriptive studies of *Philyra tuberculosa**, *Leucosia rhomboidalis**, *Lyreidus integra**, *Phalangipus longipes**, *Halimus dicanthus**, and *Sesarma sinensis**.

11578. **SHOEMAKER, CLARENCE R.** The stegocephalid and ampeliscid amphipod crustaceans of Newfoundland, Nova Scotia, and New Brunswick in the United States National Museum. *Proc. U. S. Nation. Mus.* 79(22): 1-18. 6 fig. 1931.—A report of 4 spp. of Stegocephalidae and 12 of Ampeliscidae. Stegocephalidae: *Phippsiella similis*, first record for Western Hemisphere; *P. minima** and *Andaniella pectinata**, descriptive notes, first records for eastern coast of N. Amer. Ampeliscidae: *Ampelisca aequicornis, A. latipes, A. amblyops, A. gibba*, and *Haploops similis*, first records from eastern coast of N. Amer.; ? *Ampelisca typica*, new to Western Hemisphere; *Haploops* **spinosa*** (p. 13), type in U. S. Nat. Mus.

11579. **SMEDLEY, N.** A fresh-water crab, Paratelphusa sexpunctatum (Lanch.) in the Malay Peninsula. *Bull. Raffles Mus.* 5. [68]-[70]. 1 pl., 2 fig. 1931.—First

description of ♂*. Describes the damage done by these crabs in the rice fields and the methods used to counteract it.

11580. **STEPHENSEN, K., et J.-M. PIRLOT.** Les amphipodes hypérides du genre Mimonectes Bovallius (inclus: Sphaeromimonectes Woltereck et Parascina Stebbing) et de quelques genres voisins (Archaeoscina Stebbing, Micromimonectes Woltereck, Microphasma Woltereck et Proscina n. g.). *Arch. Zool. Exp. et Gén.* 71(4): 501-553. 18 fig. 1931.—Mimonectidae: *Mimonectes* Bovallius (=*Parascina* Stebbing, *Sphaeromimonectes* Woltereck); *Mimonectes loveni* Bov. (=*Sphaeromimonectes cultricornis* Wolt., and probably *Parascina cheirocuri** Pirlot), ♀* with incubatrix plates described in detail; *M. sphaericus* ♀* with marsupial plates described; *M. fowleri* ♀* with ovitectrices described; *M.* **valdiviae** (*Sphaeromimonectes v.** Wolt.) (p. 530); *M.* **gaussi** (*S. g.* Wolt.) (p. 531); *M.* **scinoides** (*S. sc.* Wolt.) (p. 531); *M.* **diomedeae** (*S. d.* Wolt.) (p. 531); *M.* **spandlii*** (p. 532), Atlantic Ocean near Portugal, and Morocco. Archaeoscinidae: *Micromimonectes* **steenstrupii** (*Mimonectes s.* Bovallius) (p. 534), ♀* with ovitectrices described; *Archaeoscina bonnieri* Stebbing is probably the ♂ of *Microm. steenstrupii.* Family uncertain: *Microphasma agassizii**, descriptive notes. Scinidae: **PROSCINA** (p. 543), near *Scina,* based on *Proscina* **stephenseni** ♀* (*Parascina s.* Pirlot) (p. 544) and *P.* **magna** ♂* (p. 545), Atlantic Ocean, the type of the latter in Mus. Océanographique de Monaco. The Hyperiidea Physosomata are divided into 2 new subtribes, the **SCINIFORMATA** (p. 551) for Archaeoscinidae (Pygmaeidae), Mimonectidae, and Scinidae; and the **LANCEOLIFORMATA** (p. 551) for Lanceolidae and Chuneolidae, and provisionally the genera *Mimonecteola* and *Microphasma. Mimonectes* **setosus** (*Parascina setosa* Barnard) (p. 552).

11581. **VERWEY, J. Einiges über die Biologie Ost-Indischer Mangrovekrabben.** *Treubia* 12(2): 167-261. Map. 9 pl., 20 fig. 1930.—A discussion of the ecology and biology of certain mangrove crabs, *Sesarma, Metaplax, Ilyoplax, Uca, Scylla,* and others, together with some observations on mangrove gasteropods. Five ecologic zones are distinguished. These are characterized by particular crabs and gasteropods, and by the degree of moisture of the substratum upon which the animals depend for food. These zones are recognizable at Batavia, and elsewhere among mangroves. The chief biological peculiarities of mangrove animals are resistance to changes of salinity, mud feeding, and the fact that many are amphibious. These alternative "breathers" are of 2 kinds, those which are chiefly "lung breathers" and those which are primarily dependent on gills. With the exception of *Thalassina anomala* and *Macrophthalmus definitus,* the various mangrove animals stick closely to their particular zones and all construct burrows which descend to ground water in order to supply the moisture required. *Thalassina* is independent of zonal restrictions as it finds its nourishment beneath the surface. Ecologic, biologic, and physiologic observations upon *Uca signata* are given in considerable detail and compared with those made in other species. The remarkable "waving" of the claws of *Uca* and other crabs is not amatory, but serves as a warning gesture to keep intruders from each particular crab's feeding range. These movements appear to occur in species which live under much crowded conditions, and which are individually bound to a particular burrow, and find their food in its immediate vicinity. The extent of the home area, feeding range, and fighting are discussed. The food and feeding habits are considered and the mouth parts are figured and compared with those of *Cancer* and *Carcinus.* The significance of their divergence from those of *Uca* is not clear. The gastric secretions of *Uca* in an alkaline medium digest fibrin, digest connective tissue (catgut) slowly, and contain a lipase, amylase, and invertase. According to their mode of breathing, mangrove crabs are of 2 kinds: Those which, when removed from the water, "pump" the water out of the branchial chamber, and then draw it in again after it has spread out over the surface of the body; and those which "pump" air through the water. Of the species studied, *Sesarma, Ilyoplax, Metaplax,* and *Macrophthalmus* belong to the first group, and *Grapsus, Uca, Ocypode,* and *Potamon* to the second. That *Ocypode* lives but a short time under water is incorrect. *Uca* quickly dries out if there is no water available for moistening. Moisture, a branchial chamber that in part functions as lung, and firm gill plates that do not readily stick to one another enable the Ocypodes to endure the hot tropical sun. At flood tide *Sesarma taeniolata* climbs trees, while *S. bataviana* seeks its burrow. Old *S. taeniolata* lives longer in the air than old *bataviana,* though young *taeniolata,* of the size of old *bataviana* dries out just as quickly as the latter. Only because of their size do old *taeniolata* survive so long in the air. There are no differences in the structure of the branchial chamber or the gills in these 2 species. Non-pumping species dry out sooner than the pumping species. Apparently the mere passing of air through the water filled branchial chamber results in a greater loss of water than when it is pumped out and drawn in again. That many tropical animals live very close to the maximal temp. which they can endure also holds good for *Uca. Uca* is an unquestioned diurnal animal; the degree to which light and temp. are of effect here was not investigated. Seeing with *Uca* is chiefly perception of movement, to a lesser degree the perception of form. *Uca* seems to reproduce throughout the year. *Sesarma taeniolata,* and less markedly *S. bataviana,* show a periodicity in their reproductive cycle. The length of time in which the eggs complete their development may be of quite variable duration. The larvae of *Paracleistostoma* differ morphologically from those of *Sesarma* and *Uca,* for one thing, lacking the dorsal spine. The author also makes certain observations upon the growth and coloration of *Uca.*—*W. L. Schmitt.*

ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

(See also in this issue Entries (History) 9070, 9109, 9117; (Pollinators) 9150, 11026; (Ecology) 9175, 9176, 9177, 9178, 9182, 9184, 9187, 9189, 9190, 9192, 9196, 9199, 9200, 10005; (Plant disease vectors) 9222, 9223, 9239, 9243, 9244, 9245; (Plant injury) 11202; (Physiology) 9408, 9941, 9960; (Genetics) 9413; (Nutrition) 9633, 9687, 9690, 9770; (Growth) 9859; (Animal disease vectors) 10451, 10635, 10743, 10755, 10771, 10781, 10790; (Parasites) 10595, 10602, 10604, 10610; (Immunity) 10619; (Paleontology) 11247; (Embryology) 11453)

11582. COCKAYNE, E. A., et al. Abstract of proceedings. *Proc. South London Ent. and Nat. Hist. Soc.* 1931-2 pp. 30-84. [1931].—In the meeting of April 24, 1930, E. A. Cockayne (p. 37-38) stated that [Lepidoptera] *Taeniostola, Chortodes, Petilampa,* and *Miana* have similar larvae, and should be placed near each other and not separated, as now, by genera with different larval types. In *Apamea, A. secalis* and *A. ophiogramma* seem to belong to the above group, while the larvae of the other species are very different. H. J. TURNER (p. 38, 39) commented on the genera *Miana* and *Oligia.* In the meeting of Aug. 14, 1930, specimens of Lepidoptera communicated by SNEYD TAYLOR (p. 54) from the Transvaal were exhibited, including *Nudaurelia zambesiana* ssp. *ringleri* [Saturnidae] bred on plum, and *Calamistis fusca* bred from stems of maize. Miss D. G. STEP (p. 54) sent in a specimen of *Bombylius minor* [Diptera] bred from the cell of a *Colletes daviesana* [Apoidea] in England. In the meeting of Sept. 11, 1930, T. H. L. GROSVENOR exhibited results of crossing *Zygaena filipendulae* ♂ with *Z. f. stoechadis* ♀. Meeting of Oct. 9, 1930: E. A. Cockayne contributed "Notes on the larva of *Macrogaster* (*Phragmataecia*) *arundinis,* Hb." Meeting of Oct. 23, 1930: D. L. PALMER exhibited a melanic ♂* form of *Argynnis cydippe* (*adippe*) [sic].

11583. CORSET, JEAN. Les coaptations chez les insectes. *Bull. Biol. France et Belgique, Suppl. 13.* 1-337. 2 pl., 182 fig. 1931.—The volume deals descriptively with the various types of coaptation, or reciprocal adjustment of parts to each other, in the orders of insects. Many of the illustrations are of cross sections showing the nature of the adaptations, which occur on all parts of the body. The work is divided into four parts, anatomical, physiological, biological, and philosophical. The anatomical studies are based upon representatives of the various families in each order, and include 25 Orthoptera, 10 Hemiptera, 137 Coleoptera, 4 Hymenoptera, 10 Lepidoptera, and 2 Neuroptera. Three types of coaptation are distinguished: by juxtaposition, by serration, and by union (as where one part fits into a groove or depression of another). Some of the purposes of coaptation are to assure immobility of certain parts; to synchronize movements in flight; to insure close fitting of parts when in repose. The bibliography contains 105 references.

11584. CRAMPTON, G. C. A criticism of the current theories concerning the origin of metamorphosis in insects, with suggestions for a theory based on mutations. *Entomologist* [*London*] 64(818): 154-158; (819): 171-174. 1931.—The writer brings forth arguments to disprove the contention that the larva of a holometabolous insect is merely a free-living embryo, and shows that they are strictly post-embryonic. He contends that holometabolism is a result of mutations.

11585. GUNN, DONALD L. The function of the air sacs of insects. *Nature* [*London*] 127(3193): 58-59. 1931.—The common view that the air-sacs of those insects which have powers of sustained flight function by buoying up the insect, is incorrect. It is shown, by Archimedes' principle, that the weight of the air displaced by these sacs is too small to be significant. However, the sacs may serve as pumps, increasing tracheal ventilation.

11586. ILLINGWORTH, J. F. Insects in the Waiahole ditch. *Proc. Hawaiian Ent. Soc.* 7(3): 408-409. 1931.—Reports on 11 spp. of insects found floating in the canal, *Adoretus sinicus* and *Charadromyia torrenticola* being present in large numbers.

11587. KAUDELKA, JOSEF. Ein empfehlenswerter Klopfschirm. *Internat. Ent. Zeitschr.* 25(6): 61-62. 1931.—Description of a beating umbrella.

11588. LUTZ, FRANK E., and W. R. HICKS. An analysis by movietone of a cricket's chirp (Gryllus assimilis). *Amer. Mus. Novitates* 420. 14p. 5 fig. 1930.—Each sound-wave is represented on the movietone film by a line. Knowing the speed at which the film moved, the pitches of the notes were determined. Each "chirp" of *Gryllus assimilis* consists normally of 3 "pulses" of sound so close together as to be indistinguishable by ear. Each pulse starts at a fairly high pitch, rises a bit and then falls to below the starting pitch. The data indicate that each sound-wave is the result of scraping an individual tooth of the "file" and not of a continuous vibration of the wings. Doubt concerning the adaptiveness of the "drum" is suggested.—*F. E. Lutz.*

11589. NICHOLSON, A. J. Methods of photographing living insects. *Bull. Ent. Res.* [*London*] 22(2): 307-320. 10 pl., 5 fig. 1931.

11590. PONGRÁCZ, ALEXANDER. Bemerkungen über die Insektenfauna von Oeningen nebst Revision der Heer'schen Typen. *Verhandl. Naturhist.-Med. Ver. Heidelberg* 17(2): 104-125. 9 fig. 1931.—Descriptive notes are given on all spp. mentioned below. Odonata: *Libellula doris* Heer and *L. thoë* Heer are referred to *Cordulia; L. eudore* Heer (=*L. eurynome* Heer) is referred to *Gomphus; Gynacantha* polydore* (*Aeschna p.* Heer) (p. 111); *Aeschna tyche**. Hymenoptera; Formicidae: *Camponotus lignitum**; *Formica seuberti* Heer (=*F. lavateri* Heer); *Aphenogaster juliginosa**; *Formica immersa**; *Ponera ventrosa; Myrmica macrocephala* Heer (=*M. rugiceps* Heer). Apidae: *Xylocopa senilis**. Diptera; Bibionidae: the generic relations of *Eoplecia**, *Protomyia**, *Plecia, Mesomyia,* and *Bibio* are discussed; *Protomyia jucunda; P. amoena; Bibio elongatus**; *B. angustatus**; *B. moestus**; *B. fusiformis**. Asilidae: *Asilus* (?) *antiquus** Heer probably does not belong to this family.

11591. ROWELL, L. S. Preparation of bee slides. *Science* 73(1890): 320. 1931.—Methods for clearing and mounting the chitinous skeletons of insects.

11592. SWEZEY, O. H. Some new records of insects of Molokai. *Proc. Hawaiian Ent. Soc.* 7(3): 485-488. 1931.—A list of 41 spp. reported as new from Molokai during 1929 and 1930.

11593. TILLYARD, R. J. A new theory of the evolution of the insects. *Nature* [*London*] 126(3191): 996-998. 1930.—Review of a theory treated in full in Tillyard, R. J. The evolution of the class Insecta. *Papers and Proc. Roy. Soc. Tasmania* 1930: 1-89. 1931.

11594. WOODWORTH, C. W. The arrangement of the major orders of insects. *Psyche* 37(2): 157-162. 1930.—A discussion, with table, giving in chonological order the arrangements that have been used from 1735 to 1926.

11595. WUCHERPFENNIG, F. Amazonas-Sammelreise 1930/31. *Ent. Rundschau* 48(6): 59-61. 2 fig.; (7): 69-71. 2 fig. 1931.—Records of a collecting trip in Amazonas, Brazil.

ACARINA

AUGUST E. MILLER, *Editor*

(See also in B. A. 6(3): Entries 7791, 7832, 8445, 8632, 8647, 9056; and in this issue 9196, 10599, 10914, 11575)

11596. ANDRÉ, MARC. Les pièces buccales du rouget, larve du Thrombicula autumnalis Shaw. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(1): 100-103. 5 fig. 1929.—The buccal apparatus of the harvest mite, *T. autumnalis** is described.

11597. ANDRÉ, MARC. Une espèce de Thrombicula (Acarien) non encore signalée en France. *Bull. Soc. Ent. France* 1930(15): 237-239. 2 fig. 1930.—A mite tentatively identified as *T. formicarum** Berlese reported commensal with *Lasius niger* L.—*S. B. Fracker.*

11598. ANDRÉ, MARC. Deux Microthrombidium (Acarien) nouveaux pour la faune française. *Bull. Soc. Ent. France* 1930(15): 241-242. 1930.—*M. albofasciatum* Berlese and *M.* (*Enemothrombium*) *densipapillum* Berlese collected at Versailles.—*S. B. Fracker.*

11599. ANDRÉ, MARC, et EDOUARD LAMY. Les acariens parasites des Mollusques. *Jour. de Conch.* 74 (3): 199-221. 1930.—The authors collate numerous records of species of Acarina which are parasitic on various aquatic and terrestrial mollusks. Life histories of these mites are also reviewed.—*H. B. Baker.*

11600. DIOS, ROBERTO L., y ROSA KNOPOFF. Sobre Ixodoidea de la República Argentina. [Ixodidae of Argentina.] *Rev. Soc. Argentina Biol.* 6(9/10): 593-627. 36 fig. 1930.—A systematic study of *Amblyomma maculatum**, *A. rotundatum**, *A dissimile** Koch, *A. testudinis**, *A. pictum**, *A. furcula**, *A. cajennense**, *A. brasiliense**, *A. altiplanum**, *Rhipicephalus sanguineus* Latr., *Ornithodoros talaje**, *O. megnini**, and *O. turicata**.—*J. T. Lewis.*

11601. GARNETT, HENRY. Occurrence of the water mite, Hydrachna geographica Mull., in Lancashire. *North Western Naturalist* 6(3): 162. 1931.

11602. HODGKISS, H. E. The Eriophyidae of New York: II. The maple mites. *New York State* [*Geneva*] *Agric. Exp. Sta. Tech. Bull.* 163. 1-45. 14 pl. 1 fig. 1930.—This part treats especially of species which subsist on foliage of maple trees, the first contribution dealing with mites attacking apples and pears. The activities of many of the Eriophyidae on maple leaves result in galls or other malformations of the tissues. These outgrowths often assume curious shapes or vivid hues that attract attention to the miscreants which on account of their small size might otherwise remain undetected. In some years owing to an abundance of the galls, the foliage of hard and soft maples, especially, becomes misshapen and large numbers of the leaves drop, lessening the value of the trees for ornamental purposes. Other kinds of maples attacked by mites are the black maple, *Acer negundo* Linnaeus; red maple, *A. rubrum* Linnaeus; Norway maple, *A. platanoides* Linnaeus; and the mountain maple, *A. spicatum* Lambert. An examination of leaves of the striped maple, *A. pennsylvanicum* Linnaeus, from widely separated localities, resulted in a failure to detect Eriophyidae or evidences of their characteristic work on this plant. In these studies, 25 spp. of mites have been recognized. The most important of these from an economic standpoint are the soft maple pouch gall mite, *Phyllocoptes quadripedes* Shimer; and the fusiform gall mite, *P. aceris-crumena* Riley, which occurs on the leaves of the hard maple. Other species have been recognized on this host among which are 2 interesting European mites, *P. gymnaspis* Nal. and *Oxypleurites serratus* Nal. The remaining forms including *Eriophyes* aceris* (p. 19), abundant among erineum galls on the under surfaces of leaves of the silver maple, are new to science. *Phyllocoptes quadripedes* and *P. aceris-crumena* hibernate in crevices or wounds in the limbs or under rough bark on the trunks of the trees. As the buds begin to swell in the early spring, the hibernating forms of these species migrate to young unfolding leaves and puncture the epidermal tissues. Galls form at these points which extend a short distance above the surfaces of the leaves and serve as an abode for the mites in which they feed and reproduce. The eggs of the hard and soft maple mites are minute spherical objects and are deposited along the inner surfaces of the galls. The eggs hatch during the latter part of May or early in June and the young larvae feed within the galls until mature. As the season advances the galls usually become discolored and shrivel and the more seriously deformed leaves drop. Coincident with the drying of the leaf tissues the mites return to their winter quarters. Aside from the papers mentioned it does not appear that any well-defined attempt has been made to identify the species of Eriophyidae which subsist on trees of the Aceraceae in this country. In Europe, more extensive taxonomic studies of this group have resulted in the recognition of a large number of species on maples. These live chiefly on *Acer campestre* L., *A. platanoides* L., *A. pseudoplatanus* L., and *A. obtusatum* W. K., where they either form galls or live a vagabond existence on the surfaces of the leaves. Except as previously noted, none of these forms have been recognized in the material we have examined.—*H. E. Hodgkiss.*

11603. JACOT, ARTHUR PAUL. Oribatid mites of the subfamily Phthiracarinae of the northeastern United States. *Proc. Boston Soc. Nat. Hist.* 39(6): 209-261. 10 pl., 1 fig. 1930.—The author reviews the genera and genotypes in this subfamily. He discusses their synonymy, their phylogenetic arrangement, the identification and reidentification of spp., and structures and terminology. PHTHIRACARINI (p. 214) new tribe, type *Phthiracarus* Perty, including also *Steganacarus* Ewing; EUPHTHIRACARINI (p. 214) new tribe, type *Euphthiracarus* Ewing, including also *Pseudotritia* Willmann, *Oribotritia* Jacot, and *Indotritia* Jacot. The systematic account of 23 forms includes detailed descriptions, distributional and habitat records, and figures. There are diagnoses of all genera. There are keys to spp. of *Phthiracarus* and *Euphthiracarus* and to genera of Euphthiracarini. *Phthiracarus* brevisetae* (p. 225), Connecticut; *P.* boresetosum (p. 228) and *P.* erinaceum (p. 230), Maine; *P. setosellum* bryobium* (p. 232), Connecticut; *P.* compressum* (p. 232), Connecticut (type), Maine, and New York; *P.* sarahae* (p. 234), Maine; *Steganacarus* Ewing is shown to have been erroneously placed by Sellnick in the synonymy of *Hoploderma* Michael; *S.* diaphanum* (p. 236), Connecticut; *S.* thoreaui* (p. 239), Maine; *Pseudotritia ardua* mut. obesum* (p. 245) and *P. a.* var. monoheterodactylum (p. 246), Connecticut; *P.* simplex* (p. 248), Maine (type) and Connecticut; *Euphthiracarus flavum* ssp. pulchrum* (p. 250), Connecticut; *E.* punctulatum* (p. 250), New York, Connecticut (type), and Maine; *Oribotritia* carolinae* (p. 257), N. Carolina; *O.* virginiensis* (p. 257), Virginia. Types in Mus. Comp. Zool.—*A. P. Jacot.*

11604. MARSHALL, RUTH. Preliminary list of the Hydracarina of Wisconsin. I. The red mites. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 26: 311-319. 2 pl. 1931.—*Limnochares aquaticus**, *Eylais desecta**, *Protzia* ovata ♀* (p. 312), first species in the genus for N. Amer.; *Hydrachna crenulata**; *H. rotunda**. *H. canadensis**, *H.* bilunata ♀* (p. 314), British Columbia and Wisconsin; *H. schneideri americana**; *H. magniscutata**; *Pseudosperchon verrucosus**, first record for N. Amer.; *Hydryphantes ruber**; *H. tenuabilis**; *H. multiporus**; *Diplodontus despiciens**.

11605. **OUDEMANS, A. C.** Acarologische Aanteekening LXXXV. [Acarological notes.] *Ent. Berichten [Amsterdam]* 7(154/155): 208-212. 1927.—*Aponomma* kerberti (p. 208).

11606. **RADFORD, CHARLES D.** Observations on the tick, Ornithodorus moubata Murray. *North Western Naturalist* 6(3): 155-158. 1931.—Notes on the feeding and breeding habits.

11607. **SCHULZE, PAUL.** Die Zeckengattung Hyalomma I. (H. aegyptium L., detritum P. Sch., volgense P. Sch. u. Schlottke, H. scupense P. Sch. und H. uralense P. Sch. u. Schlottke.) *Zeitschr. Wiss. Biol. Abt. F. Zeitschr. Parasitenk.* 3(1): 22-48. 44 fig. 1930.—A critical review of the genus *Hyalomma*, which is divided into the subgenera *Hyalomma*, *Hyalommina*, and **HYALOMMASTA** (p. 27), type *Hyalomma* (*Hyalommasta*) *aegyptium** L. (=*H. syriacum* Koch). The anatomical details of each species and variety are described and illustrated, and host records are given. *H. detritum* perstrigatum* (p. 34), Chihli Prov., China, type in Zool. Mus., Berlin; *H. d.* rubrum* P. Schulze and Olenev (p. 38), Kazakstan, on *Sus scrofa*, type in Zool. Mus. Acad. Sci. Leningrad.

11608. **SELLNICK, MAX.** Mexikanische Milben I. *Zool. Anz.* 95(5/8): 179-186. 6 fig. 1931.—Oribatidae: **DAMPFIELLA** (p. 180), near *Otocepheus*, type *D.* procera* (p. 180), **PELOPPIA** (p. 183), near *Ceratoppia*, type *P.* serrata* (p. 184), both from Mexico, from dead stem of *Abies religiosa*.

11609. **SSUJETOW, S.** Zur Kenntnis der Gattung Arrhenurus (Hydracarina). *Zool. Anz.* 94(5/8): 213-218. 6 fig. 1931.—*Arrhenurus* boruzkii* ♀ (p. 214) and *A.* sokolowi* ♂ (p. 216), Russia.

11610. **THOR, SIG.** Norwegische Alycidae I-VII. *Zool. Anz.* 94(9/10): 229-238. 4 fig. 1931.—**EPISTOMALYCUS** (p. 233), near *Alycus*, type *E.* clavipilus* (p. 234), from moss, Denmark; *E.* plumipilus* (p. 237), in moss, Norway.

11611. **THOR, SIG.** Über Nanorchestes Topsent et Trouessart 1890=(Syn.) Monalichus A. Berlese 1904 und über eine bisher unbekannte Endung der Tracheenstigmen. *Zool. Anz.* 95(3/4): 106-110. 3 fig. 1930.—*Nanorchestes* T. & T. (=*Monalichus* A. Berl.); *N. amphibius** redescribed with illustrations of thorax, mouth parts and leg, with special attention to the tracheal stigmata.

11612. **UCHIDA, TOHRU.** Einige fernorientalische Arten der Wassermilben. *Zool. Anz.* 94(5/8): 129-138. 14 fig. 1931.—Hydrachnidae: Measurements and descriptive data are given on all species mentioned. New distributional records are cited below: *Limnesia koenikei** and *L. undulata*, Japan; *L. burensis**, Formosa; *Hydrachna* (*Diplohydrachna*) sp.*, larvae found parasitic on *Ranatra chinensis* in Japan; *H.* (*Schizohydrachna*) *nova** Marshall (=*Monohydrachna tokyoensis* Kishida), nymphs often on *Ranatra* and *Nepa*, Japan; *H.* (*S.*) china* ♂ (p. 136), Canton, China; *H.* (*S.*) fukuoka* ♂ (p. 137), Japan. Types in author's coll. Parasitic Protozoa, *Vorticella nebulifera*, were found on *L. koenikei* and *L. undulata*.

11613. **VIETS, K.** Typus und Subgenera in Hydrachna O. F. Müller. *Zool. Anz.* 93(5/6): 173-185. 6 fig. 1931.—The author reviews in detail the nomenclatural history of various spp. described in this genus. New diagnoses are given of *Hydrachna cruenta** Müller (=*H. binominata* Thor, *H. biscutata* Thor, *H. thoni* Piersig, *H. rossica* Dad.) and *H.* skorikowi* (*H. schneideri skorikowi* Piersig, =*H. valida valida* Koen., *H. v. crassirostris* Koen.). The author follows Latreille in fixing *H. cruenta* as the genotype. The genus is separated into the following subgenera: *Anohydrachna* Thor; **RHABDOHYDRACHNA** (p. 184), type *H. comosa* Koen.; *Diplohydrachna* Thor; and *Hydrachna* Müller.

11614. **VITZTHUM, H.** Eine Notiz über Amblyomma longirostre (C. L. Koch 1844). *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 3(1): 49-51. 2 fig. 1930.—Note on a specimen of *Amblyomma longirostre** from *Coendou prehensilis*, from S. Amer.

11615. **WALTER, C.** Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 6. Arachnides halacariens. *Arch. Zool. Exp. et Gén.* 71(3): 375-381. 9 fig. 1931.—Descriptive notes on *Soldanellonyx chappuisi* and *S. monardi*, from cave, Indiana; **HAMOHALACARUS** (p. 377), near *Limnohalacarus*, based on *H.* subterraneus ♀* (p. 378), also from cave, Indiana.

11616. **[ZASUKHIN, D. N.]** ЗАСУХИН, Д. Н. Материалы к познанию клещей в связи с очередными задачами изучения их на Юго-Востоке РСФСР. [Data for the study of ticks in connection with their present-day importance in southeastern RSFSR.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 250-262. [English summary 287-288.] 1930.—Distribution of ticks in the southeastern part of Russia with name of the host, based on data collected by the author and others.—*G. A. Lebedeff.*

ARACHNIDA (EXCEPT ACARINA)

ALEXANDER PETRUNKEVITCH, *Editor*

(See also in this issue Entries 9196, 10177, 11222, 11247, 11752)

11617. **BEIER, MAX.** Pseudoscorpione aus Marocco nebst einer Art von der Insel Senafir. *Bull. Soc. Sci. Nat. Maroc* 10(1/6): 70-78. 5 fig. 1930.—Notes on 11 spp., including: *Obisium* (*O.*) maroccanum* (p. 70) and *Ectoceras* maroccanum* (p. 72), Morocco; *Olpium* gracile* (p. 75), Senafir Isl., Red Sea.

11618. **BEIER, MAX.** Neue Pseudoscorpione der U. O. Neobisiinea. *Mitteil. Zool. Mus. Berlin* 17(2): 299-318. 10 fig. 1931.—*Halobisium* occidentale (p. 299), California, type in Wien Mus.; *Microcreagris* luzonica* (p. 300) and *M.* philippinensis (p. 300), Philippines, types in Berlin Mus.; *M.* chamberlini (p. 301), California, type in Chamberlin coll.; *M.* maroccana (p. 301), Morocco; *Ideobisium* costaricense* (p. 302), Costa Rica, type in Silvestri coll.; **NANNOBISIUM** (p. 303), near *Ideobisium*, type *N.* liberiense* (p. 303), Liberia, type in Wien Mus.; **GYMNOBISIUM** (p. 304), near *Ideobisium*, type *I. quadrispinosum* Tullgren; **MIROBISIUM** (p. 304) (Bochicinae), type *Ideobisium cavimanum* Beier; **DINORONCUS** (p. 305), near *Ideoroncus*, type *Ideobisium* (*Ideoroncus*) *chilense* Ellingsen; **NEGRORONCUS** (p. 305) (Ideoroncinae), type *Ideoroncus africanus* Redikorzev; *Olpium pallipes* balcanicum (p. 305), Levkas Isl., Greece, type in Wien Mus.; *O.* angolensis* (p. 306) [figured as *O. angolense*], Angola (Turkey), type in Berlin Mus.; *Minniza* algerica* (p. 306), Algeria, type in Berlin Mus.; *M.* babylonica (p. 307), Mesopotamia, type in Wien Mus.; **PAROLPIUM** (p. 308), near *Olpium*, type *O. gracile* Beier; *O. arabicum* Sim. and *O. minor* Ell. are referred to *Parolpium; P.* madagascariense (p. 308), Madagascar, type in Berlin Mus.; *Apolpium* minutum* (p. 309), Costa Rica, type in Wien Mus.; **PACHYOLPIUM** (p. 310), type *P.* reimoseri* (p. 310), Costa Rica, type in Wien Mus.; *P.* incertum (p. 311), St. Thomas, W. Indies, type in Berlin Mus.; *P.* erratum (p. 311), Brazil, type in Berlin Mus.; **OLPIOLUM** (p. 312), near *Apolpium*, type *O.* medium* (p. 312), Paraguay, type in Berlin Mus.;

THAUMATOLPIUM (p. 313) (Olpiinae), type *Ideoroncus silvestrii* Beier; PSEUDOGARYPINUS (p. 313), near *Amblyolpium*, type *P.* costaricensis* (p. 314), Costa Rica, type in Wien Mus.; *Geogarypus* formosanus* (p. 315), Formosa, type in Berlin Mus.; *G.* fiebrigi (p. 316) and *G.* paraguayanus (p. 316), Paraguay, types in Berlin Mus.; AFROGARYPUS (p. 317), near *Geogarypus*, type *Garypus senegalensis* Balzan; PROGARYPUS (p. 317) (Garypinae), type *Olpium ramicola* Balzan, also including *O. oxydactylus* Balzan; *P.* novus (p. 318), Brazil, type in Wien Mus.

11619. BERLAND, LUCIEN. Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 7. Arachnides Aranéides. *Arch. Zool. Exp. et Gén.* 71(3): 383-388. 1931.—The American cave spiders are briefly reviewed, with synonymy, and consist of *Porrhomma* incerta (*Linyphia i.* Emerton) (p. 384); *Phanetta subterranea, Bathyphantes* weyeri (*Linyphia w.* Emerton) (p. 385); *Nesticus carteri*, and *Meta menardi*.

11620. BONNET, P. Remarques sur les "Notes diverses sur les Aranéides" de M. J. Denis. *Bull. Soc. Ent. France* 1931(8): 107-109. 1931.—Notes on the biology of *Zoropsis spinimanus* Duf., *Pholcus phalangioides* Fues., *Argiope bruennichi* Scop., and *Salticus scenicus* Cl.—*S. B. Fracker.*

11621. DAHL, FRIEDRICH. Spinnentiere oder Arachnoidea. I: Springspinnen (Salticidae). In: Die Tierwelt Deutschlands und angrenzenden Meeresteile Pt. 3. pp. 1-55. 159 fig. Gustav Fischer: Jena: 1926.—Contains keys to the German species. The ♂ palpus and the epigynum of each species are figured, the latter from cleared preparations. *Heliophanus* mariae* ♀ (p. 46), Glatzer Mts. Numerous ecological observations are recorded.—*A. Kästner.*

11622. DENIS, JACQUES. Notes diverses sur les Aranéides. *Bull. Soc. Ent. France* 1931(4): 53-59. 1931. —Notes on the habits of the following species, mostly in France: *Zoropsis spinimanus* Dufour, *Scytodes thoracica* Latreille, *Uroctea durandi* Lat., *Pholcus phalangioides* Fuessli, *Latrodectus tredecimguttatus* Rossi, *Argiope bruennichi* Scopoli, *Salticus scenicus* Clerck, and several Argiopidae.—*S. B. Fracker.*

11623. FRANGANILLO, PELEGRÍN. Mas aracnidos nuevos de la isla de Cuba. [More new arachnids of Cuba.] *Mem. Trab. Realiz. Inst. Nacion. Invest. Cien. y Mus. Hist. Nat.* [*Habana*] 1: 45-97. 21 fig. 1929(1930). —Dipluridae: *Ischnothele* longicauda* (p. 47). Theraphosidae: *Leptopalma* arastellatus (p. 48); *L.* cubana (p. 49); *Ischnoculus* denticulatus ♀ (p. 49); BISTRIGUS (p. 51), near *Leptopelma*, type *B.* muticus (p. 51); *Stothis* maculata (p. 51); *Xenesthis* cubana* (*Eurypelma spinicrus* Latr.) (p. 52). Lycosidae: *Lycosa* ovalata (p. 53); *L.* rostrata (p. 53). Theridiidae: *Theridion formosum* v. serratum (p. 53); *Latrodectus* albomaculatus (p. 55); *Theridion* cabriolatum* (p. 56), *T.* fuscum. Pholcidae: *Leptopholcus* delicatulus ♀ (p. 59). Dinopidae: *Dinopus* bituberculatus (p. 59). Argiopidae: *Agyroepeira* pinarensis (p. 59); *A. pulcherrima* v. ochre-rufa (p. 60); *Cyrtognatha* producta (p. 61); *Gea* partita* (p. 61); *G.* integra* (p. 63); *G. subarmata* v. maculata (p. 63); *Meta* linguiformis* ♀ (p. 64); *M.* serrana ♀ (p. 64); *Mangora* triangularis (p. 65); *Eustala* unimaculata (p. 66); *Cubanella* recta* (p. 66); *Cyclosa* elongata (p. 68); *Acusilas* rufonigra (p. 68), *A. r.* var. maculata (p. 68); *Salassina crassicauda* vars. albotuberculata (p. 68) and nigrotuberculata (p. 68); *Araneus fuligineus* vars. romboidalis (p. 69) and sanguineus ♂ (p. 69); *A.* excavatus (p. 69); *A.* aequiangulus* (p. 70), with var. ochraceus (p. 72); *A.* perfoliatus ♀ (p. 72); *A.* anuncinatus (p. 72), with var. depilosus (p. 73); *A.* sulphureus* (p. 73); *A.* fistulosus ♀ (p. 73); *A. nephiloides* v. trapezoidalis ♀ (p. 74); *Micrathena mammillata* v. tuberculata (p. 75); *M.* laminaris (p. 75); *M.* cylindracea (p. 76), with var. argentata (p. 76); *M.* sexacantha (p. 76). Ctenidae: *Ctenus* cruciatus ♀ (p. 77); *C.* impressus ♂ (p. 77); *C.* pilosus (p. 77); *Celaetycheus* fulvorufus (p. 78); *C.* cabriolatus* (p. 78). Thomisidae: *Misumena spinosa* v. olivacea (p. 79). Clubionidae: *Anyphaena* pallidula ♂ (p. 79); *Wulfila* tincta (p. 79); *Corinna* albicans (p. 80); *Stethorrhagus* mandibulatus ♂ (p. 80); *Paratyle* montana (p. 81). Salticidae: *Sarinda* glabra (p. 81); *Emathis* unispina ♀ (p. 82); *Tariona* maculata ♀ (p. 83); *Hassarius* bisetatus (p. 84); *Nagaina* olivacea (p. 85); PARAPLEXIPPUS (p. 85) (Plexippinae), type *P.* sexignatus* ♂ (p. 88), with also *P.* quadrisignatus* (p. 87); *Corythalia* arcuata* (p. 87), with var. fulgida (p. 88); PELEGRINA (p. 88) (Heliophaninae), type *P.* geniculata* (p. 89); *Dendryphantes variegatus* v. limbatus (p. 90); *Menemerus* depressus (p. 90); *M.* fasciculatus* (p. 91); *M.* ochraceus ♀ (p. 91). Pedipalpi, Phrynidae: *Phrynus* pinarensis (p. 92). Scorpiones, Diplocentrinae; *Diplocentrus* trinitarius ♂ (p. 93). It is stated that *Rhopalurus junceus* Poc. is *Scorpio hemprichii* Luc. of Cuban authors. *Rhopalurus junceus* v. ravidus* (p. 95); *Centruroides* subviridis (p. 95). Nineteen spp. new to Cuba, and 29 new localities for spp. already cited are also given.

11624. GUDGER, E. W. More spider hunters. Accounts of arachnids which attack and devour vertebrates other than fishes. *Scientific Monthly* 32(5): 422-433. 9 fig. 1931.—A review of literature concerning arachnids which catch tadpoles, salamanders, frogs, toads, lizards, snakes, birds, and mammals.

11625. HANCOCK, RICHARD. The Aranea or spiders of Hartlebury Common. *Proc. Birmingham Nat. Hist. and Phil. Soc.* 16(2): 45-48. 1931.—A list of 27 spp.

11626. HOLM, Å. Spindelfaunan inom Abisko National-park. Spindlar-Araneae. [The spider fauna within Abisko National Park (Sweden).] *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 19. p. 1-9. 1931.—This paper is based on a study of 98 spp. (2500 specimens), of which 86 were taken within the Abisko Nation. Park. *Robertus scoticus, Lephthyphantes nigriventris, Utopiellum mirabile, Erigone psychrophila, E. tirolensis, Titanoeca nivalis, Hahnia mengei*, and *Lycosa norvegica* are new to Sweden.

11627. KÄSTNER, A. Studien zur Ernährung der Arachniden. 2. Der Fressakt von Chelifer cancroides L. *Zool. Anz.* 96(3/4): 73-77. 3 fig. 1931.—The action of the mouth parts of *Chelifer cancroides** in feeding is described.

11628. [PERELESHINA, V. I.] ПЕРЕЛЕШИНА, В. И. Фауна пауков окрестностей Болшевской Биологической станции. [Spiders of the Bolshevo Biological Station, Moscow district.] [English summary.] Записки Биологической Станции Общества Любителей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии. (*Bull. Sta. Biol. Soc. Amis Sci. Nat., Anthrop. et Ethnogr. à Bolchevo, Gouv. Moscou*) 2. 3-74. 1 pl., 8 fig. 1928.—An annotated list of 166 spp. in 76 genera in the families Dictynidae, Drassidae, Pholcidae, Theridiidae, Thomisidae, Clubionidae, Agelenidae, Lycosidae, Oxyopidae, and Salticidae. The nests of the following are illustrated: *Gnaphosa lucifuga, Theridion varians, T. formosum, Linyphia phrygiana*, and *Sitticus floricola*. The reproductive organs of *Laseola torva, Xysticus erraticus, X. ulmi, X. striatipes, Philodromus emarginatus, P. fusco-marginatus, Clubiona reclusa, C. stagnatilis, C. subsultans, Sitticus floricola*, and *Dendryphantes hastatus* are illustrated.

11629. SMEDLEY, N. Notes on king-crabs (Xiphosura). *Bull. Raffles Mus.* 5. [71]-[74]. 1931.—Critical notes on *Tachypleus gigas, T. tridentatus*, and *Carcinoscorpius rotundicauda*.

COLEOPTERA

ANDREW J. MUTCHLER, *Editor*

(See also in this issue Entries 9090, 9176, 10898, 10905, 10906, 10912, 10927, 10928, 10931, 10936, 10945, 10951, 11838)

11630. **ABBOTT, CYRIL E.** The comparative morphology of the spiracles of two species of weevils. *Ann. Ent. Soc. Amer.* 22(2): 331-334. 4 fig. 1929.—In the granary weevil (*Sitophilus granarius*) there is a chamber beyond the spiracle proper, leading to a chitinous bow, followed by a constriction of the trachea and then a wider vestibule in communication with which are 2 tracheal trunks. No muscles are attached to the apparatus and evidence of spiracular closing is lacking. The chamber between the spiracle and the bow differs from a true atrium especially in having tenidia. In the corn billbug (*Sphenophorus maidis*) there is in addition to the heart-shaped spiracular opening a true atrium continuous with a pair of triangular chitinous plates between which there is a slit communicating with the large air chambers. The slit, normally closed, is opened by muscles connecting the apices of the triangular plates. —*M. W. Boesel.*

11631. **BALTHASAR, VLADIMÍR.** Zwei neue Aphodius-Arten (subg. Bodilus) aus Nordafrika nebst einige Bemerkungen über die von mir in Tunesien und Ostalgerien gesammelten Coprophagen. *Ent. Blätter* 25(2): 105-107. 1929.—*A.* (*Bodilus*) **ghardimaouensis** (p. 105), North Africa; *A.* (*B.*) **mařani** (p. 106), Tunisia. Notes on 4 other north African Scarabaeidae.—*M. H. Hatch.*

11632. **BENICK, L.** Drei neue mitteleuropäische Parastenus-Arten nebst Bestimmungstabelle (Col., Staph.). *Ent. Blätter* 25(2): 91-99. 3 fig. 1929.—Key to 12 spp., including *P.* **areolatus** (p. 94, 97), Bergamasker Alps, Italy; *P.* **connatus** (p. 94, 96), eastern Carpathians, Rumania; *P.* **vernaculus** (p. 95, 98), Maritime Alps, France.—*M. H. Hatch.*

11633. **BRADLEY, J. CHESTER.** A manual of the genera of beetles of America north of Mexico. Keys for the determination of the families, subfamilies, tribes, and genera of Coleoptera with a systematic list of the genera and higher groups. [Lithoprinted.] 360p. Daw, Illston and Co.: Ithaca, New York, 1930.—The compiler has selected, rearranged, abbreviated, combined, and translated keys from all the most recent sources, scattered throughout the world's literature on insects. They are dichotomously arranged. The classification is essentially that of Leng's Catalogue (1920), to which page references are given in an appended taxonomic list of genera. There is a full index.

11634. **CAMERON, MALCOLM.** New Staphylinidae from the Malay Peninsula. (Second paper.) *Jour. Fed. Malay States Mus.* 16(1/2): 154-159. 1930.—The new forms are from Malay Peninsula unless otherwise stated. Types of most of them are in author's coll. *Trogophloeus* **malayanus** (p. 154); *Oxytelus* (*Anotylus*) **malayanus** (p. 154); *O. m.* var. **ruficeps** ♂ (p. 154); *Scimbalium* **suturale** (p. 155); *Philonthus* **pendleburyi** ♂ (p. 155); *Staphylinus* **auropubescens** (p. 156); *S.* **subchalceus** (p. 156); *S.* **rufipennis** ♂ (p. 156); *Astilbus* **semicyaneus** (p. 157); *Orphnebius* **politus** (p. 158); *Zyras* **rufithorax** (p. 158), Malay Peninsula and Siam; *Z.* **sparsipennis** (p. 159).

11635. **CAMERON, MALCOLM.** Staphylinidae from British North Borneo, with descriptions of new species. *Jour. Fed. Malay States Mus.* 16(1/2): 160-168. 1930.—The new forms are not all confined to British North Borneo, some being from other parts of Borneo or the Malay Peninsula. The types of most spp. are in the author's coll. A number of previously known spp. are also recorded, with locality and date records. *Lispinus* **unipunctatus** (p. 160); *L.* **borneensis** (p. 160); *Phloeonomus* (s. str.) **crenicollis** (p. 161), *P.* (s. str.) **germanus** (p. 161), and *Oedichirus* **pendleburyi** (p. 162) [type depositories not given]; *Pinophilus* **bettotanus** ♀ (p. 162); *Philonthus* **sericatus** ♀ (p. 162); *P.* **hybridus** ♂ (p. 163); *Staphylinus* **aeneoacreus** ♀ (p. 164); *S.* **aeneipennis** (p. 164); *Naddia* **borneensis** ♀ (p. 165); *N.* **aeneipennis** ♂ (p. 166); *Coproporus minutissimus* v. **nigriceps** (p. 167), Borneo and Malay Peninsula, and *Coenonica* **abdominalis** (p. 167) [type depositories not given]; *Placusa* **cyanescens** ♂ (p. 167); *Zyras* **granulipennis** (p. 167); *Z.* **bettotanus** (p. 168).

11636. **EGGERS, HANS.** Zwei neue Dryocoetes-Arten. *Ent. Blätter* 24(4): 174-175. 1928.—*D.* **samoanus** (p. 174), Samoa; *D.* **rotundicollis** (p. 174), S. Australia.—*M. H. Hatch.*

11637. **EGGERS, HANS.** Zwei neue Blastophagus-Arten (Ipidae, Col.). *Ent. Blätter* 25(2): 103-104. 1929. —Key to 7 spp. of *Blastophagus* including *B.* **brevipilosus** (p. 103), China, and *B.* **starki** (p. 104), Ussuri.—*M. H. Hatch.*

11638. **EGGERS, HANS.** Eine neue Ipidengattung (Col.) aus Nordamerika. *Tijdschr. voor Ent.* 72(1): 40-41. 1929.—**SPHAEROSINUS** (p. 40), near *Dendrosinus* and *Sphaerotrypes*, type *S.* **striatus** (p. 41), type in Zool. Mus. Amsterdam.

11639. **FISHER, W. S.** New Malayan Buprestidae. *Jour. Fed. Malay States Mus.* 16(1/2): 25-57. 1930.—The following are from Malay Peninsula unless otherwise stated. Types are in U. S. Nation. Mus. *Iridotaenia* **insularis** (p. 25); *Exagistus* **atroviridis** (p. 26); *Blepharum* **leopardum** (p. 27); *Chrysopistus* **aeneoviridis** ♀ (p. 29); *Cyphogastra* **malayensis** ♀ (p. 30); *Lampra* **pubescens** (p. 33); *Chrysobothris* **strigicollis** (p. 33), Siam; *C.* **malayensis** (p. 34); *C.* **viduus** (p. 36); *Meliboeus* **angustatus** (p. 37); *M.* **exiguus** (p. 39); *M.* **bicolor** (p. 40); *M.* **insularis** (p. 41); *M. i.* var. **langkawicus** (p. 42); *Agrilus* **malasicus** ♀ (p. 43); *A.* **pendleburyi** ♀ (p. 44), Siam; *A.* **klossi** ♀ (p. 46); *A.* **kedahae** (p. 47); *Coraebus* **semiviridis** (p. 50), Siam; *C.* **kedahae** (p. 51); *Toxoscelus* **speciosus** (p. 53); *Neotoxoscelus* **aeneiventris** (p. 54); *Trachys* **kedahae** (p. 56).

11640. **FISHER, W. S.** New Bornean Buprestidae. *Jour. Fed. Malay States Mus.* 16(1/2): 58-97. 1930.—These are from North Borneo unless otherwise stated; types in U. S. Nation. Mus. *Iridotaenia* **sandakana** (p. 58); *I.* **acutipennis** (p. 59); *Exagistus* **brunneus** (p. 60); *Phrixia* **opulenta** (p. 62), Sarawak; *Neotoxoscelus* **ornatus** (p. 63); *Meliboeus* **melanescens** (p. 65); *Coraebus* **rajah** (p. 66); *Agrilus* **samawangensis** ♂ (p. 68); *A.* **abreui** ♀ (p. 70); *A.* **convergens** ♀ (p. 72); *A.* **brooksi** ♀ (p. 73); *A.* **contractus** ♀ (p. 75); *A.* **bettotanus** ♀ (p. 77); *A.* **kayan** ♀ (p. 78); *A.* **kudatensis** ♂ (p. 80); *A.* **cyanochloris** ♀ (p. 83); *A.* **curtus** (p. 84); *A.* **samboides** ♀ (p. 86); *A.* **kenniah** ♂ (p. 87); *Trachys* **klossi** (p. 89); *T.* **pendleburyi** (p. 91); *T.* **aeneocephalus** (p. 92); *T.* **bettotanus** (p. 94); *T.* **oreophilus** (p. 95).

11641. **FISHER, W. S.** New West Indian Buprestidae (Coleoptera). *Proc. Ent. Soc. Washington* 32(7): 125-129. 1930.—*Polycesta* **insulana** (p. 125), Jamaica; *Psiloptera aurata* v. **domingoensis** (p. 126), Santa Domingo; *Actenodes nobilis*, first record for the West Indies; *Peronaemis* **elegans** (p. 127), Cuba; *Neotrachys* **hoffmani** (p. 128), Porto Rico. Types in U. S. Nation. Mus.

11642. **FRANCK.** [Notes on aberrations of two species of Gyrinus.] *Ent. Blätter* 24(4): 187. 1928.

11643. **GRIDELLI, E.** Risultati zoologici della Missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell'oasi di Giarabub (1926-1927) [Cirenaica]. Coleotteri. *Ann. Mus. Civ. Storia Nat. Genova* 54: 1-487. Map, 1 fig. 1930.—The present study includes also Coleoptera collected by Vito Zanon around Bengasi, and notes on spp. mentioned by other authors, thus constituting a complete record of all Coleoptera thus far known from Cirenaica. The systematic list includes

locality records, notes on frequency and general distribution, and original references of the names of spp. *Bembidion serdicanum* Apflb. is removed from the synonymy of *B. jordanense* Pioch.; *Carterus* (*Macrocarterus*) silvestrii (p. 22); *Laemostenus complanatus* ssp. cyrenaicus (p. 36); *Metabletus impressus* ssp. cyrenaicus (p. 40); *Microlestes* holdhausi* (p. 42); *Omalium* krügeri (p. 61); *Quedius fulgidus* v. erythropygus (p. 77); *Tolyphus* dubius (p. 133); *Merophysia* cyrenaica (p. 139); *M.* andreinii (p. 142), Tripolitania; *Hapalus bimaculatus* v. vittatipennis (p. 183), type in coll. R. Ufficio Agrario Bengasi; *Omophlus* (*Odontomophlus* cyrenaicus ♂ (p. 190); *O. tenellus* Kirsch, emended description; *O.* (*O.*) krügeri ♂ (p. 193), type in coll. Dodero; *O.* (*O.*) *scutellaris* Muls., emended description; key is given to these 4 spp. of *Omophlus; Arthrodeis* confalonierii (p. 196); key is given to the spp. of Tentyriinae of the "8th group of Reitter"; *Oterophloeus* desioi (p. 210); *Schweinfurthia* schusteri (p. 211); key is given to spp. of *Tentyria; T. latreillei* ssp. brachythorax (p. 219); *T.* confalonierii (p. 222); *Adesmia acervata* v. minor (p. 232); key is given to 6 spp. of *Machlopsis; M.* doderoi (p. 235), Lampedusa Is.; *M.* pseudoalata (p. 236); *Stenosis* cugiae (p. 238); *Dichillus* (*Dichillocerus*) cyrenaicus (p. 242); *Scaurus* schusteri (p. 260); key is given to 8 spp. of *Ocnera; O.* cyrenaica (p. 270); key is given to 5 spp. of *Pimelia; P. consobrina* ssp. confalonierii (p. 274); *P.* gestroana (p. 279); *Cabirus* cyrenaicus (p. 290); key is given to 9 spp. of *Scleron; S.* andreinii (p. 295), Tripolitania; *S.* dubium (p. 295); *Scleropatrum* vinciguerrae (p. 297); key is given to the 4 known spp. of *Glaresis; Aphodius* (*Bodilus*) antii (p. 312); *Mnematium ritchiei* ssp. bottoi (p. 324). Unless otherwise stated, all new forms are from Cirenaica, and the types of most are in Mus. Civico Genova; in some cases the type depository is not given. The treatment of some groups is monographic. A table shows the distribution in Cirenaica and neighboring regions of all the 751 spp. mentioned in the catalog. Another table shows the number of spp. from each family which occur in Cirenaica. North Africa is divided into 2 zones, "Africa Minor" and the Sahara. The Sinai Peninsula, Palestine, Mesopotamia, and perhaps a large part of northern Arabia and Persia, can be included with the Sahara to form what the author terms the "eremic" zone, considering that the Cirenaican fauna without doubt belongs to this zone. This fauna is essentially palearctic, including only 29.20% of "circummediterranean" spp., and 45.50% of "eremic" spp. A table of 103 spp. characteristic of the "eremic" subregion is given, with distribution. There is a discussion of the geological history of northern Africa, with its implications for faunistic distribution. There is an index of families, genera, and subgenera.

11644. HELLER, K. M. 7. Bestimmungsschlüssel aussereuropäischer Käfer: Gattung Lophochirus G. A. K. Marshall (Curculionidae). *Ent. Blätter* 24(3): 103-111. 1928.—Key to and notes on 24 spp. of *Lophochirus*, including *L.* circumscriptus (p. 108), New Guinea; *L.* keyensis (p. 109); *L.* aruensis (p. 109), ? Aru; *L.* flexitibia (p. 110), Mindanao; *L.* bisignatus (p. 110), Borneo; *L.* novaeguineae (p. 110), New Guinea; *L.* migrans (p. 110), Java; *L.* basiplagiatus (p. 111), Sumatra; *L.* buruensis (p. 111), Buru; *L.* papuanus (p. 111), New Guinea; *L.* gracilitarsis (p. 107), Sumatra [misprinted as *pracilitarsis* (p. 111)]; *L. apicalis* ab. divisa (p. 109).—*M. H. Hatch.*

11645. HORION. Massenfunde von Stenus kiesenwetteri Ros. [Mass occurrence of S. kiesenwetteri.] *Ent. Blätter* 25(1): 55-56. 1929.

11646. HUBENTHAL, W. Kleine coleopterologische Mitteilungen. *Ent. Blätter* [*Berlin*] 24(2): 88-95. 1 fig. 1928.—The following notes from different authors were gathered together by Hubenthal. WALTER HORN: ♂♂ and ♀♀ of *Meloetyphlus fuscatus* Waterh. were found in 2 different nests of *Euglossa smaragdina* Perty in bamboo in Costa Rica; this large blind beetle is an inhabitant of a very small hole; short diagnosis of ♂ and ♀ is given. P. FRANCK: *Gyrinus natator* ssp. *substriatus* Steph. is the correct name for the beetle hitherto designated *G. natator* L.; *G. n.* ssp. *substriatus* ab. *schatzmayri* Ochs (=*corpulentus* Schatzm.); the true *G. natator* L. (=*mergus* Ahr., *marginatus* Germ., *wankowiczi* Rég.). OCHS: Oct. 1st, very late in the season, there were found near Frankfurt several lampyrid larvae, probably *Phausis splendidula* L. HUBENTHAL: (1) *Anommatus 12-striatus*, reported by Staudinger and Bang-Haas from Dresden, is a synonym of *A. kiesenwetteri* Reitt. (2) *Carabus cancellatus* which has the first joint of antennae black is very rare in Thuringia. (3) *Carabus scheidleri* v. *preyssleri* is found near Breslau, Silesia. VAN EMDEN: *Haltica sandini* Kemner, eastern Prussia, is new to Germany. R. SCHOLZ: (1) *Amara spreta* ab. *nigripes* Schilsky is new to Silesia. (2) Larva (described Ent. Bl. 1926 p. 103) belongs to *Cephennium problematicus*. (3) *Neuraphes talparum* Neresh. and Wagner may be largely distributed around Liegnitz; *Choleva elongata* Payk. new to Silesia. (4) *Meligethes solidus* Kugel, very rare, found at Haasel, Lower Silesia. (5) *Chrysomela sanguinolenta* L. bred from larvae found on small *Veronica* forms. (6) The name of determiner should be used always in connection with the name of the identified form; a label bearing only the name of determiner is worthless. N. KOROTNEW: (1) Notes on a beetle-collecting glass with an automatic cover. (2) Description of an hygienic exhaustor*. (3) Note on investigation of tree-holes with a mirror.—*G. G. Maydell.*

11647. JEANNEL, R. Coléoptères cavernicoles des Carpates méridionales. Rectification. *Bul. Soc. Stiinţe Cluj* [*Rumania*] 5(Fasc. 3, Part 2): 71-72. 1930.—*Duvalius budai* ssp. diószeghyi (*D. diószeghyi* Mallász, =*D. b.* ssp. *micrangulus* Jeannel) (p. 72).

11648. KLEINE, R. Über die Brenthidentypen von Motschoulsky. *Ent. Blätter* 25(1): 51. 1929.—Motschoulsky described only 3 spp. of Brenthidae. 14 unpublished names are included in his collection, the valid names of which are here given.—*M. H. Hatch.*

11649. KLEINE, R. Neue Lyciden der Malaiischen Subregion. *Jour. Fed. Malay States Mus.* 16(1/2): 169-174. 19 fig. 1930.—These spp., except where otherwise stated, are from the Malay Peninsula; types are in British Mus. *Ditoneces* curvicollis* (p. 169); *D.* indistinctus* (p. 169), Malay Peninsula and Borneo; *D.* soror* ♂ (p. 170); *Leptotrichalus* rubrosignatus (p. 170); *Dilophotes* costatus* ♀ (p. 170); *Cautires* selangorensis *♂ (p. 170); XYLOBANELLUS (p. 171), allied to *Conderis* and *Xylobanus*, type *X.* atricolor ♀ (p. 171); *Calochromus* siamensis* (p. 172), Siam; *C.* perakensis* ♀ (p. 172); *Dilophotes* grossus* ♀ (p. 172).

11650. KOLBE, H. Nachtrag zu meinem Artikel über die Carabidomemninen. *Ent. Blätter* 24(3): 125-129. 1928.—The slight differences between the closely related Carabidomemnini (Paussidae) and Ozaenini (Carabidae) are discussed and the paussid *Carabidodoxus* bänningeri (p. 127), Usambara, described.—*M. H. Hatch.*

11651. KOLBE, HERMANN. Foliopaussus, eine neue Untergattung von Paussus. *Ent. Blätter* 25(2): 100-103. 1929.—FOLIOPAUSSUS subg. n. (p. 100) of *Paussus*, for *P. foliicornis* Wasmann (type), which is described, and *P.* hildebrandti (p. 102), Abyssinia.—*M. H. Hatch.*

11652. KOLOSSOW, I. Propylaea 14-punctata L. a. batmanewi nov. ab. *Ent. Blätter* 24(4): 188. 1928.—From Russia (Ural).—*M. H. Hatch.*

11653. KOLOSSEW, J. Was ist Agabus eversmanni Ballion? *Ent. Blätter* 26(2): 85-88. 1930.—Usually interpreted as *A. labiatus* Brahm, this sp. is really a synonym of *A. fuscipennis* Payk.—*M. H. Hatch.*

11654. LENGERKEN, H. von. Langlebigkeit bei Käfern und deren Larven. *Mitteil. Deutsch. Ent. Ges.* 1(6): 84-88. 1930.—The normal age of larvae is 3-4 yrs., although some live 8-45 yrs. The abnormal age is due apparently to lack of moisture rather than to quantity or quality of food, or to the effect of unfavorable temperature conditions on metamorphosis.

11655. LEVER, R. J. A. W. A new endoskeletal organ

in the hind legs of the Halticinae. *Zool. Anz.* 92(9/10): 287-288. 6 fig. 1930.—This organ*, found in *Oxygona, Homophoeta, Disonycha,* and *Asphaera,* is probably a saltatorial modification. It is absent from all the Galerucinae.

11656. MIWA, Y. An enumeration of the coprophagid-Coleoptera from Formosa, with a table of the geographical distribution. *Insecta Matsumurana* 4(4): 163-180. 3 fig. 1930.—List of 101 spp., with descriptions of *Geotrupes laevistriatus* ssp. **formosanus*** (p. 164); *Onthophagus* **sonani*** (p. 171); and *Aphodius* **kotoensis** (p. 174). Types in the Ent. Lab., Research Inst., Formosa.—*R. Takahashi.*

11657. PIC, M. Sur quelques Coléoptères recueillis en Égypte. *Bull. Soc. Roy. Ent. d'Égypte* 14(2/3): 61-64. 1930.—*Centropthalmus* **grandis** (p. 61); *Thorictus* **impressithorax** (p. 62); *T.* **testaceus** (p. 62); **NOTHORHINOMORPHA** (p. 62), based on *N.* **deplanata** (p. 63); *Pogonochaerus perroudi* and *Opilo barbarus,* new to Egypt.

11658. PIC, M. Deux nouveaux Hétéromères de la République Argentine. *Rev. Soc. Ent. Argentina* 3(1): 29-30. 1930.—*Mordella* **ogloblini** (p. 29); *Copidita* **ogloblini** (p. 29).

11659. PLAVILSTSHIKOV, N. N. Über einige Cerambyciden-Arten (Coleopt.). *Ent. Blätter* 25(1): 29-35. 1929.—Descriptions of *Cortodera colchica* Reitt., *Poecilium alni* L., and *Purpuricenus kaehleri* L., and their varieties; *Pogonocherus taygetanus* Pic=*P. eugeniae* Cglb.; *P. eugeniae* v. pici (p. 34), Austria; status of *P. griseus* Pic and *P. hispidus* v. *rufescens* Pic is discussed.—*M. H. Hatch.*

11660. PRELL, HEINRICH. Beiträge zur Kenntnis der Morphologie und Biologie der einheimischen Lochmaea-Arten. *Ent. Blätter* 25(1): 1-11. 1929.—Key to *L. crataegi* Forst., *L. capreae* L., and *L. suturalis* Thoms., with morphological and biological notes on each.—*M. H. Hatch.*

11661. PRETNER, E. Contributo alla conoscenza delle Hydraenae italiane. *Boll. Soc. Ent. Ital.* 62(10): 178-182. 2 fig. 1930.—*Hydraena* (*Haenydra*) **solarii*** (p. 178); *H. truncata* ssp. **falzonii** (p. 181). *H. decolor* Dev., ♂ genitalia figured.

11662. RIBEIRO, S. Notes on some Indian Paussidae with the description of a new species. *Rec. Indian Mus.* 32(3): 223-246. 18 fig. 1930.—A supplement to the work of Fowler, who monographed the family in the "Fauna of British India" series in 1912. The paper is a taxonomic study of those spp. insufficiently treated by Fowler and those described from India since 1912. There are new locality records and observations on the secondary sexual characters of certain spp. The structure of the ♂ genital tube of this family is described for the first time and keys are given for separating the genera and spp. on the basis of this character. Notes, description of ♂ genital tube, and additional localities are given for most of the following: *Ceraptus; C. latipes**, and ssp. *singalensis; C. horsfieldi**; *Pleuropterus; P. taprobanensis**; *Ceratoderus; C. bifasciatus**; *C. andrewesi; Merismoderus; M. bensoni**; *Platyrhopalus; P. denticornis**; *P. angustus; P. intermedius; P. westwoodi; Euplatyrhopalus; E. aplustrifer**; *E. vexillifer**; *Platyrhopalopsis; P. melleyi**; *Platyrhopalides; P. badgleyi**; *Paussus; P. desneuxi; P. spencei; P. cognatus**; *P. hearseyanus; P. sesquisulcatus,* and var. *brevicornis; P. adamsoni**; *P. pilicornis**; *P. fletcheri; P.* **sewelli*** (p. 241), type in Imper. Agric. Res. Inst., Pusa; *P. hardwickei; P. boysi; P. jerdani**; *P. thoracicus; P. tibialis**; *P. nauceras; P. politus; P. escherichi; P. madurensis; P. angustulus.*—*S. Ribeiro.*

11663. SCHILDER, F. A. Zur Variabilität von Adonia variegata Goeze (Col. Coccinell.). *Ent. Blätter* 24(3): 129-142. 1 fig. 1928.—The color variation of each of 204 specimens of this species from Austria is described and the correlation between variation in different parts of the body investigated.—*M. H. Hatch.*

11664. SCHWARZER, BERNHARD. Beitrag zur Kenntnis der Cerambyciden (Ins. Col.). *Senckenbergiana* 13(1): 59-78. 33 fig. 1931.—*Hoplocerambyx* **abnormis*** ♀ (p. 59), Dutch New Guinea; *Massicus* **subregularis*** (p. 60), Sumatra (type) and Borneo; *Dialeges undulatus* ssp. **villosicornis*** (p. 60), Java; **QUETTANIA** (p. 62), near *Anubis,* type *Q.* **coeruleipennis*** ♀ (p. 63), British Baluchistan; *Rhaphuma* **bimaculata** (p. 63), India; *Rhaphuma?* **maculata** ♂* (p. 63), India; *Demonax* **lineaticollis** ♀* (p. 64), Assam; *Ptycholaemus* **longicollis*** (p. 64) and *P.* **variecollis*** (p. 65), Belgian Congo; *P. v.* ssp. **lateralis** ♀* (p. 66), Angola; *Nemophas* **ammiralis*** ♂ (p. 66), Admirality Is. [Melanesia]; *Epepeotes* **soembanicus** ♀* (p. 66), Sumba Is.; *Dihammus* **subauratus** ♂* (p. 68), Borneo; *Choeromorpha* **adspersa*** (p. 68), India; *Tmesisternus* **gabrieli*** (p. 69), Dutch New Guinea; *Niphonoclea?* **longicollis*** (p. 69) and *Acronia* **strasseni** ♂* (p. 70), Philippines; *Cenodocus* **gardneri** ♂* (p. 71), *Pterolophia* **gardneri** ♀* (p. 71), and *P.* **occidentalis** ♂* (p. 72), India; *Lychrosis* **quadrisignatus** ♂* (p. 72), Celebes; *Plocia* **sybroides** ♂* (p. 73), *P.* **ochraceomaculata*** (p. 73), *P.* **subfasciata** ♀* (p. 75), *Cylindroplocia* **helleri*** (p. 76), *Epilysta* **olivacea*** (p. 76), and *Atelais* **basigranosus** ♂* (p. 76), all 6 Philippines; *Glenea* **ochraceolineata** ♂* (p. 77) and *G.* **nobilis*** (p. 78), Borneo. Types in Senckenberg Mus.

11665. TRÄGÅRDH, IVAR. Some aspects in the biology of longicorn beetles. *Bull. Ent. Res.* [*London*] 21(1): 1-8. 6 fig. 1930.—Subjects treated are oviposition, larval tunnels and pupal chambers, the emergence of the adult beetle, and feeding habits of the adults.

11666. UHMANN, E. Berichtigungen zu meinem 3. Beitrag zur Käferfauna Deutschlands. (Ent. Blätter 24: 53-54. 1928.) [Errata for my third contribution to the Coleoptera fauna of Germany.] *Ent. Blätter* 24(3): 143-144. 1928.

11667. URBAN, C. Von der Lebensweise des Lixus myagri Ol. *Ent. Blätter* 24(4): 171-173. 1928.—Oviposition in Germany in early May on the stems of *Barbaraea, Brassica, Nasturtium,* and *Sisymbrium,* in which the larvae mature, usually by August, and transform into adults, in August or September. Notes on the larva. —*M. H. Hatch.*

11668. URBAN, C. Beiträge zur Naturgeschichte einiger Rüsselkäfer II. *Ent. Blätter* 25(2): 65-79. 1929. —Notes on the life cycle, habitat, and immature stages of *Bagous nodulosus, Craponius epilobii, Cidnorrhinus quadrimaculatus, Coeliastes lamii, Allodactylus affinis, Phytobius velatus, Poophagus hopffgarteni, Coryssomerus capucinus, Sibinia potentillae,* and *Orchestes rufus.*—*M. H. Hatch.*

11669. VAN EMDEN, FRITZ. Zwei neue Eptacus aus Syrien (Col. Curc.). *Ent. Blätter* 24(3): 120-124. 1928.—Key to 6 spp. of *Eptacus,* including *E.* **wohlberedti** (p. 120), Transjordania, and *E.* **otiorrhynchoides** (p. 121), Syria.—*M. H. Hatch.*

11670. VOSS, EDUARD. Einige weitere Attelabinae und Apoderinae (Col. Curc.). (26. Beitrag zur Kenntnis der Curculioniden.) *Ent. Blätter* 24(3): 112-120. 1928. —*Euscelus* (*Pheleuscelus*) **fuscus** (p. 112), French Guiana; *E.* (*Eleuscelus*) **subconcolor** (p. 112), Brazil; *Hybolabus* **guyanensis** (p. 113), French Guiana; *Anisolabus* **evanescens** (p. 113), Bechuanaland; *Plassoderinus* **minutus** (p. 114), Congo; *Omolabus* **innotatus** (p. 114), French Guiana; *Paratomapoderus togoensis* ssp. **cordieri** (p. 115), French Congo; *Parapoderus brachypterus* f. **biplagiata** (p. 115), Cameroons; *P.* **patricius** (p. 115), Gabun; *Apoderus* (*Allapoderus*) **collarti** (p. 116), Gabun; *A.* (*Strigapoderus*) **scabrosus** (p. 116), China; *A.* (*Compsapoderus*) **dispar** (p. 117), India; *A.* (*Leptapoderus*) **signatus** (p. 118), China; *A.* (*L.*) **varians** (p. 118), Punjab; *Cycnotrachelus* **parvulus** (p. 119), China.—*M. H. Hatch.*

11671. WASMANN, E. Ein neuer Paussus (P. nobilis) aus Ostindien. (Col. Pauss.) *Mitteil. Deutsch. Ent. Ges.* 1(6): 94-96. 1 pl. 1930.—*P.* **nobilis*** ♂ (p. 94), Central Provs., India, type in Imp. Agric. Res. Inst., Pusa.

11672. ZIMMERMANN, A. Die Dytisciden-Gattung

Lacconectas Motsch. Übersichtstabelle der bekannten Arten nebst zwei Neubeschreibungen. *Ent. Blätter* 25(1): 12-16. 1929.—Key to 10 spp. including *L.* punctipennis (p. 14), Java, and *L.* strigulifer (p. 15), India; *L. festae* Griff. probably belongs to *Aglymbus.*—*M. H. Hatch.*

DIPTERA

E. T. CRESSON, JR., *Editor,* Brachycera

O. A. JOHANNSEN, *Editor,* Nemocera

(See also in this issue Entries 9189, 9196, 9770, 9859, 10619, 10889, 10907, 10936, 10938, 10939, 10940, 10942, 10943, 10944, 10945, 10951, 11582, 11590)

11673. **ALEXANDER, CHARLES P.** New or little known Tipulidae from eastern Asia (Dipt.), VI. *Philippine Jour. Sci.* 42(1): 59-82. 2 pl. 1930.—The present paper is based on the study of the crane flies of the extensive collections made by Syuti Issiki in southern Kiushiu, Yakushima I., south of Kiushiu, and in the mountains of Formosa; also a few spp. from China. Types of new spp. are in author's coll. *Tipula* uénoi* (p. 59), Honshiu, Japan; *Limonia* (*Libnotes*) recurvinervis ♂* (p. 61), Szechwan, China; *L.* (*Geranomyia*) radialis ♂* (p. 62), Kiushiu; *L.* (*G.*) alpestris ♀* (p. 63), Formosa; *L. apicalis* ssp. majuscula (p. 65), and *Helius* (*H.*) chikurinensis ♂* (p. 65) and ssp. minusculus ♂* (p. 66), Formosa; *Tricyphona* baikalica ♂* (p. 66), Baikal, *T.* yakushimana ♂* (p. 67), Kiushiu; *Ula* flavidibasis ♀* (p. 68), Formosa, at 6,500 to 8,000 ft.; *Adelphomyia* ariana* (p. 69), Formosa, 6,500-8,000 ft.; *Pseudolimnophila* chikurina ♂* (p. 70), Formosa; NIPPOLIMNOPHILA (p. 70), resembling *Limnophila,* type *N.* kiusiuensis ♂* (p. 71), *N.* yakushimensis ♂* (p. 72), and *Ulomorpha* polytricha ♂* (p. 72), Kiushiu; *Eriocera* platysoma ♂ (p. 73), Szechwan, China; *Elephantomyia* (*E.*) serotina ♀ (p. 74), Formosa, at 6,000-8,000 ft.; *Ceratocheilus* tinctipennis ♀* (p. 75), Formosa, at 6,500-8,000 ft; *Lipsothrix* yakushimae ♀* (p. 75), Kiushiu; *Gonomyia* (*Ptilostena*) curticellula ♂* (p. 76), Formosa; *G.* (*P.*) shantungensis ♂* (p. 77), Shantung; *Erioptera* (*E.*) ensifera* (p. 78) and *E.* (*Ilisia*) tenuisentis ♂* (p. 79), Formosa; the subg. *Ilisia* is new to Formosa; *E.* (*Empeda*) microtrichiata* (p. 80), Kiushiu; *E.* (*Empeda*) angustistigma ♀* (p. 81), Formosa; *Molophilus* nigritus ♀ (p. 81), Formosa, at 6,500 to 8,000 ft.; *M.* nigritarsis ♀ (p. 82), Formosa.

11674. **AUSTEN, E. E.** A new hippoboscid parasite (Diptera, Pupipara) of the Indian sand-martin. *Ann. and Mag. Nat. Hist.* 5(29): 560-561. 1930.—*Ornithomyia* comosa (p. 560), India, on *Riparia paludicola chinensis* Gray & Hardw. Types in British Mus.

11675. **BURKE, H. E.** Monterey pine midge pupates at bases of needles. *Pan-Pac. Ent.* 6(4): 147. 1930.—Note on *Thecodiplosis piniradiatae.*

11676. **CURRAN, C. H.** New species of Lepidanthrax and Parabombylius (Bombyliidae, Diptera). *Amer. Mus. Novitates* No. 404. pp. 1-7. 1930.—A revision of the genera with keys to the spp. *Lepidanthrax* lutzi (p. 2) and *L.* morna (p. 3), Arizona; *L.* indecisa ♂ (p. 4), Mexico; *L.* panamensis (p. 5), Panama; *Parabombylius* vittatus ♀ (p. 7), Arizona.

11677. **CURRAN, C. H.** Three new Diptera from Canada. *Jour. New York Ent. Soc.* 38(1): 73-76. 1930.—*Hydrophorus* browni (p. 73), Quebec; *Cyrtophloeba* nitida (p. 74), Manitoba; *Meriania* septentrionalis (p. 75), British Columbia. Types in Canadian Nation. Coll. In the material studied were many other dolichopodids previously known only from Alaska, indicating that the Arctic fauna is continuous in distribution around the northern coast of Canada proper, at least as far east and south as the north shore of the Gulf of St. Lawrence.

11678. **DUDA, OSWALD.** Bibionidae. In: **ERWIN LINDNER.** Die Fliegen der palaearktischen Region. 2 (sect. 4): 1-75. 2 pl., 29 fig. (Lief. 45). Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—The family and subfamilies, their economic importance etc. are discussed, and keys are given to subfams., genera, and spp. The descriptions include: *Axymyia* kerteszi ♀* "n. sp. or var. of *A. furcata*" (p. 8), Hungary; *Dilophus* rubiginosus ♀ (p. 35), Siberia, type in Vienna Mus.; *D.* strobli (*D. tenuis* v. *minor* Strobl, not *D. minor* Beck.) (p. 36); the larval stages of *Dilophus* are described and figured; also those of *Bibio,* with a note on the larval parasites of the latter; *Bibio* caucasicus ♂ (p. 48), Caucasus, type in Vienna Mus.; *B. clavipes* v. tancrei (p. 50), central Asia; *B.* crassipes ♀* "n. sp. or=*Lautaretensis* Villen." (p. 50), Scandinavia, Finland; *B.* fulvicrus "n. sp. or var. of *fulvicollis* Gimm" (p. 54), Transbaikalia; *B.* handlirschi (p. 56), Austria, Hungary; *B. hortulans* vars. hispanicus and graecus (p. 58), Spain; *B. hortulanus* v. japanicus (p. 59), Japan; *B. h.* var. major ♀ (p. 59), east Asia; *B. h.* vars. nigropilosus and turcmenicus (p. 60), Turkestan; *B. rufipes* v. hungaricus (p. 68), Hungary; *B.* strobli ♀ (p. 69), the Alps. An index to families, subfamilies, tribes, genera, and spp. concludes the paper.

11679. **ENDERLEIN, GÜNTHER.** Zwei neue Toxorhynchites aus dem Kongogebiete. *Zool. Anz.* 94(3/4): 123-125. 1931.—*Toxorhynchites* schultzei ♀ (p. 123), French equatorial Africa, sucking human blood; *T.* tessmanni ♀ (p. 124), Spanish Guinea; *T. conradti* Grünb., ♀ redefined. Types of new spp. in Zool. Mus. Univ. Berlin.

11680. **GALLI-VALERIO, B.** Observations sur les Culicidés, les Tabanidés, les Simulidés et les Chironomidés. *Zentralbl. Bakt. Abt. I.* (*Orig.*) 116(2/3): 220-224. 1930.—Chiefly on local distribution and seasonal development.

11681. **HULL, FRANK M.** Notes on several species of North American Pachygasterinae (Diptera: Stratiomyidae) with the description of a new species. *Ent. News* 41(4): 103-106. 1930.—*Neopachygaster* vitreus (p. 103), Iowa, type in author's coll.; *Eupachygaster punctifer* Malloch, ♂ described.

11682. **LENGERSDORF, FR.** Zwei neue Arten der Familie Lycoriidae (Sciaridae). *Zool. Anz.* 94(3/4): 65-67. 2 fig. 1931.—*Neosciara* röderi ♀* (p. 65) and *Plastosciara* longipennis ♀* (p. 66), Bear Island. Types in Zool. Inst. Univ. Halle.

11683. **LENGERSDORF, FRANZ.** Lycoriidae (Sciaridae). (Conclusion.) In: **ERWIN LINDNER.** Die Fliegen der palaearktischen Region. 2(sect. 7): 33-71. 4 pl., 11 fig. (Lief. 43). Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—Keys to spp., and descriptions, including: *Lycoria* corticalis* (p. 38), Germany; *L.* medialis* (p. 51), northern Europe; *L.* pygmaea ♂* (p. 54), central Europe; *L.* insulana and irmgardis* (p. 61), central and northern Europe.

11684. **LINDNER, ERWIN.** Phryneidae. (Anisopodidae, Rhyphidae.) In: **Die Fliegen der palaearktischen Region.** 2(sect. 1a): 1-10. 7 fig. (Lief. 50). Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—Discussion of the family and the genera *Phryne* (with key to spp.) and *Mycetobia,* with an annotated list.

11685. **LINDNER, ERWIN.** Petauristidae (Trichoceridae). In: **Die Fliegen der palaearktischen Region.** 2(sect. 1b): 11-22. 12 fig. (Lief. 50). Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—Discussion of the family and its morphology, larvae and pupae, and keys to genera and spp., followed by an annotated list of some 20 spp. An index to genera, spp., and vars., and their synonyms concludes the paper.

11686. LINDNER, ERWIN. Blepharoceridae + Deuterophlebiidae. In: Die Fliegen der palaearktischen Region. 2(sect. 2): 1-37. 2 pl., 37 fig. (Lief. 50). Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—Contains description of the family, larvae and pupae, keys to genera, and to imagoes and larvae of *Liponeura*, and an annotated list of about 25 spp.

11687. LINDNER, ERWIN. Thaumaleidae. (Orphnephilidae.) In: Die Fliegen der palaearktischen Region. 2(sect. 3): 1-16. 3 pl., 12 fig. (Lief. 50). Schweizerbart'sche Verlagsbuchhandlung: Stuttgart, 1930.—Discussion and description of the family, larvae and pupae, an annotated list of 28 spp., and an index to genera and species.

11688. MARTINI, E. Ein Zwitter von der Gelbfiebermücke. (Dipt.) *Stettiner Ent. Zeitung* 91(1): 83-85. 1 fig. 1930.—A detailed description of *Aedes meigenanus* is given.

11689. MUKERJI, S. Taxonomic importance of the terminal segments of psychodid larvae. *Nature* [*London*] 125(3151): 446-447. 1930.—Specific differences are confined to the 2 terminal segments in the case of *Phlebotomus*, and to only the last segment in *Psychoda*.

11690. ROHDENDORF, B. Caliphorinen-Studien III (Dipt.). Eine neue Rhynchomyia aus Transkaspien. *Zool. Anz.* 88(7/8): 176-179. 1 fig. 1930.—*R.* koschewnikovi* (p. 177), type in Zool. Mus., Univ. of Moscow.

11691. SÉGUY, E. Un nouvel Asilus chinois. (Dipt.). *Ann. Soc. Ent. France* 99(1): 48. 1930.—*A.* sinis, near Peking, type in Mus. Paris.

11692. SPENCER, G. J. Notes on Phalacrocera species, an aquatic crane fly (Diptera, Tipulidae). *Proc. Ent. Soc. Brit. Columbia* 27: 15-16. 1 fig. 1930.—Notes on larvae of *P. vancouverensis** Alex.

11693. STACKELBERG, A. v. Beiträge zur Kenntnis der paläarktischen Syrphiden. II. *Zool. Anz.* 90(3/4): 113-120. 9 fig. 1930.—*Chilosia* lunulifera* (p. 113); *C.* annulifemur* (p. 116); *C.* sichotana* ♀ (p. 118); *Cinxia* dux* ♂ (p. 119). All from the Ussuri region, Siberia; types in Zool. Mus. Russ. Acad. Sci.

11694. TAYLOR, T. H. The blowfly's mouth. *Nature* [*London*] 125(3146): 238. 1 fig. 1930.—A suggestion that the name mouth be applied to to the aperture between the epi- and hypopharynx at the end of the rostrum, rather than to the opening in the center of the terminal disc.

11695. THIEL, P. H. van. Anopheles maculipennis et la variété atroparvus; un problème de l'anophélisme sans paludisme. *C. R. du 2me Congrès International du Paludisme à Alger* [no pp. designated]. 1930; appearing in: *Acta Leidensia, Scholae Med. Tropicae* 5: 193-195. 1931.—Swellengrebel's "race à index alaire plus petit" of *A. maculipennis* is recognized as the var. *atroparvus* (p. 193) of *A. maculipennis* Meigen, the parent spp. being Swellengrebel's "race à index alaire grand." Experiments, including one in which the larvae of both series were fed *Daphnia* powder, fail to sustain Achundow's contention that these "races" are merely forms resulting from different nutrition.

11696. VAN DUZEE, MILLARD C. New species of Dolichopodidae from North America (Diptera). *Ent. News* 41(2): 53-55; (3): 70-73. 1 fig. 1930.—*Rhaphium* latifacies ♂ (p. 53), *R.* longibara (p. 53), *Neurigona* ornatus ♂ (p. 55), *N.* nigrimanus (p. 70), and *Dolichopus* breviciliatus ♂ (p. 71), all from Alberta, types in U. S. Nation. Mus.; *Polymedon* flavitibialis* ♂ (p. 71), Arizona, and *Paraclius* elongatus (p. 72), West Indies, types of both in Univ. Arkansas.

11697. VILLENEUVE, J. Diptères nouveaux de la Somalie italienne. *Boll. Soc. Ent. Ital.* 62(3): 53-55. 3 fig. 1930.—*Sarcophaga* flagellata* (p. 53); *S.* praerupta* ♂ (p. 54); *Blaesoxypha* anceps* (p. 55).

11698. WEHRLE, LAWRENCE PAUL. A note on the food habits of Chyliza erudita Mel. (Diptera). *Jour. Econ. Ent.* 23(1): 286. 1930.—Larva appears to feed on pitch.

HEMIPTERA AND HOMOPTERA

H. H. KNIGHT, *Editor*, Hemiptera

Z. P. METCALF, *Editor*, Homoptera

(See also in this issue Entries 9178, 9196, 10904, 10913, 10918, 10922, 10945, 11754)

11699. BALL, E. D. The toadhoppers of the genus Phylloscelis Germ. (Rhynchota, Fulgoridae). *Canadian Ent.* 62(9): 192-195. 1930.—*Phylloscelis*, key to spp.; *P. atra*, redefined, key to vars., host *Andromeda* sp.; *P. a.* var. ocala (p. 193), Florida; *P.* rubra (p. 194), on *Xolisma fruticosa*, Florida (type), also along coast from Mississippi to New York; *P. rubra* v. nigra (p. 194), Florida; *P. pallescens* on *Andromeda in*, Florida. Types of new spp. in author's coll.

11700. BEAMER, R. H. Some Erythroneura (grape leaf hoppers) of the maculata group (Homoptera, Cicadellidae). *Canadian Ent.* 63(6): 127-135. 1931.—*E. maculata*, ♂ type described; *E.* gillettei (p. 128) and *E.* noncuspidis (p. 129), Illinois; *E.* stephensoni (p. 130), Texas (type), Oklahoma, and Illinois; *E. lunata*, ♂ genitalia described; *E.* contracta (p. 130), Kansas (type), Illinois, and Tennessee; *E.* gemina (*E. maculata* var. *g.* McAtee) (p. 131); *E.* curvata (p. 132) and *E.* impar ♂ (p. 133), Kansas; *E.* brevipes (p. 133), Oklahoma; *E.* nigriventer (p. 134), Illinois; *E.* bifida (p. 134), Louisiana.

11701. BOX, HAROLD E. Algunos Membrácidos de Tucumán y Jujuy. Contribución para un catálogo de las especies argentinas de la familia Membracidae (Hemiptera-Homoptera). *Rev. Soc. Ent. Argentina* 2(5): 217-218. 1929.—A list of Membracidae of these regions, including 9 spp. new to Argentina, with mention of their host plants.

11702. COCKERELL, T. D. A., and ELMER D. BUEKER. New records of Coccidae (Homoptera). *Amer. Mus. Novitates* 424. p. 1-8. 2 pl., 3 fig. 1930.—*Antonina* littoralis ♀* (p. 1), at roots of grass, New Caledonia; LORANTHASPIS (p. 4) (Diaspinae), based on *L.* microconcha ♀*, larva on *Loranthus pentandrus*, parasitic on *Canarium sleeumanum*, Japan; *Ceroplastes* dozieri (p. 7), on *Maytenus buxifolia;* MARSIPOCOCCUS n. subg. (p. 7), presumably in *Lecanium*, based on *Lecanium marsupiale** Green (p. 7). Types in Amer. Mus. Nat. Hist.

11703. DEAY, HOWARD O. Six new species of Tenagobia Bergroth (Hemiptera, Corixidae). *Bull. Brooklyn Ent. Soc.* 25(3): 171-181. 2 pl. 1930.—*Tenagobia* minuta* (p. 171), Panama; *T.* truncata* (p. 172), Ecuador; *T.* mexicana* (p. 174), Mexico; *T.* serrata* (p. 175), Bolivia; *T.* constricta* (p. 176), Ecuador; *T.* hungerfordi* (p. 177), Matto Grosso, Brazil. Types in Univ. Kansas Ent. Coll.

11704. DRAKE, C. J., and H. M. HARRIS. A wrongly identified American water-strider. *Bull. Brooklyn Ent. Soc.* 25(3): 145-146. 1930.—*Gerris rufoscutellatus* does not exist in the United States; *G.* dissortis (p. 145), Ohio (type in Drake coll.), Illinois, Iowa, New York, eastern Canada.

11705. DRAKE, CARL J. Concerning some Tingitidae from the Philippines (Hemiptera), with new species. *Proc. Ent. Soc. Washington* 32(9): 165-168. 1930.—*Paracopium* philippinensis (p. 165), Sibuyan; *Cromerus* bakeri (p. 166), Samar; *C. kalshoveni*, Mindanao, new to Philippines; *C. invarius*, Mindanao and Samar, new to Philippines; *Diplocysta nubilia*, Negros; *Cysteochila pictus*, Borneo, Luzon; *Tingis* buddleiae (p. 168), Luzon, on *Buddleia asiatica*. Types in U. S. Nation. Mus.

11706. GODING, FREDERIC W. Membracidae in the American Museum of Natural History. *Amer. Mus. Novitates* 421. p. 1-27. 1 fig. 1930.—Records are given for 342 spp. **TUMECAUDA** (p. 2) (Centrotinae, Acuminatini), type *T.* **schaefferi** ♀* (p. 3), Arizona; *Bocydium*, key to 5 spp.; *B.* **bullifera** ♀ (p. 4), Bolivia; *Guayaquila* **mirucornua** (p. 7), Honduras; *Umbonia* **octolineata** ♀ (p. 9), Mexico; *U.* **sordida** ♀ (p. 10), Panama; *Alchisme* **elevata** ♀ (p. 10), Bolivia; *Cymbomorpha* **convexa** ♀ (p. 12), *Dysyncritus* **lineatus** ♀ (p. 12), *D.* **nubilus** ♀ (p. 13), and *D.* **discrepans** ♀ (p. 14), Chapada, Brazil; the last named are separated in a key from *D. intectus; Proterpia* **truncaticornis** (p. 15), Chapada; *Poppea* **bulbidorsa** ♀ (p. 17), Peru; *Centrogonia* **speciosa** ♀ (p. 18), Brazil; *Gelastogonia* **gibbera** ♀ (p. 20), Ecuador; *Telamona* **celsa** ♀ (p. 21), Brazil; *Micrutalis* **atrovena** ♀ (p. 22), Costa Rica; *M.* **callangensis** ♀ (p. 22) and *M.* **lata** ♀ (p. 22), Peru; *M.* **tartaredoides** ♀ (p. 22), Bolivia; *M.* **chapadensis** ♀ (p. 23), Brazil; *M.* **tau** ♀ (p. 23), Peru; *Gargara* **discrepans** ♀ (p. 24), Borneo; *Pogon* **flavescens** ♀ (p. 25), N. S. Wales; *Pyrgauchenia* **cornuta** ♂ (p. 26), Borneo; **EUXIPHOPOEUS** (p. 26) (Centrotinae, Centrotini), type *E.* **nodosus** (p. 26), "Dar."

11707. GODING, FREDERIC W. The Membracidae of South America and the Antilles. IV. Subfamilies Hoplophorioninae, Darninae, Smiliinae, Tragopinae (Homoptera). *Trans. Amer. Ent. Soc.* 55(3): 197-330. 2 pl. 1929.—The paper contains keys to all known spp. from South America and the Antilles, with synonymy and habitat. *Umbonia spinosa* v. **sordida** (p. 203), Panama; *Atypa* **bucktoni** (*A. gibba* Buckton, preoc.) (p. 219); *Monobelus flavidus* Fairm. (=*Darnoides semicrema* Baker); *Poppea* **discrepans** (p. 253), Peru; *Micrutalis* **bella** (p. 291); *Acanthicus desmarestii* Laporte is an unknown pupa of some sp. of *Lycoderes.*—*F. W. Goding.*

11708. GRANOVSKY, A. A. A new name for the genus Quippelachnus Oestlund (Aphiidae, Homoptera). *Proc. Ent. Soc. Washington* 32(4): 61-64. 1 fig. 1930.—**OESTLUNDIELLA** (p. 63) (Callipterini), type *O.* flava (*Euceraphis f.** Davidson, =*Quippelachnus "gillettei* Davidson" Oestlund (not *Euceraphis g.** Davidson)); *Euceraphis betulae**.

11709. HOTTES, F. C. Notes concerning the first papers dealing with the aphid fauna of America. *Proc. Biol. Soc. Washington* 44: 61-70. 1931.—The writer gives an English translation of the original descriptions of 36 spp. described by Rafinesque in 1817-1818, and 7 described by Haldeman in 1844, which affect the nomenclature of American aphids. *Aphis diervilla-lutea* Raf. and *A. aralia-hispida* Raf. have not been recognized; *Myzus* **aquilegia-canadensis** (*Aphis a.* Raf.,=? *M. essigi* G. & P.) (p. 62); *Myzus hieracii* (Schrank) (=*A. hieracium-venosum* Raf., *A. campanula-riparia* Raf., *A. hieracium-paniculatum* Raf., *A. annulipes* Raf., *A. verticolor* Raf.); *A. melampyrum-latifolium* Raf. and *A. chenophyllum-canadense* have not been recognized; *A. erigeron-philadelphicum* Raf. (=*A. erigeron-canadensis* Raf.) has precedence over *Macrosiphum erigeronensis* (Thomas); *Myzus persicae* (Sulzer) (=*A. furcipes* Raf.); *A. fusiclava* Raf. is not an aphid; *Macrosiphum rosae* (L.) (=*Aphis rosa-suaveolens* Raf., *A. diplepha* Raf., *A. rhodryas* Raf.); *Aphis viburnicola* Gillette is not a synonym of *A. viburni* Scop.; *A. rumicis* L. (=*A. viburnum-opulus* Raf., *A. viburnum-acerifolium* Raf.); *Rhopalosiphum* **crategus-coccinea** (*A. c.-c.* Raf.,=*R prunifoliae* (Fitch)) (p. 65); *A. cornus-stricta* Raf. (=*A. helianthi* Monell); *Neothomasia* **populus-grandidentata** (*A. p.-g.* Raf.,=*N. populicola* (Thomas)). The description of *Aphis populus-trepida* Raf. appears to apply in part to *Chaitophorus populifoliae* Oestland (Davis); *A. jacobea-balsamita* Raf. (=*A. oreaster* Raf., =*Macrosiphum ambrosiae* (Thomas), *A. xanthelis* Raf., *A. ambrosia* Raf.). *A. erigeron-strigosum* Raf. is synonymous with *Macrosiphum rudbeckiae* (Fitch). *Aphis gibbosa* Raf. is also a synonym of above and is given precedence by Hottes over *A. erigeron-strigosum* although the latter has page precedence. *A. verbena-hastata* Raf., *A. polanisia-graveolens* Raf., *A. arabis-mollis* Raf., *A. polygala-senega* Raf., and *A. acaroides* Raf. have not been recognized; *A. brassicae* L. (=*A. brassica-napus* Raf.). The genus *Loxerates* Raf. with type *A. diervilla-lutia* remains unknown; *Dactynotus* Raf. with type *A. hieracii* Schrank (=*A. hieracium-paniculatum* Raf.) takes precedence over *Myzus* and its subgenus *Neomyzus. Adactynus* Raf. with type *A. pteris-aquilinoides* (=*Macrosiphum ptericolens* Patch) has precedence over *Macrosiphum* Pass. *A. quercus-monticula* Hald. and *A. discolor* Hald. have not been recognized. *Adactynus gibbosa* Raf. (=*Aphis rubecula* Hald.); *Aphis castanea-vesca* Hald. is probably synonymous with and has precedence over *Calaphis castanae* Fitch; *A. pomi* DeGeer (=*A. bicolor* Hald.); *Cinaria pini* (L.) (?=*A. marginipennis* Hald.); *Clavigerus salicis* (L.) (=*A. pilosus* Hald.).

11710. HUNGERFORD, H. B. A new genus of semi-aquatic Hemiptera. *Bull. Brooklyn Ent. Soc.* 24(5): 288-291. 1 pl. 1929.—**MESOVELOIDEA** (p. 288), in Mesoveliidae, based on *M.* **williamsi** ♀* (p. 289), Ecuador, type in author's coll.

11711. HUNGERFORD, H. B. Two new water bugs from the western U. S. A. (Nepidae and Notonectidae). *Canadian Ent.* 62(10): 216-218. 1930.—*Ranatra* **texana** (p. 217), Texas; *Notonecta* **spinosa** (p. 217), Utah (type), Nevada. Types in Univ. Kansas Ent. Mus.

11712. KLYVER, F. D. Notes on the Chermidae. Parts I & II. (Hemiptera: Homoptera). *Canadian Ent.* 62(8): 167-175. 1 pl. 1930; 63(5): 111-115. 3 fig. 1931.—*Trioza albifrons** and *T. urticae* of England are distinct; nymphs of *albifrons* in California are described. *Aphalara calthae,* description of 5th stage nymph*. *Paurocephala* **fremontiae*** (p. 174), California, host plant *Fremontia californica; Synoza pulchar* Laing (=*S. floccosa* Ferris). *Psylla pyricola,* nymphal stages* on *Pyrus persicolor* in New York described; *Psylla mali* nymph* on apple in Nova Scotia described.

11713. KNIGHT, HARRY H. Descriptions of four new species of mimetic Miridae (Hemiptera). *Ent. News* 41(10): 319-321. 1930.—*Coquillettia* **nigrithorax** ♂ (p. 319), Arizona; *C.* **granulata** (p. 319), Utah; *Sericophanes* **albomaculatus** ♂ (p. 320), Texas; *Cyrtopeltocoris* **gracilentis** ♂ (p. 321), Alabama. Types in author's coll.

11714. KNOWLTON, GEORGE F. Notes on Utah Lachnea (Aphididae). *Canadian Ent.* 62(7): 152-161. 6 fig. 1930.—The supertribe Lachnea, and particularly the Lachnini, correspond most closely to a hypothetical ancestral type, feeding on the bark of conifers; the Eulachnini, which are smaller and have remained on the primitive host, attack the needles; the Pterochlorini have gone over to the woody parts of deciduous plants; the Anoeciini have taken on the habit of subterranean summer wingless forms. *Lachnus medispinosus,* which feeds on the bark of twigs of *Pinus contorta;* description of ♀ fundatrix, apterous* and alate* vivipara; *L. brevispinosus* also feeds on *P. contorta; L. solitarius,* description of ♀ apterous vivipara, feeds on younger bark of *Pinus ponderosa; L. edulis** was found on *P. monophylla; L. e.* ssp. **tanneri** ♀ (p. 155), apterous and alate vivipara, Utah, on *P. monophylla; L. hottesi,* description of ♀ apterous* and alate* vivipara, host *Picea engelmanni,* attended by *Formica cinerea* and *F. rufa; L. coloradensis,* description of apterous viviparous and oviparous ♀♀, host *Picea pungens,* attended by *Formica fusca; L. glehnus,* description of apterous viviparous ♀♀, host *Picea pungens; L. curvipes* and *L. occidentalis,* host *A. concolor; L. burrilli* and *L. pulverulens,* host *Juniperus utahensis; Eulachnus rileyi,* host Austrian pine; *Essigella pini,* host lodge pole pine; *Tuberolachnus viminalis,* description of ♀ apterous* vivipara, hosts *Salix alba* and *Acer negundo,* attracting *Vespa occidentalis,* attacked by many syrphid larvae; *Pterochlorus rosae* on rose; *Anoecia querci* on dogwood and grasses.

11715. METCALF, Z. P., and S. C. BRUNER. Cuban Fulgorina. 1. The families Tropiduchidae and Acanaloniidae. *Psyche* 37(4): 395-424. 5 pl. 1930.—A list of

16 spp. with records of localities and dates including: *Neurotmeta sponsa*, nymph figured; *N.* **breviceps** (p. 398), type in Gundlach Mus., Havana; *Neurotmeta* Guerin equals *Tangia Stål;* **TANGELLA** (*Tangiopsis* Melichar, not Uhler) (p. 397), type *Tangia kraatzi* Stal. *Tangia sponsa* Van Duzee (nec Guerin) from Jamaica is referred to *Tangella* (p. 397). *Pelitropis rotulata** Van Duzee, nymph described. The status of the genera *Colgorma* Kirkaldy, *Temora* Kirk., and *Rudia* Stål is discussed. **ACHILORMA** (p. 400), type *Achilius bicinctus* Spinola; *Colgorma fowleriana* Kirk., also referred to *Achilorma* (p. 400); *Colgorma* **montana** (p. 401); *C.* **campestris** (p. 403); *Cyphoceratops furcata** Uhler described; *Remosa spinolae** Guerin, described; *Ladella* **acunae** (p. 405); *Acanalonia servillei** Spinola, described; *A. pumila** Van Duzee, nymph described and illustrated; *A.* **impressa** (p. 408); *A.* **lineata** (p. 411); *A.* **carinata** (p. 413); *A.* **viridula** (p. 414); *A.* **gundlachi** (p. 415); *A.* **insularis** (p. 416). Types, unless otherwise stated, in Metcalf coll., paratypes in coll. Estacion Exper. Agronomica, Cuba.—*Z. P. Metcalf.*

11716. MORDVILKO, A. Les Pemphigiens des Pistachiers et leurs formes anolocycliques. *Bull. Soc. Zool. France* 53: 358-366. 1928.—Nearly every sp. of *Pistacia* has its own sp. of plant-lice of the tribe Fordea (subfam. Pemphiginae); therefore the modern distribution of an anolocyclic form of a heteroecious sp. (living on secondary hosts beyond the limits of distribution of primary ones) indicates the former distribution of the primary host during Tertiary or glacial times. *Forda trivialis* galls are produced on *Pistacia terebinthus*, and its anolocyclic forms (on Gramineae roots) are distributed as follows: Turkestan, the Caucasus, the Crimea, and northwards to central Europe. In Transcaucasia and southern Crimea the sexuparae of this sp. have not entirely disappeared and continue to appear on *Pistacia mutica*, which is not the primary host; this fact indicates that *P. terebinthus* existed there in relatively recent times. *Paracletus cimiciformis* Heyd. (=*Pemphigus pallidus* Derbès). Its galls are formed on *Pistacia terebinthus*, its anolocyclic forms (on Gramineae roots) are distributed over most of Europe, in the Caucasus, in Turkestan, and in Siberia, extending as far as the river Ob (Barnaul). The sexuparae have remained in Transcaucasia and in southern Crimea, which shows that *P. terebinthus* existed there in relatively recent times. *Trifidaphis phaseoli* (=*Tychea groenlandica* Rübsaamen, *Trifidaphis perniciosa* Nevsky, *T. radicicola* Essig) has as its primary host *Pistacia mutica*, on the leaves of which it forms its galls. Its anolocyclic forms are distributed as follows: Turkestan, Egypt, most of Europe (excepting the northeastern part), Greenland, North America, and it is probable that such was the distribution of *P. mutica* in the Tertiary. The galls of *Aploneura lentisci* Pass. are produced on *Pistacia lentiscus*. Its anolocyclic forms are distributed over Turkestan, Egypt, the Caucasus, and most of Europe. *Aploneura* **ampelina** (*Rhizoctonus ampelinus* Mokrz.) (p. 364). This sp. exists now only as an anolocyclic form, for its primary host (probably related to *P. lentiscus*) has possibly entirely disappeared. Its present distribution is the Crimea and Ciscaucasia, on *Vitis vinifera* roots. The 2 spp., *Forda* **hirsuta** (p. 359) and *Slavum lentiscoides*, form galls on the *Pistacia vera* leaves in Turkestan. As to the former sp., only its emigrants and wingless exules are briefly described. The progeny of the emigrants was brought up on *Agropyrum repens* rhizomes, in test-tubes. The exules are not found in Europe, and it may be that *P. vera* never existed in Europe. *Forda follicularia* is recorded from *Pistacia mutica* and *P. terebinthus*. **PEMPHIGETUM** (p. 359), with *P.* **muticae** (p. 359), host *Pistacia mutica; P.* **utricularium** (Pass.) (p. 359), n. comb., host *Pistacia terebinthus.*—*A. Mordvilko.*

11717. MUIR, F. Descriptions and records of Fulgoroidea from Australia and the South Pacific Islands. No. 1. *Rec. Australian Mus.* 18(2): 63-83. 31 fig. 1931.—*Aka* **tasmani*** (p. 63) and *A.* **hardyi** ♂ (p. 64), Tasmania, types in Australian Mus.; *Oliarus* **doddi** ♀* (p. 64), *O.* **hackeri*** (p. 65), *Iolania* **vittipennis*** (p. 66), and *I.* **clypealis** ♂* (p. 67), Queensland; *Tarberus* **jacobii** ♂* (p. 67), New Caledonia; *Nesocharis* **v-nigra** ♀ (p. 68), New Hebrides; *Ugyops* **longiceps*** (p. 69), Queensland; *U.* **sulcata*** (p. 70), and *U.* **buxtoni*** (p. 71), New Hebrides; *U.* **musgravei*** (p. 70), Lord Howe Is., type in Australian Mus.; *Lamenia* **epiensis*** (p. 72), New Hebrides; *Rhinodictya* **granulata** (p. 73), Fiji Is.; *R.* **buxtoni** (p. 73), New Hebrides; *Thaumantia* **insularis** ♀ (p. 74), Solomon Is.; **KALLITAMBINIA** (p. 74) (Tropiduchidae), near *Tambinia*, type *K.* **australia** ♀ (p. 74); *Pseudoparicana* **sanguinifrons** (p. 75), New Guinea [type depository not given]; **LAVORA** (p. 75) [Tropiduchidae], near *Vanua*, type *L.* **ricanoides*** (p. 76), Solomon Is., type in Australian Mus.; *Nisia* **buxtoni*** (p. 77), New Hebrides; **PAINELLA** (p. 77) [Lophopidae], near *Buxtoniella* and *Virgilia*, type *P.* **harti*** (p. 78), Solomon Is.; *P.* **simmondsi*** (p. 80), Solomon Is.; *Plestia* **viridis*** (p. 81), *P.* **minuta*** (p. 82), and *P.* **trimaculifrons*** (p. 82), New Hebrides; *Aprivesa* **varipennis** (p. 83), Western Australia. Types are in British Mus., unless otherwise noted.

11718. TAKAHASHI, RYOICHI. List of the aphid genera proposed as new in recent years. *Proc. Ent. Soc. Washington* 32(1): 1-24. 1930.—This list of 110 names is supplementary to A. C. Baker's 1920 list of aphid genera. *Pterochlorus* Rond. (=*Maculodryaphis* Gaumont); *Glyphina* Koch (=*Kurisakia* Tak.); *Sappocallis* Matsumura (=*Telocallis* Shinji); *Myzocallis* Pass. (=*Pteriaphis* Gaum., *Melanocallis* Oestl., *Tinocallis* Mats., *Tuberocallis* Nevsky, *Mesocallis* Mats., *Neocallis* Mats., *Sarucallis* Shinji, *Lutaphis* Shinji); *Myzocallis kahawaluokalani* Kirk. (=*Sarucallis lythrae* Shinji); *Myzocallis yokoyamai* Takah., *M. querciformosanus* Takah., *M. nigra* Okam. and Takah., and *M. pilosus* Takah. are referred to *Recticallis; Euceraphis* Walk. (=*Quippelachnus* Oestl.); *Thripsaphis* Gillette (=*Allaphis* Mordvilko); *Drepanaphis* Del Guercio (=*Mimocallis* Mats., *Betacallis* Mats.); *Clavigerus* Szépl. (=*Plocamaphis* Oestl.); **PAOLIELLINA** (p. 7), new subtribe in Callipterini, for *Paoliella; Eutrichosiphum* Essig & Kuwana (=*Goodea* Shinji); *Cervaphis* van der Goot (=*Diverosiphum* Shinji); *C. quercus* Takah. (=*Diverosiphum kunugii* Shinji); *Setaphis* van der Goot (=*Cerciaphis* Theobald); *Neoacaudus* Theobald (=*Amphicercidus* Oestl.); *Anuraphis* Del Guercio (=*Cedoaphis* Oestl., *Xerobion* Nevsky, *Ceruraphis* Börner, *Lachnaphis* Shinji); *Longicaudus* van der Goot (=*Hemiaphis* Börner); *Cerosipha* Del Guercio (=*Aphidula* Nevsky); *Cryptosiphum* Buckton (=*Pseudolachnus* Shinji); *Xerophilaphis* Nevsky is a synonym of *Brachyunguis* Das and apparently also of *Pergandeidia* Schout.; *Neaphis* Nevsky is a synonym of *Stephensonia* Das, and probably of *Rhopalosiphum* Koch; *Rhopalosiphum lahorensis* Das (=*Neaphis viridis* Nevsky); *Vesiculaphis* Del Guercio (=*Trilobaphis* Theob.); *V.* **theobaldi** (*Trilobaphis caricis* Theob., not *V. c.* Fullaway (p. 12); *Macrosiphum* Pass. (=*Tritogenaphis* Oestl., *Sitobion* Mordv., *Staticobium* Mordv., *Paczoskia* Mordv., *Anameson* Mordv., *Metopolophium* Mordv.); the type of *Staticobium* is selected as *S. otolepidis* Nevsky; *Macrosiphum neoartemisiae* is referred to *Titanosiphon; Megoura* Buckton (=*Tuberosiphum* Shinji); *M. citricola* van der Goot (=*T. camphorae* Shinji); *Amphorophora* Buckton (=*Clavosiphum* Shinji); *Capitophorus* van der Goot (=*Cryptomyzus* Oestl.); *Hyalopteroides* (=*Hayhurstia* Mordv., not Del Guercio); *Forda Heyden* (=*Hemitrama* Mordv.). The bibliography contains 77 references.

11719. THEOBALD, FRED. V. Three new British aphides. *Entomologist [London]* 61(776): 8-10. 3 fig. 1928.—*Macrosiphoniella* **triglochiniella*** (p. 8), apterous viviparous* and alate viviparous* ♀♀ on *Triglochin maritimum; Neoacaudus* **inflatus*** (p. 9), apterous viviparous ♀ on *Artemisia vulgaris; Aphis* **palustris*** (p. 10), apterous viviparous ♀, on *Triglochin palustris.* Types in author's coll.

HYMENOPTERA

C. F. W. MUESEBECK, *Editor*

(See also in this issue Entries 9150, 9178, 9193, 9408, 10005, 10934, 10945, 10947, 10948, 10949, 10951, 10967, 10972, 10973, 10974, 10979, 10980, 10985, 10986, 11582, 11590, 11866)

11720. **ANDREWS, E. A. Populations of ant mounds.** *Quart. Rev. Biol.* 4(2): 247-257. 1929.—In Europe, actual counts of the ants in their nest mounds have been few and have shown at most about 100,000 ants; however, authorities have surmised that the populations may run up to 500,000. In America, the count of ants from one average mound of *Formica exsectoides* F. and certain calculations give a mere 10,000 as the entire ant population when in the state of hibernation within and beneath one mound; though data lead to the assumption of such numbers as 50,000 for a very large mound. These mounds thus have a population much like that of the beehive; and not comparable to the much greater population of some termite dwellings.—*E. A. Andrews.*

11721. **BALDUF, W. V. The bionomics of Tetrastichus verrucarii (Chalcidoidea) with notes on its hosts (Neuroterus spp., Cynipidae) on bur oak.** *Canadian Ent.* 61 (6): 125-130. 1929.—The observations here recorded extend the known hymenopterous fauna of *Quercus macrocarpa* by 4 or more species.

11722. **BENSON, ROBERT B. On the occurrence of the sawfly Arge ciliaris L. in Britain.** *Ent. Month. Mag.* 66(792): 113-114. 1930.

11723. **BEQUAERT, J. Some additional remarks on the masarid wasps (Hymenoptera).** *Psyche* 36(4): 364-369. 1929.—Attention is called to a recent paper by A. v. Schulthess, describing new African spp. and one new genus; also to a paper by C. H. Hicks on the habits of *Pseudomasaris.* The value of certain venational characters is discussed. In all Masaridinae the marginal cell of the fore wing is more or less truncate at the apex. A brief account is given of the fossils that have been referred to the Diploptera. It is concluded that *Palaeovespa gillettei* Ckll. is probably diplopterous and most likely belongs in one of the social subfamilies, though doubtfully one of the Vespinae; *Odynerus praesepultus* is doubtfully diplopterous; while *Odynerus palaeophilus* does not belong to the Diploptera.—*J. Bequaert.*

11724. **BLÜTHGEN, P. Neue turkestanische Halictus-Arten. (Hym. Apidae).** *Konowia* 8(1): 51-86. 10 fig. 1929.—*Halictus* **tadschicus** (p. 51), type in Brit. Mus.; *H.* **korbi*** (p. 55), type in author's coll.; *H.* **quettensis** (p. 58), type in Brit. Mus.; *H.* **skorikovi*** (p. 61), type in Leningrad Mus.; *H.* **alanus** (p. 64), type in A. Lebedev (Kiev) coll.; *H.* **testaceohirtulus*** (p. 65), type in Jaroslaw Mus.; *H.* **pseudaraxanus** (p. 70) and *H.* **anguligularis*** (p. 72), types in author's coll.; *H.* **gussakovskii*** (p. 74), type in Jaroslaw Mus.; *H.* **subauratovestitus** (p. 80) and *H.* **bulbiceps** (p. 81), types in author's coll.; *H.* **mordacellus** (p. 84), type in the U. S. Nat. Mus. The ♂ of *H. scutellaris* Mor. is described for the first time; *H. araxanellus* Blüthg. is redescribed, *H. mongolicus* Mor. ♀ is redescribed and the ♂ described for the first time; the ♂ of *H. desertorum* is described for the first time.—*C. E. Mickel.*

11725. **CHEESMAN, L. EVELYN. Hymenoptera collected on the "St. George" expedition in Central America and The West Indies.** *Trans. Ent. Soc. London* 77(2): 141-154. 9 fig. 1929.—An annotated list of 77 spp., including: *Tetrapedla* **acuticollis*** ♀ (p. 142), Colombia; *Xylocopa darwini* Ckll. is figured; *Euglossa* **cupreiventris*** ♀ (p. 146), Panama; *E.* **gorgonensis*** ♀ (p. 146) and *E.* **granti*** ♀ (p. 147), Gorgona Is., Colombia; *E.* **championi*** ♂ (p. 148), Panama.

11726. **COCKERELL, T. D. A. Descriptions and records of bees. 119.** *Ann. and Mag. Nat. Hist.* 4(21): 296-304. 1929.—*Sphecodes* **levequae** ♀ (p. 296), *Nomada* **semirugosa** ♀ (p. 297), *Colletes* **cauponarius** ♀ (p. 298), *C.* **rufocinctus** ♂ (p. 298), and *C.* **nitidicaudus** ♂ (p. 299), Colorado; *Augochlora* (*Odontochlora*) **seitzi** ♀ (p. 299), Brazil; *Andrena* **timberlakei** (p. 300), California. The paper also gives a list of spp. of Xylocopidae from Siam, including: *Mesotrichia latipes* v. **magnifica** (p. 302); *Xylocopa iridipennis* v. **semipurpurea** (p. 302); *X. auripennis* v. **phenachroa** ♀ (p. 303); *Mesotrichia* **kerri** ♀ (p. 303).

11727. **COCKERELL, T. D. A. African bees of the genus Megachile.** *Ann. and Mag. Nat. Hist.* 6(34): 512-519. 1930.—*Megachile* **andersoni** ♀ (p. 512) and *M.* **ritchiei** ♀ (p. 513), Tanganyika Terr.; *M. pennata* Smith is removed from the synonymy of *M. maxillosa* Guérin; *M.* **mombasica** ♀ (p. 515), Kenya Colony; *M.* **leonum** (p. 516), Tanganyika Terr.; *M.* **mediorufa** (p. 516), Sudan; *M.* **masaiella** ♀ (p. 518), Kenya Colony; *M.* **bedfordi** ♂ (p. 518). Types in Brit. Mus. There are distributional and taxonomic notes on a number of previously known spp.

11728. **COCKERELL, T. D. A. Wasps of the genus Cerceris in the Queensland Museum.** *Mem. Queensland Mus.* 10(1): 32-36. 1930.—*Cerceris* **hackeriana** (p. 32), N. S. Wales; *C.* **goddardi** (p. 33), *C.* **darrensis** ♀ (p. 34), *C.* **brisbanensis** ♀ (p. 35) and *C.* **goodwini** ♀ (p. 35), Queensland.

11729. **COLLART, A. Sur la biologie de deux Hyménoptères congolais.** *Rev. Zool. Bot. Africaines* 16(4): [55]-[58]. 1929.—An abstract, referring to *Philanthe apivore,* parasitic on the honey bee, and to *Cerceris* sp., parasitic on Buprestidae.

11730. **DAKESSIAN, V. S. Variation and correlation on the legs of the honeybee.** *Ann. Ent. Soc. Amer.* 22(2): 168-174. 1 fig. 1929.—Considering only the femora and tibiae of all the legs and the 1st tarsal joint of the 3rd leg, the most variable segment is the 1st tarsal joint of the hind leg and the least variable are the tibia and femur of the 3rd leg. The width of the segments is more variable than the length. The highest correlation is found between the bilaterally symmetrical joints. Correlation between segments of one leg is higher than correlation between similar segments of different legs. There is no correlation between the length and width of the same segments. A list of references is given.—*M. W. Boesel.*

11731. **DONISTHORPE, HORACE. Cardiocondyla bicolor, sp. n. (Hymenoptera, Formicidae), a species of myrmecine ant new to science.** *Ann. and Mag. Nat. Hist.* 6(33): 366. 1930.—*Cardiocondyla* **bicolor** ♀ (p. 366), Palestine, on *Ficus sycamorus;* type in Brit. Mus.

11732. **FOUTS, ROBERT. A new species of Microphanurus from Italian Somaliland (Hym. Scelionidae).** *Boll. Soc. Ent. Ital.* 62(6): 118-120. 1 fig. 1930.—*Microphanurus* **aloysii-sabaudiae*** (p. 118), from *Nezara viridula* and *N. pallidoconspersa.*

11733. **FRIESE, H. Die Schmarotzerbienengattung Osiris Sm. (Hym.).** *Stettiner Ent. Zeitung* 91(1): 103-127. 5 fig. 1930.—A monograph of the 34 spp. of this genus which inhabit the American tropics and are parasitic on bees of the genus *Tetrapedia.* A key to species is given. *O.* **duckei*** (p. 112); *O.* **carinicollis** (p. 113); *O.* **fasciatellus** ♂ (p. 115); *O.* **nigrocinctus** ♀ (p. 115); *O.* **polybioides** ♂ Ducke i. l. (p. 115); *O.* **atriventris** ♂ (p. 116), Bolivia; *O.* **collaris** ♂ (p. 116); *O.* **angustipes** (p. 117); *O.* **analis** ♂ (p. 117); *O.* **nigriventris** (p. 117); *O.* **paraënsis** ♂ (p. 118); *O.* **boliviensis** (p. 118), Bolivia; *O.* **ferrugineus** (p. 118), Bolivia; *O.* **flavus** ♂ (p. 119), Peru; *O.* **nitidicollis** (p. 120); *O.* **latitarsis** (p. 120); *O.* **longiceps** ♂ (p. 120), Bolivia; *O.* **longipes*** (p. 122); *O.* **flavofasciatus** (p. 123); *O.* **rutilans** ♂ Klüg i. l. (p. 123); *O.* **fulvicornis** ♂ (p. 123); *O.* **acutiventris** ♀ (p. 124); *O.* **notaticollis** ♂ (p. 125). Except where otherwise given, new spp. are all from Brazil. Types in Berlin Mus.—*H. Friese* (*transl. by P. H. Timberlake*).

11734. **HABERMEHL, H.** Neue und wenig bekannte paläarktische Ichneumoniden (Hym.). [To be concl.] *Konowia* 8(3) : 257-267. 1929.—Brief notes and records of 65 spp. of Ichneumoninae and Cryptinae. *Ichneumon* sieberti (p. 259) and *I.* solitarius (p. 259), Russia; *Amblyteles? palliatorius* f. subniger (p. 260); *Platylabus? nigricollis* f. discedens (p. 260), and *Spilocryptus* gracilentus (p. 264), Germany; *S.* uffelni (p. 265), Switzerland; *Microcryptus* hedwigi (p. 266), Germany. Types in the author's coll.—*C. E. Mickel.*

11735. **HEINRICH, G.** Bemerkungen über die Ichneumoninae in Brischkes Sammlung zu Danzig. *Konowia* 8(1) : 7-8. 1929.—*Hepiopelmus longicornis* Br. ♂=*Platylabus* sp. ♂; *Phaeogenes aries* Br. ♀=*Diadromus guttulatus* Grav. ♀; *Phaeogenes rufipes* Br. ♀=*Centeterus confector* v. *opprimator* Grav. ♀; *Phaeogenes pulchricornis* Br. ♀=*P. ophtalmicus* Wesm. ♀. There are additional notes regarding the identity of certain specimens in the Brischke coll.—*C. E. Mickel.*

11736. **HEINRICH, G.** Beiträge zur Systematik der Ichneumoninae. *Konowia* 8(1) : 13-17. 1929.—*Coelichneumon wormatiensis* Haberm. ♀=*Stenichneumon dorsosignatus* Berth. ♀; *Ichneumon comitator* L. is the same as *I. lineator* Grav. and the author thinks that *Coelichneumon comitator* auct. is probably the same as *C. derasus* Wesm.; there are notes on *Euichneumon sarcitorius* ssp. *turkestanicus* Heinr. ♂, *Melanichneumon fortipes* Wesm. ♂, and *Amblyteles equitatorius* ssp. *carnifex* Kriechb. ♂. *Stenichneumon sordidus* Wesm. ♀=*S. personatus* Grav. Characters are indicated by which the ♂♂ of *Barichneumon sicarius* Grav. and *rufifrons* Grav. may be separated. *Euichneumon albiger* v. polonicus (p. 14), Poland; the ♂ of *Platylabus gigas* Kriechb. is described.—*C. E. Mickel.*

11737. **HEINRICH, G.** Die Wirte einiger Ichneumoniden. *Konowia* 8(3) : 319-320. 1929.—Host records for 16 spp. of Ichneumonidae.—*C. E. Mickel.*

11738. **HENSCH, A. H.** Beitrag zur Kenntnis der jugoslavischen Ichneumonidenfauna. [To be concl.] *Konowia* 8(2) : 123-153. 1929.—Treats the tribe Pimplini, genera *Pimpla* Fabr. and *Troctocerus* Woldst; 47 spp. of *Pimpla* and 1 of *Troctocerus* are recorded, and keys presented for their identification. *Pimpla angens* v. simulans (p. 127), *P.* dumeticola (p. 129), *P.* obscuripes (p. 129), *P.* divergens (p. 129), *P. nigriscaposa* v. ribesii (p. 129), *P.* salicicola (p. 130), *P.* singularis (p. 130), *Troctocerus* zagoriensis (p. 132), *Ephialtes* tener (p. 140), *E.* discrepans (p. 146), *E.* incertus (p. 150), *E.* vernalis (p. 153).—*C. E. Mickel.*

11739. **HICKS, CHARLES H.** Pseudomasaris edwardsii Cresson, another pollen-provisioning wasp, with further notes on P. vespoides (Cresson). *Canadian Ent.* 61(6) : 121-125. 1929.—Biological notes including nest architecture, parasites and behavior.

11740. **HOFFMEYER, E. B.** Neue und wenig bekannte Callimomiden aus Suedeuropa, hauptsaechlich Italien (Hym. Chalc.). *Boll. Soc. Ent. Ital.* 62(6) : 114-117. 1930.—This paper is based upon collections in the Mus. Civico of Genoa and in the Zool. Mus., Copenhagen. A list of 17 spp. is given, with locality records and taxonomic remarks. *Callimome* schiödtei ♀ (p. 115), Italy, type in Mus. Zool., Copenhagen; *C.* scoparii ♀ (p. 116), from *Asphondylia sarothamni,* France and Italy, type in Mus. Civico, Genoa.

11741. **KUZNETZOV-UGAMSKIJ, N. N.** Die Ameisen des Süd-Ussuri-Gebietes. *Zool. Anz.* 83(1/4) : 16-34. 5 fig. 1929.—The present paper has been published in Russian by the author. It contains an annotated list of 30 spp., with emended descriptions.

11742. **KUZNETZOV-UGAMSKIJ, N. N.** Die Ameisenfauna Daghestans. *Zool. Anz.* 83(1/4) : 34-45. 3 maps, 1 fig. 1929.—A list of the 60 spp. known to Daghestan, Caucasus, including: *Formica rufibarbis* v. montaniformis (p. 39).

11743. **LEBEDEV, A. G.** Neue Biene-Arten aus S.S. S.R. *Konowia* 8(3) : 268-272. 1 fig. 1929.—The following bees are reported from Soviet Russia: *Anthidium* (*Proanthidium*) *transcaspicum* Lebed., descriptive notes; *Andrena* eburneoclypeata (p. 268); *Dasypoda* vulpecula* (p. 269). Types in author's coll.—*C. E. Mickel.*

11744. **LUBBOCK, Sir JOHN (Lord AVEBURY), and J. G. MYERS** (with plates by A. J. E. Terzi). Ants, bees and wasps: a record of observations on the habits of the social Hymenoptera. new ed. 377p. 6 pl. E. P. Dutton & Co.: New York; Kegan Paul & Co.: London, 1929. $3.75.—This edition contains notes by J. G. Myers which give more recent contributions on the problems discussed by Lubbock, including quotations from such authors as von Frisch, Kühn, Eidmann, Forel, Donisthorpe, and Wheeler.—*F. G. Wallace.*

11745. **LYLE, G. T.** Contributions to our knowledge of the British Braconidae. 11. Calyptinae. *Entomologist* [*London*] 62(793) : 123-129. 1929.—Diagnostic list of the Calyptinae with keys to the genera and species.

11746. **MASI, L.** Descrizione di un'Allodape viventi nelle spine di un'acacia nella Somalia Italiana. [An Allodape living in the spines of an acacia in Italian Somaliland.] *Mem. Soc. Ent. Italiana* 9(1) : 67-75. 2 fig. 1930.—*Allodape* strandi* (p. 68), from spines of *Acacia fistula* Oliv., type in Genoa Nat. Hist. Mus. The larva* also is described.

11747. **MENOZZI, C.** Formiche della Somalia Italiana Meridionale. [Ants of southern Italian Somaliland.] *Mem. Soc. Ent. Italiana* 9(1) : 76-130. 3 pl., 4 fig. 1930. —This paper treats of 54 forms, with synonymies and notes on taxonomy and ecology. *Phcidole variolosa**, first description of soldier; *Cardiocondyla emeryi* ssp. chlorotica ♀ & ♀ (p. 84); *Crematogaster* (*Acrocelia*) aloysii-sabaudiae* ♀ (p. 86), from spines of *Acacia bussei; C.* (*A.*) *chiarinii* v. *aethiops,* first description of ♂; *C.* (*A.*) *gerstäckeri** Dalla Torre, emended description; *C.* (*A.?*) *rivai* v. luctuosa* ♀ (p. 96); *C.* (*Sphaerocrema*) paolii* ♀ (p. 102); *C.* (*Decacrema*) *solenopsides,* first description of ♂; key to workers of *Crematogaster* so far found in Italian Somaliland; *Tapinoma* chiaromontei* ♀ (p. 113); *Camponotus* (*Tanaemyrmex*) *somalinus,* first description of ♂; *C.* (*Myrmotrema*) *ilgi,* first description of ♀. A list of 73 spp., subspp., & var. found to date in Italian Somaliland is appended.

11748. **MEYER, N. F.** Zur Ichneumonidenfauna von Chiva und Buchara. *Konowia* 8(1) : 18-26. 1929.—Seventy spp. of Ichneumonidae are listed from this region including: *Enicospilus* abnormis (p. 19); *Ophion* buchariensis (p. 20); *O.* cephalotes (p. 20); *Trichomma* cingulata (p. 21); *Erigorgus villosus* v. nigripes ♀ (p. 21); *Labrorychus amabilis* v. chivensis (p. 22); *Paniscus* nigridorsum (p. 23); *Exetastes* rufiventris (p. 23); *E.* gussakovskii (p. 23); *E.* pillosus (p. 24); *E.* paradoxus (p. 25); *Cremastus* zimini (p. 25).—*C. E. Mickel.*

11749. **MICHELI, LUCIO.** Note biologiche e morfologiche sugli Imenotteri. (Contributo 2°.) [Biological and morphological notes on Hymenoptera.] *Mem. Soc. Ent. Italiana* 9(1) : 46-66. 6 pl., 1 fig. 1930.—Detailed descriptions of nests and larvae of *Odynerus* (*Ancistrocerus*) *oviventris** (Wesmael); *O.* (*Hoplopus*) *spinipes* v. *alpina**; *Crabro* (*Coelocrabro*) *cinxius** Dahlbom; *Psen pallipes** (Panz.); *Pemphredon* (*Cemonus*) *unicolor** (F.); and *Osmia leucomelaena** (Kirby). The nest of the first is figured.

11750. **MORLEY, CLAUDE.** Cornish Hymenoptera-Parasitica. *Entomologist* [*London*] 62(792) : 113-114. 1929.—List of 79 spp.

11751. **MORLEY, CLAUDE.** A sawfly new to Norfolk. *Ent. Month. Mag.* 66(790) : 62-63. 1930.—*Arge ciliaris* L., captured on marsh vegetation, is very rare in Britain.

11752. **NIELSEN, E.** A second supplementary note upon the life histories of the Polysphinctas (Hym. Ichneum.). (In English.) *Ent. Meddel.* [*Copenhagen*] 16(7) : 366-368. 2 fig. 1929.—Two ichneumon-fly larvae were found in an egg-cocoon of the spider *Segestria senoculata.* From one of these larvae (only one pupated), a ♀ *Clistopyga oncitator* F. emerged. The author is of the opinion that *Clistopyga* parasitizes spiders only.

11753. **NIXON, G. E. J.** The Ethiopian representa-

tives of the genus Galesus (Proctotrupoidea), with descriptions of new species. *Ann. and Mag. Nat. Hist.* 6(34) : 399-414. 1930.—This paper is based mainly on collections made by R. E. Turner. All new forms are from the Union of S. Africa, and the types are in the Brit. Mus. An emended diagnosis of the subgenus *Schizogalesus*, which includes all the spp. herein described, is given. There are keys to the ♂♂ and the ♀♀ of the various spp. *Galesus* quadridens (p. 402); *G.* bidens (p. 403); *G.* inquisitor (p. 404); *G.* distinctus (p. 405); *G.* rectangularis (p. 406); *G.* abdominalis (p. 406); *G.* magnificus (p. 408); *G.* modestus (p. 408); *G.* turneri (p. 409); *G. t.* var. carinaticeps (p. 410); *G.* longiceps (p. 410); *G.* silvestrii (p. 411); *G. s.* vars. nigricornis and robustior (p. 412); *G.* difficilis (p. 412); *G.* muscidorum (p. 413); *G.* punctulatus (p. 414); *G.* conradti (p. 414).

11754. **OGLOBLIN, A. A.** A new species of Telenomus parasite of Hysteropterum liliimacula Costa. *Mem. Soc. Ent. Italiana* 9(1) : 41-45. 3 fig. 1930.—*T.* sacchii* (p. 41), Italy.

11755. **ÖKLAND, FRIDTHJOF.** Wieviel "Blattlauszucker" verbraucht die rote Waldameise (Formica rufa)? *Biol. Zentralbl.* 50(8) : 449-459. 1930.—Three trees (*Betula verrucosa*, *Pinus silvestris*, and *Picea excelsa*), each visited by a different colony of red ants, were investigated. Equal numbers of descending and ascending ants were collected, dried, and weighed. The average excess in weight of a descending individual over an ascending individual was about 1 mg. Thus, with an estimated number of 500 visits per season, the average seasonal consumption of honeydew per ant would be 5 g. If ½ of the 100,000 inhabitants of a nest fetch honeydew, their seasonal consumption would amount to 10 kg. Thus honeydew is of great importance to *Formica rufa*. *Lasius niger* makes still greater use of this substance. The amount consumed by a colony of *F. rufa* compares favorably with the honey production of a swarm of bees.

11756. **PANDAZIS, GEORG.** Über die relative Ausbildung der Gehirnzentren bei biologisch verschiedenen Ameisenarten. *Zeitschr. Wiss. Biol. Abt. A, Zeitschr. Morph. u. Ökol. Tiere.* 18(1/2) : 114-169. 26 fig. 1930. —Measurements were made of the brain centers in species of ants that differ biologically. It thus became evident that the sense centers (lobi optici and lobi olfactorii) are dependent on the degree of development of the corresponding sense organs, while the higher association centers are independent in this respect. The size of the latter is correlated with the degree of biological complexity of the ant species, the primitive and degraded species having inferior association organs, while the higher genera, such as *Formica*, etc., possess relatively large corpora pedunculata. Of the 3 casts found among the ants, the ♂♂ possess the smallest, the ♀♀ the intermediate sized and the workers the largest corpora pedunculata. In polymorphic species the intermediate sized workers usually show the best developed association organs, while the soldiers of dimorphic species have the corpora pedunculata less well-developed. If these results are compared with the biology of the different species, casts, and undercasts, the conclusion is reached that the size of the corpora pedunculata in Formicidae (36 spp. were investigated) corresponds to the degree of psychological development, or, in other words, that these structures are really a center of the higher psychological functions, a conclusion also supported by histological studies.—*G. Pandazis* (*transl. by P. H. Timberlake*).

11757. **PEACOCK, A. D.** On rearing larvae from eggs dissected out of a saw-fly. *Proc. Roy. Phys. Soc.* [*Edinburgh*] 21(4) : 171-174. 1929.—From a specimen of *Pristiphora pallipes* Lep., which was unable to lay because of defective saws and the absence of saw-guides, 28 eggs were dissected out under water; 16 of these which were pasted on the food-plant (gooseberry), then placed under glass in an incubator at 30°C., died within one day; but from 12 eggs, similarly treated but kept in the laboratory at 13° C., 5 larvae hatched in the normal time of 10 days. The eggs of *P. pallipes* therefore can develop parthenogenetically after artificial removal from the body and possess considerable powers of viability. The egg-pocket is evidently primarily protective, for it is not indispensable for *pallipes* egg nutrition and development. The growth of mould on and around the eggs does not apparently affect development; hence the protective value of the egg chorion must be considerable. Of the 5 larvae hatched only 1 survived; it pupated after a normal life of 20 days; it was, however, smaller than normal and died in the cocoon between 29th June and 23rd July 1928.—*From author's summary.*

11758. **RAU, PHIL.** The silk spun by the larvae of certain social wasps. *Canadian Ent.* 61(10) : 219-221. 1929.—The larva of *Vespa maculata* spins a cocoon, a cell lining, and a lid to its cell. The larva of *Polistes annularis* and of *P. pallipes* spins the lid to the cell and, when the cell is too small, adds several rings of silk. Some cells of *P. annularis* are found lined with silk. Methods of nest building of *Polistes* and those of *Vespa* are compared and found analogous; and a convergent evolution for the 2 genera is suggested.—*M. C. Mansuy.*

11759. **RAU, PHIL.** The habitat and dissemination of four species of Polistes wasps. *Ecology* 10(2) : 191-200. 4 fig. 1929.—The general statement that *Polistes* spp. build in sheds, out-buildings, and overhanging rocks, does not suffice. The conditions probably are that each of the 4 spp. uses a distinct site for its nests; *P. annularis* in trees, *P. variatus* mostly close to the earth, *P. pallipes* in buildings, and *P. rubiginosis*, in hollow trees or in dark recesses. When the 4 species occupy 1 area, a division of nesting sites occurs so that one species may not interfere with the other. If the habitat were the same for all species in a given area, an overcrowded condition and many difficulties would result, together with probable hardships in food-hunting. Then, again, if antipathy exists between the species it may be necessary for the clans to keep far apart. It would be difficult to find a better arrangement under such circumstances than to have one species follow the habit of nesting high up in the branches of the trees, one low down near or in the earth, one building in well lighted sheds, and the other seeking the cover of dark recesses.—*From author's summary and conclusions.*

11760. **SANTSCHI, F.** Trois notes myrmécologiques. *Bull. & Ann. Soc. Ent. Belgique* 70(10/11) : 263-270. 1930.—An annotated list of spp. with key. From Japan: *Crematogaster* (*Acrocoelia*) *brunnea matsumarai* v. iwatensis ♀ (p. 264) and *C.* (*A.*) *b.* st. teranishii ♀ (p. 265). From Cyprus Isl.: *C.* (*A.*) *jehovae* v. cypria ♀ (p. 266) and *Leptothorax bulgaricus* st. cypridis (p. 266). From Africa: first description of ♂ *Bothroponera crassa* st. *crassior* Santschi, ♂ *Pheidole speculifera* Em., ♂ and ♀ *P. s.* st. *ascarus* Em., *Crematogaster* (*Sphaerocrema*) *luctans* v. sordidoides ♀ (p. 269), Sierra Leone; *Myrmicaria natalensis* v. taeniata ♀ (p. 269), Belgian Congo; *Eugramma* tailori ♀ (p. 269), off Mozambique.

11761. **[SKORIKOV, A. S.]** СКОРИКОВ, А. С. Видовой состав подсем. Myrmosini (Hymenoptera, Mutillidae) в фауне СССР. [A note on the sub-family Myrmosini in the USSR. fauna.] Ежегодник Зоологического Музея Академии Наук СССР. (*Ann. Mus. Zool. Acad. Sci. URSS.*) 30(2) : 245-247. 1929.—A key is given to the 6 spp. of *Myrmosa* Latr., and their distribution is compared. *M.* czerskii (p. 246), southern Ussuri region, Siberia.

11762. **SKRIPTSHINSKY, G. P.** Einige neue Schlupfwespen-Arten aus Russland (Fam. Proctotrupidae et Chalcididae). *Konowia* 8(3) : 321-322. 1929.—*Gryon* dagestanicus (p. 321); *Chalcis* turkestanica (p. 322).—*C. E. Mickel.*

11763. **STRAND, EMBRIK.** Kritische Betrachtungen zu einigen hymenopterologischen "Leistungen" des Herrn P. Blüthgen nebst allgemeinen Bemerkungen über

"Typen," "Spezialisten" etc. *Ent. Zeitschr.* [*Frankfurt a. M.*] 42(24): 324-328. 1929.—Answer to Blüthgen's criticism.

11764. **TELENGA, N. A.** Einige neue Ichneumoniden-Formen. *Zool. Anz.* 83(5/8): 185-189. 1 fig. 1929.—**COTIHERESIARCHES** (p. 185), near *Heresiarches*, type *C.* **meyeri*** ♀ (p. 185), Siberia; *C.* **niger** ♀ (p. 186), S. Russia; *Hoplismenus* setaceus ♀ (p. 187), Siberia; *Amblyteles* ferrugineus ♀ (p. 188), Transbaikalia; *Glypta* caucasica ♀ (p. 188), north Caucasia.

11765. **TRAUTMANN, W.** Beitrag zur Kenntnis der Goldwespen Cyperns. *Konowia* 8(2): 154-158. 1929.—Twenty-four spp. of Chrysididae are recorded from Cyprus, including *Hedychrum* **mavromoustakisi** (p. 157), *Chrysis orantiensis* v. **braunsiana** (p. 154), *C. incisa* v. **cypria** (p. 156), *C. succincta* v. **mavromoustakisi** (p. 156), *Holopyga fervida* v. **cypria** (p. 158).—*C. E. Mickel.*

11766. **WATERSTON, JAMES.** On a chalcidoid parasite bred from a flea larva. *Parasitology* 21(1/2): 103-106. 1 fig. 1929.—This insect was bred from cocoons of *Ceratophyllus wickham*, a flea of the American gray squirrel, now introduced in the vicinity of London. It differs from the genus *Pirene* Hal., in antennal, neutrational, and propodeal characters, and therefore requires the formation of a new genus: Miscogasteridae, Pirenini: **BAIRAMLIA** (p. 103), based on *B.* **fuscipes*** (p. 104), England. Type in Brit. Mus.

11767. **WILKINSON, D. S.** A revision of the Indo-Australian and Ethiopian species of the genus Microgaster (Hym. Bracon.). *Trans. Ent. Soc. London* 77(1): 99-123. 7 fig. 1929.—Key is given to 24, including: *Microgaster* **integra** ♂ (p. 103), Uganda; *M.* **resplendens** ♀ (p. 106), Tasmania; *M.* **morata** (p. 106), Victoria, ♀ parasitic on *Thyridopteryx herrichi*; *M.* **tearae** (p. 107), Victoria, on *Teara tristis*; *M.* **rixosa** (p. 108), N. S. Wales, types in Brit. Mus.; *M.* **apo** (p. 108), Philippine Isls.; type in Zool. Mus., Berlin; *M.* **vulpina** (p. 109) and *M.* **perniciosa** ♀ (p. 112), Victoria; *M.* **turneri*** (p. 113), Cape Province; *M.* **earina*** (p. 115), Nigeria, host probably *Earias biplaga*; *M.* **persimilis*** (p. 118), Uganda; *M.* **austrina** ♀ (p. 119), Cape of Good Hope; *M.* **magnifica** (p. 120), Queensland; last 7 types in Brit. Mus. Except where given, hosts of the new spp. are unknown.

11768. **WOJNOVSKAJA-KRIEGER, T. G.** Einige neue Braconiden-Arten aus Russland. *Konowia* 8(2): 234-235. 2 fig. 1929.—*Baryproctus* **niger** (p. 234); *Phanerotoma* **rjabovi*** (p. 234).—*C. E. Mickel.*

MACROLEPIDOPTERA

J. McDUNNOUGH, *Editor*

(See also in B. A. 6(3): Entries 6190, 7799, 7817, 7833, 8638, 8647, 8659; and in this issue 9190, 9463, 10014, 10915, 10945, 11582, 11864)

11769. **ALDIN, d', BERNIER, BRASCASSAT, CASSAGNO, COUTEAU, DUBORDIEU, FRÉMONT, GOURRIN, HENRIOT, JOLIBERT, De JONGHE, Le CHARLES, De LAJONQUIÈRE, MALRIEU, MEILHAN, MELON, De SANDT, SCHIRBER, et TABUSTEAU.** Catalogue des Lépidoptères de la Gironde par un groupe de Lépidoptéristes Girondins. Deuxième partie des Macrolépidoptères. *Actes Soc. Linnéene Bordeaux.* 79: 5-70. 1927.—A local faunistic list including some 694 spp.

11770. **BENTINCK, G. A.** Espèce nouvelle pour les faunes belge et hollandaise. *Lambillionea* 29(4): 50-52. 1929.—Note on *Anaïtis efformata* Guénée.

11771. **BENTINCK, G. A.** Caradrina (Athetis) selini B. et quadripunctata F. (clavipalpis Sc., Cubicularis Schiff). *Lambillionea* 30(3): 42-43. 1 pl. 1930.—Critical notes, with a plate showing the genitalia of 5 spp. of *Caradrina*.

11772. **BENTINCK, G. A.** Ilema (Lithosia) lutarella L., pallifrons Z. et pygmaeola Dbld. *Lambillionea* 30(3): 43-44. 1 pl. 1930.—The ♂ genitalia of these 3 spp. are described and figured.

11773. **DERENNE, F.** Une question de priorité. *Lambillionea* 28(1): 3-6. 1928.—Concerns *Vanessa urticae* v. *ichnusioides* de Selys. The var. was originally so named and described and should be so listed, not *ichnusoides* as it appears in some catalogs.

11774. **DERENNE, F.** Acidalia (Ptychopoda) robiginata Stgr. *Lambillionea* 28(6): 61-62. 1928.—The author states that the sp. recorded in ibid. 1911, p. 56, is *A. similata* Thnbg. and not *A. robiginata* Stgr., and that the notation in Seitz, vol. IV, p. 132, 1913 that the latter sp. had been recently recorded from Belgium is, therefore, also an error.

11775. **DERENNE, F.** Euxoa (Agrotis) temera Hbn. *Lambillionea* 28(6): 62-66. 1928.—Critical notes, with synonymy.

11776. **DERENNE, F.** Cosymbia Hbn. (Ephyra Dup.) ruficiliaria H. Schaff. *Lambillionea* 28(7): 71-74. 1928.—This sp. has been erroneously recorded from Belgium, having been confused with *C. punctaria* v. *hybridaria* (de Selys). The latter proves to be a synonym of *linearia* Hb.

11777. **DERENNE, F.** Phragmatobia fuliginosa L. var. borealis Stgr. ou ab. subnigra Mill.? *Lambillionea* 29(2): 19. 1929.—Belgian specimens hitherto considered as *P. f.* var. *borealis* Stgr. should be called *P. f.* ab. *subnigra* Mill.

11778. **DERENNE, F.** À propos des Lithosia (Ilema) lutarella L., pallifrons Z. et pygmaeola Dbld. *Lambillionea* 29(7): 86-88. 1929.—*Lithosia pygmaeola* is regarded as specifically distinct from the other 2 spp.

11779. **DERENNE, F.** Pieris brassicae L. ab. fasciata Kiefer et alligata Cabeau. *Lambillionea* 30(1): 12-14. 1930.—*P. b.* ab. *alligata* Cabeau is removed from the synonymy of *P. b.* ab. *fasciata*.

11780. **DERENNE, F.** Addenda au catalogue des Géométrides de Belgique. *Lambillionea* 30(2): 22-23. 1930.—Two spp. of *Lythria* are added (with forms).

11781. **DUFRANE, ABEL.** Variation chez Papilio (S. S.) antimachus Drury. *Lambillionea* 29(12): 138-139. 1929.—*P. antimachus* abs. congolanus ♂, vreuricki ♂, Congo; abs. pupillata ♂, obsoleta ♂ (all p. 138), and lagai ♂, Belgian Congo; ab. virgularia (p. 139). Types in author's coll.

11782. **DUFRANE, ABEL.** Mise au point. *Lambillionea* 30(1): 5-6. 1930.—*Metachrostis perla* ab. grisescens (*M. p.* ab. *grisea* Dufrane, not Vorbrodt) (p. 6); *Bryophila* Treit. (=*Metachrostis* Hb.); Bryophilinae (=Metachrostinae).

11783. **DUFRANE, ABEL.** Nouvelles aberrations de Papilio (Pharmacophagus). *Lambillionea* 30(2): 19-21. 1930.—*Papilio priamus poseidon* abs. **nigropunctata** ♂ and **aureopunctata** ♂ (p. 19), **paradoxa** ♀ (p. 20), New Guinea; *P. helena oblongomaculatus* f. *amaura* ab. **obsoleta** ♀ (p. 20), New Guinea; *P. h. o.* f. *o.* ab. **goezei** ♀ (p. 21), Ceram Is.; *P. v*[*ertumnus*] *v.* abs. **latoplaga** ♀ and **rubropuncta** ♀ (p. 21), French Guiana.

11784. **DUFRANE, ABEL.** À propos de l'ab. plasschaerti Dufrane de Pieris brassicae L. *Lambillionea* 30(3): 40-42. 1930.—Critical notes.

11785. **GRAVES, P. P.** Notes on collecting in Ireland. *Ent. Rec. & Jour. Var.* 42(7/8): 97-102. 1930.—Descriptions of the region, notes on frequency, and list of captures, including *Polyommatus icarus* ssp. *clara* (gen. secunda) f. **postclara** (p. 99), type in author's coll.

11786. **GROSSE, G.** Ein neuer Arctiidenhybrid. [Concl.] *Zeitschr. Österreich. Ent.-Ver.* 12(4): 33-35. 1927.—*Diaphora* hybrid *micheli*, note. A list is given of all previously known *Diaphora* hybrids. [See B. A. 2(3/5): entry 8133.]

11787. **HANNEMANN, E.** Eucosmia undulata L. f. heinrichi f. n. (Lep. Geom.). *Internat. Ent. Zeitschr.* 24(34): 366-367. 1 fig. 1930.—*E. undulata* f. heinrichi*, Germany, type in Heinrich coll.

11788. **HANNEMANN, [E.].** [A lecture on butterflies.] *Internat. Ent. Zeitschr.* 24(37/38): 400-401. 1931.—*Chrysophanus amphidamas marchica* fs. ferephlaeas, radiata, and fulva; *Carsia paludata imbutata* f. brunneofasciata; *Lycaena hylas* f. apicipunctata; *Satyrus alcyone* f. caeca. All from Germany; types in author's coll.

11789. **HAYWARD, KENNETH J.** Description of the larvae of Ceratocampa brisottii, Bsdv. *Ent. Rec. & Jour. Var.* 42(10): 136-137. 1930.

11790. **HEPP, A.** Die Schmetterlingssammlung Pfarrer August Fuchs im Naturhistorischen Museum der Stadt Wiesbaden. [The butterfly collection of A. Fuchs in the Mus. Nat. Hist., Wiesbaden, Germany.] (Concl.) *Ent. Anz.* 10(18): 353. 1930.

11791. **HERING, MARTIN.** Neue und alte Lepidopteren. *Mitteil. Zool. Mus. Berlin* 16(4): 513-522. 2 pl., 2 fig. 1930.—*Charaxes ansorgei** Roth. is considered a race or seasonal form of *C. pollux* Cr.; *Thyrgis*, key to spp.; *T.* tenuifascia* (p. 515) and *T. t.* ssp. daguana ♀* (p. 515), Colombia; *Pericopis* variifasciata ♀* (p. 516), Colombia; *P. marginalis* f. tibesina ♂* (p. 517), Costa Rica; *Isostyla* ampliplaga ♀* (p. 517), Colombia; *Nudaurelia* krucki* (p. 518), with f. brunneonigra (p. 519), Kenya Colony; *Micragone* phantasma* (p. 519), Belgian Congo, type in Congo Mus. Tervueren; *Rhodopsona* decolorata ♂* (p. 520), presumably from India or China; EROTOMANIA (p. 520) (Limacodidae), related to *Andrallochroma* and *Eccopa*, type *E.* schoutedeni ♂* (p. 521), Belgian Congo, type in Congo Mus. Tervueren. Types of new forms in Berlin Mus. unless otherwise stated.

11792. **KREMKY, JERZY.** Kleine lepidopterologische Notizen, II. [With Polish summary.] *Fragmenta Faunistica Mus. Zool. Polonici* 1(6): 143-145. 1930.—Records of *Apamea nictitans, A. lucens,* and *A. paludis* in Poland, Russian Podolia, and Austria. The last is by far the most numerous sp.

11793. **NEUMANN, MAX.** Eine neue Form von Smerinthus ocellata L. *Internat. Ent. Zeitschr.* 24(22): 248. 1930.—*S. o.* form flavescens, near Berlin, type in author's coll.

11794. **PROUT, LOUIS B.** A revision of the Indo-Australian Cleora of the alienaria group. *Bull. Hill Mus. [London]* 3(3): 179-222. 3 pl. 1929.—For this group the subgeneric name of *Chogada* (possibly a synonym of the African *Hypopalpis* Guenée) is used. Typical *Cleora* is redescribed. The group is revised with synonymy, original references, key to spp., distribution, with races of several spp., ♂ genitalic figures of practically all spp., and notes. The following are new: *Cleora illustraria* ssp. crina (p. 199), New Ireland; *C.* rhadia* (p. 204), Luzon, Philippines, type in British Mus.; *C. hemiopa* ssp. quirosi (p. 207), New Hebrides, type in coll. Joicey; *C. h.* ssp. ecdees (p. 207), Lifu, Loyalty Is., type at Tring Mus.; *C. concentraria* ssp. inobeda (p. 210), Nias, type at Tring; *C.* cheesmanae* (p. 217), New Hebrides, type in British Mus.—*W. T. M. Forbes.*

11795. **RÖBER, J.** Neue exotische Falter. *Internat. Ent. Zeitschr.* 24(37/38): 389-393. 6 fig. 1931.—*Papilio hahneli* ab. subfasciatus (p. 389), Peru; *Amblypodia* caelestis* (p. 390) and *A.* hyacinthus ♂* (p. 390), New Guinea; *Castnia* atrata ♂* (p. 392), Peru.

11796. **SANDT, de.** Les variations de croceus. *Lambillionea* 30(7): 115-119; (8/9): 123-125; (10): 152-154; (12): 184-188. 1930.—Critical notes.

11797. **SCHAWERDA, KARL.** Mitteilung über das Vorkommen von Leptidia major gen. vern. croatica Grund in Niederösterreich und im Burgenland. [Occurrence of L. major gen. vern. croatica in Lower Austria.] *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): (105)-(106). 1929(1930).

11798. **SCHAWERDA, KARL.** Meine dritte, vierte und fünfte Lepidopteren-Ausbeute aus dem Hochgebirge Korsikas. *Zeitschr. Österr. Ent.-Vereines* 13(5): 41-49; (12): 111-116. 1928. 14(1): 9-10; (3): 28-30; (6): 57-61. 2 pl. (1 col.). 1929. 15(1): 6-10. 1 pl.; (2): 13-17; (3): 26-30. 1930.—An extensive list including: *Hadena rurea* v. corsa ♀ (p. 43); *Cidaria hydrata* v. clarior ♀ (p. 43); *Argynnis paphia* v. *immaculata* abs. transiens and lilamarginata (p. 44); *Agrotis margaritacea* v. *cyrnea* ab. montedoronis (p. 45); *Hadena adusta* v. *sylvatica* ab. nera (p. 45); *Acidalia honestata* ab. cyanolata (p. 45); *Cidaria frustrata* v. *griseoviridis* ab. olivo-grisea (p. 45); *C. flavicinctata* v. corsaria (p. 46); *C. cyrnea* ab. incudina (p. 46); *Gnophos obscurata* v. *bellieri* ab. vizzavonae (p. 46); *Bryophila perla* v. corsivola (p. 112); *Euxoa haverkampfi* ab. xanthophila ♂ (p. 113); *Rhyacia candelisequa* v. cyrnos ♂ (p. 113); *Anaitis* corsalta (p. 114); *Ptychopoda fuscovenosa* v. corsula (p. 29); *P. aversata remutata* v. griseocorsa (p. 29); *Boarmia lichenaria* v. leukocyrnea (p. 30); *Agrotis saucia* v. tenebricorsa (p. 57); *A. s.* ab. *nigrocosta* Tutt (=*A. s.* ab. *philippsi* Caspari); *Gnophos bellieri* ab. doronis (p. 58); *G.* corsica (*G. variegata c.* Obth.) (p. 59); *G. c.* ab. prouti (p. 59); *Coscinia bifasciata* abs. fortestrigata, paucisignata, and transversata (p. 60); *Cnephasia* joannisi* (p. 60) and ab. evisa (p. 61); *Epagoge montedorea* abs. straminea and pouzatella (p. 61); *Agrotis tritici* v. *falleri* ab. vinosa ♂ (p. 9); *A. corticea* v. *corsa* abs. pallida ♂ and obscura (p. 9); *A. margaritaea* v. *cyrnaea* ab. vixsignata ♂ (p. 10); *Caradrina selinoides* ab. pallens (p. 10); *Gnophos onustaria* abs. tangens and illineata (p. 10); *G. corsica* ab. corsalba ♀ (p. 10); *Cledeobia angustalis* ab. aurantialis (p. 27); *Agrotis crassa* ab. atrata (p. 29). *Eupithecia vulgata* v. *montium, Leucania scirpi* ab. *serratilinea, Hemerophila abruptaria* ab. *theobromina, Agrotis simulans, A. conspicua, Apamea dumerilii, Sesamia nonagrioides,* and *Platyedra vilella* are new to Corsica. A list of spp. known from Corsica is included.

11799. **SCHAWERDA, KARL.** Neue Lepidopteren aus Aragonien. *Zeitschr. Österr. Ent.-Vereines* 13(11): 102-106. 1928.—*Erebia zapateri* ab. punctifera (p. 102); *Macrothylacia digramma* ssp. *curvifascia* (Rothschild) (=*M. rubi* v. *korbi* ab. *bistrigata* Bubacek); *Taragama repanda* ab. roseoclara (p. 103); *Agrotis constanti* abs. rosescens and pallida (p. 103); *A. subdistinguenda* abs. diluta and obscura (p. 103); *Dianthoecia xanthocyanea* v. consparcatoides (p. 103); *Caradrina bermeja* ab. clara (p. 104); *Naenia typica* v. claricolor; *Episema trimacula* ab. elvira (p. 105); *Euclidia glyphica* v. aurantiaca (p. 105), type in author's coll.; *Ortholitha alfacaria albarracina* ab. inondula (p. 105); *Enconista miniosaria* abs. cretacea, grisea, rosescens, and obscura (p. 106).

11800. **SEITZ, ADALBERT.** Die Gross-Schmetterlinge der Erde. *Fauna Africana [Lief. 100-106.]* 14: 569-599. 8 col. pl. Alfred Kernan: Stuttgart, 1930.—Contains index to the plate-vol. (p. V-VII) and conclusion of the index to genera and spp. listed in the now completed vol. 14 of Fauna Africana.

11801. **SEITZ, ADALBERT.** Die Gross-Schmetterlinge der Erde. *Fauna Palaearctica (Suppl.) [Lief. 9-10; 14-20]* 1: 121-296. 4 pl. Alfred Kernan: Stuttgart, 1930-1931.—CHR. BOLLOW (p. 121-126). Conclusion of index to the spp. of the Palaearctic Pieridae. A. SEITZ (p. 127) treats the genera *Danais* Latr. and *Euploea* F., with index to the Palaearctic Danaidae listed with their original descriptions in supplement vol. 1. Of Satyridae, A. SEITZ (p. 129-132) lists *Mandarinia* Leech, *Mycalesis* Hbn., *Lethe* Hbn., *Zophoessa* Dbl., *Melanitis* F., *Neope* Btlr., *Ypthima* Hbn., and *Argestina* Ril. M. GAEDE (p. 131) treats *Callerebia,* including *C.* perocellata (*C. polyphemus* Leech, not Oberth.) (p. 131). H. v. d. GOLTZ (p. 132-152) treats *Erebia* including: *E. kefersteini* ab. effusa (p. 135); *E. haberhaueri* fs. hilaris and tunkuna (p. 136), Sayan Mts.; *E. maurisius* f. lederi* (p. 136), Central Altai; *E. m.* form sajana (p. 136), W. Sayan; *E. turanica* ab. reducta* (p. 137); *E. manto** ab. ligata* (p. 137); *E. m.* ab. rubroligata* (p. 138), Swiss and Bavarian Alps; *E. ceto* ab. extincta ♀ (p. 138), Switzerland, type apparently

in Senckenberg Mus.; *E. stygne* f. **thuringiaca** (p. 140), Thuringian forest, Germany; *E. gorge* ab. **semicaeca** (p. 144), "Pirin" Mts.; *E. aethiops* fs. **uralensis** (p. 146), Ural, and **altaica** (p. 146), Altai; *E. curyale* f. **pyraenaeicola*** (p. 147), E. Pyrenees; *E. e.* var. **minima*** (p. 148) and *E. ligea** f. **altaica** (p. 149), Altai; *E. rossii** abs. **nigra** ♂ and **pallida** (p. 150), Sayan Mts.; it is pointed out that *E. dzhelindae* Shelj. is a local race of *E. eroerda* and not a separate sp.; *E. afer* f. **transcaspica** (p. 152), Transcaspia. M. GAEDE (p. 153-179) treats 8 genera: *Melanargia*, including *M. galathea* **flavina** (*M. g. flava* Fritsch preocc.) (p. 153); *Oeneis; Satyrus*, with *S. dryas* **totacaeca** (*S. d. caeca* Osth. preocc.) (p. 168); *Pararge; Aphantopus; Epinephele; Coenonympha;* and *Triphysa*. Pp. 180-182 contain supplement and corrections to the Palaearctic Satyridae, followed by an index to spp. listed with original descriptions in supplement vol. 1. Of Nymphalidae, CHR. BOLLOW (p. 191-196) treats the subfamily Nymphalinae, including 5 genera. M. GAEDE (p. 196-228) treats the subfamilies Limenitinae, Euthaliinae, and Vanessinae; a short supplement to the Palaearctic Nymphalidae concludes the list, followed by index (p. 228-236) to spp. listed, with original descriptions, in supplement vol. 1. The family Erycinidae is treated by M. GAEDE (p. 237-238), containing *Polycaena* **helcha** (p. 237) and *Dodona maculose* f. **kansuensis** (p. 238), Kansu. Of Lycaenidae, M. GAEDE (p. 239-250) treats 14 genera including *Thecla ilicis* f. *esculi* Hbn. (=*T. i.* form *alineata* Vrty.); *T. i.* form *fountainei** Aign. (=*T. i.* form *powelli* Oberth.). CHR. BOLLOW (p. 250-296) treats the genera *Virachola; Polyommatus; Tarucus; Zizera; Chilades; Everes,* including *E. ion* ssp. **cellariusi** (p. 254), Kansu; *Lycaena,* with *L. sephyrus* ssp. **trappi** (*L. s.* ssp. *lycidas* Trapp, nec Meigen) (p. 263), *L. eumedon* **stauderi** (*L. e. meridionalis* Stauder) (p. 271), *L. icarus* ab. *semipersica* Tutt (=*L. i.* ab. *paucipuncta* Courv.), *L. i.* ab. *subtusradiata* Oberth. (=*L. i.* ab. *striata* Gillm.), and *L. lycormas* **sumpantingi** (p. 287), Szechwan; and *Cyaniris;* and begins the genus *Taraca*.

11802. TAMS, W. H. New African Lasiocampidae. *Ann. and Mag. Nat. Hist.* 7(37): 1-17. 2 pl. 1931.—*Opisthodontia* **spodopasta*** (p. 2), Gold Coast; *Pseudolyra* **megista*** (p. 3) and *P.* **parva** ♂* (p. 4), Uganda; *Streblote* **finitorum** ♂* (p. 4) and *S.* **collenettei** ♂* (p. 5), Brit. Somaliland; *S.* **dysimata** ♀* (p. 5), Sudan; *S.* **callizona** ♀* (p. 6), Kenya Colony; *Bombycopsis* **hyatti** ♀* (p. 7), Somaliland; *B.* **lepta** ♀* (p. 7), Kenya Colony; *Leipoxais* **typodes** ♀* (p. 8), Uganda; *L.* **dolichoprygma** ♂* (p. 9), Belgian Congo; *Odontocheilopteryx* **ungemachi** ♂* (p. 10) and *O.* **eothina** ♂* (p. 11), Abyssinia, types in Ungemach coll.; *Chilena* **scotti** ♂* (p. 12), Abyssinia; *C.* **cardinalli*** (p. 13), Gold Coast; *Chrysopsyche* **pyrodes** ♂* (p. 13) and *Lechriolepis* **nephopyropa** ♂* (p. 14), Rhodesia; *L.* **cryptognoma** ♂* (p. 15), central Africa; *Trabala* **prasinosphena*** (p. 15), Belgian Congo. Types in Brit. Mus. unless otherwise specified.

11803. TAYLOR, JOHN SNEYD. Notes on some south African Lepidoptera. *Ent. Rec. & Jour. Var.* 42 (9): 122-123. 1930.—Descriptions of larvae of spp. of Noctuidae (6), Geometridae (1), Saturniidae (1), and Lycaenidae (1), with their food plants.

11804. TURNER, HY. J. British Noctuae and their varieties. [Continuation.] *Ent. Rec. & Jour. Var.* 42 (7/8 suppl.): (145)-(152); (10 suppl.): (153)-(156). 1930.—Critical, comparative, and synonymic notes and a few new descriptions. *Nonagria dissoluta* ab. **flavia** (p. (147)); *N. sparganii* abs. **impunctata** and **clara** (p. (155)); Wightman has described the following: *N. s.* abs. **lutea, rosea** (p. (155)), **rufa, nigrostriata, roseoradiata,** and **deleta** (p. (156)).

11805. VERITY, ROGER. According to the rules of nomenclature the name of Argynnis adippe is of Rottemburg (nec L.), and that of Melitaea dictynna, Esp., must be replaced by diamina, Lang. *Ent. Rec. & Jour. Var.* 42 (11): 149-152. 1930.

11806. WALSCHE, JULES de, et al. À propos de la répartition de certains lépidoptères belges. *Lambillionea* 29 (3): 38-41; (4): 57-58. 1929.—Notes on the distribution and status of *Aporia crataegi, Apatura iris, A. ilia,* and *Chrysophanus dorilis* in Belgium.

11807. WARNECKE, G. Sideridis (Leucania) velutina Esp. no. subsp. enervata Warn. (Lep. Noct.). *Mitteil. Deutschen Ent. Ges.* 1(8): 120-121. 1930.—*S. v.* ssp. enervata, Vladivostok, type in Zool. Mus. Hamburg.

11808. WOLFF, NIELS L. On individual variation of a structural character in the genus Oporinia Hb. (Lep. Geom.) *Ent. Meddel* [*Copenhagen*] 16(7): 391-397. 1929.—States, with graphs, the result of examining 259 Danish specimens of *Oporinia* ♂♂ (*O. dilutata* Bkh. (39 specimens), *O. christyi* Prt. (143), and *O. autumnata* Bkh. (57)), studying the individual variation of the distance of the octavals.—*N. L. Wolff.*

11809. WORM-HANSEN, J. G. The lepidopterous fauna of San Cataldo (southern Italy). Notes from a collecting trip in the late-summer 1928. *Ent. Meddel.* [*Copenhagen*] 16(8): 425-432. 1930.—A list of 110 spp. with notes on occurrence and frequency. The total of specimens of all insect orders collected was 3000. Moths proved to be chance catches, as treacle with added acetic ether, used in Denmark with great results, had no attraction for the moths of this part of Italy.

MICROLEPIDOPTERA

CARL HEINRICH, *Editor*

(See also in B. A. 6(3): Entries 7771, 7773, 7775, 7799, 7811, 8431, 8638, 8659, 8812; and in this issue 10889, 10896, 10901, 10911, 10917, 10923, 10929, 10933, 10946, 11582, 11791, 11795, 11798)

11810. BORTHWICK, ANN V. Notes on a tineid moth (Hyponomeuta evonymellus Linn.) and its occurrence in Midlothian. *Scottish Nat.* 1931(191): 149-152. 1931.—This sp. was attacking trees of *Prunus padus*.

11811. BOX, HAROLD E. The crambine genera Diatraea and Xanthopherne (Lep., Pyral.). *Bull. Ent. Res.* [*London*] 22(1): 1-50. Map, 5 pl., 4 fig. 1931.—A table shows the distribution by countries of the 48 American spp. of *Diatraea*. *Diatraea* Guilding (=*Iesta* Dyar, *Trinidadia* Dyar & Heinrich) (p. 11), emended description and key to spp.; *D.* **argentina*** (p. 18), Argentina, type in British Mus.; *D. morobe*, first description of ♂; *D. crambidoides** Grote (=*D. zeacolella* Dyar, *D. tripsacicola* Dyar), removed from synonymy of *D. saccharalis; D. saccharalis** (F.) (=*D. sacchari* Guild., *D. incomparella* Dyar & Heinrich); *D. indigenella**, ♂ described; *D.* **brunnescens** ♀* (p. 29), Venezuela; *D.* **incertella*** ♂ (p. 30), Brazil; *D. continens**, first descr. of ♂; *D.* **luteella*** (p. 32), Ecuador; *D.* **suffusella*** ♀ (p. 33), French Guiana; *D.* **albicrinella*** (p. 34), Brit. Guiana, Brazil (type), Peru, and Ecuador; *D.* **amazonica*** (p. 36), Brazil (type) and Argentina; *D.* **rufescens** ♂* (p. 37), Bolivia; *D.* **entreriana*** (p. 39), Argentina; *D. impersonatella* (Walk.) (=*D. moorella* Dyar & Hein.), removed from synonymy of *D. lineolata; D.* **flavipennella*** (p. 42), Brazil, type in Brit. Mus.; *D. lineolata* (Walk.) (=*Chilo culmicolellus* Zeller, *C. neuricellus* Zeller) [much of the sugar cane literature on this sp. is incorrect, records from the United States referring to *D. grandiosella,* and from Trinidad and Brit. Guiana to *D. impersonatella*]; *Xanthopherne* D. & H., key to spp.; *X.* **heinrichi** ♂* (p. 48), Peru, type in U. S. Nation. Mus.; *X.* **bimaculata*** (p. 49), Peru (type) and Venezuela; *X.* **endothermalis*** (*Diatraea e.* Hamps.). Types, unless otherwise stated, in Tring Mus. *Chilo comparellus* Felder & Rogen. is not a synonym of

Diatraea saccharalis, nor does it belong to *Diatraea*. The genitalia of 31 spp. are illustrated. Full synonymical notes are given for all spp.

11812. HEDDERGOTT. Aufsuchen von Sesienraupen. *Internat. Ent. Zeitschr.* 25(2): 21-24. 1931.—Notes on the larvae of *Trochilium apiformis, T. crabroniformis, Sciapteron tabaniformis, Sesia spheciformis, S. tipuliformis, S. conopiformis, S. vespiformis, S. myopaeformis, S. culiciformis, S. formicaeformis, S. ichneumoniformis, S. empiformis*, and *Zeuzera pyrina*.

11813. HERING, MARTIN. Ein neuer Parietaria-Minierer, Cosmopteryx parietariae sp. n. (Lep.). *Mitteil. Deutsch. Ent. Ges.* 2(5): 67-70. 3 fig. 1931.—*Cosmopteryx* parietariae* (p. 68), a leaf miner in *Parietaria ramiflora*, Italy. It is compared with *C. turbidella**.

11814. McDUNNOUGH, J. A new Argyroploce species (Eucosmidae, Lepid.). *Canadian Ent.* 63(7): 150-152. 3 fig. 1931.—*A.* trinitana* (p. 151), Ontario (type in Canadian Nat. Coll., Ottawa), Manitoba, Quebec, and Saskatchewan; bred from *Cypripedium pubescens*.

11815. MEYRICK, EDWARD. Exotic Microlepidoptera. 3(18): 545-576. Published by the author: Thornhanger, Marlborough, Wilts, England, 1930. Pr. 3 s.—Cosmopterygidae. *Labdia* semiramis ♀ (p. 545), Solomon Is., on *Cocos nucifera; L.* niphoxantha ♀ (p. 545), Central Provinces, India, from *Litsea polyantha; L.* orthritis ♂ (p. 545), Fiji Is., type in Brit. Mus.; *Pyroderces stagmatophora*, in Uganda, on *Androphogon sorghum; P.* haemodryas ♀ (p. 546), Malay Peninsula, from *Nipa fruticans; Stagmatophora* niphochrysa ♂ (p. 546), Texas; *Limnoecia* xanthotyla ♂ (p. 546), Solomon Is.; MELANOZESTIS (p. 547), between *Leptozestis* and *Ascalenia*, for *M.* heterodesma ♀ (p. 547), Natal, type in Brit. Mus.; *Mompha trithalama* Meyr., from *Clidemia pustulata* (p. 547); *Batrachedra knabi* Wals. (=*B. enormis* Meyr.). Tineidae: *Tinea* absolutrix ♀ (p. 547), Peru; *T.* isocharis (p. 547), New Guinea; CYNOMASTIX (p. 548), allied to *Mastigostoma* and *Cyathaula*, for *C.* rhothodoxa ♀ (p. 548), New Caledonia, type in Brit. Mus.; *Hypophrictis* spiloglypta ♂ (p. 548), Siam, type in Brit. Mus.; ENDOTHETIS (p. 549), allied to *Tanymita*, for *E.* anomogramma ♀ (p. 549), New Britain; *Themeliotis* projectrix ♂ (p. 549), New Britain; *Melasina* lavata ♂ (p. 550), *M.* zalomorpha ♂ (p. 550), and *M.* melicrana ♂ (p. 550), Sudan; *M.* isopoca (p. 551), Belgian Congo; *M.* obtrectans (p. 551), Kanara, [S. India]; *M.* vorticosa (p. 551), Bombay; *M.* spaniocctenis ♂ (p. 552), Uganda, type in Brit. Mus.; *Acrolophus* empedocles ♂ (p. 552), Brazil; *Tinea allutella* Rebel (=[*T.*] *utcrella* Wals.=[*T.*] *pachyspila* Meyr.); *Hapsifera* platyloxa ♂ (p. 553) and *H.* incrustata (p. 553), Uganda, type of latter in Brit. Mus.; XERANTICA (p. 553), between *Hapsifera* and *Drosica*, for *X.* tephroclysta ♂ (p. 553), Uganda, type in Brit. Mus.; PHILAGRAULA (p. 554), for *P.* punica ♀ (p. 554), Sudan, bred from decaying stem of date palm; *Narycia* crocodilitis (p. 554), Uganda. Xyloryctidae: *Odites* malivora ♀ (p. 555), Manchuria, bred from larva rolling leaf of *Pyrus malus; O.* balanospila ♂ (p. 555), Sierra Leone, type in Brit. Mus.; *Asapharcha* crateropa ♂ (p. 555), Portuguese E. Africa; *A.* nephelomicta ♀ (p. 555), New Mexico; *Antaeotricha* cyprodeta (p. 556) and *A.* serarcha ♀ (p. 556), Brazil; *A.* sortifera ♀ (p. 557), Bolivia; *Stenoma* ogmolopha ♂ (p. 557) and *S.* crypsithias ♀ (p. 558), Brazil; *S.* sciogama ♂ (p. 558), Bahia, bred from larvae feeding on leaves of *Anona squamosa*, type in Brit. Mus.; *S.* hyacinthitis ♀ (p. 559), British Guiana, type in Brit. Mus.; *S.* ulosema ♂ (p. 559) and *S.* macraulax ♀ (p. 559), Brazil; BRYONYMPHA (p. 560), probably allied to *Agriophara* and *Ptilogenes*, for *B.* silvana ♂ (p. 560), Comoro Is. [Mosambique Chan.]; *Agriophara* muscicolor ♂ (p. 560), Brit. New Guinea, type in Berlin Ent. Mus. Scythridae: *Scythris* hydronoma ♀ (p. 561), Sudan; *S.* delodelta ♂ (p. 561), Natal, type in Brit. Mus. Coleophoridae: *Coleophora* castalia ♂ (p. 561) and *C.* echyropis ♂ (p. 562), Kashmir. Hyponomeutidae: *Zelleria* semitincta ♂ (p. 562), Texas; *Pronomeuta sarcopis* (p. 562), bred from larvae skeletonizing leaves of *Hydnocarpus wrightiana;* STICHOTACTIS (p. 562), probably allied to *Homadaula*, for *S.* calamitosa (p. 563), Sudan, bred from *Acacia nilotica* and *A. arabica; Ethmia* hamaxastra ♀ (p. 563), Portuguese E. Africa; *Prodidactis*, transferred from the Tortricidae and characterization as a hyponomeutid given. Pterophoridae: *Trichoptilus* bidens ♂ (p. 564), Assam; *Oxyptilus* scutifer ♀ (p. 564), Ecuador; *O.* indentatus (p. 564), Texas and New Mexico; *O.* intercisus (p. 565), Croatia, type in Berlin Ent. Mus.; *Deuterocopus* deltoptilus ♂ (p. 565), Uganda, type in Brit. Mus.; *Platyptilia* niphadarcha ♂ (p. 566), Uganda, type in Brit. Mus.; *P.* saeva ♀ (p. 566), Peru (9000 ft.); *P.* macrornis ♀ (p. 567), Turkestan; *Alucita* endophaea ♀ (p. 567), Portuguese E. Africa; *A.* dryogramma (p. 567), Croatia, type in Berlin Ent. Mus.; *Adaina* subflavescens (p. 568), Sumatra, bred from flowers of *Pluchea indica; A.* excreta ♂ (p. 568), Peru (9000 ft.); *Pterophorus* excors ♂ (p. 568), Askold Is.; E. Siberia; *P.* jason ♂ (p. 568), Brazil; *P.* nauarches ♂ (p. 569) and *P.* chionophanes ♂ (p. 569), Peru (9000 ft.); *P.* zetes ♀ (p. 569), Bahia; *P.* calais ♂ (p. 570), Pernambuco; *Stenoptilia* megalochra (p. 570), Bulgaria; *S.* philocremna (p. 570), Texas and New Mexico (at 7000 ft.). Adelidae: *Nemotois* photodoxa ♂ (p. 571), New Guinea; *N.* cyanochrysa ♂ (p. 571), New Ireland; *N.* hippophylax ♀ (p. 572), British New Guinea; *Adela* arabarcha ♂ (p. 572), Tunis; *Ceromitia* aphroneura ♂ (p. 572), Portuguese E. Africa. Oecophoridae: STASIXENA (p. 573), for *S.* subagrestis ♂ (p. 573), Brazil; *Gonada* flavidorsis ♂ (p. 573), Brazil; *Borkhausenia* chalcocrates ♂ (p. 574), Croatia; *Eochrois* erebocrossa ♀ (p. 574), Queensland; *Elaphrerga* eucentrota (p. 574), Andaman Is.; *Filinota* vociferans ♀ (p. 574), *Hypercallia* autocrena ♂ (p. 575), *H.* halobapta ♂ (p. 575), and *H.* citroclista ♀ (p. 576), Brazil; *H.* heliomima ♂ (p. 576), Colombia.

11816. STERNEK, JAKOB. Venilia macularia ab. krombholzi nov. *Internat. Ent. Zeitschr.* 25(4): 37-38. 1 fig. 1931.—From Bohemia.

11817. TABATA, IKUO. Some studies on morphology and ecology of Cnaphalocrocis medinalis Guén. [In Japanese.] *Ann. Agric. Exp. Sta. Govt.-Gen. Chosen* 5(2): 127-134. 1930.

NEUROPTEROIDS

F. M. CARPENTER, *Editor*

(See also in this issue Entries 10945, 10946, 11247, 11590)

11818. ANDER, KJELL. Trollsländor-Odonata. 13. In: Insektfaunan inom Abisko Nationalpark. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 18. 60-63. 1931.—A list of 6 spp., with locality and distributional notes.

11819. BANKS, NATHAN. Trichoptera from Cape Breton, Nova Scotia. *Bull. Brooklyn Ent. Soc.* 25(3): 127-132. 1 pl. 1930.—A list of 4 Phryganeidae, 16 Limnephilidae, 3 Sericostomatidae, 1 Leptoceridae, 3 Rhyacophilidae, and 4 Hydropsychidae; including the following. Sericostomatidae: ARCADOPSYCHE (p. 129), near *Crunoecia*, based on *A.* prominens* (p. 129); Rhyacophilidae, *Rhyacophila* fairchildi* (p. 130); Hydropsychidae, *Plectrocnemia* aureola* (p. 130); *P.* albipuncta* (p. 131). Types in Mus. Comp. Zool.

11820. BANKS, NATHAN. Some oriental neuropteroid insects. *Psyche* [*Boston*] 38(1): 56-70. 1 pl. 1931.—Corrodentia, Psocidae: *Hageniella* pusilla (p. 56), *Tagalopsocus* hyalinus (p. 58), and *Ectopsocus aethiops* v.

bakeri* (p. 58), Philippines. Neuroptera, Myrmeleonidae: *Stenares* frazeri ♀ (p. 58) and *Nesoleon* perpunctatus (p. 59), India; EOPHANES (p. 60), near *Paraglenurus*, type *E.* formosa* (p. 61), Luzon; *Formicaleo schladeri* Van der Weele is provisionally referred to *Eophanes; Syngenes* palpalis (p. 62), Madras; *Madrasta handlirschi**, redescribed from Luzon material. Ascalaphidae: *Suhpalacsa* reducta (p. 63), Luzon, Samar, and Negros. Chrysopidae: *Chrysopa* obliquata (p. 64), Luzon; *Spilosmylus ceylonensis,* first descr. of ♀. Trichoptera, Sericostomatidae: *Goera* tagalica* ♀ (p. 66), *Gocrinella* minor* (p. 67) and *Anisocentropus* bellus* (p. 67), Luzon. Hydropsychidae: *Macronema* caliptera* (p. 68), Luzon; *Dipseudopsis* spectabilis* (p. 69), Borneo. Rhyacophilidae: *Rhyacophila* carletoni* (p. 69), north India. Types in Mus. Comp. Zool.

11821. **BENGTSSON, SIMON.** Dagsländor-Ephemeroptera. 11; Sjösländor-Plecoptera. 12. In: Insektfaunan inom Abisko Nationalpark. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 18. 56-60. 1931. —A list of 16 Ephemeroptera and 15 Plecoptera, with brief notes on locality and distribution.

11822. **CARPENTER, FRANK M.** The biology of the Mecoptera. *Psyche* 38(1): 41-55. 1 fig. 1931.—The writer reviews the history of the knowledge of these insects and discusses their mating and feeding habits, and metamorphosis, emphasizing the fact that relatively little is known of their biology.

11823. **CRAMPTON, G. C.** The genitalia and terminal structures of the male of the archaic mecopteron, Notiothauma reedi, compared with related Holometabola from the standpoint of phylogeny. *Psyche* 38(1): 1-21. 4 pl. 1931.—*Panorpa* hirsuta* (p. 10), India, type in Mus. Comp. Zool. The abdominal structures of *Notiothauma reedi** indicate that this remarkable insect is a remnant of the ancestral Mecoptera and is the nearest living representative of the ancestors of the Panorpidae. The family Notiothaumidae may be placed before the Panorpodidae and Panorpidae. The genitalia of numerous other Mecoptera are figured.

11824. **DESPAX, R.** Description sommaire d'un sous-genre nouveau et de deux espèces nouvelles du genre Leuctra Steph. [Plecoptera]. *Bull. Soc. Ent. France* 1929(19): 298-301. 1929.—PACHYLEUCTRA (p. 298) erected as a new subg. for *Leuctra* (*P.*) montana (p. 299) (type), Pyrenees, Haute-Garonne, and *L.* (*P.*) ribauti (p. 301), Saint-Béat, Haute-Garonne.—*S. B. Fracker.*

11825. **FORSSLUND, KARL-HERMAN.** Nattsländor-Trichoptera. 10. In: Insektfaunan inom Abisko Nationalpark. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 18. 46-55. 1931.—A list of the spp. (44) hitherto known from the Abisko region, with distributional notes.

11826. **LAIDLAW, F. F.** Remarks on some Odonata (dragonflies) from Mangalum Island, North-west Borneo. *Bull. Raffles Mus.* 5. [90]-[92]. 1931.—The odonate fauna indicates that this island once formed part of Borneo. An annotated list of 10 spp. is given. *Lestes praemorsa,* new to the Bornean list.

11827. **LESTAGE, J. A.** Études sur les Mégaloptères. VI. Les Austrosialis de la Tasmanie. *Bull. & Ann. Soc. Ent. Belgique* 70(3/4): 107-113. 1930.—A comparative study showing that the fundamental venation, as indicated by Tillyard in his publication on Megaloptera, remains constant; the cross-venation however is subject to great changes which are noticeable to an equal degree in the archaic members of the family Sialidae of the Australian fauna, as well as in the more recently evolved species of the present fauna. The number and importance of these variations are not specific, but are individual. —*C. Zeimet.*

11828. **LIEFTINCK, M. A.** A revision of the genus Epophthalmia Burm. (Odon., Corduliinae), with notes on habits and larvae. *Treubia* 13(1): 21-80. 1 col. pl., 29 fig. 1931.—*Epophthalmia* Burmeister (=*Azuma* Needham not Jordan & Snyder); descriptive key to ♂♂ and ♀♀; the genitalia of each sex are illustrated, *E. elegans* ♂* ♀*, mature larva*, a subsp.? is illustrated in color; *E. frontalis* ♂* in color, and genitalia; *E. vittata vittata* ♂* ♀*, mature larva*; *E. v. cyanocephala* ♂*; *E. v.* sundana (p. 61), ♂* in color, egg*, first larva*, Java, type in Buitenzorg Mus.; *E. australis* ♂* in color; *E. vittigera* ♂* ♀*, mature larva*.

11829. **LUCAS, W. J.** Notes on British Paraneuroptera in 1930. *Entomologist* [*London*] 64(819): 175-179. 1931.—Records of collecting Aeschnidae, Libellulidae, Calopterygidae, Lestidae, and Agrionidae.

11830. **McDUNNOUGH, J.** The bicolor group of the genus Ephemerella with particular reference to the nymphal stages (Ephemeroptera). *Canadian Ent.* 63(2): 30-42. 4 pl.; (3): 61-68. 1931.—*Ephemerella,* key to nymphs and species in *E. bicolor* group; all nymphs are fully described and figured; *E. lutulenta** Clemens (=*E. lineata* Clemens); *E. temporalis** McD., 1st description of nymph; *E.* prudentalis* (p. 40), *E.* minimella* ♂ (p. 63) and *E.* aestiva* (p. 64), Quebec, types in Canadian Natl. Coll. The ♂ genitalia and ♀ subanal plate are illustrated in several spp.

11832. **McDUNNOUGH, J.** The genus Isonychia (Ephemeroptera). *Canadian Ent.* 63(7): 157-163. 6 fig. 1931.—*Isonychia,* key to spp.; *I. arida**, *I.* georgiae ♂* (p. 159), Georgia; *I. sicca**; *I. s.* var. *manca**; *I. s.* var. campestris* (p. 161), Alberta; *I. bicolor**; *I.* rufa* (p. 162), Iowa. Types in Canadian Nat. Coll., Ottawa.

11833. **MORSE, MIRIAM.** The external morphology of Chrysopa perla L. (Neuroptera: Chrysopidae). *Jour. New York Ent. Soc.* 39(1): 1-42. 4 pl. 1931.—A critical study of the sclerites of the adult, with a bibliography on insect morphology of 48 references.

11834. **MORTON, KENNETH J.** Hemerobius perelegans Stephens: A good species. *Entomologist* [*London*] 64(820): 197-201. 1 pl., 3 fig. 1931.—*Hemerobius p.** is removed from the synonymy of *H. subnebulosus.* It is compared with *H. humuli* and *H. orotypus.*

11835. **MOSELY, MARTIN E.** The genus Diplectronella Ulmer (Trichoptera). *Ann. and Mag. Nat. Hist.* 8(44): 195-205. 4 pl., 5 fig. 1931.—*Diplectronella,* redescribed; *D. taprobanes**, wings* and ♂ genitalia*; *D.* indica* (p. 199), India; *D.* afra ♂* (p. 202), Uganda. Types in Brit. Museum.

11836. **MOSELY, MARTIN E.** Apatania arctica Bohem, ♂. *Entomologist* [*London*] 64(813): 34. 1931.—*Apatania palméni* J. Sahlb. may be the ♂ of *A. arctica.*

11837. **MOSELY, MARTIN E.** Trichoptera and Ephemeroptera of British Guiana, with special reference to the Oxford University Expedition to British Guiana, 1929. *Entomologist* [*London*] 64(819): 169-170. 1931. —A list of 21 spp. of Trichoptera and 5 Ephemeroptera from Brit. Guiana.

11838. **MUSGRAVE, PAUL N.** A coleopterous enemy of Corydalis cornuta L. (Anthicidae: Neur.: Sialididae). *Ent. News* 42(7): 202-203. 1931.—*Anthicus heroicus* infested egg masses of *Corydalis cornuta* on the Potomac River in W. Virginia, usually pupating in cells in the soil beneath the egg masses.

11839. **STEGER, ANNE LOUISE.** Some preliminary notes on the genus Ephemerella. *Psyche* 38(1): 27-35. 1 pl. 1931.—Contains descriptions and illustrations of stages in the life cycle of *Ephemerella cornuta**, *E. dorothea*, *E. rotunda,* and *E. septentrionalis**; all collected at Ithaca, New York.

11840. **TJEDER, BO.** Nätvingar-Neuroptera. 9. In: Insektfaunan inom Abisko Nationalpark. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 18. 42-46. 1931.—This paper is based on material belonging mainly to Naturhist. Riksmus., Stockholm, consisting of 36 specimens, representing 7 spp. which are here listed, with notes on locality and distribution.

11841. **TRAVER, JAY R.** The ephemerid genus Baetisca. *Jour. New York Ent. Soc.* 39(1): 45-64. 1 pl. 1931. —*B.* carolina* (p. 52), N. Carolina; *B.* callosa* (p. 57), W. Virginia.

ORTHOPTEROIDEA

A. N. CAUDELL, *Editor*

(See also in this issue Entries 9175, 9182, 10883, 10908, 10910, 11247, 11588)

11842. ANDER, KJELL. Rätvingar-Orthoptera. 14. In: Insektfaunan inom Abisko Nationalpark. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 18. pp. 64-69. 1931.—An account of the Orthoptera collected in the Abisko region, represented by 1 cockroach and 2 grasshoppers.

11843. BERLAND, L., et L. CHOPARD. Remarques sur Diponthus cribatus Serville (Orthoptère Acridien), et sur les types de Serville en général. *Bull. Mus. Nation. Hist. Nat. [Paris]* 1(2): 143. 1929.—*Diponthus* cribatus (*Acridium cribratum* Serv.).

11844. CRAMPTON, G. C. The affinities of Grylloblatta indicated by a study of the head and its appendages. *Psyche* 33(3): 78-85. 1 fig. 1926.—The writer believes that *Grylloblatta* is practically a living protorthopteron, very closely related to the common stock from which sprang the Tettigonioid and Grylloid Orthoptera. Outside of the true Orthoptera, the next of kin of the Grylloblattids are the Dermaptera, with the Phasmidae more remotely related. The head capsule of *Grylloblatta* is forficuloid; the maxillary lacinia and galea resemble those of *Gryllotalpa;* the labium is typically orthopteroid; the mandible resembles that of *Gryllotalpa;* the antennae resemble those of *Embia.*

11845. KARNY, H. H. Die Gryllacriden von Neu-Guinea. In: *Nova Guinea, Resultats Exped. Sci. Nouvelle Guinée* 15(4): [1]-[44]. Map, 1 col. pl., 20 fig. E. J. Brill S. A., Leiden, 1930.—Gryllacrinae: GLENOGRYLLACRIS (p. 3) described as a new genus with "*Glenogryllacris pretiosa* n. sp." as type, but on p. 4 is used as a subgenus. *Gryllacris* (*Gl.*) pretiosa ♀* (p. 4); *Gryllacris* griseola ♀* (p. 8); *G.* (*Papuogryllacris*) *ligata*; G.* (*P.*) *dimidiata,* key to 6 subspp., including chalybeata ♀* (p. 12) and signicollis ♂* (p. 14); *G.* (*P.*) *trianguligera** and its subsp. dimidiatipes ♀* (p. 17); *G.* (*P.*) *diluta* v. *huoniana*; G.* (*P.*) piceicollis ♀* (p. 19); *G.* (*P.*) *purarica* spp. brachyura ♀* (p. 22); *G.* (*P.*) parvolaminata ♀* (p. 23); *G.* (*P.*) leeuweni* (p. 26); *G.* (*P.*) *vidua*; G.* (*P.*) circumdata ♀* (p. 30); *G.* heurnii ♀* (p. 32); *G. giulianettii,* first descr. of ♂*; *G. multicolor* v. nigropicta ♀* (p. 37); *G. ebneri*; G. punctipennis*; G. urania**. Henicinae: *Papuaistus pallicrus* descr. of ♀ allotype. Rhaphidophorinae: *Rhaphidophora* alpha ♂* (p. 41), and *R.* beta ♂ (p. 41). Types in Buitenzorg Mus.

11846. RAMME, W. Beiträge zur Kenntnis der palaearktischen Orthopterenfauna (Tettig. et Acrid.). *Mitteil. Zool. Mus. Berlin* 17(1): 165-200. 1 pl., 13 fig. 1931.—Tettigoniidae: *Poecilimon gracilis* is distinguished from *P. schmidti; P. brunneri* Friv. (=*P. berlandi* Uv.); P. poltoratskyi (*Isophya p.* Uv.) (p. 166); *P.* neglectus* (p. 167), Asia Minor; *Isophya* brevicauda* (p. 168), Jugoslavia, type in Berlin Mus.; *I. bivittata* Uv. (=*I. transcaucasica* Ramme); *I. modestior* Br. (=*I. fusconotata* Br.); *Barbitistes serricauda* occurs on *Alnus glutinosa;* notes on *B. ocskayi* and *B. yersini; Ancistrura* nigrovittata (*Barbitistes nigrovittatus* Br., =*B. brunneri* Panč., *Ancistrura truncata* Uv.); METAPLASIA (p. 172), near *Barbitistes* and *Ancistrura,* type *M.* oertzeni* (*B. o.* Br.) (p. 174); *M.* pulchripennis* (*B. p.* Costa) (p. 175); *M.* ornata* ♂ (p. 174), Greece, type in Berlin Mus.; *Leptophyes albovittata,* descriptive note; *Drymadusa* ornatipennis (*Paradrymadusa o.* Ramme); *Pholidoptera* ebneri* (p. 177), Albania; *Platycleis romana* descr. notes; *P. eversmanni* (Kitt.) (=*P. dubia* Uv., *P. falzfeini* Ramme); *Metrioptera coracis** and *M. dofleini* descr. notes; *M.* kuntzeni* (p. 181), Istria; *M. oblongicollis* (Br.) (=*Pholidoptera albanica* Čsiki); *Decticus verrucivorus** is compared briefly with *D. annaelisae*; Psorodonotus fieberi* ssp. *fieberi** is compared with *P. f.* ssp. macedonicus* (p. 184), Macedonia; *P. uvarovi*, P. illyricus* Ebner is removed from *P. fieberi* and raised to species rank. Acrididae: *Stenobothrus* posthumus* (p. 188), Montenegro, type in Berlin Mus.; *Stauroderus* eisentrauti* (p. 190), Austria; *Euchorthippus* angustulus* (p. 191), Balearic Isls., compared with *E. pulvinatus*; Oedipoda fuscocincta* ssp. portugalensis* (p. 193), Portugal; *Pamphagulus* uvarovi ♀* (p. 193), Mauretania, type in Paris Mus.; *P.* vicinus ♀* (p. 195), Tunis, type in Paris Mus.; *Podisma emiliae,* descr. notes; *P. schmidti* ssp. rubripes (p. 197), Rumania; *P. alpina* f. leisleri (p. 197), Austria; *Conophyma fedtschenkoi* ssp. ornatum* (p. 198), South Turkestan, type in Hamburg Mus.

11847. UVAROV, B. P. Notes on the genus Iris, Saussure (Orthoptera, Mantidae). *Ann. and Mag. Nat. Hist.* 8(45): 234-238. 1 pl. 1931.—*Iris* radians ♂* (p. 234), Punjab, type in Imp. Inst. Ent.; *I. oratoria* coeca ♂* (p. 235), Sudan; *I. o.* polystictica (*Mantis p.* Fischer-Waldheim=*Iris tiflisina* Giglio-Tos) (p. 236); a catalogue and key of spp. is given.

11848. WILLEMSE, C. A new species of Aucacris from Chile. (Orthopt., Cyrtacanthacr.) *Mitteil. Deutschen Ent. Ges.* 2(2): 22-24. 1 fig. 1931.—*A.* hebardi ♀* (p. 22), type in Mus. Hamburg.

11849. ZEUNER, FRIEDRICH. Ein Massenflug von Calliptamus italicus L. (Orth. Acrid.) *Mitteil. Deutschen Ent. Ges.* 2(2): 26-27. 1931.—Report of great destructive swarms of locusts, at Darmstadt, not only *Calliptamus italicus,* but also several other spp.

11850. ZEUNER, FRIEDRICH. Beiträge zur deutschen Orthopterenfauna. *Mitteil. Deutsch. Ent. Ges.* 2(5): 75-78. 1931.—Remarks on *Stauroderus vagans* and 4 closely related spp. *Tettix kiefferi, Tettigonia caudata, T. viridissima,* and *T. cantans; Gampsocleis glabra; Podisma alpina* and *Isophya pyrenaea.*

SMALLER ORDERS OF INSECTA

H. E. EWING, *Editor*

(See also in B. A. 6(2): Entries 3311, 3328, 4661, 5779, 6043; 6(3): 6369, 7799, 8632, 8647, 8655, 8659; and in this issue 10914, 11820)

11851. AHRENS, WILLI. Ueber die Körpergliederung, die Haut und die Tracheenorgane der Termitenkönigin. (Fauna et Anatomia ceylanica, 4. Nr. 8). *Jenaische Zeitschr. Naturwiss.* 64(3): 449-530. 2 pl., 20 fig. 1930.—A detailed description is given of both gross and fine anatomy of the head*, thorax*, abdomen*, and tracheal organ* (Exsudatorgane of Holmgren) of a termite queen (*Termes redemanni*) based on material from Ceylon. Retrogression in the 1st abdominal sternite and initial stages in reduction of the following 3 segments are apparent from histological research. The hypodermis* (epidermis) of the abdominal integument is rich in glands below the brown pigment of the sclerites, in which region cell walls have disappeared giving a syncytial appearance of the tissue. Elongate, unicellular glands which open to the exterior contain tricogens. In the intersegmental membrane, however, glandular elements are entirely lacking and the cells are regular in shape and uniformly arranged. In areas with especially heavily chitinized cuticula, a characteristic degeneration occurs.

Typical apodemes distinguished by their manifold ramifications, arise from the basement membrane and give support and strength to the protoplasmic fibrillae. A significant differentiation in the cuticula occurs at the periphery where a dark border consisting, apparently, of dark-staining nuclei or small rods (secretion centers) lying in a denser zone of protoplasm, may be observed; not infrequently in place of these rod-like bodies a row of alveoli is found. The dermis is composed of dark and light lamellae, the former due, possibly, to protoplasmic changes, the latter formed from secretions; none of the dermal layers are definitely barred or striated. The tracheal epithelium has, as pointed out by Bugnion, an influence on the blood composition. The author therefore proposes to speak of it as a tracheal rather than as an excretory organ, since its relation to other excretory organs is not proved. Since the tracheal organ does not develop from the fat body as supposed by Holmgren, it may be assumed to have no influence on caste differentiation.—*W. Ahrens (transl.)*.

11852. BATHELLIER, JEAN. Contribution à l'étude systématique et biologique des termites de l'Indochine. 240p. 13 pl. 113 fig. Societe d'Editions Geographiques, Maritimes et Coloniales: Paris. 1927. Pr. 80 fr. [See B. A. 3(7/8): entry 16763.]

11853. CHAPMAN, PAUL J. Corrodentia of the United States of America: I. Suborder Isotecnomera. *Jour. New York Ent. Soc.* 38(3): 219-290; (4): 319-403. 10 pl. 1930.—Keys to the families, subfamilies, and genera of Isotecnomera in the U. S. Psocidae: *Psocus,* key to 42 spp.; *P.* **crosbyi** ♀* (p. 235), Washington State; *P.* **desolatus** ♂* (p. 236), Colorado; *P.* **hoodi*** (p. 239), Arizona; *P.* **infernicolus** ♂* (p. 240), Wyoming; *P.* **insulanus** ♂* (p. 244), *P.* **lithinus*** (p. 249), *P.* **montivagus*** (p. 255) and *P.* **quaesitus*** (p. 270), New York; *P.* **subapterous*** (p. 278), California; *P.* **subquietus*** (p. 279), New York; **PSEUDOPSOCINAE** (p. 287), new subfam. for **PSEUDOPSOCUS** (p. 287), type *P.* **amabilis*** (*Psocus a.* Walsh=*P. minusculus* Banks) (p. 288). Pt. 2. Caeciliidae: *Caecilius,* key to 8 spp. *C.* **croesus*** (p. 326), N. Carolina (type), New York, and Kentucky; *C.* **perplexus*** (p. 326), Colorado (type), Wyoming, and Alberta; *C.* **quillayute*** (p. 330), Washington; *C.* **citricola** (*Psocus c.* Ashmead) (p. 331); **TELIAPSOCUS** (p. 224), near *Kolbea,* type *T.* **conterminus*** (*Psocus c.* Walsh=*P. canadensis* Prov., *Caecilius definitus* Aaron) (p. 334); *Polypsocus corruptus** Hagen (=*Ptilopsocus annulicornis* Banks); **TERRACAECILIUS** (p. 224), type *T.* **pallidus** ♀* (p. 343), New York (type), and Tennessee; *Lachesilla,* key to 11 forms; *L.* **arida** ♀* (p. 346), Arizona; *L.* **contraforcepeta*** (p. 347), New York (type), Maine, Virginia, N. Carolina, and Wyoming; *L.* **forcepeta*** (p. 348), New York (type), Kentucky, N. Carolina, Tennessee, Georgia, and Florida; *L. f.* var. **major*** (p. 349), Tennessee, Virginia, N. Carolina, Indiana, Florida; *L.* **corona*** (p. 350), New York (type), and Virginia; *L.* **pacifica** ♀* (p. 353) and *L.* **silvicola*** (p. 361), Washington. Bertkauiinae: *Bertkauia* **lepicidinaria** ♀* (p. 363), New York (type), and Kentucky; *B.* **crosbyana** ♀ (p. 364), New York (type), Maine to Minnesota, Florida, Mississippi. Peripsocinae: *Peripsocus,* key to 5 spp.; *P.* **stagnivagus** ♀* (p. 376), N. Carolina (type), and S. Carolina. Many other previously known spp. are described and illustrated.

11854. DENIS, J. R. Notes sur les Aptérygotes. Le dimorphisme sexuel d'Archisotoma besselsi (Pack.) *Bull. Soc. Zool. France* 51(1): 16-19. 2 fig. 1926.

11855. HANDSCHIN, EDUARD. Collembola from Mexico. *Jour. Linnean Soc. London Zool.* 36(247): 533-552. 35 fig. 1928.—Treats of *Hypogastrura armata* Nic., *H. matura* v. **mexicana*** (p. 535); *H. copiosa* Fols., *Schöttella* **nodiseta*** (p. 536); *Xenylla nitida* Tull., *Pseudachorutes complexus* McG., *Achorutes muscorum* Templ., *A.* **barberi*** (*A. quadrioculata** Fols.) (p. 537), *Tullbergia collis* v. **mexicana*** (p. 538), *Proisotoma* **intermixta*** (p. 539), *Isotoma minor* Schäf., *I. viridis* Bourl., *Tomocerus flavescens* v. *americanus* Schtt, *Isotomurus palustris* Müll., *Entomobrya decemfasciata* Pack., *Lepidocyrtus cyaneus* Tull., *Lepidocyrtinus mexicanus* Fols., *L.* **semicoloratus*** (p. 544), *Heteromurus* **mexicanus*** (p. 545), *Sminthurinus aureus quadrilineata* Tull., *S. quadrimaculatus* Ryd., *Ptenothrix testudineatus* Fols. The close affinity of the Mexican collembolan fauna to that of N. Amer. is noted. The author presents arguments in favor of using the name *Hypogastrura.* Collembola of: (1) Hot and semi-desert regions; (2) mountain-forests; and (3) snow-regions are discussed. *J. W. Folsom.*

11856. HOOD, J. DOUGLAS. Two Urothripidae (Thysanoptera) from Florida, with keys to the known genera and the North American species. *Bull. Brooklyn Ent. Soc.* 24(5): 314-322. 1 pl. 1929.—Consideration of group characters and key to genera; **TRACHYTHRIPS** (p. 317), near *Bebelothrips,* type *T.* **watsoni*** (p. 317); *Stephanothrips,* key to spp.; *S. occidentalis* H. & W., new to U. S. A.

11857. JACKSON, C. H. N. The Collembola of Wicken Fen, Cambridgeshire. *Nat. Hist. Wicken Fen* 4. 300-307. 1 pl. 1928.

11858. KEILIN, D., and G. H. F. NUTTALL. Iconographic studies of Pediculus humanus. *Parasitology* 22 (1): 1-10. 18 pl. 1930.—This series of beautifully executed plates presents in detail the internal and external anatomical structures of *P. humanus* with exception of the mouthparts. The plates are fully explained, and include one of *Phthirus pubis* for comparison. Attention is directed to the priority of *P. humanus* race corporis de Geer, 1778 over *P. h.* race *vestimenti* Nitzsch, 1818. *Phthirus* (not *Phthirius*) is the correct spelling for the genus as established by Leach.—*A. E. Miller.*

11859. SILVESTRI, F. Contributions to a knowledge of the Indo-Malayan Japygidae (Thysanura). *Rec. Indian Mus.* 32(4): 439-489. 51 fig. 1930.—A preliminary account of the Japygidae from the region is given. The material dealt with includes 26 spp. and varieties of which 7 are provisionally referred to the genus *Japyx* Hal., 16 (varieties included) to *Indjapyx,* 2 to *Burmjapyx,* and 1 to *Parajapyx.* The author believes that the true form of *Japyx indicus* Oud. is confined to Sumatra and that specimens taken elsewhere, but hitherto grouped together as *J. indicus,* actually constitute other species, subspecies, and varieties. The folowing are described in Latin: *Japyx syriacus* v. **inferior*** (p. 439) and *J.* **evansi*** (p. 440), Mesopotamia; *J.* **beccarii*** (p. 442), Borneo, type in Sarawak Mus.; *J.* **greeni*** (p. 444), Ceylon; *J.* **immsi*** (p. 447), India; *J.* **murudensis*** (p. 449), Borneo; **INDJAPYX** (p. 451), type *I.* **indicus*** (*Japyx i.* Oud.) (p. 451), Sumatra, with varieties: **separata*** (p. 454), Riouw Arch., **javana*** (p. 456), Java, **divisa*** (p. 458), Flores Is., Dutch E. Indies, **birmana*** (p. 459), Burma, **borneensis*** (p. 462) and **bidicola*** (p. 463), Borneo; *I.* **ceylonicus*** (p. 465), Ceylon; *I.* **kraepelini*** (p. 467), Java, type in Mus. Hamburg; *I.* **heteronotus*** (p. 469), India; *I.* **annandalei*** (p. 471), with var. **bituberculata*** (p. 473), Bombay; *I.* **seymourii*** (p. 475), *I.* **pruthii*** (p. 477) and *I.* **gravelyi*** (p. 479) (type in Madras Mus.), India; *I.* **taprobanicus*** (p. 481), Ceylon; **BURMJAPYX** (p. 483), type *B.* **oudemansi*** (*Japyx o.* Parona) (p. 484); *B.* **paronae*** (p. 487).—*S. Ribeiro.*

11860. SJÖSTEDT, YNGVE. Eine neue Termite aus Katanga, Belg. Kongo. *Ent. Tidskr.* [*Stockholm*] 48(3): 169. 1 fig. 1927.—*Megagnathotermes* **katangensis*** (p. 169), Soldier, type in Mus. Stockholm.

11861. STACH, JAN. Zwei neue Collembolen aus Ungarn. *Ann. Mus. Nat. Hungarici* 24: 81-86. 1 pl. 1926. —*Xenylla* **birôi*** (p. 81), resembling *X. börneri* Axels.; *Deuterosminthurus* **fenyesi*** (p. 82), resembling *D. pallipes* (Lubb.). A synoptic table of all *Deuterosminthurus* spp. in which the unguiculi are alike on all feet, is given. —*J. Stach (transl. by J. W. Folsom).*

11862. [TIFLOV, V. E.] ТИФЛОВ, В. Е. Блохи водяных крыс (Arvicola amphibius) Юго-Востока РСФСР. (The fleas of water rats. (A. amphibius) in the southeast of the RSFSR.) Вестник Микробиологии,

Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 263-268. [English summary p. 288.] 2 fig. 1930.—Out of 829 fleas taken from 136 water rats and 32 nests in the province of Orenburg, 87% were *Ceratophyllus walkeri* Roth., and the remaining 12.53% were *C. penicilliger, C. mustelae, C. consimilis, Ctenophthalmus wagneri, C. breviatus, C. orientalis,* and *Hystrichopsylla talpae.* The author stresses the fact that *C. walkeri* (described) which so far was known only in Great Britain, was found in Russia.—*G. A. Lebedeff.*

11863. WOMERSLEY, H. Sinella myrmecophila Reut. (Collembola) in Britain. *Ent. Month. Mag.* 64(774): 247. 1928.

FOSSIL INSECTA

F. M. CARPENTER, *Editor*

(See also in this issue Entries 11247, 11723)

11864. FORBES, WM. T. M. The oldest moth. *Amer. Naturalist* 65(700): 479-480. 2 fig. 1931.—Comparison of the wing of *Chionaemopsis quadrifasciatus* Cockerell and LeVeque with that of *Atteva aurea* shows close similarity and suggests that *C. quadrifasciatus* falls within, or is the immediate ancestor of, *Atteva.*

11865. MYERS, J. G. Tillyard's work on insect phylogeny. *Psyche* 33(3): 92-95. 1926.—A review of Tillyard's paleontological studies.

11866. SALT, GEORGE. Three bees from Baltic amber. *Bernstein-Forschungen (Amber Studies)* 2. 136-147. 3 fig. 1931.—*Glyptapis* neglecta* (p. 136), *Ctenoplectrella* dentata* (p. 139), *Andrena* wrisleyi* (p. 141), types in Geol. Mus. Königsberg contains a list of fossil bees.

CYCLOSTOMATA, ELASMOBRANCHII, AND PISCES

BARTON WARREN EVERMANN, *Editor*

H. WALTON CLARK, *Associate Editor*

(See also in this issue Entries 9114, 9121, 9693, 9760, 9863, 9867, 9879, 9894, 9947, 10021, 10024, 10113, 10153, 10218, 10460, 10461, 10474, 10475, 10477, 10601, 10771, 10799, 10940, 11222, 11252, 11262, 11297, 11306, 11464, 11466, 11467, 11488, 11524, 11526)

11867. BLAKE, ISOBEL. The external disinfection of fish ova with reference to the prophylaxis of furunculosis. *Fishery Board for Scotland, Salmon Fisheries, 1930,* No. II. 10pp. 1931.—The introduction discusses the general theory of the actions of disinfectants; this is followed by tables giving methods and results of the determination of lethal concentrations of germicides (acriflavine, brilliant green, chlorine, phenol, and potassium permanganate) for *Bacillus salmonicidus.* The effect of the above-mentioned germicides on the viability of trout ova and the practical application of acriflavine as a disinfectant of ova are discussed. A summary and references to literature are given. The author's conclusions are as follows: Ova may be regarded as a possible means of spread of furunculosis; *B. salmonicidus,* if carried by ova, is on the surface and not in the interior of the ova; ova may be disinfected without injury by application of certain germicides; acriflavine has been found to be a suitable disinfecting agent. At a concentration of 1 in 2000, this substance destroys *B. salmonicidus* and is practically non-injurious to ova, when applied for 20-30 minutes. The germicidal effect of acriflavine is not greatly diminished by the presence of organic matter in the water; disinfection by acriflavine is easily carried out, and the cost is relatively small.—*Evermann and Clark.*

11868. BRYANT, WILLIAM L. Supplementary note on Coccosteus angustus. *New York State Mus. Bull.* 286. p. 153. 1931.—*C.* **involutus** (*C. angustus* Bryant, preoc.).

11869. BURKE, VICTOR. Revision of the fishes of the family Liparidae. *U. S. Nation. Mus. Bull.* 150. 1-204. 110 fig. 1930.—A taxonomic report based chiefly on a comparative study of material in the Amer. Mus., the Mus. of Comparative Zool., the U. S. Nat. Mus., the U. S. Bureau of Fisheries, and the Stanford Univ. Zool. Mus. Accounts of species not examined, but recognizable from descriptions, are also included. The author examined about 830 specimens representing 90 spp. Altogether 13 genera and 114 spp. are recognized. The first part of the paper contains a discussion of the various characters used in classification, their modifications, and the probable lines of phylogenetic development; the structure of the dorsal fin; the geographical and vertical distribution of these fishes, from shallow tide pools to great ocean depths. It also contains directions for collecting and preserving these soft-bodied fishes; a brief historical account of the family; and an account of their bionomics. The 2nd part contains descriptions of the genera and species, beginning with a discussion of the probable relationship of the genera. Under each of the 3 genera (*Liparis, Careproctus, Paraliparis*) containing numerous species, a rather lengthy discussion of the structural characters used in classification and the distribution of the species, are given, similar to that of the first part which treats of the family as a whole. Dichotomus keys to the genera and species are given. The paper contains many figures, mostly outline drawings of teeth, which are of importance in identification. *Liparus mucosus* Ayres (=*Neoliparis florae* Jordan & Starks); *L.* **rhodosoma** (p. 81), Okhotsk Sea, 75 fathoms; *Careproctus* **abbreviatus*** (p. 128), south of Alaska Pen., 625 fathoms; **TEMNOCORA** (p. 146), type *T.* **candida** (*Careproctus candidus* Gilbert & Burke) (p. 146); *Careproctus* **jordani** (*C. gilberti* Jordan & Thompson preocc.) (p. 192); types of new sp. in Stanford Univ. Zool. Mus. The author questions the propriety of referring *Gymnolicodes edwardsi* Vaillant to the Discoboli. A partial bibliography is appended.—*I. Ginsburg.*

11870. CAPRA, F. Osservazioni sul Percus strictus e forme affini. *Ann. Mus. Civ. Storia Nat. Genova* 52: 181-190. 1925/1928.—*Percus strictus* v. folchinii (Dodero i. l.) (p. 188), Asinara Isl. Catalogue of the subspp., vars. and synonyms of *Percus strictus.*

11871. LAVERDIÈRE, J. W. Description d'une plaque osseuse d'Heterosteus (groupe des Arthrodira) du Frasnien de Trélon (Nord de la France). *Ann. Soc. Geol. du Nord* 55: 61-70. 1 pl. 7 fig. 1930.—Several plates, including an anterior dorso-lateral plate, from the basal upper Devonian, are described and referred to the genus *Heterosteus.* This is the first reported account of the fossil from the Baltic region and also the first record of occurrence so high up in the Devonian.—*W. Berry.*

11872. LEBER, A. Über Tetrodonvergiftung. *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 641-643. 2 pl. 1927.—A case of violent poisoning following the ingestion of some flesh of the fish *Tetrodon* (probably *immaculatus*) is reported. The symptoms and successful treatment are described.—*L. W. Butz.*

11873. NICHOLS, J. T. Speculations on the history of the Ostariophysi. *Copeia* 1930(4): 148-151. 1930.—The suckers are considered more primitive than and more or less ancestral to the true carps, the whole group

of carp-like fishes to have pemanently lost oral dentition by passing through the sucker form. Southern Asia, perhaps more specifically China, seems to have been the recent center of differentiation and dispersal for this group. The loaches, though somewhat catfish-like superficially, are thought to have no near relationship with the catfishes, but to be a modern derivative from the true carps. The carps are unquestionably more recent than catfishes or characins, and their distribution has been from the north. The earlier distribution of catfishes and characins has presumably followed the same course. Resemblances in species of these 2 groups in Africa and S. Amer. are superficial, and their evolutionary diversification in the respective continents seems to have been entirely independent. Structurally catfishes are more specialized than characins, and ancestral Ostariophysi should have been characin-like, but there is some evidence that the distribution of modern catfishes was earlier than that of modern characins. The Ostariophysi seem to be a Tertiary group, existing and perhaps in much their present form throughout the Tertiary, but with closer relationships to more primitive pre-Tertiary fishes uncertain. They seem always to have been continental fresh-water fishes, a few catfishes only having become marine, these marine forms now occurring in salt water, and also having relatives in Australian fresh waters.—*J. T. Nichols.*

11874. PEYER, B. Rochen-Eikapseln aus den Horwerschichten (unteres Stampien) von Grieigen, Kt. Luzern. *Eclogae Geol. Helvetiae* 21(2): 407-413. 1 pl. 1928.—The author describes and figures 4 new-found egg-cases and compares them with *Raia helvetica.*—*W. Berry.*

11875. PIETSCHMANN, VICTOR. Remarks on Pacific fishes. *Bernice P. Bishop Mus. Bull.* 73. 24p. 4 pl. 4 fig. 1930.—Since the publication of Fowler's comprehensive work on the Fishes of Oceania a number of undetermined fishes have been received at Bernice P. Bishop Mus., some from the Honolulu fish market, others from various parts of Oahu. Notes or descriptions are given of 41 spp., including *Echinorhinus* **cookei*** (p. 4), Kauai; *Cypselurus* **gregoryi*** (p. 7), Pearl and Hermes Reef; *Ptenonotus* **melanogeneion*** (p. 8) and *Ichthyocampus* **edmondsoni** (p. 8), Waikiki Reef, Honolulu; types in Bernice P. Bishop Mus. In the synonymy of *Thalassoma purpureum* are included *T. umbrostigma* (Rüppell) and *T. berendti* Seale, which a comparison of many specimens show to be the same. *Crayracion manillensis* Bleeker is the young of *Tetrodon immaculatus* Bloch & Schneider.—*Evermann & Clark.*

11876. PRUVOST, PIERRE. Sur un poisson fossile trouvé dans le terrain houiller de l'Escarpelle. *Ann. Soc. Geol. du Nord* 53: 296-298. 1928.—Discusses the occurrence of *Rhadinichthys planti* from the coal regions of Escarpelle, northern France.—*W. Berry.*

11877. REY, LUIS LOZANO. Los "Dentex" de España y del Marruecos español. [The species of Dentex of Spain and Spanish Morocco.] *Trab. Mus. Nacion. Cien. Nat. Zool.* 55. 1-24. 2 pl., 2 fig. 1930.—The author gives a systematic account of the 4 Mediterranean spp., including a key, synonymies, common names, descriptions, distribution, economic value, and figures of each.

11878. RIMSKY-KORSAKOFF, V. N. The food of certain fishes of the Lake Champlain watershed. (III of A biological survey of the Champlain watershed.) *Suppl. to 19th. Ann. Rept. New York Conserv. Dept.* 1929. p. 88-104. 1930.—This paper is based upon examination of the alimentary tracts of 2,465 fishes taken in summer. Tables show the percentage of the various kinds of food taken by individuals of stated length, and also give the identification of the food items (often to genus, and sometimes to species). The small fishes are in no way selective as to the kind of Crustacea they feed upon, both Copepoda and Cladocera being taken in about equal amounts. Comparatively few species (*Coregonus clupeaformis* and *Catostomus commersonnii*) feed mostly upon mollusks. Mayfly nymphs, midge larvae, and caddisfly larvae are the most important kinds of insect food. Practically no fish eggs were found in the alimentary tracts. The most important constituents in the diet of fish-eating species were: *Perca flavescens, Boleosoma nigrum olmstedi, Osmerus mordax, Notemigonus crysoleuca,* minnows (Cyprinidae), and sunfishes (Centrarchidae). *Lepisosteus osseus* was found to be the most predacious fish-eating species.

11879. ROULE, LOUIS. Les attitudes des Hippocampes. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(5): 313-315. 1928.—Swimming, resting, and feeding attitudes and mating behavior are described.

11880. ROULE, LOUIS. Présentation d'un squelette de Lampris luna L.-Gm. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 133. 1929.—The elongations of the dorsal and pelvic fins are less pronounced in large individuals than in small ones. The pectoral and pelvic girdles are of considerable size in a small individual.

11881. SANZO, L. Peso specifico in uova de Exocoetus e portata biologica dei filamenti di attacco di esse uova a corpi solidi galeggianti. [Specific gravity of eggs of Exocoetus and biological significance of their adhering filaments to floating bodies.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1008-1009. 1930.—The specific gravity of eggs of the flying fish *Exocoetus* being greater than that of surface marine water, they are suspended to floating bodies by means of special filaments. Without adhering to these bodies, they would sink deeper in the sea, where the density of water would not correspond to the natural habitat of the developing larvae.—*M. Comel.*

11882. SELLA, MASSIMO. The tuna (Thunnus thynnus L.) of the western Atlantic. An appeal to fishermen for the collection of hooks found in tuna fish. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(1/2): 46-67. 2 maps, 8 fig. 1931.—The seasonal and geographical occurrence and the economic importance of *T. thynnus* in Canada and the U. S. A. are discussed. Accurate morphological comparisons of the European and western Atlantic tuna would probably not only settle the questions of the affinity and taxonomic status of the European and American forms, but would also afford evidence as to whether tuna actually cross the Atlantic or not. The migrations of these fish were formerly considered as limited to the Mediterranean and Spanish waters. Both eastern and western tuna are classified as *Thunnus thynnus* L., since the American species, *T. secundodorsalis*, was apparently based on characters which are not distinguishable from those of *T. thynnus.* A special appeal is made for hooks found in tuna, with view to settling, if possible, the mooted question of migrations of tuna across the Atlantic.—*M. Sella.*

11883. SCHMIDT, P. A revision of the genus Hemilepidotus Cuvier (Pisces, Cottidae) and of the allied genera. Ежегодник Зоологического Музея, Академия Наук Ленинград (*Ann. Mus. Zool. Acad. Sci. Leningrad*) 30 (3): 359-369. 1929.—This paper is based upon a collection made by the Hydrographic Exped. of the Pacific Ocean. *Hemilepidotus, Melletes,* and *Calycilepidotus* form a separate group of the Cottidae, characteristic of the north Pacific. A key to the 6 forms is given. The account of each form includes synonymy, taxonomic remarks, and distribution. *Hemilepidotus hemilepidotus* **jordani** (*H. jordani* Bean) (p. 362).

11884. SCHMIDT, P. On the Japanese shark Halaelurus torazame (Tanaka). Доклады Академии Наук СССР., Сер. A. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(9): 223-227. 2 fig. 1930.—*H. torazame** (Tanaka) (=*Scylliorhinus rudis* Pietsch.) redescribed.

11885. SCHMIDT, P., and G. LINDBERG. A list of fishes, collected in Tsuruga (Japan) by W. Roszkowski. Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(10): 1135-1150. 1 fig. 1930.—This is a report on 84 spp. belonging to 48 families; among them are 15 spp. that occur also near Vladivostok. Northern spp. are completely absent. The systematic account includes records of locality, date, and length, with descriptive notes on some spp.

11886. SCOTT, WILLIAM BERRYMAN. On certain Silurian fish-like forms from Norway. *Proc. Amer. Phil. Soc.* 69(6): 391-396. 1930.—The recent discovery by Kiaer of an abundance of Silurian Anaspida fossils in Norway, helps considerably in clearing up the obscured phylogenetic status of the Cyclostomata. They show that the unpaired olfactory organ, the pouched gills, absence of jaws, true teeth and of paired fins date back to the Silurian. The sucking, disc-like mouth, set with rows of horny teeth, may be regarded as a unique specialization.—*J. H. Wales.*

11887. [SOKOLINSKIĬ, N. N.] СОКОЛИНСКИЙ, Н. Н. Новый подвид усача Barbus capito serratus subsp. n. [A new subsp. of barbel.] Известия Азербайджанского Государственного Университета имени Ленина, Отдел Естествознание и Медицина (*Annals V. I. Lenin State Univ. Azerbaijan, Sect. Nat. Hist. & Med.*) 6: 173-176. 1927.—*B. c.* serratus (p. 173), Caspian Sea.

11888. STEKHOVEN, J. H. SCHUURMANS, Jr. Einige Beobachtungen über die Bewegungen der Seenadel. *Zool. Anz.* 92(5/6): 141-146. 1930.—An aquarium collection of pipefish, *Syngnathus typhle,* from 10-12 cm. long was studied at the Netherlands Zool. Station at Helder. Their normal resting position in aquarium was not horizontal, but with the tail curving dorsally and the body slanting vertically upward. In swimming only the pectorals are used, the dorsal held rigid and the tail dragged as a rudder, the fore part of the body oblique, the dorsal surface approximately parallel to the surface of the water. If the tail is irritated, the animal moves its dorsal fin and swims away from the irritant in a horizontal position. Thus disturbance of the tail is seen to set up an escape reflex in the dorsal fin. The author agrees with Weber, who experimented on seahorses, that this is a cerebral reflex. Observations, and experiments with amputating greater or less portions of the tail showed following results: The tail is the anchor enabling *Syngnathus* to stay on or near the bottom. The tail never rolls up ventrally as in *Hippocampus.* Grasping does not belong to the normal behaviour of this animal as it does to the seahorse. The horizontal position assumed in escape is not its normal position. The tail when incited or injured moves away from the irritant, instead, like *Hippocampus,* of toward it. Thus reflexes in the pipefish in many respects, such as releasing movements of the dorsal fin, use of the tail as steering apparatus, of the pectoral fins in forward progression, resemble those of the seahorse, but the tail movements and reflexes causing them are different due to the entirely different structure of the 2 animals. —*F. LaMonte.*

11889. THOMPSON, DAVID H., and FRANCIS D. HUNT. The fishes of Champaign County. A study of the distribution and abundance of fishes in small streams. *Illinois Dept. Registr. & Educ. Div. Nat. Hist. Surv. Bull.* 19(1): 1-101. 52 map. 1930.—An intensive study of the abundance, distribution, and ecology of fishes resulting in an almost quantitative tabulation of data due to the restricted area of investigation. Physical characteristics of streams vary as functions of seasonal change, and parallel variations occur in streams of the same size. About 32 or so common aquatic plants have been observed in the streams of Champaign County. There were 132 quantitative collections made ranging through the entire year of 1928 and including 28,905 specimens represented by a water area of 9,535 sq. yds. Nine type habitats occur in the county: (1) vernal rivulets, (2) kettle holes at mouths of tile drains, (3) oxbow ponds along small streams, (4) permanent headwater streams, (5) stretches of shallow, sluggish water, (6) gravelly and sandy riffles, (7) rocky rapids and riffles, (8) moderately deep, smoothly flowing stretches, and (9) long, deep pools. One of the 74 spp, reported from the county is represented by 6,440 specimens, while 12 others are represented by a single specimen each. This extreme variation of abundance becomes explicable only through a thorough study of ecology. Soil fertility indirectly affects the number of fish in the neighboring region. Species reaching greatest abundance at certain points in a stream also reach greatest abundance in other streams at points with the same drainage area regardless of distance from source. Number of fish is inversely proportional to the amount of pollution; lack of sufficient oxygen content in the water being the cause. *Semotilus atromaculatus* was most tolerant to sewage. Distribution depends largely upon 3 factors: (1) Vegetation, (2) depth of water, and (3) kind of bottom and rate of flow. There exists a close correlation between morphological adaptations and habitat. Migration in small streams is a definite procedure with many fish, referable to the time of year and spawning habits. Of the 74 spp. taken within the county, there are 17 that are absent from one or more of the 6 stream systems. Most of these, however, when introduced into streams from which they were originally absent often become well established. The explanation for the association of different species of fish probably lies in similar environmental predilections, that of *Notropis cornutus* and *Hybopsis kentuckiensis* being the most extraordinary. Analytical keys together with data on distribution and abundance for each species are given.—*J. Piatt.*

11890. VINCIGUERRA, D. Sopra una collezione di pesci della Palestina. *Ann. Mus. Civ. Storia Nat. Genova* 52: 210-226. 1925/1928.—Descriptive data on 16 spp., including *Barbus* continii (p. 221), Palestine.

11891. VINCIGUERRA, D. Enumerazione di alcune specie di pesci della Somalia italiana raccolte dal March. Saverio Patrizi. *Ann. Mus. Civ. Storia Nat. Genova* 52: 246-259. 2 fig. 1925/1928.—Records and remarks on 16 spp. including *Labeo* grammipleura (p. 248) and *Fundulus* patrizii ♂* ♀* (p. 254). Types in Mus. Civ. Genova.

11892. [VORONTSOV, E. M.] ВОРОНЦОВ, Е. М. Материалы по ихтиофауне Днепровского бассейна. II. Рыбы и рыболовство среднего течения р. Десны. [Ichthyofauna of the Dnieper Basin. II. Fishes and fishing in the middle part of the River Desna.] [German summary.] Смоленский Государственный Университет, Научные Известия (*Universität Smolensk, Wiss. Mitteil.*) 5(1): 63-76. 1928.—An annotated list of 36 spp. A table shows the distribution of spp. in this and other parts of the Dnieper Basin.

11893. WHITE, E. GRACE. The whale shark, Rhineodon typus. Description of the skeletal parts and classification based on the Marathon [Florida] specimen captured in 1923. *Bull. Amer. Mus. Nat. Hist.* 61(4): 129-160. 9 pl., 12 fig. 1930.—A critical review of the classification of the different groups of sharks based on anatomical characters. The author gives external measurements of the specimen, and discusses the occipital region of the cranium; the characters of the trunk vertebrae, including a cross section; the visceral arches; the dental bands, and the detailed morphology of the claspers (myxopterygia). Different authors have held varying views of the relationship of the whale shark. Regan considered it allied to the nurse sharks (Orectolobidae); Müller and Henle, and Jordan and Evermann assigned its relationship to the isuroids. On the basis of available data the author assigns it to the latter position. She gives an analysis of its characters with other indications of relationships grouped under class, subclass, etc. Characters of suborders of sharks are compared with corresponding characters of *Rhineodon.* A bibliography is included.

AMPHIBIA AND REPTILIA

G. K. NOBLE, *Editor*, Amphibia
KARL PATTERSON SCHMIDT, *Editor*, Reptilia

(See also in this issue Entries 9196, 9863, 11247, 11252, 11452, 11526)

GENERAL

11894. BOND, HARLEY D. Some amphibians and reptiles of Monongalia County, West Virginia. *Copeia* 1931(2): 53-54. 1931.—Annotated list of 19 amphibians and 16 reptiles.

11895. BURT, CHARLES E. A report on some amphibians and reptiles from New York and New Jersey. *Jour. Washington Acad. Sci.* 21(9): 198-203. 1931.—Locality data and ecological notes on 6 salamanders, 2 toads, 7 frogs, 2 lizards and 3 snakes.

11896. CORRINGTON, JULIAN D. Abnormal herpetological specimens from Syracuse, New York. *Amer. Naturalist* 65(696): 77-85. 1931.—A spotless *Ambystoma maculatum*, a white-bellied *Storeria occipito-maculata*, and an albino *Necturus maculosus*.

11897. LOGIER, E. B. S. A faunal investigation of Long Point and vicinity, Norfolk County, Ontario. IV. The amphibians and reptiles of Long Point. *Trans. Roy. Canadian Inst.* 18(1): 229-236. 1931.—An annotated list of 6 amphibians, 6 snakes, and 6 turtles. This area is noteworthy for the apparent absence of *Ambystoma, Plethodon*, all Hylidae, *Rana clamitans*, and *R. sylvatica*, for the scarcity of *Bufo americanus*, and for the abundance and pronounced melanistic tendency of *Thamnophis s. sirtalis*. The abundance of the last sp. probably accounts for the scarcity of amphibians.

11898. POPE, T. E. B. Wisconsin herpetological notes. *Trans. Wisconsin Acad. Sci. Arts and Lett.* 26: 321-329. 1931.—Distributional notes on about 40 spp. of Amphibia and Reptilia.

11899. SLEVIN, JOSEPH R. Range extensions of certain western species of reptiles and amphibians. *Copeia* 1931(3): 140-141. 1931.—*Eleutherodactylus augusti* new to Arizona: *Dermochelys schlegelii*, range on Pacific coast extended north to Marin County, California; slight range extensions of several other spp. noted.

11900. SMITH, MALCOLM A. The Reptilia and Amphibia of the Malay Peninsula from the Isthmus of Kra to Singapore including the adjacent islands (A supplement to Dr. G. A. Boulenger's Reptilia and Batrachia, 1912). *Bull. Raffles Mus.* [*Singapore*] 3. 149p. 13 fig. 1930.—This report supplements G. A. Boulenger's Fauna of the Malay Pen. (Reptilia and Batrachia), adding to his list of spp. 1 turtle, 16 lizards, 12 snakes, and 18 amphibians. Keys for many genera and species are provided and complete descriptions are given of all those added since 1912. Attention is also directed to the curious discontinuous distribution of a considerable number of species found in the northern part of the peninsula and in the Malay Arch., but not in the southern part of the peninsula. The list includes a crocodile, a turtle, several lizards, snakes (including sea snakes), and amphibians. *Rana cancrivora* **raja** (p. 97), "Patani town." A bibliography of 41 titles, mostly recent literature dealing with the fauna of the Malay Pen. is added.—*S. C. Bishop.*

11901. SMITH, MALCOLM A. (Introduction by F. N. CHASEN.) The herpetology of Mt. Kinabalu, North Borneo, 13,455 ft. *Bull. Raffles Mus.* [*Singapore*] 5. 3-32. 2 pl., 3 fig. 1931.—In the introduction the faunal zones and collecting stations are described. The systematic report, dealing with 600 specimens collected by F. N. Chasen and H. M. Pendlebury, is divided into 3 parts. The first part is a list of the spp. arranged according to the altitudes at which they were collected. The second part is a systematic account of the collection, with locality records, descriptive notes, and taxonomic remarks. *Leptobrachella*, emended diagnosis; *L.* **baluensis*** (p. 12), 7200 ft.; *Nectophryne* **altitudinis*** (p. 14), 7200-10,200 ft.; *Phrynoglossus* Peters (=*Oreobatrachus* Blgr.); *Ooeidozyga* Kuhl & v. Hasselt (=*Osteosternum* Wu); *Philautus* Gistel (=*Nyctixalus* Blgr.); *P.* **amoenus*** (p. 18), 7200 ft.; *P. pictus* (Peters) (=*Rhacophorus anodon* van Kampen); *P. margaritifer* (Blgr.) (=*Ixalus flavosignatus* Bttg.); *P. aurifasciatus* (Schlegel) (=*Nyctixalus robinsoni* Annandale); *P.* **spiculatus*** [labeled *P. spiculosus* on pl. 1] (p. 20); *Lygosoma kinabaluensis* Bartlett is maintained as distinct from *L. variegatum*, and an emended description is given; *Natrix murudensis* M. A. Smith and *Oreocalamus hanitschi* Blgr., emended descriptions; *Calamaria* **pendleburyi** (p. 27); *C. grabowskyi* Fischer (=*C. baluensis* Blgr., *C. moultoni* Dunn); *Trimeresurus* **chaseni*** (p. 29). The third part lists the spp. known to inhabit the mt. above 3000 ft. Types of new spp. in Brit. Mus.

11902. STRECKER, JOHN K. Field notes on the herpetology of Wilbarger County, Texas. *Contrib. Baylor Univ. Mus.* 19. 3-9. 1929.—Annotated list of 9 amphibians, 8 lizards, 14 snakes, and 5 turtles.

11903. STRECKER, JOHN K. A preliminary list of the amphibians and reptiles of Tarrant County, Texas. *Contrib. Baylor Univ. Mus.* 19. 10-15. 1929.—Annotated list of 12 amphibians, 10 lizards, 20 snakes, and 6 turtles. The spp. belong to the fauna of eastern Texas rather than of western Texas.

AMPHIBIA

11904. BARBOUR, THOMAS. Another introduced frog in North America. *Copeia* 1931(3): 140. 1931.—*Hyla septentrionalis* at Key West, Florida, presumably introduced from Cuba.

11905. CAMPBELL, BERRY. Notes on Batrachoseps. *Copeia* 1931(3): 131-134. 1931.—The range of *B. a. attenuatus* is found to overlap those of *B. a. major* and *B. a. pacificus*. The forms of this genus, recently regarded as conspecific, are therefore separated into 2 spp., each with 3 subspp.: *B. a. attenuatus; B. a. caudatus; B. a. leucopus; B. pacificus pacificus; B. p.* **major** (*B. m.* Camp.) (p. 133); and *B. p.* **catalinae** (*B. c.* Dunn) (p. 133).

11906. FEDOROWICZ, Z. Żaba zwinka (Rana agilis Thom.) z Nieświeża. [R. agilis in NE. Poland.] [With German summary.] *Kosmos* [*Lwów*] 55(3/4): 737-738. 1930(1931).—The northern limit of the range of *R. agilis* in Central Europe is extended to 53° 15′ N. in Poland.

11907. KLAUBER, L. M. An addition to the fauna of Lower California. *Copeia* 1931(3): 141. 1931.—*Bufo californicus*.

11908. LOYER, M. Les crapauds d'Ouargla [Algeria]. *Rev. Hist. Nat. Pt. 1. B. Aquicult., Ent., Aquar. et Terrar.* 10(12): 410-416. 1929.—Description of habits of *Bufo pantherinus* and *B. viridis*.

11909. MOFFAT, C. B. December tadpoles. *Irish Nat. Jour.* 3(11): 230-231. 1931.—Notes on the continuance of frog tadpoles in the tadpole stage into Dec. and Jan., in Ireland.

11910. MOHR, CHARLES E. Observations on the early breeding habits of Ambystoma jeffersonianum in central Pennsylvania. *Copeia* 1931(3): 102-104. 2 fig. 1931.—First description of the spermatophore* of this sp. The courtship behavior, also described, is similar to that of *A. maculatum*.

11911. MYERS, GEORGE S. The original descriptions of Bufo fowleri and Bufo americanus. *Copeia* 1931(3): 94-96. 1931.—The authorship of *B. fowleri*, generally credited to Garman (1884), is shown to belong to Hinckley (1882). *B. americanus* Holbrook is considered a composite sp., and the name is restricted to the sp. cur-

rently known as *B. americanus*, instead of to the one now known as *B. fowleri*.

11912. **OYAMA, JUNJI.** Note on the color pattern of Hynobius stejnegeri Dunn. *Copeia* 1931(3): 86. 1931.

11913. **PIATT, JEAN.** An albino salamander. *Copeia* 1931(1): 29. 1931.—*Plethodon glutinosus*, in Indiana.

11914. **SCHMIDT, KARL P.** A new toad from Korea. *Copeia* 1931(3): 93-94. 1 fig. 1931.—*Bufo* stejnegeri* (p. 94), type in Field Mus. Nat. Hist.

11915. **SMEDLEY, N.** Notes on the giant frog, Rana macrodon. *Bull. Raffles Mus.* 5. [59]-[62]. 1931.—Two forms of this sp., one broad-headed and the other narrow-headed, are found in the Indo-Malayan region. The former seems absent in Sumatra and the latter in Java, but otherwise both forms occur throughout the western part of the Malay Arch. Measurements of a series of specimens are given.

11916. **SVIHLA, ARTHUR.** An extension of the range of Dicamptodon ensatus. *Copeia* 1931(3): 143. 1931.—To eastern Washington.

11917. **VAN KAMPEN, P. N., and L. D. BRONGERSMA.** Notes on a small collection of Amphibia from Sumba. *Treubia* 13(1): 15-18. 1931.—An annotated list of 5 spp. *Rana papua*, new to Sumba.

REPTILIA

11918. **BROOM, R.** Notices of some new genera and species of Karroo fossil reptiles. *Rec. Albany Mus.* [*Grahamstown*] 4(1): 161-166. 1931.—Therocephalia: **CYNARIOGNATHUS** (p. 161), erected for *C.* **platyrhinus** (*Pristerognathus p.* Broom) (p. 161); **ICTIDOSTOMA** (p. 161), erected for *I.* **hemburyi** (*Ictidognathus h.* Broom) (p. 161); **ICTIDOSUCHOIDES** (p. 162), erected for *I.* **longiceps** (*Ictidosuchus l.* Broom) (p. 162); *Whaitsia* **major** (p. 162), Orange Free State, type in author's coll.; **LYCIDEOPS** (p. 162), allied to *Whaitsia*, erected for *L.* **longiceps** (p. 162), Orange Free State, type in author's coll.; **EUCHAMBERSIA** (p. 163), resembling *Whaitsia*, erected for *E.* **mirabilis** (p. 163), Cape Province. Cynodontia: **CYRBASIODON** (p. 163), erected for *C.* **boycei** (p. 163), Natal, type in Durban Mus.; **CYNOSUCHOIDES** (p. 164), erected for *C.* **whaitsi** (*Cynosuchus w.* Haughton) (p. 164); *Lycaenognathus* **kannemeyeri** (p. 164), locality not stated, type in Albany Mus. Gorgonopsia: *Aelurosaurus* **breviceps** (p. 165), Cape Province, type in Am. Mus. Nat. Hist. Bauriamorpha: **MICROHELODON** (p. 165), erected for *M.* **eumerus** (*Microgomphodon e.* Seeley) (p. 165). Anomodontia: **CERATAELURUS** (p. 166), allied to *Pristerodon*, erected for *C.* **mirabilis** (p. 166), Cape Province, type in Am. Mus. Nat. Hist.; **MEGACYCLOPS** (p. 166), allied to *Eocyclops*, erected for *M.* **whaitsi** (p. 166), locality not stated, type in Cape Town Mus.

11919. **BURT, CHARLES E.** On the occurrence of a throat-fan in Callisaurus ventralis gabbii and two species of Crotaphytus. *Copeia* 1931(2): 58. 1931.—Apparently first record of this structure in these spp. Courtship display of *Callisaurus ventralis gabbii* described.

11920. **[CHERNOV, S. A.]** ЧЕРНОВ, С. А. О дальневосточных и китайских черепахах р. Amyda. [Far eastern and Chinese turtles of the genus Amyda.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(10): 251-255. 1930.—Comparative study of *A. sinensis*, *A. schlegeli*, and *A. maacki* leads the author to assume that the last 2 spp. are merely young forms of *A. sinensis*.

11921. **DOLLFUS, ROBERT PH.** Notules herpétologiques marocaines. I. *Bull. Soc. Sci. Nat. Maroc* 9 (7/8): 112. 1929.—*Emys orbicularis*, *Hemidactylus turcicus*, and *Boodon lineatus* are new to Morocco.

11922. **DREVERMANN, FRITZ.** Das erste Skelett des Pflasterzahns Placodus, ein Geschenk Arthur V. Gwinner's. *Natur u. Mus.* [*Frankfurt a/M*] 61(4): 150-156 6 fig. 1931.—Account of the finding and preparation of a fairly complete skeleton of *Placodus** from the Muschelkalk of Germany, with a description of its chief characteristics. In the author's opinion this reptile, like the modern *Amblyrhynchus*, lived on the land but sought its food in the sea.

11923. **FORCE, EDITH R.** Habits and birth of young of the lined snake, Tropidoclonion lineatum (Hallowell). *Copeia* 1931(2): 51-53. 1931.—This sp. is abundant under debris near Tulsa, Oklahoma. It feeds upon earthworms. Broods of 2-12 individuals, from 70 to 130 mm. long, are born in August.

11924. **GRANT, CHAPMAN.** Notes on the Ameivas of Porto Rico. *Copeia* 1931(2): 61-62. 1931.—Coloration and habits of *A. exsul* and *A. wetmorei* described.

11925. **HARTWEG, NORMAN.** Apparent ovoviviparity in the Mexican skink, Eumeces lynxae Wiegmann. *Copeia* 1931(2): 61. 1931.—No previous record of ovoviviparity in this genus.

11926. **NOPCSA, FRANCIS.** On Troödon, a reply to Dr. C. W. Gilmore. *Ann. and Mag. Nat. Hist.* 43(8): 70-72. 1931.—The author refers the type skull of *Troödon* to the Acanthopholinae, but considers that the body skeleton described as *Troödon* belongs to another animal and will require a new generic name.

11927. **POPE, C. H.** A list of reptiles known to occur in Fukien Province, China. *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 2: 20-22. 1929.—Six turtles, 16 lizards, and 62 snakes are listed.

11928. **VAN HYNING, O. C.** Reproduction of some Florida snakes. *Copeia* 1931(2): 59-60. 1931.—Notes on 8 spp. The distinctness of *Natrix sipedon fasciata* and *N. s. pictiventris* is questioned.

11929. **WETTSTEIN, OTTO.** Neue oder wenig bekannte Eidechsen. *Zool. Anz.* 95(11/12): 280-291. 5 fig. 1931.—*Lacerta sicula* **mertensi*** (*L. serpa major* Mertens not *L. viridis* v. *major* Blgr.) (p. 280); *L. sicula* **ragusae*** (p. 282), Dalmatia, type in Mus. Wien; *Ommateremias* Lantz, a subg. of *Eremias*, is not considered valid; several forms of *Eremias multiocellata* are reviewed, and an emended description of *E. m. planiceps* Strauch is given.

AVES

LUDLOW GRISCOM, *Editor*

(See also in this issue section Economic Ornithology; and Entries 9066, 9067, 9179, 9194, 9195, 9196, 9968, 10018, 11247)

LOCAL AND FAUNISTIC

11930. **ARRIGONI DEGLI ODDI, E.** Notizie sulla comparsa dell'Edredone nella Venezia Tridentina. [Appearance of the eider duck in Venezia Tridentina.] *Studi Trentini Sci. Nat.* 11(1): 59-61. 1 fig. 1930.—Specimen of *Somateria m. mollissima* taken on Sept. 25, 1929.

11931. **BEAL, CLARENCE M.** A summer colony of the least tern. *Bird-Lore* 32(3): 193-195. 2 fig. 1930.—Nesting in New Jersey.

11932. **BERGSTRÖM, ULF.** Några faunistiska anteckningar från Sjaunjaområdet. [Faunistic notes from Sjaunja.] *Fauna och Flora* 1930(3): 123-135. 7 fig. 1930.—Notes on 60 spp. of birds.

11933. **BLACKWOOD, W. T.** Nesting of hawfinch in Peeblesshire. *Scottish Nat.* 1930(184): 100. 1930.—First record of the local nesting of *Coccothraustes coccothraustes*.

11934. **BLACKWOOD, W. T.** Waxwing in Peeblesshire. *Scottish Nat.* 1930(184): 100. 1930.—Visual record of *Ampelis garrulus* in May.

11935. BLYTH, R. O. On the winter distribution of some sea-birds. *British Birds* 23(12): 314-317. 1930.—Observations in the Atlantic between England and S. Africa in Jan. and Feb.

11936. CAMPBELL, JAMES W. Some Essex bird notes (1929-1930). *British Birds* 24(4): 97-99. 1930.—Notes on the status of 11 uncommon spp.

11937. CASTELLI, GUIDO. La seconda cattura accertata nel Trentino dello Stercorarius crepidatus (Banks) Labbo (Varietà scura). [Second definite capture of S. crepidatus in Trentino.] *Studi Trentini Sci. Nat.* 10(3): 203-209. 1 fig. 1929.—Record of one specimen, Oct. 26, with a review of the literature on the occurrence of the species in Italy.

11938. CHAPMAN, FRANK M. The bird life of Mt. Duida, Venezuela. *Science* 71(1846): 517. 1930.—Abstract.

11939. COMTE, A. Notes et observations biologiques sur les oiseaux des environs de Genève. Année 1929. *Bull. Soc. Zool. Genève* 4(2): 141-151. 1930.—Chiefly nesting notes on about 32 spp.

11940. CONNELL, CHARLES G. The black-necked grebe—first breeding records for Scotland. *Scottish Nat.* 1930(184): 105-109. 1930.—*Podiceps nigricollis* in the Forth area, in 1930.

11941. CORAINVILLE, COSTREL de, et al. Notes et faits divers. *Rev. Hist. Nat. Appliquée Pt. 2. Oiseau et Rev. Franç., Ornithol.* 11(6): 377-378. 1930.—De Corainville gives an account of the capture of the red-necked grebe (*Podiceps g. griseigena* Boddaert) in Calvados. L. BATIOT reports *Falco rusticolus candicans* Gm. on the coast of Vendée. MARCEL LEGENDRE presents notes on the birds of Paris. M. DAUPLAY reports the recovery of banded birds in Indo-China.

11942. CORLETT, GEOFFREY. The winter status of the Bass Rock Gannets. *British Birds* 24(2): 54-55. 1930.—Few individuals of *Sula bassana* are seen in Dec. and Jan. in the North Sea off Scotland. In Feb. numbers return to the vicinity of their breeding ground on Bass Rock.

11943. COWARD, T. A., et al. Notes from reservoirs and sewage farms. *British Birds* 23(9): 234-241. 1930.—T. A. Coward contributes notes on migration and habits of "Passage waders on a Cheshire sewage farm in the autumn of 1929." (pp. 234-236). A. W. BOYD gives migration data on various water birds in "Notes from Staffordshire reservoirs." (pp. 236-238). H. G. ALEXANDER writes on "Passage migrants at North Worcestershire reservoirs." (pp. 238-240), dealing chiefly with water birds. C. OLDHAM contributes notes on the migration and habits of "Spotted redshank and other migratory waders at Tring." (pp. 240-241).

11944. DOBBRICK, W. Eine neue Brutstelle vom Karmingimpel (Erythrina er. erythrina Pall.) im Danziger Gebiet. *Ornithol. Monatsschr.* 55(2): 29-30. 1930.—Several pairs and young of the Scarlet Bullfinch were found in 1929.

11945. DROST, [R.]. Ungewöhnliche Gäste auf Helgoland im Frühjahr 1929. *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 46. 1930.—Hoopoe, cirl bunting, lesser grey and red-backed shrikes, red-footed falcon, *Merops apiaster*, and *Oenanthe hispanica*, were observed as Heligoland in the spring of 1929.

11946. DROST, RUDOLF, und HANS SCHILDMACHER. Zum Vogelzug im Nordseegebiet nach den Ergebnissen der Beobachtungsstationen der Vogelwarte Helgoland. *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1(1): 34-40. Map. 1930.—The fall migration at Heligoland and neighboring positions of the coast is chiefly in a southwesterly direction. Passage over the sea is influenced by weather and by the form of the coast. Night migrants are much less influenced by coast lines than day migrants. Migration dates are given for several species at various points in 1928.

11947. FALLA, R. A. The Arctic tern (Sterna paradisea Brünnich). An occurrence in New Zealand. *New Zealand Jour. Sci. & Technol.* 12(1): 27. 1930.—Specimen taken near Wellington, Dec. 15.

11948. FLICKINGER, FREDERICK R., and LAWRENCE D. HIETT. Tern-ing around. *Bird-Lore* 32(4): 251-255. 4 pl. 1930.—Study of a nesting colony of common terms* in Ohio.

11949. FRIELING, HEINRICH. Eine Beobachtung an den Frohberger Teichen. [A year of observation on the Frohberg ponds, Saxony.] *Mitteil. Ver. Sächs. Ornithologen* 2(5): 201-208. 1929.—Migration and breeding records of water birds.

11950. GARLAND, H. B. Sabine's gull in Kent. *British Birds* 23(9): 250. 1930.—Sight record, Dec.

11951. GARNETT, R. M. White-spotted Bluethroat in Norfolk. *British Birds* 23(12): 339-340. 1930.—*Luscinia svecica cyanecula*, first record for Norfolk.

11952. GRINNELL, JOSEPH, and RICHARD HUNT. Notes on water birds at Morro Bay, California. *Condor* 31(2): 62-73. 3 fig. 1929.—Habits, dates of occurrence, weights, colors of soft parts, and other details are given for 59 spp.—*T. I. Storer.*

11953. GROTE, HERMANN. Wanderungen und Winterquartiere der paläarktischen Zugvögel in Afrika. *Mitteil. Zool. Mus. Berlin* 16(1): 1-116. 1930.—Most transients go to East Africa, but some western palearctic species visit West Africa. Many birds from west and middle Asia winter in Africa, especially in the northeast, even species from east Asia, as *Falco amurensis* and *F. pekinensis* migrate regularly to S. Africa for the winter. Few species spend the winter in Madagascar, palearctic passerine birds being entirely lacking. A detailed bibliography is given.—*H. Grote (transl. by M. M. Nice).*

11954. HADLEY, ALDEN H. A visit to Cobbs Island. *Bird-Lore* 32(4): 318-320. 1930.—Notes on nesting and migrating water birds on this Virginia island.

11955. HAIGH, G. H. CATON. Red-breasted flycatchers in Lincolnshire. *British Birds* 23(12): 339. 1930.—Two *Muscicapa p. parva* collected, Sept. 18 and 19.

11956. HAIGH, G. H. CATON. Albino pink-footed geese in Lincolnshire. *British Birds* 23(12): 340-341. 1930.—*Anser brachyrhynchus.*

11957. HALE, JAMES R. Ring-ouzel in Kent in July. *British Birds* 24(4): 106. 1930.—*Turdus t. torquatus.*

11958. HARWELL, C. A. Tree swallows of Yosemite. [California.] *Yosemite Nature Notes* 9(5): 35-36. 1930.—20 spp. observed in 1 day's observations, with note on the western bluebird (*Sialia mexicana occidentalis*).

11959. HOFFMANN, BERNH. Von zwei Ornithologen-Fahrten nach Hiddensee. [To be cont'd.] *Ornithol. Monatsschr.* 55(2): 17-24. 1 fig.; (3): 43-48; (4): 51-60; (5): 78-80; (6): 83-94. 1930.—An account of trips in 1928 and 1929 to this island on the coast of Pomerania and to other localities in north Germany. Previous papers on the birds of this island are cited. In the systematic list distribution and habits are discussed, and special attention is given to songs and call-notes.

11960. HOFFMANN, BERNH. Von zwei Ornithologen-Fahrten nach Hiddensee. [Two ornithological trips to Hiddensee Isl., Germany.] *Ornithol. Monatsschr.* 55(7): 100-110; (8): 118-126. [2 fig.] 1930.

11961. HUMPHREYS, G. R. Observations on the migration of birds at Irish light-stations during the year 1928. *Irish Naturalists' Jour.* 3(4): 83-89. 1930.

11962. HUTSON, H. P. W. The birds of Hong Kong. *Hong Kong Naturalist* 1(1): 2-7. 1 col. pl. 1930.—This is the first of a projected series of articles on the birds of the region. The species are rather limited in number though individuals are fairly numerous. The family Sturnidae, represented by 4 species, is treated in this installment, with a key and notes on habitats and habits.

11963. H[UTSON], H. P. W. Ornithology. *Hong Kong Naturalist* 1(1): 35-40. 2 pl., 1 fig. 1930.—*Megalaema virens** is recorded for the first time from Hong Kong, where it nested. Seasonal notes on migrants and nesting specis are given, and suggestions for bird study are made.

11964. **INGERSOLL, S. R.** Bird migration in Volusia County. *Florida Nat.* 3(4): 90-92. 1930.—The author records bird migrations in fall of 1929 and spring of 1930.

11965. **INGRAM, GEOFFREY C. S., and H. MORREY SALMON.** Lesser black-backed gulls in Glamorgan. *British Birds* 23(9): 250-252. 1930.—Breeding birds, *Larus fuscus affinis*, are present in this region from March to Nov. In winter some of the Scandinavian race, *L. f. fuscus*, have been observed, and apparently a few of the form *intermedius*, of Denmark and southern Norway.

11966. **JENSEN, J. K.** Nesting of the Piñon Jay, Cyanocephalus cyanocephalus, in New Mexico. *Oologists' Rec.* 10(2): 37. 1930.

11967. **JESPERSEN, P.** Distribution of some oceanic birds in the waters east of New Zealand. *Nature* [*London*] 126(3173): 280-282. 3 maps. 1930.—This paper is based upon observations of the Dana expedition in Dec., 1928, and Jan., 1929. Latitude 44° S. appeared to be the approximate line of demarcation between the distribution of certain birds breeding on North Isl. or farther north and that of certain other species breeding on South Isl. or farther south. In this connection it is noted that there is a rapid decrease in surface temp. from 17° to 14° C. between lat. 42° and 44° S., and also a great difference in the composition and kind of plankton. Thus the surface temp., by affecting the food for the birds, becomes an important factor in their distribution.

11968. **JOHNSTON, T. L.** Sabine's gull in Cumberland. *British Birds* 23(9): 250. 1930.—Specimen found dead, Dec.

11969. **JORDAN, K. H. C.** Zum Vorkommen des Haselhuhnes, Tetrastes bonasia rupestris (Brehm), in der sächsischen Oberlausitz. *Mitteil. Ver. Sächs. Ornithologen* 2(5): 209. 1929.—Record of one shot.

11970. **JOURDAIN, F. C. R.** First record of stock dove breeding in Bute. *Scottish Nat.* 1930(184): 126. 1930.—*Columba oenas*, in 1897.

11971. **KNAPP, G. ARTHUR.** Lapland longspur in Connecticut. *Bird-Lore* 32(3): 200. 1930.—Flock on March 30, sight record.

11972. **LODGE, S., and A. M. BAILEY.** Brewer's blackbird in the Chicago area. *Progr. Activities Chicago Acad. Sci.* 1(3): [10-11]. 1930.—First report of *Euphagus cyanocephalus* in this area.

11973. **LUNDSTRÖM, LLOYD V.** Fynd av storlabb (Stercorarius skua Brünnich.) vid Skälderviken. [Finding of S. skua in Skälderviken.] *Fauna och Flora* [*Stockholm*] 1930(2): 81-84. 1 fig. 1930.

11974. **MACPHERSON, A. HOLTE.** Birds of inner London. *British Birds* 23(10): 266-268. 1930.—Brief notes on a number of spp. supplementing a previously published list.

11975. **MASEFIELD, JOHN R. B.** Marsh-harrier in Staffordshire. *British Birds* 23(12): 340. 1930.—*Circus aeruginosus*, first specimen for Staffordshire.

11976. **MASEFIELD, JOHN R. B.** Glossy ibis in Staffordshire. *British Birds* 23(12): 341. 1930.—*Plegadis f. falcinellus.*

11977. **MEESON, P. M.** Breeding of the spotted crake in Somersetshire. *British Birds* 24(2): 56. 1930.

11978. **MEESON, P. M.** Breeding status of the garganey in Essex. *British Birds* 24(4): 108-109. 1930.—*Anas querquedula* an uncommon but regular breeder.

11979. **MEYER, VIKTOR.** Unsere Brutvögel auf Oehe-Schleimünde 1929. *Ornithol. Monatschr.* 55(5): 65-78. 2 maps. 1930.—A study and census of nesting water birds in a preserve on the coast of Schleswig-Holstein. A map shows the recovery of banded young *Larus canus* in other parts of Germany and in Netherlands, France, and England.

11980. **MEYLAN, O.** Notes sur les oiseaux des environs de Genève. 2me année-1929. *Bull. Soc. Zool., Genève* 4(2): 100-122. 1930.—This is a compilation of the notes of several observers on the distribution and habits of numerous birds of Switzerland.

11981. **MICHAEL, ENID.** Bird survey at el Portal. [California.] *Yosemite Nature Notes* 9(5): 38-40. 1930.

11982. **MICHAEL, ENID.** The common nesting birds of Yosemite Valley. *Yosemite Nature Notes, Spec. Bird No.* 9(6): 41-64. 19 fig. 1930.—Notes on 20 summer visitants and 16 permanent bird residents in Yosemite Valley, with chart showing first arrivals.

11983. **MICHAEL, ENID.** Yosemite bird report for June, 1930. *Yosemite Nature Notes* 9(8): 79-80. 1930.—A list of 50 birds with nesting notes.

11984. **MILLAR, G. R.** Nesting of the goosander in Selkirkshire. *Scottish Nat.* 1930(183): 87. 1930.—First record of the nesting of *Mergus merganser* south of the Firth of Forth in Scotland.

11985. **MOLTONI, EDGARDO.** Cattura di un rondone pallido (Apus murinus brehmorum Hart.) in Piemonte. [A. m. brehmorum taken in Piedmont, Italy.] *Atti Soc. Italiana Sci. Nat. e Mus. Civico Stor. Nat. Milano* 69(1): 42-45. 1 pl. 1930.

11986. **MÜNCHBERG, PAUL.** Die in den letzten Jahren in den Kreisen Landsberg und Schwerin (Grenzmark) beobachteten seltenen Durchzügler und Wintergäste aus der Vogelwelt. [Rare bird migrants and winter visitors recently observed about Landsberg and Schwerin, Germany.] *Helios* 30: 138-147. 1930.—Notes on numerous spp.

11987. **NASH, J. KIRKE.** Bird-life on Cramond Island. *Scottish Nat.* 1930(184): 111-115. 1930.—A general account of the birds of this small island in the Firth of Forth.

11988. **NELSON, Mrs. EARL.** The upland plover in Minnesota. *Bird-Lore* 32(3): 184-186. 1 pl. 1930.—Notes on song, call, and habits.

11989. **NICE, MARGARET MORSE.** The Harris Sparrow in central Oklahoma. *Condor* 31(2): 57-61. 1929.—*Zonotrichia querula* arrives Oct. 27-Nov. 1 and departs May 3 to 12. On Christmas censuses 82 to 450 were recorded in an eight-mile tract of diversified country. Harbor is taken in brush; food includes ivy berries, elm blossoms and seeds. The adult plumage through the winter shows no change save on the cheeks which go from buffy to gray. The black crown is in process of acquirement by March 1; only 5 to 10% of the autumn population has the black hood. There are 3 different individual notes uttered by members of the species under differing circumstances, besides the song (here described in detail).—*T. I. Storer.*

11990. **O'DONOVAN, M. J. W.** Occurrence of the white-fronted goose (Anser albifrons albifrons) in the United Provinces. *Jour. Bombay Nat. Hist. Soc.* 33(3): 716. 1929.—A note.

11991. **ORR, J. W.** A robin flight. *Bird-Lore* 32(3): 203. 1930.—Tens of thousands passing southeastward in Virginia, Jan. 22.

11992. **PERSSON, CARL.** Anteckningar om fågellivet i sydvästra Jämtland. [Notes on birds of Southwest Sweden.] *Fauna och Flora* 1930(3): 97-122. 8 fig. 1930.—Notes on 103 spp.

11993. **PITMAN, C. R. S.** The nesting of the Little Grebe, Poliocephalus ruficollis capensis (Salvad.), on Lake Bunyonyi in the Kigesi District of S. W. Uganda. *Oologists' Rec.* 10(2): 25-26. 1930.—Note.

11994. **PONCY, R.** Liste des 40 espèces de Palmipèdes observés dans le Port de Genève de 1890-91 à 1929-30. *Bull. Soc. Zool. Genève* 4(2): 164-165. 1 fig. 1930.—With notes on their relative numbers.

11995. **PONCY, R.** L'Hirondelle de mer tschegrava et les Sterniens dans le port de Genève (Alt. 375 m.) *Bull. Soc. Zool. Genève* 4(2): 168-170. 1930.—Notes on the occurrence and habits of 5 spp.

11996. **PYNNÖNEN, ALPI.** Mitteilungen über die Vögel Nord-Kareliens. *Ann. Soc. Zool.-Bot. Fennicae, Vanamo* 8: (7)-(18). 1929.—An annotated list of about 65 forms, many of which had not been recorded previously from northern Karelia, Finland.

11997. **RALFE, P. G.** Ornithology in the Isle of Man, 1929. *North West. Nat.* [*Arbroath, Scotland*] 5(2): 96-104. 1930.—Bird records, with notes, including recoveries of ringed birds and migration notes, compiled from reports furnished to the Manx Mus.

11998. **RINTOUL, LEONORA JEFFREY, and EVELYN V. BAXTER.** Bird notes from Skye. *Scottish Naturalist* 1930 (183) : 85-87. 1930.—A list of 23 of the more interesting species observed in May and June, 1930. Greenfinch, first record of breeding on Skye; tree-pipit, white wagtail, wood-warbler, and redstart, new to Skye.

11999. **ROBERTS, THOS. S.** Some changes in the distribution of certain Minnesota birds in the last fifty years. *Univ. Minnesota Mus. Nat. Hist. Occ. Papers* 3. 9-12. 1930.—Sixteen species have extended their ranges in Minnesota within this period. At first rare and irregular, most of them now occur regularly and breed. Eleven have come from the south,—red-bellied woodpecker, cardinal, Louisiana water-thrush, barn owl, prothonotary, blue-winged, and cerulean warbler, Bewick's and Carolina wrens, tufted titmouse, and blue-gray gnatcatcher. Six have come from the west,—Brewer's blackbird, western kingbird, burrowing owl, lark bunting, and McCown's longspur. The eastward movement of the last 2 species was finally stopped entirely by the extensive cultivation of the prairies.

12000. **ROCARD, M.** Contribution a l'étude de la faune ornithologique de l'ile de Noirmoutier [France]. *Rev. Hist. Nat. Appliquée Pt. 2. Oiseau et Rev. Franç. Ornithol.* 11 (6) : 351-360. 1930.—Notes on 31 birds of the Island.

12001. **ROGERS, NELL A.** Two unusual flocks of swans. *Science* 72 (1857) : 116. 1930.—Report of 2 large flocks of the rare *Cygnus columbianus* in Wisconsin.

12002. **ROWAN, WILLIAM.** Notes on Alberta waders included on the British list. Part 8. The nesting of the greater yellowshank. *British Birds* 24 (4) : 90-93. 2 fig. 1930.—Account of the nesting habits of *Tringa melanoleuca*, illustrated with the first known photograph of its nest.

12003. **RUSSELL, GEO. W.** Pink-footed goose as winter visitor to Shetland. *Scottish Naturalist* 1930 (183) : 68. 1930.

12004. **SCHAECK, F. de.** Sur un ouvrage manuscrit d'un avifauniste Genevois, Daniel Le Clerc, junior, de la deuxième moitié du XVIIIe siècle. *Bull. Soc. Zool. Genève* 4 (2) : 155-163. 1930.—This original work in Latin, recently brought to light, was a systematic treatise for the determination of the local species of birds. It is noteworthy for the local names, most of which are no longer in use, for the brief but precise data on habitats, migration, and food, and for records of rare species. In this review the local names are copied, and some of the rarer and more interesting records are quoted.

12005. **SCHARLEMAN, N.** Kreuzschnäbel und Tannenhäher in der Ukraine 1929. *Der Vogelzug* 1 (2) : 94-95. 1930.—Large numbers of crossbills began to appear about the 1st of June. At first the flocks consisted mostly of young birds, but by fall adults predominated. *Nucifraga c. caryocatactes* appeared in small numbers from Sept. to Nov.

12006. **SCHOUTEDEN, H.** Mes récoltes ornithologiques au Katanga. I. Environs d'Elisabethville. *Rev. Zool. & Bot. Africaines* 18 (3/4) : 277-290. 1930.—The avifauna of this region resembles in part that of the forest region of the central Congo, and in part that of the savanna region of East Africa and Rhodesia. A briefly annotated list of 148 forms is presented. *Plocepasser rufoscapulatus* Bütt. and *Notiospiza angolensis* Gmel. had not been previously recorded from the Congo.

12007. **SCHUZ, [E.].** Vom Frühjahrszug 1929 in Rossitten. [The spring migration of 1929 at Rossitten, East Prussia.] *Der Vogelzug. Ber. ü. Vogelzugsforsch. u. Vogelberingung* 1 (1) : 45-46. 1930.—Data on several unusual or noteworthy birds.

12008. **SEHLBACH, FR.** Ornithologische Beobachtungen aus dem Wesertale während des kalten Winters 1928-29. *Ornithol. Monatsschr.* 55 (1) : 4-11. 1930.—This extreme winter evidently reduced the numbers of certain species such as linnet, serin, nuthatch, tree creeper, dipper, kestrel, buzzard, barn owl, little owl, moorhen, kingfisher, and partridge. Other spp. seem to have been little affected.

12009. **SHARP, W. M.** The starling in West Virginia. *West Virginia Univ. Bull., Proc. West Virginia Acad. Sci.* 3 : 77-81. 1929.—This introduced *Sturnus vulgaris* began its invasion of the state in 1918-20 and practically completed it by 1926; though still unknown in some mountainous parts. The first flocks appeared in winter and departed northward for the summer. Now the species is a permanent resident. Food, relations with native birds, and future status are discussed.

12010. **SHULPIN, L.** Zosterops erythropleurus Swinh. im Ussuriland. *Jour. Ornith.* [*Berlin*] 78 (1) : 72-75. 1930.—This bird proves to be a fairly regular migrant and probable nester in the region. It appears in flocks in late May and in Aug. Notes on habits, color, and measurements are given.

12011. **S[OWERBY], A. de. C.** Peregrine falcon in Shanghai. *China Jour.* 13 (2) : 92-93. 1930.—*Falco peregrinus harterti* making its headquarters on a tower.

12012. **STEVENS, H.** [A recent trip in western China.] *Bull. British Ornith. Club* 50 (339) : 46-54. 1930.—The author describes his travels in Yunnan and Szechwan in 1928-29 as a member of the Kelley-Roosevelts Expedition of the Field Mus., and gives notes on numerous birds met with.

12013. **STRESEMANN, ERWIN.** Eine zweite Vogelsammlung aus Kwangsi. *Jour. Ornith.* [*Berlin*] 78 (1) : 76-86. 1930.—This is a report on specimens collected by S. S. Sin in the Yao-shan in 1928 and 1929. The species now known from the region number 181. The systematic list includes dates, wing measurements, and taxonomic remarks. There is a supplementary list of 63 forms, compiled from 2 recent papers published in Chinese by S. S. Sin.

12014. **STRESEMANN, ERWIN.** Eine dritte Vogelsammlung aus Kwangsi. *Jour. Ornith.* [*Berlin*] 78 (3) : 301-308. 1930.—This is a report on about 36 forms collected in the Yao-shan Mts. in 1929 by S. S. Sin. The treatment includes a list of specimens (with dates), wing measurements, and notes on manner of occurrence and on taxonomy.

12015. **SWAN, GRACE.** Arkansas Kingbirds in eastern Washington. *Bird-Lore* 32 (4) : 272-273. 1 pl. 1930.—Notes on nesting and other habits.

12016. **TANTZEN.** Die Verbreitung des Weissen Storches im Landesteil Oldenburg. *Jour. Ornith.* [*Berlin*] 78 (1) : 106-112. 2 maps. 1930.—Here, as elsewhere in Germany, the white stork is decreasing. This is not due to shooting nor to lack of nesting sites, but to drainage of marshes. The fertility of the species seems subject to fluctuation. In 1928 more than a quarter of the local storks reared no young. The nests abandoned since 1900 and those occupied in 1928 are indicated on maps.

12017. **THOMAS, J. F.** Redshanks breeding in Carmarthenshire. *British Birds* 24 (1) : 32. 1930.—*Tringa t. totanus*, first breeding records in that county.

12018. **TICEHURST, N. F.** Gadwall in Kent. *British Birds* 24 (4) : 108. 1930.—*Anas strepera*, first record in April.

12019. **URNER, CHARLES A.** The birds of Union County, New Jersey, and its immediate vicinity—a statistical study. *Abstr. Proc. Linnaean Soc. New York*, Nos. 39/40. 44-98. 2 map. 1927/28 (1930).—This paper presents the results of field studies on the seasonal occurrence of birds, chiefly during the period of 1916-1927. There are brief notes on the varying topography of this area, and conditions of bird life in 2 major types of habitat, salt marshes and uplands, are compared throughout. As a result of the increasing human population and industrial development, there has been a general decline in the bird life. Tables show the relative numbers of individuals of the various bird families among the breeding population; the numbers of each species nesting on a 236-acre tract; and the total number of species observed each month during a 12-year period. An an-

notated list of 276 forms includes extreme dates of occurrence, periods of average occurrence, the maximum number of each species seen on any one trip during each month, and the average number seen per trip during June.

12020. **WAGSTAFFE, R.** The birds of Great Saltee Island. *Southport Soc. Nat. Sci.* 24th Rept. 6-7. 1929/1930.—Summary of a lecture on the birds of this island off the Irish coast. The nesting of the hooded crow and the gannet, and the presence of a chough, were noteworthy.

12021. **WAHBY, ALY.** Les oiseaux de la région de Stamboul et ses environs. *Bull. Soc. Zool. Genève* 4(2): 171-175. 1930.—The author lists, with localities and dates, the species collected or observed since 1919, and adds migration notes on some of them.

12022. **WHISTLER, HUGH.** The birds of the Rawal Pindi District, N. W. India. *Ibis* 6(1): 67-119. 1930.—Annotated systematic list.—*W. W. Bowen.*

12023. **WILLIAMS, LAIDLAW.** Notes on the feeding habits and behavior of the California Clapper Rail. *Condor* 31(2): 52-56. 7 fig. 1929.—Observations on *Rallus obsoletus* on marshes of San Francisco Bay near Dumbarton Bridge showed that one particular bird had a regular forage route. The principal item of food was a clam, *Macoma balthica*, which was dug out, washed and then swallowed, entire in the case of small individuals the larger ones piecemeal.—*T. I. Storer.*

12024. **WITHERBY, H. F.** New British birds and alterations to the British List. *British Birds* 24(1): 22-25. 1930.—*Oenanthe deserti deserti* and *Phalacrocorax carbo sinensis* are added to the list. Three changes of names, already dealt with in previous literature, are discussed.

12025. **WITHERBY, H. F.** [An ornithological expedition in eastern Spain.] *Bull. British Ornith. Club* 50 (342): 74-79. 1930.—Includes notes on distribution, nesting, and taxonomy of various species.

12026. **WOHLFARTH, GERHARD.** Das Vogelleben um Frankfurt a. d. Oder. *Helios* 30: 73-137. 1930.—A list of 214 forms, with notes on status, migration, habitat, and habits.

12027. **ZDOBNITZKY, FRANZ.** Zweiter Beitrag zur Kenntnis der Vogelwelt der Brünner Umgebung und des südlichen Mährens. Verarbeitete Beobachtungen von 1910-1924 im Lichte der trinären Nomenklatur. *Verhandl. Naturforsch. Ver. Brünn* 61: 151-176. 1927/1929 (1930).—This installment includes 4 Alaudidae, 9 Motacillidae, and 2 Fringillidae, with notes on distribution, seasonal occurrence, habits, and taxonomy. A few observations by the author in Siberia are also included.

12028. **ANONYMOUS.** The bustard in China. *China Jour.* 12(3): 170-171. 2 pl. 1930.—*Otis dybowskii* winters abundantly in Chihli, Shansi, and Shensi, where the natives hunt it by means of decoys and blinds. The feathers are used for fans.

12029. **ANONYMOUS.** Invasion of crossbills from the continent. *Scottish Nat.* 1930(184): 109-110. 1930.—An extensive flight in Scotland in July and Aug., 1930.

12030. **ANONYMOUS.** Leach's fork-tailed and storm-petrels inland. *British Birds* 23(9): 253-254. 1930.—Records of a number of *Hydrobates pelagicus* and of *Oceanodroma l. leucorrhoa* in England, picked up dead or dying after stormy weather.

MAMMALIA

GERRIT S. MILLER, *Editor*

REMINGTON KELLOGG, *Associate Editor*

(See also in this issue Entries 9095, 9196, 10443, 10747, 11234, 11247, 11295, 11296, 11304, 11327, 11343, 11352, 11374, 11375, 11398, 11484)

12031. **ANTONIUS, OTTO.** Streitfragen zur Phylogenie der Equiden. *Verhandl. Zool.-Bot. Ges. Wien* 78 (1): 4-18. 2 fig. 1928.—Answering the criticism of J. U. Duerst, the author maintains the geological position of *Equus abeli* as that of the Early Quaternary and its phylogenetic position as nearest that of the Taubach horse. He considers Spain the center of origin of the heavy domestic horse with a long, small skull and ram-like head. He criticizes Schwarz's use of trinomials and acceptance of the law of priority in paleontology. He maintains the distinctness of the extinct tarpan of south Russia from the oriental domestic horse. He points out Matthew's error in considering the "pli caballin" absent in the upper molars of the ass, and discusses other details of Matthew's recent work.

12032. **ATHANASIU, SAVA, and D. M. PREDA.** Stratigrafia basinului inferior al Trotuşului. II. Elephas meridionalis din Pliocenul Superior dela Pralea-Căiuţi (Distr. Bacău). [E. meridionalis in the Upper Pliocene of Pralea-Căiuţi.] [French summary.] *Anuar. Inst. Geol. României* 13: 65-84. Map, 2 pl., 1 fig. 1928(1929).—From the lignite beds associated with fragments of *Rhinoceros* cf. *etruscus*, 3 incomplete molars are described.

12033. **BLACK, DAVIDSON.** Interim report on the skull of Sinanthropus. *Bull. Geol. Soc. China* 9(1): 7-10. 6 pl. 1930.—Probably not far removed from the type from which evolved both the extinct Neanderthaler and the modern *Homo sapiens*.

12034. **BOBRINSKOJ, N.** Bats of Central Asia. Ежегодник Зоологического Музея, Академия Наук СССР. (*Ann. Mus. Zool., Acad. Sci. URSS.*) 30(2): 217-244. 5 fig. 1929.—22 spp. and sspp. are listed with notes on distribution and systematics; synonymy is given, and comparative measurements in 5 tables. Diagnoses of *Myotis mystacinus przewalskii** Bobr.; *M. m.* **kuk**-norensis *Balekut-gomi* on Huang-ho R. to the south from Lake Kuku-nor (p. 221); *Eptesicus caucasicus pallescens** Bobr.; *E. alashanicus** Bobr.—*G. Maydell.*

12035. **CABRERA, ANGEL.** Más sobre los leopardos africanos. *Bol. R. Soc. Española Hist. Nat.* 28(1): 79-94. 1928.—The author disagrees with J. A. Allen's conclusion, and supports Thomas in fixing the type locality of Linnaeus' *Felis pardus* as the Nile valley of Egypt, instead of Algeria, so that the northeastern race, *Panthera nimr*, recognized by Allen, becomes a synonym of *pardus*. The author admits that the leopard he named *Panthera pardus reichenowi* in 1918, from northern Cameroon, is a ♀ and not a ♂, thus accounting for its small size, as at first supposed, but maintains the probability that the name is valid for the open country form; whereas for the forest region from Lake Kivu to the West Coast there is but a single recognizable ssp., to which *Felis pardus centralis* Lönnberg is applicable, except that the name is preoccupied by *Felis centralis* Mearns (1901) for a race of Central American jaguar. The correct name for the forest leopard of central Africa is, therefore, *Panthera pardus ituriensis* J. A. Allen, the next name available. The author points out, further, the absurdity of recognizing distinct spp. of leopard in East Africa, to which the names *fortis*, *chui*, and *suahelica* have been given, but admits the probability that in various parts of the range, the forest-living leopards differ subspecifically from those of open country.—*G. M. Allen.*

12036. **COOK, HAROLD J.** New rhinoceroses from the Pliocene of Colorado and Nebraska. *Proc. Colorado Mus. Nat. Hist.* 9(4): 44-51. 7 pl. 1930.—*Paraphelops* **yumensis*** (p. 44), ? *Peraceras* **ponderis*** (p. 45), and *Aphelops malachorhinus* **longinaris*** (p. 45), Colorado, types in Colo. Mus. Nat. Hist.; **MESOCERAS** (p. 49), n. subg. of *Teleoceras*, erected for *T.* **thomsoni*** (p. 49), Ne-

braska, type in author's coll.; also including *T. mediocornutus* Osburn.

12037. [FLEROV, K. K.] ФЛЕРОВ, К. К. Очерк фауны млекопитающих долины реки Чороха. [Mammal fauna of the valley of the river Chorokh.] Ежегодник Зоологического Музея, Академия Наук СССР. (*Ann. Mus. Zool., Acad. Sci. URSS.*) 28(1): 63-71. 1927.—Notes on 24 spp. of mammals with a table of comparative measurements.—*G. Maydell.*

12038. GRANDIDIER, G., et G. PETIT. Étude d'un mammifère insectivore malgache, le Geogale aurita A.M.E. et A. G. In: Faune Colonies Françaises 4(4): 441-493. 20 fig. 1930.—The varying opinions of zoölogists on the systematic position of this rare mammal* are cited. On the basis of new material, the present authors furnish a detailed comparative study of its external and internal morphology. The typical form is restricted to the western part of the island, and a new ssp., *G. aurita* orientalis (p. 446), is described from the east coast; type in coll. G. Grandidier. The sp. shows affinities with both the Oryzoryctinae and the Centetinae (subfamilies of the Centetidae), and it may constitute a separate subfamily intermediate between the other two.

12039. HELLER, FLORIAN. V. Palaeozoologie, Vertebrata. Murmeltierreste aus dem jüngeren Löss von Nebra [Saxony]. *Leopoldina* 6: 581-586. 2 pl. 1930.—Two well preserved marmot skulls are described, with the hope of settling the relationships of diluvial marmots. The author believes that these forms should be classed with *A. primigenius* rather than with *Arctomys bobac* or *A. marmotta*. The smaller skull was broken, presumably by a bird of prey.—*F. Heller* (*transl. by A. E. Wood*).

12040. HOARE, W. H. B. Conserving Canada's musk-oxen. Being an account of an investigation of Thelon Game Sanctuary 1928-1929 with a brief history of the area and an outline of known facts regarding the musk-ox. [With appendix B: "Notes on the musk-ox and the caribou" by R. M. ANDERSON.] 53p. Illus. Published by Canada Dept. Interior, Northwest Territories & Yukon Branch, 1930.

12041. KAVANAGH, E. N. The Roosevelt elk, Cervus roosevelti Merriam. *Jour. Forest.* [*Washington*] 28(5): 659-663. 1930.—The taxonomic and ecological characteristics of the Roosevelt elk, inhabiting the Olympic Peninsula in northwestern Washington, are given.—*P. C. Wakeley.*

12042. KELLOGG, REMINGTON. The history of whales—their adaptation to life in the water (concluded). *Quart. Rev. Biol.* 3(2): 174-208. 13 fig. 1928.—A detailed osteological comparison of the skulls of extinct and contemporary whales, by families. Morphological peculiarities of the mysticetes. Anatomical and physiological adjustments of the body to meet the needs of aquatic existence. Detailed discussions of the eye and cerebellum and of the olfactory apparatus and olfactory lobes.—*P. Bonnot.*

12043. KOCH, W. Über angebliche Anzeichen von Domestikation am Skelett von Rindern. *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 7(3): 444-471. 6 figs. 1927.—Domestication of Bovinae does not always lead to decrease in size. There is no notable difference in size between *Bos taurus primigenius* Boj. and large modern domestic cattle; nor between wild and large domesticated specimens of *Bos grunniens*. Great weight and firmness and roughness of the skeletal surface are no signs of wildness, but of age. Existing differences in the skeleton, especially in cervical and thoracic vertebrae, are attributable to influence of size of horns. Furrowings and varying surface structure of the frontal peg or occurrence of bony accretions at the base, are not characters differentiating wild and domestic forms; they are signs of age. On such basis, age can be determined very well. No generally valid points of differentiation between wild and domesticated cattle have hitherto been found. Determination occasionally rests largely upon differences in size and form of horns. The alleged primitive stock of the domesticated form (*Bos europeus* Adametz) is denied, as the wild type can not be ascertained. *Bos taurus primigenius* Boj. is indicated for the first time for southern Bavaria.—*W. Koch* (*transl. by E. W. Count*).

12044. KOCH, W. Das Gehörn der Schraubenziege (Capra falconeri Wagn.). *Zool. Anz.* 93(7/10): 275-278. 2 fig. 1931.—In direction of spiral winding, in basal outline, and other characters, the horns of the markhor, *C. falconeri**, are the reverse of those of *C. hircus**. Since intermediates are impossible, the latter can not have been derived from the former species.

12045. KOLLER, OTTO. Säugetiere aus Tunis, gesammelt von Alfred Weidholz, 1912. *Ann. Naturhist. Mus. Wien* 44: 1-4. 1930.—An annotated list of 17 spp. from the Mus. Nat. Hist., Wien.

12046. KRIEG, HANS. Biologische Reisestudien in Südamerika. XVI. Die Affen des Gran Chaco und seiner Grenzgebiete. *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 18(4): 760-785. 14 fig. 1930.—The genera *Callithrix*, *Callicebus*, *Aotes*, *Alouatta*, *Cebus*, *Saimiris*, and *Ateles* are considered. The treatment is mainly of a zoogeographical-ecological nature, especially of what can be observed of the animals in their natural environment. As in the author's previous work on this expedition, the environment and climate are described, in which the animals live. The main types are the flood region of the eastern Chaco, the dry bush of the western, the wooded region of the eastern slope of the Bolivian Andes, the Amazon-type tropical rain forests which bound the Chaco on the northwest, and the Chiquitos region which is especially interesting zoogeographically and which bounds the Chaco plain on the north. This region is transitional between tropical virgin forest and the dry region lying to the south of it. The relations between mode of life and body proportions of the monkeys observed are given. Members of the genera *Callithrix*, *Aotes*, and *Callicebus*, which all have long flexible tails [Schlaffschwänze], must be definitely classed as "jumpers." This is well seen in the much greater length of the hind limbs as compared with the fore limbs. In opposition to this, *Alouatta* and *Ateles* have the tail formed into a gripping organ, and the forelimbs into long gripping hooks, while the hind limb is relatively short and the jumping mode of progression is completely absent or nearly so. A mean between the two types is *Cebus*, in which the tail is a facultative gripping organ, and the limb proportion approaches the "jumper" type.—*H. Krieg* (*transl. by R. M. Bond*).

12047. KUNTZE, ROMAN. Przyczynek do znajomości fauny Ssaków południowej Polski. [Notes on mammals of southern Poland.] [German summary.] *Kosmos* [*Lwów*] 55(1/2): 219-232. 1 fig. 1930.—The distribution and ecology of several spp. are discussed. *Putorius lutreola*, supposed extinct here for 30 years, is recorded in 1914 and 1924. *Glis glis* occurs chiefly in the foothills of the Carpathians. *Dyromys nitedula* occurs in the Carpathians up to 1300 m. and also spreads over the lowland to northeastern Poland. *Muscardinus avellanarius* is recorded up to 1000 m. in the Carpathians. *Evotomys glareolus* consumed about 80% of the beech and oak mast on 3 ha. In a plague of *Microtus arvalis*, leucistic (white-haired, black-eyed, epidermally pigmented) individuals were observed. *Microtus agrestis* is recorded from 1400 m. in the Carpathians—the second known locality for the sp. in Poland.

12048. LAGRANGE, E. L'autotomie de la queue chez un mammifère (Acomys cahirinus). *Arch. Internat. Physiol.* 33(3): 225-228. 1931.—*Acomys cahirinus*, a small Egyptian rodent, when seized by the tail, escapes, leaving the skin of the tail in the captor's hands; later the tail dries up and drops off. Experiments showed that this "autotomy" does not occur before the 6th week of life. The tail of the young rodent shows a distinct constriction, which disappears as the mechanism of autotomy becomes established. A weight of 400-500 gm. or more (the animal itself has an average weight of less than 40 gm.) was necessary to pull the skin off the tail by force in 10-20 sec. Burning or pinching the tail did

not produce detachment. The author concludes that the act is voluntary and coordinated especially with fear and the desire to escape; not with that of avoiding pain.

12049. **LIEBUS, ADALBERT.** Quartäre Säugetierreste aus der Barrande-Grotte. *Naturwiss. Zeitschrift Lotos.* 76(8/12): 347-350. 1 fig. 1928.—Discovery of the Barrandegrotte in Srbsko near Berau (Bohemia) led to the finding of a number of scattered bones, presumably of recent origin. The author identified the following: *Gulo luscus**, left mandible, right femur, a fragment of the first phalanx of the 5th toe; exact measurements are given of the mandible and of the femur; *Mustela martes*, 2 skulls, 1 mandible; *Lupus spelaeus*, 1 calcaneum and a fragment of the proximal end of the femur. In addition, remains of Artiodactyla, 1 ungual phalanx, 1 phalanx, and 2 fragments of molars, were also identified. —*A. Liebus (transl.)*

12050. **LINDSAY, HELEN M.** Scientific results from the mammal survey. No. 48. Indian shrews. *Jour. Bombay Nat. Hist. Soc.* 33(2): 326-340. 1929.—Habitat and character analysis of 24 spp. and sspp. of the genus *Suncus*, including *S. niger* malabaricus (p. 334), Coorg and Cochin, at 3000 ft. altitude.—*J. T. Nichols.*

12051. **MILLER, FREDERIC W.** A new Colorado pocket gopher of the genus Thomomys. *Proc. Colorado Mus. Nat. Hist.* 9(3): 41-43. 1 fig. 1930.—*T. talpoides* macrotis* (p. 41), along the Cherry Creek bottoms in Douglas Co., Colorado.

12052. **MURR, ERICH.** Zur Erklärung der verlängerten Tragdauer bei Säugetieren. *Zool. Anz.* 85(5/8): 113-129. 1 map, 2 fig. 1929.—The extended period of gestation, in agreement with their closest relatives, of many indigenous mammals (martin, roe, badger, bear, bat), which has been elucidated for the martin in the North American fur farms, is looked upon as an expression of a great physiological age, as the retention of primitive characters (Prell 1927). Comparative investigations with consideration of climate and geographic relations show that more or less prolonged periods of gestation seem to occur in numerous relatives of these animals, and make it much more probable that low temperatures of the present or earlier habitat, because of periodic lack of food, and other factors, have tended to prolong the intrauterine development (labile homoiothermism). By such a transition from the historical to the physiological point of view, the problem becomes accessible to experimental treatment; at the same time the direct influence of the endocrine glands might be considered.—*E. Murr (transl. by J. E. Lynch).*

12053. **NELSON, J. W.** The Columbian black-tail deer of the California National Forest. *Jour. Forest. Washington* 28(5): 664-667. 1930.—Notes on food and habitat are given.—*P. C. Wakeley.*

12054. **NOWAK, J., E. PANOW, J. TOKARSKI, WŁ. SZAFER, and J. STACH.** The second woolly rhinoceros (Coelodonta antiquitatis Blum.) from Starunia, Poland. (Geology, mineralogy, flora and fauna.) *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II)* [*Zool.*] 1930(Suppl.): 1-47. Map, 10 pl., 1 fig. 1930.—This young ♀ is the 2nd woolly rhinoceros carcase found in Galician Pleistocene silts. The anomalous preservation of the skin, tongue, palate, fragments of the intestines, and loose hair, is probably due to saturation with crude oil and salt water. This rhinoceros, as well as the mammoth and fore-parts of the first rhinoceros found, are associated with a tundra flora* which seems to contain secondary inclusions from the present flora of the Carpathian foothills. Starunia is about 120 kilometers south of the terminal moraine and about 40 kilometers from the nearest Pleistocene mountain glacier. The skeleton is mostly preserved, also the skeleton of a 3rd rhinoceros without soft parts. The external appearance suggests the white rhinoceros more than any other living form. The name *Coelodonta antiquitatis* staruniensis* (p. 42), is proposed for this form. All these remains seem to have been carried by a stream in flood into pits containing salt water and crude oil.—*H. E. Wood, II.*

12055. **RODRIGUES DOS SANTOS, J. Jr.** Um caso de macrodontismo num "Oryctolagus cuniculus algirus (Loche)." *Anais Fac. Sci. Porto* 16(2): 80-84. 1 pl., 1 fig. 1930.—Describes a case of abnormal dentition in this sp.*

12056. **ROMER, ALFRED S., and PAUL H. NESBITT.** An extinct cane-rat (Thryonomys logani, sp. n.) from the central Sahara. *Ann. and Mag. Nat. Hist. Ser. 10.* 6(36): 687-690. 1 fig. 1930.—From Pleistocene or post-Pleistocene deposits in the Tanezrouft region. *T. logani** (p. 687), types in Walker Mus., University of Chicago. The presence of this rodent is indicative of a radical change of climate in this now arid region.—*A. S. Romer.*

12057. **SANBORN, COLIN CAMPBELL.** Two new fruit bats collected by the Whitney South Sea expedition. *Amer. Mus. Novitates* 435. 1-3. 1930.—*Pteropus* banksiana (p. 1), Banks Is., between New Hebrides and Santa Cruz Is.; *P.* nitendiensis (p. 2), Santa Cruz Is. Types in Amer. Mus. Nat. Hist.

12058. **[SEREBRENNIKOV, M. K.]** СЕРЕБРЕННИКОВ, М. К. Материалы по систематике и экологии грызунов (Mammalia, Rodentia) Южного Зауралья. [Classification and ecology of the rodents of the southern trans-Ural region.] Ежегодник Зоологического Музея, Академия Наук СССР. (*Ann. Mus. Zool., Acad. Sci. URSS.*) 30(2): 251-284. 3 pl. 1929.—25 spp. and sspp. are listed with notes regarding habits, distribution, ecology, and systematics. *Microtus arvalis* transuralensis (p. 257), Pokrovka, Chelyabinsk Co., So. Trans-Ural region; *Lagurus lagurus* aggressus (p. 267), Ferapontovka, Busuluks Co., Samara prov.; *L. l.* abacanicus (p. 267), Dmitrievka, Munusinsk Co., central Siberia.—*G. Maydell.*

12059. **SNYDER, L. L.** The mammals of the Lake Abitibi region [Ontario]. *Univ. Toronto Studies Biol. Ser. No.* 32. 7-15. 1928.—This paper is based on a collection made in the summer of 1925, and includes notes on local distribution, numbers, habits, economic status, and measurements of 34 spp. The discovery here of *Eutamias minimus borealis* represents an eastward extension of its known range.

12060. **STEAD, DAVID G.** The great whales of Australia and Antarctica. *Australian Mus. Mag.* 4(4): 123-132. 5 fig. 1930.—The author gives a brief account of the whaling industry, particularly in Australian waters. Certain finback spp. visit these waters from June to October, concentrating off Jervis Bay, N. S. Wales, and Point Cloates, Western Australia. *Balaenoptera musculus**, *B. physalus**, *Megaptera nodosa**, and *Physeter macrocephalus* are discussed in detail, with notes on morphology, habits, food, and commercial status. The author suggests that the forward position of snout and blowhole in *Physeter* has evolved as a result of the struggles between this sp. and the giant squids on which it preys. The latter might interfere with the whale's respiration if they could reach its blowhole with their suckers. It is also suggested that the oil in the head-case and the spermaceti in the dorsal humps of *Physeter* facilitate maintenance of equilibrium and freedom of movement.

12061. **SVIHLA, ARTHUR.** Change in color pattern in a captive red squirrel. *Amer. Naturalist* 65(696): 92-95. 1 fig. 1931.—A *Sciurus hudsonicus loquax* at 8 months showed a number of symmetrically disposed spots of light gray, resulting from the presence of unpigmented hairs among normal red ones. After isolation from cage-mates which tormented it, the gray patches began to disappear, owing, apparently, to improvement in the physiological processes of the animal.

12062. **TEILHARD de CHARDIN, P.** Note complémentaire sur la faune de mammifères du Tertiaire inférieur d'Orsmael. *Acad. Roy. Belgique Bull. Cl. Sci.* 14(8/9): 471-474. 2 fig. 1928.—Additional isolated teeth, including: *Adapisoriculus?**, *Adapisorex**, *Plesiadapis**, *Dissacus**, and a *Paramys lemoinei**, lower molar with the paraconid crest.—*H. E. Wood, II.*

12063. **THOMAS, OLDFIELD. Note on Sciurus splendidus, Gray.** *Ann. and Mag. Nat. Hist. Ser. 10.* 2(12): 590. 1928.—*Sciurus splendidus* Gray, 1842, described from an unknown locality, proves to be identical with, and takes precedence over, *S. saltuensis magdalenae* Allen, 1914. *S. variabilis saltuensis* Bangs and *S. saltuensis bondae* Allen become subspp. of *S. splendidus*.

12064. **TROUGHTON, ELLIS Le G. Notes on striped opossums of the genus Dactylopsila.** *Australian Zool.* 6(2): 169-174. 1930.—A synopsis of the literature dealing with the habits and general history of the genus *Dactylopsila*, together with a discussion of the wide variation within different spp. A detailed account of *D. melampus* Thomas and *D. pictata* Thomas is given.—*C. F. Jackson.*

12065. **VOSSELER, J. Zur Fortpflanzung des Känguruhs. Unter Benutzung von Beobachtungen A. Goerlings.** *Zool. Garten* [*Leipzig*] 3(1/3): 1-11. 3 fig. 1930.—The young just after birth work their way through the woolly coat of the mother without assistance by movements of their sturdy anterior appendages. The mother cleans up the trail by licking. This movement is made possible by the much more rapid development of the anterior than of the posterior legs. The mother does not concern herself with the naked embryo; if it falls out of the pouch, it dies, especially since it soon loses the resistance to low temperature which it possessed at birth. Only the posterior pair of teats are used in suckling.—*E. H. Behre.*

12066. **WALKER, M. V. Two "herds" of three-toed horses.** *Trans. Kansas Acad. Sci.* 33: 137-143. 1930.—A descriptive account of prospecting for fossil horses in east central Wyoming and west Nebraska with special reference to the finding of a herd of 8 and one of 6 *Mesohippus bairdi* in the Oligocene northwest of Crawford, Nebraska, in 1929.—*F. C. Gates.*

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 — MAY, 1932 — NUMBER 5

Entries 12067-15103

GENERAL BIOLOGY

A. H. GRAVES, *Editor,* Plant

C. A. KOFOID, *Editor,* Animal

(See also in B. A. 6(4): Entries 9063, 9088, 9089, 9093, 9129, 9164, 9363, 9421, 10386, 11091; and in this issue 12157, 12440, 12441, 12629, 13111, 14206)

GENERAL

12067. **BOLOGA, VALERIU L. Invaţământul istoriei ştiinţei la universităţi.** [Teaching the history of science in universities.] [French summary.] *Intâiul Congr. Nat. Naturalişt. România* 1: 61-73. 1928 (1930).

12068. **BORZA, AL. Problema protecţiunei naturii in România.** [The problem of conservation of natural resources in Rumania.] [With English summary.] *Intâiul Congr. Nat. Naturalişt. România* 1: 94-127. 32 fig. 1928 (1930).

12069. **BRUNSCHVICG, L., J. PERRIN, P. LANGEVIN, G. URBAIN, L. LAPICQUE, CH. PEREZ, et L. PLANTEFOL. L'orientation actuelle des sciences.** [Orientation of sciences today.] [*Bibliothèque de philosophie contemporaine.*] Félix Alcan: Paris, 1931. Pr. 25 fr.

12070. **BUDAI, E. Attraction universelle et énergie vitale. (Étude astrobiologique théorique.)** *Rev. Path. Comp. et Hyg. Gén.* 30 (398/399): 712-723. 1930.—Many diseases show a cyclic development and a periodic recurrence. This periodicity may sometimes be ascribed to astronomical influences such as "sun spots." The ultra-radio-genetic theory of vital energy which postulates a supply of vital energy from the ultra-penetrating rays of Millikan cannot be accepted for 2 reasons: (1) the method of union between these cosmic radiations and electronic energy of the cell is unknown; and (2) periodicity of pathological phenomena cannot be thus explained. The astro-biologic conception based on the principle of universal attraction is more rational. Lunar periodicity seems related to many biological phenomena (recurrent fever, human ovulation, etc.). The periodicity of biological phenomena in diurnal and semi-diurnal cycles, and the action of certain diastases appear to be influenced by forces from the great cosmic machine. The biological phenomena recurring every 10 yrs. (periodic epidemics) generally associated with sun spots, might be related to Jupiter's position in relation to the sun, and would also depend on the principle of universal gravitation.—*P. Joyet-Lavergne (transl. by A. M. Chickering).*

12071. **CASTIÑEIRAS, JULIO R. Principios fundamentales de la filosofía natural.** *Anales Soc. Cien. Argentina* 107 (2): 97-142. 13 fig. 1929.—The author outlines briefly the history and discovery of the fundamental principles of thermodynamics, their characteristics, and their generalized interpretation; the influence of the 2nd principle on the perfecting of thermal machines, and the application of the calculation of probabilities, with the aim of explaining their essence; and the explanation of most physiological phenomena by this principle. The ideas of Poe, Spencer, Boltzmann, le Bon, etc. on the evolution of the universe are also analysed.—*A. A. Pinkus.*

12072. **CURTIS, FRANCIS D. Second digest of investigations in the teaching of science, including chiefly the research investigations published from 1925 through 1930.** 424p. P. Blakiston's Son & Co. Inc.: Philadelphia, 1931. Pr. $3.00.—The greater part of the book is devoted to current practices in the teaching of the sciences, largely in the high schools and elementary courses in colleges and universities, with special reference to methods and objections.—*C. A. Kofoid.*

12073. **EAST, EDWARD M., (editor). Biology in human affairs.** 399p. Whittlesey House, McGraw-Hill Book Co.: New York, 1931. Pr. $3.50.—This is a collection of authoritative essays (by 13 authors), some of which are more sociological than biological. E. M. East contributes a general chapter on The relation of biology to human problems in the past, present, and future; and also one on Heredity. Other authors and subjects are: M. FISHBEIN, The frontiers of medicine; H. S. CUMMING and A. M. STIMSON, The outlook of public health; E. K. MARSHALL, Physiology of to-day; E. M. PARSHLEY, Zoology and human welfare; D. F. JONES, Efforts to increase the food reso[illegible]; and E. V. McCOLLUM, Diet and nutrition.—*H[illegible]ings.*

12074. **GRUHL, KURT. Tier- und [illegible]ege zoologi[illegible]t des Kreises Grünberg in Schlesien und se[illegible]** New York, 1931. **bung.** 587p. illus. (some col.). W. I[illegible]rg in Schlesien, 1929.—The 1st part co[illegible]aboratory guide [illegible]ion of 21 biotic communities or habitat[illegible]an Co.: New Y[illegible]and detailed notes on the flora and fa[illegible]part, devoted to economic aspects, conta[illegible]s **Tier im Bild.** [illegible]gri-culture, by LEIFELD; on an[illegible]6 pl. Brehm Ver[illegible] by BECKER; on parasites of domestic[illegible]und, M. 15.—T[illegible]RN; on pomology, wine-growing, and h[illegible]ustrated series OTTO HOLZER; on forestry, game, and [illegible]parental rela[illegible]PAUL; on fisheries, by PAUL SCHUMI[illegible]ese relations on bee-keeping, by W. JÄCKEL. The [illegible] reptiles, b[illegible]nsists of systematic, annotated lists of the v[illegible] text, and n[illegible]al groups; a chapter on galls and leaf [illegible]—*C. A. Ko[illegible]y* HUGO SCHMIDT); and an account o[illegible] **Lehrbuch d[illegible]**, including a review of previous botanical w[illegible]av Fischer[illegible]n annotated list of plants. The 4th part treat[illegible] [illegible] protection of animal and plant life. The volume i[illegible] de[illegible]ofusely illustrated and has an index of common n[illegible]Thes.

12075. **JOHNSON, JOHN C. Educational biology. The contributions of biology to education. A textbook for teachers' colleges and university schools and colleges of education.** xx+360p. 123 fig. Macmillan Co.: New York, 1930. Pr. $3.00.—The 27 chapters of this textbook deal with the following subjects: subdivisions of biology; individuation and integration; variation; natural selection; artificial selection; adaptation; isolation and geographical distribution; color in organisms; classification; the primates; man as an animal; instincts in lower animals and in man; degeneration and parasitism; the palaeontological record; the cell, the unit of life; one-celled versus many-celled animals; the embryological record; maturation of the reproductive cells and fertili-

zation; theories concerning inheritance before 1900; Mendel's laws of inheritance; human inheritance; the improvement of the human species; inheritance of acquired characters; civic biology; epochs in the history of biology; and the brain.—*C. A. Kofoid.*

12076. **KELLOGG, CLAUDE R. The opportunities and need for biological research in Fukien.** *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 1: 13-17. 1928.

12077. **KRAFFT, CARL F. Can science explain life?** 94p. Published by author: Washington, D. C. 1931. $1.00.—A revised and enlarged presentation of the author's "Spirazines." [See also B. A. 5: 26527.]

12078. **LAKHOVSKY, GEORGES (préface par d'ARSONVAL). Le secret de la vie. Les ondes cosmiques et la radiation vitale.** 2e éd. revue et augmentée de "L'origine de la vie." 261p. 23 fig., 6 pl. Gauthier-Villars et Cie: Paris, 1929. Price 25 fr.—This enlarged edition expands the author's views on the relations of radiant energy to vital phenomena. Specifically, a graph of sunspots from 1847 to 1907 shows a coincidence of sunspot maxima with yrs. of best Bordeaux wines and of sunspot minima with yrs. of mediocre and poor wines. Plant cancers caused by *Bacterium tumefaciens* are reported as treated successfully by 2 exposures at a 24 hr. interval for 3 hrs. to Lakhovsky's Radio-Cellulo-Oscillateur producing oscillations of a wave length of 2 m. at the rate of 150,000,000 vibrations per sec. Cancer is regarded as a disturbance of the oscillatory equilibrium of the body and curable by its restoration. The geological character of the soil and conductivity of soil water, by their effect on transit and reflection of cosmic rays, are held to have a relation to the relative frequencies of neoplasms. This view is illustrated by data from the incidence of cancer and the geological substrate in Paris and by water supply in other parts of France.—*C. A. Kofoid.*

12079. **LECOMTE, HENRI. Des "réserves naturelles" dans les colonies françaises. Un commencement d'exécution.** [Natural reserves in the French colonies.] *Rev. Hist. Nat. Pt. 1. B. Aquicult., Ent., Aquar. et Terrar.* 10(8): 257-276. 1929.

12080. **'CK, ERICH. Eine neue Stätte wissen-**
schaft] **chung auf der Insel Hiddensee.** *Dohr-*
: 136-147. 1931.—Account of a new
b. on the coast of Pomerania.

W. L. The scientific attitude in
non . *Ent. Soc. Washington* 32(4): 65-
66. ience all questions are forever re-
garc decisions of committees and con-
gres dered as binding on systematists.

1 **NS. Was ist das Leben?** [What is
life?] arth: Leipzig, 1929. Pr. 3 M.

1208 **, MARY E., and LUCY E. COX.**
Element or matriculation and allied exami-
nations. g. Univ. of London Press: London,
1931. Pr.

12084. **, H. The foundations of science.**
553p. The ess: New York, [1930]. Pr. $5.

12085. SC **Die Maschinentheorie des Lebens.**
[The mechai ry of life.] [2nd ed.] 194p. Felix
Meiner: Leip 1929. Pr. 7.80 M.

12086. SMA. **WOOD, WILLIAM MARTIN. A textbook of biology.** [6th ed.] 470p. 4 col. pl., 174 engravings. Lea & Febiger: Philadelphia, 1930. Pr. $4.00.—This textbook of biology for students in general, medical, and technical courses is completely revised and largely rewritten. The frog is used as a typical example of a complex animal; its anatomy and physiology are discussed in detail, including the distribution of energy and the nervous system. Part II extends the analysis to the biological unit, the cell, and presents the lives of simple animals and plants. Part III considers some invertebrate metazoans—stinging animals, worms, arthropods, molluscs, and echinoderms. Part IV introduces some theoretical considerations—heredity, variation, adaptation, parasitism, the biology of disease, and evolution. Part V leads to human biology and the connection between biology and human welfare, providing the foundations on which any public health program must ultimately rest.—*W. M. Smallwood.*

12087. **SPRATT, E. R., and A. V. SPRATT. Biology for schools: a textbook suitable for school certificate and similar examinations.** [School examination series.] viii-403p. Univ. Tutorial Press: London, 1931. Pr. 4s. 6d.

12088. **THOMSON, J. ARTHUR, and PATRICK GEDDES. Life: outlines of general biology.** vol. 1 & 2. 1552p. Frontispiece. 202 fig. W. Heffer & Sons: Cambridge; Harper and Brothers: New York, [1931.] Pr. $15.00.—The introduction classifies the domain of biology and the 1st chapter characterizes living creatures and compares them with crystals. The 2nd chapter deals with natural history or ecology, discussing the relations of organisms to types of environment and to modes of life, the interrelations of plants and animals, the balance of nature, and illustrates the intricacies of the interrelations among organisms. The 3rd chapter takes up the basic functions of movement and locomotion, the nervous and sensory functions, hypnosis, sleep, the quest for food, bacteria, vitamins, excretion, circulation in plants and animals, fermentation, metabolism, physiology of the cell, tissue culture, phagocytosis, luminescence, bacteriophage, immunity, poisons, and the question, what is life? The 4th chapter deals with reproduction and sex, discussing adaptation for, modes of, and rates and periodicity of reproduction; hormones, telegony, grafts and chimaeras, consanguinity, fertility, parthogenesis both normal and artificial, dimorphism, sex characters, the Manoilov test, parasitic males, courtship, sex behavior, sex determination, theory of sex, sex reversals, education in animals, parental care, forms of family, position of woman, sex instruction, and eugenics. The 5th chapter discusses animal behavior, from rational conduct to the tropisms of Protista, the subconscious, instinct, linked instincts, intelligence, autonomy of life and mind, mechanism, and vitalism. The 6th chapter treats of form and symmetry, organs, differentiation, integration, homology, analogy, convergence, organogenesis, substitution and change of function, vestigial organs, tissues, cells, cell theory, and the problems of species. In the 2nd volume the opening chapter deals with the development of organisms, germ cells, meiosis, embryonic stages, recapitulation, continuity of germ cells, organisms, regeneration, life cycles, the curve of life, life histories of plants, alternation of generations, the meaning of larval stages, longevity, the biology of death, and the play period and industries of animals. The 8th chapter outlines the steps in organic evolution, characterizes the ascent of life through the geological periods, notes the great structural advances, the divergence of plants and animals, the apartness of the bacteria, the origin of unicellular and multicellular bodies, the beginning of natural death, origin of sex, internal cavities, bilateral symmetry, and the beginnings of brains; discusses the origin of land plants, seeds, insects, birds; analyses the effects of recurrent ice ages; and discusses life beyond our world-limits. The 9th chapter epitomizes the theories of evolution from its adumbrations in Greek philosophy to the latest aspects of Holism. Pre-Darwinian evolutionists are summarized and the evidences for organic evolution, variations, mutations, atavism and reversions, genes, nature and nurture, inheritance of acquired characters, natural and sexual selection, isolation, adaptations, acclimatization, and biotechnics are discussed. The factors in evolution and the different kinds of evolution, including social evolution, are summarized. Chapter 10 discusses the relations of biology and its sub-sciences to the other sciences and to the arts, seeks a harmonization of its specialism in a unity of science, and notes the organismal view in physics. Chapter 11 deals with the biology of man, his pedigree, place of his emergence, beginnings of human society, the significance of hunting and cultivation of plants, and the status of woman in human progress. Chapter 12 relates biology to education, health, medicine,

sociology, population, war, eugenics, education, progress, and relativity; and chapter thirteen leads towards a theory of life. Four appendices deal respectively (1) with the great events in biology, a brief summary of the work of eminent biologists; (2) with naturalists at work, largely an account of British enterprises; (3) of how a biological outlook on life can be developed by education, containing an outline and discussion of educational methods; and (4) with a guide to biological reading, a very full classified list of nearly a thousand titles.—*C. A. Kofoid.*

12089. **VALOIS, CHARLES.** Réserves et parcs nationaux français. [French national parks and reserves.] *Rev. Hist. Nat. Pt. 1. B. Aquicult., Ent., Aquar. et Terrar.* 10(6): 177-193. 1929.

12090. **VLÈS, F.** Travaux pratiques de physique biologique et de chimie physique. [Laboratory guide for biophysics and physical chemistry.] 93p. 55 fig. Vigot Frères: Paris [1929]. Pr. 15 fr.

12091. **VOGEL, J. C.** The cause of the Russell effect observed in oils. *Trans. Roy. Soc. South Africa* 18(4): 295-300. 1930.—The development of photographic plates in the presence of (but not in contact with) wood, vegetable tissues, resins, and oil of various plant and animal origins, is due not to radiation but to volatile substances, here identified as butyric acid, the possibility remaining that similar fatty acids also may be active. Ozone and H_2O_2 are excluded. In 4 samples of olive oils, and in several lubricating oils, no general relationship was found between the Russell (photographic) effect and either the rate of oxidation of the unsaturated part or the I number of the oils.

12092. **WARREN, HOWARD C.** The organic world and the causal principle. *Science* 71(1834): 204-208. 1930.—The evolution of life and mind may be understood in purely mechanistic terms without the introduction of any new type of energy, vital force or entelechy not found in the organic. The laws of cause and effect, which may be summed up under the general principle of the conservation of energy—"the law of unvarying total"—which are effective in the inorganic, are equally effective in the organic. "The changes that occur in connection with the growth of an individual organism and the changes of type which mark the evolution of sp. may all be brought under the principle of the unvarying total." Although every step in organic development is in accord with the causal principle, the process of increasing adaptation, which means the appearance of something novel, leads to the supplementary principle of natural selection. Thus the principle of selective adaptation may be said to be superimposed upon the principle of the unvarying total. At a later stage in the developmental process, the responses of certain organisms to situations come to be determined in part by a 2nd novel and supplementary principle—that of anticipatory adjustment. Thus these 2 supplementary principles, based upon the fundamental causal principle of the unvarying total, form a hierarchy which is needed to account fully for the organic stages of evolutionary progress.—*G. J. Dudycha.*

12093. **WOODGER, J. H.** The "concept of organism" and the relation between embryology and genetics. II. *Quart. Rev. Biol.* 5(4): 438-463. 1930.—This is an analysis of embryological and genetical theory and a discussion of their mutual relations. A symbolic notation is developed, and it is shown how, by means of this analysis, many current disputes and misunderstandings can be avoided.—*J. H. Woodger.*

12094. **YONGE, C. M.** The Great Barrier Reef expedition, 1928-1929. *Rept. Great Barrier Reef Committee* 3: 1-25. 6 pl. 1931.—A general account of the activities, personnel, and equipment of this expedition, with a résumé of work accomplished and recommendations for future work.

12095. **ANONYMOUS.** Adjourned discussion on the introduction of alien species. *Proc. Linnean Soc. London* 142. 17-20 1929/30(1931).—The resolution was unanimously adopted: That this Meeting deprecates all attempts to introduce and naturalise wild animals or plants in countries where they are not native, unless such introduction is urgently needed for economic reasons, and until a thorough study has been made of the local conditions and of the results that are likely to follow.

12096. **ANONYMOUS.** Discovery investigations station list 1927-1929. *Discovery Reports* 3: 1-134. 10 maps. Cambridge Univ. Press: Cambridge, 1930.—Contains the R. R. S. "William Scoresby" stations, South Sandwich Islands stations, and Ross Sea stations.

12097. **ANONYMOUS.** General information regarding the Territory of Alaska. 151p. Illus. U. S. Dept. Interior: Washington, D. C., 1931. Pr. 40 c.—Includes information on agriculture and stock raising, timber resources and national forests, reindeer, fisheries, aquatic mammals, health conditions, game and land fur-bearing animals, fur farming, game and bird refuges, and U. S. A. government publications on Alaska.

12098. **ANONYMOUS.** The Nigeria handbook, containing statistical and general information respecting the Colony and Protectorate. [9th ed.] 350+[9]p. Illus., maps. C. M. S. Bookshop: Lagos, 1929. Pr. 7s. 6d.—Contains data on climate and rainfall, forestry, agriculture and live stock, public health, sanitation, hospitals, health and disease, and poultry keeping.

12099. **ANONYMOUS.** Suggestions for an international marine biological station and laboratory at Hawaii. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 6(2): 6-9. 1931.—A round-table discussion.

ANIMAL

12100. **AKELEY, MARY L. JOBE.** (Foreword by HENRY FAIRFIELD OSBORN.) Carl Akeley's Africa. The account of the Akeley-Eastman-Pomeroy African Hall Expedition of the American Museum of Natural History. 321p. Maps & illus. Dodd, Mead & Co.: New York, 1930. Pr. $5.

12101. **FLEISCHMANN, A.** Einführung in die Tierkunde. [Introduction to zoology.] 228p. 158 fig. Gustav Fischer: Jena, 1928. Pr. 10.50 M.

12102. **GIDEON, P. W.** An introduction to zoology. 88p. 76 fig. Students Own Book Depot: Dharwar, India, 1930. Pr. 5.8 Rs.

12103. **HEGNER, ROBERT W.** College zoology. [3rd ed.] 184p., 568 fig. Macmillan Co.: New York, 1931. Pr. $3.50.

12104. **HEGNER, ROBERT W.** Laboratory guide for college zoology. 75p., 1 fig. Macmillan Co.: New York, 1931. Pr. $1.

12105. **HEILBRON, ADOLF.** Das Tier im Bild. Aus der Kinderstube der Tiere. 32p. 126 pl. Brehm Verlag: Berlin-Charlottenburg. 1929. Pr. bound, M. 15.—This is the 6th volume in the richly illustrated series "Das Tier im Bild." It deals with the parental relations to offspring. About 5 instances of these relations, mainly among insects, fishes, amphibians, reptiles, birds, and mammals, are discussed in the brief text, and many more illustrated in the numerous plates.—*C. A. Kofoid.*

12106. **HERTWIG, RICHARD.** Lehrbuch der Zoologie. [15th ed.] xii+656p. 588 fig. Gustav Fischer: Jena, 1931. Pr. 22 M.

12107. **KÜHN, ALFRED.** Grundriss der allgemeinen Zoologie. [4th ed.] 264p. 214 fig. Georg Thieme: Leipzig, 1931.—This text is divided into 4 parts: a brief statement of the general characteristics of organisms and the problems of zoology; the structural plan of animals, including a brief outline of the morphology of Protozoa, Porifera, Coelenterata, Vermes, Arthropoda, Mollusca, Echinodermata, and Chordata; activites (nutrition, respiration, excretion, motion and locomotion, irritability); and development and evolution of animals.—*A. M. Chickering.*

12108. **PYCRAFT, W. P.** Random gleanings from nature's fields. 210p. 40 pl. Hale, Cushman & Flint: Boston, 1930. Price $2.50.—This is a selected, revised, and corrected edition of "Essays in Natural History" from the London Illustrated News. Among the topics discussed are the white coloration of mammals, such as

ermines and young grey seals, the feeding habits of jelly-fishes, the coloration of young birds and mammals, the asymmetry of the external ear in owls, the feeding of Sagitta upon fish larvae, the courtship of the Argus pheasant, the origin of the birds' wing, an account of a lesser rorqual whale stranded at Mablethorpe, bats' ears, oyster farms, mermaids and dugongs, the hypertrophy of organs outgrowing their usefulness, the extermination of seals, and the diet of the walrus. —*C. A. Kofoid.*

12109. **ROULE, LOUIS. Description de l'aquarium nouvellement restauré du Muséum National d'Histoire Naturelle.** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(1): 70-74. 1929.

12110. **STEINMANN, PAUL. Tiere um Haus und Hof. Lebensbilder und Leidensgeschichten.** 251p. 108 fig. H. R. Sauerländer u. Co.: Leipzig, 1931.—This natural history of German wild life deals with the habits and behavior of the badger, fox, marten, otter, bat, mole, hare, hedgehog, roe-buck, stork, raven, gull, swallow, swift, sparrow, finch, blind-worm, tree frog, eel, pike, cricket, dragon fly, water striders, ants and plant lice, bees, spiders, leeches, and the horse-hair worm.—*C. A. Kofoid.*

12111. **STEMPELL, W. Repetitorium der allgemeinen Zoologie (Morphologie, Physiologie, Oekologie, Abstammungslehre).** 269p. 249 fig. Gebrüder Borntraeger: Berlin, 1929. Price 7.60 M.—This is a richly illustrated, much condensed, and very complete compendium of the essential facts in zoology broadly conceived. Fully labelled diagrammatic figures illustrate the essential features of animal morphology, the development of invertebrates and vertebrates, the basic functions, the factors in evolution, cytology, heredity, and the relations of animals to their environment.—*C. A. Kofoid.*

APPARATUS AND TECHNIQUE

12112. **CAYLOR, HAROLD D., and TRUMAN E. CAYLOR. An inexpensive light source for a portable microscope.** *Science* 74(1907): 73-74. 1 fig. 1931.—The light source is composed of a lamp and reflector from a flash light, a hinge-topped metal case, containing 2 standard dry cells, and a rheostat switch which allows 2 different degrees of light.

12113. **DuBOIS, DELAFIELD. A machine for pulling glass micropipettes and needles.** *Science* 73(1891): 344-345. 1 fig. 1931.—With the described machine adjusted to give the type of point desired, it is possible to turn out pipettes or needles at the rate of 4-6 per min.

12114. **GARDNER, I. C., and F. A. CASE. The lateral chromatic aberration of apochromatic microscope systems.** *Rev. Sci. Instruments* 2(7): 416-428. 3 fig. 1931.—Measurements on 20 apochromatic microscope objectives of 4 makes and on 10 compensating eyepieces of 2 makes show that the compensating eyepieces in general do not entirely compensate the chromatic aberration of the objectives and that the complete microscope system is usually undercorrected. The bearing of this on the performance of the system in photomicrographic work by a 3 color process and in the direct visual observation of objects is considered.—*From authors' abstract.*

12115. **GERLACH, JOHN J. Jr. A new dark field microscope illuminator for opaque objects. Producing annular, cross fire, and indirect illumination.** *Rev. Sci. Instruments* 2(7): 412-415. 3 fig. 1931.—The illuminator, measuring $\frac{1}{2} \times 1\frac{1}{4}$ in. in diam. and weighing less than 1 ounce, can be used on any microscope. The annular prism is mounted in a covering of bakelite by means of cement. The light comes up from below on all sides of the object and is reflected at the silvered surface of the annular prism. On emergence from the prism at the inner conical face, which is the fundamental part of the illuminating system, the light is refracted downward and falls obliquely on the mounted object.

12116. **HAITINGER, MAX. Ein lichtstarkes Fluoreszenzmikroskop.** *Mikrochemie* 3(3): 220-222. 1931.

12117. **HARVEY, E. N. A method for comparing growth rates by means of a protractor.** *Science* 74(1906): 46-47. 1931.—The customary growth increment graphs are plotted upon standard coordinate paper and, in any series to be compared, the distances along the abscissa and ordinate allotted to the units of time and growth must remain constant throughout all sheets of graphs. The rate of growth is the slope of the graph between any 2 points or observations. The value of this slope in degrees is easily determined by means of an ordinary transparent protractor.

12118. **HAUSER, F. Two arrangements for illumination with reflected and oblique light.** *Instrument World* 4(40): 67-70. 7 fig. 1931.—On lighting apparatus and technique for taking photomicrographs of opaque objects.

12119. **HERVEY, GEORGE E. R., and JAMES G. HORSFALL. A simple device for humidity regulation.** *Science* 73(1901): 617-618. 1 fig. 1931.—Preliminary description and report on use of an apparatus for humidifying air in incubators, accurate within $\pm 2\%$ relative humidity, and costing about $20.

12120. **HOKE, WILLIAM E. Some aspects of progressive improvement in the screw thread.** *Rev. Sci. Instrum.* 2(9): 554-570. 7 fig. 1931.—Applications are also made to microscopical adjustments.

12121. **HURST, C. T. A device for washing tissues.** *Science* 73(1891): 343-344. 4 fig. 1931.—This apparatus for washing fixed tissues consists essentially of a tank, a rack to hold tubes containing material, and an overhead trough to distribute the water.

12122. **KOHL, E. J., and C. M. JAMES. A method for ripening haematoxylin solutions rapidly.** *Science* 74 (1914): 247. 1931.—Ehrlich's or Delafield's hematoxylin solutions are placed for ripening in a very wide and rather shallow evaporating dish and exposed at a distance of about 2 ft. to any rather powerful quartz Hg vapor lamp. About 2 hrs. are required for Delafield's and 3-4 hrs. for Ehrlich's solution.

12123. **LEIFSON, EINAR. A simple automatic pressure regulator for filtration.** *Science* 73(1904): 707-709. 2 fig. 1931.—Description of an apparatus easily constructed operating on a principle similar to that of an hydraulic press.

12124. **LOUNSBURY, JAMES A. A simple microscope eyepiece pointer.** *Science* 73(1888): 266. 1931.

12125. **McLENNAN, GEO. C. A paraffin embedding apparatus.** *Jour. Roy. Microsc. Soc.* 51(2): 136-138. 2 fig. 1931.—To keep the system at the exact melting point of the paraffin used, heat from the lamp is controlled by a variable electrical resistance.

12126. **RAU, N. S. A note on the use of vacuum-flasks in paraffin imbedding.** *Jour. Indian Bot. Soc.* 8 (2): 131-132. 1929.—Where neither gas nor electricity is available, vacuum flasks can serve as an efficient substitute for a paraffin oven. The flask is filled with water at a temp. a little above the melting point of the paraffin; material is transferred from cedar oil to paraffin in a short test tube; the tube is inserted in the flask through a hole in the stopper; and the cover screwed down. Even cheap flasks maintain heat long enough for satisfactory infiltration.—*W. Dudgeon.*

12127. **SCAGLIETTI, OSCAR. Di un nuovo procedimento tecnico per la decalcificazione dell'ossa. Nota preventiva.** *Monitore Zool. Italiana* 40(3): 94-96. 1929. —Bone fragments that had been fixed for several mo. in Ruffini's solution 3 (Müller's fluid 50 cc., 1% chromic acid 50 cc., glacial acetic 2 cc., corrosive sublimate 1 gm.), and then kept in Kayserling II, had become completely decalcified. This is no doubt due to the Müller's fluid and to the chromic and acetic acids. The Kayserling solution acts as a softening agent, especially on tissues fixed by Cr salts, and this action is manifest after about 30 days. For sections prepared with the usual stains, it is recommended to fix 48-60 hrs. in Ruffini No. 3 thin disks of fresh bone (2 mm. thick or less) taken from the epiphysis, from embryonic bone, or bone which through a pathologic process has partly lost its Ca content.—*O. Scaglietti* (*transl. by P. Hillkowitz*).

12128. **SCHMIDT, W. J. Dichroitische Färbung tierischer und pflanzlicher Gewebe. [Dichroic staining**

of animal and plant tissues.] [In: Handbuch der biologischen Arbeitsmethoden. Abt. V. Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus. Teil 2. Heft 16. Allgemeine und vergleichende Physiologie, Lief. 355.] p. 1835-1924. 1 col. pl., 24 fig. Urban & Schwarzenberg: Berlin, 1931.

12129. SIEDENTOPF, HENRY F. W. On the quality of the image and resolving power in the microscope. *Jour. Roy. Microsc. Soc.* 49(3): 231-236. 1 fig. 1929.—Distinction between quality and resolving power in a microscopic image is stressed. The complicated diffraction which occurs when images are formed of objects as encountered in practical microscopy, makes a theoretical approach to the problems involved seem out of the question. Along purely experimental lines progress is promising, as in the accurate measurement of microscopic images under appropriately varied conditions. This involves a knowledge of the modern theory of contrasts. The very order of magnitude may be questioned for values like 0.025 μ for the thickness of flagellae. Measurements are reported for a mercury globule approximately 17 μ in diam., made with an apochromatic objective 60 n.a. 0.95. Full details are given as to the conditions under which the measurements were made. The only variable was the width of the illumination (central). The diam. of the image decreased as the width of the illuminating pencil increased. It is concluded that the larger diam. with narrow illuminating pencil more nearly approaches the true value.—*W. Marquette.*

12130. VARRELMAN, F. A. Paper apron to prevent curling of microtome sections. *Science* 74(1905): 20. 1931.—Wet paper on a paraffin or celloidin block prevents curling of ribbons.

12131. VEIHMEYER, F. J., C. H. HOFMANN, and C. V. GIVAN. An automatic balance. *Science* 73(1894): 424-426. 1 fig. 1931.—The balance operates on the displacement principle using a pure organic liquid which has low viscosity, vapor pressure, and surface tension. The movement of the beam of the balance is indicated on a scale by an optical lever after being greatly amplified. The image from a single filament lamp is focused on the scale after reflection from a special concave mirror, attached to the beam of the balance, and a plane mirror. Changes in the density of the displacement liquid with temp. which may require adjustment for the scale length are compensated for by means of an adjustment nut which raises or lowers the center of gravity of the beam system. The balance is accurate, flexible, and simple in construction and operation. The fatigue of weighing is reduced and the speed is greatly increased. —*F. J. Veihmeyer.*

12132. WALKER, J. HENRY Jr. Inexpensive aerated aquaria. *Science* 73(1904): 709. 1 fig. 1931.

12133. ANONYMOUS. New micrometer microscope. *Instruments* 4(8): 465-466. 1 fig. 1931.

BIOGRAPHY, HISTORY, AND BIBLIOGRAPHY

CARROLL W. DODGE, *Editor*

(See also in this issue Entries 12067, 12075, 12097, 12100, 12446, 12524, 12525, 12526, 12624, 12670, 12791, 13921, 13952, 14055, 14167, 14260, 15012, 15021)

HISTORY

12134. BERNARD, ALBERT. La pomme de terre en Bourgogne avant Parmentier. [The potato in Burgundy before Parmentier.] *Ann. Acad. Macon Ser. 3.* 25: 119-122. 1926-1927 (1930).—Historical note regarding the early introduction of the potato into Haute-Bourgogne, France.

12135. BREUIL, H., et R. de SAINT-PERIER. Les poissons, les bactraciens et les reptiles dans l'art quaternaire. *Arch. Inst. Paléont. Humaine [Paris] Mem.* 2: 1-169. 76 fig. 1927.—This is a description and discussion of the drawings, paintings, engravings, and carvings made by Pleistocene man in Europe. Fishes, especially fresh water ones, were favorite subjects of these early artists; amphibians and reptiles were much less frequently reproduced.—*B. F. Howell.*

12136. BROCK, ARTHUR J. Greek medicine. Being extracts illustrative of medical writers from Hippocrates to Galen. 256p. J. M. Dent & Sons; London, E. P. Dutton & Co.; New York, 1929.—The general introduction consists of a very careful summary of the history of Greek medicine, describing briefly the contribution of each school and great teacher, with enough of the general intellectual background to orient the reader. This is followed by excellent translations of large portions of Ancient Medicine, and Airs, Waters & Places and significant shorter selections of the Epidemics, Prognostic, and Surgery. Rufus of Ephesus is represented by "On the interrogation of the patient" and "Anatomical Nomenclature" while about half the book is devoted to extracts from various works ascribed to Galen. Brief extracts are given from Thucydides, Diodorus and Aetius. All the translations are original and scholarly and in most cases are not otherwise available to the non-classical worker.—*C. W. Dodge.*

12137. CAULFIELD, ERNEST. An early case of pyloric stenosis. *Amer. Jour. Dis. Children* 40(5): 1069-1075. 1930.—Patrick Blair gained notable distinction as an anatomist and botanist among the physicians and scientists of the early 18th century. In 1717, he reported an unusual case before the Royal Society, which is probably the earliest description of pyloric stenosis in an infant.—*From author's summary.*

12138. COLÓN, E. D. Datos sobre la historia de la agricultura de Puerto Rico antes de 1898. 302p. Cantero, Fernández & Co., Inc.: San Juan, Porto Rico, 1930.—The book outlines in chronological order the development of the agricultural industry from the discovery of the Island in 1493 to 1898 when the U. S. took possession. It is divided in 3 parts. The 1st deals with the social, political and industrial preparedness of the Spanish people at the time of the discovery of America, which made them a natural ethnological entity prepared for the discovery and colonization. In the 2nd part, the evolution of the agricultural industry, as developed to fit the needs and laws of the mother country and the political and social conditions of the Island, is thoroughly discussed. The introduction of what today are the important crops such as sugar cane, coffee, tobacco and cotton and their bearing in the economic structure of the Island at the time of their expansion is presented. In the last part the experimental work done up to 1898 with various major and minor crops is given. Early in the 15th century the first experiment station in the New World was established in the Island by King Ferdinand; and already in 1890 Quintanilla and López Tuero had performed soil analysis, fertilizer and variety tests with various crops. In conclusion, the writer blames the old system of colonial exploitation for the rather slow development of the agricultural industry during the period reviewed. 143 papers are cited.—*A. Roque.*

12139. CREPIN, PIERRE. La chèvre dans l'antiquité. *Rev. Hist. Nat. Pt. 1. A. Mammifères* 10(11): 361-385. 1929.—After a brief résumé of evidence of the domestication of the goat by the lake dwellers of Switzerland, the Egyptians, and the Chaldaeans, the literature of Greece and Rome is quoted (in translation) in some detail.—*C. W. Dodge.*

12140. DALEY, CHAS. History of Flora Australiensis. *Victorian Nat.* 47(7): 113-115. 1930.—Two letters from Hooker and 1 from Bentham to Mueller are printed.

12141. DANNEMANN, FR. Aus der Geschichte der Ernährungsphysiologie. [History of physiology of nutrition.] *Zeitschr. Ernähr.* 1(4): 113-117; (7): 209-214. 1931.

12142. **DAWSON, BERNARD. The history of medicine, a short synopsis.** 160p. H. K. Lewis & Co.: London, 1931. Pr. 7s. 6d.—The 7 chapters of this book correspond to as many lectures delivered by the author to the junior medical students of Adelaide University, Australia. The intent of the work is to give to these students the historical backgrounds of medical sciences, to demonstrate the stream of medical knowledge flowing from various and varied sources down to our time. This book purposely avoids detailed technicalities and is lightened with many amusing personal anecdotes. The periods covered are: Grecian, Greco-Roman, the Dark Ages and the Hippocratic tradition, the Middle Ages and the universities, the Renaissance, the period of consolidation.—*B. S. Dodge.*

12143. **DENGLER, A. Die Hundertjahrfeier der Forstlichen Hochschule Eberswalde.** [Celebration of the 100th anniversary of the Forest Academy at Eberswalde.] *Zeitschr. Forst.- u. Jagdw.* 62(10): 730-742. 5 pl. 1930.

12144. **FISCHER, EUGEN. Aus der Geschichte der Deutschen Gesellschaft für Rassenhygiene.** *Arch. Rass.- u. Ges.-Biol.* 24: 1-5. 1930.—The first eugenics society in the world was founded in Berlin in 1905, and has been active ever since.—*P. Popenoe.*

12145. **FISCHER, HERMANN. Mittelalterliche Pflanzenkunde.** [Geschichte der Wissenschaften und Botanik. 2 Band.] 326p. 70 fig. München Drucke: München, 1929. Pr. 12.50 M.—The works of the chief writers of the Middle Ages, with reproductions of the illustrations of the time, are presented. Pure botany of the cloisters and schools, and its part in the instruction of the times, are discussed with Salerno, Hildegard, and Albertus Magnus as prominent features. The literature of the applied botany of the period is dealt with in chapters on the uses of plants for decorative purposes, their relation to the symbolism of the times, and the gardens of Christian Europe. The uses of plants in medicine with special attention to medieval editions of Dioscorides receive much attention. A very interesting chapter concerns the changes in the forest areas of Western Europe and follows the introduction and extension of the cultivation of the most important economic plants. A list of synonyms used in medieval plant nomenclature refers the Latin and German terms used by these early writers to the now accepted botanical names. Glossaries of plant names of Roman origin, as well as those coming through the Roman from the Greek and Arabic, and names of German origin are given. Useful indices close the book. —*R. H. True.*

12146. **FREY, CHARLES N. History and development of the modern yeast industry.** *Indust. & Eng. Chem.* 22(11): 1161-1162. 1930.—The history of the yeast industry from the earliest times down to the manufacture of the modern compressed yeast is outlined, with the various theories of fermentation which have arisen during the course of the development of the industry, and a brief survey of the uses of yeast in industry.—*Author (courtesy Indust. & Eng. Chem.).*

12147. **FULTON, JOHN F. The rise of the experimental method: Bacon and the Royal Society of London.** *Yale Jour. Biol. & Med.* 3(4): 299-320. 1 pl., 10 fig. 1931.

12148. **GARRISON, FIELDING H. An introduction to the history of medicine: with medical chronology, suggestions for study and bibliographic data.** 4th ed. 996p. illus. W. B. Saunders Co.: Philadelphia, 1929. Pr. $12.

12149. **GÓRSKI, M. Zarys historji gleboznawstwa w Polsce. (Z bibljografja od roku 1919.) [History of pedology in Poland with a bibliography of works after 1919.]** [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 17(3): 335-348. 1927.

12150. **GRIFFIN, FRANCIS J. On the dates of publication and contents of the parts of Strecker (H.), "Lepidoptera etc.," 1872-1900.** *Ann. & Mag. Nat. Hist.* 8(45): 257-258. 1931.

12151. **IDETA, ARATA. On the development of plant pathology in Japan and the relation of plant diseases between Japan and the United States of America.** [In Japanese.] Reprint from: *Nippon Gakujitsu Kyokwai Hokoku [Rept. of Japan Sci. Soc.]* 4: 415-419. 1928.

12152. **JACOBI, W. Arbeiten zur Ideengeschichte der Psychiatrie. II. Das mechanistische und das genetische Prinzip in der Geschichte psychiatrisch-neurologischen Denkens.** [The history of psychiatric concepts: The mechanistic and the genetic principle in the history of psychiatric-neurologic thought.] *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 129-150. 1930.

12153. **JOHNSON, CHARLES W. An interesting copy of Wiedemann's Diptera exotica.** *Psyche [Boston]* 38 (1): 25-26. 1931.—Data on a copy of this work dated 1820.

12154. **JUEL, H. O. Förteckning över i Uppsala förvarade herbarieexemplar med påskrifter av Linnés hand.** [English summary.] *Svenska Linné-Sällskapets Årsskr.* 14: 12-16. 1931.—A list of herbarium specimens kept at Upsala with labels in Linné's handwriting.

12155. **LAUFER, BERTHOLD. The American plant migration.** *Sci. Monthly* 28(3): 239-251. 1929.—In America may be recognized 4 strata of plant cultivation: (1) plants peculiar to America, like maize, pumpkins, and sunflower; (2) those introduced from England in colonial times, like wheat, oats, and apples; (3) plants introduced from the West Indies in the 17th and 18th centuries; (4) plants brought from China and Japan from the 18th century onward. Chinese chronicles prove the introduction from America since 1500 of such plants as maize, sweet potatoes, manihot, tobacco, pineapples, guavas, papaya, custard apples, *Capsicum*, peanut, tomato, and many others. There never was a direct prehistoric interchange of plants between China and Mexico or between Oceania and Peru. The facts indicate that American Indian agriculture must be not centuries but thousands of yrs. old. The potato was introduced into Virginia from Bermuda in 1621-22, and had reached England about 1586. It has never become popular among the civilized nations of Asia, but the sweet potato, introduced from America through the Philippines in 1594, has become one of the important food plants of China. The pineapple, as a result of long cultivation, has become seedless. It was widely dispersed in America before the conquest, and is mentioned by most of the early chroniclers. In ancient Peru it was unknown, but later is was introduced there from Brazil. Its antiquity in Mexico and among the Maya does not seem to be well authenticated. It is reasonable to regard Brazil as the mother country of pineapple cultivation. The fruit first reached England in 1657; it was grown in Guinea before 1602, and was introduced at the Cape of Good Hope about 1660. About 1550 it reached southern India, and at the beginning of the 17th century China.—*P. C. Standley.*

12156. **LEATHES, J. B. The birth of chemical biology.** *Lancet* 219(5591): 889-895. 1930.—Harvey and John Mayor and other early workers on respiration.

12157. **LEE, WM. A. Liverpool and botanical science.** 11p. T. Buncle & Co.: Arbroath, 1928.

12158. **MAJOCCHI, DOMENICO. Concetto biologico sugli alimenti di Jacopo Bartolomeo Beccari "Quid aliud sumus, nisi id ipsum unde alimur?" esposto dal medesimo nel 1728 all'Accademia delle Scienze dell'Istituto di Bologna. Risposta al ch. mo Prof. Pietro Albertoni.** [The biological concept of food of J. B. Beccari ("What then are we, if not that which we ingest?") propounded in 1728 to the Acad. Sci. of Bologna. Answer to the honorable Prof. P. Albertoni.] *Rend. Sess. R. Accad. Sci. Ist. Bologna Cl. Sci. Fis.* 32: 142-148. 1927-1928.—This note commemorates the 200th anniversary of Beccari's discovery of gluten in wheat. In 1728 he announced the identification of gluten in wheat and casein in milk, and thereupon formulated a new concept of qualitative nutrition, viz., that the animal body is made up of substances ingested as foods.—*M. J. Lepore.*

12159. **MARTIN, HENRI. La frise sculptée et l'atelier solutréen du Roc (Charente).** *Arch. Inst. Paléont. Humaine [Paris] Mém.* 5: 1-86. 5 pl., 37 fig. 1928.—Paleolithic implements, engravings, and carvings, and a hu-

man skull from this locality in France, are discussed. The animals figured include the horse, bison, musk-ox, bear, and man.—*B. F. Howell.*

12160. **MELDRUM, ANDREW NORMAN.** The eighteenth century revolution in science—the first phase. 60pp. Longmans, Green & Co.: Calcutta, 1930.—This book is based upon Lavoisier's memoirs and journals (quoted in Berthelot's "La revolution chimique") and upon memoirs of Bayen and Priestley.—*C. W. Dodge.*

12161. **MILLER, JOSEPH LYON.** The physicians of the Old South, their character and education. *Bull. Med. Coll. Virginia* 25(12): 9-22. 1 pl. 1929.

12162. **MUSGRAVE, ANTHONY.** The history of Australian entomological research. *Australian Zoologist* 6 (3): 189-203. 1930.—An account of 3 periods: the Fabrician (1770-1830), the Westwoodian (1831-1861), and the Macleayan (1862-1929).

12163. **PADBERG-DRENPOL, GEORGE A.** Ensaio critico-historico sobre o café e investigação etymologica do nome. [Critical historical essay on coffee and the etymology of the name.] *Bol. Mus. Nacion. [Rio de Janeiro]* 3(4): 13-116. 1927.

12164. **PHILLIPS, E. PERCY.** A brief historical sketch of the development of botanical science in South Africa and the contribution of So. Africa to botany. *S. African Jour. Sci.* 27: 39-80. 1930.

12165. **RODER, OSKAR.** Geschichte der Veterinärmedizinischen Fakultät der Universität Leipzig. [History of the Vet. Med. Faculty of the Univ. of Leipzig.] *Berliner Tierärzt. Wochenschr.* 46(40): 651-672. 2 pl., 25 fig. 1930.

12166. **ROHR, MORITZ von.** Kepler und seine Erklärung des Sehvorganes. [Kepler and his explanation of vision.] *Naturwiss.* 18(46): 941-945. 3 fig. 1930.

12168. **SARTON, GEORGE.** Discovery of the theory of natural selection (with facsimile reproductions of Darwin's and Wallace's earliest publications on the subject [1859]). *Isis: Internat. Rev. Hist. Sci.* 14(1): 133-154. 1930.

12169. **SCHWAPPACH, A.** Eberswalde 1830-1930. *Deutsch. Forstztg.* 45(31): 777-785. 16 fig. 1930.—An historical account of the forest school and experiment station at Eberswalde, Prussia.

12170. **SELGA, MIGUEL.** (transl. from Spanish by L. B. UICHANCO.) Historical notes on the cultivation of wheat in the Philippines. *Philippine Agric.* 20(4): 239-245. 1931.—Available documentary data, some of which are unpublished, show that extensive cultivation of wheat which Luis de Matienzo started in the higher altitudes of the P. I. in 1664, continued actively for at least 70 yrs. to the evident advantage of the people. Wheat growing on a commercial scale was given up in the P. I. not because of unfavorable climate but because competition in foreign trade brought to Manila better wheat at lower prices.—*M. Manresa.*

12171. **SERNANDER, RUTGER.** Linnaeus och Rudbeckarnes hortus botanicus. [With English summary.] *Svenska Linné-Sällskapets Årsskr.* 14: 126-157. 5 pl., 7 fig. 1931.—A study of the foundation by Olaus Rudbeck, Sr., of the Botanical Garden at Upsala, in 1657, including a reference to its importance to Linnaeus when he was constructing his classification of plants.

12172. **SPETER, MAX.** Zur hundertjährigen Geschichte des Chloroforms. [The 100 yrs. of chloroform.] *Pharm. Zentralhalle Deutschland* 72(40): 628-630. 1931.

12173. **TRÖGER, J.** Über einige im Altertum zu gewerblichen Zwecken verwendete Pflanzen. [Some plants employed in antiquity for technological purposes.] *Pharm. Zentralhalle Deutschland* 71(38): 593-598; (39): 611-613; (40): 628-631; (41): 642-646. 1930.—A historical review of drug and other economic plants of antiquity.

12174. **WEISS, HARRY B.** More about Doctor Brickell's "Natural History of North Carolina." *Jour. New York Ent. Soc.* 38(3): 313-315. 1930.—This work was pirated from John Lawson's "A new voyage to Carolina, etc.," published in 1700.

12175. **WILSON, E. H.** Gardening's renascence in the 18th and 19th centuries. *House & Garden [New York]* 57(5): 86, 152, 182. 1930.

12176. **ZINSSER, HANS, and ARTHUR F. COCA.** Remarks concerning Landsteiner's discovery of isoagglutination and the blood groups, with special reference to a paper by J. A. Kennedy. *Jour. Immunol.* 20(4): 259-262. 1931.—Contrary to the opinion of Kennedy, credit for discovery of isohemagglutination belongs to Landsteiner and not to Jan Janský.

12177. **ANONYMOUS.** La société Linnéenne de Bordeaux. *Actes Soc. Linnéenne Bordeaux* 80: 11-14. 1928. A review of the society's history since its organization in 1818.

BIOGRAPHY

12178. **ABBOTT, MAUDE E., (edited by).** Appreciations and reminiscences of Sir William Osler. With bibliographies. 2nd ed. *Internat. Assoc. Med. Mus. Bull. 9.* 634p. 51 fig. 59 illus. Privately issued at 836 University St., Montreal, Canada, 1927.—In the present volume the Montreal period (1870-1884) is covered by F. J. SHEPPARD, A. D. BLACKADER, E. J. A. ROGERS, MAUDE E. ABBOTT, BRYSON DELAVAN and MARIAN OSBORN and JEAN CAMERON; the Philadelphia period (1885-1889), by C. K. MILLS, GEORGE DOCK, HOBART AMORY HARE, JOS. LEIDY 2nd, H. R. M. LANDIS, E. B. KRUMBHAAR, J. C. WILSON and W. W. KEEN; the Baltimore period (1889-1905), by LLEWELLYS F. BARKER, HOWARD A. KELLY, HENRY M. HURD, T. R. BROWN, H. A. LAFLEUR, JOHN T. FINNEY, W. S. THAYER and CHARLES P. EMERSON; the Oxford period (1905-1919), by HUMPHREY ROLLESTON, E. SHARPEY SCHÄFER, WILLIAM HALE-WHITE, WILLIAM COLLIER, F. PARKES WEBER, CHARLES SINGER, ARCHIBALD MALLOCK, A. G. GIBSON, WILBURT D. DAVISON, WILDER PENFIELD, R. TAIT McKENZIE, EDWARD CLARK STREETER, WALTER M. BIERRING, HENRY R. VIETS, G. W. NORRIS, EDGAR LOVINGTON GILCREET, C. A. P. HOWARD, J. GEORGE ADAMI and FRANCIS A. WINTER. There are a number of short reminiscent articles by students of the Montreal, Philadelphia and Baltimore periods. The Foreword is by WILLIAM H. WELSH, the Preface by CLIFFORD ALLBUTT, the Editorial Preface by MAUDE E. ABBOTT. There are general articles (Editorials) by A. S. WARTHIN, ARTHUR KEITH, OSCAR KLOTZ, PIERRE MARIE, E. LIBMAN, L. J. RHEA, C. N. B. CAMAC, J. LUDWIG ASCHOFF, JAMES F. COUPAL, ETTORE MARCHIAFAVA, FRANCIS R. PACKARD, KARL SUDHOFF, FIELDING H. GARRISON, GERMAN SIMS WOODHEAD, THOMAS McCRAE, C. F. MARTIN, RUFUS COLE, GEORGE M. KOBER, JOSEPH H. PRATT, J. GEORGE ADAMI, HENRY W. COTTELL, HENRY BARTON JACOBS, LEONARD M. MACKALL, and W. W. CHIPMAN. The early years (1849-1869) are covered by NORMAN B. GWYN and J. L. TODD. The volume also contains a complete bibliography of Osler's writings, the titles covering 133 pages, and a bibliography of writings about him.—*D. J. Healy.*

12179. **A[DIKIN], R. W. H. Miles [1863-1930.]** *Entomologist [London]* 63(810): 264. 1930.—English entomologist whose work was largely done in India, especially on the pests of tea.

12180. **ALFONSUS, ERWIN C.** The life of Anton Jansha. *Amer. Bee Jour.* 71(11): 508-509. Portrait. 1931.—Historical and biographical sketch of this apiculturist and keen student of bees (1734-1773).

12181. **ALVERDES, FRIEDRICH.** Das Lebenswerk Lamarcks. Gedächtnisrede anlässlich der 100. Wiederkehr seines Todestages am 18. Dezember 1929. [Lamarck's life work.] *Sitzungsber. Ges. Beförder. Gesamt. Naturwiss. Marburg* 64(6): 137-141. 1929(1930).

12182. **B. Geheimer, Forstrat Professor i.R. Dr. Phil. Dr. h. c. der Bodenkunde Heinrich Vater.** *Deutsche Forstztg.* 45(9): 218-219. Portrait. 1930.—Vater (1859-

1930) was prof. of soil science at Tharandt Forest Acad. after 1885.—*W. N. Sparhawk.*

12183. **B., W. Baron Shibasaburo Kitasato [1852-1931].** *Nature [London]* 128(3221): 142-143. 1931.—This Japanese bacteriologist in 1889 first demonstrated the bacillus of tetanus; with Emil Behring he produced tetanus antitoxin and laid the basis for serumtherapy. In 1894 he discovered and worked out the chief features of the bacillus of plague. He was director of the Imperial Japanese Inst. for Infectious Diseases, 1899-1914.

12184. **BAKER, E. G. Charles Edgar Salmon (1872-1930).** *Proc. Linnean Soc. London No.* 142. 218-221. 1929/30(1931).—An English botanist, known especially for his work on *Limonium* and *Alchemilla* and for his "Flora of Surrey."

12185. **BANKS, NATHAN. J. H. Emerton [1847-1930].** *Canadian Ent.* 63(1): 23-24. 1931.—Massachusetts artist, arachnidologist, describer of 350 sp. of spiders.

12186. **BARCLAY, A. James Fairlie Gemmill.** *Glasgow Nat.* 9: 58-59. 1919/1930(1931).—Scotch marine biologist, late prof. of zoology in Dundee.

12187. **BENEKE, RUDOLF. Vom Einfluss Hallischer Kliniker auf die Entwicklung der deutschen Balneologie.** *Leopoldina* 5: 110-123. 1929.—Since Paracelsus wrote the first booklet on bathing resorts (Badebuchlein) in the 16th Century, balneology has been built upon chemistry. Friedrich Hoffmann, who, in 1694, founded the medical division of the Univ. of Halle, and who was its director for nearly 50 yrs., was the first great balneologist, using the merely empirical ideas of Sydenham and Boyle. He discovered and made practical application of a number of springs, e.g., Karlsbad. At the same time, he was the founder of German climatology and demonstrated the relation between climate and health. These discoveries have hardly been quoted for 200 yrs., but they represent basic truths even today. 100 yrs. after Hoffmann, Johann Christian Reil, another famous clinician in Halle, introduced the saline and steam baths, which he investigated in a special institution at the salt springs of Halle.—*R. Beneke (transl. by A. Plaut).*

12188. **BILLARD, ARMAND. Courte notice sur les travaux de M. Bedot. [-1927]** *Bull. Soc. Zool. France* 53: 36-37. 1928.—This late director of the Museum d'Hist. Nat. of Geneva wrote important works on Coelenterata.

12189. **BOERI, G. [et al.] Giambattista Morgagni (1682-1771).** *Morgagni* 73(26): 1217-1269. 2 portraits, 3 fig. 1931.—This issue is devoted entirely to articles on Morgagni and the various phases of his work.

12190. **[BORISIAK, A. A.]** БОРИСЯК, А. А. Вильгельм Бранка. 1844-1928. [Wilhelm Branca.] Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1928(3): 203-204. 1928.—German paleontologist.

12191. **[BORISIAK, A. A.]** БОРИСЯК, А. А. Отто Иекель. 1863-1929. Некролог. [Otto Jaekel, Obituary.] Известия Академии Наук СССР. Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS. Cl. Sci. Phys.-Math.*) 1929(9): 771-775. 1929.—Biography of this distinguished German paleontologist, with a list of his (100) publications.

12192. **BOURDELLE, E. Le professeur E. L. Trouessart (1842-1927).** *Bull. Soc. Zool. France* 53: 67-69. 1928.—Trouessart practised medicine for many yrs., and in 1906 took charge of the mammal and bird departments of the Muséum d'Hist. Nat. in Paris. He was known especially for his Catalogus Mammalium, the 1st edition of which appeared in 1885. He was a former president of the Soc. Zool. de France.

12193. **BOWMAN, A. Thomas Scott, LL.D. (1840-1929).** *Proc. Linnean Soc. London No.* 142. 221-223. 1929/30(1931).—A Scotch biologist and member of the Fishery Board for Scotland, known especially for his extensive publications on Crustacea.

12194. **BRIQUET, JOHN. Auguste Guinet, 1846-1928.** *Candollea* 3: 481-489. 1926/1929.—Appreciation of this Swiss bryologist, in charge of the cryptogamic collections of the Delessert Herbarium 1908-1925, with a list of 45 publications.

12195. **BRÜNE. C. A. Weber [1856-1931].** *Mitteil. Ver. Förd. Moorkult. Deutsch. Reiches* 49(10): 187-190. 1931.—Biography and appreciation of this botanist of the Moor Exp. Sta. in Bremen.

12196. **BULTINGAIRE, L. Les peintres du Muséum à l'époque de Lamarck.** *Arch. Mus. Hist. Nat. [Paris]* 6: 49-58. 1 col. pl. 1930.—An account of such painters of animals and plants as Van Spaendonck, Marechal, Redouté frères, Gérardin, de Wailly, Nicolas Huet, Werner, and Oudinot, and of Lamarck's connection with some of them.

12197. **BURKILL, I. H. Sir George Watt (1851-1930).** *Proc. Linnean Soc. London No.* 142. 226-229. 1929/30(1931).—This Scotch botanist and economist, with a long experience in India, was known especially for his work on the flora and economic products of that country.

12198. **CALVERT, PHILIP P. Dr. Friedrich Ris [1867-1931].** *Ent. News* 42(7): 181-191. Portrait. 1931.—Swiss physician and student of Odonata and Lepidoptera, whose great work was a monograph of the "Libellulinen."

12199. **CÉPÈDE, CASIMIR. La vie et l'oeuvre d'Emile Sauvage [1842-1917].** *Bull. Soc. Acad. l'Arrond. Boulogne-sur-Mer.* 11: 209-295. Portrait. 1922/1928(1929).—Biography and appreciation of this French zoologist, paleontologist, and anthropologist, with an extensive annotated list of his many publications.

12200. **CHAINE, J. Éloge de J.-F. Laterrade [1784-1858].** *Actes Soc. Linnéenne Bordeaux* 80: 77-93. 2 pl. 1928.—Founder of the Soc. Linnéenne de Bordeaux, director of the local Jardin des Plantes, and author of "Flore bordelaise" and other botanical works.

12201. **CHINA, W. E. Dr. Frederick Muir.** *Entomologist [London]* 64(818): 166-168. 1931.—F. Arthur Godfrey Muir [1872-1931] was entomologist of the Hawaiian Sugar Planters' Assoc. and specialist on the Fulgoroidea.

12202. **COOKE, C. MONTAGUE. Joseph Swift Emerson. [1843-1930].** *Nautilus* 44(3): 94-95. 1931.—Hawaiian conchologist.

12203. **CRUM, ETHEL K. Biographical notice of Ida May Blochman [1854-1931].** *Madroño, Jour. California Bot. Soc.* 2(3): 30-31. 1931.—An amateur California botanist.

12204. **COSTANTIN, J. Les derniers jours de Lamarck. Sa mort. Sa philosophie morale. [The last days of Lamarck, his death, his moral philosophy.]** *Arch. Mus. Hist. Nat. [Paris]* 6: 5-10. 1930.

12205. **CURTIS, C. H. Charles Edward Pearson, V.M.H., F.L.S., F.R.H.S. (1856-1929).** *Proc. Linnean Soc. London No.* 142. 214-215. 1929/30(1931).—This English ornithologist and horticulturist was founder and editor of the "Horticultural Trades Journal."

12206. **D., A. A. Obituary. Edward John Haynes Thomas.** *Northwestern Nat. [Scotland]* 5(3): 187-189. 1930.—British physician and amateur field naturalist.

12207. **D., C. D. Dr. Karl Bělař [1895-1931].** *Nature [London]* 128(3219): 59. 1931.—Cytologist of the Kaiser Wilhelm Inst. für Biologie, Berlin.

12208. **DAHL, CARL G. E. H. Wilson: 1877-1930.** *Lustgården* 11; 149-151. 1 fig. 1930.—Obituary notice and brief biographical sketch of this American botanist of the Arnold Arboretum, whose chief work was on the cherries, conifers, and Taxaceae of Japan.

12209. **DALLA VOLTA, AMEDEO. Umberto Parodi—necrologia.** *Boll. Soc. Ital. Biol. Sper.* 3(4): 506-508. 1928.—Parodi (1879-1928) was an anatomical pathologist of Italy and prof. at the Univ. of Catania. He first (1907) demonstrated the transmission of syphilis to the testicle of a rabbit, and was the first in Italy to demonstrate the production of tar carcinoma.—*A. Dalla Volta (transl. by J. G. Edwards).*

12210. **DAWSON. Henry Hill Hickman.** *Proc. Roy. Soc. Med.* 23(8): 1127-1130. 1 fig. 1930.—This address commemorates the centenary of the death, at the age of 29, of a Shropshire practitioner who made practical experiments in anesthesia 18-20 yrs. before its clinical

employment by Long and Wells. Hickman rendered animals unconscious first through partial asphyxiation by the exclusion of air, then by inhalation of CO_2 and N_2O, and performed various surgical operations on the animals during anesthesia. Hoping to extend the benefit of his findings to man, he published in 1824 a pamphlet on this subject, "A letter on suspended animation," which was ignored by both the English and French medical professions.

12211. **DOMIN, KAREL. Václav Vraný [1851-1929].** *Veda Prirodní [Prague]* 11(4): 97-98. Portrait. 1930. —Well-known Czechoslovakian botanist.

12212. **DRUCE, F. Charles C. Coltman-Rogers (1854-1929).** *Proc. Linnean Soc. London No.* 142. 195-196. 1929/30(1931).—Welsh student of forestry, author of "Characteristics of conifers."

12213. **D[UPOND], C. [Laurent Coopman, 1875-1930.]** *Le Gerfaut [Brussels]* 20(2): 81-85. Portrait. 1930.—Belgian ornithologist.

12214. **E., F. W. Fred. V. Theobald [1868-1930].** *Entomologist [London]* 63(803): 95-96. 1930.—British entomologist, author of monographs on the Culicidae of the world and British Aphididae.

12215. **EMILY, J. Le médecin inspecteur général des troupes coloniales, Paul Gouzien [1862-1926?].** *Acad. Sci. Coloniales Compt. Rend. Séanc. Communic.* 8: 565-573. Portrait. 1926-27(1928).—Biography of this French student of tropical medicine, with a list of his published works.

12216. **FAGE, LOUIS. Notice sur Édouard Chevreux [1846-1931].** *Ann. Soc. Ent. France* 100(1/2): 107-120. 1931.—This French zoologist was an authority on Amphipoda. His bibliography contains 114 references.

12217. **FINCH, et al. Professor John Henry Comstock [1849-1931].** *Ent. News* 42(6): 153-157. 1931.—Biographical sketch of this famous teacher of entomology at Cornell Univ.

12218. **FISCHER, ED. Anton de Bary. Zur Erinnerung an seinen hundertsten Geburtstag.** *Naturwiss.* 19(5): 97-102. 1931.—Biography and appreciation of this great German botanist.

12219. **FRANCHINI, F. Vicende postmortali di Marcello Malpighi. [Postmortem vicissitudes of Malpighi.]** *Cultura Stomatol.* 5: 554. 1928.—Dying in Rome in 1694, the Italian anatomist Malpighi left instructions that he be buried in Bologna. Litigation over the site of the tomb prevented permanent sepulture for many yrs. In 1838 his remains were again transferred, in Bologna, to the Chapel of St. Camillo, where they now rest.—*P. Popenoe.*

12220. **FRIEND, HERBERT E. Peter Orlando Hutchinson—antiquarian and botanist.** *Jour. Bot.* 69(821): 137. 1931.—Brief biographical sketch of this Englishman (1810-1897).

12221. **GAGE, A. T. George Henderson (1836-1929).** *Proc. Linnean Soc. London No.* 142. 197-198. 1929/30 (1931).—Member of the Indian Medical Service, interested in natural science and horticulture, and co-author with A. O. Hume of "Lahore to Yarkand" (1873), embodying the scientific results of the Yarkand Mission.

12222. **GAGE, SIMON HENRY. Veranus Alva Moore [1859-1931].—Pierre Augustine Fish [1865-1931].** *Science* 73(1899): 550-553. 1931.—Both were eminent veterinary scientists, great teachers, and administrators. Both served as heads of departments of the New York State Vet. College at Cornell Univ. and later as deans, Fish succeeding Moore.

12223. **GARNETT, HENRY. Richard Buxton. An old-time Manchester botanist [1786-1865].** *Northwestern Naturalist* 6(1): 18-21. Portrait. 1931.—Biographical sketch.

12224. **GEPP, A. Obituary: Frederick Beatson Taylor (1851-1931).** *Jour. Bot.* 69(820): 103-104. 1931.—British botanist who published several papers and a book on diatoms.

12225. **GOLDSTEIN, K. Konstantin von Monakow [1853-1930].** *Deutsche Zeitschr. Nervenheilk.* 120(1/2): 1-7. 1931.—Monakow was particularly known for his work on pathology and function of the brain, the theory of diaschisis, and his biological approach to the problems of neurology and psychiatry.

12226. **GRABAU, AMADEUS W. Memorial of Yatseng T. Chao [1898-1929].** *Bull. Geol. Soc. China* 8(3): 257-261. Portrait. 1929.—This brilliant young paleontologist was on the staff of the Geol. Survey of China. A list of 20 publications is appended.

12227. **GRANT, KERR. T. Brailsford Robertson, D. Sc., Ph. D. [1884-1930].** *Trans. & Proc. Roy. Soc. S. Australia* 54: 192-195. 1930.—This distinguished biochemist and physiologist was born in Edinburgh and educated in So. Australia (Adelaide) and in the Univ. of California. In 1919 he was elected prof. of physiology in the Univ. of Adelaide and in 1927 became chief of the Commonwealth [Australia] dept. of animal nutrition. He was the author of "The principles of biochemistry," "The physical chemistry of the proteins," and many other important works.

12228. **GROCHMALICKI, J. Benedykt de Nałęcz Dybowski (1833-1930).** *Kosmos [Lwów]* 55(1/2): 1-16. 1930.—This distinguished Polish zoölogist, exiled to Siberia 1864-1876, investigated the little-known fauna of that region, and later (1878-1883) continued his work in Kamchatka and the Commander Islands. His collections and publications added greatly to our knowledge of the Siberian fauna (particularly the vertebrates, Crustacea, and mollusks). Lake Baikal was a special object of study. He also carried on medical work among the Siberian natives. From 1883 to 1906 he held the chair of geology at the Univ. of Lwów. A bibliography of 175 titles is appended.

12229. **GROVES, J. Arthur Bennett (1843-1929).** *Proc. Linnean Soc. London No.* 142. 187-189. 1929/30 (1931).—An English amateur botanist, author of nearly 400 papers, owner of a large herbarium, and an authority on *Potamogeton.*

12230. **GRIJNS, G. In memoriam H. Zwaardemaker [1857-1930].** *Arch. Néerland. Phys. Homme et Animaux, Ser. 3C.* 16(1): 1-5. 1931.—Eminent Dutch physiologist, best known for his studies on the physiology of vision, sound production, and audition.

12231. **H[ILL], A. V. Dr. Enrico Sereni [?-1931].** *Nature [London]* 127(3206): 562-563. 1931.—Italian physiologist, in charge of the section of physiology at the Zool. Station of Naples.

12232. **H[ILL], A. W. Dr. Rudolf Marloth [-1931].** *Nature [London]* 127(3216): 945. 1931.—Botanist of So. Africa.

12233. **H[ILL], A. W. Major T. F. Chipp [1886-1931].** *Nature [London]* 128(3221): 141-142. 1931.—Assistant director of Royal Bot. Gardens at Kew, botanical explorer, and writer.

12234. **HAAS, F. Arturo Bofill y Poch.** *Arch. Molluskenk.* 63(2): 83-85. 1931.—Catalonian malacologist (1846-1929).

12236. **HANNA, G. D., and C. C. CHURCH. David Dwight Baldwin, 1831-1912.** *Proc. California Acad. Sci.* 19(13): 431-436. 1931.—Conchologist, noted chiefly for his collections from the Hawaiian Islands.

12237. **HARMER, SIDNEY F. Sir Edwin Ray Lankester [1847-1929].** *Proc. Linnean Soc. London No.* 142. 200-211. 1929/30(1931).—After Huxley's death, Lankester was the leader of British zoologists. He had held professorships at University College, London (1874-1890), and at Oxford (1891-1898), and had been President of the British Assoc. for the Adv. of Sci. While director of the British Museum (1898-1907), he did much to improve its exhibits and broaden its policies. For 52 yrs. he was editor of the "Quarterly Jour. of Microsc. Sci."; he was also editor of the 8 volumes of the "Treatise on Zoology." His numerous publications dealt largely with the morphological phases of zoology. Various volumes of essays rendered conspicuous service in explaining the results of scientific research to the general reader. His initiative resulted in the founding of the Marine Biol. Assoc. of the United Kingdom.

He was at his best as a teacher and inspired many students who became well-known zoologists.

12238. **HARTIG, FRED.** Paul Prestin [1851-1929]. *Societas Entomologica* 44(9): 33. 1929.—This noted pomologist and entomologist and corresponding member of many scientific societies specialized in Lepidoptera (*Parnassius*) and in the study of insects injurious to fruit trees.

12239. **HAŠA, R. H. E. Biolley [1858-1931].** *Věstník Československ. Akad. Zem.* 7(8): 844-847. Portrait. 1931.—Biography and bibliography of this Swiss forest inspector, corresponding member of the Czechoslovak Acad. of Agric.

12240. **HASSELWANDER, A.** Dem Andenken Emil Rosenbergs [1842-1925]. *Anat. Anzeiger* 70(5): 81-107. Portrait. 1930.—This German anatomist was one of the first comparative morphologists to employ ontogeny in the study of evolution.

12241. **HÄSSLER, ARNE.** Adolf Engler. En av den systematiska botanikens förgrundsgestalter. [One of the outstanding figures in systematic botany.] *Bot. Notiser* 1930(6): 513-517. Portrait. 1930.

12242. **HASTINGS, E. G.** William Harmon Wright, 1885-1929. *Phytopath.* 21(3): 243-246. Portrait. 1931.—Biographical sketch.

12243. **HECKENROTH.** Dr. G. Reynaud [-1926]. *Acad. Sci. Coloniales Compt. Rend. Séanc. Communic.* 8: 591-596. Portrait. 1926-27(1928).—A brief biography of this French pathologist, honorary Professor in the École de Médicine, Marseille, with a list of his publications (75), mostly on tropical medicine and parasitology.

12244. **HEINRICH, R.** Jaques L. Reverdin [1842-1929]. *Internat. Ent. Zeitschr.* 23(2): 13-18. Portrait. 1929.—This German scientist, prof. of surgery and famous for his various discoveries in medicine, became infected through an operation, which affected his hearing. In 1910 he retired from the medical profession and devoted himself from then on to natural sciences, particularly the study of Lepidoptera. A list of his 50 publications on entomological subjects concludes the paper.

12245. **HERRMANN, GEORGE.** Aldred Scott Warthin, 1866-1931. An appreciation. *Amer. Jour. Syphilis* 15(3): 289-294. 1 pl. 1931.—The pathology of syphilis and of dinitrophenol and dichlorethylsulphide (mustard gas) poisoning, traumatic lipemia, and the anemias and leukemias were among the subjects to which Warthin made important contributions.

12246. **HESSE, P.** Maximilian Braun. *Arch. Molluskenk.* 63(2): 82. 1931.—Malacological contributions of this German helminthologist.

12247. **HEWITT, J. A.** Prof. W. D. Halliburton, F.R.S. [1861?-1931]. *Nature* [*London*] 127(3216): 932, 945. 1931.—Eminent English physiologist and biochemist, prof. of physiology at King's College 1889-1923.

12248. **HILL, LEONARD.** Group-Capt. Martin Flack, C.B.E. [1882?-1931]. *Nature* [*London*] 128(3227): 402-403. 1931.—Brief biography of this British physiologist, known chiefly for his work on respiration.

12249. **HULT, OLOF.** P. J. Bergius och medicinen i Sverige. [Peter Jonas Bergius (1730-1790) and medicine in Sweden.] [English summary.] *Svenska Linné-Sällskapets Årsskr.* 14: 1-11. 1 pl., 2 fig. 1931.—An address on the achievements of this pupil of Linnaeus, who did much for the introduction of vaccination in Sweden. He was also prof. of nat. hist. at Stockholm.

12250. **I., A. D.** Dr. Frederick Muir [1872-1931]. *Nature* [*London*] 127(3215): 900. 1931.—Natural history explorer of the Malay Archipelago, pioneer in biological control of insects, authority on the Fulgoroidea and the genitalia of Coleoptera.

12251. **IBIS.** Obituary. *Ibis* 4(2): 323-333. 1928.—James Edmund Harting, George Muirhead, Gerald William Lascelles, Angus Peter Airlie Hamilton Kinloch, Otto von Zedlitz, Leverett Mills Loomis, Robert John Howard, Robert Miller Christy, Richard Kearton, and Ludovico Söderstrom.—*W. W. Bowen.*

12252. **IBIS.** Obituary. *Ibis* 4(3): 534-542. 1928.—Hans Friedrich Gadow; William Chaster Tait; Linnæus Greening; Robert William Chase; Charles George Danford; Launcelot Harrison; Albert Hess; A. Szielasko; Bradshaw Hall Swales; Harry Balch Bailey.

12253. **IBIS.** Obituary. *Ibis* 6(2): 320-325. 1930.—Emilie Snethlage; Hermann von Ihering; and Hamlet Dalton Wade-Dalton.

12254. **IBIS.** Obituary. *Ibis* 6(4): 679-682. 1930.—Frédéric Courtois and Axel Christiani.

12255. **ISSEL, RAFFAELE.** Luigi Cognetti de Martiis [1878-1931]. *Boll. Zool.* [*Napoli*] 2(2): 79-81. Portrait. 1931.—Italian zoologist, histologist, and histophysiologist.

12256. **JACKSON, A. BRUCE.** Augustine Henry (1857-1930). *Proc. Linnean Soc. London No.* 142. 198-200. 1929/30(1931).—This Irish botanist and forester was a leading authority on the trees of the temperate regions. In early life, while a medical officer in China, he collected many new genera and hundreds of new sp. of plants. He was co-author with Elwes of "The trees of Great Britain and Ireland," and in late yrs. was prof. of forestry in the College of Science at Dublin.

12257. **JEPSON, WILLIS LINN.** The botanical explorers of California.—VII. *Madroño, Jour. California Bot. Soc.* 2(3): 25-29. 3 portraits. 1931.—Brief biographical sketches of 4 early amateur botanists in California: Joseph Cook Nevin (1835-1913), William Hillman Shockley (1855-1925), Charles Austin Stivers, and Lucia A. Summers (1839?-1898), with portraits of the first 3.

12258. **JOHNSON, C. W.** James Henry Emerton [1847-1930]. *Nautilus* 44(3): 97-98. 1931.—Massachusetts conchologist.

12259. **JOHNSON, CHARLES W.** Louis William Swett [1880-1930]. *Psyche* [*Boston*] 37(3): 301. Portrait. 1930.—L. W. Swett was interested in Lepidoptera, mainly Geometridae, of which he has described many new sp.

12260. **JOHNSTONE, R. B.** Daniel Alexander Boyd [1855-1929?]. *Glasgow Nat.* 9: 60-62. 1919/1930(1931).—Scotch naturalist and mycologist, especially known for his work on the fungi of Ayrshire.

12261. **JONES, LEWIS RALPH.** William Allen Orton, 1877-1930. *Phytopath.* 21(1): 1-11. Portrait. 1931.

12262. **JOUBIN, L.** Iconographie de Lamarck. *Arch. Mus. Hist. Nat.* [*Paris*] 6: 1-3. 3 portraits, 6 pl. 1930.—A discussion and reproduction of various portraits of Lamarck.

12263. **K[ENNARD], A. S.** Obituary. Bernard Barham Woodward, 1853-1930. *Proc. Malac. Soc. London* 19(4): 165-166. 1931.—English malacologist.

12264. **KENNEDY, CLARENCE HAMILTON.** Professor James Stewart Hine [1866-1930]. *Ent. News* 42(6): 177-180. 1931.—This well-known entomologist and ornithologist was director of the division of Nat. Hist. of Ohio State Archaeol. and Hist. Mus.

12265. **KINNMAN, GUNNO.** Johan Anders Amilon. *Skogsvårdsför. Tidskr.* 28(4): 453-459. Portrait. 1930.—Account of life and work of this late instructor in silviculture at the Swedish Forest School.—*H. I. Baldwin.*

12266. **KL., ED.** Adolf Fritze [1860-1927]. *Jahresber. Naturhist. Ges. Hannover* 1924/25-1928/29. No. 75. viii. 1930.—German zoologist, former director of the natural history department of the Hanover Museum.

12267. **KLEINE, H. O.** Semmelweis und Virchow. Eine medizinhistorische Studie. *Arch. Gynaekol.* 142(2): 324-328. 1930.—Virchow used his great authority to hinder the acceptance of Semmelweis' theory of the contagiousness of puerperal fever. Not until the yr. preceding Semmelweis' death did he admit the possibility of infection as one cause (he still refused to recognize it as the sole cause) of puerperal fever; and it is doubtful if this tardy and inadequate recantation ever came to the knowledge of Semmelweis.

12268. **KLUYVER, A. J.** In memoriam. Prof. Dr. M. W. Beijerinck. *Nederlandsch. Tijdschr. Hygiëne Microbiol. en Serol.* 5(4): 173-181. Portrait. 1931.

12269. **LAMY, ED.** Un conchyliologiste français du XVIII^e siècle: L'Abbé de Crillon. [An 18th century

French conchologist.] *Jour. Conchyliol.* 74(2): 166-167. 1930.

12270. **KRAUS, F. Ferdinand Blumenthal.** *Zeitschr. Krebsforsch.* 32(1/2): 1-4. 1930.—This article dedicated to the editor on the occasion of his 60th birthday is a brief account of his activities principally as director of the cancer division of the Berlin Charity-Inst.—*H. E. Eggers.*

12271. **KŘIŽENECKÝ, JAROSLAV.** Professor L. J. Cole [1877-1931]. *Věstník Československ. Akad. Zem.* 7(8): 841-844. Portrait. 1931.—Biography and bibliography of this American geneticist, corresponding member of the Czechoslovak Acad. of Agric.

12272. **KÜTTNER, HERMANN.** Gedenkworte an Johannes von Mikulicz anlässlich der 25. Wiederkehr seines Todestages, gesprochen in der Schlesischen Gesellschaft für Vaterländische Cultur. [Address in memory of J. von Mikulicz [1850-1905], delivered on the 25th anniversary of his death.] *Bruns' Beitr. Klin. Chir.* 150(1): 1-6. 1930.—The value of his scientific work in the fields of asepsis, Basedow's and Mikulicz's disease, gastric ulcer, cancer, etc. is emphasized.

12273. **LASSILA, VÄINÖ.** Gustaf Hjalmar Grönroos [1863-1929]. *Anat. Anzeiger* 70(13/17): 345-348. Portrait. 1930.—The most important work of Grönroos dealt with the developmental history of the tritons and the spotted salamander (*Salamandra maculosa*), and with comparative anatomy, e.g., the upper-arm musculature of anthropoid apes and man.

12274. **L[AUBMANN], A.** Robert Ridgway [1850-1929]. *Verhandl. Ornith. Ges. Bayern* 19(1): 211. 1930.—Distinguished American ornithologist.

12275. **L[AUBMANN], A. E. Lehn Schiöler** [?-1929]. *Verhandl. Ornith. Ges. Bayern* 19(1): 211. 1930.—Danish ornithologist.

12276. **LAUBMANN, A.** Dr. Josef Gengler [1863-1931]. *Verhandl. Ornith. Ges. Bayern* 19(2/3): 380-383. 1931.—Well-known Bavarian physician and ornithologist, author of important papers on the birds of Bavaria and the Balkans.

12277. **LECOMTE, H., and J. LEANDRI.** L'oeuvre botanique de Lamarck. *Arch. Mus. Hist. Nat.* [*Paris*] 6: 31-44. 2 pl. 1930.—An account of the "Flore française," the botanical part of the "Encyclopédie methodique," the "Illustration des genres," and Lamarck's herbarium.

12278. **LENZ, FRITZ.** Alfred Ploetz. *Arch. Rass.- u. Ges.-Biol.* 24: vii-xv. 1930.—Life of the German eugenist, introducing a "Festschrift" volume of the Archiv on his 70th birthday.

12279. **LEROUX, DÉSIRÉ. A.-Th. Schloesing (1856-1930), sa vie et son oeuvre.** *Ann. Agron.* [*Paris*] 1(1): 3-10. Portrait. 1931.—Life and work of this European investigator in plant physiology and chemistry, general physiology, agricultural bacteriology, and soil science, with 4-page bibliography.

12280. **LEVI, G. Alexander Maximow.** *Arch. di Sci. Biol.* 13(1/2): 260-261. 1929.—Obituary note.

12281. **LIEB, H. Fritz Pregl (1869-1930).** *Ber. Deutsch. Chem. Ges.* 64(6): 113-118. 1 pl. 1931.—Obituary and brief biography of this German scientist, noted for his work in the field of medical chemistry.

12282. **LINCOLN, FREDERICK C. In memoriam—Edwin Carter.** *Condor* 31(5): 196-200. 2 fig. 1929.

12283. **LINDQUIST, BERTIL. August Stensson [1853-1929].** *Bot. Notiser* 1930(3/4): 314-315. Portrait. 1930.—An amateur botanist of note, especially occupied with the Kullaberg region of southern Sweden.

12284. **LOCATELLI, PIERA. Aldo Perroncito.** *Arch. di Sci. Biol.* 13(3/4): 502-508. 1929.—Obituary.

12285. **L[UCAS], A. H. S. Joseph Henry Maiden, 1859-1925.** *Proc. Linnean Soc. N. S. Wales* 55(4): 355-370. Portrait. 1930.—Director of the Sydney Botanic Gardens, government botanist, and creator of the National Herbarium of N. S. Wales was author of numerous important works on Australian botany, including a monograph of *Eucalyptus* and "Forest flora of New South Wales." A list of about 180 papers is appended.

12286. **LUCAS, A. H. S. Joseph James Fletcher, an idealist secretary [1850-1926].** *Proc. Linnean Soc. N. S. Wales* 55(5): 738-750. 1930.—This biography and appreciation of the distinguished Australian zoologist, written by a close personal friend, deals particularly with his personality and scientific accomplishments and presents numerous anecdotes and excerpts from his writings.

12287. **LUCAS, W. J. G. Trevor Lyle, 1873-1930.** *Entomologist* [*London*] 63(809): 239-240. 1930.—British zoologist and entomologist, specialist on British Braconidae.

12288. **LUTZ, JOHN C. Ernest Baylis [1877-1930].** *Ent. News* 41(9): 285-286. Portrait. 1930.—An amateur coleopterist.

12289. **M., A. H[endrik] A[driaan] Vermeulen.** *Ned.-Indische Blad Diergeneesk.* 43(1): 1-5. Portrait. 1931.—Brief biographical sketch on the occasion of the celebration of the completion of 25 yrs. as prof. of anatomy at the Rijks-Veeartsenijschool, Utrecht.

12290. **M., H. Wilhelm Wehrhahn [1857-1926].** *Jahresber. Naturhist. Ges. Hannover* 1924/25-1928/29 No. 75. v-vii. 1930.—German bryologist.

12291. **MAINS, E. B. Calvin Henry Kauffman [1869-1931].** *Science* 74(1914): 335. 1931.—Brief sketch of the life and work of this American teacher and student of fungi, algae, mosses, ferns, and forest pathology.

12292. **MALMESTRÖM, ELIS. Linnés Självbiografier.** [English summary.] *Svenska Linné-Sällskapets Årsskr.* 14: 17-30. 1 pl., 1 fig. 1931.—A special study was made of the autobiographies of Linnaeus with a view to preparing a critical edition. This paper includes a list of the various editions in the Univ. Library at Upsala, the British Museum, and the Linnean Society, with notes and some facsimiles.

12293. **MARKUS, R. Prof. Dr. rer. for. h. c. E. Ostvalds.** [In Latvian.] *Mežsaimniecības rakstu krājums* [*Riga*] 8: 5-13. Portrait. 1930.—An account of the career of the distinguished Latvian forester.

12294. **MARTINOTTI, GIOVANNI. Il Malpighi nello studio di Bologna.** [Malpighi's work in Bologna.] *Rass. Il Comune Bologna* 14: 1-16. 5 illus. 1928.—An account is given of the hostility which the Italian anatomist had to endure from his fellow-townsmen during most of his life.—*P. Popenoe.*

12295. **MEYER, ADOLPH. Constantin von Monakow (1853-1930).** *Arch. Neurol. & Psych.* 25(2): 389-390. 1931.—Von Monakow was neurobiologist rather than neurophysiologist. To the neurologic laboratories of Huguenin, Forel, and Honegger, von Monakow added another personal center of work, devoted extensively to the study of secondary degeneration of human cerebral lesions, with particular attention to the cortex-dependent parts, in vigorous competition with Flechsig's myelinization methods and Hösel's claims. The study of the thalamus, then the study of the red nucleus and the development of the publication of the "Arbeiten" of his laboratory laid the foundations for the "Schweizer Archiv für Neurologie und Psychiatrie."

12296. **MOHR, OTTO L. Christian Wriedt.** *Der Züchter* 1(9): 278-279. 1 fig. 1929.—Obituary.

12297. **MÖLLER, HJ. Sigfrid Olof Medelius [1878-1930].** *Bot. Notiser* 1930(6): 510-512. Portrait. 1930.—A survey of the life and work of this Swedish bryologist.

12298. **N., E. G. William Narramore (1850-1930).** *Proc. Linnean Soc. London* No. 142. 213-214. 1929/30 (1931).—This English biologist was president of several scientific societies in Liverpool.

12299. **N., F. J. Mr. David Davies [1870 ?-1931].** *Nature* [*London*] 128(3227): 403. 1931.—Welsh paleobotanist, known especially for his contributions on the coal-measure fossils of Glamorgan.

12300. **N., M. Sir Ronald Ross.** *Jour. Trop. Med. & Hyg.* 33(23): 365-367. Portrait. 1930.—Brief account of Ross' discovery of malarial parasites in anopheline mosquitoes.

12301. **NEEDHAM, JAMES G. John Henry Comstock.** *Science* 73(1894): 409-410. 1931.—An appreciation of this

distinguished entomologist (1849-1931), long associated with Cornell Univ.

12302. [NEKRASOV, A. D.] НЕКРАСОВ, А. Д. Проф. Н. В. Богоявленский. [Prof. N. V. Bogoĭavlenskiĭ, 1870-1930.] Записки Биологической Станции Общества Любителей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии (*Bull. Sta. Biol. Soc. Amis Sci. Nat., Anthrop. et Ethnogr. à Bolchevo, Gouv. Moscou*) 4: 7-17. Portrait. 1930.—Prof. Bogoĭavlenskiĭ occupied for many yrs. the chair of histology and embryology in the Univ. of Moscow. He was the founder of the Bolshevo Biol. Sta. He was primarily interested in asexual reproduction. His general interests were in protistology, evolution, embryology, and ecology.

12303. NICOL, J. W. Robert Grierson. *Glasgow Nat.* 9: 62-63. 1919/1930 (1931).—An amateur botanist, who died in 1930, known especially for his work on the alien flora of the Clyde area.

12304. NIEZABITOWSKI, LUBIEZ. Prof. Dr. Józef Rostafiński [? -1928]. *Roczniki Nauk i Leśnych* (*Polish Agric. & Forest Ann.*) 20(1): 116-119. Portrait. 1928.—Polish botanist.

12305. OLIVER, F. W. The Hooker Memorial at Halesworth. *Sci. Monthly* 32(5): 470-473. 2 portraits, 2 fig. 1931.—Reference is made to the life and work of Sir William Jackson Hooker (1785-1865) and his son, Sir Joseph Dalton Hooker (1817-1911), distinguished British botanists.

12306. OSBORN, T. G. B. Walter Gill [1852?-1929]. *Proc. Linnean Soc. London* No. 142. 196-197. 1929/30 (1931).—Botanist and former Conservator of Forests in So. Australia.

12307. P., F. B. Prof. W. E. Dixon, O. B. E., F. R. S. [1871-1931]. *Nature* [*London*] 128(3227): 401-402. 1931.—British pharmacologist.

12308. P., G. F. Dr. A. T. MacConkey [1861-1931]. *Nature* [*London*] 127(3217): 980-981. 1931.—This English bacteriologist, originator of the MacConkey bile-salt medium for culturing bacilli, did much work on serums and antitoxins.

12309. PADDOCK, WENDELL. Frederick Grover Charles. *Proc. Amèr. Soc. Hort. Sci.* 27: 575. Portrait. 1930 (1931).—Obituary notice of this American horticulturist (1885-1930).

12310. PANZER, WERNER. Emilie Snethlage [1860?-1929]. *Verhandl. Ornith. Ges. Bayern* 19(1): 212-214. 1930.—Distinguished German ornithologist, former director of the Museu Goeldi at Pará, known especially for her extensive investigations of the birds of Brazil.

12311. PARKER, R. L. Ferdinand F. Crevecoeur [1862-1931]. *Ent. News* 42(7): 212. 1931.—Amateur entomologist and naturalist of Kansas.

12312. PAULSEN, OVE. C. H. Ostenfeld, 1873-1931. *Bot. Tidsskr.* [*Copenhagen*] 41(4): 269-282. Portrait. 1931.—Appreciative account of the life and work of Denmark's leading botanist, author of about 200 papers, of which brief review (in 5 groups) is given.

12313. PATERSON, JOHN. Richard M'Kay [1840?-1920 ?]. *Glasgow Nat.* 9: 53-54. 1919/1930 (1931).—Scotch botanist, author of several lists of plants of the Clyde area.

12314. PAUTRIER, L.-M. L'oeuvre de Raimond Sabouraud. *Česká Dermatol.* 11(1): 5-25. 1930.—Sabouraud, the great French dermatologist, is an authority on tineas. He separated the trichophyta (large-spored fungi) from the microspora, and discovered 19 sp. of the former before 1893.

12315. PEARSON, KARL. The life, letters and labours of Francis Galton. Vol. 3. (In 2 parts.) 673p. 59 pl. Cambridge Univ. Press: Cambridge, 1930. Pr. 69s.

12316. PENSA, A. Luigi Sala [1863-1930]. *Monitore Zool. Italiano* 41(7): 184-194. Portrait. 1930.—Prof. of human anatomy at the Univ. of Pavia, Sala was a follower of Golgi. He wrote important works on the microscopic anatomy of the nervous system, and on embryology and cytology.

12317. PERCIVAL, JOHN. Martin Hubert Foquett Sutton [1875-1929?]. *Proc. Linnean Soc. London* No. 142. 223-224. 1929/30 (1931).—English horticulturist.

12318. PETERSON, O. A. Earl Douglass. *Science* 73 (1897): 486-487. 1931.—Obituary notice and brief life sketch of this paleontologist (1862-1931).

12319. PFEIFER, R. A. Paul Flechsig. Sein Leben und sein Werken [1847-1929]. *Schweizer Arch. Neurol. u. Psych.* 26(2): 258-264. 1930.—Flechsig's greatest contribution to science was his theory of the process of development of the central nervous system.

12320. POLE EVANS, I. B. Alice Marguerite Pegler (1861-1929). *Proc. Linnean Soc. London* No. 142. 215-216. 1929/30 (1931).—South African botanist.

12321. [POULTON], E. B., and N. D. R[ILEY]. Prof. Edwin G. R. Waters [1890-1930]. *Entomologist* [*London*] 63(806): 167-168. 1930.—This prof. of romance languages at Oxford was a student of Microlepidoptera, on which he contributed some 40 papers and notes.

12322. PRIESTLEY, J. H. Harold W. T. Wager (1862-1930). *Proc. Linnean Soc. London* No. 142. 224-226. 1929/30 (1931).—British botanist.

12323. PÜTTER, E. Ferdinand Blumenthal, ärztlicher Leiter der Fürsorgestellen für Krebskranke und -verdächtige in Berlin. [Ferdinand Blumenthal, Medical Director of the Berlin Cancer Dispensary]. *Zeitschr. Krebsforsch.* 32(1/2): 5-9. 1930.

12324. PUTZU, FRANCESCO. Roberto Binaghi (1866-1931). *Arch. Ital. Chir.* 28(6): 661-664. Portrait. 1931.—Binaghi, a brilliant surgeon, published on opsonic index of malignant tumors, the bactericidal action of pus, the protective action of the peritoneum in infections of intestinal origin, etc.

12325. R., J. Mr. J. G. Millais [1865-1931]. *Nature* [*London*] 127(3206): 563. 1931.—A distinguished zoologist and artist, author of standard works on British ducks and mammals.

12327. R., R. Lieut.-Col. Sir Charles Bedford [1866-1931]. *Nature* [*London*] 128(3222): 178-179. 1931.—Scotch physician, for yrs. in the Indian Medical Service, author of works on the composition and physiological effects of alcoholic liquors, and books on poisoning, enteric fever, and elementary hygiene in India.

12328. RAMSBOTTOM, J. David Paul (1845-1929). *Proc. Linnean Soc. London* No. 142. 214. 1929/30 (1931).—Scotch clergyman and mycologist, president of several botanical and mycological societies.

12329. RAYLEIGH, R. J. S. Lord Balfour in relation to science. viii+46p. Illus. Univ. Press: Cambridge, [1931]. Pr. $1.00.

12330. REICHENSPERGER, A. Erich Wasmann S. J.† *Mitteil. Deutsch. Ent. Ges.* 2(4): 50-54. 1931.—A review of his entomological work.

12331. REITH, J. F. Gaspard Adolphe Chatin [1813-1901]. *Pharmaceut. Weekblad* 68(22): 501-513. Portrait. 1931.—Biographical account and bibliography of this French biologist and chemist.

12332. RENDLE, A. B. Richard Hind Cambage, C. B. E. [1859?-1928]. *Proc. Linnean Soc. London* No. 142. 189-190. 1929/30 (1931).—President of the Australian Assoc. Adv. Sci. and a frequent contributor of papers on the flora of New So. Wales.

12333. RENDLE, A. B. Obituary: Richard Vowell Sherring (1847-1931). *Jour. Bot.* 69(820): 104-105. 1931.—Sherring was known for his collections, especially of ferns, in the West Indies and British Guiana.

12334. RENDLE, A. B. Spencer Le Marchant Moore (1851-1931). *Jour. Bot.* 69(821): 134-136. Portrait. 1931.—Well known English systematic botanist.

12335. RENDLE, A. B. Obituary. Dr. Rudolf Marloth. *Jour. Bot.* 69(822): 172-173. 1931.—An appreciation of this well known So. African Botanist.

12336. RENSCH, BERNARD. Johannes Thiele zum 70. Geburtstage. *Arch. Mollusk.* 62(6): 201-209. 1 pl. 1930.—Contains list of malacological papers.

12337. R[ILEY], N. D. Dr. James Waterston [1879-1930]. *Entomologist* [*London*] 63(805): 143-144. 1930.

—Minister, entomologist, authority on British Mallophaga and Chalcidae.

12338. **RITCHIE, JAMES.** Emeritus Professor W. C. M'Intosh, M.D., LL.D., D.Sc., F.R.S., 1839-1931. *Scottish Nat.* 1931 (190) : 97-100. 1931.—This distinguished Scotch zoologist, long at the Univ. of St. Andrews, was known especially for his work on the worms of the "Challenger" and other expeditions and for his investigations of fishery problems.

12339. **ROQUETTE-PINTO, E.** Gloria sem Rumor. [Silent glory.] *Bol. Mus. Nacion.* [*Rio de Janeiro*] 5 (2) : 1-24. Map. 9 pl. 1929.—Johann Friederich Theodor Mueller (Fritz Mueller) whom Darwin called the "Prince of observers," was born in Erfurt, Germany, in 1822, studied biology and mathematics at the Univ. of Berlin, graduated in 1844, and came to Brazil in 1852 with Dr. Blumenau, who founded the first German settlement in southern Brazil. During 1857-1867 he taught mathematics in Desterro; 1876-1891 he was naturalist for the Museu Nacional of Rio de Janeiro; and in 1897 he died. He published 248 monographs and papers on anatomic, physiologic, and ecologic questions, specially invertebrate and floral biology.—*B. Lutz.*

12340. **ROSS, A. John Paterson** [1860-1928?]. *Glasgow Nat.* 9 : 59-60. 1919/1930 (1931).—Scotch naturalist.

12341. **ROSZKOWSKI, WACLAW. Wladyslaw Polinski.** *Arch. Molluskenk.* 63 (2) : 72-80. 1931.—Life and publications of this Polish malacologist (1885-1930).

12342. **S., J. A. Arthur William Mera.** *London Naturalist* 1930 : 37-38. Portrait. 1931.—Brief life sketch of this British lepidopterist, who died in 1930 at the age of 81.

12343. **SCHAUS, WILLIAM, AUGUST BUSCK, and CARL HEINRICH. William Barnes** [1860-1930]. *Proc. Ent. Soc. Washington* 32 (6) : 114. Portrait. 1930.—American surgeon, lepidopterist, and public benefactor.

12344. **SCHLESCH, H. Bernard Barham Woodward.** *Arch. Molluskenk.* 63 (2) : 82-83. 1931.—English malacologist (1853-1930).

12345. **SCHLESCH, HANS. Nécrologie. Hermann von Ihering** (1850-1930). *Jour. Conchyliol.* 74 (1) : 81-88. 1930.—Biography and list of malacological papers.

12346. **SCHLESCH, HANS. Nachruf auf Dr. phil. Anders Cornelius Johansen** [1867-1931]. *Folia Zool. et Hydrobiol.* [*Riga*] 3 (1) : 172-173. 1931.—Danish ichthyologist and malacologist.

12347. **SCHUCHERT, CHARLES. James Perrin Smith.** 1864-1931. *Amer. Jour. Sci.* 22 (127) : 95. 1931.—American paleontologist, prof. of paleontology at Stanford Univ. 1892-1930.

12348. **SCHULTZE, FRIEDRICH. Salomon Eberhard Henschen** [1847-1930]. *Deutsche Zeitschr. Nervenheilk.* 120 (3/4) : 111-116. 1931.—Henschen's principal work was on the symptomatology and pathology of the brain and on the physiology of the senses, particularly the cells of light and color sense.

12349. **SEITZ, A. Eduard Study** [1862-1930]. *Ent. Rundschau* 47 (3) : 9. 1930.—Mathematician, biometrician, and prof. at the Univ. of Bonn.

12350. **S[EIT]S, A. Karl Frings** [1873-1931]. *Ent. Rundschau* 48 (16) : 161. 1931.—German entomologist.

12351. **SHEAR, C. L. Franklin Sumner Earle, 1856-1929.** *Phytopath.* 20 (12) : 923-929. Portrait. 1930.

12352. **S[HELDON], W. G. Selwyn Image.** *Entomologist* [*London*] 63 (809) : 238-239. 1930.—British artist, poet, "littérateur," lepidopterist, and naturalist, who died 1930 in his 82nd year.

12353. **[SHELIUZHKO, L. A.]** ШЕЛЮЖКО, Л. А. Памяти Леонида Константиновича Круликовского. (К десятилетию кончины.) **[In memory of Leonid Konstantin Krulikovskii (1864-1920) on the 10th anniversary of his death.]** Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 24 (3/4) : 236-245. Portrait. 1930.—A review of the life and work of this Russian zoologist, with a list of his 122 publications, chiefly on Lepidoptera.

12354. **SIMPSON, W. J. Waldemar Haffkine, C.I.E.** [1860-1930]. *Brit. Med. Jour.* 2 (3644) : 801-802. Portrait. 1930.—Haffkine produced first a cholera and later a plague prophylactic vaccine which are now effectively used wherever there is an outbreak of these diseases.

12355. **S[ÖDERBERG], E. Arvid Lorentz Segerström,** 1865-1930. *Svensk Bot. Tidskr.* 24 (4) : 573-574. Portrait. 1930.—A brief note of appreciation of this Swedish amateur botanist, with a list of his publications.

12356. **SPRAGUE, T. A. William Richard Carles** (1848-1929). *Proc. Linnean Soc. London No.* 142. 190-191. 1929/30 (1931).—A member of the British consular service, who made important collections of Chinese and Korean plants.

12357. **STANDLEY, PAUL C. Ignatius Urban.** *Science* 73 (1888) : 254-255. 1931.—Obituary notice and brief life sketch of this sytematic botanist [1848-1931] whose special field was the flora of Brazil and the West Indies.

12358. **STANDLEY, PAUL C. Erik L. Ekman.** *Science* 73 (1888) : 255-256. 1931.—Obituary notice and brief life sketch of this student of the Antillean flora, who died Jan. 15, 1931, at the age of 46.

12359. **STAPF, OTTO. Obituary: Ignatz Urban** (1848-1931). *Jour. Bot.* 69 (820) : 105-106. 1931.—This famous German botanist was Unter-Direktor of the Berlin Botanic Garden for many yrs. and the author of "Symbolae Antillanae" amongst other publications.

12360. **STELLWAAG, F. Karl Escherich zum sechzigsten Geburtstag.** *Zeitschr. Angewandte Ent.* 18 (3) : 423-439. Portrait, also *Anzeiger Schädlingsk.* 7 (9) : 97-100. 1931.—Appreciation of life and work of this German entomologist, whose chief work has been on forest insects, with a bibliography of 178 titles—the first article in a 743p. Festschrift.

12361. **STRAND, EMBRIK. Dalla Torre** [1850-1928]. *Internat. Ent. Zeitschr.* 22 (37/38) : 337-340. Portrait. 1929.—An appreciative account of the life and work of this distinguished scientist, well known, not only by entomologists, but also by botanists and general zoologists.

12362. **[STREL'NIKOV, I. D.]** СТРЕЛЬНИКОВ, И. Д. П. П. Сушкин (1868-1928). **[P. P. Sushkin (1868-1928).]** Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft*) 16 (1/2) : 5-9. Portrait. 1930.—This great ornithologist made important contributions in the field of bird morphology, especially osteology, classification, and geographic distribution of palearctic birds, and morphology and ecology of amphibians and reptiles. He was the director of the zoological department of the Lesshaft Sci. Inst. and the secretary of the physico-mathematical division of the Acad. Sci., U. S. S. R.—*S. A. Corson.*

12363. **STURANY, RUDOLF. Dr. Alfred Oberwimmer.** *Arch. Molluskenk.* 63 (2) : 80-81. 1931.—Life and publications of this Austrian malacologist (and physician).

12364. **SUGIURA, KANEMATSU. Katsusaburo Yamagiwa** [1865-1930]. *Jour. Cancer Res.* 14 (4) : 568-569. Portrait. 1930.—Dr. Yamagiwa taught pathology in the Tokyo Imperial Univ. for 40 yrs., writing largely on the etiology of cancer. He was decorated by the Imperial Acad. of Japan for his production of coal-tar cancer in 1915.

12365. **SWEZEY, O. H., and D. T. FULLAWAY. Walter M. Giffard** [1856-1929]. **A biographical sketch.** *Proc. Hawaiian Ent. Soc.* 7 (3) : 347-351. Portrait. 1931.—Entomologist, resident of Hawaii, student of its insect fauna.

12366. **SWEZEY, O. H., and F. X. WILLIAMS. The work of Dr. Frederick A. G. Muir in the biological control of sugar cane insects in Hawaii.** *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 6 (3) : 2-10. 1931.—Muir was entomologist of the Hawaiian Sugar Planters' Association from 1905 to his death in 1931. His most important work was in the importation of beneficial insects into Hawaii, including the leaf hopper parasites *Elenchus tenuicornis* and *Haplogonatopus vitiensis* from Fiji, and *Pseudogonatopus hospes* from China; a tachinid fly parasite of the cane borer, *Rhabdocnemis obscura*, from Amboina; *Scolia manilae*, an enemy of *Anomala orientalis*, from Luzon; the leafhopper egg parasite *Ootetra-*

stichus formosanus from Formosa; and the predatory bug, *Cytorhinus mundulus*, enemy of leafhopper eggs, from Queensland. A bibliography of his writings is given, listing 143 titles.

12367. S[YKES], E. R. Obituary. James Cosmo Melvill, 1845-1929. *Proc. Malacol. Soc. London* 19(2): 59-61. 1 pl. 1930.

12368. SYLVEN, NILS. Hans Tedin [1860-1930]. *Bot. Notiser* 1930(3/4): 316-318. Portrait. 1930.—Associated with experimental gardens at Svalöf (Sweden) since 1891, he provided much of the background that allowed Johannsen to formulate his theory of "pure lines" in 1903. Shortly after the publication of Mendel's observations, Tedin worked extensively on the genetics of *Pisum*, and was instrumental in developing the well-known Svalöf strains of wheat. He also wrote extensively in a popular manner on practical methods of agriculture.—*H. K. Svenson.*

12369. SYLVEN, NILS. Tycho Vestergren [1875-1930]. *Bot. Notiser* 1930(3/4): 319-321. Portrait. 1930.—Vestergren's earliest published work was on mycology; the fungi of Gotland, Sweden, and exsiccati of micromycetes. He was associated with T. M. Fries, Lagerheim, and Skottsberg. With Skottsberg he published on the flora of Ösel. Later he was occupied with ecology and systematics of the phanerogams upon both of which he published extensively. He was also editor of Botaniska Tidskrift (1908-1917) and a well-known teacher of botany.—*H. K. Svenson.*

12370. SZILY, A. von. Theodor Axenfeld [1867-1930]. *Deutsche Med. Wochenschr.* 56(36): 1543-1544. Portrait. 1930.—Axenfeld's scientific work dealt with almost all provinces of ophthalmology. He was the author of "Bakteriologie in der Augenheilkunde" and the editor of "Lehrbuch und Atlas der Augenheilkunde."

12371. T., G. Thomas Alexander Barns [1881-1930]. *Entomologist* [*London*] 63(804): 119-120. 1930.—English naturalist, geographer, and sportsman, author of 5 books on Africa.

12372. TANNER, VASCO M. Thomas Utting Spalding 1866-1929. *Ent. News* 40(10): 343-344. 1929.—Noted entomological collector, especially of Utah insects.

12373. T[ANSLEY], A. G. Prof. C. E. Moss [1870-1930]. *Nature* [*London*] 127(3194): 98-99. 1931.—English botanist; 1907-1917 lecturer of systematic botany at Cambridge, 1917-1930 prof. of botany at Johannesburg.

12374. THOMSON, G. M. Charles Chilton (1860-1929). *Proc. Linnean Soc. London No.* 142. 191-195. 1929/30(1931).—This New Zealand educator and zoologist, prof. of biology and rector of Canterbury College, made notable contributions to the study of Crustacea (especially Amphipoda and Isopoda).

12375. TICEHURST, N. F. Michael John Nicoll [1880-1925]. *British Birds* 19(9): 206-208. 1926.—A well-known British ornithologist, author of "Three voyages of a naturalist" and important papers on Egyptian birds, and former director of the zoological gardens at Giza, Egypt.

12376. TRACY, HENRY CHESTER. American naturists. viii+282p. E. P. Dutton & Co.: New York, 1930. Pr. $3.90.—Biographical sketches are given of representative naturalists stressing the basic philosophies underlying their writings and their influences on the development of American nature thought. Among those included are Roosevelt, Audubon, Carl Akeley, Roy Chapman Andrews, Burroughs, Muir, Hornaday, Thoreau, Seton, Beebe, John and William Bartram, Edward Howe Forbush, Mary Austin, Olive Thorne Miller, Alexander Wilson, Frank M. Chapman, William Leon Dawson, Walter Prichard Eaton, Liberty Hyde Bailey, and Maurice Thompson.—*M. E. Mathias.*

12377. TRELEASE, SAM F. The work of Dr. Burton Livingston as permanent secretary of the American Association. *Sci. Month.* 32(3): 281-283. Portrait. 1931.

12378. U., H. C. Engelke [1848-1926]. *Jahresber. Naturhist. Ges. Hannover*, 1924/25-1928/29 No. 75. iii-iv. 1930.—German mycologist.

12379. U[GGULA], A. Ett spanskt Linnéporträtt. [With English summary.] *Svenska Linné-Sällskapets Årsskr.* 14: 160-161. Portrait. 1931.—A note on a Spanish portrait of Linnaeus.

12380. V. Úmrtí skutečného člena Dr. Fr. Rambouska [1886-1931]. *Věstník Českoslov. Akad. Zem.* 7(8): 1931.—Biography and appreciation of this Czech entomologist, interested especially in chafers and insects which attack sugar beets.

12381. VALENTE, PULIDO. Prof. Annibal Bettencourt, 1868-1930. *Arq. Inst. Bact. Camara Pestana* 6(2): i-x. Portrait. 1930.—Biographical sketch and bibliography of this Portuguese medical bacteriologist and parasitologist.

12382. VAN DUZEE, E. P. American entomology loses a distinguished patron [?-1930]. *Pan-Pacific Ent.* 7(1): 16. 1930.—Obituary note on Dr. William Barnes, lepidopterist, whose private collection is the largest and best studied collection of No. American forms, comprising 500,000 specimens with 1915 holotypes.

12383. VERDOORN, FR. Max Fleischer [1861-1930]. *Ann. Bryologici* 4: 113-122. Portrait, 3 fig. 1931.—German bryologist, known chiefly for his work on the mosses of Java.

12384. VINALL, H. N. Russell A. Oakley [1880-1931]. *Science* 74(1912): 195. 1931.—Brief life sketch of this agronomist of the U. S. Dept. of Agric., whose research activities were concerned chiefly with alfalfa and turf grasses.

12385. VORBRODT, WŁADYSŁAW. Ś. p. Emil Godlewski. *Roczniki Nauk Rolniczych i Leśnych* 24(3): 329-372. 1930.—Biography and bibliography of this Polish botanist.

12386. W., A. S. Dr. Henry M. Ami [1858?-1931]. *Nature* [*London*] 127(3195): 136. 1931.—This well-known Canadian geologist and paleontologist of Swiss origin, made valuable contributions to the knowledge of the Palaeozoic fossils of eastern Canada. He also founded and directed the Canadian School of Prehistory in France.

12387. W., A. S. Dr. Louis Dollo [1857-1931]. *Nature* [*London*] 128(3219): 57. 1931.—A Belgian vertebrate paleontologist, with the Royal Museum of Nat. Hist. at Brussels 1882-1925, whose most important works are on fossil reptiles and fishes.

12388. W., A. S. Sir William Boyd Dawkins—1837-1929. *Proc. Roy. Soc.* [*London*] *B* 107(754): xxiii-xxvi. Portrait. 1931.—This British geologist, palaeontologist, and anthropologist was known chiefly for numerous contributions on early man and associated mammals in western Europe. From 1874 until his retirement in 1909, he was prof. of geology at the Univ. of Manchester.

12389. W., C. M. Sir Andrew Balfour, C.B., K.C.M.G. [1873-1931]. *Nature* [*London*] 127(3199): 279-281. 1931.—Once director of the Wellcome Tropical Res. Lab. in Khartoum, later sanitary adviser to the Sudan Govt., then organizer of the Wellcome Bureau of Sci. Res. in London, and finally organizer of the London School of Hygiene and Trop. Med.

12390. W., F. E. Charles Edward Moss (1870-1930). *North Western Naturalist* 6(1): 34-36. 1931.—British botanist.

12391. W., T. S. "Cooper's fascia." *Amer. Jour. Surg.* 11(3): 563. Portrait. 1931.—Sketch of Sir Astley Paston Cooper [1768-1841], surgeon and anatomist, remembered as the eponym of "Cooper's fascia," "Cooper's glands," "Cooper's hernia," and other structures.

12392. W., T. S. "Roentgen Ray." *Amer. Jour. Surg.* 12(3): 550. Portrait. 1931.—Sketch of the life of Wilhelm Conrad Roentgen [1845-1923], discoverer of x-rays.

12393. WAGER, H. William Norwood Cheesman (1837-1925). *Jour. Bot.* [*London*] 64: 22-23. 1926.—Brief appreciation of the British naturalist, especially interested in Mycetozoa and Fungi, with bibliography of his publications.

12394. WARHURST, ETHEL. Annie Lee. *North Western Naturalist* 6(1): 33-34. 1931.—Brief biographical sketch of this British teacher and botanist who died in 1930.

12395. WEIN, K. F. Ehrhart und J. A. Murray.

Zwei Typen der Botaniker der Aufklärungskeit. [With English summary.] *Svenska Linné-Sällskapets Årsskr.* 14: 73-84. 2 fig. 1931.—Ehrhart was an independent critical observer, while Murray looked upon deviations from the system of Linnaeus "very nearly as a capital crime."

12396. **WEISS, F. E. James Cosmo Melvill (1845-1929).** *No. Western Nat.* [*Scotland*] (3): 150-156. Portrait. 1930.—Biographical sketch of this British botanist, with bibliography.

12397. **WEISS, F. E. James Cosmo Melvill (1845-1929).** *Proc. Linnean Soc. London* 142. 211-213. 1929/30 (1931).—An English botanist and malacologist, known particularly for his publications on Mollusca.

12398. **WEISS, F. E. Wilfrid Robinson (1884-1930).** *Proc. Linnean Soc. London No.* 142. 216-218. 1929/30 (1931).—English botanist and mycologist, prof. of botany in Univ. College, Aberystwyth.

12399. **WEISS, HARRY B. John Southall's "Treatise of Buggs."** *Jour. New York Ent. Soc.* 39(2): 253-259. 2 pl. 1931.—Biographical data on John Southall, with quotations and illustrations of his little pamphlet (1730), which was in fact a clever advertisement.

12400. **WEISS, HARRY B., and GRACE M. ZIEGLER (foreword by L. O. HOWARD). Thomas Say, early American naturalist.** 262p. 27 illus. Chas. C. Thomas: Springfield, Ill., 1930. Pr. $5.—This biography of an early 19th century descriptive naturalist includes accounts of his southern and western trips, his life in Philadelphia and New Harmony, Ind., his work and collections, and many previously unpublished letters and facts.—*H. B. Weiss.*

12401. **WEISSENRIEDER, F. X. Prof. Dr. med. et med. vet. h. c. Theodor Oskar Rubeli, Bern, zu seinem 70. Geburtstage.** *Schweiz. Landw. Monatsh.* 9(5): 107-111. Portrait. 1931.—An appreciation of the director of the Vet.-Anat. Inst. of the Univ. of Bern, on his 70th birthday.

12402. **WHITE, C. T. Obituary. Herbert Bennett Williamson.** *Jour. Bot.* 69(822): 172. 1931.—A brief biographical sketch of this Australian botanist.

12403. **WILLIAMS, ROSWELL C. Frank Haimbach [1859-1930]. CARY, MARGARET M. Mr. Haimbach and his connection with the Germantown Entomological Club, 1926-1930.** *Ent. News* 41(9): 281-284. Portrait. 1930.—Philadelphia lepidopterist, author of several articles, the bibliography of which is given.

12404. **WOLCOTT, GEORGE N. Erik Ekman—an appreciation.** *Science* 73(1897): 487-488. 1931.—Botanist-collector.

12405. **ZIETZSCHMANN, OTTO. Heinrich Bittner [1897-1929]: Ein Nachruf.** *Anat. Anzeiger* 70(6/7): 113-116. Portrait. 1930.—Though only 32 yrs. old, Bittner had already published many works on the anatomy and histology of the lower vertebrates, and had prepared the volume on Trematodes for Schulze's "Biologie der Tiere Deutschlands."

12406. **ZWÖLFER, W. K. Escherich und die Forstentomologie. [Escherich's work in forest entomology.]** *Anzeiger Schädlingsk.* 7(9): 101-103. 1931.

12407. **ANONYMOUS. Abel Chapman [1852?-1929].** *The Bateleur* [*Nairobi*] 1(3): 103. 1929.—British naturalist.

12408. **ANONYMOUS. Robert Dunlop.** *Glasgow Nat.* 9: 54. 1919/1930(1931).—Scotch paleontologist, late curator of the Pittencrieff Glen Museum.

12409. **ANONYMOUS. Obituary. Erik L. Ekman (1883-1930).** *Jour. Bot.* 69(820): 106-107. 1931.—A Swedish botanist who made noteworthy contributions to the flora of the West Indies.

12410. **ANONYMOUS. Valère Haazen [? -1931].** *Bull. Féd. Internat. Pharmaceut.* 12(1): 12. Portrait. 1931.—President of the Internat. Pharmaceutic Federation of Belgium.

12411. **ANONYMOUS. Sidney Langford Hinde [1863-1930].** *The Bateleur* [*Nairobi*] 3(2): 53. 1931.—British ornithologist, who worked on African birds.

12412. **ANONYMOUS. Sir Frederick Jackson, K. C. M. G. [-1929].** *The Bateleur* [*Nairobi*] 1(3): 102-103. 1929.—A noted British colonial administrator and ornithologist; author of "Game Birds of Kenya and Uganda."

12413. **ANONYMOUS. Dr. R. C. Macfie [? -1931].** *Nature* [*London*] 128(3222): 179. 1931.—Scotch doctor and evolutionist.

12414. **ANONYMOUS. Miss Anne L. Massy [? -1931].** *Nature* [*London*] 128(3219): 59. 1931.—Irish zoologist.

12415. **ANONYMOUS. A. W. Mera [1849-1930].** *Entomologist* [*London*] 63(810): 264. 1930.—English entomologist.

12416. **ANONYMOUS. Mr. H. W. Monckton [1857-1931].** *Nature* [*London*] 127(3197): 206. 1931.—A British geologist and botanist, and vice-president of the Linnean Soc.

12417. **ANONYMOUS. Moartea profesorului C. S. Motaş. Comemorarea dela Facultatea de medicină veterinară dela 12 Martie 1931. [Commemoration of the death of C. S. Motaş, by the Faculty of Veterinary Medicine, Bucarest, March 12, 1931.]** *Arch. Vet.* [*Bucureşti*] 22(3/6): 77-95. Portrait. 1930.—Memorial to this Rumanian veterinary pathologist (1869-1931), with tributes in the form of letters from members of the profession.

12418. **ANONYMOUS. Obituary notice.** *Amer. Fern Jour.* 20(4): 158-159. 1930(1931).—Walter Deane, widely known ornithologist and botanist, one of the founders of the New England Bot. Club, member of botanical visiting committees at Harvard Univ., and author of many articles in scientific journals, died July 30, 1930, aged 83. His herbarium of 40,000 sheets was bequeathed to the Gray Herbarium and the New England Bot. Club.—*C. A. Weatherby.*

12419. **ANONYMOUS. Albert Schamelhout.** *Bull. Féd. Internat. Pharmaceut.* 12(1): 13. 1931.—Formerly secretary of the Internat. Pharm. Federation of Belgium and member of the committee on international pharmaceutical nomenclature.

12420. **ANONYMOUS. John Smith [1846?-1930].** *Glasgow Nat.* 9: 100. 1919/30(1931).—Distinguished Scotch geologist and naturalist.

12421. **ANONYMOUS. Mr. Henry James Waddington [1839?-1931].** *Nature* [*London*] 128(3222): 179. 1931.—One of the founders of the Nat. Sci. Soc. of Waddington, England, and a museum preparator of protozoa.

12422. **ANONYMOUS. Alexander Frederick Richmond Wollaston [1875-1930].** *The Bateleur* [*Nairobi*] 2(4): 1930.—British naturalist.

BIBLIOGRAPHY

12423. **ARTSCHWAGER, ERNST. Dictionary of biological equivalents. German-English.** 226p. 6 pl. Williams & Wilkins: Baltimore, 1930.—The book contains the English equivalents for over 15,000 German scientific terms frequently met with in biological papers. To increase the usefulness of the volume, 6 plates illustrating over 600 terms in botany and zoology have been appended. A list of German irregular verbs and common abbreviations, and a conversion table for English and metric units of wt. and measure are also included.—*E. Artschwager.*

12424. **EDWARDS, EVERETT E. George Washington and agriculture. A classified list of annotated references with an introductory note.** [Mimeographed.] *U. S. Dept. Agric. Library Bibl. Contrib.* 22. vi+25p. 1931.

12425. **HAUMAN, LUCIEN, y ALBERTO CASTELLANOS. Bibliografía botánica argentina especialmente para los años 1922-1926. [Bibliography of the botany of Argentina especially for 1922-1926.]** *Physis* (*Rev. Soc. Argentina Cien. Nat.*) 8(31): 436-467. 1927.—This is a 2nd supplement (the 1st appeared in Physis 5: 263-467. 1922) of the bibliographical work of F. Kurtz which appeared in 1913 and 1915. In it are compiled the works which refer to the Argentine flora under floristic, systematic, and phytogeographical headings, excluding works

on elementary instruction as well as applied, technical, therapeutical, agricultural works, etc.—*L. Hauman.*

12426. **KANAMARU, T.** Bibliography of the conchological classics in Japan. [In Japanese.] *The Venus* 1(1): 32-38. 1928; (2): 55-58; (3): 82-87; (4): 132-136. 1929.

12427. **PAX, FERDINAND ALBERT, und H. TISCHBIEREK.** Bibliographie der Schlesischen Zoologie. (Schlesische Bibliographie, Bd. 5.) xii + 520p. Verlag Priebatsch: Breslau, 1930. Pr. 18 M.

12428. **PITT, ERNEST R.** (editor). Catalogue of the scientific and technical periodicals in the libraries of Australia. 120Sp. H. J. Green: Melbourne, 1930. Pr. 10s.

12429. **ANONYMOUS.** A list of the existing entomological societies in the United States and Canada. *Ent. News* 42(5): 126-130. 1931.—A list of 22 societies with addresses, officers, membership data, and official publications.

12430. **ANONYMOUS.** List of publications on Indian entomology, 1929. *Imp. Inst. Agric. Res. Pusa Bull.* 207. 1-36. 1931.

EVOLUTION

(See also in B. A. 6(3): Entries 6054, 6056, 6068, 6075, 6117, 6163, 6190, 7960, 8059, 8210, 8235, 8330, 8337, 9041; 6(4): 9068, 9148, 9170, 9174, 9180, 11247, 11264, 11327, 11347, 11352, 11407, 11593, 11873; and in this issue 12075, 12092, 12508, 12557, 12627, 12947, 14236, 14257, 14274, 14303, 14367, 14565)

12431. **ANTHONY, R.** Doit-on regarder l'évolution organique comme étant une marche dans le sens du progrès? *L'Anthropologie* 40(3): 259-265. 1930.—The idea queried in the title implies an indispensable perfection as the starting point of comparisons, and a biological hierarchy based on this idea. Citations from authorities on evolution show that this continuous advance toward perfection is what they mean by progressive evolution. But it is only with regard to predetermined conditions that one organism can be called superior or inferior to another; and it is because we cannot attain a point of view detached from ourselves that we regard the human quality of intellectuality as superior to any other animal qualities with which we compare it, and ourselves, in the absolute point of view, as superior to other animals. Moreover, continuous progress implies a fixed end to evolution and the existence of an inherent will directing it toward that end,—a theological idea. Increase in complexity is confused with progress but has no relation to it. The succession of zoological classes in geologic time is the common argument for progressive evolution but nothing authorizes us to consider any one of these classes as more perfect than another. Special examples are given to show that these classes are not in all ways improved in the order of their appearance. The author's conclusion is that the course of evolution is not a progress in the absolute sense but is a progressive specialization, which in the end leads to extinction. If the idea of biological evolution be incontestably the result of natural causes, one cannot rationally admit it to be an advance in progress.—*W. K. Gregory.*

12432. **BRADLEY, JOHN HODGDON, Jr.** The parade of the living. 308p. (Howard-McCann, Inc.: New York, 1930. Price $3.00.—This is a presentation of the facts and theories of the paleontological origin and evolution of life. The following topics are discussed: spontaneous generation of life; the evidence for fossil bacteria and blue-green algae, the earliest forms of life in the Archean and Algonkian eras; the earliest of fishes; the evolution of algae and sporophytes; the effects of geological changes upon the rate and character of evolution; the dinosaurs; the evolution of the Cephalopoda and of the Reptilia; the flying reptiles and the origin of birds; the origin of mammals and of flowering plants; the evolution of horses, elephants, carnivores, and primates; primitive men; palaeopathology; the evolution of sexuality; and degeneration.—*C. A. Kofoid.*

12433. **CAULLERY, MAURICE.** Génétique et évolution. *Rev. Gén. Sci. Pures et Appl.* 41(20): 567-573. 1930.—The mechanism of evolution seems farther from solution than a generation ago. The work of Weismann and Johannsen has emphasized the very minor rôle of environment in evolution. From accumulated genetical data (*Drosophila, Oenothera,* etc.) mutations appear to be the principal source of evolutionary changes. However, mutation and genetical laws are insufficient to account for evolution because: (1) It is doubtful whether mutations constitute new development in the descent of species as they are modifications of already existing genes. (2) Mutations do not result in physiologically distinct populations, the newly isolated forms being completely inter-fertile. (3) Mutations will not adequately explain adaptation since they occur fortuitously.—*G. F. Sprague.*

12434. **COLTON, HAROLD S.** A Lamarckian experiment. *Amer. Naturalist* 65(699): 343-350. 1 fig. 1931.—An experiment to test the Lamarckian factor in evolution ran 5 yrs. From albino rats a few days after birth, the fore limbs were amputated, while a portion of each litter was kept for control. The rats were bred for 6 generations. When the adult rats were killed, the following measurements were made: Body length, total length, skull length, skull breadth, femur length, tibia length, tibia breadth, and mesial bend of the fibula. Although change of habit changed the proportions of the bones of rats, there was no evidence that the changes are inherited. The mesial bend in the fibula seems to be due to a relative increase in the tibialis anticus and tibialis posticus, as well as to a bend in the tibia, an adaptation to greater stability. As far as the Lamarckian factor in evolution is concerned, the experiments were negative.—*H. S. Colton.*

12435. **DUDYCHA, GEORGE J.** Present tendencies in the philosophy of biological evolution. *Ohio Jour. Sci.* 31(3): 129-142. 1931.—There are 4 contemporary points of view concerning biological evolution each of which presents a different solution of the problem. The 1st view, that of Langdon-Davies, posits mind and memory as the 2 important factors responsible for the progressive development in the history of life; its difficulty is that neither of these terms is adequately defined, nor is the method by which these factors operate made clear. The 2nd view, Clark's Zoogenesis, holds that by some mysterious means all the types of life burst forth simultaneously from the primitive single cell. Since this has not been the case in historic times, we can hardly believe that this is the method of nature. Again we note that the idea of the potentiality of all things in a primitive single cell is not a new view, but one which was enunciated centuries ago by St. Augustine. The view of H. J. Muller concerning the potency of cosmic radiation in effecting variations is suggestive to the extent that it posits a drive which is the go-of-events. This drive has been variously termed by philosophers—vital urge, "elan vital," nisus, etc. "Perhaps we might be so bold as to include cosmic radiation, but this is still somewhat hazardous." Hybridization, the 4th point of view, is directly in accord with one of the outstanding present-day philosophical concepts of development—namely, emergent evolution. This view is not only serviceable in biology, but is also in accord with a more general process which includes many other aspects of the universe than merely life. No theory of biological evolution, no matter how serviceable it may seem with regard to understanding the ramifications of life, is of great value unless it is in accord with the more general aspects of cosmic evolution.—*G. J. Dudycha.*

12436. **FORD, E. B.** Mendelism and evolution. 116p.

Lincoln MacVeagh, The Dial Press: New York, 1931.—A short survey of the evolutionary aspects of modern genetics. Part I treats of the particulate theory of inheritance, including the laws of Mendel and the physical basis of inheritance. The 4 chapters of Part II, Mendelism and Evolution, are as follows: Heredity and the environment (external and internal); Experimental genetics and its bearing on evolution, including "the phenotypic effects of mutation" and "domestication"; The application of the Mendelian theory to evolutionary problems in nature (Mendelism as the basis of organic inheritance, and Mendelism and selection); Special problems of evolution (The origin of species, The evolution of the sex-determination mechanism, The evolution of insect casts, and Abundance and variability). There is a list of references, a glossary, and an index.—*C. S. Gager.*

12437. **GRABAU, A. W. Asia and the evolution of man.** *China Jour.* 12(3): 152-163. 1 fig. 1930.—A review of the geologic and meteorologic history of Central Asia, with reference to the conditions under which man evolved there.

12438. **RICHARZ, STEPHEN. The age of the human race in the light of geology.** *Ann. Rept. Smithsonian Inst.* 1930: 451-464. Map, 3 pl. 1931.—Man was present in Europe some 30,000 yrs. ago.

12439. **SHIPLEY, MAYNARD. The key to evolution.** In four double volumes. Vol. 1, How life began. Vol. 2, How plants arose. Vol. 3, The origin of animals. Vol. 4, The origin of the backboned animals. Vol. 5, From amphibian to man. Vol. 6, Man, cousin to the apes. Vol. 7, Embryology and evolution. Vol. 8, Causes and methods of evolution. 64p. each. Haldeman-Julius Co.: Girard, Kansas. [1931?]. Pr. $2.45 for set.

12440. **TURRILL, W. B. Biological races in seed-bearing plants and their significance in evolution.** *Ann. Appl. Biol.* 18(3): 442-450. 1931.—In seed-bearing plants physiological differences are usually correlated with differences in morphological structure. The minute or non-morphological differences treated are classified under the following heads: differences in susceptibility, resistance, or immunity to parasites; in edaphic limitations; in drought and cold resistance; in phenology; in seed behaviour; in chemical constitution; and competition between plants displaying such differences. Biological characters frequently have a genetic basis. They frequently set limits to geographical distribution and thus have a bearing on isolation and possibilities of hybridization.—*W. B. Turrill.*

12441. **ZIMMERMANN, WALTER. Arbeitsweise der botanischen Phylogenetik und anderer Gruppierungswissenschaften.** In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden.** Abt. IX. **Methoden zur Erforschung der Leistungen des tierischen Organismus.** Teil 3, Heft 6, **Methoden der Vererbungsforschung,** Lief. 356. p. 941-1053. 14 fig. Urban & Schwarzenberg: Berlin, 1931.

CYTOLOGY

R. E. CLELAND, *Editor,* Plant
C. E. McCLUNG, *Editor,* Animal

(See also in B. A. 6(3): Entries 6103, 6106, 6114, 6117, 6127, 6128, 6129, 6130, 6145, 6148, 6158, 6170, 6173, 6208, 6211, 6420, 6421, 6423, 6424, 6425, 6439, 6440, 6451, 6454, 6493, 6569, 6593, 6603, 6646, 6650, 6665, 6725, 6800, 6901, 7212, 7747, 8051, 8175, 8261, 8295, 8300, 8361, 8440, 8467, 8547; 6(4): 9076, 9149, 9353, 9365, 9367, 9596, 9635, 9956, 10325, 10338, 10364, 10372, 11034, 11071, 11210, 11213, 11279, 11418, 11423, 11426, 11448, 11452; and in this issue 12121, 12125, 12519, 12535, 12536, 12539, 12554, 12566, 12851, 13395, 13815, 14034, 14048, 14061, 14071, 14195, 14205, 14212, 14396, 14470, 14471, 14474, 14476, 14497, 14501, 14503, 14617)

GENERAL

12442. **BHATTACHARYA, D. R. The Golgi apparatus and vacuome theory.** *Allahabad Univ. Stud.* 4: 1-18. 1928.—The author provides a brief survey of the literature on Golgi apparatus and reports his observations on cytoplasmic inclusions in the oogenesis of a number of animals as follows: (1) the Golgi bodies are granular and acquire a juxta-nuclear position in the early stages of development of the egg; (2) the later complex is probably produced by the running together of the Golgi bodies and mitochondria under the influence of strong fixatives; (3) in the later stages of development the Golgi bodies are spherical; (4) the Golgi bodies and vacuome of Parat and Guilliermond are probably homologous structures; (5) the best fixatives for preserving the form of Golgi bodies are Kolatchev-Nassonow and Ludford's modification of the osmic acid method; (6) Parat's neutral red technique is convincing for demonstration of the vacuoles (Golgi bodies); and (7) the homology of the Golgi body with the vacuome can be established only by examining these structures side by side in preparations made with classical fixatives and intra vitam.—*H. I. Corey.*

12443. **FRY, HENRY J. A critique of the cytological method: determining the structure of living cells from fixed ones.** *Anat. Rec.* 46(1): 1-21. 1930.—The most dependable evidence concerning cell components is usually obtained by studying "normal" living cells. Due to opacity or other causes, this is frequently impossible, and fixed cells must be used. In theory it is universally recognized that fixation may cause distortions; in practice the dangers of misinterpreting coagulation artifacts are frequently disregarded. A quantitative method is described for studying cells under the most difficult conditions: when the fixed component cannot be compared with the living one and when different coagulation products show diverse structure. Cells selected for the initial study are in the same stage; they are in a "normal" environment prior to fixation with any appropriate reagent; a common stain is used. A number sufficient to constitute an adequate random sample is chosen, avoiding an unconscious selection of any type. Each cell is measured and analyzed in the greatest detail, using a tabular form. Thereafter follow many similar studies, varying in turn, fixation, stage, environment, stain, and other factors. The relative number of each class of coagulation product under each condition is determined. Average measurements are known. Certain statistical methods can be applied. Current hypotheses developed by the usual method concerning the mitotic mechanism of fertilized echinoderm eggs are seriously questioned by data obtained when using the proposed method. The technique may produce significant results in various cytological, histological, and pathological studies.—*Author (courtesy Wistar Bibl. Serv.).*

12444. **GIROUD, A. Recherches sur la nature chimique du chondriome.** *Protoplasma* 7: 72-98. 1929.—Microchemical tests on the intestinal cells of *Ascaris* reveal the presence and complexity of proteins in the chondriosome. They lead the author to conceive that in part, at least, the sulfhydril group, which is present there, is more or less intimately linked to these substances. —*L. Moyer.*

12445. **HUILLERET, ALBERT. Les protéosomes de Loew et la constitution du protoplasme.** *Compt. Rend. Soc. Biol.* 99(37): 1829-1830. 1928.—Loew has given the name of "proteosomes" to certain granulations which he believes to consist of active albumin and to play an important part in the life of protoplasm, from which they may be dissociated by the action of caffeine and antipyrine. Huilleret, having coagulated protoplasm by formol, observed by the ultramicroscope the formation of "proteosomes" under the influence of caffeine, without any change in the aspect of the protoplasm. He therefore dissents from Loew's theory.

12446. KORNHAUSER, S. I. The history of staining. The development of cytological staining. *Stain Tech.* 5(4): 117-125. 1930.—This is the sixth paper of the series on the history of staining and deals with the advances made in cytological methods, especially the developments since the time of Flemming's first important work in this line (1874).—*Author (courtesy Wistar Bibl. Serv.).*

12447. KÜSTER, E. Frühe Mitteilungen über Plasmaraketen, Plasmatentakeln und Plasmazungen. *Protoplasma* 7: 446-447. 1929.—A comparison of internal and external protoplasmic processes.—*W. Seifriz.*

12448. NEMEC, B. Ueber den Einfluss des Nikotins auf sich teilende Zellen. *Protoplasma* 7: 99-105. 1929.—The achromatic supporting spindle can be separated from the daughter nuclei by the action of nicotine on dividing cells. It can exist for some time as an independent structure and even partly keep its fibrous appearance. It is of about the same specific gravity as the cytoplasm. The nucleolus is higher in specific gravity than the nuclear sap and so is the rest of the nuclear content. —*L. Moyer.*

12449. PARAT, MAURICE. Note rectificative à propos d'une opinion concernant les dictyosomes, qui m'est attribuée par Mlle. O. Tuzet dans un mémoire récent. *Arch. Zool. Exp. et Gén. Notes et Rev.* 70(2): 70-72. 1930.

12450. ROSTAND, JEAN. Les chromosomes, artisans de l'hérédité et du sexe. 280p. Hachette: Paris, 1928. Pr. 12 fr.—This general survey treats the following subjects: independent assortment of hereditary characters and its explanation in chromosome behavior; the hereditary substance; haploid, diploid and polyploid chromosome conditions; Mendelian laws as applied to heredity in man; determination of sex; sex-linked heredity; gynandromorphs, intersexes and supersexes; sex hormones; sex reversal; proportion of sexes; natural and experimental parthenogenesis; merogony; the rôle of the chromosomes in mutation; and, finally, in evolution.—*H. I. Corey.*

12451. SCHILLER, WALTER. Über Pikrofärbungen und ihre Anwendung auf die chromophoben Körperchen von Lipschütz. [Picric staining and its use for the chromophobe bodies of Lipschütz.] *Virchow's Arch. Path. Anat. u. Physiol.* 278(3): 663-689. 12 fig. (4 col., 2 partly col.) 1930.—A discussion of the relation between different cell elements and types of stains.

12452. WERMEL, EUG., und D. SASSUCHIN. Untersuchungen über die Kernsubstanzen und die Methoden ihrer Darstellung. II. Mitteilung: Über die Natur des Volutins und der Mastzellen-Granula. *Zeitschr. Wissenschaftl. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikroskop. Anat.* 6(3): 424-440. 1927.—The author concludes that the metachromatic reaction of methylene is not specific for substances derived from nuclear metabolism, and therefore, the volutin granules in yeast cells are not derived from the nucleus. Protein and carbohydrate tests, as well as Best's carmine stain, indicate that the volutin granules in yeast cells are of a glycoproteid nature, and are therefore storage granules. Similar staining reactions of vertebrate mast cells indicate that their granules are probably of the same nature as are the volutins of yeast. Other tests used were, the iodine reaction, chlor-iodide reaction, and solubility tests of water, ptyalin and diastase.—*S. P. Miller.*

PLANT

12453. HAWKER, LILIAN E. Microsporogenesis in Taxus. *Ann. Botany* 44(175): 535-539. 20 fig. 1930.—The reduction division in the pollen mother cells of *Taxus* was followed. Chromosome tetrads consisting of 4 short thick rods in contact at each end were seen during metaphase of the first division. The pollen mother cells were apparently of two kinds, some having 16 small chromosome tetrads and others having 8 larger ones. Explanations of this phenomenon are put forward. —*L. E. Hawker.*

12454. SHARP, LESTER W. Einführung in die Zytologie. Mit Genehmigung des Verfassers aus dem Englischen überstezt und vollständig neu bearbeitet von ROBERT JARETSKY. 733p. 212 fig. Gebrüder Borntraeger: Berlin, 1931. Price 52.50 M.; bound 55 M.—For the most part this volume is a faithful translation into the German of the 2d edition of Sharp's Introduction to Cytology. The chapter headings are the same as those found in the original, the figures are for the most part the same, even the footnotes are fully retained. However, the translator has introduced a large number of changes into the text, mostly in the form of additions which bring the subject matter more nearly up to date. Such additions are clearly distinguished from the rest of the text by the presence of a [J] in the margin opposite the paragraph or portion of a paragraph which has been introduced. Minor changes which have altered the meaning of the original text are not designated in any way. As a result of the many additions, the body of the text is considerably enlarged. The bibliography at the end of the book has also been considerably enlarged by the incorporation of many papers appearing as late as 1930. It covers 72 pages. There is a full combined subject and author index.—*R. E. Cleland.*

ANIMAL

12455. ALBRO, HELEN T. A cytological study of the changes occurring in the oenocytes of Galerucella nymphaeae Linn. during the larval and pupal periods of development. *Jour. Morph. & Physiol.* 50(2): 527-567. 8 pl. 1930.—Preceding each larval molt, vacuoles, apparently of nuclear origin, are found in the cytoplasm from which they are eliminated at the time of the molt. The accumulation of vacuoles is not so striking at the times of pupation and the emergence of the imago, but occurs nevertheless. Beginning with pupation or just previous to it, the larval oenocytes seemingly undergo a process of deterioration, decreasing in size and presenting a ragged appearance. The fat-cells are closely associated morphologically with the larval oenocytes, and it seems that there is a probable physiological relationship also, since the fat-cells undergo a series of changes at the same time the oenocytes are exhibiting their cyclic behavior. Furthermore, it has been observed that in many instances there is a greater accumulation of vacuoles in that part of the cytoplasm of the oenocytes which is adjacent to the fat-cells than elsewhere.—*Author (courtesy Wistar Bibl. Serv.).*

12456. BEAMS, HAROLD WILLIAM. Studies on the "Golgi apparatus" of insect muscle. *Anat. Rec.* 42(3): 323-333. 1 pl. 1929.—Ludford's modification of the Mann-Kopsch method reveals at the poles of the nuclei definitely impregnated black structures which resemble the Golgi apparatus in tissues where its identity is well known. These structures appear as knotted filaments or masses and are resistant to prolonged treatment with turpentine. It is suggested that they are homologous to the true Golgi apparatus of other tissues. The present status of the Golgi apparatus in muscle tissue is reviewed.—*Author (courtesy Wistar Bibl. Serv.).*

12457. BEAMS, H. W. Golgi apparatus, canalicular apparatus, vacuome, and mitochondria in the islets of Langerhans of the albino rat. *Anat. Rec.* 46(4): 305-327. 2 pl. 1930.—Evidence obtained indicates that the Golgi apparatus, mitochondria, and vacuome are distinct elements of the cytoplasm. The canalicular apparatus (trophospongium) is thought to represent the negative image of the Golgi apparatus. It is assumed that Holmgren must have confused the extensions of the trophospongium to the surface of the cell with some exogenous structures. The clear canals of Bensley are tentatively interpreted as the Golgi apparatus in the living cell. The neutral-red bodies are thought to represent the vacuome of Parat. Tissue which has been stained intravitam with neutral red and subsequently treated according to the modified Mann-Kopsch (Weigl) method retains the neutral-red bodies impregnated a deep black or brown. The Golgi apparatus is likewise

impregnated in the same cell. Accordingly, it is concluded that the Golgi apparatus is not formed by the action of osmic acid or fixatives containing osmic acid upon the neutral-red bodies. Moreover, it is evident that the Golgi apparatus is refractory to neutral red in the islets of Langerhans.—*Author (courtesy Wistar Bibl. Serv.)*.

12458. **BHATTACHARYA, D. R., and KRISHNA BEHARI LAL. The cytoplasmic inclusions in the oogenesis of certain Indian tortoises.** *Allahabad Univ. Stud.* 6: 1-20. 10 fig. 1929.—In young eggs both Golgi bodies and mitochondria form a clearly polarized mass. During development these two inclusions scatter about the cytoplasm and give rise to storage products: the Golgi elements forming "fatty yolk," and the mitochondria "albuminous yolk" both by direct metamorphosis and by indirect influence on developing yolk. Both Golgi elements and mitochondria enter the egg from the follicular epithelium via the zona radiata.—*H. Hibbard.*

12459. **BHATTACHARYA, P. R. Notes on cell organs in the oogenesis of the house gecko.** *Allahabad Univ. Stud.* 6: 21-27. 2 pl. 1929.—A preliminary note. The origin, growth and distribution of Golgi bodies in the egg is similar to that described in other vertebrates. They do not, however, give rise to fatty yolk. Infiltration of Golgi bodies from follicular epithelium has also been observed. Mitochondria have been found only in the peripheral zone of the egg.—*P. H. Dederer.*

12460. **BHATTACHARYA, D. R., and C. B. MATHUR. On the cytoplasmic inclusions in the oogenesis of Pila globosa (Swainson).** *Allahabad Univ. Stud.* 6: 29-40. 2 pl. 1929. Golgi elements as granules and rods appear first in the yolk nucleus of Balbiani along with the first mitochondria. Subsequent redistribution of both inclusions produces a bipolar condition. The Golgi elements very early form "fatty yolk," which soon disintegrates. The Golgi bodies now disappear and mitochondria become very prominent. They form the fuchsinophile yolk (albuminous). Simultaneously yolk is formed de novo in vacuoles on the surfaces of which mitochondria are often found. Nuclear extrusions, though present, take no part in vitellogenesis.—*H. Hibbard.*

12461. **BHATTACHARYA, P. R. The infiltration of Golgi bodies from the follicular epithelium to the egg in fishes.** *Allahabad Univ. Stud.* 6(2): 53-58. 4 fig. 1930. —Such infiltration, via the zona radiata, begins early in development. In advanced oöcytes extrusion of Golgi bodies diminishes until finally it ceases and the zona radiata becomes thin and more opaque. In advanced oöcytes there is no way of distinguishing between ovarian and follicular Golgi bodies.—*P. B. Powers.*

12462. **BLUMENTHAL, REUBEN. Mitotic development of Arbacia eggs in cyanides.** *Physiol. Zool.* 3(4): 539-563. 1 pl. 1930.—Fertilized *Arbacia* eggs were found to continue a limited amount of karyokinetic development at any stage in the presence of concentrated solution of KCN. Such development indicates that mitosis is not directly dependent on oxygen. The inhibition of karyokinesis which finally does occur in KCN might be due to some secondary effect of KCN or of anaerobic metabolism. On the other hand, methyl cyanide stops mitotic activity immediately in all stages. Unlike KCN, methyl cyanide produces a marked effect upon the chromosomes and diaster if the eggs are transferred to it during or after metaphase. Only under the latter conditions is there a delay in cell division upon return to sea-water. Exposure of the eggs to potassium cyanide at any time previous to metaphase will cause a delay in cleavage, while any exposure after metaphase produces no delay in the first cleavage, but rather in the second. Evidence supports the idea that karyokinesis and cytokinesis are partly independent. The processes concerned with mitosis are compared with those of muscular contraction and amoeboid movement.—*Author (courtesy Wistar Bibl. Serv.)*.

12463. **CALKINS, GARY N. Uroleptus halseyi Calkins. III. The kinetic elements and the micronucleus.** *Arch. Protistenk.* 72(1): 49-70. 4 pl. 4 fig. 1930.—The kinetic elements here agree with the more obvious kinetic elements of other ciliates. A motorium in the protoplasm about the gullet and near the mouth gives rise to fibrils which pass to the undulating membrane and to the chain of basal granules underlying the membranelles. The basal bodies of the frontal cirri are also connected by fibrils with this membranelle chain. Other fibrils from the motorium extend down the body. The bulk of the paper is devoted to the history of the micronucleus and the chromosome problem. Four products of the amphinucleus are formed after conjugation. One becomes a new macronucleus and 2, sometimes 3, micronuclei. These do not divide at the first cell division, so uninucleate, sometimes binucleate, individuals arise. They divide precociously for the second cell division. A perfect large mitotic figure with 24 long, rod-like chromosomes is formed. These chromosomes divide transversely. In old individuals the micronucleus lags at division. No chromosomes are formed, the division figures resembling promitosis. Such individuals may conjugate. During conjugation the micronuclei undergo three characteristic ciliate maturation divisions, each with a different type of mitotic figure. The first meiotic spindle is spherical and relatively huge, occupying practically the entire diameter of the organism. Here there are 48-50 small, granule-like, chromosomes in the nuclear plate. With division, these are separated into two groups of 24 each. In the second meiotic division these granular chromosomes are drawn out to form 12 finely granular fibers, 12 halves of these fibers lying on each side of the middle line in the anaphase and passing into the daughter nuclei. At the third meiotic division these fibers condense still more into 12 long, intensely staining, chromosomes which now divide transversely to form the two pronuclei. With fusion of pronuclei, 24 chromosomes are restored. The theory of the gene cannot apply here unless it be assumed that each chromosome contains only one type of gene, in which case it is immaterial whether the chromosome is large or small, or divides longitudinally or transversely. The idea is advanced that chromosomes have evolved into individual entities not by increased chemical complexity, but by association of different genes. If these are arranged linearly in the chromosome, transverse division would result in a qualitative difference in the resulting cells, a condition which is brought about at only one stage in metazoa, viz., the reducing divisions. On this theory it is assumed that only 12 different types of gene with their 12 allelomorphs, are present in *Uroleptus halseyi*.—*G. N. Calkins.*

12464. **CHLOPIN, NIKOLAUS G. Ein Beitrag zur Morphologie und zum Mechanismus der Eisenspeicherung.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(2): 316-332. 9 fig. 1930.—Iron saccharide is stored in large amounts in the Kupffer cells of the frog liver. In the Axolotl a marked storage of iron occurs in the convoluted tubules of the kidney. The iron granules acquire a protein-like substratum which will be designated as Krinom. The Krinom of the iron inclusions is differentiated from the neutral red Krinom through its failure to stain with basic dyes in fixed preparations and by its ability to be stained by acid aniline dyes. It, therefore, has the characteristics of a basic protein substance. With successive subjection of frogs to neutral red and iron saccharide, one can get a double storage of Kupffer cells, whereby the neutral red Krinom and the iron granules are contiguous with one another. By successful treatment of the frogs with trypan blue and iron saccharide a strong deposit of iron can be seen within the preformed trypan blue inclusions. —*Author's summary (transl. by S. I. Kornhauser)*.

12465. **CRETSCHMAR, MAX. Das Verhalten der Chromosome bei der Spermatogenese von Orgyia thyellina Btl. and antiqua L., sowie eines ihrer Bastarde.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikr. Anat.* 7(3): 290-399. 6 pl., 8 fig. 1928.—The diploid chromosome number of *Orgyia thyellina* is 22 and in *O. antiqua* 28, but in neither can homologous chromo-

somes be identified. Parasynapsis occurs in synizesis. In the pachytene stage the chromosomes are clearly bivalent, and the double strands are still faintly indicated in the diplotene stage. The first maturation division is reductional. In atypical spermatocytes the diploid chromosome number is present because of failure of synapsis. The expected 25 chromosomes are found in spermatogonia of the hybrids. During the growth phases of the hybrids the longitudinal union of the heterogeneous pairs is lost. In all phases of maturation great irregularity and variability are found and spermatids may contain highly variable complements of chromosomes. Spermiogenesis is completed only in cells with high chromosome numbers. Chromosome number is a criterion of phylogenetic-systematic relation only in cases of single species. It fails in higher systematic groups. Chromosome chains in hybrids are not the multiple chromosomes described by authors, nor are they pathological. Synaptic union is so intimate that separation may be in new planes and hence new affinity relations are established between more than 2 chromosomes. But there is no cytological evidence of an intimate intermingling of genes of the strange species. A survey of cytological results in lepidoptera hybrids shows that fertility is most strongly reduced in forms with a median degree of chromosome disturbance, i.e., in forms with partial or varying conjugation. On account of the anomalies of maturation division of these it is improbable that the sperms contain a complete chromosome complex.—*G. T. Hargitt.*

12466. DAS. A preliminary account of the cytoplasmic inclusions in the oogenesis of Columba intermedia. *Allahabad Univ. Stud.* 4: 1-9. 1928.—The Golgi bodies, shown by both silver nitrate and osmic acid methods, appear in oogonia as dense juxta-nuclear knots. These knots spread around the nucleus in the oocyte stages, and the elements become swollen and give place to "fatty yolk" except in the peripheral zone. These Golgi bodies stain vitally with neutral red. Simultaneously bodies of like nature pass from the theca cells to the follicle cells and, thence, to the periphery of the oocyte. Mitochondria follow a similar cycle from a dense granular aggregate on one side of the nucleus to an even distribution throughout the cytoplasm of the oocytes. True yolk develops from these granules by a process of swelling, first noticeable at the periphery of the cytoplasm.—*H. Hibbard.*

12467. DAWSON, ALDEN B. The "zone of Golgi" in the cartilage cells of Necturus. *Anat. Rec.* 48(2): 379-397. 2 pl. 1931.—In supravital preparations the zone of Golgi appears as a homogeneous area of cytoplasm in which bodies stainable with neutral red and filaments stainable with Janus green B are grouped. Bodies stainable with neutral red also appear in certain osmic impregnations as blackened granules. Since such preparations may be obtained in tissue from animals not previously treated with neutral red, these bodies are undoubtedly preexistent. Filaments which occupy the zone of Golgi are usually discontinuous and do not form a closed network. They react more or less specifically with osmic acid and silver nitrate, but may be demonstrated also by several mitochondrial methods. In mature cells they are indistinguishable morphologically from the filamentous mitochondria of the rest of the cytoplasm. In younger cells they are readily differentiated from the granular and rod-like mitochondria. In this instance the interpretation of osmiophilic filaments as specific Golgi substance or as modified mitochondria would appear to depend on the individual investigator's evaluation of criteria utilized to distinguish such cell components. The zone of Golgi usually occupies a definite area within the cell. In young flattened cells it is found near one pole of the nucleus. In the more rounded deep-lying cells it has a juxtanuclear position and is found on the side away from the surface of the cartilage.—*Author (courtesy Wistar Bibl. Serv.).*

12468. DOGIEL, V. Die sog. "Konkrementenvakuole" der Infusorien als eine Statocyste betrachtet. *Arch. Protistenk.* 68(2): 319-348. 27 fig. 1929.—This is a morphological investigation of the concretion-vacuole in ciliates, especially in Bütschliidae and Paraisotrichidae of which 11 genera and about 25 species were examined. The vacuole is single, spherical or ovoidal, and located in the anterior third of the organism. It has a cuticular cap, a saccular membrane, concretions within its cavity and a complex series of fibrils. During division the vacuole of the hinder daughter is differentiated from the pellicle inward, the concretions arise in the endoplasm and the vacuolar anlage comes to enclose the latter. The vacuole lacks a pore. Three types of concretion-vacuoles, *Blepharoprosthium*, *Didesmis*, and *Paraisotrichia* are recognized. It is concluded that this vacuole functions as a statocyst.—*A. S. Campbell.*

12469. DUTTA, S. K. On the behaviour of the Golgi apparatus in the oogenesis of Calotes versicolor (Boulenger). *Allahabad Univ. Stud.* 4: 19-30. 7 pl. 1928.—In the young oocytes the Golgi bodies appear as a complex juxtanuclear mass, mainly granular. In later stages they scatter in the cytoplasm and become ultramicroscopic in the medullary region. In the cortical layer larger Golgi spherules are arranged in a ring. Subsequently they are broken up and lost to view in the cytoplasm. At one stage of development the follicular epithelium becomes very active and appears to extrude a number of Golgi spherules. They pass through the zona radiata and settle down in the extreme peripheral region of the egg. The Golgi bodies contribute, either directly or indirectly, to the formation of yolk, but it is believed that for the formation of true yolk the mitochondria are responsible.—*H. I. Corey.*

12470. EKBLOM, TORE. Cytological and biochemical researches into the intracellular symbiosis in the intestinal cells of Rhagium inquisitor L. *Skand. Arch. Physiol.* 61(1/3): 35-48. 17 fig. 4 pl. 1931.—Secretion in *Rhagium* larvae is brought about by discharge of plasma globules from the distal ends of intestinal cells. Mitochondria apparently aid in the formation of the secretory drops. The Golgi-net could not be definitely related to secretion. The cells bearing the symbionts are directed toward a central lumen which connects with the main intestinal channel. The yeasts are located in the distal parts and are of variable size and shape. They migrate out singly and independently of globules. Both Gram-positive and negative strains are present. Gemmation is commonly seen but not mycelial formation. —*W. J. Meek.*

12471. FOGG, LLOYD C. A study of chromatin diminution in Ascaris and Ephestia. *Jour. Morph. & Physiol.* 50(2): 413-451. 4 pl. 1930.—The casting off of chromatic material in *Ephestia* and *Ascaris* is comparable in only the broadest and most general sense. In *Ephestia* the diminution substance is not formed in the nucleus, but is due to a later differentiation of the chromosomes. This can be made apparent by the use of differential stains and by other methods. In *Ascaris* diminution does not occur until the 3rd cleavage, and then in all 3 cells that are destined to be somatic. The diminution process in this instance is apparently comparable to the casting out of residual substance which occurs when the nuclear vesicle breaks down in other cells.—*Author (courtesy Wistar Bibl. Serv.).*

12472. FRANKENBERGER, ZDENKO. Studie o spermatogenesi plazů. II. Cytologické poměry spermatogenese Lacerta agilis. [Spermatogenesis in reptiles.] *Rozpravy České Akad. Věd a Umění Tř. 2.* 37(44): 1-16. 2 pl. 1928.—The spermatogonia have 27 chromosomes, one a heterochromosome. The 1st maturation division is a reduction division, the 2nd an equation division. There are many pluripolar mitotic figures in the spermatogonia and spermatocytes.—*J. Florian.*

12473. GATENBY, J. BRONTË. Note on human spermatic cells supravitally stained in neutral red. *Anat. Rec.* 48(1): 121-129. 1 pl. 1931.—In human spermatocytes stained ¼-1 hr. in pink neutral red Ringer, a vacuome appears separate from the Golgi apparatus. In addition,

6-S rods or crystals show up in the neighborhood of the vacuome.—*Author (courtesy Wistar Bibl. Serv.).*

12474. **GATENBY, J. BRONTË. Preliminary report on the effect of phosphorized olive oil on the spermatogenesis of Abraxas grossulariata.** *Jour. Exp. Zool.* 58 (1) : 259-279. 4 pl., 1 fig. 1930.—Olive oil was heated with yellow phosphorus. A minute quantity of this oil was injected into male larvae of *Abraxas*. In 11½ hrs. the dictyosomes of the spermatocytes had produced abortive acroblasts, each containing an acrosome. Generally only one acroblast could be found in 1 spermatocyte. At mitosis the giant acroblast was carried over whole to 1 daughter cell, and eventually into 1 of the 4 spermatids. In many cases the moths, which emerged successfully, were sterile.—*Author (courtesy Wistar Bibl. Serv.).*

12475. **HALL, RICHARD P., and JOHN B. LOEFER. Studies on Euglypha. I. Cytoplasmic inclusions of Euglypha alveolata.** *Arch. Protistenk.* 72 (3) : 365-376. 14 fig. 1930.—Mitochondria and neutral-red globules (vacuome) are described, and their reactions (vital dyes, fixation and staining, osmic and silver impregnation) are noted. Elements of the vacuome—globules scattered principally through the "alveolar zone"—are stained vitally with neutral red and are blackened in osmic and silver impregnation. The origin of reserve shell-plates is traced to small inclusions of the "granular zone." It is pointed out that there is no evidence for the origin of shell-plates from either mitochondria or vacuome.—*R. P. Hall.*

12476. **HANN, HARRY W. Variation in spermiogenesis in the teleost family Cottidae.** *Jour. Morph. & Physiol.* 50 (2) : 393-411. 2 pl. 1930.—In the Cottidae there is a greater variation in the shape of the sperm than among the other teleosts. There is an oval and a slender type of sperm with intergrading forms. Spermatid masses have been found only in some of the oval sperm forms. They have been found in 7 spp. and sspp. of *Cottus* and in 3 other genera, but have not been found outside of the Cottidae. They occur in widely separated places, and in both fresh- and salt-water forms. In *C. bairdii bairdii* they are not found in all localities, their presence apparently being due to some external factor, perhaps temperature.—*Author (courtesy Wistar Bibl. Serv.).*

12477. **HARVEY, L. A. Studies on Echinoderm oogenesis. I. Antedon bifida (Pennant). II. Asterias rubens, Linné.** *Proc. Roy. Soc.* [*London*] *B* 107 (753) : 417-441. 20 fig., 441-454. 14 fig. 1931.—The fully-grown eggs of *Asterias rubens* and *Antedon bifida* are almost identical in constitution, each containing yolk spherules, smaller droplets of fat, mitochondria and Golgi bodies. They agree also in the relation of the Golgi apparatus and mitochondria to yolk formation. In each the mitochondria show the usual changes. The Golgi apparatus of the oogonium and young oocyte consists of 1 or 2 scales at the sides of the nucleus. The scales increase in number and are scattered to the periphery of the egg. Yolk granules arise on the concave sides of the scales. In *Antedon*, cup-like groups of scales are formed, within which yolk granules develop. The function of the Golgi apparatus apparently is that of initiating the isolation of the preformed yolk out of the cytoplasmic solution. A yolk nucleus occasionally appears in the egg of *Antedon* only, and seems to have some secondary relation to formation of fat. It is suggested that the yolk nucleus is the result of accumulation of nucleolar material owing to its excessive extrusion, and that it does not appear in the eggs of *Asterias* owing to the material being used up as fast as formed. There is some evidence of extrusion of nucleolar material in solution in both eggs. Experiments on living eggs of *Antedon* with neutral red and brilliant cresyl blue have demonstrated that the vacuolar system arises under the influence of the Golgi bodies, which can be seen in vivo, in much the same way as yolk droplets arise. There is no relation between yolk and vacuome, however, the latter probably being a reaction of these cells to the dyes.—*L. A. Harvey.*

12478. **HERTWIG, RICHARD. Über die Kernverhältnisse der Acanthometren.** *Arch. Protistenk.* 71 (1) : 33-56. 2 pl. 1930.—In contrast to the oft repeated assertion that the Acanthometra become multi-nucleate even in very early developmental stages, the author shows that *Astrolonche* (*Xiphacantha*) *serrata* and *Haliommatidium mülleri* are uninucleate in fully adult state. The certainty of this fact is strengthened by the evidence presented by finding numerous examples showing how the nucleus, through a peculiar budding, gives rise to a generation of daughter nuclei, although it is not possible to find typical multi-nucleate individuals like most Acanthometra. In a number of many nucleated species (*Acanthochiasma krohni, Phyllostaurus echinoides*), the author was able to find stages of transition from the uni- to the multinucleate condition.—*R. Hertwig (transl. by S. I. Kornhauser).*

12479. **HORNING, E. S., and I. D. MILLER. Chromidial extrusion, and its relationship to atypical nuclear phenomena in tumour cells.** *Australian Jour. Exp. Biol. and Med. Sci.* 7 (4) : 151-160. 4 pl. 1930.—Evidence is given for the assumption that chromidia pass through the nuclear membrane in solution by exosmosis. Chromidiosis has been described in sarcoma cells, and its activity appears to vary directly with the metabolism and growth rate of the neoplasm. It is suggested that chromidia take part in the liberation of growth-promoting substances found in in vitro cultures of malignant tissues. The withdrawal of chromatin from the nucleus upsets the tension forces existing between the cytosome and the nuclearplasm, and leads to invaginations and constrictions in the nuclear membrane. The multinucleated condition common in neoplasms and healthy cells undergoing cytolysis results from repeated nuclear constriction following chromidial emission.—*Authors' summary.*

12480. **HUGHES-SCHRADER, SALLY. The cytology of several species of iceryine coccids, with special reference to parthenogenesis and haploidy.** *Jour. Morph. and Physiol.* 50 (2) : 475-495. 5 fig. 1930.—*Icerya littoralis, I. montserratensis, Echinicerya anomola,* and *Crypticerya rosae* have been studied cytologically in connection with certain breeding experiments. For the first 3 the complete chromosomal history has been established, and the evidence on the 4th is sufficient to indicate that it differs from the others in no essential respect. The ♀♀ are diploid, with a chromosome number of 4, and the ♂♂ are haploid, with a chromosome number of 2. Oogenesis proceeds normally; 2 tetrads are formed and 2 maturation divisions occur in which the chromosomes are reduced to 2 in each ♀ pronucleus. All eggs undergo this reduction; if the eggs are then fertilized, the diploid number is thus restored and development into ♀♀ ensues; if the eggs remain unfertilized, whether in the body of a virgin or of a fertilized ♀, they develop parthenogenetically, with no restoration of diploidy, into haploid ♂♂. The spermatogenesis of the haploid ♂♂ involves a single meiotic division, demonstrably equational in character; the accompanying cytoplasmic division is suppressed, and, from each of the binucleate spermatids thus produced, 2 spermatozoa are formed. These conditions are contrasted with the functional hermaphroditism and haploid parthenogenesis of *I. purchasi.*—*Author (courtesy Wistar Bibl. Serv.).*

formed from all of the derivatives of the zygote.—*A. S. Campbell.*

12482. **KEMP, TAGE. Über die somatischen Mitosen bei Menschen und warmblütigen Tieren unter normalen und pathologischen Verhältnissen.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(2): 429-444. 27 fig. 1930.—The number of chromosomes in somatic cells of man and chickens is usually constant but it is still possible that slight variations may occur in normal tissues. Abnormal mitosis is rare. Those occurring in the fetal membranes are obviously of special type. Chromosome counts made in Rous' chicken sarcoma and in tissue cultures of a mouse adeno-carcinoma confirmed the occurrence of mitoses with varying number of chromosomes. The behavior in this respect varies greatly in different tumors. Atypical mitoses were also found in other pathologic tissues, such as benign tumors, regenerative and inflammatory tissues, and malformations, though variations in number of chromosomes have not been observed.—*Author's summary (transl. by R. C. Whitman).*

12483. **KOKOTT, W., (mit Unterstützung aus Mitteln der E. GOLDMANN). Zur Frage des Einflusses erhöhter Temperatur auf die Mitosen in Gewebskulturen.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(3/4): 484-490. 1930.—Mitosis is checked at from 42-50° C., processes caught in telophase being especially affected, and the readiness to initiate new processes is paralysed. It is most probable that in both cases the cause is a disturbance of phases set up in the cytoplasmic colloids by the heat.—*Author's summary (transl. by R. C. Whitman).*

12484. **LACKEY, JAMES B. Studies in the life histories of Euglenida. 1. The cytology of Entosiphon sulcatum (Duj.) Stein.** *Arch. Protistenk.* 66(2): 175-200. 24 fig. 1929.—*E. sulcatum,* a euglenoid flagellate, divides in the active state by a primitive form of mitosis. Division is promitotic, the endosome serving as a division center, the nuclear membrane being persistent and the chromosomes being formed of peripheral chromatin. No centrioles are associated with the endosome, which contributes nothing to the cytoplasm. Chromosomes are beaded, and are formed by the growth and alignment of small chromatin bodies of the chromiole type. Such chromosomes, following Dangeard, are termed chromospires. The endosome is encircled by a cordon of chromospires which lie parallel to its long axis. The chromospires break transversely, and there is no sign of a longitudinal split. No mechanism for a qualitatively equal distribution of the chromatin appears. Mitosis is wholly anastral, no spindle being formed. The basal bodies of the flagella may be termed basal granules instead of blepharoplasts, since they do not function as centrioles in division, and are not budded off from the endosome, but themselves divide. The pair of old flagella is handed on to one daughter cell, while their basal granules divide and a pair of new flagella grow out from them. The tube or siphon is absorbed during division, 2 new ones arising de novo in the cytoplasm. No indication of the function or significance of the siphon has been found.—*Author's summary.*

12485. **MAWRODIADI, P. A. Zur Theorie der Chromosomenzentren.** *Anat. Anzeiger* 63(21/24): 342-349. 2 fig. 1927.—The nucleolus of the egg of the nematode *Cystoopsis acipenseri* during the process of maturing is at first round and contains a small, round nucleolulus. This divides into 6 and sometimes more nucleoluli which are localized in pairs in the lobes of the trilobular nucleolus. The nucleoluli then fuse in pairs forming bivalent chromosomes. Two other granules appearing at this stage are considered by the author to be centrioles. The described nucleoluli are essential centers which, by collecting chromatic material, become the chromosomes. —*G. Knaysi.*

12486. **MEHRA, H. R. Cytoplasmic organs in the germ cells and somatic cells of Tubifex.** *Allahabad Univ. Stud.* 3: 1-56. 41 fig. 1927.—The mitochondria of the spermatogonia are perinuclear granules; the Golgi element is small and lies at one side of the nucleus. Free spermatogonia appear later as morulae of spermatocytes whose cytoplasm, in part, flows centrally to form a blastophore. Mitochondria lie on the periphery of this cytoplasmic core. The enlarged Golgi apparatus of the spermatocytes forms a quadrangular investment of the archoplasm. The mitochondria are inconspicuous and do not take part in the formation of the spermatozoa. The Golgi granules form the acrosome atypically. Apyrene spermatozoa formation is described. The oogonia are similar to the spermatogonia. In the oocytes are innumerable small scattered mitochondria, while the Golgi apparatus appears as a dense mass around the nucleus and as scattered rodlets. The mitochondria and Golgi elements fuse and are converted into yolk discs. In somatic cells the Golgi elements are perinuclear, and the mitochondria peripheral, in position.—*C. E. McClung.*

12487. **MEIJERE, J. C. H. de. Über einige europäische Insekten, besonders günstig zum Studium der Reifungsteilungen, nebst einigen Zusätzen zur Azetokarminmethode.** *Zool. Anzeiger* 88(7/8): 209-219. 7 fig. 1930.—The Dutch Coreids *Myrmus miriformis* Fall. and *Chorosoma schillingi* Schumm. have ♂ diploid sets respectively of 12+x and 10+x. *Nabis apterus* F. ♂ with 16+x+y is more common, but the chromosomes are much alike. Among Lepidoptera the Lasiocampid *Macrothylacia rubi* L. has relatively large chromosomes in small number, viz., haploid 14. The author used his own method for making permanent smear-preparations with acetocarmine and Venetian turpentine. The method was applied in the study of meiosis in many plants.

12488. **NAKAMURA, KENJI. Preliminary notes on reptilian chromosomes. III. The chromosomes of some lizards.** *Proc. Imp. Acad. [Tokyo]* 7(1): 26-28. 6 fig. 1931.—The diploid number is: in *Takydromus formosanus* and *T. septentrionalis,* and in *Gekko japonicus,* 38; in *Japarula swinhonis* and in *Hemidactylus bowringii,* 46; in *Eumeces latiscutatus* 26. The ♂♂ of all are homozygous for sex chromosomes (XX). The chromosomes of all the above spp. are shown in metaphase.

12489. **NARAIN, DHARAM. Cytoplasmic inclusions in the oögenesis of Bufo melanosticus, Rana tigrina and Rhacophorus fergusonii.** *Allahabad Univ. Stud.* 6(2): 41-51. 2 pl. 1930.—In young oöcytes Golgi bodies first appear as minute, knot-like bodies close to the nucleus. Later they are dispersed in the peripheral cytoplasm and form fatty yolk. Golgi bodies from the follicular epithelium travel through the zona radiata to form a layer of fine, dust-like, particles in the egg's extreme periphery. Mitochondria are spherical and in early stages form a dense, cap-like cloud over one pole of the nucleus. As many as 5 nucleolar extrusions were observed. These are large in the frog and *Rhacophorus* but fine and granular in the toad. True yolk is formed by metamorphosis of mitochondria.—*P. B. Powers.*

12490. **NOËL, R. Sur le chondriome de la cellule hépatique chez certains poissons.** *Compt. Rend. Soc. Biol.* 98(1): 49-50. 1928.—The author finds the albuminoid plastids which he has described from the liver of the mouse, in the liver of the fish as well. He considers the elaboration of these plastids to be a regular function of the chondriosomes. He also considers the peripheral granules to be of mitochondrial origin.

12491. **NOUVEL, HENRI. Observations préliminaires sur les constituants cytoplasmiques et le micrométabolisme de quelques Dicyémides.** *Bull. Soc. Zool. France* 54: 124-128. 1929.—The vacuome is generally dispersed throughout the cytoplasm. The chondriome is constituted of chondriochonts or granular mitochondria. At certain stages, the verruciform cells contain very considerable masses of lipoids. In the polar cap cells of *Dicyema typus* and at certain times for all Dicyemids there is an abundance of glycogen.—*H. Nouvel.*

12492. **PEACOCK, A. D., and R. A. R. GRESSON. The rôles of the nurse-cells, oocytes and follicle-cells in tenthredinid oogenesis.** *Quart. Jour. Microsc. Sci.* 71(4):

541-561. 3 pl., 1 fig. 1928.—Oogenesis is typical. Studies on *Pristiphora padi, Thrinax mixta, Platycampus luridiventris,* and *Allantus pallipes* indicate that secondary or accessory nuclei have a 3-fold origin, namely, from the nuclei of oocytes, nurse-cells, and follicle-cells. In *Thrinax mixta* and *Platycampus luridiventris* the oocyte nucleoli give rise to buds which become free. In *Allantus (Emphytus) pallipus* the buds pass through the nuclear membrane and form accessory nuclei. Some of the follicle-cells surrounding the last oocyte in *Pristiphora padi,* and the 5th, 6th, and 7th of *Thrinax mixta,* contain dark-staining granules which pass out of the follicle-cell into the egg, and there appear as accessory nuclei. After the chamber oocyte connection has been fully established, some of the cytoplasm of the nurse cells together with accessory nuclei passes through it to the oocyte. Finally the residual cytoplasm and its contained nuclei follow, and are absorbed by the egg.—*R. H. Chipman.*

12493. PENNYPACKER, MIRIAM I. The germ cells in the hermaphroditic gland of Polygyra appressa. *Jour. Morph. and Physiol.* 49(2): 415-453. 2 pl., 4 fig. 1930.—The ♂ and ♀ germ cells of *Polygyra appressa* were found together in the acini from the time the snails were 5 mm. in width onward, and their development traced backward to the gonial stage, in which the aspect of the ♀ cells, present in small numbers in the acinus wall, and the ♂ cells, in greater numbers in the lumen, seems identical. In oocytes, differentiation involves the enormous increase in volume of cell, nucleus, and plasmosome; the appearance of yolk and of a secondary nucleolus attached to the first one, and, in some cells, various other nucleoli, attached to the chromosomes. Meanwhile the chromosomes become diffuse and spread into the interior of the nucleus, finally condensing again on the periphery. Various technical methods produced interesting variations in the aspect of oocyte chromatin and nucleoli. The appearance of the Nebenkern in spermatocytes during the growth period was noted, but no indication of its presence discovered in oocytes until the fairly late growth period. The chromosome forms were noted in spermatogonia, first spermatocytes and oocytes, and their numbers found to be 61-63, 31, and 31, respectively, but no clear dividing oogonia were found, on which similar observations could be made.—*Author (courtesy Wistar Bibl. Serv.).*

12494. POLLISTER, ARTHUR W. Cytoplasmic phenomena in the spermatogenesis of Gerris. *Jour. Morph. and Physiol.* 49(2): 455-507. 6 pl. 1 fig. 1930.—The history of the cytoplasmic components in the spermatogenesis of *Gerris* is, in general, like that which has been described in the Pentatomidae. The observations of fixed material have been checked by extensive studies of freshly teased preparations. During the spermatocyte growth period the chondriosomes undergo considerable increase in mass. During the maturation divisions the chondriosomes are remarkably constant in orientation with respect to the centrioles. The nebenkern arises by fusion of chondriosomes differentiated into chromophilic and chromophobic portions. The Golgi bodies of the earlier spermatocytes are vesicular bodies, the peripheries of which are osmiophilic. These are not visible in fresh preparations, but the masses resulting from their fusion in the late prophase of the first division are visible in the unfixed cells. The non-osmiophilic material inside these masses stains with neutral red in fresh preparations. Only the osmiophilic part of the Golgi masses is involved in the fragmentation to form dictyosomes. There is very suggestive evidence that the process of acrosome synthesis largely takes place inside the sac-like acroblast (Golgi apparatus). In the spermatid, material which stains, in fresh preparations, like the acroblast is never seen, except inside or attached to the acroblast, where it appears in the form of small spheres of "pro-acrosomic" material, which fuse to form the acrosome.—*Author (courtesy Wistar Bibl. Serv.).*

12495. PORT, JAAN. Untersuchungen über die Plasmakoagulation von Paramoecium caudatum. *Acta Inst. Horti Bot. Univ. Tartuensis (Dorpatensis)* 1(4): 1-52. 1 fig. 1928.—The coagulation time was determined with a horizontal ultra-microscope, by noting when the animals fell inactive to the bottom of a small capillary tube. In Spek's medium pH 7.7 was found to be the optimum for growth and coagulation by heat was slower. pH 6.8 and 8.4 were the limits for life in this medium. Between pH 7.7 and 6.8 the coagulation time is shorter from 38°-40° C. and longer from 42°-44° C. Between 7.7 and 8.4 the coagulation time is always shorter. The reaction of the medium influences permeability and hence is a factor in the toxicity of the added salts. These facts also apply to plant cells. The activity of the vacuoles increases at the beginning of coagulation, but soon slows as the animal dies. In an alkaline medium coagulation starts at the surface and proceeds towards the center, and vice versa in acid media. Light increases the coagulating action of neutral salts.—*J. M. Ort.*

12496. SAEZ, FRANCISCO ALBERTO. El estudio de los cromosomas. *Rev. Soc. Argentina Cien. Nat.* 8: 481-502. 4 pl. 1927.—Various methods of microtechnique, especially those of McClung, Painter, Oguma and Kihara, Winiwarter, Allen, Hance, and Belling, were employed in studying the chromosomes of So. American orthoptera, especially Acrididae of the genera *Romalea, Schistocerca,* and *Elaeochlora,* others of the group of Tryxalinae, some locusts and crickets, root tips of onions, and gonads of cats, rabbits, and guinea pigs. These methods are reviewed in some detail and made available in Spanish.—*W. R. Horlacher.*

12497. SAEZ, FRANCISCO ALBERTO. Nota sobre los complejos de cromosomas en cuatro especies de ortópteros ("Acrididae") del Río de la Plata. [Chromosome complexes of four species of Orthoptera ("Acrididae").] *Arch. Soc. Biol. Montevideo* 2(1): 35-43. 1930.—Four genera of South American Acrididae, *Schistocerca paranensis,* Burm., *Elaeochlora viridicata* Serv., *Diedronotus discoideus* Serv., and *Chromacris miles* Drury, were studied and found to have 23 spermatogonial chromosomes each, arranged in graded series.—*I. Corey.*

12498. SAEZ, FRANCISCO ALBERTO. Investigaciones sobre los cromosomas de algunos ortópteros de la América del Sur. I. Número y organización de los complejos en cuatro géneros de Acridios. *Rev. Mus. La Plata* 32: 317-361. 1 pl. 1930.—*Schistocerca paranensis, Elaeochlora viridicata, Diedronotus discoideus,* and *Chromacris miles* each have 23 spermatogonial chromosomes. *S. paranensis* has 3 small pairs, 5 median, 3 large, and the unpaired accessory; *E. viridicata* has 2 small pairs, 4 intermediary, 3 medians and 2 large; *D. discoideus* has 3 pairs of small elements, 5 medians and 3 large. In the 4 spp. mentioned, all the gonial chromosomes are telomitic rods. The chromosomes of *Elaeochlora* are longer than those of *Schistocerca.* The same has been observed in *Chromacris* compared with *Diedronotus.* In the first spermatocyte the 11 tetrads and 1 dyad, typical of the Acrididae, are presented in the 4 species. Variation has been observed in the form of the ring elements, which differ in number in the same individual. The behavior of the elements also varies in the individual. None of the 4 spp. have heteromorphic pairs. It has not been possible to establish the manner of segregation of homologues during maturation. The accessory chromosome always maintains its typical individuality clearly. In the 1st mitosis it always passes, undivided, to 1 pole. In the 2nd spermatocyte it divides equationally. In each sp., the relations of size and form are clearly shown in the 2nd spermatocytes, the constancy observed in the homologues of the spermatogonia being maintained. Each of the genera possesses a special individuality in cellular organization, being parallel with the stable taxonomic position of each genus.—*From author's summary (transl.).*

12499. SAYLES, LEONARD P. Double nucleoli and mitosis in cells of the alimentary tract of Lumbriculus following dilution of the body fluids. *Jour. Exp. Zool.* 58(1): 487-494. 1930.—Distilled water was injected into the coelom of each individual through one spot in the

body wall. The level of injection varied from the 14th to the 15th segment. The only difference in the treatment of control individuals was the substitution of unmodified Ringer fluid for distilled water. All specimens thus far studied were killed between 18 and 48 hours after treatment. In almost every instance several hundred double nucleoli and a correspondingly large number of mitoses were found among the gut cells near the point of injection of water. In similar regions of controls less than 50 double nucleoli and not more than 3 or 4 mitoses were present. These experiments, therefore, offer further evidence in support of the theory that, in *Lumbriculus* at least, dilution of the body fluids is an important factor in arousing cells to regenerative activity.—*Author (courtesy Wistar Bibl. Serv.).*

12500. SHARGA, U. S. Cytoplasmic inclusions in the oogenesis of Pheretima posthuma. *Allahabad Univ. Stud.* 4: 177-190. 3 pl. 1928.—In young oogonia of this earthworm both Golgi bodies and mitochondria appear in juxtanuclear areas. The latter are clearly defined in the early oocyte, where the mitochondrial cap spreads out in a perinuclear position. Later it migrates away from the nuclear membrane and is distributed in the general cytoplasm. The Golgi apparatus spreads out into the cytoplasm in a haphazard manner. No evidence has been found that the Golgi bodies or mitochondria arise "de novo." Neither intra vitam nor the usual fixation methods reveal the presence of neutral fat or yolk. The Golgi elements are less osmiophile than in many other animals. In fully developed eggs they are always spherical. The mitochondria are non-filamentous, but granular. There are no visible nucleolar extrusions into the cytoplasm.—*H. I. Corey.*

12501. SKOWRON, S. Recherches sur la spermatogenèse in vitro. I. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II) [Zool.]* 1929 (8/10) : 487-499. 10 fig. 1929.—First spermatocytes of *Helix pomatia* have large pseudopodia and are motile. Mitochondria and the Golgi apparatus can be distinguished. Chromosomes refract light strongly. Late prophase chromosomes are clumped laterally near the nuclear membrane, which then completely disappears. At metaphase the spermatocytes have no pseudopodia. Protoplasmic currents often displace mitochondria and shift the position of spindle and chromosomes. There is an increase in size of cell and nucleus in spermatocytes of the 2nd order. The time required for the different stages is given. Increased temp., or ether, diminishes the viscosity and surface tension of protoplasm. Often parts of the cytoplasm break off from the rest of the cell, and cytolytic disintegration of the cells occurs. There is a differential susceptibility to heat at different stages of division; the resting cell is less sensitive than the dividing. At high temp. tripolar or tetrapolar mitoses occur, followed by division. The cells thus arising continue to develop normally. Nuclear division has been observed to occur without corresponding cytoplasmic division.—*K. Jeffers.*

12502. STAEMMLER, M. Über physiologische Regeneration und Gewebsverjüngung. *Beitr. Path. Anat. u. Allgem. Path.* 80 (3) : 512-569. 2 pl. 1928.—Concerns the relation of tissue regeneration to mitotic division. In heart and skeletal muscle of man, double or multiple nuclei occur, and in the liver and kidney binucleate cells are not uncommon. These conditions are not pathological nor related to age, except that they are absent in the fetus and newborn. The binucleate or multinucleate condition apparently arises by amitosis without cytokinesis. It is concluded that in various tissues and organs there is a periodic renewal of the nuclear apparatus by amitosis and a consequent rejuvenation. Literature on occurrence of binucleate and multinucleate cells in vertebrate tissue and on the rôle of amitosis is presented.—*L. H. Hyman.*

12503. WALTER, LADISLAUS. Ciliogenesis in a cystically dilated hydatid of Morgagni. *Anat. Rec.* 42 (2) : 177-187. 2 pl. 1929.—This article contains a description of ciliogenesis in the adult ♀ tube and in the hydatids of Morgagni, according to the type mentioned by Benda and Ikeda. The diplosome sinks from the surface to the inner part of the cell, there divides and forms a granule aggregation. The dumb-bell-shaped matted granules rise to the surface of the cell and sprout cilia.—*Author (courtesy Wistar Bibl. Serv.).*

12504. WILSON, EDMUND B. The question of the central bodies. *Science* 71 (1852) : 661-662. 1930.—Brief discussion of the problem of the central bodies (centrosomes, centrioles) based on a critical re-examination of Mead's original preparations and drawings of maturation, fertilization and cleavage in the *Chaetopterus* egg. The results confirm Mead's account at every point and sustain his conclusions as against the view that the central bodies are either artifacts or random granules.—*E. B. Wilson.*

12505. WU, CHAO-FA. Cytological studies on the spinning glands of the larva of Galleria mellonella: respective rôles played by the nucleus, the Golgi apparatus, and the mitochondria during secretion. *Jour. Morph. and Physiol.* 49 (1) : 509-541. 3 pl. 1930.—Spinning in *Galleria* begins shortly after hatching and continues throughout larval life. The gland cells secrete continuously, irrespective of the act of spinning. The nucleus plays a direct and an important rôle in silk secretion by the migration of nucleoli into the cytoplasm, where they enlarge and synthesize a fatty material in the center; the fatty material is transformed into a non-soluble basophilic substance, which then changes into the secretory product in its final form. The processes of converting the fat into non-soluble substance and of converting the latter into the secretory product progress inwardly from the periphery of each secretory body. The secretory bodies or masses of secretory material break up into smaller and smaller masses and eventually into a fine dispersed state before their entrance into the lumen of the gland. The mitochondria are granular in the cells of the conductive portion and filamentous in those of the reservoir and secretory portions of the gland. In the secretory portion they are oriented with the long axis toward the gland lumen. Their rôle in silk secretion is negligible or at most a minor one. The Golgi apparatus is in the form of discrete ring- and half-ring-shaped bodies and remains so during all stages of secretion. If it plays any rôle in silk secretion, the fact has not been detected by the author.—*Author (courtesy Wistar Bibl. Serv.).*

12506. ZIRKLE, CONWAY. Fixation images with chromates and acetates. *Protoplasma* 5: 511-534. 2 pl., 1929.—Bichromates which exist in solution only on the acid side of a critical range (pH 4.2-5.2) fix with an image differing only in minor details from that of chromic acid. Reversal of the image is as a rule sudden and complete and occurs at different points with different bichromates. With certain bichromates the 2 images overlap. Copper, glucinum, cerium, and zirconium (reduced?) bichromate fix nuclear lymph, nucleoli, dividing chromatin, mitochondria and hyaloplasm. Nickel and zinc bichromate have predominately the basic image but the former gives also swollen chromosomes at metaphase and anaphase and the latter hollow chromosomes at metaphase. Bichromates with the following cations give acid images, Th^{++++}, U^{++++}, Zr^{++++}, Fe^{++}, UO_2^{++}, Hg^{+} and Cr^{+++}. Cobaltous bichromate gives an acid image and in addition fixes some mitochondria in the central cylinder. Zirconium bichromate when reduced with a little alcohol gives an image with both acid and basic element preserved. Nickelous bichromate has a basic image except as noted above.—*Author's summary.*

GENETICS

ORLAND E. WHITE, *Editor,* Plant

SEWALL WRIGHT, *Editor,* Animal

(See also in this issue Entries 12075, 12093, 12144, 12433, 12441, 12450, 12617, 12618, 12851, 13099, 13104, 13474, 13503, 13514, 13541, 13648, 13715, 13944, 13945, 13959, 13969, 13989, 13996, 14003, 14004, 14058, 14061, 14168, 14211, 14298, 14327, 14365, 14451, 14683)

GENERAL

12507. COOK, HARRY H. Like breeds like. A non-technical treatise covering heredity, live stock breeding and eugenics. xxiii+25-383p. 77 fig. Research Department, Sans Aloi's Jersey Farm: Ontario, California, 1931.

12508. SHULL, A. FRANKLIN. Heredity. 2nd ed. 345p. 142 fig. McGraw-Hill Book Co., Inc.: New York, 1931. Price $3.00.—This edition has been extensively revised, but without divergence from the original aim: an adequate presentation of the basic principles of genetics, and a discussion of the bearing of these principles on problems of human society, for students who have no previous knowledge of biology. Discussion of multiple allelomorphs and of lethal factors has been added. The chapters on evolution, heredity in man, population, and immigration, are among those which have been most revised. Problems have been introduced in the fundamental divisions of the work.—*S. Wright.*

12509. WINKLER, HANS. Die Konversion der Gene. Eine vererbungstheoretische Untersuchung. 186p. 6 fig. Gustav Fischer: Jena, 1930. Pr. 10 M.

PLANT

12510. BRESSMAN, E. N. Developing new varieties of hops. *Science* 74(1912): 202-203. 1931.—Note on initial work to develop new varieties of hops of higher quality and with resistance to *Pseudoperonospora humuli,* in which it was found that chilling and scarification of seed and growth with artificial light are of great assistance in speeding up a breeding program.

12511. FALKOWSKA, HELENA. Badania nad mieszańcami bobu z bobikiem. [Hybrids of Vicia faba major and V. faba minor.] [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest Ann.)* 18(3): 415-448. 10 fig. 1927.

12512. JENKIN, T. J. The method and technique of selection, breeding and strain-building in grasses. *Great Brit. Imp. Bur. Plant Genetics: Herb. Plants Bull.* 3. 5-34. 1 pl. 1931.—A compendium on technique based on experiment as well as general knowledge of the subject.

12513. KARPER, R. E., and A. B. CONNER. Inheritance of chlorophyll in sorghum. *Genetics* 16(4): 291-308. 2 fig. 1931.—Data on the occurrence and inheritance of the various chlorophyll characters so far studied in sorghum are presented. White seedlings seem to be the most frequent type of chlorophyll mutation in sorghums, and those found were simple Mendelian recessives. Two types of virescent seedlings, v_1 (virescent white) and v_2 (virescent yellow), are both simple recessives. Two types of yellow seedlings, one found in Sudan grass and one in kafir, of different phenotypic expression, are assigned different genetic factors, y_1 and y_2. Both are of simple inheritance and lethal. White seedlings in Sudan grass gave ratios indicating as many as 3 pairs of multiple factors involved, but if present, they could not be determined and separated because of weakness of the stock. An albino factor, acting as a zygotic and gametic lethal, is probably a better explanation of the peculiar ratios obtained. A virescent yellow Sudan grass, in which the homozygous recessive survives to maturity, is apparently due to a single gene. A chlorophyll deficiency in sorghum not transmitted through the pollen but strictly maternal in inheritance produces normal, yellow, and striped green and yellow seedlings, depending upon the nature of somatic tissue upon which the seed are borne. The factors *R* (red stem) and *w* (albino) were found to be linked with a crossing-over of 41.34%. Linkage has not previously been reported in sorghum. The frequency and diversity of chlorophyll recessives recently found in sorghum suggest a parallelism with the many types found in maize. Sorghum is largely self-fertilized, and while chlorophyll-deficient types are not so numerous as those found when maize is selfed, they are quite common and, apparently, the result of frequent mutation. These characters in sorghum are apparently not already present in the heterozygous condition, since lines or strains inbred and under observation for a number of generations without showing any chlorophyll-deficient types seem suddenly to mutate to the recessive form, and in some instances, while stock was being studied for one type of recessive, a gene mutation giving rise to another type has occurred.—*R. E. Karper.*

12514. MAZURKIEWICZ, ZYGMUNT. Zmienność w czystych linjach i w populacji pszenicy jarej. [Variability in pure lines and in the population of spring wheat.] [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 17(1/2): 115-158. 44 fig. 1927.

12515. MOLDENHAWER, KONSTANTY. O mieszańcach żyta z Aegilops. [Hybrids between Aegilops and Secale.] [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 19(3): 407-422. 6 fig. 1928.

12516. MONSCRIEFF, R. SCOTT. The chemical effect of a Mendelian factor for flower colour. *Nature [London]* 127(3217): 974-975. 1931.—In *Pelargonium zonale,* scarlet-flowered varieties have the pigment pelargonin; a violet-red variety contains cyanin, differing from pelargonin only by the possession of 1 more OH group. A rose-pink variety, "Constance," containing cyanin+flavone, selfed, gave 17 rose-pink and salmon-pink offspring, the pigment of the latter being pelargonin+a trace of flavone. Evidently the latter flower color is recessive, and the effect of the factor concerned is to substitute OH for H on the anthocyanidin nucleus.

12517. NIEWIAROWICZ, LEON. Doświadczenie nad chowem krewniaczanym żyta. [Experiments on the ancestry of rye.] *Roczniki Nauk i Leśynch (Polish Agric. & Forest. Ann.)* 15(3): 554-585. 1 pl. 1926.

12518. PATWARDHAN, G. B. A preliminary note on inheritance in castors. *Jour. Indian Bot. Soc.* 10(2): 100-109. 1 pl. 1931.—This is a report of incidental results obtained in breeding *Ricinus communis* at Poona to secure high yield and high oil content. In the cross spiny × spineless, F_1 plants all showed intermediate dominance of spininess, i.e., sparse distribution on the capsule. In bloom × bloomless, single bloom is dominant to no bloom, and treble bloom is dominant to double bloom Single bloom is defined as bloom on the stem, petiole, and peduncle; double bloom is bloom on the lower leaf surface also; treble bloom is bloom on both leaf surfaces. Green fruit × bright pink fruit gave pink capsules in the F_1, and 3 green to 1 pink in F_2. Red or purple stem × green stem gave in the F_2 3 "all grades of red up to dark purple-red" to 1 green. —*W. Dudgeon.*

12519. SANSOME, F. W. Graft hybrids and induction of polyploids in Solanum. *Rept. & Proc. Internat. Hort. Congr. London* 9: 92-99. 1930.—This discussion is based on the work of Jørgensen and Crane.

12520. SCOTT, G. W. Correlation studies on the fruit of Cucumis melo L. *Proc. Amer. Soc. Hort. Sci.*

27: 333-334. 1930(1931).—Correlation coefficients for density and shape (ED/PD) ratio of cantaloupe fruits of inbred lines of Salmon Tint, Hale's Best, and Honey Ball varieties were insignificant. The shape ratio is not a satisfactory index to the density to be used as a basis for selection in breeding work. Correlations between weight and shape ratio and weight and density are not significant.—*G. W. Scott.*

12521. **STAPLEDON, R. G.** Methods as applied to cocksfoot grass (Dactylis glomerata L.) and remarks as to technique in general. *Great Brit. Imp. Bur. Plant Genetics: Herb. Plants Bull.* 3. 35-45. 1931.—On breeding technique.

12522. **WILLIAMS, R. D.** Methods and technique of breeding red clover, white clover and lucerne. *Great Brit. Imp. Bur. Plant Genetics: Herb. Plants Bull.* 3. 46-76. 1 pl. 1931.

12523. **WOLTERECK, R.** Bemerkungen über die Begriffe "Reaktions-Norm" und "Klon." *Biol. Zentralbl.* 48(3): 167-172. 1928.—Exception is taken to the meanings attached to these terms by certain investigators. "Reaction Norm," introduced by the author in 1909 as the physiological expression for Johannsen's "Genotype," the kernel of the expression lying in the idea of immutability, is wrongly used by E. Stein when she refers to certain irreversible changes in *Antirrhinum*, brought about by radium treatment, which were carried over to the asexually produced offspring, as changes in the Reaction Norm. The changes were due rather to a complex of internal and external conditions which varied for each object exposed and they disappeared with the next sexual generation unless it was likewise subjected to the same treatment. Shull and Webber call the asexual offspring of a single plant a "Clone." The confusion of unisexual (parthenogenesis) with asexual reproduction has led to giving the name "Clone" likewise to a succession of generations arising from a single female gamete. True clones are ruled out in the study of mutations and the same is done with these so-called "Clones." This is unwarranted, because bisexuality is not a sine qua non for mutation, e.g., bacteria. It is misleading, however, to call parthenogenetic lines clones, i.e., organisms without successions of generations and without the essentials of true inheritance, viz., alternation between concentration of the whole germ in one matrix and development of the soma from this one-cell matrix.—*P. H. Yancey.*

12524. **ANONYMOUS.** Oat breeding bibliography. [Mimeographed.] 21p. Imperial Bureau of Plant Genetics School Agric.: Cambridge, England, 1931. Pr. 1s. 6d.

12525. **ANONYMOUS.** Rice breeding bibliography. [Mimeographed.] 24p. Imperial Bureau of Plant Genetics School Agric.: Cambridge, England, 1931. Pr. 1s. 6d.

12526. **ANONYMOUS.** Wheat breeding bibliography. 1 & 2. [Mimeographed.] 61p. Imperial Bureau of Plant Genetics School Agric.: Cambridge, England [1931].

ANIMAL (EXCEPT MAN)

12527. **[AGOL, I. I.]** АГОЛ, И. И. Ступенчатый аллеломорфизм у Drosophila melanogaster. [Step allelomorphism in Drosophila melanogaster.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 5(2): 86-101. 2 pl. 1929.—In the F_1 from the cross x-rayed yellow ♂ × double yellow (*yy*) ♀, 1 ♂ with reduced bristles was obtained which, as well as his offspring, in general resembled sc^1, sc^2, sc^3, flies but differed from them by the high reduction of head, sides, scutellum and post-alar bristles. This new gene (sc^4) in compounds with other scutes gave reduced bristles on parts of the body where reduction was common to both, and reversion to the wild type for characteristics not common to both genes. Thus sc^4 is partially allelomorphic to other scutes and belongs to the series of "step allelomorphs" previously described by Serobrovsky and Dubinin, according to whose hypothesis the genes of this series are located not in identical but in somewhat displaced loci of homologous chromosomes. The author concludes that the gene is not homogeneous but is composed of separate parts, each having independent action on definite parts of the organism.—*G. A. Lebedeff.*

12528. **AGOL, I. J.** A case demonstrating the absence of somatic induction in Drosophila. *Amer. Naturalist* 65(696): 88-92. 1931.—An x-rayed apricot ♂ crossed to 4 double-yellow attached-X ♀♀ produced yellow ♀ offspring and 304 phenotypically white ♂♂. Analysis showed the white to be due to the interaction of apricot and a mutation identical or allelomorphic to ruby. This had occurred in the early development of the apricot male in that part of the chromatin destined to enter the germ cells and after the separation from it of the chromatids which were to form the optic anlage. The somatic tissue of the fly was apricot, the germinal tissue apricot-ruby (phenotypically white).—*W. P. Spencer.*

12529. **[BELYAEV, M. M.]** БЕЛЯЕВ, М. М. О наследовании бесхвостости у домашней кошки. [Inheritance of taillessness in the domestic cat.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(1): 25-28. 1930.—The conclusion of Castle and Bateson that short tail in cats is inherited as a single dominant factor is confirmed. A normal ♀, with a tail 52% the length of her body, crossed with a ♂, with a tail 5% the length of his body, gave 4 kittens with tails 2, 18, 50, and 53% of body length at the age of 6 weeks, i.e., 2 normal and 2 short-tailed. Evidently the female was heterozygous (*Aa*). A cross between 2 short-tailed cats gave 4 kittens with tails of 0, 11, 28, and 47% of body length, thus showing ideal 3:1 segregation, short to normal. A cross between a homozygous tailless ♀ with a normal ♂ gave 4 embryos, and later 3 kittens, all with short tails.—*G. A. Lebedeff.*

12530. **BONTEMPO, ETALIANO.** Un caso di mutazione morfologica nella razza suina pugliese. *Riv. Zootecnia* [*Firenze*] 8(7): 273-277. 2 fig. 1931.—The Puglia hog has an arched back, generally black bristles, but not rarely it is a dirty white with black on the rump. A mutation with concave back was bred to a normal sow. The offspring were: 4 with a strongly concave back, 2 with moderately concave back and 1 with the back slightly concave. The mutant type of back is considered dominant.

12531. **[BORISEN'KO, E. YA.]** БОРИСЕНЬКО, Е. Я. Исследование аутосомной геновариации Radius incompletus у Drosophila melanogaster. [English summary.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(2): 115-138. 1930.—Autosomal recessive mutation, "Radius incompletus," arose in a wild Caucasus line of *D. melanogaster*, and is characterized by incomplete development of the second longitudinal vein of the wing; gene "*ri*" is located in the 3rd chromosome (locus 45.66). Variation in the degree of vein incompleteness was found to be merely phenotypical.—*G. A. Lebedeff.*

12532. **DANFORTH, C. H.** The manifestation of a sex-linked trait following skin transplantation. *Jour. Heredity* 20(7): 319-322. 2 fig. 1929.—Feathers produced after skin transfer from a ♂ to a ♀ chick developed a sex-linked trait of the donor, a sex-limited trait of the host. The importance of such traits as criteria of sex reversal is emphasized.—*C. H. Danforth.*

12533. **DANFORTH, C. H.** Bantam genetics; distribution of traits on a Sebright-Mille Fleur cross. *Jour. Heredity* 20(12): 572-581. 4 fig. 1929.—Descriptions are given of the F_1's of various bantam crosses among the descendants of a Sebright × Mille Fleur cross, involving size, color, comb form, hen-feathering in the male, leg-feathering, brachydactyly, and vulture hock. In some cases F_2 data are given and the results of skin grafting and castration experiments on feather form and coloring are presented. In addition to white spangling, which occurred in connection with all other patterns, 6 other types of coloration were found in the ♀ plumage. Cocky phases were determined for all but one of the corresponding ♀ types.—*L. M. Dickerson.*

12534. **DELACOUR, J.** Notes sur quelques hybrides. *Rev. Hist. Nat. Appl. Pt. 2. Ornithol. Avicult. l'Oiseau* 8(9): 276-284. 1927.—The following hybrids, made by

the author over a period of more than 20 yrs., are described: *Pavo muticus* × *P. cristatus; Lophophorus impeyanus* × *Gallus gallus; G. varius* × *G. gallus; G. sonnerati* × *G. gallus; Diardigallus diardi* × *Gallus gallus; Syrmaticus soemmeringi scintillans* × *S. reevesi; S. mikado* × *S. ellioti; Chrysolophus pictus* × *Phasianus c. colchicus; Hierophasis edwardsi* × *H. swinhoei; Gennoeus leucomelanus* × *G. horsfieldi; Tragopan temminckii* × *T. satyra; Columba speciosa* × *C. maculosa; Chloephaga rubidiceps* × *C. magellanica; C. magellanica* × *Alopochen aegyptiacus; Asarcornis scutulata* × *Anas platyrhynchos; Dendrocygna viduata* × *Metopiana peposaca; Anas poecilorhyncha* × *A. undulata; A. falcata* × *A. penelope; A. falcata* × *A. strepera; A. americana* × *A. penelope; A. sibilatrix* × *A. sponsa; A. spinicauda* × *A. sibilatrix; A. bahamensis* × *A. spinicauda; A. bahamensis* × *A. brasiliensis; A. flavirostris* × *A. crecca; A. flavirostris* × *A. castanea; A. flavirostris* × *A. spinicauda; Metopiana peposaca* × *Netta rufina; Nyroca americana* × *Metopiana peposaca; Nyroca fuligula* × *N. americana; N. marila* × *N. americana; N. marila* × *N. affinis.*

12535. **DEMEREC, M., and J. G. FARROW. Non-disjunction of the X-chromosome in Drosophila virilis.** *Proc. Nation. Acad. Sci.* 16(11): 707-710. 1930.—The frequency of primary non-disjunctions was 1 in about 1500 individuals; ♀: ♂ ratio for primary non-disjunctions was 1: 19; primary ♂♂ were sterile; frequency of secondary non-disjunctions was 1 in 1120 individuals; ♀: ♂ ratio approximately 1: 1.—*C. V. Beers.*

12536. **DEMEREC, M., and J. G. FARROW. Relation between the x-ray dosage and the frequency of primary non-disjunctions of X-chromosomes in Drosophila virilis.** *Proc. Nation. Acad. Sci.* 16(11): 711-714. 1930.—At low dosages the increase in the percentage of primary non-disjunctions was almost proportional to the x-ray dosage applied. Between 1200 and 2000 r-units the increase in non-disjunctions is smaller and the fertility of treated flies declines. Suggests that flies which would have shown non-disjunctions are killed off in larger proportion than regular offspring.—*C. V. Beers.*

12537. **[DUBININ, N. P.]** ДУБИНИН, Н. П. **Исследование явления ступенчатого аллеломорфизма у Drosophila melanogaster. [Phenomenon of step-allelomorphism in Drosophila melanogaster.]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 5(2): 53-85. 7 fig. 1929.—In the F_1 from the cross x-rayed beadex ♂ × $\frac{ju}{sc\ t\ vsl\ Bcl}$ ♀, one ♀ scute (sc^2) was found which differed from the normal scute in that it had reduced bristles in places where the normal scute had not, and normal head bristles which are usually reduced in normal scute. From the cross $\frac{sc^2\ Bx}{sc^1 w}$ × yellow ♂♂, the following results were obtained: ♂♂ 36 $sc^1 w$, 23 $sc^2 Bx$, 3 sc^3 and 35 $sc^1 wBx$; ♀♀ 64 *Bx* and 79 wild. 3 sc^2 ♂♂ had banded wings and were sterile. Males which had non-crossover x-rayed chromosome were fertile, while males with only the left-hand part of x-rayed chromosome (with new sc^2 gene) were sterile. In the F_1 of the cross x-rayed vermillion ♂ × $\frac{sc^1 w}{sc^1\ t\ vsl\ Bcl}$ ♀♀, one of the $\frac{sc^1 w}{v}$ ♀♀ had reduced bristles on the head and abdomen, but on the scutellum the number of bristles was normal. In general the effect of this new gene, sc^3, is more pronounced than other scute allelomorphs. Further studies showed that sc^3 is localized in the left end of the X-chromosome and manifested only in combinations with other scutes. sc^3 has semi-lethal effects on ♂♂. Biometrical studies showed that these 3 genes have different quantitative and qualitative effects on bristles in various parts of the body. The nature of these genes was found in studying them in combinations. Instead of obtaining the expected intermediate type, as is usual in crosses when two genes of the same series of allelomorphs are involved, partial reversion to the wild type was obtained from flies with different scutes, e.g., in sc^3 flies the 1st notopleural bristle is almost completely reduced; in sc^2 flies it is normal; while in the combination $\frac{sc^3}{sc^2}$ this bristle is normal, as in sc^3. The dominance of a character is found in all cases where the difference is in quality, while in all cases of quantitative differences between scutes the degree of reversion to the wild type is somewhat different; e.g., in sc^1 flies ocellar bristles are reduced on the average in 98%, and in sc^3 flies in 44%, while in combinations in 35%. Thus in combinations reversion to the wild type is only partial. Every gene of the scute series in combinations is manifested doubly: that part of a characteristic of a given scute which coincides with a characteristic of the other allelomorph is expressed in the combination; the other part which is normal in other scute allelomorph reverts to the wild type. Thus one part of a scute gene, e.g., $\frac{sc^1}{sc^2}$, is in a heterozygous condition, and the other part, which is manifested in a combination, is in a homozygous condition. Such a homo-heterozygous condition of the parts of the gene is due to their having non-corresponding loci in the chromosome. This is noticeable in $\frac{sc^2}{sc^3}$ combinations, which are almost normal with the exception of reduced bristles on the abdomen. The yellow gene which reduces dorso-central bristles also belongs to this series of step-allelomorphs.—*G. A. Lebedeff.*

12538. **[GAISINOVICH, A.]** ГАЙСИНОВИЧ, А. **Ступенчатый аллеломорфизм у Drosophila melanogaster. [Step-allelomorphism in Drosophila melanogaster.]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(1): 15-24. 1930.—In the F_1 from the cross x-rayed yellow ♂ × double yellow (yy) ♀, a scute ♂ was obtained which established a line which in general resembled sc^1, sc^2, sc^3, and sc^4, but differed from them by the number of reduced bristles in different parts of the body. This new gene (sc^5) in combinations with other scutes (e.g., $\frac{sc^5}{sc^4}$) gave reversion to the wild type only for characteristics not common to both genes. Thus sc^5 was found to belong to the series of "step allelomorphs" (Serebrovsky, Dubinin, Agol) and located not in an identical but somewhat displaced locus in regard to other scute genes.—*G. A. Lebedeff.*

12539. **GOWEN, JOHN W. Genetic non-disjunctional forms in Drosophila.** *Amer. Naturalist* 65(698): 193-213. 10 fig. 1931.—Abnormal individuals with anatomical changes consisting largely of overgrowth or undergrowth of wings, bristles, eye grid, and reproductive organs appear sporadically and in ratios to the normal varying from 1 in 25 to 1 in 100 in a special stock of *D. melanogaster.* Fertility is reduced and life shortened in affected individuals. These variations are associated with a change of chromosome numbers, there usually being 12 instead of the usual 8. A 3rd chromosome recessive gene brings about these chromosome changes at maturation division.—*I. M. Burgess.*

12540. **HANSON, FRANK BLAIR, and ELVENE WINKLEMAN. Visible mutations following radium irradiation in Drosophila melanogaster.** *Jour. Heredity* 20(6): 277-286. 6 fig. 1929.—A total of 49 germinal mutations arising from males treated with radium and mated to double-X yellow females or from the C 1 B stock of an experiment on lethal mutations are reported. They have been separated into sex-linked and autosomal groups.—*Author's summary.*

12541. **HARRIS, B. B. The effects of x-rayed males upon mutation frequency in Drosophila.** *Jour. Heredity* 20(6): 299-302. 1 fig. 1929.—In tests on the effect of "aging" x-ray treated germ cells on frequency of sex-linked lethals, no correlation was found between the production of mutations in spermatozoa and their viability or the duration of their functional capacity. The testes of the adult ♂ contain both mature spermatozoa and immature germ cells, some of which undergo repeated divisions in the adult testis before maturity.

X-rays are more effective in producing transmissible gene mutations and chromosome abnormalities in the mature spermatozoa than in immature cells. The distribution of mutations in different regions of the X-chromosome are in accord with similar results reported by Muller.—*L. M. Dickerson.*

12542. **HERIBERT-NILSSON, NILS. Sind die induzierten Mutanten nur selektive Erscheinungen?** *Hereditas* 15(3): 320-328. 1931.—Concerning the experimental production of mutants in recent years by various agencies, the author holds that the appearance of new types may not be due to increased mutability, but may be a selective phenomenon, the agency applied killing off a large portion of the non-mutated types and thereby increasing the percentage of rare segregates. The basis for this supposition is the result of experiments in which high temperature, 36-36.5°C., was applied to cultures of *Drosophila melanogaster*. The types used were wild-type, +, and yellow body, white eye, yw. After 24 hours' treatment twice as many yw flies hatched as +; after 48 hours' treatment no + flies hatched, only yw. The larvae of the yw are more resistant to temperatures than the + type. During the first three days only yw flies hatch, which shows that this type is more resistant to heat in the period most effective for inducing mutants. The temperature treatment thus increases the number of mutant types in relation to the normal. This effect is compared with that of keeping for several years seed of *Oenothera*. Germination is reduced, but the number of mutants thrown is increased. These phenomena are similar, selective, not mutative. —*H. Wexelsen.*

12543. **HERSH, A. H. Facet number and genetic growth constants in bar-eyed stocks of Drosophila.** *Jour. Exp. Zool.* 60(2): 213-248. 1931.—Analysis of data on facet number in the dorsal (x) and ventral (y) lobes of the eye of fifteen bar stocks, differing in the Xple genes (scute, echinus, crossveinless, cut, vermillion, garnet), discloses a power function, $y=bx^k$, in which b and k (genetic growth constants) take different values in the different stocks; they differ also in males and females. b is a decreasing exponential function of k, showing about 36 per cent and about 43 per cent decrease per 0.1 unit increase in k, in females and males, respectively. Mean facet number for the entire eye plotted against k gives a periodic curve with decreasing amplitude which oscillates quite regularly (in females, at least) about the average for forked bar, the base of reference. For females the amplitude is about thirty facets; logarithmic decrement about 0.062; one full cycle covers about $0.20k$. Similar values for the males follow: amplitude about 50 facets; logarithmic decrement about 0.056; one full cycle covers about $0.25k$. An interpretation of the power, exponential, and periodic functions is given in terms of the distribution of growth.—*Author (courtesy Wistar Bibl. Serv.).*

12544. **HUTT, F. B. A note on Lambert's mosaic in the fowl.** *Jour. Heredity* 20(7): 323. 1929.—A critical review of recent papers reporting mosaics in the domestic fowl. Attention is called to the value of the presence or absence of size irregularities in determining the origin of skin-color mosaics.—*L. M. Dickerson.*

12545. **[IL'IN, N. A., and V. N. IL'INA.]** ИЛЬИН, Н. А., и В. Н. ИЛЬИНА. Зависимость окраски сиамских кошек от температуры. (Этюды по морфогенетике пигментации животных. V.) **[Dependence of pigmentation of Siamese cats on temperature. (Studies in morphogenetics of animal pigmentation. V.)]** [German summary.] Труды Лаборатории Экспериментальной Биологии Московского Зоопарка (*Trans. Lab. Exp. Biol. Zoopark, Moscow*) 5: 217-234, 21 fig. 1929.—Experiments were conducted on 2 Siamese cats (♂ and ♀). Low temperature environment (−3° to +16° C.) resulted in 2½ mos. in darker pigmentation, especially of extremities. Local application of high temp. resulted in light pigmentation or complete depigmentation of hair on the heated spot. Observation of the offspring (5) showed the following order of pigmentation development: muzzle, ears, tail, paws, back, sides, abdomen, axillae. The authors conclude that the pigmentation of Siamese cats is truly acromelanistic, and is determined by external temp. and physiological thermo-regulating factors. Cutting of the neck sympathetic nerve caused growth of depigmentized hair instead of black. The difference in pigmentation of various body regions is due to variety in thresholds of tissue irritability. In the young, change in coloration with age is determined by the access of temperature stimulus; thus, newborn Siamese cats are wholly white, due to the high intra-uterine temp., but in the post-uterine life their hair becomes pigmented according to the sensitivity of various parts of the body to the lowered temperature.

12546. **KELLER, KARL, und THEODOR NIEDOBA. Flotzmaulbilder von doppelköpfigen Monstren des Rindes. Ein vorläufiger Beitrag zur zwillingsbiologischen Forschung bei den Haustieren. [Muzzle prints of double headed monsters of cattle.]** *Zeitschr. Züchtung B, Tierzücht. u Züchtungsbiol.* 22(3): 417-423. 5 fig. 1931.—In all 3 cases the nose prints of these identical twins ("Siamese" monsters) were mirror images of each other. The similarities were not complete in shape and size of the individual pattern sections.

12547. **KOZELKA, A. W. The inheritance of natural immunity among animals.** *Jour. Heredity* 20(11): 519-530. 1929.—A review of the literature. Bibliography of 97 titles.—*A. W. Kozelka.*

12548. **LARSEN, L. HANSEN.** Danish progeny performance tests and their bearing on the practice of dairy cattle breeding. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 1): 117-127. 1931.—In Denmark every year, progeny performance tests (P.P.T.) are worked out for 3-400 bulls, mainly of Red Danish Milk Breed. P.P.T. indicates that certain bull-lines and cow-families are highly homogeneous, others highly heterogeneous for one or more desirable characters; thus, the P.P.T. directs attention to bulls and bull-lines possessing the valuable factors and simplifies the estimation of the value of an animal's pedigree. When estimating a bull's transmitting ability for dairy characters, use of records of dam, grand-dam and sire's dam alone permits only 40% correct prediction; this increases to 60% if the sire's P.P.T. is taken into account.—*Author's summary.*

12549. **LUCE, WILBUR M. The temperature-effective period in infrabar and its heterozygotes.** *Jour. Exp. Zool.* 59(3): 467-498. 1931.—In the bar-eyed races of *Drosophila melanogaster* the ommatidial number in the adult flies is dependent upon the temperature to which the larvae are subjected during development. By allowing the larvae to start their development at one temperature and then transferring them at intervals to another to complete their development, the period during which temperature affects ommatidial number was determined at 17°, 22°, and 27°C. for homozygous infrabar and for infrabar-by-bar heterozygotes. In the cross between infrabar and bar, the bar factor is nearly completely dominant. In both homozygous infrabar and heterozygotes between infrabar and bar the effective period for temperature is proportionately longer at lower temperatures. In infrabar the relative position of the termination of the effective period remains constant while that of the initiation varies inversely with temperature. In the heterozygotes the relative position of both the termination and initiation varies with temperature. In the heterozygotes the major effect of temperature appears to be upon the processes that initiate and terminate the effective period, and the effect upon the facet-forming process itself is slight; while in infrabar the major effect seems to be an acceleration of the facet-forming process, and the differential effect upon the length of the effective period is slight.—*Author (courtesy Wistar Bibl. Serv).*

12550. **MARCHLEWSKI, T. Genetic studies on the domestic dog.** *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II)* [*Zool.*] 1930(1/2): 117-145 1 pl. 1930.—Observations are reported on the inheritance of skull type and body build

among dogs, chiefly English Pointers. The conclusion is reached that a light and narrow type of head such as is found in various breeds of sheep dogs is dominant over the more broad and dished type found in hounds and other hunting dogs, and that the difference is a genetically simple one since clear segregation occurs. The same conclusion is reached concerning body build, a lighter type characteristic of English Pointers being dominant over the heavier, broader chested German type. Compact cat-like foot is imperfectly dominant over the outspread hare-like foot of the German type. A cross involving large pendulous ear (hunting dog type) in relation to short erect ear, produces animals with small but hanging ears. Hence small is dominant over large and pendulous over erect, but no measurements are given in support of these conclusions. The author confirms the findings of other investigators that there is a dominant, as well as a recessive, yellow coat color in relation to black, and dominant as well as recessive black in relation to gray. Both dominant (harlequin) and recessive types of white spotting are recognized. Roaning and ticking (scattered groups of colored hairs on white areas) are found to be dominant. —*W. E. Castle.*

12551. **MURRAY, JOSEPH M. A preliminary note on the occurrence of a color mutation in the house mouse** (Mus musculus). *Science* 73(1896): 482. 1931.

12552. **[NAZARENKO, I. I.]** НАЗАРЕНКО, И. И. Исследование новой сцепленной с полом доминантной геновариации **"Abrupt X" у Drosophila melanogaster. [New sex-linked dominant genovariation "Abrupt X" in Drosophila melanogaster.]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(2): 85-113. 2 fig. 1930.—"Abrupt X," dominant sex-linked mutation (locus 3.7), was found among *y v sn* stock in 1928. Homozygous "*Ax*" flies have short veins in both wings which are often bent; posterior cross vein is often interrupted, bristles on the head, thorax and breast are missing, thorax often broad with a dent in the middle and rising at the sides. In the heterozygous *Ax,* 2nd, 3rd, and often 4th veins are normal; bristles are also normal with the exception of supraalar, orbital and dorsocentral. The dominance of the *Ax* gene is not complete, and only about 30% of the heterozygotes are distinctly *Ax*. Through selections for + and − modifiers, lines in which *Ax* was completely dominant or recessive were obtained, which the author regards as new evidence of the relativity of dominance and recessiveness. Certain results lead the author to conclude that *Ax* is due to translocation of a piece of the sex chromosome in the Notch region and its attachment to the homologous chromosome at the locus 3.7.—*G. A. Lebedeff.*

12553. **NORDBY, J. E. Quadruplet lambs.** *Jour. Heredity* 20(8): 388. 1 fig. 1929.—A Hampshire ewe gave birth to quadruplets which averaged 81 lbs. in weight 90 days later. One of the quadruplets retained for breeding produced twins and another a set of twins at one birth, triplets at another.—*L. M. Dickerson*

12554. **PATTERSON, J. T. X-rays and somatic mutations.** *Jour. Heredity* 20(6): 260-267. 1 fig. 1929.—It is demonstrated that the production of breaks in the chromosomes is one of the main biological effects of irradiation. Somatic modifications similar in every way to those produced by gene mutations are also produced by breaks in the chromosomes of heterozygous individuals. Both kinds of "somatic mutations" occur normally but at only a fraction of the rate at which they can be induced by x-rays.—*L. M. Dickerson.*

12555. **PATTERSON, J. T. The production of gynandromorphs in Drosophila melanogaster by x-rays.** *Jour. Exp. Zool.* 60(2): 173-203. 2 pl. 1931.—A study on the effect of x-raying the germ cells in the production of mosaics, including sex mosaics or gynandromorphs. It was found that treating the germ cells of one of the parents increased the frequency of the appearance of gynandromorphs about three times over that found in the untreated or control material. X-raying the X-bearing sperm cells results almost exclusively in the elimination of the treated X-chromosome from the male parts of the gynandromorphs, whereas treating the egg cells results in the elimination of the treated and untreated X-chromosomes with about the same frequency. Gynandromorphs can be produced by breaking the X-chromosome by irradiation. Such mosaics have in the male parts an extra fragment of an X-chromosome, in addition to one entire X-chromosome. Advantage may be taken of the effects of breaks to study the question of a possible sex factor in the X-chromosome An analysis of gynandromorphs and aberrant males and females produced by breakage indicates that, if there is a gene for sex, it must lie at some point on the chromosome between the loci for singed and forked or their normal allelomorphs.—*Author (courtesy Wistar Bibl. Serv.).*

12556. **PINCUS, GREGORY. A modifier of piebald spotting in mice.** *Amer. Naturalist* 65(698): 283-286. 1931.—A modifier (ll) is described which, in the presence of the gene (*ss*) for piebald spotting, induces white-faced spotting in mice. The modifier is apparently independent of the pieblad gene, and segregates in simple Mendelian fashion.—*G. Pincus.*

12557. **PLATE, L. Bemerkungen zu den Jollosschen Orthomutationen von Drosophila.** *Biol. Zentralbl.* 51(3): 134-136. 1931.—Polemic.

12558. **[PROMPTOV, A. N.]** ПРОМПТОВ, А. Н. Плейотропная геновариация **"Polymorpha" у Drosophila funebris Fabr. [Pleiotropic genovariation Polymorpha in Drosophila funebris Fabr.]** [German summary.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 5 (3/4): 149-181. 1 pl. 1929.—In the F_2 of wild *D. funebris* found in the province of Moscow, 2 mutant flies were found. One crossed with a normal gave, beginning with F_2, a line of polymorphic (pm) flies in which the wings, eyes, and legs were modified. The modification of wings varied from short veins to notches of different degrees. Often the wings were short or even rudimentary. The modifications in the eyes also varied from "rough" through reduction in the number of facets to almost eyeless. The modifications in the legs were in the tarsus; 4-2 tarsi were found. The recombination of these modifications varied, although strong modification in wings was correlated with variations in eyes and legs, and vice versa; slight modification in wings was correlated with normal eyes and legs. One basic non-sex-linked gene and several modifiers were found to be responsible for all 3 changes. Selection for one particular modification did not affect other changes. Crosses of "pm" with wild gave in F_1 normal flies; in F_2 in many cases 3:1, normal segregation. Deviation from this ratio to a great extent depended upon environment. In pm stock at 12-15°C. the % of "pm" decreased to 0%, i.e., all phenotypically were normal; at 25-26°C. the % of "pm" increased to 100%. The effect of temperature on wing modifications extends throughout the pupal stage, while its effect in modifying the eyes is limited to the first 3-4 days of larval life. Decreased nutritive value of culture media decreased the % of polymorphic flies. Cross between "pm" and 2 lines (B and D) of wild flies showed that these lines weakened the gene for "pm" in various degrees. From the cross "pm" × B in the F_2 and succeeding generations polymorphism is more pronounced than from the cross "pm" × D. Thus it is concluded that the appearance of the polymorphic fly is due to two basic factors: genotype (gene + modifiers), which determines the degree of polymorphism; and environment, effecting the conditions for the development of these changes in a certain number of individuals, i.e., determining the % of "pm" among phenotypically normal flies.—*G. A. Lebedeff.*

12559. **ROBERTS, ELMER. A zebra-horse cross.** *Jour. Heredity* 20(12): 544-548. 4 fig. 1929.—The history of several zebroids obtained in crosses between mares and a Grevy zebra (*Equus grevii*) is given. The zebroids were chocolate with black stripes, regardless of the color of the mare. They withstood the effects of hot weather better than other farm animals.—*L. M. Dickerson.*

12560. [ROKITSKIĬ, P. F.] РОКИЦКИЙ, П. Ф. Поле действия гена. [Field of activity of the gene.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 5 (3/4): 182-214. 20 fig. 1929.—26 regions on the body of *Drosophila melanogaster* of which 24 were symmetrically placed on each side of the body and 2 on the axis were considered as the fields of activity of the genes Polychaeta, Notch$_8$, and Hairy-wing, increasing the number of bristles; Dichaete and scute decreasing the number of bristles; and split-bristle gene (*Shd*) simultaneously reducing bristles in one place and splitting and increasing them in another. In each *Drosophila* line studied (Leningrad, Bukhar, Caucasus, and others) reduction or increase in the number of bristles is confined to certain portions of the body—"fields of gene activity"—which are highly specific for all of the genes studied. As the number of the bristles in a given region may vary, the deviation from the mean shows the percentage of "manifestation" of a given gene. In other words, a gene may not be fully expressed. The field of activity of the gene often depends upon sex, since in the males the degree of bristle reduction is higher than in the females. Consequently the field of reduction in the male may include dots which in the female are normal. The degree of manifestation of the gene depends also upon its dominance. Environment and genotype may change the field of activity of a given gene, since environment may determine the degree of its expression. Genotype may have a general effect on the field when the whole field is changed, and a specific effect when certain elements (dots) of the field are displaced, thus changing the structure of the field. In its turn the structure of the field not only depends upon the genotype but also on the tissue, which may have a different degree of "susceptibility" in a given case to the reduction process. As a result of such mutual effect of the gene and tissue one or another pattern, whether it involves the distribution of bristles or pigment as in piebald, is developed. —*G. A. Lebedeff.*

12561. **ROKIZKY, P. TH. Über das Hervorrufen erblicher Veränderungen bei Drosophila durch Temperatureinwirkung.** *Biol. Zentralbl.* 50(9): 554-566. 1930.—A discussion of Goldschmidt's experiments in which mutations were induced in *D. melanogaster* by exposure to high temperatures, followed by the author's substantiation of Goldschmidt's experimental procedure. Exposure of larvae 1-8 days old to 37-38° C. for 24 hours yielded mutation types in F_1, F_2, and (or) F_3, which were designated as rough eye, dark body and darker trident pattern, notch type, crinkled wings, reduced bristle size, lethal (questionable), rudimentary wings (sex-linked), deformed wings with raised tips, III cross vein, and indentation of the inner edge of the wings. Suggests that the higher temperature exposures effect changes in individual genes, though types similar to hereditary changes effected by x-ray or radium treatment were not obtained.—*E. F. Grossman.*

12562. [ROMASHOV, D. D., and E. I. BALKASHINA.] РОМАШОВ, Д. Д., и Е. И. БАЛКАШИНА. Материалы по генетике Drosophila funebris F. [Genetics of Drosophila funebris F.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 5(2): 102-146. 13 fig. 1929.—A series of apparent mutations was arbitrarily classified into: (1) mutations which segregated in F_2 into 3:1 and 1:1 ratios; (2) mutations which segregated very irregularly; (3) non-segregating and evidently non-heritable changes. The greatest number were found in the last two classes, which is explained by the unstable equilibrium between heritable and environmental factors, temp. and humidity being especially emphasized.—*G. A. Lebedeff.*

12564. [SEREBROVSKII, A. S.] СЕРЕБРОВСКИЙ, А. С. Исследование ступенчатого аллеломорфизма. [Step allelomorphism.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(2): 61-72. 1930.—In *Drosophila melanogaster* in the F_2 from the cross, x-rayed eosin (w^e) ♂ × double yellow (*yy*) female, one scute ♂ was obtained which, as well as his offspring, resembled other scutes (sc^1, sc^2, sc^6, sc^4, sc^5) but differed by the absence of ocellar, notopleural, and coxal bristles; and by the presence of scutellar and sternal bristles. The flies having the new scute gene (sc^6) in combinations with other scutes (with the exception of sc^5) partially resemble the parents in characters common to both and are like wild flies in bristles not common to both; i.e., scute^6 is one of the series of scute step-allelomorphs. But in the combination $\frac{sc^6}{sc^5}$ there is complete reversion to the wild type, thus showing that sc^6 and sc^5 are not allelomorphs although they both belong to the same series of allelomorphs.—*G. A. Lebedeff.*

12565. **SEREBROVSKY, A. S., and L. G. PETROFF. Downless chickens.** *Jour. Heredity* 20(7): 331-332. 2 fig. 1929.—The occurrence of 3 downless chicks in the progeny of closely related families is attributed to the action of specific semi-lethal genes.—*L. M. Dickerson.*

12566. **STURTEVANT, A. H. The claret mutant type of Drosophila simulans: a study of chromosome elimination and of cell-lineage.** *Zeitschr. Wissenschaft. Zool.* 135(3/4): 323-356. 4 fig. 1929.—Claret *D. simulans* is a "pink" eye-color, found by Plunkett in 1924, recessive, 3rd-chromosome, locus 130, "corresponds" to claret in *D. melanogaster*. Eggs of claret ♀♀ mostly perish, remainder gave highly unusual results. (1) 3% were gynandromorphs. (2) 6% of ♀♀ were XXY exceptions through primary non-disjunction, some being "equationals." (3) 50% of ♂♂ were XO sterile exceptions, some through primary non-disjunction, but most from elimination at 1st cleavage division. (4) 40% of both sexes were sterile haplo-IV's, from primary non-disjunction and from elimination at 1st cleavage. (5) 4% were haplo-IV in part only of body, from elimination at slightly later stage. (6) There was a high correlation in non-disjunction of X and IV and in elimination of X and IV. (7) Crossing-over was reduced for right end of X, as seen in regular sons. (8) There was presumably high elimination of chromosomes II and III, partly accounting for high egg mortality. (9) One mosaic was probably haploid through elimination. (10) Probably triploid intersexes occurred occasionally. The above effects (except 7) were correlated by assumption of slowed division rate of chromosomes produced in claret ♀, the retardation being most marked at reduction and at very early cleavage. Cytologically, the X of *D. simulans* is like X of *D. melanogaster*, except that it has stronger constriction; Y shorter simple rod, not longer and J-shaped as in *D. melanogaster*. Intensive study of above gynandromorphs and mosaics showed: (1) Elimination was predominantly or exclusively of maternal X. (2) Elimination was nearly exclusively at 1st, 2nd or early cleavage division, instead of in late imaginal discs as in Minute-n piebalds. (3) One side of the head includes descendants of a larger sample of blastoderm nuclei than do other parts studied, since each side of head probably comes from 3 separate imaginal discs. (4) The closeness of relationship (derivation from similar blastodermic nuclei of limited region) was highest for abdominal parts, lowest for thoracic parts of the gynandromorph. (5) The degree of relationship between various regions was roughly inversely proportional to distance upon surface in any direction except across midline. (6) Differentiation of structural parts was independent of origin of component nuclei but was determined by position of nuclei after completion of growth of competing discs. (7) Distribution of cleavage nuclei to blastoderm was indeterminate and different from embryo to embryo. (8) Mutant characters were generally self-differentiating and dependent only on constitution of nuclei in each locality.—*C. B. Bridges.*

12567. **SUMNER, FRANCIS B. Genetic and distributional studies of three sub-species of Peromyscus.** *Jour. Genetics* 23(2): 275-376. 4 pl. (1 col.), 27 fig. 1930.—The geographic races considered differ strikingly in pigmentation of hair and skin; less conspicuously in length of certain parts (tail, foot, femur, etc.) These char-

acters were dealt with quantitatively. The pigmental characters bear definite relations to certain environmental gradients; the linear measurements show no such definite relations. Mean racial differences in all these characters are entirely genetic, as shown by failure to converge in a common environment. Individual differences are partly genetic, partly non-genetic. A few of these racial (sub-specific) differences are absolute, in the sense that one race may possess in full measure a characteristic which another entirely lacks. For the most part, however, the differences are of degree. Hybrid generations, F_1 and F_2, show an intermediate condition in respect to most characters. But partial dominance is shown in certain pigmental characters, notably dorsal stripe of the tail, lack of tail-stripe being incompletely dominant over its presence, illustrated in two inter-racial crosses and one inter-specific cross. This dominance is "fluctuating" with an enormous range of variability in F_1. For the two characters which exhibit such dominance most clearly, there is a shifting of the mean in the recessive direction in F_2, as compared with F_1. In no case does a racial difference depend upon a single pair of Mendelian allelomorphs. There is, however, evidence of genetic segregation for pigmental characters, though not for body parts. As regards the former, there is great increase of variability in F_2, as shown by a uniform increase in the magnitude of the standard deviations, and by the occurrence of individuals approaching the parent types. Attention has been devoted to methods of estimating the considerable number of factor differences, with divergent results. One's first impression that the numbers involved are small, based on finding segregants closely resembling one of the parent types, is erroneous. Individuals which measure up to the average condition of one or another of the pure races, in respect to the ensemble of pigmental characters (i.e., such a standard as would include half of a population of the pure race in question) are lacking altogether in F_2 of each of the principal crosses, despite the fact that these pigmental characters are all correlated. Intra-racial correlations among these characters are of the same signs as inter-racial ones, e.g., darker individuals, as well as races, have more extensive colored areas than do paler ones. These correlations are commonly lowest for the pure races and F_1 hybrids, higher for F_2, highest for an F_3 derived from selected F_2 parents. The coefficients for the back-crosses are variable, though much more often higher than those for F_1. These relations are such as might be expected on the supposition that the characters are genetically connected and tend to segregate. These correlations are due to diverse effects of the same genetic factors, rather than to linkage. This common genetic basis for all the pigmental characters is not absolute. There is considerable independent variability among them, a large fraction of which is genetic. Thus two pigmental characters may have certain factors in common and others peculiar to themselves. Correlations exist between some of the measurable parts of the body (e.g., tail and foot), but they show no such relative magnitudes in the hybrid generations as in the case of pigmental characters. Correlations between linear measurements and pigmental characters are lacking, except in certain cases where their meaning is uncertain despite high statistical probability. Two typographical errors occur on page 307. On line 10, the exponent of the fraction $\frac{1}{4}$ should be 3, not 1. On line 19, the exponent of $\frac{1}{8}$ should be 4, not 2.—*F. B. Sumner.*

12568. SZUMAN, JERZY G. Wypadek obojnactwa u kura. [A case of gynandromorphism in poultry.] [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 17(1/2): 169-174. 1 fig. 1927.—A golden Leghorn chicken had a ♂ comb but ♀ plumage (except about 50 feathers on the body and breast). The feathers which grew in after plucking were ♀.

12569. [TIMOFEEVA-RESOVSKAIA, E. A.] ТИМОФЕЕВА-РЕСОВСКАЯ, Е. А. Влияние рентгеновских лучей на возникновение геновариаций у Drosophila funebris. **[Effect of Roentgen rays on the origin of geno-variations in Drosophila funebris.]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(1): 9-14. 18 fig. 1930.—Males of *D. funebris* stock inbred for 30 generations were x-rayed (about T4 Muller's dose) and crossed with normal ♀♀. Out of 689 crosses, 77 were sterile; and the 612 fertile crosses gave in F_2 24,722 flies (12,660 ♀♀ and 12,056 ♂♂). In F_2 and F_3 the following mutations were observed: sex linked,—miniature, crossveinless, plexus; autosomal,—reduced 2, reduced 3, missing, abnormal abdomen, and 3 recessives, spread, reduced vein, and short cross-veins. Not a single mutation of genes for eye color or body color was observed. 24 mutations were lethal, which is very low in comparison with the number of lethals in *D. melanogaster*, due, according to the author, to the absence of "markers" which make it impossible to detect all lethals. In general it was found that x-raying very significantly stimulated gene mutations.—*G. A. Lebedeff.*

12570. [TIMOFEEV-RESOVSKII, N. V.] ТИМОФЕЕВ-РЕСОВСКИЙ, Н. В. Обратные и соматические геновариации определенного гена в противоположных направлениях под действием рентгеновских лучей. **[Reverse somatic genovariations of a definite gene in opposite directions under the influence of Roentgen rays.]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 5(1): 25-31. 1929.—Eggs and pupae of homozygous white and *sc* w^e *ec* and also F_1 pupae of cross *w/W* female × *w* male of *D. melanogaster* were x-rayed; 50kV, 5mA, distance from the culture to anticathode 17-18 cm., exposure 100 and 120 min. Out of 1407 *sc* w^e *ec* flies one ♀ with about 50 colorless facets on the left eye, one ♂ with 5 colorless facets on the right eye and one ♂ with 3 darker facets were obtained, i.e., 2 cases of somatic genovariation from w^e to *w* and somatic reverse genovariation from w^e to *W*. No reverse somatic *ec* genovariations were observed. Out of 1449 homozygous white flies one ♂ had one colored facet in the right eye, the color being slightly paler than normal red; evidently *w* mutated reversely to one of the light-red allelomorphs of the *w* series. From the x-rayed F_1 eggs and pupae of *w/W* ♀♀ × *w* ♂♂, 16 flies with white facets out of 786 *Ww* ♀♀ were obtained. From cultures of x-rayed eggs the number of white facets was 16, 28, 33, 112 in 4 flies, while from x-rayed pupae the number of facets was 1-9. Out of 775 red-eyed ♂♂, 6 ♂♂ with 1-26 white facets were obtained. 802 white eyed ♀♀ gave no genovariations. Out of 735 white eyed ♂♂ one had 3 normal red facets in the right eye. The mortality of x-rayed eggs and pupae was extremely high. Sterility among females hatched from x-rayed eggs and pupae was lower than among x-rayed adults.—*G. A. Lebedeff.*

12571. [TIMOFEEV-RESOVSKII, N. V.] ТИМОФЕЕВ-РЕСОВСКИЙ, Н. В. Обратные геновариации и изменчивость гена в разных направлениях. **[Reverse genovariations and variability of the gene in opposite directions.]** [German summary.] Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(1): 3-8. 1930.—White, $y c_v v f$, $s_e w^e e_c$, $s_c e_c c_i^e v g^2 f$, males were x-rayed and crossed to virgin females of the same cultures. In the F_1 the following mutations to the wild type were observed: $s_c \rightarrow S_c$ 3 times among 11,005 flies, $w^e \rightarrow W$ once among 4,267 flies, $c_v \rightarrow C_v$ once in 5,172 flies, and $f \rightarrow F$ twice among 12,991 flies. Similarly $r_u h s_t p^p s_{s^e}$ and $r_u h t_h s t c_u s_r e^5 c_3$ ♂♂ were x-rayed and crossed with virgin ♀♀ of the same cultures. In the F_1 of these crosses $h \rightarrow H$ mutation was observed once in 960 flies, and $p^p \rightarrow P$ twice in 6,723 flies. Thus both sex-linked and autosomal reverse mutation were obtained by x-raying, which shows that recessive mutations are not due simply to absence of formerly present genes, and that the effect of x-raying is not destructive, as already shown by Muller.—*G. A. Lebedeff.*

12572. [TIMOFEEV-RESOVSKII, N. V.] ТИМОФЕЕВ-РЕСОВСКИЙ, Н. В. Существует ли "последействие" рентгенизации на геновариационный процесс. **[Is there an "after-effect" of x-rays on genovariation?]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(2): 79-83. 1930.—X-rayed *y cv v f*

♂♂ of *Drosophila melanogaster* were mated with bar females. (50kV, 5mA, aluminum filter 1mm. in thickness, focal distance about 15 cm., exposure 45 min.) 672 daughters mated with their brothers gave 49 lethal and 4 visible mutations (white, miniature, cut and reverse mutation of forked to its normal allelomorph) all in the x-rayed chromosome. Males with the x-rayed chromosome (from the preceding mating) were mated with homozygous bar ♀♀ and their daughters were tested for delayed mutations. At the same time, some of the above x-rayed ♂♂ were mated with double yellow ♀♀. F_1 ♂♂ were mated with bar ♀♀ and the daughters tested for delayed mutation. Altogether 756 ♀♀ tested for "after effect" of x-rays yielded only 2 (or 3) mutations (lethal). One lethal appeared in 793 control cultures. The author concludes that there is no after-effect of x-rays on frequency of mutation.—*G. A. Lebedeff.*

12573. **WHITING, P. W. X-rays and parasitic wasps.** *Jour. Heredity* 20(6): 268-276. 3 fig. 1929.—X-ray treatments of adult *Habrobracon juglandis* have little if any effect on duration of life or general vitality. Treated ♀♀ are likely to become sterile after producing a few offspring, but if they have been fed with honey instead of with caterpillars they produce no offspring after strong dosages. Treatment of mated ♀♀ decreases the ♀ ratio, probably by injury to sperm in seminal receptacles. Fertility of treated ♂♂, measured by ♀ ratio among their progeny from untreated mates, is decreased by weak dosages and sterility is induced by strong dosages. There is evidence for temporary recovery of fertility of treated ♂♂. Only one mutation, "cream" eye color, has appeared among ♂ progeny of treated ♀♀. Of 141 tested daughters of treated wasps, two gave visible mutations, "small-head" and "miniature," while at least 28 showed conditions indicating lethals.—*Author's abstract.*

12574. **WHITNEY, LEON F. The heredity of trail barking propensity in hounds.** *Jour. Heredity* 20(12): 561-562. 1 fig. 1929.—Dogs of certain breeds follow the trail of animals which they are pursuing, mutely. Representatives of the hound family, and certain other breeds, bay on the trail. The F_1 generations between barkers and mute trailers were always trail barkers, indicating the dominant character of trail-barking. The typical drawl in the hound's bay was missing, giving way to the staccato bark characteristic of the house dog. —*L. F. Whitney.*

12575. **WIESCH, ADOLF. Vererbung der Scheckzeichnung und korrelative Beziehung der Färbung bei Rindern.** *Kühn-Archiv* 22: 347-396. 1929.—In progressive loss of pigment in cattle, the shoulder pigment disappears (on both right and left sides) more rapidly than that on the sides and back. Then follow the sides and head. Head pigment is always present in the dark spotted cattle of the lowlands (Niederungsrindern). The fore legs are more pigmented than the rear; and the right fore-leg is more frequently pigmented than the left. In general ♂♂ are less pigmented than ♀♀. There is a positive correlation between spots on the head, white throat, and pigmented legs. The mean values of the spotting of the descendants are displaced with the mean values of the parents from one extreme to the other. The descendants of the different crosses of the 3 classes set up show characters of the adjacent classes with 2 exceptions. The results of the crosses can be explained by the different combination possibilities of the homomeric factor pairs suggested by Funkquist to explain inheritance of head spots. As a result of the great breadth of modification of the spotting, in every class are individuals of a different genotype. The mean value of the head spots of the progeny parallels the mean value of those of the parents. A special character (white base of tail) in some families behaves as a dominant character.—*From author's summary (transl.).*

MAN

12576. **ACHERMANN, E. Beitrag zur Vererbung der Recklinghausenschen Krankheit.** *Zeitschr. Augenheilk.* 67(3): 141-150. 5 fig. 1929.—Report of typical cases of von Recklinghausen's disease in a family, associated with various eye conditions (buphthalmos, neurofibroma of the eyelid and chronic glaucoma of adult life). The author discusses the apparently dominant, possibly irregularly dominant, type of inheritance of the Recklinghausen's disease and its relation to the eye conditions, and gives 38 references to the literature on similar anomalies of the eye and on von Recklinghausen's disease. —*M. L. Earle.*

12577. **ASCHNER, BERTA, und GUIDO ENGELMANN. Konstitutionspathologie in der Orthopädie. Erbbiologie des peripheren Bewegungsapparates.** 312p. 80 fig. Julius Springer: Berlin, 1928.

12578. **BIEMOND, A. Neurotische Muskelatrophie und Friedreichsche Tabes in derselben Familie.** *Deutsche Zeitschr. Nervenheilk.* 104(3/4): 113-145. 8 fig. 1928.—Neurotic muscular atrophy and related diseases are distinguished from Friedreich's ataxia by (1) marked changes in electrical conductivity of muscles and nerves, and (2) the complete absence of pyramidal tract-falling symptoms in neurotic muscular atrophy. Neurotic muscular atrophy is a pronounced hereditary familial disease, affecting a higher percentage of males than females. It often skips a generation, as shown in certain family trees. A description of the pathology is given and a review of six cases, in view of which this author believes two factors to be necessary for the development of neurotic muscular atrophy, a dominant factor, and a sex-linked recessive. When both factors are expressed, typical Tooth-Marie-Charcot-Hoffman's disease develops. If an individual with this complex marries a normal, only the dominant factor can be expressed in their offspring, which then exhibit the intermediate forms between muscular atrophy and Friedreich's ataxia which is due to the recessive sex-linked factor. Tuberculosis and syphilis may be the inciting factors in some cases.—*E. E. Jones.*

12579. **DAYTON, NEIL A. Intelligence and size of family.** *Jour. Heredity* 20(8): 365-371. 1929.—The material for this study is taken from the first 10,455 examinations of retarded children in Massachusetts public schools. The nativity of the mother and size of family were tabulated and discussed. From this study the foreign born mothers (43% of the population in the towns surveyed) are over-represented in our group. They are 68% of the mothers of retarded children and 75% of the mothers of mentally defective children. In the cases used, completed families with a child in the lower levels of intelligence are approximately twice as large as completed families with a child in the upper levels.—*N. A. Dayton.*

12580. **FARR, CLIFFORD B., L. A. SCHWARTZ, and LAUREN H. SMITH. The relative importance of hereditary factors in constitutional and organic psychoses. Analysis of two hundred cases.** *Jour. Nervous & Mental Dis.* 71(1): 36-43. 1930.—The inadequacy of data for analysis of the hereditary of nervous disorders is discussed, and a statistical treatment of cases of organic psychosis (paresis) and of so-called functional psychosis (manic-depressive) is presented with reference to heredity. From the standpoint of direct heredity, there is little difference between the two types, although functional and environmental factors are important in initiating the illness in both. Histories obtained for cases studied indicate the presence of nervous disorders in the family group in 30-40% of the cases.—*K. Jeffers.*

12581. **HEFNER, R. A. Inheritance of crooked little fingers. (Streblomicrodactyly.)** *Jour. Heredity* 20(8): 395-398. 3 fig. 1929.—This characteristic is caused by a shortness of the branch of the flexor digitorum ligament leading to the middle phalanx of the little finger, which results in inability to extend the finger parallel to the other digits. It is inherited as a Mendelian dominant.—*L. M. Dickerson.*

12582. **KEHRER, FERDINAND. Über das erbliche Zittern und die Bedeutung von Langlebigkeit, Kinderreichtum und Zwillingsgeburten in Sippen mit heredodegenerativen Nervenleiden. [Hereditary tremor and significance of longevity, child-prolificacy and twin-**

births in the kinships of heredo-degenerative nervous troubles.] *Deutsche Zeitschr. Nervenheilk.* 114(4/6): 165-208. 1930.—Hereditary tremor has many varieties and associations, "a complex hereditary Anlage," which the author reviews with the aid of old and new geneal-logic charts. Largely a critique of O. Minor's conclusions (1921-1927) and of his typhus macrobioticus multiparus. Facts are cited to show that long life is not more common in this stock than in that of other senile neuroses such as dementia and paralysis agitans. Minor did not make due comparison with controls. Prolific families have no relation to the originating basis of heredo-degenerative nervous troubles. Neither does Minor's combination of longevity and child prolificness, nor crossed or sex-limited heredity, have any relation thereto. Twin births in the kin of hereditary neuroses (e.g., Huntington's chorea, pseudosclerosis, Parkinson, Thomsen's disease, &c.) are briefly considered, but the author doubts any general over-frequency.—*W. Browning.*

12583. **KELLY, ARTHUR. Hereditary absence of the clavicle.** *Jour. Heredity* 20(8): 353-355. 2 fig. 1929.—Inheritance through three generations as a dominant non-sexlinked character is reported. A photograph and x-ray picture of the subject are figured. In medical literature the defect had previously been reported as occurring in some degree in 8 families (31 cases) and as hereditary, and has been named cranio-cleido-dysostosis —*W. E. Castle.*

12584. **LABBÉ, MARCEL. Le facteur héréditaire dans le diabète.** *Bull. Acad. Méd.* [*Paris*] 105(23): 956-970. 1931.—Labbé presents tables of 3 diabetic families through 3 and 4 generations, and concludes that although a large number of cases are attributable to faulty nurture, diabetes (especially in the severe form) is hereditary.

12585. **MANOILOFF, E. O. A rare case of hereditary hexadactylism.** *Amer. Jour. Phys. Anthrop.* 15(3): 503-508. 2 fig. 1931.—The author describes a case of hexadactylism on the hands and feet. The unique feature is that the anomaly can be traced in the family for more than 700 years. The roentgenological picture makes it plain that the thumbs must be considered as the supplementary fingers. The carpus bones in both rows are disposed regularly, but the os multanulum majus is connected not with one, but with two metacarpal bones. There are the same deviations from the normal also on the feet; the carpus bones are normal, but with the cuneiform are connected not one, but two metatarsal bones.—*Author (courtesy Wistar Bibl. Serv.).*

12586. **METZKES, WALTHER. Untersuchungen über den Erbgang der sporadischen, konstitutionellen Taubstummheit. [Heredity of sporadic, constitutional deafmutism.]** *Sitzungsber. Ges. Beförder. Gesamt. Naturwiss. Marburg* 63(7): 157-166. 1928(1929).

12587. **MISERA, J. Die Inzucht und ihre Beziehungen zur Haarstärke und Konstitution. [Inbreeding and its relation to hair strength and constitution.]** Dissertation, Breslau Universität. 56p. 1928.

12588. **POWDERMAKER, H. Vital statistics of New Ireland (Bismarck Archipelago) as revealed in genealogies.** *Human Biol.* 3(3): 351-375. 4 fig. 1931.—Through the genealogical method, vital statistics were collected among a group of Melanesians in New Ireland. 455 women formed the basis of the study and were divided into age groups according to their generation. It was found that there has been an increase in deaths occurring before marriage during the last three generations and that this increase takes place during infancy. The birth rate is small and not increasing and it is obvious, therefore, that the population is declining. Sex ratios are presented showing more males at birth and at the time of marriage for all three generations. There has been no change during these three generations in feeding and care of the infant, in the manner of living of pregnant woman and nursing mother. Neither have the fundamental aspects of native culture been broken up by white contact. The people appear busy, happy, living their normal life. The increase in infant mortality, therefore, can not be due to native customs (since they are the same as in the past), nor to psychological factors. Introduced diseases such as tuberculosis, gonorrhea and syphilis are suggested as a possible cause for the decline in population.—*H. Powdermaker.*

12589. **SNYDER, L. H. Inherited taste deficiency.** *Science* 74(1910): 151-152. 1931.—Preliminary report of experiments confirming Arthur L. Fox's conclusion that taste deficiencies exist. Study of 100 families shows that the taste deficiency for para-ethoxy-phenyl-thiourea is inherited as simple recessive.

12590. **WIENER, ALEXANDER S., and MAURICE VAISBERG. Heredity of the agglutinogens M and N of Landsteiner and Levine.** *Jour. Immunol.* 20(5): 371-388. 1931.—Specimens of blood of 131 families with 642 children were examined for agglutinogens A, B, M and N. Concerning the heredity of the agglutinogens M and N, 2 exceptions to the theory of Landsteiner and Levine, were found, but in neither case could the possibility of illegitimacy be excluded. Concerning the heredity of the agglutinogens A and B, one exception to the Bernstein theory was found, but here again the possibility of illegitimacy could not be excluded. Considering the size of the series examined (642 children) a certain percentage of illegitimacies is rather to be expected, and the authors therefore believe that their results speak well for the theories of heredity discussed. —*A. S. Wiener.*

12591. **WILLOUGHBY, R. R. The families of freshmen.** *Human Biol.* 3(3): 342-350. 1931.—Pedigree charts of the grandparents and their children and grandchildren were collected from 71 Clark University freshmen and analyzed. Most of the stocks were found to be much more than maintaining themselves; assortive mating of about .2 was found in fertility as measured by the number of siblings of parents; as a result of the selective factors inherent in the experiment the ♂♂ considered were found to be from preponderantly ♂ families, and conversely; the correlation between fertility and intelligence is approximately zero.—*R. R. Willoughby.*

BIOMETRY

JOHN W. GOWEN, *Editor*

(See also in B. A. 6(1): Entries 625, 1593, 1946, 2354; 6(2): 4801, 4851, 5638; 6(3): 6157, 6589, 8072; 6(4): 9369, 10765, 11364; and in this issue 13323, 14266, 14279, 14482, 14631)

12592. **BERGE, S., und K. WAGNER. Über die Anwendung der Affinitätszahl und der Blockberechnung in der anthropologischen Statistik.** *Avhandl. Norske Videnskapsakad. Oslo, Mat.-Naturvidensk.* 1929(paper 5): 1-19. 1929.—The so-called coefficient of association, defined as the relation between the actual incidence and that expected on the assumption that there is complete independence between the traits, has occasionally been used as a measure of correlation in anthropological statistics. Examples from Bryns paper, "Die Bastarde des nördlichen Norwegens. Eine affinitäts Undersuchung" (1922) and theoretical analysis show it to be unusable both in alternative and in class variation.—*S. Berge (transl. by C. J. Connolly).*

12593. **BONVICINI, M. La stachimetria. [Stachymetry.]** *Italia Agric.* 68(4): (1-9). 11 fig. 1931.—The author explains how one establishes the graphic scheme of a spike of wheat according to Denaiffe's method, and describes 2 modifications which he has employed for developing the stachymetric plan of certain races of wheat.—*M. Bonvicini (transl. by H. S. Wolfe).*

12594. **COMRIE, L. J., (editor). Barlow's tables of**

squares, cubes, square roots, cube roots, and reciprocals of all integer numbers up to 10,000. 3rd ed. 208p. E. and F. N. Spon, Ltd.: London, [1931?] Price 7s. 6d.

12595. **DODD, EDWARD L.** Classification of sizes or measures by frequency functions. *Amer. Statistical Jour., Suppl.* 227-234. (March) 1931.—A synopsis is given of the methods of Pearson, Edgeworth, Charlier, and others in developing functions to describe frequency. Then are treated frequency functions formed with the use of $|x|$, $x|x|$, $x^2|x|$, etc., which are equal respectively to x, x^2, x^3, except that when x is negative they have the opposite sign. With the aid of "conjugate" moments which involve such expressions, 6 parameters may be introduced into a frequency function or "curve" without going higher than 2nd moments.—*E. L. Dodd.*

12596. **EZEKIEL, MORDECAI.** Methods of correlation analysis. 427p. John Wiley & Sons: New York; Chapman & Hall: London, 1930.

12597. **FISHER, R. A.** Statistical methods for research workers. 3rd ed. 383p. Oliver & Boyd: London, Pr. 15s.

12598. **FRÉCHET, M., et H. ROULLET.** Nomographie. 208p. 79 fig. Armand Colin: Paris, 1928. Pr. 10.50 fr.—The authors discuss the various forms of nomographs which may be used for graphical calculations. The book is divided into 3 main sections: (1) relations between 2 variables, (2) relations between 3 variables, (3) relations between more than 3 variables. Under each topic there is a theoretical discussion of the construction of the special type of nomograph which is followed by a description of the method of its construction. Both Cartesian nomographs, where the results are read from a series of curves, and those where the results are read from points on scale lines, are considered. Many of the figures show nomographs for the graphical solution of particular problems. There are 54 illustrative exercises included in the text, showing the application of nomographs to the solution of problems in various branches of pure and applied science, together with suggestions for the construction. There is a short list of numerical tables and a bibliography.—*H. M. Lufkin.*

12599. **GAUSE, G. F., und W. W. ALPATOV.** Die logistische Kurve von Verhulst-Pearl und ihre Anwendung im Gebiet der quantitativen Biologie. *Biol. Zentralbl.* 51(1/2): 1-14. 6 fig. 1931.—The authors discuss the properties of the logistic curve and describe its practical application in the domain of Biology. Analysis, with the aid of this curve, of the material published by Driver on the influence of temp. on the eye facet number in *Drosophila,* indicates that the process which determines the eye facet number is different in ♂♂ and ♀♀ and it may be described with the aid of the logistic curve. The logistic curve seems to be important in the physiology of development, where it may describe the accumulation in time of different determining substances.—*G. F. Gause.*

12600. **GOULDEN, C. H.** Modern methods of field experimentation. *Scientific Agric.* 11(10): 681-701. 1931.—The analysis of variance as developed by Fisher and his staff forms the basis for the Rothamsted methods of designing field experiments and for the statistical reduction of the results. Algebraic formulae and methods of calculation are given in detail.—*C. H. Goulden.*

12601. **GUILFORD, J. P.** Some empirical tests of the method of paired comparisons. *Jour. Gen. Psychol.* 5(1): 64-77. 1931.—A comparison of Thurstone's method with the author's method of deriving scale-values from data obtained by the method of paired comparisons was made by using data obtained from lifted weights. In most respects the *G*-method proved to be the more convenient and valid, but it has one weakness in that the unit is a variable factor.—*Author's summary.*

12602. **IRWIN, J. O.** Mathematical theorems involved in the analysis of variance. *Jour. Roy. Statistical Soc.* 94(2): 284-300. 1931.—It is shown why it is correct to divide the "sums of squares" by the "degrees of freedom" and how the additive property holds.—*J. R. Miner.*

12603. **KRONACHER, C. (with the collaboration of C. F. von PATOW).** Biometrik. Eine Einführung. 2nd ed., rev. 71p. Paul Parey: Berlin, 1930. Pr. 6.50 M.

12604. **KUTSUNAI, Y.** Notes on interpreting experimental results. *Hawaiian Planters' Record* 35(3): 279-294. 6 fig. 1931.—The scatter diagram of degree Brix against polarization of sugar cane juices from many localities and varieties forms approximately a straight line, and the analyses deviating much from this line are considered suspicious. The weights of sugar cane from the test plots are compared with Chauvent's criterion for eliminating disturbing weights. Methods for interpreting the results of field trials containing 1 to several unknown constants and 1-3 unknown variables are suggested.—*Y. Kutsunai.*

12605. **MacLEAN, JOHN.** Graphs and statistics. A suggestion for a finishing course in mathematics. 200p. Tutorial Press: Bombay, 1926. Price 4rs.

12606. **NEYMAN, J., and E. S. PEARSON.** Further notes on the χ^2 distribution. *Biometrika* 22(3/4): 298-305. 1931.—The error in combining frequency groups for the χ^2 test is probably small if the groups contain only a small part of the total frequency. For small samples the test is also reasonably satisfactory. The difference between minimum χ^2 and the χ^2 of maximum likelihood is small.—*J. R. Miner.*

12607. **PÜTTER, A.** Die Auswertung zahlenmässiger Beobachtungen in der Biologie. Eine praktische Anleitung in Beispielen. 56p. 6 fig. Walter de Gruyter & Co.: Berlin and Leipzig, 1929. Pr. 5 M.—A brief treatment of the following statistical constants: Arithmetic mean; average deviation; standard deviation; average deviation of the mean value of a series of observations; the reliability of sums and products; the significant difference; correlation between 2 quantities; partial correlation coefficients; 3 and 4 quantity correlation problems. —*A. M. Chickering.*

12608. **RHODES, E. C.** On the fitting of parabolic curves to statistical data. *Jour. Roy. Statistical Soc.* 93(4): 569-572. 1930.—A summary of Jordan's method, in which not the simple power series, but a series of orthogonal functions, is fitted. The virtue of the method is that each successive approximation merely adds a new term to those already calculated.—*J. R. Miner.*

12609. **SCARBOROUGH, JAMES B.** Numerical mathematical analysis. 416p. Johns Hopkins Press: Baltimore, Humphrey Milford, Oxford Univ. Press: London, 1930. Pr. $5.50.—This book is designed for the student who desires to analyze mathematically the problems of his work and present them numerically. With this in view the material is so arranged as to set forth systematically the most important principles, methods and processes used in obtaining numerical results and estimating their significance. The book is concerned only with fundamental principles and processes and is not a treatise on forms of computation. Each major subject is introduced with a brief statement of purpose and utility. The underlying theory is then developed, and from this base the formulas and processes are derived as simply as possible, confusing methods or higher calculus being avoided. Methods for checking the accuracy of the results attained are worked out. The limitations of the formulas and the pitfalls connected with the processes are carefully pointed out. The subject is then illustrated by suitable pertinent examples. Chapters dealing with such important matters as the accuracy of approximate calculations, interpolation, numerical differentiation and integration, quadrature, solution of numerical equations, normal law of error and precision of measurement, etc., are clearly and best of all interestingly presented.—*J. W. Gowen.*

12610. **STEFFENSEN, J. F.** Some recent researches in the theory of statistics and actuarial science. 48p. Macmillan Co.: New York, 1930. Pr. $2.00.—The 3 lectures contained in this book are devoted to a discussion of the place of mathematics in statistical and actuarial theory. The 1st lecture shows that mathematical relations utilized in statistical or actuarial theory should be in such a form that the theoretical assumptions contain no

contradictions. This viewpoint leads to the conclusion that the use of the uncorrected σ_r, m_r, μ_r, etc., are the best available approximations to $\overline{\sigma_r}$, $\overline{m_r}$, $\overline{\mu_r}$, etc., and at least insures no such contradictions. The 2nd lecture takes up the methods of summarical approximation and their justification. It is shown that such problems are essentially mathematical and that statistical success is no necessary criterion for their acceptance. The 3rd lecture deals with statistical reduction formulas as means of describing facts of observation. It is pointed out that while the formulas used for this purpose are often entirely empirical, for most cases good theoretical reasons can often be given for believing that one formula will fit the facts better than another and that the choosing of this formula at the outset results in a sounder foundation and a more intelligent interpretation of the resulting conclusions.—*J. W. Gowen.*

12611. **STEVENSON, PAUL H. Conversion of non-metric data to form suitable for statistical comparison.** *Amer. Jour. Phys. Anthrop.* 16(1): 91-96. 1 fig. 1931.—The general problem of adequate statistical treatment and final analysis of non-metric data is stated and the difficulties involved are briefly reviewed. As an example, certain data on beard growth among different racial groups inhabiting central Asia are given and a method described whereby these data are converted from the ordinary category percentage distribution form to a statistical index form suitable both for quantitative appraisal and ready comparison with similar data from other sources. The formula elaborated is equally applicable to all non-metric data based on quantitative observations calling for such initial notations as absent, slight or trace, medium and marked occurrences of physical characters not subject to direct measurement. —*Author (courtesy Wistar Bibl. Serv.).*

12612. **UICHANCO, LEOPOLDO B. Methods of computing the number of days covered by an event in periods of two months or over.** *Philippine Agric.* 20(1): 49-51. 1931.—The method herein reported lends itself to work in biological investigations. With the use of a table the number of days covered by varying number of calendar months can be readily and accurately determined.—*M. Manresa.*

12613. **VAIDYANATHAN, M. On the mathematical probable error as applicable to field experiments in agriculture.** *Madras Agric. Jour.* 18(4): 175-203. 1930.

12614. **VERCELLI, F. Osservazioni complementari sulla mia nota: "Metodo generale per l-analisi delle periodicità nei diagrammi statistici e sperimentali." [Further observations on my note: "General method for the analysis of periodicity in statistical and experimental diagrams."]** [*Ibid.* 11: 638-641.] *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 12(9): 351-352. 1930.

12615. **WAHLUND, S. Gelbrostbestimmungen an Wintergerste. Eine statistischmethodologische Untersuchung.** *Hereditas* 15(2): 194-212. 1931.—The material consisted of determinations of *Puccinia glumarum* on 4 varieties of winter barley at Svaløf by 6 investigators working in pairs, each pair examining 1 of the 3 plots of each variety. The plants were grouped in 5 groups with limits 0-1, 1-2, 2-3, 3-4, and 4-5. The ordinary method now is to give each class arbitrary values, i.e., 0.5, 1.5, etc., and determine the average susceptibility through the formula $M=\sum\frac{n_i}{n}.(i+0.5)$, where n_i is the number of determinations between i and $i+1$, and n the total number. This method of estimating class values is not satisfactory and a new method is developed based on a standard series for which is determined the class values taking the mean of the series as zero and the standard deviation as unit. The formulas used for this determination are given and likewise an example of the application. The class values obtained in this way are substituted for the arbitrarily chosen 0.5, 1.5, etc. A discussion is given of the variation of the series due to environment and variation in the technique of measuring, taking the plots as units and using the formula developed by "Student" and others for cases with a small number of variates.—*H. Wexelsen.*

12616. **WARREN, RICHARD, and ROBERT M. MENDENHALL. The Mendenhall-Warren-Hollerith correlation method.** [Lithographed] *Columbia Univ. Statistical Bur. Doc.* 1. 37p. 5 pl. 1929.—Sorting and tabulating machine technical methods for calculating biometric constants are presented.—*N. M. Payne.*

12617. **WEINBERG, W. Zur Probandenmethode.** *Hereditas* 15(1): 120-126. 1931.—A discussion of the value and exactness of the Probanden method and Apperts' or the a priori method in statistical treatment of data on human inheritance.—*H. Wexelsen.*

12618. **WRIGHT, SEWALL. Statistical methods in biology.** *Jour. Amer. Stat. Assoc.* 26(Suppl.): 155-163. 1931.—A brief review of the fields of application of statistical methods to biology and a more detailed illustration of one of these: the interpretation of statistical descriptions in terms of causal relations. The method of path coefficients is used in the analysis of the rôles of heredity and environment as factors determining differences in intelligence quotient among children using Burk's data from adopted children and own children. The results are contrasted with those of the method of multiple regression in obtaining a prediction equation.—*S. Wright.*

ECOLOGY

W. C. ALLEE, *Editor,* Animal

GEO. D. FULLER, *Editor,* Plant

CHANCEY JUDAY, *Editor,* Plankton

(See also in this issue [GENERAL and ANIMAL ECOLOGY]: (General) 12074; (Methods) 12119, 12928, 13914; (Temperature) 12545, 12881, 12890, 13071, 13137, 14846; (Light) 12880, 12928; (Radiation) 12884, 12889, 12902, 12904, 13344; (Sun spots) 12070, 12078; (Climate) 14257; (Hibernation) 13634, 14640, 14866; (Periodicity) 12070, 13314, 13448; (Zoogeography and distribution) 12095, 12567, 14245, 14484, 14646, 14978, 15051; (Adaptation) 14299, 14645, 14954, 14996; (Food) 14876, 14978; (Pressure) 12877; (Plankton) 13705, 13706; (Protozoa) 14481, 14511; (Nemathelminthes) 13641; (Insecta) 13629, 13870, 13881, 13901, 13902, 13903, 13907, 13914, 14684, 14782, 14785, 14846, 14855, 14866, 14878, 14885, 14910; (Annelida) 14565, 14566, 14574; (Brachiopoda) 14578; (Mollusca) 14601, 14606, 14630, 14633, 14639, 14640; (Crustacea) 14644, 14645, 14646, 14662; (Prochordata) 14949, 14950; (Pisces) 13193, 14956, 14957, 14958, 14961, 14978, 14981; (Aves) 15017, 15042, 15047, 15051, 15058, 15059, 15061, 15068; (Mammalia) 13448, 13545, 14348, 15073, 15092, 15095. [PLANT ECOLOGY]: (Soil moisture) 12794; (Seed germination) 12859, 12860, 12864, 14033; (Pollination) 13996; (Layering in Tsuga) 14015; (Forests in Russia) 14021; (Forest ecology) 14023; (Diatom periodicity) 14034; (Ecology of Ceramium) 14038, 14056; (Ecology of fresh water algae) 14050, 14051, 14052; (Fucus, ecology of) 14054; (Fungi, associations of) 14068; (Lichens, associations of) 14070, 14086; (Spore germination) 14073; (Hygrophilous ferns) 14096; (Vegetation of Kilimanjaro) 14163; (Leaf propagation) 14172, 14202; (Bud formation) 14176, 14192; (Lianas) 14182; (Pollen analysis) 14186; (Water storage in leaves) 14200)

GENERAL

12619. BENNETT, E. W. Natural transport of stones and marine animals. *Nature [London]* 126(3182): 646-647. 1930.—Instances of the transportation of various forms of animal life on drifting kelp.

12620. GARDINER, J. STANLEY. Commensal algae and reef corals. *Nature [London]* 126(3184): 724. 1930.—Algae have been found in *Millepora* and *Heliopora* down to 50 fathoms and in *Gardineria* from more than 222 fathoms. Reef-building corals are often covered with a white slime, which ultimately kills them. This seems to be a precipitation of amorphous $CaCO_3$ from the supersaturated sea-water, owing to the chemical operations of the chlorophyll of the commensal algae in utilizing CO_2.

12621. HANCOCK, G. L. R., and W. W. SOUNDY. Notes on the fauna and flora of Northern Bugishu and Masaba (Elgon). *Jour. East Africa & Uganda Nat. Hist. Soc.* 36. 165-183. 6 pl. 1929(1931).—A brief account is given of the country north west of Mount Elgon (formerly Masaba) and the slopes to Jackson's summit on the west (lat. 1° 1′ N; long. 34° 5′ E). The country rises from the plains (4,000 ft.) to the lower hills (6,000-7,000 ft.), of which district the aquatic insect fauna is discussed. Records include mosquitoes *Culex vansomereni* Edw., *Culex andersoni,* Edw., and *Anopheles garnhami* Edw. *A. kingi,* Christ. was found breeding. In the streams at about 6,000-7,000 ft. *Anisops* was not represented nor were Veliidae; only a single individual of the family Gerridae was found; all these occurred at lower levels. *Metrocoris* was represented both at lower and higher altitudes. *Enithares v-flavum* was found in the streams at the higher levels. Temp. of streams at 4,000 ft. was about 17°C., at 7,000 ft. 13°-14°C. In the bamboo forest at 9,000 ft. larvae of *Culex hancocki,* Edw. were found in bamboos bored by *Conicofrontia* sp. and were found also in collections of water in bamboos which had been broken or cut off. In this region the butterfly *Argynnis hanningtoni* occurred, and a number of plants were noted including *Kniphofia snowdenii, Oenostachys dichroma, Begonia, Epilobium,* and small Cruciferae. In the Alpine zone a number of plants are specially mentioned, others being referred to in an appendix which contains also Lepidoptera, Coleoptera, and Diptera records. *Seneciobius loveni* was found feeding on *Senecio elgonensis* and a *Xestorhinus* and *Parasystates* were found at the bases of the leaves of this plant. *X. lobeliae* occurred at the bases of leaves of *Lobelia elgonensis* and chironomid larvae were found among pieces of ice in the water (temp. 2°C.) in these plants. The temp. of a small lake, in which were Crustacea but no insects, was as high as 10°-11° C.; a white frost was experienced at Mudange camp (12,000 ft.).—*Authors' summary.*

12622. KENDREW, W. G. Climate. A treatise on the principles of weather and climate. 320p. 53 maps, 12 pl. Oxford Univ. Press: New York, 1930. Pr. $5.—Written for the general reader and for specialists in other fields who desire a knowledge of climatology, this book devotes only a few pages to climatic types. It does, however, treat climatology mostly from its geographic side, and the principles of climate from the distribution standpoint. The parts of the book are: Insolation and temp.; Pressure and winds; Humidity, rainfall, and clouds; Sunshine, fog; Mountain and plateau climate; Weather, especially of the British Isles; Local winds; Some climatic types. There is no bibliography and almost no mention of authorities or sources of information. Frequent brief mention is made of effects of weather and climate on mankind.—*S. S. Visher.*

12623. PAPENHUSEN, FRIEDRICH. Das Vardargebiet. Ein Beitrag zur Landeskunde Mazedoniens. *Mitteil. Ver. Erdkunde, Dresden* 1930: 1-182. 10 fig. 1931.—Included in this paper are brief descriptions of the vegetation, fauna, agriculture and forestry of the region.

12624. SHELFORD, V. E. Phenology and one of its modern descendants. *Quart. Rev. Biol.* 5(2): 207-216. 1930.—The history of the idea of summing temp. is traced from its beginning by Reáumur in 1735. The failure of the method and the necessity for using hourly temp. are demonstrated, with reasons therefor.—*V. E. Shelford.*

12625. SNYDER, L. L., and E. B. S. LOGIER. A faunal investigation of King Township, York County, Ontario. I. General introduction. *Trans. Roy. Canadian Inst.* 17(2): 167-172. Map, 2 pl. 1930.—This introduction includes a brief account of topography, arboreal vegetation, and previous biological work. The area lies within the "transition" zone.

12626. YONGE, C. M. The Great Barrier Reef of Australia. *Nature [London]* 126(3171): 206-210. Map, 3 fig. 1930.—Over 100 sp. of corals are concerned in the formation of these reefs. They are assisted by the coralline algae, Lithothamnium, Foraminifera, and the shells of the giant clam, *Tridacna gigas.* The reefs are rich in the pearl shells, *Pinctada margaratifera* and *P. maxima,* and a sp. of *Trochus* from which pearl buttons are made.

ANIMAL

12627. BEQUAERT, JOSEPH C. Are ants better protected against the attacks of their predaceous enemies than other arthropods? *Zool. Anzeiger* 88(7/8): 163-176.

1930.—The paper is a discussion of Poulton's views as to the efficacy of so-called ant-mimicry as a protective device against the enemies of arthropods. Supplementary information is presented concerning certain arachnids, beetles, dragonflies, ant-lions, predaceous Hemiptera and Diptera, fishes, reptiles, birds, and mammals that prey on true ants. An attempt is made to estimate the relative importance of the several groups of predators as enemies of the Formicidae. While few arthropods are true ant-hunters, some vertebrates are decidedly ant-specialists; the most important are many frogs and toads, a fairly large group of ant-eating birds, and the so-called "ant-eaters" (Echidnidae, Myrmecobiinae, Myrmecophagidae, and Manidae) of the tropics. The crux of the problem is not whether ants have many or no enemies, but whether or not ants are better protected than other arthropods against whatever enemies they have. No special protection against predators needs be invoked in order to explain the undeniable preponderance of the Formicidae in nature. A bibliography of 37 supplementary titles is appended.—*J. Bequaert.*

12628. **BOLDT, RUDOLF. Sandwüste am Main. (Col., Lep.)** *Ent. Zeitschr. [Frankfurt a/M]* 44(17): 249-254. 1930.—Ecological notes on the Coleoptera and Lepidoptera on the sandy wastes.

12629. **BONET, F. Un nuevo aparato para la recolección de microartrópodos. [New apparatus for collecting microarthropods.]** *Conferencias y Reseñas Científicas. Soc. Española Hist. Nat. [Madrid]* 4(2): 91-94. 2 fig. 1929.—A simplification of Berlesse's apparatus, in which the action of heat is replaced by that of humidity.

12630. **BUXTON, P. A. Description of the environment.** In: **Insects of Samoa.** Part 9: Summary and index. Fasc. 1. p. 1-32. 6 pl., 2 fig. Brit. Mus. (Nat. Hist.): London, 1930.—The islands of Samoa are volcanic, principally olivine basalts. The highest altitude is about 6,000 ft. on Savaii. The interior portions of the larger islands are practically unknown. Tutuila is separated from the western Samoa islands by a depth of 6,000 ft. From Oct. to March, when the potential radiant heat would normally be greatest, there is increased cloudiness. Black-bulbed maximum thermometers showed that the least intense heat radiation occurred May-July, and greatest about Dec. The highest mean record for sunshine at Apia is 200 hrs. in Aug., and the lowest 133 hrs. in Feb. Mean monthly temp. ranges from 25.01° to 26.28° C. The mean annual temp. is 25.78° C. and the extreme temp. range in 30 yrs. was from 16.4° to 34.6° C. The seasonal differences in temp. are of little biological significance. The mean daily range in temp. at sea level is 6.4° C., and at 2,000 ft. but 9.6° C. The mean annual rainfall varies with location and altitude from 107.8 in. at Apia to 196.1 in. at Pago Pago, and to probably over 280 in. in the mountains. At Apia the wettest mo. is Jan. (16.5 in.) and the driest July (2.8 in.); while at Pago Pago the wettest month is Feb. (24.2 in.) and the driest Aug. (7.9 in.). While there is a clear seasonal distribution there is no dry season. The mean annual humidity is over 80%. In this warm damp climate comfort depends upon the winds, which are highest during the period of southeast trade winds from May to Oct. Hurricanes occur 2-3 times a yr. The steady all-year upper stratum anti-trade winds may be important insect carriers. Only 4 native mammals and 34 land birds are known; the Samoan birds are derived from the West. Four sea snakes, 1 land snake, and 10 or 11 lizards are known. There are no fresh water fish. Three genera of prawns are found in the mountain streams. The fauna is typically oceanic, with no sp. of high antiquity or of great morphological interest. The flora most nearly resembles that of Fiji and Tonga and is oceanic, with more than 30% of the flowering plants endemic. The people have apparently come from the west bringing their own parasites, and their domestic animals with their parasites.

12631. **CHAPMAN, ROYAL N. Biotic potential, environmental resistance and insect abundance.** *Congres Internation. Xe Zool. à Budapest. 1927.* 2: 1209-1218. 1929.—Quantitative data show that populations of the confused flour beetle, *Tribolium confusum,* in environments of given size and under controlled conditions, come to a point of saturation at which they remain. Thousands of eggs may be present but the numbers of larvae, pupae, and adults do not increase due to the fact that the potential rate of increase is balanced by the resistance of the environment.—*R. N. Chapman.*

12632. **CRAWFORD, STANTON C. Nocturnal adaptations.** *Proc. Pennsylvania Acad. Sci.* 5: 1-8. 1931.—This study of adaptations to nocturnal life exhibited by representatives of various animal groups is based on field studies made in the rain forest of British Guiana. Possible advantages of the noctural habit are discussed, the adaptations found are described, and the functions of the several senses which may play a definite rôle in night life are analyzed.—*S. C. Crawford.*

12633. **CREASER, E. P. Some cohabitants of burrowing crayfish.** *Ecology* 12(1): 243-244. 1931.—The occurrence of an ostracod, a copepod, and an amphipod in a burrow of *Cambarus diogenes* is recorded.—*E. P. Creaser.*

12634. **DAVIDSON, VERA G., and MARTHA W. SHACKLEFORD. Diurnal variations in the vernal invertebrate population of a central Oklahoma prairie.** *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9 (456): 54-59. 1929.—The population April 13–May 2, 1928, was in its vernal society since it was steadily increasing toward the vernal maximum, and the groups of invertebrates comprising it were approximately constant in their % relationship to the whole community. The vernal society was characterized by ants and minute white earthworms on the ground, and Diptera, leafhoppers, and aphids in the herbs. The total herb population during this period, when sampled by sweeping at 3-hr. intervals, reached its daily maximum between midnight and 3 a.m. and had a 2nd lesser peak between noon and 3 p.m. Diptera, Cicadellidae, spiders, and Hemiptera showed this same curve with 2 peaks. In the Diptera, the maximum came at night; in the other groups, the maximum came at the time of the daylight peak. The most abundant sp. of Diptera, spiders, and Hemiptera showed similarly a 2-peaked curve. Since periods when quantitative collections are large represent times when invertebrates are relatively inactive, the data seemed to indicate a diurnal rhythm of activity in vernal, prairie insect life, the periods of greatest inactivity corresponding to the coldest and hottest parts of the 24-hr. cycle. The data presented no evidence of extensive migration between sod and herbs by any group or sp. of vernal invertebrates.—*Authors' summary.*

12635. **DAVIS, WILLIAM MORRIS. The Lesser Antilles.** 207p. 16 pl., 66 fig., Maps. American Geogr. Soc. of New York: New York, 1926.—The book includes brief discussion of the possibility of a land bridge between the Greater Antilles and So. America; of the origin of the birds, mammals, and *Agave* sp. of the Lesser Antilles; and of Atlantic and Pacific coral reefs.

12636. **DAWSON, RALPH W. The problem of voltinism and dormancy in the polyphemus moth (Telea polyphemus Cramer).** *Jour. Exp. Zool.* 59(1): 87-132 1931.—Experimental rearings of the polyphemus moth in Minnesota indicated the great importance of relative temp. levels and progressions in the regulation of dormancy or voltinism. Any constant temp. high enough to sustain life and permit growth also sufficed for continued brood development. Thus, rearings at constant temp. so low as to prolong larval life from 30 or 40 to 107 days, and to produce such marked physiological effects as the reduction of the average wt. to less than ½ the normal, and to render the ♀ practically sterile by the limitation of their egg quotas, were not followed by dormancy. In striking contrast to these results, a progressively declining temp. scale, comparable to autumnal cooling, was highly or completely effective in inducing dormancy, even though the lowest temp. attained was still relatively high. Thus it appears that the phenomenon of dormancy (and therefore of brood

development per year) bears a definite relation to temp. progressions, more or less irrespective of their actual levels. It is important to note in this connection that environmental influences operating days or even weeks in advance of the time of pupation may determine the type of voltinism to be displayed by the pupae. Some rather definite data not in harmony with the evidence for acceleration of development due to alternating temp. were secured.—*Author (courtesy Wistar Bibl. Serv.)*.

12637. **[FORMOZOV, A. N.]** ФОРМОЗОВ, А. Н. О пустынном элементе в фауне южной части Восточной Европы. [The desert element in the fauna of the southern part of eastern Europe.] Доклады Академии Наук СССР., Cep. A. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1928(20/21): 449-453. 1928.—On the basis of literature on the distribution of the Aral-Caspian fauna, it is concluded that many forms of this fauna were found not only in the lower Ural and Volga regions, and in the semidesert steppes of N. E. Caucasus, but also in the W. and NW. beyond the Kalmuck steppes. This shows that it is ancient in origin, probably post-glacial.

12638. **FRIEDERICHS, K.** Welche Faktoren regeln die Individuenzahl einer Insektenart in der Natur? [Factors affecting the number of individuals of an insect species in nature.] *Anz. Schädlingsk.* 5(10): 119-123. 1929.—A review.

12639. **PANTIN, C. F. A.** The adaptation of Gunda ulvae to salinity. I. The environment. II. The water exchange. III. The electrolyte exchange. *Jour. Exp. Biol.* 8(1): 63-94. 1931.—I. This triclad lives on the seashore in the estuaries of very small streams. The components of the external medium are (1) stream water which is rich in Ca and CO_3 and (2) Atlantic sea water. These are mixed in different proportions in different parts of the estuary. Salinity determinations made on samples taken from the actual places where *Gunda* occurred show that *Gunda* has to withstand changes from completely fresh to undiluted sea water. It may normally be exposed to either extreme for several hrs.—II. In Plymouth tap water which contains little dissolved substance the worms swell rapidly during the 1st hr. to about double their volume in sea water, and the majority die within 48 hrs. In dilute sea water the worms swell to a greater extent the greater the dilution, but at great dilutions the swelling is much less than would be expected if the worm behaved as though it were covered with a perfectly semi-permeable membrane. In natural water and in solutions containing Ca the swelling is much less than in Plymouth tap water or in distilled water; hence Ca may act primarily by lowering the permeability of the worms to water.—III. The rate of loss of salts on transference from sea water to various dilute solutions was studied by measurement of the electric conductivity of the solutions. Salts are lost by the worms from the moment of immersion in dilute solutions. They lose only 25% of their salts during the time that they imbibe a volume of water from the dilute solution equal to their initial volume. The limiting internal salt concentration of worms surviving in water containing Ca is about 6-10% of the normal concentration in sea water. No such limiting value can be found for distilled water, since salts are lost continuously till cytolysis occurs. Ca reduces the rate of loss of salts. Other factors do not seem to influence this rate.—*J. M. Robson.*

12640. **SHACKLEFORD, MARTHA W., and MARY J. BROWN.** A comparison of the autumnal society of prairie invertebrates and of coincident weather conditions in 1927 and 1928. *Bull. Univ. Oklahoma (Proc. Oklahoma Acad. Sci.)* 9(456): 20-23. 1929.—The population may vary quantitatively from yr. to yr.; there were about ½ as many insects captured by similar methods in the same field in 1928 as in 1927. The duration of the autumnal society and the abruptness with which it disappears with the approach of winter differs with different yrs. In 1927, no marked decline in numbers was noted until the 1st week in Nov., while in 1928 the decline was apparent by the middle of Oct. Quantitative differences in population between yrs. were due in the instance observed to a diminution in numbers of many groups and sp., not to a few only. The autumnal population may vary qualitatively from yr. to yr. Pentatomidae and Fulgoridae (*Scalops* spp.) were present in much greater numbers in 1928 than in 1927 in the herbs, while earthworms and ants were much less abundant in the current as compared with the previous yr. The smaller total population both in herbs and ground, the rapid decline in the autumnal society, and the qualitative peculiarities observed in 1928 as compared with 1927 were coincident with a drier spring and summer, a more rapid by declining mean autumnal temp., a greater autumnal relative humidity and greater variability during the collections. Moisture was somewhat less than average, previous to collections, and somewhat greater than average during the latter part of the autumn, and temp. conditions in air and soil were rigorous as compared with similar factors in 1927.—*Authors' summary.*

12641. **STEVENS, BELLE A.** Ecological observations on Callianassidae of Puget Sound. *Ecology* 10(4): 399-404. 3 fig. 1929.—*Upogebia pugettensis* (Dana) and *Callianassa gigas* (Dana) destroy oysters in Puget Sound. They throw mud over young oysters and drain beds by constructing Y-shaped burrows. Their foods and methods of burrowing are described.—*A. S. Pearse.*

PLANT

12642. **[ABOLIN, R. I.]** АБОЛИН, Р. И. Южная часть Алма-Атинского округа Казакской АССР в естественно-историческом отношении. [Natural conditions in the southern part of Alma-Ata district of Kazak ASSR.] [English summary.] Труды Института Почвоведения и Геоботаники Средне-Азиатского Государственного Университета (*Trans. Soil & Geobot. Inst. Middle Asiatic State Univ. Kazakstan*) 1: 5-63. 33 fig. 1929.—Middle Asia is divided into 8 zones on the basis of temp.: very hot, hot, very warm, warm, moderately warm, moderately cold, cold, and very cold. In these zones the following life zones are described: desert steppe, dry steppe, meadow or wood steppe, subalpine, alpine, and snowy or super-alpine zone. The soil, climate, and vegetation are described for each zone in detail.—*L. J. Pessin.*

12643. **ANDERSEN, SVEND.** Om vegetationen paa danske kaempehöje. [Vegetation on the Danish burial mounds.] *Bot. Tidsskr. [Copenhagen]* 41(4): 283-303. 1931.—A study of the vegetation on 8 burial mounds, in various parts of Denmark, with a list of the sp. occurring on each. The vegetation on these mounds is surprisingly varied; 180 sp. are listed as occurring on the 8 mounds studied; 86 of these occur on only 1 of the mounds, and only 1 sp., *Succisa pratensis*, occurs on all 8 mounds.

12644. **AUER, V.** Some future problems of peat bog investigation in Canada. *Suomen Metsätieteellinen Seura. Comment. Forest. [Helsingfors]* 1: 3-31. 1928.—The problems suggested are: distribution; the living plants constituting the surface at present, considered from the standpoint of plant-sociology; the layers of peat under the surface, considered as a record of the development of vegetation in post-glacial times; formation and development; form (degree of convexity); formation of soils; and practical investigations (litter, afforestation, fuel).—*G. B. Rigg.*

12645. **BEHMANN, G.** Zur Morphologie und Vegetation nw-deutscher Binnendünen. *Mitt. Florist.-Soziol. Arbeitsgemeinschaft Niedersachsen* 2: 167-188. 5 fig. 1930. —Studies in the dunes of the nature preserve Neumühlen near Verden am Aller confirm the opinion of Tüxen that the colonization of the quicksand of northwest German inland dunes is caused primarily by *Weingartneria canescens* and *Carex arenaria* which start the development toward the Weingaertnerietum. On quiet or slightly moving sand, *Polytrichum piliferum* has also been observed as first colonizer. The moss and lichen carpets prefer clearly a northwestern exposure. Their develop-

ment is mainly traced back to very open pine woods of artificial origin. Plants forming much humus (*Pinus sylvestris, Calluna vulgaris, Nardus stricta*) increase considerably in the area of the northwest German oceanic climate the acidity of the soil, as shown by the following measurements: naked quicksand at a depth of 0-5 cm., pH 4.5, humus=0.25%; *Weingaertneria* community 50-60% covered with vegetation, at a depth of 10-20 cm. (root layer) pH 4.55, humus=0.40%; under *Calluna vulgaris* at a depth of 0-6 cm., pH 3.5, humus=5.65%; in decomposed pine needles the pH is 3.1 as against 4.3 in the upper undecomposed layer. The continuous predominance of such humus producers or pure stands of them (owing to man's influence) will finally make impossible in this area not only their own existence but also the growth of higher plants in general. —*G. Behmann (transl. by A. Rehder)*.

12646. **BERGER, RUDOLF.** Das Halltal. Eine pflanzensoziologische Studie als Beitrag zur Pflanzengeographie des südlichen Karwendels. [The Hall valley. A phytosociological study of the plant geography of the southern Karwendel Mts.] *Verhandl. Zool. Bot. Ges. Wien* 77 (4): 119-155. 1 fig. 1927.

12647. **BRYNSKI, KAZIMIERZ.** Przyczynek do znajomości wpływu wiatrów na wzrost drzew. [Influence of wind on tree growth.] [With English summary.] *Kosmos [Lwów]* 55(3/4): 734-736. 1930(1931).—Trees growing on both edges of a forest (in respect to wind direction) are twisted to the right or the left by strong winds, e.g., in a north wind a tree on the eastern edge is twisted to the right, and one on the western edge to the left. In the eastern Carpathians, red firs and beeches are found twisted 25° to the right or left for each meter of height.

12648. **BUJOREAN, GH.** Aparate nouă pentru măsurarea factorilor ecologici. [New apparatus for measuring ecological factors.] [With German transl.] *Intâiul Congr. Nat. Naturalişt. România* 1: 136-138. 1 pl. 1928 (1930).—New types of maximum-minimum insolation thermometer, earth evaporimeter, dew measurer, soil hygrometer, and soil hydrometer are described.

12649. **GÄYER, JULIUS.** Die Pflanzenwelt der Nachbargebiete von Oststeiermark. [Vegetation of the neighboring region of eastern Styria, Austria.] *Mitteil. Naturwiss. Ver. Steiermark* 64/65: 150-177. 2 pl. 1929.

12650. **GEORGESCU, CONST. C.** Contribuţiuni la studiul padurilor din Dobrogea de Nord. [Forests of North Dobrudja.] [With German summary.] *Intâiul Congr. Nat. Naturalişt. România* 1: 162-170. 1928(1930).

12651. **GODWIN, H.** Studies in the ecology of Wicken Fen. I. The ground water level of the fen. *Jour. Ecol.* 19: 449-473. 20 fig. 1931.—Records show the effects of rainfall, the seasonal drift and the rhythmic daily fluctuation for 1928-1930. A series of automatic water level recorders are described and their records given. By the use of insert phytometers, transpiration is shown to be considerable and to be responsible for a fall in the fen water level during the day. There is some recovery of level during the night.—*G. D. Fuller.*

12652. **GOLONKA, Z.** Odczyn gleby a współzawodnictwo roślin. (W świetle doświadczeń wazonowych). [Soil reaction and plant competition.] [With English summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 16: 27-41. 1 fig. 1926/1927.—Yields of meadow plants increased when the pH value was raised, between pH 4.45 and 7.35. At the neutral and slightly alkaline reaction the number of plant sp. was greater and the plant development was earlier than in other series. In acid series the grass prevailed. The plants under examination may be classified as to sp. indifferent and sp. susceptible to soil reaction. The latter may be divided into sp. which did not grow at the unfavorable soil reaction and those which grew at all reactions.—*From author's summary.*

12653. **GOLONKA, ZYGMUNT.** Laki i patwiska południowo-wschodniej części dorzecza Bzury (powiat skierniewicki). [The prairies and meadows in the southeast part of the Bzura Basin, Poland.] [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 16: 257-339. 1 map, 6 fig. 1926/1927.—The following vegetation types are distinguished: (1) *Festuca rubra*, the most common, on soils with sufficient water but poor in plant nutrients; (2) *Aira cespitosa*, where there is an excess of moisture and lack of plant nutrients, on moors and adjacent soils; (3) *Festuca pratensis*, on meadows cut twice a yr., with abundant water and rich soils; (4) *Alopecurus pratensis* on meadows similar to (3) where the soil is at times wet; (5) *Agrostis vulgaris* on dry soils of only average richness; (6) Parvocaricetum, in wet or rather damp places (ground water in summer 0-60 cm.) where plant nutrients are deficient; and (7) Magnocaricetum, where the water is about as in (6) but the soil fertile. The soils between the rubble-loam hills are alkaline, neutral, or weakly acid; those of the deeper rubble and dune sands are acid. Total N is fairly high.—*Author's summary (transl.)*.

12654. **GUICHARD, ANDRÉ.** Esquisse géographique et botanique de la Camargue. [Geography and flora of the Camargue.] *Rev. Hist. Nat. Pt. 1., B. Aquicult., Ent., Aquar. et Terrar.* 10(6): 194-203; (8): 277-288. 1929.

12655. **HAYEK, AUGUST.** Ein Beitrag zur Kenntnis der Vegetation und der Flora des thessalischen Olymp. [Vegetation and flora of the Thessalian Olympus.] *Beih. Bot. Centralbl. Abt. 2* 45(2): 220-328. 1928.

12656. **HECK, HERBERT-LOTHAR.** Pollenanalytische Untersuchungen altdiluvialer Tone und Torfe von Northeim und Eichenberg im Flussgebiete der Leine. [Pollen analysis of the old diluvial clays and peats of Northeim and Eichenberg in the Leine river-basin.] *Jahrb. Preuss. Geol. Landesanst.* 49(2): 1255-1264. 2 pl., 3 fig. 1928(1929).

12657. **HENDERSON, M. R.** The "Padang" flora of Jemaja, in the Anamba Islands, N. E. I. *Gardens' Bull. Straits Settlements* 5(7/8): 234-240. 1931.—Description of a peculiar plant association on a coastal sand-flat, with an annotated list of spp.

12658. **HOEHNE, F. C.** Observações geraes i contribuções ao estudo da flora e phytophysionomia do Brasil. I. Uma excursão botanica ao norte de São Paulo e regioes limitrophes des Estados de Minas Geraes e Rio de Janeiro. [A botanical excursion north of São Paulo to the regions bordering on the States of Minas and Rio de Janeiro.] 55p. Illus. 1926.

12659. **HYLANDER, NILS.** Diasporenabtrennungen und Diasporentransport. Bemerkungen zur verbreitungsökologischen Terminologie. [The cutting off of diaspores, and their transportation. Remarks on the terminology of distributional ecology.] *Svensk Bot. Tidskr.* 23(2): 184-218. 1929.

12660. **[ILLICHEVS'KII, S.]** ІЛЛІЧЕВСЬКИЙ, С. Рослинність околиць м. Полтави. [Vegetation in the vicinity of Poltava.] [English summary.] Записки Полтавського Сіл.-Господарського Політехнікуму (*Mém. Agr. Polytechnicum, Poltava*) 2(4): 1-27. 1928.—The author distinguishes and lists the plant spp. for the 3 communities. (1) On argillaceous soil of a river valley towards the upland there are forest belts, forest margins on hills and slopes, dry hills and steep hillsides, dry upland meadows, wet meadows, upland marshes, brooks and ditches, and weedy grass communities. (2) Within the limits of spring floods in the river valley, there are forests, alder groves, saline meadows, sandy meadows, river bank communities, and river aquatics. (3) On a sandy terrace there are dry groves, wet forest, arid sandy areas, depressions among the dunes ("plates" or "pannes"), cold marshes (bogs) with *Sphagnum*, salines, and areas of weedy sand. It is concluded that in the series of associations, the same plants are characteristic of the same degree of soil moisture. A plant changes its usual station according to variations of latitude and climate; therefore a plant is less plastic than is usually believed, for its sensitiveness to environment is compensated by changing its stations. The same locality affords examples of associations characteristic of

various climates and latitudes, each association with its proper vegetation, aspect, microclimate, and landscape.—*From author's summary.*

12661. **IVANOV, L. A. Die Sonnenstrahlung als Faktor der Pflanzengeographie und Ökologie.** [Sun irradiation as a factor in plant geography and ecology.] *Biol. Zentralbl.* 49(8): 493-508. 3 fig. 1929.

12662. **JENNY, H. Hochgebirgsböden.** In: Handbuch der Bodenlehre. 3: 96-118. Julius Springer: Berlin, 1930. —Climatic conditions in high mountains and their action in the development of alpine soil types are discussed. Data from regions where investigations have been carried on at these high altitudes are summarized showing the close relation which exists between soil and vegetation.—*C. F. Cox.*

12663. **JHERING, H. v. Die phyto-geographischen Grundgesetze.** [Phyto-geographical fundamentals.] *Bot. Jahrb. Syst. Pflanzengesch. u. Pflanzengeogr.* 62(2): 129-154. 1928.

12664. **KELLER, BORIS. Die Methoden zur Erforschung der Ökologie der Steppen- und Wüstenpflanzen.** [In: Handbuch der biologischen Arbeitsmethoden. Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze, Teil 6, Heft 1, Lief. 335.] p. 1-128. 22 fig. Urban und Schwarzenberg: Berlin, 1930.—The climatic and soil factors of steppe, semi-arid, and desert regions are analysed, with emphasis on the wide daily and yearly temp. ranges, the scanty and irregular water supply, and the effect of winds. Details of these factors are given for various areas including much data from southern Russia. Soils are described as to color, humus content, texture, and profile character ranging from the dark tschernosems of the grass steppes to the gray and yellow soils of the desert. Saline and solonetz soils are included. Growth forms and spp. of the various plant communities are exemplified, principally from Russian areas. Not only are the community relations discussed but also the root and stem systems, the leaf structure, and the osmotic concentration of the cell contents of steppe and desert plants are examined. Finally a scheme is presented for the classification of the plant communities under consideration. There is a summary of recent work in this field which includes contributions from many Russian investigators. Many of the data are tabulated.—*G. D. Fuller.*

12665. **MAXIMOV, N. A. The physiological significance of the xeromorphic structure of plants.** *Jour. Ecol.* 19(2): 273-282. 1931.—Very different types of plants with almost no common characters are included under the name of xerophytes. When plants are grown under desiccating conditions there are always a decrease in the dimensions of all cells, increase in number of stomata per unit area, a more compact network of veins in the leaf, denser hair covering, thicker cuticle and wax covering, and very often an increased development of palisade tissue and a decreased development of spongy tissue. These changes create conditions favorable to increased photosynthesis and in many instances to increased transpiration. Experimental evidence shows that many xerophytes have very high rates of transpiration. It is not, however, the rate of transpiration when an abundant water supply is present, but the capacity to restrict water loss to a minimum in time of drought, that characterizes the water utilization of xerophytes. When wilting occurs water loss is much less in xerophytes than in mesophytes because the former have a much lower rate of cuticular transpiration. The essential quality of the xerophyte is drought resistance, and hence xerophytes are defined as plants of dry habitats which are able to decrease the transpiration rate to a minimum under conditions of water deficiency.—*G. D. Fuller.*

12666. **LOREY, E. Vegetationsstudien im Hochgebirge.** *Ber. Senckenberg. Naturforsch. Ges.* [*Natur u. Mus.*] 60(7): 316-322. 1 fig.; (8): 372-377. 3 fig.; (9): 425-433. 3 fig.; (10): 474-481. 4 fig. 1930.—The characteristic plant formations of Rhätikon (the northern calcareous Alps) north of Davos are described. In the Brandner Valley are conifer forests of *Pinus silvestris* and *P. montana* var. *arborea*, with steppe-like undergrowth, relics of the last interglacial epoch, edaphically conditioned, not climatic as in the great central alpine valleys. The scrub forest zone is dominant on regions of poor soil and on avalanche areas on limestone slopes. The gravel field here shows successive stages. Quadrat studies show the dominant herbs to be nitrate-loving plants, *Ranunculus aconitifolius, Cirsium spinosissimum,* and *Poa alpina* var. *vivipara.* The dwarf mesophilous and hydrophilous communities of alpine snow meadows were investigated (minimum area $1m^2$). On the primitive rock, $pH < 6$, *Salix herbacea* was frequent. On limestone, $pH > 6.2$, area only half covered, an Aribidetum coeruleae was common. The mesophilous and hydrophilous sp., whose abundance and constancy were determined, are pictured. A discussion of adaptation and the application of organization characteristics is given. The wind ridge flora consists only of succulents and true xerophytes, of which not only the structure but the physiological characters (great suction power) are discussed. The most frequent of these are the Loiseleurietum (*L. cetrariosum*) and the Elynetum (*E. myosuroides*). Maps show the distribution of the communities.—*E. Lorey (transl. by H. H. M. Bowman).*

12667. **MONTGOMERY, CHARLES E. Ecology of the mosses of the Grand de Tour region of Illinois, with special reference to pH relations.** *Bot. Gaz.* 91(3): 225-251. 1931.—The Grand de Tour mosses were found on sandy, limestone, and morainic soils, and on stumps, old logs, and tree bases. They represent 62 sp. from 14 families. The pH of the 2-3 cm. of the soils in which the mosses grew made up the main body of tests, but many tests of soil 1 in. below the surface were also recorded. More than 1100 tests were made April-Nov. under as many different conditions as possible. The limestone soils were all alkaline. The sandy soils had pH values of 3.8-8.2, and the morainic soils of 5.0-8.2. The pH variations between top soils and the soil 1 in. deep were 0.0-2.8. Mosses that prefer acid soil are *Polytrichum commune, P. piliferum, Catharinea angustata, Pohlia nutans, Dicranum scoparium, Dicranella heteromalla, Calliergon schreberi, Hypnum haldanianum, Georgia pellucida,* and *Bryum caespiticium.* Mosses found on soils close to or above the neutral point were *Mnium cuspidatum, Bartramia pomiformis, Aulacomnium heterostichum, Brachythecium* spp., *Anomodon* spp., *Amblystegium* spp., *Thuidium recognitum,* and *Climacium americanum.* Mosses seem to have an optimum pH. Most sandy soil mosses are acid although some are alkaline. As in the case of many of the higher plants, some mosses are fairly good soil indicators.—*C. E. Montgomery.*

12668. **NĚMEJC, F. The floras in the Czechoslovakian travertines. A report on the investigations during the years 1925 and 1926.** *Acta Bot. Bohemica* 8: 86-103. 1929.—The Czechoslovakian travertines originated either from ordinary cold waters containing great quantities of dissolved limestone or from hot springs. If arising from mossy tufts or liverwort beds, the contained structure is somewhat visible, as are contorted leaves, water plants, grasses, or twigs fallen into the brook. Travertines from hot springs lacking plant configuration. The abundance of leaf and fruit impressions of a number of trees are discussed both in relation to the geologic age of occurrence and the exact location of their collection for study.—*V. O. Graham.*

12669. **PACIORKOWSKI, Z. Przyczynek do znajomości składu botanicznego pastwisk włościańskich powiatu tarnowskiego.** [Plant communities of cow pastures in Tarnow.] [With German summary.] *Roczniki Nauk i Leśnych* (*Polish Agric. & Forest Ann.*) 25(1): 67-94. 1931.—The following 5 vegetation types are distinguished: (1) *Trifolium repens* on alluvial, sandy loam soils, moderately productive and rich in $CaCO_3$; (2) *Nardus stricta* on poor, acid, wet, sandy soils; (3) mixed type with *Lolium perenne* dominant, on fertile alluvial soils rich in $CaCO_3$; (4) mixed type with *T. repens*

prominent on poor alluvial sandy-loam, on wet humus soils, and on sandy-loam soils of diluvial origin; and (5) mixed type with broad leaved weeds, on alluvial sandy-loam or sterile soils.—*From author's summary (transl.)*.

12670. **PASSERINI, N.** Sopra le sostanze azotate solubili che il vapore atmosferico trascina condensandosi in prossimità del suolo (con saggio bibliografico sulle ricerche eseguite in merito ai materiali disciolti nelle precipitazioni meteoriche compilato dal Dott. G. BONAVENTURA). [Soluble N materials which are brought down by water vapor and condensed near the soil, with a selected bibliography on materials dissolved in rain and snow.] *Boll. R. Ist. Sup. Agrar. Pisa* 6: 563-590. 1930.—The water vapor condensed by cooling with ice contained more ammonia (av. 1.64 mgm. per liter), NO_2 (av. 1.76 mgm.), and NO_3 (av. 0.13 mgm.) than rain water. Differences between night and day were studied and the effects of pressure, wind, state of sky, rain, etc.—*Author's summary (transl.)*.

12671. **POP, EMIL.** Spectrul polinic al turbei dela Colăcel (Bucovina). [Pollen spectrum of the Colacel moor, Bukowina.] [With German summary.] *Intâiul Congr. Nat. Naturalişt. România* 1: 357-363. 1 fig. 1928 (1930).

12672. **[POPLAVSKAĬA, G. I.]** ПОПЛАВСКАЯ, Г. И. О некоторых взаимно-замещающих буковых и сосновых ассоциациях в Крыму. [Alternating beech and pine associations in the Crimea.] Дневник Всесоюзного Съезда Ботаников [Ленинград] [*Dnevnik Vsesoĭuznogo Sĭezda Botanikov, Leningrad*] 1928: 257-258. 1928.—Changes in beech and pine associations due to different altitudes are described.—*G. A. Lebedeff.*

12673. **RAUNKIAER, C.** Dominanzareal, Artdichte und Formationsdominanten. [Cover, density, and dominance in plant communities.] 47p. Andr. Fred. Høst og Søn: Copenhagen, 1928. Pr. 1.75 kr.

12674. **RÜBEL, E.** Bericht über das geobotanische Forschungsinstitut Rübel in Zürich 1929-1930. 23p. Published by the author: Zurich, 1931.—This is a report of the organization of a geobotanic research institute, the researches in progress, and the monographs it has published.

12675. **[SAMBUK, F. V.]** САМБУК, Ф. В. Растительные ассоциации на желто-подзолистых почвах Коношской дачи. Вологодской губернии. [Plant associations on the yellow podsol soils in the Province of Vologda.] [German summary.] Журнал Русского Ботанического Общества при Академии Наук СССР. (*Jour. Soc. Bot. Russie, Acad. Sci. URSS.*) 12(1/2): 33-58. 8 fig. 1927.—A peculiar yellow podsol soil has developed on a series of hills underlain by calcareous sandy loam. The summits are occupied by a Piceetum hylocomiosum, upper slopes by a Piceetum vacciniosum, lower slopes by a P. herbosum, and the lowest levels by a Piceetum sphagnosum. Meadows occur rarely where the forest has been cleared. One sedge, *Carex wiluica*, is here recorded for the first time in European U. S. S. R. In the eastern part of the Tinowoe Moor there is a *Hypnum* bog, occupied by *Drepanocladus vernicosus*. This has the aspect of a filled pond, but closer examination shows it to represent a spring-bog. It carries certain sp. which elsewhere in Vologda are constants of such bogs, and the conifers have crooked tops as in spring-bogs. From the utilization standpoint this forest-district is divisible into: (1) obligate forest land, (2) forest-field land, (3) obligate meadow land, and (4) a reserve improvable area.—*E. T. Wherry.*

12676. **SOLACOLU, TH.** Analyse pollinique de la tourbe de "Poiana-Stampei." [Pollen analysis of the Poiana-Stampei (Rumania) peat.] *Intâiul Congr. Nat. Naturalişt. România* 1: 407-410. 1928 (1930).

12677. **SOÓ, R. de.** A Magyar vizek virágos vegetâciójának rendszertani és szociológiai âttekintése. [Systematics and sociology of the phanerogamous vegetation of the Hungarian inland waters.] *Magyar Biol. Kutató Intézet Munkái* 2(1): 45-79. 1928.—After a general characterization of the hydatophilous associations the author gives the composition of some communities of water plants; he then discusses the sp. and forms found in Hungary and the Balkan Peninsula and particularly the ecological modifications (status) of *Callitriche, Ceratophyllum, Myriophyllum, Hippuris*, and *Utricularia*.—*D. Fehér (transl. by A. Rehder)*.

12678. **SOÓ, REZSÖ.** Kisérleti ökológiai Tanulmányok a Balaton Vidékén. 1. Párolgásmérések különböző növényszövetkezetekben. (Elözetes közlemény). [Experimental-ecological studies at Balaton. Transpiration measurements in various plant associations.] [German summary.] *Mat. és Természettud. Értesitö (Math. u. Naturwiss. Anzeiger Ungarischen Akad. Wiss.) Budapest* 46: 602-614. 1929.

12679. **SUOMALAINEN, PAAVO.** Über die Samenkeimlinge auf einer Meeresstrandwiese in Südfinnland. *Ann. Soc. Zool.-Bot. Fennicae Vanamo* 11: 173-187. 1930.—A series of orientation experiments was carried out during the summers of 1927 and 1928 on the island of Längerholm in Finland. The meadow studied was low-lying and on the west side of the island. The plant sp. were zoned and their growth densities determined according to Norrlin's gradation table. Typical experimental plots, 1 m. sq., were then chosen in each zone for the study of seed germination. The zones were: (1) the *Scirpus-Juncus* consisting principally of *Triglochin maritima, S. uniglumis, J. gerardi*, and *Glaux maritima;* (2) the *Scirpus-Calamagrostis* with *Eriophorum polystachyum, S. uniglumis, C. neglecta, J. gerardi*, and *Galium palustre;* (3) the *Carex* of *E. polystachyum, C. goodenowii*, and *G. palustre;* and (4) the *Deschampsia* zone, of chiefly *D. caespitosa* and *Filipendula ulmaria*. As would be expected, a number of plants also grew between the zones. The seed of all plants which were typical to the zones germinated and produced seedlings with the exception of *Glaux maritima*. While the number of seed germinating in the same zone was fairly constant at a definite time during the summer, the total number per sq. m. was peculiar to each zone and appeared to fluctuate during the summer. The ratio of the seed count made during the summer of 1927 to the seedling count made during the summer of 1928 was particularly great in the case of *Juncus gerardi*, being 1218 to 1 in the *Juncus* zone and 8458 to 1 in the *Deschampsia* zone. The ratio was also great in the case of *Carex goodenowii*. The lowest ratio noted was that of *Deschampsia* (27 to 1).—*E. T. Bodenberg.*

12680. **TATEWAKI, M.** Ecological association of the Horomui peat-bog. [In Japanese, with English summary.] *Jour. Soc. Agric. & Forestry Sapporo, Japan* 19 (88): 531-563. 1928.

12681. **THODAY, D.** The significance of reduction in the size of leaves. *Jour. Ecol.* 19(2): 297-303. 1931.—It is difficult to tell whether a plant with large leaves exposes more surface than one with small leaves. Structural modifications tending to reduce resistance within the leaf to the flow of water may be as important for xerophytes as features leading to a reduction of transpiration. In the case of dissected leaves with narrow segments and of pinoid, ericoid, and cupressoid leaves, no part of the mesophyll is more than a short distance from the channels of supply. Storage of water in leaves is of secondary importance in many cases. The extent of the internal surface of the leaf is of considerable importance, since the greater part of the resistance to diffusion is located there.—*G. D. Fuller.*

12682. **[TIKHONOV, S. L.]** ТИХОНОВ, С. Л. Развитие растительности степного участа Кумсай (1924 г.) [Development of vegetation of the steppe region of Kumsai in Kazakstan.] Дневник Всесоюзного Съезда Ботаников [Ленинград] [*Dnevnik Vsesoĭuznogo Sĭezda Botanikov, Leningrad*] 1928: 262-263. 1928.—Abstract.

12683. **TUZSON, JÁNOS.** Adatok a Magyar Alföld Öskori Növény-Zetének Ismeretéhez. [Primitive vegetation of the Hungarian lowlands.] [German summary.] *Mat. és. Természettud. Értesitö (Math. u. Naturwiss. Anzeiger Ungarischen Akad. Wiss.) Budapest* 46: 442-457. 4 pl., 8 fig. 1929.

12684. TYMRAKIEWICZ, WŁODZIMIERZ. Analiza pyłkowa torfowiska Biłohorszczy. [Pollen analytic studies on Bilohorszcza peat bogs.] [With German summary, p. 676-679.] *Kosmos* [*Lwów*] 53(4): 656-679. 1928 (1929).

12685. UPHOF, J. C. TH. Vegetationsbilder aus den östlichen Staaten Nordamerikas. *Vegetationsbilder* 20 (5/6): (1-15). 12 pl. 1929.—The chief vegetational types from Maine to Maryland are briefly described and illustrated by reproductions of photographs. Among the forests illustrated are coniferous and swamp forests from the Adirondacks, stands of *Betula papyrifera, Picea rubra, Tsuga canadensis,* and *Fagus grandifolia* from Vermont, New Hampshire, Pennsylvania, New York, and Maryland. There are also good photographs of *Kalmia latifolia, Camptosorus rhizophyllus, Cypripedium acaule, Lilium canadense, Monotropa uniflora, Mertensia virginica,* and *Azaea nudiflora.*—*G. D. Fuller.*

12686. VERONA, O. Sui bacilli radicali del Senecio vulgaris, L. [The root bacilli of S. vulgaris.] *Boll. R. Ist. Sup. Agrar. Pisa* 3: 59-70. 1 pl. 1927.—A proteolytic and amyloclastic action has been demonstrated in the symbiotic bacteria of *S. vulgaris.* This might favor the metabolism of proteins and carbohydrates in the green plant, suggesting a mutualistic relation.

12687. WARÉN, HARRY. Untersuchungen über sphagnumreiche Pflanzengesellschaften der Moore Finnlands unter Berücksichtigung der soziologischen Bedeutung der einzelnen Arten. [Plant associations of sphagnum bogs of Finland, and the sociological significance of individual species.] *Acta Soc. Fauna et Flora Fennica* 55(paper 8): 1-133. 9 pl. 1926(1929).

12688. WERTH, E. Zur Kenntnis des postglazialen Klima- und Vegetationswechsels. [Post-glacial climate and vegetation changes.] *Ber. Deutsch. Bot. Ges.* 46(5): 328-339. 1 pl., 1 fig. 1928.

12689. WOOD, J. G. An analysis of the vegetation of Kangaroo Island and the adjacent peninsulas. *Trans. & Proc. Roy. Soc. S. Australia* 54: 105-139. 3 maps. 1930.—An analysis is made of the flora and vegetation of Kangaroo Island, and the peninsulas of Fleurieu, Eyre, and Yorke. The flora of this gulf region is composed almost equally of migrant species from the western and eastern centers of distribution in Australia, together with 82 endemic spp., out of a total of 657 spp. The migration from the west was earlier than the migration from the east; and the Southland, represented at present by Kangaroo Island and the sunklands of the gulfs, formed the chief means of passage through which the spp. of westerly origin passed. The migration of spp. from the eastern center occurred chiefly after the separation of Eyre Peninsula, and the gulfs have proved a barrier to westerly migration of these spp. As the result of continued separation, sp. production occurred at the points of greatest isolation, viz., in the west end of Kangaroo Island and the southern portion of Eyre Peninsula. In these 2 regions 69% of the total endemic spp. are found, the greater number of which are confined to 4 families. In the 2nd part of the paper the ecology of the Gulf Region is dealt with. Excluding the savannah forests of *Eucalyptus odorata* and *E. leucoxylon,* all the forest and scrub types developed within the 20-in. annual isohyet are of the sclerophyll type and are variants of the "stringybark formation" of the Mount Lofty Ranges, with *E. obliqua* as the climatic climax forest tree. A new edaphic sub-climax is present in the west end of Kangaroo Island, in the Port Lincoln district, and in the southern extremity of Yorke Peninsula. Other subclimaxes and associations are recognised, and their relations to succession in the sclerophyll forests of Southern Australia are discussed.—*Author's summary.*

12690. ZENARI, SILVIA. Le stazioni rupestri d'alta montagna nella zona delle Dolomiti. [High mountain cliff stations in the zone of the Dolomites.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 21: 3-35. 1930.—Three types of associations are noted, one characteristic of the dolomitic rock in situ, another of the gravelly debris derived from it, and the 3rd of the marl-clay terrain of the Raibliano. The manner of populating and the biological characteristics of such associations are described. —*Author's summary (transl.).*

PLANKTON

12691. BAJKOV, ALEXANDER. Reports of the Jasper Park lakes investigations, 1925-1926. VII. A study of the plankton. *Contr. Canadian Biol. & Fish.* 4(21/24): 345-396. 1929.—More than 500 night and day quantitative samples of plankton were obtained from 18 lakes situated at 3,339-5,550 ft. above sea level. Special galvanized iron plankton cylinders which cut out a vertical column of water at any point from surface to bottom with a minimum amount of disturbance were used. Total amount of plankton and the amounts of the various sp. were estimated and results expressed in diagrammatic form. Light and temp. have considerable influence on the vertical migrations of plankton. All planktonic organisms were divided into 3 groups: positively and negatively heliotropic and indifferent. To the 1st group belong nearly all green and blue-green algae, the next group comprises nearly all sp. of *Cladocera;* and the last group includes most sp. of diatoms.—*A. Bajkov.*

12692. BAJKOV, ALEXANDER. Biological conditions of Manitoban lakes. *Contr. Canadian Biol. & Fish.* 5 (10/12): 383-422. 1 map, 1 fig. 1930.—Physiography and biology of certain of the Prairie Lakes, including Lakes Winnipeg, Manitoba, and Winnipegosis, and the cycle of exchange of organic matter, are discussed. Total amount of plankton in Lake Winnipeg was estimated as 5,512,500 cu. m., containing approximately 1,147,500,000 kgm. of rough wt., 114,750,000 kgm. dry wt., 76,500,000 kgm. organic matter, 38,250,000 kgm. mineral salts, and 30% ash in dry wt. Similar estimates were also made for bottom fauna.—*A. Bajkov.*

12693. BORNER, L. Die Bodenfauna des Ritomsees und seines Deltagebiets vor der Absenkung (1916). (Schluss.) [The bottom fauna of Lake Ritom (Switzerland) and its delta before the subsidence of 1916.] *Zeitschr. Hydrol.* 4(3/4): 1-30. 1928.—See also Rev. d'Hydrol. (Hydrogr. Hydrobiol. Piscicult.) 4(1/2): 121-162. 1927.

12694. BUJOR, P. Noui contribuţiuni la studiul biologiei lacului Tekirghiol. [Biology of the salt lake of Tekirghiol.] [With French transl.] *Intâiul Congr. Nat. Naturalişt. România* 1: 139-151. 1928(1930).

12695. CANDEIAS, ALBERTO. Estudos de plancton na baía de Sesimbra. *Bull. Soc. Portug. Sci. Nat.* 11(3): 11-72. Map, 6 pl. 1930.—An annotated list of the spp. found in the Bay of Sesimbra, Portugal, includes in Ciliata, 10 sp. of Tintinnidae; in Dinoflagellata, 9 Dinophysidae, 38 Peridinidae; in Diatomaceae 21 spp.; in zooplankton 32 spp. The physical conditions of distribution are treated, and an extensive bibliography follows. Illustrations are presented of 87 forms. No new forms are described.

12696. FORTI, ACHILLE. Osservazioni biologiche sopra alcuni laghi dell'Albania orientale. [Biological observations on some lakes of eastern Albania.] *Atti Accad. Sci. Veneto-Trentino-Istriana* 21: 121-132. 1930.—An analysis is given of 20 collections from about 5 stations, with lists of spp. for each. A table of 84 spp. (chiefly plankton) shows their local distribution. The life in the various lakes was remarkably distinct, even in those very near each other, and this seems to preclude wind transportation.

12697. JUDAY, C., and E. A. BIRGE. A second report on the phosphorus content of Wisconsin lake waters. *Trans. Wisconsin Acad. Sci., Arts & Lett.* 26: 353-382. 11 fig. 1931.—The P content of 479 lakes of northeastern Wisconsin was determined The mean quantity of soluble P in the surface water of the various lakes is 0.003 mgm. per liter; the range is from none in 9 lakes to a maximum of 0.015 mgm. in 1. In 54 pairs of spring and summer observations on the surface water of 32 lakes, 26 pairs showed a smaller amount of soluble P in summer than in spring, 12 pairs were the same, and 16 pairs yielded a larger amount in summer than in spring. In

the 2nd and 3rd groups, the soluble P was maintained at the spring level, or even increased somewhat during the summer in spite of the fact that some of these lakes supported large crops of phytoplankton at that time. Most of the thermally stratified lakes showed a more or less marked increase in quantity of soluble P in the lower strata in summer. The mean quantity of organic P in the surface water of these lakes is 0.020 mgm. per liter (range 0.005-0.103 mgm.). On the basis of the vertical distribution of the organic P, the various series of samples may be divided into 3 groups: those with the same quantity of organic P at surface and bottom; those with a larger amount at the bottom; and those with a smaller amount at the bottom.—*Authors' summary.*

12698. **KIKUCHI, KENZO. Diurnal migration of plankton Crustacea.** *Quart. Rev. Biol.* 5(2): 189-206. 4 fig. 1930.—The intensity of the sunlight and the turbidity of the water seem to be the predominant factors determining the vertical distribution of plankton. In a few cases, the change in temp. of the water in the metalimnion determines the upper or the lower limit of the vertical distribution. The physiological state of the animal must also be taken into consideration. Diurnal change of these factors, especially of intensity of sunlight, causes the periodical vertical migration. On the basis of the responses of animals to light intensity or temp. of water and on the basis of locomotor activity, various types of diurnal migration are recognized.—*K. Kikuchi.*

12699. **KOLKWITZ, R. Eine Planktonprobe aus dem Kapuas-Strom.** [In: "Beiträge zur Kenntnis der Flora von Borneo," paper 10.] *Mitteil. Inst. Allg. Bot. Hamburg* 7(3): 179-181. 1931.—A list of diatoms and other plankton from this river in Borneo.

12700. **POPOV, A. M. Hydrobiological explorations in the Nordenskiold Sea (Sea of the Brothers Laptev).** *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(5/6): 462-467. 1931.—Near the delta of the Lena, where the water is less salty than elsewhere in this Sea, and where most of the spp. are those of brackish water (some freshwater spp. occur close to the river's mouth) 73 sp. were taken. Nordenskiold Sea has a distinctly arctic fauna. Some 350 benthonic forms occur. The animal life is scanty. Four groups occur: circumpolar; eastern spp., with range from the Nordenskiold Sea to the Pacific; western spp., with range extending from this Sea to the Atlantic part of the Arctic Basin; and a group of endemics in Siberian seas, or spread along the Arctic coast of Siberia. The 1st and 3rd groups predominate in the northern and western part of the Sea, those of the 4th group in the southeastern part. Littoral life is almost absent; only *Gammarus locusta* L. was found.

12701. **[SUZDAL'SKIĬ, V. I.] СУЗДАЛЬСКИЙ, В. И. Опыт санитарно-биологического исследования барабинских озер: "Узункуль," "Большой Яркуль" и "Амбакуль." [Sanitary-biological investigation of Barabin lakes: "Uzunkul'," "Bol'shoi Iarkul'," and "Ambakul'."]** Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 82: 345-364. 1928.—An annotated list of 82 spp. of plankton and benthon.

12702. **TITUS, LESLIE, and VILLIERS W. MELOCHE. Note on the determination of total phosphorus in lake water residues.** *Trans. Wisconsin Acad. Sci., Arts & Lett.* 26: 441-444. 1931.

12703. **TRESSLER, WILLIS L., and BERNARD P. DOMOGALLA. Limnological studies of Lake Wingra.** *Trans. Wisconsin Acad. Sci., Arts & Lett.* 26: 331-351. Map, 10 fig. 1931.—Lake Wingra is a small, shallow body of water at the outskirts of Madison, Wisconsin. It shows very little stratification, even in winter under the ice. The difference in temp. between surface and bottom rarely exceeds 5°. A maximum of 26° C. was observed at the surface in summer. A fairly strong wind will mix the water from surface to bottom when the lake is open. The transparency is 0.5-2.5 m. as shown by the Secchi disc. The conductivity is 290-390 units (reciprocal of megohm resistance); average is 330. The color is about 18 on the platinum-cobalt scale. O is present at all depths and at all seasons in sufficient quantities to support animal life. Free CO_2 is found at the surface only in winter; at all other times there is a deficiency. The water contains a large amount of fixed CO_2, which may attain 110 p.p.m. The pH is 7.8-8.7. Chlorides were found in minute traces only. Organic P is high in summer, low in winter. Soluble P is low in summer and high in winter. The dissolved silica is abundant and shows some correlation with the number of diatoms. The nitrates are high at all times, but highest in winter. Free ammonia is highest in winter with a secondary rise in spring. Ammonia and nitrates are low in summer. Organic N is low in winter and high in spring and summer; it parallels the plankton curve fairly closely. The average amount of organic C is 9.0 p.p.m. The organic matter in the centrifuge plankton follows roughly the number of plankton organisms. The diatoms are most abundant of all the plankton organisms, being found in large numbers in the spring and in somewhat smaller numbers in the fall. In summer the blue greens are quite abundant. Of the crustaceans, *Cyclops* is the most abundant.—*Authors' summary.*

12704. **WIEBE, A. H. Investigations on plankton production in fish ponds.** [*U. S.*] *Bull. Bur. Fisheries (Document 1082)* 46: 137-176. 1 fig. 1930.—In ponds at Fairport, Iowa, determinations were made of N as NO_3, NH_3, NO_2, and organic N; dissolved and total P chlorides; dissolved O; free CO_2; and pH. Plankton samples were taken at regular intervals and were studied qualitatively as well as quantitatively. The organic matter in the water was also determined. Results show that the soluble P becomes completely exhausted at times and hence may be a limiting factor. The growth of plankton may be increased through the addition of fertilizer (superphosphate, soybean meal, sheep manure, and shrimp bran).—*A. H. Wiebe.*

12705. **WIEBE, A. H. Dissolved phosphorus and inorganic nitrogen in the water of the Mississippi river.** *Science* 73(1902): 652. 1 fig. 1931.—On the basis of an analysis of 44 samples of water it is concluded that inorganic N is apparently not a limiting factor for phytoplankton in the waters of the Mississippi River at Fairport, Iowa, but soluble P may be at times.

12706. **[ZAKHVATKIN, A. A.] ЗАХВАТКИН, А. А. О вертикальном распределении и суточных миграциях зоопланктона в Байкале. [Vertical distribution and daily migration of Lake Baikal zooplankton.]** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(6): 133-138. 1930.—The size of the nets prevented the capture of the adult forms of Cottomephoridae and Comephoridae. Young forms of *Cottocomephorus grewingkii* and of *Comephorus* were absent in the daytime in the upper layers. In the case of *Macrochetopus branickii,* young forms abounded at 100 m. depth; old ones were deeper. Absent from the upper 50 m. during the day, this sp. swarmed there at night. The most abundant and omnipresent sp. was *Epischura baicalensis;* it was absent in the upper 2-3 m., reaching a maximum at 8-10 m., decreasing sharply at 20-40 m., and reaching a 2nd maximum at 60-100 m., where sexually mature individuals were slightly more frequent. *Triarthra longiseta, Anuraea aculeata,* and *Notholca longispina* were more or less similar in their distribution and migrations.

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*

W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 12078, 12151, 12510, 12615, 12802, 12804, 12844, 12871, 12873, 13753, 13851, 13865, 13887, 13921, 13988, 13989, 13993, 14014, 14025, 14029, 14031, 14057, 14062, 14065, 14068, 14069, 14075, 14079, 14132, 14151, 14191, 14212, 14223, 14494, 14500, 14550, 14551, 14553, 14555, 14556, 14671, 14818)

DISEASES CAUSED BY FUNGI

12707. **BENNETT, F. T. Gibberella saubinetii (Mont.) Sacc. on British cereals. II. Physiological and pathological studies.** *Ann. Appl. Biol.* 18(2): 158-177. 3 pl. 1931.—Under storage conditions, *G. saubinetii* retains its vitality for at least 2 yr. in its vegetative stage, and for at least 1 yr. (probably much longer) in its perithecial stage. Heating to 100° C. for 5 min. under dry conditions kills the fungus on or in diseased grains, but this treatment of seed grain is not a practicable way of controlling the disease. *G. saubinetii* causes "seedling blight" and "foot rot" of cereals, but is much less virulent than *Fusarium culmorum* and *F. avenaceum* in this respect. All 3 fungi attack the ears similarly, with equal virulence and with similar results. *G. s.* occurs throughout England and in Ireland, but full details of its frequency of occurrence in the British Isles have not yet been obtained. This fungus, the conidial stage of which is known as *Fusarium graminearum* Schwabe, produces mature perithecia on natural and artificial substrata, given ample moisture and a uniform temp. of 21-22° C. British summer shade temp. does not suffice for this. The minimum temp. for germination of conidia and ascospores is about 5° C. Between 5 and 10° both kinds of spores develop mycelia, and the fungus can infect cereal seedlings. The optimum temp. for vegetative growth and the production of mature perithecia is about 24°; the maximum temp. for growth is about 37°. In its vegetative and perithecial stages this fungus can withstand prolonged exposure to −1° to −20° C. and in its vegetative stage it persists through the winter in Great Britain.—*Author's summary.*

12708. **BEYMA THOE KINGMA, F. H. van, und W. F. van HELL. Ueber die Botrytiskrankheiten der Lilien.** *Phytopath. Zeitschr.* 3(6): 619-632. 6 fig. 1931.—In 1928 the authors isolated and described *B. elliptica* (Berk.) Cooke, which forms no sclerotia. Van Hell in 1930 found a race which forms sclerotia. When lilies are infected with the 2 strains the latter kills the plants while the former causes only slight damage. *B. hyacintha* van Beyma, isolated from lily bulbs, was also parasitic in some cases and likewise caused the plants to die. 2 strains of *B. cinerea* Pers. isolated from lilies, of which one forms sclerotia and the other not, could in favorable circumstances (for the fungus) also cause leaf spots like *B. elliptica*. Of these fungi only the sclerotia-forming strain of *B. elliptica can* be regarded as actually parasitic. Since a difference in the formation of sclerotia is not of specific rank, it is the authors' opinion that the 2 should be retained under one name.—*Authors' summary (transl.).*

12709. **BONGINI, V. Le macchie fogliari del Ciclamino (Phyllosticta cyclaminis Brun.) [Leaf spot of cyclamen.]** *Boll. Lab. Sper. Fitopatol.* 7(3): 4-9. 3 fig. 1930.—A fungus was isolated from infected leaves which produced pycnidia on various media and reproduced the disease when inoculated into healthy leaves of *Cyclamen persicum* and *C. europaeum*. The ascospore form, *Didymella* **cyclaminis*** (p. 8), was found in the spring on leaves previously infected with *Phyllosticta* during the winter —*V. Bongini (transl. by C. Zeimet).*

12710. **EZEKIEL, WALTER N., D. C. NEAL, PAUL R. DAWSON, and E. B. REYNOLDS. Report of the fourth annual cotton-root-rot conference.** *Phytopath.* 21(10): 957-964. 1931.—A summary of the conference held at College Station, Texas, on January 19, 20, 1931, including the following topics (most of the research material being previously published): Physiologic specialization of *Phymatotrichum omnivorum,* sclerotia and mycelial strands, spore stages, nutritional requirements of the organism in artificial culture, host plants, effect of the disease on hosts, overwintering on live infected roots and periodicity of root rot, relation of occurrence to soil conditions, subsoiling experiments, fertilizers, soil disinfectants, rotation and cultivation, barriers to root rot spread, flooding experiments, and resistant strains and varieties.—*W. A. Whitney.*

12711. **GADD, C. H. The Armillaria root disease of tea.** *Tea Quart. [Ceylon]* 3(4): 109-113. 2 pl. 1930.—A root disease in Ceylon caused by *Armillaria mellea* is described. A constant feature of infection is the development of black rhizomorphs on the cortex, a feature which is rare under Nyasaland conditions. The radial fissures characteristic of this disease in Java were not observed in the field though they develop in the laboratory. Fructifications are rare. The destruction of diseased bushes and adjacent jungle stumps and roots has afforded adequate control and there has been no serious spread of the disease since its detection in 1927. *Albizzia lopantha, Acacia decurrens* and *Grevillea robusta* are also liable to attack in Ceylon.—*C. H. Gadd.*

12712. **HARTER, L. L., and W. J. ZAUMEYER. Pythium butleri—the cause of a bean wilt.** *Phytopath.* 21(10): 991-994. 1931.—This bean wilt, appearing coincidently in Greeley, Colorado, and Rosslyn, Virginia, is characterized in the early stages by a wilting of the foliage in the warmer part of the day followed by a nocturnal resumption of turgidity. Later appreciable drooping of the branches is seen and, under favorable conditions, the mycelium may grow profusely over the dead cortex, often from the soil line to the branches. High temp. is required for the development of maximum symptoms, humidity being a factor largely restricted to the period of infection. *P. butleri* (=*P. aphanidermatum*) probably affects all snap-bean varieties.—*W. A. Whitney.*

12713. **HOPKINS, M. C. Southern Rhodesia: Alternaria leaf spot of tobacco.** *Internat. Bull. Plant Protect. [Rome]* 5(9): 165. 1931.—3rd report for S. Rhodesia.

12714. **IACOBESCU, N. Contribuţiuni la studiul fenomenului de putrezire al lemnului, in picioare şi doborât. [Rotting of standing and felled timber.]** [With German summary.] *Intâiul Congr. Nat. Naturalişt. România* 1: 198-204. 1 fig. 1928 (1930).—In a railroad tie "Rotkern" was noted in various degrees of color. The so-called wound gum, which represents a natural penetration of "Rotkern," is not an amorphous secretion of the wood as formerly thought, but is an organism. The coloration occurs in living, standing, or felled wood. Rotting of telephone and telegraph poles occurs only in places where the ground is saturated with water. Rotting of house timbers by *Merulius lacrymans* and other fungi is discussed in its botanical, technical, and legal aspects.—*Author's summary (transl.).*

12715. **JOCHEMS, S. C. J. Spikkel in Deli-tabak. [Cercospora disease on Sumatra tobacco.]** [With English summary.] *Mededeel. Deli Proefsta. Medan-Sumatra 2nd Ser.* 72. 1-35. 3 pl. 1931.—From the beginning of tobacco culture until 1900 frog-eye was one of the commonest leaf spots in Sumatra. From 1910 to 1929 it was of no consequence. In 1930 it reappeared in rather serious form, especially in the so called "zwarte stofgrond" country, which consists of a black andesitic-dacite soil. In 1931 the whole tobacco district was affected, but again the "zwarte stofgrond" district most severely. On some estates incipient infection continued to develop in the curing sheds after the leaves had been picked, producing large dark green and black spots with

little or no zonation. As the external appearance of the Sumatra wrapper leaf is one of its principal qualities, this form of *Cercospora* disease caused much damage. In limited experiments the trouble was somewhat overcome by ample ventilation, while a large % of the black spots disappeared after fermentation.—*Author's summary.*

12716. **KENDRICK, JAMES B. Seed transmission of cowpea Fusarium wilt.** *Phytopath.* 21(10): 979-983. 1 fig. 1931.—Preliminary trials failed to show that *Fusarium tracheiphilum* penetrates the seed. Evidence is presented that the fungus is transmitted on the seed where machine methods are used for harvesting. Hand-picked seed from diseased plants showed a low percentage of wilt in 2 out of 5 trials. A rather high percentage of wilt resulted from using 1-yr. old seed.—*Author's summary.*

12717. **KONOPACKA, W. Mączniak rzekomy na różach. [Downy mildew of roses.]** [With English summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 18(2): 169-172. 1927.—*Peronospora sparsa* is reported as a new disease in Poland. It was observed in Lublin on seedlings of *Rosa canina* and *R. rubiginosa.* Spraying with bordeaux mixture gave favorable results.

12718. **LOHWAG, HEINRICH. Zur Rinnigkeit der Buchenstämme.** *Zeitschr. Pflanzenkrank.* 41(8): 371-385. 5 fig. 1931.—The prominent, soft, swollen, longitudinal grooves of beech trunk result from radial longitudinal fissures in the heart wood along which rot fungi (*Fomes fomentarius* and others) quickly spread. When the crack (and the mycelium) reaches the cambium, its activity ceases but the adjacent parts increase their activity so that the grooves are mostly bordered by swellings. This appearance can be designated as the "spongy channeling" of beech. Since moisture hinders the production of the fruiting bodies, it is possible to explain both the strong resistance of the portions rich in water and the weak resistance of the portions containing air by the same cause, viz., the moisture relations. In parts poor in water, such as the heart wood, it is not the presence of air but the absence of water which causes the stronger mycelial growth.—*Author's summary (transl.).*

12719. **PEROTTI, R., e G. BONAVENTURA. Attacchi di Botrytis cinerea, Pers. su infruttescenze di ricino. [Attacks of B. cinerea on the inflorescence of the castor bean.]** *Boll. R. Ist. Sup. Agrar. Pisa* 3: 101-110. 1927.—Control recommendations are: treat the seed with 1% H_2SO_4; after harvest, burn all the plants; avoid cultivating *Ricinus* in the same soil again for 2 yr.

12720. **PETRI, L. Un'estesa infezione di "Pythium" su piante di grano. [Infection of wheat by Pythium.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 11(12): 1066-1068. 1930.—In May, 1930, all the wheat in the province of Padua showed more or less injury. A late variety usually showed the injury on the 1st internode and also on the rhizome, while an early variety showed it on the 2nd internode. The lesions resulted from an attack of *Pythium* which occurred at a point of the culm which had been injured by the late cold weather and aided by the continued spring rains. (See also *Ibid. Boll. R. Staz. Pat. Veg.* 10(3): 285-301. 10 fig. 1930.)—*L. Petri (transl. by B. F. Lutman).*

12721. **REICHERT, I., and F. LITTAUER. The causal agent of gummosis disease in Palestine.** *Hadar* 4(6/7): 145-150. 4 fig. 1931.—Many isolations from citrus trees affected by foot and trunk rot, and fruits attacked by brown rot yielded spp. of *Phytophthora.* On potato dextrose agar 2 groups of *Phytophthora* were differentiated, one showing a radial type of growth resembling that of *P. citrophthora,* the other showing a woolly type of growth resembling that of *P. parasitica* as obtained by Leonian on malt extract agar. Temp. relations confirmed the above determination: *P. citrophthora* did not grow at 32° C., whereas *P. parasitica* did. Comparison with well determined strains from Egypt and Spain confirmed the identifications. Inoculations with the strains determined as *P. citrophthora* alone, and also with *P. citrophthora* from Egypt, on orange fruits produced typical brown rot. Since it has been shown that both foot and trunk gummosis may be caused by either *P. citrophthora* or *P. parasitica,* it is proposed to accept the old name brown rot gummosis for the two terms Pythiacystis gummosis and mal di gomma previously used. As both species causing gummosis develop well in wet soil, removal of the soil from the base of the tree, or the use of rings around the base of the trunk has been recommended. Gummosis may be considerably reduced by effective control of brown rot.—*Author's summary.*

12722. **SPRAGUE, RODERICK. Cercosporella herpotrichoides Fron, the cause of the Columbia Basin footrot of winter wheat.** *Science* 74(1906): 51-53. 1931.—Inoculation studies showed that *C. herpotrichoides* (emended description given) is the primary cause of a footrot of winter wheat and barley occurring in the Columbia River (U. S. A.) basin. The fungus was identified by means of spores produced on corn meal cultures.—*R. Sprague.*

12723. **STANER, P. Une maladie étrange des racines du caféier.** *Bull. Agric. Congo Belge* 21(3): 919-923. 1 fig. 1930.—A root disease of coffee present in Belgian Congo, Netherlands Indies, Kenya, Uganda, the Philippines and Brazil, described by Mayné (1915), is discussed. Infection spreads throughout the root system. Young leaves hang down, old leaves turn yellow and fall. Buds secrete a brownish substance which solidifies on them. The disease is due to the association of *Pseudococcus citri* and *Polyporus coffeae.* The fungus incrusts the roots, and the insect encysts within the incrustation. The fungus fruits after the death of the tree. The insects, attended by red ants, lay their eggs at the base of the trunk; larvae live on the roots; the adults form on the roots dense colonies in which the hyphae of the *Polyporus* grow on the honey dew secreted by the insects. The fungus apparently does not harm the insect, but seems to protect it from too much or too little water. The fungus ultimately attacks the cortex of the roots which have been weakened by insect attack, causing progressive and rapid necrosis. *Sclerotium (Rhizoctonia bataticola),* reported elsewhere in association with the *Polyporus,* has not been found in this study. Means of control suggested by various workers are compiled.

12724. **TANAKA, SHÔICHI, and SHIGERU ENDO. Studies on a new canker disease of Japanese pear trees caused by Phomopsis fukushii n. sp.** *Tottori Nogaku-Kwaiho (Trans. Tottori Soc. Agric. Sci.)* 2(1): 123-134. 2 pl. 1930.—A new canker disease [*P. fukushii** (p. 132)] of Japanese pear trees (*Pirus serotina*) is described. The disease is prevalent in Tottori, Kanagawa and Saitama Prefectures. The fungus invades the cut ends of branches and the wounds of trunks and limbs, causing dark brown cankers. It affects old trees most readily. Pear varieties such as Okusankichi, Nijisseiki and Taihei are more or less resistant, while Imamura-aki, Imamura-natsu, Chojuro and Meigetsu are readily attacked. When artificially inoculated, the fungus attacks not only Japanese pear trees but also a European variety (*P. communis*) although the latter is not affected in the orchards. Apple trees are completely immune. The min. temp. for mycelial growth is about 8°C. and the max. about 33°. —*Authors' summary.*

12725. **[TOGASHI, K., and E. TSUKAMOTO.] [On the 3 species of Fusarium which cause the wilt-disease of pea. (Preliminary report II.)]** [In Japanese.] *Jour. Soc. Agric. and Forestry Sapporo, Japan* 19(87): 409-419. 1928.

12726. **UPPAL, B. N. India: Rhizoctonia bataticola on sorghum in the Bombay Presidency.** *Internat. Bull. Plant Protect. [Rome]* 5(9): 163. 1931.

12727. **VERONA, O. Marciume dei frutti di pomodoro dovuto a "Rhizopus nigricans" Ehr. [Tomato rot due to R. nigricans.]** *Boll. R. Ist. Sup. Agrar. Pisa* 6: 647-653. 1 col. pl. 1930.—Cultivated in a medium containing carbohydrates and acids, growth of the fungus was promoted by addition of sugars and hindered by acids.

12728. **WARE, W. M. A blossom wilt of lavender**

caused by Botrytis cinerea. *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 206-210. 2 fig. 1931.—*B. cinerea* is able to cause infection of *Lavandula* spp. only through wounds and then it is restricted to the portion of the flowering stem between the blossom bud and first pair of leaves. Self-inflicted wounds probably account for the natural infection, since there was no evidence of insect injury. The characters of the organism are briefly described.—*W. A. Whitney.*

12729. YAMAUCHI, TAMETOSHI. [Diaporthe associated with mulberry blight "Kangare."] [In Japanese, with English summary.] *Bull. Imp. Sericult. Exp. Sta.* 8(1): 1-34. 9 pl. (1 col.). 1930.—On typical blight specimens *Diaporthe* was almost always present. The fungus, supposed to be the real pathogen, has been considered as *D. orientalis* and more recently *D. niphonia.* The fungus has a pycnidial, or *Phomopsis,* stage, which is the usual form on the lesion, with α and β spores. The filiform body in the pycnidium is considered a kind of spore, because it has its own sporophore; it is a transition form between the elliptical and the filiform spores. Germination of the β spore was not achieved. The genetic relation between the perithecial and the pycnidial stages has been shown by cultural and serological (agglutination reaction) methods. The opt. temp. for development is about 25°C. The fungus often occurs on trees dying from natural or artificial causes. Inoculation experiments proved that the fungus cannot attack healthy plants in warm regions. Only when the tree was inoculated with a piece of naturally infected bark did the margin of the inoculated parts turn slightly brown or reproduce pycnidial papillae. Though the fungus seems to have an intimate relation to the disease, it is not considered the sole cause. The fungus is widespread but the disease is restricted to snowy localities. The temp. adaptation of the fungus is not low, and the disease may occur in a season of rather high temp., but no indication of spread was recognized. The fungus appears readily on injured trees.—*From author's summary.*

12730. ZELLER, S. M., and J. W. DEREMIAH. An anthracnose of Ledum caused by a species of Elsinoë. *Phytopath.* 21(10): 965-972. 3 fig. 1931.—An anthracnose of the evergreen shrub, *L. glandulosum,* is described. It occurs along the Pacific coast of Oregon and Washington, and one specimen from Michigan on *L. groenlandicum* has been examined. The disease seems to be distributed throughout the range of the genus *Ledum* in the U. S. A. Leaf and stem spots are the chief symptoms of the disease. *E. ledi* Zeller (*Aulographum l.* Peck) (p. 970) is constantly associated with the disease. The fungus was first described on *L. groenlandicum* from St. Lawrence County, New York. An emended description of the fungus and disease is included. *Cryptostictis* arbuti Zeller (*Disaeta a.* Bonar) (p. 972) frequently occurs in Oregon on *L. glandulosum* in close proximity to *E. ledi.*—*Authors' summary.*

DISEASES CAUSED BY BACTERIA

12731. JOHNSON, E. M., and W. D. VALLEAU. Blackleg of tobacco seedlings. *Phytopath.* 21(10): 973-978. 5 fig. 1931.—A stem rot of tobacco seedlings at the transplanting stage is described from 2 plant beds in Kentucky. Affected plants showed actively motile bacteria. The name, blackleg, is suggested for the disease because of its resemblance to blackleg of potato. Bacteria isolated from affected plants caused a stem rot of Turkish tobacco in the greenhouse, and a stem and pith rot of Burley tobacco in the field. Soft rot of potatoes and carrots was produced by cultures of the stem-rot pathogen. Comparative studies indicate that the stem-rot organism is similar to, if not identical with, *Bacillus aroideae* in that it produces acid but not gas on beef broth containing lactose, dextrose, and sucrose.—*Authors' summary.*

12732. KROHN, V. Die ersten Funde von Phytomonas maculicola McCulloch in Suomi. [P. maculicola on cabbage in Finland.] *Phytopath. Zeitschr.* 3(5): 531-532. 1931.

12733. LIRO, J. IVAR. Finland: Bacterium maculicolum. *Internat. Bull. Plant Protect.* 5(8): 141. 1931.—First occurrence of this cabbage disease in Finland.

12734. PEROTTI, R., e O. VERONA. La rogna del cotogno (Pirus cydonia, L.). [Quince rot.] *Boll. R. Ist. Sup. Agrar. Pisa* 3: 51-59. 1 pl. 1927.—From the lesions were isolated small, short bacteria 1-1.5 × 2.5-3 μ, very active. They, stained with Ziehl's carbol fuchsin and gentian violet, are gram negative, and non-acid fast. They are asporulant, and do not liquefy gelatin or coagulate milk.

DISEASES CAUSED BY PHANEROGAMS

12735. BONAVENTURA, G. Contributo alla conoscenza del parassitismo della "Cuscuta pentagona" Engel. [The parasitism of C. pentagona.] *Boll. R. Ist. Sup. Agrar. Pisa* 6: 427-439. 3 fig. 1930.—List of plants serving as host.

12736. HARRISON, R. M. Observations of many hosts of dodder (Cuscuta epithymum Murray) in Kent, and a record of a variety new to Britain. *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 300-303. 8 fig. 1931.—After listing 46 plants attacked by *Cuscuta,* mention is made of *C. epithymum* var. *angustata* subvar. *alba* Engelm. found for the first time in Britain. The pathological histology of dodder of eyebright (*Euphrasia officinalis*), itself a semi-parasite on grasses, on wild rose, on *Brachypodium pinnatum* and *Lotus corniculatus* is briefly described.—*W. A. Whitney.*

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

12737. ARNDT, C. H., and G. STEINER. Aphelenchus parietinus as the cause of seedling losses in cotton. *U. S. Dept. Agric. Bur. Plant Indust. Plant Dis. Reptr.* 15(8): 82-83. 1931. [Mimeographed.]

12738. GOFFART, H. Rassenstudien an Heterodera schachti Schm. *Arb. Biol. Reichsanst. Land- u. Forstwirtsch.* 18(1): 83-100. 7 fig. 1930.—The paper consists of 2 parts: Morphological differentiation of races of *H. schachti;* and host relationships of the various races. Measurements are given of the eggs of the strains from sugar beet, oats, and potato. The oat strain has distinctly larger ova. Measurements of the ova of the sugar beet and oat strains overlap. The youngest larvae of the sugar beet strain are also distinctly longer but of nearly the same diam. (α 23-28); the sugar beet and oat strains are 20-23 and 18-23 resp. Measurements of the cysts show that α reaches its largest values in the sugar beet strain and its lowest in the potato strain. Cysts of nematodes from sugar beet and oats, sugar beet and potato, sugar beet and turnip-rooted cabbage, potato and turnip-rooted cabbage, potato and white cabbage, white cabbage and oats, all differ appreciably in the α value. Cysts from sugar beet and turnip-rooted cabbage, sugar beet and white cabbage, and white cabbage and turnip-rooted cabbage, differ only slightly in this value. The sugar beet strain infected mangold, spinach, sugar beet, turnip-rooted cabbage, white cabbage, cauliflower, mustard, black radish, and radish. Corn, oats, wheat, rye, barley, potato, tomato, clover, pea, and sunflower were not susceptible. The turnip-rooted cabbage and white cabbage strains did not infect other hosts. The potato strain infected only the tomato though other members of the Solanaceae were used (*Nicotiana* and *Petunia*). Members of the Gramineae, Chenopodiaceae, and Cruciferae were not infected. A nematode population (*H. schachti*) conforms to one of the following possibilities: (1) it belongs to a fixed biological race and has a limited circle of host plants; (2) it belongs to 2 or more fixed races, each with a limited circle of host plants; (3) it consists of a group of individuals, which have no fixed host plants and are therefore genetically heterozygous. It is uncertain whether the author presents the above statements as a

possibility or a necessary conclusion from his findings. —*B. G. Chitwood.*

12739. **KOESLAG, J. D. Een onderzoek over de resistentie van verschillende roggerassen tegen het stengelaaltje.** [Resistance of rye varieties to the stem nematode (Tylenchus dipsaci). *Tijdschr. Plantenziek.* 37 (5): 96-104. 3 fig. 1931.—Of 35 varieties of rye grown on a plot heavily infested with *T. dipsaci*, only 2 poor inland varieties proved somewhat resistant. Infestation within a field is often localized but may spread to neighboring fields. Cases are also known of fields formerly badly diseased, which now yield healthy crops. Infection at an early stage causes most serious injury.—*H. L. G. de Bruyn.*

12740. **VERRIER, M. L. Contribution à l'étude de la cécidie de Livia juncorum Latr. sur Juncus conglomeratus L.** *Bull. Soc. Ent. France* 1929 (4): 77-80. 1929.—The conical gall produced by this psyllid at the point of inflorescence in *Juncus* first arrests the development of the floral parts and then stimulates the development of structures morphologically identical with a leaf or cauliform bract.*—*S. B. Fracker.*

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

12741. **BOLAS, B. D. Physiological investigations of mosaic disease in the garden tomato.** *Exp. & Res. Sta. Nursery & Market Gard. Indust. Devel. Soc. Turner's Hill, Cheshunt, Herts.* 16: 62-67. 1930 (1931).—The effect of mosaic disease on the efficiency of the plant is most strongly felt in the presence of blue-green light. The effect in white light is similar to that in red light at low intensities, the harmful effect of the virus increasing with the intensity. When tomato sap was filtered through paper and portions of the residue used for inoculum, stripe was not produced in infections from the center, while both stripe and fern-leaf symptoms were of fairly common occurrence in infections from the edge. The temp. at which inoculation is carried out influences the period of incubation. Aucuba mosaic leaves maintained at 40°C. for 15 min. before, during, and after inoculation were not affected, while inoculations made at 32° and 13° showed mottle in 6 days, at 11° in 8 days, and at 5° in 13 days. Under influence of a 0.5 microamp. electric current, the portion of the virus producing intense symptoms accumulated at the + pole while that producing milder symptoms went to the − pole. No evidence of change in pH or of oxidase content was found within the range of migration of the virus. Plants receiving a full day's light showed normal mottling while those receiving that equal to a December day showed typical winter symptoms of blistering and slight deformation on some of the leaves. A short clearing process is outlined. Fern-leaf produced by Aucuba mosaic has been converted into typical mottle by exposing plants having the former symptoms to 90°F. for a few days and an artificial 12-hr. day at a light intensity of 750 foot-candles. Regeneration of a green color when the yellow area of a leaf is treated with a Cu salt indicates that the etiolation may be correlated with a pathological acid production in the tissues.—*W. A. Whitney.*

12742. **KIRKPATRICK, T. W. Further studies on leaf-curl of cotton in the Sudan.** *Bull. Ent. Res.* [*London*] 22 (3): 323-363. 2 pl. 1931.—The virus disease of cotton in the Gezira area known as "leaf-crinkle"* is identical with that called "leaf-curl" at Shambat near Khartoum. It shows different symptoms in different varieties, including "net-vein enations" and "mosaic."* The disease is transmitted by white flies, *Bemisia gossypiperda* [Aleurodidae], as proved by numerous experiments. Attempts to transmit by means of *Aphis gossypii* and *Empoasca facialis* were unsuccessful. Evidence is presented to show that the virus of leaf curl is not transmissible through seed or soil. There is considerable variation in the incubation period of the disease, the minimum being 8 days. Shading and low soil temp. seem to retard its development. The disease appears to be latent in some plants, not appearing until they are mutilated. White flies which have taken up the virus as larvae may transmit it as adults. The white fly is capable of transmitting the virus for as long as 27 days after feeding on an infected plant. The virus does not pass through the egg stage. The disease was transmitted by white fly from Sakel cotton to *Hibiscus esculentus*, but not the reverse; from cotton to *H. cannabinus* and vice versa; from *H. esculentus* to *H. c.* and vice versa; from Sakel and *H. c.* to Watts long staple cotton; from Watts to Sakel. *Althaea rosea* and *H. sabdariffa* were found affected with leaf curl, with white fly present. Some cotton varieties show only crinkle, others only mosaic. Similar crinkle diseases are noted on tomatoes. It is believed the virus is carried over from one season to the next in ratoon plants, which should be eradicated.

12743. **LE PELLEY, RICHARD H. Introductory note on virus diseases of plants in Kenya.** *Jour. East Africa and Uganda Nat. Hist. Soc.* 1930 (37): 198-200. 1931.—Some of the more important are: sugar cane mosaic; tobacco mosaic; maize streak; rosette of ground nuts; curly-leaf of cassava; possibly several virus diseases of potatoes.

12744. **MUMFORD, EDWARD PHILPOTT. On the curly top disease of the sugar beet: a biochemical and histological study.** *Ann. Appl. Biol.* 17 (1): 28-34. 2 pl. 1930.—A number of physico-chemical measurements were made of the saps from 2 strains of sugar beets, one resistant, the other susceptible to curly top. An increase of refractive index, specific resistance and of freezing point depression was noted in diseased as compared with healthy leaves in both strains, indicative of an increase in total solids and non-electrolytes in diseased tissues. This increase was much greater in the susceptible than in the resistant strain. In general sap from resistant beets was less concentrated in total solids and non-electrolytes, and more concentrated in electrolytes than sap from susceptible beets. Observed differences in pH were small, but there was a general tendency toward greater acidity in young leaves of the resistant strain. Nitrogen content was greater in sap of young leaves and roots of susceptible beets than in corresponding portions of either healthy or diseased plants of the resistant strain; the N content was increased in diseased tissues. In the susceptible strain the quantity of sugar is increased in the leaves, but decreased in the roots, in the presence of the disease; in the resistant strain the quantity of sugar is decreased in diseased leaves as well as roots. The possible relation of sugar accumulation in the leaves of susceptible beets to the feeding of the leafhoppers is pointed out. Phloem necrosis occurs in diseased plants of both the resistant and susceptible strains. A tendency toward greater thickness of epidermis and cuticle was noted in the resistant strain.—*F. Weiss.*

12745. **UPPAL, B. N. India: a new virus of Dolichos biflorus.** *Internat. Bull. Plant Protect.* [*Rome*] 5 (9): 163. 1931.—Resembling mosaic of beans and observed on *D. biflorus* and *D. lablab.*

NON-PARASITIC DISEASES AND TERATOLOGY (INCLUDING DISEASES OF UNKNOWN CAUSE)

12746. **BAKER, CLARENCE E. A study of the skin structure of the Grimes apple as affected by different types of injury.** *Proc. Amer. Soc. Hort. Sci.* 27: 75-81. 4 pl. 1930 (1931).—Russet appears in its earliest form as thin layers of cork cells, produced by a phellogen to bridge the ruptured cuticle and epidermis. Larger russeted areas such as frost bands are of similar structure. The cork cambium together with the cork cells produced toward the surface of the apple is usually clearly visible. Flakes formed of groups of cork cells that have sloughed from the ruptured surface of large injuries as the fruit increases in size are also seen. Russeted fruit loses more moisture in storage than normal fruit, leading to early shriveling. Storage scald appears in its earliest stages as a darkening of the exterior 1-2 layers of collenchyma, immediately beneath the epidermis, the cuticle being normal. In more advanced scald the subepidermal cells become disintegrated and compressed, the cuticle losing

its definite structure. Ammonia injury appears first as a browning of the cells immediately around the lenticels just beneath the epidermis. Sulphur burning from spray materials may develop in the first 5-6 layers of collenchyma cells without apparent injury to the cuticle. In other types of spray burning the cuticle may be ruptured or raised by the formation of a mass of cork cells beneath it and exterior to the normal subepidermal tissue.—*C. E. Baker.*

12747. **BÈNES, G. Contribution à l'étude sur le court-noué.** *Progrès Agric. et Vitic.* 96(41): 348-349. 1931.—Plants grown near grapes suffering from "short-node" showed "root-burn," which may be due, in the case of beets, to puddling of the soil by rains resulting in lack of aeration. Soils favoring root burn are generally high in Fe and low in Ca. Both "short-node" in vines and "root-burn" in beets seem due to malnutrition, owing to a soil defect which can be remedied by lime.

12748. **CARNE, W. M. Grey speck disease of wheat and oats (known as white wilt in Western Australia).** *Western Australia Dept. Agric. Leafl.* 227. 1-5. 1 pl. [1931].—White wilt of wheat and oats in Western Australia is identical with the gray speck disease of oats in Europe and the roadside take-all in South Australia. In this state it is associated with brown mallet or wandoo in mallet country. The disease appears as yellow or whitish patches on hillsides, first noticeable in June or July. By the end of August or early September the affected areas either recover and produce nearly normal crops or fail. Failure depends on unsuitable climatic conditions for growth in August and September. The disease has been experimentally controlled by certain chemical treatments; possibly some such treatment may be found which will be economically justified. The evidence available indicates that cropping not more than once in 4 yr. definitely reduces the disease.—*Author's summary.*

12749. **JUSTESEN, S. H. Invloed van de bemesting op de kurkvorming van de aardappelknol. [Influence of manuring upon the formation of woundcork in the potato tuber.]** [English summary.] *Tijdschr. Plantenziek.* 37 (1): 1-16. 2 pl., 5 fig. 1931.—Greatest wound-cork formation occurred with potatoes manured only with nitrate, the smallest amount with those fertilized only with potash, and intermediate with complete manuring or none at all. The wound-cork reaction at the stem end was visibly greater than at the bud end, but the number of suberized cell layers in the two positions was about equal. In the center of the tuber the wound reaction was less, presumably because of lack of O.—*H. L. G. de Bruyn.*

12750. **MITTER, J. H., and R. N. TANDON. A disease of Solanum melongena in Allahabad.** *Jour. Indian Bot. Soc.* 9(4): 242. 1 pl. 1930.—In 1930 brinjal plants showed a stunted tufted growth, the shriveled, green to dull violet stems became denuded, and the fruit, when present, was greatly reduced. The cause in unknown.—*W. A. Whitney.*

12751. **MOORE, H. C. Notes on sprout tuber or no-top potatoes.** *Amer. Potato Jour.* 8(8): 189-192. 1 fig. 1931.—Sprout tuber or no-top potato injury in Michigan in 1931 was most severe in the central and southern districts where drought was severe in September 1930. Field observations in affected areas showed that sprout tuber or no-top was most severe in potatoes grown on very light, humus-deficient soils. Early plowing and preparation of the seed bed; green-sprouting the seed 2 weeks previous to planting; and storage of seed at 36-40° F. were factors that lessened sprout tuber injury.—*H. C. Moore.*

12752. **PEROTTI, R. Patologia da concimazioni "ad alta dose" particolarmente di nitrato. [Diseases from too much fertiliser, especially NO_3.]** *Boll. R. Ist. Sup. Agrar. Pisa* 3: 129-150. 1 fig. 1927.—The optimum concentration of KNO_3 solutions for cereals is 0.2%. For growing drug plants the optimum is 0.05%. Plants receiving abundant nitrates are more susceptible to attacks of parasites than controls.—*From author's conclusions (transl.).*

12753. **REICHERT, I., and J. PERBERGER. Little leaf disease of citrus trees and its causes.** *Hadar* 4(9): 193-194. 2 fig. 1931.—Report of studies on a new disease causing heavy losses in Palestine. No organism with etiological relations was found. Chemical analyses and climatic studies showed the disease to be due to drought combined with K deficiency; the outstanding symptom lies in a change from mesophytic to xerophytic growth habit.

12754. **SCHOLLENBERGER, C. J. Effect of leaking natural gas upon the soil.** *Soil Sci.* 29(4): 261-266. 1930.—Where natural gas leaks the soil blackens and develops a peculiar stagnant mud odor, as well as the acrid odor due to constituents absorbed from the gas. The most pronounced chemical effect upon the soil is shown by a great increase in exchangeable Mn content, and by an appreciable increase in exchangeable NH_3. This increase in active base content causes a lowering of the pH. The source of the exchangeable Mn is in the higher oxides, which are abundant in many soils. The effects of the gas are due to displacement of air from the soil, resulting in a biological reduction under anaerobic conditions so established, and are quite transient. The exchangeable Mn quickly reverts to the non-exchangeable form under exposure to conditions favoring oxidation, and plants grow well in the soil. Recovery of very acid soils damaged by gas would no doubt be hastened by an application of lime in addition to thorough aeration.—*Author's summary.*

DISEASE RESISTANCE AND PARASITISM

12755. **ANDERSON, BERNARD A. The toxicity of water-soluble extractives of western yellow pine to Lenzites sepiaria.** *Phytopath.* 21(10): 927-940. 2 fig. 1931.—The hot-water extracts of *Pinus ponderosa* are more toxic to *L. sepiaria* than corresponding cold-water extracts. In general, the water-soluble-heartwood extracts seem slightly more toxic than the corresponding sapwood extracts, but no pronounced difference in the relative toxicity of the 2 types of extracts was noticed. Water-soluble extracts obtained from air-seasoned material were more toxic than corresponding water-soluble extracts from kiln-dried material. This would indicate a loss of certain volatile materials toxic to *L. sepiaria* brought about by the temp. used in kiln drying.—*Author's summary.*

12756. **CELICHOWSKI, KAZIMIERZ, i ANTONI KURYŁŁO. Przyczynek do badań raka ziemniaczanego. Z doświadczeń wazonowych nad odpornością ziemniaków przeciwko rakowi ziemniaczanemu. [Potato wart.]** [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 18(2): 173-180. 3 fig. 1927.—Various potato vars. were tested for resistance to potato wart. Of these only Pepo, Parnassia, and Hindenburg were resistant. Rains increased susceptibility. *Author's summary (transl.).*

12757. **GARBOWSKI, L. Wrażliwość uprawianych w Polsce odmian żyta na rdze źdźbłową Puccinia graminis Pers. f. sp. secalis Er. et Henn. [Resistance of Polish rye varieties to rust.]** [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 19(2): 195-240. 21 fig. 1928.—4 vars. were found highly resistant to rust but none was immune. Barley could easily be inoculated with this form of *P. graminis* but not oats or wheat.—*Author's summary (transl.).*

12758. **GASSNER, G., und K. HASSEBRAUK. Untersuchungen über die Beziehungen zwischen Mineralsalzernährung und Verhalten der Getreidepflanzen gegen Rost.** *Phytopath. Zeitschr.* 3(6): 535-617. 10 fig. 1931.—For practical decision of the fertilizer question, yields must be studied exclusively. Strong N applications clearly lengthened the fruiting period of the rust, while K and P fertilizers had no effect. K fertilizers somewhat increased resistance to rust when the other nutrients remained constant. If N and P were also changed the effect of K varied in proportion as it exceeded N

and P, i.e., the action of K depends on the N:P ratio. KCl and K_2SO_4 were about equally efficient in increasing resistance. N decreases resistance to rust, its action increasing as N is in excess of P and K. In neutral soils ammonium salts weakened resistance most, followed by $Ca(NO_3)_2$, $NaNO_3$, and KNO_3. Overfertilizing with $NaNO_3$ and KNO_3 can change resistant to susceptible plants. The action of phosphoric acid always depended on the soil content of N and K and the K:N ratio. According to the P:K:N ratio, phosphoric acid increased the resistance or the susceptibility. The difficultly soluble salts are weaker in their action than the soluble ones. The actions of these salts is attributable to their effects on leaf activity and the protein content of the plants.—*From authors' summary (transl.)*.

12759. **HANNA, W. F. Studies on the nature of rust resistance in wheat. V. Physiology of the host.** *Canadian Jour. Res.* 4(2): 134-147. 1931.—Determinations were made of catalase, diastase and oxidase activity; rate of respiration; and content of chlorophyll, xanthophyll and carotin in the seedling leaves of varieties Little Club, Marquis, Kanred, Kota, Mindum, Kubanka, Emmer and Khapli. Catalase activity increased and diastase activity decreased as the leaves became older. Rust reaction was not correlated with enzyme activity. No significant differences were found in the oxidase activity or respiratory rate of the 8 varieties. Little Club and the varieties of the *vulgare* group were relatively rich in chlorophyll and the carotinoids. It is suggested that photosynthetic processes may take place more rapidly in the cells of the varieties having a high content of these pigments, and thus furnish conditions suitable for the growth of the rust mycelium.—*W. F. Hanna.*

12760. **REINKING, O. A., and C. J. HUMPHREY. Laboratory tests on the durability of Philippine woods against fungi.** *Philippine Jour. Sci.* 45(1): 77-91. 2 pl. 1931.—The paper presents data on the resistance to decay of 15 common Philippine woods and a species of southern yellow pine from the U. S. A. These were tested against *Daedalea flavida, Polyporus sanguineus, Tramctes versatilis, T. meyenii, Xerotus nigrita,* and 9 unnamed spp. of common and destructive Philippine fungi. Small blocks of wood were inserted in 2-liter Erlenmeyer flasks, inoculated, and allowed to decay up to 28 mo., but for the most part 16-17 mo. The severity of decay was gauged by loss in weight and by the physical condition. The relative scale of durability derived accords well with the published records of the resistance of the same woods to fungus attack under natural or service conditions. Molave (*Vitex parviflora*), yakal (*Hopea plagata, Isoptera borneensis, Shorea balangeran*), and tindalo (*Pahudia rhomboidea*) lead in durability. The softer woods, such as the lauans (*Shorea, Parashorea, Pentacme*), guijo (*Shorea guiso*), katmon (*Dillenia philippinensis* and *D. luzonensis*), dapdap (*Erythrina variegata*), and malaanonang (*Shorea polita*), are quite perishable under conditions favorable to decay. Narra (*Pterocarpus indicus* and *P. vidalianus*) and apitong (*Dipterocarpus grandiflorus* and *D. vernicifluus*) proved moderately durable.—*Author's summary.*

12761. **TUBEUF, [K.] v. Ist Pinus peuce gegen den Blasenrostpilz immun oder für ihn nur wenig disponiert?** *Zeitschr. Pflanzenkrank.* 41(8): 369-370. 1931.—*P. peuce* is not, as previously accepted, completely immune to white pine blister rust, but is less susceptible than *P. strobus* and *P. monticola.*—*Author's conclusions (transl.)*.

12762. **VILKAITIS, V. Ar kūlėtī kvīečiaī estī labīau nurūdījе? [Is smutty wheat less resistant to yellow rust?]** [With German summary.] *Žemės Ūkio Akademijos Metraštis [Lithuania]* 1929/1930: 110-118. 2 fig. 1931.—Smutted plants from contaminated seed were more susceptible to rust.

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, AND SPRAYING)

12763. **BAGENAL, N. B., W. GOODWIN, E. S. SALMON, and W. M. WARE. The control of apple scab. I. Bramley's seedling.** *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 188-205. 3 fig. 1931.—The 2 control plots taken together yielded 28.6%, in 1924, and 28.3%, in 1925, scab-free apples. The plot sprayed 3 times with bordeaux gave 69.6% scab-free apples in 1924 and 68.5% in 1925, an increase of 41.0% and 40.2% over the control plots, and of 20.7% and 10.7% over the plots sprayed 3 times with lime-sulphur. The plot sprayed 3 times with bordeaux, compared with that sprayed twice, showed an increase of 20.8% in 1924 and of 15.2% in 1925. The plot sprayed 3 times with lime-sulphur, compared with that sprayed twice, showed an increase of 23.8% in 1925. No increase in fungicidal power was obtained in either year when lead arsenate was added to lime-sulphur. No scorching (russetting or leaf-fall) of any commercial importance occurred with any of the sprays used.—*Authors' summary.*

12764. **BIRMINGHAM, W. A. Black spot or scab of apple. Experiments for its control in New South Wales. 1. Distribution, life-history, etc. 2. The Batlow experiments.** *Agric. Gazette N. S. Wales* 42(8): 635-640; (9): 721-729. 5 fig. 1931.—7 spray programs were tried during 1925-30. Bordeaux throughout gave best control of black spot, but in certain seasons involves the risk of severe russetting. Bordeaux (6-4-40) at "spur burst" stage, followed by lime-sulphur (1-14) at the "pink" stage and lime-sulphur (1-35) at the "calyx" stage and subsequently as required, gave best control without risk of russetting. The average % of infection for the 5-yr. period was 1.4, as compared with 55.2 and 63.5%, respectively, for the control plots. In 1927-28, when conditions for black spot were very favorable, the % of infection for the control plots were 94.8 and 87.4, respectively, while in plot 2 (Bordeaux followed by lime-sulphur) it was 4.5. The department recommendation is: Bordeaux mixture (6-4-40) at "spur-burst" stage; lime-sulphur (1-14) 26° Beaumé at "pink" stage; lime-sulphur (1-35) at "calyx" stage and subsequently as required.

12765. **BURNETT, L. C., and CHAS. S. REDDY. Seed-treatment and date-of-sowing experiments with six varieties of flax.** *Phytopath.* 21(10): 985-989. 1931.—Due to the exceptionally dry season, satisfactory yields of flax were obtained only from the 1st sowing, May 1; little more than ½ as much (53.4%) from the 2nd sowing, May 14; and practically no yield from the 3rd sowing, May 31. When Bison flax of high vitality was grown under a wide range of conditions, the percentage of seed which produced plants varied from 14.9 to 53.4. In the same experiments, seed of the same lot treated with Ceresan gave percentage stands of 42.6-63.6. Seed treatment with Ceresan increased yields of Bison flax 26.5% in 26 replications and the yields of 5 other varieties (2 replications each) by 12.6-44.5%.—*Authors' summary.*

12766. **CLAYTON, E. E. Vegetable seed treatment with special reference to the use of hot water and organic mercurials.** *New York [Geneva] Agric. Exp. Sta. Bull.* 183. 1-43. 6 fig. 1931.—From extensive experiments over a period of 9 yr. the following conclusions are drawn. Stimulation of growth is caused but rarely by either chemical or heat treatments of seeds. Retardation of growth may also result from seed treatment. Thus, in certain seeds, e.g., lima beans, treatment with mercury decreases the yield of tops and pods by about 25%. Treatment with organic mercurials does not increase the percentage of seed germinating, but prevents decay of seed and developing seedling, and hence increases the percentage stand. The greatest increases in stand were secured in early spring when the germination period is longest and the likelihood of decay greatest. Comparison of many copper and mercury compounds used as dusts showed that organic mercurials were distinctly superior to other preparations in protecting the seed and increasing stands. Damping-off was partly controlled by organic mercurials, when seed was sown in the greenhouse. Liquid organic mercurial treatments in comparison with mercuric chloride, iodide, or cyanide were much safer to use. Seed stored after treatment with

liquid organic mercurials may, however, develop injury. In tomato, there was temporary inhibition of germination. Treated seed germinated well when planted at once, or after 3 yr., but when sown 6 months after treatment it germinated very poorly. In carrots germination decreased rapidly after treatment. Dust treatments did not affect germination either immediately or after storage for 4 yr., and the dust apparently lost but little of its effectiveness during storage. Hot water treatments of brussels sprouts, cabbage, or cauliflower seed at 50° C. and up to 30 min. exposure had no immediate effect on germination, provided the seed was of good vitality. Later effects were directly proportional to the length of treatment. Hot water treatments should be no longer than necessary to destroy parasitic organisms and should not be used much in advance of the probable date of sowing. Many combined chemical and hot water treatments were tested, most of which reduced germination more rapidly than either form of treatment separately. The only substances used in seed treatments which had a beneficial effect on germination were aluminum and zinc sulphates.—*E. E. Clayton.*

12767. **DURUZ, W. P. Further notes regarding peach rust control.** *Proc. Amer. Soc. Hort. Sci.* 25: 333-337. 1928.—All the lime-sulphur and bordeaux sprays applied in the early fall gave good control of *Tranzschelia punctata*. The late fall applications alone were not effective. One application in late fall and another in the spring were more effective than a single spraying, due to the killing of successive crops of spores in the bark pustules. Liquid lime-sulphur, full dormant strength, gave the most uniform and best control. There was little difference between the effectiveness of the other S sprays in any one block. Bordeaux applied early in the fall was practically as effective as the S sprays, but in the late fall or spring, it was less effective than the full strength liquid lime-sulphur.—*From author's discussion.*

12768. **HURT, R. H., and F. J. SCHNEIDERHAN. Calcium sulphide for the control of apple and peach diseases.** *Virginia Agric. Exp. Sta. Tech. Bull.* 36. 15p. 2 fig. 1929.—Experimental work with calcium sulphide as a fungicide for apples and peaches was begun by the senior author in 1926. Field experiments in 1926, 1927, and 1928 showed clearly that this material had great merit as a summer fungicide for both apples and peaches. 2 grades of material were used in these experimental tests, namely, U. S. P. Crude Calcium Sulphide containing approximately 60 % CaS, and a commercial preparation made especially for spraying work containing approximately 65% CaS together with a spreading agent. The material designated in this paper as calcium sulphide is a mixture of calcium sulphide (CaS), anhydrous calcium sulphate and small amounts of the reducing agent. This aggregate of materials is a result of the process of reducing the calcium sulphate which is used for making the calcium sulphide. In these experiments the 2 grades of material were used at the rate of 10 lb. to 50 gal. of water on apples, and 8 lb. to 50 gal. on peaches. In comparative tests to determine caustic reaction to leaves and fruit of both apple and peach, calcium sulphide was less caustic than any of the fungicides now in common use.—*R. H. Hurt.*

12769. **MEER, J. H. H. van der. Maatregelen ter voorkoming eener ernstige aantasting der tomaten door de schimmel Cladosporium fulvum Cke. ("Meeldauw"). [Means of preventing tomato leaf-mold.]** [English summary.] *Tijdschr. Plantenziek.* 37 (4): 69-90. 3 fig. 1931.—Greenhouses were disinfected with formaldehyde gas liberated by the permanganate method or by heating formaldehyde pastils. The min. quantity necessary for killing the spores was 1 cc. solution and 0.5 gm. $KMnO_4$ or 0.77 pastil per m^3, and tight closing of the house for 24 hr. A quantity of formaldehyde insufficient to kill the spores delays their germination, in proportion to the concentration or length of exposure. The min. quantity of SO_2 necessary to kill the spores was obtained by burning 2.5 gm. S per m^3, and closing the house for 20 min. A subminimal quantity did not delay germination. In large houses which cannot be kept tight, larger quantities are required. In a house of 600 m^3 killing of the spores was obtained by burning 6 kg. S divided into 3 lots. Sulphur is preferred because of its cheapness. *H. L. G. de Bruyn.*

12770. **MURRAY, R. K. S. Further sulphur dusting experiments against Oidium.** *Rubber Res. Scheme (Ceylon)* 8(2/3): 17-24. 2 pl. 1931.—The experiments described confirm previous conclusions, and the better control secured here is attributed mainly to the earlier start of operations. It is valueless, however, to commence dusting while the fungus is still passive. Disregarding yield figures, the treatment could confidently be recommended for the improvement in foliage alone. Experiments on S dusting have reached a stage at which treatment can be definitely recommended on the most severely diseased areas. Whether the work should be undertaken on more mildly affected estates is left open. —*From author's conclusions.*

12771. **PADEREWSKI, JÓZEF. Praktyczne zabiegi przeciw grzybowi "Cerospora beticola."** [Control of C. beticola.] [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 20(1): 100-115. 8 fig. 1928.—Experiments showed that the only way to control *C. beticola* is by producing plants with a crown containing at least 3.4% of N. Spraying is of no avail and is even dangerous if the tops are to be used for feed. Use of nitrate fertilizers is not sufficient; in addition the external crown leaves must be removed. In passing from the outer to the inner leaves the % of N increases rapidly while the % of other constituents decreases. It is thus possible to secure leaves having at least 3.4%, and in many cases 4.5-5.0%, of N. The yield from such plants is also 2-3 times as great as from plants not thus defoliated. The sugar content was also greater.—*Author's summary (transl.).*

12772. **PASINETTI, L. Contributo allo studio delle sostanze anticrittogamiche (esperienze col Fideol N. 1). [Contribution to the study of fungicides. Experiments with Fideol No. 1.]** *Riv. Patol. Veg.* 19(9/10): 193-213. 1 pl. 1929.—A new disinfecting mixture known as "Fideol" of the F. I. D. E. society is said to be composed of a mixture of formalin, mercuric chloride, alcohol and other ingredients. Tests were made to determine its effect on seed of wheat, maize, barley, oats, beets and kidney beans and its fungicidal power against *Ustilago tritici, U. maydis* and *Tilletia tritici*. Treating the seed with ½%, 1% and 2% solutions for 7 or 15 min. did not affect the germination percentage and in many cases the growth was more rapid. Treatment with 2% solution for 15 min. prevented growth of the fungi.—*F. M. Blodgett.*

12773. **PEROTTI, R., e S. ADLER. Sull'impiego del carbone e di alcuni suoi preparati negli speciali riguardi fitopatologici. [Use of charcoal and some of its preparations in plant pathology.]** *Boll. R. Ist. Sup. Agrar. Pisa* 3: 267-315. 5 fig. 1927.—Vegetable charcoal, "vegetina," and "vigorina" are compared as to bactericidal properties and their effects on development and growth of the higher plants.

12774. **SCHLÖSSER, JACOB. Schnitt der Schattenmorellen als Mittel zur Bekämpfung der Monilia.** *Obst- und Gemüsebau* 77(5): 77-78. 1931.—The author notes a considerable loss in the shade cherry crop from *Monilia*, and agrees with Sorenson that heavy and regular pruning may lessen the attack. Control by pruning is effective only when all infected twigs and branches are removed. Based on his observations during 15 yr. in Freiland, he concludes that twig or branch infection takes place at picking time from the numerous fruit mummies, the copious spores from which infect wounds and breaks in the bark of twigs. Early fruit infections arise from bark infections of the previous year, from which the mycelium penetrates to the young fruit via the pedicel. As a spray he recommends thorough application of 0.5% carbolic acid just before picking. A

cheaper grade of this material makes the cost reasonable. —*W. A. McCubbin.*

12775. **STANER, P. La désinfection des graines de coton.** *Bull. Agric. Congo Belge* 21(3): 830-832. 1930.—Methods and apparatus are discussed, particularly those in use in, or suitable for, Belgian Congo. The Simons hot air sterilizer gives good results if the seed is dry, but since such accessories as automatic temp. control can usually not be used in Africa, and since moist seed is killed at 65° C., its use with moist seed is not recommended. The Mallet sterilizer is preferable, as more complete temp. control is possible. Disinfection with H_2SO_4 is dangerous to the operator and is expensive. Use of Clayton gas (a mixture of sulphurous anhydride with sulphuric anhydride) is still in the experimental stage in Belgian Congo. Use of other poison gases, chloropicrin, CS_2, HCN, et al., is not recommended because of the complicated technic of producing and using them. Dusting the seed is impracticable on the required scale in Belgian Congo.

12776. **THIES, W. H. Why spray materials spread.** *Proc. Amer. Soc. Hort. Sci.* 24: 172-175. 1927.—Spreading of any given spray material depends on its composition, which determines the extent to which the substance is adsorbed by the surface. Without adsorption neither wetting nor spreading can occur. The velocity at an appreciable distance from the nozzle depends on the size of the drops more than on the initial velocity imparted by the spray outfit, unless the actual carrying of the material is accomplished by a draft of air. The ideal outfit, then, is one which delivers a mist-like spray, always releasing it near the surface to be covered.—*From author's discussion.*

12777. **TILEMANS, EM. Les influences de la désinfection des graines de coton sur le développement des maladies.** *Bull. Agric. Congo Belge* 21(3): 833-837. 1930. —Experimental results indicating improvement of stand as a result of seed disinfection are mentioned.

12778. **WOODMAN, R. M. An examination of some commercial suspensions used in the spraying of plants.** *Chem. & Indust.* 50(42): 391T-397T. 6 fig. 1931.—From photomicrographic and sedimentation experiments it was demonstrated that a manufactured suspension (Brouisol) is much finer-particled than ordinary bordeaux; that a manufactured S suspension (Sulsol) and a S paste (Ialine) yield dilute suspensions in which the S particles are much finer than those obtained by dusting S dusts; that Sulsol is a finer-particled and more stable suspension that one made from Ialine S; and that addition of soap to an Ialine suspension causes coagulation of the S particles, more rapid sedimentation, a tendency to uneven distribution, and adsorption of the S in the droplet edges. Use of gelatin as a protective colloid for Ialine S suspensions is barred because of precipitation of S. Gum arabic also is of little use, and the suggestion is tentatively made that the particles of S are too small to benefit greatly from inclusion of protective colloids.—*Author's summary.*

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

12779. **BYL, P. A. van der. Plantsiektes: Hul Oorsaak en Bestryding. [Plant diseases: their cause and control.]** 404p. 115 fig. Nasionale Pers Beperk: Capetown, 1928.—The book is intended primarily as a text for college students, but it is adaptable to the needs of teachers and students in agricultural schools and to progressive farmers, and also as a reference work for local use in South Africa. The spelling employed differs enough from that in use in the Netherlands and its colonies to render it somewhat difficult to read with the ordinary dictionary. A very complete host index occurs at the end, with which is supplied the Latin names of the hosts. Approximately one-sixth of the text is devoted to a general discussion of fungi, and one-fifth to the etiology and control of plant diseases, including a chapter of 16 pages on parasitic flowering plants. Most of the remainder of the book is devoted to chapters on the diseases of particular hosts, one-fourth of the total space in the book being given to fruit diseases, principally apple, peach, grape and citrus, with short sections on mango, quince, mulberry, walnut, papaya, pear and strawberry. One-sixth of the book is devoted to truck crops. Special brief sections are given to carnations, asters and chrysanthemums, roses and violets. In the general portion of the book the diseases of a considerable number of less important hosts are mentioned, including numerous local species of trees, with footnote references to the author's English publications on South African diseases.—*C. Hartley.*

12780. **GHESQUIÈRE, J. Principales maladies du coton au Kasai et au Sankuru.** *Bull. Agric. Congo Belge* 19(4): 552-561. 3 pl., 1 fig. 1928.—An account of the symptomatology and control of the principal diseases: sore shin (dark rust, damping off, seedling rot) due to *Rhizoctonia;* root knot, caused by *Heterodera radicicola;* bacteriosis; and "Maladie du pivot," with symptoms resembling *Fusarium* collar rot, but due to an undetermined basidiomycete.

12781. **HASKELL, R. J., J. E. McMURTREY, Jr., G. W. FANT, and STATE COLLABORATORS. Results of the tobacco disease survey, 1930.** *U. S. Dept. Agric., Bur. Plant Indust., Plant Dis. Reptr. Suppl.* 80. 5-29. 1931 [Mimeographed].—Seed is mostly home-grown, although about 40% is purchased from local growers. About 62.5% of the growers clean their seed, the method varying from wind blowing and sieving to machine cleaning. Approximately 40% of those treating seed used formaldehyde, 33% $AgNO_3$, 15% semesan, and 12% $HgCl_2$. Seed treatment is practiced most extensively in the southeastern states, where bacterial leaf spots first made their appearance. The general practice in treating seed was (1) treat for 10 min., (2) wash thoroughly in water, and (3) dry before planting. Plant beds are, for the most part (58%), located on the edge of woods or in wooded areas, the balance were in fields. About 70% of the growers make new beds each year; of the beds used for more than 1 yr., a large number were sterilized with steam or by burning before being sown. Even new beds are sterilized in the same manner, primarily for weed control. Where beds are burned, 2 hr. or less was more effective than a longer period. Where seed-bed diseases and flea beetles are prevalent the application of bordeaux or a copper-lime dust is general. Injuries in seed beds from drouth, excess water, and chlorine (in fertilizers) are reported. Damping off, bed rot (*Rhizoctonia* or *Sclerotinia*), bacterial soft rot (*Bacillus ?aroideae*), wildfire (*Bacterium tabacum*), angular leaf spot (*Bact. angulatum*), mosaic, and root knot (*Caconema radicicola*), together with minor afflictions, compose the register of seed-bed maladies. In the field, crop rotation is practiced on about 60% of the plantations. In 1930 early plantings showed less injury from black root rot (*Thielavia basicola*) than did the later settings; subsequently bacterial leaf spots and frenching were less prevalent. Mosaic was the most common and severe of all field diseases during 1930, infections of 90-100% being observed. Ring spot was of wide, and seemingly increasing, occurrence. Vein banding (virus) in Kentucky spread rapidly in early-set tobacco near potato fields. Black shank (*Phytophthora nicotianae*) and bacterial wilt (*Bact. solanacearum*) were severe in North Carolina. Sore shin (*Rhizoctonia solani* and *Sclerotium rolfsii*) was more prevalent than usual in N. C. and was not held in check by the dry weather. Brown root rot (undetermined) was serious in Wisconsin. Drouth spot was reported from Virginia, Ohio, South Carolina, and Georgia.—*W. A. Whitney.*

12782. **JOHNSTON, JOHN R. Enfermedades y plagas de la piña en la América tropical. [Diseases and pests of pineapple in Tropical America.]** *Bol. Unión Panamer.* 65(1/2): 88-103. 6 fig. 1931.—A popular description of the more common diseases and pests with mention of the conditions of development, varieties of pineapples affected, and methods of control where necessary. Included in the list are the black rot due to *Ceratostomella*

(*Thielaviopsis*) *paradoxa*, base rot of suckers and slips, black rot of the fruitlets, crown rot, sunburning, russeting, leaf spot, chlorosis, various deformities, nematode injury; borer injury due to *Metamasius ritchii* and *Cholus wattsi*, *M. sericeus* and *M. dimiadepennis* also being reported as accompanying injured fruit; the moth borer *Tmolus echion* with reference to *Hypolycaena philippus* and *Castnia icarus*, and the mealy bug *Pseudococcus bromeliae*.—*J. R. Johnston.*

12783. [KARAKULIN, B. P.] КАРАКУЛИН, Б. П. Об опытах по изучению вредоносности болезней растений путем применения искусственных заражений. [Study of harmfulness of plant diseases by means of artificial infection.] [German summary.] Болезни Растений [*Bolezni Rastenii*] 19(1/2): 1-8. 1930.—Studies are reported which show the possibility of infecting whole groups of plants, under canvas, by blowing rust spores on them with a dust gun. The effect of rust on wheat, when it first appears as late as the blooming period and develops to only a slight degree, was not expressed on the weight of individual plants or their vegetative parts, but was expressed in grain development; in general there is a sharp distinction between the weight of kernels of infected and control plants. Statistical treatment of these results shows that the difference may be regarded as almost a certainty (odds of 2.9).—*Author's summary (transl.).*

12784. **MANDELSON, L. F.** Tobacco diseases. *Queensland Agric. Jour.* 36(2): 213-233. 6 pl. 1931.—Blue mold, mosaic disease, black root rot, black shank, damping off, stem rot, bacterial leaf spots, *Fusarium* wilt, frog-eye, bacterial wilt, *Phyllosticta* leaf spot, ring spot, frenching, brown root rot, and K and Boron deficiencies are discussed.

12785. **RAMÓN y ACOSTA, DOMINGO.** Investigaciones fito-patológicas. *Rev. Facult. Agron.* [*Montevideo*] 4. 74-90. 1931.—A list of parasitic fungi with notes on hosts, origin, and characteristic injuries caused by each.

12786. **RIVERA, V., e E. CORNELI.** Rassegna dei casi fitopatologici osservati nel 1929 (danni da freddo e da crittogame). [Plant disease survey in 1929 (injuries by cold and cryptogams).] *Riv. Patol. Veg.* 21(3/4): 65-100. 2 pl., 1 fig. 1931.—The injuries by low temp. in 1929 to olives, grapes, and peaches in 5 localities of Umbria and Marche are described in relation to proximity to lakes, topography of land, conditions of soil and air moisture, and varieties affected. In general either ambient or cultural conditions which cause active growth resulted in greater injury, in respect to entire trees, or parts of trees. Injury was favored by moist soil or atmosphere, pruning, and irrigation, and was hindered by aridity, transplantation of adult trees, and lack of pruning. Anatomical studies indicated the maximum damage was in the youngest succulent tissue, especially the cambium, and was due to dehydration. It was characterized by the formation of open spaces which occurred where the resistance to laceration was least. The cold weather also served to repress various plant diseases, e.g., those caused by *Septoria graminum* and *Accidium ranunculacearum*, and the crown gall of olives. *Erysiphe graminis* was earlier and more abundant. Notes are also given on the occurrence of *Sclerospora macrospora*, tracheomycosis of melons, *Sclerotinia libertiana* on beans, *Accidium magelhaenicum*, *Clasterosporium carpophilum* on cherries, *Ustilago hordei*, *Orobanche crenata*, *Exoascus deformans*, *Puccinia triticina*, *plasmopara viticola*, *Phragmidium subcorticium*, *Sclerotinia fuckeliana*, *S. fructigena*, *Urocystis occulta*, *Rhizoctonia violacea*, *Nectria ditissima*, fusariose of potatoes, and pathogenic alterations of sweet cherries and plane trees.—*F. M. Blodgett.*

12787. **STANER, P.** Maladies du Citrus au Congo Belge. *Bull. Agric. Congo Belge* 20(3): 364-373. 7 fig. 1929.—The principal diseases are: gummosis; scab (*Sporotrichum citri*, *Sphaceloma fawcetii*); anthracnose (*Colletotrichum gloeosporioides* and *Gloeosporium limeticolum*); fruit rot (*Penicillium italicum*, *P. digitatum*, and *Pythiacystis citrophthora*); sooty mold (*Capnodium citri*); algae disease (*Cephaleuros virescens*); chlorosis; parasitism by *Loranthus*; and the depredations of *Lepidosaphes beckii*, a coccid on oranges, frequently parasitized by the fungus *Aschersonia*.

12788. **SU, U. THET.** India: Plant diseases in Burma. *Internat. Bull. Plant Protect.* 5(8): 141-142. 1931.—Mosaic disease of chillies (*Capsicum annuum*) and sterility of pigeon pea (*Cajanus indicus*) are mentioned.

PLANT PHYSIOLOGY, BIOCHEMISTRY, AND BIOPHYSICS

B. M. DUGGAR, *Editor*

(See also in this issue Entries 12078, 12091, 12113, 12117, 12385, 12479, 12506, 12510, 12516, 12599, 12624, 12661, 12664, 12665, 12678, 12681, 12702, 12707, 12727, 12744, 12749, 12751, 12754, 12758, 12759, 12877, 12882, 12885, 12904, 12907, 12908, 12909, 12914, 12915, 12916, 12917, 12930, 12931, 12933, 12984, 12992, 13011, 13518, 13738, 13741, 13754, 13765, 13776, 13777, 13783, 13785, 13788, 13789, 13790, 13798, 13802, 13810, 13816, 13821, 13834, 13973, 13982, 13988, 13992, 13997, 13998, 14000, 14011, 14018, 14022, 14031, 14033, 14042, 14048, 14049, 14058, 14065, 14073, 14081, 14168, 14169, 14178, 14191, 14192, 14216)

GENERAL

12789. **BARTON-WRIGHT, E C.** Recent advances in plant physiology. 352p. 51 fig. P. Blakiston's Son & Co.: Philadelphia, 1930.

12790. **ONSLOW, MURIEL WHELDALE.** The principles of plant biochemistry. Part I. 326p. 11 fig. Cambridge Univ. Press; Macmillan Co.: New York. 1931. Pr. $4.75.—The emphasis in this book is laid upon the carbohydrates, proteins, and respiration. The 1st chapter considers the types of sugars which occur in plants, analyses of the sugars in plant tissues, and the mutual interrelations of the carbohydrate family of compounds. The 2nd chapter deals with the cell wall, its constituents and modifications. The 3rd chapter considers oxidation-reduction systems, such as the oxygenase-peroxidase system, tyrosinase, laccase, peroxidase, oxido-reductases, and other systems. The relation of these to respiration is discussed, along with the historical sequence of investigations. Chapters IV and V deal with the plant proteins and N metabolism. Albumins, globulins, prolamins, and glutelins are described; and the metabolism of seed and seedlings, starved leaves and shoots, synthesis and decomposition of proteins, purine metabolism, proteolysis, and amino acids receive consideration. The final chapter deals with respiration of both yeast and the higher plants. The substrate for respiration, relation of phosphate to the process, dismutation of methyl-glyoxal, acetaldehyde as an intermediate product and its fate, action of coenzymes and of molecular O, and oxidative anabolism are the principal topics. Eleven sectional bibliographic lists are provided, with about 975 references to pertinent literature.—*C. A. Shull.*

12791. **VORBRODT, LADISLAS.** Pisma Emila Godlewskiego Starszego. [Publications of Emile Godlewski 1870-1890.] 598p. Portrait. Polska Akademja Umiejetnosci: Krakow, 1930.—This is the 1st of 3 volumes intended as a complete publication of the work of Godlewski, in commemoration of his 80th anniversary. Vol. 1 contains articles in the field of physiology. Ten articles of 275p. are in Polish; 4 articles of 66p. in French; and 13 articles of 257p. in German. The 2nd volume is to begin with 1891 and extend through 1910. The 3rd will contain recent publications together with popular articles in the field of agriculture. In general, the scientific articles appear in the language in which they were originally published but for articles which have appeared

in Polish, translations or résumés occur in French or German.—*B. M. Duggar.*

OSMOSIS, PERMEABILITY, PHYSICO-CHEMICAL PHENOMENA

12792. COLLA, SILVIA, e ZIPORA DANIN. Variazioni di pressione osmotica in alcuni basidiomiceti. [Variations of osmotic pressure in some Basidiomycetes.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 885-887. 1930.—In *Boletus edulis, Amanita caesarea, Cantharellus cibrarius,* and *Russula virescens* the osmotic pressure values were specifically different. They showed diminution during maturation and senescence, and were different in the different portions of the same individual.—*M. Comel.*

12793. NIETHAMMER, A. Beitrag zur Kenntnis des lebenden Zellinhaltes der Rinde heimischer Waldbäume. *Forstwiss. Centralbl.* 53(2): 74-77. 1931.—Bark parenchyma cells of oak, beech, linden, ash, and chestnut were stained in a neutral red solution and then put in various plasmolyzing solutions, including KNO_3, $ZnSO_4$, $CuSO_4$, $NiSO_4$, $CoSO_4$, $Tl_2(SO_4)_3$, $Al_2(SO_4)_3$, $HgSO_4$, potassium-nickel cyanide, mercuric acetate, mercuric sulphocyanate, and caffein. With several of these, the cell contents contracted into reddish or dark-colored spheres. The reaction was less marked during the winter rest period. During the intensive growth period the bark cells become filled with Ca-oxalate crystals, which are resorbed later.—*W. N. Sparhawk.*

WATER RELATIONS, SAP MOVEMENT

12794. FURR, J. R., and J. R. MAGNESS. Preliminary report on relation of soil moisture to stomatal activity and fruit growth of apples. *Proc. Amer. Soc. Hort. Sci.* 27: 212-218. 2 fig. 1930(1931).—The investigations reported indicate that orchard trees can function at nearly the maximum rate so long as the moisture content of the whole root zone is appreciably above the wilting %. As the zones of greatest root concentration reach the wilting %, the tree apparently adjusts itself to reduced water supply through earlier closing of the stomata each day. Earlier stomatal closing, resulting in a reduction in CO_2 entrance to the leaf and a reduction in photosynthesis, is reflected in a reduced growth rate in the fruit. The more restricted the root zone and the greater the root concentration in certain soil areas, the more pronounced the reaction of the tree is likely to be during periods of reduced moisture supply.

12795. GAWRILOW, N. J., und B. B. EWSLINA. Untersuchungen auf dem Gebiet der Tabakchemie. I. Das Wasser im Tabak. *Biochem. Zeitschr.* 208(1/3): 79-90. 1 fig. 1929.—Analyses of different varieties of tobacco for water showed that the Markusson method of distillation with toluol or better the less inflammable ethylene chloride gives a more correct value than the ordinary 3-hr. period of drying at 95° C. in an oven. The latter method gives a value 3-7% high for the water content. Of the other methods tried none was successful in the extraction of all of the hygroscopic water with the possible exception of the method which uses a stream of dry air, in which case lower temp. may be applied than with the distillation methods.—*A. D. Moinat.*

12796. JONES, W. N. A sensitive recording (transpiration) balance with a new form of electrically operated recorder. *Jour. Exp. Biol.* 8(1): 9-16. 1931.—A new form of self recording balance is described, sensitive to losses (or gains) of about 0.015 gm. A new design of 3-pen electrical recorder is also described. This possesses a very wide range and gives a continuous record for some days without attention.—*J. M. Robson.*

12797. MONTEMARTINI, LUIGI. L'assorbimento dell'acqua nei bottoni fiorali delle rose Druschki. Saggio di esame di bilancio idrico di un organo vegetale. [Absorption of water by rose buds. An example of water balance.] *Rend. R. Ist. Lombardo Sci. e Lett.* 63(11/15): 1-9. 1930.—Determinations were made every 6 hrs. of the loss in wt. of a rose bud placed with its stem in water. The quantity of water absorbed during petal unfolding was determined at the same time. The absorption was independent of the transpiration, and reached a maximum in the morning.—*L. Montemartini* (*transl. by H. S. Wolfe*).

12798. RETTIG, H. Über den Einfluss der Luftfeuchtigkeit auf die Entwicklung und die Gewebedifferenzierung der Pflanzen. *Bot. Arch.* [*Leipzig*] 25(1/2): 128-172. 4 pl., 14 fig. 1929.—*Sinapsis alba* and *Tropaeolum majus* are affected similarly by humidity and soil moisture, although the latter is more effective. Stem structure is little affected by either factor. Leaves grown in relatively dry air are smaller and more closely veined; contain more stomata; have smaller epidermal, guard, and palisade cells; and the cells have a higher osmotic value. These results are more pronounced on soils of low moisture. In some plants of *S. alba* moist air caused structural changes similar to those of relatively dry air. These results are compared with those of other workers and theories are presented to explain them.—*Author's summary* (*transl. by N. A. Pettinger*).

MINERAL NUTRIENTS, SALT RELATIONS

12799. BERTRAND, GABRIEL, et L. SILBERSTEIN. Sur le dosage du soufre et du phosphore dans les plantes. *Ann. Sci. Agron. Franç. et Étrangère* 47(3): 319-323. 1930.—The % of S and P found in fresh material, dried material, and ash, and that lost in calcination, are tabulated for *Brassica napus, Solanum tuberosum, Trifolium pratense, Valerianella olitoria, Medicago sativa, Taraxacum officinale, Allium cepa,* and *Triticum sativum.* Determinations of S in fresh and in dried material gave consistent results in all cases except *Allium.* However, ash determinations show 43.8% (*Brassica*) to 76.1% (*Allium*) less than fresh samples. P content as determined from fresh and dried samples is consistent, loss during calcination (at low temp.) running from 0.2% in *S. tuberosum* to 7.1% in *Medicago.* Fresh material should be used for analysis in families in which S exists in a volatile form, e.g., Cruciferae, Liliaceae, etc.—*G. S. Avery, Jr.*

12800. ECHEVIN, R. Variation de la matière minérale des feuilles au cours du jaunissement automnal. *Rev. Gen. Bot.* 39(463): 405-419. 1927.—The generalization made by Sachs that there is a migration of the mineral element of the leaf down the stem during leaf yellowing is questioned, and the errors in previous methods of investigating this question are pointed out. To assure oneself of migration, all parts of the tree or plant must be chemically analyzed for each element over a period of time, including an examination of the green leaf as it ages, turns yellow, and finally falls. In addition it must be determined that, as the element diminishes in leaf, it increases proportionately in the stem and later in the root. Some investigators have reported an increase of ash and Ca in the yellowing leaf while others have not.—*R. P. Hibbard.*

12801. ECKERSON, SOPHIA H. Influence of phosphorus deficiency on metabolism of the tomato (Lycopersicum esculentum Mill.). *Contr. Boyce Thompson Inst.* 3(2): 197-218. 2 pl., 5 fig. 1931.—Vigorous 4-5 in. tomato plants were transplanted to sand and watered with a nutrient solution lacking phosphate. There is a rapid decrease in reductase (nitrate-reducing) activity which results in N starvation. Although there is an abundance of nitrate present the plant can no longer use it. After the soluble P compounds have been used up, the complex phosphatides begin to break down. This results in the disintegration of the protoplasm and therefore the disorganization of the cell. If phosphate is supplied to the plant before the phosphatides are affected, reductase is regained and the plant recovers.—*S. H. Eckerson.*

12802. HARTT, CONSTANCE ENDICOTT. Potassium deficiency in sugar cane. *Bot. Gaz.* 88(3): 229-261. 14 fig. 1929.—Cuttings of Louisiana Purple sugar cane were grown in quartz sand in glazed earthenware crocks. Nutrient solutions were based on Shive's best solution and contained the following p. p. m. K: 703.8, 0.0, 3.9, and

39.0. In 4 mo. a gradation in growth was obtained as well as die-back and discoloration symptoms of K starvation; 3.9 p. p. m. K was insufficient for the best growth. The K-deficient plants had greatest diastase activity in all organs except roots, in which activity was equal. The blades of the controls had greater invertase activity than the K-deficient plants. All organs of the controls had greatest peptase activity. Ereptase was the same in all plants. The catalase activity was greater in plants supplied with K, with the exception of the roots. Equalizing the K content of blades did not equalize the invertase activity and therefore it seems likely that K may play a rôle in the formation of invertase. K-deficient plants had greater % of total sugars, reducing sugars, and sucrose. Greater lignification occurred in K-deficient plants, while greater cutinization was found in plants supplied with K. Abnormal distribution of vessels in pith of roots, small size of vessels and parenchyma cells of stems, large cavities in cortex of roots, and underdevelopment of root hairs occurred in K-deficient plants. Suggestions are made regarding the causes of symptoms of K starvation, as well as the greater resistance toward low temp. and diseases found among plants supplied with K; and an attempt is made to link together in a chain of cause and effect the derangements in morphology and physiology.—*C. E. Hartt.*

12803. McCOOL, M. M., and W. J. YOUDEN. The pH and the phosphorus content of the expressed liquids from soils and plant tissues. *Contr. Boyce Thompson Inst.* 3(2): 267-276. 1 fig. 1931.—The pH readings of liquid removed from soils and from the stems of coleus, tomato, and apple twigs by the application of different pressures, becomes decidedly less as the pressure is increased. In this respect marked changes were noted even when the hand pressed samples were subjected to 1000 lbs. per sq. in. Further reductions took place as the pressure was increased. The P content of the moisture removed from soils became less as the pressure was increased. There was considerably less P in that obtained by the application of 4000 lbs. per sq. in. than there was in the hand pressed liquid. The solutions obtained by high pressures in several instances contained less P than 1 part per million.—*M. M. McCool.*

12804. NIGHTINGALE, G. T., L. G. SCHERMERHORN, and W. R. ROBBINS. Some effects of potassium deficiency on the histological structure and nitrogenous and carbohydrate constituents of plants. *New Jersey Agric. Exp. Sta. Bull.* 499. 36p. 4 fig. 1930.—Working largely with Bonny Best tomato plants grown in plus- and minus-K nutrient cultures, it was observed that externally the lack of K affected the plants in much the same way as the lack of N. The 1st conspicuous symptoms were the development of a stiff woody stem and of yellowish green leaves with purple veins and the early setting of fruit. Internally there was a marked accumulation of carbohydrates and the formation of thick cell walls in the xylen, phloem, and mechanical tissue. There was no difference between the plus- and minus-K tomato plants as to concentration of nitrates. However, when the external nitrate supply was withheld, the plus-K plants quickly assimilated all the nitrates in their tissue, while the minus-K plants maintained a high concentration of nitrates until death, suggesting that K is essential for the synthesis of organic N from nitrates. The comparative abundance of nitrites following the application of K to minus-K plants indicates that K is specifically necessary for initiating nitrate assimilation. Finding the protein fraction to be about the same in the plus- and minus-K plants, it is concluded that K is not directly essential for the later stages in synthesis of storage proteins, since the % of total protein may be comparatively high in K-deficient plants which invariably have a low proportion of meristematic tissue. Most of the K in the plant is water soluble and, when present in limited amount, is translocated freely from mature tissue to regions of active cell division, no meristematic tissue being found which did not contain an abundance of K. Minus-K plants increased considerably in length but little in diam., the activity of the cambium being apparently inhibited. Lack of K also limited the development of cork cambium or the initial embryonic layer of the abscission zone. During the last stages of minus-K treatment, many of the leaves and fruits failed to abscise. K-deficient plants died prematurely if bearing fruit, the limited K supply being translocated to the fruit at the expense of the growing tip. Death of the tip was followed shortly by the death of the entire plant.—*Courtesy Exp. Sta. Rec.*

PHOTOSYNTHESIS, CHLOROPHYLL

12805. CONANT, J. B., and W. W. MOYER. Studies in the chlorophyll series. III. Products of the phase test. *Jour. Amer. Chem. Soc.* 52(7): 3013-3023. 1930.—Pure chlorophyll compounds give a characteristic color reaction or phase test on treatment in ether solution with strong methyl alcoholic KOH. In the "*a*" series the color is yellowish brown which soon changes to intensive green. In the "*b*" series the phase is reddish brown. This method of saponifying the phaeophorbides is used as a test of the purity of the material, but the products of the reaction have been relatively little studied. The authors studied these products from pure members in the "*a*" series, saponifying methyl phaeophorbide *a*, phaeophorbide *a*, and the trimethyl ester of chlorin *e*. Under phase test conditions at room temp. unstable chlorins are formed in large amounts; from these chlorins a new type of compound, designated as the phaeopurpurins, results by a spontaneous change. By the use of ethyl alcohol in place of methyl, or by lowering the temp., the unstable chlorins become the sole products. Quick saponification at an elevated temp. produces chlorin *e* and no unstable chlorins. Probable empirical formulas for the compounds described, together with representative analytical data, are given, although it is too soon to attempt to write satisfactory structural formulas for the compounds involved in the phase test.—*M. C. Merrill.*

12806. CONANT, J. B., J. F. HYDE, W. W. MOYER, and E. M. DIETZ. Studies in the chlorophyll series. IV. The degradation of chlorophyll and allomerized chlorophyll to simple chlorins. *Jour. Amer. Chem. Soc.* 53(1): 359-373. 1931.—It has been shown that the saponification of allomerized chlorophyll *a* yields phaeopurpurin 7, a characteristic product of the phase test; allomerization and the phase test appear to be equivalent processes. Phaeopurpurin 7 (a monomethyl ester) on pyrolysis loses CO_2 and CO, forming the monomethyl ester of a simple chlorin which appears to be a hydrogenated rhodoporphyrin. The corresponding dibasic acid is formed by the action of hot alcoholic KOH on phaeopurpurin 7, oxalic acid being split off. These facts show that phaeopurpurin 7 is an *a*-keto acid. Pyrochlorin *e* is a simple chlorin of the unallomerized series; it still contains the C atom which is eliminated as CO in the allomerized compound. It appears to be isomeric with phylloporphyrin. All these facts point to an oxidation-reduction process as being involved in the phase test and allomerization.—*Authors' summary.*

12807. CRIST, J. W., and MARIE DYE. Spectral light, chlorophyll and vitamin A. *Proc. Amer. Soc. Hort. Sci.* 27: 220. 1930 (1931).—Abstract of studies on asparagus.

12808. FODOR, A., und R. SCHOENFELD. Darstellung und Eigenschaften wässeriger Carotinlösungen. [Preparation and properties of aqueous solutions of carotin.] *Biochem. Zeitschr.* 233(1/3): 243-244. 1931.—Preliminary report.

12809. HONERT, T. H. van den. Beperkende Factoren bij de Koolzuurassimilatie. [CO_2 assimilation and limiting factors.] *Handelingen 5th Nederlandsch-Indisch Natuurwetensch. Congres Soerabaja* 1928: 410-415. 1 fig. 1928.—According to Blackman's "principle of limiting factors" the velocity of CO_2 assimilation is determined by several factors (CO_2, light, temp.), but only by one at a time. This is graphically represented by an ascending line, which suddenly becomes horizontal with a sharp

break, as soon as the factor represented on the abscissa is no longer the limiting one. Several authors deny the existence of this sharp break and maintain that there is a gradual transition from the limitation by one factor into the limitation by another factor. However, nearly all experiments have been made with leaves or even entire plants, in which the individual plastids are in very different conditions of light and, perhaps, of CO_2. Even if Blackman's curve held good for each individual plastid, it might hardly be expected to do so for the entire leaf or plant. Therefore assimilation experiments were made with a filamentous terrestrial alga (*Hormidium flaccidum*), which forms tiny pellicles on fluid culture media, consisting of only 1 layer of cells, each cell containing 1 plastid. Several mgm. of this alga were used in the experiments. All chloroplasts could be kept in exactly the same conditions. A complicated method was elaborated, by which the influence of light, temp., and CO_2 was studied. CO_2 was determined by means of a slightly modified Krogh gas analysis apparatus (accuracy .001%). The assimilation curves of the single chloroplasts were nearly "ideal Blackman curves." It is argued that assimilation is a chain process, consisting of at least 3 consecutive (diffusion, photochemical and dark chemical) processes. As in other chain reactions, the slowest process of the chain practically determines the velocity of the total process. One by one the above processes were made the "slowest" by making respectively CO_2, light, and temp. the limiting factor. The properties of the individual processes (temp. coeff., etc.) could thus be studied, all of which were found to be in full agreement with the above conception. When CO_2 is limiting, the assimilation rate is always governed by a diffusion process, even in small, unicellular organisms, into which CO_2 penetrates very easily. With temp. as the limiting factor the Q_{10} (temp. coeff.) was 1.87 12°-20° C. The plastid contains an assimilating agent (probably the chlorophyll), which has an extremely high affinity for CO_2, so that at a CO_2 pressure of only 1/100,000 atmospheres it is almost entirely saturated with it. The chlorophyll content of the algae was determined spectrophotometrically. Willstätter's "assimilation number": (gm. CO_2 per hr./gm. chlorophyll) was 6.75 at 20° C. (temp. limiting factor). The assimilation quotient: O_2/CO_2 was probably higher than 1, possibly because in *Hormidium* the first visible assimilation product is an oil.—*T. H. van den Honert.*

BIOCHEMISTRY, METABOLISM (GENERAL)

12810. BEUTLER, RUTH. Über den Zuckergehalt des Nektars einiger einheimischen Blütenpflanzen. *Sitzungsber. Ges. Morph. u. Physiol. München* 38: 24-31. 1927/1928.—Nectar was studied from a variety of native plants to find out the concentration and kinds of sugars present although it has been previously thought that bees tolerate a solution of cane sugar of about 4.25% and reject one that is appreciably stronger, the nectar was found to contain sugar in greater concentration. Small quantities of nectar on analysis showed the presence of cane sugar, dextrose, and levulose, and in some cases maltose, but no mannose or pentose.—*O. F. Black.*

12811. CONRAD, C. M. The decarboxylation of d-galacturonic acid with special reference to the hypothetical formation of l-arabinose. *Jour. Amer. Chem. Soc.* 53(6): 2282-2287. 1931.—A test was made of the theory that *l*-arabinose arises in acid decomposition of *d*-galacturonic acid as an intermediate product in the formation of furfural. Galacturonic acid in the form of its Ba salt was decarboxylated with 4% H_2SO_4 but no arabinose could be recovered. Ehrlich's tetra acid *"a,"* a polymer of *d*-galacturonic acid, was also studied but in no case could arabinose be recovered from the decarboxylation products. Carefully conducted controls showed that added arabinose could always be recovered. *l*-Arabinose was found in the hydrolytic products of both apple and lemon pectins. In the case of apple pectin over twice the amount of arabinose that could have been due to decarboxylation was found. The arabinose recovered from the hydrolytic products of plant substances comes from arabinose units in the substances and not from decarboxylation of galacturonic acid.—*Author's summary.*

12812. CORDNER, H. B., and W. A. MATTHEWS. Changes in carbohydrate content of White Bush squash during maturation and storage. *Proc. Amer. Soc. Hort. Sci.* 27: 520-523. 1930(1931).—In maturation, quality improved with increasing content of free-reducing substances until rind hardening induced inedibility. Low-temp. storage was more desirable from the point of view of conserving the total carbohydrates and in minimizing loss in wt.—*Authors' conclusion.*

12813. DAS, U. K. The problem of juice quality. *Hawaiian Planters' Rec.* 35(2): 163-200. 13 pl. 1931.—A comprehensive outline of information from various sources on sucrose formation in cane.

12814. DESCHIENS, MAURICE. Algues marines et colloïdes. *Rev. Gén. Colloïdes* [*Paris*] 7(65): 206-219. 1929.—The author discusses the method of extraction and purification of colloids and salts from marine algae. He also considers their industrial utilization. A review of the literature is included.—*S. P. Nichols.*

12815. EASTCOTT, EDNA V. The isolation and identification of bios I; its absorption by and recovery from yeast. *Trans. Roy. Soc. Canada, Sect. 3.* 22(2): 267. 1928.—Continuing the studies of Sims and Cahoon, bios I is shown to be identical with inactive inosite.

12816. HILDITCH, T. P., and J. PRIESTMAN. The component glycerides of Stillingia (Chinese vegetable) tallow. *Chem. and Indust.* 49(41): 397T-400T. 1930.

12817. IWANOFF, NICOLAI N., R. S. ALEXANDROWA, und M. A. KUDRJAWZEWA. Über die Umwandlung der Zuckerarten beim Reifen der Früchte von Wassermelonen. *Biochem. Zeitschr.* 212(4/6): 267-279. 1 fig. 1929.—Glucose, fructose, and sucrose were determined in watermelons at various stages of growth from fruit setting to harvest and after a period in storage. The sugar fractions were also determined in melons grown under different climatic conditions and in wild and cultivated forms. The first sugar present in very young melons was glucose. This was gradually converted to fructose until the fructose: glucose ratio was above 1 when condensation to form sucrose occurred. In ripe melons a constant fructose: glucose ratio after inversion of 1.3: 1.4 existed. Climatic conditions had little effect on the total sugars but greatly influenced the relative amount of sucrose and free reducing sugars. Cultivated sp. of watermelons were higher in all forms of sugar and in the fructose-glucose ratio than wild sp. Following harvest, sucrose increased with a corresponding decrease in fructose and glucose for several weeks, after which there was a gradual decrease in sucrose and total sugars.—*M. H. Haller.*

12818. KAFUKU, KINZO, TETSUO NOZOE, and CHUTA HATA. Studies on the constituents of the volatile oil from the leaf of Chamaecyparis obtusa, Sieb. et Zucc., f. formosana, Hayata, or Arisan-Hinoki. I. *Bull. Chem. Soc. Japan* 6(2): 40-53. 1931.—An unsaturated fatty acid was found with properties close to those of chamaenic acid ($C_{16}H_{16}O_2$), constituting the larger part of the acid portion. Of the acid-free oil, terpenes occupied about 34%, of which about 50% consisted of *d*-sabinene, and 20-30% of a new monocyclic terpene "chamene." The constitutional formula for chamene was partly deduced, but not yet fully established. The chief constituents of the leaf oil, *d*-sabinene, *d*-chamene, and *d*-terpinenol-4, have never been found in the oils from root or wood; while *d*-α-pinene, dipentene, and α-terpineol, which form the main part of the latter oils, are found in the former oil either in very small quantities or not at all. Almost all the constituents found in this oil are to some extent related to sabinene.

12819. KAFUKU, KINZO, and NOBUTOSHI ICHIKAWA. Studies on the volatile constituents of the leaf of Chamaecyparis formosensis, Matsum. *Bull. Chem. Soc. Japan* 6(4): 94-102. 1 fig. 1931.—Chemical composition and properties of various constituents are reported.

12820. KAFUKU, KINZÔ, and TETSUO NOZOE. Studies on the constituents of the volatile oil from the leaf of Chamaecyparis obtusa, Sieb. et Zucc., F. formosana, Hayata, or Arisan-Hinoki. 2. *Bull. Chem. Soc. Japan* 6(5): 111-118. 1931.—Chemical studies are reported.

12821. KRAYBILL, H. R., J. T. SULLIVAN, and L. P. MILLER. Seasonal changes in the composition of Stayman apple tree. I. Carbohydrates. *Proc. Amer. Soc. Hort. Sci.* 27: 206. 1930(1931).—Abstract.

12822. LINK, KARL PAUL, and ALLAN D. DICKSON. The preparation of d-galacturonic acid from lemon pectic acid. *Jour. Biol. Chem.* 86(2): 491-497. 1930.—A convenient source material for the preparation of crystalline *d*-galacturonic acid is lemon pectic acid, obtainable commercially. The pectic acid is hydrolyzed in 2.5% H_2SO_4 and the galacturonic acid first obtained as its Ba salt. The Ba-galacturonate is converted into the free galacturonic acid by decomposition with 0.1*N* H_2SO_4.

12823. MANSKE, RICHARD H. F. The occurrence of d-mannose in seaweed and the separation of l-fucose and d-mannose. *Jour. Biol. Chem.* 86(2): 571-573. 1930.—Mannose was identified as a constituent of the hydrolytic product from *Fucus vesiculosus*. The greater portion of the fucose was removed by crystallization, and in a less pure although crystalline product the presence of *d*-mannose was shown by the isolation of a mannoheptoic acid and lactone from the HCN addition product. Mannose had concentrated in the final mother liquor, and the isolation of its phenylhydrazone was made possible by the remarkable insolubility of the latter in pyridine.—*Author's summary.*

12824. PREISING, FRIEDRICH-AUGUST. Untersuchungen über den Kohlenhydratstoffwechsel des immergrünen Laubblattes im Laufe eines Jahres. *Bot. Arch.* 30(3/4): 241-306. 1930.—The 2 spp. studied were *Ilex aquifolium* and *Hedera helix*. Assimilation takes place throughout the yr., but during the winter months is very low and of what types is not definitely known. In March carbohydrates and glucosides appear in appreciable amounts. April-Aug. starch is the chief carbohydrate, although in May and July saccharose appears in abundance and then disappears entirely, to appear again in Sept. for a short time in great quantity. Much glucose is never present so it is thought to be utilized directly by the cell. Osmotic pressure is the highest in leaves during Nov.-March. It is not due to the presence of sugar or glucosides because that is the time when carbohydrates are low; furthermore, in summer and spring when sugar is abundant, osmotic pressure is the lowest. The starch produced during the summer shows a daily increase and a decrease in the night. When leaves are injured by wounding or by an adverse environmental condition, quantities of saccharose are present. —*R. P. Hibbard.*

12825. SCHMIDT, ERICH, KARL MEINEL, und WILHELM JANDEBEUR. Das Mindest-Äquivalentgewicht von Cellulosen. *Naturwiss.* 19(18): 376. 1931.—Progress note on studies on the chemistry of cellulose of *Picea excelsa* and *Phytelephas macrocarpa*.

12826. SNYDER, J. C., and H. W. RICHEY. Carbohydrate composition of protected and unprotected raspberry canes. *Proc. Amer. Soc. Hort. Sci.* 27: 146-150. 1930(1931).—In the spring the % of carbohydrate of unprotected canes was greater than that of either soil-mulched or straw-mulched canes; the slight differences apparently had no appreciable influence on quality and quantity of fruit produced.

12827. SPENGLER, O. Die Nichtzuckerstoffe der Rübe. *Züchter* 1(6): 193-196. 1929.—A review.

BIOCHEMISTRY, METABOLISM (NITROGEN RELATIONS)

12828. GAWRILOW, N. J., und M. M. BOTWINIK. Über einen Anhydridkomplex aus Edestin, der die Hexonbasen enthält. *Biochem. Zeitschr.* 214(1/3): 119-133. 1929.—When edestin was hydrolyzed according to the method of Zelinsky, the phosphotungstic acid precipitate contained both hexone bases and monoamino acid possessing anhydride properties. The ninhydrin reaction was negative while the picric acid gave a positive test. After complete hydrolysis histidine and arginine were present. From the ethyl acetate extract of the monoamino acid fraction histidine could be identified after hydrolysis. Similarly in the diamino acid fraction arginine was detected. The work of Haurowitz was confirmed, indicating that histidine forms complexes with monoamino acids which do not precipitate with phosphotungstic acid.—*G. W. Pucher.*

12829. MACHT, DAVID I. A pharmacological study of leucines and cystines. *Jour. Pharmacol. & Exp. Therapeut.* 36(2): 243-250. 1929.—The pharmacodynamic effects of leucine and cystine on the growth of living seedlings of *Lupinus albus* in nutrient plant-physiological solutions were studied. Both the leucines and cystines definitely influenced growth of the plants. In each case the levo-rotatory variety was pharmacologically more active than the dextro. Combinations of the various stereoisomers gave evidence of a definite synergistic pharmacological effect.

12830. SJOLLEMA, B. Über die Zusammensetzung des Weidegrases, seinen Gehalt an Nitrat, Rohprotein und Reinprotein sowie das Eiweissverhältnis in einigen Grasproben. *Tierernährung* 2(6): 505-519. 1931.—Pasture grass often contains nitrate in early spring as well as later, even in autumn. Differences in soils and methods of manuring are important factors. The highest amount of KNO_3 was about 2%. Grass with low % of proteins seldom shows even 0.5-1.0% KNO_3. The content of crude-proteins was sometimes more than ¼ of the dry matter, sometimes about 1/10; that of true-proteins was about 1/4-1/12 of the dry matter. Nearly half of the spring samples contained 20-24.9% crude-proteins and about 18.5% of true proteins. The nutritive ratio was often too narrow, in other cases too wide for a good physiological and economical effect of the pasture. The extreme values were 1:2.4 and 1:9.5. The % of proteins decreased in several cases considerably, in some weeks even to ½ the original content. Sometimes pastures with a low % of proteins contain a relatively large amount of non-protein N.—*From author's summary.*

12831. SULLIVAN, J. T., and H. R. KRAYBILL. Seasonal changes in the composition of Stayman apple trees. II. Forms of nitrogen. *Proc. Amer. Soc. Hort. Sci.* 27: 220. 1930(1931).—Abstract.

BIOCHEMISTRY, METABOLISM (ENZYMES, FERMENTATION)

12832. BOAS, I. Über eine neue enzymatische Oxydationswirkung (Metaoxydase). *Biochem. Zeitschr.* 227(1/3): 135-139. 1930.—In common vegetables were found characteristic color changes in connection with definite oxidisable substances. Since it was not possible to determine whether it was a question of a new enzyme or of phenolase, it was decided to name the active material metaoxidase. Whether metaoxidase is to be included among the true metabolic ferments is doubtful. Since it is never found in animal substances and only rarely in vegetable substances, and since it is soon destroyed in normal gastric juice, it is probably not taken up into the body juices of animals.—*Author's summary (transl. by I. I. Lemann).*

12833. CALDWELL, M. L., and M. G. TYLER. A quantitative study of the influence of acetate and of phosphate upon the activity of the amylase of Aspergillus oryzae. *Jour. Amer. Chem. Soc.* 53(6): 2316-2320. 1931.—The highest amylase activity of this enzyme in the presence of either of these buffers occurs in systems of slightly higher pH value as the concentration of either is increased from 0.01 to 0.10 *M* (measurements at 40° for 30 min. in presence of 2% starch). Increasing the concentration of acetate from 0.01 to 0.10 *M* slightly decreases the activity of the amylase. The decrease in the presence of 0.01 *M* acetate is negligible and is more than offset by the increase in reproducibility of results over those obtained in unbuffered systems. Changes of phosphate from 0.01 to 0.10

M do not influence the activity of the enzyme, which is also the same in the presence of 0.01 *M* acetate or 0.01 *M* phosphate, if the pH values of the systems are suitably adjusted. In measurements of the activity, acetate is preferable to phosphate because of its more efficient buffer effect in the region of optimal pH for the action of this amylase. In measurements of 30 min. at 40° with 2% starch containing 0.01 *M* acetate, the amylase is most active saccharogenically at pH 5.3-5.5. —*From authors' summary.*

12834. **DENNY, F. E. The effect of thiocyanates upon amylase activity. I. Potato amylase.** *Contr. Boyce Thompson Inst.* 3(2): 277-286. 1931.—Since previous experiments had shown the effectiveness of solutions of thiocyanates in hastening the germination of freshly-harvested potato tubers, and since the successful treatments also caused a reduction in the starch content of the tubers, experiments were undertaken to determine whether this result could be accounted for by a direct effect of the thiocyanate in hastening amylase activity. The capacity of the expressed juice to form reducing sugar from soluble starch was decreased by both NaSCN and KSCN when the amounts added were in excess of about 10 mgm. per 100 cc. of reaction-mixture. Smaller amounts had no effect. The rate at which starch was broken down to the stage at which no blue color was given with I was less influenced by the thiocyanates, since it required about 100 mgm. per 100 cc. to cause retardation of amylase action. Neither the sprouting response nor the observed breakdown of starch of potatoes treated with thiocyanates is caused by any direct effect which the chemical itself exerts upon the amylase of the potato.—*F. E. Denny.*

12835. **DENNY, F. E. The effect of potassium cyanide upon the amylase activity of potato juice.** *Contr. Boyce Thompson Inst.* 3(2): 297-308. 1931.—The addition of small amounts of KCN to the juice of potato tubers increased the amylase activity; 30 mgm. of KCN per 100 cc. of reaction-mixture caused an increase of 50-100%. But when the KCN was added to juice which had been dialyzed in collodion bags no increases were observed. In order that the activating effect of KCN may become evident not only must the amylase be present but also a portion of the juice which will pass through collodion in dialysis. When the juice was dialyzed for various periods up to 24 hrs. before the addition of KCN, the gains in amylase activity due to the KCN became progressively smaller.—*F. E. Denny.*

12836. **GUTHRIE, JOHN D. The inhibiting effect of oxidase on the reduction of sulphur by potato and gladiolus juice.** *Contr. Boyce Thompson Inst.* 3(1): 125-130. 1931.—Treatment of dormant potato tubers or gladiolus corms with ethylene chlorhydrin results in an increase in the power of the juice to reduce S to H_2S. This action is increased by boiling the juice or carrying out the reaction in an atmosphere of N. Addition of unboiled juice to boiled juice results in a decrease in H_2S production. Fresh juice catalyzes the oxidation of H_2S. These results are explained by the presence of oxidase in the unboiled juice.—*J. D. Guthrie.*

12837. **IWANOFF, NICOLAI N., und F. A. KRUPKINA. Über die Stickstoffausscheidung der Hefe während der Gärung.** *Biochem. Zeitschr.* 212(4/6): 255-266. 1929. —On the basis of experiments which ran only 1-2 days, it is reported that pure cultures of *Saccharomyces cerevisiae, S. apiculatus, S. pastorianus,* and *S. ludwigii* caused an increase in the N of the fermented sugar solution as the result of a decomposition of the proteins of the yeast cells. The N content does not change in this way unless a fermentible sugar is supplied, and the phenomenon is definitely related to fermentation rather than to autolysis.—*C. J. Lyon.*

12838. **IWANOFF, NICOLAI N., und A. N. AWETISSOWA. Über die fermentative Umwandlung des Guanidins in Harnstoff.** *Biochem. Zeitschr.* 231(1/3): 67-78. 1931.—Guanidin is a good source of N for *Aspergillus niger* if a solution of glucose and guanidin salt is given the fungus grown on peptone. The living fungus decomposes guanidin into urea and NH_3 only in the presence of carbohydrate. Under these conditions formation of the corresponding ferment, designated "guanidinase," occurs in the mycelium. The dead, dried mycelium of *A. niger* which contains guanidinase and no urease splits guanidin into urea and ammonia quantitatively. Boiling of such mycelium destroys the guanidinase.—*Author's summary (transl.).*

12839. **LISCHKEWITSCH, MARIA L. Das Abschätzen der Samenqualität nach dem Fermentgehalt.** *Fermentforsch.* 12(2): 244-261. 1930.—Classification of seed according to their content of catalase, amylase, lipase, and proteases is not particularly hopeful, as it is influenced greatly by conditions under which the seed are grown and ripened, and also by inherent properties of the seed, particularly that of quick or slow ripening.—*E. McCoy.*

12840. **MYRBÄCK, KARL, und HANS von EULER. Co-Zymase und die Aktivierung der Gärung frischer Hefe durch Hefenextrakt.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 176(6): 258-268. 1928.—A substance designated as "factor Z" present in yeast extract and other extracts—not yet isolated—is capable of very materially increasing the speed of fermentation of fresh yeast without a corresponding increase in the number of cells. It is essentially different from cozymase. It is readily soluble in 94% alcohol, is not precipitated by $Ba(OH)_2$ or lead acetate but is precipitated by lead acetate plus NaOH. It is not affected by autolysis, and it dialyses through celloidin. While boiled yeast extracts containing 2 units of cozymase accelerate the fermentation of fresh yeast by more than 100%, a purified solution of cozymase of 30 units is inactive. Conversely, fresh yeast is activated by solutions containing no cozymase. This fact is contrary to Kostychev's assumption that cozymase activates fresh yeast. His views, therefore, have no bearing on the question of whether the fermentation by dried yeast can be ascribed to the presence of living cells. The activation of fresh yeast can neither be traced to the presence of amino acids nor to that of hexose-phosphates.—*F. A. Rotondaro.*

12841. **NEUBERG, CARL, und MARIA KOBEL. Weiteres über die Vorgänge bei der desmolytischen Bildung von Methylglyoxal durch Hefe.** *Biochem. Zeitschr.* 210 (4/6): 466-488. 1929.—Methyl glyoxal was formed by the decomposition of Mg-hexose-diphosphate under the action of substances contained in a variety of yeast preparations. These included the liquid from plasmolyzed top yeast, the residual mass of cells, washed bottom yeast in dry form, and untreated dry yeast. The methyl glyoxal was captured by the use of dinitro-phenylhydrazine which gives with it an insoluble compound.—*C. J. Lyon.*

12842. **NEUBERG, CARL. Über das Verhalten des glukose-schwefligsauren Natriums zu Hefe und damit zusammenhängende Fragen.** *Biochem. Zeitschr.* 212 (4/6): 477-489. 1929.—The Na salt formed by the union of Na_2SO_3 and glucose during the process known as "sulphite fermentation" is not fermented by either top or bottom yeasts. It actually hinders the fermentation of fermentable hexoses. When used along with other compounds involved or thought to be involved in the reactions of fermentation, the results are usually those to be expected from the use of the products of dissociation of the sugar-sulphite compound except that acetaldehyde appears under unusual conditions. The possible relationships to the hypothetical reactions of fermentation are considered in detail.—*C. J. Lyon.*

12843. **SEN, PARIMAL BIKAS. A method of locating urease within tissue by microchemical method.** *Indian Jour. Med. Res.* 18(1): 79-82. 1 pl. 1930.—Urease of tissue acts on a solution of urea applied to the tissue, in alcohol or acetone solution up to 80-85%. The $(NH_4)_2CO_3$ formed, being insoluble in so strong a solution of alcohol or acetone, is crystallized out at the site of urease action, and may be rendered visible by treatment with a metal (Ca, Cu, Pb, Ni, Co) which gives an insoluble carbonate in place of the $(NH_4)_2CO_3$. Cobalt gives good results, and has no effect on protein.

The cobalt carbonate crystals are blackened by exposure of the section to H_2S.

12844. SZENT-GYÖRGYI, A., und K. VIETORISZ. Bemerkungen über die Funktion und Bedeutung der Polyphenoloxydase der Kartoffeln. *Biochem. Zeitschr.* 233(1/3): 236-239. 1931.—Crushing potatoes increased the activity of the phenoloxidase at least 15 times. Either inhibiting factors were destroyed, activators freed, or it must be assumed that the ferment and its substratum were spatially separated in the tissue. The presence of such a system, far exceeding respiratory needs, in potatoes (and presumably in other phenoloxidase plants) which was inactive in the uninjured plant and immediately freed upon injury, may indicate that it is not related to respiration but to natural immunity. Quinones (formed in the brown discoloration on injured potatoes) have a high bactericidal value; on the other hand, they may affect only the proteins, thereby giving bacteria an unsuitable medium; it was not possible to find bactericidal action in the quinones of injured potatoes.

BIOCHEMISTRY, METABOLISM (RESPIRATION, OXIDATION)

12845. CROZIER, W. J., and A. E. NAVEZ. Temperature characteristics for the production of CO_2 by Phaseolus seedlings. *Jour. Gen. Physiol.* 14(5): 617-630. 1931.—Rate of CO_2 production by seedlings of *P. aureus* 5-7 days after sprouting was studied as a function of temp. The CO_2 production was determined by the usual $Ba(OH)_2$ titration method. From about 12-20°C. the log of the rate of CO_2 production is a straight line function of the reciprocal of absolute temp., the slope or temp. characteristic (μ) of which is 16,500. A critical temp. appears at 20-21°C., above which this relation no longer holds.—*P. S. Tang.*

12846. ERMAKOFF, A. I., und NICOLAI N. IWANOFF. Über die Atmung der Samen von Ölpflanzen. *Biochem. Zeitschr.* 231(1/3): 79-91. 1 fig. 1931.—Respiration of flax, castor bean, and almond seed is the same in the initial stages as that of carbohydrate seed. The respiratory quotient of oleaginous seed beginning to sprout approximates 1. Flaxseed showed no increase in dry wt. on germinating; the quantity and quality of the oil was unchanged during the first hrs. Mono- and disaccharides increased at the beginning of germination through enzymatic splitting of polysaccharides. The I value of linseed oil remains unchanged both on the 1st day of germination when the amount is the same as in the seed, and on the 2nd-3rd day when it has distinctly decreased, showing that the oil is not oxidized directly by the O_2 of the air. The germinating seed in the oil plants tested used carbohydrate, primarily, as respiratory material.

12847. HARRIS, G. H. The influence of top on root as determined by root respiration of young fruit trees. *Proc. Amer. Soc. Hort. Sci.* 26: 329-334. 2 fig. 1929(1930).—An apparatus is described for the continuous measurement of tree-root respiration. It was found by using this apparatus that any injury to the root, even very slight, resulted in a temporary increase in its respiratory activity. The bursting of buds markedly depressed root respiration although it had previously increased. Vegetative buds had a more pronounced effect than blossom buds. In the early stages of shoot growth, root respiration remained at a low level. At a certain stage in growth when the leaf area was increasing relatively fast, root respiration increased rapidly until around the time shoot elongation ceased. Diam. growth of top depressed root respiration while that of roots increased it. New root growth in length continued to take place when all other apparent activities had ceased but was usually accompanied by a relatively low respiratory activity.—*G. H. Harris.*

12848. TANG, PEI-SUNG. Temperature characteristics for the oxygen consumption of germinating seeds of Lupinus albus and Zea mays. *Jour. Gen. Physiol.* 14(5): 631-641. 1931.—The Warburg manometer technique was used, with slight modifications, over the range 7-26° C. Above and below a critical temp. at 19.5°C. the temp. characteristic for O consumption by *L. albus* was $\mu = 11{,}700 \pm$ and 16,600 respectively. The same critical temp. was encountered in *Z. mays*, with temp. characteristics $\mu = 13{,}100 \pm$ above and $\mu = 21{,}050$ below that temp.—*P. S. Tang.*

ORGANISM AS A WHOLE

12849. HOLT, MARY. Giant yeast cells. *Trans. Roy. Soc. Canada, Sect.* 3. 22(2): 269-270. 1928.—Attempts to identify, among the products of casein hydrolysis, the substance responsible for the formation of giant yeast cells when yeast is allowed to bud in media containing sugars, salts, and the products of casein hydrolysis, are reported; of 12 amino acids tried, 2 (aspartic and glutamic) caused giant cells. With aspartic acid, cells 70μ long were obtained.

12850. QUEDNOW, KLAUS GEORG. Beiträge zur Frage der Aufnahme gelöster Kohlenstoffverbindungen durch Orchideen und andere Pflanzen. *Bot. Arch.* 30(1/2): 51-108. 2 fig. 1930.—When *Brassica*, as a representative of higher autotrophic plants, was compared with various spp. of orchids under conditions of darkness, it was found to absorb through the roots the same C compound in practically the same amounts. The magnitude of absorption depends on the kind of C compounds used. Glucose is the best source of C, followed by levulose, saccharose, and maltose. Up to certain limits an increase in concentration of C compounds results in an increase in dry wt. of tissue. The pH of the medium controls the quantity absorbed (optimum about 4.7). In *Brassica*, germination and early growth under normal condition is provided for through the presence of reserve material in the seed. This is not the case with orchids. In nature the pH value and the proper C compounds are determined by the activity of the fungi. Under controlled experimental conditions the necessity for fungi is obviated by adjusting the pH value and providing in the medium of growth the suitable C compound.—*R. P. Hibbard.*

GROWTH, DEVELOPMENT, REPRODUCTION

12851. CHIARUGI, ALBERTO. L'inversione sessuale apomeiotica nelle antere di Ochna serrulata Walp. e il suo probabile significato nei riguardi dell'apomissia. [Apomeiotic sex reversal of the anthers of O. serrulata and its probable significance in relation to apomixy.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 286-289. 1930.—In the anthers of *O. serrulata*, groups of cells were found among the normal ones, which had the characters of ♀ apomeiotic gametophytes (as in *Antennaria*). These cells, perfectly analogous to those developed by the same plant in the ovules, show all the characteristics of apomeiotic growth. The apomeiosis of the sex-inversed cells is considered to be determined, like the inversion itself, by the acceleration of the vegetative factors in the plant. The factors of apomeiosis would then be strictly correlated with those of sex reversal, and the opomixy would, therefore, be the expression of an increase of vegetative (anabolic) factors.—*M. Comel.*

12852. HOLM, THEO. The apparent influence of inulin on the meristem in roots of Compositae. *Beih. Bot. Centralbl. Abt. 1.* 47(3): 359-377. 17 fig. 1931.—Inulin was observed in the roots of some No. American spp. of *Hieracium, Vernonia, Aster, Helenium* and *Prenanthes;* in the aerial organs it was found in the basal leaves of *Hieracium venosum* L., and in the stem of *Hieracium scabrum* Michx. It may occur in some roots and be absent from others in the same specimen; it may be present in some parts of a root,—apex, or base, or between, and totally absent from other parts of the same; it may be present in various tissues of the same root. It is most abundant in the meristem, close to the primary xylen; but it may occur in some quantity in the cortical parenchyma, seldom in the endodermis, occasionally in the pith, and in the young wood fibers.

It was not found in the epidermis, the exodermis, the cork, the phelloderm, the sclerenchyma, and the phloem. The presence of inulin appears to stimulate the meristem to divide, at the same time arresting its further development into secondary vascular tissue. The effect on the meristem is so conspicuous that fresh roots in which the inulin is not visible may still be determined as inulin-roots. The principal structural deviation depends on the position of the primary xylem, whether close to the pericycle, as in the inulin-roots, or close to the center of the stele, as in those free from inulin. The proximity to the pericycle depends mainly on the suppression of the activity of the meristem outside the proto-xylem. It is surprising that the meristem is the principle tissue, where the inulin occurs, inasmuch as active meristems do not as a rule contain reserve-food. Inulin-bearing roots are therefore distinctive. In *Prenanthes* it was clear that in young, tuberous roots the lateral roots traverse the cortex, and become free on the lower face of the tuberous root.—*T. Holm.*

12853. NESS, RUDOLF. Untersuchungen über die physikalische und chemische Veränderung reifender Hülsenfruchtsamen. *Bot. Arch.* [*Leipzig*] 27(1/2): 60-158. 16 fig. 1929.—Victoria peas, Schurig peas, horse beans, and yellow, white, and blue lupines were studied. The changes involved were fundamentally alike for all seed studied, except in N for the 3 lupines. The amount of water contained in the seed decreases with progressive ripening. Most rapid evaporation of water begins in the seed with yellow-ripeness and a little earlier in the pod. Loss of water from pods is faster than from seed. In the green and yellow-ripe stages, pods and seed have the same water content; before the green-ripe stage and after full maturity, seed have higher water content than pods; and in intermediate time, pods have higher water content. Water content is a more reliable measure of stage of ripening than is external appearance. The increase of dry wt. is slow up to green-ripeness; then it becomes more rapid and continues until shortly before yellow-ripeness. After yellow-ripeness the total dry wt. of the seed decreases slightly. Yellow-ripeness is the moment when increase in total dry wt. ceases. After harvesting, the total dry wt. of less mature seed may increase. Different seed on the same plant or different plants of the same crop reach the yellow-ripe stage at different times, so it is difficult to apply the term to the whole plant or crop. When crops are cut very early there is not enough food in the plant to mature all seed. Some are left to dwarf, while others mature by using up most of the food. This not only applies to pods in a single branch but to seed in a single pod. The pod furnishes about 70% of the substance for developing immature seed and the straw the rest.—*W. Crocker.*

12854. NEUBERT, HANS. Ersatzbildung beim Flachs. *Faserforschung, etc.* 9(1): 9-62. 80 fig. 1931.—Experiments showed that plants of *Linum usitatissimum, L. hiemale,* and *L. perenne* at almost any age are capable of extensive adventitious growth. Pre-existing or new formed buds were stimulated to growth by cutting off a part of the plant or coating it with plaster of Paris. Adventitious buds occurred only in the hypocotyl or in the zone of the cotyledons. When the tops of plants of *L. hiemale* and *L. perenne* were cut off, the dormant buds in the older wood and the adventitious buds in the region of the cotyledons were stimulated to growth. Coating with plaster of Paris caused the buds of *L. usitatissimum* and *L. hiemale* to have an enlarged leaf area. A portion of a shoot, with or without the tip, formed roots at the base when grown on blotting paper or sand. Hypocotyledonary pieces without buds produced new roots and shoots. A single cotyledon and foliage leaf or leaf portion always produced roots at the base. The marked ability of *L. usitatissimum* to form adventitious buds may be understood when we consider that it is derived from biennial or perennial spp., and that it contains growth energy derived from the transition from the perennial to the annual type. The ability of *L. hiemale* and *L. perenne* to form adventitious buds may have been due to the fact that only 1 yr.-old, vigorous plants were used.—*H. Neubert* (*transl. by H. H. Flor*).

12855. STANTIAL, HELEN. The sporulation of yeast. *Trans. Roy. Soc. Canada, Sect. 3.* 22(2): 257-261. 1928.—Yeast was cultivated in wort, washed on filter paper, and suspended in distilled water. Addition of orange, lemon, or tomato juice, or juice expressed from fresh lettuce, to the water suspension or to the original culture in which the yeast was grown (wort), gave abundant sporulation, not obtainable by growth on gypsum blocks or any of the ordinary methods. In 0.5 cc. of wort culture of yeast, pipetted into 25 cc. of water containing fruit or vegetable juice, about ¼ of the cells became asci. By proper adjustment of the components, nearly all the cells could be made to form spores. The result is ascribed to a vitamin or vitamin-like substance in the fruit juice; this is not bios I or bios II.

TROPISMS, GROWTH AND TURGOR MOVEMENTS

12856. BEYER, ADOLF. Experimentelle Studien zur Blaauwschen Theorie. II. Neue vergleichende Untersuchungen über Lichtkrümmung und Lichtwachstum bei normalen und dekapitierten Haferkeimlingen. *Zeitschr. Wiss. Biol. Abt. E, Planta* 5(3): 478-519. 2 fig. 1928.—Genetically pure seed of *Avena* and *Hordeum* were placed on moist filter paper or on moist soil and subjected to preillumination of definite intensities and for definite periods during the early stages of germination. The seedlings were then set in soil in small containers placed within a larger vessel in a dark, constant temp. room at 25.5° C. The relative humidity was maintained at 70% or higher. When the coleoptile extended 2-3 cm. above the soil, observations were made on growth at frequent intervals with a horizontal microscope during short alternate periods of darkening and illumination applied on opposite sides or from above with 2 small electric lights. In some instances the seedlings were rotated on a clinostat between the light sources. No parallelism was found between the light effects on growth and on curvature. In normal seedlings, increased illumination on one side caused definite bending although uniform illumination did not reduce growth as a whole. Under suitable conditions decapitated seedlings exhibited reduced growth but no phototropic curvature. Hence, no causal relationship exists between the phototropic and the light-growth reactions. In normal and in decapitated seedlings, the retarding action of light on growth decreases with decrease in intensity of growth in the dark. The absolute growth-inhibiting action of light is smaller on the decapitated than on normal seedlings but, expressed in % of growth in the dark, the retarding action is greater on the decapitated than on normal seedlings. Contrary to Vogt's conclusion, the final length attained by the *Avena* coleoptile increases with increase in temp. In comparison with fully etiolated plants, illumination of *Avena* seedlings in the first hrs. of germination modifies the character of the subsequent growth, lessens its duration, and reduces the final length attained. An increased growth produced by vertical over-head illumination was not obtained with side illumination, suggesting a possible qualitative distinction in the stimulus from the 2 forms of illumination. In oat seedlings guttation is dependent on a definite moisture content of the substrate so that it ceases when the soil moisture falls outside certain limits.—*W. W. Garner*

12857. PROTIĆ, GEORG. Untersuchungen über den Geotropismus der Achsenorgane und Blätter von Euphorbia lathrys. *Österreich. Bot. Zeitschr.* 77(3): 195-219. 2 pl., 2 fig. 1928.—The correctness of Haberlandt's starch grain statolith theory was tested by means of simple experiments. Statoliths were found in the endodermis of stem, branches, and leaves. Geotropism took place only in the presence of statolithic starch. In young and in well developed stems, geotropic response occurred in the apical 15-25 mm.; in older ones, 5-8 mm. In the 2nd growing period there were 2 reaction zones: the apical zone, and the region which marked the pre-

vious year's tip; the latter was the more susceptible. When the plant was placed in a horizontal position, the geotropic curvatures of the main stem and of the lateral axes in a horizontal position were about the same. The remaining lateral branches responded very slightly. In an inverted position the response to geotropism in the main axis began later than in the horizontal position. Immature leaves were slightly negatively geotropic.—*J. M. Haber.*

12858. UMRATH, KARL. Über die Erregungssubstanz der Mimosoideen. [The "stimulation substance" in Mimosa.] *Zeitschr. Wiss. Biol. Abt. E. Planta* 4(5): 812-817. 1927.

GERMINATION, DORMANCY, RENEWAL OF ACTIVITY

12859. AXENTJEFF, B. N. Über den Einfluss einiger Salze auf die Keimung der Samen von Amarantus retroflexus L. *Biochem. Zeitschr.* 211(4/6): 454-467. 1929.—When KNO_3 and $Ca(NO_3)_2$ stimulate the germination of above seed, they affect the embryos rather than the seed coats. They inhibit the swelling of the colloids of the embryo; hence any stimulation by the salts does not depend upon increased hydration of these colloids and, therefore, not on growth stimulation, but upon some other (undetermined) cause. Salts protect against the toxicity of ether and phenol. In this protection the anions and cations arrange themselves according to the lyotropic series. $Al_2(NO_3)_6$ also shows strong protective action.—*W. Crocker.*

12860. [DUNIN, I. S., and M. N. MĬAZDRIKOVA.] ДУНИН, И. С., и М. Н. МЯЗДРИКОВА. К вопросу о методе определения "минимума" воды, необходимой для прорастания семян. [Method of determining the minimum water quantity for seed germination.] [German summary.] Главный Ботанический Сад, Записки по Семеноведению (*Jard. Bot. Princ., Ann. Essais Semences* [*Leningrad*]) 7(2): 71-103. 1930.—The minimum water necessary for germination (*M*) as worked out by a new, very accurate method and corrected for substances leached out during swelling and germination, was greater in poorly germinating seed. Ten gm. samples are best for beet, wheat, etc. *M* increases with stage of germination. Quick germinating seed have slightly lower *M* value. *M* value for germination at 9° C. is higher than at 18-27° C. Use of optimum temp. for swelling and germination reduces loss from leaching. The sources of *M* in germinating seed are water imbibed during swelling, water vapor absorbed under certain conditions during germination, and water produced by respiration. The error involved in determining *M* by previous work was 1.4-8.4%; with the method developed, the error was reduced to 0.62%.—*W. Crocker.*

12861. [EGOROVA, A. A., M. N. BULATOVA, and Z. M. SCHULTZ.] ЕГОРОВА, А. А., М. Н. БУЛАТОВА, и З. М. ШУЛЬЦ. Материалы к познанию прорастания и созревания семян. [Materials for testing the germination and ripening of seed.] [German summary.] Главный Ботанический Сад, Записки по Семеноведению (*Jard. Bot. Princ. URSS., Ann. Essais Semences* [*Leningrad*]) 7(2): 58-63. 1930.

12862. MILLER, LAWRENCE P. The influence of sulphur compounds in breaking the dormancy of potato tubers. Preliminary report. *Contr. Boyce Thompson Inst.* 3(2): 309-312. 2 fig. 1931.—Many S compounds break the dormancy of potato tubers. Some effective ones are ammonium dithiocarbamate, thiosemicarbazide, thioglycollic acid, thioacetic acid, H_2S, methyl disulphide, ethyl mercaptan, thioglycol, and various derivatives of dithiocarbamic acid.—*L. P. Miller.*

12863. NIETHAMMER, ANNELIESE. Fortlaufende Untersuchungen über den Chemismus der Angiospermensamen und die äusseren natürlichen, wie künstlichen Keimungsfaktoren. I. Der Einfluss des Frostes auf die Keimfähigkeit. *Biochem. Zeitschr.* 197(1/3): 241-244. 1928.—Freezing at −10° C. did not break the rest period of highly dormant seed but partially destroyed the effect of light in aiding the germination of seed which respond to light. With seed which respond to numerous stimulants, freezing favored germination; but seed which germinate readily without stimulation were either unaffected or impaired in germination by freezing. Light and low temp. affect germination by means of changes produced within the seed.—*H. R. Kraybill.*

12864. ROSSI, ERNESTO. Sulla germinabilità del seme di "Pinus maritima Lam." in rapporto alla temperatura. [Germination of pine seed in relation to temp.] *Atti Ist. Bot. "Giovanni Briosi" e Lab. Crittogam. Ital. Univ. Pavia* 1: 107-115. 1929(1930).—Seeds of *P. maritima* heated to 190° C. lost their capacity for germination in 60 sec. Warming them to 50° C. only hastened germination, without injury, giving 85% of the germination at normal temp. When seeds were kept at 50° C. continuously for 100, 300, and 500 hrs., the initial germinations occurred after 17, 16, and 15 days respectively. It required 35 days at 22° C. to obtain an equal % of germination.—*E. Rossi (transl. by H. S. Wolfe).*

TEMPERATURE RELATIONS

12865. BĚLEHRÁDEK, JAN, et JAN MELICHAR. L'action différente des températures élevées et des températures normales sur la survie de la cellule végétale (Helodea canadensis Rich.). *Biol. Generalis* 6(1): 109-124. 3 fig. 1930.—Leaves from near the tips of vigorously growing shoots were subjected to different temp., held constant to within 0.1-0.2° C., for various time intervals, after which % of living and dead cells were determined by Ruzicka's neutral rose-methylene blue method. Cells appeared to succumb beginning at the base of the leaf, progressing toward the tips, and ending in certain patches some distance below the apex. At lower temp. the order of death was less well defined and often was reversed from that at higher temp. Unequal sensitivity of cells of the same leaf was held to be due to the injury of severing the leaf and to differential physicochemical states of the cells. The time of survival of cells when plotted against temp. appears to be expressed by the same degree of precision by the formula Q_{10} (log. of time plotted against temp. Celsius), the law of Van't Hoff-Arrhenius (log. of time against inverse of absolute temp.), and the equation of Porodko and Bělehrádek (log. of time against log. of temp. Celsius), since the difference between these formulae is less for the limited range of temp. applicable in these experiments. The coefficients of temp. involved in these formulae are always much higher for higher temp. than normal temp., the change occurring suddenly at 44° C. The unequal values of the temp. coeff. indicate that the mechanism of death from heat differs from that which accompanies death at lower temp.—*R. C. Friesner.*

RADIANT ENERGY RELATIONS, PHOTOPERIODISM

12866. LOJKIN, MARY. Some effects of ultraviolet rays on the vitamin D content of plants as compared with the direct irradiation of the animal. *Contr. Boyce Thompson Inst.* 3(2): 245-266. 2 fig. 1931.—Green plants grown in these experiments under ordinary greenhouse glass did not produce vitamin D. U.-v. rays from the solar spectrum impart very slight antirachitic value to lettuce, alfalfa, spinach, New Zealand spinach, and soy beans. Rays from the Hg vapor lamp supply these plants with appreciable calcifying properties. No antirachitic properties were produced in cabbage by u.-v. rays from either source. Irradiation with the rays of the Hg vapor lamp imparts measurably greater antirachitic properties to the cut plant than to the intact plant. The antirachitic substance formed in the living plant by u.-v. radiation is not destroyed for at least 24 hrs. Complete calcification of the bones takes place when young rats on Sherman's diet 84 are exposed to sunlight transmitted through a special u.-v. transmitting filter for 30 min. in winter or 15 min. during summer and spring. An exposure of 1 min. per day to the rays of a Hg vapor lamp transmitted through various filters gave complete protection

to rats on Sherman's rickets-producing diet 84. Wave lengths shorter than 285 mμ had little or no protective value on rats. The rays most effective in the cure of rickets in rats were within the limits of solar radiation, that is, longer than 290 mμ. The minimum exposure to u.-v. rays necessary to produce an appreciable amount of vitamin D in plant tissue is considerably longer than that required to impart complete protection in case of direct irradiation of the animal.—*Mary Lojkin.*

12867. **MEZZADROLI, G. e E. VARETON. Azione esercitata dal radio sulla germinazione dei semi. [Effect of radium on seed germination.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 12(1/2): 73-80. 1930.—Dry seed of various grains and legumes were exposed to the action of $RaBr_2$ and then germinated. A short irradiation had a favorable effect; longer ones were injurious. The most favorable results show an increase up to 80% in total length and wt. of plants coming from irradiated seed. The effect of the irradiation on the seed is lasting, as shown by seed germinated 2 mo. after treatment.—*B. F. Lutman.*

12868. **MEZZADROLI, G., e E. VARETON. Ulteriori ricerche sull'azione esercitata da un radio-oscillatore per onde ultracorte di λ=2-3 m., sulla germinazione dei semi e sull'accrescimento delle piante. II. Azione delle onde elettromagnetiche ultracorte sulle piante poste entro un circuito in resonanza con il radio-oscillatore. [Effect of short-wave radio oscillator on seed germination and plant growth. II. Effect when plants are placed within a circuit in resonance with the oscillator.]** *Zymol. Chim. Colloidi e Zucch.* 5(3): 88-94. 1930.—Seed and plants were subjected to the action of very short electromagnetic waves (λ=2-3 m.) and the sprouts were placed within the coil of a receiving oscillator circuit. The effect obtained was even greater than that found with interposition of the Lakhovsky oscillating circuit or obtained with the system of Lecher threads in the zone of greater intensity.—*Authors' conclusion (transl. by H. S. Wolfe).*

12869. **MEZZADROLI, G., e E. VARETON. Azione esercitata dalle onde elettromagnetiche ultracorte sul potere catalasico dei semi. [Effect of very short electromagnetic waves on the catalase activity of seed.]** *Zymol. Chim. Colloidi e Zucch.* 5(3): 95-98. 1930.—Very short waves (λ=2-3 m.) from a radio oscillator have a beneficial effect on seed germination, since the seed so treated showed an increase of catalase activity during the 1st days of germination. The catalase activity of treated seed was as great as that of controls 1-2 days older.—*Authors' conclusions (transl. by H. S. Wolfe).*

12870. **WIGODER, SYLVIA B. Effect of activated fluorescein on growing beans.** *Brit. Med. Jour.* 2(3641): 643. 1930.—A year's experiments on *Vicia faba* indicate that the intensifying effect of "activated" fluorescein on x-rays is negligible.

TOXIC ACTION

12871. **McCALLAN, S. E. A., and FRANK WILCOXON. The fungicidal action of sulphur. II. The production of hydrogen sulphide by sulphured leaves and spores and its toxicity to spores.** *Contr. Boyce Thompson Inst.* 3(1): 13-38. 8 fig. 1931.—The attached leaves of higher plants and the spores of fungi of all sp. (45) tested evolved H_2S when in contact with S. Sulphured strawberry plants at 35° C. produced 0.002 mgm. H_2S per hr. per sq. dm. of leaf surface. The H_2S production by spores of *Venturia inaequalis, Uromyces caryophyllinus, Puccinia antirrhini, Sclerotinia americana, Macrosporium sarcinaeforme, Pestalotia stellata, Glomerella cingulata,* and *Botrytis* sp. (*cinerea* type), was directly proportional to the number of spores, was independent of the pH of the medium within the range 4.0-8.0, and varied with different sp. In 12 hrs. at 30° C. the H_2S produced varied from 9.8% of wt. of spores for *Glomerella* to 0.14% for *Macrosporium.* The optimum temp. was 35° C., with complete inhibition at 60°, thus indicating an enzymatic reaction. Actual contact between spores and S is unnecessary, as H_2S production will take place through a collodion membrane or across an air space of 4 mm., the H_2S being produced on or within the spores. The presence of the S-reducing -SH group has been demonstrated in spores of *S. americana.* H_2S is highly toxic to the spores of the 8 fungi mentioned, the toxicity to H_2S and S varying in decreasing sensitivity as follows: *Venturia, Uromyces, Puccinia, Sclerotinia, Macrosporium, Pestalotia, Glomerella,* and *Botrytis.* When the production of H_2S by these spores is expressed in units equal to the amount of H_2S required to reduce their germination 50%, the 4 S-sensitive sp. controllable in the field with S produced more than 1 unit, while the 4 resistant sp. not controllable by S produced considerably less than 1 toxic unit of H_2S. An hypothesis, involving the diffusion of S vapor from the S particles to the spores and its reduction within the spore to form toxic H_2S, is presented to account for the fungicidal action of S.—*S. E. A. McCallan.*

12872. **SEYBOLD, A. Zur Kenntnis der oligodynamischen Erscheinungen. [Oligodynamic phenomena.]** *Biol. Zentralbl.* 47(2): 102-107. 1927.

12873. **THORNTON, NORWOOD C. The effect of carbon dioxide on fruits and vegetables in storage.** *Contr. Boyce Thompson Inst.* 3(2): 219-244. 6 fig. 1931.—Commercial fruits and vegetables held in storage 3-7 days withstood, without apparent injury, concentrations of CO_2 of 6-83%, depending upon the kind and variety tested. The concentration of CO_2 causing injury to, as well as that tolerated by each fruit and vegetable was determined at 6 storage temp. varying from 0° to 25° C. The noticeable effect of the gas on each fruit and vegetable is discussed separately. Low concentrations retarded coloration and in some cases caused noticeable changes in ripening, while high concentrations impaired the flavor, killed growing tissue, and promoted breakdown and surface discoloration of some fruits. The tolerance to CO_2 was influenced by ripeness, firmness, and freshness of the plant organ. An excess of moisture in the gas storage chamber increased the injury to most vegetables. Increasing the O_2 supply of the storage chamber before the addition of CO_2 retarded the apparent injury to celery, but had no noticeable effect on oranges. This work corroborates the observations of others that in the CO_2 injury to many plant organs insufficient O_2 in the storage atmosphere is an important factor.—*N. C. Thornton.*

ELECTRICAL PHENOMENA

12874. **BLINKS, L. R. The direct current resistance of Nitella.** *Jour. Gen. Physiol.* 13(4): 495-508. 2 pl. 1930.—The electrical resistance of *Nitella* cells to direct current is determined in a Wheatstone bridge, using a vacuum-tube detector, and string galvanometer. Very small currents are passed through the cells, to avoid stimulation. The galvanometer record shows typical transient effects in the living cells at opening and closing of the circuit, due to the development of back E.M.F. With 1 cm. contacts of tap water, and 1 cm. between comtacts the resistances of living cells are usually 1,000,000-2,000,000 ohms. They go as high as 3,500,000 ohms when the cells are in the best condition. The resistance falls to about 50,000 ohms immediately after killing. Leakage around the cell is small because the wall in imbibed with tap water. By measuring the resistance of the isolated wall (air-filled), and by varying the areas of contact with intact cells, the effective protoplasmic resistance is calculated. This is 100,000-700,000 ohms per sq. cm. of surface, with a typical value of about 250,000 ohms. This high resistance represents a low permeability for most ions, since the values are nearly as high with contacts of 0.01*M* NaCl, $CaCl_2$, LiCl, NH_4Cl, and $MgSO_4$. The resistances are greatly reduced however by solutions of KCl, which is correlated with a high mobility of the K^+ ion in the protoplasm. Electrical stimulation causes a marked reduction of resistance, which may be due to exosmosis of KCl.—*Author's summary.*

12875. **BROOKS, S. C., A. C. GIESE, and R. I. GIESE.**

Potential differences across natural membranes separating unlike salt solutions. *Jour. Exp. Biol.* 8: 124-132. 1931.—When the lower epidermis of the bulb scale of the onion separates 0.1*M* and 0.01*M* solutions of KCl, NaCl, or LiCl a transient "concentration" P. D. was observed, whose magnitude decreased in the order: K > Na > Li. The P. D. of 0.1*M*: 0.01*M* $CaCl_2$ is small and opposite in sign to that of the above chains. When the epidermis separates like concentrations of chlorides of K, Na, and Li, a cation "chemical" P. D. arises which is low but steady. When K-salts with different anions are present on the opposites sides of the membrane, the anion "chemical" P. D. is small or lacking. These facts are most simply accounted for by assuming that the epidermis is a mosaic of cation and anion permeable areas, the permeability to alkali metal cations much exceeding that for Ca ion or the anions tried. The cell walls may perhaps participate in the production of the bioelectric potentials observed in other plants.—*J. M. Robson.*

ANIMAL PHYSIOLOGY

GENERAL

(See also in this issue Entries 12070, 12078, 12090, 12599)

12876. **ARTHUS, MAURICE.** La physiologie pour tous. 142p. Payot et Cie: Lausanne, 1928. Price 2 fr.—This is a series of lectures to the general public delivered from the Lausanne Broadcasting Station. A selection of the facts of human physiology is presented in an attractive literary manner. The subject matter is divided into chapters dealing with the constitution of living beings, the blood and its circulation, digestion, respiration, the maintenance of body temp. and concludes with 3 chapters on the science of the common foods. The inter-relation of structure and function is kept well before the reader.—*D. J. Lloyd.*

12877. **FONTAINE, M.** Recherches expérimentales sur les réactions des êtres vivants aux fortes pressions. *Ann. Inst. Océanograph.* 8(1): 1-99. 16 fig. 1930.—Regnard's hypothesis that high pressures lacerate tissues could not be confirmed. Muscular tissue in particular imbibes fluid when placed under pressure in an isotonic medium. Even if compressed in air and placed in the fluid after decompression, imbibition still occurs. Compression and tetany appear to have similar effects on muscular tissue. As pressure is increased respiration in fish increases to a maximum and then decreases; in algae respiration decreases throughout. Study of the influence of pressure on cellular permeability and viscosity indicates that at 700 kgm. pressure (a depth of 7000 m.) irreversible changes occur in most forms of protoplasm.—*D. B. Dill.*

12878. **HICKMAN, CLEVELAND P.** Laboratory manual in college physiology. xiv + 116p. The Macmillan Co.: New York, [1931?]. Pr. $1.10.

ANIMAL PHYSIOLOGY

LIGHT AND HEAT

E. NEWTON HARVEY, *Editor*

(See also in this issue Entries 12070, 12545, 12549, 12561, 12624, 12636, 12866, 12910, 12928, 12945, 12946, 12949, 13058, 13131, 13132, 13139, 13144, 13167, 13193, 13208, 13271, 13275, 13297, 13344, 13345, 13365, 13438, 13587, 14348, 14846)

12879. **ARNAUTOV, G., und E. WELLER.** Zur Wirkung des natürlichen und künstlichen Lichtes auf den Gaswechsel des Menschen. *Zeitschr. Ges. Exp. Med.* 76(5/6): 694-708. 5 fig. 1931.—In completely resting men the gaseous metabolism is greater under the influence of natural or artificial light than in the dark; the same holds true for pulmonary ventilation. Although the increase of these values is not great, the fact, that such increase was present in all experimental persons in different series with exact control of all other factors affecting the gaseous metabolism, seems to justify this conclusion.—*W. F. von Oettingen.*

12880. **BACHEM, A., and C. I. REED.** The penetration of light through human skin. *Amer. Jour. Physiol.* 97(1): 86-91. 1931.—An elaboration of the method of Stenstroem and Reinhard was used; the mounted skin specimen is placed in the opening of a screen and resting practically against the surface of a photographic plate. Specimens were used from: (1) cantharides blisters on the flexor side of the forearm; (2) strips from the ventral abdominal wall of fresh autopsy material cut with a microtone, while frozen, to the desired thickness; (3) tensed folds of the scrotum of living subjects, and scrotal strips from dead subjects. Visible and near infra-red rays were strongly absorbed by the blood of the corium and subcutaneous layers, with direct effects on the blood to be expected. The heating effect must be rather mild on account of the small absorption in the epidermis and the strong convection by the blood stream. The far infra-red has very little penetrating power; most of it is absorbed in the epidermis. The heat produced is slowly conducted away by the blood stream and by the air. Over-exposure of the germinal layer may lead directly to blistering. There is greater variation in percentage penetration of ultra-violet than in other parts of the spectrum. At 280 mμ, absorption in the corneum and prickle-cell layers is very pronounced. The great antirachitic effect of this wave-length must occur in or about these layers. On both sides of this band, near 300 and 250 mμ the penetration is greater, more radiation reaching the stratum Malpighii and the corium. These observations, with those of Hausser and Vahle, indicate that erythema production occurs in the germinal layer (or the corium) under the shadow of the upper layers. The stratum corneum and granulosum must play an important rôle in the light protection of these sensitive layers. From 250 mμ down the absorption in the horny layer increases rapidly. Near 200 mμ the absorption is so complete as to prevent any radiation from reaching the living layers of the skin.

12881. **BARCROFT, J., and F. VERZÁR.** The effect of exposure to cold on the pulse rate and respiration of man. *Jour. Physiol.* 71(4): 373-380. 1931.—The 4 experiments were carried out in 3 stages: (1) the subject lay naked but comfortably covered in bed until the pulse became steady; (2) the bedclothes were removed and the subject exposed for about ½ hr. to the cold, pulse rate and rectal temp. being frequently observed, and in 1 Du Bois spirometer observations being also made; (3) the bedclothes were replaced and observations continued—but not, as originally intended, until the temp. rose to the original reading, because this rise was exceedingly slow. The conclusions are: Apart from spasmodic rises in the pulse rate associated with shivering, the pulse rate falls with fall of body temp. The spasmodic rises associated with shivering may amount to 40% of the original pulse rate. The respiration shows marked summation of inspiratory movements during

the rigors which had very deep and sustained inspirations. The O consumption increases during the shivering fits by as much as 75% of its value during rest.

12882. **BĚLEHRÁDEK, J. Sur la signification des coëfficients de temperature.** *Protoplasma* 7: 232-255. 1929.—Because of the chemical heterogeneity of protoplasm the relation between the temp. and the speed of biological processes can not be expressed by the formula of van't Hoff nor by that of Arrhenius. The author proposes an empirical formula which gives a thermal coefficient that does not vary with the temp. even in the cases where the other formulae break down. It follows from the laws of heterogeneous systems that the speed of protoplasmic processes is limited by the speed of diffusion in the phases of the protoplasm and that these 2 rates are identical. The speed of diffusion being dependent on viscosity it follows that the thermal coefficients of biological reactions are only the thermal coefficients of the viscosity of the reacting protoplasmic phases. From figures of J. Loeb's it is demonstrated that in solutions of gelatin the thermal coefficient of viscosity can serve to evaluate the viscosity itself. This principle, applied to living protoplasm, justifies the conclusion that the temp. coefficients of physiological processes are indicative of the viscosities of the reacting protoplasmic phases.—*L. Moyer.*

12883. **BROWN, DUGALD E. S., and CECIL V. KING. The nature of the photogenic response of Photurus pennsylvanica.** *Physiol. Zool.* 4(2): 287-293. 1931.—The photogenic response is recorded by a photoelectric cell, the output of which, after suitable amplification, is led to a Cambridge-type string galvanometer. In the response of the ♂ the light intensity rises to a maximum and then diminishes along a curve exhibiting no discontinuities. In the ♀ the response usually exhibits 2 maxima. The magnitude of the response as indicated by the light intensity produced at the maximum varies widely with the number of stimuli and the frequency of stimulation. The duration of the response remains constant in those cases where the entire organ responds. The genesis of the response is considered as determined by: The fundamental luciferin-luciferase reaction; the successive stimulation of the cells in different regions of the organ; and the variation in light intensity in different regions of the photogenic organ and possibly within the limits of a single cell.—*Authors (courtesy Wistar Bibl. Serv.).*

12884. **CARMICHAEL, EMMETT B. The action of ultraviolet radiation on Limax flavus Linnaeus. I. The varying effects on non-pigmented and pigmented embryos.** *Physiol. Zool.* 4(4): 575-580. 1931.—Eggs from this nocturnal slug containing living embryos were treated with all the rays from a quartz mercury-vapor lamp (exposure, 3-20 min.). Pigmented embryos were easily injured by u.-v. rays; the deeply pigmented ones were especially sensitive, a few minutes' radiation being lethal. Non-pigmented younger embryos were not so easily injured as older pigmented ones. Control experiments ruled out the possibility of the effects being due to the increase in temp. of the surrounding atmosphere or to the effect of ozone. Other experiments show that the effects were due to u.-v. rays.—*Author (courtesy Wistar Bibl. Serv.).*

12885. **CHARITON, J., G. FRANK, und N. KANNEGIESSER. Über die Wellenlänge und Intensität mitogenetischer Strahlung.** *Naturwiss.* 18(19): 411-413. 1930.—Using yeast as a detector and Al, Zn and Cd arcs (also Hg vapor lamp) as senders, the mitogenetic effect was produced only below 2606 Å and could be obtained only by definite intensities. If the biological senders previously used emit rays identical with these, such emissions cannot be monochromatic and also require a definite time of exposure to produce an effect.—*L. S. Moyer.*

12886. **CORTESE, FRANZ. Ulteriori studi circa l'azione dei raggi ultravioletti sull'occhio. [Effect of ultraviolet on the eye.]** *Boll. Soc. Med.-Chir. Pavia.* 44 (5): 555-569. 2 fig. 1930.—U.-v. irradiation of 1 eye each of 10 adult rabbits (5 albino and 5 pigmented) showed that albino and pigmented were equally sensitive and equally unable to acquire actinoresistence. Changes were produced only in the anterior part of the eye, particularly in the cornea, and failed to affect the posterior part, particularly the retina. The difference between these results and those Cortese had previously obtained on young rabbits may be explained by the greater permeability to u.-v. rays of the cornea and the crystalline lens of young than of adult rabbits; by the law of Grotthus-Draper, the effect of u.-v. rays on the tissues is in proportion to the absorptive capacity of the latter for the rays. Bacteria isolated from an irradiated conjunctiva were no more resistant to u.-v. rays than were the same species from a non-irradiated conjunctiva. The diminution in numbers of bacteria in the irradiated eye is explained by the modification of the ambient of the conjunctival sac induced by the acute conjunctivitis, rendering the sac less suitable for bacterial life.

12887. **EISING, EUGENE H. Therapeutic and physical properties of ultraviolet irradiated petrolatum.** *Ann. Surg.* 93(6): 1231-1239. 7 fig. 1931.—Eising obtained unexpected therapeutic results from u.v. irradiated petrolatum, which he at first regarded as a vitamin action. Later, finding that irradiated petrolatum will produce an image on a photographic plate, he was led to attribute the therapeutic properties to a secondary radiant energy, derived from the u.v. rays. U.v. irradiation turns ordinary yellow petrolatum orange-brown and white petrolatum yellow; it has no effect on liquid petrolatum.

12888. **HARVEY, E. NEWTON, and PETER A. SNELL. The analysis of bioluminescences of short duration, recorded with photoelectric cell and string galvanometer.** *Jour. Gen. Physiol.* 14(4): 529-545. 1 fig. 1931.—The rapid fading of luminescence in extracts of the ostracod *Cypridina hilgendorfii* was studied by means of a photoelectric-amplifier-string galvanometer recording system. For rapid flashes of luminescence, the fading is logarithmic if the ratio of luciferin to luciferase is small; logarithmic plus an initial flash, if the ratio of luciferin to luciferase is greater than 5:1. The logarithmic plot of luminescence intensity against time is concave to time axis if ratio of luciferin to luciferase is very large. The velocity constant of fading in the case of rapid flashes of luminescence is approximately proportional to enzyme concentration, is independent of luciferin concentration, and varies approximately inversely as the square root of the total luciferin (luciferin + oxyluciferin) concentration. For large total luciferin concentrations, the velocity constant is almost independent of the total luciferin. The variation of velocity constant with total luciferin concentration (luciferin + oxyluciferin) and its independence of luciferin concentration is explained by assuming that light intensity is a measure of the luciferin molecules which become activated to oxidize (accompanied with luminescence) by adsorption on luciferase. The adsorption equilibrium is the same for luciferin and oxyluciferin and determines the velocity constant.—*From authors' summary.*

12889. **HESS, ALFRED F., and PHILIP E. SMITH. Excessive ultraviolet irradiation. Effect on the nutrition and the endocrine glands of rats.** *Amer. Jour. Dis. Children* 41(4): 775-782. 1931.—Two series of rats [♂ and ♀] (the 1st series litter-mates; the 2nd series, though not litter-mates, the progeny of the 1st) were irradiated with 3 intensities, mild, moderate and severe, with the mercury vapor lamp for 5-6 mos. or were given viosterol in small as well as in excessive amounts. The growth of the animals subjected to marked intensities of u.-v. or given large amounts of viosterol was as good as that of animals which had lived under similar conditions but had not been irradiated or given viosterol. No difference was noted at necropsy betwen the endocrine glands of the treated and those of the untreated animals.—*Author's summary.*

12890. **IWATAKE, H. On the variations in the temperature of the skin according to changes in the temperature of the environment.** [In Japanese, with English

summary, pp. 25-26.] *Jour. Oriental Med.* 14(3): 1931.—Sudden or slow change of thermal environment was produced (in a thermostatic "arm box,") on 2 young Chinese men and 1 Japanese girl, all with normal skins. (1) When the arm was suddenly introduced into the arm box: at 48° C., the skin temp. [S.T.] rose quickly at first, and more slowly later, reaching a nearly constant temp. of 43° in 15 min.; at 38°, S.T. took almost the same course, reaching 38° in 15 min., when it became stable; at 30°, which is nearly S.T. under normal conditions, the temp. of the box rose slightly owing to the warmth of the hand, consequently the S.T. correspondingly rose to 34° or 35° in 15 min.; at 20° the temp. within the box rose a little, and S.T. suddenly fell at first, but soon resumed its former level; at 13-10°, the temp. inside quickly rose to 15°, and S.T. fell to 25°, after which it became nearly constant.—(2) After the arm had been introduced into the box, it was warmed or cooled slowly by circulation of hot or cold water through the double walls of the box. The curve of S.T. ran in almost a straight line above 20° and crossed the line of the temp. of the box at 35°, making an angle of 15° or 18° with it. Under 20°, the S.T. made a slighter curve, bending toward the line of the environment. When the arm was kept in the box at a high temp., for example, 50°, long enough for the temp. of the arm box to equal the S.T., the box was cooled slowly, the S.T. followed a similar course to the one mentioned above. However, contrary results were obtained when the skin was cooled first and then warmed slowly. A comparison of the results of these 2 experiments shows that in the former the temp. is generally higher than in the latter though not in any great degree (the point of intersection of the temp. curve of the box and that of the skin was 37° or 38° in the former, and 35° in the latter).

12891. **KOSTYÁL, LADISLAUS. Über die Wirkung der Quarzlampenbelichtung auf die Eiweissfraktionen des Blutplasmas in vitro. [Action of quartz lamp lighting on albumin contents of blood plasma in vitro.]** *Biochem. Zeitschr.* 229(1/3): 100-108. 1930.—After exposure of 20 plasmas from 11 patients to quartz lamp irradiation, the changes in sedimentation rate of erythrocytes of the same patients were determined. The albumin colloids of blood in various diseases show various degrees of sensitiveness to quartz light. The accelerating action on blood cell sedimentation rate continues to a certain point and then falls. As tests on precipitation and swelling show, the sedimentation is often delayed, as if it were in albumin free solution, not because the lighting was stopped or another counteracting action interfered, but because the protein bodies passed into another condition characterized by aggregate formation and by breaking up of protein molecules, particularly of fibrinogen. In the breaking up, they lose the capacity of precipitation, of swelling and of neutralizing erythrocytes. In some cases, the sedimentation was maintained even after 120 min. exposure, the rate so accentuated that the fall is shotlike, even after the fibrinogen had lost it characters.—*Author's summary (transl. by P. M. Suski).*

12892. **KROPATSCH, ANTON, und KARL LINSER. Ein weiterer Beitrag zur Frage der Sensibilisation und Desensibilisation der Haut gegen UV.-Licht.** *Strahlentherapie* 29(2): 342-348. 4 fig. 1928.—A band of skin was exposed to ultra-violet (lamp 50 cm. distant, 5 min.), and the erythema allowed to fade out, leaving the band marked by faint pigmentation. A 2nd band, crossing the former perpendicularly, was exposed, and, in cases where the area treated earlier was desensitized, this desensitization extended 2-3 mm. on either side of it. When the earlier treated area was sensitized, as a rule no desensitized border was found. The width of the desensitized border varied with the amount of the 2nd dose. This desensitization can not be due to pigment formation; it may be due to a general depression of cell function, including pigment-producing power and sensitivity to u.-v., which spreads slightly.—*W. C. Boyd.*

12893. **RAJEWSKY, B. Die Strahlungsreaktion des Eiweisses und die Erythemwirkung.** *Strahlentherapie* 29(4): 759-772. 13 fig. 1928.—After a discussion of the reasons for the different conclusions reached by different workers on biological effects of ultra-violet radiation, the author outlines a "model research" for studying in vitro radiation effects similar to those in living tissue. This is done by irradiating an albumin preparation with u.-v. of varying wave lengths and counting the number of coagulated particles produced, using an ultra-microscope for the purpose. The number of such particles varies with the wave length of the radiation, other factors remaining the same. This variation parallels that in the production of the skin erythema by the same rays. —*E. H. Quimby.*

12894. **RÖHR, H. O. Über die unspezifische Umstimmung der Haut nach Bestrahlung.** *Strahlentherapie* 34(1): 157-189. 1929.—The first day after appearance of erythema following irradiation with a quartz lamp, urticaria-producing substances, such as histamine, atropine, morphine, produce an effect stronger than normal. After 5-6 days they produce less than the normal effect; this lowered sensitivity lasts 15-20 days. Methods (as pressure) which blanch the normal skin fail during erythema, and for some time the blanching produced is more transient. Reddening of the skin cannot be produced during the first 3 days of erythema, it can during the next 2-6 days, and for some weeks will last longer than normal, especially after strong stimuli. Adrenalin, during the first days, considerably reduces the erythema, though the effect on the capillaries is slower than normal, and disappears sooner. A stimulus (such as irradiation) was found capable of producing either hypersensitivity or hyposensitivity to new stimuli, depending on the interval elapsed.—*W. C. Boyd.*

12895. **WICHMANN, P. Zur biologischen und therapeutischen Wirkung der leuchtenden Wärmestrahlen.** *Strahlentherapie* 28(1): 189-196. 6 fig. 1928.—To determine whether light radiant heat has indirect as well as direct biological and therapeutic effects, histological studies were made of skin treated with the heat rays of ordinary and concentrated arc light, using various filters. Indirect therapeutic effects apparently exist. Especially noticeable is a selective effect of light heat rays on pathological tissue in the cutis. It is well known that treatment of certain diseases by means of the Finsen light is more effective than by radiant heat alone or by the mercury arc, a fact which can only be explained by the large amount of light radiant heat present in the Finsen light.—*O. Glasser.*

ANIMAL PHYSIOLOGY

ELECTRICITY, X-RAY, RADIUM

(See also in B. A. 6(4): Entries 9414, 9418, 9432, 9501, 9776, 9977, 10002, 10013, 10022, 10023, 10026, 10030, 10071, 10080, 10140, 10216, 10346, 10874; and in this issue 12555, 12569, 12570, 12571, 12572, 12573, 12867, 12868, 12869, 12910, 13140, 13149, 13226, 13227, 13257, 13930)

12896. **ANDREIS, NORA. Contributo allo studio delle mitosi cellulari nei tumori maligni con particolare riguardo agli effetti dell'irradiazione sulle mitosi. [Effect of irradiation on mitosis in malignant tumors.]** [With English summary.] *Arch. Ital. Anat. e Istol. Patol.* 2(2): 369-392. 5 fig. 1931.—Histologic examination in 56 cases of malignant tumors treated by x-ray and radium indicates that the irradiation retards the karyokinetic process without restoring it to the normal type, and probably has more effect on the number than on the type of mitoses.

12897. **BROXON, JAMES W., and KARL F. MUEN-**

ZINGER. Changes in skin potentials during the psychogalvanic reflex. *Jour. Gen. Psychol.* 5(1) : 94-98. 1931.—When a static instrument is used to indicate potential difference, i.e., an arrangement which leaves the electrodes at all times in an open circuit, the psychogalvanic reflex exists and is evidenced by changes in the p. d. between the electrodes, giving deflections that are similar in character to those observed commonly with closed-circuit instruments. Changes of p. d. during response to stimulation are highly correlated with changes in resistance (real or apparent) as measured with an alternating 60-cycle current. Moisture and pressure affect the initial p. d. when solid electrodes are used.—*Authors' summary.*

12898. DORNEICH, M. Über die Frage der Verteilung der Röntgenstrahlenintensität im Körper bei Tiefentherapiebestrahlungen. I. Kritischer Rückblick und Grundsätzliches. *Strahlentherapie* 38(4) : 591-622. 4 fig. 1930.—The author, who has worked for a number of years in Dessauer's institute on the problem of the intensity distribution of x-rays within the body, or within a phantom, presents in the first section of his paper a comprehensive discussion of the measurements of intensity distribution made previously, and of the fundamental aspect of the problem. The photographic and ionization methods of intensity measurement are discussed in detail. Special attention is called to the various errors which are usually made in measurements with small ionization chambers, such as disregarding the effect of the length of the inner electrode, of the position of the chamber within the phantom, of the shadow and absorption effects of the chamber holder, of the direction effect within a small chamber, etc.—*O. Glasser.*

12899. GORDON, MURRAY B. The stimulative effect of roentgen rays upon the glands of internal secretion. A review of the literature. *Endocrinology* 14(6) : 411-437. 1930.

12900. KOTSCHNEFF, NINA, und ANNA ARAPOFF. Radonwirkung auf die Phosphorverteilung im Intermediargebiet. (Nach Versuchen an angiostomierten Hunden.) *Strahlentherapie* 36(2) : 360-367. 1 fig. 1930.—The introduction of 10-30 millicuries of radon into the blood-stream, the stomach, the intestine and the gall-bladder, of the dog during fasting or digestion reduced the inorganic P in all the vascular regions. The results of simultaneous study of arterial blood and the blood of the portal, hepatic, renal and femoral veins suggest that the very considerable decrease of P in the blood of the renal veins after introduction of radon is the main direct cause of the decrease in inorganic P of the blood at large. —*From authors' summary (transl.).*

12901. McCLENDON, J. F., and ALLAN HEMINGWAY. Variations in the polarization capacity and resistance of the skin. *Jour. Gen. Physiol.* 13(6) : 621-626. 3 fig. 1930.—The psychogalvanic reflex is due to variations in the polarization capacity and resistance in the skin, evidently in the sweat glands. This confirms Gildemeister. Densham and Wells are shown to be in error in supposing that stretching of the skin had anything to do with it. Their effects were evidently due to the stretching with consequent cracking or peeling off of collodion used to limit the area of the skin.—*J. F. McClendon.*

12902. McKINLEY, G. MURRAY, and JOHN G. McKINLEY, Jr. The vacuum tube oscillator in biology. *Quarterly Rev. Biol.* 6(3) : 322-328. 1931.—A review of the literature (26 papers cited), mostly since 1924, on the biological effect of electric waves of 1-100 m. wave length.

12903. [MOGIL'NITSKIĬ, B. N., and L. D. PODLĬASHUK.] МОГИЛЬНИЦКИЙ, Б. Н., и Л. Д. ПОДЛЯШУК. К вопросу о действии рентгеновских лучей на центральную нервную систему. II. [Action of x-rays on the central nervous system. 2.] Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1930(9) : 883-896. 3 fig. 1930.—Experiments were conducted on 50 rabbits and 2 dogs. Single irradiations of the head with large x-ray doses did not change the usual reaction of mesenchymal elements to the intravenous introduction of trypan blue and saccharated iron oxide (Fe saccharat. oxyd.). Irradiation with several medium doses resulted in some insignificant morphological changes, such as fat accumulation and proliferation of endothelium, and in chemico-physical changes such as adsorption of substances introduced during the animal's life (trypan blue and Fe) and penetrability of the mesenchymal barrier. These phenomena were observed in some cerebral regions only. The "hemato-encephalic barrier" is, apparently, formed by the vessels, brain capillaries, and mesoglia.

12904. PACKARD, CHARLES. The biological effects of short radiations. *Quarterly Rev. Biol.* 6(3) : 253-280. 1931.—A review of literature on the biological effect of x-rays and radium. 125 papers are cited in the bibliography.

12905. POMMER, ALOIS, und WALTER MÄHLING. Die Röntgen-Epilations- und Erythem-Dosis der Haut bei Hunden. *Arch. Wiss. u. Prakt. Tierheilk.* 64(1) : 35-60. 9 fig. 1931.—With 120kV, 4mÅ, 1mm. Al filter and a 50-cm. distance from the skin, the first appearance of an effect on the hairless skin was observed at a dosage of 180 r (30% of the HED.). Loosening of the hair growing on the shaved skin occurred with irradiation of 300 r (50%), and on the normal (hairy) skin with 600 r (100%). The epilation dosage on shaved skin was 420-600 r (70-100% of the HED.) and for the normal (hairy skin) 780-960 r (130-160% of the HED.). In man the epilation dosage is accepted as at 80% of the HED.

12906. WILLIAMS, M. M. D. The effect of x-rays on the potential difference across frog's skin. *Protoplasma* 9(1) : 1-8. 2 fig. 1930.—Small doses of x-rays increase the potential difference of frog's skin in proportion to the dose. Larger or lethal doses increase at first and then decrease the potential until death ensues. Small doses stimulate but large doses have the added effect of injury to the skin.—*L. S. Moyer.*

ANIMAL PHYSIOLOGY

OXIDATION AND REDUCTION

WM. MANSFIELD CLARK, *Editor*

(See also in B. A. 6(3): Entries 6515, 6549, 6554, 6906, 7115, 7151; 6(4): 9307, 9308, 9406, 9407, 9616, 10025, 10226; and in this issue 12922, 13765)

12907. COHEN, BARNETT, and PAUL W. PREISLER. Studies on oxidation-reduction. XVI. The oxazines: Nile blue, brilliant cresyl blue, methyl Capri blue, and ethyl Capri blue. [*U. S.*] *Public Helath Repts. Suppl.* 92. 1-67. 1931.—This is the first detailed potentiometric characterization of representative compounds of the oxazine class of dyes. They cover the region of electrode potentials lying approximately between the methylene blue and indigo disulfonate systems. The evidence indicates that Nile blue is an acid sulfate. Its solutions show colloid properties which affect the electrode potentials in a peculiar way. The 3 other dyes also exhibit salt and concentration effects but to a lesser degree. A notable characteristic is the ease with which these compounds react with water to form oxazones and intermediate products of oxidative hydrolysis. Moderate alkalinity and acidity accelerate such decompositions. Strictly speaking, these dyes remain intact only if kept away from water. Until more stable compounds are available the phenoxazines, cresyl blue, methyl Capri

blue and ethyl Capri blue can serve as indicators of oxidation-reduction. Their basic properties may make them desirable in cases where the acid indigo sulfonates cannot be safely employed.—*B. Cohen.*

12908. **COULTER, CALVIN B., and MOSES L. ISAACS. Oxidation-reduction equilibria in biological systems. II. Potentials of aerobic cultures of B. typhosus.** *Jour. Exp. Med.* 49(5): 711-725. 3 fig. 1929.—The reduction potentials of *B[acillus] typhosus* in culture in bouillon which is given access to atmospheric O show a negative drift that attains the values found in sterile bouillon when deaerated with nitrogen: *Eh*, −0.085 to −0.095 volt at pH 7.6. The potential reaches this level after 6-8 hrs. incubation, and is maintained at this point for several hrs. A slow decline to more negative values is then observed and continues for at least 48 hrs. when a potential of −0.145 volt may be attained. The bacteria influence the potentials in the first period of their growth by exhaustion of O from the culture, thus permitting the characteristic potential of the culture medium to become manifest, and do not contribute the substances responsible for the observed potentials. The decline in potential to values more negative than those of the culture medium occurs while the rate of dying of the bacteria approaches and exceeds the rate of multiplication; it is suggested that dissolution of bacteria liberates reductive substances. Cultures in 0.5% dextrose medium show a somewhat more negative potential after 18 hrs. growth than cultures in medium without dextrose. This may be due to the more rapid "turn-over" of the bacteria and the liberation of larger amounts of reductive material from dissolution of larger numbers of bacteria. The potential of cultures through which O is passed continuously does not show a negative drift at any time. This indicates that reductive substances of bacterial origin in the case at least of the typhoid bacillus do not influence the electrode potentials in the presence of O and confirms the importance of bacterial respiration as the means for the removal of O and the consequent establishment of characteristic reduction potentials in cultures.—*Authors' summary.*

12909. **ELEMA, B. Studies on the oxidation-reduction of pyocyanine. Part 2. Redox potentials of pyocyanine.** *Rec. Trav. Chim. Pays-Bas* 50(7/8): 807-826. 5 fig. 1931.—The oxidation-reduction potentials of pyocyanine were determined in the range of pH 1.3-11.5. In the more physiological pH region (6-9) the potentials were between those of methylene blue and indigo trisulphonate. Below pH 6 the reduction of the pigment has peculiar features. There is a remarkable colour change (red—green—colourless) during reduction. Moreover, the relation between *Eh* and % reduction indicates that reduction occurs in 2 steps each involving 1 electron. This abnormal behaviour is due to the formation of a half-way reductant which is not a meriquinone, but is a free organic radical.—*From author's summary.*

12910. **LUND, E. J., and JAMES B. MOORMAN. Electric polarity and velocity of cell oxidation as functions of temperature.** *Jour. Exp. Zool.* 60(2): 249-265. 1931.—The rate of O consumption and magnitude of the potential difference (P.D.) of different frog skins under constant conditions are independent variables. In the experiments reported the rates of oxidation in the different frog skins per gm. per hr. were practically the same. When several of frog skins are subjected alternately to different constant temp. for 3-hr. periods, the average Q_{10} of the observed P.D. is approximately 2.0 for the temp. range between 16.4° and 26.4° C. This large Q_{10} of E.M.F. cannot be accounted for on the basis of any of the common theories of the origin of bioelectric potentials which depend for their interpretation on the existence of differences in concentration of ions under ordinary conditions of stable equilibrium nor on simple diffusion potentials. The flux-equilibrium concept applied to an oriented oxidation-reduction system in the cell does account for the results. The E.M.F.'s of the frog skin and other similar systems exhibiting electrical polarity are measurable as E.M.F.'s of systems in the condition of flux of chemical processes (oxidations), and are not as systems in the condition of perfect reversibility. When the skin is subjected to temp. which are being alternately raised and lowered, there is a time lag between the change in direction of the drift in temp. and the change in direction of the drift in P.D. The details of these findings can be understood in terms of the flux equilibrium of the oxidation-reduction systems of the living cells in which the electric polarity resides.—*Authors (courtesy Wistar Bibl. Serv.).*

12911. **REISS, P. Les potentiels d'arrêt dans la division des oeufs d'oursin et de Sabellaria.** *Arch. Phys. Biol.* 8(1): 39-48. 1930.—By adding various oxidizing and reducing agents to sea water, the effect of different potential levels on the development of the eggs of *Paracentrotus* and *Sabellaria* was studied. Above about 700 mv. and below 200 mv. no development occurs.—*F. Bernheim.*

12912. **RONA, P., J. A. PARFENTJEV, und H. LIPPMANN. Die Oxydationskatalysatoren der Insekten.** *Biochem. Zeitschr.* 223(1/3): 205-212. 1930.—The ash of *Periplaneta americana*, of *Carabus nemoralis*, and of silkworm eggs was analyzed and the actions of the total ash and its fractions tested on cysteine oxidation. The cockroaches contained 0.03 mgm. Fe, 0.0075-0.008 mgm. Cu, 2.5 mgm. P, 0.11-0.13 mgm. Mg, and no Mn; the silkworm eggs 0.006 mgm. Cu and 0.042 mgm. Fe; Si was found in the front wings of *C. nemoralis;* traces of Pb were found in the cockroaches. The actions of the various fractions were tested on 3 mgm. cysteine-HCl and 2.66 mgm. Na pyrophosphate in a manometer. Cu played an important, if not an exclusive, rôle in oxidation. Apparently Fe, perhaps also Pb, participated.

12913. **SCHÖBERL, A. Cystein und Glutathion als Antikatalysatoren bei Oxydationen mit molekularem Sauerstoff.** *Ber. Deutsch. Chem. Ges.* 64(3): 546-561. 1931.—A study of the function of glutathion in the oxydation by O_2 of leuco methylene blue in acetic acid solution with cupriacetate as catalyst. H_2O_2 formation was shown. Addition of Mohr's salt reduced O_2 absorption. A possible rôle of Cu and Fe in oxidations by O_2 is suggested. Cystein, cysteinhydrochloride, and glutathion may hinder O_2 absorption by leuco methylene blue solutions completely (anticatalysts). The extent of inhibition depends on the concentration of the SH-groups. The H_2O_2 causes inactivation of the anticatalysts which are oxidized to the corresponding disulphides; cystin has but weak effect. Inhibition by SH-compounds possibly is due to formation of complexes with those Cu-ions which function in O_2 transport.—*A. Schöberl (transl. by H. T. Gebhardt).*

ANIMAL PHYSIOLOGY

BIOCHEMICAL, BIOPHYSICAL AND PHYSIOLOGICAL METHODS AND APPARATUS

C. H. FISKE, *Editor,* Biochemical and Biophysical

S. E. POND, *Editor,* Physiological

(See also in this issue Entries 12113, 12117, 12123, 12702, 12796, 12843, 12890, 12907, 12913, 12942, 12943, 12955, 12958, 12960, 12970, 13015, 13040, 13065, 13082, 13092, 13113, 13198, 13247, 13289, 13437, 13772, 13798, 13811, 14405, 14409)

BIOCHEMICAL AND BIOPHYSICAL

12914. **COFFIN, C. C. Some new physico-chemical apparatus.** *Canadian Jour. Res.* 4(5): 540-543. 2 fig. 1931.—Detailed description of the "Volumestat," an apparatus for automatically maintaining a constant volume and registering its pressure, shown connected to a gas thermometer; and of a combined gas heater and thermoregulator.

12915. **GRANT, JULIUS. The measurement of hydrogen ion concentration.** 159p. Illus. Longmans, Green & Co.: New York, 1930.

12916. **HAUGE, SIGFRED M. The Van Slyke method for protein analysis as affected by fats.** *Jour. Amer. Chem. Soc.* 53(8): 3049-3052. 1931.—The method for protein analysis is affected by the presence of fat. The reactive constituent of the fat molecule is glycerol; fatty acids such as stearic acid, representing the saturated group, and oleic acid representing the unsaturated groups, are without effect. The significant effects produced by fat or glycerol are: an increase in the acid-soluble humin, in the phosphotungstic acid humin, and in the nonamino nitrogen, and a decrease in the amino nitrogen and arginine values. Carnauba wax, which is not a glyceride, had little, if any, effect on the Van Slyke method.—*Author's summary.*

12917. **KLEINMANN, HANS. Neuerungen in der Nephelometerapparatur, insbesondere über die Trübungsmessung steriler Systeme. [Improvements in the nephelometer, particularly in the measurement of turbidity in sterile systems.]** *Biochem. Zeitschr.* 234(1/4): 25-38. 1931.

12918. **KOK, J. A. FILEDT. Micro chloride determination in blood.** *Arch. Néerland. Phys. Homme et Animaux, Ser. SC.* 16(1): 132-135. 1931.—A modification of Votoček's method. A dilution of blood is deproteinized, some sodium nitroprusside is added, and $N/10$ $Hg(NO_3)_2$ is added until slight turbidity appears (due to the precipitation of mercury nitroprusside upon the exhaustion of the Cl ions originally present). Complete removal of protein is essential; 5 common deproteinizing agents are compared. Alcohol and Zn acetate preparation is unsuitable because Zn reacts with the nitroprusside; kaolin contains Cl, as do commercial and oxydum ferricum dialysatum; sulphosalicylic acid is free from these defects and gives complete removal of protein. Slight turbidity was detected by use of an electric beam.

12919. **LOTTRUP, M. C. Om Mikrometri af de røde Blodlegemer. [Micrometric estimation of the red blood cells.]** *Hospitalstidende* 72(19): 513-517. 1929.—When using the method of Bentzen and Gram it is necessary to determine the red blood cells and to make control determinations on normal individuals also; otherwise the results may be erroneous, even if the test has been done with the necessary exactness.—*K. C. Berthelsen.*

12920. **MACH, F., und W. LEPPER. Über die Verwendung von Kupfersulfat statt Quecksilber beim Aufschluss nach Kjeldahl.** *Landw. Versuchs-Stationen* 109 (5/6): 363-366. 1909.—The Kjeldahl digestion of foodstuffs is completed in the same time by the use of $CuSO_4$ and K_2SO_4 as with metallic Hg or $HgSO_4$. The K_2SO_4 can all be added at once at the start, since it is desirable to heat at first with a small flame to avoid loss of N by violent evolution of gas (especially with large samples). The distillation is carried out with NaOH; addition of Zn is to be avoided when the alkali contains nitrate. Graphite dust is recommended to prevent bumping, though this is seldom needed. On account of several advantages of the $CuSO_4$, we recommend that the method as it has been used be altered in accordance with wider studies.—*From author's summary (transl. by M. H. Keith).*

12921. **MARENZI, AGUSTIN D. La determinación colorimétrica de los fenoles de la orina. [Colorimetric determination of phenols in urine.]** *Rev. Soc. Argentina Biol.* 7(1): 13-25. 1931.—Theis and Benedict's method modified so as to adapt it to urine analysis. Folin and Denis and Goiffon and Nepveu's methods give figures that are too high.—*J. T. Lewis.*

12922. **MASON, HAROLD L. A study of glutathione. 2. The determination of reduced glutathione in tissues.** *Jour. Biol. Chem.* 86(2): 623-634. 1930.—Glutathione is allowed to reduce ferricyanide at pH 5.9 and the resulting ferrocyanide is estimated colorimetrically as Prussian blue. Cysteine is used as a standard. Reducing substances other than glutathione are estimated by repeating the procedure with addition of 0.5 cc. of 40 per cent formaldehyde which prevents oxidation of reduced glutathione (GSH) and permits calculation of GSH by difference. This method gives lower values than titration with iodine. It is more specific for GSH.—*H. L. Mason.*

12923. **MAYER, K. Ein neues Titrierkolorimeter. [A new titrating colorimeter.]** *Biochem. Zeitschr.* 231 (4/6): 314-316. 1 fig. 1931.

12924. **MENEGHETTI, E. Determinazione dell'argento negli organi e nei liquidi organici. [Determination of Ag in organs and body fluids.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 813-814. 1930.

12925. **MOUNIER, P. (préface de L. BÉTHOUX.) Parvianalyse clinique des urines et des autres liquides de l'organisme. Techniques, sémiologie, interprétations.** 441p., 33 fig. Norbert Maloine: Paris, 1931.—The term "Parvianalyse" (parvus, small) is used in preference to semi-microanalysis to designate "the biochemical analyses made upon small quantities of products: biological liquids and reagents." The methods are designed to meet the needs of biochemists, physicians, laboratory technicians and others who lack the expensive equipment and special reagents used in microanalysis. Only 1-2 cc. of the liquid is necessary for a determination. Expensive equipment and delicate technique are eliminated. Although the book deals chiefly with urine analysis, consideration is given to other biological fluids: blood, feces, spinal fluid, etc. It is divided into 3 parts: general considerations, including descriptions of apparatus and reagents; methods and symptomatology, which contains microscopic and chemical methods for the analysis of normal and abnormal urine, and other biological liquids; and clinical interpretations of the results. In addition to many of the familiar quantitative clinical methods, there appear numerous others; some are original. The abnormal constituents of the urine and the interpretation of the results are discussed in detail.—*R. A. Greene.*

12926. **MÜHLBOCK, O., und C. KAUFMANN. Die gravimetrische Cholesterinbestimmung im Blut und Serum.** *Biochem. Zeitschr.* 233(1/3): 222-235. 1931.—After alcohol-ether extraction, removal of impurities, and precipitation of the free cholesterol in blood and serum, the filtrate of the cholesterol-digitonin precipitation was used directly for determination of cholesterol ester. Checked against colorimetric methods the gravimetric was much more exact, Bloor's colorimetric giving 76%, and Myers' 38% higher values.

12927. OWEN, SEWARD E. An electrical drop counter. *Science* 74(1905): 19-20. 1 fig. 1931.—An apparatus is described for recording such fluids as urine, saliva, bile, pancreatic and other secretions. A 22½ volt radio dry cell gives a suitable voltage supply.

12928. RAJEWSKY, B. Eine neue Messanordnung für kleinste Lichtintensitäten. [A new apparatus for measuring very small intensities of light.] *Strahlentherapie* 39(1): 194-200. 1 fig. 1930.

12929. RANGANATHAN, S. Note on the use of ammonium molybdate in Kuttner and Cohen's method of microestimation of phosphates. *Indian Jour. Med. Res.* 18(1): 109-115. 1930.—Kuttner and Cohen's method is modified by substituting the more common ammonium molybdate for the relatively rare Na molybdate.

12930. SAUNDERS, FELIX. A micro hydrogen electrode. *Jour. Amer. Chem. Soc.* 53(6): 2180. 1931.—The tip of an ordinary Pt hypodermic needle is cut off, and the needle threaded for about 5 mm. on the outside. A shield made of Pt screws on the needle over the tip. A length of copper wire is soldered to the side of the nub of the needle, leaving room enough at the end to attach a rubber tube for the H. The electrode and cap are insulated with bakelite paint, and the electrode platinized on the inside.

12931. SCHWARZACHER, W. Nachweis von Metallspuren im organischen Gewebe. [Detection of traces of metals in tissue.] *Naturwiss.* 19(9): 213. 1931.

12932. SPIEGLER, RUDOLF. Die Elektro-ultra-filtration, eine Methode zur Bestimmung der physikalischen Zustandsart der Minerale im Serum. [Electric ultrafiltration, a method of determining the physical condition of minerals in serum.] *Biochem. Zeitschr.* 230(4/6): 253-258. 2 fig. 1931.

12933. TATE, FRANCIS G. H. (Historical introduction by the author in collab. with GEORGE H. GABB.) Alcoholometry. An account of the British method of alcoholic strength determination. xviii+93pp. illus. His Majesty's Stationery Office: England. 1930. Pr. 5s.

12934. TEORELL, TORSTEN. Spektrophotometrische Mikrobestimmung des Phosphors. *Biochem. Zeitschr.* 230(1/3): 1-9. 1931.—The Fiske-Subbarow colorimetric method for P determination is somewhat modified and the color determined with the spectrophotometer. Thereby, without use of a standard, 0.01-0.05 mgm. P in organic matter could be determined with an accuracy of about ±2%.—*From author's summary (transl.).*

12935. WEISSBERG, BERTHOLD. Zur Kritik der Bestimmung des in der sogenannten Oxyproteinsäure-Fraktion des Harnes enthaltenen Stickstoffs. [Determination of N in the so-called oxyproteic acid fraction of urine.] *Biochem. Zeitschr.* 233(1/3): 113-117. 1931.

12936. WIDMARK, G., und B. VAHLQUIST. Zur Mikrobestimmung von Calcium und Phosphor im Blute und in Geweben. *Biochem. Zeitschr.* 230(4/6): 245-252. 1931.—A simplification of the oxidimetric microdetermination of Ca and of the alkalimetric microdetermination of P is described. New in each instance is a better method of removing the oxalate and molybdate precipitates by microfilter rods. In 2 cc. plasma, Ca can be determined with only 2-3% error, phosphatides in 1 cc. plasma and soluble P in 2 cc. plasma with an accuracy of 1%. In tissue analysis, amts. containing 0.2-0.3 mgm. Ca and 0.05-0.1 mg. P are necessary.—*From authors' summary (transl.).*

12937. WOLF, P. M., und N. RIEHL. Über einen neuen, sehr einfachen Apparat zur Erzeugung von Radiumemanation (Radon). [A new, simple apparatus for generating radium emanation.] *Strahlentherapie* 40(1): 159-173. 6 fig. 1931.

ANIMAL PHYSIOLOGY

BLOOD AND BODY FLUIDS

V. C. MYERS, *Editor*

FRANKLIN C. BING, *Assistant Editor*

(See also in this issue Entries 12591, 12918, 12919, 12926, 12932, 12936, 13000, 13002, 13017, 13026, 13038, 13059, 13084, 13095, 13100, 13101, 13270, 13272, 13287, 13293, 13311, 13330, 13349, 13417, 13426, 13437, 13439, 13454, 13468, 13474, 13476, 13477, 13485, 13503, 13514, 13533, 13534, 13541, 13548, 13554, 13557, 13563, 14304, 14348)

12938. ALTMANN, FRANZ. Das Verhalten der glykämischen Reaktion nach hohen, langdauernden Luftverdünnungen. *Zeitschr. Klin. Med.* 114(4/5): 642-661. 1930.—Blood sugar curves were made on 10 rabbits given glucose intravenously and by mouth. After 1 to 2 days in atmosphere corresponding to altitude 5000 to 8000 m., the animals were given glucose as before and the blood sugar curves repeated. The curves showed lower peaks with (in cases of peroral administration) a shift to the right. This effect is explained by a sympathetic hypotonia due to a rise in blood pH. Addison's disease, which gives a sympathetic atonia, and mountain sickness show very similar symptoms.—*Author's summary (transl. by C. M. Goss).*

12939. BÁLINT, RUDOLF. Über die Wasserstoffionenkonzentration des Blutes und des Harnes bei Gesunden und Kranken. *Zeitschr. Ges. Exp. Med.* 64(1/2): 288-294. 1929.—A defense of the indicator method of determining the pH of the blood in answer to the criticism of Kaltstein and Erdey-Gruz (*Biol. Abstr.* 4(3): 8370. 1930).—*R. Isaacs.*

12940. BARCROFT, JOSEPH, (with remarks by M. NICLOUX, P. PORTIER, and P. GIRARD). L'hémoglobine et son rôle biologique. *Réunion Plénière Soc. Biol.* 25-26 Mai 1928. 3-28. 14 fig. 1928.—The present review aims to demonstrate the relation between the biologically significant properties of hemoglobin, on one hand, and what is known of its physical and chemical properties, on the other. The various characteristics treated are: (1) The ability of hemoglobin to combine with O in proportions which depend on the partial pressure of the gas; a discussion of the structural chemistry of the blood pigment and related substances. (2) The buffer action of hemoglobin, whereby the blood is able to transport large quantities of CO_2 with only slight changes in the partial pressure of the gas. (3) Its high solubility in relation to the transport of large quantities of O to the tissues. (4) Adaptation of the O affinities of the blood pigments of different varieties of animals to their O requirements. This is effected by (a) specific hemoglobins, (b) variation in the environmental conditions (pH, salt concentrations, temperature) in which the hemoglobin acts. (5) Adaptation of the hemoglobin—in particular, the temp. coefficient of its equilibrium constant—to alterations in the external environment resulting from temp. differences. (6) O exchange between blood and tissues or lungs, as affected by the relation between intracellular pH and that of the plasma. An extensive bibliography is included.—*F. Hollander.*

12941. BARER, ADELAIDE P. A study of glycolysis. *Jour. Clin. Investigation* 10(3): 507-520. 1931.—A study of the rate of glycolysis in bloods from 80 patients with different diseases is presented. There is no correlation between age or sex and rate. The rate is markedly influenced by temp. Glycolytic studies should be performed at 37° C.,—the optimum for the disappearance of sugar from blood in vitro. Citrates and oxalates, when used as anticoagulants, retard glycolysis in drawn blood in proportion to the concentration. Fluorides

arrest glycolysis. Defibrination or heparinization does not interfere with the rate of glycolysis, and blood so treated should be used for glycolytic studies. The rate bears no relation to the initial glucose content of the blood. Glycolysis in vitro is not affected by insulin. Both erythrocytes and leucocytes are responsible for the glycolytic power of blood, and their number, type, age, and physiological integrity are important.—*From author's summary.*

12942. **BARRAL, ET., et PH. BARRAL. Précis d'analyse biologique clinique. II.** Sang. 2nd ed. 424p. 2 col. pl., 95 fig. J. B. Baillière et Fils: Paris, 1931. Pr. 40 fr.—The first half of this book contains a general discussion of the physical properties of blood. Hemoglobin and related pigments, regulation of pH, and alkaline reserve are well discussed. Normal and pathological variations of the above are described. The 2nd part is a laboratory guide, giving the directions for quantitative determinations of blood constituents and a brief discussion of the normal and pathological significance of each. Analytical methods described are mostly European although some American methods are given. Methods for practically all constituents of blood are included.—*M. R. Freeland.*

12943. **BECK, A., und H. J. LAUBER. Zur Frage der aktuellen Reaktion von Körperflüssigkeiten (Gelenkexsudaten, Sekreten, usw.).** *Arch. Klin. Chir.* 155(3): 469-485. 2 fig. 1929.—The present methods for the determination of the actual reaction of body fluids (synovial fluid, secretions, pus, spinal fluid, etc.), are discussed. The results of their measurements carried out on 43 cases, avoiding the errors previously existing in the methods, are given. The abnormal reaction for the seminal fluid is far on the acid side. In general, the regularity, as established by Schlade, holds true with the CO_2 tension and the reaction for each degree of inflammation. It is pointed out however, that in many cases the determination of these changes is not always suitable for clinical and prognostic use. A discussion of the difficulty experienced in measuring the actual reaction of fluids from open wounds and in the first stages of inflammation is given. An attempt is made to explain the favorable action of doses of acids and alkalies on the processes of inflammation and healing in a wound. —*J. E. Andes.*

12944. **BECKER, S. Über die Veränderung des Jodgehalts im Blut unter dem Einfluss der Schlammbehandlung.** *Zentralbl. Gynäkol.* 55(26): 2045-2046. 1931.—Mud (9-10 kgm. at 50°) containing 0.1, 1, 2, and 3% KI or NaI was placed on the abdomen of ♀ patients and mud without I in vagina for 20 min. daily for 15 days. There was no change in I content in saliva or urine; I in the blood decreased after 2 hrs., returning to normal at end of 24 hrs. This decrease was not due to the I content of the mud, since it occurred when mud free of I or loam was used; the author attributes it to an inhibitory action on the thyroid.

12945. **BOSMAN, LOUIS PIERRE, and HARRY ZWARENSTEIN. The effect of temperature on the carbohydrate tolerance in Xenopus laevis (South African clawed toad).** *Quart. Jour. Exp. Physiol.* 20(3): 231-243. 1930.—The normal blood sugar level at 20° C. is 44 mgm. %. Higher values were obtained at 5° C. and 10° C. Injection of glucose solution causes a rise and return to normal of the blood sugar which varies according to the temp.—*W. C. Russell.*

12946. **CAREDDU, G. Variazioni del pH e del contenuto di fosforo inorganico nel siero irradiato con raggi ultravioletti. [Variations of pH and inorganic P of serum irradiated by U. V. rays.]** *Biochim. e Terapia. Sperim.* 18(4): 109-115. 1931.—Following irradiation an increase of inorganic P content and an increase of pH values were shown by blood serum in vitro. In some samples of serum no variation of either followed irradiation; a relation between P content and pH value is therefore suggested.—*M. Comel.*

12947. **DAKIN, W. J. The composition of the blood of aquatic animals and its bearings upon the possible conditions of origin of the vertebrates.** *Nature [London]* 128(3219): 66-67. 1931.—Comparative and experimental physiology gives little support to the view that the regulated blood salinities of the vertebrates represent the salinity of the media in which their ancestors evolved that constancy. We can only accept the universal saline composition of the blood of the metazoa as a possible reflection of a long continued existence and probable origin in a saline medium.

12948. **DALLA VOLTA, AMEDEO. La reazione cloroemoglobinica nei tessuti del cadavere. [The chlorohemoglobin reaction in cadavers.]** *Boll. Soc. Ital. Biol. Sperim.* 3(1): 37-40. 1928.—Subcutaneous (or deeper) injection of a saturated aqueous solution of hydroxylamine sulfate or hydrochloride into cadavers gives a characteristic green coloration if gaseous putrefaction has started. This coloration is particularly rapid and intense if the injection is preceded by injection of a reducing agent, such as a saturated aqueous solution of $Na_2S_2O_4$.

12949. **DESCHWANDEN, J. von. Der Glutathiongehalt des Blutes im Hochgebirge und bei Bestrahlung mit natürlicher Höhensonne.** *Strahlentherapie* 39(2): 278-282. 1930.—The glutathione content of an unstated number of rabbits (10 wks. at 1360 m. above sea level; shaved before exposure) was determined before exposure and immediately and 1 hr. after irradiation. Before exposure the glutathione of the erythrocytes was increased; after 1 hr. in the sun it decreased. The author concludes that the specific respiratory function of the blood and of the erythrocytes is increased at this elevation and apparently decreased by irradiation.

12950. **DEZANI, SERAFINO. Il tenore in solfo totale del sangue umano. [Total S content of human blood.]** *Biochim. e Terapia. Sperim.* 18(1): 34-37. 1931.—The total S of blood in healthy subjects was: minimal, 1.648 gm. per liter blood; maximal, 2.314 gm.; average, 1.928 gm.—*M. Comel.*

12951. **EISNER, GEORG, und FRITZ LEWY. Über die Aufnahmefähigkeit roter Blutkörperchen für Lävulose.** *Biochem. Zeitschr.* 202(1/3): 91-98. 1928.—The authors obtain values for the amount of glucose taken up by red blood cells comparable to those previously obtained by O. Loewi. Levulose is taken up in such small amounts as to make its absorption questionable. The effect which insulin has in increasing the capacity of red cells to take up sugar is also questionable. The results are in agreement with the concept that the rôle of levulose in metabolism is different from that of glucose.—*J. M. Johlin.*

12952. **ENGELHARDT, W. A., und M. LJUBIMOWA. Glykolyse und Phosphorsäureumsatz in den Blutzellen verschiedener Tiere.** *Biochem. Zeitschr.* 227(1/3): 6-15. 1930.—The following are listed according to the intensity of phosphoric acid splitting in their erythrocytes:—cow, goat, horse, dog, pig, man, guinea pig, rabbit, corresponding except in the case of the pig to the organic P content. The following are listed according to the glycolytic capacity of their corpuscles—cow, goat, dog, horse, guinea pig, man, rabbit. This order agrees with that above omitting the pig whose corpuscles show no glycolytic power. The quotient

$$\frac{\text{mols of combined phosphoric acid}}{\text{mols of vanished sugar}}$$

is 0.2 to 0.3 for goats, cows, and horses, varying between 0.5 to 1.0 for dogs, man, guinea pigs and rabbits.—*E. Hyde.*

12953. **FABER, FRANS. Undersøgelser over Serumkalken og Serumfosforet i Barnet's førs te Leveaar. [Serum calcium and phosphorus in young children.]** 295p. Nielsen and Lydiche: Copenhagen, 1928.—A monograph dealing with a series of 123 children in which serum Ca and P were determined, under as far as possible the same conditions, in normal children and children with tetany and rickets. The effect of various therapeutic measures as salts of Ca and P, cod liver oil, parathyroid extract, and heliotherapy on the level of the serum Ca and P was studied both in the normal and the pathological children. The results are in general

agreement with those previously reported. In addition new work was done on normal children, and it was found that cod liver oil and heliotherapy increase the Ca content of the serum, which, however, later falls gradually to a normal level in spite of continued treatment. The serum P cannot be influenced by cod liver oil in normal children, while heliotherapy may cause a hyperphosphatemia. The methods employed are described in detail, and there is a review of the literature regarding the normal and abnormal amount of serum Ca and P in children and the various factors that may influence it, as medication and heliotherapy, both in man and animals. The material is well summarized (pp. 146-152) and amply illustrated with charts and tables. Detailed case reports fill 137 pages.—*G. L. Muller.*

12954. **FARKAS, G. v., und B. GRÓAK.** Über die elektrostatischen Eigenschaften des menschlichen Fibrinogens. *Zeitschr. Ges. Exp. Med.* 66(5/6): 596-613. 1929.—The precipitation optimum of fibrinogen varies according to the method of isolation and the buffer system employed. The use of half saturated NaCl and an acetate buffer results in an optimum precipitation at pH 4.8 (4.6) and at a second pH 5.6 (5.8). With a citrate-phosphate mixture it lies between 3.8 and 4.1. With the use of 27% $(NH_4)_2SO_4$ neither the acetate nor the citrate-phosphate buffer showed a precipitation optimum. There were, however, precipitation zones beginning on the alkaline side at pH 4.0-4.6 and extending into the more acid range. After 2 to 3 weeks in the ice chest, the precipitation optimum at pH 5.6 disappeared. A diminished electrolyte content accelerates this disappearance. The dual precipitation optimum is due to the presence of two different albumins which can be completely separated by precipitation at the isoelectric points in the presence of the acetate buffer. Both are capable of clot formation and exhibit an individual optimum. Dialysis causes denaturation.—*J. M. Johlin.*

12955. **FEULGEN, R., K. IMHÄUSER, und M. BEHRENS.** Zur Kenntnis des Plasmalogens. 1. Eigenschaften des Plasmalogens, Darstellung und Natur des Plasmals. *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 180 (4/6): 161-179. 1929.—Plasmal was obtained from animal tissues as plasmalogen by treatment with HCl or $HgCl_2$. It is lipoidal in nature and has aldehyde reactions. Plasmalogen is associated with phospholipids after extraction of the tissue with H_2O and ethyl alcohol. The two are difficultly separated but the plasmalogen was shown not to be a phospholipid. Plasmal may be easily separated by saponification of the phospholipid and is a mixture of the higher fatty aldehydes.—*M. E. Turner.*

12956. **FORSGREN, ERIK.** 24-Stunden-Variationen des Reststickstoffgehaltes im Blute. *Acta Med. Scandinavica* 73(3): 213-223. 1 fig. 1930.—The residual N of the blood varies considerably in 24 hrs. without showing any characteristic relationship to the time of eating. The residual N may be highest in the morning, therefore there is no object in making this determination before the patient has had breakfast. The usual limits in renal insufficiency are 56 and 83 mgm. % while in a normal individual they are 26 and 45 mgm. %. Values may be obtained in azotemia approaching 40 mgm. %, while the upper limit of a sound individual may be exceeded. Because of this overlapping the greatest care should be used in interpreting individual results. These variations may be ascribed to rhythmical liver function.—*J. M. Johlin.*

12957. **FRANZA, R.** Influenza della leucocitosi sperimentale sulla produzione di ambocettori emolitici. *Boll. Soc. Ital. Biol. Sper.* 3(6): 714-719. 1928.—The author produced a marked leukocytosis of some duration in rabbits by the daily administration of nucleic acid, nucleinate of soda, and NaI. These animals were then subjected to injections of red blood cells of cows. A notable increase of specific hemolysins was noted as compared with control animals. The author attributes the increase in the hemolysins to the excitation of the hema- and lymphopoietic organs by nucleic acid, nucleinate of soda and NaI and to the functional hyperactivity of these tissues due to the action of the same drugs.—*R. Franza (transl. by J. DeCarlo).*

12958. **GÄRTNER, ST., und L. KOSTYÁL.** Zur Theorie der Kolloidreaktionen. I und II. *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(5): 648-663; 664-672. 1930.—I. The protein of the cerebrospinal fluid was precipitated with ethyl alcohol in varying concentrations (80, 70, 60, 50, 40%) and the transmission of light through the resulting turbid solutions was measured with the Pulfrich photometer (using the Belák-Gärtner serum protein stability method for the fluid). From the calculated extinction coefficient, the mass of the precipitated protein was ascertained. By a similar method it was possible to determine the total proteins of the fluid (cf. earlier papers). Numerous calculations become possible on each chosen alcohol concentration. This makes it possible to obtain the protein quotient (globulin-albumin ratio). The protein quotients calculated for the 50 and 60% alcohol precipitation were 2.66-0.353 for fluids from normal subjects, and about the same (2.66-0.512) for fluids from paralytics. The precipitated total protein value for paralytics amounted to many times that of the normal. There is in paralysis, an equivalent protein increase to be considered. In exudative-transudative processes (Meningitis basilaris tbc., Paralysis postdiphtheritica, Poliomyelitis ant. acuta) the protein quotient is very high (7.34-10.18 and 1.50-1.70). It is concluded that in these diseases the protein increase consists chiefly of the finely dispersed albumin phase. The increase in the globulin—though absolute—is relatively low. The colloid reactions (gold sol and mastic) stand in strict accord with the qualitative and quantitative protein relationships. The albumin and globulin display an antagonistic action; the colloids are precipitated by the globulin while being protected by the albumin. In the case of normal protein quotient and an absolute but equivalent protein increase, one obtains a strong displacement of the colloid curve toward the left (Paralysis type). When the protein quotient is high, where the albumin shows a strong absolute and relative increase, and the globulin shows an absolute but not a relative increase, then a colloid curve is obtained which has a displacement toward the right characterized by a maximum precipitation only at the greater dilutions (Meningitis type). The changes in the electrolyte concentration and the salt content have an influence upon the course of the colloid curve. These exert their effects indirectly, as a result of the physico-chemical changes in the protein bodies.—II. The albumin obtained by dialysis of blood serum exhibited a protective action on the colloidal solutions, the globulin a precipitating action. In low concentration, the albumin also displayed a weak precipitating action. The cerebrospinal fluid in paralytics changes to the albumin state in the meningeal type, the meningitic fluids to the globulin state in the paralytic type. Ammonia increased the protein quotient and compressed therewith the colloid curve. Urea and chloral hydrate had no significant influence on the colloid reactions. After dilution of the cerebrospinal fluid of a meningitic patient with that from a normal subject, the colloid curve in half the cases may be compressed stepwise (Goebel); in the other half, they change over into the paralytic type, in which the changed colloid equilibrium stands in best agreement with changes in the protein quotient. Sera with different protein quotients gave, on dilution—in spite of equal protein content—different types of curves. Tubercular serum, diluted, gave a paralytic colloid curve; typhoid, on the contrary, gave a meningitic curve. The basis for this phenomenon is to be found in the protein quotients of the undiluted sera. Under the influence of u.-v. light the protein bodies of the fluids exhibited a change of state characterized by an increase in the hydrophilic phase (albumin) at the expense of the hydrophobic phase (globulin). Correspondingly the protein quotient increased considerably. The colloid curve, after the irradiation, as a result of

the increased protective action, flattened out considerably, in fact, showed entirely normal relationships. Also, the stability reactions of the formerly strongly positive fluids decreased to a low value, or became definitely negative.—*Authors' summaries (transl. by D. R. Briggs).*

12959. **HAMAZAKI, YUKIO, und MASATOSHI HAYAKAWA. Ueber Veränderungen der Milzflecke durch die Entmilzung.** (Japanese.) *Okayama Iggakkwai Zasshi* 39(9): 1927.—In an earlier study the author showed that the "spleen spots" of the greater omentum indicate a spleen-like structure, and that the histiocytes of the spleen spots belong to the reticulo-endothelial system. In the present study the author investigates the changes in the spleen spots in young rats after removal of the spleen. From the 20th day after operation until about the 100th the Fe content of the spleen spots increases. In 50 days the histiocytes assemble here and there to form giant cells, which contain large masses of hemosiderin. In later stages the compensatory function of the spleen spots in rats which have had the spleen removed appears to exceed that of the liver. In histologic alterations the spleen spots show marked individual differences, as in the liver. In the initial stages increase of histiocytes usually occurs, and in the middle stage hypertrophy and new formation of spleen spots, as well as accumulation of lymphocytes. It is noteworthy that in the late stage the nodular formation of lymphadenoid tissue in the inner zone and the increase of lattice fibers constitutes a morphologic as well as a functional compensatory reaction to extirpation of the spleen.—*A. Mori (courtesy Japanese Jour. Zool.)*

12960. **HAMSIK, ANTONÍN. Prosthetická skupina barviva krevního. [Prosthetic group of hemoglobin.]** *Spisy Lékařské Fak. Masarykovy Univ. Brno (Publ. Fac. Med. Brno.)* 6(54): 1-8. 1928.—Two procedures are described for preparing oxyhemin and chlorhemin. Oxyhemin may be obtained in 2 types which differ in crystalline form. One of these may be converted to protoporphyrin while the other yields another porphyrin. Reference to the original must be made for details of preparation.—*D. B. Dill.*

12961. **HEISSMEYER, KURT. Untersuchungen über die Veränderung des in Körperhöhlen ergossenen Blutes.** *Deutsche Zeitschr. Chir.* 231(2/4): 227-236. 1931.—Blood from the carotid of other rabbits was injected into the abdomen in an unstated number of rabbits, 10 cc. being retained for analysis; from time to time samples were removed by laparotomy. The O deficit, the O total capacity, Hb, and erythrocytes dropped abruptly during the first hour, had disappeared at about the 6th; the leucocytes dropped at first, rose abruptly at the 4th hour, and were still higher at the 6th; the lymphocytes and monocytes decreased, polynuclear leucocytes increased, transitional forms and eosinophiles showed little change. The blood reduction value sank slightly, the lactic acid slightly more, being ⅔ the initial value at 6 hrs.; methylglyoxal also sank distinctly. The decrease in glycolytic action the author attributed to an increasing absorption, not to injury, of the ferment.

12962. **HENDERSON, L. J. "Le sang" système physico-chimique. Traduit de l'anglais, C. VAN CAULAERT, et A. ROCHE.** Preface, **D'OCAGNE.** viii+ 298p. Les Presses Universitaires de France: Paris, 1931. Pr. 80 fr.

12963. **JOSAM, HANS. Über den Einfluss der Ovarien auf die Blutbildung.** *Zeitschr. Klin. Med.* 107(1/2): 151-161. 1928.—Studies were made of the hemoglobin, red and white cells, serum albumin, O absorption, and blood smears in dogs before and after ovariectomy, and in ovariectomized dogs after administration of ovarian extracts. Immediately after the operation there is a marked leucocytosis which soon subsides; this is due to the anesthesia and operation and not to ovarian extirpation. As indicated by an appearance of young red cells and an increased O absorption, removal of the ovaries stimulates the bone marrow. Castration does not produce a marked effect upon hemoglobin or red blood count. Injections of ovarian extracts also stimulated hematopoiesis.—*E. W. McHenry.*

12964. **JULLIEN, A. Sur les phénomènes de phagocytose par les cellules sanguines de la seiche.** *Bull. Soc. Zool. France* 53: 87-89. 1928.—The leucocytes of the cuttle fish leave the vessels by diapedesis. In normal tissues their infiltration does not result in phagocytosis, but if the tissues are irritated by introduction of foreign bodies, active phagocytosis of the irritant agent and of the altered tissue elements occurs.—*A. Jullien (transl. by L. C. Havens).*

12965. **JÜRGENS, RUDOLF, und HERBERT TRAUTWEIN. Über Fibrinopenie (Fibrinogenopenie) beim Erwachsenen, nebst Bemerkungen über die Herkunft des Fibrinogens.** *Deutsches Arch. Klin. Med.* 169(1/2): 28-43. 2 fig. 1930.—The only 3 cases of hemorrhagic diathesis with complete or nearly complete disappearance of fibrinogen hitherto known occurred in children. The same condition is reported in an adult. There was nearly complete absence of fibrinogen and a normal concentration of other coagulation components. Morphological investigation showed a carcinoma of the prostate and secondary fibrous changes in the bone marrow; evidently the bone marrow is involved in fibrinogen formation. Checking blood coagulation with heparin or hirudin over a period of days does not result in hemorrhagic diathesis. —*D. B. Dill.*

12966. **KAISER, ERNST. Experimentelle Untersuchungen über Wirkungen von Massage.** 41p. Dissertation, Universität Zürich, 1928.—Lymph flow from an open fistula on the upper leg of a patient was increased by massage of that leg. Two patients were brought into N balance and their N excretion was followed before and after massage. Contrary to the results of previous investigators no increase could be established but if anything a slight decrease. A further study was made of the efficiency of massage as a relief measure for chronic constipation. Glass balls were introduced into various parts of the alimentary canal of cadavers but it was found impossible to move them appreciably by massage from the outside. With the use of x-rays no stimulation of peristalsis in the intestine could be demonstrated as a result of massage. In ergographic experiments it was found that after complete fatigue a 5-10 min. recovery period did not suffice to restore the normal contractility of the muscle but a similar recovery period with massage was more than sufficient for this purpose so that the contractility was better than before the experiment began.—*W. O. Fenn.*

12967. **KNOTT, F. A. Active and inactive leucocytosis: a method of differentiation.** *Guy's Hosp. Rept.* 80(2): 208-212. 4 fig. 1930.—Washed emulsion of *Staphylococcus albus,* suspended in 2% Na citrate, is mixed with 4 times its volume of fresh blood (finger-prick). In leukemic patients, before any x-ray treatments, the myelocytes and myeloblasts, if any are present, are entirely non-phagocytic: none contain any cocci. Ascending the scale of maturity among the cells, the number of bacteria taken up by the different types of white cell varied greatly. In general the more immature the cell, the less its phagocytic power.

12968. **[KOSÍAKOVA, A. V.]** КОСЯКОВА, А. В. Распределение мочевой кислоты в плазме и шариках и влияние на него кислой и щелочной диэт. **[Distribution of uric acid in the blood plasma and in the blood cells, and the effect on this distribution of acid and alkaline diets.]** [German summary.] Русский Физиологический Журнал имени И. М. Сеченева (*Russ. Jour. Physiol.*) 13(1): 145-150. 1930.—Studies were made on 74 children, 38 of whom were on a mixed diet. 18 on an acid diet and 18 on an alkaline diet. A relatively stable colored standard was prepared which permitted the determination of uric acid according to Benedict. Uric acid is unequally distributed in the blood, predominating in the plasma. Different diets have no effect on this distribution. On standing of the blood the uric acid content decreases in the corpuscles, but remains practically constant in the plasma.—*S. A. Corson.*

12969. [LOMOVITSKIĬ, P. A., and A. D. OSNOVINA-LOMOVITSKAĬA.] ЛОМОВИЦКИЙ, П. А., и А. Д. ОСНОВИНА-ЛОМОВИЦКАЯ. К вопросу об определении функции кроветворных органов. [Function of hemopoietic organs.] Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 78: 94-105. 1926.—The authors experimented on guinea-pigs (number not stated) injected subcutaneously with different doses of phenol, pyrogallic acid, aniline oil, toluylendiamin, nitrobenzol, lead, and phenylhydrazin. The authors examined also 16 patients with various diseases, all treated with As. Observation of the relationship between the fluctuations in number of erythrocytes, and their morphological changes, and resistance to hypotonic NaCl solutions led the authors to the following conclusions. In guinea pigs degeneration of erythrocytes was usually accompanied by increase of their maximal, and often also their minimal resistance to hypotonic NaCl solutions, although no complete parallelism was observed. Rejuvenation of the blood was not accompanied by decrease of the minimal resistance of the young erythrocytes. In As therapy no evident dependence between fluctuations of the number of the erythrocytes and their resistance could be observed.

12970. **MARTINI, P., G. LOEWE, JONKOW, B. SCHULER, und O. STÜTZEL. Spektralphotometrische Blutuntersuchungen.** [Spectrophotometric examinations of the blood.] *Deutsches Arch. Klin. Med.* 170(1/2): 72-90. 1931.

12971. **NISIMARU, YASUYOSI. Bile pigment formation in the liver from hemoglobin.** *Amer. Jour. Physiol.* 97(4): 654-657. 1931.—In experiments on ♂ bullfrogs (no. not stated) suitable perfusion with dilute Hb solution was followed by bile pigment formation and elimination, proving that Hb is converted into bile pigment in the liver. Perfusion of Hb through the hepatic artery led to bile pigment formation but not perfusion through the portal vein. The appearance of bile pigment in the cystic duct after perfusion with Hb was inhibited by HCN.

12972. **PUPILLI, GIULIO. Sul comportamento di alcune sostanze coloranti di fronte ai globuli rossi di diversi animali.** [Action of some dyes on erythrocytes of different animals.] *Biochim. e Terapia Sperim.* 18(4): 116-127. 1931.—Acid dyes (tropaeolin 000 No. 1) added to a suspension of erythrocytes were distributed between aqueous solvent and corpuscles following the law of partition. On the contrary, basic dyes (methyl green, methylene green and rosanilin) added to suspensions are adsorbed by the erythrocytes.—*M. Comel.*

12973. **PURJESZ, BELA, MARTHA DANCZ, und KLARA HORVÁTH. Die Rolle des Plexus chorioideus bei der Ausscheidung des Liquor cerebrospinalis.** *Monatsschr. Psychiatr. u. Neurol.* 77(6): 319-347. 3 fig. 1930.—Assuming, on the basis of the work of Schlayer and his collaborators, an analogy between the choroid plexus and the kidneys, the authors poisoned 21 dogs by subcutaneous, intravenous, and intra-arterial injection of $HgCl_2$, K_2CrO_4, uranium nitrate and cantharidin. The resulting phenomena in the plexus included epithelial degeneration, distension of the vascular loops by blood, hemorrhages, signs of inflammation of the serosa, exudation and frequently cellular infiltration of the connective tissue. Parallel with these changes went degeneration and hyperemia of the renal tubular apparatus, frequently with renal hemorrhages or the picture of glomerulonephritis. The poisons which in the kidneys affected chiefly the tubular apparatus ($HgCl_2$, uranium nitrate and K_2CrO_4), in the choroid plexus showed the most distinct damage to the epithelium. Poisons which produced changes particularly in the kidneys, in the plexus affected especially the system of villous processes. The excretion of lactose and NaI under certain conditions was indicative of the degree of pathologic lesion present. Hence it appears that cerebrospinal fluid is produced in the plexus by a mechanism similar to that by which the urine is produced in the kidneys.

12974. **STUBER, BERNHARD, und KONRAD LANG. Über die Blutglykolyse als auslösendes Moment des Gerinnungsprozesses.** *Pflüger's Arch. Ges. Physiol.* 227 (3): 361-366. 1931.—About 6 cc. blood were removed by heart puncture from large, healthy rabbits, 10 gm. of a 50% glucose solution given the rabbits by sound, and 1-2 hrs. later a second blood sample taken; lactic acid and sugar were determined in both immediately after sampling and later during coagulation; lactic acid increased and sugar decreased during coagulation. A marked decrease in coagulation time, attributable to the increased glycolysis, occurred in the 2nd sample. A 4 cc. blood sample was removed by heart puncture. When the operation was done quickly no venesection hyperglycemia resulted; when the operation was bungled a psychic hyperglycemia appeared, due to binding and pain. The determination of lactic acid in blood glycolytic studies is important for it reflects the intensity of coagulation and, in contrast to sugar, may be determined with great precision.

12975. **TAUBENHAUS, M. Zur Lehre des Stoffwechsels im Unterdruck. IV. Über die Verteilung des Reststickstoffes auf Vollblut und Plasma bei Nahrungskarenz und bei Luftverdünnung.** *Zeitschr. Ges. Exp. Med.* 76(1/2): 210-219. 1931.—The residual N in whole blood of 3 normal rabbits was higher than in oxalate plasma of the same animals; this is ascribed to the higher residual N content of the erythrocytes. In 4 fasting animals this difference rose markedly. It can be explained by a previously determined increase of the undefined portion of the non-coagulable N in hunger. According to Folin and Berglund this is 2-5 times higher in the erythrocytes than in the plasma. The residual N of the erythrocytes in hunger varied according to the vascular region: in the hepatic vein it was higher than in the vena cava, highest in the portal vein. In 4 fasting animals kept at a pressure of 340-280 mm. Hg, in spite of the fact that the residual N was absolutely higher in the whole blood, the residual N of the erythrocytes was almost the same, but relatively lower, than in the fasting animals. This agrees well with the previously determined fact that the absolute residual N was increased in negative pressure chiefly by increase in urea in the blood (the urea is divided uniformly between plasma and erythrocytes according to most authors). In the various vascular areas in negative pressure (contrary to the condition in hunger alone) the erythrocytes of the vena cava were usually richer in residual N than those of the hepatic vein. Saturation of the blood with CO_2 caused no notable migration of the residual N from the plasma to the erythrocytes, and therefore a varying CO_2 tension cannot be made responsible for the difference between fasting and negative pressure or for the differences in the various vascular areas. The addition of substances decreasing coagulation (oxalate, citrate, fluoride) to whole blood did not change the residual N of the plasma. The characteristic shift of residual N content in fasting animals and those under negative pressure, in the rabbit at least, occurs predominantly in the erythrocytes.

12976. **TIEN, CHIA YU. On the normal blood picture of Chinese.** [In Japanese, with English summary, p. 40.] *Jour. Oriental Med.* 14(4): 1931.—Study of 320 ♂ and 15 ♀ cases shows Chinese Hb and blood counts very similar to those of Europeans, Americans and Japanese.

12977. **WALKER, BURNHAM S., and MILDRED E. HUNTSINGER. The phosphorus partition in normal whole blood.** *Jour. Lab. & Clin. Med.* 16(3): 247-252. 1930.—Analyses were made, using the Fiske-Subbarow method, of whole blood from normal, fasting, young adults. The figures represent respectively maximum, minimum, and mean values in mgm. per 100 cc. whole blood: inorganic phosphate as P, 4.7, 3.0, 3.8; acid soluble P, 31.0, 22.1, 26.7; acid soluble organic P, 29.4, 18.7, 22.9; lipin P, 16.8, 11.8, 14.2; total P, 44.4, 34.9, 39.2.—*B. S. Walker*

12978. **WALLBACH, GÜNTER. Studien über die Zellaktivität. IV. Mitt. Histogenetische Untersuchungen über den Eisenpigmentstoffwechsel.** *Zeitschr. Ges. Exp.*

Med. 63(3/4): 426-495. 9 fig. 1928.—Iron pigments can not be formed from hemolysed blood. Storage of erythrocytes and subsequent formation of Fe pigment take place in rabbits after a single intravenous injection of washed erythrocytes of sheep, but by repeating such treatment and developing immunity, the injected erythrocytes do not come in contact with the storing cells. There is no storage of Fe pigment nor erythrophagocytosis in the spleen. The hemoglobin freed through hemolysis behaves exactly like a medicinal hemoglobin preparation when injected; it is not taken and changed either by the cells of the spleen or other organs, but is excreted by the kidneys. Attention must be called to the fact that the washing of the sheep erythrocytes has to be very thorough. If there is a trace of protein present in the supernatant liquid or if there is bacterial contamination, a very pronounced storage of Hb and Fe pigment takes place in the spleen. The foreign proteins in serum or bacteria act as a stimulus to the pulp cells of the spleen, resulting in storage of Hb or of Fe pigment. The decomposing erythrocytes play a secondary part only, as is shown in an experiment in which an intravenous injection of foreign serum was performed. A high degree of storage of Fe pigment was obtained by continuous immunisation of rabbits with proteus OX19. In plasma culture experiments on rabbit's spleen, it has been evident that in the normal uninfluenced culture of rabbit spleen a very fine, just noticeable, Fe pigment deposit occurred on the 4th day of incubation, and that, on the contrary, addition of blood to the plasma-medium retarded the growth, and caused a hardly detectable pigmentation only in 8-10 days. On the other hand, it was evident that the addition by itself of foreign serum (human) produced a marked pigment deposit by the 2nd day. While under common conditions only the large histiocytic macrophages store hemosiderin, after addition of serum all cells, including fibroblasts, take part in such storage. It is not at all necessary to add blood, in order to obtain these deposits; under normal conditions the blood present in explanted tissues is sufficient to be taken by the cells to the degree mentioned and to be elaborated into iron pigment.—*G. Wallbach (transl. by H. J. Ropshaw).*

12979. WASJUTOTSCHKIN, W., und M. RYBINA. Über den Einfluss des anorganischen Serums von Truneček auf den Blutchemismus des normalen Kaninchens. *Zeitschr. Ges. Exp. Med.* 64(3/4): 417-430. 1929.—Truneček's inorganic serum is a solution of the inorganic salts of the blood serum, with the exception of Ca, in a concentration 10 times greater than that in the blood. It has been advised in the treatment of sclerotic conditions. It was injected daily under the skin of the abdominal wall of rabbits in doses of 2 c.c. Studies of the chemical changes in the blood following a week or more of this treatment showed that there was a significant lowering of the Ca content of the blood and a tendency toward a lowering of the alkaline reserve. There was also at first some lowering in the blood sugar. The K content shows rather wide variations in the normal and no definite changes were recognized following this treatment. There were no changes in the cell content of the blood. The Ca tended to rise again as soon as the medication was stopped. In so far as Ca may be considered an element in the causation of sclerosing lesions, these results may be regarded as evidence of the value of this serum in the treatment of those conditions.—*R. G. Stillman.*

12980. WEYL, PAUL. Untersuchungen über die Blutzuckerregulation beim Säugetier. III. Die Einwirkung von erhöhter Aussentemperatur auf das Verhalten des Blutzuckers von Kaninchen und Hunden. *Biochem. Zeitschr.* 206(4/6): 485-502. 1929.—Hyperglycemia develops in rabbits usually within 5 min. on exposure to 32-37° C. for 5-7 hrs. Blood sugar decreases after 2-3 hours and usually returns to normal before the end of the experiment. However, the hyperglycemia persisted if the animals showed marked exhaustion. Neither hyper- nor hypoglycemia was induced in dogs by long or short exposures to high temp. (30-38° C.). The statement that blood sugar is lower at higher than at lower temperatures cannot be accepted.—*E. G. Schmidt.*

ANIMAL PHYSIOLOGY

NUTRITION, DIET, VITAMINS, GENERAL METABOLISM, GROWTH

J. R. MURLIN, *Editor*

H. A. MATTILL, *Associate Editor*

E. F. ADOLPH AND R. G. SINCLAIR, *Assistant Editors*

(See also in this issue Entries 12117, 12141, 12158, 12815, 12828, 12849, 12866, 12887, 12900, 12912, 12945, 12951, 12952, 12966, 12968, 12978, 12980, 13063, 13071, 13081, 13089, 13095, 13105, 13179, 13184, 13187, 13188, 13191, 13236, 13259, 13325, 13377, 13409, 13414, 13421, 13429, 13434, 13435, 13436, 13438, 13482, 13581, 13776, 13777, 13826, 13949, 13956, 13960, 14264, 14278, 14340, 14413, 14683)

FOOD AND NUTRITION

12981. ADRIANO, F. T., and M. S. GUZMAN. The phosphorus and calcium content of some Philippine food products. *Philippine Agric.* 20(1): 43-48. 1931.—The total phosphoric acid anhydride and CaO contents of some of the most common Philippine food products are reported.—*M. Manresa.*

12982. ADRIANO, F. T., and MAMERTA MANAHAN. The nutritive value of green, ripe and sport coconuts. *Philippine Agric.* 20(3): 195-199. 1931.—The nuts of *Cocos nucifera,* either green, mature or as sports locally known as macapuno, are eaten extensively by Filipinos. The authors report analyses for moisture, ash, ether extract, protein, crude fiber and carbohydrate. —*M. Manresa.*

12983. AGNEW, MARY. Dietary studies in Szechwan. *Jour. West China Border Res. Soc.* 3: 55-60. 1926/29 [1930].—The diet of Szechwan students is probably adequate in energy value, and in vitamins B and C. It is inadequate in the quality of the proteins, in vitamins A and D, and in Ca and P. These results are in agreement with reports from North China and from South China.—*Author's summary.*

12984. BRONSON, BARNARD S. Nutrition and food chemistry. 467p. 34 fig. John Wiley & Sons, Inc.: New York, 1930. Pr. $3.75.

12985. COONS, CALLIE. Dietary standards for pregnancy. *Proc. Ann. Convention Assoc. So. Agric. Workers [U. S. A.]* 31: 293-295. 1930.—Variations in protein intake affected N retention and subsequent success in lactation. Calcium intakes of less than 1 gm. daily were inadequate to meet fetal demands.—*C. Coons.*

12986. DOBBS, ETHEL M. Food values in practice; simple guidance in diet planning and cookery. 240p. University of London Press: London, 1929.—Price 4s.

12987. GEBHARDT, F., und G. FRICKE. Untersuchungen am Eck-Fistel-Hund. II. Blutzucker nach Glucosebelastung beim Eck-Fistel-Hund. *Zeitschr. Ges. Exp. Med.* 74(5/6): 636-645. 1930.—The 23 experiments were performed on 6 Eck fistula and 2 normal dogs. Eck fistula dogs were fed either a meat free and carbohydrate rich diet or an exclusive meat diet, or were subjected to

a fasting period. Subsequently glucose was administered and a blood sugar curve obtained. After the meat-free diet no abnormal increase in the blood sugar usually resulted. Variable results were obtained after an exclusive meat diet. High curves were obtained when toxic symptoms and other injurious results of a meat diet occurred. One dog, which after 13 days on a meat diet remained normal, did not show any abnormal rise in the blood sugar curve. Differences in the curves for normal and for Eck fistula dogs were obtained after a fast of 50 hrs. and subsequent administration of glucose. With Eck fistula dogs the curves either rose steadily or showed a delayed return to normal. These results point to the importance of giving more exact data of the diet during the control periods in experiments on Eck fistula dogs.—*Authors' summary (transl. by H. Zwarenstein).*

12988. **HENDRICKS, WALTER A., MORLEY A. JULL, and HARRY W. TITUS. A possible physiological interpretation of the law of the diminishing increment.** *Science* 73(1894): 427-429. 1931.—The authors propose the following equation to describe the relation between the feed consumption and growth of an animal: $dW/dF = C - mW$, in which C represents the true efficiency of the feed for growth and mW represents the amount of feed used for other metabolic processes, expressed in terms of an equivalent amount of body tissue. This equation is derived from the differential form of the equation of the curve of the diminishing increment: $dW/dF = k(A - W)$, for $kA = C$, and $k = m$. The amount of feed required for metabolic processes other than growth during the time the animal consumes the increment of feed, $F_2 - F_1$, and makes a gain in live weight, $W_2 - W_1$, is deduced to be: $F_2 - F_1 - (W_2 - W_1)/kA$. The values of kA calculated from growth data for several groups of chickens show close agreement although the feed consumption of the comparable groups was unequal. The values of kA also are consistent with an experimentally determined value of the true efficiency of a given feed mixture for the growth of chickens.—*W. A. Hendricks.*

12989. **KINNEY, CHARLES NOYES. Review of essential chemical elements that constitute a balanced food.** 2nd ed. xvi+315p. 1 pl. Success Composition & Printing Co.: Des Moines, Iowa. 1930.

12990. **LABBÉ, HENRI. Le cacao et le chocolat au point de vue alimentaire et hygiénique.** *Congrès Internat. Fabricants Chocolat et Cacao, Anvers, Compt. Rend. Oficiel* 1930: 195-217. 1930.—An address reviewing the history of cacao and chocolate, composition, digestibility of its proteins and fats, its vitamins, its by-products, stimulating effects, indications in dietetics and hygiene, and modes of preparation.

12991. **LEIGHTON, GERALD, and PETER L. McKINLAY. Milk consumption and the growth of school children. Report on an investigation in Lanarkshire Schools.** 20p. Dept. of Health Scotland: Edinburgh, 1930. Price, 3d.—Addition of milk to the diet of school children is reflected in a definite increase in the rate of growth both in height and weight. There is no obvious or constant difference in this respect between boys and girls; and there is little evidence of definite relation between the age of the children and the amount of improvement. The results do not support the belief that the younger derived more benefit than the older children. As manifested merely by growth in weight and height the increase found in younger children through the addition of milk to the usual diet is certainly not greater than, and is probably not even so great as, that found in older children. In the present investigation the effects of raw and pasteurized milk on growth in weight and height were equal.—*Authors' conclusions.*

12992. **McCULLOCH, W. E. Nutritive value of benniseed.** *Nature [London]* 127(3197): 199-200. 1931.—Attention is called to the high Ca (1.2%) and P (1.39%) content of the seed of *Sesamum indicum*, and to its nutritional value to the Munshi and Tiv people of Northern Nigeria, whose dietary is otherwise grossly deficient in Ca and protein. The Munshi women burn the seed-bearing heads after removing the seeds, and use the ash in their soups. As the plant seems to have a strong selective power for Ca, it might prove valuable to plant on soils poor in Ca and P.

12993. **ROSE, MARY SWARTZ. A laboratory handbook for dietetics.** 3rd ed. xiv+269p. The Macmillan Co.: New York, 1929.

12994. **RUBNER, MAX. Deutschlands Volksernährung. Zeitgemässe Betrachtungen.** [Nutrition in Germany. Present-day considerations.] 63p. Julius Springer: Berlin, 1930.

ENERGY METABOLISM

12995. **BENEDICT, FRANCIS G., und ERNEST G. RITZMAN. Über die den Energieumsatz bei Schafen beeinflussenden Faktoren.** *Wiss. Arch. Landw. Abt. B, Arch. Tierernähr. u. Tierzucht* 5(1): 1-88. 11 fig. 1931.—This article discusses the results of a study on sheep carried out over a number of years at the New Hampshire Agricultural Experiment Station, in cooperation with the Nutrition Laboratory of the Carnegie Institution of Washington. The various types of respiration apparatus employed are described. The heart rate of sheep 7 or 8 hrs. after food is from 60 to 92 beats per min. The rectal temp. is slightly higher than that of cows or steers, ranging from 38.8° to 40.4° C. With fasting the heat production falls, until at the end of about 3 days it reaches a constant level. During this time the respiratory quotient falls to approximately 0.73. No reaction to environmental temp. was noted, for it was found that this may go down to 0° without noticeable influence upon the energy metabolism of the sheep. Huddling causes no lessening of the energy output. The metabolism during quiet standing is approximately 15% higher than that when the sheep is lying down. The average heat production of sheep 6 mos. of age or older and bearing at least a 6-mo. growth of fleece, 24 hrs. after food, corrected for the difference between the metabolism standing and lying, is 1275 calories per sq. meter of body surface per 24 hrs. Two or three hours after the sheep has eaten a protein-poor hay, its metabolism increases 30%. The factors of age, sex, and pregnancy were also studied.—*F. G. Benedict.*

12996. **BERKHOUT, P. J. TEDING van. Contribution à l'étude du métabolisme basal chez les habitants des tropiques.** *Mededeel. Dienst Volksgezondheid. Ned.-Indie.* 18(1): 1-16. 6 pl. 4 fig. 1929.—With the aid of a combination of a closed circuit system (method of Krogh) and of an open circuit system (method of Douglas and gas analysis according to Haldane) the basal metabolism of 12 Europeans, 3 Indo-Europeans and 12 Malaysians, all in good health, was determined. At least 6 observations were made on each, carried out on different days. The lowering of the basal metabolism in the Europeans agreed entirely with that observed during the past 8 or 9 years in Europeans in other tropical countries. The extreme limits in the 1st group (i.e., 12 Europeans and 3 Indo-Europeans) were calculated to the standard values of Dubois and Benedict, respectively −17.1% and −13.5%, to respectively +1.7% and +5.7%, the mean differences being respectively −9% and −5.4%. The heat production averaged 35.5 calories per sq. meter hour, with a probable error of ±0.48. The average of the standard values, calculated according to Dubois, was for the 15 subjects of this group 39.0 calories per sq. meter hour, with a probable error of ±0.2. The difference of these two averages was 3.5 calories, with a probable error of ±0.52. In the 12 Malaysians the extreme results compared to the standard values were, respectively, −17.2% and −15.1%, and respectively −3.3% and +2.0%; the average differences being respectively −11.41% and −7.70%. The heat production averaged 35.2 calories per sq. meter hour, with a probable error of −0.34, the standard Dubois values being an average of 39.75 calories, with a probable error of ±0.11. The difference of these 2 averages for this series was 4.55 calories, with a probable error of ±0.36. If it is granted that the

standard values hold good for the Malaysians so that the normals computed for them are not too high by more than a few percent, these observations show a lowering of the basal metabolism approximately equal to that observed in Europeans whose basal metabolism taken in the tropics is compared with the standard values calculated for a temperate climate. The differences found in the 2 groups of subjects between their average basal metabolism and the average of the standard values calculated for their basal metabolism cannot be attributed to chance, since these differences were more than 6 to 12 times the probable error.—*Author's résumé and conclusions (transl. by I. I. Lemann).*

12997. **BOHNENKAMP, H. Über die Energieumwandlungen im Herzmuskel.** *Verhandl. Phys.-Med. Ges. Würzburg* 52(2): 113-124. 5 fig. 1927.—The subject of "cardiac weakness" is alluded to, and, from this viewpoint, the total energy relations of the contracting heart are discussed. Measurements, by the author and his associates, show that work done by heart muscle and the rate of O consumption run independent courses; the latter attains a steady level some time before the maximum work is done against a succession of increased pressures. There is postulated an energy store, or chemical reserve, which arises at the end of the oxidation process and is not quantitatively related to oxidation over a given period of time. The nature of this store is suggested by experiments on anaerobic hearts (HCN, oxygen lack). The amount of work in each successive beat falls off regularly; the work-summation curve rises rapidly at first, then more slowly, approaching the horizontal. The stroke-work (per beat) is a function of the work already performed. Relationship is expressed in an equation having a proportionality constant, k. This factor remains unaltered if O is admitted. Glucose gives a much reduced value of k, but alanin has no effect. It is known (Weizsäcker) that in a heart fatigued by limiting the perfusion with Ringer's solution, the onset of fatigue is independent of the load; hence the amount of work performed by a heart seems to be without influence on the extent of metabolism. Experiments in the author's laboratory (auxobaric method) upon a large number of hearts support this conclusion. Since O consumption is not, then, a true measure of the energy of heart activity, the total heat production is sought. The author's findings, by improved methods, show that the heart, contracting a given number of times in a fixed period, but with different loads, yields equal amounts of energy. The all-or-none principle can thus be extended to the metabolism of heart muscle as well as to its mechanical response.—*H. S. Hopkins.*

12998. **COMEL, MARCELLO. Influence du phosphation sur les échanges gazeux de la bouillie musculaire à pH variable.** *Arch. Internat. Physiol.* 31(1): 1-19. 4 fig. 1929.—The phosphate ion exerts a remarkable action on the respiratory exchanges of muscular tissues of frogs, kept at various pH values. The respiratory exchanges are increased, and such action is exerted as well for pH values more alkaline than that of the muscular tissues of frog, as for those more acid than that of the isoelectric point of the muscular proteins. The action of the phosphate ion is attributed in first instance to its rôle in the metabolism of the muscle cell, especially in the synthesis and cleavage of the lactacidogen. The phosphate ion increases the oxidative cleavage of the carbohydrates by the muscle cells, during their respiration in O, at various pH values of the surrounding fluid. If the excised and hashed muscle tissues of the frog are kept in buffer solutions at pH values near the isoelectric point of the muscle proteins or more acid than that in O, the tissue absorbs O and eliminates CO_2 in smaller amounts than at pH value optimum, which corresponds to that of the tissue itself and is near the neutral point. Nevertheless at the very acid pH values tested the respiratory exchanges were yet measurable.—*M. Comel.*

12999. **GUALDI, ANTONIO. Ricerche sul metabolismo per variazioni della temperatura locale dei tessuti. IX. Variazioni del ricambio respiratorio e del metabolismo basale per ipotermia circoscritta da raffreddamento diretto. [Variations of respiratory exchange and basal metabolism following local hypothermia due to direct cooling.]** *Riv. Patol. Sperim.* 5(4/5): 403-406. 1930.—Local cooling of a limited area of the body surface is followed by increased O consumption and heat production by the organism.—*M. Comel.*

13000. **KRAWTSCHINSKY, B. D. Die Wirkung der Gewerbearbeit auf das Basensäuregleichgewicht des Blutes.** *Arbeitsphysiologie* 4(3): 259-267. 1931.—The total CO_2, alkali reserve and lactic acid of the blood was determined in 50 foundry workers and 50 lathe workers before and after the day's work. The bloods of the foundry workers averaged 52.5 and 48.9 vols. % alkali reserve, and 15.3 and 25.4 mgm. % lactic acid before and after the work. The blood of the lathe workers averaged 48.7 and 46.0 vols. % alkali reserve and 12.5 and 19.2 mgm. % lactic acid. The higher lactic acid content of the foundry workers in the morning was ascribed to the greater severity of the work and also to the high temperatures of the environment, which hindered recovery. The fall of alkali reserve ran parallel with the rise in lactic acid in the blood. The correlation coefficient between daily changes in alkali reserve and lactic acid was $r = -0.57$ with foundry workers and $r = -0.39$ with lathe workers.—*T. M. Carpenter.*

13001. **SMITH, HOMER W., NICHOLAS FARINACCI and ANNE BREITWIESER. Metabolism of the lung-fish, Protopterus aethiopicus.** *Jour. Biol. Chem.* 88(1): 97-130. 1930.—About 15% of the total metabolism is attributable to muscular movements, muscular tone, circulation, and respiration; the rest to non-mechanical processes of an unknown nature. About 50% of the total metabolic energy is normally furnished in the active, fasting lung-fish by protein. The degraded N is excreted about equally as urea and ammonia, together with relatively constant quantities of SO_4 (presumably derived from protein S), PO_4, K, and creatine. During estivation the metabolic rate may sink to low levels, a considerable reduction occurring in the non-mechanical as well as the mechanical metabolism. This reduction appears to be attributable primarily to progressive emaciation. In the estivating fish also protein yields a large fraction of the metabolic energy, the protein N being almost quantitatively degraded to urea, which accumulates in the body to the extent of 1 to 2% of body weight in 1 year. Ammonia formation is apparently suspended. When returned to water the urea is quickly excreted as such, together with large quantities of SO_4. The excretion of creatine and of PO_4, on the other hand, begins at a low level and rises slowly to the normal, basal level; it would appear that these substances are either recatabolized, or that their anabolism is suspended, during estivation. In relation to the latter interpretation it is significant that muscular activity and muscular tone are reduced to a negligible level during estivation because of the complete immobilization of the animal. No acetone or acetoacetic acid can be detected in estivating fish, and uric acid is apparently decomposed.—*H. W. Smith.*

WATER BALANCE

13002. **DRESEL, KURT, und ZOLTAN LEITNER. Zur Physiologie und funktionellen Pathologie des Wasserhaushalts. II. Der Einfluss des Trinkens von Wasser und von Kochsalzlösungen auf Blutmenge, Blutzusammensetzung und Diurese.** *Zeitschr. Klin. Med.* 116(1/2): 185-205. 1931.—One group of normal human subjects was maintained on a salt-poor diet, another on a salt-rich diet for 3 days. Both were starved 14 hrs. and then sub-groups given either 500 cc. tea, or physiological or 4% salt solutions, by mouth. Blood volume, plasma, red cells, hemoglobin, serum chloride and serum protein were estimated before and 30 min. after this treatment.

Urine output and urine chlorides were noted after 4 hrs. Blood volume was increased after tea and physiological salt solution, and decreased after 4% salt intake in both groups, especially the salt-poor group. The variations were due chiefly to plasma changes. Serum chloride increased in all instances in those on salt-rich diets, and after 4% salt intake in those on salt-poor diets; it decreased in the others. Serum protein decreased in all cases. Diuresis was greater in all cases where a salt-rich diet preceded. The salt excretion was likewise more dependent on diet than on the amount of salt given in the experiment. The authors conclude that diuresis increases with the water or salt content of the blood and is greatest when both are increased.—*A. B. Gutman.*

13003. GOLDZIEHER, M., und J. KALDOR. Experimentelle Beiträge zur Rolle der Hypophyse im Wasserstoffwechsel. *Zeitschr. Ges. Exp. Med.* 76(5/6): 819-832. 5 fig. 1931.—The effects of diuretics, such as novasurol and theobromin, upon water metabolism and on the hypophysis were studied on guinea pigs. 24 animals were killed at intervals of ¼ to 6 hours following injections. The anterior lobe of the hypophysis showed modification of the eosinophiles, followed by a decrease in their number as they were replaced by transitional, and finally, by basophile cells. The hypophysis returned practically to its original normal state 6 hrs. after injection; the tissue changes apparently preceded onset of diuresis. These experiments suggest the discharge of a diuretic hormone from the anterior pituitary lobe, corroborating the demonstration of such a substance by Teel. The effect of diuretics combined with pituitrin was studied also on animals after their tissues had been blockaded by the injection of India Ink. Injection of India Ink alone produces increased diuresis, particularly if repeated several times. Pituitrin, which ordinarily restricts the elimination of water, produces a paradoxical diuretic effect in the blockaded animals. Novasurol also has a far greater diuretic effect in the blockaded animal than under normal conditions, but such excessive losses of water are successfully prevented by pituitrin. In the non-blockaded animal the antagonism of pituitrin to novasurol is almost negligible.—*M. Goldzieher.*

13004. GÜNTHER, HANS. Die wissenschaftlichen Grundlagen der Hunger- und Durstkuren. 171p. S. Hirzel: Leipzig, 1930.—Extensive presentation of the physiology and pathology of the withholding of food and water, the clinical indications for and practical applications of the hunger and thirst cures.—*H. Günther (transl. by M. H. Keith).*

13005. HERRMANN, FRANZ. Über die Wasserbindung in der Haut. *Zeitschr. Ges. Exp. Med.* 76(5/6): 780-791. 1931.—In drying to constant weight at 105°, pieces of human skin and masses of the same skin after chopping, more water was usually given up by the pieces. Skin of aged individuals gave up water more easily than the normal. Unaffected skin of 12 tuberculous patients (10 lupus, 1 tuberculosis verrucosa cutis, 1 genital tuberculosis) gave up relatively little; compared with the chopped skin there appeared to be a particularly firm binding of the water, probably because of the high NaCl content of the skin. During Sauerbruch-Herrmannsdorfer diet in lupus, more water was given up by skin samples, corresponding to a decrease in inorganic salts. In a case of dermatitis herpetiformis this diet led to a decrease in water content and an increase in total N and dry matter in the skin. In gelatin samples the water held was found to be related to NaCl content.

13006. KIRCHHOFF, HEINZ. Der Einfluss von Solbädern auf den Wasserhaushalt des Kindes. 32p. Dissertation, Univ. Hamburg. Published by Kieler Zeitung G. m. b. H.: Kiel, 1929.—Water intake, water and chloride output through the urine, body weight, and blood concentration were measured in daily periods in 3 patients. The chief effect of a salt-water bath was to increase the body weight a few hours afterward by diminishing the extrarenal loss of water.—*E. F. Adolph.*

PROTEIN METABOLISM

13007. BERDNIKOW, A., et C. CHAMPY. Recherches sur la substance mucoïde de la crête du coq. *Compt. Rend. Soc. Biol.* 106(10): 804-805. 1931.—A technique for the isolation of this substance is described. It gives a colloidal solution in water, is soluble in weak alkalies and salt solutions, and contains the biuret group. It contains 1.5% P and 14.5% N. A concentrated solution gives histochemical reactions the same as those of sections of the comb but they differ from those of ordinary albumin.—*E. Weiner.*

13008. EIMER, KARL. Studien über den Kreatin-Kreatininstoffwechsel. I. Harnkreatinin und Ernährung. *Zeitschr. Ges. Exp. Med.* 74(5/6): 738-749. 1930.—It is demonstrated (by experiments on 4 subjects), contrary to the opinion widely held, that the creatinine excretion in the urine in normal subjects is not measurably influenced by ingestion of ordinary amounts of meat (200 gm. per day). This meat creatine in the diet (1 gm. per day) is either destroyed in the intestine by bacteria or burned in intermediary metabolism. A considerable increase in the meat content of the diet causes an increased elimination of creatinine in the urine, indicating a close relationship to the total N metabolism. Continued feeding of larger amounts of meat-creatine does not cause the appearance of creatine in the urine. The human organism can store creatine and later give it up gradually in the form of urinary creatinine.—*Author's summary (transl. by G. T. Lewis).*

13009. SLONAKER, JAMES ROLLIN. The effect of different percents of protein in the diet. V. The offspring. VI. Weight of mothers during gestation and lactation. *Amer. Jour. Physiol.* 97(4): 573-580; 626-634. 1931.—V. Albino rats (originally 180 in 5 groups, I, II, III, IV and V) were fed throughout life on synthetic diets containing 10, 14, 18, 22 and 26% protein respectively. The order of fertility of both sexes of the parents from highest to lowest % was groups II, I, III, IV, and V. The average number of litters and the average number of young born per pair from largest to smallest was in the same order. The sex ratio was highest in group II, lowest in V, and below normal in all groups. Results indicate a greater prenatal mortality of ♂♂ than of ♀♀. The mortality of the young during the nursing period was least in group II and greatest in V. With the exception of group V the mortality of the ♀♀ was greater than that of the ♂♂ of the same group. A greater postnatal vitality of the ♂♂ than of the ♀♀ is suggested. Cannibalism did not exceed the normal or vary sufficiently to warrant any conclusions. The weight at birth of the ♂♂ was greater than that of the ♀♀ of the same group. In general the weights tended to increase as the protein content of the diet became greater. The % of daily gain from birth to weaning age was lowest in group I and, with one exception, increased to group V with each addition of protein in the diet. The same order of weights found at weaning were, in general, maintained to the age of 280 days. In group II there survived a larger number of young, in proportion to the number born, than in any of the other groups, probably because of greater vigor. In general the rate of growth of the young increased as the % of protein in the diet increased.—*Author's summary.*—VI. The curve of average weights of 186 rat mothers during gestation changed gradually from a simple curve in group I to a compound curve in group V. This was probably due to an increasing deposition of adipose tissue during the early part of gestation. The maximal weight attained was correlated with the size of the litter born. The average % gained by the mother due to developing young was II, 22.53; I, 22.50; III, 20.87; IV, 14.49; V, 13.43. For each young born the per cents were: I, 9.84; III, 9.80; II, 8.42; V, 7.34; IV, 6.47. The loss of weight of the mothers while nursing was greatest in group I and became less as the % of protein in the diet increased. Data indicate that the quantity and quality of milk secretion was poorest in the group receiving 10% protein and increased as the protein content of the diet increased.

CARBOHYDRATE METABOLISM

13010. DEMUTH, FRITZ. Verteilung von Milchsäure und Calcium in Gewebekulturen. *Biochem. Zeitschr.* 234 (1/4): 247-256. 2 fig. 1931.—Demuth studied the production and distribution of lactic acid and Ca in tissue cultures of embryonic chick heart, Crocker X sarcoma, and Ehrlich mouse carcinoma. He found a greater production of lactic acid in the 2 latter types of cultures than in those of the normal tissue. The new-formed acid remains close to the explant. When large amounts of lactic acid accumulate in cultures Ca lactate precipitates in a ring in the medium about the tissue.—*W. Bloom.*

13011. EVANS, WILLIAM LLOYD, and ROBERT CASAD HOCKETT. The mechanism of carbohydrate oxidation. XIII. The action of potassium hydroxide on calcium hexosediphosphate. A comparison with that of glucose and fructose. *Jour. Amer. Chem. Soc.* 52(10): 4065-4069. 1930.

13012. FORSGREN, ERIK. Über die Einwirkung des Insulins auf die Leber. *Acta Med. Scandinavica* 70(2/3): 139-149. 1 fig. 1929.—The glycogen content of the livers of normal rabbits varied widely. An important cause of this variability was the varying assimilatory and secretory activity of the liver. The glycogen values rise during the assimilatory but decrease during the secretory phases. Insulin produces no noticeable effect on the liver glycogen values and does not interfere with the rhythmic activity of the liver. The sensitivity to insulin appears to vary with the rhythmic activity of the liver and to be greatest in the secretory phase if the glycogen content is low.—*O. W. Barlow.*

13013. FÜRTH, OTTO, und PAUL ENGEL. Über die Assimilierbarkeit und Toxizität razemischer Milchsäure. *Biochem. Zeitschr.* 229(4/6): 381-396. 1930.—The Warkany method for determining lactic acid in urine was not applicable to rabbit urine; since ether extraction of the lactic acid aided by the centrifugal apparatus of Lindt can not be avoided. 20-30% of fermentation lactic acid administered per os to humans appeared in the urine. In rabbits lactic acid by way of stomach was very much more toxic than heretofore assumed. While subcutaneous administration of 2.8-3.6 gm. per Kgm. exhibited no toxicity or only a very slight one according to Parnas, the authors found doses of 1.6 gm. per Kgm., one as low as 0.6 gm. per Kgm. in divided doses over 3 days, fatal. In mice, with subcutaneous administration of Na lactate, the fatal dose was 2-4 gm. per Kgm. Rats tolerated daily administration of 2 gm. per Kgm. for longer periods of time, and even much larger doses. In view of the high toxicity, especially when administered by way of the stomach in rabbits, also that in man appreciable amounts are excreted unchanged, the conclusion is reached that fermentation lactic acid is not a practical food constituent. No objection is raised to its limited use as an adjunct to lemonade, fruit juices and candy. Alkalosis induced by administration of Na_2CO_3 was without influence on the elimination of lactic acid in rabbits and toxicity in mice. Utilization of lactic acid in rabbits (per os) was not modified by epinephrine, phlorhizin, or large doses of glucose. Non-lethal P poisoning induced a very marked elimination of lactic acid in rabbits; after disappearance of the poisoning, a very high capacity for assimilating it was noted. In rats very large doses of lactate revealed no storage within the organism. A test with catalytic oxidation of lactic acid on the surface of charcoal revealed no differences in the attack of the *d* and I *l* components.—*W. F. Jacobs.*

13014. HANDOVSKY, HANS. Der Muskelchemismus unter dem Einfluss von Inkreten und Giften. *Pflüger's Arch. Ges. Physiol.* 220(1/6): 782-813. 4 fig. 1928.—Curare, ether, urethane, and $MgCl_2$ cause the lactic acid conc. of the muscles of rabbits to decrease. The total carbohydrate remains normal or is slightly increased. Curare and especially ether decrease the water content. Apomorphine and physostigmine greatly increase the lactic acid conc. This effect is prevented when a narcotic is given previously. A review of the author's previous work is given and an attempt is made to enumerate and interrelate the factors influencing the carbohydrate-lactic acid equilibrium.—*G. H. Hitchings.*

13015. HERRFARTH, FRITZ. Über alimentäre Galaktosurie. 17p. Dissertation: Univ. Berlin, 1929.—Dogs were fed 30 gm. of galactose. About ⅓ of the amount ingested was excreted in the urine within 12 hrs. A nitrogen sparing action of the galactose was noted in the 2nd 12 hr. period.—*G. T. Cori.*

13016. HOLMGREN, HJALMAR. Beitrag zur Kenntnis von der Leberfunktion. *Jahrb. Morph. u. Mikrosk. Anat. Abt. II, Zeitschr. Mikrosk.-Anat. Forsch.* 24(4): 632-642. 5 fig. 1931.—White mice given free access to food were killed every 2 hrs. day and night. Liver glycogen and biliary granules appeared alternately. Hepatic action showed a 2-phase rhythm: an assimilatory, predominating during the night, characterized by large cells filled with glycogen; a secretory, predominating during the day, with numerous cells containing biliary constituents staining with carmine. The rhythm was to some extent independent of food intake, and time of eating appeared to be without significance.

13017. KOTSCHNEFF, NINA. Zuckerbildung und Zuckerverteilung unter den Organen im nüchternen Zustande des Tieres und während der Verdauung nach Versuchen an angiostomierten Hunden. *Pflüger's Arch. Ges. Physiol.* 218(5/6): 661-666. 1928.—In fasting, sugar is passed from the liver into the blood stream. The sugar content of the hepatic vein is therefore higher than in other blood vessels; it is about 20% higher in the hepatic than in the portal vein. Other organs take out from the blood sugar that the liver has furnished. The largest quantities of sugar are used by the small intestine, the duodenum, and the pancreas. A great deal of sugar is retained by different muscle groups. In fasting conditions the kidneys use little sugar and the spleen almost none. The suprarenals use no demonstrable amount. With exclusive protein and fat diets the same sugar content of the blood is observed during digestion, in all vascular regions. The portal and the pancreatico-duodenal veins contain after carbohydrate food the largest quantity of sugar. The largest part of the sugar is retained by the liver. Of the small part that goes into the general circulation, the kidneys retain the most (up to 24 mgm. for 100 cc. blood) and the muscles up to 19 mgm. %. The spleen, during digestion just as in fasting animals, retains almost no sugar (up to 5 mgm. %).

13018. KRAWTSCHINSKY, B. D. Die Wirkung der Zweischichtenarbeit im Schmiedebetrieb auf den Organismus des Arbeiters. I. Biochemie des Schweisses, des Harnes und des Blutes. *Arbeitsphysiologie* 4(3): 268-277. 1931.—The composition and quantities of sweat and urine were determined with 5 workers forging rear axles of automobiles with a 3-ton hammer in which the work was carried on in a day shift of 8 hrs. and an evening shift of 7½ hrs., with 1 hr. and ½ hr. at rest respectively for meals. The values for the morning and evening shifts were as follows: 6.09 and 5.82 liters of sweat containing 7.31 and 8.20 gm. lactic acid, 14.98 and 20.42 gm. chlorides (Cl), and 0.96 and 1.44 gm. ammonia. The morning and evening urines contained 7.21 and 8.48 gm. chlorides and 1.14 and 0.99 gm. ammonia. There was no alteration in the blood chlorides, so that the loss in chlorides was from the tissues. Indications of the severity of the work were the large excretion of lactic acid and ammonia in the sweat and the increase over normal of the titrable acid and creatinine in the urine. The work of the evening shift was greater, as shown by a greater loss of body weight, the large excretion of lactic acid and ammonia in the sweat, and the greater excretion of titrable acids and creatinine in the urines of this shift.—*T. M. Carpenter.*

13019. PARTOS, ALEXANDER. Regulácia uhlohydrátovej výmemy. 3. Sdelenie. [The rôle of lactic acid in intermediary carbohydrate metabolism.] *Bratislavské Lekárske Listy* 9(1): 41-47. (English summary p. 14.) 1929.—Lactic acid in vitro increased glycogen cleavage by action of the hepatic prodiastase. Adrenalin, pitui-

trin, and ovarian extract accelerate glycogen cleavage in vitro, insulin inhibits it, and thyroid gland extract has little influence on it. Lactic acid administered simultaneously with the extracts speedily influenced glycogen cleavage. Applied simultaneously with insulin, it increased in vitro the hypoglycemia caused by insulin. It diminishes the hyperglycemia induced by adrenalin, pituitrin and ovarian extract, indeed it transforms hyper- into hypoglycemia. It has only a slight influence on the hyperglycemia caused by thyroidin.—*Author's summary.*

13020. **WACHSMUTH, W. Untersuchungen über den regulatorischen Reizablauf bei alimentärer Hyperglykämie.** *Zeitschr. Ges. Exp. Med.* 73(5/6): 645-658. 1930.—Experiments show that alimentary hyperglycemia is brought about by nervous stimulus from the intestine to the liver. These stimuli cause an emptying of the sugar depots. The duodenum is the most sensitive place from which to excite this reflex. Evidences are against a hormonal explanation. There is evidence to indicate that much depends on the irritability of the vegetative nervous system in the particular patient or animal studied.—*W. C. Alvarez.*

FAT METABOLISM

13021. **BARELLI, LUIGI. Il distretto epato-splenico e il suo apparato reticolo-istiocitario nel metabolismo dei grassi. (Hepato-splenic reticulo-histiocytic apparatus and metabolism of fats.)** *Arch. Ist. Biochim. Ital.* 3(2): 215-246. 6 fig. 1931.—Intraperitoneal injection of oil or of Sudan III in oil is not followed in the rat by progressive processes in the epithelium of the ear such as described in rabbits. The evolution of circulating sudanophile granulocytes from reticulocytes in the peripheral area of the spleen was followed in some rats. Giant cell metaplasia of the spleen occurred in some rats injected with Sudan III in oil. Visible fat in the liver was more frequently observed in winter than in summer.—*M. Comel.*

13022. **BEREND, N. Der Einfluss verschiedener Nahrungsmittel auf die Menge der vierfach ungesättigten Säuren im Blute.** *Biochem. Zeitschr.* 229(4/6): 323-328. 1930.—The feeding of lard and olive oil causes an initial fall and then a rise in the amount of tetra-unsaturated acids in dogs' blood. Feeding of carbohydrate and fat causes a more prompt increase, the initial drop being absent. Carbohydrate and protein caused no significant changes.— *R. G. Sinclair.*

13023. **FIORI, A. La formazione di lisocitina nella decomposizione spontanea della lecitina. [On the formation of lysocithin following spontaneous decomposition of lecithin.]** *Biochim. e Terapia Sperim.* 17(6): 267-271. 1930.—By prolonged heating lecithin, suspended in water while conditions of asepsis and absence of air are maintained, is decomposed, and formation of fats and lysocithins follows. The presence of cholesterol prevents the hemolytic action of the lysocithin formed by decomposition of lecithin.—*M. Comel.*

13024. **KIMURA, MASAKICHI. Experimentelle Studien über intravenöse Fettinfusion unter besonderer Berücksichtigung parenteraler Ernährung. V. Mitteilung. Zur Frage des Übertritts intravenös infundierter Fette in die Lymphbahn.** *Tohoku Jour. Exp. Med.* 14(2/3): 275-282. 1929.—Kimura concludes that the injected fat is taken up directly by the tissues and none goes by way of the lymph. This, he thinks, is due to the fact that, unlike crystalloids, fat has no osmotic pressure; the body is rather indifferent to it, and the fluids do not migrate to dilute it as they do with crystalloids.—*W. C. Alvarez.*

MINERAL METABOLISM

13025. **BARTH, E. Untersuchungen über den Bleigehalt der menschlichen Knochen.** *Virchow's Arch. Path. Anat. u. Physiol.* 281(1): 146-151. 1931.—Bones of 30 adults who had never had lead sickness nor worked with lead, and of 10 infants from 1 day to 4 mos. of age, were examined for lead by Schmidt's micro-method; so far as possible epiphysis, diaphysis, flat bones, and red marrow were examined separately. In infant bones 0.01-0.03 mgm. and in one instance 0.04 mgm. Pb per 3 gm. bone ash was found; in young adults 0.02-0.065 mgm., usually 0.03-0.05 mgm; in older persons 0.06-0.19 mgm., averaging 0.08-0.14 mgm. Less Pb was present in marrow than in bony tissue. Persons using water from lead pipes showed no more Pb than the others. Apparently very small amounts of lead are constantly ingested and laid down, innocuous, in the bone. Since it does not come from water, foods must contain traces.—*Author's summary (transl.).*

13026. **FLINN, FREDERICK B., and J. M. INOUYE. Some physiological aspects of copper in the organism.** *Jour. Biol. Chem.* 84(1): 101-114. 2 fig. 1929.—The wide distribution of Cu in plant and animal kingdom indicates that it plays an important rôle in metabolism. The authors present results of animal experiments on the absorption, excretion, and distribution of Cu in the various tissues after feeding by mouth. White rats fed 1059.5 mgm. Cu in the drinking water in 82 days, excreted 1020.78 mgm. in the feces, and 12.36 mgm. in the urine. By placing a tube in the gall bladder its excretion in the bile was measured, the results indicating that part of that recovered in the feces had been temporarily absorbed. White rats and guinea pigs fed 2 mgm. Cu per day for 12 mos. were killed and the Cu determined in brain, bones, hair, heart, kidney, liver, lungs, muscles, and spleen. The distribution of Cu in the blood of cats after placing Cu solution in isolated loop of intestine was observed, the results indicating a concentration of Cu in plasma twice that in the corpuscles. No change of blood pigment to methemoglobin was found. Feeding Cu by mouth to rats and guinea pigs for 18 mos. yielded no evidence that Cu produces hemolysis; in fact Cu may play an important rôle in blood formation. The weight curves of Cu-fed rats showed higher average weights than a control group.—*W. S. McEllroy.*

13027. **HARA, HIROMITI. Biochemical studies of bone. (First report.)** *Bull. Agric. Chem. Soc. Japan* 7(1/3): 22-23. 1931.—Abstract of Japanese paper in *Jour. Agric. Chem. Soc. Japan.*

13028. **HARPUDER, KARL. Versuche über den Salzhaushalt nach länger dauernder Verfütterung kleiner Salzmengen.** *Zeitschr. Ges. Exp. Med.* 76(5/6): 709-714. 1931.—Rats (4 experimental series each of 6-7 rats, and 6-7 fresh water controls) were fed NaCl, KCl, and $CaCl_2$ solutions, and a compound solution (NaCl 8 gm., Na_2SO_4 3 gm., $CaCl_2$ 3 gm., and m/50 KH_2PO_4 a liter) for 4-6 weeks, were killed, and the Na, K, and Ca contents of spleen, liver, heart, muscle, kidneys, skin, and blood were determined. Simple NaCl and $CaCl_2$ solutions gave no deposit. KCl provoked increase of K in spleen, kidneys, and probably also in the heart. The compound solution increased Ca content of the spleen, perhaps also of kidneys and heart; and increased Na content of liver and muscles of the extremities.

13029. **McGHEE, J. L. Metallized food in the regeneration of hemoglobin in rat and man.** *Science* 73 (1891): 347-348. 3 fig. 1931.—The author found that metals dissolve in milk to an extent sufficient to supply requirements for rapid regeneration of hemoglobin in rat and man. Cu alone is effective but less so than when accompanied by other metals, especially Fe. Much less mortality occurs among rats fed on metallized milk than when salts of the metals are used in anemia tests. These metals produce no odor, color, taste or other observed change in milk with the quantities used, unless exposed to air and milk.—*Author's conclusion.*

13030. **ROMAN, W. Eine vergleichende Übersicht über den Jodgehalt von Meer- und Süsswasserfischen. Ein Beitrag zur Kropfprophylaxe. [Iodine content of salt- and fresh-water fish. Note on goiter prevention.]** *Mitteil. Deutsch. Seefischerei-Ver.* 46(11/12): 552-555. 1930. —A review.

13031. **SATO, KYU. Mechanism of the formation of rhodan in the body and the region of the formation. II. On the cells of the liver forming rhodan. [In Japanese,**

with English summary, p. 4.] *Jour. Oriental Med.* 14 (1): 1931.—The author had previously reported that thiocyanate is formed in the liver and intestine of rabbits and in the liver of dogs. This study proves that the stellate and parenchymal cells of the liver have the function of forming thiocyanate. The blood of a dog, with the stellate cells of the liver blockaded with India ink, the parenchymal cells poisoned with C, Cl_4, and P and the bile duct ligated, showed a marked decrease of thiocyanate formation after an injection of propionitrile. A part of the thiocyanate formed in the liver is excreted into the bile by means of the stellate and parenchymal cells.—*Author's summary.*

13032. **SÜLLMANN, H.** Zur Frage der Eisenresorption. *Biochem. Zeitschr.* 234 (1/4): 241-246. 1931.—In a preliminary report the author concludes that Fe in food, in so far as it is transformed into the ionized state by digestion, is absorbed in the small intestine as diffusible ferrous bicarbonate.

13033. **TAYLOR, NELSON W., and CHARLES SHEARD.** Microscopic and x-ray investigations on calcification of tissue. *Proc. Soc. Exp. Biol. & Med.* 26 (3): 257-258. 1928.—Preliminary paper.

GROWTH

13034. **JACKSON, C. M.** Recent work on the effects of inanition and of malnutrition on growth and structure. *Arch. Path.* 7 (6): 1042-1078; 8 (1): 81-122; 8 (2): 273-315. 1929.—A supplement to the author's previous monograph on "The effects of inanition and malnutrition upon growth and structure" (1925). The literature is reviewed under the headings of total inanition and partial inanition, the latter term including the effects of dietary deficiencies of protein, minerals, water, and vitamins (A, B, C, D, E, F). Bibliography of 727 titles. —*C. M. Jackson.*

13035. **LUDWIG, WILHELM.** Vergleichende Untersuchung über Wachstumsgesetze. *Biol. Zentralbl.* 49 (12): 735-758. 6 fig. 1929.—Every growth law depends on the fact of a self-limiting cell increase. Since there are but 4 simple continually diminishing functions, only 4 simple growth laws can exist: (A) $\phi = K(c-t)$ specific growth velocity decreases with time; (B) $\phi = K(c-v)$ specific growth velocity decreases with body size; (C) $\phi = k/t$ specific growth velocity is inversely proportional to time; and (D) $\phi = k/v$ specific growth velocity is inversely proportional to size. (A) has not been used so far and (D) only in a form identical with (C). Hence all the numerous growth formulae and laws are either (B) (Robertson-Pearl) or (C) (Schmalhausen). Neither can be theoretically preferable, and actual curves exist illustrating each type. It is concluded that these laws are too simple for an adequate formal handling of growth and too complicated for a physiological analysis. The mathematical treatment of growth seems for the present to have exhausted itself, and needs to be sustained by a more descriptive method.—*G. B. Moment.*

13036. **LUDWIG, WILHELM.** Über vergleichende Wachstumsuntersuchungen. Eine Erwiderung an Professor Schmalhausen. *Biol. Zentralbl.* 51 (3): 116-119. 1931. —A note, based chiefly on criticism and interpretation of some of Schmalhausen's contributions.

ANIMAL PHYSIOLOGY

DIGESTIVE SYSTEM AND DIGESTIVE SECRETIONS

A. J. CARLSON, *Editor*

(See also in this issue Entries 12470, 12499, 12966, 12971, 13016, 13020, 13186, 13294, 13298, 13315, 13331, 13332, 13334, 13350, 13383, 13435, 14505, 14796)

13037. **AUSTIN, J. H., and GEORGE D. GAMMON.** Gastric secretion after histamine: sodium and potassium content and pepsin estimation. *Jour. Clin. Investigation* 10 (2): 287-307. 1931.—The contents of the fasting stomach were studied before and after administration of histamine in 28 subjects, 17 forming a high acid and 11 a low acid group, for volume rate of secretion, titration and chlorides; some in each group were also studied for measurement of N, K and Na. Studies were also made on 2 dogs with fundic pouches. The results indicate that the period of maximal Na secretion after histamine is before the period of maximal acid secretion and not as the acid secretion is subsiding. A late increase in Na secretion was inferred by MacLean and Griffiths (1928) from the increase in neutral chloride in the gastric juice during subsidence of acid secretion following various types of stimulus other than histamine. The occasional increase in Na concentration in this period in the present studies is due to fall in acid secretion and not to increased rate of Na secretion. The rate of N and Na secretion in the low acid group is approximately the same as in the high acid group, no higher. K from its constancy of concentration appears to be a constituent in about the same concentration in the gastric secretion whether this be highly acid or neutral. The correlation in rate of secretion of Na and of N suggests that they are constituents of 1 part of the gastric secretion, a part which appears to be mucoid in character. These results appear to be consistent with the studies of Gamble and McIver (1928) and Polland, Roberts, and Bloomfield (1928). The course of secretion in the fundus pouches is sufficiently like that in the gastric contents of the patients to suggest that the major factor in determining the character of the gastric secretion obtained in these patients is the secretion of the fundus.

13038. **BELONOGOWA, N. S.** Über den Einfluss der Darmmotilität auf den Urobilinogengehalt der Faeces und des Harns. *Deutsches Arch. Klin. Med.* 170 (4): 436-444. 1931.—Determinations during constipation, diarrhea, and normal defecation in patients showed that there was a significant loss of urobilinogen with normal intestinal motility, and decreased loss when motility was increased, and vice versa. This loss was caused both by resorption from the intestine and by decomposition within it, the latter being the greater. The excretion of urobilinogen with the feces afforded no absolute measure for hemoglobin decomposition, nor could the duration of decomposition and the life of the erythrocytes be deduced. Comparative determinations should take intestinal motility into consideration.

13039. **BODENDÖRFER, L., und A. R. SELL.** Über die Wirkung von äusseren Temperaturreizen auf die Sekretionstätigkeit des Magens. *Deutsches Arch. Klin. Med.* 169 (3/4): 166-179. 1930.—The effect of hot and cold stimuli to the skin upon gastric secretion was studied in 170 healthy and sick individuals. A reduction in the acid value and a lessening of the amount of juice resulted from application of heat, and an increase in the acid value and the amount of juice from cold. Influence on the amount of juice preceded that on the acid value. Apparently the point of temperature application to the skin had no differentiating influence. Temp. stimulus to the esophagus influenced the secretions in the same way. This reaction to temp. irritation of the skin was not observed in cases of carcinoma of the stomach or of anacidity. Cold and histamine had the same effect on secretion and strengthened the reaction of each other when used in combination.—*Authors' summary (transl. by R. R. Best).*

13040. **BREDNOW, W.** Zur Autoplastik der Magenschleimhaut. [English and French summaries, (2): 7*.] *Fortschr. Geb. Röntgenstrahlen* 43 (1): 91-94. 5 fig. 1931. —A capsule only slowly soluble in the stomach and filled with opaque material was swallowed, followed by

the usual opaque fluid. Pronounced gastric movements, not otherwise visible, could then be visualized.

13041. **BUTTIAUX, R., G. PIETTE, et A. CHAVEY. Dispositif permettant le prélèvement aseptique des biles humaines par tubage duodénal.** [Removal of human bile through a duodenal tube.] *Arch. Mal. App. Digest. et Mal. de Nutrition* 21(5): 619-622. 1931.

13042. **[CHASOVNIKOV, N.] ЧАСОВНИКОВ, Н. О ходе секреторного процесса в клетках покровного эпителия желудка у некоторых амфибий и млекопитающих. [Secretory process in the protective epithelium cells of the stomach in some amphibians and mammals.]** Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 78: 345-364. 1 pl. 1926.—Mucous membrane of the stomach was studied in axolotl, salamander, cat, dog, rabbit, and rat. The author concluded that in these animals the protective epithelial cells of the stomach were real mucous elements, both morphologically and by nature of their secretions, differing from typical mucous cells only by their continuous function. They had no special differentiated cover. Secretion of mucus was twofold—slow in some cases, while in others (especially at the height of digestion or due to artificial irritation) it was so violent that part of the cell was torn away. Two main types of cells were distinguished: the active cells with a well-developed Golgi reticular apparatus, and cells with the secretory part associated with the nucleus and predominating over the reticular apparatus. The latter's chondriosome-fiber-forming activity makes it the important metabolic center of the cell.

13043. **CHOISY, R., et S. KATZENELBOGEN. Repas d'Ewald et épreuve de l'histamine. Résultats comparatifs.** *Arch. Mal. App. Digest. et Mal. de Nutrition* 21 (4): 455-464. 1931.—The Ewald test meal is as good a test of secretory function as the histamine test and hence should not be supplanted as a routine; additional complementary information may be gained by using both tests.—*F. R. Vanzant.*

13044. **DAHM, MAX. Die Bewegungen des Ösophagus im Röntgenbild.** *Fortschr. Geb. Röntgenstrahlen* 43(4): 464-475. 22 fig. 1931.—In addition to movements of distension varying according to the food, peristalsis was sometimes observed in the esophagus; pulsations from vessels and heart produced a pendulum motion. The thoracic portion was inactive.

13045. **DEDIČ, ST. Über physiologische Formierung und Motilität der Verdauungsorgane bei Habichten (Astur palumbarius).** [English and French summaries, p. 15*.] *Fortschr. Geb. Röntgenstrahlen* 43(3): 367-370. 12 fig. 1931.—Roentgenological examinations were made on 3 European goshawks with Ba suspension. The crop was found to serve as a provisional food storehouse. The actual gastrointestinal tract showed no marked deviation from that of the human digestive organs.

13046. **DELHOUGNE, FRANZ. Über den Gehalt des Magensaftes an phosphorhaltigen Substanzen.** *Deutsches Arch. Klin. Med.* 170(5/6): 609-613. 1931.—In 10 healthy subjects with normal gastric juice, P-containing substances averaged 2-4 mgm. %; in 15 with subacid gastric juice, values up to 20 mgm. % were found, the highest appearing in those who did not react to histamine. Hyperacid stomachs showed values near normal. In dogs there was 2-4 mgm. % P; after corrosion with 100 cc. 50% alcohol twice daily for several weeks, producing a severe atrophic gastritis, the P contents rose steadily. It is probable that the gland cells of the stomach excrete no phosphoric acid, and that P is present in the gastric juice in organic union.

13047. **ENGELMANN, B. Arbeitspausen und Nahrungsresorption bei körperlicher Schwerarbeit.** *Arbeitsphysiologie* 4(3): 217-226. 5 fig. 1931.—The absorption of carbohydrate, fat, and protein was determined with a subject who carried out severe muscular work under conditions corresponding to hard physical labor in actual life. The absorption was not decreased by beginning the tasks immediately after eating nor was absorption improved by pauses longer than usual in actual practice. —*Author's summary (transl. by T. M. Carpenter).*

13048. **FLÖSSNER, O., und F. KUTSCHER. Beiträge zur Biochemie der Selachier. 1. Untersuchungen über die Leber von Raja clavata.** *Zeitschr. Biol.* 88(4): 390-394. 1929.—Chemical analysis was made of the livers of 11 fresh specimens of *R. clavata*. In the water soluble extract the following substances were found: Adenin, cholin, neosin, histidin, acanthin, sarcolactic acid, n-valerianic acid and traces of volatile acids. These results differ from those of Kutscher and Berlin on the liver of the shark, from which they were able to isolate besides acanthin also betain and cholin.—*A. C. Ivy.*

13049. **GALPERIN, S. J. Neue Angaben über die Tätigkeit des präpylorischen Sphincters. I. Die Wirkung der Scheinfütterung auf den Übergang der Nahrung aus dem Fundus in den pylorischen Teil des Magens.** *Zeitschr. Ges. Exp. Med.* 74(1/2): 114-127. 1930.—The 22 experiments were performed on a dog with 3 fistulae, pyloric, fundal and duodenal. The first series of experiments confirmed observations of Orbeli and Chosroev, showing that fat introduced into duodenum inhibits the passage of food from the fundus to the pyloric part of a stomach. The dog was then esophagotomized. The next experiments showed that during sham feeding there is complete or partial reflex closure of the prepyloric sphincter, which lasts during whole period of sham feeding and divides the stomach into 2 separate cavities—fundic and pyloric. An essential part of the reflex effect of a sham feeding is due to the mechanical stimulation of the oral mucosa. During vomiting movements, which are caused not only by apomorphin (Cannon, Roschansky) but also by the sticking of food in the throat and upper portion of the esophagus, strong and protracted contractions of the prepyloric sphincter were observed. The "psychic" impetus (excitation by the feeding) has apparently a tonic effect on the prepyloric sphincter.—*P. S. Kupalov.*

13050. **GARIN, CH., et P. BERNAY. La gastrophotographie. Premiers résultats.** *Arch. Mal. de App. Digest. et Mal. de Nutrition* 21(5): 558-562. 1931.—Description of the scope of the method of examination, its limitations and possibilities.—*F. R. Vanzant.*

13051. **GOLDSTEIN, BORIS. Zur Physiologie des isolierten Pankreas. V. Über den Mechanismus der Sekretinwirkung.** *Zeitschr. Ges. Exp. Med.* 75(1/2): 182-193. 1931.—Dog's isolated pancreas perfused with Ringer-Locke solution does not secrete on secretin stimulation when the perfusate is bicarbonate-free, but secretes copiously as soon as the perfusate is changed for Ringer-Locke containing 0.15% $NaHCO_3$ and no secretin; on the other hand, no secretion follows perfusion with secretin preceded by perfusion with bicarbonate. Similarly, the increased secretion of adrenaline by the isolated suprarenals under the action of secretin only occurs when the perfusate contains bicarbonate. The author concludes that secretin becomes bound in the tissue cells, which secrete only when their environment becomes more alkaline, this being effected by the power of the fixed secretin to attract bicarbonate. The stronger the secretion of secretin juice by the pancreas, the greater is its alkalinity, whereas the enzyme concentration falls. The volume of juice secreted in a given time depends on the concentration of bicarbonate in the perfusate, the salt passing quantitatively from the latter into the secretion. The higher the concentration of secretin in the perfusate, the longer the secretion lasts; the total quantity of the secreted juice in any experiment is proportional to the square root of the secretin concentration in the perfusate.—*R. J. Brocklehurst.*

13052. **HAUROWITZ, FELIX. Der Abbau des Blutfarbstoffes im Verdauungstrakt des gesunden Menschen.** *Arch. Verdauungs-Krankh.* 50(1/2): 33-46. 1931.—On a blood- and chlorophyll-free diet the author took 50 cc. blood per os. Most of the pigment appeared in the feces as protohemin (85-90%), some in the free, pyridine-soluble form, some combined with lipids and protein

products of decomposition, perhaps as heminproteose. From the second day increasing amounts of deuterohemin (total 5-8%) appeared in addition to the protohemin; only a small part of the pigment was decomposed to porphyrines. The remainder, 2-3%, was excreted as a protoporphyrine fraction, 0.5-1% as a deuteroporphyrine. Excretion of coproporphyrine was not affected by ingestion of blood. Deuterohemin, proto- and deuteroporphyrine arise by decomposition, not by digestion; only derivatives of protohemin were obtained by treatment of human blood pigments with pepsin-HCl followed by trypsine digestion. In tests in vitro no pigment was found in the original form, for the gastric juice transforms it in a few minutes; soda-trypsine solution or an excess of trypsine acted slowly and original pigments were still present after 24 hrs. Thus in subjects with achylia, unaltered pigments would be expected in the feces.

13053. **KOSCHTOJANZ, CH. Beitrag zur Physiologie des Embryos (Embryosecretin).** *Pflüger's Arch. Ges. Physiol.* 227 (3) : 359-360. 1931.—HCl extracts were made of various sections of the digestive tract and of embryonal tissue and fluids of a large number of dog embryos, chicken embryos to the 14th day of incubation, and human embryos of 3, 3½, and 4½ mos., and newly born kittens that had not yet nursed, and injected into the femoral vein of a dog with temporary pancreatic fistula. The extract from the duodenal mucosa of the dogs (6/14 cm. long), kittens, and the human embryo of 4½ mos. called forth the typical secretin effect; the other intestinal extracts and those from liver, stomach, meconium, and amniotic fluid did not. These results indicate that secretin has a specifically hormonal nature, and that its formation is related to a definite morphological structure; its appearance at a specific stage of development shows that the highly active secretin is formed only in completely differentiated tissue, here the cephalad end of the small intestine.

ANIMAL PHYSIOLOGY

ENDOCRINOLOGY

W. W. SWINGLE, *Editor*

J. J. PFIFFNER, *Associate Editor*

(See also in this issue Entries 12899, 12944, 12963, 13003, 13014, 13051, 13106, 13115, 13117, 13119, 13120, 13184, 13195, 13251, 13260, 13324, 13347, 13352, 13359, 13377, 13394, 13407, 13420, 13427, 13428, 13472, 13482, 13483, 14334, 14395, 14442)

13054. **ABELIN, I. Thyroxin und Thyreoidea.** *Biochem. Zeitschr.* 228 (1/3) : 233-249. 1930.—When rats were fed thyroid substance for 6-9 days, no glycogen was stored in the liver; but after 2 to 3 mos. without thyroid feeding, deposition was resumed; the livers stored glycogen in small but significant amounts. This change in response suggests to Abelin the well known defense reactions in connection with various antigens. When thyroxin was substituted for thyroid and given, in comparable quantities, parenterally instead of by mouth, the defense reaction did not occur after the 2nd period of injections; furthermore, the respiratory exchange was materially increased. Abelin points out that while iodothyreoglobulin has been found in the blood stream, thyroxin has not; which supports his view that thyroxin is not a true thyroid hormone but a fragment of a larger, protein-thyroxin molecule, and suggests a basis for its relative toxicity as a foreign substance not occurring normally in the body.—*H. B. Torrey.*

13055. **ALBRIGHT, FULLER, WALTER BAUER, JESSIE REED COCKRILL, and READ ELLSWORTH. Studies on the physiology of the parathyroid glands. II. The relation of the serum calcium to the serum phosphorus at different levels of parathyroid activity.** *Jour. Clin. Investigation* 9 (4) : 659-677. 1931.—From an analysis of 354 simultaneous determinations of serum Ca and serum inorganic P in patients at varying degrees of hypo- and hyperparathyroidism, it would appear that one rises as the other falls to such a degree that their product remains roughly constant. It is pointed out that such a constancy implies a slight reduction of P at high levels of Ca but a marked increase of P at low levels of Ca. The question is raised whether this constancy represents the direct expression of a law or whether it is merely a close approximation to some law. In this connection it is pointed out that if Ca and phosphate are precipitated in the bones as secondary Ca phosphate and if the effect introduced by serum protein can be shown to be constant there may be chemical support to such a constancy. The effects of serum protein, the thyroid hormone, the species of organism, the phenomenon of growth and pH on the product of Ca × P are discussed. It is believed that dysfunctions of the parathyroid glands belong to that group of Ca disorders in which the body fluids contain a normal amount of Ca phosphate but in which the relation of the Ca to the phosphate is abnormal. However, at very high levels of Ca a secondary phenomenon occurs. P is no longer excreted in the urine and serum P abruptly rises. This results in a disorder of Ca metabolism where the body fluids contain an increased amount of Ca phosphate and leads to Ca phosphate precipitation in tissues other than bone. The data give no clue as to whether with parathyroid administration the serum Ca rises because the serum P falls, or whether the serum P falls because the serum Ca rises. Based on this data alone one supposition is as logical as the other.—*Authors' summary.*

13056. **BACQ, Z. M., and S. DWORKIN. The heart rate after sympathectomy and vagotomy and the blood sugar as affected by posterior hypophyseal extracts (pitressin and pitocin).** *Amer. Jour. Physiol.* 95 (3) : 605-613. 1930.—In 6 normal cats pitressin, injected intravenously, caused a prompt reduction in heart rate (confirming Gruber's observations). In 4 normal cats pitocin had little effect. In 4 surviving vagotomized cats, pitressin reduced the heart rate, but to a level still far above the average basal rate for a normal animal. In cats surviving excision of both sympathetic chains, the action of pitressin upon heart rate was dependent upon the presence or absence of (central) vagus innervation to the heart. Slowing occurs when the vagi are present [2 cats]; marked acceleration when these nerves have been sectioned [4 cats]. Both pitressin and pitocin, given intravenously [to 6 normal cats], caused a prompt rise in blood-sugar concentration. The hyperglycemia may last as long as 2 hrs. In 5 sympathectomized cats the glycemic effect of pitressin was somewhat less than in normal animals, but not markedly so.—*Authors' conclusions.*

13057. **BAYER, GUSTAV von. Hypophyse und Chromatophorenreaktion.** *Endokrinologie* 6 (4) : 249-254. 4 fig. 1930.—Description of a "white" frog in which the lack of color was not due to a loss of pigment, but rather to the persistent contraction of the pigment cells. Sections of the hypophysis show a cyst-like formation replacing the pars intermedia. Since melanophore expansion and contraction were absent it is assumed that the pars intermedia secretes or liberates a melanophore-activating principle.—*B. Cunningham.*

13058. **BERGFELD, W. Der Einfluss des Tageslichtes auf die Rattenschilddrüse mit Berücksichtigung des Grundumsatzes.** *Endokrinologie* 6 (4) : 269-298. 15 fig. 1930.—Experiments carried out at Freiburg indicated a definite relationship between the function of the thyroid of the rat and light, darkness interfering with proper functioning. Later experiments at Bern indicated the

same differences, but to a much less degree. The author thinks the differences may be due to the quality of light, the Freiburg rats receiving more ultra-violet. Basal metabolism studies made of the Bern rats showed about 10% increase in O consumption and CO_2 output in favor of the "light rats." The heat production was slightly higher, but not significantly so, in the animals in the dark. The thyroid effect is not transmitted through the sympathetic nervous system.—*B. Cunningham.*

13059. **BLANCHETIÈRE, A., L. BINET, et A. ARNAUDET. Capsules surrénales et glutathion.** *Jour. Physiol. et Path. Gén.* 28(4): 816-821. 1930.—The suprarenal gland is, in the dog, richer in glutathione than any other tissue; the average value being 482 mgm. glutathione per 100 gm. fresh tissue. The glutathione content is reduced by ovariotomy, and increased during gestation. Venous suprarenal blood is particularly rich in glutathione.—*W. R. Fearon.*

13060. **BORST, MAX. Ueber Beziehungen zwischen Hypophysenvorderlappenhormon (Prolan) und der maennlichen Keimdruese.** *Deutsche Med. Wochenschr.* 56(27): 1117-1120. 5 fig. 1930.—Experiments were made on ♂ white mice (62 receiving prolan and 51 controls) divided into 3 age groups, No. I consisting of mice up to the 26th day of life (with immature sexual glands), No. II, mice 26-40 days old (with maturing sexual glands), and No. III, mice more than 40 days old (sexually mature animals). The germinative portion of the testicle in Group I was especially responsive to the stimulus of prolan; Groups II and III showed increasingly greater resistance and a variable reaction of the interstitial tissue.

13061. **BRÜDA, B. E., und W. M. KREINER. Reticuloendothel und Homoiotransplantation.** *Deutsche Zeitschr. Chir.* 228(6): 421-423. 1930.—After castration of 30 ♀ rats and establishment of the castrate type of vaginal secretion, 18 of the rats were irradiated with the x-ray and 12 left unirradiated. The ovaries of normal ♀ rats were grafted into 12 of the irradiated and 6 of the non-irradiated rats 24 hrs. after irradiation. This implantation was followed by reestablishment of the sexual cycle in all cases; but the change continued for a 6 mos. observation period, only in the case of the previously irradiated rats (with 1 exception); in those not irradiated, the cycle ceased in 2 mos. The control animals showed no change. This indicates that x-ray irradiation produces a better healing of implants, which is attributed to an inhibition of the action of the reticulo-endothelial system.

13062. **CALIFANO, L. L'ormone del lobo anteriore dell'ipofisi e la diagnosi biologica della gravidanza. [The hormone of the anterior lobe of hypophysis and the biological diagnosis of pregnancy.]** *Riv. Patol. Sperim.* 5(4/5): 422-426. 3 fig. 1930.—A review.

13063. **CERUTI, GIULIO, e ENNIO SAPEGNO. Azione dell'insulina sulla termoregolazione. [Action of insulin on thermoregulation.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 905-906. 1930.—No marked variations of internal body temp. followed administration of insulin in amounts not affecting blood glucose. When the latter dropped below 50-60 mgm. % a marked fall of temp. followed, rising only if glucose was administered. The decreased internal temp. is accompanied by a decreased skin temp., indicating a diminished heat production as causing the lowered temp.—*M. Comel.*

13064. **CHAHOVITCH, X. Influence de la thyroïdectomie sur le métabolisme énergétique (métabolisme de base et métabolisme de sommet).** *Compt. Rend. Soc. Biol.* 100(14): 1220-1221. 1929.—Thyroidectomy causes a great decrease in the maximum metabolism, and a decrease in thermogenic accommodation. Thyroid extract treatment increases the maximum metabolism.

13065. **CHARLES, A. F., and D. A. SCOTT. Action of proteolytic enzymes on crystalline insulin.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 95-99. 1930.—Insulin in its purest form is a crystalline protein. Whether its activity is due to the whole protein or is associated with a part of the protein, e.g., a peptide or an amino acid, is of interest. When insulin protein is broken into simpler substances by means of acid or alkaline hydrolysis the activity of the insulin disappears very early. "In fact, the potency of the insulin disappears long before any splitting of the protein can be detected. For this reason it seemed desirable to investigate the hydrolysis of insulin by other means, e.g., by proteolytic enzymes, and, further, to carry out these digestions on crystalline insulin." Crystalline insulin was digested by purified trypsin and by purified pepsin. Destruction of potency proceeded more rapidly than did digestion of the protein. It is concluded that "crystalline insulin cannot be broken down into a simpler, physiologically active substance by the proteolytic action of pepsin or of trypsin."

13066. **DEUTICKE, HANS JOACHIM. Über den Einfluss der Hypophyse auf die Tätigkeit des quergestreiften Muskels.** *Pflüger's Arch. Ges. Physiol.* 227(1/2): 24-44. 4 fig. 1931.—The effect of removal of the hypophysis on muscular contraction was tested in frogs. Artificial stimulation of the excised gastrocnemius of one leg was tested; 5 to 8 days after hypophysectomy, a similar test was made on the remaining gastrocnemius. Control animals gave comparable results to such tests and no effect was found as the result of operative exposure of the gland without removal. After removal of the hypophysis fatigue to isotonic contraction was induced much more rapidly. The tensions developed in isometric contractions with an initial stretch of 25 gm. were much below normal (often 50% or more). Improvement was seen with daily subcutaneous injections of extracts of either anterior or posterior lobes. These extracts had no definite effect on normal frogs.—*H. C. Bazett.*

13067. **DRAPER, W. B. I. The relative amounts of pressor and renal activity in "vasopressin" and "oxytocin." II. Some evidence indicating the presence of a third or renal hormone in the posterior lobe of the pituitary gland.** *Amer. Jour. Physiol.* 89(2): 273-279. 1929.—Experiments on spinal cats and bladder fistula dogs indicate that the renal activity of "oxytocin" is more than 50 times that of a pressor equivalent of "vasopressin" and 25 times that of a like amt. of standard pituitary powder. This is taken as indicating the presence of a 3rd or renal hormone in extracts of the posterior lobe of the pituitary gland which is chemically separate from the pressor and oxytocic hormones.—*Author's summary.*

13068. **DRZEWICKI, STEFAN. Über den Einfluss der Schilddrüsenextirpation auf die Zauneidechse.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 114(2/3): 155-176. 9 fig. 1928.—A relationship has been established between the shedding process and the function of the thyroid gland in the lizard, *Lacerta agilis.* After thyroidectomy the formation of the horny layer of the skin becomes continuous, i.e., no new epidermis and no new boundary layer are formed; hence the layers do not become detached. The skin loses its luster and becomes rough and wrinkled, due to the extraordinary growth of the horny layer. This disappears when the skin is shed. Lack of the thyroid also causes xerophthalmia, resulting from a horny, many-layered conjunctival epithelium over the cornea which cannot be shed. This also disappears upon shedding. Growth of the young lizard is prevented by thyroidectomy. Also a hypertrophy of the accessory thyroid gland (post branchial body), due to formation of large colloid filled follicles, is noticed. In the thymus tissue large cysts are formed filled with an acidophilic substance.—*P. E. Claus.*

13069. **FRANK, ROBERT T. The female sex hormone.** xiv+324p. Baillière, Tindall & Cox: London, 1930. Pr. 25s.

13070. **FREI, W., und MACK A. EMMERSON. Der Serumkalkspiegel beim Rinde mit besonderer Berücksichtigung der Beziehungen zum Geschlechtsapparat.** *Biochem. Zeitschr.* 226(4/6): 355-380. 1930.—The influence of age and of sexual factors was studied on 25 normal ♂ calves, 3-12 wks. old, 25 normal bulls, 1-6 yrs. old, 25 castrated steers, 1-10 yrs. old, 25 ♀ calves, and

150 cows 1-15 yrs. old. The conclusions are: Calves have more serum Ca than grown animals. The serum Ca content of the female calves is somewhat greater than that of the males. In cows the blood Ca decreases with increasing age. The Ca content of the serum in estrus is at a somewhat higher level than in anestrus. The exact sequence of the serum Ca variation in a cow shows a fall of the blood Ca before estrus, then in estrus a quick ascent until toward the end or shortly after estrus, when the Ca value again falls and in the corpus luteum phase rises slowly. Pregnant cows have less serum Ca than nonpregnant. Castration of male cattle seems to lower the blood Ca content, but increases it, however, in female animals. The cystic degeneration of the follicle in the ovary of cattle is associated with an elevation of the serum Ca content. The Ca content of the cystic fluid is somewhat greater than that of the blood serum. Injection of progynon (placental extract) into a cow causes a lowering of the serum Ca for several hours. The injection of sistomensin (ovarian extract) had a brief effect in the opposite direction, as also did injection of the extract of anterior pituitary. The variations of the serum Ca content are considered in relation to variations in the sympathetic-parasympathetic balance and with the endocrine organs.—*From authors' summary (transl. by G. L. Kelly).*

13071. [GAL'PERINA, R. K.] ГАЛЬПЕРИНА, Р. К. Некоторые наблюдения над теплорегуляцией у животных с травмированной эндокринной системой. [Thermic regulation in animals with lesions of the endocrine system.] [French résumé.] Архив Биологических Наук (*Arch. Sci. Biol.*) 30(5/6): 549-559. 1930.—Eleven dogs and 1 rabbit were observed. Hot and cold baths were used as mechanical stimuli. After a period of observation, the endocrine glands of the animals were surgically altered and the observations resumed. Dogs with lesions of the parathyroids displayed no change of thermic regulation in response to cold, but overheating provoked a considerable increase in body temperature and was not well borne, often leading to convulsions. Lesion of the thyroid lowered the average body temperature. The animals reacted normally to overheating, but cold caused the temperature to fall more sharply than in normals. However, thyroidin restored the thermic balance. The partial lesion of the suprarenal glands and their comparative insufficiency always increased the average body temperature. Overheating was met with a normal reaction, but cold, instead of the normal lowering of the temperature, induced its increase.

13072. **GOLDSTEIN, L. A., and A. J. TATELBAUM. Physiology of the corpus luteum. IV. Production of artificial deciduomata with extracts of the corpus luteum.** *Amer. Jour. Physiol.* 91(1): 14-18. 1 pl. 1929.—Experiments on 12 guinea pigs confirm the observation that corpus luteum extract contains a special hormone which has for 1 of its functions the sensitization of the uterine mucosa of the guinea pig so that deciduomata are formed upon indifferent stimulation of the endometrium during the proper period of the sexual cycle.

13073. **HABERLANDT, L. Über einen Erregungsstoff im Zentralnervensystem. III. Versuche am Warmblüter.** *Pflüger's Arch. Ges. Physiol.* 226(6): 781-785. 2 fig. 1931.—Feeding raw cerebral cortex or an extract thereof induced greater activity in guinea pigs isolated in individual cages than in controls.—*G. P. McCouch.*

13074. **HADLEY, CHARLES E. Color changes in excised and intact reptilian skin.** *Jour. Exp. Zool.* 58(1): 321-331. 1930.—The melanophores of isolated patches of the skin of *Anolis iodurus, A. carolinensis,* and *A. watsoni* respond directly to changes in illumination, thus making it probable that such a reaction is common to the genus. The melanophores of *A. iodurus* expand maximally following intraperitoneal injection of 0.5 cc. of 1:9 solution of pituitrin in Ringer's solution and remain expanded when the animal is exposed to a white background, to which the animal normally responds by rapid melanophore contraction. Intraperitoneal injection of adrenalin in Ringer's solution (1:10,000) produces melanophore contraction with subsequent failure of reaction to background. The melanophores of excised skin patches from *A. iodurus* expand rapidly when the skin is exposed to solutions of either pituitrin or adrenalin. The opposite effects produced upon melanophores of intact and excised skin by adrenalin indicate that direct action of adrenalin upon melanophores of an intact animal is unlikely, but the consistent expansion of melanophores of intact and excised skin stimulated by pituitrin solution admits of the possibility of a direct response of melanophores to pituitrin in the intact animal.—*Author (courtesy Wistar Bibl. Serv.).*

13075. **HORIE, KENJI. Experimentelle Untersuchungen über die Funktion der Nebennierenrinde. II. Einflüsse des Nebennierenrindenextraktes auf den Blutzucker.** *Manshu Igaku Zasshi (Jour. Oriental Med.)* 8: 53-86. 1928.—In rabbits intravenous injection of cortical extract produced an initial transient hyperglycemia and then, gradually, a hypoglycemia varying according to the dose. The effect appeared to be almost entirely dependent upon the choline content.

13076. **HOUSSAY, B. A. Acción sexual de la hipófisis en los peces y reptiles. [Hypophysis and gonads in fishes and reptiles.]** *Rev. Soc. Argentina Biol.* 6(9/10): 686-688. 1930.—Implantation of anterior lobe produced expulsion of eggs in *Cnesterodon decemmaculatus* and in the snake *Xenodon merremi.*—*J. T. Lewis.*

13077. **IVY, A. C., G. KLOSTER, G. E. DREWYER, and H. C. LUETH. The preparation of a secretin concentrate.** *Amer. Jour. Physiol.* 95(1): 35-39. 1930.—A method for the preparation of a secretin concentrate is described. It has proved reliable and yields a product which is active in doses of 1 mgm. or less in the anesthetized dog.—*Authors' summary.*

13078. **JUHN, MARY, G. H. FAULKNER, and R. G. GUSTAVSON. The correlation of rates of growth and hormone threshold in the feathers of fowls.** *Jour. Exp. Zool.* 58(1): 69-111. 3 pl. 1930.—In the Brown Leghorn cock and capon the regenerating plumage shows different rates of growth in distinct and readily recognized areas. The more rapidly growing feathers require higher concentrations of the chemically prepared female hormone for the female reaction than feathers having a slower growth rate and, conversely, the more rapidly growing feathers revert to the male type before the more slowly growing feathers after cessation of female-hormone injection. The order of reversion in time of feathers having different threshold values for the female hormone after interruption of injections may therefore be used as an estimate of the concentration of the persisting hormone. Repeated daily injections of female hormone (dissolved in olive oil) increase the concentration effective in female-plumage modification to a certain degree. An estimate of this hormone summation is arrived at by comparing the female-hormone response recorded in feathers having different thresholds when alternate cycles of injections and intervals without injections are repeated during the time of feather regeneration.—*Authors (courtesy Wistar Bibl. Serv.).*

13079. **LOEWE, S., H. E. VOSS, und ELISABETH PAAS. Über weibliche Sexualhormone (Thelykinine). XIII. Beobachtungen zur Frage der Thelykininwirkung an Vögeln. [Female sexual hormones (thelykinin). Effect of thelykinin on birds.]** *Pflüger's Arch. Ges. Physiol.* 215(3): 453-456. 1927.

13080. **LONDON, E. S., and N. P. KOTCHNEFF. Dynamics of insulin secretion by the pancreas and epinephrine secretion by the suprarenal gland.** *Proc. Soc. Exp. Biol. & Med.* 27(9): 1035-1036. 1930.—Preliminary paper.

13081. **McCLENDON, J. F., GEORGE BURR, and CLAIRE CONKLIN. Basal metabolism (oxygen) of normal women in relation to injection of follicular hormone.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 265-266. 1928.—Preliminary paper.

13082. **MARCHLEWSKI, L., et BOL. SKARZYŃSKI. Absorption of ultraviolet light by some hormones and**

allied substances. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. A: Sci. Math.* 4 (5A): 241-254. 5 fig. 1929.—Absorption spectra of the hydrochlorides of *d*, *l*-ephedrine, *l*-ephedrine, and ps-ephedrine are approximately the same when examined in non-polarized light. While the absorption caused by ephedrine is weaker and of quite a different character from that caused by adrenaline, the intensity of absorption of ultraviolet light by adrenaline, pyrocatechol, and dihydroxyphenylalanine is of the same order. The absorption spectra of two preparations of synthetic thyroxine were found to agree approximately. Values for *o*-hydroxytyrosine are given.—*A. M. Woodruff.*

13083. **MIGLIAVACCA, ANGELO. L'insulina e i suoi rapporti con l'ovulazione. (Con dimostrazione di preparati microscopici.) [Insulin and its relation to ovulation.]** *Boll. Soc. Med.-Chir. Pavia* 44(4): 453-460. 1930.—Insulin was subcutaneously injected into 7 white rats, 5 clinical units daily for 30 days into 4 rats and 10 units daily for 20 days into 3 rats. All gained weight under treatment. One rat (10 units daily) was killed 15 days from beginning treatment, 1 rat (5 units daily) at the end of treatment, 2 rats (5 and 10 units respectively) a month after the end of treatment. The ovaries of all these animals showed a remarkable increase in the number of corpora lutea and a consequent arrest in the growth of graafian follicles. The 3 remaining rats were mated but remained sterile, a result which Migliavacca attributes to the ovarian modification. He believes that insulin acts directly on the ovary, but does not deny the possibility that it may act indirectly through the anterior pituitary.

13084. **MUKHERJEE, HARENDRA NATH. The production of hypoglycaemia in rabbits by oral administration of precipitated insulin.** *Jour. Physiol.* 70(2): 182-183. 1930.—The phosphotungstate precipitate obtained from crude insulin when administered by mouth definitely lowers the blood-sugar level. In many cases the effect is as marked as after subcutaneous administration of insulin, as evidenced by marked hypoglycaemia (a blood-sugar level as low as 0.015% has been observed), paralysis and convulsions appearing within 1-2 hrs. of the oral administration in rabbits. The effect on diabetic patients is also very marked and definite beneficial results such as decrease in hyperglycaemia, polyuria and glycosuria have been obtained in patients following oral administration for a few days. The substance does not appear to have toxic effect when thus administered. The tungstic acid precipitate of crude insulin has also been tried in a few cases (rabbits) and appears to be equally effective. The animals showing marked hypoglycaemia appear to have an increased tendency to bleed, as there is some difficulty in stopping the bleeding; this disappears on subcutaneous administration of glucose.—*Author's summary.*

13085. **PARHON, C. I., et (Mme.) T. CAHANE. Recherches expérimentales concernant l'action du traitement thymique sur la croissance.** *Compt. Rend. Soc. Biol.* 106(9): 756-758. 1931.—Five dogs, 2 cats, 7 guinea pigs, 2 cocks, 1 hen and 2 ducks were fed fresh thymus. All the animals were young. In some cases the treated animals increased in weight more than the controls; in others the controls gained more than the experimental animals.—*E. Weiner.*

13086. **PARHON, C. I., et (Mme.) T. CAHANE. Sur la teneur en calcium et en eau du muscle cardiaque des animaux hyperthyroidises.** *Compt. Rend. Soc. Biol.* 106(9): 758-760. 1931.—Treatment with a solution of thyroxine or dried thyroid increased the Ca content of cardiac muscle in 2 mice and 3 guinea pigs. In the rat the Ca content decreased. The water content decreased in 2 rats and 2 guinea pigs. Cardiac muscle is the same as skeletal muscle with respect to the effect on water content but differs in effect on Ca content.—*E. Weiner.*

13087. **PHILIPP, E. Die biologische Differenzierung der Hypophysenvorderlappenhormone.** *Zentralbl. Gynäkol.* 55(1): 12-16. 1931.—Transplantation of 32 rabbit hypophyses into an unstated number of infantile ♀ mice produced only the action of follicular maturation, not luteinization. Two hypophyses each were implanted into 3 normal ♀ rabbits; when killed 5 days later only the follicular action was evident. Implantation of 5-7 guinea pig hypophyses into 8 rabbits gave the same result; so did implantation of 2-3 guinea pig hypophyses each into infantile ♀ mice. When human hypophyses from non-pregnant ♀♀ were implanted into rabbits the typical pregravid uterine mucosa, corpora lutea atretica, and pronounced luteinization of the ovary occurred. When implanted with hypophysis from a woman dying in the 3rd day of the puerperium no action on the uterus or ovaries occurred.

13088. **RACCHIUSA, S., e A. CRISERA'. Presunta influenza della midolla surrenale sull'iperglicemia alimentare. [On the alleged influence of the adrenal medulla on alimentary hyperglycemia.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 993-996. 1930.—Extirpation of the adrenals was followed in dogs, immediately after operation, by a marked fall of temperature; hypoglycemia never occurred. In some cases marked hyperglycemia followed.—*M. Comel.*

13089. **RING, G. C., S. DWORKIN, and Z. M. BACQ. Basal metabolism after thyroxin in sympathectomized animals.** *Amer. Jour. Physiol.* 97(2): 315-318. 1931.—In cats removal of the thoraco-lumbar sympathetic chains did not prevent the usual rise in metabolism after thyroxin, thus failing to sustain the theory of Abderhalden and Wertheimer that thyroxin raises metabolism indirectly by stimulating the sympathetic nervous system.

13090. **SANKARAN, G. The iodine-content of the normal thyroid of albino rats.** *Indian Jour. Med. Res.* 18(2): 563-575. 1930.—Figures are given for weights and I-content of the thyroids of 107 normal Coonoor stock, albino rats. The relation of the I-content of the thyroid to thyroid-weight and to body-weight has been studied statistically: The thyroid-weight increases with the body-weight. The 2 are almost directly proportional and the relationship has been represented by a regression line; there is no demonstrable difference between the 2 sexes. The I-content of the thyroids is directly proportional to their weight and has a mean value of 0.018%. Sex and age make no difference in the concentration of I in the thyroid.—*Author's summary.*

13091. **SCHIFFER, A. L., and L. B. NICE. Double adrenalectomy and the oestrous cycle in the white rat.** *Amer. Jour. Physiol.* 95(2): 292-293. 1930.—In 23 ♀ rats the differences between the oestrous cycle before and that after operation were slight and unimportant.

13092. **SIMS, H. des B., and D. A. SCOTT. Spectroscopic properties of insulin.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 117-119. 2 pl. 1930.—Amorphous insulin from a stock powder, with a potency of 13 units per mgm., and crystalline insulin, with a potency of 25 units per mgm., were studied. Amorphous insulin gave bands in the emission spectrum at 4216, 4917, 4182, 4168, 4158, and 4153 Å; crystalline insulin showed bands in the absorption spectrum at 2890-2820, 2775-2700, and 2440, 2870-2820, and 2410 Å.

13093. **SLAWSON, CHESTER B. Crystallographic description of Theelin.** *Jour. Biol. Chem.* 87(2): 373-374. 1 fig. 1930.

13094. **TERNI, TULLIO. Sul significato biologico del corpo ultimobranchiale. [Biological significance of the post-branchial body.]** *Atti R. Ist. Veneto Sci. Lett. ed Arti* 87(2): 197-206. 2 fig. 1927/1928.—The weight of the post-branchial body of the fowl was determined for various ages from the 6th day of embryonic life to 1 yr. of age. Absolute weight increases rapidly in the embryo, more slowly in the chick, and reaches its definitive value (around 16 mgm.) at 3 mos. Weight of the post-branchial body (p) relative to the weight of the body (P), $[p \times 1000]/P$, reaches its maximum value at 16 days of age, and decreases thereafter at least to 1 yr. This growth rhythm is different from that of the thyroid.

Tadpoles (*Bufo vulgaris*), in lots of about 20, were fed (1) post-branchial body, (2) parathyroid, (3) thyroid, (4) thymus, and (5) muscle of fowl. Feeding began April 15, when the tadpoles were about 12 mm. long; appearance of the posterior limbs was somewhat tardy in the lot fed postbranchial body, as compared with that fed thyroid. Those fed thyroid metamorphosed at the end of May; by the beginning of July those fed post-branchial body were mostly dead; the survivors had not begun to metamorphose. Those fed parathyroid and thymus did not metamorphose. This evidence, the author believes, supports his earlier conclusion that the post-branchial body of the fowl has an endocrine function.

13095. **TSAI, C., and F. HSU. Plasma calcium and inorganic phosphorus following intravenous injection of parathyroid extract: a study on the source of mobilized calcium.** *Chinese Jour. Physiol.* 4: 265-272. 1930.—Four adult healthy dogs were injected intravenously with Collip's parathyroid extract, and plasma Ca and inorganic P were estimated both before and at frequent intervals after the injection. Both Ca and P rise after injection, the elevation of P being about 2 hrs. behind that of Ca. The recovery of the inorganic P is much slower, probably due to a slower rate of excretion. The rate of the absolute value of increase of these 2 constituents is approximately 2: 1, thus supporting the hypothesis that the mobilized Ca and P are derived from Ca phosphate of the bone.

13096. **WEIL, RUDOLPH, und MARTIN LANDSBERG. Über die Wirkungsweise des Schilddrüsenhormons.** *Biochem. Zeitschr.* 207 (1/3) : 186-193. 1 fig. 1929.—Reviews the literature indicating that the thyroid hormone acts primarily on protein metabolism. Presents the results of experiments showing that the addition of thyroxin increases the rate of autolysis of liver broth. Thyroxin action is explained on a physico-chemical basis which includes a discussion of its influence on cell permeability. The question of whether or not the thyroid hormone acts principally through the sympathetic nervous system is considered.—*C. B. Davis.*

ANIMAL PHYSIOLOGY

REPRODUCTION AND LACTATION

OSCAR RIDDLE, *Editor*

(See also in this issue Entries 12532, 12568, 12911, 12943, 12963, 12985, 13009, 13059, 13061, 13062, 13069, 13072, 13076, 13083, 13087, 13184, 13265, 13307, 13324, 13352, 13376, 13389, 13414, 13435, 13508, 13541, 13958, 14381, 14395, 14440, 14446, 14450, 14461, 14961)

13097. **ARON, MAX. La triple potentialité évolutive des cellules de Sertoli chez les Urodèles. Contribution à l'étude des facteurs de la différentiation cellulaire.** *Arch. Anat. Microsc.* 25: 257-269. 6 fig. 1929.—The Sertoli cells of the seminiferous tubules in urodeles have 3 functions. Ordinarily, as with other vertebrates, they contribute nutriment to the spermatozoa, which, grouped isogenically, insert their heads into the cytoplasm of the Sertoli cells. At moments of periodic sexual activity, when the seminiferous tubules suddenly void their spermatozoa, the Sertoli cells are transformed into large glandular cells that fill the tubules by a process comparable to the formation of corpora lutea in the mammalian ovary and, according to the author, thenceforth assume an endocrine function and elaborate the sexual hormone. Finally, under various physiological or experimental conditions, the Sertoli cells can be phagocytic to the spermatozoa if their expulsion is retarded or prevented. The development of these 3 functions depends on local or general factors.—*M. Aron (transl. by E. W. Count).*

13098. **BARFORD, L. J. Sex determination.** *Lancet* 220 (5610) : 554. 1931.—Letter. Case in which date of intercourse and menstrual periods were known and gestation was 330 days from date of intercourse, resulting in ♂ child although in maximum girl time according to Erskine. (*Lancet* 220 (5608) : 440. 1931.)

13099. **BECCARI, NELLO. La inversione sperimentale del sesso nei vertebrati. [Experimental sex-inversion among vertebrates.]** *Atti Soc. Ital. Progr. Sci.* 1929: 641-657. 1930; also in *Boll. Soc. Ital. Biol. Sper.* 4 (9) : 1081-1103. 1929.—Review of recent literature.

13100. **BRANDSTRUP, E. On the passage of some substances from mother to fetus in the last part of pregnancy. II.** *Acta Obstetr. et Gynecol. Scand.* 11 (1/2) : 85-111. 1931.—The experiments show that in rabbits—as previously demonstrated in man—the amino-acid concentration is normally higher in the fetal blood than in the maternal; also that an increase of the amino-acid concentration in the mother is at once followed by a passage of amino-acid to the fetus, until balance is established between the 2 circulations. This passage proceeds slowly; as a rule it takes at least 2-3 hrs. before an approximate equilibrium is reached. The fetal surplus of amino N in man at parturition and in rabbits before the injection has been cited as conclusive evidence of a vital cell function in the passage of amino-acids from mother to fetus; the conclusion here reached is that no decisive importance may be attached to the slight surplus of amino N in the fetal plasma as a suggestion of a vital function exerted by the chorionic villi. The fetus is probably supplied with its protein in such a way that the amino-acids in the fetal blood are bound by the fetal tissues and organs in which the protein synthesis takes place, the quantity and quality being determined by the individual fetal cells. When there is a fall in the amino-acid concentration of the fetal blood, amino-acids pass over from the maternal blood by diffusion through the placenta.

13101. **DETRE, LADISLAUS. Über die menstruellen Veränderungen der roten Blutkörperchen.** *Zeitschr. Ges. Exp. Med.* 59 (1/2) : 240-247. 1928.—The author examined the blood, hemoglobin and premenstrual volume of 9 regularly menstruating women. He concludes that the red blood cells of the premenstrual stage are of the same size as those in circulation earlier, but that these cells are poorer in hemoglobin. Stimulation of the bone marrow occurs either as one of the extra-genital symptoms of the premenstrual phase or is a secondary finding accompanying changes in metabolism. These changes accompany premenstrual acidosis. Theoretically, the erythrocyte curve shows a premenstrual maximum, an intra-menstrual decrease and interval minimum. It is probable that the increase of the acid substances in the blood causes the increase in the number of red blood cells. The regular recurring changes in the acid substances are coincident with the changes in the count of the red blood cells in the normal non-pregnant woman.—*J. E. Lackner.*

13102. **DULZETTO, FILIPPO. Sulla distruzione della membrana vaginale come indice della maturità sessuale della femmina del ratto (Epimys norvegicus Erxleben). [On the destruction of the vaginal membrane as an indication of the sexual maturity of the ♀ rat.]** *Boll. Soc. Italiana Biol. Sper.* 3 (1) : 40-43. 1928.—Before puberty the vagina of the rat is closed by a membrane which is destroyed by a peculiar process at a definite time in the sexual life. This may be taken as the index of sexual maturity in the rat, as the follicular phase then starts, and the ♀ is in heat. By mating 29 ♀♀ immediately after the opening of the vagina, it was found that pregnancy sometimes begins on the day of copulation.—*F. Dulzetto (transl. by P. Popenoe).*

13103. **FUJITA, T., und SH. SUGIMURA. Zur Physi-**

ologie der Samenleiterbewegung. 1. Die Form der Samenleiterbewegung bei direkter und indirekter Reizung. *Tohoku Jour. Exp. Med.* 13(3/4): 341-356. 1929.—Indirect (hypogastric) stimulation of the rabbit or guinea pig vas deferens, either in situ or after removal from the body, induced a rapid and powerful contraction with longitudinal shortening, thickening and increased rigidity. The contraction began at the urethral end and spread quickly along the vas, which persisted in the contracted condition for a considerable time. This was identical with the normal reflex movement. In direct stimulation the contraction began at the point of stimulation and spread in both directions, but more markedly toward the exterior since the vesicular and middle portions were more irritable than the testicular end. The lumen decreased with the contraction, due to constriction of the circular musculature. The movements of the vas deferens of the dog and cat were essentially the same but not so forcible. There was no evidence of a peristaltic or anti-peristaltic type of movement. Indirect stimulation of vas deferens in situ, and after injection of India ink solution at the cut vesicular end, indicated that while the contents are immediately expelled toward the vesicular end, subsequent relaxation of the musculature may produce a back flow. This suggests the possibility of aspiration of substances present outside the opening of the vas deferens. Hence, the pathogenesis of acute ascending infectious epididymitis, and of epididymitis antiperistaltica of Oppenheim, may be explained without the assumption of anti-peristaltic movements in the vas deferens.—*K. E. Mason.*

13104. **GAUDENZ, DOMENIC. Beiträge zur Biologie zweieiiger Zwillinge an Hand von 142 Sippschaftstafeln aus dem Engadin.** 38p. Dissertation, Universität Zürich, J. J. Meier: Zurich, 1928.—Environmental factors seem to have no influence on the frequency of twin births. The hereditary influence, on the contrary, is proved. 208 siblings with twins (142 of them di-ovular) have been studied in a region (the Rheto-Roman part of Switzerland) known during centuries for its excessive consanguinity. In ½ of the cases the heredity can be proved in the ancestry of the mother; in a little less than ⅔ of the cases the ancestry of the father; and in the rest, in heredity on both sides. The old theory of a double ovulation is no longer tenable, since the father has inherited the property of causing the birth of twins. No connection between psychic degeneration and twin births was found. No deviation of the sex proportion, as first assumed by the author, could be established.—*D. Gaudenz.*

13105. **GUILBERT, H. R., and G. H. HART. Some effects of varying calcium and phosphorus intake on the estrus cycle and reproduction in the rat.** *Hilgardia* 5 (5): 101-118. 2 fig. 1930.—In an experiment with rats which was collateral to an extensive project on factors influencing reproduction in range cattle, a diet containing 0.22% P with a Ca: P ratio of approximately 4: 1 seriously interfered with growth and sexual maturity of female rats placed upon the diet at weaning time. Diets containing 0.18 to 0.22% P with a ratio of approximately 4: 1 fed to rats from sexual maturity to about 100 days of age caused ovulation to be irregular or to cease entirely. This level appeared adequate to maintain normal estrus cycle after about 110 days of age. Increasing Ca in the diets had the effect of intensifying P deficiency. A diet containing 0.22% of Ca with other factors adequate did not limit growth, estrus, gestation or lactation through 2 successive lactation periods.—*H. R. Guilbert.*

13106. **GUNN, R. M. C., and H. R. SEDDON. Testicular grafts on rams.** *Veterinary Record* 11(18): 494-499. 1931.—Apparently normal living, but not growing, testicular and epididymal tissue has been recovered as long as 24 days after grafting merino rams. Absorption of testicular tissue grafted on to the parietal tunica vaginalis of the scrotum appears to be rapid, usually occurring in young rams within one year. There is no good evidence here provided of any beneficial influence on body weight or wool production as a result of testicular grafting, or of injections of pulped testis or saline extract of testis.—*Authors' summary.*

13107. **HALLGREN, W. Mjölksekretion hos föl. [Lactation in foals.]** [German summary.] *Skandinavisk Vet. Tidskr.* 21(2): 48-59. 1 fig. 1931.—Of 7 cases of lactation in newborn female foals observed, in 1 secretion of a very large amount (approximately 1000 cc. within a few hrs.) permitted chemical and morphological examinations. The composition varied little from that of normal mare's milk. The foal died within a few hrs.; necropsy showed no significant changes in the udder except enlargement (weight approximately 500 gm.). The sex organs were not thoroughly examined. Histologically the ovaries appeared juvenile. The author concludes that "witch's milk" in foals is merely a secretion from the glands of individuals previous to puberty, and is not chemically or morphologically different from the milk of adults. The cause of the process may be a developmental anomaly of the udder or the endocrine glands (suprarenal capsule and hypophysis).—*Author's summary (transl. by C. W. Turner).*

13108. **ISHIKAWA, HYOZABURO. The life duration of cock spermatozoa outside the body.** *World's Poultry Congress* 4(Sect. A): 90-94. 1 pl.; résumé sect. p. 12. 1930.—A salt concentration of 0.81-0.90% was most favorable for continued activity. Semen diluted 5-10 times with a 1.0% physiologic salt solution survived longer. The effect of reaction was also tested using caustic soda, the best results being obtained with a concentration of 0.002%. Sunlight shortened life somewhat because of increased activity, but there was little difference between diffused light and darkness. Semen diluted 10 times with hen's blood suffered injury. Life duration in an egg-white solution was 390 min. as compared to 170 in 1.0% salt solution.

13109. **IWANOW, E. E. Zur Frage der Energetik der Spermatozoenbewegung.** *Zeitschr. Züchtung B. Tierzücht. u. Züchtungsbiol.* 20(3): 404-418. 1931.—Spontaneous movement of dog spermatozoa continues some hrs. in an anaerobic medium containing an entirely inadequate amt. of O to satisfy their normal O needs. This movement of dog spermatozoa under anaerobic conditions apparently has no relation to their CO_2 output. Spontaneous movement of dog spermatozoa is possible in a medium where, because of the addition of KCN, cellular respiration has almost entirely stopped. The energy required for movement does not arise from oxidative processes. Spermatozoan respiration consists obviously (as with muscles) in the elimination of the products of the catabolism which takes place under insufficient O supply. In the presence of O, spermatozoa are very active, even in very concentrated suspensions, but under anaerobic conditions, where the contractile capacity of the spermatozoa is markedly lessened, the spontaneous movement persists for a variable period of time, but only if they have enough room for their movements.—*Author's summary (transl. by H. W. Mossman).*

13110. **JOUBLOT, JEAN. Sur les relations entre le nombre de corps jaunes et le degré de préparation de l'utérus a la nidation de l'oeuf chez la lapine.** *Compt. Rend. Soc. Biol.* 98(17): 1542-1544. 1928.—Examination of the uteri of virgin rabbits, which had been deprived of varying amounts of corpus luteum, and following infertile coitus, led the author to conclude (1) that corpora alone are necessary in the preparation of the uterus for nidation; (2) the necessary number lies between 1 and 2; (3) a greater number than necessary has no influence on speed or completeness of preparation; (4) below the necessary number the preparation is proportional to amount of luteal tissue left, reaching its climax in 8 days, 7 hrs. after coitus, as in cases of normal development. Development of mammae parallels that of the uterus.

13111. **JOYET-LAVERGNE, PH. La place des problèmes de la sexualité dans la biologie générale.** *Rev. Gén. Sci. Pures et Appl.* 42(5): 142-147. 4 fig. 1931.—None of the sexual theories is satisfactory. Nuclear

cytology, genetics, and endocrinology are one-sided in their approach to the matter. This subject holds too large a place in biology to be considered a section of some other science. A new orientation is needed.—*P. Joyet-Lavergne (transl. by P. Popenoe).*

13112. **KADLETZ, MAXIMILIAN. Hermaphroditismus versus alternans oder Intersexualität in der Zeitphase: Testis dexter-Ovarium sinistrum beim Schwein. [Hermaphroditism versus reversal or intersexuality in the time phase: testis dexter-ovarium sinistrum in the pig.]** *Berliner Tierärztl. Wochenschr.* 47(33): 533-537. 5 fig. 1931.

13113. **LANZ, T. von, und MALYOTH. Neue Untersuchungen zur Biologie der Samenfäden. I. Die Entwicklung unserer Methode zur Bestimmung der Wasserstoffzahl im lebenden Organ. II. Zur Steuerung der Samenfäden im männlichen Genitalapparat.** *Sitzungsber. Gesellsch. Morphol. u. Physiol. München* 38: 52-70. 8 fig. 1927/28(1928).—A description is given of a new gold-iridium hollow needle electrode for potentiometric determination of pH in very small amounts of fluid in the living organism. By means of this apparatus it was found that the pH in the testis was 7.2; in the sperm reservoir of the cauda epididymis, 6.6; the prostatic secretion, 7.1 and the seminal vesicle secretion, 6.3. The pH of the contents of the cauda epididymis does not depend on the spermatozoa, since it was the same in the empty sperm reservoir, and after blockage of the duct system between testis and epididymis. It appears to depend on secretory activity of the duct epithelium. The spermatozoa in the testis are therefore motile and migrate, probably in the direction of ciliary action, into the ducts of the epididymis. Here the increased pH lessens their activity and they become stored in large numbers for ejaculation. During this storage period the buffers of the epididymis secretions are transferred to their protoplasm and "ripen" them. During ejaculation their latent motion is released through the alkalinity of the prostatic secretion. The acid contents of the seminal vesicle secretion in the rat does not come in contact with the true seminal fluid, but is coagulated to form the vaginal plug. The reaction in different portions of the ♂ genital tract is not dependent on spermatogenesis but on the presence of the gonads in the body. Total castration inactivates the epithelium of the epididymis and standardizes the pH concentration of its secretion against that of the blood.—*T. von Lanz (transl. by K. E. Mason).*

13114. **LINDEMANN, RUTH. Zur Frage der cyklischen Veränderungen der menschlichen Scheide.** *Zeitschr. Mikrosk.-Anat. Forsch.* 13(3/4): 373-387. 5 fig. 1928.—Lindeman examined 40 specimens of vaginal mucosa from healthy women during their sexual life. These specimens represented each day of the menstrual cycle. She also examined vaginal mucosa of 7 women in the physiological climacterium (of various lengths of time) and the vaginal mucous membrane of 3 amenorrheic women during their active sexual life (amenorrhea was due to shock, lactation, and x-ray). She concludes that there are various stages of progressive and retrogressive changes in the vagina. These are not typical pictures of the various menstrual phases because they can also be found during pregnancy, after delivery, during the climacterium, and in various amenorrheic states. The blue cornified zone described by Diercks as characteristic of the menstrual period has been found in all stages of the menstrual cycle as well as in the climacterium and during pregnancy.—*J. E. Lackner and S. S. Schochet.*

13115. **McCLEAN, DOUGLAS. Further observations on testicular extract and its effect upon tissue permeability.** *Jour. Path. and Bact.* 34(4): 459-470. 1931.—Further observations have shown that the increased permeability does not depend upon any active vascular or nervous response in the injected animal. The extract causes swelling and distortion of the fiber bundles of the dermis; a similar effect is produced by extracts of spermatozoa and by protamine salts, both of which diffuse in the dermis. Preliminary observations indicate that these extracts increase the permeability of ova and this may be related to the change occurring at fertilization. Observations on the surface tension of these extracts and upon the effect of tryptic and peptic digestion are recorded. The active substance has not yet been isolated.—*D. McClean.*

13116. **McKENZIE, FRED F., and RALPH W. PHILLIPS. Some observations on the estrual cycle in the sheep.** *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 138-143. 1930(1931).—97 ewes and 25 ewe lambs were observed during 2 breeding seasons. Nutrition seemed to influence markedly the onset of the breeding season, which occurred the latter part of August with Hampshires, Shropshires, and Southdowns. Estrum in the ewe is described. Teaser rams were used constantly, and the duration of estrum (247 periods) averaged 26.8 hrs., 74% of all periods being 18-36 hrs. Estrum in the Hampshire ewes was significantly longer than in ewe lambs. The estrual cycle averaged 16.6 days (116 cycles); 79% were 14-16 days. There appeared no significant differences due to age or breed in the length of the estrual cycle. The optimum time in estrum at which to breed would seem to be the latter part of the period. A day's starvation during the early part of the breeding season had no noticeable effect on the onset of the first estrum.—*Authors' summary.*

13117. **NISHIZAKI, SH. Supplement to experimental research on the biological significance of the adrenal function in the process of pregnancy and parturition.** *Japanese Jour. Obstetr. & Gynecol.* 12(4): 386-390. 1929.—Experimental details lacking. Excision of adrenals, unilateral or bilateral, in rabbits and albino rats produced higher mortality in pregnant than in non-pregnant animals, especially at the time of labor. Living offspring were produced. Animals fed with tyrosin to accelerate function of medullary substance were benefited during pregnancy and labor. Pregnant rats and mice showed greater tolerance to injected adrenalin.—*M. Goettsch.*

13118. **PITHON, ALINE. Contribution à l'étude de la physiologie de la lactation.** 55p. Thèse, Paris, Amédée Legrand: Paris, 1928.

13119. **RIDDLE, OSCAR. Studies on the physiology of reproduction in birds. XXIX. Season of origin as a determiner of age at which birds become sexually mature.** *Amer. Jour. Physiol.* 97(4): 581-587. 1931.—Under standard conditions in which the temperature factor would seem to be the chief seasonal variable, measurements were made of the age of attainment of sexual maturity (production of first egg) in 404 doves and 316 common pigeons belonging to 10 races. Within each of these races some ♀♀ were reared from eggs laid in each month of the year, and a measure obtained of the influence of this varying season of origin upon age at maturity. Birds from eggs of Sept.-Jan., inclusive, matured earliest; those from other months at markedly older ages—36% older in pigeons and 52% older in doves. In general, pigeons mature at an earlier age than do ring doves. Different races within either of these species mature at unequal ages and thus reveal genetic factors, probably involving the anterior pituitary, which also condition the establishment of maturity. Under the most favorable conditions now known a dove or pigeon must be approximately 4 months old before it will produce an egg. If an age of 4-5 mos. is reached during the fall the maturity is delayed, if reached during Feb.-July maturity is hastened, by endocrine conditions (thyroid, perhaps pituitary) connected with this part of the year. The author's earlier studies have shown that this season of accelerated maturity is also the season in which, even in mature birds, thyroid size and activity are decreasing. This rule probably applies to birds generally. A seasonal factor has been found in practically all aspects of sex and reproduction thus far studied in doves and pigeons.—*Author's summary.*

13120. **RIDDLE, OSCAR, and PELA FAY BRAUCHER. Studies on the physiology of reproduction in birds. XXX. Control of the special secretion of the crop-gland in**

pigeons by an anterior pituitary hormone. *Amer. Jour. Physiol.* 97(4): 617-625. 5 fig. 1931.—The response in doves and pigeons of the 2 dorsolateral areas of the crop (which normally enlarge at the end of the brooding period and then secrete the "crop-milk" fed to the young) to the several pituitary hormones was tested in 108 doves and pigeons, including 33 controls, 56 birds injected with anterior lobe extracts, 10 with posterior lobe extracts, and 9 with luteinizing hormone from pregnant urine. Other hormones and substances had earlier been found ineffective. The luteinizing hormone, the posterior lobe extracts and one (commercial) anterior-lobe extract (antuitrin) were without effect on the crop-glands; 3 other anterior lobe extracts (1 growth hormone, 1 sex maturity hormone, 1 glycerin extract) produced enlarged and functioning crop glands without exception in 29 birds tested, including nestling young and 16 ♂♂. All the effective extracts were known to contain the sex maturity hormone; all probably contained at least small amounts of the growth principle. Which anterior-lobe hormone influenced the crop-gland was not determined. A previously effective preparation tested, after heating for 13 hrs., at 99° C., on 4 birds had no effect on the crop glands. The crop-gland response was obtained in one pigeon after section of the nerves supplying the area, and is therefore not regulated or conditioned by the nerves. The authors conclude that, if this is a specific response to the growth hormone, it is the best method of testing and standardizing that hormone.

ANIMAL PHYSIOLOGY

SENSE ORGANS

(See also in B. A. 6(3): Entries 6668, 8228, 8233, 8371; 6(4): 9361, 9439, 9498, 10003, 10015, 10040, 10041, 10993; and in this issue 12166, 12586, 12589, 12632, 12886, 13140, 13147, 13148, 13158, 13198)

13121. **BONAIN, A. (Vibrations et ondes vibratoires.) Membranes et lentilles acoustiques.** *Arch. Internat. Laryngol. Otol.-Rhinol. et Broncho-Oesoph.* 9(7): 769-782. 1930.—Discussion of the author's theory of the existence of "auditory accommodation" by refraction of acoustic waves by the curved gaseous lens enclosed by the tympanum.

13122. **BONAIN, A. Étude sur les fenêtres labyrinthiques et leur role fonctionnel.** *Arch. Internat. Laryngol. Otol.-Rhinol. et Broncho-Oesoph.* 9(7): 783-796. 1930.—Comparing the phylogeny of the apparatus of equilibrium and hearing of the various animal species, Bonain concludes that the fenestra ovalis, the membrane of the tympanum and the chain of ossicles serve solely to protect the labyrinthine organs and to effect "auditory accommodation," and that the fenestra rotunda, being the most direct and most permeable means of access for the acoustic waves to the auditory sense organs, serves to transmit sounds to the internal ear.

13123. **BOWEN, R. E. Movement of the so-called hairs in the ampullar organs of fish ears.** *Proc. Nation. Acad. Sci. U. S.* 17(4): 192-194. 1931.—Sensory hairs of the ampullar organs of *Ameiurus nebulosus* in some cases move actively. Some cristae were seen in which no movement was observed. When movement was seen the number of hairs moving in any one crista varied from one to many. Present evidence does not indicate that there is more than one type of hair cell. In some cases the movement of the hairs was a lashing with whip-like strokes; in others the hairs moved without curving; in still others there was wave-like movement involving the entire length of the hair. Some hairs were seen beating in unison. There were no definite periods of movement and of rest. The rate of movement of the hair cells was not the same for all of the hairs which were seen moving.—*Author's summary.*

13124. **BRESSLER, JOSEPH. Illusion in the case of subliminal visual stimulation.** *Jour. Gen. Psychol.* 5(2): 244-251. 1931.—By means of a psychophysical test, the stimulating strength of three sets of arrows was measured and found to be subliminal. Two of these sets of imperceptible arrows were found to be of equal stimulating strength and the 3rd set to be stronger than the former but still under the threshold. The responses of these stimuli were measured. The Müller-Lyer illusion was effective in evoking a response even when the arrows were so faint that they were not visible to the observer. The magnitude of this response varies directly with the strength of the stimulus, as determined with the customary psychophysical tests. The illusion created by the imperceptible arrows was smaller than that created by clearly visible arrows in proportion to the intensity of the stimulus.—*Author's summary.*

13125. **FRISCH, K. v. Versuche über den Geschmackssinn der Bienen.** [Investigation of the sense of taste in bees.] *Naturwiss.* 16(18): 307-315. 1928.—The relative sweetness of 21 different sugars, with cane sugar as the normal, was tested for bees, and is compared with the relative sweetness to man.

13126. **FRÖHLICH, FRIEDRICH W. Die Empfindungszeit. Ein Beitrag zur Lehre von der Zeit-, Raum- und Bewegungsempfindung.** [Susceptibility to time, space and motion.] 366p. 6 pl., 58 fig. Gustav Fischer: Jena, 1929. Pr. 22 M.

13127. **GELDARD, FRANK ARTHUR. Brightness contrast and Heymans' law.** *Jour. Gen. Psychol.* 5(2): 191-206. 1 fig. 1931.—Brightness contrast is given its correct expression in terms of the reciprocal relations maintained when two local retinal areas are simultaneously stimulated. Stating the contrast problem in these terms, a disparity is found between two groups of experimental findings. The claim that stimulation of a peripheral portion of the retina sensitizes the fovea is controverted by Heymans' Law, which states that the reverse condition obtains. An experiment is described in which simple contrast thresholds were determined without peripheral stimulation and again under conditions of varying intensive degrees of such stimulation. Crude data derived from this experiment show a relatively insignificant deviation from the results to be expected if Heymans' Law were applicable. However, correction for pupillary changes reverses the trend of measures. A quantitative statement of brightness contrast is found to be given by the formula $RL=K \log I+C$, and the values fitting these data are ascertained. Heymans' Law is evaluated in terms of the present results and is found to be an artifact of faulty treatment of experimental findings. Particularly is the claim repudiated that former experiments substantiating the law have demonstrated the presence of "central inhibition." A second, more direct attack is described in which similar thresholds were obtained under conditions of pupillary control. These results confirm the relationship found in the first work. A caution is issued against the generalization of the statement arrived at, two further situations being described in which it is shown that the facilitation effect breaks down at certain limits. In conclusion it is indicated that a systematic exploration of the retina would be necessary to establish the spatial relations involved in brightness contrast.—*Author's summary.*

13128. **GRAHAM, CLARENCE H., and WALTER S. HUNTER. Thresholds of illumination for the visual discrimination of direction of movement and for the discrimination of discreteness.** *Jour. Gen. Psychol.* 5(2): 178-190. 1 pl. 1931.—An apparatus, patterned after that used by Hecht and Wolf with bees, was used with human subjects to determine the thresholds of illumination necessary for the discrimination of direction of movement and for the discrimination of direction of

lines. The results show a marked difference in the illuminations required for the two responses. At the highest reciprocal of the visual angle tested, only about one-thousandth of the illumination required for the movement discrimination is needed for that under stationary conditions. It is suggested that the movement situation elicits a temporally controlled response while the stationary situation elicits a spatially controlled response. In discussing the experiment by Hecht and Wolf on the visual acuity of the honey bee, the authors point out that the bees were discriminating on the basis of direction of movement rather than on the basis of the discreteness of stationary visual stimuli, which is the typical acuity situation.—*Authors' summary.*

13129. GRANIT, RAGNAR, [et al.] Comparative studies on the peripheral and central retina. IV. RAGNAR GRANIT, and WILLIAM A. DAVIS. Temporal summation of subliminal visual stimuli and the time course of the excitatory after-effect. V. RAGNAR GRANIT, and EDWARD L. HAMMOND. The sensation-time curve and the time course of the fusion frequency of intermittent stimulation. VI. C. H. GRAHAM, and RAGNAR GRANIT. Inhibition, summation, and synchronization of impulses in the retina. *Amer. Jour. Physiol.* 98(4): 644-653; 654-663; 664-673. 1931.—IV. A flash of light lasting 0.0113 sec. is adjusted to a strength just below the absolute threshold of vision. When this flash is followed by a second subliminal of still shorter duration, it is found that the second flash sums with the after-effect of the first to give a visible effect. The shorter the interval between the flashes, the smaller the quantity (intensity × duration) with which the second subliminal is capable of raising the after-effect of the first to threshold value. By measuring this quantity at various intervals between the flashes it has been possible to determine the level of the subliminal excitatory remainder as a function of time.—V. The development of the fusion frequency as a function of time of exposure has been studied in central and peripheral vision with a 1° and a 3° area. The fusion frequency increases first rapidly, then slowly with time of exposure. The higher the intensity, the steeper the rise and the longer the time to the maximum. Increase in area affects the time course of the fusion frequency, as does an increase in intensity and as does the moving of a large area towards the periphery (at 10°). The curve showing the development of the sensation of brightness has been obtained under conditions identical with those used in measuring the time course of the critical frequency. In plotting the 2 sets of data to the same abscissae (time of exposure) and correlating them it becomes evident that the 2 functions are different, in spite of the fact that the flicker phenomenon is an index of brightness. The nature of this discrepancy is analyzed. —VI. An apparatus was used in which 2 beams of light centered on 2 adjacent semicircular test patches can be varied independently as to intensity and flicker. When the 2 semicircles are of equal brightness and flicker synchronously they give a higher fusion frequency than each taken singly. When only 1 beam is flickered and the other one adjusted to give the same brightness as the flickered patch when fused the presence of the steadily illuminated semicircle raises the fusion frequency of the flickering semicircle. In this case, however, the effect is less than in the case when both are flickered. It is concluded that synchronization of impulses favors interaction over lateral channels. Since a steadily illuminated area is capable of raising the fusion frequency in an adjacent area, it is further concluded that part at least of the interaction, but probably the whole process, involves a true spatial summation. When the 2 semicircles are at different levels of brightness the fusion frequency of the darker is unaltered or lowered by the presence of the brighter, whereas the fusion frequency of the brighter is increased by the presence of the darker, provided the difference between them is not too great. The removal of the summation on the darker must be due to inhibition, since the results obtained with the brighter show that summation is bound to appear unless actively inhibited. Also the "darker" semicircle would sum with an equally "dark" adjacent patch. By showing that when 2 adjacent areas are at different levels of brightness, the brightness difference is exaggerated by a specific mechanism, which well may be a retinal form of contrast, the results explain how it is possible at high intensities to retain visual acuity and the faculty of discriminating brightness in spite of the increased summation over lateral channels. The inhibition is especially well developed in the fovea. No evidence of inhibition at high intensities in the periphery has been obtained. The predominance of summation in the periphery explains its low visual acuity and deficient brightness discrimination at degrees of eccentricity where convergence of receptors and scatter of light are of less significance.—*Authors' summaries.*

13130. HASCHEK, EDUARD. Ein Beitrag zur Young-Helmholtz'schen Theorie. [Contribution to the Young-Helmholtz theory.] *Akad. Wiss. Wien Math. Naturwiss. Kl. Sitzungber. Abt. 2A* 137(8): 513-528. 1928.

13131. HOSOYA, YUJI. Über die Altersverschiedenheit der Ultraviolettabsorption der menschlichen Augenmedien. *Tohoku Jour. Exp. Med.* 13(5/6): 510-523. 5 fig. 1929.—Experiments on the absorption of ultraviolet light from a nickel arc lamp and the Hilger quartz spectrometer were carried out on 16 human eyes removed 8-15 hours after death. The total eye, as well as the various parts of the eye of a fetus, absorbs ultraviolet less than those of a child. The absorption limit for the cornea is near 2,984 Å, for the lens at about 3086 Å, and for the total eye at about 3099 Å. These limits remain the same during fetal life from the fourth month on. After birth the absorption value increases with age. The lens of the fetus and the child transmits ultraviolet light up to 3,100 Å. A weak transmission, which however disappears completely with increasing age, was observed for the range of 3,100-3,800 Å.—*O. Glasser.*

13132. HOSOYA, YUJI. Fluoreszenz der einzelnen Augenmedien und Sichtbarkeit des ultravioletten Gebietes des Spektrums. *Tohoku Jour. Exp. Med.* 13 (5/6): 524-538. 1929.—Studies of the range of waves which cause a fluorescence in the various parts of the eye were undertaken on eyes of animals and human beings with homogeneous light obtained from various light sources by means of a Hilger quartz spectrograph. No appreciable differences were found in the fluorescence of eyes of animals or of human beings. All parts of the eye except the lens show a definite fluorescence for rays from 3,650 to 3,100 Å. Fluorescence of the lens is also caused by violet light of a wave length of about 3,700 Å. The strongest fluorescence was observed in the lens, less in the retina and cornea, and still less in the vitreous and aqueous parts of the eye. The maximium intensity of the fluorescent spectrum in the lens is near 5,500 Å. Ultraviolet radiation can easily be noticed up to about 3,100 Å.—*O. Glasser.*

13133. JOHANNSEN, DOROTHEA E. A quantitative study of binocular color vision. *Jour. Gen. Psychol.* 4 (1/4): 282-308. 1930.—The results of stimulating the two eyes simultaneously with different colors by the method described may be summarized as follows: (1) The color of the member of the pair which has the longer wave-length dominates the binocular field more than that of the shorter; (2) those pairs of colors, the members of which are separated by the smallest number of wave-lengths or j.n.d.'s, mix the most readily and completely; (3) the nearer together the two colors in wave-length, the fewer the fluctuations; (4) the color having the greater intensity has the greater dominating power; (5) the less the absolute brightness of the colors, the more readily they mix; (6) the more alike in brightness the colors, the more readily they mix; (7) with adaptation, the shorter wave-lengths tend to lose more in brightness than the longer; (8) when the fixation points are in focus, the positive dominance difference tends to be increased; (9) regular and fairly rapid

blinking tends to bring back the weaker color, though individual differences here are large; (10) when the eye is previously adapted to the color having the shorter wave-length of a pair, the dominance difference is increased in a positive direction; adaptation to the longer wave-length tends to decrease the size of the dominance difference.—*Author's summary.*

13134. **KLOSSOWSKY, BORIS, und A. M. LEVIKOWA. Der Mechanismus des vestibularen Nystagmus. (Über die homonyme keineswegs cruciate Innervation der Musculi recti interni von dem Oculomotoriuskern beim Nystagmus.)** *Pflüger's Arch. Ges. Physiol.* 228(1/2): 198-212. 7 fig. 1931.—Since the investigations of Bernheimer it is known that the internal rectus muscle is supplied with both crossed and uncrossed fibers from the oculomotor nuclei. The present experiments seek to determine whether the internal recti are innervated by both these fibers or only one during horizontal nystagmus. A description is given of the hypothetical pathways of the impulses from labyrinth to internal recti, and the details of the operative approach to these fibers. The authors used cats throughout. After section of one posterior longitudinal bundle in its course between the abducens and trochlear nucleus the horizontal nystagmus on the homolateral side became weaker. The nystagmus on the contralateral side did not change. If now the external recti muscles were dissected away together with the external insertions of the retractor bulbi muscle the nystagmus ceased in the homolateral side and became weaker on the contralateral side. From these results the authors draw the conclusion that during horizontal nystagmus the internal recti are innervated only by fibers from the homolateral oculomotor nucleus. —*F. H. Adler.*

13135. **LEFROU, G. Contribution à l'étude de l'acuité visuelle chez les noirs.** [Visual acuity in Negroes.] *Bull. Soc. Anthrop. Paris* 8(4/6): 254-257. 1927.

13136. **LUTHER, WOLFGANG. Zur Frage der Chemorezeption der Brachyuren und Anomuren.** [Chemoreception in Brachyura and Anomura.] *Zool. Anzeiger* 94(5/8): 147-153. 1931.—A defense of a previous work, answering criticisms of Friedrich Brock.

ANIMAL PHYSIOLOGY

NERVOUS SYSTEM

ALEXANDER FORBES, *Editor*

(See also in this issue Entries 12897, 12903, 13020, 13056, 13073, 13089, 13178, 13181, 13182, 13197, 13235, 13255, 13271, 13286, 13291, 13294, 13297, 13314, 13340, 13362, 13368, 13371, 14409, 14465, 14478)

13137. **ACHELIS, J. D. Über Umstimmung der Sensibilität.** *Pflüger's Arch. Ges. Physiol.* 226(2): 212-238. 8 fig. 1930.—Estimations were made of the chronaxie values required for stimulation of nerve trunks in man in order to produce sensations referred to some peripheral area, when this area was exposed to various procedures. After exposure of this peripheral area to ultra-violet light there is in the latent period before erythema develops a lengthening of chronaxie in the more central nerve trunks. On release of a stasis of several minutes' duration there is a lengthening of chronaxie associated with, but apparently not dependent on, the sensations of heat and tingling induced. Sometimes the lengthening is preceded by a temporary shortening, and particularly with short periods of stasis and sensations of cold on release the chronaxie may be shortened. With gradual application of warmth chronaxie is shortened, but it is lengthened when heat erythema is induced. Mechanical injuries to the skin produce also some lengthening. Cold, if brief so that deep effects are avoided, shortens chronaxie; if prolonged so as to give deep effects chronaxie may be lengthened. Drinking a large quantity of water causes an initial lengthening and a later shortening of chronaxie in the diuresis phase. Exposure of another area to warmth, if inducing a general sensation of warmth, may lengthen chronaxie; exposure to cold may similarly shorten chronaxie in the opposite limb. The author considers chronaxie of a sensory nerve to be shortened by all changes which increase local sympathetic tonus and to be lengthened by all that decrease this tonus.—*H. C. Bazett.*

13138. **ANTONA, SERAFINO d'. Per la conoscenza delle funzioni termo- e glicoregolatrici del corpo striato. Contributo anatomo-clinico. [Clinical and anatomical contributions to the knowledge of the thermo- and glyco-regulatory functions of the corpus striatum.]** *Riv. Neurol.* 1(2): 97-116. 1 pl. 1928.—The author reviews experimental evidence pointing toward the corpus striatum playing a part in heat-regulation and in regulation of combustion of carbohydrate. He describes a case of right hemiplegia accompanied by a persistently higher skin temperature on the same side and a vasomotor disturbance resulting in edema and ulceration of the right leg. Hyperglycemia and glycosuria appeared two days after the apoplectic seizure and persisted. Death occurred on the 20th day and autopsy revealed a recent localized area of ischemic necrosis occupying the posterior ⅔ of the putamen on the left and involving the corona radiata and the knee of the internal capsule. The lesion appeared destructive rather than irritative and the author concludes that the hyperthermia, other vasomotor phenomena and glycosuria were a result of loss of function in the region of the putamen.—*R. M. Moore.*

13139. **BATTLE, HELEN I. A note on lethal temperature in connection with skate reflexes.** *Contr. Canadian Biol. and Fish.* 4(31): 495-500. 1929.—Experimental studies on loss of reflex excitability indicate by their low values that the skate (*Raja erinacea* and *R. radiata*) when uniformly heated apparently dies, primarily from failure of some co-ordinating mechanism (presumably in the higher nerve centers), which failure occurs at a temperature in the neighborhood of that at which the automatic mechanism of the heart becomes inactive, a point at which all other tissues are still functional.—*H. I. Battle.*

13140. **BERGAMI, GINO. Ricerche sulla resistenza elettrica a varie frequenze del preparato retina-nervo ottico, in seguito a stimoli lunminosi. [Electrical resistance for varied frequencies of the retina-optic nerve preparation following stimulation with light.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 746-747. 1930.—During excitation of the retina-optic nerve preparation of frogs by light, the resistance persisted unchanged, whereas the resistance due to cellular membranes diminished. A diminution of resistance was noted with very low electric frequencies, while no variation was shown at high frequencies. The current was obtained at varied frequency by means of oscillators, and its variations registered by a galvanometer.—*M. Comel.*

13141. **BIANCALANI, GISELDA, e RENATA SOCAL. Ulteriori ricerche biochimiche intorno ai lipoidi dei centri nervosi cerebro spinali. (2a comunicazione). [Further biochemical studies on the lipins of the cerebrospinal nervous centers 2.]** *Arch. Fisiol.* 28(2): 282-288. 1930.—At birth all lipins are already present in the brain. They increase with age (old subjects were not studied however). This increase could be attributed essentially to cholesterol, sphingomyelin and kephalin. Lecithin, cherasin, phrenosin, myelin and leukopolin also increased from birth on. In the spinal cord the lipins are all present at birth except kephalin. They increase afterwards. They are present in greater amounts than in the brain, lecithin excepted.—*M. Comel.*

13142. **BLIER, ZACHARY A., and NATHANIEL KLEITMAN. Conditions affecting the linguo-maxillary reflex.** *Amer. Jour. Physiol.* 94(1): 118-124. 2 fig. 1930.—Cephalic anemia produced in anesthetized dogs (number not stated) by peripheral vagus stimulation, pulmonary inflation, and occlusion of the cephalic blood vessels, did not produce a consistent augmentation of the linguo-maxillary reflex. Stimulation of the central end of the cut sciatic nerve, or the vagus, or of visceral afferent fibers, caused an immediate abolition of the linguo-maxillary reflex, with a quick return to normal upon cessation of the stimulation. The resistance to fatigue of the linguo-maxillary reflex varied with individual dogs. In 1 animal 90,000 successive stimulations produced no evidence of fatigue. The linguo-maxillary reflex is not "ultimate," as in progressive depression of the central nervous system it disappears before the knee jerk. A new reflex, closure of the mouth upon electrical stimulation of the soft palate, is described. The authors designate it as the palato-maxillary reflex.

13143. **BRATIANU, S., et C. GUERRIERO. Nouvelles recherches expérimentales sur les cellules à fonction colloïdopexique de l'encéphale et sur la microglie de Del Rio Hortega.** *Arch. Anat. Microscop.* 26(3): 335-372. 6 pl. (2 col.), 5 fig. 1930.—As a result of experiments on adult and young rats and on mice the authors conclude:—The reticulo-endothelial system in cerebral tissue is made up of the adventitial mesenchymal cells of Maximow and of histiocytes found in the axes of choroidal villi. These elements, acting independently or together, have the functions of blockage, colloidopexy and phagocytosis. Under normal circumstances the histiocytes of the choroid plexus are activated first but in various pathological conditions the periadventitial mesenchyme cells also take part in the function of blockage. Microglia is not colloidopexic under any conditions but, as well as the adventitial cells, can show pictures of pseudoflocculation due to the phagocytosis of remains, previously imbibed, of the coloring matter which is found in the neighborhood of the cells, or even to the coloration in the cell itself of such remains. Phagocytosis is performed by histiocytes of the choroid plexus, the juxtavascular mesenchymal cells, the microglia of Hortega and oligodendroglia. Compound granular corpuscles can arise from microglia, oligodendroglia, mesenchymal cells and histiocytes of the choroid plexus. Microglia and neuroglia show the disassociation between the power of phagocytosis and the colloidopexic function, which they do not possess. Microglia in the neighborhood of arterioles and veins is paravascular; in the neighborhood of capillaries it is in relation with the vascular adventitia. The neurone never shows the colloidopexic function, but when it is altered or dead it presents a diffuse coloration of the protoplasm and nucleus or of one of these 2 components.—*Authors' general conclusions (transl. by E. A. Linell).*

13144. **BRUMAN, F. Ein Beitrag zur Physiologie der zentralen Temperaturregulation.** *Pflüger's Arch. Ges. Physiol.* 222(1/2): 142-158. 5 fig. 1929.—The temp. of 3 parts of the body (liver, muscle, skin or brain) of rabbits under the influence of heat-puncture was determined by the thermoelectric method and photographic registration. Immediately after the puncture came a fall of temp. and then a rapid rise followed by relative constancy. The liver temp. increases first, the skin last. In general, the temp. moves parallel in parts simultaneously observed. In regard to localisation of the heat center, injury of the ventricle is of great importance, but the method of heat-puncture does not solve the problem of localisation of the temp. regulating center. Irritation of the brain stem with fine electrodes and pulsating current and simultaneous determination of the temp. of 3 parts of the body of rabbits showed effective irritation-spots in the thalamus, hypothalamus, striatum and septum pellucidum, but the experiments did not give exact localisation of body-temp. regulating places in the brain.—Experiments on cats with especially fine electrodes showed important changes of temp. but these also did not give the exact localisation of temp. regulating centers in the brain.—*F. Bruman.*

13145. **CLARK, D. A. Muscle counts of motor units: a study in innervation ratios.** *Amer. Jour. Physiol.* 96 (2): 296-304. 1 fig. 1931.—A method is described for counting the total number of fibres in skeletal muscles. The motor nerve fibers and muscle fibers have been counted in 5 examples of M. soleus and 3 examples of M. extensor longus digitorum of the cat. The fiber of "red" muscle has been found stronger and of greater density than the fiber of "white" muscle. "Innervation ratio" has been defined as the ratio of the number of motor nerve fibers supplying a given muscle to the number of its muscle fibers. An innervation ratio of about 1:120 has been found for M. soleus, and 1:165 for M. extensor longus digitorum.—*Author's summary.*

13146. **DORSEY, JOHN M., and LEE EDWARD TRAVIS. Effect of alcohol on the patellar tendon reflex time in dogs.** *Arch. Neurol. & Psych.* 24(1): 48-51. 6 fig. 1930.—Alcohol consistently but irregularly reduced the patellar tendon reflex time in 5 dogs, the effect being comparable to that obtained in human subjects. This study lends further support to the proposition that the central nervous system of higher animals is a pyramid of dependencies subserving superstructures which maintain their dominance by virtue of their inhibitory effect on the subjacent and possibly adjacent structures they environ. Increase in action current duration following injection of alcohol was not detected in the case of dogs.

13147. **FACHINI, GIUSEPPE. Modificazioni della latenza del riflesso acustico nelle cavie in seguito a ripetuti stimoli. [Variations of latency of the acoustic reflex in guinea pigs as induced by repeated stimuli.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 524-527. 1930.—The latency of the acoustic reflex of guinea pigs is increased when the animal is submitted to frequently repeated sound stimuli; the increase in the latency being in proportion to the number of stimuli.—*M. Comel.*

13148. **FOÀ, CARLO, e ACHILLE PERONI. Primi tentativi di registrazione delle correnti d'azione del nervo acustico. [Attempts to register the action currents of the acoustic nerve.]** *Arch. Fisiol.* 28(2): 237-241. 1930.—Five experiments were done on *Thalassochelis carretta,* using an amplification system (constituted of 3 triodes), non-polarizable Zn electrodes and the Einthoven's galvanometer as registering instrument. Acoustic stimuli (sounds of organ pipes) were used. Whatever the pitch of the sound, the nerve gave always a discontinuous electric response: its rhythm mantained the number of 50-60 waves per sec., the indentations of the curve being sometimes rather regular, sometimes superposed, but always noticeable. The fixity of the electric response, independent of the frequency of the stimulus, may be due to different factors: to the stimulus itself, to the nerve, to the excitation process. The constancy of the electrical response leads the authors to attribute to the acoustic centres alone the analysis of sound.—*M. Comel.*

13149. **GAVRILESCU, N. Sulla resistenza elettica del tessuto nervoso in funzione delle temperature e sotto l'azione dell'etere e del cloroformio. [Electrical resistance of nervous tissue as a function of temp., and on the effect of ether and chloroform.]** *Arch. di Sci. Biol.* 13(1/2): 39-52. 3 fig. 1929.—Electric resistance of the nervous tissue diminishes with rising temp., but not so regularly as that of an electrolyte solution. Under constant temp., the electric resistance of the surviving nervous tissue rises to a certain value, afterwards diminishing quickly, doubtless on account of putrefaction. Electric resistance of nervous tissue, in situ or surviving, rises under the action of anesthetics; also in dead tissue and in the juice from the white matter of the brain.—*A. Jappelli.*

13150. **GERARD, R. W. The response of nerve to oxygen lack.** *Amer. Jour. Physiol.* 92(2): 498-541. 12 fig. 1930.—Resting and action potentials in the sciatic nerve of the grass frog and the bull frog, and the peroneal nerve of the dog were studied by the slow galvanometer

under asphyxial conditions and on return to O. Resting potentials were steadily lowered in an asphyxiated region and returned in O. Action potentials first rose and then fell to zero, and on return to O rose rapidly to high values. In asphyxia the Fleischl effect was reduced, the refractory period prolonged and the fibers blocked. The higher the metabolism the faster was the onset of block. The results are interpreted to mean that block is due to an exhaustion of the oxidizable reserve rather than to an accumulation of metabolites.—*B. R. Lutz.*

13151. GROEBBELS, FRANZ. Der Aufbau des extrapyramidalen Systems der Wirbeltiere nach funktionellen Reflexgruppen. *Zeitschr. Ges. Neurol. u. Psychiatr.* 128(1/4): 69-81. 1930.—The extrapyramidal system shows as a whole an increasing complexity as we pass up the vertebrate scale. This has occurred not only in its more frontal portions but also in what were more caudal and originally palaeocephalic systems. Since the system is distributed over many parts of the brain it is not possible to regard it as being composed of a hierarchy of physiological centres.—*H. Woollard.*

13152. HINSEY, J. C., S. W. RANSON, and H. H. DIXON. Responses elicited by stimulation of the mesencephalic tegmentum in the cat. *Arch. Neurol. & Psych.* 24(5): 966-977. 2 pl. 1930.—The tegmental response elicited by stimulation of the mesencephalic tegmentum in the region of the red nucleus in an unspecified number of cats was characterized by ipsolateral flexion and contralateral extension in the fore limbs and varying responses in the hind limbs. In cats on which no operation was performed, the ipsolateral flexion relaxed quickly on cessation of the stimulation while the contralateral extension was followed by a prolonged tonic afterdischarge. Stimulation of the basis pedunculi in the region of the corticospinal tracts caused quick contralateral flexion in the fore and hind limbs. In these experiments, the tegmental response was found to occur following section of the decussation of Forel, bilateral section of the dorsal roots of the 1st 3 cervical nerves, removal of the cerebellum and the substantia nigra and bilateral section of the medial longitudinal fasciculi. It was not found to occur on stimulation of the tectum or on the ipsolateral side following hemisection caudal to the red nucleus and the decussation of Forel. These observations, together with the other evidence, suggest that the pathway is ipsolateral down into the reticular formation, from which it may be mediated over the reticulospinal tracts.—*Authors' conclusions.*

13153. JUNGMANN, HANS, und RICHARD THIEL. Über Chronaxie-Veränderungen an Nerven und Muskeln der Extremitäten des Menschen bei peripherer Kreislaufstörung. *Zeitschr. Ges. Neurol. u. Psychiatr.* 129(5): 647-665. 1930.—This is a communication on chronaxie prolongation which occurs in the extremities under consideration, due to vasomotor disturbances. With experimentally caused peripheral disturbances of the circulation of the extremity the chronaxie changes found by Bourguignon and Laugier under similar conditions for the extensor musculature and the nervus radialis were confirmed. These changes in the upper extremities hold only for the extensor groups, not for the flexor groups and the median nerve. In these no changes occur in chronaxie following stoppage of the veins or constriction of the arteries. The nervus ulnaris takes, under these circumstances, a middle position between the flexor and extensor groups, while its chronaxie from peripheral disturbances of the circulation does not always change. In the leg only slight changes in the chronaxie appear after peripheral disturbances of the circulation. These changes concern exclusively groups with original average chronaxie. In experiments with pathologically increased chronaxie of the flexor musculature of the arms, the same changes follow experimental disturbances of circulation as in the normal.—*Authors' summary (transl. by M. Caldwell).*

13154. KISS, PAUL von. Die Untersuchung der vegetativen Innervation des Herzens mittels Elektrokardiographie. *Jahrb. Kinderheilk.* 130(3/4): 210-214. 1931.—When Aschner's pressure was applied to 5 patients on the 2nd lead, reactions varying from undisturbed rhythm to cardiac standstill of 10 sec. were obtained. A possible explanation is that a heart in labile equilibrium, under the action of a vagotropic stimulus, undergoes a primary deviation toward the vagic. The later compensating secondary sympathicotonia, or that appearing without a compensatory interval, might be explained by the fact that the stimulus involving the peripheral sensory fibers extends to the sympathetic fibers and produces tachycardia. Whether this secondary sympathetic stimulus, which probably acts through the autonomic centers, acts on the suprarenals, giving rise to an increased production of adrenalin and hyperadrenalemia, is not clear.

13155. KNORRE, H. von. Klinische Erregbarkeitsstudien (Chronaxie). *Deutsches Arch. Klin. Med.* 168 (1/2): 1-51. 1930.—The observations of the disturbances of the chronaxie values were made on a number of muscles rather than on only one. A characteristic configuration, designated as "chronaxie relief," was found in the relations of the chronaxie values of certain muscles to one another. In latent tetany there is an acclivity of the chronaxie; also in hyperventilation, varying with the different muscles. In diabetic coma and in circulatory insufficiency there is a reversal of the "chronaxie relief." The chronaxie of the separate muscles shifts with the alteration of the metabolism along a curve whose lowest point corresponds with the beginning acidosis of the tissues—toward the left in diabetes and circulatory insufficiency and to the right with an increased alkalinity, as in latent tetany and in hyperventilation. Lead poisoning shows a characteristic curve to the left, presenting 3 stages corresponding to the chronaxie. The metabolism of the organism is exactly characterised by the chronaxie values, and thus the dosage of such drugs as digitalis and insulin can be objectively measured.—*Author's summary (transl. by W. H. Gantt).*

13156. LAUGIER, H. La chronaxie. *Bull. Soc. Philomath. Paris* 18(2): 1-10. 1929.—Short general account; definition of chronaxie, its application to general and comparative physiology, pharmacology, electrodiagnosis and electrotherapy; its rôle in the function of the centers.—*H. Laugier (transl.).*

13157. LINDE, PAUL, und GUNNAR NORLIN. Ist der Adrenalintremor mit Störung des Orientierungsvermögens der Hand verbunden. *Skand. Arch. Physiol.* 60(1/4): 221-224. 1930.—In 22 typewriting experiments (18 made before and after epinephrine injections, and 4 control experiments with tests equally spaced but without injection) on 12 persons, and a small number of needle-threading tests, no disturbance of the orientation of the hand was observed following injection of epinephrine. These results indicate that epinephrine does not affect the central nervous system, and tend to support the view that the tremor is peripherally produced.

13158. LÜSCHER, E. Die Funktion des Musculus stapedius beim Menchen. *Zeitschr. Hals-, Nasen-, u. Ohrenheilk.* 25(4): 462-478. 1930.—The movements of the tendon of the stapedius muscle were observed directly in living persons in a second case with a large perforation of the ear drum. Tones between 650 and 12,000 vibrations had a constant cochlear reflex as a result. Conversational voice and Barany's alarm instrument acted at 20cm. distance from the opposite ear. The reflex could also be elicited by osteotympaneal sound conduction. The stapedius reflex showed fatigue by sustained tone and there was reflex deafness after 1-1½ min. at the most. Duration of fatigue depends upon pitch and is longer with high than with low tones. Recovery was complete as a rule within a few minutes. It was concluded that both the fatigue of the reflex and also the sensibility to sound are due to an alteration of the irritability of the perceptive apparatus. The fatigue affects the sensory side of the reflex arc. The ease with which the reflex is elicited by sounds is charac-

teristic of its summation. The reflex shows generally in the same way as auditory sensibility: the specific biological activity of the various pitches, sound analysis and fatigue.—*E. Lüscher* (*transl. by A. E. Taft*).

13159. **MARINESCO, G., O. SAGER, und A. KREINDLER. Chronaximetrische und pharmakologische Studien über die Enthirnungsstarre.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 313-339. 6 fig. 1930.—The muscles of decerebrate cats exhibit fibers differing in excitability which is decreased in fibers close to the motor point. The decrease is greater in the rigid muscles than in the antagonists. The chronaxie of the nerve is always that of the smallest value of the fibers of the corresponding muscle (fibers at the motor point). The elicitation of the neck and labyrinth reflexes is associated with a decrease in nerve and muscle chronaxie (at the motor point) in the muscles exhibiting an increase in tonus, but not in the fibers with greater chronaxie (neighborhood of the motor point). The intravenous injection of curare resulted in a decrease or disappearance of decerebrate rigidity and an increase in chronaxie of the muscle at the motor point, but not of the nerve; the neck and labyrinth reflexes disappeared. Cocaine caused a large increase in decerebrate rigidity, accompanied by evidences of stimulation (rotation of the body, rhythmic tail movements). The chronaxie of muscle fibers with the higher value increased to a definite extent, and those of smaller value often to a less extent. Intravenous injection of $CaCl_2$ decreased or abolished decerebrate rigidity, with an increase of the chronaxie at the motor point (lesser value), as well as that of the corresponding nerve. The chronaxies in the immediate neighborhood of the motor point (greater value) suffered a decrease in value. Choline subcutaneously was followed by an increase in decerebrate rigidity, with an increase in chronaxie of the fibers with higher value but no change at the motor point. The existence of muscle fibers having two different values in the decerebrate cat indicates two different functional systems of innervation. One may consider an analogy in human pathology with pyramidal and extrapyramidal motor systems. The catch mechanism of the muscle of the decerebrate cat may thus be explained through the consideration of fibers of two different types of irritability, and the effect upon them of drugs.—*Authors' summary* (*transl. by C. H. Thienes*).

13160. **MORLEY, JOHN. The significance of the afferent impulses from the skin in the mechanism of abdominal pain.** *Lancet* 217(5546): 1240-1244. 4 fig. 1929.—The writer has repeated and confirmed the experiments of Weiss and Davis, who found that the localized spontaneous pain and hyperaesthesia of the skin in acute inflammatory abdominal diseases could be relieved or abolished by local subcutaneous infiltration with novocaine. He does not agree, however, with the statement of these authors that such experiments prove Mackenzie's theory of a viscero-cutaneous reflex and maintains that the results are not inconsistent with the theory of a peritoneo-cutaneous radiation. To support this assertion the writer cites two cases of perforation of a duodenal ulcer with pain in the right shoulder region. Infiltration of the painful area of skin with novocaine diminished or abolished the shoulder pain in these cases. At operation under spinal anesthesia it was found that the contact of a swab with the under surface of the left cupola of the diaphragm produced severe shoulder-tip pain on the left side, whereas the similar application of a swab to the right cupola gave very little pain referred to the skin area anesthetised with novocaine. In acute obstructive cholecystitis the inflamed gall bladder enlarges in a downward direction, so that the fundus comes into contact with the anterior parietal peritoneum further and further down as the enlargement progresses. The area of maximum pain creeps gradually lower as the gallbladder descends. The author considers that this phenomena illustrates peritoneo-cutaneous radiation and is opposed to the theory of a viscero-cutaneous reflex.—*E. A. Linell.*

13161. **MÜLLER, L. R. Über die Gegensätzlichkeit in der Lebensinnervation.** *Deutsche Zeitschr. e. Nervenheilk.* 111(1/6): 102-110. 1 pl. 4 fig. 1929.—Not only the activity of the heart and the stomach is regulated by antagonistic innervation of the sympathetic and the parasympathetic, as was formerly known, but also the activity of other organs, as the glands of the skin. The centers are found throughout the thoracic and lumbar part of the cord, in the intermedial region of the grey matter, the efferent fibers leaving through the posterior roots.—*W. J. C. Verhaart.*

13162. **NEUSCHLOSZ, S. M. Über die Bedeutung der K-ionen für den Tonus des quergestreiften Skelettmuskels. V. Mitteilung. Die tonische Komponente des Strychnintetanus und ihre Beeinflussung durch peripher angreifende Agenzien.** *Pflüger's Arch. Ges. Physiol.* 213 (1/2): 40-46. 1926.—The increased binding of K which accompanies the central nervous increase in muscle tonus brought about by strychnine is unaffected by curare. It can be decreased by atropin, as was previously shown for the stimulation contracture of isolated muscles. This strongly supports the view that tonic impulses pass from the central nervous system to the muscle through the receptive substance, and produce the same effects in contractile elements as does ordinary stimulation.—*Author's summary* (*transl. by S. C. Brooks*).

13163. **PERRINI, F. Influenza del lavoro muscolare sul rifleso patellare. [Influence of muscular work on the patellar reflex.]** *Arch. Sci. Biol.* 11(1): 28-54. 6 fig. 1928.—In repose the patellar reflex is usually greater in the left than in the right leg; it is increased following muscular work. Contraction of a single muscle on one side (e.g., the quadriceps cruralis) increases the patellar reflex. The author concludes that the superior nervous centers inhibit the patellar reflex, and that this inhibition is weakened by fatigue.—*P. Popenoe.*

13164. **POPPI, UMBERTO. Funzione e struttura delle cellule del "Tuber cinereum." [Function and structure of the cells of the tuber cinereum.]** *Policlinico* [*Sez. Pratica*] 37(38): 1382-1383. 1930.—In view of the presence of neutral fats and lipids in the cytoplasm, of the intracellular granulations recalling those of the hypophysis and the suprarenals, and of the rich supply of communicating arteries of the tuber cinereum, Poppi raises the question whether the cells of the tuber cinereum are mere reservoirs or have an endocrine function of their own.

13165. **QUINAN, CLARENCE. The principal sinistral types: an experimental study particularly as regards their relation to the so-called constitutional psychopathic states.** *Arch. Neurol. and Psych.* 24(1): 35-47. 4 fig. 1930.—While right- and left-handedness has long been a subject for study, the significance of habitual preference for the right or left eye (first noticed about 50 yrs. ago by Joseph Le Conte), has been generally neglected. In private practice Quinan had observed that sinistrality and dextrality correspond to certain qualitative psychologic differences. In the present study each subject automatically registered his own handedness and eyedness by the use of 2 test objects, a ball to throw and a wooden pistol to sight. The types of unmixed dextrality and sinistrality are designated respectively as RR and LL (the 1st letter indicating the dominant hand and the 2nd the dominant eye) and the mixed types as RL and LR respectively. Of 1,000 students examined with reference to handedness and eyedness, 704 were RR; 185 were RL; 40 were LL; 36 were LR; 35 are classified as ambilaterals and other types. Therefore, 26.1% of these are sinistrals. Nearly the same percentage of sinistrals was found in a study of 317 Chinese school children. There seems to be a marked tendency for sinistrals to concentrate in certain of the esthetic vocations. On the basis of data collected from 815 students, it can be stated that sinistrals are definitely more musical in their tastes than dextrals. In a survey of 693 neuropsychiatric patients, it was found that in dementia praecox and in most other forms of mental

disease the percentage of sinistrals was 30.4, while in a mixed group of persons with constitutional psychopathic states the average value was 54.1%. It is suggested that sinistrals, especially those of the RL type, are apt to show signs of constitutional instability.

13166. **RESWJAKOFF, N. P. Zur Theorie der dekrementiellen Leitung im Nerven.** *Pflüger's Arch. Ges. Physiol.* 226(1): 86-98. 8 fig. 1930.—Using the sciatic nerve of the frog (*Rana temporaria*) and twitches of the gastrocnemius muscle as indicator, isotonic KCl, distilled water, and heat as agents to impair conduction, four types of experiment were performed. Either warming the distal portion of the affected region or making it the anodal region for a constant current gave transient restoration of conductivity which had just disappeared. Rapid shortening of the area exposed to heat had a similar effect. In a modification of Lodholz's experiment with 4 electrodes on the affected region numbered from the proximal end, stimulation failed first at 1, next at 2, next at 3, and finally at 4. Stimulation at all 4 electrodes was from the same inductorium at the same coil distance. Electrodes 1 and 3 were cathode on closing, 2 and 4 on opening of the primary circuit. There is no mention of the location of cut branches of the nerve or of controls for spread of current. The author considers these results as evidence in favor of the theory of decremental conduction.—*G. P. McCouch.*

13167. **SATO, HIROSHI, und MAMORU NEMOTO. Einfluss der Erwärmung des Karotidenblutes auf die Atmung des Hundes dessen Corpora striata ausgerottet sind.** *Tohoku Jour. Exp. Med.* 14(2/3): 135-145. 6 fig. 1929.—Heating of the carotids, so that the pharyngeal temp. rose to about 42 degrees and the anal to 38, caused an acceleration (from 11 to about 100 per min.) and an augmentation of the respiratory excursion in 8 dogs whose corpora striata had been removed, and this acceleration was equal to or greater than in dogs with corpora striatae intact. Narcosis was not employed in the experiments. After the period of heating, there was, especially in the normal dogs, a gradual decrease of the tachypnea and then apnea or Cheyne-Stokes breathing. The acceleration lasted from 10 to 120 min.—*Authors' summary (transl. by W. H. Gantt).*

13168. **SEGAAR, J. Zentrale Innervation bei normalen und "manege"—Krebsen. [Central innervation in normal and rotating crustaceans.]** *Tijdschr. Nederland. Dierkund. Vereen.* 1(3): 113-117. 1 fig. 1929.—Central stimulation in the crab (*Cancer, Astacus*) produces contrary results from peripheral stimulation. The possible causes of this and of circular movements of a crab which has lost half its brain are considered.—*G. E. Johnson.*

13169. **STRUGHOLD, HUBERT. Beiträge zur Kenntnis der Refraktärphasen der Eigenreflexe beim gesunden Menschen. Der Einfluss der Atembewegung auf den Patellar- und Achillesreflex.** *Zeitschr. Biol.* 88(4): 346-362. 2 fig. 1929.—If the stimulus for releasing the knee jerk or the ankle jerk be applied within the refractory phase there is a slight increase in the strength of the response during normal inspiration which is doubled during deep inspiration. Also the refractory period is shortened to ½ its ordinary value. There is no change if the stimulation be applied outside the refractory time. The author concludes that there is a reflex facilitation from the respiratory muscles on the reflex apparatus of these particular tendon responses.—*M. Beck (transl. by H. Woollard).*

13170. **ULLMANN, E. V. Zur Frage des subkortikalen Phonationsmechanismus (Lokalisation des rhombencephalen Phonationszentrums).** *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 60(2): 122-127. 4 fig. 1926.—The capacity for phonation is retained, when the cortex and subcortical ganglia are totally extirpated down to the level of entry of the eighth nerve. Accordingly, the nuclei situated in the caudal part of the rhombencephalon are sufficient to release phonation, upon stimulation of sensory nerves. Careful experiments failed to demonstrate any influence of the cerebellum upon phonation.—*Author's summary (transl. by C. E. Kellogg).*

13171. **VIZIOLI, FRANCESCO. Ancora sul fenomeno di Piotrowski. [Further considerations of Piotrowski's phenomenon.]** *Riv. Neurol.* 1(2): 137-145. 1928.—An antagonistic reflex in the lower leg (principally the anterior tibialis muscle) is found in normal, neurasthenic, and hysterical persons so generally as to justify considering it more or less normal; it is closely associated with the general reflex sensitivity of the individual. Hence it has little value for diagnosis in neuropathology. —*P. Popenoe.*

13172. **WACHHOLDER, KURT. Die allgemeinen physiologischen Grundlagen der Neurologie. I. Teil. Allgemeine Physiologie der Reizung und Erregung.** *Fortschr. Neurol., Psychiatr. u. Grenzgebiete* 1(6): 253-266. 1929.—The article is a review of recent work on irritability.

13173. **WENDEROWIC, E. Das myelogenetische Studium des Nervensystems nach Flechsig als eine der Grundlagen zur Erkenntnis seiner Struktur und Funktionen u. a. des Verhaltens und über die Beziehungen zwischen physiologischer und morphologischer Untersuchung.** *Arch. Psychiat. u. Nervenkrankh.* 90(5): 789-804. 1930.—Physiologists and anatomists have both overemphasized the importance of their particular fields in the solution of problems of the central nervous system. Each has taken the lead in certain researches but his work has required confirmation and elaboration by the other before a complete understanding has been attained. Even behavior is not clearly understood until anatomical and physiological explanations have been elaborated. The field of nervous and mental disease is too complicated for anyone to have a firm grasp of every phase of the situation and the ideal method of research is painstaking and considerate consultation and collaboration between men of different training. In the field of morphology alone there are fiberanatomists, architectonic anatomists, cellular histologists, comparative anatomists, specialists in the vegetative nervous system, etc. A knowledge of brain anatomy is essential to the study of the mind.—*J. M. Nielsen.*

ANIMAL PHYSIOLOGY

MOTOR APPARATUS

W. O. FENN, *Editor*

(See also in B. A. 6(4): Entries 9361, 9398, 9537, 9541, 9578, 9586, 9590, 9592, 9598, 9601, 9618, 9619, 9620, 9625, 9626, 9705, 9709, 9729, 9760, 9850, 10033, 10039, 10065, 10066, 10071, 10075, 10086, 10099, 10107, 10108, 10114, 10120, 10147, 11272, 11306, 11315, 11318, 11326; and in this issue 12966, 12998, 13014, 13018, 13066, 13156, 13162, 13163, 13172, 13202, 13264, 13267, 13294, 13307, 13340, 14267, 14367, 14412)

13174. **ALTENBURGER, H. Der Einfluss des Sympathicus auf die Tätigkeit des quergestreiften Muskels beim Menschen.** *Zeitschr. Ges. Neurol. u. Psych.* 132(3/4): 490-501. 1931.—In 2 patients with complete unilateral cervical sympathectomy records were taken of the contractions of the upper lip on the two sides following stimulation of the N. facialis. On the operated side more rapid fatigue was observed; the height of the individual twitch decreased; its duration was increased; the tetanus contraction height and the frequency necessary for a complete tetanus were decreased.—*W. O. Fenn.*

13175. **ALTENBURGER, H., und F. W. KROLL. Chronaximetrische Ermüdungsstudien.** *Zeitschr. Ges. Neurol.*

u. Psych. 132(3/4): 484-489. 1931.—Chronaxie determinations were made on the hand extensors in fatigue. Irregular results were obtained in voluntary contraction. After strong faradic stimulation there was first a decrease of chronaxie from 0.36 σ to 0.1 σ after 3 min. stimulation followed by an increase to 1.4 σ after 14 min. stimulation and then gradual recovery. Simultaneous observations on the contralateral side showed a decrease of chronaxie but no increase. This is a reflex not a hormonal phenomenon since it occurs only in the homologous contralateral muscle group.—*W. O. Fenn.*

13176. **BETHE, ALBRECHT. Die passive Kraft menschlicher Skelettmuskeln.** *Pflüger's Arch. Ges. Physiol.* 222(3): 334-349. 7 fig. 1929.—By means of a dynamometer, measurements were made of the force exerted by the arm in different positions during maximal voluntary contractions (active force). With the arm in corresponding positions similar measurements were made of the force exerted when the dynamometer was pulled away from the subject by the experimenter (passive force). The resisting, or passive, force was uniformly larger than the active force. The ratio varied with the training of the individual from 100:108 to 100:160, the average being 100:112. The force exerted by the legs in extending, as in rising from a squatting position, was 300-600 kgm. The passive force so exerted was 50% greater. A length-tension diagram was plotted by measuring the maximum force exerted by the legs in different degrees of extension, these being the successive positions assumed during the take-off for a high jump. The area of this diagram suffices to explain the height to which the center of gravity of the body is raised in jumping. It was found, however, that the subjects could jump down from much higher levels and still land in a squatting position. This indicates that the passive exceeds the active force. The movements of the center of gravity in the jumps were followed by moving pictures. In one subject the length-tension diagram showed 65 kgm. m. available for jumping; the work actually done in jumping up was 61 kgm. m. This subject was, however, able to "catch himself" after jumping down from such a height that his muscles had to absorb 150 kgm. m., the passive force exerted.—*W. O. Fenn.*

13177. **BOZLER, EMIL. Über die Tätigkeit der einzelnen glatten Muskelfaser bei der Kontraktion. 3. Registrierung der Kontraktionen der Chromatophorenmuskelzellen von Cephalopoden.** *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13(4): 762-772. 8 fig. 1931.—A method is described for the registration of chromatophore movements in *Loligo vulgaris*. The movements are caused by contractions of smooth muscle cells. The time necessary for contraction after electric stimulus at 21° was in many cases only 1/7 sec., never more than ½ sec. After 13 min. with 20 stimuli a sec. the muscle was not completely fatigued. These contractions could be superimposed upon a varyingly shortened condition, caused by a tonic contraction of the same cells. The tonic contraction was inhibited by faradic stimulation. The behavior of the muscle fibers agreed in all important details with that of the sphincter muscle of pecten, which consists of 2 parts, a shortening muscle and a tonus muscle. This substantiated the earlier assumption of the existence of 2 physiologically different, contractile mechanisms in the same cell, corresponding to the 2 components of the pecten muscle.

13178. **CARDOSO, D. M. Permeabilidade muscular e phosphageno. [Muscular permeability and phosphagen.]** *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 191-208. 1931.—Determinations of phosphagen were made in the gastrocnemius and sartorius muscles of *Leptodactylus ocellatus*, kept in an isotonic solution of sucrose or in Ringer solution. The phosphagen is broken down by the sucrose, but the rate of this breakdown is lowered at low temperatures. This phosphagen breakdown seems to be the immediate cause of the reduction of excitability. At 0° C. the phosphagen is very stable, and the muscles do not lose their excitability in sucrose solution.

13179. **CATTELL, McKEEN, T. P. FENG, W. HARTREE, A. V. HILL, and J. L. PARKINSON. Recovery heat in muscular contraction without lactic acid formation.** *Proc. Roy. Soc. [London] B* 108(757): 279-301. 7 fig. 1931.—Muscles poisoned with mono-iodo-acetic acid (Lundsgaard) contract without producing lactic acid. After contraction in O a delayed heat production occurs, similar to that which in normal muscles is associated with recovery. After the first 1 or 2 contractions of a poisoned muscle the "recovery" heat may be of normal amount in relation to the initial heat. After 30 or 40 twitches it is less than the normal, but still a considerable fraction of it. The heat production rate in O of a muscle poisoned with iodo-acetic acid and exhausted may remain, for long periods, far higher than that of a normal resting muscle. If the O be removed for a period the heat rate falls, and a "heat-deficit" occurs which is partly, but only partly, balanced by a "heat-excess" when O is readmitted. In a twitch or a short tetanus, as found by others, the ratio of tension developed to heat produced is entirely unaffected by poisoning with iodo-acetic acid. Functional recovery in O after stimulation, can be demonstrated under certain conditions, in muscles poisoned with iodo-acetic acid. The persistence of "recovery" heat when functional recovery has been eliminated suggests that one effect of iodo-acetic acid is to interfere with the mechanism by which the energy released in oxidation can be employed in driving the endothermic reactions necessary for functional recovery. It does not interfere with oxidation as such, at least in the concentrations used.—*From authors' summary.*

13180. **FENN, WALLACE O. The oxygen consumption of muscles made non-irritable by sugar solutions.** *Amer. Jour. Physiol.* 97(4): 635-647. 1931.—The immersion of muscles in isotonic sucrose solutions is accompanied by a small contraction of the muscle, an enormous increase in the O consumption, an increased loss of phosphoric acid, an increased lactic acid concentration, a loss of irritability, and an electrical change in the muscle which is temporarily negative but predominantly positive. Mixtures of small amounts of isotonic solutions of NaCl, $CaCl_2$, and KCl with isotonic sugar solutions behave like isotonic solutions of these salts without sugar. The immediate increase in the O consumption caused by sugar is increased by NaOH and decreased by HCl. As a rule, O consumption remains high almost indefinitely in sugar solutions unless these solutions are constantly renewed or unless they receive additions of electrolyte. Apparently any electrolyte so added brings the O consumption back to normal levels. In spontaneous non-irritability no rise in O consumption is caused by sugar, K or other agents causing contracture. Previous treatment with K prevents the rise in O consumption due to sugar. Previous treatment with sugar prevents the contracture and the rise in O consumption due to K. It is suggested that sugar non-irritability, K non-irritability and spontaneous non-irritability are all due to the same fundamental cause, which is probably a critical shift in the electrolyte balance across the cell membrane.—*Author's summary.*

13181. **GELLHORN, E. The recovery contracture in muscle; a new general salt effect.** *Biol. Bull. Marine Biol. Lab.* 60(3): 397-408. 10 fig. 1931.—If the sartorius or biceps of *Rana esculenta* is stimulated with condenser discharges in periods of 5 min. with a frequency of 45-150 per min. and stimulation periods alternate regularly with recovery periods of the same duration, a recovery contracture is brought about in the beginning of the 2nd and each following stimulation period provided the muscle is allowed to recover in an aerated salt solution. Wide changes in the K and Ca concentration of the Ringer's solution are without influence. The contracture also occurs when isotonic solutions of Na or Li salts are employed. The phenomenon is suppressed by replacing the salt with a non-electrolyte. The following observations are in favor of the assumption that the

contracture is a recovery contracture: (1) The phenomenon does not occur if the frequency is too low to produce even a slight fatigue; (2) it decreases from the 2nd to the 4th stimulation period, i.e., with increasing fatigue; (3) the changes in the shape of the contractions (Funke's Nose) during the recovery contracture show a temporal sequence just the opposite of that in fatigue. It is assumed that changes in the surface layer of the muscle cell bring about the recovery contracture. In favor of this hypothesis are the facts: (1) The recovery contracture is increased with increasing duration of the electrical discharges which were used to stimulate the muscle; (2) non-electrolytes which suppress the phenomenon bring about changes in the surface layer of cells.—*Author's summary.*

13182. **[GERSHUNI, G. V.]** ГЕРШУНИ, Г. В. Влияние симпатической нервной системы на прямую и непрямую возбудимость скелетной мышцы при механическом раздражении. [**The influence of the sympathetic nervous system on the direct and indirect excitability of skeletal muscle under mechanical stimulation.**] [English summary.] Русский Физиологический Журнал имени И. М. Сеченева (*Russ. Jour. Physiol.* 13(1): 129-144. 6 fig. 1930.—Studies were made on the sartorius muscle of the frog (*Rana temporaria*) using the Hofmann-Blaas apparatus. The mechanical excitability of the sartorius muscle is not the same in different parts of the muscle. In determining the threshold values for mechanical excitability of the most sensitive (according to Hofmann-Blaas-neural regions) regions of the muscle no difference was found between the reaction of the normal muscle and that of the muscle deprived of sympathetic innervation. In muscle with or without somatic innervation, stimulation of the sympathetic fibers does not cause any change in the mechanical irritability of the neural regions of the muscle. On stimulation of the sympathetic nerve, the indirect excitability of the muscle under mechanical stimulation undergoes changes characteristic of sympathetic effects. There is an increase in excitability which continues to rise after cessation of the stimulus and returns to the normal condition a fraction of a sec. after the end of stimulation. —*S. A. Corson.*

13183. **GRAY, J. The mechanism of ciliary movement. VI. Photographic and stroboscopic analysis of ciliary movement.** *Proc. Roy. Soc.* [*London*] *B* 107(751): 313-332. 3 pl., 10 fig. 1930.—A technique is described for obtaining a photographic record of the movement of a single living cilium and of recording the position of the cilium at suitable intervals of time. At 15°C. the abfrontal cilia of *Mytilus* have a cycle of approximately 0.35-0.45 sec.; the lateral cilia, 0.1-0.05 sec. The wave of curvature which passes along these cilia travels with an average velocity of 0.5 mm. per sec. The form of a metachronal wave can be reconstructed from the form of beat of its constituent cilia. Metachronal waves on the lateral epithelium of *Mytilus* travel at an approximate velocity of 160 μ per sec. at 15°C. and with a frequency of 16 per sec. The difference in phase between two adjacent cilia in the lateral epithelium lies between 0.001-0.003 sec.—*J. Gray.*

13184. **HANDOVSKY, HANS, und HELGA HINTNER. Über ein besonderes Verhalten der arbeitenden Skelettmuskeln kastrierter männlicher Kaninchen.** *Pflüger's Arch. Ges. Physiol.* 223(1/2): 221-231. 9 fig. 1929.—Muscles from castrated ♂♂ of the same dry weight as those from normal ♂♂ or ♀♀ contain more lactic acid. Stimulus of the M. tibialis anterior of the castrated ♂ showed that it fatigued much more quickly than the normal ♂. Stimulus of the N. ischiadius produced vasodilatation in both normal and castrate ♂♂. Therefore the fatigue of the castrate ♂♂ could not be accounted for by a poor circulation. Rather they seem unable to use lactic acid as efficiently as normal ♂♂.—*N. M. Payne.*

13185. **HEIDERMANNS, CURT. Vergleichend physiologisch-ökologische Untersuchungen an Ermüdungserscheinungen der Skelettmuskeln der Anuren.** *Zool. Jahrb. Abt. Allgem. Zool. u. Physiol. Tiere* 47(4): 723-758. 23 fig. 1930.—With 2 stimuli per sec. the gastrocnemius muscle of the different species of *Rana* is more easily fatigued than that of *Bufo vulgaris, B. calamita, Bombinator pachypus, Pelobates fuscus,* and *Hyla arborea,* but the last is just as easily fatigued as *Rana* with a load of 100 times the weight of the muscle. A line drawn so as to connect the top points of the single contractions is characteristically different for each species. The area enclosed by the top point line and the base line is a relative measure for the endurance. In tetanic stimulation the fatigue generally increases in proportion to the load, but in some species it is independent of the load. Animals collected in different ecological conditions show different reactions even after having been kept in a uniform environment.—*J. F. Wiedemann.*

13186. **HILDEBRAND, G. Y. Studies in the masticatory movements of the human lower jaw.** *Skand. Arch. Physiol.* 61: (Suppl.) 1-190. 203 fig. 1931.—This paper presents a detailed study of the movements of the infradental and uppermost condyle points in adults with normal and abnormal bites during empty chewing and mastication of various kinds of food. The usual methods of inspection and photography were employed, but in addition methods of kinematography and Roentgen kymography were developed. These registered both speed and movement of light weight indicators attached to the moving points of the jaw. In empty sagittal gliding the condyle movement is about 10 mm. The curve of the infradental point in normal cases is determined only by the overbite of the front teeth, as long as the front teeth are in contact. In empty frontal gliding in cases with deep overbite the infradental curve is determined entirely by the front teeth and canines; in other cases by both the teeth and the condyles. The character of frontal gliding in the horizontal plane, as in the caudal movement, is that of a combined movement of rotation and displacement. The condyle path commences on Camper's plane about ½ in. ventrally from the porion, goes down over the tub. artic. and up on its ventral side, finishing approximately at Camper's plane. The curve of mastication in the frontal plane is as follows: the mouth is opened to a third or rather more of the caudal position; the mandible is then moved obliquely, cranially, laterally, and usually to the side having the best conditions of articulation, to a maximal lateral position. The mandible reaches the occlusal position after an eventual gliding of the lower denture against the upper. The curve of mastication in the sagittal plane resembles the curve in the empty caudal movement. In mastication the condyles in the caudal movement go down side by side not quite to the top of the tub. artic. When the infradental point swings aside the median condyle goes down onto the tub. artic. in all likelihood medially; the lateral condyle however goes a corresponding distance backward and laterally. The nature of the food does not as a rule influence the character of the mastication curves in any respect. Crushing and grinding curves resemble each other so closely that the reasons are not clear for maintaining a distinction between these two types of movement. Deviations from the normal types of masticatory curves occur in non-normal cases. The masticatory side is as a rule chosen where most teeth are in contact during lateral gliding. The masticatory movements are not believed to be responsible for extreme wearing of the teeth.—*W. J. Meek.*

13187. **LEHNARTZ, EMIL. Über Verknüpfung des Aufbaus und Abbaus von Tätigkeitssubstanzen des Muskels.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 184 (1/2/3/4): 1-55. 5 fig. 1929.—When muscle press juice was made alkaline and buffered with $NaHCO_3$ a synthesis of phosphocreatine, and simultaneously a decomposition of lactacidogen and pyrophosphoric acid occurred. Addition of myoadenylic acid greatly accelerated the synthesis of pyrophosphate, but inosinic acid and adenosine were not active. It is suggested that the reversible deaminization of adenylic acid which occurs

in activity is bound in some way with the pyrophosphate metabolism.—*G. H. Hitchings.*

13188. LEHNARTZ, MARGARETE. Besteht ein bestimmtes Verhältnis zwischen Milchsäure- und Ammoniakbildung bei der Muskelkontraktion? *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 184(5): 183-195. 1929.—When a muscle was regularly stimulated at long intervals (4 sec.) the NH_3 content failed to increase whereas the lactic acid conc. rose rapidly. With shorter intervals of stimulation considerable NH_3 was produced. Thus there is no constant ratio of lactic acid to NH_3. Isometric, auxotonic, and isotonic contractions gave identical results. The failure of NH_3 to increase is attributed to resynthesis of the NH_3 precursor.—*G. H. Hitchings.*

13189. MALLWITZ, und RAUTMANN. Muskelarbeit und Blutkreislauf. [Muscular work and blood circulation.] 168p. 10 fig. Gustav Fischer: Jena, 1928. Pr. 9.50 M.

13190. MARTINS, THALES. Action des sucres sur la rigidité musculaire produite par l'acide monobromacétique. *Compt. Rend. Soc. Biol.* 18(17): 1558-1560. 1 fig. 1928.—Sugar perfusions of muscles treated with monobromacetic acid increased the degree of rigidity produced, saccharose being most effective, lactose least so. The relation of this change to permeability changes in the muscle fiber is suggested.

13191. MOZOŁOWSKI, WŁ., T. MANN, und C. LUTWAK. Über den Ammoniakgehalt und die Ammoniakbildung im Muskel und deren Zusammenhang mit Funktions- und Zustandsänderung. IX. Die Stellung der Ammoniakbildung in der Reihenfolge der chemischen Vorgänge im tätigen Muskel. *Biochem. Zeitschr.* 231(4/6): 290-305. 1931.—After section of the sacral plexus iodoacetic acid (40 mgm. to 100 gm. frog) was injected into the thoracic lymph sac. Experimentation began on the hind legs when the forelegs became rigid. The resting value of the gastrocnemius (av. of 24 exps.) was 1.03±0.1 mgm. % ammonia N. The opposite gastrocnemius was electrically stimulated. The maximum formation of ammonia appeared only after rigor had set in after 100-200 responses (during period of max. response the increase was only from 1 to 2 mgm. %; in the later fatigue period it reached 6-9 mgm. %).

13192. [RUSOV, IU.] РУСОВ, Ю. Бокова мускулятура риб деяких етольогічних типів. [Lateral musculature of fishes as related to their ecology.] [In Ukrainian.] Збірник Математично-Природописно-Лікарської Секції Наукового Товариства ім. Мевченка у Львові (*Coll. Math.-Nat. Hist. Med. Sec. Sci. Soc. Shevchenko, Lwow*) 27(1/82): 16 pl. 2 fig. 1928.—A biometric study of the rhythmic motion of the lateral musculature of fishes. As a rule the coefficient of rhythmic motion is highest for caudal myotomes. In symmetrically compressed fishes the coefficient is low and the same for the whole body. In asymmetrically compressed forms the coefficient is likewise low, but higher for caudal myotomes. For sireniform and arrow-shaped forms the coefficient is the same throughout the body especially with the longer forms. In flattened fishes the coefficient is highest for the most flexible part of the body. In general the part of the body that is most active in propulsion has the highest coefficient of rhythmic motion.—*I. Rusov* (*transl. by R. F. Shaner*).

13193. RYCHLEWSKA, H. O cieple spalania mięśni żywych. [The heat of combustion of living muscles.] [French summary.] *Acta Biol. Exp.* [*Varsovie*] 1(Paper 2): 1-16. 1928.—The heat of combustion was determined in the bomb calorimeter. Match muscles were used, one set being burned in the fresh state and the other after desiccation. Drying increased the heat of combustion 1.74 ± 0.63%, showing that the processes occurring in drying are endothermic. A similar difference was found when the results were compared in terms of the amount of C found in the muscles. The heat of wetting of the dried material was determined and found to be only ¼ of the difference between the heats of combustion of the fresh and the dried muscles.—*W. O. Fenn.*

ANIMAL PHYSIOLOGY

VASCULAR SYSTEM

(See also in this issue Entries 12881, 12997, 13154, 13189, 13240, 13247, 13253, 13255, 13256, 13260, 13261, 13268, 13287, 13295, 13301, 13314, 13315, 13317, 13358, 13371, 13420)

13194. BECK, CLAUDE S., and WILLIAM V. COX. The effect of pericardiostomy on the mechanics of the circulation. *Arch. Surg.* 21(6[part I]): 1023-1039. 6 fig. 1930.—In 8 experiments on dogs, the opening of the pericardial cavity to atmospheric pressure was followed by: 1) a definite sustained rise in venous pressure; 2) a fall of from 8-30 mm. of Hg in the arterial pressure, prolonged in 1 experiment, in others transient; 3) a decrease of from 15-30% in the min. vol. output of the heart. There was a return to almost normal output following closure of the pericardial opening. The production of these changes is a pressure phenomenon. Atmospheric pressure acts as an air tamponade on the heart and the great vessels within the pericardial cavity. It also produces dilatation of the pericardial cavity similar to that produced by the effusion of fluid. The authors name this mechanism pneumocardiac tamponade.

13195. BISCEGLIE, V. Sull'attività contrattile degli espianti di cuore embrionale in condizioni normali e sotto l'influenza di alcuni ormoni. [Activity of cultivated embryonic heart under normal conditions and under the influence of hormones.] *Arch. di Sci. Biol.* 13(1/2): 53-72. 1929.—The experiments were on cultures of heart muscle from chick embryos. At 2 or 3 days all heart segments possess automatic activity, contracting at most 82 times per min. At a more advanced stage of growth the automatism disappears from the ventricles, finally on the 6th or 7th day the right auricle possesses a more striking activity. As first noted by Fischer and Olivo, if two fragments of embryonic heart, of the same or different chicks, are cultivated together, after 20 hrs. culture the beat of both fragments becomes synchronous. Thyroid excites, insulin and folliculin depress, the activity.—*A. Jappelli.*

13196. BROEMSER, PH., und OTTO F. RANKE. Über die Messung des Schlagvolumens des Herzens auf unblutigem Weg. *Zeitschr. Biol.* 90(5): 467-507. 10 fig. 1930.—Using a simple schematic model of the circulation, there were derived, under various hypothetical conditions, several dimensionally correct equations which express the relation between stroke volume, pulse frequency, duration of systole and diastole, systolic and diastolic pressure and the volume-elasticity modulus of the air cushion in the schema. The derived equations were applied to a complicated model provided with an elastic tube which replaced the air cushion. From the cross-section of the tube, pulse-wave velocity and duration of systole, a simple relation was derived for the air-cushion which permitted the calculation of the cushion action of the tube during a pulsating flow through it. The derived formulae contain only values which, besides the stroke volume, can also be determined with little trouble on the actual human circulation from two pulse curves, a blood pressure measurement and a roentgenogram of the aorta. The validity range of the different equations for the actual circulation was proved by experiments on rabbits and dogs with which the values found in the equations and the volume flow in the aorta ascendens were simultaneously measured. In addition, there was determined a purely numerical fac-

tor, Z, introduced into each of the dimensionally correct equations. The following equation was determined as fitting best the relations in the circulation under widely varying conditions:

$$V = \frac{Z_F Q S T \left(\frac{p_s - p_i}{2} - p_d \right)}{D \rho c} \qquad (F)$$

in which: V = stroke volume; Q = cross section of the aorta ascendens; p_s = systolic, p_d = diastolic pressure; p_i = pressure immediately behind the incisura (all pressures measured in the aorta ascendens); S = systolic duration, D = diastolic duration; T = pulse duration; ρ = blood density; c = pulse wave velocity in the aorta; Z_F = pure numerical factor. The numerical factor, Z_F, remains almost constant in the same animal under marked circulatory changes, and has nearly the same value in the different kinds of animals. The equations offered suggest a new method for determining the stroke volume of the heart which is also applicable to man. Besides the stroke volume a value for the air-cushion action of the aorta and large vessels can be calculated and also a value for the frictional resistance in the entire peripheral vascular area. Table with experimental results from 6 animal experiments, with 80 single experiments.—*O. F. Ranke (transl. by M. Dresbach).*

13197. **DANIELOPOLU, D., L. MARCU, und G. G. PROCA. Die reflexogenen Zonen der Carotis. III. Der Effekt der mechanischen Reizung am zentralen und am peripheren Ende des Vagosympathicus.** *Zeitschr. Ges. Exp. Med.* 63(1/2): 157-162. 7 fig. 1928.—Experiments on dogs show that direct mechanical stimulation of afferent, not efferent, fibers of the exposed vago-sympathetic trunk may produce marked respiratory and cardiovascular reactions. In man it is probably stimulation of the carotid sinus which causes the effects commonly ascribed to pressure on the vagosympathetic.—*M. Dresbach.*

13198. **DIETER, WALTER. Demonstrationsmethoden zur Bestimmung des Blutdruckes im Auge. [Demonstration methods for determining blood pressure in the eye.]** *Pflüger's Arch. Ges. Physiol.* 220(1/6): 317-320. 1928.

13199. **ELLIS, LAURENCE B., and SOMA WEISS. The measurement of capillary pressure under natural conditions and after arteriolar dilatation; in normal subjects and in patients with arterial hypertension and with arteriosclerosis.** *Jour. Clin. Investigation* 8(1): 47-67. 1929.—A study was made of the capillary pressure by the skin blanching method under natural conditions and in skin in which an arteriolar flare had been created by intradermal injection of histamine. The latter measurement was shown to have a quantitative relationship to arteriolar pressure. The average capillary pressure in 10 normal subjects was 9 mm. Hg; in 23 patients with arterial hypertension 12 mm.; and in 13 patients with senile arteriosclerosis 13 mm. The average arteriolar pressure in normal persons was 55 mm. Hg; in hypertensive patients 108 mm. and in arteriosclerotic patients 48 mm. Hypertension is due to an increased resistance in the vascular circuit. Evidence is presented that this resistance lies in the arteriolar portion, as it does in normal persons, and, in the absence of marked arteriosclerosis, is functional in character. Hypertension may be a compensatory phenomenon designed to maintain normal tissue oxidation through a normal capillary blood flow. Evidence for the basic difference between arterial hypertension and senile arteriosclerosis is given.—*L. B. Ellis.*

13200. **FILIP, LADISLAV. Electrocardiogramme post mortem.** *Rev. Med. L'Est* 57(13): 393-398. 1929.—A woman, struck down by apoplexy on the street, was carried into a near-by hospital to receive treatment, and, by chance, into the electrocardiographic laboratory. After all efforts to revive her had failed and all signs of life had disappeared, the body was connected with an electrocardiograph. At once (21 min. after the apoplectic stroke and at least 6 min. after clinical death) the galvanometer began to register pulsations at the rate of 33 per min. The curve showed in the first lead atypical ventricular complexes of pure diphasic form, such as are seen from the simple contraction of a muscle with bipolar registration; in the 2nd lead a little notch complicated the curve, which became lower in the 3rd lead. No P or auricular wave could be discerned. This rhythmic beat of 33 per min. continued for 130″; then followed an extrasystole, a pause of 20″, a new ventricular complex differing from the first lead by a notch, another pause, and so on, the ventricular complex being complicated toward the end by the appearance of a new wave—perhaps the "X wave" of Martini and Sekell. The rhythmic activity did not disappear entirely until 30′ after the stroke or 15′ after clinical death.

13201. **FOGELSON, L. J., und M. J. SCHEWLAGINA. Über die Atrio-ventrikulare Automatie. I.** *Zeitschr. Kreislaufforsch.* 21(9): 256-261. 5 fig. 1929.—The destruction of the sinus node is responsible for clinical cases of atrio-ventricular rhythm. In 1 case atropine caused a slowing of the heart and no shift in the origin of the impulse. Adrenalin caused a change to sinus rhythm. The number of cardiac contractions is determined by the location of the origin of the impulse, decreasing from the atrial to the ventricular portion of the node.—*H. M. Krueger.*

13202. **GANTER, G. Ueber die Vorgänge im Kreislauf bei der Arbeit.** *Arch. Exp. Pathol. und Pharmakol.* 138(5/6): 276-300. 15 fig. 1928.—By tying off all the branches of the right iliac down to the arteria femoralis the blood supply is limited to the muscles supplied by the sciatic of the same side. On compressing the abdominal aorta the constriction in this isolated circulatory field can be measured by the rate of fall in a manometer connected to the left iliac. On tetanic stimulation of the sciatic the circulatory area of the corresponding extremity undergoes at first a sharp vasoconstriction which however begins to pass off before the end of stimulation. After stimulation there is a marked dilatation. The initial constriction is due to stimulation of vasoconstrictor fibers in the sciatic; both reflexly and directly. On elimination of all nervous effects by the administration of ergotamine a certain amount of increased peripheral resistance still remains which is due to mechanical compression from the muscular contraction. The subsequent vasodilatation cannot now be abolished in any way. It is believed to be due to the direct action of the acid products of muscular activity. If the resistance in a fore limb is recorded it will be noted that a reflex vasoconstriction follows stimulation of the pinched end of the cut sciatic or compression of the artery to the muscles of the hind leg. This constriction in the distant fore leg is reflex, for it is abolished by ergotamine. It depends upon stimulation of the vasomotor center by the acid content of the blood which comes from the active or asphyxiated muscles. It can be delayed by preventing the venous return from the muscles concerned. If this vasoconstriction be prevented by ergotamine, a vasodilatation takes place which is due to the direct action of the acid products on the vessels of the fore limb. Ordinarily the reflex predominates over direct stimulation. In certain regions poorly provided with vasomotors, such as the coronaries, the direct action of the metabolites is more important.—*W. J. Meek.*

13203. **GROSCURTH, GEORG. Die Kreislaufgeschwindigkeit bei der Fettsucht.** *Zeitschr. Klin. Med.* 111(3/4): 357-375. 1929.—As a result of observations on 6 normal subjects and 17 obese, the author concludes that the average cardiac output per min. and per beat is less in the obese, and the coefficient of utilisation of O greater. The effect of thyreoidin treatment is considered not altogether favorable. Cardiac output was calculated from determinations of O consumption, oxyhemoglobin dissociation curves, and composition of "arterial" and "venous" alveolar air.—*W. T. Dawson.*

13204. **GUILBERT, ANDRÉ. Un exemple d'autorégulation mécanique dans le coeur humain. [An ex-**

ample of mechanical autoregulation of the human heart.] *Revue Sci. Illus.* 68(15): 457-461. 1930.

13205. **HERING, H. E.** Über die Abhängigkeit der Herzschlagzahlabnahme von der Blutdruckzunahme beim Wachstum. *Zeitschr. Kreislaufforsch.* 22(3): 82-84. 1 fig. 1930.—Pulse frequency decreased from 10-11 years, increased from 11-12 years, was constant between 12 and 13, then gradually fell from 13-17 years, rose sharply between 17 and 18 years, and fell again at 19 years. Blood pressure rose from 10-16 years, fell between 16 and 17 years, was relatively constant between 16 and 18 and rose sharply from 18-19 years. Number in each age group is not given.

13206. **HOET, JOS.** Le sinus carotidien et les réflexes cardio-vasculaires. [The carotid sinus and the cardio-vascular reflexes.] *Rev. Méd. Louvain* 1929(4): 49-56. 4 fig. 1929.

13207. **IVALO, T., H. F. KARMA, H. O. STRENG, und I. VARTIAINEN.** Über die Veränderungen des Durchmessers der Aorta ascendens bei verschiedenem Druck. *Skand. Arch. Physiol.* 60(1/4): 189-203. 1 fig. 1930.—Discussion of curves obtained in 5 experiments on rabbits with asphyxiation and injections of NaCl, epinephrine, nitroglycerin and curare.

13208. **KIRK, ESBEN.** Untersuchungen über den Einfluss des normalen Schlafes auf die Temperatur der Füsze. *Skand. Arch. Physiol.* 61(1/3): 71-78. 5 fig. 1931.—In bed-ridden patients the temp. of the skin of the foot rises 2-6° C. shortly before sleep comes on. Sleep appears at about 35.5° and a maximum of about 37° is quickly reached. Following this there is a fall of some 2° and then a 2nd rise shortly before waking. At waking the temp. falls quickly to normal. This series of events agrees with that reported by Ipsen for narcosis. The changes are believed to be physiological, depending on reductions in tonus of skin arteries. In decompensation the initial rise may be long delayed and in old debilitated patients there may be a fall of temp. as sleep comes on.—*W. J. Meek.*

13209. **LAMPERT, FELIX.** Experimenteller Beitrag zur Denervation des Herzens. *Arch. Klin. Chir.* 155(4): 597-601. 1929.—In 25 dogs the stellate ganglion was removed and in a few the middle cervical also. The animals were then observed from a few days to 1½ years. No histological changes in heart muscle were detected. The animals were able to run 12-15 kilometres without fatigue. The heart increased in size following the operation. Electrocardiograms showed only a transitory negative T on removal of left stellate. The reaction to adrenalin was unchanged. There were no changes in condition of the hair nor any signs of muscular atrophy. Decrease in surface temperature, and in some cases pigmentation of the iris and relaxation of the nictitating membrane were noted.—*W. J. Meek.*

13210. **LIAN, C., O. VIAU, et C. VIDRASCO.** L'atypie ventriculaire en electrocardiographie. (Conception generale et valeur semeiologique.) *Ann. Med.* 26(1): 48-65. 5 fig. 1929.—This article gives a discussion of the question of QRS aberration; the relationship between abnormal ventricular complexes and cardiac insufficiency; the significance of atypical ventricular complexes; and finally the diagnostic, prognostic and therapeutic problems in patients having QRS aberration and heart disease. The authors studied the degree of QRS aberration or its absence in 250 cases. Eighty-four of these had slight, 54 moderate, failure, 45 marked heart failure, 29 doubtful failure and 39 cases had no sign of cardiac insufficiency. They conclude from their studies that while heart failure and QRS aberration are often associated, they are not necessarily related; and that although abnormality of the QRS complex is an important and serious finding, it is not an invariable accompaniment of cardiac failure. In addition to a brief discussion of the diagnostic and prognostic features of these cases they also state that, contrary to the belief of some writers, digitalis, ovabain and quinidine may be used in cases showing QRS aberration if moderation and caution are employed. Several excellent simultaneous electrocardiographic and arterial (brachial) tracings are shown.—*H. E. Jordan.*

13211. **LOEPER, M., et A. LEMAIRE.** Les réserves glycogéniques du coeur. [The glycogenic reserves of the heart.] *Progrès Méd.* 1930(5): 185. 1930.

13212. **LOEPER, M., J. TONNET, et LEBERT.** Variations régionales des lipoïdes cardiaques. [Regional variations of the cardiac lipids.] *Progrès Méd.* 1930(6): 225. 1930.

13213. **MIURA, GEN.** Untersuchung des Radial pulses. I. Mitteilung. Das absolute Sphygmogramm. *Acta Scholae Med. Univ. Imp. Kioto* 12(2): 215-227. 5 fig. 1929.—Experimental investigations supplied the data for the construction of a scale with which to interpret the tambour-excursion values of sphygmographic (kymographic) records and thus to determine the degree of blood pressure. Measurement by this scale of any given point on the sphygmogram shows its specific value. Preliminary adjustment of the initial tracings is necessary to secure absolute values. Percentage values are obtainable by the method used.—*G. Miura (transl. by H. E. Jordan).*

13214. **MIURA, GEN.** Untersuchungen des Radial pulses. II. Mitteilung. Klassifikation der Formen des Radialpulses und über verschiedenes auf die Pulskurve Bezügliches. *Acta Scholae Med. Univ. Imp. Kioto* 12(2): 239-250. 1 fig. 1929.—On the basis of the percentage value of the sphygmogram 540 pulse curves of various diseases were classified in 3 groups. The pulse curve, Type I, is characterized by a maximal crest of normal apex and by little or uncertain or negligible elasticity elevation. In Type II the apex of the maximal crest is also normal, but the ascending limb indicates elasticity elevation. Pulse curve, Type II, is further divisible into 3 series depending upon the height of the incisura and the form of the recoil elevation. Type III has a rounded crest with high anacrotic notch. Pulse curves of this type are divisible into 2 series according to the elevation of the incisura. The sphygmogram reveals also certain modifying factors of the pulse curve such as age, blood pressure, and frequency and amplitude of the pulse.—*G. Miura (transl. by H. E. Jordan).*

13215. **MIURA, GEN.** Untersuchungen des Radialpulses. III. Mitteilung. Untersuchung des absteigenden Schenkels *Acta Scholae Med. Univ. Imp. Kioto* 12(2): 251-258. 5 fig. 1929.—On the basis of clinical experimental investigations, the condition of the peripheral resistance could be determined from the form of the ascending limb of the pulse curve. In cases of increased peripheral resistance, the ascending limb of the curve of the radial pulse shows an even slope; decrease of peripheral resistance is indicated by a subterminal concavity.—*G. Miura (transl. by H. E. Jordan).*

13216. **ORSI, ARRICO.** La regolazione e le alterazioni del ritmo cardiaco secondo le teorie attuali. [Regulation of cardiac rhythm and its alterations according to present theories.] *Clin. Med. Italiana* 59(2): 85-86. 1928.—A review of modern teaching and extensive literature. The author states essentially that the regularity of the cardiac rhythm under normal conditions and its pathological alterations have been explained until a few years ago from a unitary point of view, namely: that an impulse starting from the sinus node spreads over the auricles, reaches the node of Tawara and finally spreads to the ventricles over the bundle of His and its branches. Against this view several dualistic theories have been directed, among others that of Géraudel which regards the contraction of auricles and ventricles as independent of each other. These different theories are explained and their applicability in different syndromes is put to the test. The dualistic theories have, however, encountered such difficulties of elucidation that the unitary view still persists, abundantly supported by physiological and clinical experience.—*L. Braun (transl. by G. Bachmann).*

13217. **PATRIZI, L. M.** Le recenti esperienze e ipotesi sul seno carotideo non infirmano l'interpretazione classica del fenomeno Czermak-Concato (bradicardia da stimolo

meccanico diretto del vago). [The recent studies on carotid sinus do not invalidate the classic interpretation of Czermak-Concato's phenomenon (bradicardia following mechanical stimulation of the vagus).] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 668-671. 1930.—Bradycardia following mechanical stimulation of the vagi should not be attributed to stimulation of the reflexogenous area of the carotid sinus, nor to any reflex; it follows too quickly after stimulation.—*M. Comel.*

13218. POL, B. van der, and J. van der MARK. The heartbeat considered as a relaxation-oscillation and an electrical model of the heart. *Arch. Néerl. Phys. Homme et Animaux* 14(3): 418-544. 18 fig. 1929; also in *Philosoph. Mag.* 6: 763-775. 3 pl. 1928.—In § 1 and 2 the principal properties of sinusoidal and relaxation oscillations are described in general; in § 3 the characteristic properties of relaxation oscillations are described in more detail. In § 4 a system is described, based on the conception that the heartbeat is a relaxation oscillation, which shows the properties of the heart rhythm and its anomalies (system of 3 degrees of freedom). § 5 describes an electrical model of the heart, which gives, by means of relaxation oscillations produced by neon-tubes, the rhythmic properties of normal and abnormal heartbeat. The activity of each part of the heart corresponds to the flashing of neon-tubes. § 6 gives the experiments performed with the aid of this model and shows electrocardiograms of the normal rhythm, of the different stages of partial heartblock, of complete heartblock and the various types of extrasystolae; moreover it is shown how the model follows the law of all or nothing. § 7 gives the conclusion; the period of the heartbeat is determined by a relaxation-time (here a diffusion time). Finally some new possible anomalies of the rhythm are given, which can be produced by the model and were derived theoretically, but which, as far as is known to the authors, are not yet discovered or recognised in the real heart.—*B. v. d. Pol.*

13219. REIN, H., und R. ROSSLER. Die Abhängigkeit der vasomotorischen Blutdruckregulation bei akuten Blutverlusten von den thermoregulatorischen Blutverschiebungen im Gesamtkreislaufe. *Zeitschr. Biol.* 89(3): 237-248. 9 fig. 1929.—The manner in which warm blooded organisms are able to maintain a vasomotor control of both blood temperature and pressure at the same time has been investigated by means of a Reins "Thermo-Stromuhr." The average amount of blood passing through various vessels is measured simultaneously with the arterial pressure. The vessels generally chosen are the vena cava (in the closed thorax); the portal vein; the left renal vein and a peripheral vessel. The animal is submitted to different conditions which necessitate its regulating both temperature and pressure. The vessels that had already contracted to regulate the temperature are also the first that contract to regulate pressure. On the other hand those regions of the blood system where dilatation takes place to regulate the temperature are not used for the control of pressure. Thus an animal under low temperature conditions regulates its blood pressure almost exclusively by means of the peripheral vessels whereas the vessels of the splanchnic region play practically no part. Animals under high temperature, however, utilise their abdominal vessels almost exclusively for regulating pressure. The blood supply to the kidneys is profoundly influenced in temperature regulations whereas it is not used for regulating pressure.—*H. Rein (transl. by C. H. O'Donoghue).*

13220. RISER, et SOREL. La circulation cérébrale étudiée par la microphotographie. *Rev. Oto-Neuro-Ophtalmol.* 7(7): 485-492. 4 fig. 1929.—Of the 2 methods of studying the cerebral circulation, (1) registration of the cerebrospinal fluid and (2) registration of the cerebral volume and pulse, Riser and Sorel declare the 1st worthless because the pressure of the cerebrospinal fluid depends on too many factors and the 2nd, though more precise, difficult of interpretation in certain particulars. They describe a method of direct examination of the brain by trephining, opening the dura mater and illuminating the exposed field with a powerful light. For the purposes of photography (since each thoracic dilatation moves the brain 2 or 3 mm. and puts the object out of focus) natural respiration is suspended by blocking the roots of the phrenic nerves with "scurocain," and artificial respiration is established. The vessels are kept under observation, and, whenever an interesting modification is observed, respiration is interrupted for a few seconds, until a negative can be taken. The action of acetylcholin, epinephrine and CO_2 on the cerebral circulation was studied in the dog. Acetylcholin produced rapid diminution of the cerebral volume following rapid subsidence of arterial pressure. This is not due to spasm of the cerebral arteries, for comparative photography shows that the caliber of the arteries does not change; it is, instead, directly connected with general vascular hypotension and marked slowing of the systoles, reducing the blood in the viscers. Epinephrine, intravenously injected, caused a marked increase both in cerebral volume, and in arterial tension. Inhalation of CO_2 produced a diminution of cerebral volume, not great but distinct, which is not due to vascular spasm, for in ¾ of the cases the arterial vessels were immediately slightly dilated. These apparently contradictory phenomena are reconciled by the consideration that the slight arterial dilatation is compensated by the considerable drain of venous blood into the thorax produced by the forced and numerous inspirations following inhalation of CO_2. The experiments show the ease with which the brain can be passively engorged with or emptied of blood, and the need of supplementing plethysmography with direct observation and microphotography in the study of cerebral circulation.

13221. ROUS, PEYTON, and H. P. GILDING. Is the local vasodilatation after different tissue injuries referable to a single cause? *Jour. Exp. Med.* 51(1): 27-39. 2 pl. 1930.—Experiment shows that the vascular contraction responsible for Bier's spotting prevails over the local vasodilatation due to mechanical injury of the skin, and causes the local reddening to blanch. It is without effect, however, upon the local vasodilatation caused by histamine pricked into the skin. The results raise doubts concerning the validity of the hypothesis referring all local vasodilatations to the action of a single chemical substance or set of substances ("H substance"), liberated within the tissues.—*Authors' summary.*

13222. SCHERF, D. Über die Wirkung von Säure- und Alkaliinfusionen sowie von Änderungen des Gasgehaltes des Blutes auf die Extrareizbildung im Säugetierherzen. VII. *Zeitschr. Ges. Exp. Med.* 73(3/4): 382-401. 5 fig. 1930.—The following results were obtained with the dog heart, left in situ and treated beforehand with aconitine: (1) After injection of a 10% solution of NaH_2PO_4 an extrasystole originated regularly in the right heart; every other previously existing rhythm was suppressed. (2) Larger quantities of a 1 to 2% solution of lactic acid had the same action. (3) Correspondingly small amounts of a 10% soda (Na_2CO_3) solution removed the extrasystoles in the majority of the experiments; larger quantities, however, elicited a right sided extrasystole similar to that of the acids. (4) In 15 of 19 experiments the existing bigeminy was temporarily abolished by asphyxia. (5) An analysis of this action by the breathing of different gas mixtures yielded the result that extrasystoles are very sensitive to an accumulation of CO_2, but under the experimental conditions they do not react to a lack of O. (6) The extrasystole centers are much more sensitive to these very different disturbing agents than are those of the normal stimuli.—*Author's summary (transl. by M. Dresbach).*

13223. STEPHENS, G. ARBOUR. A new method of eliminating the basic or diastolic blood pressure. *Med. Rev. of Rev.* [*New York*] 36(4): 294. 1930.

13224. STIÉNON, E. Le pouls veineux jugulaire physiologique et son interprétation. *Ann. Inst. Chir. Bruxelles* 29(5): 81-89. 1928.—Tracings were made simultaneously of the heart beat and of the jugular

pulse. Three positive waves and two negative ones represent a complete heart beat. The first venous pulse wave corresponds to the presystolic period and the auricular systole; the second wave to the protosystolic period and the ventricular systole. The first negative venous pulse wave corresponds to the mediosystolic period and the closure of the auriculo-ventricular valve. The third positive wave corresponds to the teleosystolic or protodiastolic period, the increase of intra-auricular pressure, and the opening of the tricuspid valve. The second negative wave corresponds to the teleodiastolic period and the ventricular diastole.

13225. **WITTING, VITO, J. MARKOWITZ, and FRANK C. MANN. The rôle of glycogen in the contraction of the perfused heart of the rabbit.** *Amer. Jour. Physiol.* 94(1) : 35-40. 1930.—The unperfused hearts of 21 rabbits starved 3-6 days and subjected to convulsions from strychnine (to exhaust the glycogen) contained 0.06%-0.25% (av. 0.12%) glycogen. The hearts of 10 rabbits not subjected to strychnine convulsions (3 well fed, 7 starved 3 days) perfused with glucose-free Ringer-Locke's solution showed a glycogen content (0.03-0.13%, av. 0.094%) much below that in 7 normal rabbits starved for 3 days (0.33-0.50%, av. 0.40%). The hearts of 4 rabbits containing traces (less than 0.1%) of glycogen and perfused identically had approximately the survival period of about 4 hrs. The consumption of energy of the perfused heart is believed to be sufficiently great so as to preclude the possibility that hearts deficient in glycogen can obtain their energy from the oxidation of the remaining traces of this substance. It would appear from these observations that when glycogen is present in a heart, it is used by preference, but that when it is gone, some other foodstuff can serve as a source of energy. The value of glucose in the perfusing fluid for the heart is considered. On the basis of the authors' observations, it is suggested that the beneficial effect of glucose is not due to the fact that it is converted into glycogen.

13226. **ZWAARDEMAKER, H., et PH. ARONS. Sur l'origine de l'automatine.** *Arch. Néerland. Sci. Exactes et Nat.* Ser. 3C 12(4) : 520-528. 3 fig. 1928.—Automatine is an active automatic cardiac substance formed from the inactive mother-substance: automatinogen. The beta rays from K act on the automatinogen converting it to the active form: automatine. The nodal tissue, because it has an affinity for the substance, contains automatine in much larger quantities than are found elsewhere. Within physiological limits automatine has a positive chronotropic action on the heart.—*H. Zwaardemaker (transl. by C. Brooks).*

13227. **ZWAARDEMAKER, H., und T. P. FEENSTRA. Die Wiederbelebung des Herzens mittels weicher Röntgenstrahlen, nachdem es durch die Entfernung seiner permeablen Kaliumsalze zum Stillstand gebracht worden war.** *Strahlentherapie* 36(2) : 368-369. 1 fig. 1930.—Since the biologic effect of x-rays is generally ascribed to the swiftly moving electrons set free in the tissues, a result analogous to that obtained with corpuscular rays was sought with x-rays of high absorbability and low hardness (belonging to the Bucky zone). The subjects were isolated hearts of frogs and eels. In a previous series of 14, reanimation was produced in all, complete in 8, partial in 6. In the present series of 10, complete reanimation was produced in all, in an average time of 10 min. between critical stoppage and beginning of pulsation, and an average duration of 6 hrs. full and regular pulsation.

PHARMACOLOGY

ERWIN E. NELSON, *Editor*

RALPH G. SMITH, *Assistant Editor*

(See also in this issue Entries 12172, 12445, 12448, 12462, 12829, 12894, 12900, 12933, 12941, 12963, 12973, 13002, 13003, 13012, 13013, 13014, 13019, 13028, 13081, 13086, 13146, 13149, 13159, 13162, 13179, 13180, 13190, 13207, 13208, 13220, 13391, 13440, 13472, 13513, 13579, 13584, 13587, 13609, 13614, 13619, 13825, 13933, 13937, 15005)

13228. **AMSLER, C. Die Morphinmiose. I. Uber den Angriffspunkt des Morphins und den Mechanismus der Miose. [Morphine miosis. I. The point of attack of morphine and the mechanisms of miosis.]** *Arch. Exp. Pathol. und Pharmakol.* 122(1/2) : 61-65. 1927.

13229. **ANAN, SHINJI. Über die Gefässwirkung des Tetrahydro-β-naphthylamins.** (In Japanese.) *Nagasaki Igaku Kwai Zasshi* 5 : 681-695. 1927.—Small doses of tetrahydro-β-naphthylamine produce in the perfused rabbit's ear a well marked vasoconstriction after a preliminary dilatation. A somewhat weaker constrictor effect is produced in the rabbit's kidney. Constriction is also produced in the perfused frog's legs. The vasoconstrictor action of this drug is abolished by ergotamine, caffeine, ethylene diamine and large doses of atropine. Therefore it probably acts on the sympathetic nerve endings.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by A. J. Clark).*

13230. **ANDERSON, H. H. Effect of morphine sulphate by mouth on oxygen consumption in normal humans.** *Proc. Soc. Exp. Biol. & Med.* 27(2) : 102-103. 1929.—Doses of .1 mgm. to .5 mgm. per kgm. generally produced a decrease in O consumption. Respiratory rate was unchanged, pulse rate was somewhat increased. Pulse pressure was decreased in some cases and increased in others.

13231. **ANDERSON, HAMILTON H., and CHAUNCEY D. LEAKE. The oral toxicity of emetine hydrochloride and certain related compounds in rabbits and cats.** *Amer. Jour. Trop. Med.* 10(4) : 249-259. 1930.—The minimal lethal dose of emetine hydrochloride given orally in enteric coated capsules is 15 to 20 mgm./kgm. for rabbits and cats. Of emetine bismuth iodide it is 50 mgm./kgm. for rabbits and 30 to 40 mgm./kgm. for cats; of emetine antimony iodide it is 30 mgm./kgm. for rabbits and 15 to 20 mgm./kgm. for cats; of auremetine it is 100 to 125 mgm./kgm. for rabbits and 30 to 40 mgm./kgm. for cats, and of iso-amyl cephaeline phosphate it is 300 to 350 mgm./kgm. for rabbits and 200 to 250 mgm./kgm. for cats. Postmortem examination revealed degenerative injury to cardiac and smooth muscle and to liver and kidney following lethal doses of all these drugs. Since the minimal lethal dose of emetine hydrochloride by mouth is in the same range as that given subcutaneously, fairly complete absorption from the gut is indicated. Again, since the minimal lethal dose on single subcutaneous injection or on single dose by mouth is in the same range as when given in small divided doses daily, an extremely slow rate of elimination or detoxification of the drug is indicated. The significance of the toxic range of such a drug as emetine is discussed.—*Authors' summary.*

13232. **BEHRENS, BEHREND, und REINHOLD PACHUR. Zur Pharmakologie des Bleies. II. Die Verteilung und der Zustand kleinster Bleimengen im Blut. [Pharmacology of lead. II. Distribution and state of extremely small amounts of lead in the blood.]** *Arch. Exp. Pathol. und Pharmakol.* 122(5/6) : 319-337. 1927.

13233. **BERTRAM, FERDINAND. Zur Pharmakologie des Lobelins. [Pharmacology of lobelin.]** *Arch. Exp. Pathol. und Pharmakol.* 128(3/6) : 179-191. 8 fig. 1928.

13234. **BLESS, GERTRAUD. Einfluss von Mineralsalzen auf rektale Avertin- und Äthernarkosen.** *Arch. Exp. Pathol. u. Pharmakol.* 148(3/4) : 129-139. 1930.—Depth of avertin and ether narcosis was increased by injection of Na or Ca salts, or by their administration per os. To a less degree Mg salts also increased nar-

cotic effects of avertin and ether. The greatest depth of narcosis was found in a mixture of avertin, $CaCl_2$, and oxalic acid. Avertin-$CaCl_2$ narcosis was partly reversible by injection of NaCl; avertin-oxalic acid narcosis by injection of $CaCl_2$. Narcosis was increased in hunger. Depth of narcosis of ether applied per rectum was 1.33 alone; 1.7 after previous treatment with $CaCl_2$; 1.5 after oxalic acid: with avertin alone depth was 1.7-2; 3.3 after previous treatment with $CaCl_2$; 4 after oxalic acid.

13235. BLUME, WILHELM. Studien zur vergleichenden Pharmakologie des Zentralnervensystems. I. Teil: Untersuchungen an Krebsen. II. Teil: Untersuchungen an Fischen. *Arch. Exp. Path. u. Pharmakol.* 149(3/4): 129-185. 3 fig.; 186-210. 1 fig. 1930.—A comparison of the effects of strychnin and phenol on vertebrates and invertebrates was carried out on the green crab (*Carcinus maenas*) and other crabs, and on the marsh carp (*Carassius vulgaris*).

13236. BODANSKY, MEYER. The conversion of cyanide into thiocyanate in man and in alkaline solutions of cystine. *Jour. Pharmacol. & Exp. Therap.* 37(4): 463-474. 1 fig. 1929.—KCN in small amounts, by mouth, produced as marked an increase of the SCN content of the saliva as did an equimolecular amount of KSCN, similarly taken. This argues for the physiological conversion of CN into SCN. Evidence was presented to show that KCN reacted with cystine to yield SCN. This reaction occurred to a slight extent even in neutral sol., but was more pronounced in alkaline sol. of cystine. The amount of SCN produced was not influenced by varying the amount of KCN from 0.5 to 4.0 molar equivalents of the cystine, nor by varying the alkalinity between 0.05 and 1.0 M Na_2CO_3. On the other hand, heating the alkaline cystine solutions, before treating with CN, markedly increased their power to form thiocyanate. Apparently the S which was liberated in the alkaline decomposition of cystine (labile S) oxidized the KCN to SCN. A smaller portion of the SCN produced under these conditions was present in organic combinations as α-amino-β-sulfocyanopropionic acid.—*Author's summary.*

13237. BRAGA, C. Sull'azione farmacodinamica dei principi attivi della "Capsella bursa pastoris." [Pharmacodynamic action of the active principles of shepherd's purse.] *Ateneo Parmense* 2(2): 99-123. 1930.—A dealcoholized ext. produced a veratrin-like picture in frogs and a progressive diminution in heart rate even though atropine had previously been given. In dogs and rabbits the alcoholic preparations gave a fall in blood pressure with cardiac acceleration. A similar result was obtained in rabbits with watery preparations. The vessels of the isolated perfused ear of the rabbit were dilated, this dilatation being antagonized by epinephrine. The tone of the isolated uterus of guinea pigs and cows was lowered, but the pregnant uterus of these animals and of the human as well was stimulated.

13238. BURN, J. H., and M. L. TAINTER. An analysis of the effect of cocaine on the actions of adrenaline and tyramine. *Jour. Physiol.* 71(2): 169-193. 1931.—The main conclusions from experiments on the heart-lung preparation of the dog and isolated organs and tissues of dogs and cats are: (1) Epinephrine action is increased, that of tyramine and ephedrine diminished or abolished by cocain, both on the heart in the heart-lung preparation, and on the vessels of the hind limbs perfused by means of the Dale-Schuster pump. (2) On the isolated auricles of the cat the augmentor action of epinephrine as well as the augmentor action of tyramine is abolished by cocain; similarly on the virgin or nonpregnant uterus of the cat the inhibitor action of epinephrine as well as the inhibitor action of tyramine is greatly lessened or abolished by cocain. (3) On the isolated intestine of the cat the inhibitor action of tyramine is abolished by cocain, while that of epinephrine is variably affected. Ephedrine inhibits both the uterus and the intestine of the cat, but the diminution of these inhibitions by cocain is much more difficult to demonstrate. On the isolated cat's heart perfused with Ringer, perfusion with a weak solution of cocain, 1 in 10,000,000, diminishes the effect of epinephrine and tyramine on the heart. If, however, instead of perfusing cocain through the heart, a single dose is injected into the cannula, the injection of epinephrine immediately afterwards is followed by a greatly increased effect; the injection of tyramine immediately after the injection of cocain is followed by a diminished effect. (4) If the pupil of a cat's eye is denervated by extirpation of the superior cervical ganglion, and time allowed for full degeneration of the nerves, the pupil is now dilated by a much smaller dose of epinephrine than before, but it is not dilated at all by large doses of tyramine. Similarly only very large doses of ephedrine have even a slight dilator action. (5) Further evidence is given that tyramine has, in large dose, a histamine-like action on the vessels. It is suggested that in many respects tyramine stands between epinephrine and histamine in its physiological effects. (6) It is shown that cocain has a vaso-dilator action on the perfused hind limb, that it stimulates the virgin cat's uterus and the cat's intestine, which are inhibited by epinephrine and tyramine, and that it has no stimulant effect on the isolated auricles. It is not, therefore, a general stimulant of sympathetic endings.—*Authors' summary.*

13239. CASSINIS, U., e L. BRACALONI. Curva alcoolemica ed alcoolurica alimentari nel riposo e negli esercizi fisici. [Alimentary alcoholemic and alcoholuric curves during rest and during muscular exercise.] *Arch. Fisiol.* 29(1): 19-30. 2 fig. 1930.—During rest, and when alcohol is administered in one dose, the alcoholemic curve has a parabolic shape, showing a maximum ½-1 hr. after ingestion. The alcoholuric curve is increased, and its values are higher than those of the alcoholemic one. The rise of the latter is slower when the alcohol is taken fractionally. During running the alcoholemic content shows a marked diminution. Walking and rowing also produce a lowering of the alcoholemic curve. The alcoholuric curve has, during muscular exercise, a shape not very different from that during rest, but the quantity of alcohol eliminated during work is less than during rest. During both rest and work only a small fraction of the ingested alcohol is eliminated through the kidneys. The subjects suffer from alcohol administration, and the time necessary to perform a given exercise is greater when alcohol is taken than when the subject is fasting.—*M. Comel.*

13240. CATTELL, McKEEN, and DAYTON J. EDWARDS. Epinephrin action in relation to the hydrostatic pressure effect on the contraction of cardiac muscle. *Amer. Jour. Physiol.* 96(3): 657-661. 1931.—Epinephrine stimulates the contraction of cardiac muscle perhaps more strongly than any other known chemical substance; purely physical means (hydrostatic pressure) produce even more striking effects of the same general nature. The question of the mutual effect of these 2 agents on each other's action was studied on the isolated auricle (16 experiments) or ventricle (13 experiments) of the terrapin heart, which was so arranged that the tension of the isometric contractions was optically recorded from a torsion wire lever. The tissue was kept immersed in a chamber containing Ringer's solution to which pressure was applied or epinephrine added as required. The tension data were obtained from photographs of the response of non-rhythmic preparations to single break induction shocks. Usually the preparation was stimulated regularly at 1-min. intervals. Results indicate that the stimulating action of increased hydrostatic pressure on the tension developed by cardiac muscle is augmented by the presence of epinephrine. This augmentation is greater than the stimulation produced by epinephrine alone, indicating a synergistic action between these 2 agents. Through the combined action of pressure (1200-1600 lb.) and epinephrine (1:250,000) the average value for the tension developed was increased 70.9% in the case of the auricles and 121.4% in the case of the ventricles.

13241. CHOU, TSAN-QUO. The alkaloids of Chinese Corydalis ambigua, Cham. et Sch. (Yen-Hu-So). Part

III. Corydalis I and Monomethyl ethers of Corydalis F and G. *Chinese Jour. Physiol.* 3(3) : 301-306. 3 fig. 1929.—From the tubers of Chinese Corydalis (Yen-Hu-So), besides the 8 alkaloids (Corydalis A-H) already reported, another new alkaloid, Corydalis I, has now been isolated from fraction "2." It crystallises out in prisms; m.p. 104°; specific rotation +112.5°. It forms well crystallised salts; oxalate, prisms, m.p. 185°; hydrochloride, needles, m.p. 236°; hydrobromide, needles, m.p. 241°. Corydalis I produces a slight depression of the central nervous system in mice and rats, followed by severe convulsions ending in death. In frogs, the same depression is observed, but no convulsions. Corydalis F forms a monomethyl ether having a molecular formula $C_{21}H_{25}O_4N$, m.p. 140° C and specific rotation −275°. Corydalis F is probably l-corypalmine isolated for the first time. Corydalis G gives rise to the formation of corydaline (Corydalis A) when methylated. This proves that Corydalis G is corybulbine.—*Author's summary.*

13242. **CIUCA, M., et I. ALEXA. Traitement de la Malaria par le Stovarsol.** *Arch. Roum. Pathol. Exp. Microbiol.* 1(1) : 105-114. 1928.—Stovarsol (160 to 250 mgm. intraven.), with a total maximum dose of 1.5 gms. daily, caused a disappearance from the blood of schizogonia and gametes. Nine of 20 benign tertiary malaria patients showed marked kidney damage, as shown by the urine findings. The drug was practically without effect, administered by mouth.—*M. G. Mulinos.*

13243. **COLLIER, W. A., und MAGDALENE KRAUSE. Über die Wirkung eines unlöslichen Arsenpräparates auf die Trypanosomeninfektion der weissen Maus.** *Zeitschr. Hyg. u. Infektionskr.* 110(3) : 516-521. 1929.—The prophylactic effect of the arsenic-pyridin compound BR 34a was found (in a series of 8 experimental mice and 4 controls) recognizable but unreliable; the therapeutic effect of its early employment was marked and unmistakable (8 out of 12 experimental mice surviving, 2 controls dying on the 4th day).

13244. **COMEL, M. Studii sulla sindrome paratireopriva. II. Azione preventiva dell'ergosterolo irradiato in dosi eccessive. [Studies on parathyroid deficiency. II. Preventive action of overdosage with irradiated ergosterol.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 11(9) : 857-860. 1930.—When a treatment with overdoses of irradiated ergosterol, subcutaneously administered, has preceded parathyroidectomy, no tetany follows it, although hypocalcemia is developed. P rises in serum, but never so much as in non-treated dogs. In a later stage Ca and P contents revert to normal values; no tetany is developed. Most animals show indefinite survival in good health. Probably a progressive hypertrophy of aberrant parathyroid tissue follows, while ergosterol would aid the animal in sustaining a first stage of acute parathyroid deficiency.—*M. Comel.*

13245. **COSTA, AURELIO. Ricerche sperimentali sul potere ipoglicemizzante del lievito di birra somministrato per via enterica. [Hypoglycema following peroral administration of beer yeast.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6) : 878-881. 3 fig. 1930.—Administration of Levurinose Blaes (desiccated beer yeast) was followed by diminution of: (1) hyperglycemia caused by intravenous glucose administered to rabbits; (2) of the "glycemic area" following peroral administration of glucose; (3) of the glucose content of blood of normal rabbits. However, during the 1st hr. after yeast administration hyperglycemia occurred.—*M. Comel.*

13246. **DANIELOPOLU, D., und R. BRAUNER. Die Wirkung des Cholins auf die Morphologie des Blutes.** *Zeitschr. Klin. Med.* 115(1/2) : 261-270. 1930.—Secondary anemia was produced in 2 dogs by bleeding, and 1 treated thereafter with 7 daily injections of acetylcholine (15 mgm.-0.1 gm.). On the 7th day the red blood cells (R.B.C.) far exceeded the number before bleeding (4,000,000-2,032,000-4,820,000). The other dog showed an increase in R.B.C. but not to equal the initial count. A 3rd dog was bled, left untreated for 6 days, during which there was some increase, then treated for 10 days with injections of 0.02-0.03 gm. acetylcholine when the R.B.C. had attained the original count. The increase in reticulocytes was much more pronounced during acetylcholine treatment; the Hb did not increase proportionally to the R.B.C. Three patients with pronounced anemia were treated with acetylcholine chloride. As in the dogs, there was an increase in the R.B.C. and Hb; there was an increase in reticulocytes, and often in polychromatophilia. The authors were uncertain whether the action of choline is directly on the hematopoietic organs or by way of the autonomic system.

13247. **DAVIS, E. Relations between the actions of adrenaline, acetylcholine, and ions, on the perfused heart.** *Jour. Physiol.* 71(4) : 431-441. 2 fig. 1931.—Experiments were performed on the perfused frog heart, and repeated on the isolated perfused rabbit heart. A perfusion switch and a frog heart cannula for heart perfusions are described. *R[ana] esculenta* is less sensitive than *R. temporaria* to adrenaline; and high adrenaline concentrations in Ringer of low Ca^{++} content can cause initial depression of the *R. esculenta* heart. The stimulating effect of adrenaline is enhanced in low Ca^{++} concentration and H^+ excess; acetylcholine has a reduced inhibitory effect in low K^+ concentration and OH^- excess. After perfusion with Ringer pH 9.5 (rabbit heart) and pH 9.9 (frog heart) an "OH^- paradox" similar to the "K^+ paradox" is seen. After the frog heart has been perfused with Ringer pH 4.0-4.5, there is practically no beat on changing to normal Ringer. In normal Ringer + adrenaline, however, a normal beat is obtained, but the heart stops again in Ringer without adrenaline.

13248. **DAVIS, LOYAL, and LEWIS J. POLLOCK. The effect of atropin upon skeletal muscle tonus.** *Amer. Jour. Physiol.* 93(2) : 379-383. 1930.—Atropin, hyoscin, scopolamin and duboisin have long been known to diminish, and in some cases to abolish, muscle rigidity in some way hitherto unexplained. In 20 atropinized decerebrate cats, neck, labyrinthine and nociceptive reflexes could be elicited without qualitative or quantitative change, and crossed extensor thrusts could be evoked easily. Only one reflex activity was always affected, the muscle proprioceptive reflex. Hence it is concluded that the action of atropin on rigidity in decerebrate animals is due to its effect on the muscle proprioceptive arc.

13249. **DELARIO, A. J. Paths of absorption and excretion of sodium tetraiodophenolphthalein.** *Jour. Lab. and Clin. Med.* 16(4) : 329-340. 2 fig. 1931.—Experiments on dogs to determine the source of the uniform, homogeneous shadow seen in the large intestine after intravenous or oral administration of Na tetraiodophenolphthalein showed that, given orally or rectally, it is absorbed in both the small and the large intestine; given intravenously, it leaves the blood stream in 2-4 hrs. About 60-70% is excreted (probably unchanged) by the liver, beginning in 1-2 hrs., reaching a maximum in 5-7 hrs., and continuing a little at a time for 6-7 days. 5-10% is excreted (some in inorganic state) in the urine, and about 25% from the large intestine. Some dye is rendered insoluble as the dye-containing bile meets pancreatic juice. Fat causes greater amount of the dye to be rendered insoluble in the small intestine. Fat causes greater liver secretion of the dye, and probably greater gall bladder absorption.

13250. **DELLEPIANE, G. Ricerche chimiche sulla eliminazione dell'ossi-iodopiridon-acetato di sodio, iniettato nell'organismo per via endovenosa. [Studies on the elimination of Na oxy-iodo-pyridon-acetate endovenously administered.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3) : 426-431. 2 fig. 1930—The elimination of uroselectan may be studied by radiological examination, by the determination of specific gravity of urine (which is increased) and by I determination in successive samples of urine.—*M. Comel.*

13251. **DIETRICH, S. Untersuchungen über Diabetes und Insulinwirkung. XI und XII. [Researches on diabetes and insulin action. XI and XII.]** *Arch. Exp. Pathol. und Pharmakol.* 125(5/6) : 326-342. 1927.

13252. **DOMAGK, G., und W. KIKUTH. Die Behand-**

lung der Hundepiroplasmose mit Trypaflavin. *Zentralbl. Bakt. Abt. I. Orig.* 118(7/8): 401-406. 1930.—Dogs infected with *Babesia canis* responded better to trypaflavin than to any other treatment. The fatal intravenous dose was 30 mgm. per kgm. body weight; the tolerated dose, 20 mgm. per kgm. Of 14 dogs each treated with one intravenous dose, 5 dogs received 15 mgm. per kgm., 6 received 10 mgm., and 3 received 5 mgm.; 2 of those receiving 15 mgm. were permanently deparasitized, the peripheral blood of the others remaining parasite-free for 12-19 days. Similar quantities given intramuscularly in a single dose to 6 dogs cleared the peripheral blood for 7-15 days. Of 10 dogs in the acute stage of the disease treated with single doses of 15-7.5 mgm., 7 survived, though the peripheral blood was parasite-free for but 2-17 days. The authors add that, while intramuscular treatment is slightly less effective than intravenous, 2-3 intramuscular doses at intervals of 5-6 days produced complete recovery.

13253. **DUNLOP, H. A. Adrenaline vasodilatation.** *Jour. Physiol.* 67(4): 349-355. 7 fig. 1929.—The volume of a skinned limb of a cat under ether anesthesia increased when 0.05 mgm. epinephrine was injected intravenously; this dose produced a marked rise in blood pressure. 0.005 mgm. caused a fall in blood pressure; obstruction of the abdominal aorta enhanced, clamping of the common iliacs diminished this response. During the fall in blood pressure there occurred usually a shrinkage in intestinal volume. Cardiac impairment was not observed during the fall in blood pressure. It is concluded that the lessening by ether of the effect of adrenaline on the heart enables the vasodilator action of this substance to reveal itself in the blood pressure tracing, but the principal cause of the fall in blood pressure is a diminution of vasoconstriction, whereby the dilator action is unmasked.—*G. T. Cori.*

13254. **DURHAM, FLORENCE M., J. H. GADDUM, and J. E. MARCHAL. Reports on biological standards. II. Toxicity tests for novarsenobenzene (neosalvarsan).** *Med. Res. Council [London] Spec. Rept. Ser.* 128: 6-40. 8 fig. H. M. Sta. Office: London, 1929. 9 d.—This 40 page report concerns itself with the details of providing a sound, practical test for the toxicity of novarsenobenzene and certain allies. The subject is attacked from three standpoints: the comparison of the unknown with an international standard specimen; the analysis of the variable factors occurring in the animal material; a statistical analysis of the results. Comparison is also made with similar tests used in other countries. A practical test is recommended. Owing to the fundamental nature of the problems involved, and the recognised experience of the authors in this field, this work has much wider general application than its unassuming title suggests. All persons engaged in quantitative pharmacological work would be well advised to consult the original.—*O. S. Gibbs.*

13255. **DWORKIN, SIMON. Insulin and heart rate after sympathectomy and vagotomy.** *Amer. Jour. Physiol.* 96(2): 311-320. 1931.—Insulin (3.3-6 units per kgm.) produced marked acceleration of the heart rate (due to central sympathico-adrenal impulses) in 2 out of 9 normal cats; in the others the heart rate was either unchanged or slowed (owing to central vagus stimulation or peripheral action). In a cat in which the sympathetic chains were removed, the vagi being left intact, the heart rate was retarded by insulin. While after section of the vagi, sympathetics being left intact, the heart rate was so rapid and variable as to make insulin tests unreliable, in 2 out of 3 cats so treated insulin was followed by considerable acceleration. In 2 out of 3 cats (4 out of 5 observations) in which the sympathetics to the adrenals and liver were cut, the cardiac nerves being left intact, insulin slowed the heart rate. Dworkin concludes, in accordance with findings of Bulatao and Carlson, that, while both divisions of the autonomic nervous system may be stimulated during insulin hypoglycemia, the vagus influence predominates in organs innervated by both sets of nerves. In 6 completely sympathectomized cats with heart denervated insulin had a delayed action upon the heart rate, manifested in a prolonged, though not marked slowing. This slowing developed gradually, attaining the maximum long after the lowest blood-sugar level had been reached, and some time after injection of glucose. Injected without previous insulin administration, glucose had no definite effect on heart rate in these animals. The slowing could be promptly abolished by atropine sulphate.

13256. **EATON, PAUL, and JOSEPH KRAFKA, Jr. The effect of silver nitrate, gold chloride and adrenalin on the size of the endothelial cells of arteriole, capillary and venule.** *Amer. Jour. Physiol.* 89(2): 310-314. 1 fig. 1929.—The endothelial cells in the intestines of cats injected with toxic doses of the drugs were studied in camera lucida enlargement, 100 measurements being made in each class. A comparison of the average area, length and maximum width of endothelial cell in arteriole, capillary and venule when subjected to $AgNO_3$ only, shows an increase in area associated with an increase in width. The increase in area under $AuCl_3$ is also associated with an increase in width of the cells, consistent with an increased dilatation; however, there is an increase in the arteriole and venule as well as in the capillary, hence the Au seems to be a general endothelial poison and not entirely a capillary poison. Adrenalin produces an effect on the endothelium, consisting characteristically of a series of large lobate interlocking processes, such as might be produced by local decrease in surface tension, or a change from a gel to a sol state, while the musculature shows circular constriction. No logical explanation of the contraction of the capillary cells under adrenalin is at hand The cells widen, but at the same time shorten to reduce the surface area, an effect which is readily possible in the thin walled capillary. The fact in itself is indicative of an independent activity of the endothelium, since a passive dilatation due to vascular pressure should produce a larger area than shown by the Au if the increase in size of the venule endothelium is produced by the same factor.

13257. **EITEL, HERMANN. Über eine empfindliche Methode des Urannachweises und die Lokalisation des Urans im tierischen Organismus bei der Uranvergiftung.** *Arch. Exp. Pathol. u. Pharmakol.* 135(3/4): 188-193. 2 fig. 1928.—The presence of uranium in dilutions of 1: 500,000 could be demonstrated by measuring the fluorescence of the metal in certain portions of the spectrum by means of the Hanauer ultra-violet analytical lamp. Uranium nitrate was injected into guinea pigs and rabbits and deposition in various organs studied. Deposition occurs only in the cortex of the kidney. The heart, liver, lungs, small intestines, muscle, and skin were uranium free.—*O. W. Barlow.*

13258. **ELIAS, H., und E. VIOLIN. Insulin als Antiemeticum. Eine klinische und experimentelle Untersuchung.** *Zeitschr. Ges. Exp. Med.* 59(1/2): 61-75. 1 fig. 1928.—Insulin injected in non-convulsive doses frequently acts as an anti-emetic. It has no effect on the vomiting caused by stenosis of the pylorus, increased brain pressure, $CuSO_4$ or apomorphin. Where it is effective it is supposed to destroy some abnormal metabolites which have an emetic action.—*Authors' summary (transl. by G. T. Cori).*

13259. **FELDBERG, W., und E. SCHILF. Histamin: Seine Pharmakologie und Bedeutung für die Humoralphysiologie. [Pharmacology and importance of histamine for humoral physiology.]** *Monograph. Gesamtgebiet Physiol. Pflanzen u. Tiere* 20: xii+582p. 86 fig. Julius Springer: Berlin, 1930.

13260. **FLOREY, H., A. SZENT-GYÖRGYI, and M. E. FLOREY. Methods for testing for the presence of adrenal cortex hormone.** *Jour. Physiol.* 67(4): 343-348. 5 fig. 1929.—Respiration was recorded in 2 cats decerebrated and adrenalectomized. No respiratory failure as reported by Vincent and Thompson was obtained in 5 and 9 hrs. after operation. Rapid fatigue of tetanized

muscles from adrenalized cats was observed. Lowering blood pressure by bleeding also hastened fatigue. Contraction could be restored for a short time in a fatigued muscle from adrenalectomized cats by adrenaline administration. Raising the blood pressure by injection of gum saline causes a return of contractions in a fatigued muscle. It is concluded that content of adrenal cortex hormone can not be satisfactorily determined by measurement of recovery from fatigue of muscles from adrenalized animals.—*O. O. Stoland.*

13261. **FORBES, HENRY S., HAROLD G. WOLFF, and STANLEY COBB. The cerebral circulation. X. The action of histamine.** *Amer. Jour. Physiol.* 89(2): 266-272. 1 fig. 1929.—From 21 experiments on 10 cats under amytal, 11 experiments on 5 cats under ether, and 2 experiments on cats under both amytal and ether, the authors conclude that vessels of the brain react to intravenous injection of histamine in a very different manner, depending on whether the animal is under ether or amytal anesthesia. Under amytal the vessels of the brain dilate (following intravenous injection of histamine) and the cerebrospinal fluid pressure rises. The same results follow small doses of histamine in non-anesthetized man. Under ether the vessels of the brain are already dilated, and little if any further dilatation follows the intravenous injection of histamine; instead they often become narrower and cerebrospinal fluid pressure falls. Local application of histamine to the surface of the brain always results in dilatation of the pial vessels, without noticeably affecting intracranial or systemic vascular pressures. Intravenous injection of histamine (in animals under amytal) causes great pial artery dilatation in spite of a coincident fall in systemic arterial pressure. Chemical changes in the blood are often more powerful than alterations in blood pressure as a means of regulating the caliber of the pial blood vessels in mammals.—*Authors' summary and conclusion.*

13262. **FRANCESCON, A., e B. ZANCAN. Su alcune condizioni sperimentali che favoriscono la fissazione nel polmone di colloidi elettronegativi iniettati endovena. [Experimental conditions which aid the fixation in the lung of electronegative colloids injected intravenously.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 531-533. 1930.—Following introduction of anesthetic in the pleural cavity the fixation of electronegative colloids in the lung was augmented. The colloids are to be found in the lungs in 3 forms: either diffusely coloring the whole lung tissue, or as granular precipitates in the interstitial connective tissue, or contained as granules in the cytoplasm of histiocytes.—*M. Comel.*

13263. **FRAZZETTO, S. Azione di alcuni anioni sul tono e sui movimenti automatici dello stomaco di rana. [Action of some anions on the tonus and automatic movements of the frog's stomach.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 514-516. 1930.—The anions of salicylate, benzoate, cyanide and tartrate exercise an inhibiting action on tonus and automatic movements of frog's stomach. For all but tartrate an exciting action may precede the stage of inhibition.—*M. Comel.*

13264. **FUJITA, MASAO. Über die Wechselwirkung zwischen Chinin und Adrenalin an überlebenden glattmuskeligen Organen, im Vergleich zu derjenigen zwischen Atropin und Adrenalin.** (German.) *Okayama Igaku Kwai Zasshi* 39: 1545-1560. 1927.—The antagonistic action of quinine on adrenalin was studied on the isolated organs of rabbits. The stimulating effect of adrenalin is changed to inhibition when the organ has been treated in advance with 0.003-0.02% quinine solution. The experiments were performed on the uterus, round ligament of pregnant rabbits, tube, vagina, bladder, trigone and vas deferens. In organs in which adrenalin has an inhibiting effect treatment with quinine does not reverse its action. The same doses of quinine have no effect on Ba or pilocarpin action. The effect of quinine on the adrenalin action is explained by the assumption that quinine paralyzes the stimulating sympathetic fibers faster and to a higher degree than the inhibiting fibers. The action of quinine and atropin in reversing the adrenalin effect are compared. A quinine solution needs 5-6, an atropin solution 1-2 min. in order to paralyze the augmenting sympathetic fibers to the same degree. In further experiments the inversion of adrenalon action was studied. Quinine has an even stronger effect on adrenalon than adrenalin.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by G. T. Cori).*

13265. **FUJITA, MASAO, und FUJINO GENZÔ. Pharmakologische Untersuchungen an den Uterusadnexen in verschiedenen physiologischen Zuständen mit Berücksichtigung des zugehörigen Uterus. II. Versuche am Lig. latum und Lig. retundum der Katze.** *Folia Pharmacol Japonica* 8(4): 227-236. (German summary *Breviaria* 1-2.) 4 fig. 1929.—Several drugs were studied in various physiological conditions of the uterus, on the 2 ligaments. Seven poisons acted the same as on the uterus, and in all physiological conditions: papaverine inhibited; Ba, strophanthine, morphine, physostigmine, cocaine and Ca stimulated; quinine stimulated in small, but inhibited in large doses; veratrine acted much as on uterus, chiefly stimulating. The other poisons varied in action with the physiological condition, which action often differed from that on the uterus. Adrenaline relaxed the non-pregnant and puerperal round ligament, and the broad ligament in all conditions, while the pregnant and puerperal uterus was stimulated. The stimulating action of pilocarpine on both ligaments was very weak, being absent, or inhibiting in late pregnant and puerperal condition. Pituitrin had no marked action on either ligament, except at the end of pregnancy, and in the puerperium, when the action was very powerful. On the round ligament of the virgin cat inhibition often occurred. Nicotine and K produced, in all conditions on both ligaments, first inhibition, then stimulation, while on the pregnant uterus nicotine usually, and K often, caused stimulation. On the basis of these observations the innervation of both ligaments of the cat must be from the mixed fibers of the sympathetic; but the excitor fibers, being weaker in relation to the inhibitor, as in the uterus, are always suppressed in favor of the inhibitor in the broad, and in the round except during pregnancy. The parasympathetic fibers appear to be very weak in these adnexa. The condition of the musculature may also play a rôle in the action of the poisons. —*Authors' summary (transl. by R. H. M'Gonigle).*

13266. **GALBRAITH, WALTER W., and W. ARTHUR MACKEY. Uroselectan: a preliminary experimental note.** *Brit. Jour. Urol.* 2(2): 122-128. 5 fig. 1930.—Experiments were made on 7 young rabbits of 2 kg. wt., doses of 1.34 gm., 4 gm., 6.5 gm., and 10 gm. of a 40% solution of uroselectan (representing the human dose, per kgm., and multiples thereof) being injected into the ear vein. Roentgenograms were made at once and frequently thereafter; catheter specimens of urine were examined chemically and microscopically from 5 hrs. to 40 days thereafter; at the end of 24 hrs. a left nephrectomy was done in 6 animals. The rabbits showed no ill effects from the treatment; 1 showed a trace of albuminuria, 1 a larger amount, but was later found to be suffering from spontaneous focal nephritis which underwent no exacerbation because of the treatment. By kinking 1 ureter, an attempt was made to produce hydronephrosis in the 7th rabbit, but the lumen was occluded and obstruction anuria resulted. Two doses of 4 gm. each produced no appreciable ill effects.

13267. **GAY, HAROLD H. I. Effect of intravenous injections of sodium sulphide and sodium cyanide on reflex response of anterior tibialis muscle.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 825-826. 1929.—Preliminary paper.

13268. **GESSNER, OTTO. Ueber die Gefässwirkung der Krampfgifte Strychnin, Pikrotoxin u. Samandarin.** *Arch. Exp. Pathol. und Pharmakol.* 129(5/6): 261-270. 3 fig. 1928.—Strychnine, picrotoxin and samandarine are inactive on the carotid strip of the calf. They constrict the vessels of the frog (method of *Läwen-Trendelenburg*). The action is reversible especially for picrotoxin but not for strychnine. The rise in blood pressure by

concentrations which produce spasms is due to central irritation.—*H. Graf.*

13269. **GESSNER, OTTO. Ueber das Gift der Ringelnatter (Tropidonotus natrix). I. Die Wirkung des Ringelnatterblutes auf das isolierte Kaltblüterherz.** *Arch. Exp. Pathol. u. Pharmakol.* 130(5/6): 374-383. 4 fig. 1928.—With the isolated frog or toad heart, arrest is produced by the defibrinated blood, plasma, or serum of *T. natrix*, either undiluted or diluted 1:5 (sometimes 1:10) with Ringer's solution. The heart usually stops in systole, more rarely in the middle position or in diastole, but always with very pronounced subsequent contraction of the cardiac muscle. The cardiac principle of the blood of *T. natrix* is certainly not a digitalis-like substance, since sensitization to Ca is not observed. This principle is very likely a saponin-like substance as it resembles the saponins (Quillaja saponin) in pharmacological action. The content of the cardiac principle in the blood of *T. natrix* is not constant.—*L. W. Butz.*

13270. **GINSBURG, PAUL. Zur Frage der Einwirkung des Digalens auf den Calcium- und Kaliumgehalt des Blutserums. [Action of digalen on Ca and K content of the blood serum.]** *Arch. Exp. Pathol. und Pharmakol.* 128(1/2): 126-132. 1928.

13271. **GIRNDT, OTTO. Über den Angriffspunkt von Antipyreticis: Chinin und chininähnlichen Stoffen.** *Arch. Exp. Path. u. Pharmakol.* 140(1/2): 91-117. 7 fig. 1929.—The action of quinine on body temp. of an animal when this drug was injected into the ventral part of the optic thalamus was compared with action of quinine subcutaneously injected and with the antipyretic effect of intracerebral application of antipyrin. Plasmochin injected subcutaneously lowers body temperature when used in doses causing collapse but is without action when injected intracerebrally. Eukupin applied to the right and left thalamus increased the temperature of one rabbit out of 3 in which a fever had been produced by piqûre. It increased temperature in 4 out of 5 rabbits in which fever had been caused by *Bacillus coli*. Unilateral application of the drug did not influence temperature except in 1 case and then decreased it .8 of a degree C. Plasmochin had no effect on body temperature in doses of from 4.9 to 10 mgm. per kgm. of rabbit, but decreased temperature when used in doses of 10.6 mgm. to 13.6 mgm. or collapse-producing doses. When applied intracerebrally it was without effect.

13272. **GOLDEMBERG, LEON. Glycosurie et perturbation de la glycemie provoquees par le fluorure de sodium.** *Jour. Physiol. et Pathol. Gen.* 26(3): 426-429. 1928. Experiments on lambs show that with doses of 300 mgm. of NaF a glycosuria develops. In dogs with doses of .5 to 10 mgm. per kgm. a hyperglycemia results.—*H. N. Ets.*

13273. **GOLLWITZER-MEIER, KL. Zur Frage der specifischen Wirkung der Ketonkörper auf die Atmung. [The specific action of ketone bodies on respiration.]** *Arch. Exp. Pathol. und Pharmakol.* 125(5/6): 278-286. 1927.

13274. **GOWER, WALTER E., and ARTHUR L. TATUM. Diuresis and individual tolerance in experimental barbital poisoning.** *Jour. Pharmacol. & Exp. Therap.* 37(4): 481-492. 1929.—Sodium barbital (400 mgm. per kgm. intraven.) in dogs proved fatal within 5 days in 70% of cases. The tolerant animals recovered repeatedly from this dose at rates which could be correlated with the rate of excretion of barbital in the urine. Increasing the rate of urine flow from 4 to 5 cc. per kgm. per hr. to 10 to 40 cc. per kgm. per hr., by glucose or saline infusion, temporarily increased the rate of barbital excretion but failed to influence the total quantity excreted in an 8 to 10 hr. period or to shorten the recovery time. Urinary volume and barbital output were reduced by bleeding alone but not when the blood removed was replaced by salt solution.—*W. E. Gower.*

13275. **GRAM, CHR. N. J., og O. JUL NIELSEN. Undersøgelser over den optiske Aktivitet af Insulin-Muskel-Glukose-Saltvandsblandinger samt nogle Bemaerkninger vedrørende Brintionkoncentrationen. [Investigations on the optical activity of insulin-muscle-glucose together with some remarks on hydrogen-ion concentration.]** *Hospitalstidende* 71(27): 699-725. 1928. —(See B. A. 4(1): Entry 823.)

13276. **GREBE, ARNOLD. Erweiterung unserer Kenntnis über die Wirkung "ruhigstellender" Pharmaka auf die Funktion des extrahepatischen Gallenwegssystemes.** *Zeitschr. Klin. Med.* 115(3/4): 446-453. 2 fig. 1931.—Duodenal intubation and cholecystography showed that atropine or holopon atropine facilitated emptying of the gall-bladder, particularly when the drug had acted 4-5 hrs.

13277. **GREMELS, H. Über den Einfluss von Diuretica auf den Sauerstoffverbrauch am Starlingschen Nierenpräparat.** *Arch. Exp. Path. u. Pharmakol.* 140(3/4): 205-219. 3 fig. 1929.—The normal isolated kidney consumes from 40-100 cc. of O per kgm. per min. Certain diuretics, e.g., salyrgan, novasurol, strophanthin and digitoxin, produce with diuresis an increase in O consumption. Extract of the posterior lobe of the hypophysis decreases O consumption. Thyroxin has no influence on O consumption of the kidney. NaCl diuresis does not increase O consumption. O consumption runs parallel to N excretion.

13278. **GRUBER, CHARLES M. XIX. The arterial blood pressure and the blood flow in skeletal muscles in unanesthetized cats as influenced by the intravenous injection of epinephrin.** *Amer. Jour. Physiol.* 89(3): 650-661. 1929.—Epinephrine in small doses caused a rise in blood pressure during its intravenous injection in unanesthetized cats but this was followed by a prolonged fall lasting for several min. In some animals only a fall was noted. Epinephrine intravenously in small doses in unanesthetized cats caused a dilatation of the vessels of skeletal muscles like that observed in anesthetized animals even though no change in blood pressure was registered on the kymograph. No difference was noticed in the effect of larger doses of epinephrine in unanesthetized animals from that commonly observed in anesthetized animals. Epinephrine in large doses caused vaso-constriction in skeletal muscles, simultaneously with the marked rise in blood pressure. A fall in blood pressure below the normal level was observed following the increase in blood pressure from large doses of epinephrine. Concomitantly with the fall there was an increase in the blood flow from skeletal muscles.

13279. **GRUHZIT, O. M. Local microscopic changes following the administration of antisyphilitic drugs.** *Arch. Dermatol. and Syphilol.* 19(6): 922-944. 26 fig. 1929.—Administration of the arsphenamine type of drugs intramuscularly in dogs invariably results in the formation of sterile abscesses. At the end of 8 wks. the healing has shown little progress. The Hg compounds produce the same type of injury but in lesser degree. The injured areas are more rapidly fibrosed and absorbed. Bi thioglycollate causes least injury and is followed by most rapid healing.—*E. A. Smith.*

13280. **GULLAND, J. M., and R. A. PETERS. The alleged antineuritic properties of certain quinoline and glyoxaline derivatives.** *Biochem. Jour.* 23(5): 1122-1125. 1929.

13281. **HAUFE, M. Über das Verhalten des Alkohols im Harn.** 40p. Gustav Fischer: Jena, 1928. Pr. 2.40 M.

13282. **HAYAMA, KEIDO. Ueber die pharmakologische reaktion der pupille der Taube.** (Japanisch.) *Nihon Gankwa Gakkwai Zasshi* 31(7): 1927.—The pupil of the pigeon is dilated by tetrodotoxin, atropine, homatropine and cocaine and constricted by physostigmin and veratrine; it is constricted initially and then definitely dilated by the Digitalis group. Adrenalin, pilocarpine, arecoline, hyolin, guanidin, quinine, Ba, Ca, K and Mg have no action on the pupil.—*O. Mori* (*courtesy Japanese Jour. Zool.*).

13283. **HEATHCOTE, R. ST. A., and A. L. URQUHART. The pharmacological and toxicological actions of acriflavine.** *Jour. Pharmacol. & Exp. Therap.* 38(2): 145-160. 3 fig. 1930.

13284. **HEUBNER, WOLFGANG. Über allobiotische**

Wirkungen. *Nachr. Ges. Wiss. Göttingen, Math.-physik. Kl.*] 1929(1): 60-64. 1929.—Experiments are reported with *o*-hydroxyquinoline (A) and iodohydroxyquinoline sulphonic acid (B) on the changes of N in dogs with balanced intake or fasting. The daily excretion was determined for N and for the drugs used. It was demonstrated with fair regularity that a few days after (A) the excretion of N fluctuated, usually with increase in urine on 3rd day. The chief effect occurred in fed animals after most of (A) had left the body. (B) behaved like (A) only in fasting animals and more weakly. Intravenously (B) also had action on urinary N in fed animals. Noteworthy with this sulfoacid is the slowness of excretion, especially in fasting, and the high proportion excreted into the intestines, especially after larger doses. A typical allobiotic reaction could not be proven for (B) but is not excluded for (A).—*W. Heubner (transl. by E. V. Lynn).*

13285. **HEYMANN, WALTER. Untersuchungen über die pharmakologische Wirksamkeit des Blutserums.** [Pharmacological action of blood serum.] *Arch. Exp. Pathol. und Pharmakol.* 125(1/2): 77-88. 1927.

13286. **HUNT, REID, and R. R. RENSHAW. Further studies on the relation of heterocyclic compounds to the autonomic nervous system.** *Jour. Pharmacol. and Exp. Ther.* 37(2): 177-191. 1929.—The action upon cats of the following compounds was investigated chiefly from the standpoint of "muscarine" and "nicotine" effects upon the autonomic nervous system: (1) Quaternary compounds of quinoline and its homologues. The ethiodides of quinoline, quinaldine, lepidine, 6-methyl-, 2, 4 and 2, 6 dimethyl-quinoline, did not have a muscarine or nicotine action. (2) Compounds and derivatives of nicotinic and picolinic acids. The phenyl esters of picolinic and nicotinic acids had no action on the autonomic nervous system; the methiodide of nicotinic acid had a weak nicotine action. Methyl (β carbamido) pyridinium iodide had a weak muscarine action; the corresponding phenyl compound was inactive; the ethyl-phenyl compound was very toxic and had a weak paralyzing nicotine action. The special relation of methyl and pyridine groups in certain classes of compounds to muscarine action was observed in several compounds of this series. The introduction of an acetyl group into the amino group of some of these compounds did not increase the muscarine action—in striking contrast to the effect of the introduction of an acetyl group into the choline (Hunt and Taveau, 1906). (3) Ethers. The phenyl ether of hydroxyethyl-N-methyl-pyrrolidinium iodide had an intense stimulating nicotine action (comparable to that of the phenyl ether of choline); analogous ethers of pyridinium and piperidinium compounds were almost inactive.—*R. Hunt.*

13287. **ISHII, RAIJI, und SAKATA SHINZŌ. Über die Beziehung zwischen der Gefässerweiterung durch Pharmaka und der Glykogenolyse.** [Orig. in Japanese.] *Folia Pharmacol. Japonica* 8(4): 269-275. (German summary, *Breviaria*, 5.) 1929.—To see whether the effect of adrenalin on the liver is due to change of vessel caliber or to a specific action, perfusion experiments were done on the toad, comparing constant pressure perfusion with constant outflow perfusion, and determining the amounts of sugar released. Quinine, papaverin and silicic acid depress glycogenolysis, histamine and sodium nitrite increase it. The amount of sugar liberated in this fashion depends not upon the width of the liver vessels, but upon the rate of perfusion flow.—*Author's summary (transl. by C. Reynolds).*

13288. **ISHIKAWA, Y. Pharmacological studies of codeine and thebaine.** [Original in Japanese; summary in English.] *Sei-I-Kwai Med. Jour.* 46(10): 1-4. 1927.—Morphine hydrochlorate, nitrosomorphine, codeine phosphate, nitrocodeine, thebaine hydrochlorate, oxycodeinone hydrochlorate, and dihydro-oxycodeine hydrochlorate increased the reflex excitability of the frog spinal cord. Injection of morphine hydrochlorate produced tetanus, except in frogs which had been warmed. The tetanus produced by morphine and its O derivatives resembled that produced by strychnine or picrotoxin. Injection of codeine, morphine, or dihydro-oxycodeine produced clonic movements in the tails of mice. Thebaine produced clonic convulsions of the limbs but no tail reaction. The minimum lethal dose of the drugs tested for the frog ranged from .5 mgm. per 10 gm. in the case of thebaine hydrochlorate to 7 mgm. per 10 gm. of dihydro-oxycodeine. The minimum lethal dose of drugs tested for the mouse ranged from .25 mgm. per 10 gm. of thebaine hydrochlorate to 5 mgm. per 10 gm. dihydro-oxycodeine. In general the toxicity of the drugs of the morphine-codeine series was of the same order for the mouse as for the frog.

13289. **JACOBS, WALTER A., and EDWIN L. GUSTUS. Strophanthin. XVII. Dehydration and lactone cleavage in isostrophanthic acid derivatives.** *Jour. Biol. Chem.* 84(1): 183-190. 1929.—Treatment of β-isostrophanthic lactone acid (I) with acetic anhydride and acetyl chloride produced a neutral, crystalline substance, $C_{25}H_{30}O_7$ (II), similar to that obtained from duodephanthondiacid. Apparently in (II): the stable lactone group of (I) was retained; the labile lactone group was opened with formation of a substituted succinic anhydride; the resultant exposed hydroxyl was removed by dehydration, forming a double bond; and the remaining free hydroxyl (2) was acetylated. The reaction occurred only when the end carboxyl of (I) was free, since the methyl ester yielded only the acetate of hydroxyl (2). Heating α-isostrophanthic lactone acid (methyl ester) with dry methyl alcohol and a little HCl formed the neutral unsaturated dimethyl ester, $C_{25}H_{34}O_7$, isomeric with the dimethyl ester of (II). The isomerization was produced not by alkali but by the free HCl. Detailed discussion and description of methods are included in the original.—*W. A. Peabody.*

13290. **JOEL, ERNST. Experimenteller Beitrag zur Behandlung der akuten Morphinvergiftung.** *Arch. Exp. Pathol. und Pharmakol.* 132(1/2): 63-76. 1928.—Experiments on rabbits, rats and mice to diminish the symptoms of acute morphine poisoning by injections of atropine were negative; atropine combined with morphine increases its action. Atropine alone in proper doses accelerates the respiration of the normal but not of the morphinized animal. Lobeline regulates the respiration of morphine poisoning even in cases of complete irregularity treated by atropine without any success. On mice it was shown that between lobeline and morphine there is an antagonism not only of their special effect upon the respiratory centers but also of the mechanism of their central action.—*H. Graf.*

13291. **JONG, H. de. Experimenteele Katatonie.** *Psychiatr. en Neurol. Bladen.* 1929(6): 481-486. 1 fig. 1929.—Average doses of bulbocapnine (alkaloid of Corydalis cara) produce a series of symptoms, resembling human catatonia, in higher animals, which have a well-developed cerebral neo-cortex. Animals without neo-cortex (frogs, serpents, fishes, etc.) give only hyperkinetic symptoms, when higher doses of bulbocapnine are given; they never present catalepsia. Very small doses of bulbocapnine produce sleep; large doses produce epilepsy in higher animals.—*H. de Jong.*

13292. **KEITH, NORMAN M., MARY WHELAN, and EDWIN G. BANNICK. The action and excretion of nitrates.** *Arch. Internal Med.* 46(5): 797-832. 1930.—Experiments on 6 normal dogs and 4 normal human subjects, and clinical tests in 6 cases of renal disease confirmed the diuretic action of nitrates, the best results being obtained from NH_4NO_3, apparently because, on absorption, the NH_4 radical is readily converted into urea, leaving the nitrate portion of the molecule free to act. Toxic results were rare.

13293. **KIONKA, H. Untersuchungen über Alkohol. III. Die Schwankungen im Alkoholgehalt des menschlichen Blutes.** *Arch. Exp. Pathol. und Pharmakol.* 128(3/6): 133-145. 1928.

13294. **KÖNIG, WILLY. Pharmakologische Untersuchungen an der Muskulatur von Kehlkopf und Ösophagus.** [Pharmacological researches on the muscula-

ture of the larynx and oesophagus.] *Arch. Exp. Pathol. und Pharmakol.* 128(3/6): 192-201. 1928.

13295. **KOSDOBA, A. S. Zur Frage der experimentellen Adrenalinämie. I.** *Arch. Klin. Chir.* 156(1/2): 284-308. 4 fig. 1929.—Intraven. injection of epinephrine produced pathological changes in the blood vessels of rabbits. Divided doses of a unit dose of epinephrine produced greater changes than a unit dose given at one time. In the early stages of the process of blood vessel change the media shows the greatest effects. This change in the media of the vessels is believed to be associated with later production of high blood pressure in epinephrinized animals and it is the media change rather than the blood sugar increase which determines the toxicity of epinephrine. Prolonged dosage with the drug produced a partially necrotic media with Ca and connective tissue plaques and edema of the connective tissue. The adventitia was swollen and split partially in layers and in some cases the lumina of the vasa vasorum were obliterated. There was perivascular infiltration. The intima showed thickening of the connective tissue layer, and degeneration and desquamation of the endothelium. Mechanically, rise in the blood pressure was produced by hypertrophy of the muscles of the media, hypertrophy of connective tissue of the adventitia and partial necrosis of the endothelium and overdevelopment of the connective tissue of the intima.

13296. **KOSTYÁL, LADISLAUS von. Über die Calciumwirkung auf das vegetative Nervensystem bei Kindern.** *Zeitschr. Kinderheilk.* 50(2): 249-252. 1930.—The action of Ca on epinephrine sensitivity was tested in 24 children. Ca was amphotonic, or more frequently vagotonic. The vagotonic or sympathicotonic action on the blood pressure did not always correspond in the same person to the action on epinephrine sensitivity. Ca allows the 2nd phase of epinephrine sensitivity to appear more sharply.

13297. **KOZA, F. Pokus o výklad mechanismu působení plynových uhličitých lázní u arterielní hypertense. [Mechanism of carbonic acid gas baths.]** (With English, French and German summaries.) *Bratislavské Lekárske Listy* 9(11): 1163-2029. 2 fig. 1929.—The author traced the influence of the CO_2 bath in 50 cases of severe hypertension in a special apparatus. The temperature of the bath was 22 to 27°C.; its duration 20 min.; the baths were given either daily or every 2nd day. The patients experienced no subjective sensations of any kind while in the bath, and the skin did not change color. By measuring the CO_2 expired, it was proved that far less carbonic acid penetrated into the body in dry carbonic acid gas baths than in wet ones. All the cases examined reacted with fall of blood pressure. The CO_2 baths had a very favorable sedative effect on the climacteric disturbances of women, even if the blood pressure was not increased. These baths had a similarly satisfactory influence on arterial hypertension with angina pectoris. The author traced the influence of the carbonic acid on the blood pressure in rabbits with permanent arterial hypertonia that was induced in them artificially. The carbonic acid was applied in a threefold manner: 1, in the gas bath in airtight surroundings; 2, by means of intraperitoneal insufflation; and 3, by sterile application of water impregnated with carbonic acid. The animals reacted by fall of blood pressure, usually amounting to ⅔ the value of its artificial rise. In the gas bath, the blood pressure sank more slowly and the decline of pressure did not persist as long as after intraperitoneal insufflation. The infusion of sterile water heated to 37°, and impregnated with carbonic acid, causes an artificially induced hypertension to drop less intensely than insufflation does. Carbonic acid gas baths probably develop a direct influence on the peripheral vascular region. The direct action of carbonic acid on the central nervous system prevents its accumulation.—*Author's summary.*

13298. **KRATINOFF, A. G., und M. A. NOVIKOWOA. Über den Einfluss des Cholins auf die Bewegung des Verdauungstractes.** *Zeitschr. Ges. Exp. Med.* 65(3/4): 427-440. 7 fig. 1929.—By the balloon method, the effect of intraven. injections of choline on the motor activity of the digestive tract was studied in dogs and cats. With ether or chloroform narcosis, choline had little or no effect on the activity of the small intestine. With morphine, morphine-chloroform-ether or barbital narcosis, choline produced in dogs typical stimulant action on the intestinal tract. With the two latter methods of anesthesia, two phases may be distinguished, a primary depressant phase, which is paralleled by an increase of blood-pressure, followed by a second stimulant phase. This double action is especially pronounced after previous intraven. administration of pilocarpine. In decerebrate cats and dogs, choline produced a typical stimulant action. From this it appears that the condition of the neuro-muscular apparatus is an important factor in the action of choline and the paradoxical depression of choline should not be due to the choline proper, but to an existing depression of the neuro-muscular apparatus of the digestive tract.—*W. F. von Oettingen.*

13299. **KREITMAIR, H., und U. HINTZELMANN. Über sklerotische Organveränderungen, insonderheit der Arterien. I. Mitteilung: Versuche mit aktivierten Ergosterin.** *Arch. Exp. Pathol. u. Pharmakol.* 137(3/4): 203-214. 6 fig. 1928.—Very large doses of irradiated ergosterol cause deposition of Ca not only in the bones but in various organs of laboratory animals. These deposits are especially seen in those organs classed as having an acid secretion. Tremendously large doses cause a solution of Ca from the bones. The Ca is deposited in normal tissue, not in necrotic cells.—*Author's summary* (*transl.* by *C. Reynolds*).

13300. **KUBOTA, SEIKO. Some notes on the study of Chinese drugs.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 583-586. 1927[1928].—Brief review of the literature, with notes.

13301. **KUROSE, IWAO. Über die Beziehung der Hypophyse zum Diabetes insipidus. Über die antidiuretische Wirkung der Hypophysenextrakte, inbesondere dieselbe des Pituitrins beim Diabetes-insipidus-kranken. II. Pharmakologische Analyse der Wirkung des Pituitrins auf die Gefässe.** (Japanese.) *Okayama Igaku Kwai Zasshi* 39: 2173-2200. 1927.—The author concludes, as a result of perfusion experiments, that the anti-diuretic action of pituitrin is largely due to contraction of the blood vessels of the kidney. While atropin is capable of suppressing the effect of adrenalin, that of pituitrin is as little affected as is that of caffein or of the Ba salts. This permits the assumption that pituitrin acts directly upon the vascular muscle or more peripherally than atropin. Atropin, in certain concentration, increases the effect of pituitrin upon the blood vessels of the liver, the stomach and the intestine. Ergotoxin has the same influence as atropin. The action of adrenalin is less than the action of pituitrin. Strong solutions of spartein annihilate the vascular action of adrenalin as well as that of pituitrin; weak solutions, on the other hand, sometimes increase the action of pituitrin.—*Author* (*courtesy Japanese Jour. Med. Sci. IV*) (*transl. by B. Fantus*).

13302. **KUWATA, SATORU, und MITSUHARU HARIMA. Untersuchung über Calystegia sepium R. Br. var. japonica Makino. I. Über die blutzuckerspiegelherabsetzende Wirkung vom Wasserextrakt derselben.** (Japanese.) *Yakugaku Zasshi* 548: 881-888. 1927.—A blood sugar reducing substance in the watery extract of this plant appears evident from the fact that 4-5 hrs. after administration, a low degree hypoglycemia is found. Further, 4-5 hrs. after administration, the hyperglycemia produced by giving adrenalin and glucose together, or glucose alone, is depressed. Due to its own high carbohydrate value, there is always a transitory increase (alimentary) in blood sugar.—*Author* (*courtesy Japanese Jour. Med. Sci. IV*) (*transl. by R. H. M'Gonigle*).

13303. **LABES, RICHARD. Über den Einfluss des Sauerstoffes auf die Adrenalinwirkung am Carotisstreifen.** *Arch. Exp. Path. u. Pharmakol.* 127(3/4): 148-152. 1928.—Strips of arteries were kept in Ringer solu-

tion through which H was bubbled. After a change from H to O the tone of the arterial strip was not altered. After 20 min. of anaerobiosis addition of adrenalin had little, after 45 min. or more it had no effect on the tone of the vessel. The artery at this time was not dead, for when O was admitted, adrenalin caused a prompt contraction. After prolonged anaerobiosis Ba salts also failed to cause a contraction.—*G. T. Cori.*

13304. **LASCH, F., und S. BRÜGEL. Über die perorale Resorption von Insulin durch Beigabe von Saponin. [The peroral resorption of insulin with added saponin.]** *Arch. Exp. Pathol. und Pharmakol.* 120 (3/4) : 144-155. 1927.

13305. **LENDLE, L. Vergleichende Untersuchungen über die Geschwindigkeit der Wirkung verschiedener Narkotika. [Comparative researches on the rate of action of different narcotics.]** *Arch. Exp. Pathol. und Pharmakol.* 125 (5/6) : 287-300. 1927.

13306. **LEVADITI, C., et LI YUAN PO. Étude expérimentale de la calcification des lésions tuberculeuses sous l'influence de l'ergostérol irradié.** *Presse Méd.* 38 (101) : 1720-1725. 2 pl. (col.), 6 fig. 1930.—See B. A. 5 (10) : 23412.

13307. **LILJESTRAND, S. H. The action of pseudoephedrine. I. On the isolated uterus and bladder.** [Chinese summary.] *Chinese Jour. Physiol.* 3 (3) : 249-268. 12 fig. 1929.—Both pseudoephedrine and ephedrine, within a certain range of concentration, act like adrenaline in relaxing the resting rat uterus (ps-ephedrine similarly relaxes the contracted fundus vesicae). Pituitrin contracts the uterus strips relaxed by the ephedrines; on oestrous uteri, however, the latter had only a slight depressant action following pituitrin. The levo-isomer, ephedrine, in various preparations of rat uteri, was from 10 to 50 times as effective as the dextro-rotatory pseudosalt. This high ratio was much reduced in experiments on other uteri and on the urinary bladder. The possible reversed action of ps-ephedrine on the rat uterus in higher dilutions than 1 in 1,000,000 was investigated, in some cases increase of tone being obtained. Results were not conclusive. Ps-ephedrine acts like pituitrin on guinea pig, rabbit and human uterus strips. But its latent period is much longer. It has a similar action on the trigone vesicae and on the relaxed fundus vesicae. The action of ps-ephedrine on the rabbit uterus is not reversed by ergotoxine as is that of adrenaline. The same fact obtains in the case of the trigone vesicae, which is innervated by the sympathetic. In both cases after ergotinization, adrenaline inhibits the ps-ephedrine action. Adrenaline also inhibits pituitrin effects, after ergotoxine. Ps-ephedrine action is of long duration in all cases. Its toxicity is relatively low; it is slowly decomposed in the tissues. It brings a contracted fundus strip down and a relaxed strip up to a median degree of tonicity. This action-inversion, depending on the tissue state, resembles that occurring with adrenaline which has been shown to affect smooth muscle according to the state of the contractile mechanism. Ps-ephedrine action is predominantly musculotropic, with marked similarity to pituitrin in the nature and length of the curve of change of tone. It is, however, much milder in action, its effect being tonic rather than contractive. Higher concentrations (1 in 5 to 10,000) give prompt and pituitrin-like effects in the rabbit uterus. In only one or two experiments were these effects absent in the pregnant rabbit uterus, in which case pituitrin also was ineffective. Other pregnant uteri gave relatively greater effects. The ratio of effectiveness of the two ephedrine isomers, while very high in their heterodox "adrenaloid" action on the rat uterus, which was shown to resemble the effect of oxygen privation, falls to almost parity in rabbit and human uteri. The probable ratio in the former was 4 to 1 in favor of ephedrine, but the latter drug was remarkably indifferent to human uterine strips.—*Author's summary.*

13308. **LOEWE, S. Über Kombinationswirkungen. VIII. Wirkungen von Diäthylbarbitursäure-p-Kresotinsäure-Codeingemischen.** *Arch. Exp. Pathol. und Pharmakol.* 120 (1/2) : 41-47. 1 fig. 1927.

13309. **LOEWE, S., (nach z. Tl. gemeinsam mit B. OTTOW, und M. ILISSON unternommenen Versuchen). Die Wirkung synthetischer Cycloäthylamine aus der Verwandtschaft von Adrenalin und Histamin auf autonome Erfolgsorgane. Zugleich Beiträge zur Kenntnis der Adrenalinumkehr. [VI. Mitteil. über cyclische Seitenkettenäthylamine.]** *Zeitschr. Ges. Exp. Med.* 56 (3/4) : 271-333. 20 fig. 1927.—33 synthetically prepared cycloethylamines were tested for their pharmacological action on the uterus of various species, cat and rabbit gut, and blood pressure in cats and rabbits. On the whole, substances chemically related to epinephrine had also a similar pharmacological effect. Imidazol derivatives often acted like histamine. A considerable number of the substances investigated acted similarly to ergotamine.—*G. T. Cori.*

13310. **LYON, R. A., and T. E. REYNOLDS. Promotion of healing by benzoyl peroxide and other agents.** *Proc. Soc. Exp. Biol. & Med.* 27 (2) : 122-124. 1929.—Preliminary paper.

13311. **McCLURE, GEORGE. Acid changes in pH of portal, hepatic, and arterial blood on administration of sodium cyanide.** *Proc. Soc. Exp. Biol. & Med.* 26 (9) : 829-830. 1929.—Preliminary paper.

13312. **MACKEITH, M. H. The pharmacological action of certain synthetic alkaloidal bodies.** *Quart. Jour. Pharm. & Pharmacol.* 2 (2) : 169-173. 1929.—Twelve compounds representing steps in the synthesis of strychnine were prepared. The pharmacologic effects of these compounds were studied on frogs and rabbits. No strychnine-like action was observed with any preparation. Only 4 compounds were active, i.e., fatal, in dosages of 200-700 mgm. per kgm. of frog.—*O. W. Barlow.*

13313. **MAHLO, E. Über die Wirkung einiger Eukalyptusölarten auf Askariden.** *Arch. Kinderheilk.* 87 (1) : 46-53. 1929.—Using in vitro tests with adult ascarids from the pig, none of the eucalyptus oil products examined had fatal effects comparable to oil of chenopodium, which killed the worms in 10 to 20 min. up to dilutions of 1 : 2500, and in 30 to 45 min. at 1 : 5000.—*N. R. Stoll.*

13314. **MALOFF, G., und I. BURDI. Zur Pharmakologie der Venen. I. Mitteilung. Nervenreizversuche an der isolierten Froschleber.** *Pflüger's Arch. Ges. Physiol.* 227 (1) : 90-99. 4 fig. 1931.—The liver and duodenum of the frog with sympathetic innervation were isolated and perfused according to a method of Beresin, and flow through the vessels determined by a drop method. Usually the nerves were stimulated simultaneously, sometimes singly, by use of a "Schlittensapparats" or the alternating current of the laboratory. A 5 min. interval intervened between successive stimulations. Stimulation of the splanchnic effected a brief vasodilatation followed by a constriction. The dilatation was more pronounced, the stronger the current. A seasonal variation of tone was evidenced by the more marked vasodilator effect in autumn frogs. With lowered perfusion pressures the vasoconstrictor effect was increased. K, either in excess or as in a Ca-free Ringer's solution, produced a decreased vasoconstrictor effect, while Ca tended to increase both the effect of the vasodilators and vasoconstrictors. Atropine in 1 : 50,000 or greater concentrations decreased the effectiveness of nerve stimulation, in weaker concentrations there was little effect and that upon vasoconstrictors; ergotamine may abolish the effectiveness of nerve stimulation; however, atropine in 1 : 1000 to 1 : 20,000 or ergotamine in the perfusing fluid produce constriction of the vessels; sodium nitrite tends to increase their caliber. With adrenalin in dilute solution the effect of nerve stimulation was to increase the amount of vasoconstriction. The authors suggest that the parasympathetic system may take part in the innervation of these vessels.—*B. McGlone.*

13315. **MAMMOSER, LAMBERT F., and T. E. BOYD. Influence of various chemical agents on the absorption of histamine from the intestine.** *Proc. Soc. Exp. Biol. & Med.* 26 (9) : 765-767. 1929.—When 5 mgm. of histamine

dichloride per kgm. body wt. was introduced into the duodenum no change in blood pressure was observed. If 5 to 10 cc. of chloroform diluted with 1-2 vol. of paraffin oil was added there was a prompt and prolonged fall in blood pressure. HCl .4%, 20-40 cc. CCl_4, or ethyl alcohol 15-30% concentration 20-30 cc. when introduced into the duodenum with the histamine lowered blood pressure. NaF in 1% solution gave negative results. In the colon histamine alone produced no fall in blood pressure. When it was preceded by alcohol or .4 HCl it produced a marked fall.

13316. **MARSCHAK, M., und L. KLAUS. Untersuchungen ueber die Wärmeregulation. I. Mitteilung. Ueber die Wirkung der Wasser- und Kochsalzaufnahme auf den Kochsalzgehalt in menschlichen Schweiss und Blut bei hoher Umgebungstemperatur.** *Arch. Hyg. u. Bakt.* 101(5): 297-307. 1929.—Perspiration was collected from the forehead on filter paper. The subject was naked in 50% relative humidity. When no water was drunk, 1000 cc. of H_2O and 7 gms. of NaCl were excreted in 2 hrs. Drinking 2100 cc. of H_2O doubled these amounts. Twenty gms. of NaCl added to the 2100 cc. of H_2O had no effect on the amount excreted but prevented loss from the blood.—*F. Bernheim.*

13317. **MASCHERPA, PIETRO. L'azione farmacologica del chetocineole. Nota I. Azione generale e sull'apparato circolatorio. [Pharmacology of chetocineola. General effect on the circulatory system.]** *Arch. Internat. Pharmacodyn. et Thérap.* 36(1): 81-98. 1929.—This camphor like drug was structurally identified by Cusmano in 1912. In solutions of 1 to 1000 it retards slightly, 2 to 1000 definitely retards, and 5 to 1000 completely inhibits germination of lentils. On intact frogs .001 gm. intraperitoneally produced an initial excitement in 15 min. with torpor in 25 min. and recovery in 40 min. .05 gm. suppressed voluntary movement in 10 min., reflexes in 15 min. with prolonged torpor, and larger doses were followed by paralysis and death. In guinea pigs 0.5 gm. produced paralysis in 20 min., death in 3 hrs. A similar dose was toxic to dogs. Compared with camphor chetocineola has greater toxicity for the nervous system. On the vascular system 0.03 gm. to 0.1 gm. slowed the heart. By Straub's perfusion method 0.1 gm. greatly decreased amplitude and strength of beat, more so than camphor in the same dose. After atropine the slowing of rate does not occur and following chloral there is little change in amplitude, a reaction similar to that of camphor. Chetocineola in intravenous doses of .15 gm. produces a fall of arterial pressure in the dog. The general results of the experiments point to a camphor-like action on the central nervous system with epileptiform reaction in dogs.—*C. W. Greene.*

13318. **MAZZA, SALVADOR. Accion de la plasmoquina sobre los gametocitos de infecciones espontaneas por hemoproteus. [Effect of plasmochin on spontaneous infection by hemoproteus.]** *Prensa Med. [Argentina]* 15 (1): 55-58. 1928.—Given by mouth to several species of birds with hemoproteus infection it had a definite and constant action on the parasites in blood and tissues, and also destroys avian trypanosomes.—*E. A. Molinelli.*

13319. **MEYER-NOBEL, KARL. Über die Beeinflussung künstlich erzeugter Krämpfe durch chronische Darreichung von Bromnatrium.** *Arch. Exp. Pathol. und Pharmakol.* 130(5/6): 365-373. 1 pl. 1928.—It has been shown that daily doses of 0.4 gm. of NaBr per kgm. over a period of 3 weeks can produce a typical poisoning. The intoxication can be rapidly corrected by the administration of NaCl. NaBr fed to animals in small dosages over a longer period, although not significantly affecting the animals, raised and even more than doubled the M.F.D. of picrotoxin. The relation between the Br concentration in an organism and the inhibition of the actions of convulsants is approximately linear.—*O. W. Barlow.*

13320. **MUNCH, JAMES C. Bioassays. A handbook of quantitative pharmacology.** 958p. 16 fig. Williams & Wilkins Co.: Baltimore, 1931. Pr. $10.—This book was prepared as a critical compilation and digest of over 17,000 references in the field of quantitative pharmacology. Over 5,000 references are included in the book itself. It is the author's hope that this compilation of available information will prevent unnecessary duplication of efforts, and will point out the need for further research based upon the information now on hand. The necessity for standardization of drugs upon animals is stressed throughout the book. Where the same samples of material have been tested by more than one method (chemical or physiological), results have been tabulated to show the nature of agreement obtained. The need for the use of a sufficient number of test animals is stressed, and the accuracy of results to be expected when assays are performed by properly trained workers is emphasized. Simple methods for statistical procedure are outlined, and formulae developed for use in determining the accuracy of experimental results. In general available information has been arranged under the various animals used. After a short historical sketch of each drug, or group of drugs, the available chemical methods for qualitative and quantitative determinations are given, with especial reference to the toxicological aspect. Information is presented on animals arranged in order of increasing zoological complexity (unicellular organisms, leeches, fish, frogs, mice, rats, rabbits, cats, dogs, monkeys and men). At the close of each section a "conclusion" is given suggesting the method of assay which is preferable and giving the accuracy of this method if such information is available. The various drugs and chemicals are grouped according to the nature of their principal pharmacological action, or according to the most suitable method of standardization. (Nervous System, Circulation, Respiration, or Muscles). An entire chapter is devoted to glandular products. Miscellaneous assays (anthelmintics, mydriatics and miotics, vitamins, etc.) are combined in the last chapter of the book. Each section of the book is considered a separate entity and has its own bibliography. Three appendices are given: (1) An index of tables; (2) An index of animals, showing the tests which may be conducted upon each animal; (3) A subject index.—*J. C. Munch.*

13321. **NAVRATIL, E. Ein Beitrag zur Kenntnis der Apomorphinwirkung.** *Arch. Exp. Pathol. und Pharmakol.* 131(3/4): 159-170. 10 fig. 1928.—Apomorphine decreases the amplitude of the ventricle and the origin and conduction of impulses in the auricle of the frog and turtle heart; these changes are reversible on washing with Ringer's solution. The characteristic responses of the ventricle to epinephrine, acetylcholine, choline, and muscarine, which are prevented by apomorphine, do not return. The inotropic effect of accelerator and vagus stimulation is destroyed due to ineffectiveness of accelerator and vagus substances rather than to failure of their liberation. The action of $BaCl_2$ on the frog heart and perfused vessels is not changed by apomorphine. The vaso-constrictor action of epinephrine in the frog vessels is destroyed, but the pressor action in rabbits is not affected.—*E. E. Nelson.*

13322. **NIKOLAEFF, M. P. Über die Wirkung des Pituitrins und Insulins auf die Sekretion und Gefässe der isolierten Nebenniere. [Action of pituitrin and insulin on the secretion and the blood vessels of the isolated adrenals.]** *Arch. Exp. Path. u. Pharmakol.* 140 (3/4): 225-236. 1929.—Solutions of pituitrin in Ringer-Locke solution increase epinephrine secretion in direct proportion to their concentration. Solutions of 1: 100,000,000 as a rule do not exert any influence on this secretion. Insulin acts much the same as pituitrin though its action is slower, but of longer duration. Repeated perfusion of the same adrenal by pituitrin or insulin produces a diminishing effect. A concentration of from 1:1000 to 1: 10,000 of pituitrin produced first a dilation, then a constriction, and then a return to the initial size. In weaker concentrations the constriction stage was shortened, in concentrations of 1: 100,000,000 it was lacking altogether, and the initial stage was a dilation.

Insulin in the same concentration acted differently on different adrenals.

13323. **NYIRI, WILLIAM, and LOUIS DuBOIS. Experimental studies on heart tonics. II. The application of biometric methods to digitalis standardization.** *Jour. Pharmacol. Exp. Ther.* 39(1): 99-109. 1930.—A question as to the practicability of applying biometric methods to digitalis standardization is raised. Data are presented to prove that Van Wyngaarden's formula is misleading and permits too great a range of experimental variation, i.e., assays which vary more than 100% may be within the rule. The suggestion is made that terms of probability should be applied with caution to biologic experiments.—*O. W. Barlow.*

13324. **OKAZAKI, YOSHITADA. Über die Uteruswirkung des Pituitrins.** (Japanese.) *Folia Pharmacol. Japonica* 6: 98-117. 1927.—The observation of Sahakos that the effect of pituitary upon the isolated uterus of the rabbit depends upon its condition as regards pregnancy is confirmed. On the non-pregnant uterus it has a marked exciting effect, while on the uterus in the beginning or the middle of pregnancy with fresh corpus luteum it exerts no effect or is inhibitory. This lack of action is probably to be ascribed to a hormone secreted by the corpus luteum. Other agents acting upon the uterus are not as markedly influenced as is pituitary.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by B. Fantus).*

13325. **OLMSTED, J. M. D., and GEORGE GIRAGOSSINTZ. Effect of amytal anesthesia on glucose tolerance.** *Proc. Soc. Exp. Biol. & Med.* 27(2): 103-106. 1929.—In amytal anesthesia the pyloric sphincter of the stomach was closed so tightly that sugar introduced into the stomach could not enter the duodenum. Sugar absorption from the duodenum was diminished when sugar was introduced.

13326. **OTTO, R. Untersuchungen über die Toxine europäischer Viperinen.** *Zeitschr. Hyg. u. Infektionskrankh.* 110(1): 82-92. 1929.—The venoms investigated were *Vipera ursinii, V. berus, V. ammodytes, V. aspis,* and *Mesocoronis.* The several venoms differed from each other in toxicity, but that of *Mesocoronis* was distinguished from the others as regards biological properties, resistance to heat, and relation to various antivenins. This venom must contain a large amount of thermostable neurotoxin.—*R. Otto (transl. by Lewis W. Butz).*

13327. **OTTO, R. Untersuchungen über die Wirkung verschiedener Schlangengift-Antisera auf das Berus-Kreuzottern-Toxin.** [The effect of various snake-poison anti-serums on the toxin of the berus viper.] *Zeitschr. Hyg. und Infektionskr.* 110(3): 513-515. 1929.

13328. **PANTSCHENKOW, M. M., und A. A. KIRSTNER. Die quantitative Bestimmung des Chinins im Blute.** *Arch. Schiffs-u. Tropen Hyg.* 32(32): 137-140. 1928.—Blood is mixed with $NaHCO_3$, heated to dryness, and the pulverized dried blood extracted with ether. The extract is evaporated and to the residue H_2SO_4 is added. The quinine sulphate thus formed is irradiated in the dark with ultraviolet light. The quinine fluoresces, and by comparison with a standard solution, the concentration is determined. The method is sensitive to quinine 1:2,000,000, and detects the presence in the blood of this substance and of its isomer, quinidine, after administration to patients in the usual way.—*H. S. Wells.*

13329. **PEARL, RAYMOND, FLORENCE BARCLAY WHITE, and JOHN RICE MINER. Age changes in alcohol tolerance in Drosophila melanogaster.** *Proc. Nat. Acad. Sci.* 15(5): 425-429. 1 fig. 1929.—A preliminary report on the results of the effect of absolute alcohol vapor on flies of different age and sex. The general result was that as flies grow older they become anesthetized more quickly, i.e., their alcohol tolerance is reduced. This seems to prove B. Gompertz's assumption that the physiological process of senescence follows a geometrical progression.—*B. W. Rhamy.*

13330. **PETERSEN, W. F., S. A. LEVINSON, and SERGIUS ARQUIN. The relation of the reaction to epinephrine to the potassium-calcium ratio and other ratios.** *Arch. Internal Med.* 42(2): 256-269. 3 fig. 1928.—Twenty-six normal and 123 pathological cases were examined for their blood pressure response to epinephrine (0.5 cc. 1:1000 sol. subc.). According to the results, the individuals were divided into sympathetic and parasympathetic groups. In a general way, but with many individual exceptions, the sympathetic group is characterized by more permeable skin capillaries, a lower blood K:Ca ratio, a higher serum globulin, a lower blood CO_2 combining power and a lessened muscular electrical reactivity in comparison with the parasympathetic group. Twelve exophthalmic goiter patients, similarly examined, corresponded closely with the most marked sympathicotonic group.—*R. G. Smith.*

13331. **POLLAK, STEPHAN. Beitrag zur Leberfunktionsprüfung mittels intravenöser Galaktoselösung.** *Wien. Arch. Inn. Med.* 21(2): 311-314. 1931.—After administration of galactose, 40 gm. perorally and 20 ccm. of 40% solution intravenously the following day, the blood sugar (B. S.) in normals reached almost identical maximums in 15-30 min. In acute parenchymal injuries, proportional to the severity of the lesion, there was delayed rise in B. S. after peroral, and delayed and lower maximum value after intravenous administration. In chronic parenchymal injuries (alcoholic cirrhosis, intoxication, and stasis cirrhosis) there were delayed and lower maxima respectively. In hepatargia the B. S. curve was almost flat; in obstructive jaundice it resembled the normal.—*From author's summary (transl.).*

13332. **POPOFF, P.** Приносъ къмъ изучването на хологога и фармакодинамичното имъ въздействие върху чернодробната секреция. **(Beitrag zum Studium der Cholagoga und ihre pharmakodinamische Beeinflussung der Gallensekretion.) [Contribution to the study of cholagogues and their pharmacodynamic influence on the secretion of bile.]** [In Bulgarian.] Годишникъ на Софийския университетъ, Ветеринарномидицински факултетъ *(Jahresber. Univ. Sofia Vet. Med. Fakultät.)* 5: 105-174. 1929.—The author tested about 50 substances on 45 dogs. Acting most strongly: atophan, atophanyl, sodium salicylate, lactic acid, camphoric acid, thymol; less strongly, peppermint, caraway, and anise oils, gamboge, chloral hydrate, boldo leaves, etc. The liver fixed basic substances as well as acid. The former gave no noteworthy, enduring increase of bile; but a specific influence was attributable to the latter.—*A. Kalojanoff (transl. by E. V. Lynn).*

13333. **PUIGGARI, HUGO. Sobre estabilidad y atenuación de la insulina.** [Stability and attenuation of insulin.] *Rev. Soc. Argentina Biol.* 5(8/9): 677-684. 1929.—Attenuation is avoided by concentration of alcohol-acid extracts of pancreas in vacuo at 35-40° C.—Controls were made 200 days later, 31 days at 37° C., and no loss of pharmacological activity was found.—*J. T. Lewis.*

13334. **QUIGLEY, J. P. Action of insulin on the gastric motility of man.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 769-770. 1929.—Preliminary paper.

13335. **RABBENO, A. Ricerche sull'azione farmacologica dell'acqua di mare. Nota III. Sulla produzione di urina e sull' eliminazione dei cloruri in seguito ad iniezioni endovenose di acqua marina. [Urinary flow and chloride elimination after venous injection of sea-water.]** *Arch. di Sci. Biol.* 14(1): 26-40. 3 fig. 1929.—The curves drawn from the data of urine secretion, toxicity, diuresis, chloride elimination following an intravenous injection of sea-water are all of the same shape.—*A. Jappelli.*

13336. **RABBENO, A. Ricerche sull' azione farmacologica dell'acqua di mare. Nota IV. Sulla produzione di urina e sull'eliminazione dei cloruri in seguito ad iniezioni endovenose di cloruro sodico. [Urinary flow and chloride elimination after venous injection of NaCl.]** *Arch. di Sci. Biol.* 14(1): 41-57. 3 fig. 1929.—After intravenous NaCl injection it may be noted that water and chloride output through the urine is greater than after sea water. Glycosuria, which may be present after sea water, is always present after NaCl.—*A. Jappelli.*

13337. **RABBENO, A. Ricerche sull'azione farma-**

cologica dell'acqua di mare. Nota V. Riassunto generale e commento critico. [Pharmacological action of sea-water.] *Arch. di Sci. Biol.* 14(1): 58-75. 1929.—A review and deductions drawn from the preceding notes I-IV. Sea-water, injected into veins of rabbits, is more toxic than a NaCl solution, and less diuretic. Toxicity, diuresis, chloride elimination vary with the injection velocity. Greater toxicity of sea-water can perhaps be referred to the greater content of Mg and to Ca deficiency.—*A. Jappelli.*

13338. **RAYMOND-HAMET.** Tropine et atropine. *Compt. Rend. Acad. Sci.* 188(11): 820-822. 1 fig. 1929.—Experiments on the intestine, in situ, indicate that tropine is antagonistic to atropine.

13339. **RAYMOND-HAMET.** Action vasculaire de l'éphédrine chez le chien normal, chez le chien yohimbinisé et chez le chien ergotaminisé. *Rev. Pharmacol. et Thérap. Expérim.* 1(4): 264-332. 1929.—Removal of both suprarenal capsules and section of both major and minor splanchnics did not diminish the rise of blood pressure produced by ephedrine. Three mgm. ephedrine per kgm. produced a prolonged, marked vasoconstriction of the spleen; and 0.1 to 3 mgm. per kgm. a similar vasoconstriction of the kidney in situ. In dogs doses of yohimbine sufficient to cause an epinephrine-reversal suppressed the renal vasoconstriction of ephedrine, diminished but did not reverse the blood pressure rise, but did not abolish the increase of cardiac tone or rate. Ergotamine in the dog prevented the vasoconstrictor action of ephedrine on the kidney and spleen, reduced, but did not reverse, the blood pressure rise, and did not abolish the increased tone or acceleration of the heart. Contrary to Curtis, epinephrine causes a marked fall and ephedrine a marked and prolonged rise of blood pressure when given in successive equimolecular doses to ergotaminized dogs. On the ergotaminized animal the blood pressure fall and the cardiac actions of epinephrine are proportional to the doses within minimal and maximal limits. Ergotamine in large doses, caused profound functional changes in the heart, with decreases in rate and force. Epinephrine, on the contrary, tends to re-establish the normal function of the ergotaminized heart. With successive injections of moderate doses of epinephrine (0.05 mgm.) in ergotaminized dogs, the first injection causes a marked rise in blood pressure followed by a fall, with a new base level established higher than before the 1st injection; whereas after the 3rd injection, one sees a feeble rise as compared to the one preceding and a drop which establishes a base level much lower than before this injection. Simultaneous study of the cardiac contractions shows that the 1st and 3rd injections exhibit their action on a heart contracting almost normally. The cardiac action of the 1st injection is therefore considerably greater than that of the 3rd, so that, for the 1st injection, it is the cardiac effect rather than the vasodilator action which is predominant, while for the 3rd injection, the vasodilator is more significant. On the other hand, a large dose of epinephrine (2 mgm.) which causes an extremely long and marked increase in cardiac rate and amplitude in the ergotaminized animal, produces, after a brief rise, a fall of carotid pressure which brings the base level much below the initial value. Here the vasodilator action is so powerful that it overcomes the marked cardiac effects.—*Author's conclusions (transl. by M. A. Seidenfeld).*

13340. **REHSTEINER, RICHARD.** Die Bedeutung der Nervenversorgung für die Acetylcholin-Contractur und den Zuckungsablauf des Skelettmuskels. *Pflüger's Arch. Ges. Physiol.* 217(3/4): 419-429. 1 fig. 1927.—A comparative study of effect of acetyl-cholin on denervated frog's muscle with effect on homologous muscle of other side with nerve intact, showed that cutting the ischiatic nerve sometimes rendered the muscle more sensitive, at other times less. The cutting of posterior roots had no definite effect on the action of acetyl-cholin. Cutting of anterior roots caused, after 9-12 days, a definite although not constant increase of sensitiveness on the operated side. The frequency of tetanic jerks and the rapidity of recovery of tired muscle were not influenced by cutting the nerve roots.—*Author's summary (transl. by T. H. Glenn).*

13341. **RENTZ, EDUARD.** Die Verlangsamung der Herztätigkeit durch Morphin. [Slowing of the heart by morphine.] *Arch. Exp. Pathol. und Pharmakol.* 125(5/6): 352-357. 1927.

13342. **ROFFO, A. H., y O. CALCAGNO.** El plomo en el tratamiento del cancer. [Lead treatment in cancer.] *III. Prensa Med. Arg.* 15(28): 1225-1239; (29): 1263-1282. 18 fig. 1929.—Twenty-six patients with tumors of different types and localisation were treated with several salts of Pb and colloidal Pb prepared electrically with high and low voltage. No favorable results were obtained, sometimes they were unfavorable. No toxic symptoms were seen as toxicity of preparations was low. Sometimes when using colloidal Pb cuprocyanid secretion and odor diminished, a result due to the Cu. Tissue cultures of normal and neoplastic cells are not inhibited by even slight concentrations of colloidal Pb. Colloidal Pb vanadiate and Pb cuprocyanid inhibit growth, this is not due to the Pb as the effect persists when these salts of K are used instead of Pb. The same results are seen when studying the cytolytic power of normal and neoplastic cells in vitro.—*E. A. Molinelli.*

13343. **ROSENBLUETH, ARTURO, and TEODORO SCHLOSSBERG.** The sensitization of vascular response to "sympathin" by cocaine and the quantitation of "sympathin" in terms of adrenalin. *Amer. Jour. Physiol.* 97(2): 365-374. 1931.—The action of $NaHCO_3$, glycine, $CaCl_2$ and cocaine on the rises in blood pressure produced by injections of epinephrine in Elliott's preparation was studied in young decerebrate ♂ cats. Of these cocaine proved to be the only effective sensitizer. Cocaine is more toxic to animals deprived of their adrenal glands than to intact animals. The higher the dose of cocaine, within limits set by toxicity, the more marked are its effects. Cocaine does not increase the effectiveness of epinephrine in accelerating the heart but it sensitizes smooth muscle to epinephrine. There is a close similarity between the action of cocaine as a sensitizer of smooth muscle to epinephrine and its rôle as sensitizer to the action of sympathin. This evidence favors the view of the identity of epinephrine and sympathin. In animals with the brain pithed, the adrenals extirpated, the sciatics cut and the sympathetic chains severed at the 3rd lumbar ganglion, stimulation of the lower portion of the sympathetic, which causes contraction of pilo-motor muscles, produces a rise in blood pressure after cocaine injection which continues after the stimulus has ceased and which disappears very slowly (5 min.). Shutting off the circulation in the posterior part of the animal by pulling on a thread passed beneath the cava and aorta behind the renal vessels causes a quick rise of pressure and a quick fall when the thread is released; stimulating the lower end of the abdominal sympathetic chains during the pull on the thread produces a persistence of the rise in blood pressure after the thread is released and the stimulus stopped. The pressure falls slowly after this and is similar to the one mentioned above. The quantitation of sympathin in terms of epinephrine shows (on the average) that in a typical instance it is necessary to inject 2.4 cc. of epinephrine (1/500,000), the first 0.6 cc. at a rate of 0.1 cc. per 5 sec., the following 0.9 cc. at a rate of 0.1 cc. per 10 sec. and the last 0.9 at the rate of 0.1 cc. per 20 sec., in order to match the rise in pressure occasioned by half-min. stimulation of the sympathetic. The total amount of epinephrine thus injected is 0.000005 gm. The store of sympathin is limited under the conditions of the exp. The 1st stimulus is the most effective and the later stimuli (3 or 4) become rapidly incapable of producing any further results on the blood pressure.—*Authors' summary and conclusions.*

13344. **ROSKIN, GR., und K. ROMANOWA.** Arzneimittel und ultraviolette Strahlen. I. Mitteilung. Die Chininwirkung auf die Zelle bei gleichzeitiger Bestrahlung derselben mit ultravioletten Strahlen. *Zeitschr.*

Immunitätsforsch. 62(1/2): 147-157. 1929.—Small doses of ultraviolet rays from a quartz mercury arc have a stimulating effect upon the multiplication of Paramecium caudatum. Traumatic changes after radiation often do not appear until later generations. Equal doses of ultraviolet rays given simultaneously with diluted quinine solutions (1:100,000 to 1:300,000) quickly cause death of the paramecia, although the quinine solutions alone are not toxic. This effect seems to depend to some degree upon the lability of the plasma under the influence of the radiation and to a greater degree upon the definite increase in toxicity of the quinine solutions because of the irradiation. Plasmochin solutions (1:10,000) ordinarily kill paramecia after 3 days but when simultaneously radiated with ultraviolet rays, death takes place in a few min.—*O. Glasser.*

13345. **ROSKIN, GR., und K. ROMANOWA. Arzneimittel und ultraviolette Strahlen. II. Mitteilung. Die kombinierte Wirkung von ultravioletten Strahlen und Novarsolan auf Trypanosoma equiperdum.** *Zeitschr. Immunitätsforsch.* 62(1/2): 158-163. 1929.—Various doses of novarsolan (1:2000, 1:3000, 1:4000) have been found to have no curative effect upon mice infected with Trypanosoma equiperdum. The same doses immediately followed by ultraviolet radiation of the mouse lead to a complete sterilization of the tissue. Novarsolan in dilutions of 1:5000 and 1:6000 with subsequent irradiation usually does not produce this complete effect but seems to defer the recurrences.—*O. Glasser.*

13346. **RYDIN, HOKAN. Der Einfluss von Decholin auf den respiratorischen Umsatz von Ratten.** *Biochem. Zeitsch.* 200(1/6): 401-406. 1928.—Decholin is a very strong cholagogue and if the liver is concerned in the causation of the specific dynamic action of food the administration of decholin should increase the basal metabolic rate. Decholin given intraperitoneally or per os augmented the basal metabolism by about 12%, thus supporting the theory under consideration.—*L. H. Hyman.*

13347. **SCHMIDT, A. A., und KLARA TULJTSCHINSKAJA. Die Widerstandsfähigkeit des Insulins gegenüber einigen Bakterien.** *Biochem. Zeitschr.* 231(4/6): 352-364. 1931.—Equal volumes of active and inactivated (60° C. for 1 hr.) emulsions of *Bact[erium] coli communis, Staphylococcus aureus,* and *Streptococcus hemolyticus* of 4-6 milliards per cc. and pH 7.5 and of insulin solution (10 units per cc. in physiological saline at pH 7.5) were mixed, kept at 37° for 24 hrs., then tested on rabbits for insulin activity. Control solutions of 1 cc. insulin at pH 7.5 and 1 cc. physiological saline, and 1 cc. active emulsion and 1 cc. physiological saline, were also kept at 37° for 24 hrs. None of the insulin solutions were inactivated. A similar experiment with *B. coli* freshly obtained from the intestine of the dog had the same result. One volume of an insulin solution (20 units per cc.) was added to 4 volumes of bouillon and warmed to 60° for an hr. on each of 3 days. The medium was then used to culture *S. aureus, B. coli communis* and 2 anaerobic types isolated from the dog's intestine. One anaerobe, which gave an odor of putrefaction, caused inactivation of insulin, the other 3 did not. It would appear that the insulin molecule is attacked by proteolytic but not by peptolytic ferments; that it would be inactivated in the colon but not in the small intestine.

13348. **SCHWARZ, CARL, und HELMUTH SASSLER. Die alimentäre Glykämie in Phlorrhizindiabetes, ein Beitrag zur Phlorrhizinwirkung auf die Leber.** *Biochem. Zeitschr.* 198(4/6): 250-258. 1928.—Dogs were used and normal blood sugars as well as the course of alimentary glycosurias determined. Thereafter the animals were depleted of glycogen by injection of phlorhizin subcutaneously on 3 successive days during which time and for 2 additional days they received no food. All blood sugar determinations were made at similar times and in like manner. During the time of phlorhizin injection the blood sugar reached markedly low values but during the 2 following starvation days, it again became normal. Then the animals were given food corresponding to that in the original alimentary glycosuria experiments, either the normal high carbohydrate or the exclusive meat diet. It was noted that the peak of the blood sugar curve was reached later, rose higher and dropped more slowly in phlorhizinized than in normal dogs. These observations were interpreted as indicating injury to the glycogen forming and storing function of the liver since the renal disturbance was no longer manifested at the time of the observations.—*W. W. Herrmann.*

13349. **SCHWARZ, F. K. THEO. Die magnetische Suszeptibilität von Körperflüssigkeiten, ein neues Kriterium für die hämatopoietische Wirkung von Antianaemica.** *Zeitschr. Ges. Exp. Med.* 76(1/2): 99-107. 4 fig. 1931.—The monometric method of Quincke proved superior to one involving the angle of deviation in determining the magnetic susceptibility (M.S.) of body fluids. The results for distilled H_2O, urine, gastric juice, blood, ascites, serum, and cerebrospinal fluid varied from -0.73 to $-0.40 \cdot 10^{-6}$, similar to values of related fluids. In variations of Hb content within 10% no change in M.S. was found. A stable hemolytic anemia of about 40% Hb was then produced in rabbits (about 15) by 14 daily injections of 5 cc. distilled H_2O (M.S. of rabbit blood, Hb of 80% was $-0.50 \cdot 10^{-6}$. Daily intravenous injections of 1 cc. of 0.05% electroferrol were then made in 6 rabbits, of 0.1% colloidal siderac in 8, for 14 days; 2 served as controls (M.S. of siderac $+7.52 \cdot 10^{-6}$; electroferrol $+7.07 \cdot 10^{-6}$). There was a rapid rise in Hb with colloidal siderac, a less rapid rise with electroferrol; a parallel rise in M.S. was apparent as soon as the Hb variations exceeded 10%. The M.S. is a measure of the hematopoietic action of intravenously administered Fe solutions.

13350. **SCOLARI, ENEA GIUSEPPE. Dimostrazione istochimica delle vie di eliminazione del solfocianuro di potassio nelle ghiandole salivari. [Chemical demonstration of the means of elimination of potassium sulphocyanate in the salivary gland.]** *Boll. Soc. Med.-Chir. Pavia* 42(4): 589-600. 1928.—If a rabbit is injected with a considerable amount of KSCN, this is eliminated through the salivary gland, and mainly through the cells of the excretory ducts. The salt must be found in the salivary gland in a large quantity to render it visible by means of a precipitation with $CuSO_4 + H_2SO_3$. The organs must be loaded with it. The experiment is certainly artificial, because the animal is overloaded with a salt which normally is found only in very small quantities; and because normally the salivary secretion is not as active as under the conditions of this experiment. The most important fact noted is that the elimination of KSCN through the salivary glands is decidedly oriented towards the cells of the ducts.—*Author's summary (transl. by R. M. Biondi).*

13351. **SEIDEL, WERNER. Die Wirkung des Ergotamins (Gynergen) auf den Blutzuckerspiegel beim Kaninchen und beim Menschen. [The action of ergotamin (gynergen) on the blood sugar in rabbits and man.]** *Arch. Exp. Pathol. und Pharmakol.* 125(5/6): 269-277. 6 fig. 1927.

13352. **SIEGMUND, H., und F. KAMMERHUBER. Über Unterschiede in der Reaktionslage des Uterus von Kaninchen, Ratte, Maus und Meerschweinchen.** *Zentralbl. Gynäkol.* 55(9): 521-523. 1931.—The rabbit uterus under the influence of the corpus luteum lost contractility and tonus and did not react to posterior lobe hormone (P.L.H.); under similar circumstances the rat uterus reacted promptly. Extracts of corpus luteum from cattle and swine inhibited the response of the rabbit uterus but not of the rat uterus to P.L.H. The mouse reacted similarly to the rat both for P.L.H. and for epinephrine (loss of tonus and contractility); the guinea pig showed the same behavior to P.L.H. The author expresses no opinion as to whether a difference in hormone equilibrium or the uterus itself was responsible for the difference in reaction.

13353. **SINGER, E., und F. HODER. Oligodynamie**

in Gewebskulturen. *Arch. Exp. Zellforsch.* 8(3): 443-446. 1929.—Cu, Ag and Hg limit growth and migration of tissue cells (spleen cultures from guinea pig) and may kill tissues. Au, Pt and Pb exerted only a stimulating action on growth. It may be that these substances did not diffuse well enough through the culture medium to be toxic. Zn and glass were neutral. Mg and Fe did not exert an oligodynamic action.

13354. **SINGER, E., und F. HODER.** Wirkung von Alkoholen auf Gewebskulturen. [Action of alcohols on tissue cultures.] *Arch. Exp. Zellforsch.* 8(3): 447-451. 1929.

13355. **SINTON, J. A., W. BIRD, and B. F. ORR.** Studies in malaria with special reference to treatment. Part X. Quinine-troposan in the treatment of chronic benign tertian malaria. *Indian Jour. Med. Res.* 16(2): 333-339. 1928.—Treatment with quinine-troposan, the quinine salt of 2-oxy-5-acetylamino-phenyl arsenic acid, resulted in a relapse rate less than that usually seen after the cinchona alkaloids or quinine-stovarsol, but greater than that after plasmoquine alone or with quinine. The authors recommend that as with their other arsenical treatments the liver be protected by sugar and the kidney by bicarbonate-citrate administration, and elimination promoted by daily morning dosage with 4 gm. magnesium sulphate. Under these conditions 0.9 gm. troposan (with 1.125 gm. quinine) daily for 14 days appeared well tolerated by 44 patients.—*W. T. Dawson.*

13356. **[SMORODINTSEV, I. A., and E. V. SERKOVA.]** СМОРОДИНЦЕВ, И. А., и Е. В. СЕРКОВА. О выносливости мышей и морских свинок по отношению к экстрактам из тмина. [Tolerance of mice and guinea pigs against extracts of Carum seed.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(6): 408-411. 1929.—Seeds of Carum were treated with water, alcohol, and ether, and experiments conducted on 18 mice and 3 guinea pigs. Toxicity of dry residue of water extract was insignificant, toxic dose being as high as 1.43 gm. per 100 gm. weight of the mouse. Smaller quantities caused rapid and considerable loss of weight. Alcohol extract was more toxic; doses from 0.9 gm. to 1.3 gm. per 100 gm. weight caused death within 10-15 min. Smaller doses are not fatal, but cause persisting inflammation at the site of injection. The animal loses weight; sight is also affected—3 mice became blind. Ether extract, being insoluble in salt or water solutions, could not be tested.—*B. Van Rosen.*

13357. **STIRLING, R. F.** The treatment of canine piroplasmosis. *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 647-653. 1927[1928].—Trypan-blue is a specific for piroplasmosis caused by *P. canis*. The formation of abscesses following the use of trypan-blue administered subcutaneously is of rare occurrence, if the solution employed for injection is duly sterilized, ordinary antiseptic precautions are taken and a suitable site is chosen for injection. Good results have been obtained by the use of tryparsamide in repeated doses in piroplasmosis due to the *P. gibsoni*. *Tryparsamide* will also rid the blood of *P. canis*. Tryparsamide can be safely used subcutaneously.—*Author's summary.*

13358. **STROSS, W.** Untersuchungen über die Wirkungsweise einiger Analeptika. III. Mitteilung. Hexeton. *Arch. Exp. Pathol. und Pharmakol.* 130(5/6): 349-364. 1928.—The paralytic effect of hexetone on frog's vagus is the same as camphor. Hexetone stimulates the heart after alcohol, but has no effect after chloroform. On the isolated heart with distended atrium or perfused with chloral, quinine or low Ca, hexetone does not show stimulation. In rabbits (urethane anesthesia) hexetone intravenously during constant ventilation, e.g., artificial respiration or pneumothorax, in some cases raises the blood-pressure but not for so long a time as coramine, nor to the same degree as cardiazol.—*H. Graf.*

13359. **SZUREK, STANISLAUS A.** Efficiency and advantages of calcium gluconate as a therapeutic agent. *Proc. Soc. Exp. Biol. & Med.* 26(9): 773-776. 1 fig. 1929.—Ca gluconate was as effective as Ca lactate in preserving the lives of thyroparathyroidectomized dogs. Ca gluconate is water soluble and tasteless. When injected subcutaneously and intramuscularly it was relatively painless.

13360. **THIENES, C. H.** Nicotine tolerance in the white rat. *Proc. Soc. Exp. Biol. & Med.* 26(9): 845-846. 1929.—Preliminary paper.

13361. **TIEFENSEE, KURT.** Pharmakologische Studien an der Bronchialmuskulatur. II. Über die Bedeutung der Blutbeschaffenheit für den Tonus der Bronchialmuskeln und ihr Ansprechen auf Gifte. *Arch. Exp. Pathol. und Pharmakol.* 139(3/4): 139-153. 1929.—Effects of alterations in alkalinity of the blood of decapitated cats upon the response of the bronchial muscle to pilocarpine, atropine, epinephrine. Pilocarpine no longer constricts the bronchi, but still slows the heart, when the blood is artificially (inhalation of air enriched with CO_2, etc.) made less alkaline. Discussion of theory of asthma.—*W. T. Dawson.*

13362. **TIEMANN, FRITZ.** Über das Atemzentrum lähmende und erregende Substanzen. [Effects of stimulant and depressant substances on the respiratory center.] *Arch. Exp. Pathol. u. Pharmakol.* 135(3/4): 213-227. 1928.—In morphine, chloral and avertin poisoning, vagus depressants increased the depression of respiratory activity in the rabbit and a depression of the excitability of the center occurred in the absence of vagal depressants. In chloral poisoning the excitability of the center decreased as the dosage increased. In avertin narcosis, an inexcitability of the vagus occurs and the effects of vagal depressants may be diminished. CO_2 was the best stimulant of the respiratory center studied. Lobelin and atrinal were less effective and atropin was ineffective. CO_2 lobelin and atrinal modify the depressant effects of vagus stimulation. Lobelin in large doses paralyzes the respiratory center and under such conditions increases the effects of vagus depression.—*O. W. Barlow.*

13363. **UHLMANN, FR.** Über eine neue Wertbestimmungsmethode für Digitalispräparate. *Arch. Exp. Path. u. Pharmakol.* 122(3/4): 219-227. 3 fig. 1927.—The method suggested consists essentially of injecting into the abdominal vein (frog) the preparation to be assayed. The time required to produce standstill of the heart by 0.005 c.c. of a 1:10,000 ouabain solution (7 min. on the average) is set at a value of 1 as the unit of activity and the principal commercial digitalis preparations, as well as other cardiac drugs, are compared with it.—*Author's summary (transl. by M. Dresbach).*

13364. **UTEWSKAJA, S. L.** Über den Einfluss der Staphylokokken auf die Funktion der Gefässe. *Zeitschr. Ges. Exp. Med.* 60(5/6): 583-590. 7 fig. 1928.—Filtrates of bouillon cultures of staphylococcus as well as extracts of the bacilli influence the circulation of the isolated rabbit's ear by affecting the vessel tonus. The filtrates of bouillon cultures of staphylococcus have a vaso-constrictor effect in direct proportion to the concentration of the filtrate, and are vaso-dilator in dilutions of 1-10,000 or less. The tonus change in the blood vessels of the isolated rabbit's ear affected in this way is not altered by heat but may be altered by alcohol. The effective agent belongs apparently to those complex toxins which result from bacterial metabolism and which are found in the medium in which the bacteria occur.—*D. Perla.*

13365. **VIVO, G. del.** A proposito dell'azione di alcuni olii essenziali sulla pigmentazione. [Action of essential oils on pigmentation.] *Gior. Ital. Derm. e Sifil.* 71(2): 467-480. 1 pl. 1930.—Experiments on 9 children and 3 young persons showed that, of the essential oils of which cologne water is ordinarily composed, only the oils of bergamot and cedar induce pigmentation in the skin exposed to the sun; the other oils are inactive. The author concludes that these oils, having entered into solution with the acids of perspiration, may be decomposed by solar irradiation (artificial irradiation had no such effect), and that among the products of decom-

position may be an irritant or revulsive substance.—*From author's summary (transl.)*.

13366. **WALLBACH, GÜNTER. Studien über die Zellaktivität. 11. Umstimmungen des Organismus, gezeigt an der Verteilung eingeführter speicherbarer Substanzen.** *Zeitschr. Ges. Exp. Med.* 60(5/6): 709-749. 1 fig. 1928.—Using mice, the influence of single injections of physiological salt solution, iodoform, pepton pantopon, insulin, adrenalin, serum, thyroid extract, pituitrin, lithium carmine on the subsequent distribution of such dyes as India ink, trypan blue, Berlin blue was studied. By changes in the vital staining capacity of different tissues the author was able to study the effects of different substances on cellular activity. Since the same drug produced variations in the staining capacity to different dyes, the author believes that each dye demands for its entrance into the cell a different physiological action. Physiological salt solution stimulated vital staining in the liver and spleen, iodoform depressed and peptone stimulated the liver Kupffer cells, pantopon stimulated the Kupffer cells but not the splenic reticulo endothelial elements; insulin markedly depressed the activity of the Kupffer cells; serum diminished and adrenalin had little effect; hypophysin stimulated the liver Kupffer cells, as did thyroid extract. The dye and the drug were injected simultaneously into the tail vein. The curves made from comparative histological quantitative estimates of dye distribution at intervals of 20, 40, 60, 80 and 100 min. following the injections can be but crude representations. Normal control curves are not given.—*D. Perla.*

13367. **WATANABE, KEIREI. Untersuchungen über die Wirkung des Stragmins, des Tetrahydroberberinchlorids, auf den Verdauungskanal.** (Japanese.) *Jikken Showaki Byogaku* 2: 1070-1076. 1927.—Stragmin has only a very weak action in frogs and rabbits. Given internally to man it slightly increases the gastric acidity, acts in small doses (0.3 gm.) as a mild laxative, but in large doses (1 gm. t.i.d.) is quite constipating.—*Author (courtesy Jap. Jour. Med. Sci. IV) (transl. by C. Reynolds).*

13368. **WEIL, ARTHUR. Changes of structure and lipin content of central nervous system in ether anesthesia.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 776-778. 1929.—Preliminary paper.

13369. **WIELAND, HERMANN, und PAUL PULEWKA. Quantitative Untersuchungen über den Antagonismus Chloralhydrat-Pikrotoxin. [Quantitative studies of the antagonism between chloral hydrate and picrotoxin.]** *Arch. Exp. Pathol. und Pharmakol.* 120: (3/4): 174-185. 1927.

13370. **WILKIE, DAVID. The relation between concentration and action of adrenalin.** *Jour. Pharmacol. & Exp. Therap.* 34(1): 1-14. 5 fig. 1928.—The relation between adrenalin concentration and outflow from the aorta of a perfused frog heart, the relations between adrenalin dosage and the rise in blood pressure of pithed cats and the isotonic and isometric response of sheep's carotid artery tissue to varying concentrations of adrenalin are expressed by the formula: $Kx = y/A - y$ where x = concentration, y = action as % of maximum action (A) and K = constant.—*C. W. Matthew.*

13371. **WOLFF, HAROLD G. The cerebral circulation. XI. The action of acetylcholine. Action of the extract of the posterior lobe of the pituitary gland. Action of amyl nitrite.** *Arch. Neurol. and Psychiatry* 22(4): 686-699. 3 fig. 1929.—The method consists, in brief, in the use of a small window screwed into a trephine hole in the skull. In the rim of this window are 2 small holes into which needles are soldered. The surface of the brain is exposed. The window is put in place, and then spinal fluid or Ringers solution may be irrigated through the needles to wash out the space under the window and to bring the intracranial pressure back to normal. With a microscope placed over the window, lateral illumination allows an observation of pial vessels up to magnification of 200 diameters. Direct measurements and photographs of the pial vessels were made, and their changes were checked with the concomitant changes observed in the general blood pressure and with the intracranial cerebrospinal fluid pressure. It was observed that the intravenous injection of acetylcholine causes dilatation of cerebral arteries, veins and minute vessels, usually a rise in cerebrospinal fluid pressure and a fall in systemic arterial pressure. Extract of the posterior lobe of the pituitary gland causes constriction of pial arteries, arterioles, veins, venules and minute vessels. Inhalation of amyl nitrite causes dilatation of all cerebral vessels, a fall in systemic arterial pressure and a rise in cerebrospinal fluid pressure. These observations indicate that in the regulation of the diameter of cerebral blood vessels, the chemical content of the blood may be of greater importance than its pressure.—*H. G. Wolff.*

13372. **WRIGHT, H. N., and A. D. HIRSCHFELDER. Ultramicroscopic studies upon colloidal state of antiseptics and arsenicals in relation to their action.** *Proc. Soc. Exp. Biol. & Med.* 26(9): 790-791. 1929.—Preliminary paper.

13373. **YAMAGUCHI, OSAMU. Über den Einfluss der Gefässgifte auf das mikroskopische Bild der Arterienwand.** *Japanese Jour. Med. Sci. IV. Pharmakol. Trans.* 3(2): 173-178. 2 pl. 1929.—Rabbits' and dogs' ears were removed immediately after death by bleeding. Locke's solution containing adrenalin or $NaNO_2$ was infused into the Arteria auricularis posterior. The rate at which drops of liquid came out of the Vena auricularis was recorded on an electrically equipped kymograph. At suitable intervals ears were fixed, sectioned and studied histologically. Large numbers of measurements were made of the thicknesses of artery walls and component layers under the influence of adrenalin and sodium nitrite, making possible a quantitative expression of the action of these substances.—*W. N. Berg.*

13374. **YAMAGUCHI, TOMOTAKA. Studien über Flüssigkeitsaustausch. V. Hormonale Beeinflussung des intermediären Flüssigkeitsaustausches im gesunden und sog. nierenkranken Zustande des Hundes.** (German.) *Tohoku Jour. Exp. Med.* 9: 551-616. 1927.—The action of 4 hormones, thyreoglandol, insulin, pituitrin and adrenalin, when injected into sound dogs, and dogs poisoned by cantharidin and uranium, was to change blood and tissue imbibition; such changes being greatest on cantharidin tissue, least on normal. Thyreoglandol shortened the interval before appearance, and also the degree, of tissue imbibition. These changes were ascribed to cell asphyxia due to an acute hyperthyroidism. That blood dilution, in diseased conditions, need not always be small was shown for uranium dogs. Insulin produced a considerable hyperchloremia, not qualitatively modified by the so-called kidney poisons. Adrenalin, by influencing mechanically the force of the fluid exchange, produced increased tissue tension, which, through blood imbibition, inhibited extra-vascular water exchange; so that blood thickening is not always produced by vascular contraction.—*Author (courtesy Japanese Jour. Med. Sci. IV) (transl. by R. H. M'Gonigle).*

13375. **YOSHIMATSU, GUNSHI. Ueber das Verhalten der aromatischen Ester gegen Organauszüge. II. Mitteilung. Ueber die Wirkung des Organextraktes auf Benzoesäureisobutylester, Benzoesäureamylester, Benzoesäureglycerinester, Salicylsäureisobutylester und Salicylsäureamylester.** *Acta Scholae Med. Univ. Imp. Kioto* 11(4): 617-638. 1929.—The author investigated the reaction of glycerin extracts from organs of the pig with the various aromatic esters and recorded the hydrolysis of tributyrin. Among the aromatic esters, the salicylic acid ester is hydrolyzed much more difficultly than the benzoic acid ester and the isobutylester is hydrolyzed much more easily than the amyl ester. All aromatic esters that were investigated are much more hydrolyzable by the glycerine extract of liver; while tributyrin is more readily hydrolyzed by pancreas pulp. According to these results, the aromatic esters behave towards extracts of animal organs just as do the simple esters.—*F. R. Greenbaum.*

13376. **YUNOKI, SH. Pharmacological investigation**

of placental vessels of rabbits. I. Effects of uterine tonics on placental vessels of rabbits. II. Effects of sympathetic and parasympathetic poisons on placental vessels of rabbits and question of presence of vasomotor [innervation] in the said vessels. III. Effects of vegetable drastics on placental vessels of rabbits. IV. Effects of diuretics belonging to purin derivatives on the placental vessels of rabbits. V. Effects of heavy metallic compounds on placental vessels of rabbits. *Kinki Fujinka-Gakkai Zasshi* 11(4): 619-723. 1928.—I. Vasomotor innervation in placental vessels has not been demonstrated with certainty, anatomically or physiologically. The placental vessels of rabbits were irrigated with various drugs to ascertain the presence of vasomotor nerves. The drugs used were: 9 representative ergot preparations, epinephrine HCl, pituitary extract, quinine HCl, cotarnine HCl, and hydrastinine HCl. Ergotamine tartrate, histamine, and tyramine (effective ingredients of ergot preparations), had always the greatest contractive effect on placental vessels, and were not affected by atropine or ergotamine. Thus these drugs supposedly affect the placental vessel muscle directly. Epinephrine HCl had almost no effect. Pituitary extract produced at first a slight contraction, but immediately slight dilatation followed.—II. Excised placental vessels of rabbits were perfused with sympathetic and parasympathetic poisons, in a study of vasomotor innervation of these vessels. Epinephrine, a strong sympathetic stimulant, was almost ineffective. Physostigmine, cocaine and other drugs regarded as attacking the muscle fibres of vessels and the nerve endings had a very intense effect. Drugs such as pilocarpine and atropine, believed to stimulate or paralyze the sympathetic and parasympathetic nerve ends acting antagonistically in other organs, showed effects on the placental vessels only. It is believed, from previous results, that in many respects the action of these drugs on the placental vessels of rabbits is not confined to muscular fibers of the blood vessels. There is considerable evidence that there is a vasomotor innervation to the placental vessels; but it would seem from the effects of these drugs that if present the vasomotor innervation in the placental vessels is extremely undeveloped and consequently much different as compared with the vasomotor nerves in other regions of the body. Accordingly the effects of these drugs on the placental vessels differ greatly from the effects on other organs. —III. The excised placentas of rabbits were irrigated with Locke's solution containing extracts of various vegetable drastics:—colocynth, aloes, cascara sagrada, rhubarb, and senna. Colocynth and aloes caused dilatation, but the effect of the latter was much weaker than that of the former. Cascara sagrada and senna produced intense contraction. Rhubarb, when diluted, caused a slight dilatation, but in stronger solution a temporary dilatation was followed by contraction; and with a concentrated solution an intense contraction was caused from the commencement of irrigation. The action of these drastics on the excised placenta is presumably attributable to their attack on the muscular fibers of the blood vessels. From the fact that rhubarb extract produced at first a dilation and then a marked contraction, it is impossible to exclude innervation entirely from the consideration of the subject.—IV. In perfusion experiments caffeine (and caffeine sodio-benzoate) produced an intense dilatation in the placental vessels of rabbits, while theobromine sodium salicylate (diuretin) and especially theocin sodium acetate caused an intense contraction. It is very interesting that these drugs, very similar in composition and effect in other regions, acted in an opposite way on the placental vessels. It may be that these purine derivatives have their point of action on the muscular fibers of the placental blood vessels. But in respect to the action of caffeine, the presence of vasomotor nerves must be taken into consideration.—V. Compounds of Hg, As, Bi, Pb, and Sb, which are soluble in water and do not coagulate albumin, were used in perfusion experiments. The effects of these on the excised placental vessels of rabbits differed from their effects on the blood vessels of other regions. Arsenic compounds (arsenious acid and arsoval) and a Pb compound (lead acetate) always produced contraction with an effective dose. An Sb compound (tartar emetic) and a Bi compound (bismuthyatren A) produced dilatation when attenuated, but when not attenuated caused contraction after a temporary dilatation. A Hg compound (Novasurol) caused contraction in most cases, after a temporary slight dilatation. It is believed that the contraction produced by all these metallic compounds in the excised placental vessels of rabbits is to be mainly attributed to their attack on the muscular fibers of the blood vessels, and that dilatation is attributable to vasomotor action.—*S. Yunoki.*

13377. **ZAWADOWSKY, B. M., und A. A. TITAJEV. Über den Einfluss organischer und anorganischer Jodpräparate auf die Mauser und Depigmentierung des Hühnergefieders.** *Wilhelm Roux' Arch. Entwicklungsmechan. Organis.* 113(3): 582-600. 5 fig. 1928.—Thyroxine, when injected into fowls, causes depigmentation and moulting. Crystalline I causes a slight depigmentation of the newly grown feathers at the site of injection but no moulting. Iodotyrosine and tryptophane with I when injected into fowls caused but feeble moulting and depigmentation. The speed of growth of the feathers growing at the site of operation and the determination of the influence of thyroxine and of thyroid gland on the growth of new feathers were determined. The effect of thyroxine on the plumage of fowls is suggested as a useful test for thyroid activity. Seasonal variations in the stability of the feathers to thyroxine were found. A possible chemical relationship between the thyroxine molecule and moulting is discussed.—*E. C. Kendall.*

13378. **ZUNZ, EDGARD. Relations entre la constitution chimique des médicaments et leur action dans l'organisme.** *Jour. Pharm. Belgique* 1928(44/47): 1-17. 1928. —A review, with numerous examples.—*W. T. Dawson.*

13379. **ZUNZ, EDGARD, et JEAN LA BARRE. Sur les causes de l'augmentation de la teneur en insuline du sang veineux pancréatique après l'injection intraveineuse de décaméthylènediguanidine. [Cause of the increased insulin content of pancreatic venous blood after the intravenous injection of decamethylenediguanidine.]** *Compt. Rend. Soc. Biol.* 97(36): 1801-1803. 1927.

13380. **ZUNZ, EDGARD, et JEAN LA BARRE. A propos du mode d'action de la synthaline.** *Bull. Soc. Chimie Biol.* 10(2): 322-326. 1928.—Pancreatic internal secretion of dog 1 is diverted through its principal pancreatic vein by anastomosis of the latter into the jugular vein of dog 2. From both dogs the adrenals are removed. Injection by vein into dog 1 of 1-2 mgm./kg. synthalin (decamethylenediguanidine) 2-3 min. before opening the anastomotic passage causes greater fall of blood sugar in dog 2 than in dog 1. Synthalin is therefore believed to excite a secretion of insulin. Anesthesia—chloralose.—*W. T. Dawson.*

ANIMAL PATHOLOGY

MORBID ANATOMY

E. W. GOODPASTURE, *Editor*

C. EUGENE WOODRUFF, *Assistant Editor*

(See also in this issue Entries 12479, 12482, 12896, 12973, 13033, 13256, 13279, 13299, 13342, 13373, 13465, 13491, 13497, 13577, 13600, 13612, 13623, 13636, 13643, 13702, 14289, 14360, 14435, 14442, 14447, 14456, 14458, 14463)

13381. **BALL, DAVID. Change in the size of the heart in severe anemia.** *Amer. Heart Jour.* 6(4) : 517-521. 2 fig. 1931.—A case of severe secondary anemia in which the heart, after definite enlargement, decreased in size on return of the blood picture to normal, is presented as the first reported case of x-ray proof of return of the heart to normal shape and smaller size.

13382. **BURROWS, HAROLD. Tumor resistance.** *Jour. Path. and Bact.* 34(6) : 802-803. 1931.—Among rats which had been refractory to repeated regrafting with Jensen's rat sarcoma, 5 spontaneous tumors occurred: 1 a sarcoma of the liver arising in connection with a parasitic cyst; the other 4 non-malignant mammary adenomas.—Mice in which a primary tumor graft had failed to grow were regrafted with mouse carcinoma 63. From these secondary grafts tumors grew in a proportion of cases when the primary grafts had consisted of mouse carcinoma 63, Twort carcinoma, Harding and Passey's mouse melanoma, and an unpigmented derivative from the last named. But among 37 mice which had proved resistant to mouse sarcoma 37, grafting with mouse carcinoma 63 produced not a single tumor.—*H. Burrows.*

13383. **DAHL, BJARNE. En patologisk-anatomisk og klinisk studie over akutt og kronisk gastritt. [A pathological, anatomical and clinical study of acute and chronic gastritis.]** *Norsk. Mag. Laegevidensk.* 90(8) : 813-852. 9 fig. 1929.—Based on 95 preparations of human stomachs, 87 from gross resection. Inflammation is usually confined to the pyloric gland region, while the fundus glands are attacked much later. In 27 cases with ulcus ventr., in 12 with duodenal ulcers and in 5 with stenosed scars, chronic antrum gastritis was always evident. The gastric ulcer has always developed in the pyloric gland region. In 24 operated cases, diagnosed as ulcer, where no ulcer or scar was present, chronic antrum gastritis was found. The origin of the secretory anomalies of gastritis is in the pyloric gland region, for the stimuli to and regulation of secretion of gastric juice by the fundus glands is initiated here. Hypersecretion and hyperacidity may be caused by the irritation of acute inflammation of the specific antrum epithelium. Chronic achylia is thus a result of chronic antrum gastritis. In many cases with chronic achylia the fundus gland region was quite sound. 14 cases of cancer ventr. and 5 of suspected carcinoma were studied. The so-called hyperplastic atrophic gastritis and especially polypous gastritis are true precarcinomatous conditions. Of 7 observed cases, 4 displayed definite passage to carcinoma and in an 8th, though not histologically verified, liver metastasis occurred.—*C. S. Leonard.*

13384. **EINBECK, EVELINE. Die Bedeutung des weissen Blutbildes für die Diagnostik der Gonorrhöe des weiblichen Genitalapparates.** *Arch. Gynäkol.* 146(1) : 78-87. 1931.—In more than 500 blood smears from patients with acute and chronic gonorrhea of the ♀ genitalia, the general predominance of lymphocytosis in the acute stage was apparently due to a high lymphocyte value with relatively low leucocyte count. Eosinophilia was frequent; basophils were normal; sedimentation time was not affected by the white cells.

13385. **FERRARO, ARMANDO. The origin and formation of senile plaques.** *Arch. Neurol. and Psychiatr.* 25(5) : 1042-1062. 20 fig. 1931.—Histologic study indicates the origin of senile plaques from neuroglial elements (chiefly microglia cells, some oligodendroglia cells, apparently no astrocytes), and from the nerve cells, by an as yet unknown histochemical process giving rise to a granular argyrophil substance which in the central portion of the plaque yields, at times some of the reactions of amyloid substance, at other times the reaction of fat substance.

13386. **FINKELDEY, W. Über Riesenzellbefund in den Gaumenmandeln, zugleich ein Beitrag zur Histopathologie der Mandelveränderungen im Maserninkubationsstadium. [Giant cells in the faucial tonsils: histopathology of tonsillar changes in the incubation stage in measles.]** *Virchow's Arch. Path. Anat. u. Physiol.* 281(2) : 323-329. 2 fig. 1931.

13387. **FISHER, A. MURRAY, and JAMES P. BECK. Death in asthma. Report of a case with autopsy.** *Jour. Allergy* 2(3) : 149-160. 5 fig. 1931.—In a man of 32 with a typical history of asthma for 2 yrs., no definite allergic etiologic substance was found, but his allergy was thought to be bacterial in origin, and he apparently died of asphyxia during an acute attack. Small holes were found in both lungs with an escape of air into the pleural cavities, but without collapse of the lungs. The histologic picture in the lungs is characteristic of that in asthmatics, the chief findings being in the bronchioles: Plugging of the narrowed lumina of the bronchioles with thick mucus containing many eosinophils and Curschmann's spirals; great infolding of the mucosa of the bronchioles; a thickened hyalinized basement membrane; hypertrophy of the muscle wall; and infiltration of the mucosa, submucosa and mucous glands with many eosinophils and plasma cells. The tracheal mucosa contains a similar infiltration. There are also marked emphysema and hypertrophy of the right ventricle.—*Authors' summary.*

13388. **GOLDSTEIN, ISADORE, and DAVID WEXLER. Niemann-Pick's disease with cherry-red spots in the macula. Ocular pathology.** *Arch. Ophthalmol.* 5(5) : 704-716. 1 pl. (col.), 12 fig. 1931.—The prominent features were: degeneration of the ganglion cell layer of the retina, corresponding closely to that described in Tay-Sachs' disease; vacuolation of the cells of the nuclear layers, causing a striking honeycombed appearance; presence of pigmented, vacuolated cells in the choroid; presence of vacuolated histiocytes about the scleral vessels and in the episclera, and an infiltration of these cells among the fibers of the sclera; a group of ganglion cells in the episclera, in intimate contact with the ciliary nerves, exhibiting changes similar to those of the cells of the brain and of ganglion cells elsewhere in this case: granular degeneration of Nissl's substance, swelling of the cell and vacuolation of the cytoplasm. —*Authors' summary.*

13389. **HABERLAND, H. F. O. Experimentelle und klinische Studien über Kryptorchismus.** *Arch. Klin. Chir.* 163(4) : 603-613. 10 fig. 1931.—One or both testes were returned to the abdomen in 18 dogs more than 1½ yrs. old and in 8 mature guinea pigs; in the latter the testes are usually intraabdominal except at the mating period. All dogs showed adhesions between the divided gubernaculum Hunteri and the abdominal wall or peritoneum. Torsion of the pedicle occurred in 7 dogs, the direction being 6 to right, 4 to left (10 testes displaced); thereupon in 2 dogs each the divided gubernaculum Hunteri of the right and the left testis was united to a tag of peritoneum, but torsion was indifferent; the author attributes the slight predominance of right side to intestinal peristalsis directed to the right side of the abdomen. No adhesions or torsion occurred in the guinea pigs. Atrophy of the testis occurred in both dogs and guinea pigs. In none was libido affected, particularly not by the bilateral operation. The author concludes that

the body refuses to house any organ not present physiologically; malignant degeneration, however, is not to be feared, tumors being found in only 0.75% of inguinal or abdominal testes (veterinary statistics).

13390. **HANGARTER, WERNER.** Zur Histologie der Gynäkomastie. *Deutsche Zeitschr. Chir.* 231(2/4): 262-267. 1931.—In 2 ♂ gynecomastic breasts, the tissue structure lay within the physiological limits of the normal ♀ breast. The author regards gynecomasty as a secondary ♀ sexual characteristic in the ♂.

13391. **HAYNES, F.** Experimental dust inhalation in guinea-pigs. *Jour. Hyg.* 31(1): 96-123. 6 fig. 1931.—Guinea-pigs (19 groups, 12 in a group) were exposed to the various dusts for 2 hrs. a day for 2 wks.; 2 pigs were killed soon after the last exposure and the others in pairs at various intervals thereafter. The most deadly of all dusts examined was precipitated silica. Less dangerous, but all producing fibrosis, were, in order of decreasing toxicity: flint, slate, aluminium hydroxide, precipitated chalk, magnesium carbonate, and carborundum. In the concentrations used, calc-spar and emery were border-line dusts, indicating that their inhalation in any considerable quantity would cause fibrosis. Wood charcoal inhaled in large amount produced a slight fibrosis. Colloidal coal, when inhaled in massive amounts, is potentially dangerous, shale under similar conditions rather more so. Haematite, talc, and molecular mixtures of soluble silica with aluminium hydroxide and magnesium carbonate respectively caused no permanent lesions in the lung. All inhaled particles are rapidly ingested by certain cells (dust cells or phagocytes) of the alveolar epithelium, which remain in the lung parenchyma until they have ingested an amount of dust constituting the cell's saturation load (which varies with the different dusts), when it sooner or later becomes detached from the alveolar wall and either migrates into the lymphatics or becomes free in the alveolus. In the former case it passes into the pulmonary lymphoid tissue and thence to the bronchial lymph glands; in the latter, it passes up the bronchial tree to be either coughed out or swallowed. Dust cells which speedily leave the alveolar wall are principally eliminated by the bronchi. A dust cell eliminated from the lung via the lymphatics may be arrested in the periatrial lymphatics on account of its bulk. The dam thus produced offers obstruction to the passage of other dust cells shed into the alveoli. Groups of free dust cells in the obstructed alveoli form plaques, which degenerate and liberate their dust. This is again ingested, and the irritation caused by such a process may lead to fibrosis. The continued presence of dust-laden cells in the lymphatics may set up a foreign body irritation, with resulting fibrosis. Most inhaled particles contain some soluble matter: if harmless, the cell is stimulated to detach itself from the alveolar wall, and so remove the dust; if toxic, the solute affects the viability of the phagocyte, which becomes less able to detach itself. At the same time the solute irritates the neighboring tissues, with consequent fibrosis. While many dusts cause pulmonary fibrosis, silica is the dust par excellence predisposing to tuberculosis, doubtless due to its influence in forming a medium suitable for not only the survival but the proliferation of the tubercle bacillus in the lung. The harmful effects of soluble silica may be neutralized by simultaneous administration of basic dusts such as aluminium hydroxide or magnesium carbonate, though the latter are themselves harmful when inhaled alone. It is suggested that their respective solutes combine to form monosilicate. Monosilicates appear to have no harmful effect on the lung. Heavy inhalations of any dust may cause pulmonary damage. The intensity of the initial pulmonary reaction to a dust is very generally in inverse ratio to the degree of eventual damage caused by the dust.

13392. **HICKLING, R. A.** [Vital staining of malignant cells in a peritoneal effusion.] *Jour. Path. and Bact.* 34 (6): 789-791. 1 col. pl. 1931.—A description of the reactions to neutral red of living malignant cells from a peritoneal effusion, and from a portion of infiltrated omentum removed at operation, with notes on the contrasts between these cells and the cells commonly found in effusions.—*R. A. Hickling.*

13393. **HIERONYMI, E.** Die Band- oder Palisadenstellung der Zellkerne in einem epithelialen Tumor der Haut. *Deutsche Tierärztl. Wochenschr.* 39(7): 97-101. 3 fig. 1931.—A sweat gland adenoma in a dog is described, remarkable in containing the palisade arrangement of cell nuclei, a structure hitherto described only in human tumors of mesenchymal origin, typically in neurinomas. It is now shown to occur in animal tumors of ectodermal origin.—*M. C. Marsh.*

13394. **LEYTON, OTTO, HUBERT M. TURNBULL, and ALLEN B. BRATTON.** Primary cancer of the thymus with pluriglandular disturbance. *Jour. Path. and Bact.* 34(5): 635-660. 4 pl. 1931.—The authors describe 2 cases in which a small-celled medullary carcinoma of the thymus was associated with great hypertrophy of the cortex of the suprarenal bodies, functional hypertrophy of the thyroid gland, infiltration of the medulla of the suprarenal bodies with lymphocytes and plasma cells, and fatty infiltration of the centers of the hepatic lobules. One patient, a boy aged 11, developed within a month fatness of the face, conspicuous hypertrichosis of the face and prominence of the abdomen. The other, a man of 31, developed during less than a year increasing fatness of the neck and trunk, and striae atrophicae upon the abdomen. Both patients on admission to hospital had diabetes mellitus.—*H. M. Turnbull.*

13395. **LIPSCHÜTZ, B.** Ergebnisse cytologischer Untersuchungen an Geschwülsten. XIV. Untersuchungen über das Chondrom und Chondrosarkom der Maus. *Zeitschr. Krebsforsch.* 33(4): 333-347. 1 fig. 1931.—The author reports characteristic changes in the cells of mouse chondroma and chondrosarcoma similar to those previously reported by him in animal and human tumors,—the so-called plastin reaction and the appearance of the characteristically grouped intracellular bodies he terms stegosomes. The tumor studied here is of particular interest, since it represents a sarcomatous evolution of the mouse chondroma originally propagated by transplantation by Ehrlich. The findings appeared with unusual distinctness, and its use is recommended as a test preparation in similar studies.—*H. E. Eggers.*

13396. **MARINESCO, G.** Recherches sur la structure normale et pathologique de la microglie. *Ann. Anat. Path. et Anat. Normale Méd.-Chir.* 7(2): 153-199. 15 fig. 1930.—The results of this work agree with those of Hortega. Microglia occur in all parts of the central nervous system, but are more abundant in the gray than in the white substance. Their form is in close relation with the surrounding structure and varies in the different cortical layers; there is also a variation in amount. In the white substance these cells are more numerous about the blood vessels than among the myelinated fibers. The appearance in different locations is described in detail. Microglia arise from the pia mater and the vascular connective tissue. The cells migrate and change their form as they progress through the nerve tissue. They are mesodermal in origin, and act as macrophages in pathological conditions. Following traumatism, the early appearance of microglia about the focus indicates an emigration from the surrounding normal areas. Recent experiments in poliomyelitis of the monkey indicate that the cells in the sub-pial space, which present all the histochemical and morphological characters of microglia, are without doubt of mesoglial origin. Originality is added to this work by experiments on the dynamics of the morphology of microglia cells. In order to explain the polymorphism consideration is given to the physicochemical factors, as osmotic tension, surface tension and contact electricity. To this end, Ringer's solution of different pH was injected at the level of the fourth ventricle. Modifications of the microglia found in both the alkaline and acid spheres were the same as those found in other conditions. The acid gave increase in the perinuclear protoplasm, with swelling of the processes. Secondary branchings and their spines were lacking. Fol-

lowing injection of alkaline solution (pH 7.70) the lesion was greater, and of different aspect. The cells were more swollen and contained many vacuoles, some presented pseudopods. Treatment with Scharlach demonstrated no fat. To explain this cell swelling, consideration is given not only to the physicochemical factors already mentioned, but also to the digestive ferments found in these cells. Often swelling of the cells and their processes preceded phagocytosis, in which the digestive ferments (especially lipase) of the cells took part. During the globular phase, the microglia contained lipoid droplets made up largely of myelin from degenerated nerve fibers. Protease must also have been present, for some cells contained fragments of axis cylinders as well as red blood corpuscles and bacteria. Change in osmotic tension by injection of distilled water into the cisterna caused, especially in the cerebellum, swelling of the cell processes and reduction in their number. The intensity of the process was variable and included all the different forms of microglia cells. The lesion diminished in severity from the surface downward. Trypan blue was also injected into the cisterna with resulting increase of cytoplasm and swelling of processes. This lesion was somewhat similar to that following repeated injections of acid Ringer's solution (pH 6.10). In all of these injection experiments, alterations were present not only in the microglia, but also in the brain cells.—*A. E. Taft.*

13397. MICHELI, F. Anemia (splenomegalia) emolitica con emoglobinuria-emosiderinuria tipo Marchiafava. [Hemolytic anemia (splenomegalia) with hemoglobinuria-hemosiderinuria, type Marchiafava.] *Haematologica 1. Arch. [Messina]* 12(2): 101-124. 1931.—Author presents the clinical, hematological and histopathological findings of a new form of hemolytic anemia.—*N. A. Michels.*

13398. MIGUNOW, B. I. Primäre spontane Neubildungen bei Versuchstieren. *Centralbl. Allg. Path. u. Path. Anat.* 51(11): 417-420. 4 fig. 1931.—The author describes adenocarcinomas, one of the ileo-cecal region, one of the abdominal skin each in a ♂ guinea pig and an endothelioma in a ♂ rabbit. Tumors in guinea pigs are exceedingly rare, more frequent in rabbits.

13399. MONALDI, TULLIO de SANCTIS. La colorazione sopravitale del sangue di cavie inoculate con B.C.G. e con bacilli tubercolari virulenti. [Supravital staining of the blood of guinea pig inoculated with B.C.G. and virulent tubercle bacilli.] *Haematologica 1. Arch. [Messina]* 12(1): 65-76. 1931.—Author gives a modification of the supravital staining technic of Sabin, Cunningham and Doan. In 250 examinations on 50 guinea pigs the normal leucocytic formula was: neutrophils, 38.99%; eosinophils, 2.80%; basophils, 0.13%; monocytes, 8.80%; lymphocytes, 49.28%. The L/M (lymphocyte-monocyte) ratio showed a normal variation of 5.60. In progressive tuberculosis (mortal), polynucleosis and marked monocytosis were accompanied by a diminution of the L/M ratio. The author claims that with the newer technic monocytes may be detected which show a small central rosette and disseminated vacuoles. Important differences were noted anent the mode of infection. If the tubercle bacilli were introduced subcutaneously, the initial neutrophilia and increase of monocytes were followed by a marked lymphocytosis; if per os, the initial monocytosis was followed by a lymphocytosis. Since modifications in the L/M ratio corresponded to the evolutionary stages of the infection, they are to be regarded as having important prognostic value.—*N. A. Michels.*

13400. MUSTAKALLIO, SAKARI. Über das Basalfibroid oder das typische Nasenrachenfibrom. *Acta Soc. Med. Fennicae "Duodecim" [Suomalaisen Lääkäriseuran Duodecim'in]* 13 [Ser. B.] (3): 1-32. [Art. 7.] 2 pl. 1931.—In 6 cases of basal fibroid or typical naso-pharyngeal fibroma, embryonal mesenchymal cells (principally grouped around the blood vessels, but also independently in streaks and islets) and elastic fibers were found in all, fibroblast giant cells (not hitherto mentioned in literature) in 5, non-striated muscular fasciculi independent of the blood vessels in 3, and hyaline degeneration in 4 cases. Hyaline degeneration seemed to begin in blood vessel walls in the same region as the embryonal mesenchymal cells mentioned. Hence the degeneration of these cells is presumed to play an important part in the disappearance of the tumor, which occurs after puberty.

13401. OERTEL, HORST, HERBERT NYE, and BRIAN THOMLINSON. A further contribution to the knowledge of innervation of human tumours. *Jour. Path. and Bact.* 34(5): 661-666. 10 pl. 1931.—The observations here recorded confirm the conclusions previously expressed, that mature and immature human tumor tissues are innervated, and that this innervation applies to blood vessels and also to the stroma and parenchyma of the growing tumor. This conception is based upon close co-ordination of newly-formed nerve fibers with stroma and parenchyma in which they end and to the cells and nuclei of which they are so intimately attached that a resemblance to normal innervation is definitely noticeable.—*M. J. S.*

13402. ROCHLIN, D. G., und G. A. SEDGINIDSE. Der Einfluss konstitutioneller und Rassen-Besonderheiten auf die Entstehung der sogenannten Pyorrhoea alveolaris. *Zeitschr. Ges. Anat. Abt. 2, Zeitschr. Konstitutionsl.* 16(2): 217-226. 26 fig. 1931.—From studies on 53 patients, the author concludes that pyorrhoea alveolaris is caused by constitutional inferiority of the mesodermal derivatives; signs of premature aging occurred in the bones, also a mesodermal derivative. The condition of the sella in these patients pointed to a certain degree of hyperpituitarism; roentgenological indications of pyorrhea were also found in some acromegalia patients.

13403. SABORIDO, J. Reproducção do lymphosarcoma de camondongos mediante inoculação de orgãos de animaes portadores do tumor. [Reproduction of lymphosarcoma of mice through inoculation of organs of animal carriers of tumor.] *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 281-284. 1 pl. 1931.—Ten series of inoculations of organs of mice, having well developed lymphosarcomas, in the subcutaneous tissue of the axilla, were made on 39 normal mice. These resulted in the development of 4 new tumors, 2 of which were observed in a group of 14 mice having received liver, 1 in a group of 12 mice which received spleen, and 1 in a group of 13 which received kidneys. The new tumors were inoculated into normal mice and proved as easily transplantable as the original lymphosarcoma. Based on these positive results, a suggestion is made on the metastatic nature of some atypical, small, round-shaped cells commonly found in the vicinity of a number of vessels in organs of mice carrying the tumor.

13404. SCHLAEPFER, KARL. Beitrag zur pathologischen Anatomie der Lungen nach Unterbindung der Hauptlungenarterie einer Lunge mit und ohne gleichzeitige Phrenicotomie derselben Seite. *Arch. Klin. Chir.* 164: 240-247. 3 fig. 1931.—Ligation of the primary branch of the pulmonary artery of one lung is followed by chronic stasis in that lung. After several mos. the stasis is somewhat relieved through collateral circulation established between the bronchial artery and pulmonary veins. Ligation of the artery with simultaneous phrenicotomy on the same side increases the stasis appreciably; the stasis is permanent, since collateral circulation is not so effective. As a result, after 2 yrs. there occurs a peribronchial fibrosis, which sometimes invades the atria and even the alveolar walls.—*M. Lederer.*

13405. SCHULTZ, ARTHUR. Zur Frage der Beziehungen zwischen Leukämie und Gicht. Zugleich Mitteilung histologischer Darstellungsmethoden der Harnsäure und der Urate. *Virchow's Arch. Path. Anat. u. Physiol.* 280(2): 519-533. 7 fig. (4 col.) 1931.—A 21 yr. old ♀ at autopsy showed typical gout deposits in the joints; the liver and kidneys showed marked enlargement, and lymphocytic infiltration. The clinical course was that of an aleukemic leukemia combined with gout. In the kidneys typical deposits of Na monourate with granuloma-like proliferations were demonstrable. In the uriniferous tubules were uric acid crystals from which

after destruction of the tubules, Na monourate is formed. The deposits are explainable as due to the destruction of nuclear material. The uric acid was stained with a modified glycogen stain (Best-Fraenkel) and the urates with methylene blue and picric acid.—*A. Schultz (transl. by G. L. Rohdenburg).*

13406. **SCHUSTER, NORAH H. Pulmonary asbestosis in a dog.** *Jour. Path. and Bact.* 34(6): 751-757. 1 pl. 1931.—In the lungs, the histology is typical, but naked asbestos fibers are present instead of asbestos bodies usually found, and the case throws no direct light on the mode of formation of these bodies. Asbestos bodies do not alter the course or nature of the disease. The fibrosis is probably a result of the toxic action of the asbestos and not a mechanical effect.—*N. H. Schuster.*

13407. **SELIGMAN, C. G. Acromegaly among the old Northmen.** *Nature [London]* 128(3223): 221. 1931.—Quotations from the Egil Saga are given, indicating the existence of acromegaly among the Norsemen.

13408. **SHAPIRO, PHILLIP F. Fetal adenoma of the hypophysis and dermoid cyst of the hypothalamus.** *Arch. Path.* 11(1): 22-43. 7 fig. 1931.—The first tumor resembled one of the so-called "pars intermedia tumors," but originated from the midportion of the pars anterior, instead of the pars intermedia. It was composed, not of the specific differentiated pars intermedia cells, but of undifferentiated fetal cells. If man has a pars intermedia comparable with that of lower animals, it is rudimentary, variable, and functionless; there is, as yet, no histologic proof of its presence. The dermoid cyst belonged to the group of inclusion tumors of the hypophyseal area. It was derived from embryonal rests of cranial external ectoderm included during the invagination of the brain vesicles, and was related to Erdheim's tumors derived from rests of oral ectoderm invaginated with Rathke's pouch. It involved the hypothalamus, leaving the hypophysis relatively intact, and yet produced the diabetes insipidus and the diabetes mellitus usually ascribed to hypophyseal lesions. The diencephalon rather than the hypophysis is chiefly responsible for these syndromes.—*Author's summary.*

13409. **SMITH, M. C., E. M. LANTZ, and H. V. SMITH. The cause of mottled enamel, a defect of human teeth.** *Arizona Agric. Exp. Sta., Tech. Bull.* 32. 253-282. 7 fig. 1931.—Evidence from a study of an Arizona community, and from experimental work on rats, leads to the conclusion that mottled enamel, a tooth defect first reported in the United States in 1916 and now recognized as endemic in various communities, is caused by the destructive action of fluorine present in the water supplies of the afflicted communities.—*S. L. Smith (courtesy Exp. Sta. Rec.).*

13410. **SOUDAKOFF, P. Fatty degeneration of the anterior segment of the eyeball (Xanthomatosis Bulbi).** *Nation. Med. Jour. China.* 17: 86. 1931.—Whether xanthomatous accumulations in the sclera are developed locally or as a part of a generalized cholesterol diathesis has not yet been determined. The author concluded that "fatty degeneration of the anterior segment of the eyeball is found exclusively in a recently inflamed amaurotic eye in which metabolic processes were disturbed, and circulation was hampered by increasing tension. Fat could no longer be utilized by the cells, it was liberated and phagocytosed by histiocytes. Fat infiltration of the innermost lamellae of the sclera may be explained by a predisposition of this tissue to accumulation of fat and by a hindered outflow in the sclera on account of a glaucomatous condition of the eyeball."—*F. D. Weidman.*

13411. **STOCKMAYER, W. Über Osteodystrophia fibrosa beim Hunde.** *Arch. Wiss. u. Prakt. Tierheilk.* 62 (6): 602-616. 3 fig. 1931.—The external signs of an hypostatic-porotic form of this disease in a dog were softening and atrophy of the bones without the presence of deformities. Histologically, in all parts of the skeleton the giant cells, lacunar resorption, breaking down of bone structure and new growth of fibrous tissue with newly formed trabeculae—changes typical of osteodystrophia fibrosa—were observed. The lesions were subperiosteal, occasionally endosteal, and more advanced on the head. "Appositional" bony tumors, partly lamellar, partly reticular, of osteoblastic origin were rarely encountered. As a rule metaplastic new bone growth took place directly from connective tissue. Increased resorption causes porosity of the skeletal frame.—*W. Stockmayer (transl. by F. Volkmar).*

13412. **STORTI, E. Anemia sperimentale di Botriocefalo. [Experimental anemia with Bothriocephalus.]** *Haematologica 1. Arch. [Messina]* 12(3): 237-264. 4 fig. 1931.—Dogs which had ingested *Diphyllobothrium ranarum* larvae developed a grave anemia, suffering a 50% loss of body weight. The red cell count dropped to 1 million per cmm., the drop being accompanied by intense hemolysis and diminution in hemoglobin. The most striking alterations occurred in the bone marrow, which showed an intense hyperplasia of the erythroblastic series. The process however did not exhibit the slightest deviation from normal erythropoiesis. The leucoblastic mechanism was not involved. The myeloid metaplasia which occurred in the spleen was largely erythroblastic, relatively few myelocytes being present. While splenic follicles were reduced in size, aggregations of plasma cells were conspicuously massive. Nothing is recorded to substantiate the contention that plasma cells represent aborted erythroblasts. The lymph nodes showed extensive hyperplasia of the histiocytic elements, many of which proliferated by mitosis, others differentiated into macrophages. No myeloid metaplasia occurred in lymph nodes, the few erythroblasts encountered being interpreted as having been carried into the organ by the blood stream. Hemolymph nodes showed no modifications. Except for an intense hyperplasia of the stellate Kupffer cells and small foci of plasma cells, the liver was relatively unaltered. After a critical review of the literature comprising 200 cases of anemia due to *Bothriocephalus*, the author concludes (as does Ferrata) that very rarely is the infection a true pernicious anemia.—*N. A. Michels.*

13413. **TROITZKAJA-ANDREEWA, A. M. Zur Kenntnis der Altersveränderungen der Arterien. (Über die Altersfibrose der Arterienwand.)** *Frankfurter Zeitschr. Path.* 41(1): 120-135. 6 fig. 1931.—Specimens were examined from the ascending aortic arch, the thoracic, and abdominal aortas, the common carotid, and the femoral, branchial, lienal, superior mesenteric, and right and left coronary arteries from 21 subjects: 3 aged 9 days; 2 each aged 5, 10, 23, and 40 yrs.; and 1 each of 16, 20, 24, 27, 42, 53, 56, 62, and 83 yrs.; in the older persons only sections without visible lesions were chosen. A constant thickening and increase in collagen and collagen fibers took place at the expense of the reticular fibers, for the precollagen changed into collagen. In arteries of the elastic type numerous coarse collagen fibers were always present. The collagen and precollagen fibers were arranged circularly in the media, anastomosing with each other through the spaces of the elastica as well as with the collagen fibers of the intima and adventitia. Arteries of muscular type contained little collagen or precollagen; muscle fibers divided into irregular groups. Decrease in muscle was not so distinct in arteries of the elastic type, the total muscle sometimes being greater in advanced age; the arrangement of fibers became irregular. With advancing age collagen and precollagen stained more diffusely and contours became indistinct (hyalinosis). The increase also was diffuse, focal accumulations not being observed, though in the media, usually nearer the adventitia were small areas which apparently corresponded to the vasa vasorum where the collagen fibers were particularly developed. The changes appeared to be uniform in the various arteries. The author concludes that the collagen in the media had no relation to atherosclerotic changes in the intima. Thus, while mechanical influences appear to be basic for arterial fibrosis, there is also a primary change of the physicochemical structure of the interstitial substance that increases with age.

13414. URNER, JOHN A. The intra-uterine changes in the pregnant albino rat (Mus norvegicus) deprived of vitamin E. *Anat. Rec.* 50(2): 175-187. 1931.—Ninety-one Wistar albino rats, reared on a diet low in vitamin E (Burr no. 561), composed of casein (crude) 30.0, sucrose 45.0 salts (McCollum no. 185) 4.5, and lard 20.0, with 0.6 gm. of powdered yeast and 3 drops of cod-liver oil daily, exhibited normal growth, oestrous rhythm, and breeding behavior. Pregnancy was followed by embryonic death and resorption. There was no first-litter fertility. From the 10th to the 16th day of pregnancy, body weight increases at a reduced rate, due to the preponderance of mammary development over embryonic and fetal resorption. After the 16th day, it decreases, associated with mammary involution. Gross examination of pregnant uteri after the 10th day revealed abnormal pregnancy by a softening of the enlargements and a blue discoloration, due to blood in the amniotic cavity. Embryos showed apparently normal development until the 10th day, when there appear a rarefaction of the mesenchyme, failure of the blood-forming tissues, and death of the embryo. Abnormality of the ectoplacenta began by the 10th day of gestation, due to failure of the mesodermal elements. Necrosis began by the 13th day and was complete by the 17th or 18th day. The decidua basalis became necrotic by the 15th day. The uterus returned to almost virginal condition by the 21st day.—*Author (courtesy Wistar Bibl. Serv.)*.

13415. WALICHAN, SONA. Zur pathologischen Anatomie der Endophthalmitis. Über Veränderungen der Suprachorioidea und des Suprachorioidealraumes. *Graefe's Arch. Ophthalmol.* 126(4): 561-591. 6 fig. 1931.—Endophthalmitis [24 eyes studied] could be divided into 2 groups according to the histological changes: cases of typical endophthalmitis with marked exudation into the vitreous, polynuclear cells predominating; and cases with exudation and altered suprachoroidal space,—cases in which the character of the cellular elements and participation of the choroid approximated sympathetic inflammation.—*From author's summary (transl.)*.

ANIMAL PATHOLOGY

FUNCTIONAL

(See also in this issue Entries 12070, 12479, 12576, 12577, 12578, 12580, 12582, 12584, 12586, 12896, 12938, 12939, 12943, 12958, 12965, 13004, 13005, 13010, 13026, 13031, 13043, 13199, 13200, 13217, 13221, 13257, 13297, 13331, 13348, 13361, 13383, 13397, 13402, 13409, 13410, 13414, 13532, 13544, 13617, 13632, 13702)

13416. BARELLI, LUIGI. Sulla temperatura propria dei tessuti neoplastici. [Temperature of neoplastic tissues.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 741-746. 1930.—The temperature of adenocarcinoma of mice (measured by the thermoelectric method) was in most cases lower than that of muscles of the hind leg of the animal. The temperature of chicken sarcoma was in most cases lower than that of uninjured breast muscles. The temperature of the skin in the area over the neoplasm was in most cases lower than the temperature of the uninjured muscles. The temperature of the skin over a malignant neoplasm in man was higher than that of surrounding parts, while the reverse was observed in benign neoplastic processes. The possible diagnostic value of the thermoelectric temperature measurement is mentioned.—*M. Comel.*

13417. BENEKE, RUDOLF. Der Wasserstoss als gewebeformende Kraft im Organismus. *Beitr. Path. Anat. u. Allg. Path.* 79(1): 166-208. 1 fig. 1927.—The author, disciple of the developmental-mechanics of Roux, develops the idea that constant disturbances of the total water content of the tissues (including intracellular as well as that of the blood), are significant for the growth and the maintenance of the normal tissue structures as well as for the development of pathological growths. They present mechanical stimuli active throughout life. To this water impact all tissues react, most strikingly the connective tissue. Thus Beneke explains, for instance, that the sclera of the eye, as a sphere of connective tissue, is influenced by the water enclosed in the vitreous which during each movement of the eye undergoes a definite expansive impulse. The hard bony cavity of the labyrinth responds to the wave impulses of the endolymph which exert their effects against the walls. The normal structure of the vascular system depends on the continually changing volume of the water content of the blood, also on the firmness or the softness of the stroma of the organs, (for example: liver, kidneys, brain), and on the degree of intake of the water impact through the parenchyma cells, etc. These basic principles repeat themselves in the pathological products in varied manner. The author analyzes according to his new viewpoint the pathological histology of many heart diseases (sclerosis of the valves and others, thrombosis and its relation to the heart-myomata), the connective tissue structures of the auricle walls (especially the left), and the heart-aneurisms. Furthermore, he sees in the water-impact of the edematous fluids the reason for the growth of the elephantine fibroses, for the vicarious intervertebral tissue hypertrophies in the spondylositic growths (under a special accentuation of the water increase of the hypertrophic intervertebral discs). The strength and the growth of the dura and its pathological formations in the brain and cord (meningocele, etc.) are influenced by the water impact of the cerebrospinal fluid, as also the development of the hydrocephalus as well as of the glia-walls from the foci of brain softening (cysts). The latter can go on to become blastomata (gliomata) through chronic water impact; the case is similar for traumatic growths in the cord. Here lies the significance of the chronic water impact for the appearance of certain blastomata. The same applies to cysts in other tissues. The atrophy of the wall of the hydrocele, the changes of the peritoneum in chronic ascites, the thickening of the wall of chronic hydropericardium depend directly on the mechanical action of the enclosed water; increase of water through its impact effect plays a part. In these cases the epithelium and the connective tissue of the sac are both equally influenced. It is the same in ovarian cysts. In all these growths there is the possibility of increase of the growth-force through the impacts of their contents; the author thinks that the development of the blastomata can go on to the stage of malignancy (ovarian cysts to carcinomata).—*R. Beneke (transl. by H. J. John)*.

13418. BERNER, OLE. Über kleine, aber tödlich verlaufende traumatische Gehirnblutungen, die sog. "Duretschen Läsionen." Eine rechtsmedizinische Studie. *Virchow's Arch. Path. Anat. u. Physiol.* 277(2): 386-419. 20 fig. 1930.—In 190,000 necropsies Berner has never seen a single case of primary ventricular hemorrhage of the 4th ventricle of spontaneous origin. He has, however, seen a group of cases in which cerebral hemorrhage seems to be the result of injury elsewhere, and in which the bleeding tends to occur in the 4th ventricle and in the neighborhood of the aqueduct. These he believes to be due to waves of increased pressure in the cerebrospinal fluid in persons with exceptionally fragile blood-vessels.

13419. BERTACCINI, GIUSEPPE. Ricerche sull'equilibrio acido-base e la riserva d'alcali nel sangue in alcune dermopatie. [Acid-base equilibrium and the alkali reserve in the blood in certain dermopathies.] *Gior. Ital. Derm. Sifil.* 69(1): 1-17. 1928.—The author reviews briefly the fundamental principles of acid-base equilibrium. Results of studies on 32 patients of skin diseases are then reported, which include the alkali reserve determination by the Van Slyke method and, as a control, the colorimetric determination of serum pH by the

Michaelis method. In accordance with the findings of other authors it was found that the variations of the blood pH are so slight as to be considered within the limits of technical errors. Considerable variations, however, were found in the alkali reserve, which was always below normal in 22 cases of eczema in various stages and forms of the disease (slight or moderate acidosis); somewhat higher but still below normal in 3 cases of psoriasis; and almost normal in 7 other dermatoses. In young patients the alkali reserve figures were lower than in elderly patients. Interesting relations were found between alkali reserve and glycemia and glycosuria. There is a lowering of the alkali reserve with the increasing of glycemia and appearing glycosuria in a diabetic and vice versa, during dietetic treatment. With insulin, there is a rapid fall of the glycemia while the alkali reserve increases, reaching after 3 or 4 days a value higher than the pre-existing, at least for a number of days. Similar, but less conspicuous effects were obtained by the A. with intravenous introduction of $CaCl_2$ and sodium hyposulphite, and the endomuscular injection of milk. The A. proposes to return to this subject with more numerous data and researches extended to collateral problems.—*M. M. Strumia.*

13420. **BRAUCH, FRITZ.** Über den Blutdruck bei Morbus Basedow. *Zeitschr. Klin. Med.* 114(1/2): 79-95. 1930.—The problem of blood pressure variations in Basedow's disease is considered from the viewpoint that cases with equable variations of blood pressure may be combined, without considering somatic symptoms. It is shown that the blood pressure values in Basedow's disease and pronounced thyrotoxicosis are variable, being increased in 13 of 48 cases. These increased values were found in obese types (of 13 cases with increased pressure, 8 were adipose). The development of the lymphatic ring, the tendency to alimentary hyperglycemia and glycosuria, increased sympathicotonus, and markedly increased true adrenalin sensitiveness appear to be without particular relationship to the increased blood pressure. There is described a Basedow's case with outspoken symptom changes, typically controlled by nitro-glycerine. During the course of Basedow's disease observed over a long period, there are variations in blood pressure. —*Author's summary (transl. by E. H. Boyer).*

13421. **CASPARI, W., und F. OTTENSOOSER.** Über den Einfluss der Kost auf das Wachstum von Impfgeschwülsten. III. Mitteilung. Untersuchungen über das Vitamin D. *Zeitschr. Krebsforsch.* 32(1/2): 74-81. 2 fig. 1930.—Mice on an anti-rachitic diet, achieved by adding to their food either small amounts of a commercial preparation of vitamin D (Merck's vigantol), or irradiated ergosterol, showed marked enhancement of growth of inoculated tumors, although vigantol in therapeutic doses showed this effect only in part. This effect is distinct from the growth-stimulating action of vitamin B.—*H. E. Eggers.*

13422. **CASTELLANI, ALDO.** Metadysentery. *Ann. Internal Med.* 2(2): 155-170. 1928.—Some years ago Castellani introduced a new classification of bacterial dysenteries as follows: (1) Bacterial dysentery, sensu stricto (synonyms Shiga dysentery, Shiga-Kruse dysentery), due to dysentery organisms which do not ferment lactose or mannitol and do not clot milk (Shiga-Kruse bacillus). (2) Paradysentery, due to organisms which do not ferment lactose, ferment mannitol (acid only), do not clot milk (Flexner, Hiss-Russell, etc.). (3) Metadysentery, due to organisms, the metadysenteric bacilli, which, as is the case with the true dysentery bacilli, do not produce gas in any sugar, but either ferment lactose (acid only) and clot milk or ferment lactose (acid only) without clotting milk, or clot milk without fermenting lactose. (Organisms of the genus *Dysenteroides* and *Lankoides*.) To make clear this grouping of bacterial dysenteries and dysentery bacilli, it may be said that the classification of the aerobic (facultative anaerobic) asporogenous, non-capsulated, gram-negative intestinal bacilli which do not liquefy gelatine or serum and do not produce pigment, viz., the tribe Ebertheae of Chalmers and Castellani (bacillaceae growing well on ordinary media, not forming endospores; aerobes and often facultative anaerobes; without fluorescence, pigment formation or gelatine liquefaction; without polar-staining, gram-negative, without a capsule), which may be subdivided into 2 subtribes: (a) The organisms do not produce gas in glucose or any other sugar—Subtribe *Eberthoanaerogeneae.* (b) The organisms produce gas in glucose and usually in other sugars—*Eberthoaerogeneae.* The 1st subtribe contains 6 genera: *Alkaligenes* Castellani and Chalmers, *Vibriothrix. Eberthus* Castellani and Chalmers, *Shigella* Castellani and Chalmers, *Lankoides* Castellani and Chalmers, *Dysenteroides* Castellani and Chalmers. The 2nd subtribe contains 5 genera: *Salmonella* Lignières, *Wesenbergus* Castellani and Chalmers, *Enteroides* Castellani and Chalmers, *Balkanella* Castellani and Chalmers, *Escherichia* Castellani and Chalmers. These 11 genera can be easily differentiated by using 3 media: milk, lactose, and glucose. Castellani discusses differentiation and gives a key for identification of the various organisms.

13423. **DOGLIOTTI, A. MARIO, e MARIO MAIRANO.** Sul meccanismo d'azione e sulle vie di eliminazione del cloruro di sodio nel trattamento dell'occlusione intestinale alta con soluzioni ipertoniche. [The mechanism of action and the avenues of elimination of NaCl in the treatment of high intestinal occlusion with hypertonic solutions.] *Ann. Ital. Chir.* 9(4): 295-312. 1930.—Experiments on high intestinal obstruction in 4 dogs showed that more than ½ the NaCl introduced either hypodermically or intravenously was eliminated in the vomit. Comparison of the H_2O and NaCl content of the organs of a normal dog, a dog in which high occlusion had been produced without treatment and a dog occluded with treatment showed decrease of H_2O in all the organs except the stomach (in which there was an increase) of the dog occluded without treatment; decrease of H_2O, but less marked, in all the organs of the occluded treated dog except the liver, pancreas and stomach (which showed increase of H_2O over normal); decrease of NaCl in all organs of the occluded untreated dog; decrease, generally less, in all the organs of the treated occluded dog except the liver, pancreas and stomach, which showed increase of NaCl over normal. The authors conclude that the gastric mucosa, the liver and the pancreas are the organs chiefly concerned in the detoxication of the organism, that the NaCl stimulates the cellular function of these organisms, and that the H_2O is the vehicle of elimination of the substances elaborated.

13424. **FIGURELLI, GIUSEPPPE.** Ipocloruremia e terapia clorurosodica nelle occlusioni intestinali acute, alte (duodenali). (Ulteriori ricerche sperimentali e studio sintetico.) [Deficiency of blood chlorides and sodium chloride therapy in acute high intestinal (duodenal) obstruction.] *Ann. Ital. Chir.* 9(9): 878-891. 1930.—Of 11 dogs, in 6 high intestinal obstruction was produced by complete occlusion with gauze ligatures; in 5 the intestines were cut and the stumps ligated. In 3 of each group NaCl treatment was given. The deficiency of blood chlorids was less in the cases of obstruction by ligation alone than in those in which the intestine was cut; the benefits of NaCl treatment were likewise less in the former than in the latter groups.

13425. **GIORGIO, A. M. di.** Il contegno di alcuni costituenti minerali del sangue durante lo shock spinale. [Behavior of some mineral constituents of blood during spinal shock.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 798-800. 1930.—Immediately following transverse section of the spinal cord of dogs (during the stage in which the shock is marked) the Ca content of serum showed a noticeable diminution, whereas the P content did not vary noticeably. A marked diminution of the Ca/P ratio followed. The Ca and Ca/P values reverted to normal after 9 to 12 days.—*M. Comel.*

13426. **HAMMER, H.** Zur experimentellen Hämatoporphyrose der Knochen. *Virchow's Arch. Path. Anat. u. Physiol.* 277(1): 159-173. 5 fig. 1930.—These studies fail to sustain Königsdörfer's assertion that the teeth

and skeleton cannot be colored by experimentally introduced artificial hematoporphyrin. While the attempt was unsuccessful when made on adult animals, repeated injection of artificial hematoporphyrin from cattle blood into animals a few days old (3 rabbits, 2 guinea-pigs, 10 rats and 1 puppy) produced deep coloration of bones and teeth. This effect (unlike that from uroporphyrin reported by other authors) was only gradually produced; the tolerance of the subjects for hematoporphyrin seemed to be lower than that reported by others for uroporphyrin. The deposits of porphyrin disappeared from the teeth of 2 guinea-pigs on suspension of the injections for several weeks. Fränkel's opinion that the disappearance is due to a covering of the colored dentine by fresh uncolored dentine is untenable, since new dentine layers are formed, not on the tooth surface, but on the pulp. In the case of an animal killed 3½ mos. after cessation of injections, no trace of hematoporphyrin pigment could be found in the bones or the teeth.

13427. **HOUSSAY, B. A., y A. BIASOTTI. La diabetes pancreática de los perros hipofisoprivos. [Pancreatic diabetes in hypophysectomised dogs.]** *Rev. Soc. Argentina Biol.* 6(4): 251-296. 1930.—Hypophysectomy previous to or after pancreatectomy diminishes the intensity of the diabetes observed (9 experiments in which no infection occurred and 5 experiments in which infection did occur). Survival is considerably prolonged and may be as long as 6 mos., without injection of insulin. There is a gradual loss of weight, but at times important increases are observed. The blood sugar is usually between 0.13 and 0.323 gm. %, nearly always below 0.3%. In 7 dogs hypoglycemia convulsions were observed; sometimes they were fatal, at others the injection of glucose permitted recovery. Glycosuria was never very marked, on an average 0.059 to 0.89 gm. per Kgm. per day, except in 2 cases in which it was 1.3 and 3.23 gm.; fasting diminishes it considerably or even suppresses it. Ingestion of sugar increases the severity of diabetes but only from 30 to 70% of the amount given is eliminated. The D: N ratio is low, 0.70 to 1.86. The basal caloric output was below the normal in 2 cases and slightly above in 1. Lesions of the tuber cinereum do not modify the course of pancreatic diabetes. In dogs with pituitary and pancreas removed degenerative lesions of the parathyroids were observed. All operations were controlled by post-mortem examination, those on the pituitary and mid-brain by histological sections.—*J. T. Lewis.*

13428. **HOUSSAY, B. A., y A. BIASOTTI. La diabetes floridcínica de los perros hipofisoprivos. [Phlorhizin diabetes in hypophysectomised dogs.]** *Rev. Soc. Argentina Biol.* 6(5/6): 326-340. 1930.—Hypophysectomised dogs were intoxicated with phlorhizin 22 to 65 days following operation. In 3 to 9 days of intoxication 6 out of 8 died. Only 1 out of 6 controls and 1 out of 5 with lesion of the tuber cinereum had toxic symptoms and died. Hypophysectomised dogs lose less weight than the two other groups, they have no polyuria, which was marked in controls, blood sugar fell below 0.07% while only 1 control had a blood sugar as low as this figure. Injection of glucose did not produce complete recovery from toxic symptoms. Glycosuria is less marked, only ⅓ of the amount eliminated per Kgm. per day by controls. Less N is eliminated by the operated dogs and the D: N ratio is lower. Animals with lesions of tuber cinereum intoxicated with phlorhizin show no difference from normal controls.—*J. T. Lewis.*

13429. **INAWASHIRO, ROKURO. Studien über den Gasstoffwechsel bei Beriberi bzw. B-Avitaminose. III. Mitteilung. Spezifisch-dynamische Wirkung des Kohlehydrats bei Beriberi (einschliesslich der Veränderung des RQ und Blutzuckers nach Kohlehydratzufuhr bei Beriberi).** *Tohoku Jour. Exp. Med.* 12(5/6): 555-570. 1929.—In beri-beri the specific dynamic effect of carbohydrates is decreased. The R.Q. increased only slightly after glucose administration. The rise of blood sugar level was insignificant though the hyperglycemia was of long duration. The disturbance of carbohydrate metabolism is attributed to deficiency in vitamin B.—*Author's conclusions (transl. by K. E. Mason).*

13430. **JOHNSTON, CHRISTOPHER. The relationship of blood uric acid content to the state of renal function in nephritis.** *Jour. Clin. Investigation* 9(4): 555-559. 1931.—The concentration of uric acid in the blood of 30 patients with renal disease has been compared with the standard blood urea clearance determined simultaneously. The determination of blood uric acid as an indicator of renal function appears to be of little value. Normal blood uric acid may occur despite 80% loss of urea excreting power. When rise of blood uric acid does occur there is, except in some terminal cases, little correlation between the extent of rise in blood uric acid and the extent of fall in renal function.—*Author's summary and conclusions.*

13431. **LORETO, C. Sul contenuto in calcio dei segmenti ossei sede di frattura sperimentale. (Nota preventiva.) [Ca content of segments of bone containing experimental fractures.]** *Ann. Ital. Chir.* 9(12): 1283-1289. 1930.—In the fractured radii of rabbits [number not stated] the Ca content at various times after the fracture was always above the Ca content of the normal radii. This Loreto attributes not only to the Ca salts set free locally by the necrosis of the bone fragments, but also to a deposit of Ca by the blood stream.—*Author's summary (transl.).*

13432. **MACCHIARULO, O. Varianti glicemiche del periodo mestruale in donne normali, diabetiche e con affezioni morbose diverse interessanti l'apparato genitale, fegato e rene. [Blood sugar variations of the menstrual period in normal and diabetic women and women with various affections of the genital organs, liver and kidneys.]** *Rass. Ostetr. e Ginecol.* 39(4): 195-216. 1930.—In 20 normal women the average intermenstrual blood sugar was 0.092%; premenstrual, 0.105%; menstrual, 0.120%; normal on the 3rd day post menstruum. In cases of salpingo-oöphoritis the intermenstrual figures were normal, the menstrual supernormal. In women with constitutional ovarian hypofunction the intermenstrual blood sugar was low, with slight and irregular increase during the menses. In 3 cases of ovarian cyst the intermenstrual blood sugar value was low (0.08%) and not above 0.11% during the menses, with a rapid postmenstrual fall to an average of 0.075% by the 7th day. In 4 cases of uterine fibroma with metrorrhagia the premenstrual, menstrual and postmenstrual blood sugar figures were respectively 0.109%, 0.160% and 0.140%. In 6 cases of uterine fibroma with menorrhagia these figures were respectively 0.102%, 0.153%, and 0.120%. In 3 cases of hepatitis the blood sugar curve was irregular, with slight menstrual rise. In diabetic patients the blood sugar rose from a premenstrual 0.32% to 0.46% during the menses; but under insulin and dietetic treatment the figures fell to 0.18% and 0.21% respectively.

13433. **MATSUMOTO, Y. Über den gebundenen Zucker im Blute bei Hautkrankheiten.** [In Japanese.] *Japanese Jour. Dermatol. & Urol.* 30(11): 1105-1112. [German summary, 115-117.] 1930.—The bound blood sugar was entirely normal in all cases examined of urticaria, psoriasis, pityriasis rubra pilaris, prurigo, acne rosacea and alopecia areata and in single cases of other diseases. In purpura and erythema it was generally higher, and very high in syphilis, sarcomatosis cutis, in purulent dermatoses and in children.—*From author's summary (transl.).*

13434. **MIYAKE, ISAM, und KENSHIŌ NARAHARA. Zuckerstoffwechsel und ezematöse Hautveränderung. II. Hautzucker und eczematöse Hautveränderung.** [In Japanese.] *Japanese Jour. Dermatol. & Urol.* 30(8): 809-824. [German summary, p. 86.] 1930.—In a previous communication it had been shown that eczematous skin manifestations are the result of inadequate sugar metabolism. In the present paper the skin sugar and blood sugar curves are followed through a sugar dosage during and after an artificially induced dermatitis. The results indicate that under normal conditions the skin

is capable of storing sugar from the blood; this capacity is disturbed in the skin of dermatitis, though healthy skin from subjects with dermatitis functions like the skin from healthy subjects. Sugar intolerance frequently follows the production of artificial dermatitis, but stands in no direct relation to the cutaneous manifestations. The latter frequently cause disturbances of liver function, which is highly significant with relation to sugar intolerance. [See MATSUNOBU, T. Hautkrankheiten resp. eczematöse Hautveränderung und Leberfunktion (Zuckerstoffwechsel und eczematöse Hautveränderung, III.). *Japanese Jour. Dermatol. and Urol.* 30(8): 825-838. 1930.]

13435. OHTA, KOHSHI, und TOMOTAKE IZUMITA. Zur Kenntnis der Funktionsanomalie des Verdauungskanals bei der Säuglings-Beriberi. I. Über die Form und die motorische Funktion des Magens bei der Säuglings-Beriberi. II: Über die Sekretionsanomalie des Magens bei der Säuglings-Beriberi. *Jahrb. Kinderheilk.* 128 (1/2): 10-39; (3/4): 161-198. 1930.—I. This portion of the study is based on about 158 observations on 40 infants affected with beriberi. X-ray study of 32 cases showed no difference between the form of the stomach and the peristalsis in healthy infants and those affected with beriberi. The milk of women with beriberi, however, was found to remain in the stomach about 2 hrs. longer than cow's milk, which in turn was evacuated more slowly than the milk of healthy women. The relation of the vegetative nerves to the motor function of the stomach in infantile beriberi was studied by administration of small doses of pilocarpine, which generally hastened gastric evacuation, atropine, which delayed it, and epinephrine, which had no uniform effect. II. Observations on 48 cases of infantile beriberi showed 4 types of acidity: Type 1, which comprised the majority of cases, subacidity or achlorhydria; Type 2, comprising about ¼ of the total, normal acidity, soon becoming transformed into subacidity; Type 3, rarely encountered, hyperacidity passing through daily variations into subacidity and Type 4, occurring in a few cases, normal acidity throughout. Vomiting, loss of appetite, and type of disease showed no connection with the form of acidity. [Paper III in this series, "The motor function of the intestinal canal in infantile beriberi," is published in issue 3/4 of this volume of Jahrb. Kinderheilk. under authorship of IZUMITA alone.]

13436. PACCHIONI, DANTE. Il ricambio normale e patalogico dei nucleoproteidi nelle diverse età. Il braditrofismo nell'adulto e nel bambino. [Normal and pathologic metabolism of nucleoproteins at different ages. Bradytrophism in adults and children.] *Riv. Clin. Ped.* 26(4): 249-287. 1928.—The fetus synthesizes nucleoproteins which are necessary for the formation of new nuclei and for repair of used up parts of nuclei. The kidneys of the fetus participate in the excretion of uric acid. The congenital uric acid infarcts of the kidneys and those in the new-born are the result of the accumulation in the kidney of uric acid during intra-uterine life and of its abundance in the blood and interstitial fluids. The nursing infant also builds up nucleoproteins synthetically. It is probable that the cytoplasm accomplishes only a partial and preparatory synthesis which the nuclei complete. It seems that uric acid is formed in the nuclei from the nucleoproteins and in the cytoplasm from the purine compounds (purines, nucleosides, nucleotides) which did not enter the nuclei. It is also probable that uric acid originating in the nuclei is more soluble and less stable than that formed in the cytoplasm. The nursing infant eliminates more uric acid than the adult because it produces more and urinates more. In a child which consumes purine food the purine-bodies are mostly utilized by the nuclei for the synthesis of nucleoproteins, the nuclear metabolism being very active. For that reason the child produces an excess of more soluble uric acid which is easily eliminated through the kidneys without marked loss of water. Therefore the state of hyperuric-acidemia can hardly occur in infancy. On the contrary the adult produces less of the nuclear uric acid and more of the less soluble cytoplasmic uric acid. This occurs in a marked degree in gouty bradytrophics. Gout results from an insufficient metabolic activity of the nuclei due to a deficiency of the part of the autonomous endocrine system which controls the catabolic processes, i.e., the excito-catabolic sympathetic endocrine part as compared with the parasympathetic endocrine part which controls the anabolic processes. This anomaly of the harmonic balance is transmitted to descendants and reveals itself in the activity of the neuro-endocrine system; there the metabolism of the nucleoproteins is not so prominent as the fat metabolism. The lowering of the fat metabolism is responsible for the exudative diathesis in infants and for ketosis in childhood. At puberty with the activation of the endocrine function of the genital organs, increased activity of the thyroid gland, and a parallel decrease of the function of the thymus and tonsils there begins to develop a sufficient equilibrium between the two sections of the autonomous endocrine system, which lasts until early middle age. At ages between 40-50 when the action of the excito-catabolic sex glands and of the thyroid decreases, the nuclear changes are again slowing down. This results in hyperuric-acidemia and gout.—*Author's summary (transl. by I. Davidsohn).*

13437. ROBINSON, R. H. O. B. Diagnostic value of the estimation of blood cholesterol in cholelithiasis. *Lancet* 217(5533): 540-543. 1929.—A modification in the technic for estimating the amount of cholesterol in the blood is described. The normal range of value is shown to be greater than is usually realised. Although the average value is raised in subjects suffering from cholelithiasis, estimation on an individual case is useless as a means of diagnosis. The whole blood cholesterol is very markedly raised in the severer degrees of obstructive jaundice, the rise disappearing when the jaundice is relieved by biliary drainage. Ether anesthesia tends to produce a fall in the blood cholesterol, but this can be responsible for only a small part of the fall after biliary drainage. The blood cholesterol tends to maintain a constant level in any normal human subject.—*Author's summary.*

13438. ROGOZIŃSKI, F., et M. STARZEWSKA. Sur le rachitisme expérimental. I. L'influence des rayons ultraviolets sur le métabolisme minéral et sur la composition des os. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II)* [*Zool.*] 1930(3/4): 157-178. 1 pl. 1930.—Two groups of white rats, 4 litter mates each, aged 6 and 5 weeks respectively, were placed on diets designed to induce rickets, the 1st group on McCollum diet no. 3143, the 2nd on a diet lower in P, with wheat and maize flour in place of wheat and maize. The 1st group were exposed to ordinary room daylight. The 2nd group were kept in the dark except for 1 control. After a preliminary period 1 animal in each group was placed in a special metabolism cage for the determination of Ca, Mg, and P intake, excretion in urine and stool, and balance. X-ray examinations of 2 rats in Group I and 1 in Group II were made. After a period of 3-4 weeks on this regimen, the animals were irradiated twice a day for 10 min. with a mercury vapor lamp. At the conclusion of the experiment the femurs were analysed for dry weight, weight of ash, and Ca and P content. The authors conclude that the balance of Ca and P is always positive in young rats during growth, even when kept on a diet exceedingly poor in P. Ultraviolet irradiation increased the retention of Ca and P by improving absorption. For example the % of ingested P found in the stools fell from 80% in a non-irradiated rat to 28% after irradiation. The weight of the ash in the bones of rachitic animals is increased by irradiation and may equal normal. A remarkable constancy in the % of Ca in the ash of bones from rachitic and normal rats was found. The proportion of P was more variable.—*J. B. Youmans.*

13439. SCARPELLO, A. La riserva alcalina nelle colecistiti. (Ricerche cliniche e sperimentali.) [Alkaline reserve in cholecystitis.] *Ann. Ital. Chir.* 9(8): 780-794.

1930.—On the basis of 13 chemical observations and 7 experiments on dogs, Scarpello concludes that the alkaline reserve is lowered (but almost always compensated) in most cases of acidosis, the degree of acidosis being in direct proportion to the degree, the diffusion and the duration of the infective process of the cholecystitis. The condition is presumably due to a functional change in the liver cell.

13440. **SCHULTZ-BRAUNS, O. Die tödlichen Vergiftungen durch gasförmige Stickoxyde (Nitrose-Gase) beim Arbeiten mit Salpetersäure. (Zugleich ein Beitrag zur Kenntnis der Zenkerschen Degeneration des Herzens sowie der Bronchitis et Bronchiolitis obliterans und der miliaren karnifizierenden Pneumonie.) [Fatal poisoning by the gaseous oxids of nitrogen during work with nitric acid, with discussion of Zenker's degeneration of the heart, bronchitis and bronchiolitis obliterans, etc.]** *Virchow's Arch. Path. Anat. u. Physiol.* 277(1): 174-220. 10 fig. 1930.—Discussion of the chemistry and pathology of the process, with review of cases reported.

13441. **STRIECK, FR., und H. E. CH. WILSON. Untersuchungen über den Stoffwechsel in der Inkubationszeit bei febrilen Infektionen und bei afebrilen Infekten.** *Deutsches Arch. Klin. Med.* 157(3/4): 173-185. 3 fig. 1927.—The authors made metabolism studies of the afebrile incubation period in 3 cases of artificial malaria infection. They conclude that there is a rise in total or protein metabolism in the afebrile prodromal period, apparently produced by a stimulus to specific central nervous centers. A similar rise in metabolism was observed also in 2 cases of afebrile infections of different cause.

13442. **TAKIGAWA, K. Studien über Vitiligo vulgaris. I.** [In Japanese.] *Japanese Jour. Dermatol. & Urol.* 30(10): 1001-1045. [German summary, 105-107.] 1930.—Observations on 706 clinic patients and 52 patients closely studied show a fairly even distribution of cases between the sexes; low percentages in youth, maximum between the 21st and 25th years, gradual fall thereafter, with a distinct rise in ♀♀ at the time of the climacteric. In 42 cases in which the functional state of the vegetative nervous system was pharmacodynamically investigated, abnormal excitability was found. In 19 out of 52 cases in which the blood and cerebrospinal fluid were studied, an antisyphilitic treatment was instituted. In the majority of 71 cases in which blood and urinary sugar were determined, a disturbed sugar metabolism was found. In 6 out of 25 cases x-ray by Takagi's method showed a shallow pituitary fossa. Blood glutathione, studied in 23 patients, was in general somewhat lowered. Adrenaloid substance, determined in 21 patients by Chikano's method, was usually somewhat above normal. Tyrosin in the blood in 20 cases studied by Haas' method was generally within normal limits. Blood phenolase in 23 cases studied was more or less subnormal. The blood picture in 37 patients showed no important changes except a relative increase in leukocytes in 70.3% of the cases, and a slight eosinophilia in 21.7%. In 14 patients out of 17 the sedimentation rate of the erythrocytes (by Westergren's method) was hastened. The blood type of 75.7% of 37 patients was A. The congo red test of the functioning of the reticulo-endothelial system was generally negative in 16 cases. Takigawa concludes that vitiligo vulgaris has no connection whatever with syphilis, but must bear some relation to the functioning of the endocrine organs or the vegetative nervous system.—From *author's summary (transl.)*.

ANIMAL PATHOLOGY

INFECTIOUS AND OTHER DISEASES OF LOWER ANIMALS

F. S. JONES, *Editor*

R. W. GLASER, *Associate Editor*

(See also in this issue the subsection "Lower Animals" in the sections Immunology and Filterable Viruses; and Entries 12165, 13393, 13398, 13403, 13529, 13635, 13646, 13648, 13661, 13673, 13688, 13691, 13695, 13698, 13722, 13748, 13805, 13818, 13943, 13958, 14059, 14424, 14435, 14469, 14927)

13443. **BABONI, NINO. Anabortina e reazioni allergiche nella diagnosi dell'aborto infettivo dei bovini. [Anabortin and allergic reaction in diagnosis of bovine infectious abortion.]** *Profilassi Sieri e Vaccini Patol. Comp.* 3(1): 2-5. 1930.—A review of the literature is given. The author's work was done with anabortin, a suspension of Bang bacillus grown in glycerinated broth with addition of 5% formalin. The intradermal reaction, the 1st series done at the base of the neck and the 2nd on the subcaudal skin, was shown to be of diagnostic value and far superior to either the thermal or ophthalmic reactions. A large number of cows was tested.—*H. L. Gruehl.*

13444. **BERGMANN, MAX, WILLI HAUSAM, und ERICA LIEBSCHER. Dermatophyten als Erreger von Lederschäden. (10 Mitteilung über Häute- u. Lederschäden von M. BERGMANN und Mitarbeitern.)** *Collegium [Frankfurt a. M.]* 1931(733): 248-254. 3 pl. 1931.—Skin diseases produced by pathogenic fungi were demonstrated as the cause of imperfect leather. The authors describe defects 1-3 cm. in diam. in chrome leather; living fungi were demonstrated therein, *Trichophyton* being the apparent organism.—*M. Bergmann (transl. by S. W. Becker)*.

13445. **BIESTER, H. E., and L. H. SCHWARTE. Intestinal adenoma in swine.** *Amer. Jour. Path.* 7(2): 175-186. 3 pl. 1931.—In the studies of the pathology of infectious enteritis in swine, with reference to intestinal adenoma, several facts were recorded. In pigs killed after the acute disease had subsided, it was noted that in the glands of the large intestine the goblet cells had been replaced by a lower type of epithelium; other material indicated that repair had come about by proliferation of flattened elongated epithelial cells with large nuclei. In advanced cases where epithelial destruction had occurred, an adenoma-like formation containing less differentiated types of epithelium, was found.

13446. **BRUHNKE, JOHANNES. Morphologische Untersuchungen des Wandhornes und der Wandlederhaut einiger pathologischer Hufe.** *Deutsch. Tierärztl. Wochenschr.* 39(28): 433-438. 4 fig. 1931.—The investigation covered contracted hoofs, keraphyllocele and laminitis. In order to get a conception of the morphology, microserial sections were made from the wall of the hoof and its sensitive laminae in its entire length from the coronary border to the bearing surface of the toe. The findings of the various sections were compared and described separately for each of the 3 defects named.—*J. Bruhnke (transl. by F. Volkmar)*.

13447. **COMINOTTI, LUIGI. Ausscheidung des B. abortus (Bang) durch das Euter bei Kühen nach Impfung mit lebenden Kulturen desselben Bakteriums.** *Deutsche Tierärztl. Wochenschr.* 39(30): 465-466. 1931.—50-66.5% of heifers double-vaccinated with living cultures of *Bacillus abortus* excreted virulent abortion bacteria in the milk as long as 15-24 mo. after administration. The organisms maintained their biological characteristics which were acquired under artificial cultivation. Guinea pigs injected subcutaneously with such organisms developed agglutinins slowly (34-44 days after administration).—*Author's summary (transl. by F. Volkmar)*.

13448. **ELTON, CHARLES. The study of epidemic diseases among wild animals.** *Jour. Hyg.* 31(4): 435-

456. 1931.—To a summary of available published records of epidemics among wild animals, are appended unpublished records from various sources. Consideration of periodicity in numbers of mice and epidemics among them indicates that study of ecology is needed to solve problems of mammal epidemiology and human disease.

13449. **EMMEL, M. W., and I. FOREST HUDDLESTON. Susceptibility of the fowl to the species of the genus Brucella.** *Proc. 21st Ann. Meet. Poultry Sci. Assoc.* 1929. [In: *Bull. Alabama Polytech. Inst.* 25 (1): 76-77. 1930.]—A series of experiments are reported in which it is demonstrated that organisms of the *Brucella* group are pathogenic for fowls, but the disease produced is not always fatal; the course is 18-96 days. Symptoms are emaciation, and paleness about the head, comb and wattles; diarrhea and paralysis may develop in some cases. Diagnosis on gross pathology is difficult. 4 flocks are described in which natural infection occurred. Decreased egg yield seems to be an important economic factor where infection of this type occurs.—*M. W. Emmel.*

13450. **FELDMAN, WILLIAM H. Susceptibility of the gopher (Citellus tridecemlineatus) to Mycobacterium tuberculosis.** *Amer. Jour. Path.* 7 (2): 139-146. 2 pl. 1931.—Gophers were inoculated with original strains of human, bovine and avian tubercle bacilli, 2 animals being injected intravenously, 2 subcutaneously, and 1 intraperitoneally, with each type. 2 of the 15 animals injected escaped after 2 weeks, and 1 died 3 hrs. after injection. Definite lesions of tuberculosis were observed with each of the 3 forms, degree or extent of infection varying with route of inoculation. The animals were more susceptible to the bovine and human strains than to the avian form.

13451. **FELDMAN, WILLIAM H. The pathological changes following experimental exposure of dogs to Mycobacterium tuberculosis of avian origin.** *Amer. Jour. Path.* 7 (2): 147-156. 2 pl. 1931.—In 6 dogs, bacilli of avian tuberculosis were injected into the brain; later, tuberculous lesions were found in the brain and liver in every instance. In only 1 animal was the spleen involved; and in all, the lungs escaped demonstrable infection. In 4 of 10 dogs intravenously injected, in which the disease resulted, the lesions (mainly nonprogressive) were sharply limited to the liver. No explanation is known for the consistent and extensive infection of the liver in the intracerebrally inoculated animals, as compared to the infrequency of lesions in the liver of dogs inoculated intravenously. Likewise, failure of the disease to become manifest in the lungs is difficult to explain and emphasizes the significance of the susceptibility of organs in the pathogenesis of tuberculosis. The lesions induced were essentially circumscribed or diffuse accumulations of monocytic cells, generally progressive; necrosis was not common. The apparent absence of giant cells would indicate that these structures are not a part of the histological response of dogs toward tuberculous infections. Although the dog's brain offers a vulnerable portal of entry for tuberculosis, the dog apparently possesses an extremely formidable constitutional resistance to this form of the disease.—*From author's summary.*

13452. **FINKELDEY, W. Spontantuberkulose beim Affen. [Spontaneous tuberculosis in a hamadryad monkey.]** *Virchow's Arch. Path. Anat. u. Physiol.* 281 (2): 316-322. 2 fig. 1931.

13453. **[GOLOV, D. A., and A. N. KNIAZEVSKII.]** ГОЛОВ, Д. А., и А. Н. КНЯЗЕВСКИЙ. К вопросу о роли эктопаразитов пустого гнезда суслика Citellus pygmaeus в эпидемиологии чумы. **[Role of ectoparasites of the empty nest of C. pygmaeus in epidemiology of plague.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9 (1): 62-67; French résumé, 130-132. 1930.—*Cer[atophyllus?] tsq., Ct[enopsylla?] breviatus, Neopsylla setosa,* and *Rhipicephalus schulzei* O. were found on 15 marmots caught during a plague epidemic of marmots in 1929, in Kazakstan. Anatomical studies of killed marmots showed that they were not infected, but suspensions of ground fleas found on them, when injected into a house mouse, produced the disease and death on the 4th day. *Bacillus pestis* was isolated from the organs of the mouse. Fleas infected with *B. pestis* were also found in empty nests of marmots dead from plague; evidently they serve as the means of spreading the disease among the migrating young marmots. These results were not obtained with suspensions of *R. schulzei.*—*G. A. Lebedeff.*

13454. **HAYDEN, C. E. The constituents of the blood of animals as evidence of intestinal contribution to the cause of diseases of obscure origin.** *Cornell Vet.* 20 (2): 223-231. 1930.—The constituents of the blood in 1 case of preparturient paresis in a ewe, in 6 stiff lamb cases and 3 normal lambs, in 1 case of icterohematuria in a sheep and in 1 case of azoturia in a horse, together with blood from 5 normal horses for comparison, were studied. Preparturient paresis gave a high total non-protein and urea reading, together with a Ca reading 2 mg. below minimum normal standard. The stiff lamb cases gave a very high total non-protein and urea N reading, and a chloride content slightly below average. There was the same increase in total non-protein and urea N in the icterohematuria case. Other constituents of the blood in preparturient paresis and in stiff lambs would seem to indicate that increase in N is non-renal in origin, whereas the evidence in icterohematuria points toward possible renal and liver disturbance. The case of azoturia showed a higher reading for lactic acid, amino-acid and free phenols at onset, than was indicated during recovery. The author concludes that the level of some of the blood constituents would seem to indicate an etiology due to intestinal contribution in preparturient paresis, stiff lambs, azoturia, and possibly in icterohematuria.—*Lucille Bishop.*

13455. **HORTA, A. AVILA, et A. MENDONÇA MACHADO. Tuberculose du type bovin chez les porcs.** *Arq. Inst. Bact. Camara Pestana* 6 (2): LXXIII-LXXXVIII. 1 fig. 1930.—The authors identified a case of generalized tuberculosis in a pig by inoculation into rabbits, pigeons and guinea pigs. The bacillus isolated was of bovine type. Statistics from the Lisbon Municipal Slaughter-House indicate that incidence of swine tuberculosis was greatest during 1909 (0.332%), its incidence declined with 1926 (0.069%), and since then it has increased slightly. It is noted that the majority of infected pigs was from the northern country where milk products are fed; pigs in southern Spain are bred in the fields.—*A. A. Horta.*

13456. **LEBAILLY, C., et M. BRIENS. Septicémie épidémique à pneumocoques chez les bovins adultes.** *Rev. Vét. et Jour. Méd. Vét. et Zootech.* 83 (Oct.): 543-545. 1931.—A contagious pneumococcus septicemia occurred in 1930 at St. Pierre-la-Vieille. It was extremely deadly, attacking young cattle on pasture. Death occurred within 24 hrs., preceded by intestinal and nasal hemorrhages. A vaccine made of a titrated microbial emulsion stopped the epidemic.—*Authors' summary (transl.).*

13457. **MONTGOMERIE, R. F., and W. T. ROWLANDS. "Pulpy kidney disease" of young lambs in North Wales.** *Vet. Jour.* [*London*] 87 (9): 401-410. 1931.—The condition is believed to be identical with the pulpy kidney disease described by Gill in New Zealand. Field observations indicate that injection of lamb dysentery serum has markedly reduced losses from this disease. In 5 of 11 cases, diluted, filtered, intestinal contents were toxic to rabbits and mice. In one trial no toxicity was shown for a lamb. Antitoxic sera prepared from *Clostridium oedematis, Cl. welchi* and *Cl. novyi* failed to neutralize intestinal filtrate, but exposure to 60° C. for 1 hr. rendered it atoxic.—*I. E. Newsom.*

13458. **OLT, A., und A. STRÖSE. Wildseuchenbekämpfung. Gemeinfässliche Belehrung über die wichtigsten seuchenartigen Krankheiten unseres Wildes. [Control of epidemics among game animals. Most important**

epidemic diseases of game animals in Germany.] 2nd ed. 54p. I. Neumann: Neudamm, 1928.

13459. **PARISH, H. J., and S. CRADDOCK. A ringworm epizootic in mice.** *British Jour. Exp. Path.* 12 (4): 209-212. 1931.—An epizootic is described in which nearly 50% of a breeding stock of 2500 mice were infected with *Trichophyton gypseum asteroides*. The disease spread to 4 laboratory attendants. Epizootics of ringworm in mice are rare, and it is suggested that some unusual predisposing factor may have determined the virulence of this attack.—*J. Bland.*

13460. **RICHTER, JOHANNES. Zur Pathologie des Uterus der Hündin.** *Berliner Tierärztl. Wochenschr.* 46 (40): 721-730. 17 fig. 1930.—The author found 24 cases of endometritis and 40 cases of pyometra among 64 dogs with uterus disease; colon bacillus was the common cause. Clinically, one can differentiate between chronic endometritis and pyometra; histologically it is impossible unless the entire wall of the uterus has atrophied due to the pyometra. In these cases of infection, hysterectomy alone is followed by complete recovery, but symptomatic treatment is unsuccessful.—*J. Richter (transl. by J. E. Lackner & S. S. Schochet).*

13461. **SJOLLEMA, B., und L. SEEKLES. Über Störungen des mineralen Regulationsmechanismus bei Krankheiten des Rindes. (Ein Beitrag zur Tetaniefrage.)** *Biochem. Zeitschr.* 229 (4/6): 358-380. 1930.—Examination of the blood serum of 12 normal cattle and of those affected with parturient paresis and grass staggers (grass tetany) shows noticeable differences in the regulatory mechanism of mineral metabolism in the 2 syndromes, chiefly in Mg content, concentration of Ca-ions and amount of inorganic P. For parturient paresis (25 cases), the average values were, Mg, 2.19; Ca, 0.44; and P, 2.16; for grass tetany (39 cases), Mg, 0.46; Ca, 1.18; and P, 4.33 mgm. %. There were also differences in total Ca content (average, parturient fever, 4.35 mgm. %; grass tetany, 6.65 mgm. %). In normal cattle the average values were: Mg, 1.66; P, 4.57; Ca^{++}, 1.65; Ca, 9.35 mgm. %. In parturient paresis, the Ca:Mg ratio was 2; in narcosis from intravenous injection of Mg salts, the Ca:Mg ratio fell to 0.9. In normal animals the value was 5.6. Against this, the Ca:Mg ratio in grass tetany was as high as 14.6. In this disease there was a connection between Mg content of serum and time of drawing of blood. At the beginning of an attack the content was always low; soon after an attack it became relatively high. Attacks may appear when the Ca:P ratio is moderately high—average 1.5; thus, the condition resembles that seen after parathyroidectomy, when seizures may occur when the ratio is as low as 1. The 2 syndromes show great variability with regard to the % of diffusible Ca. In parturient paresis the diffusible Ca runs 25-100%; in grass tetany, 40-100%; in normal animals, 48-66%. No connection was found between occurrence of attacks and changes in the % of diffusible Ca. Inorganic phosphoric acid is wholly diffusible in normal animals as well as in these 2 diseases. Diffusible Mg fluctuates considerably in all 3 conditions. Results show that, at least in parturient paresis, there is no connection between concentrations of inorganic constituents of the blood serum (Ca^{++}, H^+, HCO_3^-, HPO_4^{--}). The assumed connection between mineral composition of blood and disease symptoms can scarcely be regarded as settled, though better agreement might be possible if we were in a position to determine quantitatively the different forms of each of the blood serum constituents. Apparently, the blood serum gives a false picture of conditions in the tissues (caused, e.g., by altered permeability), unless other portions of the blood are also taken into account.—*Author's summary (transl. by I. E. Newsom).*

13462. **SÖNTGEN, CARL. Antiformin-Anreicherungsmethode nach Machens zur besseren Ausbeute an Tuberkelbacillen bei der mikroskopischen Untersuchung von Rachenschleimbecherproben mit Nachprüfung durch den Tierversuch.** *Arch. Wiss. u. Prakt. Tierheilk.* 63 (2): 181-188. 1 fig. 1931.—The antiformin method of Machens gave 30% more positives than simple microscopic examination, when applied to 365 cases of open pulmonary tuberculosis in cattle. This method made a diagnosis possible in 4.7% more cases than did direct microscopic examination. It is to be recommended for the pharyngeal mucus test but, should occasion require, it is necessary to save enough of the mucus without addition of antiformin, for animal inoculation.—*Author's summary (transl. by I. E. Newsom).*

13463. **STAMMER, HANS-JÜRGEN. Die Bakteriensymbiose der Trypetiden (Diptera).** *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 15 (3): 481-523. 25 fig. 1929.—A study of 37 species of trypetids showed in all cases the presence of symbiotic bacteria, the manner of distribution of which varied with the genus. In the simplest case, the bacteria are diffuse or in clumps in the intestinal contents of the larvae and young adults. In old adults they are always present in enormous numbers in the lumen of the intestine. A special mechanism for transmission is lacking in this case, except for a short, slit-like connection between intestine and vagina opening in the ovipositor. With the larvae of Tephritini, of the Schistopterini, and of *Dacus oleae*, the 4 digestive caeca are filled with bacteria. In adults, the bacteria are localized in a special zone of the ventriculus. The transmission mechanism here consists of furrows in the hind intestine, which in the older adults are filled with bacteria. In the adult of *D. oleae* the diverticulum of the oesophagus contains the bacteria. The bacteria-filled, finger-like invaginations in the posterior part of the hind intestine function as the transmission mechanism. Freshly laid eggs of *Tephritis heiseri* and *D. oleae* are covered with bacteria which enter the micropyle to infest the larvae shortly before hatching. Experiments by various workers indicate that phytophagous and coprophilous fly larvae can develop only when microorganisms are present. This appears to be true also for the Trypetidae.—*O. A. Johannsen.*

13464. **STEFFAN, HELMUT. Die Beziehungen der Linsenveränderungen zu Alter, Geschlecht, Farbe und Rasse des Pferdes, ohne Berücksichtigung der Berlinschen Ringe.** *Zeitschr. Veterinärk.* 43 (2): 33-69. 1931.—The lens was affected in 34.4% of the horses observed; in 25.4% the affection involved both eyes. The number of lens affections increases with age. The incidence seems to be correlated with the presence of pigment in the skin, white horses being oftener affected than bay, sorrel or black. Geldings contributed 38.2% of the cases; mares, 26.0%. The % was higher in fullblooded than in coldblooded or warmblooded horses. The affections are equally divided between the posterior and anterior capsules and the entire lens substance. It is assumed that most of the diseases of the lens are occasioned by internal causes.—*Author's summary (transl. by F. Volkmar).*

13465. **TRAWIŃSKI, A., und I. MATERNOWSKA. Ein Fall geschwürig-eitriger Endo- und Myokardiumtuberculose beim Rinde.** *Arch. Wiss. u. Prakt. Tierheilk.* 61 (4): 359-361. 1 fig. 1930.—Autopsy of an 8-yr. old cow revealed tuberculosis of the lung, liver and heart. The upper endocardium of the right ventricle presented grayish, thickened areas; the tricuspid valve, characteristic tubercular nodules and numerous irregular, flat ulcers extending into the wartlike muscle. Histologically, the ulcers consisted of coagulation-necrosis surrounded by a zone of cellular infiltration and, on the periphery, inflammatory granulation tissue. Tendency toward calcification was observed. It is assumed that the lesions were of hematogenous origin.—*F. Volkmar.*

13466. **TULLBERG, KJELLÅKE. Diplokockjuverinflammation hos ko. Experimentella studier. [Diplococcus inflammation of the udder in cows. Experimental studies.]** [With English summary.] *Skandinavisk Vet.-Tidskr.* 21 (10): 309-337. 22 fig. 1931.—Injection of bouillon culture of diplococci isolated from an infected udder, into the teat of a healthy milch cow was followed by acute inflammation of the udder restricted to the part infected, and accompanied by changes in the milk,

Necrosis of the epithelium of the milk ducts and acini resulted. In an untreated cow, udder inflammation continued for 1 mo., but with return of health the milk did not attain its original quantity. In another case, total cessation of milk secretion followed the inflammation. In a 3rd cow, infection of one quarter 1 mo. after the 1st quarter had been infected, led to inflammation of long duration. This evidence indicates to the author that vaccines can not be regarded as of prophylactic value against mastitis.

ANIMAL IMMUNOLOGY

GENERAL AND BACTERIAL

S. BAYNE-JONES, *Editor*

(See also in this issue Entries 12176, 12547, 12590, 12964, 12967, 13326, 13344, 13345, 13361, 13382, 13387, 13425, 13443, 13456, 13457, 13466, 13571, 13634, 13645, 13652, 13655, 13656, 13658, 13661, 13667, 13672, 13687, 13698, 13700, 13702, 13713, 13715, 13766, 13772, 13775, 13791, 13800, 13819, 13831, 13833, 13838, 13942, 13943, 14081, 14351)

GENERAL

13467. **ALEXANDER, H. L. The allergic skin reaction.** *Arch. Dermatol. and Syphilol.* 24(4): 543-545. 1931.—The author had previously reported the presence in normal skin of a then unidentified substance which increases the local allergic edema (size of wheal) induced by subcutaneous injection of histamine. He now reports the isolation of this substance and its identification as Ca; it acts, however, only in very dilute solution (10 parts per million).

13468. **ANDERSEN, T. THUNE. Das Verhältnis zwischen dem F-Antigen und dem A-Antigen in Menschen-Erythrozyten der Gruppen A und AB.** *Zeitschr. Rassenphysiol.* 4(2): 49-86. 1931.—This paper deals in general with, and confirms, the well known relationship of the Forssman substance in tissues of the guinea pig type to that in cells of human group A. In his work, rabbits were immunized with saline extracts of Forssman antigen, sheep blood and human blood of all groups. In addition, some rabbits were injected in accordance with the method described by Landsteiner and Simms, viz., a mixture of alcoholic extract and pig serum. The various sera were tested for action on sheep blood and blood of group A. The author failed to produce anti-A agglutinins by injecting alcoholic extracts of human blood group A and pig serum, but the preparation of such sera was previously described by Witebsky. Peculiar properties were displayed by the sera of rabbits injected with alcoholic extracts of B blood and pig serum. These sera gave complement fixation reactions with extracts of group B blood and, strangely enough, also with guinea pig kidney.—*P. Levine.*

13469. **AOKI, K. Über das Wesen der Mitagglutination.** *Zentralbl. Bakt. I. Abt. Orig.* 105(6/8): 459-462. 1928.—The specific types of a number of *Salmonella* spp. which showed cross agglutination, were agglutinated by their own specific antisera but not by those of the other species. The non-specific types, however, were generally agglutinated by the non-specific antisera of the other species. The writer correlates the occurrence of non-specific variants within a bacterial species, with the phenomenon of cross agglutination.—*J. B. Nelson.*

13470. **BARR, M., A. T. GLENNY, and C. G. POPE. Some observations on the distribution of antitoxins in serum.** *Brit. Jour. Exp. Path.* 12(4): 217-226. 1931.—Use of $(NH_4)_2SO_4$ for fractionating antitoxic sera has advantages over that of saturated solutions. The quantities should be expressed in terms of gms. of salt per liter of serum and not as % saturation. Using this method it is shown that the quantity of $(NH_4)_2SO_4$ necessary to precipitate a given proportion of antitoxin may be altered by addition to the serum of an excess of either of the non-antitoxic proteins—euglobulin or serum albumin. On blending sera which exhibit differences in antitoxin distribution as determined by salting-out methods, some redistribution of antibodies occurs. On blending 2 globulin fractions containing different types of antitoxin, one removed at low and the other at high concentration of precipitating salt, redistribution of the antibodies from both fractions occurs; any quantity of precipitant sufficient to cause separation of protein, precipitates both types of antitoxin, though in different proportions.—*J. Bland.*

13471. **BEDSON, S. P. Immunization with killed herpes virus.** *Brit. Jour. Exp. Path.* 12(4): 254-260. 1931.—Herpes virus treated with low concentrations of formalin is capable of producing a high degree of immunity in guinea pigs. That this immunity is produced by dead virus is shown by the following: (1) Each vaccine was tested by serial passage in the plantar skin of 3 guinea pigs and proved inactive. This procedure was shown capable of reactivating sub-infective doses of live virus. (2) Guinea pigs were inoculated with a dose of virus 10 times greater than that which, though subinfective, could be reactivated by the serial passage method. This dose must therefore have been greater than any living virus which could have been present in the formolized virus. Almost no immunity was produced by this dose of living virus, however, while that produced by formolized virus was good. Herpes virus killed by heating at 60 or 100° C. is devoid of immunizing power. If the virus is treated with formalin before heating at 100°, it is still capable of producing some immunity.—*J. Bland.*

13472. **BELÁK, ALEXANDER, et al. Vegetatives Nervensystem und Immunität. IV. ALEXANDER BELÁK, und JOHANN von SIEGLER. Die Wirkung des Adrenalins auf die Agglutininbildung beim Kaninchen. V. A. BELÁK, und D. SZABÓ. Die Wirkung des Thyroxins auf die Agglutininbildung beim Kaninchen.** *Zeitschr. Ges. Exp. Med.* 75(3/4): 443-448; 449-453. 1931.—The experiments reported were done to test Pfeiffer's theory that antigen does not act directly on the cells but stimulates them through the parasympathetic nervous system. IV. The antigen used was a suspension of paratyphoid bacilli. Each rabbit in a series divided into 3 groups, received 0.1 cc. of bacterial suspension injected intracutaneously into the ear. The rabbits in the 1st group were then injected intravenously with a solution of adrenalin and the antigen depot was removed 2-3 sec. later by cutting off the ear. The 2nd group were not given adrenalin, but the antigen depot was removed by excision of the ear. The animals in the 3rd group received adrenalin intravenously and the antigen depot in the ear was allowed to remain. At intervals up to 16 days after injections, agglutination titers were tested for comparison. The averaged titers were 1-10,800 to 1-14,000 in the group receiving injection of antigen without adrenalin, while the average titers of agglutinin in the serum of those receiving adrenalin and antigen, with immediate removal of the antigen depot, were 1-5200 to 1-9800. On the basis of these differences, the authors conclude that adrenalin depresses agglutinin formation through stimulation of the sympathetic nervous system. They regard this as further evidence that antibody production is a function of the tonus-height of the parasympathetic nervous system. V. The authors report results of the effect of injection of thyroxin on agglutinin production following intravenous injection of a suspension of paratyphoid bacilli. Repeated injections caused a decreased agglutinin production. The data are presented as additional evidence in favor of the theory that immune-body formation

is dependent on the activity of the vegetative parasympathetic nervous system.—*S. Bayne-Jones.*

13473. **BELFANTI, S., et G. DESSY. Nouvelle méthode de vaccination antituberculeuse avec des bacilles vivants et virulents. (Note préliminaire.)** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 325-337. 1931.—Experiments on 695 guinea pigs and 6 goats showed that it is possible to confer immunity to tuberculosis by introducing living and virulent bacteria into the organism, provided they are carried by substances like lysocithine, saponin or cyclamine, which can rapidly excite the formation of a local barrier, the latter prohibiting general diffusion of the bacteria into the organism. Saponin is the best vehicle because it is easily conserved, is most constant in action, and is most easily sterilized. The vaccine must be introduced hypodermically, otherwise it becomes pathogenic.—*From authors' summary (transl.).*

13474. **BERARDI, ANTONIO. L'isoemoagglutinazione nei rapporti fra madre e figlio. [Isohemagglutination in its relation between mother and child.]** *Pediatria Rivista* 36(5): 250-256. 1928.—Although at birth the blood group is not well defined, in the following months it forms gradually; therefore there can be antagonism between serum of newborn and red-cells of mother. Thus, a blood-transfusion from mother to child must be done with the same precautions as for adults.—*E. Ponzi.*

13475. **BESCHE, ARENT de. Eine Untersuchung über antigene Eigenschaften in Pferdeserum und in Pferdehaaren-Pferdeschuppen Extrakt.** *Acta Path. et Microbiol. Scandinavica Suppl.* 3: 53-61. 1930.—Among 53 patients with asthma in etiologic relationship to horses, 21 gave cutaneous reactions for both horse serum and extract of horse hair and dander. The balance reacted with the hair-dander extract, but not with serum. Among the 1st group, 3 had previously received prophylactic doses of diphtheria antitoxin and reacted strongly after injection. Among the 2nd group, 4 had received diphtheria antitoxin, and 2 had dyspnea and collapse symptoms. The skin reaction is therefore of value, as indicating sensitiveness to horse serum. Distinct positive reactions were obtained when an asthmatic patient was injected with horse serum and with the hair-dander extract, although the serum reaction was less serious than the extract reaction. Guinea pigs were sensitized by intraperitoneal injection with horse serum and extract of horse hair and dander. When injected intravenously 11 days later, strong anaphylactic symptoms developed.—*P. G. Heineman.*

13476. **BIANCALANA, L., et S. TENEFF. Comportement de la réserve alcaline et du pH après transfusions de sang compatible et incompatible.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(9): 609-612. 1931.—In cases of transfusion disturbances from compatible or incompatible bloods, the authors have always found a displacement of the alkaline reserve and pH toward the acid side.—*Authors' conclusions (transl.).*

13477. **BIANCALANA, L., et S. TENEFF. Modifications du pouvoir isoagglutinant des sérums: (1) Dans la préparation des donneurs de sang immune. (2) Après les opérations chirurgicales.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(9): 613-616. 1931.—The authors conclude from their studies that universal donors are dangerous when they possess isoagglutinins in high titer. Preparation of donors for immuno-transfusion tests sometimes causes increase in isoagglutinating power. Such increase is seen preeminently in individuals in whom immunization is accompanied by a febrile reaction. It is therefore believed preferable in immuno-transfusions, even more than in ordinary transfusions, to choose the donor from the same group as the recipient. Before using universal donors, it is necessary to control the intensity of the reaction provoked by the vaccination, and eventually to base their use on the iso-agglutinin titer. In their researches the authors controlled the isoagglutinin titer after more or less grave surgical operations carried out under local or general anaesthesia; control was carried out 7 days after operation. Results obtained suffice to demonstrate that the isoagglutinin titer diminishes after surgical operations; this parallels the lowering of immunity power observed after such operations.—*Authors' conclusions (transl.).*

13478. **BIGLIERI, ROMIRIO. Ensayos de vacunación por medio de emulsiones de neuro-viruela muertos por el éter, el ácido fénico y formol. [Variola vaccination with emulsions of neuro-virus killed by ether, phenol, and formaldehyde.]** *Rev. Soc. Argentina Biol.* 7(5/6): 399-409. 1931.—Only negative results were obtained.—*J. T. Lewis.*

13479. **BIGLIERI, ROMIRIO, e IDA FISCHER. Contribución al estudio de las propiedades antibacteriofágicas de sueros humanos. [Antibacteriophage activity of human serum.]** *Rev. Soc. Argentina Biol.* 7(5/6): 410-415. 1931.—In 80 specimens examined, antibacteriophage action was found constantly for staphylococci, and in 2.5-3.7% of cases for *B. coli, B. typhosus* and *B. paratyphosus A* and *B.*—*J. T. Lewis.*

13480. **BOAS, HARALD. Untersuchungen über die neue Schnellreaktion von Kahn.** *Acta Path. et Microbiol. Scandinavica Suppl.* 3: 69-74. 1930.—In 3135 cases of syphilis, the Wassermann reaction gave 49% positive results; the Kahn reaction, 57%. In 2% of these cases the Wassermann reaction only was positive; in 10% of the cases the Kahn test was positive while the Wassermann was negative. In 2226 control cases the Kahn reaction was positive once (probably a latent case). Both reactions gave positive results in 1484 cases, and both gave negative reactions in 3481 cases. The author thinks that the Kahn reaction should not replace the Wassermann, but that both tests should be used. His choice would be the Kahn, if only one method is used, because the technique is simpler, it is more sensitive, and it requires less time.—*P. G. Heineman.*

13481. **BORQUIST, MAY, and CHARLOTTE ROWE. The phagocytosis of tubercle bacilli by leucocytes.** *Amer. Rev. Tuberc.* 24(2): 172-181. 1931.—Micromanipulation of monocytes and clasmatocytes shows that they differ in consistency, a monocyte being fragile and easily disintegrated, and a clasmatocyte being distinctly more resistant, more sticky and more elastic. Monocytes and clasmatocytes with ingested tubercle bacilli were studied: (1) on flat preparations both with neutral-red and without stain, kept under continuous observation for periods of from 2-11 hrs., and (2) on fixed and stained smears of mixtures of cells and bacteria which had been incubated in hanging drops. Monocytes, clasmatocytes and epithelioid cells with ingested bacilli were studied in smears of lung tissue and peritoneal exudates obtained from tuberculous animals. There was no evidence that ingested tubercle bacilli (bovine strains, different from those studied by Sabin and Doan) are fragmented by any of the cells studied. Bacilli inside cells neither took up neutral-red nor appeared disintegrated. Epithelioid cells contain many more bacilli than other cells, but no greater number of life-cycle changes were seen within them. These experiments suggest the possibility that the longevity of the epithelioid cell, rather than the multiplication of bacilli within it, may account for its greater content of bacilli as compared with the clasmatocyte.—*Authors' summary.*

13482. **BRAIER, BERNARDO. Influencia de la vacuna coli sobre el metabolismo nitrogenado de los perros hipofisoprivos. [Effect of B. coli vaccine on N metabolism of hypophysectomized dogs.]** *Rev. Soc. Argentina Biol.* 7(3/4): 305-313. 1931.—Hyperthermia after infection of vaccine is the same in fasting operated animals and in controls. Urinary N increases more in controls.—*J. T. Lewis.*

13483. **BRÜDA, B. E., und H. PFEIFFER. Über die Bedeutung der Milz und des Speicherzellensystems (Retikuloendothels) für die Abwehr von bösartigen Impfgeschwülsten der Ratte.** *Zeitschr. Ges. Exp. Med.* 68(1/4): 116-125. 1929.—The effect of the growth of a malignant mouse tumor was tested in splenectomized rats, in parabiotic rats where one partner was splenec-

tomized, and in splenectomized rats blocked with India ink. It is concluded that prevention of growth of malignant tumors in rats is due to secretion by the spleen of a substance, designated "mesenchymin," into the blood and lymph. The spleen is thus brought into line with the rest of the reticulo-endothelial system in having the function of inner secretion.—*R. W. Linton.*

13484. **BURNET, F. M.** The flocculation reaction with staphylococcal toxin. *Jour. Path. and Bact.* 34(6) : 759-769. 1931.—The toxin, which is remarkably heat-resistant, gives good flocculation with its antitoxin. Optimal flocculation bears a constant relation to the neutral point and is always in the zone of antitoxin excess. Both toxin and antitoxin can be recovered from the precipitate.—*A. E. Boycott.*

13485. **CAPPELLINI, ICILIO.** Sul potere isoemoagglutinante delle varie frazioni proteiche del plasma umano. (Nota preventiva.) [Isohemagglutinating power of the various protein fractions of human serum (preliminary note).] *Sperimentale* 85(2/3) : lxxxv-lxxxvi. 1931.

13486. **CARONIA, JOSEPH.** The nature and uses of lysed typhoid vaccines. *Amer. Jour. Dis. Children* 39 (1) : 1-8. 1930.—The author reports favorably on use of typhoid or paratyphoid vaccines lysed with convalescent serum, for treatment of enteric fever.—*F. W. Hachtel.*

13487. **CHANTRIOT.** Syphilis, paludisme et sérologie. *Rev. Prat. Mal. Pays Chauds* 11(6) : 249-261. 1931.—The author concludes that malarial fever modifies the course of syphilis favorably to a condition in which specific chemotherapy is effective. The plasmodium favors reactions between lipids and proteins of the Treponema. The Wassermann reflects this reaction in varying frequently from positive to negative. The action of malaria naturally acquired, as that of provoked malaria, on visceral or latent syphilis, seems to be comparable in most cases to the action of malariatherapy in paresis. Agents other than the hematozoon can bring about this serological modification and ought to be important adjuvants which prepare in some way for chemotherapy. Most of the pyretogenic shocks and heterotherapy are useful in syphilis where the serological reaction is irreducible. In the case of syphilis resistant to the ordinary chemical agents it seems absolutely necessary to practise a heterotherapy appropriate to the case. Autohemotherapy is sometimes sufficient and is apt to be of great value.—*R. E. Jung.*

13488. **COCA, ARTHUR F., MATTHEW WALZER, and AUGUST A. THOMMEN.** Asthma and hay fever in theory and practice. Pt. 1. Hypersensitiveness, anaphylaxis, allergy (COCA); Pt. 2. Asthma (WALZER); Pt. 3. Hay fever (THOMMEN). 851p. 95 fig. Charles C. Thomas: Springfield, Illinois, 1931.—This book is composed of 3 monographs, which together cover the history, theory, and practical aspects (diagnosis, etiology, prevention and therapy) of specific sensitiveness. Part I, in addition to a review of the literature of these subjects, includes chapters in which are discussed the questions of hypersensitiveness to non-antigens, the skin as a shock tissue, and the methods of preparing extracts and solutions for testing and prophylactic treatment of allergic diseases. Part II is a comprehensive and critical review of the literature on etiology, pathology, clinical aspects, diagnosis and treatment of asthma. It also includes an extensive consideration by WALZER and THOMMEN of the methods of testing for hypersensitiveness and a chapter by BOWMAN and WALZER on the excitants of allergy from the points of view of their relative frequency and importance as excitants, the proper testing strength, their chemical nature, indications for treatment with them, the various manufactured articles in which they may occur and through which contact with them by sensitive persons and others may be had. Part III presents a historical review of this subject, an exhaustive consideration of the botanic aspects of the condition, and detailed consideration of the etiology and mechanism, diagnosis and treatment of hay fever.—*A. F. Coca.*

13489. **COLOSI, NATALE.** Bile as an antigen in serum diagnosis of syphilis. *Amer. Jour. Syphilis* 15(2) : 244-246; also in *Med. Times and Long Island Med. Jour.* 59(4) : 148. 1931.—The author performed 125 comparative Wassermann tests with normal, 1+, 2+, 3+, and 4+ human sera and − and 4+ cerebrospinal fluid, using both alcoholic and cholesterinized extracts of beef heart and of ox bile. It is concluded that: (1) Ox bile possesses the antigenic principle common to extracts of normal organs. It can be used, therefore, as antigen in the Wassermann test for syphilis. (2) With normal and luetic sera and cerebrospinal fluid, aqueous solutions, plain alcoholic and cholesterinized extracts of ox bile are as reactive as Wassermann antigens, as are similar extracts of normal organs. (3) Sheep bile is hemolytic to ox and sheep erythrocytes and can not be used, therefore, as antigen in the Wassermann reaction, at least when the anti-sheep hemolytic system is used.—*N. Colosi.*

13490. **CONFALONE, RAFFAELE.** Recherches expérimentales sur l'influence réciproque de la vaccination anti-typhique et de la vaccination de Jenner. *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(5) : 170-173. 1931.—Anti-typhoid vaccination, administered simultaneously with Jenner's vaccine, often causes death of experimental animals; administered 3 days after Jenner's vaccine, it gives rise to rapid and intense production of typhoid agglutinins, which dies down in a short time; when administered after the vaccine pustule has disappeared, it produces but few agglutinins, and for a very short time. Jenner's vaccination administered after anti-typhoid vaccination shows that these treatments have no effect on each other.—*Author's résumé (transl.).*

13491. **CUMMINS, S. L., and C. WEATHERALL.** The retardation of lytic processes by colloidal silica solution. *Brit. Jour. Exp. Path.* 12(4) : 239-244. 1931.—Preservation from lysis in human blood or serum by colloidal silica solution extends to other serum-soluble bacteria besides the typhoid bacillus. The solution also preserves type 1 pneumococci from lysis in ox bile and retards both tryptic and peptic digestion of albuminous substances. Addition of colloidal silica solution to a cellular exudate produced by intraperitoneal injection of dust particles, leads to the agglutination of the leucocytes and dust cells and to their preservation intact for 2 mo. or more. The bearing of these observations on pulmonary silicosis is discussed.—*J. Bland.*

13492. **CUMMINS, S. LYLE, and C. WEATHERALL, with an analytical note by E. T. WATERS.** Adsorption of tuberculin by coal dust. *Jour. Hyg.* 31(4) : 464-471. 1931.—The relative exemption of coal miners (as compared to gold miners) from tuberculosis suggested that, if the active principle of tubercle bacilli were adsorbed by C, accumulation of coal dust in the lungs might tend to prevent tuberculous infection. Anthracite coal dust was brought into contact with tuberculin, and samples of coal-treated and untreated tuberculin were tested in 5 experiments on 9-20 patients. Results indicate that anthracite coal dust, especially in an alkaline medium, adsorbs the active principle of tuberculin. Previous saturation with serum protein, while it appears to diminish, does not annul, the power of coal dust to adsorb the active principle.

13493. **DADDI, G.** Études préliminaires sur la sérothérapie polyvalente des Bact. coli. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(9) : 549-551. 1931.

13494. **EBERSON, FREDERICK, and MARION A. SWEENEY.** Tuberculotoxins and their significance in allergy and neutralization phenomena. *Jour. Immunol.* 20(6) : 395-416. 1931.—Intracutaneous and intraperitoneal studies were made with Berkefeld filtrates of cultures of tubercle bacilli in tuberculous and normal guinea pigs. Comparative studies included filtrates prepared from extracts of focal tuberculous tissues. Neutralization tests were made by intracutaneous and intraperitoneal methods, using immune serum prepared in goats by intracutaneous injections of toxic filtrates over a period of 2 yrs. Intracutaneous tests resulted as follows: Reac-

tions obtained with toxic filtrates were unlike those of tuberculin and confirmed previous observations relating to the production of toxic substances by tubercle bacilli grown in suitable media; the immune goat serum contained antibodies demonstrable in the skin by passive transference to tuberculous animals; combinations of immune goat serum and toxic filtrates in varying proportions exhibited neutralizing properties of the serum under certain conditions; and, when such proportions of material permitted, a simultaneous reaction of passively transferred local allergy. In the normal, non-tuberculous guinea pig controls, these phenomena were not observed, indicating the specificity of these local reactions; filtrates prepared from focal tuberculous tissues in guinea pigs were inactive. Toxic Berkefeld filtrates prepared from 5-18-day-old cultures caused typical immediate or delayed reactions resulting in death or a chain of symptoms followed by recovery. Heating the filtrate to 100°C. for 1-2 hrs. modified or prevented symptoms. These reactions did not occur in normal guinea pigs. Comparison of the behavior of filtrates with ordinary Old Tuberculin under identical conditions showed definitely marked qualitative and quantitative differences. Primarily, irrespective of dosage, injections of diluted O.T. produced no immediate or delayed reactions characteristic or analogous with those elicited by the filtrates. From the quantitative standpoint also, the filtrates were not concentrated before use; the dose injected was proportionately smaller than that of tuberculin; and the cultures from which filtrates were prepared represented 5-18 days' growth, as against 6-8 wks. for tuberculin. Filtrates from 5-day cultures were highly toxic. Immune serum prepared in goats by subcutaneous injections of toxic filtrates over a period of 2 yrs. neutralized completely or lessened the toxic reactions obtained with filtrates alone. Results were considered specific for the following reasons: Normal goat serum failed to protect tuberculous guinea pigs under identical conditions; filtrates were innocuous for normal guinea pigs; immune serum did not neutralize the lethal action of diluted tuberculin, and in this respect did not differ from normal goat serum. Immune goat serum alone caused irregular reactions at times and, rarely, death, depending on dosage, indicating a passively induced allergic response. With normal serum alone the phenomenon was not observed. Toxic filtrates of cultures appeared to contain antigenic and allergenic substances. Filtrates prepared from emulsions of local tubercles in the skin of experimentally infected guinea pigs did not cause local or general reactions. A more accurate interpretation of clinical and immunity phenomena is suggested by the data presented.—*F. Eberson.*

13495. **FELTON, LLOYD D. A study of the neutralizing substance of the pneumococcus.** *Jour. Immunol.* 19 (6): 511-533. 1930.—The author considers the neutralizing characteristic the significant variable in the pneumococcus culture used in the protection test. He draws the following inferences from this experimental work: The protective antibody of antipneumococcus serum can be completely neutralized by killed cultures of pneumococci. This neutralization is type-specific. The law of multiple proportions may operate in the relation of pneumococcus antibody and neutralizing substance. The neutralizing substance of Type I is less stable than that of Type II culture. An 18-hr. culture of pneumococcus killed by 0.4% formalin makes a good neutralizing antigen. Lethal doses of 250,000-10,000,000 may be used as indicators of the endpoint of neutralization. A definite relationship exists between protective power of serum and dilution of serum which is completely neutralized by antigen. The therapeutic activity of pneumococcus-immune serum could be determined by use of a killed culture of pneumococcus as antigen.—*R. W. Jung.*

13496. **FRANZA, ROBERTO. Vaccinazioni triple alternate.** *Boll. Soc. Italiana Biol. Sperim.* 3(5): 637-640. (Also in: *Archivio Sci. Biol.* 11(3/4): 350-359.) 1928.—Rabbits were inoculated alternately with typhoid, cholera, and melitensis organisms; other rabbits, with mixed and single vaccines. They always reacted by production of specific antigens. With single vaccines specific agglutinins resulted; with mixed vaccines, one of the organisms usually produced the predominant antibody. In such cases the typhoid bacillus always showed the highest value. In animals treated alternately with 3 bacteria, no matter in what order, agglutinins were highest for the first organism that sensitized the animal. Successive injections of the other bacteria show an attenuation of their specific action but apparently help to increase the agglutinins toward the first microorganism. This phenomenon is analogous to the action of non-bacterial proteins on cells previously sensitized by a bacterial vaccine, which thereby are stimulated to greater production of specific agglutinins.—*R. Franza (transl. by P. Hillkowitz).*

13497. **FREUCHEN, IB. Einleitende Versuche zur Feststellung des Verhaltens der eosinophilen Zellen bei antistoffbildenden Processen.** *Acta Pathol. et Microbiol. Scandinavica Suppl.* 3: 123-132. 1930.—The number of eosinophils decreases on introduction of diphtheria toxin during the immunization of a horse and is apparently dependent on the previous antitoxin titer of the animal. Variation in number of eosinophils is relatively greater than, and in opposition to, variation in whole number of leucocytes.—*I. Freuchen (transl. by H. C. Sox).*

13498. **FREUND, JULES, and HOWARD J. HENDERSON. Distribution of antibodies in the serum and organs of rabbits. VI. The antibody content of the bile of immunized rabbits.** *Jour. Immunol.* 18(4): 325-330. 1930.—Antibodies are eliminated from the liver in the bile of rabbits actively or passively immunized against typhoid bacilli. The following numerical relation exists between agglutinin titers of the serum, liver-extract, lymph of the liver, and bile—expressed in %, viz.: Serum, 100%; liver-extract, 10%; lymph of liver, 80%; bile, 0.8%. In the bile of passively immunized rabbits, the maximum titer is reached within 2 hrs. after immune serum is injected. Loss of antibodies by elimination with bile explains at least in part why antibodies disappear from the blood of animals after active or passive immunization.—*J. Freund.*

13499. **FRIEDBERGER, E., G. BOCK, und A. FÜRSTENHEIM. Zur Normalantikörperkurve des Menschen durch die verschiedenen Lebensalter und ihre Bedeutung für die Erklärung der Hautteste (Schick, Dick).** *Zeitschr. Immunitätsforsch.* 64(3/4): 294-319. 6 fig. 1929.—The authors studied the occurrence of such normal antibodies as hemolysins against sheep red cells and hemagglutinins against rabbit red cells in over 600 different human sera, representing the whole span of human life and including an approximately equal number of specimens from the newborn, young infants, older children, adults, and senile individuals. Blood from the umbilical cord of the newborn contained no appreciable amount of antibodies. During the first years of life the antibody content increased gradually, reaching its maximum around the 10th yr. From that point on, the antibody curve declined slowly but steadily throughout the following decades. The level in late senility was about at the same height as in earliest infancy. The relation between the 2 antibodies mentioned, in the same sample of serum was variable. The antibody titer bore no relation to blood groups. Up to 40 yrs. of age, females showed consistently a higher antibody content in the serum than males. Similar experiments with rabbits showed an analogous curve. The hemolysin and hemagglutinin curves resembled the known curves of diphtheria and scarlatina antitoxin production in different age groups in all essential respects, excepting the transitory passive transfer of antitoxin from mother to child during the first mo. of life. The authors argue from this parallelism that defensive antibodies are formed and increased in adolescent age as a result of a general maturation law, rather than under the influence of contact with the specific antigen.—*C. W. Jungebluth.*

13500. **FUJIOKA, N. Weitere biologische Studien**

über den BCG-Stamm. Über die Tuberculinreaktion bei mit dem Stamm BCG infizierten Meerschweinchen. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 58(3/4): 335-342. 1928.—In confirmation of Kraus' observations, it is shown that guinea pigs, injected with large doses of BCG (5, 10, 20 mgm.) by the intraperitoneal, intravenous, intraocular, or intestinal routes, develop macroscopically discernible tuberculous lesions, but most of them survive intraperitoneal injection of 0.25 cc. of human tuberculin, which invariably kills guinea pigs infected with human or bovine strains of tubercle bacillus. BCG-infected guinea pigs which survive intraperitoneal injection of tuberculin, nevertheless give a positive intracutaneous tuberculin reaction. It is thus shown that the degree of sensitization in guinea pigs infected with virulent strains of tubercle bacilli differs from that induced with large doses of BCG.—*A. B. Sabin.*

13501. **GREENWOOD, M., W. W. C. TOPLEY, and J. WILSON.** Contributions to the experimental study of epidemiology. *Jour. Hyg.* 31(2): 257-289. 1931.—9 vaccines were tested on a herd of more than 4000 mice. The efficacy of a *Bact. aertrycke* vaccine, as an immunizing agent, appears to be determined by its content in O-somatic antigen. No indication was obtained that other components have any significant effect. There is a suggestion that the effectiveness of a vaccine containing O-antigen may diminish slightly on storage; but such loss is very slight over a period of 1 yr. There is a suggestion that injection of bacteria unrelated to *Bact. aertrycke* may result in a minor increase in resistance to infection with that organism; but this is trivial in comparison with that which follows injection of specific O-antigen, and is not obtained with all non-specific agents. Vaccinated mice show a significant advantage as compared with the unvaccinated in respect to expectation of life; this advantage is not uniform over the whole period of exposure. As judged by chance of survival over the succeeding 5 days, it is not apparent on the day of entry, or during the 1st week of exposure, probably because the risk of dying of a fatal infection within the first 10 days or so of residence in the cage is in any case slight. The advantage of the vaccinated mice on this test increases to a maximum between the 25th and 30th days of cage life and thereafter declines, so that a vaccinated mouse which has survived exposure for a considerable period (50-60 days in this experiment) enjoys no significant advantage over an unvaccinated mouse which has survived for the same period. The protection afforded is in no sense absolute. Judged from the experience in this herd of mice, it has little if any influence on the ultimate mortality from the specific disease. Vaccinated mice, in presence of infection, are never placed in the same position as normal mice in a non-infected herd. This conclusion does not involve the deduction that vaccination is useless. Under other conditions of exposure, especially where the risk of infection is limited in time, the advantage afforded by vaccination might well make the difference between effective immunity and death.

13502. **HARE, R. Studies on immunity to haemolytic streptococci. III. Observations on the variations in resistance to phagocytosis displayed by broth cultures of strains of high and low virulence.** *Brit. Jour. Exp. Path.* 12(4): 261-271. 1931.—Strains of hemolytic streptococci virulent for animals become resistant to phagocytosis during the active growth phase. Probably this is in reality resistance to opsonization by the opsonins of the serum of the blood in which the tests are done. The resistance to phagocytosis which accompanies the growth phase gradually disappears as the culture grows older, but it does not do so completely for many hrs. Strains of medium virulence are not so resistant during growth, and their resistance quickly disappears altogether. Strains of minimum virulence do not become resistant at any period. The virulent strain is therefore characterized by production of resistant cocci which remain resistant until the culture has gone far into the phase of decline. The avirulent strains do neither of these things. —*J. Bland.*

13503. **HASSELMANN, C. M.** Beiträge zur Blutgruppenverteilung der Bevölkerung von Frankfurt am Main. [Blood group incidence in the population of Frankfurt a/M.] *Zeitschr. Rassenphysiol.* 4(1): 24-26. 1931.

13504. **HEIDELBERGER, MICHAEL, and FORREST E. KENDALL.** Data on a protein-antibody system. *Science* 72(1862): 252-253. 1930.—By use of a protein dye as antigen, colorimetric determinations of the amount of antigen in the supernatants and precipitates of the precipitin reaction were possible. The reaction can be expressed quantitatively by simple equations that follow the mass law. The prepared antibody solutions were colorless, suggesting that antigen itself does not take part in the building up of the antibody complex.—*R. R. Spencer.*

13505. **HINTZE, K.** Ueber den Komplementgehalt des Meerschweinchenserums nach Untersuchungen an 1000 Meerschweinchen und seine Bedeutung für die Wassermannsche Reaktion. *Zentralbl. Bakt. I. Abt. Orig.* 117 (6): 353-363. 1930.—Guinea-pig serum is an important but labile factor in the Wassermann reaction and is not as consistent as has been supposed. In evaluating the same serum on the same day with the same reagents, definite differences were obtained, and in 4% of over 1000 healthy guinea pigs these differences were considerable. Mainly, the hemolysin power was diminished, but in a few cases the guinea-pig serum hemolyzed without amboceptor. These variations are most frequently found in abnormal animals—infected or pregnant. It is recommended that sera from pathological animals not be used; moreover, each guinea-pig serum should be titrated independently and those deviating markedly from the normal should be discarded, as a mixture of a related series does not give an average result since the abnormal sera hinder the action of the normal.—*H. C. Sox.*

13506. **HIRSZFELD, LUDWIG.** Schutzimpfung und Serumtherapie. Bericht über die Arbeiten betreffend die Scharlachätiologie, Pathogenese und Therapie, ausgeführt im Staatlichen Hygienischen Institut in Warschau. *Seuchenbekämpfung* 6(4): 215-222. 1929.—Experience in Warsaw clearly demonstrated the importance of the Dick reaction for recognizing susceptibility to scarlatina. Individuals recovered from attack did not always show a negative Dick reaction. Possibly such patients did not possess antitoxin, but antitoxin was rapidly produced. The number of pseudo-reactions was reduced when human blood was used for culture. Anatoxin was used in 3385 cases; 29.6% showed completely negative reactions after treatment, 34.8% showed a decreased positive reaction, and 35.6% remained positive. Of 7885 immunized individuals, 0.4% contracted scarlatina; of 63,920 non-immunized individuals, 1.09% contracted the disease; the course was variable and no definite conclusions could be reached. There seems to be competition between affinity of toxin for cells or for antitoxin, the Dick reaction being positive when cell affinity is greater than antitoxin affinity. Antitoxic *Streptococcus* serum has a favorable influence on general condition, intoxication and consciousness of the patient. Complications were not prevented, but were reduced. Pus complications were not affected. Serum treatment is recommended for all cases within 2 days, excepting for light cases. The sera are tested on at least 5 children and it is required that 0.04 cc. of antitoxin should neutralize 10 skin doses. Goats, rabbits and guinea pigs can not be used; 3% of the horses used proved suitable.—*P. G. Heineman.*

13507. **HOEN, E., und L. TSCHERTKOW.** Ueber das Verhältnis der Antikörper zu den Serumproteinen. *Zentralbl. Bakt. I. Abt. Orig.* 117(6): 364-367. 1930.—Acidification of an antigen to pH 2.8-3.0, followed by immersion in a boiling water bath for 10 min., had slight effect on a precipitinogen. Similar treatment of its homologous antibody or even acidification alone, largely destroyed its precipitating activity. The conclusion is

drawn that protein and antibody are not bound inseparably to each other.—*H. C. Sox.*

13508. **HOLFORD, FRANCES E. The placental transmission of foreign proteins in rabbits.** *Jour. Immunol.* 19(2): 177-216. 1930.—Pregnant rabbits were injected subcutaneously with varying quantities of foreign protein less than 1 wk. ante-partum; the young at birth were bled from the heart by a small hypodermic syringe; ring precipitation tests were then performed, the serum of the young being carefully layered over an antiserum of high titer and specific for the antigen in question. Of the antigens employed—crystalline egg albumin, horse or beef serum, pseudoglobulin fraction of beef serum, globulin fraction of horse serum, and horse hemoglobin—all except the last-named were in a number of instances demonstrated in the serum of the newborn. It is suggested that this fact may be of significance in further investigation and explanation of certain phenomena of modified resistance in other species, including man, which are likewise supplied with the hemochorialis type of placenta.—*Frances E. Holford.*

13509. **IMSCHENETZKY, A. Über die Permeabilität der Haut für Trypanblaulösung, unter Berücksichtigung der Hautimmunitätstheorie von Besredka.** *Zeitschr. Ges. Exp. Med.* 69(1/2): 113-125. 2 fig. 1929.—Poultices containing 1% trypan blue solution applied to the skin for 48 hrs. produce an exudative infiltrating inflammation, with necrobiosis of the epithelium and cells of the hair follicles. These points of injured epidermis and alterations in walls of hair follicles serve as points of entrance for the dye into the lymph of the cutis. Histiocytes absorb the dye from the tissue lymph and carry it as granules in their protoplasm. Particles of stain were seen also in the polymorphonuclear leucocytes which were localized especially beneath the epithelium and in the region of the hair follicles. The dye travelled with the lymph through the lymphatic vessels to the regional lymph nodes, where it was collected in certain reticular stroma cells and in the histiocytes of the capsule. External application of the dye solution, without poulticing, produced massing of the dye in the superficial horny layer, without any penetration of the dye into the corium. —*Author's conclusions (transl. by S. Bayne-Jones).*

13510. **ISHIGAMI, J. Experimental studies of percutaneous immunization by eggwhite. I. Appearance of precipitin in rabbit serum and Arthus's phenomenon of local skin by applying eggwhite. II. Appearance of precipitin in rabbit serum and the Arthus phenomenon produced locally in the skin by rubbing in of eggwhite.** [In Japanese, with English summary.] *Acta Dermatol.* 17(3): 167-188; (4): 291-306. 3 fig. 1931.—I. Immunity to eggwhite was produced in rabbits by applying eggwhite to the surface of the ear-flap, precipitin appearing in the serum on the 17th day after 1st application. One group was immunized by injection of eggwhite (A); the other, by applying eggwhite to the surface of the right ear-flap (B). Groups A and B were kept until the precipitin in the blood had completely disappeared. Then, to the surface of right ear-flaps of all, eggwhite was applied for 30 days. The time of first appearance of precipitin in the blood serum and its degree were identical in A with B, indicating that the local skin to which eggwhite has once been applied does not acquire an ability to prevent further entrance of immune substance through repeated application by the same route. The Arthus phenomenon was tested in the part of the skin where eggwhite had been previously applied cutaneously, in comparison with that shown by other spots; but neither anaphylactic nor insignificant dermo-reactions were recognizable. The local region shows only a slight hyperkeratosis, accompanied by no other histological changes. II. Experiments indicated that rabbits can be more intensely immunized by rubbing in eggwhite than by applying it, if the rubbing is continued for 30 days; that the appearance of precipitin in the blood serum is the same, whatever part of the body is rubbed (skin of ear-flap, back, abdomen); that the local skin into which eggwhite has been rubbed acquires no ability to prevent further entrance of immune substance by repeated rubbing by the same route; and that the Arthus phenomenon shows no local differences.—*From author's summary.*

13511. **KESTEN, BEATRICE M., and JENARO SUÁREZ. Observations on skin sensitivity in sprue patients.** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(3): 263-267. 1930.—24 patients with sprue were tested intradermally with food and fungus allergens. Food tests were essentially negative. 8 of 13 patients with acute sprue were positive to an extract of *Monilia psilosis.* A lesser number were also positive to blood-infusion-broth filtrates of *M. psilosis* (2 patients) and to a *Monilia* isolated from erosio interdigitalis (3 patients).—*Authors' summary.*

13512. **KLINE, B. S. Mechanism of the microscopic slide precipitation tests for syphilis. Preliminary report.** *Jour. Lab. and Clin. Med.* 16(12): 1202-1216. 9 fig. 1931.—To avoid clumping (agglutination), emulsions for the microscopic slide precipitation tests for syphilis are made by first precipitating the cholesterol crystals in water and subsequently coating them with antigen lipid. Cholesterol crystals precipitated from alcoholic solution by a small or large amount of warm or cold water or salt solution by slow or rapid mixture, vary but little in size and shape. Upon this fact depends the greater uniformity in particle type of slide test emulsions, and upon it and the fact that the reacting surface of the final particle is composed of antigen lipid only, and not of both antigen lipid and cholesterol, depends the greater specificity and uniformity of sensitivity of slide test emulsions in routine practice.—*From author's summary.*

13513. **KRAUS, R., und FR. WERNER. Giftschlangen und die Serumbehandlung der Schlangenbisse.** 220p. 98 fig. Gustav Fischer: Jena, 1931. Pr. 12 M.—This book is a manual for physicians in Europe and the tropics. Of the sections on topics of immediate practical interest to him, the following deserve mention: tabulation of venomous families and spp. according to geographical distribution; description of individual spp. (not limited to Europe and the tropics); symptomatology of envenimation; properties and uses of all available antitoxic sera, together with a list of the institutions at which they are produced; technique of snake-bite treatment. The book, incidentally, will also serve a more heterogeneous group of readers, i.e., all who are interested in venomous snakes or their venom from any point of view, since the authors appear to have included all reliable information to be had on the subject. The meagerness of our present knowledge is forcibly emphasized, e.g., concerning the composition of venom and the nature and number of its active constituents.—*L. W. Butz.*

13514. **KUMARIS, J. Zur Frage der Geschlechtsgebundenheit bei der Blutgruppenvererbung.** *Zeitschr. Rassenphysiol.* 4(1): 6-7. 1931.—The author presents his own results and those of 2 others, which show a greater incidence of group A in the female than in the male population of Greece. An opposite result was obtained by a 4th worker. No attempt is made to determine whether these differences are statistically significant.—*P. Levine.*

13515. **LASSEUR, PH., et A. DUPAIX. Considérations générales sur le mécanisme de l'agglutination sérique des microbes (phénomène de Charrin et Roger).** *Trav. Lab. Microbiol. Fac. Pharm. Nancy* 2: 7-34. 1929.—Résumé of theories and of factors affecting agglutination. 2 tables show differences in appearance in agglutination and precipitation of *B. balticus* by immune serum as seen by ultramicroscope, microscope, magnifying glass and naked eye.—*W. C. Tobie.*

13516. **LASSEUR, PH., M. MOREL, et A. DUPAIX. Variation de volume des plastides bactériennes dans l'agglutination sérique, l'agglutination par les ions H^+ Al^{+++} et Fe^{+++} et le chauffage à 80° C.** *Trav. Lab. Microbiol. Fac. Pharm. Nancy* 2: 35-49. 1929.—Acidification of suspensions of *B. prodigiosus, B. balticus, B. chloroaphis, B. pyocyaneus* with HCl gave instant precipitation, and a reduction of 33-75% in the volume of the bacterial

mass obtained on centrifuging at 10-12,000 r.p.m. for 20-60 min. Al-ions gave 60% reduction in volume of *B. prodigiosus* (colorless strain); ferric-ions gave 33% reduction of *B. chloroaphis*. Increasing concentration of HCl gave decreasing volume of bacterial mass up to a certain value (*N*/18 for *B. balticus*), beyond which a further increase had no effect. With suspensions of *B. balticus* and *B. chloroaphis* in physiological saline, antiserum in 1:15-1:100 dilution gave 25-60% increase in volume; in 1:30-1:300, 20-50% decrease; and 1:100-1:12,000, no change. In serum agglutination, a contraction in volume of cells occurs, which may be counterbalanced by adsorption of electrolytes or colloidal complexes. Heating to 80° C. causes 0-200% increase in volume in *B. chloroaphis* and *B. pyocyaneus;* and 20-60%, in *B. prodigiosus, B. balticus* and bacille rouge d'Essey.—*W. C. Tobie.*

13517. LASSEUR, PH., R. FRIBOURG, M. OLIVIER, et A. DUPAIX. Variation du pH dans l'agglutination sérique des bactéries (phénomène de Charrin et Roger). *Trav. Lab. Microbiol. Fac. Pharm. Nancy* 2: 51-57. 1929.—Observations of E. F. Hirsch (1922) that agglutination of bacteria by homologous sera caused a rise in pH of solution, were not confirmed. In the agglutination of *Bacillus chloroaphis, B. balticus,* and *B. pyocyaneus* by homologous sera in dilutions of 1:25-1:10,000 after 2-12 hrs., a decrease of 0.02-0.52 in pH occurred in most cases.—*W. C. Tobie.*

13518. LASSEUR, PH., et R. MARTIN. Phénomène de Bordet et Gengou. Fixation de l'alexine par les champignons inférieurs. *Trav. Lab. Microbiol. Fac. Pharm. Nancy* 2: 62-80. 1929.—Complement fixation shows that *Monilia cataneii* is more closely related to *M. albicans* (Charrin) and *M.* Jaubert than to *M. albicans* (Vuillemin). *M.* Jaubert and *M. albicans* (Charrin) are closely related. *Monilia* sera can not sensitize *Cryptococcus ruber, Mycoderma lactis* (Baarn), *Saccharomyces etiennei, S. pastorianus, S. ellipsoïdeus, S. pombe, Schizosaccharomyces octosporus* or *Torula colliculosa.*—*W. C. Tobie.*

13519. LATTES, LEONE. Le fonti biochimiche dell'individualità umana. [The biochemical bases of human individual differences.] *Atti Soc. Ital. Prog. Sci. (Riunione 18. Vol. I. Firenze)* 1929: 658-670. 1930.—A biochemical continuity between zygotes and soma, related to a Mendelian characteristic, is shown by the presence in human germ cells of the isoagglutinogens A and B, which pass directly into the embryo. An experimental test to distinguish between 2 kinds of spermatozoa in heterozygous individuals by means of normal group-specific sera was not successful because the sera exerted no spermatoxic activity.—*L. Lattes (transl. by M. Goettsch).*

13520. LEVINSON, L. B. Zur Frage der Atoxizität und des immunisierenden Effektes von Tetanusanatoxin. *Zeitschr. Immunitätsforsch.* 61(3/4): 268-276. 1929.—Mice which had received 3 subcutaneous injections of tetanus anatoxin were tested 1 and 2 mo. after the last injection. The majority died or showed symptoms of tetanus; only a relatively small number were immune and the immunity gradually disappeared after 2 mo. Some of the mice died with symptoms of tetanus following anatoxin injections; consequently the anatoxin can not be considered entirely non-toxic for the more susceptible individuals. The same anatoxin was non-toxic for guinea pigs and produced immunity to subsequent injection of toxin. It is assumed that the high mortality among immunized mice following toxin injection, was not due to absence of antitoxin, but that the antitoxin produced did not neutralize the subsequently injected toxin. The reactions of mice to tetanus anatoxin and toxin differ from those of horses, guinea pigs, and rabbits.—*G. I. Steffen.*

13521. LURJE, M., A. ROSENBLATT, und N. KOSSAREW. Die Dysenterie-Anavakzine Shiga-Kruse und ihre vakzinierenden Eigenschaften. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 61(1/2): 130-136. 1929.—A Shiga-Kruse dysentery bacillus emulsion, killed at 60° C., was injected intravenously into dogs weighing 1700-2000 gm. Death occurred 5 days after injecting 250 million killed bacilli; 1 billion bacilli caused death in 16 hrs. The latter was taken as the fatal dose. A formula was adopted of 2 billion bacilli in 1 cc. physiological saline with 5% formalin kept at 39° C. for 21 days. Dogs tolerated hyperimmunization with large doses of the formula (4-6-8 and 6-10-10 billion) and gave serum with agglutination titer of 1:3000-4000. Smaller doses (1-214 billion) gave a 1:2000 titer. Immunized dogs survived 8 times the fatal dose of killed emulsion and intravenous infection with living cultures. Large immunizing doses caused 10% wt. reduction and brief fever of 1-2° C. Smaller doses caused 5-6% wt. reduction and no fever. Wt. was regained in 2 wks. 11 human subjects were given 3 doses (1-2-3 billion) of the formula subcutaneously at 5 day intervals, with only a weak local reaction. Sera with titers of 1:75-1:150 were obtained from 5 subjects 7 days after vaccination.—*L. H. Cady.*

13522. MACKIE, T. J., and M. H. FINKELSTEIN. Natural bactericidal antibodies: observations on the bactericidal mechanism of normal serum. *Jour. Hyg.* 31 (1): 35-55. 1931.—A study was made of the mechanism of natural bactericidal action by sera of ox, sheep, horse, rabbit, guinea pig, rat, and man towards *Bacillus typhosus, B. dysenteriae* Shiga, *B. proteus* and *Vibrio cholerae,* which exhibit the maximum reactivity to this effect. Serum-complement has no bactericidal action per se, and an antibody-like agent invariably acts as an intermediary agent, "sensitizing" the particular organism to complement and capable of being "absorbed" by it from serum at 0° C. This sensitizing agent is stable at 55° but labile at 60-65°, in this respect resembling natural hemolysins and agglutinins but contrasting with the more stable immune antibodies and the more labile natural complement-fixing antibodies for bacterial antigens. It is resident mainly in the carbonic-acid-insoluble fraction of the serum, and is present in sera of young animals before certain other natural antibodies have developed. Absorption tests demonstrate the high degree of specificity of these natural bactericidal antibodies for particular bacteria. A non-specific extracellular substance occurs in bacterial cultures, which may neutralize or inhibit these antibodies, and interfere with their sensitizing action even at 0°. This substance is liberated in large amount in cultures heated at 120°. It can be removed by repeated washing of growth in saline solution. It may inactivate a bactericidal antibody in heated serum, though not in fresh unheated serum, and may inactivate a particular antibody in the serum of one animal species but not in another. Strains of bacteria vary in their production of this substance. Results indicate that immune antibodies have their precursors specifically differentiated in sera of normal animals and that, in general, immune antibodies are not substances formed de novo.—*Authors' summary.*

13523. MARTIN, PAUL. Contribution à l'étude de la précipitation et de l'agglutination sériques des champignons. 211p. 5 pl. Doctorate thesis: Univ. (Pharmacie) Nancy. (See also *Bull. Sci. Pharmacol.* 37(7): 416-422. 1930).—With the fungi studied, the precipitation reaction does not permit strict diagnosis of antigen. The agglutination reaction gave better results. However, the coagglutination phenomenon occurs for the species studied: *Monilia albicans, M. cattanei, M.* Jaubert, *Cryptococcus ruber, Mycoderma lactis* Baarn and *Schizosaccharomyces octosporus.* Addition of starches or of solutions of metalic salts ($MnCl_2$, $MgCl_2$) increases the agglutinating titer of the serum. It is the same with addition of alcoholic extracts of heterologous fungi.—*P. Martin (transl. by G. H. Robinson).*

13524. MIURA, MAKOTO. Experimentelle Studien über die sogenannte Depressionsimmunität. *Japanese Jour. Exp. Med.* 7(3): 379-387. 1929.—In 1920, Morgenroth, Biberstein and Schnitzer observed that mice already infected with streptococci are strongly resistant to a 2nd inoculation with large doses; this phenomenon

they termed "depression immunity." This secondary immunity is manifest within 24 hrs. of the 1st infection and continues for 5 days. The observation was later extended to other bacteria and animals and is confirmed by the author. He finds that immunity to the 2nd or super-infection develops not only to living bacteria homologous with those of the 1st or pre-infection, but also to dead homologous bacteria and to living and dead heterologous bacteria. The immunity can also be induced by pre-treatment with bacterial autolysates and nucleo-proteins, but not with bacterial metabolic products, or with proteins, lipoids and metallic colloids. Varying grades of immunity are induced by infection with streptococci, pneumococci, and mouse-typhoid bacilli, dependent on specific properties of the organism employed. Morgenroth et al. ascribed the immunity to a lowering of virulence of the organisms of the super-infection, by pre-treatment; this is not accepted by the author, who ascribes it to a refractoriness of the cells and tissues, induced by pre-infection. This refractory state may be ascribed to using-up of the tissue-cell-receptors by saturation with haptophore groups of the bacteria, etc. A leucocytosis is present in the circulating blood of pre-treated mice, but their serum appears to possess no power of retarding infection or of reducing virulence. Exceptionally, the whole blood of pre-treated mice shows no increase in bactericidal power. The immunity phenomenon can not be ascribed to any active offensive action of the tissues towards organisms of super-infection, or to functional alteration in the reticulo-endothelial system.—*R. T. Hewlett.*

13525. **[NEVLER, A. I.]** НЕВЛЕР, А. И. Реакция связывания комплемента при скарлатине. **[Complement fixation in scarlatina.]** Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 175-178; German summary, 235. 1930.—The following antigens were used: Altman and Schultz's laboratory method used in gonorrhea; Hitchcock's emulsion of 1-day-agar culture of scarlatinal and pyogenic streptococci; and Dick's toxin. Altogether, 110 human sera were tested—48 scarlatinous and 52 normal; sera of 4 rabbits immunized intravenously; and sera of 6 immunized horses. Scarlatinous sera gave positive results in 40%; normal in 20%. In rabbits, the reaction was paradoxical: it was positive before immunization with scarlatinous streptococci and toxin, and negative or weakly positive after immunization. In 2 of 6 horses, a positive reaction was noted—those with Dick toxin as antigen. Caronia's antigen gave a negative result in scarlatinous sera.

13526. **NOHLEN, ARNO, und MILIVOJ SARVAN.** **Über ein Verfahren zur Diagnostik der Tuberkulose beim Affen.** *Beitr. Klin. Tuberk.* 77(2): 186-190. 1931.—Tuberculin tests used heretofore were of no use on 6 monkeys, either in local or general effects (ophthalmic test, Mantoux, intracutaneous tests with undiluted and diluted tuberculin). In intramuscular injection of 3-5 cc. of a mixture of undiluted ophthalmotuberculin and old tuberculin, 9 tuberculous monkeys died within 1-3 days, with symptoms of severe general intoxication. In 6 healthy animals, the intramuscular injection of similar amounts of tuberculin provoked no pathological reaction.—*Authors' summary (transl.).*

13527. **OHYAMA, SEIICHI.** **Sur la purification de la toxine diphtérique.** *Jour. Biochem. Tokyo* 13: 255-272. 1931.—Willstätter's method of precipitating enzymes by addition of $ZnCl_2$ to effect adsorption of the enzyme on the resulting hydroxide or phosphate, was employed. Phosphates of Ca, Sr, and Ba and $Sn(OH)_2$ are also excellent adsorbents for the toxin, which may be recovered by eleutriation without loss of toxicity. The pH of the solution must be carefully adjusted. Addition of trypsin to the solution decreases the toxicity of the toxin; purified takadiastase is without effect.—*J. S. Caldwell.*

13528. **OLBRYCHT, J., und S. SNIESZKO.** **Untersuchungen über Präcipitine.** *Deutsche Zeitschr. Ges. Gerichtl. Med.* 12(6): 515-548. 1 fig. 1928.—A reinvestigation of the common methods of immunizing. 237 rabbits were used in production of precipitating antisera against human, horse, beef and pig sera and human and sheep hemoglobins. The strength and specificity of these antisera were studied in relation to amounts and intervals of antigen injections, season of yr., heating of antigen before injection, etc. The method of repeated injection of small amounts of normal serum, with rest periods, gave best results. A new method of immunization comprising the best parts of the old methods is described as follows: (1) Blockade the reticulo-endothelial tissues with 2 intravenous injections of 5-7.5% colloidal India ink on successive days; (2) give a series of 10 intravenous injections of 0.1 cc. normal serum + 0.9 cc. saline, with injections on each 2nd day; (3) pause for several wks. to several mo.; (4) repeat (1); (5) give a series of daily intravenous injections of 1 cc. of normal serum per kgm. body wt. To prevent anaphylactic shock give an intravenous injection of 0.1 cc. of normal serum + 0.9 cc. saline 1 hr. before the 1st injection in (5).—*A. Boyden.*

13529. **OTTO, R.** **Vergleichende Untersuchungen mit Schlangengiftseren und Viperngiften verschiedener Herkunft.** *Zeitschr. Hyg. u. Infektionskrankh.* 109(2): 272-285. 1928.—The antivenins tested were: Serum E R from the Pasteur Institute in Paris (A), Serum antiophidicum Butantan (B), Serum antibothropicum Butantan (C), and Serum from Bandoeng, Java (D). The venoms were: I *Vipera aspis* (France), II *Lachesis lanceolatus* (S. America), III *Crotalus terrificus* (S. America), IV *Ancistrodon rhodostoma* (Java), and V *Lachesis gramineus* (Java). Results: (1) *A* protected only against I, and not against II, III, IV, or V. (2) The polyvalent *B* protected not only against II and III, but likewise against I, IV, and V. (3) *C* protected against II, to a less degree against I, and not at all against III, IV, or V. (4) *D* protected against IV and V, to a less degree (by subcutaneous injection of the venom-antivenin mixture) against I, and not at all against II or III. Accordingly the antivenins *B* and *C* as well as *A* can be used in the treatment of bites by European vipers.—*R. Otto (transl. by Lewis W. Butz).*

13530. **PALDROCK, A.** **Some observations upon leprosy in Estonia and its treatment.** *Amer. Jour. Trop. Med.* 9(6): 445-460. 2 fig., 1 map. 1929.—Of 6 lepers given the combined CO_2-snow and Solganal treatment, 2 appeared completely cured, 1 nearly cured and 3 moderately improved. Active auto-immunization is accomplished by freezing lepromata with CO_2-snow, the broken-down tissues acting as antigens in stimulating antibody formation. Together with absorption of pathological tissue in treated areas, there occurs a reduction in size of untreated lepromata. Treatments are repeated every 3-4 wks. for 4 mo. At each treatment, 10 small lepromata are exposed 3-4 sec. A 4-mo. rest period follows each course of treatment. If, after 2 yrs., a patient no longer responds to this treatment, intravenous injections of Solganal are given. This drug is effective against the already weakened leprosy organisms, considered by the author as trichomyces rather than bacilli. —*A. L. Stoughton.*

13531. **[PETROV, M. N.]** ПЕТРОВ, М. Н. К вопросу об образовании антител при кишечной вакцинации. **[Formation of antibodies after per os vaccination.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(4): 419-423; French résumé, 482-483. 1929.—Of 6 rabbits which after 24-48 hrs. of fasting were given per os vaccine of paratyphoid B (30 milliards), only in 1 were agglutinins (titer 1:100) found in the serum. When these same rabbits were given a live culture (10 milliards in 5 cc. of physiological saline) of paratyphoid B, on the 5th day after treatment agglutinins (titer 1:500, soon increasing to 1:2000) were found in the serum. Thus, introduction of live cultures into animals previously vaccinated per os with paratyphoid B quickly caused the appearance of agglutinins in the serum. 0.2 cc. of blood serum of rabbits previously vaccinated

injected under the skin of mice failed to protect them when the paratyphoid culture (5 lethal doses) was injected on the following day. Serum taken from rabbits on the 5th day after introduction of live culture of paratyphoid, although not preventing death, had some preventive properties. Serum taken on the 10th day had evident preventive properties: 0.2 cc. of the serum prevented mice from dying after intra-abdominal injection of 10 lethal doses of live culture.—*G. A. Lebedeff.*

13532. **PLATONOFF, G. Neutralisation des Tuberkulinshocks durch Lipoide.** *Zeitschr. Ges. Exp. Med.* 70 (1/2): 231-235. 1930.—Experimental and clinical data show the characteristic signs of allergy in some phenomena of tuberculosis. As an approach to the treatment of tuberculosis from this standpoint, through administration of anti-anaphylactic substances like Ca, atropin, etc., the author chose the experiment of checking tuberculin shock by lipoids (Na morrhuate and Na gynocardate), the anti-anaphylactic action of which (when egg-albumin was used) was observed previously. These substances mixed with the tuberculin injected, protected 12 tuberculous guinea pigs (4 controls) against a lethal dose; and, given before tuberculin, protected 5 guinea pigs (5 controls). Clinical injections of tuberculin mixed with Na morrhuate or Na gynocardate occasioned but slight temp. reaction.—*G. Platonoff.*

13533. **RECHE, O. Theoretisches zur Physiologie der Agglutinogene und Agglutinine.** *Zeitschr. Rassenphysiol.* 4(1): 1-5. 1931.—The author discusses the origin of the human blood properties A and B and their corresponding antibodies α and β, and raises the question as to their possible function. He suggests that group "O" in the American Indian may possibly have properties differing from group O of other races containing also factors A and B, and therefore suggests that the blood of any race be examined by reagents derived from the same race only. The author cites experiments which indicate that the blood cells of some lower monkeys react with human sera of group O, but not with sera of groups A and B.—*P. Levine.*

13534. **RECHE, O. Zur Blutgruppenuntersuchung der menschlichen Primitivrassen.** *Zeitschr. Rassenphysiol.* 4(2): 88-90. 1931.—The author calls attention to the numerous primitive races not yet examined as to blood properties, e.g., those of New Guinea, Melanesia, Philippines, South America, Africa, etc.—*P. Levine.*

13535. **ROBERTS, EDWARD F. Extirpation of the antigenic depot and antibody production.** *Jour. Immunol.* 20(4): 291-304. 1931.—The contention that the stimulus to antibody production is the hematogenous-transported antigen is supported by the following evidence derived from experiments on rabbits: antigen circulates from its site of deposition; adequate ligation of the ear base blocks its passage; extirpation diminishes slightly the extent of antibody production; elimination of the nervous pathway by establishing a healed wound of 2 wks. duration as the only connecting link between antigenic depot and the remainder of the animal, fails to prevent antibody production; elimination of the venous drainage by operative procedure prevents antibody production.—*E. F. Roberts.*

13536. **SARVAN, MILIVOJ. Über die Rolle der Milz bei der experimentellen Tuberkulose.** *Beitr. Klin. Tuberk.* 77(2): 182-185. 1931.—Intrapulmonary injection of 0.5 cc. of a 1:10,000 suspension of human type tubercle bacilli was done in 3 splenectomized and in 4 normal *Macacus rhesus.* A control died spontaneously on the 27th day, and a splenectomized monkey on the 35th; the pulmonary conditions were alike, but there was a greater extension of abdominal tuberculosis in the control. The other monkeys were killed; in the non-splenectomized animals the abdominal organs were more affected, particularly by peritoneal dissemination; in the splenectomized animals all but 1 were free of peritoneal tuberculosis. Possibly from splenectomy a compensatory increase in formation of immune bodies in other organs (reticulo-endothelial system?) occurs, and, in contrast to some other causes of infection (vaccine virus, simian piroplasmosis, etc.), mainly against the tubercle bacillus.

13537. **SAVINO, E., J. NEGRETE, y C. ACUÑA. Obtención, purificación y medición del suero antineumocóccico. [Preparation and standardization of antipneumococcic serum.]** *Rev. Soc. Argentina Biol.* 7(2): 127-139. 1931.—An active serum is obtained by immunizing horses with cultures of pneumococcus type I in broth-liver-glucose. Purification, to eliminate substances that provoke chills, is obtained by the following procedure: Citrate plasma is recalcified and precipitated with 22% Na_2SO_4, dialyzed, and adjusted to pH 4.7 by adding acetic acid, thus eliminating inactive lipids, nucleoproteins, etc. After adjusting to pH 6.6-6.8 the active pseudoglobulin is precipitated by dilution with water saturated with CO_2 and then dissolved in 3% saline up to 1/10 the original serum volume. Felton's method of standardisation is followed; 1 unit is the amount of serum that protects a white mouse against the action of 10^6 minimal lethal doses of a strain that kills by the intraperitoneal injection of 10^{-8} cc. of culture. Mice weighing 15 gm. are used; they receive 0.5 cc. of a 1:200 dilution of 6-hr. culture with 0.5 cc. of the diluted serum, 3 mice being used for each dose. The protective dose contains $\frac{1}{4}$ of Felton's unit. In dead mice, presence of pneumococcus was verified. The final dilution of concentrated serum contains 750 units per cc.—*J. T. Lewis.*

13539. **SCHMIDT, S., und K. A. KJAER. Reinigung und Konzentrierung von Diphtherietoxin und Diphtherieanatoxin durch Ausfällung mit Säuren.** *Biochem. Zeitschr.* 228(4/6): 291-299. 1930.—By suitable change of the pH of toxin and anatoxin (preferably to pH 3.5-4.1), the authors precipitated the specific material. When the precipitate is dissolved in alkaline solution they find that 50-60% of the specific material has been recovered and that nearly all the non-specific proteins have been removed. Acidification changes certain specific properties of the toxin; e.g., the immunizing action of the purified anatoxin may be less than that of the corresponding crude anatoxin.—*Author's summary (transl. by M. S. Nichols).*

13540. **SCHWARZ, EUGENIO. Ricerche sperimentali sulle modificazioni immunitarie indotte da ripetute prove di Schick. [Immunity modifications from repeated Schick tests.]** *Pediatria* 37(1): 32-39. 1929.—Intradermic introduction of diphtheria toxin, even in the very small dose used normally in the Schick test, stimulates production of antitoxin.—*E. Ponzi.*

13541. **SIRACUSA, V. La propriété antigène du sperme du groupe A.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(9): 594-602. 1931.—Using the serological method, the author confirmed the analogy between antigen A of the blood and antigen A of the sperm. The so-called individual reactions of blood and of sperms to antisperm serum, confirmed only for blood, appear to be only group reactions. The author failed to show in the antiserum obtained with sperms of the A heterozygote (AO), an eventual spermotoxic action capable of distinguishing the 2 types of spermatozoids, genetically diverse, in the individual heterozygotes. Immunization with sperms of heterozygote AO failed to give specific agglutinin for O-erythrocytes, giving it only for A-erythrocytes.—*Author's résumé & conclusions (transl.).*

13542. **SORDELLI, A., y E. MAYER. El agar como antígeno "in vitro." [Agar as antigen in vitro.]** *Rev. Soc. Argentina Biol.* 7(5/6): 416-422. 1931.—Serum of horses immunized against *Bacillus anthracis* or *B. typhosus*, grown in agar-serum media, precipitated in vitro with these bacilli and with agar. All commercial brands of agar have this property, as does also *Laminaria japonica* (Kombu) and *Undaria pinnatifida* (Wakamen). There is apparently no specificity among them. The precipitinogen of agar is water-soluble, precipitates with 4 volumes of alcohol, is destroyed by acids (0.1 *N* HCl) and is not destroyed by alkali. The agar precipitin can be separated from the antianthracis precipitin by adding bacilli to the serum and centrifuging, agar precipitin alone remaining. Both precipitins are

found in the euglobulin when serum is diluted with water saturated with CO_2.—*J. T. Lewis.*

13543. **STRENG, OSW. Immunokonglutinin-Antikomplement.** *Acta Path. et Microbiol. Scandinavica Suppl.* 3: 411-429. 1930.—These studies show that agglutinins can be absorbed by native bacilli; and that with bacteria charged with complement, the immunoconglutinins are absorbed. Any complement may be used, and the new immune bodies act on the complement. By immunization with bacteria charged with complement or blood, flocculation appears as soon as combination with complement has occurred. These immune bodies are anticomplementary, and are analogous to conglutinins in calf serum. The value of these immunoconglutinins for diagnostic purposes is now being studied.—*P. G. Heineman.*

13544. **SUGIURA, KANEMATSU, and STANLEY R. BENEDICT. The effect of the injection of heated tumor tissues on resistance to tumor implantation.** *Amer. Jour. Cancer.* 15(4): 2727-2744. 5 fig. 1931.—Fragments of fresh tumor tissues in Locke-Ringer solution at pH 7 were submitted to different temp. for varying periods. The thermal death points of the Flexner-Jobling rat carcinoma (F.R.C.), Sugiura rat sarcoma (S.R.C.), and Rous chicken sarcoma No. 1 (R.C.S.) are as follows: for F.R.C., 20 min. at 45° C.; for S.R.S., 30 min. at 45°; and for R.C.S., 180 min. at 45°, 15 min. at 55°, 10 min. at 60°, and less than 5 min. at 70°. Inoculation of heat-inactivated F.R.C. cells previous to implantation of fresh, healthy homologous tumor cells failed to prevent growth of the latter. Injection of heat-inactivated S.R.S. cells produced slight but definite protection against subsequent growth of new sarcoma cells in treated animals. Injection of a fragment or emulsion of R.C.S. in which the causative agent had been attenuated at 45-60° with a minimum time of exposure, conferred marked resistance to subsequent implantation of homologous tumor. The immunizing property of the attenuated chicken sarcoma was abolished by prolonged heating or heating the tumor tissue at a much higher temp. Previous injection with heat-inactivated R.C.S prolonged life in the tumor-bearing chickens, subsequently inoculated with viable tumor. Single or repeated subcutaneous or intramuscular inoculations of heat-inactivated F.R.C., S.R.S., or R.C.S. had no effect in checking growth of firmly established tumors in animals.—*Author's summary.*

13545. **SULZBERGER, MARION B., and R. L. MAYER. Sensitizations. Regional, seasonal, dietary and other influences accounting for variations and fluctuations.** *Arch. Dermatol. and Syphilol.* 24(4): 537-542. 1931.—Chance observations showed that guinea pigs react differently when sensitizations with the same brand of neoarsphenamine were attempted in Breslau, Zürich and New York. In Breslau, 98% of the animals became sensitized; in New York, none; Zürich animals were intermediate. These differences remained constant in spite of identical technique. A study in Breslau showed that the diet of the experimental animals is of decided importance, green fodder (alkaline ash) inhibiting and dry fodder favoring sensitization (neoarsphenamine and paraphenylendiamine were employed in the experiments at Breslau). Other influences may also be involved, e.g., lack of genetic homogeneity in the races of experimental animals used. Results may throw some light on hitherto apparently contradictory results reported by different observers, as well as on observations of clinical, epidemiological, endemiological, geographic and seasonal fluctuations.—*From author's summary.*

13546. **[SYCHEV, N. A.]** СЫЧЕВ, Н. А. К вопросу о зоологической близости и серологическом типе верблюдов. **[Zoological affinity and serologic type of camels.]** Журнал Экспериментальной Биологии (*Jour. Biol. Exp.*) 6(1): 49-59. 1930.—2 rabbits were immunized with erythrocytes of a pure-bred 2-hump camel; 30 cc. of fresh erythrocytes were injected into the ear vein of rabbits once a wk. for 3 wks. Serum was taken 9 days after the last injection; the blood of the rabbits showed a typical picture of hemolysis, not only with erythrocytes of the 2-hump camel, but also with those of 1-hump, and hybrid camels. Thus the hemolysogenic antigen properties of the erythrocytes of both types of camels were closely related, or the erythrocytes of the 2-hump camel, besides its generic antigen, also had a homologous heterogenic antigen of the 1-hump camel. This led to the conclusion that the 2 types of camels are related. In confirmation the author found that these 2 types of camels belong to the serological types of the guinea pig. —*G. A. Lebedeff.*

13547. **TENAGLIA, ALFREDO. Absorción de las toxinas diftérica y tetánica por la pulpa dentaria. [Toxin absorption by dental pulp.]** *Rev. Soc. Argentina Biol.* 7(5/6): 370-376. 1931.—Diphtheria toxin was absorbed (1/10 of dose applied); tetanus toxin gave no symptoms.—*J. T. Lewis.*

13548. **THOMSEN, OLUF. Übersicht über die Entwicklung der Blutgruppen beim Menschen.** *Acta Path. et Microbiol. Scandinavica Suppl.* 5: 57-59. 1930.—The agglutinins begin to develop at 6 mo., reach their maximum titer at 5-10 yrs., and then gradually return to the titer at birth, reaching it in old age. The agglutinogens reach maximum sensitivity at 15-20 yrs., and remain unaltered thereafter.—*A. S. Wiener.*

13550. **VANDEBERG-LOMMEL, Mme. Quelques recherches sur les substances extraites des bactéries coliformes, capable de réagir dans l'épreuve de fixation.** *Arch. Internat. Méd. Exp.* 6(4): 463-469. 1931.—While alcoholic extracts of typhoid and paratyphoid bacilli contained undeniable antigens, extracts of *B. coli* were irregular, some exhibiting type-specific reactions, others, prepared under identical conditions, being incapable of complement fixation.

13551. **VELLARD, J., und A. de ASSIS. Immunologische Untersuchungen über das Gift brasilianischer Anurenarten.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 63(1/2): 116-138. 1929.—*Phyllomedusa burmeisteri* Blgr. and *Trachycephalus nigromaculatus* Tschudi have skin secretions which hemolyze goat corpuscles. Secretions of *Hyla faber* Wied, *Leptodactylus ocellatus* L., *Bufo marinus* L., *B. rubescens* Lutz, and *B. crucifer* Wied do not. The *nigromaculatus* hemolysin is very unstable, being destroyed in 30 min. at 45°, and even at 4° within a few days. That of *burmeisteri* is thermostable and decreases somewhat in hemolytic power only after 30 min. boiling. Slow poisoning of dogs with the composite venom of *B. marinus* causes formation of complement-fixing substance in the serum. These antibodies are strictly specific and exert their action only in presence of *marinus* antigen. The antigenic properties of this venom depend on the presence of small quantities of protein, which escape chemical detection and are probably atoxic. These complement-binding properties of the immune sera are weakened considerably by boiling. The toxin of the *marinus* parotid gland secretion, which is thermolabile and alcohol-soluble, has no power to stimulate formation of complement-binding substance. The same is true of anura toxin, both with regard to homologous antigens and to those of other species.—*L. W. Butz.*

13552. **WADSWORTH, AUGUSTUS, and RACHEL BROWN. Chemical and immunological studies of the pneumococcus. II. The ether-soluble fraction of type-I pneumococcus.** *Jour. Immunol.* 21(4): 255-260. 1931.—The ether-soluble fraction of type-I pneumococcus was obtained by extracting dried cells with ether at room temp. The extractive appeared to be a mixture of substances which failed to give the usual protein, sterol, glycerol, or carbohydrate reactions. N and P content were very low. The extractive was obtained in 1.2% yield from virulent, and in 2.15% from avirulent organisms. Extraction of autolyzed cultures with ether failed to give the same product. In vitro, the extractive behaved as antigen in complement-fixation reactions with the 3 types of anti-pneumococcus sera. In vivo, no antigenic activity was demonstrated. The sera of inoculated rabbits, however, protected mice against pneumococcus infection. Ether extraction of dried pneumococci did not impair

the antigenic activities of the cells in fixing complement and in immunizing mice.—*R. Brown.*

13553. WADSWORTH, AUGUSTUS, ELIZABETH MALTANER, and FRANK MALTANER. The quantitative determination of the fixation of complement by immune serum and antigen. *Jour. Immunol.* 21(4) : 313-340. 1931.—The conditions essential to quantitative measurement of changes in hemolytic activity of complement, which take place in complement-fixation tests with immune serum, were investigated, also the relations between these changes and concentration of immune serum. The observation of Morse that the point of 50% hemolysis is the most exact index of the hemolytic unit of complement, was applied; also the findings of Brooks that changes in complement activity must be measured at points of equal degree of hemolysis. The limits of concentration of reagents and the conditions under which quantitative determinations of changes in hemolytic activity could be made, were established, using tubercle antigens and their specific antisera. Variations in fixability of different complements rendered impossible the direct measurement of the immune reaction by use of a hemolytic unit of complement. However, a constant relation was discovered between extent of changes in hemolytic activity of complement and quantities of immune serum present, which made possible the use of a "fixability unit" in determining the specific activity of serum, instead of the hemolytic unit,—thus eliminating the error due to differences in fixability of different complements. The observations suggest that by use of "fixability units," determined with an immune serum selected as standard, it may be possible to measure quantitatively with different complements the activity of various other sera by comparison. Development of a quantitative method based on comparison with standard immune serum should be an important step toward standardization of the complement-fixation test, since it would permit adoption of a specific serum as a universal standard of comparison in evaluating reactions, just as such standards have been adopted in other fields, e.g., in comparing toxins and antitoxins.—*E. Maltaner.*

13554. WEINERT, H. Blutgruppenuntersuchungen an Menschenaffen und ihre stammesgeschichtliche Bewertung. *Zeitschr. Rassenphysiol.* 4(1) : 8-23. 1931.—The author examined the blood cells of 3 gorillas, 1 orang-outang, and 1 chimpanzee with human serum of groups A and B. In some instances the sera of the apes were tested with human cells of groups A and B. He concludes that the 5 higher apes belong to group A. Neither property A nor B could be demonstrated in the blood cells of some lower monkeys.—*P. Levine.*

13555. WEINZIRL, JOHN, and J. DURWARD THAYER. Desensitisation in tuberculous guinea-pigs as measured by the systemic test. *Tubercle* 12(11) : 488-505. 1931. —14 protocols were carried through, involving 238 tuberculous test guinea pigs, 55 tuberculous controls and 15 normal controls. Of the total, 125 test animals, 40 tuberculous controls and 15 normals remained to receive the systemic test; tuberculosis, intercurrent infections and antigens accounted for the loss. Antigens employed in desensitizing test animals were: (a) heat-killed, (b) iodine-killed, and (c) ether-killed virulent tubercle bacilli; (d) ether-killed avirulent tubercle bacilli; (e) ether-killed *Mycobacterium smegmatis;* (f) tuberculins; and (g) tuberculo-proteins. As indicated by the systemic test, considerable desensitization was secured in tuberculous guinea pigs treated with certain antigens. Desensitization spared the lives of the animals to a considerable extent against administration of a 25 mg. dose of old tuberculin. Heat-killed and iodine-killed tubercle bacilli, and old tuberculin are unsuitable antigens for desensitization of tuberculous guinea pigs. Ether-killed and treated antigens of both virulent and non-virulent tubercle bacilli and of *M. smegmatis* caused desensitization to about the same degree in tuberculous guinea pigs when injected in suitable doses. Tuberculo-proteins are promising antigens for desensitization of tuberculous guinea pigs. A dose of 1 mg. of bacillary antigen generally gave greater desensitization than smaller doses; larger doses tended to kill the animals. The systemic test, as here used, was unsatisfactory, due to the toxic properties of old tuberculin. Theoretically, the value of the systemic test is not altered; only the reagent is found deficient. It is hoped that purified tuberculin, S.M.T., will prove more satisfactory.—*Author's summary.*

13556. WOLFF, L. K. Ueber die Bakterizidie von Blut und Serum gegenüber Staphylokokken. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 50(5/6) : 543-558. 1927. —Usual bactericidal tests are unsatisfactory because there are so many sources of error. Agglutination of bacteria may simulate a great reduction in number. Some sera may be bactericidal in presence of air and not so under anaerobic conditions. Dilution of a serum to extinction does not necessarily measure its bactericidal power, as the undiluted serum may be inactive. What we wish to know is the bactericidal power of the whole blood in the vessels, but no practical method of making such a test has been devised. The author, using Wright's method, determined that the bactericidal power developed after injection of staphylococci into a rabbit is due to the leucocytes which kill the bacteria, but not by phagocytosis. Addition of antistaphylococcic serum does not increase the bactericidal power, either in vitro or in vivo. The bactericidal power of a blood is lessened or entirely extinguished by adding staphylococci.—*E. C. L. Miller.*

13557. YOSIDA, KAN-ITI. Über die gruppenspezifischen Unterschiede der Transsudate, Exsudate, Sekrete, Exkrete, Organextrakte, und Organzellen des Menschen und ihre rechtsmedizinischen Anwendungen. *Zeitschr. Ges. Exp. Med.* 63(3/4) : 331-339. 1928.—The author found in all physiological and pathological body fluids except cerebrospinal fluid, constant as well as group-specific isohemagglutinins and also heteroagglutinins equal to those of the serum. They were demonstrable in many secretions and excretions such as tears, saliva, sperms, sweat and urine, but in urine only after concentration. In these transudates, secretions, and excreta, and in various organ extracts (thyroid, thymus, lungs, liver, spleen, kidneys, ovary, lymph nodes, pancreas, intestine, muscle, etc.), group-specific antiagglutinins were also found, which antagonized agglutination of erythrocytes of the same group; they could be clearly demonstrated in exceedingly small amounts of material in which isohemagglutinins could not be found. The group-specific absorption capacity of the organ cells for isohemagglutinins was shown in various organs, especially glandular (e.g., thymus, thyroid, lungs, liver, spleen, kidneys, pancreas, ovaries, and lymph-nodes),—also in all mucous epithelia and in spermatozoa. Hence, specimens of blood are not absolutely necessary to determine blood groups, but merely a specimen of organ cells or body fluids.—*From author's summary (transl.).*

LOWER ANIMALS

13558. ANDRIEVSKY, PETRO. Les manipulations techniques dans la production du sérum antipestique à Bamako. [Technical manipulations in production of anti-rinderpest serum at Bamako.] *Rec. Méd. Vét. Exotique École Alfort* 4(3) : 129-136. 7 fig. 1931.

13559. BERGEON, P., et J. CÈBE. Au sujet de la vaccination antipestique. Expériences faites au laboratoire de l'école vétérinaire de l'Indochine à Hanoi en 1929. *Bull. Écon. Indochine Agric., Élev., Forêts, Sect. B* 33(May) : 434-445. 1930.—Use of glycerinized anti-rinderpest vaccine has not given convincing results. Buffaloes failed to withstand a severe test dose of virulent blood 15 days after vaccination. Calves so treated survived, but were very sick with the disease. Buffaloes and calves treated with vaccine prepared according to the "Jacotot" technique resisted the test dose of virus given 15 days and also 4-5 mo. after vaccination. It appears that the activity of the "Jacotot" vaccine deteriorates rapidly. The hyperactive serum of "Jacotot" exerts a good influence on the course of rinderpest in calves, but has no effect in buffaloes. In contaminated areas,

it appears that serovaccination should limit the loss of animals.—*L. A. Barnes.*

13560. **CLARK, C. F. Correlation of blood reactions with the breeding records over a period of years in an abortion-infected herd of cattle.** *Jour. Amer. Vet. Med. Assoc.* 32(3): 290-331. 1931.—Positive (+) animals had 2½ times more abortions than negative (−) animals. Sterility was 4 times more frequent in suspicious animals, and 8 times more frequent in + animals, than in those with a − history. Retention of the fetal membranes occurred with almost equal frequency in −, suspicious and + groups. A majority of + animals (62%) and an appreciable number of suspicious animals (11%) had *Brucella abortus*-infected udders. Of animals + at 1:50, 38% became −, 33% became suspicious, and 28% became +. Of animals + at 1:100, 11% became −, 22% became suspicious and 67% became +. Of animals + at 1:50 or 1:100 for 5-10 mo., only 2% became −. Animals + at 1:50 or 1:100 for more than 10 mo. did not become permanently −.—*Author's summary.*

13561. **HUHTALA, E. Havaintoja luomistaudin vastustamisessa. [Observations on the campaign against infectious abortion.]** *Suomen Eläinlääkärilehti (Finsk Veterinärtidskr.)* 37(2): 27-38; (3): 53-64; (4): 92-102. 1931.—The author made his observations in heavily infected regions in which about 25-35% of all cattle were infected with *Bacillus abortus* Bang. Individual farms had 15-40 cows. These properties were exclusively devoted to milk production; since in these circumstances, destruction of the infection was practically impossible, methods were chiefly directed towards maintaining production. It appeared that introduction of the plague into healthy herds was principally by indirect ways; therefore it seems that the epidemic in the early stages is insidious. With this in mind, diagnosis was established in this stage and campaign measures begun. Strict accomplishment of systematic hygienic measures is of greatest value. Immunization with killed cultures has not given satisfactory results. The author believes that this method of attack has no economic value. On the contrary, inoculation of living cultures subcutaneously gave very good results. The author describes in detail his method of dealing with control of infectious abortion in dairy herds. In Finland there is compulsory notification and pasteurization for *B. abortus* infections.—*E. Huhtala (transl. by G. H. Robinson).*

13562. **MAZZUCCHI, M. Le nouveau vaccin anticharbonneaux "Carbozoo" dans sa constitution et dans ses applications pratiques.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(6): 193-196. 1931.—The vaccine here proposed differs entirely from the anti-anthrax vaccine proposed by Pasteur; it contains, not attenuated bacilli, but living, virulent organisms in a strongly hemolytic menstruum—saponin. This vaccine, "Carbozoo," can be injected into animals without danger. A single injection is sufficient to produce, after 12 days, an immunity such that vaccinated animals withstand a dose of anthrax which kills control animals in 40-60 hrs. In comparative tests, "Carbozoo" has always been superior to other vaccines; it has been used in practice for 2 yrs., and 800,000 animals have been vaccinated, with excellent results.—*M. Mazzucchi (transl. by L. C. Havens).*

13563. **SCHERMER, S. Untersuchungen über die Blutgruppen des Pferdes.** *Zeitschr. Immunitätsforsch.* 58 (1/2): 130-142. 1928.—On the basis of investigations of 50 horses for occurrence of isagglutinins, the author finds 2 factors, X and Y, and 2 corresponding agglutinins, x and y,—thus giving 4 groups in a manner similar to man. However, 16% of the horses gave reactions not corresponding to those of any of the 4 groups. The isoagglutinins in horse sera are very weak and frequently are entirely lacking. It is consequently not always possible to determine the group of any individual horse by use of a few grouping sera. There are significant differences in incidence of the groups in various races of horses.—*P. Levine.*

13564. **VALENTINI, ISIDRO ITALO M. Trabajos clínicos y experimentales sobre la vacunoterapia de las afecciones bronquiopulmonares de los equinos. [Clinical and experimental studies of vaccine therapy of bronchopulmonary diseases of horses.]** *Bol. Min. Agric. Nacion. [Buenos Aires]* 29(4): 463-474. 1931.—The disease discussed occurred in poorly nourished animals and resembled bronchopneumonia. There was apparently no single etiologic agent. An autopyo-vaccine made from the nasal discharges, a stock vaccine, and sero-vaccine therapy were used. Digitalis was frequently administered. A stock vaccine and antistreptococcus serum were given as a prophylactic. No statistics are given as to incidence, mortality or effectiveness of treatment.—*G. H. Robinson.*

13565. **WALKER, J. Rinderpest research in Kenya.** *Communic. to Pan-African Agric. & Vet. Conf. Pretoria, August, 1929. Bull.* 8A. 21p. 1929; also in: *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Pretoria Papers Vet. Sect.* p. 39-57. 1929(1930).—In Kenya, active immunization against rinderpest consists in subcutaneous inoculation of 2 cc. of citrated virulent blood and, simultaneously, a dose of antiserum of 20 cc. per 100 kgm. body weight, for cattle of average susceptibility. Pending active immunization, outbreaks are sometimes dealt with by the serum method alone, when the herd is threatened by disease in the vicinity or when rinderpest has already appeared in the herd. With a view to perfecting the method of active immunization, the writer investigated the following problems: (1) Conferring of immunity—It was found that use of fresh blood is of fundamental importance in producing rinderpest in simultaneously inoculated cattle. (2) Supply of virulent blood for field use—Experiments showed that results with iced blood despatched to the field in insulated boxes were unsatisfactory, and use of virus-makers infected at the laboratory and despatched to the desired center by rail or lorry was substituted. (3) Production of virus free of redwater and anaplasmosis for the simultaneous inoculation of dipped stock—On account of dipping for East Coast fever, a % of cattle submitted for immunization are now susceptible to redwater and anaplasmosis and accordingly avenues were exploited with a view to production of "clean blood" or "clean virus." After various experiments, it was decided to adopt the method of breeding and rearing virus-makers free of tick-borne diseases. (4) Immunization with tissue extract—The author describes a method of immunization with tissue extract and concludes that further investigations are necessary to confirm the duration of immunity conferred. In the meantime this method of immunization is utilized for inoculation of dairy cattle, cows heavy in calf, pure-bred cattle and calves. Redwater infection is not transmissible by inactivated spleen prepared from an animal reacting to redwater.—*J. Walker.*

ANIMAL IMMUNOLOGY

PARASITOLOGICAL

W. H. TALIAFERRO, *Editor*

(See also in this issue 13585, 13588, 13630, 14507)

13566. **ADAMS, PAUL. Über das Wesen der trypanoziden Wirkung menschlichen Normalserums.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 58(5/6): 459-482. 1928.—The trypanocidal effect of parenteral administration of normal human serum in mice infected with pathogenic trypanosomes, does not depend on antibody-

provoking substances. Trypanosomes could not be eliminated from the blood of mice by administration of bile, urea, emetin, iodine, weak acids, etc. Sera from rabbits, guinea pigs, calves, horses, hogs and some lower monkeys likewise had no effect. *Macacus* monkeys succumb after infection with nagana trypanosomes. The trypanocidal action of human serum was distinctly reduced by heating at 56-60°, and completely destroyed at 62°. The action also decreases with age of serum. Serum, inactivated by heat, is not reactivated by complement (guinea pig serum). Wassermann-positive serum is more active than normal serum.—*P. G. Heineman.*

13567. CERRUTI, CARLO G. Reazioni allergiche (intrapalpebre) nella cisticercosi del coniglie. [Intrapalpebral allergic reactions of rabbits in cysticercosis.] *Nuova Vet.* 6(10): 229-234. 1 fig. 1928.—Infection of rabbits with *Cysticercus pisiformis* creates a particular allergic state demonstrable, on injection of an extract of whole worms into the lower eyelid, by a copious edema persisting for 72-90 hrs. and accompanied by a general reaction. The extreme sensitivity and specificity of the intrapalpebral reaction permits detection of rabbits infected with cysticerci. It seemed impossible to confer a passive anaphylactic state on normal guinea pigs by injection of serum from rabbits severely infected with cysticerci.—*C. G. Cerruti (transl. by H. L. Gruehl).*

13568. ESSEX, HIRAM E., J. MARKOWITZ, and FRANK C. MANN. Physiologic responses and immune reactions to extracts of certain intestinal parasites. *Amer. Jour. Physiol.* 98(1): 18-24. 1931.—Most of the experiments were performed with the dog tapeworm, *Taenia pisiformis,* up to 5 times the standard dose of its extract being injected into 4 heavily infected dogs with no depressor response; though in dogs (no. not stated) which had never been infected it produced decided fall in blood pressure. Extract of *Toxocara canis* gave similar depressor action, but the toxic principle was evidently distinct, for the depressor reaction was developed when a dose of *Toxocara canis* extract was given after either a previous dose of the same extract or one of *Taenia pisiformis* extract. The reaction in either case is evidently not anaphylactic.

13569. REGENDANZ, P., und E. REICHENOW. Über Zeckengift und Zeckenparalysis. *Arch. Schiffs- u. Tropen-Hyg.* 35(5): 255-273. 1931.—After considering pertinent literature references, the authors take up the biology and anatomy of the dog tick, *Rhipicephalus sanguineus,* with special reference to head and salivary glands. Eggs of this sp. and also of *Dermacentor reticulatus* were ground up in 0.6% Ringer's or 0.9% physiological saline and introduced intraperitoneally, subcutaneously or intravenously into dogs, rabbits, guinea pigs, rats and mice. Results showed the presence of a toxin which, if sufficient in amount, induced motor paralysis and death. The venom resists drying, is not destroyed by alcohol, and is still potent after exposure to 75° C. for 45 min., but is destroyed at 85° for 15 min. and at 100° for 1 min. Oxidation does not render it innocuous; it passes Berkefeld-N filters; and has a weak hemolyzing effect on sheep erythrocytes. Resistance to the venom apparently can not be developed. Larvae and unengorged nymphs are free of venom, which is elaborated only after feeding by the female imago; it is primarily associated with development of eggs in the ovaries. It does not occur in head or salivary glands, or in Malpighian tubules.—*E. C. Faust.*

13570. SARKAR, SARASI LAL. Some peculiarities in the malarial temperature charts of Chittagong Hill Tracts. *Indian Jour. Med. Res.* 18(2): 367-375. 1930.—A comparison of charts of children from a hyperendemic with those from a subendemic region showed that the fever in the former (1) remained at constant levels for some hrs. and did not rise to the sharp high peaks characteristic of ordinary malarial fevers, and (2) the acuteness of fever tended to diminish with advancing age. These facts are taken to support Christophers' conclusion that under hyperendemic conditions a form of immunity is produced by an acute infestation starting shortly after birth and lasting about 2 yrs.—*W. Trager.*

13571. VASSILIADIS, P. La fonction antiparasitaire de la rate décelée par la splénectomie. *Arch. Internat. Méd. Exp.* 6(1): 89-119. 1931.—In animals with rat-bite fever, splenectomy increased the number of spirilla in the blood; in rats infected with *Tr[ypanosoma] lewisi,* it rendered the infection pathogenic, which it had not been previously; in mice infected with *T. rhodesiense* and *T. pecandi,* it had no effect. Of 25 splenectomized rodents, 12 (6 species) were immune to *T. lewisi* before and after operation; of the 13 others (*Mus minutus*), 5 became infected; the remaining 9, with 4 controls, remained immune. Rabbits, normally immune to *Eperythrozoon coccoides,* after splenectomy were successfully inoculated, though after 3-5 days the parasite disappeared from the blood and the animals were refractory to fresh inoculations. In other experiments, latent infections of rodents, particularly with *Bartonella muris* and Eperythrozoa, were rendered patent by splenectomy.

PARASITOLOGY (ANIMAL)

R. W. HEGNER, *Editor*

W. W. CORT AND F. M. ROOT, *Associate Editors*

(See also in this issue Entries 13313, 13318, 13357, 13412, 13487, 13570, 13571, 13694, 13900, 13902, 13903, 13905, 13908, 13912, 13915, 13916, 14482, 14483, 14485, 14488, 14490, 14491, 14493, 14496, 14498, 14499, 14504, 14506, 14507, 14508, 14511, 14514, 14515, 14516, 14517, 14518, 14519, 14536, 14537, 14539, 14541, 14542, 14543, 14544, 14545, 14546, 14547, 14558, 14559, 14571, 14696, 14705, 14706, 14796, 14910, 14949)

13572. ALESSANDRINI, GIULIO. Parassitologia dell'uomo e degli animali domestici. [Parasites of man and of domestic animals.] 573p. 413 fig. Unione Tipografico-Editrice Torinese: Torino, 1929.—This book, taking up the whole field of zooparasitology, with emphasis on the parasites of man, and bringing out some of the recent advances in this field, is divided into 4 sections: (1) A discussion of parasites in general. Here are discussed the scope of parasitology, host parasite relationships, habitat of parasites, propagation and defense of parasites against destructive influences, origin of diseases due to parasites, deleterious mechanical influences of parasites in the host, diagnosis and prophylaxis of parasitic diseases. (2) Morphology and biology of protozoan and metazoan parasites. The author considers the four classes of Protozoa; and for the Metazoa he discusses the various parasites in the Platyhelminthes, Nemathelminthes, Annelida and Arthropoda. Each group is considered first as a whole, and then the individual species are in many cases discussed in detail. For each important parasite the synonyms are listed; many forms are figured, and differentiating tables are given for the various species of spirochaetes, amebae, malaria parasites and trypanosomes. (3) Discussion of diseases caused by zooparasites. It covers those produced by Protozoa, Trematoda, Cestoda, Nematoda, Acanthocephala, Acarina, and Insecta. For most of the diseases discussed, the author gives a general consideration of each disease caused by a specific parasite, followed by a definition of the disease, historical résumé, geographic distribution, etiology, mode of transmission, symptomology, pathology, diagnosis, prognosis, epidemiology, treatment and prophylaxis. A table gives methods of diagnosing cestodes found in man with reference to the scolices, mature

proglottids and eggs. The author discusses the Acari as possible transmitters of diseases. (4) Parasitological technic, consideration being given to methods of collecting, fixing and preserving ectoparasites and endoparasites. Directions are given in methods of collecting and examining feces for animal parasites, and in methods of killing, fixing and mounting helminths.—*J. E. Alicata.*

13573. **[ANANIAN, S. A.]** АНАНЯН, С. А. Доклады Постоянной Комиссии по Изучению Малярийных Комаров и др. Эктопаразитов при Зоологическом Музее Академии Наук СССР. Предварительные данные по паразитологии малярии Армении. **[Reports of the Permanent Commission for the Study of Malaria Mosquitoes and other Ectoparasites at the Zoological Museum of the Academy of Sciences, USSR. Preliminary data on parasitology of malaria in Armenia.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9 (2) : 231-235. [French résumé p. 285-286.] 1930.—35,854 primary blood examinations among the population of the region of the Arax and the Koura rivers during 1924-26 showed that intermittent forms of malaria predominate in Armenia. *Plasmodium vivax* was found in 50% of the cases, mainly in the lowlands, especially from April to June; *P. malariae* was found in 20-45% of the cases, also in the lowlands, but mainly from Nov. to April; and *P. praecox* in 10-15% of the cases, mainly in the hilly regions from Sept. to Nov. Out of 6 spp. of mosquitoes found, *Anopheles maculipennis* Mg. predominated; less often, mainly in the lowlands, *A. pseudopictus* G.; and in the hilly regions *A. superpictus* G., *A. bifurcatus,* and very rarely *A. plumbeus. A. superpictus* in 80% of the cases was infected with *P. immaculatum.*—*G. A. Lebedeff.*

13574. **BEVAN, E. W. List of internal parasites of sheep in Rhodesia.** *Rept. Dir. Vet. Res. So. Rhodesia* 1930: 8-12. 1931.

13575. **BRUG, S. L. Dracunculus medinensis in the Dutch East Indies.** *Mededeel. Dienst Volksgezondheid, Ned.-Indië* 19 (1) : 153-157. 3 pl. 1930.—*Cyclops leuckarti* from Java was infected with *Dracunculus* larvae from an imported case of dracontiasis. The life cycle of the larvae in the crustacean was completed, for, out of a monkey fed with the *Cyclops,* a full grown ♀ *Dracunculus* was obtained about 1 yr. after the infective meal. The fact that no epidemic of this disease has occurred in the Dutch East Indies, although a suitable vector and imported cases of dracontiasis have been present for hundreds of yrs., can be explained by the abundance of running water, the natives rarely, if ever, drinking stagnant water.—*S. L. Brug.*

13576. **CABRAS, A. L'echinococcosi in Sardegna. Studio storico-statistico compilato nel 1920 e stampato nel 1930.** 75p. Giovanni Ledda: Cagliari, 1930. Price 8 L.—Data on *Echinococcus* infestation in Sardinia—historical, clinical manifestations, incidence, morbidity, and mortality in relation to sex, vocation, etc. *Echinococcus* is quite common on the island, particularly where running water and pasture lands make it favorable for cattle. Infestation occurs in persons of all ages.—*G. Tegoni (transl. by A. S. Pearse).*

13577. **CALCAR, R. P. van. Die Ursache des Carcinoms. [Cause of carcinoma.]** 66p. 25 pl. S. C. Van Doesburgh: Leiden, 1926.—The author presents evidence for a theory of protozoan etiology. He maintains (1) that the nature of the cancer cell indicates a symbiosis with the epithelial cell on the basis of which cancer flourishes, and (2) that no experimental method of producing cancer excludes the possibility of protozoan action. He cites illustrative experiments by which he claims to have produced precancerous growth in a curetted Thiry intestinal loop of a dog by introducing protozoan cultures. He also declares that he has obtained protozoan cultures from cancer tissue previously dried under heat (80° F.) so as to destroy all life except that in the protozoan cysts and spores.

13578. **CAMERON, A. E. Parasites of horses.** *Canada Dept. Agric. Bull.* 152. 1-22. 24 fig. 1931.—A handbook.

13579. **CAWSTON, F. G. Some results of original research into the treatment of chronic haematuria caused by Schistosoma haematobium (Bilharz) and its associated trematode parasitic worms.** *Jour. Roy. Army Med. Corps* 1929 (1-12) : 1929.—Although *S. haematobium* infection has been known in South Africa since 1864, it was not specifically treated until 1919, when intravenous tartar emetic was administered. Antimony therapy has made curable an intractable condition previously unhelped by physicians. The disease, contracted by natives and whites alike, when bathing in the "infected waters" of brickkilns and slow-running rivers of Natal, has become increasingly prevalent within recent years. Mass therapy will not become popular until oral administration of some bilharziacidal drug is possible. Education regarding the specific snails as the cause of the infection, the sources from which the disease is contracted, the cleaning up of insanitary pools and the need for specific treatment,—all these should be in the program of the public health authorities for eradicating the infection. —*E. C. Faust.*

13580. **CLEVELAND, L. R., and JANE COLLIER. Various improvements in the cultivation of Entamoeba histolytica.** *Amer. Jour. Hyg.* 12 (3) : 606-613. 1930.—When liver infusion agar slants are covered with serum-saline (1-6) and a small amount of sterile rice flour is added, a culture of *E. histolytica* may be started from a single organism. This medium, so far as the amoebae of man are concerned, is virtually specific for *E. histolytica.* The amoebae become practically as numerous as blood cells in the blood stream, and encystation, excystation, and metacystic development occur simultaneously with rapid multiplication of trophozoites. This medium also permitted isolation of the amoebae from almost 100% of the stools and liver abscesses examined. The percentages of successful isolations with other media were approximately as follows: Craig, 10; Boeck-Drbohlav, 25; Dobell-Laidlaw, 70. Loeffler's dehydrated beef serum slants covered with serum-saline (1-6) was found an excellent medium; in it, the various stages in the life-cycle of *E. histolytica* did not occur in such rapid succession as when liver infusion agar slants were used. The amoebae also grew well in an autoclaved liquid medium composed of hydrolyzed Hb. Results with many other kinds of media are given.—*From authors' summary.*

13581. **DANIEL, GEORGE E. The respiratory quotient of Balantidium coli.** *Amer. Jour. Hyg.* 14 (2) : 411-420. 1931.—The respiratory quotient under the given experimental conditions is 0.84, indicating that under aerobic conditions the carbohydrate of the medium is not the chief source of energy for the balantidia.

13582. **[ELPAT'EVSKIĬ, V. S., and B. V. VOSKRESENSKIĬ.]** ЕЛПАТЬЕВСКИЙ, В. С., и Б. В. ВОСКРЕСЕНСКИЙ. Глистная зараженность детей детдома N°. 8 в Баку. **[Worm invasion among children of children's home No. 8 in Baku.]** [German summary.] Известия Азербайджанского Государственного Университета имени Ленина, Отдел Естествознание и Медицина (*Ann. V. I. Lenin State Univ. Azerbaijan, Sect. Nat. Hist. & Med.*) 6: 177-179. 1927.—Of 76 children examined only 2 were negative for worms. Distribution of species was as follows: *Trichuris trichiura,* 80.15%; *Ascaris lumbricoides,* 9.21%; *Hymenolepis nana,* 5.26%; *Taenia saginata,* 3.94%; *Enterobius vermicularis,* 3.94%; *Ancylostoma duodenale,* 1.31%; *Trichostrongylus* sp., 1.31%; *Dipylidium caninum,* 1.31%.

13583. **[ELPAT'EVSKIĬ, V. S.]** ЕЛПАТЬЕВСКИЙ, В. С. Necator americanus (Stiles) у населения Азербайджана. **[Necator americanus among the inhabitants of Azerbaijan.]** [German summary.] Известия Азербайджанского Государственного Университета имени Ленина, Отдел Естествознание и Медицина (*Ann. V. I. Lenin State Univ. Azerbaijan, Sect. Nat. Hist. & Med.*) 6: 181-184. 1927.—The author describes 2 cases, one of *N. americanus* only, and one in which both *N. americanus* and *Ancylostoma duodenale* were present.

13584. **EMELIN, V., und H. ZEISS. Die Bekämpfung**

der Kameltrypanosomiase in Russland. Доклады Академии Наук СССР., Сер. A. (*Compt. Rend. Acad. Sci. URSS., Sér. A*) 1928(20/21): 417-420. 1928.—A report on the investigations and control measures carried out by S. Ilovajskij (1922-1924) and his successors, V. Emelin and S. Dračinskij. Camel trypanosomiasis is prevalent and very destructive around Uralsk. It is caused by *Trypanosoma su-auru* Ilov., and transmitted (mechanically) by biting insects (e.g., *Tabanus, Chrysops*, and *Haemalopota*) and by contact, especially coitus. Treatment with Bayer 205 (Naganol, or Germanin) or with Antimosan proved effective; the latter gave only a temporary cure, the former immunizes also. Together they proved very effective.

13585. **FAIRLEY, N. HAMILTON, F. P. MACKIE, and F. JASUDASAN. Studies in Schistosoma spindale. Part V. The guinea-pig as a host for male schistosomes.** *Indian Med. Res. Mem.* 17. 61-68. 4 pl. 1930.—Applications to the shaved skins of guinea-pigs of cercariae of *S. spindale* showed penetration and subsequent unisexual infection with ♂♂. Since di-sexual infections result in rabbits and buffaloes using the same technique, it is suggested that some host factor is antagonistic to the development of ♀♀. This view is supported by the frequency with which mal-formed ♂♂ occur at autopsy. The pathology showed definite hepatic lesions attributable directly to the ♂♂. This pathogenicity of ♂♂ makes it advisable to use serological tests to determine unisexual infections in man; no other clinical means being available to determine the presence of this type of schistosomiasis in endemic regions.—*R. O. Christenson.*

13586. **FAUST, ERNEST CARROLL. Human strongyloidiasis in Panama.** *Amer. Jour. Hyg.* 14(1): 203-211. 1931.—Of 1662 persons of pure or mixed negro blood, 348 harbored *Strongyloides;* 2 came to autopsy; 25 were treated with gentian violet. The results confirm Darling's work in refutation of Leichtenstern's hypothesis that the tropical strain of *Strongyloides* has necessarily an indirect development and the temperate strain a direct. A third strain, the hyperinfective type, has been differentiated in many cases in this series, most of which were heavily infected showing clinical symptoms. Symptoms may develop, due to heavy infestations, as a result of (1) the hyperinfective type, (2) the gradual building up by the skin route of a heavy infestation over a long period. The specificity of gentian violet as a strongyloidicide and its tissue-staining potency were demonstrated. The effect of this dye on altering the indirect and hyperinfective strains of *Strongyloides* to the direct type has a most important bearing on the fundamental biological conception of the life cycle of *Strongyloides* and its relatives.

13587. **FISH, FREDERIC. The effect of physical and chemical agents on the oocysts of Eimeria tenella.** *Science* 73(1889): 292-293. 1931.—The prepatent period of coccidiosis produced by *E. tenella* in chicks is 160-165 hrs. Both segmented and unsegmented oocysts are killed in 10 min. at 55°C. moist heat. The thermal death time of unsegmented oocysts is inversely proportional to the degree of heat used (24 hrs. at 45°C.—5 sec. at 80°C.). One zinc sulphide unit of ultra-violet kills unsegmented oocysts. Of 8 disinfectants used, colloidal iodine, cresol, and phenol produced 100% mortality of unsegmented oocysts in less than 48 hrs.—*F. Fish.*

13588. **FOSTER, A. O., and W. W. CORT. The effect of diet on Hookworm infestation in dogs.** *Science* 73 (1903): 681-683. 1931.—Experiments on 13 dogs indicate a definite correlation between undernourishment and susceptibility to *Ancylostoma caninum.* In dogs previously demonstrated to be resistant, a deficient diet results in lowered resistance, increased rate of development of worms, and increased egg production per worm. Transfer to an adequate diet results in spontaneous loss of worms and recovery of resistance.—*A. O. Foster.*

13589. **[FREINKMAN, E. Z.]** ФРЕЙНКМАН, Э. З. Сравнительная оценка методов копрологического исследования на глистоношение. **[Comparative evaluation of methods of fecal examination in helminthiasis.]** [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 147-154. 1930.—Method of plain smear, although simple, does not give very exact results. Methods of concentration are preferable for certain species of intestinal parasites. Of these, Fülleborn's method is much simpler than that of Telemann, requires no complicated apparatus, is more exact, and yields a greater quantity of parasite eggs. In comparative experiments Fülleborn's method gave 75% positive results, as against 52% by Telemann's method, and 8% by plain smear. In Telemann's method, eggs when passing through gauze are often retained, and the whole preparation is less satisfactory than in Fülleborn's method.

13590. **[FRIEDMAN, S. M.]** ФРИДМАН, С. М. Результаты обследования учащихся сельской школы на глистоношение. **[Helminthiasis among country school children.]** [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 81-88. 1930.—Home and school conditions in the village Baranovka, district of Volyn, are highly insanitary and conducive to infections. Out of 170 children, aged 8-15, helminthiasis was found in 92.3%. *Ascaris lumbricoides* in 140 cases, *Trichuris trichiura* in 116, *Enterobius vermicularis* in 23, *Hymenolepis nana* in 23, *Taenia solium* in 1. Combination of 2 species (mostly *A. lumbricoides* with *T. trichiura*) was found in 88 cases; combination of 3 species, in 19. Boys are comparatively more infected than girls, due, probably, to their earlier participation in land work. *A. lumbricoides* and *H. nana* are more frequent among boys, *T. trichiura* and *E. vermicularis* among girls.

13591. **FROBISHER, MARTIN Jr., NELSON C. DAVIS, and RAYMOND C. SHANNON. On the failure of yellow fever virus to persist in a colony of Aëdes aegypti.** *Amer. Jour. Hyg.* 14(1): 142-146. 1931.—To test the theory that yellow fever infection may be transmitted from mosquito to mosquito, 300 mosquitoes which had fed on infected monkeys were released in a cage in which a fresh monkey was placed every fortnight for 6 mos., 100 batches of fresh mosquitoes reared from eggs laid in the cage being added in the intervals. The 1st 6 monkeys became infected and 4 died of yellow fever. The last 5 monkeys developed no fever and subsequent tests proved that they had no immunity. The authors believe that the relation in time between the disappearance of infectivity and the usual life span of fed mosquitoes suggests that the original stock of infected insects had died. It seems practically certain that in nature yellow fever is not self-propagated among *Stegomyia* mosquitoes and that these insects could not maintain infective quantities of yellow fever virus among themselves without some suitable intermediate host.

13592. **GILDOW, E. M., and C. W. HICKMAN. A new treatment for Oestrus ovis larvae in the head of sheep.** *Jour. Amer. Vet. Med. Assoc.* 32(2): 210-216. 1 pl., 1 fig. 1931.—Experiments proved that a large portion of 1 cc. of CS_2 can be introduced into the frontal sinuses through the middle nasal meatus. 3 cc. of a solution composed of equal parts of CS_2 and light mineral oil, introduced into each nostril of sheep, is of decided value in killing *Oestrus ovis* larvae in the sinuses. The success of this treatment depends entirely upon getting some of the medication into the infected sinuses.

13593. **GROSS, ALFRED O. Progress report of the New England Ruffed Grouse Investigation Committee.** p. 1-8. 1 fig. Massachusetts Fish and Game Assoc.: Boston, 1926.—Includes a brief report on parasites and diseases in *Bonasa umbellus* found by E. E. Tyzzer. Of 5 spp. of nematodes, *Ascaridia lineata* and *Dispharynx spiralis* were by far the most numerous. A few cestodes (*Davainea tetragena*) and many Protozoa were found. Infectious diseases were not common.

13594. **GRZIMEK, BERNHART. Jodmilch gegen Kückenkokzidiose.** *Arch. Geflügelk.* 5(9): 287-291. 1931.—The use of iodized milk as recommended by Kerr is not adapted to control coccidiosis in chickens. The favorable results reported are due to other circum-

stances (aging of animals, dry weather) or to the hygienic measures which Kerr recommended at the same time.

13595. **HALL, MAURICE C. Parasites of dogs and cats.** *Vet. Alumni Quart. [Columbus, Ohio]* 19(2): 47-57. 1931.—Ascarids, hookworms, whipworms, and tapeworms are discussed.

13596. **HALL, MAURICE C., and W. E. COTTON. Copper sulphate sprays on pastures for the control of worm parasites of livestock.** *North. Amer. Vet.* 12(8): 31-35. 1931.—Experiments with a limited number of animals showed that a 1% $CuSO_4$ solution is not injurious to horses, cattle, or sheep, even when spraying is repeated 4 times a month; grass also was uninjured. The solution was applied at different rates, depending on size of plot and height of grass, one example being 80 liters for 6,450 sq. ft. where the grass was 6 in. high.

13597. **HOARE, CECIL A. The peritrophic membrane of Glossina and its bearing upon the life-cycle of Trypanosoma grayi.** *Trans. Roy. Soc. Trop. Med. and Hyg.* 25(1): 57-64. 2 fig. 1931.—This membrane of the tsetse-fly is a thin chitinous sheath arising at the proventriculus and extending throughout the entire alimentary canal. Each fresh meal stimulates the production of a new portion of the membrane at the proventriculus, the older part being propelled further back, towards the rectum, whence fragments of it are gradually discharged with the faeces. The propulsion of the membrane is aided by the peristalsis, and also by the spines in the hind-gut. These spines are directed posteriorly and prevent the membrane from being drawn forwards. A revised description of the hind-gut is given. The localization of *T. grayi* in the course of its development in the tsetse-fly is determined by the presence of the peritrophic membrane and involves 3 successive waves of migration in opposite directions: (1) the flagellates first develop inside the lumen of the membrane migrating backwards, towards the rectum; then (2) they leave the peritrophic membrane and migrate forwards, outside the peritrophic membrane, up to and including the mid-gut; and finally (3) they again migrate backwards to the hind-gut.—*C. A. Hoare.*

13598. **HOFFMAN, FREDERICK L. Present-day trends in the malaria death rate.** 47p. Prudential Press: Newark, New Jersey, 1931.—This is an extended discussion, amplified by detailed statistics, of malaria mortality throughout the South and in many foreign countries. It is probably the most complete statement of its kind available. The paper discusses in detail certain excessive malaria death rates in European and non-European countries with particular attention to malaria in Panama, Africa, Asia, West Indies, and in the United Fruit Company's experience. It includes a reference to the original investigations of Sir Ronald Ross and the work of the Ross Institute. It includes the Resolutions of the Far Eastern Medical Association Congress at Algiers. Of special importance are detailed statistics of heavily infected counties of southeastern Missouri. The paper should prove of value to all students of malaria not having access to the original foreign reports.—*F. L. Hoffman.*

13599. **JELKS, JOHN L. The spread of intestinal protozoan infections.** *Jour. Tennessee Acad. Sci.* 4(2): 53-55. 1929.—Notes on the prevalence of such infections in Tennessee, and on the necessity for better sanitary control of vegetable production, to eliminate use of fecal materials, sewage, etc., on vegetables.

13600. **KHAW, O. K. Experimental infection of guinea pigs with Clonorchis cysts in fishes.** *Peking Soc. Nat. Hist. Bull.* 4(4): 19-25. 1 pl. 1930.—The lesions of clonorchiasis in the liver of guinea pigs experimentally infected with *Clonorchis sinensis* may be described as cirrhosis originating from the portal region and involving the liver lobules from the circumference inwards, and is unlike other types of cirrhosis in that it shows periportal adenoma-like hyperplasia of bile-ducts; hyperplasia of lining epithelium of intrahepatic branches of bile-ducts with projection into the lumen; and it seldom gives rise to jaundice and ascites.

13601. **KNOWLES, R. The Kala-azar transmission problem and the factor of resistance.** *Trans. 7th Congress Far East. Assoc. Trop. Med.* 3: 1-11. 1927[1928].—The author discusses the environmental conditions under which kala-azar spreads. The discovery at the Calcutta School of Trop. Med.—subsequently confirmed by the Kala-Azar Commission in Assam—that *Leishmania donovani* develops in *Phlebotomus argentipes,* is described. All attempts at actual transmission of the disease from man to man by this sandfly, however, have failed. This the author attributes to natural resistance to the disease. The epidemiological, clinical and experimental evidence in favor of this view is discussed. In the endemic areas man may become infected wholesale with *L. donovani,* but the parasite does not give rise to the symptoms of kala-azar until the patient's resistance is lowered by intercurrent disease or endocrine deficiency.—*R. Knowles.*

13602. **LÉGER, L. Sur la "Sanguinicolose," maladie parasitaire de la carpe d'élevage.** *Ann. Univ. Grenoble, Sci.-Med.* 6(1): 97-102. 2 fig. 1929.—The trematode *Sanguinicola inermis* is reported from the blood of carp in certain rearing ponds in France. The eggs and embryos of the parasite give rise to cysts in the kidney and liver, which if numerous are serious. Drainage and liming the ponds periodically and destroying the intermediate mollusk hosts (Lymnaea) are recommended.—*L. Léger (transl. by R. H. M'Gonigle).*

13603. **LINKE, OTTO. Die Ophthalmomyasis.** *Graefe's Arch. Ophthalmol.* 126(4): 644-651. 2 fig. 1931.—A fly larva, stated to be probably an Oestrid, was removed from the conjunctiva of a patient.

13604. **MANALANG, C. Malaria transmission in the Philippines. I: The natural vector.** *Philippine Jour. Sci.* 45(2): 241-249. 1 pl., 1 map. 1931.—Two years of dissection of anophelines caught in 10 places shows that of the 12 species,—*Anopheles funestus (mimimus), A. aco, A. tesselatus, A. sinensis, A. barbirostris, A. rossii, A. karwari, A. philippinensis, A. fuliginosus, A. ludlowi, A. kochi, A. maculatus,*—numerically well represented in about 65,000 mosquitoes, *A. funestus,* the same vector found in 1927, is the natural vector of malaria in the Philippines. Possibly other anopheline spp. may transmit malaria under natural conditions, but the topography and mosquito fauna of the places studied are so typical of the many known malarious regions that such would be exceptional.—*Author's summary.*

13605. **NIESCHULZ, O. Zoologische Beiträge zum Surraproblem. XXIV. Einige weitere Übertragungsversuche mit Mücken.** *Zentralbl. Bakt. I. Abt. Orig.* 111(6/8): 456-460. 1929.—Surra was transferred from horse to horse using *Armigeres obturbans* (Walk.). Out of 5 attempts 1 was positive. All attempts to transfer from horse to rabbit were negative as well as from rat to rat. Many mosquitoes were used in each experiment. The small animals were most difficult to infect. Attempts with *Culex whitmorei* (Gil.) and *Stegomyia fasciata* (Fabr.) failed. The author concludes that the mosquito is of slight importance as a vector of surra.—*M. E. Larson.*

13606. **NIESCHULZ, O., und A. BOS. Ueber den Infektionsverlauf der Mausekokzidiosis.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(1/2): 160-168. 1931.—Experiments were conducted with *Eimeria falciformis* (Eimer). With this parasite the merozoites appear in the feces a day after infection. The oocysts sporulate in 3 days at 25°C. The oocysts appear in the feces on the 5th day after infection, and a spontaneous disappearance begins a week later and the animals become free of the parasites in 26 days, when prevented from acquiring a reinfection. The chronic condition seen in field cases is probably due to reinfection.—*L. D. Bushnell.*

13607. **OTTO, G. F., W. W. CORT, and A. E. KELLER. Environmental studies of families in Tennessee infested with Ascaris, Trichuris and hookworm.** *Amer. Jour. Hyg.* 14(1): 156-193. 1931.—Environmental studies were made

of 329 families in the mountain regions and 202 families living in the central basin and western plains and lowlands. The ascaris and trichuris infestations were confined largely to the mountain areas, though considerable infestation was found in the rugged foothill type of country around the central basin. The incidence of ascaris was less than 10% in practically all of the central basin and area west of it. While trichuris infestation was much lower than ascaris, the two were roughly parallel. Families with heavy trichuris were almost invariably ascaris families, in which the dooryard where soil pollution occurred was kept quite damp either by shade, poor drainage, or a combination of both. The more resistant eggs of ascaris, however, seemed to maintain heavy sources of reinfection in unshaded and seemingly dry areas. The hookworm infestation was definitely correlated with the sandy soil provinces of the state, particularly of the Cumberland Plateau. The source of the infection was usually some moist sandy area.—*From authors' summary.*

13608. **PACHECO, GENESIO.** Sur la fréquence des kystes d'amibes et d'autres protozoaires dans des fèces, apparement normales, provenant des zones suburbaines et rurales de Rio-de-Janeiro. *Compt. Rend. Soc. Biol.* 98(17): 1560-1561. 1928.—16 specimens in 220 showed amoebic cysts, 13 specimens other protozoan cysts. Incidence of infection was high in the years 8-15, as well as 4-7.

13609. **PATIÑO, FLAVIO PATIÑO.** Tratamiento de la babesiellosis por la tripaflavina. [Treatment of Texas cattle fever with trypaflavine.] *Rev. Med. Vet.* [*Bogotá*] 3(17): 54-60. 1931.—Trypaflavine injected intravenously into cattle was efficacious in the treatment of Texas cattle fever. Whether it kills the parasite or merely hinders its multiplication has not been determined.

13610. **PAVÉ, SALOMÓN, y FRANCISCO A. ROSSI.** Eustrongylus visceralis; sintomas y lesiones en el perro. [E. visceralis, symptoms and lesions in the dog.] *Rev. Med. Vet.* [*Buenos Aires*] 13(4): 127-137. 4 pl. 1931.

13611. **PAYNE, GEORGE C., and FLORENCE K. PAYNE.** Observations on rate of loss of Necator americanus. *Amer. Jour. Hyg.* 14(1): 149-155. 1931.—Observations on 3 heavily infested patients indicated a rate of hookworm loss in feces very much slower than that estimated by Chandler.

13612. **RATCLIFFE, HERBERT L.** A comparative study of amoebiasis in man, monkeys, and cats, with special reference to the formation of the early lesions. *Amer. Jour. Hyg.* 14(2): 337-352. 4 pl. 1931.—In 6 *Ateles* and 2 *Lagothrix* monkeys the first lesions were superficial erosions of the mucosa, followed by undermining ulcers originating in the solitary lymph follicles of the wall of the large bowel. In tissue fixed immediately after death, amoebae were seen in the mucosal lesions but not in the submucosa. The lesions in human intestinal amoebiasis are similar and probably originate in much the same way. The lesions in the cat, unlike those in primates, are produced by direct invasion and destruction of the gut wall by the amoebae.

13613. **REITSMA, K.** Hoe staat het met de cysticercosis (inermis) in Nederland? [Occurrence of cysticercosis in Holland.] *Tijdschr. Diergeneesk.* 58(19): 1026-1046. 1931.—In the abattoir of Rheden in the last few yrs. the % of cysticercosis has not decreased (in 1929, 3.3% in 1930, 5.6%). The pastures along the great rivers, often flooded, seem to be an important source of infection. Rigorous meat inspection is not sufficient for combating cysticercosis in cattle (and taeniasis in man, *T. saginata*) unless supported by vigorous eradication of *T. saginata* in man by the general practitioner.—*From author's summary.*

13614. **REYNOLDS, FRANCOIS H. K., JAMES STEVENS SIMMONS, and JOE H. St. JOHN.** Experimental studies of the treatment of surra. *Philippine Jour. Sci.* 43(4): 627-653. 1930.—It was shown that rats infected with *Trypanosoma evansi* may be cured by alternating injections of tartar emetic and etharsanol in doses smaller than the amount required when the latter drug is used alone. Larger amounts of these drugs in infected horses and mules gave results warranting further study. Five animals, each weighing less than 1,000 pounds, died during treatment, probably due to poisoning by tartar emetic; none had trypanosomes in the blood at any time after the first treatment; and the organisms were not demonstrable in the spinal fluid, or in certain organs extracts of which were inoculated into susceptible white rats. In one experiment the blood remained free from trypanosomes for 60 days, after which a relapse occurred. However, following additional treatment the blood again became negative and remained so for 20 days, after which the animal was killed. Suspensions of the spinal fluid and spleen injected into susceptible rats failed to produce infection. In 3 experiments the animals were apparently cured of surra, as indicated by (*a*) immediate disappearance and permanent absence of trypanosomes from the blood, (*b*) the fact that symptoms disappeared and the temp. remained normal, (*c*) complement-fixation test became negative and remained so, and (*d*) suspensions of the spinal fluid and spleen injected into susceptible rats failed to cause infection. Since a relapse occurred in one animal after 60 days, further studies are advised.—*From authors' summary.*

13615. **ROBERTSON, ANDREW.** Coccidiosis in calves. *Vet. Jour.* [*London*] 87(7): 312-325; (8): 351-385. 1931.—The study is based upon outbreaks observed in Honduras and material selected from slaughtered calves in London. The review of literature is extensive (bibliography of 162 titles). The disease, largely confined to young animals, occurs most frequently in spring and summer and has a mortality of 1-50%. Immunity in older animals is dependent upon the carrier condition. Infection is from the older animals, a large percentage of which are carriers. Pneumonia and nephritis are given as complicating diseases. The characteristic symptom is the presence of blood and mucus in the bowel discharge. The validity of species described in cattle other than *Eimeria zürnii* is questioned. Five days is required for the formation of the sporocyst within the oocyst. The large intestine is most frequently infected but the lesser one to a smaller extent. The parasites develop at the base of the glands of Lieberkühn. Of the drugs used for treatment, tannic acid is most frequently mentioned, but no drug has been found very satisfactory. The most effective control is avoidance of close herding.—*I. E. Newsom.*

13616. **ROLLE, M.** Strongyliosis der Pferde. *Miessnerfestschrift* p. 155-166. 11 fig. Fritz Eberlein: Hannover, 1930.—The heads of the larvae were observed to penetrate into the lumen of the bloodvessels. When horses are thought to have infectious anemia, the intestinal arteries should be examined for these parasites.

13617. **SCHILLING, VIKTOR.** Interessante Fälle von Eosinophilie durch Würmer. 1. Glossitis, Allergie und hohe Eosinophilie durch abgestorbenen Bandwurm. 2. Biologische Kurve der Leukocyten bei Echinokokkenperitonitis. *Hamburg. Univ. Abhandl. Gebiet Auslandsk.* 26: 481-492. 1927.—1. Glossitis, with swelling and lack of taste, in a 64-year old woman of the better class, with an eosinophilia of 53.5%, was attributed to a dead *Taenia solium*. 2. Following the rupture of an Echinococcus cyst in the abdomen the eosinophil count rose to 43%.—*E. C. Faust.*

13618. **SCHLOTTHAUER, CARL F., and HIRAM E. ESSEX.** Control of enterohepatitis in turkeys. *Cornell Vet.* 21(3): 252-255. 1931.—Experiments with 3 groups of turkeys led the authors to believe that transmission must be through the egg. Turkeys died of blackhead within 5-7 days after hatching, regardless of the precautions taken to prevent infection.

13619. **SCHWARTZ, BENJAMIN.** Nodular worm infestation of domestic swine. *Vet. Medicine* 26(10): 411-415. 2 fig. 1931.—*Oesophagostomum dentatum, O. longicaudum, O. brevicaudum, O. georgianum,* and *O.* maplestoni (*O. conicum* Maplestone, preoc.) (p. 411)

are known to be parasitic in the large intestine of domestic pigs; *O. maplestoni* is not as yet known from the U. S. A. The larval stages occur in cysts of varying size in the wall of the large intestine, including the cecum. In southern U. S. A. ulcerated nodules are common in the large intestine, the largest and most conspicuously ulcerated ones usually being free from worms; evidently the nodules continue to increase in size and ulcerate after the larvae have migrated to the lumen of the intestine. "Chitterlings" showing inflamed or ulcerated nodules are objectionable as food and are condemned under meat inspection procedure. Hexylresorcinol in minimum doses of 4 gm. appears to be a promising treatment.

13620. **SEDDON, H. R., and T. T. McGRATH. Observations upon the conditions requisite for the transmission of gastro-intestinal nematodes of the sheep.** *N. S. Wales Dept. Agric. Vet. Res. Rept.* 6(1/2) : 40-57. 3 pl. 1931. —While continued grazing on infected grass land gives the heavy infestation with gastro-intestinal nematodes, slight infestation with *Haemonchus, Ostertagia* and *Nematodirus* may occur in sheep in contact with infested sheep and kept on bare ground. Slight infestation by *Haemonchus* and *Ostertagia* is possible from contamination of the water supply. While low-lying ground is most favorable, a heavy infestation with *Haemonchus, Ostertagia* and *Nematodirus* may be contracted from sloping grass land pasture continuously grazed. *Oesophagostomum* is transmitted under such conditions, but the infestation is not so heavy. Grazing on sloping grass land only when there is no moisture on the grass leads to infestation with *Haemonchus, Ostertagia* and *Nematodirus,* but much less heavily than with continuous grazing on such an area. *Oesophagostomum* was not contracted under such circumstances; there is evidence that this nematode is stricter in its requirements than the others mentioned. Certain evidence is adduced bearing upon the length of the parasitic stage of the above parasites up to egg-laying. This is consistent with figures recorded by others, but, apparently, the minimal period for *Oesophagostomum* may be as low as 35 days. —*Author's conclusions.*

13621. **[SHMELEVA, A. A.]** ШМЕЛЕВА, А. А. Влияние концентрации водородных ионов среды на развитие яиц аскарид. **[Effect of pH of the medium on the development of the eggs of Ascarids.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(3) : 319-324. [German summary, 360-361.] 3 fig. 1929.—The rate of development of the eggs of *Ascaris lumbricoides, A. suum, Toxascaris limbata, Parascaris equorum* does not depend on changes in pH of the medium. When 2 basic factors are supplied—favorable temp. and minimal bacterial contamination—the eggs of *A. lumbricoides* develop to the larval stage within 9-10 days, *A. suum* within 8 days, *P. equorum* within 4 days, *T. limbata* within 2 days. The "seasonal factor" in the development of Ascarid eggs described by some authors is due to not having the same experimental conditions as regards temp. and sufficient oxygen supply. The albuminous membrane of the eggs of *A. lumbricoides* and *A. suum* varies in thickness and form depending upon the pH of the medium, dissolving on the 6-8th day in solution with pH 3.0-4.0 and remaining intact until the end of the experiment at pH 5.0-8.0. The membrane of *P. equorum* dissolves within 24 hrs. at all pH values.—*G. A. Lebedeff.*

13622. **SIMMS, B. T., and J. N. SHAW. Studies of the fish-borne tapeworm, Dibothrium cordiceps Leidy.** *Jour. Amer. Vet. Med. Assoc.* 32(2) : 199-205. 1931.—Two new fish hosts, brook trout and silver salmon, were established for the larval forms of *D. cordiceps.* Examination of many dead or sick fish showed 1-50 tapeworm larvae present, some embedded in the walls of the stomach and pyloric ceca, others crawling on the peritoneal surface. Peritonitis was observed in every fish examined. Although living larvae were fed to a dog, 3 ducks, 2 raccoons, 3 gulls and a house cat, only the gull has been established as a new host for the adult parasite.

13623. **[SMIRNOV, G. G.]** СМИРНОВ, Г. Г. К вопросу о патологических изменениях при миграции аскаридных личинок в теле хозяина. Экспериментальное исследование. II. **[Pathological changes due to migration of Ascaridae larvae in the body of the host. 2.]** Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1928(1) : 31-44. 1928.—Experiments on guinea pigs showed that migration of *Ascaris* larvae within the host caused patho-anatomical changes in the organs such as liver or lungs, frequently leading to death. Intensity and character depended on the degree of invasion and the histological structure of the organ; thus, dense liver tissue reacted more weakly than and differently from the porous and highly vascularized lung tissue. Larvae of *Ascaris suilla* or *A. lumbricoides* having invaded the liver, abandoned the blood stream and became imbedded in the liver. If within the next few days the larvae did not reenter the blood stream, they lost their penetrating power and remained in the liver, which reacted by formation of a connective tissue capsule around the parasite. Impregnation of the fibrous capsule with Ca salts and possible development of concretions are probably among the later results of changes in the liver. Larvae in the bile ducts arrived from the blood vessels and from the liver. Changes in the lungs might be characterized as "ascaridal extravasation" with the predominance of mesenchymal reaction and with considerable participation of eosinophilic elements. Invasion of other inner organs via the greater circulation was met but rarely. Staining of the guinea pigs in vivo with trypan blue possibly increased the resistance of the organism to the invasion.

13624. **SMIT, H. J., en R. NOTOSOEDIRO. Arduenna strongylina (Rudolphi 1819).** [With German and English summaries.] *Ned.-Indische Blad. Diergeneesk.* 43 (4) : 323-327. 1 fig. 1931.—A detailed description is given of a small worm from the stomach of a 4-mo. old pig and regarded as *A. strongylina.* The worm is reported from the Dutch E. Indies.

13625. **SMIT, H. J., en R. NOTOSOEDIRO. Thelazia callipaeda.** [With German and English summaries.] *Ned.-Indische Blad. Diergeneesk.* 43(4) : 328-332. 1 fig. 1931.—In the eye-sack of a Java born Airedale terrier was found *T. callipaeda,* the ♂ of which was previously found only once and described by Faust. The authors counted 10 pairs of pre-anal and 2 pairs of post-anal papillae whereas Faust mentions 5 pairs of pre-anal, 2 pairs of post-anal papillae, and one pre-anal papilla in the median line.

13626. **SOUZA, MOACYR ALVES de. Coccidiose em cobaya. (Coccidiosis in guinea pigs.)** [With English abstract.] *Rev. Zootech. e Vet.* [*Rio de Janeiro*] 17(1) : 11-14. 1931.—In a wild guinea pig (*Cavia aperia*), marked ileitis, thyphlitis and colitis were observed. Numerous oocysts of *Eimeria cavia* (Sheatherp) were found in feces. Coccidia were also found in cover glass preparations of kidneys and in groups of 10, 20 or more between the urinary tubes in sections. This is thought to be the first report of kidney localisation of coccidia in guinea pig. Infection was reproduced in tame guinea pigs and chickens.—*Author's abstract.*

13627. **STEHLE, M. Ueber Trichinose bei wilden Tieren und ihre Übertragung auf den Menschen.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(4) : 320-329. 1931.—The article discusses the distribution of trichinosis in wild animals and its relation to the human disease. A review of the literature indicates that the disease is found in a variety of wild animals including grizzly bear, polar bear, brown bear, wild hog, fox, badger, marten, polecat, hedgehog, and mouse. The disease has been reported in man following the eating of flesh of bear and hog. Some of the animals in zoological gardens were found infested with the parasite which was believed to be disseminated by rats. A report is made of 69 cases in man (43 ♂♂, 26 ♀♀), with a fatality of 17.4%. The death

rate was 6.5 times as high in ♂♂ as ♀♀, perhaps due to the greater consumption of the infected flesh by the former. From the fact that the flesh of bears is commonly invaded by the trichinella in such large numbers that many persons become diseased following its use as food, it is recommended that all such flesh be carefully inspected before being marketed.—*L. D. Bushnell.*

13628. **TARAMELLI, N., et A. DUBOIS. Un cas de coenurose chez l'homme.** *Ann. Soc. Belge Méd. Tropic* 11(2): 151-154. 1 fig. 1931.—Report of a case of human infection with a taenia of the genus *Multiceps* (*Coenurus*), the 3rd case in the literature definitely determined for man.

13629. [TARNOGRADSKIĬ, D. A.] ТАРНОГРАДСКИЙ, Д. А. Водоемы курорта Теберды в малярийном отношении. **[The waters of the resort Teberda in relation to malaria.]** [German rendering.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 2(2/3): 127-166. 1 pl. 1928.—Teberda is a resort on the northern slope of the Caucasus 100 km. from Batalpaschinsk, 43° 26″ N., 41° 40″ E., altitude 1322-1424 m. It is 6 km. long, in a valley on both banks of the Teberda river, surrounded by heavily wooded hills. The predominant forest trees are pine, aspen and alder. The climate is mild with little temp. change, cool summers and warm winters. During the summer of 1927 there were 91 days with precipitation. In 1925 and 1927 all of the water sources of the area were examined as possible breeding places of anopheles mosquitoes. No larvae were found in the rapidly flowing mountain streams. Slow flowing brooks in heavily wooded areas were negative but *Anopheles* and *Culex* larvae were frequently in such brooks in lightly wooded areas where sufficient sunlight penetrated to encourage algae and other green plants. Marshy spring areas if unshaded contained many larvae. Periodically forming puddles, as leaks along water lines, served as accidental retreats for *Anopheles*, but the principal breeding places were the marshy areas in light woods and meadows. *Anopheles* larvae have frequently been found at considerably higher altitudes in the Caucasus area. A complete tabulation of all water flora and microscopic fauna found in the region surveyed is given. —*H. F. Smyth.*

13630. **TIMON-DAVID, J. Contribution à l'étude de la spécificité biochimique des parasites. Huile d'Exeristes roborator Fab.** *Compt. Rend. Soc. Biol.* 106(10): 829-831. 1931.—Following the same technique for the extraction of the reserve fat in the larvae of *E. roborator* and in its host, *Pyrausta nubilalis* Hübn., the oils obtained showed only negligible differences in their physical and chemical properties. The parasite, therefore, utilises the fatty reserve of its host without changing any of its characteristics.—*E. Weiner.*

13631. **TUBANGUI, MARCOS A. Eimeria bukidnonensis, a new coccidium from cattle, and other coccidial parasites of domesticated animals.** *Philippine Jour. Sci.* 44 (3): 253-271. 2 pl. 1931.—Cases of coccidiosis in cow and carabao calves and in pups are reported; also in 2 adult cats which were apparently only carriers but which came down with acute symptoms of coccidiosis when infected experimentally with surra trypanosomes (*Trypanosoma evansi*). Assuming that young animals are infected from their infected mothers and other adult animal carriers, a survey was made among domesticated animals and the oöcysts of the following coccidial parasites encountered: *Eimeria zürnii**, *E. smithi**, and *E. bukidnonensis** (p. 259) in cattle; *E. zürnii* and *E. smithi* in carabaos; *E. faurei** in sheep and goats; *E. debliecki* in swine; *E. canis** and *Isospora rivolta** in dogs; *Isospora* sp. in cats; *E. tenella* in chickens. These coccidia appear to be morphologically distinct; differentiation of their oöcysts is facilitated by means of a table.—*Author's summary.*

13632. **TUBANGUI, MARCOS A., and LOPE M. YUTUC. The resistance and the blood sugar of animals infected with the Trypanosoma evansi.** *Philippine Jour. Sci.* 45(1): 93-107. 1931.—The resistance (method of Taliaferro and Taliaferro) and the blood sugar (micro method of Folin) of rats, guinea pigs, cats, dogs and horses infected with surra were studied. In agreement with Knowles and Das Gupta, varying degrees of resistance were exhibited by the different animals, as indicated by their ability to keep in abeyance for a shorter or a longer period the rapid and permanent proliferation of the surra organism. The rat possesses a low resistance, the infection running an acute progressive course and the parasites undergoing constant increase in number, with death occurring when the number of parasites in the blood has reached a maximum. The guinea pig has a high resistance, the infection following a chronic relapsing course and death usually occurring when the parasites are scanty in the circulation. The resistance of cats, dogs, and possibly horses is intermediate, the infections being chronic and relapsing but death occurring when the parasites are most numerous in the peripheral circulation. No evidence was obtained that resistance depends on maintenance of a normal blood-sugar content. In most cases, irrespective of the kind of animal, no appreciable changes in blood sugar were observed during infection, except at the very end when a terminal or agonal hypoglycaemia was usually detected.—*From authors' summary.*

13633. **UAMASAKI, SHIGERU. Über eine zweigeisselige Flagellatenart im Darm von Lucilia sp. (jedenis?).** *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 605-607. 1927.—Examination of *Lucilia* sp. (?) showed 11.5% infection with a 2-lashed flagellate which agrees in many respects with the *Herpetomonas* obtained by v. Prowazek from the house fly. A detailed description is given. Since Becker has shown that *H. muscae domesticae* is infectious for flies of various genera, no new name is here proposed.—*M. W. Kamm.*

13634. **VASSILIADIS, P., et J. JARDIN. Influence de l'hibernation sur le trypanosome rhodesiense.** *Ann. Soc. Belge Méd. Trop.* 10(2): 129-131. 1930.—The experiments show that hibernation in the dormouse diminishes an infection of *Trypanosoma rhodesiense*, and that if it is continued long enough the inoculated trypanosomes disappear. The cure of trypanosomiasis by cold brings about an immunity which, although not sufficient to prevent a new infection, renders it slower and lighter. —*C. W. Dawley.*

13635. **VASSILIADIS, P., et J. JARDIN. Influence du spirochète hispanicum sur l'infection à trypanosome rhodesiense.** *Ann. Soc. Belge Méd. Tropic.* 10(2): 133-136. 1930.—The action of *Spirochaeta hispanicum* on *Trypanosoma rhodesiense* is much less marked than that of *S. duttoni* on *T. pecaude* as reported by Bruynoghe and Dubois. In the mouse, survival was never more than 48 hrs. To observe the effect of a simultaneous infection of 2 trypanosomes differing in pathogenic character and morphology, 4 rats were inoculated with the same amount of *T. rhodesiense*. The blood of 2 of these rats contained *T. lewisi*, the other 2 were free from all parasites. No difference in the development of *T. rhodesiense* was observed. The 4 rats died at almost the same time. In the ultramicroscopic examination, as in the preparations stained with Giemsa, *T. lewisi* were always very numerous, but they did not hinder the development of *T. rhodesiense*.—*C. W. Dawley.*

13636. **WEHRMANN, O. Beitrag zur pathologischen Anatomie der Trichinose des Menschen.** *Virchow's Arch. Path. Anat. u. Physiol.* 263(2): 584-589. 1927.—Five cases are briefly reported. In addition to the previously known changes, one of the author's cases showed the rare interstitial myocarditis described by Simmonds. By analogy one may speak of a thrombophlebitis and a thromboendocarditis due to trichina toxins. Furthermore, a hyperplasia of the bone marrow, and an increase in myeloblasts and eosinophils, with tremendous production of these latter, have been observed in 2 cases; in one instance small aggregates of these cells were demonstrated in the spleen. In addition, there is the reaction of the lymphatic tissue. The irritation produced by different animal parasites on the blood and

hematopoietic tissue is similar in kind, but varies quantitatively with different parasites: there is no reaction or very little; they produce a severe anemia (for example in *Ancylostoma duodenale* infection) or, in the highest degree of intoxication, lead to pernicious anemia (many cases of *Diphyllobothrium latum* infection).—*E. C. Faust.*

13637. **WETZEL, RUDOLF. Zur Ernährungsweise und pathogenen Wirkung der kleinen Strongyliden der Pferde.** Miessner-Festschrift p. 219-233. 8 fig. Fritz Eberlein: Hannover, 1930.—*Craterostomum mucronatum, Trichonema coronatum, T. goldi, T. catinatum, T. elongatum, T. insigne, T. nassatum, T. calicatum, T. minutum, T. longibursatum, T. poculatum, T. bicoronatum, T. ultrajectinum; Poteriostomum imparidentatum, P. rátzii,* and *Gyalocephalus capitatus* attach themselves by the mouth end to the mucous membrane of the large intestine of the horse and feed on the living substance of these hosts. The glandular surface which is repeatedly sucked in by the parasite is destroyed by this mechanical action and the dissolved cell elements and tissue liquids serve the worms as nutrients. The occasional opening of capillaries leads only in a few cases (*T. insigne, T. elongatum,* and *Poteriostomum* spp. to taking up of appreciable amounts of blood.—*Author's summary (transl.).*

13638. **YAKIMOFF, W. L., A. M. POLUEKTOFF, und E. F. RASTEGAÏEFF. Zur Frage der Hasenkokzidiose in Russland.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39(4): 311-319. 1931.—The breeders of hares and rabbits recognize certain years as good, others as bad, for the rearing of these animals. The latter are usually cold and wet and the losses are especially associated with coccidiosis. From a study of the cause of death of hares in Russia, it is concluded that the same types of coccidia are present in hares in Russia as in Germany and Holland. *Eimeria stiedae* Lindem. and *E. magna* (Pérard) are described from the cases examined.—*L. D. Bushnell.*

13639. **[ZASUKHIN, D. N.]** ЗАСУХИН, Д. Н. Кокцидиоз и анаплазмоз овец в Уральском округе. **(Coccidiosis and anaplasmosis in sheep in the Uralsk district.)** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 244-249. [English summary p. 287.] 1 pl. 1930.—A case of infection of sheep with intestinal coccidiosis and anaplasmosis, and its symptoms, is described. *Anaplasma ovis* was found in the blood of 41.5% of the sheep, and coccidia (*Eimeria* sp.) in the feces of 87%. Examination showed enlarged lymphatic glands, clay colored liver, hemorrhage of the small intestines. *Anaplasma ovis* and *Eimera* sp. were found in all of the dead sheep. From clinical and patho-anatomical picture it is concluded that anaplasmosis was important in the death of sheep but that coccidiosis also is fatal.—*G. A. Lebedeff.*

13640. **[ZAVADOVSKIĬ, M. M., and L. G. SHALIMOV.]** ЗАВАДОВСКИЙ, М. М., и Л. Г. ШАЛИМОВ. Возможна ли аутоинвазия при оксиуриазисе? **[Is autoinvasion in oxyuriasis possible?]** [English summary.] Труды Лаборатории Экспериментальной Биологии Московского Зоопарка (*Trans. Lab. Exp. Biol. Zoopark, Moscow*) 5: 9-42. 17 fig. 1929.—Eggs of worms from the appendix did not develop in vitro; those of worms freely passing from the rectum did; eggs of some worms extracted from the rectum did not develop in vitro, eggs of others did. Closer analysis showed this capacity to depend on the stage of development of the embryo—the "pre-tadpole" stage being incapable of development in vitro. Temperature limits for such development were 20°-40° C., rapidity of development increasing with increase of temp. From the "tadpole" stage on, eggs required O for their development; up to that stage the author believes them to utilize the O from the blood and tissues of the host. The eggs of *Enterobius* were covered with a shell of 4 membranes, A, B, C, and D, starting with the outer membrane. D was soluble in alcohol, chloroform, ether, and acetic acid, being apparently of lipoid nature. A, B, and C membranes serve as a mechanical protection, D as one against chemical reagents. All 4 membranes were formed on the surface of the undivided egg, and showed no morphologic changes during further development of the embryo. Reaching the "tadpole" stage, D changed its physico-chemical properties, becoming almost impermeable for water and salts, thus isolating the egg and allowing it to develop in water and in physiological solution. Since *Enterobius* eggs on reaching "tadpole" stage require free O, which is absent in the intestine, possibility of autoinvasion must be excluded.

13641. **[ZAVADOVSKIĬ, M. M., with participation of S. IVANOVA, E. VOROB'EVA, and O. STRELKOVA.]** ЗАВАДОВСКИЙ, М. М., с участием С. ИВАНОВОЙ, Е. ВОРОБЬЕВОЙ и О. СТРЕЛКОВОЙ. Биология Trichostrongylidae, паразитирующих у копытных животных. **[Biology of Trichostrongylidae parasitic in ungulates.]** [English summary.] Труды Лаборатории Экспериментальной Биологии Московского Зоопарка (*Trans. Lab. Exp. Biol. Zoopark, Moscow*) 5: 43-83. 6 fig. 1929.—The author studied the egg morphology and embryo development of *Trichostrongylus instabilis*, Ostertagia mentulata, Cooperia pectinata*, Tr. probolurus,* and *Tr. extenuatus,* taken from roe, reindeer, and other ungulates. Findings were similar for all 5 species. Eggs of *O. mentulata* and *C. pectinata* left the host intestine at the stage of 8-12 blastomeres; those of *T. instabilis* at 16-24 and more blastomeres. Eggs of all 5 spp. were very resistant, due to their shell of 3-4 membranes. The 2 outer membranes were permeable to salts and water; the inner almost solely to water, being soluble in lipoid-dissolving substances. Structure of the shell was the same as in Ascaridae and *Enterobius.* Eggs of Trichostrongylidae could not stand drying; they developed well in feces, in water, and in physiological solution; rapidity of development was in direct ratio to temp. increase, the limits being 4-39° C. Upon leaving the intestines, eggs could develop only in presence of O, their development being temporarily arrested in O-free media. At 25° C., larvae left the shell in about 24 hrs. Feeding on manure, they grew rapidly; no growth was shown in water. Young larvae (1-2 days) could not stand drying. Larvae of *Tr. instabilis* were fed to guinea-pigs, and in 1 case eggs were found in feces; they did not develop in the intestines. Apparently, the first stages of development are completed in the maternal gonad, utilizing the O from the host tissues; since O is required for the development of the eggs, autoinvasion with Trichostrongylidae is impossible.

13642. **[ZELENSKIĬ, V. D.]** ЗЕЛЕНСКИЙ, В. Д. Некоторые вопросы биологии трихины и этиологии трихиноза. **[The biology of trichina and the etiology of trichinosis.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(4): 365-393. [German summary.] 6 fig. 1929.—Critical review of literature.

13643. **ZOZAYA, CARLOS. Das Blutbild bei der experimentellen Hamster-Leishmaniosis.** *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 628-630. 1927.—Observations were made on 7 animals. During the course of infection there is a relative increase of lymphocytes with a simultaneous decrease in the total leucocyte count (6 mos.). As the infection progresses the plasma cell count increases (9 mos.). There is no rise in mononuclears, even in heavily infected animals. The change in the blood picture of experimentally infected hamsters is not nearly so marked as in that of human cases.—*D. Koch.*

FILTERABLE VIRUSES, BACTERIOPHAGE, ETC.

GEO. H. SMITH, *Editor*

(See also in this issue the subsection "Infectious Chloroses" in the section Phytopathology; and Entries 13479, 13486, 13544, 13662, 13693, 13764, 13779, 13784, 13850)

GENERAL

13644. **CARMICHAEL, E. ARNOLD. The aetiology of disseminate sclerosis: Some criticisms of recent work, especially with regard to the "spherula insularis."** *Proc. Roy. Soc. Med.* 24(5): 591-606. 1931.—Experiments on several series of cases, employing the Lange gold-sol curve, levulose tolerance test, variation in pH of cultures and microscopic appearance of cultures, failed to substantiate the work from the Westminster Hospital, as claiming the presence of a virus, so-called "spherula insularis," in cultures of cerebrospinal fluid from cases of disseminate sclerosis.

13645. **GANTT, W. HORSLEY, und A. W. PONOMAREW. Über den Mechanismus der Verbreitung des Tollwutvirus (Virus fixe) im Organismus.** *Zeitschr. Ges. Exp. Med.* 66(5/6): 582-595. 1929.—Fixed rabies virus (Leningrad strain) does not infect dogs when injected subcutaneously, intramuscularly, or intravenously, nor is it possible to find active virus in the brains, even when large doses of the brain of infected rabbits are used. Dogs injected subcutaneously or intravenously with passage virus and then subjected to withdrawal of cerebrospinal fluid did not contract rabies, nor did the brains of these dogs contain active virus. When fixed virus was injected into muscles, especially into those muscle groups having a short nerve connection with the brain, and when subsequently cerebrospinal fluid was removed, the dogs developed typical passage-rabies. The brains of these dogs were shown by tests in rabbits to contain the same fixed virus. Rabies virus reaches the central nervous system from the site of infection by travelling along the nerves. The centripetal spread of the virus is aided passively by the lymph flow in the nerve trunk and actively by proliferation of the virus. Fixed virus may be distributed through the connective tissue of the nerve, but it seems to be chiefly, if not exclusively, distributed along the axis cylinder. These experiments of the passage of virus along nerve sheaths under the influence of a flow of lymph consequent upon a withdrawal of spinal fluid, suggest by analogy that a similar mechanism might be usefully applied in antirabic treatment. Studies of the fate of fixed virus in the immunized animal will have a bearing on this point.—*Author's summary (transl. by S. Bayne-Jones).*

13646. **GOODPASTURE, ERNEST W., and C. EUGENE WOODRUFF. A comparison of the inclusion bodies of fowl-pox and molluscum contagiosum.** *Amer. Jour. Path.* 7(1): 1-8. 1 pl. 1931.—The inclusion bodies of molluscum contagiosum may be freed from surrounding cellular material by tryptic digestion. Unlike fowl-pox inclusions, the molluscum bodies are sticky and gelatinous after digestion, and, therefore, can not be manipulated readily with the Chambers microdissection apparatus. The gelatinous matrix of the molluscum bodies has a markedly granular appearance, due to the presence of myriads of Lipschütz granules—minute coccoid structures 0.25 μ in diam. These granules are identical in size, shape and staining reaction with the Borrel bodies of fowl-pox; they are resistant to trypsin. The molluscum bodies show little or no swelling in distilled water; the fowl-pox inclusions swell markedly, due, probably, to their lipoid material acting as a semi-permeable membrane. Trituration of the molluscum inclusions readily breaks them up into the component Lipschütz granules; fowl-pox inclusions, similarly treated, fail to break up so readily into Borrel bodies. This difference may afford an explanation for the relatively greater filterability of the former. Fowl-pox and molluscum contagiosum are apparently specific for fowls and man, respectively, cross-inoculation experiments having proved unsuccessful. Attempts to transfer molluscum to monkeys and other laboratory animals were also unsuccessful.—*Author's summary.*

13647. **McKINLEY, E. B. Filterable virus and Rickettsia diseases in the tropics. VIII. Intracellular inclusions in filterable virus diseases.** *Porto Rico Journ. Publ. Health & Trop. Med.* 5(2): 114-133. 1929.

13648. **MROWKA, FRITZ. Die filtrierbaren Krankheitserreger und Neues zum Tuberkuloseproblem. Gedanken zur Vererbungswissenschaft auf Grund von Studien an der Lahmkrankheit (renquera) der Haustiere in Perú. [Filterable pathogenes and new data on tuberculosis. Thoughts on genetics based on researches on lameness in domestic animals in Peru.]** 208p. 6 col. pl., 108 fig. Johann Ambrosius Barth: Leipzig. 1931.

13649. **PINNER, MAX, and MARIE VOLDRICH. The disease caused by filtrates of tubercle-bacillus cultures. Its alleged relation to filterable forms of tubercle bacilli.** *Amer. Rev. Tuberc.* 24(2): 73-94. 1931.—Filtrates from pure cultures of tubercle bacilli were injected into 115 guinea pigs: 81 received filtrates from broth cultures; 34, filtrates from saline suspensions of bacilli grown on solid media. In 6 of the 115, acid-fast elements, non-characteristic in appearance except for tinctorial behavior, were seen; animal passage was unsuccessful. No growth was obtained from lymphoid organs of injected animals, or from filtrates. All 34 animals injected with filtrates from saline suspensions remained well; 71.6% of the 81 animals injected with broth culture filtrates developed a disease, fatal in 41% of those affected, characterized by rapid loss of weight, dehydration and loss of tissue tone, and not associated with localized lesions. Its etiological agent is present only in the filtrate from the broth culture of tubercle bacilli, not in the uncultured broth or in bacilli grown on solid media; it is thermostable and not transmissible by animal passage. Incidence of acid-fast elements shows no correlation with incidence of the "filtrate disease."—*From author's abstract.*

13650. **SMITH, WILSON. The effect of testicular passage on the virus of herpes.** *Jour. Path. and Bact.* 34(6): 747-750. 1931.—Herpes virus is not qualitatively altered by testicular passage in rabbits, but the testis provides a better culture medium than the brain, even for intensely neurotropic strains. This accounts for the fact that testicular-passage strains cause skin reactions in high dilution when inoculated intradermally and herpetic lesions of the adrenal glands when inoculated intravenously.—*W. Smith.*

13651. **SOBERNHEIM, G. Variola und Alastrim.** *Zentralbl. Bakt. I. Abt. Orig.* 110(6/8): 97-115. 1929.—The occurrence of an unusual epidemic of smallpox in Switzerland during 1921/1926, led to experimental and epidemiological studies. The death rate was low—15 deaths among 5560 cases. Experimental studies on rabbits and epidemiological studies indicated that the disease was a mild form of smallpox. The reasons for the attenuation of the virus remain unrevealed. It is recommended that epidemics of alastrim be handled in the same manner as epidemics of smallpox, since it is possible, for unknown reasons, that the virus in mild epidemics may assume the full virulence of smallpox.—*D. H. Bergey.*

13652. **STUART, G., and K. S. KRIKORIAN. Further studies in anti-rabies immunisation. Rabies virus—exalted and classical strains compared.** *Jour. Hyg.* 31 (4): 523-542. 1931.—Cross immunity experiments on 20 rabbits showed the identity of exalted virus with the classical strain.

13653. **THOMAS, MARIE. Erzeugung von Bakteriophagen? Auftreten von Bakteriophagen in Gemischen von Bakterien und Pankreaspräparaten.** *Zeitschr. Im-*

munitätsforsch. 63(5/6): 521-536. 1929.—Of 5 preparations of pancreas tested—Pankreon-Rhenania, Pankrophorin-Kahlbaum, Pankreas Dispert-Krause Medico, Intestinol-Henning, and Pankreatin absolut-Merck—filtered solutions in normal saline or broth produced no lysis of the typhoid-paratyphoid-dysentery-coli group. Bacteriophages were occasionally obtained with one preparation only, viz., Pankreatin absolut, if the solution was mixed with broth cultures of certain strains of dysentery bacilli (Flexner, Shiga, Y) and coli. The cultures alone never gave rise to bacteriophages. With greater quantities of pancreatin, bacteriophage formation set in earlier. The bacteriophages appeared sooner if the mixtures of pancreatin and bacteria were incubated at 45°, than at 37° or 22°C. Bacteriophages were also obtained if unheated bacteria were added to pancreatin solution that had been heated to 40, 50, 55, 57.5, 65 or 67.5°, but not with 60 or 62.5°. Flexner bacilli, heated to 80°, still contained viable bacilli; such emulsions, if added to unheated pancreatin, gave rise to weak bacteriophages. No details are given as to technique or duration of heating. No bacteriophage was obtained in mixtures of boiled pancreatin and unheated bacilli. While admitting that a pre-existence of bacteriophage, either in the pancreatin or the bacterial cultures, has not been definitely proved, the author is in favor of this view.—*C. Prausnitz.*

13654. TSCHESCHKOW, A. M. Über die Bedingungen des Eindringens von Tollwutvirus in die Tränendrüsen. *Zeitschr. Ges. Exp. Med.* 78(1/2): 142-146. 1931.—Rabies virus was found in the lacrimal glands in 9 of 10 dogs infected with street virus, in 4 of 10 rabbits infected with fixed virus, and in 3 of 4 cases of human rabies. Hence, it appears that affection of gland centers in the brain does not betoken a specific predisposition of these centers, but that rabies virus settles in the entire brain-stem, and spreads thence, perhaps passively, owing to the circulatory conditions of the cerebrospinal fluid in the brain and its submeningeal spaces.

LOWER ANIMALS

13655. BROWN, HAROLD D. Rinderpest. *Peking Soc. Nat. Hist. Bull.* 4(2): 87-94. 1929.—A general summary of more recent methods of controlling rinderpest, together with some experiences in successful immunization with the aid of bile, of animals succumbing to the disease.—*W. A. Hagan.*

13656. EDWARDS, J. T. Rinderpest: Some properties of the virus and further indications for its employment in the serum-simultaneous method of protective inoculation. *Far East Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 699-706. 1927[1928].—The author describes a method of preserving the virus of rinderpest for as long as 8 days. This permits it to be shipped long distances for immunization of cattle by the virus-serum simultaneous method. The virus is passed first through goats, which filters out the bovine-specific piroplasmic infections.—*R. R. Spencer.*

13657. HAAGEN, E. Untersuchungen über die übertragbare Myxomatose beim Kaninchen. Mit besonderer Berücksichtigung der Züchtung des Myxomvirus in der Gewebekultur. *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 1-9. 6 fig. 1931.—Rabbits were inoculated intracutaneously with 1 cc. of whole blood, serum, plasma, or suspensions of erythrocytes, leucocytes, lung, kidney, lymph-nodes, spleen, testis, liver, or ocular secretion from a myxomatous rabbit at height of infection. Lung lymph-nodes and blood cells induced the most marked infection; but with the exception of 1 unsuccessful testicular inoculation, all rabbits died in 10-12 days. Suspensions of various organs, serum, plasma, erythrocytes, and mucous conjunctival secretion (0.1 cc.) were injected intracutaneously into 10 mice, 6 rats, and 8 guinea pigs; no tumor was induced nor did necropsy show pathological changes. The virus passed through a Berkefeld V but not an N filter; results were not uniform, although the original material was highly virulent, possibly because of varying size in the virus elements or because they could not be separated from the accompanying protein at a certain stage of electronegative charge. Myxomatous rabbit tissue was extracted in physiological saline, fragments of testis were submerged for 15 min. in the supernatant fluid, then placed in a drop of normal plasma-spleen extract with a piece of fresh testis; after a week's cultivation the cell zone was excised and the primary culture placed in fresh, normal plasma extract together with fresh testicular tissue; 30 weekly passages were so made. The cell zone was inoculated intracutaneously and found virulent. With increasing passage, a considerable increase in virulence occurred; at the 30th, the inoculation was 3+ on the 3rd day at a dilution of 1:1 milliard, and fatal on 6th (1st passage 3+ on the 5th day with no dilution, fatal on 11th). As in variola-vaccine virus, the virus retained its biological properties. Both testicular tissue and leucocytes proved sources of initial virus material, but because of the difficulty of growing leucocytes in hanging drop, that method had to be abandoned. Lymph-nodes, lung and kidney, as well as testis and leucocytes, were suitable for maintaining the culture. Cell changes appeared not only in the myxomatous tissue, but elsewhere, and were not uniform, varying in size, structure and staining; they were products of the cell reaction to the virus.

13658. JACOTOT, H. Existe-t-il en Indo-Chine plusieurs virus pestiques? *Bull. Soc. Path. Exotique* 24(7): 521-526. 1931.—Experiments showed that strains of the virus of bovine plague from Tonkin, from Laos, from Cochin-China, and from Nhatrang were identical in antigenic action.

13659. SATHE, R. G. Pox in sheep. *Indian Vet. Jour.* 8(2): 118-121. 1 fig. 1931.—Sheep-pox is rare in India and apparently not contagious.

13660. WOODRUFF, ALICE MILES, and ERNEST W. GOODPASTURE. The susceptibility of the chorio-allantoic membrane of chick embryos to infection with the fowl-pox virus. *Amer. Jour. Path.* 7(3): 209-222. 13 fig. 1931.—Ectodermal and entodermal cells of the chorio-allantoic membrane of the chick, as well as embryonic chick skin, are susceptible to infection with the virus at an early stage in embryogenesis. Whether this specific susceptibility is acquired as a result of cellular differentiation has not been determined. Of 4 methods described for isolation of uncontaminated fowl-pox virus, in 2 the virus is developed in tissue that has never been contaminated by extraneous microorganisms. Fowl-pox infection in the trachea of the adult hen was induced by inoculation with uncontaminated virus.—*Author's summary.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

MEDICAL

JAMES S. SIMMONS, *Editor*

(See also in this issue Entries 12886, 12895, 13345, 13364, 13399, 13453, 13459, 13481, 13487, 13506, 13511, 13530, 13571, 13635, 13647, 13648, 13649, 13714, 13748, 13803, 13840, 13902, 13903, 14063, 14066, 14078)

13661. BRUYNOGHE, R. Le sodoku. [Sodoku or rat-bite fever.] *Rev. Méd. Louvain* 1929(20): 305-312. 1929.—"Sodoku" is the Japanese name of a non-fatal intermittent fever produced in man by the bite of rats or meadow-mice. The organism responsible is *Spirillum minus;* infection produces no symptoms in rats and mice, but may be fatal to guinea pigs and rabbits. Specific lysins are formed in the blood of convalescents, and are

even found after the 1st or 2nd attack. Recurrences are explained by the formation and survival of resistant strains. The author used the infection with benefit in general paralysis (pyretotherapy).

13662. **CAROL, W. L. L., and A. CHARLOTTE RUYS.** On aphthosis and ulcus vulvae acutum. *Acta Dermat.-Venereol.* 9(2): 123-141. 8 fig. 1928.—Although the lesions of aphthosis and ulcus vulvae acutum are very similar, identical etiology does not necessarily follow. Ulcus vulvae acutum is well-differentiated from other venereal ulcers. It is suggested that aphthosis may be cased by a virus which usually infects the inner surface of the mouth, rarely the genitals, and exceptionally also the skin. The diagnosis of similar ulcers on the genitals is uncertain. A smear from the lesions usually shows *B. crassus* in almost pure culture. While the presence of the organisms in such ulcers probably warrants a positive diagnosis, the etiology is doubtful. The bacteria may be present as secondary invaders or in symbiosis with other organisms. The authors classify the ulcers into the gangrenous and venereal forms. Healing is usually rapidly spontaneous or follows simple treatment. Several cases are reported. It is concluded that ulcus vulvae acutum may occur in combination with aphthosis and that it is a clinically and bacteriologically well-defined disease. The etiology has not been established.—*L. A. Barnes.*

13663. **CASTRO, A. MARTINS de.** Tinhas dos animaes domesticos em São Paulo. 2. Tricophycia: Tricophyton cerebriforme Sabouraud, 1893. Tricophyton granulosum Sabouraud, 1908. Tricophyton gypseum asteroides Sabouraud, 1893. Tricophyton lacticolor Sabouraud, 1910. Tricophyton rosaceum Sabouraud, 1893. [Trichophytoses of domestic animals at São Paulo.] *Arch. Inst. Biol.* [*São Paulo*] 2: 163-178. 13 pl. 1929.—Of 198 cases of trichophytosis, 127 were caused by microsporia; 71, by trichophyta. The *Trichophyton* spp. of animal origin were *T. granulosum, T. asteroides* and *T. lacticolor.* Cases of *T. granulosum* and *T. asteroides* could be verified as coming from animals—cattle and horses—as the same lesions were found on the animals. Trichophytic tinea is more common in São Paulo than microsporic infections. Among 320 cases, microsporias were found in 127, tinea in 71; tinea favosa was encountered 53 times, and epidermophytosis 69 times.—*B. Bickel.*

13664. **EDDY, M. W., and E. S. KRONENBERG, Jr.** Pathological study of a commercial yeast in the lungs of white rats. *Proc. Pennsylvania Acad. Sci.* 4: 12-17. 1930.—18 *Mus norvegicus albinus* were inoculated through incisions into the trachea, with suspensions of yeast from commercial yeast cakes. All inoculated rats developed cough, and gave indications of difficulty in breathing. When the animals were killed or died of respiratory infection, gray nodules were found in the lungs and trachea, and in all cases yeast cells were detected in these lesions. In 1 series of such artificial infections, 3 successful attempts were made to re-isolate yeast from the lesions. 7 control rats inoculated by the same method with sterile distilled water remained healthy.

13665. **EPSTEIN, STEPHAN.** Untersuchungen über die Pilzarten der Dermatomykosen Schlesiens. *Arch. Dermatol. u. Syph.* 163(1): 126-134. 1931.—The investigations of the university skin clinic in Breslau, 1918-1929, showed a complete change in the etiological significance ascribed to separate species. In 1918, *Trichophyton cerebriforme* was found in almost 90% of all cases; in 1929, in only 16.2%. In its place in recent years *T. rosaceum* and *T. gypseum* appeared; *T. violaceum* was also noticed oftener, as the cause of tinea tonsurans in children. These changes were seen still more clearly in separate observations of trichophytosis capitis, barbae, and corporis. In 1918, almost 90% of the trichophytosis barbae cases were caused by *T. cerebriforme;* since 1927, there was a steady increase of *T. rosaceum,* so that in 1929 over 70% of the cases were caused by it. *T. cerebriforme,* in 1919 equal to *T. gypseum,* was usually absent in trichophytosis corporis after 1921, giving place to fungi of the *T. gypseum* group.—*Author's summary* (*transl.*).

13666. **FICHERA, SALVATORE.** Dissenteria da bacillo ceylonensis. [Dysentery due to Bacillus ceylonensis.] *Policlinico* (*Sez. Prat.*) 36(16): 550-552. 1929.—The author reports a case of chronic metadysentery due to *B. ceylonensis A,* the first found in Italy, and diagnosed by seroagglutination at 1: 900.—*F. Garofalo.*

13667. **GRABOW, C., und F. STRUWE.** Beitrag zum Vorkommen des Erregers der Rattenbisskrankheit (Spirillum morsus muris) und zu seinem Verhalten im Tierversuch. *Zentralbl. Bakt. I. Abt. Orig.* 113(5/6): 418-425. 1929.—2 strains of *Spirillum morsus muris* isolated from 6 wild rats, fall of 1926, were observed to be relatively plump, with 3-6 crowded spirals, with terminal flagella, and with unusually rapid motility. Guinea pigs inoculated intratesticularly and intraperitoneally developed typical, progressive disease with fever, swelling of the eyelids, and alopecia. The organisms were found in the regional glands 30 min. after intratesticular inoculation. Of 41 guinea pigs, 40 died between the 7th and 34th days; only 1 recovered. A primary focus was formed in 1-5 days in rabbits receiving subcutaneous injections. Secondary symptoms, such as swelling of eyelids, conjunctivitis, ulcer on the genitalia, and alopecia followed in 15-57 days. Spirochaetes were found in the blood between the 7th and 21st days; they disappeared as soon as antibodies could be demonstrated, and had no affinity for the central nervous system. The spinal fluid and brain of the rabbit remained sterile after 6 suboccipital injections; the blood and other organs became infected. Rabbits, in contrast to guinea pigs, did not die from the disease, but usually recovered spontaneously.—*C. Grabow* (*transl. by A. F. Reith*).

13668. **HERZBERG, HEDWIG.** Über Streptokokkenbefunde im Rachen von Kindern. *Monatsschr. Kinderheilk.* 43(4): 328-336. 1929.—The author studied 2200 throat swabs, taken at monthly intervals from 170 children in a children's hospital and tuberculosis clinic, for presence of hemolytic streptococci. Average findings were: for children 2-15 yrs. old, 40%+; for those in the tuberculosis clinic, 60-70%+; for infants, 10-15%+. Single swabs from 150 inmates of a tuberculosis sanitarium, taken in January, gave 75%+; from 100 children in a school taken in July, 17%+. The + findings increased as a rule in the damp and cold months from September to December, but this was not constant. 26 cases of scarlatina in the children's hospital comprised 8 cases 2-15 yrs. old, 17 from the tuberculosis clinic, and 1 infant. No relationship was found between rise of hemolytic streptococcus incidence and occurrence of cases of scarlatina, since from January to April, with falling incidence, there were 11 cases, while from October to December, with rising incidence, there were only 3 cases of scarlatina among those in the tuberculosis clinic; other irregular relationships were noted.—*W. L. Holman.*

13669. **KANNO, S., und K. FUJITA.** Über die Untersuchung des Vorkommens von Ohara-Bazillen bei an der Ruhr erkrankten Kindern. *Kitasato Arch. Exp. Med.* 7(3): 302-309. 1930.—Stools of 194 dysenteric children showed the Ohara bacillus in 10; all Ohara cases had weak clinical symptoms. 9 cases were diagnosed by the accompanying physician as "ekiri," and 1 as dysentery; 4 cases terminated in death. The biological and serological constitution of the 10 strains of Ohara bacillus corresponded with the authors' earlier studies. The investigation shows that a part of the "ekiri" cases are caused by the Ohara bacillus.

13670. **KNORR, M.** Eigenartige Formen pathogener Aktinomyceten im Gewebe. *Zentralbl. Bakt. I. Abt. Orig.* 120(3/4): 249-251. 7 fig. 1931.—A communication in regard to peculiar spheres, 3 μ in diam., found in great numbers in the original culture from a case of human actinomycosis. The spheres were capable of developing *Actinomyces.* Growth of *Actinomyces* also was successful on Pyro-plates, after preliminary culture in liver broth. Other morphologic peculiarities in human *Actino-*

myces not previously known, are mentioned.—*M. Knorr (transl. by G. H. Robinson).*

13671. **KODAMA, TAKESHI.** Bacteriological studies of measles. Part 2. Further studies of Kusama's bacillus and cultivation of a diplococcus from measles patients. *Kitasato Arch. Exp. Med.* 7(3): 226-234. 1930.—Kusama's measles bacillus, which has been isolated from the kidney of a monkey infected with measles, is identical with the diplococcus obtained from measles patients and agrees very closely with that described by Tunnicliff. The diplococcus produced slight febrile response and leucopenia when injected subcutaneously or intravenously into Japanese monkeys. However, it was impossible to develop typical measles in monkeys, using this organism. Measles-convalescent serum was found to agglutinate it at a low dilution. Results indicate that it is not necessarily of etiological significance, but that it seems to bear an important relation to measles.—*T. Kodama.*

13672. **KUDO, YUZO.** Experimentelle Forschungen über die Pathogenese des Botulismus. *Japanese Jour. Exp. Med.* 9(4): 373-384. 1931.—The author, using a Type A strain of *B. botulinus,* found that a liver broth at pH 7.0 and incubation at 37°C. for 7-14 days produced maximum toxin. The toxin is destroyed by heating at 70° for 30 min.; it is not destroyed by the amount of HCl in the stomach and it withstands trypsin. Guinea pigs succumbed with symptoms of botulism when toxin or living bacteria or spores were injected or given by mouth. A filtrate of a culture which had not yet developed toxin induced no symptoms. The author produced antitoxic and antibacterial sera in rabbits. The antitoxic serum failed to protect guinea pigs against botulism if the bacilli or spores were injected or given by mouth. Similarly, the antibacterial serum failed to protect against toxin. Therefore, the author concludes that efficient serotherapy against botulism should include use of both antitoxic and antibacterial sera.—*G. H. Robinson.*

13673. **LEIPOLD, W.** Eine Blasenerkrankung der Hände und des männlichen Gliedes, wahrscheinlich durch Pferdedruse vermittelt. *Dermatol. Wochenschr.* 93(40): 1533-1540. 1 fig. 1931.—Pus from a horse with strangles produced a vesicular inflammation on one hand of the patient; by contact, infection was transferred to the other hand and to the penis. Microscopic examination and growth on gelatine-glycerine and blood agar plates, and on agar stabs showed strangles streptococci. Attempts to inoculate a healthy person from the culture were unsuccessful. The disease resembled streptodermia bulbosa, and, on the hands, that of one described case of foot-and-mouth disease. The author suggests that cultures be made from persons with "streptodermia bulbosa," if handling horses with strangles, and inoculated into animals, to prove transmission to man.

13674. **LINDNER, K.** Ist das Bacterium granulosis Noguchi der Erreger des Trachoms? *Graefe's Arch. Ophthalmol.* 122(2/3): 391-414. 1929.—The author saw at the Rockefeller institute, New York, monkeys infected with *Bacterium granulosis,* Noguchi (July, 1928) and declares that they did not have true trachoma, but rather "Follikulosis." The latter is often taken for trachoma. Careful examination of the trachomatous Indians in Albuquerque, where Noguchi did his research, showed that they had typical Prowazek inclusions and Lindner's free initial bodies. Noguchi found no inclusions in these cases. Of the 5 cases from which Noguchi cultivated his bacillus, the author examined 4; 2 of them had a normal conjunctiva, 2 advanced trachoma. In the last 2 cases inclusions could be found. It is concluded that Noguchi examined mixed cases (trachoma with folliculosis) and folliculosis cases. The author believes that *Bact. granulosis* is the cause, or one of the causes, of folliculosis, but not of true trachoma; and he enumerates the points in favor of his conviction. —*K. Lindner.*

13675. **LUSTIG, ALESSANDRO.** Über die zwischen dem Erreger des Undulansfiebers (Maltafieber) und dem des Abortus epizooticus bovinus (Bac. Bang) bestehenden Analogien. Zusammenfassende Übersicht neuerer Forschungen, wie sie im Institut für Allgemeine Pathologie und Bakteriologie der Universität Florenz ausgeführt worden sind. [Analogies between the undulant fever bacillus and Bang's bacillus. Comprehensive survey of new experiments carried on at the University of Florence.] *Zentralbl. Bakt. I. Abt. Orig.* 115(3/4): 219-222. 1929.

13676. **MATSCHAN, W. J.** Über den Pseudoanthrax beim Menschen. [Pseudoanthrax in Man.] *Arch. Klin. Chir.* 155(1): 151-165. 1929.—A review.

13677. **MAZZA, SALVADOR, FLAVIO L. NIÑO, y RAUL NICOLINI.** Blastomicosis de la mucosa labiogeniana. [Mucous blastomycosis of the lips.] *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 231-239. 10 fig. 1930.—Report of a case of Gilchrist-Stokes's blastomycosis of the mucous surface of lips and jaw, etiological diagnosis having been established from microscopical appearances of lesions and positive cultures on human serum.—*A. de Assis.*

13678. **MRONGOVIUS, W.** Zur Frage über den Erreger der diphtheroiden Hautgeschwüre. *Zentralbl. Bakt. I. Abt. Orig.* 112(1/2): 49-54. 1929.—A diphtheroid microorganism, *Corynebacterium diphtheriae* var. **ulcerogenes cutaneum** (p. 51), was recovered from the skin lesions of a man who, within the last 3 yrs., had had 186 flat sores which left smooth scars. The organism was Gram-positive and had rather typical metachromatic granules, both terminal and central. On subcutaneous injection of a pure culture back into the patient, a typical pustule and ulcer were produced. However, similar injections into 50 normal persons produced no lesions.—*E. C. L. Miller.*

13679. **MÜNSTERER, H. O.** Beitrag zur Kenntnis der Dermatomykosen Südbayerns und zur Kasuistik der Sporothrichose. *Arch. Dermatol. u. Syph.* 163(1): 97-113. 2 fig. 1931.—In the Munich district, before as well as after the war, mycoses constituted 3-4% of the dermatoses; trichophytia alone, about 1.5%. In 1918-1921, the mycoses increased almost to 22%; in 1929-1930, the author observed 166 cases. *Microsporon audouini* and *Trichophyton gypseum* were seen most often, while other fungi occurred in isolated cases only; human trichophyton was found only twice. *T. cerebriforme,* frequent in northern Germany, thus far has not been cultured in southern Bavaria. Favus is an indigenous, though rare, disease in Old Bavaria, almost always associated with *Achorion schoenleinii;* actinomycoses were infrequent. In one case with deep softening of the buttocks and ending, after 9 yrs., in death due to sepsis, the clinical diagnosis was that of sporotrichosis and a specific fungus resembling *Mastigocladium* was cultivated. The mycotic flora of Munich shows greatest resemblance to that of Giessen and Tübingen, which also resemble it from the standpoint of economic geography.—*Author's summary (transl.).*

13680. **NÈGRE, L., A. BOUQUET, et J. VALTIS.** Sur les propriétés biologiques des voiles jeunes de Bacilles tuberculeux. [Biological properties of young cultures of B. tuberculosis.] *Compt. Rend. Soc. Biol.* 99(19): 45-46. 1928.—Young cultures (4 days or less) have less virulence and greater antigenic properties than older cultures.

13681. **NICOLLE, CHARLES, et CHARLES ANDERSON.** Indifférence des Spirochètes récurrents pour leurs hôtes du genre Ornithodore. *Acta Med. Scandinavica* 70(5/6): 392-395. 1929.—The spirochaetes of the tick fevers are transmitted to man and susceptible mammals by *Ornithodorus.* As a rule each species of spirochaete is associated with a certain species tick. In cross experiments with the 4 spp. *O. moubata, O. savignyi, O. marocanus,* and *O. normandi,* and the 5 spp. *Spirochaeta duttoni, S. hispanicum, S. marocanum, C. sogdianum,* and *S. crocidurae,* the authors demonstrated that the relation between spirochaete and host is merely a geographical one. Whenever a spirochaete encroaches on the geographical distribution of an *Ornithodorus* with

which it has never been in contact, or vice versa, the 2 will become adapted to each other.—*J. A. Gammel.*

13682. **NIÑO, FLAVIO L., y JORGE HARVEY SILVA.** Favus recidivante del cuero cabelludo. (Estudio micológico.) [Mycological studies on recidivant favus of the scalp.] *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 192-212. 6 pl. 1930.—Very detailed report of a case of recidivant tinea. From the lesions a strain of *Achorion* was recovered that seemingly differed from all other classical strains of *A. schönleini* under certain cultural aspects, sometimes nearly approaching *A. gallinae* Megnin. It was named *A. schönleini* var. tesseriformis.—*A. de Assis.*

13683. **NIÑO, FLAVIO L.** Ulceración blastomicética cutâneomucosa del labio inferior. (Consideraciones acerca de su diagnóstico etiológico.) [Cutaneous-mucous blastomycosis of the lower lip.] *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 213-225. 9 fig. 1930.—Clinical and parasitological description of a case.—*A. de Assis.*

13684. **NIÑO, FLAVIO L.** Onixis y perionixis de origen blastomicósico. (Estudio clinico y micológico.) [Blastomycotic onychitis and perionychitis.] *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 270-281. 9 fig. 1930.—From a chronic suppuration of nails and periungueal tissue a well characterized *Monilia* was recovered, showing a number of individual features distinct from all other Castellani or Niño strains. It is named *M.* periungualis, and its morphologic, cultural and biochemical properties and pathogenicity for rabbits, guinea pigs and rats are discussed. From the clinical standpoint it is stated that human lesions progressively returned following x-rays and ultraviolet therapy.—*A. de Assis.*

13685. **PARODI, SILVIO E.** La rinosporidiosis en Sudamérica. [Rhinosporidiosis in South America.] *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 362-369. 2 fig. 1930.—An account of cases observed and notes on its etiology.

13686. **PERGOLA, M.** Nuovo metodo per la ricerca e la dimostrazione del bacillo difterico. [New method for detection and demonstration of Bacillus diphtheriae.] 182p. 22 fig. Min. Interno, Direz. Gen. Sanita Pubblica: Roma, 1926.—The author makes a detailed survey of the cultural and staining methods for *B. diphtheriae.* Its biological characteristics are discussed at length and extensive, comparative studies of Loeffler's and the author's media for its culture are related. The author's medium (serum-egg-K-telurite) has several advantages over other media so far used or proposed, including the rapidity of development of *B. diphtheriae,* which overgrows other organisms present. The organism, which is subject to known variations of size and shape, retains, when grown on this medium, very distinct morphological characteristics; on staining by suitable methods, the polar granules are typical, evident and abundant.—*N. Colosi.*

13687. **[PIKUL', I. N.]** ПИКУЛЬ, И. Н. Средне-Азиатский клещевой тиф в городе Фергане и его возбудитель. [Centro-Asiatic relapsing fever in Ferghan, and its incitant.] [With French summary.] Русский Журнал Тропической Медицины [*Russian Jour. Trop. Med.*] 6(10): 612-618. 2 fig. 1928.—The author observed 44 cases of Centro-Asiatic relapsing fever in Ferghan (an endemic center). Vectors were ticks (*Ornithodorus*), found in the houses; larvae and 1st stage nymphs were always found on the floor, later stages of nymphs on the walls, and imagos under and on the ceiling. Primary and secondary bites of ticks differ sharply. 180 ticks were fed on patients whose blood contained spirochaetes, and, used for further experiments, successfully infected man, mice and guinea pigs. Virus from man was successfully passed to mice, guinea pigs and rats. Blood of an infected guinea pig, placed on the scarified skin of man, caused typical infection. The spirochaete found does not differ morphologically from *S. duttoni* and *S. obermeieri.* In man it was found in small numbers, not only during attacks but also in apyrexial periods. In mice and rats the reaction was likewise weak and the spirochaetes few; but in guinea pigs the spirochaetes were very numerous, attacks long, and 40% of the animals died. In human blood, after the 1st attack, there were found spirochaetolysins. Cross-immunization and cross-infection experiments with this spirochaete, 2 strains of *S. duttoni,* and 1 of *S. obermeieri* indicated that it is new, it is provisionally named *S.* usbekistanica. The author declares that the infection must be recognized as a distinct nosological entity, under the name of "Central-Asiatic tick relapsing fever."—*B. Van Rosen.*

13688. **RAIZISS, GEORGE W., and M. SEVERAC.** Testicular lesions in rabbits following intraspinal syphilitic infection. *Proc. Soc. Exp. Biol. & Med.* 24: 756-759. 1927.—Spirochaetes disappear from the spinal fluid within a few days after introduction into the 4th ventricle of rabbits, and they travel from the cerebrospinal system to the superficial tissues, particularly the testicles. For this reason, criterion of cure after intraspinal inoculation can not be the disappearance of the organisms from this fluid. Cure must be confirmed by general observation over a period of 6-8 mo.—*Helen M. Dyer.*

13689. **RUIZ, FERNANDO R., y TOMAS OCAÑA.** Nueva observación sobre "Rhynosporidium seeberi." *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 1: 370-376. 6 fig. 1930.—Spores were found invading the blood vessels. The possibility of invasion by metastasis is considered.

13690. **SAYERS, R. R., and F. V. MERIWETHER.** Miliary lung disease due to unknown cause. *U. S. A. Treas. Dept. Publ. Health Repts.* 45(49): 2994-3009. 2 pl. 1930.—A summary of 125 histories of cases found during physical and x-ray examinations of 18,285 individuals. A majority of the cases did not have sufficient symptoms to cause them to stop work or to seek medical aid. The most characteristic finding was a large number of discrete, dense, shot-like spots scattered over the lung areas. Tubercle bacilli were present in only 2 of the 88 cases in which the sputum was examined. Unstained smears of 31 cases (all those examined) were positive for fungi; 2 types were identified—*Aspergillus fumigatus fisheri* and *A. niger.* 10 cases tested with antigen of *A. fumigatus fisheri* gave a negative reaction; 6 cases tested with *A. niger* all gave a positive reaction. 38 cases reported by Sutherland as "miliary calcification of the lungs" are probably the same condition. These miliary calcifications may be due primarily to fungous infection.—*R. R. Sayers.*

13691. **SCHALK, A. F.** Undulant fever in man and its relationship to abortion disease in cattle and swine. *North Dakota Agri. Exp. Sta. Circ.* 41. 11p. 1930.

13692. **SCHUBERT, JOHANN.** Ueber die Beeinflussung der Virulenz von apathogenen Bakterien. [Influencing the virulence of non-pathogenic bacteria.] *Zentralbl. Bakt. I. Abt. Orig.* 117(7/8): 495-497. 1930.—In no case were any material differences observed in the effects obtained with or without uric acid, chlorophyll, anthocyanin or ultraviolet irradiation.

13693. **SELTER, und BLUMENBERG.** Über filtrierbare Formen des Tuberkelbazillus. *Zentralbl. Bakt. I. Abt. Orig.* 110(6/8): 167-170. 1929.—The author discusses the claims of Fontes and others, that they have demonstrated a filterable form of tubercle bacillus, and concludes that unquestionable evidence of invisible, filterable forms has not been produced. He admits that under certain conditions of the filter candles or membranes, fractional portions of the bacteria, in the sense of Tsechnowitzer and Karut, may pass the filters and cause tubercular infection.—*E. C. L. Miller.*

13694. **SEVERAC, M., and JOHN MOETSCH.** The intraspinal inoculation of animals with trypanosomes and spirochetes. *Jour. Chemother.* 4(1): 18-21. 7 fig. 1927.—A modification of the technique of Voegtlin et al., for intraspinal inoculation of rabbits with trypanosomes or spirochaetes, is described in detail. Treatment follows recovery of the inoculated animal from anaesthesia and a criterion of cure is the disappearance of organisms from the spinal fluid 24 hrs. after treatment, as determined by dark field examination of smears or

failure to produce trypanosomiasis in rats injected intraperitoneally with the entire amount of rabbit spinal fluid, if dark field examination proves negative.—*Helen M. Dyer.*

13695. **SEVERAC, M., and GEORGE W. RAIZISS. Generalized syphilis in a rabbit after removal of the primary lesion by castration.** *Jour. Chemother.* 4(2): 51-54. 4 fig. 1927.—Experimental support is reported for the observation of other investigators, that generalized infection seldom occurs in syphilitic rabbits in which there has been no interference with development of primary lesions, while evidence of generalized syphilis appears in animals in which early interference with primary lesions is produced, as by amputation of the testicle and scrotum 48 hrs. after their inoculation. Here is reported the appearance of severe symptoms of generalized syphilis in a rabbit in which the initial lesion was permitted to develop 49-60 days before interference. —*Helen M. Dyer.*

13696. **SMORODINZEW, A. A., und M. J. KOTT. Über Antagonismus und Symbiose unter den Mikroben der menschlichen Scheide.** *Arch. Gynäkol.* 135(3): 599-611. 1929.—The antagonistic action of the vaginal bacillus towards foreign bacteria in the vagina consists in the capacity of this organism to split the sugar of the vaginal secretion with formation of considerable quantities of acid. Should the source of the vaginal carbohydrate fail in conditions of disease, this protective acid barrier is no longer present, and foreign bacteria invade the vagina, and with their toxins increase the injury. This suggests that introduction of a culture of the vaginal bacillus into the vagina on tampons soaked in a nutrient liquid (e.g., glucose-liver-broth), together with irrigation with lactic acid of appropriate strength, would restore normal function. Adopting this procedure, it was found that the vaginal bacillus multiplies, so that by the action of 1-3 tampons during a period of 24-36 hrs., all the extraneous bacterial flora is expelled and the acidity of the secretion is markedly increased. In comparison with other procedures proposed for a like purpose, e.g., sugar, yeast, irrigation with weak lactic acid, saline, or antiseptics, the biologic method outlined acts better, for the microflora of the vagina is stabilized and the normal vital activity of the vaginal wall is restored.—*R. T. Hewlett.*

13697. **TANIMURA, CH., T. BABA, und K. TAKIGAWA. Experimentelle Untersuchung über die Pathogenese der sog. "Tuberkulide." [Pathogenesis of the so-called "tuberculids."]** [Japanese, with German summary.] *Acta Dermatol.* 14(2): 190-208. 5 fig. 1929.

13698. **[TOGUNOVA, A. I., B. I. MIGUNOV, and Z. L. BAIDAKOVA.] ТОГУНОВА, А. И., Б. И. МИГУНОВ, и З. Л. Байдакова. К изучению биологических свойств BCG. Пассажи через морских свинок. [Biological properties of BCG. Passages through guinea pigs.]** [With French summary.] Вопросы Туберкулеза [*Voprosy Tuberkuleza*] 7(2/3): 178-187. 4 fig. 1929.—Testicular inoculations were made, the 1st group receiving large quantities of the original BCG culture, and developing local tubercular processes and slight general tissue reactions, including formation of isolated epithelioid-histiocytic nodules accompanied by tuberculous allergy. Animals of the 2nd passage showed local specific processes only on introduction of a large quantity of emulsion of the modified testicle from the 1st passage animal, containing large numbers of bacilli. Small doses of emulsion caused a weaker reaction; the testicle was not fully destroyed and most of its elements regenerated. Further passages gave still smaller reactive tissue changes, until finally no changes at all occurred.—*B. Van Rosen.*

13699. **TOULOUSE, E., J. VALTIS, P. SCHIFF, et F. van DEINSE. Virus tuberculeux dans le liquide céphalo-rachidien d'un dément précoce.** *Compt. Rend. Soc. Biol.* 106(12): 1144-1145. 1931.—Direct examination of the cerebrospinal fluid of this patient (male, 20 yrs. old) showed no Koch's bacilli. One of the 2 guinea pigs inoculated with this fluid died 12 days after inoculation; it showed no macroscopic lesions and ganglia showed no bacilli. But the lumbar, inguinal and tracheobronchial ganglia were inoculated into 2 other guinea pigs; 1 died 9 days after inoculation. Autopsy showed no macroscopic lesions, but the ganglion near the point of inoculation showed a great number of characteristic acid-fast bacilli distributed in masses.—*E. Weiner.*

13700. **TOYODA, T., J. MORIWAKI, and Y. FUTAGI** (with the collaboration of **S. HOSHISAKI, M. OKAMOTO, T. TANAKA, C. KUROI, M. TAKEDA, and T. SATAKE). Experimental researches on etiology of scarlet fever with criticisms from standpoints of epidemiology, prophylaxis and therapy.** 152p. Isolation Hospital, Kwantung Government: Dairen, Manchuria, 1929.

13701. **WALDMANN, ALICE. Experimentelle Untersuchungen über die Typhus- und Paratyphusinfektion bei Kaninchen.** *Zentralbl. Bakt. I. Abt. Orig.* 120(1/2): 52-58. 1931.—On intraduodenal introduction of *B. paratyphosus* Schöttmuller, *B. typhosus* and *B. enteritidis* Breslau, varying degrees of diffuse enteritis, hyperplasia of Peyer's patches with necrosis and swelling of the mesenteric lymph nodes, were found. *B. enteritidis* was most pathogenic. *B. typhosus* was least toxic, and with bouillon cultures of even 1: 100 dilution produced only mild lesions.—*Maud L. Menten.*

13702. **WALY, AHMED. Aktinomykose der Lunge.** 30p. Dissertation: Universität Berlin, 1929.—The pulmonary form, comprising 15% of all cases of actinomycosis, is of 2 types: primary, following aspiration of infected dust, and secondary, resulting from direct extension from neighboring organs or blood-stream metastasis. The physical findings are (1) broncho-pulmonary, (2) pleural-thoracic, and (3) fistulo-thoracic, depending on the progress of the disease. Onset and course resemble chronic pulmonary tuberculosis; symptoms are detailed. The disease must be differentiated from tuberculosis, chronic pleurisy, bronchitis, syphilis, gangrene, bronchiectasis and lung tumors. Diagnosis is made by the finding of sulphur granules in the purulent sputum. Young colonies of the actinomycete do not possess clubs and are of soft consistency. Treatment consists in surgical removal of fistulous tracts wherever possible, administration of NaI, vaccine, salvarsan, x-ray therapy, intravenous injection of gentian violet, or bronchoscopic injection of Iodol. Friedmann reports beneficial results in bovine actinomycosis, following administration of his serum, and advises its use in human cases. Actinomycosis is rare in children under 14 yrs. old, since only 0.6% of the cases occur in this age group. A case of primary pulmonary actinomycosis occurring in a boy 9 yrs. old forms the basis of the author's report. Onset suggested tuberculous pleurisy and x-ray showed involvement of the left lower lobe. Temporary clinical and physical improvement followed administration of iodides, horse serum and blood transfusions, but during the 11th mo. of the disease, the pulmonary lesion extended directly through the diaphragm to the left hypogastrium; 1 mo. thereafter it metastasized to the right side of brain, with marked signs of cerebral irritation. The patient died 14 mo. after onset, the usual termination of all cases of pulmonary actinomycosis.—*L. D. Michelson.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

PUBLIC HEALTH

I. S. FALK, *Editor*

(See also in this issue Entries 13025, 13103, 13372, 13448, 13453, 13501, 13579, 13629, 13651, 13690, 13700, 13743, 13748, 13774, 13783, 13829, 13903, 13904, 13905, 13938, 13939, 13940, 13960)

13703. ACKLIN, OSKAR. Zum Nachweis des Bacterium coli commune als Fäkal-indikator menschlicher Herkunft in Wasser. *Zentralbl. Bakt. I. Abt. Orig.* 114 (1/2): 119-132. 1929.—A method is proposed for differentiation between strains of *Bact. coli* of human origin and those obtained from other animals. Human strains grow well, and produce gas and indol in the medium used, in 48 hrs. at 43-45° C. The medium is essentially a lactose, phosphate, tryptophane broth. The method is supposed to be dependent on the "physico-chemical structure" of human colon bacilli and on the osmotic pressure of the medium.—*J. F. Norton.*

13704. BERGER, HERBERT. Die Arbeitsmethoden der Trinkwasserbiologie. [Methods for investigating the biology of drinking water.] [In: Handbuch der biologischen Arbeitsmethoden. Abt. 4, Teil 15, Heft 4, Lief. 366.] P. 591-662. 35 fig. Urban & Schwarzenberg: Berlin u. Wien, 1930.

13705. BUTTERFIELD, C. T., W. C. PURDY, and E. J. THERIAULT. Experimental studies of natural purification in polluted waters. IV. The influence of the plankton on the biochemical oxidation of organic matter. *U. S. [A.] Treas. Dept. Publ. Health Repts.* 46(8): 393-426. 1931.—Based on results of an extensive series of experiments on the interrelationship of bacteria and plankton to rate of oxidation of organic matter in polluted water as studied by bacteriological, limnological and chemical tests, it is shown that, under the conditions: (1) No appreciable O depletions were observed in absence of all living organisms. (2) In presence of bacteria, in pure or in mixed culture but free from plankton, O depletions were marked during the first 2 days of incubation at 20° C. and thereafter oxidation practically ceased, although numbers of living bacteria remained quite high. (3) When plankton was present in bacteria-free culture, O depletions occurred, but their extent was very limited. E.g., when *Colpidium* in pure culture had been growing for 27 days and had reached maximum number, the O depletion observed was less than 0.1 that produced by bacteria in pure culture in a similar medium. However, when bacteria were later introduced into the same medium in which *Colpidium* had been growing for 27 days, the O depletion increased over 20 times during the next 5 days. (4) When both bacteria and plankton were present in mixed culture, O depletions during the 1st day or 2 were practically the same as when bacteria only were present, and thereafter oxidation did not cease, as stated in (2), but proceeded to completion. (5) In general, the extent of oxidation observed varied with complexity of biological factors present; i.e., the greater the variety of organisms acting in the medium, the more extensive was the O depletion. Based on results presented, the theory is advanced that the chief function of certain plankton in the biochemical oxidation process is to keep the bacterial population reduced below the saturation point and thus to provide conditions suitable for continuous bacterial multiplication, this in turn resulting in more complete oxidation. Support is given to this theory of the function of the plankton by results obtained in a series of experiments where the limiting populations of bacteria, free from plankton, were reduced by physical and by chemical means.—*C. T. Butterfield.*

13706. BUTTERFIELD, C. T., and W. C. PURDY. Some interrelationships of plankton and bacteria in natural purification of polluted water. *Indust. and Engineer. Chem.* 23(2): 213-218. 1931.—(See preceding entry.)

13707. CARRIÓN, A. L. Third report on a rat-flea survey of the city of San Juan, Porto Rico. *Porto Rico Jour. Publ. Health & Trop. Med.* 5(2): 158-166. 1929.—249 live rats were trapped in San Juan. Concentration has been moderately higher toward the residential and commercial zones. The Norwegian rat has practically predominated in all sections of the city. Fleas were found in 68% of the rodents captured, their concentration appearing highest at the docks. The index reached 7.9 fleas per rat, and the *Xenopsylla cheopis* index was 7.7. A few specimens of *Echidnophaga gallinacea*, *Ctenocephalus canis* or *felis*, and *Pulex irritans* were encountered. Flea prevalence and atmospheric humidity curves showed marked dissociation during the 2nd half of the yr.—*Author's summary.*

13708. CAVEL, LUCIEN. Sur l'adsorption des matières colloïdales par les "Boues activées." *Rev. Hyg. et Méd. Prévent.* 53(3): 179-181. 1931.—There is disagreement among investigators regarding the mechanism of adsorption of colloidal matter by activated sludge. The author tested the adsorption by such sludge, of a large number of dyes, the electric charge of which was known, and found all positively charged granules to show a relatively high coefficient of adsorption, and negatively charged dyes not to be adsorbed at all. He concludes, obviously, that activated sludge is negatively charged and that organic matter which is fixed is positively charged. Differences in degree of adsorption are explained by amount and kind of bacterial decomposition.—*C. M. Hilliard.*

13709. CHURA, ALOJZ J. Die Diphtherie in Bratislava (Pressburg) seit Beginn des XIX. Jahrhunderts. (Epidemiologische Studie.) *Jahrb. Kinderheilk.* 130(1/2): 79-112. 2 maps. 1930.—An increasing number of cases of diphtheria in recent yrs. with a higher epidemic peak than formerly stimulated renewed studies. Isolation of infected cases has been in effect since 1872. Serum therapy was first tried in 1894, became general by 1896, and in 1898 a plan was formulated for general immunization of children. 7000 children of preschool age have been immunized with Ramon anatoxin at the time of a fully developed epidemic. Diphtheria is endemic in Pressburg. Records are incomplete up to the 2nd half of the 19th century. Records of infectious diseases generally are fair from 1856 to 1906. Diphtheria records are nearly complete from 1881 to date, and these are given as tables and in graphs. Epidemic waves appear at regular intervals, with high peaks in recent yrs. at 14-yr. intervals, and lower peaks at intervening 7-yr. periods. The 2 high peaks of 1914 and 1928 followed measles epidemics (last in 1925), which in turn followed epidemics of scarlatina (last in 1924). Each of these epidemics started in the northeastern corner of the city and spread towards the southwest in the direction of prevailing air currents and traffic. In the northeastern area there is much crowding, and a similar area around the barracks served as a secondary focus. The monthly incidence curves show a peak in November, and low points in May-July, with rapid rise and comparatively slow decline. In epidemic yrs., diphtheria rise begins in July-August, and is ended by June. The study shows the importance of the preschool age group as starters of epidemics which spread through school groups. The highest grade of immunity, with highest incidence of healthy carriers, occurs in the lowest social grade; a lower immunity, in the well-to-do city dwellers; and lowest, in the country dwellers. These factors are discussed at length, as is the effect of individual susceptibility and associated infections. Family infections are rare in Pressburg, but 2.56% of families with 2 or more

children had 2nd cases in the last epidemic. Climatic conditions are also considered.—*H. F. Smyth.*

13710. **CLARK, H. W., and GEORGE O. ADAMS. Sludge digestion and pH control.** *Industr. and Engineer. Chem.* 21(3): 258-260. 1929.—When sludge from the sewage of different municipalities is digested under identical conditions, the pH for optimum digestion of each sludge may vary, due to differences in chemical composition. Raising the pH by addition of $CaCO_3$ accelerates digestion in certain instances; but the sludge of other municipalities has an available alkalinity that makes such addition unnecessary and there is practically always a slow accumulation of lime in the sludge, for organic materials are destroyed by bacterial digestion but the lime remains. Organic acids resulting from decomposition of sludge may, while causing low pH, be beneficial to digestion.—*Authors' summary.*

13711. **COLLINS, SELWYN D. Age and sex incidence of influenza and pneumonia morbidity and mortality in the epidemic of 1928-29 with comparative data for the epidemic of 1918-19. Based on surveys of families in certain localities in the United States following the epidemics.** *U. S. [A.] Treas. Dept. Publ. Health Repts.* 46(33): 1909-1937. 1931.—This study summarizes the age and sex variation in influenza and pneumonia morbidity and mortality during the 1928-1929 and the 1918-1919 epidemics. It is based on canvasses, following each epidemic, of families including nearly 150,000 persons in about 12 localities in the U. S. A. While there are some similarities in the 1928-1929 and 1918-1919 age curves, the differences are more striking than the similarities. The young adult peak in pneumonia incidence and in mortality in 1918-1919 was absent in 1928-1929. Pneumonia incidence and death rate were both much higher in 1918-1919 than in 1928-1929 but the % of fatal pneumonia cases were not greatly different in the 2 epidemics. There was a very large difference in the % of cases complicated by pneumonia in the 2 epidemics; but once pneumonia existed, the chance of fatal outcome was nearly the same in both yrs. Statistical data of this kind give no clue as to the reason for the striking difference in age incidence in the 2 epidemics, and any attempt at explanation would be only conjecture.—*S. D. Collins.*

13712. **ELDER, A. L., and A. M. BUSWELL. Changes of sulfur compounds during sewage treatment.** *Industr. and Engineer. Chem.* 21(6): 560-562. 1929.—Human excreta account for but a small % of the S found in sewage. Reduction of the S during sewage purification is small. Absence of obnoxious odors during treatment of sewage in nidus tanks was noted. Anaerobic sludge digestion produces disagreeable odors unless the pH is kept above 7.0. Reduction of sulphates in raw sewage is very rapid at 37°, fairly rapid at 22°, and slow at 10° C. The biochemical O demand of several S compounds was determined, and methods for determining various forms of S were adapted for use in sewage investigations.—*Courtesy Ind. and Eng. Chem.*

13713. **GREENWOOD, M., W. W. C. TOPLEY, and J. WILSON. Contributions to the experimental study of epidemiology. Further observations on the effect of vaccination on herd mortality.** *Jour. Hyg.* 31(4): 484-492. 1931.—An experiment to study the course of herd mortality in immunized as compared with non-immunized mice in an infected herd (over 1000 mice) showed a difference in favor of the immunized, of about 50%; but even when all immigrants had been previously immunized, the rate of mortality was high and quite different from that of an uninfected herd. Another experiment (over 800 mice) showed that oral inoculation confers immunity to *B. aertrycke* infection in less degree than that given by intraperitoneal inoculation, but superior to normal.

13714. **GÜNDEL, M., und H. LINDEN. Experimentelle und epidemiologische Studien zum Influenzaproblem.** *Arch. Hyg. u. Bakt.* 105(3): 133-167. 1931.—In investigations of the pneumonia problem the authors carried out systematic studies of the pathological significance of influenza bacilli as well as of the epidemiology of diseases produced by them. Influenza bacilli have, previously, been found only infrequently in colds, grippe or bronchopneumonias; doubt has therefore often been cast on their pathologic significance. It was found possible to materially increase the positive findings by aid of culture methods and inoculation of white mice, as described. Influenza bacilli have been found in several thousand examinations on several hundred healthy and sick individuals, and in nearly 400 autopsied lungs. From these and other examinations the following conclusions may be derived: Influenza bacilli are frequent in acute disease of the respiratory passages, even in epidemic-free periods, and not infrequently in pure culture. Occurrence of an angina produced by influenza bacilli can be demonstrated. Even in epidemic-free periods, influenza bacilli may be found in postmortem lungs. As the recognized pathologic-anatomic changes in the lungs of those dying from grippe differ more quantitatively than qualitatively, it is concluded that the influenza bacilli are not without etiologic significance. No evidence for their specificity may be developed by agglutination tests. They were always found in varying numbers in over 1000 examinations of school children, made at regular intervals during 1 yr. In November, 1929, a marked increase of influenza bacilli in school children was recognized. A difference in influenza frequency was observed between older and younger children, as the former were sooner rid of the bacilli. A migration of influenza bacilli in children in school classes was recognized. Observations indicate that the relatively immune older classes of school children may constitute an influenza reservoir. Healthy adults show a similar behavior to older scholars, only more pronounced. Either the influenza bacilli disappear quickly or there develops (rarely) a carrier state. In invalids, on the contrary, there develops a longer retention of influenza bacilli. Thus is to be explained the frequent finding of influenza bacilli in chronic diseases of the respiratory passages. Living saprophytically on the mucous membrane they may, with lowered resistance, become pathogenic. Increase in virulence of influenza bacilli is responsible for the occurrence of house infections, epidemics and pandemics; mixed infections play only a secondary part in the pathogenesis of influenza. Pfeiffer's bacillus is the cause of influenza.—*M. Gündel (transl. by H. F. Smyth).*

13715. **HILL, H. W. "Insusceptible strains" in the epidemiology of human tuberculosis.** *Amer. Rev. Tuberc.* 24(3): 340-345. 1931.—The author contrasts tuberculosis, which infects practically the whole population but produces disease in comparatively few, with measles, likewise a practically universal infection, which produces disease in at least 95% of those infected. If measles killed all susceptibles, the insusceptible survivors alone would reproduce the race. The non-fatality of measles causes its perpetuation. The author's hypothesis is that the comparatively high mortality from tuberculosis tends to weed out susceptibles and to produce insusceptible human strains, thus temporarily limiting the spread of the disease, which then flares up again as susceptible strains increase.

13716. **HOEK, HEINZ. Ein einfacher Apparat, um vereinzelte Colikeime im Wasser schnell festzustellen.** *Zeitschr. Hyg. u. Infektionskr.* 112(4): 715-718. 2 fig. 1931.—A filter plate of Berkefeld filter material was covered with infusorial earth, the solution containing microorganisms filtered with or without suction and the bacteria cultivated on Endo plates; about 67% of the known content was recovered.

13717. **HOLWERDA, KORNELIS. Over de contrôle en de mate van betrouwbaarheid van het chloreerings-proces voor drinkwater, speciaal voor de tropen. [Control and degree of reliability of the chlorinating process of purifying drinking water, especially in the tropics.]** (Thesis: Technische Hoogeschool te Delft) 186 p. Zuid-Hollandsche Boek- en Handelsdrukkerij: 's-Gravenhage, 1929.—The principle and importance of chemical control

of the chlorination process is discussed. Chemical disinfection processes in general progress according to a monomolecular reaction. A possible physico-chemical interpretation is given. The most important factors in experiments on chlorination of drinking water are discussed, and attention is paid to the inadequacy of the conception of the usual term "active Cl." Some new methods to distinguish the best concentration of "active Cl" in drinking water, are given, especially a quantitative method with methyl-orange to distinguish hypochlorite-Cl from other forms. It is demonstrated that the disinfecting power of hypochlorite is very much greater than that of most other Cl compounds, which are not indicated by methyl-orange but may be indicated by iodine, benzidine or ortho-toluidine. The influence of pH on disinfecting power of hypochlorite is demonstrated; a good correlation is found between disinfecting power and ratio between HOCl- and OCl-ions, which depends on the pH of the water. A comparison is made between disinfection with hypochlorite and Cl gas; here also the pH of the water is the predominant factor. The influence of temp. on disinfection by Cl proved to be of the same order as on a chemical reaction. The influence of the same factors was demonstrated in experiments on disinfection with NH_2Cl; its disinfecting power proved to be very much smaller than that of HOCl; in special cases, however, a smaller dosage of NH_2Cl may suffice in practice. Indications for testing the reliability of disinfection with Cl or chloramine are given, especially for the tropics. The influence of NH_3 in drinking water is discussed, and it is demonstrated that the best concentration of "active Cl" may be in the form of HOCl or in the form of other Cl compounds, especially as NH_2Cl. Also $NHCl_2$ and NCl_3 can be formed, which proved to have also a greater disinfecting power than NH_2Cl. The result of the disinfection can be determined in the same way with methyl-orange and ortho-toluidine. The influence of other eventually disturbing substances in drinking water on the chemical control of the chlorination process in the tropics was determined or discussed.—*K. Holwerda.*

13718. HOPKINS, EDWARD S. Latest practice in control of tastes and odors. *Proc. Ann. Conf. Maryland-Delaware Water and Sewerage Assoc.* 5: 87-93. 1931.—From his experimental work and a review of the literature, the author concludes that certain tastes can only be modified or partially prevented by pre-ammoniation. Intermittent change of the Cl: NH_3 ratio for given periods was practiced. No appreciable reduction in odor or elimination of algal growth in clear water reservoirs was noted, even with a 4:1 ratio. It was decided to maintain the original ratio of chlor-amines, as only taste elimination in cold water was accomplished by any given dosage. In planning for future use of this treatment, a reduction in contact period between the NH_3 and Cl is contemplated. This will, it is believed, make possible a reduction in quantity of chemicals used and permit use of a 4:1 ratio without excessive equivalent Cl residual in the water supplied to the city. A residual Cl equivalent above 0.10 p.p.m. is unnecessary for sterilization. The possible efficiency of this treatment may depend on a 4:1 ratio, as indicated by the chemical equations; review of the published data shows that it is being used more or less successfully in other proportions.—*Author's conclusions.*

13719. JENNE, LYLE L., and HENRY R. WELSFORD. Precautions needed in the ammonia-chlorine treatment of swimming pools. A preliminary study. *Industr. and Engineer. Chem.* 23 (1): 32-34. 1931.

13720. KING, W. W. Venereal disease among coast guard enlisted personnel during the fiscal year 1929. *U. S.* [*A.*] *Treas. Dept. Publ. Health Repts.* 45 (49): 2979-2993. 1930.—In 1927, in planning greater efforts against venereal diseases, the lack of knowledge of existing conditions among Coast Guard enlisted personnel was found to be a serious handicap. Annual recording of cases and tabulation of data were therefore undertaken. Data for 1927, 1928 and 1929 show a progressive reduction in total number and in number of new cases. The rate per 1000 for all cases fell from 105.64 to 82.12; for new cases, from 98.77 to 70.98. The number of men affected fell from 10.1% to 7.7%. Gonorrhea showed greatest reduction in incidence. That of syphilis remained practically stationary; chancroid showed marked variation. Hospital patients fell from 714 to 581 in number, but the number of days in hospital increased from 18,506 to 22,150; the average number of days per patient increased from 25.92 to 38.12. About 66% of the cases were hospitalized. A very high % of the cases occurred during the 1st yr. of enlistment. Southern ports as a rule showed higher incidence than northern ports. An important fact noted was the high % of cases among food handlers, cooks and mess attendants.—*W. W. King.*

13721. KLARMANN, EMIL, LOUIS W. GATYAS, and VLADIMIR A. SHTERNOV. Bactericidal properties of monoethers of dihydric phenols. I. The monoethers of resorcinol. *Jour. Amer. Chem. Soc.* 53 (9): 3397-3407. 1931.—The ethers, normal saturated aliphatic up to the nonyl ether, some secondary and cycloaliphatic and a few aromatic, were prepared. *Staphylococcus aureus* and *Bacillus typhosus* were used in the experiments. Results are presented both in minimum germicidal dilutions and in phenol coefficients. There is a distinct relation between bactericidal effect and chemical constitution, as well as a difference in behavior toward the 2 bacteria used. While resorcinol alone has a very low germicidal effect, the ethers have phenol coefficients of 1.2-650 for *Staph. aureus.* The efficacy increases with molecular wt. of saturated normal chain for *Staph. aureus* up to the nonyl ether, while a maximum is reached for *B. typhosus* with the n-hexyl compound; iso-compounds are less effective than corresponding normal chain ethers. Aromatic and alphylaromatic ethers have lower coefficients than aliphatic ethers with C_6 and above. The phenyl ether is more effective than the benzyl derivative, but in the alphylaromatic series the germicidal effect increases with length of side chain (compounds only up to phenyl propyl examined). While the bactericidal effects of the first 5 members (up to amyl) are approximately equal for *B. typhosus* and *Staph. aureus,* there is a sudden increase from 36 to 330, 580 and 650, respectively, for *Staph. aureus,* while *B. typhosus* shows a relatively moderate increase (from 38 to 46) for the hexyl ether, with a subsequent rapid decrease. A comparison with results obtained by others on nucleus substituted resorcinol derivatives shows that there is a distinct similarity between the 2 series of compounds. It is concluded that an alkyl group has approximately the same effect on bactericidal effects of resorcinol whether it is introduced into the nucleus or attached to one of the OH groups, and that one open OH group is sufficient to bring about the bactericidal effect.—*E. Klarmann.*

13722. [KONOVALOVA, S. F.] КОНОВАЛОВА, С. Ф. Блохи-обитатели сусликого гнезда как носители и хранители чумной инфекции. **[Fleas inhabiting gopher burrows as plague carriers.]** Вестник Микробиологии и Эпидемиологии (*Rev. Microbiol. et Épidémiol.*) 6 (1): 39-40. English summary, 128. 1927.—Near the village of Zavetnoe 2.5% of the gophers were infected with plague. Of 17 burrows examined, in 1 were found 17 *Neopsylla setosa* and 26 *Ceratophyllus tesquorum;* emulsion of these fleas was injected into a healthy gopher, which died in 7 days; and sown on agar on which typical plague colonies developed 24 hrs. later.

13723. LLOYD, BLODWEN. Bacteria of the Clyde Sea area: A quantitative investigation. *Jour. Marine Biol. Assoc. Unit. Kingdom* 16 (3): 879-907. 2 fig. 1930.—Water samples were taken for 1 yr.,—monthly at 3 stations, less frequently at other places. The surface waters had the highest bacterial content. With increased depth until near the bottom, there was a progressive decrease. At the bottom there was usually a slight increase. Throughout the yr. the numbers were remarkably constant for all layers except the surface, with only slight evidence of rhythmic seasonal variation. At the surface,

the bacterial content fluctuated widely, apparently in relation to factors which are not seasonal but irregular. At the surface the bacterial content is irregular throughout the day; at lower levels, there is a slight increase during hrs. of darkness, the maximum occurring in the evening hrs. in Dec., and at 3-6 a. m. in March, July and Oct. The waters of Lochs Striven and Long were remarkably free from pollution. In Cumbrae Deep, however, and in the estuary off Greenlock, the numbers of bacteria were high and a large proportion were presumptive coliform organisms.—*Author's summary.*

13724. **MAZZETTI, GIUSEPPE. Sul potere battericida dell'olio di lino cotto. Nota I. [Bactericidal power of boiled linseed oil.]** *Boll. Soc. Italiana Biol. Sper.* 3(6): 747-749. 1928; also in *Ann. Igiene* 37(10): (3-9). 1927.—Following the observations of Jacobitz and Bitter, the author found that bricks treated with commercial boiled linseed oil have a strong bactericidal action (due entirely to the oil and only in the commercial product) on *B. typhosus, Staphylococcus aureus,* anthrax spores, *B. diphthcriae* and tubercle bacilli. Pure linseed oil extracted in the laboratory by the Soxhlet apparatus acquires bactericidal power only when heated to a high temp. for a long time.—*G. Mazzetti (transl. by P. Hillkowitz).*

13725. **MAZZETTI, GIUSEPPE. Ulteriori osservazioni sul potere battericida dell'olio di lino cotto e di altri olii vegetali. Nota III. [Further observations on the bactericidal power of boiled linseed oil and other vegetable oils.]** *Boll. Soc. Italiana Biol. Sper.* 3(6): 754-758. 1928.—Continuing his previous experiments, the author found that bricks treated with commercial boiled linseed oil, although losing in time their bactericidal power, nevertheless still showed it after a rather long period (10 mo.). It is impossible with present technique to utilize the bactericidal power of boiled linseed oil for disinfection of anthrax-bearing hides. Other vegetable oils, non-desiccated (castor oil, olive oil, soy bean oil, etc.), acquire, after being heated to 280°, bactericidal power, which normally can not be demonstrated. Heating of crude commercial linseed oil increased the weak bactericidal power which it has normally. The author thinks that his experiments further explain why heated olive oil, at a high temp., is the best means of sterilization and conservation of foods.—*G. Mazzetti (transl. by P. Hillkowitz).*

13726. **ORTIZ, PEDRO N. Underlying principles of public health administration.** *Porto Rico Jour. Publ. Health & Trop. Med.* 5(4): 433-437. 1930.

13727. **ROUBAUD, E. Prédominance de Synosternus pallidus Taschenb. (Xenopsylla pallida) comme puce domestique, dans certaines régions pesteuses du Sénégal.** *Bull. Soc. Path. Exotique* 24(7): 551-554. 3 fig. 1931.—The predominance of *Synosternus pallidus* Taschenb. (*Xenopsylla pallida*) as a domestic flea in certain plague-infested regions of Senegal suggests the probability that it acts as a vector. Differential characters distinguishing *S. pallidus* from *X. cheopis* are given.

13728. **RUDOLFS, WILLEM. Chemical and biological correlations in a polluted stream.** *Industr. and Engineer. Chem.* 21(3): 256-258. 1929.—The water of the Raritan River system in New Jersey is in its natural condition admirable for potable and industrial purposes. The lower section of the river is heavily polluted. The studies conducted show an apparent direct relation between amounts of ammonia present and biochemical O demand of the river water. O depletion was far greater in summer than in winter. The effect of 2 small dams on the self-purification of the river is considerable. There was a direct relation between biochemical O demand, bacteria and plankton. The highest number of *B. coli* recorded was 11,000 per cc.—found opposite a bathing beach. During the summer mo. the average number of *B. coli* at this point was 3240 per cc. The relation between rainfall and O saturation is discussed.—*Author's summary.*

13729. **RUDOLFS, WILLEM, and H. HEUKELEKIAN. Thermophilic digestion of sewage solids. IV. Fresh solids and activated sludge.** *Industr. and Engineer. Chem.* 23 (1): 67-69. 1931.—Daily additions of sewage solids, both fresh and activated, have been digested at thermophilic temp. (50° C.) in as short a time as 2.1 days. This digestion time can probably be reduced to 24 hrs., since 92.2% of the total gas produced by activated sludge was obtained in 24 hrs. or less, and 88.5% of the gas evolved from the fresh solids in this time. The sludge produced was black, had no odor other than the tarry odor of ripe sludge, and had a biochemical O demand corresponding to ripe sludge. Gentle shaking, to bring the raw solids into contact with the seed material, proved beneficial. For best results, charging of raw material into tanks should be continuous. Preheating of the sludge is probably best, and the ripe sludge can be dewatered continuously.—*Courtesy Ind. and Eng. Chem.*

13730. **SMILLIE, W. G. Field studies of acute respiratory disease.** *Porto Rico Jour. Publ. Health and Trop. Med.* 5(1): 3-7. 1929.

13731. **THIRY, URBAIN. Nouvelles recherches sur les Leptospires aquicoles.** *Arch. Internat. Méd. Exp.* 6(4): 471-546. 23 fig. 1931.—Typical leptospiras were obtained from 69 of 124 samples of water (mostly alkaline) from various parts of Belgium. Among 324 mice from Antwerp, Ghent, Louvain and Germany, 74 showed leptospiras in the urine, attributed by the author to contamination of the conduit water. One strain proved temporarily pathogenic for white mice. A definite lysis (not agglutination) proved it to possess a close specificity, and proved *Leptospira icterohaemorrhagiae* to be distinct from all other leptospiras, either from water or from mice.

13732. **WAAL, J. W. de. Atypische colibacterien en drinkwateronderzoek. [Atypical Bacillus coli in drinking water.]** *Nederlandsch Tijdschr. Hyg., Microbiol. en Serol.* 6(1): 1-18. 1931.—Following up investigations by Clemesha and Eijkman, Smit determines the age of pollution of water by feces from the different quantities of water by which lactose at 37° and glucose at 45° C., respectively, can be made to ferment. In recent pollutions, these quantities are alleged to be equal; in older pollutions, the quantity of water necessary for the 2nd fermentation is alleged to be greater than for the 1st. Smit assumes that colon bacilli in water polluted by feces lose their power to ferment glucose at 45° C. sooner than for lactose at 37°. This assumption is incorrect; the writer found in river water, colon bacilli that could ferment glucose at 45° but not lactose at 37°. The age of a pollution by feces can not be determined in the manner prescribed by Smit. The writer suggests replacing glucose by lactose in the Eijkman-test, since fermentation of lactose at 45° is more characteristic for colon bacilli than that of glucose at the same temp.—*J. W. de Waal.*

13733. **WELDERT, R., und G. JORDAN. Vom sauren zum alkalischen Faulraum.** *Kleine Mitteil. Mitglieder Ver. Wasser-, Boden- u. Lufthyg.* 7(1/4): 34-43. 1931.—Change of the Nordhausen putrefaction chambers from acid to alkaline fermentation was accomplished. In acid fermentation it is possible to arrive at a normal alkaline condition of the sludge, so long as this depends on organic ferments, if the amount of the daily additions does not exceed 10%. The desired conditions are further insured by heating the septic tank. An emptying of the tank in such cases will hardly have been completed. The interior structure of the heating contrivance brings a preservation and improvement of the alkaline fermentation, increased yield of gas and greater reduction in the volume of the sewage; thus, it is possible to assist considerably in maintaining the desired conditions.—*Authors' summary (transl. by W. G. Sackett).*

BACTERIOLOGY AND OTHER MICROBIOLOGY

FOOD AND INDUSTRIAL

E. B. FRED, *Editor*

(See also in this issue Entries 12146, 12837, 12840, 12841, 12842, 12849, 12855, 12933, 13444, 13751, 13789, 13790, 13807, 13815, 13824, 13834, 14058, 14081)

13734. **ALLGEIER, R. J., W. H. PETERSON, and E. B. FRED. Production of acetic and lactic acids from mill sawdust.** *Industr. and Engineer. Chem.* 21(11): 1039-1042. 1929.—Commercial mill sawdust (fir, spruce, and pine) was hydrolyzed with dilute H_2SO_4 and the resulting sugar liquors were fermented with a lactic acid organism which ferments both pentoses and hexoses. Malt sprouts (5%) as a source of N and excess $CaCO_3$ as a neutralizing agent must be added to the sugar liquor for satisfactory fermentation. 7-10% concentration of sugar may be fermented in 5-7 days with a destruction of 82-88% of the total sugars. A yield of acid equivalent to 95-100% of the sugar destroyed is obtained. This acid consists of 90-95% lactic and 5-10% acetic acids. Sugar obtained by the Bergius process fermented equally as well as the sugar liquor obtained by the H_2SO_4 process, and gave approximately the same yield of products.—*Courtesy Industr. & Engineer. Chem.*

13735. **BIRDSEYE, CLARENCE. Some scientific aspects of packaging and quick-freezing perishable flesh products. II. Packaging flesh products for quick-freezing.** *Industr. and Engineer. Chem.* 21(6): 573-576. 4 fig. 1929.—The causes and effects of deterioration of flesh products during cold storage and transportation in relation to package protection, and marketing and manufacturing requirements of the package, are discussed. Tests showed that packaging before freezing gives best results as regards thawing resistance, protection from deterioration, adaptability to quick-freezing manipulation, and wrapping cost. A method for testing the relative moisture-vapor-proofness of wrapping materials was devised. Comparative properties of many kinds of wrapping, packaging, and container materials are given.—*C. Birdseye.*

13736. **FREISE, F. W. Preparation of vinegar from coffee fruit pulp.** *Industr. and Engineer. Chem.* 23(10): 1108-1109. 1931.—Fermentation of the mash with *Saccharomyces octosporus,* followed by vinegar bacteria, yields a good grade of vinegar.

13737. **FUCHS, JOSEF. Zur Beurteilung der Sarcinafrage.** *Wochenschr. Brauerei* 48(15): 152-153. 1931.—The conditions of operations in distilleries, not the presence of the *Sarcina* itself, are the cause of *Sarcina* calamities. Careful microscopic examination must be the basis of control. Biologic tests can have only a confirmatory value, but are of particular value when diplococci are found exclusively. If the investigation is made in a laboratory distant from the plant, a very rigid examination of the samples must be made. Even traces of *Sarcina* are objectionable. In the study of an infected yeast, it must also be considered whether the yeast is active or not. If not, rapid growth of the *Sarcina* occurs when transfer is made to normal wort, and this applies to an even greater extent when the wort is low in sugar.—*J. Fuchs (transl. by F. A. McDermott).*

13738. **HESSE, ALBERT. Enzymatische Technologie der Gärungsindustrien. 1. Hauptgruppe. Über Enzyme und ihre Substrate beim Mälzen und Maischen: Kohlenhydrate und Carbohydrasen; Proteine und Proteasen; Esterasen, Desmolasen, Wasserstoffionenkonzentration und Pufferung. 2. Hauptgruppe. Gerste als Braumaterial: Das Gerstenkorn; Reifen und Lagern der Gerste. 3. Hauptgruppe. Malzbereitung: das Weichen; das Mälzen; das Darren; Malz. 4. Hauptgruppe. Herstellen und Gewinnen der Würze. Das Schroten; das Maischen im Brauereigewerbe; Malzbereitung und Maischen im Brennereigewerbe und verwandten Gewerben. [Enzymatic technology of the brewing industries. 1. Enzymes and their substrata in malting and mashing: carbohydrates and carbohydrases; proteins and proteases; esterases, desmolases, H-ion concentration and buffering. 2. Barley as brewing material: barley grain; maturing and storing. 3. Preparation of malt: soaking; malting; drying; malt. 4. Manufacture and production of wort. Grinding; mashing in the brewing industry; preparation of malt and mashing in distillery and allied industries.] In: CARL OPPENHEIMER. Die Fermente und Ihre Wirkungen.** 5th ed. Vol. 4. Halbband 1. Die Technologie der Fermente. [Enzymes and their action. Technology of enzymes.] 357p. 60 fig. Georg Thieme: Leipzig, 1929.

13739. **JONES, C. L. Solid carbon dioxide from by-product fermentation gas.** *Industr. and Engineer. Chem.* 23(7): 798-800. 5 fig. 1931.—From fermentation of starch as raw material.

13740. **SCHMIDT-NIELSEN, S., and ARNE FLOOD. On the generation of hydrogen in tins.** *Kgl. Norske Vidensk. Selsk. Forhandl.* 3(paper 21): 82-85. 1930 (1931).—Examination of gas generated in samples of meat and fish in tins 30-66 yrs. old showed that H was generated by chemical action. In cans with a thick coat of pure tin and with no soldering seams or bare iron spots, tin may begin to dissolve during the first months, and in proportion to the O of the air in the can, with consequent H generation. Afterwards, as the O is consumed as "depolariser," H generation takes place, but the rapidity of this H generation in cans with neutral and sterile content is so small that it can not be detected for decenniums, if the cans are kept at room temp. However, if the contents are of bad quality, high H-ion concentration or non-sterile, local corrosion of the tin coat takes place and bare Fe spots (and consequently H generation) will be found after 1-2 yrs.—*F. A. Rotondaro.*

13741. **THAYSEN, A. C., and L. D. GALLOWAY. The microbiology of starch and sugars.** viii+336p. Oxford University Press: London, 1930. Price $8.50.—This is a companion volume to "The microbiology of cellulose, hemicellulose, pectin and gums," by A. C. Thaysen and H. J. Bunker (1927). The 2 volumes endeavor to review the microbiology of the carbohydrates. This volume presents in Pt. I a review of the chemical constitution of starch, glycogen, inulin, di-, tri- and tetrasaccharides, and glucosides, and of the action of microorganisms on them or on their decomposition products. In Pt. II the fermentation of the pentose and hexose sugars is discussed, including the action of yeasts and of other fungi, as well as of aerobic and anaerobic bacteria. Pt. III is devoted to the synthetic activities of microorganisms; Pt. IV, to the microbiology of cereals and cereal products, including grain and its milled products, starch, bread, and the bread-baking process; and Pt. V deals with transformations brought about in sugar cane, sugar beet, in raw sugar juices and in sugar-house products, during and following manufacturing operations. Each of the 23 chapters is followed by a list of literature citations, 912 in all, which include most of the essential and important references in the field. The world literature, including the American, is reviewed. The authors have synthesized this mass of literature drawn from the fields of biology, organic chemistry, and industrial technology into an organized whole.—*R. A. Gortner.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

DAIRY

L. A. ROGERS, *Editor*

(See also in this issue Entries 13958, 13959)

13742. **BREED, ROBERT S.** Judging the quality of milk and cream by the microscopic count of bacteria for the milk distributor and ice cream manufacturer. *Ann. Rept. Internat. Assoc. Dairy & Milk Inspect.* 19: 185-212. Illus. 1930.—A general review of best methods of using the direct microscopic method of examining market milk, with brief reference to its use in examining ice cream, accompanied by photomicrographs.—*R. S. Breed.*

13743. **CARPENTER, CHARLES M.** The effect of an alternating electric current on tubercle bacilli in milk. *Rept. New York State Vet. Coll. Cornell Univ.* 1928/1929: 126-134. 1930.—The electrical conductivity method of treating milk effectively destroyed tubercle bacilli with which milk had been artificially inoculated.—*Author's summary.*

13744. **DAHLBERG, A. C.** Cooling as a factor in sanitary milk production. *Agric. Engineering* 11(12): 409-412. 1 fig. 1930.—The essentials shown by the study are: The cooling tank should be large enough so that when filled with milk cans there will be twice as much ice and water as milk. Insulation with 3 in. of cork, or its equivalent, protected against wetness, saved more than its cost, in refrigeration in 1 summer. Milk can be satisfactorily cooled by placing it immediately in water at 40°, if the tank is of ample size, well insulated, and a large enough source of refrigeration is available. Stirring or surface cooling is unnecessary. For milk of bad flavor, e.g., absorbed feed flavor, aeration may be desirable. Ice has not been given a real opportunity as a refrigerant on dairy farms because of lack of insulation in cooling tanks; it will maintain temp. below 40° in insulated tanks of ample capacity. Electrical cooling of milk appears to be practical.—*From author's conclusions.*

13745. **GRIMES, M., and A. J. HENNERTY.** A study of bacteria belonging to the sub-genus Aerobacter. *Sci. Proc. Roy. Dublin Soc.* 20(8/12): 89-97. 1931.—Cultures of butter yielded several organisms which ferment litmus milk and lactose broth at 21° but not at 37° C. Of these, *Aerobacter* hibernicum (p. 92) and *A.* liquefaciens (p. 93) are described.

13746. **HANSEN, POUL ARNE.** Thermophilic bacteria in milk pasteurized by the holding method. *Internat. Dairy Congr. Eng. Ed.* 1931(Sect. 2): 10-19. 1931.—Pin point colonies may be produced by thermophilic bacteria on plates from pasteurized milk. A bacteriological study of a milk plant by Breed smears or by plating samples of milk on sugar agar, usually reveals the source of these organisms. Thermophilic bacteria can be controlled by correct plant practices and by avoiding longer than necessary heating of the milk. Continued growth of thermophilic bacteria in milk may produce acid or proteolysis; feeding experiments with rabbits and guinea pigs indicate that they are harmless saprophytes, and their occasional appearance in milk pasteurized by the holding process is not a valid argument against the holding method.—*P. A. Hansen.*

13747. **HARDING, H. A.** Report of committee on milk plant practice. *Ann. Rept. Internat. Assoc. Dairy & Milk Inspect.* 19: 94-99. 1930.—Includes brief reference to developments during the yr., in milk plant practice. Subdivisions of the report deal with thermophilic bacteria and with metals and flavors in pasteurized milk, protection of pasteurized milk from contamination, and milk-bottle washing machines.—*H. A. Harding.*

13748. **HERGESELL, WERNER.** Vergleichende Untersuchungen über die in der Milch vorkommenden Streptokokken einschliesslich des Streptococcus epidemicus (Davis). *Arch. Wiss. u. Prakt. Tierheilk.* 63(6): 543-560. 1931.—*Strep. lacticus* is easily distinguished by bleaching of litmus and methylene blue milk, by reduction of Janus green and ammonium molybdate, and by growth at 10°. *Strep. agalactiae* reddens litmus milk under coagulation; does not reduce methylene blue milk, Janus green, or ammonium molybdate; does not grow at 10°; and is α, α_1 or γ-hemolytic in the sense of Brown. The hemolytic streptococci of human and animal origin (*Strep. pyogenes haemolyticus*) are nearest to *Strep. agalactiae*, but are distinguishable through their small acid forming capacity, hemolytic power, and capacity to destroy hemoglobin. *Strep. epidemicus* can not be distinguished by bacteriological methods from *Strep. pyogenes haemolyticus hominis.* Also, the hemolytic streptococci of Diernhofer and Seelemann, which cause a mastitis not distinguishable from "Gelber Galt," agree in biological characters with *Strep. pyogenes haemolyticus.* This entitles them to be classified with *Strep. epidemicus.* There are 2 forms of *Streptococcus* udder inflammations in cattle; the *agalactiae*-streptococcus-mastitis, and the more dangerous *epidemicus*-steptococcus-mastitis.—*Author's summary (transl.).*

13749. **KLINE, EDMUND K.** The colon group of bacteria in milk. *Ann. Rept. Internat. Assoc. Dairy & Milk Inspect.* 19: 68-85. 1930.—Primary isolation and enumeration on Endo plates followed by differential tests and sugar fermentations showed that colon-aerogenes bacteria of milk correspond exactly to types isolated from bovine feces and from hay and grain cultures. Excluding atypical and intermediate cultures, about $\frac{1}{3}$ of the milk strains correspond to bovine fecal, and about $\frac{1}{2}$ to hay and grain, strains. Endo-plate counts in low-count raw milk (under 50,000 total count) show no correlation with total agar-plate counts, but are correlated to the sanitary requirements met by the dairy. They detect unclean milk held to low counts through proper cooling or other measures, and can be used as an index of cleanliness and care in control of dairy farms producing better grades of milk.—*E. K. Kline.*

13750. **ORLA-JENSEN, SIGURD.** Dairy bacteriology. Translated from the Danish by **P. S. ARUP.** 2nd ed. 198p. 67 fig. P. Blakiston's Son & Co.: Philadelphia, 1931.

13751. **WHITTIER, E. O., and L. A. ROGERS.** Continuous fermentation in the production of lactic acid. *Industr. and Engineer. Chem.* 23(5): 532-534. 1931.—The method used is based on the theory that if a continuous flow of fresh fermentable material is provided and the reaction and temp. are maintained within favorable limits, fermentation will proceed indefinitely at maximum rate. The lactose of cheese whey was fermented to lactic acid by a bulgaricus culture on a small commercial scale. The whey was sterilized in a continuous sterilizer or made sufficiently alkaline to prevent abnormal fermentation in the storage tank. The fermenting material was maintained at 43° C. and at pH 5.0-5.8. The flow of fresh whey was regulated to produce an effluent practically free from lactose. A volume of whey equal to the capacity of the fermenter was fermented every 24 hrs.—*L. A. Rogers.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

SOIL

H. J. CONN, *Editor*

(See also in this issue Entries 12149, 12686, 13789, 13790)

13752. **ALLAM, FATHALLA. Vom Energieverbrauch der Knöllchenbakterien bei der Bindung des Luftstickstoffes.** *Zeitschr. Pflanzenernähr. Düng. u. Bodenk., A. Wiss. Teil* 20(5/6): 270-301. 1931.—One series of pot cultures of soybeans was inoculated with soybean nodule organism. A sterile series was treated with varying amounts of NH_4NO_3. A portion of each received a limited amount of normal sunlight. The data taken included green wt., dry wt., ash wt., total N, leaf surface area, and chlorophyll content. Results were taken to indicate that the energy consumed by nodule bacteria may be fairly large under certain conditions. It was calculated in 2 experiments, that for fixation of 1 gm. of N. the bacteria required 104 and 50.4 calories, respectively. The partial removal of light resulted in a decrease in total dry wt. in both sterile and inoculated series; this was especially pronounced in the inoculated series. The % of total N was higher in the series receiving only a part of the sunlight but more grams of total N were produced in the series receiving normal sunlight. The author concluded that partial removal of light had a disturbing influence on symbiosis between nodule bacteria and host.—*T. C. Peele.*

13753. **JACOBS, STANLEY EDWARD. The influence of antiseptics on the bacterial and protozoan population of greenhouse soils. Part I. Naphthalene.** *Ann. Appl. Biol.* 18(1): 98-136. 1931.—Greenhouse soils were treated with naphthalene at the rate of 0.1 gm.-molecule per kgm. of air-dry soil. There was an immediate and rapid increase in bacterial numbers, at once followed by a sharp decline. Subsequently, the fall in numbers became more gradual, occurring in steps at irregular intervals. The initial rise corresponded with the rapid disappearance of naphthalene from the soil, and the sharp decrease occurred soon after the major portion had gone. By adding successive quantities of naphthalene, the bacterial numbers were maintained at a high level for considerable periods. Bacteria capable of making good growth with naphthalene as their sole source of C were readily isolated from these treated soils. All this evidence indicates that at least part of the increased bacterial population was composed of naphthalene-decomposing bacteria. By making parallel counts on Thornton's agar and on a medium containing naphthalene as sole source of C, it was shown that only a portion of the increased bacterial population was due to naphthalene-decomposing bacteria. This was borne out by showing that the level reached by the bacterial population was not raised by increasing the amount of naphthalene. Presence or absence of an initial lag in naphthalene decomposition depended on temp. of incubation of treated soil. Development of protozoa was suppressed until the bulk of the naphthalene had disappeared. At this stage there was a sudden increase in numbers of active amoebae and flagellates, followed by a decrease. Thereafter, there were bursts of activity at irregular intervals, those of the amoebae coinciding with decreases in bacterial numbers. In a soil abnormally rich in organic matter, an initial decrease in ammoniacal N was followed by an increase after the naphthalene had all disappeared. This increase was prevented by adding successive amounts of naphthalene. One of the strains of naphthalene-decomposing bacteria was capable of growth in a medium containing phthalate as sole source of C, and traces of phthalic acid were found in a culture on the naphthalene medium.—*S. E. Jacobs.*

13754. **NORMAN, A. GEOFFREY. The biological decomposition of plant materials. Part IV. The biochemical activities on straws of some cellulose-decomposing fungi.** *Ann. Appl. Biol.* 18(2): 244-259. 1931.—A number of common soil fungi [*Trichoderma* sp., *Phoma* sp., *Aspergillus flavipes, A. fumigatus, A. nidulans, A. niger, A. terreus, A. versicolor. Actinomyces* sp.] isolated from rotting straw were inoculated into sterile straw, with addition of available N. Amount of decomposition effected, losses of various straw constituents, and immobilization of N which took place, were all determined, and compared with mixed flora decompositions at various temp. Though none of the organisms develop appreciably on a cellulose-agar plate, all decomposed cellulose to a considerable extent. Certain minor differences in ability to utilize carbohydrate constituents were noted, but in general all substances but lignin were attacked to a degree relatively proportional to the apparent total loss of organic matter. The "N factor" or N immobilized by 100 gm. straw rotting with a particular organism, was determined in each case. There is no correlation between "N factor" and loss of organic matter or of any particular straw constituent; differences appear to be varietal. Some indication of the relative efficiencies of the organisms was obtained from a factor for which the name "N equivalent" is proposed. This represents the N immobilized as microbial protein in the course of removal of 100 gm. organic matter from any given plant material. Attention is drawn to difficulties which restrict the absolute value of the "N equivalent" as a measure of efficiency in decomposition. The value of single factor studies as a preliminary to the synthetic method of investigation of such a process as biological decomposition, is discussed.—*Author's summary.*

13755. **SMITH, F. B., and P. E. BROWN. The effect of manures and crop residues on nitrogen changes and microorganisms in the soil.** *Iowa State Coll. Jour. Sci.* 5(3): 155-166. 1931.—The purpose was to correlate the nitrate-assimilating power of soils variously treated with manures and crop residues and the types of organisms developing in greater numbers with the treatments, with the nitrifying power of the soil and the accumulation of nitrates. Dry virgin Carrington loam was treated with 1% dry wt. of various artificial farm manures, ordinary farmyard manure and certain residues, such as oat straw, corn stalks, and sweet clover tops and roots, in 4-gal.-pots in the greenhouse. Materials were finely ground and thoroughly mixed with the soil. The soil moisture content was adjusted to approximately 50% of saturation and maintained by frequent additions of distilled water. Samples for analysis were taken of each soil after 1, 4, 9 and 13 wks. The nitrate content of the soils, their nitrate-assimilating and nitrifying powers, and the number and genera of molds were determined at each sampling. Results showed that nitrate accumulation in the soil is prevented both by a depression in nitrate production and by a stimulation in nitrate assimilation when various organic materials are applied to the soil. Sweet clover tops and roots stimulated the nitrate-assimilating power of the soil to a greater extent than did straw and corn stalks, yet more nitrates accumulated in the soils treated with these residues than in the soils treated with straw and corn stalks. Undoubtedly this, in part, is caused by the higher N content of the leguminous residues and to their more rapid nitrification. It is also due, however, to stimulation in development of large numbers of *Mucor* and *Rhizopus* soon after treatment. These organisms do not decompose cellulose or assimilate nitrates, but are large producers of ammonia, thus increasing nitrate production and accumulation. Straw and corn stalks, rich in cellulose and pentosans, stimulated development of *Aspergillus, Trichoderma, Alternaria* and other cellulose-decomposers. These organisms are also heavy feeders on ammonia and nitrates, thus depressing nitrate production, stimulating nitrate assimilation and preventing accumu-

lation in the soil. These results would also seem to indicate the occurrence of a nitrate-assimilating flora in the soil, and that the cellulose-decomposers may be the principal nitrate-consumers.—*F. B. Smith.*

13756. **TETRAULT, P. A. The decomposition of cellulose in nature.** *Proc. Indiana Acad. Sci.* 39: 137-151. 1929 (1930).—A review of the literature of cellulose decomposition. The point is made that the breaking down of cellulose in nature is apparently a function of the lower forms of life, protozoa, fungi and bacteria being most active in this respect. The more highly developed organisms, when cellulose is used for food, seem to be dependent on some bacteria or protozoa for the digestion of this material.—*P. A. Tetrault.*

13757. **WAKSMAN, SELMAN A. Decomposition of the various chemical constituents, etc., of complex plant materials by pure cultures of fungi and bacteria.** *Arch. Mikrobiol.* 2(1): 136-154. 2 fig. 1931.—In the decomposition of plant residues by microorganisms, it was found that different organisms attack different chemical constituents. Some prefer water-soluble substances, hemi-celluloses and nitrogenous complexes; others attack cellulose; and a few are capable of decomposing lignin. Decomposition is accompanied by synthetic processes, new complexes being built up side by side with those that are being decomposed. Loss in weight as a result of decomposition is usually not a true index of the amount of decomposition that has taken place. Only an analysis of the various organic constituents will help to visualize the nature of the changes produced in decomposition of plant material by microorganisms.—*S. A. Waksman.*

13758. **ZIEMIĘCKA, J. Metody mikrobiologicznego oznaczania żyzności gleby. Studja nad mikrobiologja gleby. Część I. [Microbiological analysis of soil fertility. Soil microbiology. I.]** [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 21(1): 79-102. 2 pl. 1929.—A review of the work on testing for available phosphate by means of *Azotobacter.*

13759. **ZIEMIĘCKA, J. Znaczenie fosforu przy asymilacji wolnego azotu. Studja nad mikrobiologja gleby. Część II. [Rôle of P in N-fixation. Soil microbiology. II.]** [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest Ann.)* 21(2): 231-246. 1 fig. 1929.—Experiments showed that there was no definite relation between amount of P_2O_5 absorbed by *Azotobacter* from easily soluble phosphates and amount of N fixed. As the quantity of P diminishes, its utilization in fixation seems to become more and more economical. In presence of 26.0 mgm. of P_2O_5 in form of KH_2PO_4, less than 1 mgm. of free N was fixed per mgm. of P_2O_5 absorbed; in presence of 10.5 mgm. of P_2O_5, 2 mgm. of N were fixed for each mgm. of P_2O_5 absorbed; and in presence of 1 mgm. of soluble P_2O_5, 7 mgm. of N were fixed. The difficultly soluble phosphates such as $Ca_3(PO_4)_2$ and also those in Thomas slag, can be used to a certain extent by *Azotobacter* in N fixation.—*From author's summary (transl.).*

13760. **ZIEMIĘCKA, J. O wpływie gelu krzemionkowego na pobieranie fosforu przez Azotobaktera. [Influence of silica-gel on assimilation of P by N fixers.]** [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 22: 343-350. 1929.—Experiments here described show that colloidal Si favors growth of *Azotobacter.* Cultures on silica-gel plates with mannite and on soil molds, have shown that this organism can use PO_4 ions contained in difficultly soluble phosphates, only in presence of silica-gel. Development is not stimulated by silica-gel if the soil is well supplied with soluble P_2O_5. On the contrary, the Al-silicic acid in the clay added to the molds had no influence on absorption of insoluble phosphates by *Azotobacter.* Thus, silica-gel has a specific action in absorption of P. The gel used, saturated with bases, had a pH of 7.5-7.8. Why the gel did not have a favorable action in all the soils studied remains to be determined.—*Author's summary (transl.).*

GENERAL BACTERIOLOGY

R. E. BUCHANAN, *Editor*

(See also in this issue Entries 12113, 12183, 12731, 12844, 12908, 13364, 13462, 13463, 13572, 13671, 13675, 13678, 13687, 13693, 13731, 13745, 13748, 14042, 14486)

13761. **[BEZSONOVA, A. A.] БЕЗСОНОВА, А. А. Голодный кислый агар, как дифференциальная среда для B. pestis и B. pseudotuberculosis rod. Pfeiffer'a. [Nutrient-deficient acid agar as a differential medium for B. pestis and B. pseudotuberculosis rod. Pfeiffer.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(3): 264-269; English summary, 353-354. 2 fig. 1929.—Both *Bacillus pseudotuberculosis rodentium* and *B. pestis* grow on a nutrient-deficient agar; also, they behave alike toward the reaction of the deficient agar (pH 5.9-7.0), except that not every strain of *B. pestis* grows at pH 6.4 or lower H-ion concentration; and at pH 5.9-6.1 a definite concentration of agar (2%) is required as well. Differentiation of the 2 is possible only by combining the 4 factors—nutrient-deficient agar, acid reaction, definite concentration of agar, and a small amount of inoculum. On transferring both in 1 loop of emulsion (made from 1 loop of agar culture of each in 5 cc. of sterile physiological saline) into 3% agar prepared with physiological saline at pH 5.9-6.1, the 150 strains of *B. pestis* produced no growth, while the 11 strains of *B. pseudotuberculosis rodentium* produced growth.—*G. A. Lebedeff.*

13762. **[BEZSONOVA, A. A., and G. N. LENSKAĬA.] БЕЗСОНОВА, А. А., и Г. Н. ЛЕНСКАЯ. Бульон мутящие варианты B. pestis. (Материалы по диссоциации B. pestis.) [Broth-clouding variants of B. pestis: Data on dissociation.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(3): 270-279; English summary, 354-356. 7 fig. 1929.—One of the characteristic features of the plague bacillus—its clear growth in broth—can not be considered stable. It sometimes acquires the broth-clouding property, and in some cases retains it for a long time. This mutation is considered as a dissociation. Sometimes such variants yield avirulent colonies of peculiar appearance, a fact of great practical importance in diagnosis. These variations are evidently not infrequent; during 5 mo. of observation they were found in 4 of 150 strains. The authors believe that the broth-clouding variants, producing pale, soft colonies without laced border, can be referred to the smooth (S) type. They are avirulent; thus—like the smooth colonies of *B. anthracis*—they are exceptions to the general rule that S forms are virulent.—*From authors' summary (G. A. Lebedeff).*

13763. **[BEZSONOVA, A. A.] БЕЗСОНОВА, А. А. Пептонная вода с рамнозой, как дифференциальная среда для B. pestis и B. pseudotuberculosis rod. Pfeiffer'a. (Peptonized rhamnose-containing water as a differentiating medium for B. pestis and B. pseudotuberculosis rod. Pfeiffer.)** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(4): 458-461; English summary, 486-487. 1929.—The fact that rhamnose (methyl-pentose, $C_6H_{12}O_5$) reacts differently to *B. pestis* and to *B. pseudotuberculosis rodentium* enabled the author to construct a new differential medium consisting of 1% rhamnose, 0.5% peptone, and 0.5% NaCl (pH 7.2). The medium is colored

with litmus and sterilized 3 times at 100°C. All of the 10 strains of *B. pseudotuberculosis rod.* tested, after 24 hrs. turned the blue color to bright red, due to decomposition of rhamnose and formation of acid; none of the 160 strains of *B. pestis* tested, effected this change.—*G. A. Lebedeff.*

13764. **BOGETTI, M. Expériences de disassociation bactérique sur le groupe Castellanus-Cerruti 1930.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(6): 310-312. 1931.—The author studied a group of 20 dysentery strains isolated in Ceylon and designated as the genus *Castellanus* by Cerruti. Dissociation was accomplished by prolonged incubation and by action of anti-Shiga bacteriophages. Differentiation into typical "R" and "S" forms was confirmed, though no differentiation was obtained by cross agglutination tests performed with 4 different antisera.—*L. Baumgartner.*

13765. **BOYD, ELDON M., and GUILFORD B. REED. Oxidation-reduction potentials in cultures of Es. coli.** *Canadian Jour. Res.* 4(6): 605-613. 1931.—Following evidences advanced in a previous paper, that metabolic gases are concerned in production of growth-oxidation-reduction potentials observed in cultures of bacteria, experiments were arranged to test the effects of such gases in comparison with other factors. Growth and oxidation-reduction potentials were determined simultaneously in anaërobic buffered broth cultures of *Escherichia coli.* It is shown that in sugar-free broth there is a sudden fall in potential at the beginning of the logarithmic growth period. Addition of glucose to the medium induced an earlier and more precipitous fall in potential, coincident with the first evolution of gas. At the same time, evidence was found of a non-gaseous electromotively active system in these cultures.—*Authors' abstract.*

13766. **CERRUTI, CARLO G. L'azione della bile sul Bac. gallinarum.** *Ann. Igiene* 39(4): 274-284. 1929.—The author shows that *B. gallinarum* grows abundantly in broth containing a variable quantity of ox bile and in bile alone, without change in morphological characteristics. Cultures in 25% bile broth lose their virulence towards chickens but have marked vaccinating qualities. The attenuating and vaccinating action of bile on typhoid cultures is seen even when it has been added up to 25%. The organisms quickly resume their pathogenic and morphologic characters when transplanted to plain broth.—*C. G. Cerruti (transl. by P. Hillkowitz).*

13767. **CERRUTI, CARLO G. Su di nuovo metodo di differenziazione tra Pasteurelle e germi tifo-coli.** *Profilassi* 4(2): 40-43. 1931.—The author proposes culture in broth and agar, with addition of 4% NaCl. On these media *Pasteurella* does not develop, while the typhoid-colon group grows abundantly. Similar results are obtained by taking directly from infected pathologic material.—*C. G. Cerruti (transl. by P. Hillkowitz).*

13768. **COULTER, CALVIN B., and FLORENCE M. STONE. The occurrence of porphyrins in cultures of C. diphtheriae.** *Jour. Gen. Physiol.* 14(5): 583-596. 1 pl. 1931.—Toxic filtrates of *Corynebacterium diphtheriae* contain a complex porphyrin, not heretofore described, which has a characteristic absorption spectrum in the visible, of 2 bands, at 573 and 537 mm. This complex is unstable and has not been obtained as crystals; it breaks down to yield coproporphyrin and the Cu compound of coproporphyrin. The ash gives the reaction for Fe. It appears to represent a compound of coproporphyrin with both Cu and Fe. The content of a toxic filtrate in porphyrin is proportional to its content of toxin, so that the toxic principle may conceivably originate from the cytochrome of the bacilli, which yields the complex porphyrin.—*C. B. Coulter.*

13769. **CRUICKSHANK, ROBERT. Döderlein's vaginal bacillus: A contribution to the study of the lacto-bacilli.** *Jour. Hyg.* 31(3): 375-381. 1 fig. 1931.—A study of morphological and cultural characters of 60 strains indicates that the organism belongs to the lactobacillus group; 3 morphological types are recognized, all biologically similar. Primary culture of Döderlein's lactobacillus may be readily obtained on lactose blood agar incubated aerobically, provided the vaginal flora is of "Grade A" type, but its subsequent propagation on artificial media is less likely to succeed. There is no serological homogeneity among the strains, although there was some evidence of a serological relationship among the members of the commonest morphological type. The same serological type tends to persist in the vagina throughout pregnancy. Döderlein's lactobacillus and lactobacilli derived from other sources are not serologically identical.—*Author's summary.*

13770. **CUMMINS, S. L., and C. WEATHERALL. Effects of colloidal silica upon the growth of tubercle bacilli in blood.** *Brit. Jour. Exp. Path.* 12(4): 245-249. 1931.—Growth in vitro was neither favored nor inhibited by presence of colloidal silica solution.—*J. Bland.*

13771. **DAVID, ROBERT. Contribution à l'étude numérique de la multiplication du bacille pyocyanique dans différents milieux de cultures liquides. Influence de la teneur des milieux en certains éléments nutritifs.** 198p. Imprimerie Durand: Chartres, 1931.—4 chapters are devoted to discussion of techniques employed for quantitative study of bacterial multiplication, of growth phases in bacterial cultures, and of multiplication of *Bacillus pyocyaneus* in different liquid media, both non-synthetic and synthetic. No lag phase was evident when cells were enumerated by direct microscopic count, but it was marked when plating technique was used. The plate count was always smaller than the microscopic count. The proportion of cells capable of development on agar plates increased during the logarithmic growth period. The average length of cells increased during this phase. The lag phase is longer in synthetic media; the generation term in synthetic media is of the order of 100 min.; on ordinary media, 30-35 min. Various studies were made of media in which the bacteria had grown for 48 hrs. Surface tension is increased. The pH rises from 7.0 to 8.0-8.4. In general the rotation of light as measured by the polarimeter is decreased. Total N decreases slowly. Amino-N decreases, and disappears almost completely in 9 hrs. Ammoniacal N increases. Total C decreases. The S fixed is irregular and small in amount; P is utilized. Cl (chloride-ion) is not significant in its effect. Inhibition of bacterial growth in older cultures is not due to exhaustion of food. There is a bibliography of 198 titles.—*R. E. Buchanan.*

13772. **DOWNIE, A. M., L. STENT, and S. M. WHITE. The bile solubility of pneumococcus, with special reference to chemical structure of various bile salts.** *British Jour. Exp. Path.* 12: 1-9. 1931.—Preparation of various derivatives of bile-acids is described, and tests are made of their lytic action on strains of pneumococci from various sources and of different serological types. All normal strains of pneumococci tested, irrespective of type, were equally susceptible to lytic action of the various bile salts. Of 6 R strains tested, 5 were equally soluble, while the 6th was almost completely resistant; the latter was also resistant to normal autolysis in culture. Comparative tests with various bile salts and Na oleate indicate that there is no parallelism between lytic activity and surface tension of the solutions. Saponin and the Na salts of all the bile acids tested, except dehydrocholic and dehydrodeoxycholic acid, brought about lysis. Na salts of the various choleic acids were similar to the deoxycholic acid fraction in activity. There seems to be some correlation between chemical structure and power to form addition compounds, and lytic activity of the various salts tested. The conditions under which lysis by bile salts and normal autolysis take place are similar. The experiments suggest that the bile acids combine with the pneumococcal cell and so alter it that lysis is readily produced by the autolytic enzyme of the cell.—*J. Bland.*

13773. **DUBOSCQ, O., et P. GRASSÉ. Protistologica XXI. Coleomitus n. g. au lieu de Coleonema pour le Schizophyte C. pruvoti Dub. et Grassé, parasite d'un Calotermes des Iles Loyalty.** *Arch. Zool. Exp. et Gén.,*

Notes et Rev. 70(1): 28. 1930.—**COLEOMITUS**, erected for the preoccupied *Coleonema*, and based on *C. pruvoti* (*Coleonema p.* Dub. & Grassé).

13774. **[FEL'DMAN, M.]** ФЕЛЬДМАН, М. **Bacterium paracoli из воды р. Дона и его диссоциация. [Bact. paracoli from Don waters and its dissociation.]** Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 189-196; German summary, 237. 1930.—Of 47 *Bact. paracoli* strains isolated from water, 9 formed indol and 38 did not. Lactose was decomposed by 38 strains (5 of them indol formers). Repeated sowing heightened fermentative activity of the strain in respect to lactose, thus bringing it closer to *B. coli*. Similarity of receptors of *B. paracoli* in water did not parallel biochemical and cultural similarities. Dissociation of its water strains gave 3 widely different varieties: S, O, and R.

13775. **GARDNER, GÉRARD. Recherches sur les Spirochétidés dans le district de Montréal.** 85p. Editions Médicales: Paris, 1930.—This book on spirochaetes is divided into 10 chapters which treat of their nomenclature; characteristics; occurrence in surface waters, in feces of cows, in sea water, in decaying vegetation, and in animals; and the influence of cold on them. The author records the results of his own studies of the Spirochaetaceae in water, in decaying vegetation, and in the alimentary canal of cows, rabbits and rats. He discusses the occurrence of *S. icterohemorrhagiae* in nature, and results of testing the serum of different individuals for presence of agglutinins for this organism. Low temp. (−15°C.) influences rate of development and morphology, in slowing multiplication and in changing spiral into globular forms.—*D. H. Bergey.*

13776. **GERARD, R. W., and I. S. FALK. Observations on the metabolism of Sarcina lutea. I.** *Biol. Bull. Marine Biol. Lab.* 60(3): 213-226. 1931.—The respiration of a strain of *S. lutea*, growing as individual cocci of uniform size and of relatively high viability, was studied by the Warburg technique. Suspensions of thoroughly washed bacteria in water or in glucose solution were enumerated by direct and by plate counts, and pH determinations were made before and after manipulation in the manometer. A simple method is described for obtaining accurate gas mixtures with a low concentration of O. The O consumption of various suspensions of the washed cocci was fairly constant in water suspension at about 2.6 cmm. O per mgm. dry wt. per hr., or approximately 7 μ^3 O per single cell per hr.: that is, over 3 times its volume of O was consumed per hr. by each micrococcus. This value is for the nearly constant level attained some hours after the start of the experiment. O consumption is considerably more rapid at first and falls along a roughly arithlogarithmic curve towards an asymptote. This early excess appears to represent an O debt due to partial asphyxia produced in the course of preparation of the suspensions. In 0.2-0.5% glucose, the rate of O consumption falls along a similar curve, but the rates are 100-300% greater than for suspensions of cocci in water. The respiratory quotient in water is constant at about 0.67; in glucose it falls from 0.95 to 0.71 in 7 hrs. (1 experiment each). The O consumed by a suspension in water is independent of O concentration when this is above 1%. For glucose suspensions 2.5% O or more is required for maximal consumption. Below the critical values of O tension, O consumption becomes less with diminishing concentration. When air is admitted to the suspension after a period of complete anoxia, there is observed a high initial rate of consumption followed by progressively declining rates during several hours until a relatively constant rate is approached. When 0.5% or less of O are admitted after anoxia, consumption is greater at first and then falls as when air is admitted; but the maximal rate is low, usually less than normal for air. The O debt developed is not apparently associated with production of detectable acid metabolites (in water suspensions, at least), nor with formation of CO_2 during asphyxia. It may result from accumulation of non-acid metabolites, or of amounts of acid metabolites that do not equal or exceed the buffering capacities of the cells. The oxidation quotient, even in glucose solution, in contrast to the data for most cells that have been studied, is not over 0.6.—*Authors' summary.*

13777. **GERARD, R. W. Observations on the metabolism of Sarcina lutea. II.** *Biol. Bull. Marine Biol. Lab.* 60(3): 227-241. 1931.—The Q_{O_2} of washed *S. lutea* in water suspension at 22° C. in the relatively steady state, averages 2.5. There is no untoward effect of crowding in heavy suspensions. NaCl does not modify the Q_{O_2} until $M/5$ concentrations are reached, when a slight depression may result. The Q_{O_2} is also unaffected by pH, at least between 7 and 8, or by presence of phosphate buffers. Glucose causes a marked increase in Q_{O_2}, the maximum being largely independent of glucose concentration. The extra O used under the influence of glucose may be more than that required to fully oxidize it, which, with other evidence, suggests a "specific dynamic action." Sodium lactate may increase the Q_{O_2} in water suspension over 20-fold. Its addition is always followed by a great rise in respiratory rate, the maximum reached being independent of lactate concentration, at least between 0.05 and 2.0%. Respiration falls rapidly back to normal after addition of small amounts, and the extra O consumed accounts for full oxidation of the added lactate, both *d* and *l* forms. With larger concentrations of lactate, the increased respiration also falls after the initial maximum, but more slowly. This fall is not primarily due to removal of lactate or accumulation of end products. Methylene blue added to a suspension in water, doubles respiration at first, later depresses it. Added to one in glucose solution, the same sequence appears. The Q_{O_2} in glucose is increased only 50% by the dye, but this is an absolute increase over twice that in water; so that glucose and methylene blue added together to a water suspension cause a greater increase in respiration than the sum of their separate effects. The dye added to lactate solutions seems to be depressant from the start. Thioglycollic acid doubles the respiration of a buffered water suspension. NaCN causes no inhibition of respiration up to concentrations of $M/100$ or somewhat stronger. This is true for the low respiration of suspensions in water, saline, or phosphate buffer, and for the increases evoked by methylene blue, lactate and glucose. Extremely strong cyanide concentrations do depress, but even $M/10$ NaCN does not abolish more than $\frac{2}{3}$ to $\frac{3}{4}$ of the total respiration. CO containing 5% O has no effect on the respiration of a water suspension, but somewhat inhibits the increase in glucose and largely that in lactate. Light has little if any effect on the inhibition. The metabolism of *S. lutea* is compared with that of other cell types.—*Author's summary.*

13778. **GIBSON, JAS. The pH value of culture media.** *The Analyst* 56(662): 312. 1931.

13779. **GLASER, R. W. The "Rickettsiae" and the intracellular "symbionts."** *Science* 74(1914): 243. 1931.—Note on a criticism by Kligler and Aschner, of the author's interpretation of the intracellular bacteria which he found in the American and German roaches, in which he states that in his paper both terms "rickettsia" and "symbionts" were printed in quotes, and that much trouble was taken to demonstrate that the microorganisms discussed were indeed bacteria.

13780. **GRÉGOIRE, CH. Procédé d'isolement de l'entérocoque par les milieux dits "cyanoferrique" et "électif" de L. Muller.** *Arch. Internat. Méd. Exp.* 6(3): 319-325. 2 fig. 1931.—Addition of 0.5-0.6 cc. of iodine-KI solution to 10 cc. of a mixture of bouillon 9 parts, Na hyposulphite 1 part with 5% $CaCO_3$, produces a medium which supports life in enterococci but usually in no other bacteria.

13781. **GORDON, J., and K. E. COOPER. A study of phosphorus distribution in bacterial cultures. Part II.** *Brit. Jour. Exp. Path.* 12(4): 234-238. 1931.—The organic P in *Bacillus coli* (grown in a synthetic medium containing no detectable organic P) consists of 86% of organic P other than lipin and 14% of lipin P. There is no direct

proof that lipin P was synthesized from inorganic P but the evidence suggests that it was. On the other hand, some of the other organic P must have been so synthesized.—*J. Bland.*

13782. **GORINI, COSTANTINO.** Milk as nutritive medium for microorganisms. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2) : 95. 1931.—A summary.

13783. **HÄMÄLÄINEN, R.** Über die oligodynamische Einwirkung der Silbersalze auf den Staphylococcus aureus. *Acta Soc. Med. Fennicae "Duodecim"* [*Suomalaisen Lääkäriseuran Duodecim'in*] 13[Series A] (2) : 1-7. [Art. 4] 1930.—The effect of 42 Ag compounds on a culture of *Staph. aureus* spread out uniformly on an agar-disc, was not proportional to the chemical disinfecting action of the metal salt (dependent on its solubility), but on the oligodynamic effect of the Ag. Thus Bechold's observations are made intelligible by Murto's explanation of the oligodynamic effect on the basis of the electron theory.

13784. **HAUDUROY, PAUL.** Le cycle évolutif du bacille d'Eberth et des bacilles paratyphiques. *Presse Méd.* 38(55) : 924-927. 1930.—Typhoid bacilli, paratyphoid bacilli, and any other bacilli for which there is an active bacteriophage, can, under the influence of bacteriophage, undergo a change from a visible, nonfilterable form to an invisible, filterable form. With the typhoid bacillus, experiments show that this can take place not only in vitro but also in vivo. Evidence has been obtained that the filterable form is present in the blood of typhoid fever patients at onset of infection, and in the feces at the end of the disease. Certain septicemias are considered to be caused by the filterable form of typhoid bacillus, although the clinical signs of typhoid fever are not present. These invisible, filterable forms may play an important rôle in the etiology of typhoid fever.—*A. M. Woodruff.*

13785. **HIBBERT, HAROLD, and FRITZ BRAUNS.** Studies on reactions relating to carbohydrates and polysaccharides. XXXVI. Structure of the levan synthesized by the action of Bacillus subtilis on sucrose. *Canadian Jour. Res.* 4(6) : 596-604. 1931.—The action of *B. subtilis* on a sucrose nutrient medium gave a 2 : 6 anhydro fructofuranose polysaccharide, levan, identical in structure with that synthesized by *B. mesentericus.* The yield of levan (calculated on the fructose portion of the sucrose taken) was 60-65%. The pure, ash-free, snow-white, powdery levan, on hydrolysis with oxalic acid, was converted into fructose, the yield of the pure, crystalline hexose amounting to 99%. On methylation the levan was converted into trimethyl levan, the yield of partially purified product amounting to 88.5%. The trimethyl levan on hydrolysis was converted into 1 : 3 : 4 trimethyl fructofuranose identical with that obtained from the levan synthesized by *B. mesentericus* from the same sucrose nutrient medium. The pure, snow-white, crystalline 1 : 3 : 4 trimethyl fructofuranose was obtained in a yield of 98.5%. Attention is drawn to the marked influence exerted on the course of the methylation by small amounts of inorganic impurities present in the levan and to the necessity for using only highly purified, ash-free products for physico-chemical investigations on the properties and structure of polysaccharides. Apparently, insufficient purification of many of the products, such as starch and inulin, used previously by investigators, renders somewhat uncertain various conclusions drawn regarding the structure of these substances.—*Authors' abstract.*

13786. **[HIMMEL'FARB, Ya. K.]** ГИММЕЛЬФАРБ, Я. К. К вопросу о дифференциальном диагнозе между **B. pestis** и **B. pseudotuberculosis rodentium** на питательных средах с углеводами. **[Differential diagnosis between B. pestis and B. pseudotuberculosis rodentium on carbohydrate media.]** Вестник Микробиологии и Эпидемиологии (*Rev. Microbiol. et Epidemiol.*) 6(1) : 82-85; German summary, 133. 1927.—The author experimented with 3 virulent and 2 avirulent strains of *B. pestis,* and with 3 strains of *B. pseudotuberculosis rodentium.* The medium contained 0.5% peptone water (pH 7-7.2), with addition of different concentrations of maltose (1, 0.5, 0.25, 0.1, and 0.05%). From 48-hr. agar cultures of these bacteria an emulsion was prepared in physiological saline, containing up to 50 millions of bacteria per cc. This was sown on the medium and kept at 28-30° C. After 24, 48, and 72 hrs., the pH was tested with methyl-red solution. After 72 hrs. (sometimes earlier) the yellow color of *B. pestis* cultures turns yellowish-pinkish-red.

13787. **HODER, FRIEDRICH.** Ein verbessertes Filtrierverfahren. *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2) : 111-112. 2 fig. 1931.—By insertion of a right-angled glass tube through a 2nd hole in the rubber cork plugging the vessel into which material is filtering, a water suction pump may be attached, yet all danger of contamination and additional pipetting obviated.

13788. **HORELLI, VÄINÖ.** Über die Oligodynamie der Elemente bei Mykobakterien; mit besonderer Berücksichtigung der Theorie von J. A. Murto. *Acta Soc. Med. Fennicae "Duodecim"* [*Suomalaisen Lääkäriseuran Duodecim'in*] 13[Series A] (2) : 1-152. [Art. 5.] 5 pl. 1930.—The author examined 23 strains of mycobacteria. Growth was most effectively retarded by As, Sb, Tl; effectively by Cd, Hg, Zn, Ge; slightly but quite obviously by Co, Rd, Ir, Cu, Ag, Bi, In, Te, (Mo). Growth was promoted by Di (=Ne+Pr), W, U, Mn, Ni, Er, Y, Fe, (Mo); slightly and occasionally by La, Ce, Th, Ta, Al, (Se), V, (Pb), (Sn), (Au), B, Ti. Mycobacteria were not influenced in any way by Mg, C, Si, Zr, Nb, Cr, Pd, or Pt. A marginal elevation was formed by As, Sb, Cd, Hg, Zn, Co, Rd, Cu, Ag, Bi, Ge, (Mo); a double elevation, by Sb, Cd, Zn, (Mo). [Apparently elements in ( ) either promoted growth in some organisms and inhibited it in others, or affected only certain organisms.] There was a specific proportion between the mycobacteria and the elements. These observations are more intelligible after study of Murto's theory regarding the oligodynamic phenomena.—*Author's summary.*

13789. **ITANO, ARAO, and SATIYO ARAKAWA.** Studies on Bacillus thermofibrincolus n. sp. II. Physiological studies. *Ber. Ōhara Inst. Landw. Forsch.* 4(3) : 357-363. 2 fig. 1929.—The optimum temp. (65°C.), lower limit (30°), and maximum limit (80°) for growth, are noted. The optimum quantity of cellulose is 1.50-2.25%. As N source, albumin is better than peptone, and while $(NH_4)_2SO_4$ can be utilized, no $NaNO_3$ is used. Optimum pH is 8.0-8.4, and the limiting values are pH 4.6 and 10.2, respectively, for fermentation; for growth, pH 4.5 and 11.0. In the course of fermentation of sugars, so much organic acid is produced that only ½ the sugar (1%) is fermented in 5 days, but addition of $CaCO_3$ enables the organism to ferment the sugars completely, with exception of galactose and lactose. An alteration of pH occurred in course of fermentation.—*A. Itano.*

13790. **ITANO, ARAO, and SATIYO ARAKAWA.** Studies on Bacillus thermofibrincolus. III. Physiological studies (continued). *Ber. Ōhara Inst. Landw. Forsch.* 4(4/5) : 457-469. 4 fig. 1930.—The influence of ecological conditions and the N metabolism of the organism are investigated. When 1.5-3.0% cellulose was supplied, about 60-88% was fermented within 3-7 days; and 24-33% volatile acids (as acetic acid) and 3-12% alcohol (as ethyl) were produced, relative to the fermented cellulose. Culturing by Buchner's anaerobic method, less cellulose was fermented than under aerobic condition, but double quantity of alcohol and equal amount of volatile acids were produced; 0.5% peptone was best, and on the whole the less peptone the better the cellulose fermentation. Different nitrogenous compounds had different degrees of influence on fermentation. The organism has proteolytic action and the amino-N production is governed by the source of energy supplied.—*A. Itano.*

13791. **[IUDENICH, V. A.]** ЮДЕНИЧ, В. А. К вопросу о биологических свойствах бацилла риносклеромы **Fritsch'a.** **[Biological properties of the Fritsch rhinoscleroma bacillus.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épi-*

démiol. et Parasitol.) 8(3): 248-260; German summary, 352-353. 1929.—In determining spp. of capsulated microorganisms, fermentations of sugars, due to their instability, must be considered as secondary rather than primary indicators. Ox bile retards growth of the rhinoscleroma bacillus, and differs in effect on Friedländer's diplobacillus and on the ozena bacillus. Complement fixation is specific, and is considered as a definite method for differential diagnosis of membranous smears and also as dependable for early serodiagnosis of scleroma. Sera from immunized animals or from human cases of scleroma, agglutinate only the non-capsulated form of Fritsch's bacillus. Membranous capsules interfere with the agglutination test, but it may be considered as important for serodiagnosis and may be clinically useful. Infection of rabbits with rhinoscleroma through the nasal membrane failed to produce typical local infection. —*From author's summary (G. A. Lebedeff).*

13792. [IVANOVSKIĬ, N., and T. SASYKINA.] ИВАНОВСКИЙ, Н., и Т. САСЫКИНА. Реакция Schardinger'a в применении к дифференциальной диагностике B. pestis и B. pseudotuberculosis rod. Pfeifferi. [The Schardinger reaction in differential diagnosis of B. pestis and B. pseudotuberculosis rod. Pfeifferi.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 72-76; German summary, 132-133. 1930.—2-day-old agar cultures of *Bacillus pestis* and *B. pseudotuberculosis rodentium* were washed with physiological saline and diluted with it to 3.5×10^9 bacteria per cc. 3 cc. of these cultures were mixed with 0.5 cc. of Schardinger's solution, covered with paraffin and placed in a thermostat at 30° C. With *B. pseudotuberculosis rodentium*, discoloration of methylene blue occurs within 1 hr.; with *B. pestis*, discoloration in most cases did not occur, but only white precipitation; in only 3 of 60 cases did *B. pestis* discolor methylene blue (2-3 hrs.). Thus, the reducing properties differentiate the 2 organisms.—*G. A. Lebedeff.*

13793. **JORDAN, EDWIN O.** A text-book of general bacteriology. 10th ed. 819p. 200 fig. W. B. Saunders: Philadelphia, 1931.

13794. **KNUTTI, RALPH E., PETER K. OLITSKY, and JOSEPH R. TYLER.** Differential filtration as a means of isolating Bacterium granulosis. *Science* 73 (1904): 709-710. 1931.—A suspension of the contaminated material is diluted in normal saline and passed through filters selected to allow passage of *B. prodigiosus* but not staphylococci or other large forms. The filtrate is either spread on plates or inoculated into Leptospira medium, and *Bact. granulosis* recovered.

13795. [KOROBKOVA, E. I.] КОРОБКОВА, Е. И. К изучению B. pestis и B. pseudotuberculosis rodentium Pfeiffer. [Study of B. pestis and B. pseudotuberculosis rodentium.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 8(4): 435-457; French résumé, 484-486. 1929.—On Martin's bouillon at pH 6.4, in almost all of 158 *B. pestis* and in 11 *B. pseudotuberculosis rodentium* cultures tested, the pH decreased within the first 4-5 days, with marked variations for different cultures of both bacilli. When *B. pestis* was grown on bouillon at pH 5.8, the pH decreased to 5.6 on the 3rd day, and only on the 6th day increased to 5.7-5.9. When *B. pseudotuberculosis* was grown on the same medium, the pH increased to 6.8 on the 3rd day. This confirms Nikanotov's conclusion that Martin's bouillon at pH 5.8 is suitable for differentiating the 2 organisms. The other method for differential diagnosis is Martin's bouillon (pH 6.2-6.4) stained with thionin, indigo disulphonate, malachite green, litmus, etc. It was found that *B. pseudotuberculosis rodentium* reduces these stains more rapidly and completely than *B. pestis;* the rate of reduction increased with increase of Eō (water electrode) and rH (negative logarithm of hypothetical H tension) of the stains, also with the number of bacteria.—*G. A. Lebedeff.*

13796. **KROMBHOLZ, E., und W. LORENZ.** Über eine exakte Methode der mikrobiellen Titerbestimmung. *Zentralbl. Bakt. I. Abt. Orig.* 114(1/2): 138-153. 2 fig. 1929. —An exact method, with the necessary formulas for determining microbial titer, is described; it is more exact than current methods and does not necessarily require liquid media, gelatinized media being entirely suitable. —*P. G. Heineman.*

13797. **KUŽELA, J.** O jaderné povaze bakterií. Studie na podkladě nukleální reakce Feulgen-Rossenbeckovy. [Nuclear character of bacteria. Application of the nuclear reaction of Feulgen-Rossenbeck.] *Zákonitosti života.* Memorial Volume in Honor of the 60th Birthday of Prof. Dr. Vl. Růžička. P. 199-212. Aventinum: Praha, 1930.—These studies demonstrated by means of this nuclear reaction, the chromatic nature of the stainable granules and of the structures in *Bacillus anthracis,* and confirmed the nuclear nature of the following organisms: *B. mesentericus, B. proteus, B. fluorescens liquefaciens, Encapsulatus rhinoscleromatis,* bacilli of hay infusions, and some of the cocci. This study confirms the observations of Růžička who, in his cytological studies (1902, 1904, 1906), demonstrated an analogy between the bacterial cell and the nucleus of the ordinary cell.—*J. Kužela (transl. by B. F. Lutman).*

13798. **LASSEUR, PH., et R. FRIBOURG.** Transport électrique des bactéries. Description d'un appareil utilisé dans le transport macroscopique. *Trav. Lab. Microbiol. Fac. Pharm. Nancy* 2: 81-83. 1 fig. 1929.—This is a modified Kopaczewski apparatus using filters of porous glass to prevent diffusion, instead of agar plugs. The bacterial suspension is placed in an inverted U-tube with openings immersed in a larger, upright U-tube, each arm of which has an electrode, and an inlet tube through which a solution washes products of electrolysis through an outlet at the bottom.—*W. C. Tobie.*

13799. **LAVES, W.** Gepufferte Methylenblaulösungen zur Bakterienfärbung in Schnittpräparaten fauler Organe. *Deutsche Zeitschr. Ges. Gerichtl. Med.* 17(1): 44-47. 1 fig. 1931.—Using methylene blue solution buffered to pH 3.5 at a time when the bacteria were still electronegative (i.e., alkaline) but the tissue positive, the author obtained an elective staining of putrefactive bacteria (in putrefaction there is a gradual shift in tissue reaction from acid to alkaline).

13800. **LESLIE, P. H., and A. D. GARDNER.** The phases of Haemophilus pertussis. *Jour. Hyg.* 31(3): 423-434. 1 fig. 1931.—Analysis of 32 strains indicates that *H. pertussis* is a uniform species, without fixed varieties or "types." After isolation from human subjects, it tends to pass through a series of antigenically distinct phases, of which the first 2 are toxic to guinea pigs, the last 2 relatively harmless. The former probably correspond to the S, the latter to the R, phases of other bacteria. The phase-changes are, up to a point, reversible. Experiments on guinea pigs produced some evidence that the toxic phase I is the best, and perhaps the only, antigen for production of active immunity in guinea pigs.

13801. **LI, BANG DSCHENG.** Vergleichende Untersuchungen über den Wert der Eier-Nährböden. *Beitr. Klin. Tuberk.* 75(3/4): 367-377. 1930.—A comparison of the advantages of Lubenau-Hohn's, Petragnani's, and Sweany-Evanoff's nutrient media for propagation of *B. tuberculosis,* showed them to be of value in the order named. On Sweany-Evanoff's medium, growth from mixed cultures of H_2SO_4-treated infectious material, for diagnosis, was less abundant, very slow and difficult to differentiate. It was hard to pick colonies from it. Its preparation was most complicated. Petragnani's medium without malachite green gave much better results, but not equal to Lubenau-Hohn's. Preparation of the latter was most simple. Petragnani's medium had favorable water of condensation, thus eliminating the necessity of adding broth with the inoculum, while Lubenau-Hohn's gave the best growth. Either is recommended for diagnostic work.—*C. E. ZoBell.*

13802. **LIPMAN, CHAS. B.** "The possible rôle of micro-organisms in the precipitation of calcium carbonate in tropical seas." *Science* 74(1910): 150-151.

1931.—Critical comments on a paper dealing with this subject, by Werner Bavendamm.

13803. **MAZZETTI, GIUSEPPE. Osservazioni su di un ceppo asporigeno di bacillo del carbonchio. [A non-sporulating strain of anthrax bacillus.]** *Boll. Soc. Italiana Biol. Sper.* 3(8): 1193-1194. 1928.—The author obtained a stable non-sporulating strain by culturing in Loeffler's broth to which was added K bichromate 1:2000. This strain forms bodies resembling spores, but which will not resist 65° for 15 min. In broth it produces uniform turbidity, but this characteristic changes with variation in virulence. In agar it forms atypical colonies which only after a variable period take on the appearance of the ordinary anthrax colonies. The strain has less resistance than the vegetative form of the original strain from which it originated. This strain is virulent for guinea pigs and rabbits. It lends itself to various serological tests—agglutination, precipitation, complement deviation. Small laboratory animals can be immunized by successive inoculations by this strain, as well as by the normal virulent anthrax bacillus.—*G. Mazzetti (transl. by P. Hillkowitz).*

13804. **MEYN, A. Zur Morphologie und Biologie des Rauschbrandbazillus.** *Miessner-Festschrift* P. 143-154. 1 pl. Publ. by Fritz Eberlein: Hannover, 1930.—This bacillus of symptomatic anthrax is decidedly pleomorphic and can be anything between a sphere and a slender rod. In cultures on the surface of Zeissler plates, it occasionally forms colonies. Reproduction takes place by fission, budding, and gonidia (from peripheral swellings that form daughter cells). It can sporulate in young anaerobic cultures and under favorable nutrient conditions. Cells which show no inclination to form spores do not sporulate when air is admitted or when nutrient conditions are unfavorable.—*Author's summary (transl.).*

13805. **MINETT, F. C., A. W. STABLEFORTH, and S. J. EDWARDS. The biology of Streptococcus agalactiae.** *Zentralbl. Bakt. I. Abt. Orig.* 122: 466-469. 1 pl. 1931.—A note in reply to criticism by H. Haupt. It is concluded that: (1) streptococci of the *Strep. agalactiae* group do not uniformly show hemolysis of the alpha or alpha-prime type, in the sense of J. H. Brown. On the contrary, when growing in blood agar plates, some strains are clearly beta-hemolytic (illustrated by photographs). (2) Mastitis may be caused at times by streptococci other than *Strep. agalactiae.*—*F. C. Minett.*

13806. **MONTI, ACHILLE. Contributo alla biologia dei ferrobacteri. [Studies on the biology of iron bacteria.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 420-423. 1930.—According to the author, the term "iron bacteria" should be reserved for those organisms capable of retaining in their protoplasm and tissue, Fe dissolved in water,—a group essentially physiological in nature. Other organisms causing oxidation of ferruginous compounds outside their own bodies, by means of a precipitation of hydroxide of Fe due to a product of their metabolism, should not be included. The author isolated and cultivated in citrate solutions the thermophilic *Spirophyllum* **thermale** (p. 423), from the thermal waters of Prè-St.-Didier (near Aosta); it lives at 36° C.—*M. Comel.*

13807. **MÜLLER, D. Untersuchungen über Oxydasen in getöteten Essigbakterien. I.** *Biochem. Zeitschr.* 238 (4/6): 253-267. 1931.—When a suspension of *Bacterium pasteurianum* was dropped into 10 times the volume of acetone, stirring constantly, a preparation with few living bacteria was obtained. After addition of water it absorbed some O. Absorption was increased when various mono-, di-, and polyvalent alcohols were added: most by ethyl- and n-propylalcohol; less by isopropyl- and methyl alcohol, and ethylene glycol; still less by glucose; and little if at all by glycerol. O absorption was not increased by Ca gluconate. Living *Bact. pasteurianum* oxidized isopropyl alcohol to acetone; about 75% of the amount estimated from O absorbed was found. Acetone preparations from *Bact. pasteurianum* oxidized isopropyl alcohol to acetone; about 100% of the amount estimated from O absorption was found. Dead bacteria showed 3-6% of the oxidative ability of the living. Isopropyl alcohol oxidation ceased when a suspension of dead bacteria was heated to 95° for ½ hr.—*Author's summary (transl.).*

13808. **MUZZARELLI, G. La méthode de Muzzarelli pour la coloration des spores des microorganismes. [Method for staining of spores of microorganisms.]** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 469-471. 1931.—On a slide to which the material has been fixed by a flame, spread a solution of boracic methylene blue. Heat gently until vapor forms (20-30 sec.). Wash and decolorise for an instant, using 10% HNO_3. Wash again; then, to bring out the contrast, use 1% eosin or orange G (saturated) for a few sec. Wash again and dry.

13809. **NEUMANN, HARRY. Die Isolierung und die Entwicklung von Anaerobiersporen.** *Zentralbl. Bakt. I. Abt. Orig.* 115(1/2): 100-108. 1 pl., 4 fig. 1929.—Favorable conditions for germination of anerobe spores were found in the Fortner plate containing horse blood agar. Micro-capillary methods were used to isolate, count and seed the spores. A high % of the spores germinated. Photo-micrographs show the stages in germination, bringing out new details.—*W. N. Berg.*

13810. **NYBERG, CARL. Zur Biologie des Bacillus mycoides. III. Über einige fermentähnliche Sekretionsprodukte des Bacillus mycoides.** *Acta Soc. Med. Fennicae "Duodecim." [Suomalaisen Lääkäriseuran Duodecim'in.]* 13[Ser. A.] (3): 1-18. [Art. 9]. 1931.—*Bacillus mycoides* always produces a hemolytic substance, various types and strains producing different quantities. It is best produced in broth at pH 7.0-7.5; it may be separated from the bacteria by asbestos filter. If left standing, it rapidly decomposes; it withstands moderate heat only. Rabbit serum usually rather strongly inhibits its hemolytic effect. No antibodies seem to appear in rabbits on immunization. Production of a bacteriolytic ferment was not demonstrated. Liquefaction of gelatin is caused by a soluble ferment, best produced in broth at about pH 6 and separable from the bacteria by asbestos filter. It is not so easily decomposed as the hemolytic substance and is more thermostable. Rabbit serum strongly inhibits this ferment, which, used as antigen, does not seem to provoke antibodies.—*From author's summary.*

13811. **OIJEN, C. F. van, en B. H. MOLANUS. Colorimetrische bepaling der pH van vleesch-extracten. [Colorimetric determination of pH in meat extracts.]** [With English, German and French summaries.] *Tijdschr. Diergeneesk.* 58(16): 849-855. 1931.—A quick and reliable method, using the apparatus of Michaelis-Walpole, is described. The disk-comparator of Hellige is not suitable. Cold distilled water, boiled shortly before, is used as solvent. To about 10 gm. of meat, cut up fine, 100 cc. of water are added; ½ hr. afterward the mixture is filtered and the determination carried out.

13812. **OZOLS, P. Untersuchungen über die paratyphusähnlichen Bakterien.** *Deutsche Tierärztl. Wochenschr.* 39(42): 649-655. 4 fig. 1931.—From researches on this group in laboratory and literature, it is concluded that paratyphoid-like bacteria occur very frequently in nature. The indol-negative strains are divided into 2 main groups—motile and non-motile. Methods of culture for identification are outlined. Agglutination tests are unsuitable for identifying these forms. The arabinose and rhamnose-peptone solution with brom-thymol-blue and the so-called arabinose and rhamnose whey are of equal value. The ordinary methyl red test is unreliable. —*From author's summary (transl.).*

13813. **PERGOLA, M. Préparation des solutions de tellurite de potasse pour le "S.U.T." [Preparation of solutions of K-tellurite for "serum-egg-tellurite."]** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(7/8): 337-342. 1931.—Precise directions for addition of the tellurite to this culture medium.

13814. **PERRY, C. A. Further adjustment of Havens' brilliant-green bile medium.** *Amer. Jour. Hyg.* 14(2): 461-469. 1931.—Addition of peptone and meat-extract to bile was found to have an adverse effect on the selective bacteriostatic properties of brilliant-green. The re-

action of brilliant-green bile medium was found an important factor influencing the selective bacteriostatic properties of the dye. *Bacillus typhosus* grew in bile at room temp. at pH 5.2 but not at pH 5.0. Brilliant-green was active in bile at pH 5.1-6.0; the optimum appears to be about pH 5.6. Treatment of 1 lot of brilliant-green with HCl did not improve its selective bacteriostatic property when the reaction of the medium was satisfactory. An outfit is described for collection of stool specimens, which has been found to control satisfactorily the amount of feces added under field conditions.—*Author's summary.*

13815. **PIETSCHMANN, KÄTHE. Die Zellkernfrage bei den Bakterien.** *Archiv Mikrobiol.* 2(2): 310-332. 1931.—A review of the literature on the problem of bacterial nuclei.

13816. **RAHN, OTTO. The formula for the fermenting capacity of a single cell.** *Jour. Bacteriol.* 19(6): 383-387. 1930.—A modification of the manner of stating the formula suggested by Rahn (1912) and improved by Buchanan and Fulmer (1918), which makes it clear that the short time intervals taken must be computed separately and not from zero time, is as follows:

$$x = \Delta S(\log b_2 - \log b_1)/\Delta t(b_2 - b_1)0.434$$

where x = the amount of the fermentation product formed; ΔS and Δt are increased during a short time interval; and b_2 and b_1, the corresponding bacterial counts. This applies only while the rate of cell multiplication is increasing or constant. It applies to heat production as well as to the other products.

13817. **RAMCHANDANI, J. C. Saltations in bacteria. II. Bacillus prodigiosus.** *Ann. Bot.* [*London*] 43(171): 579-586. 1 pl. 1929.—The author reports dissociation of *Serratia marcescens* into a color-free strain which was further dissociated into a more transparent strain. The color-free cultures were morphologically, physiologically and serologically identical with the parent red strain. The color-free characteristic remained constant for 9 mo. under varied conditions. The transparent dissociant lost pathogenicity for mice, a characteristic of the parent strain.—*W. L. Kulp.*

13818. **REED, GUILFORD B., and CHRISTINE E. RICE. Studies in the variability of tubercle bacilli. I. A rapid-growing bovine type.** *Canadian Jour. Res.* 4(4): 389-398. 3 pl. 1931.—Variability studies were carried out on a considerable series of cultures of tubercle bacilli and related acid-fast bacteria. This paper deals with a rapid-growing strain of bovine tubercle bacillus. Results conform to claims recently made by Petroff, that certain types of tubercle bacilli undergo dissociation. It is shown that this avirulent, rapid-growing strain consists of R types which appear to be stable in acid fluid media and more or less stable on solid media. Rapid transfers through strongly alkaline fluids or growth in large volumes of similar media result in appreciable dissociation into S types. The S types were unstable, particularly in acid fluid media, and readily reverted to the R form.—*G. B. Reed.*

13819. **REED, GUILFORD B., and CHRISTINE E. RICE. Studies in the variability of tubercle bacilli. II. Correlation of colony structure, acid agglutination and virulence.** *Canadian Jour. Res.* 5(7): 111-121. 3 pl. 1931.—28 cultures of tubercle bacilli (including human, bovine and avian forms from widely differing sources) were compared as to colony structure, habit of growth in fluid media, acid agglutination, and virulence for animals. The recently isolated, highly virulent cultures and all those with a long history of high virulence grew on solid media in S colony form; on fluid media, in bovine and human types, as a continuous veil-like pellicle; in avian types, as a diffuse suspension. All were agglutinated only at a high acidity. All the avirulent or low virulent cultures or those with a history of loss of virulence now grow on solid media in R colonies; in fluid media, as a heavy pellicle tending to separate into discrete islands; and they are agglutinated at a relatively low acidity.—*G. B. Reed.*

13820. **REIS, JOSÉ, e ANNITA SWENSSON. Hydrolyse do hippurato de sodio por bacterias e especialmente pelas do genero Streptococcus. [Hydrolysis of Na hippurate by bacteria, especially Streptococcus spp.]** *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 237-242. 1931.—The writers find hydrolysis of Na hippurate rare outside of *Streptococcus*. In this genus it is not peculiar to the hemolytic bovine samples, but also appears in *Streptococcus equi.*

13821. **RICE, CHRISTINE E., and GUILFORD B. REED. Studies in the variability of tubercle bacilli. III. Influence of X-rays upon dissociation.** *Canadian Jour. Res.* 5(7): 122-129. 1931.—X-ray treatment of cultures of a rapid-growing strain of bovine tubercle bacillus, showing a tendency to change from R to S, promoted the change to a considerable degree. Stable R cultures of the same species are unaffected. Larger doses produce a lethal effect. Protective colloids such as gelatine or blood serum, added to the suspension, reduced the effect of the irradiation. Non-acid-fast bacteria were much less sensitive to x-rays, as no change in rate of dissociation was observed in actively dissociating cultures, with twice the dosage to which tubercle bacilli were exposed. —*G. B. Reed.*

13822. **RIEMSDIJK, M. van. Eine neue, einfache Methode zur Konservierung von mikroskopischen Ausstrichpräparaten.** *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 105-109. 1 fig. 1931.—Permanent microscopic slides can be easily and excellently preserved by a thin layer of gum arabic.

13823. **RODRIGUES, CELSO. Acção do Bacillo "E" de Kruse sobre os tartaratos. [Action of Bacillus E of Kruse on the tartrates.]** *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 17-24. 1 col. pl. 1931.—The dysentery-bacillus lactose fermenters (Kruse E) split sodium-potassium tartrate, producing an alkaline reaction, best seen by colorimetric methods in liquid media. The methods can be used for differentiation of Kruse E bacilli from other dysentery bacilli of the Flexner group. The bacillus of Schmitz also gives an alkaline reaction in media containing NaK tartrate and can be thus separated from the bacillus of Shiga.

13824. **ST. JOHN-BROOKS, R., and M. RHODES. Catalogue of the national collection of type cultures maintained by the council at the Lister Institute of preventive Medicine, Chelsea Bridge Road, London, S. W. 3rd ed.** *Great Brit. Privy Counc. Med. Res. Counc., Spec. Rept. Ser.* 64. 1-112. 1931.—Part 1. Alphabetical list of bacteria and fungi, with details of strains maintained. Part 2. List of subjects, with references to the related organisms, as, e.g., anaerobes, apple, food-poisoning, etc.

13825. **SCHANG, PEDRO J. Acción del extracto fluido de ajo sobre el bacilo de Koch y en los bovinos y cobayos tuberculosos. [Action of garlic extract on Koch's bacillus and on tuberculous cattle and guinea pigs.]** *Rev. Med. Vet.* [*Buenos Aires*] 13(4): 138-147. 1931.—This extract seems to attenuate the bacteria but not to kill them.

13826. **SCHIEBLICH, MARTIN. Über die Bildung von Vitamin B durch Bac. ellenbachensis Stutzer und Bact. prodigiosum (Ehrenberg) Lehm. und Neum.** *Biochem. Zeitschr.* 233(4/6): 371-374. 1931.—After vitamine B deficiency appeared, following vitamine B-free diet, 3 rats each (averaging 52 gm.) were given *Bacillus ellenbachensis* or *Bacterium prodigiosum* exclusively. In 30 days there was an average gain in wt. of 56.3 gm. on the former and of 29.7 gm. on the latter diet. The bacteria were grown on a medium composed of a vitamine B-free rat diet cooked with 10 volumes of water. No signs of toxicity appeared from feeding *B. prodigiosum.*

13827. **SEGRE, S. B. coli hémolytique et chlorure de lithium.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(9): 569-570. 1931.—Lithium chloride in the medium on which *Bacillus coli* was grown, acted like a poison which penetrates into the bacterial cell, altering the organism morphologically and physiologically.

13828. **SEIFERT, E. Über den Infektionsweg bei postoperativer Parotitis. III. Der Einfluss der Mucilaginosa auf das Wachstum von Staphylokokken.** *Deutsche*

Zeitschr. Chir. 231(7): 503-506. 1931.—Plant mucin formed by salep (1:50), flax seed (macerate 1:5), carrageen (1.5:120), althaea (macerate 4:18), gelatina alba (10%) and 4% oat solution failed to exert the physical, inhibitory action on staphylococci caused by animal mucus (saliva, pseudomucin of ovarian cystomata). Tragacanth appeared to have no nutritive value, and in 1:100 solution no culture appeared (no nutritive element was added). Whether this was true for species pectorales (60:250), Iceland moss or gum arabic, the author leaves undecided; perhaps a bactericidal agent was also present, as arabin in gum arabic.

13829. SMIT, JAN, en L. H. LOUWE KOOIJMANS. Onderzoekingen over Lactococcus dextranicus. [Investigations on L. dextranicus.] *Nederl. Tijdschr. Hyg., Microbiol. en Serol.* 5(4): 215-226. 1 pl. 1931.—Description of isolation and properties of *L. dextranicus* (*Strep. mesenterioides* or "Froschlaichpilz"). Among 30 strains isolated from sewage and other samples of contaminated water, 16 proved to have the property of hemodigestion, while 20 were inactive on blood-agar plates. Only this 2nd group showed the capsules characteristic for this species when cultivated on sucrose media. Most species of this group were inactive against raffinose, which is fermented by all strains of the blood-positive group. Fermentation products from glucose (89% lactic acid, 4% acetic acid, 6% carbonic acid) and production of mannitol from levulose and sucrose, were the same for both groups (while sewage streptococci do not produce carbonic acid or mannitol), but the viability of strains of both groups in sterile filtered water showed a marked difference. The blood-negative group is killed in a much shorter time (10 days) than the blood-positive (24 days). The same proved to be the case with ordinary sewage-streptococci, which also can be differentiated by the property of hemodigestion.—*J. Smit.*

13830. SMITH, MURIEL M. Observations on Bacillus (Haemophilus) influenzae with special reference to morphology and colonial characters. *Jour. Hyg.* 31(3): 321-335. 2 pl. 1931.—Several strains were grown under varying conditions for many months. A modification in morphology occurred in all strains studied. Typical coccobacillary forms were changed to atypical, long-curved forms; the reverse change was less frequent and constant. The change took place most readily after growth in Fildes' broth for several weeks or months at 37° C. The typical strains produced smooth colonies; the atypical gave rough colonies or colonies very much smaller than those produced by the typical strains. The change in colony form occurred at the same time as the change in morphology. The biochemical characters, on the whole, remained unchanged. Fermentation reactions of 140 strains were examined. The sugars most frequently fermented were dextrose, maltose and sucrose, the atypicals being the more active fermenters. Of the typicals 63.9%, and of the atypicals, 18%, gave a positive indol reaction. Although the ability to grow on *X* or *V* alone affords an important differential criterion within this group, great care is necessary in interpreting results, especially in strains which grow on *V* in absence of *X*. Different yeast preparations may give very different results in this respect. All strains tested were non-hemolytic.—*From author's summary.*

13831. SMITH, THEOBALD. The agglutinating action of agar on bacteria. *Science* 74(1905): 21. 1931.—The author observed clumping of *Brucella* and *Streptococcus* strains and of other bacteria in the condensation water of a culture medium consisting of a neutral 2% agar only.

13832. [STIEBEN, V.] ШТИБЕН, В. R и S-формы паратифа С. **[R and S forms of paratyphoid C.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 83-89; German summary, 133-134. 2 fig. 1930.—Of 6 cultures of paratyphoid C-44, one, after growth for 1½ mo. in Merezckovsky albumin water and also in bouillon with 8% NaCl, disassociated into R and S forms. The R form differed from the original and S forms morphologically (short, thick, slowly moving rods), by type of colony (dry, flat, granular, with rough margins) and by type of bouillon culture (transparent with precipitate at bottom). The S form differed from the original by type of colony (moist, elevated and round). There was no biochemical difference between S and R forms and the original culture. Serologically, the S form differed from the original and R forms by its specific agglutination. Cross absorption of agglutinins of the original culture, and of R and S forms showed that one antigen was characteristic for the S form and another for the R form; the original culture had both. The original culture had thermolabile and 2 kinds of thermostabile antigens, of which one is common to S and the other to R. The S and R forms had thermolabile and thermostabile antigens. Thermostabile antigen caused granular type of agglutination. The specific S form made it possible to differentiate the paratyphoid C from other paratyphoid rods and also showed certain differences in construction of receptors of the Glasser and Valdagsen types, which are considered as being identical.—*G. A. Lebedeff.*

13833. [STIEBEN, V.] ШТИБЕН, В. S и R-формы Bact. paratyphi N. **[S and R forms of Bact. paratyphi N.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(2): 186-192; German summary, 281. 6 fig. 1930.—As a result of a study of S and R variants, including their serological reactions, the author confirms his former conclusions that the paratyphoid $N(N_2=C_1)$ is a distinct member of the Gärtner group.—*From abstract by G. A. Lebedeff.*

13834. TARR, H. L. A., and HAROLD HIBBERT. Studies on reactions relating to carbohydrates and polysaccharides. XXXV. Polysaccharide synthesis by the action of Acetobacter xylinus on carbohydrates and related compounds. *Canadian Jour. Res.* 4(4): 372-388. 1931.—The action of *Acetobacter xylinum*, when cultivated in nutrient solutions containing certain carbohydrates or polyhydric alcohols, in forming surface polysaccharide membranes has been confirmed. The nutrient substrate necessary for effective synthesis of N and ash-free polysaccharides from such C compounds was determined, and the necessity for the presence of a small amount of ethyl alcohol proved. This type of synthesis appears to be specific for this organism, in that only the hexoses, their anhydrides and compounds which presumably yield hexoses as a result of bacterial action, give rise to polysaccharide formation. When the C compound used is not a free hexose, or one apparently capable of conversion into a hexose, as in the case of pentoses such as arabinose and xylose, glycols, polyglycols and erythritol, no membrane formation takes place. On the other hand, mannitol, known to undergo oxidation with formation of fructose under the experimental conditions, gives rise to a high yield of a synthetic polysaccharide. Glycerol behaves similarly, due presumably to a primary oxidation to dihydroxy acetone and conversion of this to fructose, the latter then yielding the polysaccharide membrane. The introduction of a methyl group into glycerol and glucose, with formation of α-methyl glycerol and α-methyl glucoside, respectively, inhibits polysaccharide formation. The product obtained from glucose was very closely related, if not identical, to cellulose. Galactose is much less reactive than glucose, while mannose appears to be relatively inactive with the strain of *A. xylinum* employed. The highest yield of the polysaccharide was obtained from fructose, a result presumably connected with the recognized fact that this bacterium forms little or no acid from this sugar.—*Authors' abstract.*

13835. TEMPEL, ERNA. Untersuchungen über die Variabilität der Actinomyceten. *Arch. Mikrobiol.* 2(1): 40-71. 1931.—5 actinomycete strains did not change in morphologic or physiologic characters under the influence of changed outside conditions, nor did aerobic forms adjust themselves to anaerobic conditions. Formation of aerial spores depends on presence of O, and forma-

tion of aromatic substances is bound to that of aerial spores. Animal inoculation gave no results.—*M. Roberg (transl. by G. Knaysi).*

13836. **THOMPSON, RANDALL L. Electrophoresis of organisms belonging to the diphtheria group.** *Amer. Jour. Hyg.* 14(2): 235-243. 1931.—Both the Abramson and Mudd electrophoresis assemblies gave reliable results with diphtheria bacilli. A study of 173 cultures of the diphtheria group indicates that toxigenic cultures may generally be separated by electrophoresis, toxigenic forms migrating more slowly than the non-toxigenic.—*Author's summary.*

13837. **THOMPSON, RANDALL L. Electrophoresis of organisms belonging to the pneumococcus group.** *Amer. Jour. Hyg.* 14(2): 244-267. 1931.—Of 77 strains of pneumococcus used, 71 are represented in the data. No relationship was found between virulence of a strain for white mice and its electrophoretic rate of migration; the latter, in the 3 pneumococcal types, decreases in the order: III > I > II. Most strains of the group may be included in 1 of 3 large electrophoretic groups. The existence of 2 other such groups has been suggested; one of these has not been shown to be definitely distinct from one of the 1st groups and the other contains an insufficient number of members to be significant. All typical strains of any one serological type probably belong to the same electrophoretic group. However, one electrophoretic group may include strains not classified in the same serological category. Rough strains may or may not migrate more slowly in the electrical field than their parent or other strains of the same type as the one from which they were derived.—*Author's summary.*

13838. **VANDEBERG-LOMMEL, Mme. Recherche sur la stabilité des modifications biochimiques et antigéniques obtenues artificiellement chez le B. coli.** *Arch. Internat. Méd. Exp.* 6(4): 455-461. 1931.—Of 32 strains of *B. coli* grown on bouillon with 0.025% safranin, 3 strains after 60 passages and 4 strains after 100 passages no longer fermented lactose; 2 strains after 60 and 3 strains after 100 passages failed to produce indol in peptonated water. The modified strains, replanted in ordinary agar, retained their acquired characters through 50 passages. Grown on agar bouillon with crystal violet, at first 0.005%, later 0.01%, after 40-100 passages, several strains failed to attack lactose or indol; transplanted to ordinary agar, after 40 passages, 4 of 5 strains resumed the lactose-fermenting property but not the property of producing indol in peptonized water. Picric acid and methyl green produced modifications in fewer strains, and these quickly resumed their usual properties on transplantation to ordinary media.

13839. **VEIBEL, STIG. Über die Methylglyoxalylessigsäure und ihre Dismutation durch Bacterium coli.** *Biochem. Zeitschr.* 232(4/6): 435-441. 1931.—Dismutation of this acid to *d-a*-oxyglutaric acid was accomplished almost quantitatively by *Escherichia coli.*—*C. B. Morrey.*

13840. **WARTHIN, ALDRED SCOTT, and RICHARD E. OLSEN. The apparent sequence of spirochetes and granular forms in syphilitic buboes.** *Amer. Jour. Syphilis* 15(2): 145-155. 16 fig. 1931.—Intracellular forms, demonstrated by starving and derived from syphilitic lesions, are described as probably representing intracellular stages of *Spirochaeta pallida.* These include (1) a polymorphous or ring form which may be connected to the typical spirochaete or more often to (2) the fine spiral form; (3) a lymphocytic granular form with intermediate spirochaetal stages; and (4) the fine threads and granules found in giant cells.

13841. **WOOLLEY, J. STANLEY, and FRANK G. PETRIK. A potato-egg medium for the isolation of tubercle bacilli.** *Amer. Rev. Tuberc.* 24(5): 596-604. 1931.—In comparative tests with over 100 sputa, a glycerinated potato extract in an egg base gave results superior to Corper's potato-cylinder medium or Petroff's meat-egg-medium. The alkaline method of digestion is preferred, though similar results were obtained with either alkaline- or acid-treated sputa.

13842. **WREDE, FRITZ, und OTTO HETTCHE. Über das Prodigiosin, den roten Farbstoff des Bacillus prodigiosus (I. Mitteilung). [Prodigiosin, the red pigment of B. prodigiosus.]** *Ber. Deutschen Chem. Ges.* 62(9): 2678-2685. 1929.

13843. **WRÓBLEWSKI, WINCENTY. Flüssiger Nährboden mit Watte zur Züchtung pathogener Anaërobier bei Luftzutritt. [Fluid media with wadding for cultivating pathogenic anaerobes in contact with air.]** *Zentralbl. Bakt. I. Abt. Orig.* 114(1/2): 158-160. 1929.

13844. **YOANNOVITCH. Recherches sur la fermentation des sucres par différentes souches du Bacillus typhi abdominalis cultivées en Yougoslavie.** *Office Internat. Hyg. Publ.: Bull. Mensuel [Paris]* 22(1): 95-97. 1930.—Adam Schmidt studied 160 strains of typhoid bacilli from various parts of Jugoslavia, on 13 kinds of sugars; certain strains could be differentiated not only by their action on xylose, but also by their action on sorbitol, levulose and arabinose. Strains from northeastern Jugoslavia are arabinose-negative and, with 1 exception, xylose-positive. In a small part of the Northwest, xylose-negative strains predominate; they are rarer in the entire country than the xylose-positive strains.

13845. **ANONYMOUS. Laboratory manual in general microbiology, prepared by the Laboratory of Bacteriology and Hygiene, Michigan State College.** 3rd. ed. xxvi+472p. 72 fig. John Wiley & Sons: New York, 1926.

ECONOMIC ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

(See also in this issue Entries (Plant injury) 12074; (Habits) 12110; (History) 12150, 12153, 12162, 12174; (Biography) 12179, 12180, 12185, 12198, 12201, 12214, 12217, 12238, 12250, 12259, 12287, 12288, 12300, 12301, 12311, 12321, 12330, 12337, 12342, 12343, 12350, 12352, 12353, 12360, 12361, 12365, 12366, 12372, 12380, 12382, 12399, 12403, 12406, 12415; (Ent. societies) 12429; (Indian pub.) 12430; (Physiology) 12456; (Cytology) 12465, 12470, 12474, 12487, 12492, 12494, 12497, 12498, 12505; (Microtechnique) 12496; (Genetics) 12527, 12528, 12531, 12535, 12536, 12537, 12538, 12539, 12540, 12541, 12542, 12543, 12549, 12552, 12555, 12557, 12558, 12560, 12561, 12562, 12563, 12566, 12569, 12570, 12571, 12572, 12573; (Ecology) 12621, 12627, 12628, 12630, 12631, 12634, 12636, 12637, 12640, 13629; (Plant injury) 12723; (Plant disease vectors) 12742, 12782, 12787; (Oxidation) 12912; (Sense organs) 13125, 13128; (Animal disease vectors) 13453, 13463, 13569, 13573, 13584, 13591, 13597, 13598, 13601, 13604, 13605, 13629, 13687, 13707, 13722, 13737, 13779; (Parasites) 13572, 13592, 13597, 13603, 13609, 13633; (Control) 14029; (Embryology) 14474)

13846. **SWEZEY, O. H., et al. [Short notes on Hawaiian insects.]** *Proc. Hawaiian Ent. Soc.* 7(3): 337-394. 1931.—O. H. SWEZEY reported *Metromenus fraternus* (Blkb.) as a new host of *Laboulbenia;* and 2 *Polistes aurifer* from Molokai, parasitized by *Xenos auriferi* Pierce. D. T. FULLAWAY exhibited specimens of *Nonachrostichus citricola* found in limes [*Citrus* sp.] taken in baggage of steerage passengers from the Philippines, and of *Lepidosaphes uniloba* (Kuwana) found on *Alyxia olivaeformis.* O. H. SWEZEY reported *Thrips panicus* Moulton, a Cuban insect, from sugar cane in quarantine on Molokai, and also on *Echinochloa crusgalli crus-*

pavonis at Kailua; also, the rearing of *Thecla echion* (L.) from *Datura arborea;* and he exhibited an *Agromyza* sp. bred from a *Zinnia* stem, which is apparently a new immigrant. L. A. WHITNEY reported a heavy infestation of *Anaphothrips orchidii* (Moulton) in an orchid house in Kaimuki. It has evidently been present several yrs. In a letter R. A. CUSHMAN identified a parasite of *Stagmatophora incertulella* (Walk.) as *Idechthis* sp. very close to *I. canescens* (Grav.). In a letter J. M. ALDRICH identified the fly reported by Swezey from *Zinnia,* and bred by J. F. ILLINGWORTH from *Centaurea,* as *Agromyza virens* Loew. O. H. SWEZEY recorded *Megacerus alternatus* Bridwell as infesting the seeds of *Ipomoea pes-caprae* in the Hawaiian Islands; he also reported the first Hawaiian record of *Trichodectes latus* Nitzsch from the dog. W. W. YOTHERS and A. C. MASON reported the fruit of *Wikstroemia phillyreaefolia* as a new host of *Ceratitis capitata.* J. F. ILLINGWORTH reported finding the eggs of *Nysius coenosulus* White in the flowers of *Erigeron canadensis* and *Amarantus spinosus;* and *Pleurophorus parvulus* Chevrolat destroying a bed of snapdragons by girdling the stems. D. T. FULLAWAY reported that *Dioctes chilonis,* introduced from China as a parasite of the rice borer [*Chilo simplex*] in July 1929, has become established. O. H. SWEZEY reported *Lophocateres pusillus* (Klug), the Siamese grain beetle, from popcorn in Honolulu. He exhibited a new sp. of *Deinocossonus* from dead twigs of *Pteralyxia;* the rare *Mysticomenus tibialis* Sharp captured in a dead frond of *Cibotium chamissoi; Plagithmysus giffardi* Perkins, reared for the first time, from *Smilax; P. vitticollis* Sharp, reared for the first time, from the stem of *Rubus hawaiiensis; Plagithmysus solitarius* Sharp, reared from a fallen *Elaeocarpus* tree; a specimen of the alfalfa seed-chalcis, *Bruchophagus funebris* (Howard), the first record from Hawaiian Islands; and he reported *Trichogramma minutum* Riley as parasitizing the eggs of *Bactra truculenta, Spodoptera mauritia,* and *Lycaenia boetica.* F. X. WILLIAMS reported that *Phaenobremia meridionalis* (Felt) was reared from the sugar cane aphis in Hawaii. O. H. SWEZEY reported *Agromyza virens* from *Gnaphalium.* J. F. ILLINGWORTH reported that *Coluocera maderae* Wollaston is found in numbers in the nests of *Prenolepis longicornis* Latr. on Oahu. O. H. SWEZEY reported *Agromyza virens* breeding in stems of *Bidens pilosa* and *Ageratum conyzoides; Neoclytarlus filipes* (Sharp) as reared from dead *Maba sandwicensis; Ceratitis capitata* from fruit of *Scaevola gaudichaudiana* [Goodeniaceae]; and *Systole geniculata* Förster from seeds of fennel, together with a sp. of *Tetrastichus* near *T. bruchophagi* probably parasitic on the *Systole.* R. H. VAN ZWALUWENBURG exhibited specimens of *Derolathrus atomus* Sharp taken beneath the bark of a dead *Elaeocarpus* tree. O. H. SWEZEY exhibited *Nesamiptis plagiota* Meyr., reared on *Eragrostris.* H. R. HAGAN reported *Pyroderces rileyi* larvae damaging pineapple seeds. R. H. ZWALUWENBURG reported the determination of *Scolopendrella neotropica, S. simplex, Polyxenus* (probably) *fasciculatus* Say, and a *Pauropus* near *P. huxleyi;* also *Onychiurus fimetarius, Folsomia fimetaria,* and *Isotoma palustris* var. *balteata* from Hawaiian cane soils, and *Lepidocyrtus cyaneus* from pineapple soils.

ECONOMIC ENTOMOLOGY

FRUITS

W. A. ROSS, *Editor*

(See also in this issue Entries 12723, 12782, 12787, 13880, 13922, 13926, 13930, 13931, 14700, 14776, 14843)

13847. **ANDREWARTHA, H. G. The apple curculio.** *Jour. Dept. Agric. Western Australia* 8(1): 106-114. 4 pl. 1931.—Description, life history and habits of *Otiorrhynchus cribricollis,* introduced into W. Australia over 30 yrs. ago, are given as applying to local conditions. From tests of various methods of control, the following are recommended: For young trees or trees not bearing fruit, arsenate of lead, 1 lb. paste or ½ lb. powder to 8 gal. water, applied the first week in Dec. and repeated 10 days later if necessary; baiting with ground dried apple 9 lbs. and NaF 1 lb., for all trees whether bearing fruit or not; running poultry in the orchard.

13848. **BONGINI, VIRGINIA. Osservazioni biologiche sulla mosca delle ciliegie in Piemonte. (Nota preliminare 1930-31.) [Biological observations on cherry fruit fly, Rhagoletis cerasi L. (Loew), in Piedmont.]** *Boll. Lab. Sperim. Fitopatol.* [*Torino*] 8(3): 4-9. 1931.

13849. **COTTERELL, G. S. Report on the occurrence of Sahlbergella spp. and other insect pests of cacao in Fernando Póo, San Thomé and the Belgian Congo.** *Dept. Agric. Gold Coast* [*Year-book 1929*] *Bull.* 22. 112-133. 2 pl., 2 maps. 1930.—Report on a visit to these 3 countries in the latter part of 1928 and in Jan. 1929. The author discusses the distribution of and injuries caused by *Sahlbergella* spp. in each country visited, with notes on other insect pests.

13850. **COTTERELL, G. S. The hispid leaf-miner (Coelaenomenodera elaeidis, Maul.) of oil-palms (Elaeis guineensis, Jacq.) on the Gold Coast.** *Dept. Agric. Gold Coast* [*Year-book 1929*] *Bull.* 22. 254-260. 3 pl., 1 map. 1930.—This article treats of the distribution, habits, life history and migration of this pest. Hymenopterous parasites, entomogenous fungi and heavy rainfall help to keep it in check.

13851. **CUTRIGHT, C. R. Experimental work with codling moth in Ohio.** *Proc. Ohio State Hort. Soc.* 64. 19-28. 1931.—Biological studies showed that usually 10-30% of all mature larvae may be trapped under bands, but it is not deemed best to advise the general use of bands of any sort in Ohio, except as a supplementary control. When treated with β-naphthol, they gave the best kills of larvae. All common fungicides, when added to arsenate of lead, reduce its toxicity. Additions of lime slightly reduce toxicity but lessen the burning of fruit and foliage. Two applications of an oil spray in midsummer were not as efficient as 1 spray of arsenate of lead and lime sulfur. Oil caused severe burning. Two applications of an arsenical dust in midsummer were less efficient than 1 of arsenical spray.—*Author's summary.*

13852. **De ONG, E. R., and M. HUNTOON. Sulphur as an insecticide.** *Jour. Econ. Ent.* 22(6): 866-873. 1929. —Finely divided sulphur dust gave good control of thrips (*Scirtothrips citri*) on navel oranges in northern California. Toxicity is closely associated with high field temp. as S does not volatilize or sublime readily under 70° F. 2-3 applications of the dust are made by airplane or by a power duster operating from the ground. The larval stage of the scale (*Coccus citricola*) was very susceptible to such applications. In the dusted blocks, mortality among the newly hatched scales ranged from 94.8 to 98.5%, as against 65.8-75.0% in the untreated plots. The higher figure was attained only at maximum ranges of 102-107° F.—*E. R. de Ong.*

13853. **DOWNES, W. The strawberry root weevil with notes on other insects affecting strawberries.** 2nd rev. ed. *Canada Dept. Agric. Pamphlet* 5. 5-19. 8 fig. 1931.—*Brachyrhinus ovatus* L. (strawberry root weevil), *Aristotelia fragariae* Busck (strawberry crown miner), *Polyphylla ruficollis* Csy. (western June beetle), and *Synathedon bibionipennis* Bdv. (strawberry crown moth), *Brachyrhinus sulcatus* Fab. (black vine weevil).

13854. **GARNIER, JEAN. Emploi de l'arsénite et de l'arséniate de soude contre la pyrale de la vigne.** *Pomol.*

Française 1930 (4/5): 58-60. 1930.—A comparison of commercial Na arsenite (80%) and Na arsenate (95-98%) (2.5 kgm. per 100 liters of water) with the hot water treatment, was made in 3 vineyards in Beaujolais which had been reinfested by *Tortrix pilleriana* Schiff. after the district had been kept free from this pest for a number of yrs. by the hot water treatment. In all 3 cases the toxicity of the salts to the insect was practically the same but Na arsenite was the more toxic to the plants, a fact confirmed in a test with *Mercurialis annua* planted in pots and treated with 4% solutions of the 2 salts. A 2.5% arsenical solution gave good results, but owing to the greater toxicity of arsenite to the plants, the use of Na arsenate is preferred.—*C. Zeimet.*

13855. **HOUGH, W. S. The life of a codling moth: at what point in its life can we take advantage of its weak position?** *Rept. Maryland Agric. Soc.* 15: 196-202. 1931.—Of the larvae [of *Carpocapsa pomonella*] found on 8 apple trees, 43.7% made their cocoons on the limbs and 56.3% beneath the bark on the trunks. Observations indicated that the moths settled within 500 ft. of their place of emergence in an orchard. About 90% of the eggs were found on the foliage. Larvae hatching from eggs on the foliage wandered about before they finally settled; the average length of the period of wandering was 131.5 min., minimum 28, and maximum 525 min. Period of wandering of larvae from eggs deposited on the fruit averaged 80 min., minimum 6, and maximum 357 min. Loss of weight of newly hatched larvae was more marked when the temp. was above 80° F. Loss in weight stimulates the young larvae to action which appears to be the reason why the percentage of successful entrants in apples is considerably higher in warm, dry weather. The weakest point in the life of the insect is during the period of wandering of the newly hatched larvae on the fruit and foliage.—*W. S. Hough.*

13856. **JAMES, H. C. Repellent banding to control the ants attending the common coffee mealy-bug.** 14p. 3 fig. Colony and Protect. of Kenya Dept. of Agric.: Nairobi, 1930.—Three types of repellents for the control of ants that attend mealy-bugs are given: High boiling point tar oils, castor oils with poison, and adhesive preparations such as Bandite, TCN6 and tanglefoot. Descriptions of bands and application discussed, together with the cost of materials and labor. The writer considers biological methods the most feasible for controlling mealy-bugs, followed by the "clean-up" method to insure the rearing and spread of predators and parasitic enemies.—*C. R. Jones.*

13857. **JARY, S. G. Some observations on winter moth caterpillar attack on fruit trees in 1929-30.** *Jour. So.-Eastern Agric. Coll. Wye, Kent* 28. 137-146. 1931. —*Cheimatobia brumata* emerged from about Oct. 24 to Jan. 30. *Hybernia defoliaria* emerged over almost exactly the same period, but in very much smaller numbers. Over 99% of the ♀♀ taken were *C. brumata. H. defoliaria* accounted for most of the others; the March Moth, *Anisopteryx aescularia,* was not recorded. An occasional ♀ of *Phigalia pilosaria* was taken. The eggs of *C. brumata,* when laid on unbanded trees, were mostly on the smaller wood and fruit spurs; about ½ were superficial and not in any way concealed, ¼ completely concealed (beneath bud-scales, dead bark, etc.). Many eggs may be laid on stakes, etc., supporting the trees. Even the most careful attention to greasebands did not entirely prevent attack, although the banded trees were as free from caterpillar damage as the best of the sprayed trees. Under commercial conditions, and especially if large numbers of moths are emerging, greasebands do not prevent considerable numbers of ♀♀ from ascending. There is considerable evidence to disprove the theory that ♀♀ may be carried up by the ♂♂, in copula. A tar oil wash of the Long Ashton type gave no better or scarcely as good control of Winter Moth caterpillars as an old type Tar Oil wash used at the same strength (10%). At 6% the control from the Long Ashton type wash was not sufficient to be of commercial value, and had to be followed by lead arsenate. Concealed eggs do not seem to hatch in any greater proportions than eggs laid superficially, when the trees on which they occur have all been subjected to the same treatment.—*From author's conclusions.*

13858. **NEISWANDER, R. B., and M. A. VOGEL. Some new phases on the oriental fruit moth [Laspeyresia molesta] situation.** *Proc. Ohio State Hor. Soc.* 64. 29-43. 6 fig. 1931.—From experimental work in Ohio, it is concluded that storage houses and used baskets provide optimum hibernating quarters for fruit moth larvae. These larvae are protected from sudden weather changes and constitute a source of reinfestation from yr. to yr. Late varieties of peaches, especially when fruits are not all harvested, carry more larvae over winter than earlier varieties and form a more abundant source of reinfestation. Bait traps may be useful in determining when sprays should be applied. Four definite broods of eggs and larvae appeared in northern Ohio in 1930. The summer oils appear safe and practical on peaches when not used in an excessive number of applications; when used in late season sprays, they seem to be the most effective of the materials yet used in Ohio. No undesirable residue was obtained in 1930 with oil used within 10 days of peach harvest.—*Authors' summary.*

13859. **SHERMAN, FRANKLIN. Recent experimental work on codling moth.** *Michigan State Hort. Soc. Ann. Rept.* 60: 48-50. 1931.—Two applications of arsenate of lead for summer brood larvae gave 10% better control than 1 application. A single application, for the summer brood larvae, of arsenate of lead, 2 pounds to 100 gallons, does not necessarily insure freedom from an excessive arsenical residue. One application of oil and nicotine on Strawberry apples for summer brood larvae gave better control than a single application of arsenate of lead. Apples treated with arsenate of lead had an excessive arsenical residue, while those treated with oil and nicotine showed less than the world's tolerance. Oil-nicotine is not effective on late varieties when applied as a substitute for arsenate of lead at the times indicated in the spray calendar for spraying with arsenate of lead. Sunoco oil used at rate of 1 gallon with ¾ pt. nicotine sulphate to 100 gallons of water is unsafe on apples. Paris green and white oil with an extract of pyrethrum proved ineffective.—*Author's summary.*

13860. **SMITH, RALPH H. Investigations on the control of the red scale. [Chrysomphalus aurantii Mask.]** *California Citrograph* 16: 310, 344, 345. Illus. 1931.—Tests with all other suggested remedies lead to the conclusion that nothing of immediate promise can be expected from measures other than oil sprays and fumigation with HCN.—*C. S. Pomeroy.*

13861. **SMITH, RALPH H., and WALTER EBELING. Experiments with oil sprays in control of red scale.** *California Citrograph* 16: 410, 448. Illus. 1931.—Wide variation is obtained in degree of clean-up and even under favorable conditions oil sprays alone appear to be limited in their effectiveness. Combination treatment (spray and fumigation) affords the most dependable means of control of resistant red scale on lemon trees. —*C. S. Pomeroy.*

13862. **SMITH, RALPH H., and WALTER EBELING. Additional report on experiments with oil spray for red scale.** *California Citrograph* 16: 451, 496. Illus. 1931.

13863. **STANILAND, L. N., and C. L. WALTON. A note on the control of woolly Aphis on dormant nursery stock.** *Jour. Bath. & West & Southern Counties Soc.* 5: 181-183. 1930/1931[1931].—In 1 experiment, woolly aphis on young apple trees was eradicated by immersion for a few minutes in, or spraying with, a 10% solution of tar oil wash. The 32 infested trees so treated all remained free until June 7 the following summer. Fumigation with HCN proved almost a complete failure, and a nicotine and soft soap solution was only partially successful.

13864. **VOÛTE, A. D. De bestrijding van door mieren bezochte schildluizen op djeroek. (Combating scales visited by ants.)** [With English summary.] *Landbouw*

[*Buitenzorg*] 6(6): 713-715. 1930.—Citrus trees heavily attacked by *Lecanium* and other scales, which are frequently visited by ants, were banded with tanglefoot; and after 1 month the scales had almost vanished.

13865. **WEDDELL, J. A. Experiments with the heat treatment of fly-infested fruit.** *Queensland Agric. Jour.* 36(2): 141-147. 1931.—A temp. of 110-115° F. at approximately 100% relative humidity for 8 hrs. killed the larvae of the Queensland fruit fly (*Chaetodacus tryoni* Frogg.) infesting apples, oranges, peaches, pears, and persimmons; codling moth larvae were also killed by these conditions. Ability to kill the eggs of the fruit fly in oranges and grape fruit was not proved since the eggs laid in the control fruit did not hatch. A number of the apples became peculiarly soft, watery, and loose skinned, presenting a "cooked" appearance some 5 days or more after treatment, and this symptom appeared distinct from various storage rots and bruises. Only fruit-fly-infested fruits of peach, pear, and persimmon were used, so the keeping qualities of treated fruits could not be ascertained. The flavor of citrus fruit was unaffected.—*From author's summary.*

ECONOMIC ENTOMOLOGY

CEREAL, FORAGE, AND OTHER FIELD CROPS

(See also in this issue Entries 14554, 14839)

13866. **BOX, HAROLD E. Observaciones sobre Taladradores de la caña azúcar. Una plaga nueva de la caña de azúcar: El gorgojo taladrador (Coleóptera; Curculionidae). [Sugar cane borers: the weevil-borer, a new pest of sugar cane.]** *Rev. Industr. y Agric. Tucumán* 19(11/12): 319-322. 2 fig. 1929.—The species is undetermined; only larvae have been found. It was injurious at plantations at Ledesma, near Jujuy, Argentine. It attacked mainly the side sprouts of 2-3 yr. old cane of the strain P.O.J. 36, but did little injury to plant cane. *Diatraea saccharalis* was injurious to corn (maize) at Jujuy, and *Pennisetum latifolium* Spreng. is reported as a new host. Both spp. of *Diatraea* showed light infestations in cane at Ledesma.—*W. T. M. Forbes.*

13867. **CAMERON, W. P. L. Cotton thrips (Heliothrips indicus Bagnall.) in the Gezira in 1929.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 55-63. 1930.—This thrips has a succession of hosts from July to Oct., including *Medicago sativa, Cymbopogon, Sorghum, Echinochloa colona, Crotalaria, Tephrosia, Sesbania, Seliotropium, Dolichos lablab, Lubia afinis, Leucas urticaefolia,* and in Oct. and Nov. it migrates to the cotton. These two months are the period of greatest damage. Flooding to kill the pupae in the ground is a valuable measure when applied at the proper time. The life cycle of the 6 generations from Aug. to Dec. is shown in tabular form, and requires 16-25 days.

13868. **CHIAROMONTE, A. Una particolare circonstanza favorevole allo sviluppo della cotonicoltura a Tessenei: l'assenza di Platyedra gossypiella Saund. [A particularly favorable circumstance to the development of the cultivation of cotton at Tessenei: the absence of P. gossypiella.]** *Agric. Coloniale* 24(4): 185-188. 1930.—The author, finding the cotton at Tessenei (Eritrea) free from any infestation by *P. gossypiella,* warns his countrymen of the danger of importing this cotton pest into Eritrea, owing to its proximity to the cotton growing section of Egypt.—*C. Zeimet.*

13869. **CRUMB, S. E. Tobacco cutworms.** *U. S. Dept. Agric., Tech. Bull.* 88. 180p. 9 pl., 19 fig. 1929.—This publication gives a large amount of information on the habits and control of the generally injurious spp. of cutworms. The first part deals with the general distribution of cutworms, their importance as tobacco pests, the factors influencing spread and importance. General characteristics for identifying larvae, pupae and adults; something on the technique of rearing; a general consideration of natural control of cutworms considering the factors of parasites, diseases and the influence of birds and climatic factors. Nearly 100 pp. are devoted to a consideration of the more common and important spp. found attacking tobacco, taking up the spp. by groups and discussing habits, life history, distribution, importance and natural enemies. The latter fourth of the bulletin is devoted to a consideration of control measures, giving a very comprehensive review of methods which have been tried and the relative efficiency of each.—*W. P. Flint.*

13870. **GIFFARD, W. E. The Sudan bollworm (Diparopsis castanea Hamp.) in the Sudan.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 27. 1-17. Map, 2 col. pl. [1929 or 1930.]—*Diparopsis castanea* is known from many parts of Africa. Its only known host in the Sudan is cotton, although in So. Africa it breeds on other Malvaceae. The egg*, larva*, pupa*, and adult* are described, and the color variations of the latter are illustrated. Data are presented on ecological conditions, seasonal history, duration of stages, depth of pupation. The total developmental period is 40-60 days. When first known in the Sudan it was only one-brooded, but is now a continuous breeder with 4-5 broods a year. This species causes more damage than the pink bollworm (*Platyedra gossypiella*) where the two are present. No satisfactory means of control has been found, although light traps and tractor plowing are useful in reducing the numbers.

13871. **KING, H. H., and H. W. BEDFORD. An account of the locust season [in Anglo-Egyptian Sudan].** 1929. *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 7-14. 1930.

13872. **KIRKPATRICK, T. W. Pink bollworm (Platyedra gossypiella Saund.) in the Gezira [Anglo-Egyptian Sudan] during 1929.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 48-54. 1930.—No living larvae have been found in numerous samples of seed which have been sunned, showing the efficacy of this treatment. It is thought that the climatic differences partly explain the lesser damage in the Gezira than in Egypt.

13873. **MAHOUX, J. Un ennemi du blé. Le cèphe pygmée.** *Progr. Agric. et Vit.* 94(29): 64-66. 1930.—The biology of the wheat stem sawfly (*Cephus pigmaeus*) is described, and there is a short review and description of the common wheat diseases (rust, foot rot and "scald"). The feeding habits of the larvae, as the causative agents of a premature dying of the infested wheat stalks, are described. The insect hibernates in its larval stage and pupates only a short time before its emergence. Crushing with heavy rollers and the use of weed killing chemical solutions (10% sulphuric acid) are suggested as methods of control. *Pachymerus calcitrator* is a natural enemy of the larva of this sawfly; it might perhaps be used to keep the sawfly in check.—*C. Zeimet.*

13874. **MAXWELL-DARLING, R. C. The winter breeding of locusts in the Sudan. Season 1929-30.** *Wellcome Trop. Res. Lab., Ent. Soc. Bull.* 31. 19-21. 1930.

13875. **MICHELMORE, A. P. G. Observations on leafhoppers (Homoptera Fam.—Jassidae) in the Gezira in 1929.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 64-66. 1930.—A preliminary note on *Empoasca fascialis* which has been found on cotton, *Hibiscus, Abutilon,* and other Malvaceae, *Ricinus communis, Solanum dubium, Rhyncosis memnonia,* and *Momordica cymbalaria.*

13876. **NELSON, ALEXANDER. Pasture production in areas liable to infection by Oncopera intricata (Walker) in Tasmania.** *Ann. Appl. Biol.* 18(1): 54-59. 1931.—The replies to a questionnaire sent out to a large class of sheep owners and pastoralists in Tasmania indicate: (1) that *O. intricata* is a pest of first-class economic importance in *Tasmania,* precluding successful pasture production over large areas; (2) that grasses with a mechanism for natural vegetative propagation, *e.g.,*

stolons, etc., are likely to persist through a severe attack and by their recovery after the pupation of the grass-attacking larvae provide some return rather than allow the ground to go out of production or be covered by unprofitable weeds; (3) the replies plus external evidence show that a sward of creeping grasses and clovers is likely to be most useful.—*Author's summary.*

13877. **OGLOBLIN, ALEJANDRO. Informe preliminar sobre un nuevo parásito del trigo. [Preliminary data on a new wheat parasite.]** *Bol. Min. Agric. Nacion [Buenos Aires]* 29(4): 451-455. 9 fig. 1931.—Larvae of a weevil, probably *Prosalidus rufus* Hust., attack the wheat in the province of Buenos Aires. The infestation from 1 to 4% was recorded in different localities of the province. Short account of life-history and the external morphology of larvae are given.—*A. A. Ogloblin.*

13878. **POPE, JAMES B. El "Arrebiatado" del Algodón en Piura (Dysdercus ruficollis L.). [The cotton stainer in Piura.]** *Estac. Exp. Agric. Soc. Nation. Agrar. Lima-Peru, Bol.* 3. 1-14. 2 pl. 1929.—The cotton stainer is a major cotton pest in the coastal valleys of Peru. More damage is done by this insect in the Northern than in the Southern valleys. Data collected from the oldest planters indicate that since 1916 the damage has continued to increase. Since 1916 the area devoted to cotton has increased along with changes in varieties and cultivation methods, which in all probability has made conditions more favorable for this cotton pest. The average time required from egg to adult stage is about 45 days, varying with temp. and food supply. The average life of an adult is about 30 days. The average number of eggs laid during the life of a ♀ is about 200. From 60 to 80 eggs are deposited at a time in the soil under the cotton plants. The damage results from the introducing of fungi by the insect at the time of feeding on the cotton bolls before they open. Bolls less than 30 days old are completely spoiled. The damage to bolls over 30 days old varies, depending on the number of punctures and climatic conditions. The amount of damage varies, depending on the number of stainers and the stage of development of the bolls when they are attacked. In some cases in late planted fields the total crop is lost. Early plantings usually escape heavy damage. Control recommendations are: Early planting over a short period of time; destruction of all cotton plants at the earliest date possible after the crop is harvested; and closed season of at least 60 days between cotton crops.—*J. B. Pope.*

13879. **RUTTLEDGE, W. A note on the control measures used against locusts in northern Kordofan [Anglo-Egyptian Sudan].** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 15-18. 1930.

13880. **RUTTLEDGE, W. Survey of the pests affecting cotton and other crops in Mongalla Province.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 79-82. 1930.—The cotton stainers *Dysdercus superstitiosus, D. nigrofasciatus,* and *D. cardinalis* were found on *Sterculia, Hibiscus esculentus, H. sabdariffa,* and *Wissadula rostrata.* Other cotton pests were *Heliothis obsoleta, Platyedra gossypiella, Oxycarenus* spp., *Empoasca fascialis,* and *Earias insulana. E. insulana* was bred from fruit of *Dombeya kirkii.* A coffee plantation was infested by *Hemileia vastatrix.*

13881. **SPRINGER, R. E. Some factors affecting the hatching of the eggs of the European corn borer.** *Proc. Pennsylvania Acad. Sci.* 4: 99-102. 1 fig. 1930.—Direct exposure of the eggs of the European corn borer [*Pyrausta nubilalis*] to sunlight is fatal. The effect of time of exposure at 90° F. and of exposure to ultra-violet light for various periods is shown in tables and chart.

13882. **ULLYETT, G. C. The life-history, bionomics and control of cotton stainers (Dysdercus spp.) in South Africa.** *Union of So. Africa Dept. Agric. Sci. Bull.* 94. 3-9. 1930.—*Dysdercus fasciatus, D. nigrofasciatus,* and *D. superstitiosus* attack cotton in So. Africa. The present report deals mainly with *D. nigrofasciatus,* of which the developmental periods, generations, and life cycle are discussed. It breeds on cotton, *Sterculia platanifolia, S. murex, Pappea fulva, Hibiscus calycinus, H. lumarufolius, Datura, Abutilon* and *Sida.* The only predator found was *Rhinocoris segmentarius.* No satisfactory means of control have been found.

13883. **VAYSSIÈRE, P. La lutte contre les sauterelles nuisibles en France et en Afrique du Nord.** 52p. 6 pl., 10 fig. Soc. Anonyme de l'Imprimerie Maulde et Renou: Paris, 1929.—Grasshoppers are occasionally injurious to agriculture in southern France and are considered serious in Algeria, Tunisia and Morocco. Eleven spp. of grasshoppers and 4 spp. of grouse locusts attack crops. *Schistocera gregaria, Dociostaurus maroccanus,* and *Calliptamus italicus* are the most important. Description, habits, distribution, noxiousness of each sp. are given as well as a table for identification. Of the various means of control used, poison bait is the most effective. White arsenic is the poison used; it is mixed with bran and molasses, and a strong coloring material (black, green or blue) is added to avoid any fatal error. Special legislation against grasshoppers is provided for in France and Algeria, enabling the authorities to organize departmental syndicates for the compulsory destruction of the pest. Samples of such decrees are given in appendix. —*G. Maheux.*

13884. **WHITFIELD, F. G. S. Report on the entomological work of the Talodi Field Laboratory [Anglo-Egyptian Sudan] for the year 1929.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 76-78. 1930.—The cotton leaf roller, *Sylepta derogata,* was one of the principal pests, but was heavily parasitized. The most serious pests of cotton in the Province are *Dysdercus fasciatus* and *D. superstitiosus.* The only other food plant of the latter is *Adansonia digitata.* Other pests of cotton are *Earias insulana, Podagrica puncticollis,* and *Sphenoptera gossypii.*

13885. **WILKE, S. Der Stand der Maiszünslerfrage.** *Arch. Naturgesch. Abt. A* 91(9): 31-72. 3 maps, 11 fig. 1925(1927?).—Maps and data on the distribution of *Pyrausta nubilalis,* by countries in Europe, Asia, Africa, and America; list of host plants; the damage in various countries is reviewed; the life history, seasonal history, parasitic control and artificial control are discussed.

ECONOMIC ENTOMOLOGY

FOREST AND SHADE TREES

J. M. SWAINE, *Editor*

(See also in this issue Entries 12360, 12406, 13922, 13926, 13929, 14029, 14871)

13886. **BRAMMAN, L. Priežu dārznieku (Myelophilus) kaitīgās darbības piemēri un vinu nozīme celmu mizošanas jautājumā. [Damage caused by the pine beetle and its relation to the peeling of stumps.]** *Mežsaimniecības rakstu krājums [Riga]* 6: 10-25. [German summary, 127-128.] 3 fig. 1928.—The large pine beetle (*Myelophilus piniperda*), which does considerable damage in Latvian pine forests, breeds in large numbers under the bark of stumps and of logs left in or near the forest. Cutting low stumps is almost as effective as peeling the stumps in reducing infestations, and is much cheaper. —*W. N. Sparhawk.*

13887. **DENGLER. Ein auffälliges Auftreten des grossen Waldgärtners bei Eberswalde.** *Zeitschr. Forst- u. Jagdw.* 62(2): 122-126. 3 pl. 1930.—The first evidence of the dying of young shoots in the tips of thrifty 130-140-yr.-old pines near the Möller Institute was noted toward the end of July, 1929. Inspection of broken shoots

revealed the presence of *Myelophilus piniperda*, which alone was responsible. It has been generally believed that shoots attacked by this beetle remain green even until broken off in the fall storms. The unusually dry summer of 1929 is considered responsible for the drying up of infested shoots. The occurrence of this particular attack in a stand remote from any felled timber or area containing suitable brood trees indicates that the life history of the beetle needs further study. —*J. Roeser, Jr.*

13888. FELT, E. P., and S. W. BROMLEY. Shade tree insects in 1929. *Jour. Econ. Ent.* 23(1): 137-142. 1930.—The Norway maple leaf stem miner, *Nepticula sericopeza* Zell., is generally distributed in southeastern New York and southwestern New England. Spraying with a nicotine molasses soap combination in May apparently gives excellent control. The red cedar aphis, *Lachnus sabinae* Gill., provided an excellent outdoor demonstration of injuries earlier associated provisionally with this sp. The hackberry nipple gall, *Pachypsylla mamma* Riley, and the hackberry bud gall, *Pachypsylla gemma* Riley, are common on hackberry. The former is readily controlled with a nicotine molasses spray applied about the middle of May and the latter with the same materials applied about June 10th. The insecticide kills many adults and apparently destroys the eggs. The knotty oak galls, *Andricus punctatus* Bass, *A. cornigerus* O. S., and *A. clavigerus* Ashm. are common on the red oak, pin oak and willow oak respectively, in some instances causing serious injury. The alternate generation of the former 2 develops in a small blister leaf gall. The hackberry leaf aphid, *Myzocallis fumipennellus* Fitch, is responsible for a very general yellowish spotting and browning of hickory leaves in early fall, in some cases, most of the leaves being killed. The bronze birch borer, *Agrilus anxius* Gory, and the 2-lined chestnut borer, *Agrilus bilineatus* Weber, are generally distributed. Available data show that feeding of birches frequently enables the trees to outgrow somewhat serious infestations. Work by the 2-lined chestnut borer is frequent on trees indirectly injured by grading or building operations. The filbert bud mite, *Eriophyes avellanae* Nal., produces greatly enlarged buds on European filberts and has been associated with some severe injury. A paste of $Ca(CN)_2$ and castor oil applied to areas infested by the linden borer, *Saperda vestita* Say, has given encouraging results.—*Authors' abstract.*

13889. LÉPINEY, JACQUES de. Les insectes nuisibles du chêne liège dans les forêts du Maroc. (Deuxième étude.) [Injurious insects of cork oak in the forests of Morocco. 2.] *Ann. Épiphyties* 14(4): 313-321. Map. 1928.—Details of the rearing, multiplication and release of an introduced parasite of the destructive Lepidopteron, *Lymantria dispar*, are given and the successful establishment of the parasite, *Schedius kuwanae*, at a number of points in the field is noted. A few notes on the following insects, which were found to be injurious to cork, are also included. Foliage insects: *Phalera bucephala* v. *bucephalina, Drymonia chaonia, Marumba quercus, Boarmia ilicaria, Carcina quercana, Gracilaria sulphurella, Orthacanthacris aegyptia, Chrysomphalus dictyospermi*, and *Chaitophorus*. Insects of the twigs, branches and the trunk: *Dryaphis, Chionaspis lepineyi, Kermes vermilio*. Wood-boring insects: *Xyleborus monographus*.—*H. L. Person.*

13890. SAUNT, J. W. Some American immigrants. *Ent. Record* 43(1): 11-12. 1931.—Notes on the damage to American Ash by *Neoclytus erythrocephala, N. capraea* and others.

13891. SCHWERDTFEGER, F. Beobachtungen und Untersuchungen zur Biologie und Bekämpfung des Kiefernspanners während des Frassjahres 1929 in der Letzlinger Heide. [Biology and methods of control of the pine looper-moth (Geometra piniaria L.) during the outbreak of 1929 on the Letzlinger heath.] *Zeitschr. Forst- u. Jagdw.* 62(2/3): 65-93, 133-166. 2 pl., 26 fig. 1930. —The 5 chapters treat of: general consideration of the area affected; review of the history of the outbreak; observations and investigations of the biology of the insect; comparative experiments to study the effect of various control measures; and recommendations for the future handling of control operations. Scatological observations constituted the principal method of study, and are highly recommended as a means for procuring valuable information in the life habits and control measure possibilities under epidemic conditions. Meteorological conditions (precipitation and temp. fluctuations) had no effect on emergence of the moths, and only partially affected the feeding intensity of the caterpillars. During the 3 feeding months, 10% of the total consumption occurs in August, 30% in September and 60% in October. The favorable results claimed for control spraying in recent times have not been entirely substantiated. Various experiments with arsenic compounds, including Ca arsenate, applied with a power duster, were made under favorable conditions during this outbreak, but with only minor success. This is due not to biological reasons, but to physical causes, such as the character of air movement about the needles, and the electrical charge of the poison dust particles. The failure of motor dusting (not airplane) is attributed to the lack of penetration to all parts of the tree crowns. In future control operations, the employment of airplanes and the use of stronger As compounds are recommended. Control measures must be instituted at the beginning of an attack and not delayed until its height. A fairly extensive bibliography is included.—*J. Roeser, Jr.*

13892. SCHWERDTFEGER, F. Kritische Bemerkungen zu der Abhandlung von Dr. Borchers und Dr. May. Erfahrungen bei der Arsenbekämpfung des Kiefernspanners in biologischer und technischer Hinsicht. [Criticism of Borchers' and May's paper on use of arsenic for killing the pine looper (Bupalus piniarius).] *Forstwiss. Centralbl.* 53(2): 68-73. 1931.—The writer criticises Borchers and May for drawing general conclusions from inadequate experiments, and for misquoting his own views. Other investigations do not show that dusted foliage is too dry for the caterpillars to eat. Borchers failed to consider the influence of wind on the caterpillars' activity.—*W. N. Sparhawk.*

13893. SIMMEL, R. Die Splintkäfer an Hopfenbuche: Eccoptogaster intricatus Ratz.- und E. carpini Ratz.-Sippe. [The ambrosia beetles of hop-hornbeam: the intricatus-carpini-group of Eccoptogaster.] *Ent. Blätter* 24(4): 154-171. 4 pl., 2 fig. 1928.—Biological studies on *E. intricatus* Ratz., *E. simmeli* Eggers, *E. carpini* Ratz., *E. balcanicus* Eggers.—*M. H. Hatch.*

13894. SPENCER, G. J. Insects emerging from prepared timber in buildings. *Proc. Ent. Soc. British Columbia* 27: 6-10. 1930.—Records are given of *Buprestis aurulenta* emerging from buildings as much as 20 yrs. old. There is 1 record of the Longicorn, *Phymatodes dimidiatus*, emerging from split fir rafters in a house 6 yrs. old. Adults of *B. fasciata langi* (and presumably *B. aurulenta*), apparently oviposited in cracks in newly-laid veranda boards and in a seasoned flag pole 2 yrs. old. These beetles may be capable of developing from eggs laid in cracks in prepared lumber, even of heartwood, without feeding first on bark, bast, cambium or sap-wood.

13895. SWEZEY, O. H. Some observations on the insect faunas of native forest trees in the Olinda forest on Maui. *Proc. Hawaiian Ent. Soc.* 7(3): 493-504. 1931. —Results are given of observations on the insects inhabiting certain spp. of native Hawaiian trees in a forest region at 3500-4500 feet elevation on the slope of Mt. Haleakala on the island of Maui. Most attention was given to *Acacia koa* and its insect fauna. This tree is one of the most characteristic of the region, and the fact that nearly all of this species of tree were mostly defoliated early in 1926 by the caterpillars of a native moth, *Scotorythra paludicola* (Butl.), led to these studies. New foliage did not appear on these trees for some months and considerable dying of branches and even of entire trees occurred; but there was fair recovery eventually and no recurrence of the caterpillar outbreak

followed. All the other insects found living on *Acacia koa* are listed, and also the insects found on about a dozen of the other trees characteristic of the region.—*O. H. Swezey.*

13896. **TUBEUF, von. Diplosis pini (DeGeer) (Cecidomyiden-Studien).** [Gall midge studies.] *Zeitschr. Pflanzenkrank. (Pflanzenpath.) u. Pflanzenschutz* 40(8): 375-390. 2 pl., 18 fig. 1930.—In this report is included the French, Danish and German literature on the peculiar life cycle of *Diplosis pini* on *Pinus silvestris* and its pathological status on *Picea excelsa.*—*v. Tubeuf* (*transl. by G. A. Bicherdorf*).

13897. **WICHMAND, HANS. Hylotrupes bajulus L. in Dänemark.** *Anz. Schädlingsk.* 7(2): 13-16. 2 fig. 1931. —*Hylotrupes* is more important than formerly. The increase is apparently correlated with the increased use of slate roofs. The damage is done under the roof. The attack to the main supports is slight. The sprays used in control are Bujerlin, Cuprinal and Goreal; Cyanogas and heat seem to give total kills.—*H. Wichmand* (*transl. by G. A. Bicherdorf*).

13898. **WOLFF. Fünf Jahre Arsenkampf gegen Forstschädlinge.** *Zeitschr. Forst- u. Jagdw.* 62(7/8): 465-497. 5 pl. 1930.—A chronological review of the systematic arsenical-poisoning campaign undertaken in Prussia, 1925-1929, against pine noctua (*Noctua piniperda* Panz.), pine sawfly (*Lophyrus pini* L.), nun-moth (*Liparis monacha* L.), pine looper (*Geometra piniaria* L.), and oak leaf-roller (*Tortrix viridana* L.), including operations with airplanes and with ground dusting apparatus. Of 71 operations, 41 were entirely successful. In 4 cases the result was not completely satisfactory, and 1 failure was due to unfavorable weather, 4 to late application, and 1 to undetermined causes. Success does not require complete destruction of the pest, but only destruction to the point where the endemic balance can be maintained naturally. No loss of birds or game animals resulted from the dissemination of vast quantities of As poisons. Objections based on the decimation of useful parasitic insects in such operations are without foundation. Both airplanes and ground machines find a useful field, the latter being preferable where the area does not exceed 100 ha. The Junker-type W33 airplane, poison dusting model 1929, is said to be the best for overhead operations, and Borchers' "Hercynia" motor duster to be the most effective apparatus for ground use. To be effective, poison dusting must be done in season, and not employed as a last resort.—*J. Roeser, Jr.*

13899. **ANONYMOUS. Mitteilungen des Pressedienstes des Preussischen Ministeriums für Landwirtschaft, Domänen und Forsten.—Forstschäden und ihre Bekämpfung.** *Zeitschr. Forst- u. Jagdw.* 61(10): 633-636. 1929. —The most destructive insect outbreak in forest history occurred in 1924 and 1925 when *Noctua piniperda* killed 5,423,950 cu. m. of timber on 23,623 ha. Following this insect, bark-beetles killed 3,272,260 cu. m. and necessitated the clear-cutting of 10,400 ha. in 1926 and 1927. The sudden removal of the forests has resulted in serious disturbance of ground water conditions over wide areas. The likelihood of future catastrophes of this kind is minimized by the recent progress in combating insects by scattering calcium arsenate from airplanes. The danger of destroying useful insects is apparently obviated by the employment of a new non-arsenic compound, Forestit, which was first prepared in 1928.—A hurricane on November 6-7, 1921, on the Bohemian frontier, was followed by winter damage and an attack by *Tomicus typographus*, which together resulted in the destruction of 690,000 cu. m. and clear cutting of 2,750 ha.—Only 1 large fire, about 1000 acres, is recorded for the last 10 yr. period. Progress is being made in the improvement of portable fire extinguishers.—*J. Roeser, Jr.*

ECONOMIC ENTOMOLOGY

INSECTS AFFECTING ANIMALS

F. C. BISHOPP, *Editor*

(See also in this issue Entries 13453, 13569, 13573, 13578, 13591, 13592, 13601, 13603, 13604, 13629, 13681, 13687, 13707, 13722, 13727, 13939, 14677, 14691, 14693, 14706, 14771, 14785, 14796, 14839, 15009)

13900. **AYRES, SAMUEL, Jr. Pityriasis folliculorum (Demodex).** *Arch. Dermatol. and Syphilol.* 21(1): 19-24. 1930.—*Demodex folliculorum* was reported from 11 patients who had suffered from various degrees of dermatosis accompanied by itching and burning. In some cases there was pronounced scaling of the skin.

13901. **BECKETT, H. E. Colored glass as a deterrent to house flies.** *Nature* [*London*] 125(3160): 780. 1930.—Blue-green glass was effective.

13902. **CHORLEY, J. K. The bionomics of Glossina morsitans in the Umniati fly belt, southern Rhodesia, 1922-23.** *Bull. Ent. Res.* [*London*] 20(3): 279-301. 5 fig. 1929.—The pupal period is between 3 and 4 times as long in winter as in summer. Breeding continues all year, but greatest density and activity is in September, i.e., towards the end of the dry season. During a period of heavy rains, long grass and full forest foliage, puparia were fairly abundant. Density counts did not indicate lack of nourishment, although the grass in these mopane belts never grows long. All types of forest were used for breeding except the heavy river forest. In the mopane a heavy reduction in density occurred after leaf-fall. The puparia are attacked by at least 7 spp. of insect parasites. Of these *Mutilla glossinae* and possibly 2 spp. of bombyliids are the most important. These parasites show definite seasonal acitivity. At the end of the dry season, 84% of all emergences were parasites. The % of collected puparia which failed to yield either flies or parasites increased from 23% in March to 60% in November. Half an hour's exposure to the sun (118° F.), killed the puparia, even when covered with about 1 in. of sand. Parasitism and the hot summer sun on puparia no doubt contributes to the great fall in density throughout the mopane forest at the end of the late dry season. This fly belt has spread and game has increased despite free shooting since 1905. Between 1924 and 1925 the spread eastward has been rapid, and new settlement areas have been endangered. —*From author's summary.*

13903. **CHORLEY, J. K. Experiments in grass fires against Glossina morsitans in southern Rhodesia.** *Bull. Ent. Res.* [*London*] 20(4): 377-390. 1929.—An account is given of two organized grass fires in the Lomagundi fly-belt of Southern Rhodesia during 1927 and 1928, to control *G. morsitans*. The effect on the flora and game is described. The effect on the adults was to concentrate them along the shady watercourses; on the puparia, no immediate effect was noticeable. The dead puparia collected increased during Oct. and Nov., due probably to the sun, not the fire. The pupal period of the fly decreases from 82 days for puparia collected in June, to 21 days in Nov. Greatest activity of the fly appears to occur in September. A short account is given of the trypanosome infection and food of the fly. On the average 11% of the flies are infected with pathological trypanosomes in the proportion of 10 *congolense* group to 7 *vivax* group. Only 1 infection of the gland was found out of 1,523 dissections. Infection of flies tends to increase during the late dry season, coincident with the increased visibility of the game. Examination of the fat content indicated no starvation amongst the flies. Their food consists almost entirely of mammalian blood, only 1 case of avian blood being found. A decision has

not yet been reached as to the efficacy of grass fires as a means of control.—*From author's summary.*

13904. **COHN, WILLI M. Über eine Form der Malariabekämpfung in Palästina (Folgen eines Spleen).** *Bericht Senckenbergische Naturforschende Gesellschaft* 59(2): 123-124. 1929.—Thousands of *Lebistes reticulatus* [Cyprinodontidae] have been introduced into pools and cisterns in Palestine, where they destroy the larvae of *Anopheles* [Culicidae] and *Culex* [Culicidae].

13905. **[DRENSKI, P., and K. DRENSKI.]** ДРЪНСКИ, П., и К. ДРЪНСКИ. Приносъ къмъ изучване родъ **Phlebotomus (Dipt.)** и тридневната треска въ България. **[Phlebotomus and 3-day fever in Bulgaria.]** [German summary.] Известия на Българското Ентомологично Д-во (*Mitteil. Bulgar. Ent. Ges.*) 4: 31-56. 4 fig. 1927.—Studies were made of *Phlebotomus* from several places in southern and one in northern Bulgaria. Results are divided into 4 headings: morphology and biology of the genus, spp. and their distribution, epidemiology and clinical picture of "Papataci-fever," and prophylaxis and control of the disease. Under the 2nd heading the authors describe *P. papatassi* Scop., *P. minutus* Rond., *P. sergeti* Par., and *P. perniciosus* Serg., and give keys.—*F. M. Wadley.*

13906. **GAUT, R. C., and C. L. WALTON. Report on ox warble flies and their control.** *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 220-225. [1930].—A report on field experiments with treatments to kill the insects in the backs of the animals; also a study of infestation. Oily liquids or oily ointments were not effective, because they dispersed too quickly into the surrounding tissues. A proprietary ointment containing Derris root constituents and a mixture of Derris root with soap were effective and reasonable in cost, application being made 4 times during spring and early summer. —*W. H. Chandler.*

13907. **IYENGAR, M. O. T. Dissolved oxygen in relation to Anopheles breeding.** *Indian Jour. Med. Res.* 17(4): 1171-1188. 1 fig. 1930.—The dissolved O content of 332 ponds and ditches at Sonarpur, Bengal, India, varied from 0 to 6.5 mgm. per liter of water. *Anopheles* breeding was found over the entire range. Of the 6 spp. observed, no relation was shown to the concentration of O except possibly in the case of *A. pseudojamesi* and *hyrcanus* (var. *nigerrimus*) which decreased in prevalence with increase in O, but this may have been a coincidence and actually due to their association with the aquatic plant *Pistia.* The variation in O content of the surface water of the same ponds varied greatly during 24 hrs., reaching the lowest level at 6 A.M. and the highest point between 3 and 4 P.M. One pond examined frequently for 4 days showed a minimum of 3.57 mgm. per liter and a maximum of 6.94. Algae, particularly the very small forms of Volvacaceae and Pleurococcaceae, were thought to be mainly responsible for the enormous output of O during the day. The estimation of dissolved O was made by Winkler's method with slight modifications. For the comparative study the samples of water were all taken between 8 and 10 A. M. Details of the technique used are given.—*W. V. King.*

13908. **JACK, R. W. Some aspects of the Tsetse fly problem in a colony developing on the basis of European settlement.** *Union So. Africa Dept. Agric. Pan-African Agric. & Vet. Conf. Papers Vet. Sect.* [*Pretoria*] p. 16-22. 1929(1930).

13909. **JOHNSON, CHARLES W. A bot fly from the White-footed mouse.** *Psyche* [*Boston*] 37(3): 283-284. 1930.—First definite record of *Cuterebra fontinella* Clark from *Peromyscus leucopus noveboracensis* in Massachusetts. A skin of *Rangifer caribou* from Labrador had over 1000 perforations by bot flies (probably *Oedemagena tarandi* L.).

13910. **KOBAYASHI, HARUJIRO. Study on the seasonal prevalence of house flies in Chosen (Korea).** *Far East. Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 186-195. 1927[1928].—Laboratory experiments show that the flies survive longer and produce more eggs in dry and hot weather, and adverse results are obtained in lower temp. and wet conditions. Counting of adult flies in nature shows that the flies are abundant twice in the year, late spring and early autumn; they are not rare in winter. Generally the climate in Keijo is dry, except July and August. Hot and dry air in the Korean homes during winter favors the overwintering of adult flies, which results in early prevalence in spring.

13911. **McINTYRE, G. Scabies in poultry.** *Jour. S. African Vet. Med. Assoc.* 1(3): 69-70. 2 fig. 1929.—Due to *Cnemidocoptes laevis gallinae.*

13912. **MOUTIA, ANDRÉ. Flies injurious to domestic animals in Mauritius.** *Mauritius Dept. Agric. Sci. Ser. Bull.* 15. 1-8. 2 pl. 1930.—Local data, symptoms, and control of flies causing myiasis (*Chrysomia putoria* and *Sarcophaga haemorrhoidalis*) and keratitis (*Stomoxys nigra*) of cattle.

13913. **PETERS, HAROLD S. Ectoparasites and bird-banding.** *Bird-Banding* 1(2): 51-60. 6 fig. 1930.—An account of lice, mites, ticks, fleas, and hippoboscids that infest birds, with some details of their appearance, life histories, habits, abundance, and importance, and with suggestions for coöperation between bird-banders and entomologists in solving problems relating to ectoparasites.

13914. **POTTS, W. H. A contribution to the study of numbers of tsetse fly (Glossina morsitans Westw.) by quantitative methods.** *So. African Jour. Sci.* 27: 491-497. 1930.—A critical account of the methods of counting the tsetse fly population of a given area. Data taken from a few collections on man or on cattle are of little significance, as such data do not allow for varying activity of the fly, or for rapid mass movements of the fly. "Fly rounds" (i.e., collection of flies at 3-5 half-hr. intervals, in the same locality, daily, the collection being done by natives) proved unsatisfactory. Extended reconnaissance fly rounds, covering large stretches of country, in which the collector followed regular beats which corresponded with definite vegetational or topographic areas, gave valuable results. The method preferred, and treated at length in this paper, is the method of "ecological fly catches." A party of definite size (4 catchers, 2 markers, 1 recorder) made 5-min. catches daily, the flies being marked and released. The party follows regular beats, on a "grid" system, whereby each catch is carried out along the same stretch once in 6 days.

13915. **SHORTT, H. E. Note on the feeding habits of Phlebotomus minutus.** *Indian Jour. Med. Res.* 18(3): 1047-1049. 1931.—Disagreeing with the statements made by Lloyd and Napier (See B. A. 5(11): Entry 28477), the author reports experiments in which sandflies (339 in all, *Phlebotomus minutus* group) placed on man (3 hrs.) and on geckos, fed on the latter sp. only. He suggests that either Lloyd and Napier were mistaken as to the identity of the insects they studied, or they may have used an unsatisfactory precipitin technique.

13916. **SIEVERS, HUGO K. Aparición de la larva de Hypoderma bovis en Chile. [Larva of H. bovis in Chile.]** *Rev. Chilena Hist. Nat. Pura y Aplicada* 32: 81-82. 1 fig. 1928(1929).—Larvae of this fly have been found in cattle imported into Chile from the U. S. A., and into Argentina from Germany. The hosts arrive in Chile at a season unfavorable for the development of the larvae, which consequently die without emerging.

13917. **SMITH, A. D. BUCHANAN. Colored glass as a deterrent to house flies.** *Nature* [*London*] 125(3160): 780. 1930.—Blue glass was effective.

13918. **TORRES, DEMETRIO DELGADO de. Dípteros parásitos de la langosta en España. [Dipterous parasites of Dociostaurus maroccanus in Spain.]** *Bol. Patol. Veget. y Ent. Agric.* 4(15-18): 65-68. 1 fig. 1929.

13919. **WELLS, CLIFFORD W. The identification of the anopheline mosquitoes of Porto Rico.** *Amer. Jour. Trop. Med.* 10(4): 243-248. 1 pl. 2 fig. 1930.—Distinguishing larval and adult characters of *Anopheles albimanus* (known vector), *A. grabhamii* and *A. vestitipennis,* are described and illustrated, especially as an aid for field workers on malaria.

ECONOMIC ENTOMOLOGY

INSPECTION AND REGULATION

(See also in B. A. 6(4): Entry 10929; and in this issue 13883, 13916)

13920. **BACK, NATHANIEL A. A study of the economic costs of quarantines in New Jersey.** *State of New Jersey, Dept. of Agric., Bur. Statistics and Inspection, Circ.* 182. 3-47. 4 maps. 1930.—The costs of operation of quarantine regulations against the Japanese beetle (*Popillia japonica*), the Asiatic beetle *Anomala orientalis*), and the Asiatic garden beetle (*Aserica castanea*) in New Jersey are analyzed in detail, to determine the costs to state and federal governments, nurseries, greenhouses, and dealers, farmers and to shippers of salt hay, sphagnum moss, straw, and sand. Eighteen greenhouses and nurseries reported that the cost of meeting the regulations constituted 20.66% of their net income. For the years 1918 to 1929, inclusive, the costs of administering the Japanese beetle quarantine in New Jersey totaled over one million dollars.

13921. **ESSIG, E. O. Plant quarantine.** *Science* 71 (1840) : 350-353. 1930.—A popular discussion of the history, types, and results of plant quarantines.—*C. R. Stillinger.*

13922. **McLAINE, LEONARD S. The gypsy moth outbreak in Southern Quebec.** *Jour. Econ. Ent.* 23(1) : 38-41. 1930.—Canada has been vitally interested in the gypsy moth (*Porthetria dispar*) situation for years. Scouting was carried on in New Brunswick and Nova Scotia in 1921, and was started in Quebec in 1922. After the discovery of an infestation within ½ mile of Canadian territory in 1923, more extensive and intensive scouting was carried on in the latter province, which resulted in 1 infertile egg cluster being found at Beebe, and quite a severe infestation at Henrysburg in 1924. A total of 2,908 egg clusters were found at Henrysburg, the last in 1926. Control operations consisting of spraying, creosoting egg clusters, banding and burlapping trees, and burning stone walls were followed. In addition, 6,248 miles of road, 250 miles of railroad, 1,638 miles of main highways leading to large centers, and 11 sq. miles of woodland, were thoroughly examined. The quarantines placed on southern Quebec by the United States and Canada Departments of Agriculture in 1924, have been rescinded.—*Author's abstract.*

ECONOMIC ENTOMOLOGY

INSECTICIDES AND APPARATUS

C. H. RICHARDSON, *Editor*

(See also in this issue Entries 12775, 12778, 13753, 13847, 13851, 13852, 13854, 13856, 13857, 13858, 13859, 13860, 13861, 13862, 13863, 13864, 13883, 13891, 13892, 13897, 13898, 13906, 13922)

13923. **BARNES, J. W., and C. W. MURRAY. Sampling cleaned apples for determination of arsenical spray residue.** *Industr. and Engineer. Chem.* 21(11) : 1146-1147. 1929.—A statistical study of the variations in arsenical residue on individual apples that have been cleaned indicates that for apples carrying not more than 0.01 grain of arsenic trioxide per pound, a sample of 6 apples (taken at random from a lot all parts of which have had the same treatment) will give an accuracy of ± 0.0015 grain per pound.—*Authors' conclusions.*

13924. **DOUENCE, A. Les appâts empoisonnés. Leur utilisation dans la lutte contre les ennemis des cultures.** *Ann. Epiphyties* 15(1/2) : 1-96. 1929.—The history, properties, characteristics and uses of baits are reviewed at considerable length. Information is given on toxic substances used in baits, such as As, F, Ba, strychnine, P, silica, trimono-methylxanthine, theobromine, thallium sulphate, boric acid, salicylic acid, Na salicylate, formalin, cobalt, hexamethylene, tartar emetic, $BaCO_3$, $Zn_3(PO_4)_2$, Paris green, Ca arsenate, Na arsenate, Pb arsenate, Cu arsenate, Na borate, etc. Information on stimulants and attractives, such as the following substances: Essential oils, fruit essences, mineral oils, alcohols, aldehydes, acids, beer, sweet products (molasses, sugar, etc.), are discussed. Methods for studying attractants and poison baits are discussed at length. Studies are given on poison baits for: Rodents, birds, mammals, mollusca, crustacea, grasshoppers, crickets, elaterids, noctuiid caterpillars, *Tipula* larvae, sucking parasites, Coleoptera, Lepidoptera, Diptera, Hymenoptera, and other insects. About 40 formulae for poison baits are listed and discussed in connection with the above studies. Several pages are devoted to the discussion of the advantages and disadvantages of poison baits. Legal requirements in France in connection with the use of poison baits are discussed. There is an 8-page bibliography.—*J. W. Bulger.*

13925. **FARRAR, M. D. Effect of oil sprays on orchard fruit and foliage.** *Trans. Indiana Hort. Soc.* 1930: 76-80. 1931.—Chemically inert emulsions embodying saturated white oils (100 secs. viscosity Saybolt) may be used on apple foliage and fruit. Drought and high temp. (95° F.) will sometimes cause some limited fruit and foliage injury. White oils at 2% concentration, although slightly inferior to arsenate of lead, were a satisfactory substitute for it, when used for the late brood codling moth. The reduction of lead arsenate residue on oil sprayed fruit more than offset the difference in control. Nicotine sulphate 1-800 combined with oil emulsions, gave control comparable to lead arsenate.—*M. D. Farrar.*

13926. **GLEISBERG, W., und F. MENTZEL. Zur Methode von Raupenleimprüfungen im Freilandversuch.** *Zeitschr. Pflanzenkrank.* 41(10) : 481-518. 4 fig. 1931.—From experiments and a review of the literature, it is concluded that tests with sticky banding materials are of value to horticulturists only when based on a laboratory test made shortly before the field trial. A method was developed to determine the captivating power of the banding materials in the open which has been tried out successfully by 18 makers of commercial banding materials; also, the plasticity, duration time, and resistance of the materials to rain were determined.—*Authors' summary (transl.).*

13927. **INMAN, M. T. Jr. Sulfonated oxidation products of petroleum as insecticide activators.** *Industr. and Engineer. Chem.* 21(6) : 542-543. 1929.—Addition of certain oxidation products of petroleum to nicotine sulphate sprays for soft-bodied insects greatly increases the insecticidal efficiency of the latter: added at the rate of 1:200, a satisfactory kill may be obtained with ⅓-⅕ of the nicotine otherwise necessary. Such oxidation products of petroleum are regarded as activators, and are supposed to function by: (1) promoting wetting of the leaf and of the insect; (2) carrying the insecticide; (3) penetrating to the vital organs of the insect; (4) toxicity of their own. A chemical technique of oxidation and sulfonation suitable for preparing activator substances is given, and their physical and chemical properties are discussed.

13928. **JONES, HOWARD A. Decomposition of rotenone in solution.** *Industr. and Engineer. Chem.* 23

(4) : 387-388. 1931.—The stability of rotenone in various solvents has considerable interest from the insecticidal viewpoint. Benzene is valuable for extraction of rotenone and because no appreciable decomposition occurs in it. Acetone is a good water-soluble solvent for it, whereas in the presence of pyridine decomposition takes place rapidly. Solutions of rotenone should be freshly made or stored in air-tight containers. Whenever possible, it should be stored and shipped in the dry condition.—*C. H. Richardson.*

13929. **LUIGI, EMILIANI.** L'esca al fosfuro di zinco per preservare i vivai forestali dai danni delle grillotalpe. [Bait of zinc phosphide to protect nurseries from the damage of mole crickets.] *L'Alpe Riv. Forest. Ital.* 18 (7) : 380-382. 1 fig. 1931.—A mixture of ground rice (100 parts), water (25), and zinc phosphide (5) is used. Directions for making and applying are included.

13930. **MEHRHOF, FLOYD E., and E. R. van LEEUWEN.** An electrical trap for killing Japanese beetles. *Jour. Econ. Ent.* 23(1) : 275-278. 2 pl., 1 fig. 1930.—Best results were obtained with a frequency of 60 cycles and from 10,000 to 12,000 volts. Beetles were most attracted within a radius of 2 feet from the attrahent. A metal frame and porcelain insulators gave best results. The most effective bait was a geraniol emulsion sprayed on branches. Practically all beetles that were attracted were killed.—*P. M. Casamento.*

13931. **NELLER, J. R.** Removal of spray residues from apples. A wax-solvent method. *Industr. and Engineer. Chem.* 23(3) : 323-325. 1931.—HCl is effective in most cases, but it sometimes fails with fruits that have been sprayed with oil or have become waxy. Thorough cleaning was obtained by first dipping the apples in certain wax solvents, preferably methanol, after which treatment with an unheated HCl wash dissolves and removes practically all the lead arsenate residue.

13932. **PERROT, EM.** L'état actuel de la question du chrysanthème (Pyrèthre) insecticide. [Chrysanthemum (Pyrethrum) as an insecticide.] *Compt. Rend. Acad. Agric. France* 14(14/15) : 539-553. 1928.

13933. **PIERCE, W. DWIGHT.** The bearing of the oxytofactor in insect control. *Jour. New York Ent. Soc.* 39(2) : 159-165. 1931.—The value of insecticides is often governed by the oxytofactor (pH). A departure from the normal pH condition of an organism toward acidity or alkalinity brings about dormancy or, if great enough, death. *Helix adspersa* may be killed almost instantly by a very small amount of $CuSO_4$ or $FeSO_4$ coming in contact with the slime, due to the difference in potential.

13934. **SMITH, C. M., and C. W. MURRAY.** The composition of commercial calcium arsenate. *Industr. and Engineer. Chem.* 23(2) : 207-208. 1931.—Sixteen brands of recently manufactured Ca arsenate were analyzed in detail. A basic arsenate of undetermined composition is present. The average product contains 80-85% of what is probably a mixture of tricalcium arsenate and this basic arsenate, together with about 6.5% each of $Ca(OH)_2$ and $CaCO_3$ and small amounts of incidental impurities. The individual products may, however, differ rather widely from these average figures. —*Authors' summary.*

13935. **STREETER, L. R., and G. W. PEARCE.** Reactions involved in the use of hydrates in lead arsenate sprays. *Industr. and Engineer. Chem.* 23(10) : 1140-1144. 1931.—When acid lead arsenate reacts with small amounts of $Ca(OH)_2$ to form water-soluble As, the ratio of As to Ca found in solution agrees closely with the As : Ca ratio in $CaHAsO_4$. Small amounts of $Mg(OH)_2$ react with acid Pb arsenate to form larger quantities of soluble As than are found when $Ca(OH)_2$ is used. $CaCO_3$ and $MgCO_3$ react with Pb arsenate to form soluble As. $MgCO_3$ produces more soluble As than $CaCO_3$. The data justify the opinion that hydrates high in Ca are better correctives of spray injury than hydrates high in Mg. The reaction between $CaCO_3$ and Pb arsenate is inhibited in the presence of high concentrations of CO_2. Under normal atmospheric conditions the existence of sufficient CO_2 to suppress the formation of soluble As seems doubtful.—*Courtesy Industr. and Engineer. Chem.*

13936. **TERÉNYI, ALEXANDER, und JOSEPH PÁSKUJ.** Einfache und schnelle analytische Methoden zur Bestimmung des Wirkungssubstanzgehalts von Pflanzenschutzmitteln. VI. Die titrimetrische Bestimmung des Arsens in Pflanzenschutzmitteln. *Zeitschr. Analyt. Chem.* 84(11/12) : 416-441. 1931.—The authors adjust the distillation of As, and of dilute or concentrated solutions of As in HCl without H_2SO_4 and KBr. Insecticides can be directly distilled with conc. HCl in the presence of $FeSO_4$ and KBr. The decomposition is carried out either with H_2SO_4 and H_2O_2 or with H_2SO_4 and HNO_3. A solution of 50% H_2SO_4 is added and distilled with HCl in the presence of $FeSO_4$ and KBr. It is then titrated according to Gyory's method. When hydrazine sulfate is substituted for $FeSO_4$, a micro method of analysis can be applied to small quantities (0.4 to 4 mg.).—*J. M. Ginsburg.*

13937. **WILLIAMS, C. L.** Fumigants. *U. S.* [*A.*]. *Treas. Dept. Public Health Repts.* 46(18) : 1013-1046. 1931.—This paper, read before the police school in New York City, provides a relatively complete, though generalized account of the use of HCN gas as well as a briefer reference to other fumigants. Various methods of preparation and application are described, while other sections cover warning gases, poisoning, treatment, rescue, gas mask and fire hazards.—*C. L. Williams.*

13938. **WILLIAMS, C. L.** The air jet hydrocyanic acid sprayer. *U. S.* [*A.*] *Treas. Dept. Publ. Health Repts.* 46(30) : 1755-1761. 2 pl., 1 fig. 1931.—This new apparatus for spraying liquid HCN for fumigation consists essentially of an oxy-acetylene torch to the acetylene side of which has been attached a tube carrying liquid HCN and to the O side a compressed air supply line. A pressure of 100 lbs. per sq. inch is maintained on each line. The HCN is sprayed to considerable distances as a fine mist, which rapidly evaporates. Distribution is immediate and maximum concentration is rapidly attained. A special modification with spring control valves mounted on a handle carrying the nozzle, permits direct injection of gas into small enclosed spaces. An improvement of the latter uses compressed air passed through liquid HCN, eliminating the liquid HCN line.—*C. L. Williams.*

13939. **WILLIAMS, C. L.** Report on some tests of the use of a new cyanogen product in ship fumigation. *U. S.* [*A.*] *Treas. Dept. Publ. Health Repts.* 46(35) : 2048-2059. 2 pl. 1931.—The product tested was HCN discoids (now manufactured under the name of Zyklon Discoids). This consists of liquid HCN absorbed in discs of wood fiber and packed in strong cans. It is in all essentials similar to Zyklon (a German product in which HCN is absorbed in granular Kieselguhr), with the advantage that the individual discs, carrying ¼ oz. HCN in the 1 lb. size and ½ oz. in the 2½ lb. size, permit accurate dosage in small compartments, but the disadvantage that a special can opener is required. When the material is scattered, the HCN evaporates rapidly, so that after fumigations only traces remain in the discs. —*C. L. Williams.*

13940. **ANONYMOUS.** Effect of hydrocyanic acid gas on foods, fabrics, metals and other commodities. Excerpts from authoritative references. 11p. Compiled by the Ent. Sect., The Roessler & Hasslacher Chem. Co.: New York, 1931.

ECONOMIC ENTOMOLOGY

SERICULTURE

CHARLES S. GIBBS, *Editor*

(See also in B. A. 6(1): Entries 257, 1173, 1316; 6(2): 3562, 3655, 5447; 6(3): 7989; 6(4): 11442; and in this issue 12912)

13941. **CALUGAREANU, D. Eine funktionelle Eigentümlichkeit der Spinndrüse des Seidenspinners (Bombyx mori).** *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13(2): 223-230. 1930.—In observations on 300 silkworms the silk gland developed rapidly during the last 4 days of the larval stage. It reached its maximum weight at the time the silkworm ceased to take nourishment and sought a suitable site for spinning its cocoon. After the larva had begun to spin, the weight of the gland, in contrast to the total weight of the body, increased in the first 20-25 hrs. At this time the absolute weight of the gland was unchanged although it was functional. After 20-25 hrs., or at the time the rest of the body had come to constant wt., the silk gland began to lose. This loss lasted until the cocoon was spun. During this loss in weight, the gland changed all the material stored in its cells to silk, without any replacements from the blood, lymph, or other larval tissue. The cells of this gland, aside from its secretory activity, serve as a reserve organ in which the materials necessary to produce silk are stored.

13942. **CARBONE, DOMENICO. La vaccinazione dei bachi da seta.** [Vaccination of silk worms.] *R. Ist. Lombardo Sci. e Lettere, Rend.* 62(1/5): 138-142. 2 pl. 1929.—Silk worms, fed leaves which had been immersed in or sprayed with suspensions of cultures of bacteria isolated from worms dying of flacherie and gattine, showed some resistance to both diseases. Resistance seemed to be specific.

13943. **CARBONE, DOMENICO, et ELENA FORTUNA. La vaccination des vers à soie.** *Soc. Internazion. Microbiol. Boll. Sez. Ital.* 1(1): 11-12. 1929.—In 2 series of experiments, 30 lots of silkworms (4946 in all) were vaccinated against flacherie and grasserie by polyvalent and monovalent vaccines sprinkled over the food. Of the vaccinated worms, 28 lots showed a lower mortality than the unvaccinated controls; 1 lot had a mortality equal to that of the controls; and 1 lot had a higher mortality. Vaccination was more advantageous when applied early or during all stages than when given only during late stages.

13944. **JUCCI, C. La distribuzione del pigmento negli strati del bozzolo degli incroci reciproci (F) tra due razze di bachi da seta, Oro Chinese e Giallo Indigeno.** *Atti. R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 11(10): 909-915. 1930.—Pigments from the cocoons of 2 races (Oro Chinese and Giallo Indigeno) of silk worms, were extracted and estimated. The pigment from 2 gm. of cocoons, in 350 cc. of solvent, was colorimetrically equivalent to a 0.007% solution of xanthophyll. The different colors in the cocoon of the 2 races depend on the distribution of the pigments in the layers of the cocoon. The F_1 hybrids (♀ Oro × ♂ Giallo and the reciprocal cross) were intermediate between the parents as to the distribution of pigment in the layers of the cocoon and the degree of development of pigment migrating from blood to silk.—*C. Jucci.*

13945. **LOMBARDI, L. Nuove razze del baco da seta.** [New races of silk worms.] *Boll. Staz. Gelsi-Bachicultura. Ascoli Piceno.* 6: 145-190. 3 pl. 1927.—Eighteen new strains of silk worms were secured by crossing Yellow Italians with Oriental races over a period of 10 yrs. Four of the new strains possessed the principal characteristics of the parent stock, which apparently remained fixed from the 1st generation.—*M. Tirelli* (*transl. by A. Biraghi*).

13946. **LOMBARDI, L. Ricerche preliminari sull'azione della luce ultravioletta sul baco da seta e sull'impiego della luce di Wood come mezzo di selezione.** [Effect of ultraviolet rays on silk worms and on the use of Wood's light as a medium for selection.] *Boll. Staz. Gelsi-Bachicultura Ascoli Piceno* 7: 35-60. 1928.—Fresh laid eggs of silk worms are not fluorescent under Wood's light; eggs already colored give a yellowish or dark violet fluorescence. The cocoons give different colors according to the race to which they belong: the cocoons of the Italian yellow races are nearly all yellowish, a few are violet; the "chinese gold" are yellowish or violet, a few are brilliant yellow. The "chinese white" are mostly brilliant yellow. Fluorescence of the cocoons is not related to sex. All the layers of the yellow cocoons are yellow; the violet cocoons have the medium layers yellow and the others violet. The silk thread retains the fluorescent color of the cocoons from which it comes. After bleaching the fluorescence disappears.—*M. Tirelli* (*transl. by A. Biraghi*).

13947. **PATERSON, D. D. Sericulture in Iraq.** *Iraq Dept. Agric. Mem.* 14. 1-25. 1930.—A report of 8 yrs.' experiments. Local varieties are inferior in quality. The imported variety known as Baghdad White proved to be the most suitable, having a rendement of 3.3 and yielding an excellent quality of silk. The best mulberry tree for feeding the worms is the "Naringi Khafif." Local rearing, reeling and weaving were all profitable operations. Cocoons bought in Iraq for Rs. 4/- or less per kgm. would be sold profitably in the world's markets. Silk production in Iraq increased from 19 to 1600 packets of eggs during the period.—*D. D. Paterson.*

ANIMAL PRODUCTION

G. BOHSTEDT, *Editor,* General

M. A. JULL, *Associate Editor,* Poultry

(See also in this issue Entries 12097, 12098, 12139, 12507, 12530, 12548, 12550, 12553, 12559, 12568, 12574, 12575, 12920, 12995, 13106, 13116, 13377, 13563, 13578, 13596, 13979, 13982, 14427, 14461, 15035, 15071)

GENERAL

13948. **DUERST, J. ULRICH. Grundlagen der Rinderzucht.** xvi+759p. 313 fig. (some col.) Julius Springer: Berlin, 1930.—RM 66.- and 69.-.

13949. **HOGAN, A. G. Retarded growth and mature size of beef steers.** *Missouri Agric. Exp. Sta. Res. Bull.* 123. 52p. 4 pl., 16 fig. 1929.—The length of the period of growth of normal beef steers was about 6 yrs.; in one case, a low plane of nutrition lengthened it to 9 yrs. Severe undernutrition during the first 3 yrs. or longer generally tended to reduce the mature size. The severity and length of underfeeding affected the mature size attained. All cattle did not make the same percentage gains in all measurements. Retarding growth did not result in abnormalities in form.—*H. W. Marston* (*courtesy Exp. Sta. Rec.*).

13950. **ISAACHSEN, H., og OLA ULVESLI. Rotfrugtbladenes kemiske sammensaetning, fordøielighet og melkeproduksjonsvaerdi. (The production value of roots and leaves.)** [With English summary.] *Meld. Norges Landbrukshøiskole* 9(10/11): 545-572. 1929.—Leaves, mainly of Dale's hybrid turnip, were tested for 3 yrs. on

22 pairs of milking cows. Roots were used as check fodder. As compared with roots, the leaves are distinguished by greater content of dry matter, organic matter, crude protein, true protein, fat, fiber and ashes; the same or somewhat smaller content of carbohydrates; and a different distribution of nitrogenous substances. The effect of leaves on animal growth was not so favorable as that of roots. There is indication that leaves produced a small, probably not significant, increase in the milk fat. —*From authors' summary.*

13951. **KOLBE, WALTER. Das Oberländer Pferd unter besonderer Berücksichtigung des Altbürschl-, Normänner-, Clydesdaler- und Clevelandstammes. (Thesis: Universität Leipzig.)** 86p. 2 maps, 4 pl. Robert Noske: Borna-Leipzig, 1928.

13952. **MACALIK, BASIL. Dějiny chovu skotu na Hané. [History of cattle husbandry in the region of Haná, Czechoslovakia.]** [With French summary.] *Sbornik Československé Akad. Zem.* 6(2): 171-256. 10 fig. 1931.

13953. **RICHTER, K., K. E. FERBER, und CHRZASZCZ. Fütterungsversuche mit Roggen und Gerste bei Schweinen.** *Mitteil. Deutsch. Landw. Ges.* 45(25): 545-547. 1930.—There were no evident ill effects from substituting rye for half or even all of the barley in a mixed supplementary feed (80% grain, 8% herring meal, 5% dried yeast, 5% soybeans, 2% chalk) for nursing pigs or in the main feed for a 19-weeks fattening period immediately after weaning (with protein and mineral supplement). The average daily gains for the all-rye (I), half rye (II), and all-barley (III) groups were: 549, 629, 627 gm., respectively; the total nutrients required per kgm. gain: 3.26, 2.94, 2.70 kgm. The losses at slaughter for Groups I, II, and III were: 18.76, 18.57, and 16.75%, respectively. Differences in the quality of the meat were slight.—*M. H. Keith.*

13954. **[RYBIN, D. A.]** РЫБИН, Д. А. Виковое зерно, как основной источник белка для растущих и откармливаемых свиней. **[Vetch seed as the main source of protein for fattening swine.]** Известия Северо-Черноземной (бывш. Шатиловской) Областной Сельско-Хозяйственной Опытной Станции (*"Isvestia" (Annals) of the Shatilov (North-Chernoziom) Agric. Exp. Sta.*) 3(2): 125-136. 4 pl. 1929.

13955. **SHAW, THOMAS. A grassland dairy smallholding.** *Jour. Min. Agric.* [*Gt. Britain*] 36(8): 713-724. 2 pl. 1929.—Rotational grazing and fertilization were the important factors in a production of 426 gallons of milk per acre on a 25-acre farm. 8 paddocks of about 2 acres each were grazed by the herd of 14 cows. After each milking, the cows were given access to a fresh paddock for 1 hr., the balance of the grazing being obtained from partially grazed paddocks. When the grass became exhausted, each paddock was harrowed, fertilized and rested for 4-6 weeks. The amounts of milk secured when a 12% protein concentrate supplemented the pasture were about equal to those produced when a 22% protein concentrate was used. This is thought to demonstrate the high protein content of the pasture grass under the system used.—*W. B. Nevens.*

13956. **WATSON, S. J. The digestibility and feeding value of dreg meal.** *Jour. Agric. Sci.* 21(3): 410-413. 1931.—Trials with sheep showed dreg meal to be a valuable foodstuff of high digestibility and feeding value. Owing to its high oil content, however, it should be used with caution and cattle should not receive a greater allowance than 4-5 lb. per head per day. Because of its low fiber content, it should be a suitable foodstuff for pigs as well as cattle and form a useful source of protein in the ration. Detailed results are given in tables.

13957. **WILKENS, Ein Beitrag zur zweckmässigen Verwendung des Zuckers in der Schweinemast.** *Zeitschr. Schweinezucht* 38(5): 95-97. 1931.—No increased appetite was observed in animals fed sugar. Sugar may replace 20% of the total feed of barley. No unfavorable effect of sugar on the quality of flesh and fat was observed.—*Author's summary (transl. by W. E. Joseph).*

13958. **WINKLER, WILLIBALD, WALTER GRIMMER, und HERMANN WEIGMANN, Editors. Handbuch der Milchwirtschaft. Bd. I, Teil I. Die Milch: Zusammensetzung, Eigenschaften, Veränderungen, Untersuchung. [Handbook of dairy science. Vol. I, Pt. I. Milk: its composition, characteristics, changes, investigation.]** Bearbeitet von **J. BAUER, B. BLEYER, K. J. DEMETER, W. ERNST, W. GRIMMER, W. KIEFERLE, F. LÖHNIS, M. SCHIEBLICH, und L. SCHEUNERT.** x+413p. 69 fig. Julius Springer: Wien, 1930.—This volume covers, in great detail, the composition and characteristics of milk; its microbiology; changes in milk due to physical, chemical and biological causes, including diseases of milch animals; and physical, chemical, bacteriological and biological methods of investigation.

13959. **WINKLER, WILLIBALD, WALTER GRIMMER, und HERMANN WEIGMANN, Editors. Handbuch der Milchwirtschaft. Bd. I, Teil II. Die Milchproduktion: Die Milchviehzucht, Fütterung, Haltung und Pflege der Milchtiere, Entstehung, Gewinnung und Behandlung der Milch. [Handbook of milk production; milch cow breeding, feeding, care and rearing of milch animals; formation, obtaining and handling of milk.]** Bearbeitet von **H. v. FALCK, TH. HENKEL, E. HIERONYMI, B. LICHTENBERGER, B. MARTINY, E. NERESHEIMER, G. WIENINGER, und W. WINKLER.** ix+482p. 229 fig. Julius Springer: Wien, 1930.—The authors take up in great detail the breeds of milch cows, goats and sheep; breeding and feeding of milch animals; the milch cow stable and rearing of milch animals; milk glands and milk formation; obtaining and handling of milk; water in milk and dairy operation.

13960. **WINKLER, WILLIBALD, WALTER GRIMMER, und HERMANN WEIGMANN, Editors. Handbuch der Milchwirtschaft. Bd. II, Teil I. Die Milchversorgung der Städte und grösseren Konsumorte. [Handbook of dairy science. Vol. II, Pt. I. The milk supply of cities and larger centers of consumption.]** Bearbeitet von **F. TRENDTEL, B. LICHTENBERGER, W. WESTPHAL, W. WEIGMANN, A. BEYTHIEN, und W. ERNST.** viii+488p. 4 pl., 165 fig. Julius Springer: Wien, 1931.—The following main subjects are taken up in great detail: milk as a food; the milk supply, including care, handling, storing, transportation, milk control by cities and other organizations; construction and equipment of dairies.

13961. **YAPP, WILLIAM WODIN, and WILLIAM BARBOUR NEVENS. Dairy cattle. Selection, feeding and management.** 2nd ed. 390p. 117 fig. John Wiley & Sons, Inc.: New York, 1930.

AGRONOMY

CARLETON R. BALL, *Editor*
M. A. McCALL, *Associate Editor*, Crops
R. B. DEEMER, *Associate Editor*, Soils

(See also in this issue Entries 12097, 12098, 12134, 12138, 12149, 12155, 12170, 12182, 12510, 12512, 12517, 12521, 12522, 12524, 12525, 12526, 12593, 12600, 12613, 12652, 12653, 12662, 12664, 12669, 12670, 12752, 12754, 12758, 12773, 12802, 12803, 12813, 12854, 12992, 13596, 13950, 14169, 14193, 14555)

CROP SCIENCE (ARVICULTURE)

13962. **APSITS, J. Some criticisms of autumn tillage.** *Internat. Rev. Agric. Pt. 1. Mo. Bull. Agric. Sci. & Pract.* 21(4): 117-123. 1930.—A number of questions concerning autumn tillage in northern countries having moist climates need to be cleared up by direct experiment. In normal conditions autumn tillage is preferable to spring. It is not absolutely essential to turn in the stubble as well as to plough in autumn; either is sufficient if completed by deep ploughing in spring, and the choice must be made according to the need for weed destruction and weather conditions.—*Author's résumé.*

13963. **ASO, KEIJIRO. Genge [Astragalus sinicus] as a crop plant for green manure.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 2: 1972. 1926(1928).—Abstract of a lecture.

13964. **BATHO, GEORGE. How to kill couch grass.** *Manitoba Dept. Agric. & Immigrat. Circ.* 98. [1-7]. 5 fig. 1930.

13965. **BENOLIEL, BENJAMIN F. Subsídios para o estudo das variedades de arroz nacionais e das variedades estrangeiras cultivadas em Portugal. [Varieties of native and foreign rices grown in Portugal.]** [With English abstract.] *Min. Agric. Estaç. Nacion. [Portugal] Bol.* 1. Ser. C. 1-63. 2 pl. 1928.—An account of work done at the National Agricultural Station on varieties of rice grown in Portugal, some of native and others of foreign origin. Agronomic and descriptive data for each variety are given.—*From author's abstract.*

13966. **BORDEN, RALPH J. Replication of plot treatments in field experiments.** *Hawaiian Planters' Rec.* 34 (2): 151-155. 1930.

13967. **CLINTON, Chairman. The growth of cheaper winter food for live stock; being the report of a conference held at Rothamsted on November 15th, 1929, under the chairmanship of CLINTON.** Contr. by **JOHN RUSSEL, J. G. STEWART, H. E. ANNETT, et al.** 56p. Ernest Benn: London, 1930. Pr. 2s 6 d.

13968. **DÖPKE, OTTO. Morphologisch-anatomische Untersuchungen an Hafersorten.** *Jour. Landwirtsch.* 77 (4): 341-372. 1929.—The varieties Friedrichswerther Berghofer, Kirsches Gelbhafer and Hörnings Gelbhafer were studied under varying conditions of soil, moisture and applications of fertilizer with results indicating no constant varietal structural differences, but showing dependence on environmental conditions of differences hitherto regarded as varietal. The modifying factor was found to be not moisture but availability of nutrient salts.—*H. D. Hill.*

13969. **FRANKEL, O. H. Pflanzenzüchtung in Neuseeland.** *Züchter* 1(9): 290. 1929.—The Canterbury Agricultural College at Lincoln has co-operated with the Wheat Research Institute. Hilgendorf began selection work with wheat in 1910. At present 90% of the wheat grown in New Zealand is from these selections. The average yield of 250,000 acres is 31-32 bushels per acre. Oats, grasses and red clover are being studied.—*F. V. Owen.*

13970. **FURBY, E. B. Murrumbidgee irrigation area (Griffith end.)** *Agric. Gaz. New S. Wales* 41(5): 362-368. 1930.—Results of tests with fertilizers and varieties of cereals.

13971. **GARRATT, G. T. An experiment in grassland manuring, 1928.** *Jour. Min. Agric. [Gt. Britain]* 35(12): 1121-1125. 1929.

13972. **GHESQUIÈRE, J. A propos des Faux-Cotonniers Congolais et de leurs possibilités culturales.** *Annales de Gembloux* 33(5): 173-188. 1927.—Refers to *Ceiba, Gossampinus* and *Bombax.*

13973. **GÓRSKI, M., i St. KLARNER. Potrzeby nawozowe machorki. [Fertilizer trials with Nicotiana rustica.]** [German summary.] *Roczniki Nauk Rolniczych i Leśnych [Poznan]* 24(1): 17-27. 1 fig. 1930.—Results of 3 yrs. show that *N. rustica* responds most to N and to a lesser degree to K. Leaf analysis revealed a marked influence of fertilizer upon nicotine content in that lack of N and K reduces this constituent whereas lack of P increases it.—*F. F. Halma.*

13974. **HACKING, THOMAS. Grassland improvement trials at Shoby, Melton Mowbray, Leicestershire.** *Jour. Royal Agric. Soc. Eng.* 90: 176-182. 1929.—Results from trial plots at the end of 6 yr. demonstrate that grassland improvement comprises something more than the application of fertilizers. Surface cultivation is imperative in a large number of cases and where thoroughly carried out prepares the way for the full and effective use of fertilizers. Surface cultivation and fertilization must go together. The superiority of basic slag as compared to North African phosphate was shown.

13975. **HONCAMP, F. Handbuch der Pflanzenernährung und Düngerlehre.** Band 2: **Düngemittel und Düngung. [Handbook of plant nutrition and fertilizers.** Vol. 2. **Fertilizers and manures.]** xii+919p. 285 fig. Julius Springer: Berlin, 1931. RM 86; bound RM 89.80.

13976. **KOCH. Sicherstellung des Winterfutters durch Stickstoffdüngung der Wiesenflächen.** *Mitteil. Deutschen Landw.-Ges.* 45(13): 275-277. 1930.—The average hay yield of Germany is 3500-4000 lb. per acre. As an average of a large number of tests with ammonium sulphate and calcium nitrate during 1923-29, applications of 36, 71, and 107 lb. of N per acre increased hay yields by 1258, 2219, and 3306 lb., respectively, per acre (total of 2 cuttings). The interest return on the investment in nitrogen was about 90%. 63% of the total yield was obtained at the 1st cutting.—*F. H. Crane.*

13977. **LENNOX, C. G. The variety problem in Australia.** *Hawaiian Planters' Record* 35(1): 21-26. 1931.—The insect and disease problems of the Australian sugar industry are the result of unrestricted importing of sugar cane cuttings from all countries of the world. Importation is now permitted only under rigid quarantine. The breeding of sugar cane seedlings was spasmodic for 20 yr. Within the last few years an organized effort has been made to start a breeding and selection program. A system of controlled planting of only approved varieties of high sucrose content, as well as a higher rate of payment for cane of high sucrose content, has tended to increase the juice quality of the whole crop. The 1929 season's quality ratio figures from 5 representative mills show H. Q. 426, B 208 and Q 813 to average better in juice quality than Badila.—*Author's summary.*

13978. **MAKIN, R. N. Pasture improvement on the near southern highlands.** *Agric. Gaz. New So. Wales* 41(5): 334-336. 3 fig. 1930.—Notes on results of tests on fertilizing and types of pasture plants.

13979. **MONTAGUE, ENOS J. Intensive grassland management under the Hohenheim system.** *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 1929: 61-69. 1930.—A brief summary of 2 yr. work on intensive grassland management under the Hohenheim system at the Massachusetts Agricultural College. A heavy, thick turf is essential for best results from fertilizer application. The application of fertilizer increases the quality and quantity of pasture grass. Nitrogenous fertilizers

are necessary for greatest returns when a good pasture turf is established. Proper management of the herd and plots, combined with fertilizer treatment, is essential for the greatest net returns per acre from an intensive grassland system. It is difficult to conceive of an intensive system without the use of fertilizers.—*From author's summary.*

13980. **PADEREWSKI, JÓSEF.** Przyczynek do badań nad polaryzacją fizjologiczną i asymetrją chemiczną w burakach curkrowych. [Polarization and chemical asymmetry of beet sugars. (Cont'd.)] [French summary.] *Doswidczalnictwo Rolnicze* [*Warsaw*] 5(3): 56-77. 2 pl., 37 fig. 1929.—This article, which is part 2 of a series of studies, deals with the development and arrangement of the root system of the sugar beet.—*D. J. Healy.*

13981. **PAMMEL, L. H., and C. M. KING.** Heights of weeds. *Proc. Iowa Acad. Sci.* 36: 221-231. 1929 (1931).—The range of height of 96 spp. is given. From 1 to 11 localities are cited for each sp., with type of soil. A chart of rainfall and temp. is added.—*H. S. Conard.*

13982. **PUGSLEY, L. I., and R. R. McKIBBIN.** Calcium relationships of forage crops. *Canadian Jour. Res.* 4(1): 39-51. 1931.—The Ca content of timothy and red clover hays increased directly as the total Ca content of the clay loam soils in which they were grown, and decreased as the "lime requirement" of these soils increased. There was no proportionate increase of protein or of P as the Ca content of the hays increased. The timothy hays from the area investigated are extremely low in Ca but are otherwise normal. The ratios CaO: P_2O_5 and protein: CaO for these timothy hays are, respectively, abnormally low and abnormally high. These values appear to be normal in the red clover hays.—*Authors' abstract.*

13983. **REMY, TH., FR. von MEER, und H. VÖLKER.** Über den Einfluss von Düngung und Strandraum auf die Pflanztauglichkeit der Kartoffeln. *Landwirtsch. Jahrb.* 72(2): 209-246. 12 fig. 1930.—Contrary to earlier observations, it was found that differences in spacing and fertilization neither affected the vigor of potato plants nor the proportions of non-precipitable and amino acid N in the tubers. No relationship was established between the vigor of the plants and the amount and form of N in the tubers.—*From abstr. by T. Remy (transl. by B. A. Brown).*

13984. **SCHUSTER, GEO. L.** La potasa en relación con la calidad de las cosechas. [Potash in relation to quality of crop.] *Bol. Compañia Admin. Guano* [*Lima*] 6(7): 383-405. 15 fig. 1930.—See B. A. 2: Entry 6706.

13985. **STÄGMEYR, E.** The use of potash on tropical and sub-tropical crops. 32p. 5 fig. Agric. Dept., The Dominions Potash Supply, Ltd.: London, 1930.—This handbook, for farmers and planters in tropical and subtropical countries, includes a discussion of the principles of manuring and green manuring as applied to the tropics. Specific recommendations are given as to soil requirements and fertilizer practice best adapted for the principal commercial crops. These include grain and hay crops, tea, coffee, cacao, sugar cane, sisal, cotton, rubber, coconut, other field crops, fruit and truck. The importance of experiments conducted by farmers to determine the specific needs of their own soils is emphasized.—*F. L. Duley.*

13986. **STRÖBELE, F., PH. HOFFMANN, und G. GROSS.** Ergebnisse mehrjähriger Tabakdüngungsversuche in der Pfalz. *Arbeit. Deutschen Landw.-Ges.* 370. 9-36. 1929.—Nitrogen from manure may be entirely or partly substituted by N from artificial fertilizers. It is not usually advantageous to use manure alone, however, nor to use only artificial fertilizers in tobacco culture, but the latter is possible where the preceding crop has received manure. For bright tobacco it is good practice to supply ⅓ of the N from manure and the balance from minerals. An application of N in the form of urea or sulphate of ammonia always resulted in increased yields. 60-80 lb. of N to the acre, without manure, should suffice to produce a crop of tobacco, while with manure, 30-60 lb. should suffice. Urea produced better quality than sulphate of ammonia. When urea or sulphate of ammonia are used it is advantageous to divide the application so that ½ is given 8-14 days before planting and the balance as side-dressing. Topping did not affect quality, but a lower yield was obtained from tobacco not topped as compared with topped tobacco.—*From authors' summary (transl. by T. R. Swanback).*

13987. **TRAUB, H. P., and C. E. STEINBAUER.** Summer frost prevention on northern peat lands by raising the ground water-table. *Proc. Amer. Soc. Hort. Sci.* 1927: 54-60. 3 fig. 1927.—A study was made of the temp. 1 ft. above the surface of peat lands during summer frosts as affected by different ground water-tables. Raising the ground water-table 2 ft. raised the temp. 1.2-1.3° F., 1 ft. above the surface. Data are given to show that in 1927 a tomato crop was severely damaged by summer frosts when the ground water-table was at 4-5 ft., while with a 3 ft. table there was very slight injury.—*A. K. Anderson.*

13988. **WESSELS, P. H.** Effect of different hydrogen ion concentrations upon the yield of potatoes. *Proc. Ann. Meet. Potato Assoc. Amer.* 15: 27-29. 1928. 245-250. 1929.—Results of experiments covering a soil reaction of pH 4.4-6.6 show a rather narrow margin between the point where yields are cut by too much acidity and the point where trouble with scab begins because of too little acidity. The point at which scab becomes serious is not clearly established by these 3 yr. results. In 1926 Irish Cobblers were free of scab at pH 6.0 and 6.6. In 1927 Green Mountains in the same plots were badly scabbed. So far as yields are concerned, a reaction just sufficiently acid to control scab seems best. On Long Island scab is seldom serious where the reaction is more acid than pH 5.3. The cooking qualities of potatoes grown on the more acid soils are decidedly inferior to those of potatoes grown on soils at pH 4.9-5.3.

13989. **WUNDER, B.** Anfänge der Weizenzüchtung in Chile. *Züchter* 1(9): 280-289. 3 fig. 1929.—General adaptation tests so far have been emphasized. Wheat varietal tests were begun in 1924, much of the agricultural land in Chile being well adapted to wheat. Many varieties from the U. S. A., Canada, Europe and elsewhere have been tested. Resistance to *Puccinia graminis* and *P. triticina* is important and preliminary work is reported. A limited number of crosses are described.—*F. V. Owen.*

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 12074, 12155, 12175, 12309, 12519, 12520, 12746, 12766, 12786, 12794, 12797, 12801, 12804, 12812, 12817, 12826, 12847, 12873, 12982, 12992, 13975, 13985, 14132, 14151, 14168, 14179, 14199, 14202, 14203)

13990. **BAILEY, L. H.** The fear of cultivated plants. *Gentes Herbarum* 2(4): 159-163. 1930.—The author deplores the prejudice of systematic botanists toward cultivated plants. They are not so inextricably hybridized as commonly supposed. Cultivated plants are divided into 2 great classes: (1) archeophytes (such as wheat, apple, cabbage), whose evolution goes back into archaeology, and (2) those less anciently associated with man and more readily identified with a wild prototype.

13991. **BURKHOLDER, C. L., and LAURENZ GREENE.** Influence of size of Mahaleb seedlings on nursery grades. *Proc. Amer. Soc. Hort. Sci.* 27: 85-86. 1930 (1931).—Data from trees growing under very adverse conditions for 2 seasons seem to indicate that the

size of the seedling budded is important in the production of a large, 1-year-old cherry nursery tree.

13992. **CALMA, V. C., and H. W. RICHEY. Influence of amount of foliage on rooting of Coleus cuttings.** *Proc. Amer. Soc. Hort. Sci.* 27: 457-462. 2 pl., 3 fig. 1930 (1931). —The results indicated that root production is determined largely by the amount of leaf area on the cutting. Cuttings with the greatest leaf area produced the largest amount of roots and also the highest percentage of rooted cuttings. Cuttings defoliated on one side produced roots mostly on the side containing leaves; a high percentage of mortality occurred in fully defoliated cuttings.

13993. **CIFERRI, R. Informe general sobre la industria cacaotera de Santo Domingo.** *República Dominicana Estac. Agron. Moca Ser. B. Bot.* 1929 (16): 1-177. 2 maps, 60 pl. 1929.—Contains: preliminary notes about the world development of the cacao industry; developmental history, statistical data, and economic importance of the Dominican cacao industry; distribution of cacao culture in Santo Domingo; meteorological and climatic data, and the relation of rainfall to yield in the cacao districts; species and varieties of cacao and enumeration of shade trees; organolectic and analytic data on Dominion cacao; preliminary notes on agricultural ecology of cacao tree; production data for 24 yr. from a cacao estate; parasitic and non-parasitic diseases of cacao tree. Three indices and 54 tables are annexed. The annual cycle of cacao, from the ecologic-agricultural standpoint, is divided into 5 sub-periods: (1) period of bloom; (2) from fecundation to the attainment by the fruit of a length of 10 cm.; (3) from this length to full size; (4) from full size to full ripeness; (5) rest period, from ripening of fruit to the next bloom period. No definite correlation exists between rainfall and yield of cacao in Santo Domingo.—*R. Ciferri.*

13994. **DARNELL, A. W., Ed. Illustrations and descriptions of beautiful and interesting plants suitable for outdoor culture in the British Isles.** *Hardy and Half-Hardy Plants* 1 (2): 20-42. 21 pl. (1 col.) 1929.—Plates of the following plants, with brief descriptions of each: *Arisaema triphyllum, Asplenium petrarchae, Berberis wallichiana, Calceolaria fothergillii, Castilleja linariaefolia, Chamaescilla corymbosa, Citrus trifoliata, Corysanthes macrantha, Cynoxylon floridum, Epigaea repens, Gladiolus edulis, Glaucium flavum, Iris delavayi, Kneiffia fruticosa youngii, Lathyrus pubescens, Meconopsis heterophylla, Morisia hypogaea, Philesia buxifolia, Primula paulinae, Sarracenia purpurea, Tecophilaea cyaneo-crocea.*

13995. **DOUGLASS, J. The snake bean. Suitable for dry western districts [of New South Wales.]** *Agric. Gaz. N. S. Wales* 42 (5): 379-380. 1 fig. 1931.—The author recently discovered a selected, climbing, disease-resistant type which meets the requirements of dry western districts where hot winds destroy the pollen. Best results are obtained when the plantings are made after the soil has warmed up in the early part of October.

13996. **EINSET, OLAV. Open pollination vs. hand pollination of pollen-sterile grapes.** *New York State [Geneva] Agric. Exp. Sta. Tech. Bull.* 162. 1-14. 6 fig. 1930.—Selfing Concord and Rosaki varieties with upright stamens, under glass, cheesecloth, or paper covers gave a full set; while selfing Brighton, Eclipse, Lindley, and Pontiac varieties with recurved stamens, under the same covers, gave no set. Bakator, also with recurved stamens, gave no set when enclosed in paper bags. Clusters of the self-unfruitful varieties were paired, both clusters being left to open pollination, while one of the 2 clusters was hand pollinated as well. The open-pollinated clusters were characteristically loose, while those bunches of the same variety which were also hand pollinated were compact.—*O. Einset.*

13997. **GARDNER, F. E. The relationship between tree age and the rooting of cuttings.** *Proc. Amer. Soc. Hort. Sci.* 26: 101-104. 1929.—Working with a number of deciduous and evergreen tree spp. the author found that cuttings made from the stems of 1-yr.-old seedlings root much more readily than cuttings from 1-yr. wood of older trees. Even those species considered very difficult to root from cuttings, such as cherry, apple, locust, and the pines, rooted rather freely when the stems of 1-year-old seedlings were used. With increased age the faculty of rooting diminishes rapidly.—*F. C. Bradford.*

13998. **GEISE, F. W. Spinach for canning: the relation of physical and chemical properties to quality.** *Maryland Agric. Exp. Sta. Bull.* 320. 303-326. 6 fig. 1930.—Of the 3 crops of spinach, fall harvested, overwintered, and spring sown, possible under Maryland conditions, that harvested in the 1st half of the fall produced the highest yields of trimmed spinach, while the overwintered crop averaged low in yield. Quality declined rapidly in the fall crop with the advance of the season, this loss being accompanied by a decline in moisture content, an increase in percentage of total and invert sugars, and a decline in total hydrolyzable substances, but with no evidence of any correlation between season and the percentage of crude fiber. Total and invert sugars were lower in young than in mature leaves, while the percentage of total nitrogen was greater in the young leaves. From storage experiments at controlled temp. the author concludes that the high percentage of total and invert sugars in the fall crop may be correlated with low temp. prevailing at that time. Spinach stored at 26° F. gained slightly in moisture, while at 40° and at 60-70° moisture was lost in direct proportion to rise of temp. Loss in invert and total sugars was greatest at the higher temps. Practical deductions are offered.—*J. W. Wellington (courtesy Exp. Sta. Rec.).*

13999. **HANDEL-MAZZETTI. H. The natural habitats of Chinese Primulas.** *Jour. Roy. Hort. Soc. [London]* 54 (1): 51-62. 4 pl. 1929.—The character of the habitat in China in which each of 83 species was found is briefly described. Only a small part of China is involved in the distribution of the spp. of this genus, whose real home is the highland and the high mountains of Yunnan and West Szechwan, where more than ⅓ of all the species are indigenous. The subtropic zone at 6,000-9,000 ft. is characterized by an arid climate and this seems to be the home of the Malvacea section of the genus. As the elevation increases there is a greater amount of precipitation and consequent increase of humidity. The species occurring in the various zones from the subtropic at 6,000 feet to the alpine at 15,600 feet, where the small Nivalids grow, are presented according to their specific habitats. Some species grow naturally in the crevices of rocks in open and exposed situations, others only under shelter. Granitic rocks, slate, sandstone, limestone, alluvial soils, leaf mold and decaying humus apparently each support certain species, and the facts presented indicate an adaptation of the species to widely diverse conditions of habitat. The purpose of the article is to furnish information to horticulturists useful in providing favorable conditions for propagation.—*P. D. Strausbaugh.*

14000. **HOPKINS, E. F., and J. H. GOURLEY. The effect of nitrate applications on the soluble carbohydrate in apples.** *Proc. Amer. Soc. Hort. Sci.* 27: 32-36. 7 fig. 1930 (1931).—Nitrates had little effect.

14001. **HUBBELL, DONALD S. The influence of various plant containers on the growth and development of Pelargonium hortorum.** *Proc. Amer. Soc. Hort. Sci.* 27: 475-477. 1930 (1931).—Pots made of mulch paper, unglazed clay, glazed clay, and screen were equally effective when given similar treatment. The conclusions were based on root and top weight, total amount of water consumed, inside and outside temp. within the potted soil, and the percentage "potbound." Nine other types of pots produced abnormal plants.

14002. **KNOWLTON, H. E., and M. B. HOFFMAN. Nitrogen fertilization and the keeping quality of apples. (A preliminary report.)** *Proc. Amer. Soc. Hort. Sci.* 27: 28-31. 1930 (1931). Pressure tests on Black Twig (1928 crop) and Stayman (1928 and 1929 crops) showed greater firmness in samples picked from unfertilized, as compared with N-fertilized, trees. Results with Grimes (1929 crop) were conflicting. The divergence from re-

sults obtained by some other workers is attributed to the use of composite, i.e., orchard run, samples, rather than samples with matched colors. Poorly colored fruit is softer, and the percentage of poorly colored fruits is higher, on fertilized trees. The authors conclude tentatively "from the practical standpoint there was little if any difference in storage quality between fruit from trees fertilized with nitrate and from trees receiving none," but consider further study advisable.—*F. C. Bradford.*

14003. **LAMBE, RICHARD F. The new hybrid citrus.** *Gard. Chron.* [*London*] 89(2298) : 35. 1931.—Notes on the production of hybrids of grape fruit × tangerine.

14004. **LANTZ, H. L., and S. W. EDGECOMBE. Apple breeding: some significant differences in the vigor and grade of cross-bred apple seedlings.** *Proc. Amer. Soc. Hort. Sci.* 27: 289-295. 1930(1931).—Despite the assumed heterozygous genetic constitution of apple varieties, it is evident that progenies produced by crossing different varieties differ as to average vigor, range of vigor and in grade of tree. Varieties may be placed in at least 3 general groups with respect to their prepotency for vigor. The varieties within the proposed groups may not be identical in genetic constitution, but their seedlings indicate that they are of similar constitution, but this point needs verification. The varieties studied here are grouped tentatively as follows: Group 1: Sharon, and possibly Patten 1031 and Northwestern Greening; Group 2: Delicious, Monona, Jonathan, Ames 516, McIntosh, Ames 426, and Wolf River; Group 3: Salome, Malinda, and Patten 1023.—*Authors' conclusions.*

14005. **MENDES, CARLOS TEIXEIRA. Idéas geraes sobre a adubação do cafeeiro (Adubos organicos). [Organic fertilizers for the coffee-tree.]** *Agronomia, Ann. Soc. Brasil. Agron.* 1: 39-55. 1930.

14006. **PEARSON, O. H. Methods for determining the solidity of cabbage heads.** *Hilgardia* 5(11) : 383-393. 3 fig. 1931.—The volume and density of 37 heads of the Copenhagen Market type of cabbage, approximately a slightly flattened sphere in shape, and of 18 heads of other types of cabbage, have been determined by 5 methods. Densities based upon calculated volumes showed a general agreement with those determined directly by water displacement, but a variation of as much as 25% of the direct determination was sometimes found when geometrical methods were employed. An immersion method making use of a rubber cap and heavy rubber bands to retain all the air in the head was shown to permit of duplicating results on a given individual head with an extreme experimental error of about 6%. With the apparatus used for determining volume by displacing water, not more than 6 determinations could be made an hour, while the buoyancy method was much more rapid.—*Author's summary.*

14007. **POTTER, G. F., and E. H. PUTNAM. Comparative growth characteristics of the Baldwin and McIntosh apples.** *Proc. Amer. Soc. Hort. Sci.* 27: 265-270. 3 fig. 1930(1931).—The Baldwin and McIntosh varieties in 2 orchards were similar as to amounts and variability of twig and spur growth. Some correlation exists between fruitfulness and vigor of spur as measured by annual increment of length growth. On this basis the Baldwin spur requires greater vigor to obtain any given amount of fruitfulness than does the McIntosh. Spurs of McIntosh under similar growth conditions bloom more profusely than do those of Baldwin. The most striking difference between the 2 varieties, however, is in the matter of successive bloom on the same spur, which is common in the McIntosh and with that variety is an important means of attaining annual bearing, but is almost wholly lacking in the Baldwin.—*Authors' summary.*

14008. **ROWNTREE, LESTER. California Calochorti for eastern gardens.** *Horticulture* [*Boston*] 8(21) : 507. 1930.—Of 24 spp., only the following are reliably hardy in the northeastern U. S. A.: *Calochortus leichtlinii, C. nuttalli, C. macrocarpus* and *C. nudus.*—*C. G. Bowers.*

14009. **SCHILLETTER, J. C., and H. W. RICHEY. Four years' study on the time of flower bud formation in the Dunlap strawberry.** *Proc. Amer. Soc. Hort. Sci.* 27: 175-178. 1930(1931).—Differentiation did not occur at the same corresponding time during the 4 seasons. The initiation of flower buds proceeded for at least 6 weeks, and did not take place in all plants at the same time.

14010. **TUKEY, H. B., and KARL BRASE. Granulated peat moss in field propagation of apple and quince stocks.** *Proc. Amer. Soc. Hort. Sci.* 27: 106-108. 1 pl. 1930(1931).—In general the indications are that types of vegetative stocks which root easily are benefited by peat less than are those which root with greater difficulty. The quince, which roots readily, gave 62% well-rooted plants from untreated, and 78% from treated rows, an increase of only 24.5% in favor of peat, though the quality of plants from treated rows was markedly superior. On the other hand, with apple Type XIII, which roots with greater difficulty than quince, the percentage of well-rooted plants from untreated rows is 21.5 and from treated rows 46.4, an increase of 115%, the benefits being further supplemented by the higher quality of plants from peat-treated rows.

14011. **WINKLER, A. J. The relation of number of leaves to size and quality of table grapes.** *Proc. Amer. Soc. Hort. Sci.* 27: 158-160. 1930(1931).—Under vineyard conditions at Davis, California, the Malaga, thinned to a maximum of 33 leaves to a cluster, produced fruit of good size and high quality. With less thinning of the crop, i.e., with fewer leaves to a cluster, the berries were much smaller and the sugar and acid contents indicated poor nutrition. Increasing the number of leaves to more than 33 to a cluster by more severe thinning produced somewhat larger berries and better quality. In this case, however, the thinning was sufficiently severe to reduce the total crop considerably.

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 12074, 12097, 12098, 12143, 12647, 12650, 12672, 12685, 13629, 13899, 14130, 14144, 14209)

14012. **AITCHISON, P. E. Annual forest administration report of the Bombay Presidency including Sind for the year 1929-30.** 69p. 10 pl. 1931.—Alternately soaking and drying teak seed fortnightly, if repeated 3 times in succession, results in wastage of seed through premature germination. An investigation with 3 methods of propagating *Dendrocalamus strictus* gave the following results in order of merit: (1) Transplanting 1-yr. old seedlings, (2) direct sowing in lines, and (3) planting out 3-foot cuttings with roots. *Santalum album* trees of the same girth growing in the same locality do not always contain the same thickness of heartwood nor is the shape of the heartwood on a cross-section necessarily concentric with the annual rings. The best age at which to coppice *Hardwickia binata* for producing a copious supply of leaves for fodder is between 30 and 40 yrs.—*M. V. Laurie.*

14013. **AUBREVILLE, M. L'aménagement de la forêt de la Côte d'Ivoire.** *Bull. Agric. Congo Belge* 21(4) : 1395-1412. 1930.—The Ivory Coast equatorial forest of 12 million ha. is botanically rich but economically poor. The original forest is being converted to a valueless secondary type with a high fire hazard. Forest laws of 1912 restricting clearings were ineffective. National forests established in 1928 serve as botanical reserves of primitive forest types and as protection areas. Other

reserves will be managed to increase the proportion of economically usable species. A minimum size cutting limit will not suffice. Rapid weed growth and costly release cuttings discourage extensive replanting. An all-aged mixed stand of a large number of valuable species can be built up gradually and economically. Often the desirable young trees present will suffice to improve the forest if their crowns are kept free by cleanings every 5 yrs. Interplanting young trees of several valuable species growing under natural conditions will hasten this improvement. One hundred young trees per ha. are needed. Old trees should be removed. By freeing seedling crowns from competition, by introducing good species into the forest and by natural seedling an intermediate type of forest can be developed which cultural operations will change into a selection forest of a type which does not now exist.—*L. Wyman.*

14014. BENSKIN, E. Annual progress report on forest administration in the province of Bihar and Orissa for the year 1929-30. p. 1-72. 1930.—The conversion from the selection to the "uniform" or concentrated regeneration system for sal (*Shorea robusta*) has proved a failure on both silvicultural and financial grounds. Though fairly satisfactory in areas where sal exists as a more or less stable climax type of vegetation, the application of the "uniform" system elsewhere has resulted in a serial retrogression into associations of other species and, in individual cases, into a complete change of vegetation. Repeated burning is being resorted to as a means of eradicating the "sal thicket fungus." Fungus disease may be the cause of the continued mortality in plantations of *Casuarina equisetifolia. Lecanium longulum* in *Casuarina* plantation causes the death of about 5% of the plants attacked. A mechanical analysis of the soil in *Casuarina* plantations, which is almost pure sand, shows a correlation between the percentage of higher fractions and the tree mortality.—*M. V. Laurie.*

14015. COOPER, WILLIAM S. The layering habit in Sitka spruce and the two western hemlocks. *Bot. Gaz.* 91(4): 441-450. 4 fig. 1931.—The layering habits of *Picea sitchensis* Carr., *Tsuga heterophylla* Sarg., and *T. mertensiana* Carr. in southeastern Alaska are described. The mechanics of the process were investigated by means of a detailed anatomical study of layered branches. Suggestions are offered as to the physiological processes involved.—*W. S. Cooper.*

14016. De WILDEMAN, É. Communication de M. De Wildeman sur une étude de M. J.-C. Peirier, de la Faculté des Sciences de Marseille, relative aux plantes oléagineuses africaines. *Bull. Inst. Roy. Col. Belge* 1(3): 486-496. 1930.—Reviewing Peirier's data the author discusses certain questions relative to the African Chaulmoogras, and to the African members of the genus *Omphalocarpum,* which he lists. He also discusses the utilization of vegetable fats for motor fuel.—*É. De Wildeman* (*transl. by J. Kittredge, Jr.*).

14017. ENEROTH, OLOF. Studier över "det lokalas järnhårda lag." [Studies of the "iron law of site."] *Skogsvårdsför. Tidskr.* 29(1): 74-95. 13 fig. 1931.—Wagner's border cuttings at Gaildorf result in natural reproduction of spruce on sandstone areas, but not on clay soil. Beech and fir are more easily established on clay soils; spruce must be planted. Fir competes with grass on clay soils more successfully than spruce. On sandstone soils the particles are more variable in size, drainage is better, and raw humus does not form. Humus layers on both soils had reactions of pH 4-5. Border cuttings have not only secured reproduction, but have also made management more systematic and reduced insect and animal damage.—*H. I. Baldwin.*

14018. FEHÉR, DÁNIEL. Vizsgálatok az erdö Széndioxidtáplálkozásaról. [C nutrition of forests.] [German summary.] *Mat. és. Természettud. Értesitö* (*Math. u. Naturwiss. Anzeiger Ungarischen Akad. Wiss.*) *Budapest* 44: 321-329. 1927.

14019. FRANK, JOHANN. Neue Erkenntnisse in der Mittelwaldwirtschaft. *Wiener Allg. Forst- u. Jagdzeitg.* 49(33): 199-200. 1931.—This is an argument for the wider application of the coppice-with-standards system in the Austrian lowlands, where the recent tendency has been toward coniferous high forest for greater financial return. Coniferous forest on these lands fails to utilize the deep rich soils fully and also brings about soil deterioration. High forest of hardwoods involves too much opening of the stand if timbers of the more valuable intolerant hardwoods are to be grown. Underplanting is difficult. Coppice-with-standards is the logical system. Detailed suggestions for its application are given.—*F. S. Baker.*

14020. GOLDING, G. H. A. Report on forest administration in the Andamans for the year 1929-30. p. 1-85. 1931.—Germination of padauk (*Pterocarpus dalbergioides*) is plentiful but few seedlings survive under forest shade. It is such a strong light demander that it seems impossible to obtain satisfactory regeneration except in clear-fellings. Maize and sugar-cane are sown between the lines in plantations in order to keep down weeds. The weed *Eupatorium odoratum* is now fairly established on Sound Island.—*M. V. Laurie.*

14021. [GROSSET, H. E.] ГРОССЕТ, Г. Э. Материалы к изучению лесов Воронежской губернии. 1. Леса Валуйского уезда. [Studies on the forests of the province of Voronezh. 1. Forests of the Valuisk district.] Труды Научно-Исследовательского Института при Воронежском Государственном Университете (*Trav. Inst. Rech. Sci. Univ. d'État, Voronèje, URSS.*) 1928(2): 49-120. 1928.—The author describes 3 basic and one transitory type of forest. The 1st basic type occurs on the plateaus with coarse clayey soil and consists of oak, ash, and elm. The underbrush is sparse and consists of hawthorn, pear, and others. Grasses include *Poa nemoralis, Brachypodium silvaticum, Carex pilosa, Stellaria holostea* and others. The 2nd basic type also occurs on the plateau but on saline podsol soil and consists wholly of oak. The underbrush is sparse and consists of hawthorn, pear, maple, and birch. The typical forest grass types are absent. The 3rd type occurs on the floor and sides of the valley and consists of oak, ash, pine, maple, and elm; the underbrush of hawthorn, *Cornus sanguinea,* and *Viburnum opulus* is well developed. The grass vegetation consists of *Pulmonoria obscura, Asarum europaeum, Stellaria holostea, Brachypodium silvaticum,* and others. The 4th type is only transitory and occurs exclusively on the floors and sides of the valley and on clearings.—*G. A. Lebedeff.*

14022. HICKS, H. G. Progress report of the forest administration in Coorg for 1929-30. 32p. 1931.—An accidental fire in March 1930 in a teak plantation 2 yrs. old caused the appearance of a valuable crop of mixed species along with the teak. The area is better stocked after the fire than it was before, and weeds have been kept down. *Terminalia tomentosa* seed does not germinate well unless sown within 10 days after falling from the parent tree. Sandal seed (*Santalum album*) is much damaged by rats and squirrels. Attempts to accelerate germination by weathering the seed are being made. Dhall (*Cajanus* sp.) is sown along with sandal as a temporary host, cuttings of *Erythrina indica* being put in as permanent hosts. Millet is sometimes used instead of dhall.—*M. V. Laurie.*

14023. JOUBERT, M. Science forestière et sylviculture. *Rev. Eaux et Forêts* 69(3): 194-209. 1931.—Silviculture is the culture of the forests. Forest science, over and above silviculture, is defined as the science which deals with forest formations, their rôle, their constitution, their evolution and the reciprocal relations between them and the environment. "Forest formation" is a group of suberoligneous plants, living in a symbiotic relation. Forest science, like other natural sciences, should be based upon experimentation to yield conclusive results. Experimentation is distinct from comparative research, which yields valuable results for the technician in silviculture, but is subjective and not scientific experimentation. The evolution of forest formations is too slow for the periods of time available for human experimentation. Coordination of observations of

the biological phenomena in the life of the forests, when suitably established, will permit inductive reasoning leading to the necessary syntheses. Deduction of consequences will then provide the facts to verify or disprove the inductions.—*J. Kittredge, Jr.*

14024. KLEM, GUSTAV G. Qualitätsbestimmung des Schleif- und Celluloseholzes. [Quality evaluation of wood for mechanical and chemical pulp.] *Der Papier-Fabrikant* 28(31): 489-494; (32): 501-508; (33): 521-524. 1930.—The width of the annual ring is not reliable for judging the specific gravity of wood, especially when it originates in different regions or in different stands with unlike conditions of growth. The summerwood zone in a growth ring largely determines its specific gravity, and the specific gravity has an important influence upon the yield of paper per unit of volume. A study of 481 spruce trees from 7 localities showed the feasibility of using tree taper or tree form as a measure of wood quality. Curves showing the relation between specific gravity and taper and between knottiness and taper are presented for each of several groups of trees and finally for all of the trees together. All of the graphs show a consistent relationship. Taper measurements taken on the upper and lower portions of the stems gave similar results, but the limits of taper in the upper portions were much narrower. Curves based on form quotient instead of taper followed the same trends in relation to specific gravity and to knottiness, with the exception that above a form quotient of 0.70 the specific gravity failed to increase with a higher form quotient. This is attributed to slow growth in overstocked stands which results in lighter wood. A decrease in the form quotient from 0.70 to 0.50 was accompanied by a decrease of over 20% in specific gravity. Finally, curves are presented to show how the quality of wood may be judged by the total height and diameter of the trees. Trees of the same height of different diameters are used for each curve. Thus, trees (all 12 m. in height) 15, 18, 21 and 24 cm. in diam. had ave. sp. gr. of 0.515, 0.445, 0.42 and 0.39 respectively. A similar relation was found with respect to knottiness of trees. The author urges that raw pulp wood be paid for according to its value for paper manufacture. In poorer classes of wood 15-20% of the wood is lost in the removal of knots, etc. He shows that the trees with better form stand in the more thickly-stocked areas.—*B. H. Paul.*

14025. LUNDBERG, GUSTAF. Om s. k. sommaravverkning av gagnvirkessortiment och dess berättigade former. [Justifiable summer cutting of timber.] *Skogen* 18(9): 212-216. 1931.—Buoyancy of freshly cut spruce and pine depends largely on the percentage of heartwood, which has a moisture content of only 30% of the dry weight, as against 100-170% for sapwood. Logs with less than 20% of heartwood require preliminary drying before driving; this is more essential for pine than for spruce. The moisture content of sapwood is nearly constant during winter, with a maximum just before the start of the vegetative season, and a minimum in midsummer. Periods of wet weather may increase the water content in summer by restricting transpiration. Peeling timber in summer exposes the wood to blue stain fungi; unpeeled wood is protected by the bark and its moisture content remains higher than the optimum for fungi. Leaving the green crown attached to summer-felled wood, or peeling strips of bark have little effect in reducing the moisture content. Wood cut in fall and winter dries very little until spring, however prepared. The best method of increasing buoyancy is to cut and peel the logs completely in Sept., pile in open triangles, remove snow from landings early in spring, and postpone driving until early summer.—*H. I. Baldwin.*

14026. MILROY, A. J. W. Progress report of forest administration in the Province of Assam for the year 1929-30. 57p. 1930.—Seed from middle aged or mature trees of *Pinus khasia*, though fairly fertile, does not give rise to healthy seedlings. The species is unique in this respect, and seed from young trees only is used. Experimental tapping of *Isonandra polymorpha* for gutta percha gave promising results.—*M. V. Laurie.*

14027. MOLL, FR. Künstliche Holztrocknung. Ein Grundriss. [Outline of artificial wood-drying.] 101p. 35 fig. Julius Springer: Berlin, 1930.

14028. NEWMAN, H. L. Annual forest administration report of the Bombay Presidency including Sind for the year 1928-29. 101p. 18 pl. 1930.—The necessity of avoiding unsuitable or waterlogged soils in selecting the sites for teak (*Tectona grandis*) plantations is emphasized. The conservation of superior mixed tree species of deciduous timber forests when they occur in the teak plantations and the artificial introduction of these species to create a mixture is receiving more consideration than in the past. Germination tests showed 20% germination for teak seed which had been alternately soaked and dried for a week, and 90% for seed which had been similarly treated for a fortnight. Underplanting in teak forests after thinning proved a failure. The conclusion is that mixtures can be introduced more cheaply and effectively at the time the teak is planted. In propagating rosha grass (*Ischaemum angustifolium*), poorly drained localities should be avoided. The effect of burning prior to seeding is negligible. Neither burning nor grazing is particularly harmful to established rosha crops. Shoot planting has proved to be the best method of propagating *Dendrocalamus strictus*.—*M. V. Laurie.*

14029. PARNELL, R. Progress report on forest administration in the Punjab for the year 1929-30. 42p. Map. 3 pl. 1930.—The parasitic plant *Arceuthobium minutissimum* is causing considerable loss in *Pinus excelsa* forests at high levels. Experiments in the irrigated plantations of *Dalbergia sissoo* on desert land to find the most economical method of irrigation showed that better results with less consumption of water were obtained by frequent shallow irrigations than by fewer deep irrigations. The attacks of white ants on cuttings of *Eucalyptus rostrata* were checked by watering with nicotine-impregnated water.—*M. V. Laurie.*

14030. POLANSKÝ, BOH. Význam školkování pro výchovu sazenic u smrku a sosny. [Results of transplanting Norway spruce and Scotch pine.] *Lesnická Práce* 10: (1-24): 4 pl., 1931.—To determine the effect of transplanting on spruce and pine, 2- and 3-yr. transplants and seedlings were compared as to development. Transplanting impaired height growth and root development, especially with spruce. Transplants are not as well adapted for use on unprepared forest sites as seedlings grown in thin stands and fertilized.—*B. Polanský (transl. by N. W. Hosley).*

14031. RICHMOND, R. D. Administration report of the forest department of the Madras Presidency for the year ending 31st March 1930. 1: 1-235. 5 pl., 2: 1-320. 1931.—Removal of root competition of weeds by forking or scraping in 1-yr. plantations of teak (*Tectona grandis*) caused the latter to retain its leaves and grow vigorously throughout the hot weather when it is usually leafless and dormant. Removal of the weed *Strobilanthes* in evergreen forests by cutting close to the ground was successful. Seed of many species of trees treated with concentrated H_2SO_4 germinated better and earlier in almost all cases. Treatment for 8 minutes gave the best results. The effect was very marked with some of the most refractory seeds. In making nurseries for tropical evergreen species outside of the evergreen jungle, evergreen forest humus or cattle manure must be added to the beds. Burnt over beds gave poorer results than unburnt beds for evergreens, but the reverse was true with deciduous species. Mound sowings of the xerophilous exotic *Acacia cyanophylla* gave much better results than sowings in patches or pits in dry scrub jungle. Attempts to introduce *Araucaria cunninghamii* (hoop pine) into tropical evergreen forest were not encouraging. *Gluta travancorica* is easily raised in gaps in evergreen forest by direct sowing. The hitherto useless weed *Atylosia albicans* is an excellent host for the lac insect. It is quick growing, tolerant of poor soil, cheap to raise and

produces good lac. Transmission of "spike disease" in sandal (*Santalum album*) by grafting has been successful. Leaf tissue is infected more readily than other tissues. Cambium tissue is next in susceptibility. It has not been found possible to transmit the disease by grafting parts of the root or bark. Ecological survey of a "spiked" area indicates a larger proportion of *Lantana camara*, the proportion being about 20:1 in spiked and healthy areas respectively. To increase the quantity of sandal in deciduous jungle, propagation centers are being formed where it is intensively cultivated. The best method of establishing sandal plants is to transplant them with a temporary host under the shade of the shrub that will form the permanent host. *Hardwickia pinnata* seed soaked in running water at night and exposed to the sun during the day gave higher germination percentage than untreated seed.—*M. V. Laurie.*

14032. SCHAEFFER, A., A. GAZIN, et A. d'ALVERNY. Sapinières. Le jardinage par contenance. (Méthode du contrôle par les courbes.) 100p. 14 fig. Presses Universitaires de France: Paris, 1931.—A tested and workable method of forest management based on the tradition of Gurnaud is presented in detail. Its most characteristic features are the short cutting cycle, determination of the cut without the use of formulae, elimination of rate of growth as a guide, and the use of curves to represent the stands. The suggestion of a method of directing the stands toward a condition of equilibrium is original. The principles of selection forest management are, 1) maintenance of the stand without clean cutting, 2) sufficient space for crown development, 3) vertical layering of the crowns with low cover for the soil and increased crown height, 4) continuous but only just sufficient regeneration, and 5) cutting of selected individual trees in all size classes, making frequent cuttings and removing each time the trees that are retarding the development of others. The method of control implies, 1) independent treatment of entire parcels, 2) a short cutting cycle, 3) measurement of volume production by comparison of periodic inventories, 4) cutting equal to this production if the forest is normal, if not, under- or over-cutting, 5) determination of the most advantageous forest condition from experience with the particular stand. The financial aim is the maximum increase in value with the least accumulation of forest capital which will insure permanence. The ideal selection forest toward which this system of management aims is based on the principle that every all-aged stand in equilibrium (that is, when cutting and continuous regeneration maintain its composition constant) may be represented by the curve of equilibrium, a hyperbola in which the number of stems per unit area decreases from one category to the next by a constant factor or in geometric progression. In fir forests, this factor varies from a poor to a very favorable site (for 5 cm. diam. classes) from 1.5 to 1.3. By appropriate cultural treatment, the curve of equilibrium may be modified so that its constant factor or coefficient of decrease becomes smaller and simultaneously, the basal area, size of the average tree and volume become larger, thus tending toward the ideal of management.—*J. Kittredge, Jr.*

14033. SCHMIDT, W. Die physiologische Keimlingsdiagnose. *Verhandl. Internat. Kongr. Forst. Versuchsanst.* [*Stockholm*] 1929: 317-332. 3 fig. 1930.—The author undertakes to show the consequences of growing seedlings under climatic conditions that differ from those under which the seed was produced. He deals mainly with light requirements and the physiology of water economy. Light requirements for germination of pine were always higher in seed from the plains of the Main than in those from Brandenburg and East Prussia. Light requirements for germination were lowered in all cases and eliminated in some by freezing the seed. The undesirability of growing seedlings in central nurseries for distribution to localities having different climatic conditions is emphasized. Pines of French origin produced fewer seed than native pines. Native trees showed greater resistance to needle cast and frost injury.—*L. J. Young.*

ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in B. A. 6(4): Entries 9165, 11197, 11216, 11224, 11239, 11246; and in this issue 12441, 12619, 12620, 12626, 12695, 12699, 12787, 14070, 14225, 14226, 14233, 14234, 14235, 14241, 14509)

14034. BETHGE, H. Einige Fälle von Massenentwicklung bei Diatomeen. *Ber. Deutsch. Bot. Ges.* 48(10): 490-503. 3 fig. 1930.—Two cases of unusually heavy mass production of diatoms are cited: (1) *Melosira varians* Ag. occurring in a basin on the shore of the Elbe near Dresden in such numbers in Dec., 1929, as to give a bad odor to the water; (2) multiplication in Nov.-Dec., 1929, of *M. binderana* Kütz. in such masses as to prevent the use of large fishing nets for a time in the large Storkower lake. Though the latter is normal to these waters in other years, an especially favorable combination of temp., light and water movement is thought to have brought about the dominance. It occurred in greater abundance in the deeper waters, and the author believes the slower changing temperature of the Fall is more favorable to its development than the more rapid changes in the Spring. There is a discussion of these relationships, together with lists of the associated diatoms in each body of water, and mention of instances of such mass occurrences in Sweden and elsewhere. The hinderance to fishing was caused by the rapid production of clumps and felty masses by the long filaments; as soon as large numbers of the diatoms died, easy disintegration of the filaments again permitted fishing.—*P. S. Conger.*

14035. BROCKMANN, CHR. Interglaziale Brackwasserablagerungen an der deutschen Nordseeküste. *Abhandl. Naturwiss. Ver. Bremen* 27(3): 331-340. 1 fig. 1930.—Material reported was obtained from borings of diatomaceous earths at 2 points along the coast. Material from dredge borings in the blue earth layers near the island of Wangeroog were partly fresh water- and partly brackish water deposits. The material from borings at Hooksiel was a brackish water deposit. The diatom flora of all the brackish water deposits gave evidence of having been laid down in an interglacial river bed, indicating that the seacoast of that period is to be sought somewhat further north. The diatom flora gave no evidence of the age of the interglacial deposits.—*D. Doubt.*

14036. DANGEARD, PIERRE. Sur les chromatophores de l'Acrochaetium caespitosum Naegeli. *Bull. Soc. Bot. France* 76(9/10): 1043-1048. 1 pl. 1929.—*A. caespitosum* (J. Ag.) Naeg. is distinguished from other spp. of the genus by the presence of several chromatophores, with pyrenoids, in each cell. Its structure recalls that of *Rhodocorton* of the group *R. floridulum*, but the chromatophores have not the star-shaped form characteristic of that species. This phenomenon without doubt will necessitate the creation of a new subdivision of the genus *Acrochaetium*. The monospores of *A. caespitosum*, when liberated, show the amoeboid movement characteristic of *Chantransia* (*Acrochaetium*) *thuretii.*—*P. Dangeard* (*transl. by L. Newton*).

14037. De WILDEMAN, É. À propos de la multiplication chez les Conjuguées. *Acad. Roy. Belgique Bull. Cl. Sci.* 16(3): 236-243. 1930.—Apropos of a study by de Puymaly of layering and propagules in *Spirogyra*, the author returns to the subject of holdfasts in Conjugales, and multiplication by simple fragmentation of the thallus without any interdependence between asexual reproduction and zygospore formation. The author returns to the generality of the principle that every iso-

lated cell is capable of regenerating a thallus, and that the isolation need not be the result of destruction of neighboring cells.—*É. de Wildeman* (*transl. by I. F. Lewis*).

14038. **Du RIETZ, G. EINAR. Studies in the taxonomy and ecology of Ceramium diaphanum in the Baltic.** *Bot. Notiser* 1930(6): 433-458. 1930.—The *Ceramium* population of the Baltic is considered to consist of *C. rubrum* and *C. diaphanum*, the latter name covering Baltic forms that have been referred by writers to *C. strictum*, *C. arachnoideum*, *C. corticulatum*, *C. tenuicorne*, *C. vertebrale*, *C. tenuissimum*, *C. cimbrium*, *C. gracillimum*, and *C. fruticulosum*. The author's ecological studies of the polymorphic *C. diaphanum*, covering 15 yrs., confirm only in part the observations of Svedelius and of Sjöstedt. The seasonal alternation of generations is more complicated than believed by Svedelius. The over-wintering generation is certainly tetrasporic; it apparently gives rise to a 2nd tetrasporic generation, presumably from paraspores, in late spring and early summer, and even a 3rd tetrasporic generation may occur. The sexual late-summer generation is derived from the 2nd or sometimes the 3rd tetrasporic generation.—*M. A. Howe.*

14039. **ERLANDSSON, STELLAN. Marine diatoms collected by the Swedish Kamtchatka-Expedition 1920-1922.** *Arkiv Bot.* [*Stockholm*] 23(3, No. 8): 1-10. 3 fig. 1931.—An annotated list of 46 spp. and vars., including *Achnanthes* capitata* (p. 5).

14040. **FUGE, DINGLEY P. Diatoms from near Kugssuk, West Greenland.** *Meddel. Grönland* 76(5): 213-224. 1930.—Lists of diatom spp. of 11 samples from different habitats are discussed and compared with records from other Arctic regions. A comparison is made of the coastal flora with that from an altitude of 2,200 feet; little difference is noted. The spp. listed are thought to be a fairly representative flora of this latitude.—*P. S. Conger.*

14041. **GEITLER, LOTHAR. Studien über den Formwechsel der pennaten Diatomeen.** *Biol. Zentralbl.* 50(2): 65-79. 12 fig. 1930.—A comparative life history study of 4 common diatoms through the course of a year, with special reference to auxospore formation and successive change in form, the diatoms being grown in agar culture. In *Eunotia formica* Ehr., *Gomphonema gracile* var. *naviculoides* Grun. and *Navicula minima* var. *atomoides* Grun. sexual propagation in clones took place. Three cell generations of the *Navicula* were obtained in 9 months. *Gomphonema* presented a new case of anisogamy with different behavior of the gametes from those of a mother cell. It was hence concluded that the diploid hybrid differed sexually from the gametes of the mother cell and they were sterile with one another. The 3 spp. followed the usual scheme of division resulting in diminishing cells and necessary auxospore formation, which occurred only under a certain cell size. Change in cell size resulted in a definite change in cell shape. *Eunotia pectinalis* var. *minor* Grun. did not follow the usual method of division but maintained a chain of cells of equal size, auxospore production not being observed. —*P. S. Conger.*

14042. **GRINȚESCU, I. Culturile pure și importanța lor in studiul Algelor, al Schizoficeelor și al Ciupercilor. [Use of pure cultures in studies of algae, schizophytes, and fungi.]** *Intîul Congr. Nat. Naturalișt. România* 1: 171-173. 1928(1930).

14044. **KNIGHT, MARGERY. Studies in the Ectocarpaceae. II. The life history and cytology of Ectocarpus siliculosus, Dillw.** *Trans. Roy. Soc. Edinburgh* 56(2): 307-332. 6 pl., 3 fig. 1929/1930.—A review of the taxonomic literature of *E. siliculosus* is given. Morphological details are presented for distinguishing *E. siliculosus* from *E. confervoides*. Pyrenoid-like bodies, embedded in the chromatophore or attached by protoplasmic connection, arise de novo or by division. Typical fucosan granules lie in the center around the nucleus, and smaller granules lie near the cell periphery, but are not positively identifiable as fucosan. Fucosan appears after, and disappears during, nuclear and cell division. Adventitious branches arise as a response to degeneration of branches, or formation and dehiscence of plurilocular sporangia, the latter becoming smaller and arising at greater angles from the main branches as the plant ages. The development of the plurilocular sporangium is traced from its origin as an ultimate, lateral, branch. Longitudinal divisions at right angle planes establish as many as 600 cubical locules in the sporangial initial. Dehiscence of the sporangium takes place by a definite lateral or terminal opening through which the zoids escape in single file. Proliferation of dehisced sporangia is reported, a plurilocular sporangium often appearing where its predecessor was unilocular. The mature zoid is typical of the Phaeosporeae. Unilocular sporangia appear early in the growing season and late in the autumn. Their development is traced in detail. Nuclei, chromatophores, and deeply staining granules (blepharoplasts) divide in regular sequence, rearranging within the cell into groups consisting of 1 nucleus, 2 chromatophores, 1 blepharoplast. Cleavage follows, isolating hexagonal masses of protoplasm. Dehiscence occurs with considerable pressure. Zoids are similar to those of the plurilocular sporangia but slightly larger. The chromosome number of somatic cells and zoids of the plurilocular sporangium is 16. Meiosis occurs in the mother cell of the unilocular sporangium, its zoids having 8 chromosomes. The life history of *E. siliculosus* in British waters is as follows: The plant body is diploid, producing either haploid zoids from the unilocular sporangia or diploid zoids from the plurilocular. The latter develop directly into the diploid plant body, the former only after conjugation in pairs. Chromosome counts are given for related forms, based on the plurilocular sporangium, and where possible the unilocular: *E. fasciculatus*, $2n=16$; *E. tomentosus*, $2n=16$; *E. penicillatus*, $2n=16$, $n=8$; *E. velutinus*, $2n=16$, $n=8$; *Isthmoplea sphaeromorpha*, $2n=16$, $n=8$. The life history of *E. siliculosus* at Naples is entirely different: Zoids from the plurilocular sporangia are gametes, which fuse in pairs; the chromosome number in the somatic cells and those of the plurilocular sporangia is 8 (plants with unilocular sporangia were not available). The plant body of the British *E. siliculosus* is therefore diploid, $2n=16$; that of the Naples form haploid, $n=8$. It is suggested that the disagreements in reports of fusion of zoids may be correlated with the location in which the work was done; if the British plants are diploid and the Naples plants haploid, there may be both diploid and haploid plants in the intervening stations. There is no morphological alternation of generations in *E. siliculosus* in British waters, the dominant phase being the diploid (in the Naples plants, the haploid). The morphology of the plurilocular sporangium is dependent on its function—the production of large numbers of reproductive cells, irrespective of sexuality; the form of the unilocular sporangium depends on the necessity of meiosis. The gametes of *E. siliculosus* are physiologically, and to some extent morphologically, anisogamous; ♂ gametes have higher fucosan content than the ♀.—*H. C. Bold.*

14045. **KÖHLER, A. Über die Feinstruktur von Navicula (Pinnularia) nobilis Ehbg.** *Zeitschr. Bot.* 22(9): 442-454. 1 pl., 1 fig. 1930.—The shell shows on the costae structural details similar to *Pleurosigma angulatum*, but with closer intervals between the lines (about 48-51 per 10μ). For demonstration, microphotographic exposures were made with extremely oblique blue light through an apochromatic lens (N. A. 1.40) and with oblique or straight ultraviolet light ($\lambda=0.275$) through a monochromatic objective (N. A. 1.25). The preparations made by Möller (Wedel) were mounted in styrax (for blue light) or fastened dry to a quartz coverglass (for ultraviolet). The finer structures were not visible by direct observation. The parts of the shell revealing the fine structure show double refraction under the polarizing microscope.—*A. Köhler* (*transl. by I. F. Lewis*).

14046. **KOL, E. Über die Kryovegetation der Hohen-Tátra. I.** *Folia Cryptogamica* [*Szeged*] 1(6): 613-622.

1 col. pl. 1928.—The previously known snow flora of the High Tatra Mts. comprised only 8 spp. The author here lists 23 algae and 1 fungus, with locality and date records and descriptive notes. Cyanophyceae: *Chrococcus* **scherffelianus*** (p. 614); *Scytonema minor* v. **istvánffiana** (p. 615). Chlorophyceae: *Ankistrodesmus longissimus* v. **rostafinskii*** (p. 617); **GYÖRFFYELLA** (p. 618), resembling *Raphidonema,* erected for *G.* **tatrica** (p. 618); *Cosmarium subspeciosum* v. **schaarschmidtiana** (p. 619). The author found "green snow" caused by *Ankistrodesmus tatrae,* and "red snow" by *Chlamydomonas,* while "black snow" contained various species. —*E. Kol.*

14047. KYLIN, HARALD. Über Heterogamie bei Enteromorpha intestinalis. *Ber. Deutsch. Bot. Ges.* 48(10): 458-464. 1 fig. 1930.—The zoospores had a greenish colored chromatophore and germinated readily when freshly discharged from the cells. The young zoospores were always positively phototropic. After 30-40 min. the positive phototropism changed to negative. The ♀ gamete is somewhat larger than the ♂ and has a greenish chromatophore with a single pyrenoid and a red eye-spot. The ♂ gamete has a yellow-green chromatophore with the red eye-spot. The gametes fuse readily when freshly discharged but after a few hrs. the ability to copulate is lost. No parthogenetic development was found in the cultures. The gametes died after a few hrs. Germination is slow, the first cross-wall appearing the 8th or 9th day after the zygote is formed.—*S. P. Nichols.*

14048. LIEBISCH, WERNER. Experimentelle und kritische Untersuchungen über die Pektinmembran der Diatomeen unter besonderer Berücksichtigung der Auxosporenbildung und der Kratikularzustände. *Zeitschr. Bot.* 22(1/2): 1-65. 1 pl., 14 fig. 1929.—Presence of a pectic membrane both in the Centrales and Pennales is determined by microchemical tests. Auxospore and craticular development are described in detail in certain spp. of Discaceae and Biddulphiaceae (Centrales), and in the Araphideae, Raphidioideae, Monoraphideae and Biraphideae (Pennales). A pectic envelope is present around the protoplast. Across this membrane in the pore region (Centrales), or along the raphe (Pennales), diffusion of food materials, etc., must be effected. During auxospore formation in the Centrales no perizonium is formed. The daughter cell arises within the strongly developed pectic membrane. The movement of diatoms is discussed in reference to the continuity of the pectic membrane. It is suggested that water moves forward between the pectic membrane and the raphe, impelled by protoplasmic undulation. It then passes out through the polar nodule and returns backward along the outer channel of the raphe. When culture conditions become unfavorable, contraction of the protoplast and the appearance of oil mark the beginning of the craticular state. There is great similarity between this and the onset of auxospore formation. A review of previous literature is given. *Stauronella constricta* v. **linearis** Mer. (p. 33), Kiel Harbor, and *Rhopalodia gibberula* v. **sphaerola** (p. 41), Upper Egypt, are new.—*F. Murray Scott.*

14049. MIYAKE, KIICHI, and HIROSHI KUNIEDA. On the conjugation of the gametes and the development of the zoospores in Ulvaceae. *Jour. Coll. Agric. Imp. Univ. Tokyo* 11(3): 341-357. 4 pl. 1931.—In *Monostroma* the plants are strictly dioecious. Only the gametes from plants of different sexes conjugate. There is considerable variation in size and form of the gametes, but none according to sex. Gametes are positively phototactic, zygotes negatively so. The zygote is invested with a thick cell-wall and gradually increases in size. It does not germinate for many days. After about 40 days a few zygotes showed signs of germination and formed 2- or 3-celled sporelings.—In *Enteromorpha** there is strictly differentiated sexuality, and the conjugation takes place only between gametes of different sexes. As in *Monostroma,* the gametes are positively phototactic, the zygotes negatively so. The form and structure of the gametes are similar to those of *Monostroma.* Although there is considerable variation in size and form of the gametes, no sexual difference was observed. The zoospore is 4-ciliated, much larger than the gamete, and is positively phototactic although slightly less sensitive to light than the gamete. The resting zoospore germinates within 2 or 3 days, and after 5-6 days 3- or 4-celled sporelings were obtained. The further development was not followed.—In *Ulva** the form and behavior of the gametes are similar to those of *Monostroma* and *Enteromorpha.* The zoospore is much larger than the gamete and has 2 cilia, instead of 4 as previously reported. The resting zoospore with a thick cell-wall germinates in 2 or 3 days by pushing out a protuberance. The cell divides transversely into 2, one of which elongates and forms the primary rhizoid. By further cell-divisions and elongation the sporeling develops into a simple filament consisting of a single row of cells with a rather long rhizoid. When the filament increases to 10 or more cells by transverse divisions, the longitudinal divisions begin. The primary rhizoid soon degenerates, and the secondary rhizoids are formed. The sporelings often consisted of a single row of cells of nearly equal size and without a primary rhizoid; these seem to develop later into sporelings consisting of branched filaments with or without primary rhizoids. In an addendum the authors report heterogamic gametes in *Ulva* sp., like those reported by Kylin in *Enteromorpha intestinalis* (see entry 14047); one is always larger than the other. The gamete of *Ulva* described above is probably that of the ♂; in other spp. of *Ulva,* however, the gametes of different sex were of the same size.

14050. MORRISSEY, RICHARD V. Survey of algae in ponds on Presque Isle, Erie, Pa.—summer, 1928. *Proc. Pennsylvania Acad. Sci.* 3: 47-51. Map. 1929.—Sixteen ponds are briefly described, and the genera of algae found in each listed. In the most recently formed ponds *Chara* is a dominant form. Cyanophyceae were seldom found in the youngest ponds. *Spirogyra* seemed to be found in well developed, quiet water ponds. Diatoms were the one form common in most ponds of all ages. There appears to be no close correlation between the age of pond and forms of algae to be expected there.

14051. OKAMURA, K. Icones of Japanese algae. 4(5): 39-46. 5 pl. Published by the author: Tokyo, 1931.—Detailed descriptions (in English and Japanese) and figures of 8 forms. *Gracilaria* **incurvata*** (p. 41); **DELESSERIOPSIS** (p. 43), forming a new section, **DELESSERIOPSIDEAE,** in Ceramiaceae, erected for *D.* **elegans*** (p. 43). The n. spp. are from Japan.

14052. OLLIVIER, G. Étude de la flore marine de la Côte d'Azur. *Ann. Inst. Océanograph.* [*Monaco*] 7(3): 53-173. 2 maps, 1 pl., 6 fig. 1929.—The paper was edited for Ollivier posthumously by C. SAUVAGEAU. The area studied extends westward from the Italian border about 40 km. and includes rocky, sandy and muddy substrata. Geology and bathylithology of the region are reported together with environmental factors—physical and biological. Zonation is not markedly vertical, as on ocean coasts where wide tidal range exists; but there is definite zonation from the outer exposed capes in to the protected bays. 279 spp. of marine Chlorophyceae, Phaeophyceae and Rhodophyceae found on the Azure Coast are listed with ecological notes. *Cutleria* **monoica*** (p. 115) is reported, the gametophyte of *Aglaozonia chilosa* Falk, found at Villefranche-sur-Mer; formal description is lacking. Eight concluding pages, with 10 more figures, are devoted to marine Pyrenomycetes of the region: 2 found on Cyanophyceae, 3 on Chlorophyceae, 23 on Phaeophyceae, and 2 on Florideae. *Melanopsamma* **tregoubovii*** (p. 167) and vars. **cutleriae** (*Thalassoascus c.* Oll. nomen nudem) and **cystoseirae** (p. 172) are new.—*D. G. Doubt.*

14053. PALMER, C. MERVIN. Algae of Marion County, Indiana. A description of thirty-two forms. *Butler Univ. Bot. Studies* 2(paper 1): 1-21. 32 fig. 1931. —Several of the spp. are new for Indiana.

14054. **RICHARD, JOSEPH. La vie des Fucus au contact de l'eau douce.** *Botaniste* 20(6): 209-227. 2 fig., 1 map. 1929.—The author discusses observations and theories of Svedelius and of Arcichovskij on the occurrence and habit of *Fucus serratus* and *F. vesiculosus* in the Baltic Sea. He gives an account of the distribution in relation to the river-water of *F. platycarpus, F. serratus, F. vesiculosus,* and *F. ceranoides* at the mouth of the Loire (sketch map), and at the mouths of some rivers of Brittany. *F. platycarpus* and *F. serratus* disappear when salinity becomes too feeble or too inconstant, but *F. vesiculosus* withstands conditions more easily. *F. platycarpus* var. *spiralis,* however, occurs in water more fresh than salt in the Bassin d'Arcachon, but is the only exception known to the author. The general effect of fresh water is that, while the thallus remains normal, the piliferous crypts become fewer and smaller and the contained hairs more stunted, and the crypts may become marginal in position. The effective factor may be the variation in salinity, and not the feeble degree of salinity. In the Baltic, factors are too numerous and complex to determine effect of fresh water alone, but in the Loire the factors are simpler.—*B. M. Griffiths.*

14055. **SECKT, HANS. Stand der Phykologie in der Argentinischen Republik.** *Ber. Deutsch. Bot. Ges.* 48(4): 98-108. 1930.

14056. **SJÖSTEDT, L. G. Researches into the Öresund. XIV. Revision of some dubious Swedish Ceramium types, their classification and ecology.** *Lunds Univ. Arsskr.* 23 (paper 12): 1-30. 4 pl., 5 fig. 1927.—A detailed discussion of the classification and synonymy of the proposed forms in the series *Ceramium diaphanum-strictum* is followed by a taxonomic treatment of the following forms: *C. diaphanum* f. **medium**[S] (p. 7); *C. d.* form *modificatum,* emended descr.; *C. d.* form corticatulum (*C. c.* Kylin) (p. 8); *C. strictum* f. strictoides (*C. diaphanum* form *s.* Henn. Petersen) (p. 9); *C. strictum* f. corticatulo-strictum (*C. diaphanum* form *c.-s.* Kylin) (p. 10); *C. strictum* f. *stricto-tenuissimum* (= *C. s.* form *vera* Henn. Petersen, *C. cimbricum* Henn. Petersen, ? *C. diaphanum* f. *patentissima* Foslie), emended. The author presents data which show that no seasonal alternation of generations occurs in the *diaphanum-strictum* series. A review of the literature on the occurrence of a regular seasonal alternation of generations in Florideae leads to the conclusion that this phenomenon is not of such general occurrence as was claimed by Svedelius.—*W. C. Muenscher.*

FUNGI

C. L. SHEAR, *Editor*

EDITH K. CASH, *Associate Editor*

(See also in this issue Entries 12113, 12441, 12452, 12470, 12615, 12707, 12708, 12724, 12725, 12729, 12730, 12785, 12792, 12849, 12855, 13444, 13518, 13523, 13663, 13665, 13670, 13679, 13682, 13684, 13689, 13824, 14042, 14046, 14052, 14091, 14927, 14949)

FUNGI

14057. **BEAUVERIE, J. Sur un Zygosaccharomyces de la datte iso-hétérogame.** *Bull. Trim. Soc. Mycol. France* 45(2): 153-170. 16 fig. 1929.—The yeast from the fruit of *Phoenix dactylifera* is described from cultures on wort agar. Its reactions to temp. changes were investigated; anomalous budding is described and correlated with the temp. and osmotic pressure of the medium. Conjugation occurs above 25° C. When it occurs between equal cells, both cells form spores; when between unequal cells only the larger. The yeast is identified as a variety of *Zygosaccharomyces cavarae* Rodio, the difference between this and the parent strain being physiological and not of specific value. The physiological difference may perhaps be correlated with the climatic difference between the places where the strains were studied.—*B. Colson.*

14058. **BERNHAUER, K. Ueber die Charakterisierung der Stämme von Aspergillus niger. II. Die Bedeutung saurer Substrate für die Charakterisierung und Züchtung der Pilzstämme.** *Biochem. Zeitschr.* 205(1/3): 240-244. 1929.—The extent to which the addition of acids to the culture fluid promotes the selection of fungus races with the greatest acid-forming property, and the different effects of various mineral acids on similar races of fungi, are discussed. By selection of the cultures with the greatest acid-forming ability, i.e., selection of those with the most luxuriant mycelial growth, acid-forming ability can be increased.—*K. Bernhauer* (*transl. by R. H. Chipman*).

14059. **BLOCHWITZ, ADALBERT. Schimmelpilze als Tierparasiten. (Vorläufige Mitteilung.)** *Ber. Deutsch. Bot. Ges.* 47(1): 31-34. 1929.—To determine the course of natural infection as distinct from artificial inoculation, *Drosophila* were confined under bell jars together with small cultures of *Aspergillus,* and incubated at 25, 30, and 35° C. At 28-30° the animals were dead on the following day; they were covered with mycelium on the 2nd day, and with conidia on the 3rd, and exhibited the characteristic color of the fungus on the 4th. At 35° the mycosis developed somewhat more rapidly; at 25° but few individuals were affected by *A. clavatus.* Using larvae, mycosis developed at the same speed as in imagoes. In infections immediately preceding pupation, dense bundles of conidiophores emerged at the open ends of the pupae. Swarms of *Drosophila* confined under a bell jar with a few dead flies became generally infected,—a mycosis epidemic. *A. fumigatus, malignus, flavus* incl. *tamari, niveus, galeritus,* n. sp. [not described], *nidulans,* and *clavatus* incl. *giganteus* are parasites, and the various races of a species were usually equally virulent. No infection was obtained with other spp. of *Aspergillus* or with *Penicillium glaucum, Rhizopus nigricans, Mucor mucedo.* High temp. alone is not sufficient to insure infection; the most important factor is high humidity. Under these conditions the conidia adhering to the hairs germinate and the hyphae penetrate the soft membrane of the articulations or the spiracles. Symptoms are described. While all the parasitic spp. except *clavatus* are thermophile, not all thermophiles are parasitic. Also, not all hygrophiles are parasitic, although moist tropical climates are most favorable for them. The parasites appear to be definitely oxyphobe, none of the parasites being oxyphile. The author speculates on the phylogeny of parasitism in Aspergilli.—*From abst. by A. Blochwitz.*

14060. **BLOCHWITZ, ADALBERT. Schimmelpilze als Pflanzenparasiten.** *Ber. Deutsch. Bot. Ges.* 47(6): 351-356. 1929.—Cases of fungi parasitic on other fungi are reviewed from the literature. In the experiments reported, spp. of *Aspergillus* were cultured in mixture with *Mucor* and *Rhizopus* at 25-30°. *A. flavus* (all strains) and *A. tamarii, fumigatus, nivens, galeritus, malignus,* and *nidulans* penetrated the hyphae or stolons, and their conidiophores pierced the stolons and the sporangia. These are the same spp. that kill the *Drosophila* and other insects; the other spp. of *Aspergillus* did not parasitize the Mucorineae.—*A. Blochwitz.*

14061. **BULLER, A. H. REGINALD. Researches on Fungi, 4. Further observations on the Coprini together with some investigations on social organisation and sex in the Hymenomycetes.** 329p. 4 pl., 149 fig. Longmans, Green and Co.: London, 1931. Pr. 21 s.—Part I, divided into two parts. A continuation of the author's observations on the structure and physiology of the Coprini, contains chapters on: (1) the Curtus Sub-type of fruit-body organisation illustrated by *Coprinus curtus;* (2)

the Plicatilis Sub-type illustrated by *C. plicatilis;* (3) various remarks on the Coprini; (4) the germination of the spores of *C. sterquilinus* and of other coprophilous Coprini; and (5) an analysis of the factors concerned in the mechanical fixation of the fruit-body of *C. sterquilinus* in its substratum. The production and liberation of spores in *C. curtus* and *C. plicatilis* is described in detail. New taxonomic descriptions of these fungi are given. A fruit-body of *C. curtus* sheds its spores in 30 min. to 3½ hrs. The fruit-body of *C. plicatilis* resembles in its general structure those of other Coprini but differs from them in that its gills do not undergo autodigestion from below upwards, but remain dry during the whole of the spore-discharge period. *C. hemerobius* is regarded as merely a large form of *C. plicatilis*. The relative efficiency of the *Coprinus* and Non-*Coprinus* types are discussed. The blackness of *Coprinus* ink is chiefly due to the spores which the ink contains but is due in part to the liquid which is brown. The *Coprinus* on beet and mangel seed is *C. lagopus*. The presence of bacteria is not required for the germination of the spores of *C. sterquilinus* and other coprophilous Coprini. The various factors which enable the large fruit-body of *C. sterquilinus* to take up its upright position on its substratum of horse dung are discussed in detail. Light inhibits the growth of all small rudiments of fruit-bodies that happen to develop on the upper sides of dung balls exposed to light; and it regulates the length of the solid stipe-base. The upward pressure exerted by a growing fruit-body of *C. sterquilinus* is nearly ½ lb. Part II, which treats of sex and social organization in the Hymenomycetes contains chapters on: (1) social organisation in *C. sterquilinus* and other fungi; and (2) the effect of diploid on haploid mycelia in *C. lagopus* and the biological significance of conjugate nuclei in the Hymenomycetes and higher fungi. Social organisation in plants generally is reviewed with the aid of new drawings of *Chondromyces crocatus, Dictyostelium mucoroides* and *Arcyria pomiformis*. In *Coprinus sterquilinus* hundreds of spores may germinate in a single horse-dung ball, the mycelia may then all unite to form a single compound mycelium which may produce a single large fruit-body. The fruit-body genetically is the product of a single binucleate cell of 1 hypha of 1 of the simple mycelia, but nutritionally it is developed at the expense of all the components of the compound mycelium. Social organisation in fungus groups other than the Hymenomycetes is illustrated with special reference to *Trichoderma lignorum, Pleurage anserina, Ascobolus magnificus*, and *Colletotrichum trichellum*. Hyphal fusions in the Hymenomycetes are of importance in the following ways: (1) they convert every young mycelium into a network of such a kind that food materials may be conducted through it to fruit-bodies sclerotia, etc., in diverse directions; (2) in heterothallic spp., they place 2 mycelia of opposite sex in continuity, thus making possible the association of their nuclei in conjugate pairs; (3) in heterothallic spp., they convert the haploid mycelia into a network of such a kind that, when a haploid mycelium is being diploidised by nuclei derived from another haploid mycelium, the nuclei can travel through the mycelium by numerous and varied routes; (4) they convert all mycelia, whether haploid or diploid, into a network of such a kind that a mycelium, when injured by the breaking of some of its hyphae, still remains as a unit and can act as such in the production of a fruit-body; and, finally, (5) in a single sp., whether homothallic or heterothallic, they permit of any number of adjacent mycelia, whatever may be their sexual state, uniting to form a compound mycelium and thus acting as a social unit in the production of fruit-bodies and spores. The term diploidisation has been introduced to designate the process by which a haploid cell is converted into a diploid cell, or a haploid mycelium into a diploid mycelium, by the formation of conjugate nuclei within the cell or within the mycelium. A haploid or diploid mycelium is said to diploidise a haploid mycelium when, through its agency, the latter becomes converted into a diploid mycelium containing conjugate nuclei $(n) + (n)$. The method of inoculating a large haploid mycelium several cm. in diameter with a small haploid or diploid mycelium 1-2 mm. in diameter has been introduced as an aid to the study of the diploidisation process in *C. lagopus* and other Hymenomycetes. The *C. lagopus* of the author's "Researches on Fungi" and of his pupils is identical with the *C. fimetarius* of Mlle. Bensaude, Kniep, Brunswick, Oort, and other workers on sex in the Hymenomycetes. In *C. lapopus* legitimate combinations, $(Ab) \times (Ab) + (aB)$ and $(AB) \times (AB) + (ab)$, a large haploid mycelium became diploidised by a small diploid inoculum. A factorial analysis of the 2 diploidised haploid mycelia showed that they must have had the composition $(Ab) + (aB)$ and $(AB) + (ab)$ respectively. In 8 legitimate combinations of all possible kinds, a haploid or a diploid inoculum converted a large haploid mycelium, 5.5-6.0 cm. in diameter when just inoculated at the periphery, into a diploid mycelium in 3-4 days. When a large *C. lagopus* haploid mycelium (AB) was inoculated with a haploid mycelium of opposite sex (ab), the (ab) nuclei travelled through the large haploid mycelium at the rate of 1.5 mm. per hr. This was the maximum rate of movement observed in a combination of 2 haploid mycelia. The maximum rate of movement of nuclei derived from a diploid inoculum $(AB) + (ab)$ through a large haploid mycelium (AB) was 1.2 mm. per hr. The nuclei derived from a tiny mycelial inoculum, when advancing through a large haploid mycelium which they are diploidising, can travel through any part of the haploid mycelium, old or young, but they move more readily through a younger part. The diploidisation of a large haploid mycelium in an illegitimate combination of the type $(Ab) \times (AB) + (ab)$ has been studied. The biological significance of conjugate nuclei in the Basidiomycetes and the Ascomycetes is discussed. The complete diploidisation of any multicellular and multinuclear hymenomycetous haploid mycelium through the agency of a single nucleus or a few nuclei derived from a haploid mycelium of opposite sex or from a diploid mycelium of oppsite sex is absolutely dependent on the formation and non-fusion of conjugate nuclei. The organisation of the nuclei in conjugate pairs $(n) + (n)$ instead of as isolated nuclei $(2n)$ in the diploid mycelium and fruit-body of the Hymenomycetes results, it is true, in delaying the fusion of nuclei of opposite sex until the basidia come into existence, but it has the great advantage that, in the diploid mycelium, each member of a pair of conjugate nuclei retains its identity, so that 1 member of a pair can divide independently of the other member of the pair whenever such a division is able to promote the diploidisation of a haploid mycelium.—*Author's summary.*

14062. BURCHARD, G. Beiträge zur Kenntnis parasitischer Pilze. 1. Moniliopsis Klebahni, die Ursache des Umfallens der Koniferenkeimlinge. 2. Didymella applanata, der Erreger der Himbeerrutenkrankheit. 3. Versuche mit Sclerotinia tuberosa als Schädling der Anemone nemorosa. 4. Stachybotrys klebahni. *Phytopathologische Zeitschr.* 1(3): 277-313. 27 fig. 1929.—(1) The "damping off" which causes death of coniferous seedlings is due to *Moniliopsis* **klebahni** (p. 278). Infection of seedlings of *Pinus silvestris, Larix europea, Pseudotsuga douglasii* f. *viridis* and *Abies alba* is described. Young stems of *P. silvestris* may become infected by way of the stomata, whence the fungus spreads and results in eventual death of the plant.—(2) *Didymella applanata* is pathogenic to raspberry. Ascospores produced on old canes produce infection (April to June) on young canes. The mycelium penetrates the cortex and produces brown lesions in which, during Aug. and Sept., pycnidia of *Phoma idaei* appear. The pycnospores infect young shoots and the mycelium remains in the primary cortex where lesions develop which in the following spring bear the perithecial stage.—(3) Those ascospores of *Sclerotinia tuberosa* which germinate in the soil bring about infection of *Anemone nemorosa* only if the resulting

mycelium comes in contact with rhizomes.—(4). *Stachybotrys klebahni** (p. 314) is compared and contrasted with *S. alternans.—G. Burchard (transl. by F. A. Wolf).*

14063. CURZI, MARIO. Intorno alla posizione sistematica di un Fusarium isolato dalla pelle del cane. [The classification of a Fusarium isolated from the skin of the dog.] *Atti Istit. Bot. R. Univ. Pavia Ser. IV.* 1: 95-105. 2 fig. 1929.—*F. moronei* Curzi, here compared with allied spp. of the section Gibbosum, is the only sp. of the section isolated from an animal. Other well-known spp. from animals are those found in insects, and are included under the sections Roseum and Lateritium.—*M. Curzi (transl. by P. Hillkowitz).*

14064. FISCHER, ED. Untersuchungen über Phalloideen aus Surinam. *Beibl. Vierteljahrsschr. Naturforsch. Ges. Zürich* 73(15): 1-39. 2 pl., 7 fig. 1928.—Following a short summary of previous knowledge of the phalloids of British, French, and Dutch Guiana, there is a detailed study of the species collected by G. Stahel in Surinam. The following, described earlier by Fischer, are completely described and figured for the first time, and their development is followed: *Clathrella stahelii* Fischer, *Anthurus surinamensis* Fischer, *Aseroë arachnoidea* var. **americana** (p. 18) Fischer, *Mutinus granulatus* Fischer, and *Ithyphallus paucinervis* Fischer. Other spp., whose development is discussed, are: *Clathrus columnatus* Bosc., *Dictyophora indusiata* (Vent.) Pers., *D. farlowi* Fischer, *Staheliomyces cinctus* Fischer, and *Mutinus xylogenus* Mont. Questions discussed in connection with the studies include: generic limits in the Clathraceae, the various types of development of the intermediate tissue between gleba and receptacle in phalloids of the *Mutinus* type, and certain points raised by Lohwag concerning the significance of the receptacle.—*Ed. Fischer (transl. by G. W. Martin).*

14065. FRENZEL, WALTER. Ernährung und Farbstoffbildung von Chlorosplenium aeruginosum (Oed.). *Akad. Wiss. Wien. Math. Naturw. K. Sitzungsber. Abt. I* 137 (9): 717-746. 1 pl., 1 fig. 1928.—The so-called greenrot of lumber caused by *C. aeruginosum* may be easily produced in pure cultures. Ascospores or fragments of infected wood or fruiting bodies may be used as inoculum. It takes at least 1 mo. for good cultures to develop. Experiments were made on various solid and liquid substrata (wood, wood extract, rice, extract of plums, agar, and gelatine) with varying additions of inorganic nutrient solutions and materials from C and N sources. Although the fungus is not very particular about the choice of nutrients, because of its preference for carbohydrates, however, *C. aeruginosum* is not omnivorous. For its growth on wood it is not necessary that other microorganisms have preceded it. Growth of the fungus is possible within a wide range of pH values (pH 2.4 to slightly above neutral). It is typically aerobic. Minimum temp. for development is around 0° C and maximum about +28° C. Through a micro-chemical procedure it was possible to crystallize out the green pigments. These are not volatile, but are easily reduced to red and yellow products and the green color is again developed by the use of an oxidizing agent; they are indicators of alkali or acid.—*T. R. Swanback.*

14066. GIOELLI, FELICE. Valore dei caratteri zimogeni nella classificazione di alcune forme di miceti. [The value of fermentation tests in the classification of some fungi.] *Atti Ist. Bot. Univ. Pavia, Ser. IV.* 1: 59-74. 1928.—Many spp. chiefly of *Monilia* (as understood in medical literature), were cultivated in liquid media containing sugars. Cultures of various ages, in different media, and under various environmental conditions, were studied. According to Castellani's classification based on fermentation characters, the same strain would be placed with different spp., as these characters were found to vary according to the cultural conditions.—*F. Gioelli (transl. by C. Ciferri).*

14067. HIRATSUKA, NAOHIDE. Additional notes on the Melampsoraceae of Saghalien. *Trans. Sapporo Nat. Hist. Soc.* 10: 119-121. 1929.—*Melampsora hypericorum, Uredinopsis pteridis, U. filicina, U. struthiopteridis, Pucciniastrum arcticum* (new to Japan), *P. hydrangeae-petiolaridis,* and *Chrysomyxa pirolae* are additions to the author's former list; the following new hosts are recorded: *Calyptospora goeppertiana* on *Abies sachalinensis; Thekopsora guttata* on *Galium trifloriforme;* and *Chrysomyxa ledi* on *Picea jezoensis.—Courtesy Japanese Jour. Bot.*

14068. HRUBY, JOHANN. Die Pilze Mährens und Schlesiens. Ein Versuch der Gliederung der Pilzdecke dieser Länder. *Hedwigia* 68(1/2): 119-160; (3/4): 161-190. 1928.—An intensive phytographic study of this area (25,000 sq. miles), applying to the distribution and grouping of the fungi of this region the principles which have been so successfully used in dealing with the higher plants. Extensive lists of the fungi collected, with hosts or substrata, are given. These are grouped according to their ecological requirements: e.g., Malignosa, forest associations; Herbosa, those occurring in formations of meadow and herbaceous plants; Aquiherbosa, those requiring abundant water.—*T. H. Mac Bride.*

14069. JØRGENSEN, C. A. Barkkraeft paa Aeble og Paere, foraarsaget af Neofabraea corticola (Edgert.) C.A.J. n. sp. et n. comb. [Bark canker in apples and pears caused by N. corticola.] *Tidsskr. Planteavl [Copenhagen]* 36(5): 800-811. 13 fig. 1930.—Early in 1930 a bark canker of apples and pears, corresponding to the "superficial bark canker" known in U.S.A., came to the author's notice. In the diseased areas acervuli of *Myxosporium corticolum* Edg. soon developed; this sp. is new to Denmark. In the material a few small apothecia also developed, suggesting their connection with the Myxosporium. Monospore cultures from conidia and from ascospores developed on malt agar, but did not sporulate; better growth was obtained on sterilized apple twigs, on which the typical acervuli of *M. corticolum* were formed in both cases, the connection thus being proved. The apothecium is provisionally referred to *Neofabraea* as *N.* corticola* (*Myxosporium corticolum*) (p. 810).—*C. A. Jørgensen.*

14070. KELLER, BORIS. Die Erdflechten und Cyanophyceen am unteren Lauf der Wolga und des Ural. *Vegetationsbilder* 20(8): Pl. 43-48. 1929.—Various communities of lichens and Cyanophyceae are described and illustrated. Among the spp. depicted are *Aspicilia esculenta* and *A.* spp., *Parmelia vagans, Diploschistes scruposus, Psora decipiens, Acarospora schleicheri* and *Nostoc flagelliforme.—G. D. Fuller.*

14071. KNIEP, H. Über den Generationswechsel von Allomyces. *Zeitschr. Bot.* 22(9): 433-441. 2 fig. 1930.—This paper presents a discussion of the life cycle of *Allomyces javanicus* Kniep. An alternation of generations is described based on observations of the fungus grown in culture. The sporophytic generation begins with the germination of the zygote which is the result of the fusion of 2 unlike planogametes. The diploid mycelium formed from the zygote produces zoosporangia and resting cells. Zoospores which are produced in the zoosporangia continue to reproduce sporophytic plants, while the zoospores produced by the resting cells give rise to small plants which bear only gametangia. Reduction division is said to take place in the resting cells, thus marking the origin of the gametophytic generation. The mycelium formed from the zoospores produced by the germination of the resting cells produce only gametangia, never zoosporangia or resting cells.—*B. B. Kanouse.*

14072. KONRAD, P., et A. MAUBLANC. Icones selectae fungorum. Préface de RENÉ MAIRE. Volume 1., comprising Fascicles 1 to 6. Paul Lechevalier: Paris, price 125 frs. per fascicle.—Fasc. 2, 1924(1926) comprises p. 17-48 of text and 50 col. pl., dealing with the Agaricaceae; fasc. 3, 1927, p. 49-72, with 50 col. pl. deals with Agaricaceae, Russulaceae, Hygrophoraceae, Boletaceae, Polyporaceae, Hydnaceae, Corticiaceae, Clavariaceae, and Cantharellaceae; Fasc. 4, 1928(1929), p. 73-112. with 48 col. pl. deals with the Agaricaceae, Russulaceae, Hygrophoraceae, Boletaceae, Polyporaceae, and Clavariaceae; Fasc. 5, 1929, p. 113-152, with 52 col. pl. deals

with the Agaricaceae, Boletaceae, Polyporaceae and Hydnaceae; Fasc. 6, 1930, p. 153-192, with 50 col. pl. deals with the Agaricaceae, Boletaceae, Polyporaceae, Phylacteriaceae, Corticiaceae, Clavariaceae, and Cantharellaceae, the latter including "*Craterellus* **konradi** R. Maire et Bourdot in litt." (pl. 500). The price of subsequent fascicles has been raised to 150 frs., each fascicle to comprise a volume. The complete work is to consist of 500 col. plates with accompanying text giving descriptive notes, synonymy, distribution and degree of commestibility of each fungus. Keys, general notes and bibliography form the paged text.

14073. MALYCHEV, N. Les conditions de la germination des spores du champignon Dasyscypha wilkomii. *Rev. Gén. Bot.* 41 (483) : 185-190. 1929.—Spores of *D. wilkomii* do not germinate in water, in ½% gelatin, or in gelatin plus an extract of the dead bark of larch. On gelatin plus an extract of fresh branches of larch, 90% germination was obtained, and on gelatin containing 25-35% glycerine, 18% germination; a medium with 13-15% glycerine gave only 5% germination. Higher or lower concentrations of glycerine were not favorable. Light had no influence on germination. Good results were obtained at 25-37°. No germination was observed at 15-17°.—*R. C. Thomas.*

14074. MATTHEWS, VELMA DARE. Studies on the Genus Pythium. 136p. 29 pl. Univ. of North Carolina Press: Chapel Hill, 1931. Pr. $3.—A monographic study, in which descriptions are given of all the spp. of *Pythium* which had been described at the time of publication, and a report is made on 20 spp., isolated by the writer, 5 of which are new. Keys are given to the genera of the Pythiaceae and to the spp. of *Pythium*. Several spp. are reported from the U. S. A. for the first time. *P.* **inflatum*** (p. 45) isolated from *Vaucheria; P.* **catenulatum*** (p. 47) isolated from a fresh water collection; *P.* **carolinianum*** (p. 71) parasitic on *Spirogyra* sp.; and *P.* **echinulatum*** (p. 101) and *P.* **elongatum*** (p. 106) isolated from soil; all from No. Carolina.—*V. D. Matthews.*

14075. NISIKADO, YOSIKAZU, and HIROYOSI MATSUMOTO. Preliminary note on the studies of black-spot disease on Ulmus. [In Japanese.] *Agric. and Hort.* 4: 655-662. 8 fig. 1929.—A disease on *Ulmus* spp. (*parviflora, japonica,* and *pumila*), which is prevalent in Japan, Manchuria and China, becomes recognizable soon after the development of leaves in early spring and is continued during the existence of green leaves. The leaf spots are yellowish at first; they enlarge, and produce black stroma-like bodies in the center; severely diseased leaves fall. The causal organism, earlier regarded as *Melasmia ulmicifolia* B. et C. or *Systremma ulmi* (Schleich.) Theiss. et Sydow, is *Gnomonia* **oharana.** —*Courtesy Japanese Jour. Bot.*

14076. PILÁT, ALBERT. Ein kleiner Beitrag zur Kenntnis der Gattung Cyphella Fr. in der Tschechoslowakei. *Hedwigia* 67: 113-118. 1927.—*C.* **callostoma** (p. 113) is close to *C. struthropteridis* Pilat but is histologically different. *C.* **bourdoti** (p. 115) is related to *C. citrispora* Pilat, *C. punctiformis* Karst., and *C. jancheni* Pilat. *C. taxi* Lev. is found on rotten branches of *Juniperus communis.—A. Pilat (transl. by R. E. Stone).*

14077. POEVERLEIN, H., SPEYER, und K. v. SCHOENAU. Weitere Vorarbeiten zu einer Rostpilz-(Uredineen-) Flora Bayerns. *Kryptogam. Forsch. Bayerische Bot. Ges. Erforsch. Heimischen Flora* [*München*] 2(1) : 48-118. 1 fig. 1929.—A list of the rusts of Bavaria compiled from collections made by the writer and coworkers from 1919-1927, and from the collections deposited in the herbarium of Munich. 27 genera and 365 spp. and vars. with the localities in which they were observed, are listed. *Puccinia* **angulosi-phalaridis** Poeverl. (p. 68), I on *Allium angulosum* L., and *P.* **pumilae-coronata*** H. Paul (p. 95), O and I on *Rhamnus pumila* L. and II and III on *Sesleria caerulea* Scop.—*L. E. Wehmeyer.*

14078. SABOURAUD, R. Le problème du pléomorphisme des cultures des dermatophytes. V. *Ann. Dermat. et Syphiligr.* 10 (5) : 481-486. 1929.—When dermatophytes are cultured on media containing sugar, about ⅔ of the cultures of some spp. show 1 to several downy tufts, which coalesce until the culture becomes covered by down. This white down can be subcultured and isolated from the original growth and may then be cultured indefinitely. Changing the medium or animal passage does not alter its nature; it is a fixed mutation. Old cultures on sugar-free medium may appear down-like, but down formation is not a sign of senility, since it may appear as early as 20 days. *Endothrix acuminatum* does not show pleomorphism. The down is readily formed by animal *Microsporum* and by *Epidermophyton inguinale*. The downs resemble each other more than they do the original culture. Morphological details are given. The more the down is subcultured the more the aleurispores disappear, and only the matted flimsy hyphae remain, but the down remains alive. No fungus species has been shown to arise from another by pleomorphism.—*S. W. Becker.*

14079. SAWADA, KANEYOSHI. On the systematic investigation of Phyllactinia in Formosa. [In Japanese.] *Rept. Dept. Agric. Govt. Res. Inst. Formosa* 49. 1-95. 7 pl. 1930.—The author gives a historical résumé of the group, discusses its relationships, lists the hosts of *Phyllactinia* and *Ovulariopsis* by families and with bibliographic references, and describes the following: *Ovulariopsis* **alni-formosanae*** (p. 77), *O.* **asclepiadis-curassavicae*** (p. 77), *O.* **macarangae*** (p. 78), *O.* **caricae*** (p. 79), *O.* **ampelopsidis-heterophyllae*** (p 79), *O.* **ampelopsidis-ciliatae*** (p. 79), *O.* **cephalanthi*** (p. 80); *Phyllactinia* **kakicola*** (p. 80), *P.* **sapii*** (p. 81); *O.* **salicis-warburgii*** (p. 82); *P.* **actinidiae-formosanae*** (p. 82), *P.* **actinidiae-latifoliae*** (p. 83), *P.* **pyri-serotinae*** (p. 84), *P.* **moricola*** (*P. suffulta* var. *m.* P. Henn.) (p. 85); *O.* **broussonetiae-papyriferae*** (p. 87); *P.* **broussonetiae-kaempferi*** (p. 87). A 4-page bibliography is included.

14080. YAKUSHIJI, E., und M. KUMAZAWA. Ueber einige im Koishikawa botanischen Garten gesammelte Isaria-Arten. I. *Bot. Mag. Tokyo* 44 (517) : 40-42. 1 pl. 2 fig. 1930.—*I. cosmopsaltriae* Yasuda on Cicada, *I. atypicola* Yasuda on the spider, *Kishinouyeus typicus,* and *I.* **nigra*** (p. 42) Yakus et Kumaz. on a beetle (adult and larva) were mentioned.—*M. Kumazawa.*

14081. YUKAWA, MATAO, and MASASHI OHTA. Serological identification of yeasts. I and II. [In Japanese, with English summary.] *Bult. Sc. Fak. Terk. Kjusu Imp. Univ.* 3 (2) : 187-199, 200-216. 1928.—*Zygosaccharomyces barkeri* and *Debaryomyces globosus* are fairly closely related. *Endomyces fibuliger* acts positively almost in equal degree against *Z. barkeri, D. globosus,* saké and beer yeast. *Torula C* reacts positively against *Z. barkeri, D. globosus,* saké and beer yeast, but negatively against *E. fibuliger. Schizosaccharomyces octosporus* reacts negatively against all the yeasts studied. Saké, wine and beer yeasts are indistinguishable by the ring test. *Saccharomyces turbidans, S. pastorianus* and *S. validus* on one hand, and saké, wine and beer yeast on the other, although placed under the same subgroup by Hansen, are clearly distinguishable serologically; also, saké, wine and beer yeasts can be distinguished by the absorption test. The varieties among saké yeast itself are indistinguishable, either by the ring test or by the absorption test.—*Courtesy Japanese Jour. Bot.*

14082. ANONYMOUS. Edible and poisonous fungi. *Min. Agric. & Fisheries* [*Gr. Britain*] *Bull.* 23. 3rd edit. 25p. 25 col. pl. 1930. Pr. 2s. 6d.—This popular handbook is designed to enable those interested in mushrooms as food to distinguish the more common edible from poisonous spp. 7 new plates, 4 of which represent additional spp., are included in this edition, and some changes made in text and nomenclature. The 16 edible and 9 poisonous spp. treated, each of which is briefly described and illustrated by a colored plate, belong with few exceptions to the Agaricaceae. The scientific terms used are listed in a short glossary.—*E. K. Cash.*

LICHENES

14083. BACHMANN, E. Der Lagerbau bei Verrucaria. *Ber. Deutsch. Bot. Ges.* 47(9): 554-560. 1 pl. 1929.—The structure of the thalli of *V. acrotella* Ach. and *V. pinguicula* Mass. indicates that there are 3 forms of thallus structure. In these, the thallus layer is, respectively, endolithic (*V. calciseda* DC. and related spp.), epilithic (*V. pinguicula* and *V. nigrescens* Pers.), and exolithic. In the exolithic type, forms with well developed medulla (*V. aethiobola* Wahlb. and related spp.) and without medulla (*V. acrotella Ach.*) can be distinguished. —*C. C. Plitt.*

14084. BACHMANN, E. Die deutschen, felsbewohnenden Segestriaspezies. *Hedwigia* 69(5): 287-300. 18 fig. 1929.—*Segestria lectissima*, S. langeana**, and *S.* **makrokarpa*** (p. 287), the last collected on gneiss in mountains (the Erzgebirge) near Rittersgrün in 1911. These differ in structure of the perithecial wall, and in fruit characters. The largest perithecia, those of *S. makrokarpa*, have the strongest protective layer, the smallest perithecia (*S. langeana*) have the weakest.—*L. R. Tehon.*

14085. MAGNUSSON, A. H. New or Interesting Swedish Lichens. VI. *Bot. Notiser* 1930(6): 459-476. 1930.—In nearly all cases descriptions as well as critical notes are included in the discussion of the following spp. (No. 36-49 of the author's series): *Dermatocarpon bachmanni* Anderss., previously known from northern Bohemia, found in several localities in Sweden; *Verrucaria* **cinereoatra** Zschacke (p. 461); *V. erichsenii* Zschacke, commonly overlooked as a depauperate form of *V. maura*, and *V. e.* f. **subathallina** (p. 463); *Arthopyrenia orustensis* Erichs., common in the sublittoral zone along the west coast of Sweden, but usually overlooked; *Normandina pulchella* (Borr.) Nyl., new for Sweden; *Collema alpinum* Th. Fr., on calcareous rocks in Lappmark; *Ephebe lanata* f. *complicata* Vain., rather common on the west coast of Sweden, hitherto confused with *E. hispidula; Caliciella subparoica* (Nyl.) Vain., new for Scandinavia; *Coniocybe sulphurea* (Retz.) Nyl., a minute usually overlooked sp. now recorded from Västergötland; *Lecidea? atroumbrina* (p. 468); *Rinodina turfacea* f. *ecrustacea* Vain.; *R. demissa* f. cinerascens (p. 471); *R. diplocheila* fs. typica, caesiascens (p. 473), and **luxurians** (p. 474); *Lecanora pityrea* Erichs. is considered distinct from *L. varia.*—*H. K. Svenson.*

14086. NILSSON, GUNNAR. Lichenologiska bidrag. III. [Contributions to lichenology. III.] [With German summary.] *Bot. Notiser* 1930(5): 344-359. 1 fig. 1930.—The author found the northern *Verrucaria ceuthocarpa* Wg. in 3 localities in Bohuslän and 5 on the Baltic; thus its Finnish localities are no longer isolated. It generally occurs in the lower portion of the supralittoral zone, often with *V. microspora* Nyl. The latter species usually incorrectly named *V. halophila* is noted from 2 new localities in Bohuslän.—Räsänen (1921) described *Xylographa rubescens* from Finland, differentiated from *X. abietina* (Pers.) Zahlbr. by the red reaction of the thallus when treated with KOH. The author has found 19 localities in Sweden and 1 in Norway. The spores, despite the original description, are no larger than those of *X. abietina* and specific distinction is questionable.—*Evernea mesomorpha* Nyl., representing an eastern element in the European flora, is cited from Lule Lappmark.—*Cetraria norvegica* (Lynge) DR. is reported from Bohuslän, Sweden, and a list of the accompanying plants in 1 sq. meter is given. A bibliography of the spp. treated in this paper is included.—*H. K. Svenson.*

BRYOPHYTA

A. LEROY ANDREWS, *Editor*

(See also in this issue Entries 12441, 12667)

14087. BRINKMAN, A. H. Notes on some Canadian hepatics. No. 2. *Bryologist* 34(2): 13-16; (3): 38-44. 1 pl. 1931.—Reclassification of Ottawa material involved several changes in the genera *Metzgeria* and *Riccardia*. *Metzgeria furcata* var. **pacifica** (p. 15), British Columbia, is new. *M. furcata* and *M. myriopoda* were not found in the Ottawa material, as was claimed in the original classification. *Riccardia sinuata* and var. *major* appear to be rare in Canada.—*A. M. Taylor.*

14088. GUILLAUMONT. Additions à la flore bryologique du Morvan. *Rev. Bryologique* 4(1): 41-42. 1931.

14089. HERZOG, TH. Hepaticae. In: **EDGAR IRMSCHER: "Beiträge zur Kenntnis der Flora von Borneo," 11.** *Mitteil. Inst. Allg. Bot. Hamburg* 7(3): 182-216. 10 fig. 1931.—An annotated list of 111 determinable spp. (in 43 genera) collected by Hans Winkler in West Borneo. Aneuraceae: *Aneura subexalata* f. **granulata** (p. 184); *A.* **squarrosa** (p. 184); *A. lobata* f. **papulosa** and var. **angustisecta** (p. 184); *A.* **limbata** (p. 184). Blyttaceae: *Pallavicinia* **validus** (p. 185). Lophoziaceae: **PLAGIOCHILIDIUM** (p. 186), near *Plagiochila* and *Jamesoniella*, based on *P.* **borneense*** (p. 186); *Plagiochila* **johannis-winkleri*** (p. 187); *Chiloscyphus* **oblatistipulus*** (p. 189); *C. zollingeri* var. **borneensis** (p. 190). Cephaloziaceae: *Mastigobryum erosum* var. **auriculatum** (p. 190); *M.* **rajanum** (p. 190); *Lepidozia supradecomposita* var. **falcifolia** (p. 191). Radulaceae: *Radula* **amoena*** (p. 192); *R.* **laciniata*** (p. 193). Pleuroziaceae: *Pleurozia* **johannis-winkleri*** (p. 195). Porellaceae: *Madotheca* **johannis-winkleri** (p. 195). Lejeuneaceae: *Archilejeunea* **subaloba** (p. 196); *A.* **serricalyx*** (p. 196); *Ptychanthus* **plagiochiloides*** (p. 197); *Mastigolejeunea* **spinicalyx*** (p. 197); *Thysananthus spathulistipus* var. **borneensis** (p. 199); *Caudalejeunea* **revoluta*** (p. 199); *Ptychocoleus* **gomphocalyx*** (p. 200); *P.* **grandiflorus** (p. 200); *Cyclolejeunea* **acrotoca** (p. 201); *Strepsilejeunea* **spicatula** (p. 202); *Trachylejeunea* **malangensis*** (p. 203); *Drepanolejeunea* **propagulifera** (p. 204); *Ceratolejeunea* **moniliata*** (p. 205); *Taxilejeunea* **longirostris*** (p. 207); *Hygrolejeunea vesicata* var. **borneensis** (p. 208); *Pycnolejeunea* **johannis-winkleri** (p. 208); *Cheilolejeunea* **obcordata*** (p. 209); *C.* **pterota*** (p. 210); *Rectolejeunea* **crenulata*** (p. 210); *Leptocolea* **scaberrima*** (p. 211) and f. **eurydicta** (p. 213); *L.* **inundata*** (p. 213); *L.* **johannis-winkleri*** (p. 214); *Physocolea verrucosa* var. **rectispina** (p. 214); *P.* **crenulata*** (p. 215); *P.* **peculiaris*** (p. 216). In addition, several "n. spp. ad interim" of *Aneura* appear, without description.

14090. MARQUAND, C. V. B. A bryological holiday in the Eastern Alps. *Bryologist* 34(2): 23-26. 1931.—A description of the topographic features and the bryophytic vegetation of the region.—*A. M. Taylor.*

14091. PITMAN, HELEN. Bryology notes from Panther Pond, Raymond, Maine, U. S. A. *Bryologist* 34(3): 37-38. 1931.—Several spp. of mosses and lichens, and one hepatic are mentioned.—*A. M. Taylor.*

14092. ROBERTS, C. M. Leucobryum albidum for West Virginia. *Bryologist* 34(2): 22. 1931.—Reported from 3 localities.—*A. M. Taylor.*

14093. SHARP, A. J. Preliminary report of the liverworts of eastern Tennessee. *Jour. Tennessee Acad. Sci.* 6(4): 163-173. 1 pl., 2 fig. 1931.—A list (41 genera, 69 spp.), with key.

14094. WILLIAMS, R. S. Homalia sharpii, sp. nov. *Bryologist* 34(2): 20-21. 1 pl. 1931.—From Tennessee.—*A. M. Taylor.*

PTERIDOPHYTA

C. A. WEATHERBY, *Editor*

(See also in this issue Entries 12441, 14099 14133, 14166, 14177, 14181, 14190, 14211, 14212, 14222, 14224, 14231, 14236, 14239)

14095. **COPELAND, EDWIN BINGHAM.** Miscellaneous Oriental pteridophytes. *Univ. California Publ. Bot.* 12(15): 383-418. 6 pl. 1931.—*Lycopodium somae,* new to Philippines (Luzon); *L. tenuifolium,* new to Saghalien; *Lycopodium* (=*Urostachys* Herter), with *L.* **whitfordi** (*Urostachys w.* Herter), *L.* **merillii** [sic] (*U. merrilli* Herter), *L.* **banayanicum** (*U. banayanicus* Herter), *L.* **delbruckii** (*U. d.* Herter) (all p. 384); *L. sieboldi* Miq. (=*L. fargesii* Herter, *L. christensenianum* Christ & Herter); *Gleichenia hirta* Bl. (=*G. candida* Ros.); *G.* **peninsularis** (p. 387), Malay Peninsula; *G. brackenridgei* Fourn., new to New Hebrides; *Cyathea* **setchellii*** (p. 389), Samoa; *C.* **laciniata** (p. 389), New Hebrides, apparently new; *C.* **rugosula** (p. 390), Tonga Isls.; *Monachosorum* **gracile** (p. 391), New Guinea; *Dryopteris* **euaensis** (p. 391), Tonga Isls.; *D.* **emigrans** (*Nephrodium thwaitesii* Baker, not *Meniscium t.* Hooker) (p. 392); *D.* **macroptera** (p. 392), Tonga Isls.; *Athyrium* **uncidens** (*Dryopteris u.* Ros.) (p. 394); *Blechnum* **rosenstockii** (p. 394), New Guinea; *Ithycaulon* **acuminatus** (*Dennstaedtia acuminata* Ros.) (p. 395); *Cheilanthopsis* **elongata** (*Woodsia e.* Hooker) (p. 395); *Oleandra* **pubescens*** (p. 397), Siam; *O.* **gracilis*** (p. 397), New Guinea; *Araiostegia* **perdurans** (*Davallia p.* Christ) (p. 397); *A.* **dareiformis** (*Polypodium dareaeforme* Hooker) (p. 398); *A.* **gymnocarpa** (p. 398), Siam; *A.* **parva*** (p. 399), Sikkim; a key is given to the spp. of *Araiostegia; Davallodes* **novoguineense** (*Davallia viscidula* var. *novoguineensis* Ros.) (p. 400); *Humata* **werneri*** (p. 400), New Guinea; *H. intermedia,* new to Philippines (Luzon); *Scyphularia* **dorsalis*** (p. 401), New Guinea; *S.* **tannensis*** (p. 401), New Hebrides; *Polypodium* **bolanicum** (*P. solidum* var. *bolanica* Ros.) (p. 403); *Prosaptia* **rosenstockii** (p. 404), New Guinea; *P.* **davalliacea** (*Polypodium davalliaceum* Mueller & Baker) (p. 404); *P.* **engleriana** (*Davallia e.* Brause) (p. 404); *Cyclophorus* **micraster** (p. 405), Malay Peninsula; *Lecanopteris* **crustacea** (p. 406), Sumatra; *Dendroconche* **kingii** (p. 407), Papua. Critical notes on various other spp. are given.

14096. **GOEBEL, K. Archegoniatenstudien XVIII. Roraimafarne. [Roraima ferns.]** *Flora* 24(1): 1-37. 18 fig. 1929.—1. **HYMENOPHYLLOPSIS** (p. 3), based on *H.* **dejecta*** (p. 3), belongs to the hygrophyllous ferns and possesses a much simplified leaf structure similar to the Hymenophyllaceae. The leaf blade proper consists of 3 cell layers, an upper and a lower of papillose chlorophyll-bearing cells and a middle one without chlorophyll and apparently gelatinous. Stomata are absent. The vascular bundles are surrounded by a tanniferous sheath. The rhizome is covered with scales and has an amphiphloic solenostele with small leaf gaps. Sori, located at the tips of the veins, are covered with a basal indusium. The formation of the lobes of the leaf opposite the indusium and the insertion of the indusium vary. But the difference between indusium and the leaf lobe is recognizable, especially since the latter has a vascular supply, the former not. The sporangia resemble most closely those of *Alsophila;* the annulus encroaches upon the insertion of the short stalk. The form of the sporangium varies; there are only a few (five at the most) present in each sorus. The new genus, therefore, recalls the leaf structure of the Hymenophyllaceae and the form of the indusium may be compared to that of *Hymenophyllum,* if one considers the leaf lobe opposite the indusium as the upper covering and the latter as the lower. If one assumes one "indusium inferum," it resembles most closely the genus *Hemitelia* of Cyathaceae, or the indusium of Davalliaceae. *Hymenophyllopsis* may be considered as a representative of a group much reduced, and altered in form of sorus, standing close to the Cyathaceae and apparently very limited in distribution.—*Pleurogramme* **luetzelburgiana*** (p. 21), growing in rock crevices on the summit of Roraima, is the smallest American species known. It is of interest because the sporangia are not always borne only on the upper portion of the leaf. These may appear also along the peculiarly modified simple lateral veins lower down. This indicates that *Pleurogramme* represents a gymnogrammoid development approaching certain *Polypodium* species. In certain species appear in addition commissural veins in the fertile portion, a character which has established itself in quite a number of fern groups.—A third (already known) Roraima fern, *Pterozonium cyclophyllum,* is discussed because it also shows relatively primitive characters, including leaf form and hairs instead of scales.—*Enterosora,* another Roraima fern, can no longer be considered endemic as this (or a closely related species) is also found in Costa Rica. The leaf structure confirms the supposition of Baker that it is related to *Polypodium trifurcatum.* The sori of the Costa Rican species are elongated and sunken in pits from which sporangia emerge through elongation of the stalk.—The anatomical structures of the leaf of the ferns discussed agree in combining a hygrophyllous form with structural peculiarities which retard rapid desiccation. The "hygrophile" form appears in 2 types: thin leaf blade without intercellular spaces, mostly without stomata, etc., and leaves with almost homogeneous mesophyll and large intercellular spaces. As structural provisions for preventing rapid desiccation are discussed further: thickness of leaves and stonger development of epidermal cell walls. *Hymenophyllopsis,* in which the assimilative cells are freely exposed, apparently has such provision in the possession of gelatinous cells. In *Pleurogramme, Pterozonium cyclophyllum* and *Enterosora* the assimilative tissue is composed of uniform cells with intercellular spaces,—in *Enterosora* attaining a surprisingly large size for a land plant. The epidermis on the lower side has large stomata but its cell walls are relatively thick, which is not the case in the related *P. trifurcatum. Pterozonium reniforme,* found near Roraima, shows another structure. An attempt was made to establish a correlation of leaf structure of the Roraima ferns with climatic conditions. Brief mention is also made of some endemic carnivorous plants in the Roraima section (*Heliamphora nutans, Genlisea roraimensis* and *Utricularia humboldti*).—*Author's summary* (*transl. by H. L. Blomquist*).

14097. **KUPPER, W. Notiz über die Sporenausstreuung bei Platycerium biforme Bl. [Spore dispersal in P. biforme.]** *Flora* 22(3/4): 388-391. 2 fig. 1927.

14098. **SCHMIDT, O. C. Plantae sinensis a Dre. H. Smith annis 1921-22 lectae. XIII. Selaginellaceae.** *Acta Horti Gothoburgensis* 5: 51-54. 1930.—An annotated list of 14 spp., including *Selaginella* **smithii** (p. 52), Szechwan.

SPERMATOPHYTA

FRANCIS W. PENNELL, *Editor*

(See also in this issue Entries 12074, 12154, 12357, 12358, 12440, 12441, 12621, 12635 12649, 12650, 12654, 12655, 12657, 12677, 12735, 12736, 13993, 13994, 13999, 14098, 14176, 14206, 14224, 14236)

GENERAL

14099. **RYDBERG, P. A.** Taxonomic notes on the flora of the prairies and plains of central North America. *Brittonia* 1(2): 79-104. 1931.—A contribution, in advance of the author's manual on the region, dealing with nomenclatorial problems, transfers, and new diagnoses. Included are: *Bothriochloa* saccharoides (*Andropogon s.* Sw. 1788, *Amphilophis s.* Nash) (p. 81); *Echinochloa* pungens (*Panicum p.* Poir.) (p. 81); *E.* occidentalis (*E. muricata o.* Wieg.) (p. 82); *E.* microstachya (*E.* [*muricata*] *m.* Wieg.) (p. 82); *Zizania* interior (*Z. aquatica i.* Fassett) (p. 82); *Spartina michauxiana* (1908) Hitchcock, to be superseded by the older name *S. pectinata* Link (1820); *Koeleria* latifrons (*K. gracilis* subsp. *nitida latifrons* Domin) (p. 84); *Poa* plattensis (p. 84), Nebraska; *P.* overi (p. 84), S. Dakota; *Agropyron* leersianum (*Triticum repens l.* Wulf.) (p. 85); *Juncus* litorum (*Juncus balticus littoralis* Engelm. 1866, not *J. littoralis* C. A. Meyer 1831); *J.* amblyocarpus (*J. articulatus obtusus* Engelm.) (p. 85); *Luzula* bulbosa (*L. campestris b.* Wood) (p. 85); **DENSLOVIA** (p. 85), based on *D.* clavellata (*Orchis c.* Michx.) (p. 86); *Goodyera* ophioides (*G. repens o.* Fern.) (p. 86); *Salix* nudescens (*S. glaucops glabrescens* Anders., not *S. glabrescens* Lindl.) (p. 86); *Quercus* mandanensis (*Q. obtusiloba depressa* Nutt., not *Q. depressa* Blume); (p. 86); *Pilea* opaca (*Adicea o.* Lunell) (p. 87); *P.* fontana (*A. f.* Lunell) (p. 87); *Eriogonum* helichrysoides (*E. microthecum h.* Gand.) (p. 87); *Persicaria* iowensis (p. 87), Iowa; *Claytonia* robusta (*C. multicaulis r.* Somes) (p. 87); *Limnia* humifusa (*Montia h.* Howell) (p. 88); *Sabulina* texana (*Arenaria stricta t.* Robins.) (p. 88); *S.* litorea (*A. l.* Fern.) (p. 88); *S.* dawsonensis (*A. d.* Britton) (p. 88); *S.* propinqua (*A. p.* Richards) (p. 88); *Thalictrum* hypoglaucum (p. 88), Texas; *Sophia* richardsoniana (*Sisymbrium richardsonianum* Sweet) (p. 89); *Cheirinia* syrticola (*Erysimum s.* Sheld.) (p. 89); *Pleurophragma* lilacinum (*Thelypodium l.* Greene) (p. 89); *Amelanchier* carrii (p. 89), S. Dakota; *Prunus* rugosa (p. 90), Kansas; *Desmanthus* cooleyi (*Acacia c.* Eat.) (p. 90); *Psoralidium* batesii (p. 91), Nebraska; reasons are advanced for retaining *Leptoglottis* DC. (1823) versus *Schrankia* Willd. (1806) and *Morongia* Britton (1894), *Larrea* Ortega (1797) versus *Hoffmanseggia* Cav. (1798), *Parosela* Cav. (1802) versus *Dalea* Juss. (1789), and *Cracca* L. (1753) versus *Tephrosia* Pers. (1807); *Lathyrus* macranthus (*L. myriafolius m.* White) (p. 92); *Meibomia* pubens (*Desmodium paniculatum p.* T. & G.) (p. 92); *Galarrhoeus* esula (*Euphorbia e.* L.) (p. 93); *G.* lucida (*E. l.* Waldst. & Kit.) (p. 93); *G.* robustus (*E. montana r.* Engelm.) (p. 93); *G.* missouriensis (*E. arkansana m.* Norton) (p. 93); *Rhus* nortonii (*Schmaltzia n.* Greene) (p. 93); *Megapterium* brachycarpum (*Oenothera brachycarpa* A. Gray) (p. 93); *Meriolix* oblanceolata (p. 93), Kansas; *Osmorrhiza* villicaulis (*O. longistylis v.* Fern.) (p. 93); *Svida* baileyi (*Cornus b.* Coulter & Evans) (p. 94); *S.* stolonifera (*C. s.* Michx.) (p. 94); *S.* foemina (*C. f.* Mill.) (p. 94); *Cyanococcus* angustifolium [sic] (*Vaccinium a.* Ait.) (p. 94); *C.* corymbosus (*V. corymbosum* L.) (p. 94); *C.* vacillans (*V. c.* Kalm) (p. 94); *Anthopogon* procerus (*Gentiana procera* Holm) (p. 94); *Moldavica* thymiflora (*Dracocephalum thymiflorum* L.) (p. 94); *Dracocephalum* formosius (*Physostegia formosior* Lunell) (p. 95); *Stachys* brevidens (p. 95), Minnesota; *S.* pustulosa (p. 95), Wisconsin; *S.* homotricha (*S. palustris h.* Fern.) (p. 95); *S.* schweinitzii (*S. velutina* Schwein.) (p. 95); *S.* borealis (p. 95); *Stachys* puberula (*S. palustris p.* Jennings) (p. 96); *Androcera* citrullifolia (*Solanum citrullifolium* A. Br.) (p. 96); *Aureolaria* serrata (*Gerardia s.* Torr.) (p. 96); *Triosteum* illinoense (*T. perfoliatum i.* Wieg.) (p. 96); *Ambrosia* striata (p. 96), Colorado; *A.* variabilis (p. 97), S. Dakota; *Eupatorium* holzingeri (p. 97), Minnesota; *Brickellia* umbellata (*Coleosanthus umbellatus* Greene) (p. 98); *Liatris* compacta (*L. squarrosa c.* T. & G.) (p. 98); *L.* glabrata (p. 98); *L.* hirsuta (p. 99), Missouri; *L.* bebbiana (p. 99), Illinois; *L.* haywardii (p. 99), S. Dakota; *L.* herrickii (*Laciniaria h.* Steele in herb.) (p. 99), Minnesota; *L.* ligulistylis (*Laciniaria l.* A. Nels.) (p. 100); *L.* rosendahlii (p. 100) and *Chrysopsis* ballardii (p. 100), Minnesota; *Isopappus* validus (p. 100), Kansas; *Solidago* hapemaniana (p. 101), Nebraska; *S.* somesii (p. 101), Iowa; *S.* lunellii (p. 101), N. Dakota; *Euthamia* glutinosa (p. 102), Kansas; *Aster* finkii (p. 102), Iowa; *A.* batesii (p. 102), Nebraska; *A.* woldeni (p. 103), Iowa; *A.* lucidulus (*A. puniceus l.* A. Gray) (p. 103); *A.* laeviformis (p. 103) and *A.* oticus (p. 103), Minnesota; *Bidens* sandbergii (*B. connata pinnata* S. Wats. not *B. pinnata* Noronh.) (p. 104); *B.* filamentosa (p. 104), Minnesota.

GYMNOSPERMAE

14100. **MARKGRAF, F.** Monographie der Gattung Gnetum. *Bull. Jard. Bot. Buitenzorg* 10(4): 407-511. 8 maps, 14 pl. 1930.—The genus *Gnetum*, isolated among the Gymnosperms, is here treated monographically for the first time. In the general part of the work the morphology of the genus is presented and its phylogeny and evolution discussed, including remarks on some general questions of taxonomy. The distribution of each sp. is illustrated by a map and the relation of distribution to evolution considered, leading to some new floristic ideas on the Indo-Malayan flora. Two keys to the species are provided, for ♂ and ♀ plants respectively. Descriptions are in Latin; citation of specimens and synonymy are complete. Included are: *G. gnemon* var. domesticum* (*Gnemon domestica* Rumph.) (p. 437), with f. volubile, New Guinea, and f. stipitatum*, Moluccas, (p. 440); *G. g.* var. brunonianum* (*G. b.* Griff.) (p. 440); *G. g.* var. griffithii* (*G. griffithii* Parl.) (p. 442); *G. g.* var. tenerum* (p. 444), Borneo; *G. g.* var. gracile (p. 444), Celebes; *G.* schwackeanum Taub.* (p. 450), Brazil; new subsect. **STIPITATI** (p. 455); *G. latifolium* var. blumei* n. name (p. 459), Malay Peninsula, with f. longipes* (p. 461) and f. brachypodum* (p. 462), both from Philippines; *G. l.* var. macropodum* (*G. m.* Kurz) (p. 462); *G. l.* var. minus* (*G. m.* Foxw.) (p. 463); *G. l.* var. funiculare (*G. f.* Bl.) (p. 463); *G.* montanum* (p. 466), Sikkim, Assam, Burma, Tenasserim, Siam, China, Tonkin, with f. megalocarpum* Assam, and f. parvifolium* (*G. scandens* v. *p.* Warb.) (p. 468); *G.* contractum* (p. 470), India; *G.* oblongum* (p. 471), Bengal, Pegu, Tenasserim; new subsect. **SESSILES** (p. 472); *G.* klossii* Merr. ms. (p. 478), Borneo; *G.* ridleyi* Gamble (p. 479), Malay Peninsula; *G.* loerzingii* (p. 480), Sumatra; *G.* diminutum* (p. 483), Borneo; *G. leptostachyum* var. tenue* (p. 489), Borneo; *G. l.* var. robustum* (p. 490), Borneo.—*F. Markgraf* (*transl. by H. A. Gleason*).

14101. **MATTFELD, JOH.** Abies duplex Hormuzaki als Gipfel von Abies alba Mill. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 405-411. 1928.—Mattfeld denies the validity of Hormuzaki's species, *Abies duplex*, claiming that it represents merely the crown of trees of *A. alba* Mill.,—a conclusion reached after extensive observations in the field.—*A. M. Johnson.*

14102. **MATTFELD, JOH.** Individuelle Heterophyllie, nicht Sippendifferenzierung, bei Abies alba Mill. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(96): 583-593. 1929. —Mattfeld argues in support of his contention that

Abies duplex Hormuzaki is not a valid species but, as recently contended (see preceding entry), is merely the "crown" or top portion of individuals of *A. alba* Mill. The paper is a reply to a denial by Hormuzaki.—*A. M. Johnson.*

ANGIOSPERMAE (MIXED)

14103. **MATTFELD, JOH.** Vermischte Diagnosen VI. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(100): 1049-1053. 1930.—*Olyra* luetzelburgii Pilger (p. 1049) (*Gramineae*), northern Brazil; *Butia* microspadix Burret (p. 1050) (*Palmae*), Brazil; *Pycnophyllum* leptothamnum (p. 1051), (*Caryophyllaceae*), Peru; *Guranía* huebneri Harms (p. 1052) (*Cucurbitaceae*), Brazil. **ARROJADOCHARIS** (*Compositae*), n. n. for *Arrojadoa* Mattf. preoccupied, and based on *Arrojadocharis* praxeloides (*Arrojadoa p.* Mattf.) (p. 1053).—*A. M. Johnson.*

14104. **SANDWITH, N. Y., et al.** Decades Kewenses Plantarum Novarum in Herbario Horti Regii Conservatarum. Decas CXXIV. *Kew Bull. Misc. Inform.* 1930 (4): 153-161. 1 pl., 2 fig. 1930.—*Ruyschia* phylladenia (p. 153), Costa Rica; *Impatiens* barnesii C. E. C. Fischer (p. 153) and *I.* laticornis C. E. C. Fischer (p. 154), India; *Banara* regia (p. 154), Ecuador; *Strychnos* silvicola A. W. Hill (p. 156), Siam; *Jacquemontia* ciliata (p. 156), Trinidad; *Vitex* calothyrsa (p. 157), Venezuela; *Pandanus* (*Vinsonia*) basedowii* C. H. Wright (p. 158), Australia; *Eriocaulon* ensiforme C. E. C. Fischer (p. 159) and *E.* gamblei C. E. C. Fischer (p. 160), India.—*A. D. Cotton.*

14105. **STANDLEY, PAUL C.** Studies of American plants—V. *Field Mus. Nat. Hist. Bot. Ser.* 8(5): 295-398. 1931.—The present report is mainly devoted to tropical American flowering plants, especially Rubiaceae, studied in part from recent collections, in part from loans of material in European herbaria. The following appear: Gramineae: *Andropogon saccharoides* var. parvispiculus (*A. s.* ssp. *p.* Hitchc.) (p. 297); *Briza monandra* var. condensata (p. 298), Peru. Nyctaginaceae: *Mirabilis* microchlamydea (*Allionia m.* Standl.) (p. 304); *M.* glabra (*Oxybaphus glaber* Wats.) (p. 304); *M. g.* var. recedens (*O. glaber* var. *r.* Weatherby) (p. 304); *M.* exaltata (*Allionia e.* Standl.) (p. 305); *M.* carletoni (*A. c.* Standl.) (p. 305); *M.* gausapoides (*A. g.* Standl.) (p. 305); *M.* decipiens (*A. d.* Standl.) (p. 305); *M.* pauciflora (*Oxybaphus pauciflorus* Buckl.); *M.* lanceolata (*Allionia l.* Rydb.) (p. 305); *M.* coahuilensis (*A. c.* Standl.) (p. 305); *M.* pumila (*A. p.* Standl.) (p. 305); *M.* rotundifolia (*A. r.* Greene) (p. 305); *M.* grayana (*A. g.* Standl.) (p. 306); *M.* suffruticosa (*A. s.* Standl.) (p. 306); *M.* comata (*A. c.* Small) (p. 306); *M.* longipes (*A. l.* Standl.) (p. 306); *M.* ciliata (*A. c.* Standl.) (p. 306); *M.* oligantha (*Hesperonia o.* Standl.) (p. 306); *M.* polyphylla (*H. p.* Standl.) (p. 306); *M.* grandiflora (*Allionia g.* Standl.) (p. 306); *Torrubia* myrtiflora (p. 307), Peru; *T.* broadwayana (*Pisonia b.* Heimerl) (p. 308); *T.* obtusiloba (*P. o.* Huber) (p. 308); *T.* riedeliana (*P. r.* Fisch.) (p. 308); *T.* warmingii (*P. w.* Heimerl) (p. 308); *Bougainvillea* pachyphylla Heimerl in herb. (p. 308), Peru; *Neea* williamsii (p. 309), Peru; *Allionia* cristata (*Wedelia c.* Standl.) (p. 310); *A.* choisyi (*A. incarnata* var. *glabra* Choisy) (p. 310). Ranunculaceae: *Anemone* multiceps ("*multifida*") (*Pulsatilla multiceps* Greene) (p. 310). Nymphacaceae: *Nuphar* fraternum (*Nymphaea fraterna* Miller & Standl.) (p. 310); *N. advena* var. erthryaeum (*Nymphaea a.* subsp. *erythraea* Miller & Standl.) (p. 310); *N.* ozarkanum (*Nymphaea ozarkana* Miller & Standl.) (p. 310); *N.* ludovicianum (*Nymphaea ludoviciana* Miller & Standl.) (p. 311); *N.* fluviatile (*Nymphaea fluviatilis* Harper) (p. 311); *N.* chartaceum (*Nymphaea chartacea* Miller & Standl.) (p. 311); *N.* ulvaceum (*Nymphaea ulvacea* Miller & Standl.) (p. 311); *N.* ovatum (*Nymphaea ovata* Miller & Standl.) (p. 311); *N.* puberulum (*Nymphaea puberula* Miller & Standl.) (p. 311); *N.* microcarpum (*Nymphaea microcarpa* Miller & Standl.) (p. 311); *N.* orbiculatum (*Nymphaea orbiculata* Small) (p. 311); *N.* bombycinum (*Nymphaea bombycina* Miller & Standl.) (p. 311). Cruciferae: *Nasturtium* clavatum (*Roripa clavata* Rydb.) (p. 312); *N.* williamsii (*Roripa w.* Britton) (p. 312). Droseraceae: *Drosera intermedia* Hayne, Brit. Honduras, the family new to Central America. Leguminosae: *Calliandra* papillosa (*Anneslia p.* Britt. & Rose). (p. 312); *C.* belizensis (*A. b.* Britt. & Rose) (p. 312); *C.* chapaderoana (*A. c.* Britt. & Rose) (p. 312); *C.* salvadorensis (*A. s.* Britt. & Rose) (p. 312); *C.* izalcoensis (*A. i.* Britt. & Rose) (p. 312); *C.* juzepczukii (p. 313), Mexico; *Bauhinia* hondurensis (p. 313), Honduras; *Eriosema* pinetorum (p. 315), Brit. Honduras, Aquifoliaceae: *Ilex* liebmannii (p. 315), Mexico. Celastraceae: *Celastrus* liebmannii (p. 316), Mexico. Theaceae: *Eurya* lancifolia (p. 317), Brit. Honduras. Flacourtiaceae: *Abatia* mexicana (p. 318), Mexico; *Xylosma* celastrinum (*Flacourtia celastrina* HBK.) (p. 318). Myrtaceae: *Psidium* rotundifolium (p. 318), *P.* chrysobalanoides (p. 319), *P.* schippii (p. 319), *P.* hypoglaucum (p. 320) and *Eugenia* flavifolia (p. 320), Brit. Honduras. Cornaceae: *Cornus disciflora* var. floccosa (*C. f.* Wang.) (p. 321). Convolvulaceae: *Lysiostyles* sericea (p. 322), Hondurus. Solanaceae: **EUTHETA** (p. 324), based on *E.* hondurensis (*Cacabus h.* Donn. Smith) (p. 325). Scrophulariaceae: *Lagotis* minor (*Gymnandra minor* Willd.) (p. 325); *L.* reniformis (*G. r.* Willd.) (p. 325). Orobanchaceae: *Boschniakia* rossica (*Orobanche r.* C. & S.) (p. 325). Rubiaceae: *Manettia* minutiflora (p. 326), *M.* tomantha (p. 326), *M.* campanulacea (p. 327), *M.* paulina (p. 328), *M.* hoehnei (p. 329) and *M.* bradei (p. 330), Brazil; *M.* samuelssoniana (p. 331), Argentina; *M.* paranensis (p. 331), Brazil; *M.* asclepiadacea (p. 332), Peru; *Bouvardia* orizabensis (p. 334), Mexico; *Cinchona* amazonica (p. 334), Peru; *Remijia* longifolia Benth in herb. (p. 335), Brazil; *Ladenbergia* ferruginea (p. 336) and *Ferdinandusa* loretensis (p. 337), Peru; *Hillia* goudotii (p. 338), Colombia; *Exostema* leonis (p. 338), Cuba; *Sickingia* williamsii (p. 340), Peru; *S.* paraguayensis (p. 340), Paraguay; *Phitopis* sterculioides (p. 341), Peru; *Rondeletia* gracilispica (p. 342), Mexico; *R.* peruviana (p. 342), Peru; *Oldenlandia* dusenii (p. 343), Brazil; **CREATANTHA** (p. 344), based on *C.* peruviana (p. 344), Peru; *Isertia* alba (*Cassupa a.* Schum. & Krause) (p. 346); *I.* juruana (*C. j.* Schum. & Krause) (p. 346); *I.* panamensis (*C. p.* Standl.) (p. 346); *I.* pittieri (*C. p.* Standl.) (p. 346); *I.* scarlatina (*C. s.* Schum. & Krause) (p. 346); *I.* verrucosa (*C. v.* H. & B.) (p. 346); *Coccocypselum* pumilio (p. 346), Brazil; *Pentagonia* subauriculata (p. 347) and *P.* velutina (p. 347), Peru; *Hoffmannia* dusenii (p. 348), Brazil; *Tocoyena* williamsii (p. 349) and *T.* amazonica (p. 350), Peru; *T.* sprucei (p. 350), Brazil; *Randia spinosa* var. pubescens (*Mussaenda p.* HBK.) (p. 352); *Duroia* stenophylla (p. 353), *D.* trichocarpa (p. 353) and *Amaioua* urophylla (p. 354), Peru; *Alibertia* gardneri (p. 354), Brazil; *Kotchubaea* sericantha (p. 355) and *Retiniphyllum* adinanthum (p. 355), Peru; *R.* kuhlmannii (p. 356), Brazil; *Machaonia* williamsii (p. 357), Peru; *Guettarda* colubrinoides (p. 358), Mexico; *G.* rhamnifolia (p. 359) and *G.* hypoglauca (p. 359), Brazil; *Anisomeris* englesingii (*Chomelia e.* Standl.) (p. 360); *A.* klugii (p. 360), Peru; *A.* occidentalis (*Chomelia o.* Muell. Arg.) (p. 361); *A. ribesioides* var. villosula (*Malanea r.* var. *v.* Muell. Arg.) (p. 361); *A.* brasiliana (*Chomelia b.* A. Rich.) (p. 361); *A.* pedunculosa (*C. p.* Benth.) (p. 361); *A.* tristis (*C. t.* Muell. Arg.) (p. 361); *A.* pubescens (*C. p.* C. & S.) (p. 361); *A.* oligantha (*C. o.* Muell. Arg.) (p. 361); *A.* vulpina (*C. v.* Muell. Arg.) (p. 361); *A.* estrellana (*C. e.* Muell. Arg.) (p. 361); *A.* parviflora (*C. p.* Muell. Arg.) (p. 361); *A.* malaneoides (*C. m.* Muell. Arg.) (p. 361); *A.* transiens (*C. t.* Muell. Arg.) (p. 361); *A.* sessilis (*C. s.* Muell. Arg.) (p. 361); *A.* juruensis (p. 361), *A.* parvifolia (p. 362), *A.* monantha Schum. in herb. (p. 363), *A.* modesta (p. 363), *A.* bella (p. 364), *A.* randioides (p. 364) and *Malanea forsteronioides* var. pilosa (p. 365), Brazil; *Coussarea* megalocarpa (p. 366), *C.* ses-

silifolia (p. 367), *C.* ovalis (p. 367) and *C.* tricephala (p. 368), Peru; *Declieuxia fruticosa* var. guyanensis (*D. chiococcoides* var. *g.* Muell. Arg.) (p. 369); *D.* dusenii (p. 369), Brazil; *Cephaelis* bella (p. 372), Peru; *C.* oinochrophylla (p. 372), Peru; *C.* duckei (p. 374), Brazil; *C.* hastisepala (*Psychotria h.* Muell. Arg.) (p. 375); *C.* appendiculata (*P. a.* Muell. Arg.) (p. 375); *C.* trichocephala (*P. t.* Poepp. & Endl.) (p. 375); *C.* biternata (*P. b.* Muell. Arg.) (p. 375); *C.* glabrescens (*P. g.* Muell. Arg.) (p. 375); *C.* horridula (*P. horridula* Muell. Arg.) (p. 375); *C.* involucrans (*P. i.* Muell. Arg.) (p. 375); *C.* phyllocalymmoides (*P. p.* Muell. Arg.) (p. 375); *Psychotria* marcgraviella (p. 375), *P.* huallagae (p. 376), *P.* klugii (p. 377), *P.* tarapotensis (p. 377) and *P.* nudiceps (p. 378), Peru; *P.* dusenii (p. 378), Brazil; *P.* pycnantha (*Mapouria brachypoda* Muell. Arg.) (p. 379); *P.* hayatae (*P. macrophylla* Hayata) (p. 379); *Palicourea* stenoclada (*Psychotria s.* Muell. Arg.) (p. 380); *P.* corymbifera (*Psychotria c.* Muell. Arg.) (p. 380); *P.* fulgens (*Psychotria f.* Muell. Arg.) (p. 380); *P.* lanata (*Psychotria l.* Muell. Arg.) (p. 381); *P. rigida* var. aurata (*Palicourea aurata* Mart.) (p. 381); *P.* subaeneo-fusca (*Psychotria s.-f.* Muell. Arg.) (p. 381); *P.* rudgeoides (*Psychotria r.* Muell. Arg.) (p. 381); *P.* pachypodina (*Psychotria p.* Muell. Arg.) (p. 381); *Rudgea* microcarpa (*Coffea m.* R. & P.) (p. 382); *R.* villiflora Schum. in herb. (p. 383), *Mitracarpus* rigidifolius (p. 384) and *M.* recurvatus (p. 384), Brazil; *Staelia* scabra (*Diphragmus scaber* Presl) (p. 385); *S.* hassleri (*S. filifolia* Chod. & Hassl.) (p. 386); *Richardia* tricocca (*Diodia t.* T. & G.) (p. 386); *R.* rigidifolia (*Richardsonia r.* Krause) (p. 386); *R.* lomensis (*Richardsonia l.* Krause) (p. 386); *R.* pedicellata (*Richardsonia p.* Schum.) (p. 386); *Diodia* subulata (*Borreria s.* DC.) (p. 386); *D. brasiliensis* var. microphylla (*D. polymorpha* var. *m.* C. & S.) (p. 387); *Borreria* brittonii (*B. saxicola* Britt. & Millsp.) (p. 388); *B.* balansae (p. 389), Paraguay; *B.* vulpina (p. 389), *B.* valens (p. 390), *B.* clinopodioides (p. 391), *B.* liliifolia (p. 392) and *B.* luteovirens (p. 392), Brazil; *B.* chodatiana (*B. thalictroides* var. *latifolia* Chod. & Hassl.) (p. 393); *B. thalictroides* var. longifolia (p. 394), *B.* mitreoloides (p. 395), *Relbunium* malmei (p. 396) and *R.* paulense (p. 397), Brazil; *R. hirtum* var. camporum (*Galium camporum* Pohl) (p. 397); *R. hirtum* var. reflexum (*Galium r.* Pohl) (p. 398); *Galium* werdermannii (p. 398), Chile. Compositae: *Lagascea* media (*Nocca m.* Blake) (p. 398); *L.* pteropoda (*Nocca p.* Blake) (p. 398).

MONOCOTYLEDONES

14106. BLATTER, E., and C. McCANN. Gramineae. X. of: **E. BLATTER: "Revision of the flora of the Bombay Presidency."** [Continuation.] *Jour. Bombay Nat. Hist. Soc.* 33(4): 753-775. 1929.—Systematic treatment of the tribes Chlorideae, Pappophoreae, Oryzeae, Festuceae, Hordeae and Bambuseae. Keys to the genera and spp. are given with extensive synonymy and citations of literature and specimens. Descriptions are given only in cases where the species was not given in the earlier Flora of the Bombay Presidency by Cooke. Page references to this work are given for the description of all other species.—*Oxytenanthera* ritcheyi (*Bambusa r.* Munro) (p. 773). The authors here correct an error in *Ibid.* Vol. 32. 1927, and state that their n. comb. *Hemarthria glabra* must now be referred to *H. compressa* (Linn. f.) R. Br. on account of preoccupation.—*P. L. Ricker.*

14107. BLATTER, E., and C. McCANN. Gramineae. Part XI of: **BLATTER, E. Revision of the Flora of the Bombay Presidency.** *Jour. Bombay Nat. Hist. Soc.* 34 (1): 12-26. 1930.—A natural key to the 109 genera is given.—*E. Blatter.*

14108. BULLOCK, A. A. A new genus of Iridaceae from East Africa. *Kew Bull. Misc. Inform.* 1930(10): 465-466. 1930.—**OENOSTACHYS**, based on *O.* dichroa, Mt. Elgon, Uganda, at 9000-10,000 ft. alt., is remarkable for its brightly colored bracts which hide the flowers almost completely, and form a wine-colored spike. It is allied to *Gladiolus, Antholyza,* and *Watsonia.*—*A. A. Bullock.*

14109. BURRET, M. Four new palms collected in the Territory of Papua (British New Guinea) by **L. J. BRASS.** *Jour. Arnold Arboretum* 12(4): 264-269. 1931. —*Calamus* nannostachys (p. 264), *Areca* (*Balanocarpus*) nannospadix (p. 265), *Actinophloeus* microcarpus (p. 267), *A.* linearis (p. 268).—*A. Rehder.*

14110. BURRET, M. Die Palmengattung Manicaria Gaertn. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (95): 389-394. 1928.—*Manicaria* martiana (p. 392), Amazon region near Manaos, Brazil, where it goes by the name "Bussu" or "Ubussu."—*A. M. Johnson.*

14111. BURRET, M. Die Palmengattungen Chelyocarpus Dammer und Tessmanniophoenix Burret, nov. gen. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 394-401. 1928.—Dammer's *Chelyocarpus* is a fan palm, most closely related to *Acanthorhiza* and *Trithrinax* but differing in possessing 2 annular points of insertion of the spathes and in the spathes being readily deciduous. The fruiting spadix of *Chelyocarpus* is described in full. *Chelyocarpus* wallisii (*Acanthorhiza w.* H. Wendl.) (p. 397) is hesitantly proposed. **TESSMANNIOPHOENIX** (p. 397), near *Chelyocarpus,* includes *T.* longibracteata (p. 398), eastern Peru, and *T.* chuco (*Thrinax c.* Mart.) (p. 400).—*A. M. Johnson.*

14112. BURRET, M. Die Palmengattungen Orbignya, Attalea, Scheelea, und Maximiliana. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(96): 493-543. 1929.—No grounds exist for combining the genera *Attalea* and *Scheelea, Scheelea* being a natural sharply distinct genus. Less definite is the distinction between *Attalea* and *Orbignya. Maximiliana,* closest to *Scheelea,* is distinguished by the characters of the endocarp and especially by the germ pores. The stone of the fruit furnishes useful specific distinctions in *Orbignya, Attalea,* and *Scheelea.* The carpellate inflorescence shows a flower arrangement similar to that in *Cocos* and related forms; indeed the carpellate inflorescence may be described morphologically as androgynous. No fertile staminate flowers were found in the carpellate inflorescence. The author doubts the occurrence of dioecious forms in these genera. The spadices in all cases show simple branching. Knowledge of the geographic distribution of these genera is rather incomplete, but they occur in the West Indies and S. Amer. The plants yield oils, fiber, and edible fruits. A conspectus of the genera and species follows. In *Orbignya* (19 spp. listed, with notes on localities) appear: *O.* huebneri (p. 501), Amazon region; *O.* macropetala (p. 507), British Guiana; *O.* microcarpa (*Attalea m.* Mart.) (p. 507); *O.* spectabilis (*Attalea s.* Mart.) (p. 508); *O.* agrestis (*Attalea a.* Barb. Rodr.) (p. 511). A fuller description is given for *O. speciosa** (Mart.) Barb. Rodr. In *Attalea* (17 spp. included, for most of which the fruit is unknown) appear: *A.* hoehnei (p. 522), Matto Grosso, Brazil; *A.* tessmannii (p. 538), Peru; *A.* crassispatha (*Maximiliana c.* Mart.) (p. 527); *A.* lapidea (*Cocos l.* Gaertn.) (p. 533); *A.* dubia (*Orbignya d.* Mart.) (p. 537); *A.* concinna (*Pindarea c.* Barb. Rodr.) (p. 537). A list of excluded spp. and genera and a list of nomina nuda vel delenda follow.—*A. M. Johnson.*

14113. BURRET, M. Neue und kritische Arten der Palmengattung Mauritia. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(96): 565-574. 1929.—New material has disclosed disagreements in the literature regarding earlier spp. The difficulty in identification lies in the fact that these palms are dioecious, which has led to erroneous specific identifications of staminate and carpellate plants, these having been based on characters of the leaves only or on photographs. The inflorescences of the "sexes" are so different as to be valueless for taxonomic purposes. The most reliable characters reside in the carpellate inflorescence alone, in the fruiting stage, with which must be combined the leaf characters. *Mauritia carana* Wallace is discussed, and the following proposed: *M.* sphaerocarpa (p. 569), *M.* huebneri (p. 570) and *M.* intermedia (p. 572), Brazil; *M.* macroclada

(p. 574), Colombia. The author is unable to discover any valid characters for Drude's genus *Orophoma*.—*A. M. Johnson.*

14115. **BURRET, M.** Die Heimat von Astrocaryum rostratum Hook. f. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 837-838. 1929.—Author maintains that the palm which has passed in botanical gardens and greenhouses for *A. rostratum* did not come from Brazil but from Mexico, and should be called *A. mexicanum* Liebm.—*A. M. Johnson.*

14116. **BURRET, M.** Zur Gattung Jessenia Karst. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 839-840. 1929.—*Jessenia* weberbaueri (p. 840), Moyobamba region of Peru; the fruit is edible.—*A. M. Johnson.*

14117. **BURRET, M.** Die Gattung Ceroxylon Humb. et Bonpl. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 841-854. 1929.—A conspectus of the spp., with a key to 16 spp. The genus has a rather restricted range in the Andean region of Colombia and Peru, and perhaps of Bolivia, the spp. ascending to the limits of the tree zone. In northern S. Amer. it reaches Caracas, Venezuela. The fruits are fleshy and quite large. A list of doubtful or little known and excluded species is appended. *Ceroxylon* latisectum (p. 844), Peru; *C.* schultzei (p. 846), Colombia; *C.* ventricosum (p. 847), Ecuador; *C.* weberbaueri (p. 848), *C.* crispum (p. 849) and *C.* verruculosum (p. 850), Peru; *C.* floccosum (p. 851), Colombia; *C.* ceriferum (*Klopstockia cerifera* Karst.) (p. 846); *C.* beethovenia (*C. andicola* H. Wendl.) (p. 845).—*A. M. Johnson.*

14118. **BURRET, M.** Die Gattung Hyospathe Mart. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 854-859. 1929.—A conspectus of 10 S. Amer. spp of *Hyospathe*, with key, including: *H.* wendlandiana Dammer in scheda (p. 855), Colombia; *H.* tessmannii (p. 856), Peru; *H.* micropetala (p. 857), Peru; *H.* sodiroi Dammer in scheda (p. 857), Ecuador; *H.* weberbaueri Dammer in scheda (p. 858), Peru.—*A. M. Johnson.*

14119. **EIG, A.** Aegilops sharonensis n. sp. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 489-491. 1928. —This n. sp. from Palestine belongs to sect. *Platystachys*. —*A. M. Johnson.*

14120. **HARMS, H.** Bromeliaceae novae. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(96): 575-582. 1929. —Localities are mentioned for specimens of *Navia caulescens* Mart., from Colombia and Brazil. *Navia* is transferred from the tribe Pitcairnieae into subfamily Navioideae. MEZIOTHAMNUS (p. 575), based on *M.* brevifolius (*Navia brevifolia* Griseb.) (p. 576), Argentina; *Tillandsia* chinchicuana (p. 578), *T.* arnoldiana (p. 579) and *T.* caloura (p. 580), Colombia; *Aechmea* huebneri (p. 581), Brazil. Distributional notes are given for *Tillandsia crenulipetala* Mez., *T. grisebachiana* Bak., *Aechmea spicata* Mart., and *A. spectabilis* Brongn.—*A. M. Johnson.*

14121. **HARMS, H.** Bromeliaceae novae III. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 784-805. 1929.—A conspectus of 41 spp. of *Araeococcus, Hohenbergia, Streptocalyx, Portea, Aechmea, Pitcairnia, Puya, Lindmania, Tillandsia, Vriesea, Thecophyllum, Caraguata, Guzmania,* and *Schlumbergeria*, including: *Araeococcus* flagellifolius (p. 784), *Hohenbergia* pickelii (p. 785) and *Portea* leptantha (p. 786), Brazil; *Aechmea* inconspicua (p. 786), Bolivia; *Pitcairnia* cotahuasiana (p. 788), *P.* latibracteata (p. 788), *P.* herrerae (p. 789), *Puya* densiflora (p. 791) and *P.* herrerae (p. 792), Peru; *P.* werdermannii (p. 793), *Lindmania* villosula (p. 794) and *Tillandsia* guentheri (p. 794), Bolivia; *T.* araeostachya (p. 797), Cuba; *T.* selleana (p. 799), Hispaniola; *T.* tephrophylla (p. 800), Cuba; *Schlumbergeria* ekmanii (p. 804), Hispaniola; *Pitcairnia* imperialis (*Puya grandiflora* Hook f.) (p. 790).—*A. M. Johnson.*

14122. **HERTER, GUILELMUS.** Las Gramíneas de la República O. del Uruguay. In: **CORN. OSTEN et GUIL. HERTER.** "Plantae Uruguayensis. IV & V. Siphonogamae Angiospermae 2. Eumonocotyledoneae. Monocotyledonearum series (A 3) Glumiflorae, subseries (1) Gramineae." *An. Mus. Hist. Nat. Montevideo* 2(3): 301-320. 1927; 3(1): 43-56. 8 pl. 1929.—These 2 installments treat of 66 spp., with synonymies and distributional records. EUMONOCOTYLEDONEAE (p. 305), n. subclass proposed to include "Monocotyledonearum series 3-11 Engler, Syllabus (1892-1924)"; MAYDACEAE (p. 305), n. fam. based on Maydeae Mathieu; ANDROPOGONACEAE (p. 307), n. fam. based on Andropogoneae Presl (part); ZOYSIACEAE (p. 318), n. fam. based on Zoysieae Miquel; TRISTEGINACEAE (p. 319), n. fam. based on Tristegineae Link; PANICACEAE (p. 43), n. fam. based on Paniceae Kunth; *Eriochloa punctata* var. montevidensis (*E. annulata* var. *m.* Nees) (p. 47); *E. p.* var. parodii (p. 47); *Axonopus compressus* var. fissifolius (*Paspalum fissifolium* Raddi) (p. 48); *A. scoparius* var. suffultus (*Paspalum suffultum* Mik.) (p. 49); *Paspalum notatum* var. cromyorrhizum (*P. c.* Trin.) (p. 51); *P. quadrifarium* var. ferrugineum (*P. f.* Trin.) (p. 55).

14123. **KRAUSE, K.** Zwei für China neue Liliaceengattungen. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 806-807. 1929.—*Protolirion* sinii (p. 806) and *Chionographis* chinensis (p. 807), both from southern China, and both genera new to China.—*A. M. Johnson.*

14124. **KRAUSE, K.** Über einige neue oder seltenere Araceen. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(100): 1045-1048. 1930.—*Anthurium* longispadiceum (p. 1045) and *Philodendron* woronowii (p. 1046), Colombia; *Arisaema* sinii (p. 1947), southern China. *P. gloriosum* André, from Colombia, and *Synandrospadix vermitoxicum* (Griseb.) Engler, from Argentina are diagnosed. —*A. M. Johnson.*

14125. **LEÓN.** Contribucion al estudio de las palmas de Cuba. *Revista Soc. Geogr. Cuba* 4(2): 33-59. 7 pl. 1931.—Brother León, long a student of the Cuban flora, discusses the spp. of the island referred to the palm genus *Copernicia* of Martius, raising the number of named Copernicias recognized in Cuba to 25, 3 of which are considered to be hybrids. These species are organized in key form into 7 groups or sections: *Macroglossae, Rigidae, Pauciflorae, Hospitae, Brittonianae, Yareyes, Gigantes*. In his recent paper on the Ekman collections, Burret had added 5 Copernicias to Cuba; León now adds fourteen: *C.* torreana* (p. 10); × *C.* escarzana* (p. 12); × *C.* sueroana (p. 14); *C.* clarensis* (p. 15); *C.* roigii* (p. 17); *C.* holguinensis* (p. 18); *C.* brittonorum* (p. 19); *C.* fallaense* (p. 21); *C.* baileyana* (p. 22); *C.* curbeloi* (p. 23); *C.* textilis* (p. 24); *C.* molineti* (p. 25); *C.* excelsa* (p. 26); *C.* vespertilionum* (p. 27). —*L. H. Bailey.*

14126. **MANSFELD, R.** Zur Kenntnis der Gattung Catasetum L. C. Rich. I. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 476-478. 1928.—Included are: *Catasetum* rolfeanum* (p. 476) from Amazon region, *C. atratum* var. mentosum (*C. m.* Lemaire) (p. 477), and *C.* georgii (*C. hübneri* Mansf.) (p. 478).—*A. M. Johnson.*

14127. **MARTELLI, U.** Two Pandanaceae from the New Hebrides collected by S. F. Kajewski. *Jour. Arnold Arboretum* 12(4): 269-270. 1931.—*Pandanus* cominsii Hemsl. and *Freycinetia* tannaensis (p. 269).—*A. Rehder.*

14128. **NAKAI, TAKENOSHIN, and FUMIO MAEKAWA.** Yoania amagiensis Nakai & F. Maekawa, a new species of Yoania. *Proc. Imp. Acad.* [*Tokyo*] 7(8): 319-322. 1 pl., 1 fig. 1931.—*Y.* amagiensis* (p. 319), Japan.

14129. **PAPP, C.** Berichtigung zu: Papp, Formen von Melica usw. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 412. 1928.—Part of this article is devoted to a correction in the descriptions of forms of *Melica* occurring in *Ibid.* 10(94): pp. 354 and 355, and a correction in the description of the figure on page 354 of the same issue. *Melica adhaerens* var. tenuis is described from Bolivia.—*A. M. Johnson.*

DICOTYLEDONES

14130. **BLATTER, E., and W. S. MILLARD.** Some beautiful Indian trees. Part IV. *Jour. Bombay Nat. Hist. Soc.* 34(2): 271-274. 4 pl. (2 col.), 4 fig. 1930.—*Plumi-*

eria acutifolia Poir. and *Thespesia populnea* Corr. are illustrated and described.—*E. Blatter.*

14131. **BLATTER, E.** Revision of the flora of the Bombay Presidency. Part XII. *Jour. Bombay Nat. Hist. Soc.* 34(2): 291-306. 1930.—Annonaceae, Nymphaeaceae, Papaveraceae, Cruciferae, Pittosporaceae, Polygalaceae, Frankeniaceae, Caryophyllaceae, Portulacaceae, Tamaricaceae. *Sageraea* laurifolia (*Guatteria l.* Grah.) (p. 294) is proposed; *Nymphaea lotus* is excluded; *Miliusa eriocarpa* Dunn is doubtful in the Presidency. Morphological characters of *Cardamine trichocarpa* Hochst. are discussed. *Xanthophyllum bombayanum* Chodat and *Frankenia pulverulenta* L. are new to the region.—*E. Blatter.*

14132. **BULLOCK, A. A.** Nandi coffee. *Kew Bull. Misc. Inform.* 1930(9): 401-402. 1930.—*Coffea eugenioides* S. Moore (=*C. nandiensis* Dowson ex Hutch. ms.) occurs wild in Kenya and Uganda at 4000-6000 ft. Cultivation at Kampala and Nairobi shows that it is very susceptible to attack by *Hemileia vastatrix* B. & Br. and is unlikely to prove commercially valuable.—*A. A. Bullock.*

14133. **CRAIB, W. G.** Contributions to the flora of Siam. Additamentum XXVII. *Kew. Bull. Misc. Inform.* 1930(4): 161-174. 1930.—*Pygeum* kingianum (p. 161); *Pyrus* fragrans Geddes (p. 161); *Terminalia* densiflora (p. 162); *Combretum* alatum (p. 162); *C.* foliatum (p. 163); *C.* winitii (p. 164); *Quisqualis* caudata (p. 164); *Eugenia* cacuminis (p. 165); *E.* furfuracea (p. 165); *E.* fuscescens (p. 166); *E.* globiflora (p. 167); *E.* irregularis (p. 167); *E.* jugorum (p. 168); *E.* rhamphiphylla (p. 168); *E.* spissa (p. 169); *E.* sublaeta (p. 169); *Barringtonia* abbreviata (p. 170); *B.* kratensis (p. 170); *Osbeckia* pulchra Geddes (p. 171); *O.* watanae (p. 171); *Otanthera* confusa (p. 172); *Chirita* capitis (p. 173); *C.* oculata (p. 174); *Polypodium* (*Goniophlebium*) garrettii C. H. Wright (p. 174).—*A. D. Cotton.*

14134. **CRAIB, W. G.** Contributions to the flora of Siam. Additamentum XXVIII. *Kew Bull. Misc. Inform.* 1930(7): 313-327. 1930.—*Melastoma* acutisepalum Geddes (p. 313); *Oxyspora* caudata Geddes (p. 313); *O.* gracilis (p. 314); *O.* setosa (p. 314); *Allomorphia* procursa (p. 315); *A.* sylvarum Geddes (p. 316); *Phaulanthus* brevidens (p. 316); *P.* nervosus (p. 317); *P.* pedunculatus (p. 317); *Sonerila* angulata (p. 318); *S.* insularis (p. 319); *S.* notata (p. 319); *S.* sylvicola (p. 320); *Marumia* dimorpha (p. 320); *M.* impressa (p. 321); *Medinilla* elliptica (p. 322); *M.* emarginata (p. 322); *M.* ferrata (p. 323); *Memecylon* brandisianum (p. 323); *M.* caudatum (p. 324); *M.* constrictum (p. 324); *M.* dissitum (p. 325); *M.* geddesianum (p. 325); *M.* kratense (p. 326); *M.* tricolor (p. 326); *Lagerstroemia* noei (p. 327).—*A. D. Cotton.*

14135. **CRAIB, W. G.** Contributions to the flora of Siam. Additamentum XXIX. *Kew Bull. Misc. Inform.* 1930(9): 405-427. 1930.—*Casearia* calva (p. 405); *C.* oblonga (p. 405); *C.* pallida (p. 406); *Adenia* angustisepala (p. 406); *A.* linearis (p. 407); *A.* saxicola (p. 407); *Alsomitra* plena (p. 408); *A.* simplex (p. 409); *Begonia* demissa (p. 409); *B.* discreta (p. 410); *B.* festiva (p. 411); *B.* garrettii (p. 411); *B.* incondita (p. 412); *B.* obovoidea (p. 413); *B.* prolixa (p. 413); *B.* pumila (p. 414); *B.* rabilii (p. 415); *B.* rimarum (p. 415); *B.* saxifragifolia (p. 416); *B.* socia (p. 417); *B.* soluta (p. 418); *B.* subviridis (p. 418); *B.* vagans (p. 419); *Peucedanum* siamicum (p. 419); *Heracleum* siamicum (p. 420); *Schefflera* cuneata (p. 420); *S.* oblonga (p. 421); *S.* simulans (p. 421); *Brassaiopsis* calcarea (p. 422); *Arthrophyllum* ferrugineum (p. 423); *A.* lucens (p. 423); *A.* meliifolium (p. 424); *Trevesia* tomentella (p. 424); *T.* valida (p. 425); *Scheffleropsis* subintegra (p. 425); *Alangium* oblongum (p. 426).—*A. D. Cotton.*

14136. **CRAIB, W. G.** A list of the plants known from Siam with records of their occurrence. Rosaceae—Cornaceae. *Florae Siamensis Enumeratio* 1(4): 563-809. Bangkok Times Press, Ltd.: Bangkok; Luzac & Co.: London, 1931.—An extensive, annotated list, including the following: *Prunus* nitens (*P. nitida* Koehne, not Salisb.) (p. 565); *Rubus* efferatus (*R. ferox* Wall. ex Focke, not Tratt.) (p. 570); *Pyrus cuspidata* var. lenticellata (p. 576); *P. granulosa* var. siamensis (p. 577); *Myriophyllum mezianum* var. siamense (p. 591); *Terminalia citrina* var. nana (*T. chebula* var. *n.* Gagnep.) (p. 603); *T. myriocarpa* var. hirsuta (p. 606); *Combretum annulatum* var. orbiculare (p. 614); *C. kunstleri* var. rectinerve (p. 617); *C. squamosum* var. dissitum (p. 620); *Eugenia anacardifolia* var. minor (p. 632); *E. diospyrifolia* var. lanceolata (*Jambosa lanceolata* Korth.) (p. 639); *E.* euneura (*Syzygium euneuron* Mig.) (p. 640); *E. filiformis* var. parvifolia (p. 641); *E. grata* vars. collinsae (*E. c.* Craib) (p. 645) and nervosa (p. 646); *E. javanica* var. parviflora (p. 647); *E.* leptalea (*E. leptantha* Wight not Benth.) (p. 649); *E. limnaea* var. gracilior (p. 650); *E.* megacarpa (*E. macrocarpa* Roxb. not Schlecht.) (p. 652); *E. operculata* vars. avicennifolia (p. 654) and cerasoides (*E. c.* Roxb.); *E. pseudosubtilis* var. orientalis (p. 657); *E.* rotata King Mss. (*E. urceolata* King not Cordem.) (p. 660); *E. toddalioides* var. latifolia (p. 665); *E. winitii* var. terminalis (p. 666); *Barringtonia edaphocarpa* var. ladellii (p. 669); *B. scortechinii* var. globosa (p. 673); *Osbeckia pulchra* var. rubra (p. 677); *Melastoma imbricatum* var. longipes (p. 679); *M. malabathricum* var. grandiflorum (p. 681); *M. normale* var. divergens (p. 682); *Oxyspora collina* var. subglabra (p. 684); *Sonerila helferi*, redescribed and amplified; *S. picta* var. clarkeana (p. 693); *Marumia rhodocarpa* var. esetosa (p. 697); *Medinilla caerulescens* var. nuda (p. 699); *M. elliptica* var. tetramera (p. 699); *Memecylon edule* vars. brevipes and orientale (p. 706); *M. gracilipes* var. rotundatum (p. 708); *M. pauciflorum* var. brevifolium (p. 712); *M. plebejum* vars. ellipsoideum, siamense and symplocinum (p. 712); *M. tricolor* vars. longipes (p. 714) and latifolium (p. 715); *Lagerstroemia floribunda* vars. brevifolia, subecostata and sublaevis (p. 722); *L. spireana* var. armata (p. 726); *L. undulata* var. subangulata (p. 727); *L. villosa* var. sparsior (p. 729); *Passiflora horsfieldii* var. distans (p. 743); *Adenia cardiophylla* var. arcta (p. 746); *A. nicobarica* var. obliqua (p. 747); *A. parvifolia* vars. insularis and nervosa (p. 748); *Alsomitra* angustipetala (*Gynostemma a.* Craib) (p. 767); *A. pubigera* var. glauca (p. 768); *Begonia* bilocularis (p. 771) (*Diplocl inium biloculare* Wight, *B. sinuata* Wall. not Emey.) *B. debilis* var. punicea (p. 772); *B. laciniata* var. pilosa (p. 775); *B. sibthorpioides* var. grandifolia (p. 779); *Trachyspermum* roxburghianum (*Ptychotis roxburghiana* DC. *T. involucratum* (Roxb.) Wolff not Maire) (p. 788); *Heracleum siamicum* var. gracilius (p. 793); *Aralia pseudo-ginseng* var. angustifolia (*A. quinquefolia* var. *a.* Burkill) (p. 794); *Schefflera bengalensis* var. impolita (p. 797); *S.* clarkeana (*Heptapleurum venulosum* var. *macrophyllum* C. B. Clarke) (p. 797); *S. corona-sylvae* var. siamensis (p. 797); *S. heterophylla* var. dentata (p. 799); *Arthrophyllum meliifolium* var. kratense (p. 802); *Scheffleropsis subintegra* var. angkae (p. 805); *Cornus oblonga* var. siamica Geddes (p. 808).

14137. **DINGLER, H.** Griechische Rosen. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 479-488. 1928.—A list of varieties, subvarieties, and forms of 12 spp. of roses collected in Greece by Joh. Mattfeld, including: *Rosa glutinosa* var. *leioclada* subvar. bozdaghensis (p. 480); *R. g.* var. *coqueberti* subvars. anantis (p. 481) and katantis (p. 482); *R. g.*+*R. heckeliana* Trat. forma bornmülleriana (p. 482); *R. sicula* vars. erymanthea (p. 483) and mattfeldiana (p. 484); *R. agrestis* var. *belnensis* f. glabrior M. Schulze ined. (p. 485) and var. chodschajailensis (p. 486); *R. canina* var. *subglabra* subvar. geniculata (p. 486); *R. spinosissima* var. myriadena (p. 487).—*A. M. Johnson.*

14138. **DOMIN, KAREL.** Sedum krajinae Dom. n. sp. a jeho příbuzenské vztahy. [Sedum krajinae Dom. n. sp. and its nearest allies.] [With English summary.] *Rozpravy České Akad. Věd a Umění, Tř. 2.* 39 (číslo 19): 1-21. 5 pl. 1929(1930).—*S.* krajinae* (p. 1), Slovakia;

S. sartorianum Boiss.(?) var. **novákii*** (*S. n.* Domin in sched.) (p. 11), Serbia; *S.* **robustum*** (*S. acre* var. *r.* Vel. in part) (p. 12), Bulgaria; *S.* **zlatiborense*** (p. 13), Serbia; *S.* **rohlenae** (p. 18) [loc. not given]; *S. acre* var. **confertum** (p. 15) [loc. not stated]; *S. a.* var. **umbrosum** (Schuchert nom.) Dom. (p. 15) [doubtfully new], Bohemia; *S. acre* var. **degenianum** [mentioned only in summary, p. 21]; *S. sexangulare* L. is a form of *S. acre* L., and not a synonym of *S. mite* Gilib. A synopsis of the varieties and forms of *S. acre* is given, and a key to the spp. of the genus. *S. hillebrandii* is recorded from Czechoslovakia.

14139. **GUILLAUMIN, A. Contributions to the flora of the New Hebrides; plants collected by S. F. Kajewski in 1928 and 1929.** *Jour. Arnold Arboretum* 12(4): 221-264. 3 fig. 1931.—After a short résumé of the status of the botanical exploration of the new Hebrides, the author gives a systematic enumeration of the plants collected by S. F. Kajewski with full collector's notes and the distribution of the species outside of the New Hebrides. The following appear: *Dillenia* **neo-ebudica** (p. 222); *Oncodostigma* **wilsonii** (p. 224); *Pittosporum* **aneityense** (p. 225); *Calophyllum* **neo-ebudicum** (p. 227); *Hibiscus tiliaceus* f. **variegata** (p. 228); *Sterculia* **banksiana** (p. 229); *S.* **tannaensis** (p. 230); *Grewia* **inmac** (p. 231); *Elaeocarpus* **hortensis** (p. 231); *E.* **kajewskii** (p. 232); *Evodia* **kajewskii** (p. 234); *E. schullei* var. **simplicifolia** (p. 234); *Canarium* **nungi** (p. 236); *Dysoxylum* **aneityense** (p. 237); *Gouania* **efatensis** (p. 239); *Aphania* ? **neo-ebudica** (p. 240); *Cupaniopsis* **neo-ebudensis** (p. 241); *Semecarpus* **tannaensis** (p. 242); *Rubus* **neo-ebudicus** (p. 249); *Dedea* **neo-ebudica** (p. 250); *Weinmannia* **kajewskii** (p. 250); *W.* **tannaensis** (p. 251); *Crossostylis* **banksiana** (p. 252); *Metrosideros villosa* var. **glaberrima** (*M. collina* var. *g.* Bertero) (p. 253); *Myrtus* **aneityensis** (p. 254); *Decaspermum* **neo-ebudicum** (p. 254); *Syzygium* **aneityense** (p. 256); *S.* **kajewskii** (p. 256); *S.* **neepau** (p. 257); *S.* **nidie** (p. 257); *S.* **nomoa** (p. 258); *Medinilla* **neo-ebudica** (p. 260); *M.* **heteromorphophylla** (p. 260); *Astronia* **aneityensis** (p. 261); *A.* **banksiana** (p. 261); *Homalium* **aneityense** (p. 262); *Strobilopanax* **neo-ebudicus** (p. 263); *Tieghemopanax* **neo-ebudarum** (p. 264).—*A. Rehder.*

14140. **HARMS, H. Zur Kenntnis der Gattung Sciadodendron Griseb.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(95): 452-456. 1928.—Examination of new material shows that *Reynoldsia americana* J. D. Smith and *Pentapanax granatensis* Rusby are conspecific with *Sciadodendron excelsum* Griseb. The author's conclusion thus gives the first report of the genus *Sciadodendron* from the Antilles.—*A. M. Johnson.*

14141. **HARMS, H. Passifloraceae americanae novae.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(98): 808-821. 1929.—*Passiflora* **schultzei** (p. 808), Colombia; *P.* **faroana** (p. 809), Brazil; *P.* **apoda** (p. 809), Colombia; *P.* **mapiriensis** (p. 810) and *P.* **guentheri** (p. 811), Bolivia; *P.* **rojasii** (p. 812), Paraguay; *P.* **ischnoclada** (p. 812) and *P.* **lonchophora** (p. 813), Brazil; *P.* **thaumasiantha** (p. 813), Peru; *P.* **steinbachii** (p. 815), Bolivia; *P.* **brachychlamys** (p. 815), Peru. The second part of the paper lists 17 spp. of *Passiflora* collected in the province of Paraná by P. Dusén, with notes on their localities. A complete diagnosis of *Passiflora mendoncaei* Harms is included.—*A. M. Johnson.*

14142. **HOWELL, JOHN THOMAS. A variant of the coast live oak.** *Madroño, Jour. California Bot. Soc.* 2(4): 38-39. 1931.—*Quercus oxyadenia* Torrey, long relegated to the synonymy of *Q. agrifolia,* is here designated *Q. agrifolia* var. **oxyadenia** (Torr.) J. T. Howell, n. comb. (p. 38).

14143. **HUTCHINSON, J., and J. M. DALZIEL. Flora of West Tropical Africa, the British West African colonies, British Cameroons, the French and Portuguese colonies south of the Tropic of Cancer to Lake Chad, and Fernando Po.** Vol. II, Part I. 292p. 99 fig. The Crown Agents for the Colonies: London, 1931. Price 8s. 6d.—With keys to genera and species, and brief notes on distribution, discusses the families of Metachlamydeae from 113 Ericaceae to 145 Labiatae (following the recent system of Hutchinson). Included are: (Ebenaceae) *Diospyros* **insculpta** (p. 4), Nigeria; *D.* **liberiensis** A. Chev. (p. 4), Ivory Coast; *D.* **thomasii** (p. 6), Sierra Leone, Liberia; *Maba* **cooperi** (p. 7), Liberia; (Sapotaceae) *Chrysophyllum* **sericeum** A. Chev. (p. 9), Ivory Coast; *C.* **glomeruliferum** (p. 9), Sierra Leone, Dahomey and Uganda; *C.* **metallicum** (p. 9), Gold Coast; *C.* **giganteum** A. Chev. (p. 9), Gold Coast; *Pachystela* **argentea** A. Chev. (p. 10), Dahomey; *P.* **micrantha** (p. 11), Sierra Leone, Ivory Coast, Gold Coast; *Delpydora* **gracilis** A. Chev. (p. 11), Ivory Coast; *Sideroxylon* **altissimum** (p. 12), French Guinea, Gold Coast, etc.; *Mimusops* **heckelii** (p. 14), Sierra Leone, Ivory Coast, Gold Coast, Liberia, etc.; (Myrsinaceae) *Embelia* **djalonensis** A. Chev. (p. 16) and *Maesa* **nuda** (p. 16), French Guinea; (Loganiaceae) *Anthocleista* **micrantha** Gilg. & Mildbr. ms. (p. 18), Fernando Po and St. Thomas; *Mostuea* **hymenocardioides** (p. 20), French Guinea, Sierra Leone; *Lachnopylis* **mannii** Hutch. & M. B. Moss (p. 20), French Guinea, Ivory Coast, Cameroons; *L.* **guineensis** Hutch. & Moss (p. 20), Sierra Leone, Gold Coast; *Gaertnera* **cooperi** Hutch. & Moss (p. 21), French Guinea, Liberia; *G.* **salicifolia** Hutch. & Gillett (p. 21), Liberia; *Strychnos* **soubrensis** (p. 22), Ivory Coast; *S.* **littoralis** A. Chev. (p. 24), Ivory Coast, Nigeria, Cameroons; *S.* **tricalysioides** Hutch. & Moss. (p. 24), Nigeria; *S.* **venulosa** Hutch. & Moss (p. 24), Sierra Leone, Liberia; *S.* **cinnabarina** Gilg Ms. (p. 24), Nigeria; *S.* **cooperi** Hutch. & Moss (p. 24), Liberia; *S.* **johnsonii** Hutch. & Moss (p. 24), Sierra Leone, Gold Coast, Togo; (Oleaceae) *Olea* **guineensis** Hutch. & C. A. Smith (p. 26), Ivory Coast, Cameroons; *Schrebera* **chevalieri** (p. 26), Senegal; (Apocynaceae) *Clitandra* **ivorensis** A. Chev. (p. 34), Ivory Coast; *C.* **laurifolia** A. Chev. (p. 35), Ivory Coast; *Carpodinus* **macrophylla** A. Chev. (p. 36), Liberia, Ivory Coast, Gold Coast; *C.* **baumannii** (p. 36), Togo; *Pleiocarpa* **simii** Stapf (p. 38), Liberia, Ivory Coast; *Alstonia congensis* v. **glabrata** (p. 42); *Holalafia* **jasminiflora** (p. 43), Ivory Coast; *Baissea* **aframensis** (p. 48), Gold Coast; *B.* **subsessilis** Stapf Ms. (p. 46), Nigeria; *B.* **concinna** Stapf (p. 46), Liberia; (Asclepiadaceae) *Tacazzea* **viridis** A. Chev. (p. 52), Ivory Coast; *Raphionacme* **sudanica** A. Chev. (p. 54), Sudan; *Asclepias* **solstitialis** A. Chev. (p. 56), French Guinea, Ivory Coast, Gold Coast, Nigeria; *Schizoglossum* **glanvillei** (p. 58), Sierra Leone; *Tylophora* **deightonii** (p. 59) and *Ceropegia* **deightonii** (p. 62), Sierra Leone; *C.* **tourana** A. Chev. (p. 62), Ivory Coast; *C.* **hepburnii** (p. 62), Nigeria; *Caralluma* **edulis** A. Chev. (p. 65), Mauritania; (Rubiaceae) *Hymenodictyon* **epidendron** Mildbr. Ms. (p. 70), Fernando Po; *Pausinystalia* **sankeyi** (p. 71), Nigeria; *Tarenna* **vignei** (p. 77), Gold Coast; *T.* **patula** (p. 76), Nigeria; *T.* **thomasii** (p. 76), French Guinea, Sierra Leone; *T.* **lagosensis** (p. 76), Nigeria; *Dorothea* **divergens** (p. 76), French Guinea, Sierra Leone; *Randia* **lane-poolei** (p. 78), Sierra Leone, Liberia; *R.* **thomasii** (p. 78), Sierra Leone, Nigeria; *R.* **leptactinioides** K. Schum. Ms. (p. 78), Nigeria, Cameroons; *R.* **amaralioides** K. Schum. Ms. (p. 79), Gold Coast, Nigeria; *Oxyanthus* **laxiflorus** K. Schum. Ms. (p. 80), Nigeria, Cameroons; *Tricalysia* **hookeri** (p. 83), Nigeria; *T.* **elliotii** (p. 83), Sierra Leone, Gold Coast, Cameroons, N.E. Congo; *T.* **trilocularis** (p. 83), Sierra Leone; *T.* **coffeoides** (p. 83), French Guinea, Ivory Coast, Dahomey, Nigeria; *T.* **pobeguinii** (p. 83), French Guinea, Gold Coast, Togo; *T.* **oblanceolata** (p. 83), Nigeria; *Leptactina densiflora* var. **glabra** (p. 84), Gold Coast; *Belonophora* **wernhamii** (p. 85), Nigeria; *B.* **lepidopoda** (p. 85), French Guinea, Sierra Leone, Togo; *Cremaspora* **wernhamiana** (p. 85), Nigeria; *C.* **triflora** (p. 85), French Guinea to South Africa, etc.; *Ixora* **degemensis** (p. 87), Nigeria; *I.* **linderi** (p. 87), Liberia; *I.* **bipindensis** K. Schum. Ms. (p. 87), Nigeria, Cameroons; *I.* **laxissima** (p. 87) and *I.* **bauchiensis** (p. 87), Nigeria; *I.* **divaricata** (p. 89), Liberia; *Pavetta* **plumosa** (p. 91), Nigeria; *P.*

apiculata (p. 91), French Guinea, Gold Coast; *P.* mollissima (p. 91), Gold Coast; *P.* nitida (p. 91), Senegal and French Sudan to Cameroons, etc.; *P.* staudtii (p. 91) and *P.* mannioides (p. 91), Nigeria; *P.* nigrescens (p. 91), *P.* striatula (p. 91) and *P.* smythei (p. 92), Sierra Leone; *P.* flaviflora (p. 92), Nigeria, Cameroons; *Psilanthus* jasminoides (p. 92), Gold Coast; *Bertiera* maitlandii (p. 97), Cameroons; *B. racemosa* var. glabrata (p. 97), Sierra Leone; *B.* chevalieri (p. 97), French Guinea; *Atractogyne* bracteata (p. 98), Ivory Coast, Cameroons, Nigeria, Gabon; *Sarcocephalus* nervosus (p. 100), Nigeria, Cameroons; *Mussaenda* nivea A. Chev. (p. 101), Ivory Coast, Gold Coast; *M.* uniflora (p. 101), French Guinea, Liberia; *M.* punctulata (p. 103), *M.* linderi (p. 103), *Urophyllum* sylvicola (p. 104), *U.* stipulosum (p. 104), *U.* insculptum (p. 104) and *U.* linderi (p. 104), Liberia; *Sabicea* cordata (p. 106), Gold Coast; *S.* globifera (p. 106) and *S.* arachnoidea (p. 107), Sierra Leone; *Robynsia* glabrata Hutch. (p. 108), Nigeria; *Fadogia* erythrophloea (p. 109), French Sudan, French Guinea, Sierra Leone, etc.; *Canthium* rufivillosum Robyns Ms. (p. 113), Sierra Leone, Liberia; *C.* favosum (p. 113), Nigeria; *C.* euryoides Bullock (p. 113), Nigeria and East Africa; *C.* inaequilaterum (p. 115), Nigeria; *C.* dunlapii (p. 115), Cameroons; *C.* pobeguinii (p. 155), French Guinea; *C.* venosissimum (p. 115), Liberia and Gold Coast; *Craterispermum* gracile A. Chev. (p. 116), Ivory Coast; *Vangueriopsis* leucodermis (p. 117), Gold Coast, Nigeria; *Cuviera* truncata (p. 118), Nigeria; *Psychotria* fimbriata A. Chev. (p. 123), Ivory Coast; *P.* pilifera (p. 123), Nigeria; *P.* farmari (p. 123), Gold Coast; *P.* rufipilis A. Chev. (p. 124), French Guinea, Sierra Leone, Liberia, Ivory Coast; *P.* kitsonii (p. 124) and *P.* williamsii (p. 124), Gold Coast; *P.* rowlandii (p. 124) and *P.* dalzielii Hutch. (p. 125), Nigeria; *P.* sphaerocarpa (p. 125), Fernando Po; *P.* capitellata Chev. (p. 125), Ivory Coast; *P.* albifaux K. Schum., Ms. (p. 125), Nigeria, Cameroons; *Chasalia* elongata (p. 127), Liberia; *C.* cupularis (p. 127), Nigeria; *Uragoga* mannii (p. 127), Nigeria, Fernando Po, Cameroons; *U.* biaurita (p. 129), French Guinea, Ivory Coast; *U.* spathacea (p. 129) and *Geophila* liberica A. Chev. (p. 128), Ivory Coast; *Otomeria* tenuis A. Chev. (p. 129), French Sudan; *Oldenlandia* confusa (p. 131), Senegal, French Guinea, Togo; *Borreria* compressa (p. 135), French Guinea, Sierra Leone, Nigeria; *B.* filiformis (p. 135), Nigeria; *B.* stachydea (p. 135), French Sudan, Ivory Coast, Nigeria; *Anthospermum* cameroonense (p. 136), Cameroons; (Compositae) *Coreopsis* asperata (p. 143), French Guinea, Sierra Leone; *C. monticola* var. pilosa (p. 143), Cameroons; *Microlecane* occidentalis (p. 143), French Guinea, Ivory Coast; *Melanthera* gambica (p. 146), Gambia; *M.* sokodensis Muschler Ms. (p. 146), Togo; *Gynura* gracilis (p. 148), French Sudan, French Guinea, Cameroons; *G.* liberica (p. 148), Liberia; *G.* baoulensis (p. 148), Ivory Coast; *G.* caerulea (p. 148), Nigeria; *Notonia* dalzielii Hutch. (p. 149), Nigeria; *Emilia* guineensis (p. 149), French Guinea; *Artemisia* macivarae (p. 152), French Sudan; *Anisopappus* dalzielii Hutch. (p. 156), French Sudan, French Guinea, Nigeria; *Porphyrostemma* chevalieri (p. 158), Senegal; *Helichrysum* cameroonense (p. 159), Cameroons; *Vernonia* stenostegia (p. 166) and *V.* elegantissima (p. 167), Nigeria; *V.* hoffmanniana (p. 167), Nigeria, Congo, Angola, Nyasaland, Rhodesia; *V.* bauchiensis (p. 168), Nigeria; *V.* hillii (p. 168), Cameroons; *V.* conyzoides (p. 168), Sierra Leone; *V.* uniflora (p. 169), Nigeria; *Erlangea* angustifolia (p. 170), Sierra Leone; *Mikania scandens* var. laciniata (p. 172), Nigeria, Cameroons; *Echinops* elegans (p. 177), French Guinea, Ivory Coast; *Lactuca* dunlapii (p. 177), Cameroons; (Plumbaginaceae) *Limonium* mauritanicum (p. 188), Mauritania; (Campanulaceae) *Cephalostigma* perotifolium (p. 191), Nigeria; (Lobeliaceae) *Lobelia* kamerunensis Engl. Ms. (p. 193), Cameroons; *Cordia* vignei (p. 196), Gold Coast; (Boraginaceae) *Arnebia* asperrima (p. 201), Nigeria; (Solanaceae) *Solanum* clerodendroides (p. 206), Nigeria; *S.* yolense (p. 206), Nigeria; (Convolvulaceae) *Ipomoea* camporum A. Chev. (p. 215), French Guinea; (Scrophulariaceae) *Sibthorpia* australis Hutch. (p. 221), Cameroons, Fernando Po; *Bacopa* pubescens (p. 222), Sierra Leone; *B.* erecta (p. 222), Senegal, Gambia, Sierra Leone; *B.* occultans (p. 222), Nigeria; *Micrargeria* filiformis (p. 223), Senegal, Gambia, French Guinea, Ivory Coast, etc.; *Striga* dalzielii Hutch. (p. 226), Nigeria; *S.* aequinoctialis A. Chev. (p. 227); *Dopatrium* dawei (p. 230), Sierra Leone; (Gesneriaceae) *Streptocarpus* insularis (p. 237), Fernando Po; (Bignoniaceae) *Kigelia* talbotii (p. 238), Nigeria; (Acanthaceae) *Whitfieldia longifolia* var. perglabra (p. 248), Fernando Po; *Thunbergia* combretoides A. Chev. (p. 250), Ivory Coast; *Brillantaisia* bauchiensis (p. 254), Nigeria; *Asystasia* lindauiana (p. 257), Nigeria, Cameroons, French Congo and Gabon; *Bicliptera* lelyi (p. 265), Nigeria; *Rungia* pobeguinii (p. 267), French Guinea; (Verbenaceae) *Premna* macrophylla A. Chev. (p. 272), Ivory Coast; *Clerodendron* tomentellum (p. 273), Nigeria; *C.* streptocaulon (p. 274), Sierra Leone, Nigeria; *Vitex* rufa A. Chev. (p. 276), Liberia, Ivory Coast; (Labiatae) *Icomum* gambicolum A. Chev. (p. 282), French Guinea; *Solenostemon* chevalieri Briq. ex Chev. (p. 290), French Sudan; *Coleus* koualensis A. Chev. (p. 291), Ivory Coast; *C.* casamancicus A. Chev. (p. 291), Senegal; *C.* caillei A. Chev. (p. 292), French Guinea; *C.* pobeguinii (p. 292), French Guinea.

14144. **HUTCHINSON, J., and MARION B. MOSS.** A new stinkwood from East Africa. *Kew Bull. Misc. Inform.* 1930 (2): 68-70. 1 pl. 1930.—*Ocotea* gardneri is described from material sent by the Conservator of Forests, Kenya Colony. The Cape Stinkwood is a well-known timber tree of South Africa, but hitherto only one species was recorded from East Africa, and this new plant may prove of considerable economic importance. —*M. B. Moss.*

14145. **J[ENSEN], L. P.** A white-flowering partridge pea. *Missouri Bot. Gard. Bull.* 19 (2): 38-39. 1 pl. 1931. —*Cassia chamaecrista**.

14146. **LEONARD, E. C.** The genus Mendoncia in Peru. *Jour. Washington Acad. Sci.* 21 (7): 144-152. 1931. —Treatment (with key) of the spp. indigenous to Peru, including: *M.* klugii (p. 145), *M.* smithii (p. 145), *M.* aurea (p. 147), *M.* peruviana (p. 148), *M.* killipii (p. 149), and *M.* pedunculata (p. 150).

14147. **MANSFELD, R.** Monandrodendron nov. gen. Flacourtiaceae. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (98): 860-862. 1929.—MONANDRODENDRON (p. 860), based on *M.* schultzei* (p. 860), a characteristic forest tree of the Sierra Nevada de Santa Marta, Colombia.—*A. M. Johnson.*

14148. **MELCHIOR, H.** Rinorea lindeniana, eine verkannte Violaceen-Art des tropischen Südamerika. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (96): 544-550. 1929.—This species has been variously interpreted despite its clearly defined characters—seen in the configuration of the stamens and the style. The author points out the errors in the literature and gives a revised and complete diagnosis of the species, with complete synonymy and conspectus of geographical distribution.—*A. M. Johnson.*

14149. **MELCHIOR, H.** Die chinesischen Arten der Familie der Alangiaceen. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (98): 822-830. 1929.—Key and conspectus of 7 spp. of *Alangium* occurring in China, including *A.* kwangsiense (p. 823).—*A. M. Johnson.*

14150. **MILDBRAED, J.** Neue Arten von Coussapoa und Pourouma Aubl. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (95): 413-420. 1928.—*Poulsenia aculeata* Eggers (=*Coussapoa rekoi* Standley); *Coussapoa* tessmannii (p. 413), eastern Peru; *C.* donnell-smithii (p. 414), Costa Rica; *C.* sprucei (p. 415), northern Brazil; *C.* oligoneura (p. 415), Colombia; *C.* trinervia Spruce in sched. (p. 416), southeastern Colombia; *C.* warburgiana (p. 416), Brazil; *Pourouma* cuspidata Warb. (p. 417), Brazil; *P.* aurea (p. 418), western Brazil; *P.* apiculata Spruce in sched. (p. 419), southeastern Colombia;

P. crassivenosa (p. 419), Bolivia; *P.* hirsutipetiolata (p. 420), Colombia.—*A. M. Johnson.*

14151. **MYERS, J. G.** Notes on wild cacao in Surinam and in British Guiana. *Kew Bull. Misc. Inform.* 1930 (1) : 1-9. 2 pl. 1930.—Describes a visit to an area of wild cacao (*Theobroma cacao* L.) on a tributary of the Coppename River, Surinam. Witches' broom disease (*Marasmius perniciosus*) was frequent on the trees, and this locality is believed to be the source of the widespread outbreak in the Surinam plantations of cultivated cacao. The wild cacao tree and its habitat in this locality are carefully described, and the uniformity of the pods in this and other localities is considered strong evidence for the nativity of the species. Its occurrence and distribution in British Guiana and the northern Amazonian region are also discussed, the evidence being in favor of the species being indigenous. —*N. Y. Sandwith.*

14152. **PERKINS, J.** Drei neue Arten der Gattung Styrax. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (95) : 457-459. 1928.—*Styrax* ledermannii (p. 457), New Guinea; *S.* schultzei (p. 458), Colombia; *S.* tessmannii (p. 459), eastern Peru.—*A. M. Johnson.*

14153. **PILGER, R.** Einige Nachträge zur Bearbeitung der südamerikanischen Plantago-Arten. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (98) : 831-836. 1929.—A conspectus of 8 S. Amer. spp. of *Plantago: P. myosurus* Lam. and its var. *parviflora* Pilger, *P.* macbridei (p. 832), Peru, *P. extensa* Pilger, *P.* hillii (p. 833), Bolivia, *P. dombeyi* Pilger, *P. weberbaueri* Pilger, and *P. godeti* Beauv.—*A. M. Johnson.*

14154. **RIDLEY, H. N.** Additions to the flora of Borneo. *Kew Bull. Misc. Inform.* 1930 (2) : 74-87. 1930. —*Ixonanthes* grandiflora (p. 74); *I.* multiflora Stapf ms. (p. 75); *Connaropsis* grandiflora (p. 75); *Ouratea* megacarpa (p. 76); *Schuurmansia* borneensis (p. 77); *Evodia triphylla* var. pubescens (p. 77); *E.* concinna (p. 78); *E.* obtusifolia (p. 78); *Tetractomia* parviflora (p. 78); *T.* latifolia (p. 79); *T.* montana (p. 79); *Glycosmis* oliveri Stapf ms. (p. 80); *Canarium* parciflorum (p. 80); *C.* pauciflorum (p. 80); *C.* flavum (p. 81); *C.* latistipulatum (p. 81); *C.* micrantherum Stapf ms. (p. 82); *C.* costatum (*Santiria costata* Hook. fil.) (p. 82); *C.* fusco-calycinum Stapf ms. (p. 82); *C.* moultonii (p. 83); *C.* expansum (p. 83); *C.* reticulatum (p. 83); *C.* hirtipetalum (p. 84); *Santiria* mollissima (p. 85); *S.* havilandii (p. 85); *S.* latifolia (p. 86); *S.* rubra (p. 86); *S.* pedicellata (p. 86); *S.* minimiflora (p. 87). Ten other old species are recorded as new to Borneo.—*C. E. C. Fischer.*

14155. **SANDWITH, N. Y.** Contributions to the flora of Tropical America: II. Chondodendron candicans, a Menispermaceous bush-rope of Guiana. *Kew Bull. Misc. Inform.* 1930 (8) : 339-343. 1930.—It is shown that *Sciadotenia candicans* (Rich.) Diels, described from the leaves of seedlings, belongs to *Chondodendron* as *C.* candicans (*Abuta c.* Rich.) (p. 342).—*N. Y. Sandwith.*

14156. **SANDWITH, N. Y.** Contributions to the flora of Tropical America: III. Annonaceae collected by the Oxford University Expedition to British Guiana, 1929. *Kew Bull. Misc. Inform.* 1930 (10) : 466-480. 1930.—An enumeration of 14 spp. of Annonaceae collected within a radius of 2 miles from a camp on the Moraballi Creek, Essequibo River. Notes on a few other spp. of this family are added, and an index of vernacular names is appended. *Guatteria* atra (p. 468), *Duguetia* neglecta (p. 470), *D.* pycnastera (p. 471), *D.* yeshidan (p. 473), *Anaxagorea* dolichocarpa Sprague & Sandwith (p. 475), *Annona* symphyocarpa (p. 477), *Xylopia* pulcherrima (p. 477) and *X.* cinerea (p. 478) are described.—*N. Y. Sandwith.*

14157. **SCHULZ, O. E.** Cheesemania, eine neue australische Cruciferengattung. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (96) : 551-553. 1929.—**CHEESEMANIA** (*Arabideae*), near *Cardamine, Arabis,* and *Nasturtium,* with *C.* radicata (*Cardamine r.* Hook.), *C.* gibbsii (*Nasturtium g.* Cheeseman), *C.* latesiliqua (*Cardamine l.* Cheeseman), *C.* fastigiata (*Arabis f.* Hook.), and *C.* enysii (*Cardamine e.* Cheeseman) (all p. 552).—*A. M. Johnson.*

14158. **SCHULZ, O. E.** Asiatische Cruciferen verschiedener Herkunft. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (96) : 554-557. 1929.—Included are: *Cochlearia* acutangula (p. 554), China; *Draba* rockii (p. 555), Kansu, China; *D. lanceolata* var. latifolia (p. 555), Tibet; *Hesperis* ixodes Haussknecht et O. E. Schulz (p. 556), Turkish Armenia; *Megacarpaea delavayi* var. grandiflora (p. 557), Kansu; *Parrya villosa* var. albiflora (p. 557), Tibet; *Dontostemon* glandulosus (*Arabis g.* Kar. et Kir.) (p. 554).—*A. M. Johnson.*

14159. **TYMRAKIEWICZ, WŁODZIMIERZ.** Reliktowe stanowisko Warzuchy pirenejskiej Cochlearia pyrenaica D. C. var. eupyrenaica Thell. u źródlisk Bugu. [A relict station of C. p. var. eupyrenaica at the sources of the Bug.] [With German summary.] *Kosmos* [*Lwów*] 55 (3/4) : 732-733. 1930 (1931).—Second record for Poland.

14160. **ULBRICH, E.** Ranunculaceae novae vel criticae VIII. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (98) : 862-880. 1929.—A conspectus of genera, species, etc., of Ranunculaceae from Asia, including: **UROPHYSA** (p. 868), based on *U.* rockii* (p. 869), China; *Anemone* rockii (p. 876), China; **SCHLAGINTWEITIELLA** (p. 877), based on *S.* fumarioides* (p. 878), China and Tibet; *Caltha scaposa* vars. smithii (p. 864), China, and parnassioides (p. 865), China and Tibet; *Trollius pumilus* var. alpina (p. 865), Yunnan; *Thalictrum alpinum* var. elatum (p. 877), China; *Urophysa* henryi (*Isopyrum h.* Oliv.) (p. 870); *Beesia* calthifolia (*Cimicifuga calthaefolia* Maxim.) (p. 872).—*A. M. Johnson.*

14161. **WERDERMANN, E.** Beiträge zur Kenntnis der Flora von Chile. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (95) : 460-475. 1928.—II. **O. E. SCHULZ:** Die von O. Berninger, A. Hollermayer, und besonders von E. Werdermann in Chile gesammelten Cruciferen (pp. 460-472). This is a list of crucifers from Chile, with notes on localities, including: *Eudema* werdermannii (p. 462); **HOLLERMAYERA,** based on *H.* silvatica* (p. 463); *Menonvillea* arachnoidea (p. 466); **MICROCARDAMUM,** based on *M.* tenue (*Draba tenuis* Barn.) (p. 467); *Sisymbrium intricatissimum* var. brachycarpum (p. 468); *S. pubescens* var. glabrescens (p. 469); *Stenodraba suffruticosa* var. lagunae (p. 469); *Sisymbrium intricatissimum* var. deserticola (*Cardamine* (?) *d.* Phil.) (p. 469); **WERDERMANNIA** (p. 470), based on *W.* macrostachya (*Nasturtium macrostachyum* Phil.) (p. 470). III. **WERDERMANN, E.** Übersicht über die in Chile vorkommenden Arten der Gattung Salpiglossis Ruiz et Pav. (Solanaceae) (pp. 472-475). *Salpiglossis* is restricted to Peru, Chile, and Argentina, most of the species inhabiting the Atacama desert and bordering regions. *S. sinuata* R. & P., from which our cultivated forms are derived, grows in central and southern Chile. A key and descriptions are given of: *S. spinescens* Clos, *S. sinuata* R. & P., *S. parviflora* Phil., *S.* (*Reyesia*) juniperoides (p. 474), Chile, and *S. chilensis* (Clos) Wettst.—*A. M. Johnson.*

FLORISTIC AND PLANT DISTRIBUTION

14162. **BRAUN-BLANQUET, J., et R. MAIRE.** Contributions à l'étude de la flore marocaine. (Fascicule 5.) *Bull. Soc. Hist. Nat. Afrique du Nord* 22 (3) : 103-110. 1931.—An annotated list of 66 spp. (1 fern, 65 Angiosperms) from Morocco. **HANNONIA** (Amaryllidaceae) (p. 104), near *Cyrtanthus,* erected for *H.* hesperidum (p. 104); *Ononis antennata,* new to Morocco; *Erodium guttatum* var. *grandiflorum* f. caeruleum Maire (p. 107); *Viola riviniana,* new to Morocco; *Tragiopsis* hanotei (p. 108); *Teucrium rupestre* var. villosum (p. 109); *Galium viscosum* var. *gibraltaricum,* new to Africa; *Senecio lividus* ssp. foeniculaceus (DC.) n. comb. (p. 110); *Centaurea* (*Amberboa*) murbeckiana (*Amberboa maroccana* Barr. & Murb., not *C. maroccana* Ball) (p. 110).

14163. **COTTON, A. D.** A visit to Kilimanjaro. *Kew Bull. Misc. Inform.* 1930 (3) : 97-121. 2 pl. 1 fig. 1930.—

An account is given of a visit to Kilimanjaro in Tanganyika Territory and an ascent of the mountain up to 12,000 ft. A general description of the vegetation of the temperate rain forest, 6,000-8,000 ft. alt., is given and also of the grassland, 8,000-12,000 ft. A list is given of some 80 spp. collected above the forest belt, and named by Miss M. B. Moss. Included are: *Conyza* **apiculata** Hutch. & M. B. Moss (p. 113); *Senecio* **cottonii*** Hutch. & Taylor (p. 115); *Landtia* **kilimanjarica** Hutch. & M. B. Moss (p. 118); and *Pentaschistis borussica* var. **minor** Ballard & Hubbard (p. 121). Photographs show the giant Senecios *S. johnstonii* and the new *S. cottonii*.—*A. D. Cotton.*

14164. COWAN, J. M. A botanical expedition to Persia. *Kew Bull. Misc. Inform.* 1930(2): 49-68. 1 map. 1930.—Gives a descriptive account of an expedition in Persia by the author and C. D. Darlington, from Feb. 22 to July 27, 1929. An account is given of the districts passed through, namely, Palestine, Damascus to Baghdad, Khaniqin, Hamadan, Isfahan, Teheran, Tabriz, Lake Urumiya, Astara and Batum, and of the pteridophytes, gymnosperms and angiosperms observed.—*A. W. Hill.*

14165. DOMIN, K. Beiträge zur Flora und Pflanzengeographie Australiens. I. Dicotyledoneae. Systematische Bearbeitung des eigenen sowie auch fremden, besonders des von Frau Amalia Dietrich in Queensland (1863-1873), und von Dr. Clement in Nordwest-Australien gesammelten Materiales, mit teilweiser Berücksichtigung der gesamten Flora Australiens. *Bibliotheca Bot.* (No. 89III. 741-840. 1927 (See B. A. 1(2/3): Abstr. 3529)); 89IV. 841-936. 3 pl., 7 fig. 1927; 89V. 937-1032. 3 pl., 13 fig. 1928; 89VI. 1033-1128. 2 pl., 12 fig. 1928; (89VII. 1129-1200. (See B. A. 5(6/7): Abstr. 18320)); 89VIII. 1201-1317. 9 fig. 1929.—Continuations and conclusion of the treatment of Australian genera and species of numerous families. The locality is Queensland unless otherwise stated. Rutaceae: *Melicope* **simplicifolia** (p. 842); *M. pubescens* v. **superba** (p. 843); **LUERSSENIDENDRON** (p. 843), near *Melicope* and *Pentaceras*, erected for *L.* **monostylis*** (p. 843), N. S. Wales; *Evodia* **bakeriana** (p. 845); *Pagetia* **dietrichiae** (p. 845); *Fagara* **varians** (p. 846); *Geijera* **paniculata** (*Coatesia p.* F. v. Muell.) (p. 847); *G.* **linearifolia** (*Eriostemon linearifolium* DC.) (p. 847); *Acronychia laevis* vars. **dictyophleba** and **longiflora** (p. 848); *A.* **superba** (p. 849); *Murraya* **ovatifoliolata** (p. 850); *Citrus* **maideniana** (p. 851); *Flindersia* **xanthoxyla** (*Oxleya x.* A. Cunn.) (p. 851); *F.* **dissosperma** (*Strzeleckia d.* F. v. Muell.=*Flindersia strzeleckiana* F. v. Muell.) (p. 852). Meliaceae: *Owenia* **capitisyorkii** (p. 854). Polygalaceae: *Polygala leptalea* v. **australiensis** (p. 855) and *P. abyssinica* v. **intercedens** (p. 855), N. Australia; *P.* **macrobotrya** (p. 856); *P. chinensis* v. **dissitiflora** (p. 857); *P.* **pycnophylla** (p. 858); *P.* **gabrielae** (p. 858); *P. stenoclada* vars. **queenslandica** and **clementii** (p. 859), latter var. N-W. Australia; *Xanthophyllum* **octandrum** (*Macintyria octandra* F. v. Muell.) (p. 860). Euphorbiaceae: *Euphorbia mitchelliana* vars. **dietrichiae, cairnsiana,** and **filifolia** (p. 861); *E.* **biconvexa** (p. 862); *E.* **clementii** (p. 862) and *E.* **inappendiculata,** N-W. Australia; *E. i.* v. **queenslandica** (p. 863); *E. australis* vars. **canescens, subtomentosa** (from N. Australia), and **semiglabra** (p. 864); *E. macgillivrayi* vars. **pseudoserrulata** and **yarrabensis** (p. 865); *E. eremophila* v. **oblonga** (p. 866); **HETEROCALYMNANTHA** (p. 867), related to *Micrantheum* and *Stachystemon,* with *H.* **minutifolia*** (p. 867); *Amperea* **xiphoclados** (*Leptomeria x.* Sieb.) (p. 868), No. Australia; *Andrachne* **orbicularis** (p. 869); *Actephila* **foetida** (p. 869); **HEXASPERMUM** (p. 869), near *Actephila,* with *H.* **paniculatum*** (p. 870); *Petalostigma* **pubescens** (p. 871); *P.* **glabrescens** (*P. quadriloculare* var. *g.* Benth.) (p. 871); *P.* **micrandrum** (p. 871), N-W. Australia; *Glochidion* **supra-axillare** (*Phyllanthus ferdinandi* var. *s.-aullaris* Benth.) (p. 872); *G.* **benthamianum** (p. 872); *G.* **harveyanum** (p. 873); *Phyllanthus* (Sect. *Paraphyllanthus*) **collinus** (p. 874); *P.* **savannicolus** (p. 875); *P. fuernrohrii* v. **suffruticosus** (p. 875); *P. simplex* v. **myrtifolius** (p. 876); *P. s.* var. **pinifolius** (p. 877); *Flueggea virosa* v. **aridicola** (p. 878); *Bridelia leichhardtii* v. **glabrata** (p. 879); *Cleistanthus* **xerophilus** (p. 879); *Croton phebalioides* v. **acuminatus*** (p. 880); *C.* **mirus** (p. 882); *C.* **pubens** (p. 882); *Alchornea* **aquifolium** (*Sapium a.* J. Smith) (p. 886); *Mallotus claoxyloides* v. **glabratus** (p. 888). Anacardiaceae: *Pleiogynium* **cerasiferum** (*Owenia c.* F. v. Muell.) (p. 892); *Semecarpus australiensis* vars. **obtusifolius** and **macrophyllus** (p. 893). Celastraceae: *Celastrus* **baileyanus** (*C. cunninghamii* v. *parvifolius* Bailey) (p. 894); *Cassine australis* v. **pedunculosa** (p. 895); *C.* **integrifolia** (*Portenschlagia i.* Tratt.) (p. 895). Stackhousiaceae: *Stackhousia* **dietrichiae** (p. 896); *S.* **clementii** (p. 897), N-W. Australia. Sapindaceae: *Heterodendron oleifolium* v. **euryphyllum** (p. 902), N-W. Australia; *Cupaniopsis* **shirleyana** (*Cupania s.* F. M. Bail.) (p. 904); *C.* **flagelliformis** (*Cupania f.* F. M. Bail.) (p. 904); *Rhysotoechia* **contermina** (p. 905); *Jagera pseudorhus* f. **subglabrescens** (p. 906); *Arytera* **exostemonea** (p. 908); *Dodonaea calycina* v. **truncatiales** (*D. t.* F. v. Muell.) (p. 912); *Distichostemon* (*Dodonaea*) **malvaceus** (p. 913); *D.* (*D.*) **dodecandrus** (p. 914). Rhamnaceae: *Discaria* **pubescens** (*Colletia p.* Brongn.) (p. 219). Vitaceae: *Cissus antarctica* vars. **pubescens** and **integerrima** (p. 920); *C.* **bicolor** (p. 921); *Cayratia* **trifolia** (*Vitis t.* L.) (p. 924); *C.* **cuneata** (p. 924); *C.* **calcicola** (p. 925); *Tetrastigma nitens* v. **amaliae** (p. 926). Elaeocarpaceae: *Sloanea* (*Echinocarpus*) **austroqueenslandica*** (p. 926); *Elaeocarpus* **drymophilus** (p. 927); *E.* **corymbifer** (p. 928). Tiliaceae: *Berria* **rotundifolia** (*Berrya ammonilla* var. *r.* Benth.) (p. 928); *Grewia polygama* v. **elliptica** (p. 930); *Triumfetta micracantha* v. **albida** (p. 932); *T. bartramia* v. **clementii** (p. 933), N. W. Australia; *Corchorus* **macropetalus** (*Triumfetta macropetala* F. v. Muell.) (p. 933); *C.* **pascuorum** (p. 933); *C. olitorius* v. **australiensis** (p. 934) and *C. tridens* v. **euryphyllus** (p. 935), No. Australia; *C. tridens,* new to Queensland; *C.* **rigidiusculus** (p. 935); *C. acutangulus* v. **brachycarpus** (p. 935), No. Australia; key to the annual spp. of *Corchorus* so far found in Australia; *C.* **rostrisepalus** (p. 937), No. Australia; *C.* **parviflorus** (*C. walcottii** v. **parviflora** Benth.) (p. 937); *C. p.* vars. **ovatus** and **gracilescens** (p. 937), N. & N. W. Australia; *C.* **crassifolius** (p. 938), W. Australia. Malvaceae: *Malvastrum* **chillagoense** (p. 940); *Sida corrugata* v. **linearis** (p. 941), N-W. Australia; *S.* **goniocarpa*** (*S. corrugata* v. *g.* F. v. Muell. ex Benth.) (p. 941); *S.* **pedunculata** (p. 941); *S.* **laevis** (p. 941); *S. intricata* vars. **subspinosa** and **foliosa** (p. 942) and *S.* **clementii** (p. 943), N-W. Australia; *S.* **pritzeliana** (*S. cardiophylla* Pritzel not F. v. Muell.) (p. 943); *S.* **rohlenae** (p. 844); *S.* **aterophora** with var. **brachypoda** (p. 945); *S.* **mutica** (*S. cordifolia* v. (?) *mutica* Benth.) (p. 945); *S.* **subdensiflora** (p. 946); *S.* **magnifica** (p. 946); *S.* **contermina** (p. 947), N-W. Australia; *S.* **aprica** with var. **solanacea** (p. 948); *Abutilon* **nobile** (p. 948); *A.* **calliphyllum*** (p. 950); *A.* **lobulatum*** (p. 950), N-W. Australia; *A. oxycarpum* v. **subsagittatum** (p. 952); *A.* **malvifolium*** (*A. oxycarpum* v. (?) *malvaefolium** Benth.) (p. 952); *A.* **fugax*** (p. 952); *Urena armitiana* v. **stenophylla** (p. 954); *U.* **schultzii** (p. 954), N. Australia; *Hibiscus* **savannorum** (p. 957); *H.* **amaliae** (p. 958); *H.* **brevibracteosus** (p. 959); *H.* **kavinae** (p. 960); *H.* **campylochlamys** (*H. sturtii* var. *c.* F. v. Muell.) (p. 961); *H. c.* var. **clementii** (p. 961); *H.* **platychlamys** (*H. sturtii* var. *p.* Benth.) (p. 962); *H.* **cupularis** with v. (?) **strigosus** (p. 962); *Cienfuegosia australis* v. **microcarpa** (p. 963); *C.* **punctata** (*Fugosia p.* Benth.) (p. 964); *C.* **pedata** (*Fugosia p.* F. M. Bail.) (p. 964). Sterculiaceae: *Sterculia* **schultzii*** (p. 966), N. Australia; *S.* **paradoxa** (*Brachychiton paradoxum* Schott) (p. 967); *S.* **australis** (*Trichosiphon australe* Schott) (p. 968); *S. a.* vars. **dietrichae** and **acuminata** (p. 968), N. W. Australia and Queensland; *S. diversifolia* v. **longipes*** (p. 970); *Tarrietia* **peralata*** (*T. trifoliolata* var. *p.* F. M. Bail.) (p. 970); *Melhania* **brachycarpa** (p. 972), N. Australia and Queensland; *Keraudrenia* **corollata**

(*Seringia c.* Steetz) (p. 974); *K.* **collina** and var. **multiflora** (p. 974). Dilleniaceae: *Hibbertia stricta* v. **fruticosa** (p. 976); *H.* **ovata** (*Plewrandra o.* Labill.) (p. 976); *H. melhanoides* v. **baileyana** (p. 976); *H. linearis* v. **cyrtophylla** (p. 977); *H. scandens* v. **oxyphylla** (p. 977); *H.* **androsaemoides** (p. 978). Guttiferae: *Hypericum gramineum* v. **ericifolium** (p. 980), N. S. Wales and N. Australia. Violaceae: *Viola hederacea* v. **lobulata** (p. 982), N. S. Wales; *Hybanthus enneaspermus* v. **stellarioides** (p. 983); *H.* **elegans** (p. 984), N.-W. Australia; *H.* **monopetalus** (*Viola monopetala* Roem. & Schult.) (p. 984); *H. m.* var. **abbreviatus** (p. 985). Passifloraceae: *Passiflora* **baileyana** (*P. aurantia* v. *pubescens* Bailey) (p. 987). Thymelaeaceae: *Pimelea* **decora** (p. 988); *P. sericostachya* v. **amabilis*** (p. 989); *P. altior* vars. **longifolia** and **parvifolia** (p. 990). Onagraceae: *Oenothera* (*Raimannia*) **diplotricha** (p. 992); *Jussiaea suffruticosa* vars. **linearifolia, interstans, acuminata,** and **brevifolia** (p. 994). Lythraceae: *Rotala* **longibracteolata** (p. 995). Rhizophoraceae: *Ceriops* **timoriensis** (*Rhizophora t.* DC.) (p. 998). Combretaceae: *Terminalia* **chillagoensis** (p. 999); *T.* **aridicola*** (p. 1000); *T.* **subacroptera** (p. 1000). Myrtaceae: *Thryptomene* **parviflora** (*T. oligandra* v. (?) *parviflora* F. v. Muell. ex Benth.) (p. 1003); *Baeckea* **imbricata** (*Jungia i.* Gaertn.) (p. 1004); *B.* **squarrulosa** (p. 1004); *Leptospermum pubescens* v. **parviflorum** (p. 1007), Victoria; *Callistemon* **heleogiton** (p. 1008); *C.* **citrinus** (*Metrosideros citrina* Curt.) (p. 1008); *Melaleuca acacioides* v. **angustifolia** (p. 1009); *M.* **decora** (*Metrosideros d.* Salisb.) (p. 1011); *M. parviflora* v. **pubescens** (*M. pubescens* Schauer) (p. 1011); *M. p.* var. **leiostachya** (*M. preissiana* v. *l.* Benth.) (p. 1012); *M. nodosa* v. **stenostoma** (p. 1012); *Angophora* **floribunda** (*Metrosideros j.* Smith) (p. 1012); *A.* **costata** (*Metrosideros c.* Gaertn.) (p. 1013); *Eucalyptus* **aromatica** (*Metrosideros a.* Salisb.) (p. 1015); *E. raveretiana* v. **jerichoensis** (p. 1018); *E.* **leucophylla** (p. 1019); *E. crebra* v. **macrocarpa** (p. 1019); *E.* **umbellata** (*Leptospermum umbellatum* Gaertn.) (p. 1021); *E.* **gummifera** (*Metrosideros g.* Soland. ex Gaertn.) (p. 1022); *Tristania suaveolens* v. **riparia** (p. 1025); *T.* **conferta** v. **microcarpa** (p. 1025); *Syncarpia* **procera** (*Metrosideros p.* Salisb.) (p. 1026); **CHORICARPIA** (p. 1026), resembling *Syncarpia* and *Metrosideros*, based on *C.* **leptopetala** (*Syncarpia l.* F. v. Muell.) (p. 1026); *Rhodomyrtus trineura* v. **macrophylla** (p. 1028); *Myrtus* **decaspermoides** (p. 1029); *Decaspermum* **laxiflorum** (*Nelitris paniculata* v. *laxiflora* Benth.) (p. 1029); *Rhodamnia* **spongiosa** (*R. trinervia* var. *s.* F. M. Bail.) (p. 1030); *Fenzlia* **microphylla** (p. 1030); *Eugenia* **theodoriwolfii** (p. 1031). Melastomataceae: *Otanthera* **queenslandica** (p. 1032). Halorrhagaceae: *Halorrhagis* **yarrabensis** (p. 1034). Araliaceae: *Polyscias* **macdowallii** (*Panax m.* F. v. Muell.) (p. 1037); *P.* **stipulatus** (*Tieghemopanax s.* Viguier) (p. 1037); *Kissodendron* **SHIELEYOPANAX** n. subg. (p. 1038), with *K.* **bellendenkeriense** (*Pentapanax bellendenkeriensis* F. M. Bail.) (p. 1038); *K.* **dispermum** (*Cissodendron australianum* v. *disperma* F. v. Muell.) (p. 1038); *Astrotricha* (*Euastrotricha*) **glabra** (*A. longifolia* v. *g.* F. v. Muell.) (p. 1040), Queensland. Umbelliferae: **MAIDENIA** (p. 1043), near *Hydrocotyle*, based on *M.* **acroptera*** (p. 1044), N. S. Wales; *M.* **ceratocarpa** (*Hydrocotyle c.* Fitzgerald) (p. 1044); *Didiscus* **oleraceus** (p. 1044), N.-W. Australia; *Apium prostratum* v. **maritimum** (p. 1048); *A. leptophyllum* v. **dubium** (p. 1049). Epacridaceae: *Trochocarpa* **bellendenkerensis*** (p. 1050); *Leucopogon* **spiciflorus** (p. 1052); *Sprengelia* **monticola** (*Ponceletia m.* A. Cunn.) (p. 1054). Myrsinaceae: *Rapanea porosa* v. **magnifolia** (p. 1056); *Ardisia brevipedata* ? v. **depauperata** (p. 1056); *Tetrardisia* **disticha*** (p. 1058). Sapotaceae: *Sersalisia* **pohlmanniana*** (*Achras p.* F. v. Muell.) (p. 1060); *S.* **brachyloba** (p. 1061); *S.* **antiloga** (*Amorphospermum antilogum* F. v. Muell.), *S.* **baileyana** (*Lucuma chartacea* F. M. Bail.), *S.* **arnhemica** (*Achras a.* F. v. Muell.), *S.* **xerocarpa** (*Achras x.* F. v. Muell.), *S.* **chartacea** (*Achras. c.* F. v. Muell.), *S.* **australis** (*Achras a.* R. Br.), *S.* **howeana** (*Sideroxylon howeanum* F. v. Muell.), *S.* **costata** (*Sideroxylon costatum* F. v. Muell.), *S.* **euphlebia** (*Achras e.* F. v. Muell.), *S.* **myrsinoides** (*Achras m.* A. Cunn.), and *S.* **brownlessiana** (*Achras b.* F. v. Muell.) (all p. 1062). Oleaceae: *Jasminum aemulum* v. *genuinum* f. **interstans** (p. 1065), N. Australia; *J. a.* var. **glaberrima** (p. 1065), N. Australia and Queensland; *Notelaea longifolia* v. **candolleana** (p. 1068), N. S. Wales. Loganiaceae: *Mitrasacme* **spergulacea** (p. 1070); *M.* **benthamiana** (*M. alsinoides* Benth., not R. Br.) (p. 1071); *M.* **micrantha** (p. 1071); *M.* **brachystemonea** (p. 1071); *Fagraea* **cambagei** (p. 1071). Gentianaceae: *Erythraea* **clementii** (p. 1073), N.-W. Australia. Apocynaceae: **TRICHOSTOMANTHEMUM** (p. 1074), in tribe Carisseae, based on *T.* **baccellianum** (*Wrightia baccelliana* F. v. Muell.) (p. 1074); *Carissa* **velutina** (p. 1075); *Alyxia* **oblongata** (p. 1077); *A.* **orophila** (p. 1077); *Alstonia* **muelleriana** (*A. villosa* F. v. Muell.) (p. 1081); *A. m.* var. **parvifolia** (p. 1081), "Yarraba"; *Parsonsia lanceolata* v. **angustifolia** (p. 1083). Asclepiadaceae: *Cynanchum* **ovatum** (*Vincetoxicum o.* Benth.) (p. 1085); *C.* **leptolepis** (*V. l.* Benth.) (p. 1085); *Marsdenia* **fragrans** (p. 1086). Convolvulaceae: *Argyreia* **queenslandica** (p. 1087); *Lettsomia* is considered a section of *Argyreia; Ipomoea* **menispermacea*** (p. 1089); *I.* **aequisepala** (p. 1089); *I.* **lasiophylla** (p. 1090); *I.* **hastifolia** (p. 1092); *I.* **villicaulis** (p. 1092); *Convolvulus* **clementii** and var. **biflorus** (p. 1093); *Polymeria* **subhirsuta** (p. 1094); *P.* **mollis** (*P. occidentalis* F. v. Muell. nom. nud.) (p. 1094); *Breweria rosea* v. **pluriflora** (p. 1095). Boraginaceae: *Tournefortia sarmentosa* v. **magnifolia** (p. 1097); *T.* **glabrifolia** (p. 1098); *Heliotropium* **ballii*** (p. 1098); *H.* **muticum** (p. 1098), N.-W. Australia; *H.* **pascuicolum** (p. 1100); *H. ovalifolium* v. **crassifolium** (p. 1101), N.-W. Australia; *H.* **geocharis** (p. 1101); *H. tenuifolium* vars. **benthamianum** (No. Australia), **exsertum, parvilobum, majoriflorum, alsinoides** (Queensland), and **speciosum** (N.-W. Australia); *H. t.* vars. **annuum, distantiflorum** and **diffusum** (p. 1103); *Trichodesma zeylanicum* v. *commune* f. **angustifolium** (p. 1104). Verbenaceae: *Newcastlia cephalantha* v. **queenslandica** (p. 1107); *Callicarpa* **viridis*** (p. 1108); *Premna* **benthamiana** (*P. obtusifolia* v. ? *velutina* Benth.) (p. 1110); *P.* **suavis** (p. 1110); *P.* **minor** (p. 1110); *Glossocarya* **calcicola*** (p. 1112); *Vitex* **benthamiana*** (*V. trifolia* v. *parviflora* Benth., not *V. parviflora* Juss.) (p. 1114); *V.* **petiolaris** (p. 1115); *Avicennia officinalis* v. **acuminata** (p. 1116). Labiatae: *Plectranthus* **kuntzeanus** (*P. parviflorus* Gürcke, not Henckel) (p. 1118); *P. australis* v. **graveolens** (*P. g.* R. Br.) (p. 1119); *Anisomeles salviifolia* vars. **subtomentosa, tomentoso-hirsuta, hispida** (p. 1121); *Prostanthera* **latifolia** (*P. ovalifolia* var. *l.* Benth.) (p. 1122); *P.* **lanceolata** (p. 1122); *P.* **collina** (p. 1123); *P.* **parvifolia** (p. 1123). Solanaceae: *Capsicum frutescens* ?var. **queenslandicum** (p. 1126). Stylidiaceae: *Stylidium* **lachnopodum** (p. 1204). Compositae: *Lagenophora* **stipitata** (*Bellis s.* Labill.), with var. **microcephala** (*L. billardieri* l. *m.* Benth.) (p. 1207); *L.* **bellioides** (*Solenogyne b.* Cass.) (p. 1207); *L.* **gunnii** (*L. emphysopus* Hook f.); *Brachycome* **clementii** (p. 1208), N. Australia; *Calotis cuneifolia* v. **biaristata** (p. 1209); *C.* **xanthosioidea** (p. 1209); *C.* **suffruticosa** (p. 1209); *Olearia* (*Eriotriche*) **racemosa*** (p. 1210); *Vittadinia scabra* v. **linearis** (p. 1213); *Blumea* **benthamiana** (p. 1214); *B.* **diplotricha** (p. 1214), N. Australia; *B.* **arabidea** (p. 1214); *B. integrifolia* vars. **simplex** and **pumila** (p. 1215), N. Australia; *B.* **scapigera** (p. 1215), N. Australia; *B.* **dentata** (p. 1215); *B. d.* vars. **glabrescens, rigida,** Queensland, **glandulosa, foliosa,** and **schultzii** (p. 1216), N. Australia; *Pluchea* **rubelliflora** (*Eyrea r.* F. v. Muell.) (p. 1217); *P.* **ferdinandi-muelleri,** (*P. tetranthera* v. *tomentosa* Benth.) (p. 1217) and *Pterigeron* **bubákii** (p. 1217), N.-W. Australia; *Pterocaulon* **spicatum** (*Monenteles spicatus* Labill.) (p. 1218); *Helipterum* **clementii** (p. 1221), N.-W. Australia; *Helichrysum* **newcastlianum** (p. 1224); *H. boormanii*

ars. tryonii and gillivrayi (p. 1224); *H.* lindsayanum* p. 1224); *H. rupicola* v. danesii (p. 1225); *H.* waitioides (*H. apiculatum* v. *w.* Diels) (p. 1225); *H. apiculatum* v. eminens (p. 1226), Tasmania; *H.* insigne (p. 226); *H. ramosissimum* v. curvifolium (p. 1228), N. Australia; *H.* gracilescens* (p. 1228); *H.* semiamplexiaule* (p. 1228); *Podolepis* jaceoides (*Scalia j.* Sims) (p. 1230); *P.* gnaphalioides (p. 1230); *Glossogyne enwifolia* v. divaricata (p. 1236); *Senecio* shirleyanus (p. 1240). An index to genera, species and varieties concludes the series.

14166. **OSKARSSON, INGIMAR. Für die Flora von Island neue Arten.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(97): 777-779. 1929.—*Equisetum silvaticum* L., *Potamogeton praelongus* Wulf., *Carex flava* L., *Sagina caespitosa* (J. Vahl) Lange, and *Viola epipsila* Ledeb. are listed for the 1st time from Iceland.—*A. M. Johnson.*

14167. **REGEL'IS, K. Fontes florae Lituanae. Lietuvos floros šaltiniai.** [In Lithuanian & German.] *Vytauto Didžiojo Univ. Mat.-Gamtos Fak. Darbai (Mém. Fac. Sci. Univ. Vytautas le Grand)* 5(2): 221-289. 1930/1931. —(1) An extensive annotated bibliography on the botany of Lithuania; titles are chiefly in German, occasionally in French, Russian, Czech, Polish, Latin, and Lithuanian.—(2) A list of the chief herbaria containing collections from Lithuania.—(3) A list, admittedly incomplete and to be continued, of plants known to occur in Lithuania, with localities.

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in this issue Entries 12121, 12125, 12128, 12681, 12740, 12746, 12798, 12851, 12852, 14096, 14230, 14236)

14168. **ADRIANCE, GUY W. Dichogamy in the pecan.** *Proc. Amer. Soc. Hort. Sci.* 27: 435-439. 1930(1931).—Blossoming data for 7 varieties of pecan for 6 years, and for 10 varieties for 4 years, indicate 3 groups of varieties: protandrous, fluctuating, and protogynous. Type of dichogamy is influenced by environmental conditions previous to blossoming period. Deficiency in soil moisture or in heat units favors protogyny; more favorable conditions of moisture and temp. favor protandry. Soil moisture is the limiting factor; but when moisture is sufficient, the influence of temp. is appreciable. Staminate flowers show less variation in number of heat units required for maturity than pistillate, being earlier in a warm spring than pistillate, and later in a cool spring.—*G. W. Adriance.*

14169. **AUFHAMMER, G., und W. PECH. Die Behaarung der Basalblattscheiden bei Hordeum sativum Jess.** *Pflanzenbau, Pflanzenschutz u. Pflanzenzucht* 8(2): 49-61. 5 fig. 1931.—On the basal leaf sheath of *H. sativum* between the time of formation of the first 3 leaves and the end of culm formation occurred a downy border of mostly 1-celled hairs. All winter varieties showed greater hairiness shortly before shoot production than in spring. Low winter temp. in open fields injured plant growth and thereby retarded hair production. Favorable growth conditions favor a strong production of hairs. Hair production differs with the variety.

14170. **BALDWIN, HENRY I., and WARREN E. PERCIVAL. Polyembryony in red spruce.** *Science* 74 (1912): 203. 1931.—Note on a case in *Picea rubra.*

14171. **BANCROFT, HELEN, and JEAN DICKSON. Studies in floral anatomy. 1. The nectary of Pelargonium.** 23p. 4 pl. 9 fig. Basil Blackwell: Oxford, 1930.—This is a study in the floral anatomy of *Pelargonium,* with some histological features of the floral axis. The nectar tube is held to be contained within the floral axis, and is not a sac-like spur of the posterior sepal. Strands of vascular tissue pass off from the stele opposite the insertion of the posterior sepal, and enter a secretory papilla. An explanation of obdiplostemony in the flower is believed to be related to the fact that the vascular supplies to the antesepalous, or inner whorl, of stamens are derived at a higher level than the vascular supplies to the antepetalous stamens, which take their origin as branches of bundles which supply the petals. The vascular bundles to the petals and antepetalous stamens are therefore believed to constitute a single whorl, and by arranging the vascular supply to the different organs of the flower in an alternating series, the antepetalous position of the carpel loculi is also explained.—*C. L. Wilson.*

14172. **BARON, C. M., R. J. D. GRAHAM, and L. B. STEWART. Vegetative propagation. Kalanchoe verticillata.** *Trans. and Proc. Bot. Soc. Edinburgh* 30(2): 70-71. 3 fig. 1929.—The leaf-apex bears 3 or more teeth and 1 or more pairs of outgrowths. The outgrowths are buds consisting of a basal disc which carries 2 unequal leaves, each traversed by 6 bundles. In old leaves the buds drop off and produce roots from the disc. The bud originates from meristematic cells near the vascular trace of the leaf.—*C. M. Baron.*

14173. **BARON, C. MARION. Cork formation in Rhododendron.** *Trans. and Proc. Bot. Soc. Edinburgh* 30 (2): 127-130. 3 fig. 1929.—In some small spp. cork development in the stem is entirely pericyclic; in the majority it is first pericyclic and later cortical. A complete cork cylinder within the pericyclic fibers is formed early, but the cortex remains living, and later cork layers develop in the cortex, running obliquely from pericycle to epidermis. The cortex isolated between these layers dies, and through continued development of new layers the whole cortex eventually forms a dead bark. The junction of living and dead tissue is clearly visible externally and often extremely irregular. Green living areas are often enclosed in the dead bark.—*C. M. Baron.*

14174. **BROWN, C. H., ABD EL GHAFFAR SELIM, and W. LAWRENCE BALLS. The wall of the cotton hair.** *Nature* [*London*] 127(3211): 742-743. 1 fig. 1931. —Presents a diagram showing correlations between wall thickness, "ribbon width," and cell diameter.

14175. **CAHN, A. R. Twisted trees.** *Science* 73(1899): 561. 1931.—The author reports that on an island in Lake Kahnipiminanikok, Ontario, Canada, 219 cedar trees (*Thuja occidentalis*) out of 312 present were twisted, 187 having a right hand twist.

14176. **CAREY, GLADYS. The leaf buds of some woody perennials in the New South Wales flora.** *Proc. Linn. Soc. N. S. Wales* 55(5): 708-737. 75 fig. 1930.—Part 1. A general description of the leaf buds of New South Wales perennials. These are divided into: (1) Scaly buds; (2) intermediate buds; (3) naked buds; (4) mixed buds. Intermediate buds form a type showing transitional features between those shown by scaly buds and those of naked buds so that there is no sharp line between these classes. "Transitional forms" are a feature of the expanding bud of the intermediate type; these structures are not deciduous bud scales nor yet true leaves. They show more development than the former but less than the latter, and buds are almost invariably found in their axils. Mixed buds are those in which both leaves and flowers occur. The classification is based on the features of the expanding shoot as well as those of the dormant bud. It is evident, therefore, that bud structure reveals a greater range of form in New South Wales' woody perennials than in those of the Northern Hemisphere. In part 2 a brief description is given of the buds of each of the 140 spp. studied.—*G. Carey.*

14177. **CHODAT, R. Some facts of morphological continuity as shown by a comparison of fossil and living plants.** *Proc. Internat. Congress Plant Sci. Ithaca, N. Y. 1926.* 1: 487-496. 1929.—Paleontological discoveries of the last 20 yrs. have profoundly modified the funda-

mental conceptions of shoot, axis, leaf, bundles, and sporophylls. Attention is called to the striking parallelism of successive modifications as observed from Psilophytales to those living ferns showing primitive structure. During the differentiation of leaves from cauloids the anatomical structure maintained its unity, the apparently striking dissimilarities being of secondary importance. The terminal sporangia of the Psilophytales and Psilotales are borne on cauloids; in many ferns of primitive origin they become marginal and tend to pass to the dorsal part of the frond, retaining from their primitive terminal location their organization in sori, these last arising from veins as specialized ramifications.—*P. J. Sedgwick.*

14178. **CONNARD, MARY H., and P. W. ZIMMERMAN. The origin of adventitious roots in cuttings of Portulaca oleracea L.** *Contr. Boyce Thompson Inst.* 3 (3): 337-346. 2 pl., 1 fig. 1931.—The majority arise in the medullary rays within 5 mm. of the base and emerge through the cut surface without penetrating the epidermis. All attempts to induce roots to pass through the epidermis by orienting the cuttings failed. The activity of the cells in the region of the interfascicular cambium appeared to be the most essential feature of the formation of adventitious roots of this species. Generally, the pericycle formed the outer portions of the root while the endodermis was dissolved away. Some exceptions occurred where roots arose in the pith or within vascular bundles.—*Authors' summary.*

14179. **COOK, O. F. Branching habits of the Hevea rubber tree.** *Science* 71 (1841): 386-387. 1930.—In common with other tropical trees, Hevea has specialized habits of branching. Two distinct growth periods can be recognized: The juvenile period, covering the growth of the primary upright; the adult period, signalized by branching. This throws light on the problems of vegetative propagation since the lateral branches from which cuttings or bud wood are taken in mature trees may lack the ability to regenerate uprights.—*L. G. Polhamus.*

14180. **CRIST, J. W. The nature, formation and variability of stone cells in fruits of the pear.** *Proc. Amer. Soc. Hort. Sci.* 27: 542. 1930 (1931).—Abstract.

14181. **CROSS, GEORGE L. Meristem in Osmunda cinnamomea.** *Bot. Gaz.* 91 (1): 65-76. 15 fig. 1931.—The rhizome in the sporeling stage grows by means of a tetrahedral apical cell. As the plant reaches maturity the segmentation of the apical cell usually becomes progressively less regular until the identity of the original apical cell is lost, and growth takes place by 2 or more initials. Cells destined to become desmogen tissue may be recognized in the 2nd segment from the apical cell. Due to the slow growth of the rhizome and the frequency of leaf gaps, it is difficult if not impossible to refer any portion of the mature rhizome to any definite portion of the segments from the apical cell or group of initials. The pericycle and endodermis apparently have independent origins, although decisive evidence was lacking. The roots arise in tissue which later gives rise to the pericycle. The undifferentiated endodermis acts as a sort of protective layer to the young root. The number of cells of most young roots is increased for a time by means of an apical cell with 5 cutting faces. As in the stem, progressive irregularity in segmentation of this cell often results in the formation of 2 or more initial cells which replace the apical cell. The evidence obtained supports the conclusions of Bower that the Osmundaceae occupy an intermediate position between the leptosporangiate and the eusporangiate ferns, but it throws no light upon the relative antiquity of the 2 groups.—*Author's summary.*

14182. **DASTUR, R. H., and G. A. KAPADIA. The anatomy of climbing plants.** *Jour. Indian Bot. Soc.* 10 (2): 110-121. 2 pl., 4 fig. 1931.—35 spp. in 14 families were collected near Bombay. The stem anatomy of 13 spp. is described and figured; the remainder either have been studied previously, or showed no peculiarities.—*W. Dudgeon.*

14183. **DOCTERS van LEEUWEN, W. M. Microstylis kobi J. J. S. Eine Bulbillen-bildende Orchidee.** *Bull. Jard. Bot. Buitenzorg* 11 (1): 12-14. 2 pl. 1930.—Bulbils recorded for the first time in this sp.*, growing only on epiphytic plants.

14184. **ELIAS, S. Die Entwicklung der Sekretbehälter, mit besonderer Berücksichtigung der Sekretbildung und Ausscheidung bei einzelnen Arten der Umbelliferen und Rutaceen. [Development of secretory cells, with especial reference to the formation and excretion of secretions in Umbelliferae and Rutaceae.]** 62p. 31 fig. Inaugural Dissertation: Universität Berlin, 1929.

14185. **FOSTER, A. S. Phylogenetic and ontogenetic interpretations of the cataphyll.** *Amer. Jour. Bot.* 18 (4): 243-249. 1931.—In view of our limited knowledge of the details of foliar evolution in seed plants, it is suggested that cataphyll morphology be approached by intensive ontogenetic studies. K. Domin's theory of the evolution of the 2-membered leaf is thought to involve certain highly speculative assumptions regarding the morphological nature of the cataphyll. Certain important facets of the problem from the standpoint of recent studies by Schüepp, Foster, and Diels are discussed and may be summarized as follows: (1) A knowledge of the complete development of a cataphyll from a meristematic protuberance at the growing point until maturity is necessary before its divergence from the foliage leaf can be clearly appreciated. (2) The mode of internal differentiation of the cataphyll seems to offer a promising field for morphogenetic and "causal" studies, especially since the postion and duration of meristematic tissue in a foliar anlage are of fundamental importance in relation to its method of growth. (3) The periodic alternation of cataphylls and foliage leaves represents a dynamic aspect of the general problem of shoot organization which requires closer examination. In certain plants the cataphylls are formed by the growing point at a faster "tempo" than the foliage leaves; this may prove of importance. (4) The experimental studies of Schüepp and Diels suggest that a foliar primordium becomes determinate at a very early stage in ontogeny. The bearing of this fact upon Goebel's "Transformation theory" is discussed.—*A. S. Foster.*

14186. **[GERASIMOV, D. A.] ГЕРАСИМОВ, Д. А. Об отличительных признаках пыльцы Larix и Pinus cembra в торфе. [Characteristics of the pollen of Larix and of P. cembra in peat.]** Доклады Академии Наук СССР., Сер. А (*Compt. Rend. Acad. Sci. URSS., Sér. A*) 1930 (8): 199-202. 3 fig. 1930.

14187. **GLIŠIC, LJUBIŠA M. Zur Entwicklungsgeschichte der Solanaceen. Die Endospermbildung von Datura metel L. [Endosperm formation in D. metel.]** *Bull. Inst. et Jard. Bot. Univ. Belgrade* 1 (1): 75-85. 6 fig. 1928.

14188. **HAASIS, FERDINAND W. Four and five-leaved clusters in Monterey pine.** *Madroño, Jour. California Bot. Soc.* 2 (3): 29-30. 1931.—A few found among the more normal 3-leaved fascicles of *Pinus radiata.*

14189. **HASSELBERG, G. B. E. The vascular system in the stem-axis of the genus Fagraea. Contributions to the anatomy of the Loganiaceae.** *Svensk Bot. Tidskr.* 25 (2): 229-237. 6 fig. 1931.—Particular attention is paid to the arrangement of the leaf-traces. In addition to normal leaf-traces, the spp. studied have "cortical bundles." These bundles are strongly developed in *F. ceylanica, F. borneensis,* and *F. imperialis. F. litoralis, F. crassifolia,* and *F. lanceolata* have cortical bundles only in the uppermost part of the internodes. In the 3 last-mentioned spp. the number of leaf-traces increases from the 5th to the 1st node below the inflorescence. In a young plant of *Fagraea* the number of leaf-traces increases from the 1st to the 6th node above the cotyledons.—*G. B. E. Hasselberg.*

14190. **HOFMANN, ELISE. Anatomisches über Selaginella türkheimii und zwei Adiantum-Formen aus Guatemala. (Mit einem Beitrag über den Standort, von FRIEDRICH MORTON.)** *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. 1. Abt.* 139 (8/10): 641-644. 1 fig. 1930.—Leaf anatomy of cave-inhabiting plants of

these spp. is briefly described. The *Adiantum* spp. were sterile.

14191. **HOLDEN, H. S. Some observations on the wound reactions of Ankyropteris corrugata.** *Jour. Linn. Soc. London, Bot.* 48(325): 643-655. 1 pl., 16 fig. 1931.—The tissues of this fossil fern show well-marked reactions to wounding. In the root these, which consist of irregularly disposed wedges of meristematic tissue, are confined to the cortical parenchyma and may extend for some distance beyond the actual wound area. In the stem the wounds generally take the form of irregular cortical fissures. These are bordered on either side by a strip of meristem 4-8 cells in depth. Anomalous secondary xylem which occurs in a stem in the neighborhood of a bifurcation is also considered to be due probably to traumatic stimulus. In the petiole the wound reaction varies. Where the wound is superficial a pad of healing meristem is developed from the cortical cells. The parenchymatous cells are most active, but the sclerenchymatous cells may also undergo division. Exceptionally the superficial cells may be modified in a way similar to those of the normal epidermis, thus providing an example of "restitution." Other wounds, termed "crush" wounds, are characterised by irregular cortical fissures. These become bordered or surrounded by a strip of meristematic cambiform cells. Where the wounds are deep-seated the vascular tissues may be involved in the reaction, which in such cases takes the form of the development of secondary tracheids, usually short and of small calibre, which vary in position with that of the wound. There is some evidence that the phloem or phloem-parenchyma may also become meristematic under these conditions.—*Author's summary.*

14192. **HOWE, M. DORISSE. A morphological study of the leaf notches of Bryophyllum calycinum.** *Amer. Jour. Bot.* 18(5): 387-390. 1 pl. 1931.—The growth in the notches of the leaves is exogenous. It proceeds from a meristematic group of cells present in the very young leaves. The growth, which may be termed a "bud," is definitely organized when the leaf is mature. The roots are formed after the formation of the stem primordium and are endogenous. Growth of the leaf notches producing well developed plantlets is possible while the leaf is still attached to the plant, and while the parent plant is apparently healthy.—*Author's summary.*

14193. [IAROSHEVSKIĬ, P. E.] ЯРОШЕВСКИЙ, П. Е. Важнейшие анатомо-морфологические признаки у Beta и их практическое значение. [The most important anatomical-morphological traits in Beta and their practical significance.] Дневник Всесоюзного Съезда Ботаников [Ленинград] [*Dnevnik Vsesoĭuznogo Sĭezda Botanikov, Leningrad*] 1928: 323-325. 1928.—Abstract.

14194. **JAKOVLJEVIC, STEVAN J. Über die Harzdrüsen und den Blattbau bei Juniperus excelsa M.B. und Juniperus foetidissima Willd. [Resin glands and leaf-structure in J. excelsa and J. foetidissima.]** *Bull. Inst. et Jard. Bot. Univ. Belgrade* 1(2): 142-149. 6 fig. 1929.

14195. **JOHANSEN, DONALD A. Studies on the morphology of the Onagraceae. III. Taraxia ovata (Nutt.) Small.** *Ann. Botany* 45(177): 111-124. 1 pl., 4 fig. 1931.—*Taraxia ovata,* which exhibits a wide range of gentic variations, is becoming extinct because of its lost ability to reproduce by seed. The plants have a high percentage of buds entirely destitute of sporogenous elements. It is concluded that the so-called "filiform calyx-tube" is the elongated apex of the ovary and is an adaptation to carry the flowers above the leaves. The ovules are probably the largest in the family. Mode of megasporocytic meiosis is telosynaptic; $n=7$, $2n=14$. The micropylar megaspore of the quartet is invariably the functional one, and organization of the megagametophyte proceeds normally. Megagametophyte is characterized by an excessive tendency to shrink and to stain intensely with the usual chromatin stains. Fertilization is normal and no chromosomal disturbances were noted. Early stages in embryogenesis are normal, but from about the time of differentiation in the hypophysis cell a peculiar method is followed. The final result is an embryo possessing only 2 cotyledons, a short hypocotyl and radicle. Morphogenesis in the onagrad embryo is essentially a rhythmic process requiring the utmost co-ordination among the constituent groups of cells if the series of events is to culminate in a perfectly balanced new individual. Monstrosities result from interruptions in cadence. Apogamous embryos were frequently observed and probably resulted from the continued growth of all 4 megaspores of the quartet.—*D. A. Johansen.*

14196. **KARPER, R. E. Multiple seeded spikelets in sorghum.** *Amer. Jour. Bot.* 18(3): 189-194. 2 fig. 1931.—Multiple seeded spikelets occur quite frequently in milo. Normally the fertile spikelet has 1 functional and 1 aborted flower. Apparently both flowers occasionally develop and function. Sometimes a 3rd flower may be present and functional since the following fruits were observed within a single spikelet: A single kernel, the normal condition; twin seeds; connate seeds—a 2-seeded fruit formed by the fusion of parts of 2 flowers; Siamese twins or semi-connate seeds—a series intermediate between twins and connate seeds; triplets—3 separate kernels. Connate seed always had 4 remnant style branches, 2 for each member of the pair of fused kernels, indicating that the extra kernels arose from additional functional flowers within the spikelet. This series of abnormal spikelets in *Andropogon sorghum* is almost identical with a similar series found by others in *Zea mays.* These genera apparently have in common many genetic characters, particularly chlorophyll deficiencies, and the vegetative characters are similar. Homology of these abnormal spikelets in both sorghum and maize is further evidence of close relationship. The most probable explanation of the presence of these abnormal spikelets in sorghum seems to be that, under certain favorable environmental conditions, both flowers are functional and that, furthermore, the primordium of a 3rd flower is sometimes, if not always, present in the spikelet and it may develop and become functional.—*R. E. Karper.*

14197. **KÖNIG, FRIEDRICH. Morphologische Studien über den Bau des Getreidehalmes. [Morphology of the cereal culm.]** *Angewandte Bot.* 10(6): 483-576. 1928.

14198. **KRISHNAMURTI, C. S. A note on the occurrence of bicarpellary pistils in the flower of Saraca indica.** *Jour. Indian Bot. Soc.* 10(2): 159. 1 pl. 1931.

14199. **LEK, H. A. A. van der. Anatomical structure of woody plants in relation to vegetative propagation.** *Rept. & Proc. Internat. Hort. Congr. London* 9: 66-76. 6 fig. 1930.—Multiplication of woody plants by cuttings depends largely on their anatomical structure, the first condition for the formation of roots in the majority of woody dicots being the presence of preformed initial organs (rhizogens). Varieties which form roots easily show without exception many well developed rhizogens, while those which do not root easily lack them.

14200. **MULLAN, D. P. Observations on the water-storing devices in the leaves of some Indian halophytes.** *Jour. Indian Bot. Soc.* 10(2): 126-133. 3 pl. 1931.—Of 8 spp. of littoral swamp forest (mangrove) halophytes studied, 7 showed water storage tissue beneath the epidermis and 1 centrally. Out of 11 spp. of psammophilous halophytes, 2 showed water storage tissue centrally placed, and 9 showed characteristic large upper epidermal cells, apparently functioning as water storage tissue. Plants of both groups growing inland showed thinner leaves and reduction of water storage tissue. The leaves of 2 spp. of psammophilous halophytes became thicker during the rainy season due to water storage in ordinary mesophyll cells. 2 spp. store water in the mesophyll of old chlorotic leaves.—*W. Dudgeon.*

14201. **MULLAN, D. P. A note on the development of adventitious roots from the petioles of the leaves of some Acanthaceae and Labiatae.** *Jour. Indian Bot. Soc.* 10(2): 167-168. 1 pl. 1931.—Leaves of 12 sp. of Acanthaceae and a few spp. of *Coleus* produced roots from the

cut ends and occasionally from the sides of the petioles, in soil or water cultures.—*W. Dudgeon.*

14202. **PATWARDHAN, G. B. "Some more plants developing adventitious roots from leaves."** *Jour. Indian Bot. Soc.* 10(2): 165-166. 1931.—A list of 17 sp. that develop roots from leaves, and are propagated by that means by gardeners at Poona.—*W. Dudgeon.*

14203. **PETERSEN, N. F. Vegetative propagation in the Missouri gourd.** *Science* 73(1898): 528. 1931.—Note on natural propagation of *Cucurbita foetidissima* by root formation at the nodes.

14204. **REEVES, R. G. Development of the ovule and embryo sac of alfalfa.** *Amer. Jour. Bot.* 17(3): 239-246. 2 pl., 20 fig. 1930.—Licent's fixing fluid was used mostly. Common and variegated varieties of *Medicago sativa* were studied and found to be the same. Megaspore formation is as usual in dicots and the chalazal spore functions. Most ovules have 8 nuclei in the embryo sac but sometimes only 6 occur because there is only 1 division in the chalazal end. The antipodals disappear early, long before the female gametophyte is mature. The variability of Leguminosae is shown by the extreme variation in the number of archesporial cells; in the number and arrangement of parietal and sporogenous cells; and in the form and number of tetrads (if several (2 or 3) tetrads are present only 1 tetrad completes its development).—*W. G. Houk.*

14205. **RITTER, GEORGE J. Dissection of wood fibrils by chemical means.** *Industr. and Engineer. Chem.* 21(3): 289-290. 4 fig. 1929.—Delignified spruce and elm fibers, treated with 68-77% phosphoric acid at 60-65° C. for 15-20 min., were broken down into fibrils which had begun to separate into spindle-like bodies that appear to be the smallest building units of the fibrils visible with the high power of the microscope. These units are named "fusiform bodies."

14206. **RUSBY, H. H. The value and limitations of histology in vegetable taxonomy.** *Proc. Internat. Congr. Plant. Sci., Ithaca, N. Y. 1926* 2: 1356-1360. 1929.—The author believes that the anatomical method if extensively applied would prove a great aid in taxonomic work. A large number of independent studies of groups is proposed, proceeding from the smaller to the larger categories, designed to ascertain, if possible, those anatomical characteristics invariably present in any given category, and that have therefore diagnostic value.—*P. D. Strausbaugh.*

14207. **SABNIS, T. S. Notes on Indian plant-teratology.** *Jour. Indian Bot. Soc.* 10(1): 21-26. 3 pl. 1931.—The paper describes bifurcation (1) of stem of *Saccharum officinarum,* (2) of leaves in *Anacardium occidentale,* (3) of cotyledons on seedlings of *Michelia champaca;* repeated bifurcation of the inflorescence of *Pennisetum typhoideum,* perhaps due to reversion; lateral vegetative shoots instead of terminal inflorescence shoots in *Brassica oleracea* var. *caulorapa;* and fasciation in *Linum usitatissimum,* garden roses, daisies, *Eutoca viscida,* and *Cucurbita maxima.* Fasciation may be of genetic origin.—*W. Dudgeon.*

14208. **SAHNI, B., and T. C. N. SINGH. Notes on the vegetative anatomy and female cones of Fitzroya patagonica (Hook. fils).** *Jour. Indian Bot. Soc.* 10(1): 1-20. 1 pl., 12 fig. 1931.—The leaves have been described as verticillate, but actually "the leaf traces of each whorl do not arise exactly at the same level. . . . It may turn out that a truly verticillate condition does not exist in the conifers at all." Palisade tissue in the leaves is mainly abaxial. The stomata occur on one or both surfaces in several parallel rows, forming longitudinal bands. 4-6 subsidiary cells surround each stoma, and the rows are separated only by the subsidiary cells. The cuticle is much thickened over the bands of stomata. The vestibules of the stomata are plugged with wax. The appearance of the stomata in sections and in macerations is very different. Macerations of fossil cuticles must be compared with macerations of cuticles of living plants, and not with sections. A stem 1 cm. thick showed structure similar to that of *Juniperus:* growth rings well marked; resin parenchyma scattered through the spring wood; resin canals and ray tracheids absent; medullary rays 1-10 (average 2.6) cells high and uniseriate; tracheids with circular separate bordered pits on radial walls; ray cells in the phloem region thin walled and much expanded; cortex containing resin canals. Ovulate cones of 2 ages were available,—at pollination time, and nearly mature. A cone consists of 5 whorls of 3 scales each. The scales of the uppermost whorl bear 5 ovules each, those of the next whorl 1 ovule each; the other whorls are sterile. The ovules are erect, 2-3-winged, and have a prominent funnel-like micropylar tube. At the apex of the cone, alternating with the scales of the upper whorl, are 3 gland-like organs somewhat resembling a nucellus, but hollow. Their morphology is unknown. At pollination time the ♀ gametophyte contains about 200 free nuclei. Most of the ovules had no pollen grains in the micropyle. The scales of the 3 basal whorls contain only 1 vascular bundle. Those of the 4th and 5th whorls have a single unbranched bundle to the bract. The bundle for the ovuliferous scale arises independently from the cone axis. It is inverted, and divides into many bundles, which spread out into a deeply curved arc. The bundles at the end of the arc are sometimes C-shaped, and occasionally the abaxial portion of the C may become detached as a distinct bundle, which is then oriented like the scale bundle.—*W. Dudgeon.*

14209. **SAINT-LAURENT, J. de. Études sur les caractères anatomiques des bois d'Algérie. I—(1. Gymnospermes; 2. Cupulifères).** *Bull. Sta. Rech. Forest. Nord de l'Afrique* 1(7): 241-255. 6 pl. 1926.—For the 4 species of Gnetaceae, 10 of Coniferae, and 9 of Cupuliferae growing naturally in Algeria and Tunis, keys based on anatomical characters, tabular synopses of dimensions of parenchyma, vessels, and rays, and photomicrographs of the transverse sections of the wood are presented.—*J. Kittredge, Jr.*

14210. **SCHMALFUSS, KARL. Untersuchungen über die interkalare Wachstumszone an Glumifloren und dikotylen Blütenschäften. [Intercalary growth in Glumiflorae and flower scapes.]** *Flora* 24(4): 333-366. 7 fig. 1930.—In hand sections of an elongating internode of *Hordeum hexastichon* the lowest indication of the characteristic crenation of the cell walls appeared at 15 mm. above the node. At 30 mm. stomata were fully developed and cells were 10 times as long as at 8 mm. Microtome sections (Flemming's fixative and triple stain) were used in further work. In *Cyperus alternifolius* cell division occurs in the pith in the lowermost 4 mm. of the stem. Above this the cells elongate and attain a length of 75μ at the 9-mm. level where cell division is just ceasing in the peripheral tissue, and the cells are 5μ long. Spindle axes are predominantly parallel with the direction of elongation. Studies in the following gave similar results: *Dactylis glomerata, Molinia coerulea, Hordeum distichum, Avena sativa, Triticum vulgare.* In *Avena* intercalary growth occurs in only 1 internode at a time, and in each internode successively beginning with the lowermost. Cell division occurs in the 5 mm. just above the node. Pith cells vary from 28μ in this region to 110μ at the mature upper end where a few still persist. The inflorescence develops independently. Leaf sheaths and leaves undergo a similar course and succession of intercalary growth and each is fully developed before the corresponding internode begins its intercalary growth. The upper portion of a scape of *Plantago media,* ½ its final length, was a region of cell division in all tissues, and pith cells were short with large nuclei. The reverse was true in the lower portion where all tissues were mature. In *Taraxacum officinale,* in several scapes ranging from 1.35 to 37 cm., division figures, which occurred throughout the younger, were progressively fewer and increasingly confined to the region just below the head in the older, and lacking in the mature scapes. Pith cells varied in length from 18μ in young regions to 148μ in the pith cylinders of mature regions. Until elongation is complete they are longer near the base than just below the head. Measurements in growth by stretching

were made in the following: *Arrhenatherum elatius, Phragmites communis, Molinia coerulea, Lolium temulentum, Holcus lanatus, Alopecurus pratensis, Triticum sativum, Avena sativa, Secale cereale, Cyperus alternifolius, Plantago media, Taraxacum officinale.* As seen in *Hordeum,* spiral and annular vessels, completely differentiated in the region of cell division, extend downward and disappear in the node where netted ducts occur. They stretch passively during the elongation of the tissue of the internode. As studies in *Phragmites communis* indicate, they continue through several young internodes in the grasses. In the upper portion of the zone of intercalary growth the pitted and netted ducts are differentiated and lie beside the spiral vessels, from which they take the water by lateral filtration. They extend throughout the mature region of the internode. In the scape of *Plantago* the position is reversed but the development and the functioning of the vessels and ducts corresponds with that of the internodes of the Gramineae.—*F. C. Jud.*

14211. SCHRATZ, EDUARD. Untersuchungen über die Geschlechterverteilung bei Equisetum arvense. *Biol. Zentralbl.* 48(10): 617-639. 1928.—Prothallia were studied in their natural habitats and in cultures. Under unfavorable conditions most of the thalli developed as males. From this it may be concluded that all spores have the potentiality to develop as males. Under favorable conditions at least 50% developed as males; the remaining thalli were at first female and later developed into hermaphrodites. This transformation takes place only when the archegonia remain unfertilized. Pure female thalli are genotypically hermaphrodite. The archegonia are always developed before the antheridia. Changing male thalli to female by improving nutrition was not accomplished. When the sex is once determined it becomes rather fixed. It is most easily changed in the earlier stages of development of the thallus. Hermaphroditic thalli are relatively rare in natural habitats. Author concludes that probably the hermaphroditic condition is normal for the species and that early phenotypic determination during the development of the spores with subsequent difficulty of reversal may be the cause of the apparent unisexuality of certain individuals.—*J. H. Schaffner.*

14212. SCHWARZ, W. Über die Entwicklungsmechanik der Panaschierungen. *Ber. Deutsch. Bot. Ges.* 48: (105)-(109). 1930.—Preliminary paper. See: **Über die Ursachen und das Zustandekommen der Panaschierung bei einer Form der Selaginella martensii Spring. fol. var.** *Protoplasma* 10(3): 1930.

14213. SINGH, T. C. N. Studies in the morphology of pollen grain.—I (a) Boraginaceae. *Jour. Indian Bot. Soc.* 10(1): 38-42. 1 pl. 1931.—External features of the pollen grains are described and figured for *Nonnea pulla* Lamk., *Anchusa italica* Retz., *Gastrocotyle hispida* Bunge., *Borago officinalis* L., *Heliotropium supinum* L., *H. marifolium* Retz., *Myosotis caespitosa* Schultz. Grains of various sizes and shapes occur in the family, and only *Myosotis* showed dumb-bell-shaped grains. Therefore Miss Pope's statement does not hold that the family is distinguished by small dumb-bell-shaped pollen grains. —*W. Dudgeon.*

14214. SINGH, T. C. N. Notes on the teratology of certain Indian plants—V, VI. *Jour. Indian Bot. Soc.* 9 (4): 248-252. 2 pl. 1930; 10(2): 134-138. 1 pl. 1931.—The following abnormalities are described and figured: (V.) a fasciated leaf in *Mirabilis jalapa,* double fruits in *Prunus amygdalus* and *Vitis vinifera,* 2 standards in a flower of *Erythrina indica,* transformation of petals, stamens, and carpel into leaves ranging from uni- to trifoliate in *Trifolium alexanderinum,* and fasciated stem and peduncle in *Crotalaria juncea;* (VI.) double nut in *Areca catechu,* branched leaf tip in *Ficus religiosa,* leaves of *Acacia arabica* "telescoped" into cone-like structures, seedlings of *Ricinus communis, Carica papaya* and *Zinnia elegans* with 3 cotyledons, fasciated peduncle in *Jasminum sambac,* and fasciated stem in *Ipomoea pulchella.*—*W. Dudgeon.*

14215. SINHA, B. N. Notes on the teratology of certain Indian plants.—VII. *Jour. Indian Bot. Soc.* 10(2): 160-164. 1 pl. 1931.—Double fruits are described and figured for *Musa paradisiaca* var. *sapientum; Mangifera indica; Punica granatum; Diospyros kaki;* and *Solanum melongena.*—*W. Dudgeon.*

14216. SKUTCH, ALEXANDER F. Unrolling of leaves of Musa sapientum and some related plants and their reactions to environmental aridity. *Bot. Gaz.* 90(4): 337-365. 23 fig. 1930.—The leaves of many spp. of Musaceae, Marantaceae, Zingiberaceae and Cannaceae are characterized by a well developed water-tissue, composed of large, thin-walled, hyaline cells which form one or more layers just beneath the upper epidermis. Observations and experiments on *M. sapientum, Heliconia bihai, Calathea magnifica, Alpinia exaltata* and *Canna* sp. show that the leaves, which in all these spp. are convolute in vernation, are forcibly unrolled through the agency of the cells of this water-tissue lying above and immediately adjacent to the principal transverse veins of the lamina, and which for this reason are termed "expansion cells." At the proper time these cells enlarge greatly, pushing the veins toward the upper (inner) surface, so that they are thrown into a state of compression, in which they cause the lamina to unroll. If the unrolling is prevented by binding, the expansion cells become several times their size in normally unfurled leaves. On the other hand, if the leaf is prematurely unrolled and held in a plane, the expansion cells fail to enlarge more than the neighboring cells of the water-tissue which take no part in unrolling. The leaves of *Musa* and *Canna* unroll normally in darkness. While the leaves of most related plants fold above the midrib in dry weather, thereby exposing the stomata, those of the banana fold below the midrib. The movements of the lamina halves are effected by special motor organs, the pulvinar bands, which lie along either side of the midrib throughout its length. The prismatic cells on the lower sides of these bands develop only when this side becomes concave, and in the light. Without them the pulvinar bands can not function.—*A. F. Skutch.*

14217. SOLOMON, RUSSELL. The anatomy of caudex and root of Eriocaulon septangulare. *Jour. Indian Bot. Soc.* 10(2): 139-144. 2 pl. 1931.—Material was obtained from Nova Scotia and Ireland. The caudex is 2.5-10 cm. long, and hairy. The tissues of the caudex, from the epidermis inwards, are: 1 cell layer of collenchyma; cortex of large many-armed bladderlike cells; endodermis, without characteristic features; and stele. Mestome bundles in the cortex are surrounded by thick-walled endodermis, those in the stele only by parenchyma. Roots are 1-2 mm. thick and 10-50 mm. long; the root-cap is small. The endodermis has no Casparian strip. The 3-5 protoxylem elements often lie in the single-layered pericycle. The surface of the root shows transverse ridges, caused by diaphrams formed at intervals across the air spaces.—*W. Dudgeon.*

14218. TRONCHET, A. Recherches sur les types d'organisation les plus répandus de la plantule des dicotylédones. Leurs principales modifications, leurs rapports. *Arch. de Bot.* 4(1): 1-252. 266 fig. 1930.—In part one the normal structure of a number of dicotyledonous seedlings is discussed. The variation in the cross arrangement of the xylem is considered and theories advanced as to the possible relationship between the different existing types. In part two, normal and abnormal structures in seedlings are considered in relation to the mechanism which brings about the principal modifications as shown in part one. The value of the theory of adjustment is discussed. The third part discusses the principal types of anomalies which can affect the cross arrangement of the xylem, their relation to each other, and their relation to some specific normal type.—*W. E. Steidtmann.*

14219. WAGNER, RUDOLF. Über die Symmetrieverhältnisse der Rispen von Paulownia rehderiana Hand.-Maz. [Symmetry relations of the panicles of P. reh-

deriana.] *Akad. Wiss. Wien Mat.-Nat. Kl. Anzeiger* 65 (1/27): 226-230. 1928.

14220. **WELCH, M. B. The occurrence of intercellular canals in the wood of some species of Flindersia.** *Jour. and Proc. Roy. Soc. N. S. Wales* 64: 352-362. 1 pl. 4 fig. 1931.—Longitudinal intercellular canals of a gummosis type occur in the secondary wood of some spp., notably *F. brayleyana.* They are found in metatracheal parenchymatous bands and form a more or less anastomosing network extending tangentially. The contents appear to be similar to wound gum, the canals being formed by the breaking down of the cell walls. Their origin is usually schizo-lysigenous.—*M. B. Welch.*

14221. **WIELAND, G. R. Conifer inflorescence.** *Science* 72 (1857): 113-115. 1930.—The unit of structure in angiosperm and conifer inflorescences is compared, partly with reference to the fossil record, combating the more conventional view that the two are hardly comparable. It is concluded that conifers might be as much the descendants of angiosperms as the reverse.—A useful method of preparing museum sections of the larger pine cones, such as *Pinus coulteri,* is described in some detail. —*W. T. Saxton.*

14222. **WILLIAMS, S. The morphology of Trichomanes aphlebioides Christ, with special reference to the aphlebioid leaves.** *Proc. Roy. Soc. Edinburgh* 50 (2): 142-152. 1 pl., 3 fig. 1930.—The aphlebioid structures of *T. aphlebioides* arise at the base of axillary branches and the method of departure of the aphlebioid trace is similar to that of the common trace. The structures are therefore thought to be modified leaves, the first fronds of the axillary branches.—*L. R. Atkinson.*

14223. **WYLIE, ROBERT B. Cicatrization of foliage leaves. I. Wound responses of certain mesophytic leaves.** *Bot. Gaz.* 90 (3): 260-278. 14 fig. 1930.—A study of "defenses" set up by *Vitis vulpina, Rhus glabra,* and *Syringa vulgaris* after the wounding of their leaf tissue. This phenomenon in immature leaves was compared with that of mature leaves. A pseudocicatrice, resulting primarily from the death and collapse of normal leaf tissue, is formed immediately. "The cicatrice proper, while highly efficient in its completed form, is relatively slow in its development. It is not initiated until 3 or 4 days after wounding, and its formation is related to the preliminary barrier. For several days after injury the marginal living cells, covered and protected by the pseudocicatrice, are passing through the cell division and cell enlargement stages. Ten or more days may be required for completion of the cicatrice in mesophytic leaves, and 20-30 days in broad-leaved evergreens." Several photomicrographs illustrate the results.—*L. W. Melander.*

PALEOBOTANY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 12656, 12668, 12683, 14035, 14177, 14191, 14208, 14221, 14241, 14247, 14248, 14254, 14255, 14257, 14259, 15078)

14224. **BERRY, EDWARD WILBER. A flora of Green River age in the Wind River basin of Wyoming.** *U. S. Geol. Surv. Prof. Paper 165-B.* 55-81. 10 pl. 3 fig. 1930.—Forty-one spp. are recorded from beds in the Wind River basin of western Wyoming which are supposed to be referable to the Bridger formation. Twenty-one of these are common to the flora of the Green River formation and 15 are unknown from other regions or formations, which forces the conclusion that this flora is of middle Eocene age (Lutetian or Auversian). The containing sediments are regarded as flood plain, channel and eolian deposits. The flora is considered to represent ecological conditions such as obtain in Louisiana at the present time. *Equisetum* **tipperarense*** (p. 61), *Asplenium* **serraforme*** (p. 62), *Palmocarpon* **lesquereuxi*** (p. 67), *Dryophyllum* **wyomingense*** (p. 69), *Fagara* **wyomingensis*** (p. 71), *Negundo* **fremontensis*** (p. 72), *Zizyphus* **wyomingianus*** (p. 73), *Grewiopsis* **wyomingensis*** (p. 73), *Laurus* **fremontensis*** (p. 74), *Aralia* **browni*** (p. 75), *A. notata* **denticulata*** (p. 75), *Diospyros* **mira*** (p. 76), *Antholithes* **anceps*** (p. 77), *A.* **browni*** (p. 77), *A.* **fremontensis*** (p. 78), *Carpolithus* **bridgerensis*** (p. 78), and *C.* **browni*** (p. 78).—*E. W. Berry.*

14225. **DANGEARD, LOUIS. Sur les Solénopores du Jurassique de Mortagne (Orne).** *Bull. Soc. Geol. France* 30 (6): 437-443. 3 fig. 1930.—The Solenopora are found associated with corals and *Diceras.* They are all attributed to *Solenopora jurassica* Nich. and are very numerous. The age of the beds is Lusitanian or Oxfordian. These Solenopora have retained their original pink color.—*W. Berry.*

14226. **DEWALL, HANS WERNER von. Geologisch-biologische Studie über die Kieselgurlager der Lüneburger Heide.** *Jahrb. Preuss. Geol. Landesanst.* 49 (2): 641-684. 4 pl., 4 fig. 1928 (1929).—Petrographic, physical, and chemical characteristics of the various diatomaceous deposits in the vicinity of Lüneburg are discussed, and chemical analyses are given of different grades of diatomaceous material in each. The stratigraphy and the biological significance of the included fossils are discussed in detail. Two hundred and sixty identified species of diatoms, including varieties, all freshwater forms, are found to be contemporaneous, with the exception of one, *Navicula geinitzii* Bünte, which the author gives reasons for believing may be considered a good indicator for interglacial formations in the Lüneburg area. He cites the opinions of other workers concerning the numbers and duration of the glacial and interglacial periods and, on the basis of the present studies, computes the duration of the last interglacial period in northwest Germany as 8000 yrs. Annual diatom sedimentation is discussed and the results employed in the calculations, the included fossils being used to correlate the various layers with each other and with known geological formations. Origin and subsequent disturbance of the various deposits is considered. Remains of higher plants and animals of known environmental requirements, contemporaneous in southern Germany and farther south, found in the deposits are believed to indicate a mild temperate climate in the Lüneburg area during interglacial times. A bibliography is arranged according to topics.—*P. S. Conger.*

14227. **GALENIEKS, P. Remains of buried oak forest at the town of Daugavpils.** (In English and Latvian.) *Acta Horti Bot. Univ. Latviensis* 5 (1/3): 61-74. 1930.—A peat layer containing many well preserved trunks of oak, is exposed on the right bank of the river Düna, Latvia. The horizontal extension of the layer is about 200 m. and the thickness 1 m. The layer lies 1½ m. above the average water level of the river and the foundation is a stratum of moraine marl, light greyish above and reddish in the deeper parts. Remains of 25 plants were found, besides many large oak trunks, measuring 40-65 cm. in diameter without the bark; the latter is also well preserved. Pollen diagram is given of the layer. It is estimated that the age of the forest is 3500 to 4000 years. Similar buried remains of oak woods are known in several other localities in Latvia.

14228. **GOTHAN, W. Der Stand der Vergleichung der Mitteleuropäischen Steinkohlenbecken und Vorschläge zur Vereinheitlichung. [Comparison of the Middle-European anthracite coal basins and suggestions for a system of unification.]** *Congr. Avancem. Études Stratigr. Carbonifère, Heerlen, Compte Rend. 7-11 Juin, 1927.* 259-273. 1928.

14229. **GOTHAN, W. Paläobotanik und Ruhrkarbon.** *Zeitschr. Deutsch. Geol. Ges.* 81 (3/4): 148-150. 1929.—

A preliminary report stressing the importance of paleobotany in correlations and age determinations in the Ruhr and neighboring coal districts, especially where marine and fresh water faunas are absent. Previous to the work of Potonié and Cremer (1893), correlation was attempted by comparison of the gas contents of the coals of the various beds. One plant species, *Lonchopteris rugosa*, is mentioned as an aid in correlating coal beds of hitherto doubtful age.—*H. R. Joesting.*

14230. KISSER, JOSEF. Die Anfertigung von Dünnschliffen von rezenten pflanzlichen Materialien. [The preparation of thin sections of mineralized plant tissues.] In: **EMIL ABDERHALDEN.** *Handbuch der biologischen Arbeitsmethoden.* Abt. XI. **Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze.** Teil 4. Heft 2. Lief. 353. p. 237-252. 2 fig. Urban & Schwarzenberg: Berlin, 1931.

14231. LOUBIÈRE, A. Observations sur l'Odontopteris obtusa de Brongniart. *Bull. Soc. Bot. France* 76(9/10): 1080-1082. 1929.—Contrary to an assertion by Zeiller, fig. 3 of pl. 78 of Brongniart's Histoire des végétaux fossiles accurately represents the species.—*C. A. Arnold.*

14232. NĚMEJC, F. O některých nových nálezech ve středočeských úhelných pánvích. II. *Rozpravy České Akad. Věd a Umění, Tř. 2.* 39(číslo 33): 1-7. 2 pl. 1929 (1930); Also as: **On some discoveries of fossil plant remains in the Carboniferous districts of central Bohemia. (II).** *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Prés. Cl. Sci. Math., Nat. et Méd.* 30: 131-137. 2 pl. 1929.—I. *Dicranophyllum* **domini*** (p. 131), from the Kladno coal measures. The identity of Sternberg's "species" of *Neuropteris rubescens* and Zeiller's *Alethopteris costei* is discussed. Reexamination of the original specimens of the former has convinced the author that it is identical with the latter; because of priority the name *Alethopteris rubescens* Stbg.-Zeiller should be used. Neuropteroid seeds in connection with the phyllomes were discovered in the hanging wall of the main Kladno coal measure in the Mayerau mine near Kladno. The species seems to be identical with *Neuropteris bohemica** Ett. Gothan. The attached seeds are less mature than are the unattached. They are borne at the base of large cyclopteroid leaves and therefore are transformed parts of cyclopteroid leaflets, rather than transformed normal leaflets, as in the 2 previously recorded cases of attached seeds.—*A. M. Taylor.*

14233. PFENDER, J. Sur la présence d'une Solénopore dans l'Urgonien du sud-est de la France: Solenopora urgoniana n. sp. *Bull. Soc. Geol. France* 30(1/2): 101-105. 1 pl. 1930.—*S. urgoniana** (p. 103), Lower Cretaceous. —*W. Berry.*

14234. PFENDER, J. Les Solénopores du Jurassique supérieur en Basse-Province calcaire et celles du Bassin de Paris. *Bull. Soc. Geol. France* 30(3/4): 149-164. 4 pl., 8 fig. 1930.—*Solenopora* **melobesoides*** (p. 149) from the white limestone (Portlandian), at Madrague, *S. jurassica* v. **lanquinei*** (p. 154) from the same formation north of Géménos (Bouches-du-Rhône). *Pseudochaetetes polyporus** (Qu.) Haug (=*P. champanensis* Peterhaus) from the Malm of Champagne. The author believes that *Pseudochaetetes* Haug and *Chaetetes* Munier-Chalmas should be included in the genus *Solenopora.*—*W. Berry.*

14235. PIÀ, JULIUS. Upper Triassic fossils from the Burmo-Siamese frontier. A new Dasycladacea, Holosporella siamensis nov. gen., nov. sp., with a description of the allied genus Aciculella Pià. *Rec. Geol. Survey India* 63(1): 177-181. 1 pl. 1930.—**HOLOSPORELLA** (p. 177), near *Aciculella,* erected for *H.* **siamensis*** (p. 177), Kamawkala Limestone; *Aciculella bacillum** Pià, emended description.

14236. THOMAS, H. HAMSHAW. The early evolution of the angiosperms. *Ann. Botany* 45(180): 646-672. 9 fig. 1931.—Clues to the origin of flowering plants will probably come only from study of evolutionary tendencies found in fossil Spermatophyta from the Mesozoic and Palaeozoic periods. The Bennettitales and Caytoniales are examined with a view to ascertaining the changes undergone by derivatives from the Carboniferous pteridosperms. The Caytoniales are undoubted angiosperms. The morphological relations of the sporophylls of this group to the carpels and stamens of modern plants is discussed. The venation of the follicles in several genera of Ranunculaceae and of some other carpels is figured. The accepted view that the carpel represents a simple infolded leaf is stated to be without foundation, and a new view is put forward which regards the carpel as derived from a compound structure of the Gristhorpia type in which the ovules were borne on the midribs of lateral segments. Suggestions are made as to the origin of the stigma and the anatropous ovule. A preliminary description is given of **UMKOMASIA*** (p. 664), a new type of Mesozoic pteridosperm from Natal. The flowering plants are regarded as having originated from the Pteridospermae early in the Mesozoic period; their sudden increase towards the end of this period may have been due to the evolution of features which greatly increased their rate of reproduction and their chances of hybridization.—*H. H. Thomas.*

14237. ZERNDT, J. Megasporen als Leitfossilien des produktiven Karbons. *Bull. Internat. Acad. Polonaise Sci. et Lettres Cl. Sci. Math. et Nat. Sér. A Sci. Math.* 1931 (3): 165-183. 8 pl. 1931.—From 45 strata in the Polish coal basin, megaspores were isolated and classified under 31 types. The distribution of megaspores in time both in the Carboniferous of Poland and the coal basin of Scotland is such as to show that the individual horizons are characterised by different types of megaspores. The comparison of overlying strata shows that it is possible to differentiate the different strata by aid of the megaspores, and this method has already given much promise in distinguishing the age of strata, the stratigraphic position of which was up to the present time uncertain.—*O. Raber.*

14238. ZERNDT, J. Triletes giganteus, n. sp., eine riesige Megaspore aus dem Karbon. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B Sci. Nat.* [*Bot.*] 1930(7/10): 71-79. 3 pl. 1930.—This species, characterized by its great size (it may attain 6.44 mm. by 3.2 mm.), is distributed throughout the coal-measures of Poland. The exosporium is usually without emergences, except for occasional wart-like protuberances at the wider end. Of the original tetrad, one spore was absorbed or thrown off earlier than the other two, which occasionally occur still associated with the large spore. Owing to their size, it is possible that these other two spores may have been capable of germination.—*I. M. P. Browne.*

14239. ZERNDT, J. Megasporen aus einem Flöz in Libiąż (Stéphanien). *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B. Sci. Nat.* [*Bot.*] 1930(7/10): 39-70. 8 pl. 1930.—The author discusses, first, methods of getting spores from slaty coal by washing them out with water, decanting, and then pouring the spores through a sieve; second, the fact that the spores were obtained from strata that are 100 meters deep; and third, descriptions of 4 kinds of *Triletes* spores. Pollen of *Dolerophyllum* sp. was also found. The same kind of spores found in the slaty material were also found in the coal. Megaspores can not always be told from microspores by size alone. The comparative sizes of megaspores and microspores are given in a table. Different thicknesses of the exospores and the possibilities of using spore markings for systematic classification are discussed. Some of the species, such as *Triletes triangulatus,* are widely distributed.—*B. McAvoy.*

PALEOZOOLOGY

(Abstracts of general papers only. Abstracts of systematic and morphological papers are grouped with those of a similar nature treating of living animals.)

B. F. HOWELL, *Editor*

JOHN R. SANDIDGE AND GLEN L. JEPSEN, *Associate Editors*

(See also in this issue Entries (Unclassified) 12135, 12191, 12318, 12347, 12386, 12387, 12388, 12432, 12439, 12635, 14271, 14565; (Protozoa) 14480, 14487, 14510, 14629; (Porifera) 14641; (Coelenterata) 14522, 14523, 14524, 14525, 14527, 14532, 14591, 14629; (Annelida) 14629; (Brachiopoda) 14527, 14578, 14579, 14591, 14618, 14621, 14629, 14641; (Bryozoa) 14580, 14618, 14629, 14641; (Echinodermata) 14584, 14586, 14587, 14589, 14618; (Mollusca) 14527, 14591, 14592, 14593, 14594, 14595, 14596, 14597, 14614, 14618, 14619, 14620, 14621, 14622, 14623, 14627, 14629, 14632, 14635, 14641; (Crustacea) 14618, 14629, 14641, 14664, 14669; (Arachnida) 14704; (Insecta) 14948; (Pisces) 14965, 15080; (Reptilia) 14992, 15001, 15002, 15007, 15011, 15015, 15074; (Mammalia) 12139, 12159, 12437, 12438, 15070, 15071, 15072, 15073, 15074, 15075, 15076, 15078, 15079, 15080, 15083, 15084, 15085, 15086, 15087, 15088, 15090, 15095, 15097, 15098, 15099, 15102)

14240. **ABEL, OTHENIO.** Schwimmfährten von Fischen und Schildkröten im lithographischen Schiefer Bayerns. *Natur u. Mus.* [*Frankfurt a/M*] 61(3): 97-106. 6 fig. 1931.—Impressions* in the lithographic slates of Bavaria (Jurassic) are interpreted as having been made by the median fins of *Undina penicillata* [Coelacanthidae] and by the feet of *Eurysternum wagleri* [Testudinata], while the animals were swimming.

14241. **ANDROUSSOFF, NICOLAS.** Le Pliocène de la Russie méridionale d'après les recherches récentes. *Věstník Královské České Společnosti Nauk. Třida Mat.-Přírodov.* (*Mém. Soc. Roy. Sci. Bohême Cl. Sci.*) 1927 (paper 4): 1-22. 1928.—Records from the Pliocene of southern Russia: the pelecypods, *Prosodacna* sp., *Didacna crasatellata, D. tchaudae, D. cazecae, D. crassa, D. gurievi, D. dépereti, D. lascarevi, D. intermedia, Monodacna maxima, M. subcolorata, M. pseudocatillus, Paradacna abichi, Congeria abchasica, C. caucasica, C. subcarinata, C. galisgensis, Dreissensia isseli, D. polymorpha, D. anisoconcha, D. schemachanica, D. eichwaldi, D. caspia, D. rostriformis, D. carinato-curvata, D. auricularis, Limnocardium* sp., *Parivenus widhalmi, Cardium negativum, Zagrabica spiridonis, Ninnia subcarinata, Mactra subcaspia, M. caspia, M. karabugasica, M. miserabilis, M. acutecarinata,* and *Acicularia italica;* the gastropods *Valenciennesia* sp., *Planorbis* sp., *Lymnaeus* sp., *Potamides dijunctoides* and *Melanopsis dianaeformis;* notes the presence of foraminifera; and records the bones of the horse, *Hipparion,* the mastodon, *Mastodon arvernensis,* and the elephant, *Elephas meridionalis.* Lists also the plants, *Chara* and some diatoms.—*D. J. MacNeil.*

14242. **ASSELBERGHS, E.** Le Dévonien moyen et inférieur entre la Gileppe et le Graben de la Ruhr. *Bull. Soc. Belge Géol. Paléont. et Hydr.* 37(2): 123-143. Map. 1929.—Records from the Middle and Lower Devonian of this region on the Belgo-German border some crinoids, the coral *Calceola sandalina,* the bryozoan *Fenestella;* the brachiopods *Wilsonia dillensis, Rensselaeria crassicosta, Spirifer aduennensis, S. subcuspidatus, S. parcefurcatus, S. carinatus, S. daleidensis, S.* aff. *inflatus, Schizophoria striatula, Leptaena rhomboidalis, Schuchertella umbraculum, Productella subaculeata, Camarotoechia imitatrix, Dielasma maillieuxi, Atrypa reticularis, Lozonema* sp., *Cyrtina heteroclita, Athyris* cf. *concentrica, Orthothetes umbraculum, Leptagonia rhomboidalis, Productus* sp., *Stringocephalus burtini, Rhynchonella daleidensis, Centronella* sp., and *Meganteris archiaci;* the gastropods *Bellerophon striatus, B. fraiponti, Platyceras compressum,* and *Tentaculites scalaris;* the pelecypods *Myalina goeensis, Sphenotus elongatus,* and *Cardiomorpha dewalquei;* and the trilobites *Cryphaeus laciniatus* and *Homalonotus* sp.—*D. J. MacNeil.*

14243. **BELL, W. A.** A Mississippian fauna collected by Miss Eleanor T. Long from Windsor, Nova Scotia. *Proc. Acad. Nat. Sci. Philadelphia* 81: 617-625. 1929.—The Upper Windsor, or *Martinia galataea* zone, is divided into subzone E, characterized by *Caninia dawsoni* and *Chonetes politus;* subzone D, by *Productus semicubiculus;* and subzone C, by *Dibunophyllum lambii* and *Nodosinella priscilla.* The lower Windsor, or *Composita dawsoni* zone, is divided into subzone B, characterized by *Diodoceras avonensis;* and subzone A. The Upper Windsor is characterized by the first appearance of *Martinia* and *Dibunophyllum.* A faunal list from subzone B includes spp. of Annelida, Conularida, Bryozoa, Brachiopoda, Pelecypoda, and Cephalopoda. The Windsor fauna is correlated with the fauna of the Viséen of western Europe. *Protoniella beedii; P.* **baddeckensis** (*Productella b.* Bell) (p. 623); *Bakewellia* **shubenacadiensis** (*Macrodon s.* Dawson) (p. 624); and *Worthenia* **longi*** (p. 625) are described.—*C. W. Wilson.*

14244. **CHAPMAN, FREDERICK.** The Sorrento bore, Mornington Peninsula, with a description of new or little known fossils. (Descriptions and new species also by **IRENE CRESPIN.**) *Victoria Dept. Mines Rec. Geol. Surv. Victoria* 5(1): 1-195. 12 pl. 1928.—Tabulates cores and contents, lists fossils according to depth, discusses faunas and stratigraphic horizons (Tertiary), and describes many new spp.: (the new forms are all by Chapman and Crespin, unless otherwise stated) the foraminifera *Spiroloculina* **dispansa*** (p. 87), *Frondicularia* **nuda*** (p. 87), and *Truncatulina mundula* v. **carinata*** (p. 89); the coelenterate *Graphularia* **kalimnae*** (p. 90); the echinoderms *Goniocidaris* **prunispinosa*** Chapm. & Cudmore (p. 90) and *G.* **pentaspinosa*** Chapm. & Cudm. (p. 91); the molluscoids *Melicerita* **sorrentae*** (p. 92), *Amphiblestrum* **ctenostoma*** (p. 92), *A.* **spathuloides*** (p. 93), and *Malleia* **planidorsata*** (p. 93); the molluscs *Limopsis* **affinitalis*** (p. 96), *Lissarca* **cincturata*** (p. 97), *Arca* (*Barbatia*) **micro-ündula*** (p. 98), *A.* (*B.*) **dissimulina*** (p. 98), *Anomia* **tatei*** Chapman & Singleton (p. 99), *Myodora* **gabrieli*** (p. 100), *Cuspidaria* **vellicata*** (p. 101), *Cardita* **sorrentae*** (p. 101), *Venericardia* **archaenepeanensis*** (p. 102), *V.* **subcompacta*** (p. 102), *Protocardia* **ornithopetronica*** (p. 103), *Antigona* **dennanti*** (p. 104), *Katelysia* **multistrigosa*** (p. 105), *Clausinella* **shelfordensis*** (p. 105), *Dentalium* **semiaratum*** (p. 105), *Teinostoma* **calva*** (p. 107), *Cyclostrema* **cornuspira*** (p. 107), *Brookula* **singletoni*** (p. 107), *Eulima* **bicurvata*** (p. 108), *Turbonilla* **mulderi*** (p. 108), *T.* **radicans*** (p. 109), *T.* **constricta*** (p. 109), *Eulimella* **nitidula*** (p. 111), *Natica* **gatliffi*** (p. 112), *Haurakia* **gabrieli*** (p. 113), *Turritella* **acinella*** (p. 115), *T.* **multicincturalis*** (p. 116), *T.* **medioplicatilis*** (p. 116), *Cerithiella* **trigemmata*** (p. 116), *Cerithiopsis* **reticosa*** (p. 117), *C.* **mitchellensis*** (p. 118), *Ataxocerithium* **serotinoides*** (p. 118), *Trophon* **halli*** (p. 119), *T.* **profundus*** (p. 119), *Marginella* **crassidens*** (p. 120), *M.* **globiformis*** (p. 120), *Filodrillia* **steiroides*** (p. 121), *Eucithara* **subglabra*** (p. 121), *Etrema* **trophonalis*** (p. 122), *E.* **praespurca*** (p. 122), *E.* **pseudoelegans*** (p. 123), and *Guraleus* **volutiformis*** (p. 123); and the arthropods *Cythere* **sorrentae*** (p. 124), *C.* **baragwanthi*** (p. 126), *Bythocythere* **keblei*** (p. 127), *Cytherura*

praemucronata* (p. 128), *Cytherella* sulcosa* (p. 129), *C.* intermedia* (p. 129), *C.* araneosa* (p. 130), *Scalpellum* (*Arcoscalpellum*) dunni* (p. 131), *S.* (?*A.*) meridianus* (p. 131). Bibliography.—*F. Anderegg.*

14245. **DAVIES, A. MORLEY.** Faunal migrations since the Cretaceous Period. *Proc. Geologists' Assoc.* [*London*] 40(4): 307-327. 2 maps. 1929.—After the extinction of many forms of life at the end of Cretaceous time, there appeared in the eastern hemisphere two Paleocene faunas—boreal, with *Cucullaea, Cyprina, Astarte, Dosiniopsis, Beloptera,* etc., and Tethyan, with none of the above genera, but with *Gisortia* and many other warm-water forms. The presence of *Cucullaea* links the boreal fauna with the Paleocene faunas of America (Alabama, Texas, California, Soldado I., Brazil, Argentina). These American faunas (except those of California and Argentina) are marked by *Calyptraphorus*, also known at Mons (Belgium), Landana (Belgian Congo) and Sind. The Lower and Middle Eocene in Europe are marked by the northward spread of the Tethyan fauna and disappearance of the boreal genera, which return to northern Europe in the Oligocene. The Middle Eocene fauna of West Africa (except the Senegal) agrees with that of America in the absence of Nummulites, while North and East Africa have typical nummulitic limestone. In the Upper Eocene, nummulites and some echinoids migrated to America, and in the Oligocene *Lepidocyclina* migrated from America to Europe. Towards the end of Eocene time the Mediterranean and Indian Ocean were separated, and their faunas diverged. In the Miocene Mediterranean faunas include three main elements: (1) autochthonous, (2) a slight re-infusion of Indo-Pacific forms, and (3) cryptogenetic forms allied to the present-day Peruvian fauna; with some boreal and North American immigrants. The English Pliocene fauna contains a number of north Pacific forms which arrived before the boreal influx. The paleogeographical significance of these and other facts is discussed.—*A. M. Davies.*

14246. **DEHÉE, RENÉ.** Description de la faune d'Etroeungt. Faune de passage du Dévonien au Carbonifère. *Mém. Soc. Géol. France* 5(2, Mém. 11): 1-63. 8 pl. 1929.—Lists a great many corals, echinoderms, bryozoans, brachiopods, pelecypods, gastropods, cephalopods, and ostracods, and some trilobites from this Devonian-Carboniferous region in France. Describes the following forms, giving the synonymy where necessary: the corals *Caninia dorlodoti**, *Clisiophyllum omaliusi**, *Cyathophyllum** sp., *C. aquisgranense**, and *Michelinia;* the bryozoans *Fenestella* cf. *plebeja, Polypora** ? sp., *Ramipora** ? sp.; the brachiopods *Productus scabriculus, Athyris concentrica**, *Atrypa spinosa**, *Chonetes hardrensis, Leptaena rhomboïdalis* (p. 36), *Tylothyris laminosa**, *Dalmanella interlineata**, *Orthotetes crenistria**, *Productella subaculeata, Productus praelongus**, *P. niger**, *P. scabriculus**, *Rhynchonella letiensis**, *Schizophoria striatula, Seminula* (?) struniensis* (p. 27), *Spirifer* julii* (*S. gosseletti* Vaughan, not Béclard nor Holzapfel) (p. 19), *S. strunianus**, *S. tornacensis, S. verneuilli**, *Streptorhynchus* cf. *umbraculum**; the pelecypod *Pterinopecten radiatus;* the gastropod *Straparolus* sp.*; the cephalopod *Clymenia;* the ostracod *Leperditia okeni**; and the trilobite *Phacops bergicus**.—*D. J. MacNeil.*

14247. **GOLDRING, WINIFRED.** Handbook of paleontology for beginners and amateurs. Part 2. The formations. *New York State Mus. Handbook* 10. 1-488. 62 fig. 1931.

14248. **HOWCHIN, WALTER.** The building of Australia and the succession of life: with special reference to South Australia. Pt. 2. Mesozoic and Cainozoic. pp. 205-448. 11 fig. Brit. Sci. Guild (So. Australian Branch), Adelaide, 1928.—Gives extent and fauna of Triassic, Jurassic, Cretaceous, Eocene, Oligocene, Miocene, and Pliocene, and flora of Cainozoic and Tertiary, times.—*F. Anderegg.*

14249. **KEGEL, WILHELM.** Das Gotlandium in den kantabrischen Ketten Nordspaniens. *Zeitschr. Deutsch. Geol. Ges.* 81(1/2): 35-62. 2 maps, 2 pl., 2 fig. 1929.—In discussing the fossils of the Ordovician, Silurian, and Devonian of northern Spain the author lists the following: the coral *Chaetetes* sp.; the graptolites *Monograptus tenuis, M. priodon, M. concinnus, M. decipiens, M. halli, M. gregarius, M. sedgwickii, M.* cf. *convolutus, M. sandersoni, M. runcinatus, M. marri, M.* cf. *spiralis, Didymograptus, Diplograptus bellulus,* and *Rastrites hybridus;* the worm *Scolithus;* the brachiopods *Strophodonta* pataci* (p. 60), *Spirifer kopaninensis, S. arduennensis, S.* cf. *pellicoi, S. hystericus, S. verneuli, S. carinatus, Pentamerus* (?), and *Orthis* cf. *confinis**; the pelecypods *Cardiola interrupta, Ptorochaenia* cf. *glabra,* and *Nuculites* (*Cleidophorus*) llarenai* (p. 58); the cephalopods *Cyrtoceras* sp., *Orthoceras* sp., and *Endoceras duplex;* the trail *Cruziana;* and the trilobites *Calymene tristani* and *Homalonotus* sp. All are of Silurian age except the *Calymene* and the *Endoceras,* which are Ordovician, and the *Cyrtoceras* and the spp. of *Spirifer,* which are Devonian. The *Homalonotus,* the *Ptorochaenia,* and the *Orthis* cf. *confinus* are discussed. Bibliography.—*D. J. MacNeil.*

14250. **LADD, HARRY STEPHEN.** The stratigraphy and paleontology of the Maquoketa shale of Iowa. Part I. *Iowa Geol. Survey Ann. Rept. 1928* 34: 307-448. Illus., (many maps). 1928.—A report dealing mainly with the stratigraphic relations and the important faunal zones of this shale of the Ordovician or Silurian. Part II will describe the fossils. The shale is a lithologic unit in the southeastern area, but divisible into the Elgin Limestone, the Clermont Shale, the Fort Atkinson Limestone, and the Brainard Shale in the northwestern area. There are corresponding faunal differences. The Maquoketa is considered to be of Richmond age (possibly latest Ordovician, or, more probably, earliest Silurian), and there are unconformities above and below it in Iowa. Three faunal zones are developed in both northwestern and southeastern areas: the Depauperate Zone (at the base), a Graptolite Zone (near the base), and the *Cornulites* Zone (at the top). 27 additional spp. (10 of them new) are recorded from the Depauperate Zone, making the total for the zone 44, over half of which are mollusks. The fauna is made up of unusually small spp., but not true dwarfs. Several explanations are suggested for this smallness. The *Cornulites* Zone has a fauna of 86 spp., of which 69 are molluscoids. Other faunas are present in the northwestern area. The vertical and horizontal ranges of all the spp. are given. The coral, *Streptelasma haysii** (Zaphrentidae), previously known only from Cape Frazier, between 80° and 81° N., 70° W., is described and discussed from the Elgin (or possibly the Clermont); the coral *Lindströmia* solearis* (Zaphrentidae) (p. 397) is described from the Fort Atkinson; the new brachiopods *Hebertella insculpta* maquoketensis* (p. 399) (Orthidae) (from all zones of the Maquoketa except the Depauperate), and *H. sinuata* var. prestonensis* (p. 401) (from the *Cornulites* Zone and the underlying shales); *Dinorthis subquadrata* v. occidentalis* (p. 402) (Rhipidomellidae) (from the whole Maquoketa except the Depauperate Zone and the Fort Atkinson); and *Rhynchotrema capax* v. altirostratum* (p. 403) (Rhynchonellidae) (from the Elgin), are described and discussed; and the new pelecypod *Whitella* minnesotensis* (p. 405) (Cyrtodontidae) is described from the Elgin. Seven plates of fossiliferous slabs from the various formations are presented, the fossils not being named. There are maps of the known distribution of the Maquoketa and the Depauperate Zone in North America. It is considered that the Depauperate fauna invaded the Mississippi Valley area from the south, that the higher faunas came from the north, and the Mississippi Valley and Ohio Valley areas were separated by a barrier during Maquoketa time. Many of the Ohio Valley spp. have been erroneously identified with those of the Maquoketa, differences of at least varietal rank having been found by the author in most cases. A summary of previous work and a bibliography of 166 titles are given.—*B. F. Howell.*

14251. **MORSE, WILLIAM CLIFFORD.** Paleozoic

rocks. *Mississippi State Geol. Surv. Bull.* 23. i-xi+3-212. 2 maps, 22 pl., 14 fig. 1930.—The following formations are recognized, all new to stratigraphy except the New Scotland. In the Devonian (Upper series) the Whetstone Branch shale; (Oriskanian) Island Hill formation; (Helderbergian) New Scotland; in the Mississippian (Chester series) the Forest Grove formation with 2 members, Southward Bridge formation with 4 members; Southward Spring sandstone, Southward Pond formation with 6 members, Allsboro sandstone, Alsobrook formation with 3 members; (Lower series) Iuka terrane, and Carmack limestone. These are established principally on a paleontologic basis, their faunas being listed in numerous measured sections from Mississippi and adjacent states. Correlation is made between these formations and Weller's Standard section (1921), the Alabama section, and (in part) the Mississippi Valley, eastern Tennessee, and Ohio sections. The following are figured: specimens of brachiopods, a tentaculite, trilobites, corals, blastoids, a crinoid, and a bryozoan.

14252. **MOUTA, VELEZ, et ALEXANDRE BORGES.** Sur le crétacé du littoral de l'Angola (Districts de Benguela et de Mossamedes.) *Congrès Géol. Internat. Compt. Rend.* 14(3): 911-928. 1926(1928).—Records some echinoderms and many pelecypods, gastropods, and cephalopods from this Cretaceous formation of Angola, Africa.—*D. J. MacNeil.*

14253. **POHL, ERWIN R.** The Middle Devonian traverse group of rocks in Michigan, a summary of existing knowledge. *Proc. U. S. Nation. Mus.* 76(14): 1-34. 2 pl. 1930.—The distribution, nomenclature, and sequence of this group of rocks are discussed, and detailed stratigraphic sections are given. Faunal lists include spp. of corals, bryozoans, brachiopods, pelecypods, crinoids, and trilobites. The miniature closed anticlines and synclines, which are so abundant at exposures of the Traverse beds in western Michigan, are related to small, compact *Prismatophyllum* and *Stromatopora* reefs. The stratigraphic position occupied by the Traverse Group is between the Onondaga and Hamilton of New York, thus extending the time scale by the interpolation of 700 feet of limestone. The Traverse fauna had a northern origin, differing from the Middle Devonian faunas to the south, west, and east.—*C. W. Wilson.*

14254. **PRUVOST, PIERRE.** La Faune continentale et la division stratigraphique des terrains houillers. *Congrès Avanc. Étud. Strat. Carbonifère, Heerlen. Compt. Rend.* 1927: 519-534. 1 pl. 1928.—Records some pelecypods and cephalopods, many crustaceans, myriopods, and insects from the continental Carboniferous of Europe; also the fishes *Coelacanthus elegans, C. mucronatus, Rhizodopsis sauroides, R. wachei, Megalichthys hibberti, M. coccolepsis, Vetacapsula cooperi, Pleuroplax affinis, P. attheyi, Helodus simplex, Strepsodus sauroides, Elonichthys denticulatus, E. egertoni, E. aitkeni, Rhadinichthys renieri, R. lerichei, R. monensis, Platysomus parvulus, Mesolepsis scalaris, Cheirodus granulosus,* and *Brydenius molyneuxi,* together with some plant remains.—*D. J. MacNeil.*

14255. **RUSSO, P.** Le quaternaire dans les hauts plateaux de l'est marocain. *Congrès Géol. Internat. Compt. Rend.* 14(3): 799-832. 2 maps. 1926(1928).—Records the pelecypods *Cardium edule* and *Unio rhomboideus;* the aquatic gastropods *Limnea palustris, L. truncatula, L. depereti, Succinea putris, S. debilis, Cochlicella acuta, Bulimus psilius, Melanopsis estrusca, M. magnifica, M. maresi, M. chlorotica, M. subscalaris* v. *striolata,* and *Physa contorta;* the terrestrial gastropods *Xerophyla ounifiana, X. lemoinei, X. subcostulata, Helix bailloni, Rumina decollata, Albea marocana, Bulimus contortus,* and *Massylaea bailloni;* and leaves of the plants *Pistacia, Nerium oleander, Phoenix dactylifera,* and some indeterminable mosses,—all from this Quaternary deposit of Morocco.—*D. J. MacNeil.*

14256. **SEN-SHING, YOH.** Preliminary report on the geology and mineral resources of Nan Tan Hsien, Ho Chi Hsien, I Shan Hsien, Ma Ping Hsien & Hsiang Hsien, Northern Kwangsi Province. [With Chinese text.] *Ann. Rept. Geol. Surv. Kwangtung & Kwangsi* [*Canton, China*] 1: 97-124. 3 pl., 6 fig. 1927-1928(1928).—The Tungkanling formation of the Middle Devonian of North Kwangsi contains 12 spp. of Anthozoa, 12 of Brachiopoda, and various spp. of Bryozoa, Gastropoda, Pelecypoda, Cephalopoda, and Echinoidea. The Liangsuiaias formation (Upper Devonian) contains several spp. of brachiopods. The Tanchi Series (Carboniferous) is composed of two well-defined divisions, the quartzitic beds and the overlying flinty limestones. The fossils in the quartzitic beds are too poorly preserved to be identified. The lower division of the flinty limestone contains spp. of corals (6) and brachiopods (*Striatifera maxima*) which indicate that the beds are Dinantian. The upper division includes *Fusilina* beds, which may represent at least a part of the Vralian. Only 19 genera and 6 spp. of corals, brachiopods, foraminifera, and pelecypods are mentioned.—*C. W. Wilson.*

14257. **SIMPSON, G. C.** The climate during the Pleistocene period. *Proc. Roy. Soc. Edinburgh* 50(3): 262-296. 3 maps, 3 fig. 1929/30.—An attempt is made to reconstruct the Pleistocene climate in the neighborhood of Frankfort-on-Main, Germany, on the assumptions of (1) the shift of the pole described by Wegener, which would cause glaciation in northwest Europe during the Pleistocene, and (2) periodic variations in solar radiation which would produce the glacial and interglacial epochs. The sequence of changes is shown to be (a) a cold period at the beginning of the Pleistocene-Gunz glaciation; (b) a warm wet period—Gunz-Mindel interglacial epoch; (c) a cold dry period—beginning with the Mindel glaciation and ending with the Riss glaciation, the Mindel-Riss interglacial epoch being cold and dry; (d) a warm wet period—Riss-Würm interglacial; (e) the beginning of a cold dry period which was ended just after the Würm glaciation by a shift of the pole. A sequence in interglacial faunas and floras corresponding to the climatic changes is given, and the evidence from contemporary human cultures is discussed. Corresponding to the Acheulean culture occurred, among other forms, *Elephas antiquus* and *Rhinoceros mercki,* typical of relatively warm conditions; and at the same time were found the forest animals—*Cervus euryceros, Capreolus caprea, Castor fiber,* and *Sus scrofa ferus.* With the Mousterian belonged two groups, the arctic and tundra forms, *Ursus spelaeus, Rhinoceros tichorhinus, Elephas primigenius, Rangifer tarandus, Canis lagopus, Lupus variabilis,* and *Myodes;* and the typical open country forms, *Equus caballus* and *Canis lupus.* These two groups, with the addition of the open country *Cervus elephas,* continued also through the Aurignacian and the Solutrean, and many of the forms went on through the Magdalenian, when the characteristic steppe forms *Equus hemionus, Arvicola, Lagormys pusillus, Cricetus, Felis manul,* and *Spermophilus rufescens* appeared.—*G. C. Simpson.*

14258. **SIMPSON, G. C., A. C. SEWARD, J. W. GREGORY, PETER MITCHELL, C. E. P. BROOKS, C. TATE REGAN, and HAMSHAW THOMAS.** Discussion on geological climates. *Proc. Roy. Soc.* [*London*] *B* 106(744): 299-317. 1930.—SIMPSON: There must always have been climatic zones with the equatorial zones warmer than the polar zones; there must always have been a summer half-year and a winter half-year; no change in the distribution of land and sea alone could have produced the large changes of climate shown in the geological record. These changes in Pleistocene times can have been due only to changes in solar radiation, there having been probably two large oscillations of intensity of radiation. Changes of this nature, limited in magnitude and of relatively short period, have occurred in all geological periods. The large climatic variations which have caused Europe to be temperate to-day, frigid in the Pleistocene, subtropical in the Miocene and tropical in the Carboniferous, and have given subtropical if not tropical conditions in polar regions and polar conditions in equatorial regions, can be explained only by Wegener's hypothesis of the shift of the poles

and the drift of the continents. SEWARD: There is no justification for describing the climate of certain past periods in the northern hemisphere as tropical, on the evidence afforded by fossil plants. The climate of the world was never uniform; the early Tertiary floras of different latitudes in the northern hemispheres differed from each other. Fossil plants can be used as indicators of climate only with great caution, as their relations to climate are not well understood. We tend to think that ancient floras were more uniform in character throughout the world than they actually were because of the imperfection of our knowledge and because they lacked the flowering plants, which give such variety to modern floras; the more we learn about ancient floras, the more we realize that they show the same sort of zonation in vegetation as we have at present. MITCHELL: Fossil animals are useless for determining past climates, because they may have been adapted to almost any climate. GREGORY: Coal seams may be formed today in the Arctic from driftwood carried from more southern regions. The climate of the Eocene was not uniformly warm throughout the world, nor were those of the Cretaceous or the Miocene; the Upper Carboniferous glaciers were formed on high lands, and did not reach sea level in tropical regions. The climate of the earth, as a whole, has remained fairly uniform throughout geological time; there have been zones of climate which have been approximately parallel to the equator; the thermal isanomalies at various times have been greater than at present. All the variations in climate which have been established on adequate evidence can be accounted for by differences in atmospheric and oceanic circulation due to different distribution of land and water and different elevation of the land. All established changes can be explained without a shifting of the poles, a drift of the continents, or material variation in the heat supplied from the sun. BROOKS: Diversion of heat from equatorial regions toward the poles (especially by deflection of the equatorial currents of the oceans) has tended to keep the northern hemisphere warmer than the southern hemisphere, and this diversion was especially great in the late Carboniferous. At present a small increase of temperature in the north polar regions, which would be given by another ocean current flowing into the Arctic Ocean, would wipe out the ice and give a far more favorable climate, one which would be capable of maintaining a moderate vegetation everywhere. REGAN: The main distribution of fresh-water fishes was accomplished before the Tertiary; it depended on the distribution of land and water in Cretaceous times, and indicates that, whereas South and North America were then separated, South America was connected with Africa; throughout most of the Eocene the genera of marine fishes peculiar to America must have been developing independently. This means that America must have been much more widely separated from the Old World than Wegener's hypothesis postulates. THOMAS: In determining the distribution of plants, rainfall may have been of far more importance than temperature.—*B. F. Howell.*

14259. STEPHENSON, LLOYD W. Correlation of the Upper Cretaceous or Gulf series of the Gulf Coastal Plain. *Amer. Jour. Sci.* 16(96): 485-496. 1928.—The Cenomanian, Turonian, and Senonian are represented in the Gulf series. The correlations of the lower formations of the series are based on plants and marine invertebrates, those of the upper formations chiefly on marine invertebrates. The beds of Senonian age are divisible into the *Exogyra ponderosa* Zone (of Santonian and Campanian age) and the *E. costata* Zone (of Maestrichtian age). An *E. cancellata* Subzone, in the lower part of the *E. costata* Zone, is traceable from New Jersey to central Texas. Several spp. of ammonites related to *Acanthoceras rotomagense* in the base of the Eagle Ford Formation indicate that these basal beds and the underlying Woodline Formation are Cenomanian. That the rest of the Eagle Ford is Turonian is shown by the presence of ammonites of the genera *Metoicoceras, Prionotropis,* and *Prionocyclus,* and the pelecypod, *Inoceramus labiatus.* The Austin Chalk is believed to be of early Senonian age because it holds the pelecypod *Inoceramus undulato-plicatus* and other spp. of the same genus, as well as the cephalopod *Mortoniceras texanum.* The formations of the age of the middle Senonian Taylor Formation are characterized by the pelecypods *Exogyra ponderosa,* and *Inoceramus* of the *I. barbeni* type, the cephalopods *Scaphites hippocrepis* and *Mortoniceras delawarense,* and the crinoid *Marsupites americanus* (closely related to *M. testudinarius* of the Santonian of Europe). Twenty characteristic pelecypods, gastropods, and cephalopods of the upper part of the Maestrichtian Navarro Formation are listed; and the pelecypods *Exogyra costata* and *Pecten venustus,* and the cephalopods *Sphenodiscus* and *Pachydiscus* aff. *gollvillensis,* are said to be characteristic of that formation and the Escondido. Because of the presence in its fauna of the cephalopod *Acanthoceras* aff. *rotomagense,* the lower part of the Benton Shale is thought to be Cenomanian, but the occurrence of *Metoicoceras, Prionotropis,* and *Prionocyclus* higher up in the Benton indicates that the rest of that Shale is Turonian. *Inoceramus labiatus, I. fragilis,* and *Ostrea lugubris* are common to the Eagle Ford and the Benton. *Inoceramus deformis* and *I. undulato-plicatus* are found in the Niobrara Formation. Various spp., among them *Scaphites hippocrepis, Mortoniceras delawarense,* and *Inoceramus* aff. *sagensis,* indicate that the Pierre faunas are of about the same age as the Taylor ones. That the part of the Navarro Formation above the *Exogyra cancellata* Zone is of the same age as the Fox Hills Sandstone is evidenced by the presence in the Fox Hills of spp. of *Scaphites* closely related to *S. conradi* and some of its varieties that are found in the upper beds of the Navarro, and by the fact that *Sphenodiscus* occurs in both formations.—*B. F. Howell.*

14260. WOODWARD, ARTHUR SMITH. Modern progress in vertebrate palaeontology. *Nature [London]* 127 (3211): 745-747. 1931.

14261. ZAHÁLKA, ČENĚK. Albien v belgickém a českém křídovém útvaru. Sudetský útvar křídový a jeho aequivalenty v zápaních zemích střední Evropy. [Albian of Belgium and of Bohemia.] [French résumé.] *Věstník Královské České Společnosti Nauk (Mém. Soc. Roy. Sci. Bohême Cl. Sci.)* 1926(Art. 9): 1-51. 1927.—Lists from the Cretaceous of east central Europe the pelecypods *Pecten asper, Arca subglabra,* and *Protocardia hillana,* and the cephalopods *Douvilleiceras mamillatum, Hoplites interruptus,* and *Mortoniceras inflatum;* and notes the presence of sponges, sponge spicules, and brachiopods.—*D. J. MacNeil.*

14262. ZAHÁLKA, ČENĚK. Cénomanien v belgickém a českém křídovém útvaru. Sudetský útvar křídový a jeho aequivalenty v zápaních zemích střední Evropy. [Cenomanian formation of Belgium and Bohemia.] *Věstník Královské České Společnosti Nauk. Třida Mat.-Přírodov. (Mém. Soc. Roy. Sci. Bohême Cl. Sci.)* 1927 (paper 2): 1-71. 1928.—Records from the Cretaceous of east central Europe the coral *Asteroseris coronula;* the echinoderm *Holaster subglobosus;* the brachiopod *Terebratulina gracilis;* the pelecypods *Pecten asper, P. pulchellus,* and *Inoceramus labiatus;* and the cephalopods *Actinocamax plenus, Schlönbachia varians, Acanthoceras rotomagense, A. laticlavium, A. mantelli,* and *Mortoniceras inflatum.*—*D. J. MacNeil.*

VERTEBRATE ANATOMY, HISTOLOGY, AND PHYSICAL ANTHROPOLOGY

Editors

WAYNE J. ATWELL, *Endocrine Glands, Genito-Urinary System*
ELIZABETH C. CROSBY, *Neurology*
ROBERT S. CUNNINGHAM, *Hematology, Adenoid Tissue, Reticulo-endothelium*
CHESTER H. HEUSER, *Technique*
DAVENPORT HOOKER, *Experimental Anatomy and Regeneration*
C. C. MACKLIN, *Alimentary System, Respiratory System*
PETER OKKELBERG, *Gross Anatomy (except Primate)*
WILLIAM L. STRAUS, JR., *Physical Anthropology*
WALTER E. SULLIVAN, *Bones, Muscles, Joints, Fasciae*

STACY R. GUILD, *Advisory Editor*

(See also in this issue Entries 12121, 12125, 12128, 12159, 12289, 12434, 12437, 12452, 12467, 12502, 12588, 12592, 12611, 12959, 12967, 12976, 13033, 13034, 13035, 13057, 13068, 13094, 13097, 13114, 13122, 13123, 13134, 13138, 13144, 13145, 13151, 13173, 13192, 13256, 13376, 13386, 13396, 13397, 13408, 13413, 13414, 13417, 14381, 14383, 14384, 14388, 14389, 14391, 14393, 14395, 14397, 14402, 14405, 14409, 14410, 14412, 14413, 14445, 14448, 14453, 14459, 14468, 14478, 14958, 14960, 14996, 15013, 15015, 15071, 15072, 15097)

PHYSICAL ANTHROPOLOGY

14263. ARX, MAX von. Die Tangentenkonstruktion, Kraftlinien und Kraftfelder des menschlichen Kopfes. *Zeitschr. Ges. Anat. Abt. I, Zeitschr. Anat. u. Entwicklungsgesch.* 86(1/2): 237-258. 9 fig. 1929.—The application of a technical method of orthogonic projection in 3 planes, and the consequent possibility of a trigonometrical expression of biological form, enabled the author to reach a mathematical formula in the analysis of the human pelvis, based on the relation of the power of resistance of a specific protoplasm to the forces of the environment (gravity, atmospheric pressure). The same constant relation (ϕ) between the internal morphogenetic forces (i) and the external tangential antagonistic forces (e) appears in the human head. $\phi = e/i = R/r = \sqrt{2 \sin 60°} = 1.2246 =$ constant. The brain-case is elipsoidal in form; the center of gravity falls on the oblique plane of the clivus and is thrown onto the transverse axis of the condylar processes. The principle of construction of the entire human body is dynamostatic, similar to that of a semi-rigid Zeppelin airship, with an interrupted axis (hip-joint). The value of ϕ for the human head can also be obtained from the relation of the radii R and r of 2 circles, of which r encloses an equilateral triangle, and R encloses a square of side equal to that of the triangle. Both circles intersect at the junction of the lambdoid sutures, at which point the internal and external forces are in equilibrium. Morphogenesis of the whole body is a process obeying geometrical and mechanical-mathematical laws.—*M. von Arx (transl. by G. R. de Beer).*

14264. BALDWIN, BIRD T., LAURA M. BUSBY, and HELEN V. GARSIDE. Anatomic growth of children. A study of some bones of the hand, wrist, and lower forearm by means of roentgenograms. *Univ. Iowa Studies Child Welfare* 4(1): 1-88. 2 pl., 7 fig. 1928.—This study was undertaken to obtain an objective measure of the anatomic development of the child as shown by the bones of the wrist, the epiphyses of the long bones of the lower forearm and the hand, and the sesamoid bones of the hand. Examination was made of 1300 roentgenograms of the lower forearms and wrists. The ages of the children varied from birth to 17 yrs. with a few additional cases that were older. By inspection, a record of the number and the name of the carpals present, the number, location, and fusion of the epiphyses was obtained. A quantitative measure of the amount of ossification of the carpal bones was obtained by tracing the area of each carpal bone with a circumscribing disc planimeter. Girls were in advance of the boys in time of first observation and fusion of the epiphyses of the hand and lower forearm. The distributions of areas of each carpal bone and the sums of the areas of all bones in age groups showed a wide range for each age and a large amount of overlapping in the ranges of age groups. There were no significant differences in the means of the sums of the areas of the carpal bones of the right and of the left wrists. For age groups from 1 yr., 3 mos. to 17 yrs. there was probably a significant difference in the mean total carpal area for the boys and girls at 3 and 13 yrs. and a quite evident difference at 5, 6, 7, 14, 15, 16, and 17 yrs. The boys had the larger means after 13 yrs. A high or moderately high degree of relation between total carpal area and each of 4 physical traits (height, weight, width of shoulders, and width of hips) was shown for ages 10-16 for the boys and 8-12 for the girls. The period of greatest correlation between total carpal area and the physical traits seemed to be present for boys and girls at their respective periods of accelerated anatomic development. On a whole the correlations between carpal area and the physical traits showed that the general skeletal size of the individual was a factor to be considered in judging anatomic maturity from the area of the carpal bones. In this study 2 methods are presented to allow for general skeletal size of an individual: multiple regression equation, and anatomic index. The anatomic index was a fine enough measure to discriminate the anatomic growth of 1 chronological year for boys from the 2-yr. to the 17-yr. age group, and for the girls from the 1-yr., 3-mo. age group to the 15-yr. age group. The mean anatomic index was significantly higher for the girls than for the boys at all ages from 3 to 16 yrs.—*Helen G. Kelly.*

14265. BERKSON, JOSEPH, and GERTRUDE M. SCHULTZ. The question of compensating variability. *Amer. Jour. Phys. Anthrop.* 13(1): 131-137. 1929.—The concept of compensatory variability implies that, during growth, there is a tendency to maintain a relative fixity of portions of the body, considered in their totality, so that for such as consist of a number of parts, an overgrowth of one part is accompanied by a diminishing growth of another. Measurements on 296 ♂♂ and 198 ♀♀ between the ages of 19 and 35 years were made of: total arm length, consisting of upper arm length, forearm length, and hand length; and head size, consisting of head length, head width, and head height; and for ♀♀, stature. The coefficients of variation of the totals and parts are calculated and compared, and the total has the smaller coefficients. Since this numerical result cannot be taken as evidence in favor of the main thesis the method of "partial correlation" is resorted to. The results indicate that there is no statistical evidence of compensating growth among the measurements considered. The authors disclaim finality for their results. —*Author (courtesy Wistar Bibl. Serv.).*

14266. BERKSON, JOSEPH. Growth changes in physical correlation—height, weight, and chest-circumference —males. *Human Biol.* 1(4): 462-502. 1929.—The changes in the Pearsonian correlation coefficient r between height, weight, and chest-circumference in ♂♂ that occur as age advances, and parallel changes in other statistical functions were investigated. The data comprise several independent series including a total of about 200,000 in-

dividuals. The conclusions are as follows: Intercorrelations between height and weight, weight and chest circumference, and height and chest circumference, as measured by the Pearsonian coefficient r in ♂ whites, all show significant variation with age. The correlations between height and weight show in their trend on age alternate maximum and minimum points in the neighborhood of ages 1.5 yrs., 3 yrs., 6 yrs., 11 yrs., 14 yrs., and 21 yrs. The correlations between weight and chest circumferences, and height and chest circumference, as well as that between height and weight, show a maximum point in the neighborhood of 14 yrs. Each of the other statistical functions studied, means, standard deviations, and coefficients of variation, also shows in its trend with age a maximum point in the neighborhood of 14 yrs. This is taken to be associated with adolescence and therefore the fall in the trend after 14 yrs. is referred to as the "post-pubescent decline." Comparison of the critical points of the correlation trends, other than at about 14 yrs., with those of other statistical functions, including velocity of growth of the means, shows suggestive but inconclusive analogies. The relative size of the correlation coefficient after about 10 yrs. is highest for the weight-chest circumference, next for the weight-height and smallest for height-chest circumference. Between about 6 and 10 yrs., the height-weight correlation coefficient is higher than the weight-chest circumference while the latter and height-chest circumference retain the relative position they occupy after 10 yrs.—*J. Berkson.*

14267. BERLINER, MAX. Vergleichende Untersuchungen über die Weichteilhärte am Lebenden. *Zeitschr. Ges. Anat. Abt. 2, Zeitschr. Konstitutionsl.* 15(1): 114-126. 1929.—With a specially designed instrument the firmness of the soft parts was tested on various body surfaces. The average of 63 men and women was: shoulder, 10.4 mm.; popliteal space, 10.05 mm.; back, 1.65 mm.; trigon, 3.2 mm.; and abdomen, 2.25 mm. Distinct deviations were found in 17 with various pathological conditions. Exercised muscles appeared to lose rather than increase in hardness.

14268. BIJLMER, H. J. T. Outlines of the anthropology of the Timor-Archipelago. 234p. 99 pl. Indish Comité voor Wetenschapeelijke Onderzoekingen: Weltevreden, 1929.

14269. BINGHAM, HAROLD CLYDE. Observations on growth and development of chimpanzees. *Amer. Jour. Phys. Anthrop.* 13(3): 433-468. 18 fig. 1929.—Growth changes in 4 chimpanzees are presented over a period exceeding 3 yrs. Observations were made periodically in an effort to develop techniques for physical measurements of living anthropoid apes. Each observation was repeated many times before it was recorded, and each record represents at least 2 measurements. Tables and figures are used throughout to summarize results. Weight, dentition, and other factors are discussed as a criterion of age and in relation to other changes. It has been demonstrated that methods can be developed which will elicit cooperation of anthropoid subjects, as well as furnish criteria of growth.—*Author (courtesy Wistar Bibl. Serv.).*

14270. BLACK, DAVIDSON. A study of Kansu and Honan Aeneolithic skulls and specimens from later Kansu prehistoric sites in comparison with North China and other recent crania. Part I. On measurements and identification. *Geol. Surv. China Paleontol. Sinica* 6D (1): 1-83. 31 fig. 1928.—Investigation of the group measurements and form relations of the Honan and Kansu prehistoric crania in comparison with recent North China material, would seem to establish beyond reasonable doubt that the prehistoric populations represented were essentially Oriental in physical character. Further, the resemblances between these prehistoric and recent North China populations would appear to be such that the term "proto-Chinese" may with some propriety be applied to the former. Of the prehistoric populations represented by this material, that of the Aeneolithic culture phase would seem to diverge somewhat more widely from the modern North China type than do those of the later prehistoric culture phases, and also to present, in certain suggestive features, some near resemblance to the Tibetan B or Khams Tibetan type described by Morant. Of the Sha Ching skulls, but a relatively small proportion (7 specimens out of 18 represented) were sufficiently free from posthumous deformation to be available for the measurements from which the coefficients of Racial Likeness have been calculated. While the specimens not available for these measurements will be considered in detail in Part II of this report, it should be noted here that the Sha Ching skull series on the whole appears to include a greater proportion of individuals characterized by somewhat flatter and more coarsely modelled facial features, than obtains among the other prehistoric groups.—*Author's conclusions.*

14271. BLACK, DAVIDSON. Preliminary note on additional Sinanthropus material discovered in Chou Kou Tien during 1928. *Bull. Geol. Soc. China* 8(1): 15-32. 6 pl. 1929.—New *Sinanthropus* material has been recovered within the main deposit from 2 sub-localities, distinguished for descriptive purposes as Locus A and Locus B. These sub-localities are very definitely contemporaneous and of Lower Quaternary (Polycene) Age. From Locus A the greater part of the right horizontal ramus of an adult lower jaw with the 3 molar teeth in situ was obtained, as well as several other teeth representing different individuals. The material from Locus B is for the most part inbedded in travertine of very irregular hardness from which several important specimens have already been partially or wholly freed. Among these are included the complete symphysis region of the lower jaw of a very young individual, numerous isolated teeth of various ontogenetic ages and parts of the calvaria of both immature and adult individuals. It is evident from a preliminary study of this material that the lower jaw of *Sinanthropus*, while ape-like in the symphysis region and very massive throughout, supported a generalized but typically hominid dentition in which the 3rd permanent molar was the smallest of the grinding teeth and neither milk nor permanent canines projected above the general dental crown level. It is further to be noted that notwithstanding the primitive form of its lower facial region *Sinanthropus*, like *Eoanthropus*, was a large brained form.—*D. Black.*

14272. BLACK, DAVIDSON. Interim report on the skull of Sinanthropus. March 29, 1930. *Anthrop. Anzeiger* 7(1/2): 117-118. 1 pl. 1930.

14273. BLOCH, ADOLPHE. Sur les taches pigentmaires [pigmentaires] normales des muqueuses. *Bull. et Mem. Soc. Anthrop. Paris* 7(1/3): 8-14. 1926.—Cases of normal pigmentation of mucous membranes in individuals of pure white stock are studied. The author believes that they are due to very remote atavism.

14274. BOLK, L. Origin of racial characteristics in man. *Amer. Jour. Phys. Anthrop.* 13(1): 1-28. 1929.—The author begins with a short survey of the fundamental idea of his theory on the historical development of the specific faculties of man's body. According to this theory the somatic faculties of man are the result of a retardation of the ontogenetic development (hypothesis of retardation), in consequence of which they persist in a fetal state of development (hypothesis of fetalization). Compared with the body of other *Primates*, that of man appears, therefore, as a highly "fetalized" form. Proceeding, from the hypothesis that the evolutive factors giving rise to the human races must have been quite the same as those of man in general, the author shows that the racial differences bear a fetal character. In some sense, therefore, a race may be defined as a group of individuals in whom a definite somatic property or condition terminates its evolution at a certain stage, whereas in all other individuals its evolution is still proceeding till the very end.—*Author (courtesy Wistar. Bibl. Serv.).*

14275. BOLK, M. Le problème de l'anthropogénèse. *Compt. Rend. Assoc. Anat. France. (Soc. Impress. Topog.*

Nancy) 1926: 80-92. 1926.—The author considers anthropogenesis independently of the theories of the descent of man. He feels that the study of comparative anatomy to determine generic and familial relationships is unsound. He believes that the position of the occipital foramen in man is a retained fetal characteristic, probably responsible for his bipedal position, and that further development has caused it to move occipitally in other primates. The somatic characters which are peculiar to man alone among the primates are fetal characters made permanent. This retardation extends likewise through the period of growth, prolonged maturity, and gradual senescence. Neanderthal man (lack of jaw development being correlated with rapid dentition) is cited as having attained maturity early and as being more simian in that respect. He considers that man has evolved to his present state of retarded development. Examples are given to show that this retardation is a characteristic, in less degree, of the higher and intermediate simian forms. The endocrines are considered the internal factor causing "fetalization" and "physiological retardation."

14276. BREZINA, ERNST, und VIKTOR LEBZELTER. Über Habitus und Rassenzugehörigkeit von Wiener Schmieden und Schriftsetzern. [Habitus and race affiliations of Viennese smiths and type-setters.] *Zeitschr. Konstitutionsl.* 13(1): 1-41. 1 pl. 1927.

14277. BROOM, R. Australoid element in the Koranas. *Nature [London]* 124(3127): 507. 1929.—Fragments of a skull, more primitive than the Springbok skull, were discovered. The skull is unlike that of the Bushman or Bantu, only little like the typical Koranna, and is probably of an early Australoid race in South Africa, or perhaps of a Koranna in which Australoid characters are prominent. The discovery gives further support to the theory of the existence in S. Africa of a race, neither Bushman nor Bantu, probably ancestors of the Koranna.

14278. BORDIER, H. Évaluation de la surface du corps de l'homme. Utilité et signification de la surface spécifique. *Presse Méd.* 37(37): 602-603. 2 fig. 1929.—Measurement of body surface was made with an instrument (intégrateur de surfaces) designed by J. Richard. For each height there is a constant relationship between body surface and weight, $W/S=K$. K is a constant and is called the specific surface of the body. The value of K varies from 2.53 at 1.90 m. height to 3.0 at 1.50 m. It varies from 5.3 to 6.6 for infants. It is only necessary to measure height and weight and by the use of these values for K, the body surface can be easily calculated, $S=WK$.—*G. T. Lewis.*

14279. BOYD, EDITH. The experimental error inherent in measuring the growing human body. *Amer. Jour. Phys. Anthrop.* 13(3): 389-432. 1929.—A series of anthropometric measurements on 35 nursery-school children was taken at monthly intervals over periods of 5-17 mos. 3 readings were taken for each measurement. 6 of these measurements, 2 of stature and 4 of body stem, have been analyzed for experimental error both in the 3 readings taken in rapid sequence, "consecutive measures," and for those taken at monthly intervals, "progressive measures." By various statistical estimates (average and percentage deviations, standard deviations, rank correlations, deviations from parabolae, and straight lines fitted by method of least squares), the error for progressive measures is larger than for consecutive measures and is consistently less for standing height than for length and for the 4 measurements of body stem. This error inherent in measuring needs to be taken into consideration before positive conclusions are drawn regarding the significance of either small variations in growth trends or before individual measures are compared with a standard.—*Author (courtesy Wistar Bibl. Serv.).*

14280. [BUSHMAKIN, N. D.] БУШМАКИН, Н. Д. Некоторые особенности рельефа головного мозга бурят. [Peculiarities in brain of the Buriats.] Иркутский Медицинский Журнал *(Irkutsk Med. Jour.)* 4 (3/4): 5-8. 1926.—♂ brain-weight is 1085-1572; length of fissura cerebri lateralis varies greatly; fissure of Rolando (sulcus centralis) in 59% cuts the median border of the hemisphere; in 72% is found the middle frontal gyrus (Sul. frontalis medius); in 90% the transversal occipital gyrus (S. occipitalis transversus) is found in both hemisphere; there are 3 types: (1) S. occ. transv. is the prolongation of the fissura parieto-occipitalis; (2) S. occ. transv. is entirely independent; (3) S. occ. transv. blends in its interior end with S. temporalis superior.

14281. CAMERON, JOHN. Craniometric studies. XXI. The facial height as a criterion of race. *Amer. Jour. Phys. Anthrop.* 13(2): 319-334. 1929.—The author made a study of the upper facial height in diverse racial types, and found that by its means one could divide modern man into 3 main groups: (A) the Mongolian type; (B) the prognathic type; and (C) an intermediate type. A was represented in this research by the Eskimo, the Mongol, and the American Indian. These races possessed the highest averages for facial height. B was represented by the American negro, the native Australian, the native Tasmanian and the Melanesian, races possessing the lowest averages for facial height. The intermediate type (C) was so called because it evidently possessed averages intermediate between those for A and B. The only available material representing this type was Turner's Scottish crania. Races with high averages for the facial height also exhibited high averages for the nasal height and the orbital height, and vice versa.—*Author (courtesy Wistar Bibl. Serv.).*

14282. CAMERON, JOHN. Craniometric studies. XXII. The facial width as a criterion of race. *Amer. Jour. Phys. Anthrop.* 13(2): 335-343. 1929.—The author records 4 types of average facial width: (A) the Mongolian type; (B) the European type; (C) the African negro type; and (D) the Australasian type. Type A was represented by the Eskimo, the Mongol, and the American Indian; these races possessed the greatest average facial width. Type B was represented by Turner's Scottish crania; the average facial width for these crania was much below that for the Mongolian races. Type C was represented by the American negro and also by negro types from Africa; their average facial width was ascertained to be closely similar to that for the Scottish crania. Type D was represented by native Australian, Tasmanian, and Melanesian crania. In these the average facial width displayed a distinct increase when contrasted with type C. The averages for these 3 Australasian races showed a remarkable degree of similarity.—*Author (courtesy Wistar Bibl. Serv.).*

14283. CAMERON, JOHN. Craniometric studies. XXIII. A study of the upper facial index in diverse racial types of mankind. *Amer. Jour. Phys. Anthrop.* 13(2): 344-352. 1929.—The author studied the upper facial index in representative racial types and found that by it one could divide modern man into 3 main groups; (A) the European and Mongolian type; (B) the Australasian type; and (C) an intermediate type represented at present by the American negro. The only European crania available for study of this index were Turner's Scottish crania. The Mongolian races were represented by the Eskimo, the Mongol and the American Indian. All these races, both European and Mongolian, exhibited the highest averages for the upper facial index. Type B was represented by the native Australian, Tasmanian and Melanesian, races which were found to possess the lowest averages for the facial index. The intermediate type was so called because it evidently possessed averages intermediate between those for A and B. The only available material representing this type was the American negro.—*Author (courtesy Wistar Bibl. Serv.).*

14284. CAMERON, JOHN. Researches in craniometry. No. 19. The Basion-pituitary-alveolar angle. A new cranial angle. Its significance in man, the anthropoids and lower mammals. *Trans. Roy. Soc. Canada Biology (sect. 5)* 23(2): 199-211. 1 pl., 2 fig. 1929.—This new cranial angle reaches its minimum dimensions in the higher Hominidae, and exhibits a gradual increase as

one descends the mammalian scale. It is an index of gnathism, and follows the alveolar index consistently. It has, moreover, certain advantages over the sphenomaxillary angle as an index of gnathism. By means of this angle it is possible to divide the Hominidae into orthognathic, mesognathic, and prognathic groups. The orthognathic group will probably fall mainly within the limits 80°-85°, the mesognathic group between the limits 85°-88°, while the prognathic group will probably be represented by crania with angles over 88°. A definite evolutionary gap exists between the Hominidae and the Simiidae, so far as the dimensions of this angle are concerned. Evidently a sexual factor determines the size of the angle which was slightly larger on the average in ♀♀ than in ♂♂ in both the Hamann Museum white and negro crania. This indicated that the ♀♀ were slightly more prognathic than the ♂♂ in these 2 ethnic groups. These observations confirmed the author's previous conclusions regarding the influence of the sexual factor upon the alveolar index.—*J. Cameron.*

14285. **CAMERON, JOHN. Researches in craniometry. No. 20. The pituitary-alveolar-basion angle. A new cranial angle. Its significance in man, the anthropoids and lower mammals.** *Trans. Roy. Soc. Canada Biology (sect. 5)* 23(2): 213-220. 1 fig. 1929.—This new cranial angle attains its maximum dimensions in the higher races of modern man, and displays a gradual diminution in size, as one descends the mammalian scale. It is an index of gnathism, and follows the alveolar index consistently. There is a very definite evolutionary gap between the Hominidae and the Simiidae, so far as the size of this angle is concerned. There is evidently a sexual factor at work determining the size of the pituitary-alveolar-basion angle, for it was slightly smaller in the ♀♀ than in the ♂♂ in both the Hamann Museum white and the Hamann Museum negro. This meant that the ♀♀ were slightly more prognathic than the ♂♂ in these 2 racial groups. These observations confirmed the author's previous conclusions regarding the influence of the sexual factor upon the alveolar index.—*J. Cameron.*

14286. **CAMERON, JOHN. Researches in craniometry. No. 21. The pituitary-basion-alveolar angle. A new cranial angle. Its significance in man, the anthropoids and lower mammals.** *Trans. Roy. Soc. Canada Biology (sect. 5)* 23(2): 221-228. 2 fig. 1929.—This new cranial angle attains its maximum dimensions in the orthognathic skull of the higher Hominidae, and exhibits a gradual diminution in size, as one descends the mammalian series. It is an index of gnathism, and follows the alveolar index consistently. There is a well defined evolutionary gap between the Hominidae and the Simiidae, so far as the size of this angle is concerned.—*J. Cameron.*

14287. **CAMERON, JOHN. Researches in craniometry. No. 22. Three new cranial indices. The relative proportions of the three sides of the pituitary-alveolar-basion triangle in man, the anthropoids and lower mammals.** *Trans. Roy. Soc. Canada Biology (sect. 5)* 23(2): 229-241. 1 fig. 1929.—In this paper the human and comparative anatomy of 3 new cranial indices is described for the first time. The *P-B/P-A* index is a study of the relative proportions of the pituitary-basion and the pituitary-alveolar cranial lengths. The *P-B/B-A* index is a study of the relative proportions of the pituitary-basion and the basion-alveolar cranial lengths. The *P-A/B-A* index is a study of the relative proportions of the pituitary-alveolar and the basion-alveolar cranial lengths. All 3 are indices of gnathism, and they all follow the alveolar index consistently. All 3 attain their maximum in the orthognathic type of skull, and all exhibit a gradual diminution, as one descends the mammalian scale. This means that they all become reduced with increasing degrees of prognathism. All 3 exhibit well defined evolutionary gaps between the Hominidae and the Simiidae.—*J. Cameron.*

14288. **CAMERON, JOHN. Researches in craniometry. No. 23. The inclination of the cranio-facial Axis (Cameron) to the Frankfort Plane in man and in lower mammals.** *Trans. Roy. Soc. Canada Biology (sect. 5)* 23(2): 243-251. 1 pl., 1 fig. 1929.—The author's cranio-facial axis consists of a pre-pituitary segment (the nasion-pituitary length) and a post-pituitary segment (the pituitary-basion length). The inclination of these 2 segments to the Frankfort plane was studied in man and in lower mammals. The angle of inclination of the pre-pituitary segment exhibits a marked increase in lower mammals, as compared with man. The degree of inclination of the post-pituitary segment to the Frankfort plane in man is controlled by 2 factors, racial and sexual, thus it is less in the Hamann Museum White than in the Hamann Museum Negro, and less in the ♂♂ than in the ♀♀ of both races. It tends to approximate to 180°, as one descends the mammalian scale. In the Hamann Museum White and Negro crania the pre-pituitary segment of the cranio-facial axis is more stable in its position with reference to the Frankfort plane than the post-pituitary segment.—*J. Cameron.*

14289. **CAMPBELL, T. D. Adelaide University field anthropology: Central Australia. No. 5. Dental notes.** *Trans. & Proc. Roy. Soc. S. Australia* 52: 28-30. 1929.—Full-blooded natives showed well-formed dental arches with strong, appreciably worn teeth. The occurrence of caries was somewhat higher than among Australian natives generally, in their natural environment, but much lower than among civilized white people. Few other dental pathological conditions were present. The gums were generally firm and healthy. The dental condition of these natives supports the contention that the less refined the foodstuffs used, the less will be the occurrence of dental abnormalities and pathological conditions.

14290. **CHOUKE, K. S. The epicanthus or mongolian fold in Caucasian children.** *Amer. Jour. Phys. Anthrop.* 13(2): 255-279. 8 fig. 1929.—Most of the published work on this subject is limited to the percentages of cases found in certain races. The present study was undertaken to investigate any possible relationship between the Mongolian fold of the eye and the measurements of the head and face. In the description of variations in the Mongolian fold, Drews' classification is adopted, recognizing 3 degrees of development of the fold. Von Ammon, in 1831, first described the Mongolian fold. Since then many theories have been advanced to explain its occurrence in different races. Most authors consider the flattening of the nose to be the cause of the development of the fold, but the present investigation, supported by actual measurements, failed to corroborate such a claim. A combination of extraordinarily small superciliary arches and flattened root of the nose appears to be the cause of the formation of epicanthus.—*Author (courtesy Wistar Bibl. Serv.).*

14291. **COLLINS, SELWYN D., and TALIAFERRO CLARK. Physical measurements of boys and girls of native white race stock (third generation native born) in the United States.** *U. S. Public Health Reports.* 44(18): 1059-1083. 12 fig. 1929.—This paper is the first of a series on the growth of children of native white stock from 6 to 15 yrs. of age. Physical measurements were made of nearly 30,000 school children of native white parents and grandparents in the United States. The measurements were standing height, or stature, sitting height, or trunk length, weight, chest circumference (at rest), transverse chest diam., or width of the chest, antero-posterior diam., or depth of the chest, and vital capacity. The technique was identical in all places, the measurements all being made by 3 medical officers of the Public Health Service. The children were, roughly, from 4 geographic sections of the United States—Northeast, North Central, South Central, and Western States. As age increases, weight and vital capacity increase more rapidly than any of the other measurements taken. In all the measurements except vital capacity and transverse chest diameter, there is a period of 2-5 yrs. between 11 and 15 yrs. of age, inclusive, during which the mean measurement for girls exceeds the mean for boys of a corresponding age. In general the largest excesses of girls over boys occur at about 13 yrs. of age. By comput-

ing the difference between the mean measurements at successive ages, the mean annual increments of growth in these measurements may be approximated. The age of greatest growth varies somewhat for the different measurements, but there is a tendency for a maximum percentage increment about the age of puberty, the maxima for girls coming 1 or 2 yrs. earlier than the maxima for boys. For every measurement considered in this study there is a period of 3 or more yrs. between 6 and 13 yrs. of age during which the mean annual increment for girls exceeds the increment for boys of a corresponding age. In general, the largest excesses in the increments of girls over those of boys occur from 11 to 12 yrs. of age. The increment from 13 to 14 yrs. of age is for every measurement larger for boys than for girls. The mean annual increments of girls exceed those of boys at considerably earlier ages than in the case of the mean measurements themselves.—*S. D. Collins.*

14292. COSGROVE, C. B. A note on a trephined Indian skull from Georgia. *Amer. Jour. Phys. Anthrop.* 13(2): 353-357. 3 fig. 1929.—A fragment of a skull vault exhumed from a mound near Augusta, Georgia, shows a circular trepanation about 38 mm. in diam. with signs of healing. The fragment seems to belong to the cranium of an adult ♂ Indian.—*Author (courtesy Wistar Bibl. Serv.).*

14293. CZEKANOWSKI, J. Anthropologie von Polen. (Begleitworte zur synthetischen anthropologischen Karte von Polen.) *Petermanns Mitteil. Justus Perthes' Geogr. Anst. [Gotha].* 75(5/6): 113-119. 1 col. map, 1 fig. 1929. —When determining quantitatively the degree of similarity of the populace of single territorial districts, by means and on the ground of the averages of a number of anthropological features, the separating of geographical provinces results. These are the prevalence zones of anthropological types (racial elements). In Poland, there is a sharp contrast between the homogeneous region of the nordic type and the heterogeneous zones with a strongly mixed population, where, beside the nordic, the lapponoid type is the most prominent. The anthropologic conditions of Poland quite resemble those of Germany. The present paper gives the solution of the problem which is seen in the synthesis of geographical representations of a number of phenomena which hitherto had to be judged by comparing several charts which in the end proved quite deceptive.—*J. Czekanowski (transl. by B. Oetteking).*

14294. DART, R. A. The South African negro. *Amer. Jour. Phys. Anthrop.* 13(2): 309-318. 1929.—The history of scientific investigation of the physical anthropology of the South African negro races is discussed. The lines upon which research has chiefly proceeded in South Africa are indicated with information concerning the materials available for investigation in South Africa and a bibliography of the contributions to knowledge of the South African races.—*Author (courtesy Wistar Bibl. Serv.).*

14295. DIAKONOW, P. P. Kopf und Rumpf in ihren dynamischen Beziehungen. *Zeitschr. Ges. Anat. Abt. 2, Zeitschr. Konstitutionsl.* 14(2): 212-226. 3 fig. 1928.—The author presents his method and apparatus for the routine carrying out of measurements which estimate the lordoses (depth of cervical and lumbar lordoses) upon which the vertical body length is essentially dependent. In addition, the configuration of the head, chest, abdomen, and pelvis and their dynamics are intimately related to lordotic distortions of the vertebral column, the exact measurements of which indicate the stress to which they have been subjected. The influence of the degree of cervical lordosis upon the configuration of the calvarium has been studied by means of body and head measurements on students of the Moscow Medical School. On the head, the following measurements were made: length, height (inion-vertex level difference), parietal breadth and temporal breadth (by a new method of measurement between pterion-points based on Kronlein's method). The more marked the cervical lordosis, the more the cranial vault increases; at the same time, the temporal breadth is somewhat less markedly increased. The cervical lordosis increases with body length, as a result of the continual bending of the body over the desk while sitting. Besides the flattening of the chest skeleton, as a result of the shortening of the play of the Mm. scaleni, of the diaphragm, and of the flat abdominal muscles, there is also the above noted peculiar change in skull form as a result of marked cervical-lordosis. The spatial relationships within the skull are directly influenced thereby; in consequence, the blood supply of the brain is hindered by the numerous windings of the Aa. and Vv. vertebrales, and the function and development of the individual areas of the brain will be affected. It is therefore shown that to secure a harmonious form for the skull and brain, there should be a marked individuality in the height of work tables and table tops, determined by dynamic-anthropometric controls. The author concludes:—measurements are only worth while submitting to statistical examination when they are made in conformity with a dynamic method of measurement, here described.—*P. P. Diakonow (transl. by A. N. Burkitt).*

14296. FAWCETT, E. Report on Kilgreany human bones. *Univ. Bristol Proc. Spelaeolog. Soc.* 3(3): 126-133. 11 fig. 1929.—Pleistocene remains from a cave in Ireland, with skulls apparently of the Mediterranean type.

14297. FISCHER, EUGEN. Über Varietätenforschung. *Verhandl. Ges. Phys. Anthrop.* 3: 16-22. 1929.—The author points out the poverty of our knowledge of the nature of the numerous structural variations occurring in the organs of the human body, whether they are actually idio-variations or individual para-variations. He suggests that the matter may be approached by combined investigation, a definite number of such variations being recorded statistically from all dissections in all countries, so that information may be obtained as to the frequency of the variations in different races. The Deutsche Anatomische Gesellschaft will prepare an appropriate record form.—*From author's abstr. (transl. by J. P. McMurrich).*

14298. FISCHER, EUGEN. Zur Frage einer ätiopischen Rasse. *Zeitschr. Morph. u. Anthrop.* 27(2): 339-341. 5 pl. 1929.—The strongest support for the establishment of a distinctive Ethiopian race, and its acceptance by many authors is the fact that many groups in North East Africa, Abyssinia, Somaliland, etc., possess preponderantly wavy and not spirally curled hair. The author has previously shown in the Rehobother bastards that by crossing straight and spiral hair, a wavy type results. He assumes a special hereditary factor for this. A further factor then makes spiral hair from wavy. The assumption of multiple factors makes clear the individual degrees of wavy and spiral hair. The author figures wavy Somali and Bastard hair side by side and shows the complete agreement between the two. The hair form of the Somali and other North East Africans can therefore be considered as a result of the crossing of a negro with an oriental race, Semite). A distinctive Ethiopian race does not exist.—*E. Fischer (transl. by A. N. Burkitt).*

14299. FOSTER, ANDRÉ. Possibilités d'adaptation de l'astragale aux exigences de la statique du pied dans la serie des Mammifères. *Arch. Anat., Hist. et Embryol.* 5(1/3): 141-159. 5 fig. 1926.—The astragalus is, so to speak, the keystone of the longitudinal arch of the foot, articulating with the tibia on the one hand, and in the foot with the os calcis and scaphoid. Its form is therefore associated with the mode of locomotion of mammals, and its adaptations in this respect the author seeks to trace in a series of mammals. The form changes undergone by the astragalus, and its articular modifications in a series of mammals in correlation with changes in gait, etc., are considered.—*C. W. Bock.*

14300. FRASSETTO, FABIO. Proposta per l'unificazione dei metodi antropologici. [Proposals for uniform methods in anthropology.] *Atti Soc. Ital. Progr. Sci.* 1927: 552. 1928.—Abstract.

14301. FRASSETTO, FABIO. Sistema di normalità tra statura, perimetro toracico e peso nelle norme per il reclutamento. [System of normality in stature, thoracic perimeter, and normal weight, in army recruits.] *Atti Soc. Ital. Progr. Sci.* 1927: 552-553. 1928.—Abstract.

14302. GLÄSMER, ERNA. Die Eigenart weiblicher Konstitution und die Notwendigkeit einer geschlechtsspezifischen Typenaufstellung. *Zeitschr. Geburtsh. u. Gynäkol.* 96(3): 572-586. 9 fig. 1929.—Types of body build in women are: hypoplastic, including infantile; euplastic; and hyperplastic, including the adiposo-genital, dystrophic conditions. Hypoplastic corresponds to asthenic ♂ type, euplastic to pyknic, and hyperplastic to athletic. Endocrine balance plays an important part in determining body build.

14303. GREGORY, WILLIAM K. The palaeomorphology of the human head: ten structural stages from fish to man. Part II. The skull in norma basalis. *Quart. Rev. Biol.* 4(2): 233-247. 3 fig. 1929.—Three series of 10 skulls each are figured, illustrating the evolution of the under side of the skull from fish to man, the 1st series showing the evolution of the norma basalis as a whole, the 2nd and 3rd the evolution of the outer and inner jaw series respectively. The 10 stages do not constitute a direct phylogenetic series from fish to man, but they illustrate the evolutionary history of the principal skull elements. These stages are represented by the Devonian lobe-finned ganoid *Eusthenopteron,* the primitive amphibian *Eobaphetes,* the primitive reptile *Seymouria,* the advanced cotylosaurian reptile *Captorhinus,* the primitive mammal-like reptile *Scylacops,* the advanced mammal-like reptile *Cynidiognathus,* the primitive marsupial mammal *Thylacinus,* the primitive lemuroid *Adapis,* the modern chimpanzee and man. In each stage it is shown that fundamental characters of the previous stage are retained, while distinctive advances are made toward the stage beyond, the dominant factors of change in the norma basalis in the last 3 stages being the development of the dentition, the gradual assumption of the erect posture, and the increase in brain volume. A study of the individual elements of the skull confirms the evidence of the norma basalis as a whole. In the skull of man the only bones lost in the long progress from the Devonian lobe-finned ganoid are the prevomers, ectopterygoids and quadratojugals. All others are present, though some have been fused, some taken over to serve other functions and all changed in form.—*W. K. Gregory.*

14304. GRIGORJEWA, S. P. Die Manoilowsche Reaktion als Mittel zur Rassenbestimmung beim Menschen. *Zeitschr. Rassenphysiol.* 2(2): 92. 1929.—In studies of the blood of various peoples for the Manoiloff reaction, the results were not satisfactory. Of the Russian peoples, 60% gave their characteristic reaction and only 40% of the Hebrew race were typical. When numerous specimens were tested on several occasions the results were not constant in 59% of the cases. The author concludes either that the "race hormone" is very labile or that the method of performing the test must be improved; also that malaria patients do not constitute favorable material.—*P. Levine.*

14305. GÜNTHER, HANS F. K. Der Rasseeigene Geruch der Hautausdünstung. [The racially characteristic odor of perspiration.] *Zeitschr. Rassenphysiol.* 2(2): 94. 1929.

14306. HARRIS, H. A. [The diploic veins as evidence of age, with especial reference to the skull attributed to Lord Darnley.] *Jour. Anat.* 64(1): 115-116. 1929.—Abstract.

14307. HECKER, PAUL. Sur le bord dit pubien de l'os iliaque chez l'homme et dans la série des mammifères. *Bull. Mém. Soc. Anthrop. Paris* 7(4/6): 79-84. 5 fig. 1926.—The pubic border is one of the 3 structural margins of the ilium of which the essential and primitive form is that of a triangular prism. Its characteristics are: the internal iliac spine; the pyramid on the pubic margin; its partial fusion with the innominate line and its continuation on the pubic. It separates the iliac cavity from the homologue of the iliac tuberosity. In the mammalian series, particularly in the simians, the internal iliac spine produces a migratory motion in a dorsal direction: (a) In the marsupials, rodents, carnivores and prosimians, the pubic border is very close to the acetabular border, so that the internal iliac spine is almost blended with the anterior superior iliac spine. (b) In the simians, the internal iliac spine is in the middle of the iliac crest. (c) In anthropoids and man, the iliac spine is very close to the ischial border. The pubic border is prominent in the prismatic and long ilia (marsupials and rodents); it is less prominent in flat short ilia (catarrhini, anthropoids and man). The development of the pubic border corresponds directly with the development of the sub-articular facet of the iliac tuberosity serving as a point of fixation for the mass of extensors of the trunk.—*Author's conclusions (transl. by J. E. Moody).*

14308. HEJINIAN, LUCEA, and ELISE HATT. The stem-length: recumbent-length ratio as an index of body type in young children. *Amer. Jour. Phys. Anthrop.* 13(2): 287-307. 3 fig. 1929.—Data on 189 nursery-school children (98 boys and 91 girls) show: that the stem-length: recumbent-length ratio progressively diminishes with increasing age during the years from 2 to 5; that the range of variability within each age group is as great as that between the median ratios at 26 and 60 months, indicating the necessity of using a measure of variability as well as the mean in interpreting the data; and that, by such a method, the ratio may be used as an index of body type during the preschool years. The validity of this index was tested by a study of the percentile ranks of the ratios of 50 children throughout their stay in the nursery school. This study showed that: fluctuations in the rank from month to month were the rule, but that these fluctuations were due more to errors in measurement than to biologic irregularity; and trend lines indicate that 72% of the children remained in approximately the same rank during the years from 2 to 5, and about ¼ distinctly changed their rank. It is concluded that, within certain limits, a child tends to retain the same relative percentile rank in stem-length: recumbent-length ratio during the preschool years, as compared with his chronological peers, and that the ratio is accordingly a valid index of body type during these years.—*Author (courtesy Wistar Bibl. Serv.).*

14309. HELLMAN, MILO. The face and teeth of man. A study of growth and position. *Jour. Dental Research* 9(2): 179-201. 15 fig. 1929.—Measurements of 104 American Indian skulls approximately 2000 yrs. old show that facial height increases continuously up to old age, then decreases in senility. Periods of rapid growth (late infancy and youth) alternate with periods of slower growth (childhood and adulthood). The teeth play a part in increase as well as in decrease of facial dimensions. Different parts grow at different rates, increase of facial height differing from that of dental height. Increase in the antero-posterior dimension occurs posteriorly, such growth in the jaws producing a forward swing of face in relation to cranium.—*S. W. Chase.*

14310. HOMANN, HANNA, und WALTER SCHEIDT. Untersuchungen über Rassenmischung. II. Annahme und Nachweis von Rassenmischung in nordeuropäischen Bevölkerungen. *Arch. Rass.- u. Ges.-Biol.* 22(3): 245-254. 1929.—Having calculated correlations between various indices in 27 groups of living Europeans, the authors conclude that, though these populations are racially mixed, there is little evidence of the presence of a component with short stature and either round head (Alpine) or long head (Mediterranean). They believe the north European population is shown rather to be made up of 2 elements with large stature, long skulls, and broad face. One of these (Scandinavian) has light eyes and light skin color; the other, which they call Atlantic, has light eyes and dark skin color.—*P. Popenoe.*

14311. HRDLIČKA, ALES. Mental fossae. *Amer. Jour. Phys. Anthrop.* 14(2): 317-319. 1 pl. 1930.—The paper calls attention to the occasional presence in the lower jaw of the human infant of a marked fossa located

externally on each side of the chin. Remnants of these fossae may now and then be seen even in later childhood. Illustrations are given of 2 cases, an Indian and an Eskimo infant, in which these fossae are very markedly developed.—*Author (courtesy Wistar Bibl. Serv.)*.

14312. IMBELLONI, J. Intorno ai crani "incredibili" degli indiani Natchez. *Atti XXII Congresso Internaz. Americanisti.* 1: 391-406. 4 pl. 1928.—The Natchez Indian skull from the burial grounds of Vicksburg investigated by S. G. Morton in 1839 is a remarkable specimen, and has occupied an important place in the literature upon artificial deformations. The cranio-trigonometrical method has been applied to this skull, tracing the cranial lozenge, after determination of the true position of the lambda and corrected the errors in the profile drawings of Gosse and Topinard. The comparative figures both of lengths and angles clearly separate this skull from those specimens deformed by means of occipito-frontal boards (brachycephali artificiales obliqui) and makes it certain that the occiput was flattened by compressions upon a back-board (decubitus board) which places it in the author's second series (brachycephali artif. erecti) which is set aside for those skulls deformed by a "berceau" or similar means. The duration for the deforming process must be very long, and on account of the tendency of certain authors who have thought that this was a question of months, it is necessary to refer to the definite statement of Garcilaso (La Florida. IV 13.) who speaks of the instrument being permanently on the child's head for 9 or 10 yrs.—*J. Imbelloni (transl. by A. N. Burkitt)*.

14313. JERLOV, EMIL. Projet de système de classification plantaire chez les nouveaux-nés. *Acta Obstetr. et Gynecol. Scand.* 9 (1/4): 267-281. 8 fig. 1930.—The author has made up a system of classification on about 450 cases. As distinguished from the classification of finger impressions this classification is based upon the different forms of design on the big toe and metatarsal region. A design present on the big toe forms the denominator of a fraction, the numerator of which is the design on the underlying metatarsal part. The designs present on the big toe of a new-born child is, in principle, similar to those present on the fingers, thus in accordance with Henry-Galton's system of 9 different kinds: arches, tented-arches, 2 loops, etc. Even in that part of the metatarsus situated just behind the big toe this sort of design is present although here, instead of 2 loops, there are 3 loops of different kinds. Here, therefore, are 10 different groups of design. The 9 possibilities of the denominator and the 10 of the numerator make up altogether 90 main groups. The designs situated on the lateral aspect of the metatarsal parts under the big toe form the sub-classes in the system. A region entirely or partly lacking in design is denoted by an O.—*Author's summary.*

14314. KLEIWEG DE ZWAAN, J. P. Schedels van Schouten-Eiland. [Skulls from Schouten Island.] *Volkenkundige Opstellen II, herausg. v. Kolonial-Inst.: Amsterdam, Mededeeling Nr. 9, Afd. Volkenkunde* Nr. 3: 69-143 p. 8 pl. 1928.—Schouten Island is one of the Dutch New Guinea group. 3 chief races inhabit this island: the Biakkers, 85.6% dolichocephalic and 14.4% mesocephalic; the Noeforeezen, 40% dolichocephalic, 40% mesocephalic, and 20% brachycephalic; the Arfakkers, 75% dolichocephalic and 25% mesocephalic. The Biakkers are the tallest of the 3 races; averaging 160.1 cm. in height, the Noeforeezen 156.7 cm. and the Arfakkers 150 cm. The Arfakkers are the purest. They seem to be the original inhabitants and are believed to have been strongly dolichocephalic, with over-long arms, and comparatively short legs. Later this dolichocephalic pigmy race mixed somewhat with mesocephalic and brachycephalic races. The spheno-parietal suture of Schouten Island skulls tended to be short. The average length was .85 cm. on the right and .81 cm. on the left. The fronto-parietal suture also tended to be short, the shortness often being due to the presence of a processus frontalis ossis temporalis. The average length of the fronto-parietal suture was 2. cm. on the right, and 2.05 on the left. In 3 skulls, there was a bilateral infra-orbital suture; this is most commonly met in Eskimo skulls. There were 2 general types of skull form: one a smaller lightly boned skull with glabella and arcus supercilares protruding but little, upper margin of the orbit short; lineae nuchae and occipital protuberance little developed; the mastoid process and nasal bone short; root of the nose flat, and the jugal bone with a tendency to bend laterad. The other type of skull is heavier and more strongly developed; glabella and arcus supercilares project forward strongly; lineae nuchae well marked and strongly developed, as are the mastoid and zygomatic processes; the occipital protuberances project forward. As a rule the pars bregmatica is the most strongly developed part of the sagittal suture. The pars lambdoidea of the lambdoidal suture is usually more tortuous than the other portions. In some skulls the pars lambdoidea was almost straight. Of the 16 skulls examined, in at least 7, one of the chief sutures was obliterated, the coronary suture was lacking in 2 skulls, the sagittal suture in 1 skull; and other skulls had parts of various sutures missing. The average bregma angle of Schouten Island skulls was 61.9°, the nasal-bregma angle 63.4°, the angulus frontalis 94.9°. These and other skull relations were marked by difference in the dolicho- and brachycephalic skulls. The skull length ranged from 15.5 to 19.1 cm.; skull breadth from 12.0 to 14.0 cm.; cephalic index from 70.68 to 80.46. Skulls were of 2 distinct types, dolicho- and brachycephalic. Skull height (Broca's method) was 13.2 cm. for dolichocephalic skulls, 13.2 cm. for mesocephalic skulls and 13.4 cm. for brachycephalic skulls. Length-height index ranged from 70.06 to 79.75; breadth-height index from 95.7 to 103.6; horizontal circumference from 44 to 52.3 cm.; sagittal circumference from 33.8 to 37.9 cm.; length of foramen magnum from 2.8 to 3.8 cm.; length of base of skull from 9.2 to 10.8 cm.; fronto-parietal index from 90.2 to 114. The average length-breadth ratio of the foramen magnum was 82.3. The sagittal index ranged from 20.7 to 30.5. When skulls of the Schouten Island were classified according to the fronto-parietal index, none fell into either the microseme or the ultra-megaseme class, 31.3% were mesoseme, 56.2% were megaseme and 12.5 were hypermegaseme. Cranial capacity varied from 1090 cc. to 1410 cc. in the 16 skulls; 53.8% were microcephalic, 46.2% mesocephalic, and none megacephalic. The facial index varied from 47.7 to 56.7; 20% were of the chamaeprosope type, 50% of the mesoprosope, and 30% of the leptoprosope. All skulls had a cranio-facial index of less than 100. Classification of the nasal indices showed 28.6% leptorhine noses, 21.4% mesorhine, and 50.0% platyrrhine. Of the 16 skulls measured 71.4% were prognathic, and 28.6 orthognathic. The average nasal profile angle was 80.5°, the average alveolar profile angle 75.5°. When skulls were classified according to orbital index, 38.8% were chamaeconchic, 44.4% mesochonchic, and 16.7% hypsiconchic.

14315. KOSINSKI, CHARLES. Le valeur anthropologique des variations dans l'innervation cutanée des membres inferieures. *Compt. Rend. Assoc. Anat. France (Soc. Impress. Topog. Nancy)* 1926: 291-295. 1926.—The author suggests the cutaneous innervation of the calf and sole of the foot as indicative of variations within the European group.

14316. LACK, L. A. HODGKINSON. The endocranial equivalents of the Frankfurt plane and the exocranial position of the internal auditory meatus. *Jour. Anat.* 65 (1): 96-107. 1930.

14317. LEBOUCQ. GEORGES. La mensuration de la surface des hémisphères cérébraux. *Compt. Rend. Assoc. Anat. France (Soc. Impress. Topog. Nancy)* 1926: 338-343. 1926.—The method involves precipitation of Cu_2O from boiling Fehling's solution on the surface of the lobe previously soaked in a glucose solution, recovery of the Cu and calculation of the total amount from each lobe against that from a measured area of the lobe.

14318. **LEBZELTER, VIKTOR. Hallstatt- und La Tène-Schädel aus Güns und Ordod Babot (Ungarn).** [Hallstadt and La Tène skulls from Güns and Ordod Babot, Hungary.] *Wiener Prähistorische Zeitschr.* 15(2): 115-120. 2 fig. 1928.

14319. **LOTH, EDOUARD. Considérations générales sur l'anthropologie des parties molles.** *Compt. Rend. Assoc. Anat. France (Soc. Impress. Topog. Nancy)* 1926: 374-380. 1926.—The author suggests methods for the study of the soft parts in primates. He discusses the application of the data obtained and stresses the importance of biological deviation from the normal rather than the study of anomalies, and requests the coöperation of medical men. He desires to interest the League of Nations in the necessity for gathering data from those races which are rapidly disappearing. The value of such data in determining the degree of primitiveness in man is indicated.

14320. **McMURRICH, J. PLAYFAIR. The evolution of the human foot.** *Amer. Jour. Phys. Anthrop.* 10(2): 165-171. 3 fig. 1927.—In the lower mammals there are, as a rule, 3 contrahentes in the plantar musculature and the dorsal interossei are arranged with reference to an axis passing through the 3rd metatarsal bone. In man there are no contrahentes, and the dorsal interossei are arranged with reference to an axis passing through the 2nd metatarsal. In the platyrrhine apes and the cercopithecid monkeys, the mammalian type persists. In the gibbons the contrahentes are reduced to 2, but the dorsal interossei still have the mammalian arrangement. In the chimpanzee, only 1 contrahens has been described, none in the orang and gorilla, while all 3 genera appear to present sometimes the mammalian and sometimes the human arrangement of the dorsal interossei.—*Author (courtesy Wistar Bibl. Serv.).*

14321. **MAGUIRE, F. A. A critical survey of the anatomy of the female pelvis based on sections and dissections of a series of sixteen female pelves.** *Med. Jour. Australia.* 1927: (3-138). 1927.—The bony pelvic ring is complete at the pelvic inlet. The obturator membrane and the sacro-tuberous and sacro-spinous ligaments confer a certain amount of resiliency on the antero-lateral and postero-lateral portions of the pelvic wall. These lie in the diagonal conjugates. On either side a quadrate mass of bone forms strong unyielding lateral pelvic wall. The joints in the pelvis allow for a certain degree of expansion and elasticity in the bony ring in pregnancy and parturition. The pubes, spines of the ischia and coccyx are in the same plane; so are the origins of the levatores ani. The pelvic floor consists of all the structures from the pelvic fascia to the skin, i.e., the muscular pelvic diaphragm (levatores and coccygei), the uro-genital diaphragm or triangular ligament, the perineal body, the ischio-rectal fossae and the superficial structures of the vulva. The levatores ani consist of 2 main parts: (1) a stout bifurcated muscle sling extending from the coccyx to the anal canal and thence by 2 limbs to the pubes. This comprises the pubo-rectalis and pubo-coccygeus portions usually described. It is strengthened and supported by the ano-coccygeal raphe, the perineal body and the uro-genital diaphragm. The muscle tissue forms a strong active or dynamic support. The supporting tissues are passive and have firm bony attachments to the margins of the bony pelvic outlet. This portion of the levator ani bounds the genital hiatus, acts as a sphincter for the vagina and slings the anal canal up the pubes. (2) The remainder of the muscle forms a thin fan-shaped sheet forming the roof of the ischio-rectal fossa. The coccygei are often vestigial, being mainly fibrous. The uro-genital diaphragm is a stout supporting structure attached to the ischio-pubic rami. It affords a strong bony attachment for the urethra and vagina and the perineal body. It strongly supports the levatores ani on either side of the genital hiatus. The terms parietal and visceral pelvic fascia as at present used should be discarded. The only true visceral fascia is that actually reflected over the viscera. The remainder should be described by the name of the muscle it covers. The firm and strong perineal body is slung from the tuber ischii by the bases of the uro-genital diaphragm and from the coccyx by the ano-coccygeal raphe. It is an important constituent of the pelvic floor holding the medial margins of the levatores ani together and completing the genital hiatus. The clitoris is described in detail. The pelvic connective tissue forms a packing for the viscera and their canals and a general support as well. The neuro-vascular bundles are reinforced by the pelvic connective tissue. They assist in suspending the viscera. The viscera are fixed by a series of supports which are described in detail. In general they are suspended from the pelvic walls by special thickenings of the pelvic connective tissue and by the neuro-vascular bundles. They are strongly supported below by the pelvic floor. The ureters have 3 danger points: at the pelvic brim where they are only 3-5 mm. posterior to the infundibulo-pelvic folds, at the base of the broad ligament where they are crossed by the uterine artery, where they enter the lateral angle of the bladder, because their relation to the vagina varies considerably owing to the asymmetry of the vagina and uterus. Hart's description of a movable pubic segment and a fixed sacral segment opening like swinging doors will not hold. The pelvic floor is entirely fixed both anteriorly and posteriorly. It can open only by stretching of the margins of the genital hiatus. The 16 pelves on which these findings are based are described in detail with 59 photographs of sections and dissections.—*F. A. Maguire.*

14322. **MICHELSON, T. Notes on Mongolian craniology.** *Human Biol.* 1(3): 421-423. 1929.—A study of Mongolian crania based upon the Catalogue of Human Crania in the U. S. National Museum Collections. The figures given do not agree with those previously given by Cameron as he has used but 34 cases instead of using the entire material available. Cameron's contention that dolichocephaly gives way to brachycephaly from Greenland to the west is sustained, but the picture of the transition changes decidedly (Mongolian ♂ crania: length 184.319 mm. as opposed to 187; breadth 150.124 mm. as opposed to 146. The figures suggest that the coefficients of correlation of skull-length to cranial capacity, etc., might vary from those given by Cameron. The procedure of Cameron in using selected cases instead of the entire material is not justifiable.—*T. Michelson.*

14323. **MICHELSON, TRUMAN. Note on Shoshoni anthropometry.** *Proc. 23rd Internation. Congress Americanists (New York)* 1928: 856. 1930.—Points out the substantial agreement between the cephalic indices earlier reported by the author (1927) and by Boas.

14324. **MIJSBERG, W. A. Die Halswirbeldornen der Javaner. Eine morphologische und anthropologische Untersuchung.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 85(3/4): 446-475. 15 fig. 1928.—The bifurcated cervical neural spine of man developed from an ancestral unforked stage. In the ancestors of man ontogeny ends in the preancestral condition of a single neural spine formed by the fusion of 2 halves while in man of today a further phylogenetic progression is expressed in the bifurcated neural spine due to the non-fusion of the terminal halves. The simple neural spine may be due to: (1) full growth of a median spine anlage; (2) complete fusion of 2 halves; (3) asymmetrical completion of the prongs of the fork. The neural spine of the 3rd and 5th cervical vertebrae of the Javanese present primitive conditions more frequently than do those of the Europeans and the Japanese. The spine of the 6th cervical vertebra of the Japanese, on the other hand, shows primitive conditions much more frequently than does that of the Javanese. On the whole, the neural spines of the cervical vertebrae of the Javanese present a much closer relation to those of the Europeans and the Japanese than to those of the Australians, Tasmanians, Negros and Andamanians, and Terra del Fuegians. The last much more frequently present relations more primitive phylo-

genetically. 3 tables and list of literature.—*H. F. Nachtrieb.*

14325. **MILIANITCH, N., et R. SPIRIDONOVITCH. Variations de la morphologie et de l'innervation des muscles de l'épaule et due bassin chez les Serbes. (Morphologie) Étude basée sur 200 cas.** *Compt. Rend. Assoc. Anat. France (Soc. Impress. Topog. Nancy)* 1926: 385-395. 1926.—The authors find that complete independence of the spinal head of the deltoid is common, of the clavicular head very rare, but when it does occur the spinal head is also independent. The costo-deltoid frequently inserts fleshily without connection with aponeurosis. Connections, single and mutiple, between the shoulder muscles are frequent, and may be of ethnic origin. A case of a supernumerary posterior tensor of the shoulder capsule is recorded. Partial fusion of the supraspinatus with the teres minor is frequent, complete fusion rare. Fusion of the tendons of the teres major with the latissimus dorsi occurs and is interesting in connection with variations in the innervation of the muscle. The authors conclude that there is no marked difference in percentage of variation between sane and insane, that variations are more common in the ♂, and that muscular variations are of frequent occurrence among Serbs.

14326. **MILIANITCH, N., et B. CHLYIVITCH. Variations de la morphologie et de l'innervation des muscles de l'épaule et due bassin chez les Serbes. (Innervation.)** *Compt. Rend. Assoc. Anat. France. (Soc. Impress. Topog. Nancy)* 1926: 396-402. 1926.—The authors find 3 branches, 2 anterior motor and 1 posterior mixed, in 5% of the axillary nerves studied. In 3.3% the axillary does not divide into anterior and posterior branches. A table of the occurrence of the number of branches (1-4) from the suprascapular nerve to the supraspinatus muscle is given. A short filament to the scapular is described. The variations in innervation of the infraspinatus, teres major and minor are given. The authors believe the subscapular nerves are not 2 but 3-6 in number, which they designate as N. subscapularis medialis, to the surface and interior of the subscapular; N. s. intermedius, variable but seldom absent, to the fasciae of the subscapular; N. s. lateralis, to the external part of the teres major. Distributions and variations of the upper and lower subscapulars and the thoracodorsal nerve are given.

14327. **MUCKERMANN, H. Rassenforschung und Volk der Zukunft. Ein Beitrag zur Einführung in die Frage vom biologischen Werden der Menschheit:** 49p. Ferd. Dümmler, Verlag: Berlin, 1928. Pr. M. 2.50.—Contents: I. Biologic preliminaries. II. On human races of the present. III. Source of racial differences. IV. Causes of same. V. The problem of influencing races. VI. hereditary basis and eugenics. The author discusses paravariation, idiovariation and mixovariation, plus selection with a presentation of known facts and theories. Whether races come from a common trunk is not known. Knowledge of mental racial differences and their dependence on brain structure is very limited. Idiokinesis of degeneracy does not lead to racial development. Domestication in animals with selection seems to have produced new forms. A fortunate constellation of hereditary lines is even more important than of environment. The exterminating effect of the progress of modern culture offers no hope in stemming degeneracy. Natural selection in primitive people clears out such things as myopia, deafness, and insanity. Representative national undertakings for eugenics are named. Their tasks are partly negative, especially selection of mates; more important are the positive, such as housing, work-conditions, selected culture, rearing, normalizing of life-conditions, transformation of stock-ability into current energy, exclusion of the able from public care, etc. No anthropologic race is to be excluded. But the science of anthropology is marked for a fundamental transformation. The author pleads for a combination of humanity with the needs of mass welfare.—*W. Browning.*

14328. **MUTEL. Les déhiscences normales lombo-sacrées.** *Compt. Rend. Assoc. Anat. France (Soc. Impress. Topog. Nancy)* 1926: 422-429. 11 fig. 1926.—Radiographs show that the non-closure of the neural arch in the cervical and sacral regions is normal in infancy. The cervical arch is completed at about 4 yrs. The sacral arches close around 10 yrs. In adults, dehiscence of the posterior arc of the atlas is very rare, and of the lumbo-sacral region more common. The author believes however that dehiscence in those regions where ossification is late, is a normal variation comparable to the fissures of the sternum and persistence of the frontal suture.

14329. **NOIR, J. À la Conférence Broca de la Société d'Anthropologie. Quelle est l'attitude normale de la tête chez l'homme?** *Concours Méd.* 51 (49): 3675-3676. 1929.—Each animal has an attitude of the head characteristic of the species. Comparison of 30 species of mammals and 20 species of birds shows that, without exception, the normal attitude of the head is such as to place the plane of the horizontal semicircular canal of the labyrinth actually parallel with the horizon. The human head seems at first to offer an exception, but this is only apparent, for the natural attitude of the head, in man, is inclined somewhat forward, like that of one absorbed in his task or his thoughts. The upright attitude of the human head is a forced one, which has produced a modification, at times pathological, of the cervical portion of the spinal column. This law of the natural attitude of the human head is of importance in anthropology, in which it has been difficult to establish a standard horizontal plane of reference and measurement of the skull. The alveolo-condylar plane of Broca, which is most generally employed, does not represent the normal attitude of the head in all races, since the orbital axes of different races (e.g., Europeans and Chinese) are differently placed. The discovery of a plane universal, not merely for the human race, but for all vertebrates, is of particular interest for paleontology, since it is an aid in determining the posture of extinct animals.—*Abstract from a paper by L. Girard.*

14330. **OETTEKING, BRUNO. Craniology of the Northwest Coast of North America.** *Atti XXII. Congresso Internaz. Americanisti* 1: 421-425. 1928.—Certain tribes of the northwest coast of N. America practice head deformation, which renders craniologic investigation difficult. The principal modes of deformation are the intentional anteroposterior (Cowichan, Chinook) and the cylindrical compression (Koskimo). The prevailing skull types in the undeformed are mesocranial and hypsicranial, while the face and orbit are of medium height with a tendency toward lepteny in the former and of hypsiconchy in the latter. The nose is chamaerrhinic at 47%, with a slight tendency toward narrowing. Mesognathy (ear-eye orientation) in the facial profilation, changes to decided prognathy in the alveolar region, which latter is quite characteristic in the mongoloid skull in comparison with the Mongol proper. Deformation of the kinds mentioned seems to be of more or less consequence in the morphology of the northwestern Indian skull outside of the directly changed cranial dimensions.—*B. Oetteking.*

14331. **OPPENHEIM, S., ADOLF REMANE, und W. GIESELER. Methoden zur Untersuchung der Morphologie der Primaten.** In: **E. ABDERHALDEN'S Handb. der biol. Arbeitsmeth. Abt. VII. Methoden der vergleich. morphologischen Forsch.** Heft 3, Lief. 236, p. 531-682. 6 pl., 69 fig. Urban & Schwarzenberg: Berlin, 1927.—The work is divided into 3 parts. Part 1 is by Oppenheim and deals with craniology, osteometry, and measurements in the flesh; part 2, by Remane, deals with dentition; part 3, by Gieseler, treats of the longer limb bones. In each section the various instruments and methods used in obtaining measurements and indices are described. In part 1, a scheme for comparing cranial sutures is included as well as methods for representing the skull and its parts graphically. Methods for measuring and obtaining indices of the scapula, sacrum, astragalus, and

calcaneus are given, as well as for obtaining comparative measurements of the trunk, head, and limbs in the flesh. Methods for the study of the structure, color, and shape of hair as well as for the study of friction ridges are included. In part 2, the importance of teeth in comparative morphology of primates is emphasized. A scheme for a numerical designation of teeth is given. 5 areas are recognized on the crown: the occlusal, lingual, labial (Buccal), mesial, and distal. For the tubercles, Osborn's nomenclature is employed. Methods for determining the planes and axes of the teeth are given; also for measuring the tubercles and the distance between them. Methods for obtaining root measurements are also included. From all these measurements, numerous indices are derived. The last section treats of the methods employed in dealing with the longer limb bones in anthropoids (chimpanzee, gorilla and orang-utan). Methods employed for man, as described by Martin, are used with modifications. The following bones are treated: humerus, radius, ulna, femur, tibia, and fibula. Detailed measurements are given as well as the methods for obtaining various indices.—*P. Okkelberg.*

14332. **PAN, N. Measurements of the pelvis in Hindu females.** *Jour. Anat.* 63(2): 263-266. 6 fig. 1929.—A record of measurements of the antero-posterior, transverse and oblique diam. of the pelvic inlet, cavity and outlet, made on the cadavers of 64 Hindu ♀♀. The Hindu ♀ pelvis averages 1 cm. less in all diameters than do British or American pelves. This is compensated by the smaller size of the Hindu child at full term, the average weight of 100 such being 5 lbs. 6¼ oz. and the biparietal head width being 1.25 cm. less than that of British and American children. Stature does not seem to influence the pelvic diam.—*J. P. McMurrich.*

14333. **PAPILLAULT. Étude anthropométrique de deux jumeaux monovitellins adultes. [Anthropometric study of two adult identical twins.]** *Bull. et Mém. Soc. Anthrop. Paris* 9(4/6): 177-180. 1928.

14334. **PAPILLAULT, GEORGES. Nouvelles études sur le gigantism.** *Bull. et Mém. Soc. Anthrop. Paris* 7(1-3): 73-79. 1928.—Observations on a case (J.) of gigantism and comparison with one (Ch.) previously (1899) studied by author. Subject was 1.93 m. in stature. Radiographs revealed no disturbances of pituitary, and genitals were normal in contrast to Ch. Case history showed abnormality in growth, health, and character (introvert). Heredity of subject throws light on his physical and mental features, but these are due ultimately to activities of endocrine glands. Head and trunk measurements of the 2 subjects are given and compared with the averages of 100 cadavers of Paris. Trunk in both subjects is relatively inferior in development while the legs are much longer in proportion. The segments of the legs, however, contribute to the total length in diverse proportions in the 2 subjects. The inter-membral index is lower compared to the normal. While head measurements revealed resemblances in the 2 cases, facial proportions showed profound differences, giant Ch. showing acromegalic tendencies. The author attributes these morphological differences to different physiological factors not yet determined.—*C. J. Connolly.*

14335. **PARISOT, PIERRE, et M. MUTEL. L'importance de la phalange unguéale dans l'identification de débris osseux.** *Rev. Méd. Est.* 57(6): 149-162. 3 fig. 1929.—Studies, before and after exposure to fire, of the distal phalanges of 12 adult skeletons, in relation to the general characters of each entire skeleton, lead to the conclusion that the human distal phalanx cannot be confused with the homologous bone from any lower animal; that the phalanx from a human adult is distinct from that of a child; but that there are no means of distinguishing sex by this bone.

14336. **PFUHL, WILHELM. Handbuch der Anatomie des Kindes. Band 1. Lief. 2: Topographische Anatomie und aussere Gestalt. [Handbook of anatomy of children. Topographical anatomy and external form.]** p. 191-320. 51 fig. Ludwig Graper: Jena, 1928. 18 M.

14337. **PITTARD, EUGÈNE,** (in collaboration with A. DONICI). **Répartition géographique dans le Royaume de Roumanie de quelques caractères anthropologiques.** *Mem. du Globe* 65: 49-114. 1926.—Stature and pigmentation are studied in the examination of 2583 individuals. The median height of Roumanian men is 1.66 m.; of the women 1.57 m. This average height, which exceeds the European average, is not due to a few exceptionally tall persons; it represents the true state of the population. The hair of most Roumanians is strongly pigmented, light hair being present in only 1.9%. Black hair, however, is not frequent (about 13%). More women are blond than men (4.9%). Red hair is rare. Pigmentation of the iris is represented by 2 nearly equal groups; one with little pigment (gray, gray-blue, etc.), the other with heavy pigment. Blue eyes are not abundant (12.14%). Fewer women than men have light or medium eyes, more have dark eyes (58.3%).—*E. Pittard (transl. by J. B. Bullitt).*

14338. **PITTARD, EUGÈNE** (with collaboration of **ALEX. DONICI**). **L'indice nasal des Roumains et sa répartition géographique dans le royaume de Roumanie.** *Bull. Soc. R. Romîne Geogr.* [*Bucharest*] 46: 1-30. 1927.—This study is based upon the examination of 2604 individuals. The mean nasal index for men is 70.11 (mesorhine), for women 68.6 (leptorhine). The distribution among the sexes is as follows: ♂♂, leptorhine 49.5%, mesorhine 47.8%, platyrrhine 2.7%. ♀♀, 6.4%, 37.5%, 1.1% respectively. The nasal dimensions of ♀♀ as compared to ♂♂ are: length 91.9: 100; breadth 89.5: 100. The article gives the distribution of the nasal index by provinces and by districts.—*E. Pittard (transl. by J. B. Bullitt).*

14339. **PITTARD, EUGÈNE. Contribution à l'étude craniologique des Boschimans (Dunes de Sables).** *Bull. et Mém. Soc. Anthrop.* [*Paris*] 7(1/3): 43-47. 1928.—♂ skulls among the Bushmen are dolichocephalic; ♀ mesaticephalic. The basibregmatic diam. is feebly developed. These skulls are chamaecephalic (Broca and Topinard). As regards prognathism the Bushmen of the Sand Dunes are mesognathic (Flower). Among individual skulls the ♂♂ are orthognathic more often than the ♀♀. Prognathism is rare among both sexes. The majority among both sexes are platyrrhine. The orbital indices of the ♂♂ fall almost equally in the microsemic and mesosemic classes. The megasemic types are most numerous among the ♀♀. Weight of skulls; ♂♂ 632.6 gr., ♀♀ 554.8 gr. Cranial capacity; ♂♂ 1343.89 cc., ♀♀ 1302.85 cc.—*E. Pittard (transl. by J. B. Bullitt).*

14340. **RAUTMANN, H. Muskelarbeit und Körperwachstum.** *Anthrop. Anz.* 6(2): 167-170. 1929.—Report of the 5th anniversary meeting of the German Medical Union for the promotion of physical exercise, in Cologne. **STIEVE,** though recognizing the importance of inherited tendencies, emphasized that growth can be markedly influenced by physical exercise, nutrition, and general external conditions. Physical exercise has little effect on bodily height, but markedly influences the width of the body. **SPITZY** discussed the effect of physical exercise on growth in children from the orthopedic point of view. He maintained that the majority of deformities of the vertebral column arise in childhood. **KAUP** opined that there are 2 marked increases in the intensity of growth, viz., in the fetal period and at puberty. The conditions during puberty form the body in a characteristic manner. **KOHLRAUSCH** discussed the effect of physical exercise on the adult human organism. Sport increases the elasticity of the skin and the thickness of the subcutaneous pads of fat. According to **RAUTMANN** it is possible to obtain a uniform objective understanding of human bodily growth by taking the characteristic relationship of length to width and depth. If the height of the body is taken as length, and the chest girth as the equivalent of width and depth, a series of variations are obtained which fall into definite groups, for which Rautmann has suggested the names leptosome, mesosome and pyknosome.—*H. Rautmann (transl. by J. M. Robson).*

14341. **RICHTER, H. Kurze Bemerkungen zur No-**

menklatur der Körperrichtungen. [Nomenclature of the body axes.] *Congrès Internation. X^e Zool. à Budapest 1927 Part 2.* p. 1533. 1929.—Abstract.

14342. **ROYSTER, L. T., and C. N. HULVEY.** The relations of weight, height and age in negro children. *Amer. Jour. Dis. Children* 38(6): 1222-1230. 1929.

14343. **SALTYKOW, S.** Zur näheren Kennzeichnung der einzelnen Konstitutionen. *Virchow's Arch. Path. Anat. u. Physiol.* 275: 616-637. 1930.—Types of body build based upon the following are shown in tables: body length, arm span in percentage of body size, trunk length in percentage of body length, arm length in percentage of body length, leg length in percentage of body length, chest circumference in percentage of body length, chest circumference in percentage of length of the anterior trunk wall, arm length in percentage of leg length, shoulder breadth in percentage of anterior trunk length, pelvic width in percentage of shoulder width, width index of the trunk and back, shoulder width in percentage of chest circumference, and anterior trunk wall length in percentage of posterior trunk length. The author divides his material into 17 types, ranging from asthenic through pyknic to adipose and lymphatic.

14344. **SCHEBESTA, PAUL.** Orang Utan: Bei den Urwaldmenschen Malayas und Sumatras. [Orang Utan: among the forest men of Malay and Sumatra.] 268p. 2 maps, 125 illus. F. A. Brockhaus: Leipzig, 1928.

14345. **SCHREIBER, OTTO.** Anthropologische Messungen an Neugeborenen. p. 676-690. Diss. Göttingen, 1928.

14346. **SCHULTZ, ADOLPH H.** The metopic fontanelle, fissure, and suture. *Amer. Jour. Anat.* 44(3): 475-499. 10 fig., 3 tables. 1929.—3 new cases of remnants of metopic fontanelles in adult human skulls are described. Certain measurements of these skulls are compared with corresponding dimensions in series of normal skulls. In one of the former skulls the left nasal bone is congenitally missing and the basioccipital bone shows a deep transverse fissure. This study includes an extensive review of the scattered literature on the subject. It is shown that the metopic fontanelle is a normal part of the bregmatic fontanelle in early fetal life, that it persists in about 15% of the cases to infantile life, and that traces of it are found in adult skulls from nearly every part of the world. Such remnants are more frequent in men than in women and are particularly common in certain Mongolian groups. Adult skulls with metopic fontanelle remnants ("metopic fissures"), as well as those with metopic sutures, are characterized by unusually broad foreheads and interorbital regions, but not by increased cranial capacities. Metopic fontanelles and fissures represent neither atavisms nor progressive variations, as has been claimed, but are due to an arrest in normal fetal development of the lower midsagittal region of the frontal bones.—*Author (courtesy Wistar Bibl. Serv.).*

14347. **SHAPIRO, H. L.** Contributions to the craniology of central Europe. 1. Crania from Greifenberg in Carinthia. *Anthrop. Papers Amer. Mus. Nat. Hist.* 31(1): 5-120. 1 map. 1929.—In this paper are recorded the results of an examination of 496 crania from Greifenberg in Austria, the main purpose of the author being an attempt to unravel the racial composition of the inhabitants of Central Europe. The paper is illustrated with tables of measurements for a comparative study of the various ethnic types of modern man. These crania displayed a high average cranial capacity. An analysis of their length-breadth indices showed that they were in the sub-brachycephalic class. The morphological features of these crania indicated a more intimate relationship to the brachycephalic Alpine type of Central Europe than to any other generalized type. The author concludes that there is a center for a brachycephalic type which may be termed Alpine, and which is represented by the crania from Danis in Switzerland. This type is spread over most of the Alpine area. On the borders of this area, however, are found certain deviations from the type, which, as far as the evidence from Greifenberg, Laas, Wurtemberg and Bavaria goes, are all in a similar direction.—*J. Cameron.*

14348. **SHEARD, CHARLES, and LOUIS A. BRUNSTING.** Optical measurements on the color of the skin as affected by race, environment, radiant energy and superficial blood. *Amer. Jour. Physiol.* 90(2): 515. 1929. —Abstract.

14349. **SHIMASAKI, YOSHIAKI.** Sur le diverticule de Nuck de la Japonaise. *Folia Anat. Japonica* 8(1/2): 63-78. 1929.—From the examination of the diverticula of Nuck of 25 ♀ cadavers and of 175 living women, the following conclusions were obtained: The diverticulum of Nuck persists more frequently in Japanese than in European women. Bilateral obliteration of the diverticulum is observed most frequently, persistence on the right side secondly, bilateral persistence thirdly, and persistence only on the left side most rarely. Persistence of the diverticulum is observed more frequently in the newborn and girl than in the adult. The diverticulum persists on the right side more than twice as often as on the left. In the adult the diverticulum is situated most frequently forward and inward from the round ligament of the uterus, but in the newborn and girl it is forward and outward from the ligament. In many cases the obliteration of the diverticulum is less complete in ♀♀ whose ovaries are not descended than in those whose ovaries have completely migrated. The average length of the diverticulum on the right side of the adult is 10.90 ± 1.55 mm., and that of the left 11.86 ± 0.84 mm. The average diameter of the abdominal orifice of the left diverticulum of the adult is 5.00 ± 0.34 mm., and that of the right diverticulum is 5.23 ± 0.20 mm.—*Author (courtesy Wistar Bibl. Serv.).*

14350. **STOLYHWO, [KASIMIR].** Zur Frage der Differenzierung der fossilen Menschenrassen. *Verhandl. Ges. Phys. Anthrop.* 2: 52-56. 1927.—Supraorbital ridges seem to be the most trustworthy character for classification. On this basis it is probable that 2 races existed during the Mousterian epoch: the Krapina race and the Neanderthal. An extensive chart showing these differences is included.

14351. **STEFFAN, PAUL.** Die Beziehungen zwischen Blutgruppe, Pigment und Kopfform. [The relationship between blood group, pigment and shape of the head.] *Zeitschr. Rassenphysiol.* 2(2): 57. 1929.

14352. **STEFKO, W.** Studien über die Konstitution in ihrer Anwendung bei der Berufsberatung. *Arbeitsphysiologie* 1(5): 377-395. 3 fig. 1929.—This is a psychological study according to the method of Rossolimo and an anthropometrical investigation of 2500 Russian youths from 14 to 18 yrs. old. They were classified into 3 groups: (1) the normal, subdivided into several typical groups; (2) those whose embryonic and growth development had been interfered with by adverse conditions; (3) those who were distinctly pathological due more especially to variations from the normal in the endocrine glands.—*T. M. Carpenter.*

14353. **STEGGERDA, MORRIS, JOCELYN CRANE, and MARY D. STEELE.** One hundred measurements and observations on one hundred Smith College students. *Amer. Jour. Phys. Anthrop.* 13(2): 189-254. 1929.—The 100 ♀ students were selected at random and ranged in age from 17 to 24 years. About ¾ of the individual measurements were purely physical, e.g., height, weight, span, head measurements, etc. The others pertained to studies of finger prints, teeth, eye color, etc. A mean, a standard deviation, and a coefficient of variation were given for each measurement, along with the frequencies and distributions. In this paper all data obtained are presented; data from other investigators are shown for comparison with those used for this study.—*Author (courtesy Wistar Bibl. Serv.).*

14354. **SUOMINEN, Y. K.** Physical anthropology in Suomi (Finland). *Jour. Roy. Anthrop. Inst. Gr. Britain & Ireland* 59 (Jan.-June): 207-230. 1 map, 2 pl. 1929.—The paper is based chiefly upon the research of Finnish authors. With the reservation necessary in the question of race, the author states: (1) The present Baltic Finns

are a distinct European race, which, as regards height, and color of hair and eyes, most nearly resembles the Nordic race, but from which it differs in greater degree of brachycephaly and also in other respects. For this reason it may be easier to distinguish it as a special East-Baltic race collateral with other European races such as the Nordic, Mediterranean, Alpine, Dinaric, etc. (2) Linguistically the Finno-Ugrian languages form their own entity, the relationship of which with other language-groups is still vague regarding several points and, in any case, so distant that such relationship can hardly have any "racial" importance. Theories have been stated regarding the possible distant relationship of the Finno-Ugrian languages as well with Indo-Germanic as with Turco-Tartarian.—*Y. K. Suominen.*

14355. TALKO-HRYNCEWICZ, J. Les habitants autochthones contemporains de la région de Cracovie. Étude anthropologique. *Bull. Internat. Acad. Polonaise Sci. et Let. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. II [Zool.]* 1928(3): 251-262. 1928(1929).—The thickly settled districts within a radius of 45-50 km. around Cracow afforded the material for this study, comprising 351 individuals, of whom 265 were ♂♂ and 86 ♀♀ of an average age of 28 yrs., while the greater number of them (66.7%) were from 21 to 25 yrs. The numerous somatic and somatometric observations brought to light the occurrence of the mongolian fold in 11.1% (Cassoubes), and here again more frequently in the children, as is the case with the Mongol proper, of protruding cheek bones in 60.4%, and of flat faces and occipita. The cephalic index ranges from 75.8 to 94.4 in the ♂♂, and from 76.9 to 95.4 in the ♀♀, averaging 85.1 in the former and 86.1 in the latter. The population of Cracow and of the Carpathian mountains is thus seen to be the most brachycephalic of Europe. Men as well as women have narrow and high foreheads, rather low and broad faces, and strongly developed lower jaws. They are of submedium stature; the hair color is chestnut in both, while the eye and skin color, bluish and light in men, is brownish and darker in women.—*B. Oetteking.*

14356. TAVARES, AMANDIO. Sobre metopismo. [Metopism.] *Arq. Anat. e Antropol.* 11(1): 1-48. 1927; Also as **Sur le metopisme.** *Compt. Rend. Soc. Biol.* 97(26): 876-877. 1927.—In regard to the morphologic significance of the persistence in the adult of the metopic suture, the generally accepted view is to attribute it to exaggeration of intracranial pressure due to the rapid development of the frontal lobes of the brain, thus causing a retardation of the ossification of the sutures by a mechanism analogous to that of hydrocephalus. Some wormian bones are present in most of the metopic examples observed, a fact which has led to comparison of the persistence of the suture and the appearance of the wormian bones in the anterior sutures of the vault, indicating the so-called osteogenetic insufficiency. The author has observed the synostosis delayed in the metopic suture compared with the other sutures in the examples of the series. Of these, 19 showed asymmetric metopism and 10 showed the caput cruciatum arrangement.—*A. Tavares (transl.).*

14357. TAVARES, AMANDIO. Sur les éminences basilaires de l'occipital. *Bull. Soc. Portug. Sci. Nat.* 10(10): 105-124. 10 fig. 1927.—The author examined 549 occipitals and only in 1.45% was a median basilar eminence (3rd condyle) encountered. Uniting these observations with those of several authors, out of 2058 occipitals, 0.97% were found to have the 3rd condyle. The percentage of presence of the median basilar eminence is less than that of the lateral basilar eminences. The author reviews the literature in detail, provides 9 fig. showing the ventral aspect of the skull, and discusses similar eminences in the skulls of other mammals.

14358. TAVARES, AMANDIO. Sur les éminences basilaires de l'occipital. *Compt. Rend. Assoc. Anat. France (Soc. Impress. Topog. Nancy)* 1926: 534-541. 2 fig. 1926.—Preliminary paper. Findings on the occurrence of a 3rd condyle, based on the examination of 528 occipital bones are given. The types of occurrences are described and possible significances and analogies are discussed.

14359. THOMPSON, HELEN. A measuring-board for infants. *Amer. Jour. Phys. Anthrop.* 13(2): 281-286. 4 fig. 1929.—The article describes a device which preserves for infant anthropometry the technique used in measuring adults and which at the same time respects the infant's intolerance of restraint and manipulation.—*Author (courtesy Wistar Bibl. Serv.).*

14360. TRATMAN, E. K. Notes on the human teeth and jaws from Kilgreany. *Univ. Bristol Proc. Spelaeolog. Soc.* 3(3): 134-136. 1929.—A report on Pleistocene remains from a cave in Ireland, with particular reference to pathology.

14361. TROTTER, MILDRED. The vertebral column in whites and in American negroes. *Amer. Jour. Phys. Anthrop.* 13(1): 95-107. 1929.—The ventral, middle, and dorsal vertical diam. or heights were measured on the movable vertebrae of the column in a series of 139 skeletons of whites and American negroes. 2 measurements were taken, also, on the base of the skulls of the same skeletons: the length of the basi-nasion and the length of the parachordal portion. The differences in length between the corresponding segments are not significant; however, the differences in length of the combined segments are more marked, being quite significant in the white ♂ group and indicating a cumulative effect. The variability is greater in the negroes than in the whites of the ♂ series, while in the ♀ series the whites are more variable than the negroes. A tendency for the columns of the ♀♀ to show less curvature than those of the ♂♂ is present in both races. In the lumbar segment the indices of the individual vertebrae are quite similar for the ♂♂ in both races, while a marked difference is present in the ♀ series. A positive correlation was found in length between all the movable segments in both sexes of both races, but no correlation could be found between the total length or the length of the parachordal portion of the base of the skull and the column in this series.—*Author (courtesy Wistar Bibl. Serv.).*

14362. TSCHERMAK, A. Beitrag zur Konservierungsweise und Rassendiagnostik ägyptischer Mumien. *Med. Klin.* 25(41): 1588-1589. 6 fig. 1929.—The author believes that the racial characteristics in Egyptian mummies are often greatly obscured, so far as the soft parts are concerned, by artificial appearances due to the method of preparation, and that much remains to be learned from them by x-ray studies of the skulls. He shows exterior views and roentgenograms of a mummy that he studied.

14363. VARIOT, M. G. Remarques sur la ressemblance apparente complète de deux jumeaux unisexués et vraisemblablement uniovulaires agés de 17 ans. Réflexions sur les variations du poids des enfants à la naissance. [Apparently complete resemblance of two 17 yr. old twins, presumably identical.] *Bull. et Mém. Soc. Anthrop. Paris* 9(4/6): 173-177. 2 portraits. 1928.

14364. VERSCHUER, O. v. Zur Frage der Asymmetrie des menschlichen Körpers. *Zeitschr. Morph. u. Anthrop.* 27(2): 171-178. 5 fig. 1929.—Observations on numerous cases of asymmetry in a large collection of single-ovum and double-ovum twins lead to the conclusion that in the former one may differentiate 3 groups of asymmetries: those which are found in practically the same manner in both twins (e.g., situs viscerum); those which often are mirror images or unlike in the 2 members of a pair (e.g., handedness, position of testicles); and those which in the partners of a single-ovum pair are the same or varied in about equal frequency (e.g., palmar ridges). The explanation for the different relations of these 3 groups of asymmetries seems to lie in the time of determination of the asymmetry. The earlier in ontogenetic development the character is determined the more likely it is to be produced alike in both twins of a single-ovum pair, and the later in development the character is determined the more likely its manifestation is to be modified by external influences

such as conditions of intrauterine development.—*O. v. Verschuer (transl. by W. J. Atwell).*

14365. **VERSCHUER, v. Demonstrationen zur Zwillingsanthropologie.** *Verhandl. Ges. Phys. Anthrop.* 4: 67-74. 11 fig. 1930.—Effects of environment on human development are shown by photographs of uni-ovular twins and by curves of weights and heights of twin pairs. Hypsicephaly and marked asymmetry of the skull are induced by mechanical effects of twin pregnancy; twins at first very similar may come to appear quite different as a result of spinal curvature in one of the pair.—*v. Verschuer (transl. by C. H. Danforth).*

14366. **VIOLA, DOMENICO. Contributo statistico allo studio del rapporto fra la misura della grande apertura delle braccia e quella della statura. [Statistical study of the relation between spread of arms and height.]** *Boll. Soc. Med.-Chir. Pavia* 44 (2) : 335-345. 1930.—In 932 of 1000 persons, mostly Lombards, over 20 yrs. old, the spread of arms was greater than the height. The excess of arm spread over height, when greater than 9 cm., was frequently, yet not exclusively, associated with adenoidism and with delicate constitution.

14367. **WATERMAN, HARRIET CUTLER. Studies on the evolution of the pelvis of man and other primates.** *Bull. Amer. Mus. Nat. Hist.* 58 (12) : 585-642. 1 pl. 10 fig. 1929.—Dissections of the pelvic region were made in certain lemurs, New World and Old World monkeys, anthropoid apes, and man with a view to determining the relation between the form of the pelvis and the function of the muscles attached to it. The results of the investigation are summarized through 2 lists—a list of the habitus and heritage characters in the ilium and ischium of the animals (*Lemur, Galago, Perodicticus, Cebus, Alouatta, Macacus, Lasiopyga, Papio, Hylobates, Pan, Pongo, Gorilla*) studied, and a list of the habitus and heritage characters in the musculature of the main groups (*Lemuridae, Lorisidae, Cebidae, Cercopithecidae, Simiidae, Hominidae*). The study supports Gregory's (1920) conclusions that the pelvis of bipedal man has been derived from that of primitive arboreal quadrupeds through earlier upright sitting stages and a later brachiating stage.—*H. C. Waterman.*

14368. **WEIL, ARTHUR. Measurements of cerebral and cerebellar surfaces. Comparative studies of the surfaces of endocranial casts of man, prehistoric men, and anthropoid apes.** *Amer. Jour. Phys. Anthrop.* 13 (1) : 69-90. 9 fig. 1929.—The surfaces of endocranial casts of men from 5 living races, 5 prehistoric men, and 4 anthropoid apes were measured with a new method. The values found were combined with linear measurements, and 22 indices were calculated. Compared with the cast of a European man as "standard" 100, the mean values of these 22 indices were for the representatives of living races: Mashona, 99.5; Japanese, 98.9; Andaman Islander, 99.3; Australian, 99.9. The corresponding numbers for the endocranial casts of prehistoric men and anthropoid apes were: Piltdown man, 97.2; Predmost man, 95.0; Rhodesian man, 94.6; La Chapelle-aux-Saints man, 93.4; Trinil man, 91.8; gorilla, 91.5; orang-utan, 88.3; chimpanzee, 86.1; gibbon, 84.2. The measurements of the cerebral surfaces did not support the theory of a marked asymmetry of both hemispheres. Only in the Piltdown man this difference was 5.4%; the reconstruction of more than 50% of the total surface of the cast may be responsible for this gross difference. The frontal part of the casts was best developed in specimens of living races measuring 28-31% of the total surface of the cap of the cast. The corresponding numbers were 27% in the reconstructed Piltdown cast, 21-25% in the casts of the other prehistoric men, and 17-20% in the casts of the 4 anthropoids.—*Author (courtesy Wistar Bibl. Serv.).*

14369. **WEINERT, HANS. Über die Lage des Basion am neuzusammengesetzten Moustierschädel. [The position of the basion in newly assembled Moustrian crania.]** *Zeitschr. Morph. u. Anthrop.* 28 (3) : 345-346. 1930.

14370. **WESTHUYZEN, G. C. A. van der. An account of anthropometrical and anthroposcopical observations carried out on male students at the University of Stellenbosch.** *Ann. Univ. Stellenbosch, Sect. A* 7 (5) : 1-64. 1929.—This investigation is the first of its kind carried out on Europeans in S. Africa and highly interesting results are recorded. The results were obtained by measuring some 128-130 individuals more or less completely. The distribution of these individuals over the 4 Provinces of the Union and Rhodesia were as follows: Cape 104; Transvaal 12; Orange Free State 11; Natal 0; Rhodesia 1. The simian fold was present in 6.7% of all the hands examined. It is probable that this fold is widely distributed in all races of mankind, although this point has, strangely enough, evidently received little attention from investigators. The mongolian folds have a low percentage incidence as would be expected. A noteworthy point is the rather large percentage incidence of epicanthus. Other interesting features are the meso-chamaetapeinocephalic head form, the moderate broadness of the face and of the root of the nose, which in itself is coupled with a relatively preponderant leptorrhiny while the face in general seems to be of a leptoprosopic character. The stature of the individuals places them amongst the tall races of man.—*P. A. van der Byl.*

14371. **WELLISCH, S. Die zahlenmässigen Rassenanteile der Deutschen.** *Zeitschr. Rassenphysiol.* 3 (3/4) : 117-120. 1931.—The author concludes that both from a serological and anthropological point of view the German race is not a unit. He states that the populations in various parts of Germany resemble their adjacent anthropological types found in Europe.—*P. Levine.*

14372. **WESTENHÖFER, M. Der Gang des Gibbon in Beziehung zum Menschenfuss. [Gait of the gibbon in relation to the human foot.]** *Zeitschr. Säugetierk.* 3: 278-283. 1 pl. 1928.

14373. **WILDER, INEZ W. The morphology of the palmar digital triradii and main lines.** *Jour. Morph. and Physiol.* 49 (1) : 153-222. 7 pl., 20 fig. 1930.—A study is made of the morphological types of the 2nd, 3rd and 4th interdigital patterns of the human palm and their differential occurrence as a basis for determining the morphological significance of the digital triradii and main lines, which are the final remnants of the pattern boundaries. Certain types of patterns show a large preponderance, with a correspondingly large percentage of a certain morphological value for each digital triradius, although other morphological possibilities than the usual one are discovered in each case. Correlated combinations of rare patterns are presented and their hereditary nature discussed.—*Author (courtesy Wistar Bibl. Serv.).*

14374. **WISSLER, CLARK. Growth of children in Hawaii; based on observations by LOUIS R. SULLIVAN.** *Bayard Dominick Expedition Publ.* 17. 256p. 4 fig. 1930. Pr. $2.—In 1920 the following measurements were made upon more than 8,000 children attending school in Honolulu: weight, stature, span, head length and width, minimum frontal face width, anatomical face height, bigonial diameter, nasal width and height, ear length and breadth; in addition, skin color, hair form, texture and color, eyefold, nose bridge, nasal profile, axis of the nostrils, septum, forehead, glabella, lips, chin and ears were checked according to the accepted standards. The race groups represented are Hawaiian, Chinese, Japanese, Korean, N. European, S. European and mixed Hawaiian. Under each race group are averages for each age from 6 to 18 yrs. for each measurement and character ratings —67 tables in all. These tables present comparative data on race groups, and the changes in dimensions and characteristics due to growth. Sex differences are recorded in the growth tables for all measurements. As a rule girls lead in rate of growth during the earlier years, to be overtaken by the boys later, shown in the crossing of the growth curves for girls and boys. However, the growth curves for head width, head length, relative span, and transverse fronto-parietal index do not cross, but tend to be parallel. The above holds for all the race groups. In general the growth curves for each character show no essential race difference in pattern. Some of the

changes from child to adult are an increase in the magnitude of size measurements: in the case of indices, those for relative span, anatomical face, cephalo-facial and transverse fronto-parietal increase in childhood and youth, whereas the relative sitting height, cephalic index, zygomatico-frontal, nasal index and ear index, show a decrease; the zygomatico-mandibular index remains fairly constant. Among the qualitative characters straight hair decreases in frequency in all race groups: in hair color the Hawaiians and Europeans darken with age, the Chinese, Japanese and Koreans tend toward brown; the epicanthic fold declines in frequency and prominence; nose bridge from low to high; axis of the nostrils from transverse to antero-posterior; lips from thin to thick.—*C. Wissler.*

14375. **WOO, T. L. A study of seventy-one ninth dynasty Egyptian skulls from Sedment.** *Biometrika* 22(1/2): 65-93. 5 pl. 1930.—Individual measurements, means, and type contours are given. The series is not more variable than in other Egyptian dynasties. Judged by the coefficient of racial likeness it is most like the 4th and 5th dynasty Egyptians from Deshasheh and Medum and the modern Cretans. It has a higher cephalic index, a greater height, and a higher height-length index than any other early Egyptian type. These divergences are in the direction of the modern Cretan type.—*J. R. Miner.*

14376. **WOOD JONES, FREDERIC. The Tasmanian skull.** *Jour. Anat.* 63(2): 224-232. 4 fig.; **The Australian skull.** *Jour. Anat.* 63(3): 352-355. 3 fig. 1929.—Outline drawings of the normae lateralis, facialis, verticalis, and occipitalis were made of 90 skulls of each race, 480 points were measured, and 24,000 measurements of the Tasmanian skulls, and 40,000 of the Australian skulls are available for mathematical treatment. In the Tasmanian skulls the contours are well rounded, not angular, the temporal fossae are well filled, the forehead and cranial vault are not low and narrow, the sutures are simple, the metopic is present in 3 cases, narial margins and nasal bones are "infantile," styloid process is absent, teeth are large and well rooted, and palate is roomy. The cranial capacity is 1353.09 cc. Sexual differences are not given. The Tasmanian has heretofore been given a lower place in the human scale than the character of his skull warrants. The Australian skull is markedly dolichocephalic, narrow in the parietal and temporal regions, low and narrow in the frontal but wide in the facial region, with great prognathism, long nasal bones not upturned, "infantile" rounded orbits, large teeth and palate. Cranial capacity 1290.09 cc. Tasmanian and Australian cannot be called the same race.—*R. B. Bean.*

14377. **WOOLLARD, H. H. The cutaneous glands of man.** *Jour. Anat.* 64(4): 415-421. 1930.—The frequency of occurrence of apocrine and epicrine glands in the axilla, the mammary, pubic and circumanal regions in the bodies of 2 ♂ Australian aborigines was studied. The percentage of apocrine glands in the mammary and pubic regions show variations the directions of which do not mutually accord. The method used has too many sources of error to make the numerical values of much importance. In the pubic region, where differences are greatest, the racial order so derived would advance the Australian aboriginals in front of the whites. The large circumanal glands in Australian aboriginals are regarded as the equivalent of the circumanal glands of European anatomy. If circumanal glands are few and scattered in the white, and if they are of the same type though more frequent in the negro, then the large circumanal glands of the Australian aboriginal may be a character of some racial importance. This latter conclusion is rejected.

14378. **WOOLLARD, H. H. The growth of the brain of the Australian aboriginal.** *Jour. Anat.* 65(2): 224-241. 3 pl., 4 fig. 1931.—Study of the brain of an Australian aboriginal ♀ and her infant, both dead in childbirth, indicates that the brain of the Australian aboriginal fetus in its general conformation resembles the fetal brain of the white. The extreme dolichocephaly of the adult is due to later unequal rates of growth. The dimensions of the cortical fissures in the principal areas of the adult brain indicate that absolutely and relatively the occipital area is the most developed; that the parietal and frontal areas are moderately developed, the frontal, however, falling behind that of the white; while the temporal area lags very far behind that of the white. Comparison of the dimensions of the fissures in the aboriginal fetus and adult indicate the precocious development of the occipital area and its relatively great extent. The backwardness of the temporal area is also evident. It may be said then that the occipital area is the most important neural basis for symbolic formulation in the aboriginal cortex. The order of development in the principal cortical areas in man is first the visual area, later the temporal area; with each of these is correlated expansion in the parietal and frontal areas; the frontal area is the last of all to show its characteristic human development. The histological examination of the cortex shows that the degree of cell stratification is less well established than in the white brain except in the visual area. Everywhere the cerebral cortex is thinner than in that of the white except in the visual area. Though a sulcus lunatus may be absent, the striate area extends onto the lateral occipital cortex. The number of cells in the aboriginal cortex is both absolutely and relatively fewer than in the white cortex. The facts elicited afford at least an approximate neural basis for the cultural level of the Australian aboriginal as well as an explanation of his special aptitudes such as those based on visual symbolization.—*Author's summary.*

14379. **WYNKOOP, ELIZABETH M. A study of the age correlations of the cuticular scales, medullas, and shaft diameters of human head hair.** *Amer. Jour. Phys. Anthrop.* 13(2): 177-188. 7 fig. 1929.—In this study 483 specimens of the head hair of humans, representing 82 individuals and ranging in age from 3 hrs. to 91 yrs., were used. Shaft diameters, scale widths and indices were measured, and the morphological types of the medullas determined ocularly—all under the microscope. The writer concludes that: The morphological type of the medullas of human head hair is not determined by the age of the individual, but is definitely correlated with the diameter of the hair shaft. The relative sizes of the cuticular scales (referred to as scale index) bear no relation to the age of the individual, but vary inversely with the diameter of the hair shaft. The hair-shaft diameter bears little or no relationship to the age of the individual, though there seems to be a rough correlation (subject to wide variation within limits) with age group of individuals, reaching maxima in the age groups 10-20, 40-50, and 90-100. Wide variations of hair-shaft diameter are frequently found in the same scalp. The relationships between medullary form and cuticular-scale size (and index), and diameter of hair shaft, already suggested by earlier studies cited, are further substantiated in this present study, in which an entirely new series of hair samples was used.—*Author (courtesy Wistar Bibl. Serv.).*

14380. **WURZINGER, ST. Vergleichende Entwicklungstudien an Säuglingen und Kleinkindern.** *Klin. Wochenschr.* 8(13): 594-596. 1929.—Anthropometric studies (with the method modified by Martin) were made of 111 boys and 100 girls up to 18 mos. old in a Munich asylum. From the statistics gathered, it is evident that even at the youngest age period there is a difference between the sexes as regards height, weight, circumference of chest, head and thigh, as well as breadth of the shoulders. With the single exception of the thigh circumference, all measurements were greater for boys than girls, at all age periods.—*St. Wurzinger (transl. by T. C. Hempelmann).*

VERTEBRATE EMBRYOLOGY

CARL HARTMAN, *Editor*
C. F. DE GARIS, *Associate Editor*

(See also in B. A. 6(4): Entries 9367, 9452, 9567, 9653, 10139, 11263, 11281, 11289, 11321, 11358, 11375, 11397, 11445, 12065; and in this issue 12093, 12466, 12503, 12533, 12546, 12581, 12583, 12585, 13094, 13112, 13353, 13354, 14297, 14345, 14346, 14365, 14380)

DESCRIPTIVE

14381. **BECCARI, NELLO.** Organo del Bidder e sessualità nei bufonidi. [Bidder's organ and sexuality in toads.] *Boll. Soc. Ital. Biol. Sper.* 3(5): 660-662. 1928.—Completing an earlier study of the development of Bidder's organ in *Bufo viridis* (Arch. Ital. Anat. e Embriol., 1926), it has been shown that this organ also persists in the ♀ after metamorphosis. Morphologically it does not appear because it remains included in the ovary. It can not be considered an ordinary ovary, but rather a larval progonad. Its presence would represent the manifestation of an early femininity predominating in all individuals at the commencement of development. —*N. Beccari (transl. by P. Popenoe).*

14382. **BEZDÍČEK, JIŘÍ.** Mesenchym amnia u ssavců a ptáků a jeho diferenciace. [Differentiation of the amniotic mesenchyme of mammals and birds.] *Spisy Lékarské Fak. Masarykovy Univ. Brno (Publ. Fac. Med. Brno)* 6(59): 1-60. 26 fig. 1928.—The cytological changes of the mesenchyme of pig embryos from 8 mm. to birth were followed and described as were those for the chick also. The cells of the mesenchyme change into fibrocytes before they become connective cells.—*From German summary by C. S. Simkins.*

14383. **BOENIG, HORST.** Studien zur Morphologie und Entwicklungsgeschichte des Pankreas beim Bachneunauge Lampetra (Petromyzon) planeri. [Morphology and development of the pancreas in the lamprey.] *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschr. Mikrosk.-Anat. Forsch.* 8(3/4): 489-511. 3 pl., 4 fig. 1927.

14384. **JOKL, ALEXANDER.** Vergleichende Untersuchungen über den Bau und die Entwicklung des Glaskörpers und seiner Inhaltsgebilde bei Wirbeltieren und beim Menschen. Dissertation. 249p. 44 pl. 18 fig. Almquist und Wiksell: Upsala, 1927.—This comprehensive paper begins with a discussion of the special technique used. The following sections describe the development and structure of the vitreous body in selachians, teleosts, ganoids, amphibians, reptiles, birds, mammals, and man: *Acanthias vulgaris, Torpedo ocellata, Salmo salar, (Lota vulgaris, Syphonostoma typhle, Caregolus lavaretus, Liparis montagui) Amia calva, Lepidosteus osseus, Triton cristatus, T. alpestris, Rana temporaria, Tropidonotus natrix, Vipera berus, Lacerta muralis, Alligator, Gallus domesticus, Columba domestica, Bos taurus.* Each section gives a detailed historical account of previous investigations, followed by the results of the author's own investigation. Original work has been done by the author on at least 1 member of each group of vertebrates. The last part of the paper deals with various disputed questions related to the vitreous body. The author comes to the following conclusions:—(1) the fibrils composing the vitreous body arise first as protoplasmic processes from the cells of the lens and retina and are, therefore, ectodermal in origin; (2) mesodermal cells may appear later among the primary ectodermal fibers; (3) the processes of both ectodermal and mesodermal cells become finer and appear like faintly staining fibers, giving a more openwork appearance to the tissue; (4) the fibers of the suspensory ligament of the lens arise from a fine membrane on the surface of the ciliary body and are not connected with the ciliary epithelium; (5) the anterior vitreous body is formed by processes from cells of all the surrounding structures; (6) in early embryonic stages and in the lower vertebrates the fibers of the vitreous body form a network, in mammals and man the network is lacking; (7) the interfibrillar substance is gelatinous in nature; (8) a hyaloid membrane is present in all the animals investigated and arises from the outer layers of the vitreous body independently of any cells. Other subjects discussed are the choroid fissure, the papillary process, blood vessels and cells of the vitreous body. At the end of the paper is an extensive bibliography (over 800 titles).—*H. W. Kaan.*

14385. **JOUBIN, L.** Les métamorphoses des animaux marins. 270p. 71 fig. 1926. Ernest Flammarion: Paris.—This is a semi-popular account of the larval histories of marine metazoa. It does not attempt any discussion of cell-lineage or of the more technical phases of development, but treats the larval life-stages of the groups as successive members of the plankton. Many of the characteristic types are figured.—*H. B. Baker.*

14386. **KOLMER, W.** Kapillaren im Epithel des Jacobson'schen Organs und einige andere Beziehungen von Gefässen zum Epithel. [Capillaries in the epithelium of Jacobson's organ, and some relations of vessels and epithelium.] *Anat. Anz.* 65(19/20): 321-327. 5 fig. 1928.

14387. **LANDACRE, F. L., and H. M. AMSTUTZ.** Data on the number of somites compared with age in the white rat. *Ohio Jour. Sci.* 29(6): 253-259. 1929.—The evidence indicates that the number of somites is not constant for embryos of a given age, estimated from the time of deposition of the sperm plug; and it is inferred that in the growth and differentiation of a particular structure when compared with a standard such as age, length, weight or number of somites, a wide range of variation might be encountered.—*C. J. Pierson.*

14388. **KRÜGER, WILHELM.** Die vergleichende Entwicklungsgeschichte im Dienste der Lösung des Homologisierungsproblems an den Darm- und Gekrösabschnitten des Menschen und einiger Haussäugetiere (Hund, Katze, Pferd, Schwein und Wiederkäuer). *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 90 (3/4): 458-548. 63 fig. 1929.—An extensive study on a large number of specimens of various species of mammalia, with plates made from dissections. That there is a single principle for the development of the mesentery in all mammals is more readily understood by considering the digestive system to be separated into 2 parts: a cranial portion, the stomach and duodenum, and a caudal portion, the remainder of the canal. The stomach appears as a sagittal spindle from the wall of which there is an out-pocketing either to the dorsal and left or to ventral and right side. This results in a V-formed sack with a greater and a lesser curvature. The stomach rotates 90° with simultaneous rotation of pyloric region forming an angle to the body axis. In horse, pig and ruminants, the stomach is at almost right angles to body axis. In animals with relatively simple and small stomachs, this rotation results in an approximately transverse position in the body. The rotation changes the position of the pars cranialis duodeni in horse, pig, carnivora and man. The principal for the remainder of the intestine is dependent upon frontal ventral loop of the intestine at the level of the aperture to the yolk sac and its rotation around a dorsoventral axis, the arteria mesenterica cranii. This rotation may start from the base of the loop and twist the cranial limb in horse, carnivores and man. It may involve the whole loop in pig, or it may start from both points in ruminants. The amount of rotation can be 360°, in which the flexura duodenojejunalis may be rotated from the right side caudal to the left of the artery and come to lie cranial to it. The flexuria coli I. does not appear so active as the flexura duodenalis. In carnivora, horse and man, it is shifted a little to the left and cranially, so that it lies to the left and cranially to A. mesenterica cranialis. The ascending colon is different, for the cecum

is to the right and caudal to the artery. The rotation can be less than 360° or it can be even more, 540°, as in the pig. In this animal, the flexura coli I. lies in the median line and cranial to the artery. The ascending colon as well as the descending colon may increase markedly in length. In ruminants, pig and horse, the ascending colon is long; in horse the descending colon is long. The mesentery may fuse with the body wall as does that of the duodenum in pig and man; or the cecum in horse and pig; or the ascending colon in pig, ruminants, and man; or the transverse colon in which there is partial fusion in pig and ruminants; or the descending colon in ruminants and man.—*S. P. Miller.*

14389. LAMBERTINI, GASTONE. Studio comparativo sulla formazione dei villi. *Arch. Ital. Anat. e Embriol.* 26(3): 401-416. 2 col. pl. 1929.—The development of the intestinal villi was studied in larvae of *Rana esculenta* and in fetuses of the guinea-pig and of man. The epithelial cells toward the apices of the villi are at first, especially in the guinea-pig, high and pyramidal in form, with their nuclei near the free surfaces; at the sides they become lower and in the infundibular regions (the future intervillous spaces) they may have the appearance of an invagination. The formation of the villi is due to the proliferation of the connective tissue of the mucosa keeping pace with that of the epithelium and is an example of the morphogenetic factor termed by Ruffini stichotropism.—*A. Mannu (transl. by J. P. McMurrich).*

14390. LAMBERTINI, GASTONE. Studio istologico sulla struttura della vescicola ombelicale negli embrioni umani. [Histological study of the structure of the umbilical vesicle in human embryos.] *Arch. Ital. Anat. e Embriol.* 26(4): 493-527. 9 fig. 1929.—Eleven human embryos 1-3 mos. old were the material for this study. Examined with a lens the glandular nature of the vesicle is suggested by the occurrence of minute bodies resembling cysts. The external splanchnopleural endothelium is 1-layered, its cells being of the cubical type and containing lipoid vacuoles. The inner epithelial lining is in general simple, in some areas high and regular, in others cubical or flattened. Into the intermediate layer the epithelial buds observed by Tourneux project, becoming transformed into cysts or utricles with a single-layered epithelium. These utricles vary in development; their lumina vary in size, there epithelial cells are cubical in form and show evident signs of secretory activity. In the first period of its development the yolk sac is a hematopoietic and nutritive organ; in the second stage it may be an organ of internal secretion.—*J. P. McMurrich (from abstract by A. Mannu).*

14391. ORBAN, B., und E. MUELLER. Die Entwicklung der Bifurkation mehrwurzeliger Zähne. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 90(1): 115-128. 25 fig. 1929.—Graphic reconstruction of serial sections of developing molars of rats show that the bifurcation is determined before coronal development is completed. The roots are first outlined by eccentric peripheral enlargement of the basal opening of the tooth-germ (enamel organ). In this eccentric growth certain portions of Hertwig's epithelial sheath remain relatively fixed, though later these projections enlarge and unite to form the bifurcations. There is no epithelial downgrowth. The epithelial sheath is a fixed level from which the tooth-germs grow toward the oral cavity.—*S. W. Chase.*

14392. RAPOSO, LUIS SIMOES. Quelques observations sur la gastrulation chez les Urodèles. La gastrulation des oeufs de Molge waltii, Michah. *Arch. Portug. Sci. Biol.* 2(1): 22-83. 1 pl. 1927.

14393. SCHWARZ-KARSTEN, HANS. Über die Entwicklung des Lymphgefässsystems in der Halsgegend bei Cavia cobaya. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 87(5/6): 781-797. 18 fig. 1928.—After studying serial sections and making wax reconstructions of vascular channels in the region of the neck of guinea-pig embryos, the author concludes that the lymph vessels of the cervical region grow out directly and centrifugally from the veins. They arise in segmental series, of which only the lower two develop further, while the upper segmental branches degenerate. These early lymphatics become transformed into the jugular lymph sac, from which channels subsequently grow out and spread to the periphery of the body. Nowhere did he observe the formation of lymph vessels from mesenchymal spaces; although he does not deny positively the participation of such spaces in the earliest stages of genesis of the thoracic ducts and lymph sacs.—*O. F. Kampmeier.*

14394. STUMP, C. WITHERINGTON. A human blastocyst in situ. *Trans. Roy. Soc. Edinburgh* 56(1): 191-202. 10 pl. 1928-29. (1929).—A study of an early human blastocyst in situ, giving a minute description of an embryo of a pre-somite stage. It is an important contribution to the study of early human development, and the specimen ranks in importance with the Hugo, Miller, Mateer, and De Beyre specimens. Comparisons are made with the latter examples.—*P. L. Risley.*

14395. TÜMA, VLADIMÍR. Příspěvek k seznání ochranných zařizení v placentě essavči. [Protective mechanism of the placenta in mammals.] *Rozprawy České Akad. Věd a Umění* 36: 1-5. (číslo 12) 2 pl. (1 col.) 1927.

14396. WINIWARTER, H. de. Origine du tissu interstitiel. *Arch. Anat. Microsc.* 25: 75-86. 1 fig. 1929.—The interstitial cells in the ovary of the dog almost as soon as formed, become loaded with lipoids; they are easily distinguished from the epithelial formations, especially the medullary cords which contain no lipoid, at least until much later. In the dog, as in the cat, the interstitial tissue is plainly of connective tissue origin. The derivation of the interstitial tissue from the epithelium is based on inadequate material and confusion with the degeneration phenomena in the medullary cords. Experiments with tissue cultures lead to the same conclusion.—*H. de Winiwarter (transl. by C. S. Simkins).*

EXPERIMENTAL

14397. ARON, MAX. Experiences de greffe siamoise chez les larves de batraciens. Nouveaux arguments en faveur de la notion de facteurs de la croissance et de la morphogenèse, supportés par l'axe nerveux cérébro-spinal. *Compt. Rend. Soc. Biol.* 98(17): 1539-1542. 2 fig. 1928.—Larvae of anurans, were joined so that the tail of one was continuous with that of the other so as to result not only in intimate humoral connections but also in direct continuity of the spinal cords. Such larvae retained their individual growth rate. After section of the nerve axis of one of the conjoined twins at some level posterior to the brain, the axial organs of the operated twin were controlled by the normal and behaved like a distal extremity of the normal twin. The behavior indicated that the spinal cord of each twin was polarized in the opposite direction from the other twin. If one such twin were decapitated, it came under the dominance (control) of the normal twin and assumed the growth rate of the normal twin even though before injury its own growth rate had been slower. The author can only say that "growth of anuran larvae is dominated by an unknown factor propagated along the spinal cord posterior to the brain."

14398. BÁNKI, ÖDÖN. Die Enstehung der äusseren Zeichen der bilateralen Symmetrie am Axolotlei, nach Versuchen mit örtlicher Vitalfärbung. [Appearance of external signs of bilateral symmetry in Axolotl after local vital staining.] *Congrès Internat. Xe Zool. à Budapest 1927.* Part 1. 377-385. 11 fig. 1929.

14399. DRAGOMIROW, N. Über die Dauer der determinierenden Einwirkung des Augenbechers auf die Linse. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 123(2): 206-229. 11 fig. 1930.—From earlier work the author found that the optic cup determines the heteropolarity of the lens for it induces the fibers comprising the fiber zone (Faserkugel) at the proximal pole. Further investigations were made to ascertain whether the inducing action lasted for a long time or if

the prospective significance of the proximal pole was determined before its pronounced differentiation. The lens-forming area of an embryo of *Amblystoma mexicanum* was transplanted homoplastically under the skin in the region of the ear. The transplant could not be distinguished from the neighboring cells of the inner layer of the skin ectoderm or was present as a thickened disc without distinct limits. The relation to the optic vesicle and the optic cup respectively was always easily demonstrated. The postoperative period did not last more than 12 days. The transplant developed like the normal lens or (in ⅓ of the cases) was entirely absent. This absence can probably be explained by the fact that the transplant was subjected to the factors of differentiation of the host epidermis and completely mingled with it (in connection with the local conditions and the orientation at operation). Degeneration of the transplant was never observed. In 6 cases the heteropolarity of the lens was destined from the beginning or before the beginning of demonstrable morphogenesis of its material; the central cells of the lens-forming disc were determined as future fibers of the median pole. The fibrous differentiation may occur without other influence in normal or almost normal temp. The factors determining the form of the fiber region lie in the changing cells themselves; there was no dependence upon the size or form of the lenticular vesicular space. New, supplementary fibers in the young lens sometimes occurred in the absence of other inducing action, owing to the assimilating influence of the fiber region on the epithelial cells, which embraced its basal pole.—*Author's summary (transl.)*.

14400. **FILATOW, D. Über die Verpflanzung des Epithels und des Mesenchyms einer vorderen Extremitätenknospe bei Embryonen von Axolotl.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 113(1): 240-244. 1928.—The mesenchymal mass from just visible limb anlagen was implanted in the flank. The result was negative. The epithelium of the anlagen, similarly implanted, induced limb-formation in about half the cases. The epithelium is thus an "organisator," a result different from those of other investigators.—*A. F. Coventry.*

14401. **FLAT-HAUSER, EUGENIE, und HANS PRZIBRAM. Regeneration der langen Knochen nach teilweiser Entfernung im Innern der Molchextremitäten (Triton cristatus Laur.).** *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 122(2): 237-250. 3 fig. 1930.—59 of 73 operated animals survived long enough for study. Removal of either proximal or distal half of a long bone within a *Triton* extremity was followed by regeneration; but only in the proximal segments, was regeneration at all typical; if the proximal part was excised, a mirror-image of the remaining part grew proximad from the remaining distal piece. In a few cases all that was formed was a small cone with well-formed epiphysis resting upon the much shortened diaphysis. The sections showed in the well-formed regenerates a restoration of bony tissue of not quite normal thickness 16-17 mos. after the operation. Regeneration of bone inside of an otherwise intact limb showed the same form as those growing proximad from free or exposed surfaces of section ("Bruchdreifachbildung Przibram"). Regeneration in both directions from any single cut surface was mirror-image-wise, even though at times regeneration beginning with the distal half followed upon the severing of the pertinent nerve. No evidence suggests the presence of lesion-hormones. The form of the ends of bones regenerated is independent of adnectant bones or the surfaces of their joints. Within any long bone various "areas" or "territories" (Guyenot) of formation are distinguishable.—*E. W. Count (from German summary)*.

14402. **GÉRARD, POL. Contribution à l'étude de la placentation chez les Lémuriens: à propos d'une anomalie de la placentation chez Galago Demidoffi (Fisch).** *Arch. Anat. Microsc.* 25: 56-68. 8 fig. 1929.—In the uterus of a gestating *G. demidoffi*, a small part of epithelium of the fetal chorion differed in structure from that of the rest of the chorion. It was composed of a 2-layered epithelium with the external row composed of giant cells. The latter had destroyed the cells of the uterine epithelium and were directly joined to the connective tissue of the maternal villi without affecting their vascularization. This is no doubt a local anomaly of placentation, emphasizing the weak reactivity of the maternal tissue. The author considers this favorable to the view of the epithelial chorionic placenta of lemurs as primitive.—*P. Gérard (transl.)*.

14403. **GUARESCHI, CELSO. L'otocisti degli anfibi anuri considerata come un sistema a mosaico. [Otocysts of tailless amphibians considered as a mosaic.]** *Atti R. Accad. Lincei, Cl. Sci. Fis. Mat. e. Nat.* 9(8): 666-668. 1929; **Nota 2. Dimostrazione sperimentale.** 10(1/2): 120-122. 1929; also in *Monitore Zool. Ital.* 40(11/12): 438-441. 1930.—Repeating former experiments on the otic vesicle of the tailless amphibians (*Bufo* and *Rana*) the author demonstrated the mosaic development of the otocysts, formerly suspected. It is shown that: (1) if a part of the otocyst is removed, the remainder can develop but without regenerating the structures potentially contained in the portion removed; (2) the transplantation of one part of the otocyst contributes to development of only the structures potentially contained in it; (3) fusion of 2 otocysts can produce a single vesicle, provided all the formations contained potentially in the 2 parts fuse.—*H. C. Stevens.*

14404. **GUARESCHI, CELSO. Studi sullo sviluppo dell'otocisti degli anfibi anuri. [Development of the otocysts of Anura.]** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(1): 179-203. 12 fig. 1930.—The author sectioned embryos of *Bufo vulgaris* and of *Rana esculenta* in 2 stages. Of 176 embryos, only 29 gave results suitable for use. Removal of a part of the otic cup or otic vesicle gives the following results: in *Bufo* the formation of a simple single-layered "scar wall" which closes the wound, shows a tendency to flatten, and exhibits no trace of differentiation, thus removing the possibility of a reappearance of structures potentially present in the extirpated portions; in *Rana* the closure and regulation of the general shape of the otocyst, although there is no regeneration of different structures (endolymphatic canal, semicircular canals, sensory epithelium). From a transplanted otocyst fragment develop only those structures which were potentially present. The fusion of 2 more or less complete otocysts may lead to the formation of a single vesicle, which appears almost normal externally, but which shows all the structures potentially present in its original parts. Inasmuch as these facts point towards the regulation of favorable spatial relations, it is concluded that the otocysts of anurans represent a mosaic at the stage of the otic cup or primary otic vesicle. The research shows also that the various structures of the otocyst are already localized in the primary otic vesicle.—*Summary (transl. by H. W. Kaan)*.

14405. **GUILLERY, H. Untersuchungen über die Bestandteile des embryonalen Gewebesaftes und seine Bedeutung für wachsende Gewebe.** *Virchow's Arch. Path. Anat. u. Physiol.* 275: 181-192. 1930.—An inquiry into the efficiency of embryonic juices in tissue culture. The juice obtained by cutting up chick embryos with scissors was more effective than that obtained by crushing through a sieve or in a mortar with sand, presumably because there was less destruction of the cells. Filtering the extract diminished its activity, the filtrate from porcelain filters being less active than that from filters with coarser pores; the activity of the filtrate persisted for 8 days, but if subjected to a temp. of 37° or more it became inactive after a few hours or less. These facts point to the existence in the filtrate of a ferment produced by undestroyed embryonic cells. If the material remaining on the filter be now thoroughly washed and treated by the method of Baker and Carrel for preparing proteose from fibrin, a solution is obtained which surpasses the embryonic juice in effectiveness and resembles that of proteose. If the filtrate is made inactive by heat and is then subjected to the peptic diges-

tion its activity returns. The embryonic juice contains a ferment that acts on the contained proteins, converting them into proteoses which can be assimilated by the cells of the tissue culture.—*J. P. McMurrich.*

14406. **GUYÉNOT, ÉMILE.** La perte du pouvoir régénérateur des Anoures, étudiée par les hétérogreffes, et la notion de territoires. *Rev. Suisse Zool.* 34(1): 1-54. 1 pl., 21 fig. 1927.—Limbs of tadpoles of *Bufo vulgaris* amputated at metamorphosis or slightly later, a time when all regenerative capacity has been lost, and grafted to the back of the larvae of *Salamandra maculosa*, a form in which the internal medium is favorable for regenerative processes, fail to show, after the secondary amputation, any return of regenerative capacity as a result of host stimulation. The disappearance of the capacity for regeneration is not simultaneous in all the organs of the tadpole, as grafted and amputated tails do regenerate. The loss of regenerative capacity is not the result of some change in the internal medium (hormonal) of the tadpole due to metamorphosis, but is an expression of a local change taking place in the organ itself. The tadpole is thus a mosaic of territories, each having its own capacity for differentiation and regeneration.—*A. J. Waterman.*

14407. **GUYÉNOT, ÉMILE, et K. PONSE.** Territoires de régénération et transplantations. *Bull. Biol. France et Belgique* 64(3): 251-287. 2 pl., 7 fig. 1930.—In the lizard, *Lacerta*, caudiform structures about 7 mm. long, were produced by deviation of the sciatic nerve into the lateral part of the tail. The external form, color and scales of the regenerated bud resembled those of a normal tail but internally, axial structures were absent. Similar experiments performed previously by Guyénot and Schotte and by Bovet on *Triton* had yielded similar results, here described. In *Triton* autoplastic transplantations were made from the dorsal region of the tail including the crest, to the region of the shoulder after removal of the girdle and part of its musculature. The nerves of the brachial plexus were left intact, one of them being drawn into the implant. A plate-like regenerating bud was produced which finally developed, along its borders, the pigmentation characteristic of the tail. Histological examination showed unorganized blastema traversed by nerves, and covered by well-developed skin. The authors discuss their results from the standpoint of the theory of "territoires de régénération."—*C. V. Morrill.*

14408. **HOLTFRETER, JOHANNES.** Über die Aufzucht isolierter Teile des Amphibienkeimes. I. Methode einer Gewebezüchtung in vivo. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 117: 421-510. 37 fig. 1929.—A method is presented for the cultivation of isolated portions of the amphibian germ to the stage of histological differentiation. The body cavity and lymph spaces in the mesenchyme of older amphibian larvae are suitable cultivation-places. The germinal parts transplanted with an "introducer" develop unrestrained, either in a free state or attached to the host. Their differentiation products are to be considered self-differentiations. A series of control experiments with older already "determined" material was used for judging the developmental products derived from the younger germinal stages and for testing the cultivation regions as to their suitableness. The method was homoplastic for *Amblystoma* and *Rana* and xenoplastic for several species of amphibia, the larvae of *Rana fusca, Hyla* and *Bombinator* serving as host and the germs of *Triton, Amblystoma, Bombinator,* and *Hyla* as "donor." The "implant" from the blastula or the gastrula in all combinations yielded, according to origin, a series of different differentiations that could be related to the determining power the implant possessed at the time of its removal. The mitosis in the implant, the normal course of yolk-absorption, the differentiations, and the harmonious behavior of the partners in chimeras indicate a physiological balance betwen the host and implant. The growth of blood vessels of the host into the implant, observed in the living object, and the migration of implanted pigment cells to the epidermis of the host indicate a balance in the chemical conditions between the generically different partners. In spite of the differences in age and the specific properties of the partners the development of the younger implant in the different cultivation centers proceeds with its own rhythm of growth. The specific cells structures of the implanted tissues are retained in the specifically different host. The deviating formations that appear to a slight extent in the implant are partly of a degenerated kind and may also be due to mechanical injuries inflicted by the host or to unfavorable conditions of nutrition; in part they appear to arise because of a restriction of the capacity of selfdifferentiation of the material. Specific defense reactions of the host organism—granulation tissues and a rich accumulation of leucocytes at the place of implantation, encapsulation of the foreign material, blood infiltrations as a result of specific poisoning through the implant—were not observed. Fatalities were very rare. Examples presented show that various assumed organ-anlagen from the blastula and gastrula can develop independently. Older tissues were transplanted to investigate the power of xenoplastic implants to live for a long period in the larva. The anterior leg-bud of *Triton*, easily controllable externally, was best suited for this. The bud, introduced into or under the epidermis of very young larvae of *Hyla, Bombinator* and somewhat older larvae of *Rana*, grew there into small leg-stumps with well developed cartilaginous axis, musculature, and connective tissue cover. Its epidermis passed smoothly into that of the host. Its yellow and black pigment cells retained the normal condition of expansion and also spread out under the host-epidermis. Mitosis was observed even after 53 days. Blood vessels from the host gradually penetrated the implant and formed a richly anastomosing network, similar to that of the normal *Triton*-leg. Development progressed to the formation of 2 toes and an anlage of a wide cortical bone-mantle. Then growth stopped completely, although after 80 days it, in general, appeared to be very fresh. Several possibilities are expounded in explanation of this growth inhibition. Some suggestions are made on the application of the method. *Author's summary (transl. by H. F. Nachtrieb).*

14409. **LEVI, GIUSEPPE.** Il contributo portado dal metodo della coltivazione in vitro alla conoscenze della struttura del tessuto nervoso. [Method of cultivation in vitro for the study of structure of nervous tissues.] *Monitore Zool. Ital.* 40(11/12): 302-313. 1930.—The author summarizes the most important results of his own and his collaborators' investigations on the cultivation of nervous tissue and attempts to harmonize them with the present knowledge of the structure of nerve tissue. In regard to the problem of the interrelation of neurones, the author emphasizes that his collaborator Esaki has recently demonstrated an important and surprising fact,—that the behavior of the nerve fibers in the culture differs according to the region from which the explant has been taken; in explants from spinal ganglia the formation of plexuses and networks was especially observed; on the other hand, in cultures from mid and fore-brain, the migrating neurites always remained independent of one another. On the whole, the results obtained by the method of explantation are not contradictory to the fundamental ideas of the neuron theory.—*G. Levi (transl. by M. Gardiner).*

14410. **MARTINOVIĆ, PETAR N.** Migration and survival in vitro of the nerve cells cultivated in the cerebrospinal fluid of the embryo and the young animal. *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 10(2): 145-156. 9 fig. 1930.—The nerve cells from explants of brain of albino rat embryos and new born animals and very probably from young cats migrate quite readily upon the cover glass in the cerebrospinal fluid as the culture medium. [80 cultures from 14-20 day rat embryos, 40 from 1-3 day old rats, 8 from a 7 day old kitten showed migrating cells in 28, 12, and 4 cultures respectively.] The neuroblasts from the brain and the medulla of the chick embryos 8-11 days old do the same upon the

new growth of an explant of heart or liver tissue which serves as a support medium. If the explant has been sucked out of the cranium together with the culture medium the number of the successful cultures is greater than if the explant has been cut off of a larger piece of tissue that has previously been immersed in Tyrode solution (temp. 37°) on a hollow ground slide.—*Author's summary.*

14411. **MIJSBERG, W. A.** De regeling der ontwikkeling. [Regulation in development.] H. Kolff en Co.: Weltevreden, 1929.

14412. **MURRAY, P. D. F., and DORIS SELBY.** Intrinsic and extrinsic factors in the primary development of the skeleton. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(3): 629-662. 6 fig. 1930.—The femora, with only perichondrium, of chick embryos of 6- and 7-days incubation were grafted upon the chorio-allantois of 8-day chicks. Femora from 6-day chicks were grafted entire and those from 7-day chicks after transverse sectioning into approximately equal halves. The grafts of femora derived from 6- and 7-day chicks regularly showed 3 deviations from the normal: (1) The groove across the head of the normal femur, which lodges the acetabular ligament, was always absent due to absence of pressure from the acetabular ligament. (2) The condyles of the grafted femora showed a marked tendency to fuse in the mid-line on the posterior aspect, so reducing the intercondyloid fossa to a shallow depression because of the absence either of the tibio-fibula or of muscular pull. (3) The articular structures were subnormal in relative size, probably due in part to an artefact resulting from the operation and in part to the failure of some unknown factor extrinsic to the developing epiphyses. It is therefore concluded that, while the gross form of the skeleton of the limbs at least develops under the direction of intrinsic forces, extrinsic factors produce the final perfection of form of the functioning skeleton; that extrinsic forces provide the conditions necessary for normal development under the action of the intrinsic forces. After birth and in adult life, the extrinsic influences probably become of relatively greater, and intrinsic forces of relatively less, importance. In the case of replacing bones the form of the bone is primarily dependent upon that of the pre-existing cartilaginous element. In the grafts if bone developed around a curved or bent cartilaginous element, the thickness of bone deposited on the concave side was greater than that deposited on the convex side. Grafts of entire femora of 6-day chicks usually showed a vigorous development of bone, but those from halves of femora of 7-day chicks showed only a very thin layer of bone. In various kinds of graft which contain half a cartilaginous shaft, with 1 epiphysis and half a diaphysis, ossification and resorption of cartilage frequently occurred and always commenced at the end of the diaphysis remote from the epiphysis, i.e., approximately at that region which normally would be the middle of the shaft. Grafts of halves of femora of 7-day chicks showed that ossification and cartilage resorption progress largely independently of one another, for while ossification is retarded as compared with the same process in grafts of entire femora there was no such distinction between the amount of cartilage resorption in the 2 sets of grafts.—*From authors' summary.*

14413. **NORDMANN, MARTIN.** Wachstum und Stoffwechsel der Leberzellen in der Gewebskultur. *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 8(3): 371-414. 6 fig. 1929.—Studies on about 1300 cultures (from 500 growing or adult rats, 300 from embryonic or new-born rats, 100 from newly hatched chicks, 400 from chick embryos) indicate that liver cells show a limited growth on so-called fluid media (Locke-Lewis solution and certain modifications thereof). With increase in age of the animal from which the explant is taken, growth decreases. Growth is promoted by addition of plasma, which not only prolongs the life of the individual culture, but permits the successful use of tissues from older animals. Liver cells can be recognized by the shape of the nucleus and cell body, color, and epithelial arrangement. Glycogen dissolved in liver cells can be detected by I-vapor, and precipitated in granules by alcohol. Plasma and living liver cells can reduce the glycogen; macrophages can store it. It is produced by the liver cells in tissue cultures only under favorable conditions, its abundance being proportional to the rapidity of growth; it is largely independent of the composition of the medium. Fat, whether present in the cells or introduced in the culture, does not prevent growth, but decreases its speed, and cripples the synthesis of glycogen. Hence the speed of growth is not so much an indication of the age of the animal used, as of the metabolism of the explant or culture. Fat must be in the explant or in the medium in order to be stored by the liver cells. The observations in tissue cultures agree with those found in the living animal in so far as the quantitative relations of the medium control the metabolism.—*M. Nordmann.*

144414. **OKKELS, HARALD.** Experimentell-embryologische Untersuchungen über die Kupfferschen Sternzellen bei Hühnerembryonen. *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 10(1): 73-81. 11 fig. 1930.—Microscopic examination after iron hydrosol or very fine suspensions of India ink had been injected into the vitelline vessels or the chorionallantois showed that from the 9th day macrophages which resembled the Kupffer cells in structure and topography were present in the liver of the chick embryo. It was impossible to decide in how far the pictures of parietal attachment, observed in the young embryo, actually corresponded to endothelial phagocytic processes. The macrophages observed in tissue culture of such embryonic livers may well be derived from the Kupffer cells.—*From author's summary (transl.).*

14415. **PERRONCITO, ALDO.** Le rigenerazioni. *Atti Soc. Ital. Progr. Sci. [Roma]* (*Riunione 15, Roma*) 1926: 317-336. (1927.)

14416. **[SCHMIDT, G. A.]** ШМИДТ, Г. А. Исследования по механике развития. 3. А. Новый метод получения Asyntaxia medullaris. B. Нахождение в природе двойникового урода. (Dupplicitas anterior assymmetricus) Ranae arvalis. [Investigations on the mechanics of development. 3. A. A new method of obtaining asyntaxia medullaris. B. Monster Rana arvalis found in nature.] [German summary.] Записки Биологической Станции Общества Любитедей Естествознания, Антропологии и Этнографии в Болшеве Московской губернии (*Bull. Sta. Biol. Soc. Amis Sci. Nat. Anthrop. et Ethnogr. à Bolchevo, Gouv. Moscou*) 4. 53-58. 12 fig. 1930.—A. Early blastulae of *R. arvalis* and *R. esculenta* were placed in cane sugar solution, the best concentration being 12-13%. After 24 hrs. they were returned to lake water. In most embryos gastrulation was markedly disturbed, due, apparently, to shrinkage. Swelling of the vitellus caused various monstrosities, such as double tail, asymmetrical growth, formation of proboscis, etc. B. Among the embryos of *R. arvalis* was one with duplicitas anterior asymmetricus, with 2 distinctly pronounced head parts.

14417. **WEBER, A.** Ricerches sur les premières manifestations des ébauches d'origine épithéliale. *Arch. Anat. Microsc.* 25: 132-136. 3 fig. 1929.—The first appearance of organs of epithelial origin were studied on the chick embryo of 48 hrs. and duck embryos of 57 hrs. of incubation. At these stages, changes in thickness of the intestinal endodermal layer is seen in sections of the mid-dorsal line. At first the portion between the aditus anterior and the last branchial pouch is transparent. Caudad from there a thickened, straight zone develops which corresponds to the right and left borders of the digestive tube, called the branchial crest. On the mid-ventral line a thick, narrow band is seen. Between it and the branchial crest thin islets constitute the first formation of the lung in the chick embryo. In the duck embryo the same formation runs transversely. The bronchi do not seem to be derived from the same cellular material.

The mitoses change direction at 48 hrs. in the chick and 55 hrs. in the duck embryo.—*B. Bickel.*

14418. WEISS, PAUL. Potenzprüfung am Regenerationsblastem. II. Das Verhalten des Schwanzblastems nach Transplantation an die Stelle der Vorderextremität bei Eidechsen (Lacerta). *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(2): 379-394. 9 fig. 1930.—The experimental animals (number not stated) were *Lacerta muralis, L. agilis* and *L. serpa.* When the blastema from which the tail of the lizard was regenerating was about 2 wks. old it was transplanted to the site of a fore-limb, following amputation of the latter. In most cases the transplant developed no further; in some cases it formed a wartlike bud of tissue. Evidently the material formed after transverse amputation of the tail is at first not determined so that it shall produce a definite form. On the other hand at present it can only be concluded that there is not, in the lizard, an active limb-producing field able to determine material within its influence. In 8 cases the transplanted blastema developed into a well-differentiated tail of considerable size. These tails are diagnosed as such not only through their external appearance but also through their whole internal organization. All tails regenerating at the shoulder show a considerable bending or twisting never observed in the normal regeneration of a tail and plainly to be ascribed to the abnormal position. Possibly growth on the dorsal side is favored, a condition in harmony with the normal tendency to bending shown by the growing limb. The entire course of regeneration, both in form and in histology, from the blastema stage to that of the finished tail shows that the differentiation of a blastema, once it has been determined, does not depend upon the blastema remaining attached to its old stump. Not only does growth occur but also processes of differentiation in the direction originally indicated are carried forward without further support of similar old tissues. The lack of spinal cord in tails regenerating at the shoulder shows that the development of a regenerated tail in the lizard is independent of the presence or absence of spinal cord. The regenerated tails were well supplied with nerves. Should nervous influence play a part in tail development it is doubtless entirely unspecific as regards the form and differentiation of the part regenerating, otherwise there would not have arisen a regenerated tail with the innervation of an arm.—*From summary (transl. by W. H. Piersol).*

ANOMALIES, MONSTERS AND MARKED VARIATIONS IN DEVELOPMENT

14419. ARNTZEN, LEIF, and BØRGE WORNING. A case of double renal pelvis and double ureter in both sides. [With English, French and German summaries.] *Acta Radiol.* 10(5): 499-501. 5 fig. 1929.—The roentgen findings in a case of bilateral double pelves of the kidneys, double ureters and a large concrement in the lower pelvis on the right.—*Authors' summary.*

14420. BARILLET, H. Fissure du sternum. (Étude anatomique et radiologique.) *Presse Méd.* 37(50): 817-818. 1929.—In a study of the cleft sternum, the author shows that the origin of the anomaly occurs during the chondrogenous stage, and that it is produced by the failure of the double cartilaginous hemisternum to coalesce, also followed by the normal osseous development, which, considering the dehiscence, consists of 2 hemimanubria and the hemisternebrae, in variable numbers according to the degree of the fissure. Certain symmetrical parts are independent: in this case, the first and second sternebrae (failure of lateral conjugation), forming a purely simian character.—*P. L. Risley.*

14421. BERGEL, ARTUR. Der Dotterstiel als Ursache einer menschlichen Fehlbildung. *Zeitschr. Ges. Anat. Abt. I, Zeitschr. Anat. u. Entwicklungsgesch.* 89(4): 532-542. 6 fig. 1929.—A description of 2 deformed human embryos: (1) a 6 mm. embryo with deformities of head and fore-brain; (2) a fetus of 42 cm. crown-heel length, with umbilical hernia, exencephalia, exobulby, and cheilognathoschisis. The second case is attributed to causal factors similar to those of the first, having merely developed further. The defect in the fore-brain in the first case is attributed to the fusion of the yolk-stalk with the forehead. The incorporation of the yolk-stalk with the umbilical cord results in the cord being brought into contact with the head. These processes are instrumental in the production of exencephaly. Descriptions of the relations of the embryonic membranes to these developmental anomalies are included.—*P. L. Risley.*

14422. BOAS, J. E. V. Weiteres zur Beurteilung der Polydactylie des Pferdes. [Further data on polydactylism in the horse.] *Zool. Jahrb. Abt. Anat. u. Ontog. Tiere* 51(2): 313-322. 9 fig. 1929.

14423. BOBIN, V., et H. NEUVILLE. Sur un cas d'hermaphroditismus verus lateralis. *Bull. Soc. Anthrop. Paris.* 8(4/6): 221-227. 1 fig. 1927.—A description of a case of hermaphroditism verus lateralis in man, with an almost perfect ♂ genital apparatus on the right side and less perfect ♀ genital organs on the left. Neither sex glands were ovotestes, but were perfectly normal testis and ovary on the respective ♂ and ♀ halves of the body.—*P. L. Risley.*

14424. BÖTSCHI, ALFRED. Untersuchungen über Kryptorchismus beim Pferd, Schwein, Hund und bei der Katze, unter besonderer Berücksichtigung der mikroskopischen Anatomie. [Cryptorchidism in the horse, pig, dog and cat, with especial reference to microscopic anatomy.] *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 89(5/6): 727-753. 5 fig. 1929.

14425. BUCKLEY, R. C., and E. M. DEERY. Abnormality of the cerebrum and leptomeninges simulating an intracranial tumor. *Amer. Jour. Path.* 5(5): 459-466. 3 pl. 1929.—Localized gross developmental anomalies of the brain are rare. Such a case, clinically considered a tumor, is reported from Cushing's clinic. The patient was a ♂, age 6 mos., with an asymmetrically enlarged head. Death occurred from bronchopneumonia. Autopsy revealed a large firm mass occupying the right fronto-parietal region. Only in the frontal region was the mass sharply demarcated from the normal cerebrum. The leptomeninges were firmly adherent to the mass and studied with small thickenings. Sections revealed an asymmetrical hydrocephalus, the right lateral ventricle being larger than the left. Microscopic study revealed nests of astroblasts and astrocytes in the subarachnoid space, marginal gliosis, incomplete myelinization and extensive gliosis. Microglia and oligodendroglia were not demonstrated in this abnormal tissue.—*P. C. Bucy.*

14426. BUSSE, WALTER. Zur Frage des Ileothoracopagus tripus. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 90(5/6): 671-689. 15 fig. 1929.

14427. DANFORTH, C. H. A case of alopecia in the fowl. *Jour. Heredity* 19(12): 546-550. 3 fig. 1928.—An instance of marked deficiency in feather production in the case of a Rhode Island Red fowl was analyzed by means of a skin graft from a White Leghorn donor. The grafted skin produced normal White Leghorn feathers, from which it is inferred that the feather deficiency of the host was occasioned by an anomaly in the skin rather than in the endocrine system.—*C. H. Danforth.*

14428. DEHNEL, GUSTAV. Badania nad rozwojem i geneza potwornósci złozonych u żółwia błotnego (Emys orbicularis L.) [Development and origin of reptiles, especially mud turtles.] (With French summary.) *Arch. Biol. Soc. Sci. Lettr. Varsovie* 2(2): 1-68. 4 pl., 34 fig. 1929.—Detailed evidence is adduced to show: (1) that the presence of plurinuclear ovules in the ovaries of a monstriparous ♀ turtle (*E. orbicularis*) favors the polygeneses of ova with plurivalent nuclear system; (2) that true polygeneses, arising in nature, have their origin in an increase and primary decentralization of the nuclear material of the ovum. The results are in accord with those of Lur and Coppe de Baillon on the origin of double monsters in *Carausius morosus.*—*C. F. De Garis.*

14429. DEHNEL, GUSTAV, i JAN TUR. O nierównomierności tempa rozwojowego. (De embryonum evolutionis progressu inaequali.) [With Latin summary, p. 778.] *Kosmos* [*Lwów*] 53(4) : 770-778. 1928(1929).—See B. A. 4(6) : Entry 19880.

14430. ESSEX, HOWARD, and MARSHALL HUSTON. Abnormalities found in a two headed calf. *Proc. Iowa Acad. Sci.* 36: 377-379. 2 fig. 1929(1930).

14431. FEYRTER, FRIEDRICH. Über Fehlbildungen der extrahepatalen Gallenwege mit Störung der normalen Hohlraumbildung (Verödung, Enge und cystische Erweiterung) und des normalen Gangverlaufes. [Defects of the extrahepatic bile ducts with disturbances of the lumina (obliteration, stenosis and cystic dilatation) and derangement of the normal course of the ducts.] *Virchow's Arch. Path. Anat. u. Physiol.* 271(1) : 20-44. 17 fig. 1929.

14432. FONTES, VICTOR. Nota sôbre um case de hemimélia. *Arquivo Anat. e Antrop.* 13(1/2) : 191-209. 8 fig. 1929(1930).—In this individual the left radius was completely absent, the right was partially lacking, and also some of the radial bones in the carpus, metacarpus, and digits. From the way the radial ray is altered it is concluded that the middle segment (of the arm) was not able to reach as complete a development as the extreme segments. The partial absence of the skeleton gave rise to equally well-marked disturbances of the muscular system, easily visible in the morphological irregularities of the palmar eminences of the 2 hands. —*From abstr. by V. Fontes (transl. by F. W. Appel).*

14433. GATES, WM. H. A two-headed snake. *Jour. Heredity* 20(12) : 555-556. 2 fig. 1929.—A report of duplication of the head and neck region of a young *Opheodrys aestivus.—W. H. Gates.*

14434. GIACOMO, U. de. Le anomalie morfologiche congenite del cranio e della colonna vertebrale nelle atassie ereditarie. [Congenital morphological anomaly of the skull and of the vertebral column in hereditary ataxia.] *Riv. Patol. Nerv. e Ment.* 34(3) : 364-382. 8 fig. 1929.—Three cases reported: 1st case had an unusually large longitudinal diameter of the posterior cerebral fossa, 6 lumbar vertebrae, the 6th being arc-shaped with a tendency toward sacralization, especially on the left side; 4 coccygeal vertebrae were present. Case 2, a brother of the above, also showed enlarged longitudinal diameter of the posterior cerebral fossa, and a somewhat smaller transverse diameter than normal; mastoid was also abnormal. Vertebral column showed a marked scoliosis with a tendency toward sacralization of the left side of the 5th lumbar vertebra. In case 3, the posterior cerebral fossa was enlarged in the posterior diameter, with abnormal mastoid. There was a break in the 5th lumbar vertebra and a tendency toward sacralization. There was a comminuted fracture of the right inferior angle of the 11th dorsal vertebra. Marked scoliosis was present. Author concludes that in hereditary ataxia (Friedreich's disease) there is a fragility of bone associated with anomalies of bony structure.

14435. GRUBER, G. G. Die Morphologie der Missbildungen des Menschen und der Tiere. [Morphology of congenital anomalies in man and animals.] Teil 13. Lief. 3. Abt. 4 und 5. p. 375-574. 106 fig. Gustav Fischer: Jena, 1929. Pr. 13.50 M.

14436. HERMAN, J. v. Über Nieren- und Uretermissbildungen. *Zeitschr. Urol. Chir.* 26(5/6) : 505-561. 3 fig. 1929.—Developmental disturbances of the uropoietic system are generally due to not one but several basic causes. They are associated with other anomalies of the genital or renal system. The author classifies them as: (1) primary developmental faults with renal aplasia (anephria), hypo- and hyperplasia, polycystic or embryonal lobed kidney; renal ascent, ureteral diverticulum or fission, extrarenal calyx, supernumerary renal pelvis; blind ureteral sacs, obliteration, stenosis, hyper- and hypoplasia, and valvular irregularities; dystopic renal pelvis and renal dystopy, defects of the bladder base. (2) Secondary developmental disturbances with supernumerary kidney or fission, ureteral and renal pelvic fission, multiple ureter, dystopic ureter openings, faulty insertion of ureter in bladder. (3) Congenital anomalies, acquired renal hypo- or hyperplasia (renal atrophy, hypertrophy), displaced renal pelvis; obliterated stenosed hyperplastic ureter, changes in the ureteral valves, faulty insertion of the ureter in the renal pelvis; changed course of ureter, kinking, crowding.—*B. Bickel.*

14437. HYNIE, JOSEF. Vzácný případ hermafroditismu. [A rare case of hermaphroditism.] [With French résumé.] *Česká Dermatol.* 10(10) : 261-269. 1929.—An individual with external genitalia in the indifferent stage is described. Neither menstruation nor sperm ejaculation had ever been present. Psychologically the individual was a ♂.

14438. JAGNOV, Z. Die anatomischen Verhältnisse eines Dicephalus pseudotribrachius tetramanus. [The anatomic features of a 2-headed, 4-handed, apparently 3-armed monster.] *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 90(5/6) : 659-670. 16 fig. 1929.

14439. KRACZKIEWICZ, ZYGMUND. Studja nad platineurja. [Embryonal platyneury.] [In Polish with French résumé.] *Archiwum Nauk Biologiczych Towarzystwa Naukowego Warzawskiego (Arch. Biol. Soc. Sci. et Lettres Varsovie)* 2(3) : 3-46. 3 pl. 1929.—The author studied several human monsters (platyneural embryos) characterized by complete or partial failure of the neural plate to form a neural tube. From comparison of the length and area of the neural plate and the somites with similar measurements of normal human embryos of the same stage the following specific conclusions are drawn: (a) the neural plate of the platyneural embryo may be considered as homologous with the neural tube of the normal embryo of the being constituted from the same ectodermal primordium, but in platyneural embryos the direction of differentiation is transverse whereas that in normal embryos is in a cephalo-caudal; the area of the neural plate in platyneural embryos equals that of the neural tube in normal embryos of the same stage (criterion being the degree of cardiogenesis); the surface area of the somites of the platyneural embryo equals that of the normal embryo of the same age, but the somites of the platyneural embryo look abnormal because of the transverse differentiation; that the chorda dorsalis which superficially (in toto mounts) appears doubled in platyneural embryos is not doubled is revealed by study of serial sections. The author's general conclusions are: (1) Platyneury is a teratogenous process which may take place in different regions of the embryo. (2) It consists of a differentiation and growth of the same embryonal material as that of the normal embryo, but the direction of differentiation is transverse to, rather than parallel with, the longitudinal axis of the embryo. (3) Different organs show a certain independence and are refractory to this process (heart, notochord). Different parts of the same organ can be affected in differing degree (neural tube). (4) The facts recorded from this study seem to indicate not only a certain autonomy of the different organs, but also an independence, more or less accentuated, of different regions of the embryo during development.—*From author's French résumé (transl. by J. E. Kindred).*

14440. KREDIET, G. Intersexualität oder Hermaphroditismus bei Säugetieren. *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 91(1-3) : 251-291. 36 fig. 1929.—The works of Goldsmith on *Lymantria* are basic for the comprehension of intersexuality in mammals. In each hermaphrodite in which sex reversion arises during sexual differentiation, the ♂ and ♀ sexual impulses remain active. The true as well as the false hermaphrodites are explained by these 2 principles, and are recognized as the zygote intersexes. Kleb's scheme for the classification of hermaphrodites is discussed. Two young, intersexual pigs are described, one transitional from ♂ to ♀, the other showing newly formed follicles and seminiferous tubules derived from the germinal epithelium. The process of sex reversion of

mammals is considered in detail, also heredity of intersexuality in pigs.—*G. Krediet (transl. by C. S. Simkins).*

14441. **LOCCHI, R. Sobre um caso de polyodontia no homem.** *Ann. Fac. Med., São Paulo* 4: 1-23. 2 pl. 1929. —A case of polyodontia observed in the cadaver of a ♂ negro of 18 yrs. is described. In the maxillary dental arch there are 7 supernumerary teeth: 3 conoid teeth in the incisal region; 1 paramolar, situated buccally between the right molars; 1 distomolar, imbedded and cuspidate, also on the right; 2 left distomolars, imbedded and superimposed, the deeper one larger and with 4 cusps, the more superficial one rootless and with 3 cusps (the cusps disposed in almost perfect linear series recalling the primitive triconodont form). A left molar presents a bilobed accessory tubercle mesiobuccally. The author reviews briefly the various hypotheses proposed in explanation of polyodontia in man (atavistic, accidental, and eclectic), calling attention to the divergence of these theories.—*R. Locchi (transl. by S. W. Chase).*

14442. **LUNDH, GÖSTA. Case of hypernephroma malignum with virilismus in a girl of 3½ years.** *Acta Paediatr.* 9(1/2): 118-127. 4 fig. 1929.—In a fatal case of malignant hypernephroma with virilism in a girl of 3½ yrs., necropsy revealed, in place of the left suprarenal, a tumor almost as large as a man's head and composed of large, richly protoplasmic, polyhedral cells with large nuclei, often in the form of giant cells, with metastases in both lungs. In ♀♀, heterosexual precocious puberty appears almost always to be caused by a change (hyperplasia or tumor) in the suprarenal cortex.

14443. **McCLURE, CHARLES F. W., and GEORGE SUMNER HUNTINGTON. The mammalian vena cava posterior. An ontogenetic interpretation of the atypical forms of vena cava posterior (inferior) found in the adult domestic cat (Felis domestica) and in man.** *Amer. Anat. Mem.* 15: 5-149. 46 pl. (21 col.). 1929.—All atypical forms of the vena cava posterior found in the adult cat and in man can be interpreted and explained as modifications of a common ontogenetic plan of the veins. An analysis of this ontogenetic plan shows that these atypical forms fall within 17 predictable types, and that every atypical condition of the adult vena cava posterior thus far observed by the writers and by others has been found to fall within one or within a combination of these 17 types. The monograph contains a fairly complete bibliography of the atypical forms of the adult vena cava posterior to date.—*C. F. W. McClure.*

14444. **MacMAHON, H. E. Congenital anomalies of the liver.** *Amer. Jour. Path.* 5(5): 499-508. 4 pl. 1929. —Congenital histologic variations, exclusive of changes which result from some abnormality in the extrahepatic portion of the biliary system, may be separated into 2 groups. In the 1st, the normal development has been retarded, i.e., the liver of a full-term child may structurally resemble, in part at least, that of a fetus. In the 2nd, the developmental anomaly concerns either the parenchyma (the arrangement of the liver cells, the lobules, the intrahepatic biliary ducts), or the stroma (the architecture of the portal areas). Two cases of the 1st group and several of the 2nd are described. Of the latter, one type is characterized by an increase and dilatation of the periportal biliary ducts accompanied by an increase in connective tissue in the portal areas. Associated with this type of anomaly, which may persist throughout life, are congenital cysts of the liver and commonly, also, bilateral congenital cysts of the kidneys. —*B. Halpert.*

14445. **MAJÓ, B. PLÁ. Variété du tronc thyroidien inférieur coexistant avec l'artère thyroidienne de Neubauer.** *Arquivo Anat. e Antropol.* [*Lisboa*] 13(3): 467-478. 7 fig. 1929(1930).—This anomaly of the inferior thyroid artery consisted of division into 2 branches; one, representing the inferior terminal branch, anastomosed with the external terminal branch of the superior thyroid; the other terminated as deep and posterior branches. The latter branch rested upon the bifurcation of the right inferior laryngeal nerve. The artery of Neubauer (A. thyreoidea ima), of very large size, crossed the trachea below the thyroid gland.—*B. P. Majó (transl. by J. B. Bullitt).*

14446. **MARANON, GREGORIO. Los estados intersexuales en le especi e humana.** 255p. J. Morata: Madrid, 1929.

14447. **MARTINEZ, GREGORIO N., y JOAQUÍN LLAMBÍAS. Sobre un caso de malformación congénita del corazón acompañado de atero-esclerosis de la arteria pulmonar. [Congenital heart malformation with sclerosis of pulmonary artery.]** *Prensa Méd. Argentina* 16 (2): 101-110. 5 fig. 1929.—Description of case with intraventricular communication, hypertrophy of right cavities, thickening of wall and diminished caliber of pulmonary vessels. Permanent and progressive cyanosis. —*E. A. Molinelli.*

14448. **MENTZER, STANLEY H. Anomalous bile ducts in man. Based on a study of comparative anatomy.** *Jour. Amer. Med. Assoc.* 93(17): 1273-1277. 9 fig. 1929. —Most anomalous biliary structures in man represent arrangements normal in lower animals. Anomalous biliary tracts occur in about 10% of routine necropsies in man. Approximately 50 instances of congenital absence of the gallbladder in man have been reported. The gallbladder is normally absent in 17 species of fish, 9 species of birds and 26 species of mammals. Duplication of the gallbladder has been reported in man in 16 instances. Duplication of the gallbladder in lower animals is relatively common. Accessory and bilobed gallbladders are relatively rare in man but common in animals. The gallbladder has been found completely buried in the substance of the liver in many persons. This is its normal position in many animals. Congenital absence and duplication of the cystic duct are relatively rare in man as they are in animals. Cases of termination of the cystic duct into the left hepatic duct, the common duct, stomach, and the duodenum are reported. Normal instances of these in lower animals are given. —*S. H. Mentzer.*

14449. **MOLL, JOACHIM ALBRECHT. Beitrag zur Lehre von den solitären Leberzysten.** *Frankfurter Zeitschr. Path.* 36(2): 225-248. 4 fig. 1928.—In a macerated full term stillborn ♂, the skull was flattened anterioposteriorly. There was edema under the maxillary angle and in thorax. Both scrotal portions were well developed, but edematous. At the upper portion of the raphe was a small opening leading to a canal lined with mucous membrane. There was no penis. The anus was patent and from it protruded thready masses, seemingly desquamated epithelium. The upper cutaneous layer was cut off circularly under the inguinal fold, exposing the yellow, ductless, fatty tissue. Large quantities of fluid were evacuated from the abdomen, and a large hepatic cyst consisting of 2 parts hung from the lower surface of the diaphragm. The bipartition of the cyst was produced by the umbilical vein which ran over the outside. Hepatic tissue was found only at the borders of the hepatic lobes. Under the right lobe was a flattened kidney. Adrenal was present on the right, but no ureter. Clavicle and jaw were outside of the periosteal covering. Hard palate uncleft, but the soft showed a division. The thymus was the size of a bean.—*B. Bickel.*

14450. **PAŃKOWSKI, M., i ST. RUNGE. Przyczynek do obojnactwa u owiec. [Hermaphroditism in sheep.]** [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 18(1): 66-80. 7 fig. 1927. —A case of masculine pseudohermaphroditism is described.

14451. **PARHON, C. T., L. BALLIF, et N. LAVERENCO. Microcephalie familiale. Acromicrie ed syndrome adipeux-genital.** *Rev. Franç. Endocrin.* 7(4): 308-318. 3 fig. 1929.—The author reports cases of microcephalic brother and sister, whose paternal aunt was also microcephalic. The condition is thought to be hereditary. Microcephaly is a symptom of acromicria as opposed to acromegaly. The boy showed marked adiposity and double cryptorchidism.—*B. Cunningham.*

14452. **PATTEN, B. M., and W. B. TAGGART. An**

unusual type of triatrial heart. *Arch. Path.* 8(6): 894-905. 5 fig. 1929.—The heart of a 3 mos. old infant showed externally a marked dilatation of the right ventricle and a definitely enlarged pulmonary trunk. This dilatation marked the presence of an accessory median atrial chamber. External depressions bounding it indicated the attachments of the septa separating it from the right and left atria respectively. Both left pulmonary veins opened into it by a common funnel; also 3 right inferior pulmonary veins entered here: the right superior pulmonary vein entered near the apex of the chamber. About 1/10 of the total pulmonary return could enter the left atrium directly. An oval orifice, apparently the foramen ovale, was guarded only by a loose flap of the left-hand septum. The child with these defects presented an increased heart rate, both in intensity and extent. The blood was darker than could be registered with a Tallqvist scale.

14453. **PETIT, G. Sur la synostose de l'axis de la troisième vertèbre cervicale chez les Lamantins.** *Bull. Mus. Nation. Hist. Nat. Paris* 1928(6): 429-431. 1 fig. 1928.—Several cases of total synostosis are briefly described, and one, in *Manatus senegalensis,* is figured.

14454. **PEZCOLLER, A. Contributo allo studio delle cisti congenite del collo di origine timica.** [Congenital cysts of the neck of thymic origin.] *Clin. Chir.* [*Milan*] 32(3): 272-284. 2 fig. 1929.—A cyst about the size of a hazelnut, situated in the median line at the base of the neck about 1 cm. above the sternal notch, was removed from a 5 yr. old child. No sign of inflammatory processes were found. From the histologic finding the author concludes that the cyst was due to a degeneration of Hassall's corpuscles.

14455. **PIRES de LIMA, J.-A., et ROBERTO de CARVALHO. Deux cas très rares d'anomalies des membres.** *Ann. Anat. Path. et Anat. Normale Med.-Chir.* 6(8): (1-4). 1929.—The first is a ♂ full term, showing hydrocephalous, left sided anophthalmia, ectrodactylia and syndactyly of the hands, partial fusion of 4 ribs on left side, etc. The right foot is clubbed and has 6 toes plus a 7th on the inner side at the level of the tibiotarsal joint. This prehallux is 2-jointed with a metatarsal separate from the skeleton of the limb. The 2nd case presents a rare anomaly i.e., fusion of the carpals with the bones of the forearm in a ♂ of 23 yrs.

14456. **POLI, ANTONIO. Contributo allo studio delle assenze muscolari congenite. (Difetto dei muscoli addominali).** [Congenital absence of abdominal muscles.] *Arch. Ortopedia* 45(4): 775-801. 3 fig. 1929.—Case report with review of theories. The author believes that there is no absolute line to be drawn between dystrophy and congenital absence of muscles.

14457. **ROWAN, W. A hermaphrodite spiny dogfish (Squalus sucklei).** *Proc. Zool. Soc. London* 1929(3): 441-443. 1 pl. 1 fig. 1929.—Hermaphroditism is rare among elasmobranch fishes, only 5 published examples being known to the author, and 3 of these being very incomplete. The specimen described came from Nanaimo, B. C.—*Evermann & Clark.*

14458. **SCHRAMM, H. G. Schwere Herzmissbildungen bei älteren Individuen.** *Beitr. Path. Anat. u. Allg. Path.* 82(1): 153-162. 4 fig. 1929.—Septum defects in a 48 yr. old patient were accompanied by stenosis of pulmonary artery and tumors of septomarginal trabecula and crista supraventricularis. In a patient 58 yrs. old with a septum defect, the aorta was directly connected with the right ventricle. These cases show that pronounced heart defects do not always cause early death.

14459. **SEROICZKOWSKI, A. Symmetrische Missbildung an beiden Händen und Füssen. (Spaltbildung.)** *Zeitschr. Ges. Anat. Abt. I, Zeitschr. Anat. u. Entwicklungsgesch.* 89(1/2): 145-155. 5 fig. 1929.—In a newborn ♂ child, otherwise normal, was discovered a symmetrical deformity of all 4 extremities. In place of hands and feet were rounded stumps, each bearing an ulnar and a radial knob instead of fingers and toes. The muscles, nerves, blood vessels and skeletal parts are described in detail. In each deformed hand and foot the skeleton was cartilaginous throughout. Bone primordia, normally present at birth, were completely lacking, indicating that the defect arose relatively early in the embryonal period. Nerves, muscles, and blood vessels, however, were normal almost to the distal extremity of each defective part, and the innervation of the skin was normal. The fact that the muscles, etc., were divided in typical fashion indicates that the factors governing their differentiation are not inherent in the skeleton. The symmetrical malformation of all 4 limb-buds, as well as absence of irregularities, constrictions, or scars, indicates that the condition arose through faulty germ primordia rather than through accidental constriction by amnionic cords or other abnormal pressures.—*H. H. Johnson.*

14460. **TAVARES, AMANDIO, OSCAR MORENO, e SOUSA PEREIRA. Divertículo congénito da uretra masculina.** [Congenital diverticulum of the male urethra.] *Med. Contemporanea* 39: (3-23). 8 fig. 1929.—A case report of rare congenital diverticulum of the posterior urethra. The conclusion is that there was initially either a true epidermal sac communicating with the urethra, or a diverticulum of the urethral mucous membrane proper, with structural changes of the membranes.—*B. Bickel.*

14461. **TOLMER, L. Oeufs de poule nains ou oeufs de coq; les légendes; le déterminisme de leur formation.** *Bull. Soc. Linn. Normandie* 1: 39-41. 1928(1929).—Yolkless eggs, regarded by the ancients and by people in the middle ages as eggs of the cock, from which the basilisk hatched, and therefore of interest to alchemists and magicians, are produced by immature pullets, or due to anatomical malformation or non-functioning of the ovary. An egg with very small yolk, described by Mercier, seems to have been laid at the end of a laying period.

14462. **WENIG, JAROMÍR. Zvláštní úkaz při abnormálním vzrůstu incisivů u hlodavců.** [A special case of abnormal growth of incisors in rodents.] [French résumé.] *Rozpravy České Akad. Věd. a Umění, Tř. 2.* 38(paper 29): 1-11. 3 fig. 1929.—The cranium of a hare showed certain abnormalities: most noteworthy was the unequal development of the incisors.

14463. **YAGI, H., and H. FUJIMORI. Hydrops universalis congenitus fetus et placentae.** *Japanese Jour. Obstetr. and Gynecol.* 12(4): 330-334. 1 pl. 1929.

INVERTEBRATE EMBRYOLOGY AND HISTOLOGY

(See also in this issue Entries 12093, 12425, 12455, 12456, 12471, 12499, 12501, 12911, 13641, 13941, 13944, 14385, 14407, 14415, 14521, 14617, 14678, 14682, 14881)

14464. **HEFNER, R. A. Studies of parajulid diplopods. 2. The micro-anatomy of the alimentary canal of Parajulus impressus Say.** *Trans. Amer. Microsc. Soc.* 48(4): 321-351. 6 pl. 1929.—A detailed description is given of the technique, which can be used in the study of many arthropod tissues. The diplopod mouth-parts consist of an unpaired labrum, a pair of mandibles, and a compound lower lip called the gnathochilarium. The foregut is lined with chitin secreted by a bordering layer of hypodermal cells. This cellular wall is surrounded by circular muscles on either side of which are strands of longitudinal muscle fibers. A pronounced oesophageal valve marks the junction of the foregut with the midgut. The midgut is the most extensive of the 3 alimentary regions. Its lining cells are large glandular structures. Muscle fibers outside the midgut are few, but a net-like covering of large oval cells is prominent. The junction of the midgut with the hindgut is marked

by the attachment of a pair of malpighian tubules and the presence of a thick pyloric valve. The hindgut consists of 6 separate regions, each with characteristic structure. In general, the histology of all of these regions is similar to that of the foregut, with the exception that no longitudinal muscles are found beneath the circulars. Five pairs of glands open on or within the head of *P. impressus*. The major portion of 2 pairs of these glands lies within the anterior part of the body cavity; 3 pairs lie wholly within the head. The salivary glands surround the oesophagus to which they are attached by connective tissues. The ducts of these glands open on the ventral floor of the mouth. The anterior tubular glands, ventral to the anterior third of the alimentary tract, open outside the body on the ventral surface of the gnathochilarium. Two pairs of labral glands lie above the mouth into which they open by short ducts leading through the ventral wall of the labrum. The ventral clustered glands lie within the gnathochilarium and open by short ducts leading to the grooves which mark the openings of the anterior tubular glands.—*Author's abstr. and summary.*

14465. **HOLMES, GLADYS ELIZABETH. The influence of the nervous system on regeneration in Nereis virens, Sars.** *Jour. Exp. Zool.* 60(4): 485-503. 3 pl., 1 fig. 1931.—If the nerve cord is present at the cut surface of anterior pieces, normal posterior regeneration is evident in approximately 2 weeks; if absent, either posterior regeneration does not occur or the regenerated portion, always retarded in appearance, is abnormal in structure, lacking ventral nerve cord, parapodia, and anal cirri. Absence of the central nervous system is assured by cutting the nerve cord and looping the cut ends back, leaving several segments free of the cord. Later, when the incision is healed, the animal is cut in two in the cordless region. Histological checks were made using Heidenhain's iron hematoxylin and Boulê's silver-nitrate impregnation. Injury to the tissues in general does not account for the absence of normal regeneration. Apparently the presence of the ventral nerve cord is necessary for complete organization of new tissue. Normal regeneration can take place, even though the union of the ventral nerve cord with the cephalic ganglion is interrupted, provided the nerve cord is still intact at the cut surface.—*Author (courtesy Wistar Bibl. Serv.).*

14466. **INABA, DENSABURO. Notes on the development of a Holothurian, Caudina chilensis (J. Müller).** *Sci. Rept. Tôhoku Imp. Univ., 4th. ser., Biol.* 5(2): 215-248. 8 pl. (1 col.), 8 fig. 1930.—This paper presents the first embryological study in the family Molpadiidae. *Caudina chilensis* passes through the type of development characteristic of the Cucumariidae, having a doliolaria stage in its metamorphosis. The genital organs, egg, fertilization, maturation, cleavage*, wrinkled blastula*, gastrulation*, dipleurula stage*, ciliation of the ectoderm*, doliolaria stage*, pentacula stage (in color*), and young* are described; the rate of growth in the first year was studied and is shown graphically. The larvae emerge from the egg-membrane before gastrulation begins and the formation of free mesenchyme cells also precedes gastrulation. The bibliography contains 34 references.

14467. **LI, YIKING. Regulative Erscheinungen bei der Planarienregeneration unter anormalen Bedingugen.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 114(2/3): 226-271. 29 fig. 1928.—A number of experiments on *Planaria lugubris* are described, in which duplex and other atypical forms were produced by incisions and by the gelatin method of grafting. From his results on double-headed and double-tailed forms where one of the duplicated members is removed, the author concludes that the doubled part regenerates the better, the farther removed the cut is from the common portion; also, that regeneration proceeds better in older pieces. In other duplex individuals the duplicated members were removed simultaneously. When slight stumps are left both members regenerate; when incision is made at the level of the common portion so that no stump is left, regeneration of a single member follows. The author states that already existing body parts do not exercise a restraining influence on the formation of supernumerary regenerates. It seems rather to depend upon external conditions whether regeneration merely restores normal integrity or produces a supernumerary part. If fusion with another regenerate is not possible, a doubled part is not reduced and regeneration of doubled parts is not suppressed. From results on "isopolarly" joined pieces it is concluded that "isopolar" coalescence cannot suppress regeneration in the wound area, if a body part is missing between the joined regions. In "heteropolarly" joined parts the regenerative polarity is not changed, and regeneration at site of union does not result. Pieces "heteropolarly" joined for 5 days, if cut are no longer capable of regeneration in the direction of their coalescence. This failure of "heteropolar" forms to regenerate is not due to the small size of the piece nor to the repetition of the operation, for 1/30 of a worm regulated to form a typical planarian, and animals 2-3 cm. long regenerated heads after 11 decapitations over a period of 4 mos. An hypothesis dealing with regenerative correlation is advanced. An attempt to show its applicability to the various phenomena previously mentioned is made.—*E. D. Goldsmith.*

14468. **McCONNELL, CARL H. The successful application of Rongalit white for the study of the development of the nerve net of Hydra.** (Preliminary note.) *Zool. Anzeiger* 93(7/10): 279-281. 1931.—To a 0.5% solution of methylene blue in distilled water add 3 drops of 25% HCl; mix and filter; add 2 cc. of 15% solution of Rongalit in distilled water; warm the mixture gently over a flame, never allowing it to reach the boiling point; when the color begins to change to deep, dirty green, remove from flame, continuing to stir. The preparation becomes almost clear, and contains a yellowish precipitate. At this stage, set it aside to cool. When cool, filter into a dropping bottle. It may be used after 24-36 hrs., and is good for a week. It may be used in darkness.

14469. **PIERANTONI, UMBERTO. L'organo simbiotico sullo sviluppo di Calandra oryzae. [The symbiotic organ in the development of C. oryzae.]** *Rend. Accad. Sci. Fis. e Mat. Napoli* 33(9/12): 244-250. 4 fig. 1927.

14470. **PORTMANN, ADOLF. Die Entstehung der Nähreier bei Purpura lapillus durch atypische Befruchtung.** *Zeitschr. Wiss. Biol. Abt. B. Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(1): 167-178. 12 fig. 1930.—In each egg capsule of *P. lapillus* only a few eggs develop into larvae and the remainder of the eggs serve as food for these larvae. There is no egg dimorphism but the "nurse eggs" come from eggs that have been fertilized by atypical spermatozoa. When an egg is fertilized by an abnormal sperm the 2 sex nuclei fuse and the egg divides irregularly a number of times but there are no true maturation divisions and the resulting divisions of the cytoplasm have no observable nuclear elements or centrosomes. It is thus demonstrated that maturation and fertilization are 2 series of phenomena quite independent of one another.—*A. B. Needler.*

14471. **PORTMANN, ADOLF. Die atypische Spermatogenese bei Buccinum undatum L. und Purpura lapillus L. Ein Beitrag zur Analyse des Spermiendimorphismus der Prosobranchier.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(2): 307-326. 21 fig. 1930.—In *B. undatum* L., 2 types of sperms are produced, typical and atypical. The atypical sperms are worm-shaped, apyrene, and without a centriole or any of its derivatives. The formation of these atypical sperms is described. In *Purpura lapillus* all fully developed sperms are outwardly quite normal but it is shown that in reality the majority are abnormal having undergone an abnormal behavior of the chromatin material at synapsis. As the atypical spermatozoa so far examined in Prosobranchia have some very complicated functions they cannot be regarded as degeneration phenomena. It is believed that abnormal spermatogenesis

has arisen through sudden mutative changes in the nuclei of the sperm-forming cells, and that the small deviation from the normal found in *Purpura* and the large deviation found in *Buccinum* should not be regarded as steps in a progressive change of the spermatozoa but rather as mutations that have occurred independently.—*A. B. Needler.*

14472. RAMMNER, WALTER. Über die postembryonale Entwicklung der Cladocere scapholeberis mucronata O. F. Muller. (Ergebnisse aus Einzelzuchten.) *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 113(2): 287-311. 10 fig. 1928.—Females were reared individually for 20 instars. Growth is most intense during the early instars, decreases after egg production begins, and ceases entirely in older animals. The reduction in growth intensity varies considerably for each individual. The form of older animals remains relatively constant. A strongly arched brood chamber forms in the young animals which becomes more or less reduced in very old animals permitting young, mature, and old forms to be identified. Two local races are sharply defined throughout their entire postembryonic development,—not only in the retention of a frontal spine in advanced instars. Females bear their first brood during the fifth instar. The first clutch of eggs averages 3-4. The greatest number in older individuals was 22. One ♀ bore an ephippium and, later, parthenogenetic eggs but retained her ephippial form. Males were reared through 8 instars. Growth is not retarded earlier than in the females. They pass through a greater number of instars as can be determined from preserved material. The ephippium is not fully prepared immediately after molting but develops gradually. Considerable change may occur later in the instar. The changes in the sculpturing of the head show that great proliferation of cells occurs at first, only, however, after considerable increase in cell surface comes about. For analytical work on form, preserved material may be used only for preadult instars. Individually reared animals alone are of value for adult instars.—*B. G. Anderson.*

14473. RIESE, KARL. Phylogenetische Betrachtung über das Nervensystem von Cypraea moneta auf Grund seiner Morphologie und Histologie. (Fauna et anatomia ceylanica, IV, nr. 12.) *Jenaische Zeitschr. Naturwiss.* 65(2): 361-486. 32 fig. 1931.—This detailed account of the nervous system of *C. moneta* from Ceylon is based on reconstruction and study of serial sections. The entire system is surrounded by a connective tissue sheath. The ganglionic cortex consists of unipolar, bipolar and multipolar neurons, but all 3 types are not present in every ganglion. The neuroglia usually is composed of fibrous cells and a spongy network (sometimes absent). Special ganglion-cells, grouped between lamellar partitions, are developed in the cerebral ganglia. The cerebral and pleural ganglia of each side are practically fused, although histologically separable, and are asymmetrically twisted towards the left. The cerebral and pleural commissures are also extremely short and a secondary cerebropleural connection is present. Each cerebral gyrus gives off a tentacular, an ocular, 2 frontals and 4 nerves to the proboscis, also the pedal connective, the statocystic nerve and the combined buccal and subradular connectives. Besides the usual connectives, the left pleural ganglion is the origin of a secondary left columellar, a left posterior pallial, a siphonal nerve and the sinistral zygoneury. Right zygoneury is absent. The buccal and subradular ganglia are separable and have distinct commissures but their very long (cerebro-) connectives are fused together on each side. Two pairs of radular nerves, 3 pairs of oesophageals, a left salivary and 2 left buccals arise from the ganglia; a nerve to the radular bed branches off each connective. Chiastoneury is not developed. The subintestinal and supraintestinal connectives are both quite short, and *Cypraea* is intermediate between those groups in which the suprintestinal ganglion is close to the left pleural and those in which it is nearer the right ganglion. The long visceral commissure has 4 accessory and 1 visceral ganglion proper. Also, a primitive condition is indicated by the double fiber-origin of the 21 parietovisceral nerves, which supply mantle, hypobranchial glands, rectum, anus, genitalia, kidney, osphradium, gills, columellar muscle, enlargement of foregut and pericardium. The anastomoses of the subintestinal nerves are interesting. The pedal connectives are quite long but the pedal commissure is extremely short. In the pedal system, the vaguely circumscribed ganglia, the 9 accessory commissures and the presence of even a vestigial lateral groove appear to be primitive characters, although these "ganglia" are well demarcated anteriad and have closed cortex and structure like true ganglia. On the other hand, the cortex of the pedal cords is not continuous and posteriad their ganglion cells are restricted to longitudinal strands. The fibers of the pedal and pleuropedal connectives, which enter the right and left pedal ganglia differently, can be followed into the penial and into the columellar muscle nerves, which superficially appear to arise from the right and from the left pedal ganglia, respectively. Both nerves can thus be regarded as primitive cerebral (or pleural) nerves which have secondarily become associated with the pedal ganglia. The 34 pedal nerves anastomose in a complex manner in the foot-musculature. A detailed account of the statocysts is included. *Cypraea* is considered a primitive group of Taenioglossa, derived from the same ancestors as the Architaeniglossa. It shows affinities with the Aporrhaidae, Capulidae, Calyptraeidae, Crepidulidae, Lamellariidae and Naticidae on the one hand, and with the Cassidiidae, Tritonidae, Janthinidae and Doliidae on the other.—*K. Riese (transl. by H. B. Baker).*

14474. SLIFER, ELEANOR H. Insect development. II. Mitotic activity in the grasshopper embryo. *Jour. Morph. and Physiol.* 51(2): 613-618. 1931.—The onset of hibernation in *Melanoplus differentialis* eggs kept at high temp. is accompanied by a fairly abrupt cessation of cell division. The total number of mitotic figures present in the different individuals of a series of embryos of this grasshopper, from eggs kept 18-20 days at 25°C. from the time of laying, varied between 1000 and 4400. In contrast, embryos from eggs kept 27 days at 25°C., as well as those older and still in the hibernating state, contained few or no dividing cells. In rare cases hibernation failed to occur, a few or many of the eggs developed without a pause when kept at 25°C., and hatched at approximately the 38th day.—*Author (courtesy Wistar Bibl. Serv.).*

14475. SPEK, JOSEF. Über die Winterknospenentwicklung, Regeneration und Reduktion bei Clavellina lepadiformis und die Bedeutung besonderer "Omnipotenter" Zellelemente für diese Vorgänge. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 111(1): 119-172. 18 col. fig. 1927.—Amoebocytes of *Clavellina* (including the test-cells, connective tissue cells, blood-corpuscles, and follicle-cells of the ovum) commonly contain a refringent viscous colloid protein reserve-body which stains brilliantly with neutral red. They have nutritive and formative functions, feeding regenerating tissues and organizing new structures in the winter buds. When circulating in the lacunae of the branchial sac, they often attach themselves to the basal surface of the branchial epithelium and penetrate between the epithelial cells. They migrate wholesale from th body into the test and there remain as the "tunica-cells," still characterized by the presence of the vitally-stained droplet, whence the name "Tropfenzellen" (drop-cells) of the mesenchyme. The thin ciliated epithelium to right and left of the endostyle is underlain by the red-staining drop-cells, but in the endostyle itself the dark-red refringent drops are never seen, only pale rose-tinted vacuoles, indicative of rapid utilization of the reserve-product. It is undetermined how far there may be a specific interaction between the gland-cells of the endostyle and the wandering colloid cells. The organs of individuals which have been injured in scraping the colonies from the rocks become necrotic and, if stained promptly at the beginning of the histolysis, the lacunae

are seen to be gorged with amoeboid drop-cells in full activity without any sign of approaching cytolysis, displaying an extraordinary degree of resistance in comparison with the ordinary tissue-cells. As the tissue-destruction continues, the drop-cells gradually migrate out of the lacunar system into the stolons at the hinder end of the body. These epithelial saccules become swollen by mass-aggregations of the amoeboid cells and appear as white nodules which finally separate from the dead parent-body and are then identical with winter-buds. After a resting period of about 3 weeks they come suddenly to life and within 3 days give rise to a new organism at the expense of the protein-reserve. The first organ to appear is the primordium of the gut. The intervention of the drop-cells in oögenesis and in regeneration is described with equal fullness and their omnipotential nature is briefly discussed.—*A. Willey.*

14476. **SPEK, JOSEF. Zustandsänderungen der Plasmakolloide bei Befruchtung und Entwicklung des Nereis-eies.** *Protoplasma* 9(3): 370-427. 1 pl., 2 fig. 1930.—Oocytes of *N. dumerilii* take protein drops out of amoeboid cells in the egg cell. The proteins swell and pass almost completely into solution, making the egg transparent and altering the results of centrifuging. A cortical sheath of small granules appears. A natural indicator forms in these granules. After fertilization the egg becomes brown, due to differences in refraction between the proteins and the hyaloplasm. The cortical sheath is separated off and swells to a thick gel. General hydration sets in. After polar body formation the protein and oil drops and the indicator pass to the pole opposite the polar bodies; the other pole becomes colorless. In the 4-celled stage or earlier there occurs a change in reaction (at the pole containing the drops) to the acid side; at the clear pole it becomes alkaline. This is shown both by added indicators and the natural one. On furrowing, the cell which is alkaline forms the ectoderm while the acid one forms the endoderm. KCl-sea water induces the process artificially up to furrowing, even to change in acidity. After the change in pH the stability of the oil at the one pole is suddently lost and it aggregates while the proteins become clear; at the other, the plasma becomes more dense. Salts were injected and some which had no influence outside (even normal sea water) changed the cell markedly inside by coagulation.—*L. S. Moyer.*

14477. **VOGELSANG, ENRIQUE G. Über Taenien-Missbildungen.** *Zool. Anzeiger* 80(7/9): 268-270. 2 fig. 1929.—A specimen of *Dipylidium caninum* is described with 5 suckers, the extra one being much smaller than the 4 normal ones. In another specimen the last 3 proglottids had a median split. Abnormalities of *T. caninum* in Uruguay are apparently very rare. In 2 specimens of *Taenia marginata* the end of the strobila was forked.—*R. T. Young.*

14478. **WARNER, STANLEY G. Histological polarization of lateral giant-fibers in the crayfish.** *Proc. Nation. Acad. Sci. U. S.* 17(3): 140-141. 2 fig. 1931.—In stained sections of the abdominal nerve cord of the crayfish, segments overlap one another as in the earthworm nerve fiber; overlapping fibers differ in staining reaction, the lateral member of the overlapping pair staining darker than the median one.

14479. **ZYENG, DU-HYEN. Distribution of the intermuscular nerve cells in the earthworm.** *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5(3): 449-466. 3 fig. 1930.—Intermuscular nerve cells were found between the longitudinal and circular muscle layer, between the epidermis and the circular muscle layer, and sometimes within the circular muscle layer itself. The distribution of the cells, however, varied considerably in the species studied: *Allolobophora foetida, Pheretima megascolidioides, P. communissima,* and *P. vittata,* named in order of the number of these cells. *A. foetida* possesses nearly the same number of ordinary type cells as the others but many more of a particular spindle-shaped bipolar cell. The number of these cells tended to decrease anterio-posteriorly. It is suggested that the cells are vestiges of the primitive nerve net of lower invertebrates.—*W. N. Hess.*

PROTOZOA

D. H. WENRICH, *Editor*

(See also in this issue: (Cytol.) 12463, 12468, 12475, 12478, 12481, 12484, 12495; (Ecol.) 12626, 12695; (Pharmacol.) 13242, 13243, 13252, 13318, 13345, 13355, 13357; (Immunol.) 13566, 13570, 13571; (Parasitol.) 13572, 13573, 13580, 13581, 13584, 13587, 13593, 13594, 13597, 13598, 13599, 13601, 13604, 13605, 13606, 13608, 13609, 13612, 13614, 13615, 13618, 13626, 13631, 13632, 13633, 13634, 13635, 13638, 13639, 13643; (Bacteriol.) 13694, 13753, 13756; (Entomol.) 13903; (Algae) 14046; (Paleozool.) 14241, 14244, 14245, 14256; (Miscel.) 14629, 14949)

14480. **ABRARD, RENÉ. L'évolution de la spire et des loges dans le rameau Nummulites bolcensis-murchisoni-irregularis-distans-millecaput.** *Bull. Mus. Nation. Hist. Nat. [Paris]* 1928(4): 295-297. 1928.—The evolution of the spiral has been from a form less evolute toward the more evolute.

14481. **BARKER, H. ALBERT, and C. V. TAYLOR. A study of the conditions of encystment of Colpoda cucullus.** *Physiol. Zool.* 4(4): 620-634. 1931.—Encystment was studied by making daily counts of the number of motile and of encysted organisms in ½ cc. of cultures varied with respect to pH, bacterial food supply, and total number of ciliates. Because of the impossibility of controlling even the more obvious environmental factors in the classical hay infusion, a balanced inorganic salt solution was used as culture medium. To this was added the bacterium *Pseudomonas fluorescens,* on which *Colpoda* throve and showed optimal rate of fission. Permanent encystment was: (1) not markedly influenced by the pH of the medium (neither accelerated nor retarded within the limits of pH 6.2 to 8.2); (2) not significantly accelerated or retarded by the absence or abundance of bacterial food; (3) prevented for a long time and presumably indefinitely by frequently renewing the culture medium and not allowing the ciliates to become crowded. The formation of permanent cysts is normally dependent upon crowding, or, where not numerous at any one time, upon a cumulative alteration of the medium brought about by the ciliates themselves. The more abundant the Colpoda in a certain volume of a given medium, the sooner will permanent encystment occur.—*Authors (courtesy Wistar Bibl. Serv.).*

14482. **BOUGHTON, DONALD C. The value of measurements in the study of a protozoan parasite Isospora lacazie (Labbé).** *Amer. Jour. Hyg.* 11(1): 212-226. 1930.—The average volume of the oocysts of coccidia in the English sparrow, measured at different times during the course of the infections in captive birds, varied significantly from time to time during an infection in a single host. From measurements made at different times it was possible to obtain statistical differences greater than those which have been used in the literature to differentiate coccidian species. The author does not decide whether the results are due to several species or strains of *Isospora* in the sparrow, or to a change in oocyst size during the course of an infection. It is shown, however, that a short series of measurements at one time may give size relations which are not typical for the species at all times.—*H. Kirby.*

14483. **CHATTON, ÉDOUARD, et ANDRÉ LWOFF. Contribution à l'étude de l'adaptation Ellobiophrya donacis Ch. et Lw. Péritriche vivant sur les branchies de l'acéphale Donax vittatus Da Costa.** *Bull. Biol. France et Belgique* 63(3): 321-349. 3 pl., 4 fig. 1929.—The ciliate *Ellobiophrya* was found in about 50% of *D.*

vittatus procured from the bay of Morlaix, France, but not in any other lamellibranchs. It is typically located between the 2 filamentous lamina of the gills, attached to them by a characteristic ring-shaped structure. The adult consists of a somewhat cylindrical body 60-100μ long $\times$ 25-30μ at the widest part, and a ring formed of 2 projections which arise from the aboral end of the body, surround a gill filament and meet again in a distinct suture with a special coupling structure. The adoral end has a peristome and cytopharynx like those of most vorticellids. The organism is holozoic and feeds solely on cellular debris from the host's kidney. Fatty reserves and characteristic bacilli are constant cytoplasmic inclusions. Division begins in the usual way at the peristome but later resembles a budding process. The daughter cell remains attached for some time to the mother by a style homologous with the style of *Vorticella*. It then develops aboral cilia and breaks loose. The supporting ring now begins to form and when this is complete the aboral cilia disappear to leave a set of blepharoplasts called by the authors the "infraciliature." They propose this as a general term to designate ciliatures without cilia but persisting as chains of blepharoplasts capable at certain stages of reorganizing to produce functional ciliatures. They suggest an analogy between the alternate organization and disorganization of the infraciliature and the formation of chromosomes from dispersed chromatin with the later redispersion. The ring support of *Ellobiophrya* is found in no other protozoon, but the homologies of this structure with structures in other vorticellids may be traced. The organism is classed as a dextral peritrich in the vorticellid group and a new subfamily for it is erected: the **ELLOBIOPHRYINAE** (p. 346).—*W. Trager.*

14484. **CHEISSIN, E. Infusorien Ancistridae und Boveridae aus dem Baikalsee.** *Arch. Protistenk.* 73(2): 280-304. 1 pl., 10 fig. 1931.—The following ciliates were found in large numbers between the gill filaments of the gastropods. *Benedictia* and *Choanomphalus* in Lake Baikal: **TIARELLA** (Boveridae) erected to include *T. baicalensis** (p. 286) and *T. b.* forma **elongata*** (p. 294); **ANCISTRINA** (Ancistridae), erected to include *A. ovata** (p. 295); **ANCISTRELLA** (Ancistridae), erected to include *A.* **choanomphali*** (p. 297). The presence in Lake Baikal of these ciliates, whose family relatives are all marine, leads the author to believe that L. Baikal was once connected with the sea. The oral end of these ciliates is regarded by the author as the original rear end, the aboral as the original front end. Details of ciliation, especially of the pharyngeal region, are given, based on the Klein silver line technique. Contrary to the opinion of some, these ciliates are not heterotrichs, but are much more closely related to primitive peritrichs. Evidence is given to show that the mouth has migrated in phylogenetic development from the front end to its present position.—*L. E. Noland.*

14485. **CUNHA, A. MARQUES da, et CESAR PINTO. Trichodina fariai, n. sp., cilié péritriche endoparasite de poisson marin.** *Compt. Rend. Soc. Biol.* 98(17): 1570-1571. 2 fig. 1928.—*T. fariai** (p. 1570), from intestine of *Sphaeroides testudineus* from Brazil.

14486. **DAMEROW, ARTHUR P. An attempt to grow paramoecia in pure cultures of tubercle bacilli.** *Amer. Rev. Tuberc.* 24(3): 363-366. 1931.—Cultures of a virulent human tubercle bacilli did not support growth and reproduction of *Paramoecium caudatum*. Attempts to develop tolerance in the paramecium for the bacillus were unsuccessful. Tubercle bacilli are rapidly washed from the paramecium after they have been in contact for varying intervals of time up to 2 wks., indicating that probably the bacilli were not taken up by the protoplasm of the paramecium. A simple and satisfactory method of washing the paramecium free from bacteria is described.—*Author's summary.*

14487. **DAVIES, L. M. The fossil fauna of the Samana Range and some neighbouring areas: Part VI. The Palaeocene Foraminifera.** *Mem. Geol. Surv. India, Palaeont. Indica* 15: 67-79. 1 pl. 1930.—The author discusses and figures 8 forms of the genera *Nummulites, Operculina, Discocyclina, Dictyoconoides,* and *Nonionina* ?, including *Dictyoconoides conditi* v. roeae* (p. 76), type in Geol. Surv. India.

14488. **DAWSON, J. A., and D. C. HEWITT. The longevity of encysted colpodas.** *Amer. Naturalist* 65 (697): 181-186. 1931.—*Colpoda cucullus* was recovered from protection cysts in hay collected in Cuba in May, 1925. Motile colpodas were recovered in different media in times varying from 18 to 24 hrs. Nematodes of the genera *Cephalobus, Aphelenchus,* and *Rhabditis* as well as a small species of amoeba were recovered in active condition.—*J. A. Dawson.*

14489. **DONS, CARL. Parafolliculina röstensis n. sp.** *Kgl. Norske Vidensk. Selsk. Forhandl.* 3(paper 45): 173-176. 3 fig. 1930(1931).—*P.* röstensis from "Röst," the outermost archipelago of Lofoten, Norway.

14490. **EKSEMPLARSKAJA, E. V. Morphologie und Cytologie von Anoplophrya sp. aus dem Regenwurmdarm.** *Arch. Protistenk.* 73(2): 147-163. 3 pl. 1931.—A species of *Anoplophrya,* occurring along with *Hoplitophrya, Maupasella,* and *Plagiotoma* in the earthworm's intestine, was studied. Incidence was 80-90% in spring and summer, 30-40% in the fall. Only adult worms were infected. The *Anoplophrya* was 50-80μ long, oval, with one row of 3-5 contractile vacuoles, a long cylindrical macronucleus, uniform ciliation, no fixation apparatus. The macronuclear structure and micronuclear division are described, based largely on iron-haematoxylin and Feulgen preparations. Granules and rods of chromatin in the cytoplasm are interpreted as degeneration products. Cytoplasmic inclusions of paraglycogen, fat and lipoid are demonstrated. The *Anoplophrya* were kept alive in artificial culture medium for 5 days.—*L. E. Noland.*

14491. **GALLI-VALERIO, B. Notes de parasitologie.** *Zentralbl. Bakt. I Abt. Orig.* 120(1/2): 98-106. 1 fig. 1931.—Sporozoa in the feces of *Vulpes vulgaris,* a coccidium, *Isospora* **vulpis** (p. 102); in the feces of a ♀ *Lyrurus tetrix, Isospora* lyruri (p. 103). Nemathelminthes: in the intestine of a *Cypselus apus,* a ♀ *oxyuris* **cypselidae** (p. 104). Other parasites are described without identification. All are from the vicinity of Lausanne.

14492. **GELEI, J. v. Sensorischer Basalapparat der Tastborsten und der Syncilien bei Hypotrichen** *Zool. Anz.* 83(11/12): 275-280. 5 fig. 1929.—By means of special technics (osmium-toluidin and silver-osmium formol) certain sack-like structures at the bases of the sensory spines, cirri, and membranelles in *Euplotes patella,* or a species closely related thereto, were demonstrated. These the author calls "sensory cysts" because of their supposed function as accessory organelles of the sensory apparatus in the conduction and increase of mechanical stimuli effects, and in "registering" the movement (Bewegungszustandes) of cirri and membranelles.—*R. T. Young.*

14493. **GOUSSEFF, W. F. Zur Frage der Kaninchenkokzidien.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39 (4): 265-271. 1931.—Gousseff discusses the 3 forms (occurring in rabbits) which he recognizes as distinct: (1) *Eimeria stiedae* Lindemann (1865); the oöcysts are colorless or orange yellow; micropyle often open; poles somewhat unequal; oöcysts 23.7—43.2 $\times$ 15.1—28.0μ; spores 6.4—17.2 $\times$ 4.3—8.6μ. (2) *E. perforans* Leuckart (1879); micropyle invisible or slightly visible; oöcysts 15.1—34.5 $\times$ 8.6—23.7μ; spores 5.1—8.6 $\times$ 3.4—6.4μ. (3) *E. magna* Pérard (1924); oöcysts oval to egg shaped, of orange yellow or brown color; on the broader end is a distinctly visible micropyle; oöcysts 23.7—38.8 $\times$ 12.9—28.0μ; spores 6.4—15.1 $\times$ 4.3—8.1μ. These measurements agree with those previously published by other writers.—*L. D. Bushnell.*

14494. **HOLMES, FRANCIS O. Herpetomonas bancrofti n. sp. from the latex of a Ficus in Queensland.** *Contr. Boyce Thompson Inst.* 3(3): 375-384. 5 fig. 1931.—A new herpetomonad flagellate, *H.* **bancrofti***, occurring in the latex of *Ficus scabra,* later identified as *F. opposita* Mig., is distinguishable from all other known latex

herpetomonads by its furrowed body, unusual frequency of pairs, and its unique occurrence in chains of 3-30 cells, in addition to occurrence like that of other species in pairs and isolated individuals. Individuals in chains, 5-10μ; isolated and paired individuals, 5-24μ in length. Many short cells, and all cells in chains, aflagellate; when flagellate, both daughter cells of dividing pairs have flagella of nearly equal length. In flagellate, isolated individuals, flagellum a little shorter than body of cell on the average. Nucleus $1\frac{1}{2} \times 1\mu$; 2.4μ from anterior end of nucleus to anterior end of cell; nearly spherical parabasal body midway between these points.—*F. O. Holmes.*

14495. HURST, C. T., and D. R. STRONG. Studies on the plates of the fresh-water Ceratium, the so-called Ceratium hirundinella. *Arch. Protistenk.* 73(1): 104-110. 4 fig. 1931.—Four plates were found in the apical horn of the *Ceratium* studied; the 2 ventral ones are narrower than the dorsal ones. The first extends posteriorly to the flagellar pore, separating the first precingular plate from the sulcus.—*L. E. Noland.*

14496. [ЯКІМОV, V. L.] ЯКИМОВ, В. Л. К вопросу о паразитах у пресноводных рыб. Кокцидиоз у окуня. [Parasites of fresh water fishes. Coccidiosis of the perch.] [French summary.] Русский Журнал Тропической Медицины, Медицинской и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. & Vet. Parasitol.*] 7(8): 537-540. 1 fig. 1929.—In July 1926, for the first time in U. S. S. R., author found heavy infection in the liver of *Perca fluviatilis* due to *Eimeria* **rivierei.**

14497. JANICKI, C. Neue Beiträge über Paramoeba Schaud. *Congrès Internation. Xe Zool. à Budapest 1927.* Part 2. pp. 903-905. 1929.—Cytological investigation on *P. pigmentifera* (Grassi) with reference to the appearance of centrosomes, the finer phenomena associated with division of nucleus and "Nebenkörpers," and the significance of the latter.—*G. Alexander.*

14498. JÍROVEC, OTTO. Über ein neues Balantidium aus dem Darmtraktus von Amblystoma tigrinum. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 3(1): 17-21. 10 fig. 1930.—*B.* **amblystomatis*** (p. 17), from the intestinal tract of *Amblystoma tigrinum*, Czechoslovakia; *B. elongatum* was found in the small intestine of *Amblystoma.*

14499. JÍROVEC, OTTO. Ueber das Vorkommen von blepharoplastlosen Trypanosomen in normalen Stämmen. *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 55-58. 1931.—Blepharoplast-free trypanosomes were found in all strains examined (*Trypanosoma gambiense* Braun, *T. gambiense* Funk, *T. rhodesiense* James, *T. rhodesiense* Eastwood, *T. brucei* Naguna 30, *T. evansi, T. congolense, T. lewisi, T. equinum, Schizotrypanosoma cruzi, T. equiperdum*), even those long cultivated in experimental animals. The % was higher in freshly isolated strains; when the hematogenous infection increased in severity the number increased because of increase in abnormalities of division. The % varied from animal to animal and often was very irregular during the course of infection, the cause of the irregularity being unknown.—*Author's summary.* (*transl.*).

14500. KARLING, J. S. A preliminary descriptive study of a parasitic monad in cells of American Characeae. *Amer. Jour. Bot.* 17(9): 928-937. 3 pl. 1930.—*Diplophysalis stagnalis* Zopf is parasitic in many species of the Characeae, where it feeds on the degenerating plastids, starch grains, and the remainder of the cytoplasm. It has 4 rather sharply defined stages in its life history: Zoospores, amoebae, zoosporangium, and resting cyst. Active feeding occurs in the amoeboid stage. The resting or sporocyst has a primary and secondary wall, the latter being very rough, so that the whole structure looks somewhat like a many pointed star within a sphere.—*J. S. Karling.*

14501. KONSULOFF, STEFAN. Über die Färbbarkeit der Kerne der Infusorien aus der Familie der Opaliniden in Zusammenhang mit der Bedeutung der Feulgen's mikrochemischen Reaktion. *Arch. Protistenk.* 73(2): 311-314. 1931.—The author regards the so-called disk-shaped bodies in *Opalina* as macronuclei, the "nuclei" of other authors as micronuclei. As further evidence for this view he states that in dilute Delafield's hematoxylin and methyl green both types of nuclei stain, when young Opalinae from tadpoles are used. Feulgen's reaction was negative for both types of nuclei in both young and old Opalinae. This, in the author's opinion, however, does not exclude the possibility of chromatin being present.—*L. E. Noland.*

14502. PASCHER, A. Über die Verfestigung des Protoplasten im Gehäuse einer neuen Euglenine (Klebsiella). *Arch. Protistenk.* 73(2): 315-322. 6 fig. 1931.—**KLEBSIELLA** (p. 322), erected for *K.* **alligata*** (p. 322), a new case-bearing euglenoid flagellate, which is attached to the inner end of its case by fine gelatinous elastic fibers secreted from the posterior end of the cell. The organism, which closely resembles *Euglena*, is about 35μ long with a cup-shaped case 25μ long. A detailed description of the cell is given and comparison made with *Ascoglena, Trachelomonas, Euglena chlamydophora,* and *E. terricola.*—*L. E. Noland.*

14503. PESCHKOWSKY, LUDMILLA. Zur Morphologie von Dileptus gigas und Loxophyllum meleagris. *Arch. Protistenk.* 73(2): 179-202. 1 pl., 9 fig. 1931.—In *D. gigas* 3 myonemes were found on the ventral surface of the proboscis. The large middle one connects with the inner lining of pharyngeal rods; the 2 smaller outer ones connect on either side with the outer sheath of pharyngeal rods. Along the ventral surface of the proboscis are many short transverse superficial supporting fibrils, found as far down as the mouth in the protoplasm between the 2 sheaths of pharyngeal rods. More delicate supporting fibers were also found along the dorsal surface of the proboscis. A fibrillar network was found in the cytoplasm under the pellicle, connecting anteriorly with the outer layer of pharyngeal rods. In *L. meleagris* a peripheral fibrillar layer was observed, originating in and connecting the basal granules of the 3 left marginal rows of cilia, and running thence to the right through the peripheral cytoplasm, independently of the cilia of that region, to the oral slit on the right where they unite and form supporting strands in the pharynx and wall of the mouth. Oval cytoplasmic inclusions, presumably of glandular character, were observed and believed to be in some way associated with the trichocysts. Endoplasmic fibrils connecting these bodies may possibly be ducts or contractile strands.—*L. E. Noland.*

14504. PINTO, CESAR. Henneguya wenyoni, n. sp., Myxosporidie parasite des branchies de poisson d'eau douce du Brésil. *Compt. Rend. Soc. Biol.* 98(17): 1580. 1928.—*H.* **wenyoni** from branchiae of *Tetragonopterus* sp.

14505. RAMMELMEYER, H. Zur Biologie einiger Raubinfusorien. *Arch. Protistenk.* 73(2): 251-273. 3 pl., 2 fig. 1931.—*Didinium* fed on *Paramecia* that had ingested congo red showed the blue acid color in their food vacuoles in about 20 minutes and for about 2 hrs. thereafter. Defecation ordinarily occurred during the 2nd hour after ingestion. $MgSO_4$ and $MgCl_2$ did not materially alter the time of digestion. *Dileptus anser* ate *Paramecium, Chilomonas, Colpoda,* and *Stentor,* but not *Amoeba.* A split-tailed variety of *Dileptus* was isolated and showed some tendency to pass on the defect to offspring. Neither hunger nor extremes of temp. regularly produce encystment in *Didinium, Dileptus,* or *Euplotes.* Excretions accumulating in the medium are more effective in bringing about encystment. The encystment process is described in detail for *Dileptus* and the changes occurring in the cytoplasm are set forth. The intimocyst in *Didinium* cysts was observed by the use of 0.5% NaCl solution. *Spirostomum* cysts were obtained.—*L. E. Noland.*

14506. REGENDANZ, P., et W. KIKUTH. Sur les hémogrégarines du "Gamba" (Haemogregarina didelphydis), de la "Quica" (Haemogregarina metachiri n. sp.) et sur l'Haemogregarina ratti. *Compt. Rend. Soc. Biol.* 98(17): 1565-1567. 1 fig. 1928.—A further description of *H. didelphydis* from *Didelphys didelphydis aurita,* especially a form found in the intestine of a tick (*Ixodes loricatus*) which had been feeding on an infected *Didelphys;* a form occurring in the leucocytes was also

described. A similar gregarine from the blood of *Metachirus quica* is provisionally named *H.* **metachiri*** (p. 1567, illus. p. 1568) from Brazil. Heavy infection of wild rats with *H. ratti* is noted.

14507. REGENDANZ, P., et W. KIKUTH. Sur un parasite du sang des "Quica" (Metachirus quica), Nuttalia brasiliensis n. sp., et influence de la rate sur les infections latentes du sang. *Compt. Rend. Soc. Biol.* 98(17): 1567-1569. 1 fig. 1928.—Following splenectomy large numbers of a parasite, *Nuttalia* **brasiliensis*** (p. 1568), appeared in the blood of *Metachirus quica* (Brazil). The infections could not be transmitted to *Didelphys* or to dogs. The appearance or increase in numbers of parasites after splenectomy is noted, and the protective rôle of the spleen in parasite infections is discussed.

14508. SANDERS, ELIZABETH P., and L. R. CLEVELAND. The morphology and life-cycle of Entamoeba terrapinae spec. nov., from the terrapin, Chrysemys elegans. *Arch. Protistenk.* 70(2): 267-272. 1 pl. 1930.—The organism has a typical *Entamoeba* nucleus, its trophozoites vary in size from 10 to 15μ and its cysts from 8 to 14μ. The cysts develop in a *histolytica*-like manner to the 4-nucleate stage with heavy, blunt, rod-like chromatoid bodies. Occasionally 8-nucleate cysts are formed. All of these stages develop at 20-23° C. in the liver infusion agar medium used for *Entamoeba histolytica*. Transfers are made every 6 days. The optimum temp. for excystation and metacystic development is about 27° C., when the amoeba excysts as a 4-nucleate trophozoite. This gives rise by cytoplasmic division to 2 binucleate amoebae, which by cytoplasmic division produce 4 uninucleate amoebae. A cyst of *E. histolytica* gives rise to 8 metacystic amoebae. All stages in the life-cycle of *E. histolytica* could be found regularly in the liver infusion agar cultures grown at 37° C. Metacystic development of *E. terrapinae* at room temp. in the regular cultures was rare.—*E. P. Sanders.*

14509. SKVORTZOW, B. W. Phytoplankton from Siberia. *Jour. Bot.* 69(818): 33-38. 2 fig.; (819): 69-72. 1 fig. 1931.—One hundred and ninety-eight spp. and varieties are listed as occurring in the Akmolinsk Lake district, in the Altai Mts., and from the Amur River, including *Trachelomonas minuta* v. **siberica*** (p. 34), *T. ovoides* v. **siberica*** (p. 34).—*A. L. Grant.*

14510. VAUGHAN, THOMAS WAYLAND. Results of recent investigations of American Tertiary larger Foraminifera. *Proc. Third Pan-Pacific Sci. Congr., Tokyo, 1926* 2: 1850-1857. 1928.—The review of earlier investigations of American Tertiary larger foraminifera commencing about 1913 is given. A number of genera are discussed, and notes are given on the species recognized in America, especially data are given in regard to advances in knowledge of these forms published since the appearance in 1924 of a paper by T. Wayland Vaughan on American and European Tertiary larger foraminifera. A bibliography gives the literature published during and subsequent to 1923.—*J. A. Cushman.*

14511. [VINOGRADOVA-FEDOROVA, T.] ВИНОГРАДОВА-ФЕДОРОВА, Т. Опыт учета инфузорий желудка жвачных и культивирования их **in vitro. [Infusoria of the stomach in ruminants, and their culture in vitro.]** [German summary.] Труды Ленинградского Общества Естествоиспытателей, Отделение Зоологии и Физиологии (*Trav. Soc. Nat. Leningrad, Sect. Zool. et Physiol.*) 59(2): 3-20. 1929.—Counts of the infusoria population of the rumen of goats (♂ and ♀), by the Dogiel-Vinogradova and the Mangold-Ferber methods, gave good agreement. Counts taken from day to day, and at different hours, are fairly constant; daily variations in count were probably due to the dilution of the contents of the rumen by ingested food and drink. With these variations eliminated (in hunger) there is no significant change in infusoria count, and the infusoria population characteristic of any given ration can be determined. Counts of 649 and 782 per cu. mm. were recorded for 2 tests. The density of the infusorial population depends, undoubtedly, on the energy of their reproduction, and on the numbers of infusoria taken in with food.

14512. WETZEL, A. Über die Zucht von Actinosphaerium. *Zool. Anz.* 96(7/8): 198-200. 1931.—The methods of propagating *A. eichhorni* for laboratory use are discussed, and formulae are given for culture media.

14513. WEYER, GEORG. Untersuchungen über die Morphologie und Physiologie des Formwechsels der Gastrostyla steinii Engelmann. *Arch. Protistenk.* 71(1): 139-228. 83 fig. 1930.—The Gastrostylae were cultured in Knop's solution and fed on *Gonium pectorale*. Cell division required 70 minutes for completion. Encystment involved successively: cessation of feeding, egestion of all solid wastes, disappearance of peristomial cilia and ambulatory cirri, assumption of spherical form, transformation of pellicle into ectocyst, disappearance of all remaining cilia, occurrence of streaming movements in the cytoplasm, deposition of the endocyst, fusion of the 4 macronuclei into one, shrinking and wrinkling of the ectocyst, contraction of protoplasm away from endocyst, cessation of protoplasmic currents, disappearance of contractile vacuole, requiring 15 hrs. for completion. Excystment involves successively: resumption of cytoplasmic currents, changes of form in macronucleus, reappearance of contractile vacuole, appearance of cilia over a clear zone at one end of the cell, followed by their appearance elsewhere, swelling of endocyst, which stretches and ruptures the ectocyst, rupture of endocyst with escape of the animal, requiring 11¾ hrs. for completion. Re-encystment could be induced by changing the external conditions before emergence. Details of cell division are given. No evidence of endomixis was observed in the cysts, although abnormal encystments occasionally gave nuclear pictures like those interpreted by others as endomixis. In excystment the macronucleus divides twice to form the typical number, and the enlarged "activated" micronucleus divides, the other micronuclei remaining unchanged. In micronuclear division 8 chromosomes form and split longitudinally, giving 16, of which 8 slip out from the others to pass to each pole. Observations and speculations on spindle formation and presence of centrosome are given. In dividing of excysted animals the "activated" micronucleus does not differ in its behavior from the others. Pure line cultures were maintained 30 months without depressions, rhythms, parthenogenesis, conjugation, or encystment. In vegetative cultures the animals breed true as to micronuclear number. Encystment is not induced by variations in salt concentration, oxygen, pH, organic matter, temperature, metabolic wastes, or evaporation of medium, but is induced solely by hunger or injuries that bring the animal into a state of hunger. Excystment occurs only in the presence of organic matter; gelatin, thoroughly liquefied and decomposed by bacterial action, was found to be most effective in inducing excystment. Encystment of the Gastrostylae apparently increased the alkalinity of the culture. Too much organic matter produced abnormal excystment. Cysts washed free of organic matter died quickly after drying; dried with organic matter they lived a long time. In Knop's solution cysts retain their vitality over long periods.—*L. E. Noland.*

14514. YAKIMOFF, W. L., und S. K. TERWINSKY. Die Coccidiose des Zobeltieres. *Arch. Protistenk.* 73(1): 56-59. 1 fig. 1931.—*Eimeria* **sibirica*** (p. 58), from the Siberian sable, *Martes zibellina*. The oöcysts are oval and without micropyle, contain 4 sporoblasts and are larger than the sporocysts of *E. vulpes* or *E. mesnili*, averaging 24.5 × 19.45μ in length and breadth respectively.—*L. E. Noland.*

14515. YAKIMOFF, W. L., und E. F. RASTEGAÏEFF. Zur Frage der endoglobulären Parasiten der Rinder in dem nord-westlichen Gebiet Russlands (UdSSR.). *Arch. Protistenk.* 73(1): 111-1119. 1 pl. 1931.—The so-called *Babesia karelica* Yakimoff 1926 is identical with *Françaiella caucasica* Yakimoff & Bourzeff 1927. The latter, as well as *F. occidentalis*, are here reported as occurring in northwestern Russia (Leningrad district), in addition

to the previously reported occurrence in the Caucasus.—*L. E. Noland.*

14516. YAKIMOFF, W. L., W. S. BELAWINE, W. I. BOURZEFF, und S. N. NIKOLSKY. Zur Frage der Theileria annulata im Nordkaukasus. *Arch. Protistenk.* 73(1): 120-130. 1 pl. 1931.—Symptoms and blood pictures of animals (cows and oxen) suffering from *T. annulata* infections are given, together with detailed description of the morphology of the parasite, showing that the disease and the parasite occurring in the northern Caucasus is the same as the disease and the parasite of the Transcaucasian and Turkestan districts.—*L. E. Noland.*

14517. YAKIMOFF, W. L. Zur Frage über den Parasitismus der Süsswasserfische. VI. Eperythrozoon beim Hecht (Esox lucius). *Arch. Protistenk.* 73(2): 274-279. 1 pl. 1931.—*E.* perekropovi* (p. 278) from *Esox lucius,* Russia, is the 4th species to be assigned to the genus *Eperythrozoon* V. Schilling [See B. A. 3(9/11): entry 19886].—*W. L. Yakimoff (transl. by A. S. Pearse).*

14518. YAKIMOFF, W. L., I. I. SOKOLOFF, und E. F. RASTEGAÏEFF. Zur Frage der Coccidien beim Eichhörnchen. *Arch. Protistenk.* 73(3): 487-490. 4 fig. 1931.—*Eimeria sciurorum* Galli-Valerio is reported from a squirrel (*Sciurus vulgaris*) in Russia. The oöcysts are oval; size: 28.8-34.5 × 19.8-23.7 μ (ave.: 31.44 × 21.44). The spores are oval; 10.62-14.80 × 7.2-9.0 (ave.: 12.68 × 8.09) μ. Sporozoites are pyriform; 10.8 × 4.32 μ.—*W. L. Yakimoff (transl. by A. S. Pearse).*

14519. [ZASUKHIN, D. N., and N. A. GAÎSKII.] ЗАСУХИН, Д. Н., и Н. А. ГАЙСКИЙ. Toxoplasma nikanorovi n. sp.—новый кровепаразит степного суслика Citellus pygmaeus Pallas. [Toxoplasma nikanorovi n. sp., a new blood parasite of Citellus pygmaeus Pallas.] Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 96-100. [French résumé p. 135.] 1 pl. 1930.—Marmot (*Citellus pygmaeus*) infected with *Bacillus pestis* during hibernation died on the 204th day after infection. Analyses for plague were negative, although the autopsy gave picture strongly resembling plague: The lymphatic glands were enlarged, dark with small grayish and white knots; spleen yellow in color, and also covered with knots; lungs pink. In smears from these organs a great number of round, and half moon shaped bodies were found; they were either free or bounded in groups of 10-50 by protoplasm, which is homogeneous, vacuoles rarely found. The parasites are 4-6 × 2-3 μ in size; there was no definite membrane, only a fine pellicle around the parasites. The shape of the stained nucleus was often with pointed angles; karyosome in the nucleus could often be seen. Reproduction is by longitudinal splitting into 2 daughter cells. The organism proved to be pathogenic for *C. pygmaeus* and *C. fulvus* and nonpathogenic for *Gerbillus meridianus* and guinea pigs.—*G. A. Lebedeff.*

14520. ZINGHER, J. A., und W. W. FISIKOW. Biometrische Untersuchungen an Infusorien. I. Über die Mittelgrösse von Stentor coeruleus Ehrbg. *Arch. Protistenk.* 73(3): 482-486. 1931.—Applying biometric formulae to about 2000 individual measurements of *S. coeruleus* collected at different periods of the year and subjected to different conditions of temp. and light, it was determined that the mean size varies with the season, being largest in summer, least in winter. Under the influence of higher temp. the animals in general are larger. No independent size races were evident.—*L. E. Noland.*

COELENTERATA AND CTENOPHORA

P. L. KRAMP, *Editor*

(See also in B. A. 6(4): 9165, 11242, 11243, 11247, 11258, 11443, 11447, 11451, 11524; and in this issue 12620, 12626, 14242, 14243, 14244, 14246, 14249, 14251, 14253, 14256, 14262, 14468, 14591, 14629)

14521. BRIGGS, E. A. Studies in Australian athecate hydroids. No. 3. The histology of Myriothela harrisoni, Briggs. *Rec. Australian Mus.* 18(1): 5-14. 3 pl., 1 fig. 1930.—The ectoderm of the hydranth of *M. harrisoni** is stratified; the supporting lamella is thin and from its outer surface arises a series of either simple or branched secondary lamellae. The endodern consists of a distal region rich in goblet cells*, a middle region with gland cells and vacuolate cells, and a proximal region of vacuolate cells loaded with stored nutritive matter. The tentacles are remarkable for the extraordinary development of the supporting lamella in the capitulum*. The blastostyles are borne in the middle zone of the hydranth in such numbers as to completely hide the surface. The species is dioecious. The nematocysts* are of two kinds.

14522. CHAPMAN, FREDK. On the occurrence of a fossil Hydractinia in Australia. *Proc. Roy. Soc. Victoria* 43(2): 233-235. 1 pl. 1931.—*Hydractinia,* notes on the genus and its position; *H.* thatcheri* (p. 234), in shell-bearing polyzoal limestone of the River Cliffs, Murray, South Australia, Middle Miocene (Middle Murravian). Type in National Mus.

14523. CORIN, F. Nouveaux gîtes à Dictyonema flabelliforme, à Lorcé-Chevron. [New deposits of D. flabelliforme at Lorcé-Chevron.] *Bull. Soc. Belge Géol. Paléont. et Hydr.* 40(2): 74-76. 1931.

14524. DELÉPINE, G. Description d'un polypier nouveau, Humboldtia avesnensis nov. sp., du Viséen inférieur de Sars-Poteries. *Ann. Soc. Geol. du Nord* 54: 104-107. 1 pl. 1929.—*H.* avesnensis* (p. 104).—*W. Berry.*

14525. DUTERTRE, A. P. Etude de quelques Polypiers du Viséen du Boulonnais. *Ann. Soc. Geol. du Nord* 54: 108-129. 1 pl. 5 fig. 1929.—Enumerates a fauna of 7 spp. of corals from Boulonnais (northern France) and gives geologic and geographic ranges.—*W. Berry.*

14526. HICKSON, SYDNEY J. Three species of Alcyonaria from the Gulf of Manaar. *Bull. Madras Gov. Mus.* 1(2, pt. 2): 81-89. 3 fig. 1931.—*Clavularia margaritiferae* v. shinglei* (p. 82); *C. m.* var. krusadai (p. 84); *Xenia* nana* (p. 84); *Cornularia cornucopiae**, critical notes.

14527. LAVERDIÈRE, J. W. Contribution a l'etude des terrains Paléozoiques dans les Pyrénées Occidentales. *Mem. Soc. Geol. du Nord* 10(2): 1-131. Maps, 8 pl. 1930.—The author after discussing the stratigraphy of the Devonian of the region describes 29 graptolites and gives a table of occurrences for 52 spp. from the Pyrenees; describes 6 corals, recognizes *Stromatopora,* describes 50 brachiopods, 4 Lamellibranchia, and 1 Pteropoda.—*W. Berry.*

14528. MAZZARELLI, GIUSEPPE. Note sul corallo (Corallium rubrum L.). [With French, English and German summaries.] *Arch. Zool. Italiano* 13(3/4): 400-407. 1 pl., 1 fig. 1929.—The author examined imitative forms of *Corallium rubrum* which are formed by imposition and incrustation of coral on madreporite-skeletons and mollusk shells. He also studied the period of sexual maturity of corals, noting that in the bay of Naples they mature up to the 2nd part of September. Examination of the coral deposits of Sciacca has shown that the coral banks are due to accumulation of dead coral material rather than to living coral reefs.—*Author's summary.*

14529. NORDGARD, O. On the distribution of some alcyonarian corals in northern Norway. Faunistic notes on marine evertebrates VII. *Kgl. Norske Vidensk. Selsk. Forhandl.* 3(paper 1): 1-2. 1 fig. 1930(1931).—Notes on *Paragorgia arborea,* hitherto not found beyond Rognsund (70 23'5 N, 22 48' E) on the Norwegian coast; Rognsund (70 23'5 N) is the northernmost locality known for living specimens of *Primnoa.* Author states that there is a probability of finding *Paramuricea placomus* even north of Lofoten.

14530. PAX, FERDINAND. Edelkorallen des Schlesi-

schen Museums für Kunstgewerbe und Altertümer. *Zool. Anz.* 95(11/12) : 273-277. 1 fig. 1931.—Notes on a specimen of *Corallium reginae** from Amboina.

14531. **REDEKE, H. C., und A. P. C. de VOS.** Microhydra germanica in den Niederlanden. *Zool. Anz.* 94 (11/12) : 328-330. 1 fig. 1931.—Records the first finding of *Microhydra germanica** from Netherlands in plankton of the canals.

14532. **SMITH, STANLEY, and W. D. LANG.** Silurian corals. The genera Xiphelasma, gen. nov., and Acervularia, Schweigger, with special reference to Tubiporites tubulatus, Schlotheim, and Diplophyllum caespitosum, Hall. *Ann. and Mag. Nat. Hist.* 8(43) : 83-94. 2 pl. 1931. —**XIPHELASMA** (p. 83), a rugose coral, near *Tryplasma*, type *X.* **tubulatum*** (*Tubiporites tubulatus* Schloth.) (p. 84) ; *Tryplasma*, redefined; *Acervularia* Schweigger, type *A. ananas** (L.) (=*A. baltica* Schweigg.) ; *A. a.* var. *truncata** (His.) (=*Rhabdophyllum elongatum* Wed.) ; *A. a.* var. *singularis**; *Diplophyllum** J. Hall, type *D. caespitosum** Hall becomes a subgenus of *Acervularia*. *Rhabdophyllum excavatum* is chosen from the 6 genosyntypes as type of the genus. *R. striatum* and *R. cylindricum* are referred to *Acervularia*, and *R. truncatum* to *Kodonophyllum*. *A.* **densa*** (p. 89), Lower Salopian, horizon "f" of Lindström, Hallshuk, North Gotland, type in Brit. Mus.; *A.* **exigua*** (p. 89), Salopian horizon, Gotland, type in Hisinger coll.; *A.* **conglomerata*** (*Rhabdophyllum c.* Wed.) (p. 90) ; *A.* **breviseptata*** (*A. luxurians* var. *b.* Weiss.) (p. 91).

14533. **VOGEL, R.** Hydra circumcincta P. Sch. in fliessendem Wasser. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(5/6) : 381-382. 1931.—Notes on this sp. in the high Alps.

PLATYHELMINTHES AND MESOZOA

H. W. STUNKARD, *Editor*

(See also in this issue Entries 12491, 12639, 13412, 13572, 13585, 13622, 13628, 14467, 14477)

14534. **BOCK, SIXTEN.** Die Polycladen der Deutschen Südpolar-Expedition 1901-1903. *Drygalski's Deutsche Südpolar-Exped. 1901-1903. Zool.* 20(12) : 261-304. 4 pl., 23 fig. W. de Gruyter & Co.: Berlin & Leipzig, 1931.—*Stylochus* **crassus*** (p. 263) ; *Emprosthopharynx* **vanhöffeni*** (p. 268) ; **NOTOPLANELLA** (p. 271), (Leptoplanidae) near *Notoplana*, type *N.* **inarmata*** (p. 272) ; *Planocera pellucida*, notes; *Stylostomum* **frigidum*** (p. 279) ; *Stylochoides albus**, discussion of characters; *Laidlawia trigonopora**, anatomical notes; *Prosthiostomum* **capense*** (p. 296) ; *P.* **drygalskii*** (p. 298). Bibliography of 27 titles.

14535. **CHANDLER, ASA C.** On a specimen of Taenia pisiformis with a completely double strobila. *Trans. Amer. Microsc. Soc.* 49(2) : 168-173. 1 pl. 1930.

14536. **JONES, MYRNA F.** Tapeworms of the genera Rhabdometra and Paruterina found in the quail and yellow-billed cuckoo. *Proc. U. S. Nation. Mus.* 75(20) : 1-8. 1 pl. 1929.—*Rhabdometra* **odiosa*** (*Taenia o.* Leidy, =*R. tomica* (Kol.)) (p.1) from *Colinus virginianus*, Georgia and Florida; redescribed from type material and from fresh specimens; *Paruterina* **similis** (*Rhabdometra s.* Ransom) (p. 6), from *Coccygus americanus*.—*E. T. Boardman.*

14537. **JOYEUX, CH., RONDEAU du NOYER, et J. G. BAER.** Les Bothriocéphales. *Bull. Sci. Pharmacol.* 38 (3) : 175-190; (4) : 235-251. 29 fig. 1931.—Review of history, classification, description of *Diphyllobothrium* genus and spp., and life cycle.

14538. **LÓPEZ-NEYRA, CARLOS RODRÍGUEZ.** Consideraciones sobre el género Davainea (s.l.) y descripción de dos especies nuevas. [Discussion of the genus Davainea (s.l.) with descriptions of two new species.] *Bol. R. Soc. Españ. Hist. Nat.* 29(9) : 345-359. 1929.—Fuhrmann 1920 divided the *Davainea* Blanchard and Railliet 1891 into 5 genera. Subsequent revisions have left but 4 of these, of which 3 now contain but 9 spp. between them, the remaining genus having 149. The author offers in place of this unsatisfactory arrangement a new division based chiefly upon the shape of the uterus and the type of capsule surrounding the eggs. The genera are *Ophryocotyloides* Fuhrmann, type *Davainea uniuterina* Fuhrmann; *Davainea* López-Neyra, type *D. proglottina* (Davaine) ; **IDIOGENOIDES** (p. 351), type *D. allagea* Kotlàn; **BRUMPTIELLA** (p. 352), type *D. cesticillus* (Molín) ; **MEGGITTIA** (p. 354), type *M.* **bolivari** (p. 354) from *Alectoris rufa* L.; **KOTLANIA** (p. 355), type *D. echinobothrida* (Megnin), and including *K.* **joyeuxi** (p. 359) from *Columba livia domestica* L.—*E. T. Boardman.*

14539. **MUELLER, JUSTUS F.** The trematode genus Plagiorchis in fishes. *Trans. Amer. Microsc. Soc.* 49 (2) : 174-177. 1 pl. 1930.—*Plagiorchis corti* Lamont (=*P. ameiurensis* McCoy) ; *P.* **geminus*** (p. 176) from *Schilbeodes gyrinus* and *Ameiurus nebulosus*, Oneida Lake, New York, type in Roosevelt Wild Life Forest Exp. Sta.

14540. **NAGATY, H. F.** A new anaporrhutine trematode genus and species Nagmia yorkei, with a review of the classification of the sub-family. *Ann. Trop. Med. and Parasitol.* 24(1) : 97-108. 1 pl., 3 fig. 1930.—**NAGMIA** (p. 97), type *N.* **yorkei*** (p. 97) from *Trygon* sp., Pearl Banks. Ceylon; *Staphylorchis largum* from *Ginglymostoma concolor*, emended description. Family Gorgoderidae was divided by Looss (1901) into 2 subfamilies, viz., Gorgoderinae and Anaporrhutinae. The latter now contains the following genera—*Anaporrhutum offenheim; Probolitrema* Looss; *Plesiochorus* Looss; *Petalodistomum* Johnston; *Staphylorchis* Travassos. *Dendrorchis* Travassos is a synonym of *Phyllodistomum* Braun and belongs in Gorgoderinae. The author gives a table of differences, schematic diagrams and diagnoses of the 6 genera of the subfamily Anaporrhutinae, including *Nagmia*.—*E. W. Stafford.*

14541. **PIGULEWSKY, S. W.** Neue Arten von Trematoden aus Fischen des Dnjeprbassins. *Zool. Anz.* 96 (1/2) : 9-18. 6 fig. 1931.—*Pleurogenes* **minus*** (p. 9), in intestines of *Esox lucius;* Gasterostomidae Braun (=Bucephalidae Lühe) ; key to subfamilies, tribes, and genera; **MORDVILKOVIA** (p. 12) (Gasterostomidae) near *Gotonius*, type *M.* **elongata*** (p. 13), in intestine of *Esox lucius; Coitocoecum* **macrostomum*** (p. 14), in intestinal canal of *Silurus glanis; C.* **ovatum*** (p. 15), in intestine of *Esox lucius; Lebouria* **acerinae*** (p. 16), in intestine of *Acerina cernua; Stephanophiala* **lata*** (p. 17), in intestine of *Scardinius erythrophthalmus*. All from Ukraine; types in Zool. Mus. Acad. Sci. USSR, Leningrad.

14542. **POISSON, RAYMOND.** Présentation d'un Coenurus serialis Gerv., forme larvaire du Taenia serialis Baillet. *Bull. Soc. Linn. Normandie* 1: 8-9. 1928 (1929).—Record of specimen from rabbit.

14543. **RUSZOWSKI, J. S.** Sur la découverte d'un ectoparasite Amphibdella torpedinis dans le coeur des torpilles. *Pubbl. Staz. Zool. Napoli* 11(2) : 161-167. 4 fig. 1931.—*A. torpedinis*, adult* and egg* from the heart of *Torpedo ocellata* and *T. marmorata* in the Mediterranean.

14544. **SKRJABIN, K. J., und N. P. POPOW.** Pharyngostomum fausti n. sp., ein neuer Trematode aus dem Darm der Hauskatze. *Tierärztl. Rundschau* 36(42) : 709-710. 2 fig. 1930.—*Pharyngostomum* **fausti*** (p. 709), from domestic cat.

14545. **SZIDAT, LOTHAR.** Gigantobilharzia monocotylea n. sp., ein neuer Blutparasit aus Ostpreussischen Wasservögeln. [G. monocotylea n. sp., a new blood para-

site of east Prussian waterfowl.] *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 2(5): 583-588. 5 fig. 1930.

14546. VAN HAITSMA, J. P. Studies on the trematode family Strigeidae (Holostomidae). No. 20. Paradiplostomum ptychocheilus (Faust). *Trans. Amer. Microsc. Soc.* 49(2): 140-153. 2 pl. 1930.—The adult is fully described as *P.* **ptychocheilus*** (*Neascus p.* (Faust)) (p. 140); the identity with the metacercaria described by Faust from the minnow *Notropis deliciosus stramineus* was established by feeding infected minnows to domestic ducks. The adults were found in 4 ducks; *Mergus americanus, M. serrator, Lophodytes cucullatus* and *Harelda hyemalis*. An emended diagnosis of *Crocodilicola* Poche is given.

14547. VOGEL, HANS. Studien über die Entwicklung von Diphyllobothrium. II. Teil: Die Entwicklung des Procercoids von Diphyllobothrium latum. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 2(5): 629-644. 8 fig. 1930.—Studies of the anatomy of the oncosphere* of *D. latum;* the infection of the first intermediate host (*Diaptomus vulgaris**, *D. gracilis, Cyclops strenuus, C. viridis, C. albidus, C. bicuspidatus,* and *C. serrulatus*); the development of the oncosphere into the procercoid*, with anatomical and cytological studies of the latter.

NEMATHELMINTHES AND NEMATOMORPHA

M. C. HALL, *Editor*

B. G. CHITWOOD, *Associate Editor*

(See also in this issue Entries 12737, 12738, 12739, 13572, 13575, 13586, 13602, 13607, 13610, 13611, 13616, 13619, 13620, 13621, 13623, 13624, 13625, 13637, 13640, 13641, 13642, 14488, 14491, 14671)

14548. ALLGÉN, CARL. Was ist die von Bütschli 1874 aufgestellte Odontophora marina? *Zool. Anz.* 81 (11/12): 305-309. 2 fig. 1929.—A discussion of *Odontophora* Bütschli and *Conolaimus* Filipjev, with illustrations of the mouth parts.

14549. ALLGÉN, CARL. Zur Kenntnis des Genus Pelagonema Cobb. *Zool. Anz.* 83(1/4): 7-16. 6 fig. 1929.—A diagnosis is given of the genus, with notes on the 4 previously known spp. *P.* **propinqua*** (p. 14) and *P.* **rotundicauda*** (p. 15), from Sweden, are new.

14550. DOUBROW, S., et J. ROUSSET. Sur un procédé de technique histologique concernant la coupe en série des petits Nématodes. *Bull. d'Hist. Appl. Phys. et Path.* 6: 416-417. 1929.—Modified Schaudinn fixation and butyl-alcohol dehydration allows 4μ serial sections and good cytological detail.—*J. G. Sinclair.*

14551. GOODEY, T. The species of the genus Aphelenchus. *Jour. Helminth.* 6(3): 121-160. 23 fig. 1928.—Each disease is considered to have its own particular sp. of *Aphelenchus* as causative agent, the spp. differing only in dimensions, not in morphological details. The following are described: (parasitic forms) *A. fragariae** Ritzema-Bos from strawberries; *A. ritzemabosi** Schwartz from chrysanthemum; *A. ribes** (Taylor) from black currant; *A. olesistus** Ritzema-Bos from *Lygodium, Lomaria ciliata,* etc.; *A. olesistus longicollis* Schwartz from violets; *A. cocophilus* Cobb from coconut; *A. subtenuis* Cobb from narcissus bulbs; (free-living forms) *Aphelenchus avenae* Bastian (=*A. agricola* de Man, *A. maupasi* Micol.) from decaying plant tissues; *A. parietinus** Bastian from potato tubers, mint rhizomes, etc.; *A. helophilus** de Man from pasture grass washings; *A.* **pseudolesistus*** (p. 139), England, from decaying oak leaves and galls on *Chrysanthemum maximum; A. tenuicaudatus** de Man from rotting banana rhizome; *A.* **demani*** (p. 144), England, from grass, narcissus bulb, hop roots, potato tubers; *A. longicaudatus* Cobb from banana roots; *A. chamelocephalus* Steiner from peanuts; *A. retusus* Cobb from dead pupa of the fly *Chaetopsis aenea; A. goeldii* Steiner from damp humus; *A. naticochensis* Steiner, from Lake Naticocha, Peru; *A. caprifici* (Gaspar.) from the fig-wasp *Blastoghaga;* (species inquirendae) *A. aderholdi* Schwartz from lily-of-the-valley roots; *A. mycogenes* Schwartz from cultures of the fungus *Cryptosporium nesii;* (spp. wrongly attributed to genus) *A. neglectus* Rensch. from roots cortex of barley, wheat, grass; *A. foetidus* Büts. (removed to genus *Tylopharynx* de Man) from cow-dung; *A. nivalis* Auriv. from the alga *Sphaerella nivialis.* Closes with a habitat and locality list of the spp.—*F. J. Meggitt.*

14552. GOODEY, T. On some new and little-known free-living nematodes. *Jour. Helminth.* 7(1): 27-62. 36 fig. 1929.—The following nematodes from St. Albans, England, are described: **RHABDITOIDES** (p. 27), near *Rhabditis,* based on *R.* **coprophaga*** (p. 27) from sheep's droppings; *Rhabditis* **pseudoxycerca*** (p. 30) from pig manure; *R. oxycerca* from pig manure, and from rotting coconut palm stem from Trinidad; *Myolaimus heterurus** from pig and goat manure and orchard humus; *Tylopharynx striata** from chicken run soil and a manure heap; **BUTLERIUS** (p. 41), near *Odontopharynx,* based on *B.* **butleri*** (p. 41) from rotting banana roots; *Diplogaster* **vorax*** (p. 45), ingesting nematodes, ciliates and tardigrades, from pig manure; *D.* **microstoma*** (p. 49) from pig manure; *D.* **winchesi*** (p. 51) from decaying leaves; *D. coprophages** from sheep droppings; *D. gracilis** from goat droppings; *D. minor** from decaying leaves. *Tylopharynx* is removed from the Anguillulininae and placed in the Diphtherophorinae.—*F. J. Meggitt.*

14553. GOODEY, T. On some details of comparative anatomy in Aphelenchus, Tylenchus and Heterodera. *Jour. Helminth.* 7(4): 223-230. 4 fig. 1929.—The esophageal glands of *A. avenae* (from decaying roots of narcissus bulbs) are described, together with the shape of the stylet. A comparison of the 3 genera is made, and a description given of the cephalic glands of *A. parietinus* (from mint rhizomes).—*F. J. Meggitt.*

14554. KEMNER, N. A. Potatisnematoden eller potatisålen (Heterodera schachtii ssp. rostochiensis Woll.) och dess framträdande i Sverige. [The potato nematode, H. schachtii ssp. rostochiensis, and its occurrence in Sweden.] [In Swedish with English summary.] *Meddel. (355) Centralanst. Försöksväs. Jordbruksomr. Lantbruksent. avd.* No. 56: 1-76. 1 fig. 1929.—This nematode is believed to have been introduced into Sweden from England or Germany. It was first observed in one province in Sweden in 1922. Control measures are discussed, particularly the suggestion of temporary suspension of potato cultivation on infected fields.

14555. KEMNER, N. A. Kvantitativa undersökningar av nematodhalten i svenska åkerjordar. [Quantitative investigations on the content of nematodes in cultivated soil, Sweden.] [In Swedish with German summary.] *Meddel. (357) Centralanst. Försöksväs. Jordbruksomr. Lantbruksent. avd.* No. 57: 1-27. 4 fig. 1929.—Methods and results are discussed.

14556. ROSELLA, ET. La rouille de l'Immortelle (Helichrysum orientale). *Rev. Pathol. Végét. et Ent. Agric.* 16(4/5): 153-155. 1929.—*H. orientale,* which is grown along the French Riviera, and *H. staechas,* which grows wild, show many abortive flowers as the result of infection by *Tylenchus dipsaci.—J. Dufrenoy.*

14557. SCHUURMANS STEKHOVEN, J. H. Jr. Ein Karnivor unter den marinen Nematoden. *Zool. Anz.* 81 (7/10): 261-269. 6 fig. 1929.—Carnivorous habits are known for the spp. of the terrestrial genus *Mononchus.* The same phenomenon was observed for the first time for the marine genus *Sphaerolaimus,* all spp. of which swallow nemas of the genus *Monhystera* and, occa-

sionally, of *Axonolaimus*. The mouth cavity of *Sphaerolaimus*, described in detail, is well adapted to this mode of feeding. The quantitative relations between the spp. of *Sphaerolaimus* and those of *Monhystera* in the brackish habitats in the Zuiderzee, Holland, vary within certain limits, which is not the case when *Sphaerolaimus* and *Axonolaimus* are compared.—*J. H. Schuurmans Stekhoven, Jr.*

14558. **SCHUURMANS STEKHOVEN, J. H. Jr. Additional notes on Diplogaster entomophaga Steiner.** *Zool. Anz.* 83(9/10): 265-267. 1 fig. 1929.—*D. entomophaga*, originally found by Steiner in *Pamphilius stellatus* (Hymenoptera), was found to parasitize *Astilbus* (Coleoptera). The author shows that it is parasitic, not saprophitic, since newly-laid eggs in an early stage of development were observed in the body musculature of the host, the nemas finally causing its death. A description is given of the feeding mechanism of the nema.—*J. H. Schuurmans Stekhoven, Jr.*

14559. **THOMAS, LYELL J. Philometra nodulosa nov. spec. With notes on the life history.** *Jour. Parasitol.* 15(3): 193-198. 1 pl. 1929.—*P.* **nodulosa*** is described from a single ♀ obtained from a cyst on the upper lip of the common sucker, *Catostomus commersonii*, taken at Douglas Lake, Michigan, in 1927. Type is in the Ward coll., Urbana, Illinois. This specimen was loaded with eggs and larvae and afforded material for the study of adult and larval morphology and also for some life history experiments. *Cyclops brevispinosus* was found to ingest young larvae of *Philometra* but after passing through this crustacean host, reinfection in young suckers was not successful.—*A. C. Walton.*

14560. **TRAVASSOS, L., und E. G. VOGELSANG. Mitteilung über das Genus Streptopharagus Blanc, 1912.** *Zool. Anz.* 85(3/4): 110-111. 1929.—A brief historical account of the genus and a critical note on some of the spp. Specimens from *Macacus rhesus* agree with *S. armatus* Blanc, as described by Blanc (1912) and Monning (1923), but not with the material described under that name by Bayliss (1923), which is here regarded as identical with *S. baylisi* Ortlepp. Material from *Hamadryas hamadryas* agrees well with the latter.

ROTATORIA, GASTROTRICHA, ECHINODERA, AND CHAETOGNATHA

CHARLES H. BLAKE, *Editor*

(See also in B. A. 6(3): 7526, 8488, 9061)

14561. **VARGA, L. Beiträge zur Rotatorienfauna Südschwedens.** *Zool. Anzeiger* 96(11/12): 285-292. 1 fig. 1931.—A record of 36 spp. of Rotatoria from southwest Sweden, and their numerical relations.

ANNELIDA

J. PERCY MOORE, *Editor*

(See also in this issue Entries 12486, 12499, 12500, 13572, 14243, 14249, 14465, 14476, 14479, 14490, 14629)

14562. **ABSOLON, K., und S. HRABĚ. Über einen neuen Süsswasser-Polychaeten aus den Höhlengewässern der Herzegowina.** *Zool. Anz.* 88(9/10): 249-264. 20 fig. 1930.—Detailed taxonomic diagnosis of a serpulid **MARIFUGIA** (p. 249), with *M.* **cavatica*** (p. 249) allied to *Placostegus* and *Ditrupa*. The species was collected 250 m. above sea level at the bottom of Trebinjčica river where this empties through an underground passage into the sea through which its ancestors evidently migrated from the sea.—*A. L. Treadwell.*

14563. **BASKIN, B. Über Fridericia connata Bretsch.** *Zool. Anz.* 85(9/10): 264-269. 2 fig. 1929.—The worm was found at Charkow in rather damp earth. The specimens have more numerous setae than those originally described. The secretion of the septal glands passes along ducts into the pharyngeal cavity between the cells of its dorsal wall. The account of the anatomy supplements the original brief description.—*J. Stephenson.*

14564. **COONFIELD, B. R. The peripheral nervous system of the earthworm.** *Trans. Kansas Acad. Sci.* 34: 115. 1931.

14565. **GATES, G. E. Earthworms of North America.** *Jour. Washington Acad. Sci.* 19(15): 339-347. 1929.—A brief account of the evolution and distribution of N. Amer. earthworms. The theory of land bridges, Wegener's theory of continental drift, and Stephenson's theory of accidental transportation and polyphyletic origin are summarised to explain the affinities of N. Amer. endemics.—*G. E. Pickford.*

14566. **MONRO, C. C. A. Polychaete worms.** *Discovery Repts. Govt. Dependencies Falkland Isl.* 2: 1-222. 91 fig 1930.—An account of the Polychaeta collected by the staff of the Discovery Investigations. The majority were obtained in the neighborhood of S. Georgia and the Falkland Isls., but some were collected at various localities in the S. Atlantic including the west coast of Africa. In all 245 species and varieties are represented of which 29 are new, 2 being the types of new genera. Tables showing geographical and bathymetrical distribution are given and there is also a further table recording the types of bottom on which the various benthic species were found. Types in British Mus. Amphinomidae: *Paramphinome* **australis*** (p. 32), S. Orkneys. Polynoidea: *Harmothoë* (*Evarnella*) *impar* v. **notialis*** (p. 58), E. Falkland Isl.; *H.* (*Barrukia*) **curviseta*** (p. 61), Palmer Arch.; *Antinöe* **pelagica*** (p. 63), S. Georgia; *A.* **setobarba*** (p. 65), King George Isl., S. Shetlands; *A.* **epitoca*** (p. 67), St. Paul de Loanda, Angola; *Podarmus* **atlanticus*** (p. 42) Antarctica; **SHEILA** (p. 43), type *S.* **bathypelagica*** (p. 43), Antarctica. Phyllodocidae: *Eulalia* **anomalochaeta*** (p. 43), S. Georgia, S. Shetlands, and Palmer Arch.; *Lopadorhynchus krohnii* v. **simplex*** (p. 79), between Cape Town and Cape Verde Isls. Tomopteridae: *Tomopteris* (*Johnstonella*) **kempi*** (p. 88), Tristan da Cunha. Syllidae: *Pionosyllis* **maxima*** (p. 92), S. Georgia. Nereidae: *Nereis* **typhla*** (p. 105), S. Georgia; *N.* (*Eunereis*) **hardyi*** (p. 109), Antarctic. Eunicidae: *Rhamphobrachium* **ehlersi*** (p. 126), Deception Isl., S. Shetlands; *Onuphis* **notialis*** (p. 129), S. Georgia, Clarence Isl., S. Shetlands, and Palmer Arch.; *Leptoecia* **antarctica*** (p. 133), Deception Isl., S. Shetlands; *Lumbrinereis* **antarctica*** (p. 138), Palmer Arch.; **AUGENERIA** (p. 138), type *A.* **tentaculata*** (p. 140), S. Orkneys, and Palmer Arch. Spionidae: *Pygospio* **dubia*** (p. 146), S. Georgia. Cirratulidae: *Cirratulus* **antarcticus*** (p. 155), S. Georgia; *Heterocirrus caput-esocis* v. **capensis*** (p. 156), False Bay, So. Africa; *Tharyx* **epitoca*** (p. 157), Palmer Arch. Capitellidae: *Capitella capitata* v. **antarctica** (p. 164), S. Georgia: Opheliidae: *Travisia kerguelensis* v. **gravieri*** (p. 167), Antarctica; *Kesun* **abyssorum*** (p. 167), S. Shetlands. Maldanidae: *Axiothella* **antarctica*** (p. 175), S. Orkneys. Terebellidae: *Polycirrus* **hesslei*** (p. 195), Falkland Isls. Serpulidae: *Vermiliopsis* **notialis*** (p. 209); *V. richardi* v. **fauveli*** (p. 212), Gulf of Guinea; *Salmacina dysteri* v. **falklandica*** (p. 213), Falkland Isls.—*C. C. A. Monro.*

14567. **MONRO, C. C. A. A new brackish-water poly-**

chaete from Rangoon, Nereis (Neanthes) meggitti, sp. n. *Ann. and Mag. Nat. Hist.* 8(48): 580-585. 6 fig. 1931. —*Nereis* (*Neanthes*) meggitti* (p. 580), type in Brit. Mus.

14568. OKA, ASAJIRO. Sur l'anatomie de l'Ichthyobdella uobir. *Proc. Imp. Acad.* [*Tokyo*] 7(2): 64-66. 3 fig. 1931.—*I.* uobir*, first description of internal characters, notably the genital organs.

14569. OKA, ASAJIRO. Étude morphologique d'une nouvelle espèce de Semiscolex (Hirudinea). *Proc. Imp. Acad.* [*Tokyo*] 7(8): 323-326. 1 fig. 1931.—*S.* zonatus* (p. 323), Brazil.

14570. SCIACCHITANO, IGINIO. Oligocheti nuovi per il Modenese. *Atti Soc. Nat. e Mat. Modena* 61: 84-86. 1930.—Records of *Aeolosoma hemprici, Chaetogaster diaphanus, C. limnaei*, and *Nais elinguis*.

14571. STEPHENSON, J. On an oligochaete worm parasite in frogs of the genus Phrynomerus. *Proc. Linn. Soc. London* 142. 58-59. 1929/30(1931).—*Nais bauchiensis*. Abstract.

14572. TREADWELL, AARON L. Three new species of polychaetous annelids in the collection of the United States National Museum. *Proc. U. S. Nation. Mus.* 80 (Art. 2): 1-5. 3 fig. 1931.—*Nereis* heterocirrata* (p. 1), Japan. *Lumbrinereis* elongata* (p. 3) and *Eupomatus* decorus* (p. 4), Louisiana. Types in U. S. Nat. Mus. —*A. L. Treadwell.*

14573. TREADWELL, AARON L. Four new species of polychaetous annelids collected by the United States Fisheries Steamer "Albatross" during the Philippine expedition of 1907-1910. *U. S. Nation. Mus. Bull.* 6(5): 313-321. 3 fig. 1931.—*Macellicephala* maculosa* (p. 313); *Iphionella* elongata* (p. 315); *Onuphis* branchiata* (p. 317); *Maldane* philippinensis* (p. 320). Types in U. S. Nat. Mus.—*A. L. Treadwell.*

14574. WOLF, WILHELM. Über die Bodenfauna der Moldau im Gebiete von Prag im Jahreszyklus. Oligochaeta. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* [*Leipzig*] 20(5/6): 377-408. 9 fig. 1928.—Thirty-eight spp. of Oligochaeta are enumerated, 2 being Aeolosomatidae, 30 Naididae, 3 Tubificidae, 1 Enchytraeidae, 2 Lumbriculidae; those which are new to Bohemia are noted, and for 3 of the commonest species indications are given of their relative abundance in each month throughout the year. Frequency of occurrence was not shown to vary with pH concentration, alkalinity, or CO_2 content. O content has an influence on the number of species found at any given locality; more are found in better oxygenated waters. A few data are given concerning relation of certain species to abundance of food. A rise in the river is followed by reduction in numbers of individuals; probably they are carried away by the current. As to seasonal variation, fewer individuals are found in winter (Dec.-Feb.), but there is not a total disappearance; scarcity of food in winter leads to infrequency of fission, and hence to paucity of individuals. Short anatomical notes are given on all the species, and also a few data on frequency at the 6 stations in the different months or seasons. *Stylaria* brevirostris* (p. 396). *Amphichaeta leydigi, Chaetogaster langi, Paranais uncinata, Macrochaetina intermedia*, and *Nais elinguis* are treated most fully. Three modes of life of aquatic Oligochaeta are described, and the Oligochaeta of the Moldau belonging to each group are enumerated: (1) Creeping, in mud; including worms which push forward by a series of jerks, others which creep sluggishly, and others which move by creeping, combined with gliding on the substratum. (2) Tube-inhabiting, the tubes being of their own making; a general description of the tubes is given, with notes on the tubes of several spp., and on the behavior of *Dero* in their tubes. (3) Anchoring, or adhering to the substratum; notes on the habits of the several spp. of this group are given. Certain representatives of each group have the power of swimming freely; this is performed by a spring-like movement of both head and tail ends toward the middle of the body but on opposite sides, so forming an S-like figure; the dorsal setae are more or less applied to the body. All swimmers have long dorsal setae, which in the intervals of swimming are spread out and act as a parachute, hindering the fall through the water. The grade of swimming power is proportional to the number and length of the dorsal setae.—*J. Stephenson.*

14575. YAMAGUCHI, HIDEJI. On the variability of the capsulogenous glands in the earthworm (Pheretima hilgendorfi, Michaelsen). [With Japanese summary.] *Trans. Sapporo Nat. Hist. Soc.* 11(2): 89-96. 1 fig. 1930. —The capsulogenous glands open externally, concentrating on a circular papillate area ("Porenfeld" of Michaelsen) on the ventral median line in front of the chaetal line of the segment and in either the pre- or postclitellar region. The position and frequency of both glands and pore field varies greatly. They may occur in both pre- and postclitellar regions, in one only, or be completely absent. In most cases, they are found in segments VIII and XVIII. Observations show 961 occurrences for the former and 93 for the latter in 1010 individuals. Frequently more than 2 papillate areas are found in successive segments, that is, VI-XIV in the preclitellar region and XVII-XXII in the postclitellar. —*H. Yamaguchi.*

14576. ZICK, KARL. Zur Frage der Verbreitung des medizinischen Blutegels (Hirudo medicinalis L.) in Deutschland. *Zool. Anz.* 96(11/12): 328-330. 1931.

BRACHIOPODA, BRYOZOA, PHORONIDEA

R. C. OSBURN, *Editor*

(See also in B. A. 6(3): 8, 88, 8192, 8198, 8201, 8202, 8205, 8206, 8215, 8586, 8625, 9061; 6(4): 11242, 11243, 11245, 11248, 11252, 11254, 11255, 11256, 11258, 11259, 11524; and in this issue 14242, 14243, 14244, 14246, 14249, 14250, 14251, 14253, 14256, 14261, 14262, 14591, 14618, 14621, 14629, 14641)

BRACHIOPODA

14577. HAYASAKA, I. On the brachiopods of Mutsu Bay. [In Japanese.] *The Venus* 3(1): 1-9. 1 pl. 1931.—*Lingula* sp.*, *Hemithyris psittacea** and its ssp. *woodwardi**, *Terebratalia coreanica**, *Coptothyris grayi** and a n. ssp.*, *Laqueus rubellus**.

14578. MORESCHI, AMELIA. Brachiopodi di Montegibbio (Modena). *Atti. Soc. Nat. e Mat. Modena* 61: 173-186. 1930.—Eleven Tertiary forms are listed, with notes on their geographical and geological distribution and their habitat.

14579. RUIZ, CARMELA. I brachiopodi batoniani del Monte Inici (Trapani). In: *Mem. Ist. Geol. R. Univ. Padova* 7: 1-77. (separately paged) 2 pl., 2 fig. 1928.—A historical survey and discussion of the fauna precedes the systematic section. The author describes 14 old spp. of *Rhynchonella*, 19 of *Terebratula*, and 1 of *Waldhamia* from the Bathonian (Jurassic) of Sicily. A table comparing the typical Bathonian spp. with those of other localities, and an index to the brachiopods of the *Posidonomya alpina* zone in Sicily through 1927 are included. There is a bibliography of 80 titles.

BRYOZOA

14580. CANU, F., et G. LECOINTRE. Les Bryozoaires Cheilostomes des faluns de Touraine et d'Anjou. *Mém. Soc. Géol. France* 4(3, Mém. 4): 51-82. 4 pl. 1928; 6 (1, Mém. 4): 83-127. 10 pl. 1930.—In the portion of the work here reviewed, the authors describe or review 91 species. All of them are figured. *Figularia* planicostulata* (p. 51); *Hippothoa* rudis* (p. 52); *H.* rugulosa* (*Lepralia r.* Reuss) (p. 53), Helvetian, Tortonian; *H.* parvipora* (p. 53); *Schizostoma* helvetica* (p. 57); *S.* (?) crassicollis* (p. 58); *Buffonella* strophia* (p.

63); *B.* bicornis* (p. 64); *Lacerna* gibbosa* (p. 64); *L.* aviculifera* (p. 65); *Dakaria* gigantea* (p. 65); *D.* elongata* (p. 66); *D.* incisa* (*Eschara i.* Milne-Edwards) (p. 66); *D.* (?) michelini* (*Eschara i.* Michelin) (p. 67); *D.* arbuscula* (p. 67); *D.* bituberculata* (p. 68); *Arthropoma* ciliata* (p. 68); *Schizobrachiella* andegavensis* (p. 69); *Schizolavella* crassiambita* (p. 70); *S.* divisa* (p. 70); *S.* meandrina* (p. 70); *Stephanosella* lucida* (p. 74); *S.* baculina* (p. 75); *Schizomavella* aculifera* (p. 76); *Hippadenella* deshayesi* (*Eschara d.* Milne-Edwards) (p. 77); *H.* michelini* (*Eschara pertusa* Michelin) (p. 78); *H.* pelliculata* (p. 78); *H.* curta* (p. 80); *H.* stricta* (p. 80); *H.* levigata* (p. 81); *Hippoporella* bicornis* (p. 81); *H.* filifera* (p. 82); *Hippodiplosia* imbellis* (*Hemeschara i.* Busk) (p. 82), fossil; *H.* perforata* (p. 83); *H.* ? marginata* (p. 84); *H.* ? articulata* (p. 84); *Hippomenella* grandirostris* (p. 85); **HIPPOPLEURIFERA** (p. 86) (Escharellidae), type *H.* sedgwickii (*Eschara s.* Milne-Edwards) (p. 86), Helvetian and recent; *H.* grandis* (p. 86); *H.* elegans* (p. 87); *H.* elongata* (p. 87); *Haswellia* parvipora* (p. 90); *Cheiloporina* planula* (p. 92); *C.* marginata* (p. 92); *Smittina reticulata** MacGillivray (=*Eschara membranacea* Reuss, =*Lepralia trigonostoma* Reuss), fossil; *S.* bassleri* (p. 95); *S.* microtheca* (p. 95); *S.* gibbera* (p. 96); *S.* lobata* (*Lepralia l.* Busk) (p. 96); *Mucronella* reussiana* (*Lepralia r.* Busk) (p. 99); *M.* capitata* (p. 100); *Porella* mutabilis* (p. 100); *Umbonula* elongata* (p. 101); *Bryocryptella* foliacea* (p. 102); *Retepora* transversa* (p. 104); *Schizellozoon* fungosum* (p. 105); *Hemicyclopora* collarina* (p. 106); *H.* dimorpha* (p. 107); *H.* brevis* (p. 107); *Perigastrella* eximia* (*Phylactella e.* Hincks) (p. 108); *P.* labiatula* (p. 108); *P.* lyrulata* (p. 109); *P.* crassilabiata* (p. 109); *Holoporella* palmata* (*Cellepora p.* Michelin) (p. 111); *H.* dupliciter (p. 112); *H.* cerioporoides* (p. 113); *Schismopora* perforata* (p. 114); *S.* spathulata* (p. 115); *S.* coarcta* (p. 115); *S.* strictofissa* (p. 116); *Cellepora* granulosa* (p. 116). The fauna is listed by localities.—*L. B. Kellum.*

PHORONIDEA

14581. HILTON, WILLIAM A. A new Phoronopsis from California. *Trans. Amer. Microsc. Soc.* 49(2): 154-159. 1 pl., 1 fig. 1930.—*Phoronopsis* californica* (p. 154), with detailed anatomical description.

ECHINODERMATA

HUBERT LYMAN CLARK, *Editor*

(See also in this issue Entries 12477, 14242, 14244, 14246, 14250, 14251, 14252, 14253, 14256, 14259, 14262, 14466, 14618, 14657)

14582. BERNASCONI, IRENE. Una ofiura vivípara de Necochea. [A viviparous ophiurian from Necochea.] *Anal. Mus. Nacion. Hist. Nat. Buenos Aires* 34: 145-153. 4 pl. 1926-1928.—*Amphipholis squamata,* formerly unknown from the Argentine coast, is reported from Necochea (Buenos Aires). A description of the sp. is given, with a key for its determination; and notes on its embryology, autotomy, nutrition, and respiration.—*I. Bernasconi (transl. by R. A. Muttkowski).*

14583. GRIEG, JAMES A. Echinoderm fra den norske kyst. [Echinoderms from the coast of north Norway.] *Bergens Mus. Årbok* 1930(2, paper 10): 13p. 1931.—Notes on 8 echinoderms, *Astropecten irregularis, Leptychaster arcticus, Asterias lincki, A. panopla, Amphipholis squamata, Echinus esculentus, Echinocardium pennatifidum,* and *E. cordatum,* which were found along the Norwegian coast from Lofoten to Varangerfjord.

14584. JEANNET, ALPH. Sur quelques echinides jurassiques de la collection Renz. *Eclogae Geol. Helvetiae* 21(2): 460-465. 1 pl. 1928.—Describes 3 echinoids, among them *Pseudodiadema* renzi* (p. 461), in the lower Toarcien from the gorge of the Breggia, Mendrisiotto, Ticino; *Psephechinus* renzi* (p. 462), from the same horizon at Perkulatica, Corfou.—*W. Berry.*

14585. KOEHLER, R. Description de deux Dorocidaris papillata anormaux provenant de Monaco. *Bull. Inst. Océanogr.* [*Monaco*] 1930(552): 1-10. 8 fig. 1930.—Detailed descriptions of an almost regular tetramerous specimen, and a strongly deformed pentameric specimen of *D. papillata* (Leske) [*Cidaris cidaris* (L.)] from off the coast of Monaco, depth unknown.—*E. Deichmann.*

14586. MERRIAM, CHARLES W. Notes on a brittle-star limestone from the Miocene of California. *Amer. Jour. Sci.* 21(124): 304-310. 2 fig. 1931.—This limestone, Santa Margarita in age, is composed of ophiuran skeletal debris deposited under littoral conditions. The name **OPHIURITES** (p. 306) is proposed for fossil vertebral ossicles. The low $MgCO_3$ content is compared with that of fossil crinoids.—*D. L. Frizzell.*

14587. MORTENSEN, TH. Bothriocidaris and the origin of echinoids. *Vidensk. Meddel. Dansk. Naturhist. For. Köbenhavn* 86: 93-122. 12 fig. 1928.—Discussion of the morphological structures of the Ordovician spp., *B. globulus* Eich. and *B. pahleni* Schmidt, which have been re-examined from specimens in the Mus. of Leningrad and Revel Mus., Dorpat, Esthonia. *B. archaica* Jackson is regarded as a synonym of *B. globulus. Bothriocidaris,* formerly considered an echinoid, is referred to Cystoidea, whereas the echinoids are considered as derived from primitive Edrioasteroidea.—*E. Deichmann.*

14588. PARKER, G. H. On certain feeding habits of the sea-urchin Arbacia. *Amer. Naturalist* 66(702): 95-96. 1 fig. 1932.—Record of *A. punctulata* capturing and devouring live fish (*Fundulus*).

14589. WANNER, JOH. Neue Beiträge zur Kenntnis der Permischen Echinodermen von Timor. *Wetenschapp. Mededeel. Dienst Mijnbouw Ned.-Indië. No. 11. I. Allagecrinus.* 1-34. 4 pl. II. Hypocrinites. 35-116. 7 pl., 16 fig. 1929.—Based on the collections of J. Venema, Basleo, Timor, now in Bandoeng, Java. The morphology of *Allagecrinus* is treated, comparison made with the Scottish forms, and diagnosis and key to 9 spp. given. *A.* jakovlevi* (p. 15); *A.* inflatus* (p. 18); *A.* acutus* (p. 19); *A.* procerus* (p. 21); *A.* quinquelobus* (p. 21); *A. indoaustralicus** Wann.; *A.* excavatus* (p. 24); *A.* quinquebrachiatus* (p. 25); *A.* ornatus* (p. 26).—A key to the 14 genera of the section Hypocrinites Wann., diagnosis, genotype, etc., given for some of the genera, and description of the examined spp. *Hypocrinus schneideri* Beyr. (p. 40); **CRANOCRINUS** (p. 41), with *C.* timoricus* (type) (p. 42), *C. turbinatus** Wann., and var. minor* (p. 48); **TENAGOCRINUS** (p. 48), *T.* sulcatus* (*Embryocrinus s.* Wann.) (p. 49); *Allosycocrinus* Wann., *A. pusillus** Wann.; *Monobrachiocrinus ficiformis** Wann., var. *elongata** Wann., var. carinata* (p. 62), var. *granulata* Wann.; *Abrachiocrinus* Wann., *A.* conicus* (p. 63), *A.* timoricus* (p. 64); *Embryocrinus hanieli** Wann.; *Acariaiocrinus* Wann., *A. clavulus** Wann., *A.* angulosus* (p. 74); *Hemistreptacron* Jak., *H.* carinatum* (p. 75), var. ornata (p. 78); *Coenecystis* Girty, *C.* angulosus* (p. 79), *C.* perforatus* (p. 80); **ATREMACRINUS** (p. 82), *A.* calyculus* (p. 83). A list of all known spp. of Hypocrinites with their occurrence, the morphological features of the group, and a table with their supposed genetic relations are given.—*E. Deichmann.*

MOLLUSCA

H. A. PILSBRY, *Editor*

H. B. BAKER, *Associate Editor*

J. B. REESIDE, *Associate Editor,* Mesozoic and Paleozoic Mollusca

(See also in this issue Entries 12202, 12234, 12246, 12269, 12341, 12344, 12345, 12363, 12367, 12426, 12460, 12493, 12626, 12641, 12884, 13177, 14241, 14242, 14243, 14244, 14246, 14249, 14250, 14252, 14253, 14254, 14255, 14256, 14259, 14261, 14262, 14470, 14471, 14473, 14483, 14484, 14527, 14641)

14590. **COEN, GIORGIO. Studi malacologici. Sulla Doliopsis crosseana Monterosato e sul suo rinvenimento nell' Adriatico. [Malacological studies. On Doliopsis c. and its occurrence in the Adriatic.]** *Atti R. Ist. Veneto Sci. Lett. ed Arti* 90(3/4): 147-153. 2 pl. 1930/1931.—*D. crosseana**, described from a single specimen, is maintained as valid, and a 2nd specimen* is described.

14591. **CRICKMAY, COLIN H. The Jurassic rocks of Askcroft, British Columbia.** *Univ. California Publ. Bull. Dept. Geol. Sci.* 19(2): 23-74. 1 map., 6 pl. 1930.—Description of Up. Triassic and Middle and Up. Jurassic rocks and their fossils in a small area in the interior plateau of southern Brit. Columbia and elsewhere. Faunal lists follow. Up. Triassic: *Paratropites* **spepsumensis*** (p. 60) (Cephalopoda). Early Middle Jurassic—Sonninian, *"discitae"* (date according to Buckman biological chronology); **KRATEROSTROBILOS** (Coelenterata, Anthozoa, Turbinoliidae), type *K.* **bathys*** (p. 40); *Isocrinus californicus* Clark (Echinodermata); *Kallirhynchia* sp. and *Ewidothyris* **francescalaurae*** (p. 42) (Brachiopoda); (Mollusca) *"Trigonia"* sp.; *Chlamys* **paideios*** (p. 54); **PARAPECTEN** (Pectinidae), type *P.* **ntlakapamuxanus*** (p. 55); *Entolium* **semlini*** (p. 56); *Gryphaea* **minutula*** (p. 49); *Goniomya* sp.; *Homomya* **jurozephyriensis*** (p. 58); *Fontannesia* cf. *carinata* Buckman. Early Middle Jurassic—Sonninian, pre-*sauzei: Vaugonia* sp.; *Entolium semlini* Crickmay; *Modiolus* sp.; *Pleuromya* **rhynchophora*** (p. 57); *Pseudomelania* sp. Early Middle Jurassic—Sonninian, *sauzei:* **ARCHAEODON** (Pelecypoda, Parallelodontidae), type *A.* **phylarchus*** (p. 42); **ASHCROFTIA** (Parallelodontidae), type *A.* **inversidentata*** (p. 43); **GILBERTWHITEA** (Parallelodontidae) type *G.* **similima** (*Arca s.* Whiteaves) (p. 46); *G.* **micromorpha*** (p. 46); *Grammatodon* **semiornatus*** (p. 46); *G.* **sonninianus*** (p. 47); *Pinna* **amblyrhyncha*** (p. 47); *Gervillia* **ashcroftensis*** (p. 48); *Gryphaea* **patera*** (p. 51); **SCHAPHOGONIA** (Trigoniidae), type *S.* **argo*** (p. 52); *Entolium* cf. *semlini* Crickmay; *Modiolus* **sphenoproratus*** (p. 56); *Pleuromya* **scutalisensis*** (p. 57); *P.* **chlutosensis*** (p. 58); *Astarte* **sonniniarum*** (p. 59); *Pseudomelania* sp.; *"Fontannesia"* sp.; *"Sphaeroceras"* sp.; *Kallistephanus* sp. Early Upper Jurassic—Proplanulitan: *"Aucella"* sp.; *"Torricellites"* sp.; *"Gowericeras"* sp.; *"Catasigaloceras"* sp. Early Up. Jurassic fossils from northern Brit. Columbia: **VAUGONIA** (Trigoniidae), type *V.* **veronica*** (p. 53); *V.* **mariajosephinae*** (p. 54). Pedaliidae is substituted for Pedelionidae Stephenson, olim Pernidae. **HAIDAIA** (Trigoniidae), type *Trigonia dawsoni* Whiteaves, is also proposed. Discussion of catamorphism, with examples from Parallelodontidae, etc. Discussion of micromorphism with example of *Gryphaea minutula.*—*C. H. Crickmay.*

14592. **DELÉPINE, G. Sur la présence de Cymaclymenia camerata Schindewolf dans la zone d'Etroeungt à Sémeries (Nord de la France).** *Ann. Soc. Geol. du Nord* 54: 99-103. 1 pl. 1 fig. 1929.

14593. **DUTERTRE, A. P. Metoicoceras pontieri dans le Sud du Boulonnais.** *Ann. Soc. Geol. du Nord* 55: 220-221. 1 fig. 1930.—Describes this ammonite from the Touronian at Boulonnais, North of France.—*W. Berry.*

14594. **FINLAY, H. J. On Turbo postulatus Bartrum; Does it indicate a Pliocene connection with Australia?** *Trans. and Proc. New Zealand Inst.* 62(1): 1-6. 1931.—*Heligmope* **postulatus** (*Turbo p.* Bartrum) (p. 5) permits the fixing of a Lower Pliocene base-line from which the correlations of higher and lower beds on either side of the Tasman may be surveyed. *Heligmope* **pehuensis** (*Lippistes p.* Marwick) (p. 5). *Heligmope* is referred to the Ianthinidae.

14595. **FINLAY, H. J. On Austrosassia, Austroharpa, and Austrolithes, new genera; with some remarks on the gasteropod protoconch.** *Trans. and Proc. New Zealand Inst.* 62(1): 7-19. 1931.—**AUSTROSASSIA** (p. 7), an Eocene genus in Cymatiidae, still existing, type *Septa parkinsonia* Perry; *A.* **procera** (p. 10), n. n. for *Triton minimus* Hutton; *A.* **reticulata** (*Streptosiphon* (*Streptopelma*) *reticulatum* Suter=*Cymatium marwicki* Finlay) (p. 10); *Austrotriton maorium, insignitum, cyphoides,* and *decagonia* are referred to *Austrosassia* (p. 10); **AUSTROHARPA** (p. 11) (Harpidae), type *Harpa pulligera* Tate; *H. punctata* Verco, *H. spirata* Tate, *H. abbreviata* Tate, *H. tenuis* Tate, and ? *H. clathrata* Tate are referred to *Austroharpa; A.* **tatei** (p. 14), older Pliocene, So. Australia; **AUSTROLITHES** (p. 14) (Colidae), type *Fusus bulbodes* Tate as restricted by Pritchard. *Clavella platystropha* Pritch., *F. tateanus* T.-W., and *F. incompositus* are referred to *Austrolithes* (p. 15); *Pelicaria* **marwicki** (p. 17), "older Pliocene" of So. Australia. The writer finds the scaphelloid or pseudoscaphelloid apex more common in Mollusca than was thought, and here discusses it in Cymatiidae, Harpidae, Colidae, and Struthiolariidae. He regards the protoconch as of considerable importance in palaeontology. Types are in author's coll.

14596. **FLETCHER, HAROLD O.** (Introduction by **W. S. DUN.**) **Contributions on the Permo-Carboniferous Aviculopectinidae of New South Wales.** *Rec. Australian Mus.* 17(1): 1-34. 16 pl. 6 fig. 1929.—The introduction describes Varney Parkes collection, of which the material here described is a part, and other collections, and notes large size of aviculopectens and deltopectens from Australia. Dun also discusses differences between *Deltopecten* and *Aviculopecten* and gives registration numbers of specimens of Avidulopectinidae in the Mining and Geol. Mus. at Sydney, and in the Australian Mus. Fletcher describes 21 spp. from "Nowra grits," Up. Marine series of the Permo-Carboniferous, from N. S. Wales (specimens of *Deltopecten comptus* (Dana) are also from western Australia and of *Aviculopecten squamuliferus* (Morris) also from Tasmania) including: *Aviculopecten* **extensus*** (p. 6); *A.* **multicostatus*** (p. 8); *A.* **gracilis*** (p. 11); *A.* **parkesi*** (p. 13); *Deltopecten* **media*** (*Aviculopecten m.* Laseron (part)) (p. 15); *D.* **depressus*** (p. 18); *D. leniusculus** Dana (=*D. rienitsi* Mitchell); *D.* **comptus*** (*Pecten c.* Dana) (p. 23); *D.* **clarkei*** (p. 28); *Deltopecten* sp.*, probably new (p. 29); *D. subquinquelineatus* v. **delicatula*** (p. 31); *D.* **lata*** (p. 32). The remaining 9 spp. belong either to *Aviculopecten* or *Deltopecten* and 4 of them are redescribed. Types of new spp. in Australian Mus., Sydney.—*J. S. Williams.*

14597. **FLETCHER, HAROLD O.** (Introduction by **W. S. DUN**). **A revision of the genus Astartila.** *Rec. Australian Mus.* 17(2): 53-75. 5 pl. 1929.—The introduction gives history and diagnosis of the genus; 18 spp. are described and figured, all from Permo-Carboniferous (Up. Marine series) of New So. Wales. Types of new spp. in Australian Mus., Sydney. *A.* **danai** (*Pachydomus d.* DeKoninck) (p. 55); *A.* **compressa*** (p. 58); *A. cyprina** Dana and *A. polita** Dana, placed in the genus *Pachydomus* by DeKoninck, are referred back to *Astartila* by Fletcher. *A.* **obliqua*** (p. 61); *A.* **parkesi*** (p. 63); *A. intrepida** Dana (=*Pachydomus*

ovalis (?) McCoy); *A.* **ovata*** (p. 69); *A.* **quadrata*** (p. 70); *A.* **delicatula*** (p. 71); *A.* **pusilla*** (*Pachydomus pusillus* McCoy) (p. 72); *A.* **centralis*** (p. 73); *A.* **subcarinata*** (p. 74); *A.* **subgemma*** (p. 74). Additional notes are given on the following which comprise the remainder of the 18 spp. treated: *A. cytherea** Dana; *A. corpulenta** Dana; *A. cyclas** Dana; *A. transversa** Dana.—*J. S. Williams.*

14598. **GAMBETTA, LAURA. Risultati zoologici della Missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell'oasi di Giarabub (1926-1927). La Malacofauna del lago Arrascía. [Zoological results from the oasis of Jarabub. The mollusks of Lake Arrascia.]** *Ann. Mus. Civ. Storia Nat.* [*Genova*] 53: 265-298. 2 Maps, 8 fig. 1928-1930.—Three living marine mollusks from Lake Arrascia are described: *Pirenella conica* v. *fusca* Pallary, *Mytilus minimus* v. **coeni*** (p. 271), *Cardium edule-rectidens* v. **arrasciensis*** (p. 294). The shell modifications of the new varieties are attributed to the action of environmental waters. Maps show the distribution of *C. edule* in the Atlantic and (contrary to some) in the Mediterranean.—*L. Gambetta* (*transl. by H. Federighi*).

14599. **GATLIFF, J. H., and C. J. GABRIEL. Additions to and alterations in the catalogue of Victorian Marine Mollusca.** *Proc. Roy. Soc. Victoria* 43(2): 202-232. 1931.—The synonymy of 168 spp. is brought up to date. *Marita* Hedley is removed from *Guraleus* and raised to generic rank; *Xenophalium* Iredale (=*Xenogalea* Iredale).

14600. **GRIMPE, G. Teuthologische Mitteilungen. XIII. Über die Cephalopoden der Sunda-Expedition Rensch.** *Zool. Anz.* 95(5/8): 149-174. 14 fig. 1931.—*Abralia* **renschi*** ♀ (p. 149), Sumatra; **STENABRALIA** (p. 150, 164), n. subg. in *Abralia*, erected for *A. renschi, A. steindachneri, A. astrolineata,* and *A. astrosticta; Idiosepius pygmaeus* ssp. **hebereri*** (p. 165), Lombok Isl., compared with *I. p. pygmaeus** and *I. p. paradoxus.* Types in Zool. Mus. Berlin.

14601. **JACOT, ARTHUR PAUL. Rheotropism and evolution.** *Peking Soc. Nat. Hist. Bull.* 5(3): 39-40. 1931.—The mollusks *Eulota ravida* and *Cathaica pyrrhozona* are essentially plain forms and are not strongly rheotropic, ascending under other stimuli; *C. yantaiensis* though active during rains does not ascend at all. On the other hand certain species found in the hills appear to be rheotropic.

14602. **KENNARD, A. S., A. E. SALISBURY, and B. B. WOODWARD. The types of Lamarck's genera of shells as selected by J. G. Children in 1823.** *Smithsonian Misc. Coll.* 82(17): 1-40. 1931.—The dates of Children's rare little work "Lamarck's genera of shells, etc." are given as Oct. 1822 to Jan. 1824. Children used "type" in the modern sense, but some of his designations are not valid, because of earlier designations or non-inclusion in the original description. The writers comment on Children's fixations of the types of 212 genera found in Lamarck's "Histoire" (1818-22) and settle the status of each genus. The following designations must date from Children: *Clavagella* Lam., type *C. echinata; Gastrochaena* Sprengl., type *G. cuneiformis; Glycimeris* Lam. (1818) not Da Costa (1778), type *G. siliqua; Solemya* Lam. (=*Solenomya* Lam.), type *S. togata* Poli (=*S. mediterranea* Lam.); *Amphidesma* Lam., type *A. variegata; Saxicava* Fleur., type *Mytilus rugosus* L., *Venerupis* Lam., type *Venus perforans* Montag.; *Psammobia* Lam., type *P. feroensis* (Gmelin); *Psammotaea* Lam., type *P. donacina; Corbis* Lam., type *C. fimbriata; Cyrena* Lam., type *C. cor; Venericardia* Lam., type *V. planicosta; Cardita* Brug., type *C. sulcata; Hyria* Lam., type *H. avicularis; Etheria* Lam., type *E. semilunata; Podopsis* Lam., type *P. truncata; Gryphaea* Lam., type *G. angulata; Helicina* Lam., type *H. neritella; Navicella* Lam., type *N. tessellata; Tornatella* Lam., type *T. flammea* Gmel.; *Planaxis* Lam., type *P. sulcata.* The authors are responsible for the selection of the type of *Avicula* Brug. as *A. hirundo.*

14603. **KURODA, TOKUBEI. New Japanese shells (3).** *The Venus* [*Japan*] 2(6): 314-318. 1 pl. 1931.—The following spp. were illustrated and named in vol. II, no. 1, May 30, 1930, plate I from which publication they will date, but they are here described for the first time: *Thais* (*Mancinella*) *lata, T.* (*M.*) *siro,* and *Coralliophila sugimotonis.*

14604. **KURONUMA, KATSUZÔ. On the Japanese ship-worms, with descriptions of three new species.** *The Venus* [*Japan*] 2(6): 294-304. 2 pl. 1931.—Reports on 9 spp., including *Teredo* (*Lyrodus*) **hibicola*** (p. 295), *T.* (*Teredops*) **tateyamensis*** (p. 295), *Bankia* (*B.*) **nakazawai*** (p. 296).

14605. **LAIDLAW, F. F. Note on Ariophanta (Microcystis) normani, Smith, from Christmas Island.** *Proc. Malac. Soc. London* 19(4): 176. 1931.—Anatomical and radular notes are given; these show that the species belongs in the Durgellinae, near *Sitala.*—*H. B. Baker.*

14606. **LAIS, ROBERT. Die Molluskenfauna des Alpersbacher Stollens im südlichen Schwarzwald. I. Beitrag zur Molluskenkunde Südwestdeutschlands.** *Arch. Molluskenk.* 63(2): 53-70. 1 pl. 1931.—A list of mollusks from non-calcareous soils is given and the problem of the population of isolated calcareous areas is discussed.—*H. B. Baker.*

14607. **LAMY, ED. Sur une coquille de la Mer Rouge: Prasina borbonica Deshayes.** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(4): 272-277. 1 fig. 1928.—A review of the literature on *P. borbonica**, which is compared with *P. cornuta**.

14608. **LAMY, ED. Les Pinnidés de la Mer Rouge (d'après les matériaux recueillis par le Dr. Jousseaume).** *Bull. Mus. Nation. Hist. Nat. Paris* 1928(5): 352-354. 1928.—Notes on 5 spp. of *Pinna.*

14609. **LAMY, ED. Les Avicules de la Mer Rouge (d'après les matériaux recueillis par le Dr. Jousseaume).** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(1): 111-116. 1929.—Notes on 12 spp. of *Pteria: P.* **aegyptiaca** (*Avicula a.* Chemn) (p. 111); *P.* **zebra** (*A. z.* Reeve) (p. 112); *P.* (*Electroma*) **ala-corvi** (*Mytilus a.* Dillwyn) (p. 112); *P.* (*E.*) **spadicea** (*Avicula s.* Dunker) (p. 112); *P.* (*Pinctada*) **margaritifera** (*Mytilus margaritiferus* L.) (p. 113); *P.* (*P.*) *m.* var. **eythraensis** (Jameson) n. comb. (p. 113); *P.* (*P.*) **reentsi** (*A. r.* Dunker) (p. 113); *P.* (*P.*) **vulgaris** (*Perlamater v.* Schumacher) (p. 114); *P.* (*P.*) **lentiginosa** (*A. l.* Reeve) (p. 115); *P.* (*P.*) **cetra** (*A. c.* Reeve) (p. 115); *P.* (*P.*) **crocata** (*A. c.* Swainson) (p. 115); *P.* (*P.*) **nigra** (*A. n.* Gould) (p. 116); *P.* (*P.*) **placunoides** (*A. p.* Reeve) (p. 116).

14610. **LAMY, ED. Les Malleacea de la Mer Rouge. (D'après les matériaux recueillis par le Dr. Jousseaume.)** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 150-156. 1929.—Synonymical and distributional data on *Malleus savignyi, M.* (*Malvufundus*) *regula, M.* (*M.*) *decurtatus, M.* (*M.*) *legumen, Vulsella rugosa, V. vulsella, V. spongiarum, V. attenuata, Crenatula picta, Melina legumen,* and *M. australica.*

14611. **LAMY, EDOUARD. Révision des Limidae vivants du Muséum National d'Histoire Naturelle de Paris. (Suite et fin.)** *Jour. de Conch.* 74(3): 169-198. 1 pl. 1930; (4): 245-269. 1930.—These 2 parts finish the discussion of *Lima* (subg. *Mantellum, Limatulella, Acesta, Ctenoides,* and *Limatula*) and treat also the genus *Limea. Lima* (*Mantellum*) **orbignyi** (p. 180), n. n. for *L. angulata* Sow.; *L.* (*Ctenoides*) **lischkei** (p. 196), n. n. for *L. dunkeri* Smith.—*H. B. Baker.*

14612. **LØYNING, PAUL. Benthoctopus sibiricus, a supposed new species of Cephalopoda from the Siberian Arctic Ocean.** *Meddelel. Zool. Mus. Oslo No. 21* (*Norw. North Polar Exp. with the "Maud" 1918-1925, Sci. Results, 5, no. 11*) 1-11. Map. 2 pl., 2 fig. 1930.—*B.* **sibiricus*** (p. 1), description based chiefly on characters of radula and hectocotylus, from fragment taken from a walrus stomach, in 38 m., 76° 12′ N., 146° 10′ E., N. of the New Siberian Isls.—*S. S. Berry.*

14613. **MacGINITIE, G. E. The egg-laying process of the gastropod Alectrion fossatus Gould.** *Ann. and Mag. Nat. Hist.* 8(45): 258-261. 4 fig. 1931.—The use of the

pedal gland in the process of oviposition is illustrated.

14614. **MAKIYAMA, JIRÔ.** On Arca kiyonoi n. sp. *The Venus* [*Japan*] 2(6): 269-277. 8 fig. 1931.—*A.* kiyonoi* (p. 269), from Post-Pleistocene deposits in Mikawa and Ettyû provinces, Japan, also living in China Sea.

14615. **MERCIER, JEAN.** À propos des variations de l'aire ligamentaire d'Ostrea wiltonensis Lyc. et du genre Pernostrea Munier-Chalmas. *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 3-7. 1 fig. 1928(1929).

14616. **MERCIER, L.** À propos de "La présence de Cyclostoma elegans Müller dans la région littorale du Bessin." *Bull. Soc. Linn. Normandie* 1: 5. 1928(1929).

14617. **MORIN, G., et A. JULLIEN.** Histophysiologie de l'organe de Bojanus au cours de l'estivation artificielle chez Helix pisana. *Bull. Histol. Appl. Phys. et Path.* 7(7): 220-232. 3 fig. 1930.—Aestivation was produced through desiccation and the excretory epithelium was studied. Normally the cells are cylindrical, distinct, with basal vesicular nuclei and distal globular ends. They have abundant filamentous mitochondria about the basal end and the sides. After 21 days mitochondria are reduced to a few round granules, the cells form a syncytial mass with very eccentric nuclei and the cytoplasm is vacuolated. After 62 days the epithelium cannot be distinguished from the adjacent connective tissue since both enter into a 2-layered structure. Large coarse mitochondrial rods are again found in the cell borders. This shows that the organ is in continuous or accentuated activity during aestivation.—*J. G. Sinclair.*

14618. **MÜLLER, WILHELM.** Die Fauna der Frasnes-Stufe bei Almáden (Sierra Morena, Spanien). *Abhandl. Senckenberg. Naturf. Ges.* 41(5): 247-282. 4 pl. 1929.—The material collected is from the Frasnian (Devonian) deposits. The collection comprises 36 spp. belonging to the following groups: Brachiopoda, Lamellibranchia, Gastropoda, Pteropoda, Bryozoa, Cephalopoda, Echinoderma, and Crustacea. The spp. are fully described and figured. Lamellibranchia: *Aviculopecten* unnamed n. sp. ? (p. 265); *Lyriopecten* 2 unnamed n. spp. ? (one figured) (p. 266); *Leptodesma* almadenensis* (p. 266); *Leptodesma* unnamed n. sp.* (p. 267); *Avicula* ? (*Dolabra* ?) hispanica* (p. 268); *Modiola* supradevonica* (p. 269); *Cypricardella* oblonga* (p. 269); *Nuculana* acuta* (p. 270); *Ctenodonta* robustella* (p. 270); *Cucullella* planiforma* (p. 271); *Myophoria* rotunda* (p. 272); *Carydium* beushauseni* (p. 272); *Grammysia* unnamed new sp.* (p. 274). Tables are given showing: (1) The distribution of the spp. in the 5 different beds of the series; (2) a comparison of the distribution of the same spp. in the Dinant Basin and the Boulonnais.—*M. L. Hett.*

14619. **NATHAN, HANS.** Eine zwischeneiszeitliche Mollusken-Fauna aus Südbayern. *Abhandl. Geol. Landesuntersuch. Bayerischen Oberbergamtes Hft. 3.* p. 31-41. 2 pl. 1931.—Thirty-six gastropods and 1 pelecypod are listed, with descriptive and distributional notes, and a local geographical analysis is given. The fauna is comprised of northern, southern, and eastern elements, and represents the "Riss-Würm" interglacial epoch.

14620. **OPPL, EGON.** Ueber einige Makrofossilien der Wigantitzer Klippe bei Roschnau unter dem Radhost. *Naturwiss. Zeitschr. Lotos* 78(2): 107-109. 1930.—*Lamellaptychus beyrichi* and *Punctaptychus punctatus,* the first macrofossils to be recorded from this formation, furnish new evidence of its Tithonian age (Jurassic). Three undetermined spp. of *Belemnites* are also recorded.

14621. **PARONA, C. F.** Ricerche sulle rudiste e su altri fossili del Cretacico Superiore del Carso Goriziano e dell' Istria. [Rudistids and other Upper Cretaceous fossils of Carso Goriziano and Istria, Italy.] In: *Mem. Ist. Geol. R. Univ. Padova* 7: 1-56. (separately paged) 6 pl., 8 fig. 1926.—A cross-section showing the structure and fossiliferous horizons, and a discussion of the stratigraphy and paleontology precede the systematic section. There are descriptions and taxonomic notes on 54 spp. belonging to 16 genera of rudistids, and 12 other spp. of pelecypods belonging to 6 genera, as well as 1 gastropod and 2 brachiopods from the Senonian and Turonian. *Radiolites* cremai* (p. 28); *R.* depressa* (*Caprinella d.* Cornalia & Chiozza) (p. 30); *Requienia* calegarii* (p. 43); *Alectryonia* polae* (p. 51). All new spp. from the Turonian.

14622. **PATTON, LEROY T.** The geology of Stonewall County, Texas. *Univ. Texas Bull.* 3027. p. 3-77. Map, 4 fig. 1930.—A unique association of a new sp. of *Ostrea* with *Pleurocera strombiformis, Exogyra texana,* and *Gryphaca pitcheri* in strata referred to the Trinity or possibly a transition to the Comanche group, is noted.

14623. **REED, F. R. COWPER.** Some new lamellibranchs from the Silurian of the Ludlow district [England]. *Ann. and Mag. Nat. Hist.* 8(46): 289-304. 3 pl. 1931.—*Tancrediopsis* ludensis* (p. 289); *Maminka* (*Matercula*) anglica* (p. 290), first record of the genus in the British Silurian; *Dualina* impersonata* (p. 291); *Chaenocardiola* marstoni* (p. 292); *Lunulicardium* relegatum* (p. 293); *Grammysia* morata* (p. 294); *Rhytimya* (?) lineata* (p. 295); *Endolasma* (?) protractum* (p. 296); SALWEYIA (p. 301), new subg. of *Euthydesma* ?, type *E.* ? (*S.*) subobliquatum* (p. 298); *Pterinea* aymestriensis* (p. 301); *P.* nupera* (p. 302). Types in Ludlow Mus.

14624. **RENSCH, ILSE.** Beitrag zur Kenntnis der Schneckenfauna der Admiralitätinseln. *Zool. Anz.* 95 (5/8): 186-194. 5 fig. 1931.—*Papuina* pulcherrima* (p. 187); *P.* klaarwateri* (p. 187); *P.* admiralitatis* (p. 188); *P. novaecgeorgiensis* (Cox) (=*Helix* (*Geotrochus*) *moscleyi* E. A. Smith); *Chloritis* (*Eustomopsis*) dentrecasteauxi (*Helix* (*C.*) *d.* E. A. Smith) (p. 190); *Hemiplecta* cartereti (*Helix c.* E. A. Smith) (p. 191); *Dendrotrochus helicinoides* labillardierei (*Helix* (*Geotrochus*) *l.* E. A. Smith) (p. 191); *Ganesella* infrastriata (*Helix i.* E. A. Smith) (p. 192); *G.* (?) modesta* (p. 192). All from Admiralty Isl.; types in Zool. Mus. Berlin.

14625. **ROCH, FELIX, und FRIEDRICH MOLL.** Die Terediniden der Zoologischen Museen zu Berlin und Hamburg. *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 1-22. 2 pl., 20 fig. 1931.—Full synonymy is given for each species; the palette of 41 spp. and the shells of 13 n. spp., are illustrated. *Teredo megotara* Hanley (=*T. denticulata* Gray); *T. m.* var. antarctica (*T. a.* Hutton) (p. 5); *T.* gazellae* Roch (p. 6), Malay Arch.; *T.* diederichseni* Roch (p. 6), between Manila and Sunda Strait, type in Hamburg Mus.; *T.* petersi* Moll (p. 6), Kerimba Isl., Portuguese E. Africa; *T.* semoni Moll (*T. clava* Martens) (p. 9); *T.* yatsui* Moll (p. 10), Japan; *T.* lamyi* Roch (p. 10), Italy, type in Hamburg Mus.; *T.* takanoshimensis* Roch (p. 10), Japan [type dep. not given]; *T.* togoensis* Roch (p. 11) and *T.* lomensis* Roch (p. 11), Togo; *T.* franziusi* Roch (p. 11), Mediterranean Sea; *T.* sinensis* Roch (p. 13), China; *T.* nodosa* Roch (p. 14), Italy; *T.* dicroa* Roch (p. 14), Togo; *T.* hermitensis* Roch (p. 14), Hermit Isl., Bismarck Arch.; *Nausitoria* orientalis* Roch (p. 17) and *N.* kamiyai* Roch (p. 17), Japan; *Bankia* bagidaensis* Roch (p. 18) and *B.* anechoensis* Roch (p. 18), Togo; *B.* kuronunii* Roch (p. 19) and *B.* kingyokuensis* Roch (p. 20), Japan; *B.* segaruensis* Roch (p. 20), Togo. Except where otherwise given, types are in Berlin Zool. Mus.

14626. **ROSZKOWSKI, WACŁAW.** Contributions to the study of the family Lymnaeidae. 1. On the systematic position and the geographical distribution of the genus Myxas J. Sowerby. *Prace Państwowego Muz. Zool.* (*Ann. Mus. Zool. Polonici*) 8(2): 64-97. 5 pl. 1929.—On the basis of a detailed anatomical study of *Myxas glutinosa,* the author decides that this genus should be retained in the Lymnaeidae. Records of its distribution are also collated.—*H. B. Baker.*

14627. **RUTSCH, R.** Einige interessante Gastropoden aus dem Tertiär der Staaten Falcón und Lara (Venezuela). *Eclogae Geol. Helvetiae* 23(2): 604-614. 1 pl. 1930.—Four gastropods are figured and described in-

cluding *Scobinella morieri* v. **gavilanensis*** (p. 611), from the Pliocene.—*W. Berry.*

14628. SASAKI, MADOKA. A monograph of the dibranchiate cephalopods of the Japanese and adjacent waters. [A posthumous paper.] *Jour. Fac. Agric. Hokkaido Imp. Univ. Sapporo* 20 (Supplem.): 1-357. 30 pl. (1 col.), 179 fig. 1929.—This paper, the plates of which are issued in a separate volume, is based on a 10 year study of material contained in 9 different collections, comprising about 10,000 specimens. The spp. herein described amount to 125, in 52 genera, of 21 families, of which 2 families, 3 genera, 1 subg., 53 spp., and 7 varieties are new to science. A key is given to the families and subfamilies (found in Japan), there are also numerous keys to genera and spp., and tables of measurements of ♂ and ♀ species. All spp. are figured. In the suborder Octopoda, the following nomenclatorial changes occur: Division **PINNATTA** n. n. (Lioglossa Lütken) (p. 4); subdivision **PROTOPINNATA** n. n. (Eurytreta Grimpe) (p. 4), containing Wataselliidae; subdivision **METAPINNATA** n. n. (Stenotreta Grimpe) (p. 6), containing Cirroteuthidae; a synopsis of the 6 genera of this genus is appended; division **APINNA** n. n. (Trachyglossa Lütken) (p. 12), containing Eledonellidae, with *Eledonella* **ijimai*** (p. 13), Kyushu, Japan, type in Tokyo Imp. Univ.; Amphitretidae, Allopsidae, Argonautidae, and Polypodidae with *Polypus* **oshimai*** (p. 44), Formosa and *P.* **luteus*** (p. 45), Pescadores; *P. jan-siao* v. **typicus*** (p. 49), Japan [type dep. not given]; *P. f.* var. **etchuanus*** (p. 53), Kyushu; *P.* **fasciatus*** (*P. pictus* ssp. *f.* Berry) (p. 58); *P.* **fujitai*** (p. 70), Japan; *P. döfleini** Wülker (=*P. apollyon* Berry); *P.* **tenuicirrus*** (p. 78), Japan, type in Tokyo Imp. Univ.; *P.* **hattai*** (p. 87), Japan; *P.* **variabilis*** (p. 90), and var. **typicus*** (p. 90), Japan; *P. v.* var. **pardalis*** (p. 94), Japan, type in Tokyo Imp. Univ. In the suborder Decapoda, Loliginidae, the following nomencl. changes occur: *Loligo edulis* Hoyle (=*L. budo* Okada); *L. e.* forms **nagasakensis*** and **grandipes** (p. 109), Japan [type dep. not given]; *L.* **formosana*** (p. 109), Formosa; *L.* **gotoi*** (p. 116), Kyushu; *L.* **tagoi*** (p. 118), Japan, type in Tokyo Imp. Univ.; *L.* **beka*** (p. 121), Japan; *L.* **oshimai*** (p. 123), Formosa. Idiosepiidae: A synopsis of the 4 spp. of the genus *Idiosepius* is appended. Sepiolidae: *Euprymna* **berryi*** (p. 143), all Japan (except Hokkaido), Formosa, Hongkong, Philippines, Andaman Isls., Kolumadulu Atoll (Indian Sea), Ceylon. Sepiidae: *Sepia* **tigris*** (p. 168), Formosa, type in Formosan Mus.; *S.* **robsoni*** (p. 179), Tokyo Bay, type in Tokyo Imp. Univ.; *S.* **erostrata*** (p. 183), Kyushu, type in Tokyo Imp. Univ.; *S.* **tenuipes*** (p. 193), Honshu, type in Tokyo Imp. Univ.; *S. kobiensis* v. **typica*** (p. 204), south of Kyushu [no type loc. given]; *S. k.* var. **andreanoides*** (*S. a.* Hoyle) (p. 206); *S. k.* var. **toyamensis*** (p. 209), Toyama Bay, Honshu; *S. k.* var. **beppuana*** (p. 211), Bungo Prov., type in Tokyo Imp. Univ.; *S. k.* var. **crassa*** (p. 213), Surugu Prov., type in Tokyo Imp. Univ.; *Sepiella* **japonica*** (p. 219), Etchû Prov.; *S.* **heylei*** n. n. (p. 221). Enoploteuthidae: *Abralia* **multihamata*** (p. 245), Formosa, type in Formosan Mus. Chiroteuthidae: **TANKAIA** (p. 308) subg. of *Chiroteuthis*, type *C.* (*T.*) **borealis*** (p. 309), Kushiro Prov., type in Fish. Inst. Takashima, Hokkaido; *Mastigoteuthis* **latipinna*** (*Idioteuthis l.* Sasaki) (p. 312). Cranchiidae: *Teuthowenia* **tagoi*** (p. 326), Suruga Prov., type in Tokyo Imp. Univ.; *T.* **elongata*** (p. 327), Kyushu, type in Tokyo Imp. Univ. An extensive bibliographical list concludes the paper. Except where otherwise given, types of new forms are in Hokkaido Imp. Univ.

14629. SAYRE, ALBERT NELSON. The fauna of the Drum limestone of Kansas and Western Missouri. *Bull. Univ. Kansas, Sci. Bull.* 19 (2): 75-203. 21 pl. 1930; simultaneously published in Bull. Univ. Kansas, State Geol. Surv. Kansas, Bull. 17. p. 75-203. 21 pl. 1930.—The molluscan fauna of the Drum limestone presents a sharp contrast to those of the preceding and succeeding limestones of the Pennsylvanian system of Kansas. Bryozoa: *Fenestella mimica* v. **latirama*** (p. 88), *F.* **moorei*** (p. 89), *Polypora submarginata* v. **nodosa*** (p. 90), *Rhabdomeson* **kansasense*** (p. 91). Brachiopoda: *Productus insinuatus* v. **missouriensis*** (p. 94) and *Dielasma* **ventricosa*** (p. 98), Missouri and Kansas. Pelecypoda: *Edmondia* (?) **kansasensis*** (p. 104); *Nucula* **triangularis*** (p. 105); *Parallelodon* **kansasensis*** (p. 108), *Pteria* **welleri*** (p. 110), *Pseudomonotis* **spinosa*** (p. 114) and *Myalina* (?) **slocomi*** (p. 117), Kansas and Missouri; *Schizodus* **trigonalis*** (p. 118); *Lithophaga* **subelliptica*** (p. 123); *Pleurophorus* **attenuatus*** (p. 125); *P.* **turnerensis*** (p. 126). Gastropoda: *Pleurotomaria* **bilineata*** (p. 132), Missouri; *P.* **fisheri*** (p. 133); *P.* **kansasensis*** (p. 134); *Ptychomphalus* **laudenslageri*** (p. 134); *P.* **lineata*** (p. 135); *Murchisonia* **matheri*** (p. 135); *Goniospira* **helicaformis*** (p. 136); *Phanerotrema* **ornatum*** (p. 136); *Microdoma* **ornatus*** (p. 140); *Naticopsis* (?) **minuta*** (p. 142); *Hemizyga* (?) **cancellata*** (p. 145); *Bulimorpha* **meeki*** (p. 146), n. n. for *Actaeonima minuta* Meek & Worthen; *B.* **turnerensis*** (p. 147); *Aclisina* **breva*** (p. 150); *A.* **parallela*** (p. 150); *Orthonema* **liratum*** (p. 151); *Trachydomia* **pustulosa*** (p. 152), Kansas and Missouri. Cephalopoda: *Orthoceras* **kansasense*** (p. 153), Missouri and Kansas; *Metacoceras cavatiforme**, *M. c.* var. **angulatum** (p. 155), Missouri. Except where otherwise given, new spp. are from Kansas. Types in Geol. Mus. Univ. Kansas. Various other spp. in Foraminifera, Alcyonaria, Zoantharia, Annelida, Bryozoa, Brachiopoda, Pelecypoda, Gastropoda, Cephalopoda, and Trilobita are described from collected material and illustrated.

14630. SCHERMER, ERNST. Die Molluskenfauna der ostholsteinischen Seen. *Arch. Hydrobiol.* 22 (2): 259-305. 4 pl., 1 fig. 1930.—This survey includes studies on 33 east Holstein lakes; 48 species were obtained; for all of these, notes on the distribution through the series and in the individual lakes, dimensions of the various forms and other peculiarities are discussed. *Bithynia leachi* f. **gracilis*** (p. 288).—*H. B. Baker.*

14631. SCHILDER, F. A. Gesetzmässigkeiten und Ursachen der Schalen-Variabilität bei Cypraea. *Xe. Congrès Internation. Zool. à Budapest, 1927.* Part 2. 980-990. 1929.—The principal variations in size, shape, number of folds, and color (ground, stripes and spots) are discussed and illustrated by statistical tables for examples. Surveys of known variation in the species are also presented.—*H. B. Baker.*

14632. SPATH, L. F. Revision of the Jurassic cephalopod fauna of Kachh (Cutch): Part III. *Mem. Geol. Surv. India; Palaeont. Indica.* 9 (Mem. 2): 163-278. 28 pl. 1928.—Deals with Up. Jurassic members of the ammonite superfamily Stephanoceratidae, assigned to the families Macrocephalitidae Buckman emend., **EUCYCLOCERATIDAE** (p. 203), Pachyceratidae Buckman emend., **MAYAITIDAE** (p. 222), and Reineckeidae Hyatt emend. In discussion of families, genera, and species many new names are given, new assignments are made for India and for other parts of the world. Names in the following list are for India unless other country is given. *Macrocephalites* **leei*** (p. 169); *M.* **steinmanni** (p. 170); **INDOCEPHALITES** (p. 171); type *I.* **kheraensis*** (p. 184); *Kamptokephalites* Buckman emend.; *K.* **bedfordensis** (p. 172); *K.* **maconnensis** (p. 172); *K.* **subpila** (p. 173); *K.* **hudlestoni** (*Macrocephalites h.* Blake) (p. 172) and *K.* **terebratus** (*Macrocephalites t.* Phillips) (p. 172), England; *Dolikephalites* **subcompressum** (*Stephanoceras s.* Waagen) (p. 173); *D.* **gracilis** (p. 173), Italy; *Nothocephalites* **semilaevis*** (*Stephanoceras s.* Waagen) (p. 174), *Kamptokephalites* **subkamptus** (p. 174), New Guinea; **ARCTOCEPHALITES** (p. 174), type *Ammonites ishmae arcticus* Newton, Franz Josef Land; *A.* **pompeckji** (*Macrocephalites p.* Sokolov) (p. 174), Russia; *Macrocephaliceras* **polyptychum** (p. 174), France; *Indocephalites* **gerthi** (*Macrocephalites diadematus* Gerth) (p. 175), Argentina; **EURYCEPHALITES** (p. 175), type *Macrocephalites vergarensis* Burckhardt (p. 175), Argentina; *E.* **eurystoma** (*Macrocephalites e.* Stehn) (p. 175), Argentina; **EPICEPHA-**

LITES (p. 175), type *Macrocephalites epigonus* Burckhardt, Mexico; **XENOCEPHALITES** (p. 175), type *Macrocephalites neuquensis* Stehn, Argentina; *X.* **extremus** (*Macrocephalites e.* Stehn) (p. 175), Argentina; *Macrocephalites* **triangularis*** (p. 180); *Indocephalites* **transitorius*** (p. 183); *I.* **chrysoolithicus*** (*Stephanoceras c.* Waagen) (p. 186); *I.* **diadematus*** (*Stephanoceras d.*) (p. 188); *I.* **indicus*** (p. 189); *I.* **gibbosus*** (p. 190); *I.* **sphaeroidalis*** (p. 191); *Pleurocephalites* **habyensis*** (p. 192); *P.* **elephantinus*** (*Ammonites e.* Sowerby) (p. 194); *Kamptokephalites* **magnumbilicatus*** (*Stephanoceras m.* Waagen) (p. 195); *K.* **dimerus*** (*Stephanoceras dimerum* Waagen) (p. 197); *K.* **lamellosus*** (*Ammonites l.* Sowerby) (p. 198); *K. l.* **aureus*** (p. 200), *K.* **etheridgei*** (p. 200), New Guinea; *Subkossmatia* **flemingi*** (p. 205); **SIVAJICERAS** (p. 205), type *Ammonites fissus* Sowerby; **IDIOCYCLOCERAS** (p. 205), type *I.* **perisphinctoides*** (p. 215); **NOTHOCEPHALITES** (p. 205), type *N.* **asaphus*** (p. 208); *N.* **mondegoensis*** (p. 206), Portugal; *Eucycloceras* **intermedium** (*Macrocephalites bifurcatum* G. Boehm, part) (p. 206), New Guinea; *Idiocycloceras* **bifurcatum** (*Macrocephalites b.* G. Boehm, part) (p. 206), *Nothocephalites* **paradoxus*** (p. 207), Madagascar; *N.* **semilaevis*** Waagen (p. 209); *Eucycloceras* **pilgrimi*** (p. 209); *E.* **intermedium** (*Macrocephalites keeuwensis* Boehm, pars) (p. 210); *Dolikephalites* **flexuosus*** (p. 210), New Guinea; *Subkossmatia* **obscura*** (p. 211); *S.* **coggin-browni*** (p. 212); *S.* **discoidea*** (p. 213); *S.* **ramosa*** (p. 214); *Idiocycloceras* **singulare*** (*Stephanoceras fissum* Waagen) (p. 216); *I.* **dubium*** (p. 217), *Erymnoceras* **dorotheae*** (p. 220), *Pachyceras indicum**; *P.* **distinctum*** (p. 222); *Mayaites* Spath emend.; **EPIMAYITES** (p. 223), type *Stephanoceras transiens** Waagen; *E.* **tenuicostatus** (*Macrocephalites palmarum* var. *tenuicostata* G. Boehm) (p. 223), *E.* **metroxyloni** (*Macrocephalites m.* G. Boehm) (p. 223), *E.* **batavoindicus** (*Macrocephalites b.* G. Boehm) (p. 223), *E.* **rotangi** (*Macrocephalites r.* G. Boehm) (p. 223), *E.* **palmarum** (*Macrocephalites p.* G. Boehm, part) (p. 223), *E.* **sublemoini** (*Macrocephalites palmarum* G. Boehm, part) (p. 223) and *E.* **sinuatus** (*Macrocephalites p.* var. *alpha* G. Boehm, part) (p. 224), New Guinea; *Mayaites* **rotundus*** (p. 227); *M.* **jumarensis*** (p. 228); *M.* **obesus*** (p. 228); *M.* **subkobyi*** (p. 229); *M.* **smeei*** (p. 230); *M.* **radiatus*** (p. 231); *Epimayaites* **polyphemus** (*Stephanoceras p.* Waagen) (p. 233); *E.* **lemoini*** (*Stephanoceras maya* Waagen) (p. 234); *E.* **axonoides*** (p. 235); *E.* **subtumidus*** (*Stephanoceras subtumidum* Waagen) (p. 237); *E.* **pseudindicus*** (p. 237); *E.* **evolutus*** (p. 238); *E.* **excentricus*** (p. 239), *E.* **transiens** (*Stephanoceras t.* Waagen) (p. 240); *E.* **lautus*** (p. 242); *E.* **falcoides*** (p. 242); *E.* **patella*** (p. 243); *Dhosaites* **elephantoides*** (*Stephanoceras elephantinum* Waagen, part) (p. 244); *D.* **otoitoides*** (p. 245); *D.* **primus*** (p. 245); **PARYPHOCERAS** (p. 247), type not designated; *P.* **rugosum*** (p. 247); *P.* **badiense*** (p. 248); *P.* **stephanoides** (*Stephanoceras fissum* Waagen, part) (p. 248); **PROGRAYICERAS** (p. 250), type *P.* **grayi** (*Stephanoceras nepalense* Waagen) (p. 250), *P.* **traumanense*** (p. 251), **PSEUDOSTRENOCERAS** (p. 253), type *Parkinsonia hystricoides* Rollier, France; **HEMIGARANTIA** (p. 253), type *Ammonites julii* d'Orb., France, **PSEUDOPLETOCERAS** (p. 255), type *Ammonites chauvinianus* d'Orb., France, **EPIMORPHOCERAS** (p. 257), type *Perisphinctes decorus* Waagen; *Reineckeia* **tyranniformis*** (p. 260); *R.* **smithi*** (p. 263); *R.* **ravana*** (p. 264); *Kellawaysites* **oxyptychoides*** (p. 266); *Reineckeites waageni* v. **regalis*** (p. 269); *Collotia* **drapaudi*** (p. 273); *C.* **kachhensis*** (p. 274); *C.* ? (*Reineckeia*) **octagona*** (p. 276). Figured and named on plate but not noted in text: *Prososphinctoides* **manialensis*** (pl. 42).—*J. B. Reeside, Jr.*

14633. TAKI, IWAO. Some ecological observations on Lymnaea (Radix) japonica Jay. VI. Résumé. [In Japanese, with English summary.] *The Venus* [*Japan*] 2(6): 278-294. 4 fig. 1931.—Observations on the copulation, egg laying, egg mass, feeding habits, and enemies. The most formidable enemy is the larva of *Hydrophilus acuminatus**, which crushes the columella of the body whorl and pulls the entire soft part of *Lymnaea* out of the shell, to serve as food.

14634. TOLMER, L. Essai sur la répartition géographique du genre Polycera Cuv. 1817 (Mollusque Nudibranche); et des trois espèces P. quadrilineata Müller, P. lessonii d'Orbigny, P. ocellata Alder et Hancock. *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 30-38. Map. 1928 (1929).—The distribution of the 3 spp. is mapped. Bibliography of 32 titles.

14635. VINCENT, ÉMILE. Mollusques des couches à Cyrènes (Paléocène du Limbourg). (Mémoire posthume.) *Mém. Mus. Roy. Hist. Nat. Belgique* No. 43. 9-43. 7 pl. 1930.—This paper gives detailed description of a Paleocene section found in a mining shaft near Limbourg, Belgium. The fauna indicates brackish water conditions of deposition. Thirty-five spp. of mollusks are listed and described, including: *Arca* (*Barbatia*) **limburgica*** (p. 17); *Ostrea* (*Alectryonia*) **taxandrica*** (p. 19); *Diplodonta* (*Felaniella*) **eysdenensis*** (p. 20); *Corbicula* (*Loxoptychodon*) **taxandrica*** (p. 22); *Corbula* **rensoni*** (p. 26); *Jouannetia* **taxandrica*** (p. 28); *Teredo* **eysdenensis*** (p. 28); *Neritina* **disparilis*** (p. 29); *Bithynella* **eysdenensis*** (p. 31); *Natica* **eysdenensis*** (p. 31); *Melania* **limburgica*** (p. 32); *M.* (*Campylostylus*) **taxandrica*** (p. 34); *Aurelianella* **eysdenensis*** (p. 36); *Siphonalia* **aestuarina*** (p. 38); *Murex* (*Poireria*) **disparatus*** (p. 39); *Planorbis* (*Hippeutis*) **eysdenensis*** (p. 40); *Traliopsis* **belgica*** (p. 42).—*B. L. Clark.*

14636. WAGNER, HANS. Die Nacktschnecken. (XIV Teil. Zoologische Forschungsreise nach den Jonischen Inseln und dem Peloponnes, von MAX BEIER.) *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. 1 Abt.* 139(8/10): 555-558. 2 fig. 1930.—*Limax* (*Limax*) **beieri*** (p. 556), Levkas Isl., Greece. Four other species of slugs were found.

14637. WAGNER, HANS. Nacktschnecken aus Volosca und Abbazia. *Arch. Molluskenk.* 63(1): 46-50. ½ pl. 1931.—This list of slugs and snails from Istria includes the anatomical description of *Milax* (*Milax*) **plöbsti*** (p. 47), Italy.—*H. B. Baker.*

14638. WATERSTON, RODGER. Acme lineata (Drap.) in Midlothian. *Scottish Nat.* 1931(191): 152. 1931.

14639. WINCKWORTH, R. On the growth of Paphia undulata (Veneridae). *Proc. Malac. Soc. London* 19(4): 171-174. 2 fig. 1931.—*Paphia* lives less than 2 yrs. and breeds in the hot season; the young brood grows rapidly until the cooling of the water in the wet season; growth stops during the winter; about May, increased warmth stimulates breeding and further growth; and, in the second winter, growth stops at an earlier date.—*H. B. Baker.*

14640. ZIMMERMANN, K. Wasseraufnahmefähigkeit von ausgetrockneten Eobania vermiculata. *Arch. Molluskenk.* 63(2): 85-86. 1931.—Aestivating animals absorbed as much as 100% of their weight.—*H. B. Baker.*

CRUSTACEA

MARY J. RATHBUN, *Editor*
WALDO L. SCHMITT, *Associate Editor*
CHANCEY JUDAY, H. A. PILSBRY, CLARENCE R. SHOEMAKER,
CHARLES B. WILSON, *Assistant Editors*

(See also in this issue Entries 12216, 12629, 12630, 12633, 12641, 13136, 13168, 13575, 14242, 14244, 14246, 14249, 14251, 14253, 14254, 14472, 14478, 14618, 14629, 14681, 14705)

14641. **BRADLEY, JOHN H. Jr. Fauna of the Kimmswick limestone of Missouri and Illinois.** *Contrib. Walker Mus.* 2(6) : i-v+219-290. 8 pl. 1930.—Fifty-one spp. are described. Included are.—Porifera: *Receptaculites* **cornutiformis*** (p. 221), Missouri. Bryozoa: *Hallopora* **gigantea*** (p. 222); *Escharopora* **patens*** (p. 223). Brachiopoda: *Rafinesquina* **jeffersonensis*** (p. 225); *Anastrophia* **primigenia*** (p. 228). Mollusca: *Ctenodonta* **concinna*** (p. 229); *Cyrtodonta* **sulcata*** (p. 231); *Conocardium* **limatulum*** (p. 231); *Tryblidium* **rugosum*** (p. 234), Missouri; *Bucania* **batchtownensis*** (p. 234); *B. punctifrons* v. **primeva*** (p. 236), Illinois; *Phragmolites* **multinotatus*** (p. 237); *Lophospira* **lineata*** (p. 237), Missouri; *Gyronema* **intermedium*** (p. 238); *Holopea* **missouriensis*** (p. 239) and *Hyolithes* **multicinctus*** (p. 240), Missouri; *Pterotheca* **triangularis*** (p. 242); *Conularia trentonensis* v. **occidentalis*** (p. 242). Crustacea: *Isoteloides* **kimmswickensis*** (p. 249); *Illaenus* **depressicapitatus*** (p. 252); *Goldius* **slocomi*** (p. 257); hypostoma* (perhaps of *G. slocumi*); *Proëtus* **canalis*** (p. 261); *Cyphaspis* **globosus*** (p. 262); *Haploconus* **tumidus*** (p. 263); *Acrolichas* **aspratilis*** (p. 265); *A.* **subdisjunctus*** (p. 267); *A.* **antiquarius*** (p. 268), Missouri; *Hemiarges* **leviculus*** (p. 271); *Ceraurus* **globulobatus*** (p. 274); *Ceraurus* sp.* ind.; *Ceraurinus* **platycanthus*** (p. 276) and *C.* **tenuisculptus*** (p. 278), Illinois; *Pseudosphaerexochus* **subcircularis*** (p. 279); **HOLIA** (p. 280) (Cheiruridae), type *H.* **magnaspina*** (p. 281); *Heliomera* **raymondi*** (p. 282), Illinois; a small pygidium*, sp. indetermined; *Sphaerocoryphe* **arachniformis*** (p. 284); *Dalmanites* **katharina*** (p. 286). Types in Walker Mus.—*J. H. Bradley, Jr.*

14642. **CHAPPUIS, P.-A. Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 4. Crustacés Copépodes.** *Arch. Zool. Exp. et Gén.* 71(3) : 345-360. 22 fig. 1931.—A discussion of 8 spp. of Cyclopidae and 4 forms of Harpacticidae from Donnelson's and Marengo Caves in Indiana; Mammoth and Horse Caves in Kentucky. In an appendix 7 forms of Harpacticidae from Canada are discussed: *Bryocamptus zschokkei* ssp. **frigidus** (*Attheyella frigida* Willey) (p. 357); *B.* **minusculus** (*Canthocamptus m.* Willey) (p. 358); *B.* (*Arcticocamptus*) **subarcticus** (*Attheyella subarctica* Willey) (p. 358); *Echinocamptus* (*Limocamptus*) **nivalis** (*A. n.* Willey); *Attheyella* (*Brehmiella*) *northumbrica americana* (Herrick) (=*A. northumbricoides* Willey not Brehm, *A. willeyi* Kiefer); *A.* (*B.*) *illinoisensis* ssp. **hyperborea** (*Canthocamptus hyperboreus* Willey) (p. 359).

14643. **CHAPPUIS, P. A. Zur Kenntnis der Mikrofauna von Britisch Indien. 3. Copepoda Harpacticoida.** *Rec. Indian Mus.* 30(4) : 375-385. 32 fig. 1928.—*Canthocamptus* **horai*** (p. 376), *C. zschokkei* **orientalis** (p. 377), *C. z.* **himalayensis** (p. 378), *C.* **bryophilus*** (p. 378), *C.* **sewelli*** (p. 381), *C. s.* **indicus*** (p. 382), *C. s.* **eremita*** (p. 383), *Maraenobiotus insignipes* **indicus*** (p. 384), *M. brucei* **himalayensis*** (p. 384).—*M. J. Rathbun.*

14644. **COTT, HUGH B. The Zoological Society's expedition to the Zambesi, 1927: No. 2. Observations on the natural history of the land-crab Sesarma meinerti, from Beira, with special reference to the theory of warning colours.** *Proc. Zool. Soc. London* 1929(4) : 679-692. 1 col. pl., 4 fig. 1929.—An account of the habits of *S. meinerti* found at Beira, East Africa, living on dry ground near mangrove swamps. This species has largely adopted terrestrial habits and the author gives some account of the structure and mechanisms which enable it to respire in air or in a minimum amount of water. A colored drawing of the species is given and evidence brought forward to show that the brilliant colors have a warning (aposematic) function. The vivid color, aggressive behavior and power of self-defence, tough physique, powers of regeneration, and relative freedom from persecution by enemies all point to this conclusion. The warning coloration is correlated with the exigencies of a more or less terrestrial mode of life and its origin and development are to be explained by the operation of natural selection.—*W. M. Tattersall.*

14645. **COTT, HUGH B. The Zoological Society's expedition to the Zambesi, 1927: No. 3. Observations on the natural history of the racing-crab Ocypoda ceratophthalma from Beira.** *Proc. Zool. Soc. London* 1929(4) : 755-765. 1 pl., 1 fig. 1929.—An account of the habits of *O. ceratophthalma* found at Beira, East Africa. The fossorial habits of the species are described, including the method of digging its burrow, the structure of the burrows and the special structural modifications to a fossorial habit. Some account is given of the enemies of the species, which are chiefly birds of prey, and the protective value of its cryptic coloration by day. The crabs are scavengers, and, though often seen abroad by day, are essentially nocturnal in habits. Notes are added on stridulation and on its cursorial habits. The crabs can travel over the loose sand at a speed of at least 10 miles per hr., and the pointed extremities and depressed shape of the dactyli of the walking legs are regarded as cursorial adaptations. The young are precocious as regards speed and sight, their legs and eyes attaining a high development at a very early age.—*W. M. Tattersall.*

14646. **[DEKSBACH, N. K.] ДЕКСБАХ, Н. К. Cladocera Кавказа и Северной Персии. [Cladocera of the Caucasus and northern Persia.]** [German summary.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3(1/3) : 63-79. 1930.—Previous work on the Cladocera of this region is reviewed, 26 papers being listed. The material of the present study was obtained chiefly in small, shallow bodies of water, and supplements the previous material obtained mainly from lakes. It contains 22 spp. from the Caucasus and 7 from Persia. Of the 50 spp. and vars. recorded so far from the Caucasus, 23 play a leading rôle; a table compares their distribution in the Caucasus, the Carpathians, the Tatra, the Alps, and the mts. of N. Sweden. The Caucasian spp. include the following elements: cosmopolitan, endemic, those of eastern origin, and southern spp. Arctic forms and glacial relicts are lacking. Vertical distribution of the spp. is shown in a table. *Chydorus sphaericus* and *Alona quadrangularis* reach a height of 3000 m. *Moina rectirostris,* in pools at altitudes of 580-1870 m., is "polycyclic." *Daphnia pulex,* in pools at 610-1424 m., is "dicyclic." In a supplement the list of Caucasian spp. and vars. is increased to 88.—*From author's summary.*

14647. **DOLLFUS, ROBERT PH. Un hôte nouveau pour Sarcotaces verrucosus Olsson 1872 (Copepoda paras.).** *Bull. Mus. Nation. Hist. Nat. Paris* 34(5) : 341-345. 3 fig. 1928.—*S. verrucosus* ♀* is recorded as a parasite of *Iridio radiatus** in Martinique.

14648. **FAGE, LOUIS. Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 5. Crustacés Amphipodes et Décapodes.** *Arch. Zool. Exp. et Gén.* 71(3) : 361-374. 21 fig. 1931.—Amphipoda: *Eucrangonyx packardi* was found in Don-

nelson's and Marengo caves, Indiana. Decapoda: Atylidae: *Palaemonias ganteri** was again found in Mammoth Cave, Kentucky, and is fully redescribed. Potamobiidae: *Cambarus pellucidus* was taken in Donnelson's Cave, Indiana; Mammoth and Horse Cave, Kentucky; and *C. bartoni tenebrosus* in Donnelson's and Marengo caves.

14649. GORDON, ISABELLA. African freshwater prawns of the species Caridina nilotica (Roux), with special reference to the Nile basin. *Proc. Zool. Soc. London* 1930(1): 33-50. 13 fig. 1930.—A detailed study of over 1000 specimens of *C. nilotica* from various east African localities extending from Egypt to Natal, with special reference to the variation of the telson, thoracic appendages, and rostrum. The results show that all over east Africa there is a vast assemblage of slight local deviations from the type form (*C. nilotica typica*), from the lower Nile. In each of the 2 large lakes, Victoria and Albert, there is a shore form, and an open water form which may be regarded as a lacustrine modification of the shore form.—*W. M. Tattersall.*

14650. GRAVIER, CH. Sur un Crustacé Stomatopode rare, le Gonodactylus guerinii White. *Bull. Mus. Nation. Hist. Nat. Paris* 34(5): 337-340. 3 fig. 1928.—A record of the 4th specimen known of *G. guerinii**, taken in the Marquesas Isls.

14651. JENKIN, PENELOPE M. The Cladocera of Wicken Fen. *Nat. Hist. Wicken Fen* Pt. 4. 356-365. 1 pl. 1928.

14652. KEISER, N. Über die Cladoceren und Copepoden der Wüste Kara-Kum. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(5/6): 355-372. 21 fig. 1931.—*Daphnia atkinsoni* v. nuda* (p. 357); *D. a.* var. turkomanica* (p. 360); *D. a.* var. triquetriformis* (p. 362); *Moina* turkomanica* (p. 366).

14653. KLIE, W. Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 3. Crustacés Ostracodes. *Arch. Zool. Exp. et Gén.* 71(3): 333-344. 20 fig. 1931.—*Entocythere* donnaldsonensis* (p. 335), Donnelson's Cave, Indiana; *Candona* marengoensis* (p. 341) and *C.* jeanneli* (p. 341), Marengo Cave, Indiana; *Candona* sp.* Mammoth Cave, Kentucky.

14654. KLIE, WALTER. Cytherura cochlearis n. sp. (Ostracoda, Cytheridae). *Zool. Anz.* 84(11/12): 303-307. 8 fig. 1929.—*C.* cochlearis* (p. 303), Baltic Sea.

14655. LEHNHOFER, KARL. Über Missbildungen bei Sapphirina-Arten. *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. 1 Abt.* 139(8/10): 545-554. 12 fig. 1930.—Records of deformities in *Sapphirina bicuspidata**, *S. auronitens**, *S. stellata**, *S. scarlata**, *S. iris**, *S. ovatolanceolata**, *S. nigromaculata**, and *S. sali**.

14656. LOWNDES, A. G. Eurytemora thompsoni, A. Willey, a new European record. *Ann. and Mag. Nat. Hist.* 8(47): 501-507. 16 fig. 1931.—*E. thompsoni* new to England, ♂* and ♀* described in detail. The only other known records are from Nova Scotia and the Sea of Okhotsk.

14657. MACHADO, ANTONIO. Notas de zoologia. *Anais Fac. Sci., Porto* 16(3): 187-192. Map, 1 pl. 1931.—Notes on the existence of the fresh-water lobster *Astacus fluviatilis** in Portugal. A second note deals with the destruction in an aquarium of the echinoderm *Marthasterias glacialis** by *Asterias rubens**.

14658. MAN, J. G. de. Ilyoplax delsmani n. sp., a new species of Ocypodidae. *Zool. Mededeel.* [*Leiden*] 9(1): 16-27. 12 fig. 1926.—*I.* delsmani* (p. 16), Java.

14659. MAURY, ANDRÉ. Note sur les Gnathiidae (Crustacés Isopodes) de la faune normande. *Bull. Soc. Linn. Normandie* 1: 25-28. 1928(1929).—Notes on *Gnathia oxyuraea, G. maxillaris,* and *Paragnathia formica.*

14660. MAURY, ANDRÉ. Tanaïdacés et Isopodes des côtes normandes (excl. Epicarides). (Crustacés marins, d'eaux saumâtres et d'eaux douces.) 1re liste. *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 152-161. 1928(1929).—Collecting records of 28 spp. of Isopoda and 4 spp. of Tanaidacea. *Cymodoce truncata* (Mont.) is dimorphic, the ♀ having been known as *Sphaeroma curtum* Sp. B. & W. and *S. pridcauxianum* Sp. B. & W. *Dynamene bidentata* (Adams) is also dimorphic, the ♂ having been known as *Naesa b.* and the ♀ as *D. rubra* Sp. B. & W. and *D. viridis* Sp. B. & W.

14661. MAURY, ANDRÉ. Les Haplophthalmus (Crustacés Isopodes Oniscoïdea: F. des Trichoniscidae) de Normandie. *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 3-7. 1930(1931).—*Haplophthalmus* is a good genus, containing at present 5 spp., the habits of which are discussed. The bibliography contains 13 references.

14662. MAURY, ANDRÉ. Crustacés Isopodes de Normandie (formes terrestres). 2e liste. *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 40-50. 1930(1931).—Ecological and distributional notes on 10 spp. of Oniscidae, 2 Armadillididae, 1 Ligiidae, 4 Trichoniscidae, to which are added published records of other species.

14663. MERCIER, L. Présentation de la 2e génération d'une culture de Chirocephalus diaphanus Prévost (Phyllopode, Branchipodidae). *Bull. Soc. Linn. Normandie* 3: 25-26. 1930(1931).—The generation required 50 days to mature.

14664. NAGAO, TAKUMI. Two new decapod-species from the Upper Cretaceous deposits of Hokkaido, Japan. *Jour. Fac. Sci., Hokkaido Imp. Univ. Ser. 4, Zool.* 1(2): 207-214. 1 pl. 1931.—*Notopocorystes* (*Eucorystes*) intermedius* (p. 209), *Linuparus* japonicus* (p. 212).—*M. J. Rathbun.*

14665. PIROZHNIKOV, P. L. Zur Gammaridenfauna des Jenissej-Stromes. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(5/6): 373-380. 1 fig. 1931.—Notes on 9 spp. in Haustoriidae, Oedicerotidae, and Gammaridae.

14666. SCIACCHITANO, IGINIO. Copepodi raccolti dalla R. Nave "Ammiraglio Magnaghi." Nota preliminare. [Copepods taken by the ship, "Ammiraglio Magnaghi."] *Boll. Zool. Unione Zool. Italiana* 1(4): 149-151. 1930.—*Euchaeta* arabica ♂ (p. 149), *Xanthocalanus* gigas ♀ (p. 150) and *Amallophora* cristata (p. 150), all from the Gulf of Aden.

14667. TORELLI, BEATRICE. Sferomidi raccolti in Sardegna dal Prof. Achille Costa. [Sardinian sphaeromids collected by A. Costa.] *Ann. Mus. Zool. R. Univ. Napoli* 6(3): 1-5. 1 fig. 1929.—Three exceptionally large *Cymodoce spinosa* Risso, 2 ♂♂ and 1 ♀ of *C. emarginata* Leach, and 3 *Sphaeroma ephippium** Costa. The ♀ of *C. emarginata* is described for the first time and distinguished from the ♀ of *C. truncata.* Description and figure are supplied for *S. ephippium.* This species is not confined to pools as Costa supposed.—*B. Torelli* (*transl. by H. L. and C. H. Blake*).

14668. TORELLI, BEATRICE. Cymodoce erythraea Nobili e Cymodoce dellavallei Torelli. *Boll. Soc. Naturalisti Napoli* 41: 165-168. 6 fig. 1929(1930).—*C. erythraea* Nobili (=*C. dellavallei* Torelli) ♀ described.—*B. Torelli* (*transl. by C. H. Blake*).

14669. ULRICH, E. O. Ordovician trilobites of the family Telephidae and concerned stratigraphic correlations. *Proc. U. S. Nation. Mus.* 76(21): 1-101. 8 pl. 1929(1930).—Review of previous literature on the genus *Telephus,* with discussion of its systematic position and relationship, also a revised description. *Telephus, Glaphurus,* and the new genus *Glaphurina* are placed in Telephidae, and are thought to be related to *Irvingella* and *Chariocephalus* of the late Cambrian and early Ozarkian periods; these are also referred to the Telephidae, and the group is thought to have originated in the Arctic province. Critical notes on 6 European species, previously known, and descriptions of new spp., as follows: *T.* haddingi* (p. 12) and *T.* jamtlandicus* (p. 13), Ogygiocaris shale, Jamtland, Sweden; *T.* linnarssoni* (p. 15), Leptaena limestone, Sweden; type in Geol. Surv. Mus. [Stockholm]; *T.* reedi* (p. 19), Whitehouse Group, Scotland. Critical notes on the American spp. *T. americanus**, *T. gelasinosus**, and *T. troedssoni** and descriptions of new spp. as follows: *T.* mysticensis* and var. simulator* (p. 22), from limestone boulder, presumably Blount, or Chazyan age, Quebec; *T.* bicornis*

(p. 23), Whitesburg limestone, Virginia; *T.* **latus*** (p. 26), found only in limy basal Athens shale, Virginia; *T.* **pustulatus*** (p. 28), Whitesburg limestone, Virginia; *T.* **spiniferus*** (p. 29), limy basal Athens shale, Virginia; *T. s.* var. **calhounensis*** (p. 30), Athens shale, Tennessee; *T.* **sinuatus*** (p. 30), Whitesburg limestone, Virginia; *T.* **bipunctatus*** (p. 31), Whitesburg limestone, Virginia, Tennessee, Alabama; *T.* **impunctatus*** (p. 33), and *T.* **prattensis*** (p. 34), Whitesburg limestone, Tennessee and Alabama; *T.* **tellicoensis*** (p. 35), *T.* **transversus*** (p. 37) and *T.* **hircinus*** (p. 38), Tellico formation, Tennessee; *T.* **bilunatus*** (p. 39), Whitesburg limestone, Tennessee; *T.* **buttsi*** (p. 40), Athens shale, Alabama; *Glaphurus pustulatus**, emended descr.; *G.* **latior*** (p. 44), Whitesburg limestone, Virginia (type), and Alabama; **GLAPHURINA** (p. 44), type *G.* **lamottensis*** (p. 45), basal bed of Up. Chazyan, Vermont; *G.* **brevicula*** (p. 46), Holston limestone, Virginia; *G.* **falcifera*** (p. 46), Lower Chazyan, Tennessee. Types in U. S. Nat. Mus. unless otherwise stated. Stratigraphic and geographic range of the family, also correlation of formations in N. America and Europe, are discussed. The forms described are confined to Middle and Up. Chazyan age. The fauna is found only in the eastern portion of the Appalachian Valley (Virginia, Tennessee, and Alabama), in the extreme Up. Chazyan of the Champlain and St. Lawrence Valleys, and in formations in Britain, Norway, Sweden, and the Baltic region, which are considered equivalent in age. The distribution indicates a mid-Atlantic origin for the fauna. A correlation table, showing author's conception of the stratigraphic relations, is included.—*J. Bridge.*

ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Associate Editor*

(See also in this issue Entries (Plant injury) 12074; (Habits) 12110; (History) 12150, 12153, 12162, 12174; (Biography) 12179, 12180, 12185, 12198, 12201, 12214, 12217, 12238, 12250, 12259, 12287, 12288, 12300, 12301, 12311, 12321, 12330, 12337, 12342, 12343, 12350, 12352, 12353, 12360, 12361, 12365, 12366, 12372, 12380, 12382, 12399, 12403, 12406, 12415; (Ent. societies) 12429; (Indian pub.) 12430; (Physiology) 12456; (Cytology) 12465, 12470, 12474, 12487, 12492, 12494, 12497, 12498, 12505; (Microtechnique) 12496; (Genetics) 12527, 12528, 12531, 12535, 12536, 12537, 12538, 12539, 12540, 12541, 12542, 12543, 12549, 12552, 12555, 12557, 12558, 12560, 12561, 12562, 12563, 12566, 12569, 12570, 12571, 12572, 12573; (Ecology) 12621, 12627, 12628, 12630, 12631, 12634, 12636, 12637, 12640, 13629; (Plant injury) 12723; (Plant disease vectors) 12742, 12782, 12787; (Oxidation) 12912; (Sense organs) 13125, 13128; (Animal disease vectors) 13453, 13463, 13569, 13573, 13584, 13591, 13597, 13598, 13601, 13604, 13605, 13629, 13687, 13707, 13722, 13737, 13779; (Parasites) 13572, 13592, 13597, 13603, 13609, 13633; (Control) 14029; (Embryology) 14474)

14670. [BAROVSKIĬ, V. V.] БАРОВСКИЙ, В. В. К познанию энтомофауны озерной области. II. [Insect fauna of the lake region (Finland and adjacent territory). 2.] Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23(1/2): 143-151. 1929.—Locality records for 89 forms of Coleoptera, 59 Hymenoptera, 16 Hemiptera-Heteroptera, and 1 Trichoptera, including many new records for the region. [Hymenoptera] *Nisson dimidiatus* ab. **nigrina** (p. 148), prov. Leningrad.

14671. **BURKILL, H. J. Plant galls section. Report for 1930.** *London Naturalist* 1930: 19-23. 1931.—A list for England, including Coleoptera, Cynipidae, Cecidomyidae, Muscidae, Psyllidae, Aphididae, Eriophyidae, and Nematoda.

14672. **COLE, A. C. Jr. Typha insects and their parasites.** *Ent. News* 42(1): 6-11; (2): 35-39. 1931.—Studies on the insects of *Typha latifolia* and *T. angustifolia*, principally at Monroe, Michigan, on *T. latifolia*. The species cause injury to the part of the plant mentioned after each name, and are parasitized as indicated. *Arsilonche albovenosa* [Lepidoptera], on leaves, parasitized by Blacus sp. and *Microbracon* sp. [Braconidae], *Rogas stigmator* [Ichneumonoidea], *Exorista larvarum* [Diptera], and *Macrocentrus ancylivora* and *Pimpla inquisitoriella* [Ichneumonoidea]; *Apatela oblinita* [Lepidoptera], on leaves, parasitized by *Sceliphron caementarium* and *Casinaria genuina; Endothaenia hebesana* [Lepidoptera], on seeds, parasitized by *Microbracon* sp.; *Lymnaecia phragmitella* [Lepidoptera], on heads; *Coleophara* sp. [Lepid.], in dried stalks; *Nonagria oblonga* [Noctuidae], in stalks; *N. subflava*, on leaves; *Archanara subcarnea* [Lepidoptera], in stalks, parasitized by *Masicera senilis* and *Muscina stabulans* [Diptera]; *Bactra maiorina*, on heads; *Cacoecia rosaceana* [Lepidoptera], on stalks; *Archips obsoletana* [Lepidoptera], on heads; *Platychirus quadratus* [Diptera], on heads; *Calendra pertinax*, in stalk near the surface of the ground; *Mononychus vulpeculus* [Curculionidae], in heads; *Paria canella* v. *aterima*, in leaf-sheaths; *Notaris puncticollis* [Curculionidae], in stems. Larvae of *Chaetopsis aenea* [Diptera], in lepidopterous burrows; larvae of *Macrosargus clavis*, on leaves, parasitized by *Diaulinus pulchripes* [Chalcidoidea] and *Tumidiscapus* sp. [Braconidae]; *Drosophila* sp., *Elachiptera nigriceps*, and *Corodonta dorsalis* [Diptera], reared from stalks; larvae of *Aphiochaeta chaetoneura*, in a tunnel of *Archanara subcarnea*; larvae of *Eurytoma* bicolor, in dry, overwintered stem galls; *Ischnorhynchus resedae* [Hemiptera] nymphs, feeding on moist petioles; 7 spp. of aphids recorded; eggs of *Conocephalus* sp. [Orthoptera], in stalk, parasitized by *Macroteleia* sp. and *Tumidiscapus* sp. [Chalcidoidea]; *Thripsaphis ballii* [Hemiptera], collected from moist petioles. A bibliography of 13 references is appended.

14673. **COSTA LIMA, A. da. Supplemento ao 2° catalogo systematico dos insectos que vivem nas plantas do Brasil e ensaio de bibliographia entomologica brasileira.** [Supplement to the 2nd systematic catalog of insects on Brazilian plants, with entomological bibliography.] *O Campo* [*Rio de Janeiro*] 1(9): 28-31. 1930.—Lists covering Fam. Hesperiidae and suborder Heterocera Fam. Castniidae (Lepidoptera) through Fam. Bostrichidae (Coleoptera).

14674. **CRAMPTON, G. C. A claim for priority in dividing pterygotan insects into two sections on the basis of the position of the wings in repose, with remarks on the relationships of the insect orders.** *Ent. News* 42(5): 130-136. 1931.—Discusses the synonymy of superordinal groups, especially of the Archipterygota Crampton 1924 (=Palaeoptera Martynov 1924, not the order Palaeoptera Crampton 1915), applied to the insects which hold the wings outstretched; and Neoptherygota Crampton (=Neoptera Martynov), applied to the insects which fold the wings along the top of the abdomen when in repose. Other questions of priority between the author and Martynov are discussed.

14675. **CRAMPTON, G. C. The terminal abdominal structures of female insects compared throughout the orders from the standpoint of phylogeny.** *Jour. New York Ent. Soc.* 37(4): 453-496. 8 pl. 1929.—The present paper coordinates the conclusions on the interrelationships of the orders drawn from earlier critical studies of other

parts of the insect anatomy. The primitive structure from which the ♀ abdomen is derived in the hypothetical protohexapod is depicted as having the limbs of the 8th, 9th, and 10th abdominal segments biramous as in Crustacea, composed of a basal portion or protopodite, an outer branch or exopodite, and an inner branch or endopodite. In the course of modifications the protopodite of the 8th abdominal limb becomes first a coxite and then a basivalvula, while its exopodite becomes a stylus and its endopodite a ventral ovipositor valve. The protopodite of the 9th abdominal limb becomes first a coxite and then a dorsal ovipositor valve; its exopodite becomes a stylus and its endopodite an inner ovipositor valve. The protopodite of the 10th abdominal limb is homologous with a coxite and is to become a paraproct, while its exopodite becomes a cercus and its endopodite a so-called "paraprocess." The writer has changed his viewpoint from earlier publications wherein he regarded the cerci as derived from the endopodites. The 11th tergite in the primitive forms bears a terminal appendage or "telite," which becomes multiarticulate in *Machilis*. *Grylloblatta** and *Rhipipteryx** represent very nearly the typical orthopteroid* type. *Machilis** is one of the nearest living representatives of the primitive Protohexapoda, from which the living orders are derived. The multiarticulate telofilum borne on the end of the suranale and the multiarticulate cerci borne at the tips of the paraprocts of *Machilis* clearly lead to the types of structures in the pterygote Ephemerida*; while the stylus-bearing, valve-like coxite of *Machilis* is clearly the prototype of the stylus-bearing, coxite-like, dorsal valve of the ovipositor of the Odonata* which are the most primitive Pterygota having this type of ovipositor. The Lepismatidae* are apparently the nearest living representatives of the types ancestral to the Pterygota. The terminal segments of the Japygidae* are so extremely similar to those of the Campodeidae* that there cannot be any doubt that they belong to one order, Dicellura. The closest relatives to the Protura among the Apterygota are the Collembola*. The closest relatives of the Plecoptera* are the Embiidae*. The similarity in terminal segments of these two orders and Orthoptera* indicates common ancestry. The Blattidae*, Mantidae*, and Isoptera*, form a compact group of orthopteroid insects. The Dermaptera* show affinity to this group on one hand and to true Orthoptera (Saltatoria*) and Phasmidae* on the other hand, with closest affinity to the latter. *Hemimerus** belongs truly to the Dermaptera and does not merit an ordinal rank. Dermaptera (=Diploglossata). *Grylloblatta** belongs to the true Orthoptera. The Zoraptera* are primitive Psocoptera. The Mallophaga* are evidently descended from psocoid ancestors. It is probable that the ancestors of the Anoplura* were closely allied to the mallophagoid ancestors. The Thysanoptera* present puzzling features showing affinities to several groups, but are quite closely related to the Hemiptera. *Eugereon* is evidently of palaeodictyopteroid type and has no affinities with the ancestors of the Hemiptera. The occurrence of long orthopteroid cerci in sawflies* suggests a protorthopteroid ancestry for the Hymenoptera*. The Coleoptera* are not very closely related either to Neuroptera* or Hymenoptera* but doubtless represent an early offshoot from the protorthopteroid ancestors of the Holometabola. The Mecoptera* are evidently descended from neuropteroid ancestors and are in turn the ancestors of the Diptera*, Trichoptera*, and Lepidoptera*. The Siphonaptera* are a baffling group; they cannot be descended from the Diptera. The terminal abdominal structures do not offer any valuable clues as to the affinities of the fleas. The writer closes with a table of 28 recent orders, and a bibliography of 56 references. The terminal segments of most of the orders are illustrated.

14676. GUNDER, J. D. A new insect camera of compact design. *Canadian Ent.* 62(10): 215. 1 pl. 1930.

14677. HEMMING, A. F., et al. [Notes and exhibition of specimens.] *Proc. Ent. Soc. London* 4(1): 1-68. 2 pl. (1 col.), 6 fig. 1929.—A. F. Hemming: [Lepidoptera] *Carcharodus dravira** Moore is distinct from *C. orientalis** Rev. (genitalia described and figured); *Polyommatus loewii* ssp. **lockharti** (p. 3), Transjordania, *P. l. l.* f. **margarita** (p. 4), Transjordania, and *P. l.* **antilibanotica** (p. 4), types in author's coll. [H. ST. J. K.] DONISTHORPE reports *Atomaria morio* [Coleoptera] new to Britain (from jackdaw's nest). R. STEWART MacDOUGALL reports *Eccoptogaster ratzeburghi* [Scolytidae] on birch in Scotland, the first finding in Britain in 67 years. F. C. FRASER reports a pair of *Danaida limniace* in copula from Malabar with the ♂ dead. O. W. RICHARDS suggests that the ♂ was killed by a spider. J. E. M. MELLOR (p. 8), submits *Spalgis lemolea* [Lepidoptera], whose larvae are active enemies of an *Icerya* [Coccidae] on a cycad in Zanzibar; ♂♂ of the black and red *Megachile combusta* [Apidae] are reported chasing ♂♂ of *Acraea insignis* f. *siginna* with similar colors [Lepidoptera]. E. STEP reports *Cynips kollari* galls on oak opened by blue-tits [*Parus caeruleus obscurus*]. HANITSCH describes the ♂ of *Ischnoptera pitmani* [Blattidae] from Uganda. H. M. PENDLEBURY describes the evening flight of *Milionia pyrozonis* [Lepidoptera] on Kedah Peak. F. M. S. V. G. L. VAN SOMEREN (p. 15) submits a specimen of *Papilio dardanus* f. cenea [Papilionidae] from Nairobi which had reverted to the ancestral tailed type due to mechanical shock experienced by the larva. J. E. M. MELLOR reports dragonflies (including *Brachythemis*) eating *Glossina palpalis* flies in Lake Victoria. E. B. POULTON discussed the Uvarov theory of locust migration, suggesting that there was probably a significant relationship between the conspicuous coloration and the gregarious habit of the migratory locusts [*Locusta migratoria*]. Certain migrating butterflies, such as *Belenois mesentina*, pair and oviposit during migrations, and others, such as *Libythea laius* and *L. labdaca*, have these functions delayed as in the migrating Acrididae. B. P. UVAROV states that migration of locusts is most closely connected with the rate of development of the sexual products. [J. C. F.] FRYER reports that in Ceylon *Belenois mesentina, Ixias pyrene* and *Huphina nerissa* [Lepidoptera] are sexually mature when migrating and deposit eggs on the bushes of *Capparis pedunculosa*. *Papilio polytes* is also sexually mature during migration. The writer does not believe that larval crowding gave rise to the migratory instinct but rather that the later helped to prevent overcrowding. W. J. LUCAS exhibited examples of predaceous species and their prey: *Formica rufa* with *Geotrupes sylvaticus, Vespa vulgaris* with *Eurois prasina, Dysmachus trigonus* with *Tortrix viridana, Pyrrhosoma nymphula* with *Leuctra hippopus, Philodromus aureolus* with *Coenonympha pamphilus* and another with *Ammophila campestris*. W. C. SIMMONS reports on the habits of the larvae of *Papilio dardanus dardanus* in Uganda. V. G. L. VAN SOMEREN submits a specimen of *Cryptomima hampsoni* mimicking *Oneinella analis*. E. B. POULTON exhibited Asilidae with their prey: *Asilus* sp. with *Itaballia demophile demophile*, from Brazil; *Neoitamus cyanurus* with an anthomyid, and *Dioctria baumhaueri* with *Rhamphomyia* sp., from England. B. B. OSMASTON, writing from Naini Tal, Central Himalayas, describes the manner of attack upon man by *Pangonia longirostris* [Tabanidae]; they usually attack the legs. T. D. BROUGHTON gives corroboratory evidence on the biting of man. CYNTHIA LONGFIELD reports being bitten by *Tabanus bovinus*. A. F. HEMMING describes *Zegris eupheme* **uarda*** (p. 26), from Transjordania (type), and Palestine, type in author's coll., which may be distinguished from *Z. e. dyala**. K. JORDAN exhibited specimens of *Mus musculus* L. from Brazil with swellings behind the ears each containing an extended ♀ of *Tunga caecata* [Siphonaptera]; notes are given on the genus generally known as *Dermatophylus*. Communications by E. B. POULTON, C. N. BAKER, J. W. YERBURY, K. A. C. DOIG, H. STEVENS, RODNEY C. WOOD, and C. L. COLLENETTE deal with the

attack on butterflies by birds. H. CECIL KENWAY communicates field notes on the South African [Lepidoptera] *Euxanthe wakefieldi*, and 7 spp. of *Charaxes: C. varanes varanes* on *Schmidelia africana, C. candiope candiope* on *Croton sylvaticus, C. druceanus druceanus* on *Eugenia cordata* and *E. gerrardi, C. xiphares* ssp. kenwayi E. B. Poulton (p. 48), on *Buddleia salvifolia*, Transvaal, type in Hope coll. K. JORDAN exhibited specimens showing ♂ sexual characters in the Anthribidae: *Ptychoderes nebulosus*, Phloeotragus hottentottus*, Meganthribus whiteheadi*, Mecocerus allectus*, Nemotrichus barbicornis**, and *Habrissus fasciatus**. G. TALBOT exhibited 6 cases of mimicry among Lepidoptera. H. M. EDELSTEN exhibited larvae of [Lepidoptera] *Chrysophanus dispar batavus* from England and presented the following report: Report of the Committee appointed by the Ent. Soc. of London for the Protection of British Lepidoptera (pp. 53-68, colored plate II). This report discusses the history of the species in England, its races, habits, and food plants. *Chrysophanus dispar dispar*, C. d. batavus**, and *C. d. rutilus** are illustrated in color.

14678. IMMS, A. D. A general textbook of entomology: including the anatomy, physiology, development and classification of insects. 2nd ed., rev. Illus. Methuen & Co., Ltd.: London, 1930. Pr. 36s.

14679. [KIZERITSKIĬ, V.] КИЗЕРИЦКИЙ, В. Энтомологические заметки. [Entomological notes.] Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23(1/2): 115-123. 1929.—Data on distribution of 49 spp. of Coleoptera and on *Japyx solifugus* [Thysanura].

14680. KLOTS, ALEXANDER B. On the naming of individual variants in Lepidoptera. *Ent. News* 41(9): 298-302; (10): 324-328. 1930.—After discussing the tendencies in naming variants and especially J. D. Gunder's proposed classification of transition forms, the writer questions the effect on nomenclature and insists that scientific names should not be applied to any concept lower than subspecies and when so applied should have no standing in nomenclature.

14681. OMER-COOPER, J. Notes on the fresh-water fauna of southern Tunisia. *Entomologist* [*London*] 63 (810): 251-255. 1930.—Records in desert pools, including 11 Crustacea, 30 Coleoptera, and 14 Hemiptera.

14682. PRZIBRAM, HANS. Wachstumsmessungen an Sphodromantis bioculata Burm. IV. Zunahme der Facettengrösse und -Anzahl. *Zeitschr. Wiss. Biol. Abt. D. Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 122 (2): 289-299. 1930.—The facets of the compound eye increase from molt to molt in size and number differently in different hemimetabolous insects. The mantis, *S. bioculata*, in nymphal stages 1-6 and then again after stage 9 shows an increase of single facet lengths as 1 is to 1.26, that is, a doubling of corneal volume. In stages 6 to 9 the length increase is less, being about 1:1.414 for the 3 intervals, corresponding to a doubling of the outer surface of the eye. After the 10th molt the number of facets has doubled since the hatching of the larva. A comparison of the eye development in *Dixippus morosus, Oxycarenus hyalinipennis, Blatta orientalis*, and *Notonecta glauca* shows a prevalence of the doubling principle, which applies in some cases to the volume, in others to the surface, and sometimes to the number of component parts (facets), with various combinations of these relations at different stages of development in the same species.—*W. P. Hayes.*

14683. SMIRNOV, EUGEN, und A. N. ZHELOCHOVTSEV. Über den Einfluss verkürzter larvaler Ernährungszeit auf die morphologischen Charaktere von Drosophila funebris F. *Zeitschr. Wiss. Zool.* [*Leipzig*] 135 (1/2): 214-255. 26 fig. 1929.—A biometric study of 19 wing measurements of 36 ♀♀ from larvae which fed for 9 days, as contrasted with similar measurements of 96 ♀♀ from fully nourished (13 days feeding before pupation) larvae. The restricted feeding produced smaller flies, with the wing measurements reduced on the average about 12%. The distance between the points of union of the 2nd and 3rd longitudinal veins with the marginal vein showed the minimum reduction (5.2%); the length of the posterior cross vein, the maximum decrease (16.6%). The basal portion was reduced to greater degree than the distal. The average of the coefficients of variability of the test flies was about 2.5 times that for the controls. The restricted feeding increased all 171 coefficients of total correlation without exception, but reduced the range (0.554 to 0.994) over that of the control series (0.092 to 0.947). There is a definite direction of stronger and weaker correlation, so that the wing may be considered a vectorial field. The law of proximity in regard to total correlation has only secondary interest. Partial correlation (with constant wing length) is much weaker than the total, and is conditioned by topographical proximity. Coefficients of regression are higher as a rule in the experimental series. The results agree closely with those previously obtained for *Calliphora* (B. A. 2: entry 14751).—*A. H. Hersh.*

14684. SNODGRASS, R. E. How insects fly. *Smithsonian Inst. Ann. Rept. Board of Regents* 1929: 383-421. 25 fig. 1930.—Insects are the only animals with true wings, i.e., separate organs and not adaptations of other organs for flying. The origin of wings is unknown, but probably they arose from lateral thoracic extensions which served as gliders. Winged insects are divided into vibrators and flexors,—those which keep their wings extended in rest or fold them tip to tip, and those which fold them horizontally and over the abdomen. The first includes dragonflies and mayflies; the other, the remainder of insects (except butterflies). Wings consist of membranes supported by "veins," which are fundamentally similar in all groups. Articulation is simplest in the vibratory type; in flexion an additional mechanism for folding is required and hence a larger number of sclerites. In the first type there are 4 sets of wing muscles, and 5 sets in the flexion type. Wing movements embrace flight, or flexion and extension. Flight movements consist of upstroke, downstroke, forward movement, rearward movement, and partial rotation of the wings on their long axis producing a figure 8. Rotary movement occurs in swift-flying insects (bee, dragonfly, flies), up-and-down movement in slower fliers (grasshoppers and butterflies). The number of strokes varies from 8 to 300 per sec. Speed is high, and highest in hawk moths (Sphingidae), up to 15 m. per sec. Steering is accomplished by the wings themselves, not by abdominal and leg movements. Hovering, reversed, lateral, and circuitous flying are unexplained because of lack of present knowledge of static (equilibrial) and kinetic organs in insects. Blinded insects fly without difficulty.—*R. A. Muttkowski.*

14685. TALBOT, G. The naming of individual variants in Lepidoptera. *Ent. News* 42(3): 80-82. 1931.

14686. TASCHENBERG, ERNST. Die Insekten. In: Brehms Tierleben. Bd. 8. Herausgegeben von CARL W. NEUMANN. 644p. 72 pl. (8 col.) Philipp Reclam Jun.: Leipzig, 1929.—Neumann's work involves a complete revision of the earlier text. It deals with the natural history rather than with the morphology, development, or classification of the Insecta. Especial attention is given to the genera and species of Germany and to those of economic and popular interest, such as ants, bees, wasps, gall insects, leaf rollers, beetles, mosquitoes, flies, fleas, butterflies, the silkworm, ant lions, plant lice, cicadas, lice, termites, grasshoppers, crickets, and dragon flies. The illustrations are noteworthy for their composition and completeness.—*C. A. Kofoid.*

14687. TROUVELOT, B. Premières remarques sur l'étude comparative des associations d'insectes entourant de mêmes végétaux en Europe et en Amérique du Nord. *Compt. Rend. Som. Séances Soc. Biogéogr.* No. 63. 17-20. 1931.

14688. ULMER, GEORG. Unsere Wasserinsekten. (Naturwiss. Bibliothek für Jugend und Volk.) 2nd ed. 157p. 3 pl. Quelle und Meyer: Leipzig, 1929. Pr. 3 M.

14689. WALKER, E. M. On the clypeus and labium of primitive insects. *Canadian Ent.* 63(4): 75-81. 1 pl.

1931.—The primitive clypeus is undivided, as in *Thermobia** [Thysanura]. The first indication of a division into ante- and postclypeus is the extension of the membranous area adjacent to the labral articulation as in *Forficula** [Dermaptera], *Embia** [Embioptera], *Parcoblatta* [Dictyoptera], and *Grylloblatta* [Notoptera]. Re-sclerotization of this membrane has given rise to a more definite anteclypeus separated from the postclypeus by a more or less definite fold or suture, as in *Gryllus** [Orthoptera] and *Libellula** [Odonata]. The primitive insect labium is divided into 2 median segments, the submentum and mentum. The submentum is primarily undivided as in *Thermobia**. The first indication of division is the extension of the membranous area adjacent to the mentum, as in *Machilis** [Prototthysanura]. Re-sclerotization of this membrane, or part of it, has given rise to a secondary submental sclerite, as in *Periplaneta** and *Gryllus**, and the Blattidae*. This part has commonly been called the mentum. The secondary nature of this sclerite is shown by its lack of muscular attachments, its absence in the Apterygota, and its tendency to become reunited with the primary submental sclerite and thus lose its identity. The submentum is probably homologous with the united cardines of the maxillae, to which possibly a part of the labial sternum is added. The "medilabium" of Crampton is merely a part of the articular membrane between mentum and submentum. The "gulamentum" is merely the submentum and in the absence of a definite gula it is impossible to recognize a gular region, either on the basis of "submento-mental" muscles or on the position of the posterior tentorial pits, which may or may not take part in the process of elongation to which the ventral parts of the head are subjected when prognathism develops.

14690. WU, CHENFU F. A new design for an entomological light trap. *Peking Soc. Nat. Hist. Bull.* 4(4): 95-98. 1 pl. 1930.—The special feature of this new trap is two lights, one to attract the insects and entrap them, the second at the bottom of the funnel to draw them down to the poison or alcohol bottle.

ACARINA

AUGUST E. MILLER, *Editor*

(See also in this issue Entries 13569, 13572, 13687, 13900, 14787)

14691. ANDRÉ, MARC. Sur une nouvelle forme larvaire d'Acarien (Erythraeidae), parasite d'une fourmi (Plagiolepis pygmaea Latr.). *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(4): 255-259. 3 fig. 1929.—*Bochartia* **mentonensis*** (p. 256), larval form, France, parasitic on adult ants, *Plagiolepis pygmaea**.

14692. ANDRÉ, MARC. Decription d'une forme adulte du rouget. (Thrombicula autumnalis Shaw.) *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(6): 394-400. 3 fig. 1929.—A specimen of a ♀ *Thrombicula** believed to be the adult of *Leptus autumnalis*, hitherto unknown, is described in detail.

14693. ANDRÉ, MARC. Nouvelle forme larvaire de Thrombicula parasite sur un saurien de Palestine. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(6): 401-405. 2 fig. 1929.—*Thrombicula* (*Microthrombidium*) **agamae*** (p. 402), larva* on the lizard *Agama stellio*.

14694. FLÖGEL, J. H. L. Epitrimerus massalongoianus (Nal.). *Arch. Naturgesch. Abt. A* 91(8): 94-120. 4 pl., 10 fig. 1927.—*Epitrimerus massalongoianus** occurs in Germany on buds and twigs of *Quercus pedunculata*, wintering over only as ♀; the 10 stages of growth are described, and the anatomy* of the adult is given in detail, especially the musculature*. The biology is briefly sketched.

14695. GRANDJEAN, F. Existence d'une vésicule externe ou d'un organe poreux sous-alaires dans plusieurs genres d'Oribatei. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(6): 406-409. 1 pl. 1929.—This organ is described and figured for *Achipteria nitens**, *Ceratozetes gracilis**, and *Oribatella quadricornuta**.

14696. LeVEQUE, NORMA. Mites of genus Dinogamasus (Dolaea) found in the abdominal pouch of African bees known as Mesotrichia or Koptorthosoma (Xylocopidae). *Amer. Mus. Novitates* 434. 1-19. 11 fig. 1930.—A list of 14 previously described species is given with references to the original descriptions. *Dinogamasus crassipes* Kramer (=*Dolaea maxima* Vitzthum; = *Greenia sjöstedti* Tragardh), and possibly *Dolaea schoutedeni* Oudemans is a synonym of *D. crassipes*. Seven spp. of the *Mesotrichia flavorufa* group are listed as hosts for *D. villosior* (Berlese). A key to spp. of the *D. braunsi* group is given including *D.* **acutus*** ♀ (p. 13), host *Mesotrichia luteola*, Belgian Congo; *D.* **brevihirtus*** ♀ (p. 13), host *M. cloti*, Belgian Congo; *D.* **cockerelli*** ♀ (p. 14), type from *M. incerta seychellensis*, Seychelles, Mahé, Indian Ocean, other specimens from *M. caffra*, Rikatla, Delagoa Bay; *D.* **inflatus*** ♀ (p. 14), host *M. aestuans*, Egypt; *D.* **heteraspis*** ♀ (p. 15), host *M. imitator*, Belgian Congo; *D.* **productus*** ♀ (p. 16), host *M. divisa*, Natal; *D.* **parvus*** ♀ (p. 16), host *M. codiani*, Lisala, Belgian Congo; *D.* **oudemansi*** ♀ (p. 18), host *M. stuhlmanni*, Rikatla, Delagoa Bay; *D.* **bequaerti** ♀ (p. 18), host *M. albifimbria*, Belgian Congo. Types of new spp. in Amer. Mus. Nat. Hist.—*J. W. Wilson*.

14697. Le VEQUE, NORMA. New species of Dinogamasus (Dolaea), symbiotic mites of carpenter bees from the Oriental tropics. *Amer. Mus. Novitates* 479. 14p. 4 pl. 1931.—Key to spp. of *Dinogamasus* including *D.* **kerrianus** (p. 1), Siam; *D.* **concinnus*** (p. 5), *D.* **similis** (p. 5) and *D.* **ramaleyi*** (p. 5), Philippines; *D.* **longipes*** (p. 7), Siam; *D.* **trihirtus*** (p. 8) and *D.* **macgregori*** (p. 8), Philippines; *D.* **octoconus*** (p. 11), Java (type) and Siam; *D.* **bakeri*** (p. 12), Singapore; *D.* **brevipes*** (p. 12), Szechwan, China. All are from species of *Mesotrichia*. Types in Amer. Mus. Nat. Hist.

14698. LUNDBLAD, O. Die Hydracarinen der Insel Bornholm. *Kgl. Danske Videnskab. Selskab. Biol. Meddel.* 8(7): 1-96. 9 pl. 1930.—Forty-four species of water mites were collected from 7 stagnant pools, and 16 fresh water stations. Descriptive notes are included, and *Lebertia* (*Hexalebertia*) *stigmatifera* v. **separata*** (p. 32) is described. Detailed notes on distribution, ecological conditions of the water, and abundance of individuals are also given.—*J. W. Wilson*.

14699. LUNDBLAD, O. Zur Kenntnis der wenig bekannten Hydracarine Acerus pistillifer var. stylatus Lundblad. *Zool. Anz.* 96(11/12): 292-298. 1931.—*Acercus pistillifer* v. *stylatus* ♂ and ♀ described in detail, from Sweden.

14700. McGREGOR, E. A. A new spinning mite attacking raspberry in Michigan. *Proc. Ent. Soc. Washington* 33(8): 193-194. 1 pl. 1931.—*Tetranychus* **mcdanieli*** (p. 193) and *Paratetranychus ilicis* attack raspberry in Michigan.

14701. MAGLIO, CARLO. Idracarini raccolti in Cirenaica dal Prof. E. Zavattari. [Acarina collected in Cyrenaica by Prof. Zavattari.] *Boll. Zool.* [*Naples*] 2(3): 111-113. 1931.—The specimens were all of *Hydryphantes acutus* Walt., previously reported from Spain and Morocco. This new locality indicates that it is probably a circum-Mediterranean sp.

14702. OUDEMANS, A. C. Notizen über Acari. 27. Reihe (Oribatidae). *Arch. Naturgesch. Abt. A* 91(8): 120-147. 36 fig. 1927.—Detailed studies of the history of the genus *Notaspis*, and of the synonymy and morphology of *N. coleoptratus*, *N. punctata**, *N. nitens**, *N. intermedia**, *N. patavinus**, and *N. italicus**.

14703. OUDEMANS, A. C. Aus P. Kramers Nachlass (Acari). *Arch. Naturgesch. Abt. A* 92(4): 99-119. 8 fig. 1926[1928].—*Trombidium* **pectinifer*** (p. 99), German

E. Africa; *T. tinctorium* L., notes; *Megisthanus* lamellicornium* (p. 101), "Kuri Isl." [Island in Chad Lake]; *M.* oblongus* (p. 104), locality not given; **STENOSTERNUM** (p. 107), near *Megisthanus* and *Antennophorus*, with *S.* bipilosum* (p. 107), E. Africa; *Megisthanus armiger* Berlese is considered referable to the new genus; *Dinogamasus* crassipes* (p. 112), Central Africa; *Lobocephalus* acuminatus* (p. 115), no locality given; *Euzercon* ovale* (p. 116), E. Africa.

14704. **SELLNICK, MAX.** Milben im Bernstein. *Bernstein-Forschungen (Amber Studies)* 2. 148-180. 39 fig. 1931.—Descriptions of mites found in Baltic amber. Oribatidae: *Pelops* punctulatus* (p. 151); *Galumna* diversa (p. 152); *G.* clavata* (p. 152); *Neoribates* borussicus* (p. 153); *Oribatella* mirabilis* (p. 153); *Tectoribates* parvus* (p. 154); *Sphaerozetes* primus* (p. 155); *Melanozetes mollicomus* form fossilis (p. 155); *M.* foderatus* (p. 155); *Chamobates* difficilis* (p. 156); *Protoribates* longipilis* (p. 157); *Scheloribates* areatus* (p. 158); *S.* setatus* (p. 159); *S.* apertus* (p. 159); *Oripoda* baltica* (p. 160); *Liebstadia* similiformis* (p. 161); *Eporibatula* pellucida* (p. 162); *Trhypochthonius* corniculatus* (p. 162); *T.* badiiformis (p. 163); *Scapheremaeus* undosus (*Mulvius u.* Selln.) (p. 164); *S.* acuminatus* (p. 164); *Micreremus* scrobiculatus* (p. 164); *M.* reticulatus* (p. 165); *Hermanniella* concamerata* (p. 166); *Tectocepheus* similis* (p. 168); *Carabodes* gerberi* (p. 168); *C.* dissonus* (p. 170); *C. coriaceus* f. fossilis (p. 170); *C. labyrinthicus* f. fossilis (p. 170); *Otocepheus* niger (p. 171); *O.* praesignis (p. 172); *Cultroribula* superba* (p. 172); *C.* lauta* (p. 173); *Licneremaeus* fritschi* (p. 173); *Caleremaeus* gleso* (p. 174); *Suctobelba subtrigonus* f. fossilis (p. 175); *Dameosoma* sucinum* (p. 175); *D. longilamellatum* f. fossilis (p. 176); *D.* medium* (p. 176); *D.* angustum* (p. 177); *Lucoppia* (?) simplex* (p. 177); *Oribotritia* translucida* (p. 179); *Damaeus* (?) gedanensis* (p. 179).

14705. **VIETS, KARL.** Über eine an Krebskiemen parasitierende Halacaride aus Australien. *Zool. Anzeiger* 96(5/6): 115-120. 6 fig. 1931.—Halacaridae: **ASTACOPSIPHAGINAE** (p. 116), n. subfam., type **ASTACOPSIPHAGUS** (p. 115), type *A.* parasiticus* (p. 115), parasite in the gills of *Astacopsis serratus* from southern Queensland; type in Australian Mus.

14706. **VITZTHUM, H.** Pneumonyssus stammeri, ein neuer Lungenparasit. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 2(5): 595-615. 5 fig. 1930.—The article is introduced with a list of acarian parasites of the lungs of reptiles, birds and mammals. The parasites of monkey lungs are considered in detail: *Pneumonyssus simicola, P. griffithi, P. duttoni* and *Pneumotuber macaci. Pneumonyssus* stammeri ♀* (p. 606), parasite in lungs of a S. American *Lagothrix infumatus*. The phylogeny of the lung parasite genera is discussed. The genus *Pneumonyssus* is arranged with the mammalian lung parasite genus *Halarachne* in the Halarachnidae, with indications of derivation from the Laelapidae.

14707. **VITZTHUM, H.** Eine afrikanische Jacobsonia (Acari). *Zool. Anz.* 96(5/6): 153-159. 4 fig. 1931.—*Jacobsonia* tertia* (p. 153), Gabon, parasitic on a myriapod.

14708. **VITZTHUM, H.** Zwei neue deutsche Milben. *Zool. Anz.* 96(7/8): 187-192. 4 fig. 1931.—*Halolaelaps* holsaticus* (p. 187) and *Tyroglyphus* psenuli* (p. 190) (on *Psen atratus*), Germany.

COLEOPTERA

ANDREW J. MUTCHLER, *Editor*

(See also in this issue Entries 12470, 12621, 12628, 13846, 13847, 13853, 13877, 13887, 13890, 13893, 13894, 14469, 14633, 14670, 14671, 14673, 14677, 14679, 14681)

14709. **ANDREWES, H. E.** Papers on Oriental Carabidae. **XXI.** *Ann. and Mag. Nat. Hist.* 2(12): 586-590. 1928.—*Scarites guineensis* Dej. (=*S. boysi* Chaud.); *Haplogaster humeralis* Putz. is referred to *Gnaphon; Scapterus sulcatus* Putz. (=*S. figuloides* Gestro); *Chlaenius rugulosus* Nietn. (=*C. pachysomus* Chaud.); *Anoplogenius patinalis* Bates is removed from the synonymy of *A. discophorus* Chaud.; *Perigona ruficollis* Motch. (=*P. luzonica* Putz.); *P. plagiata* Putz. (=*P. annamita* Fvl.); *Carabus sexpustulatus* is referred to *Brachinus; Brachinus limbellus* Chaud. (=*B. clarescens* Bates); *B. pallidipes* Reitt. (=*B. stenoderus* Andr.); *B. biguticeps* Chaud. (=*B. hageni*, Oberth.); *Cymindis* championi (*C. alticola* Andr.); *Calleida cupreomicans* is referred to *Physodera*.

14710. **ANDREWES, H. E.** Fauna Sumatrensis. (Beitrag No. 64.) Carabidae (Col.). *Tijdschr. voor Ent.* 72(3/4): 303-340. 1929.—An enumerated list of 103 spp., collected mainly by Edw. Jacobson at Fort de Kock, Sumatra, including: *Dhanya* seminigra (p. 315), and v. pallidula (p. 316); *Hexagonia* virens (p. 317); *Caelostomus* sumatrensis (p. 318); *C.* iridescens (p. 319); *C.* singularis (p. 320); *Lesticus* jacobsoni (p. 321); *Hyphaereon* lautulus (p. 322); *Perigona* lata (p. 323); *P.* parvicollis (p. 324); *P.* jacobsoni (p. 325); *P.* erythroma (p. 326); key to Sumatran spp. of *Perigona; Lorostema* subnitens (p. 328); *Colpodes* purpurascens (p. 329); *C.* chalcochiton (p. 330); *Dolichoctis* jacobsoni (p. 331); *D.* lis (p. 332); *D.* quadratipennis (p. 333), Malay Peninsula and Java; *Calleida* tenuis (p. 334), Malay Penin., Borneo, and Java; *Lebia* clarissa (p. 335), Malay Penin.; *L. c.* var. bakeri (p. 337), Borneo; *L.* lacerta (p. 337); *L.* lineola (p. 338); *Pentagonica* blanda (p. 339), Java, Borneo, and Malay Pen. All new spp. from the west coast of Sumatra, with additional localities as indicated. Types in Brit. Mus.

14711 **ANDREWES, H. E.** On some new species of Carabidae from Sumatra contained in the collection of the Leyden Museum. *Zool. Mededeel.* [*Leiden*] 13(3/4): 193-203. 1930.—*Tachys* blötei (p. 193) and *Craspedophorus* mannae (p. 194), Manna, types in Leiden Mus.; *Acupalpus* ustus (p. 195), Borneo (type in author's coll.) and Sumatra; *Trigonotoma* lucida (p. 195), Sumatra, type in Leiden Mus.; *Colpodes* circumdatus (p. 196), Pahang (type in Brit. Mus.), Sumatra, and Sarawak; *C.* knapperti (p. 197), Manna, type in Leiden Mus.; *Perigona* sulcatipennis (p. 198), Borneo (type in author's coll.) and Sumatra; **OMOBRUS** (p. 199), near *Brachinus*, type *O.* praetextus (p. 200), Java (type in author's coll.), Sinalu Isl., Perak, and Pahang; *Holcoderus* puncticeps (p. 201), Java (type in author's coll.) and Sumatra; *Physodera* diglenus (p. 202), Selangor (type in Brit. Mus.) and Sumatra.

14712. **BALTHASAR, VLADIMIR.** Eine neue Art der Gattung Cyphonoxia Reitt. aus Nordafrika. *Ent. Nachrichtenbl.* 4(3): 59-63. 1930.—*C.* kircherei ♂ (p. 61), Algeria.

14713. **BALTHASAR, VLADIMIR.** Zwei neue Formen der Potosia cuprea F. aus Sibirien. (6. Beitrag zur Kenntnis der Scarabidae des palaearktischen Faunengebietes.) *Ent. Nachrichtenbl.* 4(3): 63-64. 1930.—*Potosia cuprea* ssp. mandli (p. 64) and *P. c.* ab. perpunctata (p. 64), Transbaikalia; types in author's coll. A table is given to separate the Siberian forms.

14714. **BÄNNINGER, M.** Über die Scaritini des kontinentalen Afrika. 15. Beitrag zur Kenntnis der Carabinae. *Ent. Blätter* 25(2/4): 79-90, 118-129, 161-172. 1 pl. 1929.—General discussion of characters and key to 27 spp., including **TIBIOSCARITES** (p. 85) for *T.* excisomandibularis* (p. 120), Tanganyika; *Thyphloscaris* microphthalmus (p. 85, 119), Kenya; *T.* gracilis (p. 85, 119), Tanganyika; *Menigius* phillipsi (p. 86, 122), e. Africa; *M.* congoënsis (p. 86, 123), French Congo, Cameroons; *M.* mandibularis (p. 86, 124), Mozambique;

M. **hintzi** (p. 87, 127), Cameroons; *M.* **camerunensis*** (p. 87, 128), Cameroons, French Congo; *Mamboicus* **ochryopoides** (p. 87, 161), *M.* **heterosculptus** (p. 88, 162), and *M.* **methneri** (p. 88, 164), Tanganyika; *Chondressus* **granulatus** (p. 88, 165), Cameroons, Belgian Congo; *C.* **semigranulatus** (p. 88, 166), Gabon; *Scarites* **hypocrita** (p. 89, 169), Cameroons; *S.* **usambarensis** (p. 89, 169), Tanganyika; *S. aberdarensis* ssp. **neavei** (p. 90, 171), Kenya.—*M. H. Hatch.*

14715. BENICK, L. Ein Riesen-Stenus aus Neu-Guinea. *Neue Beitr. Syst. Insektenk.* 5(2/3): 32-33. 1931.—*Stenus* **gigas** ♀ (p. 32), type in Nat. Hist. Mus. Genoa.

14716. BERNHAUER, MAX. Neue Staphyliniden aus China von der Stötzner'schen Expedition. *Ent. Nachrichtenbl.* 5(1): 1-3. 1931.—*Paederus* **chinensis** (p. 1), *Othius* **stötzneri** (p. 1), *Philonthus* **emdeni** (p. 2), and *Staphylinus* (*Ocypus*) **sericeomicans** (p. 2), all from Sze-chwan. Types in Dresden State Mus.

14718. BORCHMANN, FR. Alleculidae y Meloidae. [Translated into Spanish by C. BRUCH.] *Rev. Soc. Ent. Argentina* 3(2): 85-100. 2 pl. 1930.—*Allecula* **pupillata** (p. 85); *A.* **procera** (p. 86); *A.* **bruchiana*** (p. 87); *A.* **sericeipes*** (p. 88); *A.* **collaris** ♂ (p. 88), Paraguay [type depository not given]; *A.* **exigua*** (p. 89); *Lobopoda* (?) **nana** ♂ (p. 90); *Epicauta* **nigripes*** (p. 91); *E.* **rutilifrons*** (p. 91); *E.* **curticollis*** (p. 92), Paraguay; *E.* **costipennis*** (p. 93); *E.* **bruchi*** (p. 93); *E.* **minute-punctata*** (p. 94); *E.* **langei*** (p. 94); *E.* **pluvialis*** (p. 95); *Spastica* **tristis** ♂ (p. 96), Brazil, type in author's coll.; *Nemognatha* **bilunulata** ♂ (p. 97); *Tetraonyx* **seminiger*** (p. 97); *Pseudomeloe* **flavomaculatus** (p. 98); *P.* **caligatus*** (p. 99); *P.* **unicolor*** (p. 99); *P.* **araneipes*** (p. 100). All from Argentina and types in coll. Bruch, unless otherwise stated.

14719. BORCHMANN, FRITZ. Neue Lagriiden aus Niederländisch-Indien. *Tijdschr. voor Ent.* 72(3/4): 187-196. 1929.—*Cerogia* **luchti** (p. 187), Sumatra; *C. quadraticollis*, first description of ♂; *Lagria* **drescheri** (p. 190) and *L.* **kannegieteri** (p. 191), Sumatra; *L.* **cimetaria** (p. 192), Batoe; *Heterogria* **javanica** (p. 193) and *Casnonidea* **drescheri** (p. 195), Java.

14720. BROWN, W. J. Coleoptera of the north shore of the Gulf of the St. Lawrence. *Canadian Ent.* 62(10): 231-237; (11): 239-246. 1930.—An insect survey from Trinity Bay to Bradore Bay in the Straits of Belle Isle. Collecting records on 4 Cicindelidae, 33 Carabidae, including *Curtonotus* **imperfectus** ♀ (p. 232), Quebec; 2 Haliplidae, 42 Dytiscidae, including *Coelambus* **quebecensis** (p. 234), Quebec, and *Hydroporus* **brumalis** (p. 235), Quebec; 7 Gyrinidae, 12 Hydrophilidae, 11 Silphidae, 22 Staphylinidae, 1 each in Ptiliidae, Scaphidiidae, Histeridae, Lycidae, Mordellidae, Pythidae, Dascillidae, Helodidae, Rhizophagidae, and Cucujidae; 2 each in Lampyridae and Cryptophagidae; 4 Cantharidae, 16 Elateridae, and 3 Buprestidae. *Limnius* **subarcticus** (p. 241), Quebec (Helmidae) 5 Byrrhidae, 3 Nitidulidae, 5 Lathridiidae, 4 Coccinellidae, 4 Melandryidae, 8 Scarabaeidae, including *Aphodius* **errans** (p. 243), Quebec (type), New Brunswick, Alberta, Brit. Columbia; 5 Cerambycidae, 6 Chrysomelidae, 13 Curculionidae, and 5 Scolytidae. Types in Canadian Nat. Coll.

14721. BRUCH, CARLOS. Tres interesantes coleópteros. *Rev. Soc. Ent. Argentina* 1(4): 15-22. 1 pl., 6 fig. 1927.—**CICINDISINI** (p. 17), new tribal name, established for *Cicindis horni** Bruch; *Burmeisteriellus mirabilis**, first description of ♀; *Drilocephalus pallidipennis* v. **brunnea** (p. 22), Argentina, type in author's coll.

14722. BRYANT, G. E. New species of African Spondylia (Megalopidae, Col.). *Ann. and Mag. Nat. Hist.* 7(42): 547-557. 5 pl. 1931.—*S.* **clytoides*** (p. 549), Rhodesia; *S.* **bicolor*** (p. 551), Tanganyika; *S.* **pubicollis*** (p. 553), Rhodesia; *S.* **lineata*** (p. 555), Uganda; *Poecilomorpha* **dollmani*** (p. 555), Rhodesia. Types in Brit. Mus. Key is given to the African spp. of *Spondylia*.

14723. BURGEON, L. Description d'une nouvelle espèce de Catascopus (Col. Carabidae) du Congo Belge. *Rev. Zool. et Bot. Africaines* 19(1): 123-124. 1930.—*C.* **uelensis** (p. 123), type in Congo Mus.

14724. CARTER, H. J. New Guinea and Australian Coleoptera. Notes and new species. *Proc. Linnean Soc. N. S. Wales* 55(5): 532-549. 13 fig. 1930.—*Stigmodera* (*Castiarina*) **apicenotata*** (p. 533), Queensland, type in S. Australian Mus.; *S.* **ariel*** (p. 533) and *S.* (*C.*) **bogania*** (p. 534), N. S. Wales, types in author's coll.; *S.* (*C.*) **dryadula*** (p. 535), New Guinea, type in S. Australian Mus.; *S.* (*C.*) **quadriplagiata*** (p. 535) and *S.* (*C.*) **mackayana*** (p. 536), Queensland, types in S. Australian Mus.; *Lyriocnrodes* **variabilis** (p. 537), Queensland, N. S. Wales; *Derispia coccinelloides* is not an Australian insect; *Pseudolyprops* **australiae*** (p. 538), N. Australia, type in Mus. of Div. Econ. Ent., Canberra; *Pteroneclacus* **wagneri** (p. 538), New Guinea, type in S. Australian Mus.; *Helaeus* **perlatus** (p. 539), W. Australia, and *Quosterrhis* **hackeri** (p. 539), S. Australia, types in author's coll.; **NEOTHECA** (p. 540) (Tenebrionidae, Cnodalonimae) type *N.* **fusca*** (p. 540), New Guinea, type in S. Australian Mus.; *Licinoma* **oblonga*** (p. 541), Queensland, and *L.* **tricolor** (p. 542), N. S. Wales, types in author's coll.; *Amarygmus* **insignis** (p. 542), New Guinea; *A.* **hossfeldi** (p. 543), New Guinea, type in S. Australian Mus.; *Chalcopterus* **nitidus** (p. 544), West Australia, type in Australian Museum; *Ebenolus* **serraticollis*** (p. 544), New Guinea, type in S. Australian Mus.; *E.* **papuensis** (*Allecula p.* Macl.; = *E. wollastoni* Blair) (p. 545); *E. p.* var. **anthracinus** (*E. wollastoni* var. *a.* Geb.) (p. 545); *E.* **aruensis*** (p. 545), Aru Is.; *Strongylium* **pusillum** (p. 545) and *S.* **wagneri*** (p. 546), New Guinea, types in S. Australian Mus.; *Zophophilus* Fairm. (= *Sphenothorax* Geb., *Teremenes* Cart.); *Coptocercus* **scripticollis*** (p. 548), Victoria, type in Hamburg Mus.; *Porithodes*, key to spp.; *P.* **pustulata** (p. 548), Queensland, type in author's coll.; *Dascillus* **oblongus** (p. 549), N. S. Wales, type in author's coll.

14725. CORPORAAL, J. B. Check-list of the Cleridae of Sumatra with their geographical distribution outside this island. (8th communication on Cleridae.) *Misc. Zool. Sumatrana* 51. 1-6. 1931.

14726. CROS, A. Le Sitaris solieri Pecchioli. Sa larve primaire. Étude biologique. *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 77-84. 1 pl. 1930.—*S. solieri* was taken ovipositing on rosemary, *Rosmarinus officinalis*, a large cluster of eggs. The first larva* is described; specimens were seen to attach themselves to hairs of a bee. Evidence is presented to indicate that the first larvae may hibernate as such.

14727. CROS, AUGUSTE. Zonabris silbermanni Chevrolat. Etude biologique. *Bull. Soc. Hist. Nat. Afrique Nord* 21(3): 36-42. 1930.—In examining lots of oothecae of *Dociostaurus maroccanus* from Algeria, numerous larvae of *Trichodes x-littera* were found and 3 hypnothecae of *Zonabris silbermanni*, also 2 2nd stage meloid larvae, presumably of the same species. The hypnothecae are described. This stage lasted through the winter. In April the hypnothecal skin was cast and a prepupal larva stage appeared, which after 25 days transformed into a pupa. The pupal stage lasts 31 days. The life history of this insect has previously been unknown.

14728. DEANE, CEDRIC. Trichopterygidae of Australia and Tasmania. Descriptions of six new genera and eleven new species. *Proc. Linnean Soc. N. S. Wales* 55(4): 477-487. 22 fig. 1930.—**PHILAGARICA** (p. 477), near *Nossidium*, type *P.* **agilis*** (p. 478), N. S. Wales, type in author's coll.; *P.* **pilosa** (p. 479), Tasmania, type in Lea coll.; **LEADUADICUS** (p. 480), compared with *Ptenidium*, type *L.* **tolerabilis*** (p. 480), N. S. Wales, type in Lea coll.; *L.* **imperialis*** (p. 480), Queensland, type in S. Australian Mus.; **ACHOSIA** (p. 481), allied to *Ptinella*, type *A.* **lanigera*** (p. 482), type in S. Australian Mus. and *A.* **femoralis*** (p. 482), type in Lea coll., both N. S. Wales; **EPOPTIA** (p. 482), near *Ptenidium*, type *E.* **rotunda*** (p. 483), Tasmania, type in S. Australian Mus.; *Trichopteryx* **australica*** (p. 483), Victoria, type in author's coll.; **COCHLIARION** (p. 484), compared with *Rodwayia*, type *C.* **victoriense*** (p. 485)

and *Rodwayia* **grandis*** (p. 485), Victoria, types in author's coll.; **CNEMADOXIA*** (p. 486), near *Ptiliodes*, type *C.* **okei*** (p. 487), Victoria, in nests of the ant *Amblyopone obscura*, type in author's coll.

14729. DONISTHORPE, HORACE. Coleoptera found in the "birch-bracket" fungus, Polyporus betulinus. *Ent. Record and Jour. Var.* 43(1): 14. 1931.—A list of some 30 spp. found in Windsor forest, England, including: *Cryptophagus dentatus* ab. **major.**

14730. EDMONDS, T. H. Cartodere separanda, Reitt., a species of Coleoptera new to Britain. *Ent. Rec. Jour. Var.* 42(11): 148-149. 1930.

14731. ELSTON, ALBERT H. Elateridae. Results of Dr. E. Mjöberg's Swedish Scientific Expedition to Australia 1910-1913. 50. *Arkiv. Zool.* [*Stockholm*] 22 A(1, Paper 1): 1-22. 1931.—List of spp. including: *Lacon* **recticollis** (p. 4) and *L.* **mjöbergi** (p. 5), Queensland, *L.* **reticulatus** (p. 6), N. W. Australia; *Glypheus* **sanguineus** (p. 8), Queensland; *Conoderus rufifrons* Cand. and *C. castaneipennis* Macleay, redescribed; *C.* **mentitus** (p. 13), N. W. Australia, *C.* **mjöbergi** (p. 13), Queensland; *Cardiophorus macleayi* Schwarz, emended description; *Paracardiophorus* **mjöbergi** (p. 16), and *P.* **jugulus** (p. 16), N. W. Australia; *P.* **attenuatipennis** (p. 17), Queensland; *Hapatesus pretiosus* Cand., comparative notes; *H. jugulatus* Cand., emended description; *H. hirtus* v. **minor** (p. 19), *Agonischius* **mjöbergi** (p. 20), and *A.* **laticornis** (p. 21), Queensland; *Ascesis* **testaceus** (p. 21), N. W. Australia. Types are in Stockholm Mus.

14732. GARDNER, J. C. M. The early stages of Niponius andrewesi, Lew. (Col. Hist.) *Bull. Ent. Res.* [*London*] 21(1): 15-18. 1 pl., 1 fig. 1930.—Biological notes and illustrated descriptions of full grown larva, prepupa, and pupa.

14733. HATCH, MELVILLE H., and A. I. ORTENBURGER. Records and new species of Coleoptera from Oklahoma. *Publ. Univ. Oklahoma Biol. Surv.* 2(1): 7-14. 1930.—An annotated list of 95 spp. previously recorded from and 59 spp. recently collected in the state, including *Bembidion* (*Odontium*) **weesi** (p. 11) and *Philonthus* **oklahomensis** (p. 12). Notes on *Omophron americanum iridescens* Csy. and *Acmaeodera neglecta* Fall. A key to 8 spp. of the *hepaticus* group of *Philonthus*.—*M. H. Hatch.*

14734. HATCH, MELVILLE H. The collection and preparation of Coleoptera. *Publ. Univ. Oklahoma Biol. Surv.* 2(1): 27-31. 1930.—Killing, nets, collecting, mounting, labeling, care of collection, and dealers are discussed, with bibliography.—*M. H. Hatch.*

14735. HOSCHECK, ARTHUR BARON. Beiträge zur Kenntnis der Buprestiden (Col.) III. *Mitteil. Zool. Mus. Berlin* 17(1): 133-164. 11 fig. 1931.—*Neopolycesta* **gebhardti*** (p. 134), Madagascar, type in Zool. Mus. Berlin; *Halecia* **superba*** (p. 135), Costa Rica, type in author's coll.; descriptive notes on *C. modesta**, *C. hustachei*, *C. diviana**, *C. celsa**; *Chrysobothris* **kuntzeni*** (p. 142), Mindanao [P. I.], type in Zool. Mus., Berlin; *C.* **facialis*** (p. 144), Costa Rica; *C.* **pseudinsularis** (p. 146), Jamaica, type in Zool. Mus., Berlin; *Actenodes heros* v. **picta** (p. 147), French Guiana; *Conognatha* **ovatula** (p. 148), Brazil, ♂ type in author's coll., ♀ type in Dresden Mus. f. Nat. u. Völkerkunde; *C. gracilis*, valid sp.; *C. sellovi*, *C. thoreyi*, *C. vicina* Thery (=*C. nitida* v. Rothk.) and *C. sanguinipennis* Mnh. (=*C. floricola* Obbg.), critically compared; *C. plebeja* v. Rothk. is considered a ssp. of *C. subdilatata* Saund.; *C. ulei* is distinct from *C. principalis*; *C. p.* ab. **insignata** (p. 156), Rio Grande do Sul; *C. rogersi** Saund. (=*C. flavipennis** Kerr.); *C.* **erudita** (*C. nigroviolacea* Obenb., not Deyrolle) (p. 158); *C.* **moluccana** (*C. viridipunctata* Blanch., not Cast. et Gong.) (p. 158); *Hyperantha interrogationis*, comparison of vars. *cruentata* and *bella*; *Coraebosoma* **carteri** (p. 159), Luzon [P. I.], type in Zool. Mus., Berlin; *Polyonychus* **fisheri** (p. 161), Candanduani Is., P. I., type in Zool. Mus., Berlin; *Tetragonoschema* **cupreocingulatum** (p. 163), Bolivia, type in Zool. Staatsmus. München.

14736. JORDAN, KARL. Anthribidae versus Platystomidae. *Novitates Zool.* 36(3): 281-287. 1931.—The author considers W. D. Pierce unjustified in his decision that the type of *Anthribus* Geoffrey is *Dermestes pulicarius* L., and maintains that if Geoffrey's work is accepted, the type should be one of those figured, and accepts Latreille's 1810 designation of *A. latirostris* Fab. If Geoffrey is not accepted, he believes that the genus should hold from Forster 1771, for which he designates *A. fasciatus* as type.

14737. JORDAN, KARL. Anthribidae collected by F. C. Drescher on the island of Java. *Novitates Zool.* 36(3): 288-302. 4 fig. 1931.—A record of 51 spp. including: *Acorynus lineolatus* ssp. **slamatus** (p. 288); *Litocerus figuratus* ssp. **notalis** (p. 289); *L.* **xenopus** (p. 289); *Hucus* **concinnus** (p. 290); *Zygaenodes* **rectimargo** (p. 291); *Z.* **leptipus** (p. 292); *Uncifer* **hapalus** (p. 292); *Nessiara* **cognata** (p. 293); *Apatenia viduata* ssp. **promota** (p. 294); *Hypseus* **cyphus** (p. 295); *H.* **scaphidius** ♀ (p. 295); *Phaulimia* **lineosa** ♀ (p. 296); *Sintor* **floridus** (p. 296); *Cleorisintor* **drescheri** ♂ (p. 297); *Xylinades westermanni* Gyll. (=*X. vicinus* Jordan); *X. nodicornis* Weber (=*X. westermanni* Gyll. var. β); *Phloeobius* **facilis** (p. 298); **ADOXASTIA** (p. 299), near *Protaedus*, type *A.* **drescheri** ♂* (p. 299); *A.* **trux** ♀* (p. 300); *Misthosima* **badia** (p. 301); **EPIDYSNOS** (p. 301), near *Dysnos*, type *E.* **procer** (p. 301); *Dysnos sericeus* Jord., referred to *Epidysnos*.

14738. JORDAN, KARL. Two new oriental Anthribidae. *Novitates Zool.* 36(3): 303-304. 1931.—*Zygaenodes* **kalshoveni** (p. 303), Brit. India; *Araecerus* **conabilis** (p. 303), Java, from fruits of *Podocarpus*.

14739. JORDAN, KARL. Some Anthribidae from tropical Africa. *Novitates Zool.* 36(3): 305-310. 1 fig. 1931.—*Mecocerus* **gratus** (p. 305) and *Syntophoderes* **simplicipes** (p. 305), Belgian Congo, types in Mus. Belgian Congo; *S.* **phrator** (p. 305), Belgian Congo (type), Gabon, and Cameroon; *Anthribus* **ornaticollis** (p. 306), French Congo and Cameroon, type in Carnegie Mus.; *Zygaenodes* **auritus*** (p. 306), Belgian Congo, type in Mus. Belg. Congo; *Epicerastes* **adustus** ♀ (p. 307), Cameroon (type, in Carnegie Mus.) and Belgian Congo; *E.* **muscosus** (p. 307), Cameroon, type in Carnegie Mus.; *E.* **exstans** (p. 308), Belgian Congo; *E.* **latimanus** ♂ (p. 308), Nyasaland; *E.* **musculus** (p. 308), Cameroon; *Epicerastes*, key to 14 spp.

14740. JUREČEK, ŠT. Eine neue Aberration von Lebia bifenestrata Mor. (Col. Carabidae). *Ent. Nachrichtenbl.* 5(1): 7. 1931.—*Lebia b.* ab. **obscura**, Siberia.

14741. JUREČEK, ŠT. Eine neue Aberration von Judolia longipes Gebl. (Col., Cerambycidae). *Ent. Nachrichtenbl.* 5(1): 8. 1931.—*Judolia l.* ab. **erythruroides** ♀, e. Siberia, type in O. Reiss coll.

14742. KANABÉ, DESIDER. Über Irrtümer in den Beschreibungen von Judolia (Pachytodes) cerambyciformis Schrank. ab. efasciata Csiki. und ab. transsylvanica Csiki. *Ent. Nachrichtenbl.* 4(3): 65. 1930.—*J. cerambyciformis* ab. **immaculata**, type in author's coll., with notes on the above mentioned aberrations.

14743. KLEINE, R. Die Cautires-Arten des Congo-Museums nebst Bestimmungsschlüssel der afrikanischen Arten. *Rev. Zool. et Bot. Africaines* 19(1): 4-19. 1 pl. 1930.—A study of a collection of Lycidae from Congo Mus., chiefly of spp. of *Cautires*, including: *C.* **congonus** ♂* (p. 4), **costulatus** ♀* (p. 5), **opacicollis** ♀* (p. 5), **lamellatus** ♂* (p. 5), **ochraceipennis** ♂* (p. 6), **triangularis*** (p. 6), **maculatithorax** ♂* (p. 7), **flavipennis** ♂* (p. 7), **seydeli*** (p. 7), **africanus** ♀* (p. 8), **schoutedeni** ♂* (p. 8), **constans** ♀* (p. 8), **reticulatus** ♂* (p. 9), **gracilis*** (p. 9), **certus*** (p. 9), **flavofemoralis** ♀* (p. 10), and **aethiops** ♂* (p. 10), apparently all from Belgian Congo. Key is given to the African spp.

14744. KNOWLTON, GEO. F. Notes on Utah Coleoptera. *Florida Ent.* 14(2): 36-37; (3): 53-56; (4)

75-77. 1930; 15(1): 10. 1931.—A list of spp., with collecting records, based on examination of the coll. at Utah Agric. Exp. Sta.

14745. **LIEBKE, MAX.** Laufkäfer-Studien VII. Zwei neue Carabiden-Arten aus Südost-Asien. *Ent. Anzeiger* 11(13): 261-263. 2 fig. 1931.—*Dinopelma* **minor*** (p. 261), Borneo (type), west Sarawak; *Mastax* **latefasciatum*** (p. 262), Annam. Types in author's coll. *Lebia* **atricapilla** (*L. putzeysi* Lbk., not Bedel) (p. 263).

14746. **MACHULKA, VÁCLAV.** Beitrag zur Synonymie der palaearktischen Pselaphiden. *Časopis Čsl. Spol. Ent.* 26(5/6): 119-121. 1930.—*Batrisodes buqueti* Aubé (=*B. hubenthali* Reitter); *Pselaphus xanthopterus* Reich. and *Tychus dichrous* Schmidt are discarded as unrecognizable; Aubé, not Schmidt, is considered the author of *Reichenbachia opuntiae*; *Tychus niger* ab. **bohemicus** (p. 120), Czechoslovakia; *Bythinus monstrosetibialis* Stolz (=*B. trojani* Fleischer), emended description; *Bythinus* (=*Megalobythus* Jeannel, *Macrobythus* Raffray).

14747. **MAMITZA, RICHARD.** Ein neuer Heterocerus aus Abessinien. *Ent. Nachrichtenbl.* 4(4): 85-86. 4 fig. 1930.—*H.* (s. str.) **abyssinicus*** (p. 85), type in Brit. Mus.

14748. **MARSHALL, GUY A. K.** New species of African Brachycerus (Col., Curc.). *Ann. and Mag. Nat. Hist.* 7(40): 409-424. 1 pl. 1931.—*B.* **terrenus*** (p. 409), Tanganyika and Nyasaland; *B.* **canus** (p. 410), S. W. Africa; *B.* **vansomereni** ♂ (p. 412), Kenya; *B.* **suahilicus*** (p. 413), Rhodesia, Portuguese E. Africa, Nyasaland; *B. s.* ssp. **reductus** (p. 415), Rhodesia, Tanganyika, Kenya; *B.* **deludens** (p. 415), Nyasaland; *B.* **erosicollis** ♂ (p. 416), Portuguese E. Africa, Tanganyika, Rhodesia; *B.* **grandicallosus*** (p. 417), Portuguese E. Africa, Nyasaland, Tanganyika, Zanzibar; *B.* **lupatus** (p. 419), Tanganyika, type in Hamburg Mus.; *B.* **microderes*** (p. 420), French Congo, Cameroons; *B.* **rasicollis*** (p. 422), Rhodesia, Nyasaland; *B.* **basidentatus*** (p. 423), Kenya, Tankanyika.

14749. **MIWA, YUSHIRO.** Elateridae of Formosa (V.). *Trans. Nat. Hist. Soc. Formosa* 22(113): 72-99. 1931.—*Corymbites gratus* v. **fuscipes** (p. 72); *Agriotes sonanis* v. **brunneipennis** (p. 78) and v. **nigrinus** (p. 78); *Denticollis* **puerilis** (p. 83); *D.* **mounaldaui** (p. 83). Keys are given to the genera and spp. as well as a list of geographical distribution.

14750. **OBENBERGER, JAN.** Einige Bemerkungen zur Verbreitung und Synonymie von afrikanischen Meliboeus-Arten (Col., Buprestidae). *Folia Zool. et Hydrobiol.* [*Riga*] 2(2): 172-175. 1931.—Notes on 12 known spp.

14751. **OGLOBLIN, A. A.** Beitrag zur Kenntnis der neotropischen Halticinen. I. *Rev. Soc. Ent. Argentina* 3(1): 47-52. 1 pl. 1930.—*Longitarsus* **brunnipes** (p. 47), Argentina, and *L.* **pallipes*** ♂ (p. 47), southern Brazil, types in author's coll.; *L.* **fryellus*** (p. 48), Brazil and Argentina; *L.* **mendax*** ♂ (p. 49), type in author's coll. and *L.* **vicarius*** (p. 49), Argentina; *L.* **frontalis*** (p. 50), Rio Grande do Sul, Sao Paulo, and Argentina; *Chaetocnema* (*Tlanoma*) **fuscipes** (p. 51), Argentina; *C.* (*T.*) **gibbosa*** (p. 52), Brazil, type in author's coll.

14752. **OKE, CHARLES.** On some Australian Curculionoidea. *Proc. Roy. Soc. Victoria* 43(2): 177-201. 6 fig. 1931.—*Ecrizothis* **similis** (p. 177); *E.* **blackburni*** (p. 178); *E. inaequalis*; *E. bovei*; *E.* **terminalis*** (p. 179); *Polyphrades* **viridis** (p. 179); *Leptops* **nothus*** (p. 180); *L. phymatodis*; *Mandalotus acanthocnemis*; *M. bivitticollis* and *M. pentagonoderes*, emended descriptions; *M.* **leai*** (p. 184); *M.* **impressicollis*** (p. 185); *M.* **bryophilus*** (p. 186); *M.* **graminicola** (p. 186); *M.* **explanicollis*** (p. 188); *M.* **octagonalis*** (p. 188); *M.* **minusculus** (p. 189); *M.* **egenus** (p. 190); **MANDALOTINA** (p. 190), near *Mandalotus*, type *M.* **atranotata*** (p. 190); *M.* **varia** (p. 191); *M.* **bicolor** (p. 191); *Phrynixus*, emended description; *P.* **victoriae*** (p. 192); *P.* **sylvicola** (p. 193); *P.* **major*** (p. 194); **DAYLESFORDIA** (p. 195), tentatively placed in Rhyparosominae, type *D.* **uvida*** (p. 195); **DIXONCIS** (p. 196), doubtfully referred to Aterpinae, type *D.* **pictus*** (p. 196); *Rhinoncus* **australis** (p. 198); *Dicthosa* **setosa** (p. 198), on *Acacia pycnantha*; *D.* **venusta** (p. 199); *Blepiarda* **panacis*** (p. 199); **NYELLA** (p. 200), of uncertain position, perhaps near Tryxetini, type *N.* **tuberculata*** (p. 200). All new spp. from Victoria, types in author's coll.

14753. **PIC, M.** Nouveaux Malacodermes et Hétéromères de la République Argentine. *Rev. Soc. Ent. Argentina* 1(3): 13-16. 1927.—*Astylus* **griseopubens** (p. 13); *A.* **bruchi** (p. 13), and var. **interna** (p. 14); *Attalus* **bruchi** (p. 14); *Mauronisces* **maculatus** (p. 14); *Chauliognathus* **caroli** (p. 15); *Macrosiagon nigromaculatum* v. **bruchi** (p. 15); *M.* **semilimbatum** (p. 16).

14754. **PIC, M.** Nouveaux coléoptères malacodermes de l'Amérique Méridionale. *Rev. Soc. Ent. Argentina* 2(1): 35-36. 1928.—*Leucothrix* **argentina** (p. 35); *Calopteron* **wagneri** (p. 35); *C. maculatum* vars. **mediobliteratum** and **ignaciosum** (p. 35); *Chauliognathus* **bilineaticollis** (p. 35), *C. b.* var. **semiconnexus** (p. 35), Argentina and Paraguay; *C.* **nigrolateralis** (p. 36) and *C.* **erratus** (p. 36), South America; *Discodon* **criollanum** (p. 36); *D. c.* vars. **mediojunctum** and **suturiferum** (p. 36), *D.* **laticolle** (p. 36); *Silis* **vagelimbatus** ♂ (p. 36). All from Argentina unless otherwise stated, and types in author's coll.

14755. **PORTEVIN, G.** Histoire naturelle des Coléoptères de France. Vol. 1. Adephaga,—Polyphaga: Staphylinoidea. In: *Encyclopédie Entomologique Ser. A*, No. 12. x+649p. 5 col. pl., 571 fig. Paul Lechevalier: Paris, 1929.—An extensive study, including notes on the general characteristics of Coleoptera, with figures to clarify the terminology. The systematic part is in the form of keys, with many figures. There are keys to suborders, families, subfamilies, tribes, genera, subgenera, and spp. For each genus there are brief notes on habits and habitat, with notes on larval characters if known (including citations of larval descriptions), and distribution in France. Species from Corsica are included. There is an alphabetical index to all names. The following new subgenera are proposed: **DEROGRAPHUS** (p. 210), n. subg. of *Graphoderes*, erected for *G. austriacus* Stm.; **QUEDIOPSIS** (p. 337), n. subg. of *Quedius*, erected apparently for *Q. riparius* Kelln. and *Q. kraatzi* Ch. Bris.; **LATHROBIDIUM** (p. 382), n. subg. of *Lathrobium*, erected for *L. lusitanicum* Grav.; **CHAETODERUS** (p. 602), n. subg. of *Plegaderus*, erected for *P. pusillus* Rossi; **CHETABRAEUS** (p. 604), n. subg. of *Abraeus*, erected for *A. globulus* Creutz. The genus *Xanthosphaera* Fairm. is considered hypothetical, being based upon a single, apparently composite specimen, consisting in part of a *Triarthron*, in part of a *Cyrtusa*.

14756. **REINECK, GEORG.** 4. Beitrag zur Lebens- und Entwicklungsweise von Coleopteren. *Zeitschr. Wiss. Insektenbiol.* 24(7/8): 220-226. 10 fig. 1929.—The life history of *Chrysochloa rugulosa** Suffr. is described. The host plants are *Centaurea scabiosa* L. and *C. jacea* L. The life from egg to adult takes about 4 months. Pupation takes place in the soil. The sp. is found throughout French Switzerland to the country south of Staffelberges in Bavaria. The occurrence of *Chrysochloa tristis* v. *smaragdina* Ws. in French Switzerland is noted as an error. The life history is given of *Chrysomela aurichalcea* v. *asclepiadis* Villa, taken from stony slopes near Muggendorf and Doos in Franconia on *Vincetoxicum officinale** Moench. The ♀♀ hibernate and appear in the spring for egg-laying. Breeding experiments are therefore difficult.—*G. Reineck* (*transl. by J. A. Reeves*).

14757. **ROUBAL, J.** Vier neue Coleopteren aus U. S. S. R. *Ent. Blätter* 25(1): 46-48. 1929.—*Geodromicus* **lebedevianus** (p. 46), Asiatic Russia; *Monotoma brevicollis* ssp. **lebedevi** (p. 47), central Asia; *Mycetophagus multipunctatus* ssp. **sulcatulus** (p. 47), n. Caucasus; *Mordellistena* **lebedevi** (p. 48), central Asia.—*M. H. Hatch.*

14758. **RÜSCHKAMP, F.** Zur rheinischen Käferfauna III. *Ent. Blätter* 24(4): 145-154. 1928.—Annotated list of 143 spp. from Rhenish Prussia, with special notes on *Hygrotus versicolor* Schall., *Hydroporus dorsalis* F.,

Gyrophaena rugipennis Muls. et Rey, *Hydraena gracilis* Germ., *Endomychus coccineus* L., *Cytilus auricomus* Dtfs., *Melanotus rufipes* Hrbst., *Anaspis regimbarti* Schils.—*M. H. Hatch.*

14759. **RÜSCHKAMP, F.** Zur rheinischen Käferfauna IV. *Ent. Blätter* 25(1): 35-43. 1929.—Annotated list of 97 spp. from Rhenish Prussia, with special notes on *Harpalus quadripunctatus* Dej., *Paracymus scutellaris* Rosenh., *Brachypterus glaber* Steph., *Pentaphyllus chrysomeloides* Rossi and *P. testaceus* Helw.—*M. H. Hatch.*

14760. **SCHAEFFER, CHAS.** On some species of Phaedon. *Bull. Brooklyn Ent. Soc.* 24(5): 286-287. 1929. —*P. carri* Hatch is a valid sp., and not a synonym of *P. cochleariae* Fab.; *P.* americanus (p. 287), Michigan (type), Idaho and Washington.

14761. **SCHEDL, K.** Notes on the Pityophthorinae (Coleoptera Ipidae). II. Three new species. *Canadian Ent.* 63(7): 163-168. 1 pl. 1931.—*Pityophthorus* smithi* (p. 163), Brit. Columbia, from twigs of *Pinus contorta; P.* pygmaeus ♀* (p. 165), Quebec; *P.* pilifer* (p. 166), Ontario, from *Picea canadensis*. Types in Canadian Nat. Coll., Ottawa.

14762. **SICARD, A.** Descriptions d'espèces nouvelles appartenant à la famille des Coccinellides (Col.). *Ann. and Mag. Nat. Hist.* 8(45): 228-234. 1931.—*Vibidia* tricincta (p. 228), Uganda; *Rodolia* obscuricollis (p. 229), Cape Province, feeding on *Icerya euphorbiae* on *Euphorbia; Scymnus* (*Pullus*) luniferus (p. 229), Tanganyika; *S.* (*Sidis*) ancoralis (p. 230), Kenya; *S.* c-luteum (p. 231), Uganda; *S.* ardosiacus (p. 232), Gold Coast, predator on *Aspidiotus destructor; S.* erinaceus (p. 232), Fiji; ORCULUS (p. 233), near *Orcus*, based on *O.* castaneus (p. 234), Sierra Leone. Types in Brit. Mus.

14763. **THÉRY, A.** Notes d'entomologie Marocaine et Nord-Africaine. (Septième note.) *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 90-91. 1929.—*Labidostomis* embergeri ♂ (p. 90), Morocco.

14764. **THÉRY, ANDRÉ.** Buprestides nouveaux d'Afrique. (Deuxième note.) *Bull. Soc. Sci. Nat. Maroc* 9(7/8): 139-171. 4 fig. 1929.—*Amblysterna* somereni* (p. 139); *Steraspis lemoulti* ssp. carpenteri (p. 140), Uganda; *Iridotaenia* camerunica (p. 141), Nigeria; *Polybothris* blairi (p. 143), Madagascar, type in Brit. Mus.; *P.* natalensis* (p. 144), Natal, type in Natal Mus.; *Sphenoptera* (*Hoplistura*) braunsi* (p. 146), Transvaal; *S. b.* ssp. carpenteri* (p. 148), *S.* (*H.*) madiensis* (p. 148) and *S.* stupida (p. 150), Uganda, types in Imperial Inst. of Entomology; *Anthaxia* (*Cratomerus*) hunti (p. 152), Kenya, type in Brit. Mus.; *A.* (*C.*) maracaensis (p. 153), Abyssinia; *A.* monbasica (p. 154), Kenya; *A.* vulpes (p. 156), Cameroon; *Damarsila albomarginata* ssp. ugandae (p. 157) and *D.* carpenteri (p. 158), Uganda, types in Imp. Inst. Ent.; *Megactenodes* raffrayi (p. 160), Abyssinia (type) and Brit. East Africa; *Strigulia* bottcheri (p. 161), Rhodesia; *S.* auberti (p. 162), Gabon; *Discoderes salzmanni* v. carpenteri (p. 163), Uganda, type in Imp. Inst. Ent.; *Sambus* sulcicollis (p. 163), Natal, type in Natal Mus.; *Cryptodactylus* abyssinicus (p. 165), Eritrea; EUMORPHOCERUS (p. 166), near *Evimantius*, based on *E.* laticornis (p. 167), Madagascar; DISCODEROPSIS (p. 168), near *Paradora*, based on *D.* incurvatus (p. 169), Madagascar; *Agrilus* australis (p. 170), Natal, type in Imp. Inst. Ent. Unless otherwise stated, the types are in the author's coll.

14765. **UHMANN, E.** Hispinen aus dem holländischen Kolonialgebiet. *Zool. Mededeel.* [*Leiden*] 13(3/4): 178-179. 1 fig. 1930.—Chrysomelidae: *Botryonopa* kleinei (p. 178), Borneo, type in Deutsch. Ent. Inst., Berlin-Dahlem; *Metaxycera purpurata, Sceloenopla maculata, S. quinquemaculata,* and *Amplipalpa collaris* are new to Surinam; new descriptive data on *Hispa fabricii,* and *Dactylispa cincta**.

14766. **URBAN, C.** Beiträge zur Naturgeschichte einiger Rüsselkäfer. I. *Ent. Blätter* 25(1): 16-24. 1929.—Notes on life history and immature stages of *Phyllobius urticae* Deg., *P. maculicornis* Germ., *Barypithes mollicomus* Ahr., *Strophosomus faber* Hbst., *Sitona lineatus* L., *Phytonomus trilineatus* Mrsh., *P. meles* F., *Dorytomus longimanus* Forst., *Pseudostyphlus pilumnus* Gyll., *Mononychus punctum-album* Hbst.—*M. H. Hatch.*

14767. **VOSS, EDUARD.** Einige bisher unbeschriebene Rhynchitinen der paelaearktischen Region (Col. Curc.). (27. Beitrag zur Kenntnis der Curculioniden.) *Ent. Blätter* 25(1): 24-29. 1929.—*Coenorrhinus cribrum* ssp. italicus (p. 24), Italy; *C.* livescens (p. 25), Abschasien, Kachetien; *Rhynchites* (*Haplorhynchites*) nudipennis (p. 25), Siberia; *R.* (*Involvulus*) cupreatus (p. 26), Taurus, Crimea; *R.* sarafschanicus (p. 27), Turkestan; *Byctiscus* coerulans (p. 28), China, Japan; *Depasophilus* koreanus (p. 28), Chosen; *Deporaus* hartmanni (*D. affectatus* Sharp non Fst.) (p. 28).—*M. H. Hatch.*

14768. **VOSS, EDUARD.** Monographie der Rhynchitinen-Tribus Byctiscini. VI. Teil der Monographie der Rhynchitinae-Pterocolinae. *Koleopterol. Rundsch.* 16(5): 191-208; (6): 209-243. 10 fig. 1930/1931.—Key, bibliography, and descriptions of 44 spp. (4 genera) of Byctiscini, including *Byctiscus betulae* ssp. intermedius (p. 197, 211) and f. coeruleata (p. 197, 211), Germany, Finland, and ssp. destitutus* (p. 197, 212), Hungary, Syria; *B. populi* f. transbaicalia (p. 197, 215), Transbaikalia, and f. semicuprea (p. 198, 215), Mongolia; *B.* lucidus (p. 199, 221) and *B.* fulminans (p. 199, 221), China; *B. lacunipennis* ssp. aumurensis (p. 199, 223), Siberia, Chosen, ssp. yunnanicus (p. 199, 223), Yunnan, subsp. collaris (p. 199, 224), Formosa, and ssp. subtilis (p. 199, 224), China; *B.* (*Taiwanobyctiscus*) separandus (p. 200, 226), Formosa; *B.* (*T.*) foveostriatus (p. 200, 227), China; *Byctiscidius* griseus (p. 229, 231), East Indies; BYCTISCOPHILUS (p. 193, 231), for *B.* championi* (p. 232), India; *Listrobyctiscus* montanus (p. 233, 235), *L.* insularis (p. 233, 236), and *L.* mindoroensis (p. 234, 237) [*mindoraensis,* in key], Philippine Is.; *L.* tombuguensis (p. 234, 237), Celebes; *L.* mindanaoensis (p. 234, 238), Philippine Is.; *L.* luzonensis (*L. laevigatus* f. *luzonensis* Voss) (p. 234, 238); *L.* malaccanus (p. 234, 239), Malacca.—*M. H. Hatch.*

14769. **ZOTTA, ANGEL.** Un ejemplar topotipo de la especie argentina del género Camptodontus Dej. (Coleopt.). [A topotype specimen of the Argentine species of Camptodontus.] *Rev. Soc. Ent. Argentina* 3(2): 145-146. 1930.—A specimen of *C. crenatus* Brullé from the Prov. of Corrientes. The original description is reproduced.

DIPTERA

E. T. CRESSON, JR., *Editor,* Brachycera

O. A. JOHANNSEN, *Editor,* Nemocera

(See also in this issue Entries 12153, 12566, 12621, 13463, 13597, 13603, 13604, 13846, 13848, 13888, 13896, 13901, 13902, 13905, 13909, 13910, 13919, 14059, 14671, 14677, 14683, 14948)

14770. **ANDREWS, H. W.** The earlier stages of Diptera. (Presidential lecture.) *Proc. South London Ent. and Nat. Hist. Soc.* 1929-30: 17-29. 1930.

14771. **[APRIAMOV, G. G.]** АПРИАМОВ, Г. Г. К биологии Anopheles maculipennis Meig. и A. bifurcatus L. в районе города Владикавказа. [Biology of Anopheles maculipennis and A. bifurcatus in the region of Vladikavkaz.] [German summary.] Работы Северо-Кавказской Гидробиологической Станции (*Trav. Sta. Biol. Caucase du Nord*) 3(1/3): 145-154. 1930.—Sluggish brooks are the chief breeding-places of *Anopheles bifurcatus. A. maculipennis* has no more than

5 generations in this district. The abundance of larvae of *A. bifurcatus* in 1928 and their scarcity in 1929 suggest that propagation is somewhat dependent on meteorological factors. This sp. winters here in the larval state. —*Author's summary.*

14772. AUSTEN, E. E. A new tsetse-fly of the Glossina palpalis group occurring in Belgian Congo. *Bull. Ent. Res.* [*London*] 20(1): 1-4. 5 fig. 1929.—*G.* **newsteadi*** (p. 1), type in Brit. Mus. This brings the number of recognized spp. of *Glossina* up to 20.

14773. BLANCHARD, EVERARD E. A dipterous leaf-miner on Cineraria, new to science. *Rev. Soc. Ent. Argentina* 1(1): 10-11. 1 pl., 1 fig. 1926.—*Agromyza* **huidobrensis*** (p. 10), from cultivated *Cineraria**.

14774. BONNE-WEPSTER, J. The genus Taeniorhynchus Arribalzaga in the Dutch East Indies. Part 2. Subgenus Coquillettidia Dyar. *Mededeel. Dienst Volksgezondheid Nederlandsch-Indië* 19(3): 387-399. 3 fig. 1930.—A key to the spp. of *Taeniorhynchus* (*Coquillettidia*) is given, including: *T.* (*C.*) **nigrochraceus** ♀ (p. 392), New Guinea and Sumatra; *T.* (*C.*) **memorans** ♀ (p. 393), New Guinea. Types in Med. Lab., Batavia.

14775. BURKILL, HAROLD J. Some notes on midge galls. *Entomologist* [*London*] 63(802): 59-61. 1930.—Records of 7 cecidomyid bud galls, 8 flattish circular galls inside the lamina of the leaf, 7 galls folding or rolling the leaf, and 2 stem galls on various British plants.

14776. CRESSON, EZRA T. Jr. A revision of the North American species of fruit flies of the genus Rhagoletis (Diptera: Trypetidae). *Trans. Amer. Ent. Soc.* 55(4): 401-414. 1 pl. 1929.—Synonymic notes and descriptions of new species: *Rhagoletis suavis* ssp. **completa*** (p. 412), California and Texas, and *R.* **boycei*** (p. 413), Arizona, both infesting Persian walnut, *Juglans regia*. Types in Acad. Nat. Sci. Philadelphia.

14777. CRESSON, EZRA T. Jr. Studies in the dipterous family Ephydridae. 2. *Trans. Amer. Ent. Soc.* 55(2): 165-195. 1929.—*Polytrichophora* **canora** ♀ (p. 166), Formosa; *P.* **duplosetosa** (*Clasiopa d.* Becker) (p. 166); *P.* **luteicornis** ♀ (p. 166), Malay Peninsula, type in Hungarian Nat. Mus.; *Diclasiopa* **lacteipennis** (*Discocerina l.* Loew) (p. 167); *Hecamedoides* **costata** (*Hecamede c.* Loew) (p. 167); *H.* **aurigera** (p. 168), New Guinea; *H.* **caprina** (p. 168), Formosa; *H.* **hyalinis** ♂ (p. 169) and *H.* **invida** (p. 169), New Guinea; *Trypetomima* **formosina** (*Actocetor formosinus* Becker) (p. 172); *T.* **solitaria** (p. 172) and *T.* **completa** (p. 173), Guam Isl. [Ladrone Isl.]; *Allotrichoma* **alium** (p. 173), New Guinea; *A.* **livens** (p. 174) and *A.* **biroi** (p. 174), Bombay, types in Hungarian Nation. Mus.; *A.* **sciens** (p. 175), Germany; *A.* **perspiciendum** (*Elephantinosoma p.* Becker); *Atissa* **suturalis** (p. 177), New S. Wales; *A. hepaticoloris* Becker (=*Allotrichoma litoralis* Cole); *Atissiella* **kairensis** (*Atissa k.* Becker) (p. 179); *A.* **durrenbergensis** (*Atissa d.* Loew) (p. 179); *Cyphops* **digna** (*Dryxo d.*,=*D. spreta* Osten Sacken) (p. 182); **KAREMA** (p. 182), type *K.* **loewella** (p. 182), Transvaal, type in Munro coll.; *Oedenops* **nuda** (*Paralimna n.* Coquil.) (p. 183); *Paralimna* **punctipennis** (*Notiphila p.* Wiede.,=*P. appendiculata* Loew) (p. 184); *P.* **sana** (p. 185), Paraguay; *P.* **nubifer** (p. 187), Congo; *P. puncticollis* (=*Poecilothorax angustus* Becker); *P.* **sinensis** (*Notiphila s.* Schiner) (p. 189); *P.* **concors** (p. 189), Philippine Isls., type in U. S. Nat. Mus.; *P. hirticornis* Meij. (=*P. nitens* Bezzi); *P. molosus* Schiner (=*P. puncticornis* v. *captiosa* Cresson); *P. confluens* Loew (=*P. ornatipennis* Adams); *Phaiosterna* **aequalis** (p. 193), French Indo-China; *Typopsilopa* **chinensis** (*Notiphila c.* Wiede.); *T.* **tonga** ♀ (p. 194), Egyptian Sudan. Types in Acad. Nat. Sci. Philadelphia, unless otherwise stated.

14778. CRESSON, EZRA T. Jr. Studies in the dipterous family Ephydridae. Paper III. *Trans. Amer. Ent. Soc.* 56(2): 93-131. 1930.—Representing results of a study of the Ephydridae in the coll. belonging to Naturhist. Mus., Wien, and other material. *Hydrina flavipes* (Fallen) (=*Ephydra minuta* Meigen); *H. posticata* (Meigen) (=*Philygria nigricauda* Stenh.); *H.* **morans** (p. 98) and *H.* **tirolis** (p. 99), Austria; **NAPAEINAE** n. subfam. (p. 100), to include *Axysta*, *Hyadina*, *Pelina*, *Brachydeutera*, *Napaea*, *Parydra*, *Halmapota*, and possibly *Canace*, and allied genera, the group apparently intermediate between the Notiphilinae and Ephydrinae; *Nostima* **picta** (*Notiphila p.* Fallen) (p. 101); *Hyadina* **pullipes** (p. 103), New S. Wales; *Napaea* **mitis** (p. 110), Upper Austria; *N.* **consors** (p. 111), Dalmatia; **SETACERA** (p. 116), type *S.* **pacifica** (*Ephydra p.* Cresson) (p. 116); *S.* **micans** (*Ephydra m.* Haliday) (p. 116); *S.* **pedalis** (p. 117), Austria, type in Vienna coll.; *S.* **breviventris** (*Ephydra b.* Loew) (p. 117); *Lamprogaster* Hendel, critical note; **EUSTIGOPTERA** (p. 126), type *E.* **quadrata** (*Notiphila q.* Fallen) (p. 127); *E.* **pauciguttata** (*Scatella p.* Strobl) (p. 127); *E.* **stenhammari** (*Ephydra s.* Zetterstedt) (p. 128); *Scatophila* **quadriguttata** (*Ephydra q.* Meigen) (p. 130). Types in Acad. Nat. Sci., Philadelphia, unless otherwise stated.

14779. CURRAN, C. H. New species of Diptera belonging to the genus Baccha Fabricius (Syrphidae). *Amer. Mus. Novitates* No. 403. p. 1-16. 1930.—*Baccha* Fabr. (=*Oeyptamus* Macq.). A key to 59 spp. of *Baccha*, new and recent synonymy of spp. and the following descriptions are given: *B.* **telescopica** ♀ (p. 4), *B.* **vierecki** (p. 6), *B.* **shropshirei** ♀ (p. 7), *B.* **zeteki** (p. 8), *B.* **panamensis** (p. 9), *B.* **nitidula** ♂ (p. 9), all from Canal Zone; *B.* **atypica** (p. 10), *B.* **prenes** ♂ (p. 11) and *B.* **murina** ♂ (p. 12), Brazil; *B.* **mentor** and *B.* **macer** ♂ (p. 13), Paraguay; *B.* **deceptor** (p. 14), West Indies; *B.* **chapadensis** ♀ (p. 14), Brazil; *Baccha* **mexicana** (*B. lugubris* Williston, preocc.) (p. 6); *B. gastrostactus* Wied., notes distinguishing the ♂ and ♀; *B. lineata* Macq. (=*B. tropicalis* Townsend); *B. obscuricornis* Loew ♀ (=*B. cognata* Loew ♂).

14780. CURRAN, C. H. New Syrphidae from Central America and the West Indies. *Amer. Mus. Novitates* No. 416. p. 1-11. 1930.—*Megametopon* **violacea** (p. 1) and *Copestylum* **bequaerti** ♂ (p. 2), Mexico; *Volucella*, key to 3 spp., including: *V.* **watsoni** (p. 3), Haiti; *V.* **ingenia** ♀ (p. 4), Bahamas; *V.* **feminina** ♀ (p. 4) and *V.* **ernestina** ♂ (p. 5), Mexico; *Microdon* **apiculus** (p. 5), "Barro Colorado Is."; *M.* **panamensis** (p. 6), "France Field"; *M.* **solitaria** ♀ (p. 8) and *Callostigma* **panamensis** ♀ (p. 8), Barro Colorado Is.; *Xanthandrus* **mexicanus** ♀ (p. 9), Mexico; *Ceriogaster* **panamensis** ♂ (p. 10) and *Meromacrus* **panamensis** ♂ (p. 11), Barro Colorado Is. The author believes that *Melanostoma ?eucephalus* Bigot, from Colombia, is the same as *bucephalus*.

14781. CURRAN, C. H. Review of the African species of Sphyracephala, Say. *Ann. and Mag. Nat. Hist.* 2(9): 274-275. 1928.—*Sphyracephala* **munroi** ♀ (p. 274), Transvaal, type in Munroe coll.; key is given to differentiate *munroi*, *africana*, and *beccarii*.

14782. CUTHBERTSON, ALEXANDER. Studies on Clyde crane-flies. VIII. The seasonal prevalence of crane-flies (Tipuloidea. Dipt.) in the West of Scotland. *Entomologist* [*London*] 62(799): 270-273. 1929.—A list of 8 spp. found in winter, 35 in spring, 46 in summer, and 24 in autumn; 26 spp. occur from May to September. The largest percentage of spp. occurs in June.

14783. DYAR, HARRISON G. The mosquitoes of the Americas. *Carnegie Inst. Washington. Publ.* 387. 616p. 123 pl. 1928.—A monograph covering the classification of mosquitoes of the North- and South-American continents. The classification adopted is not materially altered from the one, used in a previous edition, published by Howard, Dyar, and Knab, dealing with the mosquitoes of North and Central America and the West Indies, of which the present monograph is a supplement. The revised edition comprises the family Culicidae, subfamily Culicinae with the tribes Sabethini, Culicini, Megarhinini, Uranotaeniini and Anophelini, including the genera: *Sabethes*, *Sabethoides*, *Limatus*, *Wyeomyia*, *Miamyia*, *Menolepis*, *Dendromyia*, *Goeldia*, *Joblotia*, *Psorophora*, *Haemagogus*, *Aëdes*, *Culicella*, *Mansonia*, *Deinocerites*, *Lutzia*, *Culex*, *Aëdeomyia*, *Orthopodmyia*, *Megarhinus*, *Uranotaenia* and *Anopheles*. The

figures refer in the main to the ♂ hypopygium of the various spp. listed, to a diagram of the lateral view of thorax of mosquito and to a diagram of mosquito larva (*Culex*).—*C. Zeimet.*

14784. **GEMIGNANI, EMILIO V.** Las especies argentinas del género Mallophora (Dipt.) y descripsión de cuatro nuevas especies. [Argentine spp. of Mallophora and descriptions of four new spp.] *Rev. Soc. Ent. Argentina* 3(2): 133-144. 2 fig. 1930.—A review of the characteristics of the genus and of 15 spp. represented in the Mus. Nac. Hist. Nat. Buenos Aires. Bibliographical references, descriptions, and locality records are given for the old spp. *Mallophora* **doello-juradoi** (p. 136); *M.* **copelloi** ♂ (p. 138); *M.* **lynchi** ♂ (p. 141); *M.* **zottai** ♀ (p. 141).

14785. **[GONCHAROV, G. D.]** ГОНЧАРОВ, Г. Д. Питание личинок **Anopheles maculipennis** в искусственных условиях. [Larval feeding of A. maculipennis in artificial conditions.] [French summary.] Русский Журнал Тропической Медицины [*Russian Jour. Trop. Med.*] 6(8): 482-488. 2 fig. 1928.—Larvae in all stages were omnivorous; their stomach contents showed a mass of fine granules (sand), vegetable matter (especially Volvocales and Protococcales), and animal matter (predominantly Rotatoria). Plankton of the reservoirs was directly related to these contents,—larvae absorbed the predominant forms. In II, III, and IV stages the author noticed progressive increase of animal matter, corresponding to the development of buccal and digestive apparatus. Lack of Ca in the water was compensated by rich food resources.—*B. Van Rosen.*

14786. **KRÖBER, O.** Die Tabanidenuntergattung Phaeotabanus Lutz. *Zool. Anz.* 86(11/12): 273-300. 21 fig. 1930. —The author includes in this subg. 22 spotted-winged spp. of *Tabanus*, his conception of the group differing somewhat from that of Lutz. The group is widely distributed in South America and extends north to Costa Rica. There is a key to the ♀♀ of nearly all spp. and to the ♂♂ of a few spp. The systematic accounts of the spp. include citation of the type, description, geographical distribution, and figures of front, palp, antennae, and wing. The subgeneric name is used throughout in binomial combination. *Phaeotabanus* **ecuadoriensis** ♀* (p. 279), Ecuador, type in Halle; *P.* **unimaculatus** ♀* (p. 280), Dutch Guiana, type in Halle; a ♀ from Brazil, in the Winthem collection at Vienna, is designated as the type of *P. aphanopterus* Wied.; *P. a.* var. **obscurehirtus** ♀* (p. 284), British Guiana, type in London; *P.* **minor** ♀* (p. 284), Brazil, type in Vienna; *P.* **nigriflavus** ♂* (p. 285), French Guiana, type in author's coll.; *P.* **semiflavus** ♀ (p. 288), Venezuela, type in author's coll.; *P. apicalis* Wied. (= *Tabanus tinctipennis* Brèth.); *P.* **austeni** ♀* (p. 294), Peru, type in London; *P.* **multiguttatus** ♀* (p. 295), Colombia and Ecuador type in author's coll.; *P.* **tenuifasciatus** ♀* (p. 296), Peru, type in Dresden; *P.* **ocelligerus** ♀* (p. 296), Costa Rica, type in Vienna; *P.* **pallidetinctus** ♀* (p. 297), Panama, type in London; *P.* **reticulatus** ♀* (p. 298), Peru, type in author's coll.; *P.* **formosus** ♀* (p. 299), Costa Rica, Colombia, and Ecuador, type in author's coll.

14787. **MARELLI, CARLOS A.** La Agromyza productora de agallas nodícolas en la lagunilla y sus parásitos e hiperparásitos. [The Agromyza which produces knotted galls on "lagunilla" (Alternanthera philoxeroides) and its parasites and hyperparasites.] *Rev. Soc. Ent. Argentina* 1(2): 13-21. 1 fig. 1926.—Galls* from the roots of *Alternanthera philoxeroides*, produced by *Agromyza marellii* Brèthes, contain also various parasites of the latter, including *Hypolethria bonariensis* [Cynipidae], *Habrocytus platensis* [Chalcididae], and *Mymarilla agromizae*, which often kill the larval *Agromyza*. The size of the gall gives an indication of which sp. will emerge from it. Another parasite of *A. marellii* is a mite, *Dipterolelaps manganaroi* "n. g. n. sp." (nomen nudum).

14788. **MEIJERE, J. C. H. de.** Die Larven der Agromyzinen (Fortsetzung und Schluss). *Tijdschr. voor Ent.* 69(3/4): 227-317. 69 fig. 1926.—The first part of this work was published *Ibid.* 68: p. 195-293. 1925, and dealt with the genera *Agromyza, Domomyza, Melanagromyza, Ophiomyia, Dizygomyza,* and *Liriomyza,* to which a supplement is given in this part (p. 303-307), containing a critical discussion of S. W. Frost's work (1924) on North American leaf-miners, as well as additional notes on several spp. of the above genera. The present part gives critical notes and descriptions of larvae and adults of *Napomyza*, Pseudonapomyza*, Phytagromyza*, Cerodonta*,* and *Phytomyza,* including *P.* **avenae*** (p. 251) and *P.* **pratensis*** (p. 284). Indexes to generic and specific names and to host plants conclude the paper.

14789. **MEILLON, BOTHA de.** On the Ethiopian Simuliidae. *Bull. Ent. Res.* [*London*] 21(2): 185-200. 6 fig. 1930.—For easy field identification, keys to the ♀♀ are given, and use of the illustrations of ♂ genitalia and pupal filaments is urged, in addition. The following are new: *Simulium* **bovis*** ♀ (p. 188), Zululand; *S.* **blacklocki*** Edwards (p. 189), Sierra Leone, type in British Mus.; *S.* **woodi*** ♀ (p. 190), Nyasaland; *S.* **nyasalandicum*** ♀ (p. 190), Nyasaland, type in Brit. Mus.; *S. nigritarsis* Coq., ♂ described for first time and ♀ redescribed.

14790. **MUKERJI, S.** Morphology of the pharynx of female Culicoides and its taxonomic importance. *Nature* [*London*] 127(3201): 339-340. 1 fig. 1931.—Examination of the pharynx in *C. pulicaris, C. oxystoma,* and *C. peregrinus,* indicates considerable variation in the structure which may be of taxonomic value.

14791. **PARENT, O.** Diptera vrachycera. 1. Dolichopodidae. (Ent. Results of the Swedish Kamchatka Exp. 1920-1922.) [In French.] *Arkiv. Zool.* [*Stockholm*] 21 A(2 No. 14): 1-7. 4 fig. 1930.—Of the 12 spp. collected, 6 are common all over Europe, 2 were hitherto known from palearctic Asia, and 4 are new: *Hydrophorus* **femoratus** ♂* (p. 2); *H.* **nigrihalteratus** ♂* (p. 3); *H.* **dubius** ♀* (p. 5); and *H.* **orientalis** ♀ (p. 5).

14792. **PARENT, O.** Contribution à la faune diptérologique (Dolichopodidae) des Pyrénées (versant français). *Butl. Inst. Catalana Hist. Nat.* 9(3): 56-72. 4 pl. 1929.—A list, with localities, of about 80 spp. collected by H. W. Brolemann, including: *Ludovicius* **spectabilis** ♂* (p. 58); *Hercostomus* **gavarniae*** (p. 62); *Campsicnemus* **mammiculatus*** (p. 64); *Medetera* **brolemanni*** (p. 69). Keys are given to differentiate the new spp. from closely related ones.

14793. **PARROT, L.** Sur une collection de Phlébotomes du Congo Belge. *Rev. Zool. et Bot. Africaines* 19(2): 181-192. 15 fig. 1930.—A list of 9 spp., including: *Phlebotomus* **brodeni** ♀* (p. 185); *P.* **rodhaini** ♂* (p. 187), type in Belgian Congo Mus., Tervueren; *P. minutus* v. *antennatus* Newstead and *P. squamipleuris* Newst., new to Belgian Congo.

14794. **PARROT, L.** Sur Phlebotomus rodhaini. *Rev. Zool. et Bot. Africaines* 20(2): 103. 1930.—Emended description.

14795. **ROHDENDORF, B.** Records of Sarcophagidae with new species. *Bull. Ent. Res.* [*London*] 21(3): 315-318. 3 fig. 1930.—*Sarcophaga* **sinica*** ♂ (p. 315) and *S.* **sera*** ♂ (p. 316), Foochow, China, types presumably in Imperial Inst. of Ent.

14796. **ROY, D. N., and BRUCE MAYNE.** A note on the presence of supernumerary lobes in salivary glands of anopheline mosquitoes. *Parasitology* 23(1): 77-78. 1 pl. 1931.—Records the finding of supernumerary lobes in 202 cases in *Anopheles quadrimaculatus*, A. punctipennis, A. subpictus*,* and *A. barbirostris**.

14797. **SHANNON, RAYMOND C.** Apropos "Masarygus" Brèthes. [In English.] *Rev. Soc. Ent. Argentina* 2(1): 37-38. 1928.—The author gives his reasons for considering *Masarygus* only a subgenus.

14798. **TAYLOR, ERNEST.** On the pupation of Cylindrotoma distinctissima Meig., a tipulid infesting Caltha palustris L. *North Western Naturalist* 6(1): 17-18. 1931.

14799. **VAN DUZEE, M. C.** New Dolichopidae from Connecticut. *Amer. Mus. Novitates* 439. 1-5. 1930.—*Mesorhaga* **caerulea** ♂ (p. 1); *Campsicnemus* **crassitibia** ♂ (p. 1); *C.* **curvispina** (*C. calcaratus* V.D. preocc.)

(p. 2); *Chrysotus* atratus ♂ (p. 2); *Argyra* fasciventris (p. 2); *Dolichopus* lobipennis ♂ (p. 3); *Hercostomus* (*Gymnopternus*) currani (p. 4). Types in Amer. Mus. Nat. Hist.

14800. VAN DUZEE, M. C. New species of Dolichopodidae taken by Mr. and Mrs. F. W. Edwards in South America. *Ann. and Mag. Nat. Hist.* 7(39): 243-255. 11 fig. 1931.—*Paraclius* edwardsi ♂* (p. 243), Argentina; *P.* brevimanus (p. 244), Uruguay; *Thrypticus*, key to spp.; *T.* penicillatus* (p. 246), Argentina; *T.* nigriseta ♂* (p. 247), Argentina; *T.* edwardsi (p. 248), Argentina; *Sympycnus* comatus (p. 249), Uruguay; *S.* flaviciliatus ♂ (p. 251), *Leptorhethum* tenuipes ♂ (p. 252), and *Condylostylus* ornatipes ♂ (p. 253), Argentina. Types in Brit. Mus.

14801. WEBBER, R. T. A new parasitic fly of the genus Chaetophlepsis. *Proc. U. S. Nation. Mus.* 78(20): 1-4. 1931.—*C.* orbitalis (p. 2), Massachusetts, reared from *Cingilia catenaria* Drury, type in Gipsy Moth Lab.

HEMIPTERA AND HOMOPTERA

H. H. KNIGHT, *Editor*, Hemiptera

Z. P. METCALF, *Editor*, Homoptera

(See also in this issue Entries 12740, 12742, 13846, 13875, 13878, 13882, 14670, 14671, 14681, 14682, 14947)

GENERAL

14802. KNOWLTON, GEORGE F. Notes on Utah Heteroptera and Homoptera. *Ent. News* 42(2): 40-43; (3): 68-72. 1931.—Record of 72 Heteroptera and 39 Homoptera.

14803. MUSGRAVE, ANTHONY. Contributions to the knowledge of Australian Hemiptera. No. 2. A revision of the subfamily Graphosomatinae (Family Pentatomidae). *Rec. Australian Mus.* 17(7): 317-341. 3 pl., 1 fig. 1930.—Tribe Graphosomataria: key to Australian genera; *Deroploopsis*, new generic diagnosis of ♀♀, key to spp.; *D. curvicornis**, descriptive data; *D.* brevicornutus ♀* (p. 320), *D.* trispinosus* (p. 322), and *D.* bidentatus* (p. 324), South Australia, types in South Australian Mus.; *D.* recticornis* (p. 323), West Australia, type in Australian Mus.; *Deroploa parva* Westw. (=*D. affinis* Schout.); *Eufroggattia tuberculata* ♂*; *Dandinus* belongs to this tribe; *Testrica antica**, illustrated from specimen identified by Stål; *T. haedulea**, *T. bubala**, *Protestrica rudis**, and *P. stali** (Schout.) (=*Testrica emarginata* Stål not Vollenh.), are illustrated from Stål's types; *P. subpunctata** is illustrated from Walker's type; PROPETESTRICA (p. 333), near *Testrica*, type *P.* trimaculata* Victoria and South Australia, type in National Mus.; *P.* angulata* (p. 334), South Australia, Central Australia, type in South Australian Mus.; *Ippatha*, key to spp., all illustrated; *I.* angustilineata ♀* (p. 336), South Australia, type in So. Austr. Mus. Tribe Podoparia: key to Australian genera; CORACANTHELLA (p. 337), allied to *Storthecoris*, type *C.* geophila* (*Scutellera g.* Montr.); *Podops teter** Walker (p. 338); *Scotinophara* allanae* (p. 340), Northern Terr., type in National Mus., Melbourne.

HEMIPTERA

14804. BAKER, ALEX. D. A study of the male genitalia of Canadian species of Pentatomidae. *Canadian Jour. Res.* 4: 148-220. 2 pl. 155 fig. 1931.—The development of knowledge of the ♂ genitalia of the Pentatomidae is indicated and other papers reviewed in the light of the writer's findings. Specialization of the 8th and subsequent segments is associated with the reproductive functions. Although often much reduced in size the 8th abdominal segment is always present. It is partially or completely retracted within the anterior segments. It bears no appendages. The considerable development of the intersegmental membranes adjacent to the 8th segment permits great mobility for the posterior genital carrying structures. The 9th segment is specialized for the accommodation of the genitalia. This is accomplished by the invagination of the posterior margin to form a bowl-like depression or "genital-cup." The claspers are homologized as originating from the primitive latero-caudal borders of the 9th sternum. The aedeagus arises from between the 9th and 10th sterna and has its most intimate connection with the 9th sternum. Structures termed the genital-plates are present in many species, chiefly among forms considered more primitive. The 10th segment is much reduced in size, existing as a small tail-like structure usually lying well within the genital-cup. This "proctiger" normally conceals and protects the aedeagus. The 11th segment is not apparent but there is a possibility that it may exist in the slightly sclerotized folds found bordering the anus. The anus opens at the distal end of the proctiger. The aedeagus varies considerably in form but the basic plan is clearly indicated. The basal plate of the aedeagus is made up of 4 sclerotized regions and 2 pairs of connectives, a ventral pair of connectives running to the infolded margin of the 9th sternum and a dorsal pair running dorso-cephalad. The aedeagus is articulated with its basal plate and continues distad as a sclerotized cylindrical structure, the penial theca, which encloses a large seminal reservoir. At the distal end of the penial theca the more thinly sclerotized penis is located. The penis may be 2- or 3-lobed. The ejaculatory duct has been traced from its distal end to an opening in the median sclerotization of the basal plate of the aedeagus. It is joined by a duct from the seminal reservoir in the penial theca. The ejaculatory duct terminates distad between the 2 lateral penis lobes. When a median lobe is present the duct passes through this structure. In some species a conspicuous penisfilum is present. A distinct connection between the claspers and the 9th sternum is present in certain species, which is independent of the aedeagal connections. The genital structures of the ♂ and ♀ are in their correct relation to each other when the insects assume the position of posterior to posterior. Owing to the great mobility of the genital segment this is not a necessary, nor the usual, initial position adopted during copulation. The functions of the claspers are apparently twofold: to assist in separating the genital sclerites of the ♀, and to assist as clasping organs during copulation. The aedeagus is capable of some extension beyond the limits of the genital-cup in addition to that brought about by the extension of the penis lobes. The movements of the basal plate and its connectives are described. In some species, the proctiger is capable of being partially withdrawn within the genital segment. In other species, slight dorsal flexion is possible. The movements allow for the protrusion of the aedeagus. In those species where a penisfilum is present, it is normally coiled in a clockwise direction, when viewed dextrad. Anticlockwise coiling, to the same extent, occurs within the median penis lobe. As a result when the penisfilum is extended uncurling is unnecessary and this organ and the adjacent portions of the ejaculatory duct merely undergo a compensating straightening of their parts. Description of the ♂ genitalia of a number of Canadian species of Pentatomidae is given. Only those structures normally visible, and therefore of greatest practical value, are made use of. In general the present grouping of species in the various subfamilies of this family is in harmony with these findings. Of the species studied, *Zicrona caerulea* and *Meadorus lateralis* exhibit the widest departures from the general features of their subfamilies. Some suggestions on the general line of

development of the genital structures are given. Evidences of primitiveness are suggested by: the direction of the opening of the genital-cup; size and degree of retraction of the 8th segment within the abdomen; degree of specialization of the proctiger, as to function and structure; the presence of genital-plates; absence of bulb, median penis lobe, penisfilum, etc., on aedeagus; absence of superior and inferior ridge, etc. Bibliography of 76 titles.—*A. D. Baker.*

14805. BERGEVIN, ERNEST de. Description d'un nouveau genre et de deux nouvelles espèces d'Hémiptères Lygaeidae (tribu des Rhyparochromaria St.) provenant des chasses de M. de Peyerimhoff (mission du Hoggar). *Bull. Soc. Hist. Nat. Afrique Nord* 21(3): 32-36. 2 fig. 1930.—**SEURATINA** (p. 32), near *Lasiosomus*, type *S.* **lasiosomoides** ♂* (p. 33); *Parapolycrates* **hoggari** ♀* (p. 34).

14806. DRAKE, C. J., and H. M. HARRIS. An undescribed water-strider from Brazil (Hemiptera-Gerridae). *Ann. Carnegie Mus.* 20(2): 267-268. 1931.—*Tenagogonus* **celocis** (p. 267), Brazil, type in Carnegie Mus. This sp. was erroneously attributed to *T. opacus* by the authors in a previous paper (1930).

14807. JACZEWSKI, TADEUSZ. Die Corixiden (Corixidae, Heteroptera) des Zoologischen Staatsinstituts und Zoologischen Museums in Hamburg. *Mitteil. Zool. Staatsinst. u. Zool. Mus., Hamburg* 44: 140-148. 10 fig. 1931.—Collecting notes on 39 spp. *Tenagobia* **costaricana** ♂* (p. 144), Costa Rica; *T. signata* and *Centrocorisa kollari*, ♂ genitalia*; *Sigara rubyi*, ♂ pala*, strigil*, and genitalia*; *S.* **rehi** (p. 147), Argentina, ♂ papa*, strigil*, and genitalia*. Types in Hamburg Mus.

14808. JACZEWSKI, T. The male of Mesoveloidea williamsi Hungerford (Hemiptera: Heteroptera). *Proc. Ent. Soc. Washington* 33(3): 64-66. 2 fig. 1931.—*M. williamsi*, ♂ described from Ecuador. Corrections are made to the distribution of *Mesovelia mulsanti* and *M. bisignata* given in Horvath's catalog.

14809. KIRITSHENKO, A. Leptoypha, an American genus hitherto unknown as occurring in palearctic Asia. (Hemiptera: Tingitidae.) *Ann. Carnegie Mus.* 20(2): 269-270. 1931.—*L.* **capitata** (*Monanthia c.* Jak., = *Tingis tenuimarginata* Lindb.) (p. 269) occurs in the upper course of the Ussuri River (Siberia), feeding on the leaves of *Malus manshurica* and *Pirus ussuriensis.*

14810. KNIGHT, HARRY H. New species of Pseudopsallus Van D. with an allied new genus described (Hemiptera, Miridae). *Bull. Brooklyn Ent. Soc.* 25(1): 1-8. 1930.—**BIFIDUNGULUS** (p. 1), type *B.* **viridicans** (p. 1), Colorado, Arizona, Kansas, and Texas [type dep. not given]; *B.* **puberus** (*Oncotylus p.* Uhler) (p. 2); *Pseudopsallus* **artemisicola** (p. 2), Colorado, on *Artemisia filifolia; P.* **sericata** (*Labopidea s.* Uhler) (p. 3); *P.* **anograe** (p. 4), Colorado, on *Anogra coronopifolia; P.* **abroniae** (p. 5), Colorado, on *Abronia elliptica; P.* **tanneri** (p. 5), Colorado, California, Utah, Montana; *P.* **davisi** (p. 6), Utah; *P.* **nicholi** (p. 7), Huachuca Mts. (6000 ft.), Arizona; *P.* **demensus** (*Orthotylus d.* Van D.) (p. 8). Types (excepting one) in author's coll.

14811. KNIGHT, HARRY H. New species of Psallus Fieb. (Hemiptera, Miridae). *Canadian Ent.* 62(6): 125-131. 1930.—*Psallus* **amorphae** (p. 125), Minnesota (type), Iowa, host plants *Amorpha canescens* and *A. fruticosa; P.* **astericola** (p. 125), Iowa, host plant *Aster sericeus; P.* **fuscopunctatus** (p. 126), Colorado (9000 ft.), host plant *Artemisia frigida; P.* **cercocarpicola** (p. 127), Colorado, on *Cercocarpus parvifolius; P.* **nicholi** (p. 127), Arizona; *P.* **carneatus** ♀ (p. 128), California; *P.* **vaccinicola** (p. 128), Arizona (type), California, host plant *Vaccinium* sp.; *P.* **rubrofemoratus** ♂ (p. 129) and *P.* **atritibialis** (p. 129), Arizona; *P.* **flaviclavus** (p. 130), Colorado, host plant *Pinus ponderosa scopulorum; P.* **nigrovirgatus** (p. 130), Colorado (type), and New Mexico, host plant *Pinus ponderosa.* Types in author's coll.

HOMOPTERA

14812. BALL, E. D. Some new genera and species of leafhoppers related to Eutettix Van Duzee (Rhynchota Homoptera). *Florida Ent.* 15(1): 1-6. 1931.—Key to 4 genera; *Eutettix* **goniana** (p. 1) and *E.* **glennana** (p. 2), Arizona; *Opsius stactogalus* Amyot (= *Eutettix osborni* Ball); *Eutettix clarivida, E. insana, E. pauperula, E. tenella,* and *E. stricta* are referred to *Opsius* (p. 2); **NORVELLINA** (p. 2), near *Opsius,* type *Eutettix mildredae* Ball. This new genus is said to embrace 20 or more spp., but only the type and *Eutettix seminuda* and *E. chenopodii,* transferred to *Norvellina,* are cited; *N.* **oregona** (p. 3), Oregon; *N.* **helenae** (p. 3), Florida; *N.* **apachana** (p. 4), Arizona; **MENOSOMA** (p. 4), near *Eutettix,* type *M.* **stonei** (p. 5), Florida; *M.* **cincta** (p. 5) new comb.; *M. c.* var. **binaria** (p. 5), Florida; *M.* **acuminata** (Bak.) (p. 5), new comb.; *Athysanus litigiosus* Ball, transferred to *Menosoma; M.* **tortolita** (p. 6), Arizona. Types in author's coll.

14813. BALL, E. D. A supplemental revision of the genus Athysanus in North America. (Homoptera: Cicadellidae.) *Trans. Amer. Ent. Soc.* 55(1): 1-8. 1929.—A key to the North American genera including two new ones together with a description of food habits, distribution and new synonymy. **REMADOSUS** (p. 3), near *Athysanus,* resembling *Phlepsius,* key to North American spp., type *R.* **magnus** (*Athysanus m.* Osb. & Ball) (p. 4); **EXITIANUS** (p. 5), resembling *Euscelis* and *Athysanus,* type *E.* **obscurinervis** (*Jassus o.* Stål, = *Cicadula exitiosa* Uhler, *Athysanus picatus* Gibson, *A. miniaturatus* Gibs.) (p. 5); *Drylix,* key to North American spp.; *D.* **uneolus** (p. 6), Utah, type in author's coll.; *Euscelis* **obsoletus** (*Jassus o.* Kirschb., = *Athysanus relativus* Gill. & Baker, *Euscelis deceptus* Sand. & DeL.) (p. 7); *Ophiola* Edw., notes; *Commellus estacadus* Ball (= *Euscelis ozarcensis* Gibs.)

14814. CHINA, W. E. A new species of Erythroneura (Homoptera, Jassoidea) injurious to French beans (Phaseolus vulgaris) in the Sudan. *Bull. Ent. Res.* [*London*] 22(1): 53-54. 1 fig. 1931.—*E.* **lubiae*** (p. 53), Sudan, type in Imp. Inst. Ent.

14815. COCKERELL, T. D. A., and ELMER D. BUEKER. Some geophilous mealy-bugs from Australia (Homoptera: Coccoidea). *Amer. Mus. Novitates* No. 441. 1-7. 6 fig. 1930.—Root-feeding mealy-bugs of the *Ripersia* and *Ripersiella* group, found on roots of grass and *Rumex,* show a fairly wide distribution although the ♀♀ can crawl only a short distance. They have doubtless been disseminated from time to time by migrating birds, especially shore birds nesting on the ground. Being general feeders, they stand a good chance of survival in a new habitat. Diagnostic characters for *Phenacoccus, Puto, Heterococcus, Pseudococcus, Trionymus, Ripersia,* and *Rhizoecus* are discussed, and spp. of these genera compared. *Pseudococcus* **hystricosus*** (p. 4) and *Trionymus* **angustus*** (p. 6), New South Wales, types in American Mus. Nat. Hist.—*J. L. Buys.*

14816. FUNKHOUSER, W. D. New genera and species of neotropical Membracidae. *Jour. New York Ent. Soc.* 38(4): 405-420. 2 pl. 1930.—**CENTRONODUS** (p. 405), type *C.* **denticulus** ♂* (p. 405), Costa Rica; *C.* **flavus** ♀* (p. 406), Brazil; **OREKTHEN** (p. 406), near *Eustollia,* type *O.* **osborni** ♀* (p. 407), Chile; **DONTONODUS** (p. 407), type *D.* **serraticornis** ♀* (p. 408), Costa Rica; *Eustollia* **variegata** ♀* (p. 408), Chile, type in coll. Herbert Osborn; *Mina* **spinosa** ♀* (p. 409), Ecuador; *Campylocentrus* **nigris** ♂* (p. 410), Costa Rica; *Flexocentrus* **brunneus** ♂* (p. 410), Brit. Guiana; *Leioscyta* **pulchella** ♂* (p. 411), Brazil; *Erechtia* **trinotata** ♀* (p. 412), Argentina; **OREKTHOPHORA** (p. 412), type *O.* **cornuta** ♀* (p. 412), San Domingo; **SPINODARNOIDES** (p. 413), near *Paradarnoides,* type *S.* **typus** ♀* (p. 413), Porto Rico; *Alchisme* **projecta** ♂* (p. 414), Peru; *Tragopa* **bitriangulata** ♀* (p. 414), Matto Grosso, Brazil; *Antonae* **bulbosa** ♂* (p. 414), Mexico; *Poppea* **zebrina** ♂* (p. 416), Canal Zone; *P.* **nitida** ♂* (p. 416), Peru; *Maturna* **maculata** ♂* (p. 417), Colombia. Unless otherwise stated, types in author's coll.

14817. GODING, FREDERIC W. New Membracidae. *Jour. New York Ent. Soc.* 38(2): 89-92. 1930.—**PARAXIPHOPOEUS** (p. 89), in Centrotini, type *P.* **arebiensis**

(p. 89), N. W. Congo, type in author's coll.; *Spalirises* **humilis** (p. 89), Uganda, type in Jacobi coll.; **PLANECORNUA** (p. 90), in Centrotini, type *Centrotus infractus* Jacobi; *Awania* **vicina** (p. 90), French Congo, type in author's coll.; **EUXIPHOPOEUS** (p. 91), in Leptocentrini, type *Xiphopoeus geniculatus* Stål; *X. hirculus* Jacobi is also referred to *Euxiphopoeus; Leioscyta* **humeralis** (p. 91), Saõ Paulo, Brazil, type in Mus. Paulista; **XIPHIDIA** (p. 92), in Xiphistesini, type *Gongroneura carinata* Funkhouser.

14818. KNOWLTON, G. F. Studies on the morphology of the beet leafhopper, Eutettix tenellus (Baker). *Utah Agric. Exp. Sta. Bull.* 212. 24pp. 36 fig. 1929.—A study of its general external and internal morphology. Particular attention is paid to the digestive system and its accessory glands, as they appear to be the organs most closely associated with the transmission of the curly top disease of the sugar beet.—*G. F. Knowlton.*

14819. LAMBERS, D. HILLE RIS. Two new gall-forming species of Astegopteryx Karsch from Styrax. *Misc. Zool. Sumatrana* No. 55. 1-5. 4 fig. 1931.—Aphididae: *Astegopteryx* **vandermeermohri** (p. 1), alate* and apterous* viviparous ♀s, first instar larva; *A.* **sumatrana** (p. 4), alate* and apterous* viviparous ♀s, and first instar larva. Both species from Sumatra, forming galls on *Styrax subdenticulatus,* types in the author's coll.

14820. MYERS, J. G. New or little-known Australasian cicadas of the genus Melampsalta, with notes on songs by IRIS MYERS. *Psyche* 33(3): 61-77. 1 pl. 1926.—*Melampsalta* **sericea*** (*Cicada s.* Walk.,=*C. nervosa* Walk., *M. indistincta* Myers) (p. 62); *M.* **cassiope*** Huds. (song given) is not a synonym of *M. quadricincta** (Walk.); *M.* **melanesiana*** ♂ (p. 64), New Caledonia, type in Brit. Mus.; *M.* **oromelaena*** (p. 65), New Zealand, type in author's coll.; *M. mangu**, a lectotype is chosen, the species is redescribed, and its song recorded; *M. campbelli**, first descr. of ♂, record of song; *M.* **hamiltoni*** (p. 71), New Zealand, type in author's coll., record of song; *M. muta* Walk. is divided into varieties *muta* Walk., *subalpina* (Hudson) reduced from species rank, and *cutora* (Walker); *M. nigra**, *M. lindsayi**, and *M. iolanthe**, ♂ genitalia figured.

14821. PICKLES, ALAN. Leocomia cinchonae, sp. n., a new cercopid from Jamaica. *Ann. and Mag. Nat. Hist.* 6(35): 586-589. 2 fig. 1930.—*L.* **cinchonae*** (p. 586), host *Miconia rubens**, with notes on its biology. Nymphs of all stages (130) were dissected and examined for parasites, but with no success. Eggs, under observation for about one week, also failed to show signs of parasitism.

14822. SMITH, FLOYD F. A further comment on the "pumping" habit of plant lice. *Science* 73(1892): 364. 1931.—The writer, in his studies on feeding habits of certain leafhoppers and aphids, failed to discern any external evidence of "pumping" of sap by any of the species with their beaks in place. Insertion of the mouth-parts into the plant tissues and extraction of sap calls into play delicate muscles located within the head. External evidence of such muscular activity would be quite different from any violent "pumping" action.

HYMENOPTERA

C. F. W. MUESEBECK, *Editor*

(See also in this issue Entries 12492, 12627, 13846, 13873, 14670, 14671, 14672, 14677, 14691, 14697, 14787)

14823. ALFKEN, J. D. Was ist Apis (Nomada) ferruginata L.? *Mitteil. Deutsch. Ent. Ges.* 2(5): 79-80. 1931.—*Nomada stigma* F. (=*N. ferruginata* W. Kirby, not L.); *N. ferruginata* (*L.*) (=*N. blancoburgensis* Schmied.); *N. f.* var. **xanthosticta** (*N. xanthosticta* W. Kirby) (p. 80).

14824. ARNOLD, G. African species of Sapygidae. *Ann. Transvaal Mus.* 13(3): 175-181. 4 fig. 1929.—*Polochrum* Spin. and *Sapygina* A. Costa are considered subgenera of *Sapyga* Latr. All African spp. (key) fall in the subgenus *Sapygina. Sapyga* **lobengulae** ♀* (p. 176), *S.* **swierstrae*** (p. 178), *S.* **simillima*** (p. 178), and *S.* **superciliosa** ♀* (p. 179), all from Rhodesia; *S.* **braunsi** ♀ (p. 180), Cape of Good Hope. Types in Rhodesia Mus.

14825. [ARNOLDI, K. V.] АРНОЛЬДИ, К. В. О представителях двух новых для Союза ССР триб муравьев-понерин. [Representatives of two tribes of Ponerinae, new to the USSR.] Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 24(3/4): 156-161. 4 fig. 1930.—Proceratiini: *Sysphincta europaea* ssp. **rossica*** (p. 157), Russia. **AULACOPONE** (p. 159), erected for *A.* **relicta*** (p. 159), Azerbaijan. **STICTOPONERINI** (p. 161), new subtribe in Ectatommini, erected to include *Aulacopone, Alfaria,* and *Stictoponera.*

14826. BECK, D. ELDEN. Bees of the sub-family Osminae in the collection of the Brigham Young University. *Bull. Brooklyn Ent. Soc.* 24(5): 303-306. 1929.—A list of 36 spp. with collecting records.

14827. BENGTSSON, SIMON. Humlor-Bombinae. 3. In: Insektfaunan inom Abisko Nationalpark. II. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* No. 17. pp. 1-3. 1931.—A list of 15 spp., with brief distributional notes.

14828. BENOIST, RAYMOND. Descriptions d'espèces nouvelles d'Hyménoptères mellifères du genre Heriades. *Bull. Mus. Nation. Hist. Nat. Paris* 1928(5): 332-336. 1928.—*Heriades* **tumida** ♂ (p. 332), *H.* **gibba** ♂ (p. 333), *H.* **forcipata** ♂ (p. 334), and *H.* **depauperata** ♀ (p. 334), Turkey; *H.* **syriaca** ♀ (p. 335), Syria. Types in Mus. Nation. Hist. Nat., Paris.

14829. BENOIST, RAYMOND. Les Quartinia (Hymen. Vespidae) de la région Méditerranéenne. *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 92-95. 2 fig. 1929.—Records of 6 spp., including *Quartinia* **lesnei** ♀* (p. 92), Algeria, type in Mus. de Paris; *Q.* **cincta*** (p. 93), Morocco.

14830. BENOIST, RAYMOND. Hyménoptères mellifères nouveaux du Maroc. *Bull. Soc. Sci. Nat. Maroc* 9(7/8): 120-121. 1929.—*Anthophora retusa* v. **seminigra** (p. 120); *A. balneorum* v. **africana** (p. 120); *A. b.* var. **subcarinata** (p. 120); *Rhophites* **theryi** (p. 120); *Osmia lamina* J. P. (=*O. triloba* Ben.).

14831. BENSON, ROBERT B. Nine sawflies requiring new names. *Entomologist* [*London*] 63(804): 107. 1930.—*Blennocampa* **dyari** (*B. spiraeae* Dyar, not Brischke); *Hemidianeura* **flavicornis** (*H. apicalis* Enderlein, not Mocsáry); *Monophadnus* **furvus** (*M. bipunctatus* MacGillivray, not Klug); *M.* **vapularis** (*M. planus* MacGill., not Klug); *Tenthredella* **viridans** (*T. enslini* Forsius, not Schirmer); *Tenthredo* **afra** (*T. diversipes* Pic, not Schrank); *T.* **lovetti** (*T. rustica* MacGill., not L.); *T.* **pallidula** (*T. albiventris* Mocsáry, not Klug); *T.* **variana** (*T. variabilis* Mocs., not Klug).

14832. BEQUAERT, J. Moroccan folded-winged wasps, mainly collected by Professor T. D. A. Cockerell's party. *Jour. New York Ent. Soc.* 39(2): 131-137. 1931.—Records of 4 spp. of Masaridinae, 9 Eumeninae, 2 Polistinae, and 2 Vespinae.

14833. BERLAND, LUCIEN. Les Sphegidae (Hyménoptères) du Muséum National de Paris. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(5); 329-331. 1928.—Locality records for 12 spp. of the subgenus *Sphex* and their varieties. *Sphex umbrosus* v. **aureopilosa** (p. 330), Tonkin, Kiang Si, and Ceylon; *S. luctuosus* v. **splendida** (p. 331), Loyalty Isls.

14834. BISCHOFF, H. Eine bisher verkannte und eine neue Art der Gattung Vespa aus der mitteleuropäischen Fauna. (Hym. Vesp.). *Mitteil. Deutschen Ent. Ges.* 2(1): 6-7. 1931.—*Vespa* **adulterina** (*V. norvegica* var. *a.*

Buyss.) (p. 6); *V.* **omissa** (p. 6), Thuringia, type in Zool. Mus., Berlin.

14835. BISCHOFF, H. Was ist Vespa tripunctata Schenck (1861)? *Mitteil. Deutsch. Ent. Ges.* 2(5): 66. 1931.—*Pseudovespa omissa* Bischoff (=*Vespa tripunctata* Schck., not Fab.).

14836. CAVRO, E. Description d'un Cynipide [Hym.] nouveau de France. *Bull. Soc. Ent. France* 1928(11): 184. 1928.—*Eucoela* **cavroi** Hedicke.—*S. B. Fracker.*

14837. COCKERELL, T. D. A. The bees of Australia. (Cont'd from vol. 6, part iii, p. 236.) *Australian Zool.* 7(1): 34-54. 1931.—Records of Australian bees of the families Anthophoridae, Nomadidae, Melectidae, Andrenidae (subfam. Nomiinae). *Anthophora,* key to spp. in 2 groups; *Crocisa,* key to spp. in 2 groups; *Nomia,* key to spp.

14838. CUSHMAN, R. A. Three new Braconidae parasitic on bark beetles. *Jour. Wash. Acad. Sci.* 21(13): 301-304. 1931.—*Meteorus* **hypophloei** (p. 302), Washington, host *Hypophloeus* sp.; *Coeloides* **dendroctoni** (p. 303), Montana (type), Idaho, Washington, hosts *Dendroctonus monticolae* and *Ips oregoni; C.* **scolyti** (p. 303), Washington (type), Oregon, California, host *Scolytus* spp. Types in U. S. National Mus.—*R. A. Cushman.*

14839. CUSHMAN, R. A. Descriptions of thirteen new American and Asiatic ichneumon-flies, with taxonomic notes. *Proc. U. S. Nation. Mus.* 79(14): 1-16. 1931. —*Ectopimorpha* **luperinae** (p. 1), Iowa, host *Luperina stipata; Photocryptus,* contrasted with *Acroricnus; P.* **pachymenae** (*Cryptanura* (?) *p.* Cresson), host *Sceliphron fistularae,* and *P.* **ater** (p. 4), Canal Zone; *Calliephialtes* **nucicola** (p. 5), California (type), Oregon, and New Mexico, hosts *Carpocapsa pomonella,* in walnuts, and *Walshia amorphella; Calliephialtes* **benefactor** (p. 6), New Jersey, host *Grapholitha molesta; Eiphosoma aztecum,* emendation; *E.* **paraguaiense** (p. 7), Paraguay; *E.* **batatae** (p. 8), Brazil, host lepidopteron on sweet potato; *Capitonius* Brullé (=*Aulacodes* Cresson), emendation; *Helconidea* **necydalidis** (p. 10), British Columbia, host *Necydalis laevicollis; Chelonus* (*Chelonella*) **pectinophorae** (p. 11), Korea, host *Pectinophora gossypiella; Fornicia* **pilosa** (p. 12), Costa Rica; *Vipio* **chinensis** (p. 13), China; *Atanycolus* **anocomidis** (p. 14), Brit. Columbia, host *Anocomis lignea; Microbracon* **nigrorufum** (p. 15) and *M.* **isomera** (p. 16), Korea, parasites of *Pectinophora gossypiella.* Types in U. S. Nat. Mus.

14840. De GANT, FRANK D. A new species of Macrocentrus from Ohio (Hymenoptera: Braconidae). *Proc. Ent. Soc. Washington* 32(4): 65. 1930.—*M.* **pallisteri** ♀ (p. 65), Ohio, type in U. S. Nation. Mus.

14841. DODD, ALAN P. A revision of the Australian Teleasinae. *Proc. Linnean Soc. N. S. Wales* 55(2): 41-91. 1930.—Key to genera; *Trimorus* Forster (=*Hoplogryon* Ashm.); *Trimorus,* key to 60 spp.; *T.* **tenuistriatus** ♀ (p. 46), South Australia, type in S. Australian Mus.; *T.* **parvulinus** ♀ (p. 47), Victoria; *T.* **tantillus** ♀ (p. 48), Tasmania, type in S. Australian Mus.; *T.* **lativentris** ♀ (p. 48), S. Queensland; *T.* **parvipennis** ♀ (p. 49), Victoria; *T.* **citreiclavus** ♀ (p. 49), *T.* **tricoloricornis** ♀ (p. 50), and *T.* **pallidiclavus** ♀ (p. 51), Queensland; *T.* **nigrinotum** (*Pentacantha n.* Dodd) (p. 53); *T.* **striatiscutum** ♀ (p. 54), N. Queensland; *T.* **aterrimus** ♀ (p. 55), N. S. Wales; *T.* **australicus** (*Pentacantha australica* Dodd) (p. 56); *T. varicornis* Dodd (=*H. bicolor* Dodd) (p. 56); *T.* **bicoloricornis** ♀ (p. 57), Queensland; *T.* **atripes** (*T. nigripes* Dodd) (p. 58); *T. assimilis* Dodd (=*T. auratus* Dodd, *T. leai* Dodd); *T. punctatus* (=*T. niger* Dodd, *T. nigrellus* Dodd) (p. 61); *T.* **concoloricornis** ♀ (p. 62), Queensland; *T.* **breviventris** (p. 62), S. Queensland and Victoria; *T.* **striatellus** ♀ (p. 63), *T.* **novispinus** ♀ (p. 64), *T.* **pilosicornis** (p. 66), *T.* **delicatus** (p. 67), *T.* **impressus** ♀ (p. 68), *T.* **acutispinus** (p. 69), Queensland; *T.* **crassispinus** (p. 71), *T.* **validispinus** ♀ (p. 72), *T.* **tenuipunctatus** (p. 73), and *T.* **condensus** (p. 75), all Queensland; *T.* **latispinus** ♀ (p. 76), Victoria; *Trissacantha* Ashmead (=*Propentacantha* Kieffer, *Pentacantha* Ashm.), key to spp.; *T.* **asperata** (p. 81), *T.* **trifurcata** ♂ (p. 83), and *T.* **simulata** ♂ (p. 83), Queensland; *Gryonella,* key to spp.; *G.* **affinis** ♀ (p. 86), N. S. Wales; *G.* **magnidens** ♀ (p. 87) and *G.* **platythorax** ♀ (p. 88), Queensland; *Xenomerus,* key to spp.; *X. varipes* Dodd (=*X. dubius* Dodd). Types in Queensland Mus. unless otherwise stated. Redescriptions of all previously described species are given.

14842. DONISTHORPE, HORACE. Camponotus (Tanaemyrmex) britteni, sp. n. (Hymenoptera, Formicidae), a formicine ant new to science. *Ann. and Mag. Nat. Hist.* 8(43): 129-131. 1931.—*C.* (*T.*) **britteni** ♀ major and minor, England, types in Brit. Mus.

14843. DOZIER, H. L., and H. G. BUTLER. Notes on the rearing of Ascogaster carpocapsae, a braconid parasite of the codling moth. *Jour. Econ. Ent.* 22(6): 954-957. 1929.—*Ascogaster* oviposits in the eggs of the moth. The host larvae spins its cocoon but fails to pupate. Adult parasites emerged 17.3 days after the host stopped feeding. The total development of the parasite required 36.43 days.—*W. V. Balduf.*

14844. DULAC, ALBERT. Liste de Sphegidae et de Pompilidae des environs du Creusot. *Soc. Hist. Nat. d'Autun, Bull.* 29(3): 148-150. 1930.—Distributional list of 435 spp. of Sphegidae and 10 Pompilidae.

14845. ELLIOTT, E. A. New Stephanidae from Peru. *Entomologist* 64(816): 97-98. 1931.—*Stephanus* **testaceipes** ♂ (p. 97) and *Hemistephanus* **carinatus** ♀ (p. 97), types in Brit. Mus.

14846. FLANDERS, STANLEY E. The temperature relationships of Trichogramma minutum as a basis for racial segregation. *Hilgardia* 5(12): 395-406. 4 fig. 1931. —There are at least 4 races of *T. minutum* that can be differentiated by color when reared at identical temp., but at certain dissimilar temp. they can not be separated. A yellow race from Massachusetts is less responsive to variations in temp., has a shorter life cycle and develops in a normal manner at a higher temp. than the dark race from tropical Mexico. The amount of pigmentation in the adult is determined by the duration of exposure to low temp. during the early pupal period. The slowing up of development by exposure to low temp. is most marked in the pupal stage.

14847. FLANDERS, STANLEY E. Races of Trichogramma minutum. *Pan-Pacific Ent.* 7(1): 20-21. 1930.— The strains from various localities in N. America are segregated according to color and life cycles into 5 races, which are briefly characterized.

14848. FORSIUS, RUNAR. A new Diprion from China. *Notulae Ent.* [*Helsingfors*] 11(1): 26-27. 1931.—*D.* **marshalli** ♀ (p. 26), type in Imp. Bur. Ent., London.

14849. FRISBY, G. E. The Hymenoptera of the Rochester district. *Rochester Nat.* 6(131): 90-101. 1928.—An annotated list of the Hymenoptera near Rochester (Kent, England).

14850. GAHAN, A. B. Two new hymenopterous parasites of Tachypterellus consors Dietz. *Jour. Washington Acad. Sci.* 21(3): 37-39. 1931.—*Habrocytus* **lividus** (p. 37) and *Entedon* **tachypterelli** (p. 38), Colorado; types in U. S. Nat. Mus.

14851. GAUTIER, CL., et S. BONNAMOUR. Remarques sur Ephedrus plagiator Nees [Hym. Braconidae]; complément de description de cette espèce. [Remarks on E. plagiator, with a description of the sp.] *Bull. Soc. Ent. France* 1929(5): 92-95. 1 fig. 1929.

14852. GAUTIER, CL., et S. BONNAMOUR. Description d'un nouvel Apanteles. *Bull. Soc. Ent. France* 1930 (5): 108-112. 1 fig. 1930.—*A.* **polypori*** (p. 108), a parasite of an unknown insect which feeds on *Polyporus hispidus* in France.—*S. B. Fracker.*

14853. GAUTIER, CL., et H. CLEU. Un Chelonus [Hym. Braconidae] parasite de la chenille d'Argyresthia chrysidella Peyer. [Lep. Tineidae.] *Bull. Soc. Ent. France* 1930(11): 196-198. 1930.—*Chelonus* **hiemalis, France,** parasitizing *A. chrysidella* in the fruits of *Juniperus oxycedrus.*—*S. B. Fracker.*

14854. HUNGERFORD, H. B. An unusual nest of

Vespula (Dolichovespula) arenaria Fabr. (=V. diabolica de Saussure). (Hym.: Vespidae.) *Ent. News* 41(10): 329-330. 1 pl. 1930.—As the nest* was built against a window, its internal structure is seen in cross section.

14855. KARAWAJEW, W. Beitrag zur Ameisenfauna Jakutiens. *Zool. Anz.* 94(3/4): 104-117. 2 fig. 1931.—This paper, based upon material collected by expeditions of the Russian Acad. Sci. in 1925-26, consists chiefly of detailed distributional data on 17 forms, with some remarks on taxonomy and ecology. *Myrmica bergi* v. divergens* ♀ (p. 105) and *M.* (*Myrmica*) forcipata* ♀ (p. 105), Yakutsk, Siberia.

14856. KOSTYLEV, GEORG. Drei neue Odynerus-Arten aus Turkestan (Hymenoptera). Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23(1/2): 111-114. 2 fig. 1929.—*Odynerus* (*Lionotus*) sarykorum* ♀ (p. 111), Transcaspia; *O.* (*L.*) zhelochovtzevi* ♂ (p. 112) and *O.* (*L.*) edentatus* ♂ (p. 114), Turkestan.

14857. MARÉCHAL, PAUL. Sur trois Hyménoptères se développant dans un cocon en mosaïque. (Supplement.) *Mém. Soc. Ent. Belgique* 23(4): 163. 1930.—A correction and a few definite data on the ♂ and ♀ larvae of *Miscophus spurius* Dahlb.—*P. Maréchal.*

14858. MENOZZI, C. Raccolte mirmecologiche dell' Africa orientale conservate nel Museo Civico di Storia Naturale "Giacomo Doria" di Genova. Parte prima. Formiche raccolte dal Marchese Saverio Patrizi nella Somalia Italiana ed in alcune località dell' Africa orientale inglese. [Myrmecological collections from East Africa in the Mus. Civ. Genova. I. Ants collected by Saverio Patrizi in Italian Somaliland and in some localities of British E. Africa.] *Ann. Mus. Civ. Storia Nat. Genova* 52: 356-362. 3 fig. 1925/1928.—A record of 27 spp. of Formicidae, including *Carebara* patrizii ♂* (p. 357) and *Acantholepis* somalica (p. 359), types in Mus. Civ. Genova.

14859. MENOZZI, C. Risultati zoologici della missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell' oasi di Giarabub (1926-1027). Formicidae (Hymenoptera). [Zoological results of the mission sent by the R. Soc. Geogr. Ital. for exploring the oasis of Jarabub. Formicidae.] *Ann. Mus. Civ. Storia Nat. Genova.* 52: 379-382. 1925/1928.—A list of 23 spp., with notes on occurrence. *Acantholepis frauenfeldi* v. *nigrescens* ♀, first description; *Cataglyphis albicans* ssp. *livida* v. *aurata*, ♀ (dealated), first description.

14860. MERCET, RICARDO GARCIA. Les genres Prochiloneurus et Achrysopophagus. (Hymen.-Chalcididae.) *Bull. Soc. Roy. Ent. Égypte* 14(4): 224-228. 2 fig. 1931.—These 2 genera are very close, and the only known hosts are spp. of *Pseudococcus. Achrysopophagus,* key to spp.; *A.* aegyptiacus ♀* (p. 225), Egypt, type in Alfieri coll.

14861. MÜLLER, MAX. Unsere Pillenwespe (Eumenes F.). *Mitteil. Deutsch. Ent. Ges.* 2(5): 70-75. 1931.—Notes on the nesting habits and developmental stages of *Eumenes coarctatus* and *E. pomiformis.* The enemies are *Chrysis ignita, Mesostenus gladiator,* and *Acroricnus stylator.*

14862. NOVICKY, SVATOSLAV. On two chalcidoid parasites of Zeuzera pyrina L. Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23(1,2): 32-36. 5 fig. 1929.—*Elasmus* ciopkaloi* (p. 32) and *Euderus* sp.*, Ukraine.

14863. PATE, V. S. L. A new Belomicrus from the west. (Hymen.: Sphecidae.) *Ent. News* 42(3): 77-78. 1931.—*B.* franciscus (p. 77), California, type in Cornell Univ.

14864. PIC, M. Nouvelles notes hyménoptérologiques. 1° Ichneumoniens. *Bull. Soc. Ent. France* 1929(19): 306-307. 1929.—These notes relate to the distribution in France of 8 spp. of Ichneumonidae and 7 of Tenthredinidae.—*S. B. Fracker.*

14865. PICARD, F. Note sur les Stizus et les Bembex [Hym. Sphegidae] de l'Hérault. *Bull. Soc. Ent. France* 1930(3): 41-43. 1930.—Notes on the distribution of 8 French spp. of *Bembex,* 1 *Sphecius,* and 9 *Stizus.*—*S. B. Fracker.*

14866. ROUBAUD, E. Caractère obligatoire de l'hibernation chez les reines de Vespides annuels. Consequences biologiques. [Obligatory nature of hibernation in queens of annual Vespidae. Biological consequences.] *Bull. Soc. Ent. France* 1929(4): 83-84. 1929.

14867. SCHOUTEDEN, H. Les genres congolais de Sphégides. *Rev. Zool. et Bot. Africaines* 20(1): 90-96. 1930.—A list of 32 genera of the family Sphegidae contained in Congo Mus., Tervueren.

14868. SCHWARZ, HERBERT F. A case of stylopization in a panurgid bee, Liopoeum submetallicum (Spinola). *Jour. New York Ent. Soc.* 39(1): 77-79. 1931.—This is the first record of stylopization in the genus *Liopoeum* and is based on a specimen from Chile.

14869. SMITH, W. W. Ants inhabiting Mount Egmont. *New Zealand Jour. Sci. & Tech.* 13(1): 45-47. 1 fig. 1931.—Notes on 17 spp. of ants taken in the Mount Egmont Forest Reserve, New Zealand. Also a short note on the feeding habits of *Hemideina megacephala* (Orthoptera).

14870. WATERSTON, JAMES. On the differential characters of Chelonogastra Ashmead and Philomacroploea Cameron, two genera of Ichneumon flies of the family Braconidae. *Proc. Ent. Soc. Washington* 31(8): 167-168. 1929.—The 2 genera are to be considered distinct.

14871. WELD, LEWIS H. Three new gall-flies from Arizona (Hymenoptera: Cynipidae). *Proc. Ent. Soc. Washington* 32(2): 28-31. 1930.—*Diplolepis* capronae ♀ (p. 29), *Andricus* scutella ♀ (p. 29), and *Xanthoteras* mediocre ♀ (p. 30), gall formers on *Quercus subturbinella.* Types in U. S. Nat. Mus.

14872. WHEELER, WILLIAM MORTON. A list of the known Chinese ants. *Peking Soc. Nat. Hist. Bull.* 5(1): 53-81. 1930.—This list records 245 forms, comprising 138 species, 54 subspecies, and 53 varieties.

MACROLEPIDOPTERA

J. McDUNNOUGH, *Editor*

(See also in this issue Entries 12150, 12621, 12628, 13846, 13855, 13857, 13870, 13941, 13944, 14672, 14673, 14677, 14680, 14685, 14902, 14907, 15082)

14873. CLAYHILLS, THOMAS H. Eine neue Noctuiden-Art aus Nord-Europa. *Notulae Ent.* [*Helsingfors*] 10 (3): 80-82. 1 pl., 1 fig. 1930.—*Rhyacia* fennoscandica* (p. 80), N. Finland and N. Sweden.

14874. COLLENETTE, C. L. Lymantriidae (Lepidoptera Heterocera) from N. E. (British) Somaliland. *Ann. and Mag. Nat. Hist.* 7(39): 286-289. 1931.—First record for Somaliland of *Naroma signifera, Laelia subrosea,* and *Lymantria modesta; L.* finitorum ♀ (p. 289); *Laelia* somalica (p. 288). Types in Brit. Mus.

14875. COMSTOCK, JOHN A. Studies in Pacific Coast Lepidoptera (continued). *Bull. Southern California Acad. Sci.* 29(3): 135-142. 2 pl., 3 fig. 1930.—Description of early stages (egg, larva, or pupa) of *Parnassius smintheus behrii*, *Phyciodes campestris*, *Prenes errans*, and *Platysamia gloveri** with notes on food plants.

14876. DUMONT, C. Expériences sur la modification profonde du régime alimentaire de diverses chenilles. *Ann. Soc. Ent. France* 97(1/2): 59-104. 1928.—Caterpillars, fed on carrots, showed every degree of adjustability in taste, and in physiological effect. In 210 spp. of 109 genera and 25 families, there was at least partial success, the largest numbers being: 68 Noctuidae (with 8 each of *Agrotis* and *Mamestra*), 57 Geometridae (with 11 *Larentia* and 7 *Boarmia*), 11 Arctiidae, 6 Lymantriidae, 13 butterflies and 34 microlepidoptera. Only 18 spp.

refused the food entirely; 94 tried the food but soon succumbed; 33 more failed to pupate (full discussion of *Cossus cossus*); 24 died in the pupa; and about 52 survived the experiments. Of the last 28 were normal, 4 dwarfed, 12 pauperized and albinic, and 9 melanic; 2 spp., both melanic, had a quickened life history, and 3 (1 of them pauperized) showed delayed development.—*W. T. M. Forbes.*

14877. **GIACOMELLI, EUGENIO.** Sobre una rara especie de Euptoëta (Rhopalocera, Nymphalidae). *Rev. Soc. Ent. Argentina* 1(2) 39-40. 1 fig. 1926.—*E.* ramirezi* (p. 39), Argentina, type (♂ ?) in author's coll.

14878. **GUNDER, J. D.** Butterflies of Los Angeles County, California. Being an annotated check list giving details of where to go, when to go, and what to collect. *Bull. Southern California Acad. Sci.* 29(2): 39-95. Map, 5 pl., 2 fig. 1930.—With the cooperation of several local lepidopterists (whose portraits appear in a plate), the author gives an annotated list of 178 forms of Rhopalocera, including the original reference of the technical names, the common names, references to published illustrations, detailed records of localities and dates, and food plants. Three new "transition forms" are described: *Eurema nicippe* tr. f. dammersi* ♀ (p. 52), type in author's coll.; *Melitaea wrightii* tr. f. pelona ♀ (p. 61), type in coll. of J. A. Comstock; *Phyciodes mylitta* tr. f. collinsi ♂ (p. 62), type in author's coll. A map shows collecting localities.

14879. **HOLLAND, W. J.** New species of Erebia (Lepidoptera: Satyridae). *Trans. Amer. Ent. Soc.* 56(3): 149-153. 1930.—*E.* avinoffi (p. 151) and *E.* steckeri (p. 153), Alaska. These spp. will be illustrated in the new edition of the Butterfly Book.

14880. **JOICEY, J. J., and G. TALBOT.** A catalogue of the Lepidoptera of Hainan (China). *Bull. Hill Mus.* [*London*] [Continuation.] 3(3): 151-162. 1929.—A complete list of spp. known to occur on Hainan. The present paper treats Erycinidae (5 spp.) and Lycaenidae (63 spp.). *Curetis acuta* and *C. paracuta* are distinct spp. 28 spp. in these families are recorded for the 1st time from Hainan.—*J. J. Joicey.*

14881. **HENIG, BLUMA.** Über die Chordotonalorgane der Schmetterlingsraupen. *Zool. Anz.* 89(5/6): 183-186. 1 fig. 1930.—A chordotonal organ occurs in the femur of all 3 pairs of legs of the butterfly larvae of *Orthosia lota* Cl. and *Sylepta ruralis* Sc. The organ consists of 8-10 characteristic sensory nerve cells lying in the proximal region of the femur. The organs may be considered "typical chordotonal organs of the leg" as designated by Eggers. The absence of a proximal insertion and the double distal insertion point are characteristic.—*B. Henig* (*transl. by W. P. Hayes*).

14882. **KOZHANTSHIKOV, IGOR.** Uebersicht der Gattung Dichagyris Ld. (Lepidoptera, Noctuidae). Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 24(1/2): 1-30. 5 pl. 1930.—The paper is based on material from Zool. Mus. Acad. Sci. Leningrad, Inst. of Comp. Zool. and Phytopathol., and Tiflis Mus. Keys are given to ♂♂ and ♀♀ of *Dichagyris*, and one for determination of the spp. by the markings. Nineteen spp. are discussed, including: *D.* jacobsoni ♂* (p. 5), Transcaspia; *D.* assimilata ♂* (p. 7), Caucasus; *D.* armeniaca ♂* (p. 7), Armenia; *D. tyrannus* striatus (p. 10), Persia; *D. squalidior* albicolaris (p. 11), Caucasus; *D.* nigrolineata* (p. 11), Persia; *D.* crimaea* (p. 13), Crimea; *D.* subsqualorum* (p. 14), Caucasus; *D.* venosa* (p. 16), *D.* bisignata* (Tshetverikov in litt.) (p. 17), and *D.* melanuroides* ♂ (p. 18), Turkestan.

14883. **NITSCHE, JOSEF.** Zur Fauna des Grossen und Kleinen Fleisstales in Kärnten. *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): (92)-(98). 1929(1930).—Numerous local records of Lepidoptera, including *Larentia aptata* ab. stenotaeniata (p. 97).

14884. **PATTERSON, S. C.** List of Lepidoptera of Whangarei. *Trans. and Proc. New Zealand Inst.* 61 (3/4): 554-561. 1930.—About 250 spp. are listed, with notes on status, seasonal occurrence, and habitat.

14885. **PREISS, J.** Die Schmetterlingsfauna des unteren Werratals. (Macrolepidoptera.) *Abhandl. u. Ber. Vereins Naturk.* (*e. V.*) *Kassel* 57: 20-27. 1929.—Faunistic, ecological and life history notes on a large number of families and spp., including ecological notes on the region.

14886. **PROUT, LOUIS B.** A list of the Geometridae collected by Mr. C. L. Collenette in British Somaliland, with descriptions of new species. *Ann. and Mag. Nat. Hist.* 7(39): 262-272. 1931.—*Scopula* nephotropa ♀ (p. 263); *Zygophyxia* transmeata ♀ (p. 263); *Eupithecia* profuga ♀ (p. 264); *Coenina* collenettei ♂ (p. 265); *Sesquialtera* audens ♀ (p. 266); *Epigynopteryx* lioloma (p. 267); *Psilocerea* hypermetra ♀ (p. 267); *Ectropis* oleitincta ♀ (p. 268); *Boarmia* syntropha (p. 269); AËTHEOMETRA (p. 271), related to *Atomorpha*, type *A.* iconoclasis ♂ (p. 271); *Zamarada consecuta* ssp. mesotaenia (p. 272).

14887. **REBEL, HANS.** Kongo-Lepidopteren, gesammelt von Weidholz 1927/28. *Verhandl. Zool.-Bot. Ges. Wien* 79(2/4): (98)-(103). 1929(1930).—An annotated list of about 87 forms from French Equatorial Africa and the Belgian Congo, including *Pieris theora* ssp. weidholzi ♂ (p.(99)), Belgian Congo, type in Naturhist. Mus. Vienna.

14888. **SCHAWERDA, KARL.** Neue Lepidopteren aus Aragonien. *Zeitschr. Österreich. Ent.-Ver.* 12(4): 35-37. 1927.—*Satyrus prieuri* v. *iberica* ab. fumosa (p. 35); *Acidalia marginepunctata* ab. zernyi (p. 36); *Lithina convergata* ab. carmen (p. 36), type in author's coll.; *Selidosema plumaria* ab. aragonensis (p. 36); *Axia margarita* v. soledad (p. 36), and ab. rubrociliata (p. 37), type in author's coll.; *Lithosia* predotae (p. 37), type in author's coll.

14889. **SCHULTZE, ARNOLD.** Biologisches aus dem afrikanischen Aequatorialwald. *Deutsche Ent. Zeitschr. "Iris"* 44(4): 176-188. 2 pl., 4 fig. 1930.—Notes on some Lepidoptera spp., including *Papilio ridleyanus* ab. semivitreus (p. 176), "Mongoumba"; *Salamis cacta* ♂*, *S. parhassus**, *Cymothoe theobene**, and *Acanthosphinx güssfeldti** are figured.

14890. **STICHEL, H.** Eine neue Hamearisart. *Rev. Soc. Ent. Argentina* 1(1): 12-13. 1926.—*H.* hubrichi (p. 12), type in Bruch coll.

14891. **TURATI, EMILIO, e ATTILIO FIORI.** Lepidotteri di Rodi. [Lepidoptera of Rhodes.] *Mem. Soc. Ent. Ital.* 9(2): 196-214. 1930.—A list of 126 forms, with locality records and taxonomic remarks. *Aporia crataegi* f. fert (p. 197); *Gonepteryx cleopatra* f. fiorii (p. 199); *Epinephele cypricola* f. ornata (p. 201); *E. rhamnusia* f. lupinulus ♂ (p. 202); *Lycaena loewii* f. robusta (p. 204); *L. cyllarus* f. insulicola (p. 204); *Stenoptilia* stenodactyla (p. 210); *Glyphipteryx* medianella ♀ (p. 211); *Rhinosia* ochracella ♀ (p. 212); *Peritia* cinereipunctella (p. 213).

14892. **TURNER, A.** Revision of Australian Oenochromidae (Lepidoptera). III. *Proc. Linn. Soc. N. S. Wales* 55(3): 191-220. 1930.—47 spp., with synonymies, descriptions, and distributional records are treated. Keys to the spp. of *Oenochroma, Gerusia, Eumelea, Zeuctophlebia, Derambila* and *Ozola* are given. *Oenochroma* alpina ♀ (p. 196), N. S. Wales, type in coll. Goldfinch; *Monoctenia punctiunculus* Luc., emended to *Antictenia punctiulis; Gerusia* rubricosa ♀ (p. 203), Queensland, type in coll. Barnard; *Eumelea* stipata (*E. rosalia* f. *stipata* Prout) (p. 208); AXIAGASTA (p. 209), allied to *Zeuctophlebia*, erected for *A.* rhodobaphes (p. 210), Queensland; *Noreia vinacea* Prout (=*Idiodes loxosticha* Turner); *Derambila* idiosceles (p. 215), N. Australia and Queensland; *D.* liosceles ♂ (p. 216), Queensland and Timor. The following spp. have been wrongly referred to the Oenochromidae: *Aspilates chordota* Meyr. (Boarmiadae); *Arhodia orthotoma* Low., a synonym of *Orsonota clelia* Cram. (Boarmiadae); *Arhodia porphyropa* Low. (Geometridae); *Monoctenia niphosema* (Noctuidae). *Dichromodes* ? *triglypta* Low. belongs in *Sterrha; Epidesmia unilinea* Swin., is a synonym of *Heteralex aspersa* Warr., the type being from China, not Tasmania.

14893. **WAGNER, FRITZ.** Berichtigung zu meinem Artikel: "Ueber einige neue und wenig bekannte Lepidopteren aus Spanien." *Zeitschr. Österreich. Ent.-Ver.* 12(4): 40. 1927.—*Larentia euphrasiata* Millière (=*L. flavoparsata* Wgnr.); *L. brunnescens* [?] Kit (=*L. galiata* v. *ochreata* Wgnr.).

14894. **WARNECKE, G.** Lampropteryx (Larentia) interponenda n. spec. Warn., eine neue Art der Lampr. suffumata Hb.-Gruppe (Lep. Geom.). *Internat. Ent. Zeitschr.* 24(34): 361-366. 1 pl., 4 fig. 1930.—*L.* (*Larentia*) interponenda* (p. 361), Koko-Nor, China, in Zool. Mus. Hamburg.

14895. **WHEELER, GEORGE.** Notes from the French Alps of Haute Savoie, Isère and the Hautes Alpes. *Ent. Record* 43(1): 1-5. 1 pl. 1931.—A list of spp. observed, with notes of frequency.

14896. **WILLIAMS, R. C. Jr., and E. L. BELL.** Short studies in American Hesperiidae. (Lepidoptera: Rhopalocera.) *Trans. Amer. Ent. Soc.* 56(2): 133-138. 1 pl., 1 fig. 1930.—Geographical range is given for *Pyrgus syrichtus* F. and *P. orcus* Cramer. *P. communis* Grote (=*Hesperia tessellata* Scudder). The ♂ genitalia of *Atrytonopsis lunus* Edwards are figured.

14897. **ZIKAN, J. F.** Copiopteryx virgo n. sp. *Rev. Soc. Ent. Argentina* 2(6): 335-336. 1 pl. 1929.—From Argentina, type in Nosswitz coll. (Buenos Aires).

MICROLEPIDOPTERA

CARL HEINRICH, *Editor*

(See also in this issue Entries 12621, 13855, 13858, 13866, 13872, 13881, 13885, 13888, 13891, 14673, 14876, 14881, 14891)

14898. **BRAUN, ANNETTE F.** Notes on Pterophoridae with description of a new Oidaemetophorus (Lepidoptera). *Canadian Ent.* 62(6): 122-124. 1930.—Notes on the larval feeding habits of *Platyptilia fragilis* in seed capsules of *Penstemon cyananthus* in Utah. The larvae of *Stenoptilia coloradensis* attack the center shoot of *Gentiana quinquefolia*, and occasionally *Sabatia* in Ohio, having one generation a year; injury, mature larva, and pupa are described. The larvae of *Adaina cinerascens* feed on the underside of leaves of *Balsamorrhiza sagittata* in Utah. *Oidaematophorus* **confusus** (p. 123), reared on *Baccharis pilularis*, California. Types in author's coll.

14899. **FILIPJEV, N.** Lepidopterologische Notizen. VII. Eine neue Tortricidengattung aus den Gebirgen des Ussurigebietes. Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS, Sér. A.*) 1930(14): 373-375. 3 fig. 1930.—**EURYDOXA** (p. 373), near *Cerace*, type *E.* **advena*** (p. 374), Ussuri, Siberia.

14900. **HEINRICH, CARL.** Notes on and descriptions of some American moths. *Proc. U. S. Nation. Mus.* 79 (13): 1-16. 7 pl. 1 fig. 1931.—*Galenara* **consimilis*** (p. 1), New Mexico, larvae defoliate *Pseudotsuga taxifolia; Epipyrops* **cucullata*** (p. 2), Haiti, ♂*, pupa*; genitalia of *E. barbariana* figured; *Diatraea* **considerata*** (p. 3), Mexico, host, sugar cane, *Saccharum officinarum; D. busckella* v. **rosa** (p. 4), Venezuela, larva bores in sugar cane; *Platytes* (?) **aenigmatica** ♀* (p. 4), larvae attack stems of *Cirsium; Aglossa* **furva*** (p. 5), Brit. Columbia; *Gymnandrosoma desotanum*, first description of ♂*; *Thiodia* **implicata** ♂ (p. 7), Washington; *Gretchena dulciana*, host plant *Alnus; Epinotia* **opposita*** (p. 7), Peru, larvae bore in stems of alfalfa (*Medicago*) and cowpeas (*Vigna*); *E.* **accessa*** (p. 9), Panama; *E.* **patriciana** ♂* (*Eucosma p.* Wals.) (p. 10); *E.* **lantana*** (*Crocidosema l.* Busck) (p. 10); *Crocidosema plebeiana**, ♀ genitalia figured; *Anchylopera* **brauni*** (p. 11), Ohio, larvae feed on leaves* of *Rhamnus lanceolata; Anchylopera spiraeifoliana*, rectification of type; *Satronia tantilla**, host *Pinus palustris*, redescribed; *Phaecasiophora* **inspersa** ♂ (p. 13), Florida; **TSINILLA** (p. 14), in Olethreutinae, type *T.* **lineana** (*Eucosma l.* Fern.), first description of ♂*, larva feeds on folded *Anona* leaves. Types in U. S. Nat. Mus.

14901. **PETERSEN, WILHELM.** Die Blattminierer-Gattungen Lithocolletis und Nepticula (Lep.). Teil II. Nepticula Z. *Stettiner Ent Zeit.* 91(1): 1-82. 3 pl., 16 fig. 1930.—This is mainly a review and reclassification of the palearctic spp. of *Nepticula*, based primarily on genitalic characters. Of 135-140 spp., nearly 100 are described. Material was largely collected by the author, especially at Reval, Berlin, Sätja (Linné's old estate near Upsala), the Riesengebirge and in England. There is a discussion of the chief variable characters in the genus. The simple uncus, subscaphium present, more complete venation, coarse scaling and cocoon in the mine are considered primitive. The black head is viewed as in general a modern specialization, frequently postglacial, and often confined to the ♂. The larvae always feed on members of a single family, usually of a single genus. Host families include Rosaceae, Betulaceae, Fagaceae (Cupuliferae), and Salicaceae. Practically all feed on woody plants. Comparisons are made with the very similar case of the genus *Lithocolletis*. The spp. are divided into eleven genitalic types, three of which are subdivided; and the ♂ genitalia of all the spp. studied are figured. *N. betulicola* v. **nanivora** (p. 61), on *Betula nana*, is new.—*W. T. M. Forbes.*

14902. **PHILPOTT, ALFRED.** Notes and descriptions of New Zealand Lepidoptera. *Trans. and Proc. New Zealand Inst.* 62(1): 26-36. 4 fig. 1931.—*Scidosema melinata* Feld (=*S. scariphota* Meyr.); *Epicroeis sublignalis*, ♂ described, new to New Zealand; *Crambus malacellus*, new to New Zealand; **TAWHITIA** (p. 27) (Crambidae), type *T.* **glaucophanes*** (*Tauroscopa g.* Meyr.); *T.* **leonina*** (p. 28), Takitimu Mts., type in Cawthron Inst.; *Tauroscopa gorgopis*, wings*; *Scoparia* **subita** (*Orocrambus subitus* Philp.) (p. 28); *S.* **contexta** (p. 28), Mt. Moltke; *S. gyrotoma* Meyr. (=*S. repercussa* Philp.); *Aglossa cuprealis*, new to New Zealand; *Gauna aegalis*, in Auckland Province; *Eucosma mochlophorana* Meyr. (=*Eucosma aphrias* Meyr., *Raumatia trimaculata* Philp.); *Eucosma fugitivana* Meyr. (=*Raumatia varia* Philp.); *Elachista* **stellata** ♂ (p. 31); *Scythris* **nigra** ♂ (p. 31), Mt. Maungatua; *Leptocroca* **aquilonaris** (p. 31); *L.* **lenita** ♂ (p. 32); *Gymnobathra* **aurata** (p. 32); *Trachypepla* **minuta** ♂ (p. 33); *Proteodes clarkei*, first description of ♀; *Carposina* **marginata** ♂ (p. 33); *Stathmopoda* **albimaculata** ♀ (p. 33); *Tanaoctena* **dubia** ♂ (p. 34); *Orthenches* **disparilis** ♂ (p. 34); *O. chartularia* Meyr. (=*O. nivalis* Philp.); *O. similis* Philp., distinct from *O. semifasciata* Philp.; *Archyala* **culta** ♂ (p. 35); *Tinea* **conspecta** ♂ (p. 35); *T. belonota* Meyr. (=*Gymnobathra zephyrana* Clarke); *Porina* **gourlayi** (p. 36). Types, unless otherwise stated, in Auckland Mus.

14903. **REISS, HUGO.** Zygaena F. *Internat. Ent. Zeitschr.* 23(46): 521-525. 1929.—*Z. cilicica* Burgeff (=*laphria* Herrich-Schaffer, *ledereri* Stgr. Rbl., *charon* var. ?Stgr.); *Z. laphria* Freyer, and *Z. filipendulae* ssp. *anodolitia* Reiss, from Akshehr, the latter being distinct from *cilicica-ledereri.—W. T. M. Forbes.*

14904. **SHELDON, W. G.** Notes on the nomenclature and variation of British species of the Peronea group of the Tortricidae. *Entomologist* 63(805): 121-124; (806): 148-151. 1 pl.; (807): 175-178; (808): 193-198; (809): 222-225; (810): 242-246; (811): 273-277. 1930; 64(812): 2-6; (813): 30-34; (814): 60-64; (815): 77-82; (816): 99-103; (817): 124-127. 1931.—*Rhacodia emargana* fs. **griseana** and **fuscana** (p. 122); *Peronea cristana* f. **albicapitana** (p. 148); *P. hastiana** fs. **rufistrigana** (p. 176), **albicapitana, plumbeostriana, plumbeofasciana** (p. 177), **nigrovittana, nigrostrigana, apiciana*, transapiciania*, argentana*, argenteostrigana, ustomaculana** (p. 178), al-

bicostana*, sagittana* (p. 193); *P. maccana* fs. suffusana and canescana (p. 223); *P. umbrana* fs. lamprana (p. 224) and brunneana (p. 225); *P. hyemana* fs. griseana and brunneana (p. 243); *P. sparsana* fs. *sparsana* Schiff (=*P. sponsana* Fab.) and haworthana (p. 245); *P. lipsiana* fs. costimaculana (p. 274) and griseana (p. 275); *P. rufana* fs. ochreostriana (p. 276), ochreana, and purpurana (p. 277); *P. variegana* fs. brunneana (p. 3), fuscana (p. 4), and argentana (p. 5); *Acleris caledoniana* f. rufimaculana (p. 77); *Dictyopteryx lorquiniana* f. flavana (p. 100); *Oxigrapha logiana* f. tripunctana (p. 103); *O. literana* fs. fulvana* (p. 125) and brunneana* (p. 126). Keys are given to the forms of many spp.

14905. **SLASTSHEVSKIJ, P. Zur Biologie von Phassus schamyl Chr. (Lepidoptera, Hepialidae).** *Rev. Russe Ent.* 23 (3/4): 189-199. 1 fig. 1929.—This supplements Schaposchnikov's data. The mating flight takes place at dusk and is a swinging flight in both sexes. The ♀ has a heavier flight in laying eggs and flies both at dusk and dawn. The eggs are broadcast, and average about 2000, with a maximum of 3720. The ♀ lives two weeks, laying most of its eggs the first days. The egg is white, later turning black and the stage lasts 19 days or less. The first stage larva makes a sand tube and is very lively, later it lives in a tube in the soil which it leaves readily. The food is varied, but typically consists of dead leaves in the first 4 stages, and of roots in later stages. It refused ferns and *Verbascum*, but did well on potatoes. The larva and mating are figured.—*W. T. M. Forbes.*

14906. **TONNOIR, A. L. Notes on Indian blepharocerid larvae and pupae with remarks on the morphology of blepharocerid larvae and pupae in general.** *Rec. Indian Mus.* 32 (2): 161-214. 58 fig. 1930.—An historical survey of the Indian spp. in which the identities of *Blepharocera indica* Brun. and *Philorus bionis* Aghr. are questioned. A list of the larvae and pupae obtained from different localities in India is given; larvae A*, B*, C Aghr. are redescribed; *Apistomyia* larvae L*, M*, N*, larvae and pupa O*, larvae P*; genus? (near *Apistomyia*) larva K*; *Blepharocera* larvae A*, D*, larvae and pupa E*, larvae F*, G*, H* (*B. indica* Brun.?); genus ? (near *Blepharocera*) larvae J*; genus? (near *Blepharocera* and *Philorus*) pupa Q*; **EULIPONEURA** (p. 176) with *E.* horai (p. 176), larvae and pupae I*; *Euliponeura?* larvae B*, larva C*; **HORAIA** (p. 193), type (described in addendum); *H.* montana* (p. 210), larvae and pupa R_1*, larvae R_2, R_3, R_4. Notes on the morphology and metamorphosis of the larvae and pupae of the Blepharoceridae are also included. Types of new genera and spp. in the Indian Mus. In the addendum appears: *Euliponeura* assamensis* ♂ (p. 207).—*S. Ribeiro.*

14907. **WAGNER, FRITZ. Zweiter Beitrag zur Lepidopteren-Fauna Inner-Anatoliens.** *Internat. Ent. Zeitschr.* 23 (48): 545-558. 1 pl. 1929. 24 (2): 16-22. 1930. —(Macrolepidoptera) Noctuidae: *Agrotis* (*Euxoa*) cortii* (p. 549); *A.* (*E.*) glabella ♂* (p. 551); *A.* costaevittata* (p. 551); *Nonagria geminipuncta* v. orientalis* (p. 553). (Microlepidoptera) Pyralidae: *Dattinia* (*Epizonora*) variabilis (p. 17), with fs. obscurior ♀ and albidior (p. 18). Oecophoridae: **CROSSOTOCERA** (p. 19), with *C.* wagnerella (p. 20). Coleophoridae: *Coleophora* pellicornella ♀ (p. 21). Types in Naturhist. Mus. Wien. Besides these, *Leucanitis caucasica, Saragossa siccanorum, Agrotis robiginosa, Earias insulana, Arctia spectabilis, Gymnancyla canella, Bactra robustana,* and *Tineola murariella* are new to Asia Minor. *Anaitis opificata* Ld. and *A. kawrigini* Chr. are not synonymous, but separate, valid spp.

ORTHOPTEROIDEA

A. N. CAUDELL, *Editor*

(See also in this issue Entries 13871, 13874, 13883, 14677, 14682, 14869)

14908. **BERLAND, LUCIEN. Les Forficules sont-elles carnivores?** *Bull. Soc. Ent. France* 1929 (18): 289-290. 1929.—*Euborellia moesta* feeds on the larvae of *Carpocapsa pomonella* and under some conditions is cannibalistic. *Forficula auricularia* is reported to prefer *Gracilaria syringella.* Both can subsist on vegetable tissue also.—*S. B. Fracker.*

14909. **BOLÍVAR y PIELTAIN, C. Monografía de los Eumastácidos (Orth. Acrid.). Primera parte.** *Trab. Mus. Nacion. Cien. Nat. Zool.* [*Madrid*] 46. iii-xxxii+1-380. 186 fig. 1930.—The monograph begins with a general morphological, biological, and geographical discussion. Key to 11 subfamilies. All spp. are fully described, with complete synonymy, and many are illustrated. Chorotypinae, key to genera; *Phyllochoreia,* key to spp.; *P. unicolor** (=*P. ramakrishnai* C. Bolívar) redescribed from ♂ type of *P. r.*; *P. equa* Burr (=*P. asina* Burr) ♀*; *P.* westwoodi ♀* (p. 20), India, type in Brit. Mus. The writer accepts Kirby's first type designation for *Xiphicera* Lamarck as *Gryllus serripes* "Fabr." (=*G. carinatus* "L."=*G. cucullatus* Stoll), and not his later designation of *G. gallinaceus. Chorotypus* Serv. (=*Chorotypus* Haan, *Xiphicera* Kirby 1910 not Lamarck), key to spp.; *C. biemarginatus* ♂*, *C.* saussurei ♂* (p. 32), Perak, type in Brit. Mus.; *C. pusillus* ♂*; *C.* servillei ♂* (p. 35), Borneo, type in Brit. Mus.; *C. fenestratus* ♂*; *C.* ameliae ♂* (p. 41), Borneo, type in Madrid Mus.; *C.* brunneri (*Xiphicera b.* Kirby) (p. 43), ♂* redescribed; *C. gallinaceus* (=*Choroetypus monachus* Brunn., *C. mutilatus* Brunn., *Xiphicera burri* Kirby, *Phyllochoreia whiteheadi* Kirby) ♂*, ♀*, ♀ larva*; *Orchetypus* key to subgenera, subgenus *O.,* key to spp.; *O.* (*O.*) *rotundatus* Brunn. (=*O. subtruncatus* Brunn.), ♀*; *O.* (*O.*) greeni (*Scirtotypus g.* Burr) (p. 61); **CHESCIRTYPUS** (p. 62), new subg. in *Orchetypus,* based on *O.* (*C.*) curtithorax ♀* (*Choroetypus c.* Karsch) (p. 63); *O.* (*C.*) finoti (*Scirtotypus f.* Saussure) (p. 65); *O.* (*C.*) martinezi ♀* (p. 66), the Cameroons, type in Vienna Mus.; *O.* (*C.*) parki ♀ (p. 68), Nigeria, type in Brit. Mus.; *O.* (*C.*) assiniensis ♀* (p. 70), Ivory Coast, type in Paris Mus.; *O. ocreatus* is also assigned to this subgenus; *Scirtotypus aberrans* ♀*. Erianthinae, key to genera; *Hemierianthus,* key to spp.; *H. camerunensis* ♂*; *Kirbyita bifida* ♂*; **EBNERIDIA** (p. 94), near *Erianthus,* type *Ebneridia* luteofasciata ♂* (p. 96), Burma, type in Vienna Mus.; *Erianthus,* key to spp.; *E.* bakeri ♀* (p. 109), Luzon, type in Madrid Mus.; *E. versicolor* Brunn. (=*E. flavipes* Sauss., *E. tonkinensis* C. Bolivar, *E. pictus* Karny) ♀*, key to subspp.; *E. v.* ssp. dohrni (*E. d.* C. Bol.) (p. 128) ♂*; *E. v.* ssp. fruhstorferi (p. 128), Siam; *E. guttatus* (Westw.) (=*E. malcolmi* I. Bol.) ♂*. Illustrations are given also of *E. affinis* ♀*, *erectus* ♀*, *formosanus**, *defloratus* ♂*, and *obtusus* ♀*. *Butania* lugubris* (*Erianthus l.* Brunn.=*Bennia oberthuri* I. Bol.) (p. 141); *B. l.* var. major (p. 143), Sikkim, type in Vienna Mus.; *Bennia innotata* ♂*; **BURRINIA** (p. 146), near *Bennia,* type *Burrinia* burri (*Bennia b.* C. Bol.) ♀*, key to spp. (p. 148); *B.* humbertiana (*Erianthus humbertianus* Sauss.) (p. 150) ♂*; *Eupatrides* Brunn., the type is designated as *E. excelsus* Brunn., key to spp.; *E. excelsus* ♂*; **KARNYDIA** (p. 160), near *Mnesicles,* type *K.* celebesica ♀* (p. 162), Celebes, type in Madrid Mus.; *Adrapetes,* key to spp.; *A. karschi* ♂*; *Mnesicles* Stål. (=*Xanthomastax* Sauss.), key to spp.; *M. crassipes* ♂*; *M.* moluccensis* (p. 177), Ternate (♂ type in Paris Mus.), Halmahera (♀ type in Vienna Mus.); *M.* amboinensis* (p. 180), Amboina, type in Vienna Mus.; *M.* novaeguineae* (p. 183), New Guinea, type in Madrid Mus.; *M. modestus* ♂*; *M.* mazarredoi ♂* (p. 191), Philippines, type in Madrid Mus.; *M. saussurei**, *M. roseosignatus**; **UVAROVIA** (p. 200), near *Mnesicles,* type *U.* longi-

pennis ♀* (p. 202), Dingding Isl. (type in Brit. Mus.), and Singapore. Eruciinae, key to genera; *Erucius*, key to subgenera; **CURIEUS** (p. 214), subg. in *Erucius*, type *E.* (*C.*) *tenuis* Brunner (=*E. javanus* Burr) ♂*; subg. *Erucius*, key to spp.; *E.* **fruhstorferi** (p. 220), Java, type in Vienna Mus.; *E. pictus* Sauss. (=*E. nebulosus* Sauss.) ♂*; *E. brunneri* ♂*; *E.* **staudingeri** ♂* (p. 230), Borneo, type in Vienna Mus.; *E. magnificus* ♂*; *E.* **labuanensis*** (p. 234), Borneo; *E.* **moultoni** ♂* (p. 237), Sarawak, type in Brit. Mus.; *E.* **stâli** ♂* (p. 239), Borneo, type in Vienna Mus.; *E. bifasciatus* ♂*; *E. vitreus* ♂*; *E. apicalis* Westw. (=*Acridium* (*Mastax*) *agrionoïdes* Haan) ♂*; *E.* **willemsei** ♂* (p. 251), Borneo; *E. w.* ssp. **chaperi** ♂ (p. 254), Borneo, type in Paris Mus.; *E.* **dusmeti** ♀*, ♂, Sarawak, type in Brit. Mus.; *E. dimidiatipes* ♂*; *E. d.* ssp. **luteipes** (p. 261), Penang, type in Brit. Mus.; *E. d.* ssp. **zonatus** (p. 262), Sumatra, type in coll. C. Willemse; *Mastacides*, key to spp.; *M. pupaeformis** I. Bol. (=*M. vaginalis* Sauss.); *M.* **ramachendrai** ♀*, ♂ (p. 271), *M.* **gracilipes** ♂* (p. 274) and *M.* **stuartensis*** (p. 276), India, type in Brit. Mus.; *M. nilgirisicus* ♂*; *M.* **fletcheri** ♀*, ♂ (p. 281), India, type in Brit. Mus.; *M. pterolepis* ♂*; *M.* **crassipes** ♂* (p. 285). Gomphomastacinae, key to genera; *Gomphomastax*, key to spp.; *G. antennata**; *G. clavata clavata* (Ostroumoff) (=*Parerucius antennatus* Krauss not *G. a.* Brunn., *G. kraussi* Burr) ♀*; *G. c.* ssp. **plotnikovi** (p. 298), Turkestan; *G.* **disparilis*** (p. 300), Kashmir; **PAEDOMASTAX** (p. 303), near *Gomphomastax*, type *P.* **constricta** (*G. constrictus* Brunn.), ♂*; key to spp. (p. 305). **BIROELLINAE**, n. subfam. (p. 308), erected for *Biroella*; key to spp. of *Biroella*; *B. dispar* ♂*; *B. papuana**; *B. rammei* ♂*; *B. lutea**; *B.* **aruensis** (p. 334), Aru, type in Oxford Mus.; *B. mimikensis* ♂*; *B. bolivari* ♂*; *B. b.* ssp. **schultzei** ♂ (p. 342); *B. b.* ssp. *polita**; *B. kuthyi**; *B. crenulata* ♀*; *B. rufipes**; *B. inconspicua* ♀*; *B. fissa* ♀*; *B. forficulata**; *B. bürgersi**; *B. carinata* ♀*; *B. longicercata* ♂*; *B. karnyi* ♂*; *B. ornata ornata* ♀*. Chininae: *China mantispoides* ♂*.

14910. CAMPOS, FRANCISCO. El grillo (Gryllus assimilis Fabr.) [The cricket G. assimilis.] *Rev. Colegio Nac. Vicente Rocafuerte* [*Guayaquil*] 10(32/35): 7-11. 1 pl. 1928.—A biological account of this orthopteran, dealing briefly with its distribution over Ecuador (where it is found up to altitudes of 4000 m.), its nymphal stage, its behavior during the mating season, and stridulation. Its omnivorous feeding habits constitute a factor of economic importance during seasons of great abundance of the insect; allusion is also made to the danger to public health, since *G. assimilis* is the carrier of the nematode *Gordius gryllivorus*. Its periodic abundance in Ecuador appears to be correlated with the seasonal change, its general appearance being coincident with the approach of winter.—*C. Zeimet.*

14911. CAPRA, FELICE. Una nuova specie di Troglophilus d'Italia (Orth. Phasgonuridae). *Ann. Mus. Civ. Storia Nat. Genova* 52: 310-313. 1 fig. 1925/1928.—*Troglophilus* **andreinii** ♂* (p. 310), Italy, type in Mus. Civ. Storia Nat. Genova.

14912. CHOPARD, L. Biospeologica. LVI. Campagne spéologique de C. Bolivar et R. Jeannel dans l'Amérique du Nord (1928). 8. Insectes Orthoptères. *Arch. Zool. et Gén.* 71(3): 389-402. 20 fig. 1931.—The evolution, phylogeny, and taxonomy of American cavernicolous Orthoptera are discussed; and the species are described in detail. Gryllacridae: *Hadenoecus subterraneus**, *H. puteanus**, *Ceuthophilus stygius**. *C. brevipes* is new to Kentucky.

14913. CHOPARD, L. Les Orthoptères du mont Aigoual. *Bull. Soc. Ent. France* 1930(7): 137-140. 1930.—Twenty-six spp. are listed from this region in southeastern France. —*S. B. Fracker.*

14914. CHOPARD, L. Description d'un Mantide (Orth.) mimétique des Cicindèles du genre Tricondylus. *Bull. Soc. Ent. France* 1930(14): 229-232. 1 pl. 1930.—**TRICONDYLOMIMUS** (p. 229), erected for *T.* **coomani*** (p. 229), Tonkin.—*S. B. Fracker.*

14915. CHOPARD, L. Sur une espèce nouvelle du genre Eneoptera confondue avec l'E. surinamensis (Orth. Gryllidae). *Bull. Soc. Ent. France* 1931(1): 14-16. 1931. —*Eneoptera* **guyanensis*** from French Guiana.—*S. B. Fracker.*

14916. CHOPARD, L., H. H. KARNY, and C. WILLEMSE. Orthoptera Celebica Sarasiniana. I. Saltatoria. *Treubia* 12(suppl.): 1-273. Map. 112 fig. 1931.—Each of the 3 authors cited above treats independently (not as joint author) certain families included in the group Saltatoria, as follows: H. H. KARNY.—Introduction (pp. 1-3. Map); Tettigoniidae (pp. 4-140. 70 fig.); Gryllacridae (pp. 141-184. 18 fig.). Karny also translated into German the sections contributed by Chopard and Willemse. The introduction contains a map of Celebes and adjacent islands, and a key to the families of Saltatoria found therein. Tettigoniidae: A table is given showing distribution of the Celebesian spp. or near allies of Tettigoniidae and Gryllacridae in Sumatra, Java, Borneo, Philippines, Sunda Isls., Moluccas, Key Isls., Aru, New Guinea, and N. Australia. A key is given to the subfams. of Tettigoniidae, and keys are also given to the genera of each subfam. *Emmarota* is redescribed; *E.* celebica* (*Locusta* (*Phaneroptera*) *c.* De Haan) (p. 12); *Ducetia thymifolia**; *Elimaea inversa**; *Isopsera vaga**; *I.* **fissa*** (p. 19), Buru; *Phaula* **neglecta** ♂* (p. 22); *P. compressa**; *Casignota longipes** is compared with *C. loliifolia** and *Elbenia jacobsonii**; *Tapiena* **chelicerca** ♂* [*Casigneta chelicerca* by error? in fig. 14, p. 30] (p. 29); *Liotrachela* **taeniistyla** ♂* (p. 32); *Holochlora* **metazonalis** ♂* (p. 35); *H.* **sarasini** ♀* (p. 36); *H.* **mapanensis** ♂* (p. 38); *Psyra* **celebica** ♀ (p. 43); *Phygela* **latipennis** ♂* (p. 45); *Sasima bifurcata* ♂*; *Sasimella* **sarasinifolia** ♀* (p. 49). *Phyllomimus detersus* ♀*; **DIPLODONTOPUS** (p. 57) (Pterophyllinae), near *Phyllomimus*, based on *D.* **insolitus** ♂* (p. 59); **ACAULOPLACELLA** (p. 62) (Pterophyllinae), type *Acauloplax asiatica** Brunner v. W.; the type species is provisionally left in *Acauloplax*. **DIAPHLEBOPSIS** (p. 67) (Mecopodinae), near *Paradiaphlebus*, type *D.* **fissiceps** ♂* (p. 70); *Segestes* **celebensis** ♂* (p. 72); *Sexava karnyi**; *S. coriacea**; *Phisis* **buruana*** (p. 91), Buru Isl.; *P.* **leontopolites** (p. 92); *P.* **sarasini** ♀* (p. 92); *Hexacentrus unicolor**; *Mortoniellus* **digitatus*** (p. 100); *M.* **hamatus** ♂* (p. 101); *M. azuriventer**; *Xiphidion maculatum**; *X. longipenne**; *X. affine**; *Nicsara* **aethiops** ♀* (p. 116); *N.* **sarasini** ♀* (p. 119); *N. inferior**; *Anthracites* **discolateralis** ♀* (p. 124); *A.* **tibialis*** (p. 126); *A.* **humeralis** ♀* (p. 127); *Xestophrys horváthi**; *Pseudorhynchus minor**; *Euconocephalus mucro**; *E. brachyxiphus**; *E. gracilis**. Gryllacridae: *Gryllacris*, key to 17 forms; *G.* **maculiventris** ♀* (p. 144); *G.* **celebica** ♀* (p. 149); *G. helleri**; *G.* **sarasini** ♂* (p. 154); *G. bicornuta**; *G. sexpunctata* spp. **obscuripes** ♂* (p. 159); *G. inconspicua**; *G.* **brevistyla** ♂* (p. 162); *G.* **nodistyla** ♂* (p. 164); *G. voluptaria**; *G.* **libidinosa** ♀* (p. 171); *Neanias* **celebensis** ♀* (p. 174); *Rhaphidophora* **sarasini*** (p. 179). L. CHOPARD.—Achetidae and Gryllotalpidae (pp. 185-188): A list of 20 spp. is given including *Euaphonus* **atrifrons** ♀ (p. 188). C. WILLEMSE.—Acrididae (pp. 189-270): key to 6 subfams., also keys to genera in each subfam. **CELEBOMASTAX** (p. 203) (Eumastacinae), type *C.* **curiosa** ♀* (p. 204); *Mnesicles* **saussurei** (*Xanthomastax crassipes* Sauss.) (p. 206); *Phlaeoba* **abbreviata** ♂* (p. 212); *Heteropternis obscurella**; *H. respondens**; *Tagasta celebesica**; *Trigonopteryx* **celebesia*** (p. 230); *Oxyrrhepes* **celebesia*** (p. 234); **PARACRANAE** (p. 234) (Cyrtacanthacrinae), near *Oxya*, type *P.* **celebesia*** (p. 235); *Tauchira* **gracilis*** (p. 242); *Chitaura brachyptera**; **TAURACRIS** (p. 248) (Cyrtacanthacrinae), near *Chitaura*, type *T.* **flavo-lineata** ♀* (p. 248); *Mesambria maculipes**; *Alectorolophus speciosus**; *A. applicatus**; *A. unilobatus**; *Celebesia acuticerca**; *Traulia ferruginata**. Except where otherwise given, new forms are from Celebes. All types in Wien Mus.

14917. CUMMINGS, BRUCE F., and B. UVAROV. Dermaptera and Orthoptera. Part 19 of Results of an expedition to Korinchi Peak, 12,400 ft., Sumatra. *Jour. Fed.*

Malay States Mus. 8(3): 218. 1931.—A list of 7 Dermaptera and 7 Orthoptera.

14918. DAVIS, WILLIAM T. Rearing the young of the viviparous cockroach, Panchlora cubensis. *Jour. New York Ent. Soc.* 38(2): 85-88. 1930.—The note relates to the young produced by an immigrant ♀ on Staten Isl., 2 of which were carried to maturity.

14919. KERVILLE, HENRI GADEAU de. Observations sur le Pseudochelidura sinuata Germ. *Bull. Soc. Ent. France* 1930(4): 61-63. 3 fig. 1930.—Comments on the 2 forms of ♂♂ in *P. sinuata.*—*S. B. Fracker.*

14920. KERVILLE, HENRI GADEAU de. Sur les oeufs et l'instinct maternel du Pseudochelidura sinuata Germ. (Dermaptera.) [Eggs and maternal instinct of P. sinuata.] *Bull. Soc. Ent. France* 1931(8): 119-120. 1931.

14921. LÉPINEY, J. de. La chaîne du Haut-Atlas et les invasions de Schistocerca gregaria Forsk. dans le Maroc septentrional. *Bull. Soc. Sci. Nat. Maroc* 10(1/6): 62-65. 1930.—The Haut-Atlas Mts. present a considerable barrier to the flight of *S. gregaria* but many of them succeed in flying over, while others are killed by the cold.

14922. LU, HSU TIEN, and T. T. CHEN. The anatomy of Cyrtacanthacris flavicorne (Acridiidae). *Natur. Hist. Soc. Funkien Christian Univ. Foochow, China* 1: 49-58. 2 pl. 1928.—Suggests this species as a satisfactory laboratory animal. Brief descriptions of the exoskeleton, alimentary tract, respiratory, circulatory, reproductive and nervous systems are given. Detailed drawings of the skeleton and soft anatomy are included.—*H. Ruckes.*

14923. MEISSNER, OTTO. Die Färbungsabarten der indischen Stabheuschrecke, Carausius morosus Br. (Phasm.). *Ent. Zeitschr., Frankfurt a/M* 43(24): 299-301. 1930.

14924. MOREIRA, CARLOS. Contribuição para o conhecimento dos insectos dermapteros do Brasil. [Dermapterous insects of Brazil.] *Rev. Ent. [São Paulo]* 1(3): 257-265. 6 fig. 1931.—Labiduridae, Psalinae: *Euborellia* **flavipes*** (p. 258); *E.* **inermis*** ♀ (p. 259); *Psalis* **brasiliensis*** ♂ (p. 260), *P.* **minima*** ♂ (p. 261). Brachylabinae: *Nannisolabis* **punctulata*** (p. 261), with var. **rufa** (p. 262). Strongylopsalinae: *Strongylopsalis iheringi* Rehn (=*Labia castanea* C. Moreira). Types in Inst. Biol. Defesa Agric., Rio de Janeiro.

14925. REGEN, JOHANNES. Über den Aufbau der Stridulationslaute der saltatoren Orthopteren. *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. 1 Abt.* 139(8/10): 539-544. 1930.—The stridulations of *Liogryllus campestris, Thamnotrizon apterus, Chorthippus parallelus,* and *Oecanthus pellucens* are classified according to the rhythm as recorded by an oscillograph.

14926. REHN, JAMES A. G. On the blattid genera Abrodiaeta Brunner (=Allacta Saussure and Zehntner) and Margattea Shelford (Orthoptera). *Trans. Amer. Ent. Soc.* 57(3): 297-304. 1 fig. 1931.—*Allacta* Saussure & Zehntner, having as its type *Abrodiaeta modesta* Brunner, is rediagnosed. *Margattea* Shelford, rediagnosed, is closely related to *Allacta.*

14927. RUNGS, C. Contribution à la détermination du nombre des générations annuelles du criquet pélerin Schistocerca gregaria Forsk. *Bull. Soc. Sci. Nat. Maroc* 10(1/6): 66-69. 1930.—There are at least 2 generations of *S. gregaria* in Morocco. The insects are attacked by the fungi *Beauveria densa, B. bassiama, B. globulifera,* and *Spicaria verticilloïdes.*

14928. SILVESTRI, F. Notes on Grylloblatta campodeiformis and a description of a new variety (Grylloblattidae). *Trans. Amer. Ent. Soc.* 57(3): 291-295. 1 pl., 1 fig. 1931.—*G. campodeiformis** v. **occidentalis** (p. 293), Washington State, type in author's coll. The Grylloblattidae should form a group of equal rank with Blattoidea and Isoptera. The type localities of *G. campodeiformis* and *G. c.* var. *occidentalis* are shown in photograph.

14929. STÄGER, ROB. Einige Notizen über Anechura bipunctata (Dermatopt.). *Ent. Zeitschr., Frankfurt a/M* 43(22): 271-273. 1930.—Biological notes.

14930. UVAROV, B. P. A new mantid from Baluchistan. *Ann. and Mag. Nat. Hist.* 8(46): 418-419. 1931.—*Microthespis* **evansi** ♂ (p. 419), type in Brit. Mus., is compared with *M. dmitrievi.* The distinction between *Microthespis* and *Rivetina* is discussed.

14931. UVAROV, B. P. Composition and origin of the palaearctic fauna of Orthoptera. *Congrès Internaton. Xe Zool. à Budapest 1927* Part 2. pp. 1516-1524. 1929.—Autochthonous elements of the Palaearctic fauna of Orthoptera belong to 2 main groups: (1) A tropical Tertiary fauna of damp habitat; (2) an Atlantic fauna of (a) forest and (b) dry rocky habitats. The following developments have taken place in the evolution of the fauna: (1) Invasion of the Angara fauna, which occupied all except the most southern parts of the region; (2) secondary progressive development of the autochthonous elements in the Mediterranean countries, with 2 main centers, Iberian and Anatolian, and subsequent migration of new faunistic elements northward; (3) formation, in response to climatic conditions, of the desert fauna out of the Atlantic elements in 2 main centers, northwestern African and Persian, and subsequent spreading of these elements northward; and (4) development of the peculiar alpine fauna in Central Asia out of the autochthonous tropical elements lifted up by the rising of the mountain ranges.—*B. F. Howell.*

14932. WILLEMSE, C. Orthoptera (Acridiidae) from Mangalum Island, Northwest Borneo. *Bull. Raffles Mus.* 5. [93.] 1 pl. 1931.—A list of 4 spp., including *Valanga nigricornis* ssp. **mangalumensis.**

14933. ZOLOTAREVSKY, B. N. Sur le comportement du Phymateus puniceus Bol. (Orth. Acrididae). *Bull. Soc. Ent. France* 1930(18): 283-286. 1 fig. 1930.—*P. puniceus** in Madagascar is unattractive as food for animals or man on account of its bad odor. The adults are solitary, but the nymphs are gregarious, migrating to new plants in single file.—*S. B. Fracker.*

SMALLER ORDERS OF INSECTA

H. E. EWING, *Editor*

(See also in this issue Entries 13727, 13846, 13867, 14029, 14677, 14679)

14934. BONDAR, GREGORIO. Um novo genero e tres novas especies de Thysanopteros Heliothripineos, encontrados na Bahia. [A new genus and three new species of Thysanoptera Heliothripinae, taken at Bahia.] *Arch. Inst. Biol. Defesa Agric. e Animal* 4: 83-88. 1 pl. 1931.—Heliothripinae, key to genera; **HOODOTHRIPS** (p. 83), near *Parthenothrips,* type *H.* **neivai** ♀* (p. 84), on *Dahlia variabilis,* and Apocynaceae; *Heliothrips* **apicallis** ♀* (p. 86), on Boraginaceae; *H.* **ipomoeae** ♀* (p. 86), on *Ipomoea batatas.* Types in author's coll.

14935. BROWN, JAMES MEIKLE. Report on the Collembola collected by the Oxford University expedition to Lapland, 1930. *Ann. and Mag. Nat. Hist.* 8(43): 131-139. 5 fig. 1931.—The collection consists of 14 spp. on which collecting data are given. *Proisotoma* (*Isotomina*) **lapponica*** (p. 134); *P. minuta**.

14936. GALLARD, LUKE. The discovery of the eggs of Heterojapyx gallardi, Tillyard. *Australian Nat.* 8(5): 92. 1931.—A cluster of 25 eggs were found under ground in N. S. Wales, attended by ♀; in another case 15 young were found clustered about the mother, much as in the manner of the centipedes.

14937. [JOHN, O.] ИОН, О. И. Пузыреногие из Новгородской губернии. (Thysanoptera from the Novgorod Province.) Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 24(3/4): 218-219. 1930.—

An annotated list of 22 spp., including *Prosopothrips vejdovskyi* and *Haplothrips alpester*, new to the USSR, and 4 other spp. new to the district.

14938. **JORDAN, KARL.** Three new South American fleas. *Novitates Zool.* [*Tring*] 36(3): 311-316. 5 fig. 1931.—**CTENIDIOSOMUS** (p. 311), near *Stenoponia*, type *C.* **spillmanni*** ♀ (p. 311), Ecuador, from *Neomys* sp.; *Craneopsylla* **chiris*** (p. 313), Argentina, on *Phyllotis xanthopygus* [Muridae]; *C.* **tolmera** ♂* (p. 314), Ecuador, on *Neomys* sp.

14939. **KARNY, H. H.** Zur Systematik der Orthopteroiden Insekten. Zweiter Teil. *Treubia* 12(3/4): 431-461. 1930.—This article deals primarily with classification of the Order Copeognatha [Corrodentia], but considers other orders. Isoptera: **TERMOPSIDAE** (p. 432), new fam. name for Protermitidae Holmgren; **RHINOTERMITIDAE** (p. 432), new fam. name for Mesotermitidae Holmgren; **TERMITIDAE** (p. 432), new fam. name for Metatermitidae Holmgren. Copeognatha: key to suborders, families, subfamilies, and tribes; checklist to the genera in each group. Some of the group names given below are new but the author does not so indicate. The classification used is as follows: the suborder Permopsocida is divided into 4 families, Psocidiidae, Permopsocidae, **MARTYNOPSOCIDAE** (p. 453), based on **MARTYNOPSOCUS** (n. n. for *Dinopsocus* Martynov not Banks) (p. 446), and **NEUROSEMIDAE** (p. 434), including the subfamilies Neuroseminae, based on *Neurosema* McLachlan, and Calopsocinae, based on *Calopsocus* Hagen. The suborder Embiopsocida contains only the Delopteridae, in which is placed **LITHOPSOCUS** (p. 435), n. n. for *Lithentomum* Martynov not Scudder. The suborder Parapsocida contains the fams. Trogiidae and Amphientomidae. The fam. **TROGIIDAE** (p. 441), is divided into subfamilies Thylacinae, with tribes Thylacini and Udamolepidini; Empheriinae, with tribes Empheriini and Rhypsocini; Psoquillinae; Trogiinae, with tribes Trogiini and Lepinotini; Psyllipsocinae, with tribes Psyllipsocini, Archipsyllini and Allopsocini; Troctinae, with tribes Embidopsocini, Troctini and Pachytroctini; Electrentominae; Pseudopsocinae; Prionoglarinae and Archipsocinae. The family Amphientomidae is divided into subfamilies Perientominae, with tribes Perientomini, Echmepterygini and Echinopsocini; Lepidillinae; and Amphientominae, with tribes Cymatopsocini and Amphientomini. The suborder Eupsocida contains the remaining four families. **STENOPSOCIDAE** (p. 444) contains the subfamilies Callistopterinae, Propsocinae, Stenopsocinae, and Bertkauiinae. The family Psocidae contains the subfamilies Myopsocinae; Psocinae, with tribes Psocini and Hemipsocini; and Thyrsophorinae, with tribes Ischnopterygini and Thyrsophorini. The family **LACHESILLIDAE** (p. 439), n. n. for Caeciliidae Enderlein, preocc. in Amphibia, includes the subfamilies Ptiloneurinae; Elipsocinae; Reuterellinae; Dypsocinae; Xenopsocinae; **LACHESILLINAE** (p. 451), with the tribes Epipsocini and **LACHESILLINI** (p. 451), the latter including *Lachesilla* Westwood and containing among other genera *Caecilius* Curtis upon which Caeciliidae was founded. The family Peripsocidae Cockerell is redefined, and contains the subfamilies Neurostigminae and Peripsocinae.

14940. **MORISON, GUY D.** A new thripid (Thysanoptera) from South Australia. *Bull. Ent. Res.* [*London*] 22(2): 245-248. 3 fig. 1931.—*Hemianaphothrips* (*Anaphothrips*) **concinnus*** (p. 245), on *Leptospermum lanigerum*, compared with *H. tersus**. Type in Brit. Mus.

14941. **PETERS, HAROLD S.** A new biting louse (Mallophaga) from white-tailed deer. *Proc. Ent. Soc. Washington* 32(5): 76-79. 3 fig. 1930.—*Tricholipeurus* **virginianus*** (p. 76), parasite on *Odocoileus v. virginianus*, Pennsylvania (type, in U. S. Nat. Mus.), and from *O. v. texanus*, Texas.

14942. **PRIESNER, H.** Indomalayische Thysanopteren III. *Treubia* 12(3,4): 263-270. 1930.—*Gynaikothrips* **brevisetis** (p. 263), ♂, ♀, and larva, Luzon, Philippines, on *Conocephalus*; *G.* **piperis** (p. 265), ♂, ♀, and larva; *G.* **eugeniae** (p. 266), Kuala Lumpur, in leaf gall on *Eugenia*; *G.* **ficarius** (p. 267), Singapore, in leaf gall on *Ficus benjamina*; *G.* **retusae** ♀ (p. 269), Penang, Malacca, on *Ficus retusa*.

14943. **SCHÖTT, HARALD.** Hoppstjärtar-Collembola. 15. In: Insektfaunan inom Abisko Nationalpark [Sweden]. III. Studies under the leadership of Yngve Sjöstedt. *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* 18. Pp. 69-72. 1931.—List of 21 spp. in 3 families, with brief locality notes.

14944. **TUXEN, S. L.** Über die dänischen Machilidae. *Ent. Meddel.* [*Copenhagen*] 16(7): 398-400. 1929; (8): 401-413. 10 fig. 1930.—Keys are given for both sexes of the 7 north-European species of *Petrobius* Leach. Two of these have been found in Denmark: *P. balticus** Stach, very common, and *P. oudemansi** Carp., only 3 females. Also mentioned from Denmark is *Lepismachilis notata** Stach, this species previously having erroneously been called *Machilis polypoda* L. in Denmark.—*S. L. Tuxen.*

14945. **TUXEN, S. L.** Einige Apterygoten aus Südeuropa nebst Beschreibung zwei neuer Arten von Thysanura. *Ent. Meddel.* [*Copenhagen*] 17(3): 219-227. 7 fig. 1930.—A list is given of Apterygota collected in Croatia and north Italy. *Campodea* **suensoni*** (p. 222) and *Japyx* **sinuosus*** (p. 223) are described together with a juvenile form* (?) of the latter.—*S. L. Tuxen.*

14946. **WATSON, J. R.** A new Haplothrips from Panama. *Florida Ent.* 15(1): 11-12. 1931.—*Haplothrips* **panamaensis** ♀ (p. 11), on pineapple introduced in shipment to Washington, D. C., from the Canal Zone. Type in author's coll.

14947. **WEBER, HERMANN.** Die Lebensgeschichte von Ectopsocus parvulus (Kolbe 1882). Ein Beitrag zur Kenntnis der einheimischen Copeognathen. *Zeitschr. Wiss. Zool.* 138(3): 457-486. 18 fig. 1931.—*E. parvulus* is found in greenhouses on various hostplants in association with the homopteran *Trialeurodes vaporariorum*; it feeds upon the sooty mold which develops on the droppings of white flies. They spin webs* under which they live in colony. Reproduction is by thelytoky, no ♂♂ being produced. Development is at optimum at 20° C., requiring 9 days for the egg stage, 17 days for the larva; there may be 12 generations a year. The ♀ genital organs*, embryonic egg-burster*, egg*, embryo*, larval stages*, and adult* are described.

FOSSIL INSECTA

F. M. CARPENTER, *Editor*

(See also in this issue Entry 14254)

14948. **ALEXANDER, CHARLES P.** Crane-flies of the Baltic amber (Diptera). *Bernstein-Forschungen* (*Amber Studies*) 2. 1-135. 1 pl., 168 fig. 1931.—The types of most of the described species of Tipulidae fossil in amber have been examined and many are figured. Baltic amber was formed during the Lr. Oligocene. Superfam. Tipuloidea, key to families. Tanyderidae: *Macrochile*, recharacterized, is distinct from the recent *Protoplasa*. *M. spectrum**. Tipulidae, key to subfamilies, tribes, and subtribes, in amber. Tipulini, key to genera and subg.; *Macromastix bornhardti**; **ELECTROTIPULA** (p. 21), n. subg. in *Tipula*, type *T.* (*E.*) **pinetorum** (p. 22), type in Berlin Mus.; key to ♂♂ of spp. of subg. *Tipula*; *T. media**; *T.* **submedia*** (p. 26), *T.* **digitifera*** (p. 26) and *T.* **phoracantha*** (p. 27), types in Klebs coll.; *T.* **presliana*** (p. 27), *T.* **spinistyla*** (p. 30), *T.* **falco** (p. 30), *T.* **handlirschiana*** (p. 32) and *T.* **scudderiana*** (p. 32), types in Geol. Inst. Coll. Univ. Königsberg; *T.*

*major**, *T. graciosa**, *T.* (?) *eocenica**. Limoniini: key to genera; *Limonia* Meigen (=*Ataracta* Loew), key to spp.; *L.* **meunieri*** (p. 36) and *L.* **flagellata*** (p. 38), types in Klebs coll.; *L.* **lobata*** (*Dicranomyia l.* Meunier) (p. 37); *L.* **sinuata*** (*D. s.* Meun.) (p. 39); *L.* **graciosa** (*D. g.* Meun.) (p. 39); *Dicranoptycha* **electrina*** (p. 40), type in Geol. Inst.; *Thaumastoptera* **electra*** (p. 41), type in Fritsch coll.; the genus *Antocha* does not belong to amber fauna; *Helius* **pulcher*** (*Rhamphidia pulchra* Meun.=*Antocha succinea* Meun.). Hexatomini: key to genera; *Palaeopoecilostola* Meunier, recharacterized, is restored to generic rank, removed from *Lasiomastix*, key to spp.; the type is designated as *P.* **longicornis*** (*Lasiomastix l.* Meun.=*Limnophila robusta* Meun.) (p. 46); *P. l.* ssp. **parallela*** (p. 48), type in Geol. Inst.; *P.* **speciosa*** (*Limnophila s.* Meun.) (p. 48); *P.* **fastuosa*** (*L. f.* Meun.). *Tanysphyra* Loew is removed from synonymy with *Limnophila*, and restored to generic rank, type *T.* **meunieri*** (*Limnophila m.* Ckll., *L. gracilis* Loew preocc.). *Austrolimnophila* **elegantissima*** (*Limnophila* (*Dactylolabis*) *e.* Meun.); *Phyllolabis* **andréei*** (p. 52), type in Geol. Inst.; *Trichoneura* Loew (=*Sackeniella* Meun.), key to ♂♂; *T.* **gracilistylus*** (p. 57), type in Klebs coll.; **ELECTROLABIS** (p. 58), near *Dactylolabis*, type *E.* **extincta*** (p. 58), type in Klebs coll.; **IDIOLABIS** (p. 59), n. subg. in *Dactylolabis*, type *D.* (*I.*) **terebrella*** (p. 60), type in Klebs coll.; *D.* (*Dactylolabis*) **vetusta*** (p. 60), type in Klebs coll.; *Pseudolimnophila*, key to spp.; *P.* **loewiella*** (p. 63), n. nom. for *Limnophila* (*Dactylolabis*) *concinna maculata* Meun.; *P.* **vulcana*** (*Limnophila v.* Meun.) (p. 64); *P.* **timida*** (p. 65), type in Geol. Inst.; *P.* **producta*** (*Prionolabis p.* Meun.) (p. 66); *P.* **exigua** (*Prionolabis e.* Meun.) (p. 66); *P.* **pinicola*** (p. 67), type in Klebs coll.; *P.* **inculpata*** (p. 68), type in Geol. Inst.; *P.* **continuata*** (*Limnophila* (*Dactylolabis*) *c.* Meun.); *P.* **ambigua*** (p. 70), type in Klebs coll.; *Limnophila*, key to spp.; *L.* (*Phylidorea*) **servilis*** (p. 72), type in Geol. Inst.; *L.* **samlandica*** (p. 73) and *L.* **skwarrae*** (p. 74), types in Klebs coll.; **TANYMERA** (p. 75), a name proposed (with insufficient diagnosis of the genus) by Loew in 1850 for 4 unnamed spp., type *T.* **fritschi*** (p. 78), type in Fritsch coll.; key is given to spp. of *Tanymera*; *T.* **arguta*** (p. 76) and *T.* **terminans*** (p. 78), types in Geol. Inst.; *T.* **berendti*** (p. 79), type in Klebs coll.; *Pilaria*, key to spp.; *P.* **batheri*** (p. 81), type in Brit. Mus.; *P.* **elongata*** (*Limnophila e.* Meun.) (p. 81); *P.* **electrina*** (*Limnophila e.* Ckll. & Clark) (p. 82); *P.* **baltica*** (p. 82) and *Hexatoma* **minuta*** (p. 84), types in Geol. Inst.; *Eriocera*, key to spp.; *E.* **plastica*** (p. 86), type in Brit. Mus.; *Elephantomyia* **baltica*** (p. 88), type in Klebs coll.; *Adelphomyia* **hirtipennis*** (*Ula h.* Meun.) (p. 93); *Tricyphona*, key to spp.; *T.* **succinea*** (p. 94), type in Klebs coll.; *T.* **sepulchralis*** (p. 94), type in Geol. Inst.; *T.* **electrina*** (p. 95), type in Zool. Mus. Eriopterini, key to genera and subg.: *Dasymolophilus* **circumcinctus*** (*Erioptera circumcincta* Meun.) (p. 98); *Ormosia* Rond. (=*Rhypholophus* Kol., *Gonomyiella* Meun.); *O.* **skwarrae*** (p. 100), type in Klebs coll.; *O.* **electrella*** (p. 101), *O.* **tornquisti*** (p. 102) and *O.* **beurleni*** (p. 102), types in Geol. Inst. *Erioptera*, subg. *Erioptera*, key to spp.; *E.* (*E.*) **arcuata*** (p. 105), type in Klebs coll.; subg. *Empeda*, key to spp.; *E.* (*Emp.*) *minuta** Meun. (=*E. prolifica* Meun., *E. elongata* Meun.); *E.* (*Emp.*) **platyphylla*** (p. 107), *E.* (*Emp.*) **duplicata*** (p. 108) and *E.* (*Emp.*) **axillaris*** (p. 110), types in Klebs coll.; *E.* (*Emp.*) **diacantha*** (p. 109), *E.* (*Emp.*) **subabortiva*** (p. 110) and *E.* (*Emp.*) **rectistyla*** (p. 111), types in Geol. Inst.; *Palaeogonomyia* Meun. is removed from *Gonomyia* and recognized as a subg. of *Rhabdomastix*, with type now designated as *R.* (*P.*) **pulcherrima*** (*Gonomyia* (*P.*) *p.* Meun.) (p. 114); *R.* (*P.*) **klebsi*** (p. 113), type in Klebs coll.; *R.* (*P.*) **elegantula*** (*G.* (*P.*) *e.* Meun.) (p. 114); *R.* (*P.*) *pulcherrima* **graciosa** (*G.* (*P.*) *g.* Meun.) (p. 116); *R.* (*P.*) **borussica*** (*G.* (*P.*) *b.* Meun.) (p. 117); *R.* (*P.*) **brevis*** (p. 117), type in Geol. Inst.; **ELECTROGONOMYIA** (p. 118), n. subg. in *Gonomyia*, type *G.* (*E.*) **pinetorum*** (p. 118), type in Klebs coll.; *G.* (*Gonomyia*) **oligocenica*** (p. 119), type in Geol. Inst.; *Gnophomyia*, key to spp.; *G.* **minuta*** (*Trimicra m.* Meun.) (p. 121); *G.* **inferna*** (p. 122) and *G.* **parvicellula*** (p. 122), types in Klebs coll.; *Trentepohlia* (*T.*) **dampfiana*** (p. 123). Other amber species are described and figured. The bibliography contains 42 references.

PROCHORDATA

(See also in B. A. 6(3): Entry 9061; 6(4): 11441; and in this issue 14475)

14949. **HARANT, HERVÉ.** Les ascidies et leurs parasites. *Ann. Inst. Océanograph.* 8(4): 231-389. Map, 60 fig. 1931.—A few new facts are brought out in this work, which completes and summarizes the author's publications since 1922. They are as follows.—Polyclinidae: **PSEUDODISTOMINAE** (p. 246), n. subfam. erected to include *Pseudodistoma, Homeodistoma,* **RITTERELLA** (p. 268) (n. n. for *Amaroucium aequalisiphonis* Ritter), and *Placentela; Polyclinum aurantium** Edw., recharacterized; *P. a.* vars. **lahillei** (p. 248), Sargasso Sea, **pseudomolgula** (p. 248) [locality not cited], **humile** (*Glossophorum h.* Lahille) (p. 249), **brementi*** (p. 249), France, and **luteum** (*P. l.* Giard) (p. 249); **POLYCLINELLA** (p. 254), type *P.* **azemai*** (p. 254), Mediterranean. Didemnidae: *Trididemnum* **brementi** (p. 271), *T.* **duci*** (p. 272) and *Didemnum* **grassei*** (p. 278), France; *D. dentatum**, recharacterized. Keys are presented to the genera and spp. of Ascidia from the coasts of France. Morphological studies are presented on the muscles of the digestive tube, and of the tunic of Polyclinidae, the sexual organs and tentacles of Didemnidae; dorsal raphe of Ascidiidae. Histophysiological observations are made on the tunicate cells of *Polysyncraton,* pleochromatic cells of *Diazona* and of *Phallusia,* the pigmented cells of *Lissoclinum bataillonl,* the blood of Cynthiadae, the purine cells and experimental inflammation. The composition and characters of the fauna of France, and its relation to neighboring populations, are discussed, and a few associations studied. The parasites of Ascidia are discussed, including data on the culture of the fungus *Nephromyces molgularum* on agar-purines; *Selenidium* (?) **giganteum** (p. 357), a gregarine from the stomach of *Polycarpa pomaria;* description of stages of *Selysina* **dubosqui*** (p. 359), a sporozoan (Selysinidae) parasite of *Styela partita* and *P. pomaria;* and *Pseudoklossia* **legeri*** (p. 365), a coccidian parasite of *Styela* and *Polycarpa;* ecological observations concerning certain metazoan parasites or commensals of Ascidia are also made, with a list of Copepoda living in Ascidia. This memoir is a revision of the known species of Ascidia, and of their described parasites. The author expounds his ideas relative to classification, and makes some suggestions relative to geographical distribution, to associations and to parasitism.—*From H. Harant's abstract (transl.).*

14950. **HARTMEYER, R., und W. MICHAELSEN.** Ascidiae Diktyobranchiae und Ptychobranchiae. Fauna Südwest-Australiens 5(6): 251-460. Map. 61 fig. Gustav Fischer: Jena, 1928.—This work was finished after the death of Dr. Hartmeyer, and each section is attributed to its actual author. In all, 57 spp. are treated in detail with bibliography and synonymy, distribution and description. Diktyobranchiae: Cionidae, *Ciona intestinalis** anatomical study. Perophoridae, 2 spp. Ascidiidae, 11 spp., including *Ascidia malaca* v. *australiensis** (redescribed), *A. rhabdophora**, *A. dubia gemmata**, *A. munda**, *A. austera**, *A. latesiphonica** (redescr.), *A. glabra* (redescr.), and *Phallusia obesa** are considered.

Rhodosomatidae, *Rhodosoma turcica** treated. Ptychobranchiae: Stelidae, general considerations are given of the family and of the subfam. Botryllinae, also of 7 spp. and vars., including *Botryllus anceps*, and *B. gracilis** (redescr.). In Polyzoinae 4 spp. are discussed including *Oculinaria australis**, and *Stolonica australis** redescr. In Styelinae 14 spp. are considered, including *Polycarpa aurata* f. *clavata**, *P. moebii**, *P. abjornseni** redescr., *P. hartmeyeri** redescr., *Cnemidocarpa polyphlebodes**, *C. posthuma**, *C. irma**, and *C. hartogi**, the last 3 also redescribed. Pyuridae, 18 spp. and vars. are considered, including *Microcosmus claudicans* spp. **squamiger** (*M. exasperatus* ssp. *australis* Michaelsen) (p. 405), *Pyura australis**, *P. ostreophila** redescr., *P. australiensis* f. **busseltonensis** (p. 429), S. Australia, Victoria, *P. stolonifera* ssp. *waia*, *P. albanyensis** and *P. momus* f. *galei* redescribed. Molgulidae, 3 spp. are discussed, including *Molgula nodosa** and *M. reducta** redescribed. The bibliography contains 98 references.

14951. MICHAELSEN, W. Ascidiae Krikobranchiae. *Die Fauna Südwest-Australiens* 5(7/9): 461-558. 12 fig. 1930.—Clavelinidae: Reorganization of the family with new diagnoses of many spp.; discussion of the origin and evolution of the cloaca and the consequent modification of the atrial aperture, i.e., a radial structure becoming transformed into a bilaterally symmetrical one with an atrial tongue ["*Atrialzunge*"], and its relations in the Synoicidae and Didemnidae. The earlier proposal to unite the families Clavelinidae and Polycitoridae is now modified and they are regarded as subfamilies. Subfam. Clavelininae emend.; *Podoclavella* Herdm. emend.; *P.* **ostrearium** (p. 467); *Oxycorynia* v. Dr. emend.; the temporary generic name *Nephtheis* Gould is rejected (the name in any case being only an erroneous variant of the alcyonarian genus name *Nephthea* Sav.); *Oxycorynia* (=*Colella* Herdm.); *O. fasciculatis* v. Dr. (=*Nephtheis* ? Gould, *Colella thomsoni* Herdm., *Nephtheis centripetens* Sluiter), with fuller description; *Clavelina* Sav. emend. (=*Chondrostachys* Macdonald *Stereoclavella* Herdm. part., ? *Pycnoclavella* Garstang, *Synclavella* Caullery); *C. enormis* Herdm., with fuller description; *C. cylindrica* Quoy & Gaim. (=*Chondrostachys macdonaldi* Bronn), with fuller description. Subfam. Polycitorinae emend.; doubtful genera, *Aphanibranchion* Oka and *Eucoelium* Sav.; *Sigillina* Sav. (emend.) is divided into 5 subgenera: *Archidistoma* Garstang emend., subgenotype *A. aggregatum* Garst.; *Eudistoma* Caullery emend., subgenotype *Distoma rubra* Sav.; *Paessleria* Mich. emend., subgenotype *P. magalhaensis* Mich.; **HYPERIODISTOMA** (p. 490) subgen., type *Colella möbiusi* Hartmr.; *Sigillina* Sav. emend., subgenotype *S. australis* Sav. *Sigillina* (*Paessleria*) *magalhaensis** Mich., fuller description; *Polycitor* **circes*** (p. 495); *Cystodytes dellechiajei* f. *durus* v. Dr., synonyms listed, *C. draschei* Herdm. is united with *C. dellechiajei;* 3 forms of *C. dellechiajei* are temporarily retained: f. *durus* v. Dr., f. *typicus*, and f. *ceylonensis* Herdm.; *Distaplia stylifera* (Kowalewsky) (=*Polyclinum micropnous* Sluiter, *Holozoa bursata* Van Name); discussion of the synonymy and relationships; *D. cerebriformis* Quoy & Gaim and *Sycozoa sigillinoides* Lesson brief annotations on geographical distribution. Didemnidae: *Tridemnum lüderitzi* Mich., fuller description; *Leptoclinides dubius* f. **kingi** (p. 507); *L.* **glauerti*** (p. 511); discussion on the form of the colony with reference to the migration of the cloaca through the thickness of the colony till in *L.* **glauerti*** (p. 511) the arrangement of a *Pyrosoma* colony is attained; *Didemnum* **roberti*** (p. 516); *D.* (?) **turritum*** (p. 521) possibly the type of a new genus; *Diplosomoides* **ostrearium** (p. 526); *Diplosoma spongiforme* (Giard) var. (?), discussion of the morphological characters of the sp. Synoicidae: *Macroclinum* **papilliferum*** (p. 530); *M. hypurgon* f. **galei** (p. 535); *Polyclinum* Sav., discussion of the cloacal system and of the atrial tongues (p. 539); *P. neptunium* f. **typicum*** and f. **incrustatum** (p. 542); *P. macrophyllum* ssp. **phortax*** (p. 546). Distribution. Deals with the krikobranchiate ascidians of the marine littoral and shallow water regions off S. W. Australia from Shark's Bay to King George's Sound, giving a table of all known spp. from this region together with their usual occurrence and their wider distribution in relation to the wider distribution of related forms.—*W. Michaelsen (transl. by M. L. Hett).*

14952. OKA, ASAJIRO. On a new genus of simple ascidians intermediate between "Molgula" and "Rhizomolgula" ("Hemirhizomolgula" nov. gen.). *Proc. Imp. Acad.* [*Tokyo*] 2(4): 174-176. 1926.—**HEMIRHIZOMOLGULA** (p. 174), type *H.* **utidai** (p. 174), N. Sakhalin, type in author's coll.; *Rhizomolgula* **japonica** (p. 176), Japan.

14953. OKA, ASAJIRO. On the mode of gemmation in Dictyostyela depressa n. g. n. sp. (Ascidiae sociales). *Proc. Imp. Acad.* [*Tokyo*] 2(7): 348-351. 2 fig. 1926.—**DICTYOSTYELA** (p. 348), resembling *Synstyela* and *Goodsiria*, type *D.* **depressa*** (p. 348), on *Haliotis gigantea*. The buds are not formed from the creeping stolon, but directly from the lateral region of the parent ascidiozooid. This peculiar type of budding may be termed "pseudo-stolonial" and seems to throw light upon the nature of colony formation in certain genera of ascidians in which the existence of asexual reproduction has hitherto remained doubtful. It appears highly probable that *Stolonica* also reproduces by means of this peculiar mode of gemmation and afterwards loses by atrophy the stolon-like tubes which connected the different ascidiozooids of the colony.

14954. OKA, ASAJIRO. A striking case of mimetism in simple ascidians. *Proc. Imp. Acad.* [*Tokyo*] 2(8): 423-425. 1926.—*Ascidia* **dolosa** (p. 424) and *Cynthia* **snaboja** (p. 424) both mimic *Molgula hartmeyeri* Oka which grows in the same locality.

14955. OKA, ASAJIRO. A revision of the spiniferous species of "Cynthia" (Ascidiae simplices), with description of a new species. *Proc. Imp. Acad.* [*Tokyo*] 2(10): 559-561. 1926.—*C.* **pachyderma** (p. 559), from Misaki. The author made a comparative study of all the spiniferous spp. of *Cynthia* (except *spinifera* and *okai*) and concludes that they do not constitute a natural group but must be regarded as being polyphyletic in origin. A table shows the differences in the most important anatomical characters. Suggestions for further changes are made.

CYCLOSTOMATA, ELASMOBRANCHII, AND PISCES

BARTON WARREN EVERMANN, *Editor*

H. WALTON CLARK, *Associate Editor*

(See also in this issue Entries 12074, 12097, 12135, 12338, 12346, 12461, 12476, 13001, 13030, 13076, 13123, 13139, 13192, 13600, 13602, 13622, 14240, 14244, 14254, 14303, 14383, 14457, 14485, 14496, 14504, 14539, 14541, 14543, 14647, 14991, 15017, 15080)

14956. [AMBROZ, A. I.] АМБРОЗ, А. И. Сельдь (**Clupea harengus pallasi C. V.**) залива Петра Великого. Биологический очерк. **(The herring of Peter the Great Bay. A biological sketch.)** [English summary.] Известия Тихоокеанского Научного Института Рыбного Хозяйства (*Bull. Pacific Sci. Fisheries Inst.*) 6: i-viii+1-313. 7 maps, 30 graphs. 1931.—This sp. ranges from Korea to Bering Strait and perhaps to the estuary of the Kolyma River. Within these limits it is distributed universally but not in equal quantities. The herrings of different shoals differ greatly in length and weight. Fatness varies according to season and sex. From June

to October only the 2-year-old fish remain near the shores. In the late fall the 3-year-old fish approach the shores and are followed by the 4-year-olds. The length of life in Peter the Great Bay is 13 years. Cessation of feeding takes place only just before and during spawning. The food of adults is mostly Crustacea (Copepoda, Mysidae, Amphipoda); more rarely the worm *Sagitta* and the eggs of fish. During the first 5 or 6 months of their life herrings reach an average length of 110 mm. During the winter the rate of growth slows down considerably, especially after the 2nd winter. The rate of growth is far more rapid here than in the White Sea. Sexual maturity is attained by some of the 2-year-old fish and by all of the 3-year-olds. Sexually productivity lasts as long as life. The number of eggs of an individual varies from 10,836 to 134,100, depending upon age, weight, and length of the fish; the average number in the general herring migration of 1927 was 72,178. Spawning extends from March to May, according to the latitude, being later in the north. The eggs are demersal. Spawning takes place in water varying in depth from 15 cm. to 10 m. or more, at water temp. a little below or near 0°. An individual deposits all its eggs at the same time. The incubation period varies from 15 to 50 days, according to the temp.; the sum of the temp. of the embryonal period in 4 cases varied from 136° to 143.1°. Shoreward migration of the older fish is determined by maturation of the sexual products. There are 4 successive migrations, first of the older fish (8 to 4 years), then of the 4-year-olds, 3-year-olds, and 2-year-olds; each of these age groups contains a certain percentage of other groups. The migrations extend from March to late May or even June. The spring migrations in the bays take definite courses, varying with the age group. Within a few days after hatching the fry leave the spawning grounds for deeper water. The herring shoal of Peter the Great Bay is purely local, and the region is regarded as a closed basin for herring. The 3-year age group was most numerous (32.3%) in the general catch of 1927, each succeeding age group appearing in lesser amount. Bibliography of 73 titles.

14957. **ANCONA, UMBERTO D'. Murenoidi (Apodes) del Mar Rosso e del Golfo di Aden. Materiali raccolti dal Prof. Luigi Sanzo nella Campagna della R. N. "Ammiraglio Magnaghi" 1923-24. [Muraenoids (Apodes) from the Red Sea and Gulf of Aden, collected by Prof. Luigi Sanzo on the cruise of the R. N. "Ammiraglio Magnaghi" 1923-24.]** *R. Comitato Talassografico Italiano Mem.* 146: 1-146. Map. 5 pl. 1928.—This collection includes 5 specimens definitely young or adult; 93 between larval and semilarval, and 24 prelarval stages hatched on the boat. The definitely adult or young belong to the species: *Ophisoma anago* (Schlegel) new for the Red Sea, *Muraena hepatica* Rüpp., *M. undulata* (Lac.), *Muraena* sp. juv., *Ophichthys* sp. juv. (possibly *O. arenicola* Klz.). The vertebrae of all were counted by radiograph, thus establishing the diagnoses. Larvae and semilarvae are described in detail. They belong to the following larval species, mostly new. Where possible the referable adult species is given, otherwise the adult muraenoid family. All species are figured. Congridae: *Leptocephalus ophisomatis* **anagoi*** (p. 17); *L.* **sanzoi*** (p. 27); *L.* **macrenteron*** (p. 32); *L. mauritianus** Pappenheim described; *L. congri* **cinerei*** (p. 38); *L.* **congroides*** (p. 43); *L.* **magnaghii*** (p. 44); *L.* **cotroneii*** (p. 47). Family Incertae sedis: *L.* **arabicus*** (p. 51). Nettastomidae: *L.* **saurencheloides*** (p. 52); *L.* **lateromaculatus*** (p. 56); *L.* **bellottii*** (p. 60). Synaphobranchidae: *L.* **synaphobranchoides*** (p. 63). Ophichthyidae: *L.* **ophicthoides*** (p. 65). Echelidae: *L.* **echeloides*** (p. 69). Muraenidae: *L.* **grassianus*** (p. 70); *L. muraenae* **undulatae*** (*L. peterseni* Weber) (p. 75); *L.* **muraenoides*** (p. 79); *L. muraenae* **hepaticae*** (p. 82); *L.* **erythraeus** (p. 87). Almost all species described present similarities to some of those noted for the Mediterranean; none, however, is certainly common to that sea. There is, apparently, no exchange of Apodes across the Suez Canal. The geographic, seasonal, and bathymetric distribution of the species is also considered. The following are among interesting facts recorded: The absence of leptocephali in low-lying waters, in particular the Gulf of Suez; the greater abundance of leptocephali in the most southern part of the Red Sea; the abundance of leptocephali in the winter months in the Gulf of Aden and the contemporaneous immigration into the Red Sea across the Strait of Bab-el-Mandeb. A tentative systematic arrangement is made of larval species of Apodes hitherto described collectively. The author maintains that, putting into synonymy all those not corresponding to new species, about 96 spp. may be distinguished. These, he believes, fall into natural groups, among which may be found those corresponding to the families: Anguillidae, Congridae, Nettastomidae, Ophichthyidae, Echelidae, Nemichthyidae, and Muraenidae. He indicates the species of which the adult species was noted with the name corresponding to that of the latter, attributing it to the author who identified it. The following are also proposed: *Leptocephalus* **weberi** (*L. hjorti* Weber) (p. 104), *L.* **roulei** (p. 113), *L.* **tilurus** (*Tilurus hyalinus* Facc.) (p. 117), *L.* **tiluropsis** (*Tiluropsis* sp. Roule) (p. 118).—*U. D'Ancona* (*transl. by F. La Monte*).

14958. **BELLOC, GÉRARD. Étude monographique du Merlu Merlucius merluccius L. (1e et 2e parties.)** *Rev. Trav. Office Pêches Maritimes* 2(2): 153-199. 7 maps. 25 fig.; (3): 231-288. Map. 14 fig. 1929.—The taxonomic position, species, varieties, and affinities of the hake (*Merlucius*) are treated, and the genus is diagnosed and characterized. The geographic and bathymetric distribution is discussed. Detailed descriptions, accompanied by illustrations, are given of the morphology and anatomy of the common European hake, and a case of hermaphroditism, comparatively rare in this genus, is reported. Information is also given on the common and scientific names of the European species. The hake is a fish of temperate zones and middle depths. It is represented in the north Atlantic by *M. merluccius* (a European sp.) and *M. bilinearis* (an American sp.); in the south Atlantic by *M. capensis* (an African sp.); in the north Pacific by *M. productus* (an Amer. sp.); in the south Pacific by *M. gayi* (Australian sp.). The European hake (*M. merluccius*), of which the fishery has been carried on for a long time, is fished today by trawlers from Cape Blanc to the Hebrides. The principal French fishing centers are Boulogne, Lorient, Arcachon, and especially La Rochelle. The hake is endowed with remarkable fecundity; the ♀ deposits 2-7 million eggs. Part 2 deals with the development of eggs and fry, and with the growth etc. (ethnic and sexual variations, diseases and abnormalities, albinism and melanism) of the adult. A dichotomous key is given to postlarval stages of the Gadidae. The eggs are pelagic; they are transparent and have a homogeneous vitellus and an oil globule; their development up to eclosion lasts about 65 hrs. The larva is pelagic until it reaches a length of about 4 cm. The adult may attain a length of 1.3 m. ("1 m. 30") and a weight of 15 kgm. Growth is rapid, varying with the latitude, being most rapid in a lower latitude. The ♀ grows faster than the ♂. Three growth periods of unequal rate, corresponding to 3 phases of the sexual cycle, are exhibited. A dwarf race of hake occurs in the Mediterranean. The limits of geographic distribution are: From Trondhjem Fjord, Norway, in the north, to Cape Blanc in the south. The hake is fished at a depth of 800 m. A bibliography is included.—*G. Belloc* (*transl. by F. La Monte*).

14959. **BORODIN, N. A. On the genus Anostomus (family Characinidae).** *Bull. Mus. Comp. Zool. Harvard Coll.* 72(2): 37-52. 4 pl. 1931.—The nomenclatural history and taxonomic relationships of this genus are reviewed. The subfam. Anostominae is considered to be composed of *Anostomus, Leporinus, Leporellus, Curimatus, Prochilodus, Rhytiodus, Anodus,* and *Chaenotropus.* A key is given to the 4 subgenera recognized: *Anostomus, Schizodon, Schizodontopsis,* and *Lahilliella.* The spp. represented in the collections of the Mus. Comp.

Zool. are redescribed and synonymies are given. *Anostomus* garmani* (p. 47) and *A.* rostratus* (p. 50), Brazil; types in Mus. Comp. Zool.

14960. **BURKENROAD, MARTIN D. Notes on the sound-producing marine fishes of Louisiana.** *Copeia* 1931 (1): 20-28. 1931.—Capture by man of sound-producing fishes is probably a stimulus to sound production similar in effect to some stimulus provided by the normal environment, to which the response of the fish is adaptive. Sound production in many fishes probably has a defensive function. Sound production in *Hyporamphus unifasciatus* and *Chaetodipterus faber* is described, also in a number of fishes closely related to other, previously described, sound-producers. Sound produced by the movement of the pectoral spine of *Galeichthys milberti* is not merely incidental to the defensive fixation of the spine. Methods of sound-production not previously described for these forms are noted in *Monacanthus hispidus* and certain sciaenids. The importance of the teeth as sound-producing organs of fishes is emphasized. The drumming muscles of one sciaenid, *Pogonias*, are intrinsic to the swim-bladder. Twenty-five sound-producing fishes of Louisiana are classified. The list suggests that sound production has arisen independently in the different groups.—*From author's summary.*

14961. **CRAIG-BENNETT, A. The reproductive cycle of the three-spined stickleback, Gasterosteus aculeatus, Linn.** *Phil. Trans. Roy. Soc. London B* 219(466): 197-279. 4 pl., 3 fig. 1931.—The reproductive cycle of *G. aculeatus* in its natural habitat shows a close relation to the temp. of the habitat. In the ♂ the annual beginning of spermatogenesis occurs in Aug., and experimentally this was shown to be conditioned by the high temp. of the habitat. The time during which spermatogenesis is in progress varies inversely with the rate of fall of temp. of the habitat in autumn. The natural breeding season begins when the rate of vernal rise of temp. reaches the order of 1°C. per week, this usually occurring in the latitude in which the samples were taken in April or May. In many cases the ♂ will have completed spermatogenesis prior to the breeding season and is potentially mature for a period which may amount to 2 months. During this period the secondary sexual characters and the breeding instincts are absent but the testes of such fish will fertilize eggs artificially. The development of the secondary sexual characters of the ♂ is dependent on the joint action of 2 factors: (1) The presence of well developed interstitial tissue in the testes; (2) on the fish being subjected to a rise of temp. of the order of 1°C. per week. In the natural habitat the development of interstitial tissue precedes a rise of temp. and when such fish are subjected to the rise of temp. a rapid development of the secondary sexual characters results. Under experimental conditions this order may be reversed and then a gradual development of the secondary sexual characters accompanies the development of the interstitial tissue. The rate of degeneration of the interstitial tissue varies directly with the temp., and it is impossible to produce a continuous breeding season. By suitable experimental conditions the breeding season, which in the natural habitat is restricted from April to July, may be developed at any time of the year. The cycle of the germ cells is conditioned by the temp. cycle, but that of the interstitial tissue is not directly dependent on either the physical environment or the food of the fish. A rapid development of the interstitial tissue results from either substerility doses (1 Unit Skin Dose) of hard x-rays, or from the injection of an alkaline extract of mammalian anterior lobe of pituitary.—*A. Craig-Bennett.*

14962. **DERANIYAGALA, P. E. P. Notes on the breeding habit of the eel Leiuranus semicinctus.** *Ceylon Jour. Sci. Sect. B. Zool. and Geol.* 16(1): 107. 1930.—Brief description of mating of ♂ and ♀ eels caught near Ceylon in Feb.—*F. B. Sumner.*

14963. **[DERZHAVIN, A. N.] ДЕРЖАВИН, А. Н. Куринское рыбное хозяйство и мелиорация Мугани. [The fisheries of the Kura River (Transcaucasia).]** [English summary.] Известия Бакинской Ихтиологической Лаборатории (*Bull. Baku Ichthyol. Lab.*) 2(2): 5-68. 1929.—Irrigation operations in this area have had a very detrimental effect on the local fisheries, in which the sturgeon is the most important sp. Suggestions are made for the protection of the fishing industry.

14964. **[DERZHAVIN, A. N.] ДЕРЖАВИН, А. Н. Заметка о рыбах реки Кередж (сев. Персия). [A note on fishes of the River Karaj (North Persia).]** [English summary.] Известия Бакинской Ихтиологической Лаборатории (*Bull. Baku Ichthyol. Lab.*) 2(2): 69-79. 3 fig. 1929.—The following 6 spp. are recorded from this river, which flows from the Elburz Mts. southward into a salt lake, Daria-i-Namak: *Salmo fario fario; Leuciscus cephalus orientalis; Varicorhinus* bergi* (p. 72); *V.* nikolskii* (p. 74); *Barbus* kessleri* (p. 75); and *Alburnoides bipunctatus fasciatus.* There are descriptive notes on the previously known forms and remarks on faunal relationships.

14965. **EIGENMANN, CARL H., and GEORGE S. MYERS. The American Characidae.** *Mem. Mus. Comp. Zool. Harvard Coll.* 43(5): 429-558. 11 pl. 1929.—Part 5, concluding the monograph, edited by Myers after Eigenmann's death, and with supplement by Myers. About ⅓ of the species are treated in the whole monograph. Genera reviewed in this part are *Piabina, Creatochanes, Phenacogaster* and related genera, of the Tetragonopterinae; also the genera of subfamilies Rhoadsiinae, Glandulocaudinae, Iguanodectinae and Stethaprioninae. *Gephyrocharax* major Myers (p. 479), Bolivia; *Ephippicharax* franciscoensis* (p. 506), San Francisco Basin. The S. Amer. Tertiary characins are reviewed, including: **LIGNOBRYCON** (p. 513), type *L.* ligniticus (*Tetragonopterus l.* Woodward) (p. 513), Brazil; and *Eobrycon* branneri* Eigenmann (p. 514), Tertiary lignite, São Paulo, Brazil, type in Indiana Univ. The supplement by Myers includes accounts of expeditions, additional information on various species and descriptions of: *Moenkhausia* simulata* Eigenm. & Pearson (p. 523), *M.* crisnejas* Pearson (p. 524), *Knodus* megalops Myers (p. 527) and *Hemigrammus* paipayensis Pearson (p. 533), Peru; *Hyphessobrycon* coelestinus Myers (p. 535), Goyaz, Brazil; **BRYCONACIDNUS** Myers (p. 545), type *B.* ellisi (*Hyphessobrycon e.* Pearson (p. 545)); *B.* hemigrammus (*Bryconamericus h.* Pearson) (p. 546). Plates include one of x-rays. Sexual dimorphism of Glandulocaudinae is expressed by different organs in different species.—*C. L. Hubbs.*

14966. **GINSBERG, ISAAC. On the difference in the habitat and the size of Cynoscion arenarius and C. nothus.** *Copeia* 1931(3): 144. 1931.—*C. arenarius* averages slightly larger in size, and is more of a shallow-water form, while *C. nothus* occurs more in deeper water. The 2 occur together, however, at intermediate depths in the Gulf of Mexico.

14967. **GUDGER, E. W. The fourth Florida whale shark, Rhineodon typus, and the American Museum model based on it.** *Bull. Amer. Mus. Nat. Hist.* 61(9): 613-637. 9 pl. 4 fig. 1931.—This 32-ft. specimen was captured June 9, 1923, near Marathon, Florida. Measurements and photographs (moving and stills) were made of the living or just dead fish. From these, helped by all other known figures, the model was made. The characteristic features of the fish are described, its habits considered, and its occurrence in the Atlantic and its dependencies discussed. Photographs of the model and figures of all known mounted specimens (so far as available) are reproduced for comparative study.—*E. W. Gudger.*

14968. **GUDGER, E. W., and W. H. HOFFMANN. A shark encircled with a rubber automobile tire.** *Sci. Monthly* 33(192): 275-277. 1 fig. 1931.—A ♂ shark of non-determinable species was captured off Havana harbor, with an automobile tire encircling its body behind the pectoral fins and in front of the dorsal. At Havana, garbage, street cleanings, and other debris are loaded on scows, and then are towed out to sea and dumped. Sharks collect around these to feed. It is presumed that this shark thrust its head through the tire, laid its pectorals

flat against its sides and pushed through until the dorsal fin was caught against the tire, then on expanding its pectorals, it was caught in the tire.—*E. W. Gudger.*

14969. **HERRE, ALBERT W.** A check list of fishes from the Solomon Islands. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 6(4) : 4-9. 1931.—A brief notice of previous work is given, together with a list of 344 spp.

14970. **HERRE, ALBERT W.** A list of fishes collected at Moorea, one of the Society Islands, being the first record from this island. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 6(4) : 10. 1931.—A list of 49 spp.

14971. **HERRE, ALBERT W.** A check list of the fishes recorded from the new Hebrides. *Jour. Pan-Pacific Res. Inst.* [*Honolulu*] 6(4) : 11-14. 1931.—A list of 321 spp., including 140 collected by the author.

14972. **HORNYOLD, ALFONSO GANDOLFI.** On the preparation of eel scales. *Jour. Roy. Micros. Soc.* 51(3) : 266-267. 1931.—When eels are killed by immersion in water at 52° C., they are not damaged, and the mucus on the scales is coagulated and can easily be washed off. Clean scales can then be obtained by scraping and rinsing.

14973. **HUBBS, CARL L., and LEONARD GIOVANNOLI.** Records of the rare sunfish Masturus lanceolatus for Japan and Florida. *Copeia* 1931(3) : 135-137. 1931. —This sp. is recorded as new to Japan and Florida and is redescribed.

14974. **LÖNNBERG, EINAR, und HIALMAR RENDAHL.** Eine neue Art der Gattung Corydoras. *Arkiv Zool.* [*Stockholm*] 22 A(2, No. 5) : 1-6. 1 pl. 1931.—*C.* **melini*** (p. 1), Amazonas, Brazil.

14975. **LÖNNBERG, EINAR.** Skärkniven, Pelecus cultratus Lin. fångad i Norrström vid Stockholm. [P. cultratus captured near Stockholm.] *Fauna och Flora* 1931(4) : 177-182. 1 fig. 1931.

14976. **PELLEGRIN, JACQUES.** Les trois espèces de Ptérophylles. *Rev. Hist. Nat. Pt. 1. B. Aquicult, Ent. Aquar. et Terrar.* 10(6) : 204-207. 3 fig. 1929.—*Pterophyllum scalare* C. & V., *P. eimekei* Ahl, and *P. altum* Pellegrin are described.

14977. **PERRY, LOUISE MERRIMON.** Catfish feeding on the eggs of the horseshoe crab, Limulus polyphemus. *Science* 74(1917) : 312. 1931.—At Sanibel Isl. on the west coast of Florida in April, 1930, hundreds of spawning *Limulus* were seen surrounded by hundreds of catfish standing almost vertically on their heads, forming "rosettes" around the crabs whose eggs they were devouring. Only one other like case has been recorded. In 1897, eels were seen eating the eggs of *Limulus* near Bristol, Rhode Island.—*E. W. Gudger.*

14978. **SAWICKI, MARCELI.** W sprawie celowości ponawiania importów pstrąga tęczowego (Trutta iridea) z Ameryki Północnej. (W świetle badań nad pogłowiem zaklimatyzowanem od lat 20 w Złotym Potoku w Polsce.) [The opportunity to renew the importation of rainbow trout from N. America. Study on subjects acclimatized for 20 yrs. in Poland.] [In Polish and French.] *Roczniki Nauk i Leśnych* (*Polish Agric. & Forest. Ann.*) 22: 351-362. 1929.—Previous workers have reported that the rainbow trout degenerates promptly when transplanted, but have not differentiated between somatic changes caused by poor environment, and germinal changes, evident in morphological and physiological deviations. Material brought in 20 yrs. ago shows no morphological changes and has not decreased in fertility. The decrease in egg diam. in the 1st generation is considered a natural symptom of biologic regulation and is not due to genetic degeneration.—*From author's summary* (*transl.*).

14979. **SMEDLEY, N.** An osteoglossid fish in the Malay Peninsula. *Bull. Raffles Mus.* 5. [67]-[68]. 1931. —A second record of *Scleropages formosus.*

14980. **SMITH, HUGH M.** Sikukia stejnegeri, a new genus and species of freshwater cyprinoid fishes from Siam. *Copeia* 1931(3) : 138-139. 1931.—**SIKUKIA** (p. 138), resembling *Amblyrhynchichthys,* erected for *S.* **stejnegeri** (p. 138).

14981. **[SOLDATOV, V. K., and G. J. LINDBERG.]** СОЛДАТОВ, В. К., и Г. У. ЛИНДБЕРГ. Обзор рыб дальневосточных морей. (A review of the fishes of the seas of the Far East.) [English summary.] Известия Тихоокеанского Научного Института Рыбного Хозяйства (*Bull. Pacific Sci. Fisheries Inst.*) 5: i-xlvii + 1-576. 16 pl., 76 fig. 1930.—In this work, based upon collections made by various ichthyologists during the past 20 years, the authors aim to furnish a handbook for the ready identification of fishes occurring in Russian Pacific waters. Previous work on the fishes of the region is briefly reviewed. The present work covers the region from Korea to Bering Strait. It deals chiefly with marine fishes, but includes some fresh-water spp. from the river mouths. Fishes recorded in the literature from adjacent regions are also treated. The spp. so far found in the region number 347, to which 113 spp. are added as probably occurring. The systematic account of spp. includes references to the literature, brief descriptions, and distributional records. Keys to families, genera, and some spp. are given. New forms are from the Pacific Coast of Siberia, unless otherwise stated; their descriptions are given in both English and Russian. Trygonidae: **UROLOPHOIDES** Lindberg (p. 24), allied to *Urolophus,* type *Urolophoides* **giganteus*** (p. 26). Syngnathidae: *Syngnathus schlegeli* **soldatovi*** Lindberg (p. 79), Siberia and Korea. Cottidae: **RADULINOPSIS** Soldatov & Lindberg (p. 183), near *Stelgistrum,* erected for *R.* **derjavini*** Soldatov & Lindberg (p. 185) and *R.* **derjugini*** Soldatov (p. 189) ; *Eurymen* **bassargini*** Lindberg (p. 286). Cyclopteridae: *Cyclopteropsis* **lindbergi*** Soldatov (p. 318) ; *C.* **popovi*** Soldatov (p. 322). Liparidae: *Neoliparis* **mednius*** Soldatov (p. 339) ; *Liparis* **niger*** Soldatov & Lindberg (p. 352) ; *L.* **dulkeiti*** Soldatov (p. 356) ; *L.* **tartaricus*** Soldatov (p. 361) ; *L.* **brashnikovi*** Soldatov (p. 364) ; *L.* **dubius*** Soldatov (p. 366). Bathymasteridae: *Bathymaster* **derjugini*** Lindberg (p. 478). Cryptacanthodidae: **CRYPTACANTHOIDES** Lindberg (p. 482), near *Delolepis,* type *C.* **bergi*** Lindberg (p. 484). The types of some new spp. are in the Pacific Res. Sta. of Fisheries at Vladivostok or in the collections of the Far East Expedition; the depository of the other types is not stated. Fourteen families, 32 genera, and 45 spp. are recorded as new to the region. There is a full index.

14982. **SPARTÀ, A.** Contributo alla conoscenza di uova e larve nei Labridi. II. Uova e larve di Crenilabrus ocellatus Forsk. [Egg and larva of C. ocellatus.] *R. Comitato Talassografico Italiano, Mem.* 182. 6p. 1 col. pl. 1931.—The embryonic* and early larval* stages are described.

14983. **VAN DER HORST, C. J.** Some South African siluroid fishes. *Ann. Transvaal Mus.* 14(3) : 246-250. 4 fig. 1931.—*Synodontus zambezensis,* new to Limpopo River system (Transvaal and Portuguese East Africa). Specimens of *Amphilius* from Transvaal and Natal are described and referred to *A. grandis* Blgr., hitherto unknown from South Africa; however, an accompanying figure, evidently referring to the specimens discussed, is labeled "*A.* **transvaaliensis** n. sp." (p. 247). Three new spp. of *Chiloglanis,* a genus hitherto unknown in S. Africa, are described from Transvaal: *C.* **pretoriae*** (p. 248) ; *C.* **swierstrai*** (p. 249) ; *C.* **pumilus*** (p. 250).

14984. **VLADYKOV, VADIM.** Sur un nouveau genre de Cobitides: Sabanejewia. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(1) : 85-90. 1929.—**SABANEJEWIA** (p. 86), near *Cobitis,* type *S.* **balcanica** (*Cobitis b.* Karaman = *C. montana* Vladykov) (p. 87), of which an emended description is given; *S.* **aurata** (*Acanthopsis a.* Filippi) (p. 88). The genus probably includes also *Cobitis taenia hohenackeri* Kessler and *C. t. aralensis* Kessler.

14985. **WEBER, MAX, and L. F. de BEAUFORT.** The fishes of the Indo-Australian Archipelago. Vol. 5. Anacanthini, Allotriognathi, Heterosomata, Berycomorphi, Percomorphi: Families: Kuhliidae, Apogonidae, Plesiopidae, Pseudoplesiopidae, Priacanthidae, Centropomidae. 458p. 98 fig. E. J. Brill, Ltd.: Leiden, 1929.—The fifth volume of this well known work, which is very useful and labor-saving to students of East Indian fishes and those from adjacent regions, follows the

ıeral plan of the preceding volumes. Keys to the nilies, genera and species are given, followed by deiptions. The scope of the paper is readily gathered ım the title. As a result of an examination of Bleeker's ginal types in the Leyden Mus., a number of his names ɔ reduced to synonymy. Aside from these new synyms listed below, many have undoubtedly been left t of this abstract as not being definitely stated or imed to be new by the authors. The large group of species ɛated under *Apogon* are divided into smaller genera ı the basis of number of dorsal spines and number of ys in the anal fin. The larval stages of 2 species of eterosomata are described and figured without being ımed. *Coryphaenoides* **sibogae** (p. 29), Flores Sea, 694 .; *Pseudorhombus* **quinquocellatus** (p. 104), Strait ladura, near Kangeang Ids., 80-100 m.; *Nematops* **:andisquama*** (p. 134), St. Nikolaas Bay, 108-162 m.; *ımariscus* **sunieri** (p. 141), Nikolaas Bay, 108-252 m.; *chirus* **abnormis** (p. 163), market of Makassar, Celebes; *pogon* **gjellerupi** (p. 285), *A.* **heurni** (p. 286), *A.* **damıermani** (p. 338) and *Ambassis confinis* **occidentalis** (p. 20), New Guinea. *Symphurus* **regani*** (*Aphoristia longata* Weber 1913, preocc. by *Symphurus elongatus* Gunther)) (p. 210); *Bothus intermedius* (Bleeker) (=*Anticitharus annulatus* Weber); *Solea lascaris* Risso (=*S. margaritifera* Gthr.); *Liachirus melanospilos* (Bleek.) (=*L. nitidus* Gthr.); *Cynoglossus puncticeps* (Richardson) (=*Plagusia brachyrhynchus* Bleek.); *Holocentrum cornutum* Bleek. (=*H. melanospilus* Bleek.); *Myripristis pralinius* C. & V. (=*M. seychellensis* C. & V.; *M. bleekeri* Gthr.; *M. indicus* Bleek.; and *M. multiradiatus* Gthr.); *M. hexagonus* Lac. (=*M. pahudi* Bleek.); *M. melanostictus* Bleeker (=*M. macrolepis* Bleek.); *M. murdjan* (Forsk.) (=*M. parvidens* C. & V.; *M. microphthalmus* Bleek.; and *M. violaceus* Bleeker); *Apogon melas* Bleek. (=*A. hypselonotus* Bleek.); *A. chrysopomus* Bleek. (=*Amia urostigma* Bleek.); *Apogon chrysotaenia* (=*A. cyanotaenia* Bleek. and *Amia multilineata* Bleeker); *Apogon cyanosoma* Bleeker (=*A. wassinki* Bleek.); *A. poecilopterus* C. & V. (=*A. glaga* Bleek.; *A. truncatus* Bleek.; and *A. bilaciniatus* Weber); *A. novae-guineae* Val. (=*A. modestus* Bleek.); *Rhabdamia gracilis* (Bleeker) (=*R. clupeiformis* Weber); *Ambassis commersoni* C. & V. (=*A. batjanensis* Bleek.); *Melamphaës robustus* Gthr. (=*M. malayanus* Weber). Resurrected names: *Psettodes belcheri* Bennet is distinct from *P. erumei* Bloch & Schneider; *Achirus hartzfeldi* Bleeker not a synonym of *A. japonicus* Schlegel; *Paraplagusia guttata* (Macleay) is not the same as *P. japonica* (Schlegel); *Cynoglossus polytaenia* (Bleeker) not a synonym of *C. lida* (Bleeker). —*I. Ginsburg.*

AMPHIBIA AND REPTILIA

G. K. NOBLE, *Editor,* Amphibia

KARL PATTERSON SCHMIDT, *Editor,* Reptilia

(See also in this issue Entries 12135, 12458, 12459, 12472, 12488, 12630, 13076, 13097, 13269, 13513, 13551, 14240, 14303 14406, 14416, 14433, 14571)

GENERAL

14986. ANGEL, F. Reptiles et batraciens recueillis en Indo-Chine par la Mission de MM. Delacour et Lowe. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(6): 445-447. 1928.—A list of 16 reptiles and 6 amphibians, with locality records and with descriptive notes on some spp.

14987. ANGEL, F. Liste des reptiles et batraciens du Haut-Laos recueillis par M. Delacour. Description d'un genre, de deux espèces et d'une variété d'ophidiens. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(1): 75-81. 4 fig. 1929.—A list of 31 spp. of reptiles and 1 sp. of caecilian from Xieng-Khouang, French Indo-China, with descriptive notes on some of them. Colubridae: **PARATAPINOPHIS** (p. 76), near *Tapinophis,* erected for *P.* praemaxillaris* (p. 78); *Plagiopholis* **delacouri** (p. 78); *Ablabes multicinctus* **bicolor** (p. 79). Types in Paris Mus.

14988. GANDER, FRANK F. Observations on an alligator lizard. *Copeia* 1931(1): 14-15. 1931.—A captive *Gerrhonotus scincicauda webbii* fed on various insects and on the young of *Sceloporus occidentalis biseriatus* and *Mus m. musculus.* A *Hyla regilla* gained protection from the *Gerrhonotus* by raising itself on its toes, puffing itself up, and possibly emitting some protective vapor.

14989. SCHOUTEN, GUILLERMO B. Contribuciones al conocimiento de la fauna herpetológica del Paraguay y de los paises limítrofes. [Herpetology of Paraguay and neighboring countries.] *Rev. Soc. Cient. Paraguay* 3(1): 5-32. 2 fig. 1931.—From personal observations and from the literature, the author gives an account of the food habits and reproduction of Paraguayan snakes. A systematic list of spp., a discussion of the venomous forms, and notes on economic importance are added.

14990. SMEDLEY, N. On some reptiles and a frog from the Natuna Islands. *Bull. Raffles Mus.* 5. [46]-[48]. 1931.—These islands are notable for a predominance of Bornean elements in their fauna. An annotated list is given of 9 reptiles and 1 amphibian collected by F. N. Chasen in 1928. The following are new to the Natunas: *Draco cornutus* (emended description), *D. formosus, Boiga drapiezii,* and *Rana glandulosa.*

14991. VINCIGUERRA, D. Risultati zoologici della Missione inviata dalla R. Società Geografica Italiana per l'esplorazione dell' oasi di Giarabub (1926-1927). Rettili, batraci e pesci. [Zoological results of the Mission sent by the Ital. R. Geogr. Soc. for exploring the Oasis of Jarabub (1926-1927). Reptiles, batrachians, and fish.] *Ann. Mus. Civ. Storia Nat. Genova* 52: 324-345. 1925/1928.—A record of 20 spp. of Reptilia, 1 Batrachia, 1 Pisces, with comments on each.

REPTILIA

14992. ABEL, OTHENIO. Eine Reptilienfährte aus dem Oberen Perm (Grödener Sandstein) der Gegend von Bozen in Südtirol. *Palaeobiologica* [*Vienna*] 2(1/3): 1-14. 1 pl., 2 fig. 1929.—Stratigraphy and flora suggest an Up. Permian age for this sandstone. The track is referred to *Herpetichnium acrodactylum** Pabst, type, from the Rotliegende, consists of the left hind foot of a 5 toed vertebrate with sharp claws and probable phalangeal formula of 2, 3, 3, 3, 3, hence presumably made by a theriodont, mammal, or turtle, more probably the last.—*A. S. Romer.*

14993. BERTONI, A. de W. Nuevo ofidio tiplópido del Paraguay. *Rev. Soc. Cient. Paraguay* 3(1): 4. 1931.—*Helminthophis wilderi* recorded as new to Paraguay.

14994. BRONGERSMA, L. D. Notes on the list of reptiles of Java. *Treubia* 12(3/4): 299-303. 1930.—Critical notes on 30 spp.

14995. CARPENTIER, C. J. Note sur un serpent nouveau pour le Maroc. *Bull. Soc. Sci. Nat. Maroc* 10 (1/6): 19-20. 2 fig. 1930.—*Tropidonotus natrix**.

14996. [CHEKANOVSKAÏA, O.] ЧЕКАНОВСКАЯ, О. К морфологии черепа змей Typhlopidae, Glauconidae и Ilysiidae. [Morphology of the skull of Typhlopidae, Glauconidae and Ilysiidae.] [German summary.] Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft*) 16(1/2): 55-68. 10 fig. 1930.—A comparative study of the skulls of Typhlopidae, Glauconidae, and Ilysiidae leads to the conclusion that Glauconidae and Typhlopidae have very many traits in common even though they have become extremely specialized, showing indication of many traits of adaptation to subterranean life. All 3 families have a very compact arrangement of skull bones. The skulls of snakes of the family Ilysiidae

exhibit primitive traits in having a process basipterigoidei and in the presence of teeth on the praemaxillary.—*S. A. Corson.*

14997. **DERANIYAGALA, P. E. P. The Testudinata of Ceylon.** *Ceylon Jour. Sci. Sect. B. Zool. and Geol. Spolia Zeylanica* 16(1): 43-88. 7 pl. 1930.—Detailed descriptions of 7 species (*Dermochelys coriacea*, Emyda granosa ceylonensis*, Testudo elegans, Geoemyda trijuga thermalis, Chelonia mydas, Eretmochelys imbricata,* and *Caretta caretta**), belonging to as many genera, are given; the descriptions are accompanied by observations on food, reproduction, oviposition, variation, and distribution. A bibliography of 26 titles is appended.—*S. C. Bishop.*

14998. **DERANIYAGALA, P. E. P. The crocodiles of Ceylon.** *Ceylon Jour. Sci. Sect. B. Zool. and Geol. Spolia Zeylanica* 16(1): 89-95. 2 pl. 1930.—Diagnostic characters, habits, and distribution of the 2 species of crocodile found in Ceylon; the gregarious tank form *Crocodylus palustris**, and the solitary estuarine form *C. porosus**.—*W. G. Lynn.*

14999. **FORREST, H. E. Hawksbill turtle on Welsh coast.** *North Western Naturalist* 6(1): 26-27. 1931.—On *Chelonia imbricator,* new to the fauna of North Wales.

15000. **GUTHRIE, J. E. Snake notes.** *Proc. Iowa Acad. Sci.* 36: 349-359. 5 fig. 1929.—The massasauga, or prairie rattler, *Sistrurus catenatus* (Raf.) is probably becoming rare in Iowa, but the timber rattlesnake, *Crotalus horridus* L., still maintains itself in considerable numbers in those parts of the state favorable to it. The true prairie rattler, *Crotalus confluentus* Say, is found near the S. Dakota line in Plymouth County. Two specimens of *Virginia elegans* Kennicott are described from Keosauqua. Notes on the development of the fox-snake, *Elaphe vulpina* (Baird & Girard) and figures of some 2-headed snakes are given.—*F. A. Stromsten.*

15001. **HAUGHTON, S. H. Pareiasaurian studies. Part 2. Notes on some pareiasaurian brain-cases.** *Ann. South African Mus.* 28(1): 88-96. 6 fig. 1929.—Brain-cases of *Pareiasuchus* sp.* indet., *Anthodon serrarius*, Embrithosaurus schwarzi, Bradysaurus baini*,* and *Dolichopareia angusta** are described. [See also B. A. 4(10): entries 26206 and 26207.]—*A. S. Romer.*

15002. **HUENE, FRIEDRICH von. Über Rhynchosaurier und andere Reptilien aus den Gondwana-Ablagerungen Südamerikas.** *Geol. u. Palaeont. Abhandl.* [*Jena*] 17(1): 1-62. 8 pl., 14 fig. 1929.—Based on new material from Santa Maria, southern Brazil. A specimen consisting of a skull and vertebrae of *Scaphonyx australis* is described in detail, with a restoration of the palate. Isolated bones of S. American rhynchosaurs in Tübingen and the British Mus. apparently pertaining to *Scaphonyx, Cephalonia, Cephalastron* and *Cephalastronius,* are described and figured. Lydekker's description of *Hyperodapedon huxleyi** is discussed. A résumé is given of the British rhynchosaurs, based on a restudy of the material; *Hyperodapedon gordoni** and *Rhynchosaurus articeps** are redescribed. *Eifelosaurus triadicus* is probably a rhynchosaur. A definition of the rhynchosaurs is given, including 32 characters. Other Triassic rhynchocephalians are listed, and *Polysphenodon müller** is redescribed; it is near *Brachyrhinodon.* Certain Triassic footprints are probably rhynchocephalian. The Triassic rhynchocephalians are listed and arranged in 3 families: Sphenodontidae (*Brachyrhinodon, Polysphenodon*); Gnathodontidae (*Howesia Mesosuchus, ?Browniella, ?Paliguana*); and Rhynchosauridae (12 remaining forms). A number of Permian forms, including *Galephyrus, ?Broomia, Heleosaurus, Heleophilus, Youngina, Palaeagama, Noteosuchus, Saurosternum* and *?Heleosuchus* of S. Africa and the aquatic *Hovasaurus* and *Tangasaurus* are considered to be rhynchocephalians. The primitive rhynchocephalians are compared with other reptiles: Pelycosaurs, dinocephalians, thecodonts. They are genetically related to the last, but more primitive; the Eosuchia are probably ancestral to both thecodonts and rhynchocephalians. A true cynodont is represented by part of a skull previously described as *Gomphodontosuchus brasiliensis,* resembling both *Cynognathus* and *Diademodon;* this suggests that the S. Amer. beds are equivalent to the *Cynognathus* Zone of S. Africa. A jaw seems to show the presence of a parasuchian. There are further unidentified reptilian remains. The presence of rhynchosaurs and parasuchians in S. Amer. and their absence in S. Africa suggests a Triassic land connection between India and S. Amer. The geological evidence of this connection, via Australia and Antarctica, is discussed.—*A. S. Romer.*

15003. **KLAUBER, LAURENCE M. Notes on the worm snakes of the Southwest, with descriptions of two new subspecies.** *Trans. San Diego Soc. Nat. Hist.* 6(23): 333-352. Map. 1931.—*Leptotyphlops humilis* **slevini** (p. 338), Lower California, type in Calif. Acad. Sci.; *L. h.* **cahuilae** (p. 339), California (type, in author's coll.) and Arizona. Detailed notes are given on the differential characters of these forms and *L. h. humilis,* and on areas of intergradation, habits, and distribution.

15004. **KOPSTEIN, F. Herpetologische Notizen. III. Reptilien des östlichen Preanger (West-Java).** *Treubia* 12(3/4): 273-276. 1930.—A list of 43 spp. of snakes and 24 of lizards, with records of locality and altitude.

15005. **KOPSTEIN, FELIX. Die Giftschlangen Javas und ihre Bedeutung für den Menschen.** *Zeitschr. Wiss. Biol. Abt. A. Morph. u. Ökol. Tiere* 19(2/3): 339-363. 1930.—Five years work in Java on the problem of snake poisoning shows that injuries due to bites of poisonous snakes are infrequent and deaths rare. Full statistics concerning the frequency of fatal snake bites are lacking in Java, but in the year 1920 there occurred in the largest hospital of Java only 2 cases, and in the government hospital of Surabaja only 5. No one died in these hospitals of snake bites. The Annual Report for 1921 reports 5 cases, but no deaths. For the year 1923, the figures are as follows: Batavia, 3, Semarang, 13, and Surabaja, 5, with no deaths. The report of 1924 states that 132 patients with snake bites were treated in 171 hospitals of the Netherlands Indies and only 2 died. In spite of many years of experience the author knew personally of only 1 fatality due to snake bite. Even non-fatal cases were few in number. This question is interesting because in the adjoining Brit. India, according to Hugh W. Acton, during recent years there were approximately 25,000 fatalities from snake bite annually. Java has about 40,000,000 inhabitants and Brit. India approximately ten times as many. Java has 10 species of poisonous snakes, *Bungarus fasciatus, candidus,* and *flaviceps; Naja tripudians sputatrix* and *bungarus; Doliophis intestinalis* and *bivirgatus; Ancistrodon rhodostoma; Lachesis gramineus* and *puniceus,* while Brit. India has thirty. Since among the 10 types of snakes there are several fatally poisonous ones, occurring in numbers in various regions, we may ascribe the small number of cases of snake bite to the fact that these snakes are nocturnal and that they avoid human beings. The Javanese proteroglyph snakes are more dangerous for human beings than the viperids. The bite of the latter appears to be in general not deadly, for there are very few fatal cases reported in scientific literature. The observed cases of poisoning by *Lachesis* and *Ancistrodon* resulted in recovery. Cases of bite by *Lachesis gramineus* and *puniceus, Naja tripudians sputatrix* and *N. bungarus* were observed by the author. Animal experiments were carried on with the other types of snakes. The bite and poison of the sea snakes, Hydrophiinae, are discussed. The nomenclature is that of the monograph of De Rooij, "The reptiles of the Indo-Australian Archipelago."—*F. Kopstein (transl. by B. Kramer).*

15006. **MEGGITT, F. J. Insectivorous snakes.** *Nature* [*London*] 128(3227): 413. 1931.—Stomach and intestinal contents of 15 *Simotes violaceus* in Burma consisted almost wholly of insect remains.

15007. **MEHL, M. G. A new genus of mosasaurs from Mexico, and notes on the pelvic girdle of Platecarpus.** *Jour. Scientific Lab. Denison Univ.* 24(10/13): 383-400. 4 pl., 5 fig. 1929.—**AMPHEKEPUBIS,** erected to include *A.* **johnsoni*** (p. 383). The type, consisting of much

the pelvic girdle, hind limbs, and tail, is from a ality near Monterey, Mexico; horizon unknown, prenably Up. Cretaceous, type in Univ. of Missouri. neric characters include the recurved, slender unposed pubes with remarkably developed anterior ocess; the stout, non-spatulate ischia, and the comatively slender femora. Relationships perhaps closest h *Clidastes*. A pelvic girdle assigned to *Platecarpus olosaurus*) *abruptus* is described.—*A. S. Romer.*

15008. **MERTENS, ROBERT, und LORENZ MÜLLER.** r Nomenklatur einiger Eidechsen und Schlangen tropas. *Zool. Anz.* 84(11/12): 295-302. 1929.—Despite e criticisms of W. A. Lindholm, the authors main- n the validity of the following names: *Alsophylax crotis* (Blanford); *Agama aralensis* Licht.; *Ophisaurus odus* (Pallas); *Ablepharus kitaibelii* Bibron & Bory; *yx tataricus helluo* Pallas; *Coluber viridi-flavus* acépède, *Elaphe quatuor-lineata* Lacépède. The authors nclude that Lichtenstein and not Fitzinger must stand author of the genus and sp., *Ablepharus pannonicus*. hey discard *Natrix maura cherseoides* Wagler as a mere ase of *N. maura* (L.) that does not require a name. a footnote they show that *Neoemys* Lindholm is a nonym of *Eurydoidea* Gray, and they criticize Lindlm's division of *Testudo* into subgenera on the basis geographical distribution.

15009. **MIYAMOTO, S.** Über Geckonen als Moskitoinger. *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 307. 1-61. 1930.—*Gecko japonicus* and *Hemidactylus bowringii* catch daily respectively from 49 to 59 and om 43 to 48 specimens of blood-engorged ♀♀ of *Culex itigans*.—*E. C. Faust.*

15010. **PIZA, S. de TOLEDO, Jr.** Considerações a espeito da determinação biometrica das especies em phiologia. [Biometric determination of species of nakes.] *Revista Agric.* [*São Paulo*] 5(3/4): 127-141. 930.—The author attempts to show that the determiation of spp. of snakes cannot be based solely upon uch fluctuating morphological characters as the number f rows of scales, the number of sub-caudals, the numer of ventral plates, etc. If these characters are to e taken into consideration it is necessary to make a iometrical analysis of the same.—*S. de T. Piza, Jr.*

15011. **SIMPSON, GEORGE GAYLORD.** Allognathosuchus mooki, a new crocodile from the Puerco formaion. *Amer. Mus. Novitates* 445. 1-16. 6 fig. 1930.—*A. mooki** (p. 2), from upper fossil level, Puerco formaion [Eocene], San Juan Basin, New Mexico, type in Amer. Mus. Nat. Hist., New York, consists of skull, jaws, and most of the skeleton. The generic characters of *Allognathosuchus* are emended. Skull, jaws and dentition are described. Relationships with other late Cretaceous and early Tertiary crocodiles are discussed; *Caimanoidea* is similar but more primitive although later in time. The form is of interest with regard to the Cretaceous-Tertiary transition problem. The structure does not suggest either a molluscan or chelonian diet, although the jaws were unusually powerful and the teeth were adapted anteriorly for grasping and tearing and posteriorly for crushing. Possibly the rise of this short-snouted genus may have been connected with the expansion of mammals.—*A. S. Romer.*

15012. **STRECKER, JOHN K.** Dragons and other reptiles, real and imaginary. *Baylor Univ., Contrib. to Folk-Lore* 3. 1-19. 2 pl. 1929.—A discussion of dragons, sea serpents, heliotropes and other charms, disappearing broods of snakes, charming snakes, etc.

15013. [**STREL'NIKOV, I. D.**] СТРЕЛЬНИКОВ, И. Д. К характеристике адаптивной организации черепа роющихся змей. [Characteristics of adaptive formation of the skull of burrowing snakes.] Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft*) 16(1/2): 69-72. 1930.—The skulls of *Glauconia hamulirostris*, *Typhlops punctatus*, and *Cylindrophis rufus* were studied. Each possesses distinctive adaptations to the same environment (subterranean life), indicating a different origin for these 3 snake families.—*S. A. Corson.*

15014. **TAYLOR, EDWARD H.** The discovery of a lizard Sceloporus torquatus cyanogenys Cope in Texas, new to the fauna of the United States. *Proc. Biol. Soc. Washington* 44: 129-131. 1931.—Full description is given, with discussion of locality and range.

15015. **WIMAN, CARL.** Die Kreide-Dinosaurier aus Shantung. *Geol. Surv. China Palaeontol. Sinica Ser. C* 6(1): 1-67. 9 pl., 7 fig. 1929.—In 1923 two partially complete skeletons of *Helopus* zdanskyi* (p. 6) were discovered at Mêng-Yin-Hsien, China. Specimen (a) consists of vertebrae 2-25, neck ribs and part of breast ribs, fragment of coracoid, and left femur; specimen (b) of vertebrae 22-37, entire pelvis, right femur together with the tibia, fibula, astragalus, metatarsals 1-3, and 7 phalanges. *H. zdanskyi* occupies a unique position paleontologically and though approaching *Camarosaurus* in skeletal structure, esecially in regard to the skull, must yet be placed in a new family, **HELOPODIDAE** (p. 28). There is evidence that *Helopus* led an aquatic existence, walking on the bottom of lagoons, as evinced by the high nostrils, relatively light bones, and the fan-like arrangement of the tarsal phalanges. Arrangement and structure of teeth indicate herbivorous diet. A complete skeleton of *Tanius sinensis** was also found in 1923. *Tanius* falls in the subfamily Hadrosaurinae, and it is thought that *Trachodon amurense* is identical with it. Skeletal features indicate the hydrophilous and herbivorous nature of *Tanius*. The bones of *T. sinensis* are exceedingly porous and this, together with their special modifications, substantiates the genetic affinities of the Orthopoda with the Pterosauria. Fragments of other sauropod remains are described together with those of Theropoda and a caudal spine of a stegosaur. Several turtles were also discovered. The individual parts of all the specimens are minutely described.—*J. Piatt.*

15016. **WOODBURY, ANGUS M.** A descriptive catalog of the reptiles of Utah. *Bull. Univ. Utah, Biol. Ser.* 21 (5): 1-129. 58 fig. 1931 (Biol. Ser. 1(4)).—A brief sketch is given of the history of Utah herpetology. General topics treated in the introduction include habits, sex, enemies, economic value, poisonous forms, and faunal relations. Keys are given to all groups from families to spp. The catalogue treats of 20 lizards, 25 snakes, and 2 turtles. The account of each sp. includes synonymy, description, habits, general range, and distribution within the state. Many spp. are figured. *Pituophis catenifer deserticola* Stejneger (=*P. c. stejnegeri* Van Denburgh); *Tantilla nigriceps* eiseni (*T. e.* Stejneger) (p. 107). Bibliography.

AVES

LUDLOW GRISCOM, *Editor*

(See also in this issue section Economic Ornithology; and Entries 12254, 12362, 12534, 12630, 12635, 13045, 13119, 13120, 13913)

GENERAL AND POPULAR

15017. **BARCLAY-SMITH, PHYLLIS.** The destruction of birds by oil pollution at sea and the progress made since 1926 in combating this. *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 503-508. 1931.—In addition to destroying many thousands of birds annually, oil pollution at sea results in danger of fire, defilement of beeches, destruction of plankton, and threat to fisheries. The main sources of this pollution are leakages from oil-driven and oil-carrying ships. The

installation of oil-separators on all oil-driven vessels is the best solution of the problem, and their universal adoption is urged.

15018. **CHRISTY, BAYARD H. British birds at a glance.** *Auk* 47(1): 11-21. 1930.—An American bird-lover's impressions of British bird life, especially in comparison with American birds.

15019. **DROST, RUDOLF. Über die Organisation eines Stationsnetzes zur Beobachtung des Vogelzuges im Gebiet der Nordsee.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 324-326. 1931.—Proposals for the organization and operation of a chain of stations for the observation of bird migration in the North Sea region.

15020. **GEYR von SCHWEPPENBURG, H. Zur Terminologie des Vogelzuges.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 333-339. 1931.—The term "Zug" (migration) can not be replaced by "Wanderung" (wandering). "Heimat" (home) is capable of various interpretations. "Wegzug" (departure migration) and "Heimzug" (homeward migration) are proposed as terms of more general applicability than "Herbstzug" (fall migration) and "Frühlingszug" (spring migration). "Übertrockenzeiten" and "Überregenzeiten" are applied to the migration of tropical birds to escape the dry and rainy seasons, respectively; "Überruhezeiten" to the spending of the non-breeding season. "Zwischenzug" (interim migration) is applied to the wandering of herons, etc., between the breeding season and the period of regular fall migration. "Ruheziel" (resting objective) is proposed as a more valid term than winter quarters. The area reached during the interim migration is termed "Zwischenziel" (interim objective). "Auswanderung" (emigration) is applied to a bird's shifting from its natal area to another area for breeding. A bird's actual route between its home and its resting objective is its "Zugweg" (migration route). "Idealzugweg" (imaginary migration route) is represented by a straight line connecting home and resting objective. A convergence of migration routes is referred to as a "Massenzugweg" (general migration route). "Schmalfront" (narrow front) and "Breitfront" (broad front) refer to the lateral extent of the migration of a species. An extensive physiographic formation serving to direct migration is a "Leitlinie" (guide line). "Kennpunkten" (recognized landmarks) guide certain species on definite and regular routes.

15021. **LÖNNBERG, EINAR. [Presidential address.]** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 6-28. 1931.—Comments on various problems of ornithology, including the concepts of "Formenkreis," "Rassenkreis," species, and subspecies, and the effects of environment and isolation in producing subspecies. Also memorial notices of many recently deceased ornithologists, especially E. Lehn Schiöler (Denmark), Robert Ridgway (U. S. A.), Jonathan Dwight (U. S. A.), Emilie Snethlage (Germany and Brazil), Annie Jackson Meinertzhagen (Britain), Herbert C. Robinson (Britain and Malaysia), Peter Petrovitch Sushkin (Russia), Otto von Zedlitz (Germany), and J. Büttikofer (Switzerland and Netherlands).

15022. **PITTET, L. Adlerschutz in der Schweiz.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 519-520. 1931.—The golden eagle is slowly but steadily decreasing in Switzerland. It can be saved only by complete protection during the nesting season.

15023. **SCHOENICHEN, WALTHER. Weiterer Bericht über Vogelschutz in Deutschland.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 513-514. 1931.—In Prussia recent legislation has left only 13 species of birds without protection. A shorter open season or complete protection is accorded to certain game birds. Sale and transportation of birds are forbidden. Bounties and pole-traps for birds of prey are forbidden. Lighthouses are provided with protective devices for birds.

15024. **STADLER, HANS. Elektrophonographische Aufnahmen von Vogelstimmen.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 496-499. 1931.—Description of 2 methods of recording bird voices by means of electrical apparatus.

15025. **THIJSSE, JAC. P. An introduction to the excursions of the International Ornithological Congress to the Naardermeer, the Zwanenwater and the Isle of Texel.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 100-104. 1931.—Account of several bird sanctuaries in Netherlands.

SYSTEMATIC

15026. **CARRIKER, M. A., Jr. Descriptions of new birds from Peru and Bolivia.** *Proc. Acad. Nat. Sci. Philadelphia* 83: 455-467. 1932.—*Pionopsitta melanotis* **peruvianus** (p. 455), *Pipra caeruleo-capilla* **grandior** (p. 456), *Pipreola frontalis* **juninensis** (p. 456), *Muscisaxicola capistrata* **borealis** (p. 457), *M.* **tenuirostris** (p. 458), and *M.* **titicacae** (p. 459), Peru; *Empidonax bolivianus* Allen is removed from the synonymy of *E. traillii brewsteri* Oberh.; *Todirostrum chrysocrotaphum* **neglectum** (p. 460) and *Euscarthmornis granadensis* **caesius** (p. 460), Peru; *Myiophobus* **inornatus** (p. 461), Peru (type) and Bolivia; *M.* **rufipennis** (p. 462) and *Tachurus* [misspelling for *Tachuris*?] *rubrigastra* **grandis** (p. 463), Peru; *Mionectes olivaceus* **viridiceps** (*M. striaticollis v.* Chapman) (p. 463); *Thamnophilus aspersiventer* **steinbachi** (p. 464), Bolivia; *T. aroyae* [here spelled *oroyae*] (Hellmayr), first description of ♀; *Microrhopias quixensis* **albicauda** (p. 465), Peru; *Grallaria andicola* **punensis** (*G. p.* Chubb) (p. 465), emended description; *Chlorophonia torrejoni* Tacz. is maintained as a distinct species; *Sicalis citrina* **occidentalis** (p. 467), Peru. Types of new forms in Acad. Nat. Sci. Philadelphia.

15027. **HARTERT, ERNST, and ERNST MAYR. I. On a collection of birds made by Dr. Ernst Mayr in Northern Dutch New Guinea, by HARTERT. II. My Dutch New Guinea Expedition, 1928, by MAYR. III. List of the birds collected by Ernst Mayr, by HARTERT.** *Novitates Zool.* 36(1): 18-128. 1930.—In part I (pp. 18-19) Hartert briefly reviews previous ornithological explorations in the parts of New Guinea covered by Mayr.—In part II (pp. 20-26) Mayr gives his itinerary and a general account of his field experiences in the Arfak Mts. of the Vogelkop Peninsula, in the Wandammen Mts. and in the Cyclops Mts. near Humboldt Bay.—In part III (pp. 27-128) Hartert gives a systematic account of 352 spp. and subspp., represented by 2700 specimens. This account includes distributional records, taxonomic discussion, and notes on colors of "soft parts" and weight. Two species and 30 subspp. from Mayr's collection and 9 other subspp. are described as new. *Ailuroedus jobiensis* Rothschild is removed from the synonymy of *A. melanotis arfakianus* Meyer; *Amblyornis inornatus* **mayri** (p. 30); *Seleucides melanoleucus* **auripennis** (*S. ignotus a.* Schlüter) (p. 33); *Epimachus fastosus* **stresemanni** (p. 34), type in Tring Mus.; *Diphyllodes magnificus* **intermedius** (p. 36), with review of other subspecies; *Paradisaea m. minor* Shaw, type locality fixed at Arfak; *Phonygammus keraudrenii* (Less. & Garn.), review of subspp.; *Munia* **vana** (p. 42); *M. spectabilis* **mayri** (p. 42); *M. grandis* **destructa** (p. 42); *Erythrura trichroa sigillifera* De Vis (=*E. t. macgillivrayi* Mathews); *E.* **papuana** (*E. trichroa p.* Hartert) (p. 43); *Melilestes megarhynchus* **stresemanni** (p. 45); *Melipotes fumigatus goliathi* R. & H. (=*M. f. anthophilus* Stresemann); *Meliphaga montana* **germanorum** (p. 47); *Xanthotis polygramma* **kuehni** (p. 49); *Ptiloprora guisei* **mayri** (p. 49); *Dicaeum* **geelvinkianum** (p. 51); *Melanocharis* Scl. (=*Urocharis* Salvad.); *Pachycare flavogrisea* **subpallida** (p. 53); *Pachycephala schlegelii* **cyclopum** (p. 54); *P. griseiceps* Gray, review of subspp.; *P. g. jobiensis* Meyer (=*P. g. rubiensis* Meise); *P. g.* **subflavidior** (p. 56); *P. g.* **perneglecta** (p. 56); *P. rufinucha* **niveifrons** (p. 57); *Pinarolestes megarhynchus* **goodsoni** (p. 59), with review of other subspp.; *Pitohui nigrescens* **wandamensis** (p. 59); *P. cristatus* **arthuri** (p. 61), with review of other subspp.; *Gerygone chloronota cinereiceps* (Sharpe) (=*G. placida* Madarász); *G. c. chloronota* Gould

G. c. darwini Math., *G. c. apsleyi* Math.); *G. neglecta* :scens (Blyth) (=*G. n. dohertyi* R. & H.); *G. rubra* iarpe), first description of ♀; *Phylloscopus trivirgatus* lopum (p. 65); *Microeca* Gould (=*Kempiella* th.); *Poecilodryas leucops* **mayri** (p. 67); *P.* **crypto**-:us (p. 67); *P. albonotatus* **correctus** (p. 68); *Pachy-halopsis hattamensis* **ernesti** (p. 69); *Heteromyias ispecularis* **rothschildi** (p. 69), with review of other spp.; *H. a.* **cinereifrons** (*Poecilodryas* ? *c.* Ramsay) 69); *Peltops blainvilli* **montanus** (*P. m.* Stres.) (p. ; *Monarcha axillaris fallax* (Ramsay) (*Piezorhynchus* :henowi Madarász); *Rhipidura threnothorax* S. Müll. =*Setosura t. novae-guineensis* Math.); *R. hyperythra* taneothorax Ramsay (=*R. manayoensis* De Vis); *brachyrhyncha* Schl. (=*R. montana* Math.); *R. a.* olimbata Salvad. (=*R. a. lorentzi* Van Oort); *Malurus* oscapulatus **aida** (p. 78), with review of other sub-ecies; *M. alboscapulatus* **lorentzi** (*M. l.* van Oort) . 78); *Megalurus timoriensis* **stresemanni** (p. 79), :h review of other subspp.; *M. t.* **mayri** (p. 79); *M. t.* icrurus (*Sphenoeacus m.* Salvad.) (p. 80); *M. t.* iboinensis (*Sphenoeacus a.* Salvad.) (p. 80); *M. t.* ilvillensis (*M. alisteri m.* Math.) (p. 81); *Crateroscelis* nfordi (p. 81); *C. robusta* **deficiens** (p. 81); *C. r.* **ninsularis** (p. 82); *C. r. robusta* De Vis (=*C. pec-ralis* R. & H.); *C. r.* **albigula** (*C. a.* Rchw.) (p. 82); *ricornis magnirostris* **cyclopum** (p. 83) with review of her subspp.; *S. perspicillata* **goodsoni** (p. 84); *Aetho-yias spilodera* **granti** (p. 85), type in Tring Mus.; *malocichla i.* **incerta** (*Eupetes incertus* Salvad.) (p.); *A. i.* **brevicauda** (*Drymoedus b.* De Vis) (p. 85); . *i.* **olivascentior** (p. 85); *Drymoedus superciliaris* **bec-rii** (*D. b.* Salvad.) (p. 86); *D. s.* **brevirostris** (*Dry-aoedus b.* De Vis =*Drymodes beccarii adjacens* Math.) . 86); *Eupetes leucostictus* **mayri** (p. 87); the type cality of *Campephaga strenua* Schlegel is fixed at Arfak eninsula; *Pitta atricapilla* **hebetior** (p. 92), Dampier l.; *Collocalia fuciphaga* **mayri** (p. 93); *Aegotheles istata* **affinis** (*Ae. a.* Salvad.) (p. 94); *Ae. albertisi bertisi* Scl. (=*Ae. dubius* A. B. Meyer); *Ae. a. salva-rii* Hart. (=*Ae. rufescens* Salvad.); *Eurystomus orien-lis crassirostris* Scl. (=*E. waigiouensis* Elliot); *Syma rotoro* Lesson, review of subspp.; *S. t.* **megarhyncha** *S. m.* Salvad.=*S. t. wellsi* Math.) (p. 98); *Melidora acrorhina* **waigiuensis** (p. 99); *Halcyon s. sancta* Vig. Horsf. (=*H. sanctus ramsayi* Math., *H. westralasianus* ampbell, *H. sanctus confusus* Math.); *Alcyone azurea ulchra* Gould [1846] and *A. ruficollaris* Bankier [1841] re synonyms; *Tanysiptera sylvia* **mira** (p. 100); *Cen-opus nigricans* (Salvad.) and *C. bernsteini* Schlegel are eparated specifically from *C. spilopterus* Gray; the type ocality of *Chalcopsittacus duivenbodei* Dubois is fixed t Tana Mera, of *Psittacus papou* Scopoli at Arfak, nd of *Trichoglossus josephinae* Finsch at Arfak Mts.; *Charmosyna josephinae* **cyclopum** (p. 104); *Charmo-ynopsis pulchella* **rothschildi** (p. 105); *Opopsitta d. esmarestii* (Desm.) (=*Cyclopsitta d. intermedius* van)ort); *Micropsitta pusio beccarii* (Salvad.) (=*Nasi-erna salvadorii* R. & H.); *Psittacella brehmii* **intermixta** p. 107), type in Tring Mus.; *Megaloprepia magnifica* **nterposita** (p. 114); the type locality of *Peristera rufi-rula* Jacq. & Puch. is fixed at Arfak Peninsula; *Chara-lrius apricarius* **fulvus** (*C. f.* Gmelin) (p. 118); *Iredi-arra gallinacea* Ramsay, review of subspp.; *I. g. novae-iollandiae* (Salvad.) (=*I. g. rothschildi* Math., *I. g. nelvillensis* Math.); *Chlidonias leucopareia fluviatilis* (Gould) (=*C. l. rogersi* (Math.)); *Hypotaenidia philippensis* **meyeri** (p. 121), Witu Isl., Bismarck Arch.; *Rallus pectoralis* **mayri** (p. 121); the name *Porzana tabuensis* **immaculata** (*Gallinula i.* Sw.) (p. 123) is applied to Australian birds, the subspecies described by Mathews being considered indistinguishable; *Gallinula tenebrosa* **neumanni** (p. 123); *G. t.* **frontata** (*G. f.* Wall.) (p. 123); *Fulica atra*, new to New Guinea; *Rallicula rubra* **mayri** (p. 124); *R. r. rubra* Schlegel (=*R. klossi* Ogilvie-Grant); *Synoicus ypsilophorus* **saturatior** (p. 125), with review of other subspp. Unless otherwise stated, types of new forms are from New Guinea, but not exclusively from the Dutch territory, since some of the new forms are based upon collections other than that of Mayr. With few exceptions, the type depository is not given in individual cases, but apparently the type specimens are divided between Tring Mus. and Am. Mus. Nat. Hist.

15028. **HARTERT, ERNST.** Types of birds in the Tring Museum. D. Gregory M. Mathews's types of Australian birds. III. *Novitates Zool.* [*Tring*] 37(1): 35-52. 1931.—Anatidae: *Chenopis atrata* Latham (=*C. a. roberti* Math.); *Anseranas semipalmata* (Latham) (=*A. s. hamiltoni* Math.); *Tadorna tadornoides* (Jardine & Selby) (=*T. t. westralis* Math.); *Spatula clypeata* L. (=*S. c. indiana* Math.); *Malacorhynchus membranaceus* (Latham) (=*M. m. assimilis* Math.); *Nyroca australis* Eyton (=*N. nyroca dampieri* Math.); *Oxyura australis* Gould (=*O. a. victoriae* Math.); *Biziura lobata* (Shaw) (=*B. l. menziesi* Math.). Accipitridae: *Circus assimilis* Jardine & Selby (=*C. approximans inexpectatus* Math., *C. assimilis rogersi* Math.); *C. approximans* Peale (=*C. a. drummondi* Math. & Iredale); *Accipiter novae-hollandiae cooktowni* (Math.) (=*Astur novaehollandiae alboides* Math.); *A. cirrocephalus cirrocephalus* (Vieill.) (=*A. c. quaesitandus* Math.); *Aquila audax* (Latham) (=*Aquila a. carteri* Math.); *Erythrotriorchis radiatus* (Latham) (=*E. r. katherinae* Math., *E. r. queenslandicus* Math.); *Nisaetus m. morphnoides* (Gould) (=*Aquila m. coongani* Math.); *Haliastur s. sphenurus* (Vieill.) (=*H. s. territori* Math.); *Milvus migrans affinis* Gould (=*M. korschun napieri* Math.); *Haliastur indus girrenera* (Vieill.) (=*H. i. subleucosternus* Math.); *Milvus isurus* Gould (=*M. i. westraliensis* Math.); *Elanus notatus* Gould (=*E. axillaris parryi* Math.); *Baza s. subcristata* (Gould) (=*B. s. queenslandica* Math.). Falconidae: *Falco l. longipennis* Sw. (=*F. lunulatus murchisonianus* Math., *F. lunulatus apsleyi* Math.); *Ieracidea b. berigora* (Vigors & Horsfield) (=*I. b. centralia* Math., *I. b. kempi* Math., *I. b. melvillensis* Math., *I. b. tasmanica* Math.); *Falco cenchroides* Vigors & Horsfield (=*Cerchneis cenchroides milligani* Math.). Muscicapidae: *Orthonyx t. temminckii* Ranz. (=*O. t. chandleri* Math.); *Cinclosoma punctatum* (Shaw) (=*C. p. dovei* Math.); *C. cinnamomeum cinnamomeum* Gould (=*Samuela cinnamomea todmordeni* Math.); *Hylacola p. pyrrhopygia* (V. & H.) (=*H. p. belcheri* (Math.); *H. p. cauta* Gould (=*H. p. halmaturina* Math.); *H. cauta* Gould is considered only subspecifically separable from *H. pyrrhopygia* (V. & H.); *Psophodes o. olivaceus* (Latham) (=*P. o. magnirostris* Math.). The author also comments upon a number of other types of Mathews, whose status either is not changed here or has been changed previously.

15029. **HENS, P. A.** Subspeziesfragen in Holland. *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930 439-464. 1931.—The author aims especially to determine the relations between avian subspecies in the Netherlands and in Great Britain, and mentions previous works dealing with this question in the former country. Its fauna has been derived from 3 sources: (1) the North German lowland; (2) the Rhine Valley; (3) southern and southwestern Europe, including an "Atlantic" element. The author discusses in particular 24 "Formenkreise" represented by subspecies in western Europe. Critical determinations of the breeding subspecies of the Netherlands are as follows: *Coloeus monedula spermologus; Garrulus glandarius rufitergum*, intergrading with *G. g. glandarius; Fringilla coelebs hortensis; Certhia brachydactyla megarhynchos; Sitta europaea hassica; Parus m. major; P. cristatus brunnescens; P. palustris longirostris; P. atricapillus subrhenanus; Regulus r. regulus; Turdus philomelus clarkei; Erithacus rubecula monnardi; Dryobates major arduennus; Athene noctua vidalli; Tyto alba rhenana; Haematopus o. ostralegus; Charadrius apricarius oreophilos; Perdix perdix sphagnetorum.* Bibliography.

15030. **JOUARD, HENRI.** Prélude à quelques examens de variabilité subspécifique d'oiseaux de chez nous. *Rev. Franç. Ornith.* 1928(231/232): 210-218. 1928.—A dis-

cussion of criteria in the determination of avian subspecies.

15031. **JOUARD, HENRI. Une nouvelle forme de pic-vert habiterait-elle les Pyrénées-Orientales?** *Rev. Franç. Ornith.* 1928(231-232): 242-253. 1928.—Detailed description of a puzzling specimen of *Picus viridis*.

15032. **JOUARD, HENRI. De la variabilité subspécifique de Parus major dans l'Europe occidentale.** *Rev. Franç. Ornith.* 1928(233): 287-292. 1928.—The author calls attention to slight variations in specimens from Sardinia, Germany, Switzerland, and France.

15033. **JOUARD, HENRI. De la variabilité subspécifique de Parus caeruleus dans l'Europe occidentale.** *Rev. Franç. Ornith.* 1928(234): 311-330. 1928.—A review of 6 subspp. of *P. caeruleus*, with detailed descriptive notes on specimens exhibiting local variation. The validity of *P. c. tourcdauricus* Bacm. & Kleinschm. is questioned. For the birds of France an apparently new name, *P. c.* **exiguus** (p. 330), is introduced without description and without designation of particular type locality or type specimen.

15034. **JOUARD, HENRI. De la variabilité géographique de Parus ater dans l'Europe occidentale.** *Rev. Franç. Ornith.* 1928(235): 355-374. 1928.—A review of 6 previously described subspecies of *P. ater*, with detailed descriptive notes on variations exhibited by specimens from many localities. *P. ater abietum* Brehm (=*P. a. intermedius* Burg) is recognized as a valid subspecies of Germany and Rumania; *P. a.* **burgi** (p. 372), Switzerland, type in author's coll.; *P. a.* **rapinensis** (p. 373), N. & W. France; *P. a.* **parisi** (p. 373), Pyrénées-Orientales, France, type in author's coll.; *P. a.* **mediterraneus** (p. 374), Alpes-Maritimes, France.

15035. **KUHN, OTTO. Die Kennzeichen unserer Taubenrassen. [Characteristics of the common races of doves.]** *Pelztierzucht u. Kleintierzucht* 8(1): 8-13. 11 fig. 1932.

15036. **OBERHOLSER, HARRY C. New birds from Brazil.** *Proc. Colorado Mus. Nat. Hist.* 10(5): [24]-[28]. 1931.—*Accipiter guttifer*, new to Brazil (Matto Grosso); *Uropelia campestris* **figginsi** (p. 24) and *Picumnus* **arileucus** (p. 25), Matto Grosso; *Sicalis pelzelni* **danisa** (p. 28), Matto Grosso (type) and Paraguay. Types of new forms in Colorado Mus. Nat. Hist.

15037. **RILEY, J. H. A second collection of birds from the Provinces of Yunnan and Szechwan, China, made for the National Geographic Society by Dr. Joseph F. Rock.** *Proc. U. S. Nat. Mus.* 80(7): 1-91. 1931.—This is a report on over 1700 specimens, representing 254 forms. The collection was made largely in the semi-independent kingdom of Muli, in southwestern Szechwan, where no birds had been previously collected. Some of the mountains rise to more than 25,000 ft. A list of collecting localities, with altitudes, is given. The systematic account includes locality and date records and descriptive and taxonomic notes. *Lerwa lerwa major*, new to Yunnan; *Hirundapus nudipes* (Hodgson) and *H. caudacutus* (Latham) are treated as separate species; *Calandrella brachydactyla dukhunensis*, new to Yunnan; *Babax l. lanceolatus* (Verreaux) (=*B. l. bonvaloti* Onstalet); *Trochalopteron e. elliotii* Verreaux (=*Trochalopterum yunnanense* Rippon); *Cinclus cinclus beicki* Meise (=*C. c. szetschwanensis* Meise); *Cichloselys s. sibiricus*, new to Yunnan; *Culicicapa ceylonensis calochrysea* Oberh. (=*C. c. orientalis* Baker); *Anthus spinoletta japonicus*, new to Yunnan; *Carpodacus* **murati** (*C. erythrinus m.* Delacour) (p. 75); *Leucosticte* **walteri** (*Montifringilla brandti w.* Hartert) (p. 80). Index.

15038. **SWANN, H. KIRKE, and ALEXANDER WETMORE. A monograph of the birds of prey (order Accipitres).** Part 10. 1-64. 2 col. pl. Wheldon & Wesley, Ltd.: London, 1931.—This part treats of 9 species (with their subspecies) belonging to the genera *Gypaëtus, Uroaëtus*, and *Aquila*. *Gypaëtus barbatus* **hemachalanus** (*Gypaetos h.* Hutton) (p. 5) and *G. b.* **altaicus** (*G. a.* Sharpe) (p. 7) are recognized as distinct subspecies. Keys are given to the genera of Aquilinae and the species of *Aquila*. *Aquila chrysaëtos* **barthelemyi** (*A. b.* Jaubert) (p. 23), *A. c.* **nobilis** (*A. n.* Pallas=*A. fulva kamtschatica* Severtzow) (p. 32) and *A. heliaca* **crassipes** (*A. c.* Brooks) (p. 40) are recognized as distinct subspecies; *A. heliaca* **ricketti** (p. 42), China (type from Fokien, in Brit. Mus.), Siberia, Korea, and Japan; *A. adalberti* L. Brehm is recognized as a distinct species, and *A. clanga* **fulvescens** (*A. f.* Gray) (p. 63) as a distinct subspecies.

LIFE HISTORY

15039. **BAERG, W. J. The song period of birds of northwest Arkansas.** *Auk* 47(1): 32-40. 1930.—A table indicates the extreme dates of the song periods of 76 species, as noted during the years 1924-28. Another list gives the average period during which the more common species sing with regularity. Additional details concerning the song and song periods of certain species are furnished.

15040. **BOWLES, J. HOOPER, and F. R. DECKER. The ferruginous rough-leg in Washington.** *Murrelet* 12 (3): 65-70. 1 pl., 3 fig. 1931.—*Archibuteo ferrugineus* seems confined to the country east of the Cascade Mts. in the State of Washington, inhabiting the driest localities. It builds its nests of dead sticks, lined with soft bark, on low outcroppings of rock or in small trees. The eggs are from two to five. The species is entirely beneficial to man, eating great numbers of mice and other destructive small mammals. It has a habit of putting a large ball of dry horse or cow manure in the nest with the eggs. The sitting bird sometimes will not leave her eggs unless forced from them. The magpie (*Pica pica hudsonia*) often nests in the same tree, living in perfect harmony with the hawks.—*J. H. Bowles*.

15041. **CHAPPELLIER, A. Les baguages de freux (Corvus frugilegus Linné) du Service des Vertébrés, du Centre National de Recherches Agronomiques de Versailles, et leurs premiers résultats.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 320-323. 1931.—The breeding area of rooks (*Corvus frugilegus*) in France is chiefly north of the Loire. Recoveries of those banded as nestlings indicate that the individuals breeding in this country are sedentary there, although they leave the immediate vicinity of the rookeries after the breeding season. Of immigrants from the east, banded in the fall in east central France, all recoveries in France have been from south of the Loire; there have also been several very puzzling winter recoveries in Jugoslavia and Germany.

15042. **DOBAY, LAD. Der Brutparasitismus des Kuckucks, mit besonderer Rücksicht auf die siebenbürgischen Verhältnisse.** *X^e Congr. Internat. Zool. à Budapest 1927. Part 1.* 839-856. 1929.—Thirty-two years of personal experience with cuckoos are summed up and critical observations detailed. It is concluded that cuckoos place their eggs in certain nests, not because of location, but because the nests belong to species of like kind that are most certain to successfully raise cuckoos. Females lay in nests of species by which they were raised and their breeding seasons coincide with those of these species. It is believed that the laying period depends on the general condition and food supply of the cuckoo, not on stimulation by the nuptial activities of other species as claimed by Chance. Eggs are regularly laid on the ground and placed in the nests with the bill, contrary to Chance's observations. Cuckoos watch over nests containing their eggs, and if conditions become unfavorable may move the eggs to other nests. Inability to provide food for the normally large number of cuckoo young and the problem of keeping the eggs in condition during the completion of a large set are factors which have necessitated development of a parasitic habit out of originally normal breeding behavior.—*A. H. Miller*.

15043. **HEIM de BALSAC, H. Mode de nidification inaccoutumé chez Buteo b. buteo (L.).** *Rev. Franç. Ornith.* 1928(235): 395-396. 1928.—Nest in a roadside tree far from any woods, which constitute the normal nesting habitat.

15044. **HEINROTH, O. Beobachtungen bei der Aufzucht vom Purperreiher, Ardea purpurea, vom Löffler,**

Platalea leucorodia, und vom Säbelschnäbler, Recurvirostra avosetta. *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 493-495. 1931.—Notes on development, voice, and behavior of young reared in captivity.

15045. **HUXLEY, J. S. Biology of bird courtship.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 107-108. 1931.

15046. **LÖNNBERG, EINAR. The migration of the woodcock, Scolopax rusticola L., from Sweden. (A summary.)** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 389-391. Map. 1931.—Individuals banded in central Sweden have been taken in Scotland and Ireland, doubtless having crossed directly over the North Sea. Another record from northern France suggests a secondary movement from the British Isles to France. Individuals banded in southern Sweden evidently pursue a more southerly route, several having been taken in southern England and northern France.

15047. **LUCANUS, FR. von. Die Zugwege des weissen Storchs und des Schwarzstorchs.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 327-332. 1931.—*Ciconia ciconia* now avoids the wide stretch of the Mediterranean by pursuing 2 migration routes, one around each end of this sea. But in 1856 a great number were destroyed by a storm while on migration across this sea in the vicinity of Malta. Since then the route through Italy has been practically abandoned. *Ciconia nigra* has the same two migration routes, but prefers the western one, while *C. ciconia* follows the eastern one in far greater numbers. *C. nigra* also follows the Italian route across the Mediterranean to some extent.

15048. **MICHAEL, ENID. Feeding habits of the woodpeckers in the Yosemite valley.** *Yosemite Nature Notes* 10(12): 99-101. 1931.—Notes on *Sphyrapicus varius daggetti*.

15049. **REBOUSSIN, R. La gorge-bleue Luscinia svecica cyanecula (Wolf.), en Vendée.** *Rev. Franç. Ornith.* 1928(234): 343-345. 1928.—Notes on nesting, song, and courtship.

15050. **ROTHSCHILD, [L. W.]. Notes on paradisaeidae with a list of the species, subspecies, and hybrids exhibited at the Seventh International Ornithol. Congress.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 285-289. 1931.—The author calls attention to the characteristic types of nests and eggs of this family. A list is given of the birds exhibited, including 34 forms of Ptilinorhynchinae, 70 Paradisaeinae, and 16 supposed hybrids.

15051. **SCHÜZ, E. Ergebnisse der Vogelberingung.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 293-319. 16 maps. 1931.—The number of birds banded by nearly 30 stations and their collaborators in Europe, Asia, and N. America amounted by 1927 to a million; the number of recoveries, to more than 30,000. Some of the more striking results are here summarized. The percentage of returns for small birds is far less than 1; for large birds and game birds, much greater (e.g., up to 24% for *Ciconia nigra* and 69% for *Accipiter gentilis*). The general direction of fall migration in central and northern Europe is SW.; *Cuculus canorus, Lanius c. collurio,* and *Ciconia ciconia* are exceptional in going SE. *C. ciconia* is noteworthy in having two migration routes, one around each end of the Mediterranean. Direction and choice of route, objective, and restriction of winter range on the part of species or certain populations of given species, are discussed. Ten different breeding populations of *Larus r. ridibundus* are shown to mingle more or less during the non-breeding season, yet the total range of each population differs more or less from that of the others; e.g., the members of Russian and Hungarian breeding colonies do not seem to meet those of a British breeding colony at any time of year. Various populations of *Sturnus vulgaris* show a similar and even more pronounced condition. Birds with this sort of distribution have far greater prospects of separation into geographical races than those whose populations mingle more thoroughly during the winter.

15052. **SKOVGAARD, P. Zug der Islaendischen Vögel und anschliessende Bemerkungen über den Vogelzug in Europa.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 392-405. 8 maps. 1931.—Since 1921, 4464 birds of 47 species have been banded in Iceland. The author presents records of 125 recoveries, chiefly in the British Isles and continental Europe, with a few in Africa and North America. The migration of some individuals of *Anas penelope* to North America, instead of to the main winter quarters in Europe, is especially striking. This, together with the case of 4 young of *Ciconia nigra* from the same nest in Denmark, 2 of which migrated SE. and 2 SW., contradicts the theory that migration routes correspond to the old routes of immigration, and suggests that migration routes are learned and not inherited.

15053. **STADLER, HANS. Die Stimmen des Wasserpiepers (Anthus sp. spinoletta (L.)).** *Verhandl. Ornithol. Ges. Bayern* 18(1/2): 107-131. 1929.—A detailed analysis of the song of this pipit, richly illustrated with diagrams and musical notations, and comparison with the songs of related species. The call-notes also are described.

15054. **THOMSON, A. LANDSBOROUGH. On "abmigration" among the ducks: an anomaly shown by the results of bird-marking.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 382-388. 1 fig. 1931.—Abmigration is a spring movement which is not the counterpart of any preceding autumn movement. Numbers of ducks of 5 species, banded as native birds in the British Isles, have been subsequently found in summer in Germany, Denmark, Norway, Sweden, Finland, and Russia. This abmigration of individuals may be explained on the assumption that they become attached to flocks of winter visitants and accompany them on their normal emigration in spring.

15055. **TOWNSEND, CHARLES WENDELL. The post-breeding northern migration of North American herons.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 366-369. 1931.—"There seems to be a wanderlust in young herons which appears but slightly in the adults, and this casual wandering in search of food may in past ages have become an inherited instinct for northern post-breeding migration which still shows itself in the young, but has largely faded out in the adult."

15056. **TRISTAN, de. La nidification en Sologne de le sterne moustac Chlidonias l. leucopareia (Tem.), du grèbe à cou noir Podiceps nigricollis Sundevall, et de quelques autres espèces.** *Rev. Franç. Ornith.* 1928 (231/232): 219-226. 1928.—Notes on the nesting of these and other marsh birds in central France.

LOCAL AND FAUNISTIC

15057. **BARTELS, E. Vogels van Kole Beres. [Java.]** *Natuurkundig Tijdschr. Nederlandsch-Indië* 91(3): 308-348. 1931.—An annotated list of 184 species observed from 1927 to 1929 in this area (altitude 600-1000 m.) in SW. Java. Among them, at least 155 are breeding species, and 16 are winter visitors from northern Asia. Many notes on frequency, general habits, and nesting are included.

15058. **HEIM de BALSAC, H. Exploration ornithologique dans le Sud-Oranais et le Maroc Oriental.** *Rev. Franç. Ornith.* 1928(230): 174-188; (231/232): 227-237; (233): 279-286. 1928.—This is a report on an expedition to parts of the Saharan Atlas in western Algeria and eastern Morocco in 1927. In the Dept. of Alger the Saharan fauna begins abruptly on the southern slope of the Saharan Atlas, but in Oran it invades the High Plateaus on the north, extending considerably farther north than the typical Saharan flora. The zonal distribution of vegetation and avifauna on some of the mountains, including the highest peak (Dj. Aïn-Aissa, 2250 m.), is described. The avifaunas of 2 different sections of the Saharan Atlas (in Oran and Alger) are compared. The following are recorded as new to Morocco: *Rhamphocorys clot-bey, Alaemon alaudipes, Ammomanes phoenicurus, Chersophilus duponti, Lanius excubitor elegans, Scotocerca inquietus, Oenanthe leucopyga, O. lugens, Caprimulgus aegyptius, Athene noctua*

saharae, Pterocles coronatus, Alectoris barbara spatzi. An annotated list treats of 47 spp. whose variation or distribution are of particular interest.

15059. **JOUARD, HENRI. Contribution à l'ornithologie des Alpes valaisannes. Les oiseaux du plateau de Montana-Vermala.** *Bull. Murithienne Soc. Valaisanne Sci. Nat.* Fasc. 48. 94-143. 1 pl. 1930-1931.—After a general discussion of the birds of the various seasons, a classified list is given with synonymy and descriptions. Appended is a note on the relation between the bird fauna and the altitude.

15060. **JOUARD, HENRI. Encore quelques mots sur la distribution du cini en France.** *Rev. Franç. Ornith.* 1928(235): 391-393. 1928.—Notes on the local distribution of the serin (*Serinus canarius serinus*).

15061. **KURODA, N. Distribution of the Japanese birds.** [In Japanese.] *Bull. Biogeogr. Soc. Japan* 1(1): 27-35. 1929.—An accompanying map indicates 13 faunal areas.

15062. **LAVAUDEN, L. Notes d'ornithologie malgache. I. Une nouvelle acquisition pour la faune de Madagascar (Sterna fuscata L., 1766).** *Rev. Franç. Ornith.* 1928 (230): 194-195. 1928.

15063. **MARSHALL, RAYMOND O. Birds observed in eastern Ohio in 1931.** *Oologist* 49(1): 9-10. 1932.

15064. **MEYLAN. Esquisse ornithologique.** *Bull. Murithienne Soc. Valaisanne Sci. Nat.* Fasc. 48. 34-37. 1930-1931.—Birds of the Saas and St. Nicolas valleys, Switzerland.

15065. **MOLTONI, EDGARDO. Cattura di un singolare Crociere fasciato. Loxia leucoptera bifasciata (Brehm).** [Capture of L. l. bifasciata.] *Natura* [*Milano*] 20(1): 9-13. 2 fig. 1929.—Description of an aberrant specimen taken in Italy in 1927.

15066. **MOMIYAMA, TOKU T. On the birds of Bonin and Iwô [=Volcano] Islands [Micronesia].** [Mainly in Japanese.] *Bull. Biogeogr. Soc. Japan* 1(3): 89-186. 2 col. pl. 1930.—A faunal list with extensive synonymies and reviews of previous records. A table shows the distribution of 128 species in 14 different regions in the Japanese Empire, the Philippines, Micronesia, and the Sandwich Isls. Certain related forms of adjacent regions (from Siberia to India, the E. Indies, and the South Seas) are listed and discussed. *Chloris sinica* **seebohmi** (p. 103), Volcano Isls.; *Apalopteron familiare,* col. plate; *Zosterops japonicus* **ohsimensis** (p. 172), Seven Isls., Japan; *Z. j.* **dageleticus** (p. 172), Dagelet Isl., Sea of Japan, type in Seoul Higher Common School; *Horornis cantans* **ponafidinicus** (p. 175), Seven Isls.; *Monticola philippensis* **taivanensis** (p. 177), Formosa. Types in author's coll. unless otherwise stated.

15067. **PAREL, ANDRÉ. Nidification de cigognes dans la Somme.** *Rev. Franç. Ornith.* 1928(230): 197-198. 1 fig. 1928.—Unusual breeding record of *Ciconia c. ciconia.*

15068. **RENSCH, BERNHARD. Der Einfluss des Tropenklimas auf den Vogel.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 197-205. 1931.—Tropical bird races are smaller than the races of the same species living in cooler regions (Bergmann's law); perhaps this is a direct effect of the external temperature in the poikilothermous condition of early life. Tropical races have relatively longer wings than the races of cooler regions; possibly in the case of the latter there is direct checking of growth of the exposed parts under the influence of the lower external temperature. The relative weight of the heart is smaller in tropical birds than in closely related species or races of equal weight in cooler regions. Among omnivorous feeders, tropical races have a relatively smaller stomach, shorter intestine, and shorter caecum than the races of cooler zones. Tropical races have a smaller number of eggs than races of the same species in cooler regions; this rule also applies generally to the species within a genus. This is a matter of adaptation to the shorter day-length in the tropics, or of compensation for the stronger climatic selection in the cooler regions. The melanin (especially eumelanin) of birds is increased in a humid, warm climate (Gloger's law). Strong intensification of melanin may produce expansion of the barbules and thereby give rise to iridescent colors. In the humid, warm tropics the number of bird species is greater than in equal areas in the temperate zones, but the number of individuals of the separate forms is relatively smaller; this phenomenon is evidently due to the more varied environmental conditions and the better conditions of existence in the tropics, which favor the formation and maintenance of species. In cooler zones a more rigorous climatic selection takes place during the winter period. —*From author's summary.*

15069. **WEIGOLD, H. Der Vogelzug auf Helgoland, graphisch dargestellt.** *Proc. 7th Internat. Ornith. Congress Amsterdam* 1930: 406-410. 1931.—Abstract.

MAMMALIA

GERRIT S. MILLER, *Editor*

REMINGTON KELLOGG, *Associate Editor*

(See also in this issue Entries 12097, 12159, 12437, 12567, 12630, 12635, 13546, 14241, 14271, 14299, 14303, 14331, 14344, 14367, 14368, 14372, 14402, 14462)

15070. **AIRAGHI, CARLO. Considerazioni filogenetiche sui rinoceronti d'Europa. [Phylogenetic considerations on the rhinoceroses of Europe.]** *Riv. Italiana Paleont.* [*Pavia*] 32(1/3): 23-46. 1 pl. 1 fig. 1926.—After some critical remarks on the previous attempts of classification the author defines a new index which is thought to have taxonomic value. In both skull and mandible it is the ratio between two lengths measured upon a straight line drawn through the grinding surface of the cheek teeth: (a) in the skull—from the anterior border of the glenoidal cavity to the foremost point of the foremost incisor, and the distance from the same point of the glenoidal cavity to the posterior border of the third molar; (b) in the mandible—the distance from the anterior border of the condyle to the foremost point of the foremost incisor, and the distance from the same point of the condyle to the posterior border of the third molar.—The European rhinoceroses are divided into three genera, viz. *Diceros, Rhinoceros,* and *Diceratherium. Diceros* is made to comprise all forms with two median horns, and is divided into three branches: the first with well developed lower canines and an index between 4 and 3.5; the second branching off from the first at the end of the Miocene and having an index between 3.5 and 3; the third branching off from the second during the Pliocene and containing the largest forms without either incisors or canines, with the anterior horn of great length and an index of 3-2.5. *Rhinoceros* contains large Oligocene forms without horns, previously ascribed to *Aceratherium,* and the living forms with one horn. It is divided into two branches; for the first no precise index has been established; in the second it varies between 3.5 and 3. *Diceratherium* contains the forms with two laterally placed horns, and their ancestors without horns, i.e., small Oligocene forms without diastemata between canines and premolars. *Diceratherium* is divided into two branches, one with the index 4-3.5, the other with 3.5-3.—*O. Zdansky.*

15071. **AMSCHLER, WOLFGANG. Über Capra aegagrus und Capra falconeri als Hausziegen im Kaukasus, eine Vorarbeit zur genetischen Bearbeitung der Hausziegen. (Done under the auspices of the "Notgemeinschaft der Deutschen Wissenschaft.")** *Wiss. Arch. Landwirtsch. Abt. B. Tierernähr. u. Tierzucht* 3(2): 307-338. Map. 13 fig. 1930.—On his Caucasian expedition in 1926-1927 the author made extensive studies on domestic

goats and, aside from the very prevalent *Capra prisca*, found a rare form of *C. aegagrus*. Entirely new is the discovery of various *falconeri* types as domestic goats in the Caucasus. The area of distribution of *C. falconeri* as a domestic goat is Daghestan, Ossetia, and certain parts of eastern Transcaucasia. The domesticated *C. aegagrus* greatly resembles the Bezoar goat in shape and position of horns. The study revealed the completely new fact, that the domesticated *falconeri* markedly differs from the wild *falconeri* in its more steeply rising horns with differently shaped cross-section. Several types can be distinguished according to torsion of the anterior and posterior borders: (a) both front edge and posterior surface participate in the spiral (eastern Transcaucasia and Daghestan); (b) the posterior rounded surface remains perpendicular, while the front edge winds about it (eastern Daghestan); (c) the spiral combines features of (a) and (b); (d) the spiral has several twists, combining (a) and (b). Wild individuals of *falconeri* also vary markedly in skull formation. The author does not agree with the opinion that the domestic *falconeri* sprang from existing wild forms.—*Author's summary (transl. by B. Bickel).*

15072. ANTHONY, R. Discussion sur l'interprétation de la série dentaire inférieure du Stehlinius uintahensis Matth. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(6): 416-421. 2 fig. 1928.—*Stehlinius* and related forms are allocated to the Insectivora, their resemblance to the Chiromyiformes being attributed to convergence. The author suggests that the remarkable second tooth in the lower mandible of *Stehlinius* represents a fusion of the 3rd and 4th premolars.

15073. ARAMBOURG, C. Les mammifères quaternaires de l'Algérie. *Bull. Soc. Hist. Nat. Afrique du Nord.* 20 (3): 63-84. 1 pl. 1929.—The Quaternary mammalian fauna of Algeria is somewhat different from that of Europe because in Mousterian time climatic differences and geographic barriers prevented the free interchange of animals between the two regions. The Algerian fauna remained remarkably uniform throughout the Quaternary as a result of the equable climate; boreal mammals seem not to have invaded this region. Moreover, the Algerian fauna was distinctly Ethiopian both in character and origin. Africa was undoubtedly a distinct faunal province in the Quaternary. The migration or disappearance of mammals from the Algerian region was due to climatic changes, to biologic causes (such as a climax in evolutionary development), and to the conquest of nature by man.—*E. H. Colbert.*

15074. ARAMBOURG, C., et J. PIVETEAU. Les vertébrés du Pontien de Salonique. *Ann. Paléontol.* 18(2/3): 3-82. 12 pl., 8 fig. 1929.—During French military operations near Salonika, Macedonia, a large collection of vertebrate fossils was obtained from the Pontian sediments (Upper Miocene). This collection is preserved in the National Mus. Nat. Hist., Paris. The following fauna is described: (Reptilia) *Testudo** spp.; (Carnivora) *Ictitherium robustum**, *I. hipparionum**, *Hyaena eximia**, *Felis* cf. *attica**, *Machairodus aphanistus**; (Soliped) *Hipparion gracile**; (Perissodactyla) *Aceratherium* sp., *Rhinoceros pachygnathus**, *Chalicotherium* cf. *goldfussi**; (Artiodactyla) *Sus erymanthius**; (ruminants) *Dorcatherium* **puyhauberti*** (p. 34), *Giraffa attica**, *Orasius speciosus**, *Helladotherium duvernoyi**, *Gazella deperdita**, *G. gaudryi**, *G.* **bailloudi*** (p. 48), *Protoryx carolinae**, *Tragocerus amaltheus**, *Helicotragus rotundicornis**, *Oioceros rothi**, *Tragelaphus* sp., *Palaeoreas lindermayeri**, *Palaeoryx pallasi**, *Parabos* **macedoniae*** (p. 61); (Proboscidia) *Mastodon pentelici**; (Primates) *Mesopithecus pentelici.* This fauna, like the other Pontian assemblages, has its closest modern relatives among the mammals of Africa, while characteristic Palaearctic forms do not appear until the Pliocene. The various Pontian faunas resemble each other in broad features, but some have peculiar elements.—*L. S. Russell.*

15075. ASTRE, GASTON. Anthracotherium magnum à Saint-Nazaire-de-Valentane. *Bull. Soc. Hist. Nat. Toulouse* 59(1): 153-154. 1930.—Records the finding of a skeleton in the "mollases stampiennes de l'Agenais" at 3½ m. depth.

15076. BARBOUR, EDWIN H. Ancient elephants of Nebraska. *Pan-Amer. Geol.* 53(1): 39-40. 1930.—The Tertiary sections of Nebraska are rich in mammalian remains, 20 proboscideans having been unearthed in Nov., 1929, alone. The oldest Nebraska elephants are the tetrabelodonts, possessing low brows, long jaws, and frames more rugged and bones more massive than those of modern elephants. The largest form is *Megabellodon lulli*, whose mandible and tusks exceed 6 ft. in length. The smallest is *Enhelodon marrilli*, in which the mandibular tusks are lacking. The amebelodonts, shovel-tuskers, found in this region are very massive, the mandible being close to 7 ft. in length. The type specimen, *Amebelodon fricki*, was discovered in south central Nebraska in 1927. Its mandibular tusks are each 4 ft. long, almost straight, very large, and flattened at the tips into great dental shovels. Other spp. from this region are *Amebelodon gregori*, *Archidiskodon hayi*, with but 8-9 grinding ridges in its molars, *Ar. scotti*, *Ar. maibeni* and the hairy mammoth, *Elephas primigenius*. The author remarks that, although over 300 spp. of fossil elephants have been found in various parts of the world, out of this number only 2 genera survive today, represented by the Indian elephant, *Elephas indicus*, and the African elephant, *Loxodonta africana*. —*D. J. MacNeil.*

15077. BEAUX, OSCAR de. Collezioni zoologiche fatte nell' Uganda dal Dott. E. Bayon. XIX. Mammiferi. Parte IV. Appendix, cum primatibus, insectivoris carnivorisque. *Ann. Mus. Civ. Storia Nat. Genova* 52: 100-107. 1925 [1928.—A list of spp. with records, including 1 Primate, 23 Chiroptera, 6 Insectivora, 4 Carnivora, 20 Rodentia, and 19 Ungulata, some with descriptive notes.

15078. BERNSEN, J. J. A. The geology of the Teglian clay and its fossil remains of Rhinoceros. 109p. 12 pl. Dissertation. Univ. Amsterdam. 1927.—The Teglian clay (Tegelen near Venlo in the Netherlands) has yielded a rich flora and mammalian fauna. The question of the geological age—Pliocene or Pleistocene—has given rise to a mass of literature. In the geological part, the arguments for and against the Upper Pliocene age are criticised and in the paleontological part a beginning is made with the paleontological investigation of the remains of the Mammalia found. It is evident now that 2 spp. of *Rhinoceros* occur in the Teglian clay, viz., *R. etruscus* Falconer and *R. mercki* Jäger.—*J. J. A. Bernsen.*

15079. [BIRULIA, A. A.] БИРУЛЯ, А. А. Предварительное сообщение о хищниках (Carnivora) из четвертичных отложений Крыма. **[Preliminary note on the Quaternary Carnivora of the Crimea.]** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Ser. A.*) 1930(6): 139-144. 1930.—The author found the fossils of 16 paleolithic spp.: *Canis lupus*, *C. familiaris*, *Vulpes vulpes*, *V. lagopus*, *V. corsac*, *Meles meles*, *Martes foina*, *Putorius eversmanni*, *P. ermineus*, *P. nivalis*, *Ursus arctos*, *U. spelaeus*, *Felis leo*, *F. lynx*, *F. sylvestris*, and *Hyaena spelaea.*

15080. [BOGACHEV, V. V.] БОГАЧЕВ, В. В. Тюлень в миоцене Каспийского бассейна (Предварительное сообщение). **[Seal in the Miocene of the Caspian basin. Preliminary note.]** [English summary.] Известия Азербайджанского Государственного Университета имени Ленина, Отдел Естествознание и Медицина (*Annals V. I. Lenin State Univ. Azerbaijan, Sect. Nat. Hist. & Med.*) 6: 135-148. 1 pl. 1927.—Comparative study of fossils found near Baku, belonging to several individuals of *Phoca*, some bones resembling *P. pontica*, some *P. vindobonensis*. Bones of *Gobius* were also found.

15081. BOURDELLE, E., et P. MATHIAS. A propos de quelques espèces de Cercopithèques du groupe des Mones et, en particulier, de Cercopithecus erxlebeni, grayi et pogonias. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928(5): 306-310. 1928.—*C. erxlebeni* Dahl. & Puch., *C. grayi* Fraser, *C. nigripes* Du Chaillu, and *C. pallida* are considered synonyms of *C. pogonias* Bennett.

15082. **BUCKHURST, A. S.** Moths destroyed by a long-eared bat. *Entomologist* [*London*] 63(809): 238. 1930.—The writer collected in August fragments representing 9 spp. of moths eaten by *Plecotus auritus*. Of the fragments, 73 out of 80 were identifiable; of these, 34 were *Xylophasia monoglypha* and 23 *Triphaena pronuba*.

15083. **CARVAJAL, E.** Nota sobre un yacimiento de fósiles vertebrados en el Plioceno de la provincia de Logroño. [Deposits of Pliocene vertebrate fossils in the province of Logroño.] *Congrès Géol. Internat. Compt. Rend.* 14(3): 1017-1027. Map. 12 pl. 1926(1928).—Remains of the following mammals are described: *Rhinoceros leptorhinus*, Hipparion crassum*, Palaeoryx boodon*, Tragelaphus torticornis*, Cervus pirenaicus*, C. issidorensis*, Hyaena arvernensis* mut. *pirenaica**.—*L. S. Russell.*

15084. **COOK, HAROLD J.** More evidence of mammoths in the high mountains of Colorado. *Science* 73 (1889): 283-284. 1931.—Records of molars of *Parelephas columbi* without details of deposits, which seem to indicate an early race of the Columbian mammoth and to point to relatively early Pleistocene times.

15085. **DREVERMANN, F.** Ein bemerkenswertes Skelett eines grossen ausgestorbenen Faultieres. *Ber. Senckenberg. Naturforsch. Ges.* [*Natur u. Mus.*] 60(12): 553-556. 2 fig. 1930.—Nontechnical account of *Nothrotherium shastense**, Texas, in the Peabody Mus., Yale Univ.

15086. **DUBOIS, GEORGES.** Marte de la tourbe de Marquion. *Ann. Soc. Geol. du Nord* 52: 280-285. 5 fig. 1927.—A new find of *Martes martes* L. from the peat bogs (Flandrian) of Marquion (Pas-de-Calais) in the valley of the Gâche, northern France.—*W. Berry.*

15087. **DUBOIS, GEORGES.** Additions à la connaissance de la brèche à Lemmings de Maubeuge. *Ann. Soc. Geol. du Nord* 52: 315-322. 3 fig. 1927.—Redescription of *Dicrostonyx torquatus* v. **henseli** (*D. henseli* Hinton) (p. 315), and discussion of a find of *Lemmus lemmus**, both from the north of France.—*W. Berry.*

15088. **DUBOIS, G., et G. PONTIER.** Description de la molaire de lait d'Elephas primigenius trouvée à St. Druon, près Cambrai [northern France]. *Ann. Soc. Geol. du Nord* 53: 112-115. 1 pl. 1928.

15089. **DYBOWSKI, B.** Zur Kenntnis der Sibirischen Seehunde. *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat., Sér. B: Sci. Nat. (II)* [*Zool.*] 1929(8/10): 405-415. 3 pl. 1929.—The author gives a systematic review of the seals hitherto known as *Phoca annellata* (Baltic Sea), *P. saimonensis* (Lake Saima, Finland), *P. ladogensis* (Lake Ladoga, Russia), *P. caspica* (Caspian Sea), and *P. sibirica* (Lake Baikal). The characters of the skull and the pelage are discussed in detail. New family, supergeneric (?), generic, subgeneric (?), and specific names are introduced for all of these forms, without regard to the law of priority. For the 2 forms of Lakes Baikal and Oron, Siberia, the following names, of generic or approximately generic rank, are employed: **SIBIRICO-BICUSPIDATO-BAICALOPUSA** (p. 414), **SIBIRICO-BAICALOPUSA** (p. 405), **BAICALOPUSA** (p. 405), **SIBIRICO-ORONOPUSA** (p. 405), and **ORONOPUSA** (p. 405). The corresponding species are named *Baicalopusa* (or *Sibirico-bicuspidato-baicalopusa*) **dorohostaiskii** (p. 412) and *B.* (or *S.*) **wereschtschagini** (p. 412), but which name applies to the seal of Lake Baikal, and which to the seal of Lake Oron, is not stated. The family name **SIBIRICOPUSIDAE** (p. 412) or **SIBIRICO-BICUSPIDATO-BAICALOPUSIDAE** (p. 414) is employed for the above-mentioned group of Siberian forms. For 3 European species the following new names are introduced: *C.* [initial not explained] **behningi** (p. 414), *C.* **kisielewitschi** (p. 414), and *C.* **dierzawini** (p. 414), but no type localities are given, and it is not explained to which of the older names each of the 3 new names corresponds. The family name **EUROPÄOPUSIDAE** (p. 412) or **EUROPAEO-TRICUSPIDATO-CASPIOPUSIDAE** (p. 414) is employed for this group of 3 European forms. Several other new terms, of indefinite rank and partly of uncertain spelling (owing to the use of abbreviations), are applied (pp. 405 and 412) to 4 European forms, but are not listed in this abstract. None of the new names is labeled as such, and there is no synonymy and no bibliography. [Cf. B. A. 1: 13813 and Opinion 105 of the International Commission on Zoological Nomenclature.]

15090. **EDGAR, J. H.** The haunts of the giant panda. *Jour. West. China Border Res. Soc.* 3: 29. 1926/29[1930].—A record of this sp. from Szechwan more than 4000 years ago.

15091. **FINLAYSON, H. H.** Notes on some South and Central Australian mammals. Pt. 1. *Trans. and Proc. Roy. Soc. So. Australia* 54: 177-180. 1930.—*Petaurus breviceps* is recorded as new to S. Australia. *Thylacomys lagotis* is reinstated as a member of the fauna of Central Australia. Variation in the pelage and skull of *Petrogale lateralis* is discussed.

15092. **FORMOZOW, A. N.** Ueber die Säugetiere der nördlichen Mongolei. *Folia Zool. et Hydrobiol.* [*Riga*] 3(1): 41-78. 1931.—This report is based upon a collection of over 300 skins made by an expedition of the Russian Academy of Sciences in 1926, from the Altai Mts. northward. The systematic list of 44 spp. includes notes on distribution, taxonomy, habits, food, enemies, breeding, etc. *Cricetulus furunculus* **griseus** (*Cricetus g.* A. M. Edw.) (p. 58); *C. f.* **obscurus** (*Cricetus o.* A. M. Edw.) (p. 58); *C. f.* **fumatus** (*C. griseus f.* Thos.) (p. 58); *C.* **curtatus** (*C. migratorius c.* Allen) (p. 61); *Cricetiscus* Thos., reduced to subgeneric rank under *Phodopus* Miller; *Phodopus congarus* **campbelli** (*Cricetulus c.* Thos.) (p. 61); *P. roborovskii* Satunin (=*Cricetulus bedfordiae* Thos.); *Microtus gregalis raddei* Pol. (=*M. angustus* Thos.); *Alticola* **semicanus** (*Microtus worthingtoni s.* Allen) (p. 67); *Ellobius talpinus* **larvatus** (*E. l.* Allen) (p. 69).

15093. **FORMOZOW, A. N.** Notizen über einige Nager des westlichen Kaukasus mit Beschreibungen zweier neuer Formen. *Folia Zool. et Hydrobiol* [*Riga*] 3(1): 79-84. 1931.—*Sicista montana* **strandi** (p. 79); *Chionomys nivalis* **nenjukovi** (p. 81); both from No. Caucasus. *Dyromys nitedula* aff. *nitedula* is recorded also.

15094. **HUEY, LAURENCE M.** A new subspecies of Peromyscus from the gulf coast of Lower California, Mexico. *Trans. San Diego Soc. Nat. Hist.* 6(26): 389-390. 1931.—*P. crinitus* **pallidissimus** (p. 389), type in San Diego Soc. Nat. Hist.

15095. **KRETZOI, NIKOLAUS.** Materialien zur phylogenetischen Klassifikation der Aeluroïdeen. *X. Congrès Internation. Zool. Budapest, 1927.* Pt. 2. pp. 1293-1355. 2 pl. 1929.—The author undertakes a revision of the spp., genera, and higher groups of Aeluroïdea, both recent and fossil. He also discusses the position of the Aeluroïdea in the system of the Ferae, giving a provisional classification of the entire order. The paper ends with remarks on the phylogeny, origin, and distribution of the aeluroid stock. Diagnoses are given of the genera and higher groups. The systematic account of the spp. includes synonymies, information as to type specimen, type locality, and geological horizon, and descriptive and taxonomic notes. The following are new: *Ailurictis* **helbingi** (p. 1295), France, Middle Stampian, type in Basel Mus.; *A.* **jourdani** (p. 1295), France, Vindobonian, type in Mus. Hist. Nat. Lyon; **HYPERAILURICTIS** [Nimravidae] (p. 1295), near *Ailurictis*, type *H. intrepida* **sinclairi** (*Pseudaelurus intrepidus s.* Matthew) (p. 1296), including also *H.* **marshi** (Therpe), n. comb. (p. 1296); **AFROSMILUS** [Nimravidae] (p. 1296), compared with *Ailurictis*, type *A.* **africanus** (*Pseudaelurus a.* Andrews) (p. 1296); **SIVASMILUS** [Nimravidae] (p. 1296), near *Afrosmilus*, type *S.* **copei** (p. 1297), India, Middle or Upper Miocene, type in Geol. Surv. India; **PROPONTOSMILUS** [Nimravidae] (p. 1297), near *Sivasmilus*, type *P.* **sivalensis** (*Pseudaelurus s.* Lydekker) (p. 1298); **PONTOSMILUS** [Nimravidae] (p. 1298), type *P.* **orientalis** (*Machairodus o.* Kittl) (p. 1300), including also *P.* **ogygius** (*Felis ogygia* Kaup) (p. 1299), *P.* **hungaricus*** (*Machairodus h.* Kormos) (p. 1299), *P.* **schlosseri** (*Machairodus s.* Weithofer) (p. 1299), and *P.*

indicus (p. 1300), India, Pontian, type in Geol. Surv. India; *Paramachaerodus* Pilgrim, emended diagnosis; *P.* **pilgrimi** (p. 1301), India, Pontian, type in Geol. Surv. India; **METADEINIKTIS** [Machairodontidae] (p. 1303), near *Dinictis* Leidy, type *M.* **cyclops** (*Dinictus c.* Cope) (p. 1304); *Eusmilus* **schlosseri** (p. 1305), France, Aquitanian, type in München Mus.; **PAREUSMILUS** [Machairodontidae] (p. 1305), near *Eusmilus* Gervais, type *P.* **filholi** (p. 1305), France, Upper Eocene, type in Brit. Mus.; **ALBANOSMILUS** [Machairodontidae] (p. 1306), similar to *Ischyrosmilus* Merriam, type *A.* **jourdani** (*Machairodus j.* Filhol) (p. 1306); **SANSANOSMILUS** [Machairodontidae] (p. 1307), resembling *Albanosmilus* Kretzoi, type *S.* **palmidens** (*Felis p* Blainv.) (p. 1307); *Megantereon* Croizet & Jobert and *Drepanodon* Bronn, emended diagnoses; *Drepanodon* **mehelyi** (p. 1310), Hungary, Upper Pliocene, type in Kgl. Ung. Geol. Anstalt; **TOSCANIUS** [Megantereontidae] (p. 1309), provisionally proposed, type *Ursus cultridens* Cuvier; **EPIMACHAIRODUS** [Machairodontidae] (p. 1310), resembling *Ischyrosmilus* Merriam, type *E.* **hungaricus*** (p. 1311), Hungary, Upper Pliocene, type in Kgl. Ung. Geol. Anstalt, including also *E.* **crenatidens** (*Machairodus c.* Fabrini) (p. 1311), *E.* **latidens** (*Machairodus l.* Owen) (p. 1312), and *E.* **boulei** (p. 1312), France, Upper Pliocene; **PROTAMPHIMACHAIRODUS** [Machairodontidae] (p. 1316), type *P.* **maximiliani** (*Machairodus m.* Zdansky) (p. 1316); **AMPHIMACHAIRODUS** [Machairodontidae] (p. 1316), resembling *Machairodus*, type *A.* **palanderi** (*Machairodus p.* Zdansky) (p. 1317), incuding also *A.* **tingii** (*Machairodus t.* Zdansky) (p. 1317); **AILUROMACHAIRODUS** [Ailuromachairodontidae] (p. 1319), type *A.* **quadridentatus** (*Felis quadridentata* Blainv.) (p. 1319); **PARAPSEUDAILURUS** [Felidae] (p. 1322), near *Pseudaelurus* Gervais, type *P.* **osborni*** (p. 1322), Hungary, Upper Sarmatian, type in Kgl. Ung. Geol. Anstalt, including also *P.* **gaillardi** (p. 1322), France, Vindobonian, type in Mus. Hist. Nat. Lyon; **ELMENSIUS** [Felidae] (p. 1323), resembling *Neofelis* Gray, type *E.* **stehlini** (p. 1323), Germany, Lower Miocene, type in Senckenberg Mus.; **SIVAPANTHERA** [Felidae] (p. 1324), type *S.* **lydekkeri** (p. 1324), India, Upper Pliocene, type in Brit. Mus.; **PARDOTIGRIS** [Felidae] (p. 1325), near *Leo* Oken, type *P.* **onca** (*Felis o.* L.) (p. 1325), including also *P.* **palustris** (Burm.) n. comb. (p. 1325); *"Drepanodon"* **cautleyi** ("species incerti generis") (p. 1331), India, Upper Pliocene, type in Brit. Mus.; **TELOSMILUS** [incertae sedis] (p. 1331), provisionally proposed, type *"Drepanodon" cautleyi* Kretzoi; *Pseudaelurus* ? **pontopersicus** [Felidae] (p. 1332), Persia, Pontian, type in Naturhist. Mus., Wien. Nimravinae, emended diagnosis; **POGONODONTINAE** (p. 1333), n. subf. of Nimravidae, including *Pogonodon* Cope and possibly *Archaelurus* Cope; **DINICTINAE** (p. 1334), n. subf. of Machairodontidae, including *Dinictis* Leidy and *Metadeiniktis* Kretzoi; **HOPLOPHONEINAE** (p. 1334), n. subf. of Machairodontidae, including *Hoplophoneus* Cope, *Eusmilus* Gervais, *Pareusmilus* Kretzoi, and *Ischyrosmilus* Merriam; **EPIMACHAIRODONTINAE** (p. 1335), n. subf. of Machairodontidae, including *Epimachairodus* Kretzoi and *Homotherium* Fabrini; Machairodontinae, emended diagnosis; **SMILODONTINAE** (p. 1336), n. subf. of Machairodontidae, including *Smilodon* Lund, *Amphimachairodus* Kretzoi, *Trucifelis* Leidy, *Smilodontopsis* Brown, *Dinobastis* Cope, and possibly *Protamphimachairodus* Kretzoi; **PSEUDAELURINAE** (p. 1338), n. subf. of Felidae, including *Pseudaelurus* Gervais, *Parapseudailurus* Kretzoi, and *Metailurus* Zdansky; **NEOFELINAE** (p. 1338), n. subf. of Felidae, including *Neofelis* Gray; Pantherinae emended to include *Puma* Jardine; Nimravidae and Machairodontidae, emended diagnoses; **AILUROMACHAIRODONTIDAE** (p. 1340), with subf. **AILUROMACHAIRODONTINAE** (p. 1336), including *Ailuromachairodus* Kretzoi; **MEGANTEREONTIDAE** (p. 1341), with subf. **MEGANTEREONTINAE** (p. 1337), including *Megantereon* Croizet & Jobert and *Drepanodon* Bronn; Felidae, emended diagnosis; **DINAILURICTIDAE** (p. 1341), provisionally proposed, with subf. **DINAILURICTINAE** (p. 1337), including *Dinailurictis* Helbing; **MACHAIRODONTOÏDA** (p. 1342), n. tribe, including Nimravidae, Machairodontidae, Megantereontidae, and Ailuromachairodontidae; **EUAILUROÏDA** (p. 1346), n. tribe, including Felidae. The oldest representatives of the Aeluroïdea can be regarded as small, arboreal Pseudocreodi with specialized dentition, with their nearest relatives in the Oxyaenidae and Hyaenodontidae. Certain changes in the classification of the Ferae are proposed. The Eucreodi of Matthew are united with the suborder Carnivora, which includes the superfamilies Arctoïdea, **MUSTELOÏDEA** (p. 1350) (with Mustelidae as type and only family), and "Herpessoidae" [Herpestoïdea ?]. The new suborder **PARACARNIVORA** (p. 1349) is erected to include the superfamilies Pseudocreodi and Aeluroïdea, with Felidae as the type. The suborder Creodonta is made to include the superfamilies Procreodi and Acreodi. **ARCTODONTINAE** (p. 1350) is proposed as a new name for Arctotheriinae, since *Arctotherium* Bravard is a synonym of *Arctodus* Leidy. The Aeluroïdea are considered to be of African origin, the oldest genus *Ailurictis* being widespread in that continent. A table is introduced to show the geological and geographical distribution of the genera of Aeluroïdea. The spread of groups to the various continents at different geological periods is briefly discussed.

15096. PING, CHI. On the skeleton of Felis tigris. *Contr. Biol. Lab. Sci. Soc. China* 2(1): 1-6. 5 fig. 1926.—This specimen was shot in Amoy, Fukien. Comparison is made with bones of cat, dog, and leopard.—*A. M. Boring.*

15097. SIMPSON, GEORGE GAYLORD. A new Paleocene uintathere and molar evolution in the Amblypoda. *Amer. Mus. Novitates* 387. 1-9. 9 fig. 1929.—**PROBATHYOPSIS** (p. 1), type *P.* **praecursor*** (p. 2) from the Clark Fork of Wyoming, closely related to *Prodinoceras*. The problem of the molar pattern of uintatheres and coryphodonts is considered. It is concluded that *Probathyopsis* may be ancestral to the uintatheres, but is at most very distantly related to *Pantolambda*, and that the uintatheres cannot have been derived from *Pantolambda*.—*A. E. Wood.*

15098. SIMPSON, GEORGE GAYLORD. Additions to the Pleistocene of Florida. *Amer. Mus. Novitates* 406. 1-14. 7 fig. 1930.—Pleistocene mammals have been discovered in Florida in several localities: a fauna from the Itchatucknee River, associated with artifacts, including *Ondatra zibethica, Castor canadensis*, Lutra canadensis*, and *Mylohyus ?pennsylvanicus**; at Bradenton the mammoth, *Parelephas floridanus*, a skull of a capybara, *Neochoerus pinckneyi**, and the horn cores and occiput of *Bison latifrons**; in Sarasota Co. fossils from beach deposits, Pleistocene river clays, and typical stream and bog deposits.—*E. H. Colbert.*

15099. SIMPSON, GEORGE GAYLORD. American Mesozoic Mammalia. *Mem. Peabody Mus. Yale Univ.* 3(1): 1-171. 32 pl., 62 fig. 1929.—This monograph covers all known kinds and specimens of American Mesozoic Mammalia, treating the taxonomy, morphology, phylogeny, and geographic and geologic distribution of the Triconodonta, Symmetrodonta, Pantotheria, and the Mesozoic Multituberculata, Marsupialia, and Insectivora. Multituberculata, Plagiaulacidae: *?Psalodon* **marshi*** (p. 27), type in U. S. Nation. Mus. Symmetrodonta, incertae sedis: **EURYLAMBDA** (p. 41), type *E.* **aequicrurius*** (*Amphidon ae.* Simpson) (p. 41). Pantotheria, Paurodontidae: *Archaeotrigon* **distagmus*** (p. 52). Pantotheria, Dryolestidae: *Laolestes* **grandis*** (p. 64); *?Herpetairus* **humilis** (p. 74); *Melanodon* **goodrichi*** (p. 76). Pantotheria: **DOCODONTIDAE** (p. 84), type *Docodon* Marsh; this name replaces Dicrocynodontidae, since *Dicrocynodon* Marsh and *Ennacodon* Marsh are reduced to synonymy with *Docodon; Docodon* **superus*** (p. 95).

Types of new spp., except the first, in Peabody Mus., Yale Univ. All from the Morrison formation, Jurassic, Wyoming.—*H. E. Wood, II.*

15100. **SODY, H. J. V. Over Rattus rattus roquei Sody, met beschrijving van een nieuw ras van Rattus rattus van Soemba. [On R. r. roquei Sody with description of a new race of R. rattus from Soemba.]** *Zool. Mededeel.* [*Leiden*] 13(1/2): 94-99. 1930.—*Rattus r. roquei*, the tree rat of Java, is distinct from *R. r. jalorensis* of Malacca; *R. r. sumbae* ♀ (p. 98), East Soemba, type in Zool. Mus. Buitenzorg.

15102. **WEIDENREICH, FRANZ. Über die systematische Stellung des Australopithecus africanus Dart.** *Natur. u. Mus.* [*Frankfurt a/M*] 61(5): 229-234. 6 fig. 1931.—By comparing the relative proportions of the cranium and the facial part of the skull in *Australopithecus**, the author concludes that it is nearer to the Hominidae than are the chimpanzee* and the gorilla*, although it may still be considerably below the *Pithecanthropus* stage.

15103. **ANONYMOUS. Wild game census in Colville National Forest, northwestern Washington.** *Murrelet* 12(1): 26. 1931.—Census of game, predatory, and fur-bearing animals.

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 | JUNE-JULY, 1932 Entries 15105-18117 | NUMBERS 6-7

GENERAL BIOLOGY

A. H. GRAVES, *Editor,* Plant

C. A. KOFOID, *Editor,* Animal

(See also in this issue Entries 15123, 15161, 15259, 15309, 15511, 15744, 16765, 16811, 17046, 17066, 17266, 17465, 17716, 17717, 17726)

GENERAL

15105. GEITLER, LOTHAR. Über die Bedeutung der Grösse für die Organisation der Zelle. *Naturwiss.* 18 (14) : 301-305. 5 fig. 1930.—Body size is not the result of mere chance but is intimately connected with the life processes, since these are determined by the forces of molecular adsorption which are largely dependent on organelle size and, in particular, on the relation of volume to surface area. Evidence for this contention is adduced (1) from the absence of a nucleus in true bacteria (probably) and in the Cyanophyceae which seems to be correlated with the smallness of these cells. (2) In the algae in general, the smaller the cell the simpler the type of chromatophores. (3) Among Diatoms reduction in cell size is not merely geometrical but results in a different form since it takes place chiefly at the expense of the long axis, the others remaining almost constant. Such changes affect the developmental cycle because they influence sexual reproduction, there being a definite "copulation-size" among the organisms. Those that cannot conjugate die off. (4) The impossibility of organelles below a certain size for a certain type of organization is shown by comparing 2 vars. of *Cocconeis placentula.* A chromatophore of the *lineata* type is impossible in *pseudolineata* because the cells of the former are twice the size of the latter. (5) The different numbers of gametes formed by different diatoms is explained by cell size. Thus, large-celled sp. of *Navicula minima* regularly form 2 gametes whereas small-celled sp. form only 1. In general 2 gametes are formed by a small cell only when the nucleus, chromatophores, pyrenoids, etc., are realizable in sufficiently reduced form to fit into the cell. Hence size as a purely physical factor has an essential rôle in the differentiating of the cell and the changes of form of an organism.—*P. H. Yancey.*

15106. GREEN, WYMAN REED. The general status of sex and the sexes in organisms. *Jour. Tennessee Acad. Sci.* 2 (2) : 18-23. 1927.—Sex is a phenomenon not of individuals but of race, being related to the smallest racial unit, the "macrobion," which includes the neuters as well as the sexes. The locus of the primordial sex differentiation, not its quality, determines whether the sp. is bisexual or unisexual, etc. The clue to the guiding principle underlying the evolution of the sexes is to be found in the study of ontogeny. Sex is no more susceptible of evolution than is hunger or energy requirements. Secondary or even primary sex characters are in no sense expressions of sex. Life histories are cycles following the physico-chemical requirements of the law of successive reactions. Sex is related to the whole cycle in the same way as are the need for locomotion, for energy, or for means of defense.—*W. R. Green.*

15107. HÖBER, RUDOLF. Das Lebendige als Objekt naturwissenschaftlicher Forschung. [The living organism as object of scientific research.] 19p. Lipsius & Tischer: Kiel, 1930. Pr. 1 M.

15108. KINGSLEY, NATHAN H., and EDWARD J. MENGE. Laboratory studies, demonstrations, and problems in biology. 208p. Bruce Publishing Co.: Milwaukee, [1931?] Pr. $1.28.—This is a laboratory outline for an elementary course in high school biology, including 95 laboratory exercises in elementary botany, zoology, and physiology, with a short appendix on collecting and directions for a group of 16 projects.—*C. A. Kofoid.*

15109. LANTZ, C. W. The status of the biological sciences in the high schools of Iowa. *Proc. Iowa Acad. Sci.* 37: 101-105. 1930 (1931).—Biology has mostly replaced botany and zoology, and General Science has become almost universal. Training of teachers is inadequate. Biology is taught as related to human life.—*H. S. Conard.*

15110. LEPESCHKIN, W. W. My opinion about protoplasm. Sammelreferat. *Protoplasma* 9 (2) : 269-297. 1930.—Protoplasm is defined as a complex mixture of chemical substances. There are no living molecules, no living substances, but only living matter, i.e., a living mixture of chemical substances. The presence of a membrane on the surface of protoplasm is not necessary to explain its osmotic properties. The surface of protoplasm, which is not covered by a pellicula, is liquid. The colloidal structure of protoplasm is the only one possible. Pfeffer's hypothesis of a peculiar surface layer of protoplasm governing its osmotic properties is wrong; these properties are to be attributed to the whole mass. The dispersion medium of the colloidal system of protoplasm is a mixture of the principal compounds of protoplasm in water.—*W. Seifriz.*

15111. LEVI, GIUSEPPE. Organismo e tessuti. [Organism and tissues.] [Also in French.] *Scientia [Bologna]* 48 (219-7) : 19-32, and suppl. 7-19. 1930.—Organization, development, regeneration, hypertrophy, atrophy, abnormal activities including the formation of neoplasms, and the behavior of tissues in vitro are discussed from the standpoint of regulation by the organism; and it is concluded that there is the most profound difference between the life of the organism and the life of the tissues.—*M. M. Metcalf.*

15112. LOTKA, ALFRED J. The structure of a growing population. *Human Biol.* 3 (4) : 459-493. 1931.—A population growing according to the logistic law has a characteristic structure as regards age and sex composition, annual birthrate and deathrate, "inherent" as compared with the actual rate of natural increase, and other biometric functions. These characteristic features are developed by mathematical analysis in which a "generalized logistic" function, built up of the hyperbolic tangent and its derivatives, plays a leading rôle. The

discussion is first conducted for the special case of a population with a constant life table, then for the more realistic case of a population with a fluent life table, i.e., with gradually improving mortality conditions. In the case of a constant life table the curve of total annual births is very nearly a simple logistic, whose point of inflection comes about 35 yrs. before the point of inflection of the population growth curve. This is on the basis of the 1919-20 U. S. A. life table, and 35 yrs. in the mean age of the living in the corresponding "life table population." The curve of the birthrate per head is very nearly an inverted logistic, with its point of inflection about 22 yrs. later than that of the curve of total annual births, and about 12 yrs. before the point of inflection of the curve of population growth. The computed birthrates follow a course very similar to the observed. It is here clearly seen that a declining birthrate such as observed among the population of the U. S. A. is a necessary accompaniment of the logistic law of growth. A comparison of the age distribution in the logistic population with (1) a population growing according to the law of Malthus, and (2) the actual U. S. A. native white ♀ population brings out the fact that a population growing by the logistic law has a relative excess of persons at the reproductive ages, and that the actual structure of the U. S. A. native white ♀ population conformed quite closely to the computed logistic age distribution. The analysis further shows that the "inherent" or "true" rate of natural increase in a logistic population is necessarily always less than the "crude" or "observed."—*A. J. Lotka.*

15113. LYON, SCOTT C. Possibilities for the establishment of a biological station at Reelfoot Lake [Tennessee]. *Jour. Tennessee Acad. Sci.* 1(1): 11-15. 1926.

15114. McDOWALL, S. A. Biology and mankind. 224p. 46 fig. Macmillan Co.: New York, 1931. Pr. $2.50.—This is a statement of the course in general biology, given as the concluding year's work in a 5 yr. science course for classical students. The previous yrs. are given to physical geography, mechanics, chemistry, and physics. It therefore has a somewhat greater maturity of thought than the usual introductory course. Its aim is to present the significance of the biological basis of human life and its relations to problems of social and racial movements. It begins with a presentation of organic evolution and contrasts the Lamarckian and Darwinian hypotheses. The evidence for the inheritance of acquired characters is fairly summarized and rejected, with an examination of its social implications. The review of cellular basis of heredity and principles of Mendelian inheritance is followed by a discussion of its mechanism, of sex determination, and of the effects of inbreeding and outbreeding. The evidence of the extent and characteristics of Mendelian inheritance in man is reviewed and applied to social problems of population and human defects. National and international problems arising from outbreeding and inbreeding are discussed with reference to Ireland, Great Britain, and the U. S. A. and to the eugenic aspects of racial hybridization in general.—*C. A. Kofoid.*

15115. MENGE, EDWARD J. v. K. Biological problems and opinions. *Quart. Rev. Biol.* 5(3): 348-359. 1930.—Results of a questionnaire sent to the outstanding biological workers in all lands show the most important problems which need this generation's attention to be: the nature of life; the constitution of protoplasm; the mechanism of evolution; cancer research; the relation of genetics and environment; disease; criminality; racial superiority and inferiority; and problems of economic entomology.—*A. C. Haase.*

15116. METCALF, MAYNARD M. The place of research in the undergraduate college. A symposium by members of the Joint Committee on Research in Colleges. *Assoc. Amer. Colleges Bull.* 16: 1-7. 1930.

15117. PYCRAFT, W. P., editor. The standard natural history: From amoeba to man. 942p. 12 col. pl., 900 illus. Frederick Warne Co., Ltd.: New York, 1931. Pr., $6.00.—The purpose of the editor and his colleagues is to provide a balanced presentation of the entire animal kingdom such as to afford an easy, comprehensive survey of the classification of animals. The aim is to furnish a concise classification, and also to trace progressive development and to indicate existing and phylogenetic relationships. Adaptation of the animal to its environment is emphasized. A comprehensive account of the development of species, in all major groups, is included. Preceding a more detailed treatment of a given group there is a general discussion of the phylum, class, or order under consideration. The book is divided into sections in which the groups, ranging in rank from phylum to orders, are treated by the following authorities [the phylogenetic sequence observed in the book is sometimes broken in order to bring together all groups treated by one author]. M. BURTON: Protozoa (p. 5-20), Porifera (p. 21-28), Coelenterata (p. 29-40), Polyzoa (p. 68-71), Protochordata (p. 407-416); C. C. A. MONRO: Vermes (p. 41-67), Echinoderma (p. 77-101); in the group Vermes are included the phyla Annelida, Gephyrea, Rotifera, Gastrotricha, Nemertinea, Platyhelminthes, Nemathelminthes, Acanthocephala, Chaetognatha; G. C. ROBSON: Brachiopoda (pp. 72-76), Mollusca (pp. 102-147); W. T. CALMAN: Trilobita (p. 153), Crustacea (pp. 154-188); N. D. RILEY: Prototracheata (pp. 189-191), Insecta [exclusive of the Coleoptera and Diptera] (pp. 194-290), Hymenoptera (pp. 320-345); G. J. ARROW: Coleoptera (pp. 291-319); F. W. EDWARDS: Diptera (pp. 345-378); THEODORE H. SAVORY: Myriapoda (pp. 191-193), Arachnida (pp. 379-406); J. R. NORMAN: Salachii and Pisces (pp. 417-488) (a genealogical tree is given of fishes, p. 423); H. W. PARKER: Amphibia (pp. 489-510), Reptilia (pp. 511-563); W. P. PYCRAFT: Aves (pp. 564-779) with a phylogenetic tree showing the 6 main groups of "Neognathine" birds, and relative position of the "Palaeognathae" or ostrich-tribe; J. G. DOLLMAN: Mammalia (pp. 780-918). A comprehensive index concludes the book.

15118. SMART, HAROLD R. The logic of science. 234p. D. Appleton & Co.: New York, 1931. Pr. $2.50.—The chapters which are concerned with biological matters are II, On the general presuppositions, methods, and aims of natural knowledge, and VI, The biological sciences. The classificatory judgment, as it functions in the biological sciences, differs essentially from that in the mathematical and physical sciences. The relationship to which it gives expression is that of the individual to the class. The element of individuality becomes much more prominent than in the case of physical laws. In the latter case each particular counts only as another instance of the universal; in the former, we have the recognition of variability and adaptiveness, signs and indications of considerable inner diversity of structure and function, even amongst the members of the same species. And an explanation, in this realm, means the tracing of an evolutionary process of change, and possibly reference to purpose. The chapter on the biological sciences considers briefly the respective merits of mechanism, vitalism, and teleology, as methodological presuppositions for the guidance of the study of living things. It argues for Bergson's thesis that in the biological sciences the conception of natural kinds dominates the search for laws, somewhat as physical conceptions condition the application of mathematical principles to physical phenomena; and lastly it emphasizes the necessity of forming a clear idea of the process of evolution and of its natural limitation to the domain of living, quasi-individual entities.—*C. A. Kofoid.*

15119. THOMSON, J. ARTHUR, and PATRICK GEDDES. Life: outlines of general biology. 2 vols. 1515. Frontispiece. 202 fig. Harper & Bro.: New York & London, 1931. Pr. $15.00.—This treatise has a natural history background and a physiological framework with an evolutionary pattern. It is thus dynamic throughout. The treatment of the structural and systematic aspects is subordinated to the developmental and evolutionary. The material utilized is selected with reference to the

illustration of process or theory rather than to present an encyclopedic inclusive account. Its underlying philosophy is an attempt to interrelate the long standing and often contrasted mechanistic and vitalistic points of view. The general plan presents a summary of all important advances in the realm, mainly of animal biology, and with special reference to human interests. The introduction maps out the domain of biology and characterizes living creatures. The natural history, interrelationships, or ecology of organisms follows. Then follows an account of the functioning of the individual, especially as influenced by the hormones. A special chapter is devoted to the complex of problems associated with reproduction and sex from germ cells to parentage. The biopsychological patterns of organisms from rational thinking to the tropisms of the Protista are discussed, somewhat from the organismal point of view. Structure and classification are brought into the picture only to serve as foils for the discussion of generalities, such as symmetry, differentiation, integration, homology, analogy, convergence, change of function, vestigial organs, classification of tissues, the cell theory, and the species questions. The development of organisms, both plant and animal, affords opportunity for tracing the origin and continuity of germ cells, recapitulation, organisers, life histories, the curve of life, alternation of generations, the meaning of larval stages, longevity, the biology of death, and the play period and industries of animals. Organic evolution summarizes the ascent of both plant and animal life, notes the great steps in structural advance, the origin of organisms, the apartness of the bacteria, origin of insects and birds, effects of recurrent ice-ages, and the question of life beyond our world limits. The theories of evolution are followed from the earlier vague adumbrations to the latest aspects of holism. One finds here a very clear presentation of the oft-recurrent question of the inheritance of acquired characters, a loyal adherence to the main theses of the Darwinian hypothesis, and a summary of the factors of evolution. The biological factors which underlie human sociology, such as sex, individuality, woman's status in early stages of the evolution of human culture, the influence of the hunting stage and the cultivation of plants, and the present changing status of the sexes, are reviewed. The chapter on the wider aspects of biology touches upon such themes as the cultural value of natural history, biology and health, population, biology and ethics, war, eugenics, genius, education, biology and sociology, and relativity. This is followed by a chapter entitled "Toward a theory of life," naturalistic in basis, with a discussion of the origins of evils and of determinism or freedom. Four appendices treat respectively of (1) the great events in biology, a brief summary of the work of eminent biologists; (2) naturalists at work, largely an account of British enterprises; (3) how a biological outlook on life can be developed by education, containing an outline and discussion of educational methods; and (4) a guide to biological reading, with a very full classified list of nearly 1,000 titles.—*C. A. Kofoid.*

15120. WALKER, ERNEST P. Wild life protection—an urgent problem. *Ann. Rept. Smithsonian Inst.* **1930**: 327-346. 4 pl., 13 fig. 1931.—There is need for increasing the supply of wild life for recreational uses and for commercialization. The supply can be increased by proper administration or wild-animal husbandry on lands and water now producing scanty or no crops. Proper administration necessitates work by competent naturalists to ascertain existing conditions, to plan steps for improving conditions, to submit their findings and plans to those in a position to facilitate their execution, and to educate the public on the subject to the end of obtaining its full cooperation in improved wild-life production. Among various examples presented, it is shown that by limiting the open season for fur-bearers to the period when the fur is prime, the value of a smaller catch during this period may be greater than that of a larger catch during a more extended period.—*From author's summary.*

15121. WOLFF, MAX. Vom Missbrauch des Gesetzes der Kausalität in der Biologie. *Zool. Anzeiger* **86** (7/8): 175-179. 1930.—A plea is made for a clear distinction between mere opinion or expression of faith and scientifically established facts. Many zoologists, among whom are Konow, Haeckel, Forel, and Ostwald, have carried over religious or philosophical ideas into science to the detriment of the latter. The position of Kant and Schopenhauer on this matter is sound. The attitude of Volkmann, who avoids the question of causality in natural phenomena because it is too frequently confused with purpose and design, is especially commended. Teleological viewpoints may have a place in human thinking but not in science.—*A. M. Chickering.*

15122. WOOD, HORACE ELMER, 2nd. Priority in family, order and higher group names. *Science* **72** (1861): 219-220. 1930.—General agreement would be desirable on the method of applying priority to family names. The use of homonyms such as Cyclostomata (Bryozoa), Decapoda (Mollusca), and Tardigrada (Arthropoda) should be discontinued.—*H. E. Wood.*

15123. ZIMMERMANN, WALTER. Kritische Bemerkungen zu einigen biologischen Problemen. II. Zweckmässige Eigenschaften und Phylogenie. [Adaptations and phylogeny in some biological problems.] *Biol. Zentralbl.* **48** (4): 203-229. 1928.

PLANT

15124. FAIRCHILD, DAVID. Exploring for plants. 591p. 190 illus. Macmillan Co.: New York, 1930. Price $5.00.—A semi-popular narrative (based on notes taken during the Allison Vincent Armour expeditions for the U. S. A. Dept. of Agric., 1925, 1926, and 1927) of the author's experiences in studying, collecting, and introducing foreign plants and seeds into the U. S. A. and other parts of America. Descriptions of thousands of plants introduced have been recorded in the printed "Inventories of plant material introduced by the Office of Foreign Plant Introduction," and constitute the formal report of the expedition's activities. These explorations covered a wide range of territory extending from Panama, southern and Western Europe, the Mediterranean, northern and western Africa (a map facing p. 522 shows regions here visited), to southern Asia, including lesser known islands of the East Indies as well as Sumatra, Java, and Borneo (a map facing page 523 indicates regions here visited). Among results of these expeditions many new plants which give promise of economic or aesthetic value have already become established in America, among which may be mentioned: Mangosteen trees in Honduras; coconut and African oil palms in Panama; rock-cover plants in the parks of Seattle, Washington; poplars on the prairies of the Dakotas; Moroccan apricots in California; forage shrubs in the mountains of Arizona; shade trees, timber bamboos, sand dune shrubs, flowering vines, and strand trees and palms on the coast of Florida.

15125. HAUMAN, LUCIEN. Un voyage au pays des Araucaria. [A trip to the country of the Araucaria.] *Nouveau Jardin Pittoresque. Bull. Assoc. Nat. Belge.* **1927**: 205-210. Illus. 1927.—A botanical trip from Buenos Aires to the Argentine Cordillera in the territory of the Neuquen is described.

15126. MARTENS, P. Notes de botanique microscopique. 3e éd. 81p. Uystpruyst: Louvain, 1931. Pr. 12 fr.—A collection of practical notes for the guidance of first yr. students in the laboratory, including description and explanation of 74 preparations. The chapters treat of: the microscope; the cell; the nucleus and cell division; meristems; histology (differentiation of parenchymatous, supporting, conducting, secretory and protective tissues, epidermis and stomata); anatomy of the phanerogams (stem, leaf, root, primary and secondary structures); reproductive organs of phanerogams; vegetative and reproductive apparatus of pteridophytes, bryophyte and thallophytes.—*P. Martens (transl. by R. E. Cleland)*

15127. ROBBINS, WILFRED W. The botany of crop plants. 3rd ed. rev. 639p. 269 fig. P. Blakiston's Son & Co., Inc.: Philadelphia, 1931. Pr. $4.—This edition incorporates additions to our knowledge of crop plants since the publication of the 2nd ed. in 1924. Practically all chapters have been revised, several new illustrations added, and reference lists enlarged. Tables and matter pertaining to the distribution and yield of crop plants have been largely eliminated, so that this edition is more strictly botanical than the other two.—*C. S. Gager.*

ANIMAL

15128. CEDERSTROM, J. A. Retention of information gained in courses in college zoology. *Pedagogical Seminary & Jour. Genetic Psychol.* 38(1/4): 516-520. 1930.

15129. CHIDESTER, F. E. Zoölogy. A textbook for college and university students. 581p. 268 fig. D. Van Nostrand Co., Inc.: New York, 1932. Pr. $3.75.—This book is divided into 22 chapters, the titles of which indicate its predominantly taxonomic character as compared with the "principles" type of text-book. The Introduction deals with generalities and definitions of plants and animals, the subdivisions of zoology, cellular and chemical constitution, physiology and relationships of animals and a scheme of classification in the order of Mammalia to Protozoa. Then follows a chapter each for the phyla Protozoa, Porifera, Coelenterata, Platyhelminthes, Nemathelminthes, Annelida, Trochelminthes, Molluscoidea, Echinodermata, Mollusca, Arthropoda and Chordata, which are treated unequally according to the author's idea of their importance. This brings the text to p. 221. In addition to the more strictly taxonomic and morphological matter reference is generally made to geographical distribution, paleontology, ecological relations, economic importance and frequently to other subjects of popular interest concerning each group. Several groups, such as Sipunculoidea and Echiurida, are omitted altogether, though the latter is named in error for the Echinoidea in the introductory table. Treatment of the Chordata is expanded in chapters on the classes Cyclostomata, Pisces, Amphibia, Reptilia, Aves, Natural History of Mammals and Physiology of Mammals, the latter being especially comprehensive. There is a short chapter on the Social Life of Animals and a final one on Evolution, Heredity and Eugenics. The volume is designed to appeal not only to the general culture college student but to students specializing in zoology, in premedical sciences, and in agriculture, which explains the emphasis placed on certain aspects of the subject. Several distinctive features are worthy of note. The illustrations are abundant and fresh. A large part of them either were drawn especially for this book or were taken from sources not previously drawn upon for text-book illustrations. Many of the chapters were read and shaped in the making by specialists and brief statements of several special theories and points-of-view were written by their authors, thus giving an added authority. There is much information on topics not usually mentioned in text-books of general zoology. This usually appears in the form of short paragraphs introduced by a catchword printed in italics or heavy-faced type.—*J. P. Moore.*

15130. GASTHUYS, P. Historique de la protection de la faune au Congo Belge. *Bull. Agric. Congo Belge* 21(2): 374-379. 1930.—This is a chronologic résumé of the game laws of the Belgian Congo, dealing principally with the protection of the larger animals such as the elephant, the white rhinoceros, and other animals sought for their rarity by collectors and hunters. The location of park preserves for animal protection is described. One of the weaknesses of the game laws is the ordinance declaring that the amateur hunter when killing in defense of his life, or that of others, or of his property, may appropriate the ivory of the animals thus killed under the sole condition of registering.—*M. Buchsbaum.*

15131. REED, H. D., and B. P. YOUNG. Laboratory studies in zoology. 121p. 4 fig. McGraw-Hill Book Co.: New York, 1930. Pr. $1.00.—The object of this book is to meet the principal difficulties encountered by beginners and to provide an outline sufficiently elastic to meet preferences of the individual instructors. One-third of the book is based upon the frog as a type to illustrate zoological method, animal organization, and biological principles. Brief sections on mitosis, development, and heredity follow. The last half is given to a discussion of the principal phyla of animals and closes with a key to phyla and classes.—*J. P. Moore.*

15132. SCHMIDT, JOHANNES. Oceanographical expedition of the Dana, 1928-1930. *Nature [London]* 127(3203): 444-446. Map, 2 fig.; (3204): 487-490. Map, 2 fig. 1931.—This globe-circling expedition made investigations in many of the principal enclosed seas as well as the 3 oceans. Its main features were: making very large collections of pelagic life in the different depths of the various oceans; obtaining data on the physical and chemical composition of the different water layers; and subjecting a number of important pelagic forms, represented by abundant individuals, to finer analysis by biometrical methods. There is a special discussion of the striking latitudinal distribution of the recently described eel genus, *Nessorhamphus.* Each of the 2 known sp. occurs in the Indian, Pacific, and Atlantic Oceans, *N. ingolfianus** about the transitional circles, and *N. danae** (p. 487) in the equatorial belt. In a supplement (pp. 489-490), HELGE THOMSEN discusses "Oxygen in the tropical Pacific." From Panama to Tahiti an O minimum (of generally less than 5%) occurs at about 400-500 m., the amount steadily increasing as lower depths are reached. From Tahiti to New Caledonia the minimum does not go below 40%, this being reached at about 2000-2500 m. Probably this layer especially poor in O is centered about lat. 5-10° N. and extends right across the whole Pacific. This O minimum has about the same geographical distribution as the equatorial counter current, and the poor O layer under the latter shows that in these depths the currents with a meridional component must be extremely weak.

15133. STILES, C. W. Is an international zoological nomenclature practicable? *Science* 73(1892): 349-354. 1931.—The author gives a historical review of the International Rules on Nomenclature and of various attempts which have been made to alter them more or less radically. Special mention is made of propositions from Berlin and Vienna, and of the Horn Resolution adopted at Padua. American zoologists are urged to define their position towards this resolution.—*C. W. Stiles.*

15134. STRAND, EMBRIK. Nomenklatur und Ethik. Zurückweisung nomenklatorischer Entgleisungen der Herren Dr. Th. Mortensen und Prof. Dr. R. Richter. *Folia Zool. et Hydrobiol. [Riga]* 2(1): 25-46. 1930.—A controversial article answering Mortensen and Richter, and defending his own nomenclatorial practices.

15135. THORPE, W. H. Biological races in insects and their significance in evolution. *Ann. Appl. Biol.* 18(3): 406-414. 1931.—A biological race is a sub-specific group of individuals separated from other members of the same morphological sp. by definite and constant biological differences; structural and pigmentary differences are either completely absent or else very slight and inconstant. Biological races are usually distinguished by food preferences and seasonal distribution. Thus, whereas, a geographical ssp. is characterized by differences of average size or pigmentation and is isolated by geographical barriers, a biological race is characterized primarily by biological characters and is isolated by biological differences such as food and mating preferences. Biological races are known to exist in most of the main invertebrate groups. They appear to be most highly developed in the Insecta, Arachnida, and Nemathelminthes. There is also evidence of their existence in Coelenterata, Porifera, and Protozoa. In the 2 latter groups, where morphological characters are often slight and unreliable, the concept of a sp. fades insensibly into that of a biological race. This, of course, does not imply that the morphological characters of a sp., even in the higher

groups, are any more fundamental or important than the biological; they are accentuated merely for the sake of convenience in systematic work. With regard to insects, the host plant preferences which provide the basis for most biological races may be either germinally fixed or may be merely "memory reactions." The latter are renewed in each generation owing to the preference of an adult insect for oviposition on the particular food plant on which it was nourished as a larva,—the so-called "host selection principle." In the case of those which are germinally fixed, the probability that such biological characters may be of survival value is obvious. But even where the characters are of no direct value or where they are not germinally fixed, they may well be of evolutionary importance in that they would provide physiological barriers—lines of cleavage in an otherwise homogeneous population, which aid the spread and establishment of any new variety which might arise. In a number of cases, true biological races appear to have been induced experimentally. In most of these a Lamarckian explanation has been suggested. As regards insects there does not seem to be any one instance in which all other theories are completely ruled out, but there are 1 or 2 cases concerning plant-feeding Nematodes which make a Lamarckian explanation much more difficult to dispense with. Taken as a whole the phenomenon of biological races seems to provide a considerable amount of circumstantial evidence for some form of Lamarckian theory.—*W. H. Thorpe.*

15136. **UCHIDA, S. The present condition of the protection of birds and mammals in Japan.** 23p. 10 pl. Dept. of Animal Industry, Min. Agric. & Forestry: Tokyo, 1927.

APPARATUS AND TECHNIQUE

15137. **BRADBURY, O. C. A new dehydrating agent for histological technique.** *Science* 74 (1913): 225. 1931.—In experiments with animal tissues isopropyl alcohol not only is as good a dehydrating agent as ethyl alcohol, but causes less hardening of tissues. Tests with plant material are suggested.

15138. **FRIESNER, RAY C. A microtome knife cooler.** *Butler Univ. Bot. Studies* 1 (paper 12): 176. 1 fig. 1930.

15139. **GRAUPNER, HEINZ, und ARNOLD WEISSBERGER. Über die Verwendung des Dioxans beim Einbetten mikroskopischer Objekte. Mitteilungen zur mikroskopischen Technik I.** *Zool. Anzeiger* 96 (7/8): 204-206. 1931.—Dioxan (diethylene-dioxide) is miscible with water and with methyl and ethyl alcohol in all proportions, and also with paraffin at 60°. It may be kept dry by the addition of KCl. Methods of using it as a paraffin solvent for imbedding are given.

15140. **GROVE, A. J. An apparatus for keeping marine organisms under circulation in narrow observational tanks.** *Jour. Marine Biol. Assoc. Unit. Kingdom* 16 (3): 757-760. 1 pl. 1930.—This modification of Cannon & Grove's (1927) apparatus is made by holding a U-shaped rubber tube between 2 glass plates with spring clips.

15141. **GUILD, STACY R. Accumulation of gas in closed collodion sacs immersed in flowing tap water.** *Science* 70 (1812): 287-289. 1928.—Collodion sacs, 16 mm. in diam. and about 60 mm. long, filled with water or with aqueous solutions of various salts or gases and firmly closed without inclusion of free gas bubbles, when placed in slowing flowing tap water, became completely filled with gas in 6-7 days. In one measured experiment a pressure sufficient to support a 49½ in. water column in a 5 mm. glass tube was developed. The gas bubbles disappeared from the sac when it was taken out of tap water and put into a solution which had been "degassed" by means of a faucet filter pump. The information derived from these experiments is applicable in histological technic when there is distortion of tissues due to retained gas, as for example, in the membranous labyrinth.—*S. E. Johnson.*

15142. **HARVEY, E. NEWTON, and ALFRED L. LOOMIS. A microscope-centrifuge.** *Science* 72 (1854): 42-44. 2 fig. 1930.—The apparatus described enables one to get a magnified image of cells making 2,000-3,000 revolutions per min. at 10 cm. from the centrifugal axis. The cells are mounted on a slide clamped to the centrifuge arm. The source of light is fixed above the slide. Light passed through the slide into an ordinary microscope objective is then diverted by totally reflecting prisms to the eyepiece fixed above the centrifuge axis. By lighting cells for a few micro seconds every time they reach a certain point in revolution, they appear stationary and their contents show effects of centrifugal force. A special Hg lamp is described.—*M. B. Garnett.*

15143. **HOLMES, W. C., and A. R. PETERSON. The atmospheric dealkylation of aqueous solutions of cresyl blue.** *Stain Technol.* 6 (3): 79-82. 1931.—Aqueous solutions of cresyl blue are decidedly less stable than those of methylene blue. An appreciable degree of dealkylation occurs even under only slightly alkaline conditions (e.g., pH 7.68) and at room temp. within a few weeks. At pH 9 the dye is distinctly affected within 24 hrs.—*Authors (courtesy Wistar Bibl. Serv.).*

15144. **JOHNSON, B. K. Sources of illumination for ultra-violet microscopy.** *Proc. Phys. Soc. [London]* 43 (2): 127-137. 2 pl., 4 fig. 1931.—The conclusions recorded in the literature that a spark discharge between Cd electrodes is the most suitable source of illumination are confirmed. The brightness of the spark was found to be a function of the energy input and of the capacity employed. The frequency of alternation seems to have little effect.—*W. Marquette.*

15145. **LEECHMAN, DOUGLAS. Technical methods in the preservation of anthropological museum specimens.** *Bull. Canada Dept. Mines* 67. 127-158. 1931.—Methods of combating insect pests in museums are discussed and preservation of the following materials is considered: antler, babiche, baleen, bone, buckskin, feathers, fur, hair, horn, ivory, leather, rawhide, shell, sinew, turtleshell, wool; basketry, birchbark, resin, textiles, wood (including totem-poles); amber, beads, clay, copper, glass, gold, iron, lead, pictographs, pottery, silver, stone. There is a short bibliography.—*D. Leechman.*

15146. **PORTER, ALFRED W. The formation of images and the resolving power of microscopes.** *Jour. Roy. Microscop. Soc.* 49: 245-251. 1929.—A comparison is made of Abbe's and Rayleigh's methods of applying the diffraction theory in explaining the formation of images in the microscope. The importance of secondary spectra in calculating the resolving power is stressed, but it would be a mistake to consider this of great importance in practice.—*W. G. Marquette.*

15147. **SAVAGE, ALFRED, and M. C. JAMIESON. Note on the combined use of photo-electric cell and projection microscope.** *Canadian Jour. Res.* 3 (4): 322-326. 1 fig. 1930.—A method is described whereby the comparative areas of irregularly shaped microscopic objects may be rapidly determined. It consists of staining them with fuchsine and projecting their magnified images into a photo-electric cell insensitive to red light. The photo-electric current is inversely proportional to the sizes of the images and, at low magnifications, may be measured with a sensitive galvanometer.—*Authors' abstract.*

15148. **SCHMIDT, W. J. Dichroitische Färbung tierischer und pflanzlicher Gewebe.** In: **EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden.** Abt. V. **Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus.** Teil 2. Heft 16. Lief. 355. 1835-1924. 1 col. pl., 24 fig. Urban u. Schwarzenberg: Berlin, 1931.—The writer discusses the property of some dyes and elements, such as metals and iodine, of showing one color in transmitted light and another in reflected light (dichroism). He goes into detail concerning certain theories to explain dichroism. Thus according to Ambronn dichroic staining is brought about by dyes being deposited in small particles which are oriented in one direction. Ambronn's theory is no longer held in all details, but it is believed that the phenomenon appears because the particles of the sub-

stance stained have a certain definite orientation. The phenomenon is not bound to color, as the color of the object can be changed without destroying the dichroicity. Thus it has been found that cellulose fibers, stained *dichroically with congo* red, continue to show the dichroic property even after treating with lead acetate which intensifies the red color. Objects which are doubly refractive stain dichroically; e.g., cellulose of plants, almost all animal fibers, and under certain conditions cell plasma, chromatin and chondriosomes. For staining, physical maceration has ordinarily been employed, but sections of material fixed in alcohol or $HgCl_2$ are also satisfactory. Fox showed that cellulose fibers are dichroic regardless as to whether the dyes are acid, basic, or those used in dyeing cotton. If mordants are used—tannin for basic dyes and alum or soda for acid dyes—the dichroicity is less pronounced; but if the resultant lake is dissolved the property will reappear. Some consideration is given to the application of the principle to histology. Nearly all the material given is drawn from the literature, although the author is apparently familiar with the technic.—*H. J. Conn and L. M. Hansen.*

15149. STONE, CALVIN P. A rabbit cage designed for use in small laboratory rooms. *Pedagogical Seminary & Jour. Genetic Psychol.* 35(2): 325-327. 1 pl. 1928.

15150. SUMNER, C. G. An automatic recording camera for discontinuous operation. *Jour. Sci. Instruments* 8(3): 104-109. 3 fig. 1931.—A method is described for operating automatically a recording camera by which separate exposures at arbitrary time intervals may be made, the exposed sensitive paper being wound on after each exposure without being driven continuously.—*Author's abstract.*

15151. ANONYMOUS. Progress in the standardization of stains. Army specifications for biological stains. *Stain Technol.* 6(3): 73-77. 1931.—Specifications for methyl orange, congo red, brilliant green, methyl violet, crystal violet, acid fuchsin, safranin O, and methylene blue have been submitted by the Med. Dept. to the Stain Commission, approved by interested manufacturers, and have been adopted by the Med. Dept. for use in purchases of stains. They are to be submitted to the Federal Specifications Board for acceptance as master specifications by the U. S. Govt.—*Courtesy Wistar Bibl. Serv.*

BIOGRAPHY, HISTORY, AND BIBLIOGRAPHY

CARROLL W. DODGE, *Editor*

(See also in this issue Entries 15928, 16686, 16704, 16705, 16844, 16883, 16911, 16914, 16995, 17000, 17010, 18055)

BIBLIOGRAPHY AND HISTORY

15152. BRETSCHNEIDER, ARTHUR. Die höhere Bundeslehranstalt und Bundesversuchsstation für Wein-, Obst- und Gartenbau in Klosterneuburg. [The institute for horticultural teaching and research at Klosterneuburg.] *Ernähr. Pflanze* 27(19): 410-414. 11 fig. 1931.

15153. FRACASTORIUS, HIERONYMUS. De contagione, et contagiosis morbis et eorum curatione. Libri III. Translation and notes by WILMER CAVE WRIGHT. 356p. G. P. Putnam's Sons: New York, 1930. Pr., $4.50.

15154. GUNDER, J. D. North American institutions featuring Lepidoptera. XVIII. The museums of Cuba. *Ent. News* 41(9): 290-295. 3 pl. 1930.—The Museo de Historia Natural of Havana, under the direction of Mario Sanchez Roig, has a large collection of Lepidoptera. At Havana is also the Museo "Valle Yznaga," under the Inst. of Havana (director, Serafin Espinosa), and containing the Gundlach collection. The Museo Municipal Emilio Bacardi Moran at Santiago is under the direction of Jose Bofill and his son. At this city also lives Ozario Querci and his family, well known commercial collectors of Lepidoptera.

15155. GUNDER, J. D. North American institutions featuring Lepidoptera. XIX. Entomological institutions in Mexico. *Ent. News* 41(10): 313-318. 5 pl. 1930.—The oldest of the Mexican lepidopterists is Robert Müller, Mexico City, the owner of the largest collection of Mexican butterflies and moths. Other private collectors are his nephew, Max Draudt, and Pablo Petersen of Puebla. The other collections of note are official. The Mexican Plant Protection Service of the Ministry of Agric. is under the direction of Alfonso Dampf, concerning whom biographical data are given. Among his assistants are Leopold Conradt and Ignacio H. Olmedo. The medical entomological work is conducted by the Dept. of Public Health in Mexico City under the direction of C. C. Hoffman, who has a private collection of Lepidoptera. The Biological Inst. of the Mexican National Univ. is under the direction of Isaac Ochoterena who heads the National Museum of Nat. Hist.

15156. HYDE, H. A. The Welsh National Herbarium. *North Western Nat.* 6(3): 135-139. 1931.—History and brief summary of contents.

15157. MALIKOFF, GABRIELLE E., Editor. Union list of serials in libraries of the United States and Canada. Suppl. 1925-1931. 660p. H. W. Wilson Co.: New York, 1931.—Contains new titles and titles previously listed in main volume. Entries represent either corrections or holdings of new libraries or of libraries that have acquired or completed sets since original volume was published. Many cross references which tend to be useful in locating a title in the list have been added. [For abstract of original list see B. A. 2(6/8): entry 8641.]

15158. MONTESSUS de BALLORE, R. de, ed. Index generalis 1932. Annuaire général des universités. (French and English editions.) Éditions Spes: Paris. U. S. Agents: W. H. Allen: Philadelphia; Williams & Wilkins Co.: Baltimore. Pr., 225 fr. 1932.

15159. PEROTTI, R. I Laboratori di Patologia e Batteriologia del R. Istituto Superiore Agrario di Pisa e l'annesso R. Osservatorio Regionale di Fitopatologia. [The pathological and bacteriological laboratories of the Royal Agric. Inst. of Pisa and its annexed regional survey of phytopathology.] 18p. 12 fig. Stabilimento Editoriale Vallerini: Pisa, 1929.—History and description.

15160. POLEVOY, P., and B. PENTEGOFF. Research institutions of the Russian Far East. *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 1: 313-314. 1926(1928).

15161. ROYS, RALPH L. The ethno-botany of the Maya. *Tulane Univ. Middle Amer. Res. Ser., Pub.* 2: 1-359. 1931. Pr., $5.00.—Knowledge of plants from which food, clothing and shelter were obtained was part of the heritage of every Maya Indian farmer in Middle America 20 centuries ago; but study of medicinal plants and their properties was a specialized science confined to a priestly class which, since the Spanish conquest, survives as the "yerbateros." Plant-medicine suffered least of any of ancient Maya culture from European invasion. A considerable body of native Maya literature on the subject exists in MS. form, in the European script adapted to the special needs of the language of Yucatán by early missionaries. Indications are that the MSS. were compiled from much older sources. This volume offers a survey of the botanical knowledge of the Mayas, essentially an agricultural people who turned to the forest to supplement their food supplies in times of scarcity. Medicine was closely associated with religion and sorcery. Maya doctors believed in curing like with like. Yet a surprisingly large percentage of Maya medical texts were devoted to treatment of symptoms and are based on objective observations of effects of certain plants on the human system. Even when the Maya doctor borrowed from the Spaniards, he usually adhered

to his own methods and adopted their simple remedies rather than their pseudo-scientific theories. Maya medicine at least was not hampered by the theories of humors and distempers which so long continued to be the basis of European medical science. Maya methods of human sacrifice must have resulted from a practical knowledge of anatomy among the priests and doctors, probably handed down from generation to generation. The yerbatero's services are still in demand. Suggestion plays an important part in the cure. Little is known as to the extent to which this system of medicine has spread outside the Maya area. Most of the book's 359 pages contains only the plant-medicine remedy in Maya with an accompanying translation into English. There is also a vocabulary of Maya terms relating to the growth, parts and environment of plants, an annotated list of Maya plant-names, a table of nomenclature, an annotated list of Maya fauna names, a chapter on the climate and food-supply of Yucatán, a bibliography and an index.—*M. Ries.*

15162. **WOOD, CASEY A., (compiled and edited by). An introduction to the literature of vertebrate zoology, based chiefly on the titles in the Blacker Library of Zoology, the Emma Shearer Wood Library of Ornithology, the Bibliotheca Osleriana [The Gest Library of Chinese Literature], and other Libraries of McGill University, Montreal, Canada.** 643p. Col. frontispiece. Oxford University Press: London: Macmillan: New York, 1931. Pr., $15.—This attractively made quarto opens with a beautifully colored frontispiece depicting a Dodo from an original drawing in the Blacker Library. Following a preface the book consists of 3 parts: an introduction to the literature of vertebrate zoology p. 1-146, an author index p. 147-174, and catalogue of titles of vertebrate zoology in the libraries of McGill University p. 175-643. The preface gives much historical and other information relating to the indexed libraries. The introduction is divided into 19 short chapters and is essentially a history of the literature of vertebrate zoology with particular emphasis placed on ornithology and including bits of information and lively comments by the editor. Beginning with Aristotle the first 3 chapters carry the account into the 17th Century. Modern vertebrate zoology is dealt with by topics. Chap. IV and VI deal with systematics and evolution and V with records of explorations. Other chapter headings are animal painters and illustrators, faunas and bionomics (2 chap.), important works on ornithology and mammalogy (3 chap.), zoogeography and ecology, important treatises of ichthyology, herpetology and amphibiology, oriental literature, periodicals, and unique and rare printed books. The index is a list of authors arranged geographically, chronologically and by taxonomic classes with a single word indicating the scope of the work. The body of the book is the catalogue of titles arranged alphabetically by authors, editors or title of series with full bibliographical references and numerous descriptive annotations and comments, which are especially full on birds.—*J. P. Moore.*

15163. **ANONYMOUS. Facilities for advanced study and research in agricultural science and cognate pure sciences in the United Kingdom.** 141p. Ministry of Agric. & Fisheries: London, 1929.—Includes soils and crops, horticulture, animal pathology, animal husbandry, and other economic phases of agriculture.

CYTOLOGY

R. E. CLELAND, *Editor,* Plant

C. E. McCLUNG, *Editor,* Animal

(See also in this issue Entries 15105, 15110, 15137, 15139, 15142, 15180, 15181, 15185, 15186, 15188, 15189, 15190, 15191, 15196, 15199, 15204, 15208, 15214, 15215, 15227, 15228, 15240, 15241, 15249, 15259, 15283, 15284, 15285, 15286, 15287, 15290, 15423, 15427, 15621, 15649, 15656, 15751, 15755, 16303, 16309, 17030, 17102, 17298, 17348, 17349, 17355, 17360, 17381, 17385, 17386, 17395, 17471, 17476, 17481, 17488, 17500)

GENERAL

15164. **SAX, KARL. The mechanism of crossing-over.** *Science* 74(1906) : 41-42. 1931.—A reply to criticisms by Darlington, of the author's paper: Chromosome structure and the mechanism of crossing over.

PLANT

15165. **BOWEN, ROBERT H. The distribution of the plastidome during mitosis in plerome cells of Ricinus.** *Cellule* 39(1) : 123-154. 3 pl. 1929.—The proplastids are rod-shaped and aggregate about the poles of the mitotic spindle assuming a radiate arrangement. Individual proplastids are not seen to divide during nor immediately before mitosis but those present are distributed in approximately equal numbers to the two daughter cells. The literature on the subject of plastid distribution is discussed. Cytoplasmic arrangement is believed to determine the orientation of the mitotic spindle in both plants and animals without regard to the presence or absence of centrosomes.—*A. M. Showalter.*

15166. **COLLINS, J. L., and KENNETH R. KERNS. Genetic studies of the pineapple (Ananas sativus Lindl.) I. A preliminary report upon the chromosome number and meiosis in seven pineapple varieties and in Bromelia pinguin L.** *Jour. Heredity* 22(5) : 139-142. 2 fig. 1931.—The haploid number in 7 varieties is 25. Root tip nuclei showed 50 chromosomes. Meiosis appeared to be regular but differences in size of pollen grains were observed. Six triploid plants with 75 chromosomes were found in a hybrid population of about 8000 plants produced by crossing a wild type from Brazil with the Cayenne. Heilborn had previously reported a 75 chromosome pineapple from Ecuador. The chromosomes are small and rounded in both pollen mother cells and root-tip cells. *Bromelia pinguin,* a species closely related to the pineapple, had 48 chromosomes in haploid cells. Morphologically they are similar to those in *Ananas.*—*J. L. Collins.*

15167. **DEMBOWSKI, JOHANN. Karyologische Studien an Wurzelmeristemen höherer Pflanzen. I. Die Persistenz des Nukleolus bei der Zellteilung in Wurzelmeristemen von Helianthus annuus. 2. Die Anlage der jungen Zellwand in meristematischen Zonen von Helianthus und Monstera.** *Bot. Arch.* 28(1/2) : 1-56. 26 fig. 1929.—I. The nucleolus contains no chromatin. During mitosis it consists of 2 or possibly 3 substances which differ in form and color. In nucleolar division, the contents break up into spheres which are later freed into the nuclear cavity. At anaphase these bodies pass to the poles with the chromosomes and are there reassembled as the telophase nucleoli. In *Monstera* as well as *Helianthus,* substances diffuse from the daughter nuclei to the equator, forming dark, transverse zones. These substances are thought to act as ferments, building up the new cell wall out of raw materials derived from the remains of the mother nucleus, with cytoplasmic additions.—*M. M. Lesley.*

15168. **EMERSON, STERLING H. The reduction division in a haploid Oenothera.** *Cellule* 39(2) : 159-165. 1 pl. 1929.—Heterotypic prophase figures in a haploid *O. franciscana* showed as many parallel threads as are found in corresponding diploids, leading to the interpretation that these parallel threads in diploids do not represent a pairing of homologous chromosomes. Two chromosomes often were attached at one end. It is suggested that these may be two chromosomes of the ring of four

in the parent. The distribution of chromosomes was not random, the most frequent class being 6:1.—*S. H. Emerson.*

15169. **ERLANSON, EILEEN WHITEHEAD.** A group of tetraploid roses in central Oregon. *Bot. Gaz.* 91(1): 55-64. 3 fig. 1931.—Cytological material from *Rosa durandii, R. myriadenia,* and *R. yainacensis* showed that these are balanced tetraploids with 14 pairs at diakinesis. A semisterile *R. nutkana* was hexaploid. These tetraploid roses resemble *R. nutkana* in the size of flowers and hips, and in inflorescence type. In the number of stamens, fine serrations of the leaflets, size of pollen grains, and amount of sterile pollen they resemble the tetraploid *R. californica.* This tetraploid group seems to have a limited range, perhaps from central Oregon to the northern counties of California. It may have originated from a crossing between *R. nutkana* and *R. californica.* Some other rose species of limited range in this area may belong to this group. They are *R. delitescens, R. brownii, R. calavera, R. pinetorum,* and the forms in northern California usually classified as *R. muriculata.* Pollen grain size might be used in distinguishing the tetraploid and hexaploid rose forms in herbaria. The cubes of the mean length of the pollen of diploid, tetraploid, and hexaploid are as 1:1.7:1.9.—*Author's summary.*

15170. **HEIMLICH, L. F.** Microsporogenesis in Cucumis sativus. *Cellule* 39(1): 1-24. 3 pl. 1929.—The primary sporogenous cells function directly as spore mother cells. Their nuclei are small and contain little chromatin, which composes a very fine reticulum. The reticulum transforms into slender threads that conjugate parasynaptically and contract, forming a confused mass about the prominent nucleole. After synizesis the spireme is thicker and shows evidence of pairing of chromomeres. Mitochondria are prominent in a zone surrounding the nucleus during the two divisions. The nucleole diminishes in size and ultimately disappears, sometimes after marked changes of form. Occasionally a portion of nucleole is found associated with the chromosomes and difficult to distinguish from them. An intranuclear multipolar spindle is formed and changes to a bipolar one. Cytokinesis is by furrowing of the plasma membrane. Occasionally one or more spores of a tetrad disintegrate. The reduced number of chromosomes is 7.—*A. M. Showalter.*

15171. **LENOIR, M.** Étude vitale des cellules mères du pollen chez Lilium candidum L. *Compt. Rend. Soc. Biol.* 106(10): 813-814. 1931.—A method of removing the pollen mother cells from the anther is described. After removal, cytoplasmic streaming can be observed; the cells can be plasmolysed at this time also. The nucleoli function normally. Hence removal from the anther does not destroy vital properties.—*E. Weiner.*

15172. **MANGENOT, GEORGES,** (preface by A. GUILLERMOND). Données morphologiques sur la matière vivante. 258p. 54 fig. R. Guillon: Paris, 1930. Price 31.50 fr.—A review, dealing with the nature of protoplasm in plant cells, designed primarily for persons with scientific background but without cytological training. The subject-matter is treated under 6 chief headings: a general discussion of protoplasm and the products of its activity; the cytoplasm; the chondriosomes; the nucleus; the paraplasm; the cell and cellular differentiation. While the general outline of the book follows a strictly morphological pattern, the subject is treated from a broadly physico-chemical point of view, a considerable proportion of the book being devoted to the chemistry, physics and physiology of the various cellular structures. Thus, the chapters on the cytoplasm, chondriosomes and nucleus each include sub-headings dealing respectively with the morphology, chemistry and functions of these portions of the cell. The chapter on the paraplasm treats in a similar manner of the vacuome, of various inclusions, of skeletal structures, as well as of various other substances elaborated by the cytoplasm or by the chondriosomes. A subject index is included, but there is neither an author-index, nor a bibliography; and, although various workers are mentioned in the text, no specific references to individual papers or books are given.—*R. E. Cleland.*

15173. **ROBYNS, WALTER.** La figure achromatique, sur matériel frais, dans les divisions somatiques des Phanérogames. *Cellule* 39(1): 85-119. 1 pl. 1929.—The polar caps are formed of nucleolymph outside the nuclear membrane and increase in size as this membrane contracts. Both the caps and the ultimate spindle are optically homogeneous with no semblance of fibers or plates. The fibers and plates of fixed material are asserted to be entirely artifact, as are also dermatosomes. The cell plate is first discernible as a continuous membrane and becomes the middle lamella.—*A. M. Showalter.*

15174. **SOUZA VIOLANTE, J. M. de.** La parasyndèse dans Balsamina hortensis et Campanula persicifolia. *Cellule* 39(2): 235-266. 4 pl. 1929.—Prochromosomes are prominent in somatic nuclei of meristems of Balsamina and are of diploid. In early prophase nuclei of sporocytes, the prochromosomes are associated in pairs ("zygosomes") which are haploid in number. No true leptotene is found. Parasynapsis is demonstrable in the earliest stages of prophase. In *Campanula* no prochromosomes are discernible but the behavior is otherwise similar.—*A. M. Showalter.*

15175. **THOMPSON, W. P.** Chromosome homologies in wheat, rye and Aegilops. *Canadian Jour. Res.* 4(6): 624-634. 1931.—A review.

15176. **TURESSON, GÖTE.** Studien über Festuca ovina L. II. Chromosomenzahl und Viviparie. *Hereditas* 13(2/3): 177-184. 2 fig. 1930.—Three different sexual types of *F. ovina* were found to have 7 haploid chromosomes. Three apomictic or amphi-apomictic, viviparous types had the following chromosome complements: 1. *rogalandica,* a dwarf form from western Norway is triploid with somatic chromosome number 21. 2. In *svolvaeriensis,* a more vigorous type with larger bulbs, 2n=28. 3. In *tennforsiensis,* a very high and vigorous form, 2n=42. It is completely apomictic. There is an increasing sexual sterility with increasing chromosome number. The types with higher chromosome numbers may have arisen through hybridization, through the production of diploid gametes in some plants or by somatic duplication. The increasing degree of viviparity with increasing chromosome number indicates that they may have arisen from diploid gametes in forms with lower chromosome number and a slight degree of viviparity.—*H. Wexelsen.*

15177. **VOKES, MARGARET MARTIN.** Nuclear division and development of sterigmata in Coprinus atramentarius. *Bot. Gaz.* 91(2): 194-204. 48 fig. 1931.—After fusion of the 2 nuclei in the basidial cell, synapsis takes place in the single nucleus. This nucleus then migrates to the apex of the cell and its membrane comes in contact with the cell wall, where four hyaline bodies become attached. With the withdrawal of the nucleus to the center of the cell cytoplasmic threads are drawn out. These connect the hyaline bodies left on the wall to the nucleus. The centrosomes of the spindles are not interfered with in the formation of the four hyaline bodies which remain on the basidial wall. After the first division, threads from four hyaline bodies are attached to the two nuclei; after the second division, threads from four hyaline bodies are attached to as many nuclei. The long axis of the spindle has no definite orientation in either division. The hyaline bodies remain attached to the apex of the cell wall from the time the fusion nucleus comes in contact with it until after formation of the spores. These bodies react on both the wall and the nucleus in such a way that the wall pushes up at their points of contact and sterigmata form. The nucleus then follows, and after it has entered the spore the wall greatly enlarges and assumes mature proportions. After the hyaline bodies become attached they remain at all times at the apex. After a sterigma forms, a hyaline body is at the tip, as well as after the spore is formed. There are 8 chromosomes in the fusion nucleus. Reduction takes place in the first division. —*Author's summary.*

ANIMAL

15178. GRABOWSKA, Z. Über die Plasmakomponenten (Golgi-Apparat u. a.) in den männlichen Geschlechtszellen von Potamobius astacus L. [In Polish, with German summary.] *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Math. et Nat. Sér. B: Sci. Nat. (II)* [*Zool.*] 1929(3/6): 197-214. 1929.—The behavior of the mitochondria, Golgi material and vacuomes in the development of these non-flagellated spermatozoa was studied in vivo, in material stained intra vitam, and in fixed material. The vacuome is identical with the internum of the Golgi material, and is characterized by affinity for neutral red. The Golgi material stains black with osmic acid in the absence of chrome salts. These changes in staining properties are attributed to secretory activities in the formation of the motor organ or (and) centrosomal apparatus. The mitochondria are characterized by affinity for dahlia and gentian violet and the usual stains. They do not coalesce, but remain granular, gather at the poles in the spermatid, and, except for a minute remnant, are sloughed off.—*R. C. Whitman.*

GENETICS

ORLAND E. WHITE, *Editor,* Plant

SEWALL WRIGHT, *Editor,* Animal

(See also in this issue Entries 15114, 15164, 15166, 15176, 15437, 15508, 15585, 15586, 15587, 15589, 15604, 15619, 15628, 15928, 16049, 16383, 16512, 16863, 16871, 16883, 16889, 16897, 16900, 16929, 16936, 16950, 17047, 17064, 17099, 17101, 17134, 17153, 17173, 17201, 17416, 17474, 17926, 18002, 18007, 18087)

GENERAL

15179. ACQUA, CAMILLO. Ambiente ed eredità dei caratteri acquisiti. (A proposito del 2° Congresso Italiano di genetica.) *Ann. Tecnica Agraria* 3(2): 127-138. (Latin abstract p. 283-284.) 1930.—The author summarizes the position of Enriques at the Congress of Genetics, in which he stated that of the 3 kinds of environmental influence, "homotypic induction" does not exist; "heterotypic induction," if it exists, fails to explain evolution; while "collective induction" furnishes an explanation of adaptation. Unusual environmental conditions acting on germ plasm as well as soma may effect hereditary changes.—*H. D. Hill.*

15180. HALDANE, J. B. S. Theoretical genetics of autopolyploids. *Jour. Genetics* 22(3): 359-372. 1930.—The gametic series to be expected from various types of heterozygous autopolyploids (polyploids in which a chromosome is equally likely to pair with any of two or more others) are given, and the effects of self-fertilization and random mating on populations are considered.—*R. J. Garber.*

15181. WETTSTEIN, FRITZ von. Über plasmatische Vererbung und über das Zusammenwirken von Genen und Plasma. *Ber. Deutsch. Bot. Ges. 1. Generalversammlungsheft* 46: (32)-(49). 1928.

15182. WETTSTEIN, R. Das Problem der Evolution und die moderne Vererbungslehre. *Zeitschr. Indukt. Abstamm.- u. Vererbungsl. Suppl.* 1: 370-380. 1928.

PLANT

15183. ANDERSON, EDGAR, and DOROTHEA de WINTON. The genetic analysis of an unusual relationship between self-sterility and self-fertility in Nicotiana. *Ann. Missouri Bot. Garden* 18(1): 97-115. 1 pl. 7 fig. 1931.—An anomalous plant of *Nicotiana alata* was female cross-sterile with *N. langsdorffii* and with a self-fertile garden hybrid. When used as a pollen parent it produced F_1's each of which was composed of self-fertile and self-sterile plants in approximately equal numbers. The self-sterile F_1's were female cross-sterile with their self-fertile parent *N. langsdorffii,* and female cross-fertile with self-sterile plants of *N. alata.* These anomalies are interpreted as due to a single factor, S_F, belonging to the allelomorphic *S* series studied by East. S_F behaves like the self-sterility allelomorphs previously described except that it has the additional property of retarding the growth of pollen tubes carrying the S_f (full fertility) allelomorph as well as those carrying S_F. The hypothesis was tested by F_2 and back cross families and fully confirmed. The effect of gametic elimination caused by interaction of the *S* factors should be morphologically apparent in species crosses. Such an effect is demonstrated in this material.—*E. Anderson.*

15184. BARTOSCH, JULIUS. Untersuchungen über die Vererbung der Knollengestalt bei der Kartoffel. (Untersuchungen zur Genetik der Kartoffel. III. Herausg. von K. O. MÜLLER.) *Arb. Biol. Reichsanstalt Land- u. Forstwirtsch.* 18(2): 117-131. 1930.—Tuber shape is expressed in a coefficient of length: breadth. The material was analyzed with the aid of statistical constants. Progenies of selfed seed of the parents, F_1 progenies and F_2 progenies of certain F_1 individuals, were studied. Tuber shape and formation of secondary tubers were shown to be heritable characters by positive correlation between parents and progeny. Correlation between tuber shape and formation of secondary tubers was not established. The monohybrid inheritance of tuber form advanced by previous authors did not fit the material. The results are explained by the multiple-factor hypothesis, involving 3 or 4 factor pairs which somewhat influence the thickness of the tuber.—*F. A. Krantz.*

15185. BAUR, ERWIN. Mutations-Auslösung bei Antirrhinum majus. *Zeitschr. Bot.* 23 (Festschr. Oltmann's): 676-702. 19 fig. 1930.—The completely homozygous strain of snap-dragon used showed a mutation rate of 1.5% under ordinary circumstances. This rate is based only on easily perceived mutations. Plants 6 to 8 weeks old (i.e., with only diploid cells) were subjected to experimental conditions. Some had the stem tips merely immersed in various solutions, others had the tips immersed in tubes of solution and were whirled about in centrifuge. 216 treated plants flowered and set seed. They were normal-looking. Progeny (F_1) tests showed that only two of the 216 had become heterozygous for easily observed mutant characteristics,—a frequency essentially the same as untreated material. A further generation (F_2) from inbreeding F_1 was grown. 1936 F_2 groups revealed in 23 of them new recessive characters—a mutation rate about like that for "spontaneous" changes. Neither the kind nor the strength of the stimuli had any relation to the mutants found. However, this research yielded an unexpectedly high number of "non-factorial mutations" whose basis is cytoplasmic, whose transmission is through the ♀, and whose expression vegetatively is variable.—*J. P. Kelly.*

15186. BEADLE, GEORGE W. Heritable characters in maize XXXIII. Slit-leaf blade. *Jour. Heredity* 21 (1): 45-48. 3 fig. 1930.—This recessive factor (*sb*) is characterized by a decrease in size and ultimate disappearance of the plastids in certain longitudinal regions between the main vascular bundles of the leaf. Nuclear disintegration follows, and the tissues made up of the dead cells are often mechanically torn. The *sb* gene lies in the *Y-Pl* chromosome, some distance to the left of *Y.* The order of the genes is *sb-Y-Pl.*—*Author's summary.*

15187. BERG, v. Züchtung des Sagnitzer Roggens 1930/31. *Zeitschr. Zücht. Reihe A, Pflanzenzücht.* 16 (4): 657-661. 1931.—Selection methods are described used with ordinary rye varieties and with those ryes showing tendencies toward developing self-pollinating strains.—*L. R. Waldron.*

15188. BLEIER, H. Genetik und Cytologie teilweise

und ganz steriler Getreidebastarde. *Bibiographia Genetica* 4: 321-400. Martinus Nijhoff: The Hague, 1928.—A comprehensive survey of the many researches on hybridization in cereals, covering hybrids obtained with einkorn, with numerous emmer-spelt combinations, and with wheat-rye, *Aegilops*-wheat, *Aegilops*-rye, *Aegilops*-wheat-rye, and *Triticum villosum* parentage. Data are given regarding chromosome numbers, fertility and sterility, genetics, and the question of the origin and relationships of the various types of cereals.—*A. B. Stout.*

15189. **BUCHHOLTZ, J. T., and A. F. BLAKESLEE.** Radium experiments with Datura I. The identification and transmission of lethals of pollen-tube growth in F_1's from radium-treated parents. *Jour. Heredity* 21 (3): 119-129. 15 fig. 1930.—Three genetic abnormalities obtained following radium treatment were manifested after pollination: (1) failure of half of the pollen grains to germinate; (2) early bursting of half the pollen tubes, lethal to the male gametes affected; (3) slower growth of half the pollen tubes, a semi-lethal condition in that under normal conditions growth is too slow to permit the pollen tube to reach the ovary. Recessive genes rather than chromosomal abnormalities are probably responsible for these effects.—*L. M. Dickerson.*

15190. **CLAUSEN, J.** Cytogenetic and taxonomic investigations on Melanium violets. *Hereditas* 15(3): 219-308. 150 fig. 1931.—This paper reviews the author's cytological and genetic studies on this group. The cytology of species hybrids, the taxonomic and genetic relationships of the Melanium spp., the species concept, and the origin of the new spp. are discussed. In all, 25 successful specific crosses are reported. *V. tricolor* and *V. arvensis* occupy a central position in the section since they cross with a large number of the spp.; *V. cornuta* crosses only with *V. orphanidis* and *V. elegantula; V. calcarata* only with *V. battandieri.* In the collective species *V. kitaibeliana,* morphologically similar types are very incompatible, while one of the forms, *nana,* is compatible with the morphologically different type *V. tricolor.* In meiosis of the pollen mother cells the F_1 hybrids show a variable amount of chromosome conjugation with varying numbers of univalents, bivalents and polyvalent chromosome associations. There is no complete parallelism between morphological similarity and chromosome conjugation. The fertility of the F_1 varies considerably, a very irregular meiosis is often combined with a fairly good fertility. Autosyndesis occurs in some crosses. Taking the amount of chromosome conjugation as an indication of chromosome homology, many difficulties arise, many spp. which after their behavior in some crosses would be expected to conjugate in F_1 fail to do so; a species may show autosyndesis in one cross and not in another. This must mean that homology of chromosomes tends to produce conjugation if not prevented by other factors, environmental or genetic. In some hybrids the lagging univalents that divide at the first anaphase lead to an increase of chromosome number in later generations; in other crosses the elimination of chromosomes leads to a decrease in number. Crossing favors segmental interchange between nonhomologous chromosomes in later generations, resulting in multivalent association of chromosomes into long chains. Specific differences are determined by Mendelian genes. A gene can be introduced from one sp. into another, irrespective of chromosome number. Segregations of genes for anthocyanin show that there is parallelism between the degree of chromosome polyploidy and polymery of these genes. *V. alpestris* and *V. arvensis* show rather close genetic relationship. New constant, fertile vigorous types have been isolated from these crosses, some of which have a chromosome number new in the section. These new spp. are just as characteristic as many of the wild ones and no doubt would have been regarded as "good" spp. if found in nature. The following types have been named: *V.* **phaeno-elegantula,** *V.* **crassicaulis,** *V.* **hyperchromatica,** *V.* **petaloidea** and *V.* **velutina.** The spp. of the Melanium section constitute a complete series of transitions as regards intersterility, morphological differences and chromosome conjugation in hybrids. No sharp line can be drawn between specific and subspecific differences. It becomes impossible therefore to give any definite criteria of specific differences and one must abstain from making a definition of the species concept. In classification, however, all available methods must be used. Such studies must include morphology, ecology, geographical distribution, chromosome morphology, crossing ability and chromosome behavior in hybrids.—*H. Wexelsen.*

15191. **CLAUSEN, ROY ELWOOD.** Inheritance in Nicotiana tabacum. XI. The fluted assemblage. *Amer. Naturalist* 65(699): 316-331. 1931.—The fluted assemblage comprises a series of derivatives obtained directly or indirectly from fluted, a type monosomic for the F-chromosome. Two of these, the recessive types coral and mammoth, are shown to be due to secondary modification of the F-chromosome. Coral and mammoth crossed with normal or with each other, exhibit frequent non-conjunction of the F-chromosomes, as a consequence of which the F_2 populations contain haplo-F and triplo-F types in addition to the expected classes of offspring. No crossing-over was observed between coral and mammoth. A type called pale sterile also appeared in some lines and was found to owe its sterility to extensive non-conjunction of the chromosomes in meiosis. From pale sterile $\times$ normal, variable offspring were produced consisting of monosomic, trisomic and other more complex chromosomal variants. Four instances of origin of carmine-coral variegation are reported; one of which was shown to be due to fragmentation of the F-chromosome and to be subject to reversion to a self-carmine condition. The evidence indicates that coral, and probably also mammoth, is not due to factor mutation; but to some special form of modification to which the F-chromosome is subject when in the univalent condition. —*R. E. Clausen.*

15192. **COLBY, A. S.** Some raspberry varieties being used as parents in breeding. *Proc. Amer. Soc. Hort. Sci.* 27: 422-424. 1930(1931).—In a preliminary study of over 6000 individuals, Quillen appears to be by far the most useful parent in breeding work at the Illinois Station, with a number of seedlings outstanding as to anthracnose resistance and excellence in fruiting characters. Gregg and Honey Sweet rank well. Seedlings of Cumberland, Plum Farmer, Older, Black Pearl, Earhart, and Munger do not, in general, appear as good as the parents. Some promising individuals resulted from the Honey Sweet-Plum Farmer cross. An occasional hybrid purple of Quillen-Latham parentage is outstanding.—*A. S. Colby.*

15193. **COOK, R. C.** Chimera or accident of development? *Jour. Heredity* 21(9): 386. 1 fig. 1930.—A flower cluster of *Daucus carota* having a sector of maroon flowers is figured and described.—*L. M. Dickerson.*

15194. **CORRENS, C.** Vererbungsversuche mit buntblättrigen Sippen. VIII. Nochmals Stellaria media status albomaculatus. IX. Hypericum perforatum status paralbomaculatus. X. Primula malacoides forma albomarginata. XI. Coleus hybridus forma (?) albopicta. *Sitzungsber. Preuss. Akad. Wiss. Phys.-Math. Kl.* 1931 (10/11): 203-231. 8 fig. 1931.—White and green variegation of *Stellaria media* (status *albomaculatus*) is inherited through ovules only as indicated by the data from crosses: variegated $\times$ green and $F_1 \times$ green. Non-Mendelian white and green variegation of *Hypericum perforatum* (status *paralbomaculatus*) is transmitted both through ovules and pollen as indicated by reciprocal fertilization of green by variegated branches, by self-pollinations and by reciprocal crosses with green plants. White margins on leaves of *Primula malacoides* (forma *albomarginata*) are inherited as a simple Mendelian recessive. Variegation in *Coleus hybridus* forma (?) *albopicta* is influenced by environment. It is, probably, inherited as a dominant Mendelian character.—*M. Demerec.*

15195. **DARROW, GEO. M.** Foliacious calyx of the young dewberry. *Jour. Heredity* 21(5): 216. 1 fig. 1930. —Dewberries showing a tendency to produce leaves in-

stead of sepals are figured. This is a genetic character, appearing only under the influence of undetermined environmental stimuli.—*L. M. Dickerson.*

15196. **DAVIS, BRADLEY MOORE. Some attempts to obtain haploids from Oenothera Lamarckiana.** *Amer. Naturalist* 65(698): 233-242. 1931.—Some 200 ovaries of *O. lamarckiana* from which the styles had been cut were pricked and slashed without inducing the parthenogenetic development of seeds. Pollinations of *lamarckiana* involving wide crosses likewise failed to induce the development of haploids. Tables give the results of these experiments.—*B. M. Davis.*

15197. **DICKERSON, L. M. The inheritance of ruby seed coat color in peas (Pisum sativum).** *Jour. Heredity* 22(10): 319-321. 1931.—Ruby, a seed coat color, is independent in inheritance from specking (*F*). Ruby is tentatively designated as *Ru*, its allelomorph as *ru*. *Ru* is dominant in F_1 during the immature stages of seed development, but segregates as a "recessive" in the mature seed coats of the F_2. Being visible in the immature seed coats and masked by the later appearance of gray, it gives the appearance of reversal of dominance. The masking of Ruby in mature *RUru* seeds by *Gc* may possibly be interpreted as epistasis of *Gc.—Author's summary.*

15198. **EDMOND, J. B. Seasonal variation in sex expression of certain cucumber varieties.** *Proc. Amer. Soc. Hort. Sci.* 27: 329-332. 1930(1931).—Plants of 5 commercial varieties grown in the greenhouse from June 27 to September 6, 1929; from December 15 to April 15, 1929-30, and from February 17 to May 25, 1930, varied in the staminate to pistillate ratio from 39.29:1 to 8.58 to 1; from 0.059:1 to 0.005:1 and from 0.345:1 to 0.012 to 1 respectively. Though varietal standings were not maintained during the three periods, the results show that high light intensity with long length of day is favorable for the production of a large number of staminate flowers, while low light intensity with short length of day is more favorable for the production of pistillate forms. During the long days of summer, plants were vigorous, possessed long internodes and large leaves; while during the short days of winter, plants were weakly vegetative, possessed short internodes and small leaves. —*J. B. Edmond.*

15199. **EMERSON, STERLING. The inheritance of rubricalyx bud color in crosses with Oenothera Lamarckiana.** *Proc. Nation. Acad. Sci. U. S.* 16(12): 796-800. 1930.—Three types of F_1 plants occur in crosses between *O. lamarckiana* and *O. rubricalyx: velans·^{h}latifrons* with a ring of 8 chromosomes and 3 pairs, in which bud color is independent of the *velans* lethal and the ring; *gaudens·^{h}latifrons* with the same configuration, in which bud color is completely linked to the *gaudens* lethal and the ring; and *gaudens*·modified-*velans* with a ring of 12 and a pair, in which bud color is linked to the *velans* and *gaudens* lethals and to the ring. The *velans* lethal and the gene for bud color are in different chromosomes but show complete linkage when both chromosomes are in a common ring.—*S. Emerson.*

15200. **EYSTER, W. H. Heritable characters of maize XLI—Dilute Aleurone.** *Jour. Heredity* 22(7): 225. 1 fig. 1931.—A dilute aleurone gene, *da*, greatly reduces the intensity of aleurone color in maize. It is inherited as a simple Mendelian recessive, and is the expression of a gene which has its locus in chromosome I, as indicated by its rather close linkage, with approximately 11% crossing over, with aurea chlorophyll deficiency.—*W. H. Eyster.*

15201. **EYSTER, W. H. Heritable characters of maize XLII—Reduced Endosperm.** *Jour. Heredity* 22(8): 250-252. 4 fig. 1931.—Two genetically different strains of maize with subnormal-sized kernels are illustrated and described as reduced endosperm$_1$ and reduced endosperm$_2$. These characters are inherited as simple Mendelian recessives and have their loci in chromosome VIII, at approximately 15 and 1 crossover units, respectively, from the locus of vivipary$_2$.—*W. H. Eyster.*

15202. **GOULDEN, C. H. Breeding rust resistant varieties of wheat. Fundamental aspects of the problem.** *Sci. Agric.* [*Ottawa*] 10(4): 258-267. 2 fig. 1929.—A review of the literature with 34 titles listed. The inheritance of mature plant resistance is independent of seedling resistance, very simple, and offers possibilities for production of resistant varieties.—*H. D. Hill.*

15203. **GRUBER, FRITZ. Über Selbststerilität und Selbstfertilität bei Antirrhinum.** 32p. 7 fig. Paul Dünnhaupt, Grossdruckerei: Köthen, Anhalt. 1930.—Self-pollinations and cross-pollinations were made within each of the 3 groups of self-sterile snapdragons, namely, Orgiva, Chorro, and Baryacas, containing 20-30 plants each. With the exception of one crossing combination, all plants in the Orgiva group were cross-fertile, indicating the presence of a large number of sterility allelomorphs. Within the Chorro group there were 4 crossing combinations and their respective reciprocal crosses which were sterile. In this group there is a larger number of intra-sterile and inter-fertile classes. Doubtful results were obtained from the 3d group, Baryacas, on account of a lack of flowers. One plant in the Orgiva group was entirely self-fertile, which is explained as being due to a mutation of a fertility factor. —*M. C. Gillis.*

15204. **HAASE-BESSELL, GERTRAUD. Über Genombindungen.** *Zeitschr. Indukt. Abstamm.- u. Vererbungsl. Suppl.* 1: 778-784. 1928.—The basic chromosome number (genom) in *Digitalis* is 12. In the polyploid *D. purpurea* (4 genoms, 2n=48), assumption of independent assortment and combination among the sets of homologous chromosomes explains the appearance of a dominant character in a recessive line (i.e., Rr rr=white; upon selfing, throws Rr Rr, red).

15205. **HARLAN, HARRY V. The origin of hooded barley.** *Jour. Heredity* 22(9): 264-272. 5 fig. 1931.—Hooded barley is assumed to have originated in Nepal as a mutation in the awn of a naked 6-rowed barley. At the time when first reported it had not spread to eastern China and Japan or to western Asia. A sterile hooded mutant was found at Aberdeen, Idaho, in a hybrid population. One of the parents was an awned, 6-rowed, naked sort from the same region in which the hooded form is assumed to have first occurred.—*H. V. Harlan.*

15206. **HARRINGTON, J. B. The relationship between endosperm development and morphologic characters in the F_2 generation of a T. dicoccum × T. vulgare cross.** *Canadian Jour. Res.* 5(2): 208-218. 1 pl. 1931.—The relationship between the degree of plumpness of F_2 seeds and the type of the resulting F_2 plants was studied in the cross Vernal (*T. dicoccum*) × Marquis (*T. vulgare*). A random sample of F_2 seeds was divided into three classes based upon kernel plumpness, viz. plump (Class A), slightly shrunken (Class B), and shrunken (Class C). In these there were by number 55.5, 41.0 and 3.5% of seeds respectively. Emergence of F_2 plants in the field was 64, 58 and 36% for Classes A, B and C. The F_2 plants were studied for 13 morphological characters. Comparing the populations for all characters combined, Class A was more *dicoccum*-like than Class B, and Class B much more *dicoccum*-like than Class C. The proportion of *vulgare*-like character was 16, 20 and 32% for Classes A, B and C, respectively. Considering the character of the individual plants, the ratios of *dicoccum*-like to *vulgare*-like were 12.1:1, 5.3:1, and 2.2:1 for classes A, B and C, respectively. Furthermore, the *vulgare*-like plants of classes A and B were less *vulgare*-like than those of Class C. There were present, however, in Classes A and B some plants that were fully as *vulgare*-like as any in Class C. These results indicate that, in an interspecific wheat cross, the breeder should give special attention to the shrunken F_2 seeds if he has very limited nursery space and a large amount of seed; whereas if he has plenty of space for a large population, special care of shrunken F_2 seeds does not seem warranted.—*Author's abstract.*

15207. **HARTMAN, HENRY. Hybrids between Pyrus malus and Pyrus fusca.** *Jour. Heredity* 20(8): 379-380.

3 fig. 1929.—Hybrids of *P. fusca,* the "Oregon Crab-apple," and *P. malus,* now found in the wild and occasionally in cultivation west of the Cascade Mountains in Oregon, Washington and British Columbia, are distinctive in many ways and constitute a fairly definite type. In F_1 the fruit combines the principal characteristics of both parents. It is high in acid and astringent compounds.—*Author's abstract.*

15208. **HERIBERT-NILSSON, N. Über das Entstehen eines ganz Cinerea-ähnlichen Typus aus dem Bastard Salix viminalis × caprea.** *Hereditas* 15(3): 309-319. 5 fig. 1931.—In the F_2 of the cross *S. viminalis* × *S. caprea,* a plant was found which in all important taxonomic characters resembled *S. cinerea.* It was sterile in crosses with both parent species. *S. cinerea* can only with difficulty be crossed with *viminalis* and *caprea.* The chromosome numbers are: *caprea* and *viminalis,* $n=19$; *cinerea,* $n=38$. The chromosome number of the *cinerea*-like plant was not definitely ascertained, but it was at least triploid. The case is regarded as an experimental synthesis of *S. cinerea,* and of the new type, *S.* **neocinerea.** It is probable that *S. cinerea* has arisen through a similar cross in nature. The hybrid *viminalis* × *caprea* is fertile and not rare in nature.—*H. Wexelsen.*

15209. **IMAI, YOSHITAKA. New mutant characters of the Japanese morning glory.** *Jour. Heredity* 22(11): 361-366. 7 fig. 1931.—Five new mutant characters, rootless, folded, lilliputian, cocoa and shrubby, are described. Aside from a deficit in the segregating ratio of some mutant forms, they are simple recessives.—*Y. Imai.*

15210. **JENKINS, MERLE T. Heritable characters of maize XXXIV—Rootless.** *Jour. Heredity* 21(2): 78-80. 1 fig. 1930.—This character (*rt*) affecting root development is inherited as a simple Mendelian recessive to normal.

15211. **KÄMMERLING, HANS. Über Geschlechterverteilung und Bastardierung von Ustilago longissima und ihrer Varietät macrospora.** *Zeitschr. Bot.* 22(3): 113-142. 2 maps. 1929.—*U. longissima* and its variety *macrospora* have been shown to have 3 sexual types, A, B, and C. *Longissima* A has been crossed with *macrospora,* both B and C. Tri-sexuality is explained by assuming multiple allelomorphs of the sex gene. Genetically distinct mycelia may infect a single plant and result in complications.—*H. D. Hill.*

15212. **KAKIZAKI, YOITI. Breeding "crossed egg plants" in Japan. An example of the practical utilization of hybrid vigor.** *Jour. Heredity* 21(6): 253-258. 4 fig. 1930.—Methods are described for practical utilization of heterosis. Important increases in yield were obtained in F_1 plants, particularly when the parent varieties differed widely in many characteristics. The pollinating technique described gave 80-90% of successful crosses.—*L. M. Dickerson.*

15213. **KARPER, R. E. The effect of a single gene upon development in the heterozygote in sorghum.** *Jour. Heredity* 21(4): 187-192. 1 fig. 1930.—A recessive lethal gene responsible for white seedlings and its effects upon the heterozygote were studied in kafir No. 223, a pure line inbred for 7 years. An albino mutation occurred in this presumably completely homozygous race. Height measurements of homozygous and heterozygous green plants at 20, 40, 60, 80, and 137 days showed no significant differences. Weight of plant, weight of head, and length of head of plants heterozygous for the albino gene and those homozygous for normal showed no statistically significant differences, although heterozygous plants were slightly heavier, with heads slightly longer, and produced a few more suckers and side branches than normal plants. When all other factors are held constant, this recessive chlorophyll gene does not have a deleterious effect on the heterozygote and the principal advantage gained in eliminating this gene from seed stock comes from getting rid of homozygous recessives, which impair the stand in the field.—*R. E. Karper.*

15214. **KEARNEY, THOMAS H. Genetics of cotton. A survey of our present knowledge.** *Jour. Heredity* 21(7): 325-336; (8): 375-384; (9): 409-415. 11 fig. 1930.—The morphology and mode of inheritance of 14 characters in the genus *Gossypium* are described and discussed; others are mentioned. The small number of examples of typical Mendelian inheritance is attributed to the widespread use of interspecies crosses by investigators. $n=13$ in the Asiatic cottons. Allelomorphic series have been reported for leaf form, petal spot and fuzzy seed. Linkage between a few factors has been reported, but in some cases the experimental evidence is not given. In the citations 49 titles on cotton are given.—*L. M. Dickerson.*

15215. **KUHN, E. Über Kreuzungen des getrenntgeschlechtigen Thalictrum fendleri mit gemischtgeschlechtigen Arten der gleichen Gattung.** *Biol. Zentralbl.* 50(2): 79-102. 10 fig. 1930.—The following crosses were made: Dioecious carpellate *Thalictrum fendleri* ($n=14$) as mother was crossed with monoecious *T. foetidum* ($n=7$), *T. delavayi* ($n=14$), and *T. aquilegifolium* ($n=7$). All of the F_1 hybrids were hermaphroditic with a decided development of maleness. In *T. fendleri* × *aquilegifolium* the carpels are reduced in number from 9-12 to 1, as the average, and these are thus almost pure staminate individuals. The anthers, carpels and ovules are externally normally developed, but after the development of the archesporium disturbances appear, sooner or later, in pollen and embryosac, which lead to a high degree of sterility. The tendency of the hybrids to develop maleness cannot come from the bisporangiate fathers but must come from the unisexual mother. Heterogamy of the female is not to be considered, since no females or female bisporangiate individuals arise, and a loss of female determining zygotes is improbable. As a working hypothesis, the author suggests homogamety for the female and a male-determining plasma. Seed development without pollination does not take place in *T. dasycarpum.* The *n* number of chromosomes for the species so far studied by the author are: *Thalictrum aquilegifolium* L., *petaloideum* L., *orientale* Boiss., *prezewalskii* Maxim., *tuberiferum* Maxim., *foetidum* L., *alpinum* L.=7; *lucidum* L., *glaucum* Desf., *dalavayi* Franch, *tuberosum* L., *fendleri* Engelm.=14; *minus* L.=21; *simplex* L. "I"=28; *simplex* L. "II"=35; *flavum* L.=42; *dasycarpum* Fisch. et Lall.=77; *polyganum* Muhl.=77 (?).—*J. H. Schaffner.*

15216. **LAIBACH, F. Die Bedeutung der homostylen Formen für die Frage nach der Vererbung der Heterostylie.** *Ber. Deutsch. Bot. Ges.* 47(9): 584-596. 4 fig. 1929.—Contrary to a bifactorial scheme advanced by Ernst to explain normal heterostyled and homostyled individuals in *Primula hortensis,* Laibach finds in *Linum austriacum* a complicated multiple factor situation. A homostyled plant of the latter species on selfing gave not homostyled but chiefly normal long-styled plants with great variation in relative length of filaments and styles. The diversities are considered to be conditioned by many multiple factors. The author's original homostyled plant was exceedingly heterozygous for genes controlling stamen and style lengths.—*J. P. Kelly.*

15217. **MacARTHUR, JOHN W. Linkage studies with the tomato. III. Fifteen factors in six groups.** *Trans. Roy. Canadian Inst.* 18(1): 1-19. 1931.—Fifteen pairs of inherited tomato characters are described and the monofactorial genetic basis of each shown. A lengthy statistical summary of all the dihybrid F_2 and backcross ratios observed to date by the author covers nearly all the possible combinations, taking 2 at a time. Deviations from the expected dihybrid ratios, stated in terms of standard errors, are used for detecting linkages. The 15 gene pairs definitely located are: 4 in group I, 1 in II, 2 in III, 2 in IV, 3 in V, and 3 (or 2?) in VI. Five or six others, unattached as yet but apparently independent of the 15, may represent markers in some or all of the 6 remaining "chromosomes."—*J. W. MacArthur.*

15218. **MALINOWSKI, EDMUND. Heterozja u fasoli. [Heterosis in Phaseolus vulgaris.]** [With English summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest Ann.)* 22: 183-188. 2 fig. 1929.—These experiments, conducted in zinc pots of special construction, have shown that some vigorous F_2 individuals breed true in subse-

quent generations. Some vigorous F_4 lines crossed with dwarf varieties of kidney bean transmitted the large size to the F_1.

15219. **MANGELSDORF, P. C., and R. G. REEVES.** **Hybridization of maize, Tripsacum, and Euchlaena.** *Jour. Heredity* 22(11): 328-343. 10 fig. 1931.—Pollen grains of *Tripsacum* germinate readily on the styles of *Zea* but fertilization ordinarily does not occur. By cutting off the styles of maize to less than an inch in length, true hybrids of these two distantly related genera were produced. There are many abnormalities in the development of the hybrid seeds and only about 4.54 seeds mature per 10,000 silks pollinated. Hybridization is facilitated to some extent by pollinating the ears with maize pollen 24 hours after pollinating with *Tripsacum*. Hybrid seeds in the vicinity of maize seeds develop better than hybrids growing alone. The somatic chromosome number of maize is 20, *T. dactyloides* (Texas) 36, and *T. dactyloides* (Connecticut) 72. Crossed seeds of maize × Texas *Tripsacum* had 38 chromosomes in the endosperm, 28 in the embryo and 28 in the root tips. Crosses of maize × Connecticut *Tripsacum* had 46 chromosomes in the root tips. The F_1 hybrids exhibit characteristics of both parents but resemble *Tripsacum*, the pollen parent, more closely than *Zea*, the seed parent. The F_1 plants are perennial, tiller profusely, and bear an inflorescence very similar to that of *Tripsacum*. Crosses of *Euchlaena* and *Tripsacum* were also made but no viable, mature seeds were obtained.—*P. C. Mangelsdorf.*

15220. **MASON, SILAS C.** **A sectorial mutation of a Deglet Noor date palm.** *Jour. Heredity* 21(4): 157-163. 5 fig. 1930.—A sectorial chimera which involves a lateral strip over 36% of the circumference of the stem is described. The mutation affects the trunk, foliage, inflorescence and fruit. It can be traced to the apical bud. The data indicate that the mutation may have arisen from a mutation in one of three apical cell initials.—*L. M. Dickerson.*

15221. **MATSUURA, HAJIME.** **Genic analysis in Avena, a monograph.** *Jour. Fac. Sci. Hokkaido Imp. Univ. Ser. 5. Bot.* 1(2): 77-107. 1931.—A useful monograph on inheritance in oats (Avena) including literature up to 1929. The inheritance of various characters is briefly discussed under the following headings: color inheritance, ear characters, grain characters, other morphological characters, and physiological characters. A list of *Avena* characters which have been genically analyzed is included. Linkage relations are discussed and a bibliography of 79 titles is appended.—*R. J. Garber.*

15222. **MILLER, JULIAN C.** **A study of mutations of the Porto Rico sweet potato.** *Proc. Amer. Soc. Hort. Sci.* 27: 343-346. 1930(1931).—The sweet potato very seldom produces viable seed in the United States, and since so very few records are available showing definite facts of introduction, it is the belief that many of the varieties have originated in this country by means of somatic mutations. The work reported in this paper has been confined to the Porto Rico type and to date the following mutations have been assembled: (1) White skin; (2) White flesh; (3) White skin and white flesh; (4) White striped; (5) Gold skin; (6) Purple skin and (7) Vineless or bunch. These variations produce potatoes according to their likeness. Some of the mutations show significant difference in yield and chemical composition from the normal parental type. Selection of desirable mutations offers a practical means of sweet potato improvement in the United States.—*J. C. Miller.*

15223. **MIYAKE, KIICHI, YOSHITAKA IMAI, and KIYOO TABUCHI.** **Contributions to the genetics of Phaseolus vulgaris.** *Jour. Coll. Agric. Imp. Univ. Tokyo* 11(1): 1-20. 2 col. pl., 1 fig. 1930.—Two recessive genes give green stem. The dominant allelomorphs are complementary in giving a colored stem. Pink stem is recessive to red. Red flowers are borne on red stems and pink flowers on pink stems. Green stems may also bear these colors in addition to flecked and white flowers. Thus the factors for stem color are not complementary in their effect on flower color. Flecked and white flowers are simple recessives to self color. Piebald seed marking is recessive to self color. Three possible modifiers affect extension of piebald color. Speckled and mottled types are dominant over plain color. A gene for cream color is linked with a gene for mottled pattern with a recombination value of 2.6 per cent. Two complementary genes when recessive produce cream. Mottled pattern does not appear in cream or white beans. All seed-coat colors are hypostatic to black. Brown also conceals all colors except black. Purple, red, gray and yellow colors are manifested by respective genes. All colors are concealed in cream and white genotypes.—*T. M. Currence.*

15224. **MOLDENHAWER, KONSTANTY.** **Studja genetyczne nad mięszańcami ♀ Triticum dicoccum × ♂ Triticum dicoccoides. [The cross between T. dicoccum and T. dicoccoides.]** [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest Ann.)* 22: 189-212. 4 pl., 9 fig. 1929.—When *T. dicoccum* (beardless) was crossed with *T. dicoccoides* (bearded) the F_2 were of 5 kinds as regards head type: *T. dicoccum;* new types of *T. dicoccum* (bearded); *T. dicoccoides,* proper; new forms which cannot be classified among any of the existing spp.; and *T. ellipticum* Mal. The parent types were in a great minority. The form of the head in F_2 showed considerable segregation, at the same time causing a series of new types to appear. The bearded hybrids were dominant over the beardless plants. In F_2 a segregation occurred in the ratio of about 18 bearded to 1 beardless. The distinctive character, consisting in hairiness of the rachis (characteristic of wild grains), is caused by 2 genetic factors in the parent types, of which one is epistatic and the other hypostatic; and the experimental ratio of the segregation corresponds exactly to the theoretical 15:1 in the F_2 and F_3 of this cross. The velvety character of the glumes is dominant in the F_1, F_2, and F_3, the segregation ratio being 3:1.—*Author's summary (transl.).*

15225. **MORGAN, W. P.** **Flower forms in hybrid Freesias.** *Jour. Heredity* 21(12): 482-488. 5 fig. 1930.—Several unusual types are figured and described, including: doubles with and without petaloid stamens; a giant mutation of the extra-chromosome type; and unusually large flower heads. All are from seedlings derived from uncontrolled hybridizations.—*L. M. Dickerson.*

15226. **MUMM, W. J., and C. M. WOODWORTH.** **A factor for soft starch in dent corn.** *Jour. Heredity* 21(12): 503-506. 2 fig. 1930.—In a line of inbred corn in which the ears had been consistently horny in endosperm composition, an ear was found with decidedly starchy endosperm. The starchy condition has continued to breed true. In crosses with horny dent corn, starchy has behaved as a recessive. Plants from starchy seeds are normal. Crosses with floury gave horny kernels. A hybrid between starchy and horny, crossed with a hybrid between floury and horny, gave only horny seeds; the hybrid between starchy and horny, crossed with homozygous floury, also gave only horny. Starchy corn is not a defective type. Compared with horny, it is as resistant to scutellum rot, the seed is as large and as viable, the seedlings are as vigorous, and the mature plants as productive. Starchy seeds were slightly lower in protein, but significantly higher in oil than horny. The symbols *H h* are proposed for this character pair.—*W. J. Mumm and C. M. Woodworth.*

15227. **MÜNTZING, ARNE.** **Einige Beobachtungen über die Zytologie der Speltoidmutanten.** *Bot. Notiser* 1930(1): 35-47. 14 fig. 1930.—This paper reports results of cytologic studies made in 1927 on speltoid material. Normal reduction division was observed in certain plants and in others various disturbances, the most striking of which were the vagabonding univalent chromosomes. The types studied were classified into "labile" and "stabile," according as to whether irregularities occurred or not. Of the 41 plants investigated, 23 were stabile and 18 labile. The labile types further were classified mor-

phologically and found to be heterozygous. The stabile plants apparently were homozygous with certain exceptions. 41 chromosomes were found in plants of the B-speltoid series; 43 in the C-speltoid series, in agreement with the results of Huskins; 43 also were found in a sub-compactum plant. Trivalent and quadrivalent complexes were not observed. Winge and Huskins assumed that speltoid types originate through faulty chromosome conjugation. Nilsson-Ehle believes that speltoids are caused in the speltoid complex by mutation in one chromosome. The author suggests (at the instance of Nilsson-Ehle) that the chromosome complications may be caused secondarily by deficiency mutation in the speltoid factor complex. This presumably weakens the affinity between the mutating chromosome and its normal partner, resulting in the formation of trivalents, quadrivalents, open chains, etc. The various chromosome anomalies are discussed. The cytologic facts known at present neither verify nor disprove the theory of Winge. Further intensive genetic and cytologic studies are necessary to clear up the speltoid problem.—*V. H. Florell.*

15228. **NEWTON, W. C. F. The inheritance of flower color in Papaver rhoeas and related forms.** *Jour. Genetics* 21(3): 389-404. 5 col. pl. 1929.—Posthumous paper prepared by J. B. S. Haldane, J. Philp, Lily Newton, and H. G. Osterstock. In addition to *P. rhoeas,* the var. *violaceum,* the horticultural form *P. hookeri,* and the Shirley poppy were studied. Gene *C* converts white or pale flower to fully colored; *P,* mauve or purple to pink or red; *B,* produces basal blotch, intensifies petal color and converts light filaments to black; *T* (in absence of *B*), tinges filaments and darkens petals; *W,* produces white-edged petals; *F,* converts pink to rose crimson, darkens mauve, and flushes light-centered flowers; *R,* converts pink to rose pink and crimson to cherry. *WRB* show linkage as do *PFT* but *C* is independent. The haploid chromosome number is 7.—*L. L. Burlingame.*

15229. **NIEVES, RAIMUNDO. Investigaciones sobre la herencia de los caracteres en el trigo. (2nd contrib.) Herencia del hábito de crecimiento. [Inheritance in wheat. 2. Inheritance of the growth habit.]** *Rev. Fac. Agron. Univ. Nacion. La Plata* 19(1): 64-70. 1929.—Kanred, a hard red winter wheat, with prostrate winter habit, resistant to stem rust, leaf rust, and both species of bunt, was crossed with Florence, an early, erect, spring wheat very resistant to both species of bunt. The growing F_1 plants were all erect like the spring wheat parent. In F_2 the growing plants segregated in a monohybrid ratio, 3 erect to 1 prostrate. No other character inheritances were reported.—*W. W. Mackie.*

15230. **PEARSON, O. H. An albino mustard.** *Jour. Heredity* 21(5): 221-223. 1 fig. 1930.—A plant of a variety of *Brassica campestris* introduced from China as S. P. I. No. 63161 produced albino progeny in the ratio of about 3 normal to 1 albino.—*O. H. Pearson.*

15231. **RAMIAH, K. The inheritance of characters in rice, part III.** *Mem. Dept. Agric. India. Bot. Ser.* 18(7): 211-227. 10 pl. (2 col.) 1930.—With respect to habit of growth, cultivated rices are placed in 2 groups, viz., compact and spreading. Inheritance studies show that spreading habit of growth is dominant to compact, and segregation occurs in a ratio of 3 : 1. A yellow chlorophyll deficiency was shown to be recessive and due to duplicate factors, giving a ratio of 15 green plants : 1 yellow. A plant of hybrid origin is described producing purple- and green-glumed spikelets on the same panicle. This plant (and family) was a simple chimera. One line with a lethal factor was isolated from this family which gave 2 plants with purple to 1 with green glumes.—*J. W. Jones.*

15232. **RAMIAH, K., S. JOBITHARAJ, and S. DHARMALINGA MUDALIAR. Inheritance of characters in rice, part IV.** *Mem. Dept. Agr. India Bot. Ser.* 18(8): 229-259. 7 pl. (1 col.), 1 fig. 1931.—The characters studied include glutinous endosperm, size and shape of grain, lax and dense panicles, clustering spikelets, dense arrangement and clustering of spikelets, "mottling" over fertile glumes, size of outer glumes, and brown rice. The common and glutinous rice endosperm characters form a simple pair of allelomorphs. In F_1 common and glutinous pollen grains are produced in equal numbers. Selfed F_1 plants, however, often result in a significant deficiency of glutinous kernels. Back crossing indicates that glutinous pollen is weaker than the common. Other experiments indicate that unfavorable environmental conditions may result in a deficiency of glutinous pollen grains. Glutinous grains are less viable than common grains, and glutinous seedlings show lack of vigor. In natural and artificial crosses, short spikelet behaved as a simple dominant to long. Segregation for panicle density gave about 3 lax to 1 dense panicle. In a cross between parents having clustered and normal spikelet arrangement, the F_1 was intermediate and in F_2, 3 groups were present—clustered, intermediate, and normal—in a ratio of about 1 : 2 : 1. In a cross using varieties with dense and cluster panicles, the F_1 was lax and intermediate for clustering. The F_2 indicates that at least two factors were involved. Length of panicle and emergence of panicle were controlled by multiple factors. The mottled dirty character proved to be a simple dominant to the even dirty color in lemma and palea. A cross between parents having short and long outer glumes resulted in F_1 with intermediate outer glumes. In F_2 three groups,—short, intermediate, and long outer glumes,—were obtained in a ratio of about 1 : 2 : 1. The pigmentation factor *A* and purple *P* are necessary for the production of purple rice, and, in the absence of *A*, *P* produces brown.—*J. W. Jones.*

15233. **REED, GEORGE M. A new method of production and detecting sorghum hybrids.** *Jour. Heredity* 21(3): 132-144. 7 fig. 1930.—By using pollen from a variety having a dominant seedling color, hybrid seedlings can be isolated after germination, and pollinations can be made by properly bagging the heads and dusting the pollen without emasculation. Heterosis is noticeable in these hybrids. Data are given on the inheritance of smut resistance.—*L. M. Dickerson.*

15234. **ROBERTSON, D. W., and G. W. DEMING. Genetic studies in barley.** *Jour. Heredity* 21(6): 283-288. 3 fig. 1930.—The following chlorophyll-deficient seedling types were described, Chlorina ($Fc\ fc$) in Colsess barley, yellow ($Xc_2\ xc_2$) in Coast barley, white ($Ac_2\ ac_2$) in Coast barley, and Virescent ($Yc\ yc$) in Coast barley. All of the above characters were found to be recessive to normal green and each dependent upon a single factor difference. The factor pairs ($Fc\ fc$), ($Xc_2\ xc_2$), ($Ac_2\ ac_2$) and ($Yc\ yc$) were inherited independently of the factor pairs ($Ac\ ac$) for green versus white seedlings and ($Xc\ xc$) for green versus xantha seedlings previously studied. The factor pair ($At\ at$) for green versus white seedlings in Trebi is inherited independently of the factor pair ($Fc\ fc$) for chlorina seedlings and ($Fc\ fc$) is inherited independently of the factor pairs ($Xc_2\ xc_2$) and ($Ac_2\ ac_2$). A three factor difference was found between the smooth style of Lion and the feathered style of Coast. The factor pairs are designated as *G.g., G'.g', G".g".*—*D. W. Robertson and G. W. Deming.*

15235. **ROBINSON, T. RALPH. A chimera in the Poinsettia.** *Jour. Heredity* 22(11): 359. 1 fig. 1931.—The stem and bracts show distinct color demarcations. The flower had 24 bracts, of which 13 were pink, 10 red and one divided with red on one side and pink on the other side of the midrib.—*L. M. Dickerson.*

15236. **RUDORF, WILHELM. Aspectos genéticos del problema de la inmunidad en las plantas cultivadas.** *Argentina Min. Agric. Sec. Propaganda e Informes* 799. 1-6. 2 col. pl. 1930.—The author surveys investigations on specialization of rusts from Eriksson up to the recent experimental work of E. C. Stakman, E. B. Mains and others. He discusses the specialization of both parasites and host plants from the standpoint of genetics. Examples of methods in genetics and of rust immunity in wheat are given. The author discusses the importance of parallel investigations of varieties resistant to groups of biotypes of more than one species of parasite with the object of establishing, if this does not already exist,

a combined resistance in one variety to groups of biotypes of another species of parasite. He found such combined resistance to biotypes of *Puccinium glumarum tritici* and of *P. triticina* in the wheat varieties: Normandie, Blausamtiger Kolben, Hard Taganrog (9 H 39 Percival) and in one *Triticum monococcum* type. (Beiträge zur Immunitätszüchtung gegen Pucc. glumarum tritici Streifenrost des Weizens, Phytopathologische Zeitschrift, Bd. I, 465-525. Berlin, Parey 1929).—*W. Rudorf.*

15237. **SCHIEMANN, ELISABETH. Über eine praktisch und phylogenetisch wichtige Mutation bei Gerste nebst einigen Bemerkungen über Mutation bei Getreide.** *Ber. Deutsch. Bot. Ges.* 48(10): 477-489. 4 fig. 1930.—A dwarf type of barley is described in detail. It occurred as a mutation from normal 2 row. The new mutant has a noticeably shorter beard than normal barley.—*D. W. Robertson.*

15238. **SHAMEL, A. D. A bud variation in the Deglet Noor date palm.** *Jour. Heredity* 21(4): 164-166. 2 fig. 1930.—In a Deglet Noor tree planted as an offshoot, several leaves developed from one sector of the trunk which have broad flat pinnae instead of the narrow folded pinnae characteristic of the Deglet Noor. Some leaves have the broad pinnae on one side of the midrib with normal pinnae on the other side. A fruit bunch arising from the mutating sector bore dates of a somewhat abnormal form which were late in ripening.—*C. S. Pomeroy.*

15239. **SINGLETON, W. R., and D. F. JONES. Heritable characters in maize. XXXV—male sterile.** *Jour. Heredity* 21(6): 266-268. 1 fig. 1930.—A factor causing the tassel to be sterile was found in *Zea mays.* This factor, ms_1, is closely linked with the *Y* locus, showing 4.5 percent crossing over. It shows a linkage value of about 28 percent with *Pl.*—*W. R. Singleton.*

15240. **STADLER, L. J. Some genetic effects of irradiation in plants.** *Jour. Heredity* 21(1): 3-19. 14 fig. 1930.—Among "visible" mutations of barley induced by irradiation, about 90% are recognizable in the seedling stage. No dominant mutations were found. Three cases of apparently direct cytoplasmic effect, resulting in striping of the treated plant, were found. In maize, mutation is induced similarly. In wheat and oats, comparable doses induce few or no mutations. In dormant seed of barley, mutation was induced at a rate approximately ¼ that found in actively germinating seed. In seed soaked but not aerated, the mutation rate under irradiation is not significantly higher than in dormant seed. Temperature during irradiation (10-50° C.) had no appreciable effect on mutation rate. Mutation frequency was directly proportional to radiation intensity, within the limits of sampling error, both in dormant and in germinating seeds. X-rays at 40, 56, 81, 98, and 112 K.V.P., applied in equal intensity, induced mutation at approximately the same rate. Mutations were induced also by "grenz rays" (ultra-soft x-rays) at 7 K.V.P. Chromosomal aberrations in endosperm development occur normally with frequency varying, for loci studied, from .05% to 0.59%. The frequency is increased more than 20-fold by x-ray treatment. In ears x-rayed shortly after fertilization, chromosome aberrations occur with high frequency also in the embryo, producing partial sterility and defective plants. In plants heterozygous for plant characters, sectors showing the recessive character are produced. Similar chromosomal effects are produced by irradiation of pollen.—*Author's abstract.*

15241. **STADLER, L. J. Recovery following genetic deficiency in maize.** *Proc. Nation. Acad. Sci. U. S.* 16 (11): 714-720. 1930.—Deficiency is the loss or inactivation of a section, or the whole, of a chromosome. Recovery is defined as the return to normal activity of genes previously deficient. Tassels of plants homozygous dominant for *A R C Wx* and *Pr* were treated to x-rays and the pollen used on plants of the genetic composition *a R C pr.* Among 3916 seeds produced 27 were colorless, indicating loss of *A,* and 9 were red, indicating loss of *Pr.* In addition, 18 seeds were colorless except for one or more small, colored spots, and 4 were red except for similar spots of purple. The average area showing the dominant character was less than 1/100 of the endosperm surface. The same treated pollen used on plants of *A R c wx* produced 2374 seeds of which 27 were colorless (18 white waxy and 9 white horny). In addition there were 5 white waxy seeds with small spots of colored horny tissue. The fact that the recovery in every instance affected both characters simultaneously is held to preclude reverse mutations as an explanation. Reasons are given against explaining the occurrence of the small spots as extreme examples of chimera. Recovery was observed also in untreated material. In 700 examples of endosperm chimeras, there were several cases in which small spots occurred in the deficient sector and 11 seeds with the entire endosperm deficient except for one or more small spots. The frequency of deficient endosperm showing recovery was as high in the untreated as in the treated seed. One example of recovery in the sporophyte is reported,—a green plant deficient for *A* that developed narrow red stripes on the lower leaf sheaths. A suggested mechanism providing for recovery is that deficiency deprives the chromosome of its power to reproduce itself without destroying its other functions. If later the ability to divide is restored, the cell descendants would constitute an island of tissue showing the dominant character.—*G. N. Collins.*

15242. **TERASVUORI, KAARLO. Hernemuodoista. [Forms of peas.]** [In Finnish, with German abstract.] *Maataloustieteellinen Aikakauskirja* [*Helsingfors*] 1 (3/4): 105-116. 1929.—Over 2000 selections were isolated from among about 70 samples of field peas. These were studied over a period of 3 years and found to be pure lines with 1 exception of a cross supposedly caused by insects. The material represented over 80 different form-groups based on such characters as principal color of flower, seed coat, and hilum; seed weight, earliness, and number of ovules per pod. When additional factors were considered, 170 groups could be distinguished. The crossing experiments of Nilsson-Ehle have shown that the operation of the well-known independent Mendelian factors can develop additional factors that can produce either a definite, separate, external character or change the apparent action of other factors. If through crossing one could combine all the last mentioned characters and the 13 factorial pairs recognized as early as 1908, in all possible ways, 1 to 2 million constant forms would result. Not all these combinations are possible in practice, but on the other hand there are many unmentioned characters which would greatly increase the number of possible forms. If all these characteristics are considered by recognizable differences of degree as well as kind, the number of theoretically possible constant forms of peas becomes inconceivable. This also holds for other self-fertile plants.—*V. R. Boswell.*

15243. **TJEBBES, K. Two linkage groups in the garden bean.** *Hereditas* 15(2): 185-193. 1931.—Two cases of linkage are reported, involving four factors determining seed coat color. *B* together with the basal factor *A* gives a pale yellow which is mottled in the heterozygote. *R* with *A* gives a wine red color, with *A* and *C* the color is burgundy red. *S* restricts the red pigment to stripes and patches. The factor *G* is a member of the allelomorphic series *Gr-G-g,* giving green foliage and pods, green foliage and yellow pods, and yellow foliage and pods, respectively. *B-R-S* are strongly linked in one group, with less than 1% crossingover. *C* and *G* are loosely linked, in another chromosome, with about 35% of crossingover.—*H. Wexelsen.*

15244. **WATERHOUSE, W. L. Australian rust studies. III. Initial results of breeding for rust resistance.** *Proc. Linnean Soc. New So. Wales* 55(5): 596-636. 3 pl. 1930.—Under conditions prevailing at Sydney University the best results in wheat crosses were obtained by pollinating 2 days after emasculating. An efficiency of 75% may be looked for. Pollination of flowers on severed stems

resulted in the production of viable grains. 1932 pollinations of wheat with barley pollen failed to produce hybrid seed. In crossing wheat and rye, no success has attended efforts to secure fertile progeny. The sterile F_1 seedlings were resistant to stem rust forms to which the wheat parent was susceptible. Owing to sterility in the F_1 little is to be gained from attempts to cross *T. vulgare* wheats directly with Khapli. There was incomplete dominance of resistance to stem rust in the F_1 of Federation-Khapli crosses. In *T. vulgare* × *T. durum* crosses, the resistance of the durums to stem rust is due to one main dominant factor. In a cross between Canberra and Thew wheats, resistance was obtained to 6 forms of *P. graminis tritici*. Each parent possessed a dominant factor for resistance to three different forms of stem rust. In the F_2 a 9:3:3:1 ratio was obtained for resistance to the 2 groups of rust forms. The inheritance of resistance to a form of *P. triticina* in this same cross was due to a single dominant factor, which is inherited independently of the 2 factors for resistance to *P. graminis tritici*. In the variety Thew, an additional independent dominant factor for resistance to *P. triticina* is present, and is linked with a factor for resistance to a form of *Erysiphe graminis*. Japanese Bearded also contains a single dominant factor for resistance to leaf rust. General results from a number of wheat crosses show that the inheritance of resistance to Forms 43 and 46 of *P. graminis tritici* is due to a single dominant factor. The inheritance of resistance to Form 34 is due to one or more factors, with dominance of susceptibility. Some work on inheritance of resistance to *P. graminis avenae* points to a single dominant factor for resistance. In many of the wheat crosses, the inheritance of the "grass clump" habit has been recorded. Grass clumps may occur in the F_1 and lead to sterility. In other crosses, counts in the F_2 show a ratio of 13 normals: 3 grass clumps, or of 15 normals: 1 grass clump. —*O. S. Aamodt.*

15245. WHITAKER, THOMAS W. Sex ratio and sex expression in the cultivated cucurbits. *Amer. Jour. Bot.* 18(5): 359-366. 1931.—Studies of sex expression in 49 varieties, representing 8 spp. and 4 genera, indicate that each species is characterized by a specific qualitative type of sex expression. In some species, there are varieties which qualitatively differ from the characteristic type. *Cucumis melo*, in most of its varieties, is andromonoecious, but its variety, Mexican Banana, is monoecious. Within a given species quantitative differences in sex expression may exist between its varieties, this being expressed in the ratio of staminate to pistillate flowers produced over a given period. Staminate flowers are greatly in the majority at all times in all forms studied. There is some evidence that environmental control of sex expression may be possible and practical.—*T. W. Whitaker.*

15246. WINGE, Ø. X and Y linked inheritance in Melandrium. *Hereditas* 15(2): 127-165. 16 fig. 1931.—In 1917 Winge reported a case of inheritance of chlorina in *Melandrium* supposed to be Y-linked. Later investigations showed that the character is X-linked and lethal when homozygous, killing all chlorina females. The character is therefore called "aurea." All aurea plants are ♂♂, yellowish green with unevenly colored leaves. In spite of difficulties on account of cooperation of autosomal and sex-linked genes, the experiments reported made clear the inheritance of aurea: a recessive gene in the X chromosome (*au*) with an autosomal inhibitor *A*. Females homozygous for *au* but carrying *A* are green; without *A* the combination is lethal. Cross combinations of various genotypes of males and females give ratios: 4:3:1, 3:3:1, and 1:1:1 of green ♀♀, green ♂♂, and aurea ♂♂. No aurea ♀ was ever found. A recessive gene *n*, demonstrated both in the X and the Y chromosome in *Melandrium*, gives abnormal plants in which the upper part is pale; the calyx never opens and the petals are completely hidden; it is less viable than the normal. Three autosomal inhibitors have been demonstrated (*G*, *H*, and *I*). Variegated is also inhibited by three autosomal genes, *L*, *M* and *O*, and likewise by the Y chromosome; all variegated plants, therefore, are ♀♀. All these mutants were found in a cross *M. rubrum* × *album*. In the same cross appeared hermaphroditic males. Sex determination and hermaphroditism in *Melandrium* are discussed. Sex is determined by different genes in the X and Y, as well as in the autosomes, exerting influence in the ♂ or ♀ direction. Hermaphrodites are ♂♂ (XY), whose X is strongly ♀ in relation to the Y (X_fY). Further, an autosomal gene *C*, exerting influence in the ♂ direction, may be involved. CX_fY individuals are ♂♂. The constant hermaphrodites found are supposed to maintain themselves on the basis of balanced lethals, having in the X_f chromosome a lethal, *l*. Hermaphrodites segregating ♀♀ and hermaphrodites have the genotype X_fY without any lethal. Exceptional individuals are found in these segregations, and the problem is complicated on account of the existence of autosomal and sex-linked genes of varying strength. *H. Wexelsen.*

15247. YAMPOLSKY, CECIL. Male-female grafts in Mercurialis annua. *Jour. Heredity* 21(2): 65-72. 4 fig. 1930.—Male and female elements can live together in the same graft without apparently influencing the morphological expression of either stock or scion. The existence of ferments or hormones which circulate and influence sex expression in plants is considered impossible because of the development of the reproductive elements in situ.—*L. M. Dickerson.*

ANIMAL (EXCEPT MAN)

15248. BLUHM, AGNES. Über eine entgegengesetzt gerichtete Mutation und Modifikation, bewirkt durch einunddasselbe Agens (Alkohol). *Biol. Zentralbl.* 50 (2): 102-113. 1930.—Six times weekly, ♂ albino mice received injections of 0.2 cc. of 15% ethyl alcohol solution. The F_1 from alcohol-treated males have a greater infant mortality than those of controls. The inbred alcoholic line shows an increasing decline in infant mortality during subsequent generations. In F_2, the rate is only slightly higher; in the later generations, the rate is lower than in control lines. Male offspring from crossmatings of control ♀♀ to ♂♂ from the alcoholic line in any generation have a higher infant mortality than the same generation of controls; ♀ offspring survive with a frequency equal that of controls. Offspring of both sexes from the cross mating of a control ♂ to ♀♀ of the alcoholic line stand a better chance to survive infancy than those of the reciprocal cross or of control lines. Chronic alcohol treatments of the stem ♂ produced hereditary gene mutations in the X and the Y chromosomes that reduce resistance against infant mortality in both sexes. The injured sperm induces a converse modification in the fertilized egg that inhibits the injurious action of the gene mutation and lasts through subsequent generations. Alcoholic ♂♂ mated to control ♀♀ have a high F_1 infant mortality because control ♀♀ do not have this modification. Alcoholic ♀♀ mated to control ♂♂ give the modification to the offspring and their infant mortality is decreased.—*C. P. Oliver.*

15249. BOLEN, HOMER R. A mutual translocation involving the fourth and the X-chromosomes of Drosophila. *Amer. Naturalist* 65(700): 417-422. 1931.—In the "mottled 5" stock of *D. melanogaster* the X-chromosome is broken between white and facet; the left end is attached to the IV. The IV-chromosome is broken between eyeless and bent, and the eyeless part is attached to the right portion of the broken X. This mutual translocation was produced by x-ray. Non-disjunction of IV occurs very frequently. A gene important for viability is located in the left (eyeless) end of the IV.—*H. R. Bolen.*

15250. CASTLE, W. E. Size inheritance in rabbits; the backcross to the large parent race. *Jour. Exp. Zool.* 60(3): 325-338. 6 fig. 1931.—Two races having, respectively, a very large and a very small body size were crossed. F_1 was intermediate. Backcrosses were made between F_1 animals and individuals of both parent races

These groups also were intermediate in size between their parents. Comparison was made of the variability of the five groups (small, large, F_1, ¾ small, and ¾ large) at four different ages; viz., 80, 150, 275, and 365 days. At 80 days the genetic size character of each group was obscured by environmental effects which produced a high variability, except in the F_1 group, where hybrid vigor and good care kept it low. At later ages, the relative genetic variability of each group is clearly revealed. Large and small races are about equally variable. F_1 is less variable than either parent race. The backcrosses produce populations more variable than the parent races or F_1, supporting a multiple factor interpretation. Contrary to expectation, the ¾-large group is not more variable, but rather less so than the ¾-small group. No support is found for the idea that new forces become operative in later phases of growth. Differences observed in the growth curves of the several groups and in the body weights finally attained by them are such as would result from original differences in the developmental rate of the fertilized egg.—*Author (courtesy Wistar Bibl. Serv.).*

15251. **CAVAZZA, FILIPPO. Studi sull'ibridismo di specie. Sulla fecondità delle mule e sui caratteri discendenti. Parte 2.** *Arch. Zool. Italiano* 15: 499-548. 4 pl. 1931.—Review of literature and description of a fertile ♀ mule in Tripoli. By an ass she produced 2 sterile mules (♂ and ♀); by a stallion 2 fertile horses (♂ and ♀).—*P. Popenoe.*

15252. **COLIN, E. C. A comparison of the descendants of lead-poisoned male guinea-pigs with those from untreated animals of the same closely inbred strains.** *Jour. Exp. Zool.* 60(4): 427-484. 6 fig. 1931.—Over a period of 4 years, 54 ♂ guinea-pigs and 5 ♀ guinea-pigs from two highly inbred and homogeneous lines, derived from single pairs in the 15th and 20th generations, respectively, of straight brother-sister mating, were fed weighed amounts of lead acetate. Symptoms of poisoning were numerous and severe and some, e.g., "cirrhosis" of the liver, were highly constant in occurrence. The life span was materially shortened. In most ♂♂ that died or were killed, motile sperm were found. In only a few cases was marked degeneration of the testis evident. Nearly all the treated ♂♂ produced offspring with normal regularity close to the time of death. Treated ♂♂ were mated with untreated ♀♀ and the 722 offspring compared with 656 offspring from control matings. Untreated offspring from treated ♂♂ were mated and the 269 F_2's compared with controls. Likewise, matings of F_2's were made and the 154 F_3's compared with controls. The effects in experiments with treated ♂♂ and their descendants were in general negative in all respects studied, namely, size and frequency of litter, frequency of abortions and stillbirths, postnatal mortality, birth weight, gain in weight, sex ratio, and the production of abnormalities and mutations. From treated ♀♀ there were indications of an increase in the frequency of abortions, but no evidence of any effect on the few living offspring produced.—*Author (courtesy Wistar Bibl. Serv.).*

15253. **DOBROVOLSKAIA-ZAVADSKAIA, N. Distribution des cas de cancer dans la progéniture d'une souris cancéreuse.** *Compt. Rend. Soc. Biol.* 106(12): 1085-1087. 1931.—A ♀ mouse with mammary cancer mated with a non-cancerous ♂ from a mother with mammary cancer produced 5 ♂♂ all non-cancerous and 8 ♀♀, of which 5 had mammary cancers and 3 were non-cancerous. All of the daughters were mated with brothers. The cancerous produced 29 ♂♂, of which 3 had cancers (non-mammary), and 20 ♀♀, of which 6 had mammary cancers and 1 another type. The non-cancerous produced 17 ♂♂, of which 1 was concerous (non-mammary), and 24 ♀♀, of which 5 had mammary cancer and 2 had other types. These include all young which lived 6 months. The author considers that this indicates a recessive factor for cancer which is usually not manifested in ♂♂, among which mammary tumors are very rare.—*S. Wright.*

15254. **DUNN, L. C., and LORNA W. THIGPEN. The silver mouse.** *Jour. Heredity* 21(12): 495-498. 1 fig. 1930.—Three types of silver coat color, due to a reduction in the number of pigment granules and to their entire absence from certain areas and from entire hairs, are described. Silver gray differs from black and chocolate by a single gene. Pink-eyed Silver did not carry this gene but did carry dilute (*dd*). No close linkage was demonstrated between silver and agouti. The expression varies with age.—*L. M. Dickerson.*

15255. **DUPOND, C. Une nichée d'hybrides intéressante.** *Le Gerfaut* 18(4): 79. 1928.—Of 5 birds composing a single brood of a captive ♀ canary, all appeared to be hybrids, one with a siskin, one with a linnet, and three with a greenfinch.

15256. **ERIZIAN, CHOREN. Das Vorkommen einiger Neubildungen bei Bos taurus in S. S. R. Armenien.** *Zeitschr. Zücht. Reihe B. Tierzücht. u. Züchtungsbiol. einschl. Tiernähr.* 22(1): 114-121. 7 fig. 1931.—The author discusses a few cases of cows with 2 or 3 teats, and tailless animals, found by him and his pupils among native cattle. The taillessness has no relation to sex. The 2-teat cows are more frequent than those with 3 teats. Among the 2-teat cows one had completely lost her back pair of teats, her front pair of teats remaining quite normal. This had no influence whatever on the form and size of the udder. The 2nd cow had an incomplete union of the back and front pair of teats, which were reduced to one pair, while every teat of this pair had 2 milk openings. This had affected the udder and made it small and funnelshaped. The third cow had also the same transformation of the back and front pair into one pair. One of the teats showed a complete union and had one opening, while the other teat was the result of an incomplete union and had 2 openings. The calves of these cows had the normal number of teats. The milk flow of all these cows remained the same as that of normal native cows, the change in the number of teats having not affected the milkflow.—*C. Erizian.*

15257. **GOODRICH, H. B., and I. B. HANSEN. The postembryonic development of mendelian characters in the goldfish Carassius auratus.** *Jour. Exp. Zool.* 59(2): 337-358. 1 pl. 1931.—The development of the characters described by Chen ('28) is traced with special reference to the melanophores and reflecting tissue. Until the 12-mm. stage the history of melanophores is identical in the common goldfish, the transparent shubunkin, and the heterozygous type or true shubunkin. After this stage the number of melanophores increases in the common goldfish, melanophores are destroyed in the transparent shubunkin and show an intermediate condition of partial growth and destruction in the hybrid. The results are numerical, based on counts of melanophores. In the common goldfish, as shown by previous work, the melanophores also degenerate much later in ontogeny (1½ to 17 mo.). In the common goldfish reflecting tissue begins development in certain loci, and spreads until the whole body, excepting fins and pupil of eye, is covered. In the transparent fish very little is developed. In the heterozygous form development starts on the same loci as in the common fish, but growth is early and irregularly inhibited. The total of reflecting tissue of the hybrid is intermediate in amount between that of the 2 homozygous types.—*Authors (courtesy Wistar Bibl. Serv.).*

15258. **GORDON, MYRON, and ALLAN C. FRASER. Pattern genes in the platyfish. Inheritance of naturally occurring color pattern variations on the Mexican killifish, Platypoecilus maculatus.** *Jour. Heredity* 22(6): 168-185. 8 fig. 1931.—Four melanic patterns are described in aquarium-reared specimens; they occur also in the progenitors of the aquarium fishes. Each of the four patterns develops in response to a dominant autosomal gene. They have been called: One-spot, *O;* Two-spot, *T;* Moon, *M;* and Crescent, *C.* There is some evidence that these four dominant factors form an allelomorphic series. Attention is called to the occurrence of polymorphism in this species.—*Author's summary.*

15259. **GOWEN, JOHN W. On chromosome balance as a factor in duration of life.** *Jour. Gen. Physiol.* 14(4): 447-461. 1931.—Under the identical conditions of

the experiment, the type ♀♀ of *Drosophila* live an average of 33.1 ± .6 days; type ♂♂ 28.9 ± 8 days; triploid ♀♀ 33.1 ± .8 days; and sex-intergrade ♀♀ 15.0 ± .3 days. The unbalance of the chromosomes is evidently a fundamental factor in the probable life span of the individual. It has been possible to show by a study of the various sex classifications within the sex-intergrade class that the presence or absence of ovarian or testicular tissue as such is not the primary cause of the difference in the life duration in the type ♂♂ and ♀♀ but that the cause is to be found deeper, sex determination and duration of life accompanying each other and resulting from the common cause, chromosome constitution. The survival curve of the sex-intergrade groups presents a limiting curve of duration of life, a constant death rate for each day of age. Triploid flies are made up of cells which are one-third larger than the cells of the type flies. It is not without significance to note that such individuals show no greater or less duration of life than do the ordinary flies when both groups have their chromosomes in balance.—*Author's summary.*

15260. **GRAVES, R. R. A herediscope demonstration of dairy cattle improvement, illustrating hereditary transmission of milk and percent butter fat with the herediscope.** *Jour. Heredity* 20(9): 431-440. 6 fig. 1929.—Data are presented and methods described for the mechanical demonstration of the manner of inheritance of size and fat production, the effect of selection and the use of proved sires. Other single or multiple factor inheritance may be demonstrated with the same apparatus.—*L. M. Dickerson.*

15261. **GREEN, C. V. Linkage in size inheritance.** *Amer. Naturalist* 65(701): 502-511. 4 fig. 1931.—An analysis of the data on the back-cross generation of a mouse species cross, between large *Mus musculus* with 3 recessive color characters (*dba*) and small *M. bactrianus* with the 3 dominant allelomorphs (DBA^w), has unquestionably shown an association in heredity between factors productive of a large final size in several quantitative characters and a qualitative, brown. This association, found to be statistically significant in four of the 9 adult size characters, was interpreted as genetic linkage and considered as proof that size in mice is influenced by chromosomal genes. To a lesser extent, size in two characters seems to be affected by factors linked with dilution.—*C. V. Green.*

15262. **GUTHRIE, J. E. A color-mutation in Graham's watersnake.** *Jour. Heredity* 21(5): 237-240. 2 fig. 1930.—A *Natrix grahamii,* taken in Iowa, of a hitherto undescribed color pattern, mated before her capture, bore a brood of ten young. Four of these were of her own peculiar (melanic) pattern, while the remaining six were marked with the color pattern characteristic of the species.—*J. E. Guthrie.*

15263. **HAWKINS, L. E., and L. J. COLE. "Porcupine" pigeons. Studies on inheritance in pigeons VIII.** *Jour. Heredity* 21(2): 50-60. 8 fig. 1930.—An abnormal feather structure of pigeons called "porcupine" is described. Barbs and barbules develop imperfectly and later become abraded, leaving in many cases little but the quill. This mutation was found independently in a white Fantail stock, and 13 years later in Homers. "Porcupine" is inherited as a simple mendelian recessive to normal. Some of the birds exhibited sub-normal nervous coordination but this condition is not uniformly characteristic of Porcupines.—*Authors' summary.*

15264. **HUTCHINSON, J. B. A possible explanation of the apparently irregular inheritance of polydactyly in poultry.** *Amer. Naturalist* 65(699): 376-379. 1931.—It is suggested that the excess of four-toed fowls frequently found in F_1, F_2 and backcross following the mating of polydactylous × normal fowls, as observed by Punnett and Pease in their collation of data on polydactyly, may be due to a deficiency in one or both parents of factors necessary for the dominance of polydactyly, rather than to the presence in "resistant" parents of factors inhibiting polydactyly as was suggested by Punnett and Pease.—*F. B. Hutt.*

15265. **HUTT, F. B. Bovine quadruplets including twins apparently monozygotic.** *Jour. Heredity* 21(8): 339-348. 3 fig. 1930.—A case of living bovine quadruplets is reported in which there were 1 bull, 1 freemartin and 2 heifers which were sterile. The bull produced a few calves. The 2 heifers exhibited reversed asymmetry in color patterns. The birth order and foetal membranes suggest that the 2 heifers were monozygotic twins.—*L. M. Dickerson.*

15266. **ILJIN, N. A., and V. N. ILJIN. Temperature effects on the color of the Siamese cat.** *Jour. Heredity* 21(7): 309-318. 7 fig. 1930.—The pattern is a true acromelanism. High external temperature favors the growth of white hair; low external temperature favors pigmentation. The inheritable factor producing the Siamese pattern is designated as C^s (= a_1 of Tjebbes). The differences between the mechanics of pattern development in these cats and also in Himalayan and Marder rabbits are purely quantitative. Physiological factors of heat production and loss also affect the pattern, the threshold of irritation being different for different body parts. Sex differences were found in the thresholds of irritation for back tissue. The change of color of Siamese kittens with age is due to external temperature.—*L. M. Dickerson.*

15267. **INGLEE, CHARLES T., HENRY D. DIXBY, HAROLD OBER, with introduction by J. E. DeMUND. Pure-bred dogs. The breeds and standards as recognized by the American kennel club.** 315p. 92 illus. G. Howard Watt: New York, 1929.—Description and standards of points are given for 89 breeds of dogs grouped as follows: I. Sporting dogs, 17 breeds, including Pointers, Retrievers, Setters, and Spaniels. II. Sporting dogs, 16 breeds including the hounds. III. Working dogs, 16 breeds including sheep dogs, sledge dogs, and other breeds especially adapted for similar work. IV. Terriers, 18 breeds. V. Toys, 14 breeds. Mostly small house dogs. VI. Non-sporting dogs, 8 breeds. Bulldogs and others mostly for pets. Photographs of characteristic specimens of each breed are given. Scale of points and disqualifications are given for most breeds. An illustrated glossary of technical terms relating to dogs is given.—*O. N. Eaton.*

15268. **JOLLOS, VICTOR. Studien zum Evolutionsproblem. 1. Über die experimentelle Hervorrufung und Steigerung von Mutationen bei Drosophila melanogaster.** *Biol. Zentralbl.* 50(9): 541-554. 1930.—Substantiation of Goldschmidt's induction of mutations in the Florida wild type culture of *D. melanogaster* by heat. Abnormalities were obtained from treatment of larvae for 10-12 (later 24) hours at 37° C. More mutations were obtained from a 15 hour treatment at 35-36° C. Three other cultures were compared with the Florida, namely spineless, eosin and sooty, which yielded eosin, sooty, black, aristaless, modification factor for eosin and abnormal abdomen mutations in spineless; black or sooty, modification factor for eosin and abnormal abdomen in eosin; and white, black and abnormal abdomen in coral. No mutations were found in the checks. The author suggests the possibility of directive mutation in successive generations, as indicated by change of red eye to dark eosin, light eosin and finally white, consecutively. Similar indications arose in definite classifications of ebony, sooty, weak-sooty and weaker-sooty body color.—*E. F. Grossman.*

15269. **JULL, MORLEY A., and JOSEPH P. QUINN. The inheritance of black and white in rose comb bantams.** *Jour. Heredity* 20(8): 359-363. 2 fig. 1929.—A pioneer cross in poultry genetics is described and illustrated.—*L. M. Dickerson.*

15270. **JULL, MORLEY A. The association of comb and crest characters in the domestic fowl.** *Jour. Heredity* 21(1): 21-28. 2 fig. 1930.—Five types of crosses involving both the Silkie and Leghorn types of rose comb were used. Apparently the gene for crest (*Cr*) acts as a modifier of comb form. The spiked comb of the Leghorn is shortened in the presence of a crest. Linkage between rose comb and crest seems doubtful in view of the results from these crosses.—*L. M. Dickerson.*

15271. **JULL, MORLEY A., and JOSEPH P. QUINN.**

The production of hen-feathered Brown Leghorns by breeding. *Jour. Heredity* 21(4): 177-186. 7 fig. 1930.—Hen-feathering is dominant to cock-feathering and controlled by a single factor with other modifying factors involved.—*L. M. Dickerson.*

15272. **JULL, MORLEY A., and JOSEPH QUINN. The inheritance of body weight in the domestic fowl.** *Jour. Heredity* 22(9): 283-294. 6 fig. 1931.—The F_2 populations from 3 matings involving reciprocal crosses were more variable in body weight than the F_1 generations. The data suggest dominance, partial or complete, of one or more factors for small body weight in Rose-comb Black Bantams over factors in Barred Plymouth Rocks. The results do not show that body weight is inherited in a simple mendelian manner. It is suggested that many factors may be involved and that for conclusive evidence large F_2 families should be reared from original crosses of highly inbred strains.—*L. M. Dickerson.*

15273. **KEELER, C. E. "Parted parietals" in mice.** *Jour. Heredity* 21(1): 19-20. 2 fig. 1930.—Many mice belonging to a rodless strain bore a well marked median-line separation between the frontal bones. A blood vessel usually emerged through this suture. The study of crosses provided a pedigree of 100 animals, from which it is evident that the character is inherited as a simple dominant. See *Ibid.* 21(2): 83 for correction of terminology.—*Author's abstract.*

15274. **KEELER, CLYDE E. A mutation to dominant spotting (W) in the house mouse.** *Jour. Heredity* 22 (9): 273-276. 2 fig. 1931.—In an unspotted strain of mice there appeared a single individual exhibiting a variegated form of spotting. This spotting depended for its expression upon a single dominant gene, shown by its manifestation in the coat when hybrid and its anemic lethal effect, when purebred, to be identical with the gene for dominant spotting (*W*) commonly present in "black-eyed-white" mice. These experiments indicate that the anemic lethal effect observed in (*WW*) animals is due to the (*W*) gene itself in homozygous form and not to a gene linked with it, because simultaneous mutation in the same two genes on two different occasions would be highly improbable.—*C. E. Keeler.*

15275. **LANDAUER, WALTER, and L. C. DUNN. The "frizzle" character of fowls.** *Jour. Heredity* 21(7): 290-305. 7 fig. 1930.—Experiments with English and American breeds show the difference between frizzled and non-frizzled plumage to be due to a single factor pair. Frizzling is dominant and has no lethal effect. Frizzle fowls bred for exhibition are generally heterozygous and show a higher degree of frizzling than outcrossed F_1 stock. Feathering is much delayed in Frizzles; exhibition and F_1 types differ microscopically in barbule abnormalities. Embryonic mortality and hatchability are normal except where either exhibition type or homozygous frizzle females are used. The basal metabolism is probably increased in Frizzles; in homozygous stock, sterility is high, susceptibility to adverse environmental conditions is increased and a high percentage of both sexes never come to maturity. Spermatogenesis appears to be normal wherever ♂♂ reach maturity.—*L. M. Dickerson.*

15276. **LITTLE, C. C. The effects of selection on eye and foot abnormalities occurring among the descendants of x-rayed mice.** *Amer. Naturalist* 65(699): 370-375. 1931.—By a series of experiments involving close inbreeding, it is shown that four sub-lines of a race of abnormal mice can be produced by selection. These are (1) a line overlapping normal in somatic appearance in almost 100%, (2) a line in which foot abnormalities have disappeared and eye abnormalities are retained in almost 100%, (3) and (4) lines in which eye and foot abnormalities are present, one showing a relative preponderance of abnormalities of the front feet, the other showing a preponderance of abnormalities of the hind feet.—*C. C. Little.*

15277. **LOEB, LEO, and HUGH C. McPHEE. Transplantation of tissues in hybrids of inbred families of guinea pigs and the individuality differential.** *Amer. Naturalist* 65(700): 385-405. 1931.—If, instead of transplanting tissues from one member of an inbred family of guinea pigs to another member of the same family, we transplant from a hybrid between two inbred families to another hybrid of the same kind, the results become more unfavorable, in accordance with the greater difference in average genetic constitution between host and donor to be expected under these conditions. In accordance with expectation the average of the results obtained in this series of transplantations, as a whole, is much superior to ordinary homoiotransplantations and corresponds approximately to the results of ordinary (brother to brother) syngenesiotransplantation. The result of transplantations between hybrids of the same inbred families, when donor and host are brothers or sisters, is much superior to ordinary syngenesiotransplantations in non-inbred families, but is somewhat less favorable than transplantations between non-hybrid brothers belonging to the same inbred family; these results are also in accordance with differences in the genetic constitution in such animals. In accordance with expectation, transplantation from hybrids between inbred families to non-related guinea pigs, either non-inbred or representing hybrids between two inbred families other than those used for the first hybridization, gives ordinary homoio-reactions. We may assume that the severity of the reaction against the transplant is determined by the number of strange gene-derivatives which are introduced with the transplant into the host and by the degree of their strangeness.—*L. Loeb.*

15278. **LUSH, JAY L. An impressive case of atavism in Jersey cattle.** *Jour. Heredity* 20(8): 381-383. 2 fig. 1929.—A cow is described whose very dark fawn color and few white markings were reproduced with unusual fidelity in a granddaughter, although the intermediate relative was a very light golden fawn with an unusually large amount of white markings. This case, while probably not new in principle, illustrates well the value of pedigree study in estimating the breeding value of animals which have not yet produced enough progeny for their breeding value to be proved.—*J. L. Lush.*

15279. **LUSH, JAY L. Duck-legged cattle on Texas ranches.** *Jour. Heredity* 21(2): 85-90. 2 fig. 1930.—Hereditary short-leggedness found in high grade Hereford cattle on several ranches is described. This dwarfness is similar to and may be identical with that found among the Dexter cattle of Ireland. Probably it is a simple Mendelian dominant kept through selection while many generations of grading up with normal Hereford bulls took place. Detailed breeding data and ratios were not available.—*J. L. Lush.*

15280. **LUSH, JAY L. Earlessness in Karakul sheep.** *Jour. Heredity* 21(3): 107-112. 6 fig. 1930.—Ear length is largely determined by one pair of genes not showing dominance. Extremely long and extremely short ears appear to be homozygous for this factor pair, while the intermediate or "short" ears are heterozygous. The results agree rather closely with those reported by Ritzman, Wriedt and Wassin.—*J. L. Lush.*

15281. **LUSH, JAY L. "Nervous" goats.** *Jour. Heredity* 21(6): 242-247. 3 fig. 1930.—A form of temporary but complete paralysis induced by surprise or fright is described as characteristic of an entire flock in western Texas. These goats had been entirely descended from animals brought from central Tennessee where the same sort of behavior has been reported previously. Inheritance is clearly indicated but nothing is known about the number of factors involved. Reference is made to similar nervous disorders in other mammals.—*J. L. Lush.*

15282. **McPHEE, HUGH C. Swine inbreeding at the United States Department of Agriculture—a progress report.** *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 131-134. 1930(1931).—Inbreeding by brother-sister mating has been carried on for 4 generations with Chester White and Tamworth, for 2 generations with Poland China swine. One of the important results is the segregation of inherited differences not apparent in the foundation stock. Among these are a recessive dilution

factor for the black of the Poland China which is apparently linked with spotting; swirls in Tamworths; belting factors in both the Chester White and Tamworth breeds; segregation of type. In general, mortality was greater and there was less vigor among the inbred stock than among the controls, but there were wide variations among different lines in this respect.—*H. C. McPhee.*

15283. **METZ, CHAS. W. Sex determination in Sciara.** *Amer. Naturalist* 63(689): 487-496. 1929.—Information, already published, on sex determination in *Sciara* (Diptera) is summarised. Cytological data are mainly from 5 spp.; genetic data mainly from 2, *S. coprophila* Lint. and *S. impatiens* Joh. The author's conclusions are: Sex determination (in the broad sense) involves two distinct series of phenomena: (a) determination of the sex of the progeny as a whole, (b) determination of the sex of the individual. Sex of the progeny is determined by the zygotic constitution of the ♀. Presumably, ♀-producing ♀♀ are *Aa*, ♂-producing ♀♀ *aa* and ♂♂ *aa*, *A* and *a* representing either chromosomes or genes. Sex of the individual is determined by a pair of sex chromosomes (XX ♀, XY ♂), *A* and *a* are probably "in" the X-chromosome or associated with it. "Unisexual" progenies are apparently the result of a selective elimination (inactivation) of sperms, not of zygotes. The "precocious" chromosome is probably not a sex chromosome. Although the exact rôle of the "sex limited" chromosomes is unknown, they are apparently not directly concerned in sex determination.—*F. G. Holdaway.*

15284. **METZ, C. W. Unisexual progenies and sex determination in Sciara.** *Quarterly Rev. Biol.* 6(3): 306-312. 2 fig. 1931.—Two types of reproduction are found in Sciara. (1) "Digenic," in which progenies are essentially bisexual; (2) "Monogenic," in which progenies are unisexual. Thirteen species have been studied, 6 extensively, 7 slightly. Of the former, 3 show digenic and 3 monogenic reproduction. In some species both types of reproduction are found. Sex ratios in digenic type are variable, not consistently 1:1. Genetic difference between the two not yet analysed. Sex determination involves two aspects: (1) sex of progeny as a whole and (2) sex of individual fly. Former is determined by the sex chromosomes of mother, ♂-producing ♀♀ being XX and ♀-producing ♀♀ being X'X. Genetic tests indicate that X and X' chromosomes are similar, but not identical in constitution. Not yet certain how sex of individual is determined. Sex-linked inheritance of Drosophila type is found. Male germ-line has 2 sex chromosomes, indicating XY constitution and a process of selective fertilization. But in both sexes certain chromosomes present in the germ-line are absent from somatic cells. Male soma lacks one more chromosome than female. Latter chromosome is presumably a sex chromosome (always the paternal one), which suggests that sex may be determined by constitution of soma and that ♂ germline may be XX, like the ♀. On this view, sex of individual would be determined at time of chromosome elimination from somatic nuclei during cleavage. Certain large chromosomes are apparently limited entirely to germ-line in both sexes; presumably their function is similarly limited.—*C. W. Metz.*

15285. **METZ, CHAS. W., and M. LOUISE SCHMUCK. Unisexual progenies and the sex chromosome mechanism in Sciara.** *Proc. Nation. Acad. Sci. U. S. A.* 15(12): 863-866. 1929.—Evidence from *Sciara coprophila* Lint. indicates that sex of the individual and sex of the progeny as a whole are "determined" by sex chromosomes: X, X', and Y. The chromosome combinations are: (1) ♂ XY; (2) ♂-producing ♀ XX (homozygous for the X found in the ♂); (3) ♀-producing ♀ XX'. X' differs from X in respect to the agent responsible for "sex of progeny." The X' descends directly from mother to daughter; X passes back and forth between the ♂ and both kinds of ♀♀.—*M. L. Schmuck.*

15286. **METZ, CHAS. W., and M. LOUISE SCHMUCK. Further studies on the chromosome mechanism responsible for unisexual progenies in Sciara. Tests of "exceptional" males.** *Proc. Nation. Acad. Sci. U. S. A.* 15(12): 867-870. 1929.—A preceding paper has shown that XX ♀♀ and X'X ♀♀ are not alike from the standpoint of sex determination. Additional experiments were performed to determine whether X'Y ♂♂ occurred and if so whether they exhibited the expected type of genetic behavior. A sex-linked mutant character carried in the X chromosome was used, in order to distinguish the ordinary XY type ♂ from the exceptional X'Y type. Experiments were performed to determine whether the X'Y type ♂ transmitted the X' to his daughters, making them all ♀-producers instead of 50% ♀-producers and 50% ♂-producers, as would be the case if an ordinary ♂ were used. This was found to be the case. In the next generation, using XY ♂♂, the progenies were all ♀ but 50% of the ♀♀ were female producers and 50% male producers as usual. The observations throw some light on the nature of the X' chromosome and its relation to X. Perhaps the most significant feature is the fact that X' may be substituted for X in both ♂♂ and ♀♀ without any conspicuous effect on external morphology, viability or fertility of the flies, although it is evident that in nature X'Y males and X'X' females are relatively uncommon.—*M. L. Schmuck.*

15287. **MULLER, H. J. Types of visible variations induced by x-rays in Drosophila.** *Jour. Genetics* 22(3): 299-334. 3 col. pl., 15 fig. 1930.—Changes produced in the germ plasm of *Drosophila* by x-rays fall roughly into three classes: point mutations, changes due to the altered "dosage" of genes, and "eversporting displacements." The induced point mutations are apparently the same as spontaneous mutations. Some x-ray mutations seem identical with previously known spontaneous ones. Others represent new allelomorphs of known loci. Still others affect loci not known to mutate spontaneously. Mutations first described in this paper are: carnation eye color, located in the X-chromosome near bobbed; snipped wings, a dominant allelomorph of vestigial; a dominant allelomorph of eyeless; prickly bristles, a 3rd chromosome dominant located 15 units from the right; and outstretched wings, a sex-linked recessive located a few units to the left of carnation. Altered dosage of genes is due to duplications or deficiencies for certain sections of chromosomes. Duplications and deficiencies arise either directly under the influence of x-rays, or indirectly, as a result of translocations or of crossing-over between chromosomes having induced genic rearrangements (inverted sections). Duplications for sections of the x-chromosome, if they involve long sections, produce more deleterious effects in ♂♂ than in ♀♀. The addition of a whole X-chromosome to the chromosomal complement of a normal ♂, however, results in its transformation into a ♀. The deleterious effect of duplications on ♂♂ must be due, therefore, to "intrachromosomal" rather than to "interchromosomal" genic disproportions. Known duplications for various sections of the X-chromosome do not affect the sexual characteristics, and the conclusion is drawn that sex is determined "by one or a few specific genes" lying in the portion of the X-chromosome not covered by the known duplications. The eversporting displacements manifest themselves as mutations whose characteristics are unstable. They vary both germinally and somatically. This variation results in some cases in splitting off of types more and less extreme than the original "mutations." The somatic variations are mosaics, most readily detected in eye color, but seen also in other parts of the body. Eversporting displacements in most cases are connected with various kinds of chromosomal aberrations, like translocations, inversions or deficiencies. Mutability in eversporting displacements affects frequently several neighboring loci. This fact suggests that "eversporting" is due to processes involving units larger than genes. No satisfactory explanation can be given at present to eversporting displacements but several suggestions are given.—*T. Dobzhansky.*

15288. **MULLER, H. J., and L. M. MOTT-SMITH. Evidence that natural radioactivity is inadequate to explain the frequency of "natural" mutations.** *Proc. Nation.*

Acad. Sci. 16(4): 277-285. 1930.—It has been shown by Hanson that the number of mutations caused by radiations is directly proportional to the ionization which these radiations produce. In attempting to discover whether natural radioactivity is sufficient to account for the "natural" rate of mutation in an animal like *Drosophila*, the authors have, therefore, attempted to measure the ratio of ionization from natural radioactivity to which these animals are exposed to the ionization to which they are exposed in irradiation experiments. This ratio is then compared with that of the number of "natural" mutations in this organism to the number produced by artificial irradiation. The intensity of the artificial rays was measured by a "dosimeter" reading in "*r*" units per min., and the number of ions produced during a specific treatment was calculated from this. This result was checked by calculating the intensity of radiation from a tungsten target Coolidge tube by the data of Terrill, and figuring the ionization from this. On the basis of evidence from various observers as to the amount of ionization produced by natural radioactivity in the vicinity of the flies, it was found to be in about the ratio of 1: 200,000 as compared with that to which the animals were subjected in artificial treatments. Yet the ratio of the number of "natural" mutations to those produced artificially in a given time is about 1: 150. Hence it is concluded that the amount of natural radioactivity from the outer environment is far too small to account for the "natural" mutation rate. The radioactivity of substances such as K or U which may occur in or near the organisms was then considered, and it was calculated that the concentrations in which these substances occur in such situations were likewise far too low to produce enough ionization to account for "natural" mutation. In this connection measurements were made of the radioactivity of the bodies of 5000 dead *Drosophila*, and also of that of their food. The possibility remains that the germ cells or the tissues in their immediate vicinity store radioactive substances in far greater concentrations than occur in the organism as a whole. The mature germ cells, however, certainly do not contain any such concentration, since they form so large a proportion of the whole animal that radiation from this source would have been detected in the above mentioned measurements. Also the investigators think it highly improbable that sufficient concentration exists in other tissues. Hence they conclude that some cause or causes other than natural radioactivity must be responsible for the vast majority of "natural" mutations in this animal.—*R. S. McEwen.*

15289. PETROFF, S. G. A comb inhibiting gene. An inhibitor of the development of the Pea and Walnut combs in domestic fowl. *Jour. Heredity* 20(11): 540-542. 1929.—A dominant gene is postulated which inhibits expression of the gene for pea comb (weque in Serebrovsky's nomenclature). Evidence is derived from crosses of pea and walnut with singles which carried the assumed inhibitor. These matings gave an excess of non-pea (aweque) forms.—*S. G. Petroff.*

15290. PICKARD, J. N. A brown-and-black rabbit, a possible case of somatic segregation. *Jour. Heredity* 20(10): 483-484. 1 fig. 1929.—A short-coated black rabbit with areas of both brown hair and long coat is described. The possible cause of this abnormal variation through segregation of the chromosomes is discussed.—*L. M. Dickerson.*

15291. PINCUS, GREGORY. On the temperature characteristics for frequency of breathing movements in inbred strains of mice and in their hybrid offspring. I. *Jour. Gen. Physiol.* 14(4): 421-443. 1931.—Young mice of a selected line of dilute brown exhibit over the range 15-25° C. (body temperature) a relation of frequency of breathing movements to temperature such that when fitted by the Arrhenius equation the data give a value for the constant μ of 24,000 ± calories or, less frequently, 28,000 ±. Young mice of an inbred albino strain show over the range 15-20° C. a value of $\mu = 34{,}000 \pm$, or, less frequently, 14,000 ±, with a critical temperature at about 20° C. and a value of $\mu = 14{,}000 \pm$ above 20° C. The F_1 hybrids of these two strains, and the backcross generations to either parent strain, exhibit only those four values of the temperature characteristic observed in the parent strains and none other. One may therefore speak of the inheritance of the value of the constant μ, but the inheritance shows in this instance no Mendelian behavior. Furthermore, the occurrence (or absence) of a critical temperature at 20° C. appears to be inherited. These experiments indicate the "biological reality" of the temperature characteristics.—*G. Pincus.*

15292. REED, SHELDON C., and GEORGE D. SNELL. Harelip, a new mutation in the house mouse. *Anat. Rec.* 51(1): 43-50. 2 fig. 1931.—This new mutation in mice, probably homologous with harelip in man, consists most commonly of a cleft in the roof of the mouth extending through the upper lip, upper jaw, and hard palate; variations in its expression are frequent. It is usually sublethal. With the exception of one mouse with only a slight harelip which lived to be 3 weeks old, all affected individuals have died within 24 hours after birth because of inability to nurse. Genetically, it behaves as a recessive subject to normal overlaps. A single-principle gene, h^p, and its allelomorph, H^p, are involved; when the gene H^p is present, mice cannot be harelip. When the mutant allelomorph h^p is present in homozygous condition, mice may or may not be harelip, dependent upon the presence or absence of certain modifiers. The existence of modifiers suppressing the development of harelip and cleft palate can be explained by the principle advanced by R. A. Fisher to account for the origin of dominance. All human pedigrees that have come to the writers' attention suggest that harelip in man behaves genetically in a manner closely similar to harelip in mice.—*Authors (courtesy Wistar Bibl. Serv.).*

15293. SEREBROVSKY, A. S., and N. P. DUBININ. X-ray experiments with Drosophila. *Jour. Heredity* 21(6): 259-265. 2 fig. 1930.—Using methods described by Muller, his results were duplicated. The study of lethal mutations showed that among the progeny of certain males mutation occurred very rarely or not at all; while at the same time in other such progenies it occurred very frequently, the unequal distribution being due to chance. Semi-lethals appeared several times. A new visible mutation ("shd"), distinguished by diminished eyes and bristles and splitting of bristles, appeared at the distance 0.2 to the right of white. Several dominant mutations in autosomes were observed; also yellow (1), white (2), miniature (3), furrowed (2), rudimentary (2), forked (8) and fused (1). Four new allelomorphs of scute; $scute^4$, $scute^5$, $scute^6$, and $scute^7$ were obtained and found to be definitely associated with particular types of transgenation.—*L. M. Dickerson.*

15294. SLYE, MAUD. The relation of heredity to cancer occurrence as shown in strain 621. Studies in the incidence and inheritability of spontaneous tumors in mice. *Amer. Jour. Cancer* 15(4): 2675-2726. 1931.—In an entire single strain of mice from a cancerous ♀ and a non-cancerous ♂, bred through 3 generations and consisting of 207 individuals (115 ♀, 92 ♂), 23 were cancerous. The 23 cancers were distributed through the generations thus: parent gen., 1; F_1 (9 individuals), 0; F_2 (36 individuals), 9; F_3 (160 individuals), 13. The types of mating in the 4 generations were: (1) non-cancer × cancer (parent generation and F_2); (2) heterozygous non-cancer × heterozygous non-cancer (F_1, F_2); (3) non-cancer × heterozygous non-cancer (F_2); (4) heterozygous non-cancer × cancer (F_2); (5) non-cancer × non-cancer (F_2); (6) cancer × cancer (F_2). Detailed figures of results show a close approximation to the expectation for cancer as a Mendelian recessive, and the classification of every mouse is confirmed by its progeny.

15295. TIMOFEEFF-RESSOVSKY, H. A. Induced gene-variations in Drosophila funebris. *Jour. Heredity* 21(4): 167-171. 2 fig. 1930.—Males were x-rayed and crossed with virgin non-treated ♀♀. The visible gene-variations, appearing in F_1, F_2 and F_3, and the lethals,

appearing in F_2, from these crossings were recorded. The % of lethals produced by x-rays in *D. funebris* is somewhat lower than in *D. melanogaster*, but at least a part of this difference is due to a much more exact method of detection of lethals in the latter. The visible genovariations produced are typical for *D. funebris*; they affect variable wing- and bristle characters overlapping the wild type.—*H. A. Timofeeff-Ressovsky.*

15296. **TIMOFEEFF-RESSOVSKY, N. W. "Does X-ray treatment produce a genetic after effect?"** *Jour. Heredity* 22(7): 221-223. 2 fig. 1931.—The numbers of lethals and visible x-chromosome genovariations of *Drosophila melanogaster*, arising directly under x-ray treatment, in previously treated (but directly after treatment, mutation-free), and in untreated, cultures were compared. Results from 682 cultures tested for the "direct effect of treatment," 756 cultures tested for the "aftereffect," and 793 untreated control matings show that there is no pronounced "after-effect" of x-ray treatment upon mutability.—*N. W. Timofeeff-Ressovsky.*

15297. **TIMOFEEFF-RESSOVSKY, N. W. Das Genovariieren in verschiedenen Richtungen bei Drosophila melanogaster unter dem Einfluss der Röntgenbestrahlung.** *Naturwiss* 18(20/21): 434-437. 2 fig. 1930.—Males of 6 different stocks carrying in various combinations 10 different sex-linked genes and 10 different genes of the III-chromosome were x-rayed (dosage about 4800r) and mated with ♀♀ from the same culture or, in case of some of the sex-linked genes, crossed with yy-attached-X ♀♀. There were found 12 reverse mutations or about 1 in 18,000 tested allelomorphs; none in about 120,000 controls. At the white eye locus there were found 8 different direct mutations and 5 different reverse mutations. In about 14,000 flies, there were found 9 $W \rightarrow w$ mutations, no $w \rightarrow W$ in 10,000 flies. In about 11,000 w-flies and 14,000 w^e and W-flies, there were found 1 $w \rightarrow w^e$, 1$w^e \rightarrow W$, 2$W \rightarrow w^e$ and 4 $w^e \rightarrow w$. There were also produced the following mutations in opposite directions $S_c \rightleftarrows s_c$, $F \leftrightarrows f$, and $P \leftrightarrows p$. The effect of the treatment upon the gene is not destructive but rather somewhat similar to an intramolecular reconstruction.—*A. H. Hersh.*

15298. **VAN ATTA, ELVENE W., and L. C. VAN ATTA. The spectrum analysis of eye color in Drosophila.** *Amer. Naturalist* 65(699): 382-384. 2 fig. 1931.—Eye color in *D. melanogaster* may be expressed quantitatively in terms of the spectral distribution of light reflected from the eye. Experimental difficulties are not serious and slight changes may be measured.

15299. **VELU, H., et L. BALOZET. Action de la greffe testiculaire sur la descendance.** *Bull. Acad. Vét. France* 4(3): 166-170. 1931.—Two lots of ewes, as nearly as possible equal in weight and age, were bred, one lot to normal Rambouillet-Caru rams and the other to rams which had been used as subjects in a series of testicular graft experiments previously reported, from which it was concluded that the only effect of the grafts was a temporary augmentation of the metabolism and a temporary increase of the body weight. Grafted rams sired 9 lambs and normal rams 11. There were no significant differences between the two groups of lambs.—*L. M. Dickerson.*

15300. **WARREN, D. C. Non-heritable downlessness in chickens.** *Jour. Heredity* 21(9): 408. 1930.—A type of downlessness in Leghorn chicks similar to that described by Serebrovsky (*Ibid.* 20(7): 331-332), though not necessarily identical, was not inherited.—*L. M. Dickerson.*

15301. **WARREN, T. R., and F. W. ATKEN. Inheritance of hernia in a family of Holstein-Freisian cattle.** *Jour. Heredity* 22(11): 345-352. 3 fig. 1931.—Data from 3 herds containing animals related to 1 sire are presented. Of 63 calves observed (42 ♂♂ and 21 ♀♀), 20 ♂♂ and 1 ♀ were herniated. All except 3 ♂♂ and 2 ♀♀ of the 63 calves were related to the sire in question through 1 son, except 1 ♂ calf which descended through a daughter. It is uncertain whether or not the herniated daughter was the result of heredity or other causes. There seems to be little doubt that umbilical hernia in cattle is inherited. Limited data indicate that hernia is inherited in a simple Mendelian fashion and may be due to a pair of autosomes carrying a sex-limited factor for hernia.—*Author's abstract.*

15302. **WLADIMIRSKY, A. P. Über die Vererbung experimentell erzeugter Färbung von Puppen der Kohlmotte Plutella maculipennis. (Vorläufige Mitteilung.)** *Biol. Zentralbl.* 48(12): 739-759. 8 fig. 1928.—Pupal melanic pigmentation depends upon environmental factors (illumination, rather than temp.), apparently followed by a definite after-effect upon the progeny. Selection of phenotypes through 12 successive generations showed shifting of the average, apparently hereditarily fixed; but the genotype involved in experimentally produced phenotypes has sometimes proved to be quite different from that expected. Such invisible genotypical differences were presumably involved in the selection experiments. Hence the assumption of the inheritance of environmental effects is premature so long as no exact analysis of the attendant process of genetic selection is at hand.—*J. H. Gerould (from author's summary).*

15303. **ZAWADOWSKY, M. M. Zebu-Yak hybrids.** *Jour. Heredity* 22(10): 296-313. 17 fig. 1931.—Data are reported on the inheritance of coat color, length of hair, fringe, length of tail hair, hump, horns, and muzzle shape. Body proportions apparently involve many factors. Male F_1 and backcross hybrids were all sterile, the seminal canals having a well developed interstitial tissue but only spermatogonia and cells of the Sertoli type. Only the earliest stages of spermatogenesis were found and no spermatozoa were produced. Secondary sexual characters and traits are well developed. Female F_1 and backcross animals are fecund when crossed with either Zebu or Yak. Heterosis is manifest in the F_1. —*L. M. Dickerson.*

ECOLOGY

W. C. ALLEE, *Editor,* Animal
GEO. D. FULLER, *Editor,* Plant
CHANCEY JUDAY, *Editor,* Plankton

(See also in this issue [GENERAL and ANIMAL ECOLOGY]: (General) 15117, 15119, 15120, 15132, 15162, 18110, 18111, 18113, 18114, 18117; (Methods) 15140, 16707, 17291, 17492; (Numbers) 15112; (Light) 15913; (Protozoa) 16579, 17476, 17478, 17482, 17485, 17490, 17495; (Coelenterata) 17519, 17521; (Platyhelminthes) 17522; (Insecta) 16591, 16810, 16827, 16848, 17729, 17770, 17773, 17799, 17875, 17880, 17881, 17882, 17893, 17901, 17904, 17905, 17909; (Mollusca) 17577, 17591, 17597, 17604; (Crustacea) 17618, 17622, 17623, 17630; (Pisces) 17927, 17937, 17938, 17939, 17940, 17941, 17945, 17949, 17954, 17955; (Reptilia and Amphibia) 17958, 17959, 17962; (Aves) 17988, 17995, 18023, 18028, 18029, 18059, 18063; (Mammalia) 16876, 18068, 18075, 18079, 18087, 18091, 18102. [PLANT ECOLOGY]: (Stomatal variation) 15475; (Drought resistance) 15479, 15489, 15492; (Seasonal sap flow) 15485; (Air roots) 15574; (Photoperiodicity) 15585, 15606, 15622; (Germination of orchid seed) 15593; (Seed germination) 15596, 15597; (Cold resistance) 15611, 15613; (Soil organic matter) 16744; (France, forests of) 17046; (Acclimatization) 17076; (Algae of Galapagos) 17082; (Algae of Pamir) 17084; (Sardinian islands, vegetation of) 17248; (Kenia, flora of) 17253, 17254; (Persia, vegetation of) 17255; (Caucasus, vegetation of) 17260; (Sweden, vegetation of) 17262; (Germany, sand hill vegetation of) 17265; (Japan, vegetation of) 17267; (Chagos Archipelago, vegetation of) 17268)

GENERAL

15304. **BREDER, C. M. Jr. On the organic equilibria in aquaria.** *Copeia* 1931 (2): 66. 1931.—Abstract.

15305. **CHODAT, FERNAND. Problèmes d'atmométrie.** *Rev. Bot. Appl. et Agric. Trop.* 11 (116/118): 1-24. 1931.—There is a general discussion of the technique of atmometry and of the results obtained in the alpine garden, Linnaea (1650 m.), in Switzerland. Data show the influence of different types of vegetation ("phyllospheres") on evaporation; wheat and oats gave evaporation rates of 13 and 32.2 respectively. A characteristic "screen function" is postulated for each type of vegetation, each of which gives a characteristic evaporation curve (atmogramme).—*G. D. Fuller.*

15306. **PORSCH, OTTO. Vogelblumenstudien II.** *Jahrb. Wiss. Bot.* 70 (2): 181-277. 1929.—A detailed compilation from the Flora Brasiliensis shows that 18.8% of the angiosperm genera and 35.7% of the families are represented in the bird visited flowers. Brazil, however, has a smaller number of sp. of humming birds in proportion to its area than any other country of America except Argentina. Colombia has the largest number of sp. and Trinidad the largest per area. A bibliography of 10p. is given.—*O. A. Stevens.*

15307. **VAINEIKIS, A. 1929 metų Fenologinių Vyksnių Apžvalga. [Phenological events of 1929.]** *Žemės Ūkio Akad. Metraščio [Lithuania]* 1929/1930: 308-344. 1931.—This pamphlet on climate and life in Lithuania comprises phenological observations during 1923-1929, using 1929 as the standard. The importance of phenology for agriculture is emphasized.—*A. Vaineikis.*

15308. **WATRY, ALVA, and R. W. LAMSON. Botanic survey of Needles, California. With special reference to the hay fever producing flora.** *Jour. Allergy* 2 (4): 272-281. Map. 3 fig. 1931.—Needles, with an elevation of 467 ft., is situated in the Mojave Valley on the south side of the Colorado River. The total rainfall, usually less than 5 in., is distributed throughout all seasons. The temp. is seldom lower than 40° F. During March-Nov. it may range from a minimum of 50° F. to a maximum of more than 100° F. The soil of this area is quite saline except along the river. There are 3 potential hay fever seasons. Any cases of early spring (Feb.) hay fever would undoubtedly be caused by pollen of *Populus fremontii* and *Salix nigra. Cynodon dactylon* and *Hilaria rigida* begin their pollination in March, thus making a potential late spring season. The real hay fever season is that due to *Atriplex.* Of these *A. lentiformis* and *A. polycarpa* are extremely important; *A. elegans* is of minor importance as are also *Acacia greggii, Prosopis juliflora, P. pubescens, Hymenoclea salsola, Amaranthus palmeri,* and *Franseria dumosa.*—*R. W. Lamson.*

15309. **WRIGHT, F. J. The new nature study.** 287p. 5 pl. 10 fig. Thornton Butterworth: London. 1929. Pr. 5s.—This is a treatise written primarily for the field use of the "rapidly growing army" of phenological observers of the Royal Meteorological Soc. of Great Britain and Ireland. It contains an account of the plants and animals to be observed and a presentation of the methods and results. It is largely concerned with bird migration and seasonal cycles of birds and insects, and with the blooming periods of plants. Floral isophenes and isokairs are plotted on the map of the British Isles. A short history of phenology in Britain and abroad is appended. —*C. A. Kofoid.*

PLANT

15310. **ALLISON, K. W. Mosses and their habitats in the Atiamuri District, New Zealand.** *Bryologist* 34 (3): 29-37. 1931.—The following habitats are described; tussock flats, bogs and swamps, streams and damp banks, heath and fern associations, and the bush.—*A. M. Taylor.*

15311. **AUER, VÄINÖ. Über die Einwanderung der Fichte in Finnland.** [Finnish abstract.] *Metsätieteellisen Tutkimuslaitoksen Julkaisuista* 13: 1-24. 6 fig. 1929.—Distribution and relation to water level of *Picea excelsa,* the latest forest tree to enter Finland, are discussed on the basis of pollen-analysis of peat deposits.—*W. N. Edwards.*

15312. **BENECKE, WILHELM. Kulturversuche mit Aster tripolium L.** *Zeitschr. Bot.* 23: 745-766. 1930.—This halophyte was grown in a mixture of sand and loam in 20 cm. pots, some being treated with fresh water, as checks, others with salt solutions. In the latter, the root system became enlarged so as to increase the absorbing area, and both the stomata and cuticle on the leaves changed in such a way as to restrict transpiration.—*E. T. Wherry.*

15313. **BEVERIDGE, GEORGE. The submerged forest and peat off Vallay, North Uist.** *Scottish Nat.* 1926 (157): 24-25. 1926.—Roots of Scots fir and birch, together with peat, were found in 2 considerable areas below high-water mark.

15314. **BRAUN-BLANQUET, JOSIAS. L'origine et le développement des flores dans le massif central de France avec aperçu sur les migrations des flores dans l'Europe sud-occidentale.** [Cont. and to be cont.] *Ann. Soc. Linnéenne Lyon* 74: 80-97. 1928 (1929).—The Mediterranean colonies in the massif are in part due to a postglacial immigration, successive, and more or less continual; also in part to a survival since the interglacial periods, and, above all, since the Tertiary.—*J. P. Young.*

15315. **BRAUN-BLANQUET, J., und H. WALTER. Zur Ökologie der Mediterranpflanzen. (Untersuchungen**

über den osmotischen Wert.) *Jahrb. Wiss. Bot.* 74(4/5): 697-748. 24 fig. 1931.—In southern France near Montpellier, the most important plant associations are: the *Quercus ilex* forest which is present only in fragments, the *Q. coccifer* scrub, and the *Brachypodium ramosum-Phlomis lychnitis* association. The water relations were examined during a yr., using the osmotic concentration as an indicator. The plants which were examined may be segregated into 7 ecological types according to their behavior and osmotic concentrations. Group I comprises the typical Mediterranean sclerophylls with xeromorphic leaves and very deep roots. Under favorable water conditions the osmotic concentration is relatively high, but shows no increase during the summer drought. The maximum values are reached in the cold winter. These plants are at their northern limit at Montpellier. Group II forms a transition to group III, which is distinguished by specially large fluctuations of the osmotic concentration. Under favorable water conditions the plants of group III show low cell sap concentrations which rise rapidly during the summer drought—a sign that the plants suffer from lack of water. In most of the spp. this is conditioned by poor root systems and is probably aggravated by a checking of transpiration which sets in only very late. Most of the sp. possess xeromorphic leaves, but are not typical sclerophylls. *Viburnum tinus* has good roots, but possesses mesomorphic leaves. Group IV comprises the coriaceous leaved shape plants. These possess xeromorphic leaves, have relatively good root systems, and grow under less extreme conditions in shady habitats; hence they do not suffer from lack of water even during the dry season. The osmotic concentrations are relatively low, showing an increase only in the winter. For the time being only *Euphorbia characias* is placed in Group V—a plant which grows frequently in very sunny habitats, but which possesses a very even water balance. Plants which possess aerial organs only in the spring or in the fall and winter, i.e., when the water conditions are favorable, are placed in Group VI. They have meso- or hygromorphic leaves and low osmotic concentrations. The succulents, of which only *Sedum altissimum* was examined, were put in Group VII. They have the lowest osmotic concentrations, are distinguished by their low transpiration intensity, and survive the drought by very economically utilizing the water which is stored in the leaves.—*Author's summary (transl. by T. M. Plitt).*

15316. BUJOREAN, GHEORGHE. Contribuţiuni la cunoaşterea succesiunii şi intovarăşirii plantelor. Lucrare di fitosiciologie experimentala. [Plant succession and plant associations. Experimental plant sociology.] [English summary.] *Bul. Grad. Bot. Muz. Bot. Univ. Cluj* 10(1/4): 1-183. 23 pl. 1930.

15317. CAIN, STANLEY A. Certain floristic affinities of the trees and shrubs of the Great Smoky Mountains and vicinity. *Butler Univ. Bot. Studies* 1(paper 9): 129-150. 2 maps. 1930.—The spp. in this southern Appalachian region are arranged according to their main geographical distributions (intraneous, extraneous, southern, northern, Canadian transcontinental, etc.), and these geographic classes are considered in respect to their location in the Great Smoky Mts. Intraneous spp., i.e., those which, in the Smoky Mts., are well within their ranges, constitute 69% of the 248 woody sp. considered. The remaining 31% are to be considered extraneous, i.e., they are northern or southern extensions or disjuncts into the Smoky Mts. and have their main distributions elsewhere. 22% of the flora is southern Appalachian, while 12% of that group is essentially endemic to the Unaka Range, of which the Great Smoky Mts. constitute the major portion. Of the extraneous spp., 26% are southern extensions of northern spp., whereas only 5% are southern; a situation which is clearly related to the mountainous conditions. In the mountains the northern elements appear in increasing importance with increasing altitude until the climax is reached in the spruce-fir zone, with 59% of its woody flora made up of northern spp.—*Author's summary.*

15318. CAIN, STANLEY A. An ecological study of the heath balds of the Great Smoky Mountains. *Butler Univ. Bot. Studies* 1(paper 13): 177-208. 2 pl., 1 fig. 1930.—A type of vegetation in the U. S. A., apparently peculiar to the Southern Appalachian Mts. is called "heath bald" because (a) the dominant shrub flora is largely composed of sp. belonging to the Ericaceae, and (b) trees are absent from well-developed examples of this association. The heath balds occur as restricted areas mainly on the windward sides of upper slopes and peaks at 4,000-6,500 ft., being more frequent in the subalpine zone. They have a fairly constant physiognomy throughout this range, despite a considerable change in sp. content, and can be described briefly as broad-sclerophyll scrub with a considerable content of evergreen sp. These facts are brought out by tables showing (a) relation of the flora of these island-like areas to the contiguous forests, (b) change in sp. content with change in altitude, (c) an analysis of the flora according to Raunkiaer's life-form classes, and (d) leaf-size classes. Initiation, maintenance and distribution of the heath balds is considered on a basis of climatic, edaphic, and catastrophic factors. It is concluded that they are post-climax, and consequently are derived from the contiguous forest associations as the result of the interaction of a number of various factors. With cool and humid climatic conditions and evergreen vegetation, there is a decided development of edaphic conditions (high acidity, peat formation, and podsolization), which progressively favor heath bald sp. In many places it is apparent that the elimination of the trees would permit the undershrubs to develop a closed cover, which they are apparently quite capable of maintaining, in most instances, against the encroachment of trees. The biological equipment of the ericads is such as to favor them in competition with other plants under these rather extreme edaphic and climatic conditions, yet their occupancy of these areas is due more to their tolerance of the conditions, since their vitality is greater under the protection of trees.—*Author's summary.*

15319. CAIN, STANLEY A. Ecological studies of the vegetation of the Great Smoky Mountains of North Carolina and Tennessee. I. Soil reaction and plant distribution. *Bot. Gaz.* 91(1): 22-41. 6 fig. 1931.—Soil samples (289), taken at the surface and 6 in. depth, from 11 forest types scattered over an altitudinal range of 1,000-6,600 ft., were tested for pH. The total range was pH 2.8-8.2. Each forest type showed considerable range in pH; contiguous communities overlapped in range but were separable on averages derived from 10 to 60 tests each. When arranged in altitudinal sequence, the forest types were progressively more acid with increasing altitude. This is also true for different stands of the same forest type. Triplicate tests on each soil sample averaged about 0.1 pH deviation from the mean; this demonstrates that 1 test per sample is sufficient, but more numerous samples are of greater value. Emphasis is placed on broad sclerophyll scrub communities, post climax to the spruce-fir, at high elevations because of their extreme acidity, surface soils averaging pH 3.2 and 3.6, while samples at 6 in. depths averaged 3.8 and 4.0 at 6,600 and 5,000 ft., respectively. This community, dominated by ericaceous sp. and accompanied by extensive upland peat formation is here described for the first time. The general problem of high soil acidity is discussed in relation to climatic, edaphic, and biotic factors, coordinated largely with high altitude.—*S. A. Cain.*

15320. CARDOT, J. Le peuplement bryologique des îles britanniques. [In: Contrib. à l'étude peuplement des îles britanniques; Mem. Soc. Biogéogr. 3.] P. 151-161. Paul Lechevalier: Paris, 1930.—The moss flora of the British Isles and that of western Europe evidently have a common origin; moreover, it is certain that, only

after the disappearance of the last glaciers at the end of the Quaternary, the Mediterranean element was introduced into the Isles, aided chiefly by winds. But this invasion was also aided by migratory birds, which may also explain the origin of several types of tropical mosses. These factors, however, do not explain the presence of mosses from western Europe and the Mediterranean on the Pacific Coast of N. America when they are absent from the Atlantic Coast. Perhaps one can consider these forms as relics of a temperate flora which, once widespread in all the northern hemisphere, disappeared in the eastern part of America as a result of a cooling of the local climate, perhaps owing to a change in the ocean currents.—*From author's conclusions (transl.)*.

15321. CHEVALIER, AUG. Le peuplement végétal des montagnes de l'Ouest africain. [In: *Peuplement des Hautes Montagnes.*] *Mém. Soc. Biogéogr.* [*Paris*] 2: 221-229. 1928.—Previous work on the vegetation of the West African mts. is briefly reviewed. Lists are presented of 20 European sp. which are found on these mts. or are represented there by closely related forms; of others that are common to the Cameroon Mts. and Abyssinia or So. Africa; of several endemic genera; and of certain forms of the East African mts. that are lacking in the West African mts. It is suggested that the invasion of the mountain sp. took place during the Glacial period. There may have been transportation of spores by the wind and of seed by birds to spots made bare by volcanic eruptions.

15322. CONZATTI, C. Las regiones botanico-geograficas del Estado de Oaxaca. *Proc. Internat. Congr. Plant Sci., Ithaca, N. Y. 1926* 1: 525-539. Map. 1929.—Oaxaca occupies approximately 1/22 of Mexico, between 15° 43′ and 18° 25′ N. latitude. Its 92,000 sq. km. of surface can be divided into 3 nearly equal regions,—low land with a tropical climate (0-1200 m.), valleys and plateaus with a temperate climate (1,200-2,000 m.), and the mountains (2,000-3,400 m.) with a cool climate. On the north or Gulf slope of the mountains, there is a moister climate and more luxuriant vegetation than on the southern, Pacific, side. On the Pacific side, oaks and conifers occur at 650-1,000 m., while on the Gulf side they are only found at 1,200-1,850 m. Over 150 families of plants are represented. Some are distributed through all the regions (*Polypodiaceae, Gramineae,* and *Leguminosae*); others have representatives in most of the zones (*Anacardiaceae, Malpighiaceae, Orchidaceae,* and *Borraginaceae*); a few are represented in only 1 zone (*Rizophoraceae, Fouquieraceae,* and *Valerianaceae*). Region *A,* sub-region (1) extends along the Pacific coast with an elevation under 100 m. Among the characteristic plants are: (a) on submerged rocks, various red and brown algae; (b) in the lagoons and bays, the mangrove, *Rhizophora mangle,* and *Acrostichum excelsum;* (c) on the beaches, such grasses as *Anthephora elegans, Bouteloua aristoides,* and *Jouvea straminea,* with *Okenia hypogaea;* (d) near the shore, *Hibiscus tiliaceaus;* and (e) on the low hills, various Anonaceae, 1 cactus, and *Espejoa mexicana.* Sub-region (2), on the coast and low valleys, is dry Oct.-May, humid June-Sept. This is the warm dry region, arid in general appearance, but very rich in number of sp. Large trees with fine wood, spiny leguminous shrubs, and cacti are numerous. In the south-western part of the region, cotton and coffee are grown; in the south-east, anil is one of the principal crops. Among the native plants are *Hymenaea coubaril, Toluifera pereirae, Haematoxylon brasiletto, Rourea glabra, Diospyros conzattii,* and *Attalea cohune.* The broad valleys on the gulf slope are warm and dry with an elevation of 550-1,200 m. The vegetation is quite distinct from that on the south side. Sugar cane and rice are cultivated. Cacti of several sp. are abundant, among them *Escoutria chiotilla, Myrtillocactus geometrizans,* and *Pachycereus columna. Elaphrium aloexylon, Ceiba aesculifolia,* and *Achras sapota* also occur here. Sub-region (3) is very moist with dense vegetation so hard to penetrate that it has been little explored. It is rich in palms and in valuable hard woods, with many sp. of ferns. Probably this sub-region should be divided into 2 or more sub-divisions. Where the forest has been cleared, cacao, sugar, coffee, tobacco, bananas, and rubber are cultivated. *Castilloa elastica, Sphagnum meridense, Alsophila schiedeana, Sobralia macrantha,* and *Dictyanthus tigrinus* are found. Region *B,* with a mean annual temp. of 19-20° in the lower parts, and 15-16° C. in the higher, is extensive and hard to characterize. The sub-region (1) occupies most of the center of the state at 16°-17° N. latitude. Sugar cane, wheat, and corn are cultivated. The numerous native plants belong to more than 70 families. The leguminous genus *Conzattia* and *Hicoria tetraptera* are fairly common. Sub-region (2) continues the former to 2,000 m. and extends 1° further N. Some parts are very moist, others are dry except in the rainy season. Sugar and coffee are cultivated in the eastern part, wheat in the western, and corn in all. The numerous plants represent 30 different families. *Rhus toxicodendron, Euphorbia fulva, Liquidambar styraciflua,* and numerous orchids occur. Region *C,* sub-region (1) begins at about 2,000 m. and extends up to about 3,000 m. Among hundreds of plants that might be mentioned are *Aporocactus conzatti, Drimys winteri, Quercus conzatti, Gaultheria acuminata, Abies religiosa, Pinus oocarpa,* and *Juniperus flaccida.* Sub-region (2) at 3,000-3,400 m. has a large number of sp., differing on the various mountains. Among the characteristic plants are *Callitriche verna, Lomaria procera, Cestrum nitidum, Gentiana adsurgens, Epidendrum elegans, Polypodium conzattii, Viola pringlei, Arctostaphylos conzattii, Abelia floribunda, Dahlia variabilis, Aplopappus stolonifera, Deyeuxia triflora,* and *Fourcroea longeva.* A few of the plants of the region have come from the north and some from the southeast, but a very large number are endemic.—*G. T. Hastings.*

15323. COSTELLO, DAVID F. Comparative study of river bluff succession on the Iowa and Nebraska sides of the Missouri River. *Bot. Gaz.* 91(3): 295-307. 7 fig. 1931.—East- and west-facing bluffs are compared with respect to number of plant individuals, variety of sp., and area occupied by the linden-ironwood climax. The effect of prevailing winds in producing treeless west-facing bluffs is discussed.—*D. F. Costello.*

15324. DAUBENMIRE, REXFORD F. The acid ranges of some spring-flowering herbs with reference to variations in flora color. *Butler Univ. Bot. Studies* 2(paper 2): 25-28. 1931.—Local variants in flower color were not correlated with differences in soil pH. These comprise: in *Phlox divaricata,* from pink to blue and white; in *P. bifida,* pink, lavender, blue and white; in *Tradescantia brevicaulis,* pink, purple, and blue; in *Dodecatheon meadia* pink and white; in *Delphinium tricorne,* blue, blue and white, and white; and in *Hepatica acutiloba* and *Lupinus perennis,* blue and white.

15325. DAUBENMIRE, REXFORD F. Factors favoring the persistence of a relic association of eastern hemlock in Indiana. *Butler Univ. Bot. Studies* 2(paper 3): 29-32. 1931.—A comparison of several vital ecological factors in a relic colony of hemlock and in its surrounding and more indigenous climax of beech-maple, indicates that whenever these factors differ (in soil moisture, soil temp., and soil acidity), the most favorable extreme is found in the hemlock environment. Air temp. and evaporation studies indicate no appreciable difference between the environments of the widespread climax and the relic edaphic climax. In view of the factors considered, a particular site, which by means of its topography is conducive to extreme drainage and consequently presents a dry soil for plant occupation, is the only adverse condition which the hemlock may make use of in getting established. Once established, a secondary group of conditions arises, through the presence of the hemlock itself, which tends to inhibit the seedlings of competing plants and thus to secure the permanency of this relic association.—*Author's summary.*

15326. DOAK, B. W. Tidal-flat and salt-marsh studies

in Nelson Haven. Part II. The soil chemistry of the Nelson mud-flat. *New Zealand Jour. Sci. & Tech.* 13 (1): 1-11. 2 pl. 1931.—Succession on the naturally "reclaimed" soils is as follows: a scattered *Salicornia* association, on areas covered with sea-water during spring tides; a *Juncus maritimus-Leptocarpus* sp. association, which entraps silt actively, and builds up a bank of soil; on poorly drained, entrapped, very fine silt, on the lee of the *Juncus* bank, *Salicornia* forms a dense association, in which algae appear; a high-marsh association, with *Salicornia* and *Lepturus*, which becomes invaded by *Selliera* sp., forming a *Salicornia-Selliera* association; a manuka association, comprising also stag's-horn, grasses, trefoil, etc., on the peat formed by the last; and finally, a climax association of grasses (*Poa pratensis*, etc.) and white clover. On areas artificially reclaimed (by dykes) the succession is: a pure *Salicornia* association; a *Salicornia*-plantain association; a grass-plantain association; and, finally, a rye grass-white clover association. Soil profiles and soil textures, soil water content, and chemical composition are given for each of these.

15327. ERDTMAN, G. Pollen-statistics: a new research method in paleo-ecology. *Science* 73 (1893): 399-401. 1 fig. 1931.—A suggested method for obtaining and studying fossil pollen grains in peats and sediments is presented. The relative frequency numbers of the pollen-sp. found in a sample taken at regular intervals in each peat-boring constitutes the pollen spectrum. On the basis of a series of pollen-spectra, a pollen-diagram is constructed, using the depth of the peat as ordinates and the pollen % as abscissae. This gives a visual representation of the composition of the pollen flora during the formation of the bog, with certain enumerated exceptions.—*S. S. Potbury.*

15328. FIRBAS, FRANZ. Über die Bedeutung des thermischen Verhaltens der Laubstreu für die Frühjahrsvegetation des sommergrünen Laubwaldes. [Thermic value of leaf-litter for early spring vegetation of deciduous forests.] *Beih. Bot. Centralbl. Abt. 2.* 44 (2): 179-198. 1927.

15329. FIRBAS, FRANZ, (unter Mitwirkung von HANS SIGMOND). Vegetationsstudien auf dem Donnersberge im Böhmischen Mittelgebirge. *Naturwiss. Zeitschr. Lotos* 76 (4/5): 113-172. 4 pl., 6 fig. 1928.—The Donnersberg (or Milleschauer) near Teplitz reaches the greatest altitude (835 m.) of the Bohemian Middle Mts. It consists of volcanic phonolite. Steppe vegetation is excluded by the precipitation (about 600 mm.). The forest is the climax and occupies all ground except rocks and stony hillsides. The climax associations on stony hillsides are divided into those characterized by: *Quercus sessiliflora-Deschampsia flexuosa; Tilia cordata-Poa nemoralis; T. cordata-Calamagrostis arundinacea; Q. sessiliflora-Melica uniflora;* and *Picea excelsa-C. arundinacea-Oxalis acetosella.* The leading forest-types are divided into oak slope forests, beach forests, and oak forests rich in *Melampyrum.* The high summits are distinguished by high limits of thermophilous plants and consortia, and by stations of some eurasiatic-subarctic and alpine sp. The temp. is like that of the Bohemian border mountains, but the precipitation increases much slower with altitude. The climate of the high situations is dry-cool. The soil is generally acid, pH 4.7-3.—*Max Onno.*

15330. GODWIN, H. The "sedge" and "litter" of Wicken Fen. *Jour. Ecol.* 17: 148-160. 4 fig. 1929.—This fen is one of the last relics of the fen-lands of eastern England. Its vegetation is of the "Flachmoor" type dominated by sedges, rushes, and grasses; *Sphagnum* and the Ericaceae are absent and the peat is alkaline. Among the many plant communities covering its surface in a complex mosaic, those designated "sedge" and "litter" are most conspicuous. The former consists of an almost pure stand of *Cladium mariscus,* an evergreen slow growing plant cut once in 4 yrs. for thatching material. "Litter" is a mixed stand of *Molina coerulea, Juncus obtusiflorus, Carex panicea,* and other plants cut about once in 2 yrs. and used as litter or in some cases for fodder. It is concluded that the present complex of fen vegetation is due to the presence of all stages of a primary hydrarch succession, of various stages of 2 deflected successions produced by heavy and light cuttings respectively, and, in addition, various true secondary succession stages following the removal of shrubs. The fen is therefore a relic of the old English fenland which displays the reaction of plant communities to different aspects of an ancient mode of agriculture.—*G. D. Fuller.*

15331. HENRY, LEROY K. Ecological observations upon the flora of Wading River, Long Island, New York. *Proc. Pennsylvania Acad. Sci.* 4 (6): 60-65. 1930.—Remarks on geology, physiography, and climate are followed by brief descriptions of 5 plant communities: pine barrens, ponds and bogs, deciduous forest, beach, and roadsides and abandoned fields. There is a tendency for the vegetation of the deciduous forest to invade the pine-barren region. Some sp. are merely migrants which disappear after the first season, while others complete ecesis, i.e., adjustment of a plant to a new home, by germinating, growing, and reproducing. The roadsides and abandoned fields may serve as a stepping stone in this migration. The vegetation of the ponds clearly indicates the advance of plant successions and the great work of plants in converting ponds into swamps and the latter into dry land. These pine-barrens seem to be an association of the deciduous forest held in check by edaphic factors, as shown by the ecesis of oaks and locusts after the former's destruction by fires.—*From author's summary.*

15332. HESMER, H. Pollenanalysen eines glazialen Torfes bei Marsberg i. Westf. Beitrag zur diluvialen Waldgeschichte. *Ber. Deutsch. Bot. Ges.* 47 (2): 110-118. 4 fig. 1929.—In this peat deposit are found pollens of *Pinus, Picea, Tilia, Carpinus, Betula, Alnus, Corylus,* in from 0 to 100%, depending on the depth below the surface. The lower beds, containing a fairly large % of wood pollen, were formed in the subarctic climate of the interglacial period. The upper part, which is richer in non-wood pollen, enjoyed a warmer and more genial climate.—*W. Berry.*

15333. HEUMANN, MARTIN, und HUBERT WINKLER. Charakterpflanzen aus Südwestafrika. *Vegetationsbilder* 21 (8): pl. 43-48. 1931.—Illustrations and brief descriptions are given of *Salicornia fruticosa, S. herbacea, Gomphocarpus fruticosus, Euphorbia monteiri, Stapelia* sp., *Harpagophytum procumbens, Drimiopsis* sp., *Tribulus terrestris, T. zeyheri,* and *Buphane disticha.*—*G. D. Fuller.*

15334. HUBER, BRUNO. Die Trockenanpassungen in der Wipfelregion der Bäume und ihre Bedeutung für das Xerophytenproblem. *Jour. Ecol.* 19: 283-291. 1931.—The foliage of trees at different heights was examined to determine whether there existed a decrease in transpiration corresponding to an increased water deficit. There was a greater decrease in transpiration with increased height in mesophytic (shade tolerant) trees than in more resistant trees. Thus the greatest decrease was found in *Sequoia gigantea, Fagus, Tilia,* and *Picea;* a less decrease in *Acer* and *Quercus;* and the least decrease in *Fraxinus, Larix,* and *Pinus.* Whereas *Sequoia* showed no structural differences between the lower and upper leaves, in *Quercus* there were distinct transitions to xeromorphic structures: smaller, thicker, and more lobed leaves, with a more wavy surface and irregularly oriented toward the light ("sun leaves"). In *Q. pedunculata* there was no decrease in transpiration with increased height, in fact usually an increase. The transpiration per unit area was greater than in the lower leaves, but the transpiration per unit wt. was the same. In 1 experiment both sun twigs and shade twigs were placed first in a moist chamber with the cut surfaces in water, and then in air. The shade twigs exhibited greatly increased transpiration whereas the sun leaves showed little change. It is concluded that under optimum conditions shade leaves (mesomorphs generally) transpire more than

sun leaves (xeromorphs). In another experiment both types of cut twigs were left to dry in the air. The shade leaves checked their transpiration decisively, especially during the 1st hr., but it took the sun leaves 2 days longer to become air dry. It is hence concluded that shade leaves check their transpiration more rapidly than sun leaves by closing their stomata early in case of water deficit; but the greater cuticular protection (and probably physiological and other factors) determine the better resistance of sun leaves to prolonged drought. The term "sun plant type" is suggested for plants which exhibit adaptations to drought similar to those of the sun leaves. This term implies the existence of other types of drought adaptations, e.g., the deviating succulent type.—*T. M. Plitt.*

15335. **HUMBERT, HENRI. Végétation des hautes montagnes de Madagascar.** [In: *Peuplement des Hautes Montagnes.*] *Mém. Soc. Biogéogr.* [*Paris*] 2: 195-220. 1928.—There are 3 principal massifs in Madagascar, with maximum altitudes of 2644-2880 m. Repeated fires have had a disastrous effect upon the vegetation, especially the endemic sp. A burnt forest is generally replaced first by a shrubby growth, dominated by Ericaceae and Compositae. When this growth is burned in turn, it is replaced by sclerophyllous Gramineae, the final type of vegetation thus being a prairie. The mountain flora of phanerogams is composed almost entirely of endemic sp. or even endemic genera. There are also numerous non-endemic genera, represented in Madagascar, however, only by endemic sp.; some of these genera occur on the mts. of East Africa, and some are more widely distributed in various parts of the world. The mountain flora of Madagascar has definite affinities not only with sp. of eastern and tropical Africa, but also with some of Australasia, India, So. America, and the Mediterranean countries. Many endemic sp. have a clearly relic character, and their affinities with foreign sp. indicate a foreign derivation. This double character of a large part of the mountain flora implies ancient land connections. The high % of endemism is evidence of the antiquity of the separation, which was certainly pre-Quaternary. Paleontological and zoogeographical data, supplemented by phytogeographical data, indicate that connections between Australasia, India, and Madagascar persisted till toward the end of the Cretaceous, and those between Africa and Brazil to the early Tertiary, while connections between Africa and Madagascar were reestablished in the Eocene, Oligocene, and Miocene. There is most evidence of connections between Africa and Madagascar. Especially during the Tertiary large earth movements created conditions favorable to the differentiation of endemic forms.—*From author's summary.*

15336. **ISSLER, E. Les associations végétales des Vosges Méridionales et de la plaine Rhénane avoisinante. II. Les Garides et les Landes.** *Bull. Soc. Hist. Nat. Colmar* 21: 47-158. 1929.—The "garides" are represented by 16 100 sq. m. quadrats in various parts of the Xero-Brometum, in which *Bromus erectus, Hippocrepis comosa, Teucrium chamaedrys, Stachys rectus,* and *Asperula cynanchica* are the most abundant sp., together with a *Festuca ovina* sub-association. There is an exceedingly rich bryophyte flora. The "landes" are represented by 2 principal associations: *Festuca rubra-Genistella sagittalis* and *Nardus-Vaccinium.* The former association is rich in *Agrostis vulgaris, Anthoxanthum odoratum, Deschampsia flexuosa, Thymus serpyllum ovatus, Campanula rotundifolia,* etc.; the latter in *Leontodon pyrenaicus, Galium saxatile, D. flexuosa, Agrostis vulgaris, Potentilla erecta,* etc. Successions culminating in *Quercus sessilis-Carpinus betulus* begin as nano-lichens and nano-bryophytes on rocks; as *Agropyrum repens* or *Poa pratensis angustifolia* in old fields; and as nano-bryophytes, nano-lichens, *Sedum, Teuerium,* etc., on sands and gravels. A succession passing into *Abies alba* begins as a *Festuca-Genista* association, passing through a *Pteridium* stage and then through either *Betula verrucosa* or *Corylus avellana.* A transition type of succession passes through *Juniperus* to fir. The "superieur" succession passes through *Sorbus* toward *Fagus.*—*Frank Thone.*

15337. **[IVANOV, L. A.] ИВАНОВ, Л. А. Солнечная радиация как экологический фактор. [Solar radiation as an ecological factor.]** Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot., Gen. & Plant Breed.*) 18(5): 345-368. 1928.—The caloric effect of the tropical sun is not greater than that of the sun in the North, and the maximum intensity of the solar rays varies but little on the earth's surface, due largely to differences in absolute humidity in the atmosphere. The clearer the sky, the weaker is the solar radiation. With an increase of water vapor, the radiation also increases, and particularly with the appearance of clouds (not rain). In such cases, the intensity may reach 0.3-0.6 gm. cal. per min. per sq. cm. which is about $\frac{1}{4}$-$\frac{1}{2}$ of the intensity of the noon sun. It is concluded that in addition to the intensity of solar radiation, the biologist must also know the activity of the solar rays illuminating the plant, and their physiological importance.—*L. J. Pessin.*

15338. **JONES, EDWARD N. The morphology and biology of Ceratophyllum demersum.** *Univ. Iowa Studies, Nat. Hist.* 13(3): 11-46. Map, 4 pl., 4 fig. 1931.—It is proposed to reduce the number of recognized sp. to 2: *C. demersum* and *C. submersum.* Long association with water has modified stem structure in several ways: caused lack of mechanical cells in either xylem or phloem; metamorphosed sieve-tubes occasionally into air spaces; and transformed some xylem vessels into parenchyma cells. Air space development is schizogenous. Form of plant was modified from sturdy to slender habit by transplanting from cool, clear, lake-water to warm, stagnant, pond water. Stamens dehisce while still attached to receptacle as well as after separation from it. The latter is the only method recognized previously. The plant depends more upon vegetative propagation, including fragmentation, than upon reproduction by seed. The usual winter vegetative dormancy was broken and mid-summer luxuriance induced during winter by means of artificial light and temp. supplied by electric-light bulbs immersed in an aquarium. The results of an extensive survey of the distribution of *Ceratophyllum* in West Okoboji Lake, Iowa, include: total area 434 acres, equivalent to 11% of surface area of lake; mean depth of zone supporting the plant, 4.01 m.; mean distance from shore 111.11 m., average width of zone, 56.23 m.; and average depth range from inner to outer margin, 1.74 m. The bays constitute a more favorable habitat than the open portions of the lake. The plant has its chief value as a biotic factor in its oxygenation of the water and as a shelter and indirect source of food for fish.—*E. N. Jones.*

15339. **KELLER, PAUL. Pollenanalytische Untersuchungen an einigen Mooren des St. Gallischen Rheintales. [Pollen analyses in connection with some moors of the St. Gall Rhine Valley region.]** *Jahrb. St. Gallischen Naturwiss. Ges.* 64: 82-95. 1928(1929).

15340. **KERNER, A. Das Pflanzenleben der Donauländer.** 2nd ed. [reimpression], with additions and 24 plates: edited by **F. VIERHAPPER.** xvi + 452p. Universitäts-Verlag Wagner: Innsbruck, 1929.—This edition is a reimpression of the original which appeared in 1863, in which the comments of the editor are presented as an appendix on pp. 349-452. These notes are referred to the proper pages of the original text. They comprise summaries of the more general literature on the subject of plant sociology as well as on the special problems of the territory concerned. Kerner's "formations" are considered to be equivalent to the present concept of "association." The plant names used are brought up to date in a separate list according to the nomenclature of the regional manuals. The bibliography lists about 150 titles. The 24 plates are either Kerner's own drawings (selected from his other publications) or photographs of characteristic formations or landscapes.—*T. Just.*

15341. **KLIKA, JAROMÍR. Contribution à l'étude géobotanique de Velkâ Hora près de Karlstein.** *Preslia Vest-*

nik Československé Bot. Spolec. (Rept. Czechoslovak. Bot. Soc. Prague) 1928(6): 31-34. 1928.—Results of soil analyses of Velká Hora near Karlstein (near Prague) show that the soils are moderately acid and vary considerably, but are not important in determining plant distribution. Climatic factors seem of greatest importance in distribution of plants of steppes and semi-steppes.—*J. Klika.*

15342. **KOBENDZA, R. Bielany pod względem botanicznym.** [The flora of Bielany.] [French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 22: 299-342. 9 fig. 1929.—This forest region near Warsaw descends on one side from a high diluvial terrace of the Wisla River to a 2nd terrace of sandy composition, and then down to the 1st terrace which is inundated at flood periods. In the forest, 6 associations can be distinguished: Alnetum, Alneto-Quercetum, Carpineto-Quercetum, Querceto-Pinetum, Quercetum, and Pinetum. The first 2 are the best preserved; the others contain few characteristic sp. owing to the presence of man. The Wisla influences the flora very much; numerous sp. grow along its banks during the floods and some are almost limited to the lowest terrace, such as *Aristolochia clematitis, Petasites spurius, Senecio fluviatilis, Solidago canadensis,* etc. Though the flora of Bielany is constantly ravaged, some of the rarest sp. around Warsaw are well preserved here in inaccessible places, e.g., *Luzula multiflora, Hypericum montanum,* and *Hieracium pratense.* Formerly Bielany was a drill ground for Russian soldiers and now many visitors go there for amusement; these facts have contributed to the introduction of sp. unknown elsewhere in these parts, e.g., *Poa bulbosa* v. *vivipara, Dracocephalum thymiflora,* and *Salvia verticillata.*—*Author's summary (transl.).*

15343. **KOZO-POLJANSKI, B. M. Xerotherme Relikten am Flusse Tichaja Ssosna (Südrussland).** *Vegetationsbilder* 22(2): 1-4. pl. 7-12. 1931.—This includes steppe vegetation on limestone slopes and limestone hilltops with *Matthiola fragrans* and *Thymus cretaceus,* together with more detailed photographs of *Hyssopus cretaceus, Asperula cretacea, Thymus cretaceus, Scrophularia cretacea, Festuca cretacea,* and *Artemisia hololeuca.* —*G. D. Fuller.*

15344. **[KRASOVSKAĬA, I. V.] КРАСОВСКАЯ, И. В. Обзор работ по морфологии и физиологии корней.** [Review of work on morphology and physiology of roots.] Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot. Gen. & Plant-Breed.*) 18(5): 3-121. 1928.—The structure of roots and their physiological functions are fully discussed, and the literature on roots in general is critically reviewed.—*L. J. Pessin.*

15345. **KRAUSE, K. Gehölze im inneren Kleinasien.** *Naturwiss.* 16(5): 73-75. 1928.—The interior of Asia Minor consists essentially of a plateau bounded by mountains on the north, south, and east, descending gradually to the seacoast on the west. The annual rainfall is generally less than 10 in. and falls mostly in the spring. The vegetation of the plateau plain is of a steppe character, woody growth being limited mainly to stream banks. The commonest tree is the Lombardy poplar (*Populus italica*). Other trees are *Ulmus campestris, Salix alba,* and *S. babylonica.* These associate along the water courses with sp. of *Tamarix, Eleagnus hortensis, Platanus orientalis* (which reaches a large size), *Fraxinus oxycarpa, Pirus eleagnifolia,* and several sp. of *Quercus* and *Crataegus.* The steppe formation extends up the mountains to 1400-1600 m., beyond which a broken forest zone, the remnant of a much more extensive formation, extends upward to 1900-2000 m. In this zone, conifers give character to the vegetation, *Pinus laricio* and various *Juniperus* spp. being common. There are also several oaks and maples. Among the shrubs appear sp. of *Daphne, Rhamnus,* and *Cistus.* Only 2 introduced trees appear to be adapted to the climate of this region, *Ailanthus glandulosa* and *Robinia pseudacacia.*—*F. S. Baker.*

15346. **KRYLOV, P. N. Die Abgrenzung von Steppen- und Waldsteppenzonen auf floristisch-statistischer Grundlage.** [In: *Handbuch der biologischen Arbeitsmethoden.* Abt. XI. Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze. Teil 6, Heft 1. Lief. 335.] 129-136. 1930.—By means of the statistical quadrant method the steppes of western Siberia are analyzed. The ratio of the number of sp. each plant formation to the sum total of the sp. characteristic of the area is used as an index. The vegetation may be divided on the basis of these ratios mainly into 2 phytogeographic areas: the forest and the steppe. A 3rd area is the desert steppe. The transition between these and also between the subdivisions is a very gradual one. The forest is subdivided into the peat and conifer zone and the peat and birch zone. The steppe is divided into the forest steppe zone and the open steppe zone. The former is still further differentiated into (a) the closed grass subzone, (b) the herb grass subzone, and (c) the *Stipa-Festuca* grass subzone. —*T. M. Plitt.*

15347 **KULCZYNSKI, ST. Die Pflanzenassoziationen der Pieninen.** *Bull. Internat. Acad. Polonaise Sci. et Lett. Cl. Sci. Mat. et Nat. Sér. B. Sci. Nat.* 1927 (Suppl. 2): 57-203. 1 col. map. 4 pl., 9 fig. 1927(1928).

15348. **[KUL'TIASOV, M. V.] КУЛЬТИАСОВ, М. В. Ботанический сад Средне-Азиатского Госуд. Университета.** [Botanic garden of the Univ. of Central Asia.] Дневник Всесоюзного Съезда Ботаников [Ленинград] [*Dnevnik Vsesoĭuznogo Sĭezda Botanikov, Leningrad*] 1928: 284-285. 1928.—Experiments with local and foreign plants were conducted to determine the ideal conditions for local plants and the adaptability of foreign plants in Turkestan.—*G. A. Lebedeff.*

15349. **KURZ, HERMAN. The relation of pH to plant distribution in nature.** *Amer. Naturalist* 64(693): 314-341. 1930.—A review.

15350. **[LARIN, I. V.] ЛАРИН, И. В. Растительные зоны средней части Уральской губернии.** [Vegetation zones of central Uralsk.] [German summary.] Журнал Русского Ботанического Общества при Академии Наук СССР. (*Jour. Soc. Bot. Russie, Acad. Sci. URSS.*) 12(1/2): 5-14. 1927.

15351. **LEEMANN, A. C. Vegetationsbilder aus den Magaliesbergen in der Hochebene von Transvaal.** *Vegetationsbilder* 22(3): 1-3. pl. 13-18. 1931.—The illustrations from this semi-arid upland of So. Africa include photographs of *Ficus soldanella, Strychnos pungens, Buphane disticha, Aloe davyana, Combretum zeyheri,* and *Ficus pretoriae.*—*G. D. Fuller.*

15352. **LIBBERT, WILHELM. Die Vegetation des Fallsteingebietes.** *Beih. Jahresber. Naturhist. Ges. Hannover* 2. 1-66. 1930.—The vegetation of an area of 150 sq. km. in central Germany is described in detail under 11 "Verbands" or "Associationsverbands," with the oak-hornbeam regarded as the climax.—*O. A. Stevens.*

15353. **LINDQUIST, BERTIL. Den skandinaviska bokskogens biologi.** [Ecology of Scandinavian beech forests.] [With English summary.] *Skogsvårdsför. Tidskr.* 29(3): 179-532. Map. 74 fig. 1931.—Mapping of the areas of *Fagus silvatica* forest was done by sketching from an airplane on base maps during the period of bud-opening, May 5-20, when beech could be distinguished from oak and other trees even at a great height. Intensive field studies on the ground showed that on very acid and moderately acid mull soils having intensive nitrification, meadow plants invaded the forest; while on less strongly acid, or basic mulls abundant ground flora was present even with 1-2% light intensity. Under the prevalent beech thinning practice, the increased light has apparently caused an increase of the abundance of *Oxalis acetosella.* Where nitrification was very active, *Oxalis* failed to survive or reproduce at intensities below ½% of full light. The abundance of *Anemone nemorosa* and *Geranium robertianum* was also dependent on light intensity. Where acidity was high, as in young stands, these plants were absent, even with adequate light. Where thinnings had been neglected and on acid mulls, a degeneration of ground vegetation occurred. The influence of nitrification in causing

conditions favorable for an increase of meadow herbs at the expense of heath vegetation was intimately connected with the prevalence of mycorhiza. Thus *Deschampsia flexuosa* disappeared when nitrification set in, owing to its depressing influence on the development of mycorhiza on this plant. Conversely, *Dryopteris linnaeana* colonized beech forests at the stage where nitrification had begun. Thus communities can be classified with respect to nitrification as (1) synusiae indifferent to nitrates, composed chiefly of grasses and sedges; (2) facultative nitratophilous synusiae, which may be independent of nitrification under conditions favorable to their reproduction; and (3) obligate nitratophilous synusiae, occurring on soils with pH 4.5-5.5, with strong nitrification. These synusiae are composed of *Geranium robertianum, Impatiens noli tangere, Stellaria glochidosperma,* and many others. Acidity as such seems to be of less importance than mycorhiza in limiting the distribution of heath communities. In the herbaceous meadow type of beech vegetation it is possible to distinguish groups differing in relation to acidity: (1) synusiae indifferent to acidity, *Acer, Fraxinus, Rubus, Deschampsia, Anemone, Oxalis,* etc. socions; (2) acidophilous synusiae, exemplified by *Milium* and *Geranium* socions; and (3) subneutrophilous synusiae, including a rather large number of sp. really dependent on a slightly acid or alkaline reaction, rather than on the nature of the soil or nitrification. However, many of these may thrive under compensating factors of good light or nutrition, on more acid media. Beech seedlings were more abundant under less acid conditions, their abundance being in direct proportion to increasing pH value. No correlation seems to exist in their case with nitrification or mull conditions. Contrary to the findings of Bornebusch, no correlation could be found between site qualities for beech and the ground flora. Modern silvicultural practice has influenced tree growth in one way and the distribution of floral types in another. The northern limit of beech is controlled by the possibility of successful reproduction. Flowering occurs every other year in response to inner periodicity, but influenced some by high maximum air temp. of the preceding June-July. The intensity of heat seems to be more important than its duration. Freezing of flowers in spring is the limiting factor to the northward spread of beech and has probably made the distribution of beech sporadic. Pollen analyses have given a good picture of its range in Boreal and Atlantic times. The limited range of beech in Western Europe does not seem to have been due to drought; in the coastal districts spring frosts were the chief cause. Sub-boreal climates were unfavorable, but changed to become very favorable about 1000 B. C. In sub-Atlantic time beech was dominant in southwestern Sweden. Man has exerted a profound influence on the distribution by cutting and burning; the latter resulted in the encroachment of *Calluna* heaths on the beech areas. This devastation reached its height toward the end of the 18th century, and was corrected by ordinances enacted after Danish examples. Present tendencies are toward a decrease in the beech area in favor of planted spruce. The Scandinavian beech forest regions are (1) the southern beech area, inclusive of Denmark (except the island of Bornholm) and the provinces of Skåne and northern Halland in Sweden, where beech is the dominant forest tree, due in part to the inability of oak seedlings to survive under beech cover; (2) the beech-spruce region, including the Norwegian beech forests, and those in south-central Sweden; and (3) the outpost beech region, consisting of scattered small stands or individual trees, possibly relics of larger stands of sub-Atlantic time.—*H. I. Baldwin.*

15354. **LITARDIÈRE, R. de, et G. MALCUIT. Contributions à l'étude phytosociologique du littoral du Boullonais: l'estuaire de la Slack.** *Arch. Bot. Bull. Mens.* 1(7): 121-137. 2 pl. 1927.—The estuary of this small stream emptying into the English Channel a short distance south of Calais is characterized by 2 littoral zones, the "slikke" between tide marks and the "schorre" submerged by spring tides only. The former has a muddy surface over sand and is covered with rather open associations of annual *Salicornia* spp., notably *S. europea* and its varieties, and of *Spartina glabra* var. *pilosa.* The "schorre" is a salt meadow dominated by an association of *Atropis maritima* together with facies of *Atriplex porticlacoides* and stands of *Festuca rubra* and *Agropyrum repens* var. *littorale.* Association tables are given for these communities and the succession is traced to the *Ammophila arenaria* association of the adjacent dunes and to an adjacent association of *Phragmites communis.* The mingling of halophytes and non-halophytes is carefully examined, the seasonal aspects are described, and the presence of *Spartina townsendi* is noted.—*G. D. Fuller.*

15355. **MAIRE, R., et L. EMBERGER. Vue d'ensemble de nos connaissances phytogéographiques du Maroc: Les étages climatiques de végétation. [Survey of the phytogeography of Morocco: Climatic stages of vegetation.]** *Compt. Rend. Acad. Sci.* [*Paris*] 185(26): 1561-1563. 1 fig. 1927.

15356. **MATTICK, FRITZ. Das Moritzburger Teichgebiet und seine Pflanzenwelt.** *Rep. Spec. Nov. Reg. Veg. Beihefte* 56: 125-166. 7 pl. 1929.—In this region just north of Dresden, the numerous ponds may have been artificially developed, though the oldest map (1570) shows them much the same but more extensive. The forest was formerly mostly oak, but pine and fir now predominate. The plant associations are described and the more common plants listed for 35 of the larger ponds (0.3-87 ha.). Special studies on 5 sp. are presented. The land forms of *Acorus calamus* and *Iris pseudacorus* had more starch in their rhizomes than did the shallow water forms. Of *Hydrocotyle vulgaris,* the shade (f. *major* Schur.) and light (f. *microphylla* Lange) forms are described. The land form (f. *terreste* Glück) of *Nuphar luteum* produced flowers (contrary to Glück), but no stomata were found on the under side of the leaves. A land form of *Phragmites communis* is described.—*O. A. Stevens.*

15357. **MIKYŠKA, RUDOLF. Skalka v horách Štiavnických. (Studie geobotanická.)** [French résumé.] *Věstník Královské České Spolecnosti Nauk* [*Mém. Soc. Roy. Sci. Bohéme Cl. Sci.*] 1928 (paper 6): 1-23. Map. 1929.—There is an analysis of the forest types in natural beech forest and a discussion of their extension into the massive andesites of Skalka, 883m. The types which appear in the region are those characterized by (1) Fagetum nudum; (2) *Carex pilosa,* with 2 subtypes (*Luzula nemorosa* and *Dryopteris linneana*); (3) *Poa nemoralis;* (4) *Asperula odorata;* and (5) *Mercurialis perennis.* An analysis is appended of Calamagrostidetum arundinaceae, of meadow groves, of alder scrub, and of forest meadows. —*R. Mikyška.*

15358. **MORTON, FRIEDRICK. Guatemala.** *Vegetationsbilder* 22(1): 1-16. pl. 1-6. 1931.—The introduction includes data on the geographical, geological, and climatic conditions of the country, and a general description of the vegetation. The mean temp. on the lowland is 23-25° C. with extremes of 16° and 30°. Sugar cane has an altitudinal limit of 1600-1900 m. Rainfall ranges up to 350-375 cm. with Dec.-March relatively dry. The vegetation types include Mangrove coastal swamps and tropical and sub-tropical rain forests. In the rain forest, ferns play a very conspicuous rôle. The cultivated vegetation includes coffee, bananas, sugar cane, *Theobroma bicolor, Persea gratissima, Capsicum annuum,* and tobacco. Among the sp. illustrated are *Tillandsia filifolia, T. bulbosa, Aristolochia grandiflora, Acacia spadicigera, Marathrum schiedcanum, Stipa ichu, Canavalia obtusifolia, Jonvea pilosa, Cyathea schanschin, Plenrothallis longissima, Polypodium bernonllii, Scheelea preussii,* and *Ceiba pentandra.*—*G. D. Fuller.*

15359. **NAYLOR, GLADYS L. Note on the distribution of Lichina confinis and L. pygmaea in the Plymouth district.** *Jour. Marine Biol. Assoc. Unit. Kingdom* 16(3): 909-918. 1 map. 1930.—Both lichen spp. occur frequently throughout the area. *L. confinis* is the more generally distributed, being present, though sometimes scantily,

on most of the coast with the exception of Tinside. On the exposed shores outside the Sound itself it forms a zone 2-3 ft. wide, being especially common between Penlee Point and Rame Head. *L. pygmaea*, though very abundant on the open coast, is scanty or entirely absent along the sheltered parts of the Sound (Cawsand to Penlee, Cremyll to Redding Point, Jennycliff Bay, etc.). The distribution emphasizes the importance to both of the degree of exposure to wave action. The importance to *L. confinis* lies in the height to which the spray is flung up the rocks, since occasional wetting by salt water is essential to this sp. In the case of *L. pygmaea*, mechanical stimulus, aeration of water, and probably the removal of the competition factor—the larger fucoids being unable to maintain a footing on steep exposed rock surfaces—all play a part. The effect of light appears to be secondary, and is probably important in connection with the desiccation of the thallus between periods of immersion.—*Author's summary.*

15360. **NĚMEJC, F. Paleobotanický výzkum některých quarterních usazenin v širším okolí Ružomberku na Slovensku.** *Rozpravy České Akad. Věd a Umění, Tř. 2.* 39(44): 1-24. 3 maps. 9 fig. 1929(1930). Also as: **Paleobotanical researches in some Quaternary deposits in the surroundings of Ružomberok, Slovakia.** *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Prés. Cl. Sci. Math., Nat. et Méd.* 30: 216-241. 3 maps. 9 fig. 1929.—The study of plant remains in sinters left by thermal springs in Slovakia has led to the conclusion that in interglacial periods of the Pleistocene the forests were made up of birch, fir, and willows, together with some larch in some places. *Larix* has been retreating slowly since the Pleistocene, probably due to the warmer climate that favors other sp. rather than it. The Holocene travertines contain beech and spruce. Spruce had its time of greatest expansion before beech. In one peat deposit fir was found in the Holocene.—*B. McAvoy.*

15361. **NOVÁK, FRANT. A. Ekologické úvahy o hadcových rasách a hadcové vegetaci. [Critical notes on the serpentine types and the vegetation of the serpentine soils.]** *Věda Přírodní* 9: 18-21, 46-51, 81-88, 176-192, 239-242, 268-287, 310-314. 16 fig. 1928. See also *Preslia* 6: 42-71. 1928.—The author has established, by analyses of the vegetation and by chemical analysis of the serpentine soils, that there exist some serpentine types and some serpentinomorphs (plants linked with a serpentine substratum). These types and forms are determined largely by the chemical constitution of the soil, i.e., by Mg: Ca greater than 1, by absence of chlorides, a low concentration of sulphates, and a high content of Fe. The lithophytes growing upon the serpentines, because they have no contact with the serpentine soil but grow upon the exposed rock surface, are neither serpentinomorphs nor marked serpentine types (the serpentinomorphs described with the thallophytes and the bryophytes are for the most part xeromorphs). The vegetation and the flora of the serpentine substratum are determined also by historical, developmental, climatic, and atmospheric factors. A list of serpentine plants is included.—*F. A. Novák (transl. by P. D. Strausbaugh).*

15362. **RAMENSKIJ, L. G. Die Projektionsaufnahme und Beschreibung der Pflanzendecke.** [In: *Handbuch der biologischen Arbeitsmethoden.* Abt. XI. **Chemische, physikalische und physikalisch-chemische Methoden zur Untersuchung des Bodens und der Pflanze.** Teil 6. Heft. 1. Lief. 335.] 137-190. 7 fig. Urban und Schwarzenberg: Berlin, 1930.—Geobotanical investigations of vegetation in relation to habitat conditions are greatly facilitated by means of the projection method. The horizontal projection of the aerial living portions of plants, expressed in % of surface covered, gives a concept of the utilization by the group components of the lighted area and thereby characterizes their ability to compete under the conditions of their special vegetation layer. This is the only objective method which permits sufficiently accurate and speedy estimation of abundance. Thus the determination of the abundance over an area of 100 sq. m. on a meadow with 40-50 plant sp. with an accuracy of about 0.5% takes 40-50 min. The average projection abundance is determined by means of a grill and a scale. The former consists of a dark broad frame whose open area of 2×5 cm. is divided into cm. squares by means of white strings. Marks on the frame 0.2 cm. apart tend to greater accuracy. A mirror attached to this grill at an angle of 45° is intended for looking upward or for dense coarse tall stands. The scale of drawings (illustrated) consists of variously shaped leaves shown in varied abundance against a background. The observer holds the grill at a certain height, looks into it perpendicularly, and estimates the abundance in one small square by comparison with the scale. By making a number of such observations, an average figure is reached. If moss or lichens are being determined, the grill is held lower; if coarse broad-leaved plants, then the grill is held higher in order to cover relatively larger areas. For the successful application of this method it is necessary (1) to recognize the plant sp. by their vegetative characteristics, (2) to train the eye systematically for measuring the vegetation types under consideration, and (3) to use the various instruments, among which is described a fork with vertical prongs to obtain actual horizontal and vertical distances. Many practical suggestions and examples of the method for use under different conditions and for various purposes are given, with hints on the interpretation of data.—*T. M. Plitt.*

15363. **RAPAICS, RAYMUND, und LADISLAUS VAJDA. Das mittelungarische Bergland.** *Vegetationsbilder* 22(4): pl. 19-24. Gustav Fisher: Jena, 1931.—There is a brief description of this mountain region of Hungary and rather extensive lists of its plants. Among the species illustrated on the plates are *Quercus cerris, Lycnis coronaria, Waldsteinia geoides, Xeranthemum annuum, Scorzonera hispanica, Stipa stenophylla, Sternbergia colchiciflora, Draba lasiocarpa, Alyssum arduini, Allium flavum* and *Centaurea sadleriana.*—*G. D. Fuller.*

15364. **REES, KINGSLEY. Seashore plant associations at L'Ancresse Bay [Guernsey].** *Soc. Guernesiaise Rept. & Trans.* 11(1): 55-60. 1930(1931).—Species of 4 associations are listed.

15365. **REVERDATTO, V. W. Die Vegetationszonen der Abakansteppe (Süd-Sibirien).** *Bot. Jahrb.* 61(2/3/4): 242-262. 1 pl. 1927.—Raunkaier's method and that of counting shoots, determining dominance, etc., were used to determine Krylov's phytogeographic zones and to characterize associations in the region near the junction of the Akaban and Jenissei Rivers. The zones found were (1) the forested steppes with an herbaceous meadow subzone, and (2) the forestless meadow zone, which in turn is divided into (a) the 4-grass steppe (with *Stipa capillata, Koeleria gracilis, Festuca sulcata,* and *Diplachne squarrosa*) and (b) the coarse *Stipa-Artemisia* steppe (with *Stipa capillata, S. pennata, Koeleria gracilis,* and *Artemisia* spp.). Noteworthy are small areas of desert-steppes.—*E. H. Walker.*

15366. **RICKETT, H. W. Notes on the vegetation of Columbia, Missouri.** *Amer. Midland Nat.* 12(10): 411-419. 1931.—The region around Columbia includes tongues of prairie mixed with forested rough country. Certain limestone bluffs have a characteristic vegetation, especially those of the Missouri River. The valley of this stream exhibits also many stray sp. Certain rocky hills show sp. characteristic of the Ozark region. Invasion and competition in newly-deposited flats on the Missouri River are described. Attention is called to sp. not previously reported from the region, particularly in *Bromus, Panicum, Carex.* The local *Crataegus* is a mixture of as yet undetermined sp. or vars. Daniels' proposals in *Vernonia* are briefly discussed. Sp. collected by previous workers but not since encountered were mostly strays, many from the Ozark region.—*H. W. Rickett.*

15367. **RUDOLPH, KARL, FRANZ FIRBAS, und HANS SIGMOND. Das Koppenplanmoor im Riesengebirge. (Ein Beispiel für den subalpinen Moortypus in Böhmen.)** *Naturwiss. Zeitschr. Lotos* 76(4/5): 173-222. 2 pl., 5 fig. 1928.—The Koppenplan Moor is the largest and finest on the eastern plateau (1430 m.) of the Rie-

sengebirge. It is situated beyond the present limit of spruce forests (1200-1300 m.) in the zone of mountain pines. It is influenced by the subalpine climate on the crest of Riesengebirge, and is characterized by low annual temp., high moisture, heavy precipitation, long snow-covering, and short vegetative period. All moors on the crest of Riesengebirge belong to the subalpine type. The subsoil of the moor is granitic. The formation of its surface is various and changing. The plant associations are: *Cetraria-Cladonia; Pinus Pumilio-Myrtillus; Polytrichum; Sphagnum russowii;* Heath-Trichophoretum; *Trichophorum-S. compactum;* Trichophoretum rich in liverworts; *Carex limosa-Sph. lindbergii; C. limosa-Sph. dusenii;* and *Carex-Drepanocladus.* A scheme of succession is given; the first 2 associations are climax. The soil reaction is about pH 5 (31 tests). The postglacial forest periods were (as shown by pollen-analysis) the same as in all Bohemia: (1) *Pinus,* (2) *Pinus-Corylus,* (3) *Picea,* and (4) *Fagus-Abies.* The formation of peat began at the end of the *Picea*-period. During the growth of the moor, as shown by tests, the sp. and associations of plants were the same as today, but the quantitative relations were different. The transition of the moor from montane to subalpine type took place with the Subatlantic change of climate.—*Max Onno.*

15368. **SAMUELSSON, CARL. Studien über die Wirkungen des Windes in den kalten und gemässigten Erdteilen. [Effect of wind in cold and temperate regions.]** *Bull. Geol. Inst. Upsala* 20: 57-230. 60 fig. 1927.

15369. **SAVULESCU, TRAIAN. Die Vegetation von Bessarabien mit besonderer Berücksichtigung der Steppe.** *Bul. Agric.* [*Bucuresti*] 3: 55p. 1927.—Bessarabia is the meeting-ground of 3 botanical provinces: The Dazischian, limited by the eastern boundary of *Fagus silvatica,* the Sarmatian, and to the south of them the Palaeopontic Province, over the greater part of which extended the bed of the Pontic Sea at the close of the Tertiary. The plants forming the elements of these provinces are listed. The whole area exhibits strong zonation. From the Black Sea northwards the zones are: Halophyte associations, Artemisietum, Siccipratum graminosum (dry grassland), Siccipratum altiherbosum (the most extensive, enclosing areas of mixed forest and transition woods to steppe), and Altiherbipratum. For each zone the chief communities are given, with their edaphic, orographic, and geographic variants. The ruderal flora is classified as Apophytes (sp. also occurring in primitive non-ruderal communities), Ergasiophytes (escapes from cultivation) and Anthropochores (sp. introduced by the agency of man). Of the last group many are Archaeophytes (naturalized from extremely early times); others are Neophytes (recent incomers). The steppe is a subxerophyllous more or less closed formation with numerous different grass and shrub communities. Its origin and development since the Tertiary expansion of the Black Sea are discussed. With the change of climate at the end of the Tertiary and the on-coming of the ice-age all Tertiary xerotherms became extinct in the area, being driven to the Mediterranean. Forests reached their greatest southern extent, the accompanying grasses showing a like southward trend. There followed a warm dry desert-inducing climate, the forests retreated northward, leaving only relics in favorable situations, the loess soils were deposited and the steppe vegetation followed, poor in sp. and xerophytic. The further north the more closed were the associations. With the gradual change to the present continental climate, successive waves of invasion came from the Podolian Plateau and the Mediterranean, followed by the European-Eurosiberian-Eurasian elements, and finally the Asiatic elements. The prehistoric steppe was as extensive as that of to-day, and the present forests are mainly young invaders. This view is opposed to that of certain Russian authors, who consider that after the ice-age the forests preceded the steppe. An extended table gives, for each sp. of the steppe, its life-period, Raunkiaerian life-form, station, and grades of frequency and constancy in the different communities.—*H. H. Allan.*

15370. **SCHRATZ, EDUARD. Zum Vergleich der Transpiration xeromorpher und mesomorpher Pflanzen.** *Jour. Ecol.* 19 (2): 292-296. 1931.—Experiments performed in the arid region of southern Arizona led to the conclusion that the transpiration of xeromorphic plants under natural conditions is high. There is no definite correlation between the observed transpiration and the structure of the leaves. In fact, the transpiration of xeromorphic plants may exceed that of mesomorphic plants, since the former may have a greater water supply due to a deeper and more spreading root system. When the transpiration rate is obtained from weighing severed twigs, the determinations should be made within a minute of the time of cutting in order to obtain truer indications of transpiration of a plant in its natural environment. Individual differences even between plants of the same sp., changing external conditions, and unknown factors, as well as the structure, influence transpiration in the open.—*T. M. Plitt.*

15371. **[SERPUKHOVA, E. I.]** СЕРПУХОВА, Е. И. Сравнение методов геоботанического исследования. **[Comparison of geobotanical investigation methods.]** [German summary.] Труды Ленинградского Общества Естествоиспытателей, Протоколы заседаний, научные статьи и сообщения (*Trav. Soc. Natur. Leningrad, Compt. Rend. Séanc.*) 59 (1): 95-109. 3 fig. 1929.—Comparative study of Drude, Raunkiaer, and Ramenskii methods was made on 20 areas, of 1 sq. m., 50 of 0.1 sq. m., and 100 of 0.01 sq. m. Three kinds of communities were investigated: grassy fields, with predominance of *Festuca rubra* and *Potentilla tormentilla;* fields with predominance of *Crepis paludosa* and *Cirsium heterophyllum;* and conifer forest with *Oxalis acetosella.* It is believed that the Ramenskii method is best.

15372. **SHAVER, JESSE M., and MAGGIE DENISON. Plant succession along Mill Creek.** *Jour. Tennessee Acad. Sci.* 3 (4): 5-13. 1928.—Five different plant associations at various stages in the formation of bars and islands in this Tennessee creek are recognized; on the creek bank 6 are recognized. The plants of each association are listed, and the nature of the succession is discussed.

15373. **SIMPSON, G., and J. SCOTT THOMSON. On the occurrence of the silver southern-beech (Nothofagus menziesii) in the neighbourhood of Dunedin.** *Trans. & Proc. New Zealand Inst.* 59 (2): 326-342. Map, 5 pl. 1928.—Near Dunedin, 12 small forest areas of *N. menziesii* have been recorded; the situation and vegetation of these areas and the surrounding country are described in detail, and the question discussed whether *N. menziesii* is a new arrival or a survivor of a former forest. According to Cockayne, *Nothofagus* forest was originally the chief tree-community in New Zealand, but it has been gradually replaced on the more fertile ground by a subtropical forest of Malayan origin. This study supports Cockayne's theory.—*A. Rehder.*

15374. **SKOTTSBERG, CARL. The vegetation of Easter Island.** *Nat. Hist. Juan Fernandez & Easter Island. Bot.* 2 (4): 487-502. 6 pl. 1927.

15375. **SMALL, JAMES. The fenlands of Lough Neagh.** *Jour. Ecol.* 19: 383-388. 1 fig. 1931.—This lake, the largest in the British Isles, in an area with an annual rainfall of 30 in., is subject to winter flooding and is surrounded by areas of fenland quite distinct from the prevalent acid moors of Ireland. The floods are supposed to act as a buffer solution preventing the development of acidity in all sections flooded. On higher levels acid moors develop. The sp. of the aquatic, fen, and carr associations are listed, and comparisons are made with the flora of similar associations in East Anglia, England.—*G. D. Fuller.*

15376. **SMALL, JOHN KUNKEL. From Eden to Sahara, Florida's tragedy.** 123p. 22 pl. Science Press: Lancaster, Pennsylvania, 1929. Pr. $1.50.—An account is given of a botanical exploration of several thousand miles in the Florida peninsula and on the Florida reef in 1922, with especial reference to the destruction by

man of Florida's unique natural monuments—the hammocks and kitchen-middens.

15377. SMORODINZEW, I. A., et A. N. ADOVA. Effet des variations de la réaction actuelle du réservoir sur le coefficient acido-base de la tourbe. *Bull. Soc. Chim. Biol.* 13: 943-949. 1931.—In studies of the degree of alkalinity of water compatible with development of larvae of *Anopheles* conducted at Moscow, pieces of peat of 2100-3900 cc. were added to each of a series of reservoirs, each containing 32 liters of water from a *Carex* swamp (pH 7.29). Three of the reservoirs had equivalent amounts of Cl (0.003 *N*) added as NaCl, $CaCl_2$, and HCl. Varying amounts of NaOH and Na_2CO_3, carbonate alone, or $Ca(OH)_2$ were added to the others, giving an alkalinity of pH 9.66-10.91. The reaction became rapidly less alkaline, and was readjusted by further additions of alkalies at intervals of 2-3 weeks for 4 mo. The pieces of peat were then removed, dried, separated into external and internal portions, and the degree of absorption of the alkalies determined by extraction with acetic acid and sodium acetate of known pH. Fixation of small amounts of added alkalies occurs in the superficial 1-2 cm. of the peat; with larger amounts there is progressive penetration into the deeper layers of the peat. Additions of NaCl, $CaCl_2$, or HCl in quantities sufficient to make the water a 0.003 *N* solution did not appreciably affect the acid-base equilibrium of the peat.—*J. S. Caldwell.*

15378. STARK, PETER. Das Klima der Postglazialzeit, erläutert an der Waldgeschichte Oberschwabens. *Ber. Senckenbergische Naturforsch. Ges. (Natur. u. Mus.) Frankfurt a/M.* 59(2): 82-94; (3): 151-160. 9 fig. 1929.—Stark reviews the work of Bertsch (1924-9) on the pollen analysis of the bogs of upper Swabia, and compares the results with the work of Keller and himself in Baden and Switzerland. The forest succession according to Bertsch may be compared to the Blytt-Sernander periods, timed by DeGeer's chronology, as follows: the Sub-Atlantic period, moist and cool, present time to 900 B. C., is approximately equal to the *Picea* period with secondary increase of *Pinus* of Bertsch; the Sub-Boreal period, dry and warm, 900-3000 B. C., Bronze and late Neolithic ages, nearly equals the *Fagus* period; the Atlantic period, moist and warm, 3000-5500 B. C., middle and early Neolithic age, is of slightly shorter duration than the *Quercus*-mixed forest period; the Boreal period, dry and warm, 5500-6500, Campignien age, includes the somewhat briefer *Carylus* period; and the Pre-Boreal period, dry and cold, 6500 B. C. to last of ice, Paleolithic age, includes the earlier 3/4 of the *Pinus-Betula* period and all the *Dryas* period. The lack of exact correlation—also evident in Baden and Switzerland—is attributed to local variations of climate to be expected in more or less mountainous country, to different refuge areas of the several components of the flora, and to differing paths of migration into the area. The forest succession is, therefore, not so monotonous as in North Germany, but it may, with proper precautions, be used in time correlation as demonstrated by Bertsch at the Taub bog, where a prehistoric site had been considered on the basis of finds of bronze, as belonging to the Bronze age. Bertsch showed by his pollen analysis that it must be Neolithic, and further excavation demonstrated the correctness of his prediction. A similar Neolithic age is demonstrated for sites at 3 other bogs. At the prehistoric site of Wasserberg on Lake Feder, the exact correspondence of the maximum or climax of the *Fagus* forest with the Bronze age (later Sub-Boreal) is demonstrated.—*Kirk Bryan.*

15379. STARK, PETER. Über die Wandlungen des Waldbildes im Schwarzwald während der Postglazialzeit. *Naturwiss.* 17(1): 1-8; (2): 31-35. 1929.—The dominant tree in the Black Forest is now *Picea,* but this is evidently due to forest culture. Results of pollen-analysis in different moors have shown the following succession of forests: (1) *Pinus,* (2) *Corylus,* (3) *Corylus-Quercus,* (4) *Abies,* (5) *Abies-Fagus-Picea,* and (6) *Pinus.* The periods and successions in the Bodensee region of Baden are analogous with some regional differences. See also the preceding Abstract.—*Max Onno.*

15380. STERNER, RIKARD. Nagra sociologiska anteckningar rörande bohuslänsk lundvegetation. [Sociological notes on grove-vegetation in Bohuslän, Sweden.] *Acta Horti Gothoburgensis* 4: 265-283. 1929.

15381. STEYERMARK, JULIAN A. A study of plant distribution in relation to the acidity of various soils in Missouri. *Ann. Missouri Bot. Garden* 18(1): 41-55. 1931.—The quinhydrone electrode was used in a reconnaissance of the soil acidity of eastern Missouri with a list of some characteristic plants on each soil type. Ranges in pH values for given sp. compared favorably with results obtained by Wherry on the same sp. Tests were made on 24 samples of soil from 5 soil types. A number of sp. were found with a limited pH range, others showed an indifference towards soil reaction. It is concluded that (1) while some sp. may be treated under a definite soil type, others may not, since they tolerate a wide range of acidity and alkalinity; and (2) water content and chemical nature of the soil, as well as a number of other factors in certain combinations, in addition to acidity, probably have much to do with plant distribution.—*J. A. Steyermark.*

15382. THORNTHWAITE, C. WARREN. The climates of North America; according to a new classification. *Geogr. Rev.* 21: 633-655. Map. 13 fig. 1931.—Formulae are presented for obtaining a precipitation effectiveness (*P/E*) index for stations where meteorological data have been collected. This index is the sum of the precipitation-evaporation ratios for the 12 mo. of the yr. Similarly a thermal efficiency index (*T/E*) is obtained. From these indices for stations throughout the continent a climatic map is derived, which seems to correspond rather closely with the distribution of soil and vegetation.—*G. D. Fuller.*

15383. TILDEN, JOSEPHINE E. The distribution of marine algae, with special reference to the flora of the Pacific Ocean. (A preliminary paper.) *Proc. 3rd Pan-Pacific Sci. Congress, Tokyo* 1: 946-953. 1926(1928).—On the basis of variation in illumination from the earliest life period to the present time, the evolution and distribution of the different phyla of marine algae are explained. Thus the blue-green algae were developed during a period of weak illumination, the Rhodophyceae during a later period of stronger rays, the Phaeophyceae still later, and last the Chlorophyceae. Similarly the geographic distribution of the marine algae may be explained; one may expect to find more Chlorophyceae in the tropics than in regions of less illumination.—*V. O. Graham.*

15384. VANDERYST, H. Études géo-agronomiques congolaises. La région agronomique schisto-calcareuse. 4. *Bull. Agric. Congo Belge* 20(1): 72-89. 1929.—Savannahs and steppes are the dominant formations. The natural forest formation is greatly restricted and confined to the more favorable places. So called secondary forests have been established artificially by man or they have developed on agricultural lands subsequently abandoned. Various types of arboreous steppes intermediate between grassland and forest are described. Reasons are presented to explain why this region has never been largely occupied by primitive forests, and a list of the common native and cultivated plants is appended.—*P. D. Strausbaugh.*

15385. VERDOORN, INEZ C. Notes on the vegetation of the Fountains Valley, Pretoria. *So. African Jour. Sci.* 26: 190-194. 1929.—The vegetative aspects at intervals throughout the 4 seasons are described, with some reference to the ecology. Plants collected are preserved in the National Herbarium, Pretoria.—*I. C. Verdoorn.*

15386. WHITE, J. M. Re-colonisation after peat cutting. *Proc. Roy. Irish Acad.* 39(21): 453-476. 5 pl., 1 fig. 1930.—In Armagh, the nature of the re-colonising vegetation is determined by the inter-action of the following factors: depth of cutting, former vegetation, nature of the surrounding vegetation, and extent of the area cut. It is also frequently influenced by the period of time which has elapsed since cutting. When Callunetum has been cut, the re-colonising vegetation may be

Callunetum, Eriophoretum, Sphagnetum (moor formation); the various societies of the fen formation; the societies of the marsh formation; or one or other of the various aquatic associations. When the area cut has been occupied by any of the plant associations or societies enumerated above, the re-colonising vegetation may be either the same or one of the associations earlier in the sere.—*J. M. White.*

15387. WHITE, J. M. Pollen analysis of peat from Stoneyisland, Portumna, Co. Galway. *Irish Naturalists' Jour.* 3(10): 210-214. 1931.—A quantitative pollen investigation of peat from the above locality was undertaken to aid in dating a skeleton found embedded in the peat at the base of the bog. *Betula* pollen was the most abundant tree pollen in all samples except in sample 2 (27 dm. from the top of bog). It was hence concluded that the base of the Stoneyisland peat was formed during the post-ancylus period.—*J. M. White.*

15388. WILLIAMS, A. H. New Zealand plants and their difficulties. *Jour. Roy. Hort. Soc.* 55(1): 101-113. Map. 11 pl. 1930.—History reveals that no mammals were present until the advent of man during the 12th century, when the black rat and a small bat came as stowaways. The flora is dissimilar to that of any other country. Through a very long period of time the plant characters have not been affected by the introduction of fresh sp. from other regions; neither have they encountered gross destruction by man nor herbivores. They have contended with birds, insects, and the overcrowding by companion sp. The unique composition of the flora is shown by the fact that of the 1700 indigenous sp., no fewer than 75.4% are found in New Zealand alone. Of the comparatively small remainder that are not confined to New Zealand alone, 339 sp. are also found in Australia only, 82 in So. America only, and 30 in New Zealand, Australia, and So. America but nowhere else. In the distant past, eastern Australia (then separated by ocean from western Australia) was connected with New Zealand, but when eastern and western Australia were joined, New Zealand was separated from Australia. The plants that did not spread to eastern Australia till after the Eocene upheaval which united the 2 parts of that continent are therefore not in New Zealand. The So. American component is explained by a pre-Eocene connection to southern S. A. Some of the peculiarities of the N. Z. flora are: tropical appearance of the forests in a temperate region; rarity of deciduous trees; trees with long persisting juvenile forms; tangled undergrowth; prevalence of epiphytes and filmy ferns; and tree-like speedwells. The difficulties encountered by these plants are brought out by a comparison of the factors of climate, soil, and sunlight quality and quantity in New Zealand and in Great Britain.—*V. O. Graham.*

15389. WITT, KARL (mit Beiträgen von W. LAMPE und R. TÜXEN). Zur Waldgeschichte der Nacheiszeit im westlichen Harzvorland. *Beih. Jahresber. Naturhist. Ges. Hannover* 2: 98-115. 2 fig. 1930.—Two bogs were examined by pollen analyses. The one at Silberhohl in Seesen probably arose in early Atlantic time, and shows the retreat of oak, the almost complete disappearance of linden and elm, and the present dominance of pine, spruce, and oak. At Harriehausen pine has also increased greatly since the origin of the peat, and the forest increased in density. Pine and spruce have grown since early Atlantic time west of the Harz, while fir was not indigenous. No border horizons were discovered.—*H. I. Baldwin.*

15390. ZUMPFE, HANS. Vorarbeiten zu einer pflanzengeographischen Karte Oesterreichs. XIII. Obersteirische Moore. *Abhandl. Zool. Bot. Ges. Wien* 15(2): 1-100, 1 col. map, 5 pl. 1929.—This is a phytogeographical and phytosociological study of moor formations near Mariazell in Upper Styria, at 862 m. in the northern Calcareous zone of the Alps. The Dachstein dolomite occurs in strata below the Dachstein limestone of alpine Trias and is less permeable to water, favoring the formation of fens. Fens and moors can only be formed where no glacial sedimentation has interrupted the slow process of replacement of water by land ("Verlandung"). The climate must have been moist and cool during the whole post-glacial period. Today it is characterized by long and snowy winters, wet summers, and warm and sunny autumns. The principal plant associations of the fens and moors are those characterized by: 1. *Calluna vulgaris-Cladonia rangiferina;* 2. *Calluna-Carex goodenovii-Sphagnum;* 3. *Calluna-Sphagnum fuscum;* 4. *Calluna-S. magellanicum;* 5. *Vaccinium vitis idaea-S. acutifolium;* 6. *Equisetum limosum-Carex rostrata;* 7. *Carex lasiocarpa;* 8. *C. flava-Calliergon trifarium;* 9. *C. flava-Drepanocladus intermedius;* 10. *Trichophorum alpinum-Drepanocladus;* 11. *Drosera rotundifolia-Sphagnum magellanicum;* 12. *Menyanthes trifoliata-S. subbicolor;* 13. *Carex limosa-S. contortum;* 14. *Carex-S. dusenii;* 15. *Carex stellulata-S. amblyphyllum-S. magellanicum;* 16. *Eriophorum vaginatum-S. magellanicum;* 17. *Molinia coerulea-S. amblyphyllum;* 18. *Menyanthes trifoliata;* 19. *Schoenoplectus lacustris.* The subalpine conifer forests, the *Nardus* heath, and the subalpine meadow are also treated as physiognomical units. The moor formations are divided into fens, transition moors, and high moors, in order of succession. Their development began during the Bühl advance of the Glacial Period. Pollen analysis has shown the following succession of post glacial forests: 1. *Pinus;* 2. *Pinus-Picea;* 3. *Quercus;* 4. *Fagus-Abies;* and 5. *Picea.*—*M. Onno.*

ANIMAL

15391. CALDERWOOD, W. L. Salmon hatching and salmon migrations. 95p. Frontispiece, 3 pl. Edward Arnold & Co.: London; Longmans, Green & Co.: New York, 1931. Price 4s. 6d.—An interesting, non-technical but authoritative discussion of the present status of fish culture as applied to salmon. Briefly reviews the history of salmon propagation, especially in Great Britain, and critically discusses its usefulness in (1) introducing salmon into new waters and (2) building up depleted runs. The relative merits of natural and artificial propagation are discussed in the light of recent investigations in Great Britain, Canada and the United States. Some of the features of salmon migration, both in fresh water and in the sea, are reviewed with particular reference to their bearing on the problems of conservation. In general the book treats primarily of the Atlantic salmon (*Salmo salar*) but frequent reference is made to the results of studies on the species of *Oncorhynchus* which include the salmon of the Pacific Coast.—*W. H. Rich.*

15392. GAVER, F. van, et J. TIMON-DAVID. Observations sur la faune diptérologique du Haut-Queyras. Étude de biogéographie alpine. *Ann. Fac. Sci. Marseille* 4(1): 1-13. 2 fig. 1929.—The Guil Valley on the borders of Piémont and Dauphiné, shut in by mountain peaks over 3,000 m. high, is the centre of a specialised population. Diptera are distributed, according to the various types of vegetation, in 4 zones (or associations): (1) the lower zone, corresponding to the stream bank, rich in syrphids, bombyliids, and tabanids; (2) the larch zone, with asilids, rhagionids, *Haematopota,* and empids; (3) the upland prairie zone with abundant tabanids which attack cattle, also tachinids and *Cyrtopogon;* and (4) the snow zone, strewn with boulders, where various spp. of *Bombylius, Chortophila,* and *Peletiera* are found. The strictly mountain spp. (as *Cyrtopogon*), and ubiquitous spp. apparently unaffected by altitude (e.g., *Eristalis tenax*), should be distinguished.—*F. van Gaver (transl. by A. Cuthbertson).*

15393. GAUSE, G. F. The influence of ecological factors on the size of population. *Amer. Naturalist* 65 (696): 70-76. 3 fig. 1931.—The analysis of the experimental material published by Chapman and Terao shows that the connection between the quantity of food and level of saturating population in the flour beetle Tribolium and the influence of temp. on the level of saturating population of the water flea *Moina* may be

expressed in the mathematical form with the aid of the Gauss curve (generalized by Pearson). This gives us the possibility of predicting a mass appearance of injurious animals under certain ecological conditions. The same holds true concerning wild animals useful to man.—*G. F. Gause.*

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*
W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 15138, 15159, 15202, 15233, 15236, 15244, 15478, 15504, 15512, 15559, 15598, 15613, 15626, 15632, 15634, 15635, 15658, 16506, 16585, 16745, 16765, 16787, 16810, 16818, 16819, 16823, 16828, 16843, 16902, 16911, 16916, 16939, 16948, 16950, 16972, 16989, 17045, 17048, 17050, 17052, 17092, 17093, 17094, 17098, 17099, 17101, 17242)

DISEASES CAUSED BY FUNGI

15394. ABBOTT, E. V. La "marchitez" del algodón. [Wilting of the cotton plant.] *Vida Agric.* [*Lima*] 7 (77): 274-281. 1 col. pl., 8 fig. 1930.—Attention is called to the losses caused annually by cotton wilt in Peru, and the symptoms of the disease are briefly described. Control measures are discussed.—*E. V. Abbott.*

15395. DOWDING, E. SILVER. Wallrothiella arceuthobii, a parasite of the jack-pine mistletoe. *Canadian Jour. Res.* 5(2): 219-230. 1 map, 2 pl., 5 fig. 1931.—*Arceuthobium americanum* occurs on *Pinus murrayana* in Alberta and on *P. banksiana* in central and western Canada; *A. tsugensis* occurs on *Tsuga heterophylla* in British Columbia, and *A. pusillum* on *P. mariana* in Ontario. *A. tsugensis* and *A. mariana* are not infected with *W. arceuthobii*, but *A. americanum* is, in Alberta and Manitoba. *Arceuthobium* fruits become infected in Canada in the spring, about a week after fertilization. The fungus and the infected fruits then increase in size, and they attain their max. development by the summer of the following year. The ascospores are not violently discharged into the air. The spores ooze out into water when the perithecia are wet. The mature perithecium is made up of 2 compartments, the lower containing the asci, and the upper into which the ascospores are discharged and where they collect. Insects may disperse the ascospores. Ascospores sown in *Arceuthobium* decoction commence to germinate, but growth ceases after the germ tube has reached the length of about 1 mm. Attempts to inoculate the stigmas of healthy *Arceuthobium* with "sprout-mycelium" have so far been unsuccessful. —*Author's abstract.*

15396. MACKIE, W. W. A new disease [Rhizoctonia bataticola] of maize and beans. *Phytopath.* 21(10): 996. 1931.—Abstract.

15397. MITRA, M. A new bunt on wheat in India. *Ann. Appl. Biol.* 18(2): 178-179. 1 pl., 1 fig. 1931.—8 hybrids between Federation and Pusa 4 and 52, were found infected with *Tilletia* indica* (p. 178).

15398. MOORE, E. S. Internal boll disease of cotton in South Africa. *Union of S. Africa Dept. Agric. Sci. Bull.* 94. 11-18. 1930.—*Nematospora gossypii*, more rarely *N. coryli*, were associated with internal boll disease, which was further related to minute insect punctures. In isolation experiments *Dysdercus fasciatus* and *D. nigrofasciatus* were found capable of transmitting the *Nematospora*, which was also demonstrated in the mouth parts and digestive tracts of the stainers. *Nematospora* was also found in *Bauhinia galpini* and *Sterculia platinifolia.*

15399. MORITZ, OTTO. Zum Problem der Fusskrankheit [Ophiobolus graminis] des Weizens. *Angewandte Bot.* 13(2): 151-161. 1931.

15400. O'BRIEN, D. G., and E. G. PRENTICE. Leaf stripe or yellow leaf of oats. *Scottish Jour. Agric.* 13(3): 272-284. 1930.—Leaf stripe (*Helminthosporium avenae sativae*) is the most destructive disease of oats in Scotland and is especially severe in the southwest part where an average of 25% of the plants are affected. It causes a reduction in stand and in yield of affected plants. Affected seedlings may die before or after their appearance above ground. A long brown or yellow stripe occurs on the 1st leaf and later on others. The plant may succumb or outgrow this. A 2nd period of infection occurs at the flowering stage, when the uppermost leaves are attacked and killed and the development of the spikelets is retarded, the lower ones sometimes being blasted. Flower infection results in the development of mycelium within the surface layers of the grain, where it may be carried to succeeding crops. No immune varieties are known but the old straw-producing ones are somewhat resistant. Experiments with various chemicals in seed treatments showed that Ceresan is very effective and practical in controlling the disease. When thus treated, less seed is required and the yield increased.—*M. F. Barrus.*

15402. RAMAKRISHNAN, T. S. A leafspot disease of Andropogon sorghum caused by Cercospora Sorghi E. & E. *Mem. Dept. Agric. India* 18(9): 259-277. 4 pl. 1931.—A leafspot (*C. sorghi*) of sorghum has been prevalent in Coimbatore for at least 20 yr., and has been found in many other parts of the world. In India the disease usually makes its appearance about flowering time. Its severity is increased by a period of wet weather. The fungus causes numerous, elongated, reddish or brown spots or patches on the leaves and leaf sheaths. The fruiting bodies of the parasite appear on both sides of the leaf and may give the surface a grayish, velvety appearance. Isolations were made of the fungus, and infection experiments were tried on groundnut, maize, eggplant, tobacco, sugarcane, and sorghum. The results were negative on all the hosts but sorghum. Cultures of the pathogen were studied on various media, and data obtained regarding the influence on the fruiting and the growth of colony produced by varying the pH values, the concentration of medium, the different nutritive salts, the amounts of KNO_3, and the temp.—*C. Chupp.*

15403. RHOADS, ARTHUR S. Clitocybe mushroom root rot of citrus trees and other woody trees in Florida. *Citrus Industry* 12(9): 5-9; 38-40. 7 fig. 1931.—Mushroom root rot (*C. tabescens*) is reported attacking grapefruit, orange, and tangerine trees. Approximately all the 150 citrus trees thus far found infected have been on rough lemon root stock. The attacked trees range from scattered individuals to more or less grouped trees, and in some groves areas have been found where a considerable number of trees were attacked. Although new to science, this disease appears to be of long-standing occurrence in Florida citrus groves but has not hitherto been differentiated from foot rot, which it closely resembles. The root rot produced by *Clitocybe tabescens* resembles in many respects that caused by the well-known honey agaric or oak-root fungus (*Armillaria mellea*), especially in regard to habit of growth, the production of rhizomorphs, appearance of the mushroom-like fruiting bodies, and prevalence on land where oak trees have occurred. In the majority of cases, when the soil was removed from the root crown and adjacent roots for treatment, more or less of the lateral roots were found invaded by the root-rot fungus, or dead, and in most cases the tap root was also dead, even before the tops showed evidence of decline.—*A. S. Rhoads.*

15404. SCOTT, C. EMLEN, and GILBERT L. STOUT. Tranzschelia punctata on cultivated Anemone in the Santa Clara Valley. *Phytopath.* 21(10): 998. 1931.—Abstract.

15405. SILVEIRA GRILLO, HEITOR V. da. A ferrugem da goiabeira. [Guava rust.] *Revista Florestal* 1 (8): 5-6. 1930.—*Puccinia psidii* injures foliage and fruit of *Psidium goyava.* It can be controlled by wide spacing

in plantations and spraying with copper sulphate solutions.—*W. N. Sparhawk.*

15406. **SILVEIRA GRILLO, HEITOR V. da. Estudo sobre o Septobasidium albidum da laranjeira.** [Study of S. albidum on the orange.] *Revista Florestal* 2(1): 51-53. 3 fig. 1930.—This fungus, probably semiparasitic, attacks stems, leaves, and fruit of most *Citrus* spp. Warmth and humidity, such as are encountered in too closely spaced orchards, favor its growth. Spraying with a lime-sulphur solution is an effective control measure.—*W. N. Sparhawk.*

15407. **THOMAS, H. E.** Verticillosis [V. albo-atrum] of strawberries. *Phytopath.* 21(10): 996. 1931.—Abstract.

DISEASES CAUSED BY BACTERIA

15408. **PASSALACQUA, T. Una batteriacea parassita delle Aloë nei giardini di Palermo, Bacterium aloës.** [A bacterial parasite of aloes in the gardens of Palermo.] *Riv. Patol. Veg.* 19(5/6): 106-110. 1929.—Nearly all species of *Aloë* were affected by a spotting disease, more frequently near the tips of the leaves. The bacteria present were cultured and used in successful inoculation experiments on *Aloë plicatilis*. Infections were secured both with and without previously wounding the leaves. The bacteria are monotrichous, gram negative, aerobic, and spore forming. The name *Bact.* aloës (p. 110) is proposed.—*F. M. Blodgett.*

15409. **SMITH, CLAYTON O. Pseudomonas prunicola and Bacterium citriputeale.** *Phytopath.* 21(11): 1091. 1931.—In inoculations and cultural experiments, *P. prunicola* appeared very similar to, if not identical with, *Bact. syringae, Bact. citriputeale,* and *Bact. cerasi.*—*W. A. Whitney.*

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS, NEMAS, PROTOZOANS, ETC.)

15410. **STELLWAAG, F. Die Milbenkräuselkrankheit des Rebstockes in ihrer Differentialdiagnose gegenüber ähnlichen Schäden im Weinbaugebiet der Rheinpfalz.** *Anz. Schädlingskunde* 7(7): 73-77. 10 fig. 1931.—This mite disease was noted early in 1931 and differed from those previously recorded. It is caused generally by *Epitrimerus vitis*. Mites present on the undersides of leaves suck juices from the parenchyma, the cells dying around the puncture and forming a characteristic star-shaped figure. The attacks cause distorted growths, and the shoots fail to develop. The leaves remain small or distorted, the flowers develop poorly and often dry up. Adventitious broom-like growths frequently follow the attack. Tips of the shoots are most frequently attacked. In late summer mites seek winter quarters under bud scales and bark. Until last year the mite attack was confined to a few of the inner shoots because of the habits of hibernation. Since 1929, the attacks have become alarming. Affected vineyards are now much more numerous in the entire district and the attack was accompanied also by a great increase in the number of individuals. There are contributing factors such as weakening of the vine by the hard winter of 1928-29. On account of the numbers and spread, the acarinose has been more extensive on single vines. The author distinguishes between the acarinose caused by *E. vitis* and that caused by *Eriophyes vitis*. Attacks by the "Rebstickler," *Bytiscus betulae,* and non-parasitic injuries caused by frost and other weather conditions are described in detail and compared with symptoms caused by *Eriophyes vitis*. The attacks of the "Rebstickler" and *Eriophyes* are occasional or local, and winter killing has destroyed many vines in the region, but the mite leaf curl disease has reached almost catastrophal proportions.—*P. Garman.*

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

15411. **BEALE, HELEN PURDY. Specificity of the precipitin reaction in tobacco mosaic disease.** *Contr. Boyce Thompson Inst.* 3(4): 529-540. 1931.—The viruses of ringspot- and cucumber-mosaic diseases were multiplied in Turkish tobacco, leaf extracts of the affected plants were then used as antigens in precipitin tests with antiserum for tobacco mosaic virus extract of Turkish tobacco. A slight precipitation resulted in the tubes containing undiluted antiserum and virus extract such as occurs when juice from healthy tobacco is used with undiluted antiserum. No precipitate was demonstrable that was specific for virus extracts of tobacco affected with either ringspot- or cucumber-mosaic disease. The specific antigenic substance in virus extract of tobacco-mosaic disease is foreign antigenic material, possibly virus itself, rather than altered host protein.—*H. P. Beale.*

15412. **BÖNING, KARL. Ueber eine Blattdeformationskrankheit an Rübe und Spinat.** *Zeitschr. Pflanzenkr. Pflanzenpath. u. Pflanzenschutz* 40(7): 315-323. 7 fig. 1930.—A leaf-deformation in beet and spinach, transmitted by several common aphid species, is described. It consists in a reduction of the leaf surface, abnormal thickening, and interference with function. A primary mark of infection is an upward rolling of the edges of partly grown leaves. If infection occurs when the plant is young a dwarfed growth results. If infection is later there is an excessive leaf-growth, the crown throwing out a rosette of small misshapen leaves. The disease is believed to be due to a specific virus, not identical with beet mosaic, spinach blight, curly-top, or the "bug-curl disease" of central Germany.—*K. Böning* (*transl. by F. M. Wadley*).

15413. **DUFRENOY, JEAN. Introduction à l'étude cytologique des plantes affectées par des maladies à virus.** *Ann. Epiphyties* 14(1): 163-174. 7 pl., 1 fig. 1928.—The various aspects of the plastids and mitochondria in plants affected with mosaic diseases were observed in both fresh and fixed material, and the staining reactions of the vacuoles are described. The degeneration of cell contents in mosaic-affected tissues appears analogous to that resulting from certain physico-chemical agents and also some parasitic fungi and bacteria.—*E. Carsner.*

15414. **EULER, H. v., W. HERTZSCH, S. MYRBÄCK, D. RUNEHJELM, und A. FORSSBERG. Über chemische Veränderungen in Abutilonblättern bei infektiöser A-Chlorose.** *Arkiv Kemi, Mineralogi och Geologi* 10B(3, paper 13): 1-6. 1931.—White areas of *Abutilon striatum* leaves contained less catalase and tryptophane than green areas. In yellow areas the decrease in catalase was not proportionate to the decrease in chlorophyll. Amino N was highest in white areas but there was no marked difference in total N.—*A. E. Hitchcock.*

15415. **McKENNY HUGHES, A. W. Aphides as vectors of "breaking" in tulips.** *Ann. Appl. Biol.* 18(1): 16-29. 1 pl. 1931.—*Myzus persicae* is a vector of breaking in tulips, with *Macrosiphum gei* also a vector, but to a lesser degree. Experimental infestations of the variety Bartigon with these 2 species of aphid from the broken Sulphur tulips gave 63.03 and 41.36% breaking, respectively. Red break and white break are transmitted equally by the 2 species, but it is suggested that red break is an earlier stage in the development of the virus, and white break is the final stage. Experiments were carried out to ascertain if "parrot" is a virus similar to breaking and transmissible by the 2 aphid species, but the results were negative. There were indications that the virus can be transmitted from some varieties of tulip more readily than from others. Mass infections in the open gave a lower percentage of breaking than individual infections under glass-house conditions. No conclusive evidence was obtained to show that *Anuraphis tulipae* and *Rhopalosiphoninus tulipaella* transmit breaking.—*A. W. McKenny Hughes.*

15416. **LINFORD, M. B. Streak, a virus disease of peas transmitted by Thrips tabaci.** *Phytopath.* 21(10): 999. 1931.—Abstract.

15417. **LINFORD, M. B. Further studies of transmission of the pineapple yellow-spot virus by Thrips tabaci.** *Phytopath.* 21(10): 999. 1931.—Abstract.

15418. **REDDICK, DONALD. La transmission du**

virus de la mosaïque du haricot par le pollen. *Rapp. II^e Congrès Internat. Path. Comp.* 1: 363-366. 1931.—Mosaic disease of beans (*Phaseolus vulgaris*) is communicable by means of pollen, as shown by artificial cross pollination experiments and observations of progenies of natural hybrids in mosaic-immune varieties.—*D. Reddick.*

15419. SHAPOVALOV, M. Graft transmissions of curly top in tomatoes (tomato yellows). *Phytopath.* 21 (10): 998-999. 1931.—Abstract.

15420. SMITH, KENNETH M. Studies on potato virus diseases. VIII. On a ringspot virus affecting solanaceous plants. *Ann. Appl. Biol.* 18(1): 1-15. 5 pl. 1931.—A ringspot virus affecting solanaceous plants is described for the first time in the British Isles. The reactions of *Solanum capsicastrum, S. tuberosum, S. laciniatum; S. nigrum, S. nodiflorum,* tomato, White Burley and Virginia tobacco, *Nicotiana glauca, Datura stramonium,* and *Capsicum* spp. are described. The close parallels in the behavior of the ringspot virus to the viruses of the potato-mosaic group are emphasized. The virus is able to exist in a variety of symptom expressions according to species of host plant and degree of virulence. Ringspot is thought to be an alternate symptom expression for a number of mosaic viruses, the development of the ringspot symptoms probably depending upon the degree of virulence of the virus, the type of host plant and the method of infection of that host plant. The phenomenon of temporary recovery of tobacco plants affected with the ringspot in its virulent form is well illustrated. Plants die down and then regrow for a period, temporarily symptomless, only to succumb once more to a severe attack. This may happen 2 or 3 times before the plant finally remains in a necrotic and moribund condition. In no case was the virus transmitted through the seed of affected plants.—*K. M. Smith.*

15421. SMITH, KENNETH M. Studies on potato virus diseases. IX. Some further experiments on the insect transmission of potato leaf roll. *Ann. Appl. Biol.* 18(2): 141-157. 1 pl., 5 fig. 1931.—Non-infective *Myzus persicae* can pick up the virus of potato leaf roll from an infected potato plant after 6 hr. feeding. The infective aphis is capable of transmitting the leaf roll virus to a healthy potato plant after 2 hr. feeding. The whole process whereby a non-infective aphis picks up the leaf roll virus and infects a healthy plant cannot be performed in 8 hr.; a minimum period of approximately 54 hr. appears to be necessary. The incubation period of the leaf roll virus in the potato plant averages 14 days. Descriptions and drawings are given of the 4 chief potato-feeding aphids occurring in England. Potato leaf roll has been transmitted by 3 species of aphids: *Myzus persicae; M. pseudosolani,* and *M. circumflexus.*—*K. M. Smith.*

15422. VALLEAU, W. D., and E. M. JOHNSON. The viruses concerned in a natural epiphytotic of streak in tomatoes. *Phytopath.* 21(11): 1087-1089. 1931.—By inoculations, the tobacco-mosaic and the masked-potato viruses are determined as responsible agents.—*W. A. Whitney.*

15423. VERPLANCKE, G. Contribution à l'étude histologique & cytologique d'une maladie de la pomme de terre, appelée en Amérique spindle tuber. *Acad. Roy. Belgique Cl. Sci. Mém. Coll. in 8°* 11(4): 1-42. 6 pl. 1930.—The nuclei in the diseased cells are sometimes lobed, frequently contain more than one nucleolus, and occupy a larger proportion of the lumen than in healthy cells. No x-bodies or striated material were found. The lenticels of diseased tubers are larger. The nonconducting cells of the diseased tuber in general show an increase in the ratio of length to width. The vascular cells show about the same length in diseased as in healthy tubers but a marked reduction in width, giving a greater ratio of length to width. The cells of the sprouts show an increased length and increased ratio of length to width. The rootlets are thinner than normal but show little change in the shape of the cells. The ratio of length to width is increased. Exceptions to these generalizations are noted. Detailed measurements of cells of various tissues are presented in extensive tables.—*K. H. Fernow.*

15424. WHITEHEAD, T. On the transmission of potato leaf-roll by aphides. *Ann. Appl. Biol.* 18(3): 299-304. 1 pl. 1931.—Evidence is submitted to show that *Myzus circumflexus* is as efficient a vector of potato leaf-roll as is *M. persicae.* The implications, both practical and academic, are discussed, particularly in view of the retardation in the development of symptoms shown by plants infested with *M. circumflexus* carrying the leaf-roll virus. *Macrosiphum gei* transmitted the disease only once and its importance as a field vector is still an open question.—*Author's summary.*

NON-PARASITIC DISEASES AND TERATOLOGY (INCLUDING DISEASES OF UNKNOWN CAUSE)

15425. CRANSHAW, J. H., and J. S. COOLEY. Experimental freezing of apple trees [with solid CO_2]. *Phytopath.* 21(10): 997-998. 1931.—Abstract.

15426. JESSEN, W. Die Marmorierung der Blätter der Getreidearten, eine Magnesiummangelerscheinung. *Zeitschr. Pflanzenernähr., Düng. u. Bodenk. A, Wiss. Teil* 22(3/4): 131-135. 1931.—Experiments showed that the mottling or chlorophyll accumulation frequently observed in leaves of cereals growing on slightly acid soils is not a symptom of acid injury, but is due to Mg deficiency.—*Author's summary (transl.).*

15427. KOSTOFF, DONTCHO. Tumors and other malformations on certain Nicotiana hybrids. *Zentralbl. Bakt. II. Abt.* 81(8/14): 244-260. 18 fig. 1930.—Certain species hybrids of *Nicotiana* formed tumors and other malformations on the roots, stems, branches, and leaves. No microorganisms were isolated from the tumors, and inoculations of tumor extracts failed to produce tumors on the parental plants. Tumors transplanted on the parent plants grew well but the parent plants themselves formed no tumors. Parent plants, grafted on the hybrids that formed tumors, grew without forming tumorous outgrowths. The hybrid stocks formed tumors only to the callus line. If extract of the paternal plant of the hybrids forming the tumors was mixed with extract of the maternal plant a precipitation reaction took place in vitro. Those hybrids whose parental extracts gave no precipitation in vitro did not form tumors. The suggestion is advanced that human cancer might be a result of the blood group agglutination phenomenon. From this point of view cancers are to be expected at a relatively early age in progeny where the greatest mutual agglutination reaction occurs in vitro between the parental groups, i.e., between $A \times B$ or vice versa. This hypothesis found support in 2 instances. The histological and cytological conditions found in the tumors (accumulation of starch and tannin, cytoplasmic enrichment, specific vacuolation, multinucleation, retardation of the mitotic processes, irregular cell division, polyploidy, nuclear and nucleolar hypertrophy, increases in the number of nucleoli, etc.) are considered as secondary phenomena.—*D. Kostoff.*

15428. OVERHOLSER, E. L., F. L. OVERLEY, and L. L. CLAYPOOL. A survey of winter injury of fruit during 1930 in Washington. *Proc. Amer. Soc. Hort. Sci.* 27: 253-258. 1930(1931).—During January, 1930, the temp. of the central Washington fruit districts dropped low enough to cause 3 types of winter injury to fruit plants: root killing, collar rot, and top injury. The 1st and 3rd forms are here discussed. From Jan. 6-25, the min. temp. ranged from −16 to +9° F. and the max. from 9-18° F. A survey was made of factors involved in root injury. Injury to the tops of cherry trees was studied from the standpoint of leaf area, number and size of fruit, and yields. Other fruits included in the study were peaches, apricots, apples, pears, plums, and English Walnuts.—*W. J. Bach.*

DISEASE RESISTANCE AND PARASITISM

15429. BROOKS, F. T., and G. H. BRENCHLEY. Silver-leaf disease.—VI. *Jour. Pomol. and Hort. Sci.* 9

(1) : 1-29. 2 fig. 1931.—The results of further experiments on the formation of "gum-barriers," associated with invasions by *Stereum purpureum*, and below wounds not invaded by parasitic fungi, are described, and the mechanism of gum-barrier formation is discussed. The incidence of silver-leaf disease in plum suckers, stocks, and young nursery trees is described. In numerous young "worked" trees affected by the disease, the fungus had entered through one or other of the wounds made in cutting back the stem of the stock in the process of propagation. Hot, dry summers promote recovery from the disease. The greatest danger of widespread infection in plum trees occurs after heavy cropping leading to breakage of the branches, especially when followed by a wet autumn.—*F. T. Brooks.*

15430. BUCHHEIM, ALEXANDER. Einfluss von Ustilago panici-miliacei auf Entwicklung und Wachstum der Wirtspflanze. *Zeitschr. Bot.* 23: 245-250. 2 fig. 1930. —Counts of the number of stalks per plant and the number of leaves per stalk of smut-infected and healthy plants of millet showed an appreciably larger mean of both stalks and leaves for the infected plants, indicating a stimulative effect of the smut mycelium on the millet plant.—*L. E. Wehmeyer.*

15431. CALDWELL, JOHN. The physiology of virus diseases in plants. II. Further studies on the movement of mosaic in the tomato plant. *Ann. Appl. Biol.* 18 (3) : 279-298. 4 pl., 1 fig. 1931.—The movement of tobacco mosaic virus in tobacco and tomato was similar to that of aucuba mosaic. The majority of the experiments were carried out with aucuba mosaic in tomato. Filtered virus juice from infected plants was readily absorbed at the cut end of a petiole and thence traveled into the xylem of the main stem. The removal of the treated petiole within 48 hr. prevented infection, but, when the petiole was left attached, the inoculated plant developed symptoms in the usual manner. In another experiment, after removal of the inoculated petiole, the leaves above were crushed. Infection resulted. In experiments in which the living tissue of an internode was killed by steam, it was found that the virus could be carried mechanically in the xylem across the dead tissue. In no case did crushing of the leaves induce symptoms on the upper part of the plant when inoculation had been made on the lower side of the "steamed" internode. The virus did not normally enter the water stream, but when it was introduced experimentally it circulated though there was no mechanism by which it could leave the vessels. The absence of the virus from the hydathode exudate was demonstrated. Apparently the virus cannot enter an unbroken cell, nor can it move through or out of dead cells. Great care must be taken to insure the absence of traces of toxic substances from inocula, otherwise infection may be prevented. The rates of movement of the virus in the tomato are practically the same upward or downward. The slightly greater rate of upward movement is attributed to greater metabolic activity in the upper portion of the plant. The movement of the virus agent along the protoplasmic strands was demonstrated by inoculating plants with infective juice after the removal of large portions of the vascular tissue. This treatment did not delay the migration of the virus up the stem. Darkness had no marked effect on the multiplication of the virus in the tissues. Prolonged periods in darkness caused permanent wilting of both healthy and diseased plants.—*J. Caldwell.*

15432. COOLEY, JACQUELIN S., and ELMER V. SHEAR. Relation of perennial apple canker to its environment. *Phytopath.* 21 (10) : 1000. 1931.—Abstract.

15433. ERIKSSON, JAKOB. Phytopathologische Mitteilungen. II. 5. Das Fortwachsen des Sporidienschlauches von Puccinia malvacearum Mont. im inokulierten Stockrosenblatte. 6. Das Überwintern von Puccinia ribis DC. in vegetativem Stadium in den Winterknospen der Wirtspflanze. *Arkiv Bot.* [*Stockholm*] 23 A (7) : 1-7. 2 fig.; 8-18. 6 pl., 2 fig. 1931.—5. The nucleoli, previously noted in the cereal rusts as arising from the host nucleus, occur also in mallow rust. They may arise in the plasma outside the nucleus or by the partial or complete dissolution of the nucleus. The fungus nucleoli increase by fission. They are a stage in the separation into distinct entities of the fungus and host which have lived together as symbionts. 6. *P. ribis*, a *Micropuccinia*, germinates in the spring and has a specialized form which infects *Ribes rubrum* but not *R. nigrum* or *R. grossularia*. Epiphytotics arise from overwintered teliospores and from thick walled resting cells (chlamydospores). Plasma masses in the petioles of infected leaves are interpreted as mycoplasma.—*F. A. Wolf.*

15434. FAHMY, TEWFIK. Étude de la pénétration du champignon Fusarium vasinfectum (Atk.) var. aegyptiacum T. Fahmy dans les racines du cotonnier. 70p. 3 col. pl., 28 fig. Thesis, Univ. Genève. Imprimerie Jent: Genève, 1930.—The development of cotton-growing in Egypt began with the introduction of seed from the U. S. A. and India: since then several varieties have been evolved. Wilt disease appeared in 1902 when Mit Afifi was the principal variety grown. It increased in importance with the extension of Sakalleridis, a very susceptible variety. The penetration of the parasite causing sore-shin was studied in comparison with that of *F. vasinfectum*. The sore-shin parasite attacks the seedling cotton plant by invading the tissue of the hypocotyl when the temperature is suitably low, while the wilt fungus enters the root later on when the temp. is high. The wilt parasite invades first the root cap, forming a sort of ectotrophic mycorrhiza. The hyphae of the parasite are then able to penetrate the root proper, first by invading the tissue near the root cap and then progressing through the intercellular spaces and sometimes penetrating some of the cells until they reach the tracheal vessels, which they enter. Their invasion is limited to vascular tissue. The root system of young plants of susceptible varieties rots and disintegrates. On artificial media the parasite utilized nitrate more readily than ammonia; of the carbohydrates tried, glucose produced the best growth.—*T. Fahmy.*

15435. FLOR, H. H. Factors influencing the severity of the root rot troubles of sugar cane. *Louisiana Agric. Exp. Sta. Bull.* 212. 40p. 10 fig. 1930.—The root-rot complex or growth failure of sugar cane has been the most important factor in the failure of a number of varieties in Louisiana. Steam sterilization of root-rot-contaminated soil resulted in greatly increased growth. No other soil treatment appreciably benefited the cane. Certain soil animals are known to injure cane roots. A species of *Pythium* also parasitized roots of corn as well as sugar cane. Excessive soil moisture increased this injury. Tests showed that *Pythium* was more injurious to corn roots below 25° C. In culture solutions the cane *Pythium* grew over a pH range of 5.2 to 10. The *Pythium* invaded all the tissues of the young roots, producing a soft rot and subsequent collapse of the root cells. Penetration of the young roots seemed to take place through a combination of solution and pressure.—*E. C. Tims.*

15436. GODFREY, G. H., and JULIETTE OLIVEIRA. Developmental stages of Heterodera radicicola in pineapple and cowpea roots. *Phytopath.* 21 (10) : 996. 1931. —Abstract.

15437. HARRINGTON, J. B. The effect of temperature on the expression of factors governing rust reaction in a cross between two varieties of Triticum vulgare. *Canadian Jour. Res.* 5 (2) : 200-207. 1931.—2 random populations of F_2 plants of the cross Marquillo × Marquis were tested for the reaction of their F_3 seedling progenies to form 21 of *Puccinia graminis tritici* in the greenhouse, at average daily temp. of 69.7° F. (the warm test) for one population, and 60.6° F. (the cool test) for the other. In both tests Marquis was susceptible and Marquillo was resistant. In the "warm test" 10 families of a total of 781 were resistant. In the "cool test" 5 families of a total of 301 were susceptible. In both cases the results fitted a 63 : 1 ratio excellently, indicating the operation of three main genetic factors for rust reaction. A genetic hypothesis is proposed

that explains the results on the basis of the influence of low temp. in curtailing the action of 3 susceptibility factors A, B and C carried by Marquis. The results indicate that genetic studies on characters which are easily influenced by environmental conditions should be made under controlled conditions, after ascertaining in advance the general effects of different temp., etc., upon the hybrid material to be used.—*Author's abstract.*

15438. **ISBELL, C. L. Nematode resistance studies with pole snap beans.** *Jour. Heredity* 22(6): 191-197. 5 fig. 1931.—2 selections from unnamed varieties of pole snap beans proved highly resistant, if not entirely immune, to nematode invasion under conditions in which standard varieties of pole snap beans and lima beans were heavily infested. Both were heavy yielders and one compared favorably in quality with such varieties as Kentucky Wonder and McCaslan.—*L. M. Dickerson.*

15439. **JOHNSON, THORVALDUR. Studies in cereal diseases. 6. A study of the effect of environmental factors on the variability of physiologic forms of Puccinia graminis tritici Erikss. and Henn. Pt. 1. Studies on the effects of environmental factors on the uredinial development of certain physiologic forms of Puccinia graminis tritici. Pt. 2. Studies on the effects of environmental factors on the formation and germination of teliospores of certain physiologic forms of Puccinia graminis tritici.** *Canada Dept. Agric. Bull.* 140. 76p. 9 fig. 1931.—Pt. 1. Temp. produces striking results on the reactions of some wheat varieties to certain physiologic forms of *P. graminis*. At a relatively low temp. (60° F.) and a low to moderate light intensity, these varieties are immune. At a high (75°), with the same light intensity, these varieties are completely susceptible. As the light intensity is increased, temp. and other conditions remaining constant, the host reaction is gradually shifted towards susceptibility. However, this effect is confined to the reaction of certain wheat varieties (particularly durum wheats) to certain physiologic forms. The same varieties when infected by other physiologic forms show no such response to changes in these factors. CO_2 concentrations within the range of 0.03 to 4.5% failed to stimulate rust development. There was, on the contrary, a decrease in pustule development at all concentrations above 1.5%. Pt. 2. Teliospore formation was somewhat more rapid at 70°-75° F. than at 55°-60° F. Different physiologic forms differed greatly in their rate of teliospore formation, some producing telia in a few days, others only after many weeks. The method of germinating teliospores formed in the greenhouse consists in freezing the wet teliospores for about 2 weeks in a refrigerator at −5° C.; spraying them with cold tap water for about one week, and subsequently wetting and drying the spores alternately (wet 2 days, dry 2 days), until germination commences. The spores usually began to germinate after the first or 2nd period of drying.—*T. Johnson.*

15440. **JOHNSTONE, K. H. Observations on the varietal resistance of the apple to scab (Venturia inaequalis, Aderh.) with special reference to its physiological aspects.** *Jour. Pomol. and Hort. Sci.* 9(1): 30-52; 6 pl.; (3): 195-227. 8 pl. 1931.—A study of spore germination and penetration by *Venturia inaequalis* suggests that no factors are sufficient in themselves to distinguish resistant and susceptible varieties of the apple. Certain characters—protective hairs, for example—reduce the liability of an organ to infection, and morphological characters (varying with age) in the cuticle modify the period of susceptibility of some varieties. Variation in the vitality of the parasite affects germination and infecting power. The importance of an adequate water supply is emphasized. Desiccation following wetting is injurious to the fungus, and this is correlated with reduction of germination and of infection among trees where free circulation of air obtains. Strains of the fungus exhibited differences in infective power, and some virulent and biologically specialized strains of the fungus were detected. True resistance depends on the physiological relationships of host and parasite within the leaf. Experiments on the effects of liquids expressed from leaves and fruits on spore germination reveal that, within a wide range of variation, liquids derived from resistant varieties are constantly more toxic to spores than liquids from susceptible varieties. Experiments made upon trees of the same variety undergoing different nutritional treatment show a similar relationship of toxicity with infection. Parallel inoculation experiments on trees under different nutritional conditions show that the period of incubation is longer in the variety Bramley's Seedling than in Worcester Pearmain but show no relation to the nutrition of the tree. A lower proportion of infection occurs in trees of both varieties which are deficient in N or receive rainwater only. Persistence of individual lesions is shorter in Bramley's Seedling than in Worcester Pearmain, remarkably short in trees deficient in N, and longer in trees deficient in K.—*K. H. Johnstone.*

15441. **KÖHLER, E., und J. LEMMERZAHL. Über die Prüfung von Kartoffelsorten im Gewächshaus auf ihr Verhalten gegen den Kartoffelkrebs (Synchytrium endobioticum).** *Arb. Biol. Reichsanst. Land- u. Forstwirtsch.* 18(2): 177-188. 1930.—Results from testing 100 new potato seedlings, obtained directly from the breeders thereof, are analyzed with the object of precisely determining the variable degrees of resistance or susceptibility to infection by the potato wart organism. The degrees of infection are designated as follows: (1) full infection (mature soral sporangia produced), (2) sub-infection (development of sorus abortive), (3) leaf overgrowths, (4) adventitious overgrowths. The distribution and density of infection types (1) and (2) are also taken into consideration in estimating the degree of resistance or susceptibility, and a numerical "index of infection" is then computed. The same set of seedlings was also tested by Spieckermann's method of inoculating with a compost of resting sporangia, and in the production of overgrowths the 2 methods agreed exactly. A statistical analysis of infection of 421 lines of potatoes was next made, whereby the variability of the degree of infection (index classes 0 to 4) was shown to be representable by a bimodal curve. When the lines showing subinfection were segregated, a normal frequency distribution was shown for the index classes characteristic of full infection. A difference in density of infection and type of response to infection may be shown by some potato lines when inoculated at different periods—for example, early as compared with late during winter storage, infection tending to become more severe with increasing strength of germination as the season advances. The variety Roode Star obtained from 2 sources showed practically the same index of (full) infection, is therefore not resistant. For practical purposes potato varieties having an index of infection below 0.5 may be designated as wart-resistant.—*F. Weiss.*

15442. **MACKIE, W. W., and KATHERINE ESAU. A preliminary report on resistance to curly top of sugar beets in bean hybrids and varieties.** *Phytopath.* 21(10): 997. 1931.—Abstract.

15443. **MALHOTRA, R. C. Biochemical investigation of mosaic in Solanum tuberosum.** *Jour. Biochem. Tokyo* 13: 473-487. 1931.—Analyses of aerial parts of Burbank potato plants 6 weeks old, collected 10 days after inoculation with mosaic, showed lower total fresh and dry weights, higher percentages of dry matter, N, and cellulose, with lower percentages of ether extract, starch, hemicelluloses, and non-reducing sugars, and lower total calories of heat per gm. of dry matter than did healthy plants of equal age. Reducing sugars and ash were not significantly different.—*J. S. Caldwell.*

15444. **SCHILBERSZKY, KARL. Die Gesamtbiologie des Kartoffel-Krebses.** 72p. 2 pl., 8 fig. F. P. Datterer & Cie: Freising/München, 1930. Price 4.50 M.—The author gives a comprehensive review of his discovery of potato wart in Hungary in 1896 (correspondence and specimens received in 1888-89 were indicative of its earlier presence) and of the subsequent literature which bears particularly on the morphology and taxonomic

relationships of the causal organism. This includes a critical discussion of the delineation of the Synchytriaceae, of the genera which comprise the family, and of the relationships with other forms in the order Chytridineae, especially the Olpidiaceae and the genus *Chytridium*. The life history of the potato wart fungus is reviewed in considerable detail, based on the literature and the author's own observations. He records the occasional occurrence of the soral stage with only a single sporangium, and considers that the resting sporangium is an analogous structure derived by reduction from a resting sorus. The occurrence of a mono-sporangiate sorus is considered as an atavistic reversion to the *Chytridium* type but is not indicative of a taxonomic relationship. The following points of difference between the potato wart fungus and the typical *Synchytrium* are stressed: (1) the number of sporangia in a sorus is always small (2-5), in *Synchytrium* the number is 30-40, and may reach 250; (2) the formation of zoospores (in the soral sporangia) is not accomplished by a fragmentation of the protoplasm as in *Synchytrium;* (3) the liberation of zoospores occurs through an irregular rupture of the sporangial wall, not, as in *Synchytrium*, through a pore; (4) the resting spore has a 3-layered membrane of which the outer is derived from the host cell—there is no certain analogue in *Synchytrium;* (5) the zoospores are of 2 sizes, those of the soral sporangia being smaller; the zoospores are facultative gametes and may copulate to produce a zygote which develops into a resting spore—in *Synchytrium* copulation of zoospores is not known; (6) the wart fungus is not limited to an epidermal position in the host, but is found deep in the tissues, being carried there by host cell divisions under the stimulus of the resting spore; this gives rise to a massive hyperplastic tissue which may contain vascular elements—there is nothing analogous in *Synchytrium;* (7) all the *Synchytrium* spp. which inhabit terrestrial plants infect only aerial organs —the wart fungus only exceptionally does so, and is well adapted to an existence in the soil. On these premises the genus *Chrysophlyctis* is maintained, and a new diagnosis is presented, the wart fungus retaining the name *C. endobiotica*. *Chrysophlyctis* is assigned to a subdivision of the *Synchytriaceae* along with *Eusynchytrium*, characterized by the development of a sorus of zoosporangia, and the possession of a resting sporangium (which may also produce a sorus) in addition to the summer sporangium stage.—Particulars of geographic distribution, host range, the relative susceptibility of potato varieties, and control by resistant varieties, extermination and exclusion are included.—*F. Weiss.*

15445. SIDERIS, C. P. Pathological and histological studies on pythiaceous root rots of various agricultural plants. *Phytopath. Zeitschr.* 3(2): 137-161. 1931.—The pathogenicity of various spp. of *Nematosporangium, Pythium, Pseudopythium,* and *Phytophthora* was studied on a great variety of plants (*Saccharum officinarum* vars. Lahaina and H-109, *Zea mays, Musa sapientum, Ipomoea batatas, Pennisetum barbinodum, Cajanus indicus* var. New Era, *Vicia faba, Canavalia ensiformis, Vigna sinensis, Phaseolus aureus, Triticum vulgare, Allium cepa, Solanum tuberosum* and *Helianthus annuus*) and found to vary in aggressiveness in respect to the different parasites, and in susceptibility in respect to the different hosts. The different *Nematosporangium* spp. are, as a group, more pathogenic on the roots of monocotyledons than on dicotyledons; the reverse obtains with *Pythium* spp. The *Phytophthora* spp. and *Pseudopythium phytophthoron* are highly pathogenic to roots of onion, which are almost immune to the *Nematosporangium* and *Pythium*. The theory of "chemical stimuli" for the initial development of parasitism rather than that of "mechanical pressure" is favored. *Triticum vulgare* was highly susceptible to all *Nematosporangium* spp., for which reason it is recommended as a relatively reliable test plant.—*C. P. Sideris.*

15446. SIDERIS, C. P., and G. E. PAXTON. Pathological, histological and symptomatological studies on pineapple root rots. *Amer. Jour. Bot.* 18(6): 465-498. 25 fig. 1931.—The susceptibility of pineapple roots to species of *Nematosporangium, Pythium, Pseudopythium,* and *Phytophthora* varied between the different genera and also between the different species of the same genus. 9 species of *Nematosporangium*, 11 of *Pythium*, 1 of *Pseudopythium*, and 2 of *Phytophthora* were pathogenic, some highly aggressive and others very weak parasites. Of the species of *Nematosporangium* studied, *N. rhizophthoron* and *N. polyandron* are responsible for the greater portion of root rot attributable to this genus. Species of *Pythium* are less pathogenic to pineapple than those of *Nematosporangium* but are responsible for some of the root rot noted. The most active species are *P. splendens, P. diameson* and to a small extent *P. artotrogus* and *P. irregularae*. The amount of root rot caused by *Pseudopythium phytophthoron* and 2 species of *Phytophthora* is small and mostly restricted to winter months. Approximate, and in certain cases accurate, identification of various pythiaceous organisms in the tissues of the roots is possible on the basis of the morphology of the reproductive organs. Root rot of this type is probably one of the important factors in pineapple "wilt." Various *Fusarium* spp. have also been assigned an etiological rôle in this disease. A species closely related to *F. affine* was able to establish itself on devitalized or dead small laterals, kill the healthy tissues by means of toxic metabolic by-products, and then make its inward advance. Injured roots may recover if the injury is light or die if it is severe. Drought conditions responsible for the death or devitalization of laterals favor infection by this organism. The damage caused by this organism under field conditions is probably of minor importance. A *Verticillium*, closely related to *V. buxi* and *V. heterocladum*, isolated from diseased pineapple roots, caused injury or death on inoculation into roots. Economic losses from this organism are low. The rate at which root rot is caused by the different organisms seems to correspond with the quantities of pectolytic enzymes which they are capable of producing.—*C. P. Sideris.*

15447. TOGASHI, KOGO. Studies on the pathology of peach canker. *Bull. Imp. Coll. Agric. and Forest. Morioka* 16. 178p. 2 pl., 34 fig. 1931.—The peach form of *Leucostoma persoonii* also infects plum, apricot, cherry and nectarine trees; the peach form of *Valsa japonica* also infects cherry, mume, apricot, and nectar trees. The mycelia generally do not penetrate to the xylem, probably due to excessive gum deposition in affected tissues. Development of wound periderm and callus tissue is notably less at the upper and lower edges than along the sides of the stem lesions. From such unprotected zones the hibernated mycelium initiates growth and forms a new canker around the old one. The pH of expressed bark juice of healthy peach twigs is about 5. Medullary rays of phloem and cambium just beneath show the highest pH of bark tissues; phloem and cambium, the lowest; pH of cell contents in the inner cortex is 4.4-5.8. The pH of affected tissues is generally somewhat higher. Gum pockets are formed in embryonic woody tissues immediately after infection, and the amount of exuding gum indicates the relative virulence of the invader. In sections of diseased twigs, discolored areas showing gummification are observed to occupy large areas without external signs. Hemicellulose, cellulose, dextrin, pectin, and starch were found suitable nutrients for culturing the fungi; sucrose, maltose, and amygdalin were in general unsuitable. Both fungi secrete diastase, invertase, maltase, emulsin, hemicellulase, pectinase, and cellulase, the last 3 being most active. The cellulase seemed unable to decompose filter paper and absorbent cotton celluloses. In general, the enzymes of *L. persoonii* were the more active, and tended to act more pronouncedly at higher temp. As a whole, pH 3-7 is the most favorable range for the enzyme activities of these 2 fungi. Relations of the fungi to pH in culture correspond with their reactions to pH in the peach branch. During active leafy stages of peach trees, the temp. of the branches

almost parallels that of the air; during the dormant stage, it is often much higher than the air temp. *L. persoonii* is more thermophilic than *V. japonica*, suitable temp. being 5° or more higher. *L. persoonii* is widely distributed in Japan, *V. japonica* is limited to the northern part of Honshu and Hokkaido. Affected tissues begin to enlarge in early spring; this is especially conspicuous on the south sides of branches. Considering the difference in temp. fluctuations between north- and south-side branches, it is probable that tissues on the south side are more tender. This seems to be an indirect cause of the sun-scald frequently seen on south-side branches. Considering the chemical constituents of peach tissues in which gumming occurs plus the characteristics of the enzymes secreted by these fungi, it is inferred that the gumming process is accelerated by the fungous enzymes. Gum formation is considered as a protective reaction of the tree against external injurious influences. The advance of the healing process against these parasites seems to depend on the growth condition of the host at the time, and on its stage of growth when infection was initiated; promotion of healing coincides well with the growth activity of the tree. In the Morioka region, the period for precautionary measures against infection seems to be from mid-August through the first third of November.

15448. WELLENSIEK, S. J. De vatbaarheid voor slijmziekte van 32 geïmporteerde aardappelrassen. (The bacterial wilt-disease susceptibility of 32 imported potato-varieties.) [With English summary.] *Korte Mededeel. Inst. Plantenziekten [Buitenzorg]* 16. 5p. 4 pl. 1931. —Susceptibility of 32 varieties to *Bacterium solanacearum* was investigated by both artificial and natural infection; the latter method gave satisfactory results. All were susceptible, but the Botergele and Dauer Rogas varieties contracted the disease at a later stage of development.

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, AND SPRAYING)

15449. BOYD, O. C. Apple scab and some new slants on its control. *Massachusetts Fruit Growers' Assoc., Inc.* 37: 58-63. 1931.—A summary of the apple disease situation in Massachusetts during 1930 indicates generally light losses from all diseases. Scab, nevertheless, caused marked losses in many commercial orchards, and extensive surveys indicated that such losses were due to failure to control the disease the preceding year, improper timing of sprays during the critical period for primary infection, difficulty in spraying closely spaced trees and inadequate pruning and thinning. Flotation sulphur compared favorably with liquid lime-sulphur in the control of scab when used in post-blossom application in a commercial orchard test, while sulphur dry lime-sulphur dust (85-15) gave less control.—*O. C. Boyd.*

15450. MARSH, R. W. Apple scab control in the Bristol Province: field trials, 1930. *Jour. Pomol. and Hort. Sci.* 9(1): 53-72. 1 fig. 1931.—Spray applications which terminated at or before the petal fall stage gave excellent control at Long Ashton from 1926 to 1929. Similar trials in commercial plantations at Bridgewater, Yeovil, Hereford, and Malvern were conducted during 1930. At the first 3 centers, scab had ruined the 1929 crop and pustules were abundantly present on twigs the following spring. At Bridgewater and Yeovil, lime-sulphur 1-30 or 1-40 was used for the first 2 applications and a weaker concentration for the third while, at Hereford and Malvern, bordeaux 4-10-50 was used for the pre-blossom applications and for the post-blossom at the latter center. Weather during the season was very favorable for scab development. Vaselined slides suspended in trees during April and May, and before scab appeared on new growth, captured conidia but no ascospores. At Hereford the concentration after 14 days was 132 conidia per sq. inch, being well-marked before pink stage, but was less in other orchards. The winter of 1929-1930 favored complete destruction of fallen leaves. On control trees, scab was first observed on May 22 and was well advanced by July 7. Excellent control (86 to 98% clean fruit) was obtained on the susceptible variety, Worcester, when sprays were applied at green flower, pink, and petal-fall stages, but was not so good when the first application was made earlier than indicated. Some slight russeting occurred on bordeaux-sprayed fruit.—*M. F. Barrus.*

15451. MASSEY, L. M., and BRUCE PARSONS. Rose-disease investigations. Second progress report. *Amer. Rose Ann.* 1931: 65-80. 1 fig. 1931.—In field experiments during 1929 and 1930, sulphur dusts were more effective than 20-80 copper-lime dust, 4-4-50 bordeaux, 1-50 liquid lime-sulphur, and a proprietary ammoniacal copper carbonate solution (Fungtrogen) in the control of blackspot (*Diplocarpon rosae*). In 1930 Ferrox flotation sulphur spray and Sulfocide also proved inferior to the sulphur dusts. Green sulphur dust with (Pomogreen) and without (Green Kolodust) lead arsenate was practically as effective as the undyed material and caused less discoloration. 20 before-rain applications were made in 1929 and 17 in 1930, while 18 and 12, respectively, applications of sulphur dust, copper-lime dust and bordeaux were made in after-rain treatments. The latter were less effective. Records for brown canker (*Diaporthe umbrina*) offer some encouragement for control through the use of sulphur fungicides with treatments starting in the seed-bed in the nursery.—*L. M. Massey.*

15452. MONTEITH, JOHN Jr. Some effects of lime and fertilizers on turf diseases. *Bull. U. S. Golf Assoc. Green Section* 9(5): 82-99. 11 fig. 1929.—Lime largely prevents, and to some extent cures, the development of brown-patch, which occurs on golf greens excessively fertilized with ammonium sulphate. Lime also lessens scald. Applications of mercuric chloride and calomel also reduce brown-patch, and the residues are not as harmful as those of copper fungicides. Ammonium sulphate is beneficial because of readily available N, but when used in excess the resulting acidity is harmful, especially in summer.—*H. H. Clum.*

15453. MOORE, M. H. The incidence and control of apple scab and apple mildew at East Malling. *Jour. Pomol. and Hort. Sci.* 8(3): 229-247. 4 pl.; (4): 283-304. 4 pl. 1930.—I. Apple Scab.—Bordeaux mixture 8-8-100 pre-blossom and 8-25-100 after blossom, or lime-sulphur sp. gr. 1.01 before blossom, sp. gr. 1.003 after blossom, applied in 1, 2, and 3 applications, gave comparably good scab control on Cox Orange Pippin but bordeaux caused severe russetting. Colloidal sulphur or lime-sulphur sp. gr. 1.003 gave poor results. Sulphur dusts gave poorer results than lime-sulphur spray. Spray results were based on shoot, leaf, and fruit infections. Cox Orange Pippin grafted on East Malling rootstocks XIII and XV had greatest resistance to scab and rootstocks I and IV had greatest susceptibility. Trees which had received a balanced manurial treatment for 10 yr. had ½ to ⅔ less scab than trees on similar rootstocks receiving no manure. II. Apple Mildew.—Observations on control of mildew were based on spraying experiments described in the preceding section. Lime-sulphur gave better control than bordeaux. Soda-soap solution 20-10-100 gave best control on Belle de Boskoop compared with sulphur fungicides. Rootstock I induced susceptibility to both mildew and scab, while rootstocks XV and III induced resistance to both in Cox Orange Pippin. Rootstock III, unworked, was susceptible to both diseases. Manurial treatments had little or no effect on mildew infection. III. Spray Injury.—Bordeaux caused leaf scorch, fruit russetting, and partial loss of crop on Cox Orange Pippin and reduced blossom trusses for succeeding year. Lime-sulphur and colloidal sulphur (0.4%) caused no injury to Cox Orange. Sulphur sprays caused severe leaf drop and reduction of crop on Stirling Castle. Rootstock may influence leaf scorch on lime-sulphur-sprayed Cox Orange.—*J. F. Hockey.*

15454. THOMAS, H. E. The curing of exanthema [of fruit trees] by the injection of copper sulphate into the tree. *Phytopath.* 21(10): 995-996. 1931.—Abstract.

15455. VOGLINO, PIETRO. Il controllo fitopatologico

sulla esportazione delle castagne dal Piemonte verso gli Stati Uniti d'America nella campagna 1930. [Phytopathological control of the exportation of chestnuts from Piedmont to U. S. A.] *Nuovi Ann. Agric.* 11(1): 29-44. 1931.

15456. **WILCOXON, FRANK, and S. E. A. McCALLAN.** The fungicidal action of sulphur. III. Physical factors affecting the efficiency of dusts. *Contr. Boyce Thompson Inst.* 3(4): 509-528. 6 fig. 1931.—Commercial sulphur fungicides differ significantly in toxicity to conidia of *Sclerotinia americana* when compared on an equal weight basis in laboratory tests. This difference cannot be ascribed to differences in rate of formation of H_2S, sulphur content, or acidity of the water extracts. Sulphur fungicides may be classified as "straight" or "modified" dusts and suspension or colloid sprays. Before an artificial rain test, the modified appear more toxic than the straight dusts, but after the rain test there is no difference between the groups, though there is between individual dusts. The colloidal sulphurs are the most toxic. The order of toxicity of straight dusts is unaffected by the rain test and the toxicity increases with decrease in particle size. A convenient method is described for the determination of mean particle size, which involves counting the number of particles furnished by a known weight of dust on a known area. Straight sulphur dusts of differing mean particle diam. compared on an equal weight basis show significant differences in toxicity, but on a basis of equal numbers of particles per unit area there is no difference. The finest dust is most adherent, following the rain test, both to glass and leaves. The percentage adherence decreases with smoothness of surface and quantity of dust applied. A measure of dusting quality was found in the "angle of slope" (the angle between the side and base of a cone of dust carefully built up to maximum height). The most important single factor determining the toxicity of sulphur dusts is the number of particles in a unit weight of material, the finest dust furnishing the greatest number.—*S. E. A. McCallan.*

15457. **WIŚNIEWSKI, P. Wpływ kwasu octowego na zwalczanie głowni prosa (Ustilago panici miliacei) i na kiełkowanie ziarn prosa. [Influence of acetic acid on control of millet smut (U. panici miliacei) and on the germination of millet grains.]** [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 22: 363-378. 1929.—Use of 1% acetic acid for 15 min. diminished the number of infected panicles, although these results were in general poorer than with formalin. Longer exposure and more concentrated solutions (3-4% for 1 hr.) were not inferior to formalin treatments (0.5% for 5 min.). Treatments with acetic acid (3-4% for 15 min.-1 hr.) without milk of lime injured the seed more than formalin, but 1-2% acetic acid without milk of lime gave no worse results than formalin. Using 6% milk of lime with 1-4% acetic acid for 15 min.-1 hr. gave better results than formalin.—*Author's summary (transl.).*

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

15458. **ABBOTT, E. V. Further notes on plant diseases in Peru.** *Phytopath.* 21(11): 1061-1071. 1931.—An annotated list of 53 diseases of economic plants not hitherto reported from Peru, together with a discussion of the most important of those already known. Sugar cane mosaic was found generally in the plantations of the Carabayllo Valley, but was not observed in other districts. Cotton wilt (*Fusarium*) is causing the abandonment of cotton culture in some sections. In field tests the Peruvian variety, Tanguis proved more resistant than several N. American varieties. Stem rust (*Puccinia graminis*) infection of wheat in the highlands decreased gradually with elevation. Germination and infection experiments indicate that the urediniospores do not survive from one crop to the next on the coast, supporting the theory that rust epidemics on the coast are initiated by wind-blown spores from the sierra. Stripe rust (*P. glumarum*) of wheat sometimes causes injury at high elevations where stem rust and leaf rust (*P. triticina*) are absent. Potato late blight (*Phytophthora infestans*) has not been found in the regions where the potato is native, indicating that it is not indigenous to S. America. Potato powdery scab (*Spongospora subterranea*) occurs throughout the Andes where the potato is native and was found once on wild potatoes, indicating its indigenous character. Wart (*Synchytrium endobioticum*) was observed in only one potato district. *Aecidium cantensis* and *Puccinia pittieriana* are reported from Canta (altitude, 8000-9000 ft.) and Tarma, resp. Diseases of fruits not previously reported include Diplodia rot (*D. natalensis*) of oranges, blue mold (*Penicillium italicum*) of citrus fruits, peach leaf curl (*Exoascus deformans*), peach mildew (*Oidium leucoconium*), and a papaya wilt (*Fusarium* sp.). Mosaics are serious on tomatoes and peppers. Miscellaneous fungi identified include *Cercospora apii* (on celery), *C. citrullina* (on watermelon), *C. zebrina* (on alfalfa), *Corticium vagum* (on 8 crops), and *Oidium* sp. (powdery mildew, on 22 plants).—*W. A. Whitney.*

15459. **CHEAL, W. F. Experiments on potato sickness.** *Ann. Appl. Biol.* 18(3): 401-403. 1 pl. 1931.—Following results already published of the effect of inoculations on potato plants with *Heterodera schachtii* and *Corticium solani* in 1928 and 1929, further pot experiments were carried out in 1930 with an additional organism, *Colletotrichum atramentarium.* The results showed a definite effect, the 1st yr. of inoculation, in those pots where *H. schachtii* was present. There was not enough evidence to support the view that the absence of *C. atramentarium* in the 1928 inoculations accounted for the slight symptoms of potato sickness produced that year compared with results obtained in 1929.—*Author's summary.*

15460. **DUFRÉNOY, J., et F. LABROUSSE. Influence du pH du milieu de culture sur la pénétration du rouge neutre dans les cellules du tabac.** *Ann. Épiphyties* 16 (2): 95-102. 5 fig. 1930.—Tobacco seed was germinated under sterile conditions on nutrient agar buffered to pH 4.4-7.5 and containing different concentrations of neutral red. Germination occurred on agar containing 20 gm. neutral red per liter but growth was soon inhibited through the death of meristematic cells in the root tips when the concentration was higher than .05 gm. Lower concentrations did not inhibit growth. Robbins' effect was noted when the seedlings did not absorb neutral red in a medium more acid than pH 5 (i.e., on the acid side of the iso-electric point) whereas seedlings grown on media of pH 5.5-7.5 absorbed neutral red in the vacuolar sap of the meristematic cells. Vacuoles so stained showed the same pattern as observed in stained sections of living tissues.—*J. Dufrénoy.*

15461. **DURRELL, L. W. The pathology of maize.** *Bull. Torrey Bot. Club* 57(4): 233-237. 1930.—A brief history showing the trend of investigational work on the various diseases [smut (*Ustilago zeae*), ear rot *Diplodia zeae*), brown spot (*Physoderma zeae*), the root and stalk diseases (*Basisporium gallarum* and *Gibberella saubinetti*), black bundle (*Cephalosporium acremonium*), et al.].—*H. H. Haymaker.*

15462. **GARD, M. Sur les causes de l'infécondité des noyers et de la vigne en 1926.** *Ann. Épiphyties* 14(2): 132-162. 8 fig. 1928.—The 2nd half of April, most of May, and June 5-20 were characterized by low temp., local freezes, or prolonged rains, conditions particularly inimical to the growth, development and functioning of the fruiting organs. Parasites, chiefly *Marssonia juglandis* and *Microstroma juglandis,* were favored by the prevailing weather conditions, the former practically defoliating the susceptible varieties. The different species of *Juglans* listed in order of their susceptibility to *Marssonia* are: *J. hindsii, J. californica, J. regia, J. cinerea, J. nigra.* The Japanese and Asiatic walnuts are nearly immune, and species of *Carya* and *Pterocarya* show practically absolute resistance. Weather conditions were also responsible for the unproductiveness of the grape vine.

Contributing causes were the damage done by *Eudemis*, the summer drouth, and the early fall freezes of 1925 which injured the immature canes and weakened the buds.—*A. G. Plakidas.*

15463. **HAARRING, FRITZ. Beizmittelprüfung an Haferflugbrand im Laboratorium mit der "Leipziger Methode."** *Pflanzenbau, Pflanzenschutz u. Pflanzenzucht* 7(3): 89-92. 2 fig. 1930.—Microscopic examination confirmed the value of the Leipzig method, but that employed by Reed was not successful because the mycelium is not present in its natural state and because of the absence of the glumes.—*G. R. Gage (from abstract by F. Haarring).*

15464. **HOLLRUNG, M. Forschungs- und Lehrtätigkeit auf dem Gebiete der Pflanzenpathologie in Deutschland.** *Proc. Internat. Congr. Plant Sci., Ithaca, N. Y., 1926* 2: 1216-1223. 1929.—The author gives a review of the development of the science of plant pathology in Germany from Plenck through De Bary to the establishment of the Biologisches Reichsanstalt für Land- und Forstwirtschaft, the organization of research and field stations in Germany, a review of current work in Germany, and of the types of instruction in plant pathology. —*L. E. Wehmeyer.*

15465. **JANKOWSKA, KRYSTYNA. O nowych dla Polski chorobach roślin uprawnych. [Some new diseases of cultivated plants in Poland.]** [With English summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 21(1): 153-162. 1929.—The following diseases of cultivated plants, new to Poland, are described and discussed: *Urocystis cepulae* on onion, *Peronospora* **ducometi** Siemaszko et Jankowska (p. 157) on buckwheat, and bacteriosis ("wild fire") of tobacco.—*Author's summary.*

15466. **KROHN, HEINZ. Wertbestimmungen des Kartoffelpflanzgutes durch neue Keimprüfungsmethoden und analytische Untersuchungen.** *Bot. Arch.* 25: 413-447. 13 fig. 1929.—Pieces weighing about 5 gm. cut from the bud end of each tuber, were used in sprouting tests to compare diseased and healthy samples of the same varieties. Tubers infected with leaf-roll, mosaic, or *Phytophthora infestans* sprouted earlier and had longer sprouts than healthy tubers of the same variety. It was impossible to identify specific diseases by the character of sprouts. Determinations of dry matter, soluble N, and protein N failed to give data that might be useful in diagnosing the value of potatoes for seed purposes. The author concludes that this method of testing is a practical way to determine the value of potatoes for seed prior to field planting.—*J. Bushnell.*

15467. **LeCLERG, E. L. Distribution of certain fungi in Colorado soils.** *Phytopath.* 21(11): 1073-1081. 1931.—A study was made of the fungous flora of 13 soils of different physical conditions supporting different crops. 31 species of fungi (in the genera *Absidia, Acrothecium, Alternaria, Aspergillus, Cunninghamella, Fusarium, Gliobotrys, Hormodendrum, Mucor, Penicillium, Phoma, Rhizopus, Serpedonium,* and *Trichoderma*) were isolated. Alkali salts tend to reduce fungous flora, although *Fusarium* spp. were abundant. Fungi were more abundant in planted than in non-planted soils, such as wind-blown soils. The number of fungi was greatest in soils producing red clover. The only forms that occurred under all soil conditions were *Fusarium* spp. These fungi were more abundant in soils that had produced wilt-sick crops of potatoes than in soils that had produced a crop of only a few affected plants. Likewise, they were very abundant in soils that had produced a crop of gladioli badly affected with Fusarium root rot. Species of *Aspergillus* and *Penicillium* outnumbered any other fungi isolated. The number of fungi decreased with depth into the soil, *Fusarium* being the only fungus present at all depths down to 6 ft.—*Author's summary.*

15468. **MARSHALL, RUSH P. A rubber dressing for tree wounds.** *Phytopath.* 21(11): 1089-1091. 1931.—Rubber latex, containing vulcanized rubber suspended in a colloidal stage, is painted on the wound surface. Combining all the advantages of many dual dressings, as well as being usable at 19°F., it is a material of wide application.—*W. A. Whitney.*

15469. **MELCHERS, LEO EDW. A check list of plant diseases and fungi occurring in Egypt.** *Trans. Kansas Acad. Sci.* 34: 41-106. 1931.—This list of the fungi and plant diseases, based on collections and records from 1820-1930, represents the most complete record for northern Africa. An organism-host and a host-organism arrangement is followed, together with dates of collections and the names of the collectors. The plant diseases include those of a bacterial, fungous, virus, and nonparasitic nature. From a survey of the crops grown in Egypt and the oases of the Libyan Desert, many diseases heretofore unreported in northern Africa are listed.—*L. E. Melchers.*

15470. **MORSTATT, H. Pflanzenpathologie als Wissenschaft und Unterrichtsgegenstand.** *Proc. Internat. Congr. Plant Sci., Ithaca, N. Y., 1926* 2: 1194-1203. 1929. —The author issues a plea for a more basic and comprehensive conception of phytopathology, with especial reference to instruction in this field.—*L. E. Wehmeyer.*

15471. **STANER, P. Les maladies du caféier dans l'Ituri et le Kivu. Rapport phytopathologique.** *Bull. Agric. Congo Belge* 20(1): 129-140. 1929.—The insect and fungous pests encountered during a tour of the coffee-growing districts of Belgian Congo are reported, with recommended measures for their control. The insects encountered include aphids and coccids (*Aphis coffeae, Dactylopius* sp., and *Lecanium* spp.); *Cemiostoma coffeela,* a leaf miner which does considerable damage in some localities; 3 species of borers causing slight damage; gray worm, a leaf-eating insect important in young plantations; nematodes; and *Stephanoderes,* a serious insect pest not yet found in the principal coffee districts. The fungous parasites include *Thyridaria tarda (Diplodia theobromae); Fomes lignosus,* causing isolated cases of root rot; *Cercospora coffeicola; Colletotrichum coffeanum; Phyllosticta coffeicola;* and *Hemileia vastatrix.* The last named fungus causes serious damage in plantations at altitudes of less than 1000 m., comparatively little at elevations of about 1500-1600 m., and is not found above 2000 m. Substitution of the more resistant *C. robusta* for *C. arabica* in plantations with elevation of less than 1000 m. is recommended. Considerable discussion is given a physiological disorder known as "die back," which follows a weakened condition of the trees brought about by overproduction, defoliation by rust, unfavorable soil, or poor cultural methods.—*B. B. Higgins.*

15472. **STANER, P. Quelques maladies de l'Hévéa.** *Bull. Agric. Congo Belge* 21(3): 649-658. 10 fig. 1930. —The root diseases caused by *Fomes lignosus* (=*F. semitostus*=*Rigidoporus microporus*); *F. lamaoensis* (=*Hymenochaete noxia*); *F. pseudoferreus* (=*Poria hypolaritia*) are described and control measures detailed. *Ustulina zonata* is a wound parasite. A physiologic disease caused by excessive soil moisture is reported. A case of polyphagy of *Fomes lignosus,* living as saprophyte on roots of *Ficus* sp. and as a parasite on roots of *Hevea, Leucaena,* and cacao tree is described. Both cacao and *Hevea* being susceptible to the same root disease, the culture of the former tree as shade plant for the latter is not recommended. A new disease of *Hevea* caused by *Corticium* sp. is described. The bark (60 cm. from ground level) is killed to the cambium and is covered by gray-perlaceous, white-bordered, zonate plates of the fungus. The roots are healthy. Scraping and application of tar are prescribed. An analytical key for the determination of root diseases (including that caused by *Sphaerostilbe repens*) is given.—*R. Ciferri.*

15473. **TILEMANS, EM. Comment lutter contre les maladies de l'Hévéa.** *Bull. Agric. Congo Belge* 21(4): 1196-1202. 1930.—Wet rot (*Fomes pseudoferreus*) and the similar diseases caused by *F. lignosus, F. lamaoensis,* and *Xylaria thwaitesii* are controlled by isolation of infected trees and liming. Soil sterilization of seedling-nurseries is useful. Dry rot of trunk and branches

(*Ustulina zonata*, a wound parasite) is controlled by scraping and an application of tar. Mouldy rot (*Sphaeronema fimbriatum*) is spread by tapping knives and is epidemic only during wet, warm seasons. Canker (*Phytophthora faberi*) is a serious disease. Disinfection of tapping surfaces by Uspulun (0.1%) is prescribed. Seedlings affected by *Pestalozzia palmarum* are to be burned and the soil disinfected by applying 5% Uspulun at the rate of 5 liters per sq. m. The following fungi causing leaf diseases are briefly discussed: *Helminthosporium heveae*, *Phyllosticta heveae*, *Phytophthora* sp., *Colletotrichum heveae*, *Cercospora cearea* (sic), *Glomerella cingulata*, and *"Chaetopelopsis tennuissina." Oidium* is controlled spraying with sulphur and copper sulphate mixtures. The Brazilian leaf disease caused by *Dothidella ulei* is cited, as well as the Alga, *Cephaleuros virescens*. Insect pests are not important. Paranitrophenol ("Mouldex") is used for the prevention of moulds on raw rubber. An alteration of raw rubber caused by bacteria or yeasts is little known.—*R. Ciferri.*

PLANT PHYSIOLOGY, BIOCHEMISTRY, AND BIOPHYSICS

B. M. DUGGAR, *Editor*

(See also in this issue Entries 15106, 15110, 15142, 15148, 15150, 15171, 15189, 15196, 15219, 15240, 15247, 15312, 15324, 15334, 15337, 15338, 15344, 15370, 15411, 15414, 15426, 15437, 15439, 15443, 15447, 15456, 15587, 15627, 15639, 15642, 15653, 15656, 15659, 15669, 15678, 15689, 15695, 15696, 15698, 15699, 15701, 15708, 15722, 15729, 15731, 15733, 15736, 15769, 15772, 15774, 15775, 15778, 15780, 15787, 15788, 15906, 16040, 16137, 16506, 16675, 16726, 16727, 16732, 16735, 16736, 16742, 16751, 16752, 16755, 16760, 16761, 16765, 16773, 16774, 16806, 16904, 16907, 16921, 16935, 16939, 16946, 16948, 16958, 16981, 17002, 17008, 17071)

GENERAL

15474. JAMES, W. O. An introduction to plant physiology. viii + 259p. 1 pl. 74 fig. Clarendon Press: Oxford, 1931. Pr., $2.50.—This elementary text contains chapters on material and energy; sugar and the plant materials formed from them; nitrogenous compounds; decomposition of sugars and the liberation of energy; the protoplast; water; irritability; and growth. Each chapter contains suggestions for experimental work. A short list of reagents and their preparation is included. The book closes with a subject index.—*Oran Raber.*

OSMOSIS, PERMEABILITY, PHYSICO-CHEMICAL PHENOMENA

15475. CHENEY, GWENDOLYN M. A correlation between leaf dimensions and osmotic concentrations in chickweeds. *Proc. Roy. Soc. Victoria* 42(2): 85-91. 3 fig. 1930.—Seedlings of *Stellaria media* and *Cerastium vulgatum* were grown in soil watered with solutions of varying concentrations. As the concentration of the salt was increased the leaf dimensions increased. The highest concentration of NaCl which could be added was 1/500 for *Cerastium*, and 1/100 for *Stellaria*. The number of stomata per sq. mm. of leaf surface of *Stellaria* diminished in high concentrations of NaCl. This was not merely a mechanical effect due to increase in leaf surface, because the total number of stomata was also reduced, thus reducing transpiration.—*Author's summary.*

15476. DAMON, E. B., and W. J. V. OSTERHOUT. The concentration effect with Valonia: potential differences with concentrated and diluted sea water. *Jour. Gen. Physiol.* 13(4): 445-457. 1930.—Electrical connection with the vacuole of a cell of *Valonia macrophysa* is established by impaling the cell on a fine glass capillary filled with artificial sap; on standing, the protoplasm becomes sealed to the glass. The P. D. between the interior of the cell and concentrated sea water (up to 1.5 times the strength of sea water) or diluted sea water (down to 0.2 times the strength of sea water) made isotonic with glycerol, is given by the equation: $P.D. = P.D._{s.w.} + \frac{2}{3} RT/F \ ln$ 1/concn. relative to that of *s.w.*, where $P.D._{s.w.}$ is the value (5-8.5 mv.) observed with natural sea water. The sign is that of the interior of the cell. While these P.D.'s may be stable for some hrs., brief exposure to very concentrated or very dilute sea water, or to hypotonic solutions, leads to reversal of the sign of the P.D. The concentration effect is due mainly to the NaCl in the sea water. It is suggested that the factor of $\frac{2}{3}$ in the formula represents the difference betwen the transfer numbers of Cl^- and Na^+ in the protoplasm; in this case, it is necessary to assume for Cl^- a mobility 5 times as great as that of Na^+.—*E. B. Damon.*

15477. HARPEN, NICHOLAAS HENDRIK van. The electrometric determination of the hydrogen ion concentration in the latex of Hevea brasiliensis and its applicability to technical problems. 459p. 41 fig. Varekamp & Co.: Medan, 1931.—Much of this book consists of a review of the physical chemistry of latex with especial reference to that dealing with coagulation and pH. A method of measurement of the pH by the quinhydrone electrode is described together with a micro-method for quinhydrone. Latex from normal trees had a pH of 6.87-7.07 while that from trees in unfavorable conditions was more acid (pH 6.63). Latex is buffered against change by dilution. Changes is acidity of the rubber dispersion by adsorption of H ions on the particle surface in different concentrations of coagulants and with different latex concentrations are determined. The pH of maximum flocculation lies at 5.05 while maximum coagulation is at 4.77. Boundary limits of the coagulation and flocculation zones were determined for latices of varied rubber content. The 1st liquid stage and flocculation are at a higher pH than normal in boiled or in centrifuged latex. With underlatex and formalin latex this boundary is at higher acidity values. In centrifuged cream latex, the 2nd liquid, and 2nd coagulation stages are at higher pH values. Auto-acidification, due to bacteria, is the chief cause of variation of the pH of normal latex. Mineral acids used as coagulants hinder auto-acidification, while organic coagulants in small quantities aid acidification but in large amounts hinder it and are thus less constant. Latex is a "pseudo-lyophilic dispersion," due to the incomplete protein coating on the surface of the particles. This protein causes flocculation but not coagulation. Normal latex follows the Freundlich adsorption isotherm closely, but boiled or formalin latex absorbs coagulants to a lesser degree. Gelation after discharge and dehydration is explained by the activity of re-hydrating substances. Sterols which flocculate at pH 3.02 were extracted from latex and, if added to de-hydrated latex, brought about gel formation at the normal pH. These seem to be carried in the latex as the resin globules of Frey-Wijssling and hence explain the spontaneous gel formation of underlatex and difficult gel formation of cream of centrifuged latex. Ammonia or formalin hinder gelation by the hydratant. The activity of other *Hevea* spp. in causing gelation of boiled *H. brasiliensis* latex corresponded to the size of their resin particles in the following order: *H. collina* > *H. guyanensis* > *H. spruceana*. These sterols have catalytic influence as shown by the close comparison between their action and that of the hypothetical coalase and hence they are considered the natural hydratant present in the latex. The flocculation and coagulation stages are independent, the latter only occurring at a certain acidity in the presence of enough of the hydratant. Methods of electrometric titration are described.—*L. S. Moyer.*

15478. HARRIS, JAMES ARTHUR, and HENRY ATHERTON LEE. The properties of the tissue fluids of sugar cane in their possible relation to drought re-

sistance. *Hawaiian Planters' Rec.* 34(2): 167-177. 1930.—In a series of averages (for leaves and stems) Uba stands first in freezing point depression and osmotic concentration, and is followed by Yellow Caledonia and Badila, but the order of the 2 latter is reversed in the case of the determinations on leaves and stems. In both cases H 109 occupies the 4th position. Lahaina, D 1135, and Yellow Tip show the lowest values in the determinations on leaves and stems. It is concluded that this is also the order of drought resistance.—*From authors' conclusions.*

15479. LLOYD, FRANCIS E. The problem of excretion with especial reference to the contractile vacuole. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 2: 1163-1168. 1929.—Contractile vacuoles occur in the conjugating gametes and in the condensing zygote of *Spirogyra,* and they may be induced in vegetative cells by the application of suitable, strong plasmolysing agents. The relation of contractile vacuoles to the primordium in the cytoplasm is discussed with reference to the work of others. From a biophysical point of view the problem of the origin of the contractile vacuole is regarded as that of internal syneresis, and comparisons are made with models. The contractile vacuoles of *Spirogyra* arise in or from the cytoplasmic layer, and their function is to take water out of the central vacuole and expel it more rapidly than it can be taken up osmotically. It is concluded that the contractile vacuole is an excretory organ, possibly merely water-excretory, though presumably the discharged water is accompanied by substances in solution or in more or less solid condition.—*M. C. Merrill.*

15480. MONSALUD, MANUEL R. Colloid content of mill juices under normal maceration and less maceration. *Philippine Agric.* 20(1): 53-74. 1 fig. 1931.—An investigation involving 156 determinations of the colloid content of mill juices in a sugar Central by the use of the ultramicroscope cataphoresis apparatus indicated that the dye values of the charged colloid of the mill juices are a function of the quality of the ground cane. The amount of colloids of the juices from each mill appears to be related to the amount of the juice extracted by each mill. Between the normal maceration and less maceration millings, the amount of dye needed to neutralize the charged colloids in the 4th mill juice appears to be a linear function of the corrected Brix. To a certain extent, the addition of maceration water produces more colloids in the juice, but this disadvantage is not alarming, as a higher sucrose extraction results from more efficient maceration.—*M. R. Monsalud.*

15481. ROBBINS, WILLIAM J. The analogy between plant tissue and a protein. *Proc. Internat. Congr. Plant Sci., Ithaca, N. Y. 1926* 2: 1125-1138. 1 fig. 1929.—The isoelectric point of various tissues was determined by noting absorption of water, absorption of cations and anions, and the influence of tissues on the reaction of solutions in which they are placed. The isoelectric points observed are: potato tuber pH 6.0-6.4; soybean root tips pH 6.2-6.44; *Elodea* pH 5.8-6.2; *Rhizopus nigricans* near pH 5.0; *Fusarium oxysporum* pH 4.9-5.0; *Giberella saubinettii* near pH 6.2, and for *Fusarium lycopersici* pH 5.4-5.5. Potato tuber tissue dies rapidly in dilute sodium phosphate buffers at pH 4.5, which is close to the isoelectric point. If small amounts (0.00068M) of a Ca salt are added, the tissue lives for some time. Tests with potato tuber tissue and mycelium of fungi show that cations are more toxic in solutions on the alkaline side of the isoelectric point and anions are more toxic on the acid side, indicating that substances become toxic when they combine with the living constituents of the cell. Growth, spore and seed germination, infection by fungi, and staining of sections of plant tissue by dyes are also correlated with the isoelectric point.—*H. R. Kraybill.*

15482. RUSSO, GIUSEPPE. Fattori determinanti e modificatori del potere smorzatore di alcuni vegetali. [Determining and modifying factors in the buffer action of some vegetables.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 490-492. 1930.—The buffer action of the juice of vegetables (lettuce, cabbage) is due chiefly to dialysable acid-salt systems and much less to protein.—*M. Comel.*

15483. WILSON, A. L. Hydrogen-ion concentration in relation to the growth of onions. *Proc. Amer. Soc. Hort. Sci.* 27: 524-528. 1930(1931).—Onion plants were grown in nutrient solutions adjusted at intervals of 0.5 of a pH, from pH 3.5 to 8.0. Responses were measured in terms of total increase in fresh and dry wt. and in % of increase in fresh and dry wt. The results of 3 experiments conducted under slightly different conditions of light, length of day, and temp. indicate that onions may be expected to grow satisfactorily in nutrient solutions at pH 5.5-7.0.—*A. L. Wilson.*

WATER RELATIONS, SAP MOVEMENT

15484. ABELL, C. A., and C. R. HURSH. Positive gas and water pressure in oaks. *Science* 73(1895): 449. 1931.—Noted in *Quercus coccinea, Q. montana,* and *Q. alba.*

15485. BARRETT, A. O., and HEBER GREEN. The seasonal sap flow of Eucalyptus botryoides. *Proc. Roy. Soc. Victoria* 43(2): 241-250. 1931.—The roots of mature trees are apparently dormant during spring and summer, but begin to form white, very active roots and root hairs in early autumn. During autumn and winter, water is stored in the bark, the moisture content of living bark rising from 57 to 64% (i.e., from 132 to 178% of the dry bark), whilst the formation of new leaves is almost nil. After the irrigative period the new leaves form in a succession of flushes or waves every 3-5 weeks throughout the spring and summer. At the same time, the sugar produced by these leaves accumulates in the bark until the sugar content has increased from 1.5 to 8%. The ash content is at its minimum (3.5%) in the spring, and at its maximum (6.0%) in the autumn. It seems probable that these periods of root growth and the other peculiarities observed, so different from those of the exotic plants of colder climates, are some of the developments which have enabled eucalypts to flourish in a semi-arid climate, withstanding a summer drought, and storing up a water supply in the wet season.—*From authors' summary.*

15486. BRIERLEY, W. G. Transpiration rates in old and new canes of the Latham raspberry as measured by nontoxic dyes. *Proc. Amer. Soc. Hort. Sci.* 27: 152-157. 1 fig. 1930(1931).—In canes of approximately the same diam. at the base, dyes rose in old canes much faster than in new canes, at the height of the harvest season. In early Aug., the rates tended to become nearly equal; then the rate declined in the old canes. In the new canes the rate increased until mid-Aug. followed by a decline. The rates for the old and new canes were roughly parallel until late Sept. when the decline in the old canes became more rapid. Although the use of dyes does not give an accurate measure of transpiration rate, the method showed the old canes to be highly efficient in water conduction until early Sept.—*W. G. Brierley.*

15487. KAMP, HERBERT. Untersuchungen über Kutikularbau und kutikuläre Transpiration von Blättern. *Jahrb. Wiss. Bot.* 72(3): 403-465. 12 fig. 1930.—Leaves of about 30 sp. of mostly woody plants were tested. The stomata on all leaves were ventral. The loss of water from the detached leaves was measured gravimetrically by attaching the petioles by a thread to the arm of a specially constructed torsion balance, which was placed within a box having glass windows that could be opened and closed as desired. After determining the loss of water for the entire leaf, the ventral surface was covered with vaseline to determine the amount of loss through the cutinized dorsal surface. Leaves of plants growing both in the open and in the glasshouse were tested, likewise both sun and shade leaves. The results of the test showed that the loss of water from the sun leaves during a given period was much more than from the shade leaves of the same sp., and that the dorsal surface of the sun leaves lost much more than that of the shade leaves. In some cases the loss from the ventral surface of sun leaves was only 2 times that of the loss from the dorsal surface

(*Coffea arabica*), while in others the loss from the ventral side was 45 times that of the dorsal (*Laurus nobilis*). The thickness of the cuticle in itself did not appear to govern the amount of water which escaped through it; and the epidermal cells themselves, aside from their layer of cutin, are a factor in controlling loss of water.—*E. T. Bartholomew.*

15488. LOWRY, M. W., and PAUL TABOR. Sap for analysis by bleeding corn plants. *Science* 73(1895): 453. 1 fig. 1931.—The stalk was cut just below one of the nodes near the soil surface and a flask attached to the stump.

15489. MAXIMOW, N. A. The physiological nature of drought-resistance of plants. *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 2: 1169-1175. 1929.—Intensity of transpiration alone can not serve as an index of the degree of xerophytism and most of the factors forming the dry habitat increase the transpiration capacity of plants. Also no direct correlation exists between drought-resistance and the water requirement of plants, but the capacity to endure without significant injury a state of permanent wilting is the principal peculiarity of drought-resistant plants. This capacity is explained on the basis of conditions within the cells, such as increase in osmotic pressure and modifications in the protoplasm itself that increase its water-holding capacity. External changes (xeromorphism) that further affect the conservation of water are merely the manifestation of these more fundamental inner physiological changes. In the case of a typical xerophyte these physiological characteristics are thought to be inherited. Thus the problem of drought-resistance like that of cold-resistance is transferred from the domain of morphology to the field of physiology and biochemistry.—*P. D. Strausbaugh.*

15490. MURNEEK, A. E. An efficient oven for drying plant material. *Proc. Amer. Soc. Hort. Sci.* 25: 338-341. 1928.

15491. OGURI, SUTEZO, and SOZI TERUI. Hygroscopic moisture of cellulose. III. *Jour. Soc. Chem. Indust. Japan Suppl. Binding* 34(7): 229B-233B. 7 fig. 1931.—Abstract.

15492. PAVLOV, KYRIL. Počet, velikost průduchů a ssaci sila (osmotická hodnota), jako pomůcky ke zjištění fysiologických vlastnosti zušlechtěných soret pšenice a ovsa, se zvláštnim zřetelem k resistenci vůči suchu. [Number and size of stomata and suction force as means of determining physiological properties of varieties of wheat and oats, with special reference to drought resistance.] [German abstract.] *Věstnik Českoslov. Akad. Zem.* 6(6/7): 620-626. 1930.—A great number of pure line winter and spring wheats and spring oats were examined. The suction pressure was determined by the method of Eibl-Buchinger-Meyer. Results showed, with few exceptions, that the more xerophytic and earlier varieties have shorter stomata and greater suction pressure, while the more hygrophytic and later ones have longer stomata and smaller suction pressure.—*K. Pavlov.*

MINERAL NUTRIENTS, SALT RELATIONS

15493. DAVIDSON, O. W. An application of the triangle system in determining a nutrient solution suitable for research with the peach in sand culture. *Proc. Amer. Soc. Hort. Sci.* 25: 354-358. 1928.—A nutrient solution having an osmotic pressure of 1 atmosphere and the following salt proportions: 0.01055 *M* KH_2PO_4, 0.00438 *M* $Ca(NO_3)_2$, 0.00237 *M* $MgSO_4$, and 0.0014 *M* $(NH_4)_2SO_4$ was found suitable for growing peach seedlings in sand culture. Under the seasonal environmental conditions of the greenhouse, the solution produced maximum dry wt. yields and total linear growth.—*Author's conclusions.*

15494. FREY-WYSSLING, ALB. Über die Ausscheidung der Kieselsäure in der Pflanze. *Ber. Deutsche Bot. Ges.* 48(6): 179-183. 1930.—Deposits of silica are more frequent in tropical plants than in those of the temperate zones. This correlates with the fact that, as the result of the higher soil temp. in the tropics, silicic acid is dissolved and taken into the plants with the water required for transpiration. Hence, the silica is ballast in the water and is not used in the metabolism of the plant. It is concluded that the deposition of silicic acid must be interpreted as a defecation rather than an excretion.—*A. Frey-Wyssling* (*transl. by C. J. Lyon*).

15495. FREY-WYSSLING, ALB. Vergleich zwischen der Ausscheidung von Kieselsäure und Kalziumsalzen in der Pflanze. *Ber. Deutsche Bot. Ges.* 48(6): 184-191. 1930.—Silicic acid and Ca salts are deposited in homologous tissues and tissue elements. Interchangeable occurrences of salts of silica and Ca indicate an analogous physiological significance of these deposits. The $CaCO_3$ excreted by plants can be interpreted as a defecation product. In the case of Ca-oxalate, only the Ca ion can be regarded as such, while the oxalate ion represents a metabolic product and therefore an excretion.—*A. Frey-Wyssling* (*transl. by C. J. Lyon*).

15496. LILLELAND, O. Does potassium increase the sugar content of prunes? *Proc. Amer. Soc. Hort. Sci.* 27: 15-18. 1930(1931).—Heavy applications of K salts to prune trees growing in K deficient soils increased the K content of leaves and fruit and delayed the development of leaf scorch, but did not increase the sugar content of the fruit. A survey of the K contents of leaves and fruit of prune trees, and the soil in which they grow in 14 orchards located in widely separated sections of California, failed to show any correlation between K and the sugar content of the fruit.—*O. Lilleland.*

15497. LOEW, OSCAR, und FRITZ MERKENSCHLAGER. Über die Resistenz der Maiswurzel gegen Magnesiumsalze. *Angewandte Bot.* 11(3): 268-273. 2 fig. 1929.—Seed of maize, lupine, barley, sunflower, dandelion, and lettuce were germinated in sand, then transferred to 0.1-0.5% solutions of $MgSO_4$ or $MgCl_2$. Richter's nutrient solution was used as a control. Symptoms of Mg toxicity, different for each sp., soon appeared with all plants, excepting maize, the roots usually becoming discolored, slimy, and spongy. The roots of maize remained white and the plants alive for a month or longer in 0.5% $MgSO_4$. Since maize is a Mg-rich plant, this resistance could not be due to low permeability of the roots for Mg salts. There was no microscopic evidence of precipitation of Mg salts in the cell. The protecting action of a nuclear membrane is suggested.—*F. H. Crane.*

15498. McHARGUE, J. S., and R. K. CALFEE. Effect of manganese, copper, and zinc on growth and metabolism of Aspergillus flavus and Rhizopus nigricans. *Bot. Gaz.* 91(2): 183-193. 7 fig. 1931.—Cultures of *Aspergillus* made a heavier and a more rapid growth in the medium containing certain concentrations of Mn, Cu, or Zn than in a medium free (carefully tested) from compounds of these elements. Combinations of the optimum concentrations of all 3 stimulated a greater growth than did combinations of any 2. The presence of all 3 influenced the assimilation of P, Mg, and Ca, and the production of fat. Mn, Cu, and Zn are all essential for the growth of both fungi.—*J. S. McHargue.*

15499. MOKRAGNATZ, M. Action du nickel et du cobalt sur le developpement de l'Aspergillus niger. *Bull. Soc. Chim. Biol.* 13: 61-71. 1931.—Effects were measured by determining the dry wt. of mycelium developed from spores sown in a nutrient solution to which $NiSO_4$ had been added. Increases in wt. over checks were found in all concentrations between N/500,000 and N/15,000, at which maximum wts. were attained. Wt. of mycelium decreased with concentrations of N/7500-N/5000 and growth was almost completely suppressed in N/3000 $NiSO_4$. With Co, no stimulatory effect was observed at any concentration; N/250,000 decreased growth and N/2500 wholly suppressed it. The amount of Ni absorbed by the fungus in the various cultures did not exceed 50% of that present even in the greatest dilutions.—*J. S. Caldwell.*

15500. PANTANELLI, E. Influenza della concentrazione sul meccanismo di assorbimento dei sale nelle piante. [Influence of concentration on the mechanism of salt absorption in plants.] *Archiv. Sci. Biol. [Napoli]* 12: 163-180. 4 fig. 1928.—Bean roots were immersed for

8 hrs. at 17-19° C. in single salt solutions of $CaCl_2$, NH_4NO_3, KH_2PO_4, and $MgSO_4$ at concentrations of 0.001-0.25 *M*. For the first 3 salts, cations and anions were absorbed in unequal amounts, more anions than cations being taken up. Plasmolysis occurred at about 0.1 *M*. With concentration of 0.25-1.0 *M* the 2 classes of ions were absorbed in more nearly equal amounts, the ratio approaching unity for the higher concentrations.—*T. I. Edwards.*

15501. **TIDMORE, J. W. Phosphate studies in solution cultures.** *Soil Sci.* 30(1): 13-31. 1930.—Using corn, sorghum, and tomatoes, the rate of PO_4 absorption was not directly proportional to the PO_4 concentration of the culture solution. Rate of growth increased with increasing PO_4 concentrations throughout the growing period. Maximum growth was obtained at 0.5 p.p.m. PO_4. Corn and sorghum made a very good growth at 0.2 p.p.m. PO_4, whereas tomatoes made a poor growth. Phosphate played a minor rôle as a buffer material in the plant sap. Corn absorbed PO_4 more rapidly from acid than from alkaline solutions. There was no appreciable difference in the rate of PO_4 absorption from solutions having a reaction of pH 4.0, 5.0, and 6.0.—*J. W. Tidmore.*

15502. [TUEVA, O. F.] ТУЕВА, О. Ф. Исследование над усвоением фосфорной кислоты ячменем в водной культуре. [Assimilation of phosphoric acid by barley in a water solution.] [English summary.] Известия Биологического Научно-Исследовательского Института и Биологической Станции при Пермском Государственном Университете (*Bull. Inst. Rech. Biol. et Sta. Biol. Univ. Perm*) 6(6): 261-276. 1929.—After 3, 5, 7, and 9 weeks of growth on a complete Knop's medium, plants were transferred to jars with the same medium, but deficient in P, and left there till the end of the experiment. Plants were analyzed for total P content, distribution of P in different plant organs, P content of the exudate from the plant stump, and finally their dry wt. It was found that the amount of P absorbed by the plants during the first 5 weeks of growth was sufficient for their normal development. Subsequent absorption of P diminished the dry wt. When PO_4 was present in the culture medium, it was continuously absorbed during the whole period of growth, and no migration from vegetative to reproductive organs took place. In the absence of P in the external medium, P was removed from vegetative to reproductive organs.—*G. Krotkov.*

15503. **WALLACE, T. Studies in the nutrition of fruit trees.** *Proc. Internat. Congress Plant Sci., Ithaca, N. Y., 1926* 2: 1012-1023. 1929.—Data are summarised concerning the effects of N, K, P, Ca, Mg, and S deficiencies on growth and yields of apples, gooseberries, black currants, and raspberry and strawberry plants grown in pot cultures. In addition results are given of some experiments on the effect of varying ratio of nutrient elements and on effects of acidity and alkalinity. Lack of N greatly reduced growth, blossoming, and fruit production; leaves were small, yellowish, and the apples produced were small and highly colored. Potash deficiency produced no early effect, but later in the season leaves became slightly bluish green, curled, reduced in size, and marginal areas became brown; in general such leaves abscissed prematurely. Fruit yields were somewhat decreased, but the symptoms in general are not as marked as with lack of N. P deficiency produced effects almost as severe as those caused by N deficiency. Greatly reduced foliage, growth, and fruiting resulted. Leaves developed purplish tints which later faded to a bronze color and abscissed prematurely. Root systems were reduced in amount. No pronounced differences were found where Ca was omitted, except a tendency for larger leaves and more shoot growth. Lack of Mg manifested itself in foliage peculiarities specific for each plant. In general, the leaves of all plants were blotched and dropped prematurely. Lack of S gave symptoms like those of lack of N but not nearly to the same degree. Experiments on the effect of varying ratios of N/K and K/Mg in nutrient solutions showed that the added growth made possible by further addition of elements such as N, might make an otherwise normal supply of one element inadequate.—*H. D. Chapman.*

15504. **WALLACE, T. The nutrition of fruit trees. I. Some effects of deficiencies of essential elements on fruit trees.** *Ann. Appl. Biol.* 17(3): 649-657. 1930.—See previous abstract.

15505. **WARD, RITCHIE R. A rapid colorimetric method for phosphorus determinations.** *Hawaiian Planters' Record* 34(3): 307-312. 1930.—This method depends on the blue color that is developed when P-molybdate is reduced with phenylhydrazine. The results obtained have been shown to be reproducible. An equation has been developed for calculating the % of P, as indicated by the standard method, from the results of the colorimetric method.—*From author's conclusions.*

15506. **WOLFF, L. K., und A. EMMERIE. Über das Wachstum des Aspergillus niger und den Kupfergehalt des Nährbodens.** *Biochem. Zeitschr.* 228(4/6): 443-450. 1930.—*A. niger* requires Cu for growth and spore formation. At least 0.2γ (γ=1/1000 mg.) in 250 cc. liquid is required for growth; 0.3γ for spore formation; 25γ for the formation of black spores. The latter arise most rapidly when 250γ Cu is added to 250 cc. nutrient material.—*C. Lieneman.*

PHOTOSYNTHESIS, CHLOROPHYLL

15507. **CONANT, J. B., S. E. KAMERLING, and C. C. STEELE. The allomerization of chlorophyll.** *Jour. Amer. Chem. Soc.* 53(4): 1615-1616. 1931.—When allowed to stand in alcoholic solution, the molecular change of chlorophyll (dehydrogenation of the -CHOHCO- groupings to -COCO- groups) has been observed. The dehydrogenation is brought about by atmospheric O, and the same process can be caused by chlorophyll *a* in acetone-pyridine solution by the addition of K-molybdicyanide.

15508. **EULER, HANS von, und DAGMAR RUNEHJEIM. Chemische Beiträge zur Kenntnis der Chlorophylldefekte.** *Arkiv f. Kemi, Mineralogi och Geologi* 10A (3, paper 10): 1-8. 1931.—Barley seed contain much less catalase before germination than after. Catalase content remained constant between 10 and 14 days of germination, and was the same at 17 as at 22° C. In both barley and variegated *Pelargonium zonale*, chlorotic tissues contained much less catalase than green tissues. Grains from chlorotic barley plants contained as much Mg as those from normal plants, and the chlorotic areas of variegated *Pelargonium* leaves had more total Mg than green areas.—*N. A. Pettinger.*

15509. **KUHN, R., und A. WINTERSTEIN. Über die Verbreitung des Luteins im Pflanzenreich.** *Naturwiss.* 18(34): 754. 1931.—Lutein, the pigment of egg yolk, is closely related to xanthophyll and is widely distributed in plants: in young grass, in crude chlorophyll, in most yellow flowers, and elsewhere. Lutein seems to have been confused with xanthophyll, but the 2 compounds differ in melting point and in degree of rotation of plane of polarized light in chloroform; that of xanthophyll is $[\alpha]_D = +136\text{-}192°$ and for lutein $[\alpha]_D = +70°$ or thereabouts.

15510. **RABER, ORAN. A possible relationship between hemoglobin and chlorophyll as shown by the use of liver extract.** *Science* 73(1895): 457-458. 1931.—Corn seedlings placed in a nutrient solution to which liver extract was added and then placed in the dark did not become etiolated so quickly as controls.—*Oran Raber.*

15511. **RIPPEL, AUGUST. Kritisches zur Assimilationsgleichung von J. C. Ghosh.** *Ber. Deutsch. Bot. Ges.* 47(3): 186-188. 1929.—This is a contribution to the dispute between those who would reduce biology to a series of mathematical expressions and those who are temperamentally and otherwise opposed, but it is also shown that Ghosh's formula, by omitting the many other factors concerned, does not fairly represent the process of photosynthesis. In the Ghosh formula, a term representing the speed of CO_2 splitting is the principal factor.

Results of experiments in which the CO_2 concentration is maintained uniform and the light varied, or the illumination maintained constant, and the CO_2 concentration is changed, do not bear out the Ghosh idea; for instead of the rate of CO_2 fixation increasing with the concentration, or with the illumination, the rate declines as concentration and illumination increase. This reduces the formula and its reciprocal to more or less of a contradiction of the facts. The formula is therefore too simple for correct representation of the extremely complicated process of photosynthesis.—*G. J. Peirce.*

15512. [RYZHKOV, V.] РЫЖКОВ, В. Проблема пестролистности в современной литературе. [Problem of leaf variegation in contemporary literature.] Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot., Gen. & Plant Breed.*) 22(5): 523-570. 1929/1930.

15513. **WHITESIDE, A. G. O. A study of the carotinoid pigments of wheat and flour with special reference to wheat varieties.** *Canada Dept. Agric. Bull.* 154. 1-33. 1931.—As determined spectrophotometrically, milled flours from spring wheat varieties grown on dry land were higher in carotin than flours milled from irrigated land wheat. Varietal differences also played a part. Test wt. per bushel and wt. per 1,000 kernels were negatively correlated with carotin concentration of flour. Protein content of wheat and ash % of flour were not so correlated. Dry and wet slick color estimations did not appear to be reliable in estimating carotin concentrations of flour. Crumb color comparisons were significantly correlated with carotin concentrations of flour. A suitable method for determining carotin concentration value of wheat which would fairly indicate that to be expected from the flour milled from it is tentatively suggested. Samples of the same variety may be expected to vary considerably in carotin concentration of the wheat and of the flour milled from it. Higher values appear to be associated with lack of plumpness as determined by test wt. per bushel measurements.—*Author's summary.*

15514. **ZECHMEISTER, LÁSZLÓ, LÁSZLÓ CHOLNOKY, és VERÁ VRABÉLY. Újabb Vizsgálatok a paprika festékéröl.** [The paprika pigment.] [German summary.] *Math. es Természettudomanyi Értesitö (Math. u. Naturwiss. Anzeiger Ungarischen Akad. Wiss.)* 45: 639-651. 1928.—Capsicum red, a pigment composed of capsanthin and carotin, was studied by the method of hydrogenation in the presence of a catalyst. Carotin ($C_{40}H_{56}$) takes up 11 molecules of H, and capsanthin takes up 9. Perhydro-capsanthin is a colorless oil, levorotatory, and of the expected molecular wt. The carotin compound agreed in molecular wt. with the Willstätter and Mieg compound. Xanthophyll and phaeophytin were also subjected to the reaction, platinum being used as the catalytic agent. On the basis of the above findings, some comments are offered on the structure of carotinoid pigments. Partial hydrogenation should show to what degree there is a series of double-linked compounds of the Kuhn and Winterstein types. The optical activity is important in examining the structure. Perhydro-carotin is inactive, while the corresponding capsanthin derivative shows a levo-rotation comparable to an O-containing ring compound ($C_{34}H_{66}O_2$). The natural reddening of paprika fruits is an oxidation process and does not occur in an atmosphere of CO_2. The capsicum red pigment does not arise from the chlorophyll complex, but from a colorless precursor.—*Authors' summary (transl. by O. E. Street).*

BIOCHEMISTRY, METABOLISM (GENERAL)

15515. **ALLEN, F. W. The influence of ethylene gas treatment upon the coloring and ripening of apples and pears.** *Proc. Amer. Soc. Hort. Sci.* 27: 43-50. 1930(1931). —Although individual samples did not always show consistent results, Gravenstein apples and several varieties of winter pears exposed to ethylene gas (1:1000) for 4-10 days were usually yellower and softer after a given period than were untreated samples. This difference was most marked in early picked fruit. The treated apples had slightly more reducing sugars and less acid. The ethylene treatment, however, failed to influence the sugar or acid content of the pears.—*F. W. Allen.*

15516. **BOBILIOFF, W. Over de vorming en de physiologische beteekenis van caoutchouc, voorkomende in de melksapvaten der planten.** [Formation and physiological significance of caoutchouc, present in the latex of plants.] *Handel. 4th Nederlandsch-Indisch Natuurwetensch. Congres Weltevreden* 1926: 406-413. 1926.

15517. **BRIDEL, MARC. Recherches sur les variations de coloration des plantes au cours de leur dessication. Le glucoside du Lathraea clandestina L. est l'aucuboside (aucubine).** *Compt. Rend. Acad. Sci.* [*Paris*] 188(18): 1182-1184. 1929.—It is aucubine rather than meliatine which causes the darkening of *L. clandestina.* The glucoside obtained is compared with aucubine from *Aucuba* and its presence in several families is noted.

15518. **BRIDEL, MARC. Les récents travaux sur la constitution des pectines.** *Jour. Pharm. et Chim.* 13(2): 99-131. 1931.—A comprehensive review with bibliography.

15519. **BRIDEL, M., et R. LAVIEILLE. Le principe à saveur sucré du Kaâ-hê-é (Stevia rebaudiana Bertoni).** *Jour. Pharm. et Chim.* 14(3): 99-113; (4): 154-161. 1931.—The leaves of *Stevia* furnish 60-65 gm. of stevioside per kgm. Pure stevioside crystallizes in elongated, colorless prisms. It is about 300 times as sweet as sugar and is thus the sweetest natural substance. It does not change in the air but is hygroscopic. It does not dissolve readily in water. It contains no N and is not hydrolysed by emulsion, rhamnodiastase, beer yeast, nor *Aspergillus niger,* but is hydrolysed by 5% H_2SO_4 in 3 hrs. in a boiling water bath, giving a crystallized non-carbohydrate, steviol (insoluble in H_2O), and d-glucose.—*Authors' summary (transl.).*

15520. **BRIDEL, M., et R. LAVIEILLE. La rebaudine de Dieterich est du stévioside impur.** [Rebaudine of Dieterich is impure stevioside.] *Jour. Pharm. et Chimie* 14(4): 161-163. 1931.

15521. **CAHN, ROBERT SYDNEY, CHARLES STANLEY GIBSON, ARTHUR RAMON PENFOLD, and JOHN LIONEL SIMONSEN. The essential oil of Backhousia angustifolia. III. The constitutions of angustione and dehydroangustione. Note on the parachors of angustione and dehydroangustione, by OWEN JOHN EVANS and FREDERICK GEORGE SOPER.** *Jour. Chem. Soc.* [*London*] 1931(Feb.): 286-294. 1931.

15522. **CLAASSEN, H. Das Wachstum der Hefe und die Zunahme ihrer Bestandteile bei dem Lufthefeverfahren.** *Biochem. Zeitschr.* 228(1/3): 154-162. 1930.—Hourly determinations of the increase in dry matter, protein, N-free substances, and ash of yeast in fermentation experiments showed that protein formation was greatest when the wort contained sugar and easily-assimilable N compounds, especially ammoniacal N. N-free constituents were synthesized most when the wort contained amino acids, alcohol, and N-free organic acids but no sugars, in the final hrs. of fermentation. The addition of limited amounts of ammoniacal N to worts containing sufficient assimilable organic N-containing materials for yeast growth did not increase the yield of yeast dry matter, but caused the yeast to form more protein and less N-free substances.—*Author's summary (transl. by N. A. Pettinger).*

15523. **DENNY, F. E. The twin-leaf method of studying changes in leaves.** *Amer. Jour. Bot.* 17(8): 818-841. 1930.—Because of the objections that have been made to the Sachs half-leaf method of selecting samples of leaves to determine the changes that take place during a given time interval, attention was turned to the possibility of using the paired leaves of sp. having opposite leaves or leaflets, the plan being to take one leaf of the pair at the beginning of the period and the other at the end. The variation in the wts. of opposite leaves of such pairs was determined for a number of sp., special attention being given to *Salvia splendens.* Here the

error involved in the assumption that the wts. of opposite leaves were equal was about 1% on a composite sample of 25 leaves and about 2% on a sample of 9. The method was applied to a study of the changes in fresh wt., dry wt., water content, starch, soluble solids, insoluble N, etc. during a 24 hr. interval, samples being taken each 2.5-4 hrs.—*F. E. Denny.*

15524. **ENGEL, HORST. Über die Chemie des Öles der Lindenrinde.** *Zeitschr. Wiss. Biol. Abt. E, Planta* 4(3): 389-391. 1927.—The stored oil in the bark consisted mainly of glycerides of fatty acids, chiefly triolein.—*M. Roberg (transl. by L. J. Pessin).*

15525. **FRÖSCHL, NORBERT, und JULIUS ZELLNER. Zur Chemie der höheren Pilze. XX. Über Omphalia campanella Batsch, Marasmius scorodonius Fr., Boletus cavipes Opat. und Calocera viscosa Pers.** *Akad. Wiss. Wien. Math.—Naturwiss. Kl. Sitzungsber. Abt. 2.* 137 (8): 677-686. 1928.—The chemical constituents of *O. campanella, M. scorodonius, B. cavipes,* and *C. viscosa* were isolated and their physical and chemical properties studied. No new chemical substance was found.—*H. J. Sax.*

15526. **HAYDEN, ADA, and J. N. MARTIN. Structure and composition of pollen grains of vernal plants.** *Proc. Iowa Acad. Sci.* 36: 233-239. 1929 (1931).—Pollen of 15 sp. of spring-flowering trees was examined morphologically and tested for starch, sugars, fats, and protein. All sp. contained starch; sugar was found in pollen of *Salix longifolia* and *Ulmus fulva;* none showed fats; and pollen of Betulaceae showed no protein.—*H. S. Conard.*

15527. **HERISSEY, H., et J. CHEYMOL. Sur le vicioside.** *Bull. Soc. Chim. Biol.* 13: 29-34. 1931.—Rittthausen isolated vicine from seed of *Vicia sativa* in 1870. He believed that the sugars resulting from hydrolysis with dilute H_2SO_4 consisted of glucose and galactose. The authors were able to identify only d-glucose in the products of hydrolysis; no trace of galactose was found. —*J. S. Caldwell.*

15528. **HILL, R., and D. KEILIN. The porphyrin of component c of cytochrome and its relationship to other porphyrins.** *Proc. Roy. Soc. [London] B* 107 (751): 286-292. 1 fig. 1930.—Two different porphyrins can be prepared from the unmodified cytochrome *c* obtained from bakers' yeast. Under the action of HBr and acetic acid, cytochrome *c* yields a hematoporphyrin which is indistinguishable from hematoporphyrin prepared in the same way from the ordinary hematin. Both show the same solubilities in ether and acetic acids, and the same absorption spectra in ether and in HCl. Both when reunited with Fe combine with various N compounds or with native globin and give respectively hemochromogens or hemoglobins with similar absorption spectra. Both hematoporphyrins (prepared from cytochrome *c* and from ordinary hematin) can be easily converted into protoporphyrin. This conversion can be accomplished by (a) heating the hematoporphyrin in vacuo; (b) heating the corresponding hematohematin in vacuo; or (c) by heating the hematohematin in acetic acid in a sealed tube. The fact that hematoporphyrin obtained from *c* can be converted into protoporphyrin gives an additional support to Keilin's proposal as to the origin of cytochrome, namely, that it is derived from the protohematin present in cells. Under the action of HCl, in the presence of a reducer such as SO_2, cytochrome *c* gives another porphyrin which can be considered as the unmodified porphyrin *c* of this compound. The absorption bands of this porphyrin occupy an intermediate position between those of hemato- and protoporphyrin, lying, however, nearer those of the former. This porphyrin when recombined with Fe and a N compound such as pyridine gives a hemochromogen indistinguishable from that of component *c* of cytochrome dissolved in aqueous pyridine. This unmodified porphyrin is insoluble either in ether and acetic acid or in chloroform, and its absorption spectrum can be measured either in acid or in pyridine. The porphyrin *c* on long standing in HCl in the presence of SO_2 gradually becomes transformed into ordinary hematoporphyrin. —*Authors' summary.*

15529. **KAKESITA, KINZIRO. Preliminary report on the study of artificial removal of astringency in the kaki.** *Proc. Imp. Acad. [Tokyo]* 6 (10): 397-398. 1930.

15530. **LAGATU, H., et L. MAUME. Le diagnostic foliaire et son degré de sécurité.** *Compt. Rend. Acad. Sci. [Paris]* 188 (16): 1062-1064. 1929.—From work on grape and potato leaves, it is concluded that a chemical analysis of the leaves can be used to determine with some degree of accuracy the physiological activity of the plant, the soil medium being considered homogeneous. The importance of this fact in agricultural experiments is stressed.

15531. **LECOQ, RAOUL. Recherches expérimentales sur les vitamines B contenues dans les levures, dans leurs extraits et dans leurs milieux de culture. [Vitamin B in yeasts, their extracts, and their culture media.]** 67p. 3 fig. Vigot Frères: Paris, 1928.

15532. **MAIGE, A. Role du cytoplasme dans l'amylogenèse.** *Compt. Rend. Acad. Sci. [Paris]* 188 (16): 1058-1060. 1929.—Physico-chemical variations in the cytoplasm of the cell can either stimulate or inhibit starch formation within the plastid.

15533. **MALHOTRA, R. C. Microchemical study of hemicellulose in some plant cells, with special reference to its distribution in the protoplasm.** *Jour. Biochem. Tokyo* 12: 341-349. 1930.—Sections of 1-yr. apple twigs (McIntosh and Winter Banana) and of stems of tomatoes grown at 80° and at 50° F. were studied. Of various reagents recommended for demonstration of hemicellulose in sections, Schulze's reagent was most satisfactory. In mature cell walls of apple, it was possible to demonstrate a middle lamella of pectin, a secondary layer mainly composed of cellulose with some lignin and hemicellulose, a 3rd layer of cellulose impregnated with hemicellulose but without lignin, and a 4th layer consisting mainly of hemicellulose. In thick sections, hemicellulose was present generally throughout the protoplasm of mature cells; younger cells had much less of it. Tomato plants grown at 50° F. had much more hemicellulose in the protoplasm of stem sections than did plants from the same seed grown at 80°.—*J. S. Caldwell.*

15534. **MATTHEWS, ASA A. L. Origin and growth of the great Salt Lake oölites.** *Jour. Geol.* 38 (7): 633-642. 2 pl. 1930.—*Gleocapsa* and *Gleotheca* are not responsible for the formation of oölites; they are formed by a physico-chemical process.—*D. J. MacNeil.*

15535. **MAY, O. E., A. J. MOYER, P. A. WELLS, and H. T. HERRICK. The production of kojic acid by Aspergillus flavus.** *Jour. Amer. Chem. Soc.* 53 (2): 774-782. 1 fig. 1931.—The effects of variation in nutrient N, temp., concentration of sugar, and depth of culture solution on the production of kojic acid from dextrose by *A. flavus* were investigated. With 20% dextrose solutions containing NH_4NO_3 as the source of N, the surface-area-volume ratio of the solution equal to 0.3-0.5, and at 30-35° C., this organism was capable of transforming more than 45% of the sugar present and more than 55% of that consumed into kojic acid in 12 days from the time of inoculation from spores.—*O. E. May.*

15536. **MEIER, K. Ueber den Gehalt, insbesondere den Energiewert von Aepfeln und Birnen im baumreifen Zustand und im Verlaufe der Lagerung.** *Landw. Jahrb. Schweiz* 44 (5): 589-597. 1930.—The composition of apples and pears varies with the period of harvest, composition of soil, and application of fertilizer. The average for apples was moisture 85.6%; ash 0.23%; and 564 calories per kgm. The average for pears was moisture 82.8%; ash 0.36%; and 674 cal. per kgm. The % of water in the fruit decreased during storage, but the fluctuations were small among the various varieties.—*J. H. MacGillivray.*

15537. **MEUNIER, A. Recherches sur les variations de coloration des plantes au cours de leur dessiccation. Le chromogène de l'Orobus niger L. (Lathyrus niger Bernh.) est l'arbutoside (arbutine).** *Bull. Soc. Chim. Biol.* 13:

72-85. 1931.—Isolation and study of properties of the glucoside responsible for blackening of the stems and leaves of the plant during drying shows that it is identical with arbutoside from the leaves of *Pyrus communis*.—*J. S. Caldwell.*

15538. **MÜNCH, ERNST.** Die Stoffbewegungen in der Pflanze. [Translocation in plants.] 234p. 30 fig. Gustav Fischer: Jena, 1930.

15539. **NAKAMURA, NOBUZO, and AKIYOSHI ICHIBA.** On the isolation of phytosteroline from wheat embryo. *Sci. Papers Inst. Phys. & Chem. Res.* [*Tokyo*] 15(289/291): 137-141. 1931.

15540. **NELSON, E. K., and HEINRICH HASSELBRING.** Some organic acids of wheat plants. *Jour. Amer. Chem. Soc.* 53(3): 1040-1043. 1931.—The water extract of growing wheat plants contained aconitic, citric, malic, and malonic acids with a trace of oxalic acid. The residue after water extraction contained oxalic acid.

15541. **OGURI, SUTEZO.** The chemical investigations of the bamboo. III. On the pentosans of bamboo. *Jour. Soc. Chem. Indust. Japan Suppl. Binding* 34(7): 233B-235B. 1931.—Abstract.

15542. **PREECE, I. A.** Studies on hemicelluloses. The hemicelluloses of brewers' grains. *Jour. Inst. Brewing* 37(8): 409-413. 1931.—Four hemicelluloses were extracted from the spent grains from an all-malt mash, one in insufficient amount for close examination. Hemicelluloses B1 and C1 are uronoxylans, whilst C2 is a urono-araban. The amount of uronic anhydride present in no case exceeds 9% of the hemicellulose. The hemicelluloses of brewers' grains are of essentially similar nature to those obtainable from woods and other sources —*Author's summary.*

15543. **ROZA, JOAQUÍN de la.** Sugar cane alpha cellulose. *Proc. Ann. Conf. Asoc. Tecn. Azucareros Cuba* 4: 150-155. 1 pl., 2 fig. 1930.—Cellulose is now obtained in commercial quantities from sugar cane bagasse. The methods employed are described.

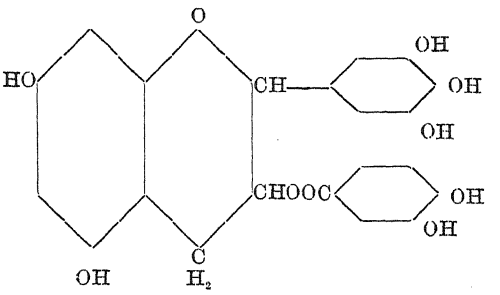
15544. **SAGARA, JUN-ICHIRO.** Zur Kenntnis der vergleichenden Biochemie VII. Zur Chemie der besonderen Sake-Hefen. *Jour. Biochem. Tokyo* 12: 459-471. 1930.—*Saccharomyces* Sake A No. 37 and 38 developed at Nagasaki produce symptoms suggestive of beri-beri when administered, although other strains have curative properties in cases of vitamin B deficiency. Studies of chemical composition and enzymatic activity show that the 2 strains are essentially identical in content of lipoids, carbohydrates, P, N, aminoacids (separately determined), and ash constituents, and in nature and degree of activity of their enzymes.—*J. S. Caldwell.*

15545. **SCHOEN, M.** La constitution de l'amidon (revue critique). *Bull. Soc. Chim. Biol.* 12: 1033-1099. 1930.—A review of existing knowledge, with a bibliography of 120 titles.

15546. **SEBELIEN, JOHN, und W. FUCHS.** Weitere Untersuchungen über das Holz einer 800 Jahre alten Hafenanlage. *Avhandl. Norske Videnskaps-Akad. I. Med.-Nat. Kl.* 1930(11): 3-6. 1930.—Old wood from the pier at Agdenes failed to give lignin reactions, but a direct determination of the lignin according to the method of Fuchs (1927) showed that the outer much changed parts of the wood contained much more lignin than the inner parts. At the same time it was shown that the content of pure cellulose, determined by successive treatment with NaOCl and Na_2SO_3, was higher in the interior part of the wood. It is, therefore, concluded that the cellulose of the wood under the long exposure to air and sea water has changed into lignin, which seems less available to *Teredo* than fresh wood with more cellulose. Nevertheless it is rather strange that the very old pier has been nearly free from attacks by the animals.—*J. Sebelien.*

15547. **TAKAHASHI, GAKUJI, YASO YOSHIKI, und TOKUZO YAGINUMA.** Über einige neue Bestandteile des aetherischen Oels aus dem Holze des Chamaecyparis obtusa. I. *Proc. Imp. Acad.* [*Tokyo*] 6(10): 393-396. 3 fig. 1930.—Two crystalline substances, unnamed, are chemically described.

15548. **TSUJIMURA, MICHIYO.** On the constitution of tea tannin. *Sci. Papers Inst. Phys. & Chem. Res.* [*Tokyo*] 15(293): 155-159. 1 pl. 1931.—That tea tannin isolated from green tea is the gallic acid ester of tea catechin and has the formula



is supported by the fact that the methyl derivative of tea tannin has the formula $C_{22}H_{11}O_3(OHC_3)_7$. Synthesis of heptamethyl tea tannin by combining tea catechin with the chloride of trimethyl gallic acid in the presence of quinoline, yielded a compound having the same absorption spectrum as the heptamethyl tea tannin produced by methylation. This is believed to constitute decisive proof of the correctness of the assumed constitution of tea tannin.

15549. **VICKERY, HUBERT BRADFORD, and GEORGE W. PUCHER.** The chemical changes that occur during the curing of tobacco leaves. *Science* 73(1893): 397-399. 1931.—Five 50-kgm. lots of leaves (8th-11th leaf) were picked from plants of Connecticut shade grown tobacco on the same day. One lot was immediately extracted with boiling water; the other 4 were cured in the customary manner. Lots were removed at the expiration of 12 days (yellow stage), 18 days (brown stage), and 51 days (fully cured). From each lot a representative sample was dried and the remainder was exhaustively extracted with boiling water. The extracts, press cake, and dry leaf samples were analysed for total solids, ash, crude fiber, soluble carbohydrates, ether extractives, and total, ammonia, amide, amino, and nitrate N. After completion of the curing process, 96.4% of the water originally present in the fresh leaf had evaporated, and 19.8% of the organic solids of the leaf disappeared; about ½ of this loss had its origin in protein. During the same period 39% of the ether soluble extractives, 81% of the soluble carbohydrates, and 38 gm. of N, of which only 4 gm. could be accounted for as nicotine N, disappeared. Far reaching chemical changes set in very shortly after leaves are detached, since ¾ of the loss of water and of soluble carbohydrates, and more than ½ of the loss of organic solids and of ether soluble constituents, occurred during the first 12 days. During this same period at least ½ of the potential amino N of the protein that underwent enzymatic hydrolysis was converted into amino and amide N, indicating that the essential sequence of reactions was protein N → amino N → ammonia N → amide N.—*G. W. Pucher.*

15550. **WIERTELAK, JAN.** The chemical composition of wood of Trochodendron aralioides. *Jour. Forest.* 29(1): 64-67. 1931.—The chemical composition of wood of this evergreen tree, which is native to Formosa and Japan and which has a wood structure intermediate between that of an angiosperm and that of a gymnosperm in that the rays are multiseriate and vessels are entirely absent, is given in a table. The high pentosan content (20.46%); the high acetic acid content (7.42%); and the deep red color obtained by the Mäule test, show that the wood conforms fully to the hardwood type.—*P. C Wakeley.*

15551. **YANOVSKY, E., and R. M. KINGSBURY.** New sources of inulin. *Jour. Amer. Chem. Soc.* 53(4): 1597-1601. 1931.—Inulin was prepared from camas roots (*Quamasia quamash*) bulbs of *Allium nuttallii*, and roots of *Balsamorrhiza sagittata*. The specific rotation of the preparations ranged from −28° to −33°.

15552. YOKOYAMA, YOSHIKUNI, and BUNSUKE SUZUKI. Soy bean lecithins. II. Lecithins of α-series. *Proc. Imp. Acad.* [*Tokyo*] 7(1): 12-14. 1931.—Chemical composition and physical properties of palmito-linoleo-α-lecithin, oleo-linoleo-α-lecithin, dioleo-α-lecithin, and dilinoleo-α-lecithin are discussed.

15553. YOSHIDA, TOKUTARO. Chemical studies on the ether-soluble constituents of mulberry leaves. Pt. I. Phytosterol. [In Japanese, with English summary.] *Bull. Imp. Sericult. Exp. Sta.* 8(1): 35-42. 1 pl. 1930.—Phytosterol was isolated from the ether extract in pure crystalline form. The amount, determined gravimetrically by precipitation of the digitonin-phytosterol, was 0.04-0.07% in fresh mulberry leaves; 0.16-0.20% in dried leaves; 2.30-4.00% in the ether extract.

BIOCHEMISTRY, METABOLISM (ENZYMES, FERMENTATION)

15554. ABDERHALDEN, EMIL, und WALTER SCHAIRER. Zum Problem der spezifischen Wirkung der Tyrosinase. *Fermentforsch.* 12(3): 329-332. 1931.—Tyrosinase prepared from dried fungi or potato peelings does not affect *m*-tyrosin but does produce a reddish yellow color and dark precipitate from *o*-tyrosin. It produces a strong red color with *p*-tyrosin, adrenalin, 3,4-dioxyphenylalanin, and 2 aminotyrosin. A similar enzyme preparation from *Russula delica* gives comparable reactions but in addition a red color with *m*-tyrosin. Tyrosinase also reacts positively with *o*- and *m*-cresol; tyrosin-containing dipeptides and corresponding halogen acyl compounds; β-[3,5-diiodo-4(4′-hydroxy-phenoxy)-phenyl]-α-aminopropionic acid; 2,5 diiodo-, and 2,5 dibrom-tyrosin; and *l*-tryptophane but not thyroxin, *d*- or *l*-ephedrin, or *d*-alanyl-*l*-tryptophane. While it is possible with well-purified enzyme preparations to secure concordant results, it is conceivable that some tyrosinase solutions contain interfering substances or other phenolases which account for the observed results. It is also possible, as in the case of positive reaction with phenyl-β-aminopropionic acid, that a subsidiary enzyme oxidizes the benzene nucleus and thereby creates conditions for the action of tyrosinase.—*E. McCoy.*

15555. CAMP, W. H. Catalase activity and sex in plants. *Amer. Jour. Bot.* 16(4): 221-224. 1929.—The catalase activity of various tissues from 12 sp. of plants having bisporangiate, monosporangiate, or dioecious types of inflorescences [*Morus rubra* L., *Pinus nigra* Arnold, *Acer platanoides* L., *Aesculus glabra* Willd., *Zea mays* L., *Ricinus communis* L., *Alnus alnus* (L.) Britton, *Carica papaya* L., *Arisaema triphyllum* (L.) Torr., *Arisaema dracontium* L., *Alocasia odora* (Roxb.) C. Koch., and *Yucca filamentosa* L.] was compared with the sexual expression. In all sp. examined, tissues related to the ♂ structures, either purely vegetative or floral, showed a distinctly greater catalase activity than tissues related to the ♀ structures of the same sp. Also, in general, floral structures showed a greater difference than vegetative parts.—*Author's summary.*

15556. CHARMANDARIAN, M. O. Zur Methodik der Katalasebestimmung im Gerstenmalz. I. *Biochem. Zeitschr.* 204(4/6): 389-396. 1929.—The catalase of malt, by prolonged extraction, loses its capacity to decompose H_2O_2. The prolonged extraction does not influence the pH of the medium, which excludes the origin of new factors which might affect the activity of the catalase. The extraction process of the malt may be conceived as a peptization of the colloid-ferment, which requires much time (depending upon the size of the malt particles) and parallels the reverse process of coagulation, which brings about a marked reduction of the decomposing capacity of the catalase. The ferment is thought to exist in a polydispersed condition, in which it is capable of various catalytic reactions. According to the degree of dispersion of the colloid (ferment) its capacity for one reaction may increase, for another, diminish.—*H. F. Bergman.*

15557. CYNBERG, D. I. Recherches sur la catalase. II. Recherches sur la transformation de la matière chez le Raphanus. [Thèse No. 669. Univ. Genève.] 35p. 3 fig. Société Anonyme: Genève, 1928.—Results of measurement of catalase activity of leaves and seed of chrysanthemums, and effect of various chemicals thereon, both in light and in darkness, are similar to those of previous workers. Part II reports preliminary analysis of radish seed.—*R. W. Thatcher.*

15558. ENGLIS, D. T., and LOUIS GERBER. A study of diastase activity in plants: the effect of phosphates in the soil media. *Soil Sci.* 28(3): 221-223. 1929.—Soybeans were grown in pot cultures with different amounts of acid phosphate fertilizers. Although the dry wt. and P absorbed increased markedly with increasing applications of the fertilizer, the changes in diastase activity were slight for moderate amounts. With large amounts the activity seemed to fall off even though the dry wt. and P taken in still increased. With rock phosphate no significant differences in any respects were observed between the untreated and treated pots.—*Authors' summary.*

15559. HARDING, PAUL L. Relation of catalase activity to temperature, respiration and nitrogen fertilization of Grimes Golden apples. *Proc. Amer. Soc. Hort. Sci.* 27: 37-42. 3 fig. 1930(1931).—With both immediate and deferred storage at 30° and 36° F. and with continuous storage at 50° F., Grimes Golden apples from nitrate-treated plots were consistently higher in catalase activity. In deferred storage fruit, just prior to the appearance of soggy breakdown, high catalase activity was registered with no corresponding increase in respiratory intensity. Respiration was not so sensitive an indicator of the approach of this disorder as was catalase activity, which indicated early in the storage season whenever breakdown was to occur.—*P. L. Harding.*

15560. KARMARKAR, DATTATREYA VISHNU, and VINAYAK NARAYAN PATWARDHAN. Amylase from wheat. *Jour. Indian Inst. Sci.* 13A(13): 159-164. 7 fig. 1930.—Amylase from germinated wheat is more active than the corresponding barley enzyme. The optimum temp. for the action of wheat-amylase is 49°-58°. If heated 1 hr. at 160°, the dry enzyme is completely inactivated. The optimum reaction is pH 4.6. The enzyme is inactivated on prolonged dialysis in collodion bags. The activity is not regenerated by adding various salts and amino-acids, which (neutral) have no influence on the activity of wheat-amylase. Pepsin inactivates the enzyme, but trypsin and papain do not.—*Authors' summary.*

15561. MEYERHOF, O., und KEN IWASAKI. Über Beeinflussung der Gärungsgrösse und des Oxydationsquotienten der Hefe. *Biochem. Zeitschr.* 226(1/3): 16-31. 1930.—The influence of the Z-factor discovered by Euler in yeast extract and in beerwort was studied on the fermentation of live yeast in N and O. In optimum concentration, the anaerobic fermentation by *S. ludwigii* is 100-200% greater than in sugar phosphate solution; with compressed yeast it is 100%. The effect of the yeast extract is detectable in a 1000-1 dilution. Simultaneously, the oxidation quotient of the fermentation is increased considerably although the respiration is unchanged. The activity increases with the temp.; it is scarcely detectable at 10°. The increase is independent of the sugar concentration. The Z-factor is present in the live yeast and is given off to the medium, especially in the presence of sugar and O. Therefore in a yeast suspension shaken several hours in a sugar phosphate solution, the anaerobic fermentation increases considerably without increase of the dry wt., and the supernatant liquor centrifuged from such yeast increases the fermentation of added yeast. The concentration of the Z-factor in yeast is greater than in yeast water, which indicates that it is continuously produced and given off to the medium by the yeast.—*Authors' summary (transl. by L. Soppeland-Butcher).*

15562. NELSON, J. M., and A. H. PALMER. Diffusion of yeast invertase through collodion membranes. *Jour. Biol. Chem.* 87(1): 1-6. 1930.—Crude yeast invertase solutions were dialysed in collodion bags, at

different pH values. Results show that more invertase passes through the collodion membrane at pH 6.7 than at pH 4.6, while the loss of enzyme during dialysis is greater at the latter pH.—*Authors' summary.*

15563. **OKAHARA, KUNIO. Physiological studies on Drosera. I. On the proteolytic enzyme of Drosera rotundifolia.** *Sci. Rept. Tôhoku Imp. Univ. 4th Ser. Biol.* 5 (3): 573-590. 1930.—A powerful proteolytic enzyme, which promotes hydrolysis of proteins to proteoses and peptones, was found in the glycerine-extract of leaves of *D. rotundifolia.* It acts in acid solutions, thus resembling pepsin, but the effects of certain toxins on its activity are different from the effects on the latter.—*R. W. Thatcher.*

15564. **PEROTTI, R., e E. BINDI. Contribuzioni alla conoscenza dei fermenti dell'uva "Colombana." [The enzymes of Colombana grapes.]** *Boll. R. Ist. Sup. Agrar. Pisa* 3: 455-465. 2 pl. 1927.

15565. **POLAK, F., und A. TYCHOWSKI. Beiträge zur Chemie der Stärke, vom diastatischen Standpunkt aus betrachtet.** *Biochem. Zeitschr.* 214(1/3): 216-228. 1929.—Amylose was prepared according to the method of Sherman and Baker and the action of α and β diastases was found to be as outlined by Syniewski. It was not possible to obtain pure amylopectin, but by allowing β diastase to act on starch for a short time and then precipitating with alcohol a product was obtained which when dissolved with varying amounts of heating yielded in solution preparations which on hydrolysis with α diastase gave different amounts of maltose. This indicated that the ratio between amylopectin and amylose had been changed.—*L. P. Miller.*

15566. **ROSENBLATT, M., und A. MARCH. Über den Einfluss katalytischer Elemente auf die alkoholische Gärung. II.** *Biochem. Zeitschr.* 226(4/6): 404-414. 1930.—Under the given conditions (no nutrients for the yeast) no metal accelerates fermentation; apparently on a nutrient substrate the metals promote only the growth of the yeast; by the increase in the latter, fermentation of sugar is also promoted. On the fermentation itself these elements apparently have no stimulating influence. Alcoholic fermentation can proceed in presence of very high concentrations of metal; these concentrations exceed by far such as will cause complete inhibition of yeast development (e.g., Co about 100 times). The order of the metals in their inhibiting action on zymase (within the yeast cells) does not coincide with the order determined for their simultaneous action on yeast development and fermentation on a nutrient substrate. Ni is the most poisonous to both actions; next, so far as inhibition of zymase is concerned, comes Fe, then Co and Mn (equal). Of especial interest is the difference in action of Co and Ni on zymase; e.g., with a concentration of 3% of metal 10.5% of sugar is fermented in presence of Ni and 79.2% in presence of Co (% compared with controls). An analogous difference in action of the 2 metals on pepsin has been observed by Tshuchihashi. Salts of Fe^{+++} are more active paralysors than salts of Fe^{++}; at 0.2% concentration the former is 5.5 times as active as the latter.—*W. E. Thrun.*

15567. **SHOJI, KENJIRO. The polarographic studies on the fermentation-products. Part IV.** [In Japanese.] *Rikwagaku-Kenkyū-Jo Ihō (Bull. Inst. Phys. & Chem. Res.)* 9(2): 69-78; [1930]. [English abstract.] Abstr. from *Rikwagaku-Kenkyū-Jo Ihō (Bull. Inst. Phys. & Chem. Res.)* 9(2): 9-11. 1930. [appendix to *Sci. Papers Inst. Phys. & Chem. Res.*] 12(221/227). [no. pp.] 1930.—By means of a recording instrument measuring the reduction potential of a reducible substance, the course of fermentation was followed in fermenting mixtures. Fumaric acid was thus found in saké; a trace of it was found in shōyu; none in vinegar. Preliminary studies on the potentials of several other unsaturated acids (mesaconic, itaconic, α-crotonic, oleic, and aconitic) and several saturated acids (acetic, succinic) either give no measurable reduction potential or give values so distinct as to eliminate confusion due to their presence.

15568. **WEIDENHAGEN, RUDOLF. Zur Spezifität der α-Glucosidasen. Erwiderung auf die gleichnamige Arbeit von H. Karström.** *Biochem. Zeitschr.* 233(4/6): 318-321. 1931.—Using Karström's strain of *Bact. coli,* the author in all instances was able to split sucrose as well as maltose.

BIOCHEMISTRY, METABOLISM (RESPIRATION, OXIDATION)

15569. **ELEMA, B., and A. C. SANDERS. Studies on the oxidation-reduction of pyocyanine. Part 1. The biochemical preparation of pyocyanine.** *Rec. Trav. Chim. Pays-Bas* 50(7/8): 796-806. 1931.—A method is described for the biochemical preparation of the pure hydrochloride of pyocyanine in high yield. As much as 260 mgm. of this salt has been obtained from a litre of a liquid culture of *Pseudomonas pyocyanea.*—*Authors' summary.*

15570. **GERHART, ARTHUR R. Respiration in strawberry fruits.** *Bot. Gaz.* 89(2): 40-66. 4 fig. 1930.—An exceedingly sensitive respirometer is described, by which the rate of respiration of a single strawberry over ½ min. can easily be measured. The amount of O used by the Missionary strawberry at 5-40°C. was determined, and amounts of O required by strawberries during shipment in carload lots were calculated. The maximum initial rate occurs at 36.5°C. The temp. coefficient for the respiration of the Missionary strawberry is 2.5 below 25°C. Strawberries are very effectively protected from water loss in dry air and have a very constant water content (89.5-90%). The Gibson strawberry, northern grown, has a much higher rate of respiration at low temp. than the Missionary, which is southern grown. Acid content declines as strawberries ripen. The respiratory ratio is greater than 1. Ethylene gas has no effect in ripening strawberries.—*A. R. Gerhart.*

15571. **HUMFELD, HARRY. A method for measuring carbon dioxide evolution from soil.** *Soil Sci.* 30(1): 1-10. 1 pl. 1930.—The method described is suitable in greenhouse plots and under field conditions. The apparatus consists essentially of a galvanized iron collecting box, a suction device and an absorption train. From the collecting box the air is removed by suction as it diffuses from the soil, and is carried into an absorbing unit. The absorption train consists of 4 bottles; the 1st and 4th are empty to serve as safeguards; the 2nd and 3rd are filled with 0.16 *N* KOH. A suitable rate of flow is about 10 l. of gas per hr. The KOH solutions are titrated with HCl after the addition of an excess of $CaCl_2$. Corn and soy beans turned under as green manure give a marked increase in CO_2 evolution over that of fallow soil. Moisture conditions play an important part in each case. Rainfall is followed by a marked increase in evolution of CO_2, if the H_2O of the soil is below optimum.—*H. Humfeld.*

15572. **KUSNETZOW, S. J. The dependence of the oxidizing fermentations from the oxidation reduction potential of the external medium.** *Zentralbl. Bakt. II. Abt.* 83(1/7): 37-52. 1 fig. 1931.—In cultures of *Aspergillus niger,* made in Winogradsky flasks with a layer of liquid of 1-15 cm., thus seemingly in strongly aerobic conditions, strongly anaerobic conditions are created under the mycelium; rH falls to 15. In connection with this, a formation of citric acid is also observed, when rH falls below 17. If more aerobic conditions be created for the development of the fungus, and if one succeeds in maintaining the rH of the nutritive medium above 17 during the whole time the mycelium develops, no formation of citric acid is observed in the cultures. If, by placing the cultures in an atmosphere of N, the rH be lowered to 12.8-14, alcohol begins to form in the cultures. If the mycelium be placed in an atmosphere of H, when the rH in the cultures falls to 2, the formation of citric acid is no longer observed.—*Author's summary.*

GROWTH, DEVELOPMENT, REPRODUCTION

15573. **DENNY, F. E. The excitation of buds under external stimulus.** *Rept. & Proc. Internat. Hort. Congr. London* 9: 77-82. 1930.

15574. GOEBEL, K., und W. SANDT. Untersuchungen an Luftwurzeln. [In: *Bot. Abhandlungen.* Heft. 17.] 124p. 6 pl., 9 fig. Gustav Fischer: Jena, 1930. Pr. 12 M. —Investigations carried out upon the epiphytes in the Münich glasshouses showed that while growing in air, the growing region of the root was exceptionally long and therefore the daily increment of growth was considerable. Temp. and moisture are the external influences which most influence the growth. Although the roots of *Cissus quadrangularis* L. were strongly positively geotropic, those of *C. velutinus, Vitis repens,* and *V. pterophora* were very little, if at all, influenced by gravity. The normal direction of growth of these air roots is downwards, but at an angle, not vertically. Although branch root primordia might be present on these air roots, their further development was usually inhibited by the vigorous growth of the main root. When the latter reached the soil, the growing zone was reduced to normal dimensions, the daily increment of growth reduced accordingly, and the branch roots grew out vigorously. Growth of the main root often ceased if the root was led into water, although branch roots then developed from it. The anatomical differences between the region of the root formed in air and in soil are described.—*J. H. Priestley.*

15575. HITCHCOCK, A. E., and P. W. ZIMMERMAN. Variation in rooting response of cuttings placed in media in different P_H value. *Proc. Amer. Soc. Hort. Sci.* 23: 383-390. 2 fig. 1926.—*Azalea amoena* cuttings rooted better in acid peat moss than in sand. Privet cuttings rooted well in sand, but poorly in acid peat moss. Both azalea and privet cuttings rooted well in a mixture by volume of half sand and half acid peat moss. Considerable variation in rooting response resulted when both azalea and privet cuttings were placed in neutralized or neutral leached peat moss. Wet acid peat moss hindered callus formation in both azalea and privet cuttings, whereas sand, neutralized peat moss, and neutral leached peat moss, favored callus formation.—*Authors' summary.*

15576. HUTCHINGS, G. C., and J. A. LARSEN. Stimulation of root growth on cuttings from hardwood forest trees. *Proc. Iowa Acad. Sci.* 36: 191-200. 1929 (1931).—Cuttings of green ash, basswood, white oak, soft maple, butternut, slippery elm, and Carolina poplar were planted in sand in the greenhouse, and in mixtures of sphagnum and sand. Treatments were with 0.01 M $KMnO_4$, 1/10,000 acetic acid, 5% sucrose, and 25% thiourea. Negative results followed sucrose and thiourea, and basswood and white oak failed to root under any kind of treatment. —*H. S. Conard.*

15577. LAIBACH, F. Ectogenesis in plants. Methods and genetic possibilities of propagating embryos otherwise dying in the seed. *Jour. Heredity* 20 (5): 200-208. 9 fig. 1929.—Embryos from *Linum* hybrids, which usually produced only defective seed, were removed from the plant when about 1½ mm. long and grown on cotton moistened with sterile 10-15% cane-sugar. These embryos matured and were later germinated on moist blotting paper and successfully cultured.—*L. M. Dickerson.*

15578. LIBATIQUE, PABLO P. Comparative development of roots of rice plants grown in pots containing ammonium sulfate fertilizers of different amounts. *Philippine Agric.* 20 (2): 121-137. 1 pl., 2 fig. 1931.—$(NH_4)_2SO_4$, when used in moderate amounts, tended to promote growth and development of the roots of rice plants. When used in larger amounts, it tended to retard root development, especially in mature plants. Rice plants supplied with $(NH_4)_2SO_4$ produced more but shorter roots than the unfertilized plants, which had relatively few but characteristically long roots. The production of top and the intensity of greening of the leaves were also favorably influenced by an increase in the application of the fertilizer, but root development was poor. The anatomical structures of the roots of the rice plant did not appear to be materially affected by the rate of application of the fertilizer.—*M. Manresa.*

15579. LILLELAND, O. Growth study of the apricot fruit. *Proc. Amer. Soc. Hort. Sci.* 27: 237-245. 2 fig. 1930 (1931).—Diameter and other measurements of the apricot fruit over a period of 5 yrs. were made in conjunction with fruit thinning studies. The growth of the fruit can be divided into 3 periods: one of rapid growth; one in which the rate of growth is distinctly depressed; and one in which the rapid rate is resumed. While the extent of these periods is quite uniform, the growth made during any one period varies markedly from season to season. Data on the development of the flesh endocarp and kernel are included.—*O. Lilleland.*

15580. OINOUE, YASUSI. Contribution à l'étude des effets de l'incision annulaire sur la vitesse de maturation. [In Japanese, with French summary.] *Bull. Inst. Oinoue Rech. Agron. et Biol.* 2: 1-8. 1928.—Ringing of fruiting branches in *Vitis labrusca, V. vinifera,* and their hybrids tends to accelerate ripening and maturation. This acceleration is greater in late than in early varieties. The effect is due to the increase in sugar content above the ring.—(*Courtesy Japanese Jour. Bot.*) (*transl. by A. G. Plakidas*).

15581. OINOUE, YASUSI. Sur l'accumulation des hydrates de carbone facilement hydrolysables dans l'intérieur des corps de la vigne et du pêcher et leur maturation. [In Japanese, with French résumé.] *Bull. Inst. Oinoue Rech. Agron. et Biol.* 2: 8-20. 1928.—Ringed branches of grape seedlings began to fruit 3.92 ± 0.103 yrs. after germination, while the controls began to fruit in 5.04 ±0.123 yrs. After injecting 20% glucose into the vine, reproduction occurred earlier than in the control. It is, therefore, concluded that flowering of grapes and other plants, induced by ringing, is due, at least partly, to the accumulation of easily hydrolysable carbohydrates.—(*Courtesy Japanese Jour. Bot.*) (*transl. by A. G. Plakidas*).

15582. POLESE, NELLO. L'azione della tubercolina sullo sviluppo di alcuni miceti. [Effect of tuberculin on the development of some fungi.] *Morgagni* 73 (23): 1075-1082. 3 fig. 1931.—In 6 experiments, up to 3% tuberculin promoted the growth of fungi tested on glucose-agar broth; beyond this, growth diminished. The effect of the tuberculin was not inhibited by autoclaving or by Berkefeld filtration; it cannot be attributed to the glycerine of the tuberculin since a glycerinated control showed no advantage over the plain glucose agar broth.

15583. PRIESTLEY, J. H. Vegetative propagation from the standpoint of plant anatomy. *Rept. & Proc. Internat. Hort. Congr. London* 9: 61-65. 1930.—A discussion of the relation between plant structures and polarity.

15584. REID, MARY E. The influence of nutritive conditions of seeds and cuttings upon the development of roots. *Rept. & Proc. Internat. Hort. Congr. London* 9: 165-169. 1930.—A discussion of the C: N quotient.

15585. SCHAFFNER, JOHN H. The fluctuation curve of sex reversal in staminate hemp plants induced by photoperiodicity. *Amer. Jour. Bot.* 18 (6): 424-430. 1931.—In order to study the relation of length of daylight to sex reversal of the ♂ plants in a normally purely dioecious variety of *Cannabis sativa* bimonthly plantings were made in the greenhouse July 15–May 15. A perfect fluctuation curve was developed, ranging from zero reversal for the July 15, May 1, and May 15 plantings to 100% reversal for the Nov. 1 and Nov. 15 plantings. There are no super-males in respect to reversal, since every ♂ plant can be caused to express femaleness. The degrees of readiness or difficulty of reversal shown by different individuals are to be ascribed to degrees of differentiation, both physiological and morphological, which the individuals have attained. The determination of sex in the hemp is not caused by an allosome differential, but these chromosomes must be assumed to play a passive rôle. Determination is brought about through differential physiological states developed in gradients in both the egg and the vegetative body.—*J. H. Schaffner.*

15586. SCHAFFNER, JOHN H. Sex reversal and the experimental production of neutral tassels in Zea mays.

Bot. Gaz. 90(3): 279-298. 4 fig. 1930.—The experiments here reported establish the fact that completely neutral, vestigial tassels can be developed at will in *Zea mays* by the simple control of environmental conditions, and that the natural photoperiodic gradient extending from Aug. to Nov. will sometimes produce 40% or more of neutral tassels in a population. With proper photoperiodicity, 7 general types of tassels can be developed: 3 of pure expression—staminate (♂), carpellate (♀), and vestigial (neuter); and 4 sex mosaics—staminate-neuter, carpellate-neuter, staminate-carpellate, and staminate-carpellate-neuter. With the decreasing photoperiodicity of autumn, femaleness is only expressed at the base of the tassel and the tip is always neuter, the staminate expression occurring in the middle region. With the increasing photoperiodicity of winter and early spring, femaleness may also be expressed at the tip of the tassel and its branches, or sometimes in such a way as to form a complex mosaic with carpellate spikelets scattered among the staminate ones. Experiments with highly inbred varieties show that pure lines react to changed photoperiodicity in the same way as commercial heterozygous varieties, giving rise to complete sex reversals, neutral vestigial tassels, and all the possible types of sex mosaics, as also extreme fluctuation series between members of a plot and fluctuation between successive plots developed in light periods of different lengths. ♂ expression can be suppressed completely in the monoecious *Zea mays* when it is grown in a decreasing photoperiodic environment of suitable length. Entire plots of individuals can be developed without the appearance of a single stamen. The diversity of sexual expression obtained is absolutely due to the diversity of physiological conditions produced through the diversity of environments, and has nothing to do in general with any diversity of hereditary factors which might be present in the different individuals of a given plot, since pure lines show just as extreme fluctuation in sex reaction as heterozygous lines. The specific sex condition developed is not dependent on any balance of sex-determining or sex-producing genes. It is evident that genetic experiments involving sex conditions are of no value unless the reactions obtained are interpreted in the light of ecological conditions present.—*Author's summary.*

15587. **SCHOPFER, WILLIAM H. Recherches sur la sexualité des champignons. Le problème de la biochimie comparée du sexe.** 183p. 11 pl., 25 fig. Imprimerie Jent, S. A.: Genève; also in *Soc. Bot. Genève. 2me Sér.* 20(1): 149-323. 1928.—Part I is a survey of literature published since 1910; Part II deals with original investigations on *Mucor hiemalis*, chapter 1 being devoted to "Conditions for zygospore formation (66 p.), chapter 2 to "Biochemical sexual dimorphism" (29 p.), and chapter 3 to "Studies on carotin" (22 p.). The bibliography contains 268 references. The author has demonstrated the influence of the nutritive substratum on the production of zygospores and concludes that the reproductive phenomenon must be considered a function of the vegetative phenomena. Using Coons' medium with 1.5% agar as a basis, the author has studied the influence of maltose and asparagin in the presence of constant quantities of the salts, and has determined for each substance, in the presence of a determined quantity of the other, the limits of concentration within which zygospores are formed. With maltose or asparagin alone zygospores are not formed. The influence of the salts was studied in the presence of determined quantities of maltose and asparagin. Potassium phosphate is indispensable to zygospore formation while $MgSO_4$ is not. KNO_3 and ammonium tartrate served equally well as sources of N. Of the 15 amino-acids studied asparagin was most favorable to zygospore formation. Acidity also plays an important rôle, a pH of 7.5-8 giving the largest number of zygospores. Small quantities of $CuSO_4$ accelerated zygospore formation. Differences in the plus and minus strains were found in their appearance on certain natural media, in the curves of growth and absorption, in their reactions to certain toxic substances, in serological reactions, and in the accumulation of carotin (in the plus progamete). A strain of bacteria was found which would attack the plus strain but not the minus strain. The author concludes that these various biochemical characters must be regarded as secondary sexual characters representing the metabolism of each sex. The expression of this metabolism must lie in the chemical composition of the medium, in the nutrition offered, and in the physio-chemical conditions in which the organism finds itself. To one medium the 2 sexes may very well behave in an absolutely identical manner while to another the sexual dimorphism may be very sharp.—*L. Dosdall.*

15588. **SIGEMATU, YOSINORI. Hardening of bamboo shoots with special reference to the growth of the shoots.** *Bull. Miyazaki Coll. Agric. & Forestry* 3. 121-128. 5 fig. 1931.—In 3 *Phyllostachys* and an *Arundinaria*, using Miura's durometer, hardness at first increased very slowly; a certain time later it suddenly advanced, after which it progressed regularly. Rate of growth is greatest while the hardness increases the first few degrees; afterwards it decreases as the hardening increases. Hardness increases in *A. simoni* much more slowly than in *Phyllostachys.*

15589. **SWINGLE, WALTER T. Metaxenia in the date palm. Possibly a hormone action by the embryo or endosperm.** *Jour. Heredity* 19(6): 257-267. 1928.—Metaxenia, the direct effect of pollen on tissues of the ♀ parent, is tentatively explained as the result of the action of hormones secreted by the embryo or endosperm or both, which diffuse out into the tissues of the ♀ parent and exert a characteristic effect, depending upon the ♂ parent from which the pollen came. Evidence is adduced to show that the embryo and endosperm of the date show remarkable chemical activities during their development and interact to some extent on each other and probably on the nearby tissues of the seed and ovary walls.—*L. M. Dickerson.*

15590. **VINCENT, GUSTAV. Věk jehličnatých dřevin a jakost jejich šišek. [Age of conifers and the quality of their cones.]** *Věstník Českoslov. Akad. Zem.* 7(1): 44-48. 1931.—The length of cones was influenced by the age of the tree. Correlations were not rectilinear, but their regression could be expressed by a curve equation. The maximum cone length was obtained in 40-100 yr. spruce and 60-100 yr. fir. The yields from the cones, water contents and fuel values of dry substance were not influenced by the ages of mother trees. Differences were more quantitative than qualitative.—*G. Vincent (transl. by H. I. Baldwin).*

15591. **VINCENT, GUSTAV. Věk jehličnatých dřevin a jakost jejich semen. [Age of conifers and the quality of their seed.]** [In Czech and German.] *Věstník Českoslov. Akad. Zem.* 7(1): 48-53. 1931.—The fresh and dry wts. of seed and their caloric value were influenced by the age of the mother tree. The correlations were not rectilinear, but their regression could be expressed by a curve equation. The maximum dry wt. and caloric value were found in 60-100 yr. spruce and fir. The germinative capacity of the seed was not influenced by the age of the mother trees, nor were any differences found in the anatomical structure of seed from trees of different ages. Observed differences in seed quality were not noticeable in the height-growth of the resulting seedlings. The differences were more quantitative than qualitative. Differences in wt. and total food reserves were established, but not in water content or relative representation of separate foods. Individual differences occurred in seed of 60-100 yr. spruce and fir, and closer approximation of the sought optimum age was impossible.—*G. Vincent (transl. by H. I. Baldwin).*

15592. **WEISKOPF, BOHDAN. O korelačních podmínkách vzrůstu pupenů u klíčnich rostlin Papilionaceí. [Correlative conditions of growth in length of buds in some Papilionaceae in germination.]** [French summary.] *Biol. Spisy Vysoke Školy Zvěrolékařské Brno (Publ. Biol. École Vét. Brno)* 6: (67-103). 1927.—Lateral buds of young seedlings of *Pisum sativum*, which had been de-

capitated above several basal nodes (especially above that of the 1st compound leaf), exhibited some regular elongation relationships dependent upon the progress of their embryonic development, upon the influence of reserve materials varied experimentally, and upon certain external factors, notably light. The arrest in the development of the cotyledonary buds of *P. sativum, Phaseolus multiflorus,* and *P. vulgaris* comes not only from the correlative effect of the terminal bud (the youngest parts lack any influence) but also from that of the region of growth deprived of buds and even from those parts where development has already been completely arrested (internodes and leaves). Certain substances, such as diastase, produce the same effect. The inhibitory substances are able to pass through a thin layer of gelatine which does not allow the passage of reserve materials or minerals in an amount sufficient for the normal growth of the stem.—*Author's résumé (transl. by A. S. Foster).*

GERMINATION, DORMANCY, RENEWAL OF ACTIVITY

15593. COMINI, ADELE. La germinazione dei semi delle orchidee. [Germination of orchid seed.] *Natura [Milano]* 18(4): 131-136. 1927.—Experiments show that old cultures of *Rhizoctonia* (isolated for more than a yr.) do not immunise but kill the seedlings; i.e., they are more virulent than young cultures. The cultures exposed to 40° C. die but those exposed to 30° C. are not attenuated; in fact when placed in contact with seedlings they invade the roots and behave the same as those not heated. Sugars in the culture medium do not keep the plants from entering into a symbiotic relationship when the opportunity offers. Hence one cannot speak of immunising phenomena in these experiments.—*Author's summary (transl.).*

15594. CRESCINI, FRANCESCO. Osservazioni e richerche su una crucifera infestante. [A cruciferous weed.] *L'Italia Agricola* 3: 4-7. 1930.—In *Calepina corvini,* which is found everywhere in the fields around Bologna, seed scattered over the surface of the soil or lightly covered by it, show, under the influence of solar heat, a higher relative germination and also a more rapid one than seed not so treated. The effect of drying is greater the longer it is continued. The germination of the seed is adapted to a position in free, humid air which does not have a greater daily oscillation of temp. than 30-31° for the maximum and 20-21° C. for the minimum. A theory is developed to explain the periodical appearance of this plant around Bologna.—*F. Crescini (transl. by B. F. Lutman).*

15595. DAVIS, W. E. Primary dormancy, after-ripening, and the development of secondary dormancy in embryos of Ambrosia trifida. *Amer. Jour. Bot.* 17 (1): 58-76. 4 fig. 1930.—The embryos of fruit of *A. trifida* are dormant at maturity. They after-ripen slowly in dry storage, but much more rapidly and completely in a saturated condition at 0°-10° C. The time required for the after-ripening of freshly harvested fruit at the optimum low temp. (5° C.) is about 3 mo. While the fruit are at low temp. there is a slight rise in the acidity together with a pronounced rise in the catalase content of the imbibed embryos over those of air-stored fruits. If the embryos after-ripened in either dry storage or at low temp. fail to germinate when placed at high temp., due to enveloping membranes that interfere with the gaseous exchange between the embryos and the external atmosphere, they revert to the dormant condition and must again be after-ripened before germination will take place. The time required for development of secondary dormancy in after-ripened embryos is 30-60 days. The same embryos may be repeatedly made dormant and after-ripened by alternating periods at high temp. and sub-minimal O supply with periods at low temp. and adequate O supply in water imbibed condition. The cause of secondary dormancy appears to be restricted respiration at high temp., which in turn is caused by the low permeability to O of the membranes which envelop the embryo, mainly the nucellar membrane, which consists of a single layer of living cells immediately next the embryo. While the development of dormancy is associated with restricted or incomplete respiration, the presence of a supply of O seems necessary. Embryos of fruit embedded in agar in order to reduce further the O supply to the embryos developed dormancy more slowly than embryos of fruit at the same temp. but free from agar. When the embryos become dormant, both the respiration and the catalase activity are reduced. At the germination temp. employed, the catalase activities of fruit, seed, and naked embryos bear about the same relation to one another as the respiratory capacity.—*Author's summary.*

15596. DUFRÉNOY, JEAN. Sur des phénomènes préparant la germination. *Compt. Rend. Soc. Biol.* 18(17): 1497-1498. 2 fig. 1928.—Beans, deprived of their teguments, germinated in 2 days at 21° or 27°; those with them required 8 days. At 15° both denuded and undenuded beans took 8 days to germinate. Denuded peach seed began to germinate in 2 days, but growth ceased until transferred to 15°. Prior refrigeration at 3° for 3 days led to a leafy stem in 10 days.

15597. ESDORN, J. Untersuchungen über anomale Kleekeimungen. *Landw. Versuchs-Stationen* 112(1/2): 103-113. 1931.—In germination tests of hard coated, scratched legumes, the experimental method employed influences the % of abnormal sprouts produced; greater moistness of the seed bed increases the number while higher germination temp. reduces it. In any case the differences vary with the different kinds of seed. Of the seed tested they are greatest for crimson clover (*Trifolium incarnatum* L.), but considerable also for black medic (*Medicago lupulina* L.), kidney vetch (*Anthyllis vulneraria* L.), and red clover (*T. pratense* L.). Even here the greatest differences appear only at the higher temp. (26° C.). Alfalfa shows appreciable differences only at the higher temp. The water content of the seed when brought into the germination bed is important; relatively dry seed react to different degrees of moistness more strongly than relatively moist seed.—*Author's summary (transl. by G. T. Harrington).*

15598. EVANS, M. M., and GEORGE HARRAR. Germination of the oospores of Sclerospora graminicola (Sacc.) Schroet. *Phytopath.* 20(12): 993-997. 2 fig. 1930.—Spores of *S. graminicola* shaken into a beaker of sterile water (the surface of the spore-furnishing material may be sterilized, when necessary, with 5% lactic acid and washed in sterile distilled water) germinated 5-30% in 24 hrs. at room temp. Germination was not affected by pH changes at pH 4.5-7, and the medium seemed to have little influence.—*W. A. Whitney.*

15599. GRÜSS, J. Bau und Semipermeabilität der Gerstenfrucht- und Samenschale. *Wochenschr. Brauerei.* 46(7): 61-66; (8): 74-80. 20 fig. 1929.—The results of A. Brown's investigations were in general confirmed. Divergences appeared however in that the soaking of the grains in dilute H_2SO_4 allows the acid to penetrate the pericarp. By means of preliminary experiments and a method of imbedding in wax, it was shown histologically that the testa, impermeable to the acid, possesses a break at the base and at the tip of the barley grain. NH_3 and SO_2 penetrate the pericarp unhindered and HCl is only slightly retarded. These breaks have been termed "the upper and the lower diffusion-passages." Otherwise the testa is semipermeable or impermeable for most substances capable of diffusion. However, in older grains these substances could penetrate through cracks into the endosperm. In the same way, material contained in the grain, mainly oxidase, peroxidase in combination with diastase, and antioxytasins, diffused into the water used in soaking the grains.—*J. Grüss (transl. by A. S. Foster).*

15600. LOOMIS, W. E., and M. M. EVANS. Experiments in breaking the rest period of corms and bulbs. *Proc. Amer. Soc. Hort. Sci. 25*: 73-79. 1928.—The foundation of a method for forcing gladiolus corms which combines high storage and high soil temp. is outlined.

Corms have given responses in all the treatments used analogous to the responses of Irish potato tubers.—Fully matured but still green onion bulbs are greatly shortened in rest period by dry storage at 95-105° F. for 2-3 weeks. Bulbs cured in the field will probably give best results at the lower temp. The method of transverse cutting, recommended by Boswell, is surpassed by longitudinal splitting of the tops of the bulbs, so as to admit air without removing any of the food reserve. During the early part of the rest period, onion and probably other similar bulbs can be forced at once by splitting combined with forced injection of tap water. The method is especially useful in identification of varieties or in inspection for bulb-borne diseases. It is suggested that the rest periods of vegetative organs containing stored starch are shortened by ethylene, ethylene chlorhydrin, ether, and similar compounds, while organs such as bulbs, containing little or no starch, will not show the same response. This theory has held in the work done with tulip, narcissus, and onion bulbs; gladiolus and crocus corms; Irish potato tubers; and apple twigs.—*From authors' summary.*

15601. **PUJIULA, JAIME.** Observaciones en la germinación del haba (Vicia faba L.). *Butl. Inst. Catalana Hist. Nat.* 9(1/2): 25-26. 1929.—A note.

15602. **SMITH, ORA.** Relation of some physical and chemical changes to potato dormancy. *Proc. Amer. Soc. Hort. Sci.* 25: 86-90. 1928.

15603. **STAHL, CHR.** Die Dauer der Keimversuche. Dürfen die Keimversuche früher abgeschlossen werden, als es bis jetzt im Allgemeinen der Fall ist? *Compt. Rend. Assoc. Internat. Essais Semences* 11-12. 117-128. 1930.—Results of tests show that, with the exception of grass seed tested shortly after harvesting, a very inconsiderable number of seedlings is produced during the last days of the periods laid down in the rules governing germination tests, and that these periods may consequently be reduced for a number of sp. without any marked influence on germination results. This applies to *Lolium perenne,* 14 days; *L. italicum,* 14 days; *Festuca pratensis,* 14 days; *Bromus arvensis,* 10 days; *Dactylis glomerata,* 18 days; *Poa trivialis,* 18 days; *Daucus carota,* 14 days; *Beta vulgaris,* 12 days; *B. vulgaris saccharifera,* 14 days; *Brassica campestris* var. *rapifera,* 8 days; *B. napus* var. *napobrassica,* 10 days. According to the examinations in question, it is not advisable to reduce the periods fixed for the germination tests of legumes and for a number of garden vegetables.—*W. Crocker.*

15604. **ZENARI, S.** Il carattere "semi duri" in rapporto con la discendenza e l'ambiente. [The character "hard seed" in relation to heredity and environment.] *Ann. di Bot.* 18(2): 174-215. 1929.—Seed of various Leguminosae, Malvaceae, and Cistaceae were tested both genetically and biologically. A 3-yr. selection did not much influence the % of hard seed. This character is irregular and can not be considered hereditary; it is strictly related to the degree of maturation of the seed. The impermeability of seed is influenced by climate and soil; shade and rainfall diminish the % of hard seed. There also exist external factors which produce a kind of supermaturation which alters the tegument of the seed and lowers the % of hard seed. These factors are essentially the product of the bacteria and molds of the soil.—*A. Biraghi.*

TROPISMS, GROWTH AND TURGOR MOVEMENTS

15605. **BOSE, JAGADIS CHUNDER** (transl. into French by **EDOUARD MONOD-HERZEN**). Le mécanisme nerveux des plantes. [Nerve mechanism in plants.] 228p. 80 fig. Gauthiers-Villars et Cie.: Paris, 1931. Pr. 45 fr.

15606. **CASTLE, E. S.** Phototropism and the light-sensitive system of Phycomyces. *Jour. Gen. Physiol.* 13(4): 421-435. 1930.—Reaction times of both the "light-growth" response and the phototropic (bending) response of dark-adapted sporangiophores of *P. blakesleanus* progressively increase in a similar manner as the duration of exposure to light decreases. Both modes of response are thus considered to be founded on the same basic light-sensitive system. Analysis of the compound reaction time shows that the rate of the process occurring during the latent period is directly proportional to the amount of preceding photochemical action.—*E. S. Castle.*

15607. **COELINGH, WILLEMINA MARIA.** Over stoffen, die invloed uitoefenen op de aggregatie by Drosera. [Substances influencing aggregation in Drosera.] [Thesis: Univ. of Utrecht.] 76p. 8 fig. N. V. Hollandia-Drukkerij: Baarn, 1929.—A study was made of the influence of the terminal gland on the distribution of the process of aggregation in the pedicel. If a tentacle from which the terminal gland has been removed is cut from the leaf and placed in a solution of pepsin or meat extract, the distribution of the aggregation appears to be the same as in uninjured tentacles; it is always strongest in the part of the pedicel nearest the gland. It was assumed that each gland regularly produces a substance which travels down the pedicels, not inducing aggregation itself, but bringing the cells into a state in which the aggregation is possible. Separated tentacles without terminal glands lose their power of aggregation in a solution of pepsin after having been immersed in water or a sugar solution for some days; the power of aggregation is maintained longest in the central part of the tentacle. Nevertheless, one can make refractory tentacles aggregate again with an extract of the glands. This extract can be boiled or evaporated without losing its power, but it cannot be kept longer than a few days; the active substance seems destroyed, probably by the action of microorganisms. The dried extract can be kept indefinitely. Aggregation seems possible also outside of the tentacle cells; thus it was observed in the cells of the leaf, calyx, bracts, and also in the hairs and papillae which cover the green parts of the plant. The 2 kinds of papillae also seem to have to a less degree the power of producing the "aggregating substance." Extracts of glands are not the only substances inducing aggregation in tentacle pieces not responding to pepsin or meat extract. Saliva can be boiled a long time and filtered without losing its aggregating property. The part of dried saliva which is soluble in 96% alcohol causes aggregation as well as the rest. The active substance in saliva is neither a ferment, nor albumen, nor KCNS. Of the salts found in saliva, the phosphates alone induce aggregation. Strong aggregation was caused also by asparagin, aspartic acid, and alanin; less by leucin and glycin; practically no results were obtained with tyrosin, kreatin, and urea. Taka diastase and Rhenania trypsine showed a weak influence. No results were obtained with some compounds which reduce the surface tension (saponin, amyl alcohol) and some which increase the swelling of colloids (KCNS). The possibility that these substances act only because of their pH is rejected.—*M. J. Sirks.*

15608. **FIGDOR, W.** Über den positiven Geotropismus der Achsenknollen von Gloriosa superba Linn. und G. rothschildiana O'Brien. *Ber. Deutsch. Bot. Ges.* 47(9): 548-553. 2 fig. 1929.—These two members of the Liliaceae develop curious tubers, the tips of which continue the growth of the plants in the succeeding season, the rest of the tuber being a food storage organ. These tubers grow into the soil, becoming the shape of an inverted U or of a compressed horse-shoe with the concavity facing downwards. That this position is the result of gravity is shown by 2 sets of experiments. Normal tubers laid horizontal in pots and covered by a thin layer of soil produce normal plants, but in the course of the season these plants form the usual tubers for the next season and these turn down as if they had been formed by plants starting in the usual position. Another set of plants in which glass plates and Pfeffer's solution take the place of soil react entirely normally whatever the position of the tubers, except that they did not come into bloom, although in the solution and on the glass, light had free access. It is concluded that gravity

principally determines the direction of development of the horse-shoe shaped tubers.—*G. J. Peirce.*

15609. **HALKET, A. C. The flowers of Silene saxifraga, L.; an inquiry into the cause of their day closure and the mechanism concerned in effecting their periodic movements.** *Ann. Botany* 45(177): 15-37. 9 fig. 1931.—These flowers open at night and close during the day. The flowers investigated were of 2 kinds, hermaphrodite and "♀" flowers; the latter have vestigial stamens, are smaller, and can be easily distinguished in the bud. Both kinds of flowers were borne on some plants, but only "♀" flowers on others. The petals of a bud unfold towards evening, the blades bending back until they are approximately at right angles to the claws. The flower remains open until morning, when the petals gradually roll up and the flowers close until evening. On wet days the flowers remain open. Flowers open and close several times; a "♀" flower opened 5 times (average). A change in light intensity or an alteration of temp. in a saturated atmosphere has no effect; a saturated atmosphere hastens the unfolding of closed petals; young, closed flowers always open if they are supplied with water. The movements are caused by the alteration of the water-content of the cells and are therefore "turgor movements." Open petals close when water is taken from their cells, and closed petals open when water is added to them. The time a "closed" petal takes to open is increased if the rate of entry of water into its cells is decreased. The curvature of a longitudinal section of a petal increased with the decrease in the amount of water in its cells. The degree of opening of a "closed" petal in a given time varies with the rate of entry of water into its cells. The salient features of the anatomy of the blade of the petal are that (a) the vascular bundles lie very near to the lower surface, (b) the mesophyll cells are long and narrow, and are orientated with their long axes in the plane of the long axis of the petal; and (c) the epidermal cells of the lower surface have thicker walls than those of the upper surface and contain chloroplasts. The change in volume of the cells of the mesophyll and the upper epidermis, in passing from the fully-turgid to the non-turgid state, is considerable, while the change in volume of the lower epidermal cells is comparatively small. The cells of the lower epidermis have a higher osmotic pressure than those of the upper. The movements depend mainly on the difference in the "elasticity" of the upper and lower surfaces of the petal and are probably affected by the age of the flower. The rate of movement, apparently, decreases as the flower ages and the movements cease after some days. The "closed" petals do not surround, and so protect, the stamens and carpels, but the rolling-up of the petals may be useful biologically; the loss of water from the surface of the flower is reduced by its closure and more water, therefore, remains in its tissues and is available for the stamens and carpels, which otherwise might suffer from a deficiency of water.—*Author's summary.*

15610. **KISSER, J., und R. STASSER. Untersuchungen über die bei der Keimung geschälter Leguminosensamen auftretenden Wurzel- und Hypokotylkrümmungen.** *Beitr. Biol. Pflanzen* 18(2): 161-184. 2 pl., 2 fig. 1930.—Seed of the several legumes studied (*Pisum, Phaseolus, Vicia, Lupinus, Soja, Lens*) show a bending of the root and hypocotyl with growth when the embryos are removed from dry seed, and the bend is always convex on the face next to the cotyledons. In some cases the root and hypocotyl form a closed spiral of 3 or 4 coils. If the seed are soaked several hrs. before removal of the coats, no bending occurs. If dry intact seed are exposed to the vapor of 1% Br water for 25 or more min., or formaldehyde vapor, similar bending occurs. The effect of these vapors is prevented by vaselining the coat over the hypocotyl before treating. In commercial seed there is generally a small % of bending due to pressure injury on outer flank of hypocotyl in harvesting, threshing, and handling. This does not occur in self-harvested seed. In more extreme injury, the root dies. With slight injury the root straightens and grows normally. The bending is due to the killing of several layers of cells on the outer flank of the hypocotyl. This is easily seen microscopically after treatment with poisons. When dry, the seed-coats adhere tightly to the outer flank of the hypocotyl and their removal causes an over-extension of the superficial cells, resulting in death later. While the response is mainly due to mechanical effects, positive and negative traumatotropism may cause some curving. Similar effects of seed sterilizers have been reported by others.—*W. Crocker.*

TEMPERATURE RELATIONS

15611. **BUSSE, W. F., and C. R. BURNHAM. Some effects of low temperatures on seeds.** *Bot. Gaz.* 90(4): 399-411. 3 fig. 1930.—Seedlings grown from flax seed that had been frozen in liquid air sometimes showed a high % of abnormal plants having fasciated or doubled stems and hypocotyls, but seedlings from untreated seed practically never showed these abnormalities. 10 different varieties, each a pure strain, and 1 lot of common seed which were tested gave widely different % of abnormal plants (0-70%). The time of cooling the seed, or the time between freezing and planting, had little effect on the number of abnormal seedlings. When the moisture content of the seed was increased about 10% before freezing, germination was not affected, but the number of abnormal plants was reduced to almost zero. Freezing in CO_2 snow had about the same effect as freezing in liquid air. Some possible causes for this twinning of the growing point are discussed. Cotton seedlings also grow abnormally if the seed are first cooled in liquid air. Here the cotyledonary leaves become cracked and broken, due probably to purely mechanical causes, but the secondary leaves grow normally.—*W. F. Busse.*

15612. **CAROLUS, R. L. Effect of seasonal temperatures on chemical composition of kale (Brassica oleracea var. acephala).** *Proc. Amer. Soc. Hort. Sci.* 27: 502-508. 3 fig. 1930(1931).—Kale plants showed an increase in dry matter, total, reducing, and invert sugars, and hydrolyzable substances after a decline in the average mean temp. A 3-day period was necessary to start the accumulation or reduction in the % of these substances. The hardening process resulting from low temp. was associated with an increase in sugar content and, therefore, an increase in edible quality.—*R. L. Carolus.*

15613. **CRESCINI, F., ed A. TETTAMANZI (with introduction by F. TODARO). Sulla resistenza del grano alle basse temperature. [Cold resistance of wheat.]** *Italia Agric.* 66(7): 546-552. 1929.—During the exceptionally cold winter of 1928-29, observations were made on the resistance of the various parts of the wheat shoots to cold. Under presumably uniform conditions of temp., 4 pure line strains of wheat all showed that in a given plant the leaf sheath, younger leaves, and younger tillers were more cold-resistant than the leaf blade, older leaves, and older tillers respectively. Moisture, ash, total N, K and P were not distributed so as to be related to the cold resistance, but reducing sugars were highest in the hardiest organs.—*F. Crescini (transl. by H. S. Wolfe).*

15614. **FIGUROVSKY, J. V. (transl. by H. KORDES). Analyse der gesamten Lufttemperatur (Wärmesumme), die von den Pflanzen innerhalb einer Vegetationsperiode benötigt wird. [Analysis of total air temperature required by plants during a vegetative period.]** *Pflanzenbau, Pflanzenschutz u. Pflanzenzucht* 7(2): 36-43. 4 fig. 1930.—Theoretical discussion.

15615. **STERN, K., und E. BÜNNING. Über die tagesperiodischen Bewegungen der Primärblätter von Phaseolus multiflorus. I. Der Einfluss der Temperatur auf die Bewegungen.** *Ber. Deutsch. Bot. Ges.* 47(9): 565-584. 13 fig. 1929.—Bean plants grown in the dark exhibit a reversal of daily leaf movements when the night temp. is a few degrees higher than that of the day. When the temp. changes are produced at intervals of 16 hrs. instead of 24, the leaf movements follow approxi-

mately the 16-hr. rhythm. Small temp. fluctuations of 1° or less, occurring in 1-2 hrs., often have synchronous leaf movements. These, however, differ from the daily periodic movements influenced by 16- or 24-hr. temp. fluctuations, the reaction time of the latter being much longer. The effects of light and temp. changes upon the leaf movements are similar.—*W. J. Himmel.*

RADIANT ENERGY RELATIONS, PHOTOPERIODISM

15616. BURGER, GEORGE N. Critical wave-lengths in killing bacteria. *Bull. Basic Sci. Res.* [*Univ. Cincinnati*] 2(1): 46-54. 5 pl. 1928.—Filters of various concentrations of lead acetate in acetic acid were used to absorb and remove ultra-violet radiations of certain shorter wave-lengths, allowing the longer radiations to penetrate. Killing wave-lengths were determined for *Staphylococcus aureus, S. albus, S. citreus, B. paratyphosus* B, *B. dysenteriae* (Shiga), *Micrococcus catarrhalis,* and *B. coli communis.* A more accurate determination was made by projecting the spectrum of a quartz Hg arc on agar-coated slides inoculated with the above organisms and *B. subtilis.* The longest killing wave-length (3020 Å) is the same for all bacteria tested, suggesting that the quantum theory is applicable to the bactericidal action of u.-v. light. The maximum killing wave-lengths lie at 2800, 2650-2700, and 2540 Å.—*J. L. Cameron.*

15617. COLLA, S. Azione della lucé di Wood sulla posizione dei cloroplasti nella cellule. [Action of ultra-violet light on the position of chloroplasts in the cells.] *Boll. Soc. Ital. Biol. Sperim.* 5(3): 318-320. 1930.—Following irradiations in the range 3300-3900 Å, migration of the chloroplasts was observed, these moving essentially toward the nucleus. It is a question whether or not these movements are to be attributed to phototropism alone. —*M. Comel.*

15618. DETWILER, S. B. The effect of ultra-violet light on germination of seeds and growth of seedlings of Ribes rotundifolium Michx. *Jour. Forest.* 29(1): 131-133. 1931.—Exposure of seed for 5, 10, and 20 min. to light of 2700-3200 Å at 3 ft., produced no greater % of germination than was obtained from untreated seed, but did cause a stunting of early growth, with a hint of resistance to disease.—*P. C. Wakeley.*

15619. GOODSPEED, T. H. The effects of X-rays and radium on species of the genus Nicotiana. *Jour. Heredity* 20(6): 243-259. 17 fig. 1929.—F_1, F_2, and F_3 progenies following treatment with x-rays or gamma rays have been grown. When dry, soaked, or germinating seed; growing points of seedlings; or mature or immature sex cells are given appropriate treatment, alterations in the hereditary material appear in later generations. Certain of these alterations are quantitative and are followed by changes in the amount and distribution of nuclear material in the cell divisions which produce vegetative or reproductive tissues; others are qualitative and produce distinctions in the genetic factors which are inherited. Very heavy dosage with x- or gamma rays of dry or soaked seed has only a retarding and no immediate lethal influence on germination and early seedling growth. Relatively light dosage proves immediately or ultimately lethal to all seed which are germinating or are in the youngest seedling stages when treated. Older seedlings when irradiated often exhibit great deformation and are incapable of further growth until side shoots below the irradiated region develop.—*From author's abstract.*

15620. GUERRINI, GUIDO. Influenze delle luci monocromatiche sull'azione del Saccharomyces cerevisiae in presenza di glucosio. [Action of monochromatic light on activity of S. cerevisiae, when glucose is present.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 635-636. 1930.—The amount of CO_2 produced was greater when the cultures were exposed to light. The amount was maximum when the light was filtered through a red screen, less with yellow and green screens, and very slight with a blue screen.—*M. Comel.*

15621. JÜNGLING, O., und H. LANGENDORFF. Über die Wirkung verschieden hoher Röntgendosen auf den Kernteilungsablauf bei Vicia faba equina. *Strahlentherapie* 38(1): 1-10. 1930.—X-rays disturb the course of cell division in roots of *V. f. equina.* Small doses which do not produce any injury visible microscopically, accelerate mitosis. Larger, injurious doses produce an undulant course of cell division, which is not in accord with the rhythm of mitosis in unirradiated roots. Still higher doses lengthen the time between mitoses, slowing down the course of effects connected therewith.—*Authors' summary (transl. by P. M. Suski).*

15622. KNOTT, J. E. Further localization of the response in plant tissue to relative length of day and night. *Proc. Amer. Soc. Hort. Sci.* 23: 67-70. 1926.—The catalase activity of the apical bud of *Cosmos* decreases as the change from vegetative to reproductive growth is caused by subjecting the tip alone to a 10 hr. day. The change is not paralleled in an adjacent leaf which was also covered. The formation of a flower bud at the apex stimulated greater vegetative growth of the shoots at the nodes below. Increased catalase activity was evident at the 1st node below the tip.—*Author's summary.*

15623. KÜSTER, A. Die Wirkung der Röntgenstrahlen auf die nyktinastischen und seismonastischen Bewegungen. *Fortschr. Geb. Röntgenstrahlen* 40(2): 242-248. 1 fig. 1929.—X-rays produce a permanent paralysis of the pulvini of the leaves of *Mimosa* and *Phaseolus,* proportional to the dosage. The hard rays are more effective in this than the soft. The paralysis does not interfere with the movement of the water stream through the pulvini.—*H. J. Fuller.*

15624. McKINNEY, H. H., and W. J. SANDO. The behavior of winter wheat in artificial environments. *Science* 71(1852): 668-670. 1930.—Glass causes abnormally long foliage and reduces sideshoots in winter wheat grown in full daylight. The same effects are produced by tungsten lamps and to a less extent by Cooper-Hewitt lamps. 7-8 hrs. daylight daily through window glass at 59°F. produced nearly normal plants during their early vegetative stage. 2-3 experimental crops of winter wheat can be obtained in 12 mo. by holding small seedlings near 32°F. in the dark for 65 days or by growing plants in an 8-hr. day at 50°F. for 36 days, then 60 F. for 18 days, following either initial treatment with long days at 70-95°F.—*H. H. McKinney.*

15625. NORRIS, ROBERT J. An application of filtered ultra-violet radiation to sterilization of diastatic enzyme solutions. *Bull. Basic Sci. Res.* [*Univ. Cincinnati*] 2(1): 93-104. 4 fig. 1928.—A ½% solution of a diastatic enzyme (of anticipated value to the baking industry) was treated with u.-v. rays of various wave-lengths, by use of special filters; the enzyme sensitivity was determined by the method of Shaffer and Hartman. 2760 Å was the most favorable bactericidal wave-length, giving complete sterilization with a minimum of enzyme destruction. The lengths of time required for sterilization of solutions of enzyme in increasing concentration (up to 10%) are reported.—*J. L. Cameron.*

15626. RAMSEY, G. B., and ALICE ALLEN BAILEY. Effects of ultra-violet radiation upon sporulation in Macrosporium and Fusarium. *Bot. Gaz.* 89(2): 113-136. 1 pl. 1930.—There is a definite stimulation of spore production in cultures of *Macrosporium tomato* and *Fusarium cepae* on exposure to u.-v. radiation produced by a quartz Hg arc. Increased spore production appears to be a result of stimulation rather than an indirect result of inhibitory action. Most spores were produced when filters were used whose lower limits of transmission were 2535-2800 Å. Slight stimulation results when filters transmitting no lower than 3120 Å are used, but those whose lower limits are 3334 Å or above are not effective. Radiations of 2535 Å and shorter stimulate spore production, but lethal effects also become noticeable. Greatest increase in spore production occurs when irradiated 15-30 min. on 3 successive days. Stimulation of spore production is not due to change in the culture medium as a result of irradiation, or to temp. fluctuation. Control cultures 2 weeks old, showing no spores, produced

hundreds of spores on irradiation. Long exposures to direct sunlight in May through filters transmitting no lower than 3120 Å induce abundant sporulation in both *Macrosporium* and *Fusarium*.—*G. B. Ramsey.*

15627. **SARTORY, A., R. SARTORY, et J. MEYER. Influence du radium sur la production des zygospores chez Mucor spinosus Van Tieghem (Zygonhynchus spinosus).** *Compt. Rend. Acad. Sci.* [*Paris*] 186(15): 1010-1012. 1928.—The organism used was isolated from the digestive tubes of different larvae of Coleoptera and Lepidoptera. The methods of Bainier and Blakeslee gave no evidence of sexual phenomenon in cultures. Irradiation in dosages of 5 millicuries per cm.² occasioned the sexual phenomena in a medium made up of gelatinized juice of carrot dissociated with NaCl. The same phenomena which had been encountered before in the study of the action of Ra upon the lower fungi were found: the latent period (5-8 hrs. after irradiation) specific for the medium, and the liquefaction of the medium. The organism seems to be much more sensitive to the action of Ra as the surface of the cellular mass exposed to the irradiation becomes greater, as shown by the dosages to which the Perisporiaceae and the Mucorineae are sensitive.—*W. K. Farr.*

15628. **STEVENS, F. L. The response to ultra-violet irradiation shown by various races of Glomerella cingulata.** *Amer. Jour. Bot.* 17(9): 870-881. 5 pl. 1930.—About 50 monosporous cultures of *G. cingulata* isolated from apples in various localities were irradiated. These cultures showed marked variations in color of mycelium, presence of setae, and production of acervuli and perithecia. Some races produced perithecia in dense stroma-like groups of 50-1000, others in smaller clusters, and a few produced scattered solitary perithecia. The perithecia varied from globose and beakless to flask-shaped and rostrate, while the ascospores were quite constant in shape and size. Some of the races gave rise to mutants, by sectoring, in plate cultures and one such mutant sector was found in an infected apple. Irradiation increased perithecia in races producing them normally and induced their formation in many races not producing them normally. Some failed to produce perithecia even when irradiated. The perithecia in irradiated cultures were always scattered or in very small groups. Formation of acervuli was strongly influenced by irradiation.—*B. B. Higgins.*

15629. **SZOLNOKI, I. Radioaktivität, Lichtelektrizität, und Kaliwirkung.** *Ernähr. Pflanze* 26(8): 177-180. 1 fig. 1930.—General discussion of work on plant pigments, photosynthesis, and respiration.

15630. **TEDIN, OLOF. Undersökningar över ljusets inverkan på groningen av tomatfrön. [Influence of violet light on the germination of tomato seed.]** [With English summary.] *Nordisk Jordbrugsforskning* [*København*] Heft 2/3. 108-126. 1931.—The effect of full light, darkness and violet light was studied. Whereas the tomato-seed germinates better in darkness than in light, it reacts against violet light like a typical light-demandant. According to Hollrung such seed are unfavorably affected by blue and violet light, whereas dark-demanding seed should respond favorably to these spectral regions.—*From author's summary.*

15631. **TEODORESCO, E. C. Observations sur la croissance des plantes aux lumières de diverses longueurs d'onde.** *Ann. Sci. Nat. Bot.* 11(2): 201-335. 1 pl., 91 fig. 1929.—Continuing earlier work, with the added precaution of employing the thermopile as a measure of the energy content of the colored light used, 43 experiments are described as illustrating results obtained in 170 tests with liverworts, vascular cryptogams, and phanerogams. To simplify the problem the visible spectrum was merely divided into the red-orange and blue-violet halves, each containing a portion of the green. For selective absorption of the light rays specially constructed double-walled bell glasses containing 7 cm. layers of 10% aqueous K-bichromate and 3.25-4.25% ammoniacal hydrated $CuSO_4$ solutions were chiefly employed. More concentrated solutions of chromic acid (which is very soluble) were substituted for the bichromate when it was desired to reduce the energy content of the red-orange rays to that of the blue-violet. For comparison, special blue and orange-red glasses were used as filters and combinations of ordinary colored glasses and films also were employed in constructing miniature glass houses for the plants. Ordinarily direct sunlight or diffuse light was used and tests were conducted at different seasons. In special cases an electric light placed at varying distances from the filters was used to secure equal illumination intensities. Screens of pure water or copper acetate were used to absorb infra-red radiation when measuring the intensity of the transmitted light, but these filters were not deemed necessary in conducting the experiments. To minimize the disturbing effects of photosynthesis, plant material well supplied with reserves was chosen and the tests were usually terminated before these reserves were exhausted. Spores of the lower plants were germinated in 2.0-.5% agar in Knop's solution of 1/10 normal concentration. Seed, tubers, or bulbs of some of the higher plants were germinated in sand, and in other cases older plants in pots were used. In certain cases only the terminal bud was placed under the light screens, the remainder of the plant being in open daylight. With some exceptions, the 2 halves of the visible spectrum differ in their effect on increase in length of plants. The longer wavelengths act like darkness, producing excessive elongation of internodes, petioles, and their cells and reducing the surface and the thickness of leaves. On the other hand, the effects of the shorter rays resemble those of white light. *Menispermum cocculus* and *Helianthus annuus* are partial exceptions to the rule. In some plants, red light increases the number of internodes. In sporelings of certain liverworts and ferns, the red-orange rays cause excessive cell elongation, the organism being reduced sometimes to a mere filament composed of a single series of cells. The red light also reduces cell division and in the early stages of growth only transverse dividing walls are seen, while the number of longitudinal walls ultimately formed is much reduced. These combined effects produce in these lower plants a characteristic etiolation like that seen in weak white light. In forms in which the spores are able to germinate in darkness (*Pteridium*) the etiolation produced by red-orange light is almost identical with that of total darkness. As soon as the reserve materials are exhausted, however, photosynthesis becomes a factor, and in the red light elongation outstrips that in darkness. In certain plants (*Conocephalum, Pellia*) the sporelings grown in red light are longer than those in the blue but shorter than those in white light, and as the intensity of white light is increased, instead of etiolation effects, the elongation is reduced. These plants act as if the reserves are exhausted and growth is dependent on photosynthesis. Hence the direct action of wavelength on growth (photomorphosis) can only be ascertained by using plants amply supplied with reserve materials and observing the action of the radiation on the transformation of these materials for growth purposes and during the growth. The blue-violet rays appear to be more favorable to normal development of the plant than the red-orange and it seems justifiable to assume that the natural form of plants developed in daylight is dependent primarily on the action of the former rays. The 2 ends of the visible spectrum likewise act differently on germination. Excepting the cases in which the spores are capable of germinating in the dark, the blue rays as compared with the red appreciably delay germination in the liverworts and vascular cryptogams.—*W. W. Garner.*

15632. **WESTON, W., A. R. DILLON, and E. T. HANLAN. The fungicidal action of ultra-violet radiation.** *Phytopath.* 20(12): 959-965. 2 fig. 1930.—*Mucor mucedo, Rhizopus nigricans, Sporodinia grandis, Cladosporium herbarum, Dematium pullulans, Pleospora herbarum, Neurospora sitophila, Fusarium sp., Sclerotinia trifoliorum,* and *Stereum purpureum* irradiated 9 min. a day for 2 weeks showed a progressively reduced growth rate

until a dormancy was acquired. Petri dishes equipped with covers of Sanalux or Vita glass were used. Coincident with the decreased growth rate, the mycelium progressed deeper into the potato-agar substratum. Following the termination of exposure, mycelial growth was renewed.—*W. A. Whitney.*

TOXIC ACTION

15633. **ALBERT, W. B., and W. R. PADEN. Calcium arsenate and unproductiveness in certain soils.** *Science* 73(1901): 622. 1931.—Observations and experimental data indicate that addition of large amounts of Ca-arsenate to gray, light, sandy-loam soils may interfere seriously with subsequent growing of As-sensitive crops, such as cowpeas, oats, cotton, and certain grasses.

15634. **BARKER, B. T. P. Investigations on the fungicidal action of sulphur.** *Ann. Rept. Agric. & Hort. Res. Sta. Univ. Bristol* 1929: 130-148. 1 pl. [1930].—Sixty-one sp. of higher plants were studied by sprinkling S on both sides of the leaves and clamping to them filter paper moistened with basic lead acetate; 15 colored the paper black or brown, 9 colored it faintly brown, and 37 did not cause any color change. Thus about ¼ gave evidence that H_2S had been formed, and this in Sept. when leaf activity was low. A larger % of lower forms, including several yeasts and common pressed yeast, showed this S reducing power. Also pulp of apple and Jerusalem artichoke show this power. Control plants without S gave no reaction with lead acetate paper. Strawberry leaves reduced KIO_3 that had been dusted on them, and $FeCl_3$ in a gelatine film placed against them; and water in which strawberry leaves had been immersed reduced $AgNO_3$. With some tissues a deeper stain of lead acetate paper was obtained if to the tissue and S a few drops of H_2SO_4 were added. Lead acetate paper was soon discolored when placed over the mouth of a flask containing a fermenting sugar solution with S in suspension. The boiled solution dropped on lead acetate paper produced a brownish-black stain, but the unboiled solution did not. The unheated liquid would not reduce $PbCO_3$ immediately, but would upon standing in a $PbCO_3$ suspension. From strawberry leaves dusted with S and kept under a beaker in sunlight, the first odor given off was aldehydic, the H_2SO_4 odor coming later; unsulphured leaves failed to respond similarly. Liquid paraffin drawn through a mass of sulphured strawberry leaves did not yield H_2S upon being heated, unless it was first acidified with a few drops of H_2SO_4. It is suggested that the first product of the reduction of S by a substance from the living plant is not H_2S but some substance that is stable at 100° C. in the presence of alkali, but in the presence of acid is easily broken down, yielding H_2S. Possibly glutathione is the reducing factor.—*W. H. Chandler.*

15635. **KRONE, PAUL R., and F. F. WEINARD. Experiments with solutions of chlorine and sodium chloride on pot plants.** *Proc. Amer. Soc. Hort. Sci.* 27: 444-448. 1930(1931).—Injury to pot plants due to Cl in solution in water starts at about 10 p.p.m. and increases with the concentration. Since very seldom more than 2 p.p.m. are used in purifying city water supplies, it is doubtful if injury often occurs from this source. As to salts in solution in water, damage occurs starting at a concentration of 200 p.p.m., characterized by a burning of foliage. Stunting of the plant occurs at 500 p.p.m. and injury increases with the concentration.—*P. R. Krone.*

15636. **LEJHANEC, G., I. A. PARFENTJEV, and B. SOKOLOFF. Influence of quinone on oxidation processes, proliferative activity and longevity of yeast.** *Proc. Soc. Exp. Biol. & Med.* 28(5): 540-541. 1931.—Quinone, a substance resulting from the decomposition of adrenalin, increased the O consumption of yeast cells when in concentration of 1: 500,000; depressed the reproduction of yeast when at the same conc., the effect being more pronounced at a conc. of 10^{-4}; and decreased the duration of life of yeast cells.

15637. **NICHOLS, SUSAN P. The effect of chloroform upon the rotation in the internodes of Nitella.** *Bull. Torrey Bot. Club* 57(3): 153-163. 1 pl. 1930.

15638. **STOKLASA, JULIUS. Biochemische Methoden auf dem Gebiete der Pflanzenhygiene.** [In: *Handbuch Biol. Arbeitsmeth.* Lief. 243. Abt. IX. **Chemische, physikalische und physikalischchemische Methoden zur Untersuchung des Bodens und der Pflanze.** Teil 3, Heft 6.] p. 865-986. 14 fig. Urban & Schwarzenberg: Berlin, 1927.—The following are among the subjects dealt with in considerable detail: Acute, chronic, and invisible effects, respectively, caused by SO_2, H_2SO_3, H_2SO_4; analyses of foliage of different plants affected by these impurities in air; critical comparison of methods of estimating these impurities; analysis of flue gases from various types of furnaces; detection and estimation of SO_2 and H_2SO_4 in foliage; effects of HF, SiF_4, and H_2SiF_6 on cells and the higher plants generally; and methods for detection and estimation of F in plant materials, minerals, rocks, clay, and soil. Less detailed treatment is accorded to the toxic effects of HCl and the estimation of Cl in plant material and soil.—*O. Owen.*

ANIMAL PHYSIOLOGY

GENERAL

(See also in this issue Entry 15668)

15639. **ARMSTRONG, E. F., and K. F. ARMSTRONG. Monographs on biochemistry. The Glycosides.** 123p. Longmans, Green & Co., Ltd.; London, 1931. Pr. 12s. 6d. net.

15640. **BUTCHER, R. ADAMS, and DENNIS E. HALEY. Introduction to agricultural biochemistry.** x+484p. 98 fig. John Wiley & Sons: New York; Chapman & Hall: London, 1932.

15641. **FOX, FRANCIS WILLIAM. The chemistry of the individual.** *Proc. S. African Chem. Inst.* 1931: 22-32. 1931.—A lecture, discussing the biochemical and biophysical interpretation of the differences between one man (or other animal) and another. Differences in chemical composition of blood and tissue; in reaction of urine, of gastric juice and of blood; differences in renal threshold of sugar secretion; "inborn errors of metabolism" (albinism, haemophilia, alcaptonuria, porphyrinuria, cystin excretion in urine, steatorrhea, and food or allergic idiosyncrasies). There is a brief review of endocrinology, with reference to accounting for personal differences on the basis of endocrine differences; diet is considered also.

15642. **GELLHORN, ERNST, (herausg. von). (Unter Mitwirkung von L. ASHER, W. von BUDDENBROCK, E. GELLHORN, C. OPPENHEIMER, und J. SPEK.) Lehrbuch der allgemeinen Physiologie.** 741p. 126 fig. Georg Thieme: Leipzig, 1931. Pr., 47 M.—As stated in the preface, this book is not limited to an introduction to general physiology. It consists of 7 synopses of recent developments by specialists in the field. I. Die Zelle als physico-chemisches System, E. Gellhorn. The author discusses permeability; electrolytes and their action; and H-ion concentration more fully than osmosis and surface phenomena. He includes a partial résumé of some of the recent views on bioelectric phenomena. II. Chemie der Zellvorgänge, C. Oppenheimer. This section considers the living substance as a chemical system; structural materials of the living substances; synthesis and decomposition of nutrients and cell substances, and the chemical mechanisms of cell processes. In the discussion of chemical mechanisms the author stresses enzyme action, and the theories of oxidation-reduction and O activation. III. Energetik der lebenden Substanz, C. Oppenheimer. The rôle of cell metabolism, work, and heat production are treated from a thermody-

namical point of view. IV. Die Zelle als morphologisches System [The cell as a morphological system], J. Spek. The main headings included in this section are: visible cell structure in the light of general physiology and the physiological reciprocal action between nucleus and cytoplasm. V. Allgemeine Physiologie der Entwicklung und Formbildung, J. Spek. Advances in the physiology of fertilization, cell division, embryological development and regeneration are presented. VI. Allgemeine Physiologie der Erregungsvorgänge, L. Asher. The section begins with a general discussion of stimulation, excitation, inhibition and "external" and "internal" conditions, and is followed by a résumé of the modern aspects of excitation and the quantitative relation between stimulation and excitation. VII. Tropismen, W. von Buddenbrock. A brief summary of present day views is presented. Each author includes a partial bibliography which consists chiefly of new books and the most important recent contributions. The more recent views of certain branches of general physiology are stressed throughout.—*H. F. Rosene.*

ANIMAL PHYSIOLOGY

COLLOIDS, SURFACE TENSION, ADSORPTION, VISCOSITY, PERMEABILITY, OSMOSIS, ETC.

D. I. HITCHCOCK, *Editor*

(See also in B. A. 6(4): Entries 9355, 9490, 9533, 9550, 9554, 9555, 9850, 9942, 10002, 10016, 10022, 10071, 10117, 10152, 10224, 10386, 10399; 6(5): 12483, 12495, 12639, 12882, 12954, 13024, 13115, 13180, 13396, 14476; and in this issue 15105, 15110, 15476, 15562, 15710, 15714, 15717, 15723, 15725, 15745, 15772, 16017, 16040, 16518, 17367, 17376, 17476, 17490)

15643. ANSON, M. L., and A. E. MIRSKY. Protein coagulation and its reversal. The identity of normal hemoglobin with the hemoglobin prepared by the reversal of coagulation, as determined by solubility tests. *Jour. Gen. Physiol.* 14(5): 597-604. 1931.—Methemoglobin was denatured in solution by the addition of HCl. Reversal of denaturation was accomplished by partial neutralization with NaOH. After complete neutralization, and separation of some denatured protein, the rest of the protein was obtained as "reversed" methemoglobin which could be crystallized. Solubilities of 3 amorphous proteins, the original methemoglobin, the "reversed" methemoglobin, and a preparation obtained from hemin and "reversed" globin, were identical within 2%. This is evidence that a protein whose coagulation has been reversed is identical with the original native protein. —*D. I. Hitchcock.*

15644. ANSON, M. L., and A. E. MIRSKY. Protein coagulation and its reversal. Globin. *Jour. Gen. Physiol.* 14(5): 605-609. 1931.—The globin prepared from hemoglobin by the acid acetone method is denatured globin. The denaturation and coagulation of globin by acid acetone are reversible. Soluble globin can be obtained from the acid acetone globin even if the globin is first precipitated by trichloracetic acid or heated to 100°C. Hill and Holden's theory that they separated native globin from hemoglobin without any intermediate denaturation is not proven by their experiments.—*Authors' conclusions.*

15645. ANSON, M. L., and A. E. MIRSKY. Protein coagulation and its reversal. Serum albumin. *Jour. Gen. Physiol.* 14(6): 725-732. 1931.—It is possible to prepare crystalline, soluble, heat-coagulable serum albumin from coagulated serum albumin. In the cases so far studied, the more soluble a denatured protein, the more easily its denaturation can be reversed.—*Authors' conclusions.*

15646. ANSON, M. L., and A. E. MIRSKY. The reversibility of protein coagulation. *Jour. Phys. Chem.* 35(1): 185-193. 1931.—Hemoglobin, globin, and serum albumin, when denatured by the ordinary procedures, can by suitable technique be repeptized to soluble proteins which seem to be the same as the original native proteins. Perhaps denaturation of the coagulable proteins in living tissues and its reversal are biological reactions which are important in ordinary cellular processes.—*T. O. Stevens.*

15647. BANCROFT, WILDER D., and J. E. RUTZLER, Jr. The denaturation of albumin. I. Denaturation by heat. *Jour. Phys. Chem.* 35(1): 144-161. 1931.—Heat-coagulated egg-white sols are peptized by KI, KSCN, NH_4SCN, urea, $NaHCO_3$, formaldehyde, and cane sugar. NaOH is also effective, but a slight amount of hydrolysis occurs. Under ordinary conditions, ether does not denature albumin, and when it does, the denaturation is due merely to removal of adsorbed water from the colloid, not to any chemical change. Extraction with ether prevents, by some sort of colloidal mechanism, the coagulation of egg-white sols. Evidently the ether extracts something from the sol and so gives it heat stability, since the extracted material, which acts like crude lecithin from egg-yolk, can act as a coagulating agent. Immunological tests for species specificity have shown that coagulated and repeptized egg-white sols are identical with the original, as also have isoelectric point measurements. A mechanism of peptization has been proposed which initially involves mechanical disintegration of the protein coagulum by hot water, aided in some cases by ether, and is followed by further disintegration and peptization by the negative ions of various electrolytes.—*T. O. Stevens.*

15648. BISHOP, G. H., FRANK URBAN, and H. L. WHITE. A study of the blocking effect of membranes. *Jour. Phys. Chem.* 35(1): 137-143. 5 fig. 1931.—In connection with a study of the filtration process through the glomerular membrane of the kidney, an examination was made of the flow of solutions through cellophane membranes and through glass capillary "pore models" of 0.035-0.150 mm. inside diam., and varying in length and taper. When water or dilute KCl solution is forced through cellophane membranes under pressure of 80 mm. Hg. or less, filtration commences at a maximum rate when the pressure is applied and in 15-60 min. may fall off to as low as 10% of the initial rate. If the streaming potentials in certain pores of the membrane were less, either in magnitude or rate of development, than were those in others, a return circuit though these pores would develop. This would oppose electro-osmotically the flow of solution due to the pressure head, resulting in an apparent falling off in the rate of mechanical filtration, and would at the same time discharge the potential difference across the membrane. The streaming potentials measured with the glass capillaries varied for capillaries of different diam. and shape, and even for the same capillary from day to day. The reasons for these differences are at present not at all clear. But it is reasonable to assume that there are great variations in the sizes and shapes of the pores in membranes, and it seems probable that the consequent differences in streaming potential may be responsible for the "blocking effects" observed.—*T. O. Stevens.*

15649. BOGUCKI, M. Recherches sur la perméabilité des membranes et sur la pression osmotique des oeufs salmonides. *Protoplasma* 9(3): 345-369. 4 fig. 1930.—The egg membrane of trout eggs is fibrillar in structure and when placed in water becomes elastic, resisting the action of NaOH. It is permeable to crystalloids but impermeable to colloids. This does not vary with egg development. In water, it absorbs about 20% of its volume. The osmotic pressure of fertilized and unfertilized eggs placed in water diminishes 30-40% in com-

parison with those in the fish. This is independent of fertilization. The perivitellin forms parallel to the absorption of water and equals in size the quantity of water absorbed. Hypotonic electrolytes stop this formation. Formation takes place, however, in hypertonic non-electrolytes. Colloids eliminated by the ovular cell in the perivitelline space seem to be responsible for these effects due to imbibition.—*Author's summary (transl. by L. S. Moyer).*

15650. BRAVO, G. A., e F. BALDRACCO. Sulla combinazione del collagene coi coloranti. [Combination of collagen with dyes.] *Ann. Chim. Appl. [Roma]* 21(8): 355-365. 1931.—When proteins of animal skins are brought in contact with solutions of dyes there is under certain conditions a true chemical reaction in addition to the colloidal adsorption. Quantitative data from the study of this reaction permit calculation of the equivalent wt. of the skin protein (collagen) as around 740.—*Authors' summary (transl.).*

15651. BRIEFER, M. Photometric and electrometric measurements of gelatin behavior. *Industr. & Engineer. Chem.* 21(3): 266-270. 1929.—The physical characteristics of gelatin vary with the chemical treatment of the raw material and not with its biological history. The prevailing theory that gelatin is at its isoelectric point specifically at pH 4.7 was originally postulated on a half-truth and is no longer tenable. Experimental data prove that gelatin has no specific isoelectric point but that there exist 2 types of gelatin, one carrying positively charged and the other negatively charged ions, depending on the original chemical treatment of the raw material. Experiments show that the ionic state of animal skins, resulting from originally acid or alkaline treatment, is not changed with respect to the isoelectric point by subsequent treatment with electrolytes, and that the gelatins extracted from these materials have corresponding physical and chemical characteristics. The specific reactions of animal hide to chemical treatment, and the persistence of the initial effect, should be an important factor in the chemistry of leather. Additional details are given with respect to isoelectric turbidity.—*Courtesy Industr. & Engineer. Chem.*

15652. CAMPEN, P. van. An apparatus for the rapid measurement of the osmotic pressure of colloidal solutions. *Rec. Trav. Chim. Pays-Bas* 50(7/8): 915-920. 3 fig. 1931.—The apparatus depends on the measurement of an artificial pressure exerted on the liquid and the observation of the velocity of the solvent passing through the membrane at this pressure. The osmotic cell is so constructed that only 10 cc. of solution are necessary for a measurement. Measurements on the osmotic pressures of hydrophilic colloids required only ½ hr.

15653. DHAR, N. R. Influence of ageing on inorganic hydrophile colloids, cells and colloids in the animal body. *Jour. Phys. Chem.* 34(3): 549-553. 1930.—A further elaboration of the theory that ageing of organisms and the "ageing" of hydrophilic colloidal systems are substantially identical phenomena.

15654. EWLES, J., and J. B. Speakman. Examination of the fine structure of wool by X-ray analysis. *Proc. Roy. Soc. [London] B* 105(740): 600-607. 1 pl., 1 fig. 1930.—X-ray fiber diagrams of 3 typical wools were obtained using the monochromatic pinhole method and iron radiation. Cotswold wool, unstretched and under ordinary atmospheric conditions of moisture, gave a definite fiber pattern, while the same wool stretched 30% in dry air gave a different diagram. A tentative interpretation is given in terms of fine structure which is in conformity with the theory of fiber structure deduced from stress-strain relationships. X-ray fiber diagrams were also obtained from Geelong 80 Merino and from Australian Merino 64 quality. The pattern of Geelong Merino, while still showing fiber structure, was less definite than the Cotswold, suggesting an ellipsoidal cell, while the 64 Merino showed only the least trace of ordered arrangement. Probably these 3 types are significant of the development of crystalline structure in wool and of its cause, the wool beginning its existence as a spherical cell of gelatinous material which elongates during growth, setting up strains which give rise to ordered and preferential arrangement along the fiber axis.—*J. Ewles.*

15655. GROLLMAN, ARTHUR. The vapour pressures of aqueous solutions with special reference to the problem of the state of water in biological fluids. *Jour. Gen. Physiol.* 14(5): 661-683. 1931.—The vapor pressure depressions of several dilute aqueous solutions (0.03-0.1 *M*) were determined by the thermo-electric method of A. V. Hill, which measured the temp. differences produced by the evaporation of very small quantities of solution from wet filter paper. The probable errors are 0.5-1.0%. In mixed solutions organic substances (urea, sucrose, etc.) gave anomalous results, and even with inorganic salts (LiCl, $CaCl_2$) only approximate additivity of the depressions was obtained. The results with mixtures of gelatin or gum acacia with NaCl or KCl in solution showed that hydration is slight with gelatin at pH 7 and indetectable in gum acacia solutions. Hence those hydrophilic colloids are not strongly hydrated. No change in hydration of the colloids was found on passing from the sol to the gel state in gelatin or in blood.—*D. I. Hitchcock.*

15656. JOCHIMS, J. Das Fadenziehen biologischer Substanzen. Sammelreferat. *Protoplasma* 9(2): 298-317. 2 fig. 1930.—A review is given of the phenomenon of thread formation as described for living and non-living matter, including the protoplasmic threads formed by a plasmolyzed protoplast and the myelin threads produced by lecithin.—*W. Seifriz.*

15657. KOPACZEWSKI, W. Traité de biocolloïdologie. Vol. I. Pratique des colloïdes. Fasc. 2. Mesure des concentrations moléculaires et ioniques. Illus. Gauthier-Villars et Cie: Paris, 1930. Pr. 40 fr.

15658. KRUEGER, A. P., and R. C. RITTER. The preparation of a graded series of ultra-filters and measurement of their pore sizes. *Jour. Gen. Physiol.* 13(4): 409-419. 1 fig. 1930.—A graded series of ultrafilters was prepared, impregnating filter paper with glacial acetic acid solutions of negative cotton in which the latter substance was varied according to the density of the membrane desired. After thorough impregnation, gelation was effected by submersion in sterile water and all traces of acid were removed by repeated washings. The pore sizes of the entire series were determined by measuring permeability to purified sols of known particle sizes and the estimates so obtained were compared with pore diam. calculated from rate of flow data. The pore diam. for any given membrane as estimated by permeability to sols was always some 150 mμ less than that calculated from data on permeability to water. The membranes are useful in determining the particle size of ultramicroscopic viruses. They require no sterilization and are employed in connection with a simple glass ultrafilter apparatus.—*A. P. Krueger.*

15659. LAGRANGE, E. Coagulation du blanc d'oeuf par des agents biologiques. *Compt. Rend. Soc. Biol.* 98 (17): 1527-1529. 1928.—Using cholera vibrio, heat, alcohol, trypsin, pepsin, meat juices, etc., types of coagulation of egg white (1 part in 4 parts distilled H_2O) were studied.

15660. LUDWIG, WILHELM. Permeabilität und Wasserwechsel bei Noctiluca miliaris Suriray. [Permeability and water exchange in N. miliaris.] *Zool. Anzeiger* 76 (11/12): 273-285. 6 fig. 1928.

15661. MONAUNI, JOSEF. Zur Frage der Kaliumdurchlässigkeit der Muskelfasergrenzschicht und ihrer Förderung durch Rohrzucker. *Pflüger's Arch. Ges. Physiol.* 221(6): 800-806. 1929.—The soft, flat, musculature of the abdomen of the ♀ frog (*Rana esculenta*) was stretched across a glass tube filled with isotonic KCl. The conductivity of the cell was then used as a measure of permeability. At 36° C. there was scarcely any ion migration across the membrane. When the tube was placed in a sugar solution, the membrane was per-

meable to K, but this was not due to poisoning of the membrane. If the membrane had been stretched too tightly across the tube the interstices became enlarged through stretching and the membrane was slightly permeable to K. Without undue stretching it was impermeable. Normally, in situ, the muscle fiber membrane would not be stretched and probably would not be permeable to K.—*N. M. Payne.*

15662. **MURATA, M. Über die parenterale Resorption von Kolloiden. III.** *Biochem. Zeitschr.* 226(4/6): 457-461. 1930.—The normal diastase value in 4 rabbit sera was found to be constantly 64 units. Subcutaneous injection of 1280 units each into 2 rabbits did not change the diastase value; nor did intraperitoneal injection of 1280 units into 2 rabbits, 2560 units into 6 rabbits, or 5120 units into 5 rabbits. Intravenous injection of 2560 units each in 7 experiments on 5 rabbits, raised the diastase for 60-180 min., and intravenous injection of 5120 units each into 6 rabbits raised the values for 24 hrs.

15663. **NORTHROP, JOHN H., and M. KUNITZ. Swelling and hydration of gelatin.** *Jour. Phys. Chem.* 35(1): 162-184. 18 fig. 1931.—The swelling, osmotic pressure, viscosity, and syneresis of gelatin gels or sols may be quantitatively accounted for on the following assumptions. Gelatin sols or gels are 2-phase, 3-component systems. The solid phase consists of particles (micellae) of an insoluble ingredient of the gelatin. The liquid phase is an aqueous solution of the "insoluble" fraction and of a "soluble" fraction in water. Each micella is a separate system consisting of an insoluble elastic wall or net-work containing an "internal" liquid phase, which is a solution of the "insoluble" fraction from the wall of the micella and of 1 or more other fractions which have a high temp. coefficient of solubility and for which the walls of the micellae are impermeable. —*Authors' summary.*

15664. **PEDERSEN, KAI O. Temperature stability and denaturation of serum albumin.** *Nature* [*London*] 128(3221): 150-151. 1931.—The aggregation products of heated serum albumin are homogeneous as to electrophoretic movement. Their isoelectric point is pH 5.1-5.3 (cf. pH 4.88 for native serum albumin), and the pH-mobility curve nearly parallels that of native serum albumin. Beyond the stability region (i.e., at acidities>pH 3.8) the smaller particles formed on heating differ in sedimentation constant from those formed from native serum albumin, and the electrophoretic mobility was as that of heat-denatured serum albumin. Serum albumin solutions at pH 3.5, exposed to ultra-violet, are changed; light absorption is increased, odor becomes strong, and other properties are modified.

15665. **ROCHE, JEAN. Sur quelques propriétés physico-chimiques de la globine.** *Arch. Phys. Biol.* 7 (3): 165-179. 3 fig. 1929.—Natural globin, prepared from hog and ox blood by a process involving dialysis at 0°, had an isoelectric point at 7.5 as determined by cataphoresis of 2-8% protein solutions containing 9% NaCl. Its minimum buffer capacity, derived from the point of inflexion of neutralisation curves obtained with HCl and NaOH (*N*/20) and an antimony electrode, occurred at pH 7.6 but varied with the concentration of protein. The denatured protein gave the corresponding values 7.7 and 7.6. Differences in the solubility of the 2 proteins are discussed.—*A. M. Smith.*

15666. **SCHREINEMAKERS, F. A. H. Membrane and osmosis. II.** *Rec. Trav. Chim. Pays-Bas* 50(7/8): 883-899. 3 fig. 1931.—Results of osmosis experiments on aqueous solutions of oxalic, succinic, and tartaric acids, and Na_2CO_3, with parchment, cellophane, and pig-bladder membranes are given. With oxalic acid solutions, water diffused through pig-bladder from the solution towards the pure water at all concentrations and during the entire osmosis. The results of such experiments are deduced from curves expressing the variation of the amounts of solute and solvent absorbed by the membrane with their concentrations in the solution, by postulating the existence of hypothetical sluice gates on opposite sides of the membrane. The sluice type of diffusion may or may not be the same as the stationary type.—*N. F. Burk.*

15667. **TARUSSOFF, B. Über Zellpermeabilität und Anpassungsfähigkeit bei Wassertieren.** *Protoplasma* 9 (1): 97-105. 5 fig. 1930.—Tissue membranes of the Euryalae are readily permeable to water and slightly to salts (1:120). Stenohaline organisms are readily permeable to both water and salts (1:1). The harmful influence of equivalent hypertonic salt solutions does not arise from osmotic pressure but from salt penetration.—*L. S. Moyer.*

15668. **WARE, JOHN C. The chemistry of the colloidal state.** 313p. 96 fig. John Wiley & Sons: New York; Chapman & Hall: London, 1930.

15669. **WHITEHOUSE, STANLEY W. Amoeboid motion as the product of protein swelling.** *Science* 73 (1890): 325-326. 1931.—Amoeboid movement is effected by injection of acids, bases, or amines, and is inhibited by salt solutions; all in definite order. This is true of the swelling of protein colloids.—*S. W. Whitehouse.*

ANIMAL PHYSIOLOGY

ENZYMES AND CATALYSTS

K. G. FALK, *Editor*

(See also in B. A. 6(5): Entries 12832, 12833, 12840, 12843, 12888, 12912, 12913, 12961, 13051, 13738; and in this issue 15556, 15562, 15625, 15659, 15662, 15708, 15748, 15771, 16011, 16031, 16137, 16219, 16506, 16732)

15670. **CHROMETZKA, FRIEDRICH, und JIRO ISHIDA. Fermentstudien. I. Vergleichende Enterokinaseanalysen.** *Zeitschr. Ges. Exp. Med.* 67(3/4): 465-474. 1929.—Trypsin obtained from man, dog, pig and ox was combined with kinase from each of the 4 and each trypsin-kinase combination was allowed to act on casein, gelatin, peptone and egg albumin. With casein and gelatin each of the 4 kinases activated each of the 4 trypsins, the homologous combinations being most strongly active in any series. None of the kinases caused trypsin from man or ox to act on peptone, while trypsin from dog or pig was activated by all 4 kinases. The egg albumin experiments with varying concentrations of kinase supported the view that differences in the kinase structures affecting the complex combination of definite molecular groups did not exist. The chemical mechanisms of the various trypsin-trypsinkinase reactions appeared to be similar.—*R. L. Nugent.*

15671. **COSACK, GERT. Aktivierung und Stabilisierung von Pankreasdiastase durch Hämatin.** *Biochem. Zeitschr.* 235(4/6): 469-484. 1931.—In vitro studies of the activating action of alkaline hematin on diastase starch splitting showed that hematin and other Fe-containing blood-pigment derivatives aside from Hb accelerated diastase within the entire range of its action. The acceleration, measured by iodine-starch decolorization (achromatic point), was 6- and 10-fold; measured by sugar formation, 9-fold. Hematin widened the zone of effectiveness of diastase moderately on the acid side, and considerably on the alkaline. Traces of admixed NaCl did not account for the entire action of the preparation, nor did the solvent action of Na_2CO_3 or the Fe contained in hematin molecule. Hematin protected the diastase from heat and especially from destruction by oxygen. This "protective action" was shown also to a slight extent by NaCl; Hb did not protect. The appearance

of hematin-diastase combination on one side and an intimate connection with oxygen on the other was assumed.

15672. **ERDTMAN, HOLGER. Über Nierenphosphatase und ihre Aktivierung. II.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 177 (5/6): 211-220. 3 fig. 1928.—A double precipitation from Liebig's beef extract yielded an activator for the phosphatase found in the kidney. The precipitants were $Ba(OH)_2$ and Pb acetate. The activator was freely dialyzable. The less carbohydrate and protein it contained the more active it was. The purified activator contained large amounts of sulphate and Mg, but was not identified as $MgSO_4$. Dialyzed ash from the kidney itself did not yield a phosphatase activator.—*N. M. Payne.*

15673. **ERDTMAN, HOLGER. Über Nierenphosphatase. III.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 177 (5/6): 231-236. 1928.—The maximal activation of phosphatase by $MgSO_4$ was as great as the maximal by the activator found in Liebig's beef extract. Small amounts of $CaSO_4$, $BeSO_4$, and $ZnSO_4$ did not activate the enzyme appreciably. Zn poisoned the enzyme. The enzyme preparations used differed considerably in strength. Experiments were made to obtain highly active enzyme solution by adsorption on $Al(OH)_3$ or kaolin and eluting with ammonia or secondary sodium phosphate. Kaolin adsorbed the enzyme at pH below 7, with ammonia for the elution. Neither adsorption nor elution was specific. The best adsorbent was $Al(OH)_3$. Elution was difficult from this adsorbent with ammonia but was readily made with secondary sodium phosphate. The purest enzyme preparations were obtained by the last method. Even this did not appear to be quantitative. The activator was possibly $MgSO_4$ but it is held that activation may be more complicated than the simple salt effect.—*N. M. Payne.*

15674. **FROMAGEOT, CLAUDE. Die stereochemische Spezifität der Sulfatase. (Über Sulfatase. XI.)** *Biochem. Zeitschr.* 208 (4/6): 482-489. 1929.—Sulfatase liberated a dextrorotatory p-secondary isobutyl-phenol from the sulphate compound, whereas hydrolysis by heating with HCl of the portion unattacked by the enzyme yielded the laevo-rotatory compound.—*O. Bodansky.*

15675. **GALWIALO, M. J., und R. DOBROTWORSKAJA. Der Einfluss des Eiweisses auf die oxydativen und katalytischen Eigenschaften anorganischer Fermente.** *Biochem. Zeitschr.* 207 (1/3): 146-150. 4 fig. 1929.—The oxidation of guaiac by certain cations (Mn, Pt, Co and Ni), whose effect alone is weak, is increased by the addition of ovalbumin; that of others (Au, Fe, Cu) whose effect is greater is not altered. Boiling the mixture inhibits, but the power is partially restored by grinding with glass. The catalytic effect on alkaline H_2O_2 of Ni, Au, Pt and to a slight extent of Mn salts is increased while that of Fe, Cu and Co salts is inhibited by the presence of protein. Its action is attributed to a protective colloid effect.—*G. S. Eadie.*

15676. **GRASSMANN, W. Neue Methoden und Ergebnisse der Enzymforschung. Enzymchemische Untersuchungen aus dem Laboratorium R. WILLSTÄTTERS. [New methods and results of researches on enzymes. Enzymo-chemical investigations from the laboratory of R. Willstätter.] (Sonderausgabe aus: Ergebnisse der Physiologie. Band 27.)** iv + 146p. 10 fig. J. F. Bergmann: München, 1928. Pr. 12.60 M.

15677. **GROLL, J. TEMMINCK. Het eindpunt der Tryptase-werking.** *Pharm. Weekblad* 68 (6): 109-121. 1931.—The extent of hydrolysis of casein and gelatin by trypsin preparations (hog pancreas dried and freed of fat according to Willstätter) was studied. About 20% of the N was converted in one week in amino-acid-N (Sorensen formol method). After 2 months the hydrolysis went as far as 30%, but this further increase could not be imputed to the enzyme, because the control without enzyme behaved similarly. Addition of new enzyme after 1 week had no influence. The enzyme was not inactivated after 1 week but could hydrolyse fresh substrate. This could be repeated 4 times. The purity of the enzyme had no influence. After purification (adsorption and elution according to Willstätter) the results were the same. pH and concentration of the enzyme also did not influence the results. The hydrolysis could be continued only by the addition of another enzyme (proteolytic enzyme from yeast).—*J. T. Groll.*

15678. **HAEHN, HUGO. Die Bestimmung der Tyrosinase. [In: Handbuch der biologischen Arbeitsmethoden. Fermentforschung. Abt. 4, Angewandte chemische und physikalische Methoden, Teil 1, Heft 6, Lief. 363.]** P. 1071-1086. Urban & Schwarzenberg: Berlin u. Wien, 1931.

15679. **HOLTER, HEINZ. Zur Kenntnis des Pepsins. Vorläufige Mitteilung.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 196 (1/2): 1-9. 3 fig. 1931.—The viscosities of casein solutions containing different pepsins were measured at different times during the course of digestion by means of an Ostwald viscosimeter. After a brief period in the digestion process (measured by titration in acetone according to Linderstrom-Lang), during which very little change occurred, the viscosity rose rapidly. Pepsins from the stomachs of dog and man, as well as fractionated pepsins, showed characteristic differences as compared with the normal curves of Merck-pepsin and of a crystallized preparation.—*F. J. McClure.*

15680. **HOPKINS, F. GOWLAND. Das Schwefel-System. In: CARL OPPENHEIMER. Die Fermente und ihre Wirkungen.** 5. Aufl. Bd. 3. **Die Methodik der Fermente.** P. 1144-1154. Georg Thieme: Leipzig. 1929.

15681. **KAWAI, TSUTOMU. Über die Wirkung des Erepsins auf die aus der racemischen Aminosäure aufgebauten Dipeptide. [Effect of erepsin on dipeptids built up of racemic amino-acids.]** *Acta Scholae Med. Kioto* 11 (1): 131-135. 1928.

15682. **KRÜGER, PAUL. Über die Verdauungsfermente der Wirbellosen. [Digestive enzymes of invertebrates.]** *Sitzungsber. Preuss. Akad. Wiss. Phys. Math. Kl.* 1929 (26): 548-564. 1929.

15683. **KRÜGER, PAUL, und ERICH GRAETZ. Über die lipatischen Fermente des Flusskrebses. [Lipases in the river-crab.]** *Sitzungsber. Ges. Naturforsch. Freunde Berlin* 1927 (1/3): 48-56. 1927.

15684. **McHENRY, E. W., and GERTRUDE GAVIN. Studies on histaminase.** *Trans. Roy. Soc. Canada, Sect. 5: Biol. Sci.* 25: 101-109. 5 fig. 1931.—Beef kidney, defatted and desiccated with acetone and ether, was used as a source of histaminase. From this, extraction with phosphate buffer, pH 7.2, gave larger yields than did a number of other solvents. The aqueous solution was unstable. It could be concentrated in vacuo below 50° C. Histaminase was quantitatively precipitated by ammonium or magnesium sulfates. Time-rate measurements of the histamine-histaminase reaction showed the velocity constant to be logarithmic and the reaction to be unimolecular. It was probably oxidative.—*E. W. McHenry.*

15685. **MAJOROW, S. Über das Vorhandensein von Urease im Organismus der Tiere.** *Biochem. Zeitschr.* 241 (1/3): 228-232. 1931.—Using 3 drops phenolphthalein as indicator with 2 cc. of tissue extract and 2 cc. of 5% urea solution, urease was found in hypophysis, stomach, suprarenals, and ovary but not in kidney, spleen, liver, lung, or blood serum of the dog; that of the gastric mucosa was inactivated at 60°. The gastric mucosa of the cat and cow but not of the rabbit, pig, or sheep contained urease; the pylorus of the cow and the liver, spleen and kidneys of both cow and cat contained none.

15686. **[MINKER-BOGDANOVA, E. T., and G. D. OBRAZTSOV.]** МИНКЕР-БОГДАНОВА, Е. Т. и Г. Д. ОБРАЗЦОВ. О липазе крови при сахарной нагрузке. **[Blood lipase following sugar administration.]** [German summary.] Русский Физиологический Журнал имени И. М. Сеченова (*Russ. Jour. Physiol.*) 13 (2): 204-209. 1930.—Blood was tested for sugar (Hagedorn-Jansen's method), fats (Bang's method), and lipase, 5, 15, 30, 45, 60, 90, 120, 150, and 180 min. after sugar administration per os to children. Lipase was determined in hemolyzed blood by measuring the quantity of fatty acid formed

in a 1% monobutyrin solution in 24 hrs. in a thermostat. The maximum changes in blood lipase coincided with the maximum changes in the sugar and fat contents of the blood; though the character of these changes was not uniform. Parallel and inverse relations were both observed.—*S. A. Corson.*

15687. MOELWYN-HUGHES, E. A. The enzymic hydrolysis of phloridzin. *Jour. Gen. Physiol.* 13(6): 807-817. 1930.—Judging by the velocity of hydrolysis by acids and also by the energy of activation, phloridzin resembled the γ-fructosides more closely than the normal glucosides. Emulsion was without action on phloridzin at various values of pH and temperature, but saccharase hydrolyzed it. Phloridzin sugar differed from glucose in its specific rotation and in its action towards *Bacillus pestis.*—*E. A. Moelwyn-Hughes.*

15688. MÜHLBOCK, O., und C. KAUFMANN. Die Wirkung der Hormone, insbesondere des Thyroxins, auf die fettspaltenden Fermente. *Biochem. Zeitschr.* 238 (4/6): 377-390. 1931.—Using the Rona-Michaelis drop method, the actions of prolan, prephyson, pituigan, myopituigan, vasopituigan, pitocin, pitressin, orasthin, tonephin, thyroxine (Henning) thyroxine (Laroche), crystallized thyroxine, insulin (Wellcome), insulin (Kahlbaum), kallikrein, synthetic suprarenin, organic suprarenin, progynon, folliculin, hogival, ovoglandol, luteoglandol, and theelin were tested on the lipases of fatty tissue, pancreas, liver, placenta, and serum. Only thyroxine had a pronounced action inhibiting fatty tissue, placenta, pancreas, and hepatic lipase; prephyson exerted a slight inhibition on lipolysis. Serum lipase was slightly inhibited by various hormones; kallikrein had a marked action. The minimal dose of thyroxine with Warburg, Rona, and Lasnitzki's method was a dilution of $1:10^7$; insulin and progynon $1:10^6$. Lipase was always inhibited; inversion of action did not occur with changed concentrations. By determining the coefficient of inhibition according to Michaelis-Rona it was found that inhibition of enzymatic action in thyroxine was due to an affinity of the hormone for the enzyme. Enzymatic fat synthesis was not affected by thyroxine.

15689. MÜLLER, D. Glykoseoxydase. IV. Glykoseoxydase aus Aspergillus niger. Verhalten gegen Disaccharide (Maltoseoxydase), Glykuronsäure und Äthylalkohol; Versuche mit Methylenblau und Monojodessigsäure. *Biochem. Zeitschr.* 232(4/6): 423-434. 1931.—Glucose-oxidase preparations (G.) had no action on lactose. Saccharose was hydrolyzed and the glucose formed oxidized to gluconic acid by G. If the enzyme was first heated to 70° for 30 min. so that the saccharase but not the G. was destroyed, the saccharose was not attacked. G. acted on maltose but the action, unlike that of saccharase, was in part direct oxidation of maltose by an enzyme that must be called maltoseoxidase, not G. Maltoseoxidase was more thermolabile than G. and with atmospheric O oxidized maltose to a non-reducible compound. G. did not act on glycuronic acid or on ethyl alcohol. According to the present investigation it attacked only compounds with the same configuration as glucose in atoms 1 and 6. Monoiodo-acetic acid inhibited the action of G. less than that of zymase. Of the known dehydrases, G. contained only malic acid dehydrase, for only malic acid accelerated the reduction of methylene blue by G., glucose, fructose, gluconic acid and other compounds inhibited the reduction.—*Author's summary (transl.).*

15690. NORTHROP, JOHN H. Crystalline pepsin. I. Isolation and tests of purity. *Jour. Gen. Physiol.* 13 (6): 739-766. 1 fig. 1930.—The preparation of a crystalline protein from commercial pepsin preparations which had powerful peptic activity was described. The composition, optical activity, and proteolytic activity of this protein remain constant through 7 successive crystallizations. No evidence for the presence of a mixture or of a solid solution was found in a study of the solubility of the protein in a series of different salt solutions, nor from the diffusion coefficient or from the rate of inactivation. These results indicated that the material is a pure substance or possibly a solid solution of 2 or more substances having nearly the same solubility in all the various solvents studied. It seemed reasonable therefore that the possibility of a mixture must be limited to a mixture of proteins, and it is concluded that pepsin itself is a protein.—*J. H. Northrop.*

15691. NORTHROP, JOHN H. Crystalline pepsin. III. Preparation of active crystalline pepsin from inactive denatured pepsin. *Jour. Gen. Physiol.* 14(6): 713-724. 1931.—Pepsin solutions which had been completely denatured and inactivated by adjusting to pH 10.5 recovered some of their activity when titrated to about pH 5.4 and allowed to stand at 22° C. for 24-48 hrs. Control experiments showed that this inactivation and reactivation were probably not due to the effect of any inhibiting substance. A method of isolation of the reactivated material was worked out. The reactivated material recovered in this way was a protein with the same general solubility, the same crystalline form, and the same specific proteolytic activity as the original crystalline pepsin. This furnished additional proof that the proteolytic activity is a property of the protein molecule.—*J. H. Northrop.*

15692. NORTHROP, JOHN H. The presence of a gelatin-liquefying enzyme in crude pepsin preparations. *Jour. Gen. Physiol.* 15(1): 29-43. 1931.—A protein fraction was isolated from crude pepsin preparations which was about 400 times as active as crystalline pepsin in the liquefaction of gelatin. The activity as measured by the digestion of casein, edestin or egg albumin was less than that of crystalline pepsin. It was more resistant to alkali than the crystalline pepsin.—*J. H. Northrop.*

15693. OSHIMA, K., and S. ITAYA. Study of liver enzymes of a crab fish "Tarabakani" Paralithodes camtschatica (Tilesius). II. [In Japanese.] *Jour. Soc. Agric. and Forestry Sapporo, Japan* 19(89): 571-575. 1928.

15694. RONA, P., und R. ITELSOHN-SCHECHTER. Weitere Beiträge zur stereochemischen Spezifität der Lipasen. [Further data on the stereochemical specificity of lipases.] *Biochem. Zeitschr.* 197(4/6): 482-490. 9 fig. 1928.

15695. SABALITSCHKA, TH. Amylase. [In: **Handbuch der biologischen Arbeitsmethoden. Fermentforschung.** Abt. 4., **Angewandte chemische und physikalische Methoden,** Teil 1, Heft 6, Lief. 363.] P. 891-1070. 35 fig. Urban & Schwarzenberg: Berlin u. Wien, 1931.

15696. SCHWAB, ERNST. Tannase. [In: **Handbuch der biologischen Arbeitsmethoden. Fermentforschung.** Abt. 4, **Angewandte chemische und physikalische Methoden,** Teil 1, Heft 6, Lief. 363.] P. 1087-1096. 1 fig. Urban & Schwarzenberg: Berlin u. Wien, 1931.

15697. STATHER, FRITZ, und HUBERT MACHON. Über den Einfluss der Temperatur auf den Abbau von Kollagen durch Pankreatin. *Biochem. Zeitschr.* 239(4/6): 430-433. 2 fig. 1931.—Even in the absence of buffer salts a pronounced temp. optimum for pancreatin action on collagen was found. By increasing markedly the proportion of active enzyme to collagen the optimum shifted to a higher temp.

15698. SUZUKI, KORETAKA. Konstitution der Polypeptide und proteolytische Fermente. *Jour. Biochem. Tokyo* 13: 57-80. 1931.—Pepsin, papain, papain-HCN, trypsin, and trypsin-kinase exerted no hydrolytic effect upon glycyl-glycyl-l-asparagine, glycyl-glycyl-l-asparaginic acid, glycyl-dl-asparagyl-glycine, dl-asparagyldiglycin, or dl-asparagyldi-l-tyrosine in 120 hrs. Erepsin attacked all but the last named. The pH of the various solutions was adjusted to the optimum values for action of the various enzymes.—*J. S. Caldwell.*

15699. THUNBERG, T. The hydrogen-activating enzymes of the cells. *Quart. Rev. Biol.* 5(3): 318-347. 1930.—A review of Thunberg's contributions on cellular oxidations, which started with the discovery of the

succinic acid oxidizing enzyme acting on muscle tissues. He named this and other similar enzymes "dehydrogenases." They are specific for every substrate. Speaking of the final fate of the consumed O and of the origin of the O in the expired CO_2, he considers that none of the O consumed in the general metabolism is found in the expired CO_2. The catabolism of the foodstuffs takes place in a series of continuous dehydrogenations carried out by a series of dehydrogenases. When O is present the H split off by the dehydrogenases is transported to this O with formation of water. The oxidation catabolism of the foodstuffs is characterized also by 2 other processes: addition of H_2O, and the splitting off of CO_2. The foodstuffs take part in the intermediate metabolism because of their actual or potential content of H. Although the C is never directly oxidized in the metabolism, its energy is made available through water addition and the splitting off of H and its oxidation. The O is used for the oxidation of the H which is activated by the dehydrogenases and given over to the O in activated form. The O consumed during the respiration is transformed into water. H_2O_2 must be the first or at least the most important product of this reaction between H and O. Through the action of catalase half of the O of the H_2O_2 is liberated and can thus function as H acceptor once more. Thus the catalase is an enzyme which renders possible a more economical use of O. The O in the expired CO_2 does not originate from the O in the atmosphere but came from other sources (O originally contained in the molecules of the foodstuffs, O of the water molecules added to the C chains).—*E. S. G. Barron.*

15700. TOMIOKA, TOKUSABURO. Ferment action and ion concentration. 1. On the destruction of amylase by acids. *Japanese Jour. Gastroenterol.* 1(3): 158-168. 1929.—The optimal pH for pancreatic amylase is 6.3-6.9; the destruction by acids depends not on the nature of the acid, but on the pH; the course of destruction describes a hyperbola. The fact that at 3 pH zones: 1.5, 4.4 to 4.9, and over 6.0, amylase was less sensitive to destruction than elsewhere indicated that it is a complex of 3 enzymes.—*O. Bodansky.*

15701. WALDSCHMIDT-LEITZ, ERNST. The mode of action and differentiation of proteolytic enzymes. *Physiol. Rev.* 11(3): 358-370. 1931.—A review of 56 papers leading to the conclusion that the general conception of enzyme action as a chemical rather than a surface phenomenon seems essentially well-grounded. The reactions of the enzymes, as well as their adsorptive behavior, depend on the action of specific chemical valences.

15702. WEBER, HANS H., und R. AMMON. Die stereochemische Spezifität von Leber- und Pankreaslipase. [Stereochemical specificity of liver and pancreas lipase.] *Biochem. Zeitschr.* 204(1/3): 197-207. 5 fig. 1929.

15703. WEINMANN, FRITZ. Über Sulfatase. X. *Biochem. Zeischr.* 205(1/3): 214-218. 1929.—Sulfatase hydrolyzed completely the racemic potassium sulphate of m-methyl-cyclo-hexyl-phenol, thus showing both enantiomorphs to be attacked.—*O. Bodansky.*

ANIMAL PHYSIOLOGY

ELECTROLYTES AND IONS

G. E. CULLEN, *Editor*

(See also in B. A. 6(3): Entries 6461, 6663, 6798, 6893, 6927, 7011, 7052, 7064, 7096, 7116, 7179, 7241, 7244, 7336; 6(4): 9247, 9355, 9391, 9393, 9433, 9463, 9469, 9478, 9503, 9504, 9513, 9555, 9557, 9708, 9721, 9753, 9804, 9850, 9869, 10007, 10011, 10013, 10116, 10119, 10140, 10143, 10155, 10175, 10206, 10213, 10265, 10403, 10415, 10874, 11448; 6(5): 12506, 12639, 12915, 12998, 13162, 13181, 13247, 13311, 13933, 14476; and in this issue 15476, 15642, 15673, 15700, 15778, 15968, 16009, 16017, 16027, 16052, 16078, 16105, 16110, 16138, 16181, 16247, 16706, 17469, 17476, 17490)

15704. BELÁK, A., S. HOLIK, und ST. KELEMEN. Übt die Unipolarität der Luft physiologische Wirkungen aus? *Zeitschr. Hyg. u. Infektionskrankh.* 111(5): 703-710. 1 fig. 1930.—A method is described by which unipolarity of the atmospheric ions may be demonstrated in a closed space. In 12 series of experiments no effect of atmospheric ionization and unipolarity could be demonstrated on human blood-pressure, pulse rate, respiration frequency or physical endurance.

15705. BERGER, EVA. Unterschiedliche Wirkungen gleicher Ionen und Ionengemische auf verschiedene Tierarten. (Ein Beitrag zur Lehre vom Ionenantagonismus.) *Pflüger's Arch. Ges. Physiol.* 223(1/2): 1-39. 1 fig. 1929.—The effect of single salts (NaCl, KCl, $MgCl_2$ and $CaCl_2$) on length of life, locomotion, heart beat and other physiological phenomena was compared with that of a solution of artificial sea water and with an isotonic NaCl solution on *Daphnia magna, Cyclops coronatus, Tinca vulgaris* and Batrachian larvae. *Colpidium,* a protozoan, was so resistant to changes in osmotic pressure and to toxic salt solutions that it was unsuitable for a study of ion antagonism. *Spirostomum ambiguum,* another protozoan, was more sensitive to osmotic changes. *Tinca vulgaris* could live in much more dilute solutions of artificial sea water (51 cc. NaCl, 1.1 cc. KCl, 3.4 cc. $MgCl_2$, 2.2 cc. $MgSO_4$ and 1.2 cc. $CaCl_2$ was the original sea water solution) than the other species studied. Each individual cation had a characteristic action on *Daphnia.* NaCl at first quickened the heart beat, and caused the animal to swim rapidly. After 1100 minutes the organism became paralyzed; after 2320 minutes the heart beat ceased and the shells opened. The heart stoppage was irreversible. KCl had a short but very pronounced stimulation effect during which time the animals swam in circles. After 38 minutes the animals became paralyzed in tetanic condition, with hearts in systole, and shells closely shut. Return to normal was accomplished when animals were placed in artificial sea water 3-5 min. $MgCl_2$ and $MgSO_4$ were only quantitatively dissimilar. $MgCl_2$ paralyzed more quickly. After paralysis the heart was in systole. $CaCl_2$ produced effects similar to those of NaCl. The heart stoppage was irreversible. The shells were closed. On tadpoles NaCl had no significant stimulating effect. The tail was the last locomotory organ to lose its function. The heart beat after respiration ceased. KCl produced marked tetanic movements of the tail. $MgCl_2$ produced an early period of stimulation followed by a gradual slowing down of the heart. The heart stopped beating in diastole. In only a few cases were the effects of $MgCl_2$ reversible. $CaCl_2$ had first a stimulatory effect followed by a paralyzing one. The heart stopped irreversibly in diastole. Each ion also had a characteristic effect on the fish. NaCl produced paralysis after a short period of stimulation. Fish died in limp condition with gill covers open. KCl produced an intense irregular stimulation followed by a paralyzing action. Fish died with heart large and gills red. $MgCl_2$ produced a paralysis. In death, the gill covers were opened slightly. $CaCl_2$ produced no stimulation but disturbed the rhythm of heart beat and respiration. In death the heart was small and systolic. As compared with length of life in artificial sea water as standard, the length of life in any one salt was distinctly shorter. The longest life length was observed in NaCl for *Daphnia magna, Cyclops coronatus,* and Batrachian larvae; in $CaCl_2$ for *Tinca vulgaris.* When binary mixtures were used, Batrachian larvae lived longer when an univalent cation was predominant. *Daph-*

nia lived longer in a binary solution of Na plus another salt if Na predominated; but in solutions containing K, it lived longer if there was more Ca or Mg than K in the solution. The optimum for *Tinca* required that a bivalent ion predominate. The effect of ternary solutions was tried only on *Daphnia magna* and Batrachian larvae. In general it was found that the more Mg was present in the solution, the more of a depressant it became. In quaternary solutions the optimum life length and physiological condition was produced when the 4 salts used were present in equimolar proportions. It is concluded that no general rule as to how a given ion acts can be laid down, since the effect of each ion differs from species to species and also depends on whether it acts singly or in mixtures.—*N. M. Payne.*

15706. CHANOZ, M., et G. GLUZET. Conductivité électrique et viscosité des dissolutions aqueuses. Freinage inégal des ions constituants. *Compt. Rend. Soc. Biol.* 100(14): 1205-1207. 1929.—To dilute solutions of KCl, NaCl, NaOH, HCl, H_2SO_4, Na_2SO_4 $CuCl_2$, etc., were added solutions of pure saccharose, glycerine, agar-agar and gelatine, the conductivity and the viscosity of the solutions being determined before and after the additions. From a study of the curves obtained the authors conclude that the restraining influence of increased viscosity does not act equally on anion and cation. No curves are given.

15707. EISENBERG-HAMBURG, E. L'influence des sels de strontium sur les mouvements du Paramaecium caudatum. Le rôle des sels de calcium et de la concentration en ion hydrogène. [In French and Polish.] *Acta Biol. Exp. [Warsaw]* 4(11): 261-277. 1930.—A characteristic reaction to $SrCl_2$ can be observed, persisting for several weeks in non-toxic solutions (0.00167-0.01337%). The number of movements increases with the concentration of non-toxic solutions, but decreases in toxic solutions. Alkalinity increases the intensity of the reaction. Experiments with different salts of Sr showed that the number of movements depends on the anion, but that their intensity is independent of it. The reaction can be annulled by the addition of $CaCl_2$ and of culture liquid. The salts of Ba, Rb, and Cs exert sometimes an influence analogous to the salts of Sr.—*E. Eisenberg-Hamburg (transl. by H. C. Wood).*

15708. GANASSINI, DOMENICO. Le funzioni dello zinco in biologia. [Function of Zn in biology.] *Arch. Ist. Biochim. Ital.* 3(2): 131-138. 1931.—Inorganic and organic basic Zn salts and the hydroxide of Zn behave in alkaline medium like the peroxidases and oxidases, as direct or indirect oxidative agents. In such an oxidase system the basic Zn salt should act binding the atmospheric O_2 (like an oxigenase) and then setting free activated O (like a peroxidase). The oxidative function of Zn, together with its hydrolytic activity and its constant occurrence in animal tissues and fluids, could be invoked to explain the splitting of nucleic acids and the formation of lysocithin from lecithin by cobra venom.—*M. Comel.*

15709. HAYASHI, SHIGERU. Untersuchungen über den Ionengehalt von Mutter und Frucht. *Biochem. Zeitschr.* 207(4/6): 432-436. 1929.

15710. HEILBRUNN, L. V., and KATHRYN DAUGHERTY. The action of chlorides of sodium, potassium, calcium, and magnesium on the protoplasm of Amoeba dubia. *Physiol. Zool.* 4(4): 635-651. 1931.—Specimens were immersed in dilute solutions of NaCl, KCl, $CaCl_2$, $MgCl_2$, and NH_4Cl, and determinations of protoplasmic viscosity were then made by the centrifuge method. Na and K ions markedly increase the protoplasmic viscosity, Ca and Mg decrease it. The behavior of Amoeba protoplasm toward the common cations is thus similar to the behavior of various other types of protoplasm. When amoebae are immersed in NH_4Cl there is apparently an entrance of ammonia or NH_4OH and this produces a secondary effect.—*Authors (courtesy Wistar Bibl. Serv.).*

15711. HELFF, O. M. Toxic and antagonistic properties of Na, Mg, K, and Ca ions on duration of life of Cambarus clarkii. *Physiol. Zool.* 4(3): 380-393. 1931.—The effects of pure solutions of NaCl, KCl, $MgCl_2$, and $CaCl_2$ representing a wide range of molecular concentrations were determined. The average sequence of toxication effect was determined as K > Ca > Mg > Na. The possible antagonistic properties of small amounts of other ions in minimizing the toxicity of pure NaCl, KCl, $MgCl_2$, and $CaCl_2$ solutions were also determined. In general, all ions tested exhibited definite antagonistic effects, which varied with the nature of the pure toxic salt solution and the relative proportions of antagonistic ions added. Solutions based on Dohrn's analysis of *Astacus* blood proved lethal, while those based on Griffith's analysis were non-toxic. Solutions based on seawater analyses (McClendon's solution, Van't Hoff's solution, and Back's solution) all proved decidedly lethal. The results are discussed in general and their bearing on future work involving the effect of various ions on crayfish respiration is indicated.—*Author (courtesy Wistar Bibl. Serv.).*

15712. KISCH, BRUNO. Zur Kenntnis der Wirkung verschiedener Ca-Salzkonzentrationen auf das Froschherz im Frühsommer. *Pflüger's Arch. Ges. Physiol.* 221(4): 469-473. 3 fig. 1929.—It has previously been found that the heart of *Rana esculenta* has a higher Ca requirement in summer than in winter. The author found that this increased need of Ca began in the end of May and disappeared by July. The frequency of the heart beat in different Ca solutions was not altered as much as the amplitude and rhythm. The Ringer's solution that was used had the following composition: 0.65% NaCl, 0.002% KCl, 0.005% NaH_2PO_4, 0.1% $NaHCO_3$ and in the Ca rich solution 0.03% $CaCl_2$, in the Ca poor solution 0.02% $CaCl_2$.—*N. M. Payne.*

15713. KISCH, BRUNO. Antagonismus und Synergismus der Wirkung von Mg- und Ca-Salzen am Herzen. *Pflüger's Arch. Ges. Physiol.* 221(4): 474-477. 2 fig. 1929.—When the frog heart (*Rana esculenta*) in early summer condition was perfused with a Ca poor Ringer's solution, addition of Mg took the place of Ca. However in the fall, Mg added to a Ca-free perfusate scarcely altered the contractility of the heart.—*N. M. Payne.*

15714. KLOBUSITZKY, D. v. Einfluss der Wasserstoffionenkonzentration auf die Salzflockung der Serumeiweisskörper. III. *Biochem. Zeitschr.* 223(1/3): 120-129. 1930.—The lowest flocculating strength of NaCl, Na_2SO_4, $(NH_4)_2SO_4$, and $MgSO_4$ solutions was tested on horse sera, electrodialyzed serum albumins and globulins in acid and alkaline medium. The first clouding in acid serum occurred with 1 *N* NaCl and Na_2SO_4, 1.5 *N* $(NH_4)_2SO_4$, and 3 *N* $MgSO_4$ solutions; 2 *N* Na_2SO_4, 3 *N* $(NH_4)_2SO_4$ and 3.5 *N* $MgSO_4$ was required to obtain the same reaction in neutral serum; NaCl had no flocculating action even in 3.5 *N* solution. In acid globulin mixtures the salt concentrations were the same as with sera except $MgSO_4$, which was active at 2 *N*. The electrodialyzed albumin solutions showed the first flocculation with 1.5 *N* NaCl, 1 *N* Na_2SO_4, and 2.5 *N* $(NH_4)_2SO_4$ solutions. $MgSO_4$ was entirely inactive at 3.5 *N*. In alkaline medium only $(NH_4)_2SO_4$ and $MgSO_4$ acted on whole serum. These phenomena can in part be traced to secondary ion effects, in part to protective colloid actions.—*Author's summary (transl.).*

15715. KRÜGER, FRIEDRICH. Untersuchungen über die Ursachen des Todes des Stichlings (Gasterosteus aculeatus) in reinen Chlornatriumlösungen. *Zeitschr. Wiss. Biol. Abt. C. Zeitschr. Vergleich. Physiol.* 7(4): 696-735. 4 fig. 1928.—All concentrations of pure NaCl between 1 *M* and 0.05 *M* proved poisonous to the stickleback. In distilled water the fish lived no longer than 15 days. NaCl solutions of 0.4 *M* or less could be detoxicated by antagonistic ions. Ca and K proved necessary to prolongation of life for 1-2 mos. Whether Mg was likewise necessary to life did not appear certain, but its addition was always helpful. Pure NaCl solutions of high concentrations caused extensive destruction of the epidermis. That NaCl permeates into the fish was shown by increased Cl excretion (also present in pure Na_2SO_4

solutions), and abnormal expansion of the melanophores and alteration of the nuclear structure of the blood cells in the dying fish, etc. The loss of wt. was less after 1 hr. in pure NaCl solutions of high concentrations than in like concentrations of balanced solutions; therefore death in pure NaCl solutions is not due to loss of water by osmosis, but is attributed to injury to musculature and nervous system.—*From author's summary (transl. by N. M. Payne).*

15717. **LEPESCHINSKAJA, O. Der Einfluss von Elektrolyten auf die Epithelzellmembran.** *Protoplasma* 8: 492-507. 3 pl. 1930.—Under the influence of electrolytes the cell membrane forms bridges, canals, vacuoles, granules, and becomes quite homogeneous or fibrous.—*W. Seifriz.*

15718. **MOORE, A. R. Fertilization and development without membrane formation in the egg of the sea urchin, Strongylocentrotus purpuratus.** *Protoplasma* 9 (1): 9-17. 3 fig. 1930.—Non-electrolytes, such as urea, render unfertilized sea urchin eggs incapable of membrane formation. Such eggs when fertilized segment and form irregular clusters of cells and not blastulae. They are, however, held together by protoplasmic bridges. Ions of alkaline earth metals added in sufficient amounts to the solution of non-electrolyte protect the egg against this loss of capacity. Since Ca and Mg are equipotential in action it is assumed that this is a valence effect.—*L. S. Moyer.*

15719. **MOORE, A. R. Fertilization and development without the fertilization membrane in the egg of Dendraster eccentricus.** *Protoplasma* 9(1): 18-24. 5 fig. 1930. —Non-electrolytes render unfertilized *Dendraster* eggs incapable of membrane formation. After fertilization, cell plates are formed instead of blastulae. Mg, Ca, Sr and Ba added to the non-electrolyte inhibit this loss of capacity in effect roughly proportional to their valence. Fertilized eggs kept for a short time in non-electrolytes or in *M*/2 NaCl or sea water at pH 4 lose their membranes and form cell plates. Bivalent ions prevent this. Ca, Sr and Ba are equal in effect and 8 times more effective than Mg. In early stages, cell bridges are seen but later hyaline processes join the cells. Cells in plates undergo a rhythm of extension and contraction.—*L. S. Moyer.*

15720. **OGAWA, JUNTARO. Über die Reaktion der Gewebe. IV. Studien über intrazelluläre Wasserstoffionenkonzentration der Entamoeba histolytica und Entamoeba coli.** *Zentralbl. Bakt. I. Abt. Orig.* 114(1/2): 68-81. 1929.—The endoplasm of the vegetative form of *E. histolytica* has a pH of 6.0-7.0. The ectoplasm is not colored by indicators as it is in *E. coli* in which pH 6.5-7.0 is found. The pH of the nucleus is usually slightly higher than the protoplasm (endoplasm and ectoplasm) pH 6.6-7.2. The pH values of the cysts were somewhat lower than in the vegetative forms and the technic offered greater difficulties. Changing the pH of the medium from 5.2 to 8.0 did not influence the intracellular pH.—*N. Kopeloff.*

15721. **POPOW, N. A., und A. A. KUDRJAWAZEW. Zur Frage nach der Einwirkung von Ionen auf die Atembewegungen des isolierten Froschkopfes.** *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 10(3): 456-464. 2 fig. 1929.—The isolated frog head preparation is capable of responding to variations in composition of perfusion fluid by changing the character of its respiratory movements. Normal or Ca-free Ringer's solution may cause their production or intensification, followed by a period of rest; removal of Ca from the perfusion fluid may produce a decrease or a complete cessation of these movements. If one of these combinations evokes a positive response, the other combination, acting on the same preparation, may frequently produce no effect or an inhibitory one. In general, therefore, there is no evidence here for ascribing an inhibitory influence on the respiratory center to doubly charged ions and an excitatory effect to singly charged ions.—*F. Hollander.*

15722. **PRATOLONGO, U. Principii di acidimetria applicata. Le applicazioni dei nuovi metodi acidimetrici alla chimica agraria, analitica, biologica, bromatologica e industriale.** 221p. 2 col. pl., 26 fig. Ulrico Hoepli: Milano, 1931.

15723. **RUNNSTRÖM, JOHN. Zur experimentellen Analyse der Wirkung des Lithiums auf den Seeigelkeim.** *Acta Zoologica* 9(3): 365-424. 24 fig. 1928.—Materials: chiefly *Paracentrotus lividus;* some experiments with *Psammechinus microtuberculatus* and *Sphaerechinus granularis.* Immediately after fertilization eggs were put into sea-water diluted with various proportions of isotonic electrolytes, using dilution with NaCl as a control. Two sorts of plasmolysis occur: "eckig," with corrugated surface and "konvex" with smooth surface. The former is interpreted to mean heightened, the latter lowered, viscosity. Electrolytes are effective in producing "eckig" plasmolysis in the order: Ca, Mg, Li, Na, K. It is concluded that K is most effective, Ca least effective in decreasing the viscosity of the cortex. In seawater with added Li, development is slowed; with added K, accelerated. K swells, Li precipitates. This was verified with the dark field microscope which shows in Li-seawater, a widening of the yellow girdle due to lowering of the colloid solubility of the lipoid and a turbidity of the protoplasm, which shown, on sectioning fixed entoderm cells, to result from a coarsening of the granulation. From theoretical considerations by the use of Donnan's equilibrium it is concluded that Li acts by penetrating the cell. K antagonizes Li and prevents both developmental Li abnormalities and colloidal changes. Abnormalities in Li and various combinations of Li and K are described; Li affects primarily the animal region of the embryo. Mg and Ca antagonize Li by hindering its penetration into the cells; K prevents the precipitation of colloids by Li. SCN is not antagonistic to Li. In attempting to imitate Li effects with other agents, CO was found most similar. In mixtures of 97% CO and 3% O_2 no development occurs in the dark but in the light larvae similar to Li larvae are obtained, with greatest inhibition in animal region and exogastrulation, CO inhibits oxidation and this causes aggregation of the colloids, which is also the chief effect of Li. Li and CO abnormalities result primarily from the inhibition of the animal region.—*L. H. Hyman.*

15724. **THORNER, MELVIN W. Recovery of the heart beat of Fundulus embryos after stoppage by potassium chloride.** *Biol. Bull. Marine Biol. Lab.* 56(3): 157-163. 5 fig. 1929.—The heart-beat of eggs blocked completely by KCl recover in both sea and distilled water although the 2 recovery processes are dissimilar. In sea water the duration of the recovery period is directly proportional to the concentration of KCl and to the time of immersion in KCl. A constant amount of KCl is required to block the heart-beat completely. The recovery of eggs in distilled water was studied with the aid of electrical conductivity.—*Author's summary.*

15725. **YAGLE, ELIZABETH M. Permeability of egg membranes. Water exchange through the egg membranes of Fundulus.** *Protoplasma* 9(2): 245-268. 14 fig. 1930.— The effect of NaCl, KCl, and $CaCl_2$ in increasing permeability of the *Fundulus* egg for water seems to be due to their cation, the order of effectiveness being Na, K, Ca. Marked physiological differences in the membranes of eggs in various developmental stages are indicated. The effect of the pH of the solution on the rates of water exchange is of little significance.—*W. Seifriz.*

ANIMAL PHYSIOLOGY

LIGHT AND HEAT

E. NEWTON HARVEY, *Editor*

(See also in this issue Entries 15266, 15268, 15291, 15616, 15749, 15751, 15867, 15913, 15948, 15966, 16410, 16499, 16708, 17363, 17593, 17880, 17882, 18028)

15726. BUCCIANTE, LUIGI. Sulla sopravvivenza alle basse temperature (fino a −25°) dei vari tessuti di embrioni di pollo di cui fu interrotta l'incubazione. [Survival at low temperatures (to −25°) of tissues of chick embryos the incubation of which has been interrupted.] [With German summary.] *Arch. Exp. Zellforsch. bes. Gewebezücht. (Explantation)* 11(3): 397-423. 1931.—While embryos fail to develop if exposed at the 6th-12th day of incubation to low temps., most of the tissues survive; migration and partition of cells takes place from explants of frozen embryos cultivated by the usual methods in plasma. If the embryos were preserved at 0°, the tissues survived longer than the tissues of embryos preserved at 15-20°—just the opposite of what occurs in cultures from embryos the incubation of which has been interrupted. The shorter the time the embryo is preserved at 0°, the better the explants thrive, indicating that only a limited number of the cells of the embryo survive under such circumstances. Not all embryos attain the extreme limits of survival; the others survive for various periods. Epithelial and connective tissue cells of the skin survive the death of the embryo as an organism for the longest period. In some organs (e.g., skin), the cells of various character have the same survival period; in others (e.g., spleen), the survival period of the cells of different character is different. Survival of tissues was observed at very low temps.,—as low as −25°. This extreme limit was reached only by cells of certain tissues (skin, cornea); survival of other tissues was observed when kept for a long time at −10° to −14°. The survival of embryonic tissues at low temps. is a form of latent life comparable to that obtained by exsiccation.—*Author's summary (transl.)*.

15727. BUCCIANTE, LUIGI. Resistenza dei tessuti di embrioni di pollo a temperature molto basse. [Resistence of tissues of chick embryo to very low temperatures.] *Monitore Zool. Ital.* 40(11/12): 313-316. 1930.—Chicken embryos of 7-8 days were exposed to temperatures ranging from 20° to −25° for various periods, and parts of various tissues tested for life by tissue culture. Different tissues differed greatly in their resistance to cold. Skin epithelium, the most resistant, lived 28 days at 0°, 24 days at 20°, and 3 hrs. at −25°.—*W. C. Boyd.*

15728. BÜNGER. Results of investigations respecting artificial ultraviolet light irradiation of dairy cows. *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 1): 165-166. 1931.—A summary.

15729. CHOUCROUN, NINE. On the hypothesis of mitogenetic radiation. *Jour. Marine Biol. Assoc. Unit. Kingdom* 17(1): 65-74. 2 pl., 3 fig. 1930.—Eggs of sea urchin in quartz vessels exposed to a revolving culture of *Bacillus tumefaciens* through the quartz developed abnormally only when the vessels were merely covered and not hermetically sealed. Sea water exposed without eggs causes abnormalities in eggs added after exposure. Hermetically sealed vessels of sea water were, however, not active. The author believes that the abnormal effects are due to chemical impurities, creeping over the surface of the vessels and, in the case of the covered ones, entering the water. These are excluded by the seal. Mitogenetic radiation is not present in this experiment.—*L. S. Moyer.*

15730. HARVEY, E. NEWTON, and G. I. LAVIN. Reduction of oxyluciferin by atomic hydrogen. *Science* 74(1910): 150. 1931.—Some luminous animals, e.g., *Cypridina* (Crustacea), contain luciferin which oxidizes to oxyluciferin in aqueous solution containing O. During attempts to excite luciferase to luminescence by energy of recombination of H atoms, the authors observed that dry oxyluciferin can be reduced to luciferin, confirming results obtained by reducing oxyluciferin in aqueous solution, and rendering it quite certain that the luciferin-oxyluciferin change is a dehydrogenation-hydrogenation reaction. When dry luciferase and luciferin are exposed to low concentration atomic H there may be observed at times a faint bluish glow which breaks into incandescence on raising the atomic H concentration. The faint glow of *Cypridina* may be a luminescence or a low temp. incandescence. Willemite, etc., show undoubted luminescence in atomic H.

15731. HOLLAENDER, ALEXANDER, and EUGENE SCHOEFFEL. Mitogenetic rays. *Quarterly Rev. Biol.* 6(2): 215-222. 5 fig. 1931.—A review.

15732. HUMPHRIS, FRANCIS HOWARD. Ultra-violet and other rays: their uses in health and disease. (Macmillan's Sixpenny Self-Help Library, Vol. 10.) 127p. Macmillan & Co., Ltd.; Eyre & Spottiswoode, Ltd.; London, 1930. Price 6d.

15733. LAKHOVSKY, GEORGES. L'oscillation cellulaire. Ensemble des recherches expérimentales. 319p. 8 fig. G. Doin & Cie; Paris. 1931.—This is a reprint, or translation and reprint, in French, of 33 papers from various French and Italian journals, of articles by the editor and others, dealing with the relations of radiant energies to plant and animal life, and to their clinical effects upon man, especially in cancer. The editor contributes an introduction.—*C. A. Kofoid.*

15734. LIEVENDAG, ESTER. Die Wirkung der Bestrahlung auf die Blutmenge. *Pflüger's Arch. Ges. Physiol.* 227(5): 546-548. 1931.—After intensive irradiation with a carbon arc lamp no increase in blood volume occurred in 6 healthy, non-anemic dogs.

15735. MIESCHER, G. Das Problem des Lichtschutzes und der Lichtgewöhnung. *Strahlentherapie* 35(3): 403-443. 12 fig. 1930.—Ultraviolet light is absorbed by the cornea in proportion to the thickness of this tissue, which explains the variations of the sensitivity to light of different regions of the body. Histological study of the reaction produced by light shows a uniformly progressing penetration proportional to the dose and only influenced by differences of the corneous layer. Resistance to the reaction of light is built up by increasing the thickness of the corneous layer. It is, therefore, closely connected with increased keratine formation. Pigment also absorbs readily the u.-v. rays (Dorno rays), but on account of its location in the deeper layers of the skin it is presumably of less importance as a protective mechanism.—*W. F. von Oettingen.*

15736. SCHREIBER, H., und A. LUNTZ. Mitogenetische Strahlung. *Tabulae Biologicae Periodicae* 1(3): 285-299. W. Junk: Berlin, 1931.—The known sources and detectors used in a study of the rays are tabulated with the + or − results, brief comments, and the name of operator (from a list of 116 references).

15737. VIGNAL, M. Les rayons ultra-violets et infra-rouges. 240p. 2 pl. 26 fig. Gaston Doin et Cie: Paris, 1930. Price 30 fr.—Addressed chiefly to physicians, this book presents a critical summary, not too technical, of modern knowledge of ultra-violet and infra-red rays. Theories as to the nature of light and similar radiations are discussed in the introduction. In chapter 1, ultra-violet and infra-red rays are defined, and their physical and chemical properties and biological effects are discussed, and there is given a résumé of the action of irradiated substances (vitamines, etc.) and of the hypotheses of the general effect of ultra-violet rays. The same chapter discusses infra-red, antagonism between ultra-violet and infra-red, and the biological effects of infra-red. Chap. 2 treats of the production of these

rays, dosage, and measurement of intensity. Chap. 3 treats of the general technique of irradiating persons or organs. Chap. 4 deals with the practical therapeutics of irradiations: their use in rickets, in spasmophily and tetany, in disturbances of growth, in osteomalacia, osteomyelitis, fractures, pseudarthroses, laryngeal tuberculosis, cutaneous tuberculosis, fungous infections of the skin, acne, psoriasis, fistula, and many other diseases and pathological conditions. Therapeutic accidents are discussed. The bibliography comprises 10p.

ANIMAL PHYSIOLOGY

ELECTRICITY, X-RAY, RADIUM

(See also in this issue Entries 15288, 15476, 15623, 15733, 15813, 15935, 16026, 16198, 16296, 16325, 16326, 16333, 16348, 16354, 17405, 17418)

15738. **AULAMO, RAUNO. Experimentelle Untersuchungen über die Einwirkung der Röntgenstrahlen auf das Kaninchenauge.** *Klin. Monatsbl. Augenheilk.* 86(4): 473-482. 1931.—Single doses of 2-10 E.D. soft x-rays were applied to the left eye in 8 rabbits, and of 1-13 E.D. hard rays to 11; the rest of the body was protected with lead. All eyes were examined with the corneal microscope, magnifying glass, and ophthalmoscope, before irradiation, and the day after, and twice a week, then weekly, for some time thereafter. Changes occurred in all those given soft rays and in 6 of those given hard rays. The conjunctiva contracted and, when the dose exceeded 5 E.D., the lids lost motility and the palpebral fissure was greatly narrowed. When 3 E.D. or more were given, epithelial and even parenchymal, clouding appeared in the central part of the cornea, the periphery remaining almost clear. In 2, iritis and iridocyclitis occurred. Cataract appeared in the course of months in 11 rabbits beginning with 2 E.D. soft, and 3 E.D. hard, rays. Intraocular tension did not increase; no changes in fundus or optic nerve were found (but they could be observed for only a short time because of corneal clouding); no dissolution of iritic pigment was observed. Sections showed the capsule unchanged even when the lens was entirely shriveled. Some thickening of the vessel walls of the ciliary body was observed but the author could not decide whether it was pathological.

15739. **BEHNKEN, HERMANN, und ROBERT JAEGER. Die Reproduzierbarkeit der Röntgendosiseinheit. (Bemerkung zu der Arbeit von A. Reisner und Th. C. Neeff: "Hauttoleranzdosis und Strahlenqualität" in Band 34, Heft 2, p. 313 dieser Zeitschrift.)** *Strahlentherapie* 36(4): 778-785. 3 fig. 1930.—The Reisner-Neeff publication [see Abstract 15761] offers no reason for mistrusting the present standard dosage unit; on the contrary, "r" is well defined and reproducible with an accuracy which exceeds the practical necessity.—*K. W. Buchwald.*

15740. **BODÓ, R., und G. ORBÁN. Das Hervorrufen von Herzflimmern durch hochfrequente Wechselströme.** *Pflüger's Arch. Ges. Physiol.* 227(3): 309-321. 1931.—The dampened harmonic oscillating currents of a frequency 500,000-1,000,000, common alternating current of a frequency of 50 periods, direct current and faradic current were administered to the heart of anesthetised dogs, one electrode being applied to the posterior surface of the right ventricle near the apex, the other at the anterior surface. The change in heart function was observed without instruments. The temp. of the heart musculature was determined immediately after the current was removed. Tesla current of a million periods of the intensity of 55 milli-amperes killed 4 of 8 dogs by heart fibrillation in less than 2 minutes. Alternating current of 50 periods was fatal at an intensity of 1.1 milli-amperes. Direct current results in immediate fibrillation at an intensity of 2 milli-amperes. After application of the 2 latter types of current there was an occasional recovery from fibrillation. The picture of the heart fibrillation produced by a current of high frequency is very similar to that effected by low frequency current. —*E. Lindemann.*

15741. **DESJARDINS, A[RTHUR] U[LRICH]. Action of roentgen rays and radium on the gastrointestinal tract; experimental data and clinical radiotherapy.** *Amer. Jour. Roentgenol.* 26(1): 145-190; (2): 335-370; (3): 493-510. 1931.—A summary, with critical analysis and evaluation of all the experimental, and the more important clinical, publications in the field.

15742. **DESJARDINS, A[RTHUR] U[LRICH]. Action of roentgen rays and radium on the eye and ear; experimental data and clinical radiotherapy.** *Amer. Jour. Roentgenol.* 26(4): 639-679; (5): 787-819; (6): 921-942. 1931.—A summary, with critical analysis and evaluation of all the experimental, and the more important clinical, publications in the field.

15743. **DUBOST, JEAN. D'une nouvelle methode d'investigation de la conductibilite du corps humain.** *Jour. Radiol. et Electrol.* 12(11): 536-545. 11 fig. 1928.—The technic used by the author in the study of the electrical resistance of the human body to alternating currents of low frequency is described. A current of audible frequency is given by an oscillatory lamp. The measurements are taken by means of Wheatstone's bridge to which is fitted an amplifier. This method gives correct data on impedance and angle of the human conductor and allows a fairly accurate graphic evaluation of "initial resistance."—*J. Dubost (transl.).*

15744. **EPIFANIO, GIUSEPPE. La radiologia e i nuovi orizzonti della biologia. Rapporti fra la biologia e la costituzione della materia. [Radiology and the new aspects of biology. Relation between biology and the constitution of matter.]** 58p. 5 fig. A. Trimarchi: Palermo, 1928. Pr., 12 L.—The ionization of the H atom, which is accomplished in the organism, and the phenomena of radioactivity in the surrounding atmosphere, are indices of the disintegration of the O, C, and N atoms. All these phenomena show the transformation of matter during biological activity; they are developed under the influence either of radiations or of excitation potentials of living matter which generate active currents.—*G. Tegoni (transl. by S. A. Thayer).*

15745. **EVANS, ARCHIBALD P. A method of controlling the destructive action of the Roentgen ray on living tissue.** *Arch. Phys. Therap., X-Ray, Radium* 10(4): 158-167. 7 fig. 1929.—The sensitiveness of the colloid systems to the x-rays is in the following order: neutral, electropositive and electronegative. The destructive effect of x-rays is due to their tendency to cause colloid systems of the organism to hydrate until they undergo lysis; it can be prevented by any method that will maintain the normal colloid state of the tissue in the radiated area. The tendency of x-rays to affect colloid systems may be neutralized by the utilization of a high oscillating electric circuit. The circuit described has proven to have neutralizing value.—*Author's conclusions.*

15746. **FISCHER, ALBERT. Mesothoriumbestrahlung von Gewebezellen in vitro.** *Strahlentherapie* 40(1): 54-96. 1931.—The author irradiated cultures of fibroblasts with mesothorium (equivalent to 5 and 40 mgm. of radium) according to the method of Laser and Halberstaetter and studied the resulting change of the area of the cultures. Numerous experiments are presented in detail. The following conclusions are drawn: The decrease in growth of the tissue cells caused by the radiation has a certain latent period. This period can not be solely explained by the fact that the cells in mitosis are radio-sensitive, for the decrease of growth is much greater than could be expected from the number of cell divisions during the radiation. The decrease in

growth is greater in cultures radiated at low temperatures than in controls radiated at body temp. The decrease of growth seems to depend on the gradual formation of injurious metabolic products in the radiated cells. The effect of these products on normal tissue cells can be demonstrated. The latent period depends only to a relatively small degree on the radiation intensity. All factors which influence the regenerative ability of the radiated tissue also increase the effect of the radiation. The effect of radiation on resting cells remains latent and only manifests itself as the cells start to proliferate. The radiation seems to attack the cells at the same mechanism upon which the proliferation catalysts act. The Bunsen-Roscoe law for photochemical reactions does not hold for the biological effect of the radium radiation.—*O. Glasser.*

15747. **FISCHER, ALBERT, und M. HORWITZ. Multiplikation der Wirkung kleinster Radiumdosen auf Gewebezellen in vitro.** *Strahlentherapie* 40(3): 465-469. 1931.—The authors radiated cultures of osteoblasts with small doses of mesothorium (equivalent to about .25 mgm. radium per hr.) and observed the inhibitory effect upon the growth of the fibroblasts. The experiments were made with the tissues at various temperatures (0-50° C.) before and after the radiation. The results show that the effect of small doses on these tissue cultures can remain latent; but by adding further small doses under various conditions it still can be shown to exist. The absolute radiation effect evidently does not depend on the rate of proliferation of the tissue cells. —*O. Glasser.*

15748. **HANCE, ROBERT T. The possible biological significance of the increased activity of x-rayed tyrosinase.** *Proc. Pennsylvania Acad. Sci.* 3: 90-92. 1929.

15749. **HAUSMANN, W., und W. E. PAULI. Über die Wirkung von Kathodenstrahlen auf Erythrocyten (Blutagarplatten).** *Strahlentherapie* 30(2): 350-358. 4 fig. 1928.—Blood agar plates were radiated with cathode rays by means of a specially constructed apparatus and the ring-shaped hemolysis produced by the radiation was studied. The erythrocytes in the center of this ring were not hemolyzed; they had become resistant against saponin. No reason for the formation of this peculiar effect can be given.—*O. Glasser.*

15750. **JACOBSEN, VICTOR C. The effects of high voltage cathode rays on the germinal epithelium of the rat.** *Arch. Pathol.* 9(5): 967-983. 8 fig. 1930.—The effect of cathode rays from a Coolidge cathode ray tube, operated at voltages of 200,000-250,000 volts at a current of 1 m.a., upon the germinal epithelium of the adult ♂ white rat was studied. Exposure times varied from ½ sec. to 30 sec. Definite lesions were produced in the seminiferous tubules in a zone about .6 mm. in depth. Degenerative and necrotic changes were observed in this zone similar to those caused by x-rays. The germinal epithelium is much more sensitive to this radiation than the tela subcutanea. It is concluded that the biological effects of x-rays are due to the electrons or cathode rays set free in the tissues.—*O. Glasser.*

15751. **KEMP, TAGE, and JENS JUUL. Influence of various agents (x-rays, radium, heat, ether) upon mitosis in tissue cultures.** *Acta Path. et Microbiol. Scand.* 7(3): 279-308. 3 pl. 1930.—Tissue cultures of fibroblasts from chick embryos were exposed to Ra and x-rays in various doses, ether vapor, and heating to 50° for various periods. The cultures were fixed at different times within the first 24 hrs. after the treatment, and the mitoses were examined. The radiation treatment was followed by characteristic variations in the number of mitoses: an early initial fall—after large doses, to zero—and then a rise, up to normal when the dose was small. After 3-6 hrs. there is again a fall of the mitosis count. Examinations within the first hr. after the irradiation show that most of the cells that have entered mitosis prior to the irradiation complete the division, whereas no new mitoses are formed in this period. After ether and heat treatment no such variations are found in the number of mitoses. After ether treatment, the findings were not constant. After heating, the mitosis count stayed fairly constant in the first hrs. after the treatment; then it went down slowly. The morphological changes observed in the individual mitoses are essentially alike after exposure to radiation, ether and heat. They are particularly distinct in the first period after the treatment, more moderate in the secondary mitosis wave. These changes appear as: pycnotic mitoses; shrinkage and clumping—perhaps, fragmentation also—of the chromosomes; and disturbances of the chromosome migrations, particularly in the anaphase. There is a complete absence of certain mitotic changes that are characteristic of the anaplasia of cancer tissue, such as multipolar mitoses, very large mitoses, and marked variations of the chromosome count.—*Authors' summary.*

15752. **KRUPSKI, A. I., und M. F. EISENBERG. Über den Einfluss schwacher Röntgenbestrahlung der Ovarien auf die Nachkommenschaft bei weissen Mäusen.** *Strahlentherapie* 30(3): 527-543. 1 fig. 1928.—On 40 white mice doses of 12, 24 and 36% erythema units were given to the ovarian tissues without castration. Three generations of offspring were observed, being normal. Six children of x-ray technicians were observed to be normal. The question of what intensity of radiation is dangerous is left open.—*H. Kahler.*

15753. **KÜSTNER, HANS. Die Dosierung der Buckyschen Grenzstrahlen mit dem Eichstandgerät. II.** *Strahlentherapie* 30(2): 334-342. 6 fig. 1928.—For very soft rays (4 to 12 kv.) the absorption of the Lindemann glass must be allowed for in estimating the intensity of radiation given off by a tube at a given power input. Both glass and air by selective absorption of the softer rays act as filters. Bucky rays must have intensity and wave length determined at the same focal distance as used in practice.—*H. Kahler.*

15754. **LACASSAGNE, A. Comparaison entre l'effet produit dans le testicule par les rayons corpusculaires β et par les rayons ondulatoires X.** *Arch. Anat. Microsc.* 25: 251-256. 1929.—A small cylinder of uranium X was introduced into the testicles of dogs and rams. Successive zones were produced of (1) total local necrosis; (2) inflammation; (3) sterilization; (4) temporary interruption of the generation of the seminal cords. The zones of inflammation and sterilization were similar to those produced by x-rays but β rays of uranium X produce dangerous local necrosis.—*H. Kahler.*

15755. **LANGENDORFF, H., und M. LANGENDORFF. Strahlenbiologische Untersuchungen an befruchteten Seeigeleiern.** *Strahlentherapie* 42(4): 793-799. 1931.—Studies were carried out on 9 series of sea urchin eggs (*Psammechinus miliaris*). 3 series were x-rayed in each stage (i.e., 1st, 2nd, and 3rd segmentation divisions). Those in the 1st stage were given 200 r 35 min. after fertilization; those in the 2nd and 3rd, 200 r 55-120 min. after fertilization. The 1st cleavage stage was given fractionated doses: 200 r in 5, 35, and 55 min. respectively, or 100 r. given twice at 5 and 35, 35 and 55, or 5 and 55 min. (5 and 55 min. being periods of maximum, 35 of minimal sensitivity). The results substantiated earlier work. In the 2nd and 3rd segmentation divisions the cell was least sensitive during the metaphase. The stage of mitosis was also determinant for the action of simple fractionated doses, about the same effect being obtained with the fractionated doses applied at the 2 maxima as when the total dose was applied at the 2nd maximum.

15756. **McKINLEY, G. M. Some biological effects of high frequency electrostatic fields.** *Proc. Pennsylvania Acad. Sci.* 4: 43-46. 1930.—A brief review of the author's recent experimentation.

15757. **MOPPETT, WARNFORD. The differential action of x-rays on tissue, growth and vitality. II. The biological reaction to x-radiation in relation to a phenomenon termed antagonism. III. The biological reaction to x-radiation in relation to the area of tissue irradiated. IV. The biological reaction to x-radiation in relation to time.** *Proc. Roy. Soc.* [*London*] B 107(751): 293-312. 1 pl., 6 fig. 1930.—II. The allantoic membrane

of the embryo chick, irradiated with homogeneous x-rays obtained by crystal diffraction, shows a reaction consisting of hypertrophy or atrophy which is associated with a definite frequency band. Any frequency outside this band tends to diminish or prevent the reaction. A prior dose of mixed radiation prevents a reaction due to homogeneous radiation. In this instance increasing doses of both radiations may be balanced against each other; a curve resembling a hyperbola was thus obtained. —III. The threshold dose for a reaction of the allantoic membrane to homogeneous x-radiation varies inversely as the square of the area irradiated for small areas. The reaction represents a summation of stimuli from adjacent parts which may not show any visible change. When 2 discrete areas are irradiated, a fused reaction may be obtained in the central non-irradiated part and the threshold dose varies as the square of the distance between parts up to 6.5 mm. Similar laws appear to hold when the skin of the rat is exposed to unfiltered soft mixed radiation and the possible rôle of the ionised atom is discussed.—IV. The allantoic membrane was exposed to homogeneous radiation for various periods of time at various intensities and the threshold dose was plotted against time. The curve showed a minimum value at 1½ hrs. and 2 upward branches representing an increase in threshold dose when T is small and a "repair factor" when T is large. The skin of the mouse exposed to soft mixed radiation shows a similar curve except that repair was more rapid in the highly differentiated tissue. Approximate equation $TD=K/T+(a+\beta)T$ where a represents the return of the ionised atom to a normal state and β a biological constant of repair.—*W. Moppett.*

15758. **OLIVIERI, FRANCESCO. Ricerche intorno all'azione dei raggi Röntgen sulla segmentazione dell'uovo e sui processi morfogenetici elementari nel Bufo vulgaris. [The action of x-rays on the segmentation of the ovum and on elementary morphogenetic processes in B. vulgaris.]** *Riv. Radiol. e Fis. Med.* 1(5): 5-30. Portrait 10 fig. 1929.—A large series of fertilized eggs of *Bufo vulgaris*, some of which were given x-rays (various doses) during segmentation, gastrulation, and the neural groove stage, were studied. Irradiation during segmentation seemed to interfere with harmonious development during that stage; during gastrulation, the injurious effects seemed to be limited to the entero-vitelline portion, and to induce a resistance or susceptibility to irradiation in certain zones and a stimulation in others; during the neural groove stage, x-rays did not interfere with morphogenesis.

15759. **QUIMBY, EDITH H., and FRED W. STEWART. Comparison of various sources of interstitial radiation.** *Radiology* 17(3): 449-470. 14 fig. 1931.—The authors have made experimental investigations of the distribution of radiation intensity around radioactive sources of various types, used interstitially. This was studied by means of 2 reactions, the bleaching of butter and the production of necrosis in the dorsal muscles of rabbits. The sources of radiation were tubes of radium sulphate and of radon, of different strengths, lengths, and filtrations. Curves and tables are given for the relative intensities of radiation at different distances from a standard radon "seed" 4 mm. long, filter 0.3 mm. gold. Factors are given by means of which similar data can be calculated for any interstitial source of radiation ordinarily used in therapy. These data are correlated with data previously obtained regarding the production of erythema on human skin, and on this basis it is assumed that such experimental data can be used as a satisfactory first approximation to determining tissue dosage. For any given source, the effect produced at any given point is proportional to the dose in millicurie-, or milligram-hours.—Extensive dosage tables are given for various types of permanent and removable radium and radon implants.—*E. H. Quimby.*

15760. **REGELSBERGER, H. Grundsätzliches über Polarisationsmessungen an der menschlichen Haut. III.** *Zeitschr. Ges. Exp. Med.* 76(5/6): 635-652. 1931.—Variations in the direct current passing between 2 electrodes applied to different parts of the body were observed. A daily rhythmic variation occurred for all parts of the body. The curve of current plotted against time of day showed maxima at 2 P. M. and 7:30 P. M. with minima at 10 A. M. and 5 P. M. Such variations were more marked by taking readings at ½-1 hr. intervals than with shorter intervals between readings. A continuous current showed none of the rhythmic variations. The effect of continued pressure on the electrodes is discussed and oscillograms of electrodes using different salt solutions are given.—*A. Hemingway.*

15761. **REISNER, A., und TH. C. NEEFF. Hauttoleranzdosis und Strahlenqualität.** *Strahlentherapie* 34(2): 313-339. 1 col. pl., 15 fig. 1929.—The dependence of the skin tolerance dose on the quality (i.e., wave length) of the x-ray radiation used (measured in half-value thickness of Cu and r units) has been investigated by means of a series of observations on skin erythema on the skin of the thigh, in women. The following relations between wave-length and skin reaction have been found: —(1) The skin tolerance dose increases with the wave length for radiation varying from 0.3 mm. to 0.2 mm. of Cu half value layer. After this, it decreases rapidly with increasing wave length. (2) The use of doses less than the tolerance dose in such an investigation may lead to false conclusions, because in this case differences between the reactions vanish. Doses close to the tolerance limit show the differences clearly. (3) This explains the differences in results obtained by earlier observers, and should bring about agreement regarding the question of the dependence of skin tolerance dose on radiation quality. (4) The physical and biological conditions of the experiments are fully discussed, and necessary precautions described. All dosage data have been determined on the basis of the standardization according to Kuestner. [See also abstract 15739.] —*Authors' summary (transl. by E. H. Quimby).*

15762. **RUSS, S., SAMSON WRIGHT, H. A. BULMAN, and L. H. CLARK. The physiological and cytological effects of penetrating x-rays upon the cat and rabbit.** *Proc. Roy. Soc. Med.* 23(12): 1671-1688. 6 fig. 1930.—A large number of cats and rabbits were placed in wooden boxes, and irradiated from above with heavy doses of x-rays of frequencies of 150 and 230 kv. applied (1) to the thorax only, (2) to the abdomen only, (3) to the entire body with the exception of the kidneys and adrenals, which were protected by a lead belt, and (4) to the long bones only. In general the dosage used was such as would prove lethal. The physiological symptoms leading to death are described in both test animals. Detailed examinations of all organs are reported, with the changes found in the alimentary canal, small and large intestines, stomach, liver, kidney, respiratory tract, spleen, blood. The principal damage occurred in the blood, intestinal tract, kidney, liver and bone marrow. Primary infection was not necessarily present in the x-ray lesions, but if secondary infection occurred, it progressed rapidly. X-ray sickness, compared with histamine poisoning, showed marked differences; x-ray sickness is probably not due to histamine released in the organism by the action of the rays. The blood changes which occurred after very heavy irradiation consisted mainly in loss of lymphocytes and polymorpho-nuclear leucocytes; the effect on red cells and platelets was almost negligible, even when the animal was practically moribund. Under certain circumstances, however, an x-ray anemia could be produced. Liver feeding was of no use. The action of the rays seems to be indirect, in that the metabolism of the cell is first disturbed.—*E. H. Quimby.*

15763. **SCHLUNDT, HERMAN, and G. FAILLA. The detection and estimation of radium in living persons. III. The normal elimination of radium.** *Amer. Jour. Roentgenol.* 26(2): 265-271. 1931.—Two girls who had contracted Ra poisoning during their employment as dial painters in 1918 were still radioactive after a lapse of 12 yrs. during which time neither had been exposed to Ra. The rate of elimination of Ra by these subjects

under normal diet and living conditions was determined in the excreta collected over a period of hospitalization for a week. The total Ra distributed over the bony skeleton was also determined quantitatively. The elimination by subject A, bearing 24 μg. (2.4×10^{-6} gm.) radium averaged 1,161 $\mu\mu$g. (1.16×10^{-12} gm.) daily, or a coefficient of daily elimination of 5×10^{-5} (0.005%). Subject B, carrying a total of 14 μg. radium, eliminated 363 μg. daily, or only 0.0026%. Fully 90% of the Ra eliminated was found in the feces. Several considerations are advanced for the observed difference in the rates of elimination in the 2 subjects, and some of the important factors involved in the problem of Ra elimination by living persons are discussed.—*H. Schlundt.*

15764. **SCHUGT, P. Experimentelle Untersuchungen über Schädigung der Nachkommen durch Röntgenstrahlen.** *Strahlentherapie* 28(3): 546-567. 2 fig. 1928.—Studies on mice are reported.

15765. **STRELIN, G. S. Röntgenologische Untersuchungen an Hydren. II. Die histologischen Veränderungen im Körperbau von Pelmatohydra oligactis unter der Wirkung der Röntgenstrahlen und ihre Bedeutung für die Regeneration und Vermehrung.** *Zeitschr. Wiss. Biol. Abt. D. Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 115(1/2): 27-51. 15 fig. 1929.—The author studied the histological changes in fixed and stained serial sections of hydra used by Zawarzin in his experiments, and also performed new experiments on the action of rays on undifferentiated interstitial elements between ectoderm and entoderm of hydra, to determine histological changes at earlier stages under various doses of rays. He concluded that the law of Bergonié and Tribandeau is fully confirmed. The action of x-rays is evident without an intervening latent period. Cells of embryonic nature, i.e., interstitial cells, are most sensitive to x-rays, especially at prophase. A strong dose leads to the disappearance of interstitial cells, which in turn leads to degeneration; but if any interstitial elements survive, they will be later regenerated completely or even excessively. The acceleration of regeneration is explained by the regenerative reproduction of interstitial elements. —*P. M. Suski.*

15766. **STROHL, ANDRÉ, et HENRI DESGREZ. Etudes des ondes faradiques emises à travers le corps humain.** *Jour. Radiol. et Electrol.* 13(8): 417-432. 1929. —In studying the Faradic currents (on opening) with the aid of "l'égersimètre," the mean voltages of the current in the different parts of the cycle were studied. Placing a patient in the secondary circuit caused changes in the wave form, due to the polarization capacity of the tissues; in fact, electric oscillations were produced and studied.—*A. Strohl (transl. by J. F. McClendon).*

15767. **WEATHERWAX, J. L., (with foreword by HENRY K. PANCOAST). Physics of radiology.** 240p. 126 fig. Paul B. Hoeber, Inc.: New York, 1931. Price $5.

15768. **WRIGHT, SAMSON, and H. A. BULMAN. Selective action of x-rays on the blood cells of the cat.** *Lancet* 217(5527): 217-219. 1929.—The entire body was irradiated at 57 cm. distance for varying periods, spark gap 10 cm. 1 mm. of Al being the filter. For a duration of 75 min. death results within 5-12 days. If the exposure is less than 60 min. all survive. For doses less than the lethal dose the lymphocytes are decreased early and markedly, the polymorphonuclear leucocytes decrease more slowly. The red cells decrease slowly and the platelets appear to change in a parallel direction both gradually recovering. In fatal cases haemolysis occurs.—*H. Kahler.*

15769. **WYNEN, WALTER. Die Radiosensibilität des Knochens in ihrer Bedeutung für die Röntgenbestrahlung der Gelenktuberkulose.** *Münchener Med. Wochenschr.* 76(6): 244-246. 1 fig. 1929.—Bones are much more resistant to x-rays than most other body tissues. Regaud believes the Ca gives off secondary radiations which destroy the delicate vascular walls within the bone lamella. In order to test this idea, root tips of *Vicia faba equina* were placed in holes drilled in bone and another set were similarly placed in muscle. Both received the same radiation 180 k. v. 4 ma. 30 cm. T.S.D. and 150 r-units. After 8 days the ones radiated in bone were further ahead than those in muscle, showing that the bone filtered out a great deal of the radiation. Practical considerations have led to the use of hard radiations in tuberculosis. Small doses are quicker and more satisfactory than massive doses. The hard radiations penetrate in sufficient amounts to the required depth while the softer radiations are absorbed chiefly in the superficial layers. The author does not maintain that radiation with Al filtration is less effective, but that the treatment is dangerous.—*K. W. Buchwald.*

15770. **ZAWARZIN, A. A. Röntgenologische Untersuchungen an Hydren. I. Die Wirkung der Röntgenstrahlen auf die Vermehrung und Regeneration bei Pelmatohydra oligactis.** *Zeitschr. Wiss. Biol. Abt. D. Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 115(1/2): 1-26. 9 fig. 1929.—In a series of experiments during 2 summers, the author found that rays accelerate and stimulate, or retard asexual reproduction and regeneration of hydra according to the doses given and the time elapsed since irradiation. The stimulating action appears directly after exposure, but the depressant action after a certain lapse of time, which is inversely proportional to doses given. There exists no latent period of action of x-rays. With the test conditions (65 K.V., 2 M.A., 16 cm. distance, no filter, superficial dose 79 r. per min., 300 r. to a HED), 6 min. exposure gave the highest general stimulating effects. Aside from the primary stimulation by x-rays, there is a secondary stimulation which occurs only with stronger doses. An operation contributes to a greater resistance of hydra to the injurious effects of x-rays. Autumn hydra are more resistant than summer hydra.—*P. M. Suski.*

ANIMAL PHYSIOLOGY

OXIDATION AND REDUCTION

WM. MANSFIELD CLARK, *Editor*

(See also in this issue Entries 15569, 15699, 16519)

15771. **BARMORE, MARK, and JAMES MURRAY LUCK. The rôle of phosphate in biological oxidations.** *Jour. Gen. Physiol.* 15(1): 97-105. 1931.—A qualitative and quantitative study of the catalytic effect of phosphates on the oxidation of glyceric aldehyde by dyes (methylene blue, 1-naphthol, 2-sulphonate indophenol, and phenol indophenol). It was concluded that the $PO_4^{\equiv}$ ion is a more active catalytic agent than $HPO_4^{=}$ or HPO_4^{-}.—*M. Barmore.*

15772. **BARRON, E. S. GUZMAN, and L. A. HOFFMANN. The catalytic effect of dyes on the oxygen consumption of living cells.** *Jour. Gen. Physiol.* 13(4): 483-494. 1930.—A study of the effect of reversibly oxidized and reduced dyes on the O consumption of sea-urchin and starfish eggs. The catalytic power of the dyes on the O consumption of these eggs is conditioned by 2 factors. Dyes whose E'_o is towards the positive side of the aerobic reduction potential of the eggs have a maximum catalytic effect. This catalytic power decreases as the E'_o becomes more negative than the reduction potential of the cell and becomes nil beyond certain limits. When a dye cannot penetrate into the cell its effect is greatly diminished, as in this case only those oxidative processes taking place at the outer sur-

face of the cell can be activated. The speed of this activation is correlated to (1) the speed at which the dye is reduced by the cell, and (2) the speed at which the leuco-dye is oxidized by atmospheric O.—*E. S. G. Barron.*

15773. **FABRE, R., et H. SIMONNET. Recherches sur le pouvoir oxydo-réducteur des tissus. 1. Introduction. Nature des questions posées. 2. Recherches sur le foie perfusé. 3. Recherches sur la pulpe de foie.** *Jour. Pharm. et Chimie* 12(3): 97-101; (5): 193-213; (6): 253-266. 1931.—Cystine is reduced to cysteine when perfused through liver and when added to liver pulp.—*F. Bernheim (from abstract by R. Fabre).*

15774. **HEWITT, L. F. Oxidation-reduction potentials in bacteriology and biochemistry. (London County Council.)** 70p. P. S. King & Son, Ltd.: London, 1931. Pr., 2s. —An extensive review of theory and methods, with particular reference to bacteriological applications.—*W. M. Clark.*

15775. **PALIT, C. C., and N. R. DHAR. Slow and induced oxidation of glycogen, lecithin, cholesterol, formate, oleate, stearate, and some food materials.** *Jour. Phys. Chem.* 34(4): 711-723. 1930.—An aqueous suspension of glycogen was oxidized by air at 25° C. in the presence of NaOH, $NaHCO_3$, and different metallic hydroxides. This oxidation is retarded by fats and nitrogenous substances. The induced oxidation of potassium stearate and oleate by air is retarded by carbohydrate, and to a greater extent by carbohydrate and urea, but the combustion is more complete. In neutral solutions with cerous hydroxide as inductor the order in which oxidation takes place is as follows: egg white>egg yellow>starch>glucose>butter; the same order obtained by Voit for actual feeding experiments. The substances are oxidized chiefly to CO_2 and not to any intermediate product. The authors think these results of importance because the oxidations are of the same type as those taking place in the animal body.—*T. O. Stevens.*

15776. **VELLINGER, EDMOND. Notes sur le potentiel d'oxydation-réduction de matières colorantes usuelles utilisables comme tampons de rH.** *Arch. Phys. Biol.* 7(2): 113-118. 1 fig. 1929.—Approximate potential measurements on various dyes.—*F. Bernheim.*

15777. **[VLADIMIROV, G. E., M. ĬA. GALVĬALO, and K. A. MAKAROVA.]** ВЛАДИМИРОВ, Г. Е., М. Я. ГАЛВЯЛО и К. А. МАКАРОВА. Глютатион, методы его получения, его свойства, термостабильная окислительно-восстановительная система. **[Glutathion; methods of obtaining it; its properties; thermostable oxidizing-reducing system.]** [German summary.] Русский Физиологический Журнал имени И. М. Сеченова (*Russ. Jour. Physiol.*) 13(4/5): 499-524. 1930.—Glutathion obtained by Hopkins' method was somewhat different in quantitative chemical composition from that obtained by Johnson and Voegtlin's method. By these methods glutathion was isolated even from 10 kgm. of yeast, brewer's yeast being unsatisfactory material. When cystein and glutathion were oxidized with iodine, the reaction proceeded beyond the disulphide form ($2RSH+I_2=RS-SR+2HI$), and was inhibited by acid and KI. Exact iodometric titration of cystein and glutathion (starch as indicator) was possible only under standard conditions in the presence of a known and sufficient amount of acid and KI. Repeated treatment of muscle preparation with the disulphide form of glutathion removed most of the H from the SH group of the muscle preparation. The S of the free SH groups of a muscle preparation represented a significant part of the whole S of the muscle.—*S. A. Corson.*

ANIMAL PHYSIOLOGY

BIOCHEMICAL, BIOPHYSICAL AND PHYSIOLOGICAL METHODS AND APPARATUS

C. H. FISKE, *Editor,* Biochemical and Biophysical

S. E. POND, *Editor,* Physiological

(See also in this issue Entries 15140, 15142, 15148, 15149, 15150, 15528, 15571, 15652, 15657, 15658, 15678, 15745, 15763, 15800, 15808, 15825, 15826, 15843, 15844, 15849, 15893, 15902, 15997, 15999, 16058, 16150, 16157, 16179, 16264, 16294, 16765, 16875, 17492)

BIOCHEMICAL AND BIOPHYSICAL

15778. **BRAVO, GIUSEPPE ANTONIO. La concentrazione degli ioni idrogeno. Il significato del simbolo pH e la sua misura.** 203p. 62 fig. Tipografia Sociale Torinese: Turin, 1929. Price 22 L.—This is essentially a practical treatise dealing with the methods of pH determination in analytical chemistry and also in industry (manufacture of paper, inks, dyes, gums, tannery products, sugar, fermentations, etc.). The author also considers the applications of the same methods for the evaluation of the constants of dissociation and hydrolysis as well as applications in biological chemistry. In addition to the 2 principal methods, the electrometric and the colorimetric, descriptions are given of those based on spectrophotometry, catalysis, electrical conductivity, viscosity and surface tension.—*G. Tegoni (transl. by B. Cohen).*

15779. **GANASSINI, DOMENICO. Modificatione ad un metodo di dosaggio dell'acido urico nelle orine. [A modified method for determination of uric acid in urine.]** *Arch. Ist. Biochim. Ital.* 2(4): 505-508. 1930.—For the Salkowski Ludwig reagent a solution of $ZnSO_4$ is substituted, to which a slight excess of Na_2CO_2 is subsequently added. Uric acid is precipitated as basic Zn urate, is then dissolved with HCl, and the Zn precipitated with Na phosphate. The uric acid is determined as Na urate with a $N/10$ I solution with indigo carmin as indicator.—*M. Comel.*

15780. **LEVENE, P. A., and ERIK JORPES. A method of separation of ribopolynucleotides from thymonucleic acid and on the conditions for a quantitative separation of the purine bases from the ribopolynucleotides.** *Jour. Biol. Chem.* 86(1): 389-401. 3 fig. 1930.—Ribonucleic acid was pptd. readily from a 10% aqueous soln. by excess glacial acetic acid, while the thymonucleic acid remained dissolved. To isolate purine bases from ribonucleic acid, Levene's method for thymonucleic acid was modified in its details: Suspend 5 gm. of the acid in 150 cc. dry methanol and pass in HCl gas for 1½ hrs. with continuous agitation. After initial solution of the acid, the hydrochlorides of the bases gradually separate. Let stand overnight in the cold. Dissolve the hydrochlorides in excess alkali and neutralize with acetic acid. Guanine settles out at once; adenine remains in soln. For complete sepn., redissolve the guanine in alk. and reppt. with acetic acid. Precipitate adenine from the combined filtrates as the picrate.—Theoretical yields of base were obtained by application of the above to pure guanine-HCl, to a known mixture of the 2 bases, and to yeast nucleic acid. The pancreas nucleic acid purified as above differed from the yeast nucleic acid in the higher content of ribose and purine bases, and particularly in the greater proportion of guanine to adenine, in the former. On partial hydrolysis, adenosine and guanosine were prepared from this acid.—*W. A. Peabody.*

15781. **OSATO, SHUNGO, and MUTSUO HEKI. On the micro determination of lipids in tissues.** *Jour. Biol. Chem.* 87(3): 541-557. 1 fig. 1930.—Practically all fatty substance is removed when tissue is reduced to a homogeneous paste by freezing, moistened and ground in a mortar repeatedly, and mixed with a suitable solvent

(alcohol-ether mixture). In this extract total fatty acid, lecithin, and cholesterol are determined. For the micro estimation of total fatty acid, the Bang-Bloor oxidative method is preferred. A slight improvement is given for the estimation of free and combined cholesterol, to facilitate the precipitation of cholesterol digitonide and to simplify the manipulation of extraction.—*S. Osato.*

15782. **PFIFFNER, J. J., and VICTOR C. MYERS. On the colorimetric estimation of guanidine bases in blood.** *Jour. Biol. Chem.* 87(2): 345-355. 1930.—A study was made of the colorimetric reaction of certain guanidine bases with alkaline oxidized nitroprusside and ferricyanide. Weber's method (1927) for the estimation of guanidine bases in blood was modified to exclude interference by creatine, and the modified method was applied to a few normal and hypertensive blood samples.—*J. J. Pfiffner.*

15783. **PINELLI, LUIGI, e ATTILIO CORBIA. Sui metodi da preferirsi per la determinazione clinica della glicemia.** [Clinical methods for determining blood sugar.] *Biochim. e Terapia Sperim.* 18(1): 19-33. 1931.—The methods of Folin and Wu, of Shaffer and Hartmann, of Hagedorn and Jensen, of Jonescu and Mathiu, and of Bertrand and Silvestri were compared. Those based upon the reduction of ferricyanide regularly gave higher values than those based upon reduction of cupric salts.—*M. Comel.*

15784. **STROHECKER, R. Die Bestimmung des Stickstoffsubstanzgehaltes der Milch mit Hilfe eines Leitfähigkeitsabfalls.** *Zeitschr. Untersuch. Lebensmittel* 61(1): 69-80. 1931.—The author suggests a method for determining the nitrogenous material in milk based on the decrease in conductivity of a dilute HCl solution when mixed with a definite quantity of milk. The method is said to give results in good agreement with the Kjeldahl method and is applicable to ordinary or evaporated milk without correction; in sweetened condensed milk a correction factor is necessary. Benzoates and borate preservatives and sodium carbonate interfere with the determination; not so H_2O_2 and formalin.—*R. W. Titus.*

15785. **TAILLANDIER, M. Études et techniques de précipitation des constituants des liquides biologiques en vue de leur dosage opacimétrique par spectrophotométrie et photométrie.** 255p. 41 fig. Norbert Maloine: Paris, 1931.—The author reports the results of a study of the theory and practice of the use of photometric and nephelometric methods in analytical chemical procedures with the particular purpose of establishing satisfactory technique for the determination of constituents of biological fluids such as blood, serum, plasma, urine, cerebro-spinal fluid, etc., 85 p. of historical and theoretical discussion are included. Results previously reported in 1927-28 and others obtained since then are combined in the description of technique for the determination of chlorides, uric acid, phosphates, acetone, reducing sugars, cholesterol, calcium and urea. The methods are suitable for clinical use. In general the percentage errors are greater than in the corresponding gravimetric methods but equal to or less than those in the corresponding volumetric methods. Up to the present time the results with the cholesterol technique are not so constant as those obtained by the colorimetric method. The basic instrument used throughout is the photometer of Vernes and Bricq, especially constructed for absorption measurements with small quantities of liquid. Observations are described made with the photometer of Vernes, Bricq and Yvon, the spectrophotometer of Fery and the apparatus of Baudouin and Bénard. A number of other instruments are discussed. The preliminary discussion suggests certain theoretical advantages of these methods as compared with a number of familiar nephelometric procedures.—*R. L. Nugent.*

15786. **TAPERNOUX, A., et FÉRY. Sur le dosage colorimétrique de l'acide lactique; applications au dosage de l'acide lactique des caséines industrielles.** *Compt. Rend. Soc. Biol.* 100(14): 1213-1214. 1929.—1 gm. of casein is macerated with 20 cc. distilled water at 40° for about 15 min., then heated to near boiling, filtered, and 1 cc. of the filtrate treated with 10 cc. pure H_2SO_4 and kept in a boiling water bath 2 min. This is cooled, and to it are added 10 drops of alcoholic solution of guaiacol (1-20). The color is then compared with a scale prepared from solutions of known lactic acid content.

15787. **TASHIRO, SHIRO, and ESTHER BOGEN TIETZ. A simple test for levulose (ketose?) in glucides.** *Jour. Biol. Chem.* 87(2): 307-310. 1930.—"In a small test-tube (preferably 1 cm. in diameter) place 1 cc. of 0.1 per cent fresh aqueous solution of ordinary ox bile salts. Add 1 cc. conc. H_2SO_4, shake immediately, and quickly add to the mixture a drop of solution to be tested. An immediate production (in about 15 sec.) of pink or purple color on the top of the solution indicates the probable presence of levulose, free or in combination." The concentration of levulose must be $M/600$ or higher. All sugars give the test if the concentration is high enough.

15788. **VERAIN, M. Sur un nouveau potentiomètre.** *Compt. Rend. Soc. Biol.* 106(10): 821-822. 1 fig. 1931.—A new modification of the potentiometer with resistance boxes is described. The resistances are introduced directly into the circuit, thus eliminating errors due to faulty connections. A direct reading in millivolts can be made on an attached rheostat. Of 600 determinations, 550 came within 0.04 of the true pH and the greatest divergence was 0.12. All parts of this apparatus are easily accessible for cleaning.—*E. Weiner.*

15789. **WEISE, W., und C. TROPP. Untersuchungen über die Jaffesche Pikrinsäurereaktion.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 178(1/3): 125-138. 1928.—The Jaffe reaction for creatinine (the red coloration of an alkaline picric acid solution) is a special case of a general reaction for active methylene and methine groups. After tabulating the results for a large number of compounds, the authors list the activating groups in the following order with nitro as the strongest: nitro, diazo, carbonyl, cyano, vinylene, carbaminyl, carbethoxy. Simple aldehydes and ketones give a positive reaction. Although malonamide gives a positive reaction, most acid amides give the characteristic color only when the CH_2 group is combined with an aromatic group (as phenylacetamide) or is in cyclic combination (as hydantoins and diketopiperazines). Method: 10 cc. of a saturated aqueous solution of picric acid; 5 cc. of 10% NaOH. Dilute mixture to a volume of 25 cc. Use 5 cc. of this reagent and 20-50 mg. of the substance to be tested. The test is positive if a definite red color is obtained in 3 minutes. With material insoluble in H_2O the test is carried out as above; after 3 minutes an equal volume of alcohol is added. If no red color develops after another 3 minutes, the test may be considered definitely negative.—*A. Renfrew.*

15790. **WILEY, FRANK H., and HOWARD B. LEWIS. The action of nitrous acid on casein. 2.** *Jour. Biol. Chem.* 86(2): 511-528. 1930.—Casein deaminized by $NaNO_2$ and acetic acid at various temperatures was prepared, and the deaminized casein analyzed by some of the newer methods of protein analysis. The study gave evidence of the inaccuracy of the Van Slyke method for the determination of characteristic groups of the protein molecule as applied to deaminized casein. The arginine content of deaminized casein as determined by the Van Slyke procedure was slightly lower than that of casein. This was not substantiated by the results of the Vickery-Leavenworth method of analysis, by which practically the same amounts of arginine could be isolated as the flavianate from casein and deaminized casein. The Vickery-Leavenworth method indicated a destruction of more than half of the histidine present in casein in the reactions involved in deamination. The Van Slyke procedure indicated a degree of destruction of lysine varying with the temp. of deamination, while by the Vickery-Leavenworth method no lysine could be isolated from the hydrolysate of casein deaminized at 20°. The tryptophane content of casein, as determined by the colori-

metric method of Folin and Ciocalteu, was not altered by the reactions of deamination. Tyrosine, as determined by the colorimetric methods of Folin and his associates, appeared to be partially destroyed in deamination. Evidence is presented that this decrease is probably due to the formation of derivatives of tyrosine during deamination, which had less chromogenic value in the color reactions used in the determination of tyrosine than tyrosine itself.—*Authors' summary.*

15791. **WIND, F., und K. v. OETTINGEN. Milchsäurebestimmung in den Uterus- und Nabelgefässen.** *Biochem. Zeitschr.* 197(1/3): 170-174. 1 fig. 1928.—A method is described for determining lactic acid in 1 cc. of blood. Analysis of the blood entering and leaving the system embryo + uterus + placenta shows that this system does not add lactic acid to the blood.—*P. A. Katzman.*

15792. **YONEYAMA, YAHEI. Über Luminescenzanalyse des Harnes.** *Zeitschr. Ges. Exp. Med.* 76(5/6): 680-688. 1931.—Various constituents of the urine, particularly: urochrome, uro-erythrin, urorosein, urorubin, urobilin, and coproporphyrine with its chromogens, especially urobilinogen, when subjected to ultraviolet illumination in the dark, gave characteristic colors.

ANIMAL PHYSIOLOGY

NUTRITION, DIET, VITAMINS, GENERAL METABOLISM, GROWTH

J. R. MURLIN, *Editor*

H. A. MATTILL, *Associate Editor*

E. F. ADOLPH and R. G. SINCLAIR, *Assistant Editors*

(See also in this issue Entries 15105, 15250, 15261, 15531, 15544, 15552, 15686, 15699, 15780, 15791, 15829, 15830, 15847, 15859, 15887, 15901, 15919, 15922, 15956, 15968, 15982, 16024, 16035, 16060, 16062, 16071, 16073, 16106, 16117, 16121, 16137, 16140, 16175, 16177, 16205, 16214, 16230, 16235, 16249, 16262, 16268, 16318, 16361, 16397, 16404, 16405, 16417, 16420, 16426, 16428, 16429, 16544, 16680, 17071, 17365, 17367, 17381, 17388, 17417, 17474, 17944, 18025)

VITAMINES

15793. **ALLEMAN, IRENE LILLIAN. Quantitative comparative studies of the solubilities of Vitamins B and G in acidified alcohol, with suggestions regarding the methods of determining these vitamins.** 39p. 11 fig. Thesis: Columbia University, New York City, 1930.—Both Vitamins B and G appear to be equally soluble (extractable) in 80% alcohol alone and alcohol of that strength made $M/10$ with gallic, benzoic, or hydrochloric acid, about $\frac{1}{3}$ of the vitamins originally in the milk powder remaining in the residues, under the conditions of extraction employed. The extracts appear to contain all the Vitamin B not left in the residues, but less of Vitamin G than would be expected from the amount remaining in the residues, that extract prepared with alcohol acidified with gallic acid being the most potent source of Vitamin G. Two changes of method are suggested for the estimation of these vitamins: (1) reducing the length of experimental period to avoid vitiation of results by unrecognized factors; (2) beginning experimental period at point of minimum weight of experimental animal.—*I. L. Alleman.*

15794. **ANGUS, T. C., F. A. ASKEW, R. B. BOURDILLON, H. M. BRUCE, R. K. CALLOW, C. FISCHMANN, J. ST. L. PHILPOT, and T. A. WEBSTER. A crystalline antirachitic substance.** *Proc. Roy. Soc.* [*London*] *B* 108(757): 340-359. 6 fig. 1931.—A crystalline antirachitic substance has been obtained by distillation of irradiated ergosterol in a high vacuum. Several grams of this substance have now been produced, as compared with the few milligrams described earlier. Attempts to detect a possible contaminant of high antirachitic activity failed, and it is believed that the observed activity is an inherent property of the substance. The name "calciferol" is provisionally suggested, pending further elucidation of the structure of this substance. It shows a high antirachitic activity of 20,000 M.R.C. units per mgm., a melting point of 123-125° C., and a high dextrorotation $[\alpha]^{29}_{5461}+260°$. It appears to contain an alcoholic hydroxyl group, and to be an isomeride of ergosterol. It shows unexpected stability, being almost unchanged after keeping for 6 weeks in vacuo, or even in dry air at room temperature. Its relation to "vitamin D" is discussed, with the conclusion that there are probably not less than 2 compounds each possessing intense antirachitic activity. It is uncertain whether calciferol is normally present in irradiated ergosterol, or is produced only by the subsequent action of heat.—*Authors' summary.*

15795. **[BOVSHIK, G. A.]** БОВШИК, Г. А. Сравнительное изучение пшеничного хлеба, приготовленного на пивных и хлебопекарных дрожжах, в отношении содержания витаминов В. **[Comparative study of vitamin B content in wheat bread baked with brewers' and bakers' yeast.]** [French summary.] Известия Научного Института имени П. Ф. Лесгафта (*Bull. Inst. Sci. Lesshaft*) 16(1/2): 237-242. 1930.—Wheat bread baked with 12% of baker's yeast was deficient in vitamin B, the pigeons fed on this bread being unable to maintain their original weight. Wheat bread baked with 6% of brewer's yeast had sufficient vitamin B.—*S. A. Corson.*

15796. **BRACEWELL, MARY F., E. HOYLE, and S. S. ZILVA. The antiscurvy vitamin in apples.** *Med. Res. Council Spec. Rept. Ser.* [*London*] 146: 5-45. 1930.—The Bramley's Seedling was decidedly more active in antiscorbutic potency than the other varieties tested. The character of the soil, the age of the tree and the season appeared to have no effect on this potency. Bramley's Seedlings picked from the same tree 14 days before the normal crop were of approximately the same antiscorbutic activity as apples of the normal crop. There was little loss in the vitamin C content of apples stored at 1° C. in the air or at 10° C. in a mixture of carbon-dioxide, nitrogen and oxygen for about 3 months. The gas-stored apples showed a greater loss of the vitamin. The activity was higher in imported dessert apples in which the time elapsing between picking and testing was shortest. No marked difference in activity could be correlated with difference in variety. The heating of Bramley's Seedlings in their skins hardly affected their antiscorbutic activity.—*H. C. Koser.*

15797. **BRIAULT, R. Introduction à l'étude des vitamines artificielles.** 50p. M. Vigné: Paris, 1930. Price 5 frs.

15798. **COWARD, KATHARINE H., BARBARA G. E. MORGAN, and F. J. DYER. The influence of vitamin A deficiency on the oestrous cycle of the rat. II.** *Jour. Physiol.* [*London*] 69(3): 349-352. 2 fig. 1930.—A series of ♀ rats (number not stated) were treated like the animals in experiments described in a previous paper, except that extracted light-white casein was substituted for vitamin-free casein ("Glaxo") in the diet. The results are divided into 3 groups. Group 1. The rats ceased to grow some time after the vagina opened; in these the authors found no normal cycles, but, after some days, cornified cells occurred continuously for as much as 21 days before they considered the rats steady in weight and ready to be given the dose of cod-liver oil. After the giving of cod-liver oil, regular cycles were sooner or later resumed. This result confirms the finding

of Evans and Bishop, and of Macy, Outhouse, Long and Graham. Group 2. The rats became steady in weight; they were given cod-liver oil and they grew for 8 to 17 days before the vaginas opened. In these rats regular cycles were not established for some time after the giving of cod-liver oil, leukocytes only appearing in the vagina for about 14 days. This result is exactly what the authors found at times in their previous work when they used "vitamin-free" casein ("Glaxo"), and confirms their conclusion that it is impossible to rely solely on the continuous occurrence of cornified cells in the vagina as a criterion of vitamin A deficiency. Group 3. The vaginas of the rats opened some time before growth ceased, but few cycles occurred and there was no long period of continuous occurrence of cornified cells. Thus vitamin A deficiency completely failed to manifest itself by this symptom.

15799. DELBET, PIERRE, et PALIOS. Action du chlorure de magnésium sur les cobayes en carence scorbutique. *Compt. Rend. Soc. Biol.* 98(17): 1534-1536. 1928.—$MgCl_2$ added to a scorbutic diet prolonged the survival over the controls. Since the control diet was not entirely free of Mg, the authors conclude that it was not absence of Mg, but the amount absorbed which was effective, possibly aiding in certain syntheses inhibited by the absence of vitamin C.

15800. GOTHLIN, GUSTAF F. A method of establishing the vitamin C standard and requirements of physically healthy individuals by testing the strength of their cutaneous capillaries. *Skand. Arch. Physiol.* 61(6): 225-270. 3 fig. 1931.—The author had 3 objectives in this research; to elaborate an indirect method of determining an individual's vitamin C status; to determine by this method the adult human vitamin C requirements; and to ascertain whether the Swedish people at all seasons were adequately supplied with vitamin C. Since the strength of the capillaries in withstanding pressure might be used to indicate whether the antiscorbutic vitamin was sufficient, the clinical "capillary resistance test" used in the study of scurvy was developed in a quantitative way. Pressure within the capillaries was regulated by a compression band around the arm. The external pressure must always be less than the diastolic pressure of the affluent artery, and should be applied for 15 min. Three levels of pressure, 35, 50 and 65 mm. are used, and the capillary hemorrhages in a 6 cm. circle at the elbow are counted after each period of pressure. Four grades of capillary strength have thus been established: I, no hemorrhages below 65 mm. Hg pressure; II, hemorrhages at 50 mm., but not more than 6; III, more than 6 hemorrhages at 50 mm. but none at 35 mm.; IV, at least 2 hemorrhages at 35 mm. The test was shown to be practical, for by placing two healthy individuals on a scorbutic diet, in a few weeks the strength of their cutaneous capillaries fell to an abnormally low level, but it gradually returned when the amount of antiscorbutic vitamin was kept adequate. By examination of persons belonging to the Nordic race it was ascertained that the vitamin C standard for that race is normal when the number of capillary hemorrhages in response to an external pressure of 50 mm. is less than 5. More than 8 is definitely subnormal. With the capillary strength test as a criterion the minimum antiscorbutic protective dose for a male individual (dementia praecox, but otherwise healthy) was 0.7 cc. of orange juice per day per kgm.; for a female in the same institution the dose was 1 cc. The susceptibility to scurvy is thus 9 to 13 times less in man than in young guinea pigs. The formerly unknown minimum antiscorbutic dose for adult man may thus be determined from the minimum guinea pig dose. For a human being weighing 60 kgm. it may be found by multiplying the minimum guinea pig dose by a coefficient lying between 14 and 20. For the guinea pig the minimum antiscorbutic protective dose of milk from cows at pasture was 50 cc. Soured milk was not inferior to fresh. After slow pasteurization the great loss of vitamin C should be compensated by the addition to the diet of such foodstuffs as potatoes and oranges. In April and May, the time at which the probability of vitamin C undernourishment is greatest in Sweden, 18% of children between 11 and 15 years showed a deficiency. Ordinary summer country life brought about a return to normal in their capillary strength.—*W. J. Meek.*

15801. HART, E. B., O. L. KLINE, and J. A. KEENAN. A ration for the production of rickets in chicks. *Science* 73(1904): 710-711. 1931.—Day old chicks were fed for 5 weeks on the following ration: 59 parts of ground yellow corn; 25 wheat middlings (standard); 12 of crude casein; 1 of NaCl; 1 of precipitated $CaCO_3$; 1 of precipitated calcium phosphate; and 1 dried yeast. They became rachitic in 28-35 days, with an ash of extracted tibia approximating 30%. In presence of adequate supply of vitamin D, chicks fed this ration for 35 days gave an ash content of 43+% in the tibia.

15802. JANOWSKAJA, B. Über das Wesen der Bezssonoffschen Reaktion auf das Vitamin C. *Wiss. Arch. Landw. Abt. B, Arch. Tierernähr. u. Tierzucht.* 6 (2): 155-160. 1931.—In investigations on the behavior of the chromogenic material towards adsorbents the same reaction as is obtained with the chromogenic substance in lemon juice was obtained with other chemical compounds. The Bezssonoff reaction cannot be considered specific for Vitamin C.—*Author's summary (transl. by H. Levine).*

15804. LAWRYNOWICZ, M. A. Observations relatives à l'influence des vitamines sur les propriétés des microbes et le cours de l'infection. *Jour. Physiol. et Path. Gén.* 29(2): 270-276. 1931.—In scorbutic avitaminosis the disease-resistant powers of the organism are reduced, as shown by the behavior of the leucocytes, the local response to irritants, and the degree of alimentary autointoxication.—*W. R. Fearon.*

15805. LEVADITI, C., et LI YUAN PO. Étude expérimentale de l'ergostérol irradié. *Presse Méd.* 38(11): 168-172. 15 fig. [13 col.] 1930.—This study was undertaken to determine the exact toxicity of ergosterol for laboratory animals; to analyze the mechanism of the calcification of certain organs; and to provoke calcification of preexisting lesions due to infections. Irradiated ergosterol is not a simple chemical substance, but a mixture in variable proportions of pure, unchanged ergosterol, of ergopinacose (Windaus), sometimes of ergosterol peroxid, of vitamin D itself, which is of unknown chemical composition, and of various products of the partial destruction of that vitamin. Administration of irradiated ergosterol by mouth in varying doses to 44 mice, 23 rabbits, 3 kittens, 2 monkeys (1 *Cercopithecus callitrix* and 1 *Macacus rhesus*) and chickens, showed that this substance was perfectly tolerated by laboratory animals, including the monkey, in doses much higher than those used in human therapy. In heavy doses it was toxic, producing progressive emaciation and organic lesions sometimes, but not necessarily, accompanied by heterotopic calcification, due to a disturbance of Ca metabolism in the cytoplasm of certain cellular elements. The absorption of repeated sub-toxic doses produced neither habituation nor hypersensibility in the mouse and the rabbit. Blockage of the reticulo-endothelial system had no appreciable effect on the sensitiveness of the mouse to irradiated ergosterol. Calcification was produced in the kidney, aorta, digestive tube, lungs, liver and myocardium. Still, some animals died of ergosterol intoxication without showing any Ca deposits in the tissues. The mouse, the rabbit, the kitten and the rat were the only animals that showed any calcification worth mentioning. In animals already bearing organic lesions, however, irradiated ergosterol determines a calcification of those lesions. It appears to render experimental tuberculosis benign. Previous studies showed a spontaneous tendency of the lesions of herpetic encephalitis toward calcification. Oral doses of irradiated ergosterol assist in this calcification and aid in cicatricial repair.

15806. LEVENE, P. A. Vitamin B_2. *Science* 71(1852):

668. 1931.—On the purification and concentration of vitamin B_2 from B_1, and on its growth-promoting effects.

15807. **LOOFBOUROW, JOHN R. Vitamin D—A review. I. Ultra-violet absorption spectra in relation to vitamin D. Sections A and B.** *Bull. Basic Sci. Res. [Univ. Cincinnati]* 3(2): 101-156. 5 fig. 1931.

15808. **NORRIS, EARL R., and ANNA E. CHURCH. A study of the antimony trichloride color reaction for vitamin A.** *Jour. Biol. Chem.* 85(2): 477-489. 2 fig. 1930. —The unsaponifiable portion of cod liver oil, tested according to technique of Norris and Danielson, produces no red coloration and the blue color is a linear function of the % concentration. Saturated fatty acids have no effect upon the color produced. Unsaturated acids show a slight inhibitory effect. Oleic acid, with increasing amounts, hastens the rate of fading of the blue color causing a rapid development of red coloration. At lower color values the curve approaches a linear function. A quantitative comparison between different oils can be made only at low color values or on the unsaponifiable portion.—*E. R. Loew.*

15809. **NORRIS, ROBERT J. The destruction of vitamin A by ultra-violet radiations.** *Bull. Basic Sci. Res. [Univ. Cincinnati]* 3(2): 89-100. 1931.—Biological and colorimetric assays of oils for vitamin A do not agree throughout the course of inactivation by irradiation with ultra-violet light. Oils irradiated until biologically inactive still showed 72 to 75% of their original vitamin potency as judged colorimetrically. Destruction of biological activity by irradiation proceeded rapidly after an initial induction period, in which there was little or no inactivation. Destruction of the chromogenic substance began immediately upon irradiation, without an induction period. It is concluded that the chromogenic substance is not vitamin A itself, but some closely associated substance.—*Author's summary.*

15810. **ODAKE, SATORU. Isolation of oryzanin crystals (antineuritic vitamin) from rice polishings. I. Report.** *Proc. Imp. Acad. [Tokyo]* 7(3): 102-105. 1 fig. 1931.—Methods of preparation and purification are given, and results of some tests on polyneuritic pigeons.

15811. **PLANK, G. M. van der. D-vitamine in voedsel voor pluimvee (Davitamon). [Vitamin D in food of chickens (Davitamon).]** [With English, French, and German summaries] *Tijdschr. Diergeneesk.* 58(14): 743-746. 1 pl. 1931.—The author reports excellent results by adding small doses of "Davitamon" to food poor in vitamin D.

15812. **ROHMER, P., et ROBERT DUBOIS. L'influence de la "vitamine A" sur l'action de l'ergostérol irradié dans le rachitisme humain.** *Rev. Française Péd.* 6(5): 604-608. 1930.—In 6 cases of human rickets the addition of vitamin A to insufficient or barely sufficient doses of irradiated ergosterol appeared to be without effect on the rickets, though it apparently stimulated growth (increased stature).

15813. **ROST, F., und W. DIETERICH. Über den Einfluss von Röntgenstrahlen auf vitaminfreie Nahrungsmittel.** *Strahlentherapie* 29(1): 152-160. 9 fig. 1928. —When the fats were previously strongly heated and subsequently radiated with ultra-violet light an increase in weight of rats (fed according to Asada (Biochem. Zeit. 141, p. 179) resulted only when the fat had the structure of bacon. Not every kind of bacon showed favorable reaction after radiation. Animals that had been weakened through a vitamine-free diet show a certain degree of recovery when fed with soft x-radiated bacon, less after hard x-rays.—*F. Rost (transl. by E. A. Wolf).*

15814. **SCHEUNERT, ARTHUR. Der Vitamingehalt der deutschen Nahrungsmittel. (Die Volksernährung. Veröffentlichungen aus dem Tätigkeitsbereiche des Reichsministeriums für Ernährung und Landwirtschaft. Herausgegeben unter Mitwirkung des Reichsausschusses für Ernährungsforschung) 8. Heft. I: Obst und Gemüse; II: Mehl und Brot.** 2nd ed. iv+40p.; 25p. 2 fig. Julius Springer: Berlin, 1930.

15815. **SCHIEBLICH, MARTIN. Vitamin-Gehalt von Nahrungs- und Futter-Mitteln.** *Tabulae Biologicae Periodicae* 1(1): 89-107. 1931.—The content in vitamins A, B, C, and D is tabulated for several hundred substances.

15816. **SHELOW, ELIZABETH, and JOHN R. LOOFBOUROW. A note on the X-ray absorption of ergosterol.** *Bull. Basic Sci. Res. [Univ. Cincinnati]* 3(2): 157-159. 1931.—A corrected curve for soft x-ray absorption of ergosterol, to replace that published earlier.

15817. **SHERMAN, H. C., and S. L. SMITH. The vitamins.** (American Chemical Society Monograph Series. No. 6.) 2nd ed. 575p. [of which p. 351-575 consist of a bibliography.] Chemical Catalog Co., Inc.: New York, 1931. Price $6.—This comprehensive monograph is constructed along the lines of the first edition. A brief general introduction to vitamin theory is followed by chapters on vitamins B (B_1), G (B_2), C, A, D and E. Their distribution in foods, their physical and chemical nature, physiological properties, their relation to nutrition and health and the methods of assay are dealt with in a complete and very readable fashion on the basis of a bibliography to about the middle of 1930. An excellent subject as well as author index adds greatly to the usefulness of the book.—*H. A. Mattill.*

15818. **SHIMIZU, T., und T. HATAKEYAMA. Über das Wachstumsvitamin A. I. Vitamin A-Choleinsäure.** *Zeitschr. Physiol. Chem.* 182(1/2): 57-71. 1929.—A water soluble vitamin A preparation was obtained from the yolks of boiled eggs by preparing a desoxycholeic acid compound. This yellow crystalline substance "gallosterol" has a melting point of 179°, is stable to light and air, and is difficultly soluble in absolute ether and chloroform. Its Na, K, and Ca salts are water soluble. Vitamin A may be separated from gallosterol by boiling with xylene in a CO_2 atmosphere, or by vacuum distillation. Addition of gallösterol to a vitamin free ration of mice checked and caused the disappearance of avitaminosis and also promoted growth.—*J. Kruger.*

15820. **SURE, BARNETT, M. C. KIK, M. E. SMITH, and D. J. WALKER. The specific effect of vitamin B on lactation, growth and water metabolism.** *Science* 73(1889): 285. 1931.—Preliminary report.

15821. **TAKAMIYA, ETSUO. Studies on the vitamin D. III. Antirachitic activation of ergosterol by means of the action of ozone and on the chemical nature of vitamin D.** *Bull. Agric. Chem. Soc. Japan* 7(1/3): 18-19. 1931. —Abstract of Japanese paper in *Jour. Agric. Chem. Soc. Japan.*

15822. **TAKEDA, KENJI. On the color reaction of vitamin A.** [In Japanese with English résumé.] *Tottori Nogaku-Kwaiho (Transl. Tottori Soc. Agric. Sci.)* 2(1): 1-44. 1930.—Three new color reactions are proposed for testing vitamin A: kaolin carbon bisulphide reaction, 1:120 $SbCl_5$ chloroform reaction, and 0.1% benzidin acetic acid reaction. The most reliable color reactions which can be applied for general purposes are the following: liquid $AsCl_3$, 1:120 $SbCl_3$, kaolin, fuller's earth, and 30% $SbCl_3$. The author prefers the $AsCl_3$ to the 30% $SbCl_3$ reaction; the latter is more unstable, especially in the mixed preparations.

15823. **THOMAS, BYRON H., and FLORENCE L. MacLEOD. Increasing the vitamin D potency of cow's milk by the daily feeding of irradiated yeast or irradiated ergosterol.** *Science* 73(1901): 618-620. 1931.— Preliminary report.

15824. **VEEN, A. G. van. Das antineuritische Vitamin. IV.** *Rec. Trav. Chim. Pays-Bas* 50(5): 610-616. 1931.— A method is given for the purification of extract containing the anti-neuritic vitamin.

15825. **WILLIAMS, R. R., ROBERT E. WATERMAN, and SAMUEL GURIN. The Jansen and Donath procedure for the isolation of antineuritic vitamin.** *Jour. Biol. Chem.* 87(3): 559-579. 1930.—The application of this procedure to rice polish led to larger losses of activity than those reported by the authors of the process. Applied to yeast the procedure led to still larger losses.

However, in the case of rice polish some of the final products, though non-crystalline, possessed physiological properties approximating those of Jansen and Donath's crystals. A sample of these crystals, kindly furnished by Dr. Jansen, permitted such a comparison to be made. With doses of 0.04 mgm. daily, polyneuritis and death were very much retarded in pigeons fed on polished rice *ad lib.* but weight loss was not avoided. The weight loss appears to be due to the absence from the highly purified products of something which was present in the original rice polish rather than to an insufficient quantity of antineuritic vitamin. The Jansen crystals in daily doses of 0.04 mgm. produced a marked growth response in young rats on a synthetic diet plus autoclaved yeast. The results of physiological tests, usually on both rats and pigeons, of the by-products of the fractionation are also reported.—*R. R. Williams.*

15826. WRIGHT, A. M., and H. O. ASKEW. Colorimetric estimation of vitamin A in fats. *New Zealand Jour. Sci. and Tech.* 11(5): 344-348. 1930.—A brief critical study of the $SbCl_3$ test, with reference to the effect of delayed observation, rancidity, etc., on the color developed (in Lovibond units). Tests seem to indicate the presence of vitamin A in tallow.

15827. YUDKIN, ARTHUR M., MAX KRISS, and ARTHUR H. SMITH. Vitamin A potency of retinal tissue. *Amer. Jour. Physiol.* 97(4): 611-616. 1931.—Of 33 rats kept on vitamin A-free basal diet, 4 were given daily supplements of 20 mgm. pig's retina, 4 received 100 mgm. butterfat, and 3 received no supplement; the remaining 22 received no supplementary food until signs of ophthalmia appeared; then 6 received each 50 mgm. retina, 6, 30 mgm., 5, 20 mgm., 4, 50 mgm. choroid, and 1, 100 mgm. butterfat. In the 6 rats given 50 mgm. and in the 6 given 30 mgm. of dried retina daily after the development of ocular symptoms, the eyes were restored to normal appearance in 3-7 days and in 5-11 days respectively; growth was normal during life, and nutrition found good at necropsy. Of the 5 rats receiving 20 mgm. retina daily, in 4 the ocular symptoms cleared up, but slowly. Growth was resumed, also slowly. Choroid induced no improvement of ocular symptoms and very slow growth; leg weakness or posterior paralysis occurred in the 4 animals of this group.

ANIMAL PHYSIOLOGY

ENDOCRINOLOGY

W. W. SWINGLE, *Editor*

J. J. PFIFFNER, *Associate Editor*

(See also in this issue Entries 15688, 15914, 15915, 15920, 15923, 15927, 15941, 15942, 15943, 15998, 16027, 16033, 16055, 16060, 16061, 16082, 16122, 16129, 16154, 16163, 16170, 16171, 16187, 16224, 16243, 16244, 16267, 16303, 16329, 16358, 16416, 16431, 16644, 16645, 17311, 17341, 17345, 17351, 17352, 17353, 17354, 17356, 17357, 17358, 17396, 17402, 17427, 17441, 17442)

15828. AGNOLI, RENZO. L'ormone ipofisario lipoideo e la vitamina della fertilità. [Lipid hormone of the hypophysis and vitamin of fertility.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 937-939. 1930.—In mice fed a diet lacking the fertility vitamin the administration of lipid hormone of the anterior lobe can not prevent alterations of the seminal elements of the testicles. No alteration occurred in the ovary, but a marked increase in weight of the uterus. Alterations are present in the sexual glands of offspring of animals kept on a diet lacking the vitamin of fertility.—*M. Comel.*

15829. ARTUNDO, ARGENTINA. Metabolismo basal en los perros hipofisoprivos. [Basal metabolism in hypophysectomised dogs.] *Rev. Soc. Argentina Biol.* 6(9/10): 497-506. 1930.—In 5 out of 8, a lower basal metabolism was found.—The average for the 8 was −15.8% (from 0 to −32%). The average per sq. m. per day was 666 Cal. in operated and 795 in normal animals. R. Q. was the same in both series.—*J. T. Lewis.*

15830. ARTUNDO, ARGENTINA. Acción específica dinámica en los perros hipofisoprivos. [Specific dynamic action in hypophysectomised dogs.] *Rev. Soc. Argentina Biol.* 6(9/10): 507-512. 1930.—The same values as in normal controls were found.—*J. T. Lewis.*

15831. ASHER, LEON, und HANS WAGNER. Untersuchungen über die Spezifität der Asherschen Methode der Prüfung der Schilddrüsenfunktion durch Sauerstoffmangel. *Zeitschr. Ges. Exp. Med.* 68(1/4): 32-81. 1 fig. 1929.—Rats and guinea pigs were placed in an air tight glass bell jar until symptoms of anoxemia appeared. The CO_2 was absorbed by KOH, and the pressure as it was reduced by the consumption of O was kept normal by the introduction of H. Animals fed with desiccated thyroid or injected with a thyroid extract showed a much more marked susceptibility to O deficiency than normal animals. The susceptibility was more marked in the animals fed per os than in those injected subcutaneously. The oral feeding and subcutaneous injection of splenic, thymic, and testicular substances did not influence the effects of O deficiency. The administration of thyroid and thymus together produced the same result as of thyroid alone. The conclusion is that the increased sensitivity to O deficiency is a specific reaction of increased thyroid function.—*L. Seed.*

15832. BACQ, Z. M., and S. DWORKIN. The action of parathyroid extract in sympathectomized animals. *Amer. Jour. Physiol.* 95(3): 614-619. 1930.—Responses (increase of blood Ca, muscular weakness, polypnea, etc.) to parathyroid extract (Parathormone) were displayed by 6 normal cats, essentially similar to those observed in dogs by previous investigators. Toxic symptoms occurred after prolonged administration, but the time of onset did not correspond to the highest blood Ca level. In 6 sympathectomized cats and 2 sympathectomized dogs the basal level of blood Ca was not outside the average range for normal animals (confirming the findings of Lamelas, 1930). The absence of central sympathetic nervous impulses did not appreciably influence the response of cats and dogs to parathyroid extract.

15833. BARTOLI, OTTORINO. Paratiroidi e rigenerazione muscolare. [The parathyroids and muscular regeneration.] *Policlinico (Sez. Chir.)* 37(10): 469-475. 1930.—Pieces of muscle were excised from a hind foot of each of 40 guinea-pigs; 20 were injected with varying doses of parathyroid extract (0.15-5.5 gm.); 10 received injections of 1.6-8 gm. of heterogeneous proteins, and 10 controls were not treated. The animals were killed 2-90 days after operation, and the scar tissues examined. The regeneration of the tissues did not appear either to be retarded or accelerated by the treatment, and no complete anatomic reconstitution of the continuity of the muscular fibers was observed.

15834. BERGER, LOUIS. La neurocrinie: considération histologique sur le mécanisme de la secretion interne. *Presse Méd.* 38(101): 1729-1731. 6 fig. 1930.—The endocrine glands are generally understood to discharge their secretions into the blood stream. Berger maintains that there are 2 classes of endocrine glands, which he terms hemocrine and neurocrine respectively; the latter discharge their secretions along the nerves. Foreign toxins, like those of tetanus and diphtheria, he says, act in this manner; why not the products of normal metabolism? He offers histologic evidence that the testicle and the hypophysis represent the neurocrine type of glands.

15835. **BOETERS, HEINZ. Prolanversuche an jungen männlichen Ratten.** *Deutsche Med. Wochenschr.* 56 (33) : 1382-1385. 1930.—The series included 54 controls and 68 experimental rats. Prolan exercised, in moderate doses, a maturing effect on the fetal and infantile germinative tissue. In animals advancing toward maturity the maturing effect was weaker; larger doses injured the germinative tissue while producing hyperplasia of the interstitial tissue and in extreme cases marked increase of the sexual organs. Of 6 ♂ and 4 ♀ rats, the increase in body weight of the 3 ♂♂ and 2 ♀♀ receiving prolan was 23-29% as against 38-53% for the 3 ♂ and 2 ♀ controls.

15836. **BORST, M., A. DÖDERLEIN, und D. GOSTIMIROVIÉ. Geschlechtsphysiologische Studien. I. Mitteilung. Ueber die Einwirkung des Hypophysenvorderlappenhormons (Prolan) auf juvenile männliche Mäuse.** *Münchener Med. Wochenschr.* 77 (12) : 473-475. 1930. —Within 100 hrs. large doses of prolan produced histologically demonstrable effects on the young ♂ mouse, involving primarily the generative portion of the testicle and altogether comparable to those produced on the young ♀ mouse. In the ♂ subjects prolan produced rapid division of spermatogonia and spermatocytes not seen in controls, both series of animals being not more than 26 days old at death.

15837. **CAYLOR, HAROLD D., and CARL F. SCHLOTTHAUER. The influence of diet in the development of myxedema in thyroidectomized pigs.** *Amer. Jour. Physiol.* 89 (3) : 596-600. 1929.—Of 10 Duroc pigs 2 mos. old (5 [Group 1] on a low protein, high carbohydrate diet and 5 [Group 2] on a high protein, low carbohydrate diet), 2 in each group were thyroidectomized, the other 3 serving as controls. In Group 1 the 3 normal controls gained more weight than their thyroidectomized litter mates, which, however, did not develop myxedema and remained as alert as the normal controls. In Group 2 the thyroidectomized swine grew in stature equal to their litter mate controls, made greater gains in weight, but developed myxedema, losing the natural curiosity characteristic of normal young pigs, becoming stupid and inert. This indicates that the quantity of protein in the diet is of significance in the development of the edema of myxedema in thyroidectomized swine, and suggests that the mental retardation seen in myxedema patients may be due in part to pressure from edema in the central nervous system.

15838. **CHAMBERLAIN, E. NOBLE. The effect of insulin and other endocrine extracts on the cholesterol content of tissues.** *Jour. Physiol.* 70 (4) : 441-448. 1930. —Experiments were made to determine the effects of overdosage with endocrine extracts on the cholesterol content of the suprarenals and other tissues. The extracts used were thyroid, "pituitrin" and insulin. The following results were obtained: 1) With thyroid feeding [in 7 rabbits] no significant changes in any tissues. The weight of the adrenals, however, did not diminish in proportion to the body weight if the loss of weight was severe. 2) "Pituitrin" produced no changes [in 12 rabbits]. 3) Insulin [in 18 rabbits] caused a marked decrease in the cholesterol content of the suprarenals, but this effect was not so pronounced if the hypoglycemia was prevented by simultaneous administration of glucose. None of the extracts produced any material changes in the cholesterol content of blood, liver or spleen. It is suggested that the synthesis of cholesterol by the suprarenal glands is controlled by the internal secretion of the pancreas.—*Author's summary.*

15839. **COGNETTI de MARTIIS, LUIGI. Contributo alla conoscenza della distruzione fisiologica dei prodotti sessuali maschili. [Physiological destruction of the male sex products.]** *Boll. Mus. Zool. e Anat. Comp. R. Univ. Genova* 10 (33) : 1-16. 1930.—Numerous findings on various types of animals have corroborated the author's work (1910) on the physiological destruction of the male sex products. Such physiological destruction is correlated with the production of the hormone. Schieffendecker (1904) and Cunningham (1908) are to be accorded priority, rather than Cattaneo (1913), as the first to consider hormones as developmental factors.—*L. Cognetti de Martiis (transl. by R. A. Muttkowski).*

15840. **COREY, E. L. Foetal and early postnatal responses of rat gonads to pituitary injections.** *Physiol. Zool.* 3 (3) : 379-391. 8 fig. 1930.—An attempt was made to ascertain the time at which the mammalian organism first shows a positive response to the pituitary secretion. Fetal and newborn albino rats were subjected to the injection of fresh, macerated, whole pituitary gland from adult albino rats, in physiological saline solution and fresh blood plasma. The results were practically identical, irrespective of the medium employed. Accelerated differentiation in the gonad was selected as an indication of response to injection. No reaction to pituitary injection was observed in the fetal rat of either sex. Accelerated differentiation was observed in the ♂ on the 10th day of postnatal life, following the daily injection of pituitary substance. In the ♀ a similar reaction was observed 15 days after parturition. The reaction of the gonad to pituitary injection manifested itself in the ♂ in an altered histological picture, due to increased tubular length and diam., as well as to an increase in the size of the interstitial cells. An increased number of cells over those present in the controls was seen within the germinal epithelium. Increase in follicular size and the amount of follicular fluid present indicated a response to pituitary injection in the ♀.—*Author (courtesy Wistar. Bibl. Serv.).*

15841. **CROWDEN, G. P. The replacement of depleted adrenaline in the suprarenals.** *Jour. Physiol.* 68 (3) : 313-323. 5 fig. 1929.—By subjecting 13 cats to prolonged chilling, the adrenin in the adrenal glands was markedly reduced. The replacement of adrenin, when the animals were placed in warm surroundings, was followed by the Folin-Dennis-Cannon method. It was found that recovery occurred in denervated as well as innervated glands.—*J. C. Donaldson.*

15842. **DINGEMANSE, E., und S. E. deJONGH. Die Mehrheit der Sexualhormone der Hypophysis; Wirkung auf weibliche Tiere.** *Pflüger's Arch. Ges. Physiol.* 226 (4/5) : 543-546. 1931.—The authors support the thesis that urine of pregnancy contains 2 hormones of hypophyseal origin: (1) a follicular growth hormone, and (2) a luteinising hormone.—*M. H. Friedman.*

15843. **DINGEMANSE, E., J. FREUD, S. KOBER, E. LAQUEUR, A. LUCHS, und A. W. P. MÜNCH. Zur Trennung des männlichen (Sexual-) Hormons vom weiblichen (Menformon).** *Biochem. Zeitschr.* 231 (1/3) : 1-5. 1931.—Since extract of testes and urine from ♂♂ contains ♀ hormone, a method of separation was developed, in the course of which it was found that the ♂ hormone, in contrast to menformon, has a basic rather than an acid character.

15844. **DINGEMANSE, E., J. FREUD, S. KOBER, E. LAQUEUR, und A. W. P. MÜNCH. Reinigung des männlichen Hormons durch fraktionierte Hochvakuumdestillation. [Purification of the male hormone by fractional distillation in high vacuum.]** *Naturwissenschaften* 19 (7) : 166. 1931.

15845. **DOISY, EDWARD A., SIDNEY THAYER, and CLEMENT D. VELER. The crystals of the follicular ovarian hormone.** *Proc. Soc. Exp. Biol. & Med.* 27 (5) : 417-419. 1930.

15846. **EUFINGER, H., und H. WIESBADER. Reid Huntsche Reaktion und Schwangerschaft. II.** *Arch. Gynäkol.* 142 (3) : 662-667. 1930.—In 45 white mice the hormone of the anterior lobe of hypophysis produced a great rise in the acetonitril resistance (33 mice surviving while all the controls died), apparently independent in degree of the amount of hormone. In 30 mice ovarian hormone produced a slighter rise in resistance, 13 of the treated mice surviving. Of 35 animals treated with the urine of pregnant women, 13 survived varying doses of acetonitril poisoning, as against 1 of (apparently 4) controls. The authors conclude that the outcome of the Reid Hunt reaction in mice previously treated with urine from pregnant women does not indicate with any cer-

tainty the increase in the blood of pregnancy of thyroxin-like substances. They incline to believe that hormone of the anterior lobe of the hypophysis, and perhaps also ovarian hormone, increases resistance to acetonitril poisoning.

15847. **FENGER, F., R. H. ANDREW, and J. J. VOLLERTSEN.** Geographic location and the iodine content of the thyroid gland. *Jour. Amer. Chem. Soc.* 53(1): 237-239. 1931.—Calculated on the desiccated fat-free basis, the yearly average for hog thyroid glands from North Dakota is 0.32% I, while that of Texas glands is 0.60% I. The seasonal variation in the I content is most pronounced in the northern glands. The higher I level of the Texas glands and the greater seasonal fluctuations of the North Dakota thyroids are attributed to the geographic location of the two states.—*Authors' conclusions.*

15848. **FEVOLD, H. L., F. L. HISAW, and S. L. LEONARD.** The gonad stimulating and the luteinizing hormones of the anterior lobe of the hypophysis. *Amer. Jour. Physiol.* 97(2): 291-301. 5 fig. 1931.—Experiments on immature ♀ rats (representative results from 6 cited) show that the anterior lobe secretes 2 hormones which act on the ovary; a gonad stimulating factor which stimulates follicular growth, and a luteinizing factor which causes lutein growth. These have been extracted quantitatively from dried anterior lobe by aqueous pyridine. The 2 hormones have been separated into 2 different preparations each giving a different physiological reaction. When the 2 fractions are again united the resulting preparation is entirely similar to the first crude extract. The luteinizing hormone cannot act on the immature ovary. The infantile ovary must be stimulated to follicular activity by the gonad stimulating hormone before a characteristic "mulberry" ovary can be produced.—*Authors' summary.*

15849. **FIROR, W. M., and G. S. EADIE.** The effect of epinephrine on muscle glycogen in the absence of the liver, and a modification of the operation for liver removal. *Amer. Jour. Physiol.* 94(3): 615-618. 1930.—The liver was totally extirpated in 14 cats to determine if a decrease of muscle glycogen would follow, indicating a peripheral action of epinephrine on carbohydrates. No sign of peripheral action of epinephrine was obtained, either on muscle glycogen or on the rate at which glucose leaves the blood (the latter confirming the work of Soskin). These results differ from the work of Cori and Cori, possibly, it is suggested, because of technic and because of the difference between the rat and the cat.

15850. **FRIEDMAN, J. L., and L. B. NICE.** Multiple ovaries and the oestrous cycle in the white rat. *Amer. Jour. Physiol.* 95(1): 40-42. 1930.—Multiple ovarian transplants in [22] normal ♀ rats nearly doubled the number of oestrous cycles as demonstrated by the vaginal smear method. The voluntary activity of these rats was not markedly increased after the operation. Pseudopregnancy was induced in 10 of the 19 animals by the glass rod stimulation of Long and Evans. Exposure to a vasectomized ♂ produced this condition in 9 of these rats.—*Authors' summary.*

15851. **GANFINI, G.** Azione della placenta sulla metamorfosi e sullo sviluppo della muscolatura liscia nei girini. [Action of placenta on metamorphosis and development of smooth muscle in tadpoles.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 949-953. 4 fig. 1930.—In raw and cooked placenta substances are contained (in smaller amount than in muscle) which stimulate development and metamorphosis of tadpoles, and activate development of smooth muscle.—*M. Comel.*

15852. **GANFINI, G.** Paratiroidi ed ergosterolo irradiato. [Parathyroid glands and irradiated ergosterol.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 953-955. 1930.—Irradiated ergosterol cannot replace parathyroid hormone; it merely delays the onset of tetany, without influencing the cachexia.—*M. Comel.*

15853. **GERÉB, PAUL.** Über den Einfluss der weiblichen Geschlechtshormone auf die juvenilen männlichen Keimdrüsen. Die Wirkung des Schwangerenurins auf die männlichen Keimdrüsen bei juvenilen weissen Mäusen. *Zeitschr. Geburtsh. u. Gynäkol.* 99(3): 443-451. 5 fig. 1931.—Filtered pregnancy urine 0.3-0.4 cc. twice daily for 3 days, at least 4 hrs. elapsing between any 2 injections, was injected into 105 white mice (29 controls), which were killed 1 day after last injection. In 89 mice the testes were distinctly enlarged, in 16 they showed little or no change; controls were unchanged. Examination revealed premature, pronounced spermatogenesis (grade II). The urine was freed of prolan by heating to 100° for ½ min.; 84 mice were injected as before (21 controls). Macroscopically the genitalia were unchanged; microscopically, spermatogenesis: grade I in 60, 24 unaffected. Mice (20) treated with boiled urine extracted with ether to remove the ♀ hormone showed no change in the testis. Spermatogenesis grade II occurred within 100 hrs. in 13 of 15 mice treated with 5-10 mouse units daily of folliculin or sistomensin. Using urine positive and negative to the Aschheim-Zondek reaction (A.-Z. R.), some extracted with ether to remove the ♀ hormone, and the same technic, it was found that A.-Z.R. II and III urine gave spermatogenesis grade II. With negative urine 17 tests were negative, 3 positive; of these negatives 11 showed A.-Z.R. I before ether extraction. While spermatogenesis can be called forth by the ♀ hormone it is always and distinctly less than with hormone of the anterior lobe of the hypophysis.

15854. **GRÜTER, F.** Aktivierung von somatisch-psychisch unterentwickelten Zuchttieren durch Anreicherung des Keimdrüsenhormons. *Arch. Frauenk.* 16(4): 279-287. 6 fig. 1931.—In 17 infantile bulls testicular transplants produced full development in 11, had no action in 6. In some cases the improvement lasted for yrs. Transplantation of ovarian tissue into 60 cows (castrated, infantile, or with atrophic ovaries) resulted in increased milk production or conception in a large proportion. In prepubertal cattle (number not stated) transplantation of sex glands hastened maturity. In a young bull calf implanted with ovarian tissue development appeared inhibited; the opposite procedure did not seem to affect development. In 20 bulls in which vasoligature was performed, reactivation was obtained in 15.

15855. **GRÜTER, F.** Hypophysen-Vorderlappen-Extrakt-Wirkungen auf kleine Laboratoriumstiere und auf Haustiere. *Arch. Frauenk.* 16(4): 287-295. 1931.—Of 6 goats, 2 normal and 2 thyroidectomized received 15 gm. anterior lobe extract, another normal received 3½ gm., and 1 received none. One normal and 1 thyroidectomized were lame for 2 days, the other 2 showed oestrus, unusual in the spring. The increase in milk secretion (animals in full lactation a short time after partus) was less pronounced with each injection, appearing in only 1 on the 4th injection. In contrast to the cow, the action was of short duration. After injection the milk was lower in sp. gr., in fat, and in dry matter than in controls. This was more pronounced in the animals which were also thyroidectomized. Thyroidectomy reduced the quantity of milk by ½. The mineral content of the milk was somewhat increased by injection if the thyroid gland was retained. Phosphoric acid and Ca were greatly increased if the thyroid was present, otherwise phosphoric acid was somewhat, and Ca greatly, lowered. Cl was greatly increased and unaffected by the thyroid. The other minerals were remarkably constant. The alkalinity of the minerals in cow's milk was weakly positive, in goat's milk weakly positive or negative, thyroidectomy seeming to promote acidity. Two and 3 injections of anterior lobe of the pituitary into 2 bulls that had regressed in reproductive ability brought reactivation; in 3 infantile bulls 4-5 injections were ineffective.

15856. **HARTMAN, FRANK A., KATHARINE A. BROWNELL, and WARREN E. HARTMAN.** A further study of the hormone of the adrenal cortex. *Amer. Jour. Physiol.* 95(3): 670-680. 1930.—Cats whose adrenals are removed in 2 stages survive 6-11 days when untreated. Those injected with a small quantity of isotonic salt solution survived the shorter period. Increase in the

interval between the operations, above a few days, does not lengthen the survival period. An increase in the operation time when not too great does not decrease the survival period. Adrenalectomized animals show considerable loss in weight if they survive many days. Cortin, the hormone of the adrenal cortex which is essential to life, is carried down by the precipitated material formed when NaCl is added to the point of saturation or below. Adrenalectomized cats treated with an extract made from such a precipitate survived an average of 26.4 days. Heating the NaCl precipitate extract to 80° C. for 5 min. destroys its potency. Precipitation of the protein in the NaCl precipitate extract by ethyl alcohol does not diminish the potency. A concentrated preparation of cortin can be made by extracting the cortex with ethyl ether which dissolves very little epinephrine. The ether is removed by distillation, the residue being extracted with warm 80% ethyl alcohol. Much inert material is removed by chilling and filtering. After removing the alcohol, the residue is taken up in water. The aqueous solution contains the cortin. This extract acts as a substitute for the adrenal cortex. Adrenalectomized cats are being kept alive in good condition indefinitely by its use. The growth of young rats whose adrenals have been removed has been maintained until the adult stage is reached by injecting the extract. Such rats behave normally in every way, even to raising litters. Cortin treated adrenalectomized cats eat well, gain in weight, play, fight and act like normals. Cortin lowers the blood urea when high. It increases the resistance to infection and cold. It speeds the repair of injury and enables the animal to withstand operative or other trauma. By its use it is possible to remove both adrenals at 1 operation and maintain life indefinitely. Animals allowed to pass into the last stages of adrenal insufficiency which just precede death have been revived by cortin. A case of Addison's disease with a systolic blood pressure of 50 mm. and a pulse of 120 per min. together with other characteristic symptoms has been revived by the use of cortin. Cortin is apparently not effective by mouth. When given subcutaneously one can begin to detect its effects in a few hours.—*Authors' summary.*

15857. **HIRSCH, MAX. Handbuch der inneren Sekretion. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. [Handbook of internal secretion. Anatomy, physiology and pathology of the endocrine glands.]** 1428p. 173 fig. Curt Kabitzsch: 1929. Pr. 135 M.

15858. **HOFBAUER, J. Concerning the etiology of hyperplasia of the endometrium.** *Surg., Gynecol. and Obstetr.* 52(2): 222-227. 5 fig. 1931.—In an unstated proportion of 28 guinea pigs treated parenterally with extract of beef anterior pituitary, and more markedly in 18 guinea pigs into which bits of fresh anterior pituitary were transplanted there were produced (so long as the ovaries were preserved) conditions in the uterine mucosa and the ovaries practically identical with those in human endometrial hyperplasia; after oöphorectomy the process was limited to the basal portion of the endometrium. These observations suggest that hyperplasia may reasonably be regarded as the manifestation of an overactivity of the anterior pituitary lobe, the internal secretion of the ovary being essential for the changes occurring in the upper part of the uterine mucosa, while the basal layer is entirely under the control of the anterior pituitary lobe.

15859. **HORSTERS, HANS. Stoffwechselversuche mit Hormonpräparaten an Kaninchen.** *Zeitschr. Ges. Exp. Med.* 73(1/2): 167-179. 1930.—Anterior lobe of hypophysis (substance and 2 preparations, used on 2 ♀, including 1 pregnant, and 2 ♂ rabbits) produced an extreme rise in urinary phosphate excretion, amounting in some cases to more than 500%; generally a decrease in NaCl excretion and a phosphate retention in the feces. Posterior lobe of hypophysis (2 preparations, used on 1 pregnant and 3 ♂ rabbits), during the experimental period produced a retention of urine and of urinary phosphate and NaCl, followed by excessive excretion of urine and of both constituents. Placenta hormone (progynon, used on 1 ♀ rabbit) caused retention of phosphate and NaCl, with hypercalcemia and hypercholesteremia. Epinephrine (suprarenin, used on 2 ♂ rabbits) produced marked decrease in total urine, retention of NaCl, and increase of fecal P, with striking rise of total acid-soluble (organic) P in the blood. Thyroxin (used on 2 ♂ rabbits) produced increase in total urine, urinary phosphate and NaCl and fecal P. Parathyroid extract (used on 2 ♂ rabbits) decreased the total urine, urinary NaCl and fecal phosphate, with decrease of urinary phosphate in 1 case and no change in the other.

15860. **HOUSSAY, B. A., y A. BIASOTTI. Sobre la substancia hipofisaria que refuerza la diabetes pancreática. [Diabetogenic substance of the anterior pituitary.]** *Rev. Soc. Argentina Biol.* 7(1): 3-12. 1931.—Hypophysectomy antagonizes the appearance of pancreatic diabetes in toads; subcutaneous implantation of 1 or 2 glandular lobes (anterior lobe of mammals) is followed by an intense diabetes. The intermediate-neural lobe (posterior lobe of mammals) is less active and all other organs of the toad tested were inactive. This same activity was found in the anterior pituitary of fishes, batrachians, birds and mammals, including man. The anterior lobe kept in acetone maintains its activity. The active principle is soluble in water and 60% alcohol, insoluble in absolute alcohol, ether, acetone, chloroform and benzene; it is destroyed at 100°C., does not pass the ultrafilter and is easily absorbed. It differs from the principle with sexual activity in that it is equally active in all species whatever its origin.—*J. T. Lewis.*

15861. **IVY, A. C., G. KLOSTER, H. C. LUETH, and G. E. DREWYER. On the preparation of "cholecystokinin."** *Amer. Jour. Physiol.* 91(1): 336-344. 1929.—A method is outlined for the preparation of "cholecystokinin," which yields a uniform product containing 3-4 doses of secretin for 1 of "cholecystokinin," free of vasodepressor action, and causing gall-bladder contraction in 3-6 mgm. doses (from dog's mucosa) and in 5-10 mgm. (from hog's mucosa) doses, when administered intravenously. The authors can make a solution which contains secretin but no "cholecystokinin," and a solution which contains "cholecystokinin," but no secretin. This observation leads to the conclusion that "cholecystokinin" is not secretin.—*Authors' summary.*

15862. **JONGH, S. E. de. Die Wirkung der Sexualhormone der Hypophyse auf männliche Tiere.** *Pflüger's Arch. Ges. Physiol.* 226(4/5): 547-558. 5 fig. 1931.—Following the injection of extracts of urine of pregnancy into immature male mice, no significant changes in the weight of the testicles were noted, nor was spermatogenesis affected. The accessory genitals, however, especially the seminal vesicles, showed marked increase in weight. Histological study of the testicle revealed some changes which might be interpreted as growth of interstitial cells in the treated animals. From parallel experiments on immature females, it seems that the factor responsible for the effects in the male is the B factor (luteinising). —*M. H. Friedman.*

15863. **JONGH, S. E. de, und ERNST LAQUEUR. Antagonismus von Menformon und Hormonen des Hypophysenvorderlappens.** *Pflüger's Arch. Ges. Physiol.* 227 (1/2): 57-70. 2 fig. 1931.—In immature and mature male mice the effects of menformon and "anterior pituitary hormone" on the accessory genitalia were determined. The authors interpret their results as showing that relatively large doses (as high as 40 units) of menformon inhibit the usual stimulating effects of the "anterior pituitary hormone" on the accessory organs of the male. It was noted, however, that in males injected with "anterior pituitary hormone," menformon was incapable of producing testicular atrophy.—*M. H. Friedman.*

15864. **JUHN, MARY, F. D'AMOUR, and E. B. WOMACK. The effects of simultaneous injections of the female and male hormones in capons.** *Amer. Jour. Physiol.* 95(3): 641-649. 1 pl. 1930.—The effects of combined injections of the ♀ and ♂ hormones and of alternate in-

jections on successive days were studied in [5] adult capons. The birds receiving the simultaneous injections developed ♀ plumage and ♂ headfurnishings. The same results were obtained when the hormones were mixed "in vitro" for 24 hrs. and 48 hrs. respectively previous to injection. When the hormones were administered in the same concentration but on alternate days ♀ plumage was not obtained and the headfurnishings showed only very slight growth. There are no indications of an antagonism between the chemically prepared sex hormones with the preparations used in the adult capon, neither is there an intensification of the action of 1 hormone in the presence of the other.—*Authors' summary.*

15865. **KORENCHEVSKY, VLADIMIR. The influence of the hypophysis on metabolism, growth and sexual organs of male rats and rabbits. II. Influence of extracts of hypophysis on the body weight, weight of fat, of sexual organs and of endocrine organs of rats.** *Biochem. Jour.* 24(2): 383-393. 1930.—A slightly alkaline extract, about pH 7.4 was prepared from the anterior lobe of the pituitary (ox) which had been ground with glycerol, kept at −5° and injected intraperitoneally into normal, cryptorchid and castrated young and adult male rats in amounts of from 1 to 2 cc. No decided influence was noticed on the growth of the animals as judged by weight. Body fat as judged by the intra-abdominal fat was decreased on the average by about 24%. Under the influence of injections of the extract the weight of penis, testes, and prostate with seminal vesicles was decreased to the greatest extent in cryptorchid animals (on an average for these organs by 31, 30 and 62% respectively). This effect was less noticeable in normal and absent in castrated rats. The weight of the thyroids was decreased by about 17% in normal and cryptorchid animals, but not significantly in castrated rats. It is concluded that the anterior lobe contains substances diminishing the weights of the penis, prostate, seminal vesicles, testes, thyroids and decreasing fat deposition and N metabolism.—*V. Korenchevsky.*

15866. **LEINATI, FAUSTO. Sulla liponecrosi sperimentale del sottocutaneo. (Nota seconda.) [Experimental subcutaneous liponecrosis.]** *Minerva Med.* 9(36): 372-382. 12 fig. 1929.—When experimental liponecroses were produced in rabbits and guinea pigs from which gonads and thyroid had been removed, the animals put on a large amount of fat, and great tumefactions occurred at the points of trauma, in which small foci of subcutaneous liponecrosis could be found. Apart from the greater obesity the results were about as reported in the author's first note, when only one type of gland was removed at a time.—*F. Leinati (transl. by P. Popenoe).*

15867. **LUDWIG, F., und J. von RIES. Die Beeinflussung des Brunsthormons durch Röntgen-, Rot- und Ultravioletstrahlen.** *Zentralbl. Gynäkol.* 55(3): 137-139. 1931.—No alteration in the action of the follicular hormone (progynon-P.) was observed in the mouse test after irradiation with 2000 R. Ultraviolet light (2-4 hrs., 60 cm.) rendered P. inactive. Irradiated with red light (3-5 hrs., 200 watt lamp, 40 cm. distance) activity increased and the vaginal reaction became particularly pronounced. While ½ mouse unit of normal P. called forth a slight vaginal reaction, when irradiated with red light ½ unit called forth a pronounced reaction; ¼ unit still showed a reaction but 1/10 mouse unit was inactive. Hormone rendered inactive by U.V. could be reactivated by red light as shown by the vaginal reaction.

15868. **LUETH, H. C., A. C. IVY, and G. KLOSTER. Further observations on the action of "cholecystokinin."** *Amer. Jour. Physiol.* 91(1): 329-335. 1929.—The gall bladder has been observed to contract under direct vision following the injection of "cholecystokinin." This has no effect on liver volume. If vasodilatin is present in the preparation of "cholecystokinin," the change in intra-gall-bladder pressure lasts much longer than the change in liver volume due to the dilatin. "Cholecystokinin" has no detectable effect on gastric motility. Its effect on intestinal motility is variable. Morphine hypodermically in some animals causes an exaggerated "tonus rhythm" of the gall bladder, which is not materially affected by atropine. Atropine, however, causes some relaxation of the gall bladder. Bile and bile salts administered intravenously cause a relaxation of the gall bladder in effective doses. Ergotamine tartrate stimulates the gall bladder and has no effect on "cholecystokinin" action. $MgSO_4$ in 200 mgm. doses (30 lb. dog) diminishes the "cholecystokinin" action, but does not abolish it. The diaphragm, thoracic and abdominal muscles play no part in the action of "cholecystokinin" on the gall bladder. An occasional spontaneous contraction of the gall bladder occurs in some dogs which cannot be accounted for. Dogs vary in their response to "cholecystokinin," the usual effect lasting 10-60 min. Occasionally the gall bladder will not relax, or return to normal for 2 or 3 hrs. after an injection. The gall bladder of the cat and dog are caused to contract on the intravenous administration of an adequate dose of "cholecystokinin." The authors failed to record a contraction for the gall bladder of the rabbit.—*Authors' summary.*

15869. **MACCHIARULO, O. Sull'azione morfogenetica della tiroide embrionale. [The morphogenetic action of embryonic thyroid gland.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 942-944. 1930.—Fetal thyroid gland exerts on tadpoles a morphogenetic influence qualitatively identical with that of thyroid glands of adult animals, the latter showing however a greater activity. The activity of fetal gland increases with fetal development. Functional activity is thus shown by the thyroid in prenatal life.—*M. Comel.*

15870. **McCLENDON, J. F., LILLAS MYRICK, CLAIRE CONKLIN, and I. H. WILSON. Ovarian hormone and metabolism.** *Amer. Jour. Physiol.* 97(1): 82-85. 1931.—In 23 women, aged 19-35 yrs. (mean 21.2 yrs.) the authors studied metabolism in the period between menstruations on the hypothesis that any changes are due to changes in concentration of hormone. They found a slight rise in basal metabolic rate. Since this rise is less than the daily variations, a large number of determinations (342) had to be made to reduce the probable error. The authors found an increase in the volume of the nipples during the same period. As the endometrium increases during this period, it seems possible that the rise in basal metabolic rate may be due to the growth of tissue in the endometrium and mammary glands. As to what hormones are concerned with these changes, the authors have only the report by McClendon and Burr that injection of follicular hormone increased the basal metabolic rate of 2 women lacking ovarian functions. There was no quantitative relation between the amount of hormone injected and the rise in basal metabolic rate. Probably a hormone from the corpus luteum causes the changes found, or they are due to more than 1 hormone.

15871. **MIGLIAVACCA, ANGELO. L'azione stimolante e sterilizzante sull'ovaio degli estratti testicolari in funzione della dose: il meccanismo della sterilizzazione. [Stimulating and sterilizing action on the ovary of testicular extracts as a function of the dosage.]** *Boll. Soc. Med.-Chir. Pavia* 44(3): 433-439. 1930.—An unspecified number of sexually mature ♀ guinea pigs and rats received intramuscular injections of homogeneous testicular extract and were killed 15-30 days later. The ovaries of animals treated with 0.25-0.5 cc. were hyperemic, remarkably rich in graafian follicles, the large majority in advanced stage of development and at the periphery of the ovary frequently reduced by the pressure of numbers to rectangular or irregularly polyhedral form with thin interfollicular walls, but the individual follicles normal and the ova very distinct. The author has never seen ovaries in similar functional condition in normal animals. Doses of 1-2 cc. produced in 15-30 days less hyperemia of the ovaries, fewer maturing follicles, but marked increase in subepithelial connective tissue. The strata of the germinative epithelium were increased all over the epithelial surface of the ovary with occasional marked invagination. In the ovaries of animals treated with 4 cc. extract the increase

of subepithelial connective tissue was still more marked; the tissue itself was more compact. The germinative epithelium was generally composed of a single layer, with only here and there a double or triple layer of epithelial cells. The majority of the follicles were atresic, with a thickened granulosa, pyknotic nuclei and chromatin broken into fragments; mitoses rather rare. Hence the action of testicular extract on the ovaries seems to be in direct relation to the quantity of the dose.

15872. **MITZKEVITCH, M. S. Die Abhängigkeit der formbildenden Reaktion von der Reife des Somas und der Anwesenheit des Geschlechtshormones.** *Endokrinologie* 6(3): 167-188. 6 fig. 1930.—The nipples of the guinea pig are used as indicators. Ovaries transplanted to castrated males produce development of nipples practically as large as in the normal female. The development of secondary sex characters is a double reaction based upon the age of the soma which permits the sex gland to produce the hormone which in turn compels the development of the nipple.—*B. Cunningham.*

15873. **MOLINENGO, L. Contributo allo studio della reazione ovarica nella topolina impubere all'azione dell-'orina di donna gravida. [Ovarian reaction in immature mice to the urine of the pregnant woman.]** *Clin. Ostetrica* 32(7): 385-395. 5 fig. 1930.—About 30 ♀ mice aged 3-4 wks. were subcutaneously injected with urine of pregnancy, divided into 3 series of 10 mice each, receiving 6 injections each of 0.2, 0.5 and 1 cc. each respectively. Of the 10 mice receiving 6 injections of 0.2 cc. each, 3 gave the 1st type of hypophyseal reaction and the other 7 the 1st and 2nd type. Of the 10 treated with 6 injections of 0.5 cc. each, 8 gave the 1st, 2nd and 3rd. Of the 10 receiving 6 injections of 1 cc. each 2 died after the 4th and 5th doses: the survivors without exception displayed the 3rd type of reaction (massive luteinization of the ovary, composed solely of atresic corpora lutea). The close relation of the degree of reaction to the amt. of the dose and the possibility of obtaining a follicular phase with small doses and hyperluteinization with large doses, in Molinengo's opinion militate against the theory of Evans and Simpson on the plurality of hypophyseal hormones.

15874. **MOORE, CARL R., and T. F. GALLAGHER. On the prevention of castration effects in mammals by testis extract injection.** *Amer. Jour. Physiol.* 89(2): 388-394. 1929.—In studying the effects of castration on rats and guinea pigs the authors obtained several physiological and morphological (gross and cytological) indicators of castration. Each alone is capable of distinguishing the castrated animal from a normal one. By injecting fractions of a lipid extract of bull testes into rats and guinea pigs the authors not only prevented the development of the castration effects by injecting immediately after castration, but also were able to eliminate castration effects that had been present for some mos. The spermatozoön motility test (guinea pig), the electric ejaculation test (guinea pig), the prostate test (rat), and the seminal vesicle test (rat), all proved that the extracts injected were able to substitute for the internal secretion of the testicle. The authors found no castration change that failed to respond to the injections. —*Authors' summary and conclusions.*

15875. **MORTIMER, BERNARD, and A. C. IVY. VII. Studies on the pancreas. An attempt to repeat the Mellanby procedure for the isolation and purification of secretin.** *Amer. Jour. Physiol.* 91(1): 220-224. 1929.—The isolation of secretin as described by Mellanby proved to be unsatisfactory in the hands of the authors because of the unreliability or lack of uniformity of results with the "bile salt" precipitation procedure. In default of more exact knowledge regarding the conditions governing the adsorption of secretin by "bile acids" they were unable to predict a yield with certainty.—*Authors' summary.*

15876. **MYERS, WALTER K. The effect of bilateral ovariectomy in cats upon sensitivity to insulin.** *Amer. Jour. Physiol.* 89(3): 610-617. 1929.—Bilateral ovariectomy in 4 cats caused an immediate increase in sensitivity to insulin and was followed by a marked increase in weight. There was a gradual recovery of resistance to insulin to such an extent that the sensitivity was subsequently diminished in comparison with that of the intact animal. Blood sugar levels and the general reaction to insulin did not coincide from time to time. This would suggest that insulin shock and hypoglycemia are separate and distinct manifestations resulting from the injection of insulin. There seems to be an exaggeration of their independence following the recovery of the animal from the immediate effects of ovariectomy.

15877. **OLDBERG, ERIC. An attempt to auto-transplant the adrenal.** *Amer. Jour. Physiol.* 91(1): 275-283. 3 fig. 1929.—Attempts to auto-transplant the adrenal into the omentum and spleen were unsuccessful. The adrenal on a pedicle consisting of the anastomosing blood vessels of the kidney capsule functioned adequately to maintain life for relatively long periods of time in 4 of 15 dogs. Sectioning of the pedicle resulted in death from adrenal insufficiency in 3 dogs; in the 4th, the animal died on the 6th day due to a ruptured duodenal ulcer. It is pointed out that the rich blood supply that the adrenal receives normally is physiologically significant. The pseudo-transplanted adrenal on a pedicle does not readily develop a secondary, or a new blood supply, which is in contrast to such tissues as the skin, stomach, pancreas, intestine, etc.—*Author's summary.*

15878. **ORSÓS, EUGEN. Pseudohermaphroditismus und die Zwischenzellen.** *Deutsche Zeitschr. Chir.* 230 (3/5): 211-219. 6 fig. 1931.—In an otherwise intensely feminine woman, operation revealed the total absence of ovaries and uterus. Each groin contained a mobile structure the size of a nut, histological examination of which revealed an abundance of interstitial cells. The author concludes that these cells have no influence on the secondary sexual characteristics.

15879. **PARHON, C. I., et CONSTANCE PARHON-STÉFANESCO. Sur un nouveau syndrome hyperhypophysaire: le nanisme hyperhypophysaire.** *Rev. Belge Sci. Méd.* 2(4): 336-340. 1 fig. 1930.—A girl 16½ yrs. old, 138 cm. tall, showed some signs of thyroid deficiency; but basal metabolism and intelligence were normal. Sexual maturity had become established at the age of 11. The sella turcica was enlarged. The authors believe that the dwarfish stature and the early sexual maturity are due to excessive or precocious functioning of the anterior lobe of the hypophysis; they propose the name of "hyper-hypophysial nanism" for the syndrome.

15880. **PENCHARZ, RICHARD I., J. M. D. OLMSTED, and GEORG GIRAGOSSINTZ. The survival of rats after total and partial adrenalectomy and adrenal transplantation.** *Physiol. Zool.* 4(3): 501-514. 2 pl. 1931. —Complete adrenalectomy in 62 piebald rats caused acute "insufficiency" symptoms and death in every case. The longest survival was 18 days, the average 7-8 days. The only sure test of complete adrenalectomy is histological examination of the removed glands. Each gland must be removed intact. If even so small an amount of cortex as 5% of the original gland remains, the rat may survive indefinitely. We believe that the survival of adrenalectomized rats reported by many investigators is due to incomplete removal of the glands, not to accessories. In over 500 rats, only one was found with a definite accessory. The severity of deficiency symptoms is roughly inversely proportional to the amount of cortex left. Subsequent removal of fragments which had been sufficient to keep rats alive, although in a state of "chronic insufficiency," caused death. Successful transplants of cortical material have been made into the ovary in 5 cases. Removal of this ovary at a time when these rats had lived longer than the longest surviving completely adrenalectomized rat, and were still in excellent health, now resulted in acute "insufficiency" symptoms and death.—*Authors (courtesy Wistar Bibl. Serv.).*

15881. **PERUSSÉ, GEORGE LOUIS Jr., and JOSEF SAMUEL ROZEN. The effect of experimental hyper-**

thyroidism on the movements of the empty stomach. *Amer. Jour. Physiol.* 91(1): 291-297. 1929.—Dogs (5) were used throughout the investigation (9 mos.). Of the 5 animals originally used, 2 were again run on a much higher dosage after an interim of 5 mo., during which time they were used for other work. A small dosage of desiccated thyroid sufficient to produce the syndrome of hyperthyroidism in dogs causes an increase in the height of hunger contractions. There seem to be 2 effects produced by feeding desiccated thyroid: one in which a hunger producing constituent causes an increase in hunger and the other in which a toxic, depressant constituent may or may not overbalance the former, depending upon the degree of tolerance to the latter that the individual dog may develop; or, it may be that these are one and the same substance, its hunger effects depending upon the tolerance developed by the individual dog. In the 15 gm. dosage, the increase in hunger effect seems to overbalance the toxic effect although the same result might have been noted in the 5 gm. dogs had they been run long enough.

15882. **PTASZEK, L. Influence des hormones sexuelles sur le métabolisme basal. Essais expérimentaux chez les femelles.** *Compt. Rend. Soc. Biol.* 100(14): 1250-1252. 1929.—In ♂ and ♀ dogs there was an immediate drop in the basal metabolism following excision of the gonads, followed by a short period of increased basal metabolism, which was in turn superseded by a permanent lowered basal metabolism. In the ♀ the 2nd period was shorter, and the increase was not so great. The author attributes this to the relatively more important part played by the ♀ hormone, and the resultant inability of the rest of the endocrines to compensate for it.

15883. **QUIGLEY, J. P., and B. O. BARNES. Action of insulin on the motility of the gastro-intestinal tract. VI. Antagonistic action of posterior pituitary lobe preparations.** *Amer. Jour. Physiol.* 95(1): 7-12. 1930.—Insulin has been found to increase the motility of the empty stomach and of the small intestine and colon; this action is related to the development of hypoglycemia. A study of gastro-intestinal motility, therefore, offers an excellent method for investigating the antagonism between insulin and pituitary extract or its fractions. The balloon technique was used to follow the hyperactivity of the gut produced by insulin administration and to determine the antagonistic action of pituitary extracts. The pituitrin preparations were usually administered intravenously but intramuscular injections were found to yield similar results: 74 experiments which gave definite results were performed and 11 dogs were used. Pituitrin, vasopressin, oxytocin, vasopressin-oxytocin and infundin were all found to inhibit high or low spontaneous motility of the stomach, small intestine and colon. They likewise inhibit the hypermotile gut of insulinized animals. The inhibition begins in 15-20 sec. (before the blood sugar level is modified) acting probably through a direct paralysis of the motor mechanism of the gut. Modifications in carbohydrate metabolism are involved apparently in the later phase of the inhibition.

15884. **REISS, M. Studien über die Funktion der Nebennierenrinde.** *Endokrinologie* 6(5): 321-335. 1930.—The author shows that the life of an adrenalectomised animal can be lengthened by administration of a substance free from the blood pressure factor of the adrenal. The substance is remedial only if administered before the typical adrenalectomy symptoms appear. This limitation can not be directly due to a scant hormone supply from the cortex since injections of greater quantities of the extract are ineffective. The reactions once initiated by adrenalectomy are irreversible; the extract hinders the process only if administered in time.—*B. Cunningham.*

15885. **REISS, M. Studien über die Funktion der Nebennierenrinde.** *Endokrinologie* 6(6): 421-437. 1930.—The author confirms previous work which showed death following adrenalectomy is decerebrated cats and dogs. Death seemed to be due to respiratory failure. However, when artificial respiration was resorted to, death ensued after about the same interval. Injections of the cortex hormone prolonged life. The reserve alkali decreased after adrenalectomy, regardless of whether or not atificial respiration was used; the reserve was increased upon the hormone injection. The reduction of the alkali reserve seems to be due to a disturbance of metabolic materials for which the active factor has not as yet been found.—*B. Cunningham.*

15886. **RIDDLE, OSCAR, and JAROSLAV KŘÍŽENECKÝ. Studies on the physiology of reproduction in birds. XXVIII. Extirpation of thymus and bursa in pigeons with a consideration of the failure of thymectomy to reveal thymus function.** *Amer. Jour. Physiol.* 97(2): 343-352. 1931.—Thymus and bursa Fabricii were completely extirpated (thymobursectomy) from 17 common pigeons at a 1st operation performed about 42 days after hatching, or at a 2nd operation 3-4 wks. later; 15 brothers of the 7 operated ♂♂, and 26 sisters of the 10 operated ♀♀, served as control. Birds were reared to or beyond maturity (3-16 mos. after operation). That part of the body growth (14% of total) which occurred after the operation was not affected by the loss of these 2 organs. No clear and consistent difference was found in wt. of testes, ovaries, thyroid, liver or spleen in operated and control. No difference was observed in bone abnormalities, basal metabolism, health and appearance. The operation had no effect on the time or age at which the ♀♀ became sexually mature. The operated ♀♀ produced eggs (88) whose envelopes were quite normal, with only 1 exception; there were no soft-shelled eggs. These data and the more crucial data of Greenwood strongly question Stoli's report of soft-shelled eggs as a result of thymectomy in mature fowls, unless the particular race of fowl used really determines the result. The authors conclude that tissue with "thymic function" is probably widely scattered in the body of vertebrate animals generally. This condition is now rather more evident in birds than in other groups. In birds such tissue is probably regularly represented in the 2 thymi, the bursa Fabricii, the 2 postbranchial bodies, in the lymph glands and perhaps in other lymphoid organs; occasionally it is undoubtedly present in still other areas adjacent to the thymus. An extensive examination of the literature leads to the conclusion that theymectomy has almost everywhere and completely failed to reveal or to confirm those functions of the thymus which have been rather clearly indicated by various other methods of investigating this organ. The explanation of the failure of theymectomy to produce effects probably rests upon the existence and hyperplasia of other widely scattered tissue having thymic function. No result ever obtained from simple thymectomy is usable as evidence against the existence of an endocrine or other function of the thymus.—*Authors' summary.*

15887. **RING, GORDON C. Adrenalin and the metabolism of exercise.** *Amer. Jour. Physiol.* 97(2): 375-385. 1931.—The metabolism of rats [no. not stated] during rest and exercise on a specially devised treadmill has been determined. Small doses of adrenalin lowered the respiratory metabolism of fatigued rats in exercise. In 9 experiments on man (as in the rat) physiological amounts of adrenalin given after fatigue caused a lowering of the respiratory metabolism of exercise. Without previous fatigue, a similar amount of adrenalin increased the metabolism of exercise. The respiratory quotients were lowered by adrenalin.—*G. C. Ring.*

15888. **SACHS, WALTER BERNHARD. Umwandlungsversuche an kiementragenden Schwanzlurchen durch Schilddrüse und Schilddrüsenpräparate.** *Zool. Anzeiger* 88(11/12): 312-321. 1930.—The author failed in attempting to produce metamorphosis in *Proteus*, *Siren* and *Amphiuma* by feeding and injection experiments with thyroid gland and thyroid extracts.

15889. **SANDERS, GERTRUDE B. The survival period and blood pressures of adrenalectomized decerebrate cats.** *Proc. Soc. Exp. Biol. & Med.* 28(3): 288-

290. 1930.—For 27 out of the 30 operated cats, the average time of survival after adrenalectomy was 8½ hrs.; the longest time was 21½ hrs. Death was not due, as a rule, to respiratory failure as has been claimed by Vincent and Thompson. A slight (doubtfully significant) fall in blood pressure was sometimes observed after adrenalectomy.

15890. SCHLOTTHAUER, CARL F., and HAROLD D. CAYLOR. The effect of thyroidectomy and of certain diets on pregnant swine and their offspring. *Amer. Jour. Physiol.* 89(3): 601-609. 1929.—Of 12 pregnant sows on a balanced diet (Series 1), 10 were thyroidectomized and 8 of these received desiccated thyroids for 30-120 days. The sows treated for 60 days or more following thyroidectomy were not affected. Of 8 pregnant sows on a low protein, high carbohydrate diet (Series 2), 4 were thyroidectomized; 2 of the thyroidectomized and 2 of the normal sows were given thyroid extract to term. The results showed that the symptoms of thyroid deficiency in pregnant sows were influenced by the diet. Thyroidectomized animals on a balanced diet revealed signs of myxedema whereas those on a high carbohydrate, low protein diet did not develop the edema of myxedema and were underweight (allowance being made for pregnancy). The hair coat and thyroid gland of the offspring of thyroidectomized pregnant swine were not markedly different from the offspring of the control animals. The thyroid gland was not enlarged in offspring of thyroidectomized swine, although in each group there was considerable variation in the size of the glands.

15891. SCHWARZ, EUGEN. Pigmentierung, Form und Wachstum der Federn des Haushuhns in Abhängigkeit von der Thyreoideafunktion. *Zeitschr. Wiss. Biol. Abt. D, Wilhelm Roux' Arch. Entwicklungsmech. Organ.* 123(1): 1-38. 12 fig. 1930.—No difference in the size of the thyroid in the sexes was found in 16-day embryos from the cross of Plymouth-Rock ♀♀ and Orloff-Kämpfer ♂♂ (factor K for slow feathering lies in X-chromosome for which ♀♀ are heterozygous, ♂♂ homozygous). In 2 hens without growth of the juvenile marginal plumage, degeneration of the thyroid was found substantiating a relation between thyroid function and speed of feathering. Half the thyroid of chickens (av. 3½ mo. old) was implanted into 2-5 day old chicks; most transplants underwent necrosis but residues remained. The excess thyroid had no action on increase in wt., and secondary and primary feathering. An increase in temp. in comparison to the controls (18th-23rd day) occurred. In the ♀ there was a darkening of the primary feathers; that of the secondaries was within limits of variability. In 1 hen and 1 cock successful thyroidectomy resulted in greatly inhibited growth, underweight, and extensive structural changes in the mature feathers. The feathers of the cock were very narrow and pointed in all regions. No change in pigment was observed; secondary sexual characteristics were well developed. The hen died 7 mos. after operation with signs of very pronounced anemia. The few new feathers (everywhere in body) were of intermediate type approaching the cock. The author differentiates between pigmentation and speed of feathering owing to the high metabolic rate, and feather forms: the thyroid first promotes pigmentation, then with larger quantities, oxidation of melanin and depigmentation occurs; increase of thyroid function speeds feathering; the development of feather form depends upon a cumulative action of thyroid and gonads, the action of the testis on the width and rounding of feathers being weakest, thyroid greater, ovary the greatest.

15892. SIEBERT, WALTER J., and ROBERT S. SMITH. The effect of various anterior pituitary preparations upon basal metabolism in partially thyroidectomized and in completely thyroidectomized guinea pigs. *Amer. Jour. Physiol.* 95(2): 396-402. 1930.—In an investigation of the reasons for the different effects of various anterior pituitary preparations, 24 ♂ guinea pigs, weighing between 350 and 500 gm., were used. Ten of these were as completely thyroidectomized as possible; 4 of these 10 were then given daily injections of 1 cc. of the acid extract of anterior pituitary substance, and 4 others were given 5 grain Armour anterior pituitary tablets by mouth daily; the remaining 2 of these 10 guinea pigs were used as completely thyroidectomized controls, to which no pituitary preparations were administered. Ten other guinea pigs were partially thyroidectomized, 1⅔ to 1½ lobes of the thyroid having been removed previous to the daily subcutaneous injection of 1 cc. of the acid anterior pituitary extract to 4 animals and the feeding of 5 grain Armour's anterior pituitary pills to 4 others. The remaining 2 of these 10 were used as partially thyroidectomized controls to which no anterior pituitary preparations were administered. Four guinea pigs were used as normal control animals. The basal metabolism determinations were then made on each of the 24 animals every 4th day with the Haldane open circuit respiratory calorimeter. Each observation consisted of a 2-hr. period on this apparatus. The animals were starved for a period of 24 hrs. before the determinations were made. The injections and feedings of the anterior pituitary preparations were made previous to the starvation period. The experiments were continued for 28 days after the beginning of the administration of the anterior pituitary preparations. The results were: (1) for Armour anterior pituitary tablets, a marked rise in basal metabolism in partially and incompletely thyroidectomized as well as normal guinea pigs, being thus independent of thyroid changes; (2) for acid extract of cattle anterior pituitary glands a marked and rapid rise in basal metabolism in normal guinea pigs, in partially thyroidectomized guinea pigs, a slight but definite rise in basal metabolism, and in completely thyroidectomized guinea pigs, no change at all in basal metabolism, the effects being apparently entirely dependent on hypertrophic changes produced by the pituitary extract in the thyroid.

15893. SPAUL, A. W., and W. W. MYDDLETON. Biological and chemical studies of extracts of the anterior lobe pituitary. *Jour. Exp. Biol.* 8(1): 30-43. 1931.—A buff colored precipitate is obtained by the addition of N/20 I solution to dilute acetic acid extracts of fresh anterior lobe substance. Similar acetic acid extracts of tissues and extracts of the anterior lobe prepared with other extracting media do not give the same precipitate with I. The precipitate indicates the presence and gives an approximate measure of the metamorphic factor in fresh gland extracts of the anterior lobe. Dilute acetic acid extracts of the precipitates after removal of the I with alcohol are biologically active and characterised by their phosphate content. Similar extracts of the posterior lobe give an I precipitate but the phosphate content is much lower than that of the anterior lobe precipitate. The I in these precipitates is adsorbed or loosely combined. The biological activity of anterior lobe extracts varies with the time of extraction and the concentration of the extracts. Its resistance to temperature, acid and alkali have been investigated. The metamorphic factor is slowly destroyed by pepsin and rapidly by trypsin.—*J. M. Robson.*

15894. SPAUL, E. A., and W. W. MYDDLETON. The phosphate content and the biological activity of the anterior lobe pituitary. *Jour. Exp. Biol.* 8(1): 44-54. 1931.—There is a direct quantitative relationship between the phosphate P precipitated by I solution from active extracts of the anterior pituitary lobe in dilute acetic acid and the metamorphic activity of the lobe. Substitution of the phosphate content of the I precipitate by other radicles results in the loss of activity. The active factor is insoluble in alcohol, chloroform and ether, which distinguishes it from Robertson's Tethelin. The melanophore stimulant is independent of the phosphate content. There is a small quantity of phosphate precipitated by I solution from posterior lobe extracts. —*J. M. Robson.*

15895. STEWART, G. N., and J. M. ROGOFF. Studies in adrenal insufficiency. IX. The influence of extracts of adrenal cortex (sheep and cattle) on the survival period of adrenalectomised dogs and cats. *Amer. Jour.*

Physiol. 91(1): 254-264. 1929.—In paper V. of this series proof was given that extracts of adrenal cortex from dogs (interrenalin) can prolong the period of survival of dogs after adrenalectomy beyond the maximum seen in control untreated animals. It was stated further that similar results were obtained in dogs by intravenous injection of cortical extracts from sheep's adrenals. The data on the influence of these extracts are given in the present paper. Subcutaneous administration of the extracts did not exert as favorable an influence as intravenous injection. Extracts prepared from the adrenal cortex of cattle in the manner recently described by Hartman and his co-workers and administered subcutaneously, as in their experiments, were found to have no influence on the survival period of adrenalectomised cats, as compared with the untreated controls. These extracts, injected intravenously into dogs, were not nearly so effective as the authors' own extracts. If they produced any definite effect at all, it was slight. Subcutaneous administration in dogs had no favorable influence upon the survival period. Accessories were found in about 6% of 121 cats operated on for removal of the adrenals. Ulcers in the stomach or duodenum of adrenalectomised dogs and cats are very common. Of 118 adrenalectomised dogs, 48 had 1 or more ulcers. Of 89 adrenalectomised cats, 29 had ulcers. Of 32 normal cats, only 1 had a gastric ulcer.—*Authors' summary.*

15896. STILL, EUGENE U., et al. Studies on the physiology of secretin. II. EUGENE U. STILL, and L. B. SHPINER. The effect of purified secretin on the blood sugar. III. JEAN la BARRE, and EUGENE U. STILL. Further studies on the effects of secretin on the blood sugar. *Amer. Jour. Physiol.* 91(2): 496-498; 649-653. 1930.—II. Purified preparations of secretin injected intravenously in 3 normal and 3 diabetic dogs, barbitalized or unanesthetized, did not alter the blood sugar. Secretin per se does not have insulin-like properties. Secretin does not stimulate the secretion of insulin from the pancreas. III. The experiments here summarized indicate that crude secretin may be prepared which is not hypotensive, possesses great potency as a pancreatic secretagogue and contains varying amounts of hypoglycemic substances. Crude secretin may be fractioned into one part which is only secretagogue and another which will lower the blood sugar. The hypoglycemic fraction from crude secretin is not hypotensive, is not insulin, and produces hypoglycemia by at least 2 known factors: (1) stimulation of secretion of insulin (most important); (2) effects of the preparation per se. Purified secretin has no effect on the blood sugar.

15897. TANIGUCHI, TORATOSHI. Experimentelle Studien über die Neotenie bei Amphibien. *Folia Anat. Japonica* 9(2): 81-90. 3 fig. 1931.—The author experimented on *Hynobius fuscus, Bufo vulgaris japonicus,* and *Rana japonica.* Metamorphosis was not retarded by feeding larvae with powdered thymus. Larvae fed with powdered beef thyroid and with the thyroideum of Sankyo & Co. showed a considerable acceleration of development and of metamorphosis. The 2nd preparation gave the stronger reaction, and was more effective on anuran larvae than on larvae of urodeles. Tadpoles kept at 10-0° C. died about 3 mos. before metamorphosis. Under the same conditions Hynobius larvae lived and retained their larval form for 2 years (partial neoteny); there was marked stagnation of colloid in their thyroid glands. In larvae fed with the thyroid preparation and kept at 5-0° C., no reaction of the thyroid gland was observable. It can be said, therefore, that low temperature is necessary to bring out neoteny by suspending the activity of the thyroid gland.—*Author (courtesy Wistar Bibl. Serv.).*

15898. TEEL, HAROLD M., and O. WATKINS. The effect of extracts containing the growth principle of the anterior hypophysis upon the blood chemistry of dogs. *Amer. Jour. Physiol.* 89(3): 662-685. 1929.—The blood of fasting dogs was analyzed just before and for a number of hrs. after the injection of growth promoting extracts of the anterior hypophysis of the ox. No significant changes were found in total P, preformed or total creatinine, uric acid or sugar. A drop in serum Ca following the injection was often but not always observed. Very slight changes in inorganic P sometimes occurred but the findings were not consistent. A marked drop in non-protein N, however, was always observed after the injection of an active extract (20-30%). The disappearance of some urea and amino acids from the blood following injection was also an almost constant finding, the amt. of drop being fairly well in keeping with the percentage composition of the blood, and not sufficient to account for more than 70% of the total drop in non-protein N. Control experiments showed that after 20 hrs. of fasting a level of non-protein N, urea and amino acids is reached in the blood. Pituitrin does not cause a disappearance from the blood of non-protein N, urea or amino acids. Neither does an extract of serum protein, nor an extract of anterior hypophysis which has been inactivated by boiling. These control experiments indicated that the disappearance of non-protein N, urea, and amino acids from the blood following the injections of active extracts is probably due to the effect of the growth principle of these extracts. The question arises as to whether this disappearance of non-protein N constituents of the blood may be attributed to increased excretion. It is impossible to draw any final conclusions, for the amts. of non-protein N and urea which disappear from the blood are too small to be traced in the urine. Experiments, however, in which the dog is deprived of water, thus cutting down on urine formation, still show appreciable drops in the non-protein N constituents of the blood after injection, and seem to furnish some evidence against increased excretion as the only explanation of the phenomena. Also the fact that the amino acids and the "undetermined N" portion of the blood decrease after injection seems to indicate that the effect is at least in part endogenous. The distribution between corpuscles and plasma of the non-protein N constituents of the blood is apparently not affected by the injection of active extracts of the anterior hypophysis of the ox. The disappearance from the blood of these constituents after injection is in general rather evenly distributed between corpuscles and plasma. Total analysis of the blood of 2 dogs made definitely acromegalic by daily injections of active extracts of anterior lobe, revealed no definite changes in the blood composition as compared with the control period before the injections. The results seem to supply some evidence that the growth promoting principle of the anterior hypophysis has an immediate effect upon the non-protein N constituents of the blood. This effect may be, at least in part, one of mobilization from the blood for building up new protoplasm.—*Authors' summary.*

15899. TEEL, H. M., and H. CUSHING. The separate growth promoting and gonad stimulating hormones of the anterior hypophysis: an historical review. *Endokrinologie* 6(6): 401-420. 1930.

15900. UHLENHUTH, EDUARD. Die Morphologie und Physiologie der Salamanderschilddrüse. V. Die Wirkung von anorganischem Jod auf die Schilddrüse des Tigersalamanders (A. tigrinum) und des amerikanischen gefleckten Salamanders (A. maculatum). *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 115(1/2): 184-236. 20 fig. 1929.—Thyroids of larvae of *Amblystoma* kept in I solutions and fed I crystals were studied by counting follicles, measuring whole gland, and examination of fresh unstained and stained glands. Small doses in a short time increase secretory cell activity (determined by increase in number and staining reaction of cell granules and by expulsion of numerous colloid vacuoles into follicular lumen) and eventually injure cells (shown by fading of cell boundaries and lack of intercellular pores and vacuoles) and inhibit emptying of colloid from follicles. Heightened secretion and lack of colloid expulsion lead to storage of colloid, swelling of follicles, fusion of follicles with resultant in-

crease in size of single follicles but decrease in total number. With continuation of I treatment, cell injury increases and cells are expelled into follicular lumen, but eventually cells adapt themselves to I so that they are no longer stimulated nor injured and normal activity (secretion and colloid expulsion) occurs. Large doses of I act similarly but cell injury occurs earlier and destruction of whole follicles is common. Finally adjustment occurs but it is less complete than after small doses. An interpretation of the action of I on the functional state of the thyroid and in Basedow's disease is outlined.—*A. E. Adams.*

15901. **UHLENHUTH, EDUARD, und CHARLES WINTER. Die Morphologie und Physiologie der Salamander-Schilddrüse. VI. Jodimplantation und ihre Wirkung auf die Schilddrüse.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 119: 516-530. 8 fig. 1929.—Following Blacher and Belkin, I crystals (.3-.7 mgm.) were implanted into body cavities of larvae of *Amblystoma tigrinum*. In a short time (earliest 9 days) larvae metamorphosed although only ½ as large as normal larvae at time of metamorphosis. This result is in marked contrast to the ineffectiveness of large amounts of I when fed to induce metamorphosis. After implantation, I is absorbed so speedily that there is no time for increased secretory activity of thyroid cells (as after I feeding), but thyroid cell injury and follicle destruction occurs resulting in decrease in follicle number and thyroid size. Since thyroid thus becomes incapacitated for removing excess I from the blood, all of it can work directly on the tissue of the animal (not known whether directly on body tissues in general or on special organs). Thus the thyroid in relation to metamorphosis sinks from the level of a maker of a specific hormone to that of a mere condenser and regulator of I.—*A. E. Adams.*

15902. **VELER, CLEMENT D., SIDNEY THAYER, and EDWARD A. DOISY. The preparation of the crystalline follicular ovarian hormone: Theelin.** *Jour. Biol. Chem.* 87 (2) : 357-371. 2 fig. 1930.—A quantity production procedure for the preparation of theelin is described. Essentially the procedure depends upon the fact that theelin, which behaves as a very weak acid, may be extracted from organic solvents with dilute NaOH solutions, and then in turn may be extracted from the alkaline solution by certain organic solvents.—*Authors' summary.*

15903. **VOSS, H. E., und S. LOEWE. Schnelltest auf männliches Sexualhormon. (Der Mitogenesetest [C. R.-Test III] auf Androkinin.)** *Deutsche Med. Wochenschr.* 56 (30) : 1256-1258. 1 fig. 1930.—Further evidence for the delicacy, rapidity and specificity of the authors' test, based on the regeneration, after injection of the hormone, of the mucosa of the seminal vesicles in the castrated ♂ mouse.

15904. **WAGNER, G. A. Ueber Vermännlichung durch bestimmte Ovarialtumoren. [Masculinization by certain ovarian tumors.]** *Deutsche Med. Wochenschr.* 56 (27) : 1120-1123. 3 fig. 1930.—Two cases.

15905. **WEHEFRITZ, E., und E. GIERHAKE. Die Einwirkung heterologer Sexualhormone auf die Ausbildung der Keimdrüsen im Embryo.** *Arch. Gynäkol.* 142 (3) : 602-617. 12 fig. (3 col.) 1930.—Commercial ovarian hormone (menformon and progynon) was injected into developing chick embryos, some of which were examined and compared with untreated controls at various stages of growth, while 8 were allowed to hatch and live till the 10th month (sexual maturity). The chicks subjected to ♀ sexual hormone developed into ♂♂ in which the primary sexual differentiation was partially impeded from the embryonic period on, right testicle being rudimentary. This work tends to support the theory that hormonal action is sex-specific and that the sexual hormone is identical throughout the vertebrates. The fact that the ♀ hormone used inhibited the development of the ♂ gonad indicates antagonistic action in the development of the primary sexual organs.

15906. **WEHEFRITZ, E., und E. GIERHAKE. Über die Spezifität des weiblichen Sexualhormons.** *Zentralbl. Gynäkol.* 55 (1) : 16-21. 1931.—After introduction of menformon or progynon into the chick embryo atrophy of the testes and hen feathering occurred in the ♂. Extract of 10 mo. old Leghorn ovaries induced estrus in the mouse (number of animals and quantities not stated). From the seed anlagen of the sunflower an extract was obtained which produced the vaginal processes of estrus and enlargement of the uterus; mature follicles and corpora lutea were found in the ovaries. Extract of the remaining portions of the inflorescence had slight action.

15907. **WEITZ, WILHELM. Über eigentümliche Muskelerscheinungen bei Myxödem (das nach Röntgenbestrahlung und teilweiser Strumektomie entstanden war).** *Deutsche Zeitschr. Nervenheilk.* 120 (5/6) : 297-303. 1931.—In a patient with myxedema following partial thyroidectomy and roentgentherapy hypertonicity and pronounced hypersensitivity of the striated musculature appeared; the parathyroid had not been injured and the condition improved when thyroxin was administered.

15908. **WUNDER, W. Experimentelle Erzeugung des Hochzeitskleides beim Bitterling (Rhodeus amarus) durch Einspritzung von Hormonen.** *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 13 (4) : 696-708. 4 fig. (1 col.) 1931.—Hormones fed had no effect, those dissolved in aquarium water little, those injected a distinct action on the development of the mating coat of uncastrated ♂ sticklebacks and carp; manufactured products, particularly Extractum testiculi Henning (E.T.H.) were superior to home-made extract of bovine testis. Before, during, and after the period of spawning the same amount of hormone had different effects. In March 0.1 cc. of E.T.H. produced a full mating coat which appeared from ½-1 hr. after injection, remained 6 hrs., and then slowly decreased until the 10th hr. In April the same preparation was effective only 3-4 hrs., in June only 2-3 hrs. Such a varying behavior was also determined for other hormones. Various concentrations of the same preparation, given at the same time, had different actions. While 0.1 cc. E.T.H. acted 6-10 hrs., 0.075 cc. of the same preparation acted only 4-5 hrs.; 0.025 cc. acted also for 4.5 hrs., but did not have such a pronounced action. Female hormone had practically no effect; Prolan had a slight reaction before the spawning period, a very good effect during it, and a very poor one, or none, after. Epinephrine first produced brightening of the body for hrs., then reddening of the fins and finally darkening of the back, and then the complete development of the mating coat. Yohimbin very rapidly produced the most extreme mating coat, which lasted for days (up to 10). Probably yohimbin and the hormones acted by way of the sympathetic.—*Author's conclusions (transl.).*

15909. **WYMAN, LELAND C. [et al.]. Studies on suprarenal insufficiency. V. LELAND C. WYMAN, and BURNHAM S. WALKER. The non-protein nitrogen and urea in the blood of suprarenalectomized rats. VI. LELAND C. WYMAN. Anaphylaxis in suprarenalectomized rats. VII. LELAND C. WYMAN, and CAROLINE TUM SUDEN. Note on the temperature regulation in suprarenalectomized rats.** *Amer. Jour. Physiol.* 89 (2) : 349-355; 356-361; 362-365. 1929.—V. In 9 out of 18, and 21 out of 30 doubly suprarenalectomized rats the non-protein and urea N of the blood was increased, the amount of increase tending to parallel the severity of the symptoms of suprarenal insufficiency. Such increases were not noted in 12 rats having either gross accessory cortical tissue or successful cortical transplants, in the absence of demonstrable chromaffin tissue. Following control blank operations, moderately high values for both substances were infrequently found during the 1st 2 wks. after operation, but these values were not so high as those observed in suprarenal insufficiency. Otherwise the values obtained were normal. The results indicate that the high values for non-protein and urea N of the blood after suprarenalectomy are associated with cortical insufficiency. It is suggested that this is further evidence for a function of the suprarenal cortex concerned with

the steady maintenance of certain bodily conditions.—VI. Of 25 doubly suprarenalectomized rats sensitized with horse serum 9 died from anaphylactic shock following the test dose, 5 had severe symptoms, 3 had moderate symptoms, and 8 had slight symptoms. No correlation was found between the presence or absence of gross accessory cortical tissue or the time of survival after operation and the susceptibility to anaphylactic shock. Normal rats (29) sensitized with horse serum had, following the test dose, no symptoms or only slight or moderate ones. Of 15 of these rats which were suprarenalectomized after the test injection 12 died of anaphylactic shock following a 2nd test dose injected after operation. Of 15 suprarenalectomized rats having autoplastic cortical transplants, and in some cases gross accessories as well, 6 died from anaphylactic shock following sensitization and the injection of a test dose of horse serum. An attempt to reduce the susceptibility of suprarenalectomized rats to anaphylactic shock by injection of adrenalin chloride solution gave suggestive though incomplete evidence of possible protection. It is concluded that suprarenalectomized rats are more susceptible than normal rats to anaphylactic shock, and that this increased susceptibility is not related to cortical insufficiency, but is consequent on the lack of medullary suprarenal tissue.—VII. After 2 hrs. in a moderately cold room 10 normal rats, 10 suprarenalectomized rats with autoplastic cortical transplants, and 5 suprarenalectomized rats having gross accessory cortical masses (with 2 exceptions) had similar slight variations in the rectal temp. All these had no marked external reactions to the cold and recovered their original normal temp. after 1 hr. at room temp. following exposure to cold. Rats having cortical insufficiency showed a fall in the rectal temp. after 2 hrs. in the cold room, showed more or less marked external reactions to the cold, and did not recover their original temp. in a warm room as soon as those having cortical tissue. The fall of rectal temp. upon exposure to cold and the inability to rapidly recover normal temp. is correlated with the degree of cortical insufficiency. It is concluded that the suprarenal cortex, as well as the medulla, is indirectly concerned with heat regulation.

15910. ZAWADOWSKY, M. Bisexual nature of the hen and experimental hermaphroditism in hens. *Biologia Generalis* 3(1/2): 129-170. 33 fig. 1927.—Completing and confirming his earlier operative and histological analysis, author concluded that every hen is potentially bisexual, not only right but the left gonad, the ovary as well produces tissues of testicular type and hormones influencing development of both ♂ and ♀ dependent characters. In young ovariotomized hens (10 cases, Brown Leghorn and hybrid) a smooth, oval or elongated rt. gonad was newly developed, practically identical with a testicle, its lobules composed of cords and of seminiferous tubules containing first stages of spermatogenesis and, rarely, mature sperms; among ♂ characters (large, red, erect comb, other head furnishings, voice, instincts and behavior of cock) appeared some ♀ characters (henny color and form of feathers, except for sickle feathers in tail). Whole complex resembles that of Seabright ♂. Left ovary implanted into body cavity or under skin of castrated cock (2 cases), or (1 case) regenerating in situ—along with rt. gonad—after incomplete removal, also produces, as in pathological cases, certain testicular tissue and male-type morphogenetic reactions. Probably left ovary ordinarily suppresses rt. gonad; but testis and ovary are not antagonistic, for testis was successfully established in castrated hen (4 cases), which sometimes regenerated ovary and became hermaphroditic. With ovary and testis secreting simultaneously they develop ♀ characters; with poorly developed ovary, asexual and ♂ characters. Masculinisin and feminisin, ♂ and ♀ morphohormones, are considered independent factors, not quantitative variations of one agent.—*J. W. MacArthur.*

15911. ZONDEK, BERNHARD. Hypophysenvorderlappen, HVH, und Placenta. Vergleichende quantitative Untersuchungen bei Mensch und Tier. *Zentralbl. Gynäkol* 55(1): 1-12. 1931.—H.V.H. contains 2 factors: A, producing follicular maturation and estrus; B, the luteinizing factor. The anterior lobe in 4 women contained 100-160 mouse units of A and 23-50 of B; that of 5 men contained 60-400 units A and 10-25 B; in carcinoma of the genitalia the hormone content in women was reduced about 75% but in instances of ovarian carcinoma it remained normal. In 5 hypophyses from pregnant and puerperal women little or no H.V.H. was found (transplantation experiments). On the other hand 1 unit A and B was found in 7 mgm. placenta in the 7th wk. of pregnancy, in 30 mgm. in the 11th, and in 200 mgm. at term: the absolute amts. were 1144, 1133 and 2900 units; these values can vary greatly. Since the hypophysis of the pregnant woman does not contain H.V.H. the assumption that the placenta is the source would seem obvious, but may be erroneous; the hypophysis might give up the hormone with increased rapidity. In cattle and swine an increase in H.V.H. is not found in placenta, urine, or blood; the anterior lobe contains about the same amts. as in the non-pregnant (in non-pregnant cattle 115 mouse units A and 74 B; in pregnant, 112 A and 60 B). The elephant, rat, mouse, and rabbit showed no increase in H.V.H. in urine or blood. The mare showed large amts. in the blood during the 1st 3 mos. but little in the urine. Its placenta is the same as that of swine.

ANIMAL PHYSIOLOGY

REPRODUCTION AND LACTATION

OSCAR RIDDLE, *Editor*

(See also in this issue Entries 15106, 15245, 15283, 15284, 15285, 15286, 15299, 15642, 15649, 15709, 15719, 15723, 15750, 15752, 15791, 15828, 15835, 15836, 15842, 15850, 15853, 15854, 15855, 15858, 15862, 15864, 15865, 15867, 15870, 15871, 15872, 15873, 15874, 15886, 15890, 15906, 15910, 15911, 16061, 16303, 16358, 16431, 16467, 16887, 17298, 17303, 17311, 17318, 17341, 17345, 17365, 17388, 17393, 17396, 17410, 17441, 17442, 17770, 18073)

15912. BALTZER, F. Zucht- und Versuchsmethoden (Geschlechtsbestimmung) bei Bonellia. Zuchtmethoden bei Thalassema und Echiurus. [Methods of culture and research (sex determination) for Bonellia. Methods of culture of Thalassema and Echiurus.] *Abderhalden's Handb. Biol. Arbeit.* 9(5): 431-442. 1928.

15913. BISSONNETTE, THOMAS HUME. Studies on the sexual cycle in birds. V. Effects of white light of different intensities upon the testis activities of the European starling (Sturnus vulgaris). *Physiol. Zool.* 4(4): 542-574. 3 pl. 1931.—Under previously described uniform conditions, groups of starlings were subjected to light from 10-, 15-, 25-, 40-, 50-watt bulbs, and from 60-watt bulbs both with and without forced exercise, for equal periods nightly, from Nov. 9 to Jan. 27. Controls received equal daylight periods only. Samples from all groups were killed for study on Dec. 13, 23, and Jan. 27. All except controls underwent progressive testis changes, leading to complete spermatogenesis in 44 days, and some birds, from even the 10-watt-treated groups, passed the climax of spermatogenesis before 79 days, even under increasing daylight periods after Dec. 21, and regressed to various degrees; others did not. Rate of acceleration of germ-cell activity increased with light intensity from 10- to 25- (perhaps 40) watt bulbs; but above that no constant differences resulted. Fifty-watt bulbs

may be slightly more effective than 60's. Added exercise caused lag of onset of light-induced changes, both progressive and regressive. Data suggest a refractory period before appearance of light-induced effects, prolonged by added exercise, together with idiosyncrasies of susceptibility to regression. Juvenile birds gave neither so rapid nor so great increases in testis size and germ-cell activity as mature birds under like conditions. Total testis size, produced in midwinter by added electric light, sometimes surpasses the spring normal.—*Author* (*courtesy Wistar Bibl. Serv.*).

15914. **CREW, F. A. E., WM. C. MILLER, and JAS. ANDERSON. A brief note on the diagnosis of equine pregnancy by biological test.** *Vet. Jour.* [*London*] 87 (10): 450-457. 1931.—The test was conducted on ovariectomised mice. The urine was precipitated with sulphosalicylic acid, filtered and neutralized with $NaHCO_3$. Four mice were used in each test, being given a total of 1.2-3 cc. divided into 6 doses and given twice daily for 3 days. Vaginal smears were made on the 5th day after beginning the test. Positive results were determined by the presence of cornification of the vaginal epithelium. Since mares in oestrus showed the presence of the hormone in considerable quantities it was necessary to determine approximate amounts. No urine was considered positive unless it contained as much as 1,000 mouse units per liter. The mouse units increased as pregnancy progressed, one reading being 160,000 M.U. on the 187th day. Within 35 hrs. after foaling this animal's urine dropped to 800 units. A positive test could seldom be obtained before the 60th day. Out of 390 samples only 3 known errors were made and 2 of these occurred early in the work before quantitative estimations were made.—*I. E. Newsom.*

15915. **DOMM, L. V. A demonstration of equivalent potencies of right and left testis-like gonads in the ovariotomized fowl.** *Anat. Rec.* 49(3): 211-242. 3 pl. 1931.—An invariable sequel of sinistral ovariotomy has been hypertrophy of the rudimentary right gonad usually into a testis-like gonad. A similar gonad may develop simultaneously on the left, though is encountered more infrequently. Experiments were devised to demonstrate the reciprocal endocrine potencies of these gonads. Sinistrally ovariotomized individuals were subsequently dextrally ovariotomized and the left testis-like gonads allowed to develop. Birds with only left testis-like gonads develop masculine head furnishings. Variations in size occurred at different periods, interpreted as due to dependence upon size and condition of the gonad. Following operation, plumage became male, subsequently reverting to female. Some revealed secondary reversions to male followed by reversions to female, interpreted as due to fluctuations in production of female hormone which consequently ranged above and below the threshold of effectiveness. Two cases did not reveal initial reversion from male to female. All individuals revealed some masculine behavior, though none were known to tread. Spurs developed. Wolffian ducts revealed perceptible growth, sometimes becoming definitely convoluted. Oviducts varied in size. The largest occurred in birds reverting to female plumage, the smallest in those showing no such change. All modifications in birds revealing only left testis-like gonads coincide closely with those previously observed in sinistrally ovariotomized birds revealing only right testis-like gonads, and indicate equivalent endocrine potentialities of right and left testis-like gonads in ovariotomized fowl.—*Author* (*courtesy Wistar Bibl. Serv.*).

15916. **FAVILLI, NARCISO. Variazioni fisiche dell' utero gestante. Contributo critico e sperimentale.** [**Physical changes in the pregnant uterus.**] 54p. Tip. S. Bernardino: Siena, 1929.

15917. **FRIEDMAN, MAURICE H. On the mechanism of ovulation in the rabbit. III. The fate of mechanically ruptured follicles.** *Amer. Jour. Physiol.* 98(2): 209-215. 2 fig. 1931.—In 8 unmated rabbits the mechanical rupture of the large follicles of 1 ovary did not lead to the formation of corpora lutea either in the operated or in the contralateral ovary. The trauma of follicular puncture as here practised is not sufficient to prevent luteinisation when an adequate stimulus for the process is present. Hence mere follicular rupture is in itself not sufficient to cause luteinisation.—*Author's summary.*

15919. **IGUCHI, K., and K. MITAMURA. The influence of the beer-yeast upon the milk production of the dairy cow.** [In Japanese.] *Jour. Soc. Agric. & Forestry Sapporo, Japan* 19(88): 447-464. 1928.

15920. **JARES, JOHN J. Failure to induce ovulation in the guinea-pig by intravenous injection of the urine of pregnancy.** *Anat. Rec.* 49(3): 185-189. 1931.—The normalcy and regularity of the oestrous cycles of adult, virgin guinea-pigs were observed by the usual external oestrous signs. In addition, the time of ovulation was defined quite exactly by employment of the vaginal wash technique during the oestrous period. Having thus established the time factor in the oestrous rhythms, intravenous injections of untreated urine from women at various stages of pregnancy were made during the dioestrous intervals, employing the ovulation date as a starting-point. Ovulation did not result from the injections in any animal, as evidenced by macroscopical and histological study of the ovaries removed 1 to 8 days after the injection of the urine. Moreover, no effect on the regularity, time relationship, or general characteristics of the oestrous cycle was observed from 1 to 4 oestrous cycles after the administration of the urine. These findings indicate a somewhat different mechanism for the release of ovulation in the spontaneously ovulating guinea-pig as compared to the non-spontaneously ovulating rabbit which readily ovulates when treated similarly with the urine of pregnancy.—*Author* (*courtesy Wistar Bibl. Serv.*).

15921. **LESTOQUARD, F. Le diagnostic biologique précoce de la grossesse.** *Rev. Vét. et Jour. Méd. Vét. et Zootech.* 83(Oct.): 545-548. 1931.—When urine of a pregnant woman was injected into a sexually immature ♂ mouse, it caused an appearance of puberty within a few days, characterised by an enormous development of the seminal vesicles, the testicles being little changed. In 300 trials this reaction never failed.

15922. **LOVELAND, GRACE, ESTHER E. MAURER, and FRANKLIN F. SNYDER. The diminution of the glycogen store of the rabbit's placenta during the last third of pregnancy.** *Anat. Rec.* 49(3): 265-274. 1 col. pl. 1931.—During the early part of pregnancy there is a considerable storage of glycogen in the maternal part of the placenta. In the present experiments the fate of the glycogen store during the latter part of pregnancy was found by histological examination (Best's carmine method) and controlled by chemical determinations. It was found by the histological method that roughly ¾ of the entire glycogen store disappears during the last third of pregnancy. The quantitative chemical determinations showed a decrease from 100 mgm. of glycogen per placenta at the 22nd day to less than 25 mgm. at term (32nd day).—*Authors* (*courtesy Wistar Bibl. Serv.*).

15923. **McCANCE, R. A., and A. WALTON. A case of double sex reversal in a hen.** *Jour. Heredity* 21(3): 130-131. 1 fig. 1930.—A normal light Sussex pullet after her 1st moult, which was prolonged, assumed ♂ plumage, spurs and behavior. One year later without an intervening moult she hatched 11 chicks from 12 eggs placed under her. Later in the year she began to lay and in the autumn reassumed ♀ plumage. Nothing abnormal was found macro- or microscopically in any of the organs.—*Authors' abstract.*

15924. **MOENCH, G. L. Studien zur Fertilität. 143p.** 24 fig. Ferdinand Enke: Stuttgart, 1931.—The monograph is a report of research work on the various phases and aspects of the subject of sterility. The author outlines the method of examination of sterile couples. He stresses the importance of a detailed anamnesis, of the determination of the breeding record, of the menstrual history, diet, amount of physical exercise and general health. He then takes up the physical examina-

tion of the woman and various gynecological lesions, transtubal insufflation, etc. The obscure causes of infertility, sexual incompatibility, vaginal acidity and psychic causes, which the author does not believe to be of great importance are next considered, followed by a short note on therapy. The second part of the paper deals with sterility in the man and the examination of the semen from the gross and microscopic standpoint and after discussing the interpretation of the number of the sperms and their motility the author describes in detail his researches on the morphology and biometrics of the spermatozoa and especially of the heads of these cells and the relation of these findings to the fertility of the particular individual. This part of the book is illustrated by many graphs and tables showing that abnormal morphology or biometrics (graphs from 300 or more measured sperm head lengths) always means disturbed spermatogenesis and therefore impaired fertility. In over 200 cases there has never been a disagreement between the microscopically obtained opinion as to the fertility of the man and the clinical outcome of the case. In conclusion the author says among other things: . . . . It seems possible, by means of exact and thorough examination of the semen, to determine not only the sterility or fertility of the man but also the degree of fertility. . . . . To judge from a relatively small number of cases, the morphology of the sperm cells and especially of the sperm heads gives the best and most dependable information as to the fertilizing power of these cells. Besides this the relative number of the ejaculated abnormal sperm heads seems to be a direct indicator for the fertility of the particular man. Thus no man with more than 19-20% abnormal sperm heads was of good fertility as judged from the breeding record, etc. . . . . The most important of the simple functions of the graphs was the coefficient of variability. In normal cases it was seldom more than 11.00. The upper physiological limit of this function seems to lie around 11.50.—*G. L. Moench.*

15925. NAESLUND, JOHN. Untersuchungen über den Übergang N-haltiger Stoffe vom Fötus auf die Mutter. *Acta Obstetr. et Gynacol. Scand.* 11 (3) : 293-350. 1931.—Determinations were made on blood specimens taken from the mother, some shortly before birth of the child, some during parturition, and some shortly after. On the child, determinations were made on blood from both the umbilical vein and the unbilical arteries, taken simultaneously with the specimens of the mother's blood at parturition. Tests of serum protein were made in 47 cases. In the mother's blood, the serum protein at the birth of the child is usually much higher than in the child's, particularly in cases in which labor has been brief, but energetic. (The mean value in the mother's blood was 8.2% as against 6.06% in the blood from the umbilical vein, and 6.19% from the umbilical arteries.) If labor has been protracted or the pains weak, possibly under the influence of deep narcosis, the serum protein in the mother's blood is not so high. Cases with nephropathy as a rule also show comparatively low values of serum protein in the blood of the mother at delivery. Neither these factors, nor asphyxia of the fetus appear to influence the protein content in the blood of the fetus, which is more constant than that of the mother. In the mother's blood, the water content of the serum (10 cases) is much lower (mean value 89.8%) than in that of the fetus (mean value for blood from umbilical vein 92.1%, from umbilical arteries, 91.9%). Evidently the values for the water and protein content of the serum of the same blood specimen are closely correlated, so that if the water content is low, the protein concentration will be correspondingly high, and vice versa. These variations in the protein content of the serum are therefore probably the result of changes on the water content of the blood. The plasma fibrinogen in the mother's blood at delivery (21 cases) is much higher (mean value 0.34%) than in the child's, in whom the values remain around 0.09% in both umbilical vein and umbilical artery blood, regardless of whether the fibrinogen content in the mother's blood rises or falls. The changes in the fibrinogen content of the blood plasma appear to have no relation to the changes in the concentration of the serum protein in the corresponding tests.

15926. PARKES, A. S. The reproductive processes of certain mammals. Part I. The oestrous cycle of the Chinese hamster (Cricetulus griseus). *Proc. Roy. Soc. [London]* B 108 (755) : 138-147. 3 pl., 3 fig. 1931.—Specimens failed to breed under laboratory conditions; this could not be traced to any abnormality of the reproductive organs of either sex. About half the females possessed perfectly normal reproductive organs (the remainder showed various degrees of fatty degeneration of the ovaries), and underwent a succession of short oestrous cycles similar to that of the mouse. The average length of the cycle was 4.3 days. A summary of the changes occurring in the ovaries, vagina and uterus is given in table 3. The average number of maturing follicles was 8, so that the size of litter is presumably similar to that of the mouse. Specimens collected in the field show a number of extraordinary bodies in the uterine wall. These bodies are obviously glandular in nature, and would appear to be true myometrial glands. Since they were not found in the laboratory specimens, they would seem to develop during some phase of the fertile cycle.—*Author's summary.*

15927. PENCHARZ, R. I., and J. A. LONG. The effect of hypophysectomy on gestation in the rat. *Science* 74 (1912) : 206. 1931.—In 43 pregnant rats complete removal of anterior and posterior lobes was followed by death at the end of a prolonged pregnancy, unless, as in 1 case, the mother's life was saved by removal of the fetuses from the uterus.

15928. PLACE, FRANCIS. Illustrations and proofs of the principles of population. Being the first work on population in the English language recommending birth control. Now exactly reproduced. With an introduction demonstrating Francis Place as the founder of the modern birth control movement, together with unpublished letters of Place on birth control, Coleridge's criticisms of Malthus' views on birth control. Critical and textual notes by NORMAN E. HIMES. 63 + xv + 355p. Houghton Mifflin Co.: Boston [1931?]. Price $4.50.

15929. REYNOLDS, SAMUEL R. M. Studies on the uterus. V. The influence of the ovary on the motility of the non-gravid uterus of the unanesthetized rabbit. *Amer. Jour. Physiol.* 97 (4) : 706-721. 1931.—From observations of 47 ♀ rabbits Reynolds concludes that marked uterine activity in the non-pregnant rabbit is associated with oestrus. Feeble activity has been twice seen in oestrus; moderate activity has been seen 7 times. Anoestrus is usually associated with only feeble activity, or none at all. The motility of the uterus of a rabbit deprived of its ovaries during oestrus becomes irregular and progressively less in 2-4 days. Complete quiescence eventually supervenes. The change has been demonstrated in the same rabbit, by obtaining records both before and after castration. Replacement therapy in castrate rabbits with Theelin and Estrogen, commercial water and lipid soluble oestrogenic extracts, may impart to the quiescent uterus activity such as usually occurs in the presence of the ovaries during oestrus. Hence the author concludes that the ovary of the non-pregnant rabbit normally exerts a profound effect upon the motility of the uterus. Occasional irregularities in uterine motility seen during oestrus indicate that certain unknown extra-ovarian influences sometimes modify or completely annul the effect of the ovary on the motility of the uterus. The minimal effective dose of Theelin as administered was less than 2 rat units per kgm. body wt. in recently castrated rabbits. In rabbits ovariectomized for 3 weeks, 20 rat units per kgm. is the minimal effective dose.

15930. REYNOLDS, SAMUEL R. M., [et al.] Studies on the uterus. VI. SAMUEL R. M. REYNOLDS. The effect of oestrin on the uterine fistula during pseudopregnancy. VII. GEORGE L. WEINSTEIN, SAMUEL R. M. REYNOLDS, and MAURICE H. FRIEDMAN.

Anaphylactic response of the non-gravid uterus of the unanesthetized rabbit. *Amer. Jour. Physiol.* 98(2): 230-236; 237-243. 1931.—VI. In experiments [apparently on 10 rabbits] a difference in threshold of the uterus to the action of Theelin on uterine motility was found in the first few days of pseudopregnancy. The initial cessation of motility may be overcome with small amounts of Theelin. After 4 days this was impossible with large amounts, whether given subcutaneously, intravenously, or by both methods over a period of 2-4 days. An acceleration in the return to activity following pseudopregnancy was not possible with the amounts employed. The effect of oestrin apparently is definitely inhibited after the first few days of pseudopregnancy, as regards its action on uterine motility. VIII. The uterine fistula preparation affords an adequate means whereby anaphylactic shock may be recorded in the unanesthetized rabbit. In 11 rabbits sensitized after parturition the normal type of uterine activity was retained, and the uterus responded with a marked tetanus in anaphylactic shock; 6 rabbits sensitized in early pregnancy did not show normal post-partum uterine activity. The data suggest that sensitization during early pregnancy is not easily accomplished. A marked difference exists in the latent period of the uterine response to pituitrin and to the shock dose of serum in the sensitized animal.

15931. **RIDDLE, OSCAR. Factors in the development of sex and secondary sexual characteristics.** *Physiol. Rev.* 11(1): 63-106. 1931.—A review of literature leading up to the conclusion that differential oxidation rate is the foundation of sex differences.

15932. **ROUGHTON, ALICE I. Sex determination.** *Lancet* 220(5607): 381. 1931.—Letter. In 1 case, a boy, conception occurred 13 days after the beginning of a period. In the 2nd case, a girl, conception occurred 20 days after the beginning of the last period. The 2 were 2 successive pregnancies in the same woman. In the case of the boy the gestation time was 277 days, in the case of the girl it was 268 days.

15933. **SCHEPETINSKY, ANNA, und MARIE KAFITIN. Über die Wechselbeziehungen zwischen Ovarialfunktion und Mineralbestand des Blutes.** *Arch. Gynäkol.* 136(2): 397-406. 1929.—Blood Ca may slightly increase before menstruation but is normal during the period. Inorganic P remains unchanged. Chloride and K show some decline and Na a marked decrease during menstruation. In primary and secondary amenorrhea, presumably due to ovarian hypofunction, the inorganic content of the blood is normal. During the climacteric the chloride shows a tendency to decline, but Ca, K, Na and inorganic P are within the normal range.—*E. W. McHenry.*

15934. **[SERGIEVSKIĬ, M. V., and I. R. BAKHROMEEV.] СЕРГИЕВСКИЙ, М. В. и И. Р. БАХРОМЕЕВ. О действии секрета предстательной железы на сперматозоиды. Влияние раздражения N. N. Hypogastrici на активную реакцию предстательного секрета. [The action of the prostate gland secretion on spermatozoa. Effect of stimulation of N. N. Hypogastrici on the active reaction of the prostate secretion.]** [German summary.] Русский Физиологический Журнал имени И. М. Сеченева (*Russ. Jour. Physiol.*) 13(1): 115-127. 1930.—The authors claim that no investigators (except those of Mislabskiĭ's school) have used a pure secretion of the prostate gland, since they obtained the secretion either according to Fürbringer or by a pipette from the cut prostate. In the first case a mixture of secretions of many glands of the urogenital tract is obtained. In the second case the admixture of blood can not be prevented. The prostate gland secretion obtained by the Mislabskiĭ-Borman method by the stimulation of the n. n. hypogastrici has none of these admixtures. The pH of the secretion has been variable. Continuous stimulation of the n. n. hypogastrici or the introduction of pilocarpine produces, instead of the original neutral secretion (pH=7.0), a distinctly acid secretion (pH=2.5 or more acid). Each secretion, regardless of the pH, caused energetic movements of the spermatozoa. At pH 6.0-2.8 the spermatozoa after a while begin to stick to each other, their movement disappearing slowly. It seems that activation of spermatozoan movement by the prostate secretion depends on some specific substance but not on the pH. Using Hess' viscosimeter, the viscosity of the prostate secretion was found to be 1.1 at the beginning of the experiment and attained a value of 1.0 after a continuous stimulation of the gland.—*S. A. Corson.*

15935. **SHELESNYAK, MOSES C. The induction of pseudopregnancy in the rat by means of electrical stimulation.** *Anat. Rec.* 49(3): 179-183. 1 fig. 1931.—Pseudopregnancy was induced by electrical stimulation of the cervix. The method consists of inserting a copper electrode, connected to a small two-cell induction-coil circuit, at the opening of the cervix and administering a light electrical shock. The method produced a greater percentage of cases of pseudopregnancy than other previously reported mechanical means. The controls were uniformly negative. A definite correlation between the frequency of occurrence of pseudopregnancy and the phase of oestrous cycle at which the animals are stimulated has been observed.—*Author (courtesy Wistar Bibl. Serv.).*

15936. **SIEVERS, H. Untersuchungen über die chemische Physiologie der Plazenta mit besonderer Berücksichtigung des Vorkommens von Cholin in der Plazenta. 2. [Chemical physiology of the placenta, with especial reference to the presence of cholin.]** *Zeitschr. Biol.* 88(2): 145-152. 1928.

15937. **SIMMS, HENRY S. Studies in milk secretion. The influence of proteins on the distribution of salts between blood and milk.** *Internat. Dairy Congr. Eng. Ed.* 1931 (Sect. 2): 50-54. 1931.—Since the calculated osmotic pressures of cow blood plasma and of milk are the same, the udder membrane is freely permeable to water. Na is more concentrated in blood serum than in milk, while K, Mg, and Ca are more concentrated in milk; samples of milk and serum dialyzed against each other maintained this relation. Proof that equilibrium had been established was obtained by removing the salts from samples of serum and milk. To the resulting solution of serum proteins the salts of milk were added and to the solution of milk proteins the salts of serum were added. When these solutions were dialyzed against each other the salts returned to the other side of the membrane so that the final solutions were identical with those from the first dialysis, showing that the distribution of inorganic cations between blood and milk is determined by the proteins.—*Author's summary.*

15938. **SPENGLER, J. J. The fecundity of native- and foreign-born women in New England.** Pamphlet series vol. 2, no. 1. ix+63p. The Brookings Institution: Washington, 1930. Pr. 50 cents.

15939. **SVENNINGSEN, O. K. Einige Beobachtungen zur Erleuterung der Aetiologie der Linea fusca.** *Acta Obstetr. et Gynecol. Scand.* 11(3): 351-358. 8 fig. 1931. —It had previously been shown by Wernøe that skin dystrophies during pregnancy are produced under hormone influence such as all the tissues of the body are subject to, while the location is dependent on the affected innervation area. The author examined 73 previously laparotomized, pregnant women, and in 15 of these he found outside the scar a narrower, less pigmented or entirely broken linea fusca. This was found practically only in patients in whom the wounds had healed by second intention. There is thus probably a causal relation between broken (unregenerated) nerve fibers and a break in the linea fusca. The latter may therefore be assumed to be a skin dystrophy of both nervous and hormone origin, arising through an axon reflex of the endocrine cells of the internal genitals.

15940. **UNTERBERGER, F. Experimentelle Untersuchungen über die Tätigkeit der Eierstöcke nach Uterusexstirpation.** *Zentralbl. Gynäkol.* 54(11): 655-657. 1930. —At 6 weeks of age hysterectomy was performed on 4 rabbits and 2 dogs. Ovaries of 2 rabbits were examined histologically a year later; they resembled those of the normal in all particulars. The other rabbits and

dogs copulated with the ♂, which never occurs in castrates. Hysterectomy thus does not interfere with complete development and incretory function of the ovaries.

15941. **WESTMAN, AXEL. Über die Zirkulationsverhältnisse in der Uterusschleimhaut nach Corpus luteum-Exstirpation.** *Zentralbl. Gynäkol.* 55(24): 1890-1896. 7 fig. 1931.—An India ink suspension was injected without pressure into the abdominal aorta in an unstated number of pregnant rabbits. In normal rabbits the mucosal vessels were filled and showed ink; about 15 hrs. after corpus luteum extirpation some of the vessels were empty, some partly filled, some filled, but never normal. In all cases the constriction occurred at the mucosa where the vessels passed through the musculature and was caused by contraction of the myometrium. Intrauterine death and abortion after corpus luteum extirpation was thus caused by deficient blood supply to the uterus and thus to the placenta. Other experiments on circulation at time of spontaneous parturition indicate that similar processes of deficient blood supply are in operation. The corpus luteum thus initiates mucosal proliferation at the beginning of pregnancy and keeping the musculature inactive, guarantees normal circulation. Its absence leads to labor, to abortion, or to intrauterine death of the fetus with resorption, according to the period at which it ceases to act.

15942. **WESTMAN, A., E. JORPES, und G. WIDSTRÖM. Untersuchungen über den Schleimhautzyklus in der Tuba uterina, seine hormonale Regulierung und die Bedeutung des Tubensekrets für die Vitalität der befruchteten Eier.** *Acta Obstetr. et Gynacol. Scand.* 11 (3): 279-292. 5 fig. 1931.—Previously Westman showed that fertilized ova present in the uterine tube degenerate shortly after castration, due supposedly to the circumstance that the ciliated cells of the tubal epithelium are not transformed into functioning secretory cells. This process of transformation is probably dependent on a hormone from the corpus luteum. In 5 experiments (apparently on rabbits), the corpora lutea were cauterized, without castration, 12 hrs. after coitus, i.e., after the ova had reached the tube. Section of the tubes 60 hrs. later showed the same effect as castration, i.e., no transformation from ciliated to secretory cells, and degeneration of ova. Ovarian extracts of various kinds produced uterine secretion in 10 of 17 castrated rabbits, and large doses permitted the preservation of the fertilized ova, results being better from extracts of the whole ovary than from extracts of corpus luteum alone. Ova which had been experimentally prevented from leaving the ampullar part of the tubes, in which there were never any secretory cells, degenerated even when there were functioning corpora lutea in the ovaries. These experiments show that the corpus luteum hormone elicits a cyclic transformation of the ciliated cells into secretory cells in the uterine tubes, and that the tubal secretion is of final significance for the vitality of the ova.

15943. **WIESNER, B. P., and L. MIRSKAIA. On the endocrine basis of mating in the mouse.** *Quart. Jour. Exp. Physiol.* 20(3): 273-279. 1930.—Mating was induced in oöphorectomised mice by injections of follicular juice; aqueous extracts of follicular juice did not induce mating. Eleven out of 20 oöphorectomised mice injected with cornifying extracts from pregnancy urine mated. Mating in these experiments is assumed to be an effect of the cornifying (α) factor conditioned by a higher threshold than cornification. The relation of the thresholds of cornification and mating can vary and this may explain mating during pregnancy.—*B. P. Wiesner.*

ANIMAL PHYSIOLOGY

SENSE ORGANS

(See also in this issue Entries 15735, 15738, 15742, 15958, 15972, 15989, 16016, 16166, 16372, 17331, 17362, 17377)

15944. **ARNDT, GEORG. Über die Abhängigkeit des Stereoeffektes von der Geschwindigkeit der bewegten Marke.** *Zeitschr. Biol.* 90(6): 574-588. 4 fig. 1930.—If a movable mark oscillating in the plane of an immovable one is observed under conditions in which the sensitivity of one eye is rendered less than that of the other, the movable mark will appear to describe circles about the immovable one. This stereo-phenomenon of Pulfrich results from double images formed because of differences of perception time between the two eyes under the conditions mentioned. The experimental apparatus is described in detail. The differences in perception time were measured at velocities of from 2.2 to 400 angular minutes per sec. At the limit of motion perception the difference between the perception times of the two eyes amounted to $1900\sigma = 1.9$ second. Close agreement was obtained with the absolute values of perception time obtained by other means. It was found that for stereo-phenomena the moment of greatest import is the beginning of sensation, not the instant in which the latter reaches its maximum. Diversion of attention increases the stereo-effect.—*M. Monjé (transl. by P. A. Moody).*

15945. **FEIGENBAUM, ARYEH. Reflex transmission of stimuli from one eye to the other. The "dark-light test" following neurectomy.** *Arch. Ophthalmol.* 5(2): 261-268. 1931.—Dark-light tests on 3 patients with glaucoma before and after opticociliary neurectomy indicated that (1) the neurectomized eye reacts in a typical way, although the sensory connections with the center are cut. Thus one may assume a so-called axon reflex, i.e., a short reflex that does not pass through the center (intra-ocular vasomotor reflex of the uveal vessels). (2) The influence of the second eye probably likewise consists in a primitive reflex of this kind, i.e., an interocular vasomotor reflex transmission of stimuli. It is thus comprehensible that in absolute glaucoma with hypotonia (atrophy of the iris and secondary cataract) in which degeneration of the related nervous receptor organs has occurred, the stimulus evokes no response. The results of the dark-light test seem to point to the probability that in primary glaucoma the parallelism in reaction comes from a reciprocal influence of both eyes, and that the lowering of pressure in one eye, after the trephining of the other, must be ascribed to a vasomotor reflex. It is also easy to understand why a secondary glaucoma often does not show this parallelism, as it frequently arises not from vascular but from coarse mechanical lesions. Probably a certain predisposition of the vessels is a primary condition for the parallelism, somewhat as Schmidt regards the endothelium in patients with glaucoma. This predisposition would then be the hypothetic directing cause for the conformity in the reaction of eyes with primary glaucoma. In general, in the dark, eyes behave as if there were an irritation of the cervical sympathetic (dilatation of the pupil, a rise in tension) while the effect of light (contraction of the pupil, a fall in tension) suggests a parasympathetic stimulation. One should not speak of a causal connection between the width of the pupil and ocular tension, but rather of a correlation.

15946. **FELDERMAN, LEON, and JOHN MILNES DYSON. Tinnitus aurium: amelioration by intraspinal injections of glucose.** *Eye, Ear, Nose and Throat Monthly* 8(10): 439-442. 1929.—Tinnitus aurium for which no organic cause exists is generally due to increased or fluctuating intralabrinthine endolymphatic pressure. Increasing the cerebro-spinal fluid osmotic tension by the

injection of glucose solution ameliorated tinnitus aurium in 60% of cases. This was done apparently by reducing endolymphatic pressure.—*From authors' summary.*

15947. **FLEISCHER, ERNEST. Die Erscheinung der Farbtöne. Erkenntnis-theoretische Abhandlung.** 43p. Schwabe und Co.: Basel, 1929.—The author states that the Helmholtz theory of color vision is the precursor of his own. The assumption of differing sensitiveness to 3 different wave-lengths is common to both and Fleischer's illustrative figures are almost the same as those long in use for explaining the Young-Helmholtz theory. There are two important differences between the two theories. Fleischer's is quantitative. Perception of different colors is due to different electro-magnetic tensions set up in the retina and brain by light of different wave-lengths. The Young-Helmholtz theory is qualitative. While the latter assumes three types of retinal receptors, each type having a different function, Fleischer assumes retinal receptors of a single form each having three different nerve paths to the brain. In dichromates (red-green blind persons) there are only two of these paths; in monochromates (totally color blind) only one. The optic fibers are of a uniform nature and traversed by impulses which do not differ from one another in kind. The quantitative differentiation of stimuli takes place in the retina because all three fibers are not equally sensitive to the same wave lengths. When the nerve impulses reach the brain they set up different "tension-constellation" for the three different sets of wave lengths which the theory assumes. "These tension constellations are the only news which the brain receives from the outer world. They are without qualitative differences." The color tones are not, therefore, due to specific energies of nerves. The usual physical explanations are given for the blue of the sea, the color of sunlight, and of light from clear, thick ice. A section entitled, "the biological development of the optic nerve," discusses the possible order of development from an eye all of whose receptors respond alike to light of all wave lengths, to one which differentiates, first, the effects of long and short waves, and then those of intermediate lengths. It is evident that Fleischer's theory is self-consistent. The three-fiber assumption would account for color blindness, and quantitative differences might account for different colors and a color scale which would shift somewhat for different energies of impinging light. There seems to be no allowance for a difference in function of retinal rods and cones, nor for numerous other physiological facts.—*L. W. Cole.*

15948. **HARTLINE, H. KEFFER. The dark adaptation of the eye of Limulus, as manifested by its electric response to illumination.** *Jour. Gen. Physiol.* 13(3): 379-389. 1930.—Dark adaptation of the eye of *Limulus* is reflected in the behavior of the action potentials obtained upon stimulation by light. By determining the intensity of stimulus necessary to produce an electric response of a given magnitude (as to maximum action potential), at various times during dark adaptation, a quantitative analysis of the process may be made. This analysis is identical with that of Hecht for the dark adaptation of the human eye. This analysis indicates that dark adaptation in the *Limulus* eye may be represented by a chemical reaction of the second order—the recombination of products of photolysis to renew the depleted supply of photosensitive material. This is in complete accord with Hecht's conception of the photosensory process, and is in quantitative agreement with the results obtained by other methods in different animal forms. The experimental relation between strength of stimulus and magnitude of electric response reduces the assumption originally made by Hecht to account for the data on the human eye to an equivalent form; that the magnitude of electric response, provided it be sufficiently large, is directly proportional to the concentration of the photo-sensitive material in the sense organ.—*Author's summary.*

15949. **HOMANN, HEINRICH. Beiträge zur Physiologie der Spinnenaugen. III. Das Sehvermögen der Lycosiden.** *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich. Physiol.* 14(1): 40-67. 13 fig. 1931.—Methods published in 1928 were applied to the eyes of Lycosidae and Pisaura. Anatomically, the bilateralism of the lateral eyes in Lycosidae is peculiar. Arrangement and angles of the rhabdomes are measured with a vertical illuminator. The visual fields of the lateral eyes encircle the spider completely, overlapping very slightly. The visual fields of the main eyes overlap extensively within the field of the lateral eyes. The greatest angle formed by the rhabdomes is 1.5°. Lycosid eyes perceive motion, but not form. A stimulation of one or two rhabdomes is sufficient to make the spider react towards prey. Finding of ♀♀ occurs through motion stimulation of the eyes, but recognition of sex is attained by contact. Functional difference between main and lateral eyes was not determinable, but probably exists in accord with the structural differences.—*H. Homann (transl. by R. A. Muttkowski).*

15950. **IWATAKE, H. On the variation of the sense threshold caused by a change in the surrounding temperature.** [In Japanese, with English summary, p. 49.] *Jour. Oriental Med.* 14(5): 1931.—Believing that former methods of studying the elevation of the threshold of both heat and cold sensations ("phenomenon of adaptation") are defective because in them the source of heat must be removed when the sensibility is tested, Iwataki devised a method permitting uninterrupted examination of the change in sensibility. The surrounding air temp. was gradually or suddenly changed, while an adaptation of v. Frey's thermoesthesiometer was attached to the skin of the dorsal side of the right forearm. When the temp. lay between 15° and 50° C., the change in the warm threshold ranged from about 34 to 38°; that of the cold threshold from 30 to 35°. Sudden changes in the surrounding temp. caused the values of the thresholds to change in the manner of the ordinary adaptation curve (i.e., the logarithm curve). The course of the changes in the threshold values corresponding to the gradual changes in the temp. did not show a straight line, sometimes taking sudden leaps. The warm sense readily adapts itself to high temp. just as the cold sense does to low temp. The results show only the fatigue of the temp. sensory organs. The most remarkable results obtained show that the threshold temp. of the warm sense is lower than that of the skin under a high temp. and the threshold temp. of the cold sense is higher than that of skin under a low temp. The results indicate the existence of a steep gradient between the skin surface and the stratum of skin which includes the sensory nerve endings. The steepness of this gradient will be exaggerated by the pressure of thermoesthesiometer and the contact with a substance of better thermal conductivity. Results vary as the thermal conductivity of the surroundings varies.

15951. **KLEITMAN, N., et H. PIÉRON. De la variation du taux de sommation superficielle des impressions lumineuses en fonction de la nature de la lumière, de la région rétinienne excitée et de l'état d'adaptation.** [Variation in the norm of the superficial summation of luminous impressions, as a natural function of light, of the retinal region stimulated, and of the state of adaptation.] *Compt. Rend. Soc. Biol.* 100(14): 1174-1177. 1929.

15952. [LAZAREV, P. P.] ЛАЗАРЕВ, П. П. О действии углекислоты на нервные центры глаза. [Effect of CO_2 on the nerve centers of the eye.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(9): 209-210. 1930.—Immediately upon inhalation of CO_2 the sensitivity of the eye was sharply lowered, within the next 1-2 min. it increased, sometimes with considerable fluctuations, and after 2-4 min. it approached the norm again. A negative phase was thus followed by a positive one, with increase of sensitivity.

15953. **NAKAZIMA, SIGERU. Notes on the response of the silkworm (Bombyx mori L.) to odors. III. On**

the olfactory sense of the adult moth. *Bull. Miyazaki Coll. Agric. & Forestry* 3: 129-141. 1931.—Since the ♂ moth responds accurately to the body extract of the ♀, this response can be used as a test of olfactory stimulation. When both antennae are eliminated from possible olfactory stimulation, the relative velocity of the response is reduced 53%; when both antennae are amputated, 76%. The antennae probably serve as important chemoreceptors. Other olfactory regions are the basal portions of wings and the labial palpi. Following the amputation of wings, and labial palpi, the longevity of moths is decreased far more than when antennae are removed.

15954. **[PARSONS, JOHN H.] Young's theory of color vision.** *Nature [London]* 128(3220): 123. 1931.—Abstract of an address, relating briefly the history of the theory in the hands of Maxwell, Helmholtz, Hecht, et al.

15955. **TULLIO, PIETRO. Some experiments and consideration on experimental otology and phonetics. A lecture delivered at the meeting of the "Societa dei Cultori delle Scienze Mediche e Naturali" of Cagliari on July 1, 1929.** 41p. Licinio Cappelli: Bologna, 1929.

ANIMAL PHYSIOLOGY

NERVOUS SYSTEM

ALEXANDER FORBES, *Editor*

(See also in this issue Entries 15721, 15832, 15952, 16004, 16008, 16016, 16052, 16053, 16060, 16127, 16252, 16294, 16351, 16372, 16413, 16421, 17305, 17327, 17339, 17379, 17408, 17409)

15956. **ALPERN, D. E., und L. M. TUTKEWITSCH. Das viscerale Nervensystem als Regulator des Gewebsstoffwechsels. VIII. Weitere Untersuchungen zum Entzündungsbegriff.** *Zeitschr. Ges. Exp. Med.* 67(3/4): 430-440. 4 fig. 1929.—Experiments in 3 series of rabbits (no. not stated) sought to establish the relation of the sympathetic nervous system to inflammation as follows: 1) production of inflammation by rubbing croton oil on the surface of one ear in a series in which inflammation had previously been produced by subcutaneous administration of tetrahydro-naphthylamin, and also in a control series of rabbits which had previously suffered no inflammation (inflammatory reactions much slighter and briefer in animals previously subjected to inflammation than in controls); 2) section of one side of the cervical sympathetic; 8 days later production of fever, and at its height, inducement of inflammation in both ears, the ear on the unoperated side serving as control (no marked difference in reactions on the two sides); 3) unilateral section of the servical sympathetic and denudation of the artery of the ear of the operated side by a Leriche operation, with later injection of tetrahydro-naphthylamin and application of croton oil to both ears (vascular reaction in both ears, but inflammation much stronger on the operated side). These results indicate that the reaction is due to a previous limitation or perversion of the function of that part of the sympathetic system affecting the region to which the harmful agent has been applied.

15957. **BARD, L. Du mécanisme physiologique des liaisons homolatérales des appareils périphériques et des centres nerveux.** *Jour. Physiol. et Pathol. Gén.* 26(2): 238-246. 1928.—The localization of sensory images and the peripheral distribution of motor impulses involves for each a special dynamic element. Both elements are involved in lateral orientation. For the auditory and vestibular functions we must postulate an elective decussation, perhaps functional in nature, where impulses from the 2 sides can be reunited in 1 hemisphere.—*A. B. Appleton.*

15958. **BECCARI, N. Il nucleo tangenziale dell'acustico e il riflesso vestibolo-oculomotorio nei pesci teleostei. [The nucleus tangentialis of the acoustic nerve and the oculomotor-vestibular reflex in teleostei.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 644-647. 1 fig. 1930.—In *Clupea pilchardus* impulses from the semicircular canals act reflexly on all ocular muscles. The nucleus tangentialis seems to constitute a peculiar apparatus for the oculomotor-vestibular reflex, taking part in the vestibular-motor reflex of the body and tail.—*M. Comel.*

15959. **BERGER, H. Über das Elektroenkephalogramm des Menschen. II.** *Jour. Psychol. u. Neurol.* 40(5/6): 160-179. 7 fig. 1930.—When non-polarizable AgCl needle electrodes are placed either in an epidural or subperiosteal position in human subjects an electroencephalogram regularly appears which shows variations 90 to 120 σ long and with an amplitude of .2 mv. On these are superimposed shorter ones 30 to 40 σ in length and .1 mv in height. These variations are independent of respiration and either the cerebral or cutaneous circulation. They accompany activity of the brain. The electroencephalogram shows periodic variations which correspond to the different degrees of mental attention. Mental work calls forth definite variations. In sleep the waves decrease in height. The author regards the larger variations, which he terms the Alpha waves, as an expression of the psychophysical processes taking place in the brain.—*H. Berger (transl. by W. J. Meek).*

15960. **BINGER, MELVIN W., FRED W. GAARDE, and J. MARKOWITZ. A study of bronchial reflexes in the guinea pig.** *Amer. Jour. Physiol.* 96(3): 647-656. 1931.—To study the possible physiologic mechanism for asthma (reflex contraction of the bronchioles) pulmonary reflexes were investigated in curarized, locally anesthetized guinea pigs (number not stated), these animals being used because susceptible to anaphylactic shock as evidenced by bronchospasm. The caliber of the bronchioles was measured by recording the movements of the lung through an intrapleural trocar, and by measuring variations in intratracheal pressure. It was found, in confirmation of the work of others, that the vagus nerve possessed both bronchoconstrictor and bronchodilator fibers. In addition, the observation was made that the bronchioles of a guinea pig were extraordinarily sensitive to such stimuli as clapping the hands, or stimulating the nose or the skin. Sectioning the vagi in the neck, paralyzing doses of atropine, or both, did not abolish these reflexes. Since the parasympathetic nerves had been eliminated, the authors conclude that both dilator and constrictor reflexes are carried by the sympathetic nerves to the bronchial muscles.

15961. **BOUMAN, H. D. Contribution à la connaissance de la marge d'excitation.** *Arch. Néerland. Physiol. Homme et des Animaux (Ser. 3c Arch. Néerland. Sci. Exactes et Nat.)* 14(2): 199-233. 3 fig. 1929.—The margin of stimulation of a muscle is the proportion between the intensity of the stimulus, required for the maximal and for the minimal contraction, this proportion being much greater in direct stimulation than in indirect.—*W. J. C. Verhaart.*

15962. **BRÜCKE, HANS. Die Regeneration des Halssympathicus nach Durchschneidung und die Wiederherstellung des Tonus seiner Erfolgsorgane.** *Pflüger's Arch. Ges. Physiol.* 226(2): 319-322. 1930.—In 12 cats the rate of regeneration after section and suture of the cervical sympathetic studied histologically was found to be about 1 mm. per day. The number of fibers distal to the point of section ultimately greatly exceeded the number proximal to it. In a large series of cats the functional capacity of its effectors was studied. For this purpose the reactions of the iris offered the most delicate quantitative index. The difference in diameter of the pupil on the operated and on the normal side was least when the normal pupil was about 6 mm. in diameter.

The difference between the pupils began to diminish long before regenerating fibers could have reached the superior cervical ganglion. Adrenalin injected intravenously under urethane narcosis yielded a dilatation on the operated side which never exceeded that on the normal side, although it was more prolonged. Bilateral extirpation of the superior cervical ganglion several days after unilateral section of the cervical sympathetic gave paralytic effects which were less intense on the side previously sectioned. Even after apparent recovery, the signs of paralysis reappeared under ether narcosis. —*G. P. McCouch.*

15963. **BUSCAINO, V. M. Effetti della mesencefalizzazione nell'uomo. [Effects of "mesencephalisation" in man.]** *Boll. Soc. Ital. Biol. Sperim.* 5(5): 751-752. 1930. —Following "mesencephalisation" in man no functional anomalies with hypertony are observed in the extrapyramidal innervation of striated muscles.—*M. Comel.*

15964. **COLLE, G., e R. PECCO. Modificazione delle arterie in seguito a simpatectomia. [Modification of artery after removal of sympathetic nerve.]** *Arch. ed Atti Soc. Ital. Chir. [Roma]* 34: 743-748. 1927[1928].

15965. **ECONOMO, CONSTANTIN von. Cytoarchitectony and progressive cerebration.** *Psychiatric Quart.* 1930 (1): (1-9). 9 pl. 1930.—The cortex of the human brain has three principal types of nerve cells: pyramidal, fusiform and small granular. In the isocortex, which includes about 11/12 of the cortex, these cells are arranged in 6 layers: (1) molecular, (2) external granular, (3) pyramidal, (4) internal granular, (5) internal pyramidal and (6) fusiform. The stimuli coming up to the cortex are received by the 4th layer; the 3rd and perhaps the 2nd serve the purpose of association; the 5th and 6th layers are purely efferent. The isocortex can be divided into fields of special function and structure depending upon the relative size and cellular content of these layers. 107 such fields are recognized. These fall into 5 main groups: (1) The agranular (motor) where the 5th layer is predominant. (2) The frontal with a special predominance of pyramidal cells. (3) The parietal with a predominance of the 2nd and 4th layers. (4) The polar with an increase in the granular layers. (5) The granular (sensory) with a special predominance of granular cells. The lower animals differ from man by the absence or pronounced poverty of development of those cortical fields that have to do with the higher intellectual functions. There is a gradual increase in the number and differentiation of these fields as one ascends the scale of animal life. This is also noticed in a comparison of the configurations of the brains of early man and that of the modern. This acquisition of new cerebral organs is called progressive cerebration. This process is subject to two laws. (1) The law of the irreversibility of evolutionary processes. (2) That of rectigradation and orthogenesis, or the inertia of development.—*W. Malamud.*

15966. **FISCHER, M. H. Reizversuche mit "Wärmestrahlung" am Zentralnervensystem.** *Zeitschr. Ges. Exp. Med.* 68(1/4): 139-144. 1929.—With a simple irradiation method local heat changes were induced in the sinus, auricles, ventricle and auriculo-ventricular boundary of isolated frog hearts. Radiation of the isolated sinus results in a marked auricular acceleration with decreased extent of contraction. The ventricle follows the auricle at first but later passes through stages of partial into complete block. The various degrees of block are believed to be related to the frequency changes. Occasionally transitory standstill occurs in auricles and ventricles at the moment of sinus irradiation, the significance of which is not clear. After longer sinus irradiation standstill appears first in the ventricle, then in the auricle and finally in the sinus. This is looked upon as a gradual decrease in sinus impulse formation due to heat injury. Local irradiation of the auricle or ventricle leads to a slowly spreading heat injury with decreased contraction in the parts concerned. Local irradiation of the A-V border leads to interference with conduction in the auriculo-ventricular funnel and consequent A-V block. During such a block funnel automatism may appear in the form of ventricular contractions and extra systole of the auricles. All these phenomena are completely and quickly reversible, when the irradiation is discontinued.—*M. H. Fischer (transl. by W. J. Meek).*

15967. **GAROFALO, A. Alcuni riflessi nel campo ostetrico-ginecologico. [Some obstetric-gynecologic reflexes.]** *Clin. Ostetrica* 32(12): 729-738. 1930.—Digital compression of the ovarian region by vaginal-abdominal pressure in 30 subjects produced the ovario-cardiac reflex (slowing of heart). Stimulation of erection of the nipple in 34 nulliparae and 50 puerperae produced the mammary-cardiac reflex (also a slowing).

15968. **GERARD, R. W., and J. WALLEN. Studies on nerve metabolism. V. Phosphates.** *Amer. Jour. Physiol.* 89(1): 108-120. 1 fig. 1929.—Fresh sciatics of winter *Rana pipiens* contain 27 mgm. % total soluble P, summer *R. pipiens* 39 mgm. %, spring *R. temporaria* 24 mgm. %, rabbit 25 mgm. %. For frog nerve this is present, roughly, ½ in inorganic form and ¼ each in acid labile and acid stable combination. For rabbit nerve, nearly ½ is in stable combination. Rest in O leads to a slight increase of combined P at expense of the inorganic. Rest in N causes breakdown of a good portion of both combined fractions so that the inorganic fraction constitutes 70% of the total, the others 15% each. Rest in O following N restores the initial ratios. Tetanization in O has an effect like asphyxia, giving 60% inorganic and 20% of each bound fraction. The total soluble P increases 5-10% during rest in O for several hrs. and about 15% in N or on stimulation. This may result from the breakdown of phosphatids. The results are considered in relation to carbohydrate metabolism and equilibration in nerve.—*R. W. Gerard.*

15969. **GROEBBELS, FRANZ. Die Lage- und Bewegungsreflexe der Vögel. XII. Die Wirkung von Läsionen verschiedener Hirnteile auf die Lage- und Bewegungsreflexe der Haustaube und ihre anatomisch-physiologische Analyse.** *Pflüger's Arch. Ges. Physiol.* 225(2/3): 340-356. 9 fig. 1930.—An experimental anatomical analysis in pigeons has shown that neck rotation after lesions of the medulla and the cervical spinal cord is due to internal arcuate and raphe fibers which cross to the motor cells of the cervical cord on the opposite side. The neck rotation and circus movements of more frontal lesions depend on fibers running between the mid-brain and thalamus and between the mid-brain and corpus striatum. The head nystagmus following a lesion of the optic lobes is opposite in its components to that following a labyrinth lesion. An isolated lesion of the accessory nucleus of the third nerve is followed by dilatation of the pupil and loss of reaction to light on the same side as the lesion. Injury of the ganglion isthmi reduces the light reaction in the contralateral pupil. Tonic impulses to the intrinsic muscles of the eye run in the tectobulbar tract. Tail spreading and elevation depend on the optic lobes and forebrain. Tr. tectocerebellaris also affects the posture of the tail. The disappearance of the postural tone in the limbs was found to be due to degeneration of the homolateral posterior columns. In ataxia the lateral cerebellar tracts are degenerated. A continuous landing reaction of the limbs is present during flight, without closure of the eyes, when both optic lobes are removed. After removal of the forebrain if the eyes are not closed the reaction of the limbs only occurs when the bird alights. After lesions of one posterior horn, posterior columns, or posterolateral column a supporting reaction appears. Other tracts than the rubrospinal must be concerned since this tract can degenerate completely without affecting this reaction.

15970. **GRUND G., und H. V. KURELLA. Die minimale Unterbrechungszeit.** *Deutsche Zeitschr. Nervenheilk.* 103(3/4): 113-129. 2 fig. 1928.—It was shown in an earlier paper that, under given conditions of interrupted direct-current-stimulation, degenerated muscle (instead of reacting with a tetanus as do normal) reac

only with an "initial twitch." If, however, the interval of closure following close upon the interval of open circuit is made longer, then the normal muscle also responds only with initial twitch (Engelmann et al.). In normal muscle it was further shown that, with current str. sufficient to elicit minimal contraction, the phenomenon of initial twitch then appeared when the preceding time of closure exceeded 8.67σ and the time of opening was below 1.33σ. Upon increasing time of rotation of interrupter, the time of closure required to call forth initial twitch no longer remained at 8.67σ but could be obtained still when as long as 90.3σ, the corresponding time of open circuit being at 17.7σ. For comparison observations were made on the same muscle (Extensor digitorum communis) in a case of neuritis of Nervus radialis showing reaction of complete degeneration. In this case normal rotation frequency and minimal current strength evoked no reaction at all. With increased current strength, however, the phenomenon of initial twitch at first could always be elicited, and finally there was again a marked lengthening of the required minimal intervening time of open circuit. With the duration of stimulus increased to 125σ and with current str. clearly more than required for minimal contraction, a marked lengthening of the intervening open circuit could be made without the initial twitch passing over into a tetanus. The set-up of apparatus is described and results in a case of right facialis showing reaction of complete degeneration following an antrotomy are added. An explanation of the phenomenon is suggested based upon Nernst's theory of electrical stimulation.—*C. D. Snyder.*

15971. ISCHLONDSKY. Contribution à la méthode d'étude objective de l'activité neuro-psychique. Une nouvelle réaction pour l'investigation de l'activité réflexe conditionnelle. *Bull. Acad. Méd.* [*Paris*] 103(12): 305-308. 1 fig. 1930.—The indicator is the psycho-galvanic reflex, which is provoked by a strong auditory (pistol shot) or mechanical (pinching) stimulus; the indifferent stimulus is a light. A diagram and explanation of the mechanism are given.

15972. KASAHARA, MICHIO, und SHIRO INAMATSU. Der Blinzel-reflex im Säuglingsalter. *Arch. Kinderheilk.* 92(3/4): 302-304. 1931.—Experiments on 2293 infants aged 2-12 mo. showed that the blinking reflex caused by stimulation of the optic nerve (finger approaching the eye) may be present during or somewhat before the 6th month but is not constant until 12 mos. The trigeminal blinking reflex (elicited by blowing on the face) is present from birth. The blinking defense reflex is not present until after infancy; none of the children examined made any defensive movements of head or body.

15973. KISSELEFF, M. Der Ringrhythmus an Nerv-Muskelpräparaten. *Pflüger's Arch. Ges. Physiol.* 226(1): 99-103. 3 fig. 1930.—Two or more nerve-muscle preparations (frog) were arranged in a closed circuit so that the nerve of one lay on the muscle of the next. A single shock applied to one nerve caused all the muscles to go into a tetanus. Simultaneous string galvanometer records from 2 muscles in the circuit confirm the hypothesis that impulses are passing round and round the circuit, each adjacent pair of preparations behaving as in the "secondary excitation" of Matteucci.—*W. A. H. Rushton.*

15974. KOCH, E. Elektrographische Untersuchungen über das Verhalten des Patellar-reflexes bei Langstreckenläufern. *Arbeitsphysiologie* 2(5): 409-416. 1930.—The patellar reflex of 5 and 8 km. runners was studied by means of an Einthoven string galvanometer. The reflex time was found to be of normal value and was longest with the tallest of the contestants. There was no appreciable difference in the reflex time before and after a race. In 12.5% after a 5 km. race, the patellar reflex was absent, and after an 8 km. run, it was missing in 60%. It remained negative longest in the victors.—*T. M. Carpenter.*

15975. LEVINE, MAURICE. Psychogalvanic reaction in painful stimuli in hypnotic and hysterical anesthesia. *Bull. Johns Hopkins Hosp.* 46(5): 331-339. 1930.—The psychogalvanic response was present (1) when a painful stimulus (needle prick), given during the hypnotic state without anesthesia (in a hysterical patient), produced overt responses and a report of perception of pain; (2) when a painful stimulus, given during the hypnotic state in an area of anesthesia produced by suggestion (in a hysterical patient), produced no overt responses and no report of perception of pain; (3) when a painful stimulus, given during the waking state to a patient with hysterical anesthesia, produced no overt responses and no report of the perception of pain; and (4) when the hallucination of a painful stimulus, suggested during the hynotic state, produced overt responses and the report of the perception of pain.—*Author's summary.*

15976. LUCCHI, GIUSEPPE, e GINO BENEDICTI. Valore e comportamento del riflesso solare in rapporto al riflesso oculocardiaco ed alle prove farmaco-dinamiche. *Gazz. Ospedali e Cliniche* 51(28): 883-888. 1930.—On the basis of tests in an unspecified number of cases (12 cited) the authors find that the solar reflex (manifested by slowing of pulsation and lowering of arterial pressure on compression of the epigastric region) exists, and may coexist with the oculocardiac reflex. It is, like the latter, subject to modification by various drugs, but it is often absent and not valuable in diagnosis.

15977. MAGNITZKY, A. N., und W. A. MUSHEJEW. Chronaxie und Parabiose. *Pflüger's Arch. Ges. Physiol.* 226(1): 1-10. 4 fig. 1930.—Parabiosis in nerve may include among its features hyperexcitability, narcosis and inhibition. This condition is produced by aniline, cocain hydrochloride, and phenol. In the poisoned region the rheobase continually increases and the chronaxie first decreases and later gets very long. In the "normal" part of the nerve rheobase and chronaxie exhibit changes which are usually rather less in magnitude. When the poison is removed there is a certain degree of recovery. The authors conclude that permeability changes underlie parabiosis.—*W. A. H. Rushton.*

15978. MICHOL, EDUARD. Fortgesetzte Untersuchungen zur Analyse der Wirkungsart sympathischer Nerven auf den quergestreiften Muskel. *Zeitschr. Biol.* 90 (4): 313-326. 18 fig. 1930.—To investigate the question whether the stimulation of sympathetic nerves makes motor nerve endings, previously made impermeable for excitation through fatigue, again permeable, two methods were used to abolish the passage of an excitation through the motor nerve endings, namely the use of curare and perfusion with a c.p. NaCl solution. In a curarised preparation an excitation of the nerve of whatever frequency had initially no effect on the muscle, but when by direct rhythmic stimulation of the muscle fatigue had been produced, stimulation of the motor nerve caused the same kind of restoration as is caused by stimulation of sympathetic nerves in a normal animal. The application of Boehm's purest curarine made the results still more clean cut. The stimulation of the sympathetic fibers themselves caused restoration of a curarised muscle fatigued by rhythmic direct stimulation. Therefore the method of stimulating the motor nerves of a curarised fatigued muscle is a new method of demonstrating sympathetic fibers for the muscle and motor nerves. The impermeability of the motor nerve endings after perfusion with the Ca-free NaCl solution was not bettered by stimulation of the sympathetic fibers. These facts are in favor of the view that sympathetic fibers act on a mechanism of the muscle itself.—*L. Asher.*

15979. MUSSEN, AUBREY T. The cerebellum. A new classification of the lobes based on their reactions to stimulation. *Arch. Neurol. & Psychiatry* 23(3): 411-459. 7 fig. 1930.—Confusion has existed because authorities have approached the study of the cerebellum from different angles and have adopted individual nomenclatures. Ontogenetic and phylogenetic studies have contributed to a changing classification. The finding that cerebellar lobes of the cat and monkey gave

definite responses to stimulation led to the necessity of a classification applicable to the human cerebellum as well. The plan adopted by the author was to present the lobes of the vermis, folium by folium, in a column, opposite to which the lobes of the hemispheres were placed. When uncertainty as to the grouping of a particular lobe arose because of an indefinite course of a hemispheral fissure, the position of the lobe was determined by the character of its reaction to stimulation. Localized reactions can be satisfactorily obtained only by the use of the stereotaxic instrument, of which there are only 3 forms in existence. The opinion of Mills and Weisenburg that the fundamental function of the cerebellum is synergia is in accord with stimulation results. A clearer idea of the grouping of the lobes of the cerebellum, founded on their functional activities as shown by stimulation may lead to a more ready appreciation of the early symptoms of cerebellar disease. There are 10 tables showing the generally accepted nomenclatures beginning with the B.N.A. of 1895, and also the author's general classification of the cerebellar lobes based on their electrical reactions, applicable to the cat, monkey and man; in addition, there are 7 diagrams.—*J. C. Michael.*

15980. **NOTO, GAETANO GIOVANNI. Un nuovo riflesso: il riflesso costo-pettorale. [On a new ribs-chest muscles reflex.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 508-510. 1930.—A reflex is elicited by striking the body of the 7th rib, and is given by contraction of the lower bundles of the musc. pectoralis major. It is adapted to reveal the existence of lesions of the segments D_1 to D_7 of the spinal cord. It is homolaterally weakened or absent in hemiplegia.—*M. Comel.*

15981. **POLJAK, S. Die zuführenden Bahnen des Vorderhirns und ihre Rindenbeziehungen auf Grund experimenteller Untersuchungen an Affen.** *Zeitschr. Ges. Neurol. u. Psychiat.* 125(1): 138-162. 9 fig. 1930.—The central portions of the somato-sensory, auditory and visual paths were interrupted in the brains of monkeys (*Macacus rhesus*) close to their subcortical origin and, after degeneration, were studied by Marchi's method. The origin, course, and cortical termination of each of the mentioned fiber systems were determined and their internal organizations studied. Conclusions were drawn with respect to the boundaries and location of the somato-sensory, auditory and visual projection cortex, and to the physiology and pathology of sensation, audition and vision. The exact projection of the retina (temporal crescent, perimacular and macular portions of the visual fields, horizontal meridian, vertical dividing line, points of fixation) upon the striate area was determined. (A detailed account with discussion of literature, and with conclusions concerning the physiology, pathology and diagnosis, accompanied by numerous illustrations and a bibliography appears in the course of this year as a monograph under the title "Main Afferent Fiber Systems of the Cerebral Cortex in Primates,"—University of California Press, Berkeley).—*S. Poljak.*

15982. **PORTA, VIRGINIO. Influenza della rachicentesi sulla termoregolazione, sul ricambio energetico e sulla glicemia. [Action of spinal puncture on thermoregulation, energy metabolism, and glycemia.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 48-52. 1930.—An increase of body temp. followed spinal puncture only when air was admitted. The pulmonary ventilation and the heat production are constantly increased, the latter from 20 to 70%. The R. Q. was in the majority of cases diminished, in the others unchanged. In most cases the glucose content of the blood was increased. Frequently the glycemia diminished afterwards. No constant relation was observed between glycemia and energy metabolism. The increase of heat production was independent of that of the body temperature. The author thinks that the mechanism depends upon a stimulation of the centers which control metabolism, the stimulus being given by the diminution of intracranial pressure.—*M. Comel.*

15983. **RADEMAKER, G. G. J., et S. HOOGERWERF. L'allure des muscles fléchisseurs et extenseurs du coude lors de la rigidité décérebrée.** *Arch. Néerland. Phys. Homme et Animaux, III C.* 14(4): 445-469. 19 fig. 1929.—In decerebrate rigidity not only the extensor- but also the flexormuscles of the arm show tetanic action currents. The stronger the rigidity, the stronger the action currents of extensors and flexors. Excitations increasing the rigidity cause an increase of the action currents of both sorts of muscles. After extirpation of the extensor muscles the increase of the action currents of the flexors still appears. Excitations which decrease the rigidity give first a decrease and then a disappearance of the action currents of the extensors. The action currents of the flexors decrease also but sometimes after the diminution and disappearance they reappear and become stronger than before; the limb then shows an "active" flexion. When the decerebrated animal lies absolutely quiet on one side, the action currents of the muscles soon disappear, usually in the first one or two hours. To maintain the tetanic contraction it is necessary that the animal be passively excited at intervals.—*G. G. J. Rademaker.*

15984. **RICHTER, CURT P., and MANLEY B. SHAW. Complete transections of the spinal cord at different levels: their effect on sweating.** *Arch. Neurol. & Psych.* 24(6): 1107-1116. 2 fig. 1930.—Complete transection of the spinal cord at different levels from C6 to L5 produced in 24 cats profound changes in the skin below the level of the lesion. These changes, which were similar to those found by Head and Riddoch in men with transections of the spinal cord, could be divided into 2 distinct stages. During the 1st stage, which lasted from 25-75 days, the skin was dry, while during the 2nd stage, which was more or less permanent, it became soft and moist and often was actually covered with visible sweat. By means of the electrical skin resistance method, it was possible to obtain a continuous picture of the onset, magnitude and duration of these changes throughout the 2 stages. During the 1st stage, when the skin was dry, the electrical resistance was high—much higher than would ever be suspected on the basis of palpation or inspection. Thus in all of the animals, it increased from a preoperative level of 40,000 to at least 2,000,000 ohms, while in some it rose to more than 25,000,000. During this stage, the galvanic skin reflex was absent. During the 2nd stage, when the skin was soft and moist and the sweat glands were obviously functioning again, the electrical resistance was as low or lower than before transection. At this time the galvanic skin reflex and spontaneous currents were present. The magnitude of the increase in the resistance of the skin was shown to depend on the level of the lesion with relation to the thoracico-lumbar outflow of the sympathetic nerves. A similar observation was made by Head and Riddoch regarding the distribution of areas of excessive sweating in men with transections of the spinal cord. By measuring the conductivity of the skin, it was possible to compare the effects produced on the sweat glands by transection of the spinal cord, sympathectomy and total nerve section, and in this way to throw more light on the question of what central and peripheral factors are involved in the control of the sweat glands. It is suggested that this method might be used in the future to study the localization and extent of injuries to the spinal cord in man.—*Authors' summary.*

15985. **RIZZOLO, ATTILIO. Localizzazione dei punti motori nella corteccia cerebrale della cavia. [The localisation of motor points in the cerebral cortex of the guinea pig.]** *Arch. Fisiol.* 29(1): 31-47. 4 fig. 1930.—In the cerebral cortex of the guinea pig motor regions determining muscular movements on the opposite side of the body can be located by the method of electrical stimulation. In each region a number of motor points can be located which when stimulated will elicit the same isolated muscular movement. These motor points differ with respect to excitability, one being the "optimum motor point" (that having the shortest chronaxie). The optimum motor point determining the extension and flexion movements of the anterior and posterior

limbs have the same chronaxie; the 4 motor points have the same excitability. The chronaxie of the optimum motor points of the anterior and posterior limbs is shorter than the chronaxie of the optimum motor points for the neck muscles, but longer than the chronaxie of the optimum motor points for the eyelids or pinna of the ear. The optimum motor point for the latter has a shorter chronaxie than the optimum motor point for the movement of the eyelids. Many facts substantiate the reality of the points located electrically in the cortex as truly motor: local application of strophanthin on a motor point diminishes the chronaxie of the grey matter, but does not affect the chronaxie of the white matter lying immediately underneath. Electrical stimulation of the caudate nucleus, the thalamus or the corpora quadrigemina evokes general muscular contractions of the entire animal. Clonic contractions evoked by local applications of absinthe on a motor point of the cerebral cortex disappear if during the contractions the grey matter is removed from the region. Loss of muscle tone and abnormalities in the behavior of a limb result if the grey matter is removed from a motor point determining its movement; the abnormalities become more evident if the ablation includes regions of other motor points determining movements of the same limb.—*M. Comel.*

15986. RIZZOLO, ATTILIO. Electrical stimulation of a lateral lobe of the cerebellum in relation to the excitation of the cerebral cortex. *Arch. Fisiol.* 29(2): 219-233. 1930.—In the dog, electrical stimulation of a lateral lobe of the cerebellum increases the excitability of the cerebral cortex. The effect of stimulation is always more marked on the side of the cortex contralateral to the cerebellar lobe electrically stimulated. Electrical stimulation of a lateral lobe of the cerebellum after a longitudinal division of the corpus callosum increases the excitability of the contralateral side of the cerebral cortex, but effects no change in the excitability of the homolateral side. It is inferred therefrom that in the dog each lateral lobe of the cerebellum is connected only with one side of the cerebral cortex, i.e., the contralateral side. The increased excitability effected on the side of the cerebral cortex homolateral to the lateral cerebellar lobe stimulated electrically—the corpus callosum remaining intact—cannot be attributed to diffusion of electrical lines of force from the cerebellar lobe, stimulation of the lateral cerebellar lobe after division of the corpus callosum longitudinally not effecting any change in the original excitability of the homolateral side of the cortex. The existence of a physiological relationship between a lateral lobe of the cerebellum and the side of the cerebral cortex with which it is connected is merely an assumption which the marked increase of excitability of the side of the cortex contralateral to the cerebellar lobe treated with electrical stimulation is not competent to settle. It is assumed that a lateral lobe of the cerebellum exerts a direct trophic influence on the cells of the contralateral side of the cerebral cortex, and an indirect one on the cells of the homolateral side of the cortex.—*M. Comel.*

15987. SCHNEIDER, KURT. Der Einfluss des Sympathicus auf die quergestreifte Muskulatur. *Pflüger's Arch. Ges. Physiol.* 225(1): 6-18. 3 fig. 1930.—Büttner and Heimbrecht have found that the registration of the contraction of the gastrocnemius muscle of a frog carried out 5 hrs. to 10 days after a unilateral sympathectomy shows on the side of the sympathetic denervation, in most cases, an increased contraction-rest compared with the intact side—80% on the average. This statement was re-tested by many experiments on summer- and winter-frogs. It was not possible to confirm it. The deviation found on the average after a unilateral sympathectomy did not overpass the differences found in numerous control experiments on intact animals. About 150 preliminary experiments were done in repeating and controlling the work of Büttner and Heimbrecht. The possible source of error is indicated. In further experiments the author registered the curve of contraction before and after the sympathectomy with the same muscle. It appeared that the height of the contraction and the contraction rest of the frog gastrocnemius registered immediately (3 min.) up to 1 hr. after the sympathectomy does not differ from that before the sympathetic denervation. In about 40% of cases a decrease of the contraction-rest below the original value during the first registration after sympathectomy could be observed. In control experiments it was proved that the effect observed was not caused by the sympathetic nerves. The normal muscle shows the same condition. The cause probably lies in a change of the mechanical condition of a muscle after a contraction, because the normal and the exsanguinated muscle shows the same conditions. Number of experiments not indicated; 20 experiments on exsanguinated frogs and ten on urethanized transfused frogs are tabulated.—*Author's summary (transl. by E. Polák).*

15988. SMYSLOW, G. G. Das digitoperoneale Phänomen und seine Beziehung zu den tiefen Gelenkreflexen, im speziellen zum Phänomen K. Mayers. *Deutsche Zeitschr. Nervenheilk.* 112(1/3): 124-139. 1930.—A study of the phenomenon produced by striking the toes, in which the foot is abducted. This is similar to the Mayer Phenomenon produced in a like manner in the hand. It is a true reflex of cerebral localization. The latent period was studied in adults, children and in various neurologic disorders. It appears in children at the time of disappearance of the Babinski reflex, and is of special significance in pyramidal lesions. Examinations were made under general and local anesthesia; the muscles involved are identified. Biogenetic and clinical significance are considered. Sphygmographic tracings were made. Bibliography included.—*A. E. Taft.*

15989. TRÄBITZSCH, W. Über die periphere Muskelerregbarkeit während Hell- und Dunkeladaptation. *Zeitschr. Psychol. u. Physiol. Sinnesorg. Abt. II. Zeitschr. Sinnesphysiol.* 61(2/3): 148-153. 1930.—The peripheral motor irritability was studied chronaximetrically on the M. flexor digitorum communis profundus in 9 persons with 19 experiments in the 1st series and an unstated number in a 2nd series by alternate illumination and darkening of both eyes. In 76 cases of adaptation to illumination (both series) there was shortening of chronaxie 31 times, lengthening 29, no change 16. In 82 adaptations to dark there was shortening 51 times, lengthening 18 and no change 13. Thus, in adaptation to light, changes in chronaxie were equally divided, a negative finding; in adaptation to dark there was a predominant shortening, showing an unequivocally specific influence. Similar changes could not be elicited otherwise even by strong acoustic stimuli.

15990. VERHAART, W. J. C. Some clinical and anatomical observations on the "Paraplegie en Flexion" and related motor disturbances. *K. Akad. van Wetenschappen Amsterdam, Proc. Sect. Sci.* 32(2): 961-972. 9 fig. 1929.—In cases of flexed lower limb 3 motor disturbances were seen. Severe degenerations of both frontal and central lobes caused the paralysis in flexion of the legs; degeneration of the 2 frontal lobes caused a permanent flexed position of the legs, with inability to go erect, but without paralysis of the muscles of the legs. These patients could stretch their legs actively. Two cases are described of hemiplegia in flexion, caused by degeneration of 1 hemisphere, by a paralytical process, particularly by a weakening down to the red nucleus. The conclusion was, that the tendency to flexion of the legs became manifest when the frontal lobes were out of function, then the typical human way of locomotion had disappeared, and the old flexed position of the legs became manifest again. This distribution of tonus remained, when a decerebration to the level of the red nucleus took place, which in animals, gives no disturbances of locomotion.—*W. J. C. Verhaart.*

15991. WASSILIEW, L. L., und M. R. MOGENDOWITSCH. Erregungssummation in einer alterierten Nervenstrecke. *Pflüger's Arch. Ges. Physiol.* 225(2/3): 389-402. 7 fig. 1930.—The authors conclude that the

Wedensky phenomenon (the single contraction following tetanic stimulation) is due to a summated stimulation process in the nerve fibre. This summation process is enhanced by the anode of a constant current, by hypertonia, and the cations of the alkaline earths. It is hindered by the cathode of a constant current, by hypotonia, by many cations such as Cu by the H-ion and by the OH-ion. Sodium ions have no marked influence. They form an intermediate group. The increased permeability of the colloid membrane of the nerve fibre and the "parabiotic" depression associated with this are unfavorable, whilst diminution in permeability creates favorable conditions for stimulus summation.—*H. Woollard.*

15992. **WEBER, HERMANN.** Beiträge zur Bewegungsphysiologie der Hippocampus-Arten. *Zeitschr. Wiss. Biol. Abt. C, Vergleich. Physiol.* 5(1) : 1-36. 21 fig. 1927.—There are 2 functional systems in the movements of the sea-horse, which are quite differently related to each other, in accordance with the situation in which the animal finds itself. The spinal animal (and also the motionless normal animal) shows only one, namely that of the tail movements concerned with clinging, which always take place mechanically in the same way, and always in response to the same stimuli. The higher system, which commonly conceals the other, consists of the fin movements and the steering movements of the tail, coordinated with them and with the functions of the labyrinths, under control of the brain rather than the cord. These tail movements influence to a considerable extent the direction of the forces exerted by the fins. Vertical and horizontal steering are controlled partly by the fins. The back fin advances the animal in the direction of its long body axis, the breast fin somewhat more obliquely upwards, in case of reverse undulation obliquely backwards and downwards. According to whether only the breast fins independently, or the back fin, or both together are employed, and also in accordance with the regulation of the position of the tail, the bodily posture and direction of movement are altered. Bodily posture, especially the position of the tail and fin movements, impulse and steering are closely interdependent and are grounded on the special structural relations which in turn condition equilibrium and posture.—*Author's conclusions (transl. by C. E. Kellogg).*

15993. **WORONZOW, D., N. JUDENITSCH, und P. MAKAROFF.** Zur Analyse der A. Fickschen "Lücken." *Pflüger's Arch. Ges. Physiol.* 226(1) : 113-137. 7 fig. 1930. Fick investigated the effect of different strengths and durations of current applied to a nerve upon the resulting muscular contraction. This work is repeated with the aid of string galvanometer records from nerve and muscle. Fick believed that when the contraction diminished with increase of current strength or duration, the impulse which started at the proximal electrode, was blocked in the neighborhood of the distal. The present authors reject this conclusion on the grounds of latent period measurements, and believe that the observed changes represent excitability variations localised at the electrodes. They conclude that excitation at the opening of a current can occur at the cathode as well as at the anode and that the local changes are an expression of the "accommodation" of Nernst.—*W. A. H. Rushton.*

15994. **WYSOCKI, JOSEPH.** Sur les voies réciproques de la dynamogénie des centres psychomoteurs. [Reciprocal paths in dynamogenesis of psychomotor centers.] *Compt. Rend. Soc. Biol.* 97(33) : 1506-1508. 1927.

ANIMAL PHYSIOLOGY

VASCULAR SYSTEM

(See also in this issue Entries 15705, 15712, 15713, 15724, 15740, 15964, 16053, 16058, 16067, 16105, 16112, 16123, 16131, 16176, 16181, 16222, 16227, 16234, 16243, 16253, 16267, 16346, 16354, 17300)

15995. **BEHRENS, ALFRED und WALTER LAMPE.** Studien über die Beziehungen zwischen Blutdruck, Blutmenge und Herzgrösse. *Zeitschr. Ges. Exp. Med.* 61 (5/6) : 657-664. 4 fig. 1928.—Experiments on rabbits and dogs show that a lowering of the blood pressure consequent upon blood letting from an artery brings about a diminution in the size of the heart following a reduction of the blood volume and this can be restored again by the infusion of a colloidal solution. An artificial increase in the volume of the circulating blood can be induced by the infusion of a colloidal solution (normal saline, gum arabic). If a 20% gum solution, which takes up a considerable amount of water is used a plethora is produced by the infiltration of water from the tissues and this brings the total amount of fluid well above the estimated amount. The vascular system soon adapts itself to the changed blood volume. At the onset of the plethora a striking increase in blood pressure occurs and this pressure is the resultant of the strength of the heart beat, the blood volume and the amount of dilatation of the vessels. If the vessels are already full and dilated to a maximum extent there is a marked increase in blood pressure which is followed by a larger fall that results from actual injury to the animal. The same is true in cases in which the animal is damaged by a rapid overfilling of the blood vessels. In acute plethora also the heart is over distended. In slow infusion however both heart and blood pressure remain unchanged. When the blood pressure rises and there is an increase in the diastolic filling the tension also rises and the increased volume passing through the heart is in part responsible for the increased blood pressure.—*C. H. O'Donoghue.*

15996. **BISCEGLIE, V. et GIULIO BUCCIARDI.** Modifications de l'activité contractile et de la structure de fragments isolés du coeur embryonnaire de poulet par les variations quantitatives de la composition du liquide nutritif. *Arch. Internat. Physiol.* 3(1/3) : 272-309. 11 fig. 1929.—Continuation of a series of experiments on embryonic chick-heart transplants in vitro. The technique of transplantation was the usual one of tissue culture. Equilibrated salt solutions cause an increase in the frequency of the beat. The effects last 1 to 2 hrs. and are more evident when $CaCl_2$ and KCl are suitably increased. Similarly in isotonic solutions in which one of either salts is increased there is an increase of frequency which however leads early to complete arrest. Uranyl acetate acts in the same manner. The growth and the structure of the migrated myoblasts of cultures in normal salt solution are not different from those of cultures in plasma or tissue juice. The cultures are damaged by an increase of KCl and $CaCl_2$. KCl leads to a vacuolization of the cytoplasm. The cultures remain viable for a long time. Growth is not accelerated by $CaCl_2$. Uranyl acetate inhibits growth, causes formation of vacuoles, dissolution of the cytoplasm, alterations in the nucleus and finally death of the transplant.—*L. Braun (transl. by G. Bachmann).*

15997. **CANTONI, OSCAR.** Circolazione crociata tra cane e gatto. [Crossed circulation in dog and cat.] *Boll. Soc. Ital. Biol. Sperim.* 5(6) : 916-918. 2 fig. 1930. —Crossed circulation was achieved between a cat and a dog, without variations of blood pressure occurring. No blood incompatibility was found.—*M. Comel.*

15998. **DEMOOR, J.** A propos des dernières recherches faites sur le réglage humoral dans le coeur. [Humoral regulation of the heart.] *Bull. Acad. Roy. Méd. [Belgique]* 8(11) : 882-906. 1928.

15999. **DUCRET, S.** Die Dehnungseigenschaften der Coronar- und Splanchnicusarterien. *Pflüger's Arch. Ges. Physiol.* 225(5/6) : 669-679. 13 fig. 1930.—An apparatus

is described for the determination of the degree of elasticity of blood vessels. Observations are recorded on the deformation cycle of coronary and mesenteric arteries, produced either by simple extension and release or by repetition of uniform or progressively augmenting tensions. The extension curves of the coronary arteries show the following features: On release of tension, first contraction then generally slight dilatation with return to constant length. When tension is alternately applied and released, the tension and recoil curves bend sharply, with a slight terminal extension. In the case of the mesenteric arteries a sharp contraction follows the release of tension, with subsequent rapid elongation and return to constant length. Tension and release are followed by prolonged readjustments requiring hours for the attainment of normal calibre. The terminal phase is characterized by a decided elongation. Temperature changes, alterations in pH and acid deficiency influence the tension curves. The results are amplified and clarified with control histologic materials.—*Author's summary (transl. by H. E. Jordan)*.

16000. ENGELHART, E. Über humorale Übertragbarkeit der Herznervenwirkung. XIII. Die Vagusstoffverteilung auf Vorhof und Kammer bei Frosch und Säuger. *Pflüger's Arch. Ges. Physiol.* 225(5/6): 721-727. 1930.—Experiments on the vagus substance and the distribution of it in the frog heart indicate that here the vagus has equal action on the atrium and ventricle, but that in the rabbit the vagus action is confined almost entirely to the atrium. The relatively small quantity of the substance in the ventricle is probably not due to direct action of the vagus nerve there but to transfer of the substance from the atrium.—*Author's summary (transl. by M. Dresbach)*.

16001. FLORKIN, MARCEL. Sur les substances qui provoquent des contractures musculaires. *Arch. Internat. Physiol.* 32(1): 114-116. 2 fig. 1930.—The contractions of a filament of fibrin from pigs' blood were ascertained in various media. Solutions of chloroform, lactic acid, $BaCl_2$, Ki, KCl and sodium glycocholate produced such contraction; acetylcholin hydrochlorid did not. Since acetylocholin hydrochlorid produces muscular contraction, it must do so by some other means than direct effect on fibrin.

16002. FREMONT-SMITH, FRANK, and HENRY S. FORBES. Intraocular and intracranial pressure. *Arch. Neurol. & Psychiatry* 18(4): 550-564. 9 fig. 1927.—Five groups of experiments were devised to study the relation between intraocular and intracranial pressure, and the dependence of both upon blood pressure. The cerebrospinal fluid and the aqueous humor are both in virtual equilibrium with blood plasma. However, they are more intimately related to the venous pressure, being only slightly affected by changes in the arterial pressure. The 1st group of experiments shows that when pressure is varied locally in either eye or cranium it is not directly transmitted from one to the other. The 2nd group shows a prompt and parallel rise in intracranial pressure in response to hydrostatic venous pressure. The 3rd group shows the effects of hypertonic solutions of NaCl, urea and glucose injected intraperitoneally or intravenously (glucose). Paralleling the rise in blood pressure there occurred a fall in intracranial and intraocular pressure. In the 4th group of experiments the osmotic pressure of the blood was lowered by injections of hypotonic solutions. The result was a rise in both ocular and cerebrospinal fluid pressures. The 5th group was designed to test the effects of CO_2, CO, epinephrine and fluorescein. These agents, with the exception of fluorescein, caused a parallel increase in both pressures.—*H. E. Jordan.*

16003. GANTER, G., und A. SCHRETZENMAYR. Prinzipielles zur Plethysmographie. *Arch. Exp. Path. u. Pharmakol.* 149(1/2): 1-24. 10 fig. 1930.—A comparison of the plethysmographic volume-curve with the blood-pressure and tonus of the symmetrically corresponding arteries indicates that plethysmography is not a trustworthy method of determining active or passive alterations in vascular condition.—*From author summary (transl.)*.

16004. GRÜNBERG, H. J. Über Funktionsveränderungen des Herznerven (Nn. vagi und Nn. sympathici) unter dem Einfluss von Kalium und Calcium. *Arch. Exp. Pathol. u. Pharmakol.* 139(5/6): 341-352. 3 fig. 1929.—Perfusion of cats' hearts by the Langendorff method with Ringer-Locke's solutions containing excess Ca or K, may bring about paradoxical changes in the functions of the cardiac nerves. When the solutions contain .04% $CaCl_2$ or .06% KCl stimulation of the vagus results in positive, and stimulation of the sympathetic in negative inotropic and chronotropic effects. Stronger concentrations of either salt destroy all nerve action. The disturbance in vagus function is only partial, for strong stimuli are still inhibitory. The disturbance in sympathetic function may be noted for all strengths of stimuli. The functional condition of the heart may determine the character of cardiac nerve response.—*W. J. Meek.*

16005. HAMM, LEE, and COBB PILCHER. Cerebral blood flow. II. The effect of intravenous injection of hypertonic and hypotonic solutions on the cardiac output and blood pressure. *Arch. Neurol. and Psych.* 24 (5): 907-912. 1930.—The cardiac output and blood pressure have been studied in [18] dogs before and after intravenous administration of hypertonic and hypotonic solutions. In most experiments the cardiac output was diminished after the injection of both types of solution, although individual variations occurred. The O consumption was usually increased and so was the O utilization by the injection of both hypotonic and hypertonic solutions. The mean blood pressure varied during the injection, but thereafter was increased slightly in all experiments. The average diminution found in cardiac output and the average increase in O consumption do not seem to be sufficiently great to account for the increase previously found in O utilization of the brain following injection of hypertonic and hypotonic solutions. This suggests that the latter changes are the result of direct effects of the solutions on the brain or its vessels.—*Authors' summary.*

16006. HESSE, A. Der Blutdruck des Menschen. [Human blood pressure.] 36p. O. Gmelin: München. 1929. 2.25 M.

16007. ISCHIKAWA, N. Gasanalytische und elektrokardiographische Untersuchungen am Kreislaufapparat elektrokutierter Tiere. [Analysis of gases and electrocardiographic investigations on the circulatory apparatus of electrocuted animals.] *Zeitschr. Ges. Exp. Med.* 69 (3/4): 422-438. 1930.

16008. KARLIK, L. Beeinflusst beim Frosch die sogenannte antidrom hervorgerufene Gefässerweiterung eine durch Reizung des N. sympathicus hervorgerufene Gefässverengerung? *Pflüger's Arch. Ges. Physiol.* 222 (3): 356-358. 1 fig. 1929.—In frogs the blood vessels do not constrict from sympathetic stimuli if the vessels have been previously dilated by antidromic stimulation.

16009. KISCH, FRANZ. Experimentelles zur Kreislaufwirkung endovenös einverleibter hypertonischer Lösungen. *Zeitschr. Ges. Exp. Med.* 56(1/2): 215-250. 13 fig. 1927.—The hemodynamic relationships, O utilization coefficient of the blood and the stimulus propagation in the heart were studied following the intravenous injection of hypertonic solutions of various reagents in varied concentrations into cats and dogs. The injection of 1 cc. per kgm. of a 40% glucose solution resulted in a hydremic plethora producing a prompt and lasting increase in the strength of heart beat and the minute volume of the heart with accompanying increase in the total circulation. Sugar solutions were more dependable and produced a greater effect than solutions of other substances. Following an initial increase the blood pressure dropped for a short period due to a decreased resistance in the arterial bed and in the capillaries as a result of the changed physico-chemical makeup of the blood. Then there was a lasting and often significant increase in the blood pressure occurring when the minute volume had reached its maximum since the dilator

factors cease to be effective when a complete osmotic equilibrium between the blood and the tissues has been established and the composition of the blood begins to return to normal. Although the heart rate is decreased by these injections the velocity of blood flow is increased due to the increased minute volume and increased blood pressure. The decreased O utilization coefficient also offers evidence for an increased blood flow. The electro-cardiogram on the introduction of 40% glucose confirms the assumption that as a result of the physico-chemical structure of the blood the impulse formation in the sinus node is made less effective since a change to atrio-ventricular rhythm can be concluded. In the case of other solutions specific factors dependent upon the reagent used may influence or delay the plethora and hemodynamic activity (e.g., the effect of K or Na on the heart muscle fibers). If the lesser circulation is not free or if the heart is incapable of driving an increased amount of blood through the periphery the intravenous injection of hypertonic solutions will have an injurious effect. Hence arise the clinical contra-indications in stasis through the lungs and in cardiac insufficiency. Edema resulting from a failure of the normal removal of fluids from an organ will not be aided by injections of concentrated sugar solutions since, following the plethora, fluid will again enter the tissue from the blood. Such injections should perhaps be helpful where there is danger of a sudden failure of the heart (e.g., acute edema of the lungs), when the circulation is chronically at low ebb, in spasms of the blood vessels where a prompt dilatation is desired and in tachycardia originating in the sinus node.—*H. M. Krueger.*

16010. LÁNCZOS, ANNA. Über die Wirkung des Vagusstoffes und Acetylcholins auf die isolierte Kammer des Froschherzens. *Pflüger's Arch. Ges. Physiol.* 225 (5/6): 710-720. 9 fig. 1930.—Both vagus substance and acetylcholin were found to exert a more powerful action on the ventricle of an intact frog's heart than on the isolated ventricle, indicating an indirect nervous influence conducted from the upper heart to the ventricle. Neither vagus substance nor acetylcholin were equally effective over all parts of the ventricle when detached; solutions of either substance which were effective on the entire ventricle were altogether inactive on the lower $\frac{2}{3}$. As the only apparent difference between the upper and lower portions consists in the difference in the number of nerve-endings, the fact seems to indicate a nervous point of attack for these substances. External application of acetylcholin to the isolated ventricle of the frog's heart produced a chronotropic action, while internal application had an inotropic effect.

16011. LOEPER, M., A. LEMAIRE, et J. TONNET. L'amylase du coeur. [The amylase of the heart.] *Progrès Méd.* 1930 (5): 185. 1930.

16012. LOEPER, M., A. LESURE, et S. de SÈZE. Variations régionales du soufre du coeur. [Regional variations of the cardiac sulphur.] *Progrès Méd.* 1930 (6): 225. 1930.

16013. LOOS, HANS. Zur Kenntnis der Beziehungen von chronotroper und inotroper Wirkung des Herzvagus. *Pflüger's Arch. Ges. Physiol.* 225 (1): 1-5. 3 fig. 1930.—During vagus inhibition of the (rabbit) heart repeated stimulation of the atrium produces a "treppe" effect, the extent of which depends upon the stimulation frequency. Under the so-called "treppe conditions" shortening of the diastolic phase promotes the strength of contractions.—*Author's summary (transl. by M. Dresbach).*

16014. MARTINI, P., und R. OPPITZ. Untersuchungen über Blutdruck und Blutdruckamplitude. *Deutsches Arch. Klin. Med.* 166 (1/2): 49-59. 4 fig. 1930.—The physics of flow through elastic tubes, studied by measurements of resistance, pressure, and volume in rubber tubes.

16015. MORIN, G., et A. JULLIEN. Recherches physiologiques concernant l'action de divers fixateurs sur le ventricule isolé de l'Escargot. *Bull. Hist. Appl. Phys. et Path.* 7 (1): 3-7. 1 fig. 1930.—Fixatives perfused into the living snail heart may kill rapidly in systole with extreme contraction, or more slowly in diastole. Most fixatives are in the first class and hypertonic Ringer formol is in the second.—*J. G. Sinclair.*

16016. NYSSEN, R., et J. HELSMOORTEL, Jr. L'influence des excitations auditives intenses sur la pression arterielle chez les normaux et chez les sourds labyrinthiques. *Jour. Neurol. et Psychiatr.* 30 (1): 47-49. 1930.—Intense auditory stimulation increased arterial pressure, probably by first acting on the extracochlear fibers. Of the 11 subjects suffering from labyrinthic deafness 5 did not respond to auditory stimulus. In the others blood pressure was increased; in a case of hysterical deafness excitation of the deaf ear did not increase arterial pressure but excitation of the normal ear did.

16017. PILCHER, COBB. Cerebral blood flow. I. The effect of intravenous administration of hypertonic and hypotonic solutions on the volume flow of blood through the brain. *Arch. Neurol. & Psych.* 24 (5): 899-906. 1930.—The O content of arterial blood and of blood from the occipitovertebral sinuses, which drain a large amount of the blood flowing through the brain, has been studied [in 21 experiments on dogs] before and after the intravenous injection of 50% dextrose, or 30% NaCl and of distilled water. The blood, variable in its O content immediately after the injections, reached a point of stability within 30 min. and this was maintained for several hrs. After 30 min. there was rarely any significant change in arterial O content, but the O content of blood from the occipitovertebral sinus was invariably diminished markedly after the injection of both hypertonic and hypotonic solutions. The arteriovenous O difference (utilization of O) increased after injection of both types of solutions. It is thought that these results indicate probably a diminution in volume flow of blood through the brain after intravenous injection of both hypertonic and hypotonic solutions.—*Author's summary.*

16018. RASUMOW, N. P., and A. B. NIKOLSKAYA. The buffer function of the diaphragm and the cardio-abdomino-diaphragmatic syndrome. *Amer. Heart Jour.* 4 (5): 600-611. 8 fig. 1929.—The buffer function of the diaphragm with respect to the organs of the thorax, particularly the heart, is of the greatest biological importance. This function is realized both by the diaphragm and the abdominal press by way of the combined reflex as defined by Sherrington. The methods indicated by the authors make it possible to analyze the reflexes of the vegetative nervous system on the diaphragm; these reflexes fall in completely with the diaphragm buffer function theory. In pathological cases a perversion of the reflexes can be observed, occurring in cases of a tonus relaxation of the diaphragm and the abdominal press; the buffer function of both is then to a certain extent impaired. In such cases, when a sympathicotonic state in the domain of the cardio-vascular system or diseases of the cardiac muscle are present, a cardio-abdomino-diaphragmatic syndrome is usually developed, characterised by symptoms of cardiac insufficiency appearing after meals, after alterations in the position of the body, during sleep, under the influence of meteorological conditions, etc. Methods for investigating the intactness of the diaphragm and abdominal press buffer function are also given in the article under discussion.—*N. P. Rasumow.*

16019. REWJAKIN, S. W. Versuche über die Anwendung der Plethysmographie zum Studium des Einflusses von Sympathectomia lumbalis und Adrenalin auf den Kollateralkreislauf. *Zeitschr. Ges. Exp. Med.* 70 (5/6): 725-738. 5 fig. 1930.—The volume of the left hind extremity was measured by plethysmography in 22 dogs; 4 series of experiments were made: (1) The changes in the volume of the extremity were studied with the femoral artery temporarily occluded (5 experiments; primary decrease in volume of the extremity, gradual secondary increase, not reaching normal); with the femoral vein occluded (4 experiments; initial increase in volume, followed in some cases by insignificant de-

crease), and occlusion of artery and later of the vein also (8 experiments; increase in volume). (2) Epinephrine was intravenously injected, first with unimpeded circulation (11 experiments; rather rapid initial increase, followed by return of volume to normal), then with artery occluded (4 experiments; slow initial increase and following decrease) and with vein occluded (3 experiments; likewise gradual increase and decrease); in all cases with increased blood-pressure. (3) Epinephrine solution (1: 10,000) was intravenously injected over an unspecified period of time at a rate of 2.5 cc. a minute (observations on 4 dogs). The drug exercised its characteristic effect at the moment its concentration in the blood changed; no perceptible effect on the circulation could be seen during continued administration of a given concentration, but increase in dosage raised the volume of the extremity. (4) The left lumbar sympathetic was severed (8 dogs); a momentary increase in volume of the extremity followed; this quickly subsided, and the volume remained unchanged. Intravenous administration of epinephrine produced a marked decrease in volume (but less than with intact sympathetic). In 4 dogs the sympathetic was severed while the animals were under the continuous influence of epinephrine; no increase in volume followed sympathectomy, but either a slight decrease or no change.

16020. **ROSENBERG, MAX. Über den arteriellen Tiefdruck (Hypotension) bei Arabern Palästinas und seine Ursachen.** *Arch. Schiffs- u. Tropen-Hyg.* 34(6): 323-327. 1930.—Rosenberg bases his discussion on observations of more than 1,000 Arabs. He defines hypertension in the Occident as essential and symptomatic increase of blood-pressure above 140 mm.; among Eastern natives, increase above 120 mm.; hypotension in the Occident as decrease below 110; among Eastern natives decrease below 90. He discusses the probable relations of disease, glandular functions, and climate to lowered blood-pressure. He does not find Eastern hypotension associated with the psychic and physical complaints with which Kylin connects it.

16021. **SAMOJLOFF, A. The extra systolic impulse of the ganglion of Limulus heart.** *Amer. Jour. Physiol.* 93(1): 186-189. 4 fig. 1930.—In its reaction to artificially induced extra systoles, the ganglion of the Limulus heart shows all the features characteristic of the pace maker of the vertebrate heart. The mechanism of the automatism is the same whether it develops in the heart muscle fiber of the vertebrate heart or in the nerve cells of the ganglion of the Limulus heart.

16022. **SCHWARZ, H., und F. SCHIMMER. Zur Bestimmung des Herzminutenvolums beim Menschen.** *Zeitschr. Ges. Exp. Med.* 64(3/4): 303-310. 6 fig. 1929.—A defense of the authors' method for determining the circulation quantitatively by means of venous tensions of O and CO_2, showing results with their method and with that of Redfield, Bock and Meakins. The authors' method is equally rapid and yields more certain results.—*M. E. Collett.*

16023. **SIRAKOFF, NIKOLA W. Über Blutdruckveränderungen bei dem Valsalva'schen Versuch und ihre Bedeutung für die Prüfung der Herzfunktion.** [Blood-pressure changes in Valsalva's experiment and their significance for the study of cardiac function.] *Deutsches Arch. Klin. Med.* 166(3/4): 227-236. 1930.

16024. **VOLLMER, HUBERT. Untersuchungen ueber den Kreatin- und Phosphorsäuregehalt verschiedener Herzteile.** *Zeitschr. Ges. Exp. Med.* 65(3/4): 522-534. 2 fig. 1929.—The amount of inorganic phosphoric acid is about twice as high in the ventricular muscle of the calf, pig and sheep as in the auricular. The ratio of creatin in the two chambers is about the same as for phosphoric acid. In man the ratio of creatin in the ventricle to that in the auricle is 1: 28. The excess connective tissue in the auricles may be responsible for part of these differences.—*W. J. Meek.*

16025. **WIGGERS, CARL J. The pressure pulses in the cardiovascular system.** Monograph on physiology. 200p. Longmans, Green and Co.: London, New York, Toronto, 1928. Price $5.00.

16026. **ZWAARDEMAKER, H. L'irradiation par les rayons mous du radium et l'automatisme.** *Arch. Neerland. Sci. Exactes et Nat.* Ser. 3C 12(4): 502-519. 9 fig. 1928.—In those organs whose functions is automatic, K is the carrier of the bioradiactivity. The bioradiactivity causes an unknown mother substance to produce "automatines" (identical with J. Demoor's "active substances" and "l'hormone cardiaque" of L. Haberlandt) having a simple chemical composition. The formation of these "automatines" takes place by means of a radiochemical reaction by which the automatic function is re-established at the end of a long latent period in the organ previously depleted of "automatines."—*Author's résumé (transl.).*

16027. **ZWAARDEMAKER, H., und H. ZECHUISEN. Automatindosis und Frequenz des Herzschlages.** *Pflüger's Arch. Ges. Physiol.* 218(5/6): 568-572. 4 fig. 1928.—Frequency of the heart beat is, ceteris paribus, a function of the Ca content of perfusion fluid in simple diffusion experiments; a function of the x-ray dosage in irradiation experiments; and a function of the amount of automatin (a hormone) in circulation experiments. Automatin was produced from automatinogen of the skeletal muscles by activation with x-rays. Normally the P in the tissues plays the rôle of a radio-active substance.

PHARMACOLOGY

ERWIN E. NELSON, *Editor*

RALPH G. SMITH, *Assistant Editor*

(See also in this issue Entries 15248, 15252, 15639, 15711, 15805, 15836, 15840, 15868, 15881, 15930, 15962, 15977, 15996, 16004, 16318, 16326, 16365, 16412, 16417, 16428, 16593, 16622, 16721, 16755, 17302, 17351)

16028. **ADLERSBERG, D., u. A. PERUTZ. Experimentelle Untersuchungen über den Wasserhaushalt der Haut mittels der Quaddelprobe. II. Mitt. Einfluss von lokal auf der Haut applizierten und vom Blut aus wirkenden Stoffen auf die Resorption der intrakutanen Kochsalzquaddel.** *Arch. Exp. Pathol. u. Pharmakol.* 151 (3/4): 129-145. 1930.—Xylol, locally, accelerates and ethyl chloride retards absorption of intracutaneously injected salt solution. Amyl nitrite, theophyllin and "Pituitrin" intravenously accelerate absorption. For the first 2, the known vascular action of the drugs gives an adequate explanation. However, to explain the protracted action of theophyllin and the action of pituitrin, a tissue factor is postulated. The action of a combination of pituitrin and either of the other substances can not be explained as a purely peripheral effect.—*From authors' conclusions.*

16029. **[ADOVA, A. M., and M. I. PANOVA.]** АДОВА, А. М., и М. И. ПАНОВА. О выносливости мышей и морских свинок к экстрактам из семян тыквы. [Tolerance of mice and guinea pigs against extracts of Cucurbita pepo.] [French summary.] Русский Журнал Тропической Медицины, Тропической и Ветеринарной Паразитологии [*Russ. Jour. Trop. Med., Med. and Vet. Parasitol.*] 7(5): 326-329. 1929.—An aqueous extract, subcut. in mice, had little toxicity; 0.09 gm. to 1.5 gm. per 100 gm. of body wt. was not lethal. At first the mice lost weight, but they soon regained it. Large doses (1.5-) caused inflammations and sores at the site of injection, which healed in 7-25 days. Ether extract

proved fatal in 15 gm. per 100 gm. wt., but 1-4 gm. caused no particular harm. Original loss of weight was quickly restored, and even surpassed. Guinea pigs showed greater sensitivity both towards water and ether residues. They lost weight, became listless and recovered slowly. Alcohol extract in doses of 0.09-0.27 gm. per 100 gm. wt. showed no harmful effect. In view of negligible toxicity of these extracts, the authors advise testing them as anthelmintics in man and animals.—*B. Van Rosen.*

16030. **ALBI, R. W., and T. E. BOYD. Effect of rectally administered ether-oil mixtures on absorption of histamine from the colon.** *Proc. Soc. Exp. Biol. & Med.* 28(4): 368-369. 1931.—To determine what effect rectal administration of ether (as in anesthesia) may have on the ability of the colon to detoxicate, during absorption, the histamine formed by bacterial activity in the intestine, dogs anesthetized by ether inhalation, with additional ether per rectum, were given histamine dichloride (5 mg. per kg.) per rectum 5-10 min. later. Arterial blood pressure fell immediately. Hence, ether, like alcohol, renders the large intestine permeable to histamine. Normal impermeability was regained in 24 hrs.

16031. **ALLODI, ANGELO, e GIUSEPPE PALOMBA. Valore clinico della ricerca delle lipasi atoxil e chinino-resistenti, e studi delle stesse sotto determinate condizioni. [The atoxyl- and quinine-resisting lipases studied under given conditions.]** *Policlinico [Sez. Med.]* 37 (8): 376-388. 1930.—In 10 out of 11 clinical cases, including 1 normal, serum lipase showed reduction of tributyrin-splitting power; but the atoxyl-resisting lipase after reaction with atoxyl showed much higher lytic power at 50° C than at room temp. To determine if this increased resistance was a power acquired by the lipase at high temp. or an effect of the temp. on the unstable atoxyl, experiments with increasing doses of atoxyl at 50° C. on 6 samples of atoxyl-resisting lipase indicated that the temp. acts on the atoxyl and not on the ferment. In 16 clinical cases stimulation of the pancreas by various means was without effect on the atoxyl-resisting fraction. From study of 37 clinical cases it is concluded that, in the absence of renal lesion, the presence of a quinine-resisting fraction points to the existence of a hepatic affection with obstruction to biliary outflow.

16032. **AMBERG, SAMUEL, and OTTO GROB. The effect of atropine on the bladder of the child.** *Amer. Jour. Dis. Children* 41(3): 507-512. 1931.—In 9 out of 19 enuresis patients aged 6-20 yrs. atropine lowered the pressure of the bladder. The action on the bladder (including effects on amplitude and frequency of contractions) bore no relation to the action on the eye, skin, mucous membrane and pulse.

16033. **ANTONA, LEONARDO, d', e GIULIO CORBINI. Ricerche sul diabete insipido e sulle sindromi ipofisarie. [Diabetes insipidus and the hypophyseal syndromes.]** *Arch. Sci. Med.* 53(12): 705-751. 3 fig. 1929.—In 4 cases of diabetes insipidus, insulin had no effect on the diuresis, epinephrine and ergotamine were doubtfully inhibitory, and the so-called mercurial diuretics constantly decreased the diuresis. Hypophysin had no noticeable effect on the glycemia. In a case of acromegaly with diabetes mellitus insulin alone had scarcely any effect, but in association with synthalin it lowered the glycemia markedly and caused the glycosuria to disappear. In a case of tumor of the hypophysis with diabetes mellitus, the diabetes disappeared when the tumor was reduced and calcified after x-ray treatment. In another case of hypophyseal tumor there was no carbohydrate or hydro-saline disturbance. In view of the variety of clinical syndromes which accompany lesions of the hypophyseal region, the authors suggest that sometimes this may be due to involvement of neighboring cerebral structures.

16034. **AOMURA, TETSUTARO, and TEH-JUN YEN. The minimum effective dose of strychnine in causing the augmented output of epinephrine from the suprarenal gland in the non-anaesthetized, non-fasting dog.** *Tohoku Jour. Exp. Med.* 14(2/3): 93-108. 1929.—The blood of the suprarenal vein was collected extraperitoneally and the epinephrine was determined by means of the rabbit intestine strip. Minimum effective amount was 0.01 mgm. of strychnine nitrate per kgm. body weight. Under ether anesthesia the minimum effective dose was 0.25 mgm. Evidence indicates that the dose needed depends upon the depth of anesthesia.—*R. W. St. Clair.*

16035. **APITZSCH, JOHANNA. Untersuchungen über Calcium und anorganisches Phosphat im Serum bei Calcium und Phosphorbelastung.** *Zeitschr. Ges. Exp. Med.* 76(1/2): 313-324. 1931.—Ca lactate (0.7 gm. per kgm. body wt.) and 1-2 days later Na_2HPO_4 (1.4 gm. per kgm.) were given to 3 subjects, and blood samples taken before and 1 and 3 hrs. after each administration. The maximum Ca occurred at 1 hr.; at 3 hrs. it had sunk about to the initial value; in all instances there was also an elevation of inorganic P. The maximum P occurred at 1 hr.; after 2 and 3 hrs. it was about the initial level; it was accompanied by no particular change in Ca. In 1 patient with a mild, true osteomalacia the Ca administration caused a rise in the Ca and at first a decrease or no change in P. Vigantol treatment gradually increased the Ca and P absorption time and then the P, under the action of Ca, rose. With P administration the P level rose, the Ca rose briefly then fell. In a Ca-poor form of bone defect an elevation of P always followed the Ca overload. With vigantol the curves approached the normal.

16036. **ARRIGO, GAETANO. Sul meccanismo di azione dei diuretici mercuriali. [The mechanism of diuresis by mercurial compounds.]** *Riv. Patol. Sperim.* 5(1): 35-61. 4 fig. 1930.—Hg diuretic compounds do not act on the heart and blood pressure. They cause, at first, a migration of edema fluid into the blood, with increased hydremia. Hydremia causes polyuria. It is possible that it stimulates the kidney through the nervous system.—*M. Comel.*

16037. **ASCOLI, RUGGERO. Ricerche sulla precipitazione dell'Uroselectan da sue soluzioni acide a vario pH. [The precipitation of uroselectan from acid solutions at various pH.]** *Biochim. e Terapia Sperim.* 17(7): 277-286. 1930.—When solutions of urine containing uroselectan are progressively acidified with dilute acetic acid, precipitation of uroselectan occurs at pH 4.6-4.4. Such values approximate those of normal urine. Thus it is advisable to control the reaction of urine when uroselectan is administered; urine must be either moderately acid, neutral or alkaline.—*M. Comel.*

16038. **BAILEY, C. F., and S. M. McELVAIN. Local anesthetics derived from quinoline and isoquinoline.** *Jour. Amer. Chem. Soc.* 52(10): 4013-4017. 1930.—The following hydrochlorides of amino esters were prepared: β-tetrahydroquinolinoethyl benzoate (1); γ-tetrahydroquinolinopropyl benzoate (2); trans-β-decahydroquinolinoethyl benzoate (3); trans-γ-decahydroquinolinopropyl benzoate (4); cis-β-decahydroquinolinoethyl benzoate (5); cis-γ-decahydroquinolinopropyl benzoate (6); γ-tetrahydroisoquinolinopropyl benzoate (7). (1) and (2) were too weakly basic for pharmacological tests. (3) to (6) inclusive were about equal to cocaine in anesthetic power, but less toxic, there was a noticeable difference between the cis- and transisomers. (7) further indicates the potency of phenyl alkyl groups in local anesthetics (cf. C. A. *24*, 2461).—*C. F. Bailey.*

16039. **BALTACÉANO, G., et G. NICHOLESCO. Recherches expérimentales sur les cholagogues.** *Arch. Mal. de l'App. Digest. et Mal. de la Nutrition* 21(2): 182-202. 1931.—Protocols are presented of 11 exps. on dogs under chloralose anesthesia studying the volume of bile flow and its concentration following the intraven. and intraduodenal administration of many substances. Pyramidon, Na_2SO_4, urotropin, and boldine have no effect; pituitary extract, epinephrine, angioxyl, coramine and sulfurion decrease the flow; while opobyl, atophan, atophanyl, sodium salicylate, sodium benzoate and certain mineral waters stimulate flow but decrease the solids. Insulin has little effect when given alone but its slight stimulating action is increased by simultaneous administration of glucose. Likewise aspirin is synergized

by pyramidon, sodium benzoate and lithium iodate.—*F. R. Vanzant.*

16040. **BANCROFT, WILDER D., and GEORGE H. RICHTER. Claude Bernard's theory of narcosis.** *Proc. Nation. Acad. Sci.* 16(9): 573-577. 1 pl. 1930.—The Overton-Meyer theory is accepted as applying to permeability, but not in any proper sense to narcosis. Bernard's theory of reversible coagulation of the colloids of sensory nerves was verified by photomicrographic studies of live yeast cells treated with 2% amyl alcohol; coagulation and flocculation occurred in 25 min.; the time varied with temp. and concentration of narcotic and culture. Centrifuged treated cultures were revived in fresh media (Laurent's). Non protein-coagulating gases (N_2O) give rise to acid metabolic products which cause flocculation. Bernard's theory offers a clue to a scientific method of countering habit-forming drugs.—*S. E. Owen.*

16041. **BARBER, M. A., W. H. W. KOMP., and B. M. NEWMAN. The effect of small doses of plasmochin on the viability of gametocytes of malaria as measured by mosquito infection experiments.** *U. S. Publ. Health Repts.* 44(24): 1409-1420. 1929.—Plasmochin in small doses, in one case in a single dose of 0.5 cgm., had a definite effect on the viability of crescents as measured by mosquito infection tests. Degenerative changes in crescents after the use of plasmochin did not appear definite enough to measure the early effects of small doses of plasmochin. It is probable that the general use in a population of such small doses of plasmochin would be safe and effective in reducing the transmission of malaria.—*Authors' summary.*

16042. **BARCHI, LUIGI. La chemioterapia della rabbia. [The chemotherapy of rabies.]** *Policlinico [Sez. Med.]* 37(11): 533-540. 1930.—In experiments on 27 rabbits (including 5 controls), Pb, Sb, Sn, and As in elemental form or colloidal solution, neutral lead acetate, and Na arsenate failed to exert any influence on rabies, either during incubation or during the clinically evident stage.

16043. **BAYER, G. Organotherapie. [In: HERMANN THOMS. Handbuch der praktischen und wissenschaftlichen Pharmazie. Bd. 4. D. Grundlagen und Richtlinien der Therapie. Lief. 14.]** p. 924-946. 1 fig. Urban & Schwarzenberg: Berlin u. Wien, 1926.

16044. **BERCEANU, D., et S. BALCU. L'accélération de la cicatrisation des plaies par le propidon.** *Bull. Assoc. Française Étude Cancer* 18(3): 285-287. 1929.—Subcutaneous injections of propidon have been found to increase the absolute number of both red and white blood cells, changing the leukocytic formula by increasing the absolute number of polynuclear neutrophiles, eosinophiles and basophiles, and especially young leukocytes and large mononuclears. Having observed that the reconstitution of conjunctive epidermal tissue which takes place during cicatrization is accompanied by multiplication of the blood cellular elements mentioned above, the authors observed the cicatrization of wounds in 10 guinea-pigs, 5 of which received preliminary injections of propidon while 5 did not, all being then subjected to the same type of wound. The wounds in the animals which had received propidon healed completely in 16-18 days; in the controls, in 25-30 days.

16045. **BERGAMI, GINO. Ricerche sul meccanismo di eliminazione dell'acido urico iniettato endovena. [Studies on the mechanism of elimination of uric acid introduced by intravenous injection.]** *Biochim. e Terapia Sperim.* 17(7): 310-322. 1930.—Uric acid, intraven., in rabbits and dogs, disappears quickly from the blood. The non-protein N increases immediately after the injection, and persists longer than the increase in uric acid concentration. The uric acid is fixed almost exclusively by the kidneys, in which edema develops. The uric acid content of the kidney falls gradually, and its value is normal after some hrs. In the days following uric acid injection the elimination of uric acid with the urine is but little increased, and so is the elimination of urea and ammonia. This increase is less than the amount of uric acid administered, a positive balance resulting.—*M. Comel.*

16046. **BERGMAN, ROLF. Prophylaktische und therapeutische Versuche mit Wasserextrakt aus ultraviolettbestrahltem bzw. ozonbehandeltem Fischlebertran bei experimenteller Meerschweinchentuberkulose.** *Zeitschr. Tuberk.* 57(1/2): 50-57. 1930.—In experiments on 18 guinea pigs with 5 controls the authors tried to find out whether previous or subsequent treatment of guinea pigs, infected with tuberculosis, with watery extract of irradiated and ozonized cod-liver oil, would protect these animals from tuberculosis or alter its course. No such results were obtained; but the indurative changes in the animals prophylactically treated with ozone water were more pronounced than in the other animals.—*Author's summary (transl. by N. Savitsky).*

16047. **BISCHOFF, FRITZ, and M. LOUISA LONG. The depletion of muscle sugar by adrenalin.** *Jour. Biol. Chem.* 87(1): 47-53. 1930.—The blood sugar and muscle sugar values do not run parallel after the subcut. administration of 0.25 mgm. of adrenalin per kgm. to the rabbit. From the 8th to the 24th hr. the muscle sugar is at a very low level. At the 3rd hr. the muscle sugar has already fallen to the fasting value, while the blood sugar is at the peak of the curve. The in vitro experiments of Sahyun and Alsberg, which indicated that deglycogenated whole skeletal muscle has the power of utilizing glucose in vitro, are invalidated by the above observations.—*Authors' conclusion.*

16048. **BLICKE, F. F., and E. S. BLAKE. Local anesthetics in the pyrrole series. II.** *Jour. Amer. Chem. Soc.* 53(3): 1015-1025. 1931.—Eight analogs of novocaine and several compounds analogous to stovaine and β-eucaine have been prepared and tested for local anesthetic action by application to the tip of the tongue. So far as the compounds discussed in this paper are concerned, the local anesthetic action of a compound was retained on the substitution of 2-pyrroyl for the benzoyl and the 4-aminobenzoyl group and on the replacement of dimethyl- and diethylamino by the 1-pyrryl and 1-pyrrolidyl nuclei.—*Authors' summary.*

16049. **BLUHM, AGNES. Zum Problem "Alkohol und Nachkommenschaft." Eine experimentelle Studie.** 87p. J. F. Lehmann: München, 1930.—The experiments were carried out on some 30,000 white mice, in order to rule out errors due to small numbers. For the determination of experimentally produced changes, both control and test animals were taken from a closely inbred series, which in turn was taken from a closely inbred race. Where it was not possible to get 2 pairs from the same litter the 2 ♂♂ (test and control) were from 1 litter, and the 2 ♀♀ from another litter of the same pair of parents were used. In a few cases, the ♂♂ were taken from one, and the ♀♀ from another of 2 inbred series from a common stem. This also permitted genetic comparisons. To limit the action of alcohol as much as possible to the germ plasm, only ♂♂ were treated with the drug in the initial generation. The alcohol was injected subcutaneously, and for the first 1½ yrs. of the experiment, the control ♂♂ were injected with salt solution, but without any evident influence on the progeny. Tolerance to alcohol developed rapidly with doses of 0.2 cc. of 15% alcohol solution. Injections were begun at about the 4th mo. of life, and were adjusted so as not to decrease the libido sexualis, the dose averaging about 0.0015 cc. absolute alcohol per gm. body weight. The initial generation consisted of 114 test and 114 control pairs. From these, matings were largely of sister and brother of the same litter, although sisters and brothers of different litters of the same parents were also mated, as well as half-brother and sister, cousins and uncle and niece. Finally, there were a large number of crossings and back-crossings between the progeny of the alcohol group and the test group. Observations made were concerned with longevity, growth in weight and organ development, fecundity, fertility, abnormalities and degenerations. Special care was taken to control effects of temp. changes and season. An increased prenatal mortality in the alcohol group was evidenced by smaller litters, increased mortality in the suckling period was shown in

the 1st and 2nd generation from alcoholized ♂♂, with decreasing mortality in the succeeding 5 generations. The increase in the mortality among the young from alcoholized ♀♀ was not so great. In both cases increased mortality was associated with an "intestinal catarrh." Young from alcoholized parents showed a lessened mortality in the age group of 3 to 8 weeks, but in later life up to the 10th mo. showed a marked increase again. The body weights averaged less and showed greater variability, and the development of eyes and ears was retarded in alcohol young. Both fecundity and fertility were decreased; there was also more evidence of degenerative changes. It was also evident that throughout the series of observations, young from alcoholized ♂♂ were at a greater disadvantage than those from alcoholized ♀♀. The author concludes from her data that alcohol administration resulted in a definite mutation, resulting from alteration in the X and Y chromosomes. —*C. H. Thienes.*

16050. **BOSCO, I. Influenza del fumo di tabacco sul potere amilolitico della saliva. [Action of tobacco smoke on the amylolytic power of saliva.]** *Riv. Patol. Sperim.* 5(2/3): 187-199. 2 fig. 1930.—Acute poisoning from tobacco smoke produces a great decrease in the amylolytic activity of saliva. Following chronic poisoning a complete loss of amylolytic activity may result. When administration of smoke is discontinued, activity is gradually restored, the time depending on the severity of intoxication. The action of smoke is attributed to a modified metabolism of the salivary glands which show histological alterations.—*M. Comel.*

16051. **BRAHMACHARI, U. N. The relation between the chemical constitution of antimonials and their therapeutic properties.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 468-480. 1927[1928].—The relationship of the chemical constitution of the following antimonials to their therapeutic properties are discussed: Metallic Sb, Sb trioxide, the antimonyl tartrates and malates, acetyl-p-amino-phenyl-stibinate of Na, p-amino-phenyl-stibinate of Na, urea-para-stibanilate, ammonium-carbamino-stibanilate (urea-stibamine), N-phenyl-glycine-amide-p-stibinate of Na.

16052. **BRANDHENDLER, W. Über die Umkehr der Wirkung des N. vagus und N. splanchnicus auf die Darmbewegungen unter dem Einflusse von Kalium und Calcium.** *Arch. Exp. Path. u. Pharmakol.* 138(1/4): 219-227. 17 fig. 1928.—A study was made of the influence of K and Ca ions on the action of the vagus and splanchnic nerves to test the assumption that K ion is a specific excitant of the parasympathetic and Ca ion of the sympathetic nerves. Dogs were placed under ether-chloroform anesthesia and contraction of the jejunum recorded by the balloon method. (1) The peripheral ends of one vagus nerve and the left splanchnic nerve were stimulated to get the normal effect. The vagus nerve was found to be motor to the gut (occasionally inhibitory), the splanchnic, inhibitory. (2) Injections of 5% KCl (2-5 cc.) and of $CaCl_2$ (10 cc.) into the femoral vein were made in different series. Both ions caused inhibition of the intestinal movements followed by a return to normal or even greater contraction. (3) Injection of Ca as well as of K ion followed by stimulation of the vagus or the splanchnic nerve usually produced a reversal of the action of the nerves, e.g., inhibition on stimulating the vagus nerve and contraction on stimulating the splanchnic n. The optimum amount of salt necessary to cause the reversal could not be determined since it is variable in different animals. It is suggested that the "milieu of the nerve" and the condition of the organ which it innervates are important factors which complicate the relationship between nerve action and specific ions.—*A. C. Ivy.*

16053. **BRANDHENDLER, W. Einfluss von Pilokarpin und Physostigmin auf das isolierte Katzenherz nach Degeneration beider Nn. vagi.** *Arch. Exp. Path. u. Pharmakol.* 140(3/4): 168-173. 1929.—Pilocarpin and physostigmin act on the isolated cat heart in which the vagus nerves have degenerated in the same way that they do on the normal heart. The vagus nerves degenerated 4 days after resection. The author believes that the point of action of pilocarpin and physostigmin on the heart is peripheral to the vagus nerve ending.

16054. **BRETT, P. C., W. A. BROOM, and W. A. HOWITT. The action of liver preparations in diabetes.** *Lancet* 220(5601): 19-21. 1931.—The authors have carried out Blotner and Murphy's directions for the preparation of this special extract of liver on several occasions, and have consistently found the extract ineffective in lowering the blood-sugar of normal rabbits when administered in suspension by stomach-tube in doses equivalent to 1/10 of a lb. of liver, a quantity which, according to Blotner and Murphy, is equivalent to about 1 unit of insulin. In the authors' experience an injection of 1 unit of insulin produces a considerable fall in blood-sugar in the type of rabbits usually used for insulin assay. Extracts were prepared from both fresh and frozen liver by the Blotner and Murphy process and extraction periods of both 12 and 48 hrs. were tried, but in no case was any hypoglycemic effect observed. Liver extract (Boots), prepared by the Medical Research Council's process (see The Lancet, 1928, ii., 514), had no hypoglycemic action. In fact, in practically all cases a slight but definite hyperglycemia resulted.

16055. **BRUGSCH, HEINRICH, und HANS HORSTERS. Insulingehalt und Insulinverteilung im Blut.** *Arch. Exp. Pathol. u. Pharmakol.* 148(5/6): 295-308. 1930.—Venous blood of non-insulinized men and animals contained less than 0.0125 units of active insulin in 0.2 cc., or a maximum of 5-6 units per 100 cc. After intravenous doses of 25 units per kgm. in rabbits and dogs, blood insulin can be quantitatively determined. It was present even 90 min. after injection. Injection of 40 units per kgm. into the portal vein in narcotized animals caused an increase in blood sugar. Insulin could be demonstrated in the iliac vein 1½ hrs. after injection of insulin into the portal vein. Active insulin was always found in the plasma; never in the corpuscles. Fasting blood from both healthy and diabetic men did not produce a hypoglycemic action in mice. Therefore it contained less than 6 units of insulin per cc. Thirty to 120 min. after subcutaneous injection of insulin, 30-50 units of insulin could be demonstrated in the peripheral venous blood. The duration of insulinemia depended on the amount of insulin injected subcutaneously.

16056. **BRÜHL, HEINZ. Untersuchungen zur Membrane und Eiweisswirkung des Coffeins.** *Biochem. Zeitschr.* 212(4/6): 291-317. 1 fig. 1929.—Filtration experiments with collodion membranes saturated with protein showed a reversible increase of permeability (1) in the presence of caffeine, and (2) by shifting the reaction towards the iso-electric point of the protein. The latter procedure causes changes of the swelling condition, the caffeine acts by changes of the degree of dispersity of the proteins coating the walls of the pores. The changes of proteins caused by caffeine are a physico-chemical phenomenon. Caffeine increases the dispersity of hydrophilic and hydrophobic colloids and the solubility of amino acids, presumably on account of the formation of complex compounds of greater solubility. Such compounds may be detected by compensation dialysis for proteins, and by freezing point determination for amino acids. The diuretic action of caffeine is discussed in relation to these filtration experiments.—*W. F. von Oettingen.*

16057. **BUCHBINDER, WILLIAM C. The effects of strophanthin and of quinidine on the rate of fibrillation of the tongue following hypoglossotomy.** *Amer. Jour. Physiol.* 91(2): 654-660. 1930.—The rate of oscillation of the fibrillating tongue following hypoglossotomy in 8 adult dogs was approximately that of the fibrillating auricle. Quinidine sulphate produced a marked slowing of the rate of oscillation of the fibrillating tongue; strophanthin greatly augmented it.

16058. **BURCH, JOHN C., and T. R. HARRISON. The effect of spinal anesthesia on arterial tone.** *Arch. Surg.* 22(6): 1040-1044. 1931.—A "reverse perfusion"

method (described) was used. In 2 normal dogs hemorrhage was followed by an initial vasoconstriction, and subsequent vasodilatation and death. In 2 out of 3 spinally anesthetized dogs the perfusion rate was practically unchanged; in the 3rd it was increased. In 8 out of 9 dogs spinal anesthesia was followed by a marked vasodilatation, in 4 cases observed in the unanesthetized area, but running especially high (up to 200%) in the 4 anesthetized areas observed. The bearing of these observations on current conceptions of shock is discussed, and the suggestion made that the terms neurogenic and hematogenic be substituted for primary and secondary shock, resp.

16059. **BURCH, JOHN C., and T. R. HARRISON. The effect of ephedrin on the circulation of dogs during spinal anaesthesia.** *Surg., Gynecol. and Ostetr.* 52(5): 953-954. 1931.—Given intravenously to 7 dogs under spinal anesthesia, ephedrine raised blood pressure and cardiac output; given intraspinally to 7 other dogs, it caused an even greater rise in blood pressure. The previous administration of ephedrine intraspinally abolished the usual vasomotor effect of spinocaine.

16060. **BÜRGER, M., und H. KRAMER. Über den muskulären Angriffspunkt des Insulins.** *Zeitschr. Ges. Exp. Med.* 61(3/4): 449-464. 1928.—That insulin had its chief point of action in the musculature, especially that of the extremities, was indicated by injecting insulin (0.4 units per kgm.) intravenously, while the iliac and subclavian arteries were compressed, or ligated, and again after they were freed. The great fall of blood sugar occurred when the limbs were in the circulation.—*R. H. M'Gonigle.*

16061. **BURN, J. H. The present position of ovarian hormones.** *Quart. Jour. Pharm. and Pharmacol.* 2(1): 63-75. 5 fig. 1929.—A review.

16062. **BURNS, CLARICE MARGARET. Factors influencing bone formation in the albino rat. I. The effect of guanidine intoxication produced by the successive injection of sub-lethal doses of guanidine salts.** *Biochem. Jour.* 23(5): 840-852. 1929.—Injections of guanidine do not cause the deposition of Ca in rachitic rats. The injections do not cause decalcification of formed bones.—*E. B. Carmichael.*

16063. **CALDWELL, FRED. C., and ELFREDA L. CALDWELL. A study of the anthelmintic efficiency of higuerolatex in the treatment of trichuriasis with comment as to its effectiveness against ascaris infestation.** *Amer. Jour. Trop. Med.* 9(6): 471-482. 1929.—A preparation of the fresh sap of *Ficus laurifolia,* "higuerolatex," kept cool and in dark bottles for over a year, was used. In the treatment of 9 patients in 1927 each with about 30 cc. of this drug, and 117 patients in 1928 with 60 cc. ea., a reduction in egg output of 89.5% and 85.4% respectively, was obtained. 22.2% of the patients of the first group were cured, and 53.8% in the larger group. A variation in the percentages of cures in the different infection intensity groups (A, 74.5; B, 46.0; C, 32.7; D, 0.0) suggests that 2 treatments should remove practically all worms. The treatment of an equal number of patients with 1.5 cc. ea. oil of chenopodium resulted in only 17% reduction in egg output, and 1.7% cure. In the group treated with higuerolatex the ascaris egg output of 37 infested patients was reduced 89.7% and 70.3% were presumably cured. A bibliography is included.—*R. Shosteck.*

16064. **CALVANO, A., e V. MONTUORO. Attività del curaro sulla capacità deidrogenativa dei tessuti. [Action of curare on dehydrogenation capacity of tissues.]** *Riv. Patol. Sperim.* 5(6): 460-463. 1930.—Curare acts on the tissues by activating their oxidative cellular processes, this activation occurring in all the tested tissues; muscle, kidney, liver, brain (of guinea pigs).—*M. Comel.*

16065. **CANNICCI, GABRIELLA. Sull'uso dell'Erba Mora (Daphne gnidium L.) nella pesca di frodo.** *Boll. Pesca, Piscicolt. e Idrobiol.* [*Roma*] 4(1): 1-11. 1928.—The so-called black weed used for illegal fishing is *Daphne gnidium,* and not the deadly nightshade *Solanum nigrum* which latter does not affect fish. *Daphne* is used as an irritant and vesicant. Experiments on carp indicate that its toxicity is probably due to a resinous vesicant principle, and that its action is indirectly irritant to the gills so as to impede respiration. Endoperitoneal injections of *Daphne* extract do not produce a quicker reaction; nor are any recognizable lesions caused.—*G. Cannicci (transl. by R. A. Muttkowski).*

16066. **CARONIA, G. The therapy of internal leishmaniasis.** *Amer. Jour. Trop. Med.* 10(4): 261-281. 1930.—A review of the development of the highly successful Sb treatment.

16067. **CASSER, HERMANN. Herzarbeit ohne Sauerstoff. V. Hemmung der Blausäurewirkung durch Dioxyazeton und Glyzerinaldehyd.** *Arch. Exp. Path. u. Pharmakol.* 149(3/4): 240-246. 1930.—Injury to the heart by cyanic acid (CNHO) is prevented by dioxyacetone and glycerine aldehyde. Both substances are inactive in the absence of O_2. The inhibition of respiration in birds' erythrocytes by KCN was eliminated by dioxyacetone and glycerine aldehyde. Both substances produce chemical detoxication through formation of cyanhydrin.—*Author's abstract (transl.).*

16068. **CATEL, W. Über die Wirkung der Kohlehydrate auf Darmperistaltik und Kammertätigkeit des Herzens. (Tierversuche.)** *Jahrb. Kinderheilk.* 130(5/6): 305-325. 1931.—In vitro experiments (40) on guinea pig intestines with 1-6% solutions of lactose, levulose, glucose, Koch's sugar, saccharose, and Soxhlet's nutritive sugar, decreased peristalsis. In concentrations of 0.2-1% a stimulating action was observed. In Straub summer frog hearts 5-6% solutions of the sugars in Ringer's solution almost without exception had a positively inotropic action; winter frog hearts were negatively inotropic or negatively chronotropic; this varying action is attributed to altered metabolism during hibernation. It is concluded that the carbohydrate did not attack the musculature directly but the vegetative nervous system. The positive, inotropic action of milk sugar can be suppressed by ergotamin.

16069. **CHAHOVITCH, X. Antagonisme de l'action de l'atropine et de l'insuline.** *Compt. Rend. Soc. Biol.* 100(14): 1215-1217. 1929.—Rabbits injected with 1.5 mgm. of atropine SO_4 and later treated with insulin did not develop insulin convulsions as rapidly as the controls. An increase in blood sugar followed atropine treatment. This is believed to be the cause for the antagonism. Smaller doses did not modify the normal blood sugar.

16070. **CHAHOVITCH, X. Sucre protéidique et décaméthylènediguanidine.** *Compt. Rend. Soc. Biol.* 100(14): 1218-1219. 1929.—The free and protein sugars of 10 rabbits were determined before and after treatment with synthaline. The increase in protein sugar does not explain the action of synthaline in lowering free blood sugar in the normal animal.

16071. **CHANELES, J. Alteraciones generales y dentarias producidas por el fluor en la rata blanca. La radiación ultravioleta en la fluorosis experimental. [Fluorine intoxication in white rats.]** *Rev. Soc. Argent. Biol.* 5(5/6): 317-335. 6 fig. **Effectos de la intoxicación crónica por el fluor en la rata blanca, con y sin tratamiento actínico, sobre la composición química de la sangre, los huesos y los dientes. [Chemistry of blood, bones and teeth in rats intoxicated with fluorine.]** *Rev. Soc. Argent. Biol.* 5(5/6): 336-339; **Alteraciones generales y dentarias provocadas por el fluor en la rata blanca. El yodo en la fluorosis experimental. [Iodine in fluorine intoxication.]** *Rev. Soc. Argent. Biol.* 5(5/6): 340-351. 3 fig.; **Alteraciones microscópicas de los dientes de la rata blanca sometida a la intoxicación crónica por el fluor con y sin tratamiento actínico. [Microscopic lesions in teeth of rats intoxicated by fluorine.]** *Rev. Soc. Argent. Biol.* 5(5/6): 352-375. 15 fig.; **Alteraciones microscópicas de los dientes de la rata blanca sometida simultáneamente a la intoxicación crónica por el fluor y a un tratamiento yodado. [Lesions in teeth of rats intoxicated with fluorine and treated with iodine.]** *Rev.*

Soc. Argent. Biol. 5(5/6): 376-385; **Histopatología del hueso, riñón, hígado, bazo, corazón suprarrenal, testículo y tiroides de ratas sometidas a una dieta fluorada con y sin tratamiento actínico y a una dieta fluorada y yodada.** [Pathology of tissues and viscera in experimental fluorosis.] *Rev. Soc. Argent. Biol.* 5(5/6): 386-396. 2 fig. 1929.—Young rats receiving 50 mgm. per kgm. of F daily, increased more rapidly in weight than the controls during 3 to 4 mos., then less rapidly so that at the 6th mo. their wt. was 20% less than that of controls. Only towards the end was cachexia observed. Females are more sensitive than ♂♂; the sexual cycle is suppressed, as determined by vaginal smears; only 1 became pregnant and delivered a normal litter. Animals treated with I had similar but more severe symptoms. Controls that received only I grew better and had finer aspect than normal controls. The incisors of fluorized rats had a dirty white color, the inferior incisors grew to a considerable length, curving backwards gradually; lesions were somewhat similar to those seen after parathyroidectomy. Ca content of bones and teeth was the same as in controls. There was less P and Mg in the incisors of fluorized rats and more P but less Mg in those that received light treatment. Fluorized rats, treated and untreated by light had more P and Mg in bone, than was found in controls. In ground sections the dentin was seen longitudinally laminated. In decalcified sections the enamel showed marked irregularities, the dentin was not homogeneous but disposed in irregular layers with calcospherites, the dentinogenous layer was thickened and sinuous, the pulp considerably widened. The incisors were more affected than the molars. Rats receiving violet light treatment had less severe lesions. No important alterations were found in other tissues. The thyroid was not increased in wt. and did not show microscopic signs of hypertrophy.—*J. T. Lewis.*

16072. [CHECHULIN, S. I.] ЧЕЧУЛИН, С. И. **Стандартизация препаратов спорыньи и некоторые физиологические наблюдения над свойствами Secale и гистамина.** [**The standardization of preparations of ergot, with some physiological observations on the properties of ergot and histamine.**] [German summary.] Труды Научного Химико-Фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 110-131. 2 fig. 1926.—The method of assay described by Storm von Leeuwen contains numerous sources of error. Although uteri of virgin guinea pigs of definite weight were used, consistent results could not be obtained. Repetition of the experiments of ergot action on the uterus, the uterus being flushed between tests, yielded a degree of activity which is altered by the sensitization of the organ by repeated doses; the time of flushing and duration of intervals play a great rôle. These questions were clarified in experiments showing that comparable results can be obtained if at the beginning of the assay 1-2 doses of ergot equal in their activity, are applied; then the histamine response is determined; and then the same dose of ergot is given, the effect being equilibrated to a definite dose of histamine. Ten min. must elapse between the applications. The apparatus for application and washing is automatic. The "Value" is reckoned from the formula $V = (0.02D\beta\ cm^3\ 100)/(Ds\ cm^3)$ where 0.02 is a constant for the use of 1 mgm. of histamine in 50 cc. water, and $D\beta$ and Ds are the doses of β-imidazolethylamine and of ergot extract which are equivalent. The ergot extract is aqueous, 1 gm. per 1 cc. water.—*Author's summary (transl.).*

16073. **CHIKANO, M. Über den Einfluss von Aminosäuren und ihren Abkömmlingen auf die Adrenalinhyperglykämie.** *Biochem. Zeitschr.* 205(1/3): 154-165. 1929.—Tyrosine or tryptophane (0.5-1 gm. subc.) in rabbits accentuate the effect of epinephrine on the blood sugar. Tyrosine alone has no effect. Tryptophane causes a slight hyperglycemia. The blood sugar is raised by 0.2 to 0.3 gm. of 3, 4-dioxyphenylalanine. Leucine (1 gm.) and histidine (0.5 gm.) inhibit epinephrine hyperglycemia. Phenylalanine, glutamic acid, and glycocoll have no effect on epinephrine hyperglycemia. *p*-Oxyphenyl pyruvic acid accentuates, while *p*-oxyphenyl lactic acid has no effect on epinephrine hyperglycemia. Pyrocatechol (0.2 gm.) raises the blood sugar.—*G. T. Cori.*

16074. **CHINI, VIRGILIO. Rapporti tra acido urico e permeabilitá di membrana.** [**Uric acid and membrane permeability.**] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 926-928. 1930.—Congo red intraperitoneally administered to rats previously treated with uric acid may diffuse through the capillary walls and produce a diffuse coloration of the tissues. No alterations followed in kidney and liver. Absorption of Congo red from subcut. tissue is usually more rapid when treatment with uric acid has preceded. If uric acid is administered, subcut. and periarticular connective tissues retain most of the injected dye. Dialysis of Congo red and trypan blue through animal membranes is hastened if uric acid is added.—*M. Comel.*

16075. **CHOPRA, R. N. A retrospect of six years' research work on the Indian indigenous drugs.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 543-552. 1927[1928].—A review of studies of Indian indigenous drugs at the Calcutta School of Tropical Medicine, with bibliography.

16076. **CHOPRA, R. N., and J. P. BOSE. The action of opium in diabetes.** *Indian Jour. Med. Res.* 18 (1): 15-26. 1930.—Small doses of opium—1 to 6 grains daily—produce a slight reduction in total urine excreted in mild cases. In severe cases it does not reduce polyuria, thirst or frequency of micturition. In the early and mild cases opium has a well marked effect in reducing the total daily output of sugar in the urine; in some cases the sugar entirely disappears. In severe cases, however, it has no effect on sugar output. Opium has little effect in reducing the amount of blood-sugar of diabetics; in fact in severe forms it actually increases it. In some patients it distinctly raises the renal threshold for excretion of sugar.

16077. **CIAMBELLOTTI, E. Studi sulla terapia calcica. III. L'azione sul cuore del calcio iniettato per vena.** [**Effect of intravenous injections of Ca on the heart.**] *Boll. Soc. Ital. Biol. Sperim.* 4(6): 769-772. 1929. —Intraven. injections of Ca lead to a more or less acute feeling of heat, followed by grave symptoms of collapse. Sphygmographic studies show that a group of systolic pulsations gradually amplifying, with short diastole about as normal, alternates with a group in which the systole diminishes until it becomes barely perceptible, while the diastole increases. The possible mechanism is discussed.—*E. Ciambellotti (transl. by P. Popenoe).*

16078. **CIAMBELLOTTI, E. Studi sulla terapia calcica. V. La associazione calcio-magnesio.** [**Ca Therapy: the association of Ca and Mg.**] *Boll. Soc. Ital. Biol. Sperim.* 4(6): 775-777. 1929.—Associating either an organic or an inorganic salt of Mg with Ca, the author succeeded in producing all the accustomed effects of Ca in therapeutics, without the circulatory disturbances usually found. This is explained as due to the difference in speed of action of the 2 elements. Small amounts of Mg were found to stimulate the spinal nervous system.—*E. Ciambellotti (transl. by P. Popenoe).*

16079. **CLIMENKO, DAVID ROBERT. Studies on the Arneth count. XVII. The effect of alternations of the serum-calcium level on the count.** *Quart. Jour. Exp. Physiol.* 20(4): 369-377. 1930.—A number of patients who were being treated with irradiated milk were examined. They showed no change in the Arneth count and the serum Ca level. Oral administration of colloidal Ca preparation in rabbits did not raise the serum Ca level and had no effect on the count. Intramuscular injections of a colloidal Ca preparation and Ca Cl_2 (intraven.) raised the serum Ca level and produced a regenerative deflection of the count. Intraven. injections of hypotonic sols. had no demonstrable effect on the serum Ca level, but caused a regenerative deflection of the count. Intraven. injections

of physiological saline sols. had no effect on the serum Ca level and none on the count.—*Author's summary.*

16080. COLLIER, W. A., und MAGDALENE KRAUSE. Zur Chemotherapie der Halteridieninfektion des Reisfinken. *Zeitschr. Hyg. und Infektionskr.* 110(3): 522-525. 1929.—Since the plasmodium infection of the canary is interrupted by parasite-free intervals, it is difficult, when testing the effect of any drug on the parasite in this bird, to judge whether the disappearance of the plasmodia is due to the treatment or to the natural protective forces of the canary. The employment of a bird subject to a chronic or at any rate non-fluctuating infection therefore seems preferable. The authors tested plasmochin on the natural *Halteridium* infection of 9 freshly imported African rice-finches (3 controls) and believe that the effects indicate the greater suitability of this bird for testing antimalarial drugs.

16081. COOPER, ZOLA K., and MARTIN F. ENGMAN. A study of the stimulating effect of small doses of thallium acetate on the rate of the growth of hair in the albino rat. *Arch. Dermatol. and Syphilol.* 23(6): 1031-1040. 1931.—Single doses of 0.004 and 0.006 gm. of thallium acetate per kgm. of body weight, dissolved in distilled water and injected intraperitoneally into white rats, produced a stimulation of 18% in the rate of the growth of hair. Doses of 0.002 gm. per kgm. of body weight were too small to produce any effect on the rate of the growth of hair.—*Authors' summary.*

16082. CSÉPAI, K., und J. FERNBACH. Über den Einfluss des Parathormones auf die Adrenalinempfindlichkeit des menschlichen Organismus. *Zeitschr. Ges. Exp. Med.* 60(5/6): 618-621. 1 fig. 1928.—The authors were unable to confirm the findings of Kylin who claimed that the vagotonic influence showed an increased sensitivity to epinephrine following the administration of parathyroid hormone. The investigators used the Collip parathyroid hormone in the case of bronchial asthma and were unable to note the slightest change in epinephrine sensitivity.—*D. Perla.*

16083. DAVID, NORMAN A., and CHAUNCEY D. LEAKE. The toxicity and balantidicidal action of "dihydranol" in guinea pigs. *Proc. Soc. Exp. Biol. and Med.* 28(2): 196-199. 1930.—2-4 dihydroxy-phenyl-*n*-heptane ("di-hydranol") causes death in guinea pigs in about 4 days with symptoms of loss of weight, diarrhea, and lethargy at an average dose of 400 mgm. per kgm. on single oral administration. In natural *Balantidium coli* infestations in guinea pigs, it seems to be curative at a total of 200-225 mgm. per kgm. on continued administration at 1-2 day intervals of 75 to 100 mgm. per kgm. Toxicity may be encountered at a total dosage only slightly higher than this indicated curative range on continued administration of the sublethal doses proposed.—*Authors' summary.*

16084. DAWSON, W. T., and FRANCIS A. GARBADE. Idiosyncrasy to quinine, cinchonidine and ethylhydrocupreine and other levorotatory alkaloids of the cinchona series: preliminary report. *Jour. Amer. Med. Assoc.* 94: 704-705. 1930.—A subject with anaphylactoid reaction to administration of quinine and cinchonidine but not to quinidine nor cinchonine showed a positive skin test (wheal formation) to quinine, cinchonidine, hydroquinine, hydrocinchonidine, cupreine, hydrocupreine, ethylhydrocupreine, ethylquitenine, but not to the dextrorotatory isomers, quinidine, cinchonine, hydroquinidine, hydrocinchonine, hydrocupreidine, ethylhydrocupreidine, ethylquitenidine, nor to nitro- nor chloro-hydroquinine, nor nitro- nor amino-ethylhydrocupreine. This supports the observation of Giemsa that a person with malaria who does not tolerate quinine may be able to take quinidine, which is also effective.—*W. T. Dawson.*

16085. DAWSON, W. T., and FRANCIS A. GARBADE. Idiosyncrasy to quinine, cinchonidine and ethylhydrocupreine and other levorotatory alkaloids of the cinchona series: further chemical delimitation of the idiosyncrasy; alteration in sensitiveness. *Jour. Pharmacol. and Exp. Therapeut.* 39: 417-424. 1930.—Further investigation shows that a subject who had given positive results on skin testing with quinine and some other levorotatory alkaloids of the cinchona series but not with corresponding dextrorotatory isomers, as quinidine, was skin-sensitive to the levorotatory amyl- and isoamyl-quitenine, propyl-, isopropyl-, isobutyl-, isoamyl-hydrocupreine, apoquinine; to the dextrorotatory quinicine and cinchonicine in strong solutions, but these last two appeared to be mere irritants as they gave similar results in normals; not sensitive to the levorotatory hexyl- and dodecyl-hydrocupreine, quitenine and cinchotenidine, aminohydroquinine, nor the dextrorotatory quinamine, cinchotenine, quitenidine. Quinoline gave a positive result, plasmochin a negative. Subject was initially not sensitive to isoamylhydrocupreine. An attempt has thus been made by a study of skin reactions to delimit some of the "chemical boundaries" of an anaphylactoid reaction to quinine.—*W. T. Dawson.*

16086. DESSY, GIORGIO. La chemioterapia della streptotricosi. [Chemotherapy of streptococcus infection.] [German summary.] *Boll. Istituto Sieroterapico Milanese* 7(1): 25-44. 1928.—Experiments on the chemotherapy of streptococcus infections, carried on for 1 yr., with 59 dyes and 20 metal salts, yield following conclusions: Dyes, particularly those belonging to the group of triphenylmethane, triazin, ossiazin, and acridin, possess in vitro a complete inhibitive and bactericidal power. Other dyes have not only no bactericidal power, but on the contrary favor the growth of cultures up to dilutions of 1:500. The most powerful growth inhibiting and bactericidal metals are: Cd, Au, U, Al, Cu, Zn, Ni, Ce, and Th. There is a general agreement with the results of the germicidal action of the dyes tested by the author and those obtained by Karwacki and Biernacki in their experiments on the tubercle bacillus. This agreement exists also in regard to the action of the metal salts, with the exception of Ba which, according to Walbum, showed a distinct chemotherapeutic action upon tubercle bacillus, while this author found it to be ineffective upon streptococcus infection. Experiments in vivo (for orientation) gave the following results: A number of substances (dyes, metals) which possess a germicidal action in vitro, also possess this chemotherapeutic action in vivo. Most of these substances do not prevent the formation of a streptococcus granuloma but limit the process and eventually cure it. Several substances apparently prevent the formation of the granuloma (at least when the organisms are injected simultaneously); among these are methylviolet, picktannin, Ni and Al. Uranium acetate possesses strong toxic action and caused death of the animals in the amounts used in these experiments.—*Author's summary (transl. by F. R. Greenbaum).*

16087. DICKENS, F., and F. ŠIMER. Observations on tissue glycolysis: the effect of fluoride and some other substances. *Biochem. Jour.* 23(5): 936-958. 3 fig. 1929.—Fluoride and oxalate inhibit anaerobic glycolysis in tissues and the former has the stronger action. Fluoride belongs to the category of specific inactivators and does not destroy the "glycolytic enzyme." Aerobic glycolysis was inhibited by fluoride in the case of Jensen rat sarcoma, but not in the rat testis.—*E. B. Carmichael.*

16088. DIMITRIJEVIC, IL. N. Der Blutzuckerspiegel im Pernoktonschlafe. *Arch. Exp. Pathol. u. Pharmakol.* 151(1/2): 91-99. 1930.—The narcotic range of Pernocton in rabbits is not so wide as previously reported. Narcotic doses occasionally cause a slight increase in blood sugar. Epinephrine-hyperglycemia is not changed by the narcosis, but insulin hypoglycemia seems to be somewhat prolonged. Although ergotamine in small doses produces a mild hypoglycemia in control animals, this effect does not appear in Pernocton narcosis. The hyperglycemia from Pernocton is probably due to a depression of the inhibitory apparatus in the brain stem.—*Author's summary.*

16089. DINGEMANSE, ELISABETH, und J. P. WIBAUT. Zur Pharmakologie von einigen Pyridylpyrrolen und einigen Abkömmlingen des a-Aminopyridins. *Arch. Exp. Path. u. Pharmakol.* 132(5/6): 365-381. 1928.

—On frog, rabbit and cat the following results were obtained: α aminopyridine produces, after a period of paralysis, signs of spasms; the acetyl derivative acts more as a cataleptic. The pyridylpyrrols and their nicotyrines have a general paralysing effect. The pyridylpyrrols have an intensive local anesthetic action on the leg of the decapitated frog and on the sciatic nerve. The acetyl and dibenzoyl- alpha-aminopyridine act as local anesthetics. The blood pressure of the spinal cat is increased by aminopyridine, while the pyrrols show variable effects. On the cat the β-nicotyrine, an oxide of nicotine, diminishes blood pressure, produces convulsions, and in larger doses cardiac standstill.—*H. Graf.*

16090. DOWNS, ARDREY W., and NATHAN B. EDDY. Influence of tyramine on the number of red corpuscles in the circulating blood. *Proc. Soc. Exp. Biol. & Med.* 27 (5): 405-407. 1930.—Tyramine HCl, dissolved in 0.9% NaCl solution, was injected subcut. in single doses (0.1 mgm. to 20.0 mgm. per kgm.), in 4 hourly doses (0.5 mgm. per kgm.), and in daily doses (0.5 mgm. or 5 mgm. per kgm.), in various groups of rabbits. With few exceptions, the red cell count in the circulating blood was increased. In an experiment in which the dose was varied in amount, the percentage increase in erythrocytes roughly paralleled the increasing dose. The effects resembled those obtained by Downs and Eddy by administering secretin to rabbits.

16091. DRAGSTEDT, CARL A., and SEWARD E. OWEN. The mechanism of the diuretic action of secretin preparations. *Amer. Jour. Physiol.* 97 (2): 286-290. 1931. —Experiments on dogs showed that the diuretic effect of secretin preparations is dependent upon their secretory stimulation of pancreatic juice and bile and occurs only when these secretions have access to the small intestine. Secretin diuresis is not dependent upon the integrity of the hypophysis or upon a local specific effect upon the kidney.—*Authors' conclusions.*

16092. DREYER, N. B. Effect of some opium alkaloids on intestinal movements in cats. *Jour. Pharmacol. and Exp. Therapeut.* 36 (3): 477-480. 1929.—The effects of the drugs were studied on the intestine in situ. Papaverine and narcotine produce decreased tone and amplitude. Codeine and morphine cause an increase in both. This effect of morphine is the same on a gut already stimulated by $HgCl_2$ or depressed by intravenous $MgSO_4$ as on the normal gut. Similar results are obtained for the large intestine.—*H. S. Wells.*

16093. DUCRET, S. Die Wirkung von Adrenalin auf die Diastole des Herzens. *Pflüger's Arch. Ges. Physiol.* 227 (1/2): 81-84. 2 fig. 1931.—Tests were made of the effect of adrenalin on the excised rabbit heart perfused through the coronary vessels with Ringer solution. The heart was moderately stretched by a rubber band attached to the apex. Increased force of contraction was noted with adrenalin concentrations exceeding 1 in 100 million, and increased frequency with a somewhat higher concentration. A more effective diastole, induced either by some decrease in tone, or by an increased speed of the diastolic relaxation was observed with concentration exceeding 1 in 100,000.—*H. C. Bazett.*

16094. EDDY, NATHAN B. Regulation of respiration. The effect upon salivary secretion of the intravenous administration of sodium bicarbonate, sodium carbonate, sodium hydroxide, sodium chloride, and sodium sulphate. *Quart. Jour. Exp. Physiol.* 20 (4): 313-320. 8 pl. 1930.—In the dog salivary secretion, elicited by continuous administration of pilocarpine, is decreased by intraven. injection of $NaHCO_3$, of Na_2CO_3, or of NaOH. The decrease in secretion produced by $NaHCO_3$ is greater the larger the dose, and is obtained in like degree whether injected in isotonic or in hypertonic sol. The effect of Na_2CO_3 upon secretion is greater than that of $NaHCO_3$, and the effect of NaOH still greater. Intraven. administered $NaHCO_3$ prevents almost completely the augmenting effect upon salivary secretion of a 10-min. period of re-breathing, though CO_2 accumulated in the re-breathing tank to the same extent as in a similar period of re-breathing without $NaHCO_3$ administration. Each of the 3 alkaline agents increases submaxillary blood-volume flow as a rule. NaCl or Na_2SO_4 intraven. administered in isotonic sol. increases submaxillary secretion and blood-volume flow. Both agents administered in hypertonic sol. decrease salivary secretion but increase more markedly submaxillary blood-volume flow. The effect upon secretion of isotonic and hypertonic sol. of NaCl and Na_2SO_4 appears to be due to the increase in blood-flow and to their influence upon the fluid available to the gland cells by withdrawal of water from the tissues. The described effects of the alkaline substances and neutral salts were obtained with the chorda tympani cut, and were not affected by cutting also the vago-sympathetic. It is suggested that the effects upon salivary secretion of intraven. injection of $NaHCO_3$, Na_2CO_3, and NaOH are due mainly to changes in acid base equilibrium, in which the pH of the interior of the cell may be a major factor. A comparison of the effects of CO_2, of $NaHCO_3$ and of Na_2CO_3 on pulmonary ventilation, mean blood-pressure, and salivary secretion is made.—*Author's summary.*

16095. EDDY, NATHAN B. Regulation of respiration. The effect upon salivary secretion of the intravenous administration of lactic acid, sodium lactate, and hydrochloric acid. *Quart. Jour. Exp. Physiol.* 20 (4): 321-326. 5 pl. 1930.—In the dog the secretion of the pilocarpinised submaxillary gland is increased by intraven. administration of lactic acid and HCl. With the latter the increase in secretion varies in duration and magnitude and is followed frequently by a decrease below the original level. Its effect is the same whether the sympathetic supply to the gland is intact or not. Both agents increase the submaxillary blood-volume flow with the vago-sympathetic intact, but the magnitude of this change seems insufficient wholly to account for the increase in secretion. A similar increase in blood-volume flow is produced after cutting the vago-sympathetic. The increase in secretion produced by lactic acid is greater if the vago-sympathetic has been cut. Sodium lactate, intraven., decreases salivary secretion if the vago-sympathetic is intact but increases it if the nerve is cut. It increases submaxillary blood-volume flow in a like degree whether the vago-sympathetic is intact or not. The differences in the effects of lactic acid and sodium lactate before and after section of the sympathetic supply to the gland suggest a central as well as peripheral control of salivary secretion. The lactate ions appear to be inhibitory to the central and augmentory to the peripheral mechanism of secretion. All 3 agents cause transient changes in blood-pressure, and both of the acids always increase pulmonary ventilation, though the change is generally more transitory than the effect upon secretion. Sodium lactate has no effect upon pulmonary ventilation or decreases it. Again the effect is transient. It is believed that changes in the acid base equilibrium of the tissues and blood are an important factor in the effect upon secretion of lactic acid, of HCl, and of sodium lactate. Coincident changes in blood-volume flow probably affected the results, and some additional effect of the lactate ions, such as their use as food material supplying energy for secretion, may be involved. The act of cutting the vago-sympathetic, while the submaxillary gland was secreting at a constant rate under the continuous injection of pilocarpine, increased submaxillary blood-volume flow sharply but decreased the rate of secretion. Possible mechanisms producing these changes have been discussed.—*Author's summary.*

16096. EDDY, NATHAN B. Regulation of respiration. The effect upon salivary secretion of the intravenous administration of ammonium chloride and ammonium carbonate. *Quart. Jour. Exp. Physiol.* 20 (4): 327-331. 5 pl. 1930.—When the submaxillary gland of the dog is made to secrete at a constant rate by continuous intraven. injection of pilocarpine after cutting the chorda tympani, the administration of NH_4Cl and of $(NH_4)_2CO_3$ produces an initial increase and a subsequent decrease in the rate of secretion. With both agents the initial increase is more marked, and with $(NH_4)_2CO_3$ the sub-

sequent decrease is greater if the vago-sympathetic is also cut before the injection. Both NH_4Cl and $(NH_4)_2CO_3$ increase submaxillary blood-volume flow. With the former the increase is greater with the vago-sympathetic intact; with the latter it is greater with the nerve cut. Both substances in a dose of 1 c.c. per kgm. of M/6 sol. produce a transient fall in blood-pressure and a brief increase in pulmonary ventilation. $(NH_4)_2CO_3$ in a dose of 5 c.c. per kgm. lowers the blood-pressure and depresses pulmonary ventilation, both for a short period only. It is believed that changes in blood-volume flow and in acid base equilibrium are factors in the production of the effects upon salivary secretion of NH_4Cl and $(NH_4)_2CO_3$. Since $(NH_4)_2CO_3$ may turn the tissues alkaline, an additional and stronger action of the NH_4 ion seems indicated. Further, the possibility of modification of the results by the rate of penetration of the ions into the cells is discussed.—*Author's summary.*

16097. **EHRISMANN, O.** Vergleichende Untersuchungen über die intraarterielle und intravenöse Applikation von Giften. *Arch. Exp. Path. u. Pharmakol.* 131 (3/4): 171-185. 1928.—By determination of the lethal dose of local anesthetics, and atropine, codeine, thebaine, Ca and K on guinea-pigs it was found that intraarterial injection is less toxic than intraven. injection. NaCl intracardially injected is not more toxic than when administered intraarterially or intravenously. Suprarenine and para-oxyphenylethanolmethylamine, intraarterially show less activity but this is not due to the higher O content or greater alkalinity of arterial blood. Atropine and nicotine show no difference, when intraarterially injected. As suprarenine and its derivatives are readily adsorbed by charcoal, it is believed that a different distribution, chemical destruction and the adsorption in the tissues may cause the reduced action.—*H. Graf.*

16098. **EICHLER, P.** Klinische und ergographische Untersuchungen über die Wirkung von Harmin und Harmalin bei Postenzephalitikern. *Monatsschr. Psychiatr. und Neurol.* 74 (3/4): 152-163. 4 fig. 1929.—Harmin was given in 22 cases of more or less high-grade postencephalitic parkinsonism, and harmalin in 6 cases. The harmin (especially when given subcut.) had a favorable but transitory effect on voluntary motion and rigidity of the orbicularis, but none on tremor, salivation, seborrhea and myoclonic tics; given by mouth in capsules soluble in the intestine it had slight effect, given in fluid form by mouth, none at all. Harmalin is practically indistinguishable from harmin in its action.

16099. **FALUDI, FRANZ.** Über die Coffeindiurese. *Zeitschr. Ges. Exp. Med.* 62 (1/2): 242-248, 1928.—The effect of caffeine on the proteins of serum and of blood plasma was studied by ultra-filtration through collodion membranes. Caffeine and its derivatives do not increase the ultrafiltrability of blood serum and plasma. The more diluted solutions also do not affect decisively the swelling of gel like colloids; more concentrated solutions are inhibiting. Since the same phenomena may be observed with cane sugar solutions, caffeine diuresis cannot be explained by a reduction of the affinity of the protein for water.—*W. F. von Oettingen.*

16100. **FAQUET.** Action sur le coeur des glucosides de l'adonis vernalis. [Cardiac action of the glucosides of A. vernalis.] Jouve: Paris, 1928.

16101. **FAU, J.** Action des extraits lipidiques d'organes sur le tissu réticulo-endothélial. *Jour. Physiol. et Pathol. Gén.* 27 (2): 290-302. 1929.—The intraven. injection of unsaponifiable lipid extracts of organs into rabbits, produces a hyperglobulinemia and later a monocytic leucocytosis. The monocytes are evident after injection of extracts of the pancreas, adrenal, muscle, more strongly after injections of spleen extracts and also of cholesterol. The presence of monocytes in abundance in the circulating blood indicates an action of these extracts on the reticulo-endothelial system. The aqueous extracts of the organs do not have an action comparable to that of the lipid extracts.—*J. Fau (transl. by O. W. Barlow).*

16102. **FERRALORO, GIUSEPPE.** La tossicità dell'acido cianidrico in rapporto alla tensione parziale dell'Ossigeno. [The toxicity of HCN in relation to the partial O tension.] *Sperimentale* 84 (2/3): 115-143. 6 fig. 1930.—The toxicity of HCN was estimated as a function of the partial O pressure and the curve of duration of life as a function of the gas concentration.—*M. L. Menten.*

16103. **FISCHER, HANS.** Der Einfluss der Temperatur auf die Bindungs- und Wirkungsgeschwindigkeit von Digitalisstoffen. *Arch. Exp. Path. u. Pharmakol.* 135 (1/2): 39-81. 1928.—The acceleration of the action of digitoxin on the isolated frog's heart (Straub's method) is independent of the thermal influence upon the normal heart function (rate and excursion), thus providing a method for testing whether a chemical reaction is involved in the digitoxin action. The digitoxin effect is a chemical one, perhaps by fixation of the OH-group of the glucoside, as the action is irreversible. The same is suggested for the action itself, as the thermal coefficient follows Van't Hoff's rule. Bigitaligenin (Cloetta) acts like digitoxin, perhaps chemically; its fixation may be very loose as the reaction is reversible. The lowest effective concentration at 29° C. for digitoxin is 1:400,000; for bigitaligenin at 27° C., 1:25000; at 18° C. 1:250,000 for digitoxin and 1:12000 for bigitaligenin. As the digitoxin effect is irreversible and that of bigitaligenin is reversible, and both follow the Van't Hoff, temp. coefficient, it is suggested that the biological substratum is damaged by the fixation of digitoxin but not by bigitaligenin.—*H. Graf.*

16104. **FISCHL, VIKTOR.** Über die Steigerung der Verträglichkeit und Wirksamkeit von Chemotherapeutika. *Deutsche Med. Wochenschr.* 55 (40): 1663-1665. 1929.—An attempt was made to find an experimental basis for the clinically observed poisonous effects of various agents after the injection of chemotherapeutic substances. Such actions occur with mice but only fatal or non fatal doses may be determined, without producing anything further of significance. One may conjecture, however, that in many cases the reduction of toxicity parallels the reduction in specific-effectiveness. Of the well known established substances, so far, only casein and detoxin, an albuminous synthetic product with many sulphydryl groups, produce a detoxifying effect with the gold preparation solganol. But detoxin simultaneously hinders the therapeutic effect. In experiments on healthy mice and on mice infected with Nagana and recurrent fever, no combined action between neo-salvarsan and other chemotherapeutic agents and poisons could be established.—*V. Fischl (transl. by O. W. Barlow).*

16105. **FLATOW, E., und Y. OSAWA.** Der Einfluss von Wasser auf die Blutgefässe des Frosches. *Arch. Exp. Path. u. Pharmakol.* 140 (3/4): 220-224. 3 fig. 1929.—Water constricts blood vessels perfused with Ringer's solution, acting like a hypotonic NaCl solution. Injection of water into blood vessels perfused with adrenalin constricts them and increases the constrictor action of serum or hypophysin.

16106. **FÖLDES, EUGEN.** Über die Wirkung des Schwefels auf den Kohlenhydratstoffwechsel. *Zeitschr. Ges. Exp. Med.* 60 (5/6): 571-582. 4 fig. 1928.—Inunction of S into the skin of normal rabbits may cause a fall in the blood sugar. In 5 of 6 instances with rabbits that had been treated with inunctions of S the injection of adrenalin produced a hyperglycemia in the usual way. In 1 instance hyperglycemia occurred with death of the animal. Normal rabbits treated for several months with daily inunctions of S and subsequently killed showed an increased glycogen content of the liver, a hyperplasia of the suprarenals and a total, as well as a relative, increase in the S content of the adrenals. Increased glycogen content of the liver and hyperplasia of the suprarenal glands did not occur in those rabbits in

which an extreme hyperglycemia occurred following treatment with S.—*D. Perla.*

16107. FRANCAVIGLIA, ANTONIO. Sul meccanismo dell'iperglicemia da pilocarpina. [On the hyperglycemia produced by pilocarpine.] *Riv. Patol. Sperim.* 5(6): 488-504. 1930.—Hyperglycemia following pilocarpine is due to increased glycogenolysis in the liver, and is accompanied by increased transfer of glucose from blood to tissues. It is checked by atropine. Intravenous administration of glucose leads to a diminution of hyperglycemia from pilocarpine, while the latter is increased by bilateral vagotomy. Bilateral adrenalectomy, though leading to hypoglycemia, does not inhibit the hyperglycemia from pilocarpin, which should be attributed to a stimulation of vagus endings in the liver.—*M. Comel.*

16108. FRANCESCON, A. Ricerche sulla colorazione del polmone in particolari condizioni sperimentali. [Studies on the vital staining of the lung in special experimental conditions.] *Boll. Soc. Ital. Biol. Sperim.* 5(4): 533-536. 1930.—Vital staining of the lung was studied following administration of anesthetics (chloroform and aether) by inhalation or direct introduction in the pleural cavity. The histiocyte granulopexis was less pronounced than in the normal.—*M. Comel.*

16109. FRANKE, KURT. Ueber die spezifisch-choleretische Wirkung des Atophans. *Arch. Exp. Pathol. u. Pharmakol.* 151(3/4): 219-231. 6 fig. 1930.—Brugsch and Horsters found that some acid dyes, e.g., eosin, are quantitatively eliminated with the bile. During 8-10 hrs., cats and rabbits received intravenously 2 cc. of a 1% eosin sodium solution once every 30 min., the dogs also intravenously received 5 cc. of a 2% eosine sodium solution once an hour. After the extraction of bilirubin and biliverdin with a 20% $CaCl_2$ solution and alcohol the dye was measured by comparison with a standard likewise prepared. In the dog, cat and rabbit atophan and atophanyl in small doses increase the excretion of eosin to about triple the norm without raising the amount of bile. Larger doses of atophan produce an increase of bile with diminished dye contents. This dilution of the bile, measured by the increase in quantity produced, can be considered as an index of the hepatotoxic action of large doses of atophan. Decholine raises the bile quantity with a constant relation between the bile and the dye. A parallelism between the acceleration of diffusion of the dye from serum to gelatine and the specific choleretic effect was noted.—*H. Graf.*

16110. GERLÓCZY, GÉZA, und GÁBOR BERENCSY. Die Resorption des in physiologischer Kochsalzlösung peroral verabreichten Calciumchlorid. I. *Zeitschr. Ges. Exp. Med.* 73(5/6): 711-714. 1930.—Aqueous 10% solution of $CaCl_2$ orally given in doses of 0.15 gm. per kgm. raised the blood Ca in 4 clinical cases 0.62-1.9 mgm. % (ave. 1.36 mgm. %) in ½-1 hr., the increase subsiding in about 7 hrs. $CaCl_2$ in physiologic NaCl solution under like conditions raised the blood Ca much more—in some cases by 170%, (ave. 143%) of the normal value.

16111. GESSNER, O., und K. SIEBERT. Zur Chemotherapie der Tuberkulose. (Beeinflussung der experimentellen Meerschweinchentuberkulose durch Mangan- und Berylliumsalze.) *Beitr. Klin. Tuberk.* 75(5/6): 609-612. 1930.—Small doses of $MnCl_2$ or $MnCl_2+BeCl_2$ administered to tubercle infected guinea pigs together with tuberculin-like substances produced a transient favorable influence upon the tuberculous process. Large doses of these salts affected the tuberculous process unfavorably. These results are considered as confirmatory rather than opposing Walbum's findings, emphasizing the importance of correct dosage in the therapeutic application of metallic salts in tuberculosis.—*Author's summary (transl. by M. I. Smith).*

16112. GESSNER, OTTO. Über Uzara. I. Über die digitalisartige Wirkung der Uzaraglykoside auf das Herz. II. Über den Wirkungsmechanismus von Uzara bei glattmuskeligen Organen, insbesondere am Darm. *Arch. Exp. Pathol. u. Pharmakol.* 148(5/6): 342-352. 2 fig.; 353-368. 5 fig. 1930.—I. Uzara acts like digitalis in some respects and like saponin in others. Uzara derivatives having digitalis action are the crystalline glucoside uzarin, the microcrystalline glucoside uzaren, and to a somewhat less extent the aglycone of uzarin, uzaridin. The water soluble split products, anhydrouzaridin and uzarenin, did not have any digitalis-like action on the heart. The cardiac effect of uzara glucosides in comparison with g-strophanthin is so slight that with oral administration it is only a side action. II. The effect of uzara on various smooth muscles was studied, including the stomach rings and cloaca of frogs, small intestine and rectum of guinea pig and rat, ductus deferens of the guinea pig, strips of blood vessels from warm blooded animals, perfused frog's hind legs, and in addition nerve-free tissue,—the chick amnion. Uzara had a direct action on contractile substance. The uzara glucosides in weak concentrations stimulated contraction, in high concentration produced reversible paralysis of smooth musculature. The mother-liquor of a uzaron-tannin precipitate (free from uzarin, uzaren, or uzaridin) produced a reversible paralysis in smooth muscle. Uzara, furthermore, increases the irritability of the endings of the sympathetic nerves. This action on the sympathetic could possibly be used in therapeutics.

16113. GESSNER, OTTO, und F. J. SCHLENKERT. Über Neodorm. *Zeitschr. Ges. Exp. Med.* 73(5/6): 586-598. 1930.—For white mice (46 mice) the minimal lethal dose per kgm. subcut. is for neodorm, 0.265 gm.; for chloral hydrate, 0.42 gm.; for ethyl alcohol, 8.25 gm.; therefore, on the mouse, neodorm is 1.6 times more active than chloral hydrate and 30.6 times more active than ethyl alcohol. The m.l.d. of neodorm for the frog after injection into the lymph sac lies between 0.1 and 0.33 mgm. per gm. For (255) salamander larvae, the fatal conc. of neodorm is 1:700; for chloral hydrate, 1:100; for ethyl alcohol, 1:20. The paralyzing concentration of neodorm (for salamander larvae) is 1:26000; of chloral hydrate, 1:750; of ethyl alcohol, 1:90. The just effective concentration of neodorm (for salamander larvae) is 1:50000; of chloral hydrate, 1:1000; of ethyl alcohol, 1:200. From these figures, it is obvious that neodorm has a marked "therapeutic breadth"; (paralyzing-fatal threshold concentration quotient) 4 times greater than chloral hydrate and 8 times that of ethyl alcohol. In comparison to chloral hydrate and ethyl alcohol the "total activity breadth" (just effective-fatal concentration threshold quotient) of neodorm is 7-fold. Distinct signs of excitement which may culminate in convulsions; occur in the mouse after neodorm, in the amphibian larvae, excitement was not observed; on frogs, seldom. In the mouse during the hypnotic stage, the respiration is at first slowed but deepened; dyspnea occurs later; and, after lethal doses, cessation of respiration. On all types of animals used, the influence of neodorm on the circulation, especially the heart, is very slight. On isolated frog organs (skeletal muscle (52); motor nerve and heart (61)) neodorm has greater absolute activity than chloral hydrate and ethyl alcohol; but, in comparison to narcotic action on the central nervous system, has so little effect that, practically, "side actions" on these organs, especially the heart, scarcely come into consideration. The cardiac action of neodorm (reduction of systole; after larger doses, diastolic stand-still) is easily reversible; the neodorm stoppage of the heart can not only be quickly and completely overcome by Ringer's sol., but, after more prolonged action of neodorm on the heart, recovery can be effected by suprarenin. Neodorm action shows itself to be dependent on temperature in accordance with the rule determined by H. H. Meyer, so that with increasing temperature and simultaneous increase in partition coefficient the narcotic activity increases. (33 salamander larvae) On (20) salamander larvae, after continued employment, "habituation" occurred; the cause of this has not yet been discovered.—*Author's summary (transl. by C. C. Haskell).*

16114. GIACOMO, UMBERTO de. Primi dati sull'azione catatonizzante, nell'uomo, di un alcaloide a struttura etil-amino-ciclica (la bulbo-capnina). [The cata-

tonic action on man of an alkaloid with ethyl-amino-cyclic structure, bulbocapnin.] *Boll. Soc. Ital. Biol. Sperim.* 5(4) : 501-504. 1930.—Bulbocapnin may provoke catatonia and mental confusion.—*M. Comel.*

16115. **GIACOMO, U. de, e A. SEVERINO. L'azione della bulbocapnina, iniettata per via endovenosa, sui riflessi locali di postura nell'uomo. [Action of bulbocapnin, intravenously administered, on the local postural reflexes of man.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6) : 965-966. 1930.—An initial stage, during which the postural reflexes are weakened or absent, is followed by a period of exaggeration.—*M. Comel.*

16116. **GIORDANO, G. B. L'ureopoiesi durante il morfinismo sperimentale. [Ureopoiesis during experimental morphinism.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4) : 564-566. 1930.—The ureopoietic activity of the dog is much reduced after morphine administration.—*M. Comel.*

16117. **GOLDEMBERG, LÉON. Action du fluorure de sodium sur le métabolisme basal du rat.** *Jour. Physiol. Path. Gén.* 28(3) : 556-566. 2 fig. 1930.—NaF given orally in daily doses of 3-4 mgm. per rat tends to lower basal metabolism when observed over a 6-8 mos. period. The m.l.d., is 28-35 mgm. per kgm. body-weight, injected intraperitoneally, in 1% solution. A single injection of 15-18 mgm. per kgm. body-weight causes a fall in basal metabolism of 12-63%, beginning within 15 min., and lasting for several hours. The effect of single small injections, 2-3 mgm. per kgm. body-weight, is variable, even in the same animal.—*W. R. Fearon.*

16118. **GULLOTTA, S. Le variazioni del calcio nella demenza precoce e sotto l'influenza della bulbocapnina. [Variations of Ca in dementia praecox and under action of the bulbocapnine.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4) : 504-507. 1930.—Increased as well as decreased values of blood serum Ca were noted in dementia praecox. Following bulbocapnine a slight decrease was observed.—*M. Comel.*

16119. **GRADINESCO, A., et H. PALMHERT. Influence des alcools éthylique et méthylique sur la digestion du suc gastrique artificiel et naturel.** *Jour. Physiol. et Path. Gén.* 29(1) : 45-51. 2 fig. 1931.—Both ethyl and methyl alcohol inhibit the gastric digestion of solid proteins; the action of ethyl alcohol is the stronger, which is in accordance with the observed increase in toxicity with increase in molecular weight among the alcohols.—*W. R. Fearon.*

16120. **GRĂDINESCU, AR., et H. PALMHERT. Influence des alcools éthylique et méthylique sur la digestion du suc gastrique artificiel et naturel.** *Bul. Soc. Ştiinţe Cluj* 5(Fasc. 3, Part 2) : 115-123. 2 fig. 1930.—Using Mette's test the authors find that artificial and natural gastric juices give concordant results, that both methyl and ethyl alcohol inhibit the digestion of solid protein material, and that ethyl alcohol has a more pronounced effect than methyl.—*A. Grădinescu (transl. by H. S. Wells).*

16121. **GRAY, SAMUEL H. The blood cholesterol following repeated administrations of chloroform, paraldehyde, and urethane.** *Jour. Biol. Chem.* 87(3) : 591-596. 1930.—There appears to be a definite rise in blood cholesterol beginning about 3 wks. after repeated administration of $CHCl_3$. If $CHCl_3$ administration is continued for a longer period, the cholesterol level remains high, but does not show a progressive rise. No very marked change in blood cholesterol occurs after repeated administration of urethane or paraldehyde, although a very slight increase in cholesterol may take place after repeated urethane administrations.—*From author's summary.*

16122. **GUT, PAUL von. Über einen pharmakologischen Test bei Hypothyreose. (Verstärkte Homatropinwirkung.)** *Endokrinologie* 6(5) : 345-355. 1930.—Homatropin produces mydriasis of earlier inception and greater length in hypothyroid individuals (13 cases) than in normals (26 cases). Experimental animals give similar results. The drug is supposed to induce hypotonia in the parasympathetic which suggests a "partial hormone" in the thyroid secretion. Gas exchange is unaffected. The difference of reaction between hypothyroid and normal is not great enough to justify homatropin as a test for hypothyroidism.—*B. Cunningham.*

16123. **HAAKE, ERICH. Über die pharmakologischen Wirkungen des frisch defibrinierten Blutes. III. Mitteilung: Die Wirkung der Frühgiftlösungen an überlebenden Organen.** *Arch. Exp. Path. u. Pharmakol.* 150 (1/2) : 119-132. 1930.—Filtrate made from whole blood by precipitation with Congo-red and HCl, or by ultrafiltration, had no action on the Läwen-Trendelenburg frog preparation, or a heart-lung preparation from a warm-blooded animal. The filtrate dilated blood vessels in a warm-blooded preparation perfused with adrenalin. It inhibited movement and lowered tonus of the small intestine of the rabbit and increased movement and tonus of the uterus of the guinea pig.

16124. **HALPERT, BÉLA, MILTON T. HANKE, and GEORGE M. CURTIS. Is sodium salicylate excreted in the bile?** *Proc. Soc. Exp. Biol. & Med.* 27(9) : 1051-1052. 1930.—Preliminary paper.

16125. **HANZLIK, P. J., and H. G. MEHRTENS, (with the assistance of D. C. MARSHALL, FRANCES WATSON, and JEAN SPAULDING). Clinical excretion of bismuth: bismuth sodium tartrate.** *Arch. Dermatol. & Syphilol.* 22(5) : 850-860. 1930.—The urinary excretion of Bi after different doses of the soluble Bi-Na tartrate (73.8% Bi) in aqueous medium was studied in 11 human subjects 4 of whom had edema of cardiac origin. The excretion in the subjects with edema did not differ materially from that in subjects without edema. The excretion was characterized by a prompt onset, early peak or maximum, comparatively short duration, without marked individual variation, thus differing in several respects from insoluble products and those given in oil. Bismuth was invariably present in the day following administration, indicating rapid absorption; the peak or maximum daily excretion occurred on the 2nd day, and the excretion lasted about 13 days (median) after single doses, equivalent to 0.022 gm. of Bi. The results were similar after 2 and 3 single doses. Those after 7, 9 and 17 successive doses showed a delayed peak, and the data on duration were incomplete. After single doses, the median amount of Bi excreted from day to day was about 1 mgm., and at the end of 2 wks., was a median total of 45.2% of the total administered. The total excretion after 2 doses, or 0.044 gm. Bi, was about the same, the results after repeated doses representing higher total dosage, namely 0.066, 0.2, 0.31 and 0.52 gm. of bismuth, being incomplete. The total excretion of Bi after the highest doses used (0.2 gm. and over), as also the daily maximum of Bi excreted, did not increase in proportion to the increase in dosage, but, on the contrary, decreased, confirming a similar tendency observed in the excretion of Bi after the injection of Bi (metal), previously reported. This agreed with a similar phenomenon after the use of toxic and fatal doses in animals, reported in the literature. The possible significance of this is discussed. The excretion of Bi occurs mainly in urine, since the excretion in the feces of 2 subjects receiving 3 and 4 single doses of Bi-Na tartrate was found negligible at different periods; the highest daily amounts detected were about ½ to ¼ of those in urine on the same days. This general result agrees with those on the insoluble and oil-suspended products. In general, the intramuscular injection of soluble Bi-Na tartrate results in the prompt absorption, distribution and uniform excretion if Bi. Thus, a prompt saturation of the tissues may be expected. With repeated, intensive medication, accumulation of Bi will supervene owing to the slowing down of excretion. The rapid removal of Bi indicates the necessity of more frequent injections, but these should be used with suitable rest periods to avoid harmful accumulation. Presumably, the muscular depots after Bi-Na tartrate are negligible, although Bi continues to be excreted in urine for days in amounts too small to be estimated, but probably not as long as after the insoluble and oil-suspended products. —*Authors' conclusions.*

16126. **HARA, Y. Experimental studies on the poisons of Formosan snakes. The influence of the snake poisons on the resistance of the red blood corpuscles, on the velocity of sedimentation of the red blood corpuscles and on the blood coagulability.** *Taiwan Igakkai Zasshi [Jour. Med. Assoc. Formosa]* 306. 50-51. 1930.—In the hemotoxic types of venom the resistance of the r.b.c. was markedly decreased, but in the neurotoxic type there was no change. Sedimentation of the corpuscles was accelerated, more strikingly in the hemotoxic type. Clotting is delayed in the presence of hemotoxic venoms. These characters are of differential clinical importance. —*E. C. Faust.*

16127. **HARDING, VICTOR JOHN, and L. J. HARRIS. Urea administration in water intoxication.** *Trans. Roy. Soc. Canada, Sect. 5, Biol. Sci.* 24(1): 101-110. 1930.—The retention of water to produce convulsive symptoms of water intoxication in dogs must be over 60 cc. per kgm. The critical value appears to be from 60-70 cc. per kgm. All animals in water intoxication convulsions recovered by the administration of 10% NaCl. Only 2 animals out of 14 recovered from water intoxication convulsions by the administration of hypertonic urea solutions. It is doubtful if the convulsions of epilepsy or eclampsia are manifestations of "water intoxication" even though they may be accompanied by a positive water balance.—*V. H. Harding.*

16128. **HEATLY, CLYDE A., and SAMUEL W. CLAUSEN. Experimental studies in peanut bronchitis.** *Arch. Otolaryngol.* 11(5): 569-579. 4 fig. 1930.—Bronchitis caused by peanut aspiration has been called arachidic bronchitis from the scientific name of the peanut *Arachis hypogaea.* Arachidic bronchitis is due to irritation; infection plays only a secondary rôle. Fat-free residue of peanuts containing unaltered proteins and carbohydrates produced no reaction. The irritant is an acid present in both the oleic and linolic fraction, and absent in the solid fraction of the fatty acids. Peanut oil containing free fatty acids is irritating. Peanut oil deprived of free fatty acids was not irritating. As small a concentration of .3% of free acid in an oil will produce irritation. Experiments were performed with rabbits. Typical arachidic bronchitis could be produced in them.

16129. **HEINZ, T. E., and W. L. PALMER. A study of the effect of insulin on gastric motility.** *Proc. Soc. Exp. Biol. & Med.* 27(9): 1047-1049. 1930.—Preliminary paper.

16130. **HENRIJEAN, F., et R. WAUCOMONT. Recherches sur l'action cardiaque de l'ergotamine.** *Arch. Internat. Pharmacodynamie et Ther.* 38: 618-832. 1930. —The irritability of the vagus is not augmented by the action of ergotamine. Stimulation of the ansa of Vieussens is effective up to a late stage of poisoning, while stimulation of the vagus produces a definite arrest of the heart. The mechanism of this arrest is not elucidated and is not in all cases due to paralysis of the accelerator endings. The injection of adrenalin during the cardiac arrest leads to cardiac contractions which are shown by the electrocardiogram to be of heterotopic origin.—*F. Henrijean (transl. by O. Barlow).*

16131. **HENRIKSSON, HARALD E. Zur Kenntnis der Einwirkung des Tabakrauchens auf den Kreislauf.** *Skand. Arch. Physiol.* 60(1/4): 143-188. 1 fig. 1930.—Large volumes of tobacco smoke were administered to 15 rabbits. The frequency of heart beat was decreased. The min. vol. decreased for a short time then increased above normal. The blood pressure showed a slight primary fall followed by a stronger, secondary rise. The work of the heart was often increased markedly.—*Author's summary (transl. by J. C. Munch).*

16132. **HENRY, GEORGE W., and HERMAN de JONG. A comparative study of the action of bulbocapnine and some other drugs in producing catatonic states.** *Acta Psychiatr. et Neurol.* 5(4): 463-471. 1930.—In an investigation of experimental catatonia induced in animals by subcutaneous injections of bulbocapnine the authors have desired to determine whether similar states follow the administration of certain other drugs. Illustrative experiments only are reported, from unspecified series with cannabis indica, harmin, luminal, sulphonal and somnifen on the hen, duck, cat, mouse and dog. The experiments show that with the exception of cannabis indica none of the drugs studied produce reactions similar to those induced by injections of bulbocapnine. Cannabis indica causes the animal to become drowsy, less active, rather indifferent to natural enemies, and to lose desire for food and drink. Occasionally it produces drooling and a tendency to maintain awkward postures. In large doses it produces disturbances of equilibrium, swaying movements on standing or walking, ataxia and action tremors of the extremities. Injections of harmin in small doses also cause drowsiness and reduction of general activity while in larger doses they cause generalized tremors, hyperexcitability, hypertonicity and spasms and finally tonic-clonic convulsions. Occasionally an animal intoxicated by this drug shows a tendency to withdraw to a dark corner of the room. The ordinary sedative drugs in small doses produce only drowsiness and sleep while in larger doses they produce disturbances of equilibrium and ataxia as well as the hyperkinetic phenomena characteristic of large doses of motor excitants. The reactions to cannabis indica somewhat resemble the loss of motor initiative, drooling and catalepsy produced by injections of bulbocapnine. Although the closest approximation to the action of bulbocapnine was obtained with cannabis indica the catatonic-like manifestations were only occasionally and imperfectly developed. Henry and de Jong never saw negativism and complicated hyperkinetic symptoms after administration of cannabis indica. These symptoms are very striking after bulbocapnine intoxication.

16133. **HERTEL, E. Über die Bedeutung der Ehrlich'schen Fluoresceinversuche.** *Arch. Augenheilk.* 100/101: 460-469. 1929.—Experiments on rabbits show that a movement of liquid produced by change of osmotic pressure in the blood can be recognized by measurement of the eye-pressure and, at the same time, can be well shown in the fluorescence experiment. Movements of both fluid and fluorescein, proceed in the same direction. Marked osmotic changes in the blood increase the penetration of liquid and dye into the vessels. By equalization of the osmotic differences, the discharge of both is lessened or abolished. An influx of liquid and fluorescein out of the vessels into the eye then takes place. Therefore, the entrance and return of liquid and dye results according to physical laws, such as are already well known for interchanges between blood and tissue.—*E. Hertel (transl. by E. V. Lynn).*

16134. **HICKMANS, EVELYN M., and SYDNEY H. EDGAR. The blood constituents in acute rheumatism before and after salicylate treatment.** *Arch. Dis. Childhood* 5(30): 387-396. 1930.—Three cases before salicylate treatment was commenced showed blood urea, non-protein N and uric acid somewhat higher than in normal children of the same age. Although salicylate increases the urinary output of total N, urea and uric acid, and the blood uric acid is thereby decreased, the examination of many cases indicates that the blood urea and non-protein N still remain slightly above normal during treatment. Since the blood P is also slightly above normal, it would seem that the kidney in rheumatism is unable to deal adequately with these 2 products. That this is due to some impairment of renal efficiency as a result of the acute rheumatic infection rather than to the salicylate, is suggested by the fact that the blood urea of normal children was not increased by similar quantities of salicylate. On the other hand, considering that after salicylate treatment, blood urea reaches a higher level than before salicylate is given, salicylate may possibly increase to some extent the degree of renal inefficiency.—*Authors' summary and conclusions.*

16135. **HILAROWICZ, HENRYK. Über die Somnifen-Urethan-Magnesium-Einschläferung bei chirurgischen Operationen.** *Schmerz* 2(12): 443-451. 1930.—Somnifene contains in 1 cc. of solution .1 gm. allyl-iso-propyl-barbituric acid and .1 gm. di-ethyl-barbituric acid. The effect

of this anesthetic was tried on 3 healthy dogs recording carotid blood pressure and respiratory movements. Somnifene in doses of .23 cc. per kgm. body weight lowered blood pressure about 30%. Urethane and $MgSO_4$ lowered it somewhat, but not so markedly. A mixture of urethane, somnifene and $MgSO_4$ produced nearly as great a blood pressure lowering as somnifene alone. Somnifene alone produced marked changes in the respiration. It produced a sleep of short duration followed by considerable pain. Mixtures of .44 cc., somnifene, .3 gm. urethane and .03 gm. $MgSO_4$ per kgm. produced a deep sleep in both dogs and men. After 7-8 hours in dogs and somewhat sooner in men, awakening occurred, followed generally by no ill effects. Three out of 33 human cases on which this anesthetic was used died during or shortly after operation, but the condition of the patient and the trauma due to operation might have been the cause of death, rather than the anesthetic.

16136. **HIRATA, TATSUJIRO. Über den Einfluss der Ermüdung auf die Wirkung der Arzneimittel. III, IV, V.** *Kyoto Igaku Zasshi* (*Kyoto Med. Jour.*) 25: 16-22, 401-407, 799-803. 1928.—There is no striking difference between the resistance to morphine of nervous tissue in an animal fatigued by work and in one which has rested. The resistance of the nervous tissue of tired and hungry animals was less than in those which rested during the fasting period. The resistance of nervous tissue of tired and hungry animals to narcopon-scopolamine, and to pantopon-scopolamine, appears to be surprisingly decreased.

16137. **HIRSCHFELDER, ARTHUR D., and ELMER T. CEDER. Does ethylene affect rate of growth or action of enzymes in animals?** *Amer. Jour. Physiol.* 91(2): 624-636. 2 fig. 1930.—Exps. showed no stimulating effect on the growth of rats by drinking water saturated with ethylene (14 exp. rats, 13 controls), or by inhaling over long periods air containing 1% (11 exp. rats, 11 controls), 0.1% (12 exp. rats, 12 controls) or 0.01% (15 exp. rats, 15 controls) of ethylene. The growth of rats is therefore not favorably affected by ethylene in 10 times the concentration which activates ripening of plants. Exps. in vitro indicate that saturation with ethylene does not convert starch into sugar as claimed by Rea and Mullinix (though it does increase the activity of amylase) nor does it affect the activity of pepsin, trypsin or liver lipase. No marked effect in the reversal of lipase action was noted, i.e., the synthesis of ethylbutyrate from ethyl alcohol and butyric acid.

16138. **HIRSCHFELDER, ARTHUR D., J. B. ENEBOE, and R. L. PARSONS. Antagonization of anesthetic effect of magnesium sulphate by chlorides of potassium, rubidium and sodium.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 258-259. 1928.—Preliminary paper.

16139. **HOLOBUT, WIESLAW. Action de la strychnine sur les nerfs moteurs et influence des ions alcalins.** *Compt. Rend. Soc. Biol.* 100(14): 1232-1233. 1929.—Strychnine sol., applied directly to the sciatic nerve, caused a marked and steady increase of excitability to a maximum. Li and K salts increased the effect and those of Ca, Ba, and Mg caused a slow but steady decrease in the effect of the strychnine. Strychnine tends to cause a greater permeability of the cell membrane and has a specific action on albumin, probably causing it to swell.

16140. **HOLTZ, FRIEDRICH, und EMMA SCHREIBER. Einige weitere physiologische Erfahrungen über das bestrahlte Ergosterin und seine Umwandlungsprodukte.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 191(1/2): 1-22. 1 pl., 9 fig. 1930.—As a result of apparently extensive experiments on dogs, rabbits and other animals, the authors conclude: The poisoning with irradiated ergosterol which has been designated by many authors as hyper-vitaminosis is not due to the administration of an excessive dose of vitamin D but is a consequence of the administration of a "calcinose factor" which is formed during the irradiation. The quantitative relationship between the concentration of vitamin D and the "calcinose factor" appears to vary within narrow limits, whether one irradiates with Mg spark or with a mercury vapor light with or without filters or whether one alters the solvent or the time of the irradiation. Only in this way can one explain why in a rather superficial evaluation of the antirachitic and toxic minimal dose a parallelism between these two properties has been observed by numerous investigators. No one has as yet succeeded in producing a potent antirachitic but non-toxic preparation and one can, therefore, state as a 2nd finding of this work that as a result of the ultra-violet irradiation there is formed from ergosterol a chemical compound which simultaneously presents both antirachitic and Ca raising properties (the "calcinose factor"). By means of certain chemical processes such as heating and careful hydrogenation this ergosterol derivative is so changed that the antirachitic effectiveness disappears but the toxicity which is dependent upon another atomic group remains.—*Authors' conclusions* (*transl. by B. Kramer*).

16141. **HORSTERS, HANS, und HANS ROTHMANN. Über den Einfluss peroral zugeführter Gallensäuren auf den Zuckerstoffwechsel des Diabetischen.** *Arch. Exp. Path. u. Pharmakol.* 142(3/4): 261-270. 1 fig. 1929.—By oral and intraven. administration of bile acids (cholalic, desoxycholalic and dehydrocholalic acids) and their salts, a marked decrease in fasting blood sugar was obtained in normal and diabetic patients [4 normal and 10 diabetic cases are cited]. In diabetics this fall in blood-sugar exceeded the drop caused by hunger alone. The course of the blood-sugar curve after administration of biliary acids in some cases corresponded to the fall in blood-sugar produced by insulin. The rise in blood-sugar regularly occurring in diabetics after taking food was prevented by oral administration of bile acids. In mild cases of diabetes an improvement in carbohydrate tolerance was obtained by peroral administration of bile acids; frequently no effect was produced in severe cases. Apparently the mechanism of the action of bile acids on carbohydrate metabolism is based on a stimulation of pancreatic tissue still capable of functioning.—*Authors' summary* (*transl.*).

16142. **HOUSSAY, B. A. Clasificación de las acciones de ponzoñas de serpientes sobre el organismo animal.** [Action of snake venoms.] *Rev. Soc. Argentina Biol.* 6(5/6): 351-357. 1930.—The following classification is proposed: I.—Toxic action, a) curarising, *Naja tripudians* type; b) Neurotoxic, *Crotalus terrificus* type; c) shock, *Lachesis* type; d) mass blood clotting, *Vipera ruselli* type.—II.—Action due to phosphatidase, a) hemolytic; b) anticoagulating; coagulating; c) cytolytic.—III.—Action of protease, local irritation and hemorrhagic, a) tumefaction, hemorrhage and local necrosis, secondarily anaerobic bacteria flourish, *Lachesis* type; b) Hemorrhagic pancreatitis and steatonecrosis by injection in the pancreatic duct; c) hemorrhages distant from site of injection; d) decrease in circulating fibrinogen, *Crotalus adamantens* and *L. flavoviridis* types. —IV.—Coagulating and thrombinic action, a) intravascular clotting by a thrombin different from the usual blood thrombin, when large doses are given; b) positive phase followed by negative phase when small doses are injected due to decrease in fibrinogen owing to gradual precipitation, *Lachesis* type; c) increase in globular resistance; d) increase in sedimentation time; e) intense initial shock; f) increase in blood globulin, decrease in albumin and fibrinogen, decrease in total protein of blood.—*J. T. Lewis.*

16143. **IGURA, SATOSHI. Einfluss des Chinins auf die Schilddrüse und Hypophyse. [Effect of quinine on thyroid and hypophysis.]** *Folia Endocrinol. Japonica* 3: 1581-1590. 1928.—After injection of quinine in rats the thyroid and the hypophysis were examined histologically. The thyroid showed the picture of colloid goiter, whether due directly or indirectly to the quinine the author could not decide. The anterior lobe of the hypophysis showed an increase and enlargement of the eosinophile cells and hyperemia, probably compensatory processes.

16144. **INAMI, TAKEHIKO. Über den Einfluss der Schwangerschaft sowie des Kalium- und Calciumgehaltes**

der Nährflüssigkeit auf die Wirkung der Uterustonica. *Chiba Igaku Kwai Zasshi (Mitteil. Med. Ges. Chiba)* 6: 67-184. 1928.—The action of various drugs on the spontaneous pendulum movement and the tonus of the excised uterus, nonpregnant and pregnant, was tested in normal Locke's sol. and in that containing either excess or deficiency of K or Ca. Rabbits and guinea pigs were used; they showed about the same sensitivity to pituitary extract, chloral hydrate, quinine, secacornin, pilocarpine, and atropine as well as to K and Ca ions. Epinephrine had a stimulating action on the rabbit uterus, an inhibiting one on the guinea pig. The guinea pig uterus was much more sensitive to cocaine, which affects the sympathetic in the manner of epinephrine, than was the rabbit uterus. The uterine action of drugs which affect the uterine musculature itself—quinine, secacornin, cocaine, etc.—was increased by pregnancy while that of the so-called parasympathetic drugs—pilocarpine and atropine—was not influenced. The uterine action of drugs of endocrine nature was most distinctly influenced by pregnancy. Epinephrine and pituitary extract had a stimulating action on the nonpregnant uterus; both lost their effectivity at the beginning of pregnancy; the action reappeared later to reach its peak at the end of pregnancy or during the puerperal period. The stimulation of uterine contractions by the various drugs was weakened by excess of K ions and increased if they were decreased or absent. The stimulation of the uterus due to drugs was increased by excess of Ca ions; if they were entirely absent pituitary extract, quinine, secacornin, and atropine produced no stimulation. Epinephrine, pilocarpine, and cocaine could produce stimulation when Ca ions were absent and if the dose were sufficient it appeared that these drugs could replace the Ca action.

16145. **IONESCO-MATIU, AL., et A. POPESCO. Le dosage de quelques produits médicamenteux par la méthode mercurimétrique.** *Bull. Sci. Pharmacol.* 38(2): 71-76. 1931.—Experiments show that the mercurimetric method can be applied with success for determining spartein, novocain, stovain and plasmochin.

16146. **JANSSEN, S., u. A. LOESER. Hypophysenvorderlappenpulver und Ovarium. II. Die quantitative Auswertung der Wirkung.** *Arch. Exp. Path. u. Pharmakol.* 151(3/4): 188-196. 1 fig. 1930.—Using a dried powder of the anterior lobe of the pituitary, that possesses, qualitatively, the complete activity upon the ovary, it is possible to construct a characteristic curve showing the relationship between dosage and percentage of positive results in groups of 10 rats. This curve can be used for evaluation of the gland products or of pregnancy urine. Glands of cattle dried with acetone and preserved over P_2O_5 have almost the same value as freshly transplanted glands.

16147. **JENSEN, H., and K. K. CHEN. Chemical studies on toad poisons. Ch'an, the dried venom of the Chinese toad.** *Jour. Biol. Chem.* 87(3): 741-753. 1930.—From Ch'an Su, the following compounds have been isolated: (1) epinephrine; (2) cholesterol; (3) suberic acid; (4) a pressor principle, different from epinephrine, in the form of a flavianate; it seems to be closely related to or identical with the pressor principle isolated by Handovsky from *Bufo vulgaris*. (5) Cinobufotoxin, which seems to be chemically closely related to bufotoxin, isolated by Wieland and Alles from *Bufo vulgaris*. On hydrolysis with HCl a decomposition product of cinobufagin which could not be crystallized, suberic acid, and arginine were obtained. (6) Cinobufagin, which was found to be different from bufagin isolated by Abel and Macht from *Bufo marinus*. The pharmacological action of cinobufotoxin and cinobufagin was quite similar to that of the digitalis glucosides. From the mother liquor obtained in the preparation of cinobufagin, a Cl-containing body was prepared. Contrary to Kotake, who assumed that this substance was derived from cinobufagin, the authors believe that it is a derivative of bufotalin. The latter has been isolated by Wieland and his coworkers from *Bufo vulgaris*.—*Authors' summary.*

16148. **JENSEN, H., and K. K. CHEN. Chemical studies on toad poisons. 3. The secretion of the tropical toad, Bufo marinus.** *Jour. Biol. Chem.* 87(3): 755-759. 1930.—From the secretion of the "paratoid glands" was isolated in crystalline form a N-containing substance which is named marinobufotoxin. It seems to be closely related chemically to bufotoxin and cinobufotoxin; its elementary composition is $C_{42}H_{62}O_{11}N_4$. The pharmacological action was quite similar to that of cinobufotoxin. Bufagin was also prepared and found to be identical with the bufagin isolated by Abel and Macht. It has the composition $C_{28}H_{36}O_6$. A monoacetyl derivative of bufagin having the composition $C_{30}H_{38}O_7$ was prepared. —*Authors' summary.*

16149. **JENSEN, JULIUS. Clinical studies on cardiovascular response to adrenalin administered subcutaneously.** *Proc. Soc. Exp. Biol. & Med.* 26(3): 259-260. 1928.—Preliminary paper.

16150. **KAHLSON, G., und R. v. WERZ. Über Nachweis und Vorkommen gefässverengernder Substanzen im menschlichen Blute.** *Arch. Exp. Pathol. u. Pharmakol.* 148(3/4): 173-197. 9 fig. 1930.—The blood vessel preparation of Krawkow-Pissemski was used as a test object. The sensitivity to constrictors was very high; the average adrenalin sensitivity (from 84 preparations) was $1:10^9$. Changes in sensitivity of the blood vessel preparation after citrate and serum perfusion solution were used on them did not occur. The specificity of the method for adrenalin could be demonstrated since ergotoxin antagonized the effect of adrenalin but not of nonspecific vasoconstrictors. Extravascular adrenalin action was not a grave source of error since in dilutions of $1:2\cdot10^8$ to $1:10^9$ the average activity lost was only 1.20% per min. Dilution of citrated blood 10 times did not affect the sensitivity of the preparation. Blood from hypertonus thyroid toxin patients and fever patients had a greater vasoconstrictor effect than blood from normal people.

16151. **KAIRIUKSCHTIS, VLADAS. Versuche mit Neon-, Argon- und Heliothorax bei Kranken an Lungentuberkulose.** *Zeitschr. Tuberk.* 59(5): 339-346. 9 fig. 1931. —In 1 patient air, A, Ne, and He were injected successively into the pleural cavity; in the 2nd, N and Ne. Resorption was followed from roentgenograms, using a planimeter; Ne and He persisted longest; A was more rapidly resorbed than air; Ne persisted longer than N.

16152. **KALK, HEINZ, und KARL NISSEN. Experimentelle Untersuchungen über die Wirkung des Spinatsekretins (Sekreton).** *Arch. Verdauungs. Krankh.* 49 (3/4): 129-143. 1931.—Injections of 2 cc. of secreton in man produced no drop in blood pressure; wheals similar to those from histamine occurred on subcut. injection. Observation of the peritoneum with the laparoscope in 3 men after intramuscular injection of 2 cc. and 8 observations with the capillary microscope in the open abdomen of 2 cats and 3 rabbits after 1 cc. intramusc. showed that the action of secreton on the small vessels was the same as that of histamine, but weaker. It produced as strong contractions in the isolated gallbladder and intestine of the guinea pig as did histamine. Subcut. and intramusc. injection of 2 cc. in man (26 exps., 18 persons) and 1 cc. in 2 dogs stimulated gastric secretion and acidity. As with histamine, achylia can be differentiated with secreton. It appeared to attack the gland cells of the gastric mucosa directly.

16153. **KATAGI, RYUZO. Der Einfluss einiger erregender Gifte auf die Wirkung des Tetrodotoxins am Skelettmuskel.** (Japanese.) *Okayama Igaku Kwai Zasshi* 39: 1869-1880. 1927.—Tetrodotoxin is a drug isolated by Tawara from the ovaries of a poisonous Japanese fish. This investigation reveals that it has a curare-like action on skeletal muscle and a paralysing effect on the respiratory and vasomotor centers. According to Hayashi and Muto's findings, who investigated the respiratory standstill, it appears that the drug acts by a curare-like paralysis of the phrenic. The author set out to investigate these previous conclusions and found that besides this curare-like action, it has a strong action on the

skeletal muscle, and is antagonistic to some of the stimulating drugs. The work was performed on isolated nerve-muscle preparations of *esculanta* and the following results were obtained: Guanidine, strychnine, caffeine, camphor, strophanthin and adrenaline lower the indirect stimulant effects on skeletal muscle following tetrodotoxin, and depress this action to some extent. This antagonistic action of the above-mentioned drugs is effected in different ways—adrenaline acts by stimulation of the motor nerve endings, strychnine, caffeine, and camphor on the contrary act on the muscle alone, and very probably guanidine and strophanthin act through both sites. The antagonism of quinine and tetrodotoxin reported by others was not seen. The drugs which can arrest the muscle paralysis following large doses of tetrodotoxin, are limited to the muscle stimulators, as caffeine, camphor and strophanthin. In a muscle almost entirely paralyzed by large concentrations of tetrodotoxin, the first two were especially active antagonists.—*Author (courtesy Jap. Jour. Med. Sci. IV) (transl. by H. C. Lueth).*

16154. [KAZANSKIĬ, V. I.] КАЗАНСКИЙ, В. И. Механизм лимфоцитоза после спленектомии. [Mechanism of lymphocytosis after splenectomy.] Клинический Журнал Саратовского Университета (*Klin. Zeitschr. Univ. Saratow*) 7(3): 227-248. 1929.—The author tested Schultze-Berezow's theory of the paralyzing influence of the lieno-hormone upon the parasympathetic system. Two men with healthy spleens were used as controls; 6 patients were experimented upon before and after splenectomy. In healthy subjects and those before operation, lability of lymphocytes toward atropine fluctuates between −0.7 and −19.5%; after splenectomy between −32.5 and −50.5%. This is a refutation of Wollenberg's statement as to the indifference of the lymphoid organs toward atropine. Lability of lymphocytosis toward pilocarpine in non-splenectomized subjects is +32.8% to +87.5%; in splenectomized subjects at the end of 1 month it is +38%; at the end of 2-3 months it is +8% to 0%. Splenectomy created experimental vagotonics.—*B. Van Rosen.*

16155. **KEHAR, N. D. Some aspects of the behavior of cinchona alkaloids towards living cells. Part II. Penetration of the various cinchona alkaloids into colloidal cells. Part III. The effect of plasmoquine on the penetration of the cinchona alkaloids.** *Indian Jour. Med. Res.* 18(1): 203-220. 1 pl. 1930; (3): 987-1011. 3 fig. 1931. —An investigation of the penetration of the cinchona alkaloids into living cells and their chemical analogues in the presence of various electrolytes showed that the presence of acids and alkalies accelerates the penetration, while the neutral salts are generally without any effect, the stronger acids and alkalies allowing more penetration than the weaker ones. In the mono- and di-basic acid series the range of penetration of the alkaloids is related to their chemical nature and systematic position in the homologous series. The degree of penetration of these alkaloids seems to be approximately an index of their clinical value in malaria. If plasmochin is mixed with the cinchona alkaloids under the above conditions, the penetration of the alkaloids is considerably increased and is very much in excess of what could be expected according to the Mixture Law. The better clinical effects recorded in malaria after treatment with plasmochin and quinine might be due to the greater and quicker penetration of the two drugs either by enhanced absorption or increased parasiticidal action. Cinchonine chloride in combination with plasmochin penetrates more than quinine under similar conditions, and if penetration is any index of clinical value, the drug is worthy of a trial. An improved form of conductivity cell is described.—*N. D. Kehar.*

16156. **KEHOE, ROBERT A., and FREDERICK THAMANN. The behavior of lead in the animal organism. II. Tetraethyl lead.** *Amer. Jour. Hyg.* 13(3): 478-498. 3 fig. 1931.—Experiments on about 38 healthy rabbits show that tetraethyl lead [$Pb(Et)_4$] is absorbed through the skin. The initial distribution of the Pb in the tissues is rapid. $Pb(Et)_4$ absorption corresponds to that of an oil-soluble material, and indicates therefore that some portion of it is absorbed and circulates as such. However, $Pb(Et)_4$ is rapidly decomposed by the tissues, including the skin, so that only a small portion of the Pb found later in the blood is in the original form. As a result, after 3-14 days all the Pb in the tissues is distributed in a manner characteristic of water-soluble Pb compounds. In small dosages the factors of rapid decomposition and low concentration in the blood so interfere with the distribution of $Pb(Et)_4$ as such, as to prevent its primary absorption by the nervous system. Even when absorbed as the Et_4 compound, the excretion follows quantitatively that of water-soluble Pb compounds. $Pb(Et)_4$ poisoning is therefore not different from Pb poisoning occasioned by other Pb compounds. Evidence is adduced showing that $Pb(Et)_4$ absorption from gasoline in concentrations not in excess of 0.1% is inappreciable.

16157. **KEITH, HADDOW M. The effect of various factors on experimentally produced convulsions.** *Amer. Jour. Dis. Children* 41(3): 532-543. 1931.—A 1% suspension of thujone is a suitable preparation for experimental production of convulsions. Rapid dehydration reduces the susceptibility of the rabbit to experimental convulsions, at least to some extent. Reduction of the intake of fluid to nothing for a considerable period does not have a similar effect. Acetone, ethyl aceto-acetate and diacetone alcohol reduce the susceptibility of the rabbit to experimental convulsions. Diacetone alcohol has the most pronounced effect. None of these drugs causes dehydration of the brain tissue. The anesthesia induced by diacetone alcohol can be interrupted by the injection of thujone.—*Author's conclusions.*

16158. **KELLAWAY, C. H., F. M. BURNET, and F. E. WILLIAMS. The pharmacological action of the exotoxin of Staphylococcus aureus.** *Jour. Path. & Bact.* 33(4): 889-912. 1930.—This agent kills cats and rabbits by blocking the pulmonary circulation and causing vasoconstriction of the coronary arteries.—*A. E. Boycott.*

16159. **KISCH, BRUNO. Differenzierende Wirkungsanalysen von Herzgiften. VI. Die Wirkung von Azetaldehyd auf das Froschherz.** *Arch. Exp. Path. u. Pharmakol.* 138(5/6): 329-338. 7 fig. 1928.—Concentrations of 0.001-1% have the same effect on the heart in situ and the perfused frog heart. Origin of impulses is hindered, the effect being reversible except at high concentration. The conduction of impulses was not disturbed. An effective dose always has a negative inotropic action. Acetaldehyde has the same antagonistic effect to Ca as known for Mg. Atropine does not change the action of acetaldehyde.—*H. Graf.*

16160. **KLIMKO, D. von. Versuche über die Wirkung verschiedener Avertindosen auf den Menschen.** *Schmerz, Narkose-Anaesthesie* 3(3): 89-91. 1930.—The limit for complete amnesia was 0.06 gm. per kgm. body wt. and 0.08 gm. the limit for deep anesthesia.

16161. **KOCHMANN, M. Zur Prüfung und Beurteilung einiger neuer Lokalanästhetika.** *Arch. Exp. Pathol. u. Pharmakol.* 151(1/2): 100-106. 1930.—Cocaine, novocaine, percaine, panthesin and a new cocaine derivative, 1112, were compared as to the minimal quantities required for anesthesia of the cornea of rabbit, and paralysis of sensory and motor nerve of frog. The toxic dose was related to the minimal active concentration. The effect on blood vessels was studied on *Läwen-Trendelenburg* preparations, and the possibility of destruction by the tissues was examined by frog heart perfusions. "1112" was the best of all; percaine also is considered a valuable new local anesthetic. Panthesin has the properties of novocaine.—*H. Graf.*

16162. **KOLLER-AEBY, H., und TH. KOLLER. Zur pathologisch-anatomischen Begründung der Behandlung mit kolloidem Silber.** *Virchow's Arch. Path. Anat. u. Physiol.* 278(1): 84-109. 13 fig. 1930.—The affinity of the reticulo-endothelial cells, especially Kupffer cells, for a colloidal Ag preparation increases with involvement of their function. The deposition of Ag is related to local

acidity, which also explains the therapeutic action of other heavy metals. In like manner the deposition of Ag in the liver and kidney may be explained.—*Author's summary (transl. by J. C. Munch).*

16163. **KOSAKAE, JIRO. Pharmakologische Untersuchungen über die Wirkungen des Plazentarextrakts.** *Kinki Fujinkwa Gakkwai Zasshi (Jour. Kinki Gynecol. Soc.)* 11: 27-37. 1928.—The author's hydrolytic extract of the placenta had, in general, the same effect as placental extract (Ciba) on the uterus in situ as well as on the surviving uterus and intestine in vitro. Respiration was increased by the two extracts. The blood pressure sank in the normal animal, but rose in most pregnant or puerperal cases. The two preparations had an inhibiting action on the perfused frog heart; first an inhibiting, then a stimulating action on the rabbit heart. They produce a contraction or a dilatation of the peripheral, vascular system according to the region involved.

16164. **KRAUSE, F. Ueber den Einfluss des Kohlenmonoxydes auf den peripheren Nerven.** *Acta Psychiatr. et Neurol.* 5(4): 473-491. 3 fig. 1930.—In 18 experiments on frog nerve-muscle preparations, of which illustrative examples only are cited, the effect of CO on the conductivity and excitability of nerve was transient, recovery following as soon after the introduction of air as after N suffocation. This is evidence against the theory of chemical union between CO and nerve substance, since break-up of such a chemical compound takes place only slowly. The direct excitability of the muscle substance itself, however, was greatly diminished by a slight concentration of CO, and the effect was removed only by long exposure to air. Hence Krause deduces a chemical union between muscle substance and CO. He attributes the CO neuritides in part to the mechanical effects of pressure and hemorrhage, and in part to a direct toxic influence.

16165. **KRITSCHEWSKI, I. L. Ueber den Mechanismus der Wirkung von Wismutverbindungen auf Spirochäten.** *Zentralbl. Bakt. I Abt. Orig.* 118(1/2): 16-25. 1930.—The spirochaetes of recurrens, at the height of the infection (in mice) immediately before exitus, are killed by Bi preparations. From this it is concluded that under experimental conditions of research which resemble infectious icterus and also relapsing fever, Bi exerts the same action on *S. obermeieri* as on *S. icterogenes*. The reticulo-endothelial system is considered to have determined the completeness of the therapeutic effect of the Bi preparation in the same manner as is the case with other chemical compounds. The therapeutic action of Bi manifests itself in infectious icterus as also in recurrens in similar form, in principle, and is considered to depend upon the immediate, direct action of the Bi on the spirochaete. This latter is considered to manifest itself, both in the destruction of the micro-organisms and in the decrease of their virulence under the influence of the metal.—*Author's summary (transl. by C. S. Leonard).*

16166. **KYRIELEIS, WERNER. Versuche über Strychninwirkung bei der sog. Pupillotonie. (Zugleich ein Beitrag zur Frage der Strychninwirkung auf die normale und pathologische Pupillenbewegung.)** *Graefe's Arch. Ophthalmol.* 123(1): 1-19. 1929.—Strychnine increased the speed of reaction to light in normal eyes, but did not affect the accommodation mechanism. It does not appear to act on tonus of the iris muscle directly; but appears to act through the oculomotor nucleus. Pilocarpine appears to act directly on pupil tonus. In eyes in which accommodation to light was poor, and at times hardly present, strychnine increased this power.

16167. **LANG, S., u. L. SZENTHE. Über die Verhinderung der Arteriosklerose.** *Arch. Exp. Path. u. Pharmakol.* 151(3/4): 253-256. 1930.—In 3 cases out of 7, insulin, and in 5 cases out of 9, ergotamine prevented the development of arteriosclerosis in rabbits, following daily doses of epinephrine. Four controls.

16168. **LAUNOY, L., P. NICOLLE, et Mlle. M. PRIEUR. De l'action trypanocide synergique du 205 Bayer-309 Fourneau et de quelques composés organiques d'antimoine, sur l'infection expérimentale à Trypanosoma congolense, de la souris et du cobaye.** *Compt. Rend. Soc. Biol.* 106(9): 712-715. 1931.—The para-acetylaminophenyl- stibinate of Na, Sb trithioglycollate of Na and Sb trithioglycollamide were used. A synergistic trypanocidal action between 309 Fourneau and the Sb compounds was demonstrated. Either of the trivalent Sb compounds with 309 Fourneau, injected subcut., produced entire freedom from parasites in 100% of cases in both hosts. Certain proportions were found best. These combinations have no preventive properties against infections in the mouse.—*E. Weiner.*

16169. **Le GOFF, J. M. Action hypotensive du cobalt.** *Compt. Rend. Soc. Biol. Paris* 101: 797-799. 1929.—After intravenous injection of 0.5 gm. Co in a rabbit, a considerable fall of blood pressure was observed. This also occurs in man 3 min. after intramuscular injection of 0.2-0.5 gm. Co.—*K. Pirschle (transl.).*

16170. **LENART, GEORG, und EMIL v. LEDERER. Die Parathormon-Eosinophilie diphtheriekranker Kinder.** *Arch. Kinderheilk.* 93(1): 55-64. 1931.—After an eosinophil count, 1 unit parathormone per kgm. body wt. was given diphtheritic children (no. not stated) on the 7-10th day of the disease; further counts were made at 5 and 24 hrs. thereafter. In normal children the count is reduced 5 hrs. after administration of parathormone, returning to the initial value at 24 hrs.; in diphtheritic children the count was increased at 5 hrs. and normal again at 24 hrs. Apparently the toxic action of diphtheria on the parenchymatous cells of the parathyroid was responsible for this reaction.

16171. **LENART, GEORG, und EMIL v. LEDERER. Die Parathormoneosinophilie gesunder und exsudativer Säuglinge.** *Arch. Kinderheilk.* 93(3): 181-187. 1931.—Eosinophilia before and 6, 12, 24, 48, and 72 hrs. after injection of 10 units parathormone into 9 healthy infants 3-12 mos. old (to establish normal values) and 10 with moderate to severe exudative diathesis showed that in all infants healthy and ill there was a simple curve returning to initial values in 48 hrs. and a delayed curve requiring 72 and more hrs.; each type showed 2 forms. The eosinophilia in infants is more labile than in older children; this lability was increased by exudative diathesis.

16172. **LENZI, LAMBERTO. Il sistema reticoloendoteliale nella difesa organica. [Reticulo-endothelial system and organic defence.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 825-828. 1930.—In animals previously treated with colloidal metals no particular resistance is developed against organic poisons. The R.E.S. is not able to increase resistance to alkaloids (quinine sulphate and morphine chloride).—*M. Comel.*

16173. **LESTSCHINSKAJA, OLGA. Über den Einfluss des Nicotins auf die Körpertemperatur und über den Mechanismus seiner Einwirkung.** *Zeitschr. Ges. Exp. Med.* 69(1/2): 14-28. 1929.—Chronic poisoning was induced in 21 rabbits and 10 guinea-pigs by subcutaneous injection of 0.2% aqueous solution of nicotin, at first 0.001 gm. per kgm. body weight, with a gradual increase if the resistance of the animal permitted; the injections were suspended if spasms or marked loss of weight was observed. Rectal temperature was taken in 17 rabbits and 5 guinea-pigs from the beginning of the introduction of the poison; in the remainder of the animals only after interruption of the poisoning already begun. The temperature was taken before injection, 5, 10, 15 and 30 min. later and at hourly intervals thereafter. The experimental periods for the different animals varied in length from 1 day to 2 yrs. An alteration in body temperature was produced by nicotin, in the great majority of cases a fall in temperature, beginning 2-3 min. after injection and progressing for 2-3 hrs.; thereafter a tendency to rise was observed. It was more marked in guinea-pigs (2°-3.5°) than in rabbits (0.5°-2°). This lowering of temperature might be due either to increased loss of heat through the skin, or to decreased heat-production. Measurements of skin temperature to determine this question, on 8 guinea-pigs and 8 rabbits,

for periods varying from 1-6 days for the rabbits and 4-7 days for the guinea-pigs, gave, in the majority of cases, a fall in temperature, the skin temperature running nearly parallel with the inner temperature, the temperature of the environment remaining normal. The lowering of body temperature, then, cannot be attributed to increased loss of heat, but must be due to a change in heat production. The hypothesis that this might be due to the effect of nicotin on the autonomic nervous system was next tested. A series of 18 experiments showed that the supine position in itself caused a fall of 2°-2.5°; therefore the experiments on the nerves were so conducted as to leave the animal freedom of movement. The sympathetic nerves were cut in 7 rabbits with resultant rise of temperature from 1° to 0.6°. In 6 rabbits the vagi were cut; the temperature fell in 4 cases 0.1°, 0.2°, 0.3°, and 0°, respectively; in the other 3 cases, the sympathetic had been cut before the vagi; the temperature fell when the 2d operation was performed the day after the first and rose when the operation was done a month afterward. After determination of the effect of section of these nerves in itself on heat-formation, nicotin was given after section of the sympathetic in 3 experiments; the effect of nicotin was noticeably weakened. In 4 experiments the vagi were cut, and nicotin then exercised no effect at all on the body temperature.

16174. [LEVINA, TS. A.] ЛЕВИНА, Ц. А. Об эритропоэтической функции белых крыс при парентеральном введении казеозана. [Erythropoietic function of white rats with parenteral administration of caseosan.] [German summary.] Одесский Медицинский Журнал (*Odessaer Med. Zeitschr.*) 4(5/7): 367-370. 1929.—Repeated parenteral administration of caseosan in doses of 0.5 cc. to 13 rats, showed that their wt. does not change; the number of erythrocytes in the majority of cases was considerably increased. Hemoglobin fluctuated, with a tendency to increase; the color index predominantly decreased; the number of erythrocytes with reticulo-filamentous substance increased; the number of such erythrocytes in 1 cu. mm. increased. Repeated doses of over 0.5 cc. resulted in loss of weight, decrease of the erythrocytic count and decrease of Hb. The color index usually remained the same. This influence of caseosan continues for at least 3½ wks.—*B. Van Rosen.*

16175. **LEYS, DUNCAN.** The influence of adrenaline on carbohydrate metabolism. *Jour. Physiol.* 71(3): 275-279. 1931.—The av. of 9 estimations of blood lactic acid of resting adult convalescent patients was 15.8 mgm. %. Injection of 0.5 or 0.75 mgm. adrenaline caused increase in lactic acid of from 28-224%. Increases in blood sugar showed no simple relationship to increases in lactic acid, and changes in blood-pressure bore no simple relationship to changes in blood sugar or lactic acid. The diastatic activity of the blood in 2 cases was not increased by adrenaline. By the method of yeast fermentation, the blood was shown to have a "residual reduction" corresponding to about 20 mgm. glucose per 100 cc. This figure showed no appreciable alteration with adrenaline.—*Author's summary.*

16176. **LINDNER, F., und R. RIGLER.** Über die Beeinflussung der Weite der Herzkranzgefässe durch Produkte des Zellkernstoffwechsels. *Pflüger's Arch. Ges. Physiol.* 226(6): 697-708. 6 fig. 1931.—Exp. were conducted on the effects of chemicals on the revival of a hypo-dynamic heart, and on the production of coronary dilatation. Extracts from heart muscle are effective but do not in any way indicate a specific hormone, since similar effects are obtained from extracts of skeletal muscle, pancreas, liver and kidneys. The work was undertaken to analyze the beneficial effect of tissue extracts in angina pectoris and one such extract (lacarnol) had a very high capacity of inducing coronary dilatation in perfused rabbit hearts. Effects on the contraction of frog heart were obtained with hexosediphosphoric acid and with inert colloidal suspensions of Al silicate but these were not effective clinically. Effective extracts give reactions for pentose and purine. Adenosin appears to be an effective agent in such reactions. The blood of arteriosclerotic patients has been found to have a low content of adeninenucleotides.—*H. C. Bazett.*

16177. **LIPMANN, F.** Über den Tätigkeitsstoffwechsel des fluoridvergifteten Muskels. *Biochem. Zeitschr.* 227 (1/3): 110-115. 1930.—The muscles of a frog poisoned with fluoride can perform work without raising their lactic acid content. In these muscles there is a more rapid decomposition of phosphagen, an esterification of hexose with phosphate and a splitting of adenyl-pyrophosphoric acid. After several contractions the poisoned muscles become rigid. This behavior is similar to that of muscles poisoned with mono-iodoacetic acid.—*Author's summary (transl. by A. G. Mulder).*

16178. **LO CASCIO, GERLANDO.** Rapporti tra azione sul tessuto emopoietico e fissazione nell'apparato reticolo-endoteliale del solfuro di rame colloidale. [Relation of the action of colloidal copper sulphide on the hemopoietic tissue and its retention by the reticulo-endothelial apparatus.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 819-822. 1930.—R.E.S. of bone marrow, spleen, and liver was blocked by intravenous administration of colloidal Hg sulphide, followed by Cu sulphide administration. The erythroblastic reaction (entrance into blood of nucleated erythroblasts) was suspended. It was re-established if smaller doses of the blocking substance were injected.—*M. Comel.*

16179. **LO FASO, GIOV. BATT.** Sulla ricerca di tracce minime di mercurio nelle orine e nei liquidi organici. [Minimal traces of mercury in urines and organic fluids.] *La Med. del Lavoro* 12: (1-6). 1928.—Methods of high sensitivity recorded in this work are more suitable for study of traces of Hg in mixtures or in inorganic combinations; but for clinical studies, they have been less satisfactory since traces of organic substances in the fluids studied can obscure and sometimes cause reactions (reduction of $AuCl_3$). The application of spectroscopic analysis, as given in early references was not tried as a clinical method but an attempt has been made to coordinate the advantages of several methods in order to develop a clinical technic sensitive, objective in the presence of foreign substances, safe and rapid.—*Author's summary (transl. by J. G. Edwards).*

16180. **LUDWIG, HERBERT.** Experimentelles zur Komplexbildungstherapie der chronischen Blei- und Quecksilbervergiftung. *Biochem. Zeitschr.* 210(4/6): 352-392. 1929.—The combination of Hg and protein is broken up by KI forming a soluble K-Hg-iodide complex. Treatment of chronic Hg poisoning with KI may result in flooding the system with Hg. A more rational treatment would promote the formation of non-toxic insoluble HgS through use of strontium sulpho-acetate. Pb compounds in the circulating blood are only very slightly activated by KI treatment. This may hasten Pb excretion, but many investigators report acute Pb poisoning symptoms after KI therapy. The danger is greater in Hg poisoning. Test tube reactions between K, Hg and various anions in the absence and presence of serum were studied. These explain the danger of KI therapy in terms of solubilities of complex Pb and Hg ions.—*W. N. Berg.*

16181. **LUISADA, A.** Über die Bedeutung der Ringerlösung für Gefässweite und -Durchgänglichkeit für Zucker. *Arch. Exp. Path. u. Pharmakol.* 122: 228-237. 1927.—Addition of 0.01% each of KCl and $CaCl_2$ to a sol. of NaCl containing glucose for perfusing the hind extremities of frogs does not change the size of vessels but increases the discharge of glucose into the tissues. Addition 0.01 or 0.1% $NaHCO_3$, with or without CO_2, to the sol. of NaCl or to Ringer sol. dilates vessels and raises glucose discharge, although NaOH or phosphate mixture, equal in pH to the bicarbonate solution, contracts vessels and does not alter discharge of glucose. Addition of veronal, CO_2 or acetic acid in dilating concentration does not increase discharge of glucose. From these results, it is probable that $NaHCO_3$ has a specific action on penetrability, not dependent on alkalinity, and an

entirely independent action on the size of blood vessels.—*Author's summary (transl. by E. V. Lynn).*

16182. **LUMIÈRE, AUGUSTE, et R.-H. GRANGE. Relation entre la toxicité, le pouvoir hémolytique et la tension superficielle de quelques substances hémolysantes chimiquement définies.** *Compt. Rend. Soc. Biol.* 100 (14): 1210-1211. 1929.—Saponin, lecithin, hexylresorcinol, "Nekal" and "Brecolane" (Na salts of sulphonic derivatives of naphthol homologues) were compared. No relationship was found between surface tension and hemolytic power, and that between toxicity and hemolytic power was not a proportional one.

16183. **LÜTOLF, WERNER. Untersuchungen über die Sensibilisierung von Adrenalin durch Thyroxin am überlebenden Säugetierherzen.** *Zeitschr. Biol.* 90 (4): 334-346. 10 fig. 1930.—Very dilute sols. of thyroxin (1: 400,000, 1: 600,000, 1: 800,000) have neither an augmenting nor an inhibitory effect on strength and frequency of the beats of a surviving rabbit's heart, while concentrations of 1: 20000 are depressing. Perfusing the surviving heart with a sol. containing thyroxin and epinephrine increases in a certain number of cases the action of epinephrine alone about 7% as to frequency and 28% as to height of contraction. The treatment of rabbits for some days with thyroxin produced in the surviving heart an enormous sensitization to the action of epinephrine. While on the average the hearts of normal rabbits react towards epinephrine in a conc. of 1: 5 million, the hearts of animals treated with thyroxin react to epinephrine sols. of 1: 3,200 million.—*L. Asher.*

16184. **LUTOWSKI. Die Bindung von Thymol durch die Stroma-Substanz der roten Blutkörperchen. (Ein Beitrag zur Theorie der Narkose.) [Thymol bound by the stroma of red blood cells. (A contribution to the theory of anesthesia.)]** *Schmerz, Narkose-Anaesthesie* 3 (7): 233-247. 1930.

16185. **MACCO, G. Di. Influenza del vago sulla azione ipotensiva del magnesio. [Influence of vagus on the hypotensive action of Mg.]** *Riv. Patol. Sperim.* 5 (2/3): 223-232. 2 fig. 1930.—After cutting the vagus the hypotensive action of Mg is greatly reduced. Vagotomy following administration of Mg does not produce hypertension. It is therefore assumed that the diminution of pressure caused by Mg is due at least partly to a prevailing vagal tonus affecting the heart's activity.—*M. Comel.*

16186. **MACCO, G. Di. Influenza dell'atropina sull' azione ipotensiva del magnesio. [Influence of atropin on hypotensive action of Mg.]** *Riv. Patol. Sperim.* 5 (4/5): 393-402. 2 fig. 1930.—In dogs treated with atropine the hypotensive action of Mg is less intense and lasting, but more rapid. If the animal is previously treated with Mg, atropine produces an additional diminution of pressure.—*M. Comel.*

16187. **MacKAY, MARGARET E. Histamine and adrenaline in relation to the salivary secretion.** *Jour. Pharmacol. & Exp. Therap.* 37 (3): 349-358. 1929.—In certain experiments on cats in which injection of histamine produced only a slight secretion of saliva the fall in blood pressure was followed by a rise above normal. After extirpation of both adrenals in cats and dogs the injection of histamine produced merely a fall in blood pressure and an augmented secretion of submaxillary saliva which was more marked after previous stimulation of the chorda. If adrenaline was slowly injected into the adrenalectomized animal the augmented histamine secretion was greatly diminished. It is suggested that adrenaline is antagonistic to the histamine action on the submaxillary gland.—*O. O. Stoland.*

16188. **MAGNUS, RUDOLPH. Lane Lectures on experimental pharmacology and medicine.** *Stanford University Publ. Med. Sci. Ser.* 2 (3): 241-342. Portrait. 1 fig. 1929. Price $1.50.—Three of the five lectures to have been given by Magnus in 1927 had been completed before the author's death. These have been edited by his friend H. H. DALE, and are given together with a short biography, also by Dale. A complete list of the publications of Magnus and his collaborators, both at Heidelberg and at Utrecht is included. The 1st lecture, on the experimental pathology of the lungs, details the results obtained by several observers, in his laboratory, on the pathology of the isolated lung, using the methods hitherto applied to the study of the physiology of isolated organs. The 2nd lecture, on the importance of choline as an intestinal hormone, gives in some detail the experimental background for the beliefs of the Utrecht school in this important field. The 3rd lecture, on "The Physiological A Priori," is a brief discussion of the important rôle played by physiological apparatus in psychic function. "We possess numerous mechanisms acting unconsciously and partly subcortically which prepare the work beforehand for our psyche, and the results of which are a priori present before sensory observation and its psychological appreciation start."—*E. E. Nelson.*

16189. **MALANDRUCCO, ILARIA. Contributo alla teoria della narcosi. Il coefficiente di ripartizione tra acqua e lipidi a vario contenuto di doppi legami. [Studies on the theory of narcosis. The coefficient of distribution between water and lipids with various degrees of unsaturation.]** *Biochim. e Terapia Sperim.* 17 (7): 287-294. 1930.—With bromural (α-bromisovalerylurea, a hypnotic of the ureide series), no relation exists between its solubility in fats and the number of double bonds. The assertion of Velluz, that the distribution coefficient (oil: water), of the hypnotic compounds derived from malonyl-urea, varies directly with the number of double bonds, is not supported.—*M. Comel.*

16190. **MANCKE, RUDOLF. Untersuchungen über die Wirkung des Calciumchlorids auf das Warmblüterherz.** *Arch. Exp. Path. u. Pharmakol.* 149 (1/2): 67-75. 2 fig. 1930.—Using the isolated cat heart perfused with increasing concentrations of $CaCl_2$, the action of the Ca from minimal to maximal poisoning has been studied. Doubling the $CaCl_2$ content of the Locke solution increases the outflow more than can be explained by the slight change in height of contraction. At this concentration there is an increase in coronary outflow, explained by a dilatation of the vessels. This effect continues longer than that on the muscle which is slight at this concentration.—*From author's summary (transl.).*

16191. **MANWELL, REGINALD D. Further studies on the effect of quinine and plasmochin on the avian malarias.** *Amer. Jour. Trop. Med.* 10 (6): 379-405. 1930.—250 birds were used, and 5 strains of bird malaria: *Plasmodium elongatum* (Huff), *Plasmodium cathemerium* (Hartman), a strain of *Plasmodium praecox* (Grassi and Feletti) from Virginia, one from Germany and one from New York. All three of the latter reacted in essentially the same manner to treatment, but important differences were demonstrated between the three species. It appears to be possible to sterilize all cases of *Plasmodium elongatum* with plasmochin, and some of *Plasmodium praecox*, but *Plasmodium cathemerium* infections have so far proved completely refractory to this drug as far as sterilization is concerned. Quinine treatment was relatively ineffective with all three species, and almost entirely so with regard to sterilization. It had the least effect on *Plasmodium elongatum*. A number of cases of *Plasmodium praecox* were treated with each of these drugs for eight weeks, the treatment being started during the acute stage. Except for one case of the 10 receiving plasmochin, sterilization was not achieved in any of the birds in the 2 series. It was shown however, that the parasite level during treatment was considerably lower in the plasmochin-treated cases than in those receiving quinine. In no case did sterilization occur in a bird not receiving treatment. A further result of the experiments was the demonstration that treatment is most effective when started just after inoculation with parasites. It was also shown that chronic infections of *Plasmodium praecox* differ very much in the individual parasite levels established and that previous treatment has little effect on them. Female canaries were used throughout the study.—*R. D. Manwell.*

16192. **MARCO, R. de. Azione di alcune sostanze**

chimiche sull-attività motoria dell'intestina. [Action of some chemicals on the motor function of intestine.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1006-1008. 1930.—Administration of adrenaline or atropine to dogs in which an intestinal Vella's pouch had been made was followed by a diminution of intestinal motility. Pilocarpine showed no noticeable action. Nicotine caused a marked increase of motility.—*M. Comel.*

16193. MARKOWITZ, J., and FRANK C. MANN. The rôle of the liver and other abdominal viscera in the destruction of epinephrin in the body. *Amer. Jour. Physiol.* 89(1): 176-181. 7 fig. 1929.—Pressor effects of intraven. epinephrine were studied in normal, dehepatized and eviscerated dogs. No evidence was found to support the belief that destruction is the special function of the liver or other abdominal viscera. This destruction apparently occurs throughout the body.—*I. I. Lemann.*

16194. MARKOWITZ, J., [et al.]. The physiologic action of rattlesnake venom (crotalin). IX. J. MARKOWITZ, HIRAM E. ESSEX, and FRANK C. MANN. Activity of protein fractions of crotalin. X. EDWARD J. BALDES, HIRAM E. ESSEX, and J. MARKOWITZ. Influence of crotalin on the viscosity of blood. *Amer. Jour. Physiol.* 97(1): 22-25; 26-31. 1931.—IX. The characteristic activity of rattlesnake venom was found present in the purified albumin fraction of the venom. The globulin fraction was inert as was the protein-free fraction. All efforts to separate the venom into several toxic components were unsuccessful. Thus far it has not been shown that the toxic manifestations of crotalin are due to a number of substances.—X. Dried venom of *Crotalus atrox* (crotalin) added to the blood of the dog in vivo or in vitro caused a marked increase in viscosity due to the increase in volume of the erythrocytes, as the addition of crotalin to the plasma alone did not appreciably change its viscosity.—*Authors' summaries.*

16195. MARKOWITZ, CECILE. Response of explanted embryonic cardiac tissue to epinephrine and acetylcholine. *Amer. Jour. Physiol.* 97(2): 271-275. 1931.—A study was made of the influence of epinephrine and acetylcholine on the heart rate of chick embryos. The hearts were either excised and studied in Locke's solution or explanted according to the methods of Carrel and Maximow. In general epinephrine and acetylcholine exerted their typical effect on embryos 6 days old or older. Many of the 5-day-old embryos showed hearts refractory to epinephrine and acetylcholine and the action of these drugs became markedly less apparent as the age of the embryo decreased. In the case of 72-hr. embryos less than ¼ of the fragments responded. Because of the lack of definite knowledge, both in regard to the exact site of action of these drugs, and to the time of development and beginning function of the intrinsic nerve mechanism of the heart, it would seem that these results can best be explained on the basis of some intermediary substance being necessary for the action of the drugs. In explants from embryonic hearts it often happened that a fresh explant from a 2-day-old heart would be negative to epinephrine or acetylcholine whereas on cultivation for 24 hrs. these drugs would exert their typical results.—*Author's summary.*

16196. MARTINI, EMILIO. Condizionali biochimiche della narcosi da magnesio. [Biochemical conditions of Mg narcosis.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 946-948. 1930.—After Mg narcosis the animals showed increased blood Mg and a decreased Ca content while the alkali reserve values of blood were higher. Blood K was in half the cases higher than that prior to narcosis.—*M. Comel.*

16197. MARULLAZ. Action des sels de magnésium sur la genèse des tumeurs du goudron. *Rev. Internat. Méd. et Chir.* 41(2): 20-24. 1930.—To each of 8 rabbits 10 mgm. of $MgCl_2$ was administered daily for more than 5 mos.; after about 1 wk. of the Mg treatment, weekly painting with tar of 1 ear of each of these 8 together with 10 untreated controls, was begun. At the end of the treatment 3 of the 8 Mg-treated animals showed only a slight follicular hypertrophy of the treated regions; 5 showed a slight abnormal activity of the epithelium and in 1 case a benign papilloma, in another a small bleeding tumor which became detached spontaneously. In 3 rabbits treated for 6 mos. with tar and bearing developed tumors, administration of Mg salts did not cure but seemed to check the development of the growth.

16198. MASCHERPA, P., e G. BELLUZZI. Emanazione di radio e azione fisiologica di alcuni farmaci. [Ra emanation and physiological action of some drugs.] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 944-946. 1930.—In animals treated with Ra emanation the poisoning following strychnine and morphine was more quickly manifest and more severe than in the absence of Ra emanation.—*M. Comel.*

16199. MAYNE, BRUCE. Tests on the effects of coumarin on the life of the mosquito and the malaria parasite. *Indian Jour. Med. Res.* 17(3): 963-969. 1930.—Coumarin, 1—1,000-2,000 solutions, killed Anopheles and Culex mosquitoes, probably not through imbibing the liquid, but as the result of asphyxia and paralysis. This viewpoint is taken for the following reasons: Several trials were made with newly emerged or unfed wild mosquitoes on the one hand, and mosquitoes whose abdomens prior to the test appeared to be distended with liquid, on the other. In both instances the mosquitoes succumbed in a similar manner to the action of the chemical. Several instances were observed in which mosquitoes exposed to the fumes of the chemical were evidently overcome within 4 hrs., but when removed to clean untreated cages revived on the following morning. No actual proof could be had, in the majority of experiments, of the mosquitoes having imbibed the strong solutions before being affected through their respiratory channels. In a few cases thirsty mosquitoes having engorged themselves with the strong solutions, when removed to fresh untreated cages apparently remained unaffected. The lethal action of coumarin solutions by actual contact of sporozoites with the liquid may probably be regarded as of only academic interest. This would have at most a transient limited application to any economic measure. The results of the tests could reasonably be interpreted to indicate that coumarin taken with the liquid extracted from a clover blossom would have no deterrent action on oöcysts and sporozoites undergoing development in the infected mosquito. The only effect conceivable would be the destruction of the sporozoites deposited in the coumarin substance at the time of visiting a leguminous plant. This might have an economic bearing only as regards an augmented discharge of sporozoites from the salivary glands at the time the mosquito might partake of vegetable food.

16200. MELVILLE, K. I., and M. BRUGER. Concerning the alleged antidotal action of sodium thiosulfate in mercuric chloride poisoning. *Jour. Pharmacol. and Exp. Therapeut.* 37(1): 1-8. 1929.—The life of dogs receiving a fatal dose of $HgCl_2$ cannot be prolonged by the subsequent injection of $Na_2S_2O_3$. The diuresis produced by $HgCl_2$ alone is not affected by the simultaneous injection of $Na_2S_2O_3$, thus indicating that the action of Hg in the body is not affected by the thiosulfate. In other words, there is no evidence that Hg is converted to an insoluble and inactive sulfide.—*W. N. Berg.*

16201. MENDENHALL, WALTER L. Tobacco. 69p. (Harvard Health Talks 17.) Harvard University Press: Cambridge, 1930. Pr. $1.—This is one of a series of public lectures intending "to provide in easily accessible form modern and authoritative information on medical subjects of general importance." Smokers and non-smokers disagree as to the reasons for and value or harm of this habit. These differences have led to rather strong prejudices, but there is little knowledge based on facts. Over-indulgence in tobacco may result in effects on the circulatory system, alimentary tract, respiratory tract, the eyes, and the nervous system. If the indulgence is discontinued the symptoms disappear. The sedative effect on the nervous system has been especially studied by the author who cites the results of his work

published elsewhere. The lack of adequate data on the effect of smoking on growth, on scholarship, on intelligence, and on efficiency, is emphasized. There is no evidence, in spite of published statements to the contrary, that smoking in woman has any effect either on her sexual functions or on her children. The substance responsible for the use of tobacco is nicotine, even in the de-nicotinized brands. The book closes with some quotations regarding smoking by extremists on both sides, and the statement that it will probably be many yrs. before enough accurate observations are made in regard to the effects of its use in moderation.—*E. E. Nelson.*

16202. **MENK, W. Über die chemotherapeutische Wirkung von Goldverbindungen bei der mit der Spirochaeta crocidurae infizierten Maus, unter besonderer Berücksichtigung der Behandlung mit Neosalvarsan-Solganalgemischen.** *Arch. Schiffs- u. Tropen-Hyg.* 35(2): 97-107. 1931.—The mixture in tolerated doses frees the mouse of the spirochetal infection.—*E. C. Faust.*

16203. **MERLINO, ANTONINO. Influenza di alcuni zuccheri sull'iperglicemia adrenalinica. [Effect of some sugars on the adrenalin hyperglycemia.]** *Boll. Soc. Ital. Biol. Sperim.* 5(3): 390-392. 1930.—Doses of 2.5 gm. levulose administered to dogs intraperitoneally inhibit hyperglycemia due to 1 mgm. adrenalin but 3 gm. do not inhibit the hyperglycemic action of 2 mgm. adrenalin. In rabbits the levulose did not influence the glycemic curve following adrenalin.—*M. Comel.*

16204. **MESSINI, MARIANO, e ARISTIDE POLI. Rapporti fra glicemia e fosforo nel sangue sotto l'azione di sali di uranile e di estratti di timo. [Relation between blood glucose and P as influenced by uranyl salts and thymus extracts.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 982-984. 1930.—Injections of uranyl acetate are followed by a diminution of blood P, accompanied in a 1st stage by increase of glucose without glycosuria, whereas in a 2nd stage glycosuria occurred. Thymus extracts lowered blood P and increased blood glucose.—*M. Comel.*

16205. **MICHELAZZI, LUIGI. Sopra l'azione tossica e calcificante dell'ergosterina irradiata. [Toxic and calcifying action of irradiated ergosterol.]** *Riv. Patol. Sperim.* 5(6): 505-521. 1930.—Intravenous administration of irradiated ergosterol was not followed by the toxic symptoms following subcutaneous injections in rabbits. A marked anemia occurred in animals treated subcutaneously. Overdosage leads to Ca precipitation in kidney, aorta, liver, lungs and other viscera in mice, guinea pigs and rabbits.—*M. Comel.*

16206. **MORACCI, E. Sull'azione di varie sostanze chimiche applicate direttamente sui centri corticali sensitivo-motori del cane. [Action of chemicals directly applied on the cortical sensitive-motor centers in dogs.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 1003-1006. 1930.—The chloride, nitrate, sulphate, sulphocyanide, of NH_4, K, Na and Li were tested as to their influence on the cortical centers. Only the Li salts exerted a marked stimulation on the centers, followed by clonic and tetanic contraction of the related muscular groups. An action similar to that exerted by Li salts followed creatine application to the cortical centers.—*M. Comel.*

16207. **MÜLLER, HELMUT, und HELMUTH REINWEIN. Zur Pharmakologie des Galegins.** *Arch. Exp. Path. u. Pharmakol.* 125(3/4): 212-228. 1927.—Injection of 2-6 mgm. per kgm. galegine-SO_4 had no effect on 2 fasting rabbits; injection of 12-30 mgm. per kgm. produced a rise in blood sugar; within 15 min. after doses of 30-100 mgm. per kgm. hyperglycemia became very pronounced (lasting several hrs.). The lethal dose was about 120 mgm.; an individual sensitivity also appeared. Dogs given 25-45 mgm. per kgm. galegine-SO_4 died in ½ hr., with hyperglycemia. With smaller doses the animals remained healthy; at 4 mgm. per kgm. a distinct decrease in blood sugar occurred. Hypoglycemic convulsions could not be produced. In pancreatectomized dogs galegine caused a reduction in blood and urinary sugar. In a healthy person and a diabetic 2 mgm. per kgm. caused a drop in blood sugar. Investigations with the enucleated frog eye, on vascular preparations of the frog, on the isolated intestine of the cat, and exps. with blood pressure indicate that the hypoglycemic action of galegine is due to stimulation of the sympathetic nervous system. Its action in producing hyperglycemia, vascular contraction, increase in blood pressure, the reaction of the eyeball, and paralysis of the intestine corresponded to that of epinephrine. Hyperglycemia caused by galegine can be prevented by ergotamine. Hypoglycemic convulsions occurred in rabbits and dogs after administration of galegine and ergotamine. Possibly stimulation of the pancreatic secretion by way of the parasympathetic nervous system causes the decrease in blood sugar after administration of galegine and synthalin.

16208. **NAMIKAWA, HIROSHI. Über den Wirkungsmodus einiger chemotherapeutischer Präparate bei Protozoenkrankheiten. I. Die Abhängigkeit der Wirkung der Chemotherapeutica von bestimmten Organen, insbesondere dem reticulo-endothelialen System. [On the rationale of chemotherapeutic preparations in protozoan infections. I. The dependence of the action on special organs, in particular on the reticulo-endothelial system.]** *Taiwan Igakki Zasshi [Jour. Med. Assoc. Formosa]* 306. 54-55. 1930.

16209. **NIESCHULZ, OTTO, und F. K. WAWO-ROENTOE. Über Behandlungsversuche von Surra mit der Benzolarsinsäure "Höchst 4002."** *Arch. Schiffs- u. Tropen-Hyg.* 34(12): 662-669. 1930.—Experimental work on mice, rats, guinea-pigs and on 3 horses gave no encouraging results, due in part to the narrow margin between the curative and tolerated doses.—*E. C. Faust.*

16210. **NISISITA, MASAMI. Studien über das atemerregende Mittel Lobelin. I. Mitt. Beurteilung verschiedener Lobelinpräparate und Vergleich mit Lobelanin und den Gesamtalkaloiden der Lobelia inflata.** [Japanese.] *Okayama Igaku Kwai Zasshi* 39: 1971-1986. 1927.—In order to investigate the stability of lobeline, in relation to its effects a series of experiments was undertaken in which the following were used, a pure crystallized lobeline hydrochloride, prepared by Takeda & Co.; "Lobelin-Ingelheim," in solution in ampoules; and "Lobelinum sulfuricum Merck," in the form of brownish crystals. The action of lobelanine and the total alkaloids of *Lobelia inflata,* both in beautiful white hydrochloride crystals, prepared by Takeda & Co., was also investigated. Freshly prepared solution of lobeline hydrochloride is a stronger respiratory stimulant for the rabbit than "Lobelin-Ingelheim" and "Lobelinum sulfuricum Merck." The emetic action of crystallized lobeline hydrochloride was very weak, the action taking place only with large doses, as much as 4 mgm. per kgm. weight of animal. As the solution became older, the action increased in strength. "Lobelin-Ingelheim" showed a stronger emetic action (at 2 mgm.), and especially in old preparations (at 0.5 mgm.). The emetic action of "Lobelinum sulfuricum Merck" was strongest (at 0.1 mgm.) and was accompanied with diarrhea. Furthermore, lobelanine and the total alkaloids show no strong emetic action (active with 5 mgm.). With *Rana temporaria* crystallized lobeline hydrochloride, and "Lobelin-Ingelheim," were equally active, only the latter responded somewhat less promptly. Lobelanine and the total alkaloids are about ⅓ as active as crystallized lobeline. If one compares the phases of poisoning and the toxicity on the mouse, one notes also that crystallized lobeline is stronger than "Lobelin-Ingelheim." Lobelanine in smaller doses, it is true, evokes more violent cramps; with larger doses the cramps are not so severe, although they last longer than with lobeline. Its lethal dose also is somewhat larger than that of the latter. Besides, it was noted that the manifestations of poisoning, as well as lethal doses of the lobeline preparations are very dependent upon the concentration of the solutions.—From these results it follows, that lobeline, as also lobelanine and the total alkaloids of *Lobelia inflata,* have a very weak emetic action so far as they are pure and their solutions are fresh, that preparation solutions like "Lobelin-Ingelheim," with the decrease in other

activity, possess an increased emetic action, and this change always increases with time, and finally the brownish colored crystals of lobeline have the strongest secondary effect. The secondary effect, especially the emetic action, depends very probably, not upon the accessory alkaloids, but upon changes in lobeline itself.—*Author (courtesy Japanese Jour. Med. Sci. IV.)*. (*Transl. by C. C. Plitt*).

16211. **NISISITA, MASAMI. Über den Einfluss verschiedener Gifte auf das in verschlossenem Raum befindliche Tier.** *Okayama Igaku Kwai Zasshi (Jour. Okayama Med. Soc.)* 40: 533-545. 1928.—Mice in airtight flasks with uniform internal pressure showed decreased length of life when the accumulated CO_2 was removed with KOH; CO_2 can, thus, lead to economy in O consumption in the body. Small doses of morphine decreased the O consumption and increased the resistance to O deficiency; the life of the animal was lengthened and it lived until the O content of the air was below normal. Somewhat larger doses decreased the resistance to O deficiency; yet the duration of life was somewhat increased by the economy of O consumption. The accumulation of CO_2 also acted favorably. In its absence the effect of the morphine was decreased and when the dose was increased the deficiency of O could not be withstood. It is probable that, aside from the CO_2 action mentioned, its stimulating action on the respiratory center antagonized the paralyzing action of morphine. Hexeton caused an increase in O consumption, although it increased the resistance to O deficiency. Life was thus shortened still more when the CO_2 was removed. A narcotic dose of alcohol caused a reduced O consumption and thus lengthened the animal's life. In small doses stimulation occurred and the reverse was true. Narcotic doses of paraldehyde had a similar action, but in suitable doses the effect was more pronounced than with alcohol.

16212. **NITTA, Y. Über die Wirkung einiger ätherischer Öle auf Gonokokken im Reagensglase und im Peritoneum der weissen Maus.** *Dermatol. Zeitschr.* 59 (1): 12-16. 1930.—Of a number of ethereal oils, some were very effective towards gonococci in vitro. For instance guaiac wood oil and oil of bitter almonds inhibited completely the growth of the gonococci at a dilution of 1/6000 to 1/12000. Marjoram oil and lemon grass oil inhibit at 1/12000. Ceylon cinnamon oil at 1/12000-1/16000, Cassia oil at 1/24000 and finally mustard oil at 1/6000-1/48000. In the peritoneum of the white mouse ethereal oils are not effective towards gonococci.—*Author's summary (transl. by F. R. Greenbaum)*.

16213. **NORGAARD, A., and TH. E. HESS THAYSEN. Clinical investigations into the effect of intravenous injection of insulin. I. The blood sugar curve in normal individuals.** *Acta Med. Scandinavica* 72(5/6): 492-510. 1929.—Intraven. injection of 12 international units of insulin into 9 men and 9 women with normal carbohydrate metabolism produces a blood sugar curve that shows a typical course with the technique employed. The curve shows first an abrupt and fairly straight fall to the lowest blood sugar value most often found in the blood sample taken 25 min. after injection. The lowest blood sugar value found was 20 mgm. %. The fall of the curve is called the *"assimilation line."* The fall is followed by a rise, during which the blood sugar concentration is restored to or nearly to its initial value. The rise—called the *"restoration line"*—consists of two components, a steeper rise, the *"primary"* rise, which lasts 10-20 min., rarely more, and a more slowly progressing rise, called the *"secondary"* rise, in the following 55-110 min. In men the "restoration line" runs a steeper course, and the distinction between the "primary" and the "secondary" rise is more pronounced than in women. In the same individual, 2 curves, taken at different times, show a striking uniformity, suggestive of a certain constitutional moment influencing their course. In the assimilation line there is much variation in the relation between the sugar content of the *venous and the capillary blood;* not until 80 min. after the injection, i.e., 50-60 min. after the end of the fall, is there constantly a greater glucose concentration in the capillary blood than in the venous blood, with a difference in one exp. of 25 mgm. %. The assimilation line is an expression for the amount of blood sugar assimilated in the organism under the influence of insulin. The *"assimilation index"* designates the amount of blood sugar assimilated per min. in percentage of the initial blood sugar value. The assimilation index varied in different individuals from 1.7 to 3.3; in the same individual it varied from 2.9 to 3.3.—*Authors' summary.*

16214. **OCHIAI, KUNITARO. On the histological studies of the mechanism of insulin and synthalin action.** *Nagoya Jour. Med. Sci.* 5(2): 110-124. 1931.—(I) In the muscles of normally fed rats treated with insulin an increased deposit of glycogen was observed, especially during convulsions, while the glycogen in the liver progressively diminished. In rats starved for 24 hrs. both liver and skeletal muscle were deprived of glycogen, and administration of insulin induced no glycogen production. It is suggested that a part of the sugar that disappears from the circulating blood during the action of insulin may be stored as glycogen in skeletal muscle.—(II.) Glucose sol. was given subcut. to starved rats and intraven. to starved guinea pigs and rabbits; glycogen was found stored soon afterward, most of it in the liver, less in the muscles. When insulin was given with the glucose, little or no glycogen was found in the liver of rats and guinea pigs, but much in the muscles; but in rabbits a large deposit of glycogen was found in the liver and none in the muscles.—(III.) No unmistakable difference was observed between the lipid bodies of insulin-treated rats and those of controls. (IV.) Preparations in alcohol, stained with hematoxylin and eosin, of liver, kidney, suprarenals and skeletal and heart muscle revealed no marked histologic changes due to insulin. (V.) A group of normal and starved rats was given synthaline subcut. in various doses. In the normal rat, the liver glycogen diminished gradually and usually finally disappeared; muscle glycogen did not entirely disappear, though the amt. present was small. The simultaneous administration of synthaline and glucose solution to normal and starved rats caused a deposit of glycogen parallel to that induced by similar injections of insulin and glucose.—(VI.) Injection of synthaline into rats was followed by a slight increase of fat in the muscles; large doses caused a marked increase in fat in the parenchyma cells of the livers and kidneys. (VII.) Livers and kidneys of rats poisoned by synthaline showed fatty infiltration, dilatation of blood vessels, degeneration of protoplasm, and in severe cases necrosis (of parenchymal cells of the liver, epithelial cells of the kidney).

16215. **OCHSNER, ALTON, I. M. GAGE, and R. A. CUTTING. The value of drugs in the relief of ileus: an experimental study.** *Arch. Surg.* 21(6 [part I]): 924-959. 17 fig. 1930.—The authors criticize previous experiments as made on animals presenting intestinal reactions fundamentally different from those in man, particularly cats (unduly resistant to intestinal obstruction) and rabbits (intestinally hyperactive). Ochsner and his co-workers used dogs exclusively, which they consider more like men in intestinal reactions than most other animals. Experiments were made on 63 dogs (some normal, others previously subjected to experimental obstruction) with pituitary extract, physostigmine, peristaltin, pitocin, choline, acetyl choline and hypertonic NaCl solution. Physostigmine was the only substance found consistently effective in raising intestinal tone and motility. The authors believe that its effect is enhanced in early intestinal obstruction, and suggest that the obstructed intestine may be hyperexcitable. The other substances used in these experiments, which had either a depressant or an inconstant and insignificant effect would therefore appear to be of slight or no value.

16216. **OGATA, A. Über die toxische Wirkung des Dictamnins. [Toxic action of dictamnines.]** [In Jap-

anese.] *Jour. Pharmaceut. Soc. Japan* 50(12): 1124-1133. 1930.

16217. **ORESTANO, G. Ricerche quantitative sull'attività granulopessica dell'apparato R. E. epatico. [Granulopexic activity of the reticulo-endothelial apparatus of the liver.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 818-819. 1930.—Colloidal Ag or Pb sulphides intravenously administered to rabbits are quickly retained by the liver. The rate of retention by liver is represented by a curve with an initial steeply rising segment and a subsequent descending one.—*M. Comel.*

16218. **OWEN, SEWARD E., and A. C. IVY. The diuretic action of secretin preparations.** *Amer. Jour. Physiol.* 97(2): 276-281. 1931.—Experiments on 10 dogs show that "purified" secretin preparations free from vasodilatin have a slight but definite diuretic effect. Results of 10 experiments on dogs indicate that the diuretic effect of secretin preparations is not species specific and closely parallels the secretin content. Extracts of various tissues prepared in a similar manner to the secretin preparations, but containing no secretin, have no diuretic effect. In 5 ♀ dogs the in vivo formation of secretin was followed by a definite diuresis. The 24 hr. output of urine (4 ♀ dogs) was but slightly if at all increased by injections of secretin.

16219. **PAZZI DEMURTAS, M. Azione degli anestetici sul tasso lipasico del sangue. [Action of anesthetics on the lipase content of blood.]** *Biochim. e Terapia Sperim.* 17(1): 33-38. 1 fig. 1930.—The lipase content of blood diminished following local anesthesia, increased following chloroform anesthesia.—*M. Comel.*

16220. **PEARL, RAYMOND. Alcohol. Biological aspects.** *Encyclopaedia of the Social Sci.* 1: 620-622. 1930. —A brief review of the biological effects of alcohol upon metabolism, behavior, growth, duration of life and inheritance in lower organisms and in man.—*R. Pearl.*

16221. **PETLACH, STANISLAV. Stanovení adrenalinu v kombinacích a anesthetiky. [Determination of epinephrine in anesthetic solutions.]** *Spisy Lékarské Fakulty Masarykovy Univ. Brno. (Publ. Fac. Med. Brno)* 6(57): 1-21. 2 pl. 1928.—The amount of epinephrine in a novocaine, tutocaine or psicaine sol. was determined by a method similar to that of Oliver-Schafer. The sol. to be tested was perfused through the aorta into the frog, and the number of drops passing through the preparation was counted. The "Index" is the ratio of drops of Ringer solution to drops of solution to be assayed. For example: tutocaine 1:2000 = 0.6, epinephrine 1:800,000 = 2.0. The "index" of both should be $(0.6+2.0)/2=1.3$. The "index" actually found after perfusion of a mixture of the two sols. was 1.53. The method was used in the determination of the amount of epinephrine necessary to neutralize the vasodilator properties of an anesthetic.—*French summary (transl. by G. T. Cori).*

16222. **PETROFF, J. R. Untersuchungen über das Verhalten des Blutdrucks und der Herztätigkeit bei Bleivergiftung.** *Arch. Exp. Pathol. u. Pharmakol.* 148 (5/6): 330-341. 2 fig. 1930.—Inhalation of lead sprays produced symptoms of lead poisoning. In the early period of poisoning there was hypertonia, tachycardia, and hypercholesterolemia, that apparently arose from increased tonus of the sympathetic nervous system. Somewhat later hypertonia developed. In a third stage in some animals a hypotonia again developed.

16223. **PLATT, ROBERT. An inquiry into the fate of thyroxin in the treatment of nephrosis.** *Quart. Jour. Med.* 23(89): 129-133. 1 pl. 1930.—Thyroxin administered to nephrotic patients was not all excreted unchanged. Tadpoles fed urine from nephrotic patients to whom thyroxin had been administered metamorphosed more rapidly than tadpoles fed urine from nephrotic patients to whom no thyroxin had been administered, but less rapidly than tadpoles to whom urine from normal patients had been administered. Tolerance to thyroxin in nephrosis, therefore, does not depend on its rapid excretion: a considerable part of it is destroyed by the body.

16224. **POLLAK, LEO. Über das Verhalten körperfremder Zuckerarten unter Insulinwirkung. II. Über die Resorption intraperitoneal injizierter Zuckerarten unter dem Einfluss von Insulin.** *Arch. Exp. Path. u. Pharmakol.* 125(1/2): 102-128. 1927.—When sugar-free Ringer's sol. was introduced intraperitoneally in rabbits, first without, then with insulin, sugar passed into the solution from the blood, the concentrations being equalized in 90-120 min.; the final concentration was slightly higher in the Ringer's sol. (7 exps.) The process was identical whether or not insulin had been administered, though the hypoglycemia in the latter case produced lower final levels. Since the equalization at the lower sugar level required the same amount of time, the sugar exchange was actually slower, as can be shown by injection of glucose simultaneously with the insulin. Whether insulin influenced permeability could not be decided, but if that occurred then it must make the marginal cell layer less permeable. An analogous process occurred when an isotonic glucose-Ringer sol., was introduced intraperitoneally. (5 exps.) The higher the blood sugar (with or without insulin, or insulin and glucose) the slower the drop in concentration in comparison to the blood. The accelerated action with insulin (hypoglycemia) may have been only one of equalization of concentration or the endothelial cells may have had an increased absorbability for glucose. Insulin, however, had the same accelerating effect on sols. of levulose and galactose (6 exps.), while sols. of mannose and lactose were unaffected by insulin (6 exps.). It is concluded that insulin reduces the partial concentrations of these first two sugars and not of the last two. This difference undoubtedly is biological rather than chemical, glucose, levulose, and galactose being those sugars most frequently absorbed by the blood from the intestinal tract. Their value in the body is not parallel to the insulin effect, however, the order here being levulose, glucose, galactose. The presence of insulin is not necessary for absorption of glucose since the sugar content of the organs of pancreatectomized dogs increases after administration of sugar. The first part of this study shows that sugar exchange between the blood and the abdominal cavity takes place by a simple diffusion process on the rapidity of which insulin does not act directly but only by its effect on the sugar concentration of the blood.

16225. **PRATT, O. B., and H. O. SWARTOUT. Effect and mode of action of tartrates in the human body.** *Proc. Soc. Exp. Biol. & Med.* 27(9): 1037-1038. 1930.—Preliminary paper.

16226. **PSCHENITSCHNIKOW, W. J. Ueber die Alkalireserve des Blutes bei lokaler Infiltrationsanästhesie.** *Schmerz, Narkose-Anaesthesie* 3(3): 85-89. 1930. —In 30 patients determination before and 10 min. and 24 hrs. after operation showed no important changes in the alkali reserve, after the use of from 400 to 1600 cc. of .25% novocaine in Ringer's solution.

16227. **RAGINSKY, B. B., JAMES B. ROSS, and R. L. STEHLE. The action of pituitary extract upon blood pressure.** *Jour. Pharmacol. and Exp. Therapeut.* 38(4): 473-480. 1930.—The action of pituitary extract upon the blood pressure of the dog under chloretone, ether and luminal is described. Quantitative differences in response are ascribed to the dosage and to the particular anesthesia used. The rise in blood pressure is frequently complicated by a phase of depression, which the authors ascribe to a constriction of the coronary vessels. This effect is not abolished by double vagotomy.—*H. S. Wells.*

16228. **RAIZISS, GEORGE W., and M. SEVERAC. Chemotherapeutic studies concerning the penetration of organic compounds of arsenic into the cerebrospinal system.** *Arch. Dermatol. and Syphilol.* 22(6): 1031-1042. 1930.—Methods for producing the penetration of organic compounds of arsenic into the cerebrospinal system and the results obtained are described, also the effectiveness of these compounds when administered intravenously into animals inoculated intraspinally with trypanosomes or spirochetes. Control animals invariably showed the

presence of trypanosomes in the spinal fluid. Among the pentavalent arsenicals that the authors studied, the most effective trypanocide in the spinal fluid was arsanilic acid, but, owing to its lower toxicity, tryparsamide has the highest chemotherapeutic index (12). It is followed by amino-arsono-ethanol with an index of 9.1. Preliminary observations with spirochetes indicate that tryparsamide is less effective, acetarsone showing a better result. Microscopically, spirochetes could not be seen in the spinal fluid. No spirochetes were present in the spinal canal several days after intraspinal inoculation, as was shown by infection of normal rabbits with the fluid. No spirochetes were found by this method, either in the brain or the spinal fluid of a rabbit which was kept under observation for a year after the intraspinal inoculation. In the great majority of cases the spinal inoculation was followed by the development of scrotal and testicular lesions, in addition to generalized manifestations of syphilis.—*Authors' conclusions.*

16229. **RASTELLI, G., e A. CASAZZA. Sul meccanismo d'azione dello zolfo colloidale. [Action of colloidal S.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 939-942. 1930.—The more finely dispersed the S, the less is it reduced to H_2S by blood serum. Of the colloidal S intravenously administered a portion, which has undergone flocculation, is reduced to H_2S, while the strongly dispersed portion may exert its pharmacological action, and cause an anaphylactic-like shock.—*M. Comel.*

16230. **REED, C. I., and E. A. THACKER. The effect of intravenous and intraperitoneal injections of irradiated ergosterol.** *Amer. Jour. Physiol.* 96(1): 21-27. 1931. —In experiments on 14 dogs irradiated ergosterol, intraven. or intraperitoneally, was more effective than comparable doses by mouth. The alimentary tract protects to some extent against the toxic effects of large doses. Present available evidence indicates that the induction of toxic symptoms is not necessarily parallel with hypercalcemia. Present evidence does not indicate any constant effect of ergosterol when administered by this method on the concentration of inorganic P in the blood. Continued administration of a therapeutic dose of ergosterol may develop in the normal animal a certain degree of tolerance as indicated by the reduction of hypercalcemia. Hypercalcemia may persist for long periods after administration has been discontinued. After pronounced toxic symptoms were developed, none of the animals in this series recovered after discontinuance of administration.

16231. **REIMANN, HOBART A. The effect of the injection of colloidal substances on experimental typhus fever.** *Jour. Immunol.* 18(2): 153-158. 1930.—The administration of india ink, sodium chaulmoograte, trypan blue and collargol before the inoculation of typhus virus in guinea pigs usually prolongs the incubation time and shortens or diminishes the febrile reaction of typhus fever. The probable explanation of the results is discussed.—*Author's conclusions.*

16232. **RIDDER, C. Pentamethylentetrazol (Cardiazol). IV. Wird Cardiazol in der Leber entgiftet?** *Arch. Exp. Path. u. Pharmakol.* 120(1/2): 126-128. 1927.—Solutions of cardiazol perfused through the liver of cold or warm-blooded animals show no change in effective strength.

16233. **ROBINSON, ROBERT. Bakerian Lecture.—The molecular structure of strychnine and brucine.** *Proc. Roy. Soc.* [*London*] A 130(814): 431-452. 1931.

16234. **ROJO, DARIO J. Acción del Energéteno de Muérdago sobre tensión y coagulación sanguineas. [Action of mistletoe on blood pressure and coagulation.]** *Rev. Méd. Latino-Americana* 14(163): 767-773. 1929.—The work of A. Gaultier and Gréhaut who asserted the hypotensive action of mistletoe, as well as the opinions of therapeutic treatises, in contradiction with his own clinical experience, led him to this study. Mistletoe is described, the active principle of which is "guipsine." In the exps. "énergétène de gui" was used, for it contains all the active principles of the plant spawn and is uniform. The technique employed in the exps. is described. "Énergétène de gui" has the properties of elevating the blood pressure and of increasing the coagulability of blood.—*Author's conclusions* (*transl. by M. R. Freeland*).

16235. **RONCATO, A. Sull'iperglicemia curarica. II. Le riserve di glicogeno muscolare ed epatico negli animali curarizzati trattati o no con insulina. [On curaric hyperglycemia II. The reserves of muscular and liver glycogen in curarised animals treated and untreated with insulin.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 254-255. 1930.—Curarisation is accompanied by an increase of the muscle glycogen up to 40% more than in resting well fed animals. The liver glycogen decreases on the contrary by 20%. Insulin administration does not influence the curare hyperglycemia, nor the muscle and liver contents of glycogen. The author infers that curare does not prevent the absorption of blood glucose by the muscle, nor its polymerisation, but prevents the mobilisation of glycogen; and that curare acts also on the metabolism of the carbohydrates in the liver, probably raising the liminal value for glycogen formation by the liver cells, and thereby contributing to the production of hyperglycemia.—*M. Comel.*

16236. **RONNEFELDT, F. Amöbenruhrbehandlung mit Rivanol. [Treatment of amebic dysentery with rivanol.]** *Arch. Schiffs- u. Tropen-Hyg.* 35(3): 176-180. 1931.

16237. **RUGGIERI, ETTORE. Comportamento ed importanza del glutatione nella narcosi eterea, ed in altre anestesie. [Glutathione in ether narcosis and other anesthesias.]** *Arch. Ital. Chir.* 28(1): 69-87. 1931.—The glutathione in the blood in 21 patients operated on under ether narcosis was much diminished, sometimes for as long as 48 hrs. In 3 patients operated on under spinal and in 2 under local anesthesia there was a comparatively slight diminution of blood glutathione. The glutathione in the blood of a normal person was estimated; then 20 cc. of this blood was exposed in a test tube to ether insufflated through it. The glutathione was reduced from 15 mgm. % to 5.25 mgm. %. It is concluded that ether diminishes the amount of glutathione in the organism, not merely driving it from the blood into other tissues. This diminution is regarded as one probable cause of postanesthetic acidosis and hyperglycemia.

16238. **RUICKOLDT, ERNST. Vomicin, ein neues Strychnosalkaloid.** *Arch. Exp. Path. u. Pharmakol.* 149 (5/6): 370-380. 4 fig. 1930.—The 3rd alkaloid from Strychnos seeds, vomicin, was tested on rabbits, mice and dogs, and on isolated organs. In warm-blooded (but not decerebrate or decapitated) animals it was found to produce (given intravenously, not subcutaneously) clonic convulsions, apparently not of reflex origin, and easily controlled even from large doses; 12 times the convulsive dose was not fatal. The alkaloid had no especial effect beyond that conditioned by the convulsions on blood-pressure and respiration. The body temperature was depressed, except as occasionally the depression was masked by a rise in temperature produced by the severe convulsions. Even after excessive doses of the alkaloid it could not be detected in the urine and feces by the color reaction of Wieland and Oertel. This, together with the quick and complete recovery of the animals, indicates rapid destruction of the substance in the organism. In the frog vomicin produces convulsions of the picrotoxin type, which, however, cease on section of the central nervous system cephalad or caudad to the level of the tympanum. The isolated frog heart is reversibly paralyzed by vomicin; the frog rectum becomes non-motile. The intestine of warm-blooded animals, isolated or in situ, is paralyzed. Vomicin did not produce contractions in the isolated virginal guinea-pig uterus.—*Author summary* (*transl.*).

16239. **RUNGE, H. G., und H. SCHMIDT. Pantocain, ein vollwertiger Kokainersatz.** *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 128(3): 232-243. 1931.—Pantocaine is a novocaine derivative obtained by substituting a methyl for an ethyl group and a butyl radical for the amino. In 1% solution it was found to be as effective as 10% cocaine or 2% percaine, as toxic as 2½% cocaine or ½%

percaine, i.e., relatively less toxic. The effect lasted longer, particularly in infiltration and conduction anesthesia. In 95% of cases the 1% solution was adequate; 2% was used in the other instances. No tissue injury occurred (hemolysis experiments). It was water soluble, stable, and could be sterilized.

16240. **RUSSO, GIUSEPPE. L'azione dell'adrenalina sui vasi in presenza di aminoacidi. [Action of adrenalin on vessels when amino acids are added.]** *Boll. Soc. Ital. Biol. Sperim.* 5(4): 488-489. 1930.—Glycine does not influence vasoconstriction by adrenalin.—*M. Comel.*

16241. **SABBATANI, L. Ricerche farmacologiche col permanganato di sodio per iniezioni endovenose. [Pharmacology of intravenously injected sodium permanganate.]** *Atti. R. Accad. Nazion. Lincei Cl. Sci. Fis. Mat. e Nat.* 7(2): 113-114. 1928.—The pharmacological action of this substance is identifiable with the general action of MnO_2. The minimum lethal dose of $NaMnO_4$ and of MnO_2 is, per kgm. of rabbit intravenously injected, 0.00023 gm. mols. Immediately after injection of $NaMnO_4$ it acts on the blood plasma and cells and on the endothelium of the vessels causing an intense hemolysis, hemoglobinemia, hemoglobinuria and anemia which is proportional, within certain limits, to the dose injected. The permanganate is reduced by the blood to colloidal MnO_2 which in turn, if large doses of permanganate be given, produces a general action depending on solubility factors. Just as the action of permanganate after the first moment is identifiable with that of colloidal MnO_2, so, finally, the action of this is identifiable with that of the products of further reduction formed in the animal from MnO_2, i.e., MnO.—*J. G. Edwards.*

16242. **SAITSU, RYUZO. Vergleichende Untersuchung über die pharmakologische Wirkung von Pelletierin und Pseudopelletierin.** *Nagasaki Igaku Kwai Zasshi (Jour. Nagasaki Med. Soc.)* 6: 154-164. 1928.—The two toxins act on the frog heart in vitro as well as on the rabbit intestine and uterus in vitro almost equally, qualitatively and quantitatively, but the toxicity of pelletierine is 10 times as great as that of pseudopelletierine for the cat tapeworm. Pelletierine always has a stimulating action on the earthworm muscle, while pseudopelletierine is paralytic.

16243. **SALOMON, H., und G. ZUELZER. Über das aus der Leber gewonnene Herzhormon "Eutonon."** *Zeitschr. Ges. Exp. Med.* 66(3/4): 291-324. 20 fig. 1929.—Eutonon caused an increased in rate and strength of beat in the Straub frog heart preparation. The harmful effects of acid and the inhibition by acetyl choline were overcome by "Eutonon" application. Increased tone of heart muscle, increased strength of beat, and increased coronary flow were noted in dog and cat heart preparations. There were no clinical contra-indications in any form of heart disease. Its use is recommended in all myocardial cases. 23 selected clinical cases are described. —*H. M. Krueger.*

16244. **SALOMONSEN, LEIF. Effects of insulin and epinephrine on the blood acetone in fasting children.** *Amer. Jour. Dis. Children* 40(4): 718-724. 1930.—In fasting children less than 3 yrs. of age an investigation was made on the effect of insulin and epinephrine on blood sugar, on blood acetone and on the content of fatty acids in the blood plasma during the hours immediately following the injections. In 8 experiments it was found that insulin reduces the blood acetone, but in decreasing degree according to the decrease of sugar in the organism. Epinephrine under the same conditions produces an increase in the blood acetone, the increase being greater in proportion as the organism is poorer in sugar. In 1 experiment, insulin effected a distinct decrease in the content of fatty acids in the blood. In 5 of 6 experiments, injection of epinephrine was followed by a rise in the quantity of fatty acids.—*Author's summary.*

16245. **SALOMONSEN, LEIF. Virkningen av insulin og adrenalin på blodacetonet hos fastende barn. [Effects of insulin and epinephrine on the blood acetone in fasting children.]** *Norsk. Mag. Laegevidensk.* 91(10): 1035-1042. 1930.—See also the preceding abstract.

16246. **SANFORD, HEYWORTH N., and MARION CRANE. The polymorphonuclear count in the new-born. III. Deflection by viosterol.** *Amer. Jour. Dis. Children* 41(3): 528-531. 1931.—Viosterol was administered to 40 infants from the 2nd to the 8th day of life and they were observed for 6 mos.; the number of young or single-lobed polymorphonuclears tended to increase and the older, multilobed forms decreased. Amount of dosage (3-48 drops daily) made little difference in the reaction. Return to normal after discontinuance of dosage was rapid.

16247. **SCAFFIDI, VITTORIO. Ricerche sull'antagonismo chimico. IV. Sul meccanismo determinante l'azione antagonista del bario e del magnesio sulla pressione arteriosa. [Mechanism of antagonistic action of Ba and Mg on arterial pressure.]** *Riv. Patol. Sperim.* 5(4/5): 371-383. 6 fig. 1930.—Arterial pressure is increased by Ba through its action on the vessels and on myocardial contractility. Mg lowers arterial pressure without acting markedly on the myocardium, through modification of the caliber of the vessels. In the antagonism between Ba and Mg the action of Ba prevails. —*M. Comel.*

16248. **SCHILLING, CLAUS, und SCHULZE. Wie wirkt Chinin bei Malaria?** *Deutsche Med. Wochenschr.* 56(2): 46-47. 1930.—The large molecule of quinine is changed in the body and broken down. The quinoline part of the molecule is active.

16249. **SCHULTZ, OTTO KARL, und WILHELM MEYER. Über die Parallelität zwischen antirachitischem und toxischem Faktor in bestrahltem Ergosterin. Ein Beitrag sur Standardisierung des Vitamin-D.** *Zeitschr. Kinderheilk.* 50(1): 84-95. 1930.—Irradiated ergosterol as Neuvigentol, Radiostal and Präformin in doses of 10-300 mgm. per kgm. was given to about 50 rabbits and doses up to 44 mgm. to 59 rats. In neither could tissue injury, or rise in inorganic P or Ca be elicited. Parallelism between the antirachitic and the toxic factor is not indicated.

16250. **SCHUMACHER, CARL. Tierexperimenteller Beitrag zur Abhängigkeit des Salvarsaneffektes vom Zustand des retikuloendothelialen Systems. (R.E.S.)** *Dermatol. Zeitschr.* 60(6): 469-476. 1931.—In an unstated no. of mice suffering from nagana or recurrent fever the reticulo-endothelial system was blocked with 0.25 cc. 20% Fe sugar solution per 20 gm. wt., some having previously been splenectomized; they were injected intravenously or subcutaneously with 1 cc. per 20 gm. wt. of 1:300 neosalvarsan or ½ cc. of 1:150. In both the blocked and the blocked and splenectomized mice the disease was more serious than in the controls and even moderate doses of neosalvarsan were toxic. With the 1:300 solution the arsenic level of the blood was lower than in the controls, which may have been due to the blocking or to the increased toxicity. In subcutaneous injection there was no particular difference in the arsenic level of the blood between test and control animals. The directly lethal action of the subcutaneous dose was 3 times that of the intravenous and the blocked animals were much more susceptible than the controls.

16251. **SECHI, ELIO. Influenza del catrame sulla formazione eteroplastica di osso nel rene di coniglio. [Action of tar on the heteroplastic formation of bone in the kidney of rabbit.]** *Riv. Patol. Sperim.* 5(1): 25-30. 1930.—When tar was injected into the kidney of a rabbit after ligation of the renal vessels, the heteroplastic bone formation was inhibited. This inhibition was observed also when tar injections were made after a treatment of the skin with tar had taken place previously. —*M. Comel.*

16252. **SERENI, ENRICO. La giunzione mio-neurale nei cefalopodi. [On the myo-neural junction in cephalopods.]** *Boll. Soc. Ital. Biol. Sperim.* 5(2): 77-82. 1930.—In cephalopods the zone between muscle and nerve shows peculiar properties, functional as well as pharmacological. Strychnine and other poisons have an elective paralysing action on it. Nicotine, pilocarpine and other poisons have on the contrary a stimulating action. The junc-

tion zone does not degenerate after cutting of the nerve fiber; weeks afterwards the action of nicotine is still present; the irritability is lost after months. Indirect stimulation follows in the most marked manner the action of guanidin, which has a paralysing action in vertebrates.—*M. Comel.*

16253. **SERGIJEWSKI, M. W., und P. F. TETERIN.** Die Reaktion des isolierten Herzens der kastrierten weissen Ratte auf Adrenalin. *Arch. Exp. Path. u. Pharmakol.* 149(3/4): 211-217. 1930.—Studies on the isolated hearts of 8 white rats showed that: The isolated heart of the normal rat responds to the injection of 0.5 cc. epinephrine 1:1,000,000 with increased amplitude and slight acceleration; that of the castrated rat, with accelerated rhythm and decreased or unaltered amplitude, but if the dose of epinephrine is increased, the reaction of the heart approaches normal. Feeding or injection of the castrated rat with dried testicular or prostatic tissue brought the heart reaction to epinephrine near normal; feeding or injection with powdered muscular tissue and prostate digested in gastric juice did not cause approximation to normal. No fatty infiltration could be determined in the heart of the castrated rat.—*Authors' abstract (transl.).*

16254. **SHAFER, GEORGE D., FRANKLIN J. UNDERWOOD, and EDMOND P. GAYNOR.** The action of amytal in impairing vagus cardiac inhibitory effects, and of ether in increasing the respiratory rate after its depression by amytal. *Amer. Jour. Physiol.* 91(2): 461-466. 1930.—Conclusions of Lieb and Mulinos that amytal rapidly impairs the effect of vagus stimulation upon the heart, and that it tends to depress the circulation are confirmed. After a time there is a gradual recovery from the impairment; however, in no case was this recovery complete while the dog was under amytal anesthesia. Stimulation of the vagus gives the greatest slowing of the heart in dogs not under the influence of any anesthetic (but decerebrate); the least slowing in dogs just completely under amytal anesthesia; and an intermediate degree of slowing when the animal is under ether anesthesia alone—or when it has been under amytal for about 2 hrs. or more. Stimulation of the intact vagus nerve of a dog whose inhibitory mechanism in the heart is almost paralyzed with amytal may cause a marked rise in blood pressure (instead of a fall) if the nerve stimulated happens to carry strong pressor impulses. Small amounts of ether either in the air breathed, or intraven., quickly increases the respiratory rate after it has been greatly depressed by amytal; and this effect of ether is shown not to be due to a reflex aroused by irritation of any part of the respiratory epithelium.—*Authors' conclusions.*

16255. **SHIMOKAWA, H., CHIN-KYU SUI, und O. KAMIZAWA.** Über den Einfluss fortgesetzten Chiningebrauchs auf den lebenden Körper. I. Bericht: Über den Gehalt an Glutathion (reduzierte Form) in Organen und Geweben. II. Bericht: Über den Einfluss desselben auf die Katalasen. [Influence of continued use of quinine on the living body. I. The amount of reduced glutathione in the organs and tissues. II. Influence on the catalase.] *Taiwan Igakkai Zasshi* [*Jour. Med. Assoc. Formosa*] 306. 51-53. 1930.

16256. **SIMONIN, CAMILLE.** Contribution à l'étude expérimentale de l'alcoolisme aigu. *Jour. Physiol. Path. Gén.* 28(3): 596-611. 6 fig. 1930.—Beverages of intermediate alcoholic content (10%) cause an increase in the alcohol content of tissues and fluids that is directly proportional to the quantity of alcohol ingested, and inversely proportional to the weight of the subject. Beverages of high alcoholic content (40-50%) raise the concentration of alcohol in the blood ½ to ⅔ above the theoretical value calculated on the basis of a beverage of intermediate strength. Beverages of low alcoholic content (3.5%) behave in the reverse manner. By spacing out the ingestions it is possible to keep the alcoholic content of the blood below the intoxication level, and yet insure that the tissues are continually exposed to alcohol. By frequently repeated ingestions it is possible to raise the alcoholic content of the blood above the value characteristic for a beverage of intermediate strength. The onset of alcoholic inpregnation appears within about 30 min. after ingestion, and is marked by a brief syndrome of attack, showing motor, emotive and labyrinthine effects. This may be of great medico-legal importance. The animals used were men, dogs and guinea pigs.—*W. R. Fearon.*

16257. **SMITH, DIETRICH C.** The action of certain autonomic drugs upon the pigmentary responses of Fundulus. *Jour. Exp. Zool.* 58(1): 423-453. 1930.—A study was made of the effects upon the dermal melanophores of *Fundulus heteroclitus* of certain drugs supposedly possessed of a specific action on parts of the autonomic nervous system. The drugs were injected into the body cavity. Fishes treated with cocaine, a sympathetic stimulant, showed no expansion of their melanophores when placed upon a black background, while ergot, a sympathetic depressant, produced a stellate condition of the melanophores regardless of the background. Pilocarpine and physostigmine, parasympathetic stimulants, favored contraction of the melanophores. With atropine, a parasympathetic depressant, injected fishes placed over a white background showed a stellate condition of their melanophores, though this drug did not prevent such fishes from becoming completely dark when they were transferred to a black background. Tests made of the responses of the trunk melanophores of ergotized and atropinized fishes to temperature changes showed that in ergotized fishes these cells reacted as if denervated, contracting in heat and expanding in cold, while in atropinized fishes they reacted as if innervated, contracting in cold and expanding in heat. The results of these experiments were taken as suggestive of a double innervation of the melanophores of fishes.—*Author (courtesy Wistar Bibl. Serv.).*

16258. **SMITH, MAURICE I.** A quantitative colorimetric reaction for the ergot alkaloids and its application in the chemical standardization of ergot preparations. [*U. S.*] *Public Health Repts.* 45(26): 1466-1481. 1930.—Based upon Van Urk's qualitative reaction of ergot alkaloids with para-dimethyl-amino-benzaldehyde a procedure has been evolved whereby these alkaloids can be estimated quantitatively by a colorimetric method. This chemical method also lends itself to the quantitative estimation of the ergot alkaloids in the fluid extract of ergot. A comparison of this colorimetric chemical method of assay with the physiological method of Broom and Clark as applied to several ergot alkaloids, both pure and impure, gave results which indicated good agreement. Agreement was also obtained when these methods were applied in the standardization of 5 fluid extracts of ergot.—*M. I. Smith.*

16259. **SORGE, G.** Sull'azione ipoglicemizzante del "tè di fagiuolo." [On the hypoglycemia following administration of "bean tea."] *Boll. Soc. Ital. Biol. Sperim.* 5(6): 967-969. 1930.—Bean extracts in vitro had no action on the glucose content of glucose solutions. Administered per os to normal or diabetic subjects they markedly lowered blood glucose. The "hyperglycemic reaction" following adrenalin administration was also influenced when "bean tea" was administered with glucose.—*M. Comel.*

16260. **SPANIER, PHILIPP.** Ein Versuch, heterogene, ins Blut transplantierte Leukocyten als mechanisches Vehikel zwecks Transportierung therapeutischer Agenzien in die Lungen auszunutzen. (Eine experimentelle Studie.) *Beitr. Klin. Tuberk.* 73(2): 210-231. 9 fig. 1929.—In order to obtain from a therapeutic agent the maximum destruction of parasites with the least harm to the host, it is desirable to secure its fixation, in suitable concentration, directly in the organ which demands treatment. Spanier sought, on this principle, to find new means of introducing therapeutic substances that would tend to direct them toward the lungs. His hypothesis was that the lungs play an important part in cellular metabolism, filtering out foreign substances from the circulating blood and destroying exhausted leukocytes.

He first sought to determine the difference between the path followed by a substance introduced directly into the circulating blood, and that followed by the same substance subjected to phagocytosis by leukocytes, and then introduced, borne by these foreign leukocytes, into the circulation of another animal. He injected an abscess in a dog with a 2% trypan blue solution. Blue leukocytes obtained from the abscess were washed and injected into the ear vein of 1 rabbit and the right heart of another. In the first rabbit blue cells were found in numerous small pulmonary vessels, but nowhere else, nor was there any blue coloration of the urine. In the rabbit injected in the heart the capillaries of the lungs were found teeming with blue leukocytes; there were a few in 1 or 2 of the large vessels of the liver but nowhere else. In a 3d rabbit injected in an ear vein with trypan-blue solution (without leukocytes), the oral mucosa, the skin of the ear, the lungs, liver, kidneys, supra-renals, testicles, and spleen were all colored. The question whether leukocytes would absorb therapeutic substances as well as dyes was next studied. Leukocytes from an abscess in a dog were found to take up 3 different Fe salts, Zn (pulv.), $BaSO_4$ and bismuth subnitrate. The path of phagocytosed therapeutic substances carried into the organism by foreign leukocytes was then studied, histologically in the case of Fe, chemically for I, and radiographically for bismuth subnitrate. Leukocytes from a dog laden with an Fe salt solution were injected into ear veins of 2 rabbits. Stained sections showed Fe particles only in the lungs. A similar Fe salt solution was injected into an ear vein of another rabbit. Stained sections showed quantities of Fe particles in the reticulo-endothelial tissue of the spleen and in Kupffer's stellate cells in the liver, less abundantly in the kidneys and sparsely in some alveoli of the lungs. In the chemically studied group, 1 rabbit received in an ear vein 3 cc. of Lugol's solution with 6 cc. isotonic NaCl solution, and another the same amount of Lugol's solution shaken with 3 cc. leukocytes and NaCl solution. Quantitative analysis of the lungs, liver, spleen and kidneys showed that the rabbit which received Lugol's solution alone retained after 5 minutes 0.42% of the injected I, chiefly in the liver, while the rabbit which received Lugol's solution with leukocytes retained 15.05% I, chiefly in the lungs. In a 3d series, in which roentgenograms were taken before and after injection, 4 dogs received injections of $BaSO_4$ and leukocytes in the vena saphena; 2 showed no changes in the lung, 1 showed, 10 min. after injection, little spots, and 1 showed, 60' after injection, a shadow 2-3 cm. broad in the region of the hilum of the left lung; a control dog injected with $BaSO_4$ without leukocytes, showed no changes. A 6th and 7th dog were injected with bismuth subnitrate, respectively with and without leukocytes. The first died under injection, yet showed numerous dark foci in the lungs that had not been there before injection, while the control, which survived, showed no focal changes 6' after injection. No attempt was made to study the therapeutic action of substances introduced through the agency of leukocytes, but the suitability of such means for the treatment of pulmonary tuberculosis is suggested.

16261. **[SPIELBERG, G. I.]** ШПИЛЬБЕРГ, Г. И. К вопросу о влиянии кальция на желудочную секрецию. **[Influence of calcium on gastric secretion.]** [German summary.] Одеський Медичний Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 197-201. 1930.—Gastric juice was extracted from the stomach, every 10 min. after breakfast. Then $CaCl_2$ sols. were injected intraven., and gastric juice examined again several times. As a result, acidity of the stomach contents was increased. This increase was more pronounced in hyperacid patients, and less so in normally acid and hypoacid ones. Increase of acidity is observed 10-20 min. after the injection of Ca.—*B. Van Rosen.*

16262. **SPIES, TOM DOUGLAS. The calcification of tubercles by means of irradiated ergosterol.** *Amer. Jour. Path.* 6(3): 337-346. 1 pl. 1930.—The administration of repeated large doses of activated ergosterol to rabbits suffering from acute tuberculosis causes extensive deposition of Ca salts within the caseous lesions. The administration of a single large dose produces no demonstrable changes. It is suggested that a high vitamin D diet might possibly be useful in some cases of pulmonary tuberculosis.—*Author summary.*

16263. **STELLER, GERHARD. Die Beeinflussbarkeit des Gaswechsels durch Suprarenin, Bellafolin und Gynergen bei älteren Knaben.** *Arch. Kinderheilk.* 91(3): 202-219. 1930.—The author discusses the effect that Suprarenin, Bellafolin, and Gynergen have on the gaseous exchange of older children, the study being made on three boys, ages 11, 12 and 12 respectively. The article is inconclusive as to final results.—*H. L. Hilgartner.*

16264. **[STEPPUN, O., and K. UTKINA-LIUBOVTSOVA.]** СТЕППУН, О., и К. УТКИНА-ЛЮБОВЦОВА. Количественный метод определения препарата "Bayer 205" в кровяной сыворотке, моче и тканях. **[A quantitative method for the determination of "Bayer 205" in serum, urine, and tissues.]** [German summary.] Труды Научного Химико-Фармацевтического Института (*Trans. Sci. Chem. Pharmaceut. Inst.* [*Moscow*]) 13: 21-25. 1926.

16265. **STERNBERG, HERMANN. Über die therapeutischen Erfolge mit minimalen Joddosen bei den Sekretionsstörungen (Hyper- und Hyposekretion, Rhinitis vasomotoria) der Schleimhäute der Luftwege. Gleichzeitig ein Beitrag zur Pharmakologie der Jodwirkung auf die Schleimhaut der Luftwege.** *Monatsschr. Ohrenheilk. u. Laryngo-Rhinol.* 64(4): 401-416. 1930.—Investigations on subjects (number not stated) with normal or affected mucosa, using I as an indicator of secretion (subcut. injection of small amounts of 5% NaI) showed that very small amounts of free I regulated both the hyperfunctioning mucosa (reducing tissue permeability) and the hypofunctioning (increasing permeability to the normal). The greater the dose, however, the greater the tendency to increase tissue permeability. The point of reversal in effect was not determined and varied from subject to subject; it occurs with a very small amount of I, however.

16266. **STOLL, A., E. SUTER, und W. KREIS. Zur Kenntnis von Scillaren.** *Verhandl. Schweizer. Naturf. Ges.* 108(2): 132-134. 1927.—The chemistry of A and B scillaren and their isolation in pure form from the glucoside. Pharmacological action of this material on animals. Color reactions and characteristics are given. —*R. W. St. Clair.*

16267. **TADA, SABURO, und FUSAKICHI NAKAZAWA. Hormonale Beeinflussung des kolloid-osmotischen Drucks des Bluts.** *Jour. Exp. Med.* 15(1/2): 119-134. 1930.—Definite amounts of various hormones were injected intraven. into rabbits and the change in the colloid osmotic pressure determined as by Krogh and Nakazawa. Thyreoglandol temporarily increases the osmotic pressure due probably to a qualitative change of the blood proteins. Pituitrin decreases the osmotic pressure. Insulin and adrenalin at first increase, then decrease the osmotic pressure.—*J. M. Johlin.*

16268. **TANIUCHI, YOICHIRO, und TETSUICHI KIYOHARA. Über die antagonistische Wirkung des Atropins gegen die Adrenalinzuckermobilisierung in der Leber.** *Folia Pharmacol. Japonica* [In Japanese] 8(3): 214-226. 1930.—In perfusion of the toad liver atropine limited sugar mobilization by epinephrine. Atropine action was greater with longer previous stimulation by epinephrine. This finding agrees with the earlier result of Lidth du Yende and Ueda that there is an antagonistic action between atropine and epinephrine, and contradicts the finding of Goharas that atropine is a fatigue poison of the sympathetic nerve ending.

16269. **TAYLOR, F. H. L., and A. G. YOUNG. Biochemical studies of mercury compounds. I. The effect of acids, bases, salts and blood serum on the diffusion of mercury compounds in vitro.** *Jour. Pharmacol. & Exp. Ther.* 38(2): 217-229. 1930.—In vitro studies of the diffusion of mercury compounds across collodion mem-

branes show that: Acids, as represented by $N/100$ HCl, increased the diffusion of inorganic Hg compounds, while bases, as represented by $N/100$ NaOH, increased the diffusion of organic Hg compounds. KI had the effect of greatly increasing the diffusion rate of all the compounds of Hg studied except K mercuritetraiodide. Chloride showed no specific action on the diffusion of Hg compounds due to the Cl ion, but acted in the same way as HCl but to a lesser extent. NH_4Cl greatly increased the diffusibility of the double salt of Na oxymercuri-o-chlorophen-oxyl acetate with diethyl barbituric acid ("novasurol") and the Na salt of Hg salicylallylamide-o-acetate ("salyrgan"). NH_4Cl acted with the other compounds studied, as an acid precursor in the same manner and degree as $CaCl_2$. The inorganic compounds of HCl represented by $HgCl_2$, K-mercuri-tetraiodide and metallic Hg showed a considerable amount of diffusion into blood serum, while the organic compounds "novasurol" and "salyrgan" showed only a small amount in the same time. Hg succinimide occupied an intermediate position. A table of solubilities of water insoluble Hg compounds in blood serum is given.—*Authors' summary.*

16270. **TEMPLETON, H. J., B. M. RIX, and ROBERT THOMSON. Absorption rate of bismuth compounds.** *Arch. Dermatol. and Syphilol.* 21 (5): 739-755. 1930.—X-ray studies were made of the absorption rate of 17 different Bi preparations in 114 patients. The absorption rate of 15 of these was also determined in 15 rabbits. The absorption rate in the rabbit was frequently so much slower than in man that the authors conclude that absorption studies should be made on patients, not on experimental animals.

16271. **THAYSEN, TH. E. HESS. Clinical investigations into the effect of intravenous injection of insulin. III. The blood sugar curve in diabetics.** *Acta Med. Scandinavica* 73 (5): 408-424. 1930.—In 21 diabetics the blood sugar curve is examined after intraven. injection of 12 units of insulin. In the mildest cases the form of the blood sugar curve is normal; the more severe the case, the more abnormal the curve, as both the assimilation line and the restoration line are flattened and presenting certain irregularities in their course. The flattening of the assimilation line is due to the lowest blood sugar value coming later in diabetics than in normal individuals, this delay increasing with the severity of the case. Thus the assimilation takes longer in diabetics than in normal individuals, even when the initial blood sugar value in the diabetic is normal. Only the mildest cases of diabetes show a definite distinction between the primary rise and the secondary rise of the restoration line. The assimilation index varied from 2.1 to 0.3. It is independent of the initial blood sugar value and of the presence or absence of acidosis, and is not influenced by 3 days' fasting (+300 gm. vegetables). The lower the assimilation index, the more severe the case seems to be. In dividing the material in 3 groups it is found that patients with assimilation index 2.1—1.1 were able to assimilate an adequately carbohydrate-rich and calorific diet without insulin. In this group were 5 cases of adiposity which called for a lower supply of calories than usual. On a similar diet, patients with assimilation index 1.0—0.7 required a moderate supply of insulin to keep the morning urine free of sugar and acetone, while patients with assimilation index 0.7—0.3 required a considerable amount of insulin. Within each of these groups there are individual variations in the relation between assimilation index and tolerance. The corresponding features of the blood sugar curve in normal individuals are illustrated by the findings in 60 examinations on 50 non diabetic individuals.—*Author's summary.*

16272. **TOMMASELLI, ANTONIO. Ricerche sull'azione del colato di sodio sulla funzione motoria dell'utero. [Action of Na cholate on the motor function of uterus.]** *Riv. Patol. Sperim.* 5 (6): 522-526. 2 fig. 1930.—Na cholate exerts a very toxic action on uterine smooth muscle, in which complete paralysis is produced even by very dilute solutions (1:30,000) of cholate.—*M. Comel.*

16273. **TRAINA, S. Importanza dei riflessi naso-faringo-laringei sulla inibizione respiratoria e cardiaca. Condizioni che possono favorire la morte improvvisa all'inizio della narcosi cloroformica. [The importance of the naso-pharyngo-laryngeal reflexes in respiratory and cardiac inhibition. Factors which may favor sudden death in the initial stages of chloroform narcosis.]** *Arch. Fisiol.* 28 (3): 503-536. 20 fig. 1930.—The reflexes obtained by local stimulation of the mucous membrane of the nose, pharynx, larynx, trachea and bronchi were systematically studied using as a stimulus chloroform administration. Cardiac inhibition is more certainly obtained if the chloroform vapors act simultaneously on the nose and larynx: the nasal mucosa elicits more intense reflexes. Those elicited from the pharynx are very weak; weaker yet are those from the trachea. If chloroform vapors act in strong concentration on the nasal mucosa the gravity of the respiratory and heart reflexes arising is increased and sometimes is such as to lead to the death of the animal (rabbit). In bilaterally sympathectomised rabbits if electrical stimulation of the vagi is accompanied by chloroform inhalation death often follows. Intravenous injections of strong doses of adrenalin elicit frequently fibrillation of the auricles and then administration of chloroform is followed by death. When the spinal cord is cut below the point where the phrenic nerve originates, the rise of pressure commonly caused by chloroform inhalation is not produced. The author was not able to demonstrate any fact to corroborate the view of a functional antagonism between the upper respiratory tract (nose and pharynx) and the lower part (trachea and bonchi).—*M. Comel.*

16274. **TROISE, EMILIO. Estudio farmacológico sobre la ponzoña de la araña Latrodectus mactans. II. [Pharmacology of spider venom. II.]** *Rev. Soc. Argentina Biol.* 5 (8-9): 605-615. 1929.—**Especificidad del suero contra la araña Latrodectus mactans. [Anti-latrodectus Serum.]** *Rev. Soc. Argentina Biol.* 5 (8-9): 616-620. 1929.—This venom is highly toxic for the guinea-pig, almost non toxic for the toad. It is destroyed by potassium permanganate, by heating between 70°-100° C.; attenuated at 50° C. It dialyzes slowly, does not raise blood-pressure as previous samples did, produces hyperglycemia, polyglobulia while diminishing the white cell count. It does not contract isolated uterus, intestine nor the bronchi in situ. Applied locally it produces convulsions in striated muscle. It produces marked symptoms of central nervous origin. The convulsive tremor is due to the spinal cord and increases on decapitation; it does not occur in pithed animals (frogs and dogs). The serum of immunized rabbits protects against injection of fatal doses in the proportion of 0.01 cc. serum for 1 mgm. venom, and direct spider bites. This action is specific for this venom and does not affect that of other species such as *C. nigriventer.* Reciprocally antinigriventer serum is inactive for *L. mactans* venom. The precipitin value of the serum was low, not more than 1%.—*J. T. Lewis.*

16275. **TSKIMANAURI, G. Zur Pharmakologie des Plasmochins.** *Arch. Schiffs- u. Tropen-Hyg.* 35 (2): 89-97. 1931.—Plasmochin may be classed as a paralyzing toxin, which primarily affects the central nervous system, particularly the medulla. In therapeutic doses (0.3 mgm. per kgm.) the blood pressure increases and breathing accelerates and deepens. With increase of dosage the blood pressure falls, and breathing becomes labored. The heart is relatively resistant to the drug. In therapeutic doses it is not harmful.—*E. C. Faust.*

16276. **URCHS, O. The treatment of amoebic dysentery with acridin dyes.** *Far East. Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 512-516. 1927[1928].—From experimental results it was concluded that: 2-ethoxy-6-9-diaminoacridinlactate was clinically and experimentally proved a specific against *Entamoeba histolytica* and diseases caused by this parasite. This compound is a very powerful anti-spasmodic, useful in related symptoms of the intestines.—*Author's conclusions.*

16277. VALENTI, A. Sulla farmacologia della chinazoline. [Pharmacological studies on chinazolins.] *Biochim. e Terapia Sperim.* 17(2): 84-96. 1930.—6-methyl-3-tolyl-3, 4-dihydrochinazolin, and its compounds with the methyl, ethyl, propyl, allyl and β-oxyethyl groups are stable basic substances, scarcely soluble in water even as chlorine salts. They have similar chemical and pharmacological properties; are scarcely toxic even when administered subcutaneously or intravenously. 0.035 gm. per kgm. intravenously produces hemolysis and forms methemoglobin. Toxic symptoms arise chiefly from the nervous system, whose centers they depress, causing localised muscular contractions and tremor. The heart rate slows and the arterial pressure falls.—*M. Comel.*

16278. VELICOGNA, A. Sull-azione dell'Adonis vernalis sul sistema organo-vegetativo. [Action of Adonis vernalis on the autonomic system.] *Gazz. Ospedali e Cliniche* 51(49): 1556-1560. 1930.—The action of *A. vernalis*, studied by the method of Eppinger and Hess in 6 cases, consisted of a slight bradycardia which probably was not due to an exciting action of the parasympathetic.

16279. VELLARD, J. Propriétés des sécrétions cutanées de quelques rainettes des environs de Rio de Janeiro. *Compt. Rend. Acad. Sci.* [*Paris*] 188(16): 1064-1066. 1929.—The cutaneous secretions of *Hyla faber, H. albomarginata, H. crospedopsila, Trachycephalus nigromaculatus,* and of the skin and parotid glands of *Phyllomedusa burmeisteri* were studied to determine their toxic properties. Those of *H. faber* and *H. crospedopsila* were completely atoxic; that of *H. albomarginata* had a faint toxic reaction, but was not fatal to pigeons, while those of the other 2 species, though differing from each other, were decidedly toxic. Their properties are described.

16280. VIALE, G., e T. COMBES. Colina e ghiandola surrenale. [Choline and suprarenal glands.] *Arch. di Fisiol.* 28(1): 25-32. 1930.—Following injection of a sympathicotropic drug, as adrenalin, the organism reacts by emission into the blood of an antagonistic, i.e., vagotonic substance, such as cholin. This cholin comes from the suprarenal glands. Vagotomy, above the diaphragm, does not exercise any action on the choline content of the cortex of suprarenal gland.—*M. Comel.*

16281. [VORONTSOV, V. N., and V. ÏŪ. LESHCHINSKIĬ.] ВОРОНЦОВ, В. Н., и В. Ю. ЛЕЩИНСКИЙ. Изменение величины зрачков у животных под влиянием наркоза. III. Морфийно-хлороформный наркоз собак, кошек и кроликов. [Change in the size of the pupils of narcotized animals. III. Morphine chloroform narcosis in dogs, cats and rabbits.] Труды Научно Исследовательского Института при Воронежском Государственном Университете (*Trav. Inst. Rech. Sci. Univ. d'État, Voronèje, U.S.S.R.*) 1929(3): 111-120. 1929.—The reactions of the pupils of various animals to combined morphine-chloroform narcosis are not the same. In dogs, dilatation of the pupil is rare. Almost invariably there is a steady contraction. In cats there is almost invariably a steady dilatation of the pupil. The degree of this dilatation in combined morphine-chloroform narcosis is somewhat less than in chloroform. Apparently the combination of morphine with chloroform does not increase the narcosis reaction of the pupil in the cat. In rabbits dilatation is most common; a scarcely noticeable contraction sometimes occurs. Dilatation in the rabbit eye is as a rule not constant; fluctuations occur, contrasting with the regular dilatation observed in chloroform narcosis. The amplitude of the dilatation of the rabbit pupil under combined morphine-chloroform narcosis is somewhat greater than in the ordinary chloroform narcosis.—*Authors' summary (transl.).*

16282. WADA, HIRATAKE. Klinische und experimentelle Untersuchung über die durch Giftraupe, Dendrolimus spectabilis, verursachte Dermatitis. V. Untersuchung über die pharmakologische Wirkung des Stichhaargiftes. *Chiba Igaku Kwai Zasshi* (*Mitteil. Ges. Chiga*) 6: 373-389. 1928.—The toxin, not yet obtained pure is grayish-white or yellowish in color, hygroscopic, not bitter to the taste, easily dissolves in water, scarcely soluble in absolute alcohol, ether, chloroform, benzol, and amylalcohol. It did not show an alkaloid or N reaction, and did not reduce Fehling's sol. The lethal dose for mice per 10 gm. body wt. was 0.005 gm. in subcut., 0.004 gm. in intraperitoneal, and 0.002 gm. in intraven. injection. In somewhat larger doses it produced only a transient rise in blood pressure of the rabbit. In Laewen-Trendelenburg preparations it contracted the vessels and caused increased action of the isolated heart.

16283. WATKINS, O., and GEORGE VAN S. SMITH. Biochemical studies on the effect of adrenalin upon the nitrogen metabolism of rabbits. *Amer. Jour. Physiol.* 96(1): 28-34. 1931.—The usual dose was 1 cc. of 1:1000 sol. of adrenalin chloride, 128 injections being given in all, 55 subcut. (blood sugar rises in every instance, blood urea rises in 12 exps. in which determinations were made), 69 intra-abdominal (blood sugar rises in 49 instances, blood urea increases in 12 rabbits in which results were followed for 6 or more hrs.); similar results from intramuscular injection. There was no retention by the kidneys, as shown by urine analyses during prolonged exps. in which repeated injections of adrenalin were given. There was, in fact, some indication of an increased excretion of urea. It is concluded, therefore, that the rise in blood urea is a result of some catabolic action of adrenalin upon protein metabolism. The intraven. administration of glucose after injection of adrenalin does not affect the rise in urea. The administration of glucose and insulin after adrenalin exaggerates and prolongs the urea rise.

16284. WALSH, E. L., and A. C. IVY. Gall bladder visualization and jaundice. *Proc. Soc. Exp. Biol. & Med.* 28(4): 382-383. 1931.—Tetra-iodophenolphthalein persists in the gall bladder (dog), after ligation of the common bile duct, for at least 2 weeks; this confirms Copher's findings. Prior (60-96 hrs.) ligation of the common bile duct (dog) delayed the visualization of the gall bladder. Ingestion of meals did not cause disappearance, or decrease density, of the shadow.

16285. WEBER, LEONARD F. A list of cutaneous irritants. *Arch. Dermatol. and Syphilol.* 21(5): 761-770. 1930.

16286. WEISS, ST., und B. PAUL. Vegetatives Nervensystem und Lipoide. *Zeitschr. Ges. Exp. Med.* 60 (5/6): 702-708. 3 fig. 1928.—The authors studied the response to adrenalin injection in animals before and after cholesterol feeding. They used an oil suspension of Merck cholesterol, administered in some instances intramuscularly and in others per os in 14 human beings. This was followed by the administration of .02 mgm. of adrenalin. Blood pressure was measured every 15 sec. A depression of the adrenalin effect in the individuals receiving cholesterol either intramuscularly or per os was noted. It was concluded that the tonus of the vegetative nervous system can be influenced by the administration of a lipid.—*D. Perla.*

16287. WENNER, W. F., and E. W. BLANCHARD. Effect of intravenous injections of alkali on physiological action of curare. *Proc. Soc. Exp. Biol. & Med.* 26 (3): 182-183. 1928.—Preliminary paper. Intravenous injection in dogs of 3.0 gm. $NaHCO_3$, 8-10 min. after intravenous injection of 5.7 mgm. per kgm. body weight of curare, led to complete recovery within 15 min.

16288. WENNER, W. F., and E. W. BLANCHARD. Effect of intravenous injection of alkali on the action of curare. *Amer. Jour. Physiol.* 91(2): 563-566. 1930.—Exps. on 19 dogs indicate that alkali intraven. decreases the action of curare. Dogs completely recovered from the effects of curare after receiving intraven. injections of $NaHCO_3$. Acids augment the action of this drug. At the 1st appearance of paralysis the pH and CO_2 capacity of the blood begin to fall. Introduction of $NaHCO_3$ not only corrects anoxemia but also neutralizes the curare effect at the myoneural junction. The levels of serum Ca and P are not affected by curare. Sufficient quanti-

ties of Ca intraven. also inhibit the action of curare. The results of these experiments are in agreement with Burridge in regard to the effect of H ion concentration and calcification of the synapses upon the excitability of the nervous system.

16289. WILDE, B. de VOS-de. Mouvements rhythmiques spontanés du canal stomaco-intestinal de l'Eledone moschata Lam. *Arch. Néerland. Phys. Homme et Animaux.* III. C. 15(1): 97-113. 8 fig. 1930.—When suspended in aerated sea water isolated segments of the 3 parts of the gastro-intestinal tract of *E. moschata* show spontaneous rhythmic movements which are more distinct with the stomach and esophagus than with the terminal intestine. With filling of the stomach the movements are increased with increased tension on the walls and may continue for several days. Movements of the intestine are more pronounced when it is empty. Phenol stimulates movements of the esophagus, stomach and intestine, although only in the intestine can an increase in tonus be demonstrated. Nicotine causes movements of the esophagus and intestine to cease; those of the stomach reappear after an initial inhibition. The tonus is increased only in the intestine; this increase is transient, lasting not more than 20 min. Pilocarpine excites only the esophagus and stomach, although there is a small increase in tonus in all sections. Very low concentrations of atropine strongly stimulate the esophagus, stomach and intestine but only in the stomach is a slight increase in tonus demonstrable. The effects of atropine and pilocarpine are not antagonistic as has been frequently stated. Their action is not cumulative and when one adds a solution of pilocarpine to one of atropine there is an augumentation of tonus equivalent only to that with pilocarpine alone. Adrenaline exerts a stimulating effect only in the stomach. The tonus increases but slightly. $BaCl_2$ has an exciting effect on the stomach. The tonus gradually increases so as to make rhythmic contractions impossible. There is only a partial analogy between action of drugs on the intestines of *Eledone* and of vertebrates.—*Author's summary (transl. by C. S. Robinson).*

16290. WILDER, ROBERT L., and F. W. SCHLUTZ. The action of atropine and adrenaline on gastric tonus and hypermotility induced by insulin hypoglycemia. *Amer. Jour. Physiol.* 96(1): 54-58. 1931.—Hypermotility produced in the stomach of a fasting gastric-fistula dog by the subcutaneous injection of insulin was inhibited, and the increased tonus was lowered by giving atropine in physiologic dosage. This effect was not accompanied by any increase in the blood sugar. Adrenaline hydrochloride, injected intravenously during gastric hypermotility accompanying hypoglycemia, caused a lowering of tonus and inhibition of the active stomach contractions. This effect was not due to increase in blood sugar. The experimental results suggest the possibility that the hypertonicity of the starving infant may be due to an increased central nervous irritability caused to some extent by an existing hypoglycemia.

16291. WOOD, W. A. Experiments on the treatment of parasitic gastritis in sheep and lambs. *Jour. Agric. Sci.* [*Cambridge*] 20(2): 186-205. 1930.—The experiments have failed to reveal a reliable treatment for parasitic gastritis of sheep other than that caused by H. contortus, but confirm the experiments of other workers in that there are several drugs available which are more or less effective against this worm. Carbon tetrachloride, given in 12 c.c. doses would seem to be effective against Haemonchus. Tetrachlorethylene (Nema) given in capsules containing 5 c.c. gave, in most cases, good results against Haemonchus. Bunostomum trigonocephalum were found in 3 animals after the administration of this drug, which does not appear, therefore, to be effective for hookworm in sheep. The results so far obtained with petroleum ether seem promising but further trials are necessary before any definite conclusion can be arrived at. Turpentine, chloroform and linseed-oil mixture, chloramine T., sodium pentasulphide, arsenic and monsol do not appear to be effective. A proprietary Cu and As mixture, and Cu with As and HCl would not appear to have any advantage over Cu alone. Gow's tobacco powder (which is said to be composed of tobacco with 33% of S) gave promising results, but tobacco alone, S alone, and tobacco and S in the same doses and in the same proportions as in Gow's powder, did not produce any decrease in the egg count. The poor results obtained from drugs mixed with the food are disappointing, as this method of administration would be extremely useful in the treatment of large flocks of sheep.—*From author's summary.*

16292. ZAGAMI, V. Contributi alla conoscenza dell'azione dell'insulina, con particolare riguardo alla sindrome ipoglicemica. [Studies on the action of insulin, and especially on the hypoglycemic syndrome.] *Arch. Fisiol.* 28(3): 339-371. 1930.—Insulin acting on the sensory and motor regions of the cortex (in dogs and rabbits) does not elicit any noticeable motor or sensory response, nor does the threshold of excitability vary. When acting on the 4th ventricle (posterior surface of its base) no motor or sensory responses are elicited. The blood sugar content showed in this case a gradual decrease. When acting on the posterior surface of the lumbar enlargement of the cord in pigeons, insulin did not elicit any motor response but a temporary depression of touch and pain sensation was observed; the plantar reflex was also weakened. Following subdural injection of insulin in amounts not sufficient to elicit convulsions if administered subc. no motor or sensory response resulted. The glycemic curve was not different from that after subc. administration.—*M. Comel.*

16293. ZIEGLER, EDWIN E. The specific effect of bile salts on pneumococci and on pneumococcus pneumonia. *Arch. Internal Med.* 46(4): 644-656. 1930.—Na taurocholate in NaCl sol. produced lysis of pneumococci (Neufeld's phenomenon) in vitro within 2 hrs. in solutions as low as 1:25,000; in serum the bile salts acted more slowly than in NaCl sol. The bile salts were about ½ as lytic for erythrocytes as for pneumococci. No interference with antibody action of specific serums on pneumococci was evident. Used intraven. in 3 cases of lobar pneumonia, the bile salts produced no toxic symptoms, bradycardia or hemoglobinuria; they seemed to exert a specific action on the pneumonia, but tended to damage and obliterate the veins and to produce slight anemia.

16294. ZIPF, K., und E. WAGENFELD. Über die pharmakologische Wirkung des frisch defibrinierten Blutes. I. Mitteilung. II. Mitteilung: Darstellung und Wirkung des wirksamen Prinzipes. *Arch. Exp. Path. u. Pharmakol.* 150(1/2): 70-90; 91-105. 1930.—(I.) Doses of 1-3 cc. freshly defibrinated rabbit blood more or less lowered blood-pressure. Parallel with its action on the blood-pressure, a dilatation of the vessels supplying the cutaneous muscles, a contraction of the vessels in the splanchnic region, and an increase in lung volume were found. Small doses of defibrinated blood increased the heart amplitude, increased the volume of the right ventricle, decreased the volume of the left ventricle, but had no appreciable effect on the frequency of the heart beat. Small doses of defibrinated blood had no appreciable effect on the respiration; large doses paralyzed the respiratory center. Freshly defibrinated blood acted as a capillary poison. Neither atropin nor bilateral vagotomy prevented defibrinated blood from lowering blood-pressure. Suprarenin and the pressor substance of the hypophysis either inhibited the blood-pressure lowering action of defibrinated blood or increased blood-pressure. Histamin did not influence the action of freshly defibrinated blood. The action of defibrinated blood on blood-pressure probably was due to its effect on blood flow through the lungs. The active principle of freshly defibrinated blood was not histamin but a histamin-like substance.—(II.) The active principle of freshly defibrinated rabbit blood was prepared by 3 methods of deproteination, namely:—precipitation with $Fe(OH)_3$ dialysate; precipitation with Congo-red

and HCl; and ultra-filtration. The filtrate prepared by each of these methods had the same action on blood-pressure and a similar action on the entire circulation as had defibrinated blood. The active principle was water soluble, but insoluble in absolute alcohol and ether. After heating it was soluble-neutral, strongly alkaline, or strongly acid: long heating at above 70° C. destroyed it. The active principle was neither cholin nor histamin but a cholin-ester. Apparently its activity was due to an imidazol or a pyrrol ring.

16295. ZSCHUCKE, JOHANNES. Therapeutische Versuche mit einer Simultanbehandlung mittels Tetrachlorkohlenstoff und Ascaridol. *Arch. Schiffs- u. Tropen-Hyg.* 35(3): 136-145. 1931.—Using 0.06 gm. of CCl_4 and 0.01 gm. ascaridol (oil of Chenopodium preparation) per kgm. of body weight on West African sleeping-sickness patients, the author found the combination effective for hookworm and Ascaris, but unsatisfactory for *Trichocephalus*. No toxic symptoms were observed.—*E. C. Faust.*

ANIMAL PATHOLOGY

MORBID ANATOMY

E. W. GOODPASTURE, *Editor*

C. EUGENE WOODRUFF, *Assistant Editor*

(See also in this issue Entries 15137, 15138, 15139, 15148, 15253, 15427, 15738, 15750, 15751, 15754, 15762, 15768, 15857, 15866, 15939, 15990, 16050, 16143, 16214, 16375, 16384, 16388, 16398, 16400, 16410, 16431, 16457, 16466, 16484, 16586, 16617, 16665, 16678, 17302, 17312, 17315, 17317, 17351, 17359, 17403, 17418, 17428, 17430, 17431, 17448, 17449, 17452)

16296. AKAIWA, HACHIRO, and MITSUZO TAKESHIMA. The reaction of lymphoid tissue to roentgen radiation. *Amer. Jour. Roentgenol.* 24(1): 42-46. 12 fig. 1930.—Rabbits weighing about 2 kgm. each were used; one knee of each was irradiated and the other used as a control. Four series of exposures were made: 1 with ¼ S.U.D. [skin unit dose]; 1 with ½ S.U.D.; 1 with 1 S.U.D.; and 1 with 2 S.U.D. The animals were killed at various periods of from 30 min. to as long as 3 wks. after irradiation. In another series the effect of continuous irradiation was studied: a knee on one side was exposed to ½ S.U.D. once a day for 5 days and in another series once a day for 10 days. Results indicate that reaction of lymphoid tissue of the rabbit to radiation can be divided into 3 periods: an early period consisting of the 1st 12 hrs., a middle period extending from 12 hrs. to 5 days, and a late period following the 5th day. In the early period are noted: increase in size of the lymph node, nuclear disintegration and decomposition of the germinal centers. Accompanying this some of the phenomena of inflammation are seen; cellular infiltration, congestion and exudation. Mitoses are seen during this period only when a small dose of x-rays is used. This evidence of regeneration is not present when the large dose is used. The middle interval is devoted mainly to phagocytosis and the clearing up of cellular débris. At the late stage there is fibrosis of the lymph node. The degree and rapidity of these above-mentioned phenomena are in proportion to the dose used. On the control side the reaction is much less and much slower than on the irradiated side, although otherwise it is the same.

16297. ALBANESE, A. Sulla dolicostenomelia. *Arch. Ortopedia.* 47(2): 539-573. 14 fig. 1931.—"Dolichostenomelia," observed by x-ray in a girl of 13, consisted of supernumerary cartilaginous zones of growth in the first metacarpals, the first metatarsals, and certain phalanges. Operation on the feet made possible histologic study. Many things indicated alterations in the germ plasm affecting exclusively the tissues of mesenchymal origin; the findings sustain the concept of "hyperchondroplasia" advanced by Mery and Babonneix.

16298. ALLEN, F. M. B., and H. I. McCLURE. A method of study of intracranial haemorrhage in the newborn infant. *Arch. Dis. Childhood* 6(32): 37-100. 3 fig. 1931.—Injection of "Röntyum (Kahlbaum)" into the cerebral vessels at necropsy gives radiograms with the finest possible detail.

16299. ALVAREZ, RAFAEL GONZÁLEZ. Acerca de la estructura curiosa de dos tumores quísticos de la cerda. [Curious structure of two cystic tumors of the sow.] *Rev. Hig. y Sanidad Pecuarias* 20(4): 317-321. 3 fig. 1930.—Two animals killed in the abattoir, previously castrated, presented neoplasms in the abdominal cavity, about the seat of operation, adherent to the muscle wall on the left side. They weighed about 500 gm., were cystic and surrounded by a layer of white tissue similar to all cavity linings. Section showed the tumors to be multilocular cysts, filled with a viscous liquid, and varying in diameter from 2 to 6 cm. None was entirely isolated from the others. Histologically, the cysts were lined with stratified epithelium. Small cavities contained papillary processes. In the wall of some of the cavities were large cellular nests of a yellow color, arranged in masses or cords, forming irregular spaces, most of which were empty, though some contained red blood corpuscles. These cells were large, cuboid, with a round nucleus containing powder-like chromatin and some large granules. Sudan III revealed fatty inclusions in some cells. Some of the cells, also, were bi-nuclear, and tended to form a syncytium. The author failed to find any reference in the literature to similar tumors. He considers the possibility of ovarian origin, or that they may be rests of the germinative epithelium of the Wolffian bodies (disembriomas).—*A. E. Taft.*

16300. BARONE, V. Mielosi eleucemica eosinofila. [A myeloid aleukemic eosinophilia.] *Haematologica 1. Arch.* 11(6): 437-448. 1930.—The case was characterized by tumefaction of lymph nodes, spleen and liver, the respective organs showing myeloid infiltrations. A secondary anemia obtained. While the white cell count was normal, the leucocytic formula comprised many immature white and red cells and an extremely high ratio of eosinophils (40-19%). The majority of eosinophils were mature forms, only 3-4% being myelocytes. At autopsy the eosinophilia was found to be generalized. No evidence was forthcoming that the case was due to constitutional inheritance, to dermatitis or to worm infection. The author accordingly interprets the eosinophilia as a peculiar form of myelopoiesis.—*N. A. Michels.*

16301. BELL, E. T., and B. J. CLAWSON. Experimental glomerulonephritis in a monkey. *Amer. Jour. Path.* 7(1): 57-62. 2 pl. 1931.—A form of chronic diffuse glomerulonephritis, produced in a monkey by repeated intravenous injections of streptococci over a period of 4 yrs., is characterized by marked increase in capillary endothelium and increase in the thickness and number of layers of the capillary basement membrane; it resembles human "lipoid nephrosis of mixed type," except that no fat is present.—*Authors' summary.*

16302. BENEDICT, JOHANN. Histologische Unterschiede der durch Endokarditis und Lues verunstalteten Aortenklappen. *Virchow's Arch. Path. Anat. u. Physiol.* 281(3): 780-796. 6 fig. 1931.—Study of valves from 17 luetic cases indicates that in valvular syphilis the aortic changes may reach the valves going either up through the sinus of Valsalva (invariably settling in the aortic valve layers and decreasing toward the free edge) or down through the valvular commissure (settling either in the aortic or in the endocardial valvular layers, and

the proliferations of the aortic intima overlapping the free edge of the valve). All these changes are histologically recognizable as inflammatory. In the earliest stages of luetic aortitis there is an enlargement of the aortic valves in all directions, together with hyperplasia of the 2nd layer, which, however, is not distinctive for syphilis. Examination of 28 cases of endocarditis shows that the changes are invariably localized in the endocardial layers of the valves, originate from a thrombus organization, and are therefore most marked at the line of closure. The chief histologic difference between aortic valves deformed by inflammation and by syphilis lies (besides the different localization) in the behavior of the elastic fibers. Only in ascending syphilis does the elastic layer coming down on the valve from the aorta undergo a change—not in descending lues and endocarditis. The endocardial elastica increases in both ascending and descending lues; in endocarditis it is ruptured and destroyed.

16303. **BIANCHINI, M. LEVI.** Virilismo prosopopilare e androfania nella donna alienata. [Masculine beard and voice in insane women.] *Arch. Gen. Neurol., Psichiatr. e Psicoanal.* 11(2): 121-133. 5 pl. 1930.—Observations in 8 cases and hypothesis that virilism of this nature is due, not necessarily to endocrine disturbance, but to the persistence or the reactivation of heterosexual chromosomes present in the embryo.

16304. **BING, ROB., et BERN. WALTHARD.** Quelques aspects anatomo-pathologiques de la myélite herpétique expérimentale. *Schweizer Arch. Neurol. u. Psychiat.* 22 (1): 3-12. 8 fig. 1928.—Guinea pigs inoculated on the sole of the hind foot, after section of the sciatic showed local eruption but no infection of the central nervous system, which always occurred if the sciatic was intact, thus being similar to rabies and tetanus. After the formation of an herpetic vesicle, the virus is propagated along the nerve to the corresponding spinal ganglion; thence to the posterior surface of the lumbo-sacral cord, where inflammatory lesions are characterized by infiltration by lymphocytes and macrophages, and by proliferation of the cells of the sheath of Schwann. Degenerative changes follow, with focal swelling of the axis cylinder. The process in the spinal ganglion is discrete and confined to the surrounding connective tissue. Lesions reach a maximum in the lumbar enlargement and decrease in ascending with infiltration of meninges and perivascular foci of degeneration in the posterior columns, with cell alterations in the posterior horns. The anterior horns are but little affected. Later, there are proliferations of interstitial tissue in both the white and gray substance affected, with loss of myelin in the posterior columns. After the 7th day, the acute lesions regress rapidly, and at the end of a month, the Marchi stain shows very little. It is concluded that herpetic myelitis may result in lesions which are essentially reversible. This explains, in part, the regression of the paralysis in the third period of acute infantile poliomyelitis.—*A. E. Taft.*

16305. **BODECHTEL, GUSTAV.** Zur Frage der Pelizaeus-Merzbacherschen Krankheit. *Zeitschr. Ges. Neurol. u. Psychiatr.* 121(3/4): 487-507. 4 fig. 1929.—Two sisters developed at the age of about 5 a neurological syndrome characterized by gross tremor of the head, ataxia, choreiform movements, speech disturbance, spasticity of the extremities, and progressive dementia. The brain of one of the sisters showed, after her death (due to a lung abscess at the age of 16), an advanced process of demyelinization involving the whole brain, but leaving strip-like perivascular aisles unaffected. The "U"-like fibers of Meynert which are claimed by Merzbacher, to be preserved in Pelizaeus-Merzbacher's disease were considerably involved also. The microscopical picture suggests a slow degeneration and not an aplastic or inflammatory condition. The case stands in between the non-inflammatory form of diffuse sclerosis and Pelizaeus-Merzbacher's disease, and seems to speak for the degenerative ideology of the latter.—*E. Lindemann.*

16306. **BRODRIBB, ARTHUR W., and P. LAZARUS-BARLOW.** A case of aleukaemic leukaemia. *Lancet* 220(5607): 347. 1931.—The differential count showed: polymorphonuclear cells 0; eosinophils, 0; large mononuclears, 6; large lymphocytes, 71; small lymphocytes, 23. Twenty-two nucleated red cells were seen per 100 leucocytes. Stained films from the spleen pulp showed enormous numbers of large lymphocytes. The blood picture (100% mononuclears) with the condition of the glands suggests aleukemic leukemia.

16307. **BRUNNER, HANS.** Der mikroskopische Befund bei einseitigem Fehlen von Mittel- und Innenohr, nebst Bemerkungen zur Ausheilung der otogenen Facialislähmung und zur Myringitis chronica ulcerosa. *Virchow's Arch. Path. Anat. u. Physiol.* 281(2): 352-376. 9 fig. 1931.

16308. **CAROSSINI, GIOVANNI.** Su di un raro caso di neuroma plessiforme del bicipite brachiale. [A rare case of plexiform neuroma of the brachial biceps.] *Arch. Ital. Chir.* 23(2): 172-184. 3 fig. 1929.—The author reviews the various theories on the morphologic and histogenetic interpretation of tumors arising from nerves, concluding that there may be: neuroma myelinicum; neuroma amyelinicum; neuroblastic or cellular neuroma. He then reports a case, from a complete gross and microscopic study of which he concludes: that although trauma cannot be said to be the cause of the tumor, it may certainly have an untoward influence on its course; that the nerves of the brachial plexus are the most frequent sites of tumors (as in this case); that the diagnosis must consider the acinous feel on palpation, the spontaneous pain and provoked tenderness, and the slow course.—*A. M. Sala.*

16309. **CRILE, GEORGE W., MARIA TELKES, and AMY F. ROWLAND.** The nature of living cells with special reference to the nature of cancer cells and of fatty degeneration. *Arch. Surg.* 23(4): 703-714. 8 fig. 1931.

16310. **DAVISON, CHARLES.** Subacute combined degeneration of the cord. Changes following liver therapy; a histopathologic study. *Arch. Neurol. and Psychiatr.* 26(6): 1195-1219. 14 fig. 1931.—Of 17 cases of pernicious anemia complicated by subacute combined degeneration, 7 had undergone liver therapy. All the treated but none of the untreated cases showed glial proliferation at autopsy. The myelin sheaths and axis cylinders were not influenced by the liver therapy.

16311. **ERDHEIM, J.** Über Wirbelsäulenveränderungen bei Akromegalie. *Virchow's Arch. Path. Anat. u. Physiol.* 281(1): 197-296. 28 fig. 1931.—This is a continuation of a monograph on acromegalic changes in the cartilage of ribs and joints. Changes take place both in the bony structure and in the intervertebral cartilages. These can be seen with the x-ray, as well as by gross and microscopical examinations. In the bone, there are alterations in the marrow, bone tissue and periosteum. The greatest amount of new growth arises from the periosteum, and a distinct line of demarcation can be seen between this and the bone proper. This is the principal distinguishing difference between acromegalic processes and spondylitis deformans. The chief function of the intervertebral cartilages is their cushion-effect; this is destroyed by loss of their turgor in degenerative processes. Calcification of cartilage always depends upon the relative pressure between it and the adjacent bone. Where there is increased stress, a proportionate amount of Ca flows from bone to cartilage, and in the opposite direction when the condition is reversed. The microscopic picture of the cartilage changes in acromegaly is chiefly granular albuminoid degeneration with vacuolization. This is a chemical change due to the solution of a fraction of the chondroitin sulphuric acid-albumin combination. There are also non-visible changes of fermentative origin. Cartilage cells persist for some time after other processes have reached a more extreme degree. At a certain point the center of the lesion may undergo mucoid degeneration. Repair takes place by growth of new cartilage cells where there are breaks or cavities in the tissue; also by fibrous replacement, and

by new bone growth. The etiology of acromegaly is unknown. The process is due not to injury, but to hyperpituitarism, the cause of which has not been determined. It is also unknown what causes the process to terminate. There is a great deal of detail in this article. A short bibliography is included.—*A. E Taft.*

16312. **FEEMSTER, ROY F. Spontaneous rupture of the heart.** *Amer. Jour. Path.* 7(3): 223-228. 9 fig. 1931.—This case bears out the claim made by Beresford and Earl that rupture usually occurs in an infarcted area, frequently the result of coronary disease and precipitated by coronary thrombosis or embolism.—*From author's summary.*

16313. **FELDMANN, GRIGORY. Die apikale Paradentitis im Lichte des Experimentes. [Experimental considerations of apical paradentitis.]** 227p. 65 fig. Hermann Meusser: Berlin, 1931. Pr. 18.80 M.—Apical paradentitis is discussed in 14 chapters. After a critical review of problems concerning the treatment of teeth with inflamed or putrid pulp, the author gives a brief summary of anatomy, histology and physiology of the paradentium. The effect of arsenic acid and cobalt on the paradentium and the alterations of this tissue after extirpation of the destroyed and not destroyed pulp are treated. Comparative clinical and pathohistological study over devitalization and anesthesia of the pulp show that both methods are imperfect. The material shows that there is no difference between the periapical alterations of teeth with good or bad fillings. The histological alterations of the paradental tissue after treatment and filling with formalin and tricresolformalin show the latter is better. Howe's silver method and other metallic fillings are not suitable for treatment of the nerve-duct, because they are resorbed. The relations of apical paradentitis and oral sepsis are treated, followed by a comparative discussion of the effects of the different drugs on the paradentium. The experiments were performed on 85 dogs.—*M. Silberberg.*

16314. **FERGUSON, JOHN A. Erythroblastosis with jaundice and edema in the newly born.** *Amer. Jour. Path.* 7(3): 277-298. 10 fig. 1931.—In the 6 cases reported, the outstanding feature was abnormal extramedullary hematopoiesis in full term non-syphilitic infants, all dead at birth or soon after. In each there was a persistence of the fetal mode and site of hematopoiesis without a corresponding retardation in general embryological development. Of 3 cases showing marked jaundice at birth, in 1 bile stasis was present in the liver, perhaps due to excessive hemolysis of imperfectly differentiated erythrocytes loading the liver cells with bile pigment more rapidly than it could be taken care of by the bile-excreting apparatus; 1 case was complicated by an infection, apparently not related to abnormal hematopoietic activity or to the jaundice. Marked edema (hydrops congenitus) was present at birth in 2 cases. One case showed neither jaundice nor edema. All cases showed a marked enlargement of the spleen and liver.—*From author's summary.*

16315. **FOIX, CHARLES et I. NICOLESCO. Anatomie cérébrale. Les noyaux gris centraux et la région mesencéphalo-sous-optique suivi d'un appendice sur l'anatomie pathologique de la maladie de Parkinson.** 582p. 356 drawings, 6 col. pl. Masson et Cie: Paris, 1926. Pr. 100 fr.—Whatever their embryonic origin and their situation in the organization of the central nervous system, the nuclei of the corpora striata, hypothalamus, the tuber cinereum, and of the mesencephalon, together with their connections make a whole system not only topographically but also anatomo-physiologically. In this monograph the authors have added to classical descriptions the recently acquired facts, with the results of their own studies on these formations. In part I there is a brief description of the elementary notions of anatomy necessary for the understanding of the following part. An alphabetic index gives precise definitions of the nuclei and the connecting bundles, followed by a brief abstract of embryology. Part II is a topographic study of series of cuts in the 3 planes: verticofrontal, horizontal, and sagittal. This study contains 2 parts: Part 1 is given to the study of the cuts colored by the myelinic methods and provides the necessary elements for the topographic representation of the divers nervous bundles. Part 2 is devoted to the study of cuts in the same planes, colored by cellular methods. This chapter brings elements which are useful for the comprehension of the whole complex disposition of the many cellular groups of the region. Part II of the book aims to give the reader the necessary notions for the study of Part III and to present model cuts from which the anatomical pathologist can study and recognize his own cuts. Part III of the monograph contains detailed study of the striate bodies, the thalamus, Luys' body, the zona incerta, the nuclei of Forel's field, the internal capsule, the innominate substance of Reichert, the white formations of the sublenticular region, the amigdaloid nucleus, the infundibulo-tuberian region, the corpus mamillaris, the red nucleus of Stilling, the black substance of Soemmering and the commissurae of the brain stem. This study unites in the synthesized descriptions everything known about the formations described: cytoarchitectonics, myeloarchitectonics, connections, comparative anatomy, embryology, myelogenesis and blood vessels. The plates and drawings which illustrate the text are nearly all made from original preparations. The final part of the monograph is dedicated to the histo-pathologic study of Parkinson's disease. To sum up, Parkinson's disease means an early senescence of the nervous centers, which begins in the extrapyramidal and vegetative formations and which is continued by diffuse alterative processes expanding progressively in other endoneuraxial formations. The principal lesions occupy the globus pallidus and the locus niger; the predominating alterations involve the nerve cells which present lesions of the abiotrophic type. Parkinson's disease with the diffuse alterations of the senile type which accompany it, appears as an abnormal localization of the process of cerebral senile decay, or as a process resembling senility brought about by an unknown adjacent or determinative factor, although it is definitely known that this factor is often infectious. So considered, Parkinson's disease loses its individuality. Perhaps there are no absolute limits between Parkinson's disease and the parkinsonian syndromes found in infectious diseases as, e.g., epidemic encephalitis. There are no absolute limits between Parkinson's disease and the pseudo-bulbar parkinsonism of the aged. The anatomic pathological definition of Parkinson's disease is above all a question of localization of the lesions. Therefore it is thought that some symptoms observed sometimes in the aged, as rigidity or isolated or limited trembling, which manifest themselves without Parkinsonian syndrome can be attributed to their true nature which is Parkinsonian.—*C. Foix.*

16316. **HAACK, KARL, und GERHARD KREYENBERG. Vergleichende kapillarmikroskopische Untersuchungen an früher sogenannten "puellae publicae" und dem Durchschnittsmaterial einer dermatologischvenerologischen Abteilung.** *Dermatol. Zeitschr.* 59(2): 95-103. 4 fig. 1930.—The authors undertook to study in 100 prostitutes the theory that frequent infantile capillary development in such classes denotes a psychic inferiority. They found 22% of capillaries of immature forms, which is a percentage no higher than the general average of patients in the venereologic division. Of 21 physically and mentally sound nurses and attendants, 10% presented immature capillary forms. The authors conclude that, while capillary microscopy may furnish instructive clues, it is not sufficient in itself to establish the fact of feeble-mindedness.—*From authors' conclusions (by Z. Cooper).*

16317. **HALKIN. Note sur les réactions du stroma conjonctif dans les épithéliomas cutanés.** *Bull. Acad. Roy. Méd. Belgique* 10(7): 385-391. 4 fig. 1930.—Study of excised specimens (on the basis of Bierich's theory of exposed forces in the production of cancer) has convinced the author that the production of elastic fibers is

the most constant defensive reaction in cutaneous epitheliomata. This reaction is particularly striking and effective in localized slowly developing and non-metastasizing basal cell epitheliomata, but gives way before epithelial invasion. The same defensive reaction occurs in spinal cell epitheliomata, but is there rapidly broken down. In both forms it appears as an intense defensive effort in the hedge of papillae of healthy skin, where it appears before any cellular infiltration.

16318. HALL, ERNEST M., and EATON M. MacKAY. Experimental hepatic pigmentation and cirrhosis. I. Does copper poisoning produce pigmentation and cirrhosis of the liver? II. The effect of heavy carrot-feeding on the rabbit's liver. *Amer. Jour. Path.* 7(4): 327-342, 343-350. 9 fig. 1931.—A litter-mate control of the same sex was fed a special control diet for each rabbit that received Cu. A diet containing 2 mgm. of normal Cu acetate in each gm. of food (alfalfa and barley) was fed to 21 rabbits for 21-105 days. Of the Cu-fed animals 17 showed pigmentation of the liver, mostly as hemofuscin stored in Kupffer giant cells; 9 showed cirrhosis of the liver; 5 which failed to show cirrhosis showed varying degrees of liver cell necrosis. Na acetate, substituted for the Cu salt in the diet of 3 rabbits produced no changes in the livers.—*From authors' summary.*—II. A high percentage of carrots was fed for 32-50 days to 22 rabbits (with litter-mate controls) divided into 3 groups on 3 different diets; 3 developed Kupffer giant cells containing a moderate amount of hemofuscin; 1 developed a definite early cirrhosis; 2 others showed slight connective tissue proliferation in the livers. Many rabbits showed clear, vacuolated cytoplasm in the liver cells probably due to excess glycogen storage. Other changes included parenchymatous degeneration, fatty infiltration and early nuclear degenerative changes. These conditions may be dependent upon diet-deficiency due to the almost exclusive diet of carrots.

16319. HAMPERL, HERWIG. Über erworbene Heterotopien ortsfremden Epithels im Magen-Darmtrakt. *Beitr. Path. Anat. u. Allg. Path.* 80(2): 307-335. 10 fig. 1928.—The author reviews a number of cases of epithelial heterotopy in the digestive tract of man, citing various instances of ectopic stratified, ciliated, intestinal and pseudopyloric or mucoid epithelia. These cases of acquired heterotopy are frequently associated with definite pathological states—carcinoma, tuberculosis, etc.—or are found after operative interference, such as anus praeternaturalis and gastroenterostomy. The abnormal or altered physico-chemical conditions to which the tissues are exposed may be an important factor in the abnormal differentiations encountered. There is a discussion of the relation of epithelial heterotopy to physiological regeneration, restorative regeneration, dedifferentiation followed by abnormal differentiation, pluripotentiality and the relative degree of differentiation of the epithelia of the various levels of the digestive tract.—*A. B. Dawson.*

16320. HINTON, J. WILLIAM. Normal thyroid in relation to the classification of goiters. Histologic studies. *Arch. Surg.* 23(2): 191-200. 11 fig. 1931.—Since in 80 cases of accidental death (0-89 yrs), the author was unable to find a relatively constant picture of the thyroid for different ages, it was difficult to conclude what was normal. In 16 cases due to acute and 11 due to chronic diseases, the sections showed no definite changes. Conflict between clinical and pathologic features is reported in 4 cases of various thyroid disturbances. The author suggests that the previously so-called various types of goiter may be merely stages of one continuous disease.

16321. HUEPER, W. C., G. E. WOODWARD, and E. G. FRY. Interrelations between histologic structure and blood chemical findings in cancer. *Amer. Jour. Cancer* 15(4): 2666-2674. 1931.—The malignancy indices and the blood pH of 34 cases of carcinoma were correlated and a preponderance of histologically highly malignant tumors was found in patients with an alkalosis, while tumors of histologically low malignancy predominated in patients with a normal blood pH. The alkalosis of the blood in cancer patients varies not only with the extent of the disease, but also with the degree of malignancy and maturity of the tumor. The degree of cellular irregularity of cancerous tissue is increased in patients with an alkaline pH of the blood as compared with patients with a blood pH of normal range. In about ⅓ of the cancer patients with a hyperglycemia (present in 78.3% of the cases) a high number of mitoses was found, while this phenomenon was absent in cancers with normal blood sugar.—*Authors' summary.*

16322. HÜNERMANN, TH. Über histopathologische Untersuchungen an der Luftröhrenschleimhaut unter besonderer Berüchsichtigung toxischer und infektiöser Gewebsschädigungen. *Beitr. Anat. Ohres, Nase u. Halses* 29(1/2): 79-99. 4 fig. 1931.—In 9 cases of grippe, the tracheal mucosa showed symptoms of diffuse inflammation microscopically, but the extensive toxico-degenerative signs in the mucous glands described by Wätjen for the grippe epidemic, 1918/19, were absent. Apparently these symptoms depend on the character of the epidemic. Both mucosa and glands showed distinct signs of toxic lesions in 3 cases of diphtheria. In whooping cough, too, a toxic effect was seen in the relatively slight inflammatory defense reaction of the tissue. For comparison, tracheas which had undergone only postmortem changes without any previous inflammatory process were examined. In one case, 9 yrs. after mustard gas poisoning, the epithelium of larynx and of trachea showed marked metaplastic alteration; finally a carcinoma formed. In 2 subjects who died of pulmonary tuberculosis the trachea remained free of tuberculosis; on the other hand, in a case of tuberculous meningitis in which the lungs were free of active tuberculosis there was a caseated tubercle in one gland lobule. It is assumed that the infection of the glands resulted from the excretory duct.—*From author's summary (transl.).*

16323. IFF, W. Über angeborene Verkalkungen, besonders der Arterien. *Virchow's Arch. Path. Anat. u. Physiol.* 281(2): 377-395. 1 fig. 1931.—In a new-born ♂ infant, dying a few minutes after birth, multiple calcification was found especially in the inner layers of the media, in part also in the intima and in the adventitia of the arteries, particularly the large and medium sized, more seldom in the smaller arteries. Calcifications also occurred in the interlobular connective tissue of the thyroid, in the glomerular capsules and the glomeruli of the kidneys, also in the interstitial connective tissue, in the retroperitoneal fatty tissue, in the cerebral pia mater, in the umbilical vein, and in the placenta. The Ca was deposited in the chromotropic fundamental substance of the arteries and other organs. A marked increase of chromotropic ground substance over the normal was present in the superior femoral vein, with no indication of disorganization. The calcification is attributed to incomplete development of the fundamental substance, congenital or produced by the hydramnion.—*Author's summary (transl.).*

16324. ITCHIKAWA [ICHIKAWA], K., T. YAMAHO, and J. FUJIMORI. On the standard weight of the spleen, the liver and the kidney of the horse, and on the variation of weight of these organs in the case of the different diseases. [In Japanese.] *Jour. Soc. Agric. and Forestry Sapporo, Japan* 20(91): 149-172. 1929.

16325. JACOBSEN, VICTOR C., and KIYOSHI HOSOI. The morphologic changes in animal tissues due to heating by an ultrahigh frequency oscillator. *Arch. Path.* 11(5): 744-759. 2 fig. 1931.—Exposure of 23 dogs, 27 adult white rats, and 3 guinea pigs in the electrostatic field of a high frequency oscillator produced marked hyperthermia, the amount of temp. increase being controllable by altering either the voltage or the distance between the plate electrodes. The morphologic changes were congestion of the organs, peripheral hyperemia, cloudy swelling, fatty degeneration, dehydration, glycogen depletion, focal hemorrhages, especially in the gastro-intestinal tract, epithelial hyperplasia in the parenchymatous organs and stimulation of the bonemarrow.

Following prolonged periods of heating, degenerative lesions occurred in the ♂ germinal epithelium. Morphologically the alterations differed but little from the effects of fever produced by various other methods.

16326. **JORSTAD, LOUIS H., and CLINTON W. LANE. Gross and microscopic changes in the skin produced by x-rays and by lipoid solvents.** *Arch. Dermatol. and Syphilol.* 19(6): 954-967. 2 fig. 1929.—An area of skin 1 cm. in diameter on the back of adult white rats was painted with different lipoid solvents or given varying dosages of x-ray. The gross and microscopical changes resulting were studied. Active precancerous lesions were produced by the repeated painting with a diluted tar preparation. The same type of lesions was produced by a single exposure of unfiltered x-ray or by combining the 2 procedures. Relatively small doses of x-ray produced the most marked changes, in that larger doses cause a necrosis of the epidermis and glandular structures as well. In the more extensive burns the derm on the edges shows the hyperplasia of skin and glandular structures as was seen throughout the lesions in the less extensive burn. Observation of these histological changes at different intervals led the authors to conclude that coal tar and allied substances, such as mazola oil, paraffin oil and neat's foot oil, and x-ray, act similarly in inducing a malignant condition. They act as lipoid solvents. The differences in the degree of change produced by each may be attributed to the different nature or "drasticity" of the lipoid solvent used.—*L. H. Jorstad and C. W. Lane.*

16327. **KEY, J. ALBERT. Experimental arthritis: The changes in joints produced by creating defects in the articular cartilage.** *Jour. Bone and Joint Surg.* 13(4): 725-739. 7 fig. 1931.—In experiments on 20 rabbits many of the changes associated with hypertrophic arthritis were produced by creating a defect in the cartilage.

16328. **KODAMA, MAKOTO, und KENSABURO TAKAHASHI. Zur histodiagnostischen Bedeutung der Gehirnveränderung beim fleckfieberinfizierten Meerschweinchen. II. Experimentelle Studien über das Fleckfieber.** *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 32-36. 1931.—In febrile guinea pigs with typhus infected with virus from 77th passage, the brains [133 examined, 155 rabbits inoculated] showed the so-called typhus nodules, most frequently in the middle portion of the cerebral cortex, 3-14 days after appearance of fever. In unquestionable typhus infection of guinea pigs, the 4 diagnostic signs (fever, decrease in body weight, transitional monocytosis, and nodular foci in the brain) were always present.—*Author's summary (transl.).*

16329. **KÖHLER, RUTH. Beiträge zur Kenntnis der thyreosuprarenalen Erkrankung (M. B. Schmidt).** *Virchow's Arch. Path. Anat. u. Physiol.* 281(2): 466-482. 1931.—In 2 cases clinically recognized as Addison's disease, necropsy showed high grade atrophy of the adrenals. The thyroid in one also was atrophic, in the other apparently normal, suggesting that the thyroid atrophy frequently seen in Addison's disease is due to constitutional weakness of the organ. This conclusion was supported experimentally. In 20 guinea pigs 1 adrenal was removed, and in 11 of these the other adrenal was later crushed, without effect on the thyroid. Thyroxin and insulin injected each into 6 guinea pigs had no effect on the adrenals.

16330. **KÖNO, MICHIO. Über die Blutmonozytose bei fleckfieberinfizierten Meerschweinchen. III. Experimentelle Studien über das Fleckfieber.** *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 37-39. 1931.—In 9 guinea pigs not infected with typhus no significant leucocytic changes appeared; in 15 with unquestioned infection an intra-infection neutrophil leucocytosis and a postinfection lymphocytosis were often observed and, without exception, a more or less evident transitional monocytosis.

16331. **KUFS, H. Die histochemischen Grundlagen der Darstellung der Spirochaete pallida im Gefrierschnitt nach Kanzler und eine brauchbare Modifikation dieser Methode.** *Zeitschr. Ges. Neurol. u. Psychiat.* 118(4): 516-525. 2 fig. 1929.—The author discusses the chemical reasons for the success of Kanzler's staining method of staining spirochaetes in tissue. He places special stress on the combination between uranium, silver and spirochaetes in the reduction process brought about by formalin solutions. He also discusses the relative value of $Ag(NH_3)_2NO_3$ solution, $Ag(NH_3)_2OH$ and NH_3AgCO_3 in these staining methods. In his modification he uses the first of these because it forms the most stabile compound, reacts least with light, is slowly reduced and combines most powerfully with the tissue. Frozen sections are placed in bromium ammonium formalin solution for 10 min., in pyridin for 10 min., and in ammonium nitrate 5% solution 10 min., between each change being washed thoroughly with distilled water. They are brought into 1½% silver nitrate solution and stained for 10-20 min. in an oven at 50°C. The sections are washed quickly in water and reduced by the modification of Kanzler's method (.5 part soda, 20 parts distilled water, 10% formalin solution) or after Kuf's method. (Silver ammonium nitrate solution is prepared by adding ammonium hydroxide drop by drop to 5 cc. of 10% $AgNO_3$ until a precipitate forms and redissolves, and 50% formalin solution.) Each section must be individually reduced.—*C. J. Bucher.*

16332. **LADAME, CHARLES, et FERDINAND MOREL. Contribution à la topographie des lésions histologiques du cerveau sénile.** *Schweizer Arch. Neurol. u. Psychiat.* 27(2): 301-310. 8 fig. 1931.—The method consisted in rigorous comparison of the senile plaques, the neuroglia, the ganglion cells and the blood vessels of symmetrical cortical areas. In both hemispheres marked similarity in number, morphology and cortical distribution of the senile plaques was noted. No constant relationship was noted between the senile plaques and the degree of cerebral atrophy. The least symmetrically arranged of the glia cells were the macroglia with best developed fibers which give these astrocytes a strikingly cicatricial character. The astrocytes attached to blood vessels were much more symmetrically arranged, but the contrary was true of the microglia. Ganglion cells of the Alzheimer type were present in circumscribed areas of the cortex which were, in general, symmetrical. There is striking symmetry of the vascular changes. Whereas vascular sclerosis (la fibrose artério-capillaire) is too diffusely distributed for the comparison of its extent in symmetrical areas, foci of softening (l'état lacunaire et l'état criblé) have a symmetrical distribution. The same may be said for the arteries radiating from the white matter.—*J. R. Cash.*

16333. **LAMBERTINI, GASTONE, e PIETRO MAINOLDI. Ricerche sperimentali intorno agli effetti delle radiazioni Röntgen sulla neurorete del Donaggio nei mammiferi neonati. [Some of the effects of x-rays on the neuroreticulum of Donaggio in new-born mammals.]** [Summaries in French, English, and German.] *Riv. Radiol. e Fis. Med.* 1(4): (3-17). 9 col. fig. 1929.—The neuroreticulum of Donaggio in the spinal nerve cells of new-born but not of adult dogs, is extremely sensitive to x-rays. The lesions which appeared in these researches are characterized by woolliness of the fibrils, and by breaking up of the neuroreticulum with the appearance of granulosity and of large vacuoles in its midst. The lysis and the consequent disappearance of the neuroreticulum is made evident in small groups of elements variously distributed. The vulnerability to x-rays of Donaggio's neuroreticulum in adult mammals as reported by Mondini, has been observed only when refrigeration was added to the action of the x-rays. The present studies indicate the vulnerability of the neuroreticulum under the isolated influence of the x-rays: evidently this demonstration depends on the special conditions of the experiment, that is, the extreme youth of the animals exposed to the irradiation. While the lysis of the neuroreticulum in adult animals occurs only through the stage of conglutination of the neuroreticulum itself and by means of the combined use of the x-rays and refrigeration, in these present studies the use of the x-rays led directly to the lysis of the neuroreticulum without pass-

ing through the phase of conglutination.—*Author's summary.*

16334. **LAZZARINI, LANFRANCO.** Osservazioni sul cancro gelatinoso della mammella. [Gelatinous mammary cancer.] *Arch. Ital. Anat. e Istol. Patol.* 1(3): 367-382. 6 fig. 1930.—On the basis of 3 cases of so-called gelatinous cancer, 2 of tubular and 1 of cysto-adenomatous type, the author rejects the theory of origin from mucous secretion and concludes that the tissue represents the total or partial gelatinous metamorphosis of a pre-existing tumor.

16335. **LOTMAR, F.** Histopathologische Befunde in Gehirnen von kongenitalem Myxödem (Thyreoaplasie). *Zeitschr. Ges. Neurol. u. Psychiatr.* 119(4): 491-513. 10 fig. 1929.—The author reports 2 cases of congenital thyreoaplasia and discusses the histopathologic findings. In case 1, he found a reduction in the number of cells in the second and third layers of the frontal and parietal lobes; in case 2 the main changes referred to a disturbance in the architecture of the cerebellum. In both cases, a developmental disturbance must be assumed. Jakob found similar changes in mongolism. Besides this reduction in cell content an edema of the upper layers of the frontal and parietal lobes is common to the thyreoaplasias and the mongoloid conditions. In addition, there are involutional changes in the brain, exemplified by a marked fat content of the ganglion cells and by regressive transformation of the glia. The condition must be considered as a chronic toxic metabolic disturbance. Experimental evidence of thyroidectomized animals tends to support this view. Calcifications have been reported in the pallidum. Such changes must also be interpreted as involutional processes. The fact that it is mainly the cortex, both of the cerebrum and of the cerebellum, that is involved merely emphasizes the greater vulnerability of the neopallium, as contrasted with the greater resistance of the older brain structures. —*A. A. Low.*

16336. **McCARTHY, LEE.** Histopathology of skin diseases. 513p. 54 col. pl., 197 halftones. C. V. Mosby Co.: St. Louis, Missouri, 1931. Pr. $25.00.

16337. **MacCARTHY, WM. CARPENTER.** The malignant cell. *Jour. Cancer Res.* 13(2): 167-172. 3 fig. 1929. —All malignant cells arise from regenerative cells of normal tissue and in the opinion of the author even single malignant cells can be recognized by certain characteristics in fresh unfixed and unstained material, using an oil immersion lens.—*G. L. Rohdenburg.*

16338. **MACCHIARULO, O., und J. TANNENBERG.** Über oxyphile Zellen. *Zeitschr. Immunitätsforsch.* 63 (1/2): 56-66. 1 pl. 1929.—The work is based on the question whether special cells of the blood or of the connective tissue have the ability to form a series of other types of cells such as are seen in inflammatory reactions. In 8 experiments made by injecting a suspension of a 24-hr. culture of *Staphylococcus aureus* into the peritoneal cavity, pleural cavity, subcutaneous tissue and striated muscle of guinea pigs, the animals were killed at intervals from immediately after injection to 6 hrs. Histologic studies of smears of the exudates and sections of adjacent tissue were made. The oxyphil cells which di Renzo believed to be transition forms between endothelial cells and leucocytes were considered to be merely degenerating cells, although the authors' findings agreed in general with di Renzo's. They call attention to the necessity for differentiating between the oxyphil cell whose cytoplasm stains solid red with eosin and the true eosinophil, whose cytoplasm contains pink staining granules.—*H. A. Davenport.*

16339. **MANICATIDE, M., et I. NICOLAU.** Seize cas de nouveau-nés vaccinés par le B.C.G. et morts de maladies intercurrentes. Etude histopathologique. [Histopathological study of 16 cases of new-born, vaccinated with B.C.G., who died of intercurrent diseases.] *Arch. Roumaines Path. Exp. et Microbiol.* 2(1): 81-104. 4 pl. 1929.

16340. **MORITZ, ALAN RICHARDS.** Interacinar epithelium of the thyroid gland. *Amer. Jour. Path.* 7(1): 37-46. 2 pl., 3 fig. 1931.—Histologic studies (no. of subjects not stated) indicate that in normal thyroids of fetuses, children and adults, in pathological glands the seat of hypertrophy and hyperplasia, in nodular goiter, and in adenomas of the thyroid, the mechanics of hyperplasia are essentially similar. New follicles are formed by intra- and extra-follicular proliferation of epithelium and the secondary follicles may lose their parent connection and become isolated units. In the scattered foci of hyperplasia in normal thyroid glands, as well as in glands that are the seat of pathological hypertrophy and hyperplasia, labyrinthine intercommunication of acini exists and is probably limited to the connection of primary with secondary acini. Solid masses of undifferentiated interfollicular epithelium are found in both normal and pathological glands, but such masses are readily accounted for as detached extra-follicular buds. Evidence contrary to certain observations by Rienhoff concerning the mechanics of hyperplasia in the thyroid gland is presented.

16341. **NICHOLSON, G. W.** An embryonic tumour of the kidney in a foetus. *Jour. Path. and Bact.* 34(6): 711-730. 2 pl. 1931.—Both parts of the developing kidney are represented in the tumor. Union between its ureteric and metanephrogenic parts has failed. Differentiation of its tissues is physiological in type, though defective in varying degree: e.g., the collecting tubules have retained their functions as "organizers" of Spemann; differentiation of the Malpighian corpuscles corresponds with that of those of the kidneys. The tumor represents the present stage of development of a kidney anlage after abnormal stimulation. It is a malformation and has acquired no new, "un-biological" characters.—*G. W. Nicholson.*

16342. **PUCCINELLI, ENRICO.** Su di un caso di cancro primitivo del fegato con metastasi multiple ossee in attiva secrezione biliare. [A primary hepatic carcinoma with multiple bone metastases actively secreting bile.] *Arch. Ital. Anat. e Istol. Patol.* 1(5): 781-795. 2 fig. 1930.—The primary tumor and all the metastases (all the latter located in the skeletal system) had an identical structure, being composed of cells similar to those of the liver, and all contained biliary pigment.

16343. **REITANO, RICCARDO.** Le alterazioni del sistema nervoso centrale e periferico nelle avitaminosi sperimentali. Ricerche su colombi e cavie e considerazioni patogenetiche. [Changes in the central and peripheral nervous system in experimental avitaminosis of pigeons and guinea pigs.] *Arch. Ital. Anat. e Istol. Patol.* 2(2): 239-292. 8 pl. (2 col.) 1931.—In the cerebrum in 16 pigeons with beriberi induced by a diet of polished rice, the only noteworthy phenomenon was tigrolysis, which the author interprets as a transitory and reversible disturbance in the nerve cell. No fatty degeneration or glial reaction was observed. Results of examination of the spinal cord and other portions of the nervous system were negative. Following Di Mattei, the author found that a diet of polished rice mixed with sunflower seeds produced an avitaminosis picture limited to paralysis of the limbs, a phenomenon always reversible by addition of brewer's yeast to the diet. The author concludes that the pathologic anatomy of beriberi in pigeons is essentially that characteristic of inanition.

16344. **REUTER, MAURICE J.** Histopathology of the skin in myxedema. *Arch. Dermatol. and Syphilol.* 24 (1): 55-71. 6 fig. 1931.—Specimens from 12 myxedema patients showed fairly uniform hyperkeratosis of the epidermis, with hyperkeratotic plugging of the hair follicles and sweat ducts; irregular, scattered atrophy of the epidermis, with degenerative changes in the epidermal cells; pronounced edematous changes in the corium, and in consequence a spreading apart of the collagen and elastic fibers associated with mild degenerative changes; a sparse cellular infiltrate about the vessels in the upper part of the cutis, and in a few cases about the hair follicles and sweat glands; and the constant presence of a mucinous staining material in considerable quantities. The characteristic appearance of patients is, in all

probability, the result of edema and the presence of the excess of mucin in the corium. In 10 cases in which the basal metabolic rates were low but myxedema not present, the cutaneous histologic picture was similar to that in myxedema, except for the absence of marked edematous changes. Mucin is probably a normal constituent of the skin.

16345. **RIX, ERICH. Die Melanose der Kälber.** *Virchow's Arch. Path. Anat. u. Physiol.* 281(2): 396-411. 4 fig. 1931.—In 2 calves with high grade melanosis, the greater part of the pigment was deposited in mesenchymal cells—apparently tissue histocytes and adventitial cells. A heavy deposit of pigment in the mucosa of the soft palate and the nose occurred in the epithelial cover cells and epithelial cells of the excretory ducts—a finding contradictory to the present conception that pigmentation is confined to derivatives of the mesoderm, and to Jäger's view that pigment is deposited only in the cover cells of the lymph vessels and (in the liver) in the stellate cells. The distribution of pigment corresponds to Weidenreich's scheme, which confines the deposit to 4 (or 2) layers.—*Author's summary (transl.).*

16346. **SCAGLIA, GIUSEPPE. Sulla sarcosporidiosi cardiaca con speciale riguardo alla patologia del fascio di His.** [Cardiac sarcosporidiosis, with special reference to the pathology of the bundle of His.] *Arch. Ital. Anat. e Istol. Patol.* 1(2): 156-182. 1 pl. (col.), 4 fig. 1930.—In the hearts of about 100 cattle and many sheep, all apparently in good general condition, taken at random from a slaughter house, sarcocysts were "constantly" found in the myocardium and particularly in the bundle of His, the nerves however being spared. To explain the fact that the animals had apparently suffered no injury from this heavy myocardial infestation, the theory is advanced that the function of the bundle of His is exercised through the nerves. In the reported human cases of fatal cardiac paralysis, the continuity of the entire bundle of His was apparently interrupted.

16347. **SCHAUMANN, J. Localisation dans la moelle des os au cours du lupus pernio type Hutchinson. Contribution à l'étude de la lymphogranulomatose metascrofuleuse et du lupus érythémateux.** [Localization in the bone marrow during pernicious lupus, type Hutchinson.] *Haematologica 1. Arch.* 11(6): 449-464. 6 fig. 1930.—The case was characterized by tumefaction of the nose and ears and by digital deformation. Cutaneous and marrow lesions were identical with those found in erythematous lupus. To distinguish the case from benign lymphogranuloma the author characterizes it with the term metascrofulous lymphogranulomatosis.—*N. A. Michels.*

16348. **SEULBERGER, P., W. SCHMIDT, und F. KRÖNING. Röntgenbiologische Untersuchungen an Carcinomen. I. Mitteilung. Cytologische Studien an oberflächlichen und tiefgreifenden menschlichen Carcinomen.** *Strahlentherapie* 31(3): 467-494. 37 fig. 1929.—A cytological examination of 5 superficial and 4 deep carcinomata showed that the number and quality of the mitoses varied widely, even before radiation. After radiation a quantitative as well as qualitative change in the karyokinesis of each tumor was observed, and the time of this change was variable. The resting cells of the tumor also showed changes. Many of the cells, especially those of deep seated tumors, showed processes of dissolution after the radiation which, perhaps, indicated a fermentative change. Increased round cell infiltration and proliferation of connective tissue in and around the tumors was probably a reaction of the organism, especially noticeable after radiation.—*O. Glasser.*

16349. **SJÖVALL, ALF, und HELGE SJÖVALL. Experimentelle Studien über die Sekundärknötchen in den Kniekehllenlymphknoten des Kaninchens bei Bacillus pyocyaneus-Infektion.** *Virchow's Arch. Path. Anat. u. Physiol.* 278(2): 258-283. 37 fig. 1930.—To ascertain whether or not formation of new secondary nodules is produced in the lymph nodes of the popliteal space of rabbits after an injection of a virulent culture of *Bacillus pyocyaneus* in the region of the lymph vessels, an accurate method for determining the various tissue components of lymph nodes was worked out, by which the lymph nodes of 11 normal and 22 experimental animals were studied. From 5 to 7 days after the injection the infected rabbits showed a significant formation of new secondary lymph nodes (s.l.n.), which after approximately 10-20 days reached their maximum, surpassing the lymph nodes of the other side as well as those of the normal animals by hundreds. After a month the s.l.n. subsided. These facts seem to support Hellman's theory that s.l.n. represent reaction centers against the bacteria, etc. In these experiments the swelling of the lymphatic tissues was noted. It was shown that under normal conditions the difference in weight of the popliteal lymph nodes of 49 animals amounted at most to 1 cgm. The condition of the experimental animals was quite different. In the first days of the experiment the lymph nodes of the infected side were very much swollen, and surpassed those of the other side by many cgm. These decreased during the course of the experiment. The swelling did not take place at the same time as the formation of new s.l.n., for the swelling had already subsided when the new formations reached their height—after 10-20 days. Generally speaking, the average size of the s.l.n. was much larger in the infected side; however, in this particular, no definite reaction can be pointed out. Also nothing specific can be said concerning the relative amounts of cortex and medulla. Accurate microscopical examinations have shown that in these inoculation experiments no demonstrable general reaction was present in the lymphatic system. The reaction seemed to be much more strongly localized in the lymph nodes of the infected side. Only here may the various types of changes be seen.—*Authors' summary (transl. by H. Jackson, Jr.).*

16350. **STEWART, FRED W. Primary liposarcoma of bone.** *Amer. Jour. Path.* 7(2): 87-93. 3 pl. 1931.—A probable diagnosis of liposarcoma in 3 cases was based on the resemblance of the tumor cells to fat cells, the presence of large fat droplets in 1 case, the general resemblance to fat cells in another although no specific fat stains were available, and the xanthomatous droplets in the second case; the peculiar clinical course, namely, a suggestion at least of multiplicity of bone lesions in all 3 instances which recalls the behavior of certain of the liposarcomas observed in the soft parts; lack of evidence of primary epithelial origin; and an appearance inconsistent with primary bone tumors of known types. All 3 tumors were either multiple in bone or else showed a marked tendency to metastasize to other bones. Of the 2 cases treated by irradiation both proved radiosensitive, a behavior inconsistent with any primary osteogenic bone tumor of comparable structure, or with a metastatic adenocarcinoma, but not inconsistent with certain liposarcomas observed in the soft tissues.

16351. **STRUWE, FRIEDRICH. Histopathologische Untersuchungen über Entstehung und Wesen der senilen Plaques.** *Zeitschr. Ges. Neurol. u. Psychiatr.* 122(1/2): 291-307. 5 fig. 1929.—The plaques are found in a great variety of conditions; in presenile, senile and arteriosclerotic dementia, but also in general paresis and in brains without clinical or pathological evidence of disease. The plaques are products of abnormal metabolism, and it is uncertain whether they are formed locally by the brain or transported there metastatically through the blood stream. But whether they are local or hematogenous products, they must be considered as "foreign bodies" which provoke reactions on the part of the surrounding tissue; in this respect they differ from the corpora amylacea, which produce no reactive changes. On this basis, the author disposes of the theory of various authors that the plaques are formed by microglia, oligodendroglia, or astrocytes. These latter cells do not produce the plaques but merely react to them as scavengers (microglia) or as supportive cells (astrocytes). Neither the plaques nor the feltwork that usually forms their radiating outer layer is necessarily connected with blood vessels. They may be totally independent of vascular structures. But in the majority of instances they are

perivascular. Ganglion cells or glia cells are unable to form plaques. The "nucleus" of the plaque usually contains lipoids.—*A. A. Low.*

16352. **TOWNE, EDWARD BANCROFT, and FREDERICK LEET REICHERT. Compression of the lumbosacral roots of the spinal cord by thickened ligamenta flava.** *Ann. Surg.* 94(3): 327-336. 13 fig. 1931.—A new cause of compression of the spinal cord is reported, with 2 illustrative case histories. The condition is a proliferation of the ligamenta flava between laminae of the lumbar spine, which eventually causes a block in the cerebrospinal fluid circulation and compression of the cauda equina; the etiology is unknown.—*From author's summary.*

16353. **WALLBACH, GÜNTER. Untersuchungen über die unterschiedliche Wirkung einiger leukocytenvermindernder Substanzen.** *Zeitschr. Ges. Exp. Med.* 68(5/6): 621-655. 7 fig. 1929.—In rabbits benzol destroys the follicles of the lymph nodes and spleen and inhibits new growth of the granular leucocytes without stimulating differentiation. In the peripheral blood there is a relative increase in the number of young forms. The bone marrow becomes aplastic, with the persistence of a small lymphoid cell with a heavily stained nucleus in the parenchyma and occasionally in the peripheral blood. There is no histological evidence of cell destruction. Thorium x produces an aplasia of the bone marrow with inhibition of new growth but there is some stimulation to differentiation, so that the peripheral blood shows older forms with no histologic evidence of destruction of leucocytes. The pouring out of lymphocytes results in a decrease in size of the follicles in the lymph nodes and spleen. 200 R of roentgen-ray produces very little change in the lymph follicles and does not reduce the leucocyte count. There is an increase in the number of eosinophils and mast cells in the blood and bone marrow. With 600 R there is a mild decrease in the number of leucocytes with some destruction of the lymph follicles and bone marrow. Granulopoiesis is stimulated by general irradiation, with increase in the number of young forms in the blood stream. The number of eosinophils and mast cells is not increased as much as with weaker doses. The response in the rabbit is apparently different from that in leukemia of man.—*R. Isaacs.*

16354. **WERTHEMANN, A. Experimentelle Röntgenschädigungen des Herzmuskels.** *Strahlentherapie* 38 (4): 702-709. 6 fig. 1930.—In 2 series of experiments on 11 rabbits, the observed x-ray injuries to the heart muscle may be summarized as follows:—(a) Injuries to parenchyma: (1) simple cloudy swelling with loss of cross striations; (2) fine-grained up to coarse nodular, occasionally waxy degeneration, with the fibrillar striations sometimes preserved and sometimes lost; (3) atrophy of muscle fibers, up to complete obliteration, leaving only the empty sarcolemma; simple atrophy of the nucleus, with more marked effects in the degenerated portions. (b) Changes in the interstitial connective tissue: (1) perivascular and extensive diffuse inflammatory infiltration; (2) miliary callus formation, which may lead to actual sclerosis.—*Author's summary (transl. by E. H. Quimby).*

16355. **WILLIS, RUPERT A. Metastatic tumours in the thyreoid gland.** *Amer. Jour. Path.* 7(3): 187-206. 12 fig. 1931.—From evidence in 10 cases observed and 47 previously recorded, the author concludes that different types of tumors possess different intrinsic capacities for establishing metastases in the thyroid; that melanoma and lung carcinoma are the most potent in this respect; that adenomatous and other abnormal areas of thyroid tissue are predisposed to the establishment of metastatic neoplasms, and that this predisposition depends on chemical or metabolic rather than on vascular changes in the altered tissues. In those neoplasms which display a maximum propensity for metastasizing to the thyroid (melanoma and lung cancer), notable association of the metastases with other abnormalities of the gland are observed only infrequently. Conversely, thyroid metastases from growths of low thyroid-colonizing tendency exhibit remarkably frequent association with pre-existing abnormalities of the organ.

16356. **WIŠKOVSKÝ, B. Über die durch Tonsillenreizung experimentell erzeugten Veränderungen des weissen Blutbildes.** *Acta Oto-Laryngol.* 15(2/4): 172-198. 2 fig. 1931.—Cauterization of the tonsils produced in 31 subjects (7 with normal tonsils) changes in the white blood picture like those produced in 4 subjects (3 with normal tonsils) by massage, and observed by Viggo Schmidt after tonsil massage in his own subjects. The leukopenia in the peripheral blood, however, was apparently not dependent on the condition of the tonsils alone, for it occurred both in normal subjects and in those with chronic tonsillitis; the author regards it as due to a restriction of the delivery of lymphocytes to the bloodstream, occasioned by a functional disturbance of the lymphadenoid system through irritation of the tonsils. The tonsils thus appear to be "feelers" of the lymphadenoid system, which under physiologically normal conditions can react to tonsillar irritation by influence on the white blood picture.

ANIMAL PATHOLOGY

FUNCTIONAL

(See also in this issue Entries 15253, 15294, 15427, 15733, 15740, 15762, 15800, 15804, 15837, 15857, 15879, 15880, 15895, 15924, 15939, 15945, 15960, 15988, 15990, 16006, 16016, 16018, 16033, 16035, 16087, 16118, 16127, 16134, 16166, 16170, 16171, 16197, 16223, 16262, 16309, 16310, 16311, 16314, 16321, 16326, 16329, 16338, 16343, 16344, 16356, 16431, 16450, 16452, 16511, 16517, 16607, 16624, 16675, 16680)

16357. **ABT, A., ELSE ASCHENHEIM, und H. FINKELSTEIN. Zur Kenntnis des alimentären Fiebers. I. Über das Eiweissfieber.** *Zeitschr. Kinderheilk.* 49(1/2): 31-54. 1930.—Addition of protein to the food greatly increases the water requirement. When large amounts are given without increasing the water intake, the increased water need is satisfied through restriction of the sensible and insensible water output. If this mechanism fails because of urea diuresis or diarrhea, then dehydration results and with it a rise in body temp. (fever). Perspiration is diminished if the temp. remains normal and is increased with a rise in body temp. The above speaks against the conception of protein fever as a hyperpyrexia due to heat stasis.—*H. Finkelstein.*

16358. **ALEXANDER, HANNS. Genitalcyclus der Frau und Lungentuberkulose in ihren wechselseitigen Beziehungen.** *Beitr. Klin. Tuberk.* 75(1/2): 313-320. 1930.—From a study of 363 patients Alexander concludes that the endocrine processes which govern menstruation, rather than menstruation itself, exercise an important influence on the course of tuberculosis in women.

16359. **ALVAREZ, WALTER C. Nervous indigestion.** 300p. Paul B. Hoeber, Inc.: New York, 1930. Pr. $3.75. —Although functional types of indigestion are common, they are poorly understood and poorly treated and medical students are graduating without sufficient experience in regard to them. This book has been written with the hope of repairing this defect in medical education. Some of the chapters deal with the physiologic aspects of the problem while others cover the psychologic, sociologic and therapeutic aspects. Detailed instructions are given for the handling of the nervous patient and for the treatment of the various symptoms which may arise. The book is written simply and interestingly enough so that it may be read also by intelligent laymen.—*W. C. Alvarez.*

16360. AMBROGIO, A. Ricerche biologiche in alcuni casi di lebbra. (Nota preventiva.) [Biologic studies on some cases of leprosy. (Preliminary note.)] *Gior. Ital. Derm. e Sifil.* 71(4): 1292-1301. 1930.—Results of serum flocculation and precipitation tests by 12 different methods, erythrocyte sedimentation tests, various tests of the cerebrospinal fluid and urine, etc., on 11 lepers and 50-250 normal controls.

16361. BARELLI, L. Die Wirkung des bestrahlten Ergosterins (antirachitischen Vitamins) auf den Mäusekrebs. *Zeitschr. Krebsforsch.* 29(4): 376-388. 1 fig. 1929.—The administration of irradiated ergosterol to mice inoculated with the Ehrlich carcinoma resulted in a certain degree of inhibition of tumor growth, an effect which the writer attributes to the known restraining effect of Ca on neoplastic growth, and the effect of this vitamin on Ca deposition.—*H. E. Eggers.*

16362. BASTOS, M., und L. MAZO. Ca-Gehalt des Blutes und chronischer Gelenkrheumatismus. *Arch. Klin. Chir.* 161(1/2): 222-232. 1930.—The authors examined the Ca content of blood from 30 clinically recovered individuals from 18-31 years of age. In all these cases, as in pathological ones to be reported later, the Ca determinations were always made in duplicate. Extreme values were: maximum 10.88, minimum 10.03, with a mean value of 10.31 mgm. % in blood serum. The authors have the impression that the normal Ca content is much more constant than earlier figures indicate. They determined the Ca content in patients having chronic articular rheumatism of distinct forms. The figures are as follows: 1) Ankylosed polyarthritis. In 12 patients belonging to this group the Ca value varied between 9.99 and 13.72, the mean value 11.35 mgm. %, a little higher than normal. 2) Monarticular arthritis deformans. In 10 patients the Ca value lay between 10.21 and 13.56 mgm. %, with the mean value 11.53. The Ca content of the blood was above normal and indeed somewhat higher than in group 1. 3) Progressive but not ankylosed polyarthritis deformans. In this group only 2 were examined; the Ca value lay between 10.88 and 12.70, mean value 11.79 mgm. %; above normal and higher than both of the first groups mentioned. 4) Rheumatism or post-infectious secondary arthritis without deforming bone lesions (8 cases). The Ca values were 9.57 and 11.17 mgm. % with a mean value of 10.31, a normal figure. In general it may be said that the Ca value in chronic articular rheumatism is variable while for completely recovered individuals it is constant. Variability corresponds to the rate of the bone change which belongs to the picture of rheumatic disease and it is concluded that the unstable Ca values are not the cause but the result of the disease process. The high Ca content in the blood in this malady is accounted for on the supposition that the lime of the blood is in transit from one point which decalcifies to another which ossifies. —*Authors' summary (transl. by J. C. Bugher).*

16363. BENEDICT, ETHEL M., and KENNETH B. TURNER. The serum calcium in polycythemia vera. *Jour. Clin. Investigation* 9(2): 263-264. 1930.—From a study of 9 cases Benedict and Turner conclude that there is no significant variation in the serum Ca in polycythemia vera.

16364. BERNOCCHI, FILIPPO. Il bilancio tossico e la reazione nera nei neurastenici. [The toxic equilibrium and the black reaction in neurasthenics.] *Cervello* 9(5): 266-277. 1930.—The "toxic equilibrium" (Condorelli's concept of a general formula expressing the degree of intoxication and of the resistance of the organism expressed in terms of the urinary total cholesterol: fatty acid ratio) was subnormal in 11 out of 15 cases of neurasthenia. Buscaino's "black reaction" (black precipitate from urine boiled with $AgNO_3$) was positive in only 2 cases. This "black reaction" expresses a special type of intoxication with substances of the amine group, while the Condorelli toxic equilibrium is of general application, based on the theory that cholesterol is antitoxic and antihemolytic, while the fatty acids are hemolytic and cytotoxic. The cholesterol rises and falls with the defensive reserves of the organism while increase of the fatty acids represents a toxic alteration in metabolism. Hence the apparent discrepancy between the results of the 2 tests is not a real contradiction; it merely shows that a general toxic condition is present in neurasthenia, but not the special kind indicated by the Buscaino test.

16365. BETHE, A. v., G. v. BERGMANN, C. EMBDEN, und A. ELLINGER. Handbuch der normalen und pathologischen Physiologie. Mit Berücksichtigung der experimentellen Pharmakologie. Bd. 8. 2. Hälfte. Energieumsatz. Tl. 2. D/II. III. Elektrische Energie. Lichtenergie. [Handbook of normal and pathological physiology with consideration of experimental pharmacology. Energy relations. Electrical energy, light energy.] 657-1095p., 207 fig. Julius Springer: Berlin, 1928. RM. 48.

16366. BULGER, HAROLD A., HENRY H. DIXON, and DAVID P. BARR, (with the technical assistance of OLIVE SCHREGARDUS). The functional pathology of hyperparathyroidism. *Jour. Clin. Investigation* 9(1): 143-190. 1930.—A study of 3 cases of hyperparathyroidism, 2 with osteitis fibrosa cystica and the other with multiple myeloma, has presented certain abnormalities of Ca and P metabolism. Most characteristic of these were a high serum Ca, possibly accounting for many of the clinical features, and an excessive excretion of Ca by the kidneys, apparently explaining the urinary tract complications. The increase of Ca in the urine was sufficient to cause a negative Ca balance, although 2 patients showed, in addition, an excessive output in the stools. Low serum P was repeatedly found except in 1 patient with marked kidney insufficiency. Altered P metabolism was encountered but no specific abnormality presented. There was no indication that the total N metabolism or creatinine metabolism is abnormal in hyperparathyroidism. Although there were marked changes in Ca and P other serum electrolytes were normal. By the administration of orthophosphate it was possible to cause an increase in the serum phosphate, a decrease in serum Ca, a reduction of Ca in the urine to normal and establish a positive Ca balance. It appears, however, that a continuation of this procedure resulted in an excessive output of Ca in the stools. Following parathyroidectomy in 2 patients the disturbances of Ca and P metabolism were reversed. The Ca almost disappeared from the urine and large amounts of Ca and P were retained in the proportion in which they occur in bone. One patient reverted to tetany which was almost fatal. It was controlled with difficulty by the administration of large amounts of parathormone and Ca. The metabolism of hyperparathyroidism differs almost completely from that of osteomalacia. In the literature, however, great confusion exists in nomenclature. Cases have been called osteomalacia which probably were examples of hyperparathyroidism. This state is perhaps most often seen with von Recklinghausen's disease of bones, but accompanies hyperplasia of the parathyroid from a variety of causes which include multiple myeloma, extensive carcinoma of bone and possibly other destructive bone processes. These studies indicate that improvement in the clinical state of hyperparathyroidism may be accomplished by the administration of orthophosphate. The possible dangers of such a procedure have been made evident. It would appear that the only effective method of treatment is the removal of parathyroid tissue.—*Authors' summary.*

16367. BURGHI, SALVADOR E. L'acidose de la première enfance. Contribution à l'étude clinique de sa pathogénie. *Rev. Française Péd.* 6(3): 335-354. 1930.—In 45 cases (infants aged 1-14 mos.) acidosis occurred exclusively among dystrophic, dehydrated infants, almost always artificially fed, at least in part. Dystrophy, though essential to acidosis, was not sufficient of itself, even when severe, to produce it. In all cases of acute, intense dehydration, however, acidosis appeared.

16368. CASPARI, W. Rohkost und Krebskrankheit. *Zeitschr. Volksernähr. u. Diätkost* 6(3): 38-41. 1931.—From a review of the literature the author believes it

not impossible that a relation exists between the increase in spread of cancer and the constant increase in the use of raw foods as constituents of the daily diet.

16369. **CASTELLINO, PIETRO G. La creatina e creatinina nelle dermatosi. [Creatin and creatinin in dermatoses.]** *Gior. Ital. Derm. e Sifil.* 71(2): 442-448. 1930.—In 19 cases of dermatosis presence of creatin and increase in creatinin content of the urine were observed only in extensive or acute dermatoses, and then not so regularly as to establish a clear relation between the condition of the skin and endogenous metabolism.—*Author's summary (transl.).*

16370. **CASTLE, WILLIAM B., WILMOT C. TOWNSEND, and CLARKE W. HEATH. Further observations on the aetiological relationship of achylia gastrica to pernicious anaemia.** *Lancet* 218(5568): 1062-1063. 1930.

16371. **CHAPIN, HENRY DWIGHT, and LAWRENCE THOMAS ROYSTER. Diseases of infants and children.** 6th rev. ed. 675p. 15 col. pl., 184 fig. Wm. Wood & Co.: New York, 1929. Pr. $7.50.—This volume on clinical pediatrics not only incorporates what is usually found in text-books, but also draws on the authors' clinical experience and their familiarity with the newer knowledge on the subject. Most of the illustrations are original. There is no bibliography.—*L. W. Sauer.*

16372. **CORDS, RICHARD. Zur Pathologie der Führungsbewegungen.** *Graefe's Arch. Ophthalmol.* 123(2): 173-218. 12 fig. 1929.—The author investigated the associated eye movements (nystagmus) in a large series of nerve cases, finding in these the symptom "Sakkadierung" (nystagmus) to which the author called attention in 1925. The patient is unable to follow slowly moving objects evenly, distinctly intermittent movements being noted. Pure "Sakkadierung" without other associated nervous disturbances was found only after epidemic encephalitis (cogwheel phenomena). With directional viewing he found combined "Sakkadierung" in cases of brain stem affections, as well as in encephalitis and multiple sclerosis. In cerebral involvement "Sakkadierung" from right to left points to lesion in the right hemisphere, from left to right in the left hemisphere. "Sakkadierung" from right to left is mostly accompanied by failure of the optico-kinetic eye movement to the right. The author sets up the hypothesis that the associated eye movements are controlled over separate cortical pathways, excitation of movement by one and inhibition of movement by another. The movement from right to left is controlled through the optic motor cortex in the vicinity of the calcarine fissure. Destruction of this portion of the cortex or blocking of the pathway from this area leads to the development of the above symptoms. This is conceivably of importance in cerebral localization.—*R. Cords (transl. by W. F. Jacobs).*

16373. **CRISTOL, PAUL. Interprétation des valeurs de la réserve alcaline du plasma sanguin au cours des céto-acidoses.** *Compt. Rend. Acad. Sci. [Paris]* 188(22): 1451-1452. 1929.—Normal or increased alkaline reserve findings in cases of ketosis, frequently encountered in diabetics, must be interpreted as errors in technique due to the accumulation of diacetic acid in the blood.

16374. **CROSTI, A. Su alcune caratteristiche biochimiche del sangue e degli essudati cutanei in dermatosi. II. Osservazioni comparative nel pemfigo su cute clinicamente normale o alterata. [Some biochemical characteristics of the blood and cutaneous exudate in dermatosis. II. Comparative observations of the clinically normal and altered skin in pemphigus.].** *Gior. Ital. Derm. e Sifil.* 71(4): 1031-1053. 1930.—Studies on 7 patients with pemphigus and Duhring's disease showed no important modifications in the blood, but emphasized some interesting constitutional differences between plasma and cutaneous exudate. Some crystalloid substances, especially Na, are contained in these exudates generally in higher concentration than in plasma, with a perceptible increase in Cl; this high concentration generally corresponds to a rather high refractive index and relatively high protein values (though always lower than those of plasma), and also increase of residual N and of H ion concentration. The vesicular contents in Duhring's disease (except for a slightly higher Ca-content) are almost identical with those in true pemphigus. No significant difference was seen between the exudates from spontaneous and those from artificially produced vesicles. More noteworthy differences were observed between vesicles produced on normal skin and skin clearly undergoing acantholysis, which latter were almost always higher in crystalloids and colloids than the former exudates, even though the index of inflammatory reaction was proportionately no higher. This, Crosti suggests, may be due to the cellular degeneration of the epidermis, producing a local accumulation of comparatively acid protein split products, and thence a state of local hyper-ionization, attracting particularly hydrophil electrolytes and thus tending to increase the protein-salt content of the exudates formed directly over the altered cellular elements.

16375. **DAS, K. K. A note on blood changes in filariasis.** *Indian Jour. Med. Res.* 18(3): 813-816. 1931.—The variation in the percentage of hemoglobin is between 62 and 84, average 74, in the positive cases, and 62 and 80, average 68, in the negative cases. The normal mean hemoglobin value in the adults of Gaya district varies between 72 and 75% (Korke, 1927). It appears therefore that there is no marked fall in the hemoglobin percentage from the standard. The mean value of the red blood cells per c.mm. is normal in the positive (5,440,000) and negative (5,198,000) cases of filariasis. Similarly the mean value of the white blood cells per c.mm. (day and night counts) is nearly normal (positive cases, average, 6,743; negative cases, average, 6,675). There appears to be no appreciable difference between the differential leucocytic count made during the identical hours of day and night, except for the fact that the eosinophil cells show a tendency to rise and polymorphonuclear cells to fall, both in the positive and negative cases of filariasis. This change appears to be due to filariasis, as the presence of helminthic ova found in the cases appears to be negligible. The number of microfilariae in the peripheral blood does not seem to influence the normal value of the red cells; but there is a suggestion in the case of white cells which are below normal (vide cases 4, 5 and 12, Table I).—*Author's summary.*

16376. **DIETHELM, O. Disturbance of vision and consciousness in Petit-Mal attacks.** *Human Biol.* 2(4): 547-554. 1930.—With hypnotic technic petit-mal attacks of various epileptic patients were investigated. The rehearsal of these attacks in deep hypnosis revealed characteristic changes in consciousness, vision and bodily sensations. Consciousness was found to be very fluctuating. At times it was clear, at others appreciation of surrounding objects was vague, passing at some points into a complete loss of external perception. In all attacks there were sensations of tightness, tenseness and numbness, most frequently in throat and face. They appeared from a few minutes to 2 hrs. before the attack and lasted for a varying period up to 10 minutes after the attack. The patients did not experience those sensations in their conscious state, and the variation in intensity was not correlated with any variation in consciousness. There was a definite concentric constriction of the field of vision on entering the attack and a similar concentric enlargement on coming out. There was further restriction of attention to the central objects, loss of the sense of the situation and location, and disturbance of fusion. Similar findings were observed in a patient who did not lose consciousness during his attacks.—*O. Diethelm.*

16377. **DODDS, E. C., and J. D. ROBERTSON. The relation of aceto-acetic acid to diabetic coma and the cause of death.** *Lancet* 218(5564): 852-854. 1930.—The alkali reserve of the blood was estimated by the Van Slyke method, great care being taken to insure uniformity in the determinations. Saturation of the specimen with CO_2 was performed by a gas mixture containing 5.5% CO_2 in air in a cylinder. The acetone bodies

in the blood were estimated by the method of Behre Benedict in the form of volatile and non-volatile acetone bodies. Since the blood contains little or no acetone these estimations correspond respectively to aceto-acetic acid in β-hydroxybutyric acid. A study of (a) the aceto-acetic acid and (b) the alkali reserve content of the blood in patients in diabetic coma failed to support the theories of ketosis and acidosis respectively as a cause of this condition. Thus, in many cases non-comatose diabetic patients were found to have a higher aceto-acetic acid content than the comatose patients, and it was found impossible to correlate the blood analyses with the clinical condition of the patient. On recovery from coma the aceto-acetic acid content rose, thereby further indicating that the enol theory of diabetic coma is improbable. In the fatal cases death was preceded by a persistently falling blood pressure, and the importance of circulatory failure is indicated. The occurrence of leucocytosis in coma is confirmed.—*Authors' summary.*

16378. Du BOIS. Cancers de la face avec granulômes à cellules géantes et corps étrangers. [In French, with English summary.] *Acta Dermato-Venereol.* 11(3): 268-276. 3 fig. 1930.—In 2 cases basocellular growths developed in the immediate neighborhood of foreign bodies, 1 of these being the sting of an insect that had been lodged for 5 yrs. in the skin at the point where the tumor made its appearance, the other a spine, probably of vegetable origin, of the date of whose lodgment nothing positive could be learned. Good microphotographs show both these foreign bodies surrounded by giant-cell granulomata in the immediate neighborhood of the 1st manifestations of a cancer. The author therefore holds that spontaneous cancer of the face should be given an important place side by side with those conditions which develop from the classical precancerous affections, and that to the list of etiological causes there should be added that of "insidious penetration into the skin of various foreign bodies." Other observations still in progress seem to show that a similar rôle can be played by foreign bodies of endogenous origin.

16379. EAVES, ELIZABETH COWPER. Diabetes insipidus. *Brain* 53(1): 47-55. 1 pl. 1930.—Report of 4 cases of diabetes insipidus, 1 associated with infantilism, 1 post-encephalitis, 1 transitory post-encephalitic, 1 transitory without nervous disease. The author states that diabetes insipidus may be due to a transient affection of the pituitary, which may recover its function completely; or it may be present as a permanent condition as, for instance, a congenital defect; that neither hyperplasia of the pars intermedia nor the pars tuberalis causes this condition but that a relatively mild lesion in the hypothalamic region of the brain may cause diabetes insipidus. This may be due to a stimulation of an inhibitory center or tract—to the pituitary, thus causing inhibition of secretion of the posterior lobe hormone. A severe lesion in the hypothalamus in contradistinction to a milder one does not bring about diabetes insipidus. —*H. J. John.*

16380. ECKSTEIN, H. C., and UDO J. WILE. Lipid studies in xanthoma. *Jour. Biol. Chem.* 87(2): 311-317. 1930.—The nature of the lipids in a xanthomatous tumor has been determined and compared with that of the lipids in the tissue adhering to the tumor and with those in normal subcutaneous fat. The fatty acid make-up of the lipids in the tumor differs markedly from that of those in normal subcutaneous fat and the lipids in the tissues adhering to the tumor. On the other hand, the nature of the fatty acids in the adhering fat is like that of normal subcutaneous fat. The percentage of cholesterol and phospholipids in the total lipids of the tumor was 48.81 and 8.1% respectively, 200 times the amounts previously found for normal human subcutaneous fat. The percentage of cholesterol in this tumor is considerably higher than the amount previously reported for other xanthomata. In accordance with our previous findings, however, no parallelism between the nature of the blood lipids and those of the tumor could be demonstrated. The nature of the lipids in xanthoma may be more dependent on the activity of the tissue than on the nature of the blood lipids.—*Authors' summary.*

16381. EDMUNDS, CHARLES W., and FRANKLIN D. JOHNSTON. The relation of the adrenals to the circulatory collapse of diphtheria. *Amer. Heart Jour.* 4 (1): 16-20. 1928.—In 4 diphtheritic dogs there was a marked diminution in the amount of epinephrine in the adrenal glands. This decrease in epinephrine was probably not the cause of the circulatory collapse.

16382. FLATAU, EDWARD. Sur l'épidémie d'inflammation disséminée du système nerveux en Pologne durant l'année 1928 et sur ses rapports avec l'encephalite lethargique, les atteintes du système nerveux au cours de certaines maladies infectieuses et les cas aigus de sclérose en plaques. *Encéphale* 24(7): 619-660. 1 pl. 1929.—Seventeen cases, most of them children and young adults occurring in first half of 1928 in Poland, are reported. In patients previously well, there is sudden onset of paralysis in one or more limbs and peculiar paraesthesia of bizarre distribution. Transitory peripheral facial palsies and clouding of vision were noted. More rarely during period of invasion diplopia and in 1 case dysphagia and hoarseness; in a few splenic disorders. In most of the cases there was no fever during onset and constitutional symptoms were usually minimal. After a few days the subjective sensory phenomena regressed, rarely being stubborn and persistent. The motor paralysis became more definite with pyramidal tract signs; the frequency of a positive even bilateral Ressolimo in the absence of the Balruski's sign is considered worthy of special mention (in 13 of 17 cases). In 2 cases tendon reflexes in the lower limbs were absent; the abdominal reflexes, especially the lower, were often lost. The pupils reacted well to light and accommodation; disorder of conjugate movement of the eye was observed, especially limitation upward; occasional diplopia and ocular palsy and in 3 cases nystagmus. In 3 cases sympathetic phenomena were recorded: narrowed palpebral fissure with miosis in one, a narrowed fissure only in one and a shiny facies in the last. There were no significant findings in the spinal fluid. Injection of it into guinea pigs was negative. Pathologically only 1 case was studied and it showed infiltration of the central ganglia, spinal cord and peripheral nerve. There was a definite neuroglial response with tendency of the glia cells to accumulate around the blood vessels. Infiltration of the leptomeninges especially at the base of the pons was recorded. Since the epidemic of encephalitis of 1918-1920 there has been a significant increase in the number of atypical reports of inflammatory diseases of the nervous system. Some of these are definitely "low forms" of encephalitis epidemica. There have also been more cases of acute and even chronic multiple sclerosis, increased frequency of central nervous system complications of acute infections, diseases like scarlet fever, measles, varicella; all these infections may be due to the same filtrable virus.—*N. Savitsky.*

16383. FLEISCHER, BRUNO. Zur Ätiologie des Keratokonus. *Arch. Augenheilk.* 100/101: 247-267. 1929.—Three cases of keratoconus arising from different causes are described in detail. Cases from the literature are discussed. It is concluded that there are many disorders both general and local which may produce keratoconus. It may arise from hereditary causes, nervous conditions, glandular disturbances, local injuries and as a result of such ocular diseases as juvenile cataract and retinitis pigmentosa.—*C. E. Keeler.*

16384. FONTANA, G. La circolazione arteriosa del rene idronefrotico. [Arterial circulation of the hydronephrotic kidney.] *Ateneo Parmense* 2(4): 312-328. 8 pl. 1930.—In experiments on 19 rabbits, the arterial renal circulation was profoundly and progressively influenced by the changes of hydronephrosis. As shown by x-rays of the injected arterial tree, the inter-arterial spaces were progressively dilated while the caliber of the vessels contracted and the terminal arborescence finally disappeared altogether.

16385. **FREUND, HELMUTH.** Darier-ähnliche Atypie eines Keratoma senile mit Blasenbildung. [A senile keratoma with atypical resemblance to Darier's disease and vesicle formation.] *Arch. Dermatol. u. Syph.* 162 (3): 733-738. 3 fig. 1931.

16386. **FUJINO, SANAE.** Über Blutzucker bei Hautkrankheiten. [In Japanese, with German summary.] *Acta Dermatol.* 16(6): 552-567. 1930.—The blood-sugar was studied by the Hagedorn-Jensen micromethod in 87 cases of various skin diseases (21 cases of vitiligo vulgaris, 11 of acne, 10 of sycosis vulgaris, 5 of lupoid sycosis, 8 of alopecia areata, 5 of urticaria, 3 of psoriasis, 5 parapsoriasis, 5 of keratodermia tylodes palmaris progressiva Dohi, 4 of chronic eczema and 1 each of various other diseases). When the blood-sugar was determined in the morning fasting and every 30 min. for 2 hrs. after a Sakaguchi test breakfast, a more or less marked rise was observed in 37% of the cases. After ingestion of 100 gm. levulose there was a rather protracted rise in 47% of the cases. After injection of epinephrine (1 mgm. in men and 0.7 mgm. in women) there was a marked hyperglycemia in 51% of cases. These results tend to sustain the theory of a latent and intermittently patent carbohydrate disturbance in various skin diseases, which may rise to the point of a pathologic hyperglycemia and sugar intolerance.—*From author's summary (transl.).*

16387. **GADE, F. G.** Further investigations on the cancerous diseases in Norway (1912-1926). *Skrifter Norske Videnskaps-Akad. Oslo, I. Math.-Naturv. Kl.* 1929 (paper 10): 1-24. 2 maps. 1930.—During the period 1912-26 the general mortality in Norway declined from 13.5 to 10.8 pro mille; but at the same time the deaths from malignant tumors increased from 103.5 to 118.7 pro 100,000 living inhabitants. The reported numbers of cancer-deaths may be augmented by ca. 15%, as 1.7% of all deaths are not reported by physicians, and at least 12% cancer-deaths are "hidden" under other diagnoses (acute intercurrent diseases, accidents etc.). The period 1919-23 being exactly investigated proves, that of the cancer-tumors 51.67% are localized in the stomach, 66.52% in the alimentary organs as a whole (liver and pancreas included), and 12.07% in the female generative organs (uterus 6.19%, ovaries 0.94%, mammae 4.94%), or 23% of all cancers in women. A striking phenomenon is the nearly identical age-curves for cancer in these organs, themselves so different as to histological and physiological qualities, all of them having an early maximum death-rate about the age of 50-55 years, the menopause, their local and functional senility; a fact which may be considered as a manifestation of a biological law. There is a slight preponderance for cancer with women (109.2 per 100,000, against 105.9 with men), particularly noticeable in the earlier periods of life, 20-60 years, and here to some degree caused by the early "female cancer," which also perhaps may be responsible for the smaller number of cancer ventriculi with women than with men, the cancer-disposed women having mostly succumbed before the 60th year, the maximum for c. ventriculi. In the very homogenous Norwegian population some racial influence may be presumed, as the relatively greatest number of cancer deaths occur in those parts of the country where the dolichocephalics are in majority.—*F. G. Gade.*

16388. **GLANZMANN, E. Röteln und Drüsenfieber (Benigne Lymphoblastosen).** *Schweizer. Med. Wochenschr.* 59(17): 445-454. 1929.—Some cases of German measles pass without fever. After fever develops it may decrease rapidly or it may increase. In the prodromal stage the symptoms are catarrhal conditions, conjunctivitis, sneezing and often severe headache. An intense reddening on the face is often the first symptom. A red eruption forms behind the ears and on the forehead and nose, and spreads rapidly. The number of leukocytes decreases. Eosinophiles do not disappear. 5 types are distinguished: septic, membranous angina, pharyngeal, abdominal, and subfebrile.—*P. G. Heineman.*

16389. **GOLDBLOOM, ALTON, and RUDOLF GOTTLIEB.** Icterus neonatorum. III. The oxygen capacity and saturation of the mother and foetus. *Jour. Clin. Investigation* 9(1): 139-142. 1930.—From a study of 25 cases the authors conclude that fetal arterial blood (umbilical vein) possesses an increased O capacity and a diminished O saturation. This diminution in O saturation of the blood in the umbilical vein is to be accounted for by the deficient respiratory function of the placenta. Maternal blood from the radial artery shows values for capacity and saturation which are within normal limits. Further evidence is thus adduced in support of the theory that the polycythemia in the newborn infant is the result of O unsaturation of the fetus in utero.

16390. **GRABFIELD, G. P.** Studies on the nitrogen and sulphur metabolism in "Bright's disease." I. The retention of nitrogen and sulphur in "nephrosis." *Jour. Clin. Investigation* 9(2): 311-318. 1930.—The N and S excretion of 5 patients exhibiting the nephrosis syndrome was studied while these patients were on a diet constant as to N, S, P, calories and water. As in other studies a large retention of N occurred. The retention of S was greater than that of N regardless of the level of dietary N. The N:S ratio in the urine was high. The N:S ratio of the "retained protein" was low.—*Author's summary.*

16391. **GREEN, M. F., and M. M. KUNDE.** The acidity of the gastric contents of normal, cretin and hyperthyroid rabbits. *Amer. Jour. Physiol.* 95(3): 626-629. 1930.—The concentration of HCl of the gastric contents (normal and histamine induced) of cretin rabbits, with severe anemia and cachexia, is the same as in normal rabbits. The HCl of the gastric contents of rabbits with experimental hyperthyroidism is depressed but not absent. The total HCl of the gastric contents of normal and cretin rabbits ranges from 0.2 to 0.56%.—*Authors' summary.*

16392. **HARDY, T. L.** The rôle of hydrochloric acid in the causation of gastric pain. *Lancet* 1(5510): 711-713. 1929.—HCl in concentrations of 0.5% will reproduce typical gastric pain, independently of any gastric or duodenal disease, in certain susceptible individuals suffering from painful disturbances of gastric function. HCl, in Hardy's opinion, plays no essential part in ordinary pain production.—*From author's conclusions.*

16393. **HEINEMANN, H.** Untersuchungen über den Liquor cerebrospinalis. V. *Arch. Schiffs- und Tropen-Hyg.* 32(10): 500-505. 1928.—In syphilis, the Chinese give a distinct positive gold reaction more frequently than the Javanese. This also holds true for leucocytosis and the Wassermann test. These serological findings bring support to the clinical experience that Chinese workmen are more predisposed to syphilis of the central nervous system than are the Javanese.—*S. Katzenelbogen.*

16394. **HEWITT, L. F.** Bence-Jones proteins. *Biochem. Jour.* 23(5): 1147-1152. 1 fig. 1929.—Bence-Jones proteins from 5 cases of myelomatosis were examined and found to differ in their properties. The most marked variation occurred with 2 specimens that did not redissolve in boiling salt solutions. In the presence of 40% alcohol, all the Bence-Jones proteins coagulated when warmed and redissolved when boiled. Serum proteins, however, behaved similarly in the presence of 40% alcohol. The author believes this effect is due to a shift in the apparent isoelectric point with the resulting formation of more soluble salts, rather than due to a solvent action of the alcohol.—*F. C. Bing.*

16395. **HUBBARD, ROGER S.** The excretion of chloride in Achlorhydria. *Jour. Biol. Chem.* 88(1): 361-366. 1930.—In a series of cases of achlorhydria a low rate of excretion of NaCl during the hour following the morning meal can be clearly demonstrated. A relatively high rate of chloride excretion immediately after awakening can also be shown in such subjects. These variations seem to be independent of variations in the rate of water excretion.—*Author's summary.*

16396. **HUBBARD, ROGER S.** The association of

renal and gastric disorders with constancy of the urinary reaction. *Jour. Clin. Investigation* 9(1): 37-41. 1930.—Of 296 patients on whom determinations were made, 173 failed to show an alkaline tide as defined by Munford and Hubbard. From consideration of clinical histories and laboratory findings in these 173 patients Hubbard concludes that: (1) relative constancy in reaction of the morning urine is often associated with an absence of HCl from the gastric juice; (2) constancy in the reaction of the morning urine frequently occurs when no impairment of renal function and no signs of kidney disease can be demonstrated; (3) although there is some evidence that an absence of the early morning period of alkalinity may be associated with diseases of the kidneys the relationship is not an essential one.

16397. **IWATA, MOTOE.** On the occurrence of lysolecithin in polished rice. *Proc. Imp. Acad.* [*Tokyo*] 6 (5): 212-215. 1930.—Lyso-lecithin ("a toxin formed from lecithin through the action of lecithinase of cobra venom") was isolated from polished rice. Its relation, if any, to beriberi is undetermined.

16398. **JOHNSON, SCOTT, and WALTER J. SIEBERT.** Experimental myocarditic lesions in the rabbit. Their effect on myocardial abscess from intravenous injection of staphylococci. *Arch. Path.* 6(1): 54-66. 3 fig. 1928.—Injection of caffeine and epinephrine was made slowly into the ear veins of rabbits: 0.2 cc. of 1:1000 epinephrine chloride solution was used and 0.025 gm. caffeine dissolved in 1 cc. of water. The drugs stimulated the capillary endothelium. Newly formed blind pockets sprouted from the capillaries. After drug injection, 2 strains of *Staphylococcus aureus,* one of high virulence and the other of low, were injected into the rabbits intravenously. The virulence of the *Staphylococcus* was increased by drug injection. In 90 out of 100 rabbits definite myocarditis had been produced by the drugs. The drug lesions had a tendency to concentrate in the left ventricle. Myocarditic lesions may be sufficiently severe to interfere with ventricular contraction at the site of the lesion. Even a *S. aureus* culture of low virulence produced abscesses in drug-treated rabbits. In control rabbits virulent cultures of *S. aureus* generally produced lesions. Frequency of cardiac decompensation from the drugs was increased by injection of *S. aureus.* The authors were unable to demonstrate any direct relationship between the acute vegetations of the heart and a lesion of the valves produced by caffeine or epinephrine injections. The presence of a myocarditic lesion may indirectly favor the production of a fibrinous pericarditis and of pneumonia. There was, however, no evidence that these drugs lowered the resistance of the pericardium to bacteria.

16399. **KATSUYA, SH.** The reticulo-endothelial system in obstetrics and gynecology. *Japanese Jour. Obstetr. & Gynecol.* 13(4): 356-426. 19 fig. 1930.—A review of experimental work done on this subject, with comment on its relation to toxemia of pregnancy.

16400. **KOKITA, HARUO.** Experimental studies on transplantable sarcomatoid newgrowths in rats (VIIIth report), especially on the experimental development and formation of the transplantable sarcoma in that animal. With some remarks on the pathology of the future. *Acta Dermatol.* 16(2): 194-212. 1930.—By feeding albino rats infested with *Cysticercus fasciolaris* on rice mixed with an aqueous extract of coal tar, Kokita was able to transform the wall of the parasitic cyst into transplantable sarcoma tissue. The spleen of a rat fed on the rice-coal tar extract diet, though presenting only inflammatory, not neoplastic changes, developed into sarcoma when subcutaneously transplanted into a normal rat. In both clinical cases and animal experiment the author claims to have discovered an "inflammatory-tumorous" tissue change—a gradual change of inflammatory into neoplastic tissue. In the rats this "inflammatory-tumorous" change developed in those fed on coal-tar extract; such tissue, subcutaneously implanted into normal rats, developed sarcomatoid characteristics.

16401. **KRABBE, KNUD H., et OLINE CHRISTENSEN.** Recherches des helminthes dans la sclérose en plaques. *Acta Phychiatr. et Neurol.* 5(4): 509-514. 1930. —Negative findings in the feces in 19 cases.

16402. **LEIGHEB, V.** Ricerche sull'attività della lipasi del siero di sangue in forme tubercolari cutanee. (Nota preventiva.) [The activity of the blood-serum lipase in cutaneous forms of tuberculosis. (Preliminary note.)] *Gior. Ital. Derm. e Sifil.* 71(4): 1287-1291. 1930.

16403. **LINDER, G. C., J. MAXWELL, and F. H. K. GREEN.** A clinical, pathological and biochemical study of amyloid nephrosis. *Arch. Dis. Childhood* 2(4): 220-230. 2 col. pl. 1927.—The paper contains a clinical, histological and biochemical study of a case of "amyloid nephrosis" in its later stages. The patient was an undersized and deformed boy of 13 yr., with a definite history of edema recurring repeatedly from the age of 4 yr. until death. In the combination of a well marked tendency to edema with a complete absence of hypertension and cardiac hypertrophy the case complied with the requirements for the diagnosis of "nephrosis." It was therefore an example of that condition in the terminal stage which is so rarely seen. On admission (Oct. '25) to the hospital the plasma contained 0.33% cholesterol and by December this had increased to 0.55%. From this time the cholesterol rose steadily, reaching a maximum of 0.92% in May, 1926. This steady rise was interrupted twice; 1st by a fall to 0.40 following a mastoid operation, and 2nd by an irregular depression occupying 7 wks. of uremia and acidosis. With the fall of the blood urea the cholesterol rose rapidly and attained the level which it would have reached if its former rate of increase had not been interrupted. A fat-free diet caused a fall in cholesterol, and the possibility arises that excessive cholesterol may be capable of reduction by such a diet. The occurrence of tetany and of symptoms of salt deprivation is reported.

16404. **McCARRISON, R.** Further researches on lymph-adenoid goitre in rats. IV. *Indian Jour. Med. Res.* 18 (2): 577-597. 4 pl., 1 fig. 1930.—The experimental production of lymph-adenoid goitre in rats, by means of a diet composed of white bread and dried yeast, is confirmed. The average urinary excretion of I by rats fed on this diet was 57γ per litre. Rats fed on this diet are more likely to develop lymph-adenoid goitre during the spring and summer than during the autumn and winter. It is considered that the seasonal incidence of the condition is not determined by the action of temperature per se on the thyroid gland. The addition of slaked lime to the diet of white bread and yeast had no influence on the incidence of the goitres caused by this diet, though it appeared to augment the size of those occurring during the summer months; its addition to the diet during the winter months did not cause an increase in size of the thyroid gland. The addition of I to this diet appeared to increase the incidence of lymph-adenoid goitre in the spring and summer, but not in the autumn and winter, experiments. This condition was most common in rats to whose diet I was added and whose urinary excretion of iodine averaged 122γ per litre. A description of 4 representative specimens of experimentally-produced lymph-adenoid goitre in rats is provided by Williamson and Pearse, who originally described this condition in man. The experimentally-produced lymph-adenoid goitre is identical with that occurring in man. The faults common to the diets hitherto used in the experimental-production of lymph-adenoid goitre are: (a) deficiency of fat-soluble vitamins (A and D); and (b) deficiency of vitamin C. Rats fed on synthetic diets deficient in vitamin C, but complete in other respects, did not develop lymph-adenoid, or other, goitre. Lymph-adenoid goitre occurred in 2 out of 18 rats fed on a diet having the above faults although they were exposed daily to the direct rays of the sun, and were, presumably, acquiring a sufficiency of vitamin D in this way. The average urinary excretion of iodine by rats so treated was 96γ per litre. By a process of exclusion of other vitamins, vitamin A-deficiency would appear to be the chief dietetic factor concerned in causing lymph-adenoid

goitre in rats; but further experimentation is necessary before the relative importance of the fat-soluble vitamins (A and D) can be finally determined. It is pointed out that while vitamin-deficiency appears to be the main dietetic factor concerned in causing lymph-adenoid goitre in rats—without which it has not up to the present been observed to arise—the possibility has to be borne in mind that some unknown positive agency may be associated with the negative one of vitamin-deficiency in the causation of this type of goitre. It would appear from the results of these experiments that in the absence of a sufficiency of fat-soluble vitamins in the diet the thyroid gland is unable to deal with I in a normal way; and, that its administration in these circumstances may actually favor goitre-production. It seems possible that the varying results of I prophylaxis in different individuals may be related to the varying amounts of these vitamins in the diets.—*Author's summary.*

16405. **McCARRISON, R. Further researches on stone. VIII.** *Indian Jour. Med. Res.* 18(3): 903-934. 1 pl. 1931.—Well-fed albino rats living under hygienic conditions are normally free from stone; they develop the disease only when fed on deficient diets. The dietetic factors so far found to be concerned in stone-production in albino rats are of 2 orders: negative and positive. The negative factors are deficiency of fat-soluble vitamins and of phosphates; the positive factors are excess of Ca and an unknown agent present in varying amounts in cereal grains. The positive factors appear to be innocuous unless the negative ones are operative. Malnutrition of the urinary tract was an important underlying cause of the calculous disease occurring in rats in these experiments. Superimposed infection may have contributed to its occurrence; it was not essential to it. In a number of cases cystitis and pyonephrosis occurred without stone, in a number of others stone occurred without cystitis or pyonephrosis. Incrusted cystitis was observed in 8 cases. Although an excess of vitamin D in the diet is known to cause stone in albino rats, the daily exposure of these animals to the direct rays of the sun did not increase the incidence of the disease when they were fed on a stone-producing diet. The incidence of urinary calculus in rats fed on a basal diet of white bread and yeast was 14.6%. The calculi so produced were of the ammonium-magnesium phosphate variety. The addition of slaked lime to the basal diet of white bread and yeast greatly increased the incidence of urinary calculus and of urinary tract infections. It also altered the physical and chemical characters of the calculi, which were no longer well formed nor composed of ammonium-magnesium-phosphate but were ill formed and composed of $CaCO_3$, $Ca(OH)_2$ or both. More lime was deposited in the urinary tract during the winter than during the summer months. The stone-producing potency of this diet (white bread, yeast and lime) was further enhanced by the addition to it of a vitamin-poor vegetable oil; inflammatory states of the urinary tract were also more frequent and more severe, due probably to the greater relative deficiency of fat-soluble vitamins brought about by the presence of this oil in the diet. The further addition of radiostoleum (approximately 0.06 of a drop per rat per day) to this diet caused a great reduction in the incidence of urinary calculus and of urinary tract infections. The stone-preventing potency of this amount of radiostoleum appeared to be related to the concentration of Ca in the diet: the more Ca the less potent the radiostoleum. Radiostoleum did not prevent the deposition of Ca in the urinary tract by limiting the amount of Ca absorbed or passing through the kidneys. Whether it prevented the deposition of Ca solely by maintaining the nutrition and functional integrity of the tissues of the tract and their freedom from infection, or by altering the physical state of the Ca-salts passing through the tract, remains to be determined. A balanced adjustment between the Ca and the radiostoleum was found necessary not only for the prevention of calculous disease but for normal growth of the rats. Vesical calculus was produced in otherwise healthy and well-nourished rats by feeding them for 75 days on a diet of high stone-producing potency and thereafter for 173 days on a diet of which the stone-producing potency was low or nil. Experimentally-produced $CaCO_3$ stones in rats have practically the same composition as urinary calculi in cattle; an observation which may have an important bearing on the etiology of cattle-stone.—*Author's summary.*

16406. **McINTOSH, RUSTIN, LASLO KAJDI, and DOROTHY MEEKER. Blood volume and plasma electrolyte changes in the dehydration of infants.** *Jour. Clin. Investigation* 9(2): 333-357. 1930.—Infants (11) suffering from dehydration associated with diarrhea were subjected to simultaneous determination of total blood volume and serum electrolyte concentration, both during dehydration and after recovery. In acute dehydration some patients showed no essential change in total blood volume, while others showed a 20% diminution of the recovery value. When this reduction was marked, it involved principally the plasma fraction, in 1 instance to the extent of 30%. There was no close parallelism between the diminution of plasma volume and (1) the degree of dehydration of the subcutaneous tissues as determined by clinical criteria or (2) the severity of toxic symptoms. Most of the patients showed during dehydration a decrease in the serum concentration of total fixed base, chloride, and bicarbonate; but the degree of acidosis, as measured by the serum bicarbonate concentration, could not be correlated with changes in blood or plasma volume, since the patient whose plasma loss was greatest for the whole series had a higher bicarbonate concentration on admission than after recovery. Before treatment had been given, the lowering of the total plasma electrolyte content was sometimes even greater than the loss of plasma water, when measured as percentage deviations from the presumably normal values found after recovery. Protein was often included among the electrolytes lost from the plasma during dehydration, so that the composition of the fluid leaving the circulation was comparable to that of plasma of normal protein and bicarbonate content but concentrated in respect to fixed base and chloride. As a check on the assumption that the 2nd set of determinations, made after recovery from dehydration but not always at a time of complete clinical recovery, represented normal values for the individual studied, the figures obtained during dehydration were compared with normal values obtained by applying the same technical procedures to healthy infants. This comparison substantiated the results already expressed.—*From authors' summary.*

16407. **MANDELSTAMM, MAXIMILIAN. Weitere Untersuchungen über die Farbenspeicherung im Zentralnervensystem. III. Mitteilung.** *Zeitschr. Ges. Exp. Med.* 62(3/4): 471-491. 1 fig. 1928.—Trypan blue, injected either intraventricularly or intracerebrally into rabbits, is taken up actively by the mesodermal perivascular cells but poorly by the normal ectodermal elements. Glia cells "activated" by trauma, however, stain well. Failure of generalized staining of the central nervous system on injection into the blood or cerebrospinal fluid can be attributed not to the existence of diffusion barriers between blood and brain, or between cerebrospinal fluid and brain, but to physico-chemical relations (electric charge, adsorption selectivity) between dye and cells.—*V. E. Hall.*

16408. **NEUDA, PAUL. Über Blutfettänderungen beim Luetiker.** *Wiener Arch. Inn. Med.* 21(3): 455-460. 1931.—The increased I tolerance of luetics is traced to changes in blood fats (3 control patients, 5 luetics); chemical analysis showed absolute and relative increase in phosphatides (based on lecithin) in the total fat, sometimes an increase in total fat. The I index in luetics pointed to increased unsaturated fatty acids.

16409. **PURJESZ, B. Zur Frage des Fiebers bei blutenden Magen- und Duodenalgeschwüren und bei Blutverlust.** *Wiener Arch. Inn. Med.* 21(3): 413-426. 1931.—In 84 of 115 patients with bleeding gastric and duodenal

ulcer, fever above 37° axilla occurred. Three dogs were bled ⅓-½ the total volume of blood from the jugular vein; temperature rose; erythrocytes returned to initial value before Hb. Two dogs were given 30 cgm. phenylhydrazine daily; temperature rose, erythrocytes and Hb decreased abruptly. Clinical experience has shown that donors often have rise in temperature together with general malaise. Thus hemorrhage and pronounced decrease in erythrocytes and Hb respectively may produce a rise in temperature which is not caused by resorption from the intestine.

16410. **PUTSCHAR, W., und F. HOLTZ. Erzeugung von Hautkrebsen bei Ratten durch langdauernde Ultravioletbestrahlung.** *Zeitschr. Krebsforsch.* 33(3): 219-260. 1 fig. 1930.—The writers were successful with great regularity in producing skin cancers of the ears, and less frequently of the backs, of rats, by ultra-violet irradiation, without the adjuvant action of chemical agents. The earliest appearance of the cancers was after 27 weeks of irradiation. After 37 weeks cancer was observed in all of 6 animals. There was no certain association between color and cancer susceptibility. Addition to the diet of irradiated ergosterol was without effect. Alterations of the elastic tissues seen were purely degenerative in character, had no relation to cancerization, and were a manifestation of the dermatitis. As a specific effect of the irradiation there was observed periodical regeneration of the hair, with pronounced overgrowth of wool hairs and the formation of giant hairs. There is a close histological connection between the precancerous light dermatoses of the human and sunlight cancers, and these experiments demonstrate the etiological importance in this connection of the ultraviolet rays. There was little evidence that these experimental cancers originated in embryonal cell types; the process appeared to be one of chronic irritation with long-continued katabiotic processes.—*H. E. Eggers.*

16411. [RABUKHIN, I. E.] РАБУХИН, И. Е. Об углеводном обмене при ТБК легких. [Exchange of carbohydrates in pulmonary tuberculosis.] [French summary.] Вопросы Туберкулеза [*Voprosy Tuberkuleza*] 7(8): 935-944. 1929.—Blood sugar in tuberculous patients (empty stomach) was usually normal. Only in diffuse nodose and exudative forms was there a tendency towards hypoglycemia. Blood sugar in Tb. varies with the process. Glucose per os and per venam showed that in all forms of extended pulmonary tuberculosis the normal sugar regulation is disturbed. In cirrhotic processes hyperglycemia was very marked; in exudative and nodular ones, there is also a retarded combustion of glucose. This disturbance does not depend on intestinal and assimilatory processes. No hyperfunction of pancreas was observed; there is rather a hypofunction of the suprarenal and thyroid glands. This assumption is supported by the tonus of the sympathetic nervous system. In benign forms there is either normal- or hypersympathicotonia; in grave, diffuse processes—hyposympathicotonia. The glycopoietic and assimilatory function of the liver plays a large part in the disturbed carbohydrate metabolism. On the whole, carbohydrate exchange in tuberculosis was lowered, justifying insulin therapy of certain forms of Tb.—*B. Van Rosen.*

16412. **ROFFO, A. H. Durch Tabak beim Kaninchen entwickeltes Carcinom.** *Zeitschr. Krebsforsch.* 33(4): 321-332. 1 fig. 1931.—Report of the production of a squamous cell carcinoma of the rabbit's ear by application of a watery solution of the combustion products of tobacco, in one of 10 animals. The applications were made daily, and 8 mos. were required. Parallel experiments with a solution of nicotin, and with a distillate from the residue after nicotin extraction, resulted negatively. The possibly active substances contained in the cancerogenic preparation were essential oils, pyridine, empyreumatic substances, along with potassium carbonate, bicarbonate and nitrate.—*H. E. Eggers.*

16413. **RUSSETZKI, J. J. Untersuchungen über den Kniesehnenreflex beim Menschen. II. Über den Kniesehnenreflex bei cerebraler Hemiparese und Parkinsonismus.** *Arch. Psychiatr. u. Nervenkrankh.* 86(5): 694-723. 1929.—Reflexometric examination, according to the method of the author (Arch. f. Psych. u. Nervenkrankh. 86, 1928), was made in 16 cases of cerebral hemiparesis and 10 of postencephalitic parkinsonism. The cases of cerebral hemiplegia, by the removal of inhibitory processes, showed an increase in the amplitude of the reflex movements (particularly return movements), an increase in the number of these movements and an inversion of the reflex formula (−+). Flexion at the knee produced the same reflex formula, −+. The parkinsonian patients presented variations analogous to the normal, but less in amplitude. Extension at the knee resulted in the same reflex formula, −+, in the cerebral hemiplegic and the parkinsonian with an amplitude analogous to the reflex movements.—*J. J. Russetzki (transl. by N. Savitsky).*

16414. **RUSSETZKI, J. J. Untersuchungen über den Kniesehnenreflex beim Menschen. III. Über den Kniesehnenreflex bei spinalen Störungen und bei einigen Störungen des Grosshirns.** *Arch. Psychiatr. u. Nervenkrankh.* 89(3/4): 644-669. 1930.—In 15 cases of spinal paraplegia of varied etiology, findings were analogous to those in cerebral hemiplegia. Certain groups of normal subjects (with amplitude of reflex of 16 to 25 degrees) showed at times evidence of functional deficiency of the pyramidal tract similar to those seen in hemiplegics and paraplegics. In 3 cases of tabes dorsalis (initial stage: before the disappearance of the tendon reflexes) posterior movements (pendular type of reflex) were readily elicited. Amyotrophic lateral sclerosis (4 cases) showed a tonic type of patellar reflex concealing the return movement (flexion). Cases with cerebellar lesions showed reflex movements of the pendular type. Chorea was characterized by the marked variability of reflex movements on repeated examinations.—*J. J. Russetzki (transl. by N. Savitsky).*

16415. **SCRIVER, W. de M., and H. OERTEL. Necrotic sequestration of the kidneys in pregnancy.** *Jour. Path. and Bact.* 33(4): 1071-1094. 5 pl. 1930.—In 2 cases following parturition anuria continued for 9 and 5 days respectively; necropsy showed bilateral necrosis of the renal cortex. In a 3rd case, oliguria continued for 6 days but was followed by diuresis and recovery. "These renal vascular disturbances seem to be related to a general abnormal state of vasomotor irritability of pregnancy (hypertension) which locally is functionally and anatomically revealed in the skin and in parenchymatous organs, notably the brain, liver, and kidneys (edema, exudation, hemorrhages, necrosis). From these and similar anatomical observations elsewhere (uremic ulcers, eclamptic livers, spleen and brain lesions) and from experimental evidence as regards irritative circulatory changes in the living warm-blooded animal, it seems that the assumption of a paralytic, terminal, segmentary, circulatory downfall (peristasis, prestasis, stasis) is in better harmony with these findings than the idea of vascular spasm and ischemia. It furnishes, moreover, a more definite mechanical conception of these lesions than the various rather hazy theories of primary toxic cell degenerations."

16416. [SHIPACHEV, V.] ШИПАЧЕВ, В. О зобе в Сибири. [Goiter in Siberia.] [German summary.] Сборник Трудов Иркутского Государственного Университета (*Studies Irkutsk State Univ.*) 17: 61-112. 4 maps, 4 pl. 1930.—Examination of 5211 thyroid patients in various endemic goiter regions of Siberia showed the predominance of the disease among women. Arthritis, arrested bone growth, dryness and desquamation of the skin, mongolism and cretinism were characteristic of the endemic goiter which the author classified as hypothyroidism.

16417. **SHORR, EPHRAIM, ROBERT O. LOEBEL, and HENRY B. RICHARDSON. Tissue metabolism. I. The nature of phlorhizin diabetes.** *Jour. Biol. Chem.* 86(2): 529-549. 1930.—The authors conducted experiments on excised renal and testicular tissues of rats,

studying the effect of phlorhizin on the oxidation of carbohydrates by studying the respiratory quotients by means of Barcroft-Warburg apparatus. The quotients showed that excised tissues utilized food-stuffs in the same proportions as did the intact animal. The excised renal tissue responded to the presence of glucose by an increase in O consumption and a corresponding rise in R.Q. The excised renal and testicular tissue of phlorhizinized rats, with and without phlorhizin in the medium, responded to the presence of glucose in the same way as normal tissue by increases in O consumption and rise of R.Q. Increasing phlorhizin showed no depression of the R.Q.; average of quotients was 0.850, indicating that carbohydrate was furnishing about 50% of the energy. The authors conclude that phlorhizin does not interfere directly with the oxidation of carbohydrate by the cells in general.—*H. J. John.*

16418. **SIKL, H. Über den Lungenkrebs der Bergleute in Joachimstal (Tschechoslowakei).** *Zeitschr. Krebsforsch.* 32(6): 609-613. 1930.—S. reports the results of autopsy findings in 10 miners, with a death rate from pulmonary cancer of at least 50%,—an incidence very close to what has been found in the Schneeberg. The author does not believe that pneumokoniosis is responsible, since this was not especially marked. Chemical analysis of a portion of one of the diseased lungs failed to reveal any agency which could be assumed with probability as the important factor,—of Pb, Bi, As, Co, Ni or uranium there were no traces. Tests for radioactivity were negative, but S. is inclined to suspect that the abundance of radio-emanative material in the mine shafts may be the factor involved.—*H. E. Eggers.*

16419. **SPILLMAN, L., M. VERAIN, et L. J. SEGALL. Considérations sur les variations du déséquilibre acido-basique du sang au cours de la syphilis evolutive.** *Compt. Rend. Soc. Biol.* 106(10): 824-826. 1931.—The pH was determined electrometrically with one hydrogen and one antimony electrode. During secondary syphilis, there is a disturbance in the pH towards alkalinity in most cases (50 observed). Anti-syphilitic treatment diminishes the divergence as it diminishes the positivity of the Bordet-Wassermann reaction. The curve which follows the pH changes under the influence of anti-syphilitic treatment only is parallel to the curves which follow the Bordet-Wassermann and the Kahn reactions.—*E. Weiner.*

16420. **STEARNS, GENEVIEVE, and JULIAN D. BOYD. The healing of rickets coincident with low serum inorganic phosphorus.** *Jour. Clin. Investigation* 10(3): 591-602. 2 fig. 1931.—The clinical healing of late rickets coincident with a persistently low level of serum inorganic P has been observed in 2 children. The retention of Ca and P observed in each child was considered amply sufficient for the building of bone. The data reported do not offer evidence substantiating any of the prevalent theories of bone calcification; moreover, it is difficult to reconcile certain of these theories with the findings.—*Author's summary.*

16421. **STIEFEL, FRITZ. Über einen neuen Abbaureflex bei Delirium tremens.** *Monatsschr. Psychiatr. u. Neurol.* 74(5/6): 369-380. 1930.—In all 5 cases of delirium tremens a rapid dorsal flexion of the foot (football reflex), was elicited shortly after the attack and continued until the final sleep or a few days thereafter; it could not be elicited in any other alcoholic disturbance, in pyramidal or extrapyramidal lesions. The author attributes it to degeneration in the tegmental or suprategmental region.

16422. **STORM van LEEUWEN, W., und P. LARSEN. Über die Atmung der Asthmatiker während leichter Arbeit.** *Zeitschr. Ges. Exp. Med.* 65(3/4): 320-325. 10 fig. 1929.—25 patients and 10 normal individuals were subjected to the slight work of ascending and descending a flight of 18 stairs 7 times. 9 patients were unable to complete the 7 trips because of dyspnea. The alveolar O and CO_2 were determined before the experiment and after each trip. The authors found no essential difference in the alveolar O or CO_2 between the patients and the normal controls. They concluded that the inability of functional emphysematics to carry out work was not dependent on lack of O or excess of CO_2 in the blood.—*H. L. Gruehl.*

16423. **SÜMEGI, ST., und L. FINDEISEN. Über Veränderungen der Rückenmarksflüssigkeit nach dem Tode.** *Frankfurter Zeitschr. Path.* 41(3): 431-434. 1931.—In 50 cadavers with no organic disease of the central nervous system (3 meningitic), spinal fluid was obtained 3-50 hrs. after death. The colloid reactions gave a normal curve until about 9 hrs. after death; later a pronounced left shift in the zone of precipitation. A few hours after death, albumin and rest N had risen considerably. The albumin-globulin quotient was below normal. Sugar disappeared after a few hours; pH shifted toward acid shortly after death.

16424. **[VAKULENKO, I. L., and S. A. ADAMOV.]** ВАКУЛЕНКО, И. Л., и С. А. АДАМОВ. К вопросу о стойкости эритроцитов из крови человека при различных заболеваниях. [**Stability of erythrocytes from human blood in various diseases.**] Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 78: 84-93. 1926.—Erythrocyte resistance (E.R.) was tested by Simmel's method on 7 patients with cancer ventriculi, 5 with other gastric diseases, 4 with hepatic diseases, 9 with pulmonary tuberculosis, and 3 with scorbutus, morbus Banti, and endocarditis lenta. Tyrode fluid taken as 1.0, hypotonic solutions of 0.7, 0.6, 0.5, 0.4, 0.3, and sometimes 0.2 were used, which made it possible to distinguish 5-6 groups of erythrocytes in respect to their resistance. In cancer, uterus, and tuberculosis, E.R. was similar. In 0.7 and 0.6 solutions, as a rule, the number of destroyed erythrocytes was within the norm. In 0.5 solution almost always E.R. was normal. Most characteristic for these diseases was the sharp increase in number of erythrocytes resistant to 0.4 solution. In 0.3 solution, however, this number was seldom above normal. In non-cancerous gastric diseases E.R. was different. In 0.5 solution it was often below the norm, while in 0.4 and 0.3 solution it remained normal. In scorbutus and endocarditis erythrocytes with minimal resistance (0.7 and 0.6 solution) decreased sharply.

16425. **VARELA, B., J. DUOMARCO, et A. MUNILLA. Modifications du glutathion réduit du sang et des organes dans l'anémie expérimentale produite par des saignées répétées chez le chien et le lapin.** *Compt. Rend. Soc. Biol.* 106(10): 837-839. 1931.—The blood of 4 dogs and 3 rabbits was studied while the hemoglobin was reduced to 50% of its original value by bleeding. After a varying period, the animal was killed and the amount of glutathione in the liver, kidneys, spleen and myocardium was determined by a modification of the method of Tunicliffe and Dixon. In the dog, the glutathione of the corpuscles and that in the tissues is increased, the latter increasing with increasing anemia. In the rabbit, this increase is still greater. As the number of red cells decreases, their glutathione increases.—*E. Weiner.*

16426. **VOGT-MØLLER, P. Ist Avitaminosis B_1 eine Intoxikation mit Methylglyoxal?** *Biochem. Zeitschr.* 233 (4/6): 248-250. 1931.—In a preliminary report the author suggests that the signs of avitaminosis B_1 intoxication (A.B_1 I.) are caused partly or entirely by methylglyoxal. He was able to demonstrate its presence in A.B_1 I., but not in liver-ferment system plus hexosephosphate of fasting or normal mice. Methylglyoxal intoxication resembles experimental beri-beri in many ways.

16427. **WITTMAACK, K. Über Schallschädigung durch Knochenleitung.** *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 123(1/2): 49-62. 1929.—The author's reply to criticisms of his work on the injury of the inner ear through bone conduction, with a report of additional experiments in which it was found that control mice exposed to certain sound waves received only by air conduction showed no demonstrable changes in the inner ear, while others receiving the same sound waves both by air conduction and bone conduction developed changes previously de-

scribed by the author as characteristic, in location and nature, of injury resulting by bone conduction.—*J. B. Youmans.*

16428. [ZHODZISHSKIĬ, B. IA.] ЖОДЗИШСКИЙ, Б. Я. К вопросу о влиянии рапных и грязевых ванн на креатининовый обмен у ревматиков. [Effect of saline and mud baths on creatinin metabolism in rheumatics.] Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 78: 283-303. 1926.—Experiments were made on 30 patients. Creatinine content in the urine of chronic rheumatics was only ¼ or ⅓ that in normal subjects. After 8-10 saline baths, 30% to 50% increase of creatinine in urine was observed. After 10-12 mud baths the increase was 100 to 150%.

ANIMAL PATHOLOGY

INFECTIOUS AND OTHER DISEASES OF LOWER ANIMALS

F. S. JONES, *Editor*

R. W. GLASER, *Associate Editor*

(See also in this issue the subsection "Lower Animals" in the sections Immunology and Filterable Viruses; and Entries 15163, 15281, 15301, 15582, 16291, 16299, 16301, 16345, 16404, 16405, 16485, 16591, 16607, 16710, 16711, 16718, 16763, 16766, 16776, 16790, 16829, 16835, 16870, 16894, 17067, 17335, 17429)

16429. **ADAMSTONE, F. B. The effects of vitamin-E deficiency on the development of the chick.** *Jour. Morph. and Physiol.* 52(1): 47-80. 4 pl., 1 fig. 1931.—In an investigation of the hatchability of eggs from hens fed on a diet deficient in vitamin E, Card found that all embryos from these eggs died during development. Study of these chicks showed that a variety of conditions were responsible: During early development the rate of growth and differentiation was definitely slower than under normal conditions, but malformations were rare. Some embryos died during the first 2 days, due to disintegration of the circulatory system or its failure to become established. At the end of the 4th day there was a definite critical period which few specimens survived, and by this time distinct pathological conditions had arisen in extra-embryonic structures. These involved wiping out of the vitelline circulation by establishment of a lethal ring in the blastoderm. This structure was produced by intensive cell proliferation in the mesoderm, which resulted in choking out vitelline blood vessels and in their subsequent degeneration. It also caused obliteration of the exocoele, with consequent failure of the allantois to expand. In addition, many embryos showed profuse hemorrhage into the exocoele. The source of bleeding was most frequently in the atrium of the heart, and at actual rupture peculiar cells occurred, which were probably histiocytic mesenchyme cells. Although death was due directly to causes enumerated above, the ultimate responsibility rests on conditions set up by them, viz.: starvation, asphyxiation, and loss of the medium (blood) by which to carry on metabolic exchange.—*Author (courtesy Wistar Bibl. Serv.).*

16430. **ALEKSA, K. Raguočiu tuberkulĩozo klausĩmu anketos davinĩai. [Cattle tuberculosis in Lithuania.]** *Žemės Ūkio Akad. Metraštis [Lithuania]* 1929/1930: 156-174. 1931.—According to special investigation made in 1930, there is in Lithuania no well-planned control of cattle tuberculosis. Registration of infected animals as now done is far from perfect. The number of infected cattle probably does not exceed 5%. The number of infected pigs continually increases.—*K. Aleksa.*

16431. **BAKER, S. L. Transplantation of a teratomatous ovarian tumour in the fowl. Production of a sex hormone by the cells of the transplants.** *Lancet* 220(5614): 742-751. 5 fig. 1931.—A teratomatous tumor of the ovary in fowls was successfully transplanted to the 1st generation of hosts. The predominating cells in the original tumor and in the transplants resembled those in the theca interna of the ovarian follicles; lipoid-containing cells were a prominent feature. In addition, there were sparsely scattered groups of columnar-celled tubules and keratinizing epithelial masses. The original tumor-bearing fowl showed a fully developed oviduct but an undeveloped immature ovary. Young birds bearing tumor transplants showed a precocious development of the oviduct, the cloacal orifice of which became perforate. The ovaries of these birds remained immature.—*Author's summary.*

16432. **BENNETT, GRANVILLE A., and WALTER BAUER. A systematic study of the degeneration of articular cartilage in bovine joints.** *Amer. Jour. Path.* 7(4): 399-414. 24 fig. 1931.—Constant differences in the synovial fluid of the carpometacarpal and astragalotibial articulations of cows were described previously. The finding of areas of degeneration in the articular cartilages of the carpometacarpal articulations of all cattle over 2 yrs. old would appear to be an adequate explanation of the synovial fluid differences observed. These areas of progressive degeneration have been studied systematically. Development of the carpometacarpal articulations was studied in bovine embryos and calves. The vascular articular cartilages of embryos and calves became avascular before the animals were 2 yrs. old. Pronounced rearrangement of the subchondral bone trabeculae resulted in a relatively deficient bony support of the medial articular cartilage where the degenerative lesions occur. Such cartilage lesions are probably due to repeated trauma in weakly constructed articulations, with deficient subchondral bone support as an important predisposing factor. The type of cartilage lesion described is not wholly similar to any of the joint lesions described in human arthritis.—*Author's summary.*

16433. **BLOUNT, W. P. Urinary calculi.** *Vet. Jour.* 87(12): 561-575. 1931.—A general summary of urinary calculi as seen in domestic animals.—*I. E. Newsom.*

16434. **BURNSIDE, C. E. Fungous diseases of the honeybee.** *U. S. Dept. Agric. Tech. Bull.* 149. 1-43. 6 pl., 5 fig. 1930.—Honeybees, both larval and adult, are attacked by certain fungi; those used in these studies were collected from widely scattered apiaries. The fungi most frequently observed are of the green and blue mold groups. The blue molds tested (*Penicillium* spp.) are apparently incapable of parasitism in nature, their growth is saprophytic on or in the bodies of bees after death. The green molds in particular caused death of bees, following artificial feeding. Several members of the genus *Aspergillus* including *flavus* (series), *fumigatus, nidulans, niger, glaucus,* and *ochraceus* were found injurious. Alcohol, ether and chloroform extracts from the media employed in culturing these organisms were nontoxic; the formulas of media used are given. None of the black molds (*Mucors*) attacked bees, except *M. hiemalis,* under certain conditions. Several other filamentous fungi tested also gave negative pathogenic results. Yeasts (*Saccharomyces ellipsoideus* and *S. cerevisiae* in particular) caused but slight dysentery when fed wholesale. The yeasts, however, produced death after inoculation into the blood. No outward abnormal symptoms were discernible in the dead bees.—*G. H. Vansell.*

16435. **CASH, J. R., and C. A. DOAN. Spontaneous and experimental infection of pigeons with B. aertrycke.** *Amer. Jour. Path.* 7(4): 373-398. 22 fig. (14 col.) 1931. —The apparently spontaneous development of a fatal disease in undernourished pigeons is reported. It is characterized by anemia, marked myeloid hyperplasia of bone marrow, striking increase of myeloid elements of blood, and extensive infiltration of liver and kidneys

with myeloid tissue. In addition, large, nodular, often necrotic masses of mononuclear phagocytic cells are frequently scattered throughout liver, spleen, kidneys, and bone marrow. *B. aertrycke* was regularly recovered in pure culture from blood, liver, kidney, spleen and bone marrow. The bacteria occur in the foci of mononuclear cells, not within the collections of myelocytes. The disease has been produced experimentally in normal pigeons by intraperitoneal injection of liver emulsion from naturally infected birds, intraperitoneal injection of *B. aertrycke* from the same source, and by oral administration of single large doses of broth cultures. Bacteria-free filtrates of broth cultures had no demonstrable effect on normal pigeons when injected or administered orally in single large doses. Frequently pathological changes occur in the tissues of apparently normal birds. —*Author's summary.*

16436. **CASTRO, A. MARTINS de. Tinhas dos animaes domesticos em São Paulo. Microsporia: Microsporon felineum C. Fox e F. Blaxall, 1896, e Microsporon canis Bodin-Almy, 1897 = Microsporon lanosum Sabouraud, 1907.** [Tinea in domestic animals of São Paulo.] *Arch. Inst. Biol. [São Paulo]* 1: 201-216. 7 pl. 1928.—In studying cutaneous mycoses, foreign and local types of tinea in animals were considered. Clinical, microscopic, and cultural examinations were made on Brazilian domestic animals. The findings were correlated with those in 320 case of human tinea. *Microsporon felineum, M. lanosum, Trichophyton gypseum asteroides* and *T. granulosum* are regarded as of undoubted animal origin; and *T. lacticolor, T. rosaceum* and *T. cerebriforme,* of probable animal origin. Tinea is by far more common in man at São Paulo than Microsporiae, and the cases are generally of *M. felineum* infection. Microsporia produced by *M. felineum* were observed in 5 cats and in 1 dog; 1 case of *M. lanosum* infection was seen in a dog. —*B. Bickel.*

16437. **GIRARD, G. Immunité du hérisson et du tanrec à la peste expérimentale.** *Compt. Rend. Soc. Biol.* 106 (12): 1078-1080. 1931.—Hedgehogs (*Ericulus setosus*) and tenrecs (*Centetes ecaudatus*) when artificially infected with cultures of the plague bacillus or tissues containing the organism, failed to develop the disease or to carry the organism. From these observations the author concludes that these animals are not reservoirs of plague infection.—*From abstract by E. Weiner.*

16438. **HABACHER, F. Beiträge zum sogenannten Hufkrebs.** *Wiener Tierärztl. Monatsschr.* 18 (14/16): 417-432. 2 pl., 4 fig. 1931.—In this study of canker and dermatitis of the hoof and fetlock regions in horses, the following conditions were noted: papilloma, condyloma, fibroma, atonic ulcer, pododermatitis, and chronic eczematose dermatitis. Histologic sections revealed streptococci, staphylococci, *B. necrophorus, B. coli* and various spirochaetes in the lesions. The rôle played by these microorganisms in the various diseased conditions was not determined. Histopathological studies showed that each disease was progressive and produced inflammatory, hypertrophic and hyperplasic effects on various tissues of the hoof and fetlock regions.—*C. S. Gibbs.*

16439. **HADLEY, F. B. Streptococcus epidemicus infection in the cow and its relation to milk-borne infections in man.** *North Amer. Vet.* 12 (9): 29-31. 1931.—*Strep. epidemicus* belongs to the β-hemolytic group and reveals a well-marked capsule with India ink. It can be positively identified only by bacteriologic methods. Spontaneous cases of infection are not uncommon in cows, from the milk of which *Strep. epidemicus* can be recovered. An epidemic in which 250 persons were affected, 5 of which died, was traced to 1 cow and proved to be milk-borne. Certain cows exposed at the teat orifices to strains of the organism of both bovine and human origin developed mastitis within 48 hrs. Chronic infections usually end in permanent destruction of function in involved quarters; temporary infections are apparently caused by less virulent strains or result from individual immunity.—*F. B. Hadley.*

16440. **HAGER, G. Zur Frage der Ursache der Dürener Rinderkrankheit.** *Fortschr. Landwirtschaft* 2 (11): 360-362. 1927.—It has recently been shown by Bleyer and Mayer that rats fed on a vitamin-free diet would not gain in weight when an extracted soy bean meal was added to the regimen, as they would when unextracted meal was used or when extracted meal to which the fat had been restored, was added. Meal extracted with benzine or with trichlorethylene proved deficient. The author warns that these results should not lead to the assumption that Dürener cattle disease results from vitamin deficiency. He points out that it has occurred on a variety of rations, usually adequate in themselves, but always when soy bean meal from which the fat had been extracted, was fed. He emphasizes particularly the fact that the disease has not occurred when soy bean meal has been extracted with benzine, but always when done with trichlorethylene. He concludes that the disease results from poisoning by an unknown product left in the defatted meal after extraction with trichlorethylene.—*W. A. Hagan.*

16441. **HALLMAN, E. T., L. B. SHOLL, and A. L. DELEZ. Observations on the pathology of Bacterium abortus infections.** *Michigan Agric. Exp. Sta. Tech. Bull.* 93. 1-19. 17 pl. 1928.—Lesions associated with *Bact. abortus* infection in experimentally infected guinea pigs, in naturally infected fetal membranes and udders of cows, and in aborted calves are discussed. Human, porcine and bovine strains of the organism were used. The primary lesion in guinea pigs consists of reticulo-endothelial cells, small round cells and fibroblasts. Necrosis may or may not occur, followed in some instances by abscessation. Studies of *Bact. abortus*-infected fetal membranes indicate that necrotic placentitis and necrotic chorionitis are the predominating lesions of bovine fetal membranes. Extensive necrosis of the placenta, per se, is thought to have no influence on development of placental areas during subsequent pregnancies. Fetal pneumonia is a frequent condition in aborted calves and may have some relation to calf pneumonia. Histological studies of the bovine udder indicate that *Bact. abortus* infection is associated with subacute or chronic interstitial mastitis, with some degeneration of the parenchyma and with some exudation into the acini in more acute processes.—*E. T. Hallman.*

16442. **HAYDEN, C. E. Sugar, guanidine, and cholesterol in the blood of the cow in milk fever.** *Rept. New York State Vet. Coll. Cornell Univ.* 1928/1929: 143-152. 1930.—By Benedict's method the sugar content of normal milk cows was determined to average 41.15 mgm. per 100 cc. of blood. Samples from cases of milk fever before udder inflation gave a glucose average of 63.19 mgm. The test for guanidine bases gave an average higher after inflation than before. The average cholesterol readings for the period before inflation were lower than those of normal milk cows. On recovery, the cholesterol readings were slightly lower than those of samples before inflation.—*F. Volkmar.*

16443. **HEELSBERGEN, T. von. Infectiöse Cloacitis bei Hühnern.** *Deutsche Tierärztl. Wochenschr.* 39 (18): 274-275. 1931.—Dissemination of cloacitis occurs only when a rooster runs with diseased and healthy hens, but the male in such cases is not regarded as merely a mechanical carrier. A rooster placed in the pen with healthy hens infected them. The circumstance that the male had for some time been associated with pullorum-diseased hens suggested the possibility that *S. pullorum* was involved; but it was not demonstrated. The etiology of the disease remains obscure.—*H. Bunyea.*

16444. **HENDERSON, WILLIAM. The relationship of pica in cattle to trypanosomiasis.** *Vet. Jour.* [*London*] 87 (11): 518-529. 1931.—It is concluded that: Pica in Northern Nigeria bears a close relationship to trypanosomiasis of cattle. Infection by trypanosomes causes an acidosis, with consequent upset of the "alkali reserve" of the blood. Excessive excretion of Na and Ca during an acidosis can not be compensated for by the amount of these elements in the herbage normally grazed. The uncompensated loss of Na and Ca leads to a craving

for salts containing these elements, and it is expressed by the showing of pica symptoms.—*I. E. Newsom.*

16445. **ITCHIKAWA [ICHIKAWA], K. On the pathological observation of animal fattening.** *Jour. Soc. Agric. & Forestry, Sapporo, Japan* 19(86): 267-272. 1928.

16446. **JACOTOT, H. La pasteurellose des boeufs et des buffles en Indochine.** [Pasteurellosis of cattle and buffaloes in Indo-China.] *Arch. Inst. Pasteur Indochine* 5/6. 5-92. 1 fig. 1927.

16447. **JÜRGENS, AXEL. On the mutual relation of calf diplococci and pneumococci.** *Acta Pathol. et Microbiol. Scandinavica Suppl.* 3: 199-208. 1930.—Certain diplococci (calf diplococci) causing in calves a septicemia accompanied by special pathological changes in the spleen and intestinal canal were closely related to pneumococci. By simple agglutination, some of the calf-diplococcus cultures and their sera proved completely identical with pneumococci types I and II and their sera, but no strain was identical with type III. Agglutination with absorption showed complete agreement with simple agglutination. The fermentation character of the calf diplococci was the same as that of the pneumococci. Protective tests carried out on mice revealed no dissimilarities between the calf strains falling into the human type I and II groups and the human types I and II.—*A. Jürgens.*

16448. **KADLETZ, MAXIMILIAN. Ist der Spat des Pferdes mit dem Plattfusse des Menschen grundsätzlich** vergleichbar? *Münchener Tierärztl. Wochenschr.* 82(16): 189-193. 2 fig. 1931.—From musculature and morphological studies it is concluded that equine spavins and human flat-foot are homologous diseases and should yield to similar treatments.—*From abstract by M. Kadletz (transl.).*

16449. **LINTON, R. G. Transit fever.** *Scottish Jour. Agric.* 14(4): 391-401. 1931.—The writer calls attention to this serious disease of cattle shipped by steamer to England and Scotland. The advisability of investigating its nature is considered.—*From abstract by R. G. Linton.*

16450. **McCARRISON, ROBERT. A goitre survey in albino rats.** *Brit. Med. Jour.* 1(3621): 989-992. 1 fig. 1930.—A survey was made of 2,651 rats in a locality (Coonoor) where goiter is not endemic; 148 were found at post-mortem examination to have goiter. Temp. conditions of spring and summer months in Coonoor appeared more favorable to development of goiters than those of the colder months. Incidence of goiter was higher in ♀♀ than in ♂♂. Goiter was most frequent in rats at the age of sexual maturity. Associated diseases did not appear to have exercised appreciable influence on goiter incidence. The goiters are not due to endemic influences. The rats had no hereditary predisposition, nor were they subjected to insanitary conditions. Well-fed rats (393), living under sanitary conditions, did not develop goiter; but 6.8% of ill-fed rats (2,168) living under sanitary conditions had goiter. Faulty food, deficient in vitamins, was the cause of the goiters. Administration of iodine to deficiently-fed rats was definitely favorable to goiter production; its administration to rats fed on physiologically complete diets was not. Urinary excretion of iodine by rats fed on deficient diets with composition favorable to goiter production, was in some experiments as low as 33 γ per liter and in others as high as 200,000 γ per liter. The histological appearances of 79 of the 148 goiters are briefly described; 44.3% were lymphadenoid, 25.3% were hypertrophic, and others intermediate, goiters. Based on their findings and the work of others it is concluded that standards of normal thyroid weights for albino rats in one part of the world may not be applicable to those in another part.—*Author's summary.*

16451. **MAKKAWEJSKY, W. N., J. A. KARKADINOWSKY, und N. J. MICHEJEW. Über die Ansteckung der Meerschweinchen und Kaninchen mit Brucella-melitensis-abortus durch die unverletzte Haut.** *Deutsche Tierärztl. Wochenschr.* 39(33): 518-519. 1931.—25% of a series of guinea pigs and 60% of rabbits infected with *Br. abortus* through the unbroken skin gave positive agglutination reactions. With *Br. melitensis*, 10% of the guinea pigs and 20% of the rabbits reacted. 60% of the guinea pigs and 90% of the rabbits reacted following conjunctival introduction of these bacteria.—*Authors' conclusions (transl. by J. B. Nelson).*

16452. **MAYER, MARTIN, WERNER BORCHARDT, und WALTER KIKUTH. Die durch Milzexstirpation auslösbare infektiöse Rattenanämie.** [Infectious rat anemia dispelled by splenectomy.] *Arch. Schiffs- u. Tropen-Hyg.* 31(Beih. 4): 5-27. 3 pl. 1927.

16453. **MEDLAR, E. M. Avian tuberculosis in normal and vaccinated rabbits.** *Amer. Jour. Path.* 7(5): 475-490. 5 pl. 1931.—Comparison of 8 non-vaccinated and 4 vaccinated rabbits intravenously inoculated with virulent avian tubercle bacilli showed a significant difference, not merely in length of life and in presence and extent of lesions, but also in gross- and histopathology and in leucocytic response. Tubercle bacilli were more numerous in the non-vaccinated, but typical tubercles (representing a regressive phase of infection and increased resistance of host) were common in vaccinated animals but not seen in non-vaccinated animals dying in 3-4 wks. The leucocytic response in vaccinated rabbits gradually became that of a septic reaction, closely resembling that in human progressive tuberculosis; it is attributed to the damaged tissue in the lesions. The megakaryocyte played an important part, of as yet unknown significance, in these acute infections with avian tuberculosis.

16454. **MINETT, F. C., and A. W. STABLEFORTH. Studies on bovine mastitis. IV. The occurrence in mastitis of haemolytic streptococci showing group similarity to Streptococcus pyogenes of man.** *Jour. Comp. Path. & Therap.* 44(2): 114-125. 1931.—In a series of 113 cases of mastitis, previously reported and unselected except that they were showing pronounced clinical symptoms, 52 were found due to beta-hemolytic streptococci. In 39 they were of the kind commonly met with in mastitis; in the remaining 13, they were distinct from the usual udder streptococci and indistinguishable as a group, by bacteriological and serological tests, from *Strep. pyogenes* of direct human origin. The evidence therefore strongly suggests, though it can not be held to prove, that in these cases the streptococci had been implanted in the udder by the milker. In 7 of the 13 cases, the organisms were present in large and predominating numbers, indicating that they were the cause of the mastitis. Notable features of these strains were their strong hemolytic properties and their high virulence for mice and rabbits. One strain produced small amounts of soluble toxin. In the more severe cases of streptococcus mastitis, strains with the characters described do not appear to be uncommon. Inquiry of the veterinary surgeons in attendance elicited the following information: All except 4 cases occurred on different farms and in widely separated districts. All the cows had been milked by hand and most of them had recently calved. There was no definite history of illness among the milkers or other persons in contact.—*F. C. Minett.*

16455. **MIRONE, GIUSEPPE. Présence de corpuscules endoglobulaires dans le sang des lézards.** *Ann. Inst. Pasteur [Paris]* 45(2): 243-246. 1 col. fig. 1930.—In 6 of 102 specimens of Piedmont lizards, (*Lacerta muralis, L. vivipara, L. viridis*), the author found numerous rounded, refractive, immobile, finely granular, intracellular bodies, 1.5-3 μ in diam., paranuclear and near the periphery of the erythrocyte. Such bodies free in the plasma of the circulating blood have not been found. The nature of these inclusion bodies is in doubt, but they are not regarded as products of karyolysis produced by hemogregarines, since only 6 lizards presented them, while practically all of the 102 were infected with hemogregarines. The inclusion bodies in the 6 individuals occurred in about 85% of the erythrocytes, and those erythrocytes never contained the *Karyolysus* (hemogregarine).

16456. **MOODIE, ROY L. Studies in paleopathology. XXVIII. The phenomenon of sacralization in the Pleistocene sabre-tooth.** *Amer. Jour. Surg.* 10(3): 587-589. 2 fig.

1930.—This phenomenon, apparently never previously described in any animal other than man, was observed in 5 of 1034 specimens of the sacrum of the sabre-tooth tiger (*Smilodon californicus*) of the Rancho la Brea preserved in the Los Angeles Museum.

16457. NIEBERLE, KARL, und PAUL COHRS. Lehrbuch der speziellen pathologischen Anatomie der Haustiere. [Textbook on pathologic anatomy of domestic animals.] iv+796p. 556 fig. (some col.) Gustav Fischer: Jena, 1931.

16458. NORWIG, HANS GEORG. Zur Pathologie der Genitalorgane des weiblichen Schweines u. Hundes mit besonderer Berücksichtigung der Histologie des Eileiters. [Pathology of the genital organs in female pigs and dogs, with especial reference to the histology of the Fallopian tube.] 50p. Thesis: Univ. of Leipzig, 1929.

16459. SPIES, TOM DOUGLAS, and THOMAS TIPTON WALKER. A comparison of the effects of viosterol in acute experimental avian and bovine tuberculosis. *Amer. Rev. Tubere.* 24(6): 723-728. 1931.—To determine whether the difference in calcification (spontaneous in one, practically absent in the other) between bovine and avian tuberculosis is due to a difference in the bacteria or in the host, the calcifying effect of large doses of viosterol was observed in 8 of 12 guinea pigs infected with acute avian tuberculosis. In these guinea pigs, in contrast to results previously observed in acute bovine tuberculosis, there was little or no calcification either of the lesions or of the heart, liver and kidney parenchyma—possibly because of (1) fundamental difference in toxicity of the 2 bacterial strains; (2) greater generalized non-specific toxicity of the bovine type; or (3) greater emaciation and susceptibility to hypervitaminosis in the bovine-infected animals.

16460. THOMAS, J. ANDRÉ. Étude d'un processus néoplastique chez Nereis diversicolor O.F.M. dû à la dégénérescence des oocytes et quelquefois des soies. *Arch. Anat. Microscop.* [*Paris*] 26(2): 251-333. 2 pl. (1 col.), 20 fig. 1930.—*N. diversicolor* of the Roscoff region are infested with tumors, sometimes voluminous and multiple, originating at the expense of the parapodia and the setigerous somites. These tumors are due to irritation set up by the degeneration of oocytes and sometimes by setae which, moreover, are fragmented and phagocytosed. The oocytes are invaded by a chromolipoid pigment, the cytoplasmic constituents disappear, there are pyknosis and karyorrhexis accompanied by passage of chromatin into the cytoplasm, a process hitherto known only in vertebrates. The setae are invaded by the same pigment as that of the oocyte but are resistant to penetration of paraffin. This setal degeneration should perhaps be regarded as the beginning of epitoke. Leucocytes flow around the oocytes or degenerate setae. They pass into the phagocyte phase and form around the inclusion a plasmodial layer which, in its turn, degenerates centrifugally. An active process of lymphogenesis appears in the tumors, starting from the coelomic epithelium and especially from the covering of the vessels, ending in the formation of lymph nodes which become free in the parenchyma. These nodes give rise to 2 distinct cellular lines, starting from the hyalin leukocytes of Kollman's stage I: the linocytic line, where one can trace the appearance of the linome without there ever being any granulations or fatty inclusions; and the adipose granular line, less abundant, leading to formation either of elecocytes, or granulocytes which have their granulations from stage I. This mass of free elements (amoebocytes) flows around the reacting nodes. The linocytes elongate, become giant (100μ), the linome forms in the cell a single, long, sinuous axis, and the cytoplasm becomes less and less important. There is organization of a newly formed, very peculiar, even fibroblastic connective tissue, by coalescence of these elements of the quiescent type. The fibrillae of this tissue,—long, flexible, and parallel with it,—derive directly from the linome of the giant linocytes. Attempts to isolate microorganisms as the etiologic factors in the tumor production were negative. An analogous and more or less permanent mechanism may be produced experimentally by injection of a powdered tumor in absence of all microbic action, or sometimes by simple lesion with a sterilized needle.—*J. A. Thomas* (*transl. by A. L. Treadwell*).

16461. THOMSEN, AXEL. Om Kalvekastningsfeberens (Svingefeberens) Forekomst hos danske Dyrlaeger. [Undulant fever among Danish veterinarians.] *Maanedsskr. Dyrlaeger* 43(2): 46-56. 1931.—Up to April, 1931, undulant fever had been diagnosed in 6 instances among veterinarians in Denmark. All 6 became ill shortly after they began practicing in abortus-infected stables. Older veterinarians do not usually contract the disease, 94% of those who have practiced for more than 1 yr. having specific antibodies against *B. abortus*. The author thinks that undulant fever was unknown in Denmark prior to 1925.—*A. F. Reith.*

16462. TOBBACK, L. Le charbon bactéridien au Katanga. [Anthrax in Katanga.] *Bull. Agric. Congo Belge* 21(2): 489-494. 1930.

16463. TSCHERNIAK, W. S., und N. A. ROMANOV. Die multiplen Kalkablagerungen in den Geweben des Organismus der Hunde bei der sogenannten "Stuttgarter Hundeseuche." *Arch. Wiss. u. Prakt. Tierheilk.* 63(5): 436-458. 10 fig. 1931.—Calcification occurred in the endocardium, myocardium, blood vessel walls, kidneys, mucosa of the upper air passages, stomach, uterus, serous membranes, skeletal muscle, lung, and skin. Calcification of the endocardium of the left atrium was demonstrated in all cases. The connective tissues were particularly subject to calcification. An altered Ca metabolism is indicated.—*J. B. Nelson* (*from authors' summary*).

16464. WEBER, und GIFFEY. Beitrag zur Wild- und Rinderseuche. *Miessner-Festschrift* p. 207-217. Fritz Eberlein: Hannover, 1930.—By subcutaneous injections with cultures or material from hemorrhagic septicemia, it could be reproduced in rabbits, mice, sparrows, starlings, crows, doves, guinea pigs, and rats. Transfer from animal to animal or by placing in the undisinfected cage was unsuccessful. Guinea pigs, mice, and starlings could be infected with contaminated feed. Immunity was not produced by feeding with infected material. Animals of the same kind varied in resistance. The causative agent of the disease is very resistant to decay; only after exposure for 12 days is the virulence reduced.—*From authors' summary* (*transl.*).

ANIMAL IMMUNOLOGY

GENERAL AND BACTERIAL

S. BAYNE-JONES, *Editor*

(See also in this issue Entries 15277, 15308, 15411, 16231, 16317, 16349, 16364, 16419, 16453, 16464, 16652, 16655, 16656, 16669, 16678, 16750, 16768, 16770, 16776)

GENERAL

16465. AKSJANZEW, M. I., und A. N. KREWER. Versuch einer pathologisch-anatomischen Charakteristik der Generalisation des Tuberkulosevirus bei verschiedenen Infektionsverfahren. (Zur Frage der experimentellen Begründung der hämatogen-disseminierten Formen der Lungentuberkulose.) *Zeitschr. Tuberk.* 61(3/4): 251-256. 4 fig. 1931.—Rabbits (29) vaccinated with 2 subcutaneous injections each of 10 mgm. of BCG, were then, with 13 controls, divided into 3 series and inoculated 40 days later with 1 mgm. of the Vallee strain (highly toxic, bovine type): (1) into marginal vein of ear; (2) sub-

cutaneously; (3) intratracheally. All animals died in 17-120 days. In the controls, intravenous and subcutaneous inoculation produced widely disseminated tuberculosis, as did most of the 7 intratracheal inoculations. In the vaccinated, infection was sharply delimited to site of injection. The fibrous, productive, exudative, and caseous reactions were conditioned by the vaccination. Extensive caseation appeared in the vaccinated animals, as well as in the others, and a marked fibrous reaction there only; the capsulation of foci and tendency to delimitation of the processes were pronounced.

16466. **ALEXEIEFF, A. Sur les cellules à poussières du poumon et les "Herzfehlerzellen." Introduction au problème de l'immunité.** *Centralbl. Bakt. I. Abt. Orig.* 103(6/8): 390-415. 1 pl., 2 fig. 1927.—The author insists on a triple nomenclature, corresponding to their triple function, for cells containing dust particles, found in sputa not only of persons with cardiac defects or bronchitis, but also of healthy elderly persons. He calls them "coniophages," because of their dust-scavenging function; "erythrophages" or "Herzfehlerzellen," because they also dispose of the erythrocytes from extravasated blood; and "lipophages," because he believes them to be concerned in fat metabolism. The nucleus in these cells is always eccentrically placed and generally possesses a nucleolus; the cells, exceedingly mobile and changeable in shape, he calls "mesenchymatous amebocytes." Following Roget, he assigns to the lungs an active rôle in elaboration of fats through the lipophages, which constitute in their ensemble a kind of "lipogenic and lipolytic gland" of the lung. Further, he regards each amebocyte as a kind of unicellular gland, secreting both oxidizing and reducing ferments. Their wide distribution enables them to regulate metabolism within the tissues. Immunity is effected primarily by digestion of the lipoids rather than of the proteins of the invading organism. The metabolism of fats takes place in the lymphatic system; hence, the reticulo-endothelia of the various organs may be considered as islands of lymphatic tissue intercalated in the parenchyma of these organs, and the joint lymphatic-reticulo-endothelial system forms a macrophagal system, the theory of which is expounded at length.

16467. **[ALISOV, P. A., and A. N. EGOROV.]** АЛИСОВ, П. А., и А. Н. ЕГОРОВ. К вопросу о предупреждении беременности путем подкожного введения сперматозоидов. **[Prevention of pregnancy by subcutaneous sperm injections.]** [With German summary.] Журнал Экспериментальной Биологии и Медицины (*Jour. Biol. et Méd. Exp.*) 8(20): 247-259. 1927.—Experiments were conducted on 18 ♀ guinea pigs and 10 ♀ rabbits; into the former, 300 millions, into the latter 900 millions, of living homogeneous sperms were injected 4 times at weekly intervals. Ox sperms (alive and killed by chloroform) were injected into guinea pigs in quantities of 490-610 millions; into rabbits, 3.7-3.9 milliards. Neither sterilization nor definite retardation of pregnancy was achieved.

16468. **ARTHUS, ANDRÉ. Immunisations par de minuscules quantités d'anacobra.** *Compt. Rend. Soc. Biol.* 106(12): 1123-1124. 1931.—8 rabbits received subcutaneous injections of anacobra (cobra venom treated with formol and glycerin and kept at 38° C. for 1 mo.) diluted with saline. The immunity produced increased as the quantity of antigen injected decreased, confirming the results of M. Arthus on venom and anavenom. Immunity did not increase with increasing number of injections, the 8 preparatory injections giving a value which is maintained if the succeeding injections are the same in concentration and quantity. A supplementary injection, larger than the previous ones, raised the immunity above this level, in 3 rabbits.—*E. Weiner.*

16469. **ASSIS, ARLINDO de. Sobre a technica do preparo da vaccina B.C.G.** [With English summary.] *Brasil-Med.* 45(15): 338-341. 3 fig. 1931.—Technical notes on the preparation of BCG oral vaccine as used in Rio-de-Janeiro for prevention of tuberculosis in newborn. Aside from the simplified technique recently devised at the Institut Pasteur of Paris for counting the bacilli, a certain number of practical modifications have been described, such as neutralization of Sauton's medium in presence of phenolphthalein, instead of an accurate determination of pH; and storage in vials, instead of in ampules. It is to be noted that 6 cgm. of living BCG bacilli have been administered for the past 2 yrs. as a routine dose for the whole vaccination, instead of the French practice of only 3 cgm.—*A. de Assis.*

16470. **AUCLAIR, JULES. Vaccination préventive et curative du cobaye et du lapin contre la tuberculose humaine. Les indications chez l'homme.** 184p. Masson et Cie: Paris, 1930. Price 25 fr.—This book is divided into 3 parts: the 1st deals with prophylactic vaccination of guinea pigs and rabbits against human tuberculosis; the 2nd with curative vaccination of guinea pigs and rabbits against tuberculosis, and the 3rd with vaccination of man against tuberculosis. The author's criterion of successful vaccination of guinea pigs was the production of a totally refractory state to injection of tubercle bacilli fatal for unvaccinated controls. He seems to have approached success in some of the experiments. Vaccinated guinea pigs and rabbits, previously infected with tubercle bacilli, showed regression of lesions and recovered. In man with lupus and other forms of cutaneous tuberculosis, the conditions showed great improvement. More extended observation is required to determine the outcome of this treatment in other forms of tuberculosis in man. The vaccine is not clearly described; it is apparently composed of killed tubercle bacilli treated with an extract of the pancreas of chickens.—*S. Bayne-Jones.*

16471. **BAUTZ, TH. Über Hautinfektion und Hautvakzination bei Anthrax. II.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 61(1/2): 115-121. 1929.—The authors used a single spore strain of *B. anthracis* of fixed virulence, and Zenkowsky's spore vaccine. A dose of 0.5-2.0 cc. of the vaccine or 0.2-2.0 cc. of the virus was rubbed 0.5-1 min. on the freshly shaved, lightly scarified guinea pig's abdomen. The subcutaneous dose of Vaccine II was 0.05-0.3 cc.; of the virus, 0.05-0.1 cc. The dosage was increased gradually at intervals of 8-20 days. After Vaccine I, Vaccine II was used, and then the virus. In the longest experiments, 13 applications were given during 6 mo. 5 skin applications of vaccine made guinea pigs resistant to skin infection with virus, but not to subcutaneous injections of Vaccine II or virus. 5 applications of vaccine plus 8 of virus protected against subcutaneous virus. Therefore, guinea pig skin is relatively resistant to anthrax and immunization against skin infection is proportionately easy. Immunization against subcutaneous infection is much more difficult. Besredka's theory of elective sensitiveness of the skin to anthrax is untenable. Immunity to anthrax is general, not local.—*L. H. Cady.*

16472. **[BERLIN, A. L.]** БЕРЛИН, А. Л. К вопросу о значении реакции термопреципитации в практике обследования чумных эпизоотий. **[Significance of thermo-precipitation reaction in investigation of plague epizootics.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 9(1): 54-59; German summary, 129. 1930.—During the plague epizootic of marmots in Kazakstan in 1929, 55 marmots were studied by the thermo-precipitation reaction. As the precipitating serum, anti-plague serum prepared by the Paris method from immunized horses was used. This serum had high precipitating properties with extracts of plague bacillus and organs of animals dying from experimental plague, but gave no turbidity either with physiological saline or with extracts of normal organs of guinea pigs or rats. The spleen, liver and, rarely, pieces of lung and lymphatic glands of marmots suspected in post mortems of having plague, were examined by this reaction. The organs were ground, at first without, and later with, addition of NaCl solution; filtration followed after heating in a water bath

for 5 min.; 0.5 cc. of these extracts was added to vials containing 0.5 cc. of precipitated serum. In case of positive reaction, turbidity was noted immediately. Among the 55 animals studied, in 6 cases plague was established by patho-anatomical and bacteriological studies, and by the thermo-precipitation reaction in 5 cases (83.3%). Of 49 negative cases, the thermo-precipitation reaction was negative in 43 cases, and positive in 6 (12.2%); thus the thermo-precipitation reaction may give positive results in negative cases, which lessens its value as an auxiliary method for diagnosing plague.—*G. A. Lebedeff.*

16473. BERTHELSEN, KNUD C. A study of the relationship of surface phenomena to the reaction of toxin and antitoxin, with toxin produced in an infusion-free peptone medium. *Jour. Immunol.* 21(1): 21-41. 1931.—The paper begins with a review of recent literature on application of the principles of theoretical physics and physical chemistry to the behavior of proteins, particularly the relation of the phenomena involved to immune reactions. It is shown experimentally that diphtheria toxin-antitoxin flocculation (Ramon method) first takes place at the liquid-air surface, where surface energy is at a minimum. In experiments in which serum and toxin were mixed in uniform proportion, it could be demonstrated that flocculation-reaction time varies according to size of tubes used and volume of mixture. From these observations the author concludes that the specific attraction forces between toxin and antitoxin molecules cause flocculation, but that reaction time is determined by the free energy. The flocculation-reaction time, therefore, may be affected by the attraction and repulsion of the particles in the toxin-antitoxin system, which decrease the free surface energy to a minimum, with resulting flocculation. This time decrease in free energy is a function of both the hydrophilic and hydrophobic ions, depending on the thickness and density of their interfaces, and should be demonstrable by surface-tension measurements. Tests of toxin made during its production in infusion-free peptone medium and particularly after purification by ultrafiltration, and also results of tests made with an antitoxic serum in which the protein particles had been denatured by heat, showed that the shorter the flocculation-reaction time, the higher the surface tension, measured in dynes. The experiments indicate that changes in the colloidal state of the toxin-antitoxin interfaces probably result in changes in reaction time.—*K. C. Berthelsen.*

16474. BERTHELSEN, KNUD C. Studies of the flocculation-reaction time in the course of immunization and the quantitative and qualitative changes of the proteins. *Jour. Immunol.* 21(1): 43-67. 1931.—A study was undertaken of such physicochemical constants of blood serum as surface tension, viscosity, protein fractions, and the inorganic substances in relation to the flocculation-reaction time. It seemed probable that the interaction taking place during development of antibodies may occur between the globulin, and possibly also the lipoids, and the electrolytes, altering the dispersion degree of the globulins between the hydrophilic and the hydrophobic ions, and that this may be indicated by changes in surface activity during immunization and may also affect the flocculation-reaction time. The flocculation-reaction time of 23 horses showed in general a continuous increase during immunization. 12 of them were followed for alterations in protein fractions during immunization with different methods and toxins. Quantitative changes in protein fractions were without effect on flocculation-reaction time. The alterations may, therefore, be related to qualitative characteristics of the antibody-protein complex. However, no qualitative differentiation in the protein complexes could be demonstrated by surface-tension measurements. It is concluded that it would be desirable to investigate further the electrokinetic phenomenon to gain a better knowledge of the qualitative characteristics of the immune protein.—*K. C. Berthelsen.*

16475. BERTHELSEN, KNUD C., and PHILIP P. MURDICK. The distribution of electrolytes in serum during immunization. *Jour. Immunol.* 21(1): 69-84. 1931.—The biological significance of the common electrolytes is briefly discussed. It is suggested that exchange or variation in equilibrium of electrolytes, or associated phenomena, may furnish the chemical stimulus necessary for antibody formation. At progressive stages of immunization, before and after injection of diphtheria toxin, the diffusible Ca, non-diffusible Ca, and total base in the blood of a series of horses were determined. The diffusible and non-diffusible P was also estimated, at weekly intervals. Ultrafiltration technique was employed to separate diffusible from non-diffusible constituents. The diffusible Ca in the serum displayed a noticeable tendency to decrease in the 24-hr. period following injection of large amounts of toxin. A somewhat similar tendency was also noted for total Ca and total base. There was considerable fluctuation in amounts of total and diffusible P but with no apparent relationship to development of immunity, although these values tended to decrease as antitoxic potency increased. It is suggested that the drop in diffusible Ca, and possibly also in other electrolytes, is a chemical factor related to the immunological stimulation process.—*K. C. Berthelsen.*

16476. BRUYNOGHE, et ADANT. Influence de quelques halogènes sur les protides. *Bull. Acad. Roy. Méd. Belgique* 10(5): 298-316. 1930.—Experimental studies (not here reported in detail) on the nature of the specificity of antigens showed that iodine, in combination with sera, removes specificity and transforms them all into equivalents of each other, no matter what the species from which obtained. Such iodized antigen has no inhibitory action on production of precipitate in mixtures of the same serum unmodified, and its corresponding antiserum. Precipitation of iodized proteins takes place as if the insolubility in the serum were produced by a non-complex antigen. The fixation of iodine on non-antigenic proteins does not render them antigenic. Br produces changes in sera similar to those produced by iodine: loss of specificity and transformation into undifferentiated, identical antigens. Bromized proteins, however, may be differentiated from iodized proteins in precipitation reactions. Under the influence of Cl, serum loses its antigenic properties and is not affected either by precipitins of normal sera or by those of iodized or bromized sera.

16477. BUBLITSCHENKO, L. Die Immunität und die Antivirushautreaktion bei Schwangeren und Wöchnerinnen. *Monatsschr. Geburtsh. u. Gynäkol.* 83(3): 191-203. 1929.—Tests were made by intracutaneous injection of 0.2 cc. of Besredka's staphylococcus and streptococcus antivirus. The antivirus used consisted of filtrates both of cultures of streptococci and of staphylococci; the organisms were derived from cases of puerperal infection. Tests were made on women in various stages of puerperal infection and on those with various infections of the uterus and adnexa. On the basis of numerous clinical and experimental observations, the author concludes: The skin reaction following injection of antivirus is due to a specific substance in the filtrate. Staphylococcus antivirus gives more frequent and more strongly positive skin reactions than does streptococcus antivirus. Women who had previously suffered from infections with staphylococci and streptococci gave the strongest skin reactions to the respective antivirus. Failure of the reaction to occur in an infected patient is evidence of the presence of a severe and probably fatal infection. Strong reactions in septic diseases give a good prognosis. During the course of an infection, the skin reaction to antivirus may become weak and return to a strongly positive reaction after recovery. The skin reaction to antivirus is recommended as a simple test for following the severity of infection. Intracutaneous injections of antivirus serve as vaccinations, increasing the resistance.—*S. Bayne-Jones.*

16478. CARLETON, H. M. Studies on epithelial phagocytosis. I. *Proc. Roy. Soc.* [*London*] *B* **108(755):**

1-10. 2 pl. 1931.—In experiments on 40 rabbits, suspensions of Hydrokollag (a proprietary colloidal suspension of graphite), carmine, cocoa butter, and live and dead *Staphylococcus aureus* and tubercle bacilli, were aseptically introduced by injection either into the vagina or into the upper end of 1 uterine horn exposed by median laparotomy. Hydrokollag, carmine, and bacteria were phagocytosed by non-ciliated columnar cells of the vaginal epithelium; cocoa butter and olive oil were absorbed by, and appeared as fatty globules in, non-ciliated columnar cells of vagina and uterus, but this is regarded as absorption rather than phagocytosis. These columnar cells have, distally, blunt projections resembling pseudopodia; they possess a layer of mucin and are presumably sticky and able to hold foreign bodies. The need for stringent criteria in defining phagocytosis is stressed, and the criteria employed are described. They are: (i) ability to bring into the same focal plane some portion of the nucleus and the suspected ingested material; (ii) to identify the cell-membrane as being definitely outside the particles. The presence of cytoplasmic vacuoles around ingested particles such as carmine and staphylococci is additional evidence of phagocytosis.

16479. CONSOLI, NICOLA, e FRANCESCO PIVETTI. Sulla persistenza della reazione delle termoprecipitine negli organi pestosi umani conservati. [Persistence of thermoprecipitins in preserved human plague organs.] *Atti Accad. Gioenia Sci. Nat. Catania* 15(4): 1-7. 1927. —The thermoprecipitin test is obtained in human plague organs preserved in alcohol (even after 2-3 yrs.) or in formalin. Organs giving the most intense reactions are, first, the lungs, then the buboes, then the spleen, and, last, the liver and kidneys.—*E. Ponzi.*

16480. COTONI, L., et N. CHAMBRIN. Sur l'immunité passive obtenue à l'aide du pneumocoque III. *Ann. Inst. Pasteur [Paris]* 45(6): 706-726. 1930.—In attempts to immunize rabbits and horses with pneumococcus Type III, 3 antigen preparations were used: (a) clear centrifugate of macerated cells; (b) dried cells; and (c) alcohol-ether extract of cells. They were given intravenously, subcutaneously or intramuscularly; on the whole, the doses were well-tolerated. Some differences were noted in the tests on sera taken from rabbits and horses. The authors recommend small, repeated doses of dried cells for immunization.—*L. A. Barnes.*

16481. DERICK, CLIFFORD L., and MARSHALL N. FULTON. Skin reactions of patients and normal individuals to protein extracts of streptococci. *Jour. Clin. Investigation* 10(1): 121-138. 1931.—Intracutaneous tests with purified nucleoprotein fraction of a hemolytic and of a green streptococcus were studied in 670 individuals. The antigens used were purified till their N content was constant. A similar protein from baker's yeast was used as a control in part of the work. The hemolytic streptococcus nucleoprotein almost uniformly induced stronger reactions than did the green streptococcus antigen. In individuals over 15 yrs. old, age plays no part in determining the presence or absence of sensitiveness to these antigens. In children under 15 yrs. old there is with increase in age a gradually increasing proportion of positive over negative reactors. This proportion is influenced markedly by the presence or absence in children of rheumatic infection, the % of positive reactors among the rheumatic group outnumbering that in the non-rheumatic group by a wide margin. Since positive reactions may be obtained in a great variety of diseases, the test has no specific diagnostic value. The disease which one has at the time of testing appears to bear some relationship to the state of sensitiveness. Whether this is cause and effect or merely an association more apparent than real, the present work does not reveal.—*Author's summary.*

16482. DIENES, L., and E. W. SCHOENHEIT. The antigenic substances of the tubercle bacillus. V. The antigenic substances of the synthetic culture medium. *Jour. Immunol.* 18(4): 285-314. 1930.—In addition to the carbohydrate-precipitable substance, 2 antigenic materials can be separated by acid precipitation from filtrates of tubercle bacillus cultures in Long's synthetic medium. These 2 fractions differ in serological reactions, antibody production, and in connection with the tuberculin reaction in guinea pigs. The acid-precipitable antigen stimulates production of specific antibodies in tuberculous animals. Antibodies formed by the acid non-precipitable fraction failed to react with homologous antigen, acid precipitate, or with concentrated culture medium; but strong reactions were obtained with bacillary emulsion. It is concluded that in the culture medium these 2 fractions are united in a higher complex which has a specificity markedly different from that of the isolated antigens, and in the reactions of which the effect of the isolated antigens does not appear. This complex antigen may be responsible for production of antibodies by concentrated culture medium and acid filtrate, although it often gives little or no reaction with these sera.—*L. A. Barnes.*

16483. DONAGHY, FRED, and ROSCOE R. HYDE. Immunity to Walker's rat sarcoma no. 1. *Amer. Jour. Hyg.* 14(2): 495-501. 1931.—Resistance to a certain transplantable spindle-cell sarcoma differed greatly in 3 strains of rats observed: (1) in the "Philadelphia" strain, tumor growth was rapid; (2) the "Hygiene" strain was 90% resistant to implants; (3) in the "Littlestown" strain about 20% of the animals supported tumor growth to thumb size, when generally it receded. Experiments involving several hundred rats were made to develop immunity in the susceptible "Philadelphia" strain by various methods, including removal of the implant after growth in the host, feeding tumor tissue, feeding tissue from resistant rats, injection of immune sera from rabbits and guinea pigs, injection of sera and whole blood from chickens treated with sarcoma no. 1, and allowing the young of susceptible "Philadelphia" stock to suckle tumor-bearing mothers. None of these methods produced immunity. Embryo skin from embryos of the resistant "Hygiene" stock was implanted in 20 "Philadelphias," giving complete immunity after absorption of the embryo skin. Implantation of embryo skin from the susceptible stock produced immunity in 17 of 20 "Philadelphias." The invariable observation of splenic hypertrophy in tumor-bearing "Philadelphias" led to injection of 10 susceptible rats with emulsion of spleen from 2 tumor-bearing rats; no tumors developed, but the treated rats proved resistant to subsequent tumor implants. The immunity in this case is not to be ascribed to the fact that the spleens were from tumor-bearing animals, as it is known that homologous normal spleen is an effective immunizing agent.

16484. DUDGEON, LEONARD S., and H. K. GOADBY. The examination of the tissues and some observations on the blood platelets of rabbits at intervals of five minutes, and later, after intravenous inoculations of Staphylococcus aureus and Indian ink. *Jour. Hyg.* 31 (2): 247-256. 3 pl. (1 col.). 1931.—Live and dead *Staph. aureus* and massive doses of India ink and colloidal Ag were intravenously injected into rabbits. Any particles injected into the circulation cause accumulation of polymorphs in the lung capillaries. Inert colloidal particles such as India ink are clumped in the capillaries of the lungs, liver, spleen and kidneys, and are phagocytozed by endothelial cells. The staphylococci, live or dead, are nearly all held up in the lungs, where they are actively phagocytozed by the polymorphs within 5 min. of an intravenous injection. Subsequently the cocci are distributed to other organs, where phagocytosis continues mainly by polymorphs, but in the liver also by Kupffer's cells. Special attention is drawn to the localization of the cocci in certain areas in the kidneys. Platelet counting on animals injected with various substances showed that there is an agglomeration of the particles with the platelets, which are consequently removed from the circulation. In the case of the inert particles, the platelets are then restored to the circulation. With organisms (*Staph. aureus*), some

of the platelets appear to be completely removed from the blood together with the bacteria.—*Authors' summary.*

16485. [ĖL'BERT, B. ĭA.] ЭЛЬБЕРТ, Б. Я. К механизму инфекции и иммунитета у белых мышей, инфицированных палочкой паратифа B-Schottmülleri. 1-е сообщение. [Infection and immunity mechanism in white mice infected with paratyphoid B-Schottmüller. I.] Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 197-220; French summary, 237-238. 1930.—Experiments were conducted on 399 white mice. After peroral ingestion, bacteria were found in mesenteric and cervical ganglia. However, in some cases they broke through this barrier and were found in subaxillary and inguinal ganglia. Only in exceptional cases were they found in blood, liver or spleen. The mechanism of subcutaneous infection was based on maximal filtration by subaxillary and inguinal ganglia. Where these 2 filters fail, dissemination in the organism occurred. Subcutaneous vaccination with dead bacilli did not prevent bacterial activity in the mesenteric ganglia. Thrice repeated subcutaneous vaccination with live bacilli 3 wk. prior to infection did not cause more rapid destruction of bacteria in the mesenteric ganglion. Blockade of the reticulo-endothelial system resulted in generalized infection, however, not always resulting in death, but in some cases becoming chronic.

16486. **FAMULENER, L. W. A method for the standardization of autogenous vaccines (bacterins).** *Acta Path. et Microbiol. Scandinavica Suppl.* 3: 119-122. 1930.—The method employed consists of centrifuging a rich broth culture, or a physiological saline suspension of bacterial growth from a solid medium, in the regulation Hopkins vaccine tube, for ½ hr. at approximately 2800-3000 revolutions per min. in a machine carrying a 30 cm. head. The bacterial material is deposited in the collecting portion of the tube at practically maximum concentration. The supernatant is removed; then sufficient sterile physiological saline is added to give a 1% suspension of organisms. This is placed in a sterile test tube, and heated in a water bath at the minimum temp. to kill the organism after 1 hr. Controls are made by inoculating a few drops of the heated suspension in suitable medium, then sufficient tricresol (10% emulsion in distilled water) is added to give a 0.25% concentration. This constitutes the "stock" suspension, from which the "testing" and "therapeutic" vaccines are prepared. An arbitrary unit was adopted, based on results of numerous tests on normal and hypersensitive individuals. The unit may be defined as that volume of bacterial substance (killed) represented by 0.01 cc. of a 1% suspension in physiological saline containing 0.25% tricresol.—*L. W. Famulener.*

16487. **FELIX, A., and M. RHODES. Serological varieties of typhus fever.** *Jour. Hyg.* 31(2): 225-246. 1931.—Fletcher and Lesslar's observations on 2 serological types of tropical typhus have been fully confirmed. The antigenic relationship between the indologenic *B. proteus X 19* and the non-indologenic Kingsbury strain is of the same order as that obtaining between *X 19* and *X 2* types of *B. proteus X*. The Kingsbury strain is an antigenic variant derived from the original *X 19* culture and represents another serological type of *B. proteus X*. The symbol "XK" is suggested for this type. Sera from cases of classical European typhus and of endemic typhus of the U. S. A. and of Australia have been tested for occurrence of main and group O agglutinins for the known types of *B. proteus X*. H agglutination as source of error in the diagnosis of typhus cases is illustrated by examples. Sera from cases of tsutsugamushi from Sumatra and Japan react with type XK like the Malayan cases of this disease described by Fletcher and co-workers. This latter reaction is of the order of group-O agglutination. Antigenically, the virus of tsutsugamushi may correspond to another serological type of *B. proteus X* as yet unknown. The data published on the serum reactions in Rocky Mountain spotted fever and in "fièvre exanthématique" of Marseilles are analyzed. These 2 diseases may represent further serological varieties of typhus. The significance hitherto attached to negative agglutination tests with *B. proteus X* and to negative cross-immunity tests with some typhus-like diseases, requires revision in the light of recent observations.—*Author's summary.*

16488. **FELIX, A. Specific and non-specific serum reactions in typhus fever.** *Jour. Hyg.* 31(3): 382-402. 1931.—In all species tested—rabbit, guinea pig, chicken and horse—normal agglutinins for *B. agglutinabilis* U_2 were far more abundant than those for *B. proteus X 19*. Human serum reacts in the same manner. Wassermann-negative sera were employed as normal sera. Their reaction in Weltmann's globulin test was also negative. Wassermann-positive sera from cases of syphilis and sera from lepers gave distinctly higher agglutination reactions with U_2 than normal human sera. On X 19, however, those sera do not exercise any increased agglutinating action. Similar, though somewhat stronger, reactions with U_2 are obtained with typhus sera. However, this reaction is far from being uniformly positive in typhus, while this is the case with the X 19 reaction. The discordance between these results and those of Wilson and of Fletcher, Lesslar and Lewthwaite is due to the failure by these workers to employ suitable controls. In syphilis and leprous sera, high titers of agglutination with U_2 coincide with globulin-increase as indicated by the Weltmann reaction. The summation effect of the non-specific agglutination by gelatin and the action of specific immune agglutinins described by Weil, are again demonstrated. The combined action of an abundance of preformed normal agglutinins and of augmented serum colloids is suggested as one of the factors involved in increased heterologous agglutination (poly-agglutination). *B. agglutinabilis* U_2 is a typical representative of "poly-agglutinable" organisms; *B. proteus X 19*, however, is not liable to the action of "poly-agglutinating" sera.—*Author's summary.*

16489. **FELTON, LLOYD D. The variables in the mouse. Protection test of antipneumococcus serum.** *Jour. Immunol.* 19(6): 485-509. 1930.—The 2 variables are: the experimental animal; the test culture. The 1st can be compensated for by using 10 mice for each dilution of serum and regarding 6 of 10 as the end-point. With regard to the 2nd variable, the author concludes that: Consistent results over a period of time may be obtained with 1 strain of organism if maximum virulence is maintained. With lethal doses of 250,000-5,000,000, the relationship of varying doses of culture to varying dilutions of serum follows the law of multiple proportions. It is the changing ratio between virulence and power to neutralize antibacterial immune-substance that is responsible for the widely divergent results with various strains of pneumococci. Both virulence and neutralizing power of pneumococci may be increased by mouse passage. Reproducible results may be obtained only when the virulence and neutralizing power of the test culture are known, and then only when estimation is made by comparison with a standard serum.—*R. W. Jung.*

16490. **FRIEDENREICH, V., et G. WAALER. Sur les sous-groupes du groupe sérologique A. Y a-t-il une relation entre la sensibilité du récepteur de globules et de l'apparition de l'agglutinine α_1 "irrégulière"?** *Compt. Rend. Soc. Biol.* 106(9): 773-776. 1931.—In researches on the process of immunization, the apparent co-existence of antigen and corresponding antibody free in the blood of immunized animals has been repeatedly noted. This paradoxical finding is, however, an illusion, for with a sufficiently delicate technique it can be shown that antigen and antibody are not strictly homologous. Analogous observations have been made on isoagglutination, and some authors consider that individuals exist with the blood-formula $A\beta\alpha$, i.e., with receptor A and agglutinin α in the blood at the same time. In such cases, it may be accepted that the corpuscles were of type A_2 and the agglutinin was α_1

(not α); i.e., antigen and antibody were not strictly homologous. Agglutinin α seems to occur only in individuals with receptors weaker than the average. Bernstein supposes that all individuals form α as well as β, though β alone appears normally in A individuals, because α is absorbed by the A receptors proper to the organism, suggesting that when the receptors happen to be feebly developed they may not succeed in completely eliminating α. This explanation does not hold good when the receptors are not abnormally feeble A-receptors, but happen to be another kind of A-receptor (A_2) which occurs in 1 out of 5 individuals. Nevertheless, certain facts indicate that a relation does exist between avidity of receptors and appearance of an "irregular" agglutinin α_1. The authors examined numerous sera for presence of α_1 agglutinin and for avidity of A_2 receptor in A_2 individuals whose serum contained the "irregular" agglutinin α_1, and found that A_2 receptor was feeble and that in A_2 individuals who had most α_1, A_2 receptor was much weaker than the average. On this and other grounds, the authors support Bernstein's hypothesis.—*R. T. Hewlett.*

16491. **FUJI, Y. Über Resorption von körperfremden Proteinen von der Haut. Gleichzeitig eine Methode für die Herstellung hochwertiger präzipitierender Antisera.** *Japanese Jour. Med. Sci. VII. Social Med. & Hyg. Trans. & Abstracts.* 1(1): 45-59. 1930.—Rabbits treated with salve made of horse serum in lanolin showed the presence of horse serum in their serum when tested with an anti-horse precipitin serum, thus showing definite absorption of horse serum. After a latent period, precipitating antibodies appeared in the serum. The titer, which reached its height in a few days, was frequently higher than that attained by the usual intravenous methods of immunization. If such animals received a 2nd application of salve, after the original antibodies had disappeared the precipitin titer rose again and was, as a rule, higher than before. The latent period also was shorter. When these animals immunized by percutaneous methods were given a single intracutaneous dose of horse serum there was a rapid drop of precipitins, followed by a rise to extremely high titer. These antibodies persisted for a surprisingly long time at a high level, in some cases over 1 yr.—*C. M. Downs.*

16492. **GINS, H. A. Experimentelle Vaccineinfektion als Hilfsmittel zur Erforschung von allgemeiner Infektion und Immunität.** *Zeitschr. Hyg. u. Infektionskr.* 110(1): 133-143. 1 fig. 1929.—The author discusses differences in results of vaccination during the last 15 yrs. The more virulent vaccines of to-day are due to increase in amount of virus. The success obtained in vaccine infection and immunity in recent yrs. is due to intensification of vaccines by passing from human to animal vaccines, and to continuous improvements in preservation methods. Vaccination causes not only typical infections but also intensive immunization, as is evidenced by nationwide vaccinations which the author considers to be the best proof for a formation of general infections after cutaneous insertion of virus. Such inserted infections lead to general immunity. The author's theoretical discussion of the relationship of vaccination to mucous membranes shows that vaccine immunization is not caused by injuries to either skin or mucosa, but by 2 other possible ways: (1) absorption through bronchioles and alveoli, or (2) through mucous membranes of nose and throat. The importance of tonsils during vaccine and other infections is also pointed out, and it is the author's view that organs whose physiological function is the maintenance of a continuous flow of leucocytes towards the cavities of the mouth and throat also play an important rôle in the increase of vaccine virus.—*O. A. Tischer.*

16493. **HACH, IW., M. BORODAJ, und V. MELNYK. Studien über Gewebeinfektion und Gewebeimmunität.** *Zeitschr. Immunitätsforsch. u. Exp. Therapeut.* 54(3/4): 251-268. 3 fig. 1928.—Cultures of *Staphylococcus aureus* were injected intravenously into rabbits, which were examined at intervals during the rapidly fatal septicemia ensuing, to determine the number of bacteria in various organs. Plate cultures were made from the circulating blood obtained by heart puncture and, after killing the animal, from the spleen and skin, using weighed and measured amounts of organs. In the first few hrs. after injection the greatest number of bacteria per unit wt. of organ were found in the spleen. This the authors attribute to active phagocytosis of the bacteria from the blood of the reticulo-endothelial cells of that organ. As the infection progressed there was a marked gradual diminution of bacteria in the spleen and a corresponding increase of those in the skin, which reached its maximum in animals examined in extremis or after death from infection. These observations lead the authors to believe that the skin plays some special rôle in acute fatal staphylococcus infections.—*A. Zeissig.*

16494. **HAMEDY, A. Le phénomène d'iso-agglutination chez les chevaux producteurs de sérum antitoxique.** *Compt. Rend. Soc. Biol.* 106(12): 1097-1099. 1931.—The blood of 11 horses producing antidiphtheric serum, was examined at the beginning and end of a 2-mo. period during which the animals continued to receive injections of antigen and were bled repeatedly. 8 of the 11 changed blood groups during this period. Group O showed the least tendency to change, AB was a little less stable, and A and B were least stable. Sera of 2 horses in group AB agglutinated all but 3 sera of 115 from normal and hyperimmunized horses. There is no evident relation between antitoxic power of sera of hyperimmunized horses and their iso-agglutination reaction.—*E. Weiner.*

16495. **HAXTHAUSEN, H., und AXEL THOMSON. Brucella-Ausschlag bei Tierärzten. (Eine eigentümliche, professionelle Hautaffektion, wahrscheinlich allergischer Natur, hervorgerufen von Bac. abortus Bang.)** *Arch. Dermatol. u. Syph.* 163(3): 477-491. 4 fig. 1931.—About 1 of each 3 veterinarians graduated in Denmark since 1915 has shown a skin disease [5 cases described] characterized by follicular papules on the arms, accompanied by pustules and necrosis. It appears directly after delivery of the placenta in cows with infectious discharge and has a tendency to reappear after each delivery. The eruption is probably caused, not by actual skin infection with *Bacillus abortus* Bang, but by an allergic reaction from "toxins" of the bacillus; it could be reproduced by "abortin" produced similarly to tuberculin (all but 1 control was negative). The allergic condition itself was probably due to a preceding infection. The skin affection was not accompanied by fever or other general symptoms and showed no similarity to undulant fever.—*From author's summary (transl.).*

16496. **HECHT, ADOLF F. Zur Immunobiologie fieberhafter Erkrankungen.** *Wien. Klin. Wochenschr.* 40(35): 1097-1101. 7 fig. 1927.—A study of serum sickness shows that when a fever-producing agent does not multiply in the body, the curve is discontinuous, the intervals being 4-6 days; the other manifestations, as urticaria, are also discontinuous. On long duration, the type of fever differs, becoming continuous, intermittent or remittent. A change in type does not necessarily mean a change in an infection; it may be only a late body reaction. There is no direct relation between fever course and local manifestations. Manifestations of serum sickness form a part of the syndrome of many infections.—*J. T. Myers.*

16497. **HEIDELBERGER, MICHAEL, and FOREST E. KENDALL. The amount of circulating precipitin following the injection of a soluble antigen.** *Science* 72 (1862): 253. 1930.—Using R-salt-azo-benzidine-azo-egg albumin as antigen, each of 2 rabbits was injected with a total of 21.6 mgm. of this purplish-red diazo protein dye. 10 days after the last injection the animals were bled, and the wt. of circulating precipitin was calculated for each. One contained 168 mgm. of such precipitin or 7.8 mgm. per mgm. of antigen injected; the other contained 138 mgm. or 6.4 mgm. of circulating precipitin per mgm. of antigen injected. The figures tend to indicate that antigen does not participate in building up the specific antibody complex.—*A. Boyden.*

16498. HULSHOFF POL, J. P. G. Über die Beziehung der Präzipitine zu den Agglutininen. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 61(1/2): 99-114. 1929.—The problem was to try to give to precipitating antisera the properties of agglutinating antisera by changing antigen from a colloidal solution to a suspension. Precipitating antisera were produced in rabbits by injection of casein and horse serum. The flocculation reaction was used, with dilution of antiserum or antigen, or both. The most satisfactory adsorbents were kaolin, MgO, rosin, and zinc stearate. Results showed that precipitating antisera do acquire the characteristics of agglutinating antisera when tested against suspended antigens. The antisera gave higher titers with suspended antigen than with colloidal antigen solutions, and could therefore be diluted much more than in the usual case of precipitins. The adsorbed suspended antigens could not be diluted very much without obtaining negative reactions. These results together with the discovery that the first antibodies against casein and horse serum to appear during injection reacted with the suspended antigen and not with the dissolved antigen, make it probable that precipitins and agglutinins are identical antibodies whose apparent differences are due to the physical state of the antigen. On the other hand, heat seemed to affect the antibodies reacting against dissolved antigen more than those reacting against suspended antigen, but this result is uncertain.—*A. Boyden.*

16499. HUNTEMÜLLER, O. Die Wirkung der Lichtstrahlen auf die natürlichen Abwehrkräfte (Alexine) im Blutserum. II. Ultrarote und Helligkeitsstrahlen. *Strahlentherapie* 40(4): 743-749. 1931.—The author studied the effect of light on the natural defense mechanism of the body, the "alexins" of Buchner. If normal or low, the alexin content of the blood serum increases first after irradiation; later it decreases slowly. If the original level in the blood is high it decreases first and then increases slowly to the original level. The 1st reaction is said to be due to a direct effect on the cells, the 2nd appears with the development of erythema and is presumably due to the effect of decomposition products of the cells on the site of formation of the alexins. These changes occur wavelike for some time after irradiation with ultraviolet. Sunlight and Sollux light, the latter having no ultraviolet, act in the same way; infra-red, however, acts more slowly but it is nevertheless very effective as to changes in alexins.—*W. F. von Oettingen.*

16500. [IMSHENETSKIĬ, A. A.] ИМШЕНЕЦКИЙ, А. А. О проходимости кожи для раствора трипановой сини в связи с учением о кожном иммунитете Безредка. [Skin permeability for trypan blue solution and Bezredka's theory on skin immunity.] Журнал Микробиологии и Иммунобиологии (*Jour. Microbiol. et Immunobiol.*) 7(2): 159-168; German summary, 234. 1930.—Experiments were made on 23 rabbits: in 14, with trypan blue compresses applied to the skin; in 4, trypan blue applied directly; in 3, antivirus compresses; and in 2, physiological saline compresses. It was found that in 48 hrs., compresses of 1% solution of trypan blue caused in the skin distinct exudative infiltrative inflammation, accompanied by necrobiotic alterations of epithelium and of hair follicles. These regions of the skin with injured epidermis, and the hair follicle walls, served as entrance for the dye penetrating into the tissue lymph of the skin proper. The dye, then, was adsorbed by histiocytes, which accumulated it in their protoplasm in granular form; grains of dye were found in special polymorphonuclear leucocytes, situated mainly under the epithelium. Tissue lymph transmitted the dye into the regional lymphatic ganglia, where it was deposited in some reticular cells of stroma and in histiocytes of the capsule. External application of the dye without compress was accompanied by its accumulation in the corneum, mostly in its surface layers; in the skin proper it was absent.

16501. JAKHNIS, B., und S. CHAGALOWA. Neue Ergebnisse der Ukrainischen Kommission zum Studium der Säuglingsimpfung mit BCG. Impfung von je einem der beiden Zwillinge. *Zeitschr. Tuberk.* 61(3/4): 191-193. 1931.—After inoculating the weaker partner in 16 pairs of twins, with BCG (20 uninoculated pairs as controls), no injurious effect was observed; the inoculated twins had a lower mortality and usually developed better than the uninoculated partners.

16502. JUNDELL, I., och H. MAGNUSSON. BCG-försök å svin. (BCG tests on pigs.) [With English summary.] *Skandinavisk Vet.-Tidskr.* 21(9): 271-288. 1 fig. 1931.—Of 24 suckling pigs free from tuberculous infection, 8 were vaccinated per os with 2 mgm. of BCG vaccine on 3 successive days, 8 were vaccinated subcutaneously with 10 mgm., and 8 were kept as controls; of the last, 6 were infected at the same time as the vaccinated animals, the other 2 being kept as healthy controls. The animals were infected 7-8 wks. after vaccination per os with a single dose estimated to contain 2,000 million tubercle bacilli and consisting of an emulsion of a tuberculous cow-udder. All the vaccinated animals developed tuberculosis within 19-21 wks. after being infected, changes being almost as progressive as in the controls. The most that can be said is that vaccination delayed the infection slightly. The average wt. of the healthy controls was 82.5 kgm. at an average age of 174 days; that of the infected controls was 60 kgm. at an average age of 210 days. The pigs vaccinated per os showed an average wt. of 75 kgm. in 213 days; those vaccinated subcutaneously, 73 kgm. in 211 days.—*From authors' summary.*

16503. KATO, N. Beiträge zur Kenntnis der Reinokulation bei experimentellem Rückfallfieber. [In Japanese, with German summary.] *Acta Dermatol.* 17(3): 189-217. 1931.—From experiments in inoculating mice with relapsing fever spirochaetes, treating them at various intervals with salvarsan, and reinoculating them, the author concludes that degree of immunity is in general independent of duration of latent stage. However, when treatments were begun the same number of days after the 1st inoculation, the degree of immunity was higher in mice in which the latency period was short and the sickness period long, than in those in which the relation was reversed. Yet when both latency and sickness were long, the degree of immunity might be lower and with lighter symptoms than in the opposite case. If the treatment were begun on appearance of the spirochaetes in the blood and reinoculation made 10 days after the last salvarsan injection, reinoculation was repeatedly positive and finally there was a negative immunity through accumulation. Thereby the height of the accumulated immunity decreased at every inoculation.—*From author's summary.*

16504. KAWAMURA, HIDEKU. A contribution to the knowledge on the toxin of the Shiga bacillus. *Kitasato Arch. Exp. Med.* 8(1): 1-23. 1931.—The specific toxin of dysentery bacilli is produced within the bacillary bodies and passed into the medium after they are dead. It is not a secreted toxin, and is quite different from Pfeiffer's so called endotoxin. Dysentery toxin becomes stronger after death of the bacilli but weakened with time. The combining power of the toxin with antitoxin increases in accordance with increase of toxicity after death of the bacilli and weakens with decrease of toxicity after a much longer time. In the dysentery bacilli a certain substance which changes into specific toxin may be found; this may be christened "toxinogen." It has neither toxic nor combining powers, but under certain changes it may be converted into another inert substance, "pretoxin," which has the power to combine with antitoxin. Further, it is converted into a toxic substance, which is the specific toxin. The changes may proceed still further and form a substance having neither toxic nor combining power, but not the substance known as "toxoid" as is the case with other sorts of specific toxins. The antitoxinogen of Shiga bacilli is found mostly in the bacillary bodies; therefore, fresh bacillary bodies are best fitted for immunization. A strong toxin can be obtained by cultivating the bacilli in a medium composed of very simple materials free of peptone, but the

toxin here obtained weakens very rapidly.—*H. Kawamura.*

16505. **KENNEDY, JAMES A. Isohemagglutination: the work of Jan Janský with a critical analysis.** *Jour. Immunol.* 20(2): 117-141. 1931.—Janský's classification is based on 3160 "cross-agglutinations" in which he utilized sera from 30 (32) individuals and corpuscles from 99. These "cross-agglutinations" are here reproduced from his work, and an orderly arrangement is made. His classification is based on 30 (32) individuals whose sera he used in the "cross-agglutinations"; it shows: Group I, 12 individuals; Group II, 10; Group III, 6; and Group IV, 2. Results of analysis of his series of "cross agglutinations" are given, and it is evident that Janský failed to realize that, in addition to grouping the sera used, he was also grouping the other individuals whose corpuscles only were employed. Consequently, his results should have been Group I, 40 individuals; Group II, 38; Group III, 20; and Group IV, 2; with a racial index of 1.8. 2 individuals (7524 F. B. and 7627 Š. J.) appear in his series, whose bloods do not fit exactly into the classification. It seems more logical to assume that the irregularity shown by the blood of 7524 F. B. was due to a low isoagglutinin "b" titer which was made ineffective by dilution, very short incubation period and possibly by temp. of incubation. The blood of 7627 Š. J. was exceptional. However, due to the fact that Janský did not include the serum of this individual's blood in his series, one is hardly justified in drawing definite conclusions regarding it. The French résumé given by Janský is here reproduced.—*J. A. Kennedy.*

16506. **KIGASAWA, T. Antigene Eigenschaften der Lysozyme.** *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 57(1/2): 146-152. 1928.—Contrary to Fleming's results, lysozymes were not found in the expressed juice of green leaves (*Robinia, Sambucus,* rutabaga) or of ripe fruits (plums, apricots, apples), or the juices of potatoes, beets, turnips, rutabagas or onions in any demonstrable quantity; the common radish, however, showed a positive lysozyme content. Lysozymes were found with much greater regularity in normal animal bodies, though the concentration was low except in certain substances (e.g., human tears, egg-white). In the guinea-pig organism the most productive source appeared to be the polynuclear leucocytes. The reason for this irregularity was not apparent. Experiments showed that the lysozyme of egg-white produced no antilysozyme in rabbits. Since Wolff was unable to produce anaphylaxis with the purified preparation, it seems improbable that lysozymes are of antigenic character.—*A. Bodansky.*

16507. **KIRKBRIDE, MARY B., KNUD C. BERTHELSEN, and ROSE F. CLARK. Comparative studies of infusion and infusion-free diphtheria toxin in antitoxin production and in standardization by the flocculation, subcutaneous, and intracutaneous tests.** *Jour. Immunol.* 21(1): 1-20. 1931.—Successful application to routine and experimental purposes, of diphtheria toxin produced with an infusion-free peptone medium is reported. In addition to the advantages of substituting known for unknown factors, the marked reduction in cost of infusion-free, as compared with meat-infusion, toxin, and the greater uniformity in potency, are pointed out. In comparative flocculation-reaction tests, infusion-free toxin compared favorably with meat-infusion toxin. The micrometer-syringe method was found less accurate than the "pipette method" in which larger volumes of toxin are used. A comparison of the flocculation-reaction test with the subcutaneous and intracutaneous animal method for determining diphtheria antitoxic values showed closer agreement with the subcutaneous tests. In titrations of sera from certain horses, wide variations were noted between results of flocculation and subcutaneous tests on the one hand, and those of the intracutaneous test on the other. The flocculation-reaction test was found satisfactory for preliminary estimations of antitoxic content of concentrated, as well as of untreated, serum. As antigen, infusion-free toxin compared very favorably with routine infusion toxin for immunization of horses in production of diphtheria antitoxin. Injections of purified (ultrafiltered), infusion-free toxin also appeared to produce an equal response in a small series of horses.—*K. C. Berthelsen.*

16508. **KLOPSTOCK, A., und G. E. SELTER. Über chemospezifische Antigene. IV. Anaphylaxiereaktionen mit chemospezifischen Antigenen.** *Zeitschr. Immunitätsforsch.* 63(5/6): 463-483. 2 fig. 1929.—Confirming Landsteiner's earlier results, the authors find that guinea pigs sensitized by subcutaneous injection with an atoxyl-protein compound are thrown into lethal anaphylaxis by intravenous injection with any atoxyl-protein-complex, irrespective of origin or nature of protein "carrier" of the atoxyl. Even guinea-pig proteins are functioning "carriers" of this chemical antigen. Lethal anaphylaxis, however, is produced only by an optimum dose of such atoxyl-protein-complexes, excessive doses acting as inhibiting agents. Isolated or uncombined atoxyl produces no demonstrable shock in hypersensitive guinea pigs, but acts as a desensitizing agent. Isolated atoxyl injected subcutaneously leads to no demonstrable intravenous sensitivity, but gives, however, a demonstrable cutaneous sensitivity both to uncombined atoxyl and to atoxyl-protein-compounds. Similar results were obtained by a parallel anaphylactic study with sodium metanilate, and metanilate-protein-compounds.—*W. H. Manwaring.*

16509. **KOYASU, Y. Über die Immunitätsforschung des experimentellen Rückfallfiebers. IV. Prävent- und Heilversuch mit dem Antispirochaetenserum. V. Über das Immunitätsphänomen in vivo.** [In Japanese, with German summary.] *Acta Dermatol.* 17(1): 1-30; (2) 79-117. 1931.—IV. Antispirochaete serum from a rat recovered from relapsing fever showed some prophylactic properties. Neither that nor sera from actively immunized or healthy rats or guinea pigs showed therapeutic action. V. Living spirochaetes were introduced directly into the blood stream (1) in mice recovered from relapsing fever and actively immunized, and (2) in healthy mice which had shown positive agglomeration and Rieckenberg reaction before injection. None showed spirochaetolysis, but in the previously infected mice the spirochaetes vanished suddenly from the circulating blood; in the others there was a slight decrease followed by 2-3 days' increase. When living spirochaetes were intraperitoneally injected into previously infected mice, they never appeared in the circulating blood; immobile, half-destroyed or agglomerated spirochaetes were found here, but within a few hrs. they disappeared from the peritoneal cavity. The data indicate a true immunity following recovery from relapsing fever; it is uncertain which cells or portions of the organism are chiefly concerned, but the author inclines to suspect participation of the capillary endothelial cells.—*From author's summary.*

16510. **KRAUS, R. Über aktive Schutzimpfung gegen Diphtherie und ihre experimentellen Grundlagen.** [Active immunization against diphtheria and its experimental basis.] *Jahreskurse Ärztl. Fortbildung* 19(10): 13-28. 1 fig. 1928.

16511. **[KRICHEVSKIĬ, I.L., and P.L. RUBINSHTEIN.]** КРИЧЕВСКИЙ, И. Л., и П. Л. РУБИНШТЕЙН. О природе иммунитета при возвратном тифе. I. Влияние ретикулоэндотелиального аппарата на течение возвратного тифа. [Immunity in recurrent fever. 1. Influence of the reticulo-endothelial system on the course of recurrent fever.] [With French summary.] Журнал Микробиологии Патологии и Инфекционных Болэзней (*Jour. Microbiol., Path. Gén. et Mal. Infect.*) 4(1): 69-91. 1927.

16512. **LANDSTEINER, KARL. Individual differences in human blood.** *Science* 73(1894): 403-409. 1931.—This Nobel Prize Lecture by Landsteiner, given at Stockholm, deals not only with the 4 blood groups for the discovery of which the prize was recently awarded, but also with individual differences of human blood in general. The 4 human blood groups are described and also the new factors, M and N, and the heredity and forensic appli-

cation of both sorts of properties are discussed. These new factors, and also the sub-groups, increase considerably the variety of human blood and support the view that practically every human blood may be different from every other—a result previously established for some animal spp. Thus, a connection is established with the remarkable individual specificity of the transplantation of tissues. The substances underlying these individuality reactions are, in all likelihood, not proteins. The latter part reviews the subject of the use of blood groups for blood transfusion.—*P. Levine.*

16513. **LANDSTEINER, K., and PHILIP LEVINE. The differentiation of a type of human blood by means of normal animal serum.** *Jour. Immunol.* 20(2): 179-185. 1931.—The factor described as "P" and demonstrated by means of immune agglutinins for human blood can be recognized also with the aid of several other reagents, viz., atypical agglutinins present in some human sera and also normal animal sera (beef, horse, pig, rabbit). The 3 sorts of antibodies give parallel reactions, but while 2 of the reagents are difficult to procure, normal animal sera furnish a readily available material. The property P was studied in 71 families and in 4 families with both parents giving negative reactions. for P; all of the 18 children reacted negatively. These results confirm those previously obtained by the authors in tests with atypical human agglutinins.—*P. Levine.*

16514. **LAWSON, GEORGE B. Isohemagglutinins in the lower animals.** *Jour. Lab. and Clin. Med.* 15(7): 629-632. 1930.—Experiments failed to demonstrate either auto- or isohemagglutinins or auto- or isohemolysins in the blood of guinea pigs and rabbits; nor were heterologous agglutinins or heterologous hemolysins uniformly present in the serum of either of these animals when tested against the erythrocytes of the other. On the other hand, when human blood was used with that of guinea pigs, there was constant agglutination. Results of the work on monkeys indicate that possibly the blood of these animals can be grouped in a manner similar to human blood.—*F. W. Hachtel.*

16515. **LEVISON, WILHELM. Komplementbestimmungen bei Herz- und Kreislaufkranken.** *Zeitschr. Ges. Exp. Med.* 78(5/6): 728-732. 2 fig. 1931.—Complement was determined in 60 sera, of which 50 were from cardiac cases (12 compensated, 38 decompensated). In the decompensated cases, complement values were irregularly increased, normal, and decreased. Of the compensated cases, 12 showed increased and 4 normal, complement content. Increased complement was found mainly in valvular defect. Hepatic stasis was generally accompanied by increase in complement. In diluted serum through which CO_2 has been conducted in vitro, complement may disappear; in undiluted serum so treated, complement may increase.

16516. **LINZENMEIER, und JERNAKOFF. Blutsenkungsgeschwindigkeit und reticuloendotheliales System.** *Zeitschr. Ges. Exp. Med.* 78(3/4): 438-450. 1931.—The reticulo-endothelial system (R.-E.) was blocked with collargol in 20 rabbits. After medium and extreme blockade, sedimentation was somewhat, but not greatly, accelerated, possibly because of the anemia or emaciation produced. In rabbits previously infected intra-abdominally with *B. coli*, a decided acceleration of the sedimentation appeared 2-3 days later. After a 3-day moderate blockade of the R.-E., the sedimentation rate was slightly accelerated. The animal in which there was first a moderate blockade of the R.-E. with collargol and later on, intra-abdominal infection with coli, showed the same acceleration of sedimentation rate as the non-blockaded controls. Hence, it appears that either the sedimentation rate is not affected by the state of the R.-E. or colloid injection does not inhibit the functioning of that system.—*From author's summary (transl.).*

16517. **LUMSDEN, THOMAS. Tumour immunity.** *Amer. Jour. Cancer* 15(2): 563-640. 1 pl., 56 fig. 1931.—The author gives a simple technique for growing cancer cells and normal tissue cells in vitro, using pure serum rather than plasma or embryo extract. By treating such cultures with immune serum prepared by injecting animals (sheep) with the minced pulp of sterile cancer tissue, anti-malignant-cell bodies lethal to cancer cells but harmless to normal tissue cells can be produced. An active immunity against cancer may be induced by gradually destroying an actively growing tumor in rats by injection of antiserum or formalin into it—so called "autovaccination"; the animal is immune to subsequent tumor transplants. Animals thus immunized are found to be immune not only to the sarcoma concerned but also to rat carcinoma; the converse is not true. The euglobulin fraction of serum contains the anti-malignant-cell bodies. The antiserum is not effective in vivo unless it can be localized in the tumor by constriction of the part affected (leg) or by adrenalin. The mechanism of tumor immunity consists of (a) production of anti-malignant-cell bodies and (b) action of a specific cytase produced by the leucocytes.—*R. R. Spencer.*

16518. **LUNDBERG, ÅKE. De la lécithine, en tant que substance capable d'inhiber l'hémoagglutination.** *Acta Med. Scandinavica* 72(5/6): 395-398. 1929.—Group determinations were made with citrated blood, as usual. If agglutination was present, the blood was mixed with an emulsion of ovolecithin, and the group redetermined. Diluted blood was used at room temp. Dungern and Hirszfeld's nomenclature was taken. In groups A or B, no agglutination was present, after adding lecithin. Blood in group AB acted as if in group O or AB. In 3 clinical cases, helpine was substituted for ovolecithin, and injected intravenously; they were divided into groups with respect to the length of time that agglutination was inhibited. Although a preliminary report, it appears quite definite that lecithin prevents agglutination in vitro and slows it down in vivo.—*J. E. Andes.*

16519. **MOLONEY, P. J., and EDITH M. TAYLOR. Effect of certain oxidation-reduction potential indicators on diphtheria toxin.** *Trans. Roy. Soc. Canada, Sect. 5. Biol. Sci.* 24(1): 127-132. 1930.—Diphtheria toxin may be rendered atoxic by certain of the oxidation-reduction indicators. The rate of detoxification decreases approximately in the order: 2-chlorophenol-indophenol, phenol indophenol, 1-naphthol-2-sulphonate indophenol, methylene blue, indigo tetrasulphonate and indigo disulphonate. The evidence supports the view that oxidation is a factor in detoxification. The rate of detoxification increases with increased concentration of indicator and with increased alkalinity of solution, at pH 6.5-7.5. By certain of the indicators, toxoids may be produced, which are equal antigenically to those produced by the action of formalin on toxin. As good antigens have been produced from purified toxin by formalin action as from crude toxin of the same combining value. Toxoid made by 1-naphthol-2-sulphonate indophenol has a markedly lower value than that produced by the other indophenols used.—*B. Cohen.*

16520. **MOORE, MARJORIE B., and EDMOND E. MOORE. Studies on pollen and pollen extracts. II. The adsorption of allergically active constituents from pollen extracts.** *Jour. Allergy* 2(3): 168-172. 1931.—The efficiency of 5 adsorbents for solid materials and for N from 2 giant ragweed [*Ambrosia trifida*] pollen extracts, was measured. The extracts were ones commonly employed for clinical desensitization, water and a buffered saline serving as extracting fluids. The same determinations were made on a water extract of timothy [*Phleum pratense*] pollen, using the 2 most efficient adsorbents tried. The activity of extracts and of filtrates after adsorption was tested: (1) by the scratch method on hay fever patients sensitive to whole pollen extract, (2) by the intradermal method in sites on normal individuals sensitized by local passive transfer, and (3) by skin tests on rabbits sensitized to whole pollen. The order of efficiency as measured by chemical means was the same as that measured by the skin-reacting activity of the filtrates after adsorption, toward man or sensitized rabbits. This order was: active charcoal, Fe oxide and alumina gel, diatomaceous silica and silica gel.

The last 2 adsorbents appeared to cause no decrease in activity of the extracts.—*Author's summary.*

16521. **NEILL, JAMES M., WILLIAM L. FLEMING, JOHN Y. SUGG, ROY C. AVERY, LURLINE V. RICHARDSON, and BERNARD E. KANE. Hypersensitiveness to diphtheria bacterial products. Comparison of filtrates of highly and of weakly toxicogenic strains.** *Jour. Immunol.* 18 (6): 437-454. 1930.—The hypersensitive man (individual-C) previously reported reactive with toxin-containing and non-reactive with non-toxin-containing test materials, was studied further by comparison of the hypersensitive reactivity or non-reactivity of the filtrates of highly and of weakly toxicogenic strains of diphtheria bacilli. With a constant test dose (3.0×10^{-4} cc.) of filtrate, each of 18 highly toxicogenic strains produced a moderate to strong immediate skin reaction; none of 14 weakly toxicogenic strains gave any reaction. This sharp demarcation was acceptable proof that the agent of this man's hypersensitive reaction was consistently present in higher concentration in the filtrates of highly toxicogenic, than in the filtrates of weakly toxicogenic, strains. While the evidence is of indirect nature, it strongly suggests that diphtheria toxin is the substance involved in the hypersensitive immediate skin reaction described.—*J. M. Neill.*

16522. **NEILL, JAMES M., WILLIAM L. FLEMING, JOHN Y. SUGG, and E. L. GASPARI. Hypersensitiveness to diphtheria bacterial products. Prevention of hypersensitive reactions by neutralization of the toxin previous to intradermal injection.** *Jour. Immunol.* 18 (6): 455-472. 1930.—Previous evidence indicative that toxin is the substance involved in individual C's hypersensitiveness was based on the consistent association of high toxin content of test material with high degree of hypersensitive reactivity and of low or no toxin content with weak or no hypersensitive reactivity. The evidence here is based on the constant association between antitoxin content of serum and capacity of serum to neutralize the hypersensitive agent when the toxin-containing filtrate is incubated with the serum before intradermal test injections. Experiments with similar results were obtained with antitoxin-containing serum of horse, rabbit, and man. The most convincing results were obtained with human sera because it was possible by choice from a large number to select more purely "antitoxic" sera than could be obtained by laboratory immunization of animals. The selected human sera, containing antitoxin but no precipitins and only traces of "group agglutinin" or none, were able to neutralize the agent of the hypersensitive reaction. Further experiments demonstrated a quantitative relationship between antitoxin content and amount of the respective serum required to neutralize the substance hypersensitively reactive with individual C.—*J. M. Neill.*

16523. **NEILL, JAMES M., JOHN Y. SUGG, and LURLINE V. RICHARDSON. Hypersensitiveness to diphtheria bacterial products. Anaphylactic reactions of antitoxin immune guinea pigs.** *Jour. Immunol.* 19 (2): 109-143. 1930.—The paper reports the anaphylactic reactions of guinea pigs immunized with toxoid and subsequently injected intravenously either with phenolized filtrate containing toxin antigen, or with formolized filtrate containing toxoid antigen. It was proved that the acute death of the antitoxic-immune animals represented true anaphylactic reactions specific to bacterial products contained in diphtheria filtrate. While it was recognized that other constituents participate to some extent, the evidence as a whole indicates that toxin or toxoid antigen is the principal agent of the anaphylactic reaction of antitoxic-immune guinea pigs to unheated filtrates containing a relatively large proportion of toxin or toxoid. The complications due to substances other than toxin or toxoid are least prominent if one uses both for immunization and for the intravenous test, minimal amounts of unheated filtrate in which toxoid is the dominant antigen, and finally selects for intravenous test, individual guinea pigs that have been "earliest" in antitoxin production.—*J. M. Neill.*

16524. **PLAUT, F. Serologie der Lipoide in ihrer Beziehung zur Syphilis und Metasyphilis.** *Zeitschr. Ges. Neurol. u. Psychiat.* 123 (2/3): 365-390. 1929.—The author critically reviews the experimental findings of various workers in their attempts to produce lipoid antibodies. Results with pure lipoid preparations, lipoid conjugated with protein, extracts of bacteria, extracts of *spirocheta pallida* and organ extracts are compared as to antisera produced by their injection into animals. Special stress is laid on the variety of responses of different experimental animals—rabbits, e.g., being most susceptible to immunization with organ extracts.—*Pearl L. Kendrick.*

16525. **PRATI, MARIO. Der Einfluss der Mikroorganismen auf die Hämagglutination.** *Zeitschr. Immunitätsforsch. u. Exp. Therapeut.* 57 (1/2): 1-18. 3 fig. 1928.—Pseudoagglutination observed in an ab serum contaminated with bacteria led to an experimental study of artificially inoculated sera. The following organisms all caused pseudoagglutination after varying periods of incubation in ab serum: staphylococci, streptococci, *Bacillus pyocyaneus, B. subtilis, B. anthracis, B. tuberculosis, B. paratyphosus, B. typhosus, B. melitensis, B. coli.* Pseudoagglutination was extremely hard to differentiate from true isoagglutination. The substance causing it was associated with change in the proteins of the serum, and the author correlates it with the same changes which cause increased sedimentation rate in infections. Pseudoagglutination does not interfere with true isoagglutination and resembles rouleaux formation, but is nevertheless difficult to differentiate.—*C. M. Downs.*

16526. **RAI, T. Immunologische Beobachtungen beim Rekurrens des Kaninchens. I, II, III.** [In Japanese, with German summary.] *Acta Dermatol.* 17 (5): 356-373; (6): 413-426; 427-452. 1931.—I. The appearance of antibodies against relapsing fever in rabbits was studied by mixing sera of infected rabbits in serial dilutions, with mouse blood containing spirochaetes, incubating the mixture, and inoculating mice. Serum of infected rabbits during onset and crisis did not differ in action from normal serum; antibodies were first apparent about 24 hrs. after crisis. The author infers that antibodies originate during onset and crisis, but are imperceptible because occurring in relatively small numbers and absorbed by the antigen (spirochaetes in the circulating blood).—II. Active and passive immunity against relapsing fever were induced in rabbits. Intravenous injection of a suspension of relapsing fever spirochaetes, sterilized for 30 min. at 56° C., induced immunity which was slight 24 hrs. after inoculation, rather strong after 48 hrs., and very marked after 72 hrs., rapidity of increase being in proportion to amount of antigen inoculated. Immune serum from infected rabbits induced in a healthy rabbit a very marked immunity within 6 hrs., degree of immunity being in proportion to dose of serum.—III. The immunity induced in a rabbit by infection with relapsing fever increased rapidly for 2 wks., and generally decreased suddenly after 3-4 wks. and gradually after 5 wks. The sera of severely infected rabbits were strongly and lastingly immune; those of lightly infected rabbits were weak and transiently immune.—*From author's summary.*

16527. **RAMON, G., A. BESSEMANS, et F. de POTTER. Le développement des anticorps au cours de l'immunisation du cheval par divers antigènes diphthériques.** *Compt. Rend. Soc. Biol.* 106 (12): 1104-1107. 1931.—An emulsion of living diphtheria bacilli and later, toxin, were injected under the skin of 2 horses and, in the same way, 3 other horses received living diphtheroids (ozena strain) or bacteria isolated recently from a case of diphtheria. 2 horses, one of which was hyperimmunized with anatoxin, were injected intravenously with living bacteria. In every case the doses were gradually increased over a period of 1 mo. or more. The animals were bled generally before each new injection of antigen and the sera tested for antitoxin, agglutinin and for antibodies fixing complement. The subcutaneous injections produced increasing amounts of antitoxin, except in the horse which received diphtheroids, where there was none.

All these sera were negative when tested for agglutinin. Intravenous injection of bacteria resulted in quick production of agglutinin which reached its maximum after the 2nd injection. The amount of antitoxin decreased more rapidly in the hyperimmunized horse. The amount of complement-fixing antibody varied from one animal to another. When bacteria are introduced subcutaneously, they grow at the site of injection and produce toxin which is then introduced into the blood stream and gives rise to formation of antitoxin, but not to agglutinin. Intravenous injection causes a quick production of agglutinins, but, since the blood stream is unfavorable for growth of the bacteria, no toxin is produced and the amount of antitoxin formed soon reaches its maximum value. This upholds the theory of the authors, that antigen or its direct derivatives enter into the constitution of antibody.—*E. Weiner.*

16528. ROWE, ALBERT H. Food allergy. Its manifestations, diagnosis and treatment, with a general discussion of bronchial asthma. xi+442p. Lea & Febiger: Philadelphia, 1931.—Price $5.00.—Food allergy is a term used to denote changes in the human organism from a hypersensitiveness of the body cells to specific foods. "The active principle in foods to which hypersensitiveness is established in the body cell is probably a protein or some substance, such as a ferment closely bound up with the protein molecule." The author's experience, together with observations of others, indicate that food allergy is a common cause of human symptomatology. It may produce localized symptoms in any tissue or part of the body, especially in the gastro-intestinal tract. This monograph discusses food allergy from the clinical, experimental, diagnostic, therapeutic and historical viewpoints. Case histories, experimental investigations and a study of results obtained by the author's "elimination diets" are presented in detail. The book is divided into 15 chapters: Food Allergy: its occurrence and characteristics; Diagnosis of food allergy; Treatment by elimination diets and general measures; Gastrointestinal food allergy; Bronchial asthma; Eczema, urticaria, angioneurotic edema and generalized edema; Allergic migraine and neuralgia; Allergic toxemia due to food allergy; Perennial hay fever; Arthritis, arthralgia, intermittent hydrarthrosis, dysmenorrhoea, cardiovascular disturbances, Henoch's purpura; Bladder allergy; Nervous manifestations of food allergy; Food allergy in infancy and childhood; General considerations in regard to food allergy; Individual food allergies and their control; Summary of literature on food allergy.—*S. Bayne-Jones.*

16529. SCHÖBL, OTTO. The immunologic effect of repeated yaws infections interrupted by specific treatment given in the early stage of initial yaw. *Philippine Jour. Sci.* 43(4): 589-594. 1930.—Repeated local yaws infections terminated by specific treatment given before the time when generalized yaws manifestations occur, produce immunity in Philippine monkeys, even though delayed. The incubation period becomes irregular, mostly prolonged with repeated reinoculations terminated by treatments. This shows that the developing immunity, although not yet strong enough to suppress completely the development of lesions, has a definite effect on the incubation period. This observation strengthens the claim that sensitization is the underlying principle of immunity in treponematoses. The findings on monkeys corroborate and amplify previous findings on human volunteers and prove that immunization against yaws by repeated local yaws infections terminated by treatments is possible. Jointly with the author's previous experimental evidence, these results indicate that the most favorable time for immunization in treponematoses is the early stage of infection and that it must be carried out vigorously within the first few mo. of infection or immunization.—*Author's summary.*

16530. SCHÜTZ, FRANZ, und F. v. HUTYRA. Über die experimentelle Grundlage der Schutzimpfung gegen Tuberkulose nach Calmette. *Zeitschr. Immunitätsforsch.* 62(1/2): 74-106. 3 pl. 1929.—BCG, though a greatly weakened strain, is still not completely avirulent for guinea pigs. At times it may cause, in undernourished animals, typical, progressive, and even fatal generalized tuberculosis. In some instances the disease so produced can be transferred to other animals and the "virus" may attain a high degree of virulence by such animal passage. The individual resistance of the animal plays an important rôle in eliciting the pathogenic capacity of the vaccine. Guinea pigs which have not been made ill by the vaccine withstand thereafter an inoculation of a moderate dose of bovine tubercle bacilli.—*M. B. Lurie.*

16531. SEWALL, HENRY. Psychic analogues of allergy. *Science* 74(1906): 37-39. 1931.—"Allergy" implies a defensive reaction against a particular antigen in a prepared subject. It is manifested by more or less violent inflammation, doubtless associated with specific chemical changes. This may be either conservative or destructive for an infected host. But sudden amelioration in the course of disease so frequently follows acute allergic disturbance that immunologists generally have come to regard allergy as itself the protective agency against infection and the concomitant of immunity. Against this view A. R. Rich has recently opposed apposite objections the resultant of which is that allergy as such has no place in the chain of events leading to immunity and that the good or harm it may do is accidental. To the writer it has seemed plausible that all these views may be too narrow. Protective reactions against viable enemies must have been primordial, independent of specific chemistry or mechanism. We find obvious analogues in the psychic sphere. Thus, the sense of pain, and the emotion of fear, wholly extra-physiological as they are, nevertheless are reactions conservative of life. The feeling of national spirit unites communities for mutual defense. Like allergy, these powers in certain intensity and coordination, protective to the host, may, uncontrolled, destroy him.—*H. Sewall.*

16532. SHIBATA, JUNICHIRO. Untersuchungen über die Komplementbindungs- und Tuberkulinreaktion mit dem BCG-Stamm im Vergleiche zu einem virulenten Tuberkulosestamm. *Zeitschr. Immunitätsforsch.* 63(5/6): 358-370. 1929.—Immune sera of a BCG strain and of a virulent bovine strain (Vallée), prepared by inoculating rabbits with dead culture suspensions, reacted equally in complement fixation tests with suspensions of the 2 strains. When alcoholic extracts of the strains were employed as antigens, inhibition of lysis with both immune sera was as pronounced as with intact bacilli, and similarly without specificity for the homologous strain. Immune sera obtained by inoculation of rabbits with alcoholic extracts also reacted equally in complement fixation tests with alcoholic extracts, but not with intact bacilli, used as antigens. After reciprocal absorption of immune sera with their respective bacilli, complement fixation in presence of either antigen was unchanged. Both immune sera in large doses inhibited hemolysis in complement fixation tests with the following antigens: alcoholic extract of ox heart and, to a less extent, aqueous and alcoholic extracts of brain, liver, and kidney of rabbits; and no definite difference in the strength of the reaction was perceptible with these, or with the tubercle bacillus antigens. No difference was manifest in amount of reaction in intracutaneous inoculations performed with tuberculins prepared with the 2 strains, on guinea pigs infected with the Vallée strain; but when the lethal effect of these tuberculins was tested by subcutaneous injection of larger doses into infected guinea pigs, the tuberculin of the BCG strain was clearly less toxic than that of the Vallée strain.—*R. T. Hewlett.*

16533. STOELS, G. Culture in vitro di vitro [virus] vaccinal et immunité antivaccinale. *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation.)* 10(4): 452-462. 1931.—Neurovaccine was added to embryo extract in Borrel flasks, 1-2 mm. fragments of rabbit spleen or testis, embryonic chick, or Rous chicken sarcoma were added, and a few min. later plasma. In controls the vaccine disappeared in 4 days at 37°, showing the necessity of living cells for in vitro culture; in their presence it lived and increased. Inclusions resembling Guarnieri bodies ap-

peared only in cultures of embryonic cornea, but must be regarded as signs of degeneration, since they appeared also in the controls. Cultures of rabbit spleen or testis were used to test antivaccinal immunity, using tissue or plasma from previously vaccinated animals. Using "immune plasma" with normal tissue, the cultures were no more virulent after 4 days at 37° than were controls (plasma added after 5 min.). A series was made in which immune plasma was added only after 5, 15, 30, and 90 min., giving time for the virus to penetrate the tissue, and the cultures were tested after 5 hrs.; the 1st had almost no virulence, the 2nd some, the 3rd and 4th a great deal. "Immune" spleen cultures destroyed large doses of virus within 5 hrs.; those of the testis were slightly virulent after 5 hrs. and virulence increased progressively after the next day. This was undoubtedly owing to difference in the cells: in the spleen, leucocytes, lymphocytes and macrophages; in the testis, fibroblasts and a few macrophages. The hypothesis that the leucocytes, macrophages, and in general all cells of the reticulo-endothelial system, have a cellular, antivaccinal immunity which the fibroblasts do not have, would explain this.

16534. **STRAUS, HENRY W. Artificial sensitization of infants to poison ivy.** *Jour. Allergy* 2(3): 137-144. 1931.—A poison ivy paste, applied as a patch test to 41 normal and atopic adults, gave a positive test in 75.6%. The same material applied to the skin of 119 newborn with the same technique gave 100% negative results. After 2-4 wk., 48 of the infants were retested by the patch method and a positive reaction was obtained in 72.9%. The skin was generally sensitized. The insusceptibility heretofore observed in children under 3 yrs. is not due to lack of mechanism, as formerly believed, but to lack of previous, or of sufficient, contact.—*H. W. Straus.*

16535. **SUGG, JOHN Y., and JAMES M. NEILL. Use of broth culture filtrates in anaphylaxis experiments.** *Jour. Immunol.* 19(2): 145-153. 1930.—The primarily toxic (anaphylactoid) action was studied by intravenous injection of normal guinea pigs with formolized and unformolized filtrates of diphtheria and other bacilli and with the non-bacterial constituents of the filtrates (uninoculated broth, solutions of phenol and of formol). The possibility of sensitization to the non-bacterial constituents during immunization with the filtrates was studied by intravenous tests on animals previously given repeated subcutaneous injections of formol solution or of formolized broth. With diphtheria filtrates, neither primary toxicity nor possibility of sensitization to broth constituents, introduced significant complications in their use as material for active sensitization and for subsequent intravenous tests. The adaptability of broth culture filtrates of other bacteria to anaphylaxis experiments would depend on the quantitative effectiveness of the antigens they liberate into their culture fluids.—*J. M. Neill.*

16536. **TAYLOR, G. L. The results of some quantitative experiments on the serum precipitation reaction.** *Jour. Hyg.* 31(1): 56-83. 1931.—Experiments based largely on the work of Dean and Webb lead to these conclusions: In the serum precipitation reaction, antigen and antibody react in equivalent proportions to form an antigen-antibody complex which adsorbs suitable matter from the surrounding medium. Excess antigen is adsorbed by, and exercises a protective action on, the micellae of the complex, and prevents completion of the reaction. Antibody in excess does not affect the reaction, but in the great majority of cases is traceable in the supernatant fluid, in equivalent amount. The speed of particulation depends on the amount of complex and adsorbable matter present. There is some evidence that in certain cases the nature and quantity of adsorbable matter may be such as to cause excess of antibody to be removed from the supernatant fluid. In such cases the adsorbable matter may possibly be adsorbent to the excess of antibody. Antisera vary in amount of antibody and in amount and nature of adsorbable matter contained. Addition of adsorbable matter is a useful way of hastening and facilitating the reading of reactions.

16537. **THIELE, HEINRICH. Diphtherieschutzimpfungen, Schickprüfungen und Bestimmungen des Antitoxin-Titers im Serum.** *Arch. Kinderheilk.* 94(2/3): 175-202. 1931.—Of 337 school-age children tested for diphtheria sensitivity, 103 were Schick-positive, girls and younger children being more affected. In about 20%, Schick test and antitoxin titer failed to correspond, due to limited possibilities of comparison between Schick and Römer (R) reactions, inadequacy of present Schick preparations, abnormal behavior of some children, and errors in observation. Numerous exceptions were observed. Of 31 pairs of siblings, 27 showed similar reactions. Of the inoculation preparations—T.A.F.-Behring, anatoxin-Behring, toxoid-Löwenstein, and anatoxin Ramon—the last was most dependable and effective.

16538. **THOMSEN, OLUF. Om eksistensen af blodtyper (blodgrupper), sideordnede og underordnede de fire Landsteiner'ske typer. [Existence of blood-types (blood-groups) beside and below the four Landsteiner groups.]** *Hospitalstidende [Copenhagen]* 71(11): 253-272. 1928.—A critical examination of the numerous "subgroups" found by different researchers and based on the agglutinability of the erythrocytes of certain individuals in sera of isolated individuals outside the "4-group-scheme." Most of these agglutination phenomena are due to the action of more or less irregularly appearing "cold-agglutinins." A constant classification into sub-groups on this basis can hardly be carried into effect.—*O. Thomsen.*

16539. **THOMSEN, OLUF. Om Blodlegemernes Receptorudvikling hos Nyfødte og spaede Børn. [Receptor development of the blood-corpuscles in the newborn and in infants.]** *Hospitalstidende [Copenhagen]* 71(28): 743-753. 1928.—Particularly in the newborn of AB-group, the A-receptor is in many cases but slightly developed, in some cases even so little that only with the help of very strong iso-sera (titer 500 or more) or of immune sera, is it possible to detect the A-receptor. Hence, a very weak A-receptor may be misinterpreted as O. The weak development of A in some AB-individuals may be interpreted as a relative dominance of B over A, which thus tends to corroborate the supposition that A and B are allelomorphic genes (Bernstein). The weakest A-receptor is found in the A_2B-group.—*O. Thomsen.*

16540. **THOMSEN, OLUF, og AXEL THISTED. Undersøgelser over Isohaemolysin i Menneskeserum. [Isohemolysis in human serum.]** *Hospitalstidende [Copenhagen]* 71(51): 1367-1379. 1928.—By using erythrocytes which had been standing at 0° C. for 1-4 days, all human sera proved to contain both isolysin and agglutinin (Hesser). The hemolysin is of a complex nature and, after previous inactivation (55°), can be partly reactivated. Examination of fresh human serum (at most, 2 hrs. after drawing) proved that fresh erythrocytes are also hemolyzable. A-erythrocytes hemolyzed much more frequently (in sera of O- and B-groups) than B-erythrocytes (in sera of O- and A-groups). Hence, it is questionable to use group-O as a universal donor, particularly for transfer to individuals of A-group, and, notably, if the donor's hemolysin titer be high.—*O. Thomsen.*

16541. **TOMÁSEK, VÁCLAV. O významu extraktu při Bordet-Wassermannově reakci. Nový extrakt pro BWaR, jeho podstata a praktická cena. [Importance of antigen in the Bordet-Wassermann reaction. Principles and practical value of a new antigen.]** [With French summary.] *Spisy Lékařské Fak. Masarykovy Univ. Brno (Publ. Fac. Med. Brno)* 6(53): 5-40. 1928.—A very active antigen for the Bordet-Wassermann reaction may be prepared from coagulated ox serum treated with a liquefying bacillus. 5-10 tubes of coagulated serum are inoculated with *B. pyocyaneus* and incubated for 5-7 days. The liquid is then decanted into a dish and dried in the incubator for some days. The dry material is ground and 1.0 gm. of the fine powder is extracted with 40 cc. of absolute alcohol for 10 days at 37°C., shak-

ing several times a day. For use, 1 cc. of alcoholic extract is diluted drop by drop with saline to make a 1:15 dilution, when the test is done at 37°; or a 1:25 dilution, when the test is done in the ice box for 12 hrs., followed by 1 hr. at 37°. For an active and sensitive antigen, dilutions must be made very slowly. Other proteolytic organisms may be substituted, but pathogenic forms should not be used. The combined lipoids of the serum set free by proteolysis are the active agents, rather than the free lipoids of the serum, for broth and agar cultures of *B. pyocyaneus* only exceptionally react, and alcoholic extracts of untreated serum, never. The active lipoids can not be extracted from serum with ether, and an antigen prepared by the *B. pyocyaneus* method from a protein poor in lipoids is inactive. Peptic digestion of serum yields an inactive, tryptic digestion a feebly antigenic, product. Results of the Bordet-Wassermann with this *B. pyocyaneus* antigen are very encouraging. The anti-complimentary action of the extract is a little greater than with other antigens, but this can be compensated for by a larger dose of complement. It is stable and the antigenic power is marked. Non-specific reactions are less frequent when the mixtures are first treated in the ice-box and then incubated, than when they are incubated immediately.—*R. T. Hewlett.*

16542. TSCHERIKOWER, R. S., und F. T. GRÜNBAUM. Der Gehalt an Antikörpern im Blutplasma und in auf verschiedene Art gewonnenem Serum. [Content in antibodies of blood plasma and of various sera.] *Zentralbl. Bakt. I. Abt. Orig.* 112(1/2): 108-116. 1929.

16543. VALTIS, J., et F. van DEINSE. Le BCG peut-il devenir virulent par culture sur filtrats tuberculeux? *Compt. Rend. Soc. Biol.* 106(12): 1109-1111. 1931.—BCG was cultured on filtrates of a virulent human strain of tubercle bacillus; 6 subcultures were made, each of which was injected subcutaneously or intraperitoneally into 2 or more guinea pigs. The guinea pigs injected with the 5th subculture died of an intercurrent malady several days afterward. None of the inoculated animals showed tuberculous lesions or bacilli in the ganglia, on postmortem. Only 2 of the animals responded positively to tuberculin. The filtrate does not increase the virulence of BCG nor does the latter increase that of the filtrate, when both are cultured together. Therefore, BCG may be used for immunizing infants of tuberculous mothers. —*E. Weiner.*

16544. VAUGHAN, WARREN T. Food allergens. II. Trial diets in the elimination of allergenic foods. *Jour. Immunol.* 20(4): 313-332. 1931.—A certain proportion of allergic individuals sensitive to foods fail to give positive skin reactions. In these cases, trial diets are formulated, containing foods known to be infrequently allergenic. The author's genetic classification of possible allergenic foods into biologic groups is the basis for his trial diets. Where a positive skin reaction to a food has been observed, the trial diet should not contain this, or any closely related, food. Wheat, egg, milk, chocolate, cabbage, orange, potato and legumes are the most frequently allergenic foods. If relief is obtained with the trial diet, new foods are added, 1 at a time, their order being based on biologic relationships. Tables show the author's genetic classification of vegetable foods, the frequency of positive reactions to various foods, and describe the formulation of the trial diet.—*W. T. Vaughan.*

16545. WHARTON, D. R. A. The effects of certain toxic substances on the ciliated epithelium of the guinea pig. *Amer. Jour. Hyg.* 14(1): 109-129. 1931.—The ciliated cells from the trachea of freshly killed normal guinea pigs, observed in dark field illumination under high power, were vigorously active, and appeared to retain their activity after several hrs. in Ringer's solution or in a variety of sera. Bacterial poisons, light and certain other factors inhibited ciliary movement, whereas bacterial toxins and venom had no demonstrable effect. The inhibitory factors of the bacterial cultures (poisons) are considered to be of protein origin. Antigen failed to produce on the ciliated epithelium of sensitized guinea pigs and on ciliated epithelium treated with precipitating antisera, any change in the action of the cilia which might be used as a criterion of hypersensitiveness or immunity. The cilia were inhibited in different periods of time by various sputa, and it is suggested that the sputum in certain respiratory conditions, as bronchitis, may affect the movement of cilia adversely.

16546. WOLFF, L. K., und G. RAS. Über unspezifische Therapie. II. *Zeitschr. Ges. Exp. Med.* 75(5, 6): 719-736. 1931.—Intravenous injections into rabbits, of 12 inorganic salts, 31 organic compounds, 12 proteins (serum or milk), 14 suspensions, and 12 samples of dead bacteria showed that a non-specific bactericidal action was obtained from all substances tried, the time between injection and effect varying with amount injected. Tolerance to histamine produced tolerance to all others; tolerance to India ink gave tolerance to all materials tested except histamine. Tolerance to a gram-negative bacterial vaccine gave tolerance for all other gram-negative, but not for gram-positive, vaccines; the reverse was also true. Subcutaneous injection also gave a bactericidal effect. The non-specific bactericidal action failed to occur in uncoagulated blood, blood and serum attaining bactericidal properties only by destruction of leucocytes. The property appeared immediately after addition of bacteria to blood. Specific bactericidal powers, inherited or acquired, occurred in uncoagulated blood, for which uninjured leucocytes were necessary; this occurred only ½-2 hrs. after mixing blood and bacteria. Serum and plasma of such blood never had bactericidal powers.

16547. YANG, K., and MAX THEILER. The relationship of Leptospira icterohaemorrhagiae and the Akiyami type A strain of Leptospira as determined by cross immunization experiments in guinea pigs. *Amer. Jour. Trop. Med.* 10(6): 407-418. 1930.—The strain of *L. icterohaemorrhagiae* used was isolated in 1925 from rats trapped in the Boston market, that of *L. hebdomadis* was the A-type isolated from akiyami, a Japanese infectious fever; virulence of both had been maintained by guinea-pig passage. For immunization, 6 guinea pigs were injected with blood of an animal with *L. icterohaemorrhagiae* infection, and 6 were injected with passage virus (2) or with culture (4) of the akiyami strain, followed in each case 24-48 hrs. later by a dose of corresponding immune serum to abort infection and preserve the animals. Some weeks later, the immunity of each group against homologous virus was tested by injection of liver pulp of a passage animal, the inoculum containing 1000-10,000 lethal doses of the corresponding virus; all animals survived. For the cross-immunity tests, the 6 icterohaemorrhagiae-immune animals were inoculated intraperitoneally with liver pulp of an akiyami passage animal, together with 6 control guinea pigs with various dilutions of the same virus material. All immunized animals lived (except one which died under an anaesthetic), whereas controls inoculated with 1/10-1/10,000 of the test dose of virus died. The 6 akiyami immune animals were similarly inoculated with massive doses of liver of an icterohaemorrhagiae passage animal and, with 1 exception, all survived, whereas 6 controls all succumbed, even with 1/1,000,000 of the test dose of virus. The 2 strains of *Leptospira* are therefore indistinguishable by cross-immunity tests, and the question is raised whether the establishment of a number of different *Leptospira* spp. is justified.—*R. T. Hewlett.*

16548. YOSHIDA, S. Immunitätsforschung der Spirochaetenkrh. V. Der Spirochaetennachweis im kreisenden Blute von gegen Rattenbisskrh. immunisierten Kaninchen nach der intravenösen Injektion der Rattenbissspirochaeten-suspension. [Japanese, with German summary.] *Acta Dermatol.* 17(1): 39-56. 2 fig. 1931.—V. [A]. Healthy rabbits (apparently 3) were intravenously inoculated with rat-bite fever spirochaetes. To determine how long living spirochaetes circulate in the blood, 0.1-1 cc. of blood was withdrawn at intervals of 3 hrs. to 11 days and injected into other healthy rabbits. Chancres were produced by blood injected on the 11th day after the donor's infection. [B]. Rabbits infected with the

spirochaetes were treated with salvarsan, and intravenously reinfected about 1 mo. after treatment. Blood withdrawn at various times after reinfection was injected into other healthy rabbits, producing primary lesions. [C]. Immunized rabbits were intravenously injected with emulsion of the spirochaetes. Blood withdrawn from them and injected under the dorsal skin of other healthy rabbits produced practically no primary lesion at point of injection. The spirochaetes disappeared from the blood of immunized rabbits much more rapidly than from that of the non-immunized. Yet the immunity was not absolute: a few spirochaetes were found in the blood of "immunized" rabbits a week after intravenous injection; and they gradually increased, becoming numerous at the end of 2 wk., eventually producing rat-bite fever. Injected into healthy rabbits, the spirochaetes increased almost from the start.—*From author's summary.*

LOWER ANIMALS

16549. **DALLING, T. Canine distemper immunization. Use of various prophylactics in hunting packs.** *Vet. Jour.* 87 (12) : 553-558. 1931.—Field trials covering several hundred hounds are reported, in which immunization was attempted by 3 methods. 2 doses of vaccine were classified as giving good results in 8 packs, as moderately good in 5, and as bad in 6. Serum and virus often gave a severe reaction which required further administration of the hyper-immune serum. Of 34 packs in which it was used, 22 were classified as good, 8 as moderately good, and 4 as bad. Vaccine followed in 14 days with dried, active virus used on 1,025 hounds gave good results in 99%.—*I. E. Newsom.*

16550. **EDWARDS, J. T. Rinderpest: Some points in immunity.** *Far East Assoc. Trop. Med. Trans. 7th Cong. Brit. India* 3: 707-717. 1927[1928].—By the serum-simultaneous method of immunization, young calves may acquire a solid immunity against rinderpest virus, which lasts for 2 yrs. A hyperimmune serum used in the inoculation may be made by repeated injections, but it has no special advantages over one made by a single injection, provided a mild but decided reaction is evoked. After immunity has lapsed it may be "freshened" up by inoculation of virus alone. Following Madsen's technique, injection of certain salts 2 hrs. before bleeding seemed to yield a better serum in animals already yielding a good serum, but did not increase the quality when the animals were yielding a poor serum.—*R. R. Spencer.*

16551. **FERREIRA, A. AGUEDA, et T. SÁ VIANA CONTE. Recherches des substances rabicides dans le sang des chiens vaccinés contre la rage.** *Arq. Inst. Bact. Camara Pestana* 6 (2) : xxvii-l. 1930.—The authors vaccinated 2 lots of dogs against rabies, one with avirulent vaccine and another with virulent vaccine, remarking that the viricidal power of the blood was positive in the first lot in 42% at the 10th to 19th days, and in only 28% at the 30th to 50th days. In the 2nd lot the averages were, respectively, 52% and 62%. When these vaccinated animals were inoculated with street virus, 57% of the 1st lot of dogs developed rabies and only 31% of the 2nd lot. Protection of the animals was paralleled by the presence of viricidal substance in the serum.—*A. A. Ferreira.*

16552. **FINZI, G. Tubercoline e anaesotubercoline.** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 12 (11) : 605-612. 1930.—Discussion of additional experiments convincing the author of the superiority of his tuberculin for diagnosis in cattle.—*P. Popenoe.*

16553. **FINZI, GUIDO. Il B. C. G. nella profilassi della tuberculosi bovina.** *Profilassi* 10: (1-82). 1931.—A résumé of the literature against BCG vaccine for veterinary use.—*F. W. Fornet.*

16554. **FREIRE MUÑOZ, CARLOS. La vacuna antirrábica de los perros por el método de Umeno y Doi. [Prevention of canine rabies by the method of Umeno and Doi.]** *An. Escuela Vet. Uruguay* 1 (12) : 457-466. 1929.—Both prevention and cure of experimental rabies of dogs proved successful by subcutaneous inoculation of phenolized-glycerolized rabic virus which had been previously kept for 7 days at 37° C. Exposures for 30 days in the ice-box or for 15 days at room temp. proved inadequate for a reliable loss of virulence. 3-5 cc. of the Umeno-Doi vaccine prepared as above protected dogs against further inoculations of street-virus by ocular route in an average of 83.33% of cases; only 25% of control dogs were spared. Curative results could also be obtained in dogs which had been previously bitten by typically rabic dogs even after 7 days, by Umeno-Doi vaccine injected subcutaneously in doses of 3-5 cc.—*A. de Assis (from author's abstract).*

16555. **FRÖHLICH, R. Erfahrungen bei der Bekämpfung des seuchenhaften Abortus.** *Tierärztl. Rundschau* 37 (33) : 588-592. 1931.—Animals which show no symptoms, either clinically or in history of abortions, frequently give positive agglutination tests for *B. abortus.* Injections of a vaccine into such animals have always insured successful gestation. Infection of man through the milk has never been observed.—*R. Fröhlich (transl. by L. C. Havens).*

16556. **HAMEDY, A. Le phénomène de l'iso-agglutination chez les chevaux avant et après leur hyperimmunisation antitoxique.** *Compt. Rend. Soc. Biol.* 106 (12) : 1095-1097. 1931.—The blood of 33 horses, divided into groups of 11 each, was examined before the beginning of anti-diphtheria immunization with increasing doses of anatoxin and after completion of hyperimmunization, 2 mo. after the first examination. The amount of iso-agglutinin in the blood of horses is very small, making the phenomena of isoagglutination less clear than in man. Variations in the blood groups of some of the horses was caused by hyperimmunization. Results of the Schick test had no direct relation to blood groups.—*E. Weiner.*

16557. **HOWARTH, J. A., and F. M. HAYES. Brucelliasis in the swine herd of the University of California.** *Jour. Amer. Vet. Med. Assoc.* 31 (6) : 830-848. 3 fig. 1931.—Agglutination tests of the blood serum of all swine in the herd failed to control spread of *Brucella* infection, when accompanied by removal of reactors, until the frequency of tests was increased to 2-wk. intervals. As measured by the agglutination test, agglutinins for *Brucella* varied markedly in concentration in reacting swine that were repeatedly tested and usually did not appear in dilutions of 1: 400 and above. Offspring from reacting sows became reactors after receiving colostrum, but soon became negative and remained so, although in intimate contact with infected mothers, until approximately 3 mo. after weaning. Abortions and birth of dead pigs were not significant symptoms, since reacting sows farrowed 2.64% and negative sows, 2.21%, of dead pigs. 1 negative cow exposed to infected swine became a reactor on the 91st day.—*F. M. Hayes.*

16558. **LAGRANGE, E. Sur l'autostérilisation mortelle des poules vaccinées contre la peste aviaire d'Egypte.** *Compt. Rend. Soc. Biol.* 106 (12) : 1080-1081.—In vaccinating chickens against Egyptian bird plague, some always succumbed; in these, the spleen, liver and blood were avirulent, while the brain was always virulent. Post-mortems of unvaccinated chickens which died of spontaneous or experimental infection showed autosterilization of the brain, while the abdominal viscera were virulent. The non-virulence of the brain in unvaccinated chickens is ascribed to an epidemic or seasonal factor, while mortal sterilization in vaccinated chickens is produced independently of seasonal factors.—*E. Weiner.*

16559. **ROSSI, PAUL. Antivirusthérapie.** *Rev. Vét. et Jour. Méd. Vét. et Zootech.* 83 (July) : 361-380. 1931. —Antivirus therapy, preventive or curative, is based on local application of substances derived from bacteria, without addition of antibodies. These antiviruses act specifically on the "receptive" cells for which the bacteria show a special affinity—a true tropism. They are incapable of affecting cells already injured, but protect those still unchanged and surround the focus of infection, preventing those within from serving as a source of new infection. The "autoviruses" and "regional viruses" are most effective, and produce rapid local

immunity without appreciable reaction. The organisms against which antivirus therapy is most effective are staphylococci, streptococci and anthrax bacilli. There are also several conditions in veterinary medicine in which this treatment is indicated.—*P. Rossi (transl. by E. I. Parsons).*

ANIMAL IMMUNOLOGY

PARASITOLOGICAL

W. H. TALIAFERRO, *Editor*

(See also in this issue Entries 16464, 16568, 16577, 16578, 16607, 16611)

16560. BLACKIE, W. K. Observations on the immunity response in experimental ascaridiasis in rabbits. *Jour. Helminthol.* 9(2): 91-96. 1931.—Experiments showed that during the migratory phase of the life-cycle of *Ascaris megalocephala* a definite humoral response occurs, which is manifested in the serum of the host by the presence of specific complement-fixing antibodies. Results are suggestive of the occurrence of a definite immunity response in ascaridiasis.—*F. J. Meggitt.*

16561. KONSTANSOFF, S. W. Malariaimmunität, Malariavakzine und Vakzination. *Zentralbl. Bakt. I. Abt. Orig.* 116(4/5): 241-256. 1930.—In regions where the disease is endemic, many individuals never succumb to infection or never again manifest symptoms after attack. This is interpreted as evidence of a true immunity. A permanent cure following quinine therapy may be attributed in part to an immunity resulting from prolonged sub-acute infection. If the drug effects are rapid, development of immunity may be prevented. The autogenous vaccine used consisted of infected red cells lysed with distilled water so that the parasites were first freed and then dissolved. The immunizing value of the vaccine was proportional to number of organisms, estimated at 750,000-80,000,000 per cc. The findings of others as to the possibility of artificial cultivation of the parasites could not be confirmed. 2-5 cc. amounts were given subcutaneously at intervals of 10 hrs. to 5 days. No untoward symptoms developed. The patient's response was a lytic fall in temp. curve with prolongation of febrile period up to as much as 40 hrs. Following the fall in temp., the ratio of polynuclear to mononuclear leucocytes returned to normal. In the records of 5 cases thus treated, one showed lysis of temp. after the 3rd day; another, of long standing infection, responded only after 2 mo. of treatment. Both remained parasite-free and without clinical manifestations. Partial failure in 3 cases was attributed to poverty of vaccine in organisms and to interruption of treatment.—*S. G. Ramsdell.*

16562. MESSIK, R. E. Zur Frage der genetischen Beziehungen zwischen Leishmania tropica und Leishmania donovani. *Zeitschr. Immunitätsforsch.* 63(3/4): 327-336. 1929.—Cross serological tests were tried with 4 strains of *Leishmania;* 2 of *L. tropica* and 2 of *L. donovani.* Rieckenberg tests (thrombocytobarins), complement fixation and tests of growth in presence of immune serum show the identity of the 4 strains. The author concludes that the tests indicate the presence of common antigenic properties in all species of *Leishmania.*—*W. H. Taliaferro.*

16563. REBRASSIER, R. E., and BRYCE R. McCRORY. A study of immunity or resistance to Ascaridia lineata (Schneider). *Jour. Amer. Vet. Med. Assoc.* 32 (3): 349-358. 1931.—The immunity of chickens to *A. lineata* was studied, following immunization with saline extracts of the specific worm. A total of 141 birds were first divided into 3 groups containing those 46, 97 and 131 days old, respectively. Each group was further sub-divided into 3 lots of 16 birds each and treated as follows: Birds in lot 1 received 1 intraperitoneal injection of 1 cc. of a 5% extract of dried *A. lineata;* 4 days later lots 1 and 2 received 500 embryonated ova of *A. lineata;* birds in lot 3 received neither worm extract nor eggs. All received a standard diet. Results in each age group are consistent in showing that chickens receiving extract and ova made a greater gain in wt. than those receiving only ova, but a lower gain than controls; and that a large % of chickens receiving ova alone showed an enteritis, which was very rare in those receiving extract and ova and absent in controls receiving neither. The birds receiving ova and extract in the 46-day-old group showed more worms than those receiving only ova.—*W. H. Taliaferro.*

16564. SCHWARTZ, BENJAMIN, JOSEPH E. ALICATA, and JOHN T. LUCKER. Resistance of rats to superinfections with a nematode, Nippostrongylus muris, and an apparently similar resistance of horses to superinfection with nematodes. *Jour. Washington [D. C.] Acad. Sci.* 21(12): 259-261. 1931.—Following the recovery of rats from a single infection with *N. muris,* the host is relatively resistant to subsequent infections. In infections acquired percutaneously, the larvae migrate to the lungs and, after developing there for a time, pass into the intestine where they reach maturity in 6-7 days after infection. Rats killed 13-16 days after the 1st infection contained in the intestine fully-grown, sexually-mature worms, and occasionally a few larvae, usually 3-5, in the lungs. Rats killed 13-16 days after the 2nd infection showed many larvae in the lungs; in some cases 50% or more of the total worms present were there. Worms recovered from the intestine were, for the most part, undersized, though usually sexually mature. In investigation of the prevalence in horses of species of *Habronema,* transmitted by flies, it was noted that despite the absence of flies in winter in the vicinity of the District of Columbia, agamic forms of *Habronema* spp., in many cases no further advanced in development than that attained in their intermediate fly hosts, were found in the stomach of horses. This appears to indicate a type of resistance of horses to *Habronema* similar to that exhibited by rats to *Nippostrongylus.*—*J. E. Alicata.*

PARASITOLOGY (ANIMAL)

R. W. HEGNER, *Editor*

W. W. CORT AND F. M. ROOT, *Associate Editors*

(See also in this issue Entries 15720, 16041, 16063, 16066, 16080, 16168, 16191, 16199, 16236, 16248, 16276, 16291, 16295, 16346, 16375, 16401, 16444, 16452, 16455, 16464, 16561, 16562, 16564, 16647, 16679, 16690, 17484, 17487, 17496, 17497, 17527, 17528, 17529, 17531, 17532, 17535, 17536, 17537, 17538, 17541, 17542, 17546, 15747, 17548, 17551, 17552, 17553, 17554, 17555, 17628, 17703, 17739, 17819, 18042)

16565. ANAZAWA, K. Experimental studies of the infectability of Anopheline mosquitoes of Formosa. *Taiwan Igakki Zasshi (Jour. Med. Assoc. Formosa)* 30(6) (No. 315, June): 42-45. 1931.—The author describes methods utilized in selecting patients infected with *Plasmodium vivax, P. malariae* and *P. falciparum;* and points out the controls used in breeding the mosquitoes in the laboratory, the methods by which they were

fed, and the spp. utilized (*Anopheles sinensis, A. minimus, A. maculatus, A. tessellatus, A. hatorii, A. fuliginosus, A. splendidus* and *A. pleccau*). All were susceptible to all 3 spp. of *Plasmodium* except *A. sinensis* in the aestivo-autumnal experiments. *A. tessellatus* was the best laboratory host for tertian and quartan parasites and *A. pleccau* for aestivo-autumnal parasites.—*E. C. Faust.*

16566. **ANDREEFF, A.** Паразитологични наблюдения. [Parasitological investigations.] Годишникъ на Софийския университетъ, Ветеринарно-медицински факултетъ (*Jahresber. Univ. Sofia Vet. Med. Fak.*) 4: 133-154. 20 fig. 1928.—The flexor tendons of more than 30 out of 46 horses aged 5-13 yrs. were infested with *Onchocerca reticulata* and the neck ligaments with *Onchocerca cervicalis*. In the neck ligaments of 12 or 16% of 100 cattle and 100 buffalo was found *Onchocerca cervicalis* bovis.—*A. Kalojanoff (transl. by J. W. Scott).*

16567. **ARNAULT, CH. Le syngame et la syngamose: son nouveau traitement.** [Syngamosis.] *Rev. Hist. Nat. Appl. Pt. 2, Ornithol. Aviculf. l'Oiseau* 8(4): 105-112. 1927.

16568. **ASSENDELFT, F. van. Impfmalaria.** *Beih. Arch. Schiffs- u. Tropen-Hyg.* 35(1): 1-104. 1931.—This monograph is a critical study of the therapeutic use of malaria in cases of paresis. After an historical introduction, in which credit is given to Wagner von Jauregg as the most important pioneer in this undertaking, the author presents his own observations based on more than 350 cases in Amsterdam. Only *Plasmodium vivax* was used, since *P. falciparum* was considered to be too dangerous for experimental use. The intravenous route was found to produce a shorter prepatent period than the intramuscular one. The number of plasmodia is stated not to be the determining factor in the incubation period, but the following are important: (1) age of the plasmodia, (2) resistance of the donor and of the patient to the organisms, and (3) the possible differences in virulence of different strains. The fever and white cell curves are then considered. The former is usually quotidian (i.e., malaria duplicata); the latter, very inconstant. The curve of multiplication of the parasite is not essentially different in the three methods of inoculation, namely, mosquito infection, intravenous or subcutaneous inoculation. In addition to its therapeutic value, inoculation malaria has served an important purpose in opening a new way and developing a new point of view in the study of experimental malaria.—*E. C. Faust.*

16569. **BLASCHIN, A. N. Beobachtungen der Eier von Parasitenwürmern auf einem dunkeln oder kontrastierenden Grund.** *Arch. Schiffs- u. Tropen-Hyg.* 35(7): 363-365. 1931.—The method described permits the observer to recognize under the microscope the eggs floated on the surface of a brine solution.—*E. C. Faust.*

16571. **BUCKLEY, J. J. C. An observation on human resistance to infection with Ascaris from the pig.** *Jour. Helminthol.* 9(2): 45-46. 1931.—Migrating larvae of the pig *Ascaris* were fed to man, to a green monkey, and to 2 pigs; adult *Ascaris* were found only in the pigs. It is concluded that under normal conditions man cannot become infected with this species.—*F. J. Meggitt.*

16572. **CAMERON, THOMAS W. M. Experimental infection of sheep with Dicrocoelium dendriticum.** *Jour. Helminthol.* 9(1): 41-44. 1931.—*Helicella itala* and *Cochlicella acuta* (land snails) were fed with the eggs and developed young stages of a fluke. In the feces of 2 sheep fed with the latter species were found eggs of the fluke.—*F. J. Meggitt.*

16573. **CAWSTON, F. G. Les Schistosomes rares de l'Afrique du Sud.** *Ann. Parasitol. Humaine et Comp.* 8(3/4): 259-262. 2 fig. 1930.—The mollusks studied and the cercaria found were as follows: *Burnupia trapezoidea* Bttg. (Faust), cercaria of a monostome; *Limnaea natalensis* Kraus and *Segmentina planodiscus* (M. and P.), *Cercaria milleri; Segmentina planodiscus* (M. and P.), *Cercaria syncytadena; Physopsis africana, Cercaria oculata, C. secobii,* and *C. octadena* (Faust); *Physopsis, Cercaria gigantosoma; Bullinus (Isidora) tropica* (Kraus), *Cercaria gladii* (Faust). The adult form of *Schistosoma haematobium* and *S. bovis* has been recovered from guinea pigs to which *Physopsis* were fed. The ova of *S. bovis* resemble those found occasionally in the urine of patients in this region. The eggs are elongate and fusiform and are not easily confused with those of *S. haematobium.* The author thinks there is little doubt that 4 distinct schistosomes parasitise man at Natal: *S. haematobium, S. mansoni, S. bovis,* and *S. spindalis.* The distribution of the latter forms is discussed.—*H. E. Essex.*

16574. **CAWSTON, FREDERICK G. A consideration of the cause and cure of bilharzia disease.** *Urol. and Cutan. Rev.* 33(12): 817-820. 4 fig. 1929.—In 1916 and 1917 the author observed the accumulation of *Planorbis pfeifferi* Krauss and *Physopsis africana* Krauss in the Durban suburbs and recognized this as a possible risk, should *Schistosoma mansoni* be imported from Egypt. At the same time a schistosome (*Cercaria* gladii (p. 817)) was found infesting *Bullinus tropica* (Krauss) in the Transvaal. Examples of the adult *Schistosoma bovis* were reared at Durban from *Cercaria octadera* infesting *P. africana.* The same schistosome, along with another unidentified one, was obtained from Pinetown, Natal. Schistosomiasis is now recognized as responsible for dysenteric symptoms and sometimes death among sheep and cattle in the Cape Province and in the Transvaal. *Schistosoma bovis* is an occasional parasite of human beings in Natal. The paper includes photographs of wax models of various cercariae, a good variety of the shell of *P. africana,* models of the typical teeth of various spp. of freshwater mollusks, and camera lucida sketches of the ova of *Schistosoma bovis.*—*F. G. Cawston.*

16575. **CHIARI, HERMANN. Über das Vorkommen von Oxyuren im menschlichen Eileiter.** [Presence of Oxyura in the human oviduct.] *Virchow's Arch. Pathol. Anat. u. Physiol.* 269(3): 730-738. 2 fig. 1928.

16576. **CHODUKIN, N. J., M. S. SOFIEFF, F. J. SCHEVTSCHENKO, und G. L. RADSIVILOVSKIJ. Phlebotomus als Überträger von Hunde-Leishmaniose.** *Arch. Schiffs- u. Tropen-Hyg.* 35(7): 424-434. 1931.—A 3-yr. experimental study in central Asia indicates that *Phlebotomus papatasii, P. sergenti, P. chinensis, P. major* and *P. caucascicus* are all potential vectors of canine leishmaniasis.—*E. C. Faust.*

16577. **DEVILLE, C., J. DUVAL, R. VINZENT, et F. DÉVÉ. Un cas d'échinococcose alvéolaire originaire du Wurtemberg observé en Normandie.** *Compt. Rend. Soc. Biol.* 106(12): 1120-1122. 1 fig. 1931.—A case of alveolar echinococcus in a man of 27 who had left Württemberg at the age of 20 is described, histologically (from a biopsy) and biologically (deviation of complement, etc.). The intradermal reaction to various hydatid antigens was about the same, showing the errors likely to occur in using this method to determine the species of echinococcus present. This disease is unknown in Normandy, where the patient had lived most of the time after leaving Württemberg.—*E. Weiner.*

16578. **EUSTATZIU, G., et V. IONESCO. Contribution à l'étude de la pathogénie de l'accès de malaria et conclusions qu'on en peut tirer pour la malariothérapie.** *Arch. Roumaines Path. Exp. et Microbiol.* 2(2/3): 325-338. 1929.—In Rumania only 56% of peasants were successfully inoculated with malaria in the treatment of general paralysis, due probably to a partial immunity established by previous naturally acquired malaria infections. The authors discovered that by increasing the dose of blood containing quartan parasites intravenously injected from the usual 5 or 10 cc. to 200-350 cc. this resistance was overcome and typical quartan accesses followed in 100% of the cases. At the same time the quartan malaria remained equally benign and susceptible to quinine therapy.—*L. W. Hackett.*

16579. **GARNHAM, P. C. C. Malaria in Kisumu, Kenya Colony.** *Jour. Trop. Med. & Hyg.* 32(15): 207-216; (16): 221-231. 12 fig. 1929.—A study of malaria in a town of 7000 inhabitants on Victoria Nyanza, is reported. *Anopheles funestus, A. pretoriensis, A. squamosus, A.*

maculipalpis, A. gambiae (*costalis*), *A. pharoensis* and *A. mauritianus* (the last 3 also found by previous observers), were discovered; also *A.* symesi and a species resembling but not identical with *A. transvaalensis*, the larvae of both being described and the breeding places of all the above discussed. There are 2 distinct types of *A. funestus* larvae; the atypical one has small abdominal plates and other points of difference. Regular adult counts for 2 years showed a high *A. funestus* level throughout and a marked seasonal production of *A. gambiae*. The peaks of the former showed no relation to the rainfall, whilst *A. gambiae* appears *pari passu* with the "long rains" and at no other time, not even after other rainy periods. Variations in density of *A. funestus* adults is in direct proportion to the proximity of its breeding grounds. Very low oocyst and sporozoite rates of domestic *A. gambiae* and *funestus* (1386 dissections; less than 1% infected), and abnormalities of salivary glands, e.g., 4 lobes are noted. Habits of *A. gambiae* and *funestus:* (1) never sheltered in vegetation; (2) early morning entry into houses; (3) infestation of houses influenced by fire and presence or absence of occupants (the last factor also reverses the proportion of sexes, males showing an actual increase on vacation of a hut); (4) proximity to breeding-grounds has a less marked effect on the distribution of sexes; (5) direct and indirect methods of studying dispersal show that a slight daily accumulation (i.e., not complete redistribution) occurs. There is a high level of cases throughout the year, minimum of 200 per month. Seasonal rises follow the long rains only and therefore depend on the sudden appearance of *A. gambiae*. Endemic malaria is probably transmitted by *A. funestus;* the density of the latter does not appear to influence the amount of malaria (above a certain minimum). There is the unusual feature of a low spleen rate and a very high parasite rate for all ages and for all classes of population (non-hospital). Parasite rate shows a rapid increase in regard to age incidence up to the maximum of nearly 100% at the period ½-3 years, then a gradual diminution until the minimum of ⅓-½ infected is reached in the adult population. Seasonal variations (slight) in the parasite rate are probably due to the appearance and disappearance of *A. gambiae*. Local variations are due not to anopheles density but to the habits of the people concerned. Species of parasite is nearly always *Plasmodium falciparum*, with an increase of *P. malariae* after the anopheline season, possibly due to its large gamete output. Extremely low crescent rate (usually less than 1%) occurs at all seasons, at all hours of the day and after repeated examinations. The other two species (rare) show very high gametocyte rates (up to 68% of their respective infections). It is difficult to reconcile the high parasite rate and the low gamete rate. Crescent production may be increased after epidemic malaria, but there is some evidence against this. Age does not affect crescent incidence. Very bad ventilation may be a predisposing cause.—*P. C. C. Garnham.*

16580. [GLADINA, S.] ГЛАДИНА, С. Экспериментальное исследование над влиянием жука **Paederus fuscipes Curt. (cem. Staphylinidae)** на глаз кролика. **[Effect of P. fuscipes on the rabbit's eye.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 7(1): 18-22. [German summary, 136.] 1928.—Extract from living beetles was injected into the eyes of 7 rabbits. The skin of the lids, conjunctiva of lids and eyes, cornea, and iris were affected; irritation appeared in 2-5 hrs. and reached its maximum on the 4-5th day. In particular the author noticed considerable blepharitis, acute inflammation of conjunctiva with much muco-purulent discharge, diffuse cloudiness of the deep layers of the cornea, and, in 1 case, a purulent infiltration. Iris always participated in the inflammation.

16581. GOODEY, T. Further observations on Tylenchinema oscinellae Goodey, 1930, a nematode parasite of the frit-fly. *Jour. Helmithol.* 9(3): 157-174. 2 fig. 1931. —Adults were found in the body-cavity and larvae throughout the whole of the gut; the point of entry into the gut was the food reservoir. Occasionally, more especially in the panicle generation, the host obtains the ascendency. Free-living larvae undergo third ecdysis after 17 hrs. and the final after 41. Copulation within a confined space is necessary for fertilization; the ♀ is not a protandrous hermaphrodite. The percentage of infection is 4.3 in the overwintering generation, 9-14 in the stem generation, and 2.89-5.3 in the panicle generation. ♂♂ are more highly infected than ♀♀. Usually only one worm per fly was found. Infected frit-flies were obtained from Lyngby (Denmark), Kiel (Germany), Leningrad (Russia), France, Washington (D. C.). A comparison with *Howardula benigna* Cobb 1921 is given. —*F. J. Meggitt.*

16582. GOOR, J. M. NOOTHOVEN van. Bijdrage tot het vraagstuk der beteekenis van lamblia intestinalis voor de menschelijke pathologie. [Pathogenic influence of L. intestinalis in man.] *Nederlandsch Tijdschr. Geneesk.* 73(48): 5557-5568. 1 pl. 1929.—The author concludes that it is not proved that *L. intestinalis* is a pathogenic flagellate for the duodenum; vegetative forms of *Lamblia* may be found in the content of the upper part of the ileum, even when cysts are not found in the feces; it is not proved and even very improbable that Lamblias may produce inflammations of the gall-bladder or the larger gall-ducts.—*J. W. Langelaan.*

16583. GRIGOROWA, O., und M. NESTURCH. Filariose bei jungen Schimpansen. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 2(5): 616-628. 2 fig. 1930.—A record of filariasis in a young chimpanzee, due to *Microfilaria perstans**, with results of blood examinations.

16584. HEGNER, ROBERT. The infection of parasite-free chicks with intestinal Protozoa from birds and other animals. *Amer. Jour. Hyg.* 10(1): 33-62. 3 fig. 1929.—Caecal material from guinea-pig, rat, guinea-fowl, duck, owl, quail, etc., infected with spp. of *Chilomastix, Endamoeba, Trichomonas, Balantidium, Endolimax*, and *Coccidium*, and *Trichomonas buccalis* from the human mouth, were inoculated per os or per rectum into young chicks of various ages. In general the chicks were very susceptible to the "foreign" protozoa, some remaining infected for long periods, some passing viable specimens of infective stages, in many the foreign protozoa reacting markedly to the changed environment, while in a few negative results only were obtained. *Endolimax* **numidae*** (p. 45) from guinea-fowl, *Trichomonas* **anseri*** (p. 48) from a goose, *Tritrichomonas* **floridanae*** (p. 52) and *Trichomonas* **ortyxis*** (p. 52) from quail are described; many new unnamed parasites were found. The advantages of parasite-free chicks as laboratory animals for the study of host-parasitic relations of intestinal protozoa are emphasized.—*M. W. Kamm.*

16585. HEGNER, ROBERT, and H. J. CHU. A survey of protozoa parasitic in plants and animals of the Philippine Islands. *Philippine Jour. Sci.* 43(3): 451-482. 5 pl. 1930.—Practically no studies had previously been made of the protozoa that live in the animals and plants of the Philippine Islands. This paper is intended as a preliminary survey and guide for further work. Animals were collected at random, and their protozoan parasites listed. The mammals examined included monkeys, carabao, pigs (wild and domesticated), dogs, rabbits, guinea-pigs, rats, civet cats, bats and flying lemurs. Protozoa are also recorded from many species of domesticated and wild birds, from reptiles, amphibia, insects and snails. Flagellates were found in only one of many species of latex-bearing plants examined. About 60% of plants of *Euphobia hirta* were infected.—*R. Hegner.*

16586. HOBMAIER, A., und M. HOBMAIER. Über das Verhalten der Lungenwürmer des Schweines, Metastrongylus longevaginatus und Choerostrongylus brevivaginatus, sowie von Dictyocaulus filaria des Schafes im Pferde, mit Bemerkungen zur pathologischen Anatomie des Haemomelasma ilei et jejuni des Pferdes. *Münchener Tierärzt. Wochenschr.* 81(29): 361-364. 2 fig. 1930.—Feeding larvae of *Metastrongylus longevaginatus*

(*M. elongatus*) and *Choerostrongylus brevivaginatus* (lungworms of swine), or of *Dictyocaulus filaria* (of sheep) to the horse is not likely to result in development of adult worms; neither nematode nodules in the lungs nor hemomelasma of ilium and jejunum are produced. The observed eosinophilia and hemosiderosis of the mesenteric lymph nodes cannot definitely be attributed to an invasion of lungworm larvae. In hemomelasma of the horse, serial sections showed nematode nodules in the submucosa, mucosa, muscularis and rarely in the subserosa; these are implicated in the alteration (hemomelasma) of the subserosa. Hemomelasma therefore appears to be primarily an alteration of the submucosa (follicle mucosa, muscularis) beneath the intestinal lymph follicles, and secondarily an alteration of the subserosa.—*Authors' summary (transl. by O. L. Williams).*

16587. HOBMAIER, ADELE, und MICHAEL HOBMAIER. Biologie von Choerostrongylus [Metastrongylus] pudendotectus [brevivaginatus] aus der Lunge des Schweines, zugleich eine vorläufige Mitteilung über die Entwicklung der Gruppe Synthetocaulus unserer Haustiere. [Biology of C. pudendotectus in the pig's lung, and preliminary note on development of the Synthetocaulus group in domestic animals.] *Münchener Tierärztl. Wochenschr.* 80 (31) : 433-436. 3 fig. 1929.

16588. HOLT, R. L., and P. F. RUSSELL. Spleen survey of the eastern shore of Bataan Province, Luzon. *Philippine Jour. Sci.* 45 (2) : 211-219. Map. 1931.—Prevalence of malaria is gauged from a correlation of spleen findings and mosquito survey. Malaria is rare on the eastern coast of Bataan except as imported from the foothills nearby. *Anopheles ludlowii* was commonly encountered in the salt water marshes of this region but is not an effective vector of malaria in this locality. Ten species of Anophelines were found. Nearness of the town to the foothills increases the malarial rate. *Anopheles minimus* was found in the streams in the foothills.—*R. L. Holt.*

16589. ISHII, N., and TEI TOK WA. Studies on the frequency of parasites and their connection with vegetables in Amoy, China. *Taiwan Igakki Zasshi (Jour. Med. Assoc. Formosa)* 30 (8) (No. 317, Aug.) : 61-62. 1931.—Fecal examination of 634 persons in Amoy showed a parasite infection rate of 66.72%. Amoebae were most common in adult ♂♂ and *Ascaris* in young ♂♂. This rate is intermediate between Tokyo (54.26%) and Canton (77.09%). 17 kinds of vegetables examined showed eggs of *Ascaris lumbricoides, Oxyuris vermicularis, Ancylostoma duodenale, Trichocephalus* and *Taenia saginata,* and cysts of *Balantidium coli.*—*E. C. Faust.*

16590. JANICKI, CONSTANTIN, und KAREL RAŠÍN. Bemerkungen über Cystoopsis acipenseri des Wolga-Sterlets, sowie über die Entwicklung dieses Nematoden im Zwischenwirt. *Zeitschr. Wiss. Zool.* 136 (1) : 1-37. 26 fig. 1930.—A careful morphological description is given of both ♂ and ♀ nematodes found encysted immediately beneath the skin on the ventral surface of the host, *Acipenser ruthenus.* The mature ♀ apparently does not deposit eggs but bursts. Experimental infection of *Dikerogammarus haemobaphes* and *Gammarus platycheir* were successful. Eggs were taken in by the intermediate hosts per os and hatched after 4 hrs.; the larvae then bored through the wall of the alimentary tract and into the body cavity of the intermediate host. They remain in the body cavity for about 2 weeks and then penetrate the muscles of various appendages, such as the coxal joints, where they become spirally coiled and encysted.—*B. G. Chitwood.*

16591. JÍROVEC, OTTO. Fauna zažívacího traktu termita Calotermes lucifugus z Řecka. *Rozpravy České Akad. Věd. a Umění, Tř. 2* 39 (číslo 49) : 1-15. 1 pl., 18 fig. 1929 (1930). Also as: **La faune du tube digestif du Calotermes lucifugus récolté en Grèce.** *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Présentés Cl. Sci. Math., Nat. et Méd.* 30: 346-356. 1 pl., 18 fig. 1929.—Descriptive notes are given in Czech in the original paper (in *Rozpravy*) on the spp. found. These include, bacteria and spirochaetes: *Spirochaeta termitis*, S. minei*, S. hilli*, Fusiformis hilli*, F. termitis*, Paraspirillum* sp. (possibly a young stage of *F. termitis*). Flagellates: (Pyrsonymphidae) : *Pyrsonympha granulata*, P. major*, P. minor, Dinenympha gracilis*, D. fimbriata*;* (Hypermastigidae) *Holomastigotes elongatum** and *Spirotrichonympha flagellata*; Sphaerita** sp. in the *Dinenympha* and *Pyrsonympha* spp., cocci, and vibrios.

16592. JOYEUX, CH. Sur quelques helminthes récoltés dans la région de Villers-sur-Mer. *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 7-12. 1930 (1931).—Trematoda: *Opisthioglyphe rastellus* in *Rana temporaria; Diplodiscus subclavacus* in *Rana esculenta;* a metacercarian of *Harmostoma* sp. in *Hyalinia cellaria;* metacercaria of *Echinostoma revolutum* in *Limnaea vulgaris,* the cercaria are described, encystment taking place in *Herpobdella octoculata; Cercaria virgula* in *Bithynia tentaculata.* Cestoda: *Archigetes sieboldii* in *Tubifex tubifex; Bothriocephalus scorpii* in *Cottus bubalis; Raillietina (Skrjabinia) cesticillus* and *Choanotaenia infundibulum* in domestic fowl; *Hymenolepis collaris, H. coronula, H. gracilis,* and *Fimbriaria fasciolaris* in duck; the *H. gracilis* cysticercoids were found in *Cyclops* and *Cypris,* and in *Limnaea vulgaris* and *L. pulustris* which had eaten infected *Cypris; Cysticercus pisiformis* in wild rabbit; cysts of *Cladotaenia cylindracea* in the liver of *Microtus arvalis; Multiceps serialis* in domestic rabbit. Nematoda: *Ascaridia gralli* in intestines of chicken and turkey; *Porrocaecum crassum* in the duck; *Passalurus ambiguus* and *Trichostrongylus retortaeformis* in wild rabbit. Acanthocephala: *Polymorphus minutus* in the duck.

16593. KHALIL, M. B. The specific treatment of human schistosomiasis (bilharziasis), with special reference to its application on a large scale. With notes: (1) Über fuadin (neo-antimosan), by HANS SCHMIDT; (2) The physiological action of the antimosan compounds, by M. M. HAMMOUDA; (3) Über die Beeinflussung des Blutkreislaufes durch einige Antimonpräparate, by H. WEESE. *Beih. Arch. Schiffs- u. Tropen-Hyg.* 35 (2) : 1-128. 1931.—This monograph is essentially a clinical paper but has a certain biological value, since it deals with an infection caused by the human blood flukes, *Schistosoma haematobium* and *S. mansoni,* and also incorporates a considerable amount of experimental evidence on the toxicity of antimony compounds. Exhaustive bibliographies accompany each section.—*E. C. Faust.*

16594. KHAW, O. K., und R. HOEPPLI. Ekto- und Endoparasiten chinesischer Bettler in Peiping. *Arch. Schiffs- u. Tropen-Hyg.* 35 (8) : 443-448. 1931.—Based on a survey of 100 beggars in Peiping, ranging in age from 2 to 80 years, the authors identified lice, *Sarcoptes scabiei* and *Pulex irritans,* as well as the common intestinal protozoa and helminths of the area. The protozoan index (180%) is the highest recorded for north China. Only 3 of the group were free from endoparasites and 23 of ectoparasites. The data indicate the exceedingly unhygienic condition in which these beggars live.—*E. C. Faust.*

16595. [KOMENDATOV, V.] КОМЕНДАТОВ, В. К эпидемиологии малярии на Северном Кавказе. (On the epidemiology of malaria in the Northern Caucasus.) Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol., et Parasitol.*) 9 (1) : 90-95. [English summary p. 134.] 1930.—The author calls attention to the several peculiarities in the epidemiology of malaria in the Northern Caucasus. While the epidemic was tropical in character the investigation of the blood of the population conducted for a year revealed 70% of tertian parasites. The substitution of the tropical parasite for the tertian in the blood of the population occurred in every locality, and was followed by mass recovery; the possibility of mixed infection was doubtful. Investigation of 30,000 pupils showed that the tropical parasite was most frequently found among

children 11-14 years old, especially among the poorer classes.—*G. A. Lebedeff.*

16596. **LADA, LAKSHMANA SADASHIVA. Um caso de amebiase pulmonar. [Case of pulmonary amebiasis.]** *Arq. Escola Méd.-Cirurg. Nova Goa Ser. B* Fasc. 3. 510-512. 1930.

16597. **[LEVIN, I. I.]** ЛЕВИН, И. И. К методике диагностики энтеробиоза. [Diagnosis of enterobiasis.] [German summary.] Одеський Медичный Журнал (*Odessaer Med. Zeitschr.*) 5(1/2): 155-174. 1930.—Fülleborn and Telemann's smear methods are inadequate for detecting *Enterobius vermicularis* or its eggs. Diagnostic dehelminthization is too complicated, expensive, and time consuming. The most adequate methods are perianal grattage and microscopic examination of subungual material. The latter gave positive results in 87.8% of enterobiasis cases.—*B. Van Rosen.*

16598. **ŁUKASIAK, JAKÓB. Anatomische und entwicklungsgeschichtliche Untersuchungen an Dioctophyme renale (Goeze 1782) [=Eustrongylus gigas Rud.]** *Arch. Biol. Towarzystwa Naukowego (Arch. Biol. Soc. Sci. et Lettr. Varsovie)* 3(3): 3-100. 6 pl. (partly col.), 6 fig. 1929(1930).—*D. renale* is rather frequent in the dog in Warsaw and its environs; out of 2338 dogs inspected there were 88 infected. The parasite in dogs was found in the right kidney (69.3%), liver (16.6%) and other parts of the abdominal cavity (14.1%), never in the left kidney. In 20 cases both ♂ and ♀ worms were found. The parasitized kidney is completely destroyed, only a thin pellicle remaining. Anatomic details concerning the nervous, excretory, muscular, digestive, and reproductive systems are given in detail. In 82 ♀♀ and 62 ♂♂ dissected, only 4 young specimens were found; very young specimens were never found. The embryonic development of the fertilized egg in water lasts 1-7 months, according to the temp. A fully-developed embryo attains the length of 0.279 mm.; probably the embryo does not get rid of the egg-cover by its own efforts. It keeps its vitality up to 2 years. After being set free mechanically from its egg-cover it is able to live in water for 2 hours. *J. Łukasiak.*

16599. **LYNCH, KENNETH M. Protozoan parasitism of the alimentary tract. Pathology, diagnosis and treatment.** 258p. 37 fig. Macmillan Co.: New York, 1930. Pr. $3.75.—Written from the viewpoint of the medical man, the book attempts to put the scattered facts on pathogenesis, diagnosis and treatment of intestinal protozoiasis in a form immediately available to the medical profession and laboratory technician. The biology of the parasitic protozoa, including life-history, morphology, immunity, prophylaxis, etc., is briefly discussed. The accepted and some doubtful species of amoebae, flagellates, ciliates and coccidia infesting the human mouth, intestine and vagina are considered in the order named, as well as the technique peculiar to their observation. The ubiquitous *Blastocystis hominis* is also considered.—*R. M. Stabler.*

16600. **McCOY, O. R. The egg production of two physiological strains of the dog hookworm, Ancylostoma caninum.** *Amer. Jour. Hyg.* 14(1): 194-202. 1931.—The egg production of a cat strain in cats was approximately 2,350 eggs per day per ♀ as compared with the normal egg production of 16,000 eggs per day per ♀ by a dog strain in dogs. The dog strain when introduced into cats produced an average of only 2,340 eggs per day, approximately the same number as did the cat strain. Infections of the dog strain in the cat, however, were of shorter duration than those of the cat strain. When infections of the cat strain were established in dogs, the egg production averaged 11,600 eggs per day per ♀. Apparently egg production is controlled by the host and is not inherent in the strain of worms.

16601. **MANWELL, REGINALD D., and CARL MILTON JOHNSON. A natural trypanosome of the canary.** *Amer. Jour. Hyg.* 14(1): 231-234. 1931.—In canaries 16 cases of natural and 1 of artificial trypanosome infection were observed. The mite *Dermanyssus gallinae* is probably the vector. The trypanosome resembles both *Trypanosoma paddae* and *T. gallinarum* in shape, but differs from both in size; it is believed to be a variety of the latter, not hitherto reported from the Western Hemisphere.

16602. **MAROTEL. La lutte antidistomienne. (3me note.)** *Rev. Vét. et Jour. Méd. Vét. et Zootech.* 83 (Aug.): 417-424. 1931.—Terebenthine-benzol has been found an excellent treatment for trematode infestations.

16603. **MELLO, F., de. Infusoires parasites de Racophorus maculatus Gray.** *Compt. Rend. Soc. Biol.* 106 (12): 1184-1185. 1931.—The following infusorians were found in the intestine of *R. maculatus* in the region of Nova Goa: *Nyctotherus papillatus* Dobell; *Opalina virgula* Dobell; *O. (Cepedea) longa* Bezzenberger; and *O. (Cepedea)* thiagi (p. 1184).—*E. Weiner.*

16604. **MAZZA, SALVADOR, y E. RICKARD. Relación del cultivo de arroz con la difusión del paludismo en la provincia de Tucumán. (Informe sobre estudios en una estación completa.) [Relation of the cultivation of rice to dissemination of malaria in Tucuman.]** *Quinta Reuniòn Soc. Argentina Patol. Reg. Norte* 2: 707-711. 1930.—The spp. of Anopheline larvae found in the rice fields belong to the group *Nyssorhynchus*, principally *Anopheles albitarsis* and *A. tarsimaculatus*. There is no proof that these spp. have any importance in the transmission of malaria in the north of Argentina. *A. pseudopunctipennis*, principal transmitter of malaria, is found especially around the rice fields and not in the rice fields themselves. The destruction of the larvae near rice fields seems advisable. It is believed that suppression of rice cultivated would increase rather than diminish the dissemination of malaria.—*D. de Rivas.*

16605. **MESA, ERNESTO OSORNO. Caso de perforación del velo del paladar por larvas de Chrysomyia macellaria Fabricius. [Perforation of the soft palate by larvae of C. macellaria.]** *Bol. Soc. Colombiana Cien. Nat.* 16(93): 157-161. 1 pl. 1927.—This records a case in a man 50 yrs. of age.

16606. **MESNARD, J., et H. MORIN. Réceptivité naturelle de l'Anopheles (Myzomyia) aconitus à l'infection par l'hématozoaire du paludisme en Cochinchine.** *Bull. Soc. Path. Exotique* 24(7): 554-556. 1931.—Of 13 spp. of Cochin-China mosquitoes examined, only *A. aconitus* and *A. minimus* were infected with malarial parasites.

16607. **MIESSNER, HERMANN. Piroplasmosen und Splenektomie.** *Arch. Wiss. u. Prakt. Tierheilk.* 63(1): 78-90. 6 fig. 1931.—Dogs injected with *Babesia canis* have a mild transitory infection with only a few parasites in the blood. A dog with generalized carcinomatosis died of a severe infection with *Babesia canis* a few days after inoculation. The carcinomatosis appeared to have blocked the reticulo-endothelium. Relapses, which are more severe than the first illness, occurred in splenectomized dogs infected with *Babesia canis;* complete recovery occurs, however. Infections with *Babesia bovis* and *Babesia bigemina* do not result in cross immunity. The experiments of Smith and Kilborne (1893) on the transmission of Texas fever through the larvae of *Boophilus bovis* were repeated. Splenectomy of cattle infected with *Babesia bovis* and *Babesia bigemina* brings about severe and fatal relapses. The blood showed thrombocytosis, monocytosis, polychromy, anisocytosis, and the presence of Jolly bodies. The spleen is of great importance in protecting dogs and cattle against *Babesia.* In an infected cow, subsequently splenectomized, small rod-like, round, and dumb-bell shaped bodies appeared in the red blood cells; these were considered to be *Theileria mutans.* Trypan blue has a more favorable parasiticidal action against babesiosis than trypaflavine and ichthargan. A cow which for some years had excreted almost a pure culture of *Paratyphosus B* (Schottmüller), showed, some days after splenectomy, only *B. coli* in its faeces. Beginning on the fourth day, however, the Paratyphoid bacilli appeared in the blood, apparently from the again active gall bladder, and completely displaced the *B. coli.*—*Author's summary (transl. by R. W. Linton).*

16608. **MILAM, DANIEL FRANKLIN, and HENRY E. MELENEY. Investigations of Endamoeba histolytica and other intestinal protozoa in Tennessee. II. An epidemiological study of amoebiasis in a rural community.** *Amer. Jour. Hyg.* 15(2): 325-336. 1931.—In a community comprising 75 families and 374 individuals, 38% of the population harbored *E. histolytica* cysts, and clinical dysentery had occurred in about ¼ the population; but the attacks clinically simulated bacillary rather than amebic dysentery and no correlation was found between the occurrence of dysentery and the harboring of *E. histolytica*.

16609. **MORGAN, D. O. On the occurrence of Hepaticola hepaticola as a natural infection of the wild rabbit in England.** *Jour. Helminthol.* 9(1): 39-40. 1931.—Eggs and females were found but no males.—*F. J. Meggitt.*

16610. **MORGAN, D. O. On the occurrence of gapeworms in nestling starlings and adult fowls.** *Jour. Helminthol.* 9(3): 117-120. 1931.—*Syngamus trachea, Hymenolepis* sp., *Capillaria ovopunctata,* and *Porrocaecum ensicaudatum* (?) found in starlings which had never left the nest.—*F. J. Meggitt.*

16611. **MORGAN, D. O. Some observations on experimental ascariasis in pigs.** *Jour. Helminthol.* 9(3): 121-128. 1931.—One pig failed to become infected with embryonated eggs of *Parascaris equorum* but 6 pigs were infected with eggs of *Ascaris lumbricoides,* one dying within 60 hours. The infection of the others lasted 18-22 weeks. The results showed an absence of age resistance and acquired immunity.—*F. J. Meggitt.*

16612. **MORISHITA, KAORU, HIROSHI NAMIKAWA, TAMOTSU MATSUURA, and KUNISHIZU TANIKAWA. Report on the malaria epidemic in Uzanto and its control, with special reference to the effect of all quininization.** *Taiwan Igakki Zasshi* (*Jour. Med. Assoc. Formosa*) 30(7) (No. 316, July): 53-54. 1931.—Uzanto is a village in the midst of an irrigation project of 360,000 acres in Tainan Province, Formosa, initiated in 1920. A parasite rate of 8.3% malaria (spleen rate 21.1%) was determined in 1927. Mass quininization for 60 days in the spring of 1927 lowered the parasite rate to 2.3%.—*E. C. Faust.*

16613. **MOWRY, HELEN A., with ELERY R. BECKER. Experiments on the biology of infusoria inhabiting the rumen of goats.** *Iowa State Coll. Jour. Sci.* 5(1): 35-60. 1930.—The results showed that numbers of infusoria in the rumen depend upon the amount and kind of food consumed by the host. An increase and change in appetite, resulting in the consumption of more and richer feeds, led to an increase in number of rumen infusoria. The percentage of sediment in a sample of rumen contents was no indicator of the amount of protozoan fauna. The fauna was influenced to some extent, but not materially, by the pH of the rumen contents. The infusoria numbers showed no correlation with the weights of the goats. The results indicated that the relationship between the goat and the protozoan fauna in the rumen is one of commensalism. The protozoa present in the 3 goats studied varied somewhat, and included *Diplodinium multivesiculatum, D. ecaudatum, D. bursa, D. hamatum; Entodinium simplex, E. minimum, E. caudatum, E. furca, E. bicarinatum,* and *E. simplex.*—*H. A. Mowry.*

16614. **NATTAN-LARRIER, L., et B. NOYER. Trypanosome du dromadaire et trypanosome du cheval au Maroc. III.** *Bull. Soc. Path. Exotique* 24(7): 569-584. 1931.—Comparison of the strain of *Trypanosoma marocanum* found in the horse with that infesting the dromedary justifies the designation of the latter as a distinct variety, *T. marocanum* var. **cameli** (p. 573); morphological differentiation is detailed. Repeated passages through guinea pig and rat modify both the horse and dromedary strains toward an intermediate type. Repeated passages through the mouse of either the horse or the dromedary trypanosome produces a somewhat distinctive type. In the placental plasmodium of infected pregnant ♀♀ occur rounded or slightly oval forms of *T. marocanum* resembling the leishmanian stage of the trypanosome, but believed by the authors to be degenerate forms. In 5 experiments the authors were unable to find the filtrable forms which Ugo Reitani claims to have discovered; nor were they able to produce infection through the digestive tract from ingestion of infected tissues, as announced by Faure. Attempts to cultivate the trypanosome on laboratory media were unsuccessful.

16615. **NIESCHULZ, O., und A. BOS. Erfahrungen beim Experimentieren mit Mücken.** *Arch. Schiffs- u. Tropen-Hyg.* 35(7): 353-356. 1931.—A method is described for securing a high percentage of blood-meals by mosquitoes from chickens, doves, ducks, guinea pigs, rabbits and horses.—*E. C. Faust.*

16616. **NEVEU-LEMAIRE, AMEUILLE, J. TROISIER, PAISSEAU, RIGOLLET, GOUZIEN, ABRAMI, et RAMOND. Infections parasitaires. In: SERGENT, ÉMILE, L. RIBADEAU-DUMAS, et L. BABONNEIX. Traité de pathologie médicale et de thérapeutique appliquée.** Vol. 14. 2nd ed. viii+613p. N. Maloine et Fils: Paris, 1930.

16617. **NISHIMURA, FUKUTARO. On the histological changes in the tissues of the final host, caused by the progressive development of Gongylonema orientalis.** *Taiwan Igakki Zasshi* (*Jour. Med. Assoc. Formosa*) 30(6) (No. 315, June): 46-48. 1931.—In the 1st stage (corresponding to the larval stages of the worm) these changes consist of desquamation of the intestinal epithelium, slight local keratization, hyperemia of the blood vessels, infiltration of leukocytes, and in severe cases general toxemia and possible esophageal stenosis. In the 2nd stage proliferation and marked keratization of the epithelium and formation of epithelial krypts are conspicuous. In the 3rd stage the neoplasm is initiated in the form of a papilloma.—*E. C. Faust.*

16618. **OLDHAM, J. N. The helminth parasites of common rats.** *Jour. Helminthol.* 9(2): 49-90. 1931.—Lists the helminth parasites of *Mus* (*Rattus*) *rattus, M. rattus alexandrinus, M. norvegicus,* and various undetermined species of "rats," together with distribution of parasite, reference to literature, and remarks on parasite. The list includes 27 Trematoda, 41 Cestoda, and 40 Nematoda, with indication of rat host.—*F. J. Meggitt.*

16619. **PROWAZEK, S. von. Handbuch der pathogenen Protozoen. Fortgeführt von W. NÖLLER.** Lief. 12. pp. 1813-1967. A. Barth: Leipzig, 1928. Pr. 16 M.—Culture methods for parasitic amoebae, intestinal and blood flagellates, Coccidia and Haemosporidia, and parasitic Infusoria.

16620. **RODHAIN, et F. HOUSSIAU. Les infections à "Onchocerca volvulus" chez l'Européen au Congo Belge.** *Bull. Acad. Roy. Méd. Belgique* 10(2): 86-102. 1930.—The opinion previously held that Europeans are refractory to infection with *O. volvulus* is shown by report of 5 cases in Europeans to be untenable. The infrequency of infection among Europeans is probably due to their comparatively thick clothing, which the short mandibles of *Simulium damnosum,* the insect host of the filaria, are unable to pierce. The authors find that the location of the filarial nodules has no relation to the puncture inflicted by the insect, proving the migration of the adult filariae before their inclusion in the subcutaneous fibroma. These are ordinarily painless, as in the natives. In most cases the occurrence of a small number of perceptible *O. volvulus* cysts produces no appreciable effect on the skin.

16621. **St. JOHN, JOE H., JAMES S. SIMMONS, and FRANCOIS H. K. REYNOLDS. A survey of mongrel dogs of Manila, Philippine Islands, for helminthic and blood protozoan parasites.** *Philippine Jour. Sci.* 44(3): 309-311. 1931.—At autopsy on 50 dogs, with the exception of filaria, the percentage infested with and the average number of helminths present per dog were not greater than would be expected in stray dogs in cities of temperate climate. In a survey of 100 dogs for blood protozoan parasites, 4% were positive for *Babesia canis.* This parasite was transmitted experimentally in 3 instances from dogs found infected in nature to healthy

animals, by *Rhipicephalus sanguineus*. The results of these transmission experiments indicate that the incubation period of piroplasmosis in dogs is about 5 days and that the infection may be severe in young, moderate in half-grown, and mild in older dogs.—*Authors' summary.*

16622. **SERGENT, ÉTIENNE, et A. CATANEI. Résultats du traitement d'enfants indigènes paludéens par la plasmoquine, en Algérie.** *Arch. Inst. Pasteur Algérie* 8(1): 71-76. 2 pl. 1930.—Among 9 native Algerian children, plasmoquine was ineffective against the schizonts of *Plasmodium praecox* in 7 cases; in 1 case it did not cause complete disappearance of the gametes of *P. praecox*, and in another it did not hinder their appearance.—*Authors' summary (transl. by R. H. M'Gonigle).*

16623. **SHORTT, H. E., H. A. H. d'SILVA, and C. S. SWAMINATH. Note on dermal leishmanoid.** *Indian Jour. Med. Res.* 16(1): 239-240. 1928.

16624. **[SMIRNOV, G. G., and M. F. GLAZUNOV.]** СМИРНОВ, Г. Г. и М. Ф. ГЛАЗУНОВ. **Об изменениях крови морской свинки при однократной и повторной аскаридной инвазии. [Changes in the blood of guinea pigs after single and repeated invasions by Ascaris larvae.]** Вестник Микробиологии, Эпидемиологии и Паразитологии (*Rev. Microbiol., Épidémiol. et Parasitol.*) 7(1): 69-92. [English summary, 141.] 1928.—Experiments were made on 10 guinea pigs; ripe *Ascaris* eggs were introduced per os; in 1 case the invasion was repeated thrice. Observations of the blood were begun 2 wks. prior to the experiments (length of experiments, 6-36 days). The authors observed regular and independent changes in red and white blood cells. The curve of erythrocytes steadily decreased, reaching minimum on 10-14th day; erythropenia attained 43% of the initial figure; Hb decreased 5-60%. The anemia was of the oligochromemia type with a lowered color index. From 4th to 6th day of invasion the leucocytosis gradually increased, attaining 25-30 thousand on the 7-10th day. Decrease of lymphocytes in number was accompanied by increase in neutrophils; both changes reach maximum on 8-10th day. Eosinophilia was constant, reaching its maximum on 10-14th day. No regular changes were seen in monocytes and basophiles; the leucocytes, especially eosinophiles, appeared as results of the toxic effect of the *Ascaris* larvae. In an extensive experiment, the loss of wt. attained 23-30% of the original. The normal condition of blood was regained on about 30-36th day, except for Hb. Examination of a singly infected guinea pig 30 days after the invasion showed a normal liver; in case of 3 repeated invasions, the liver contained incapsulated parasites 7 wks. after the first. Here the liver acted as a barrier, and thus only leucocytary reaction was present, with no changes in erythrocytes or Hb.

16625. **SPREHN, C. Über die Magen-Darmtrichostrongylose der Schafe und ihre Bekämpfung. [Trichostrongylosis of sheep and its control.]** [Preliminary paper.] *Deutsche Tierärztl. Wochenschr.* 39(39): 615-616. 1931.

16626. **STAFSETH, H. J. Studies in the pathology of avian coccidiosis.** *Jour. Amer. Vet. Med. Assoc.* 31 (6): 792-816. 12 fig. 1931.—The disease in young chicks has its seat in the ceca and lower portion of the small intestine. In birds over 8 weeks old the ceca are very seldom visibly affected. Duodenal infection is most common and the other parts of the small intestines may be involved at times. The gross pathological changes in both cases are given. Some coccidia seem to do little damage, infecting only single cells here and there; others infect extensive areas of epithelium causing desquamation. Some infect glandular epithelium as well as villous epithelium causing desquamation of both. And again some cause "subepithelial" infection and produce sloughing of the mucous membranes. Apparently there are several spp. of coccidia, *Eimeria tenella* and *E. acervulina* having been recognized. Leg weakness and paralysis occur more frequently in connection with duodenal than cecal coccidiosis. Coccidia morphologically indistinguishable from some of those found in chickens were found in pigeons showing leg weakness. Coccidia were not found in the livers of infected chickens. No evidence was found to show that sparrows carry the Eimeria.—*From author's summary.*

16627. **STEUDEL, E. Sammelreferat über Schlafkrankheitsbekämpfung in Äquatorial-Afrika. [Review of recent literature on the campaign against sleeping sickness in equatorial Africa.]** *Arch. Schiffs- u. Tropen-Hyg.* 35(2): 114-122. 1931.

16628. **STEVENSON, LIONEL. Common animal parasites injurious to sheep in eastern Canada.** 46p. 20 fig. Departments of Agriculture, Ontario, Quebec, Nova Scotia & Prince Edward Island; Canada, 1930.—A handbook.

16629. **STOCKMAYER, W. Erkrankungen und Todesfälle bei Affen infolge von Oesophagostomosis intestini.** *Zeitschr. Infektionskr. u. Hyg. Haustiere* 39 (1/2): 70-76. 1 fig. 1931.—The author reports on typical cases. Animals showed catarrhal enteritis with nodule formation and perforation of the intestine and peritonitis in some. The lesions were mostly in the submucosa, where they gave rise to relatively slight reactions. Nine cases are reported in rhesus monkeys due to *Oesophagostomum apiostomum* (Willach). In 3 of these the parasite was found in the peritoneum where it had penetrated through the intestinal wall.—*L. D. Bushnell.*

16630. **STRADOMSKY, B. N., I. N. PETROWSKY, W. W. POPOW, und G. P. RUDNEW. Ist es möglich, die menschliche Malaria künstlich auf Versuchstiere zu übertragen?** *Arch. Schiffs- u. Tropen-Hyg.* 34(9): 515-521. 1930.—Human blood containing malarial organisms from human cases was injected into the following animals, almost all young and previously treated to lower their resistance to malarial infection: 2 guinea pigs, 15-17 days old, injected subcutaneously with a solution of benzol in oil for several days; 3 guinea pigs, 1-1½ mos. old, previously submitted to large doses of x-rays; 3 guinea pigs 3 mos. old and 2 dogs 2-4 months old, previously splenectomized; 1 guinea pig, 1½ mo. old, splenectomized 4 days after the injection of malarial blood; 2 dogs, 2-3 mos. old, previously injected with collargol to block the reticulo-endothelial system; 1 grown rabbit and 1 dog 4 mos. old in which both splenectomy and blockage of the reticulo-endothelial system had been done. In only a few cases and in these only during the 1st hr. after subcutaneous or intravenous injection of malarial blood could malarial parasites be found in the circulating blood and then in very small numbers. Subsequent examinations were entirely negative. These results do not confirm Joshino's claim that human malarial infection can be transmitted to experimental animals.—*E. C. L. Miller.*

16631. **TALICE, RODOLFO V. Sobre Helmintiasis por Hymenolepis en el Uruguay. [Human infestation by Hymenolepis in Uruguay.]** *Quinta Reunión Soc. Argentina Patol. Reg. Norte* 2: 1076-1081. 1930.—Report of 24 cases of human infestation by *Hymenolepis*, mainly by *H. nana*, in about 2200 examined persons.—*A. de Assis.*

16632. **TAYLOR, E. LEONARD. Some factors concerning the occurrence of disease due to strongyloid worms in grazing animals—verminous gastritis, hoose and equine strongylidosis.** *Vet. Rec.* 10(28): 602-606. 1 fig. 1930.—This is a general discussion of the methods of infection with these parasites, the importance of overstocking, close-grazing, nutrition and moisture in causing parasitic disease due to bursate nematodes.—*T. W. M. Cameron.*

16633. **VELU, H., L. BALOZET, et G. ZOTTNER. Infections mixtes trypano-spirochétiennes (Trypanosoma marocanum + Spirochaeta hispanicum).** *Compt. Rend. Soc. Biol.* 106(12): 1092-1094. 1931.—Two guinea pigs were inoculated with trypanosomes 64 and 69 days respectively after inoculation with spirochaetes. In one the spirochaetes did not reappear in the blood although the trypanosomes recurred 3 times before the animal died. The other animal required 3 inoculations with

trypanosomes before symptoms appeared. A few spirochaetes appeared in the blood 154 days after inoculation with spirochaetes and 49 days after inoculation with trypanosomes. This confirms the results of Delorme and Anderson with *T. brucei* and *S. duttoni*. In 7 cases of mixed infection, spirochaetosis had no effect on trypanosomiasis but the latter provoked the reappearance of spirochaetes long after inoculation and attenuated the crises by reducing their duration and frequency.—*E. Weiner.*

16634. **WILSON, IRL DONAKER A study of bovine coccidiosis.** *Virginia Agric. Exp. Sta. Tech. Bull.* 42. 1-44. 7 pl. 1931.—The most complete review of the literature yet published shows that bovine coccidiosis is widely spread, occurring in dry and moist climates and during warm and cold seasons. The author's observations indicate this protozoan is present in the intestinal tract of many apparently normal cattle in widely separated sections of America, but becomes numerous enough to produce serious disturbances only occasionally. In some areas the disease causes serious annual losses in calves. *Eimeria zurnii* is the species most common, although *E. smithi* and *E.* cylindrica* (p. 12) are usually present. A review of the literature shows that what little research has been done with this disease has for the most part been fragmentary, and many contradictory statements have been made. The author finds the oocysts of the spp. of *Eimeria* affecting cattle highly host-specific, that they are killed by 10 min. exposure at 55° C., by prolonged freezing, direct sunlight, prolonged drying, putrefaction, 0.3% $HgCl_2$, 5% phenol, 4% formalin, and 2% liquor cresolis comp. They may be successfully incubated in 2% $CuSO_4$, or 2% $K_2Cr_2O_7$, and are not injured by centrifuging. The author was unsuccessful in digesting the oocyst wall in vitro or in young rats. The prepatent period is about 7 days followed by a period of about 30 days when the oocysts are eliminated in great numbers, ending in the animal becoming immune or resistant, or it may become a chronic carrier if death does not occur. The author believes that recovery from the disease may be due to immunity rather than to a limited number of asexual generations as has been suggested for some species. The symptoms are bloody diarrhea, followed by emaciation and weakness; the appetite remains fair and there is no rise of temperature. Autopsy findings are principally enteritis, ranging from catarrhal to hemorrhagic, and, in severe cases, sloughing of the intestinal epithelium. The pathologic changes and morphology of the four species of *Eimeria* affecting cattle are illustrated by photomicrographs. A list of 115 references is appended.—*I. D. Wilson.*

16635. **YAKIMOFF, W. L. Endoglobuläre Parasiten der Schafe im Nordkaukasus. [Endoglobular parasites of sheep in the North Caucasus.]** *Arch. Protistenk.* 65 (1/2) : 151-164. 1 pl., 43 fig. 1929.—Smears from the peripheral circulation and spleen were studied. The author concludes that 4 distinct parasites can be recognized: *Piroplasma ovis, Babesiella ovis, Gonderia ovis,* and *Theileria ovis.* These are the first observations on piroplasmosis recorded from the North Caucasus. Extensive bibliography.—*M. E. Larson.*

16636. **YAKIMOFF, W. L., et W. P. BASKAKOFF. A propos de la coccidiose du mouton en Russie (U.R.S.S.).** *Arch. Ital. Sci. Med. Coloniali* 11 (9) : 517-521. 1930.—Description of an epizootic disease of sheep, caused by trichostrongylids and by coccidia. *Eimeria ninae kohl-yakimov* Yakimoff and Rastegaieff, 1930 (average dimensions of oocysts 25.1$\mu \times$ 18.7μ, of sporocysts 8.3$\mu \times$ 5.9μ), and *Eimeria intricata* Spiegl, 1925 (average dimensions of oocysts 47.8$\mu \times$ 8.5μ). Treatment with CCl_4 did not influence the disease.—*W. L. Yakimoff (transl. by H. Kirby).*

16637. **YAKIMOFF, W. L., et E. F. RASTEGAÏEFF. L'essai de l'infection des bovidés avec le Françaiella colchica par les tiques.** *Zentralbl. Bakt. I. Abt. Orig.* 112 (1/2) : 69-73. 1929.—In North Caucasia the auth gathered from infected animals ticks which were c tivated in the laboratory. Using the resulting larvae *Boophilus annulatus calcaratus* Bir., a healthy milk-c was infected with *Françaiella colchica.* On the 11th d the temp. rose, and 5 days later the parasites were fou in the peripheral blood. Next day there was haemog binuria. The incubation period is 11 days. Death curred on the 18th day. Therefore, *B. a. calcaratus* the vector of *F. colchica* in North Caucasia. Tab show the form of the parasites, minute details of t blood condition, the infected organs, and the progr of the disease. Comparing this infection to piroplasm sis caused by *Françaiella* (*Babesiella*) *major* in Alge it is seen that the latter is not fatal, whereas the C casian form is. No spleen rupture was observed in No Caucasia. The Algerian authors (Ed. Sergent and c laborators) think that *F.* (*B.*) *major* is responsi for spleen rupture in Europe.—*C. I. Mactaggart.*

16638. **[ZHADIN, V. I.] ЖАДИН, В. И. Материа к изучению биологии моллюсков—передатчик фасциолоза и к выработке мер борьбы с ни [Mollusks as transmitters of fascioliasis.]** Извес Государственного Гидрологического Института (*B Inst. Hydrol.* [*Leningrad*]) 1930 (28) : 82-84. 1930.— the basin of the River Alatyr' 44 spp. of fresh-wa mollusks were found; *Limnaea stagnalis, L. peregra,* especially *L. truncatula* were intermediate hosts *Fasciola hepatica. L. truncatula* multiplies very rapi laying up to 25 eggs several times a year; the eggs velop in 10-12 days. Putting lime into water destro the mollusks only when reaction of water was pH 10.0. Superphosphates, even in considerable qu tities, had no effect on the mollusks.

16639. **ZIEMANN, H. Über die etwaigen Beziehun gewisser cumarinhaltiger Pflanzen zur Epidemiologie Malaria.** *Arch. Schiffs- u. Tropen-Hyg.* 35 (7) : 410- 1931.—On the basis of observational evidence var malariologists have considered that the presence of tain plants containing cumarin are responsible for absence of malaria in those areas. Ziemann consi the possible rôle such plants may play in the cor of malaria and publishes lists of 81 plants which known to contain cumarin. He suggests that cer of these, in particular clovers which are native to country, be planted in malarious regions to test theory on a practical scale.—*E. C. Faust.*

16640. **ZSCHUCKE, J. Eine Kammer für die mi skopische Zählung von Helmintheneiern und La** *Arch. Schiffs- u. Tropen-Hyg.* 35 (7) : 357-363. 1931 ruled counting chamber is described to simplify Stoll technic for egg counts; it is also said to be u in estimating the number of nematode larvae sample.—*E. C. Faust.*

16641. **ANONYMOUS. Notes and memoranda. N Hand-list of the helminth parasites of the rabbit.** *Helminthol.* 9 (2) : 105-116. 1931.—This compilatio the Imperial Bureau of Agricultural Parasitology all helminth parasites from *Oryctolagus cuniculus* ing complete synonymy for adult and partial syno for larval forms. Synonyms are cross-referenced. liography is given.—*F. J. Meggitt.*

16642. **ANONYMOUS. Notes and memoranda. The kidney-worm of swine: Stephanurus den** *Jour. Helminthol.* 9 (3) : 179-190. 1931.—This co tion by the Imperial Bureau of Agricultural Parasi gives synonymy, geographical distribution, morpl and life history, modes of infection, pathology, p laxis, economic importance, and bibliography species.—*F. J. Meggitt.*

16643. **ANONYMOUS. Snails force fliers to** *Nautilus* 45 (1) : 28. 1931.—Myriads of snails whi ried bilharziasis forced the removal of the Royal air force base near Lake Habbanya, near B —*F. Baker.*

FILTERABLE VIRUSES, BACTERIOPHAGE, ETC.

GEO. H. SMITH, *Editor*

(See also in this issue the subsection "Infectious Chloroses" in the section Phytopathology; and Entries 15658, 16304, 16533, 16549, 16550, 16551, 16674, 16678, 16694, 16695, 16704, 16722)

GENERAL

16644. **AUBERTIN, E., et V. REYNES. Sur la mise en évidence, par inoculation dans les ganglions lymphatiques du cobaye, de virus filtrant tuberculeux provenant de crachats bacillifères.** *Compt. Rend. Soc. Biol.* 106 (12): 1161-1163. 1931.—Sputa containing tubercle bacilli were incubated for 3-4 hrs. and then filtered through a Chamberland filter L3. Sterility of the filtrate was shown by culture in different media and by examination after Gram and Ziehl-Nielsen staining. The filtrates were inoculated into the carotid ganglia or subcutaneously at the base of the neck in guinea pigs. The glands were removed after different periods, and, after being emulsified in physiological saline, were inoculated into the carotid ganglia of other guinea pigs and examined by the Ziehl-Nielsen method. Following intraglandular injection, acid-fast bacilli are evident after about 12 days, instead of after the month required with subcutaneous injection; but results are inconstant. Of 13 cases, only twice were typical bacteria seen after the 1st inoculation; the 2nd gave 5 positives in 9 cases. In the succeeding inoculations, the number of positives became smaller (3 in 18 cases).—*E. Weiner.*

16645. **AUBERTIN, E., et V. REYNES. Lésions tuberculeuses produites par le virus filtrant provenant de crachats bacillifères et transmis de ganglion à ganglion chez le cobaye. L'ultravirus tuberculeux recupère-t-il un pouvoir pathogène analogue à celui du bacille de Koch ordinaire?** *Compt. Rend. Soc. Biol.* 106 (12): 1163-1166. 1931.—5 guinea pigs received injection of filtered tuberculous sputum in the glands of the neck. 6 succeeding lots were inoculated, one from the other, with emulsions of these glands. After removal of the glands the animals were autopsied. In general, in the 18 examined, acid-fast bacilli were found in the glands 200-250 days after inoculation. A few, tested with tuberculin, gave negative results. The ultravirus produced, in a few cases, lesions in the liver, spleen and other organs, which appeared typical, although bacilli could not be found on direct examination. Inoculation of an emulsion of these organs into 3 guinea pigs produced lesions in 1 animal, none showing bacilli. Inoculation of fragments of organs from the animal with lesions, into 2 guinea pigs produced a typical lesion at point of inoculation in one, adenopathy of the surrounding glands, and hypertrophy of the mesenteric and tracheobronchial glands. Bacilli were present in the glands of the neck. The lesions produced by the ultravirus differ from those produced by Koch's bacillus, the lesion at the point of inoculation often being absent; and the lesions produced by the ultravirus are not transmissible in series, although the same strain was used throughout. The health of the animal is important in production of lesions.—*E. Weiner.*

16646. **BADGER, L. F., R. E. DYER, and A. RUMREICH. An infection of the Rocky Mountain spotted fever type. Identification in the eastern part of the United States.** *U. S. Publ. Health Repts.* 46(9): 463-470. 1931.—A virus was isolated from cases of a disease, occurring in the eastern part of the U. S. A., which clinically resembles typhus fever or Rocky Mountain spotted fever. The virus, studied in guinea pigs, monkeys and rabbits in comparison with the viruses of Rocky Mountain spotted fever, endemic typhus and epidemic typhus, is regarded as the etiological agent of an eastern type of Rocky Mountain spotted fever.—*R. E. Dyer.*

16647. **BARYKIN, W., A. ZACHAROFF, A. KOMPANEETZ, und O. BARYKIN. Untersuchungen über das Fleckfieber. II. Das Fleckfieber bei Kleiderläusen.** *Zentralbl. Bakt. I. Abt. Orig.* 112(1/2): 25-32. 1929.—Body lice allowed to feed on patients with typhus fever become infected from the 5th day of fever on. The optimum infective period is at about 2 wks., but infection may occur even 1 wk. after temp. has returned to normal. Guinea pigs can be infected experimentally by bites of infected lice. Infection is transmitted but rarely from one louse to another, but lice can be easily infected by injecting per rectum, an emulsion of the intestinal tract of an infected louse or of the brain of an infected guinea pig. The typhus virus undergoes enormous multiplication in a louse so infected, indicating that the louse is not merely a mechanical, but rather a biological, carrier. The disease is manifested in the louse after about 1 wk., by destruction of the intestinal epithelium and death after the 2nd wk. Virus carried thus from louse to louse retains its virulence.—*E. C. L. Miller.*

16648. **BEAUREPAIRE ARAGÃO, H. de, e A. da COSTA LIMA. Sobre a transmissão do virus de febre amarella pelas fezes de mosquitos infectados. [Transmission of yellow fever virus by excreta of infected mosquitoes.]** [In Portuguese and English.] *Inst. Oswaldo Cruz, Suppl. Mem.* 8. 101-108. 1 pl. 1929.—Excreta of infected mosquitoes are infective, although in the test cases *Macacus rhesus* monkeys recovered.

16649. **BEAUREPAIRE ARAGÃO, H. de, e A. da COSTA LIMA. Sobre o tempo necessario para que Stegomyias infectados excretem fezes virulentas. [Time required by infected Stegomyia to expel virulent excreta.]** [In Portuguese and English.] *Inst. Oswaldo Cruz, Suppl. Mem.* 9. 139-145. 1929.—The excreta of yellow-fever-infected mosquitoes are infective 5-7 days after the mosquito has bitten an infected *Macacus rhesus* monkey, although the bite is not infective for 9 days.

16650. **BEAUREPAIRE ARAGÃO, H. de, e A. da COSTA LIMA. Sobre o poder infectante da haemolympha de mosquitos contaminados com o virus da febre amarella. [Contamination of hemolymph in mosquitoes infected by yellow fever virus.]** [In Portuguese and English.] *Inst. Oswaldo Cruz, Suppl. Mem.* 10. 251-255. 1 pl. 1929.—The latent period before the bite of the mosquito becomes infective is explained by the time necessary for virus to pass from stomach to coelomic cavity and thence, by the hemolymph, to the salivary glands. By microscopic technique the authors removed hemolymph from an infected mosquito and inoculated a *Macacus rhesus* monkey, causing a fatal yellow fever.

16651. **DOOREN de JONG, L. E. den. Verdere onderzoekingen over den Megatherium-bacteriophaag. [Further investigations on Megatherium bacteriophage.]** *Nederlandsch Tijdschr. Hyg., Microbiol. en Serol.* 5(4): 259-262. 1931.—Only a few of the mutilates of *Bacillus megatherium* are lysed by *megatherium* bacteriophage 899. Cultivation of insensitive mutilates on 10% peptone agar renders more of them sensitive to this bacteriophage. Aside from *megatherium* strain 899, strains 897 and 333 also appeared to produce a bacteriophage; 899 and 897 appeared to form 2 sorts of plaques—one of the normal type and another with a small colony in the center of the plaque (point plaques). 333 and 897 attack fewer of the mutilates than does 899. Probably all *megatherium* strains produce bacteriophage.—*L. E. den Dooren de Jong.*

16652. **DYER, R. E., A. RUMREICH, and L. F. BADGER. Typhus fever. A virus of the typhus type derived from fleas collected from wild rats.** *U. S. Publ. Health Repts.* 46(7): 334-338. 1931.—Inoculation into guinea pigs, of fleas (*Ceratophyllus fasciatus* and *Xenopsylla cheopis*) removed from rats trapped at a typhus focus, resulted in establishment of a strain of virus producing typhus-like reactions in guinea pigs. Monkeys and rabbits developed agglutinins for *B. proteus* X_{19}

(type O) following inoculation with this virus strain. Guinea pigs recovered from endemic typhus produced by the Wilmington strain of virus were apparently immune to a subsequent inoculation with the strain of virus recovered from the fleas.—*Authors' summary.*

16653. **DYER, R. E., L. F. BADGER, and A. RUMREICH.** Rocky Mountain spotted fever (eastern type). Transmission by the American dog tick (Dermacentor variabilis). *U. S. Publ. Health Repts.* 46(24): 1403-1413. 1931.—A disease occurring in the eastern part of the U. S. A. has been identified as an eastern type of Rocky Mountain spotted fever. The common tick in the area where it has been studied in the East is *Dermacentor variabilis*. Experimentally, these ticks were infected in the laboratory by allowing them to feed as larvae on guinea pigs infected with the eastern type of the fever. After these larvae had moulted to nymphs the infection was recovered from the nymphs.—*R. E. Dyer.*

16654. **DYER, R. E., E. T. CEDER, A. RUMREICH, and L. F. BADGER.** Typhus fever. The rat flea, Xenopsylla cheopis, in experimental transmission. *U. S. Publ. Health Repts.* 46(32): 1869-1870. 1931.—Successful experimental transmission experiments with white rats, guinea pigs and rabbits are reported.

16655. **GERARDS, J. C.** Untersuchung der phagozytierenden Kraft der Leukozyten unter dem Einfluss des Bakteriophagen. *Zentralbl. Bakt. I. Abt. Orig.* 111(6/8): 493-496. 1929.—A stimulating influence of bacteriophage on phagocytosis is demonstrated both in vivo and in vitro and is shown to be specific. Serum of rabbits injected with bacteriophage is found to exert a similar influence, which is of short duration, on leucocytes from a normal animal.—*J. B. Nelson.*

16656. **HERRMANN, OTTO.** Plazentare Uebertragung der Wut. *Zeitschr. Immunitätsforsch. u. Exp. Therap.* 58(3/4): 371-383. 1928.—Many investigators have claimed that rabies is transmissible through the placenta. The author studied the question experimentally by inoculating animals with brain emulsion of fetuses from pregnant women that had died of rabies infection, and found that the virus is transmitted through the placenta in man as well as in animals. The virus in the brain of the fetus is generally decreased in virulence. Tests for presence of the virus in the fetus should be made by inoculating young rabbits and guinea pigs.—*D. Bergey.*

16657. **IONESCO-MIHAIESTI, C., A. TUPA, B. WISNER, et I. MESROBEANU.** Études sur la poliomyélite en Roumanie. (Premier mémoire: Epidémiologie. Étude du virus. Maladie expérimentale.) *Arch. Roumanies Pathol. Exp. et Microbiol.* 2(2/3): 217-274. Map. 1929.—Few sporadic cases of anterior poliomyelitis had been reported in Rumania in the 5-yr. period preceding 1927. An explosive outbreak occurred in Bucharest from July to November, 1927, with the peak in August (190 cases). Outside of Bucharest the epidemic occurred from August to December, 1927, with the peak in September (696 cases). Few cases were reported until the next summer, when there was another smaller rise. In the 2-yr. period there were about 2630 cases with 300 deaths. Materials from 8 cases in which death had occurred within 4 days after onset of disease, proved infective in monkeys. 5 specimens from cases in which death occurred 8-22 days after onset, proved non-infective on repeated injections into several animals. Later, inoculations with a virulent virus, in many of these latter animals, produced typical infections. The pathology of these 13 cases is given in detail. In the experimental infections the same incubation period was seen with 1 virus given to 4 animals. The incubation period varied from 6 to 14 days with different viruses. In general, it was prolonged after several virus passages. Detailed clinical and pathological studies were made of the experimental disease. Over 100 monkeys were used, belonging to 7 spp.; and it was confirmed that *Mac. rhesus, C. hamadryas* and *Mac. cynomolgus* are the most susceptible spp. In electrophoresis experiments, the virus, between pH 6.9 and 8.0, had a negative charge.—*E. Megrail.*

16658. **KLIENEBERGER, E.** Ein Stamm mit eigenartigen Abkömmlingen und der Zusammenhang des Auftretens solcher atypischen Abkömmlinge mit Bakteriophagie und Lysogenität. *Zentralbl. Bakt. I. Abt. Orig.* 112(5): 354-368. 1 pl. 1929.—From 1 original strain of colon bacillus there were produced during 2 yrs. culture, 8 distinct strains characterized as follows: (1) typical coli; (2) coli, no gas; (3) slimy coli, no gas; (4) paracoli; (5) paracoli, no gas; (6) typhoid-like; (7) paratyphoid-like; (8) coli mutabilis, no gas—all decidedly constant. The strains showed marked differences in serological reactions and insensitiveness to bacteriophage. A number of them were apparently markedly affected in cultural characteristics by bacteriophage. It was shown that these strains were already present in the original and appeared as colonies on plates because resistant to bacteriophage, which destroyed the far more abundant typical organisms; the appearance of all these new strains could be explained on this basis. Some of the strains developed their own bacteriophage. Any regular relation between gradual appearance of different strains and action of bacteriophage could not be detected, though resistance to bacteriophage and variability occurred together so frequently that it appears possible that ability to produce bacteriophage may be a factor in the production of variations.—*C. B. Morrey (from author's abstract).*

16659. **LAGRANGE, E.** L'autostérilisation mortelle de la peste aviaire d'Egypte est un phénomène épidémique. *Compt. Rend. Soc. Biol.* 106(12): 1081-1084. 1931.—Observations on fowl pox were made for 2½ yrs. (including 3 winters), during which time about 30 chickens were bought each mo. 3 brains which were immunizing in the fresh condition or after several days of refrigeration, became virulent after preservation in glycerin and in the refrigerator for 2 mo. The plague is a periodic, seasonal phenomenon, apparently not affected by autosterilization, which is a new factor. The fact that the virus which is virulent in the spleen, is immunizing in the brain, shows that it has followed its usual course and is only inhibited or destroyed in situ in certain organs afterward. Autosterilization is comparatively rare and is probably due to some antagonistic force in the chicken and not to the chicken itself, since it cannot prevent death or creation of foci of infection.—*E. Weiner.*

16660. **NICOLAU, S., (Mme.) L. KOPCIOWSKA, et (Mme.) V. CONSTANTINESCO.** Immunité et virus filtrables. Recherche par l'électrophorèse du virus herpétique dans le névraxe des lapins immunisés. *Compt. Rend. Soc. Biol.* 106(12): 1100-1103. 1931.—At different times (10-30 days) after intracerebral injection of herpetic virus, the brain and medulla of rabbits were removed and subjected to electrophoresis. The emulsion which became hardened on the positive electrode in each case was inoculated under the dura in 2 rabbits and that from the negative electrode in 1 rabbit. In every case the inoculated solutions were avirulent. It is concluded that the brain and medulla of rabbits immunized against herpetic virus do not contain virus which can be demonstrated by electrophoresis; the state of immunity in experimental herpetic infection of the rabbit is incompatible with the survival of the virus in the cerebrospinal axis. A. Netter, in a note attached to this paper, states that results of Olitsky and his collaborators are incontestable for the diseases tested: thrush, vaccinia and poliomyelitis; and that the discordant results of others may be due to changes in the constitution of the media in which the cataphoresis is done.—*E. Weiner.*

16661. **RAHN, OTTO.** Betrachtungen über die Natur der Bakteriophagen. *Centralbl. Bakteriol. II. Abt.* 83: 277-280. 1931.—The size of a bacteriophage unit is about the same as that of a gene. It is so small that it can not contain the complete growth mechanism of a bacterial cell. Therefore, its protoplasm must be similar

to that of its host, the bacterium. Only a few simple changes will probably produce bacteriophage protoplasm from bacterial protoplasm. Possibly, the bacteriophage is nothing but an unbalanced protoplasm molecule of the bacterium which has lost the adaption to the regulatory mechanism in the cell and continues to grow at the expense of the cell contents.—*O. Rahn.*

16662. **RUMREICH, A., R. E. DYER, and L. F. BADGER. The typhus- Rocky Mountain spotted fever group. An epidemiological and clinical study in the eastern and southeastern States.** *U. S. Publ. Health Repts.* 46(9): 470-480. 1931.—An epidemiological and clinical description is given of a disease occurring in the eastern part of the U. S. A., identified as an eastern type of Rocky Mountain spotted fever. It is differentiated epidemiologically and clinically from endemic typhus. Eastern spotted fever occurs among rural dwellers or those having rural contacts, in contrast to endemic typhus which occurs among urban dwellers and often among those closely associated with rats. A history of tick bite is commonly elicited from those with eastern spotted fever. The clinical features are compared with endemic typhus.—*R. E. Dyer.*

16663. **SIMMONS, JAMES STEVENS, JOE H. ST. JOHN, and FRANCOIS H. K. REYNOLDS. Transmission of dengue fever by Aëdes albopictus Skuse.** *Philippine Jour. Sci.* 41(2): 215-229. 1 pl., 1 fig. 1930.—The authors show that laboratory-bred *A. albopictus* can be as readily infected with dengue virus as can *A. aegypti*. *A. albopictus* is as common in the city of Manila as is *A. aegypti*. These facts suggest that *A. albopictus* is probably of great importance as a natural vector of dengue in Manila and elsewhere.—*J. H. St. John.*

16664. **TAKAHASHI, KENSABURO, und SOYO HOSHIZAKI. Einiges über die experimentelle Reinfektion von Meerschweinchen mit Fleckfieber. IV. Experimentelle Studien über das Fleckfieber.** *Zentralbl. Bakt. I. Abt. Orig.* 121(1/2): 39-40. 1931.—Of 46 guinea pigs, reinfected during the 127 days after the 1st typhus infection, 10 showed the clinical signs of experimental typhus; the incubation time was longer, the febrile period shorter. In some animals typhus nodules were found in the brain, apparently called forth by the reinfection.

16665. **TAMURA, S. Die Prowaczek'schen Körperchen bei Trachom in Taiwan.** *Taiwan Igakki Zasshi* [*Jour. Med. Assoc. Formosa*] 309. 83. 1930.—The author demonstrated these bodies in 21.2% of 242 cases of trachoma in Formosa.—*E. C. Faust.*

16666. **TAYLOR, J., S. D. S. GREVAL, and U. THANT. Bacteriophage in bacillary dysentery and cholera.** *Indian Jour. Med. Res.* 18(1): 117-136. 1930.—26 cases of bacillary dysentery were treated with a bacteriophage of high activity. No significant difference was observed in the progress of these cases, either in mortality or in shortening of the period of attack, as compared to 20 control cases. No relationship was shown between appearance of bacteriophage in the stools and progress of the cases. Similar results were obtained in 14 cases of cholera treated with bacteriophage (with 19 controls). The authors conclude that bacteriophage is not essential to recovery and that it is not an effective therapeutic agent in the class of cases dealt with.—*J. Taylor.*

16667. **VEDDER, A. Zur spezifischen Lysabilität von Erysipelstreptokokken.** *Acta Brevia Neerlandica* 1(1): 27-28. 1931.—Earlier, the author showed erysipelas streptococci to be lysed only by the bacteriophage of Schwartzman; hemolytic streptococci of other origin have proved resistant. But only smooth strains of erysipelas cocci, producing considerable turbidity and forming rather short chains in broth, were sensitive to this bacteriophage; rough strains showing longer chains and a deposit in broth, which itself remained clear, were resistant. As hemolytic streptococci of other origin grow like the latter, the question arose as to whether these strains owed their resistance against lysis to their rough state or to a specific character. New streptococcic strains of scarlatinal, puerperal and of other origin were examined. Some grew like the smooth strains, but were resistant to lysis. Thus, the lysability of erysipelas streptococci does not depend on their smooth state only, but is a specific character.—*A. Vedder.*

LOWER ANIMALS

16668. **BEATON, W. G. Infectivity of shade-dried hides from rinderpest infected cattle.** *Vet. Jour.* [*London*] 87(11): 532-533. 1931.—Hides from animals affected with rinderpest remained infective as long as 36 hrs., but not to the 48th hr., when dried in the shade.—*I. E. Newsom.*

16669. **ELS, T. La peste bovine à la frontière orientale du Congo Belge.** *Bull. Agric. Congo Belge* 21(4): 1029-1047. 2 pl., 1 fig., map. 1930.—During an outbreak of bovine plague (rinderpest) in the West Nile District near the Congo-Sowdanaise frontier, a vaccine prepared with an autochthonous strain of virus according to the technique of Curasson was used. Of the 2,130 animals vaccinated, 14 died of plague and 4 cows aborted. The rest remained healthy.—*L. M. Bishop.*

16670. **JACOTOT, H. Sur l'état d'infection inapparente dans la peste bovine: conséquences épidémiologiques possibles.** *Bull. Soc. Path. Exotique* 22(4): 239-241. 1929.—Rinderpest can maintain itself in a form not clinically evident, in animals considered resistant to its attacks or in animals immunized against it. These animals play an important part in propagating the disease.—*L. R. Bishop.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

MEDICAL

JAMES S. SIMMONS, *Editor*

(See also in this issue Entries 15582, 15769, 16104, 16158, 16262, 16301, 16322, 16328, 16330, 16331, 16338, 16339, 16349, 16381, 16388, 16398, 16435, 16436, 16451, 16453, 16459, 16461, 16465, 16485, 16495, 16504, 16519, 16524, 16543, 16547, 16633, 16652, 16746, 16749, 16754, 16757, 16760, 16766, 16767, 16771)

16671. **ALMEIDA, FLORIANO PAULO de. Estudo comparativo do Granuloma coccidioidico nos Estados Unidos e no Brasil. [Comparative study of Coccidioidal granuloma in the United States and Brasil.** [With English summary.] *Ann. Fac. Med. São Paulo* 4: 91-98. 4 pl. 1929.—The author reports studies of various aspects of the parasite of coccidioidal granuloma observed in the U. S. A. and Brazil, and summarizes the principal differences found in the 2 countries. Considering these differences, he proposes for the parasite of the Brazilian cases the name *Coccidioides* **brasiliensis** (*Zymonema brasiliense* Splendore). A tabular comparison of the features of the disease and the causal fungi, as reported in the U. S. A. and in Brazil, covers the following features: portals of entry, principal bodily localizations, dimensions of the fungus, reproduction in the tissues, cultures and cultural characters, and inoculations. In the U. S. A., positive results were easily obtained in guinea pigs with any mode of inoculation, and with generalization of lesions; in Brazil, infections were obtained with difficulty, except by the testicular route, and then only local lesions occurred.—*From author's summary.*

16672. **BENEDEK, T. Schizosaccharomycosis. I. The present status of identification of Schizosaccharomyces hominis and its results.** *Arch. Dermatol. and Syphil.*

24(4): 557-579. 9 fig. 1931.—The discoverer of *S. hominis* reports that in 28.02 ± 3.39% of 1500 cases the fungus was identified by cultures from scales of the skin, a method which identifies only such individuals as have left the vascular system, and, traversing the skin and epidermis, have settled on the surface. Through direct blood cultures, *S. hominis* was identified in 17.48 ± 8.1 of 206 cases, the low % being due to the high inhibitive action of whole blood. Through indirect blood cultures (cantharidin method) the parasite was identified in 66.55 ± 8.5% of 279 cases. If the contents of the blisters are examined microscopically and evaluated, the positive cultures increase to approximately 100%, since multiplication is conspicuous within 24 hrs. Centrifugalization of the citrated blood shows the degree of invasion of the blood stream at a given moment by *S. hominis;* it can be identified in the blood stream in the vegetative form and also phagocytosed by microphages and macrophages. By this method the author also demonstrated *S. hominis* in the venous blood of the umbilical cord, proving transplacental transmission from mother to fetus. *S. hominis* is a constant endoparasite of man, and the dermatoses caused by it are merely "projections" of this endoparasitism on the outer surface of the integument.

16673. **FONTES, A. Ueber die Veränderlichkeit des Tuberkelbazillus.** *Tuberkulose* 10(11): 255-258. 1930.—On the basis of clinical and experimental studies begun in 1906 the author concludes that the chromatin granules found in the bacterial cells are living units of reproduction and infection, and that tuberculosis virus passes through 3 stages: (1) germinative (granular dust, free granules); (2) growing (enlargement of the granule, organization of the acid-fast bacilli); and (3) fission or destruction (splitting of cells, freeing of granules). He declares that the existence of tuberculous infection without acid-fast bacilli and without formation of tubercles is an assured fact. The classic infection of which the acid-fast Koch bacillus is the recognized cause is, in this view, merely the critical point in a process which may lead to formation of tubercles or (as lately demonstrated) to a resorptive change in which the invading organism becomes non-acid-fast and saprophytic. The author claims to have produced a similar change in vitro, acid-fast bovine tubercle bacilli becoming non-acid-fast and gram-negative; and to have kept virus alive in vitro for 2 yrs., 7 mos. A new curative principle (apparently extracted from the bacteria and tending to produce this saprophytic change) is for the present designated as Agent X because the author does not assume to know that it is a "ponderable body."

16674. **HERELLE, F. d', R. H. MALONE, and M. N. LAHIRI. Studies on Asiatic cholera.** *Indian Med. Res. Mem.* 14. 1-161. 6 pl. 1930.—The viability of the cholera vibrio in water is very weak; usually all died in less than 48 hrs. The biochemical properties of the cholera vibrios studied are fixed. The following sugars are attacked with production of acid only: glucose, mannite, saccharose, and maltose; all gave the nitroso-indol reaction, reduced nitrates, and hemolyzed human erythrocytes. Vibrios cultivated outside the body are generally avirulent, but virulence may be reacquired when certain conditions are realized. We are in ignorance of the toxigenic power. Filtrates obtained directly from stools of patients should be made to act on the original culture of vibrios isolated from the stool of the same patient. The general characters of bacteriophages parasitic on cholera vibrios are the same as those of other bacteriophages already discovered and the technique of isolation is the same. In the intestines of patients attacked by cholera, both vibrios and bacteriophages possess individuality which is lost, in both cases, by serial cultures on artificial media. For cholera to declare itself, virulent vibrios must invade and multiply within the intestinal mucosa. Virulent cholera vibrios secrete enzymes capable of digesting the living substance of cells, and powerful hemolysins for human erythrocytes. The pathology of the disease results from the action of the vibrio, tending to produce fatal lesions and the intestinal bacteriophage of *B. coli* adapting itself to the pathogenic vibrio. The vibrio and bacteriophage being present together, 4 events may take place: (1) the intestinal bacteriophage adapts itself rapidly to parasitism for the invading vibrio: the symptoms, however severe at onset, rapidly improve and the patient becomes convalescent. (2) the intestinal bacteriophage adapts itself more slowly, but attains a high virulence: convalescence is established as soon as bacteriophagy occurs in vivo. (3) after a primary exaltation, the feeble virulence acquired by the bacteriophage becomes attenuated and disappears: after temporary amelioration of symptoms the patient's condition again becomes aggravated and death ensues, (4) the bacteriophage manifests no virulence for the vibrio: no improvement of the symptoms takes place and the patient rapidly succumbs. The action of the bacteriophage is exercised in 3 different ways, all tending to recovery: (1) the bacteriophage produces bacteriophagy in vivo. (2) the bacteriophage modifies the character of the vibrios so that a secondary culture is completely avirulent. (3) the bacteriophage produces lysis of bacteria by secretion of "lysins" which also possess opsonic power. From experimental treatments it is concluded that the administration per os (never by the subcutaneous route) of bacteriophages possessing high virulence for cholera vibrio, constitutes the specific treatment of Asiatic cholera. Observations show that cessation of epidemics of Asiatic cholera is due to diffusion from convalescents of bacteriophages adapted to effect the bacteriophagy of cholera vibrios, and that it is possible to reproduce this process experimentally by sowing selected cultures of bacteriophages in the wells of infected villages. This method is easily applied, is inexpensive, and causes least inconvenience to the population.—*P. L. Cummings.*

16675. **KADISCH, E., und A. DOEWY. Über den Verlauf der Infektion mit Achorion gypseum im Höhenklima. Ein Beitrag zur Frage des Sauerstoffbedürfnisses der Fadenpilze.** *Arch. Dermatol. u. Syph.* 163(1): 149-157. 11 fig. 1931.—The course of experimental infection of a guinea pig with *A. gypseum* changed with increasing altitude: (a) the incubation period was 8-10 days instead of 4; (b) the initial and the developed infection was less marked, i.e., infiltration, extent, and scale and scab formation were slighter; (c) the mold elements seemed to be less numerous in altitude animals and did not penetrate so deeply. From published in vitro experiments the authors assume that these phenomena are related to the decreasing O partial pressure. Once, in an animal transported from Davos to Berlin, on the 15th day after infection, a ring-shaped recurrence appeared, explained by the hypothesis that at the time of transportation a local, but not general, allergy had already formed; thus the original central disease was cured, while around it there was a relapse. These results show a further parallel between trichophytia and tuberculosis. Temp. and air supply determine the localization of mycoses. Temp. and air supply, however, have values deviating from the interior of the body in the lungs as well as on the skin. Lungs and skin are therefore to be suspected as sites of predilection for tuberculosis, for temp. and air supply can also play a part in the localization of tuberculosis. The milder course of mycoses in guinea pigs at high altitudes represents perhaps in miniature a parallel to the effect of a high mountain climate on pulmonary tuberculosis.

16676. **KAHN, MORTON C. A growth cycle of the human tubercle bacillus as determined by single cell studies.** *Tubercle* 11(5): 202-217. 4 fig. 1930.—The author isolated single cells to start stock cultures, and again isolated single cells from these for study. Micro-droplets containing 1-6 bacilli were placed on cover slips and kept in special glass moisture chambers for several days up to a few weeks, observations being made very frequently. At certain stages in development, stained preparations were made, to find their reaction toward the acid-fast stain. After a few hrs. at 37° C., the rods develop certain dark zones. At 24-72 hrs. after isolation, lines of cleavage appear, without reference to the dark

zones, and the original rod is segmented into 3 or more ovoid units. At this period the ovoid forms are usually acid-fast, but some of them are only surrounded by an acid-fast zone. These coccoid forms then subdivide by simple cleavage into very small coccoid forms, some of which form short chains and diplococci. These forms are found to be non-acid-fast. After another 24 hrs. these small granules tend to form clumps and soon these small forms become dust-like granules too small to distinguish. After 24-96 hrs., small, very delicate rods, mostly non-acid-fast or very slightly acid-fast, are seen developing from these dust-like clumps. These rods gradually thicken and grow into adult acid-fast rods. Several unusual forms, such as branched bacilli with dark zones, granules breaking from rods, and fine rod-like processes growing from dark zones in the bacilli, were also observed, but they did not seem to be part of the usual life cycle. The 4 principal steps in the life cycle seem to be (1) division of the rod into 3 or more coccoid units which then (2) divide into diplococcoid forms, then (3) group themselves into dust-like groups from which new tiny rods emerge, growing again (4) into adult rods.—*F. Stivers.*

16677. **MONTEIRO, J. LEMOS. Sobre a presença de Rickettsia brasiliensis n. sp. nas cellulas endotheliaes da parede peritoneal em cobaias innoculadas no peritoneo com o virus do typho endemico de S. Paulo. [Presence of R. brasiliensis n. sp. in endothelial cells of the peritoneal wall in guinea pigs inoculated in the peritoneum with the virus of endemic typhus.]** [With English summary.] *Brasil-Med.* 45(35): 805-807. 1 fig. 1931.—The author reviews the relation between the members of the *Rickettsia* group and the pathological varieties of exanthematic typhus and allied infections. Rickettsias occur in the endothelial cells of Descement's membrane and may also occur in the endothelial cells of the peritoneal wall as a result of virus inoculation into the peritoneum of guinea pigs. Based on the etiological and immunological relations between this *Rickettsia* and the form found in the typhus endemic in São Paulo, the name of *Rickettsia* **brasiliensis*** (p. 806) is proposed. Microorganisms indistinguishable from the rickettsias appear in the endothelial cells of the peritoneal wall of guinea pigs peritoneally inoculated with the São Paulo endemic typhus virus.—*Author's summary.*

16678. **NAGAYO, MATARO, YONEJI MIYAGAWA, TOKUSHIRO MITAMURA, TAKEO TAMIYA, KIYOSHI SATO, HIKOZAEMON HAZATO, und ARAO IMAMURA. Über den Nachweis des Erregers der Tsutsugamushi-Krankheit, der Rickettsia orientalis.** *Japanese Jour. Exp. Med.* 9(2): 87-150. 13 pl. (4 col.), 1 fig. 1931.—There is considerable dispute as to the cause of tsutsugamushi disease. The authors, in very elaborate and extensive experimental work, claim to have furnished conclusive evidence that the cause is *Rickettsia orientalis.* Intraocular inoculation of the virus invariably produces a specific disease of the eye, and in the endothelial cells of Descemet's membrane the micro-organism can invariably be found. *R. orientalis* is identical in every respect with the organism isolated from the tissues of tsutsugamushi cases, as well as with the virus from experimentally infected animals. Inoculation of the endothelial cells of Descemet's membrane harboring the microorganisms even in small amounts, induces a severe infection. Introduction of virus-containing material into eyes immune against the disease induces no infection and the microorganism can not be recovered following such inoculations. The histological changes in the eye induced by the virus are identical with those found in natural cases or with those produced experimentally in animals.—*A. Eichhorn.*

16679. **PACHECO, GENESIO, e F. CARNEIRO de MENDONÇA. Um anno de investigações nas dysenterias do Rio de Janeiro. (One year's investigations on the dysenteries of Rio de Janeiro.)** [With French and English summaries.] *Archivos Hyg. [Rio de Janeiro]* 4(1): 5-39. 1930.—Results of an investigation made on stools of suspicious cases of dysentery show that diagnosis of probability by the cellular test, by presence of mucus, or by type of stools, is not likely to replace bacteriological diagnosis, for clinical and hygienic orientation. Identification of the samples was based on investigations of the sugar-fermenting organisms, on the neutral-red change, and on the action of agglutinating sera prepared from known samples.

16680. **SAUNDERS, EDWARD WATTS, with the technical assistance of MARY A. COOPER. Is there a specific bacterial irritant to four sites of carcinoma?** *Amer. Jour. Cancer* 15(4): 2745-2755. 1931.—A streptococcus isolated by anaerobic tissue cultures from stomach, colon, breast, and cervix in disease was shown to be pathogenic on isolation, then to pass through various stages, on environmental changes, from smooth to rough, to lose its pathogenicity, and to become morphologically, biologically, and serologically identical with enterococci, which are closely related to, or identical with, *Streptococcus lacticus* of cows' milk. Its greatest viability and resistance to heat above that of pasteurization, are noted. Its lactic acid production and pH range are also noted specifically because of the metabolism of the carcinoma cells, as demonstrated by Warburg. Its H_2S production is noted because of Hammett's work in demonstrating that S in the reduced state, which occurs at pH 5.5 or lower, is the chemical stimulus to cell division. The acid range of this organism is 4.2-4.8, which, according to Hammett, would result in maintaining S in the suboxidized state, stimulatory to cell division. Agglutination tests of patients' serum against an antigen of several of the identical strains demonstrated circulating antibodies. Definite microbic dissociation was demonstrated. A hypothesis is formulated, that the chronic ulcerative lesion of long duration, which finally starts to show proliferative activity and uncontrolled cell division, may be due to: (1) continuous repair; (2) poor blood supply and lymph return; (3) presence of the streptococcus, which is characterized by (a) remarkable viability, (b) lactic acid production, (c) H_2S production, (d) anaerobiosis. As a result of these 4 major characteristics, there is brought about a pH value and an oxidation-reduction potential in which the sulphydryl group, present in all tissues in the form of cystein and glutathione, is stimulatory to cell division.—*Author's summary.*

16681. **VELU, H., L. BALOZET, et G. ZOTTNER. Apparition de la virulence du cerveau chez les cobayes inoculés avec le spirochète hispano-marocain.** *Compt. Rend. Soc. Biol.* 106(12): 1089-1091. 1931.—10 guinea pigs were inoculated by putting a drop of blood containing *Spirochaeta hispanicum* in the eye. They were killed by ether at different times after inoculation and the virulence of brain and spleen was tested by subcutaneous injection into other guinea pigs and the blood examined for presence of spirochaetes. Both organs became infective at the same time, which was little before appearance of spirochaetes in the blood. To show the effect of injuring tissues, 5 guinea pigs were inoculated in the same way and 5 intraperitoneally. The spleen and blood were infective in every case, even when examined only 12 hrs. after inoculation intraperitoneally; but with the other method, this occurred later and irregularly. The brain became virulent after the blood and spleen, and organisms appeared in the blood stream still later. The left hemisphere was inoculated and the virulence of the right hemisphere, spleen and blood were studied in 7 guinea pigs after 6 hrs. to 4 days. Results were inconclusive, all the organs being infective in every case. The affinity of the central nervous system for these spirochaetes is shown only by its retention of the organisms or by their persistence in the organ because of its lack of a means of defense.—*E. Weiner.*

16682. **WEIGMANN, F. Experimentelle Untersuchungen über die Beziehungen zwischen Bact. abortus Bang und Bact. melitense.** *Zentralbl. Bakt. I. Abt. Orig.* 121 (5/6): 318-328. 3 fig. 1931.—In confirmation of Huddleson's findings, it is shown that gentian violet makes possible a differential medium for Bang's bacillus, since it inhibits various closely related organisms, but not this

bacillus. *Bact. abortus,* both bovine and human strains, were inhibited by thionin but not by methyl violet. With *Bact. melitense* and *Brucella suis* the opposite is true. *Bact. melitense* is pathogenic for monkeys (*Macacus rhesus*) which show a temp. curve similar to that in man, while human or bovine *abortus* strains are only pathogenic in large doses. By absorption of agglutinins no differences could be detected among several old laboratory strains of *Bact. abortus* and *Bact. melitense,* although the latter is more resistant to bactericidal action of normal human serum. If one takes into consideration the fact that *Bact. abortus,* on primary isolation, grows only under a modified O tension (atmosphere of CO_2, illuminating gas), while *Bact. melitense,* according to the author's work, grows under ordinary aerobic conditions, it is seen that a differentiating distinction of types within the *Brucella* group exists. On the other hand, by treating white mice with killed vaccines of either type, protection against infection with both homologous and heterologous types is demonstrated. 2 monkeys which had been infected with live cultures of *abortus* and *melitensis* strains, respectively, were later inoculated with 4 times the infecting dose in the reverse order; no symptoms of illness developed. The intracutaneous reaction is the same with both types of antigen (abortin and melitensin) regardless of which strain is responsible for infection. Inoculation of goats with human strains of *abortus,* either subcutaneously or per os, produces no noticeable symptoms. The organisms could be recovered only from the inoculation site, and no change to the *melitensis* type was noted. Inoculation of various experimental animals (guinea pigs, monkeys, goats) results in production of agglutinating and complement-fixing antibodies. Agglutinating titers were equally high for *abortus* and *melitensis* strains. An abortus strain isolated from the blood of a patient could not be differentiated from bovine strains.—*F. Weigmann* (*transl. by L. Thompson*).

16683. WINGE, KNUD. Über den klinischen Nachweis des Tuberkelbazillus durch Züchtung auf Substrat und durch Tierversuche. *Acta Tuberc. Scandinavica* 5(1): 37-85. 1929.—The experiments included comparative investigations on the same material between cultures and animal experiments in the form of intracutaneous and intraperitoneal inoculations into guinea pigs. The material examined included expectorates, clear and turbid pleural exudates, joint exudates, urine and spinal fluid. In group I are examined the yields of the different methods applied to the material, in which direct microscopy had revealed tubercle bacilli. In 20 of 24 experiments, glycerinated potato yielded growth within 13-46 days (mean 25 days), Petroff's substrate gave growth 23 times within 9-47 days (mean 13 days), and Hohn's substrate 24 times within 9-19 days (mean 13). In 23 of the animal experiments, intracutaneous inoculation yielded positive results within 7-17 days (mean 13). Autopsy of the guinea pigs performed 6 weeks after infection revealed tuberculosis in all of them. In group II were employed tubercle bacillus elutriations in different dilutions. In a dilution of 1: 10,000, bacilli could still be demonstrated in animal experiments and on Petroff's substrate. Group III comprises all the experiments in which tubercle bacilli could not be demonstrated by direct microscopy. In 41 of 59 experiments, bacilli were detected in animal experiments, and 34 times in cultures. In 7 cases, animal experiments yielded positive results, whereas the substrates failed to give results. In 1 case, 2 of the substrates gave growth of tubercle bacilli, whereas the animal experiment failed to do so. The several methods yielded the following results: Glycerinated potato gave growth 21 times within 15-65 days (mean 14 days); Petroff's substrate yielded 31 positive results within 10-51 days (mean 24 days) and Hohn's substrate gave growth 30 times within 10-40 days (mean 22 days). In the animal experiments, autopsy of guinea pigs 6 weeks after infection revealed tuberculosis in 41 of 42 cases which, in spite of the negative result obtained by direct microscopy, contained tubercle bacilli. The intracutaneous test gave 31 positive results within 7-33 days (mean 22 days). As the results of neither animal experiments nor cultures are absolutely reliable, both methods should be employed for demonstration in case direct microscopy fails. In animal experiments, intracutaneous inoculation frequently enables one to make an early diagnosis.—*K. Winge.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

PUBLIC HEALTH

I. S. FALK, *Editor*

(See also in this issue Entries 15616, 16437, 16439, 16653, 16654, 16657, 16662, 16663, 16731, 16759, 16774, 16816)

16684. AZADIAN, A. Les eaux d'Egypte. Volume 1. Notes et rapports des Laboratoires de l'Hygiène Publique No. 7. [Egyptian waters. I. Notes and reports of the laboratories of public hygiene No. 7.] 317p. Illus. Imprimerie Nationale: Cairo, 1930. Price $10.00.

16685. BRESLER, FRITZ, und HERBERT LUBINSKI. Die Bestimmung des Chlorgehaltes in eisenreichen Wässern. *Arch. Hyg. u. Bakteriol.* 106(4): 197-208. 1931.—In water containing 50-100 mgm. of Fe per liter the author suggests addition of 5-10 cc. of cold, saturated Na acetate solution to each 100 cc. of water tested, thereby reducing the acidity sufficiently for Mohr's test, and avoiding the necessity of precipitating and filtering off the Fe.

16686. CASARINI, ARTURO. La medicina militare nella leggenda e nella storia. [Military medicine in legend and history.] *Gior. Med. Militare* 20: 1-688. 154 fig. 1929.—The spirit which animates the volume rests on the conception that one must not study the history of medicine as of antiquaries; several false directives which have ruled the development of medical sciences in the course of the centuries would not have arisen if the investigators, medical and biological, had had the knowledge of history and had appreciated it in its true value. One must consider the historical studies in question not as objects of specialization but as objects of synthesis. In a rapid but sufficient incursion across the centuries the author attempts to place in evidence the sources, not many, which can be arranged for the history of military medicine (Ancient Orient, Rome, Middle Ages, Renaissance, 17th and 18th centuries, Napoleonic Period, Ancient Italian States, Great War), and to deduce the general practical conclusions. An appendix gives a glance at the Italian military sanitary services since 1870 and at the services of assistance to those sick and injured in war.—*G. Tegoni* (*transl. by G. G. DeBord*).

16687. CARNES, E. H. Rat-flea survey of the port of St. Thomas, Virgin Islands. *U. S. Publ. Health Repts.* 46(43): 2558-2562. 1931.—The survey (July 1, 1929, to June 30, 1930) yielded 312 rats, from which 2,113 fleas were taken: *Xenopsylla cheopis* and 5 *Ctenocephalus canis* or *felis.* The average rat-flea index for the period was 6.7. The *cheopis* index was high throughout the yr., but relatively highest during summer (March-September, inclusive) and varied in direct relation to temp. and rainfall. *Rattus alexandrinus* was the predominating rat; *R. norvegicus* was found. Should plague be introduced, it would probably spread rapidly, as all conditions appear favorable.

16688. COLLINS, SELWYN D., W. H. FROST, MARY GOVER, and EDGAR SYDENSTRICKER. Mortality

from influenza and pneumonia in 50 large cities of the United States, 1910-1929. *U. S. Publ. Health Repts.* 45(39): 2277-2328. 1930.—This report deals with influenza and pneumonia mortality in the 50 cities with 100,000 or more population in 1910. For 35 of these cities, with an aggregate population of nearly 25,000,000, deaths from influenza and pneumonia are available by weeks from September, 1918, to date of writing. Deaths for the country as a whole are not available by weeks, so that these data for this large group of cities has considerable significance. To supplement them, monthly influenza and pneumonia death rates have been computed for the same cities for 1910-1918. Since 1915 there have occurred 10 distinct periods, each 8-13 wk. in duration, in which the mortality from influenza and pneumonia in this group of widely dispersed cities was so greatly increased as to denote epidemic conditions. Minor epidemics prior to the 1918 pandemic occurred in January, 1916, January, 1917, and April, 1918, with a very slight rise in mortality in April, 1915, also. We are accustomed to think of the epidemic of 1918 as occurring in the fall, and it is true that the enormous peak, at mid-October, overshadowed all prior and subsequent epidemics. In addition to this tremendous peak, the epidemic stretched over a period of 31 wk., from September 15, 1918, to April 19, 1919, and as late as the latter part of January, 1919, mortality from influenza and pneumonia in excess of the expected rates at that season was greater than the excess mortality during the epidemic of 1929. In the early months of 1920, a very sharp epidemic occurred, with excess mortality greater than during any other epidemic since the 1918 pandemic. In February, 1922, February, 1923, March, 1926, and January, 1929, other epidemics occurred, and in May of 1928 there was a slight rise in influenza mortality extending to many sections of the country. The combined excess mortality from influenza and pneumonia during these 6 epidemics that have occurred since the pandemic of 1918 was somewhere near ½ that of 1918-1919. In addition to data for these cities, this report contains monthly excess death rates for each of the 50 cities for 1910-1929 and weekly excess death rates for a large number of the cities during the 3 major epidemics, 1918-1919, 1920 and 1928-1929. In all of the epidemics, there is a great variation in severity in different cities. Moreover, there are periods of excess mortality from influenza and pneumonia in certain cities and sections of the country, which are not of sufficient importance to show in the combined data for the country as a whole. The report is intended as a rather detailed history of influenza and pneumonia mortality during 20 yrs., as a background for consideration of the situation with respect to the respiratory diseases at date of writing.—*S. D. Collins.*

16689. CRAMER, ROBERT. The rôle of protozoa in activated sludge. *Industr. and Engineer. Chem.* 23 (3): 309-313. 4 fig. 1931.—Clarification of sewage was investigated under aerobic conditions maintained by dissolving 0.3% $NaClO_3$ in 100 cc. cultures. Raw sewage clarified in 2-4 days, producing sediment not distinguishable from activated sludge, when bacteria and protozoa were present and the surface was exposed to air, but not in absence of any one of these conditions. Inoculation with 1 drop of activated sludge hastened clarification. Keeping cultures at 20° C. caused clarification in about ⅓ the time required at 10°. Omission of $NaClO_3$ caused putrefaction; addition of 0.05% prevented it.—*R. Cramer.*

16690. CRICHLOW, N. The prevalent diseases of the British Solomon Islands. *Trans. Roy. Soc. Trop. Med. and Hyg.* 23(2): 179-184. 1929.—Widespread diseases are: malaria, chiefly benign tertian; pulmonary diseases, which cause 16-20% of the total deaths; tuberculosis; dysentery, chiefly bacillary, responsible for a heavy death rate; yaws, the commonest disease. Intestinal worms are widely prevalent. Gonorrhea is not uncommon, but syphilis has not been found. Other diseases are reported.—*H. Kirby, Jr.*

16691. COLLINSON, JOHN, and CLARA COUNCELL. Whooping cough in Maryland. *Maryland Dept. Health, Bur. Vital Statistics Bull.* 1. 1-16. 1931.—In this study of whooping cough in Maryland, 1921-1929, it is shown that the mean rate per 100,000 population of reported morbidity was 246.4 and that the mortality was 10.7. This death rate is higher than that in the Registration States of 1910 during the same period. The rate of mortality in Maryland was higher in the female than in the male sex, and in the negro than in the white race. 12% of the cases and 56% of the deaths were among infants under 1 yr. old. 55% of the cases and 96% of the deaths were in those under 5 years old. The peaks of morbidity and of mortality occurred during March. Age, sex, color and seasonal distribution have not varied markedly in years of high or low prevalence. Death rates from whooping cough in the counties of Maryland have been almost consistently higher than those in Baltimore City since 1906. In the different counties there is a wide degree of variation in rates and there is apparently no relation between prevalence in the negro and white races. During the preceding 24 yrs. there was a slight downward trend in death rates from this disease.—*J. Collinson.*

16692. DIXEY, FRANK. A practical handbook of water supply. 571p. 133 fig., 6 maps. Thomas Murby & Co.: London, 1931.

16693. DOHRN, K. Leitfaden der Gesundheitsfürsorge: für Fürsorgerinnen und alle in der Wohlfartspflege tätigen Personen. [Guide in sanitation for those engaged in health welfare work.] 147p. Johann Ambrosius Barth: Leipzig, 1931. Price 4.60 M.

16694. DYER, R. E., E. T. CEDER, R. D. LILLIE, A. RUMREICH, and L. F. BADGER. Typhus fever. The experimental transmission of endemic typhus fever of the United States by the rat flea Xenopsylla cheopis. *U. S. Publ. Health Repts.* 46(42): 2481-2499. 2 pl. 1931.—Epidemiological evidence rules out the tick, bed bug, head louse and body louse as possible vectors, and incriminates some blood-sucking parasite of rats. The authors report successful infection of *X. cheopis* with the virus and experimental transmission of the disease from rat to rat by this flea. Typhus virus has also been repeatedly recovered from feces of infected fleas. Brain lesions found in guinea pigs infected with endemic typhus are described. The evidence presented points to *X. cheopis* as a common vector of endemic typhus from rat to rat and from rat to man.—*R. E. Dyer.*

16695. ELLICOTT, V. L., and CHARLES H. HALLIDAY. The psittacosis outbreak in Maryland, December, 1929, and January, 1930. *U. S. Publ. Health Repts.* 46 (15): 843-850. 1931.—24 cases of psittacosis occurred in Baltimore and 12 in the counties of Maryland during the outbreak of 1929-30; 5 were fatal. 5 cases occurred among a total of 33 pet shop employees; 4, among 21 persons exposed to human cases but not to infected birds; and 2, among health department employees. Of 12 pet birds in homes prior to the outbreak and which became associated with infected parrots brought into these homes, 6 died.—*V. L. Ellicott.*

16696. FLOOD, G. M. Sewage disposal from isolated buildings. 257p. 125 fig. Sutherland Publ. Co., Ltd.: Manchester, 1929. Price 12s.—After discussing the underlying theories of sewage disposal and purification, the author describes the design and construction of septic and sedimentation tanks, filters, chemical and dry closets, and distributing systems.—*W. N. Sparhawk.*

16697. HASSELTINE, H. E. Prevalence of undulant fever in the United States. *U. S. Publ. Health Repts.* 46(26): 1519-1523. 1931.—Data compiled from reports of state health authorities (32 states) give the reported cases by mo., for 1929 and 1930. Minima occur in Jan., Feb. or Mar.; maxima in July (1930) or September (1929).

16698. HASSELTINE, H. E., and I. W. KNIGHT. Outbreak of undulant fever traced to infected milk supply. *U. S. Publ. Health Repts.* 46(39): 2291-2300. 1931.—6 cases of undulant fever in a community of 5,300, between September 1, 1930, and January 9, 1931,

all used raw milk supplied by 1 dealer who produced most of the milk that he sold. This herd consisted of 42 animals. 24 gave serologic evidence of infection with *Brucella*. In February, 1931, milk samples were obtained from 6 of the reacting cows remaining on the premises and from 2 of them *Br. melitensis* var. *abortus* was isolated in 2 different laboratories. On January 9, 1931, the State Department of Health required the dealer to discontinue sale of raw milk until all reacting animals were removed from the premises, or, as an alternative, that all milk sold from the premises should be pasteurized. The dairyman pasteurized all milk from January 10, 1931, until the last of the reacting animals were eliminated from the herd, in May, 1931. No case of undulant fever occurred among the consumers of this herd's milk after pasteurization was put into effect.—*H. E. Hasseltine.*

16699. **HERB, O. Absorptionsversuche mit belebtem Schlamm.** *Archiv Hyg.* 100(1/4): 112-120. 1928.—Experimental data and observations reported indicate that treatment of different types of sewage with activated sludge gives the same results that were obtained with the old oxidation treatments. They also show that Dunbar's absorption theory is applicable to activated sludge. Clarification of sewage depends on absorption ability as well as on kind of bacteria and ferments in the activated sludge. 25° C. is the optimum temp. for clarification of sewage with activated sludge.—*B. Domogalla.*

16700. **HOLSENDORF, B. E. An important source of original rat infestation on newly constructed vessels.** *U. S. Publ. Health Repts.* 46(33): 1943-1945. 1931.

16701. **HUDDLESON, I. FOREST. Étude sur les infections à Brucella observées à Tunis et à Malte.** *Arch. Inst. Pasteur Tunis* 19(4): 391-421. 2 pl., 1 fig. 1930.—The rapid agglutination test appears to be as accurate and specific for serodiagnosis of undulant fever in Mediterranean countries as is the test tube method. Isolation of *Br. melitensis* from human blood can be accomplished with much more ease and higher success if a special medium such as beef or veal liver infusion bouillon be used. The time interval between inoculation and initial growth of *Br. melitensis* from blood averages about 72 hrs., but occasionally 15-days' incubation is required for initial growth. The pyretic period is most favorable for culturing the organism from blood. Delay in inoculation of medium after procuring blood specimens postpones initial growth. There is no evidence that the disease in man in Tunis and the Maltese Islands is caused by a *Brucella* other than *Br. melitensis*. The disease in goats in Mediterranean countries differs from that in cows in the U. S. A., in that it is of a more generalized nature and in that the premature expulsion of the fetus commonly associated with the disease in cows does not often occur. Human infection with *Br. melitensis* in Tunis and in the Maltese Islands is on the average more severe and of longer duration than is human infection with *Br. abortus* in the U. S. A.—*I. F. Huddleson.*

16702. **HUDGINS, BERT. Turbidity, plankton, and mineral content of the Detroit Water Supply.** *Jour. Amer. Water Works Assoc.* 23(3): 435-444. Map. 1931.—Turbidity of the Detroit water supply is about 35 p. p. m., on the average. This low turbidity results in economy in the cleaning of settling basins, and yet is sufficient for aiding coagulation with alum. Increased turbidity serves as an indicator of pollution. Among plankton present in Detroit Water Supply are *Asterionella, Fragilaria, Anabaena, Synura* and hydra. The last is the only one that has ever given trouble in purification; it collects on filter walls in April and in November, necessitating scrubbing them off. Mineral content of only 96 p. p. m. in hardness and no Fe content saves the city thousands of dollars each year, because of the small amount of encrustation of boilers, hot water heaters, etc. —*B. Hudgins.*

16703. **JOHNSON, E. M. An attempt to control cyclops in a water plant.** *Jour. Amer. Water Works Assoc.* (*Proc. 50th year*) 23(4): 582-585. 1931.—The presence of *Cyclops* in the raw water of the Monroe, North Carolina, water supply reduced the length of filter runs from 26 hrs. to 13 hrs., other conditions being the same. $CuSO_4$ in large doses or prechlorination with doses as high as 0.8 p. p. m. failed to destroy *Cyclops*. Cl doses of 1.5 p. p. m. were somewhat effective. Larger doses could not be tried because of limitation of capacity of the chlorinator. Reference is made to the successful destruction of *Cyclops* by Frank Hale, New York City, with Cl doses of 1.0-3.0 p. p. m.—*C. R. Cox.*

16704. **LE-ROY y CASSÁ, JORGE. La primera epidemia de fiebre amarilla en la Habana, en 1649. [First epidemic of yellow fever in Havana, 1649.]** *Vida Nueva [Havana]* 25: 254-299; *Sanidad y Beneficencia [Havana]* 35(1/6): 64-109. Map; also publ. by "La Propagandista," 71p. Map. Havana, 1930.—Finlay affirmed the existence of this epidemic, based on a detailed study of the historians and, above all, on the Codices Mayas Chumayel and Tizimín, referred to by Bishop Dr. Carrillo y Ancona, by Cogolludo's description demonstrating the existence of yellow fever in Yucatán in 1648, and by Berenger Feraud's study citing the description by P. du Tertre, of the epidemic of this malady in 1648, in the Island of Guadalupe. A document, unknown until now, of the Captain General of the Island of Cuba, D. Diego de Villalba y Toledo, victim of yellow fever, demonstrates the introduction of "tabardillo" (the name for yellow fever in that epoch) by the fleet that came from Vera Cruz, Mexico. The author discusses the data reported by different authors. From a study of the records of deaths that occurred in Havana each day during the 17th century, he concludes that the epidemic took place during August and September, 1649; and demonstrates that this was the first invasion of yellow fever in Cuba. The disease known in epidemic outbreaks until the last introduction from Vera Cruz (1761) resulted in endemic establishment, until Gorgas eradicated it in 1901.—*J. Le-Roy y Cassá.*

16705. **LE-ROY y CASSÁ, JORGE. La mortandad en la Habana durante el siglo XVII. [Mortality in Havana in the 17th Century.]** *Vida Nueva [Havana]* 25: 414-435; *Sanidad y Beneficencia [Havana]* 35(1/6): 64-109. Map; also publ. by "La Propagandista," 71p. Map. Havana, 1930.—The author bases this study of mortality in the 17th century on the records in the parochial books, the only sources of information extant; in them he traces day by day and month by month the deaths registered in Havana, beginning with 1613, the date of the first of these records still existing. In this way he arrives at estimates of populations. He does not admit the supposed epidemic of yellow fever in 1620, which might have been malaria, smallpox or some other malady rather than yellow fever, which appeared in 1649. He discusses the other pestilences which might have affected the population, concluding with the epidemic of yellow fever and smallpox, well-attested, with which the century closed.—*J. Le-Roy y Cassá.*

16706. **LEVINE, MAX, J. H. TOULOUSE, and J. H. BUCHANAN. Effect of addition of salts on the germicidal efficiency of sodium hydroxide.** *Industr. & Engineer. Chem.* 20(2): 179-181. 1928.—Continuing studies on the germicidal properties of substances used in the mechanical washing of milk and other beverage bottles, experiments were carried out with the organism earlier employed (an unnamed bacillus resembling *B. subtilis, B. laterosporus* and *B. ruminatus*), isolated from ginger ale. Addition of NaCl, Na_2CO_3, or trisodium phosphate to NaOH markedly decreased the killing time at 50° and 60° C. The effects of equal weights of NaCl and Na_2CO_3 were approximately the same, whereas the phosphate was less efficient. As the concentration of salts added to the NaOH was increased the killing time decreased, but at a decreasing rate. It is suggested that the undissociated NaOH may be the agent which penetrates the cell. Addition of the various salts would increase the concentration of undissociated NaOH, or possibly decrease the solubility of the NaOH in the water phase which would tend to force the NaOH into the bac-

terial phase of the suspension. In either case the effect would be to increase the death rate of the bacteria.

16707. **MOHLMAN, F. W., T. L. HERRICK, and H. GLADYS SWOPE.** Technic of stream-pollution investigations. *Industr. and Engineer. Chem.* 23(2): 209-213. 1931.—Intensive studies of the condition of the Illinois River have been made by the Sanitary District of Chicago since 1925, although this work was begun in 1900. Sampling is a very important factor in stream surveys. The most representative sample was found by obtaining current meter readings and samples at various points across the stream and computing the weighted average. Depth of sample must be considered, since a deep sample may stir up sludge deposits in the river bed and, therefore, an abnormally high biochemical oxygen demand (B.O.D.) would be obtained. Sludge deposits, as long as they remain quiescent, cause no increase in O demand. Hourly samples are generally necessary in highly polluted streams or where large hourly variations in dissolved O occur. This was particularly true between Chillicothe and Peoria, due to photosynthesis. The 5-day B. O. D. was used daily, but studies were made weekly to determine the rate of B. O. D. from 1 to 40 days.—*F. W. Mohlman.*

16708. **LUCE-CLAUSEN, ETHEL M., and STANHOPE BAYNE-JONES.** The specificity of light action in experimental tuberculosis. *Amer. Rev. Tuberc.* 24 (6): 686-694. 1931.—Of 53 tuberculous guinea pigs, the average survival period was: for 17, receiving daily 15 min. ultraviolet exposure (317-430 m μ E 0.012 gm. cal/min./cm^2), 30 days; for 18, receiving daily 15 min. infra-red exposure (720-1120 m μ E 0.122 gm. cal/min./cm^2), 28 days; for 18 kept in a dark room, 33 days.

16709. **NAESLUND, CARL.** Experimentelle Untersuchungen über gewisse Faktoren, die für die Entstehung von Blausäurevergiftung bei Zyanwasserstoffbehandlung von Wohnungen und anderen Räumen von Bedeutung sind. *Upsala Läkareförен. Förhandl.* 34(5/6): 793-847. 1928/1929.—The author made numerous tests of ordinary building materials, foodstuffs, and of the various materials and substances which make up dwelling houses, etc., to determine what might be the factors involved in the cases of HCN poisoning following use of this gas as a vermifuge. He found that skins, down and similar articles held large quantities of this gas, and poisonous amounts were readily yielded after ordinary aeration or longer. For sanitary engineers the data here compiled will be invaluable.—*R. H. M'Gonigle.*

16710. **PARKER, R. R., ERIC HEARLE, and E. A. BRUCE.** The occurrence of tularaemia in British Columbia. *U. S. Publ. Health Repts.* 46(2): 45-46. 1931.—Recovery of *Bacterium tularense* from snowshoe rabbits (*Lepus americanus columbiensis*) and report of human cases, together with experimental evidence of transmission by ticks (*Haemaphysalis leporis-palustris*) from rabbit cases.

16711. **RIDLON, J. R.** Studies on Leptospira icterohemorrhagiae. *U. S. Publ. Health Repts.* 46(1): 1-5. 1931.—Leptospiras were found in the kidneys of wild rats from San Francisco Bay cities. These apparently conform to the descriptions of *L. icterohemorrhagiae.* Guinea pigs were inoculated with material from the kidneys of rats harboring Leptospiras and died, showing fever and jaundice of the eyes and skin before death. At autopsy they showed subcutaneous jaundice and hemorrhages of subcutaneous tissues and internal organs, which are the gross pathological changes described by several writers as typical of infection with *L. icterohemorrhagiae.* Leptospiras were found in the internal organs and urine of infected guinea pigs. Positive cultures were obtained. Guinea pigs were infected by injection of positive cultures. The disease was carried over in successive guinea-pig inoculations, both from original rat injections and from culture injections.—*Author's summary.*

16712. **SMITH, H. F.** Résumé of report on sanitation and yellow fever control in Liberia. *U. S. Publ. Health Repts.* 46(23): 1353-1359. 4 pl. 1931.

16713. **SOLLAI, GIUSEPPE, e CARLO G. CERRUTI.** Sull'epidemiologia dell'infezione melitense dell'uomo e degli animali in Sardegna, con particolare riguardo alla provincia di Cagliari. *La Nuova Vet.* 9(4): 137-144. 1931.—After mentioning the continual diffusion of *Alcaligenes melitensis* infection in man in Sardinia, the authors show that it is also prevalent and severe in the flocks of sheep and goats which by frequent elimination of the bacteria in the milk constitute a grave and permanent peril to man. They describe the course of the disease in these animals and indicate the best method of prophylaxis.—*C. G. Cerruti (transl. by L. W. Hackett).*

16714. **SYDENSTRICKER, EDGAR, and SELWYN D. COLLINS.** Age incidence of communicable diseases in a rural population. *U. S. Publ. Health Repts.* 46(3): 110-113. 1931.—This study, based on records of communicable diseases officially reported to the Cattaraugus County, New York, Health Department and supplemented by personal inquiries in a sample of the rural population consisting of approximately 5,000 persons, shows that the incidence of practically all the common infectious diseases is at later ages in rural than in urban populations for which similar data were available. The "lag" in age curves persists even when the rural population is classified according to farm and village. For most of these diseases,—particularly measles, whooping cough and diphtheria,—there is indicated a slower rate of immunization in more sparsely settled areas. On the other hand, in the instances of measles and whooping cough, it is shown that the % of persons at the age of 25 who had histories of attacks were about the same in both rural and urban areas.—*E. Sydenstricker.*

16715. **SYDENSTRICKER, EDGAR.** The incidence of influenza among persons of different economic status during the epidemic of 1918. *U. S. Publ. Health Repts.* 46 (4): 154-170. 1931.—In a survey of over 100,000 persons in 9 urban localities at the end of the influenza epidemic in 1918-1919, the families were graded according to economic status to ascertain whether or not the incidence varied in relation to this condition. Analysis of these records showed that the influenza and mortality rates were higher among persons living in poorer households than among those in well-to-do and moderate circumstances. The higher mortality rate was not due merely to higher incidence of the disease but also to higher fatality of the cases among poorer persons. This higher case fatality rate manifested itself particularly in the age groups 0-4, 15-34, and 45 yrs. and over, thus suggesting economic conditions in families with young children and with old persons. Household crowding, although a concomitant of poverty, did not appear to be the determining factor in this association of economic status and influenza.—*E. Sydenstricker.*

16716. **THRESH, JOHN C., and JOHN F. BEALE.** A simple method of water analysis: with sections on the analysis of sewage effluents and on the purification of water by means of chlorine; especially intended for the use of medical officers of health, sewage works managers and other sanitary officials. 10th edition. 69p. J. & A. Churchill: London, 1931. Price 3s.

16717. **WARRICK, L. F.** Stream-pollution control activities in Wisconsin. *Industr. and Engineer. Chem.* 21(3): 261-263. 4 fig. 1929.

16718. **WEDEMANN, W.** Kann phosphorsaurer Futterkalk, der bei der Verarbeitung milzbrand-sporenhaltigen Knochenmaterials in Gelatinefabriken gewonnen wird, noch lebensfähige Milzbranderreger enthalten? *Arch. Wiss. u. Prakt. Tierheilk.* 63(3): 215-229. 1931.—Anthrax spores in bone material were destroyed in 2-8 hrs. in maceration fluid of 5.8-10.8° Baumé. The dicalcium phosphate obtained from similar maceration fluids and then dried at 50-70° C. for 72 hrs. is practically free from anthrax organisms. Maceration fluids of 10.4-15° Baumé do not kill anthrax spores in 15-72 hrs.; and the dicalcium phosphate obtained from such material was not free from living anthrax organisms even after drying at 50-70° for 72 hrs. These findings are applied to the method now commonly used for recovery of

dicalcium phosphate in connection wtih gelatin manufacture.—*H. C. H. Kernkampf.*

16719. **WILLIAMS, C. L. The fumigation of loaded ships.** *U. S. Publ. Health Repts.* 46(31): 1823-1836. 1931.—Fumigation of loaded ships is described as essentially a proper introduction of the gas by way of the ventilators, sounding pipes and other routes of access. Ways of utilizing these and special apparatus devised for these purposes are described. Cargo is divided into liquid, bulk, and package. The first is in itself rat destructive. Bulk and package cargo differ in that the former fills the holds to the ship's sides, while the latter is held away from the sides by battens; with either there is always space above the cargo. Gas spreads over the top of the cargo and, when this is package, down the sides and through the interstices. Rat harborages covered by cargo cannot be reached for the purpose of making openings for entrance of gas. Carefully carried out fumigations with HCN on loaded ships usually destroy 80% or more of the rats on board.—*C. L. Williams.*

16720. **WILSON, CHARLES C., IRA V. HISCOCK, J. H. WATKINS, and JARVIS D. CASE, with the cooperation of JOHN L. RICE. A study of illness among grade school children.** *U. S. Publ. Health Repts.* 46(31): 1801-1823. 1931.—Records of absences of 3 or more successive school days which occurred among pupils attending the New Haven, Conn., public schools during the school year 1927-1928 showed that 53.8% of all cases and 38.9% of the total days of sickness were due to respiratory illness. The specific communicable diseases of childhood caused 27.9% of the cases and 44.2% of the total number of days of sickness. The average number of days of sickness was greatest for the 5-yr. old group and decreased with age. The average number of days of sickness per case showed no consistent sex differences.—*C. C. Wilson.*

16721. **YANT, W. P., H. H. SCHRENK, F. A. PATTY, and C. P. WAITE. Acute response of guinea pigs to vapors of some new commercial organic compounds. VI. Dioxan.** *U. S. Publ. Health Repts.* 45(35): 2023-2032. 1930.—The toxicity of dioxan (1, 4-dioxan or diethylene dioxide) is comparatively low. The symptoms produced are eye and nasal irritation, with lung irritation after long exposure. High concentrations also cause narcosis. The chief pathological findings are edema and congestion of the lungs. Distinct warning by irritation of eyes and nose is produced in persons by concentrations of 0.16% or above. Considering the low toxicity and low vapor pressure of dioxan, as well as its warning properties, health hazards from breathing the vapors are remote under ordinary conditions of usage and reasonable exposure. As in the case of practically all comparatively non-toxic volatile liquids, however, dioxan presents a hazard to life under conditions of exposure to air confined over liquid in tanks, vats, and similar places where high concentrations would accumulate.—*W. P. Yant.*

16722. **ANONYMOUS. Psittacosis infection from love birds.** *U. S. Publ. Health Repts.* 46(9): 480. 1931.

BACTERIOLOGY AND OTHER MICROBIOLOGY

FOOD AND INDUSTRIAL

E. B. FRED, *Editor*

(See also in this issue Entries 15535, 15544, 15549, 15556, 15564, 15572, 15625, 15722, 16718, 16776, 17088)

16723. **BROWN, R. J., and H. W. DAHLBERG. Inversion of sucrose in beet-house sirups.** *Industr. and Engineer. Chem.* 21(3): 282-285. 1929.—A satisfactory method for determining invert sugar in beet-factory sirups is given. It is shown that the invert-sugar content of low-purity beet products can not be taken as a measure of previous inversion of sucrose, owing to the destruction of invert sugar; at pH 6-9 the rate of destruction depended on the concentration of impurities, the H- or OH-ion concentration showing no measurable effect. Decreasing the pH of the sirup from 8 to 6 increased the rate of loss of sucrose about 10 times. Decreasing the purity from 100 to 60% decreased the rate of loss of sucrose about 40%. A 10° C. rise increased the rate 2-3 times. Variations in concentration of solutions, in the range of 10-80% dry substance, produced no marked effect on rate. Rate of loss of sucrose in beet sirups from different sources was constant under constant conditions; in sirups of 90% purity at pH 6 and 80% dry substance heated at 80° C. it was almost double that calculated by Spengler and Tödt on the basis of the inversion constant of sucrose in HCl found by Jackson and Gillis.—*Courtesy Industr. and Engineer. Chem.*

16724. **CHACE, E. M., and H. D. POORE. Quick-freezing citrus fruit juices and other fruit products. A preliminary report.** *Industr. and Engineer. Chem.* 23 (10): 1109-1112. 1931.—Experiments do not show that replacing the air in the head space above the juices or washing out dissolved air with CO_2 has any marked effect on flavor. Too much CO_2 gives an off-flavor. With frozen fruits, a slight improvement was noted when CO_2 was used; this was marked when friction-top cans were used. Vacuum-packed fruits are better than the ordinary pack. Freezing can readily be carried out in crown-capped glass bottles, 4- or 8-oz., before or after capping, and in 8-oz. glasses or 12-oz. glass jars, with or without vacuum. Open freezing and freezing in friction-top cans is not recommended unless special precautions are taken for storage out of contact with air.

16725. **CULPEPPER, C. W., and H. H. MOON. Sulphur-spray residues and the swelling of tin cans packed with peaches.** *Jour. Agric. Res.* 39(1): 31-40. 1929.—Sulphur-spray residues are sometimes rather difficult to remove from the surface of peaches; presence of this S in the can causes formation of H_2S and H gas, with consequent swelling of the can. Washing in cold or hot water is not always effective in removing spray material, but dipping the fruit in hot dilute lye solution followed by washing in jets of cold water is effective. Almost all forms of S in the acid juices of peaches cause swelling of the can, corrosion being caused by its combining with the metal and by its acting as a catalytic agent greatly accelerating action of the natural fruit juices on the metal. In absence of organic acids, no swelling occurs unless the S is in such form that it will combine with the metal, in which case it will corrode the can in absence of acids. H is formed by action of organic acids on the Fe, not the Sn; therefore gas formation should be less if the Fe were more completely covered with Sn. The electrochemical theory of corrosion seems to offer an adequate explanation of the phenomena observed: normal acid juices of peaches (containing oxidizing acids) act as electrolytes in which Fe is cathodic to Sn when they are in contact, but if a reducing agent such as H_2S is present this is reversed, the Fe becoming anodic and Sn cathodic. This relationship, together with the fact that H_2S accelerates the liberation of H from Fe, seems to account completely for swelling of the cans in the cases observed.—*M. W. Jennison.*

16726. **FLETCHER, LOUIS. Notes on the determination of dry matter (or moisture) in pressed yeast.** *Jour. Inst. Brewing* 37(10): 506-508. 1931.—5 gm. of unwashed yeast in a 50 mm. diam. dish is weighed, moistened with absolute alcohol and dried in a current of air for 7-9 hrs. in a water oven at 98°. A more exact method is to dry in a Lobry de Bruyn vacuum apparatus at 105°, the water being caught in H_2SO_4 bulbs. This method gives about 2¼% more water, but as the first method is easy to manipulate and gives uniform and reproducible re-

sults, it is recommended as a routine standard for relative results.—*L. Fletcher.*

16727. **HARLER, C. R. The firing of tea.** *Indian Tea Assoc. Sci. Dept. Quart. Jour.* 1930(2): 67-74. 1930.—This report deals with fermentation and drying of tea. During fermentation of the leaf, the principal chemical reaction is that of oxidation of the tannin with the aid of an enzyme in the leaf. Some tannin combines with protein in the leaf and becomes insoluble. During fermentation, there is steady loss in soluble solids. When firing begins, the rate of loss is greatly reduced. Firing inactivates the yeasts and other microorganisms on the leaf, but the fired tea gives a faint enzymic reaction resulting in a post-fermentation. This is believed to be responsible for the mellowing or maturing of tea. Optimum drying temp. vary with different conditions. Also, for teas from certain sections, i.e., northeastern India, double fire is adopted because of high moisture. In Ceylon, tea is usually fired in 1 process. Apparently, it is necessary to heat the leaf to 170° F. or more before the processes of fermentation are sufficiently slowed to allow the tea to be stored without losing quality. The author lists 5 points of most importance in firing tea in northeastern India.—*E. J. Cameron.*

16728. **MEZZADROLI, G., e P. VEREMEENCO. Sopra alcune cause che influiscono sul rendimento dell'aerolievito di melasso.** [Some of the causes influencing the gaseous fermentation of molasses.] *Atti Congr. Naz. Chim. Pura ed Appl.* 3: 576-579. 1929(1930).—(See B. A. 5(3): Entry 8420).

16729. **TOULOUSE, J. H., with J. H. BUCHANAN, and MAX LEVINE. The action of citric acid and its salts in sugar solutions.** *Iowa State Coll. Jour. Sci.* 5(2): 89-120. 1931.—Addition of citric acid, to make 0.01-0.08 *M* acid solution, depending on the final acidity desired in a beverage, can inhibit or destroy yeast under certain conditions. The effect was more marked at higher sucrose concentrations (33-36° Bé.) and lacking in dilute syrups (24° Bé.). Increasing acid strength was highly effective, but it was shown that wide variation in rate of death of yeast occurred in certain solutions of the same pH. The presence of salts of citric acid lowered the germicidal effectiveness of the acid to a marked degree. A commercial process of "cold sterilization" of bottlers' syrups is indicated, since a 36° Bé. syrup, inoculated with yeast, containing 0.04 *M* citric acid, became sterile in 24 hrs.—*J. H. Toulouse.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

DAIRY

L. A. ROGERS, *Editor*

(See also in this issue Entry 16698)

16730. **BONDIOLI, M. Quelques recherches sur la relation existant entre l'acidité d'un sérum-lactique et son contenu microbien.** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(3): 77-78. 1931.—Coccus forms predominate in lactic whey as acid is first produced. As acidity rises, coccus forms are succeeded by bacilli, which produce more acid and are more acid-resistant. Samples of lactic whey obtained immediately after cheese making, were divided into 3 portions, held at different temp., and then tested separately for either total titrable acidity or pH value, and examined microscopically for bacteria. Results were plotted on curves (not presented) and the following conclusions drawn: At low temp., increase of acidity is directly proportional to time; at higher temp. the greatest increase occurs in the first 6 hrs. Ionic acidity increases most rapidly during the first 6 hrs. even at low temp. The proportion of coccus and bacillary forms was plotted against time; the time required for cocci and bacilli to reach equal numbers lessened as temp. increased.—*G. L. A. Ruehle.*

16731. **FABIAN, F. W., E. A. BEAVENS, C. S. BRYAN, and J. M. JENSEN. Influence of alkalies on available chlorine and on germicidal effect of sodium hypochlorite in presence of organic matter as ice-cream mix.** *Industr. and Engineer. Chem.* 23(10): 1169-1174. 1931.—In the absence of organic matter, such as ice-cream mix, NaOCl was stable for 1 hr. at 50° C., but in presence of organic matter, it rapidly lost its available Cl. NaOH and Na_2HPO_4 had a stabilizing influence on the NaOCl. Na_2CO_3 in small amounts stabilized the NaOCl but larger amounts tended to decompose it. With a decrease of organic matter, available Cl did not decrease quantitatively. Addition of alkalies to NaOCl in the presence of ice-cream mix increased the loss of available Cl and was proportional to the amount of alkali added. The influence of the alkalies in the order of their decreasing effect is: NaOH, Na_2CO_3 and Na_3PO_4. A large bacterial content reduced the available Cl. A comparison of the germicidal effect of NaOCl to which 0.5% of Na_2CO_3, NaOH and Na_3PO_4 have been added showed that, in presence of ice-cream mix: Na_2CO_3 was the least effective; there was a correlation between amount of available Cl present and the germicidal effect of the solution, especially true with Na_2CO_3; 0.5% NaOH and Na_3PO_4, when added to NaOCl, killed the bacteria in practically all cases; the effectiveness of NaOH was due to its pH, since experiments showed that it greatly reduced the loss of available Cl under similar conditions; adding 0.5% of Na_3PO_4 to the NaOCl solutions showed that it was as good as NaOH and better than Na_2CO_3 in killing bacteria.—*F. W. Fabian.*

16732. **HEIDUSCHA, ALFRED, und ERNST KOMM. Über das Vorkommen von Peptidasen in der Milch.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 196(3/4): 187-194. 1931.—High quality raw cow's milk usually gave negative tests for peptolytic enzymes with the glycyltryptophane reagent. Occasionally very slight hydrolysis of peptids was noted, ascribed to bacteria in the milk. Commercial raw milks with high bacterial counts usually gave marked hydrolysis of the dipeptids, also ascribed to bacteria. Results with high-quality pasteurized milks were variable. Enzymes were ascribed to bacterial contamination. Human milk gave no positive test; 3 samples of goats' milk were also negative. Fresh, sterile milk is thus considered free of peptolytic enzyme.—*From abstract by F. J. McClure.*

16733. **HUSSONG, R. V., and B. W. HAMMER. The isomeric forms of lactic acid produced in milk by some of the anaerobes.** *Iowa State Coll. Jour. Sci.* 5(3): 167-170. 1931.—A number of cultures of *Clostridium welchii*, grown in milk, produced lactic acid of the *d* type or a mixture of active and inactive acids; 2 cultures of *C. butyricum*, grown in milk, produced inactive lactic acid; others yielded, from 1300 cc. of milk incubated 1 week at 37° C., such small amounts of Zn salt of the non-volatile acid that satisfactory purification was impossible. *C. welchii* produced smaller quantities of volatile acid in milk than *C. butyricum.*—*Authors' summary.*

16734. **WALTON, J. H. Seasonal variations in the germ content of milk at Pusa.** *Agric. Res. Inst. Pusa Bull.* 170. 12p. 1927.—Plate and coli counts of milk varied seasonally, with highest counts in the rainy season, when the most scrupulous attention should be paid to cleanliness and to efficient sterilization of all utensils.—*Author's conclusion.*

BACTERIOLOGY AND OTHER MICROBIOLOGY

SOIL

H. J. CONN, *Editor*

(See also in this issue Entries 15353, 15467, 15534, 15571, 15604, 16772, 16951)

16735. **BAVENDAMM, WERNER.** The possible rôle of micro-organisms in the precipitation of calcium carbonate in tropical seas. *Science* 73(1900): 597-598. 1931. A preliminary report of bacteriological studies of the flora of mud collected from different locations and depths off the Great Bahama Banks, Andros Island and Williams Island, in connection with the International Expedition to the Bahamas, 1930. The opinion is expressed that micro-biological rather than chemical-physical processes are primarily responsible for $CaCO_3$ precipitation at these points.—*P. L. Gainey.*

16736. **BROWN, P. E.** Soil bacteriology as a science. *Proc. Iowa Acad. Sci.* 37: 59-64. 1930(1931).—Soil bacteriology is a distinct branch of science, related to bacteriology, botany, chemistry, geology and zoology, but especially to pedology. It utilizes methods and viewpoints from all these sources, but has developed a technique of its own, and has accumulated a body of knowledge. Its special importance is in relation to crop production.—*H. S. Conard.*

16737. **BURK, DEAN.** The influence of oxygen gas upon the organic catalysis of nitrogen fixation by Azotobacter. *Jour. Phys. Chem.* 34(6): 1195-1209. 3 fig. 1930.—The unique O pressure functions of *Azotobacter* with respect to respiration, growth, efficiency of growth, pH, and humic acid obtain in both free and fixed N. Hence, they offer no indication as to the nature of the chemical mechanism of N fixation. The mechanism of respiration has been interpreted in terms of both chain reaction kinetics and contact catalysis. With respect to the latter, the data presented are consistent with the view that both O and the organic molecule oxidized must be in contact with the solid respiratory enzyme catalyst for the reaction to take place measurably, bombardments of unadsorbed molecules being ineffective.—*Author's summary.*

16738. **MURRAY, A. N., and LEWIS CLINE.** Report of progress on the organic acids produced by the bacterial decomposition of plant material. *Proc. Oklahoma Acad. Sci.* 10: 95-96. 1930.—Experiments show that soil bacteria have the power of decomposing plant material with production of at least 2 fatty acids—butyric and propionic. The water in which the decomposition took place reached a maximum acidity of 0.10935 *N*.—*A. N. Murray.*

16739. **PENDLETON, RAY A., and FREDERICK B. SMITH.** Further studies on the nitrate assimilating power of soils. *Proc. Iowa Acad. Sci.* 37: 65-69. 1930(1931).—6 types of soil were tested, showing that accumulation of nitrate in soils depresses the vigor of the nitrate-assimilating organisms. Assimilation of nitrate is increased by addition of organic matter, in this case chopped straw.—*H. S. Conard.*

16740. **PORSILD, MORTEN P.** Giebt es Knöllchenbakterien auf Disko in Grönland? *Dansk. Bot. Arkiv.* 6(7): 1-7. 1930.—Contrary to a statement by Niels Nielsen, the occurrence of *Bacillus radicicola* is reported on Disko Island and other parts of Greenland devoid of wild Leguminosae, viz., in soils near the residences of Europeans. Also an abstract is given on the results of Swedish and English researches on the contents of bacteria and protozoa in Disko soils.—*M. P. Porsild.*

16741. **SMITH, FREDERICK B.** Effect of artificial manure on nitrification in Carrington loam. *Proc. Iowa Acad. Sci.* 37: 71-73. 1930(1931).—Presents results with artificial manures, farm manure, green manures and crop residues on nitrification. The first 2 stimulate nitrification. Straw and corn stalk residues increase nitrate assimilation and depress nitrification. Green manures increase both nitrate assimilation and nitrification, but nitrates accumulate in the soil.—*H. S. Conard.*

16742. **VERONA, O.** À propos de l'oxydation microorganique de l'acide salicylique. *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 3(6): 218-220. 1931.—Salicylic acid, in suitable dilution, was used as a source of energy by certain soil microorganisms. With some soils the oxidation was rapid and complete and was distinctly influenced by the presence of disaccharids and of nitrogenous material.—*D. J. Healy.*

16743. **WALKER, R. H.** Studies on nitrogen fixation in some Iowa soils. *Proc. Iowa Acad. Sci.* 37: 75. 1930(1931).—Studies indicate that too little credit has been given to the anaerobic Clostridiums and too much to the aerobic Azotobacter group. Further study is needed.—*H. S. Conard.*

16744. **WAKSMAN, SELMAN A.** Chemical nature of soil organic matter, methods of analysis, and the rôle of microorganisms in its formation and decomposition. *Compt. Rend. Deux. Comm. Assoc. Internat. Sci. Sol [Budapest]* A 1929: 172-197. 1929.—At a high annual temp. and in well aerated soils, very little organic matter or none will accumulate in the decomposition of plant and animal residues, due to the fact that the soil microorganisms can decompose organic matter more rapidly than the plant residues can supply it. At a low annual temp. and in water-logged soils, organic matter accumulates. In the decomposition of plant residues in the soil, the water-soluble substances are the first to be acted on; then the proteins, certain hemicelluloses, and celluloses. The lignins are more resistant to decomposition in aerated soil and are practically undecomposed in water-logged soils. The soil organic matter is made up of a number of chemical complexes, depending on the nature of the plant and animal residues, on the microorganisms active in decomposition of those residues, and on the environmental conditions, especially moisture, temp., aeration and reaction, at which decomposition is taking place. The only reliable method at present available for determination of total soil organic matter is the C content of the soil as measured by wet or dry combustion. The earlier assumption that the soil organic matter contains about 58% C is confirmed by more recent investigations. As a result of the decomposition in the soil of plant residues of a wide C:N ratio, considerable quantities of CO_2 are liberated and only limited amounts of NH_3 or nitrate, until a soil organic matter has been produced of a fairly constant C:N ratio. Further decomposition leads to a parallel liberation of both C and N, in the form of CO_2 and NH_3, the latter being rapidly changed, in normal soils, to nitrate. Either liberation of CO_2 or formation of nitrate can be used with equal justification as index of decomposition of soil organic matter.—*S. A. Waksman.*

16745. **WILSON, J. K.** Nodule production on etiolated vetch seedlings. *Phytopath.* 21(11): 1083-1085. 1 fig. 1931.—Vetch seedlings were grown on sterile synthetic agar to which various saccharids were added; into the agar, 2 days after seeding, active culture of *Rhizobium leguminosarum* was inoculated and the whole continually kept from sunlight. After 36 days, plants grown on sugarless medium showed only 1 nodule in about 40 plants; with levulose, but 1 was found. Plants grown with saccharose developed nodules in all concentrations tried, more being present at 0.5 and 1% than at 2%. With other sugars, varying results, according to sugar, were obtained. Infection by *Rhizobium* may occur before photosynthesis has begun and, if suitable conditions are maintained by supplying a satisfactory carbohydrate, macroscopic nodules may develop in absence of light.—*W. A. Whitney.*

GENERAL BACTERIOLOGY

R. E. BUCHANAN, *Editor*

(See also in this issue Entries 15159, 15408, 15409, 15569, 15582, 15616, 15625, 15658, 15774, 16447, 16487, 16547, 16591, 16658, 16673, 16674, 16676, 16677, 16682, 16733, 16737, 16738, 16742, 17593)

16746. **ANDERSON, R. J. A discussion of certain fat constituents of acid-fast bacteria.** *Amer. Rev. Tuberc.* 24(6): 746-750. 1931.—Chemical analyses of human, avian and bovine type tubercle bacilli, timothy bacillus and leprosy bacillus shows that all acid-fast bacteria contain, in greatly varying proportions, similar lipoids belonging to the 3 general groups: phosphatides, acetone-soluble fat, and wax. Human type tubercle bacillus yields 10 times the amount of phosphatide contained in the non-pathogenic timothy bacillus, which, in view of the cell-stimulating, antigenic and other properties of the phosphatides, suggests that pathogenicity may bear some relation to phosphatide content. The timothy bacillus contains an acid which, though optically inactive, gives biologic reactions similar to those of the dextro-rotatory phthioic acid isolated from human type tubercle bacillus. Hence, the possibility that timothy bacillus may acquire virulence should, the author believes, be reinvestigated.

16747. **BARELLI, L. Influences de liquides organiques sur le développement cultural du bacille tuberculaire.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(9): 532-538. 1931.—Mixture of a synthetic non-protein medium with fresh serum for several days inhibits growth of tubercle bacilli, probably through bacteriolytic activity; later, growth is accelerated, probably because complementary action remains inactivated in the thermostat and the nutritive function of the serum constituents dominates. Mixture with reheated serum for ½ hr. at 56° always considerably accelerates growth. Mixture with washed erythrocytes has a somewhat tardy favorable action. Mixture with leucocytes from sterile exudate of guinea pigs gives initial inhibitory, followed by a certain favorable, action; the latter dominates if the leucocytes are freed of exudate by washing. At first there probably is a certain bacteriostatic action of the exudate serum accompanying the normal antibacterial thermolabile powers (complementary function). However, when this action is eliminated by holding in the thermostat or by washing of the leucocytes, the cellular constituents of blood or exudate are shown to contain a growth-promoting principle or to furnish nutritive substances. With this method no traces of antibacterial principles are evident. Hemoglobin dissolved in the medium has a rather favorable action on growth. Non-protein ultrafiltrate from acetic collodion filters has a rather inhibitory action, perhaps by dilution of the medium; if there is any antibacterial action here, it is uncertain and hardly probable, but the bacilli grow with considerable difficulty in pure ultrafiltrates.—*Author's conclusions (transl.)*.

16748. **BETTENCOURT, NICOLAU de. Étude sur les types "S" et "R" de l'Éberthella typhi.** *Arq. Inst. Bact. Camara Pestana* 6(2): XI-XXVI. 1 pl. 1930.—The author evoked microbic dissociation in an old strain of *Eberthella typhi* by successive culturing in phenol broth. Studying the cytomorphosis, growth curve and resistance to physical and chemical agents, he failed to observe appreciable differences between "S" and "R" types. The latter are not to be considered as a degenerative or involution form. Changing the proportion of phenol and incubation time of the "S" type cultures caused the "passage" S > R to appear suddenly, with the characteristics of a mutation-like phenomenon. The experiments to provoke the reversion R > S by changing the reaction (pH 6.0 to 8.2) and the nature of the culture media were unsuccessful; only successive and direct passages in the pleural cavity of guinea pigs produced once on 3 series the reversion R > S. Study of the antigenic constitution agreed with nearly all other work on the serology of "S" and "R" forms. In 1 of 17 cases of enteric fever, the patient's serum, examined on the 6th and the 10th days of illness, was negative with formolized broth cultures (Dreyer) and positive (1:100 and 1:400) with the alcoholized suspension (medium of Bien) of the "S" form—small-flake agglutination.—*N. de Bettencourt*.

16749. **BOISSEVAIN, C. H., and C. T. RYDER. Some observations on chemical and biological properties of the phosphatide from the tubercle bacillus.** *Amer. Rev. Tuberc.* 24(6): 751-756. 1931.—Intraperitoneal injection of a phosphatide, prepared according to Anderson's directions for phosphatide A3, causes formation of tubercular tissue and appearance of cutaneous hypersensitiveness in guinea pigs. It is impossible to free this phosphatide from acid-fast bacilli and bacillary debris by centrifugation, precipitation, or filtration of its ethereal solution. Filter candles that retain bacilli suspended in water let the same bacilli pass through when suspended in ether. It is possible to free the phosphatide from bacteria and bacterial debris by dialysis of the ethereal solution through a rubber membrane, subsequent solution in a mixture of water, alcohol and ether, and filtration through a Mandler filter candle. Intraperitoneal injection of the purified phosphatide does not cause formation of tubercular tissue or appearance of cutaneous hypersensitiveness. The tissue reaction to phthioic acid is of the nature of a foreign-body reaction.—*Authors' summary*.

16750. **CERRUTI, CARLO G., et G. SOLLAI. Étude bactériologique de cinq souches de Br. melitensis de provenance ovine et caprine, isolées en Sardaigne. Classification de deux de ces souches dans le groupe paramelitensis.** *Soc. Internaz. Microbiol. Boll. Sez. Italiana* 3(3): 69-72. 1931.—Isolation in Sardinia of 5 strains of *Brucella*, 2 of which (Arbus and Serbariu) were of caprine and 3 (Dolianova I and II and Gonnesa) of sheep origin. Besides the 2 goat strains which are not agglutinable with abortus and melitensis sera, all 5 strains showed the morphological, cultural, biological, and biochemical characteristics of *Brucella*. Moreover, the 2 goat strains inoculated into a rabbit had a very weak antigenic power. Several strains of abortus-melitensis used for cross tests were found to be non-sensitive, or nearly so, to the agglutination of the same sera, as had been demonstrated by Nègre and Raynaud. On the basis of other reactions (thermo-agglutination, non-specific agglutination), the authors classify the caprine strains under paramelitensis and the sheep strains under melitensis.—*C. G. Cerruti (transl. by P. Hillkowitz)*.

16751. **COLLEY, MARY WOTHERSPOON. Stimulation phenomena in the growth of bacteria as determined by nephelometry.** *Amer. Jour. Bot.* 18(4): 266-287. 1931. —When a relatively heavy inoculum of *Escherichia coli* was introduced into broth containing 0.0001 *N* $ZnSO_4$, more gas was produced than in control cultures. *E. coli* colonies grown in 0.001 *N*, 0.002 *N*, 0.003 *N*, and 0.004 *N* $ZnSO_4$ agar were initially larger than controls. After 8 hrs. incubation, size difference was most pronounced. The contrast was less marked at 12 and 16 hrs. and after 20 and 24 the once large colonies became approximately the same size as controls. Greatest growth as shown by colony area was 58% in 0.003 *N* $ZnSO_4$ after 8 hrs. *E. coli* colonies grown in weaker concentrations of $ZnSO_4$, 0.0001 *N* and 0.00025 *N*, were initially inhibited, but after 16 and 20 hrs. they increased so that after 24 hrs. they were 9% larger than controls. Colonies containing more than 0.005 *N* $ZnSO_4$ showed no stimulation, but an increasing toxic effect. *Serratia marcescens* colonies grown in 0.002 *N*, 0.003 *N*, 0.004 *N*, and 0.005 *N* $ZnSO_4$ agar were initially larger than controls. This difference was most marked in early growth stages. Greatest increase was 72% with 0.004 *N* after 16 hrs. A relative decrease

in size followed, which in the case of those which had been most stimulated approached within 6-8% of the normal after 48 hrs. *Azotobacter chroococcum* cultures grown in a mannitol solution containing dilute solutions of $ZnSO_4$ showed by their turbidity, measured nephelometrically, a growth increase in the presence of 0.000005 *N* and 0.000007 *N* $ZnSO_4$. This was greatest (17%) after 5 days with the 0.000007 *N*. With stronger concentrations, 0.000009-0.002 *N*, growth was initially inhibited. No growth occurred in presence of 0.005 *N*. Similar cultures containing manganese sulphate showed increased growth with 0.00001 *N*, 0.00005 *N*, 0.0001 *N*, and 0.0005 *N* after 2 days. This increase, greatest with the 0.00005 *N* after 2 days, was not maintained, and after 15 days, the cultures appeared subnormal. No growth occurred in presence of 0.01 *N* manganese sulphate. Other test salts were too toxic in dilutions used to give data on growth stimulation. Their toxicity may be judged by the highest concentrations in which no growth occurred: $Co(NO_3)_2$ 0.0001 *N*, $CuSO_4$ 0.0001 *N*, $Ni(NO_3)_2$ 0.00005 *N*, and $Cd(NO_3)_2$ 0.00005 *N*. Presence of metallic test salts in the *A. chroococcum* cultures seemed to bring about abnormally early pigmentation of cells and to shorten the life of the culture. *Pseudomonas tumefaciens* grown in a synthetic medium at 22 and 28° C. was shown by turbidity measurements to be stimulated at both temp. by presence of 0.00005 *N* $ZnSO_4$. Degree of stimulation, however, was greatest at 28°, maximum being 20% after 7 days. With increase in available O no growth stimulation was produced by $ZnSO_4$. This was also the case when dextrose was increased. Cultures of *P. tumefaciens* grown at 28° showed maximum growth increase of 28% after 5 days in presence of 0.0005 *N* manganese sulphate. As with $ZnSO_4$, when O tension was increased, there was no growth stimulation produced by manganese sulphate. *P. tumefaciens* grown at 28° with dilute solutions of $Co(NO_3)_2$ showed maximum growth increase of 19% after 5 days in presence of 0.00001 *N* dilution of the salt; and with $CuSO_4$, maximum growth increase of 52% after 5 days with a 0.00005 *N* dilution of salt.—*Author's summary.*

16752. **CORTESE, FRANZ. Esame fluoroscopico di alcuni actinomiceti. [Fluoroscopic investigation of certain Actinomyces.]** *Boll. Soc. Ital. Biol. Sperim.* 5(6): 842-844. 1930.—The author had previously reported the occurrence of a reddish fluorescence in certain strains of *A. bovis* under Wood's light. He now reports that these strains are facultative anaerobes and that the fluorescence appears only when the cultures are exposed to O. There is no fluoroscopic difference between strains grown in light and in darkness; direct sunshine is destructive to these strains. Strains grown on strongly acid or alkaline meat broth were more fluorescent than those on neutral media. Since the fluorescence occurred only in cultures on meat broth media, the attempt was made to grow the strains on "peptoglucosate" agar to which small amounts were added of constituents of the meat broth or substances chemically akin to these. Addition of phytin or "inotsal" elicited fluorescence; addition of creatine or inosite did not. The fact that the fluorescence-inciting substances are esters of phosphoric acid, comparable in chemical structure to the hexosephosphoric esters of muscle, suggests that the fluorescence may be connected with the presence in the culture medium of phosphorated compounds. The fluorescent substance, extracted with ether, was an amorphous brownish-red porphyrin; the spectroscopic and other characters of its solutions are described. Fluoroscopic studies show that under the name of *A. bovis* Harz different species are ordinarily described, especially *A. albus* and *A. sulphureus* Gasperini.—*M. Comel.*

16753. **DIMITRIJEVIÉ-SPETH, VOJIN. Weitere Erfahrungen mit Agargelatine und ihre verschiedene Durchlässigkeit für Bakterien. [Further experiments with agar gel and variations in its permeability to bacteria.]** *Zentralbl. Bakt. I. Abt. Orig.* 112(1/2): 17-25. 1929.

16754. **EVANS, ALICE C. A new subspecies, radicans, of Alcaligenes faecalis.** *U. S. Publ. Health Repts.* 46 (29): 1676-1680. 1931.—*A. faecalis* ssp. **radicans** (p. 1676) from the blood of a patient with a mild case of a fever resembling typhoid. Cultural and biochemical reactions are discussed. The patient's serum gave no agglutination with typhoid or paratyphoid A and B antigens. Intraperitoneal and intrapleural inoculations of 2 guinea pigs led to a mild peritonitis, congestion of the omentum, and an abscess near the stomach in 1 case, the organism being recovered from the abscess. In 2 rabbits and 2 mice, no pathogenicity was observed; on a few weeks' cultivation the organism apparently lost its mild pathogenicity for guinea pigs.

16755. **FOURMENT, PIERRE. Contribution à l'étude des boues végétominérales (barègines) contenues dans les eaux sulfurées-sodiques de Barèges (Hautes-Pyrénées).** *Bull. Soc. Hist. Nat. Afrique du Nord* 21(2): 11-24. 1 pl., 5 fig. 1930.—The sodic sulphated waters of Barèges favor the growth of micro-organisms, sulphuraria, adapted to this particular medium by reason of thermality and S content. In this vegeto-mineral spring baregin (or glairin) is formed at the expense of sulphuraria (*Thiothrix*), constituting an organic and mineral complex. The bulk of it originates from destruction of the dead cells of sulphuraria. This disorganization first affects the mucilaginous sheath, passing to the cellular membrane and finally destroying the protoplasm. By a combination of biologic and physical causes, there is an accumulation of mineral principles in baregin. There is 1st a protoplasmic appearance of granules of S in a soft state which, by destruction of the sulphuraria, take on rapidly a crystalline form; 2nd, a fixation by adsorption of various mineral principles, among which are silicates and salts of Fe, the latter passing through successive stages of reduction and oxidation. Baregin is a characteristic of water formed at thermal stations in southern France, e.g., Barèges and Aix-les-Bains. The author notes that the richness of these mucilaginous bodies in mineral elements explains the use of these soft masses as an aid in hydromineral cures; but he warns that it might be dangerous to apply them to mucous surfaces, or to the cutaneous surface if it has been injured or has lost its integrity, because of a possible septic character. The S is in a soft state but not colloidal. Illustrations show the filament of *Thiothrix,* the cells of which contain S; and filaments with empty vacuoles and protoplasmic granulations. Others show the filament of *Thiothrix* after plasmolysis and the attachment of the growth of *Thiothrix* and the floating masses.—*G. Hinsdale.*

16756. **GOLDIE, HORATIO. Studien über die Anäeroben-Umwandlungen.** *Zentralbl. Bakt. I. Abt. Orig.* 117 (6): 384-395. 1930.—The bacilli of Shiga and of Flexner, *B. typhosus,* and *Vibrio cholerae* underwent permanent changes in cultural characteristics when small amounts of sterile pus were added to their young bouillon cultures. Similar studies were made of the effects of leucocytes on anaerobes. Sterile pus from guinea pig abdomens was added to cultures of *B. botulinus* and *B. tetani.* This transformed the bacilli, enabling them to grow aerobically through many transplants; only the young bacilli were changed. Probable reactions of enzymes from leucocytes on the bacilli are discussed.—*W. N. Berg.*

16757. **HILL, FR. Zur Biologie des Paratyphus B-Bazillus. (Verhalten in Glyzerin-Fuchsinbouillon, Rhamnoselösung und Ammoniumchlorid-Rhamnoselösung.)** *Zentralbl. Bakt. I. Abt. Orig.* 113(5/6): 348-352. 1929. —Paratyphoid B bacilli, Schottmüller type, are recognizable by their ability to ferment glycerol and by the change of color in Stern's glycerol-fuchsinbouillon. Most Schottmüller bacilli ferment glycerol in 72-96 hrs. at 37°C. The degree of color produced varied from light to dark red. Tests with 90 strains in rhamnose solution of Bitter, Weigman and Habs, and in ammonium-rhamnose solution of Pesch and Masche, showed agreement 65 times. 25 strains gave negative results in rhamnose solution; in the ammonium-rhamnose solution only 12 of the 25 gave negative results. Thus, the ammonium-

rhamnose solution seems superior to rhamnose solution. 7 Breslau strains fermented glycerol in 48 hrs. In the Bitter, Weigman and Habs bouillon, and also in that of Pesch and Masche, they showed corresponding red color. —*H. J. Stafseth.*

16758. **KAPLAN-BRILLE, ALICE. Influence du nombre des microbes ensemencés sur la mutiplication du bacille pyocyanique dans un milieu de culture liquide.** 110p. Imprimeries Vieillemard: Paris, 1931.—4 chapters are devoted to techniques used for quantitative study of bacterial growth; to growth phases in cultures; and to results of studies on the influence of numbers of bacteria seeded on the multiplication of *Bacillus pyocyaneus* in culture media. The numbers of bacteria were determined by microscopic count, and by plating in agar. The number of cells found by direct count is always larger than from plating. The ratio between plate count and microscopic count, called "vitality ratio," is not a constant. It varies from one experiment to another in spite of efforts to maintain constant environmental conditions. It varies during the growth of the culture. It is at a minimum during the first hrs. after seeding, then increases, and may exceptionally assume a value of nearly unity, but generally does not rise above 0.4-0.5. Maximum value is found toward the close of the logarithmic growth period, then it decreases. Microscopic counts reveal no latency period following seeding; the logarithmic period of increase follows immediately. Enumeration by plate counts shows a latency period. During the logarithmic growth phase, the generation time is apparently shorter for bacteria, determined by plating. The total "crop yield" is of the same order of magnitude irrespective of size of initial seeding (250 thousand to 500 million seeded). Total numbers by microscopic count varied from 14 to 23 thousand millions, and by the plate count from 2.5 to 9 thousand millions. Duration of logarithmic growth period is relatively constant, except with very large seedings. The morphology of the bacterial cells undergoes regular variations, which follow quite regularly the growth phases. The maximum cell length, which is 2-3 times that of the cells seeded, is attained at the end of the logarithmic growth period, usually about 10 hrs. after inoculation. A bibliography of 112 titles is included.—*R. E. Buchanan.*

16759. **KITAOKA, MASAMI. Über ein neues Phänomen bei Wasserleptospirenkultur. Eine Methode zur Reinkultur der Wasserleptospiren mittels dieses Phänomens.** *Proc. Imp. Acad.* [*Tokyo*] 7(2): 82-83. 1931.—In the isolation of water Leptospiras from impure cultures, cultures made on Ringer's agar sometimes contain, 2-3 cm. deep, pure, ring-shaped colonies of *Leptospira,* contaminating organisms being superficial. To enable the bacteriologist to fish out such colonies, a special culture vessel was devised, having a closed side arm in which such deep colonies may develop. With pathogenic *Leptospira* spp., isolation is more difficult.

16760. **KOPACZEWSKI, W. Conditions physico-chimiques de la vitalité microbienne.** *Arch. Mikrobiol.* [*Berlin*] 2(2): 187-244. 12 fig. 1931.—A critical discussion of the chemical composition of media; biological factors influencing growth, such as antagonism and synergism of microbes; and physical factors, such as radiations, pH, electrical conductivity, electric charge, and surface tension. The physical modifications (density, surface tension, viscosity and reaction) of different culture media (broth, serum and tomato juice) produced by 20 species of bacteria, including pathogenic and saprophytic forms, are detailed. Physical modifications which the organisms produce in the course of their growth depend on the initial chemical composition of the medium; particularly on the pH. The sp. is also a determining factor. Definite periodicity may be noted. Physical changes are most marked in media with low buffer capacity. Bacterial antagonisms may be largely explained by the physical variations produced. The senescence of cultures is accompanied by physico-chemical modifications such that the medium becomes unsuited to growth. If the medium is restored to its initial condition, growth again occurs. The therapeutic effect of old microbial cultures may be explicable on the basis of physico-chemical action rather than of "specific antagonistic virus." Resemblances between changes produced by the microorganisms in media and in the humors and tissues of the body are emphasized as suggestive of a more direct and simple explanation of pathogenic changes.—*R. E. Buchanan.*

16761. **LOELE, W. Über die Verwendbarkeit von Oxydationsreaktionen mit Paraphenylendiamin in der Bakteriologie.** *Zentralbl. Bakt. I. Abt. Orig.* 111(6/8): 325-335. 1 fig. 1929.—The author compares the paraphenylendiamine oxidation reaction with the indolphenol blue reaction in yeasts and in a large number of bacteria of various types; results were similar in both tests. He notes special points in connection with individual bacteria and discusses the importance of the oxidation reaction of bacteria, from various points of view. Among his conclusions he states that bacteria may be divided into 4 groups according to behavior in a solution of paraphenylendiamine.—*M. L. Orcutt.*

16762. **LOGHEM, J. J. van. Zur Terminologie der bakteriellen Veränderlichkeit.** *Zentralbl. Bakt. I. Abt. Orig.* 120(5/6): 318-320. 1931.—The author points out that inheritance of acquired functions, flexibility of the genotypical constitution, instability of species, transgression of the limits of the species and "Dauermodification" are conceptions not accepted in the genetics of the higher organisms but which nevertheless have found a place in microbiology. In his own attempts at classifying the phenomena of bacterial variability he has arrived at a physiological conception: if not the single bacterial cell but the clone (i.e., the posterity of a single cell) is taken as the individual (individual line, individuality), the variations to be observed in the clone are recognized as functional phenomena within the inidividual existence of the bacterium. Accordingly, he proposes to distinguish bacterial variability as adaptation (physiological reaction on the influences of the outer world), and regression (pathological reaction); and the bacterial variations as adaptate (adaptatively changed), mutilate (permanently mutilated), atropheont (a function irretrievably lost), and degenerant (permanent change, manifesting itself as a phylogenetic regression or atavism). —*J. J. van Loghem.*

16763. **MARCHOUX, E., et V. CHORINE. Culture des spirochètes de la poule.** *Compt. Rend. Soc. Biol.* 106(12): 1125-1128. 1931.—The best medium consisted of slants of coagulated egg white or coagulum in physiological saline covered by a solution of serum diluted with physiological saline and containing 0.2% peptone and 0.1% glycogen. Optimum temp. was 37°C.; optimum pH, 7.5-7.7. The first cultures succeed only in rabbit serum, but after the 4th or 5th subculture, horse, ox, or human serum may be used. A cover of vaseline oil 1 cm. deep is also necessary.—*E. Weiner.*

16764. **MATERNOWSKA, IRENA. Eine biochemische Methode zur feineren Differenzierung der Bakterienarten der Coli-Typhusgruppe auf dem eiweissfreien Pesch-Maschke-Nährboden.** *Zentralbl. Bakt. I. Abt. Orig.* 113 (5/6): 361-365. 1929.—Determining the pH changes in liquid media of Pesch and Maschke (NH_4Cl and rhamnose) during 3 weeks after inoculation and noting turbidity of the broth, provided a satisfactory method of differentiating Breslau and Gärtner strains of *Bact. enteritidis, Salmonella schottmülleri,* and *S. suipestifer.* The Gärtner strains (16), all serologically similar, could be divided into 2 groups by this method. *S. suipestifer* would seem to belong between the Breslau and Schottmüller organisms.—*Leona Baumgartner.*

16765. **MICKLE, FRIEND LEE. Brief notes on laboratory incubator temperatures.** *Ann. Rept. Internat. Assoc. Dairy & Milk Inspect.* 19: 288-300. 1930.—A study of the effect of various loadings and environments of bacteriological incubators on temp., with recommendations as to studies needed.

16766. **MORELLI, E. Observations à propos du polymorphisme des streptothrichées.** *Soc. Internaz. Micro-*

biol. Boll. Sez. Ital. 2(6): 299-304. 1930.—*Nocardia, Cohnistreptothrix* and actinobacilli isolated from actinomycotic foci are described. The author believes them all to be different phases of the same variable organism. On artificial media and after long cultivation he was able to make these, and some old stock, cultures go through all the forms which have been given as characteristic of the different species. All gradations between the 2 forms were observed, which ruled out the possibility of having started with a mixed culture. Methods of cultivation which brought about these changes, as described, consisted of changing the organisms from anaërobic to aërobic growth, or vice versa, and addition of substances, like blood, to the media. The author believes that *Streptothrix* is a basic form with great polymorphic power, by which it can adapt itself to parasitic life in the group of mycobacteria, corynebacteria and the other forms of *Cohnistreptothrix* and actinobacilli.—*M. S. Ingalls.*

16767. **POTTENGER, JOSEPH E. The demonstration of rare tubercle bacilli in sputum by the dilution-flotation method in conjunction with picric acid.** *Amer. Rev. Tubere.* 24(5): 583-595. 1931.—Picric acid as a counterstain in preparations of rare tubercle bacilli yields over 5 times the number obtained by methylene-blue. The latter, in the concentration usually employed, should be discarded for this purpose. The dilution-flotation method, followed by picric acid as a counterstain, gives an average of over 60 times as many bacilli as can be found in direct smears from most likely particles, counterstained with methylene-blue, and 150-250 times as many in homogenized materials. The method detects as few as 1,000 bacilli in many 24-hr. sputa, thus limiting materially the use of the more time-consuming methods of culture and guinea pig inoculation. Perfect acid-fast rods were found in many specimens wholly negative by the Ziehl-Nielsen method. Failure to find bacilli may not always be due, as generally believed, to the presence of other pleomorphic forms, to the exclusion of acid-fast rods.—*Author's summary.*

16768. **REED, GUILFORD B., and CHRISTINE E. RICE. The behaviour of acid-fast bacteria in oil and water systems.** *Jour. Bacteriol.* 22(4): 239-247. 1931.—The work of Mudd on the behavior of acid-fast bacteria in oil and water systems was confirmed, using a macroscopic, in place of his microscopic, method. On shaking watery suspensions of acid-fast bacteria with oil they readily pass into the oil, while non-acid-fast organisms remain in the water. The same reaction occurs with a variety of fat solvents. The partition is complete for tubercle bacilli and 70-90% for 6 other acid-fast spp. Homologous immune serum inhibits the partition in proportion to its concentration. Emulsifying agents have a similar effect.—*G. B. Reed.*

16769. **RIGOBELLO, G. A propos de l'antagonisme entre le B. pyocyanique et son filtrat vis-à-vis de différents bactères "in vitro" et "in vivo."** *Soc. Internaz. Microbiol. Boll. Sez. Ital.* 2(6): 332-336. 1930.—A comparison between the effects of the filtrate of a culture of *Bacillus pyocyaneus* and of pyocyanase in vitro and in vivo. One can prepare strains of anthrax bacillus attenuated for rabbits by previous treatment with filtrate of *B. pyocyaneus.*—*R. Dubos.*

16770. **RYTI, ELSA. Studien über Bakterien der Coligruppe.** *Acta Soc. Med. Fennicae "Duodecim"* [*Suomalaisen Lääkäriseuran Duodecim'in.*] 13[Ser. A.] (3): 1-54. [Art. 6] 1931.—Of 320 bacterial strains isolated from various habitats (blood, gastric and duodenal contents, urine, feces), all were Gram-negative, motile, and failed to liquefy gelatine; they belong thus to the coli-group in the broadest sense. 5 of the strains were Voges-Proskauer-positive, 3 being methyl-red-negative and belonging thus to the aerogenes group (American system). Of the Voges-Proskauer-positive strains, 2 were invariably methyl-red-positive, thus forming a kind of intermediate form between aerogenes and coli bacilli. Of the Voges-Proskauer-negative strains, 6 fermented none of the sugars or polyvalent alcohols examined (glucose, lactose, mannite, maltose, salicin, saccharose); and, moreover, produced no indol; they thus belong to Petruschky's faecalis alkaligenes bacteria. Further, 5 strains were lactose-negative, but fermented all the monosaccharide sugars and produced indol; some of them, moreover, fermented certain other sugars, belonging thus to the so-called Morgan's bacilli. 304 of the strains belong to the true coli bacilli, and may, on account of their relation to fermentation of the sugars examined, production of indol, and causing of hemolysis in blood-agar, be divided into 14 groups. The greater the number of characteristics taken into consideration and the greater the number of bacterial strains examined, the more numerous are the groups found as based on biological characteristics; no uniform classification of the coli bacilli is thus obtained. Agglutination tests, using immune serum from 30 different rabbits, produced with 24 different strains, showed that some strains produce almost strain-specific sera, while other sera agglutinate a greater or lesser number of foreign strains, this condition being, however, completely irregular and quite independent of the biological characteristics and origin of the bacteria. Sera produced by aerogenes and Morgan bacilli are capable of agglutinating the true coli bacilli; it thus seems almost impossible to classify coli bacilli on their manner of agglutination.—*Author's summary.*

16771. **SCUDDER, SARA ALICIA. A differential stain favorable to the diagnosis of neisserian infection.** *Stain Technol.* 6(3): 99-105. 1 col. pl. 1931.—A differential Gram stain incorporating combined features of original Gram and Pappenheim methods. National Aniline crystal violet and new methyl green and pyronin are preferred. Iodine mixture of Kopeloff and Beerman is a satisfactory mordant, and Merck's pure technical acetone is an excellent differentiating agent. Gram-positive bacteria are coated by buffered crystal-violet solution, and iodine-NaOH solution precipitates crystal violet from other substances. The dye-iodine precipitate dissolves readily in pure acetone. Iodine green, a pure derivative of crystal violet, has the effect of non-interference in the technic and has selective action on nuclear substance. Pyronin has affinity for neisserian organisms primarily and acts as inert substance on most other proteins (except cytoplasm of eosinophiles, lymphocytes, plasma cells, and endothelial cells). Technic recommended: Stain air-dry films 3-5 min. in 1% solution of crystal violet in 10 parts Clark and Lubs' phosphate buffer of pH 6.6-7.0 and 90 parts water. Decant and flush with 2% iodine in *N*/10 NaOH. Decant and decolorize in acetone 10 sec. or less. Air dry and counterstain 1½-2 min. with methyl-green-pyronin (2 parts 2% aqueous methyl green National with 1 part 0.3% aqueous pyronin yellowish). Wash and air dry. Oil of bergamot is preferable to xylene as clearing agent.—*Author (courtesy Wistar Bibl. Serv.).*

16772. **SMIT, JAN. Die Gärungssarcinen. Eine Monographie.** 59p. 6 pl., 10 fig. Gustav Fischer. Jena, 1930. Price 9 M.—The author reviews the literature on *Sarcina ventriculi, S. maxima, S. paludosa,* and the methane sarcinae; and describes isolation of sarcinae from gastric contents, various soils, atmosphere, grains and sewage, and the morphology and physiology of the group. He creates the genus **ZYMOSARCINA** (Coccaceae) (p. 26) to include *Z.* **ventriculi** (*Sarcina ventriculi* Goodsir) (p. 27); *Z.* **maxima** (*Sarcina maxima* Lindner) (p. 27); and *Z.* **methanica** (p. 27) for the methane sarcina first studied by Söhngen but not obtained in pure culture, and which is probably identical with *Sarcina paludosa* Schröter. *Z. ventriculi* and *Z. maxima* are found to be very acid-tolerant, growing at pH 0.8-9.8. These sarcinae are strict anaerobes, under ordinary conditions forming no colonies on petri plates. Fermentation of glucose by *Z. ventriculi* yields CO_2 and ethyl alcohol, with small amounts of acetic, lactic, formic and succinic acids and of H. *Z. maxima,* on the other hand, yields CO_2, H and acetic, butyric and lactic acids as the chief products, only small amounts of ethyl alcohol being produced. Presence in the soil of resistant, long-lived and perhaps invisible forms is shown.—*M. Johnson.*

16773. **SUGIMOTO. Untersuchungen über die Bedeutung akzessorischer Nährstoffe für den Verwendungsstoffwechsel der Typhus-Coli-Gruppe.** *Arch. Hyg. u. Bakteriol.* 106(4): 185-196. 1931.—2 strains each of *Bacillus coli, B. paratyphi, B. hominis,* Breslau bacillus from meat, *B. pestifer, B. typhi,* Kruse-Shiga and Flexner bacilli, *B. paratyphi A,* and *B. pyocyaneus* were grown on 8 media, the control and base being 0.5% NaCl and 0.2% K-biphosphate in double distilled water made to pH 7 with KOH, using as source of N: ammonium lactate, tartrate, oxalate, sulphate plus Na_2CO_3, chloride plus glycerine, chloride plus dextrose, and chloride. Thereafter, lemon juice 1:1000 as source of vitamine C and ether extract of lemon rind as source of vitamine A, 0.2% alcohol, or 0.008% Na-citrate plus 0.001% fructose were added to each of the media. Both the vitamine additions and the chemical control solutions (Na-citrate and alcohol) resulted in acceleration of growth, growth on inadequate media, increased glycerine decomposition, and stimulation to color formation (with exception of *B. paratyphi A* in all instances, and Shiga in most). Thus, the accessory growth substances exerted no specific stimulus, chemicals producing the same effect.

16774. **TANAKA, KUNIO. Studies on the effect of metals and metal salts on microorganisms.** *Jour. Biochem. Tokyo* 13: 81-105. 1931.—Chlorides of Au, Cu, Ni, Co, Fe and Zn, and $AgNO_3$ were used on *Bacillus typhosus, Bacterium coli commune* and *Staphylococcus pyogenes aureus.* In the lower concentrations, bactericidal action became greater with increase in concentration up to a certain point, fell off with further increase, and finally became greater again with very high concentrations. This is explained by the fact that addition of increasing quantities of a chloride increases the acidity, finally making it more acid than pH 4.5, which is the isoelectric point for bacterial proteins. Metal-ions can combine with proteins only on the alkaline side of this point; hence, bactericidal effect lessens with increasing concentration of chloride on the acid side of the isoelectric point. Employment of $CuCl_2$ in experiments in which the acidity of the solution was kept more alkaline than pH 4.5, showed progressively greater bactericidal effect with increase in concentration. The Gram-positive *Staph. pyogenes* is more resistant on the acid side and less resistant on the alkaline side of the isoelectric point than are the Gram-negative *B. coli* and *B. typhosus.*—*J. S. Caldwell.*

16775. **TYCHOWSKI, ALEXANDER, und MARIA KOBEL. Über eine schnell verlaufende Umwandlung von Hexose-di-phosphat in Lactat unter dem Einfluss des typischen Milchsäurebildners Bacillus delbrücki. [Rapid breaking up of hexose diphosphate into lactate, as affected by the typical acid-producing Bacillus delbrücki.]** *Biochem. Zeitschr.* 209(1/3): 134-141. 1929.

16776. **UBERTINI, BRUNO. Caraterri culturali, biochimici e sierologici del "Gruppo Intermedio" (Standfuss) paragonati a quelli dei germi del gruppo Paratifo B avvelenatori da carne. Appendice: Alcuni reperti di Paratifo B negli uccelli. [Cultural, biochemic and serological characteristics of the "intermediate group" (Standfuss) compared to those of the Paratyphoid B group of meat poisoning. Appendix: some findings in paratyphoid B in birds.]** *Clinica Vet.* 54(2): 80-107. 1931.—"Intermediate group" organisms are frequently found both in the deeper layers and on the surface of organs of animals killed or dying as a result of disease, and even in healthy animals. The biochemical and serological behavior of this group, though similar to that of the paratyphoid (as regards action on glucose, lactose and mannitol), nevertheless permits a sufficiently exact and rapid individualization. Differentiation from paratyphoid B is necessary in the practical bacteriological examination of meats because in the present state of knowledge the "intermediate group" is not to be considered pathogenic for man. Consumption of meat in which "intermediate group" bacteria have been found, produces no disturbance in human health. In the present state of our knowledge, the meat poisoning bacteria of the paratyphoid B group are the following types: Gärtner, Breslau, Schottmüller, suipestifer. In the Province of Brescia it was possible to isolate an enzoötic of the paratyphoid B Breslau type in canaries and another of the same type in pigeons of a military pigeon house. Bacteriological examination of a turkey cock after death showed the presence of paratyphoid B, Gärtner type. In a young turkey from a flock in which there was an epidemic of infectious entero-hepatitis, there was found a bacillus with morphologic, biochemic and serologic characteristics of paratyphoid B, Breslau type.—*B. Ubertini (transl. by P. Hillkowitz).*

16777. **WERKMAN, C. H. Dimethyl-alpha-naphthylamine for the determination of bacterial reduction of nitrates.** *Proc. Iowa Acad. Sci.* 37: 53-55. 1930(1931).—1 cc. is dissolved in 5 cc. of methyl alcohol and the volume made up to 100 cc. with 5*N* acetic acid. It is used with sulphanilic acid solution: 0.8 gm. in 100 cc. of 5*N* acetic acid. 1 cc. of each solution is added to approximately 5 cc. of the culture to be tested. The pink color develops within 3 min., and holds well. It is sensitive to $1:10^7$ dilution of the NO_2-ion.—*H. S. Conard.*

16778. **WREDE, FRITZ, und E. STRACK. Über das Pyocyanin, den blauen Farbstoff des Bacillus pyocyaneus. III. Die Konstitution des Hemipyocyanins.** *Hoppe-Seyler's Zeitschr. Physiol. Chem.* 177(3/4): 177-186. 1928.—Pyocyanin is deep blue. It has the empirical formula $C_{26}H_{24}N_4O_2$. The pure pigment is basic. Its salts are wine red. Although it is extraordinarily resistant to acids it can be split by prolonged hydrolysis. About 80% of the initial wt. is recovered after hydrolysis. One of the split products is hemipyocyanin (empirical formula $C_{13}H_{12}N_2O$). The author thinks that pyocyanin is composed of 2 molecules of hemipyocyanin. The latter behaves as an acid of about the strength of phenol. It dissolves in acids to give a wine red, and in bases to give a violet red, solution. On neutralization it is precipitated as yellow crystals. Pure hemipyocyanin was found by the author to be identical with hydroxyphenazine (structural formula given). It has a melting point of 158° C. [uncorrected]. The calculated molecular wt. was 196; the wt. found, 204.—*N. M. Payne.*

ECONOMIC ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

WILLIAM ROBINSON, *Associate Editor*

(See also in this issue Entries: (Evolution) 15135; (Preservation) 15145; (Collections) 15154, 15155; (Genetics) 15249, 15259, 15268, 15283, 15284, 15285, 15286, 15287, 15288, 15293, 15295, 15296, 15297, 15298, 15302; (Ecology) 15309, 15377, 15392, 15393; (Plant disease vectors) 15398, 15410, 15415, 15416, 15417, 15421, 15424; (Sense organs) 15953; (Animal disease vectors) 16565, 16576, 16579, 16580, 16588, 16601, 16604, 16605, 16606, 16620, 16637, 16647, 16648, 16649, 16650, 16652, 16653, 16654, 16663, 16687, 16710; (Parasites) 16581, 16585, 16594, 16615; (Plant pests) 16939, 16967; (Wax production) 17063; (Histology) 17460, 17467, 17468)

ECONOMIC ENTOMOLOGY

FRUITS

W. A. ROSS, *Editor*

(See also in this issue Entries 15462, 15471, 16725, 16828, 17705, 17727, 17865, 17867)

16779. CORBETT, G. H. An historical note on Tirathaba rufivena Walk. (the greater coconut spike moth) and its three parasites in Malaya. *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser. No.* 3. 1-9. 1930.—*Tirathaba rufivena* is parasitized by *Nemeritis palmaris* (Ichneumonidae), *Apanteles tirathabae* (Braconidae), and *Erycia basifulva* (Tachinidae).

16780. CORY, E. N. The prevalence of codling moth in Maryland and the control recommended. *Rept. Maryland Agric. Soc.* 15: 202-210. 1931.

16781. FINTESCU, G. N. Contributions à la biologie de la mouche à scie des feuilles du poirier. [Biology of the saw fly of pear leaves.] *Intâiul Congr. Nat. Naturalişt. Romînia* 1: 159-161. 1928(1930).

16782. GHESQUIÈRE, J. Sur l'importance économique et la bionomie de deux Pyraustines nouvelles pour le Congo Belge. Leucinodes orbonalis Guen. et Pimelephila ghesquieri Tams. *Bull. et Ann. Soc. Ent. Belgique* 71 (5/8): 131-138. 1931.—*Leucinodes orbonalis*, a widely distributed pest of the potato and other Solanaceae, is of importance in the Equatorial Province. Its habits are described. *Pimelephila ghesquieri* attacks the African oil palm, *Elaeis*, boring in the growing spindle, injuring leaflets and rachis, and often killing young palms. The injury is heaviest in highly shaded groves.

16783. LEEFMANS, S. Aanteekeningen in zake een drietal hier te lande aan klappers schadelijke dynastinen. (Notes on three Dynastid-beetles noxious to the coconut-tree in the Dutch East Indies.) [With English summary.] *Korte Mededeel. Inst. Plantenziekten [Buitenzorg]* 15. 1-17. 1 pl. 1931.—Notes on damage by and life history of *Chalcosoma atlas* L., *Scapanes australis* Boisd., and *Papuana semistriata* Arrow.

16784. LEPLAE, EDM. Le scolyte des baies du caféier (Stephanoderes). *Bull. Agric. Congo Belge* 19(2): 271-276. 1 pl. 1928.—The coffee berry borer, *Stephanoderes coffeae*, is destructive in Belgian Congo. Life history and control are discussed.

16785. LUNDBLAD, O. Lilla vinbärsmalen, Incurvaria trimaculella quadrimaculella Höfn., en som skadedjur på vinbär hittills okänd och för vårt land ny malfjäril. [I. t. q., new to Sweden, and hitherto unknown as a pest on currants in Sweden.] *Meddel. 347 Centralanst. Försöksväs. på Jordbruksomr. Lantbruksent. Avd. No.* 59. p. 1-25. 13 fig. 1930.—The history and systematic position of *I. t.* ssp. *quadrimaculella** are discussed.

16786. MARÉCHAL, P. Études sur les rubicoles 2: Rhopalum clavipes L. et R. tibiale F. [Studies on bramble insects.] *Ann. Soc. Ent. France.* 98: 111-122. 2 pl. 1929.—Describes nest-making habits, metamorphosis, larvae, pupae and cocoons. An account of mixed nests is given. The following parasites are reported: *Caenocryptus macilentus* Grav., *Melittobia acasta* Smith, *Ptychoneura melaleuca* Meig and *Megaselia rata* Wood?. —*P. Maréchal (transl. by A. C. Hodson).*

16787. MASSEE, A. M. The control of the fruit tree red spider (Oligonychus ulmi C. L. Koch) of plum during the growing season. *Jour. Pomol. and Hort. Sci.* 8 (2): 184-194. 1 pl. 1930.—In England this serious pest of plums occurs commonly in orchards sprayed during the dormant season with a tar-distillate winter wash. It is essential to continue using the tar-distillate washes though the red spider is not controlled by them, as other important pests and diseases such as plum aphids, winter moth and brown rot are controlled by tar-distillate spraying. The fruit tree red spider can be controlled by spraying, about 2 weeks after the blossoms have fallen, with lime-sulphur 1-99. The spray does not reduce the crop, or cause any form of injury to the foliage or fruits. White oil emulsion (1%) and Bordeaux mixture (8:12:100) are not toxic to the mites.—*Author's summary.*

16788. MASSEE, A. M. The tarsonemid mite of strawberry. *Jour. Pomol. and Hort. Sci.* 8(4): 305-308. 1 pl. 1930.—Healthy Royal Sovereign strawberry plants became diseased and malformed when attacked by *Tarsonemus fragariae* Zimm. The older leaves became crinkled and very brittle. The young leaves turned a silvery-brown color, and remained stunted or dried up. Attacked runners were also malformed, and produced unhealthy plants. All the "control" (non-infected) plants remained healthy.—*Author's summary.*

16789. MILES, HERBERT W. Tar-distillates for the winter spraying of apples in North-West England. *Jour. Ministry Agric. [Gr. Brit.]* 36(2): 145-152. 1929.—Five brands of tar-distillate washes and dinitroorthocresol were tested against aphids, apple sucker, apple capsids, tortrix larvae and larvae of the winter moth and its allies. Yield and percentage of clean fruit were increased and appearance of foliage improved in the sprayed plats. All brands of tar-distillates were about equally effective, giving a considerable but not perfect control of aphids, apple sucker, winter and tortrix moths. Capsids were not controlled. Dinitroorthocresol was equally effective; slightly less so against winter moths.—*H. Baker.*

16790. MILLER, N. C. E. Coccus (Lecanium) viridis Green. The "Green scale" of coffee. *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser.* 7. p. 17-29. 5 fig. 1931.—*Coccus (Lecanium) viridis** is a serious pest of coffee wherever grown. In Malaya it occurs also on *Bassia latifolia, Achras sapota,* and *Citrus acida.* It is usually attended by the ant, *Oecophylla smaragdina,* which consumes the sticky juices exuded before

the sooty mold can spread over the leaves and kill the scales. The species is parasitized in Malaya by *Aneristus ceroplastae**, *Coccophagus* sp. [Eulophidae], and *Encyrtus flavus** [Encyrtidae], and is also attacked by the fungus *Fusarium*, probably *F. aleyrodis*. Spraying with kerosene emulsion is effective; other sprays are also used with good results, as tobacco-soap solution, resin-soda, and lime-sulphur. Control of *O. smaragdina* is also necessary, and consists of destruction of the nests on the tree and banding of trunks with tanglefoot.

16791. MORRIS, H. M. A survey of olive pests. *Dept. Agric. Cyprus (Ent. Ser.), Bull.* 2. 1-10. 4 fig. 1930.—The principal olive pests in Cyprus are the olive fly, *Dacus oleae;* the olive moth, *Prays oleellus;* the olive weevil, *Rhynchitis ruber;* a cecidomyid larva; and the scale, *Leucodiaspis riccae*, all of which cause the olives to fall. The type of injury to fruit, for the first 4 spp., is illustrated.

16792. PAGDEN, H. T. Two citrus fruit borers. *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser.* 7. p. 1-16. 9 fig. 1931.—*Prays endocarpa** [Lepidoptera, Hyponomeutidae] attacks *Citrus medica acida, C. limonum, C. decumana,* and *C. aurantium;* it breeds in the fruit, forming surface galls, but leaves the fruit to pupate. The egg*, larva*, pupa* and adult* are briefly described. The larvae are parasitized by *Euderus malayensis** [Chalcidoidea, Eulophidae]. No practical control measures so far tried are really successful except the destruction of injured fruit. *Citripestis sagittiferella* also feeds on the same fruits as *Prays endocarpa*, but its damage is much more severe. Where several larvae attack a single fruit, the entire contents are destroyed. The adult* is described by H. M. PENDLEBURY. The egg*, larva*, and pupa* are described. The larva is parasitized by a Tachinid and a Braconid, near *Chelonus*. As control measures the writer does not favor lead arsenate although effective, because of its effect on the flavor of the fruit, but recommends the use of tuba [Derris] or some other vegetable poison containing rotenone. Collection and destruction of damaged fruit is advised. The females are attracted to oil of limes, and will oviposit on paper painted with it. The principal ingredient of oil of limes is citral.

16793. PETTEY, F. W., and C. J. JOUBERT. Pear mealy bugs and results of experiments for their control. *Union So. Africa Sci. Bull.* 95. 1-23. 5 fig. 1930.—Two mealy bugs occur—*Pseudococcus maritimus* and *P. gahani*. The former is the more common and abundant. The life cycle and habits of both are similar. About 2½ months are required for the life cycle in summer and five mo. in winter. The eggs are laid in waxy ovisacs in crevices, under loose bark, under codling moth bands, and in calyx cavities. Damage arises chiefly from the staining of the fruit by the sooty fungus which grows on the honeydew. Some varieties of pears are preferred by the bugs to others. Infestation is heavier on late varieties and in the hotter and drier localities. Spraying should always be preceded by scraping the rough bark off the trunks and branches in winter and removing, so far as possible, all egg masses with a brush. Hessian should first be spread on the ground to catch the fallen bugs and eggs. Control by spraying is difficult and costly and in the heaviest infested areas it is questionable whether it would not be more economical to wipe the fruit. No spray gave appreciable results except an oil spray. Only 1 application of the usual winter oil spray can be given without injury to the trees if the oil in this ranges from 50 to 70% unsulphonatable residue and has a viscosity of about 110 seconds Saybolt. The strength of each spray in actual oil must not exceed 4%. No single winter application will give control of the infestation if at all heavy because no one application will kill all eggs. Possibly oils lighter in viscosity and of fairly low refinement might permit of 2 winter applications at 7% strength, 6-8 weeks apart, and effect control. In fairly light infestations and in comparatively cool areas, a winter application of 4% oil plus the substitution of 5 applications of a 1% medium grade summer oil and 40% nicotine sulphate 1-1600 for the 5 last arsenate of lead sprays, gave promising results.—*L. Caesar.*

16794. YGLESIAS, BERNARDO R. Costa Rica: The "enfermedad del café." *Internat. Bull. Plant Protect.* [*Rome*] 5(9): 158-159. 1931.—Due to serious attack, principally of young plants, by 3 insects: *Saissetia hemisphaerica, Pseudococcus* sp., and an aphid.

ECONOMIC ENTOMOLOGY

CEREAL, FORAGE, AND OTHER FIELD CROPS

(See also in this issue Entries 15398, 16815, 16840, 16967, 16972, 16989, 17701, 17786, 17823, 17868, 17910)

16795. BENEDICTIS, A. de. Eritrea: Locusts (Schistocerca gregaria). *Internat. Bull. Plant Protect.* [*Rome*] 5(4): 53-54. 1931.—Notes on egg-laying dates and migrations.

16796. BENEDICTIS, A. de. Eritrea: Locusts (Schistocerca gregaria). *Internat. Bull. Plant Protect.* [*Rome*] 5(7): 116. 1931.—Migrations of *S. gregaria.*

16797. BERNATSKY, J. Huhn und Käfer im Luzernefeld. *Nachrichtenbl. Deutsch. Pflanzenschutzdienst* 10 (8): 66-67. 1 fig. 1930.—Note on injury to *Medicago sativa* in Hungary by *Phytodecta fornicata* Brüggm. and on its control by chickens.

16798. HARDY, F., and G. RODRIGUEZ. Froghopper investigation. Progress report, June 18, 1930. *Proc. Agric. Soc. Trinidad and Tobago* 30(7): 260-266. 1930.—Notes on froghopper incidence, and attempt to cope with the outbreak by use of cyanogas and natural control.

16799. HOLDAWAY, F. G. The pink bollworm situation in Australia. *Trans. 4th Internat. Congress Ent., Ithaca, New York, 1928.* 2: 73-80. 2 fig. 1929.—The reasons for the present confusion regarding the pink bollworm situation in Australia are discussed. There occur in Australia not only the true pink bollworm, *Pectinophora gossypiella* Saund., but also 3 other spp., one of which is the Queensland pink bollworm, *P. scutigera* Holdaway. A brief discussion of the generic synonymy is given and the opinion expressed that *Pectinophora*, not *Platyedra*, is the correct genus for the pink bollworms. The original home and the world distribution of *Pectinophora* are discussed in the light of Wegener's hypothesis of the origin of continents. If this hypothesis is in principle correct then the apparently anomalous situation of the genus *Pectinophora*, and more particularly *P. gossypiella*, indigenous to Africa, Asia and Australia, is explained.—*F. G. Holdaway.*

16800. HOYER, C. Der "nebelige Schildkäfer." Ein wenig bekannter, jetzt häufig auftretender Rübenschädling! [The helmet beetle, a little known but frequently encountered beet pest.] *Deutsche Landwirtsch. Presse* 57(35): 477. 1930.—Note on *Cessida nebulesce* L.

16801. MILLER, DAVID. Insects infesting Phormium. *New Zealand Jour. Sci. and Tech.* 11(5): 273-283. 5 fig. 1930.—Two spp. of *Phormium* grow in New Zealand. *P. tenax* is milled for its "flax" fibre, and is cultivated mainly in the swamp areas. On the mountains it occurs in native stand along with *P. cookianum*. The insect fauna are all endemic. The most important enemies are those attacking the leaf, principal among which is the looping grub, *Orthoclydon praefectata*, which attacks both spp. The moths are nocturnal, depositing their eggs in batches, with a total fecundity average of 200 eggs. The larvae* feed on the epidermis and are nocturnal,

hiding during the day in dead leaf tubes. Flooding is fatal to the larvae and pupae, pupation taking place in the comparatively dry ground. The sp. is 2-brooded with a main generation and an overlapping generation as shown by a graph. The drainage of the swamplands for more extensive cultivation of the flax has been favorable to greater damage by this insect. Next in importance is the notching-grub, *Melanchra steropastis*, which cuts triangular notches in the leaves. To maintain control it is necessary to keep the soil comparatively moist, as the damage is greatest in dry lands. These 2 spp. are attacked by the parasites *Ichneumon* sp., *Paniscus productus* and *Phorocera marginata*, and by *Syrphus ropalus*, whose larvae feed on the young caterpillars. The case moth, *Oecticus omnivorus*, is of minor importance. The leaves are also attacked by *Leucaspis cordylindis*, *L. stricta*, *Trionymus diminutus*, and *Coelostomidia cordylindis*; the crown and leaf bases are attacked by larvae of *Porina signata*. A moth and a chloropid fly breed in the seeds. In the gummy fluid at the base of the plant are found larvae of *Lepidomyia decessum*. The larvae of *Batrachedra arenosella* feed upon the scale insects *Leucaspis cordylindis* and *L. stricta*.

16802. **PAGDEN, H. T. A preliminary account of three rice stem borers.** *Dept. Agric., Straits Settlements and Fed. Malay States, Sci. Ser. No.* 1. 1-30. 1 col. pl., 7 fig. 1930.—*Diatraea auricilia** oviposits in masses, the flat overlapping eggs* being found on rice leaves. The larvae* bore in the stems; they also attack *Scirpus grossus* and *Zea mays*. The eggs are parasitized by *Trichogramma nanum**, ? *Paranagrus optabilis*, and ? *Phanurus beneficiens*; the larvae, by *Apanteles flavipes*; and the pupae*, by a chalcidoid insect. *Schoenobius incertellus** deposits its eggs* in masses covered with anal hairs of the adult. The larvae* bore downward in the stalk of rice; no alternative host was found. They pupate in a silken cocoon. The eggs are parasitized by *T. nanum* and *P. beneficiens*. *Sesamia inferens** deposits loosely adhering strings of depressed spherical eggs*; the larvae* bore in the stalks of rice, maize, sugar cane, and *Paspalum commersonii*, and can also breed in *Eleusine indica*. No egg parasite has been found under natural conditions, but *T. nanum* will attack in the laboratory. The larvae are attacked by *Winthemia semiberbis*, and the pupae* by the same chalcidoids as *D. auricilia*, and by a *Xanthopimpla*. The ant *Diacamma vagans* (?) was observed extracting *Sesamia* larvae from rice stems. The life history of *T. nanum* is discussed, with descriptions of egg*, larva*, and pupa, and data on the experiments in mass breeding, using eggs of *Sitotroga cerealella*.

16803. **PHILLIPS, W. J., and G. W. BARBER. A study of hibernation of the corn earworm [Heliothis obsoleta Fab.] in Virginia.** *Virginia Agric. Exp. Sta. Tech. Bull.* 40. 1-24. 10 fig. 1929.—In studies in central Virginia covering 8 yrs., the kind of food apparently had an influence on the tendency of individuals to hibernate even as early as midsummer. Larvae that enter the ground from the 1st to the 3rd week in September usually hibernated most successfully, provided they had the proper food. Larvae construct emergence burrows for the escape of the adults and the pupae rest in a cell at the bottom of the burrows. The depth of the pupal cell ranges from ½ inch to 9 in. The fall burrows are much deeper than those in summer. The percentage of larvae that failed to pupate after entering burrows ranged from 41.8 to 43.7. Mortality of pupae was greatest from November to January. Emergence may occur from the last of May until August. Moles are the most important predaceous enemy of hibernating pupae.—*W. J. Phillips.*

16804. **RADEMACHER, BERNHARD. Der augenblickliche Stand der Rübenaaskäferbekämpfung.** *Zuckerrübenbau* 12 (5) : 84-89. 3 fig. 1930.—On control of *Blitophaga opaca* L., *B. undata* Müll. and *Silpha obscura* L. on beet.

16805. **ROOKE, H. G. D., with introduction by J. F. WEBSTER. Note on locusts in 'Iraq and the control measures adopted.** *'Iraq Dept. Agric. Mem.* 13. 1-13. 5 pl., 1 map. 1930.—A record of the results of studies by the Locust Department in 'Iraq since its inception in October, 1924, describing the organisation of the locust campaign, the life history of the Moroccan Locust, *Dociostaurus marocanus* (the species most destructive in 'Iraq), and the movements of these locusts within the country. Damage to crops and the natural enemies and other control factors are dealt with also. The most successful control methods have been ploughing of infested areas, spreading of poison bait, and spraying during the earlier stages of the hopping locusts.

ECONOMIC ENTOMOLOGY

STORED PRODUCTS

R. T. COTTON, *Editor*

(See also in B. A. 6(4): Entries 10788, 10953, 11630; 6(5): 13939, 13940; and in this issue 15145, 16945)

16806. **BONVICINI, MARIO. Sulla durata della germinabilità nel grano. Azione della naftalina. [Effect of naphthalene on germination of grain.]** *Fed. Ital. Consorzi Agrari* 68 (5) : 315-319. 1931; *Italia Agric.* 68 (5) : (1)-(7). 1931.—When wheat is kept in air-tight glass jars, addition of a sufficient quantity of naphthalene prolongs the germinability. This is attributed to the asphyxiating effect of the atmosphere within the jars.—*M. Bonvicini (trans. by H. S. Wolfe).*

16807. **HUNT, G. M., and T. E. SNYDER. An international termite exposure test.** *Proc. Amer. Wood Preservers' Assoc.* 26: 318-337. 3 fig. 1930.—A progress report of test pieces of western yellow pine treated with various preservatives and set in Panama Canal Zone, Australia, South Africa and Hawaii.—*W. H. Snell.*

16808. **HUNT, G. M., and T. E. SNYDER. An international termite exposure test. Second progress report.** *Proc. Amer. Wood Preservers' Assoc.* 27: 279-285. 2 fig. 1931.—In some cases, the test sticks reported upon in 1930 have been removed to locations where termite attack would be more certain or more severe. Some of the preservatives have proven very effective after 1-2 yrs., but it is too early to arrive at definite conclusions as to specific toxic agents at this stage. Preservatives have not shown equal effectiveness at all 4 stations, perhaps because of the presence of different spp. of termites.—*W. H. Snell.*

16809. **KING, H. H. Experiments with arsenite of soda and sulphate of copper for the protection of timber against attack by termites.** *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 22-32. 1 pl. 1930.—A report on the superficial treatment of logs of *Pinus* sp., *Hyphaena thebaica*, and *Acacia arabica*, with arsenite of soda and copper sulphate, soaking for 24 and 48 hrs., and treating ½ of each lot with tar to hold in the poison. Copper sulphate will not protect wood from attack of termites over a period of yrs. Arsenite of soda affords a high degree of protection.

16810. **KOFOID, C. A. Why is there a termite problem in California?** *Proc. Amer. Wood Preservers' Assoc.* 26: 298-306. 1930.—A complete discussion of the biological and ecological relations of California species of termites, with special reference to changes in the economy of nature brought about by the use of wood by civilized man.—*W. H. Snell.*

16811. **PASSERINI, N., e R. PAMPANINI. La conservazione degli erbari e l'efficacia del sublimato ($HgCl_2$) nell'avvelenamento delle piante. [Conservation of her-**

baria and the efficacy of $HgCl_2$ in poisoning plants.] *Boll. R. Ist. Sup. Agrar. Pisa* 3: 411-453. 1927.—Various chemicals are considered. CS_2 is recommended for general purposes and Na-arsenite for protecting the specimens against insect attacks.

16812. PÉREZ, DELFÍN GONZÁLEZ. Como prevenir el "Apolillado" de las frutas secas. [How to prevent moth injury to dried fruits.] *Bol. Min. Agric. Chile* 3(1/3): 84-88. 1931.—The best prevention is to expose the fruit as short a time as possible after it is dried. For fumigation in stores CS_2 is recommended.

16813. RANDALL, MERLE. Termites and the retail distribution of treated timber products. *Proc. Amer. Wood Preservers' Assoc.* 26: 207-214. 1930.

16814. SPENCER, G. J. An important breeding place of clothes moths in homes. *Canadian Ent.* 63(9): 199-200. 1931.—The principal household pests in British Columbia are the webbing clothes moth, *Tineola biselliella*, and the case-making clothes moth, *Tinea pelionella*. All stages of these moths were found during the winter in the felt accumulating from sweepings in the cold-air shafts of hot-air furnaces.

16815. WILLE, JOHANNES. Lasioderma serricorne F. als Schädling an Baumwollsamen. [L. serricorne as a pest of cotton seed.] *Anzeiger Schädlingsk.* 7(10): 110-112. 1931.

16816. WILLIAMS, C. L. Effect of fumigation on cockroaches on ships. *U. S. Publ. Health Repts.* 46(29): 1680-1694. 1931.—In laboratory tests it was found that with exposures of 2 hrs. (standard exposure period for quarantine fumigations with HCN), a maintained concentration of 1 oz. per 1000 cubic feet was required to kill all free running forms of *Blatella germanica* and twice this dosage to kill the eggs. When adequate harborage was provided, 4 oz. per 1000 cubic feet was necessary to kill the eggs. Concentration tests on ships demonstrated that only ½ the calculated concentration could be counted on as actually present. Therefore, on ships a dosage of 8 oz. per 1000 cubic feet was indicated as necessary; a further safety margin of 2 oz. is suggested. Practical tests on ships confirmed these laboratory figures. Since the cockroach is not believed to carry quarantinable diseases, its destruction by fumigation on ships should for economic reasons be restricted to the crew's quarters.—*C. L. Williams.*

ECONOMIC ENTOMOLOGY

FOREST AND SHADE TREES

J. M. SWAINE, *Editor*

(See also in this issue Entries 16808, 16809, 16838, 16846, 16847, 16848, 17048, 17660, 17667, 17669, 17681, 17744, 17815)

16817. BANTI, ADOLFO. Una farfalla perniciosa. (Thaumetopoea (Cnetocampa) processionea L.). [A moth pest, T. processionea.] *L'Alpe, Riv. Forest. Italiana* 18 (10): 529-534. 6 fig. 1931.—Description, damage, and control measures.

16818. BARNES, H. F. Further results of an investigation into the resistance of basket willows to button gall formation. *Ann. Appl. Biol.* 18(1): 75-82. 2 pl. 1931. —Twelve commercial varieties of *Salix triandra*, under experimental conditions, were very susceptible to attack by the button top midge (*Rhabdophaga heterobia*). Three varieties of *S. purpurea*, 1 of *S. viminalis*, 3 hybrids of *S. viminalis* and *purpurea* and *S. alba* var. *vitellina* were totally immune. Notwithstanding eggs sometimes being laid and the larvae hatching, no galls or side-branching occurred. From field observations a closely allied gall midge, *R. terminalis*, is known to attack *S. alba* var. *vitellina*, but has not been known to attack any variety of *S. triandra*. Reference has been made to a similar phenomenon with regard to attacks on willows by the Chrysomelid beetles *Galerucella lineola* (apparently confined to varieties of *S. triandra*) and *Phyllodecta vitellinae*, which is known to attack *S. alba* var. *vitellina* and *S. purpurea* and its varieties but no variety of *S. triandra*. Hybridization of *S. triandra* × *S. purpurea* or × *S. viminalis* or × *S. alba* should be attempted. Mention is made of 3 aspects of host plant preference needing special attention in connection with willow gall midges.—*Author's summary.*

16819. BEDFORD, H. W. A preliminary note on die-back of sunt (Acacia arabica Willd.). *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 31. 39-41. 1930.—The die-back disease manifested by exudations of gum is primarily due to buprestid larvae, principally *Anthaxia congregata*, which is parasitized by *Hecabalodes anthaxia;* although *Chrysobothris dorsata* has been bred from diseased timber. Branches which have died from die-back are subject to the attack of *Sinoxylon senegalense* and *S. sudanicum*. The gum is sometimes dark colored, possibly due to the presence of bacteria, which however are not regarded as true parasites.

16820. BELL, C. F. Administration of the Forest Department of the Central Provinces for the year ending 31st March 1930. p. 1-35. 1931.—The epiphytotic sal borer (*Hoplocerambyx spinicornis*) attack has been successfully overcome by burning infested trees and by trap tree operations combined with beetle catching operations, at a cost of Rs. 1,25,801 during the last 4 yrs. The severe attack of the borer *Coelosterna scabrata* Fabr. in plantations of *Acacia arabica* is ascribed to planting the *Acacia* pure in dry and unsuitable localities. Over 95% of the trees are attacked in such localities.—*M. V. Laurie.*

16821. BERTHET, H. Sur la présence de Cossus terebra (Fabr.) dans les Alpes françaises et particulièrement en Oisans. *Bull. Soc. Ent. France* 1931(5): 76-78. 1931.—The larva of *C. tenebra* feeds on *Populus tremula* and *Betula alba* in the French Alps.—*S. B. Fracker.*

16822. CAMACHO, JOÃO HENRIQUES. Notícia sôbre uma visita de estudo aos serviços de extinção da Cnethocampa pityocampa Schiff. em Espanha. [Notes on a visit to study the eradication work against C. p. in Spain.] *Arquiv. Secção Biol. e Parasitol., Mus. Zool. Univ. Coimbra* 1(3): 207-214. 2 pl. 1930.

16823. CHAMBERS, E. L., and N. F. THOMPSON. Some of the more important insects and plant diseases of Wisconsin trees and shrubs. *Wisconsin Dept. Agric. and Markets Bull.* 123. 1-58. 57 fig. 1931.

16824. FRYDRYCHEWICZ, JULJUSZ. Żerowanie gąsienic Brudnicy nieparki (L. dispar L.) w świetle cyfr i pewne dane z jej biologji. [Voracity of Lymantria dispar larvae.] [With French summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 19(2): 171-186. 2 fig. 1928.—Laboratory experiments showed that a larva of *L. dispar* which moults 5 times devours in the course of its life 27 oak leaves of average size, while one which moults 4 times eats about 16 leaves. The chrysalis period in the ♂ averages 17.3 days, that of the ♀ 14.4 days. 19% of the ♂ leave the chrysalis after 15 days and 34.1% of the ♀ at the end of 14 days. A newly formed ♀ chrysalis weighed 890 mgm. (av. of 67), while that of a ♂ (av. of 76) weighs 420 mgm. The ♀ imago weighs 430 mgm. (48% of the newly formed chrysalid) while the ♂ imago weighs 85 mgm. (20% of the chrysalid).—*From author's summary (transl.).*

16825. GRAHAM, SAMUEL A. The larch sawfly and forestry. *Trans. Internat. Congress Ent., Ithaca, N. Y., 1928* 2: 401-407. 1929.—This paper discusses the im-

portance of the larch sawfly, *Lygeonematus erichsoni* Hartig, in the swamp forests of the northern States and summarizes some results of experiments in the Lake States, especially the effects of physical and biotic environmental factors. Excessive heat and moisture are important factors in preventing successful hibernation of the sawfly. Mice are important enemies of the sawfly in the cocooned stages and destroy on the average more than 50% of the cocooned prepupae. The larval numbers are reduced by heavy rains during the first instar and by parasites and predatory spp. during the 4th and 5th instars. It is clear that the physical conditions existent in tamarack (*Larix laricina*) swamps are favorable to the sawfly. Unless it is possible either to modify these conditions or to increase biotic resistance by favoring the enemies of the sawfly, the future of tamarack as a timber tree is dubious. It is believed that means of accomplishing the desired results will ultimately be found.—*S. A. Graham.*

16826. **MALENOTTI, ETTORE.** Osservazioni sui rapporti fra Diaspis pentagona Targ. e Prospaltella berlesei How. [Relations between D. pentagona and P. berlesei.] *Atti Accad. Agric. Sci. e Lett. Verona Ser. 5* 9: 97-106; also in *Italia Agric.* 68(5): 289-293. 1931.—Although *P. berlesei* is a specific endoparasite of *D. pentagona*, it does little harm to the latter along roads traversed by speedy traffic, because the dust drives away the parasites. After these roads are paved, the ravages of *Prospaltella* immediately increase. In a trip of 250 km. through the Apennines, on all the mulberry trees infested with *D. pentagona*, *P. berlesei* was also found abundantly. No effort has been made to disseminate this endoparasite artificially, since it is probably diffused throughout Italy.—*E. Malenotti* (*transl. by P. Popenoe*).

16827. **MARCU, O.** Contribuţiuni la oecologia unor distrugători ai pădurilor Bucovinei. [Ecology of some forest insect pests of Bukowina.] [With German summary.] *Intâiul Congr. Nat. Naturalişt. România* 1: 327-336. 3 fig. 1928(1930).—Biological associations in bark beetles as described by Borce for *Ips typographus* and *Pityogenes chalcographus* are not the only ones in this family. Every conifer has various associations varying with the age and health of the tree. In sound trees such associations are found mostly at the top but descend as the top becomes damaged. In young fir, associations occur between *Cryphalus abietis* and *Pityogenes chalcographus* and between these and *Pityophthorus micrographus*. All these sp. occur in the tops of old pines. The lower bole regions are occupied by *Ips typographus* and *I. amitinus*. As the tree decreases in health *P. chalcographus* increases and descends, mixing with the *Ips* spp. The same sort of thing occurs in spruce, *Cryphalus picae*, *Pityokteines spinidens*, and *P. curvidens* occur, and the spp. characteristic of firs, *P. chalcographus* and *P. micrographus* (above), which occasionally occur also on spruces. The associations on *Pinus montana* are generally composed of *Pityogenes bidentatus* and *Pityophthorus glabratus*, and on *P. silvestris* of *Blastophagus piniperda*, *Pityogenes bidentatus*, *Ips naturalis*, *I. amitinus* and *I. acuminatus*. In Bukowina there is only 1 generation of *I. acuminatus* but 2 of *Xyloterus lineatus*. —*From author's summary* (*transl.*).

16828. **MOZNETTE, G. F.** Relative effects of bordeaux mixture and of hydrated lime on arsenical sprays in the control of the pecan leaf case-bearer. *Proc. Ann. Convention Assoc. So. Agric. Workers* [*U. S. A.*] 31: 421. 1930.—Abstract.

16829. **RAMALHO, ANTÓNIO GOMES.** Subsidios para a história das invasões do "burgo" em Portugal. (Publicação postuma.) [Note on the history of the invasions of the "burgo" in Portugal.] With a preface by **A. F. de SEABRA.** *Arquiv. Secção Biol. e Parasitol., Mus. Zool. Univ. Coimbra* 1(1): 27-47. 1929.—The insect known as "burgo" is *Tortrix viridana*, which mines the leaves of the "azinheira" [scarlet oak] and the cork oak. The natural enemies hitherto recorded are mentioned, including data on the utilization of entomophagous fungi, *Isaria densa*, *I. destructor*, and *Sporotrichum globuliferum*.

16830. **REX, EDGAR G.** Facts pertaining to the Japanese beetle. *State of New Jersey Dept. of Agric., Bur. Statistics and Inspection, Circ.* 180. 1-31. Map, 6 pl. (1 col.), 3 fig. 1930.—A review of the work on *Popillia japonica* in New Jersey, with map of distribution in 1929. Life history, natural and artificial control are considered.

16831. **SEABRA, A. F. de.** Sôbre a morte das "Tuias" do Parque das Pedras Salgadas e existência em Portugal de "Orsillus depressus" Muls. et Rev. [The death of arbor vitae in the Park of Pedras Salgadas, and the occurrence in Portugal of O. d.] *Arquiv. Secção Biol. e Parasitol., Mus. Zool. Univ. Coimbra* 1(3): 155-158. 2 pl. 1930.—*Orsillus depressus**, new to Portugal, is very destructive to *Thuja gigantea**.

16832. **WARZECHA, JAN.** Fauna rowków pułapkowych i ich użyteczność. [Fauna of traps and their usefulness.] [With German summary.] *Roczniki Nauk i Leśnych* (*Polish & Forest. Ann.*) 17(1/2): 56-114. 1 fig. 1927.—Insect traps in forests generally catch more useful than harmful insects. The traps should be examined daily, releasing the harmless insects and destroying the harmful ones.

16833. **WEDEKIND, E., und K. MÖBIUS.** Systematische Untersuchungen über Kontaktgifte zur Bekämpfung von Forstschädlingen I. *Mitteil. aus Forstwirtsch. u. Forstwiss.* 2(3): 520-528. 1931.—The effectiveness of mono-, di-, tri-, and tetrachlorbenzol as respiratory poisons on the meal-worm (*Tenebrio molitor*) was investigated. (Forest insect larvae were not available at the time the tests were made.) The first 3 killed the larvae in an average of 16.5, 21, and 34.6 hrs., respectively, but tetrachlorbenzol killed none of them in 120 hrs.—*W. N. Sparhawk.*

ECONOMIC ENTOMOLOGY

BIOLOGICAL CONTROL

H. S. SMITH, *Editor*

(See also in B. A. 6(5): Entries 12366, 13630, 13856, 13885, 13902, 13904, 14762, 14787, 14843, 14846; and in this issue 16581, 16790, 16801, 16802, 16826, 16829, 16989, 17702, 17705, 17786, 17799, 17800, 17809, 17822)

16834. **BLUNCK, HANS.** Über die Parasiten der Rohrglanzgrasgallmücke Mayetiola phalaris Barnes. *Zeitschr. Angewandte Ent.* 18(3): 582-589. 1931.—*Trichacis remutus*, *Polygnotus minutulus*, *Platygaster hiemalis*, *Phygadeuon* cf. *monodon*, *Semiotellus destructor*, *Meraporus graminicola*, *Entedon metallicus* and *Tetrastichus rileyi* are discussed.

16835. **BROWN, F. MARTIN.** Bacterial wilt disease. *Jour. Econ. Ent.* 23(1): 145-146. 1930.—*Staphylococcus flaccidifex* obtained from 7 spp. of lepidopterous larvae affected equally all lepidopterous larvae used. In the laboratory, using *Pyrameis huntera* and *Callosamia promethea*, the disease caused by this organism was highly successful both as to fatality and contagion, but under field conditions poor results were obtained.—*F. E. Whitehead.*

16836. **CARIÉ, PAUL.** La destruction des "Opuntia" à l'île Maurice. [Destruction of Opuntia in Mauritius.] *Rev. Hist. Nat. Pt. 1. B. Aquicult., Ent., Aquar. et Terrar.* 10(5): 174-176. 2 pl. 1929.—Experiments with the cochineal insect, *Dactylopius indicus*, are described.

16837. **CHATER, E. H.** A contribution to the study of

the natural control of gorse. *Bull. Ent. Res.* 22(2): 225-235. 1931.—At the request of the government of New Zealand, where the plant is a pest, a study of gorse (*Ulex europaeus*) has been made in England. It thrives on soils deficient in Ca. The annual cycle, methods of spread by adventitious rooting and seed dispersal, seed mortality, and insect damage are discussed. The greatest damage is done by *Apion ulicis*, which breeds in the flowers. The flowers are also attacked by *Depressaria costosa* and *Anarsia spartiella*, but the larvae of the latter migrate to the tips of young shoots, where they are parasitized by *Paralitomastix varicornis, Pimpla inquisitor, P. detrita, Microbracon stabilis*, and *Phaeogenes* sp. The pods are damaged by *Apion ulicis, Laspeyresia ulicitana* and *Coleophora albicosta*. *Apion scutellare* is found on *Ulex minor* and *U. gallii*. *Asphondylia ulicis* forms galls on the flower buds. Unsuccessful efforts have been made to introduce *Apion ulicis* into New Zealand.

16838. **CLARK, ARTHUR F. The parasite control of Gonipterus scutellatus Gyll.** *New Zealand Jour. Sci. and Technol.* 13(1): 22-28. 10 fig. 1931.—*Gonipterus scutellatus* is an Australian defoliator on *Eucalyptus globulus, E. viminalis, E. radiata, E. gunnii*, and *E. macarthuri*, and rarely on *E. linearis* and *E. amygdalina*. Its life history is described. *Anaphoidea nitens* parasitizes the eggs. Its egg*, larva*, pupa*, and adult* are described. *Cermatulus nasalis* final-instar larvae* and adults have been observed to feed upon the weevil larvae, although they also feed on *Eucalyptus* leaves.

16839. **FERRIÈRE, CH. Parasites de Perrisia pyri, Bouché (Dipt., Cecidom.).** *Bull. Ent. Res.* 17(4): 421-422. 1927.—The parasites of the pear midge, *Perrisia pyri*, in France, are: Scelionidae—*Isostemma boscii*, and *Misocyclops marchali;* Chalcidoidea—*Torymus abbreviatus, Eurytoma aciculata, Tetrastichus brevicornis* and *Entedon* sp.; and possibly Diapriidae—*Trichopria* (*Planopria*) sp. The 3 first named are most important.

16840. **GROSSMAN, EDGAR F. Insect enemies of the cotton boll weevil.** *Florida Ent.* 15(1): 8-10. 1931.—Records of percentage of parasitism of the boll weevil, *Anthonomus grandis*, in Florida, Georgia, and Alabama in 1927 and 1930.

16841. **IMMS, A. D. Remarks on the problem of the biological control of noxious weeds.** *Trans. 4th Internat. Congr. Ent., Ithaca* 1928. 2: 10-17. 1929.—The general principles upon which the biological control of noxious weeds is based are discussed. The precautions necessary in selecting suitable types of insects for plant control, and in introducing them into other lands, are stressed. The bearing of the host-selection principle also finds place in this discussion. The scheme of control of blackberry (*Rubus fruticosus*), ragwort (*Senecio jacobaea*) and gorse or furze (*Ulex europaeus*) in New Zealand is described. Reference is made to work carried out on this problem in connection with insect enemies of the above plants at the Rothamsted Experimental Station, and a short account given of methods adopted in shipping living insects to New Zealand.—*A. D. Imms.*

16842. **JAZYKOV, AL. A. Parasites and hyperparasites of the egg-pods of injurious locusts (Acridodea) of Turkestan.** *Bull. Ent. Res.* 22(3): 385-391. 1931.—*Epicauta erythrocephala* (Meloidae) parasitizes the egg-capsules of *Calliptamus italicus, Locusta migratoria*, and occasionally *Schistocerca gregaria;* its life history is sketched. The pseudopupa resting stage can be repeated during an individual development 2 or 3 times. A diapause, lasting many yrs., of some of the pseudopupae of each brood was regularly noticed. *Mylabris frolovi* (Meloidae) parasitizes the eggs of *Dociostaurus maroccanus, D. kraussi, Calliptamus italicus*, and *C. turanicus*. *M. deserta* is distinct: it parasitizes *Dociostaurus maroccanus, D. kraussi*, and *Ramburiella turcomana;* *M. tekkensis* parasitizes the eggs of *D. maroccanus;* *M. scabiosae scabiosae* the eggs of *D. maroccanus, D. kraussi, D. crucigerus tartarus*, and *R. turcomana;* *M. 4-punctata* the eggs of *Cal. italicus;* *M. biguttata* the eggs of *R. turcomana;* *M. atrata* is distinct, but its host is unknown. *Trichodes* larvae (Cleridae) were found in eggs of *R. turcomana, D. kraussi*, and *D. maraccanus*. *Callistoma desertorum* (Bombyliidae) is a valuable parasite of *D. maroccanus, Calliptamus turanicus*, etc.; *Cytherea setosa* parasitizes the eggs of *Calliptamus italicus;* *Anastoechus nitidulus* the eggs of *Cal. italicus*, and *C. turanicus;* *A. baigakumensis* the eggs of *Locusta migratoria;* *Hemipenthes* (*Thyridanthrax*) **pallidipennis** Paramonov (in litt.) (p. 390), undescribed, Tashkent, parasitizes eggs of *D. maroccanus;* *Anthrax oophagus* Paramonov (in. litt.) (p. 390), undescribed, (will be described in a forthcoming paper by Paramonov), data on life history, parasitizes the eggs of *Dociostaurus maroccanus, D. kraussi, D. crucigerus tartarus, Ramburiella turcomana*, and *Calliptamus turanicus*, and may become hyperparasitic on *Callistoma* [*d.*] and *Mylabris biguttata*, inhabiting the egg pods; *A. monachus* attacks the egg pods of *R. turcomana* and hyperparasitizes *Mylabris s. scabiosae* in the pods; *A.* **jazykovi** Paramonov (in litt.) (p. 390), undescribed, is close to *A. zonabriphagus* and parasitic on the prepupae of *Epicauta erythrocephala* in the Zeravshan Valley; data on life history. *Oophagomyia plotnikovi* (Tachinidae) is rare in the egg pods of *Schistocerca gregaria* and *Locusta migratoria;* *Stomatorhina lunata* is parasitic in eggs of *S. gregaria*. *Scelio nikolskyi* (Hymenoptera) attacks eggs of *Locusta migratoria*. Its true type locality is Maidan-tal district, Tashkent Prov., and not Perovsk.

16843. **MUIR, F. The critical point of parasitism and the law of Malthus.** *Bull. Ent. Res.* 22(2): 249-251. 1931.—The "critical point of parasitism" is defined as the point when the parasite can exist but can produce no further effect upon the host population. Various cases of parasite introduction and effect upon the hosts in Hawaii are discussed. The use of overlapping death factors is defended.

16844. **RILEY, WILLIAM A. Erasmus Darwin and the biologic control of insects.** *Science* 73(1896): 475-476. 1931.—Historical note on Erasmus Darwin as a forerunner of modern economic entomologists in use of insecticides and biological control.

16845. **SCARAMUZZA, L. C. Preliminary report on a study of the biology of Lixophaga diatraea Tns.** *Proc. Ann. Conf. Asoc. Tecn. Azucareros Cuba* 4: 59-63. 1930.—This Tachinid is the most important larval parasite of the sugar cane moth borer, *Diatraea saccharalis* Fbr., in Cuba. Parasitism reaches 40% during spring and summer. The flies are larviparous, and borer larvae can be inoculated by dissecting gravid ♀♀ and placing maggots on the host. There are 3 larval stages, of which part of the 1st and 2nd are attached to the trachea of the host while the 3rd is always free within the host body. 6-7 days are required for the pre-larvaposition period, 5.5-13 days in the larval stages, and 9-11 days in the pupal stage.—*Author's abstract.*

16846. **SITOWSKI, LUDWIK. O pasorzytach barczatki (Dendrolimus pini L.) i mniszki (Lymantria monacha L.). [The parasites of D. pini and L. monacha.]** [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. and Forest. Ann.)* 19(1): 1-12. 1928.

16847. **STEINER, PAUL. Zur Kenntnis der Parasiten des Kiefernspanners.** *Zeitschr. Angewandte Ent.* 17(3): 601-630. 7 fig. 1931.—*Trichogramma evanescens* Wests. and *Telenomus* sp. were obtained as egg parasites, and are favored by mixed forests. The ratios of egg parasitism in pure stands of pine, in stands of pine with an undergrowth of fir, and in mixed forests were 17, 66: 37, 62: 49, 2. Parasites of the larvae or pupae of the pine moth of practical significance are the ichneumonids, *Anomalon biguttatum* Grav., *Ichneumon nigritarius* Grav., *Heteropelma calcator* Westm. and *I. locutor* Thunb., and the tachinids, *Lydella nigripes* Fall. and *Carcelia rutilla* B.B. The total number of reared ichneumonids and tachinids were in the ratio of 1043:1871. Before the climax of the outbreak the ichneumonids were most strongly represented, after its culmination the tachinids. *I. nigritarius* develops only one generation annually in Mecklenburg and passes directly from one generation of the pine

moth to the other. Rearings at the beginning of the outbreak in 1928 exhibited a parasitism of 27% of the pupae, of 41.94% at the peak of the infestation in 1929, and 62.635% during its decline in 1930. Fungous and bacterial diseases were also potent factors regulating the population of the pest. Unparasitised pupae show a higher mortality, on account of disease, than parasitised pupae. Mortality in the unparasitised pupae and in those that contained ichneumonids is higher than the average, but among those parasitised by tachinids it is less. Supernumerary parasitism results in a contest which is won by the species having the fastest rate of development. *I. nigritarius* is not affected by the concurrence of other species. Tachinids are at a disadvantage as compared with *I. nigritarius*, but at an advantage as compared with the late emerging *H. calcator* and *A. biguttatum*. The latter suffer most seriously from superparasitism. Neither the parasites of the eggs nor of the larvae were threatened by a single application of poison in a year. Present knowledge does not furnish ground for stopping the spraying for the preservation of the parasites. The methods practised today in the study of pine moth parasites are explained.—*Author's summary (transl. by W. V. Balduf)*.

16848. **STRUBLE, GEORGE R. The biology of certain coleoptera associated with bark beetles in western yellow pine.** *Univ. California Publ. Ent.* 5(6): 105-134. 6 fig. 1930.—Life-histories are presented of 4 spp. of beetles in an attempt to find their value as a control for *Dendroctonus brevicomis* Lec. Full descriptions with figs., of egg, larva, pupa, and adult of each sp. are given. *Platysoma punctigerum* Lec. (Histeridae) overwinters as adult. Eggs are laid in May in small groups. Larvae are voracious predators; they mature in 4-6 weeks. This species has some slight value as check on *D. brevicomis*. *Plegaderus nitidus* Horn (Histeridae) overwinters as larva and adult. Eggs are laid in May and June; pupation occurs in September; overwintering larvae mature in July. It may prove valuable in control. *Hypophloeus substriatus* Lec. (Tenebrionidae) overwinters as larva and adult. Eggs laid in small groups in bark beetle burrows in June hatch in 10 days, pupate 10 days, adults emerge in September. Overwintering larvae develop in August. This is of little value in control because it feeds almost entirely on fungi. *Nudobius pugetanus* Csy. (Staphylinidae) overwinters as larva and adult. Eggs laid in June singly, larvae develop rapidly, pupate in August, adults appear in September. Overwintering larvae develop in late June. It is not valuable in control.—*J. C. Pallister*.

16849. **THORPE, W. H. The natural control of Hyponomeuta padellus L.** *Proc. Ent. Soc. London* 5: 28-30. 1930.—Nine spp. of Hymenopterous parasites and hyperparasites are recorded as attacking *H. padella*, L. (Lep.) in Sussex, England. The most important are *Herpestomus brunnicornis* Grav., *Angitia armillata* Grav., and *Ageniaspis fuscicollis* Dalm. Evidence is brought forward to show that these species are important in the control of moths of this genus.—*W. H. Thorpe*.

ANIMAL PRODUCTION

G. BOHSTEDT, *Editor*, General
M. A. JULL, *Associate Editor*, Poultry

(See also in this issue Entries 15163, 15251, 15256, 15260, 15264, 15265, 15267, 15269, 15270, 15271, 15272, 15275, 15278, 15279, 15280, 15282, 15289, 15303, 15654, 15728, 15759, 15784, 15801, 15811, 15823, 15919, 16429, 16445, 16911, 16986, 17066, 17341, 17352, 17354, 17388, 17392, 17393)

GENERAL

16850. **BOHSTEDT, G. The effect of mineral additions to practical swine rations.** *Amer. Soc. Animal Product. Rec. Proc. Ann. Meet.* 23: 222-225. 1930(1931).—Experiments involving 260 young brood sows showed that neither complex nor simple mineral mixtures had a beneficial effect when added to a good practical brood sow ration. The young sows were fed from about weaning time to the time that they farrowed their first litters; each experiment, therefore, covered about one year. The basal ration consisted of corn, oats, wheat middlings, tankage, linseed meal, and ordinary flake salt, with alfalfa pasture in the summer and alfalfa hay in the winter in addition. The minerals consisted of bone meal, or bone meal and potassium iodide, or ground limestone, or rock phosphate, or a mixture of bone meal, limestone, sulphur, potassium chloride, Glauber's salts, Epsom salts, copperas, and potassium iodide. None of the mineral additions when added to the basal ration which contained tankage and legume pasture or hay, caused any consistent improvement with respect to rate of gain, economy of gain, or vigor of offspring produced.—*G. Bohstedt*.

16851. **CAVALLI, ROBERTO. L'ingrassamento economico dei maiali. Prove pratiche eseguite con l'impiego di mangimi meno usati. [Practical experiments carried out with less common feeds.]** *Riv. Zootecnia [Firenze]* 8(7): 277-293. 1931.—The use of corn and bran is not the most economical for fattening hogs in regions where milk by-products are not available. Optimum results are obtained from ground manioc, barley bran, coarse rice flour, meat meal, etc. Animals on these feeds gain 0.84-0.95 kgm. per day, and gain more cheaply, while the traditional feeds of corn and bran produce an increase of only 0.75 kgm. per day.—*Author's conclusions (transl.)*.

16852. **CLAUSEN, HJALMAR. Beitrag zur Frage des Eiweissoptimums bei Mastschweinen.** *Züchtungskunde* 6(8): 289-304. 1931.—For the development period of 30-90 kgm. the average daily optimum of digestible protein is 250-275 gm. Increasing the daily protein up to this amount causes (1) a greater daily increase in wt., (2) lower food requirement per kgm. added, and (3) less fat but more meat. Only grain and skim-milk were fed; if skim-milk is replaced by blood meal, the latter is as good as skim-milk, but the hogs consume less.—*From author's summary (transl.)*.

16853. **DASSAT, PIERO, e FURIO CANNAVO. Frodi e inganni nel commercio dei bovini. [Frauds and deceptions in the cattle business.]** *Riv. Zootecnia [Firenze]* 8(8): 320-335. 5 fig. 1931.—Methods are described of changing the physical appearance of cattle in order to deceive concerning their condition, age, etc.

16854. **DUMITRESCU, N. A. Cercetari asupra valorii nutritive a porumbului vechiu. [Nutritive value of maize for swine.]** *Ministerul Agriculturii si Domeniilor [Bucarest]* 4/5: 1-512. 12 fig. 1929(1930).—It is not only the spoiled fresh maize that produces serious disturbances given as the sole food of swine, but also unspoiled old maize of good quality. Although it contains a considerable quantity of all the food principles which have been considered as sufficient for sustaining animal life, maize is not a complete food because its proteins lack tryptophane and contain but little glycocoll, cystine and lysine, and also because of its deficiency in vitamins and vitasterols, proof of which is found in the manifestation of certain maladies, such as paralysis of the legs, analogous to rachitic phenomena; cutaneous eruptions very similar to those of pellagra; and xerophthalmic phenomena, produced by the lack of certain vitamins and vitasterols in the food (vitasterol E, vitamine P (?) and vitamine A). Swine fed exclusively on cornmeal mush show the pathologic phenomena in much accentuated form and suffer much more than animals fed on the raw maize grain. This proves that the seed coat

of maize, partly eliminated in sifting the meal, contains traces of amino acids, vitamins and vitasterols; hence the whole grain and the unsifted meal are more nourishing than the sifted cornmeal. After a while the blood of the pig fed exclusively on maize or on cornmeal mush forms zeinolithic ferments for the defense of the organism against the maize protein (zein). Zein penetrates into the blood without undergoing digestion by the gastric juice, particularly following the frequent gastro-intestinal disturbances occurring in swine fed exclusively on cornmeal mush. Neither the wheat grain nor the bread given to swine, instead of the maize grains and cornmeal mush on which they had fed for 84 days sufficed to restore them to health or to prolong their life greatly.—*Author's conclusions (transl. by W. E. Joseph).*

16855. DU TOIT, P. J. The value of phosphorus in the cattle industry of South Africa. *S. African Jour. Sci.* 26: 373-385. 1929.—South African soils and pastures are particularly deficient in phosphorus. This is evidenced by stunting of cattle grazing on the veld, low milk yields, infrequent calving, and the prevalence of lamsiekte. Theiler showed this disease could be prevented by feeding bone meal. Experiments were begun at Armoedsvlakte in 1925 in which purebred bulls of the Friesland, Redpoll, Sussex, and Africander breeds were mated with 200 scrub cows to determine whether high class stock could be maintained on the veld or whether they would revert to stunted or scrub stock. Two-thirds of the cows were fed 5 oz. bone meal per head 6 days a week, the other third serving as controls. During 3 years, the bone meal group produced 87.3% of the possible number of calves compared to 56.5% for the control group. No significant differences between birth weights of calves of the 2 groups were found. The bone meal fed cows produced nearly 70% more milk than the controls. At weaning age of 9 months, calves from bone meal fed mothers weighed 14% more than the controls; at 2 yrs, with bone meal feeding of calves from bone meal mothers begun at weaning, the difference had reached 33%. Twenty bone meal fed oxen and 8 controls were slaughtered at 3 years of age. The controls weighed 62% as much and dressed weights were 46% compared with 50% for the bone meal group. The quality of the beef of the controls was poor, selling for a little more than half the price per pound of the bone meal fed animals. Bone meal feeding induced greater skeletal development, prevented craving for bones, and reduced the incidence of disease. Commercial dicalcium phosphate containing 43 per cent P_2O_5 (compared to 22 per cent in the bone meal) was found slightly more efficient and economical than bone meal.—*W. B. Nevens.*

16856. GIULIANI, R. Le barbabietole da zucchero nell'alimentazione del bestiame. [Sugar beet roots as feed for domestic animals.] *Riv. Zootecnia [Firenze]* 8(7): 301-304. 1931.—For fattening hogs sugar beets are better cooked than raw, but need protein supplements. Sugar beets may advantageously be added to the feed of oxen, fattening cattle, goats, and sheep. Oxen can consume 25 kgm. per day and fattening cattle as much as 30 kgm. Lactating goats and sheep derive a great benefit from sugar beets to which is added some concentrate.

16857. GIULIANI, R. L'alimentazione del cavallo da tiro. [Feeding of draft horses.] *Riv. Zootecnia [Firenze]* 8(8): 345-351. 1931.

16858. GRONOVER, A., und F. TÜRK. Untersuchung von Milch unter Berücksichtigung ihrer Lichtbrechung. *Zeitschr. Untersuch. Lebensmittel* 61(1): 85-94. 3 fig. 1931.—By means of the Zeiss refractometer the refraction of light in milk may be determined directly, without first removing the protein and fat. The attempt to use a short cut in detecting adulteration of milk with water by this method is based on the assumption that the dry matter content, which determines the degree of refraction, and the refraction are proportional within narrow limits. On the basis of a large number of tests made, it is evident that this assumption is not valid, and that the variations are so great that this method can not be used for practical deductions concerning the composition of milk.—*A. Gronover (transl. by A. H. Kuhlman).*

16859. HANNSSON, NILS. Einfluss der verschiedenen Bereitungsweisen auf die Verdaulichkeit und den Futterwert der Getreidearten. [With English summary.] *Biedermanns Zentralbl. Agrikulturchem. u. Rationn. Landwirtschaftsbetrieb Abt. B. Tierernähr.* 3(3): 243-274. 1931.—In tests, chiefly with fattening swine, mere crushing of the grains increased the utilization by about 5-6%. When the grains are ground into coarse groats, which have a content of fine meal (i.e., a meal able to pass a sieve with meshes of 1 mm.; for the rest, groats of normal coarseness are to contain only particles of a diameter smaller than 3 mm.) of about 45-50%, the effect increases about 10-12% of that of the whole grain; when the grains are ground into fine groats (85-95% fine meal), about 15-18%. These data on swine seem to hold good in the main also for horses, and to a certain extent also for fowls. So-called maize-flakes (Maisflocken), prepared by crushing, cooking, rolling and drying the maize-kernel, seem to have the same digestibility and the same feeding-value as finely ground maize. Soaking of whole, crushed, or ground grain did not increase digestibility nor feeding-value. Cooking the whole or ground grain increased its digestibility or utilization only slightly, and in no case at a rate corresponding to the cost of cooking. On the contrary, cooking greatly impaired the keeping quality of grain and groats. The fermentation of concentrates did not increase their digestibility, nor their efficiency. The so-called "Biovita"-method is considered worthless if the concentrates are used in well balanced rations. Young pigs often suffer intestinal troubles if shifted too quickly to a diet high in maize. Good results were obtained with 50% maize in the concentrates (later, almost 75%) with pigs averaging 20-45 kgm. If the maize was fed with an abundance of dairy by-products, no ill effects on the firmness of the lard were noted, even when the concentrates contained 75% maize. In general there is full agreement between the results of the digestion trials and of the practical feeding trials.—*From author's summary.*

16860. HILLS, J. L. A third of a century of feeding-stuff inspection. *Vermont Agric. Exp. Sta. Bull.* 324. 1-48. 10 fig. 1930.—In this publication the author pictures the status of feeding stuffs prior to the passage of the feed control law and compares it with the situation after the law had been in effect for a few years and with the present status of feeding stuffs. The results in terms of guaranty maintenance by present-day licensees over a period of several years are given in table form. The amount of feeding stuffs used in the state, in several of the counties, and the per farm usage covering the period from 1910 to 1925 are also given in table form. The relationship of the use of feeding stuffs to milk production is presented.—*H. W. Marston (courtesy Exp. Sta. Rec.).*

16861. HORLACHER, L. J. Factors involved in the fattening of show wethers. *Amer. Soc. Animal Product. Ann. Meet.* 23: 190-191. 1930(1931).—A comparison of breeds shows that Hampshire wethers make the most rapid gains, followed in order by grades, Southdowns, and Cheviots. Yearling wethers and wether lambs gain at the same rate. The smallest gains were made during the periods of highest temperature.—*L. J. Horlacher.*

16862. ISAACHSEN, HAAKON, und OLA ULVESLI. Die Kontrolle des Futterverbrauchs und der Gewichtszunahme bei Pferden (Östlands Pferden) im Alter von 1/2 Jahr bis zu etwa 3 Jahren. [Control of consumption of fodder and increase in weight with Östland horses from the age of 6 months to about 3 years.] [Translated from the Norwegian by EUGEN BASS and EUGEN BASS, Jr.] *Zeitschr. Gestütk. u. Pferdezucht* 26(2): 17-22. 1931.—(See also B. A. 5(10): 24336.)

16863. JOSEPH, W. E. Relation of size of grade fine wool ewes to their production. *Montana Agric. Exp. Sta. Bull.* 242. 1-15. 8 fig. 1931.—There was a progressive

increase in the weights of the average lamb crops as the weights of the ewes increased. There was an extreme spread of 21 lb. between the weight of the lamb crops from the lightest to the heaviest ewes. There was also a tendency for the heavier ewes to raise a larger percentage of twins and to raise pairs of twins that were heavier. The heavier ewes also produced heavier fleeces with a maximum spread of 1 lb. These tests were also conducted with 88 ewes out of the foundation ewes and sired by Rambouillet rams. Although these ewes averaged 20 lb. heavier than their dams, the relations between the weights of average lamb crops and weight of ewes was the same. Practically the same results were obtained in regard to twins and to wool production. The results show that culling the small ewes would not have eliminated any exceptional lamb producers and few were equal to the average. There were no indications that one weight class of ewes had any tendency to fail to produce a lamb crop more often than any other class. Preliminary results indicated that the size of a ewe was a more accurate measure of her ability to raise heavy lamb crops than was the lamb-producing ability of her dam. While size was not the sole criterion in selection, this work shows that it was the most accurate single measure for the selection of fine wool ewes.—*H. W. Marston (courtesy Exp. Sta. Rec.)*.

16864. **JUDKINS, HENRY F. The principles of dairying, testing and manufactures.** 2nd ed. rev. by RICHARD W. SMITH Jr. 322p. 85 fig. John Wiley & Sons: New York, 1931.

16865. **KLIESCH, J. Fütterungsversuche an Schweinen mit "P_3" (Chlorkalziumpräparat). Ein Beitrag zur Frage des Mineralstoffbedarfs der Schweine.** *Zeitschr. Züchtung B. Tierzücht. u. Züchtungsbiol.* 21(1): 194-200. 1931.—The investigation was conducted on pigs being rapidly fattened for market. The 5 experimental groups received the same basal ration to which different mineral salts were added. One group received no special mineral salt. The group that received the "P_3" (a $CaCl_2$ preparation), and the one that received pulverized chalk as the added mineral salt showed no difference in development. Apparently the swine on a correctly compounded fattening ration need no special mineral salts in addition. The group that received no additional mineral salts (although this may in part be due to the fact that the animals of this group were somewhat heavier at the beginning) and the group receiving "P_3" in combination with "Vigantol" developed the best. Whether the result was accidental could not be determined on the basis of one group. An earlier fattening experiment had shown with foods rich in vitamin D, that the enrichment of a normally compounded ration with vitamin D has no effect on the success of fattening in healthy swine.—*Author's summary (transl. by W. E. Joseph)*.

16866. **LARSSON, ARTUR R. Några iakttagelser från rävgården under parningstiden. [Fox farms at the mating season.]** *Svensk Veterinärtidskr.* 36(8/9): 279-283. 1931.

16867. **MONDOÑEDO, MARIANO, and FIDEL ALONTE. A comparative study of corn, cassava, sweet potatoes and pong-apong as feeds for swine.** *Philippine Agric.* 20(2): 113-119. 1931.—Cassava and sweet potato (camote) have about the same feeding value; pong-apong a somewhat lower feeding value. When compared to corn for feeding pigs, about 5 months of age or over in dry lot, 2.3 parts by weight of cassava or camote and 2.67 parts of pong-apong are equivalent to one part of corn.—*M. Manresa.*

16868. **MURO, EGIDIO de. Il nutria ed il sio allevamento. [Nutria and nutria-raising.]** *Riv. Zootecnia [Firenze]* 8(7): 293-300. 3 fig. 1931.

16869. **NEVENS, W. B. Feeding the dairy herd.** *Illinois Agric. Exp. Sta. Circ.* 372. 1-52. 15 fig. 1931.—A popular publication describing the feeding of various classes of dairy cattle. The characteristics of the ideal ration, the composition of feeds, calculating the relative economy of feeds, a simple method of balancing rations, some common problems in dairy feeding, and the feeding value and quality of individual feeds are also described. —*H. W. Marston (courtesy Exp. Sta. Rec.)*.

16870. **OTTEN, C. Die Ernährung und Aufzucht des rheinisch-deutschen Kaltblutfohlens. [Feeding and raising of Rhine-German Cold-blood colts.]** *Anleit. Deutsch. Ges. Züchtungsk.* 14. 1-20. 1931.—Feeds, care, and diseases are discussed.

16871. **PARISI, OTTAVIO. Esperimento di incrocio fra pecore gentili di Puglia e Garfagnine. [Crossing of sheep from Puglia and Garfagnana, Italy.]** *Riv. Zootec. [Firenze]* 7: 347-368. 8 fig. 1930.—Puglia sheep were unsatisfactory in low or damp areas. To produce satisfactorily they require mountain climate and high quality feeds. Attempts to acclimate them in lower levels resulted in diminished fecundity and reduced milk production which was not compensated by the increased wool production resulting. It was therefore considered impracticable to raise this breed pure in Garfagnana (part of Tuscany). Better results were obtained from the first generation crossbreds. Milk production was only slightly inferior to that of the Garfagnana sheep, while the wool was finer and its quantity was doubled. For meat production the crossbreds, although considerably smaller-framed than the Garfagnana breed, were generally fatter and there was no appreciable difference in weight. The good results obtained with the F_1 crossbreds (simple crossing) need to be checked in later generations. Especially is it indispensable to discover experimentally the method of crossing most advisable for adoption.—*Author's conclusions (transl. by E. N. Wentworth)*.

16872. **PATERSON, WILLIAM G. R. Cattle feeding. Swedes versus potatoes for beef production.** *Trans. Highland & Agric. Soc. Scotland* 43: 86-99. 1931.—Nine Blue-Grey (Shorthorn-Galloway cross) and nine Galloway bullocks with common ration of concentrates, hay and oat straw were fed in 3 groups receiving (1) 72 lb. swedes, (2) 36 lb. swedes, 16¼ lb. potatoes, (3) 32½ lb. potatoes. These amounts supplied equivalent weights of dry matter. Half the potatoes were Kerr's Pink and half Arran Chief variety; a third of total were chats. Blue-Greys were conditioned in 12 weeks; Galloways in 14 weeks. Average weekly live weight increase for Group (1) 12.4 lb. (2) 13.1 lb. (3) 13.6 lb. The percentage carcase weights to unfasted live weights were for Group (1) 57.8 (2) 58.1 (3) 58.9. The average for all the Blue-Greys was the same as for all the Galloways, 58.3. Examination of carcases showed little difference in quality of meat. From the expenditure and receipts it is calculated that 13/2d per ton was returned for swedes and 44/- for potatoes. Exclusive of moisture in roots the water consumption in gallons per head per day was, Group (1) 1.94, (2) 3.17, (3) 4.71.—*A. F. R. Nisbet.*

16873. **ROMANICKÝ, ALEX. Příspěvek k morfologii a biologii koně Przewalského (Equus przewalskii Polj.). [Morphology and biology of the Przewalski horse.]** *Zemědělský Archiv [Prague]* 21(3/4): 111-129. 6 fig. 1930.

16874. **SAITO, M. Some investigations on the freezing point of milk and its relation to the protein coagulation.** [In Japanese, with English summary.] *Bull. Miyazaki Coll. Agric. and Forestry* 3. 9-20. 1931.—Fresh Holstein milk has a freezing point of −0.530 to −0.585° C. (ave. −0.555); from Japanese breed, −0.530 to −0.575 (ave. −0.551). Milk having an acidity of more than 0.18% begins to show a depression of its freezing point below −0.555° C., the amount of the depression being approximately proportional to the acidity. When milk is coagulated by adding 0.92% of lactic acid by wt., the freezing point of the coagulated milk is lowered about 0.223° C. (ave.); lactic acid in water in the same concentration depresses the freezing point only 0.197° C. Rennet-coagulated milk tends to elevate its freezing point slightly (.0006° C.). Heating at 95-100° C. for 2 hrs. causes no appreciable change in freezing point.—*From author's summary.*

16875. **SCHARRER, K., und K. KÜRSCHNER. Ein neues, rasch durchführbares Verfahren zur Bestimmung**

der Rohfaser in Futtermitteln. [With English summary.] *Biedermanns Zentralbl. Agrikulturchem. u. Ration. Landwirtschaftsbetrieb Abt. B, Tierernähr.* 3(3): 302-310. 1931.—Three gm. of the feed (when homogeneous material is used only 1 gm., with corresponding reduction in reagents) are boiled in a reflux-condensor with 75 cc. acetic, 5 cc. conc. HNO_3 and 2 cc. trichloracetic acids. The material is filtered through a Gooch crucible, washed thoroughly with distilled H_2O, afterwards with alcohol and ether, dried at 100-110°, cooled in a desiccator, and weighed. Afterwards the crucible is heated in a muffle-furnace, with complete combustion of the organic substance. The loss of wt. between the 1st and the 2nd wt. represents the quantity of crude fiber.—*From authors' summary.*

16876. **SCHAUBE, GERHARD. Vergleichende Haaruntersuchungen am Kaninchenfell im Hinblick auf den Einfluss verschiedener Umweltfaktoren und unter besonderer Berücksichtigung der Pelzqualität.** *Wiss. Arch. Landw. Abt. B, Arch. Tierernähr. u. Tierzucht* 6 (2): 160-194. 13 fig. 1931.—To study the influence of external factors upon the hair covering, rabbits were kept under 4 different sets of environmental conditions. These different types of management appeared to have practically no influence upon the length and fineness of the downy underhair. The growth in length and diameter of the cover and guard hair was greater if the animals were kept outdoors than if they were kept in the warmer inside pens. Among the cover hair a positive correlation was found between length and diameter ($r = 0.3501 \pm 0.02925$). Among the underhair a low positive correlation was found between length and diameter ($r = 0.144 \pm 0.019$). The density of hair growth is definitely influenced by the environmental conditions; the differences in density (number of hairs per unit area) under the different environmental conditions varied up to 25%. No reciprocal relation seemed to exist between density of the underhair and fineness of the hair. Under identical feeding conditions the nutrition of the animals and the condition of the skin are influenced indirectly by the environment (e.g., temperature); this in turn greatly influences such fur qualities as resistance of the hair roots to pull, moulting, and so on. For the production of good fur qualities outdoor breeding appears to be best.—*Author's summary (transl. by W. Landauer).*

16877. **SCHMIDT, J., und H. VOGEL. Schnellmastversuche mit Jungbullen verschiedener Rassen. I. Gelbes Frankenvieh. [Rapid fattening of young bulls of different breeds. I. Yellow Frankish.]** *Züchtungsk.* 6(8): 309-319. 3 fig. 1931.

16878. **SHEALY, A. L. The value of grazing for fattening cattle in beef production.** *Proc. Ann. Convention Assoc. So. Agric. Workers [U. S. A.]* 31: 187-189. 1930.

16879. **SMITH, G. ENNIS. Seasonal nutritional requirements of silver foxes.** *Amer. Fur Breeder* 4(3): 4-8. 1931.

16880. **STAHL, W., A. SÖHNER, und F. BARTH. Pflanzliches Eiweiss in der Kartoffelschnellmast bei Schweinen.** *Zeitschr. Schweinezucht* 38(34): 591-597. 1931.—Sows with pigs when grazing and given a supplementary ration of 85% ground grain and 15% oil cake mixture gave the same amount of milk as when animal proteins were used. However, young pigs fed on a mixture of oil cakes did not thrive so well as on animal protein. Experiments with peanut meal and sunflower meal cakes show that animals thus fed do not thrive so well as with oil cakes and 50 or 100 gm. of fish meal. The complete substitution of plant for animal proteins is thus not possible.—*Authors' summary (transl.).*

16881. **TAIBEL, ALULA. Alcune osservazioni intorno ai maiali dell'isola di Piscopi. [Hogs of the island of Piscopi.]** *Riv. Zootecnia [Firenze]* 8(8): 335-345. 5 fig. 1931.—The breed of hogs on this island is characterised by a greatly reduced size. This is only partly hereditary; when well fed they may become 3-5 times the normal size.

16882. **WINKLER, WILLIBALD. Butter.** [In: Österreichisches Lebensmittelbuch. Codex alimentarius Austriacus. 2nd ed. Heft 18/19.] P. 19-44. 1931.—Quality, analyses, and bacteriology are discussed.

16883. **ANONYMOUS. Bibliography on the biology of fleece.** 32 p. Imperial Bureau of Animal Genetics: Edinburgh, 1931. Price, 2s. 6d.

POULTRY

16884. **BECKER. Wird das Hühnerei mit dem stumpfen oder spitzen Ende voran geboren?** *Deutsche Tierärztl. Wochenschr.* 39(13): 199-200. 1931.—Eggs emerge from the cloaca with the blunter end first.

16885. **BROWN, E. T. Garden poultry keeping.** 256p. Hutchinson and Co., Ltd.: London, 1930. Pr. 6s.

16886. **CAMPBELL, H. W. Poisoning in chickens with whorled milkweed [Asclepias mexicana].** *Jour. Amer. Vet. Med. Assoc.* 32(1): 102-104. 1931.

16887. **CHLEBAROFF, G. S. The fertilization of hens' eggs.** *World's Poultry Congress* 4 (Sect. a): 6-11; résumé sect., 2. 1930.—After segregation of the cock from the hens, the last fertile egg is most frequently laid at the end of the 2nd week, more rarely in the course of the 3rd week, and not later than the 19th day. The 1st egg fertilized by any one cock is laid on the 2nd day, irrespective of whether the last mating took place in the morning or evening. The number of eggs fertilized at one mating varies greatly, and depends on the intensity with which the hens are laying and on the sexual vigor of the cock. In the present tests the number was up to 8 eggs.—*Author's conclusions.*

16888. **CRESPO, RAMÓN J. Gallinas y gallineros. [Poultry and poultry culture], curso completo de avicultura adaptado al programa oficial publicado por el Ministerio de Fomento para la obtención del Título de Avicultor, previo examen ante los Tribunales competentes.** Libro 3. 406p. Illus. Ramon J. Crespo: Madrid, 1930.

16889. **FAWKES, A. K. Review of some breeding experiments carried out at the U. P. poultry association's demonstration farm, Lucknow.** *Madras Agric. Jour.* 19 (1): 2-6. 1931.—These experiments were carried on to produce a breed of egg-producing fowl more tolerant of the Indian climate. One of the most successful crosses was between pure Busra hens and a white Leghorn ♂. Egg production and size of egg were remarkable, and broodiness was almost eliminated.

16890. **FRONDA, F. M., and GAUDENCIO B. CRUZ. Preliminary studies on the possibilities of "green duck" production.** *Philippine Agric.* 19(9): 591-600. 1931.—Green ducks when properly fed make most rapid gains the 1st-7th weeks; subsequently the gains gradually diminish so that maximum profits are secured when the birds are 7-8 weeks old. The ♂♂ are easily recognized as early as 3 days after hatching by a tiny knob-like projection at the cloaca; this method has been practiced by Philippine duck raisers, for many years.—*M. Manresa.*

16891. **FUNK, E. M. Growth and feed consumption of turkeys raised in confinement.** *U. S. Egg and Poultry Mag.* 36(8): 23-25. 1 fig. 1930.—Tabulated results show the feed consumed by months by 100 Bronze and 100 White Holland turkeys. Tables also show the relative efficiency of the 2 varieties to use feed for growth and also the effect of age upon this efficiency. The most efficient gains are made during early life.

16892. **FUNK, E. M., and P. H. MARGOLF. Feed consumption and costs in raising turkeys.** *Pennsylvania Agric. Exp. Sta. Bull.* 250. 11p. 3 fig. 1930.—134 Poults of the Bronze and White Holland varieties were fed for 24 weeks. The poults were hatched in an incubator operated much the same as in hatching chicks, and were brooded in a long continuous house. Until 20 weeks of age they were fed by the all-mash method on a ration composed of yellow corn meal, wheat bran, wheat flour middlings, alfalfa leaf meal, dried buttermilk, fish meal, meat scrap, steamed bone meal, salt, and cod-liver oil. Water and liquid buttermilk were before the poults at all times until the 19th week, when condensed buttermilk

was substituted for the liquid. At 8 weeks of age ground oats was added to the mash, and at the 17th week 5 lb. of corn meal was substituted for a like amount of dried buttermilk. At 20 weeks equal parts of corn and wheat were fed in the mash hoppers. Green feed was before the birds at all times. The poults were confined until 18 weeks of age, when they were turned on range to minimize feather picking. Each poult was wing banded and weighed individually every 2 weeks to 16 weeks of age and then every 4 weeks. At the end of the test the live weight, blood and feather weight, and full-drawn weight of each turkey were determined. A growth faster than any previously reported was obtained in this study. The mash and grain consumption per bird for 24 weeks was 58.05 and 56.12 lb. for the Bronze and White Holland varieties, respectively, and the cost per pound of gain 14.7 and 15.3 cents respectively. The feed required to produce a pound of gain increased from 2.56 to 7.71 lbs. as the poults matured. A protein level of about 20% was maintained until the 18th week, and then decreased to 14.8% at 24 weeks. The mortality rate was less than 7%. Under the confinement system excellent market birds were produced. The blood and feather dressing loss for ♂♂ was 9.5%, for ♀♀ 10.4%; the total shrinkage based on full-drawn weight was 24.2% for ♂♂, 24.7 for ♀♀. The differences were due to size, not to sex.—*H. W. Marston (courtesy Exp. Sta. Rec.)*.

16893. HAYNES, JOE R. Determination of the rate of growth of Cantonese capons. *Philippine Agric.* 19(4): 243-252. 1930.—Capons showed no advantage in weight over roosters until 8 weeks after the operation. From then on the capons consistently showed a decided advantage in weight. To maintain their larger bodies the capons consumed slightly more feed but the difference was not great. Thus for every kgm. of weight the capons needed 12.30 kgm. of feed, and the roosters 12.23 kgm. The most economical gains among capons were secured at about 5 months after the operation.—*M. Manresa.*

16894. HUTT, F. B., and A. M. PILKEY. Studies in embryonic mortality in the fowl. 4. Comparative mortality rates in eggs laid at different periods of the day. *Bull. Alabama Polytech. Inst.* 25(1): 32-34. 1930. —Abstract.

16895. LEWER, R., and O. COMYNS LEWER. "The feathered world" year book for 1930. 592p. Illus. The Feathered World: London, 1930. Pr. $4.

16896. STEGGERDA, MORRIS. The relation of domestic fowls to climate. *Ecology* 10(3): 337-342. 2 fig. 1929.—It is assumed that *Gallus bankiva* is one of the ancestors of domestic poultry. The breeding season of these birds is during the dry season. This suggests a reason for the necessity of hot and dry brooder coops for chick raising. The U. S. A. census report shows that the Petaluma district of California, with the densest chicken population per farm, has a spring and summer climate most like that of the area of the original jungle fowls during the breeding season.—*M. Steggerda.*

16897. THOMPSON, WILLARD C. Limiting factors in modern poultry culture. The economic significance of variations in weights of eggs laid by individual hens in poultry flocks. *U. S. Egg and Poultry Mag.* 36(8): [46]-[58]. 1930.—Data given in 9 tables show that individual hens vary markedly as to the number or percentage of first, medium, and small eggs which they may produce during their first or pullet yr. No significant or useful correlation exists between the total number of eggs which a hen lays during the yr. and the number or percentage of firsts, mediums, or small eggs. The poultry breeder cannot use the total pullet year production record as indicative of any certain distribution as to weight or size. Egg size or weight is apparently a separate factor and probably behaves as such in inheritance, and therefore selection for this factor must be added to those which the poultry breeder must bear in mind when selecting breeding stock, if he would seek any certain condition as to egg weight or size in subsequent flocks.—*From author's conclusions.*

16898. VOITELLIER, CH. Possibilities with regard to introducing various kinds of periodical testing of egg production in place of permanent testing. *Eggs [London]* 23(12): 173. 1930.—An address. (See also B. A. 6(2): Entry 4799.)

16899. WEINMILLER, LOTHAR. Aufzucht und Ernährung der Hühner. [Raising and feeding of chickens.] *Anleit. Deutsch. Ges. Züchtungsk. Heft* 8. 1-16. 10 fig. 1930.

AGRONOMY

CARLETON R. BALL, *Editor*
M. A. McCALL, *Associate Editor*, Crops
R. B. DEEMER, *Associate Editor*, Soils

(See also in this issue Entries 15161, 15163, 15184, 15187, 15188, 15202, 15205, 15206, 15213, 15214, 15221, 15222, 15224, 15226, 15229, 15231, 15232, 15233, 15237, 15239, 15244, 15382, 15452, 15457, 15466, 15478, 15480, 15508, 15513, 15549, 15571, 15578, 15594, 15597, 15602, 15603, 15613, 15629, 15633, 15638, 15722, 16736, 16744, 16801, 16806, 16837, 16841, 16991, 17003, 17006, 17024, 17066, 17154, 17247)

CROP SCIENCE (ARVICULTURE)

16900. ABESSADZE, G. [The new species of wheat, Triticum timopheevi Zhuk., and its distribution in Georgia.] [Text in Georgian; summaries in Russian and German.] *Bull. Inst. Exp. Agric. Georgia [Tiflis]* 1929 (2): 59-72. 1929.—Zhukovsky's diagnosis of the species is emended. The sp. is intermediate between emmer and *T. dicoccoides*, but closer to emmer as to growth form, number of grains produced, chromosome number, dimensions of the ear, nervation, and other characters. It is probably a hybrid, with *T. monococcum* as one of the probable parent forms. It must have originated in Georgia long ago, and has been in cultivation there a long time.

16901. ARRHENIUS, O. The optimum soil reaction of the sugar beet. *Indust. & Eng. Chem.* 20(2): 219. 1928.—Pot and field trials (southern Sweden) in which the yield of sugar beets was determined over a wide pH range, showed that the pH optimum is on the alkaline side. The range through which yields of over 90% of the maximum yield were obtained extended, in field trials, from about pH 6.5 to about 8.

16902. ASLANDER, ALFR. Natriumkloratets verkan på åkertistel och andra växter. (The effect of sodium chlorate upon Cirsium arvense (L.) Scop. and other plants.) [English summary.] *Nordisk Jordbrugsforsk.* 1. 1-21. 7 fig. 1931.—Chlorate attacks the epidermis or exodermis and works its way to the inner portion of the roots. In a dry soil the plants develop a corky epidermis and are more difficult to kill. Chlorate applied to the soil killed barley plants growing in daylight in less time than when growing in darkness. Green *Zea mays* plants were more affected by chlorates both in water cultures and in soil than albino seedlings. Of crop plants barley was most sensitive; oats, and especially peas and vetch were less injured. The toxic action is probably due to an oxidation process. Chlorate is decomposed to chloride; and the nascent oxygen given off destroys some sensitive part of the protoplasm. Probably the varying sensitivity towards chlorate shown by various organisms depends on differences in ability to decompose chlorate. Fungi and bacteria can endure a 1% solution of sodium chlorate, which kills higher plants in a few days.—*From author's summary.*

16903. ATWOOD, WALLACE W. The agricultural lands neighboring the east margin of thhe Pacific. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 2: 1623-1657. 7 maps. 1926(1928).—Statistics of production for various crops, and data on agricultural utilization of land in various countries along the Pacific Coast of the Americas are presented.

16904. AYYANGAR, G. N. RANGASWAMI, and K. KUNHI KRISHNAN NAMBIAR. Sorghum—studies in sowing depths. *Madras Agric. Jour.* 19(5): 205-209. 2 pl. 1931.—Seedings were made in pots. With increased depth of seeding there was a progressive decline in germination and in number of secondary roots, and a progressive increase in the length of the mesocotyl. The underground portion of the coleoptile also tended to be larger. Appreciable differences in length of mesocotyl and coleophyl were noticeable within strains.

16905. BEAR, FIRMAN E. The scientific use of nitrogen fertilizers. *Indust. & Eng. Chem.* 20(1): 65-70. 1928.—Climatic and soil conditions largely govern the type of nitrogenous fertilizer that is best adapted, a wide range of N fertilizers being now available to suit the needs of different soils and crops. In some cases N applied to grass or fruit trees increased drought resistance. The importance of applying N at certain stages of growth for different crops is emphasized. The possibility of extending the use of N to other crops and to many other countries of the world is discussed.—*F. L. Duley.*

16906. BENES, VLADIMIR. Působeni některých vlivů vnějších na zmenu variability obsazeni base pšeničného klaeu. [Influence of certain environmental conditions upon basal spikelet formation in winter wheat.] [German summary.] *Věstník Československ. Akad. Zem.* 6(6/7): 628-633. 1930.—This investigation on 13 winter wheat varieties showed that the % of sterile basal spikelets decreased with increase in plant size; this was true also of varietal lines but in different degrees. Application of Chile nitrate alone slightly increased the % sterile spikelets. Hilling, and irrigating the plants during the head-forming period with an average daily rainfall of 1.6 mm. seemed to have no influence.—*Author's summary (transl. by L. R. Waldron).*

16907. BERTHOLD, TH. Vergleichende morphologische und physiologische Untersuchungen an einigen Tabaksorten. 57p. 25 fig. Dissertation, Technische Hochschule München; Carl Gerber: München, 1929.—Leaf growth, depending upon a number of factors, shows its greatest intensity in the early stages and is not much affected by the time of transplanting. The lower leaves, at the middle period of their growth, have reached nearly their maximum size; the middle and upper leaves grow more uniformly. The final leaf size depends much upon the initial stages. The growth period of the leaves increases from below upwards with an increasing acceleration. The index of length/breadth varies relative to the stage of leaf growth and to the position of the leaves on the stem. The relatively broadest leaves are found on the lower portion of the stem. In general, plants of the cut-type tobaccos transpired less than the cigar-type tobaccos. No explanation is assigned. As absolute dependence of transpiration rate upon number of stomata could not be established; it was thought that width of openings and cuticular transpiration also affected the transpiration rate. Topping the plants and breaking side branches increased leaf area and extended the growth period, particularly with the upper leaves, but decreased the leaf quality. Topping, to be most efficient, should be done as late as possible and high on the plant. Sand cultures showed tobacco plants grow best on a weakly acid soil. Essential differences in nervation appeared in only a few varieties. Various methods of curing tobacco are discussed along with experimental results. The 8 variety groups studied are described in some detail.—*L. R. Waldron.*

16908. BEZRADECKI, SERGUJUSZ. Przyczynek do poznania niektórych ras jęczmienia nagiego. [Strains of Hordeum nudum.] [With English summary.] *Pam. Państw. Inst. Nauk. Gospod. Wiejskiego Puławach (Mém. Inst. Nation. Polonais Écon. Rur. Pulawy)* 11 (1): 28-38. 4 fig. 1930.—The 2 varieties studied, Pulawy and Chełm, belong to the group *falsum* form *B* Att. and are of Asiatic origin. Under Polish climatic conditions *H. nudum* contains a large % of albumin, is early, resistant to diseases and may prove valuable as a fodder plant. The 2 varieties show biometrically significant differences in several characters.

16909. BLEDSOE, R. P. Cotton fertilizers and cultural methods. *Georgia Agric. Exp. Sta. Bull.* 152. 37p. 8 fig. 1929.—At current prices a mixture of $NaNO_3$ and $(NH_4)_2SO_4$ proved to be the most economical source of N, followed by $(NH_4)_2SO_4$ alone, and $NaNO_3$ alone. As sole sources of N, organic materials were expensive. Calurea, leunasalpeter and urea are promising. The most profitable application of $NaNO_3$ was 167-233 lb. per A. In mixtures of cottonseed meal and $NaNO_3$, a ratio of 1 to 4 gave the highest yields but a ratio of 1 to 9 was most economical. "Top dressing cotton with $NaNO_3$ at squaring time gave much poorer results than top dressing at chopping time or applying all at planting time." Limestone was decidedly beneficial when used with $(NH_4)_2SO_4$. Acid phosphate was superior to rock phosphate. The yield from an acid phosphate, blood and muriate of potash mixture was increased by limestone but decreased by ferrous sulphate. The best rate for potash was 30 lb. on Cecil sandy clay. Top dressing cotton with potash appeared beneficial. Cultivation in excess of that needed to kill weeds did not increase the yield. "Best results were obtained from spacing cotton 8 inches apart. Delayed thinning decreased yields."—*H. A. Lunt.*

16910. BONAZZI, AUGUSTO. Relación entre la producción de la caña de azúcar y los terrenos en que ésta crece. [Relation between the production of sugar cane and the soils on which it grows.] *Rev. Agricult. Comer. y Trabajo.* 11(15): 19-23. 2 fig. 1930.—This, the 2nd contribution to the subject of soil-plant relationships in Cuba, shows a direct correlation between the soil Ca soluble in 0.72% HCl and the tonnage production of sugar cane. A study is made of the soil profiles in the valley of the Nipe river and of the production over a period of 7 yrs.—*A. Bonazzi.*

16911. BRDLÍK, VLADISLAV. (Editor.) Encyclopédie Tchécoslovaque: Vol. 3. Agriculture. xlvii + 882p. Illus. Bossard, 140 Boulevard Saint Germain: Paris; Orbis, 62, Fochová: Prague, 1928.—This volume comprises the following chapters, each an independent treatise: Production methods, organization and results of agricultural enterprises, p. 1-160, VLADISLAV BRDLÍK; Utilization of plants, p. 161-272, A. MATOUŠEK; Fruit growing and cultivation of vineyards, p. 273-301, H. FORT; Pastures and meadows, p. 302-317, OT. HORÁK; Diseases of plants and the phytopathological service, p. 318-326. F. STRAŇAK; Seed production, p. 327-357, A. KONEČNÝ; Agricultural research, p. 358-384, J. JELÍNEK; The Institute of Agricultural Administration, p. 385-398, F. BUČEK; Animal breeding, p. 399-455, F. BÍLEK and J. TUPÝ; Horse breeding, p. 456-493, F. BÍLEK; Cultivation of fish, p. 494-509, V. ŠUSTA; Beekeeping, p. 510-513, A. SCHÖNEFELD; Silk production, p. 514-516, A. SCHÖNEFELD; Agricultural industry, p. 517-577, V. VILIKOVSKY; Milk production, p. 567-598, OT. LAXA; Agricultural buildings, p. 599-608, TH. PETŘÍK; Agricultural cooperatives, p. 609-671, L. F. DVOŘÁK; Regional agricultural organizations, p. 672-680, A. PROKŮPEK; Public welfare in agriculture, p. 681-814, FR. KUBEC; Agrarian reform, p. 815-846, K. VIŠKOVSKY, and A. PAVEL; History of Czechoslovak agriculture, p. 847-862, J. KAZIMOUR; Women in Czechoslovak agriculture, p. 863-874, M. TUMLÍŘOVÁ; and Spiritual life of the Czechoslovak countryside, p. 875-882, A. MATULA. The text is accompanied by numerous statistical data, and many illustrations, diagrams, maps and colored exhibits.—*V. Brdlík (transl. by J. G. Hlavac).*

16912. BRUNO, ALBERT. La toxicité de certaines

matières fertilizantes. Son utilisation agricole. *Sci. Agric.* 10(4): 281-284. 1929.—Certain fertilizers have a more or less permanent toxic effect in the soil. In the case of temporary toxicity it was possible to use this property to advantage because of the inhibiting action on weeds.—*F. L. Duley.*

16913. **BURLISON, W. L., and A. W. NOLAN.** Farm crop projects. 458p. 88 fig. Macmillan Co.: New York, 1930. Price $2.—An outline of methods for vocational agricultural teachers.

16914. **CHRISTIANSEN-WENIGER, F.** Die Pflanzenzüchtung in der Türkei. *Züchter* 1(8): 250-256. 6 fig. 1929.—Five experiment stations have been established in regions with contrasting climatic conditions. The selection of cereals, fodder plants, cotton, maize, sugar beets and potatoes adapted to particular sections is receiving attention.—*F. V. Owen.*

16915. **COOK, L. J.** Pasture work and management. *Bull. Dept. Agric. S. Australia* 242. 1-7. 1930.—General account, including fertilizing, seeding, etc.

16916. **COSTENOBLE, H. V.** Das Zuckerrohr (Saccharum officinarum Linnaeus) und seine Kultur. *Neues Handb. Trop. Agrik. Lief.* 33. 1-35. [date?]—A general discussion of the culture of sugar cane, including fertilizers and diseases.

16917. **COX, JOSEPH F.** Crop production and management. (The Wiley Farm Series.) 2nd ed. rev. xii+469p. John Wiley and Sons, Inc.: New York. Chapman and Hall, Ltd.: London, 1930. Pr. 13s. 6d.

16918. **DECOUX, L.** L'acidité du sol en rapport avec la betterave à sucre. *Ann. Gembloux* 35(5): 129-152. 1929.—The proportion of acid soil in Belgian beet districts is estimated at 60%. Investigations show a marked diminution of yield and sugar content of beets produced in acid soil. In Belgium the highest yields of beets are obtained in the Polders district, where the CaO content of the soil is highest. The opt. soil reaction for the sugar beet is pH 7-7.5. Liming is necessary in acid soil, otherwise it is to be avoided. Frequent analysis of beet lands is desirable to determine their need of lime.—*L. Decoux (transl. by H. B. Shaw).*

16919. **DECOUX, L.** Les causes de variation de la réaction du sol en relation avec la betterave à sucre. *Sucrerie Belge* 1929(16): 310-332. 1929.—The general causes of variation in soil reaction are: leaching of soil by rain, effects of vegetation, microbic activity, action of sulphuric acid, use of acid or acidifying fertilizers. The use of fertilizer containing lime does not eliminate the necessity for liming.—*L. Decoux (transl. by H. B. Shaw).*

16920. **DEFFNER, CARL.** Der Anbau der Esparsette im Lande Thüringen. Beiträge zur Kenntnis seiner Grundlagen, seines Rückganges und seiner natürlichen und wirtschaftlichen Grenzen. *Wiss. Arch. Landw. Abt. A: Pflanzenbau* 3(4): 595-646. 2 maps. 1930.—Sanfoin appears to have a greater lime requirement than alfalfa. It can be grown only on soils where the subsoil is not below pH 6.0. On light shallow limestone soils the crop may last for 6-8 yrs. or longer while on heavier soils the average is only 4 yrs. When it is brought from poor thin soil to heavy soil the highest yields are obtained after the 2nd yr. Rich soils seem not to be adapted to this crop and it requires some time to become accustomed to such an environment, after which good yields will be produced for about 3 yrs. Sanfoin on good soils does not respond to phosphoric acid but is benefited on poor soils. One of the chief reasons for the diminished production of sanfoin, aside from "sanfoin sickness" and perhaps over-fertilization, is the use of unadapted seed. The use of foreign seed and especially that from southern France has injured the cultivation of sanfoin in Thuringia. A sharp distinction must be made between: (a) its extensive cultivation where it is grown only on the poorer soils and is the only available fodder crop, producing a certain crop even under these unfavorable conditions; and (b) its intensive cultivation where it is grown on the best fields on productive soils as a valuable supplement to alfalfa, because of its value as a horse fodder and as a fat-increasing [milk] fodder for cows. It is desirable that natural selection should ensue within these 2 types of culture of which the former makes up about $\frac{2}{3}$ and the latter $\frac{1}{3}$ of the total acreage in Thuringia.—*C. Deffner (transl. by T. E. Odland).*

16921. **DUTKIEWICZ-MICZYŃSKA, BARBARA.** Rozróżnianie odmian pszenic n podstawie barwienia ziarna fenolem. [Possibility of differentiating varieties of wheat by staining with phenol.] [French summary.] *Roczniki Nauk Rolniczych I Leśnych* 23(1): 93-100. 1930.—According to the method used by Pfuhl 50 seeds of each variety were spread out in a petri dish moistened with 2 cc. of 1% solution of phenol and allowed to remain for 4 hr. After drying for 24 hr. the seeds were examined. One of the varieties exposed to phenol for 4 hr. did not change in color. The others colored more or less intensely, changing their normal pigment to yellow, bright brown, dark brown, and black. The colors were determined by the used of a color chart. Both winter and summer varieties were examined. 20 varieties were examined at 2 different times. Examination of the 2 lots of materials showed that the color of the seed induced by the action of phenol is characteristic of the variety and not dependent upon age or locality. Seed of all varieties of *Triticum vulgare* which were exposed to the action of phenol for a longer time were colored black, but the hard wheat (*T. durum*, variety Pulawy) colored only faintly after several days and never became black. Anatomical study showed that phenol colored only the testa and pericarp; the inside of the seed, including the nucellus, did not stain. Although this method of determining varieties of wheat doubtless has its limitations, it may help to fix the identity of varieties. —*Author's summary (transl. by M. T. Munn).*

16922. **ENLOW, C. R., and W. E. STOKES.** Lawns in Florida. *Florida Agric. Exp. Sta. Bull.* 209. 20p. 11 fig. 1929.—Supplemented by an article by J. R. WATSON and H. E. BRATLEY entitled The Chinch Bug on St. Augustine Grass, this paper presents general information on the most important species of lawn grasses, preparation of seed beds and renovation of old lawns, care of established lawns, and upon species especially suited for winter lawns.—*J. W. Wellington (courtesy Exp. Sta. Rec.).*

16923. **ERICSSON, GUST.** Kort redogörelse för jämförande försök med några rågsorter vid Sveriges Utsädesförenings filial på Holms säteri 1917-1930. [A report on yield trials of rye 1917-1930 at the Svalöf Branch Station in Holm.] *Sveriges Utsädesför. Tidskr.* 41(1): 58-66. 1931.

16924. **[EVKO, V. E.]** ЕВКО, В. Е. Опыты с удобрением табака на южном берегу Крыма за время 1911-1919 г. г. (Fertilizer experiments with tobacco on the southern coast of Crimea in 1911-1919.) [English summary.] Известия Государственного Института Табаковедения [*Bull. State Inst. Tobacco Invest.*] 55. 1-41. Portrait. 1929.—When 82 kg. of N as $NaNO_3$, 52 kg. of P_2O_5 as superphosphate, and 75 kg. of K_2O as the sulphate were applied, the mean yield increase was 86%. Of this increase 75% was due to the nitrogenous fertilizers and 10.5% to potash and superphosphate. The potash and superphosphate with the $NaNO_3$ were applied in spring, the remaining $NaNO_3$ in autumn. The autumn application of fertilizers has some advantages, but the triple combination applied in spring gave nearly the same results some years. When 18 tons of manure were added to the mineral fertilizers, applied as above, the mean increase in yield during 5 yr. was 30% for the P-K combination, 28% for the N-P combination, and lesser increases with other combinations. Manure as a fertilizer furnished chiefly N, less potash, and least phosphoric acid. When mineral fertilizers were applied in spring, manure applied previously in autumn showed less effect, but was again chiefly a source of N. With different quantities of manure applied alone, increase in yield paralleled increase in quantity of manure. The greatest mean yield increase from manure alone for the 5 yr. period was obtained from an application equivalent

to 540 kg. of N. This increase was 55% as against 75% from 82 kg. of N from $NaNO_3$, with P and K. With 41 kg. of N, as $NaNO_3$, 33% increase was obtained.—*From author's summary.*

16925. **FENTON, E. WYLLIE. A botanical study of pasture plots.** *Ann. Appl. Biol.* 17(3): 522-548. 1930.—Botanical analyses and estimates of total yields were made yearly during 1923-1927 of pasture mixtures in plots two yards square. There was a marked tendency to develop a flora of the same proportions in all plots. This change occurred in 3 stages; (1) the dominance of rye grasses and red clover, (2) increase of cocksfoot, timothy, wild white clover and fescues, (3) stabilization of the flora with dominance of cocksfoot and a steady proportion of perennial rye and wild white clover. In general the order of aggressiveness was: Italian rye, perennial rye, red clover, cocksfoot, wild white clover, bent and rough-stalked meadow grass, timothy, fall and meadow fescue.—*J. A. Bizzell.*

16926. **FORTI, CESARE. Tuberi e radici alimentari. La patata. [Tubers and edible roots. The potato.]** *Nuova Enciclop. Agrar. Italiana* Pt. 5. 1-119. 134 fig. 1929.

16927. **FRECKMANN. Die Kultur der Niederungsmoore.** In: *Neuzeitl. Moorkultur in Einzeldarstellungen (Verein Förderung Moorkult. Deutsch. Reiche)* Heft 3. 95p. 39 fig. Paul Parey: Berlin, 1930.—A general discussion of moor culture including soil preparation and fertilizers.

16928. **FRIEBE, PAUL. Der deutsche Frühkartoffelbau und seine Anbautechnik. [Early potato culture in Germany.]** 100p. 38 fig. Paul Parey: Berlin, 1931.

16929. **FUJIMOTO, S. Variation of home-grown rice in Formosa (Part 2).** [In Japanese.] *Formosan Agric. Rev.* 286. 777-785. 1 fig. 1930.

16930. **GARBARS, J. Vasaras kvieši. [Wheat varieties.]** *Lauksaimniecibas Menešraksts [Riga]* 1930(7): 436-444. [German summary p. 3-4, in back of issue.] 1930.—The Lettish wheat varieties Rubin, Janetzky and Extra Kolben are those most resembling the foreign kinds under trial. The period of vegetation available in Latvia for spring wheats is practically 110 days. In spite of their short vegetative period, the Canadian varieties Prelude, Garnet, Marquis and Reward are not adapted to the Lettish climate, lacking vigor and tending to lodge. This also applies to varieties from Italy and Jugoslavia. The local spring wheats consist mainly of a mixture of different botanical forms, those considered most valuable being white and brown awnless sorts. The harvest is made more difficult because of this mixture since the different kinds do not ripen at the same time. All local wheats have a low weight per 1000 kernels and the quality of grain is good, for the most part. Experiments have shown that under Lettish conditions a seeding rate of 250-300 kg. per ha. gives best results. The selection and breeding of wheats is being undertaken in conjunction with variety trial work. The objectives are (1) securing productive kinds, (2) shortening the vegetative period and (3) improving quality. The best spring wheats from the Stende station thus far are 216, 26, 28 and 3.—*L. R. Waldron.*

16931. **GASSER, E. The utilisation of refuse.** *Internat. Rev. Agric. Pt. 1 Mo. Bull. Agric. Sci. & Pract.* 21(1): 22-32. 5 fig. 1930.—Difficulties in utilisation of refuse lie in its bulk and in the variability of its composition. Green refuse, such as undecomposed straw, far from producing a beneficial or fertilizing action, may even have a definitely harmful effect. Fermentation produces the right degree of decomposition of the more resistant substances, disintegrates straw and other refuse, forming the complex humus on which a large part of the fertilizing capacity of a manure depends. This treatment of refuse also renders the fertilizing elements—N, P, K—assimilable. This form of manure may be superior to others in that, in addition to the direct action of its nutritive elements, it has an indirect action in favoring the assimilation of the nutritive elements already in the soil or applied as chemical fertilizer; moreover, it has a beneficial action on the physical, chemical and biological properties of the soil.—*From author's summary.*

16932. **GIBBS, L. Agriculture in the New Territory.** *Hong Kong Naturalist* 2(2): 132-134. 2 pl., 1 fig. 1931.—Notes, dealing particularly with rice culture.

16933. **GÓRSKI, M., i J. KROTOWICZÓWNA. Działanie obornika i nawozów mineralnych na plon machorki i zawartość nikotyny. [Effect of stable manures and mineral fertilizers on yield and nicotine content of Nicotiana rustica.]** [German summary.] *Roczniki Nauk Rolniczych i Leśnych [Poznań]* 24(1): 1-15. 1930.—Field experiments carried on for 3 yr. led to the following conclusions: *N. rustica* requires large amounts of nitrogenous fertilizers, hence it is advisable to apply well rotted stable manure in early winter. For heavy yields it is necessary to apply additional N. With a medium application of stable manure additional N is necessary but no K and P fertilizers are required. N fertilizers have a marked effect on the nicotine content of the leaves. During 3 yr. the nicotine content was much higher on plots receiving complete fertilizers than on plots without N. Lack of K also lowers the nicotine content but to a lesser degree. Lack of P however increased the nicotine content slightly.—*F. F. Halma.*

16934. **GVINERIA, J. [The cotton plant is influenced by the time of planting.]** [Text in Georgian; summaries in Russian and English.] *Bull. Inst. Exp. Agric. Georgia [Tiflis]* 1929(3): 85-95. 1929.—Experiments conducted in Georgia (U. S. S. R.) are reported.

16935. **HAFEKOST, GEORG. Über die Saugkraft der sich aus einem Rübenknäuel entwickelnden Pflanzen.** *Zuckerrübenbau* 13(1): 5-12. 2 fig. 1931.—The oldest flowers of a sugar beet cluster produce the heaviest seed irrespective of cross pollination. These are the first to germinate in sugar solution, and on further growth produce the heaviest plants and those possessing the greatest absorptive power. The seed within a cluster are not equal in "absorptive power" (functional capacity, or rapidity of development).—*Author's summary (transl. by M. N. Pope).*

16936. **HEINISCH, OTTOKAR. Beitrag zur Kenntnis der individuell gezüchteten Populationen.** *Züchter* 1(3): 86-91. 1929.—Evidence is given which indicates that the artificial mixture of barley varieties has some insurance value. Varieties may become very specialized. A certain variety may be superior to all others in an average season, but may be very sensitive during an exceptionally dry (or otherwise abnormal) season. By wisely selecting the right mixture of varieties one can avoid serious loss due to abnormal environmental conditions.—*F. V. Owen.*

16937. **HENNING, ERNST (transl. into German by F. von MEISSNER). Bestimmungstabellen für Gräser und Hülsenfrüchte im blütenlosen Zustande. [Keys to grasses and legumes based on vegetative characters.]** 40p. 7 pl. Julius Springer: Berlin, 1930. Pr. 2.80 M.

16938. **HOLLAND, C. A. Eradication of Californian thistle (Cirsium arvense).** *Tasmanian Jour. Agric.* 2(2): 51-53. 1931.—Experiments in applying sodium chlorate solution, 4 plots at the rate of 50 gal. per acre, demonstrated that after 3 weeks, the plots containing thistles 12 inches high, mature, in bud, or in full flower, showed shoots completely dried up and roots rotted to depth of 12 inches. A plot with only small suckers at the beginning of the experiment, had not been sufficiently damaged to arrest growth.

16939. **HONCAMP, F., Editor. Handbuch der Pflanzenernährung und Düngerlehre. Bd. II. Düngemittel und Düngung. Bearbeitet von E. BIEREI, H. BRENEK, R. DEMOLL, E. G. DOERELL, H. FISCHER, W. GLEISBERG, C. GRIMME, C. HERMANN, F. HONCAMP, W. JACOB, A. KILBINGER, P. KOENIG, P. KRISCHE, G. LEIMBACH, N. NICOLAISEN, O. NOLTE, S. PRAGER, E. H. REINAU, E. REINMUTH, H. RÖTGER, G. RUSCHMANN, CHR. SCHÄTZLEIN, J. SEBELIEN, B. TACKE, S. TAUSS, H. URBACH, W. WACHTEL, G. WICHERN, E. WIEDEMANN, A. WILHELMJ, und W. WÖHLBIER.** 919p. 285 fig. Julius Springer: Berlin, 1931.—This encyclopedia of plant nutrition and fer-

tilizers covers the following general subjects in great detail: Natural and artificial manures and fertilizers; uses of artificial manures; fertilizing of crop plants, forests, moor and heath, soils and ponds; and manures in relation to plant diseases and pests and to weeds.

16940. **IMAI, MICHI. Relation between the phosphatic requirement and the phosphatic content of soil for paddy rice.** *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 2: 1996-1998. 1926(1928).—Studies are briefly reported leading to the following conclusions: The ratio $Al_2O_3+Fe_2O_3$: P_2O_5 in a concentrated HCl extract of a soil may to a considerable extent indicate its phosphate requirement. The phosphate content of a 0.2 N hydrochloric acid extract also gives reliable information concerning phosphate needs. The latter is preferable to the former, because it is simpler in procedure and criteria seem to be more reliable.—*Author's conclusions.*

16941. **JURIĆ, STJEPAN. O utjecaju vremena na veličinu žetve ozime pšenic u Rumi. [Influence of the weather upon the yields of winter wheat in Ruma.]** [German summary.] *Gospod.-Sumarski Fakult. Sveučil. Kraljev. Jugoslavije u Zagrebu, Spomenica Fakult. Svjeta (Fac. Agron. et Forest. Univ. Roy. Yougoslave Zagreb, Mem. Cons. Fac.)* 1919-1929: 500-512. 1929.—Results with winter wheats grown in one locality are reported for the period 1914-1924. Weather conditions in June seem to be of outstanding importance. Low rainfall, much sunshine and high temp. make for high yields and good quality. June drouths ordinarily do not cause much damage.—*L. R. Waldron, from author's summary.*

16942. **KEEGAN, R. A method of describing wheat glumes.** *Sci. Agric.* 11(10): 702-703. 1 fig. 1931.—To overcome the difficulties of choosing the mean of the variety, the author selected 50 heads of each variety and diagrammed the average measurements each year. A comparison of the diagrams for several years shows the qualitative influence of seasonal conditions on glume characters.

16943. **KLINGE, LUDWIG. Luzerneanbau i. Baltikum. [Cultivation of lucerne in the Baltic region.]** 32p. W. Ehrenpreis: Tallinn, 1929.

16944. **KOCK, H. Ertragssteigerung im Zuckerrübenbau durch frühe Aussaat and spätere Ernte.** *Zuckerrübenbau* 12(5): 73-77. 1930.—Experimental results show that early seeding and delaying of harvest time raises the raw sugar yield (from beets) without increasing the cost of production.

16945. **KRÄNZLIN, G., und A. MARCUS. Baumwolle. [Cotton.]** (*Wohltmann-Bücher Bd.* 9.) 169p. 24 fig. Deutscher Auslandverlag Walter Bangert: Berlin-Charlottenburg und Leipzig, 1931.

16946. **LIEB, PERCY. Der Kalkphosphorsäurefaktor der gelben Lupine (Lupinus luteus) und seine Beziehungen zum Ertrag dieser Pflanze.** *Wissenschaftl. Arch. Landw. Abt. A. Pflanzenbau.* 3(1): 124-160. 1930.—The effect of the lime-phosphoric acid factor on the yellow lupin is not definite. The phosphoric acid and lime content of the plant is not influenced by the P of the soil as determined by Neubauer's method or by the lime soluble in HCl. Nor is the plant content of these elements affected appreciably by variations in the phosphates and lime applied to the soil. The ash content of the plant varies with the physical characteristics of the soil, together with the climatic conditions. Analyses of plants and the soil in which they are grown suggest no general conclusions, although in extreme cases some relationships may exist.—*From author's summary (transl. by O. Owen).*

16947. **LIEBER, und H. MÜLLER. Die Trocknung von Saat- und Körnermais. [Drying seed and grain corn.] Ergebnis mehrjähriger Untersuchungen im Auftrage des Reichsministeriums für Ernährung und Landwirtschaft, der Deutschen Landwirtschafts-Gesellschaft und des Reichskuratoriums für Technik der Landwirtschaft.** *Mitteil. Deutsch. Landw.-Ges.* 45(37): 777-779; (38): 806-808. 5 fig. 1930.—Temp. up to 50° C. may be used in drying maize for seed without lessening the germinating ability. In natural drying sheds the main factor is the vertical depth of the layer of corn, 0.7 m. appearing satisfactory.—*F. Foulds.*

16948. **LUNDEN, AKSEL P. Forsøk med tidligpoteter på forsøksgården Vollebekk og på endel spredte felter i årene 1922-27. [Field experiments with early potatoes during 1922-27.]** [With English summary.] *Meld. Norges Landbrukshøiskole* 10(3/4): 145-180. 1930.—The performance of varieties with respect to earliness, yield, tuber size, shape, weight and resistance to dry rot are given. The length of the growing period is considered secondary to yielding power and size. Seed potatoes of different size, but presumably of the same maturity, showed great differences. The number of stems and harvested tubers decreased with decreasing tuber weight, while the size of harvested tubers increased. The net yield is highest for the medium sets (50 gm.).

16949. **MARRO, MARCO, e ANTONIO SUCCI. Coltivazione dei cereali. [Cereal culture.]** (*Nuova Enciclopedia Agraria Italiana. Parte quinta.*) vii+744p. 309 fig. Unione Tip-Editrice Torinese: Torino, 1931.

16950. **MARTIN, J. P. Molokai cane importation project.** *Hawaiian Planters' Record* 35(1): 3-12. 12 fig. 1931.—Brief article on importation of sugar cane for breeding purposes, presenting methods, and equipment and facilities in use for quarantine against insects and diseases.

16951. **MEHARRY, CHARLES L., WILLIAM E. RIEGEL, EDMUND N. STAFFORD, LEWIS J. WITHROW, and JAMES W. CRUMBAKER. Twenty years with soybeans. Conclusions derived from experience on Meharry farms.** *Proc. Amer. Soybean Assoc.* 2: 58-91. 51 fig. 1928-1929(1930).—A general account covering varieties, inoculation, all phases of growing, harvesting and uses.

16952. **MOSSÉRI, VICTOR M. Revue sommaire des récents travaux sur le maintien et l'amélioration de la qualité des cotons égyptiens. [Brief survey of recent work on the maintenance and amelioration of the quality of Egyptian cotton.]** *L'Égypte Contemporaine* 17: 393-433. 1926.

16953. **NEWTON, R., and J. G. MALLOCH. Time of plowing brome grass sod in relation to the yield and quality of the succeeding wheat crop.** *Sci. Agric.* [*Ottawa*] 607-611. 1 fig. 1930.—The authors conclude from experimental work that for conditions such as obtain at Edmonton, Canada, it is advisable to plow brome sod in July or early in August, and follow with cultivation as needed to keep down green growth. As compared with later plowings this practice will ensure in an average year a more satisfactory control of the brome grass and both a better yield and better quality of wheat.

16954. **NILSSON, GEORG. Asplunds korn. [Asplund barley.]** *Sveriges Utsädesför. Tidskr.* 40(3): 150-153. 1930.—Report on trials with this variety in Sweden.—*G. Nilsson-Leissner.*

16955. **NILSSON-LEISSNER, GUNNAR. Betydelsen av rätt sortval av vallväxterna. [Importance of using adapted varieties of grasses and clovers.]** *Sveriges Utsädesför. Tidskr.* 41(2): 86-98. 1931.—Using the results of the last 10 yrs.' field trials from 9 localities in Sweden it is shown that the yield differences of commonly used varieties within several grass and clover species amount to 20-45%.—*G. Nilsson-Leissner.*

16956. **NIXON, E. L. The principles of potato production.** xxiv+25+123p. Illus. Orange Judd Publ. Co., Inc.: New York, 1931.

16957. **PAMMEL, L. H., and C. M. KING. A weed survey of Iowa.** *Jour. Amer. Soc. Agron.* 22(7): 587-594. 1930.—Certain weeds are characteristic of certain soils; *Euphorbia corollata,* of sandy soils; *Rumex acetosella* of acid soils. Certain weeds are found in particular crops: *Agrostemma githago, Saponaria vaccaria,* and *Bromus secalinus* in wheat; *Setaria glauca, S. viridis,* and *Polygonum pennsylvanicum* in corn; and *Radicula palustris* is abundant in wet seasons in oats. The most common weed of pastures is *Ambrosia artemisiifolia.* Solanum carolinense, migrant from the southwest, is common in

southern Iowa. The weed flora of 10 representative counties is listed.—*C. M. King.*

16958. **PARKER, KENNETH W., und ARTHUR W. SAMPSON, Growth and yield of certain Gramineae as influenced by reduction of photosynthetic tissue.** *Hilgardia* 5(10): 361-381. 8 fig. 1931.—*Bromus hordeaceus,* an annual exotic species grew more vigorously in water culture than *Stipa pulchra,* a perennial native species. A single harvesting resulted temporarily in cessation of root growth which was more pronounced in *S. pulchra* than in *B. hordeaceus.* Frequent harvesting at 15-day intervals over the period of 120 days proved more detrimental to *S. pulchra* than to *B. hordeaceus.* Both species when harvested at 15-day intervals produced much less dry material than when not harvested. In both species the smallest yields were procured when the herbage was removed at the time when the growth rate was at its maximum.—*From authors' summary.*

16959. **PERROT, ÉM. (préface de E. ROUME). Sur les productions végétales indigènes ou cultivées de l'Afrique occidentale Française (Sahara, Soudan nigérien, Haute-Volta, Guinée).** 468p. 2 maps, 23 pl. L. Declume: Lons-le-Saunier, 1929. Pr. 50 fr.—An official report on the vegetation, economic plants and agriculture of French West Africa, with a detailed discussion of cotton, gum arabic, shea butter, groundnut, kapok, cola, coffee, bananas, fibers, fats, tanins, drugs, perfumes, foodstuffs, spices, fodders, and fuels; and a critical summary of problems of development and outlook for these regions.—*E. E. Cheesman.*

16960. **POEL, J. Van der. Bemestingsproeven met tabak in 1928; benevens eenige beschouwingen omtrent groenbemesters. [Fertilizer experiments with tobacco in 1928 with some considerations on the effect of green manures.]** *Mededeel. Deli Proefstat. Medan-Sumatra Ser.* 2. 66: 1-45. 1930.—The quantity of (1) sulphate of ammonia, (2) double superphosphate and (3) sulphate of potash, which should be applied per plant (in planting 12,000 plants to an acre) was determined by field experiments. The best applications per plant were resp. 3-5 gm. of (1), 4-5 gm. of (2), and 1-2½ gm. of (3), depending on soil type. On some soils 18 gm. of Thomas slag, in addition to the superphosphate, was beneficial. Results were judged by length of leaves and market quality. *Mimosa invisa* and *Crotalaria anagyroïdes,* used as green manure before Deli tobacco, were sometimes beneficial. In other cases a very unfavorable effect resulted, especially from *Crotalaria,* when the tobacco was planted about 2 months after cutting and forking in the legumes. When the unfavorable effect occurs, it shows in a poor development in both nursery beds and field tobacco. The leaves, especially the lower ones, were shorter than on plants grown after a fallow with secondary jungle as is common practice in Deli. The quality of the cured leaves is little affected.—*Author's summary.*

16961. **PRINCE, A. L., and A. W. BLAIR. Soil and crop studies with ammonium sulfate.** *Soil Sci.* 29(4): 267-278. 3 pl. 1930.—Pot experiments were conducted on 3 types of soil using normal and excessive amounts of $(NH_4)_2SO_4$. Up to 1,800 lb. per acre on a heavy silt loam there was no injurious effect on barley or rape but a gradual increase in the crop yield and in the percentage of N in the dry matter. Nitrogen in barley was increased up to 3%; and in rape, up to 4%. On sassafras sand, increasing the $(NH_4)_2SO_4$ beyond 350 lb. per acre produced marked crop injury. One month after $(NH_4)_2SO_4$ was applied the pH had not changed more than 0.6 for the highest rate of application, either on loam or sand. After 10 months there was a change in pH of 1.3 for the highest rate of application on the loam soil. The changes in the sassafras sandy loam were not so great. There was a distinct correlation between the amount of "active" Al in the treated soils and their pH values. The formation of Al sulphate through base exchange reactions and the hydrolysis of this salt are thought to account for the decrease in pH of the soil.—*From authors' summary.*

16962. **REMY, TH. (with the cooperation of A. W. ULRICH). Handbuch des Kartoffelbaues. [Manual of potato culture.]** 2nd rev. and enlarged ed. 309p. 87 fig. Paul Parey: Berlin, 1928. Pr. 13 M.

16963. **REMY, TH., and H. HAASTERT. Saatzeitversuche.** *Landwirtsch. Jahrb.* 72(2): 175-207. 1930.—Experiments conducted in the Rhine province show that winter wheat, which is generally sown between the early part of October and the middle of February, yielded less when sown after December. Summer grains sown in March gave higher yields of better quality than the April sowing. This difference in yield was more pronounced with oats than with barley, late sown barley being less damaged by the Frit fly than oats. Beets planted during the first half of April gave the highest yield which gradually decreased as the planting time approached the middle of May. This decrease in yield was especially marked during yrs. with dry summer weather.—*I. Remy (transl. by F. F. Halma).*

16964. **SCHNEIDER, G., und U. STAFFELD. Ein Beitrag zur Klärung der Getreide-Umpflanzungsfrage. B. Versuche mit Wintergetreide auf dem Berliner Stadtgute Malchow.** *Deutsche Landw. Presse* 57(20): 272. 1 fig. 1930.—The studies have shown that yields were not increased by transplanting. The advantage of earliness of transplants is counterbalanced by climatic and soil factors unfavorable for the young transplants.—*O. E. Street.*

16965. **SIDÉN, JOHAN E. Svalöfs 01294. Ny sort mycket tidigt sexradskorn för Norrland, uppdragen vid Jämtlandsfilialen. [Svalöf 01294. New very early 6-rowed barley variety for northern Sweden, bred at the Svalöf Branch Station in Jämtland.]** *Sveriges Utsädesför. Tidskr.* 40(3): 143-149. 1930.—Report on trials with this new barley variety.—*G. Nilsson-Leissner.*

16966. **ŠOŠTARIĆ-PISAČIĆ, KARLO. Kvalitete naše pšenice. [Quality of Jugoslavian wheats.]** [German summary.] *Gospod.-Šumarski Fakult. Sveučil. Kraljev. Jugoslavije u Zagrebu, Spomenica Fakult. Savjeta (Fac. Agron. et Forest. Univ. Roy. Yougoslave Zagreb, Mem. Cons. Fac.)* 1919-1929: 513-531. 1929.—12 varieties and selections show desirable quality characters. The variety Serbian Prolific appeared to have the best quality and to be high yielding.—*L. R. Waldron.*

16967. **SPAFFORD, W. J. Subterranean clover. (Trifolium subterraneum.)** *Bull. Dept. Agric. S. Australia* 240. 1-16. 8 fig. 1930.—General account, including culture, handling, uses, pests, etc.

16968. **SPILLMAN, W. J. A new basis for fertilizer experiments.** *Science* 71(1831): 135-136. 1930.—Preliminary note.

16969. **SPRAGUE, HOWARD B. Some water relations of turf plants.** *National Greenkeeper* 5(3): 16-18, 20-28. Portrait. 1931.—The balance between rainfall and evaporation is most favorable for new seedings in the northeastern U. S. A. during the late summer and early fall. Artificial watering of turf is most needed from June to August, but closely cut grass suffers from lack of moisture sooner than grass cut at longer lengths, because of the correlation between height of cut and depth of root system. The effectiveness of increasing organic matter content as a means of improving the capacity of the soil for retention of water available to the plant is shown. The daily water requirement of the turf is estimated at 10-32 gallons per 1000 square ft., but other losses greatly increase the amount of water which must be supplied. Proper fertilization as a means of increasing utilization of soil moisture includes the use of phosphates to improve root development and the sparing use of soluble N fertilizers which stimulate top growth but not root development correspondingly. An abundance of soil moisture stimulates the development of tender foliage which is undesirable on turf for lawns and golf courses. Grass which receives barely enough moisture for slow continued growth is capable of enduring considerable trampling without serious injury.—*H. B. Sprague.*

16970. **STEVENS, O. A. North Dakota weeds.** *North Dakota Agric. Exp. Sta. Bull.* 243. 58p. 59 fig. 1930.—A 2nd revision of Bulletin 162 issued in 1922. The accounts of *Agropyron repens, Sonchus arvensis, Euphorbia esula* and

Convolvulus arvensis especially, have been revised. *Centaurea repens* is added to the list of chief weeds. Distribution maps of *E. esula, C. arvensis,* and *C. repens* are shown. New weeds or weeds of special interest, illustrated and discussed, are *Tragopogon pratensis, Solanum rostratum, Sophia parviflora* (*Sisymbrium sophia*), *Erucastrum pollichii, Lolium rigidum, Sisymbrium loeslii, Lepidium draba* and *Linaria vulgaris.*—*O. A. Stevens.*

16971. **STEVENS, O. A. Impurities of North Dakota Bromus inermis seed.** *North Dakota Agric. Exp. Sta. Bull.* 247. 16p. 5 fig. 1931.—General conditions in North Dakota which is considered the center of production of *Bromus inermis* seed are reviewed. A list is given of foreign seeds found in 1849 samples examined from 1909 to 1929. The distinguishing characters of *Agropyron repens, A. smithii* and *A. tenerum* are presented, together with notes on the distribution of a number of other plants. Illustrations of the following seeds, regarded as characteristic, are given: *Agrostis hyemalis, Anemone canadensis, Brauneria angustifolia, Carex festucacea, C. trichocarpa, Cirsium undulatum, Elymus canadensis, Erysimum asperum, E. parviflorum, Gaura coccinea, Hosackia americana, Lactuca pulchella, Lappula occidentalis, Plantago purshii, Poa palustris, Ratibida columnaris, Stachys palustris, Stipa viridula, Symphoricarpos occidentalis* and *Teucrium occidentale.*—*O. A. Stevens.*

16972. **STOUTAMIRE, RALPH. Tobacco growing in Florida.** *Dept. Agric. Florida Bull.* 40. 5-40. 22 fig. 1930.

16973. **STRANSKI, I. Effect of preceding crop on the quality of wheat.** *Ann. Univ. Sofia, Fac. Agric.* 7: 1-16. 1929.—The author examined numerous samples of wheat from the Plevna district to establish the effect of the preceding crop on the following properties of the wheat grain: Absolute and hectoliter weight, impurities, germination power and agricultural value. Vetch gives best results, followed by corn, wheat and fallow land. —*I. Kovachevsky.*

16974. **SYLVÉN, NILS. Avverkningsförsök i blåluzern.** [English summary.] **[Time of cutting experiments with lucerne.]** *Sveriges Utsädesför. Tidskr.* 41(1): 9-57. 1931.—The later the last cutting in the autumn the better will be the overwintering and the better the yield the following year. This depends mainly upon the fact that when the last harvest is taken late there is no chance for the winter-buds to develop new shoots before the winter sets in. The results are supported by refrigeration experiments and by data from Danish experiments. Preliminary results with sweet clover parallel those obtained with lucerne.—*G. Nilsson-Leissner.*

16975. **THROCKMORTON, R. I. The use of commercial fertilizers in Kansas.** *Rept. Kansas State Board Agric.* 50(197): 40-49. 1931.—Experiments show an average increase of 4.5 bu. of wheat per acre or 27% over a period of 19 yr. from use of phosphorus. The best rate of application is about 100 lb. of bone meal, 125 to 150 lb. of superphosphate or a 4-12-0 mixture per acre. The increase for alfalfa is about ½-1 ton per acre. For a new stand of alfalfa, superphosphate should be applied just previous to or at the time of seeding, at the rate of 150 lb. per acre. Similar results were secured with clover. Commercial fertilizers cannot be used successfully in central and western Kansas.

16976. **TOBLER, FRIEDRICH. Sisal und andere Agavefasern. [Sisal, and other Agave fibers.]** (*Wohltmann-Bücher Bd.* 10.) 104p. 44 fig. Deutscher Auslandverlag Walter Bangert: Berlin-Charlottenburg und Leipzig, 1931.

16977. **TORSSELL, ROBERT. Resultat av försök med olika rödklöverstammar vid Sveriges Utsädesförenings filial å Ultuna 1918-1929. [Trials with various red clover strains in 1918-1929 at the Svalöf Branch Station in Ultuna.]** *Sveriges Utsädesför. Tidskr.* 41(3): 127-168. 1931.—The yield, winterhardiness, and regenerative power of red clover strains are reported. Broad leaved red clover is not adapted to the climate and the purebred Swedish strains did not prove as good as old local strains from the vicinity.—*G. Nilsson-Leissner.*

16978. **TRAUB, H. P., and C. E. STEINBAUER. The effect of height of ground water-table on the development of truck crops on peat land.** *Proc. Amer. Soc. Hort. Sci.* 1927: 49-53. 2 fig. 1927.—Onions from seed do best where the level of ground water is 1½-3 ft. below the surface. Head lettuce, cabbage, cauliflower, summer radish, carrot, spinach, sweet corn, girasole, tomato and green beans do best 2-3 ft. above the water table; potato and peas, 2-4 ft.; winter radish, 3-4 ft.; and turnip, 4-5 ft. For the few truck crops analyzed, including the potato, there is little difference in composition, on the green basis, with different ground water-tables.—*A. K. Anderson.*

16979. **UMBERG. Ein Beitrag zur Ernährungsphysiologie des Buchweizens. [Fertilizer studies on buckwheat.]** *Zeitschr. Pflanzenernähr., Düng. u. Bodenk. B, Wirtsch.-Prakt. Teil* 10(7): 344-347. 1931.

16980. **VENKATARAMAN, K. Storage experiments with paddy seeds.** *Madras Agric. Dept. Year Book* 1929: 29-35. 1930.—The pressure to which rice seed in the lowermost bag of a pile is subjected does not impair germinating capacity. Similarly, in a pattarai, the enormous pressure to which the bottom-layer is subjected does not affect seed vitality. Seed thoroughly dried in the sun before storage shows a slight increase in weight when stored under shade due to the gradual adsorption of moisture.

16981. **WADSWORTH, H. A. Some observations upon the wilting coefficient of Kunia soil as determined by the pineapple in the balancing system of Briggs and Shantz.** *Pineapple News* 4(3): 37-43. 1 fig. 1930.—The balancing system suggested by Briggs and Shantz for the determination of the wilting coefficient of soils carrying plants with water storage tissue seems to be of no value when the pineapple is the plant used. With the pineapple, the rates of loss (or the moments) from the soil end, and plant end, seemed equal long after the wilting coefficient had been passed. A distinct change in rate of loss of gross weight of the system was noted, however, at a rather definite weight, and if this loss is assumed to be a measure of transpiration it is evident that there is some moisture content which marks the lower limit of equally available soil moisture. The percentage of residual soil moisture corresponding to this change of rate is rather close to wilting coefficient for Kunia soil as determined by other methods. If the period subsequent to the change in rate of loss is characterized by loss of turgidity of the leaves it is probable that growth ceases at or near this point. No growth measurements were made during the study reported. A cessation of growth at this point would identify the corresponding moisture content as the wilting coefficient. The pineapple showed the remarkably low water requirement of 9.5 gm. of water per gm. of oven-dry matter. —*Author's conclusions.*

16982. **WEIGERT, J., und E. HILTNER. Ein Beitrag zur Frage des Kalibedarfs von Gräsern und Leguminosen.** *Ernähr. Pflanze* 26(8): 172-175. 2 fig. 1930.—Ammonia and potash, potash and phosphoric acid, ammonia and phosphoric acid, and complete fertilizer were used on clover and grasses grown in pure cultures and in mixture. The mixed seedings generally yielded considerably more than the single seedings, and the increase included both grasses and legumes. The grasses in pure culture gave the lowest yields where N was lacking in the fertilizer. They also suffered rather seriously when phosphoric acid was omitted. Clover yields were reduced to a very low point when potash was omitted. In 1928 beets were grown on the land without further fertilizer treatment. The beets yielded comparatively well in all cases after both the grass and the clover, except on unfertilized plots and on plots where potash had not been used previously. The yield of beets, however, was very much smaller after clover with no potash than after grass grown without potash. The plots receiving ammonia and phosphoric acid but no potash yielded less than the check plots after both grass and clover.—*J. H. Barron.*

16983. **WHITE, R. G. Rotations of crops.** 2nd ed. 22p.

6 maps. Misc. Publ. 45. Ministry of Agric. & Fisheries: London, 1929. Price 4d.—Discusses factors determining rotations and lists suggestions.—*L. R. Waldron.*

16984. **WISHART, J., and H. G. HINES. Fertilizer trials on the ordinary farm.** *Jour. Min. Agric.* [*Gt. Britain*] 36(6): 524-532. 1929.—Field experiments of the replicated and randomized type initiated at the Rothamsted Experimental Station were successfully carried out on ordinary farms with a minimum of skilled assistance. Basic slag improved the yield of swedes and new meadow hay, even in the year of application, and the effect persisted after 3 yr. without further application. Superphosphate and sulphate of ammonia greatly increased the yield of potatoes, while varying nitrogenous dressings applied at time of sowing improved the yield of sugar beets.—*J. Wishart.*

16985. **WOODMAN, R. M., and W. J. WILEY. The eradication of prickly-pear by chemicals with particular reference to emulsions in the systems phenols-gelatin-aqueous arsenic acid.** *Chem. & Indust.* 50(22): 187T-189T. 1931.—From experiments the authors conclude that for eradicating prickly-pear, spray emulsions containing aqueous arsenic acid solutions and the cresols as liquid phases, with gelatin or glue as the emulsifier, should preferably be of the aqueous arsenic acid-in-cresols type. The arsenic acid present favors this desirable type, and tendencies to form the opposite type in the absence of this acid is suppressed.—*Authors' summary.*

16986. **ZAITSCHEK, ARTHUR. Sudan grass: its cultivation and food value.** *Internat. Rev. Agric. Pt. 1. Mo. Bull. Agric. Sci. and Pract.* 21(9): 321-325. 1930.—Sudan grass is of importance as a fodder crop particularly because of its short growing period, drought resistance, high yield, fodder qualities, and capacity for vigorous growth after cutting. Data from chemical and feeding experiments are given.

16987. **[ZHUKOVSKIĬ, P. M.]** ЖУКОВСКИЙ, П. М. Дикорастущая новая форма ржи из Анатолии и предварительные критические заметки о виде Secale cereale L. [A new wild-growing form of rye in Anatolia. Preliminary critical remarks about S. cereale.] [English summary.] Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot. Genet. and Plant-Breed.*) 19(2): 49-58. 6 fig. 1928.—A new subspecies of rye with a brittle rachis causing complete articulation at maturity was found by Vavilov (1924) in Afghanistan, where it occurred as a weed in fields of wheat and barley. The author found (1926-1927) forms of wild rye with a brittle rachis in the valley and on adjacent slopes of the Meander (Lydia). This wild polymorphous rye possesses strong straw and is of gigantic size. Many forms show thick pubescence on the external flowering glumes, a rare occurrence in rye. It differs from cultivated forms in its brittle rachis, small flattened grain with white apical brush hairs, broad empty glumes, and pubescent leaf-sheaths of young plants. It is distinguished from the Afghan form by its excessive size, pubescence of leaf-sheath, adhesion of the flowering glumes to the grain, smaller size and flatness of the kernels, hairy brush, and winter habit. The many forms of rye, according to the author, should be placed in 3 subspecies: (1) those with a brittle rachis, (2) those with a tough rachis, and (3) those with intermediate degrees of brittleness of rachis.—*W. W. Mackie.*

16988. **ZIELSTORFF, W., und K. NEHRING. Zur Frage der physiologischen Reaktion der Kalisalze.** *Zeitschr. Pflanzenernähr. Düng. u. Bodenk. A. Wissensch. Teil.* 17(1/2): 67-79. 1930.—From studies of the physiological reactions of different K salts which were tested in 3 different soils, it was found that 40% of K salts like kainite had no effect in changing the reaction of the soil, but that K-Mg sulphate acidified it slightly. In the field experiments there was no effect on the soil reaction. Hence, the various K salts must be regarded as physiologically neutral fertilizers with the exception of K-Mg sulphate.—*Authors' summary* (*transl. by C. J. Lyon*).

16989. **ANONYMOUS. De Landbouwkundige afdeeling van het "Fourth Pacific Science Congress" Bandoeng, 20-25 Mei 1929. (The agricultural division of the Fourth Pacific Science Congress, Bandoeng, 1929.)** [With English summary.] *Landbouw* 5(2): 101-222. 1929.—This account gives only an impression of the important problems discussed. The complete proceedings are to be published later by the Executive Committee. Papers given are briefly reviewed under subject groups indicated below. Rice technical problems of the Pacific area are summarized as follows: Cultivation problems, reviewed by **A. WULFF,** include irrigation, drainage, manuring, and studies on the relation of irrigation-water temp. to growth and yield. The more important insect pests of the rice crop in the area, reviewed by **P. van der GOOT,** include *Chilo simplex, Schoenobius incertellus, Nephotettix* sp. and *Leptocorisa acuta.* Diseases of the rice crop in the Dutch East Indies, Japan, and the U. S. A., are reviewed by **H. F. WATERSCHOOT.** Diseases due to fungi are the most serious in Japan, especially *Piricularia grisea, Helminthosporium oryzae* and *Hypochnus sasakii.* Selection of permanent crops is reviewed by **F. W. OSTENDORF** and others, who discuss the seminal and vegetative selection of rubber, coffee, coconut and oil palm trees. Soil survey and soil research is reviewed by **J. A. van BEUKERING,** this discussion including erosion, classification and mapping of soils. Co-operation in biological insect pest control is reviewed by **S. LEEFMANS;** and forestry problems, by **A. THORENAAR.**

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 15124, 15152, 15163, 15192, 15198, 15207, 15212, 15217, 15218, 15220, 15223, 15225, 15238, 15242, 15245, 15428, 15462, 15468, 15477, 15483, 15490, 15493, 15496, 15503, 15504, 15515, 15529, 15559, 15570, 15573, 15575, 15576, 15580, 15581, 15583, 15584, 15589, 15596, 15600, 15603, 15612, 15630, 15633, 16724, 16911, 16959, 16978, 17060, 17066, 17238, 17242)

16990. **ALLWOOD, MONTAGU C. Carnations for everyman.** 95p. Illus. Country Life Ltd.: London; Charles Scribner's Sons: New York, 1931.

16991. **BEALE, REGINALD. The book of the lawn. A complete guide to the making and maintenance of lawns and greens for all purposes.** 151p. 8 pl. Cassell and Co.: London, 1931.

16992. **BONSTEDT, C., Editor. Pareys Blumengärtnerei. Beschreibung, Kultur und Verwendung der gesamten gärtnerischen Schmuckpflanzen.** Lfg. 8. p. 673-768. Illus. Paul Parey: Berlin, 1930.—This part deals with angiosperms from Crassulaceae to Rosaceae.

16993. **BRYŃSKI, KAZIMIERZ. Kilka spostrzezén nad czerechy "Kleparowskiej" w zalezności of morfologji terenu. [Factors concerned in winter-killing of cherry trees.]** [English summary.] *Kosmos* [*Lwów*] 55(1/2): 293-301. Map. 1930.—The extent to which cherries of the Kleparów variety were killed by the severe winter of 1928-1929 is discussed, and the influences of terrain, soil moisture, wind, and other factors on winter killing are briefly treated. The variety is valuable, but highly susceptible to winter injury.

16994. **CHANG, W. T. Investigation of yangmei (Myrica rubra) fruits in Eastern Chekiang.** [In Chinese.] *Jour. Agric. Assoc. China* 80/81. 25-40. 6 fig. 1930.

16995. **CHEVALIER, AUG., et M. DAGRON. Recherches historiques sur les débuts de la culture du caféier en Amérique.** *Acad. Sci. Coloniales Compt. Rend. Séanc. Communic.* 8: 327-364. Portrait. 1926-27 (1928).—This is a detailed historical review of the early knowledge

of coffee and attempts to introduce it into the French colonies. Many letters and documents of the 18th century are quoted in full. Coffee was first introduced into Java from Arabia in 1690 and 1696. About 1700 living plants were brought by Hollanders to Europe; one of these, given to Louis XIV, furnished the shoots which were planted in Martinique. In 1714 the Hollanders introduced coffee into Surinam.

16996. **CORREVON, HENRY.** Rock garden and Alpine plants. 544p. Illus. Macmillan Co.: New York, 1930. Pr. $6.

16997. **CRANDALL, F. K., and T. E. ODLAND.** The amount of manure necessary for vegetable growing. II. *Rhode Island Agric. Exp. Sta. Bull.* 225. 1-31. 1930.—This reports the results obtained in 2 market garden rotations at the R. I. Exp. Station from 1923 to 1928, with summaries of results obtained in previous years. The largest yields of early beets and spinach were secured with 16 tons of manure and 1500 lb. of 5-12-4 fertilizer used in rotation Q where a green-manure crop is grown once in 3 yr. With these crops 8 tons of manure in the green-manure rotation maintained yields almost as well as 16 tons without the green manure. Eggplants produced the largest yields of marketable fruits with 32 tons of manure and 1500 lb. of a 4-12-3 fertilizer. On the green-manure rotation with 16 tons of manure and 1500 lb. of 5-12-4 fertilizer the average yield was slightly less. Cauliflower has not been very successful in this rotation where it is grown as a late summer crop following early beets. Commercial fertilizer may be substituted for a large part of the stable manure usually applied for this crop. Carrots, following spinach, showed relatively little difference in yield whether 8, 16, or 32 tons of manure had been applied to the preceding crop. Increasing the manure from 8 to 16 tons in the green-manure rotation increased the yield of early beets 11%, eggplant 35%, and early spinach 34%. The yields of early beets and spinach were increased only 4 and 9% respectively by changing the fertilizer from 4-12-3 to 6-12-3. Reducing the nitrogen by one half in the first ratio, decreased the yields by 17 and 31% respectively for these 2 crops. Eggplants and cauliflower responded markedly to increases in N in the fertilizer, but carrots were but little affected. Spinach and cauliflower showed the greatest increases in yield where the proportion of P was increased by 50%. The experiments demonstrate that it is possible to substitute green manure and commercial fertilizer for a considerable part of the stable manure customarily applied to these crops, with improvement of yield and profits.—*T. E. Odland.*

16998. **DORSETT, R. H.** Persimmon, Diospyros kaki, processing and storage. *Peking Soc. Nat. Hist. Bull.* 5 (4) : 27-28. 1931.

16999. **DORSEY, M. J., and R. L. McMUNN.** Relation of the time of thinning peaches to the growth of fruit and tree. *Proc. Amer. Soc. Hort. Sci.* 24: 221-228. 1927.

17000. **ERWIN, A. T.** Nativity of the cucurbits. *Bot. Gaz.* 91 (1) : 105-108. 3 fig. 1931.—Archeological evidence, much of it obtained in late yrs., proves the existence of *Curcurbita pepo* and *C. moschata* in No. America in early times. Fragments of *C. moschata* are believed to date back to the basket-baker period. Seeds are preserved, as well as a pottery vessel (So. American) modeled after a pumpkin. *C. maxima* is not represented in these collections.

17001. **FREE, MONTAGUE.** The rock garden of the Brooklyn Botanic Garden. *Brooklyn Bot. Gard. Rec.* 20 (3) : 187-241. 28 fig. 1931.—This paper contains lists of saxatile plants "easy to grow" and "fairly easy to grow" and a flowering calendar for the climate of Brooklyn.—*C. S. Gager.*

17002. **GRAAN, L. R. van.** The effect of early defoliation of vegetable plants on subsequent growth and production. *Proc. Amer. Soc. Hort. Sci.* 26: 109-113. 1929 (1930).—In the field defoliation produced no benefits in tomato, and tended to retard maturity. Defoliation of celery resulted in increased yield, particularly of heavily pruned plants. No increase was induced in cabbage, but earliness was increased 18% by defoliation. In the greenhouse root replacement was more rapid in unpruned tomato and cabbage plants, whereas in heavily pruned celery plants the increase was more rapid than in unpruned. Pruned tomato plants, wilted in transplanting, recovered more rapidly than unpruned and bore a larger yield of fruit. The transpiration per square inch of leaf surface was less in pruned tomato and cabbage plants than in unpruned plants.—*M. C. Merrill.*

17003. **HABER, E. S.** The effect of number of plants per hill on yields of sweet corn for the cannery. *Proc. Amer. Soc. Hort. Sci.* 24: 37-40. 1927.—With late maturing, large sweet corn varieties the size or weight of the ear decreased as the number of plants per hill increased; the number of ears per stalk decreased (or the percentage of barren stalks increased) as the number of plants per hill increased; the largest yields are generally secured where there are 4 plants per hill; the greater the number of plants per hill, the greater the yield of fodder. Results with Evergreen for 1 yr. show the check-row method to be far superior to the drilled method of growing this variety, as shown by decrease in size of ear and decrease in total yield of both corn and fodder below that of 7 plants per hill.—*Author's summary.*

17004. **HALL, C. J. J. van.** A review of the more important recent literature on cacao. *Mo. Bull. Agric. Sci. & Pract. [Rome] 22* (4) : 127-132. 1931.

17005. **HARDENBURG, E. V.** Place-effect influence in the Robust pea bean. *Proc. Amer. Soc. Hort. Sci.* 27: 495-497. 1930 (1931).—From the first-year results, there are no marked indications that place-effect (previous environment) in its influence on shape of seed and yield of crop is an important factor in the Michigan Robust variety of pea bean.

17006. **HIGGINS, J. EDGAR.** Annual Report of the Canal Zone plant introduction gardens for 1929. *Canal Zone Exp. Gard. Ann. Rept.* 1929: 1-31. 10 pl. 1930.—The author reports on plant collections in Hawaii and California, including avocado, sugar cane, pineapple, hibiscus, bananas, etc.; and on dissemination of collections to growers including mangos, pineapples, sugar cane, rubber plants and drought-resistant trees.

17007. **HOFFMANN, RALPH, E. O. ORPET, ERIC WALTHER, and JAMES WEST** (compiled and reviewed by). (Ed. by PEARL CHASE.) Cacti and other succulents. An annotated list of plants cultivated in the Santa Barbara Region. 107p. 5 pl. Garden Tours Committee of the Plans and Planting Branch Community Arts Assoc.: 929 Paseo Carrillo, Santa Barbara, Calif., 1930.

17008. **HOOKER, H. D.** Movement of fat in apple shoots. *Proc. Amer. Soc. Hort. Sci.* 24: 185-187. 1927.

17009. **HOSAKA, EDWARD Y.** The culture of the Chinese banana in Hawaii. *Jour. Pan-Pacific Res. Inst. [Honolulu]* 6 (3) : 12-13. 1931.—Introduced into Hawaii in 1855, it has become a very profitable crop, banana culture ranking as the 4th agricultural industry in Hawaii.

17010. **JENYNS, SOAME.** Tea. *Hon Kong Naturalist* 2 (2) : 90-91. 1931.—Studies on the etymology and history of the word suggest that tea was introduced into China during the Chen and Earlier Han dynasties, from the Monsoon regions. Tea was introduced into Europe by the Dutch in the 17th century. Notes on tea culture, trade, and use in China, are given.

17011. **JONES, H. A., and W. W. ROBBINS.** Influence of desiccation and root pruning on performance of asparagus. *Proc. Amer. Soc. Hort. Sci.* 23: 26-28. 1926.—Although crowns survive when subjected to a long period of drying, growth response after planting is slow and the yield of marketable spears is markedly reduced. Yield records during the first 2 yr. of cropping show that the roots should not be pruned before planting. As many of the fleshy roots as possible should be preserved uninjured.

17012. **KAINS, M. G.** Marica as a warm room plant.

Horticulture [Boston] 8(3): 55. 1930.—*Marica* is highly resistant to the heat and dryness of the living room. It is recommended as a pot-plant for indoor flowering.—*C. G. Bowers.*

17013. KIMBALL, D. A. Top working and repair grafting including budding. *Ontario Dept. Agric., Ontario Agric. Coll. Bull.* 357. 1-28. 25 fig. 1931.

17014. KUDO, YAKURŌ. Palms in Formosa. [In Japanese.] *Trop. Hort. [Taihoku]* 1(4): 256-259. 1 fig. 1931.

17015. LOTT, RICHARD V. An important varietal characteristic of the red raspberry. *Proc. Amer. Soc. Hort. Sci.* 27: 139-141. 1930(1931).—Under conditions similar to those of northern Colorado, bud distribution is a varietal characteristic. From this standpoint the most desirable varieties are those with the most buds in the 3rd, 4th, and 5th feet, since this region normally has the greatest yield per bud. Of the 5 varieties studied, June had the most, and Cuthbert the least, desirable bud distribution. Yields do not necessarily follow the same order. The fruiting response from severe cane heading is seldom great enough in Colorado to make up for the large number of buds removed in heading.—*Author's conclusions.*

17016. McCULLY, ANDERSON. American alpines in the garden. 251p. Illus. Macmillan Co.: New York. 1931.

17017. McKAY, H. M. Influence of fertilizers on the time of ripening in peaches. *Proc. Amer. Soc. Hort. Sci.* 24: 237-239. 1927.

17018. MACOUN, W. T. Hedges and their uses. With notes on trees and shrubs tested for hedge purposes at the Central Experimental Farm, Ottawa; and lists of best hedges at the branch experimental farms. *Canada Dept. Agric. Bull.* 142. 1-44. 15 pl. 1931.

17019. MAGIELSE, M. M., with an introduction by J. J. OCHSE. Resultaten van enten en oculeeren van vruchtboomen in den gouvernements-tuinbouwproeftuin "Ragoenan." [Results of budding and grafting of fruit-trees in the Ragoenan experimental garden.] [With English summary.] *Landbouw [Buitenzorg]* 6(10): 944-971. 1931.—This is the first of a number of papers giving results of vegetative propagation, obtained in the experimental gardens of the Horticultural Service. A great number of stocks, supposed to possess special qualities, were included in the project. Detailed results obtained are summarized in tabular form and a list of the tested scions and stocks is added.

17020. MENDES, CARLOS T. A poda da Mandioca. [Effect of pruning on manioc.] *Revista Agric.* 4(7/8): 290-302. 1929.—The author concludes that in climates where the cassava, *Maniot utilissima*, is not killed by frost one must not prune so heavily as to reduce the yields or starch content of the roots.—*C. T. Mendes (transl. by W. E. Loomis).*

17021. MURNEEK, A. E. The selection of proper material for horticultural research. *Proc. Amer. Soc. Hort. Sci.* 24: 201-204. 1927.

17022. OVERHOLSER, E. L. A study of the harvesting and the storage of Gravenstein apples. *Proc. Amer. Soc. Hort. Sci.* 24: 252-255. 1927.

17023. PHILLIPS, E. F. Some experiences in the use of bees for pollination. *New York State Hort. Soc. Proc. Ann. Meet.* 76: 37-50. 3 maps. 1931.

17024. PROEBSTING, E. L. Concentration of certain constituents of the soil solution under orchard conditions. *Hilgardia* 5(3): 35-59. 1930.—A spring minimum and fall maximum of NO_3 were found. NO_3 had been reduced under alfalfa sod. It was higher in pear plots than in peach plots. SO_4 changes were similar to those for NO_3 except that they were lower under pears than peaches. Carbonates were high in alfalfa sod, tended toward a late summer minimum and to be slightly higher in winter cover crop plots than in checks. Ca showed seasonal curves similar to those of nitrate; it was lower under alfalfa sod. The average Ca concentration increased in a 3-yr. period. Mg was almost identical to Ca in its behavior. K was nearly constant; it was lower under alfalfa. The summation of ions determined showed a slight excess of cations, which was greater in peach plots than in pear, and in alfalfa sod than checks. —*E. L. Proebsting.*

17025. RUTH, W. A., and C. EDWARD BAKER. Some apple tree and soil moisture relationships. *Proc. Amer. Soc. Hort. Sci.* 245-247. 1927.

17026. SHA, T. F. The climatic condition in Manchuria with reference to the distribution of fruit varieties. [In Chinese.] *Jour. Agric. Assoc. China* 80/81. 15-24. 1930.

17027. STEDJE, P. Beauty of Bath. *Selsk. Havedyrk. Venner Medlemsskr.* 9(1): 9-12. 1 col. pl., 2 fig. 1931.—Description of this apple variety.

17028. STOUTAMIRE, RALPH. Growing asparagus plumosus in Florida. *Dept. Agric. Florida Bull.* 35. 3-24. 15 fig. 1930.

17029. STOUTAMIRE, RALPH. Onion production in Florida. *Dept. Agric. Florida Bull.* 39. 5-18. 5 fig. 1930.

17030. SWINGLE, WALTER T. "Kindzu" or "Golden Bean" orange (Fortunella hindsii) from historic, taxonomic and cytologic standpoints. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 2: 2001. 1926(1928).—Abstract.

17031. THOMAS, H. H. The amateur's rose book: the cultivation of roses. 284p. Cassel & Co., Ltd.: London, 1930. Pr. 8s. 6d.

17033. TRAUB, HAMILTON P. The lateral root spread of the fig tree. *Proc. Amer. Soc. Hort. Sci.* 27: 109-113. 1 fig. 1930(1931).—The root system is of the fibrous type with long slender laterals; 5-6 yr. old Magnolia fig trees had a root spread of 50 ft.; a single lateral grew over 35 ft. from the main trunk. In fertilizer experiments at least 2 buffer rows between differential treatments appear necessary. Means of preventing root spread over longer distances in trees older than those studied are indicated.

17034. UNWIN, C. W. J. Sweet peas: their history, development, and culture. 2nd ed. 192p. Heffer: Cambridge, 1929. Pr. 2s. 6d.

17035. VINET, E., et M. LEMESLE. Essais sur les engrais appliqués à la vigne. *Prog. Agric. et Vit.* 94(27): 12-18; (28): 38-44. 1930.—Preliminary trials with various amounts of $(NH_4)_2SO_4$, KCl and K_2SO_4 over a 2 yr. period showed responses to both K and N the 2nd year. —*E. L. Proebsting.*

17036. WATZL, JOSÉ. Escolha da variedade Americana para reforma ou nova installação de vinhedo. [Choice of American varieties for planting or replanting vineyards.] *Bol. Agric. [São Paulo]* 30(5/6): 380-393. 1929.—Species recommended as stocks for grafting are: *Vitis riparia, V. rupestris, V. berlandieri, V. cordifolia, V. monticola, V. cinerea* and various hybrids. *V. riparia, V. solonis, V. solonis × riparia,* and *V. riparia × berlandieri* all are good stocks so far as adaptation to climate and culture are concerned. *V. riparia* and *V. cordifolia* are sensitive to lime; *V. berlandieri, V. monticola,* and *V. rupestris × berlandieri* are not. Resistance to phylloxera, from most resistant to least resistant is as follows: *V. rotundifolia, V. rupestris, V. riparia × rupestris, V. riparia, V. berlandieri, V. monticola × riparia, V. cordifolia × rupestris.* Qualities of various varieties of *V. vinifera* as scions are discussed.—*C. D. La Rue.*

17037. WILSON, ERNEST H. Aristocrats of the trees. 279p. Col. frontispiece, 66 pl. Stratford Co.: Boston, 1930. Price $15.

17038. WILSON, ERNEST H. If I were to make a garden. Stratford Co.: Boston, 1931. Pr. $10.

17039. YERKES, GUY E. Rose under-stocks in a five-year test. *Proc. Amer. Soc. Hort. Sci.* 27: 463-466. 1930(1931).—This test indicated that forms of *Rosa multiflora* are preferable to any of the stocks in the experiment and that *R. multiflora* Chenault No. 5892 seems worthy of more extended trial.

17040. ZICKMANTEL, J. H. Die Kakaokultur. (Die Tropenreihe, Nr. 21.) [Cocoa culture.] 28p. Thaden: Hamburg, 1930. Pr. 2.50 M.

FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 15319, 15328, 15353, 15373, 15378, 15550, 15576, 15588, 15591, 16807, 16808, 16810, 16813, 16820, 16989, 17006, 17076, 17132, 17222, 17223)

17041. **BAUER. Die Umstellung der Wirtschaft in den Auewaldungen des badischen Rheintales. [Change of the form of management of the bottomland forests in the Rhine valley of Baden.]** *Forstwiss. Centralbl.* 53(18): 629-643; (19): 682-696; (20): 726-738. 22 fig. 1931.—The mixed hardwood forests on these lands are potentially among the most productive forests in Germany, but now yield little except firewood. In place of the prevailing coppice or coppice-under-standards management, high-forest should be substituted. Contrary to common opinion, this type of forest is not adapted to a selection system, for the principal species (oak, ash, birch, locust, poplar, willow, maple, elm, and alder) are mostly rather intolerant of shade. Formation of even-aged stands is recommended, with an understory of tolerant species to help prune the main crop and keep down grass and underbrush. Methods of handling the various types of stands are described.—*W. N. Sparhawk.*

17042. **BERTOG, HERMANN. Die Akazie in Nordostdeutschland.** *Deutsche Forstzeitg.* 46(45): 1051-1053. 1931.—*Robinia pseudacacia* has been planted extensively in eastern Germany since the time of Frederick the Great. It thrives in localities where apples, pears, and grapes do well, but not where the growing season is short or the winters excessively cold. It is difficult to establish stands by direct seeding, and great care must be taken to avoid drying of the roots in planting. Locust stands are best reproduced by root-suckers, which are stimulated by removing the stumps and breaking up the roots by plowing. Where it is desired to replace the locust with other species, reproduction can be checked by underplanting with spruce, fir or tolerant hardwoods such as beech or maple several years before cutting the locust, as by pasturing the locust cut-over area with sheep or goats until the sprouts are killed.—*W. N. Sparhawk.*

17044. **BRENEZ, A. Essai de reboisement à Kabinda (Lomani).** *Bull. Agric. Congo Belge* 20(1): 118-125. 1 pl., 1 fig. 1929.—Reforestation of denuded land near Kabinda (Belgian Congo) was commenced in 1920, in order to check soil erosion, to afford protection against strong winds, and to furnish firewood. Ndunga (*Mesopsis eminii*) has been the principal species planted. Planting methods are described.—*W. N. Sparhawk.*

17045. **CANNING, F. Annual progress report of forest administration in the United Provinces 1929-1930.** p. 1-34. 1930.—Fencing *Shorea robusta* forest against deer led to a considerable increase in the natural reproduction of that species. *Swertia* spp. are alternate hosts of *Peridermium corticola,* which causes serious damage to young *Pinus longifolia.*—*M. V. Laurie.*

17046. **CHUARD, ERNEST, et al. Forêts de mon pays.** 183p. Illus. with photographs and 1 col. pl. Delachaux & Niestlé: Neuchatel & Paris, 1930.—This popular work on the trees and forests of Switzerland contains numerous essays and articles on the various phases of forestry, including the wild life of the woods. Its aim is to stimulate an appreciation of nature and of natural resources.

17047. **COVILLE, PERKINS. Improved forest tree seed. A suggested study.** *Jour. Heredity* 20(10): 459-467. 5 fig. 1929.—Discusses the value of studies of the relationship between source of seed and qualities of the trees grown from seed of various origins. Suggestions are made regarding methods and organization of such studies. —*W. N. Sparhawk.*

17048. **CROCE, FRANCISCO M. Explotación del alamo. [Use and exploitation of poplars.]** *Min. Indust. y Obras Públ. Mendoza Bol.* 7. 1-33. 18 fig. [1931].—Classification, culture, diseases, insect pests, and uses are discussed.

17049. **DE WILDEMAN, É. Sur la question forestière en Afrique.** *Bull. Inst. Roy. Col. Belge* I(3): 504-516. 1930.—Taking his text from a work of Lecomte on the woods of Indo-China, the author reviews the data concerning the protection of the forests of Africa. He discusses the reserves created in Congo, the necessity of the forest services and the need for international cooperation based on national understandings.—*É. De Wildeman (transl. by J. Kittredge, Jr.).*

17050. **ELMORE, D. R. (Chairman). Report of Committee 5-2-1- Treatment of car lumber.** *Proc. Amer. Wood Preservers' Assoc.* 26: 96-103. 1930.—Discusses the problems in connection with the uses of treated material in cars, the experience of several railroads to date, and the treatment by commercial plants, railroad plants and packers.—*W. H. Snell.*

17051. **FRIESENDORFF, G. von. Chilenskt skogsbruk. [Chilean forestry.]** *Skogen* 18(17): 403-405. 4 fig. 1931.—About ¼ the area of Chile is forested (150,000-190,000 sq. km.). The northern desert zone lacks forest except for a few plantations of *Eucalyptus.* In the central part, the most important agricultural region, many plantations of exotics have been made, including *Pinus insignis, P. maritima,* which yield saw timber in 12 yrs. when irrigated, *Cupressus macrocarpa,* and especially *Populus nigra* var. *pyramidalis.* The latter is perhaps the most important local wood. In southern Chile the natural forests of *Araucaria imbricata, Libocedrus chilensis, L. tetragona, Nothofagus obliqua, N. procera,* and *Fitzroya patagonica* are still subject to uncontrolled exploitation, resulting in much devastation and waste.—*H. I. Baldwin.*

17052. **ILLE, RUDOLF. Pajádro a mrazové jádro bukových kmenů. [False heart and frost heart of the beech.]** [In Czech and German.] *Věstník Československ. Akad. Zem.* 7(5): 533-536. 1 fig. 1931.—The author considers the frost heart of red beech as an abnormal diffused false (red) heart which resulted from an interruption of the development of the trees during the severe winters of 1928-1929. The origin of the usual false or red heart he tried to explain on physiological grounds. This it not the same as the heart rot caused by fungi.—*S. P. Nichols (from abstract by R. Ille).*

17053. **JUNACK. Beruht die Starkastigkeit mancher Kiefern in der norddeutschen Tiefebene auf Veranlagung oder Reizwirkung?** *Deutsche Forstzeitg.* 46(49): 1131-1134. 4 fig. 1931.—In practically every pine stand some of the trees grow faster than the others and develop a more or less bushy form with large limbs. This appears to be due to individual differences in ability to utilize the soil moisture, and is not hereditary. It is a mistake to cut out these individuals which utilize the productive capacity of the site most effectively. They should be retained as long as they maintain their dominance, unless they are decidedly crooked or otherwise poorly formed.—*W. N. Sparhawk.*

17054. **KINDS, R. L'introduction au Congo Belge du "Phytelephas macrocarpa." (Noix de corozo.)** *Bull. Agric. Congo Belge* 21(4): 1294-1295. 1930.—Nuts of *Phytelephas macrocarpa* (the source of vegetable ivory) collected in Colombia, and plants raised in Belgium from similar nuts were planted in Belgian Congo between 1923 and 1928.

17055. **KOLOWRAT, EDWARD. Die Übungen in den neuen Lehrforsten der Hochschule für Bodenkultur.** *Wiener Allg. Forst- u. Jagdzeitg.* 49(26): 157-158. 1931.—Description of an 800 ha. tract, the compartments of Nasswald and Bleibüche, near Vienna, now available as a demonstration forest.—*F. S. Baker.*

17056. **MOKRÝ, THEODOR. Die Böhmerwaldlärche.** *Wiener Allg. Forst- u. Jagdzeitg.* 49(36): 217-218; (37):

224-225. 1931.—An historical study of the natural and artificial distribution, dendrology, silviculture, and utilization of the larch in the Bohemia forest.—*F. S. Baker.*

17057. **PAMPERL, FRANZ.** Literaturstudien über die Forsteinrichtung im Niederwalde. *Wiener Allg. Forst- u. Jagdzeitg.* 49(39): 235-236; (40): 242-243; (41): 248-249. 1931.—Citations, résumés and quotations from German authors of the past 100 yrs. on the subject of formal management and regulation in coppice forests.—*F. S. Baker.*

17058. **PODHORSKY, I.** Adventiv-Wurzelbildung bei Fichte. *Wiener Allg. Forst- u. Jagdzeitg.* 49(31): 189. 2 pl. 1931.—As a rule spruces are killed whenever a deep layer of earth is deposited around the stem. Occasionally, however, a new system of shallow adventitious roots develops and the tree lives. The new roots appear to serve for aeration mainly as the older deep-seated roots remain functional.—*F. S. Baker.*

17059. **PUSTER, Abstands- oder Englische Durchforstung?** *Forstwiss. Centralbl.* 53(21): 754-760. 1931.—The method of thinning formerly advocated by Weinkauff involved selection and marking of 200 "U-trees" per ha. to stand through the rotation, together with 200 substitute trees to take care of accidents to the "U-trees." All other trees competing with the roots or crowns of these were to be taken out in thinnings beginning at 60 years. Recent modifications have brought this method close to the so-called English thinning, which begins earlier, does not definitely select the reserve trees, maintains a more closed canopy as well as understory trees, and ends the rotation with about 330 dominant trees per ha.—*W. N. Sparhawk.*

17060. **THURSTON, EDGAR.** British and foreign trees and shrubs in Cornwall. xi+288p. University Press: Cambridge, 1930. Pr. 12s. 6d.

17061. **WALRAVENS, EUGÈNE.** Plantation du Chlorophora excelsa. *Bull. Agric. Congo Belge* 21(4): 1442-1444. 1930.—The advantages of *C. excelsa* as a tree for planting in the vast treeless areas of central Africa are stressed. The wood is termite-resistant, not difficult to work; tree growth is fairly rapid; it grows well in sandy soil, in hilly regions; and it resists prolonged drought and cool nights.

17062. **WILSON, T. R. C., T. A. CARLSON, and R. F. LUXFORD.** The effect of partial seasoning on the strength of wood. *Proc. Amer. Wood Preservers' Assoc.* 26: 349-378. 18 fig. 1930.—Tests on tamarack, chestnut, loblolly and shortleaf pines and Douglas fir showed that: (1) strength values are definitely related to moisture content (below the fiber saturation point) if the moisture is evenly distributed throughout the wood; (2) the above mentioned relationships are not applicable to wood air-seasoned for several months or artificially seasoned as in connection with preservative treatment, where the moisture is not evenly distributed. It is concluded that there is no hope of deriving formulae applicable to partially seasoned timber.—*W. H. Snell.*

PHARMACOGNOSY AND PHARMACEUTICAL BOTANY

HEBER W. YOUNGKEN, *Editor*

(See also in B. A. 6(4): Entries 9287, 9539, 10163, 10181, 10183, 10184, 10236, 10283, 10285, 10295, 10456, 10959, 10962, 10976, 10982, 11044, 11178, 11210, 11872; 6(5): 12172, 12795, 12818, 12819, 12820, 12990, 13082, 13241, 13300, 13356, 14016; and in this issue 15161, 15517, 15520, 15521, 15524, 15547, 15548, 15551, 16029, 16075, 16210, 16216, 16258, 16639, 16858, 16886, 17183)

17063. **BECKER, MAX.** Über Insektenwachse. IV. Über Coccerin, das Wachs der Cochenille-Schildlaus (Coccus cati). [Coccerin, the wax of the cochineal insect.] *Biochem. Zeitschr.* 239(1/3): 235-242. 1931.—Chemical study.

17064. **CAVARA, F., e A. CHISTONI.** Sul contenuto in morfina dell'oppio di alcuni ibridi di Papaver somniferum L. (Morphine content of Papaver hybrids.] *Rend. Accad. Sci. Fis. e Mat. Cl. Soc. R. Napoli* 35(1/4): 31-34. 1929.—The hybrid *album* × *nigrum* yielded from 7.12% to 14.4% of morphine.

17065. **CRAVERI CALISTRO.** Les essences naturelles: extraction, characters, emplois. Transl. from the 2nd Italian ed. by HENRI TATU. xi+602p., 57 fig. Dunod: Paris, 1929. Price, 70 fr.—The first part of the book is devoted to the chemistry of the constituents of volatile oils. Next, methods of preparation (distillation, enfleurage, extraction with selective solvents) receive consideration. The major portion of the book is devoted to brief monographs of a number of volatile oils, arranged botanically according to the plants from which they are derived.

17066. **ESDAILE, PHILIPPA C.** Economic biology for students of social science. Part II. Animal and vegetable products. 231p. 96 fig. Univ. of London Press: London, 1931. Price 10s. 6d.—This work deals only with those animal and vegetable products which are connected with household science, and with products rather than with foods as such. Leather, parchment, and vellum; furs; hair and wool; horn, ivory, and whalebone; bone; glue, isinglass, and catgut; fats, waxes, and oils; milk and milk products, are treated from the standpoints of origin and structure, and of the relations of these to their uses. The vegetable products discussed are the vegetable dyes; fatty products including oils and fats; the gums, resins, and vegetable isinglass; fibers; carbohydrates, including starches, sugars, and cellulose; trees, timber, and tree products such as cork, rubber, gutta-percha, and balata; beverages; vinegar; and flavorings, spices, herbs, and condiments. A glossary of technical terms is added.—*C. A. Kofoid.*

17067. **FENTON, E. WYLLIE, and E. D. S. ROBERTSON.** Poisonous and milk-tainting plants and symptoms and first aid to stock. *Edinburgh & East Scotland Coll. Agric. Bull.* 4. 1-56. 1931.—This bulletin describes all poisonous and milk-tainting plants which occur in Scotland. The descriptions are short and popular. Symptoms, preventive measures and treatments of poisoned stock are briefly discussed. Water dropwort (*Oenanthe crocata, Umbelliferae*) causes more poisoning than any other plant.—*H. C. Hanson.*

17068. **GOESTER, L. E.** Pharmacognostische Opstellen, 5. Variabiliteit, erfelykheid en selectie. *Pharm. Weekblad* 68(3): 41-59. 1931.—Many medicinal plants show considerable difference from the original form; in several cases the original form is not known with certainty. This is illustrated on some examples (*Papaver somniferum, Linum usitatissimum, Cichorium intybus*). The general causes of variability on plants are discussed. Examples are given (*Hyoscyamus niger, Mentha piperita, Rheum, Piper cubeba, Pyrethrum cinerariaefolium*) to show the great importance of systematic, genetic research in the development of superior forms of medicinal plants.—*L. E. Goester.*

17069. **GRIEBEL, C.** Zur mikroskopischen Pollenanalyse des Honigs. (IV. Mitteilung.) Auslandshonig. *Zeitschr. Untersuch. Lebensmittel* 61(3): 241-306. 150 photomicrographs. 1931.—The treatise gives the description and illustration of the pollen-forms observed in about 120 honeys outside of Germany (chiefly American) and not occurring in German honeys. The technique for the separation of the pollen grains from honey is also described.—*C. Griebel* (*transl. by G. E. Marvin*).

17070. **KRISHANA, S., and T. P. GHOSE.** Indian Ephedras. *Indian Forest Rec.* 16(2): 19-50. 4 pl. 1931.—A suitable method of assay of Ephedras is described.

The alkalisation with ammonia and the action of chloroform are discussed. Ephedras from many localities in India have been assayed. *E. foliata* has no ephedrine. The richest samples of *E. intermedia*, *E. gerardiana* and *E. nebrodensis* assayed 2.33%, 2.15%, and 2.79% of total alkaloids, the percentages of ephedrine being 0.38%, 1.53%, and 1.79% respectively. The ephedrine content is not affected by altitude. The greater the rainfall the lower the percentage of alkaloids. The ephedrine content is lowest in wet months and highest in the autumn. Storage of plants does not affect the alkaloidal content appreciably. A cheap method of large scale extraction with dilute HCl is described, and 2 methods of synthesizing ephedrine are given.—*M. V. Laurie.*

17071. **LOTHROP, R. E., and H. S. PAINE. Diastatic activity of some American honeys.** *Industr. and Engineer. Chem.* 23(1): 71-74. 1931.—In view of objections raised in Germany to the low diastatic activity of various importations of American honey, the diastatic activity of many samples of unheated American honey of a great variety of floral types was made. The natural diastatic activity of most types was sufficiently high to meet the German requirements. Honeys of certain floral types, notably those of darker color, show characteristically high diastase values, whereas a few, among which alfalfa and orange are the best examples, generally show low values. Considerable variation in the diastatic activity of various samples of the same floral type was found. Moderate heating lowers diastatic activity somewhat. The diastase is probably derived from pollen. Its activity is greatly affected by variations in pH, the optimum being about 5.3. Methods for determining diastatic activity of honey in vogue in Germany do not take this factor fully into account. Gothe's method is objectionable in that large differences in pH exist between the contents of the comparison tubes in a given determination. For honeys of medium diastatic activity Gothe's method furnishes fairly satisfactory comparative values, since the pH values of the significant comparison liquids are near the optimum. In the case of very low or very high values, the method does not yield comparable results. A modification of Gothe's procedure is described in which the pH of the various liquids in a comparison series is kept constant at the optimum point for diastatic activity.—*Courtesy Industr. and Engineer. Chem.*

17072. **MAJIMA, RIKŌ. Über die Identität von Japaconitin und Aconitin und über zwei neue Aconitum-Alkaloide.** *Proc. Imp. Acad. [Tokyo]* 5(9): 415-417. 1929. Aconitine was discovered in 1820, but Japanese aconite was not investigated until 1877. The alkaloid of the Japanese aconite was considered different from aconitine, and was given the name of japaconitine. Some investigators, however, considered it identical. The present studies of the chemical constitution of the alkaloid were rendered difficult by the fact that the japaconitine used differed in minor respects from the alkaloid obtained by other investigators. Investigation of the 10 spp. of *Aconitum* found in Japan failed to yield an alkaloid that corresponded exactly with japaconitine. Differences were due not to the existence of various isomers, but to the fact that there were various mixtures of 3 alkaloids, which were finally isolated,—*aconitine* $C_{34}H_{45}NO_{11}$, and 2 new closely related alkaloids, *mesaconitine* $C_{33}H_{45}NO_{11}$ and *hypaconitine* $C_{33}H_{45}NO_{10}$. The name japaconitine has therefore become superfluous. Article concludes with descriptions and method of isolation of each alkaloid.—*C. C. Plitt.*

17073. **PRESCHER, JOHANNES, und ECKART BOHM. Über die Bewertung der Diastaseprobe bei der Beurteilung von Kunsthonig auf Honigzusatz.** *Zeitschr. Untersuch. Lebensmittel* 61(5): 500-508. 1931.—The diastase content of pure honey is not constant. Honey can readily convert 3-5% starch solution to maltose, leaving no dextrin colorable with I. Down to 2% honey solutions, the amounts of starch hydrolysed are to a great extent proportional to the honey concentrations. Artificial honey, glucose, and especially fructose, minimize the hydrolysing effect. A mixture of 10 parts of honey and 90 parts of artificial honey hydrolyses 4 times as weak as a mixture of 10 parts of honey and 90 parts of water. The opinion is advanced that 1 Gm. of artificial honey with 10% honey admixture should hydrolyse 1 cc. of a 0.1% starch solution. The demonstration of diastase in more limited honey admixture is considered uncertain.—*H. Güth (transl. by C. C. Plitt).*

17074. **RAM, KASHI. Studies in Indian oil seeds. (4) The types of Sesamum indicum, D. C.** *Mem. Dept. Agric. India. Bot. Ser.* 18(5): 127-147. 7 pl. (3 col.), 1 fig. 1930.—From observation over a period of 4 yrs., it was concluded that there are 30 types of *Sesamum indicum* DC. A key to these and a description of each are given followed by observations on a sepaloid form, and a conclusion that smooth seeds yield a greater percentage of oil.—*R. D. Bienfang.*

17075. **SCHWARTZ, LOUIS. Dermatitis venenata due to contact with Brazilian walnut wood.** *U. S. Publ. Health Repts.* 46(33): 1938-1943. 1931.—Eleven cases of dermatitis venenata occurred among 100 workmen in a cabinetmaking plant due to contact with *"embuia"* (*Nectandra* sp.), especially in persons exposed to the sawdust. Cases also occurred in 9 out of 10 other plants using the wood. Tolerance is developed as a rule. Patch tests with sawdust from this wood on 3 volunteers showed positive reaction in each case.—*Author's summary.*

17076. **YERSIN, A., et A. LAMBERT. Essais d'acclimatation de l'arbre à quinquina en Indochine.** *Arch. Inst. Pasteur Indochine* No. 8. 5-22. 3 pl. 1928.—Cultivation of *Cinchona ledgeriana* in basaltic soil appears technically possible on the slopes of the Lang-bian massif at an altitude of 1,000 m., as soil quality supersedes climatic conditions, and *C. ledgeriana* can withstand a severe dry season. Selection trials are necessary in order to obtain a good producing type adapted to its new habitat.—*From authors' conclusions (transl.).*

ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 15105, 15383, 15534, 16811, 17273, 17274, 17489, 17491, 18113, 18114)

17077. **ANDREWS, F. M. Algae of Monroe County, Indiana, III.** *Proc. Indiana Acad. Sci.* 39: 57-58. 1929 (1930).—A brief list.

17078. **BOLD, HAROLD C. Life history and cell structure of Chlorococcum infusionum.** *Bull. Torrey Bot. Club* 57(9): 577-604. 5 pl., 5 fig. 1930.—Observations of cultures show that *C. infusionum* (Schrank) Men. is identifiable by the following characters: the aggregation of polyhedric individuals into a loose coenobium which originates during the swarming of the zoospores; mature vegetative cells are 8-30 μ in diam. The wall is composed of an inner, thin, cellulose layer adjacent to the protoplast, and an outer gelatinous layer, which is often thick and lamellate. The chromatophore is parietal, with or without an opening, and often contains numerous droplets of colorless oil; the chromatophore contains 1 or occasionally 2 angular or spherical pyrenoids. The cells are uninucleate, becoming multinucleate only immediately preceding cleavage. Multiplication is by formation of biciliate zoospores and non-motile aplanospores, both arising by progressive cleavage of a mother protoplast into uninucleate segments. The pyrenoid of the mother cell fragments during cleavage, each daughter protoplast receiving a fragment which becomes a pyrenoid; there is no evidence for an origin de novo of the pyrenoid. Zoospores and aplanospores increase in size

to form the vegetative cells. There is no increase in number of individuals by cell bipartition. Gamete fusion has not been observed. Apparently it does not occur in nature or else conditions in artificial culture are an impediment to fusion. Multiplication is by zoospore formation as long as the moisture is sufficient to permit their escape from the zoosporangium. In dry cultures the potential zoospores develop thick gelatinous membranes and begin their development without a motile stage. In solutions of lower concentration than 1.8%, zoospore formation proceeds rapidly; in nutrient solutions of greater concentration multiplication is by aplanospores. Slight changes in temp. cause liberation of zoospores. The pyrenoid is associated with starch formation. Segments are separated from the protein core, dissolve, and are deposited in the form of starch in the cytoplasm surrounding the pyrenoid. It is suggested that the chemical view of certain proteins as complex molecules which have carbohydrate side chains may be the basis of the morphological changes taking place in the pyrenoid during starch formation. The so called "stroma starch" is in the form of minute ellipsoidal grains which are cleft off from the starch ring surrounding the pyrenoid, and migrate radially through the chromatophore.—*Author's summary.*

17079. **BROWN, HELEN JEAN. The desmids of the Southeastern coastal plain region of United States.** *Trans. Amer. Microsc. Soc.* 49(2): 97-139. 4 pl. 1930.—The 1st part of the paper discusses the distribution of desmids from the geographical aspect and the underlying rock strata; the distribution suggests that slightly acid waters are more important than temp. or underlying geologic formations in limiting desmid occurrence and distribution. The 2nd part consists of an annotated list of the 238 spp. (46 new for the U. S. A.) found in the collections, including: *Pleurotaenium maximum* var. **tumidum*** (p. 108) and *Micrasterias truncata* var. **major** (p. 115), both from New York.—*H. J. Brown.*

17080. **LAING, ROBERT M., and H. W. GOURLAY. The New Zealand species of Gigartina. Part II (Foliose forms).** *Trans. & Proc. New Zealand Inst.* 62(2): 134-155. 4 pl., 15 fig. 1931.—A review of species known or reported from New Zealand, with descriptive, taxonomic, and distributional notes. It includes a considerable number of species excludendae. A key to the species is given.

17081. **LAMBERT, F. D. On the structure and development of Prasinocladus.** *Zeitschr. Bot.* 23: 227-244. 4 fig. 1930.—*Prasinocladus* from an aquarium at Naples was found to be in the *"lubricus"* growth form (Zimmermann). Details of structure and growth are given. Growth in length as well as in branching is brought about by a reproductive process in which the cell divides longitudinally, and one zoospore so formed slips past the other. Instead of escaping, this may remain attached in the cell-opening and from its new position take part in further growth. In general form and habit *Prasinocladus* shows a superficial resemblance to several other algae.—*I. F. Lewis.*

17082. **LEMOINE, Mme. PAUL. Les Corallinacées de l'Archipel des Galapagos et du Golfe de Panama.** *Arch. Mus. Hist. Nat.* [*Paris*] 4: 37-88. 4 pl., 35 fig. 1929.—The descriptive list includes 14 spp. from 3 islands in the Gulf of Panama, distributed as follows: from the island of Coiba, *Archaeolithothamnium* **howei*** (p. 40), *Mesophyllum australe* vars. *tualensis** Fosl. and *minutula** Fosl., *Lithophyllum* **brachiatum*** (*L. lithophylloides* var. *brachiata* Heyd.) (p. 44), *Lithophyllum* (?) **coibense*** (p. 45), and *Melobesia* (*Litholepis*) **fertilis*** (p. 49); from Gorgona, *Lithothamnium indicum** var. *subtilis*, *Lithothamnium* sp., *Lithophyllum* sp., and *Amphiroa* **crosslandi*** (p. 50); from Cocos, *Lithophyllum* (?) **lividum*** (p. 46), *L.* (?) *propinquum* var. **cocosica** (p. 46), *L.* (?) *fetum* Fosl., *L.* (*Dermatolithon*) **saxicolum*** (p. 48), and *Porolithon* **cocosicum*** (p. 49). The 24 spp. from the Galapagos Islands are *Archaeolithothamnium* **crosslandi*** (p. 57), *Lithothamnium* **cottoni*** (p. 57), *L.* **pocillum*** (p. 58), *Epilithon galapagense*, *Mesophyllum* **laxum*** (p. 60), *Lithophyllum* **complexum*** (p. 60), *L.* **divaricatum*** (p. 63), *L.* **alternans*** (p. 64), *L. claudescens**, *L. intermedium**, *L. frutescens**, *L.* **sancti-georgei*** (p. 66), *L.* **rileyi*** (p. 68), *L.* (*Derm.*) **tessellatum*** (p. 68), *L.* (*Derm.*) **mutabile** (p. 70), *Tenarea* **erecta*** (p. 70), *Melobesia* (*Litholepis*) *accola* Fosl. (?), *Amphiroa* **van bosseae*** (p. 73), *A.* **polymorpha*** (p. 74), *A.* **dimorpha*** (p. 76), *A.* **compressa*** (p. 75), *A.* **annulata*** (p. 78), and *Arthrocardia* sp. The author remarks upon the endemic character of the corallines of the Galapagos, their non-tropical affinities, and their closer relationships with those of the Antilles than with those of the Pacific.—*M. A. Howe.*

17083. **PAL, B. P. Burmese Charophyta.** *Proc. Linn. Soc. London* 143. 42-43. 1930/1931.—Abstract.

17084. **PETERSEN, JOHS. BOYE. Algae from O. Olufsen's Second Danish Pamir Expedition 1898-1899.** *Dansk Bot. Ark.* 6(6): 1-59. 1 pl. 1930.—The paper treats of a collection of algae from Pamir, its border districts, the provinces Wakhan, Goran, and Shugnan, Ferghana, Transcaspia, and a single sample from Persia. After a short account of the climatic conditions of the area, and a summary of the literature dealing with the algae of Central Asia, follows a list of the samples examined with enumeration of the species found in each. The Halobion system of Kolbe is applied to the diatom floras of the different lakes and provinces, establishing for each a Halobion spectrum. In the waters of Transcaspia and in some of the lakes of Pamir proper a considerable number of the diatoms are mesohalobes and halophilous species. The greater part of the paper is a list of the species with systematical, ecological, and geographical remarks. New forms are: *Phormidium* **paulsenianum*** (p. 23), *Navicula* **paulseniana*** (p. 40), *Cymbella hybrida* var. **pamirica*** (p. 47), *C.* **subsymmetrica*** (p. 47), *Amphora coffaeiformis* var. **transcaspica*** (p. 48), *Nitzschia amphibia* var. **thermalis*** (p. 51), *N. heidenii* var. **pamirensis*** (p. 52). *Navicula tridentula* Krasske (=*N. bidentula* Petersen).—*J. B. Petersen.*

17085. **RICHARDS, HORACE G. Notes on the marine Algae of New Jersey.** *Bartonia* 13. 38-46. 1932.—Following a brief description of the region, summary of previous work by others, and account of methods now used, is an annotated list of the marine Algae of New Jersey as found by the writer from 1928 to 1931.—*F. W. Pennell.*

17086. **WATSON, JEANNETTE B., and JOSEPHINE E. TILDEN. The algal genus Schizomeris and the occurrence of Schizomeris leibleinii Kützing in Minnesota.** *Trans. Amer. Microsc. Soc.* 49(2): 160-167. 1 pl. 1930.—This is a summary of the information relating to the genus. The principal differences between the material collected in Minnesota and that previously described and figured are discussed: (a) the "ring"-like structure, not described in other published accounts, regularly appearing in the transverse walls of the filaments; (b) the great irregularity in the form and arrangement of the cells of multiseriate filaments in contrast with the conventionalized "brick"-like arrangement usually figured.—*J. B. Watson.*

17087. **WESLEY, OPHELIA C. Spermatogenesis in Coleochaete scutata.** *Bot. Gaz.* 89(2): 180-191. 2 pl. 1930.—This alga collected in the Chicago region produced antheridia from about June 15 to Oct. 15. By division of an interior vegetative cell of the thallus, which ordinarily would not divide again, 2 antheridial mother cells are formed. Further division of each of the mother cells produces a small antheridium and a sister cell, the latter dividing similarly as did the mother cell. In this way more than 4 antheridia may be developed from 1 vegetative cell. The wall of the sister cell of the last antheridium formed has the appearance of the outer wall of an ordinary vegetative cell. The antheridia contain either normal chloroplasts, abnormal chloroplasts, or none at all. The antherozoids formed from each of the daughter cells usually escape through a common pore. *C. scutata* is thought to be next to the Charales in complexity of antheridium development.—*L. H. Tiffany.*

FUNGI

C. L. SHEAR, *Editor*
EDITH K. CASH, *Associate Editor*

(See also in this issue Entries 15177, 15211, 15359, 15395, 15397, 15433, 15434, 15444, 15446, 15465, 15467, 15469, 15525, 15582, 15587, 15598, 15626, 15627, 15628, 16434, 16591, 16671, 16672, 16675, 16811, 16829, 17270)

FUNGI

17088. **BLOCHWITZ, ADALBERT. Standorte und geographische Verbreitung der Schimmelpilze.** *Ann. Mycologici* 28 (3/4) : 241-268. 1930.—The opinion that moulds grow on vegetable, bacteria on animal materials, moulds on acid, bacteria on alkaline substrata, is not entirely correct. All notes on the habitat found in the literature and from the author's observations are tabulated. Some spp. of *Aspergillus* and *Penicillium* endure acid media, or form acids; they are, therefore, not easily antagonized by bacteria. They flourish on moist substrata, and occur in fleshy fruits and vegetables. Oxyphobe spp. are very sensitive to bacteria, and prefer dry substrata; they often occur on excrement, on living or dead insects, on parts of the human or animal body, on cheese, dried fish and other animal materials, on dry fruits, seeds, etc. All spp. have been cultured on acid and alkaline solutions, on pears, apples, bananas, on flesh, dry and moistened cheese and bread. A few spp. are cosmopolitan and common; others have been found in all continents, but are rare. Most spp. of *Aspergillus* are rare, found only once or twice. Several spp. are common in Japan or in Java and neighboring regions, or in America, very rarely in Europe. Methods by which moulds have crossed ocean barriers are discussed. *Aspergillus* spp. are more common in warm countries, *Penicillium* in cold countries.—*A. Blochwitz.*

17089. **BOEDIJN, K. B. Notes on some sooty moulds.** *Bull. Jard. Bot.* [*Buitenzorg*] 11 (2) : 220-231. 1 fig. 1931.—The term "sooty mould" is restricted to those dark-colored fungi which grow on insect secretions, in extra-floral nectaries, etc. Six types of conidial fructification are recognized; buds put out by mycelial cells, as in *Dematium pullulans;* "bodies consisting of a few to rather numerous cells of the same shape and appearance as those of the mycelial threads," here called Coniothecium conidia after the genus of which they are characteristic; and irregular star-shaped conidia as in *Triposporium;* pycnidia with long necks,—the type of fructification united by Zopf under the name *Fumago vagans* Pers.; pycnidia similar to the above, but without long necks; and a type consisting of globose pycnidia on a coarse, *Torula*-like mycelium, here regarded as probably belonging to *Antennularia. Capnodium* **theae*** (p. 223), on leaves of Thea; *C. stysanophorum* Penzig et Sacc. is excluded, as the type specimen consists of 2 unidentified sterile fungi; *Chaetothyrium* **javanicum** (*Capnodium j.* Zimmermann) (p. 225); *Aithaloderma* **setosum** (*Antennaria setosa* Zimm.=*Capnodium guajavae* Bernard,=*A. longisetum* H. and P. Syd.) (p. 227); *Phycopsis* **treubii** (*Atichia t.* v. Höhnel) (p. 228).

17090. **DERX, H. G. Étude sur les Sporobolomycètes.** *Ann. Mycologici* 28 (1/2) : 1-23. 1 pl. 1930.—These fungi, usually encountered by accident, are a part of the microflora which develops on honey-dew and which is nourished principally by sugary exudations produced by green parts of plants as a result of atmospheric or traumatic causes. Consequently, they occur frequently among leaf parasites and often accompany sooty molds. Several spp. are markedly mucilaginous, but this character may disappear in culture. Besides cultural variations of a more or less stable sort, a true mutation was produced by *Sporobolomyces salmoneus. S.* **salmoneus** (p. 17), *S.* **gracilis** (p. 18), *S.* **odorus** (p. 14), and *S.* **albo-rubescens** (p. 14), are described, as are also *S. tenuis* Kl. and v. N., *S. roseus* Kl. and v. N., and *S. salmonicolor* (F. and Br.) Kl. and v. N. Colorless or faintly colored forms are segregated in a genus **BULLERA**, of which 2 spp. are recorded—*B.* **alba** (*S. a.* Hanna) (p. 19), and *B.* **grandispora** (p. 18). The 2 genera are united into the family **SPOROBOLOMYCÈTES** (Sporobolomycetaceae?) (p. 20). A 3rd group of organisms is mentioned under the provisional name **TILLETIOPSIS** (p. 3). These project long, slender, sickle-shaped spores.—*L. R. Tehon.*

17091. **DOWDING, E. SILVER. The sexuality of Ascobolus stercorarius and the transportation of the oidia by mites and flies.** *Ann. Bot.* [*London*] 45 (180) : 621-637. 1 pl., 10 fig. 1931.—The ascospores are unisexual and the fungus is heterothallic. The ascospores and the mycelia which they produce are sexually of 2 kinds: (+) and (−). When 2 (+) mycelia or 2 (−) mycelia are paired, the pairs remain sterile indefinitely; when a (+) mycelium and a (−) mycelium are paired, large numbers of apothecia are soon formed. The oidia are unisexual. A (+) mycelium of ascosporous origin produces (+) oidia and a (−) mycelium of ascosporous origin produces (−) oidia. When horse-dung mites or flies are allowed to crawl from a mycelium of one sex bearing oidia to another mycelium of opposite sex, apothecia are produced in the cultures visited by the mites or flies.—*E. S. Dowding.*

17092. **FLOR, H. H. Indications of heterothallism in Tilletia tritici.** *Phytopath.* 21 (1) : 107. 1931.—Abstract.

17093. **HANNA, W. F., and W. POPP. Relationship of the oat smuts.** *Phytopath.* 21 (1) : 109. 1931.—Abstract.

17094. **HINO, IWAO, and EIRI NAGAOKA. Cintractia machili n. sp., a new smut of Machilus longifolia Blume and M. thunbergii Sieb. et Zucc. var. glaucescens Blume.** *Bull. Miyazaki Coll. Agric. and Forestry* 3. 49-58. 2 pl. 3 fig. 1931.—The fungus was found on diseased winter buds of the 2 hosts, on the Island of Kinshiu. It was earlier mentioned as *Ustilago* sp. in Zyumoku-Byogai-Hen and as *Anthracoidea onumae* Shirae var. nov. (?) in "A list of Japanese fungi."

17095. **HIRATSUKA, NAOHIDE, and HIDEJI KOTANI. Notes on some species of Claviceps collected in Hokkaido, Saghalien and the Kuriles.** [In Japanese.] *Tottori Nagaku-Kwaiho* (*Trans. Tottori Soc. Agric. Sci.*) 2 (1) : 57-60. 1 fig. 1930.

17096. **KARLING, J. S. Studies in the Chytridiales VI. The occurrence and life history of a new species of Cladochytrium in cells of Eriocaulon septangulare.** *Amer. Jour. Bot.* 18 (7) : 526-557. 3 pl. 1931.—*Cladochytrium* **replicatum*** (p. 538) occurs in dying and decaying cells of *Eriocaulon septangulare, E. compressum, Elodea canadensis, Myriophyllum verticillatum, Cladophora glomerata,* and *Spirogyra* sp. collected in New York City and on Long Island. It causes no evident hypertrophy or malformation of the host and appears to be weakly parasitic. Its vegetative thallus consists of a tenuous, branched rhizo-mycelium with one- to several-celled turbinate organs which is replicated to a large extent as it spreads in the host tissue. Intercalary and terminal, spherical, oval, and irregular zoösporangia of variable diameter occur at various intervals on the rhizomycelium. The zoöspores, 4-7 μ in diameter, are discharged through a sporangial neck and lie quiescent in a mass for a few seconds before swimming away. Each zoöspore possesses a single posteriorly attached cilium and a brilliant golden brown globule. The vegetative thallus of the Cladochytriaceae is designated as a rhizomycelium with the view of calling particular attention to its difference from the rhizoidal system of the Rhizidiaceae. Large oval, spherical, and irregular golden zoösporangia which may occupy as many as thirteen host cells and produce hundreds of zoöspores have often been found in cells of *Eriocaulon, Elodea,* and *Myriophyllum.* Resting spores have so far not been found. Whether the forms which occur on the various host plants are the

same species is uncertain, but the evidence at hand suggests that they constitute a single ubiquitous species which parasitizes numerous aquatic plants.—*Author's summary.*

17097. KILLERMANN, SEB. Bayerische Becherpilze. I. Eupezizaceen. Mit kritischen Bemerkungen. *Kryptogam. Forsch. Bayrische Bot. Ges. Erforsch. Heimischen Flora* 2(1): 27-47. 3 pl. 1929.—This work is a report of collections (65 spp.) of Bavarian Eupezizaceae made over a period of 20 yrs. Critical notes deal with spore measurements, hosts, and synonymy for spp. described in century old literature by Rehm and Allescher. Keys to the genera and to the spp. of the larger and more difficult genera are given.—*M. L. Dawson.*

17098. LEONIAN, LEON H., and HERBERT L. GEER. Comparative value of the size of Phytophthora sporangia obtained under standard conditions. *Jour. Agric. Res.* 39(4): 293-311. 1929.—A tabulation of sporangial measurement of 27 spp. of *Phytophthora* (including *Blepharospora*) as reported by various workers supports Leonian's earlier conclusion that the sporangium in the genus is so variable, and so influenced by the substratum or host as to be of little taxonomic value unless taken from cultures grown under standardized conditions and on media of known composition. A large number of strains was assembled, representing 15 known spp. (many strains were unidentified). These were cultured so as to obtain sporangia under standardized conditions (a vigorous growth of sterile mycelium was obtained at 25° C. on a medium consisting of nucleinic acid 1.0 gm., dihydrogen potassium phosphate 0.6 gm., magnesium sulphate 0.3 gm., dextrose 3.6 gm., and distilled water 1000 cc.; after 3 days of growth, the sterile mycelium was removed, washed in dist. water, and transferred to $M/1000$ KNO_3, and cultured at 25° C.); 200 (in some cases 400) sporangia were measured, mean and mode of length and width being recorded. Groupings on the basis of resemblance in sporangial dimensions resulted in putting together spp. or strains which differ greatly in other and more significant characters. Similar measurements of oogonia and of oospores showed these, also, to be unreliable as criteria of species. Relation of antheridia to oogonia is similarly variable, and of little significance taxonomically, as both paragynous and amphigynous antheridia occur in at least 4 spp. (*cactorum, fagi, syringae,* and *pini*). Determination cannot be based on presence or absence of sexual bodies. Cyclical succession of phases in which sex organs are present and phases in which they do not form, occurs in some strains. Dissociation occurs, and the variants may differ greatly in sporangial, oogonial and oospore characters. So-called mutations, saltations, etc., are probably mostly instances of dissociation. The authors summarize their views as to the taxonomy of the genus as follows: *Phytophthora infestans, P. thalictri,* and *P. phaseoli* are taxonomically secure. *P. cinnamomi, P. cryptogea, P. erythroseptica,* and *P. pini* are also distinctive enough to be retained. *P. mexicana* should be merged with *P. erythroseptica* and *P. capsici* with *P. citrophthora. Blepharospora cambivora* should be *Phytophthora cambivora* and *P. fagi* is the same as *P. cactorum. P. cactorum* is retained with reservations. *P. arecae, P. nicotianae,* and *P. syringae* must be considered of doubtful specific value as classifications until intensive study of a number of strains of these organisms has been made. *P. colocasiae, P. faberi, P. palmivora, P. parasitica, P. terrestris, P. parasitica rhei,* and *P. melongenae* should be merged with *P. omnivora; P. theobromae, P. allii, P. jatrophae, P. meadii,* and *P. hibernalis* probably also belong in that group. Hartley's organisms Nos. 8, 36, and 121 seem sufficiently distinctive to merit further study.

17099. LEVINE, MOSES N., and RALPH U. COTTER. A synthetic production of Puccinia graminis hordei. *Phytopath.* 21(1): 107. 1931.—Abstract. *P. g. secalis* × *P. g. tritici* resulted in a rust which attacks certain varieties of rye and wheat rather severely.

17100. LIOU, M. Note sur quelques Urédinées peu communes ou critiques récoltées dans le Midi, le Centre et l'Est de la France. *Bull. Trimest. Soc. Mycol. France* 45(3): 197-215. 18 fig. 1929.—A list of 100 critical spp. collected in the south, center, and east of France. *Puccinia* arvernensis* (p. 198), II and III, on *Epilobium montanum* and on *E. tetragonum; Uromyces* charmelii* (p. 207), III, on *Phyteuma charmelii; Accidium* serratae* (p. 211), I, on *Euphorbia serrata,* and *A.* narcissi* (p. 213), O, I, on *Narcissus tazetta.*

17101. NEWTON, MARGARET, T. JOHNSON, and A. M. BROWN. Hybridization between Puccinia graminis tritici and Puccinia graminis secalis. *Phytopath.* 21(1): 106-107. 1931.—Abstract.

17102. YOUNG, ELAINE M. The morphology and cytology of Monascus ruber. *Amer. Jour. Bot.* 18(7): 499-517. 3 pl. 1931.—Preceding formation of a perithecium, an antheridium arises at the apex of a lateral branch; an outgrowth from the same hypha just beneath the antheridial septum becomes the ♀ organ. The 2 organs fuse and a passageway is formed; a trichogyne is separated from the rest of the ♀ branch by a septum. Nuclear migration occurs from the antheridium to the trichogyne and from the trichogyne through an opening into the ascogonium, where nuclei do not fuse. The ascogonium swells slightly and produces ascogenous hyphae as outer segments near its base. These hyphae grow up around the ascogonium and lie close to its surface. A protective covering is formed by sterile hyphae arising from the stalk below the ascogonium. The ascogenous hyphae become divided into cells, in which clearly defined associated nuclei are visible only in the later stages, although nuclei are present in these hyphae from the time of their origin. Terminal, second, or third cells of ascogenous hyphae may form asci, in which nuclear fusion results in the formation of the large nucleus having a well defined nucleole and reticulum. The 1st nuclear division of the ascus appears to be meiotic; 2 succeeding divisions result in formation of 8 daughter nuclei. Eight ascospores are formed in each ascus by the delimiting action of fibrous material arising from that part of the nucleus which is nearest the wall of the ascus. Ascus walls soon degenerate, leaving ascospores free in the perithecial cavity. *Monascus* belongs in the Aspergillaceae.—*Author's summary.*

MYXOMYCETES

17103. EMOTO, YOSHIKADZU. Javanische Myxomyceten. *Bull. Jard. Bot.* [*Buitenzorg*] 11(2): 161-164. 1931.—An annotated list of 44 from Java and Krakatoa, bringing the total number of spp. from these islands up to 95 and 12 respectively.

LICHENES

17104. GYELNIK, V. Parmelia glabra (Schaer.) Nyl. alakköre. [Forms of P. glabra.] *Magyar Bot. Lapok* 29: 15-18. 1930.—*P. glabra* var. fuscoides (p. 16), with its forms balcanica (p. 16), squamosa (p. 17), and quercicola (p. 17).—*C. Schermann.*

17105. GYELNIK, V. Ochrolechiae nonnullae novae. *Rep. Spec. Nov. Regni Veget.* 27(741/750; paper 46): 391-392. 1930.—*Ochrolechia* albosorediosa (p. 391), Hercegovina; *O.* tatrica (p. 391), Hungary; *O.* roseosorediosa (p. 391), Germany. They are closely related, the chief difference being in color of the soredia; they are probably near *O. androgyna* (Hoffm.) Arn.—*H. K. Svenson.*

17106. JAAG, OTTO. Nouvelles recherches sur les gonidies des Lichens. *Arch. Sci. Phys. et Natur.* [*Geneva*] 5(10): 28-32. 1928; also in *Compt. Rend. Séanc. Soc. Phys. Hist. Nat. Genève* 45(1): 28-32. 1928.—See B. A. 6(2): Entry 5051.

17107. SZATALA, Ö. Beiträge zur Flechtenflora von Bulgarien II. *Magyar Bot. Lapok* 29: 58-104. 1930.—This list of lichens collected in 1929 includes: *Verrucaria* bulgarica (p. 60), *Collema* rhodopense (p. 68), *Lecidea macrocarpa* f. microcarpa (p. 73), *Cladonia rangiformis* var. *muricata m.* variolosa Sandst. (p. 78), *C. pixidata* f. intermedia Sandst. (p. 79), *Acarospora* bulgarica Magn.

et Szat. (p. 82), *Pertusaria* **kasandjeffii** (p. 83), *Alectoria* **degenii** (p. 96). New combinations: *Dermatocarpon lachneum* v. **pruinatum** (*D. rufescens* v. *p.* Stnr.) (p. 61), *Mycocalicium* **compressulum** (*M. praecedens* v. *compressula* Vain.) (p. 63), *Aspicilia microlepis* v. **verrucarioides** (*A. arenaria* v. *v.* Eitn.) (p. 84), *Lecanora intricata* v. **melaena** (*L. polytropa* v. *m.* Hedl.) (p. 87), *Placodium fragile* v. **subcetrarioides** (*Lecanora fragilis* v. *s.* A. Zahlbr.) (p. 88), *P.* **incusum** (*Parmelia dendritica* v. *incusa* Fw.) (p. 88), *P.* **melanophthalmum** (*Lichen melanophthalmus* Ram.) (p. 88), *P.* **praeradiosum** (*Lecanora praeradiosa* Nyl.) (p. 89), *P.* **albomarginatum** (*Squamaria saxicola* v. *albomarginata* Nyl.) (p. 89), *Parmelia aspidota* v. **exasperans** (*P. prolixa* v. *e.* Nyl.) (p. 92), *Caloplaca stillicidiorum* f. **chloroleucum** (*Lichen chloroleucus* Sm.) (p. 97), *C. s.* f. **muscorum** (*Callopisma cerinum* v. *m.* Mass.) (p. 98), *C. haematites* f. **athallina** (Crb.) n. comb. (p. 98), *Physcia sciastra* f. **muscicola** (*Parmelia obscura* v. *m.* Schaer.) (p. 104).—*C. Schermann.*

BRYOPHYTA

A. LEROY ANDREWS, *Editor*

(See also in this issue Entries 15310, 15320, 16811)

17108. **ARMITAGE, ELEONORA. Some bryophytes of the Azores.** *Jour. Bot.* 69(819) : 75-76. 1931.—A list of 30 spp. with distribution notes; some of these had not been reported from the Azores.—*A. L. Grant.*

17109. **CHERMEZON, H., et A. HÉE. Le Buxbaumia aphylla L. en Alsace.** *Arch. Bot. (Bull. Mens.)* 2(3) : 41-47. 1928.

17110. **MÖNKEMEYER, WILH. Die Laubmoose Europas. Andreaeales-Bryales. [European mosses.]** *Rabenhorsts Kryptogamen-Flora von Deutschland, Österreich u. Schweiz.* Ergänzungsband 4(3) : 577-960. 226 fig. 1927.—Continuation of this handbook, with keys.

17111. **MÖRCH, OSCAR. Some interesting features in the life history of Funaria hygrometrica Sibth.** 12p. 7 fig. T. Buncle & Co.: Market Place, Arbroath, 1926.—Life history was studied in detail. Protonemata produced gemmae in insufficient light. Growth in height of the plants compensated for the irregularities in the surface of the substrate. Antherids and archegones on the same plant matured at different times. Mechanism for spore dissemination is discussed. A young sporophyte "grafted" to a young lettuce plant matured successfully. —*A. J. Sharp.*

17112. **ORTH, REINHARD. Vergleichende Untersuchungen über die Luftkammerentwicklung der Marchantiaceen mit Berücksichtigung ihrer Infloreszenzen.** *Flora* 24(2) : 152-203. 78 fig. 1929.—An investigation of spp. of *Marchantia, Preissia, Lunularia, Fegatella, Corsinia, Exormotheca, Targionia, Clevea, Fimbriaria, Grimaldia, Reboulia* and *Plagiochasma* shows that only in *Marchantia* and *Preissia* are the intercellular spaces which become the air chambers formed before the pores. In all the others the air chambers arise through the separation of cells from the surface inward. Leitgeb's conception of an upward growth of the surface cells around and over a point or region was wrong. The chambers and pores arise in the same manner on the inflorescences. In those species which have simple pores on the thallus and barrel-shaped ones on the inflorescences, the latter are formed like those of *Marchantia* except that the pores are there from the beginning of the chamber, and before the barrel cells are formed. Barrel-shaped pores are not due to pressure, as conceived by Leitgeb. The pores of the inflorescences are mostly smaller than those of the thalli, and show more cells in longitudinal section, i.e., the "barrels" are more cells long; also the inner or lower cells of the "barrel" are commonly much enlarged, thus leaving only a small opening. Complex chambers, as in *Grimaldia, Reboulia,* and *Plagiochasma,* arise through the separation of cells lining the original chambers in much the same manner as new chambers arise in the surface layer. Complexity does not come about through outgrowths from the floors and walls of simple chambers. The work substantiates the view that Marchantiaceae do not present an ascending line, beginning with *Marchantia,* as Leitgeb conceived; but a descending, reduced series, with *Marchantia* the most highly developed genus. The reasons for this view are: (a) Etiolated branches of *Marchantia* and *Preissia* never showed simple pores; (b) genera with simple pores show transitions to barrel-shaped pores; (c) the barrel-shaped pores in the inflorescence of those genera which have simple pores in the thallus are formed quite in the same manner as those in *Marchantia;* (d) the air chambers in the inflorescences gradually decrease in their distribution and disappear entirely in the antheridial ones of *Reboulia* and *Plagiochasma;* (e) in some genera with complex air chambers photosynthetic cells occur in some forms as branches from the walls of the chambers (*Wiesnerella, Stephansoniella*) while they may be lacking in all the other forms.—*T. C. Frye.*

17113. **PEARSON, W. H. (edited by H. C. BROOME, and FR. VERDOORN). Notes on a collection of Hepaticae made by Mr. Saxby on the West Coast of Africa.** *Ann. Cryptogamie Exotique* 4(2) : 61-71. 1931.—*Archilejeunea* **apiculata** (p. 61), Gold Coast; *Mastigolejeunea* **tarkwana** (p. 63); *Taxilejeunea* **nicholsonii** (p. 64); *Eulejeunea* **microclada** (p. 66); *Lepidozia nematodes* (Aust.) Howe (=*L. chaetophylla* Spruce); *L.* **hexiloba** (p. 67); *Metzgeria* **saxbyi** (p. 70).

17114. **SAINSBURY, G. O. K. South Island mosses recently found in the North Island.** *Trans. & Proc. New Zealand Inst.* 62(2) : 82-85. 1931.—An annotated list of 17.

PTERIDOPHYTA

C. A. WEATHERBY, *Editor*

(See also in this issue Entries 15358, 16811, 17262, 17263, 17270)

17115. **BAILEY, S. W. A second station for Asplenium montanum in Massachusetts.** *Amer. Fern Jour.* 21(4) : 140-143. 2 fig. 1931.—At Cheshire, extending the range 20 miles northward.—*C. A. Weatherby.*

17116. **BLOMQUIST, H. L. Some pteridophytes of North Carolina and their distribution.** *Amer. Fern Jour.* 21(3) : 81-90. 2 pl. 1931.—N. Carolina has 3 life zones, coastal plain, piedmont and mountain. A list of 48 pteridophytes known to occur in the state is given with the zones in which each is found and detailed discussion of the distribution of several.—*C. A. Weatherby.*

17117. **DOMIN, KAREL. The hybrids and garden forms of the genus Pityrogramma (Link).** *Rozp. II. Tř. České Akad.* 38(4) : 1-80. 11 pl. 1929.—The possibilities of hybridization in the genus are considered and previous work on the subject is reviewed. A systematic account is given of the cultivated spp. and forms and those of probably hybrid origin. *P. peruviana* var. **mayi** (p. 18); *P. presliana* var. **aurata** (*Gymnogramme tartarea* var. *a.* Moore) (p. 19); *P. chrysophylla* var. **laucheana** (*G. l.* C. Koch) (p. 21), with formae **platyloba** (p. 22), **irregularis** (p. 22), **cristiformis** (p. 23), **superba** (p. 23),

pendula-cristata (p. 23), and cristata (p. 23); *P. c.* var. heyderi (*Gymnogramme h.* Lauche) (p. 24); *P. c.* var. parsonsii (p. 25); *P. c.* var. riallii (p. 25); *P. c.* var. amabilis* (p. 26); *P. c.* var. sandfordii (p. 26); *P. c.* var. aureo-marginata (p. 26); *P. c.* var. aurifera (*Gymnogramme peruviana a.* Moore) (p. 27); *P. c.* var. alstonii (p. 27); *P. c.* var. subaurea (p. 28); *P. c.* var. major (p. 28); *P. c.* var. caudata (p. 28); *P. c.* var. spectabilis (*Gymnogramme s.* Stelzner) (p. 32); *P. c.* var. subargentea (p. 32); *P. c.* var. praestans* (p. 33); *P. c.* var. marginata (p. 34); *P. c.* var. farinifera (*Gymnogramme fariniferum* Lind. & Rod.) (p. 34); *P. c.* var. cordreyi (p. 35); *P. calomelanos* f. gigantea (p. 36); *P. decomposita* var. leiophylla (p. 36); *P. d.* var. flavicans (p. 37); *P. d.* var. bicolor (p. 38); *P. d.* var. argyrea (p. 38); *P. d.* var. elegantissima (*Gymnogramme e.* Pynaert) (p. 38); *P. speciosissima** (p. 38); *P. lathamiae* (*Gymnogramme l.* Moore) (p. 39); *P. sulphurea* f. caudata (p. 41); *P. pulchella* var. lindenii (p. 42), with f. furcata (p. 42) and f. dissecta (p. 43); *P. p.* var. virescens (p. 43), with f. cristatula (p. 43); *P. p.* var. pseudosulphurea (p. 43), with f. ramosa (p. 43); *P. p.* var. cremacea (p. 43); *P. p.* var. wetenhalliana (*Gymnogramme w.* Moore) (p. 43); *P. p.* var. spontanea* (p. 45); *P. p.* var. trichomanoides* (p. 45); *P. schizophylla* var. gloriosa (p. 46); *P.* distans (*Gymnogramme d.* Link) (p. 49); *P.* macgillivrayi (p. 52); *P.* fendleriana (p. 53); *P. hybrida* massonii (*Ceropteris m.* Link) (p. 54); *P. h.* bernhardii (*Gymnogramme h.* β *b.* C. Koch) (p. 54); *P. h.* martensii (*Ceropteris m.* Link) (p. 54), with f. ochracea (p. 55); *P. h.* sulphurea (*Gymnogramme h.* δ *sulphurea* C. Koch) (p. 55); *P. h.* ochrophylla (p. 56); *P. h.* monstrosa (p. 57); *P. h.* maxima (p. 57); *P. h.* cystopteroides (p. 57); *P.* consimilis (p. 58); *P.* albicans (p. 58); *P.* mira (p. 59); *P.* intermedia (*Ceropteris i.* Fée) (p. 59); *P.* luteo-alba (*Gymnogramme l.-a.* Lauche) (p. 60); *P.* nicaraguensis (p. 61); *P.* mayeriana (*Gymnogramme m.* A. Br.) (p. 62); *P.* rollisonii (*Gymnogramme r.* Moore) (p. 62); *P.* cubensis (p. 64); *P.* boucheana (*Gymnogramme b.* A. Br.) (p. 65), with f. kewensis (p. 66); *P.* consanguinea (*Gymnogramme c.* A. Br.) (p. 66); *P.* intercedens* (p. 68); *P.* depauperata (p. 68); *P.* berolinensis (p. 68); *P.* aureo-villosa (p. 69); *P.* stelzneri (*Gymnogramme s.* C. Koch) (p. 69); *P.* chelsonii (*Gymnogramme c.* Moore) (p. 72); *P.* dualis (p. 72). —*C. A. Weatherby.*

17118. **EWAN, JOSEPH.** Recent fern notes from southern California. *Amer. Fern Jour.* 21(3): 106-109. 1931.—Notes on and new stations for 9 spp.—*C. A. Weatherby.*

17119. **GRAVES, E. W.** Botrychiums of the central states. *Amer. Fern Jour.* 21(4): 125-132. Map. 1931.—The ranges of *Botrychium ternatum* vars. *oneidense* and *intermedium*, *B. obliquum* and *B. dissectum* in the upper Mississippi valley are worked out in detail. The spores of the group of *B. obliquum* mature about a month later than those of the group of *B. ternatum.*—*C. A. Weatherby.*

17120. **HASSLER, EMILIO.** Pteridophytorum paraguariensium et regionum argentinarum adjacentium conspectus criticus. *Trabajos Inst. Bot. Farm. Buenos Aires* 45. 1-102. 1928.—An annotated list of 239 species with habitats, general ranges, citation of specimens and more or less descriptive matter. *Trichomanes crispum* ssp. pellucens (*T. p.* Kze.) (p. 15); *Cyathea hassleriana* var. rojasii (*C. r.* Christ) (p. 18); *Alsophila compta* f. transiens (p. 20); *Alsophila trichophlebia* f. calvata (p. 20) and subf. intermedia (p. 20); *Dryopteris* adnata Rosenst. (p. 21); *D. diplazioides* var. amambayensis Rosenst. (*D. a.* Christ) (p. 23); *D. effusa* var. tenuis (*Nephrodium effusum* var. *tenue* Hicken) (p. 23); *D.* guaranitica Rosenst. (p. 24); *D.* melanopus Rosenst. (p. 24); *D. mollis* var. glabriindusiata (*Aspidium molle* var. *glabriindusiatum* Hier.) (p. 25); *Leptochilus crenatus* var. contaminoides (*Gymnopteris c.* Christ) (p. 31); *L. c.* var. *c.* f. robustior (p. 32); *Dennstaedtia* macrocarpa Rosenst. (p. 35); *Lindsaya stricta* var. microphylla (*L. m.* Presl) (p. 36); *Blechnum lanceola* f. *minus* lusus trifoliatus (*B. trifoliatum* Kaulf.) (p. 47); *B. serrulatum* f. nanum (p. 49); *Ceropteris longipes* var. argentea Rosenst. (p. 51); *Doryopteris pedata* var. lorentzii (*Pellaea l.* Hier.) (p. 54); *D. triphylla* var. pedatifida (*Cassebeera p.* Christ) (p. 54); *Adiantum delicatulum* f. tremulum (*A. t.* Kze.) (p. 60); *A. d.* var. deflectens (*A. deflectens* Mart.) (p. 60); *Polypodium recurvatum* var. subbipinnatifidum Rosenst. (p. 69); *P. r.* var. minus Rosenst. (p. 69); *P. r.* var. paraguayense (*P. p.* Bak.) (p. 69); *P. robustum* var. cinerascens (*P. c.* Lindm.) (p. 69); *P. r.* var. *c.* formae major and minor (p. 70); *P. brasiliense* var. pleiosorum Rosenst. (p. 71); *P. latipes* lusus furcatus Christ (p. 72); *P. l.* var. laetum (*P. laetum* Raddi) (p. 72); *P. latipes* var. hassleri (*P. h.* Christ) (p. 72); *P. lepidopteris* f. intermedium (p. 73); *P. lapathifolium* f. crispum (p. 75); *P. lycopodioides* var. longipes (p. 78); *Anemia trichorhiza* var. paraguariensis (p. 83); *A. phyllitidis* formae minor Rosenst. and transiens Rosenst. (p. 85); *A. p.* var. longifolia (*A. l.* Raddi) (p. 85); *A. p.* var. fraxinifolia (*A. f.* Raddi) (p. 85); *A. p.* var. hirta (*A. h.* Raddi) (p. 85); *A. p.* var. tweedieana (*A. t.* Hook.) (p. 85); *Danaea nodosa* var. intermedia (p. 89); *D. n.* var. longifolia (*D. l.* Desv.) (p. 89); *Lycopodium alopecuroides* ssp. contextum (*L. c.* Mart.) (p. 92), with formae integrum and intermedium (p. 92); *L. carolinianum* ssp. paradoxum (*L. p.* Mart.) with var. paraguariense (p. 93); *L. reflexum* var. rupestre (p. 94).—*C. A. Weatherby.*

17121. **HOLTTUM, R. E.** Malayan ferns, and a few from Java, growing under natural conditions. *Proc. Linn. Soc. London* 143. 16-18. 1930/1931.

17122. **MAXON, WILLIAM R.** New tropical American ferns—VIII. *Amer. Fern Jour.* 21(4): 136-139. 1931. *Adiantum* cordatum (p. 136), Panama; *A.* diphyllum (*Hewardia diphylla* Fée) (p. 137); *Leptochilus* killipii (p. 138), Panama.—*C. A. Weatherby.*

17123. **PALMER, T. CHALKLEY.** Tropical American Isoetes. *Amer. Fern Jour.* 21(4): 132-136. 1931.—*I. martii* is recorded from Colombia and *I. cubana* from British Honduras—the second collection of the species. *I. triquetra* is redescribed from better material than was heretofore available. *I.* montana (p. 134), Costa Rica, is new.—*C. A. Weatherby.*

17124. **ROUX, E. R.** Observations on Marsilea macrocarpa Presl. *South African Jour. Sci.* 26: 311-317. 9 fig. 1929.

17125. **SCHAFFNER, JOHN H.** Studies of Equiseta in European herbaria. *Amer. Fern Jour.* 21(3): 90-102. 1 pl. 1931.—*E. ramosissimum* and *E. debile*, though difficult to distinguish in imperfect material, are regarded as tenable spp. *E. myriochaetum* of Mexico is a good sp., separated from *E. giganteum* and its immediate allies by the arrangement of the stomata. *E. schaffneri*, *E. pyramidale* and *E. martii*, however, are considered mere fluctuations of *E. giganteum* and *E. xylochaetum*. *E. moorei* Newman is a good sp. *E. trachyodon* should be maintained and should include the American *E. variegatum* var. *jesupi*; it is not to be regarded as an offshoot of *E. hiemale*. 23 spp. are now recognized by the writer. The specimens of *Equisetum* in the herbarium of Linnaeus are enumerated. The name *E. fluviatile* is preferred to *E. limosum.*—*C. A. Weatherby.*

17126. **TEST, FREDERICK H.** Pteridophytes of Turkey Run State Park [Indiana]. *Proc. Indiana Acad. Sci.* 39: 115-118. 1929(1930).—Annotated list of 32 spp. and forms.

17127. **THOMPSON, J. WILLIAM.** 1930 Washington fern notes. *Amer. Fern Jour.* 21(4): 117-124. 1 pl. 1931. —Collecting trips were made to Mts. Angeles, Baker, Rainier and Stuart. Notes on 29 spp. are given, including *Lycopodium annotinum* var. *acrifolium*, new to the state.—*C. A. Weatherby.*

17128. **WHERRY, EDGAR T.** Asplenium bradleyi erroneously reported on limestone again. *Amer. Fern Jour.* 21(3): 111-113. 1931.—The persistence in literature of the mistaken statement that this fern is calcicolous

makes it necessary to repeat that there is no authenticated record of its occurrence on limestone.—*C. A. Weatherby.*

17129. **WHYTE, J. H. The spread of bracken by spores.** *Trans. & Proc. Bot. Soc. Edinburgh* 30 (3) : 209-211. 1929/1930.

SPERMATOPHYTA

FRANCIS W. PENNELL, *Editor*

(See also in this issue Entries 15124, 15169, 15190, 15195, 15208, 15308, 15309, 15314, 15329, 15333, 15338, 15343, 15345, 15351, 15356, 15358, 15366, 15369, 15374, 15384, 15490, 16811, 16907, 16937, 16957, 16971, 16987, 16992, 17000, 17014, 17030, 17048, 17060, 17069, 17270, 18068, 18114)

GYMNOSPERMAE

17130. **GAUSSEN, H., et M. LACASSAGNE. Les Épicéas du Kamtchatka.** *Bull. Soc. Hist. Nat. Toulouse* 59 (1) : 190-202. Illus. 1930.—The two spruces of Kamtchatka are *Picea jesoensis** (S. & Z.) Carr. and *P. kamtchatkensis** Lacass; both are described and figured. The new species appears to be northern and developed around Jelorka.—*H. Gaussen (transl. by P. A. Young).*

17131. **OSTENFELD, C. H., and C. SYRACH LARSEN. The species of the genus Larix and their geographical distribution.** *Kgl. Danske Videnskab. Selskab. Biol. Meddel.* 9 (2) : 3-106. 35 fig., 8 maps. 1930.—The authors recognize 10 spp. and 3 varieties, *L. griffithiana, mastersiana, potanini, occidentalis* and *lyallii* in one subgenus, *L. kaempferi, gmelini, siberica, decidua* and *laricina* in the other (neither named). A few hybrids, especially those occurring in nature, are treated. No new species nor combinations are presented but 3 varieties were recently described by the authors in another paper (*Pflanzenareale* 2: 7. 1930). The figures show photos of cones and habitat groups of trees.—*O. A. Stevens.*

17132. **VIGUIÉ, MARIE-THÉRÈSE, et HENRI GAUSSEN. Revision du genre Abies. Introduction à l'étude d'ensemble. I. Historique. II. Description du genre. III. Monographie et iconographie des espèces.** *Bull. Soc. Hist. Nat. Toulouse* 57 (4) : 369-434. 7 fig. 1928; 58 (3) : 245-564. illus. 1929. *Trav. Laboratoire forestièr de Toulouse* 2: 1-386.—The authors have undertaken a revision as complete as possible of the genus *Abies.* A comparative study of the morphology of the organs, paleontological history and evolution, geographical distribution, practical value of the species, and a bibliography are included. The classification enumerates 52 species and 12 varieties, among which are *A. borisii-regis* vars. **pungenti-pilosa** (Mattf. sub. forma in herb.) (p. 279), and **pseudocilicica** (*A. cephalonica apollinis* f. *p.* Guignier & Maire) (p. 281); *A. forrestii* var. **smithii** (p. 355), Yunnan; *A. koreana* var. **sikokiana** (*A. s.* Nakai) (p. 394); *A. nemorensis* var. **wilsonii** (*A. w.* Miyabe & Kudo) (p. 430); *A. nordmanniana* var. **macrolepis** (?) (p. 451).—*H. Gaussen (transl. by E. A. Baird).*

17133. **ZIEGENSPECK, [H.] Die Phylogenie der Coniferen.** *Ber. Westpreuss. Bot.-Zool. Vereins* 49. 45-60. 1927.

ANGIOSPERMAE (MIXED)

17134. **BÉGUINOT, AUGUSTO. Note Biologiche I. Partenocarpie in Stratiotes aloides L. II. Xanthium nigri Ces. Pass. e Gib. ed altre probabili mutazioni nel genere "Xanthium." III. Romulea rosea Eckl. avventizia in Australia. [I. Parthenocarpy in Stratiotes aloides. II. Xanthium nigri and other probable mutations in the genus Xanthium. III. Adventitious Romulea rosea Eckl. in Australia.]** *Atti Soc. Nat. e Mat. Modena* 60: 23-31. 1929.—*Stratiotes aloides* from lakes of Mantua thought to have only ♀ individuals more or less parthenocarpic, with no trace of the 70 ♂ individuals introduced there. In II, author publishes a new station along the upper lake of Mantua for *Xanthium nigri,* which is considered a mutant of *X. italicum* Moretti. Seedlings cultivated in garden showed forms intermediate between the two forms. Note III gives a new locality for *Romulea rosea* Eckl. (Iridaceae) supposedly imported with seed of other cultivated plants.—*H. D. Hill (from abstract of A. Béguinot).*

17135. **DIELS, L. Miscellanea sinensis III.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (99) : 881-892. 1930. —Cyperaceae: *Cobresia* **kansuensis** Kükenthal (p. 881). Palmae: *Pinanga* **sinii** Burret (p. 882); *Rhapis* **gracilis** Burret (p. 883); *Calamus* **rhabdocladus** Burret (p. 884). Aristolochiaceae: *Asarum* **insigne** (p. 885). Anonaceae: *Polyalthia* **plagioneura** (p. 886). Crassulaceae: *Sedum* **progressum** (p. 887). Saxifragaceae: *Saxifraga* (*Kabschia* § *Marginatae*) **kansuensis** Mattf. (p. 887). Ochnaceae: **SINIA** (p. 888) (*Luxemburgieae*), with *S.* **rhodoleuca** (p. 889). Labiatae: *Scutellaria* **rehderiana** (p. 889); *Thymus serpyllum* ssp. **mongolicus** Ronniger (p. 890). Scrophulariaceae: *Pedicularis* **decorissima** (p. 891), Tibet; *P.* **chenocephala** (p. 892); *P. striata* var. **poliocalyx** (p. 892).—*A. M. Johnson.*

17136. **FISCHER, C. E. C. Plants new to Assam: III.** *Kew Bull. Misc. Inform.* 1931 (5) : 281-285. 1 fig. 1931.—*Impatiens* **cothurnoides*** (p. 281); *Jasminum* **wengeri** (p. 283); *Mantisia* **wengeri** (p. 283); *Chasalia* **lushaiensis** (*Gaertnera l.* Fischer) (p. 282); 8 known species not previously recorded in the province are listed.—*C. Fischer.*

17137. **GUILLAUMIN, A. Plantes nouvelles ou critiques des serres du Muséum.** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1928 (4) : 281-283. 1928.—*Begonia lantanaefolia* A. DC., emended description; *B.* **majungaensis** (p. 281), Madagascar; *Schizopepon fargesii* Gagnep. has long been misidentified as *Actinostemma paniculatum;* the parents of × *Aloe spinosissima* Hort. are probably *A. arborescens* Mill. and *A. humilis* Haw.

17138. **HENDERSON, L. F. Some new species and varieties from Oregon.** *Rhodora* 32 (374) : 20-28. 1930.—*Scirpus* **malheurensis** (p. 20); *S. congdoni* var. **minor** (p. 21); *Juncus* **inventus** (p. 31); *Damasonium californicum* var. **biddlei** (p. 21); *Allium geyeri* var. **graniferum** (p. 22); *A.* **robinsonii** (p. 22); *A.* **mirabile** (p. 22); *A.* **punctum** (p. 23); *Iris* **innominata** (p. 23); *Montia* **sweetseri** (p. 24); *Silene* **insectivora** (p. 24); *S. montana* var. **viscida** (p. 25); *Ranunculus occidentalis* var. **dissectus** (p. 25); *Cardamine* **pattersoni** (p. 25); *Arabis* **wyndii** (p. 25); *Thermopsis* **subglabra** (p. 26); *Cotyledon* **glandulifera** (p. 26); *Dodecatheon* **poeticum** (p. 27); *Synthyris rotundifolia* var. **sweetseri** (p. 27); *Artemisia discolor* var. **glandulifera** (p. 27); *Chrysothamnus bloomeri* var. **pubescens** (p. 27); *Hieracium cynoglossoides* var. **ursinum** (p. 27); *Luina hypoleuca* var. **dentata** (p. 28); *Solidago californica* var. **aperta** (p. 28).—*S. F. Blake.*

17139. **PILGER, [R.], et al. Vermischte Diagnosen. V.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (97) : 769-776. 1929.—Pilger describes *Deschampsia* **mildbraedii** (p. 769), Cameroons; FR. MARKGRAF describes *Freycinetia* **abbreviata** (p. 769), and *F.* **lombokensis** (p. 770), Malaysia, and *Blakea* **schultzei** (p. 770), Colombia; M. BURRET describes *Lepidocaryum* **tessmannii** (p. 771), Peru; O. C. SCHMIDT describes *Weinmannia* **velutina** (p. 772), Brazil, *W.* **ayavacensis** (p. 772), Peru, and *Elaeocarpus* **pseudosepicanus** (p 773), New Guinea; J. MATTFELD proposes *Stilpnopappus* **pickelii** (p. 774), Brazil, *Tafalla* **leptothamna** (p. 775), Peru, and *T.* **scolopendra** (*Baccharis s.* Hook.) (p. 776).—*A. M. Johnson.*

17140. **ST. JOHN, HAROLD. New plants from British Columbia.** *Rept. Prov. Mus. Nat. Hist.* (*Victoria B. C.*) 1927. 14-15. 1928.—Issued also as *Contr. Bot.*

Dept. State College of Washington No. 10. 2pp. 1928.) *Juncus* fucensis and *Draba* acinacis (both p. 14).—*H. St. John.*

17141. **STANDLEY, P. C.** New forms and varieties of Indiana plants. *Rhodora* 32(374): 32-34. 1930.—*Tradescantia reflexa* f. mariae (p. 32) and f. lesteri (p. 32); *Asclepias tuberosa* f. bicolor (p. 33); *Vernonia missurica* f. carnea (p. 33); *Coreopsis tripteris* var. deamii (p. 33) and var. intercedens (p. 34), Illinois.—*S. F. Blake.*

17142. **STAPF, O.** Plants from the Royal Botanic Gardens, Kew, etc. *Curtis's Bot. Mag.* 155(1): Tab. 9249-9259. 1929(1931).—Descriptions, with hand-colored plates, are given for the following species, each by O. Stapf unless otherwise stated: *Paeonia* tomentosa (*P. wittmanniana* var. *t.* Lomakin) (tab. 9249); *Salvia jurišićii** (the author, W. B. Turrill, states that Košanin's suggestion that *S. j.* represents a new section of the genus is justified by the peculiar morphology of the flower); *Kalanchoë delagoënsis**, *Cyrtanthus epiphyticus**; *Rhododendron adenogynum**; *Onosma hookeri* spp. wardii* (tab. 9254), Tibet; *Coelogyne ovalis** and *Acacia fimbriata** (by V. S. Summerhayes); *Allium* amabile* (*A. pyrrhorrhizum* Airy Shaw) (tab. 9257); *Reevesia pubescens**; *Rhododendron hypolepidotum**.

17143. **WERDERMANN, E.** Beiträge zur Kenntnis der Flora von Chile. IV. Über einige chilenische Polster-Opuntien. V. Vermischte Diagnosen 758. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(97): 752-768. 1929.—IV. In the high Andes of the Chilean provinces of Atacama and Antofagasta occur a number of cushion-forming spp. of *Opuntia;* similar spp. occur also in adjoining areas of Argentina, Bolivia, and Peru. Four such are described and keyed: *O.* leoncito (p. 752), *O. rahmeri* Phil., *O. atacamensis* Phil., and *O. tarapacana* Phil., all from Chile. Part V discusses various other Chilean spp., including; *Danthonia* werdermannii Pilger (p. 758); *Phippsia* werdermannii Pilger (p. 759), with forms minor and major (p. 760); *Poa* (*Dioecopoa*) berningeri Pilger (p. 761); *P.* taltalensis Pilger (p. 762); *Carex* werdermannii Rud. Gross (p. 763); *Echinocactus* taltalensis (p. 763); *Cereus* deserticolus (p. 764); *Malesherbia* johnstonii (p. 765); *M.* glandulifera (p. 766); *Plantago* johnstoni Pilger (p. 767).—*A. M. Johnson.*

MONOCOTYLEDONES

17144. **AMES, OAKES, and EDUARDO QUISUMBING.** New or noteworthy Philippine orchids, I. *Philippine Jour. Sci.* 44(4): 369-383. 16 pl. (2 col.) 1931.—Descriptions and illustrations, from living material, are given of: *Adenostylis* merrillii* (p. 370); *Haemaria discolor** Lindl., new for the Philippines; *Dendrobium chameleon* v. ovatilabium* (p. 372), and *D. c.* f. alba (p. 373); *D.* miyasakii* (p. 373); in *Eria aporoides* Lindl. the pollen masses are 8 in number, hence Merrill's transfer of the sp. to *Dendrobium* is not accepted; *E.* longissima* (p. 374); *Bulbophyllum biflorum** Teijsm. and Binn., first authentic report from Philippines; *B.* emiliorum* (p. 377); *B. antenniferum** (Lindl.) Reichb. f.; *B. ebracteolatum** Kränzl.; and *B. ornatissimum** (Reichb. f.) J. J. Sm., a species previously known only from Assam and Sikkim, India.

17145. **BILL, J. P.** Carex knieskernii Dewey. *Rhodora* 32(380): 162-166. 1930.—Discussion of history of this sp., with conclusion that it is probably a distinct sp. and not a hybrid.—*S. F. Blake.*

17146. **BLAKE, S. F.** The typification of Scirpus capitatus L. *Rhodora* 30(381): 182-185. 1930.—Maintains, in reply to Farwell (see entry 17157), that Clayton 380 is the type of *Scirpus capitatus* L., and that his interpretation of the name *Eleocharis capitata* (L.) R. Br. in the sense of *E. tenuis* (Willd.) Schult. is correct.—*S. F. Blake.*

17147. **BURRET, M.** Die Palmengattungen Orbignya, Attalea, Scheelea, und Maximiliana. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(97): 651-701. 1929.—A conspectus of the spp. of *Scheelea* and *Maximiliana.* A key to the spp. is given for each genus. New to science are: *Scheelea* sects. SYNALPHOCARYUM (p. 652) and DIALPHOCARYUM (p. 653); *S.* bassleriana (p. 655), Peru; *S.* weberbaueri (p. 659), Peru; *S.* huebneri (p. 663), Amazon; *S.* passargei (p. 671), Venezuela; *S.* cubensis (p. 671), Cuba; *S.* urbaniana (p. 672), Tobago; *S.* stenorhyncha (p. 675), Peru; *S.* preussii (p. 678), Guatemala; *S.* brachyclada (p. 680), Peru; *S.* tessmannii (p. 682), Peru; *S.* costaricensis (p. 684), Costa Rica; *S.* macrolepis (p. 688), Venezuela; *Maximiliana* macrogyne (p. 692), Brazil; *M.* stenocarpa (p. 696), Peru; *M.* macropetala (p. 699), Venezuela. New combinations are: *Scheelea* wallisii (*Attalea w.* Huber) (p. 657); *S.* humboldtiana (*A. h.* Spruce) (p. 658); *S.* goeldiana (*A. g.* Huber) (p. 658); *S.* martiana (*A. excelsa* Mart. non Karst.) (p. 661); *S.* gomphococca (*A. g.* Mart.) (p. 666); *S.* tetrasticha (*Maximiliana ? t.* Drude) (p. 667); *S.* phalerata (*Attalea p.* Mart.) (p. 669); *S.* blepharopus (*A. b.* Mart.) (p. 674); *S.* maracaibensis (*A. m.* Mart.) (p. 676); *S.* rostrata (*A. ? r.* Oerst.) (p. 688). Nomina nuda are: *Schleelea imperialis* Hort., *S. macipi* Hort., *Maximiliana jagua* Seem., *M. panamensis* Linden and *M. spiralis* Linden.—*A. M. Johnson.*

17148. **BURRET, M.** Iriarteae. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(99): 918-942. 1930.—A conspectus of some spp. of *Socratea, Iriartea, Dictyocaryum, Catoblastus, Catostigma, Wettiniicarpus,* and *Wettinia*—all from South America. New to science are: *Socratea* macrochlamys (p. 918), Colombia; *Iriartea* gigantea H. Wendl. in scheda (p. 920), Costa Rica; *I.* weberbaueri (p. 921), Peru; *I.* megalocarpa (p. 921). *Dictyocaryum* schultzei (p. 925) and *D.* platysepalum (p. 927), Colombia; *Catoblastus* engelii H. Wendl. in scheda (p. 928), Venezuela; *C.* velutinus (p. 929), Colombia; *C.* mesocarpus (p. 930), Venezuela; *C.* microcarpus (p. 931), *Catostigma* megalocarpum (p. 935) and *C.* kalbreyeri (p. 935), Colombia; *C.* sphaerocarpum (p. 936), Colombia, with var. microcaryum (p. 937): WETTINIICARPUS (p. 937) with *W.* fascicularis (p. 938), Colombia; *Wettinia* weberbaueri (p. 939), Peru; *W.* hirsuta (p. 941), Colombia. New combinations are: *Catostigma* drudei (*Catoblastus d.* Cook et Doyle) (p. 932); *C.* aequale (*Acrostigma equale* Cook et Doyle) (p. 934); *Wettinia* quinaria (*Wettinellia q.* Cook et Doyle) (p. 942).—*A. M. Johnson.*

17149. **BURRET, M.** Palmae novae Luetzelburgianae. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(100): 1013-1026. 1930.—*Manicaria* atricha (p. 1013); *Geonoma* leptostachys (p. 1014), Rio Negro region; *G.* macropoda (p. 1015); *G.* major (p. 1016) and *G.* parvisecta (p. 1018), Rio Negro region; *Orbignya* luetzelburgii (p. 1019), Amazonas; *Astrocaryum* gymnopus (p. 1020), Orinoco region of Venezuela; *A.* luetzelburgii (p. 1021), Rio Uaupes; *Bactris* luetzelburgii (p. 1022), Cassiquiare, Venezuela; *B.* lanceolata (p. 1023), Rio Negro; *B.* gymnospatha (p. 1024), Cassiquiare, Venezuela; *Desmoncus* luetzelburgii (p. 1025), Rio Papori; *D.* angustisectus (p. 1025). Unless otherwise stated, species are from Brazil.—*A. M. Johnson.*

17150. **BURRET, M.** Über Leopoldinia piassaba Wallace, die Stammpflanze der Pará-Piassave. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(100): 1027-1028. 1930.—*Leopoldinia piassaba* yields the Pará-Piassave of commerce, so called because exported from Pará. From Spruce's description and from photographs supplied by Luetzelburg, Burret finds that Wallace's figure of the plant is quite correct. Luetzelburg found the species practically exterminated in certain localities. This collector gathered specimens at Capihuara and Santa Isabel on the Cassiquiare (Venezuela), where it goes by the name "Chiqule-Chiqule." According to Wallace and Spruce the palm is called "Chiquichiqui." In northern Brazil it is called "Piassaba." The Brazilian name "piassava" has also been applied to the palm *Attalea funifera* Mart., the source of the valuable "Bahia-Piassave" of commerce, and this erroneous transfer of the name has led to the belief that *Attalea funifera* ranged into Venezuela.—*A. M. Johnson.*

17151. **BURRET, M.** Palmae novae austroamericanae. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 11(101): 1-19. 1930.—*Mauritia* minor (p. 1); *Chamaedorea* minor (p. 2) and *Socratea* microchlamys (p. 3), Venezuela; *Catostigma* anomalum (p. 4); *Phytelephas* dasyneura (p. 5); *Geonoma* woronowii (p. 6); *G.* lanceolata (p. 7), Brazil; *G.* triglochin (p. 8); *G.* longepedunculata (p. 8); *G.* oligoclada (p. 9), Brazil; *G.* euspatha (p. 10); *Taenianthera* (genus emended) lakoi (p. 11), Brazil; *T.* multisecta (p. 13); *T.* gracilis (p. 14), Brazil; *Astrocaryum* guara (p. 15); *Bactris* obovata (p. 16); *B.* hirsuta (p. 17); and *B.* stictacantha (p. 18). From Colombia, unless otherwise stated.—*A. M. Johnson.*

17152. **BURRET, M.** Eine neue Palmengattung aus Südamerika. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 11(101): 48-51. 1930.—**PARAJUBAEA** (p. 48), based on *P.* cocoides* (p. 48), is grown in public places in the town of Ibarra but is indigenous to the region east of Quito, in the vicinity of Papallacta, Ecuador. *P.* torallyi (*Diplothemium t.* Mart.) (p. 50), of Bolivia, is questionably of this genus.—*A. M. Johnson.*

17153. **DEWEY, LYSTER H.** A new variety of henequen without prickles. *Journ. Washington Acad. Sci.* 19(18): 415-416. 1929.—*Agave fourcroydes* v. espiculata (p. 416), Cuba; originating as a mutation in one plant in a cultivated plantation, is continued in its progeny. It differs from the typical form of the species in the absence of prickles on the leaf margins.—*L. H. Dewey.*

17154. **DUCELLIER, L.** Céréales recueillies par M. le Dr. R. Maire au cours de la "Mission du Hoggar." *Bull. Soc. Hist. Nat. Afrique du Nord* 20(8): 221-226. 2 pl. 1929.—Notes on the distribution and character of different varieties of cultivated grains in the Sahara. *Triticum durum* var. intermedium (p. 222), Algerian Sahara, is new.

17155. **EATON, R. J.** Tripsacum dactyloides in Massachusetts. *Rhodora* 30(381): 185. 1930.—At Westport Point, the first Massachusetts locality.—*S. F. Blake.*

17156. **FARWELL, OLIVER ATKINS.** What is Scirpus glaucescens Willd.? *Rhodora* 32(374): 30-31. 1930.—Identified, on basis of description, with *Eleocharis acuminata* (Muhl.) Nees. [See also entry 17160.]—*S. F. Blake.*

17157. **FARWELL, OLIVER ATKINS.** What is Scirpus capitatus Linn.? *Rhodora* 32(381): 180-181. 1930.—Claims that Blake's transfer in 1918 of the name *Eleocharis capitata* (L.) R. Br. to the species usually known as *E. tenuis* (Willd.) Schultes is incorrect, and that "*E.* capitatus (L.) n. comb." (p. 181) should be used in place of *E. obtusa* (Willd.) Schultes. [See also entry 17146.]—*S. F. Blake.*

17158. **FARWELL, OLIVER ATKINS.** Aira spicata, Linn., and the application of the International Rules. *Rhodora* 32(384): 261-263. 1930.—Holds that the 2 spp. named *Aira spicata* L. in 1753 are to be known as *Trisetum spicatum* (L.) Richt. and *Panicum* spicatum (*Aira spicata* L.) (p. 262).—*S. F. Blake.*

17159. **FERNALD, M. L.** Carex macrocephala and C. anthericoides. *Rhodora* 32(373): 9-11. 1930.—*C. anthericoides* Presl, of the western N. Amer. coast, is distinct from the Asiatic *C. macrocephala* Willd., to which it has been referred. The latter has been found twice as an introduction on the New Jersey coast.—*S. F. Blake.*

17160. **FERNALD, M. L.** Willdenow's type of Scirpus glaucescens. *Rhodora* 32(374): 31-32. 1930.—The type in the Willdenow herbarium has 2 style-branches, and is considered to be correctly referred to the *Eleocharis palustris* group, in opposition to Farwell's opinion [see entry 17156].—*S. F. Blake.*

17161. **FERNALD, M. L.** The complex Bromus ciliatus. (*Contrib. Gray Herb.* 87(4):) *Rhodora* 32(376): 63-71. 1 pl. 1930.—*Bromus* dudleyi* (p. 63), Newfoundland (type) to British Columbia, south to New England, Minnesota, and Montana; *B. ciliatus* var. genuinus* (p. 70), and var. intonsus* (p. 70), Newfoundland to Pennsylvania and Michigan, type from Massachusetts.—*S. F. Blake.*

17162. **FERNALD, M. L.** Potamogeton alpinus and P. microstachys. (*Contrib. Gray Herb.* 87(6):) *Rhodora* 32(376): 76-83. 1 pl. 1930.—*Potamogeton alpinus** Balbis is restricted to Europe, its N. Amer. and Siberian representative being *P. microstachys* Wolfg. with var. typicus* (p. 80) and var. subellipticus* (p. 82), Newfoundland to British Columbia, south to New England, Michigan, and Wyoming, the type from Magdalen Islands.—*S. F. Blake.*

17163. **FERNALD, M. L.** The identities of Juncus canadensis and of J. brevicaudatus. (*Contrib. Gray Herb.* 87(7):) *Rhodora* 32(376): 83-88. 1 pl. 1930.—Critical discussion, with conclusion that Mackenzie was in error in shifting name *J. brevicaudatus* (Engelm.) Fernald to synonymy of *J. brachycephalus* (Engelm.) Buchenau.—*S. F. Blake.*

17164. **FERNALD, M. L.** The identity of Alopecurus aequalis. *Rhodora* 32(382): 221-222. 1930.—Maintains that Jansen and Wachter are in error in regarding the identification of *A. aequalis* Sobol. with *A. aristulatus* Michx. as too doubtful to be adopted.—*S. F. Blake.*

17165. **FOGG, JOHN M. Jr.** Tipularia discolor in Dukes County, Massachusetts. *Rhodora* 32(378): 114-117. 1930.—On Martha's Vineyard and Nashawena Island.—*S. F. Blake.*

17166. **HARMS, H.** Bromeliaceae. IV. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 11(101): 57-61. 1930.—*Puya* stenostele (p. 57), Peru; *P.* woronowii (p. 58), Colombia; *Pitcairnia* laresiana (p. 58), Peru; *Tillandsia* ekmanii (p. 59), Haiti; *Aechmea* woronowii (p. 61), Colombia.—*A. M. Johnson.*

17167. **HENDERSON, M. R.** Halophila spinulosa (R. Br.) Aschers. *Gardens' Bull. Straits Settlements* 5(7/8): 240. 1931.—New to the Malay Peninsula.

17168. **HITCHCOCK, A. S.** The grasses of Central America. *Contrib. U. S. Nation. Herb.* 24(9): 557-762. 1930.—A descriptive treatment of the family Poaceae in the region from Panama north to the southern boundary of Mexico, with keys to tribes, series, genera, and spp., descriptions of genera and spp., synonymy, range, and indication of type locality, brief bibliography, and list of numbered exsiccatae. There are 115 genera and 460 spp. included. The following are new: *Hierochloe* mexicana (Rupr.) Benth. (*Ataxia m.* Rupr.) (p. 614); *Ichnanthus* standleyi (p. 662), Honduras.—*S. F. Blake.*

17169. **KNOWLTON, C. H.** Butomus umbellatus at Lake Champlain. *Rhodora* 32(374): 18-19. 1930.—At Dresden, New York.—*S. F. Blake.*

17170. **LOESENER, TH.** Zingiberaceae novae vel minus cognitae II. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(97): 706-716. 1929.—*Aframomum* chlamydanthum Loes. et Mildbr. (p. 706), Kameruns; *Costus* (*Eucostus*) erythrophyllus (p. 707), eastern Peru; *C.* (*E.*) fortalezae K. Schum. (p. 708), Amazonas, Brazil; *C.* (*E.*) tarmicus (p. 709), Peru; *C.* (*E.*) ulei (p. 709), Amazonas, Brazil; *C. malortieanus* var. amazonicus (p. 710), Peru; *C.* (*E.*) lasius (p. 710), Peru; *C. pubescens* f. fibrillosa (p. 711), Brazil; *C.* (*E.*) validus (p. 711), northern Brazil (Peru?); *C.* (*E.*) gracilis (p. 711), northern Brazil (Peru?); *C. cylindricus* var. acreanus (p. 712), northern Brazil; *C.* (*E.*) weberbaueri (p. 712), Peru; *C.* (*E.*) erythrothyrsus (p. 713), eastern Peru; *C.* (*Cadalvena*) steinbachii (p. 714), Bolivia; *C.* (*C.*) kaempferoides (p. 714), northwestern Brazil; *Dimerocostus* tessmannii (p. 715), eastern Peru; *D.* bolivianus (*Mulfordia boliviana* Rusby) (p. 716).—*A. M. Johnson.*

17172. **MARLOTH, R.** Notes on Aloe spicata Linn. fil. *Bothalia* 3(1): 142-146. 2 fig. 1930.—Discussing the identity of *Aloe spicata* L. f. the author concludes that this is the plant now usually called *A. speciosa* Baker.—*M. O. Malte.*

17173. **MICZYNSKI, CASIMIR.** Notes systématiques sur le genre Aegilops. *Bull. Soc. Bot. France* 76(7/8): 713-719. 1 pl., 8 fig. 1929.—The author agrees with Ascheron that *A. ligustica* Coss. and *A. aucheri* Boiss. are subspecies of *A. speltoides*, with a single Mendelian factor. He finds with Percival that the pubescence on the leaf is distinctive, describing and figuring 6 types.

The following are described: *A. ventricosa* var. **obscura** (p. 715), Algeria; *A. truncialis* var. *persica* subv. **hispida*** (Afghanistan) and subv. **glauca*** (Transcaspia) (p. 716). The plate represents *A. aucheri* var. *polyathera** Boiss., a polymorphic race.—*O. A. Stevens.*

17174. **MUENSCHER, W. C.** Butomus umbellatus in the Lake Champlain Basin. *Rhodora* 32(374): 19-20. 1930.—Generally distributed along the southern part of the Lake, in New York and Vermont.—*S. F. Blake.*

17175. **PEASE, ARTHUR STANLEY.** A Carex new to New England. *Rhodora* 32(383): 258. 1930.—*Carex anguillata* Drejer, from Mt. Katahdin, Maine.—*S. F. Blake.*

17176. **POTTS, GEORGE.** Orchids of Mid-Shropshire [England]. *Northwestern Naturalist* 6(3): 163-164. 1931.—List with localities.

17177. **RUHLAND, W.** Neue Eriocaulon-Arten aus China. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10 (100): 1040-1044. 1930.—*Eriocaulon* **huianum** (p. 1040), southeastern China; *E.* **whangii** (p. 1040), *E.* **sinii** (p. 1041), *E.* **kwantungense** (p. 1042), *E.* **kengii** (p. 1042) and *E.* **yaoshanense** (p. 1043), southern China. —*A. M. Johnson.*

17178. **SMITH, J. J.** Vanda × **boumaniae, J. J. S.** *Gardens' Bull. Straits Settlements* 5(7/8): 232-233. 1931. —× *Vanda* **boumaniae** (p. 232), Alor Isl., Sunda Isls., apparently a hybrid between *V. insignis* and *V. limbata.*

17179. **SOÓ, RUDOLF von.** Revision der Orchideen Südosteuropas und Südwestasiens. [Revision of the Orchidaceae of southeastern Europe and southwestern Asia.] *Bot. Arch.* [*Königsberg*] 23(1/2): 1-196. 1928.—A critical survey is made of the Orchidaceae of the region with the main emphasis upon the designation of the more important forms already described or not previously named, with Latin descriptions in key form. Every known species from the area under consideration is included, together with the important references, geographical distribution, synonymy, recognizable forms, numbers of exsiccatae studied, and, at the end of the paper, a catalogue listing the specimens examined under each species, the localities being given by definite geographical units. A table gives the geographic distribution of every species and the principal varieties and subspecies. The list contains 131 species of Orchidaceae (37 listed as hybrids) with the following proposals: *Ophrys araneifera* f. **pseudaraneifera** n. comb. (p. 29); *Orchis patens* ssp. **orientalis** (*O. patens canariensis orientalis* Rchb. f.) (p. 50); *O. saccatus* ssp. **fedtschenkoi** (*O. f.* Czerniak.) (p. 51); *O. anatolicus* f. **rariflorus** (*O. rariflora* C. Koch.) (p. 56); *O. romanus* l. **sulphureus** (*O. sulphurea* Spr.) (p. 63); *O. holocheilos* var. **osmanicus** (*O. h.* ssp. *o.* Klinge) (p. 73); *O. maculatus* f. **sacciferoides** (*O. s.* Klinge in Sched. et ap. Gand. sol. nom.) with Latin description (p. 76), Germany and Bohemia; *Serapias lingua* ssp. **durieui** (*S. lingua* v. *d.* Rchb. f.) (p. 85); *S. l.* ssp. **excavata** (*S. e.* Schlecht.) (p. 85); *S. l.* ssp. **oxyglottis** (*S. o.* Willd.) (p. 85); *Platanthera micrantha* var. **longibracteata** (*P. l.* Hochst.) (p. 104); *Limodorum abortivum* f. **sphaerolabium** (*L. s.* Viv.) (p. 108); *Peramium* **macrophyllum** (*Epipactis macrophylla* Eaton) (p. 110); *Cephalanthera longifolia* f. **pilosa** (*Epipactis l.* f. *p.* Harz.) (p. 114); *C. l.* ssp. **acuminata** (*C. a.* Lindl. ap. Wall.) (p. 114); *Helleborine palustris* f. **gracilis** (Höppn.) (p. 116). There are diagnostic keys in Latin wherever more than one form is listed under a species. Emended descriptions are given for *Orchis blyttii* Soo and *O. graggerianus* Soo.—*I. L. Wiggins.*

17180. **STEBBINS, G. L. Jr. III.** A revision of some North American species of Calamagrostis. (*Contrib. Gray Herb.* 87(3):) *Rhodora* 32(375): 35-57. 1 pl. 1930.—Eleven species of sections *Calamagris, Deyeuxia* and subsection *Orthoatherae* are keyed and described, with synonymy and citation of exsiccatae. The following are new: *C. canadensis* var. **macouniana** (*Deyeuxia m.* Vasey) (p. 41), var. **arcta*** (p. 45), Labrador, var. **pallida** (*C. p.* Vasey & Scribn.) (p. 45); *C. scribneri* var. **imberbis** nom. nov. (*C. anomala* Suksd., not Steud.) (p. 46); *C. scopulorum* var. **bakeri** (p. 47), Colorado; *C. inexpansa* var. **robusta** (*C. stricta* var. *r.* Vasey) (p. 48), var. **brevior*** (*C. stricta* var. b. Vasey) (p. 50), var. **novae-angliae*** (p. 51), Maine; *C. neglecta* var. **micrantha** (*C. m.* Kearney) (p. 55); *C. lapponica* var. **brevipilis*** (p. 56), Quebec.—*S. F. Blake.*

17181. **WHEELER, L. A.** Scirpus peckii in Maine. *Rhodora* 32(379): 133. 1930.—At Albany, the first authentic record for Maine.—*S. F. Blake.*

DICOTYLEDONES

17182. **AFZELIUS, K.** Sur deux Convolulacées nouvelles de Madagascar. *Svensk Bot. Tidskr.* 23(2): 179-183. 2 fig. 1929.—**PENTACROSTIGMA** (p. 181), erected for *P.* **nyctanthum*** (p. 182); *Porana* **parvifolia*** (p. 182).

17183. **BACIGALUPI, RIMO.** A monograph of the genus Perezia, section Acourtia, with a provisional key to the section Euperezia. *Contrib. Gray Herb. Harvard Univ.* 97. 1-81. 7 pl. 1931.—The author reviews in detail the taxonomic history of the genus and discusses geographical distribution, generic concept and relationships, classificatory difficulties, and economic uses. Endemism is a marked feature of the mainly Mexican § *Acourtia*. Mexican Indians use various spp. as a purgative. The following, all from Mexico, are described: *Perezia* **scapiformis*** (p. 15); *P.* **lobulata*** (p. 16); *P.* **dissiticeps*** (p. 17); *P.* **aspera*** (p. 18); *P. rigida* var. **linearifolia** (p. 18); *P. r.* var. **acuminata*** (p. 19); *P. montana* var. **intermedia** (p. 19); *P. dugesii* var. **pilulosa*** (p. 19). The taxonomic account includes diagnoses of the genus and the 2 sections, *Acourtia* and *Euperezia*, and keys to the sections and to the species included in each. The treatment of the 44 spp. of *Acourtia* includes synonymies, descriptions, distributional records, and taxonomic remarks. *P. alamani* var. **adnata** (*P. adnata* Gray) (p. 64); *P. alamani* var. **oolepis** (*P. adnata* var. *o.* Bartlett) (p. 65). About 13 doubtful or uncertain spp. are also discussed. *Vernonia* **vernonioides** (*Perezia v.* Gray = *Vernonia jaliscana* Gleason) (p. 77).

17184. **BEMIS, E. W.** A new form of Aster amethystinus. *Rhodora* 32(373): 3. 1930.—*A. amethystinus* Nutt. f. **leucerythros**, Massachusetts.—*S. F. Blake.*

17185. **BENKE, H. C.** Aster amethystinus an obvious hybrid. *Rhodora* 32(373): 1-3. 1 pl. 1930.—Considered a hybrid of *A. novae-angliae* and *A. multiflorus*, on basis of its characters and occurrence in company with these species.—*S. F. Blake.*

17186. **BENOIST, RAYMOND.** Moracées nouvelles de la Guyane française. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 163-164. 1929.—**ALITERIA** (p. 163), erected for *A.* sagoti (p. 163); *Ficus* maroniensis (p. 164); *F.* **vulpina** (p. 164).

17187. **BLAKE, S. F.** A glabrous variety of Aster concolor. *Rhodora* 32(380): 144-145. 1930.—*Aster concolor* var. **devestitus**, Florida.—*S. F. Blake.*

17188. **BORNMÜLLER, J.** Kritische Bemerkungen über einige orientalische Arten der Gattung Johrenia nebst Beschreibung zweier neuer Typen. *Rep. Spec. Nov. Reg. Veg.* 28(751/755, paper 6): 33-53. 1930.—This paper consists of a discussion of the known European and Asiatic species,—many confined to small geographical areas, some known only from the original collection. The long-recognized *J. pichleri* Boiss. appears to be *Peucedanum alsaticum* L. No specimens of *J. selinoides* of undoubted European origin are to be found; the species is therefore questionably European. *J. distans* (Griseb.) Halácsy (= *J. graeca* Boiss. & Sprun); *J.* **thessala** (p. 37), Greece. A general discussion of *Johrenia* within the area of Boissier's "Flora Orientalis" is followed by a detailed account of each of the following species: *J. fungosa* Boiss.; *J. dichotoma* DC. with ssp. **sintenisii** (p. 44); *J.* **polyscias** (p. 44), Galatia; *J.* ? *juncea* Boiss.; *J. engleri* Dingler; *J. westii* Post; *J. selinoides* Boiss. & Bal.; *J. porteri* Post; *J. alpina* Fenzl; *J. berytea* Boiss. & Hausskn.; *J. aurea* Boiss. & Bal.; *J. platycarpa* Boiss.; *J. paucijuga* (DC.) Bornm. (= *J. persica* Boiss. and *J. candollei* Boiss.); and *J. platypoda* Aitch & Hemsl. The following are excluded from the

genus: *J. meyeri* Boiss. (*Peucedanum pauciflorum* Led.), *J. scoparia* Boiss., *J. tordylium* Fenzl, which is *Coriandrum* t. (Fenzl) n. comb., and *J. longifolia* Calest. By Koso-Poljansky (1920) only two species of *Johrenia* are recognized in eastern Asia,—*J. seselioides* (Hoffm.) K.-Polj. and ? *J. sieversii* (C. A. Mey.) K.-Polj.—*H. K. Svenson.*

17189. **BROWN, FOREST B. H.** Cornaceae and allies in the Marquesas and neighboring islands. *Bernice P. Bishop Mus. Bull.* 52. (*Bayard Dominick Exped. Publ.* 13.) 3-22. 5 fig. 1928.—**LAUTEA** (p. 5), with *L.* **serrata** (p. 9) and *L.* **stokesiana**, the latter with vars. **primaeva** (p. 7), **denticulata** (p. 7) and **integrifolia** (p. 8), are described and figured. Chapters are devoted to comparative morphology, venation, wood characters, geological history. Although the present species of *Cornus* and its allies are widely distributed, a study of the fossil history leads the author to conclude that the geological history of *Lautea* of the Austral Is., *Corokia* of New Zealand and *Cornus* is closely linked and that they have had a common center of origin in or near North America. He finds also that the Cornaceae show closer relationship to the Celastrales than to the Umbellales.—*F. Detmers.*

17190. **BURKILL, I. H.** An enumeration of the species of Paramignya, Atalantia and Citrus, found in Malaya. *Gardens' Bull. Straits Settlements* 5(7/8) : 212-223. 1931. —An annotated list of 25 spp., with partial keys and synonymic, descriptive, distributional, and economic notes. The name *Paramignya* is retained for spp. without pulp-cells; *Atalantia* for those with pulp-cells. *Eremocitrus* Swingle, *Fortunella* Swingle, and *Microcitrus* Swingle are reduced to sectional rank under *Citrus.*

17191. **BURKILL, I. H.** Erythropsis colorata, Burkill, comb. nov. *Gardens' Bull. Straits Settlements* 5(7/8) : 231. 1931.—*E.* colorata (*Sterculia c.* Roxburgh).

17192. **CAMUS, AIMÉE.** Castanopsis nouveaux de Chine. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2) : 165. 1929.—*Castanopsis* **incana** and *C.* **chingii**, both from Chekiang.

17193. **CHASSIGNOL, F.** Convolvulus dahuricus Sims en Saône-et-Loire [France]. *Soc. Hist. Nat. d'Autun, Bull.* 29(3) : 144-145. 1930.

17194. **CHATEAU, E.** Bidens connatus Muhlenberg, plante nouvelle pour Saône-et-Loire [France]. *Soc. Hist. Nat. d'Autun, Bull.* 29(3) : 142-144. 1930.

17195. **CLAUSEN, J.** Danmarks viol-arter. [The viola species of Denmark.] *Bot. Tidsskr.* [*Copenhagen*] 41(4) : 317-335. 13 fig. 1931.—Twelve species (with key) are listed, also some hybrids.

17196. **CORY, V. L.** A new loco from the Edwards Plateau of Texas. *Rhodora* 32(373) : 4-7. 1930.—*Astragalus* **argillophilus** (p. 5).—*S. F. Blake.*

17197. **CORY, V. L.** A new Salviastrum from the Edwards Plateau of Texas. *Rhodora* 32(376) : 89-90. 1930.—*Salviastrum* **dolichanthum** (p. 90).—*S. F. Blake.*

17198. **CORY, V. L.** A new Lesquerella from western Texas. *Rhodora* 32(378) : 110. 1930.—*Lesquerella* **lepidota**.—*S. F. Blake.*

17199. **COSTELLO, DAVID F.** Preliminary reports on the flora of Wisconsin. XIII. Fagaceae. *Trans. Wisconsin Acad. Sci., Arts and Lett.* 26: 275-279. 7 maps. 1931. —A list of 9 spp., with notes on status and habitat and with maps showing distribution within the state. A key to the Wisconsin spp. of *Quercus* is given.

17200. **DANSER, B. H.** Nepenthaceae. In: **EDGAR IRMSCHER:** "Beiträge zur Kenntnis der Flora von Borneo," paper 12. *Mitteil. Inst. Allg. Bot. Hamburg* 7(3) : 217-221. 1 pl. 1931.—Four species of *Nepenthes* are recorded, with locality data. *N. ephippiata** Danser, emended description.

17201. **DAVIS, BRADLEY MOORE.** Lamarck's evening primrose (Oenothera lamarckiana Seringe) was a form of Oenothera grandiflora Solander. *Proc. Amer. Phil. Soc.* 66: 319-355. 5 pl., 1 fig. 1927.—Paper develops in detail from personal study of material at Paris and elsewhere views of the author (1912) in opposition to conclusions of de Vries on the identity of Lamarck's evening primrose and the origin of de Vries's *lamarckiana*. *O. lamarckiana* of de Vries is not the plant grown by Lamarck in Paris about 1796, described by Lamarck under the name *Aenothera grandiflora* and renamed by Seringe (1828) *Oenothera lamarckiana*. Lamarck's plant was a form of *O. grandiflora* Solander as shown by two sheets in Herbarium of Lamarck at the Muséum d'Histoire Naturelle. Specimens from the herbarium of Abbé Pourret, also believed by de Vries to be his plant, are likewise *O. grandiflora*. Specimens from the Herbarium Michaux in Paris, regarded by de Vries as evidence that Michaux collected *lamarckiana* in North America, are neither *lamarckiana* nor *grandiflora*. Apparently the earliest known date for *lamarckiana* of de Vries in Europe is about 1860, and the plant was introduced by Carter and Co. from English sources. There were in cultivation in England as early as 1830 narrow-leaved, large-flowered Oenotheras with the pubescence of *lamarckiana* and from such material *lamarckiana* might have arisen, possibly as a hybrid. Although *Oenothera lamarckiana* Seringe is a synonym of *O. grandiflora* Solander it is best that de Vries's plant should retain its name, established in genetical literature, but it should be understood as *Oenothera lamarckiana* of de Vries.—*B. M. Davis.*

17202. **DAVY, J. BURTT.** The origin of Symphoricarpus. *Science* 72(1861) : 220. 1930.—Note on paper by Karl Sax and D. A. Kribs, who state the probable origin of the family Caprifoliaceae to be Asiatic, in which the author questions their assumption that there was ever more than one species of *Symphoricarpus* in China.

17203. **EAMES, EDWIN H.** Cubelium concolor. *Rhodora* 32(379) : 140-142. 1930.—*Cubelium concolor* f. **subglabrum**, Georgia.—*S. F. Blake.*

17204. **EATON, R. J.** Color variation in Gentiana linearis. *Rhodora* 32(380) : 143-144. 1930.—Discusses color variation in *G. linearis* Froel and f. *blanchardii* Fernald.—*S. F. Blake.*

17205. **FERNALD, M. L.** Ligusticum scothicum of the North Atlantic and of the North Pacific. (*Contrib. Gray Herb.* 87(1) :) *Rhodora* 32(373) : 7-9. 2 pl. 1930.—*L.* **hultenii** (p. 7), Alaska (type), Kamtchatka, Japan, the Pacific representative of *L. scothicum* L.—*S. F. Blake.*

17206. **FERNALD, M. L.** A new willow from the Côte Nord, Quebec. *Rhodora* 32(378) : 112-113. 1 pl. 1930. —*Salix* **simulans*** (p. 112).—*S. F. Blake.*

17207. **FERNALD, M. L.** The Cape Cod Ceanothus. *Rhodora* 32(380) : 161-162. 1930.—The "Middle" Cape Cod form of *Ceanothus americanus* L. is var. *intermedius* (Pursh) Trelease, previously recognized from South Carolina and Pennsylvania to Florida and Louisiana.—*S. F. Blake.*

17208. **FORBES, HELENA M. L.** The genus Psoralea Linn. *Bothalia* 3(1) : 116-136. 1930.—Forty-nine spp. of *Psoralea* from South Africa are keyed. Full descriptions of the species are given, as well as data on flowering time and geographical distribution. *P.* **bolusii** (p. 123) and *P.* **royffei** (p. 136), both from Cape Province, are new.—*M. O. Malte.*

17209. **GANDRUP, J.** Een nieuwe interessante vindplaats van Cladopus nymani, H. Möll. [A new interesting habitat of C. nymani.] *Handelingen 5th Nederlandsch-Indisch Natuurwetensch. Congres Soerabaia* 1928: 393-398. 1 pl. 1928.—After a brief survey of the older literature, a new habitat is described, lying farther east in Java than those formerly known. The manner of spreading of this rare species is briefly discussed.—*J. Gandrup.*

17210. **HARMS, H.** Zur Kenntniss von Lysiloma guachapele (H.B.K.) Benth. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 11(101) : 52-56. 1930.—**PSEUDOSAMANEA** (p. 54), based on *P.* **guachapele** (*Acacia guachapele* H.B.K.,=*Samanea samanigua* Pittier) (p. 54), Ecuador. Included also is *Serianthes* **inopinata** (*Mimosoideae*) (p. 55), from Brazil.—*A. M. Johnson.*

17211. **HARRIS, S. K.** An alpine station for Hieracium aurantiacum. *Rhodora* 32(378) : 113. 1930.—At

5500 ft. altitude on Mt. Washington, New Hampshire. —*S. F. Blake.*

17212. **HEILBORN, OTTO.** On some species of tropaeolum from Ecuador. *Arkiv Bot.* [*Stockholm*] 23(3, No. 9): 1-10. 4 fig. 1931.—List of 6 spp., including: *Tropaeolum pubescens* var. **rotundilobum*** (p. 2); *T.* **glaucum*** (p. 4); *T.* **repandum*** (p. 5), with f. **reniforme*** (p. 5); *T. stipulatum** Buch. & Sod., redescribed; *T.* **septemlobatum*** (p. 9).

17213. **IRIGOYEN, L. H., et A. THELLUNG.** Etude sur le Polygonum lapathifolium L. en Amérique du Nord, avec quelques considérations sur cette espèce en Argentine. *Vierteljahrsschr. Naturforsch. Ges. Zürich.* 74(3/4): 244-253. 15 pl. 1929.—A key to the forms of this species is followed by a systematic account, with synonymy and distributional data. *P. lapathifolium* ssp. *nodosum* proles **incarnatum*** (*P. incarnatum* Ell.) (p. 247); *P. l.* ssp. *n.* proles st. **johnii*** (p. 248), Quebec and Nova Scotia; *P. l.* ssp. *n.* proles **vernicosum*** (*P. persicaria* var. *v.* Cham. & Schlecht.) (p. 248); *P. l.* ssp. *n.* proles **lanceifolium*** (Danser), n. comb. (p. 249); *P. l.* ssp. *n.* proles **semilatum*** (Danser), n. comb. (p. 250); *P. l.* ssp. *n.* proles **eurybelonum*** (Danser), n. comb. (p. 250); *P. l.* ssp. *tomentosum* proles **lonchophyllum*** (Danser), n. comb. (p. 250); *P. l.* ssp. *t.* var. **euryphyllum** (Danser), n. comb. (p. 251); *P. l.* ssp. *mesomorphum* proles **semilanceifolium*** (Danser), n. comb. (p. 251).

17214. **JACOT, ARTHUR PAUL.** A new Lepidium from north China. *Rhodora* 32(374): 28-30. 1930.—*Lepidium* **chitungense** (p. 29), from Tsinan, Shantung. —*S. F. Blake.*

17215. **JOHANSSON, K.** Växtgeografiska spörsmål rörande den svenska Hieraciumfloran. II. [Plant-geographical questions in regard to the Swedish Hieracium flora. II.] *Svensk Bot. Tidskr.* 20(3): 306-343. 13 maps. 1926.—Studies on the ranges of the spp. of the *Vulgatiforma* section of *Hieracium*, in the lowlands of Sweden, are reported, and factors governing their distribution are discussed. The following are described: *H.* **phaeodermum** Joh. & Sam. (p. 336), Sweden; *H.* **tjaelderense** Joh. (p 337), Gotland.

17216. **KNOWLTON, CLARENCE HINCKLEY.** Note on Aster amethystinus. *Rhodora* 32(381): 185-186. 1930. —Found by the writer on two occasions, Massachusetts and Vermont, in both cases in company with *A. novae-angliae* and *A. multiflorus*, the putative parents.—*S. F. Blake.*

17217. **KNUTH, R.** Geraniaceae novae. Decas 3 et 4. *Rep. Spec. Nov. Reg. Veg.* 28(751/755, paper 1): 1-10. 1930.—These species come from several collectors, notably the Field Museum expeditions, and are from Peru unless otherwise noted. *Geranium* **herrerae** (p. 1); *G.* **digitatum** (p. 1); *G.* **paludosum** (p. 2), Colombia; *G.* **razuhillcaense** (p. 2); *G.* **schultzei** (p. 2), Colombia; *G.* **pallidifolium** (p. 3) and *G.* **chaparense** (p. 4), Bolivia; *G.* **scissum** (p. 4); *G.* **chinchense** (p. 4); *G.* **matucanense** (p. 5); *G.* **shensianum** (p. 5) and *G.* **lauschanense** (p. 6), China; *G.* **totorense** (p. 7) and *G.* **fuscicaule** (p. 7), Bolivia; *G.* **killipii** (p. 8), Colombia; *G.* **huantense** (p. 8); *G.* **choimacotense** (p. 9); *G.* **raimondii** (*G. canescens* Wedd. not l'Hér.) (p. 9); *G.* **caucense** (p. 9), Colombia; *G.* **lignosum** (§ **FRUTICULOSAE** n. sect.) (p. 10), Colombia.—*H. K. Svenson.*

17218. **LECOMTE, HENRI.** Sur un Dalbergia de Madagascar. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 159. 1929.—*Dalbergia* **obtusa** (*D. retusa* H. Bn., not Hemsley).

17219. **LUIZET, D.** Saxifraga maireana Luizet, sp. nov. *Bull. Soc. Hist. Nat. Afrique du Nord* 20(8): 166-170. 1 fig. 1929.—*S.* **maireana*** (p. 166), Morocco.

17220. **McLAUGHLIN, WILLARD T.** Preliminary reports on the flora of Wisconsin. XIV. Hypericaceae. *Trans. Wisconsin Acad. Sci., Arts and Lett.* 26: 281-288. 11 maps, 2 fig. 1931.—A list of 11 spp. of *Hypericum*, with key, notes on status and habitat, and maps showing distribution within the state. The distribution of *H. kalmianum* is shown to be correlated with that of the glacial Great Lakes.

17221. **MARKGRAF, FR.** Neue Apocynaceen aus Südamerika III. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(100): 1033-1039. 1930.—**RHIPIDIA** (p. 1033), based on *R.* **amazonica** (*Anechites ? a.* Mgf.); *Tabernaemontana* **maxima** (p. 1036); *T.* **stenantha** (p. 1037); *Malouetia* **lata** (p. 1037); *Prestonia* **plumierifolia** (p. 1038); *Forsteronia* **brevifolia** (p. 1038). New species all from northern Brazil.—*A. M. Johnson.*

17222. **MATTFELD, JOH.** Eine baumförmige Espeletia aus der Sierra Nevada de Santa Marta. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(97): 702-705. 1 fig. 1929.—*Espeletia* **glossophylla*** is a tree-like species characteristic of the "Paramos" of Colombia, at altitudes of 3200-4000 meters. It is distinguished from *E. grandiflora*, *E. neriifolia*, and *E. bonplandiaefolia*. It is used by the Indians for building material and clothing.—*A. M. Johnson.*

17223. **MELCHIOR, H.** Der Kokop-Baum von Neu-Mecklenburg (Ailanthus peekelii spec. nov.). *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(99): 893-896. 1930. —*Ailanthus* **peekelii** (p. 893) (Simaroubaceae) is a tall tree (40-60 meters) from the New Mecklenburg region of the Bismarck Archipelago, where it is widely distributed and yields timber and other materials to the natives.—*A. M. Johnson.*

17224. **MELCHIOR, H.** Decaphalangium, eine neue Gattung der Guttiferen aus Peru. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(99): 946-950. 1930.—**DECAPHALANGIUM** (p. 946), based on *D.* **peruvianum*** (p. 947), tropical Peru, belongs to the subfamily Clusioideae, being closest to the genus *Allanblackia* of tropical Africa. —*A. M. Johnson.*

17225. **METCALF, FRANKLIN P.** Notes on Chinese plants. *Jour. Arnold Arboretum* 12(4): 270-275. 1931. —Included are: *Desmodium* **dunnii** Merrill (*Lespedeza lanceolata* Dunn, not *D. lanceolatum* Walp.) (p. 270); *Spondias* **chinensis** (*Poupartia c.* Merrill) (p. 270); *Bredia amoena* Diels (=*B. chinensis* Merrill); *Schefflera delavayi* var. *ochrascens* Hand.-Mazz. (=*S. discolor* Merrill); *Xylosma congestum* var. **kwangtungensis** (p. 272); *Vaccinium mandarinorum* Diels (=*V. hangchouense* (Mats.) Komatsu); *V. m.* vars. **laetum** (*V. l.* Diels) (p. 274) and **austrosinense** (*V. donianum* var. *a.* Hand.-Mazz.); *Xolisma ovalifolia* var. **hebecarpa** (*Pieris o.* var. *h.* Franch.) (p. 275). There are also notes on *Desmodium floribundum* (D. Don) Sweet and on *Vaccinium donnianum* Wight.—*A. Rehder.*

17226. **MILDBRAED, J.** Acanthaceae novae. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 11(101): 62-71. 1930. —*Barleria* **megalosiphon** (p. 62), Rhodesia; *Crossandra* **usambarensis** (p. 63), Usambara, East Africa; *Aphelandra* **arnoldi** (p. 63), Colombia; *A.* **eurystoma** (p. 64), Peru; *A.* **rigida** Glaziou (p. 65), Brazil; *A.* **viscosa** (p. 66), Peru; *A.* **weberbaueri** (p. 67), Peru; *Encephalosphaera* **lasiandra** (p. 68), western Brazil; *Pseuderanthemum* **weberbaueri** (p. 68), Peru; *Beloperone* **bracteosa** (p. 69), Colombia; *B.* **chaetocephala** (p. 70), Colombia. —*A. M. Johnson.*

17227. **MÖRNER, CARL TH.** Exposé över Oxytropis deflexa Pall. som skandinavisk växt. [O. deflexa as a Scandinavian plant.] *Svensk Bot. Tidskr.* 20(3): 344-351. 1926.—Topographical notes on "Habatvuoppebakte" Mt., inner "Finmarken" [Norway], the European locality for *O. deflexa*. Flowering time is apparently July. The color of the flower is discussed. The plant has an Asiatic and a North-American distribution.

17228. **PELLEGRIN, FRANÇOIS.** Plantae Letestuanae novae ou plantes nouvelles récoltées par M. Le Testu, de 1907 à 1919 dans le Mayombe congolais. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(2): 160-162. 1929.—Euphorbiaceae: *Maesobotrya* **tsoukensis** (p. 160). Moraceae: *Dorstenia* **le-testui** (p. 161); *D.* **nyangensis** (p. 161). Artocarpeae: *Trymatococcus* **oligogyna** (p. 162). All from French Equatorial Africa.

17229. **PILGER, R.** Einige neue Santalaceae aus Südamerika. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(100): 1029-1032. 1930.—*Arjona* **schumanniana** (p. 1029), Uruguay and southern Brazil; *Quinchamalium* **brevistaminatum** (p. 1030), *Q.* **lomae** (p. 1030), *Q.* **hoppii**

(p. 1030), *Q.* **elongatum** (p. 1031), *Q.* **raimondii** (p. 1031) and *Q. procumbens* Ruiz and Pav., all from Peru. —*A. M. Johnson.*

17230. **RAUP, H. M. A new species of Salix from the Mackenzie Basin.** *Rhodora* 32(378): 111-112. 1 pl. 1930.—*Salix* athabascensis* (p. 111), Alberta.—*S. F. Blake.*

17231. **NOVÁK, FRANT. A.** Monografická studie o Dianthus gratianopolitanus Vill. [Monographic study of D. gratianopolitanus.] *Spisy Vydávané Přírodovědeckou Fak. Karlovy Univ. v Praze* 51: 1-30. 1 map, 5 fig. 1926.—Discusses *Dianthus gratianopolitanus*, giving geographical distribution and evolution, citing postglacial localities. Formae *typicus, montanus* Gaudin, *laxus* Tausch, *serotinus* Geisenheyer, *incisus* Reichenbach and a hybrid, *D. domini*, are described. A map shows the distribution.—*F. A. Novák.*

17232. **St. JOHN, HAROLD. A revision of the loco-weeds of Washington.** *Proc. Biol. Soc. Washington* 41 (6): 97-106. 1928; issued also as *Contr. Bot. Dept. State College Washington* No. 12.—An historical account is given of the discovery and classification of the species of loco-weed, *Oxytropis* (*Aragallus*), in the state of Washington. A key to the known species is included. New species are: *Oxytropis* **columbiana** (p. 100), *O.* **mazama** (p. 101), *O.* **okanoganea** (p. 102), *O.* **olympica** (p. 103), *O.* **cascadensis** (p. 105).—*H. St. John.*

17234. **SCHULZ, O. E. Amerikanische Cruciferen verschiedener Herkunft.** *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(96): 558-564. 1929.—Included are: *Cardamine ovata* v. **unijuga** (p. 557), Colombia; **CATADYSIA** (p. 558), based on *C.* **rosulans** (p. 559), Peru; *Draba* **philippi** (*Eudema thlaspiformis* Phil.) (p. 559), *D.* **sanctae-martae** (p. 560), Colombia; *D.* **schultzei** (p. 560), Colombia; **GRAMMOSPERMA** based on *G.* **dusenii** (p. 562), Patagonia; *Mathewsia* **peruviana** (p. 562), Peru; *Sarcodraba* **andina** (p. 563), Argentina; *S.* **herzogii** (p. 563), Bolivia; *Dryopetalon* **palmeri** (*Cardamine p.* S. Wats.).—*A. M. Johnson.*

17235. **SEYMOUR, FRANK C. A Callitriche new to Massachusetts.** *Rhodora* 32(373): 15-16. 1930.—*Callitriche deflexa* A. Br. var. *austini* (Engelm.) Hegelm., from Mt. Toby.—*S. F. Blake.*

17236. **SKOTTSBERG, C. Artemisia, Scaevola, Santalum, and Vaccinium of Hawaii.** *Bernice P. Bishop Mus. Bull.* 43. 1-89. 8 pl., 30 fig. 1927.—A taxonomic and distributional account of the genera listed. Included are: *Artemisia* **hillebrandii*** (p. 10); *A.* **mauiensis*** (*A. australis β m.* Gray) (p. 15), Latin description; *Scaevola* **cerasifolia** (p. 36); *Vaccinium* **berberidifolium** (*V. penduliflorum* var. *b.* Gray) (p. 79); *V.* **peleanum** (*V. reticulatum* Smith, *integrifolium* Gray) (p. 83); *V.* **pahalae*** (p. 77); *Artemisia hillebrandii* var. **kauaiensis*** (p. 13); *Scaevola chamissoniana* var. **hitchcockii*** (p. 23); *S. procera* var. **pseudomollis*** (p. 35) with f. **macrocalyx*** (p. 36); *S. gaudichaudiana* var. **stenolithos** (p. 27); *S. g.* formae **kauaiensis** and **leucocarpa** (p. 27); *Santalum ellipticum* var. **litorale*** (*S. freycinetianum* var. *l.* Hillebr.) (p. 55); *S.* **cuneatum*** (*S. f.* var. *c.* Hillebr.) (p. 56); *S. c.* var. **gracilius*** (p. 59); *Vaccinium dentatum* var. **argutidens*** (p. 76). Amplified descriptions are given of: *Scaevola chamissoniana* Gaud. and its varieties *bracteosa* and *cylindricarpa*; *S. gaudichaudiana* Cham.; *S. menziesiana* Cham.; *S. coriacea* Nutt.; *S. procera* Hillebrand; *Santalum pyrularium* A. Gray; *S. ellipticum* Gaud.; *Vaccinium calycinum* Smith; *V. dentatum* Smith. Descriptions are accompanied by keys.—*H. T. Darlington.*

17237. **SMITH, C. A. Nuxia and Lachnopylis in Africa.** *Kew Bull. Misc. Inform.* 1930(1): 10-32. 2 pl. 1930.—*Nuxia* Lam., genotype *N. verticillata* Lam., with emended descriptions; *Lachnopylis* Hochst., with an emended description, genotype *L.* **congesta** (*Nuxia c.* R. Br. ex Fres.) (p. 17). **LAXIFLORAE** n. series (p. 16): *L.* **floribunda** (*Nuxia f.* Benth.) (p. 17; 25); *L.* **pubescens** (*N. p.* Sond.) (p. 17; 29); *L.* **emarginata** (*N. e.* Sond.) (p. 19; 28), with var. **brevifolia** (*N. congesta* var. *b.* Sond.) (p. 28); *L.* **tomentosa** (*N. t.* Sond.) (p. 17; 30); *L.* **breviflora** (*N. b.* S. Moore) (p. 17; 30); *L.* **heterotricha** (p. 28), Southern Bechuanaland; *L.* **viscosa** (*N. v.* L. S. Gibbs) (p. 17); *L.* **sambesina** (*N. s.* Gilg) (p. 17); *L.* **speciosa** (p. 29), Natal; *L.* **saxatilis** (p. 27), Natal. **GLOMERULATAE** n. series (p. 16): *L.* **gracilis** (*N. g.* Engl.) (p. 17; 24); *L.* **glomerulata** (p. 24), Transvaal; *L.* **polyantha** (*N. p.* Gilg) (p. 18); *L.* **suaveolens** (p. 23), Transvaal. **SPHAEROCEPHALAE** n. series (p. 18): *L.* **sphaerocephala** (*N. s.* Bak.) (p. 18); *L.* **terminalioides** (*N. t.* Bak.) (p. 18); *L.* **pachyphylla** (*N. p.* Baker, pro maj. parte) (p. 18); *L.* **visciduloso** (p. 27); *L.* **schistotricha** (p. 30) and *L.* **montana** (p. 31), all Transvaal. A short sketch is given of the possible line of evolution in the inflorescence found in the 3 series noted, along with a key to the South African species of Lachnopylis, in which the species character of the indumentum of some species is utilised.—*C. A. Smith.*

17238. **[SMOL'ĬANINOVA, L.]** СМОЛЬЯНИНОВА, Л. Обзор литературы по роду **Corylus L. [Survey of the literature on the genus Corylus L.]** Труды по Прикладной Ботанике, Генетике и Селекции (*Bull. Appl. Bot., Gen., Plant-Breed.*) 21(5): 379-450. 11 fig. 1929.—The literature on the genus is reviewed. Geographic distribution is indicated, geological history discussed, cultivation described, and economic importance suggested. Particular reference is also made to experimental data concerning the effect of temperature on cultivation of these plants. The genus comprises 10 spp. (all described), 2 of which are American. Most of the cultivation is in Asiatic Turkey, but some also in southern Europe.—*L. J. Pessin.*

17239. **STANDLEY, PAUL C. The Nyctaginaceae and Chenopodiaceae of northwestern South America.** *Field Mus. Nat. Hist. Bot. Ser.* 11(3): 73-126. 1931.—Treatment based on material in the Field Museum and U. S. Nat. Museum, covering the area of Bolivia, Ecuador, Colombia, and Venezuela, and including about 16 genera and 73 spp., with keys to genera as well as species of the larger genera. Nyctaginaceae: *Neea* **woronovii** (p. 77), Colombia; *N.* **mapirensis** (p. 78) and *N.* **dimorphophylla** (p. 78), Bolivia; *N.* **brittonii** (*N. macrophylla* Britton, non Poepp & Endl.) (p. 80); *N.* **boliviana** (p. 81), Bolivia; *Torrubia* **floribunda** (*Pisonia f.* Hook. f.) (p. 85); *T.* **rusbyana** (*Pisonia r.* Heimerl in herb.) (p. 85), Venezuela; *T.* **pubescens** (*Pisonia p.* HBK.) (p. 86); *T.* **uberrima** (p. 88), Colombia; *Salpianthus* **pyriformis** (*Cryptocarpus p.* HBK.) (p. 95); *Boerhaavia coccinea* v. **leiocarpa** (*B. paniculata* f. *l.* Heimerl) (p. 108); *Mirabilis* **expansa** (*Calyxhymenia e.* R. & P.) (p. 113). Chenopodiaceae: *Chenopodium macrospermum* v. **halophilum** (*C. h.* Phil.) (p. 118); *Atriplex* **asplundii** (p. 125), Bolivia; *A.* **herzogii** (*A. serpyllifolia* Herzog, non Bunge) (p. 125).

17240. **STEBBINS, G. L. Jr. An interesting form of Eupatorium perfoliatum.** *Rhodora* 32(379): 132-133. 1930.—*Eupatorium perfoliatum* f. **laciniatum** (p. 133), Westport, Massachusetts.—*S. F. Blake.*

17241. **STEWARD, ALBERT N. The case for Polygonum cuspidatum Sieb. & Zucc.** *Rhodora* 32(383): 223-225. 1930.—Is proper name for the species, the previous use of the same name by Willdenow being only in synonymy, as is also the case of the substitute name *P. sieboldii* De Vriese.—*S. F. Blake.*

17242. **THACKERY, FRANK A., and M. FRENCH GILMAN. A rare parasitic food plant of the southwest.** *Ann. Rept. Smithsonian Inst.* 1930: 409-416. 9 pl. 1931.—

(2 spp.), *Sarcorhachis* (2), *Piper* (290), and *Peperomia* (140). The previously described species are listed with synonymy, type locality, general range, and citation of Costa Rican exsiccatae. The following are proposed: *Sarcorhachis* anomala (p. 118); *Piper* pertractatum (p. 130); *P.* magnifolium (*P. pseudo-lindenii m.* D. DC.) (p. 131); *P.* compactum (p. 131); *P.* tilaranum (p. 131); *P.* adenophlebium (p. 132); *P.* xanthoneurum (p. 132); *P.* venulosum (p. 132); *P.* recuperatum (p. 132); *P.* dissimulans (p. 133); *P. san-josecanum* v. minor (p. 133); *P.* corozalanum (p. 134); *P.* obumbratifolium (p. 134); *P.* longepetiolatum (*P. geniculatum l.* D. DC.) (p. 134); *P.* seductum (p. 135); *P. prismaticum* magnifolium (*P. turrialvanum m.* C. DC.) (p. 135); *P. p.* v. tilaranum (p. 135); *P. p.* v. villosulum (p. 135); *P.* cyanophyllum (p. 136); *P.* arcte-acuminatum (p. 136); *P. irazuanum* v. suborbiculatum (p. 137); *P. candelarianum* angustatum (*P. sepium glabrum* C. DC., not *P. glabrum* Mill.) (p. 137); *P. c.* sepium (*P. s.* D. DC.) (p. 137); *Piper* cuspidispicum (p. 138); *P.* viridispicum (p. 138); *P.* pachystylum (p. 139); *P.* viridifolium (p. 139); *P.* annulatum (p. 139); *P.* labeculatum (p. 139); *P.* jubatum (p. 140); *P.* altevaginans (p. 140); *P.* pexum (p. 140); *P.* operosum (p. 140); *P.* subsericeum (p. 140); *P.* detonsum (p. 141); *P.* impube (p. 142); *P.* figlinum (p. 142); *P.* tarrazuense (p. 142); *P.* subzhorquinense C. DC. in herb. (p. 142); *P.* orosianum (p. 143); *P.* arcessitum (p. 143); *P. tonduzii* v. semiherbaceum (p. 143); *P.* aereum (p. 144); *P.* deflexispicum (p. 144); *P.* escasuense (p. 144); *P.* tacamahaca (p. 144); *P.* subvariabile (p. 145); *P.* caeruleifolium (p. 145); *P.* omega (p. 146); *P.* aragonense (p. 146); *P.* perpuberulum (p. 146); *P.* cercidiphyllum (p. 146); *P.* falcigerum (p. 147); *P.* sublaevifolium (*P. laevifolium* C. DC., not *P. l.* Blume) (p. 147); *P.* sinuatifolium (p. 147); *P.* tortuosipilum (p. 148); *P.* gracilipedunculum (p. 148); *P.* surubresanum (p. 148); *P.* opacibracteum (p. 148); *P.* unguiculiferum (p. 149); *P.* copeyanum (*P. pulchrum c.* C. DC.) (p. 149); *P.* pseudo-glabrifolium (p. 150); *P.* pacacanum (*P. nobile minus* C. DC.) (p. 150); *P.* escuadranum (p. 150); *P.* irrasum (p. 151); *P.* palmanum (p. 151); *P.* aserrianum (p. 151); *P.* cincinnatum (p. 151); *P.* clavuliger (p. 151); *P.* signatum (p. 152); *P.* ciliatifolium (p. 153); *P.* bullulaefolium (p. 152); *P.* tinctum (p. 153); *P.* pentagonum (p. 153); *P.* pseudo-fimbriulatum (p. 153); *P.* exiguispicum (p. 153); *P.* perlongipes (p. 154); *P.* auritifolium (p. 154); *P.* mirabile (p. 154); *P.* evasum (p. 55); *P.* longevillosum (p. 155); *P.* auriculiferum (p. 156); *P.* insolens (p. 156); *P.* disparifolium (p. 156); *P.* celatipetiolum (p. 156); *P.* vicinum (p. 157); *P.* pelliticaule (p. 157); *P.* anisophyllum (*P. dilatatum acutifolium* C. DC.) (p. 157); *P.* alajuelanum (p. 158); *P.* villosisquamulum (p. 158); *P.* rhodostachyum (p. 158); *P.* nigricaule (p. 158); *P.* concepcionis (p. 159); *P.* arundinetorum (p. 159); *P.* sulcinervosum (p. 159); *P.* pendens (p. 160); *P. pendens* v. infaustum (p. 160); *P.* blepharilepidum (p. 160); *Piper* oppressum (p. 161); *P.* esquivelanum (p. 161); *P.* coactoris (p. 161); *P.* villistipulum (p. 162); *P.* tabanicidum (p. 162); *P.* disparipes (p. 162); *P.* papulatum (p. 163); *P.* imparipes (p. 163); *P.* pubens (p. 163); *P.* subdivaricatum (p. 163); *P.* rotundibaccum (p. 164); *P. r.* v. fraijanesanum (p. 164); *P.* zonulatispicum (p. 164); *P.* ejuncidum (p. 164); *P.* dotanum (p. 165); *P.* pseudo-albuginiferum (p. 165); *P.* verruculigerum (p. 165); *P.* catacryptum (p. 166); *P.* tractifolium (p. 166); *P. t.* var. pubescens (p. 166); *P.* concinnifolium (p. 167); *P.* elliptico-lanceolatum (*P. aequale e.-l.* C. DC.) (p. 167); *P.* stenocladophorum (p. 168); *P.* heptaneurum (p. 168); *P.* pablense (p. 168); *P.* carnosicaule (p. 168); *P.* coarctatum (p. 168); *P.* guacimonum (*P. sepium g.* C. DC.) (p. 169); *P.* silvanorum (p. 169); *P.* pseudo-lanceaefolium (p. 170); *P.* disparispicum (p. 170); *P.* aduncifolium (p. 171); *P.* gonagricum (p. 171); *P.* pejivallense (p. 171); *P.* curvipilum (*P. hirsutum pallescens* C. DC.) (p. 172); *P.* pergeniculatum (p. 172); *P.* genuflexum (p. 172); *P.* echeverrianum (p. 172); *P.* reventazonis (p. 172); *P.* biasperatum (p. 173); *P.* pavasense (p. 173); *P.* talamancanum (p. 173); *P.* cookii (p. 174); *P.* tsuritkubense (p. 174); *P.* subquadratum (p. 174); *P.* machucanum (p. 174); *P.* laevius (*P. hirsutum l.* C. DC.) (p. 174); *P.* granulatum (p. 175); *P.* anguillaespicum (p. 175); *P.* oblanceolatum (p. 175); *P. o.* v. fragilicaule (p. 175); *P.* comatum (*P. hirsutum longepilosum* C. DC.) (p. 175); *P.* griseopubens (p. 176); and v. revocabile (p. 176); *P.* leucophlebium (p. 176); *P.* scalpens (p. 176); *P.* spicilongum (p. 177); *P.* trichophlebium (*P. hirsutum tonduzii* C. DC.) (p. 177); *P.* caudatifolium (p. 177); *P.* torresanum (p. 177); *P.* inhorrescens (p. 177); *P.* squalipelliculum (p. 178); *P.* valetudinarii (p. 178); *P.* submolle (p. 178); *P.* carminis (p. 179); *P.* coronatibracteum (p. 179); *P.* subhirsutum (p. 179) and v. tomentosicaule (p. 179); *P.* scintillans (p. 179); *P.* fusco-granulatum (p. 180); *P.* baculiferum (p. 180); *P.* rectamentum (p. 180); *P.* punctiunculatum (p. 180); *P.* emollitum (p. 181); *P.* injucundum (p. 181) and vars. praepubinervium (p. 181) and praecalvinervium (p. 181); *P.* albuginiferum (p. 181); *P.* phanerolepidum (p. 182); *P.* lanatibracteum (p. 182); *P.* lanosibracteum (p. 182); *P.* pullibracteatum (p. 182); *P.* fusco-bracteatum (p. 183); *P.* curridabatanum (p. 183); *P.* capacibracteum (p. 183); *P.* ventoleranum (p. 184); *P.* flavescens (*P. pseudovelutinum j.* C. DC) (p. 184); *P.* pileatum (p. 184) and v. obliquum (p. 184); *P.* rugosifolium (p. 185); *Peperomia* barbensis (*P. hispidula b.* Dahlst.) (p. 191) and v. alajuelana (p. 191); *P.* late-ovata (p. 191) and v. glabrata (p. 191); *P.* delicatissima (p. 191); *P.* tenuipes (p. 192); *P.* amphitricha (p. 192) and v. santa-rosana (p. 192); *P.* chambesyana (p. 193); *P. tecticola* v. tilirina (p. 193); *P. lignescens* carthaginensis (*P. c.* C. DC.) (p. 193); *P. l.* v. subcuneilimba (p. 193); *P. aguacatensis* vars. orosiana (p. 194), picta (p. 194) and urocarpoides (p. 194); *P.* subdita (p. 194); *P.* bistortaefolia (p. 195); *P. vinasiana* macrocarpa (*P. m.* C. DC.) (p. 195); *P.* fimbribractea (p. 196) and v. sparsipila (p. 196); *P.* jimenesana (*P. caulibarbis j.* C. DC.) (p. 196); *P.* crispipetiola (p. 196); *P. carpinterana* v. sparsipila (p. 197); *P.* herediana (p. 197); *P.* munyecoana (p. 197); *P.* virillana (p. 198); *P.* vueltasana (p. 198); *P.* pseudopedicellata (p. 198); *P.* dyscrita (p. 198); *P.* pilulifera (p. 199); *P.* niveo-punctulata (p. 199); *P.* montecristana (p. 199); *P.* erythrophlebia (p. 200); *P.* versicolor (p. 200); *P.* brachypus (p. 200); *P. stenophylla* v. paradendrophila (p. 201); *P.* stenophyllopsis (p. 201); *P.* fissispica (p. 201); *P.* multifida (p. 201); *P.* zurquiana (p. 202); *P.* fraijanesana (p. 202) and vars. subrhombica (p. 202) and san-isidroana (p. 202); *P.* chlorostachya (p. 203); *P. hylophila* v. personata (p. 203); *P.* tenellaeformis (p. 203); *P.* punctataefolia (p. 204) and v. munyecoana (p. 204); *P. oerstedii* punctata (*P. p.* C. DC.) (p. 205); *P.* incisa (p. 205); *P.* rejecta (p. 205); *P.* delecta (p. 206); *P.* cryptolepida (p. 206); *P.* megalanthera (p. 206); *P.* reptabunda (p. 206); *P. san-ramonensis* v. atricha (p. 207); *P.* congestifolia (p. 207); *P.* candelaber (p. 207); *P.* calyculata (p. 207); *P. poasana* v. herediana (p. 208); *P.* brevicaulis (p. 208); *P.* atirroana (p. 208); *P.* breviscapa (p. 209); *P.* subacaulis (p. 209); *P.* venabulifolia (p. 209); *P.* guapilesiana (p. 210); *P.* queserana (p. 210); *P.* pothifolia (p. 210); *P.* orientalis (p. 211); *P.* circumscissa (*P. pendula* C. DC.) (p. 211); *P.* tilarana (p. 211); *P.* parmata (p. 212); *P.* ciliifera (*P. hernandifolia c.* Trel.) (p. 212); *P. c.* filipes (*P. hernandifolia f.* Trel.) (p. 212); *P.* acutilimba (p. 213); *P. tsakiana* v. victoriana (p. 213); *P.* compotrix (p. 213); *P. calvicaulis* vars. perexigua, subpenninervis, hydnostachya, and ovata (all p. 214); *P.* cacuminicola (p. 215); *P.* dotana (p. 215); *P.* isidroana (p. 215); *P.* navarrana (p. 215); *P.* tremendalensis (p. 216); *P.* pachyphlebia (p. 216); *P.* peninsularis (p. 216); *P.* mentiens (p. 217) and v. lata (p. 217); *P.* pyrolaefolia (p. 217); *P.* pseudo-alpina (p. 217); *P. calvifolia* f. abrupta (p. 218); *P. martagonifolia* vars. contempta

(p. 218), wercklei (*P. w.* C. DC.) (p. 218), and torresana (p. 219); *P. turialvensis* v. brachystachya (p. 219); *P.* guanacastana (p. 220); *P.* barbinodis (p. 220); *P.* stipitifolia (p. 220); *P. palmana* oxystachya (*P. o.* C. DC.) (p. 221); *P. p.* v. pseudo-oxystachya (p. 221); *P. olivacea* v. perlongispica (p. 221); *P.* esperanzana (p. 222); *P.* aguacalientis (p. 222); *P.* pseudo-boliviensis (p. 222); *P.* cartagoana (*P. reflexa pallida* C. DC.) (p. 222); *P.* reflexaefolia (p. 223); *P.* compaginata (p. 223); *P.* subemarginulata (*P. reflexa s.* C. DC.) (p. 223); *P.* pirrisana (p. 223); *P.* imbricata (p. 224); *P.* pseudo-tetraphylla (p. 224) and v. juvenalis (p. 224); *P.* sepicola (p. 225); *P.* pseudo-hoffmannii (p. 225) and v. lenticularis (p. 225); *P.* amphoterophylla (p. 225) and v. glutineofructa (p. 226).

17244. WARD, H. A. Some rare introductions near Harrisburg, Pennsylvania. *Rhodora* 32(374): 28. 1930. —*Thlaspi perfoliatum* L., *Cynanchum nigrum* (L.) Pers. —*S. F. Blake.*

17245. WENT, F. A. F. C. Untersuchungen über Podostemonaceen. III. *Verhandl. Kon. Akad. Wetensch. Amsterdam. Afd. Natuurk. 2 Sectie* 25(1): 3-59. 11 pl. 1926.—The author studied living Podostemonaceae near the Raleigh Falls of the Coppename river in Surinam (Dutch Guiana). The species studied were *Apinagia* nana (p. 31), *A.* flabellifera (*Oserya f.* Tul. & Wedd.) (p. 36), *A. perpusilla, Mourera fluviatilis, Oenone richardiana, O.* staheliana (p. 14), *O. versteegiana, O. marowynensis* and *Tristicha hypnoides. Mourera* revealed itself as rootless; it fastens with hapters, which morphologically are not roots. Formation of starch in the sun could be proved by Sachs' iodine experiment. Assimilating parts are very hairy, the hairs being moved to and fro by the current and probably serving as absorbing organs. As soon as the water of the river is lowered, flowering sets in. Flower buds are ready a long time beforehand, but elongation begins only when dryness sets in. Pollination by distinct bees is described. The mechanical tissue in the flower stalks and stems is first collenchyma, and after drying up is changed into sclerenchyma. At the same time the superficial tissue of these organs is cast off in the living state (the cells may be plasmolysed). These cell-walls shrink, which they do not do so long as they are in connection with other tissues. The development of the embryo sac and egg-apparatus was identical with that described earlier by the author. In an appendix the author gives investigations on the embryo sac of a Javanese species, *Cladopus nymani*, by one of his former students, Miss F. BEUCKER ANDREAE, who left these notes after her early death. Here also the development follows the same course, contrary to published statements by Werner Magnus for some of the Podostemonaceae from India and Ceylon. A short investigation of some other Surinam rivers showed that there are some species which may be found in any river, such as *Mourera fluviatilis*, whereas others are localised in one river in definite horizontal zones, where some species in one river may represent a different one in another river. It is suggested that in the course of time 2 different lines of development have been followed by the species of this family: one leading to the large rootless forms of tropical America, the other through Africa to Ceylon and India leading to forms with roots enormously developed but shoots reduced. *Tristicha* having the same development of the embryo sac as the other species, there seems to be no reason for following Willis and establishing a separate family of Tristichaceae for this genus.—*F. A. F. C. Went.*

17246. WILLIAMSON, H. B. Notes on some Victorian Acacias. *Victorian Naturalist* 46(10): 198-200. 1930.—A review of the Victorian representatives of *Acacia*, sections *Bipinnatae* and *Juliferae*, with notes on distribution and specific distinctions. Recognition of *A. mollissima* Willd.; *A. longifolia* Willd. var. *typica* Bth.; *A. sophorae* R. Br.; *A. phlebophylla* F. v. M.; *A. floribunda* Sieb.; *A. mucronata* Willd. with vars. *dependens* Benth, dissitiflora (*A. d.* Bth.) (p. 200) and acuta (p. 200).—*H. B. Williamson.*

FLORISTICS AND PLANT DISTRIBUTION

17247. BACKER, C. A. Onkruidflora der Javasche Suikerrietgronden. Handboek ten dienste van de Suikerrietcultuur en de Rietsuiker-Fabricage op Java. [Handbook of weed flora of Javanese sugar cane soils.] 7e deel. Aflevering 4. p. 821-907. Proefstation voor de Java-Suikerindustrie: Pasoeroean, Java, [1931].—This concluding part of the weed flora of Javanese sugar cane fields brings plates 97 to 128, each illustrating one grass or sedge species, and an index of scientific and vernacular names.

17248. BÉGUINOT, AUGUSTO. Rilievo floristico e fitogeografico di alcune piccole isole della Sardegna nord-orientale. [Floristic and phytogeographical remarks on some small islands of N. E. Sardinia.] *Arch. Bot. Sistemat., Fitogeogr. e Genet.* 5(1): 79-93. 1929.—A list of vascular plants from 8 islands, completed by the author and his collaborators, including the following number of species from each: Figarello (126), Barca Sconcia (27), Isolatta dei Garofani (16), Isola dei Cigni (62), Isola Piana (95), Punta (7), Cana (29), Molara (126). Topography, soil, and vegetation of each island are briefly described.—*M. Onno.*

17249. BISHOP, HARLOW. The Austin collection from the Labrador coast. *Rhodora* 32(375): 59-62. 1930. —General features of flora; records of several species, including range extensions.—*S. F. Blake.*

17250. EWER, S. JUDSON. Notes on Katahdin plants. *Rhodora* 32(384): 259-261. 1930.—Records 23 species and varieties not previously recorded from Mt. Katahdin, Maine, including *Salix arctophila* Cockerell and *Aster puniceus* var. *perlongus* Fernald, new to New England. —*S. F. Blake.*

17251. FASSETT, NORMAN C. Notes from the herbarium of the University of Wisconsin—V. *Rhodora* 32 (375): 57-59. 1930.—Records of *Scirpus heterochaetus, Echinochloa walteri, Galium boreale* var. *typicum,* and *Bidens coronata.—S. F. Blake.*

17252. FOGG, JOHN M. Jr. A few noteworthy plants from Falmouth, Massachusetts. *Rhodora* 32(378): 103-110. 1930.—Annotated list of various species, mostly characteristic of the mainland rather than the coastal plain. —*S. F. Blake.*

17253. FRIES, ROB. E., und TH. C. E. FRIES. Beiträge zur Kenntnis der Flora des Kenia, Mt. Aberdare und Mt. Elgon XII. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(96): 594-621. 1929.—This is a list of plants, with notes on distribution, additional to the flora of the districts named in the title. The species fall to the following families: Gramineae by R. PILGER.—13 genera, 32 spp.; Rubiaceae by K. KRAUSE and W. ROBYNS.—22 genera, 61 spp., 1 variety; Piperaceae by R. E. FRIES,—3 genera, 8 spp.; Proteaceae by R. E. FRIES,—2 genera, 3 spp.; Sterculiaceae by T. C. E. FRIES,—1 genus, 3 spp.; Combretaceae by T. C. E. FRIES.—1 genus, 4 spp. New to science are: Gramineae: *C.* papillipes (*Hyparrhenia p.* Hochst.) Pilger (p. 597); *Cymbopogon* (*Hyparrhenia*) micrantherus Pilger (p. 596). Rubiaceae: *Mussaenda* keniensis K. Krause (p. 603); *Randia* fratrum K. Krause (p. 604); *Pavetta* friesiorum K. Krause (p. 606); *Anthospermum* aberdaricum K. Krause (p. 609); *Rytigynia* friesiorum Robyns (p. 614); *Canthium* rubrocostatum Robyns (p. 616).—*A. M. Johnson.*

17254. FRIES, ROB. E., und TH. C. E. FRIES. Beiträge zur Kenntnis der Flora des Kenia, Mt. Aberdare und Mt. Elgon XIII. *Notizbl. Bot. Gart. u. Mus. Berlin-Dahlem* 10(99): 897-917. 1930.—A conspectus of the species, etc., of the ranunculaceous genera *Delphinium, Ranunculus, Anemone, Clematis,* and *Thalictrum* from Kenia. Described by E. ULBRICH as new to science are: *Ranunculus* helogeton (p. 901); *R.* elgonensis (p. 902); *R.* aberdaricus (p. 904); *R. oreophytus* vars. genuinus (p. 906), gunae (*R. g.* Schweinf.) (p. 907), and stolonifer (p. 908); × *Ranunculus* fratrum (p. 912) (*R. oreo-*

phytus Del. × *pubescens* Thbg.); *Clematis* friesiorum (p. 914); *Thalictrum* stolzii (p. 916); *Anemone thomsonii* var. friesiorum (p. 900).—*A. M. Johnson.*

17255. **GILLIAT-SMITH, B., and W. B. TURRILL.** On the flora of the Nearer East. A contribution to our knowledge of thhe flora of Azerbaidjan, N. Persia. VI, VII, VIII, IX. *Kew Bull. Misc. Inform.* 1930 (7/8/9/10): 273-313, 375-401, 427-465, 480-493. 1930.—This paper is based on more than 4 years' field experience and the taxonomic and phytogeographical analysis of 1370 herbarium specimens of 699 spp. and 31 additional varieties. An account is given of the topography, geology, and climate of Persian Azerbaidjan and of previous botanical exploration in the province. Field studies are summarized, and a phytogeographical analysis leads to the conclusion that the flora of Azerbaidjan is Mediterranean-Oriental and that its closest affinities are with Armenia and Transcaucasia to the north and northwest and not with central and south Persia. A full systematic enumeration of the collection includes taxonomic and distributional notes, vernacular names, field observations etc. The following are described: *Delphinium divaricatum* var. gilliatii (p. 290); *Papaver somniferum* var. collinum (p. 295); *Alyssum campestre* var. compactum (p. 297); *Sterigmostemum tomentosum* var. subintegrum (p. 304); *Tribulus terrestris* var. grandiflora (p. 375); *Astragalus* distantior (p. 377); *A.* glabristylus (p. 378); *A.* mishouensis (p. 379); *A.* phaulanthus (p. 380); *A.* sirensis (p. 382); *Achillea* sahandica (p. 396); *Centaurea* albonitens (p. 427); *Cousinia microcephala* var. glabrescens (p. 431); *Jurinea macrocephala* var. glabrescens (p. 434); *Campanula* gilliatii Milne-Redhead et Turrill (p. 439); *Acantholimon* gilliatii (p. 441); *A.* yamense (p. 442); *Androsace maxima* var. flavida Gilliat-Smith (p. 443); *Linaria lineolata* var. latifolia (p. 449); *Scrophularia alata* var. pubescens (p. 450); *Salvia* gilliatii (p. 456); *Plantago loeflingii* var. longistyla (p. 461); *Halanthium rariflorum* var. sanguineum (p. 463). Unless otherwise indicated, new names are by Turrill.—*B. Gilliat-Smith and W. B. Turrill.*

17256. **GRAVES, ARTHUR HARMOUNT.** Important woody plants—trees, shrubs, and woody climbers—of Greater New York. *Brooklyn Bot. Gard. Leaflets* 19 (2/3): 1-8. 1931.—The list, including exotic species common in cultivation, was prepared on the request of the committee on requirements for the examination of candidates for teaching licenses for junior and senior high school biology in New York City. It is one of several lists of natural objects (wild flowers, birds, reptiles, etc.) being added to the requirements in order that natural history may be given a larger emphasis in biology instruction in the New York City high schools.—*A. H. Graves.*

17257. **HISAUCHI, KIYOTAKA.** Botanical notes from the Tochûken. IV-IX. [In Japanese.] *Jour. Japanese Bot.* 3 (9): 240-242. 1926; 4 (4): 102-104. 1927; 5 (3): 122-126. 1 pl., 2 fig. 1928; (5): 200-202. 1928; (9): 340-346. 4 fig. 1928.

17258. **JÁVORKA, SÁNDOR, és VERA CSAPODY.** A Magyar Flóra Képekben (Iconographia florae Hungaricae). Füzet 8. 3 pl. (2 col.), fig. 1673-1867. K. Magyar Természettudományi Társulat: Budapest, 1931.—Plates and figures with descriptions.

17259. **KENNEDY, R. B.** Some additions to the Newfoundland flora. *Rhodora* 32 (373): 3-4. 1930.—Records of *Hydrocotyle americana* L., *Anemone riparia* Fernald, *Impatiens pallida* Nutt., *Potamogeton subnitens* Hagström, *Lotus corniculatus* L., and *Crepis biennis* L., all new to Newfoundland.—*S. F. Blake.*

17260. **[PASTERNATSKAÏA, V. F.]** ПАСТЕРНАЦКАЯ, В. Ф. Ботанико-географическое исследование в долине р. Лашипсе в Абхазии. [Phytogeographic studies in the Lashipse River Valley in Abkhasia, Caucasus.] (German summary.) Журнал Науково-Дослідчих Катедр м. Одеси (*Ber. Wiss. Forsch.-Inst. Odessa*) 2 (4): 12-20. 4 fig. 1926.—The vegetation is similar to that of the western Transcaucasian region, herbaceous plants predominating, with few arborescent spp. of *Alnus, Fraxinus, Carpinus* and *Fagus*. On the higher slopes, oak and red and silver fir occur. On the lime formations pine replaces the fir and *Arctostaphyllos* occurs. Notes are given extending the known ranges of a few species. *Rhamnus frangula* var. abchasica (p. 17) is new.—*E. D. Merrill.*

17261. **PEASE, ARTHUR STANLEY.** Botanical notes from northern Vermont. *Rhodora* 32 (374): 17-18. 1930.—Records of various spp., including *Linum catharticum* L. at Holland, here first reported from the interior of New England.—*S. F. Blake.*

17262. **QVARFORT, S.** Kärlväxtfloran på Runmarö. [Flora of Runmarö, Sweden.] *Svensk Bot. Tidskr.* 25 (1): 36-76. 2 maps, 6 fig. 1931.—The paper is a short description of the flora, with respect to the phanerogams and pteridophytes, of the isle Runmarö in the Stockholmian archipelago of the Baltic sea. This island, of about 15 square kilometres, bears a rich vegetation, growing upon limestone; in this it is similar to the island of Gotland, also in the Baltic sea. Runmarö has 22 spp. of Orchidaceae, which in proportion to its area is more than any other place in Sweden. Many extension limits of Scandinavian plants pass through the isle, both of northern and southern spp. The botanical exploration, begun as late as 1876, can now be regarded as practically completed, and the list shows 701 spp., excluding *Rosa, Taraxacum* and *Hieracium*, which are not yet fully examined. Including the flora of the adjacent islands (within parentheses in the list), the number rises to 731, but 12 spp. of *Taraxacum* and 34 of *Hieracium* are cited. A list of papers dealing with the flora of Runmarö up to 1929 is added.—*S. Qvarfort.*

17263. **RICKETT, H. W.** Flora of Columbia, Missouri. *Univ. Missouri Studies* 6 (1): 3-84. 1931.—This is essentially a revision of Daniels' "Flora of Columbia, Missouri, and Vicinity" (1907); 20 genera and 63 spp. not found in the above work have been added, including 19 Pteridophyta, 2 Gymnospermae, and Angiospermae. A list of the families, with the number of genera and species of each represented, is given. *Vernonia baldwini* v. parthenioides (*V. p.* Daniels) (p. 81) is a provisional n. comb.

17264. **SĂVULESKU, TR., si T. RAYSS.** Materiale pentru flora basarabiei. Part 2. *Supl. Bul. Agric.* [*Bucuresti*] 3: 81-230. 13 pl., 35 fig. 1926.—The second part of the Bessarabian flora, beginning with the Betulaceae and ending with the Frankeniaceae, includes 340 spp. and many varieties. The distribution of every species in Bessarabia is noted. Detailed descriptions of some more interesting species and varieties with figures, e.g., varieties of *Quercus lanuginosa** (Lam.) Thuill., *Q. sessilis** Ehrh., *Q. lanuginosa* × *sessilis**, *Q. robur** L., *Rumex* spp., *Euphorbia* spp. with a key; *Obione verrucifera** Mogn. Tend. and *O. portulacoides** Mogn. Tend., with a key to separate them; *Camphorosma monspeliaca* L., *C. annua** Pell. and *ovata** W.K., *Petrosimonia* spp., *Dianthus rehmani* Blocki and *leptopetalus** Willd., *Syrenia* spp., *Alyssum* spp. Plates of: *Populus alba* × *tremula, Salix acutifolia, Rumex acrainicus, Obione verrucifera, camphorosma, monspeliaca, Halocnemum strobilaceum, Petrosimonia brachiata, P. crassifolia, Dianthus leptopetalus, Silene sibirica, Roripa prostrata, Alyssum transilvanicum, Schivereckia podolica.* For some more difficult species are given comparative tables for determination. Included are: *Euphorbia falcata* var. intermedia (p. 120); *Polygonum lapathifolium* ssp. *verum* var. *danubiale* fs. putatum and prutenicum (p. 110); *Silene longiflora* var. *typica* f. abortiva (p. 166); *S. l.* var. *scabra* f. elata (p. 166); *S. cserei* var. pusilla (p. 162); *Melandrium noctiflorum* var. *typicum* f. villosum (p. 168); *Atriplex patula* var. uncinata (p. 125); *Consolida regalis* f. albiflora (p. 172); *Dianthus rehmani* var. *sublanceolatus* f. ramosus (p. 157); *D. r.* var. *thyraicus* f. scaber (p. 157); *D. r.* var. longivaginatus (p. 157); *Ranunculus illyricus* var. speciosus (p. 178); *R. cassubicus* var. incisodentatus (p. 178); *R. polyanthemus* ssp. *eu-polyanthemus* f. parviflorus (p. 179); *Papaver dubium* var. *collinum* f. multicaule (p. 183);

Corydalis cava ssp. *eu-cava* f. **maxima** (p. 184); *C. solida* ssp. *eu-solida* f. **bicaulis** (p. 184); *Chorispora tenella* f. **caespitescens** (p. 212); *Reseda inodora* f. **brevipedicillata** (p. 215); *Myosoton aquaticum* vars. **scandens** (Godr.) S. & R. and **silvaticum** (Schur) S. & R.; *M.* **sarmaticum** (*Stellaria sarmatica* Zapal). 60 plants are new for Bessarabia and 16 are very rare.—*C. Regel.*

17265. **SCHAAF, GUSTAV.** Von der Pflanzenwelt des Schwetzinger Dünenzugs. [Vegetation of the Schwetzingen sandhills, Germany.] *Aus der Heimat* 42(6): 161-172. 15 fig. (3 maps). 1929.—The Schwetzinger range of sandhills and its extension as far as Mainz constitutes, by a combination of temp., precipitation and soil, a phytogeographic island within south Germany. Among plants adapted to dryness and warmth occur especially *Jurinea cyanoides, Kochia arenaria, Helianthemum fumana, Corispermum canescens* var. *marshalli.* Some sands are rich in lime, others lack it. The number of spp. found in lime-sand is less than half the number recorded by Spilger from Darmstadt: *Plantago ramosa, Helianthemum fumana, Jurinea cyanoides, Alyssum montanum.* The difference appears to be due to higher temp. and less precipitation than at Darmstadt. *Allium sphaerocephalum* f. *nodosa* produces a second accessory bulb directly under the surface of the sand, an adaptation to the blowing over of the sand.—*G. Schaaf* (*transl. by J. E. Dinsmore*).

17266. **STEARN, W. T.** Unnecessary changes in nomenclature. A criticism of Dr. Abrams' "Flora of the Pacific States." *Gard. Chron.* [*London*] 88(2290): 410. 1930.—The author deplores the use of certain names by Abrams, who has followed the American Code rather than the International Rules of Botanical Nomenclature.

17267. **TATEWAKI, M.** The vernal vegetation in the vicinity of Cape Erimo and Mt. Apoi, Prov. Hidaka, Hokkaido [Japan]. [In Japanese, with English summary.] *Jour. Soc. Agric. & Forestry, Sapporo, Japan* 19(85): 137-156. 2 pl. 1927.

17268. **WILLIS, J. C., and J. STANLEY GARDINER.** The Percy Sladen Trust Expedition to the Indian Ocean in 1905. XI. Flora of the Chagos Archipelago. *Trans. Linn. Soc. London, Zool.* 19(2): 301-306. 1931.—The authors review previous collections and reports on these isls. in the Indian Ocean. The slow planting of many of the islets is ascribed to the absence of land crabs, which have a way of visiting the shores and dragging inland any flotsam. Plants other than those cultivated number 98, of which 46 are recorded in the Maldives and 65 in the Seychelles, 40 being common to all 3 groups. The number of spp. in the natural flora is estimated by one author at 20-25; by the other at about 49. This flora is chiefly Malayan in composition, owing to the direction of the currents reaching the group. A briefly annotated list of spp. is given, with remarks on distribution, habitat, and economic uses.

PALEOBOTANY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 15327, 15360, 15378, 15534, 17132, 17280, 17286, 18107)

17269. **BERRY, EDWARD WILBER.** A revision of the flora of the Latah formation. *U. S. Geol. Surv. Prof. Papers* 154. pp. 225-265. 16 pl. 1928(1929).—The author describes the late miocene flora from eastern Washington and discusses the environmental conditions indicated. Particular attention is given to the large number of genera present which the progressive aridity, due to the elevation of the mountains to the westward that intercepted the moisture laden winds from the Pacific, exterminated in this region, and which survived in either southeastern N. America and eastern Asia, or both. Polypodiaceae: *Asplenium* **occidentale***, *Woodwardia* **praeradicans***, and *Woodsia* **bonseri*** (p. 236). Pinaceae: *Pinus* **macrophylla***, *P.* **latahensis***, *P.* **monticolensis*** described from seeds, and *P.* **tetrafolia** (p. 238); *Tsuga* **latahensis*** (p. 239), cone scales, first described in America. Naiadaceae: *Potamogeton* **heterophylloides*** (p. 240). Myricaceae: *Comptonia* **hesperia*** (p. 241). Salicaceae: *Salix*, pistillate flower*, first recorded in association with fossil foliage. Betulaceae: *Alnus* **elliptica***, and *A.* **prerhombifolia*** (p. 244). Fagaceae: *Quercus simulata* Knowlton (=*Q. chaneyi* Knowlton, *Q. praenigra* Knowlton); *Q.* **treleasii*** (p. 247). Moraceae: *Ficus*? *washingtonensis* Knowlton, emended description. Menispermaceae: *Menispermites* **latahensis*** (p. 249). Magnoliaceae: *Liriodendron* **hesperia*** (p. 249), first record of the genus in the Tertiary of N. Amer., described from carpels. Hamamelidaceae: *Liquidambar californicum* Lesquereux, emended descr. (=*L. protensum* Les., *L. europaeum patulum* Knowlton, *L. pachyphyllum* Knowlton, *L. convexum* Cockerell, *L. acutilobum* Chaney). Grossulariaceae: *Ribes* **fernquisti*** (p. 251), first record of the genus as fossil outside Colorado. Rosaceae: *Cercocarpus* **praeledifolius*** (p. 252). Caesalpiniaceae: *Cassia* **sophoroides*** (*Phyllites s.* Knowlton) (p. 253); *C.* **spokanensis*** (p. 253), descr. from fruit. Papilionaceae: *Meibomites* **knowltoni*** (p. 253); *Leguminosites* **bonseri***, *L.* **alexanderi*** (p. 253). Sapindaceae: *Sapindus* **spokanensis*** (*S. angustifolius* Les.) (p. 254); *S.* **armstrongi*** (p. 254). Celastraceae: *Celastrus* **spokanensis*** (p. 254); *Euonymus* **knowltoni*** (p. 255), first record of the genus as fossil in post-Eocene deposits of America. Hippocastanaceae: *Aesculus* **hesperia*** (p. 256). Rhamnaceae: *Rhamnus* **spokanensis*** (p. 257). Tiliaceae: *Tilia* **hesperia*** (p. 258). Malvaceae: *Hibiscus*? **occidentalis*** (p. 258), descr. from seed, first record of the genus as fossil. Ternstroemiaceae: *Ternstroemites* **idahoensis*** (*Myrica*? *i.* Knowlt.) (p. 258). Lauraceae: *Sassafras* **hesperia*** (p. 259); *Umbellularia* **dayana*** (*Salix d.* Knowlt.) (p. 260); *U.* **lanceolata*** (p. 260). Cornaceae: *Cornus* **acuminata*** (p. 260); *Nyssa* **knowltoni*** (p. 261); *N.* **magnifica** (*Carpites m.* Knowlt.) (p. 261). Umbelliferae: **UMBELLIFEROSPERMUM** (p. 261), resembling *Rhodosciadum*, type *U.* **latahense*** (p. 261), descr. from fruit. Ericaceae: *Arctostaphylos* **knowltoni*** (p. 261); *A.* **spatulata*** (p. 262); *Menziesia* **knowltoni*** (p. 262), first record of the genus as fossil. Vacciniaceae: *Vaccinium* **americanum** (*Santalum a.* Les.=*V. salicoides* Knowlt., *Salix pseudoargentea* Knowlt.); *V.* **bonseri*** (p. 262); *V. b.* var. **serrulatum*** (p. 262); *V.* **spokanense*** (p. 263). Apocynaceae: *Apocynophyllum* **latahense*** (p. 263). Convolvulaceae: *Porana* **microcalyx** (*Diospyros*? *m.* Knowlton) (p. 263), emended descr. Caprifoliaceae: *Viburnum* **lantanafolium*** (p. 264); *V.* **fernquisti*** (p. 264), descr. from fruit. Position uncertain: *Carpolithus* **pteraformis*** (p. 264), descr. from fruit. All from Washington.

17270. **BROWN, ROLAND W.** Additions to the flora of the Green River formation. *U. S. Geol. Surv. Prof. Papers* 154. pp. 279-293. 7 pl. 1928(1929).—The author notes previous studies of the flora, and reports 130 certainly identified species now known. Twenty-three genera, new to the Green River (middle Eocene) flora, and having living spp., are recorded. A probable environment is suggested. Additions to the flora include: Thallophyta, Laboulbiliaceae: *Caenomyces* **planerae** (p. 281). Pteridophyta, Schizeaceae: *Aneimia* **delicatula*** (p. 281). Arthrophyta, Equisetaceae: *Equisetum* **winchesteri*** (p. 282). Spermatophyta, Taxaceae: *Taxites* **eocenica*** (p. 282). Pinaceae: *Picea* **pinifructus*** (p. 282). Sparganiaceae: *Sparganium* **eocenicum*** (p. 282). Myricaceae: *Myrica torreyi* Lesquereux; *M. alkalina** Lesq. Juglandaceae: *Hicoria juglandiformis** (Sternberg) Knowlton. Betulaceae: *Betula* **eocenica*** (p. 283). Ulmaceae: *Planera nervosa** Newberry (=*Myrica prae-*

drymeia Knowlton); *Celtis* debequensis* (p. 284). Moraceae: *Ficus mississippiensis* (Lesquereux) Berry; *F.* omballi* (p. 285). Proteaceae: *Lomatia* coloradensis* (*Phyllites c.* Knowlton) (p. 285); *L. acutiloba* Lesq.; *Banksia* cockerelli* (p. 286). Lauraceae: *Oreodaphne* knowltoni* (p. 286). Rosaceae: *Chrysobalanus* lacustris (p. 286). Leguminosae (Mimosaceae): *Mimosites* debequensis* (p. 286), *M.* falcatus*, and *Cassia* hesperia* (p. 287). Malpighiaceae: *Banisteria* bradleyi* (p. 287). Anacardiaceae: *Rhus myricoides** Knowlton (Knowlton's fig. 9 is designated type); *R.* balli* (p. 287); *Weinmannia obtusifolia* Lesq., *W. haydenii* Lesq., and *W. integrifolia* Lesq. are considered not to belong to *Weinmannia; Schmaltzia vexans* (Lesq.) Cockerell; *Anacardites* schinoloxus* (p. 288), described from fruit. Celastraceae: *Celastrophyllum* lesquereuxii* (p. 289); *C.* emarginatum* (p. 289); *Maytenus* berryi* (p. 289). Sapindaceae: *Thouinia* eocenica* (p. 289). Aquifoliaceae: *Ilex affinis* Lesq. Tiliaceae: *Grewiopsis* cissifolius* (p. 290). Sterculiaceae: *Sterculia* coloradensis* (p. 290). Ternstroemiaceae: *Ternstroemites* viridiflumensis* (p. 290). Oleaceae: *Fraxinus* petiolata* (p. 290). Apocynaceae: *Apocynophyllum wilcoxense* Berry; *Apocynospermum* coloradensis* (p. 291). Cucurbitaceae: *Cucurbita* glandulosa* (p. 291). Incertae sedis: *Phyllites* juncoides*, *Carpolithus* cassioides*, *C.* ellipticus*, *C.* capsularis*, and *C.* palmites* (p. 291); *C.* serratifolius*, *Antholithes* vitaciflora*, *A.* dubia*, *A.* polemonioides*, *A.* pendula*, *Caulinites* acanthus*, *C.* prehensus*, *Rhizocaulon* natans*, and *R.* dichotomum* (p. 292). All from Colorado.

17271. HOLLICK, ARTHUR. Records of Triassic fossils on Staten Island, New York, with descriptions of specimens. *Proc. Staten Isl. Inst. Arts and Sci.* 6(1): 5-22. 9 pl. 1931.—The described and figured specimens were obtained from morainal material, thought to have come from eroded Triassic areas in New Jersey. They are the first fossils of this age reported from New York state. Algae, 2 doubtful spp.* of *Chondrites*. Filicales ?: GELLERA (p. 9), compared with *Baiera*, erected for *G.* paradoxa* (p. 9), type in Staten Island Inst. Arts and Sci. Equisetales: *Equisetum rogersii** ? (Bunbury) Schimper, and a possible stem* of *Equisetum*. Coniferales: branch of a conifer*, branch-bud of a gymnosperm* ?, and other coniferous remains*. Amphibia: footprints*.

17272. RICHARDS, HORACE G. The subway tree—a record of a Pleistocene cypress swamp in Philadelphia. *Bartonia* No. 13. 1-6. 1 pl. 1931.—In excavating for a subway in Philadelphia, stumps of *Taxodium distichum* (bald cypress) were found at 38 ft. below the surface and 10 ft. below sea-level. The trees probably grew prior to the last (Wisconsin) glaciation, near the margin of a marine invasion that converted the lower Delaware River into an arm of the sea. It is suggested that the stumps belong in the Cape May formation, and that that formation was deposited in a warmer interglacial period; later the forest was covered by outwash from the Wisconsin glaciation in northeastern Pennsylvania. Comparison is made with a similar find of *Taxodium* in making excavations at Washington, D. C.—*F. W. Pennell.*

17273. ZANON, VITO. Le Diatomee nel periodo Carbonifero. *Atti Pontificia Accad. Sci. Nuovi Lincei* 81 (4): 278-279. 1928.—A note, confirming the report of the existence of diatoms in the Carboniferous.

17274. ZANON, V. Le Diatomee delle ambre Etrusche. *Atti Pontificia Accad. Sci. Nuovi Lincei* 81(6): 364-366. 1928.

PALEOZOOLOGY

(Abstracts of general papers only. Abstracts of systematic and morphological papers are grouped with those of a similar nature treating of living animals.)

B. F. HOWELL, *Editor*

JOHN R. SANDIDGE AND GLEN L. JEPSEN, *Associate Editors*

(See also in this issue Entries (Unclassified) 16456; (Protozoa) 17477, 17479, 17486, 17499, 17501, 17502, 17503, 17505, 17506, 18115; (Coelenterata) 17513, 17514, 17516, 17517, 17564; (Brachiopoda) 17477, 17564, 17565, 17566, 17567; (Echinodermata) 17486; (Bryozoa) 17564, 18115; (Osteostraci) 17931, 17932; (Mollusca) 17486, 17564, 17576, 17580, 17588, 17592, 17596, 17598, 17599, 17601, 17605, 17606, 17607, 17608, 17611, 17612, 18107, 18115; (Crustacea) 17486, 17620, 17635, 18115; (Pisces) 17486; (Amphibia) 17271; (Reptilia) 17974, 17978; (Mammalia) 18069, 18070, 18072, 17080, 18081, 18084, 18085, 18088, 18093, 18094, 18098, 18101, 18103, 18104, 18105, 18106, 18107, 18109)

17275. ABEL, OTHENIO. Paläobiologie und Stammesgeschichte. [Paleobiology and history of origins.] 423p. Gustav Fischer: Jena, 1929. Pr. 22 M.

17276. BAILEY, THOMAS L. The geology of the Potrero Hills and Vacaville region, Solano County, California. *Univ. California Publ. Dept. Geol. Sci. Bull.* 19 (15): 321-333. Map, 1 pl. 1930.—The supposedly nonfossiliferous sandstone previously referred to the Markley (Oligocene) yielded *Pseudoperissolax blakei, Turritella uvasana,* and *Turricula coheni,* typical Tejon mollusks, and established its age as Eocene.

17277. BIGOT, A. Analyse de travaux récents sur le Quaternaire du littoral du Nord-Ouest de la France. *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 87-93. 2 fig. 1928 (1929).—There is a note on the molluscan fauna of the region, and mention is made of *Buccinum undatum, Purpura lapillus,* and *Cardium edule.*

17278. BROWN, IDA A., and W. S. DUN. The geology of the south coast of New South Wales. Part ii. Devonian and older palaeozoic rocks. *Proc. Linnean Soc. N. S. Wales* 55(2): 145-158. 2 maps, 2 pl. 1930.—A report on a geological reconnaissance of the trail from Moruya to Bendithera. Here is found an Upper Devonian deposit crowded with casts of *Spirifer disjuncta**, west of the Deua River at Bendithera, and Silurian limestones containing several varieties of *Favosites* [Anthozoa], and crinoid stems. In late Devonian rocks on the Bateman-Braidwood road abundant casts of *Rhynchonella pleurodon* were taken. In the Quaama-Cobargo district the Devonian fossils are *S. disjuncta, R. pleurodon, Pterinea,* and *Pteronites.* In Ordovician rocks north of Cobargo were found *Diplograptus foliaceus, Climacograptus* sp., and *Dicellograptus* sp. At Bellbird Creek were taken *Rhynchonella* and casts of *Phthonia** [Pelecypoda], and a fragment of ? *Aviculopecten.*

17279. BULMAN, O. M. B. Some petrological and paleontological relations in subsurface stratigraphy. *Jour. Sedimentary Petrol.* 1(1): 37-42. 1931.—The writer discusses the importance for oil geologists of exact knowledge of species belonging to each geological stratum.

17280. CUMIN, GUSTAVO. Notizie geologiche sul gruppo del Mangart (Alpi Giulie Orientali). [Geological notes on the Mangart Massif (Eastern Julian Alps).] *Boll. Soc. Adriatica Sci. Nat. Trieste* 29: 177-204. 1 fig. 1926-27.—Records Triassic land plants, fresh water crustaceans and fishes, marine pelecypods, gastropods,

cephalopods, brachiopods, crinoids, echinoids, and corals; and Jurassic cephalopods, brachiopods, echinoid, crinoid, and coral. Bibliography.—*B. F. Howell.*

17281. **EHRENBERG, KURT. Erhaltungszustand und Vorkommen der Fossilreste und die Methoden ihrer Erforschung.** [State of preservation and occurrence of fossils and the methods of studying them.] In: E. ABDERHALDEN'S *Handb. biol. Arbeitmeth. Abt. 10, Meth. Geol., Mineral., Paläobiol. Geogr.* Heft. 7, Lief. 310. p. 751-882. 30 fig. 1929.—This treatise deals mainly with the methods of study of the life of the past which have lately been applied parallel to those of adaptation and comparative anatomy. It deals with fossilization and its phenomena, namely, conditions of fossilization, destruction and alterations of fossils, preservation of fossils, and their occurrence. Methods of study relative to conditions of preservation and to occurrence are also discussed.—*E. Antevs.*

17282. **HERITSCH, FRANZ. Silurische Versteinerungen von Allrode im Harz.** *Jahrb. Preuss. Geol. Landesanst.* 50: 510-513. 1 pl. 1929.—A small fauna from the upper Silurian from a new station. *Cardiola bohemica* shows that it is $\theta\beta$.—*F. Heritsch (transl.).*

17283. **HERITSCH, FRANZ. Die obersilurische Fauna des Wiedatales im Harz.** *Jahrb. Preuss. Geol. Landesanst.* 50: 513-580. 4 pl. 1929.—Description of a fauna belonging to the $\theta\beta$ stage from a new station. The fauna includes 56 species which for the most part are in common with the Bohemian ($\theta\beta$). There is one n. sp., (Mollusca) *Deiroceras amatum** (p. 548). The following groups are represented and sp. discussed: (Coelenterata) *Petraia, Cystiphyllum;* (Echinodermata) *Scyphocrinus;* (Brachiopoda) *Strophomena, Pentamerus, Rhynchonella, Merista, Spirigera;* (Pelecypoda) *Avicula, Goniophora, Cardiola, Conocardium, Dualina, Dalila, Vlasta, Praecardium, Lunulicardium, Paracardium;* (Gastropoda) *Phragmostoma, Pleurotomaria, Platyceras, Loxonema, Hercynella;* (Cephalopoda) *Barrandeoceras, Orthoceras, Protobactrites, Dawsonoceras,* and *Kionoceras.*—*F. Heritsch (transl.).*

17284. **LEUTHARDT, F. Über die Fauna der Bermensdorferschichten im Schweizerjura.** *Eclogae Geol. Helvetiae* 21(1): 256-259. 1928.—Lists 30 species of invertebrates (sponges, corals, worms, crinoids, echinoids, asteroids, bryozoans, brachiopods, pelecypods, gastropods, cephalopods, and crabs) from Schönrain, 40 from Hersberg, and 29 from Fluhmatt, all of Jurassic age.—*W. Berry.*

17285. **MERCIER, JEAN. Étude sur le contact du Bathonien et du Callovien en Normandie et dans la Sarthe et sur l'équivalent du Cornbrash anglais.** *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 7-29. 2 fig. 1928 (1929).—The Norman beds are contrasted with the English Cornbrash especially as to ammonite fauna. *Clydoniceras discus, Macrocephalites macrocephalus,* and *Zeilleria obovata* are common to both.

17286. **MERCIER, JEAN. Application des empreintes à la celluloïdine pour l'étude des Echinodermes fossiles.** *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 129-132. 1928 (1929).—The writer describes methods of using celluloïdine to make permanent prints of echinoderm structures. Celluloid is dissolved in equal parts of acetone and amyl acetate. One may add 10 to 15% castor oil to obtain transparent prints, or glycerine to obtain opaque milky prints. In making the print first a 2% solution is dropped on the specimen and when this is dry a 10% solution.

17287. **MERCIER, JEAN. Note sur des Crinoïdes parasités de la couche à Leptaena (Toarcien) de May-sur-Orne.** *Bull. Soc. Linn. Normandie* 3: Trav. Orig. 12-15. 1 fig. 1930 (1931).—The *Leptaena* beds of Toarcien period at May-sur-Orne contain a great abundance of fragments of the crinoid *Millericrinus,* many of which show evidences of parasitism*, which the author thinks may have been molluscan, perhaps *Aplacophora.*

17288. **METZ, KARL. Beiträge zur Devonfauna im Grazer Palaeozoikum. 1. Fundpunkt Thalermühle.** *Mitteil. Naturwiss. Ver. Steiermark* 67: 116-120. 7 fig. 1930.—*Spirifer sophiae**, *S. hassaki**, *Dalmania heideri, Conocardium bohemicum, Striatopora suessi,* and *Syringopora schulzei* are reported from beds that are probably transitional between Lower and Middle Devonian.

17289. **MONESTIER, JOSEPH. Considérations sur les théories de l'évolution et sur certaines données de préhistoire et de protohistoire.** P. Carrere: Rodez, France. 1928.

17290. **REEVES, FRANK. Geology of the Big Snowy Mountains, Montana.** *U. S. Geol. Surv. Prof. Papers* 165-D. 135-149. 1 map, 4 pl. 1931.—Pelecypods and cephalopods are recorded from the NeoJurassic Ellis Formation of this region. The Quadrant Formation of central Montana, on the basis of the listed fauna, chiefly brachiopods and mollusks, is considered Mississippian (St. Genevieve in part), except the top part of the limestone series, which is probably Pennsylvanian (Pottsville). It is older than, and should not be correlated with, the Tensleep and Embar of southwestern Montana. The limestone series at the top may be equivalent to the Amsden. Fossils—corals, brachiopods, bryozoans, and gastropods—listed from the base of the Madison limestone confirm Calvert's unpublished conclusion that there are no beds in the Big Snowy Mountains between the Mississippian (Madison) and the Cambrian (Meagher).

17291. **RICHTER, RUD. Gründung und Aufgaben der Forschungstelle für Meeresgeologie "Senckenberg" in Wilhelmshaven.** *Bericht Senckenbergische Naturforsch. Gesells.* 59(1): 1-30. 1 pl., 20 fig. 1929.—This laboratory began work in April, 1928, studying the mud flats of the North Sea. A new building has been erected where the formation and preservation of tracks, the manner of death and entombment of various living forms, faunal facies, and the sedimentation of the mud flat, will be studied.—*J. W. Monahan.*

17292. **SCHUTZ, HEINRICH. When mammoths roamed the frozen earth.** (Transl. from German by F. BARNES.) 198p. Jonathan Cape, Ltd.: London, 1930. Pr. 7s. 6d.

17293. **STEPHENS, FRANK. Notes on the marine Pleistocene deposits of San Diego county, California.** *Trans. San Diego Soc. Nat. Hist.* 5(16): 247-255. 1 map. 1929.—Describes the areal distribution and localities, and lists the common pelecypods, scaphopods, Amphineura, gastropods, and an echinoid.—*F. Anderegg.*

17294. **WARING, GERALD A. The geology of the island of Trinidad, B. W. I., with notes on the paleontology by G. D. HARRIS.** *Johns Hopkins Univ. Studies in Geol.* No. 7. 1-180. map, 20 pl., 1 fig. 1926.—Records 1 "Eozoön," 2 corals, and 1 cystoid from early Paleozoic rocks; 1 pelecypod and 2 gastropods from late Paleozoic strata; and 1 pelecypod from post-Paleozoic beds. Discusses and figures echinoids, pelecypods, gastropods, and an ammonoid nucleus from Cretaceous deposits; Foraminifera, pelecypods, and cephalopods from Eocene beds; and pelecypods from Miocene sediments.—*F. Anderegg.*

17295. **WHITE, ERROL I. Fossil hunting in Madagascar.** *Nat. Hist. Mag.* [*London*] 2(15): 209-235. Map, 20 fig. 1930.—Narrative of an expedition in 1929, which collected Cenozoic specimens of *Aepyornis,* hippopotamus, lemurs, and fishes. Notes on present animal and plant life are included.

VERTEBRATE ANATOMY, HISTOLOGY, AND PHYSICAL ANTHROPOLOGY

Editors

WAYNE J. ATWELL, *Endocrine Glands, Genito-Urinary System*
ELIZABETH C. CROSBY, *Neurology*
ROBERT S. CUNNINGHAM, *Hematology, Adenoid Tissue, Reticulo-endothelium*
CHESTER H. HEUSER, *Technique*
DAVENPORT HOOKER, *Experimental Anatomy and Regeneration*
C. C. MACKLIN, *Alimentary System, Respiratory System*
PETER OKKELBERG, *Gross Anatomy (except Primate)*
WILLIAM L. STRAUS, JR., *Physical Anthropology*
WALTER E. SULLIVAN, *Bones, Muscles, Joints, Fasciae*
STACY R. GUILD, *Advisory Editor*

(See also in this issue Entries 15137, 15138, 15139, 15141, 15145, 15148, 15257, 15277, 15654, 15746, 15833, 15834, 15857, 15877, 15891, 15962, 15965, 15985, 16079, 16284, 16300, 16306, 16315, 16320, 16324, 16338, 16340, 16345, 16353, 16356, 16432, 16466, 16545, 16876, 16883, 17380, 17383, 17386, 17387, 17396, 17399, 17403, 17404, 17406, 17407, 17409, 17435, 17440, 17451, 17465, 17919, 17931, 17993, 18071)

GENERAL

17296. MÖLLER, J., und P. MÜLLER. Grundriss der Anatomie des Menschen für Studium und Praxis. [Fundamentals of human anatomy for study and practice.] 5th ed. 488p. Walter de Gruyter u. Co.: Berlin, 1931. Pr. 8.50 M.

17297. RAUBER, AUGUST, und FRIEDRICH KOPSCH. Lehrbuch und Atlas der Anatomie des Menschen. In sechs Abteilungen. Abt. 1. Allgemeiner Teil nebst Zellen- und Gewebelehre. Besonderer Teil: Äussere Haut. Abt. 5-6. Nervensystem, Sinnesorgane. Nebst Anhang: Grundzüge der Oberflächen- und Projektions-Anatomie. 13th ed. Abt. 1. 248p. 321 fig. Abt. 5-6. v+607p. Georg Thieme: Leipzig, 1930. Pr. M. 26.

EXPERIMENTAL ANATOMY AND REGENERATION

17298. BECCARI, NELLO. Ovociti nella rigenerazione di innesti testicolari eteroplastici omosessuali nel Triton cristatus. [Ovocytes in regenerated heteroplastic homosexual testicular grafts in T. cristatus.] *Boll. Soc. Ital. Biol. Sperim.* 5(5): 791-794. 1 fig. 1930.—In the regenerated grafted testicular tissue ovogenesis was observed near spermatogenesis. The sexually indifferent or indeterminate condition of the Triton testis is thus corroborated.—*M. Comel.*

17299. BELLAVITIS, CESARE. Contributo allo studio delle colorazioni vitali nel sistema nervoso. *Riv. Patol. Nerv. e Ment.* 34(3): 348-363. 1929.—Injections of trypan blue were used in rabbits after injecting into the brain of the animal a foreign body (paraffin) or substances (such as virus or Na nucleinate) capable of producing a reaction. With the 2nd method the findings were negative. With paraffin not only the meningeal cells, the cells in the adventitia of the blood vessels, and the choroidal plexus took the stain, but also satellite cells of the nervous elements, and cells of the granulo-adipose type (especially abundant in the immediate zone of the wound). These last when stained with silver showed true granulo-adipose bodies in all stages of development, thus assigning to these cells a microglial origin. This gives the microglia another of the essential properties of the reticulo-endothelial system, the power to take the vital stain, which together with its migratory, phagocytic and reproductive properties should help in establishing its mesodermal origin.—*J. De Carlo.*

17300. BENASSI, ENRICO. Lo sviluppo e trofismo dello scheletro degli arti in rapporto alla allacciatura dei vasi principali. [Development and trophism of the skeleton of the limbs after ligation of the principal vessels.] *Arch. Ital. Chir.* 28(1): 49-68. 4 fig. 1931.—Two series of rabbits, 21 about 1 mo. old and 12 adults, were each divided into 3 groups (7 and 4 rabbits respectively). Group 1 of each series underwent ligature of the right external iliac artery; group 2, ligature of the homonymous vein; and group 3, of both vein and artery. The animals were killed after 24 hrs.-90 days. No skeletal difference was found between the normal and operated side, by either x-ray or dissection. The only histological difference was a temporary repletion and congestion of the juxta-epiphyseal capillary reticulum, particularly marked after ligature of the vein, less so after ligature of both artery and vein, and hardly noticeable after ligature of the artery alone; this circulatory disturbance, however, was succeeded by complete return to normal, thus confirming the compensatory activity of the collateral circulation.

17301. BERTOCCHI, ANDREA. Decorticazione periarteriosa alla Leriche ed innesti auto ed omoplastici di pelle. [Leriche's periarterial decortication, and autoplastic and homoplastic skin grafts.] *Arch. Ital. Chir.* 29(1): 1-36. 21 fig. 1931.—Experiments on rabbits (no. not stated) show that autoplastic skin grafts on vascular areas supplied by a "decorticated" artery "take" rapidly. Homoplastic grafts similarly situated are in part eliminated, but in part are retained below the regenerated epithelium, serving at least as a scaffolding for the reconstruction of the tissue replaced by the grafts.

17302. CRUZ, JOSÉ. Über die Beeinflussung der intravitalen Farbstoffablagerung in den Nieren durch Nierengifte. *Zeitschr. Ges. Exp. Med.* 74(5/6): 680-691. 1930.—Control rabbits were injected with trypan blue, which is stored in granules in the renal epithelium, and with ferrum saccharatum (which normally is not stored in the kidney) in NaCl solution. The experimental animals [no. not stated] were injected with chromic acid, Ca chromate, $HgCl_2$, or cantharidin, in addition. Trypan blue was stored in the convoluted tubules of the controls, abundantly in the primary tubules, progressively less abundantly in the tubules of the 2nd and 3rd order. The poisons (Ca chromate particularly, $HgCl_2$ less markedly, cantharidin apparently killed the animals before the effects on the kidneys were striking) deprived the renal epithelium of its ability to absorb dye and dislodged the granules it already contained. This suggests that dye distribution may serve as an index of the injurious effects of poisons on the kidney. Experiments showed also that granular deposition of dye takes place only when the cells of the uriniferous tubules are intact. Nevertheless it is not thought that dye assemblage involves an active process such as phagocytosis, but rather that deposition is a form of precipitation. Failure of dye distribution after poisoning is explained on the assumption that the protoplasm is so altered that the characteristic precipitation cannot take place.—*F. R. Hayes.*

17303. DAHL-IVERSEN, E. Recherches expérimentales sur l'autotransplantation libre de muqueuse utérine dans le péritoine des cobayes. *Lyon Chir.* 26(6): 767-781. 3 fig. 1929.—In 13 free autotransplants of uterine mucosa on the peritoneum, implantation occurred in 12 cases: on the incision in the mesentery of the extirpated uterine horn, in the angle between the cervix uteri and the bladder, at the base of the mesentery of the extirpated uterine horn, on the uterine horn at its connection with the cervix uteri, and in the scar in the uterine wall; i.e.,

the endometrium freely placed on the peritoneum became implanted only in those places where the serosa has been injured by the operation. Moreover, the entrance of blood into the peritoneal cavity could not produce a lesion such that implantation of endometrium could take place. These results do not support Sampson's theory. The superficial graft agreed with the uterine stroma in vascularity, hemorrhage and epithelial desquamation, but the deep graft showed (as previously found) no such correspondence in oestral cyclic changes. —*E. Dahl-Iversen (transl. by G. L. Kelly).*

17304. FREUND, ERNST. Histologische Untersuchungen über den Heilungsvorgang bei eingekeilten Schenkelhalsbrüchen. *Arch. Orthop. u. Unfall-Chir.* 28(3): 489-520. 12 fig. 1930.—The healing process of an impacted fracture of the neck of the femur was observed in 7 human cases up to a stage in which it was almost impossible to note the former fracture macroscopically. The periosteum of the neck takes almost no part in the callus formation. This is not due to a special quality of the periosteum of the neck of the femur but rather to its maturity, which has caused failure to form callus in other bones as well. Indeed the parosteal tissue takes a more important part in callus formation, which may even lead to a typical posttraumatic myositis ossificans. As a result of pronounced disturbances of the circulation, aseptic necrosis appeared in the fractured head in 3 cases, combated by the surrounding healthy bone marrow. This process, described in detail, is very similar to the previously described healing of aseptic necrosis in the spongiosa of the head of the femur without fracture of the neck.—*Author's summary (transl. by H. F. Nachtrieb).*

17305. GERARD, R. W., and ROY R. GRINKER. Regenerative possibilities of the central nervous system. *Arch. Neurol. and Psychiatr.* 26(3): 469-484. 1931.—In experiments on new-born rats and on fetuses in utero, the spinal cord was transected by a single clean cut with a cataract knife, and subsequently studied histologically, the "clinical" course being observed during the interim. Many experiments yielded negative or no results because the animals died or the spinal column became displaced, etc. Several rats operated on at birth, however, gave evidence of a gradual return of function. One animal, studied with special care, showed evidence of a complete section at the time of operation, was entirely paralyzed and anesthetic below the lesion for 2 wks., but in the subsequent 3 wks. recovered sensation and voluntary motion practically completely; the spinal cord showed no evidence of lesion. Several rats operated on in utero were born 5-7 days later with the sense of pain, voluntary motion, or both, present in the hind quarters; the spinal cords showed partial lesions or none. The possibility of the growth of nerve fibers into and across a lesion after complete or partial transection is definitely established. The immature spinal cord also possesses remarkable powers of physiologic reorganization which may lead to full return of function below an almost complete separation of the cord. The mass of evidence indicates that although some growth of nerve fibers from the cut end of axons may appear, return of function due to anatomic regeneration has not been proved.

17306. GIANOTTI, M., e G. BERTINI. Contributo sperimentale allo studio degli innesti testicolari. [Testicular grafts.] *Arch. Ital. Anat. e Istol. Patol.* 1(5): 797-820. 16 fig. 1930.—Experiments on 15 guinea pigs and an unspecified number of dogs (6 reported), the implants being made subcutaneously, preperitoneally and vaginally, and removed 5-45 days after operation, showed that the grafts undergo necrosis and are reabsorbed most slowly from the vaginal site.

17307. GODLEWSKI, EMIL JUN. Untersuchungen über Auslösung und Hemmung der Regeneration beim Axolotl. *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 114(1): 108-143. 36 fig. 1928.—To test experimentally the problem of the release or inhibition of regenerative activity, especially the effect of controlled inhibition, the tails of axolotls were amputated and covered. Amputated tails of yearling axolotls always failed to regenerate if the cut surface was immediately covered with living skin of the same or another animal, which healed in place. Histologically, such covering became normal skin after undergoing readjustment, involving the development of a sheet of connective tissue between the epidermis and the underlying tissues, a formation not found in normal regeneration, in which large cellular contributions are made from nests of reserve cells in the epidermis to the blastema of the future tissues. Covering the amputation surface with chamois leather did not inhibit regenerative processes. Covering the cut surface with skin after regenerative processes have started did not unconditionally stop further activity, though it may interfere with its normality and cause the formation of irregular buds and miniature tails: these tails, however small, have spinal cord, vertebral column and traces of muscles. If a new cut surface is made in a tail the regeneration of which has been inhibited, regeneration occurs on the new surface; the regeneration is quite local and cannot induce regenerative activity in any remaining part of the inhibited area; the inhibited area influences the direction and to some extent the rate of growth of the regenerant. Injection of tissue and tissue-extracts gave negative results.—*A. F. Coventry.*

17308. GORBUNOFF, W. P. Vergleichende Studien über die Knochen- und Knorpel-Auto- und Homotransplantation. *Arch. Klin. Chir.* 161(4): 651-670. 1930.—Dogs were selected in pairs and rib-bone and rib-cartilage transplants taken from each. The transplants were divided into approximately equal parts, weighed, and one part planted under the skin of the dog from which the part had been taken and the other part was transplanted to the other dog of the pair. Both dogs thus carried auto- and homotransplants. 160 such transplants were made, but some of the cases festered and some of the dogs died. The conclusions are based on 120 successful transplantations. Homocartilage and homobone are a little less resorptive than autocartilage and autobone. Often the dog's own cartilage and bone were resorbed more rapidly than was that of the other dog. An exact microscopic differentiation could not be made between auto- and homotransplants. In plastic operations, in which bone or cartilage may serve to fill a defect, cartilage must be given unqualified preference as less subject to resorption. Cartilage preserved in alcohol, because of its capacity to become converted into living, firm, fibrous connective tissue, should have manifold applications in cosmetic operations and should replace auto- and allopathic material.—*Author's conclusions (transl. by H. F. Nachtrieb).*

17309. GUERRAZZI, GUERRAZZO. L'innesto delle ghiandole da uomo a uomo; considerazioni sugli acquisiti di una polemica. [Homotransplantation of glands in man.] 23p. S. Belforte e C.: Livorno, 1927.

17310. HAAS, S. L. The union of grafts of live and of preserved fascia with muscle. A comparative study. *Arch. Surg.* 23(4): 571-580. 6 fig. 1931.—In 7 experiments on dogs, dead preserved fascia lata united with muscle just as rapidly and as firmly as did live fascia lata. The union of both dead and live fascia depended mainly on the ingrowth of the endomysium and perimysium. The muscle cells themselves appeared to be transformed into elements of fibrous tissue and to aid in the uniting process. There was some evidence that the preserved fascia lost some of its elasticity and stirred up more reaction in the surrounding tissue than did live fascia.

17311. HUMPHREY, R. R. Studies on sex reversal in Amblystoma. V. The structure of ovaries of A. tigrinum subjected for long periods to the influence of a testis resident in the same animal. *Anat. Rec.* 51(2): 135-148. 2 pl. 1931.—Previous experiments have shown that an ovary developing under the influence of a testis resident in the same animal commonly undergoes modification to a rudimentary or vestigial structure. Such ovaries often begin reversal to functional testes (i.e.,

testicular lobules begin to develop) in animals under 6 months of age. Other ovaries at this time, however, show no development of testicular lobules, and these regenerate into normal ovaries when the testis responsible for their modification is removed. In this experiment, ovaries reduced to a known rudimentary or vestigial state were left 8-14 mos. under the influence of a testis. In these ovaries the germ cells (oogonia) of the cortex decreased in numbers, sometimes eventually disappearing almost completely; regeneration of the cortex in consequence occurred slowly or not at all when the ovary was relieved of the influence of the testis. In many ovaries testicular lobules developed after a variable time, thus completing reversal into a testis. In others, however, lobules failed to develop. Such gonads usually had few or no germ cells in their hilar or medullary portions. With the reduction of their cortical germ cells these approached a condition of complete sterility. It is concluded that a small portion of all modified ovaries would remain in this state indefinitely.—*Author (courtesy Wistar Bibl. Serv.)*.

17312. **IMBERT, LÉON. Recherches histologiques sur l'évolution de la greffe osseuse.** *Ann. Anat. Path. et Anat. Normalle Méd.-Chir.* 7(3): 291-315. 16 fig. 1930.—A segment about 2 cm. long comprising the thickness of the bone was resected from the ulnar diaphysis of a dog, and then firmly replaced after being shortened. After 30 days a segment, including the graft and the ends of the bone on each side, was removed. The callus was in process of formation. Bone reconstruction involved a double mechanism: (1) Proliferation of the exogenous or periosteal bone forms a ring of areolar tissue developed nearly equally on the shaft of the bone and on the graft, which rapidly becomes abundant and, reinforced by a plug developed within the marrow cavity, forms a provisional yet strong splice. Later ferrule and plug are reabsorbed more or less completely and the marrow canal is thus re-established. This process, like that which provisionally repairs a fracture, produces an osseous neoformation with its fibrous and cartilaginous processes, but a rarefaction of the osseous tissue ensues, visible on both the graft and the living bone, and also a necrosis of the bony cells characterized by disappearance of the nuclei. All cells of the graft appear to be affected by this necrosis, but it is apparent only for a limited distance on the living bone. (2) Besides the provisional exogenous, periosteal or medullary bone, endogenous bone is produced by 2 processes: on the surface of the fracture exostoses containing living cells appear, abundant on the living bone, rare on the graft; their juncture and fusion with the peripheral bone produces definite consolidation, permitting the periosteal bone, its function performed, to disappear. The essential element in the process of graft repair is the enlargement of the Haversian canals, with consequent disappearance of the dead cells and formation of new and healthy living bone which reduces the enlarged Haversian canals to normal dimensions. This process, the result of a kind of antagonism between the destructive osseous rarefaction and the reconstructive osseous formation, goes on at all points, but not simultaneously; hence a graft examined at any moment shows both dead and living areas. In bone planted in the soft tissues and destined to be reabsorbed, the 2 processes are also apparent, but the destructive prevails, as in the failure of a graft intended to repair an osseous break. In successful cases, the osseous reconstructive process dominates and prevails over the destructive.—*Author's summary (transl. by R. T. Hatt)*.

17313. **ISHIKAWA, SHINICHI. Über die Phagozytose der Epithelien, insbesondere der menschlichen.** [In Japanese.] *Hifukwa Kiyo* 9(6): 1927.—A minute piece either of the skin, of the mucous membrane of the urinary bladder and of the spermduct of man, of the mucous membrane of the guinea pig or of the skin of *Rana nigromaculata* was cultivated in autoplasm to which India ink had been added. The epithelia, which spread like a membrane in the nutritive medium or crept along the surface of the implanted tissue, stored particles of the ink in their cell bodies. In a series of experiments also made in vivo by painting a very small amount of the ink in a small incision, phagocytic activity of the epithelial cells toward ink particles was clearly established.—*Author (courtesy Japanese Jour. Zool.) (transl. by H. F. Nachtrieb)*.

17314. **NÄRVI, E. J. Einiges zur Frage der Sehnenregeneration.** *Acta Chir. Scandinavica* 68(3): 267-277. 5 fig. 1931.—Confirming earlier conclusions, the author presents results of recent experiments on cats showing the cicatricial structure of a regenerated tendon; the regeneration is believed to arise, not from the ends of the divided tendon, but from the surrounding connective tissue.

17315. **PINETTI, PINO. Su la rigenerazione del rene. [Regeneration of the kidney.]** *Arch. Ital. Anat. e Istol. Patol.* 1(3): 353-366. 2 pl. (col.), 7 fig. 1930.—Circumscribed necrotic lesions, as nearly uniform as possible, were produced by freezing with CO_2 snow a small portion of the parenchyma in the remaining kidney in 100 unilaterally nephrectomized rabbits, which were killed in 2-200 days. The necrotic tissue was gradually replaced by new tissue. Resorption began immediately after the intervention and was complete toward the 90th day. The formation of new connective tissue and the replacement of the membrana propria of the tubules and of the capsule of the glomeruli was evident from the 3rd day. In animals killed on the 110th day and thereafter, the site of the lesion was perceptible only by a slight thickening of the capsular and intertubular connective tissue of the parenchyma immediately below the capsule of the injured portion.

17316. **SAWELSOHN, S. Untersuchungen über die Speicherung einiger Vitalfarbstoffe in den Leberzellen.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 8(3): 602-616. 1929.—Absorption of trypan blue, administered by intraperitoneal injection, may occur in the liver cells of mice and rats provided the dye is administered in large doses and at frequent intervals. The amount of absorption is less than that occurring in rabbits and guinea pigs and is less in rats than in mice, while in dogs it does not occur. Hunger and protein diet did not alter the amount of absorption. —*J. P. McMurrich*.

17317. **WALLBACH, GÜNTER. Untersuchungen über die Ätiologie und die Genese der mesenchymalen Zellherde in der Leber als Beitrag zu einer Lehre der mikroskopisch sich darstellenden Zellfunktionen.** *Zeitschr. Ges. Exp. Med.* 68(5/6): 569-620. 11 fig. 1929.—Extirpation of the spleen, in rabbits and white mice (on special diet) failed to produce mesenchymal cell masses in the liver 6-90 days after this operation; rabbits subjected to anemia-producing conditions (phenylhydrazine, toluylenediamine, and actual arterial bleeding) also gave negative results; but x-ray treatment of the spleen and poisoning of rabbits with arsenic and injections of foreign protein gave positive results. The development of spleen tissue in the liver was obtained only when spleen pulp was subjected to an intense strain.—*W. Malamud*.

GROSS ANATOMY (EXCEPT PRIMATE)

17318. **BRUNELLI, G., e LINA RIZZO. Ghiandola esocrina, ovario impari ed ermafroditismo nella "Perca fluviatilis." [Exocrine gland, unilateral ovary and hermaphroditism in P. fluviatilis.]** *Atti. R. Accad. Naz. Lincei Cl. Sci. Fis. Mat. et Nat.* 7(10): 865-867. 1928.—In *P. fluviatilis* the disappearance of one of the ovaries is probably related to the presence of an exocrine gland. This gland is present, however, in both sexes and in the ♀ may furnish the mucilaginous involucrum of the eggs. In some cases an hermaphroditism seemed to exist in the ♀ while in the ♂ it was not possible to observe eggs in the corresponding gonad.—*From abstr. by E. Ponzi*.

17319. **CRABB, EDWARD DRANE. Principles of functional anatomy of the rabbit.** 137p. 33 fig. P. Blakiston's Son & Co., Inc.: Philadelphia, 1931. Pr. $1.50.—This is an elementary guide to the dissection of the

rabbit. The elementary tissues, the skeleton, and the articulations are briefly described in the first 37 pages, followed by 8 pages on nomenclature and work preliminary to dissection. In chapters V-IX are given the attachments and functions of the muscles of the left thoracic and pelvic limbs, 2 muscles of the head, 3 muscles of the neck, and 12 of the trunk with directions for their dissection. Directions for the dissection of the blood vessels, lymphatics, and the nerves of the limbs of the left side and the glands of the head and neck together with the jugular veins and carotid arteries are also included. The thorax and abdomen and their respective organs and blood vessels are given in Ch. X-XI. The dorsal and ventral aspects of the brain are shown in 2 fig. Very short descriptions of the pineal and pituitary bodies and the spinal cord are given. The 5th and 7th cranial nerves are briefly described and directions given for their dissection.—*G. S. Hopkins.*

17320. **DANIEL, J. FRANK, and L. H. BENNETT. Veins in the roof of the buccopharyngeal cavity of Squalus sucklii.** *Univ. California Publ. Zool.* 37 (3) : 35-40. 3 fig. 1931.—This remarkable group of veins was demonstrated by using new portals of injection. These vessels consist primarily of 2 large parallel trunks, designated as the buccopharyngeal veins, and certain important tributaries, draining the dorsal part of the cranium in the region of the orbit, the rostrum both dorsally and ventrally, and the larger part of the olfactory area. This group of veins is connected with the cutaneous system of veins through the dorsal cutaneous, and with the orbital sinus of the anterior cardinal system through the orbitonasal vein. These vessels finally empty their blood into the anterior cardinal sinus in the roof of the pharynx.—*J. F. Daniel.*

17321. **DU TOIT, C. A. Die Skedelmorphologie van Heleophryne regis. [With English summary.]** *So. African Jour. Sci.* 27 : 426-438. 11 fig. 1930.—Microscopic examination of a young adult and macroscopic examination of an old specimen showed that the maxilla in *H. regis* has nearly the same form and relationship to other parts of the skull as in *Rana fusca*. The prenasal cartilage is forked posteriorly and formed around the median horizontal septum of a double sac. The inferior prenasal cartilage is likewise forked posteriorly and its lowest free part supports the caudal prolongation of the pre-maxilla. The nasal cavity differs in some respect from that of *R. fusca*. A middle ear is present. The pars interna plectri is united antero-dorsally and ventrally with the sides of the fenestra ovalis; the pars media plectri is ossified; the pars externa plectri lies like a wedge against the tympanum, and carries the processus ascendens partis externae-plectri. There are 3 foramina acusticae. The vomer bears teeth. The os en ceinture is extended between the nasalia, widely separating them. A fenestra frontoparietalis and taeniatecti medialis are absent. The processus thyroideus is much elongated as in *Cacosternum* (de Villiers 1930). Its anterior portion is ossified. The hyoid articulates with the lower edge of the otic capsule. —*J. van de Erve.*

17322. **FAZZARI, IGNAZIO. Le arterie del cervelletto. Studio anatomo-comparativo ed embriologico. [The arteries of the cerebellum: comparative-anatomy and embryology.]** *Monitore Zool. Ital.* 40 (11/12) : 572-575. 1930. —The author studied the arrangement of the cerebellar arteries in different mammals and man (30 cases); he then followed their development in embryos of *Ovis aries* 9-180 mm. long. In general the vascularization of the cerebellum is affected by 4 arteries in lower mammals and by 6 as the primates are approached. In carnivores and primates, the vertebro-cerebellar artery appears as a true cerebellar artery. In other mammals, besides the 4 cerebellar arteries, others, originating directly from the basilar trunk or as collaterals of the bulbar arteries, supply a portion of the vermis. As the primates are approached these branches are seen to be homologous to the vertebro-cerebellar arteries of man. The territory of distribution of the cerebellar artery is constant in all animals, but varies in extent: the anterior cerebellar arteries supply the whole anterior lobe and the middle portion of the cerebellum and often the region of the flocculus and parafloculus; from them always originate collaterals to the corpora quadrigemina region. The posterior cerebellar arteries go to the middle and posterior lobe, frequently sending rami to the region of the parafloculus, rarely to that of the flocculus. The territory of these arteries is less constant, being dependent on the presence or absence of the vertebro-cerebellar arteries, since their development is correlated with the diminution of vascularization associated with the posterior cerebellar arteries. The vertebro-cerebellar arteries supply a territory at first small, then gradually larger, until a maximum is reached in man. One of the best supplied regions of the cerebellum is that of the flocculus, since to it go collaterals from the posterior cerebellar artery, the anterior cerebellar artery, and sometimes from the internal auditory artery; there is almost always a collateral from the anterior cerebellar artery, which often originates from the basilar trunk. Before the metencephalic anlage has formed, the blood supply for the cranial part of the rhombencephalon arises from collaterals of one artery of the mesencephalon (meso-metencephalic rhamus); the caudal and central part is supplied by arteries coming directly from the basilar trunk, including the long posterior cerebellar artery. Later, when the cerebellar anlage appears, the collaterals for the cerebellum from the meso-metencephalic branch tend to become autonomous, originating directly from the basilar trunk. There is a tendency for these anterior cerebellar arteries to fuse, forming one artery. The posterior cerebellar arteries are at first distributed to the vault of the rhomboid fossa and of the bulb; when the metencephalic anlage appears they supply it with cranial collaterals; with progressive development of the cerebellar mass these cerebellar branches become more and more important, thus acquiring the true character of cerebellar arteries; while the bulbar branches and those of the 4th ventricle develop very little.—*I. Fazzari (transl. by G. A. Bica and T. T. Job).*

17323. **FREUND, LUDWIG. Die topographische Anatomie der Leibeshöhle nebst ihrer Beziehung zur Kiemendarmhöhle bei den Teleosteern.** *Congrès Internat. Xe Zool. à Budapest* 1927: Part 1. 549-556. 1929.

17324. **FUCHS, HUGO. Beiträge zur Entwicklungsgeschichte und vergleichenden Anatomie des Brustschultergürtels der Wirbeltiere. VIII. Von Verschiedenheiten der Gestalt des Präzonales am Brustschultergürtel der Froschlurche und ihrer systematischen Bedeutung. [Embryology and comparative anatomy of the thoracic girdle in vertebrates. 8. Morphological differences of the prezonal region of the pectoral girdle in amphibia and their systematic significance.]** *Anat. Anz.* 65 (21/22) : 353-369. 8 fig. 1928.

17325. **GSCHWEND, THEODOR. Das Herz des Wildschweines (VI. Beitrag zur Anatomie von Sus scrofa L. und zum Domestikations Problem).** *Anat. Anz.* 72 (4/5) : 49-89. 8 fig. 1931.—In the wild hog the position of the heart is from the 2nd to 5th intercostal spaces; in the domesticated hog, from the 3rd to 6th intercostal spaces. The shape is much more pointed than in the domestic hog. The average length is 10.57 cm. compared with 7.8 cm. for the domestic species. The oblique diameter is 9.16 cm. compared with 11 cm. of the tame species. The relative weight to that of the body as a whole is 0.638% for the wild species and 0.38% for the domesticated species. The absolute weight is 336 gm., while that of the domesticated species is 265 gm. The right atrium is smaller than the left. There are 2 large pulmonary veins and in most instances a 3rd small vein. The foramen ovale is obliterated in 75% of the specimens and the fossa ovalis is 0.5-1 cm. in diam. The depth of the longitudinal sulci is more pronounced in the wild hog. The right ventricle does not have a large number of trabeculae. The moderator band in young individuals is thicker than in older ones, a condition which is reversed in the domesticated hog. The opening

into the aorta from the left ventricle is small. The formation of the anterior papillary muscle from 3 trabeculae, as in the tame species, is only faintly indicated. There is less pericardial fat, the ligamentum Botali is smaller and more delicate. The muscle fibers are thicker, denser, with more nuclei, less fat, and larger intermuscular spaces. The material studied included 15 hearts of wild hogs ranging from 35 to 93 kg. in weight, and including 3 ♀♀.—*S. P. Miller.*

17326. HELBING, H. Zur Osteologie von Amphicyon crassidens Pomel. [Osteology of A. crassidens.] *Verhandl. Naturforsch. Ges. Basel* 40(pt. 2): 280-294. 6 fig. 1928-29(1929).

17327. HUBER, ERNST. Evolution of facial musculature and cutaneous field of trigeminus. I. II. *Quart. Rev. Biol.* 5(2): 133-188; (4): 389-437. 72 fig. 1930.—In this paper, comparative anatomical, racial anatomical and embryological investigations on the facial musculature, and studies on the cutaneous field of the N. trigeminus, are correlated with data obtained from neuro-physiological research. Chapters 1-3 refer to the evolution of the motor facialis field: in the mammals the facial musculature has evolved to a remarkably high level. After having become completely separated from the deep facial musculature, the superficial facial musculature, which in the inframammalian vertebrates is restricted to the neck region, has expanded in the mammals over the whole head and face, subsequently giving rise to the many, more or less distinct individual facial muscles. *Echidna* and *Ornithorhynchus* developed their superficial facial musculature along their own line on a common monotreme ground-plan, which has, however, undergone considerable adaptive modification in the 2 monotreme types. The marsupials and placentals on the other hand share a common ground-plan of the superficial facial musculature which is fundamentally different from the monotreme plan and has diverged along many and very different lines. Hence detailed comparative anatomical studies of this field afford far-reaching evolutionary conclusions, and they are likewise of high systematic value. The great expansion of the superficial facial musculature in the mammals led to a tremendous increase in size of the motor component of the N. facialis and a rich ramification of its branches. This was accompanied by an extensive evolution of the motor part of the nucleus N. facialis in the medulla oblongata in which again the monotremes show a ground-plan which differs fundamentally from the marsupio-placental plan. In addition to this primitive motor center in the brain stem, which the inframammalian vertebrates share with the mammals, the latter acquired representation of the facial musculature in the motor cortex of the cerebral hemisphere. The motor facialis field was evidently one of the first in the phylogeny of the mammals to become definitely localized in the cerebral cortex, for it already exists in the monotremes and primitive marsupials. Within the orders of the placentals there is a gradual evolution and fuller differentiation of the motor cortex: In the insectivores, bats and rodents the motor cortex appears to have evolved little above the state found in the marsupials. The ungulates also seem not to have reached a higher differentiation. In the carnivores the various motor areas are well developed and respond with more elaborate movements. In the "ascending scale of the primates" the motor cortex, including the facial area, evolved by individualization of emerging smaller areas within the principal motor areas, attaining the greatest completeness and highest differentiation in the anthropoid apes and man. In chapter 4 it is emphasized that while in the mammals the motor facialis field is so highly evolved, the cutaneous field of the N. facialis is reduced to a mere vestige, a variable area on, and adjacent to, the outer ear. The N. trigeminus took over the cutaneous sensitivity of the face. Indeed, the cutaneous trigeminus field in the mammals has attained a high development similar to that of the motor facialis field. Also in regard to the ground-plan of the trigeminus field the monotremes show fundamental differences from the marsupials and placentals, which share a common ground-plan. All this leads to the assumption that the monotremes must have been derived entirely apart from the marsupials and placentals from a different group of the theriodont reptile stock. In the monotremes (chapter 5) the evolution of the cutaneous trigeminus field culminated in the extraordinarily rich supply of the snout, which is fur-free in its whole extent and bare of mystacial and mental vibrissae. Vibrissae are absent also in the rest of the face. The peculiar arrangement of the cutaneous trigeminal branches, on an identical plan in *Echidna* and *Ornithorhynchus*, and the absence of vestiges of facial muscles corresponding to those of the vibrissae of other mammals, are brought forward as evidence that the monotremes never possessed actively movable tactile facial vibrissae. In the marsupials and placentals (chapter 6) the evolution of the cutaneous trigeminus field is closely linked with the acquisition of facial tactile vibrissae. The elaboration of this important head-protecting and guiding mechanism led to the differentiation of individual facial muscles as vibrissae movers characteristic of the marsupio-placental ground-plan of the superficial facial musculature. The evolving tactile facial vibrissae apparatus of the common ancestors of the marsupials and placentals, requiring sensory as well as motor representation in higher cortical centers, must have played an influential rôle in the early stages of the neopallium. In the various orders and suborders of the marsupials and placentals the facial tactile vibrissae have subsequently become modified along many lines. Chapter 7 deals with the evolution of the facial musculature in the "ascending scale of the primates," illustrated with elaborate figures representing the findings in a series of selected types of the main groups of the primate stock. The gradual differentiation of the superficial muscles of the face proper (mimetic musculature S. str.) in the primates, in close correlation with the evolution of the corresponding central nervous mechanism, led to the elaboration of facial expression which in man ultimately attained marvelous perfection. It is suggested that the elaboration of facial expression during phylogeny of man closely followed the evolution of emotional life, which in turn depended on the elaboration of the association centers. An important influence is also attributed to the acquisition and gradual perfection of articulate language. This chapter moreover includes a section on the embryological development of the facial musculature in parallel series of whites and negroes, showing the critical period of development and differentiation of the facial musculature between the 2nd and 3rd month, and demonstrating in the succeeding stages the gradual structural differentiation, typical coloring and acquisition of the proportions of the individual facial muscles characteristic of the new-born, and the slight postnatal changes. While the structural differentiation of the mimetic musculature and the corresponding facial branches is completed before birth, there is practically no facial expression in the new-born. The elaboration and modification of facial expression in the course of life of the individual is briefly described, and a section is included referring to racial differences in facial expression, which are evidently the result of structural differences in the mimetic musculature (as illustrated with figures representing various human stocks), skin and subcutaneous tissue, but more so to differences in psychological reactions. In chapter 8 the superficial skin sensibility and the 3-fold deep sensibility (deep skin pressure, muscle pressure and periosteal pressure) of the face are discussed. Evidence is presented from experiments (blocking of the cutaneous trigeminal branches and subsequent electrical stimulation of the corresponding motor facial branches in the author's face) that we have muscle sense in the mimetic musculature; this sense is conducted with the muscle pressure sense, by the muscle branches of the N. facialis, though additional postural sensations may be carried back through the N. trigeminus from the skin when the latter is under tension

and wrinkled through the contracting mimetic muscles. Chapter 9 refers to reflex connections which have been established in the mammals between the sensory trigeminus field and the facial musculature. Moreover, experimental proofs are presented against the view that the facial musculature receives an additional motor supply through branches of the N. trigeminus and nerves of the cervical plexus anastomosing with the N. facialis. The experimental findings are thus in accord with the morphological findings presenting the facial musculature as a genetically uniform field innervated exclusively by branches of the N. facialis.—*E. Huber.*

17328. **KADLETZ, MAXIMILIAN. Anatomische Grundlagen der rektalen Untersuchung beim Rind.** *Deutsche Tierärztl. Wochenschr.* 39(43): 655-672. 3 fig. 1931.—The anatomy and physiology of the digestive system of cattle is discussed and compared with the homologous systems in horses and dogs.

17329. **KIMURA, TADASI. Morphologische Untersuchungen über das membranöse Gehörorgan der Vögel.** *Folia Anat. Japonica* 9(2): 91-142. 9 pl. 1931.—The membranous labyrinths of oriental types representative of 18 orders of birds were sectioned at 20-45 μ after celloidin infiltration. Wax plate models were prepared of each. Descriptive accounts of species are given in the following order: *Podiceps ruficollis, Nettion crecca, Larus canus, Synthliboramphus antiques, Rallus aquaticus, Columba livia, Excalfactoria chinensis, Phalacrocorax carbo, Ninox scutulata, Dryobates major, Oceanodroma leucorrhoa, Cuculus canorus, Heteroscelus incanus, Eurystomus, orientalis, Milvus lineatus, Nycticorax nycticorax, Zosterops palpebrosa, Alcedo atthis.* Comparative statements regarding each subdivision of the labyrinth are made, including calculations of gross proportions and angles of the semicircular canals. Birds as a group are comparatively uniform in the structure of the labyrinth. The most variable parts are the semicircular canals. Certain similarities exist among swimming birds contrasted to land or wading birds. Several striking similarities between non-related forms evidently are parallel developments. A full summary of structural features is given.—*A. H. Miller.*

17330. **[LANSHINA, T. N.] ЛАНШИНА, Т. Н. О некоторых корреляциях в челюстном и дыхательном аппаратах хищных и планктоноядных рыб. [Correlations in the maxillary and branchial structures of carnivorous and plankton-feeding fishes.]** [French summary.] Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1928(3): 253-272. 8 fig. 1928.—The manner of feeding affects primarily the force and size of the masticating musculature (M. adductor mandibulae). Its development in carnivorous spp. (*Blennius, Gadus, Scorpaena, Belone, Gobius, Lucioperca*) is correlated with changes in the skeleton; in the plankton-feeding spp. (*Mugil, Engraulis, Harengula, Caspialosa*) the orbit diminishes, the operculum diminishes and is pushed to the rear, and the musculature weakens. The size of the operculum also depends on the type of respiration. The kind of respiration affects the development of other respiratory organs: the branchiostegals, the floor of the buccal cavity with M. geniohyoideus, as well as the mechanism of the urohyal. In bottom-living forms (*Blennius, Gobius, Scorpaena*), which respire especially with the aid of the branchiostegal apparatus and the floor of the buccal cavity, this apparatus and M. geniohyoideus are well developed, but these forms have a weak operculum. On the contrary, pelagic forms (*Caspialosa, Engraulis, Harengula, Mugil*) have a well-developed operculum, but their M. geniohyoideus and their branchiostegal apparatus are weak. In the pelagic forms the urohyal is elongated, permitting the branchial cavity to be opened below. In the bottom-living forms the urohyal is short and large, and the branchial cavity is opened less fully from below. In pelagic forms (*Belone acus*), where the development of M. adductor mandibulae results in diminution of the operculum, the other organs of respiration (the floor of the buccal cavity with M. geniohyoideus and the branchiostegals) are developed. Thus the carnivorous manner of feeding can change the kind of respiration. The food habits also affect the size of the appendages of the branchial arches, though they are not the sole factor concerned. The appendages are well developed in plankton-feeders, but may be almost lacking in carnivorous forms.

17331. **LYNN, W. GARDNER. The structure and function of the facial pit of the pit vipers.** *Amer. Jour. Anat.* 49(1): 97-139. 2 pl., 14 fig. 1931.—The pit-organ of the Crotalinae consists of 2 chambers, one lying beneath the other and separated from it by a thin sheet of tissue, the "pit-membrane." The outer chamber is widely open to the exterior; the inner chamber communicates with the air by means of a small pore opening near the eye. Many nerve fibers derived from the ophthalmic and supramaxillary branches of the trigeminal nerve are distributed in the pit-membrane and are continuous with large sensory cells which are characterized by their hyaline cytoplasm. The pit-organ arises comparatively late in development, first appearing as a slight invagination between the nostril and the eye. A 2nd invagination later arises behind the first and runs beneath it to form the inner chamber of the pit-organ. The labial pits of pythons and boas are innervated by the same nerves as are the facial pits of the pit vipers, but differ markedly from the latter with respect to form and cellular structure. On the basis of the present study, a number of earlier theories as to the function of the facial pit seem to be definitely eliminated, for they demand certain peculiarities of structure which do not exist. The structure and innervation of the organ indicate that it may, as has been suggested by Noble, function in the perception of air vibrations.—*Author (courtesy Wistar Bibl. Serv.).*

17332. **M'INTOSH, W. C. On abnormal teeth in certain mammals, especially in the rabbit.** *Trans. Roy. Soc. Edinburgh* 56(2): 333-407. 103 fig. 1929/1930.—Descriptions of chiefly structural or positional abnormalities rather than numerical, derived from the literature and from examination of specimens in various museums in the British Isles. Cases are cited from primates (except man), carnivores, rodents other than rabbits, insectivores, cetaceans, ungulates, Sirenia, edentates, and marsupials, but the largest number concern the teeth of rabbits.—*S. W. Chase.*

17333. **PALMGREN, AXEL. Die Insertion des M. Biceps Brachii und des M. Brachialis bei den Huftieren im Lichte der vergleichenden Anatomie. [Insertion of M. biceps brachii and M. brachialis in ungulates, in the light of comparative anatomy.]** *Acta Zoologica [Stockholm]* 9(3): 331-364. 6 fig. 1928.

17334. **PETKOFF, A.** Израстване и развой на рѣзцитѣ при бивола и опредѣляне възрастьта му по тѣхъ. **[Growth and abrasion of teeth in the buffalo.]** Годишникъ на Софийския университетъ, Ветеринарно-медицински факултетъ (*Jahresber. Univ. Sofia, Vet.-Med. Fakultät*) 4: 181-206. 20 fig. 1928.—Schematization of the changes shown by deciduous and permanent incisors leads to statement of the following periods: (1) of the appearance and abrasion of the deciduous incisors, (2) of shedding and replacement of the deciduous incisors, and (3) of abrasion and loss of the permanent incisors.—*A. Kalojanoff (transl. by S. W. Chase).*

17335. **STEGER, WALTHER. Variabilität und Missbildung im Schweineherzen.** *Anat. Anz.* 63(10/11): 145-164. 7 fig. 1927.—The material includes 24 normal hearts in 4% formalin, 19 fresh hearts opened according to Vermes' method, some studied fresh and others in Jores-solution I, and 238 hearts examined at the slaughter house. Constant features and variations are noted and particularly the great variability in the atrio-ventricular valves, in the form and strength of the papillary muscles, in the trabecular structures, in the foramen ovale, and in the cysts on the segment of the atrio-ventricular valve as reversions to a fetal form of vascularization. In one heart with combined septal defects, the relations of the atrio-ventricular valves together with the defects in the

septa exclude the explanation of an inhibited development. This is a case of a deviation from the normal process of development. Defective atrial and ventricular septa in the human heart are common but appear to be extremely rare in the pig. Literature.—*H. F. Nachtrieb.*

17336. SUMULONG, MANUEL D. Thyroid gland of the carabao. *Philippine Jour. Sci.* 44(3): 313-323. 2 pl. 2 fig. 1931.—The gland (studied in 10 animals) is bilobed as in the ox, sheep, horse, and goat, and the lateral lobes are generally brownish red in young animals but dark red in adults. The left and right lateral lobes in young animals vary in shape, but in full-grown individuals, irrespective of sex, the left lobe is generally elliptical or ellipsoidal in outline and the right irregularly triangular. Invariably, both in young and adult animals, the right lateral lobe is flatter and less voluminous than the left. The isthmus is constantly present and glandular in young subjects, but in adults may be represented only by fibrous connective-tissue strands; in old subjects it is generally absent. In adults the lateral lobes are situated along the dorsolateral aspect of the trachea, extending over the first 3 tracheal rings and the posterior half of the cricoid cartilage. Not infrequently the right lateral lobe does not extend so far forward as to lie over the cricoid cartilage. In young animals the position of this gland varies a little. The gland has practically the same relations as in the ox; the right lateral lobe, however, is not always in contact with the oesophagus. The gland receives its blood supply from the thyrolaryngeal artery and from another collateral branch of the common carotid artery which corresponds to the posterior thyroid artery in the horse. The corresponding thyroid veins are radicles of the internal jugular. The microscopic anatomy does not materially differ from that of other animals. Microscopic appearance of the gland from the young animal presents no striking difference from that of the adult.—*Author's summary.*

17337. VILLIERS, C. G. S. de. Über den Schädelbau des Breviceps fuscus. *Anat. Anz.* 72(6/9): 164-178. 8 fig. 1931.—This peculiar South African frog, popularly known as the "Jan Blom" was investigated for comparison with *Hemisus*, with which it is universally supposed to be closely allied. Minute and exhaustive comparison of the skulls of the two genera, however, proves that the two genera cannot be even nearly allied, as *Breviceps* possesses a well-developed annulus, plectrum, middle ear, Eustachian tubes and dorsal cranial fontanelle, all absent in *Hemisus*. But very interesting points of similarity with *Phrynomerus* are enumerated, e.g., the presence of posteriorly directed processes from the region of the mental symphysis, and probably of the nature of sesamoid bones. The larva of *Hemisus* is ranid.—*C. G. S. de Villiers.*

17338. WINOGRADOW, P. P. Zur normalen Anatomie des Büffels (Bos bubalus.) *Anat. Anz.* 72(12/14): 241-244. 4 fig. 1931.—The number of bones is the same as in other species of *Bos*. The skull is distinguished by the following features: the posterior portion is round and low, the horn tubercles face caudally and ventrally and are covered with thick horn, long nasal skeleton, greatest breadth in the auditory region, the external auditory meatus is longer and broader and placed almost ventrally, the bulla ossium lacrymalum is papilliform, the facies massetericae ossis zygmatici broad, tuba maxillaria is poorly developed, pars basilaris ossis occipitis is large, triangular pharyngeal tubercle massive, major palatine foramen open at juncture of palatine and maxilla, a sharp bony ridge posterior to the last molar on the maxilla. Sulcus chiamatis is shallow, sinus fronto-parietalis is poorly developed, sinus maxillaris very small, ventral border of mandible broad, processus coronoideus large, hook-shaped, with a groove at anterior end.—*S. P. Miller.*

17339. ZERNIK, H. Zur Anatomie und Nervenphysiologie der Nickhaut des Katzenauges. [Nictitating membrane of the cat's eye.] *Pflüger's Arch. Ges. Physiol.* 220(1/6): 593-598. 2 fig. 1928.

GENITO-URINARY SYSTEM

17340. ANGELIS, A. de. Sulla rigenerazione del testicolo. [Regeneration of the testis.] 21p. Petrucciani: Campobasso, 1929.

17341. COLE, H. H., C. E. HOWELL, and G. H. HART. The changes occurring in the ovary of the mare during pregnancy. *Anat. Rec.* 49(3): 199-209. 1 pl., 4 fig. 1931.—Ovaries, fetuses, and blood samples were procured from 35 range mares throughout the period of pregnancy. The duration of pregnancy was determined by the reaction of the injected blood serum upon the ovaries of immature rats and by measurement of the fetuses. The outstanding result is the division of the gestation interval into 4 periods, depending upon the condition of the ovaries:. (1) A single corpus luteum of pregnancy and several follicles. Interval about first 40 days of pregnancy. (2) Time of formation of several corpora lutea, closely correlated with the time of high concentration of the ovary-stimulating hormone in the blood. Ovulation apparently occurs in some instances during this period. Interval, 40th-150th day of pregnancy. (3) Regression of all of the corpora lutea and absence of large follicles. Interval from about the 150th day to late stages of pregnancy. (4) Only minute vestiges of corpora lutea and rarely follicles larger than 1 cm. in diameter. Interval, late stages of pregnancy.—*Authors (courtesy Wistar Bibl. Serv.).*

17342. CUTORE, G. Modificazioni citologiche nel testicolo in seguito ad iniezioni di sostanza coloranti "intra vitam." [Cytologic modifications in the testicle after intra vitam injections of coloring substances.] *Boll. Soc. Ital. Biol. Sper.* 3(5): 588-591. 1928.—Subcutaneous injections of pyrrhol blue (1% aq. sol.) were made in 6 dogs. After 72 days the author found in the intertubular connective tissue of the testicle pyrrholophilic cells of connective tissue nature, distinguishable into spherical, spindle and flat shapes. The author concludes that intravital injections of dyes, better than any other method, differentiate in the testicle the cells of specific function, such as the seminiferous and the interstitial, from the monocytes and from particular forms of connective tissue cells, which, while differing in location, form or volume, have in common a pyrrholophilic and a granulopexic character which suggests that they belong in the not yet well defined group of resting migratory cells (Maximow) hemohistioblasts (Ferrata). —*G. Cutore (transl. by G. A. Bica and T. T. Job).*

17343. GIANNELLI, LUIGI. Sulla questione della neoformazione intravitale di uova. [Intravital neoformation of eggs.] *Monitore Zool. Ital.* 41(1): 1-7. 1930.—In adult guinea-pigs, the ovarian epithelium never presents phenomena of proliferation. Sometimes epithelial cells have been observed, detached from the epithelium and penetrating into the ovarian stroma, to assume the characters of ovogonia and ovocytes. But even such cases must be interpreted as a late differentiation of germ cells pre-existing in the ovary. Formation of new ova probably never occurs in the adult.—*E. Padoa.*

17344. INOUYE, CH. Über den Lappenbau der Niere. Eine phylogenetische Studie. *Anat. Anz.* 72(4/5): 89-105. 6 fig. 1931.—From a study of 33 kidneys ((Reptilia) *Varanus salvator, Eumeces latisculatus, Elaphe quadrivirgata, Chlemmys japonicus;* (Mammalia) *Echidna hystrix, Perameles nasuta, Phalanger cuscus, Tatusia novemcincta, Manis pentadactyla, Equus caballus, Sus scrofa, Bos taurus, Nasua rufa, N. narica, Herpestes griseus, Canis familiaris, Felis domestica, Lepus cuniculus, Mus rattus, Petaurista leucogenys, Hystrix cristata, Mogera wogura, Erinaceus* sp., *Chrysochloris sciurus, Galeopithecus volans, Pteropus pselaphon, Propithecus langer, Stenops tardigradus, Cebus vellerosus, Hapale jacchus, Cercopithecus* sp., *Macacus cyclopsis,* and *Homo*) it is concluded that the mammalian kidney is divided into lobes and lobules by means of vascular connective tissue septa. The permanent kidney consists of primary lobes and exhibits no medulla or cortex (reptiles). The secondary lobules of the mammalian kidney are formed

by the fusion of 2 primary lobes with the simultaneous formation of Henle's loops and the elongation of the collecting tubules. The so-called stellate veins of the human kidney are closely related to the superficial cortical veins of certain Carnivora. A table of measurements of the gross dimensions, as well as the number of inter-lobular septa, is appended.—*S. P. Miller.*

17345. **JASONNI, VINCENZO. Condizioni anatomiche e funzionali degli annessi uterini in gravidanza. [Anatomical and functional conditions of the uterine adnexa during pregnancy.]** 161p. Stab. Pol. Riuniti: Bologna, 1928.

17346. **MÖLLENDORFF, WILHELM von. Einige Beobachtungen über den Aufbau des Nierenglomerulus. [Observations on the structure of the renal glomerulus.]** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 6(3): 441-450. 8 fig. 1927.

17347. **MÖLLENDORFF, WILHELM von. Bemerkungen zu der Arbeit von Ch. Inouye: "Über den Lappenbau der Niere."** *Anat. Anz.* 72(12/14): 306-307. 1931.—Critique of Ch. Inouye's work (see Entry 17344) on the lobulation of the kidney.

17348. **SHIOSAWA, ZENICHI. Über eine besondere Zellanhäufung im Gewebe der männlichen Geschlechtsorgane der Tiere.** *Virchow's Arch. Path. Anat. u. Physiol.* 273(2): 531-540. 6 fig. 1929.—The material was obtained from 13 dogs and 287 rabbits. Serial sections were made of the testes and globus major of the epididymis of 1 young and 4 adult rabbits and 4 dogs. The cell groups here described were not found in the sections of 1 rabbit, but in 2 series they were found on one side and in 2 on both sides of the testes. The cell groups were found in about 28% of the rabbits but in none of the dogs. Summary: These cell groups vary in number from 1 to 10 or more and in size from 45 to 1100μ. They are located in different parts of the sperm paths from the rete testis to the coni vasculosi. The form is not always the same. The structure is encased in a connective tissue sheath and the group is often divided into smaller clusters by a few irregularly arranged connective tissue strands with histiocytes and blood capillaries but no elastic fibers. In this respect it at times resembles a glandular tissue. The parenchyma is composed of characteristic cells that in their specific constitution differ from the normal cells of the testicular tissue,—they are relatively rich in protoplasm, generally round, often polygonal, and contain an almost round nucleus, poor in chromatin. In several preparations an inner and outer layer, with no sharp line between them, could be distinguished in the parenchyma. In the physiological condition, most of the cells do not contain any fatty substance but in experimentally produced pathological cells a small quantity of fat was produced at times. These cells are wanting in Altmann-, oxidizing- and glycogen-granules, pigment, phagocytic properties and the storing of carmine granules in vital staining. The capillary endothelium and connective tissue cells store a small amount of carmine in strong vital stains and also india ink. These cell groups appear to be more resistant to endogenous or exogenous injuries than the other components of the testis. They rarely show capillary enlargements, bleeding, or increase of connective tissue in the parenchyma. These and other specific characters the author thinks stamp the cell groups as a distinctive tissue or as an organ. The author's experiments thus far have yielded little regarding the function of this organ. That it is not a pathological structure is shown by its occurrence in healthy rabbits.—*H. F. Nachtrieb.*

ENDOCRINE GLANDS

17349. **BLOOM, WILLIAM. A new type of granular cell in the islets of Langerhans of man.** *Anat. Rec.* 49(4): 363-370. 1 col. pl. 1931.—In sections of human pancreases fixed shortly after death in Zenker-formol and stained with the Mallory-azan method, 3 types of granular cells are visible in the islets of Langerhans. Cells of the A type are filled with bright red-stained granules; the B cells contain orange-gray granules. The 3rd type of cell (D) is filled with fine, blue-stained granules, and is probably not identical with Bensley's type C, non-granular cell. The significance of this new type of cell is not known.—*Author (courtesy Wistar Bibl. Serv.).*

17350. **CHARIPPER, HARRY A. Studies on amphibian endocrines. II. The pituitary gland of Necturus maculosus.** *Anat. Rec.* 49(4): 345-357. 2 pl., 1 fig. 1931.—The hypophysis in the adult consists of pars anterior, pars intermedia, pars tuberalis, and pars nervosa: the 2nd and 3rd are purely basophilic; the 3rd is non-vascular; the 2nd contains a few isolated capillaries; the last is sacculated and its walls show little cellular differentiation. The pars anterior is highly vascular and contains basophiles, eosinophiles, and "chromophobe" cells. The eosinophiles may be subdivided, cytologically: (*a*) cells with numerous small granules grouped near the nucleus in the cytoplasm toward the capillary lumen; (*b*) cells with large spherical granules almost filling the cytoplasm on the side of the nucleus near the vascular lumen; (*c*) cells with a highly vacuolated cytoplasm; (*d*) cells with many large spherical bodies described as "secretory" spheres. Osmiophilic substance is present in the chromophobe cells and eosinophiles. This substance is similar to Golgi material and occurs as rings and large and small granules variously distributed in the different cells. The occurrence of vacuoles, variations in the osmiophilic substance, and the presence of variously sized cytoplasmic granules is interpreted as histological evidence of secretory activity in the pars anterior of the pituitary gland in the adult. This portion of the gland has been successfully tested for its metamorphosing potency by implants into anuran larvae.—*Author (courtesy Wistar Bibl. Serv.).*

17351. **DEANESLY, RUTH. The histology of adrenal enlargement under experimental conditions.** *Amer. Jour. Anat.* 47(2): 475-509. 6 pl. 1931.—The reactions of adrenals were studied in mice which received subcutaneous lethal and non-lethal toxic injections—suspensions of killed Gaertner bacilli, solutions of morphine acetate and thyroxin. The work was directed primarily toward ascertaining the histological changes involved in adrenal enlargement described as occurring under a variety of experimental conditions. Different types of adrenals were produced according to the nature and amount of the injections. The cortex might enlarge and show a decrease in its stainable fat, or an increase proportionate to the change in size; the 2 kinds of enlarged cortex could be associated both with normal and enlarged medullas. Cortical enlargement was always initiated by an increase in the size of the cortical cells, followed by their mitotic division. Mitosis also occurred in the medulla, when the latter showed enlargement, but only morphine injections, in the present work, caused an increase in medullary cell size. Medullary enlargement was associated with a loss of chromaffinity. Adrenal size was estimated by a paper-reconstruction method from serial sections. The return of the adrenal to normal after toxic injections was studied.—*Author (courtesy Wistar Bibl. Serv.).*

17352. **DOMM, L. V. Spur dichotomy in the ovariotomized brown leghorn.** *Anat. Rec.* 48(2): 257-265. 1 pl. 1931.—The normal ♀ fowl rarely exhibits spurs, though these structures are present in rudimentary form. As long as the ovary retains its normal functional activity, these rudiments remain dormant. However, following ovariotomy or pathological destruction, these rudiments become activated and develop into typical spurs. The author's ovariotomized fowl have always developed spurs. Three cases of spur dichotomy were found in ovariotomized fowl. In two the left spur was dichotomous, the right being normal, while in the third both spurs were dichotomous. In the cases showing only left-spur dichotomy, the 2 members of the pair were nearly of equal size and as large as the normal single right spur. In one case the proximal was largest, in the other the distal. In the case exhibiting both right

and left dichotomous spurs there was considerable size discrepancy, the proximal of each pair being considerably smaller. These were curved, pointed, and triangular instead of circular structures. None of the dichotomous spurs were grown together. All 3 ♀♀ were secured from the same source, two belonging to the same hatch. They were sinistrally ovariotomized when 43, 56, and 57 days old, respectively. A comparable condition has never occurred in our normal or castrated ♂♂. It is probable that a developmental arrest at an early stage is responsible for the condition.—*Author* (*courtesy Wistar Bibl. Serv.*).

17353. GRANT, MADELEINE P. The release of follicular colloid from the thyroid of Amblystoma jeffersonianum following heteroplastic anterior-pituitary implants. *Anat. Rec.* 49(4): 373-388. 3 col. pl., 3 fig. 1931.—Studies of the thyroid during different stages of activity were made with Champy fixation and hematoxylin and Mallory's connective-tissue stains. Thyroids of larvae, presenting no incipient metamorphic changes, contained numerous follicles distended with stored secretion and lined with low cuboidal cells. Occasional follicles contained a few columnar cells filled with large non-staining vacuoles. Occasional colloid droplets were seen in both the vacuolated and the non-vacuolated cells. Similar larvae received implants of frog anterior pituitary into the peritoneal cavities daily for 1, 2, 3, 4, 5, or 6 days, and were killed 24 hrs. following the last implant. The glands from individuals receiving 1, 2, and 3 implants showed no marked changes from the normal picture, except for slight but definite increases in the number of vacuolated cells. After 4 successive implants, the number of vacuolated cells had greatly increased, while the size of their vacuoles had decreased. The most striking change at this stage was the marked decrease in the amount of follicular colloid, accompanied by a simultaneous increase in the amount of intracellular colloid. Following 5 or 6 daily implants, the follicles were completely emptied and all the thyroid cells were saturated with colloid. The theory of intracellular colloid release is presented.—*Author* (*courtesy Wistar Bibl. Serv.*).

17354. HARDESTY, MARY. The structural basis for the response of the comb of the Brown Leghorn fowl to the sex hormones. *Amer. Jour. Anat.* 47(2): 277-323. 3 pl., 2 fig. 1931.—A systematic microscopic and macroscopic study of the development of the comb from the embryo to the adult ♂ and ♀ state shows the gradual differentiation of comb tissue under the influence of the gonadal hormone of a sexually maturing bird. With the structure of the mature cock's comb as a basis for comparison, studies have been made upon the histological changes which take place in regression after castration, and restoration after injection of the ♂ hormone. It is concluded that the hormone causes the secretion of large quantities of mucoid by the cells of the intermediate layer, and that the presence of this mucoid is primarily responsible for the other changes which appear. Comparison of the comb of the laying and non-laying ♀♀ suggests that the ♀ differs only quantitatively from the ♂ in its effect upon the comb. Autoplastic comb grafts have been made. Castration and injection bring the same histological results in the grafts and stumps as in normal combs. The stumps remaining after amputation do not regenerate.—*Author* (*courtesy Wistar Bibl. Serv.*).

17355. HIRSCHLEROWA, ZOFJA. Mikroskopisch-anatomische Untersuchungen an der Amphibienschilddrüse mit besonderer Berücksichtigung ihres Golgi-apparates. [Microscopic-anatomic study of the thyroid gland of amphibia, with especial reference to the Golgi apparatus.] *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 6(1/2): 234-256. 11 fig. 1927.

17356. MASON, VIRGIL A. The fate of the ultimobranchial body in the cat (Felis domestica), with special reference to cyst formation within the thyroid. *Amer. Jour. Anat.* 49(1): 43-64. 2 pl. 1931.—The ultimobranchial body in the cat is a regressive structure and shows no evidence of possessing a function. It arises in close association with thymus IV, and the two unite as one epithelial mass. They become reticulated (about the time of contact with the thyroid), forming a syncytium, which is soon obscured by thymocytes. When this occurs, the resulting structure, made up of the ultimobranchial body and thymus IV, is called the internal thymic lobule. Thymus IV is variable in its development and sometimes lacking. Complex IV (ultimobranchial body, thymus IV, parathyroid IV), due to its growth shiftings and the expansion of the thyroid, is usually partially or entirely embedded in the thyroid, but may be entirely external. There was no evidence in the cat that the ultimobranchial body contributed to the formation of the thyroid or that the thyroid transformed into internal thymic lobule. Cysts are normally present in the thyroid of the cat and may be small and isolated or large and in direct communication with the medullary portion of the internal thymic lobule. They are derived from cell cords of the ultimobranchial body which undergo degeneration. As that part of the ultimobranchial body and thymus IV which is not cystic is thymic, cyst formation and thymic transformation are in reciprocal relation.—*Author* (*courtesy Wistar Bibl. Serv.*).

17357. MÜLLER, JULIUS. Die Nebennieren von Gallus domesticus und Columba livia domestica. Ein Beitrag zur makroskopischen und mikroskopischen Anatomie der Nebennieren der Hausvögel. [Suprarenal glands of G. domesticus and C. livia domestica. Macroscopic and microscopic anatomy of suprarenals in domestic birds.] *Jahrb. Morph. u. Mikrosk. Anat. Abt., 2 Zeitschr. Mikrosk.-Anat. Forsch.* 17(3/4): 303-352. 1 pl., 14 fig. 1929.

17358. WILLIAMSON, G. SCOTT, and INNES H. PEARSE. The anatomy (comparative and embryological) of the special thyroid lymph system, showing its relation to the thymus; with some physiological and clinical considerations that follow therefrom. *Brit. Jour. Surgery* 17(67): 529-550. 20 fig. 1930.—A special thyro-thymic lymph system is described as the essential and most primitive feature of thyroid anatomy. Structurally all thymic tissue is formed of the coiled, plicated capillary terminals of the thyro-thymic lymphatics, and the thymus is thus essentially of the nature of a lymph reservoir to the thyroid. A special lymphogenic secretion of the thyroid is poured into the thyroid lymph sinusoids and can, under proper conditions, be seen pervading the thyro-thymic lymph system. Embryological and phylogenetic studies of the thyroid confirm the above anatomical facts, for in the most primitive thyroid, the naked epithelial sacs lie in a cavernous lymph-sac, which in the course of phylogenetic development becomes the thymus of man. In considerations of the thyroid function, the thyroid and thymus must be regarded as one apparatus. Clinical aspects in relation to Grave's disease, thyrotoxicosis, endemic goitre, thyroid cancer, and cystic hygromas are considered.—*P. L. Risley.*

UNCLASSIFIED

17359. BRACK, E. Über die "Glashäute" der Epithelien. *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 9(3): 534-543. 9 fig. 1929.—The authors have investigated the relation between 2 subepithelial membranes, the "glashäute" (basal membrane) and the reticular layer. From studies on normal and pathological tissues of skin, mammary glands, reproductive organs, respiratory tract, and alimentary canal, they concluded that the "glashäute" develops from the reticular layer. By using van Gieson's stain, red and yellow basal membranes are clearly differentiated, representing sclerosis and hyalinosis respectively. Pressure and pulling actions play important rôles in the genesis and dissolution of the membrane, so that it is a question of acquired and not inborn formation of the basal membrane. A fine, fibrous network is the only

inborn structure, which under certain conditions (senility, inflammation, tumors) becomes sclerotic, thick, hyaline, and finally forms the basal membrane.—*R. C. McCardle (transl. from abstr. by P. Caffier).*

17360. **CH'UAN, CHANG HUI. Mitochondria in osteoclasts.** *Anat. Rec.* 49(4) : 397-399. 1 pl. 1931.—From the jaws of a very young hamster, the author secured bone sections without decalcification and thus stained mitochondria. As the mesenchymal cells, reticular cells, or osteoblasts become osteoclasts, their mitochondria increase in number. In areas of active bone development the osteoclasts contain more mitochondria than any other cells. These facts are taken to indicate that osteoclasts are not degenerating cells.—*Author (courtesy Wistar Bibl. Serv.).*

17361. **DAVENPORT, C. B. Adolescent spurt in growth. The laws of life, memorial volume in honour of the 60th birthday of Prof. Dr. V. Růžička, Prague, Czechoslovakia.** 10p. Aventinum: [Prague], 1930.—The mass curve of increments owes its form to the summation of many highly variable individual curves of increment, and has little significance for the individual. The maximum velocity of growth ordinarily occurs in boys between 13 and 15 and is correlated with a growth of the external genitalia at this age. That the gonads play a part in this adolescent spurt is strengthened by the fact that in gonadectomized mice the adolescent spurt is less marked than in unoperated mice.—*C. B. Davenport.*

17362. **EVANS, JOHN N. Retinal perivascular delineation.** *Arch. Ophthalmol.* 6(6) : 823-839. 6 fig. 1931.—The writer reviewed all earlier work and then modified the methods. Over 200 animal eyes were used (dogs, cats and rabbits) and, finally, a modification of the Weed-Wegefarth method was used—that of injecting an isotonic solution into the vitreous and later precipitating Prussian blue. The preparations, as finally obtained by this technic, would seem to indicate that under the conditions of these experiments a certain portion of the fluid elements of the vitreous passes out of the eye through the retinal perivascular perineural system. Also that this system is connected with the retinal pericellular and perifibrillar spaces. That the fluid is actually in some sort of a formed space is not evident from these studies, as the histological structure of such a space is not made evident by the means here employed. Moreover, it would not seem justifiable to accept the findings of these studies as evidence of a similar state under strictly normal conditions. After all, some disturbance of the normal pressure and biological balance must have occurred. At most it is only fair to assume that the Prussian blue particles indicate the site to which the injected fluid had passed in the eyes employed and under the conditions of the investigation.—*J. N. Evans.*

17363. **[ELISEEV, V. G.] ЕЛИСЕЕВ, В. Г. Культуры in vitro мигательной перепонки кролика. [Cultures in vitro of the nictitating membrane of the rabbit.]** Известия Томского Государственного Университета (*Trans. Tomsk State Univ.*) 82: 167-173. 1 pl. 1928.—Excised fragments of the membrane were rinsed in Ringer's solution, placed in Petri dishes, irradiated for 5 min. with mercury-quartz lamp at 45 cm., and minute pieces planted in homogeneous plasma. Some cultures were not irradiated, and some, retained as controls, not rinsed, in addition. A total of 150 cultures were made. Non-irradiated fragments showed more intensive growth in vitro than those irradiated. In the latter, epithelium tended to become imbedded in the connective tissue, showing atypical growth. Excretory ducts and secretory parts of the glands were dedifferentiated. Their cells hypertrophied, giving rise to characteristic, compact, epithelial islets within the explant. The elements of these islets multiplied rapidly by mitosis.

17364. **JANATKA, JIŘÍ. Vznik, skladba a význam nucleus pulposus ploténky meziobratlové.** *Rozpravy České Akad. Věd. a Umění, Tř. 2.* 39(číslo 29) : 1-8. 1 pl., 3 fig. 1929(1930). Also as: **Genèse, structure et signification de nucleus pulposus d'un disque intervertébral.** *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Prés. Cl. Sci. Math., Nat. et Méd.* 30: 289-291. 1 pl., 3 fig. 1929.—The nucleus pulposus of the intervertebral discs in man is composed of gelatinous substance, granules, fibers and cells. The granulations, albuminous-like, arise from the fundamental cartilaginous substratum. The fibers are arranged in 3 zones, a medial and 2 marginal zones separated by liquid substance. The medial zone is larger, the fibers parallel to the disc surface, while the marginal ones lie vertical to those of the medial zone. The basophilic cells contain albuminous granules and show hydropic degeneration. The nucleus pulposus is surrounded by an annular fibrosa layer composed of collagenous fibers containing chondromucoid substance. The nucleus pulposus develops by transformation of the cartilaginous substratum. The function of the nucleus is shown by its structure; it acts as a cushion to withstand pressure and tension. There is considerable pressure present even at rest.—*E. A. Baumgartner.*

17365. **KING, HELEN DEAN, and HENRY H. DONALDSON. Life processes and size of the body and organs of the gray Norway rat during ten generations in captivity. Pt. I. Life processes; Pt. II. Size of the body and organs.** *Amer. Anat. Mem.* 14. 106p. 1929.—Some effects of captivity on the wild gray Norway rat are here reported. This study is based on gray Norway rats reared by King for 10 generations. There were 1539 litters containing 9505 individuals: 4680 ♂♂ and 4825 ♀♀. The effects of captivity on the life processes are considered by King and involve records of rate of body growth, variability in body weight, the reproductive period, number of litters cast, number of individuals per litter, sterility, sex ratio, mortality, and changes in behavior. The weights of organs and bones are considered by Donaldson and involve records for body weight, body length, weight of brain and some parts, weights of hypophysis, thyroid, suprarenals and gonads, and weight, length and percentage of water in femur—representing the bones. The data for the captive gray Norways are compared with the corresponding data for the common albino, captive for many generations.—*Authors (courtesy Wistar Bibl. Serv.).*

17366. **NAGEOTTE, J., and L. GUYON. Reticulin.** *Amer. Jour. Path.* 6(6) : 631-653. 3 pl. 1930.—The authors' observations support the "unitary hypothesis," i.e., that reticulin is essentially the same as collagen. According to them, there exist different varieties of reticulin, all in continuity of substance with the collagen bundles so that the connective tissue framework forms a single system. The elastic fibers, on the contrary, though mingled with the connective tissue framework, have no continuity with it. Subcutaneous areolar tissue is well adapted to complete histological analysis. In the edematous tumor it can be demonstrated that, contrary to general opinion, the collagen bundles form a network like the reticulin. From the network of reticulin, which in this tissue is particularly delicate, to the network of collagen bundles, the transition is gradual and continuous, both in the thickness of the fibers as well as in their coloring by Ag. When, in a tissue having a connective tissue framework, there are fixed cells other than fibroblasts, it is these cells that govern the arrangement of the reticulin. The fibroblasts, on the contrary, are scattered at random; they lodge where they can and they do not cause any special arrangement to be constructed around themselves. In the adult, the fibroblasts are distributed in the connective tissue framework throughout almost its entire extent, but they are absent in some territories, such as the fat lobules and the hepatic lobules, where the framework is exclusively reticulated. Treatment of the tissues with normal solution of NaOH (4%) does not hinder the impregnation of the reticulin by Ag. Boiling the tissues, causing progressive fragmentation of the reticulin, does not prevent the coloring of the fragments with Ag as long as they persist. The reticulin of the splenic pulp does not resist boiling as long as that of the liver. In Ag

impregnations, the color assumed by the fibers depends on physical conditions, on their thickness and conformation, but not on their chemical composition. This feature, then, cannot serve as a criterion to establish a systematic distinction between collagen and reticulin. The interfaces play an important rôle. Viewed with the ultramicroscope the collagen bundles present a broad, mirror-like surface, while the reticular fibers appear as sparkling lines. Like reticulin, fibrin stains black with Ag, if the clot has been washed before fixation, but it does not stain if the albumins of the serum remain in contact with the fibrils. Treated with a dilute acid, the tendons of the rat's tail, but not those of the paws, yield a substance (Collagen A) which coagulates in fibrils under the influence of neutral salts. These fibrils have all the properties of natural collagen except that they are more easily soluble in acids; they stain black with Ag exactly like reticulin. The tendons of the rat and those of the rabbit and the dog, treated with NaOH and then with a dilute acid, yield another substance (Collagen B) which also coagulates in fibrils with neutral salts. These fibers also stain black with Ag. Tendons of bovines yield neither Collagen A nor Collagen B. To say nothing of differences in the zoölogical series, homologous substances in the same animal present regional variations that selective stains do not reveal. Variations of this kind exist between the reticulins of various organs, but these differences are not of a nature to establish a distinction between a collagenous system and a reticulin system; for nothing has been observed so far that warrants the supposition that the collagen part and the reticulin part of a given tissue differ in any way in the chemical constitution of their substance.—*Authors' summary.*

17367. **NEŠPOR, JOSEF. Differenciace a dedifferenciace tkáňových kultur s hlediska měření vitality.** *Rozpravy České Akad. Věd. a Umění, Tř. 2.* 39(číslo 24): 1-6. 1929(1930); also as: **Différenciation et dédifférenciation des cultures de tissu au point de vue de la mesure de la vitalité.** *Acad. Tchèque Sci. Bull. Internat. Rés. Trav. Prés. Cl. Sci. Math., Nat. et Méd.* 30: 82-83. 1929.—Attempting by histochemical and physiological means to obtain decisive evidence on the moot question as to whether tissues in culture can undergo dedifferentiation, the author grew cultures of frog skin in the Lewis-Lewis medium, at high temp. ("E" cultures); controls were kept at room temp. ("K" cultures). At 3-day intervals, portions from these cultures were subjected to a nuclear reaction (Feulgen-Rossbeck, Schiff technique), to the ninhydrin reaction (mod. by Berg, 1922), and to measurement of internal pH by the Vlès and the Wagner-Needham methods. The Feulgen test showed no nuclear pycnosis in the "E" cultures; the ninhydrin test demonstrated products of protein destruction in the center of the culture, more intense in the "E" series; the reaction of the explanted tissue, acid in the beginning, approached alkalinity in the "E" cultures; it changed from around pH 6.2 to around pH 6.0 in the first 3-day interval, but steadily became more alkaline, rising to around pH 7 in the succeeding 2 intervals. The above changes are interpreted as supporting the view that dedifferentiation or rejuvenation takes place; from the relation which exists between pH, viscosity, and colloidal stability, it may be assumed that, likewise, the tissue outside the organism follows the principle of protoplasmic hysteresis.

17368. **NOHIRA, A. A study of the movement of corneal epithelium explanted in culture medium.** *Acta. Dermatol.* 12(1): Japanese orig. 29-69; English summary 69-72. 14 fig. 1928.—Epithelium of *Rana nigromaculata* and *R. rugosa* was cultivated in autogenous and homogeneous plasma. Vital staining with neutral red and nile blue was applied to determine the origin of the epithelial cells in the cultures. As Matsumoto found, the cells belonging to different layers of the epithelium show a different arrangement of the stained protoplasmic granules. The upper layer of cells shows no granules and is not active in the explants. The middle and basal layers always move together and both are active. During the movement, the individual cells spread and the thickness of the different layers is reduced, resulting in an increase in the area occupied by the epithelium. There are no cell divisions. In older explants the epithelial membrane sometimes consists of only 2 layers of cells, or even one layer formed by the epithelial cells of the basal and middle layer of the normal cornea. The gradual stretching of the cells during their movement causes a decrease in the stratification of the epithelium. The epithelium moves over the underlying connective tissue until this is entirely surrounded. Sometimes the epithelium moves in the culture medium instead of covering the underlying tissue. Wandering cells seem to arise chiefly from the upper cells of the middle layers, (contra Erdmann). The epithelial cells moving around the connective tissue live longer than those moving in the culture medium. The sheet-like expansion of the epithelium takes place many times without showing any evidence of pseudopodia; in these cases the expansion cannot be regarded as a mere sum of the individual cell-movements. "The sheet-like movement, however, can not be explained, as Oppel suggested, as a quite different and independent type of cellular movement, corresponding, for instance, to a muscle fiber contraction; but is to be considered as the movement of the epithelial cells en masse, ruled more or less by a certain governing power by which each epithelial cell is unable to display its autonomy." The cells are under cytotropistic control. Stereotropism plays an important rôle in determining the direction of the epithelial movement.—*J. P. M. Vogelaar.*

17369. **PAFF, GEORGE HUGO. A quantitative study of the capillary supply in certain mammalian skeletal muscles.** *Anat. Rec.* 46(4): 401-405. 1930.—Capillary counts were made from camera-lucida drawings of injected homologous skeletal muscles of the rat, guinea-pig, and cat. The rat has the largest number of capillaries per sq. mm. of muscle and the cat has the least. The values ranged from 3573 to 2341 capillaries per sq. mm. From the same drawings the "fibers" were cut out. By comparing their total weight with the weight of a known area of the same paper, the ratio of muscle tissue to connective tissue in muscle fasciculi was computed. In transverse paraffin sections this ratio is 7:3. The average cross-section area of muscle tissue (excluding connective tissue) metabolically dependent on a single capillary was computed. An inverse proportion exists between the intensity of metabolism and the area of muscle tissue supplied by one capillary. By direct measurements on camera-lucida drawings (cross-section paper) the average area of muscle fibers in cross-section was computed for each muscle. In general, muscle fibers in the guinea-pig are considerably larger than those in the rat and cat. In the rat and cat they are approximately equal.—*Author (courtesy Wistar Bibl. Serv.).*

17370. **PRICE, JOHN W. Growth and gill development in the small-mouthed black bass, Micropterus dolomieu, Lacépède.** Ohio State Univ. Press, Franz Theodore Stone Lab. Contr. 4. 46p. 1931.—The present study represents an attempt to determine the relations that exist between the gill surfaces and the body measurements and weight, and to correlate the growth of the gills with the growth of the body throughout the life history of the fish. The data for this paper have been obtained from a study of 127 specimens, ranging in total length from 1 to 27 cm. The data have been treated statistically and the results shown graphically. The components of the gills grow at a differential rate. The filaments, when the fish hatches, are small and relatively few in number, especially on the most posterior gill arch. During the first half of the life history, their number increases very rapidly, reaches a maximum and thereafter is constant. The linear dimensions of the filaments, such as length, width and depth, grow at a constant rate throughout the life history and in direct proportion to the total length of the fish. The area of the folded surfaces of the filaments, as well as of the smooth surfaces, varies as

the square of the length of the fish. The area of the folded surfaces, however, is expressed by the interrelation of the height of these folds, their number per running millimeter and the length of the filament. As the fish grows, these lamellae increase proportionally in height but decrease in their numbers per unit length of the filament. Thus, increase in total gill surfaces is acquired at first by increases in the numbers of filaments, and the relatively large numbers of lamellae per linear dimension of the filament. Later, the factors of the size of filaments and height of the lamellae assume greater relative importance in gill growth. The gill surfaces maintain a constant relationship to the total length of the fish at all sizes, the gill surface increasing at a rate in excess of, but approaching the square of the total length of the fish. The body measurements of width and depth in the Small-mouthed Black Bass increase in direct proportion to the length of the fish, the form of the body being constant throughout life. The weight of the body increases as the cube of the length, and their variations are highly correlated. The relation between the total gill surface of the bass and its weight is expressed by an equation, where the square root of the gill surface is equal to the cube root of the weight multiplied by a constant. However, the gill surface per 1 gm. of live weight is proportionally greater in younger than in older fish. This is correlated with the fact that the metabolic rate is higher in younger fishes.—*J. W. Price.*

17371. **RINEHART, JAMES F. Reticulum. Its origin. The occurrence of reticulum fibrils in capillary endothelium. A new method of demonstration. II. The finer capillary bed.** *Amer. Jour. Path.* 6(5): 525-539. 6 pl. 1930.—This new method of metallic impregnation yields complete impregnation of mesenchymal, reticulum and collagen fibrils, and permits adequate polychrome counterstaining of the impregnated tissues. The mesenchymal cells possess a rich, delicate fibrillar cytoplasm. Morphological support is given for the concept that capillaries are formed in situ by a direct differentiation of the mesenchyme. The capillary endothelial cell remains in the embryo as a fiber-producing cell and this capacity persists into the mature organism. Both reticulin and collagen are fiber products derived from a common fibrillar matrix and are undoubtedly chemically similar. Reticulum fibers are demonstrated in capillaries in tissues of a sufficiently wide variety to justify the concept of their universal occurrence in the capillary endothelium. Otherwise stated, reticulum may be identified as the fiber product of capillary endothelium. In the lymph nodes similar fiber substance is present in the endothelial and reticulum cells which, like the capillary endothelial cells, are little differentiated, direct descendants of the mesenchyme. Reticulum fibers are also present in the intersinusoidal or so-called reticulum cells of the splenic pulp and line the sinusoids of the liver. Reticulum fibers are little changed descendants of the mesenchymal fibers. Evidence is presented for the transformation of reticulin into collagen. Reticulum is the most widespread and important supporting substance in the body. It is the scaffolding of cells and cell units. Reticulum fibers form the immediate lining of capillaries and minute reticulum-lined spaces are shown extending between and connecting the capillaries as seen in ordinary sections. Such channels are considered to serve normally for the transfer of elements contained in the blood plasma and to be capable of enlarging or "opening up" under effective stimulus to a caliber sufficient to convey corpuscular elements. This endothelial reticulum is identified with the basement membrane in the kidney, pancreas, adrenal and gastric mucosa; this probably applies to basement membranes in general.—*From author's summary and conclusions.*

17372. **SAAL, RUDOLF von. Beobachtungen über den feineren Bau des menschlichen Zahnbeines. (Zahnstudie IV.)** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 11(3/4): 638-657. 22 fig. 1930.—The readily stained fibers of Tomes in the canaliculi of the dentine are complex structures of protoplasm and a framework. The darkly stained ring around the Tomes fibers is the sheath of Neumann. The clear layer between this and the fiber of Tomes is largely an artificially produced enlarged space traversed by fine radial fibers. In the sheath of Neumann there are longitudinal fibers, a cross section of which shows about 18 granules at regular intervals; a spiral thread is also present. Surrounding the sheath of Neumann is an additional sheath that is becoming calcified, or already lies in the ground-substance. The sheath of Neumann is connected with the fiber of Tomes through fine threads that extend to the granules mentioned and now and then come in contact with, or are united with, the longitudinal fibers. Furthermore these fibers pass further peripherally to the older sheath of Neumann and beyond this to the ground-substance of the dentine. On the basis of these observations, the author modified the scheme of Kantorowicz. —*Author's summary (transl. by H. F. Nachtrieb).*

17373. **SHIBATA, SHIN. Histologische Untersuchung der Gitterfasern in den Zahnpulpageweben und ihre Bedeutung bei der Dentinbildung. (Japanisch.)** *Jikken Igaku Zasshi* 11(6): 1927.—The author stained the normal dental pulps of man and mammals with the Bielschowsky stain for lattice-fibers. In such preparations the lattice-fibers stain dark brown or deep violet. They arise from pulpal cells and from the fine reticulate fibers in the walls of vessels in the middle and deep layers of the pulp, and run, winding spirally, through the odontoblastic layer into the dentinal matrix. Most of the fibers are simple, but some unite with one another and others anastomose with neighboring fibers by lateral branches. A few disappear near the dentine. The fine lattice-fibers in the dentinal matrix lie parallel to the dentinal tubules. If calcification is advanced, the fibers are stained with difficulty, but can be observed well in the interglobular spaces. These fibers stain just as do the lattice-fibers of other tissues and appear to be quite distinct from the fibrils of Ebner in the dentinal matrix. The lattice-fibers are demonstrable in all stages, from the dental papilla at the beginning of development of the pulp on to senile atrophy of the pulp, and also in shrinkage of high degree. During dentinogenesis the lattice-fibers are in part differentiated into collagenous fibers and become the foundation layer for calcification of the dentinal matrix. After dentinogenesis they remain unaltered in the matrix and serve to connect the dentine with the dental pulp.—*O. Mori (courtesy Japanese Jour. Zool.) (transl. by S. W. Chase).*

17374. **SONDERMANN, R. Beitrag zur Entwicklung und Morphologie des Schlemmschen Kanals.** *Graefe's Arch. Ophthalmol.* 124(3): 521-543. 19 fig. 1930.—From preparations of eyes of embryos of 3, 4, and 8 mos., of children still-born, 2½ mos. and 3½ yrs. old, and adults aged 52, 64, 70, 71, and 84 yrs., the author concludes: Schlemm's canal was laid down first not as a circular vessel but as radial channels which conduct the blood from the tissue in the rim of the optic cup to the anterior ciliary veins during the 2nd mo. and the first ½ of the 3rd. They run for a distance in the edge of the sclera. At the point of their entrance into scleral tissue a localized enlargement occurs as a result of a compression by the contracting sclera. The remainder of the vessel becomes obliterated. The enlargements become connected by the dilation of capillaries. In this manner a circular canal is formed. Thus in the same eye, a large lumen and numerous plexus-like small channels may replace Schlemm's canal. The defects of the pectinate ligament communicate freely with the Schlemm's canal through an internal canaliculus usually opening near the lateral end of the canal. The external canaliculi opening into the anterior scleral vein are almost always given off from the medial portion of the canal.—*Author's summary (transl. by T. J. Putnam).*

17375. **TRETJAKOFF, D. Das Knochenmark des Frosches. [Bone-marrow of the frog.]** *Anat. Anz.* 67 (1/4): 66-77. 5 fig. 1929.

17376. **WOLF, JAN. Umělé vytvoření kollagenních fibrill in vitro a bez přítomnosti buněk procesem gelatinisace fibrillárních solů. [Production of collagen fibers in vitro and in the absence of cells, by gelatinization of fibrillar sols.]** [With French summary.] 47p. 14 pl., 1 fig. Nákladem České Akad. Věd. a Umění: Prague, 1931.—Cases are presented where collagen fibers are formed inside large cell-free cavities, independently of the action of cells, by the gelatinization of fibrillar collagen sols. These cases are: (1) formation of clumps of collagen fibers in needles inside of cavities of the "amianthic" spaces and of cavities of colliquation, cell-free, in the costal cartilage of man; (2) similar formation of clumps of fibrils in the arytenoid cartilage of cattle. The nature of the fibrils in these needles is demonstrated: by selective stains which show the collagen; by anisotropy; by the penetration of these fibrils among those of functioning tissues; and by their unmistakable homology with the other collagen fibrils in surrounding tissue. The case in which elastic needles were found in cavities of colliquation of the arytenoid cartilage of cattle makes it probable that the elastic fibers have a similar origin, i.e., that they are formed by gelatinization of elastic sols. The elastic nature is proved: (1) by elective staining to demonstrate elastin; (2) by digestion by trypsin; (3) by the transitory formation of these needles in elastic precipitate on the one hand, and in elastic fibers in the other. If, as seems to be the case, the collagen fibers originate by simple gelatinization of fibrillar collagen sols, it may be possible to imitate and repeat these experiments of living tissue, and to obtain the same collagen fibers artificially in analogous circumstances (i.e., in vitro) by the same process (gelatinization of fibrillar collagen). The author succeeded in obtaining true collagen fibers in the absence of cells, by this process, from the fluid taken from the cavities of colliquation of the arytenoid cartilage of beef. They are shaped, variable in size, sometimes curved, sometimes straight, sometimes wavy, generally aggregated in rosettes. These can be shown identical with the fibrils occurring in the cavity in vivo.

17377. **RISCHARD, MICHEL. Sur la vraie valeur des muscles de l'iris.** *Bull. Histol. Appl. Physiol. et Path.* 8(1): 21-26. 1931.—These muscles are extensions of the ciliary body, which is a ring fixed to the sclera. Contraction therefore causes pupil dilatation. With the oculomotor nerve cut the sympathetic controls all pupil movements while with the sympathetic cut the pupil fails to respond to oculomotor stimulation. Direct stimulation of the sphincter dilates the pupil. There is no proof of radial fibers to the iris.—*J. G. Sinclair.*

17378. **WOOD, HORACE ELMER II, and FLORENCE DOWDEN WOOD. Refutation of the alleged diametric growth of erupted rat molars.** *Anat. Rec.* 48(1): 169-183. 1931.—Measurements and impressions of the molars of 7 Wistar-stock albino rats, made at intervals throughout life, show no trace of the diametric growth deduced by Donaldson and French from averages for individuals killed at different ages. The experimental evidence agrees with the fact that no mechanism is known capable of producing posteruptive growth in rooted teeth.—*Authors (courtesy Wistar Bibl. Serv.).*

VERTEBRATE EMBRYOLOGY

CARL HARTMAN, *Editor*

C. F. DE GARIS, *Associate Editor*

(See also in this issue Entries 15139, 15256, 15264, 15273, 15276, 15279, 15280, 15292, 15300, 15301, 15642, 15726, 15727, 15758, 15878, 15897, 15901, 15996, 16297, 16307, 16314, 16341, 16432, 17298, 17305, 17307, 17311, 17322, 17332, 17335, 17343, 17353, 17356, 17358, 17367, 17368, 17374, 17465, 17470, 17951)

DESCRIPTIVE

17379. **BECCARI, NELLO. Il differenziamento dei centri tegmentali nell'asse cerebrale degli embrioni di Selacei. [Differentiation of tegmental centers in the cerebral axis of embryo selachians.]** *Monitor Zool. Ital.* 40(11/12): 325-328. 1 fig. 1930.—The author treated embryos of *Scyllium* and *Pristiurus* with Cajal's $AgNO_3$ method. He recognized in the cerebral axis of these selachians the existence of a metencephalic, a myelencephalic, and a meso-diencephalic tegmental center. There were no cells exclusively mesencephalic. In the metencephalic center, the author distinguished a pretrigeminal nucleus and a principal nucleus. The pretrigeminal nucleus, principal metencephalic nucleus and the myelencephalic center correspond to the 3 reticular nuclei described by Van Hoewell in Raja.—*N. Beccari (transl. by W. A. Willard).*

17380. **BEGG, R. CAMPBELL. The urachus: its anatomy, histology and development.** *Jour. Anat.* 64(2): 170-183. 2 pl., 4 fig. 1930.—In the adult the urachus is a cone-shaped structure averaging about 5 c.m. in length from the apex of the bladder to its attachment to the remnants of the umbilical arteries. The urachus arises developmentally as the cephalic end of the urinary bladder, which is in turn derived from the ventral cloaca and the proximal ends of the mesonephric ducts. During postnatal life it shares in the caudad descent of the bladder, but retains its attachment by fibrous strands with the remnants of the umbilical arteries. Although it takes part in the descent of the bladder it does not grow as rapidly as this organ. Histologically the posterior face of the urachus is invested by the peritoneum and its anterior face is embedded in the fascia of the transversalis muscle. Beneath these outer layers is a layer of areolar tissue enclosing a thin, denser layer of fibrous connective tissue. The next internal layer is formed of muscle fibers continuous with the muscular coat of the bladder. These fibers spread in strap-like fashion in the bladder wall to end at the prostate. Thus the urachus acts as a sort of center of action for contraction of the muscular coat of the bladder. Internal to the muscular layer there is a dense fibrous layer which supports a delicate tunica propria investing the transitional epithelium. The urachal canal is a tortuous channel about 1 mm. in diameter which may be discontinuous by reason of the masses of degenerating desquamated epithelial cells. In about 2 out of 3 individuals the lumen is separated from the lumen of the bladder by a thin valve-like partition of the mucous membrane.—*J. E. Kindred.*

17381. **BHATIA, D. On the growth of the muscle cells in the developing fish (Salmo fario).** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 12(3): 430-435. 1930.—Sections of larval stages of trout were studied. In the 1st stages of larval development growth occurs by hypertrophy of muscle cells apparently without cell division. As soon as the larva begins feeding and yolk absorption is diminished or ended, muscle tissue increases by both growth and multiplication of cells. With maturity, growth rate falls, cell division increases. Amitosis becomes more and more common in the latter part of development.

17382. **HARMAN, MARY T., and MARJORIE PRICKETT. The development of the external form of the guinea-pig (Cavia cobaya) between 15 days and 21 days of gestation.** *Trans. Kansas Acad. Sci.* 33: 64. 1930.—A description of the embryos of guinea-pig for each day between 15 and 20 days copulation age inclusive.—*F. C. Gates.*

17383. **KOSTANECKI, K. L'evolution du segment latéral du ligament large et son rapport avec le repli dit ligament appendiculo-ovarian de Clado.** *Arch. Anat. Histol. et Embryol.* 12(1/4): 77-108. 6 fig. 1930/1931.—

This investigation includes a re-examination of the literature concerning the numerous ligaments and peritoneal folds of the pelvic region, as well as descriptions of the development of the structures in question. Various stages of both ♂ and ♀ embryos are used in an elucidation of the terminology of the various ligaments, including the broad ligament, the appendiculo-ovarian ligament of Clado, the mesovarium and mesorchium, etc., and their interrelations. The displacements of the folds during the migration of the ovaries and testes are considered in detail, and some attention is given to the shiftings of the other organs of this region. A critical consideration of the various views of other authors forms the greater portion of this paper.—*P. L. Risley.*

17384. **LÖWENKRON, HANS. Über die Entwicklung des Bindegewebes der grossen Mundspeicheldrüsen bei menschlichen Embryonen.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 93 (3/4) : 370-385. 10 fig. 1930.—Epithelial anlagen of salivary glands exercise a formative influence upon embryonic connective tissue leading to the development of a connective tissue mantle. Main stages in the process are: cells divide and round up; nuclei become large, spherical, deeply staining; fibrils form into bundles parallel to the surface of gland and separate the lobes from each other; blood vessels invade the connective tissue when the end buds of the glands appear.—*A. E. Adams (from author's summary).*

17385. **MAINLAND, DONALD. The early development of the ferret: the pronuclei.** *Jour. Anat.* 64 (3) : 262-287. 7 fig. 1930.—The pronuclei in serial paraffin sections of 71 tubal ferret ova were examined in detail. The results were subjected to biometrical tests (chiefly χ square), in place of the usual method of untested observation. In the collection as a whole the number of hours between insemination and death afforded a measure of the progress of development. In specimens fixed in Perenyi's fluid the pronuclear chromatin particles tended to be larger than after other fixatives. In ova fixed in Perenyi and obtained late after insemination the particles specially tended to be large. In 31 out of 49 central pronuclei, non-basophilic particles were found, independently of fixative, of depth of staining and of time between insemination and death. These particles were significantly absent from peripheral pronuclei. Among pronuclei with chromatin accumulated chiefly near the outer membrane, there was a great proportion showing only basophilic particles. The condition of the pronuclear reticulum was independent of the stage of development and of the fixative, but Zenker-fixed specimens stained with Mayer's hemalum and eosin showed a definite tendency towards a fine reticulum. There was very little evidence to show whether actual fusion of pronuclei occurred. It was not possible to indicate the probable developmental processes in the ferret pronuclei by using information from other mammals. A definite spermatozoon tail was found in 1 ovum; the scarcity of such specimens probably being due to technical factors. One trinucleated ovum was found, attributed to double fertilization.—*D. Mainland.*

17386. **MASKELL, F. G. On the New Zealand lamprey, Geotria australis, Gray. Part 2. On the mid-gut diverticula, the bile duct, and the problem of the pancreas in the Ammocoetes stage.** *Trans. and Proc. New Zealand Inst.* 61 (3/4) : 478-497. 1 pl., 14 fig. 1930. —The *Ammocoetes* stage of *Geotria australis* possesses 2 forwardly directed intestinal diverticula, a left and a right. Into the left opens the bile duct. Such diverticula are unknown from other *Ammocoetes.* In the epithelial lining of the diverticula occur scattered glandular cells, which are compared with the exocrinous pancreatic cells of vertebrates on the basis of appropriate cytological studies.—*F. G. Maskell.*

17387. **ONO, KOSAKU. Untersuchungen über die Entwicklung der menschlichen Milz.** *Zeitschr. Wiss. Biol. Abt. B, Zeitschr. Zellforsch. u. Mikrosk. Anat.* 10 (3) : 573-603. 12 fig. 1930.—This study is chiefly concerned with the development of the vascularization of the spleen in general and of the Malpighian corpuscles in particular. Before the mesenchyme cells that form the primordium of the spleen begin to assume definitive characters, 2 veins penetrate the mass. Both are offshoots from the portal vein, one (primary) taking an independent course, with its branches parallel to the surfaces of the spleen, the other (secondary) accompanying the branches of the artery. The branches of the 2 veins anastomose, but no anastomoses of arteries with veins could be seen; a closed blood path was not to be seen at any stage of development. The mesenchyme is a reticular plasmodium and begins in the 5th month to assume the fibrous structure of the pulp reticulum. In the 4th month lacunae begin to appear in the reticulum adjacent to the branches of the venous plexus and these later become the venous sinuses. Hematopoiesis begins in the spleen with the formation of the lacunae, reaches its highest point in the 5th month and diminishes with the completion of the development of the venous sinuses. Lymphatic tissue first appears in the spleen in the 5th month, forming an adventitious coat for the arteries. About the middle of that month accumulations of lymphocytes begin to appear at points where an artery branches dichotomously. These accumulations are the primordia of Malpighian corpuscles. In the 7th month arterial branches form an outer plexus around each accumulation and still later an inner plexus is developed, its development being accompanied by the appearance of cleft-like spaces in the lymphatic tissue.—*J. P. McMurrich.*

17388. **ORRU, A. Costituzione chimica e struttura del guscio d'uovo di casuario. [Chemical constitution and structure of the egg shell of the cassowary.]** *Boll. Soc. Ital. Biol. Sperim.* 5 (2) : 172-176. 1 fig. 1930.—The egg shell consists of 19 layers, which consist alternately of organic and inorganic matter. The internal layers are colored by a green pigment. The organic matter consists of proteins; the inorganic matter is chiefly $CaCO_3$. —*M. Comel.*

17389. **POPOFF, N. Les glandes acineuses simples de la conjonctive palpébrale chez le foetus humain.** *Arch. Anat. Histol. et Embryol.* 11 (1/4) : 187-196. 2 pl. 1930. —The simple acinous glands of the conjunctiva are very precocious in development. They are present in the human fetus of 8.5 cm. (V-H) i.e., well before the appearance of the glands of Wolfring or of Krause. During the first stage of development the glands are of the mucous type. During later fetal life the goblet cells become less active, producing a close resemblance between the glandular and the conjunctival epithelium. At the same time, the glands elongate and become tubular. Without careful examination of serial sections these glands may be confused with simple invaginations or folds of the mucosa. These glands are similar to the glands of Henle.—*N. Popoff (transl. by J. E. Kindred).*

17390. **STEEN, J. C. van der. De ontwikkeling van de occipito-vertebrale streek van Microhyla. [The development of the occipito-vertebral region of Microhyla.]** [In Dutch, with German summary.] 160p. Dissertation, University of Leiden: Leiden, 1930.—This is a detailed investigation on the ontogeny of the skeletal elements of the occipital region: the trabecular and the basal plate, the arcus occipitalis; there is no mesotic cartilage and no preoccipital arcus. In the development of the vertebrae, the atlas is not double. An aberrant kind of cartilage is present, which is perhaps the cause of the miscarriage of Van Wijhe's method. Detailed description is given of the ontogeny of the soft parts: 3 prootic somites, the influence of the rostral displacement of the somites on their reduction and on that of the nerves of the head. There is remarkable reduction of the chorda. —*C. J. van der Klaauw.*

EXPERIMENTAL

17391. **ADACHI, AKIRA. Über die Züchtung von Linsenepithelzellen in vitro.** *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation)* 10 (4) : 437-441. 4 fig. 1931. —Eyes of 8-9 day old chicken embryos were enucleated,

the posterior surface of the vitreous exposed, the lens removed vertically, the anterior surface incised and small pieces of epithelium removed from the equator and explanted by Fischer's method. Epithelial growth began in 1-2 days; if elements of the capsule were transplanted they remained unchanged for a long time. The culture grew in a membranous layer toward the periphery, with numerous processes there. The cells were usually polygonal, the cytoplasm was granular, and the nucleus usually oval; the cells multiplied by mitosis. Fat granules appeared which the author attributed to the culture medium (plasma and embryo extract, not aqueous humor) and to changes in properties of the cells themselves.

17392. **ASMUNDSON, V. S. The formation of the hen's egg. Parts II and III.** *Sci. Agric.* 11(10): 662-680. 7 fig. 1931.—The following results of experiments show that both the isthmus and the uterus influence the shape of the egg: Eggs laid after the anterior half of the isthmus had been removed were, in general, more irregular in shape than eggs laid before the operation. A hen with isthmus torn longitudinally and the tear closed with catgut sutures subsequently laid eggs with characteristically wrinkled shells. Eggs with very little shell have the characteristic shape of normal eggs laid by the same hens. Interference with the isthmus resulted in the laying of abnormally shaped eggs for a time, with gradual return to the laying of approximately normal eggs. After removal of a piece 2.5 × 1.1 cm. from the ventral side of the uterus of a pullet, she at first laid a few eggs that were approximately normal in shape but later, eggs that were flattened on one side. Hens that were similarly treated except for the final operation on the uterus laid normally shaped eggs. An egg laid after cotton was placed at the sides of the uterus had a thin-shelled depression on one side. Eggs laid later had a depression reaching more or less around the egg. It is considered probable that the general shape of the egg is determined chiefly by the amount of albumen secreted, the caliber of the lumen of the albumen part and isthmus, and the muscular activity of the walls of these parts. Studies on the determination of the size of eggs showed that the relative variability in the weight of the parts of eggs as measured by the coefficient of variation was in inverse order to weight. Weight of egg was positively correlated with the weight of each of the parts, but weight of yolk was not correlated with weight of shell. The correlations between the parts of the egg indicate that the amount of albumen and shell depends to only a limited extent on the size of the yolk. A comparison of 15 bantam eggs with 60 eggs having yolks of the same weight, from ordinary hens, showed that the bantam eggs had less albumen and shell.—*From author's summaries.*

17393. **ASMUNDSON, V. S. The formation of the hen's eggs. Pt. IV.** *Sci. Agric.* 11(11): 755-788. 1 fig. 1931.—Dwarf eggs were obtained from 2 actively ovulating hens. One of these laid 7 such eggs, so spaced as to suggest that they resulted from normal ovulation, and an 8th which contained a vitelline membrane. The bird was killed after laying the last dwarf egg and yolk material was found in the body cavity. Three double-yolked eggs were laid by a hen after an artificial yolk had been inserted into its oviduct. Operations of the type used have, in other cases, resulted in temporary or permanent inactivation of the oviduct, hence it is probable that lowered physiologic tone of the oviduct was the cause, although the rate of ovulation was obviously higher than at other times. Three eggs with elongated stalks were obtained. One was a dwarf egg that resulted from the insertion of an artificial yolk. The other two had normal yolks but were laid by a hen that had been operated on twice and artificial yolks inserted, one of which had albumen and membrane secreted around it, while the other was expelled, without any egg envelopes, 2 days after it was inserted.—*Author's summary.*

17394. **BALINSKY, B. I. Ein Fall der abhängigen Entwicklung von Linsenfasern bei völligem Mangel eines Augenbechers bei Triton.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(1): 12-21. 5 fig. 1931.—The author describes a larva of *Triton taeniatus* from which it appears that in *Triton*, as previously shown by Dragomirow in Anura, 2 phases can be distinguished in the development of the lens: (a) the formation of a lentoid, i.e., of a small epithelial vesicle from the inner layer of the dermal epithelium, and (b) the metamorphosis of parts of these cells of the vesicle into lens fibers. The 1st phase of development can go on fairly independently if the future lens material possesses certain properties which may perhaps be received from the optic cup (induction of the lens through the optic vesicle). The 2nd phase, as in Anura, is always a dependent development. Without an external influence, the transformation of the cells of the epithelial vesicle to fibers does not take place. This influence is not peculiar to the optic cup—it can apparently be exerted through any nervous tissue (in the case mentioned, through a piece of tissue of the hypothalamus through the tissue of the olfactory organs).—*J. H. Welsh (from author's conclusions).*

17395. **BISCEGLIE, VINCENZO. Studi sui tessuti espiantati. I. Ricerche sulla morfologia e biologia delle cellule epatiche ed endoteliali in culture di fegato embrionale. [Explanted tissue. I. Morphology and biology of hepatic and endothelial cells in culture of the embryonic liver.]** *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation)* 10(4): 407-436. 13 fig. 1931.—Explants of liver from 5-8 day chick embryos gave rise to liver and endothelial cells; if embryos were 12 days old and more, the explants showed also fibroblasts. Migration of liver cells (40th hour of life on), proceeded in the form of a single-layered epithelial membrane of regular elements in contact with each other; the cytoplasm of which contained many mitochondrial granules. Often, numerous vacuoles appeared, especially in the peripheral cells of the invasion zone; isolated cells were short-lived. Binuclear cells were rare. In the majority of explants there was also proliferation of endothelium of the sinusoids, but in some cultures (those greatly diluted with embryonal extract), proliferation of liver cells occurred in pure culture. Liver cells divided by mitosis when the culture was taken from a 5 day embryo. Endothelial cells migrated much earlier than the liver cells—generally within the first 24 hrs. Some cultures showed pure endothelium in the 1st passage. These wandering elements tended to form elongated and rounded meshes, or else were separated from each other by narrow fissures. The chondrioma of the endothelial cells appeared predominantly as tortuous filaments. These endothelial cells divided mitotically and faster than liver cells. Division rate of either class of cells falls with age of embryo and with successive passages. Lengthened life of the culture seemed not to affect the structure of the liver cells. After the 5th-6th passage, rate of growth increased, however, and having reached the original rate, surpassed it. Since in the mixed cultures the endothelial cells showed a greater rate of growth in repeated passages than did liver cells, they finally appeared in pure cultures, but underwent various alterations assuming the appearance of fibroblasts; but since these did not form collagen fibers, a genuine and effective transformation of endothelial cells into fibroblasts was not demonstrated. On the other hand, after some time these cultures showed other elements, such as isolated amoeboid, and phagocytosing cells—true macrophages. Their origin must be traced back primarily to Kupffer cells, although it is possible that the endothelium of the sinusoidal-capillary vessels, as well as that of liver, participated in this formation to a limited degree.

17396. **BURNS, ROBERT KYLE Jr. The process of sex transformation in parabiotic Amblystoma. II. Transformation from male to female.** *Jour. Exp. Zool.* 60(3): 339-373. 7 pl., 7 fig. 1931.—In 29 cases of ♂—♀ parabiotic *A. tigrinum* larvae, varying in age, 5 pairs show the gonads of the ♂ in advanced stages of transformation to ovaries. This transformation is rendered possible by

the existence, in the young normal testis, of a peripheral germinal layer, the ♂ cortex, considered homologous with the true cortex of the ovary. In some cases this ♂ cortex, stimulated by the hormones of the ♀ partner, grows actively with concomitant regression of the medullary region of the gonad. This may result in a transformation so complete that large portions of the gonad are indistinguishable from normal ovary, while in other sections transformation is still in progress. The existence of the ♂ cortex, with its latent physiological capacity, indicates that the early ♂ gonad is a bisexual structure, with dual capacity, enabling it to transform into an ovary under suitable conditions. However, transformation from ♂ to ♀ occurs only in a small minority of cases, while in all others the ♂ dominates. Quantitative studies show that, where the ♀ dominates, a large volumetric preponderance of the ♀ gonads is always found, and is probably necessary. This preponderance is established early in development, and its origin may be fortuitous. The transformability of a testis may largely depend upon the relative amount of preexisting ♂ cortex.—*Author (courtesy Wistar Bibl. Serv.)*.

17397. **DETWILER, S. R. Heteroplastic transplantations of embryonic spinal cord segments in Amblystoma.** *Jour. Exp. Zool.* 60(2): 141-171. 12 fig. 1931.—When the brachial portion of the spinal cord of *A. trigrinum* embryos is substituted for the corresponding region in embryos of *A. punctatum*, the graft, in larvae 32-60 days old, shows complete regulation so as to correspond in size and cell numbers with this portion of the normal *punctatum cord*. The regulation occurs much earlier than with other heteroplastic grafts. Difference in size of corresponding cross-section areas between the normal spinal cords in *A. tigrinum* and *A. punctatum* larvae possessing extreme size contrasts is not so great as might be assumed. The greater volume and cellular production in the *tigrinum* cord as a whole as compared with the *punctatum* cord is an expression of the greatly increased length of the former. When the first 3 spinal segments of the *tigrinum* cord are substituted for the *punctatum* brachial region (3rd, 4th, and 5th segments), regulation does not occur. The graft undergoes extensive development in size and cell numbers. In this respect it behaves in a manner similar to the corresponding region of a *punctatum* cord when grafted homoplastically to the same position. Evidence is produced also to show that a *tigrinum* cord graft in the *punctatum* embryo grows with a greater velocity, in the early stages, than the host rate, but that complete regulation occurs typically by 30 days after the operating stage.—*Author (courtesy Wistar Bibl. Serv.)*.

17398. **GLICK, BENJAMIN. The induction of supernumerary limbs in Amblystoma.** *Anat. Rec.* 48(2): 407-414. 3 fig. 1931.—The transplantation of the nasal placode of *Amblystoma* embryos (Harrison's stage 29 ±) to a position 4 or 5 segments caudal to the forelimb rudiment has been followed by the development of a supernumerary limb or parts of a limb at the site of the graft in 34 out of 71 cases. The first sign of the "induced" limb appeared 6-18 days after the operation. The limbs ranged in structure from a single digital outgrowth to a short limb with as many as 11 digits. In all cases the limbs were smaller than the normal, but in several instances there developed essentially normal hands. Examination of the sections in several cases showed the nasal placode as a vesicular organ. The "induced" limbs possessed definite skeletal elements with atrophic muscular development.—*Author (courtesy Wistar Bibl. Serv.)*.

17399. **HEYS, FLORENCE. The problem of the origin of germ cells.** *Quarterly Rev. Biol.* 6(1): 1-45. 19 fig. 1931.—A critical survey of the literature is made. More recent investigations are discussed in 4 groups: (1) those which deny early segregation of germ cells; (2) those which admit early segregation but bring evidence that segregated cells are not definitive and degenerate to be replaced by epithelial proliferations; (3) investigations which have led to the conclusion that germ cells are segregated early and migrate to the site of the developing gonad to persist as definitive cells, but that their numbers are increased periodically by a proliferation from the epithelium; (4) those which indicate that the definitive germ cells are set aside at an early stage in embryonic development not to be replaced later by transformation of differentiated peritoneal cells, their numbers being increased only by mitotic divisions. The author's experiments on ovarian regeneration in rats consisted of 2 series: (1) 105 doubly-ovariotomized (210 operations), ranging in age from 10 to 200 days and (2), 108 rats (216 operations), all under 40 days of age. An attempt was made to determine the conditions under which the operator can be sure of complete removal and what bearing the age of the animal at operation has upon the certainty of complete removal. Autopsies of the 1st series showed 2.88% of regeneration among rats beyond 40 days of age at operation. In 2 cases histological study of the excised ovary demonstrated incomplete removal. In the 2nd series of operated rats (under 40 days) autopsy findings were entirely negative. The success of complete extirpation depends primarily upon the age of the animal at the time of excision. It was easily possible to be certain of complete removal of the ovary in rats under 40 days of age, and upon complete removal no regeneration occurred. The small amount of regeneration observed in these experiments was due to the difficulties inherent in a perfect ovariotomy, age being the determining factor, because of the lobulated condition of adult ovaries. In operations performed on very young rats when the capsule as well as the stalk of the ovary remained in place, ample opportunity was afforded for proliferation from the epithelium. If no regeneration occurs under these conditions, it follows that the epithelium cannot replace the excised ovarian tissue. In so far as these experiments bear on the problem of the definitive germ cells, they lend no support to origin from a peritoneal source.—*F. Heys.*

17400. **HORNING, E. S., and K. C. RICHARDSON. On the cytology and behaviour of endothelium during the process of de-differentiation in vitro.** *Arch. Exp. Zellforsch. Bes. Gewebezücht. (Explantation)* 10(4): 488-500. 3 pl. 1931.—Embryonic liver, which gives a sheet-like outgrowth of endothelial cells when cultivated in a medium of plasma and embryonic extract, was used. In early embryos, where the liver tissue has lately mobilized, the endothelium of the sinusoids de-differentiated, very readily and quite soon after explantation, into typical mesenchymal cells. The endothelial cells from older embryos underwent a similar change in vitro, but more slowly, while similar cells from 18-19 day embryos failed entirely to de-differentiate under the same conditions of an unchanged medium and showed merely typical degenerative changes without alteration in morphology. It is suggested that recently differentiated cells in an embryonic organ or tissue undergo a period of "unfixed" differentiation before finally becoming resistant to any change in their cytological characters. Cells explanted during their latent period of "unfixed" differentiation in the early embryo retrogress, after short periods in vitro, to a more primitive cell-type. Those near the conclusion of the latent period take longer to de-differentiate while cells "fixed" in their differentiation fail to respond to the factors incurring de-differentiation. Similar results were obtained with endothelium derived from the cultivation of vena cava in vitro. Although variations in metabolism may be the ultimate factors causing de-differentiation, as suggested by Child, cells apparently must be in their latent period of "unfixed" differentiation for these factors to operate.—*K. C. Richardson.*

17401. **HUNT, T. E. An experimental study of the independent differentiation of the isolated Hensen's node and its relation to the formation of axial and non-axial parts in the chick embryo.** *Jour. Exp. Zool.* 59(3): 395-427. 4 fig. 1931.—Chorio-allantoic grafts of isolated levels of the area pellucida of chick blastoderms in the definitive primitive-streak, advanced head-process, and 1-12-somite stages were studied. Results show that the node

level of each stage considered forms specific parts and is the only level of the primitive streak which has any marked capacity for differentiation. The primitive streak posterior to the node forms in each stage only non-specific structures, such as gut, cartilage, muscle, and integument, which are common to all levels of the embryo. The node in the definitive primitive-streak stage forms all levels of the brain, spinal cord, notochord, eye, epiphysis, hypophysis, heart, liver, mesonephros, and the non-specific structures. The node is thus considered totipotent to the extent that it has the capacity to differentiate structures representative of all levels up to and including the mesonephros level. In the head-process and somite stages the capacity of the node is progressively restricted. It no longer differentiates anterior parts, but the frequency of formation of trunk structures, such as spinal cord, mesonephros, and adrenal, is increased. Apparently, the principal rôle of the node is the formation of axial parts, i.e., neural tube and notochord. Consequently, the node is a center of development and essential to the formation of the embryo. Evidence given suggests that the head process induces formation of the medullary plate.—*Author (courtesy Wistar Bibl. Serv.)*.

17402. **KELEMEN. Beeinflussung des in Vitro-Wachstums von Embryonalgeweben durch Tonsillensubstanz. [Influence of tonsil tissue on in vitro growth of embryonic tissue.]** *Arch. Ohren-, Nasen- u. Kehlkopfheilk.* 127: 196-197. 1930.—Abstract.

17403. **NIVEN, JANET S. F. The repair in vitro of embryonic skeletal rudiments after experimental injury.** *Jour. Path. & Bact.* 34(3): 307-324. 1931.—The repair of the various constituents of embryonic avian and mammalian long bones and of Meckel's cartilage has been investigated by fracturing and incising them at various stages of development and then studying them in vitro. The results depend on the period of embryonic life at which injury is made. In 5-day avian long bone rudiments, complete repair of the cartilage of the center of the shaft takes place. At a slightly later stage (5½-day rudiments), the cartilage is incapable of proliferation and union of the fragments is brought about by: (a) rapid increase of the adjoining cartilage matrix, (b) restoration of continuity of the surrounding osteogenic tissue and mesenchyme, (c) frequent ingrowth of osteogenic tissue into the gap between the cut ends which sometimes results in the formation of osteoid tissue in this situation. Cultivation in vitro for 24 hrs. renders the cartilage of the center of the shaft incapable of repair. In the less differentiated peripheral zones of cartilage, the capacity for proliferation persists longer. During and after repair in vitro, normal histogenesis and morphogenesis continue. When 9-day avian rudiments are fractured repair of the bony cylinder takes place but the osteoblasts which wander into the gap bring about resorption of cartilage. The cells of Meckel's cartilage possess the capacity for proliferation for a longer period than the chondroblasts of the center of the shaft of a long bone rudiment. Later, however, they become susceptible to necrosis after injury. In embryonic mouse bones approaching maturity, repair of the cortical bone occurs by the agency of the osteoblasts. —*J. S. F. Niven.*

17404. **PARKER, RAYMOND C. Structural and functional variations of fibroblasts in pure cultures.** *Science* 73(1893): 401-402. 1931.—Preliminary paper.

17405. **PASQUINI, P., e G. MELDOLESI. Ricerche sulla radio-sensibilità nello sviluppo delle ova d'Anfibi. I. Radiosuscettibilità differenziale dei vari stadi embrionali (Anuri). II. Alterazioni specifiche e malformazioni secondarie da radiosuscettibilità differenziale in Rana esculenta. [Action of radium on amphibian eggs. I. Differential susceptibility in the various stages of development. II. Specific alterations and malformations secondarily due to differential susceptibility in R. esculenta.]** *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 10(5/6): 298-306. 1 fig. 1929; 11 (7): 705-712. 4 fig. 1930.—The early gastrulation stages are the most susceptible. Small doses cause no histogenic changes but gradual inhibition of morphogenesis results. Cellular alterations, or "radiumkrankheit," the first type of radium effect, depends upon intensity of dosage; but the effects are less than the proportionate increase of dosage. The second effect, that of abnormal morphogenesis, depends on the stage of development. As gastrulation proceeds (with 25-26 mch.), the action of the radiation is elective for the neural tube.—*P. Pasquini.*

17406. **REIS, KAROLINE. Untersuchungen über das Verhalten der Transplantate larvaler Amphibienhaut auf Larven und auf erwachsenen Amphibien, mit besonderer Berücksichtigung der Metamorphose.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(3): 494-545. 31 fig. 1930.—Larval skin grafted on larval or adult salamanders undergoes metamorphosis. Metamorphosis also occurs in larval skin-grafts on animals just before and after metamorphosis, and on sexually mature adults (*Triton cristatus* and *T. taeniatus*). Similar results were obtained with axolotl skin on *Amblystoma* hosts. Both homo- and hetero-plastic grafts retain their species-characters regardless of the site of the transplant. The involution of the Leydig cells is taken as the criterion of metamorphosis in the graft. The fact that grafts of larval skin undergo metamorphosis when transplanted on mature amphibians shows that the factors controlling metamorphosis are retained in the body of the grown amphibian. The factors are not species-specific. Axolotl skin grafted on *Amblystoma* metamorphoses as a result of the action of factors present in the body of *Amblystoma*, though the larval axolotl control does not metamorphose. Metamorphosed and partially metamorphosed grafts remain unchanged for a year when grafted on neotenous forms, indicating that the process of metamorphosis is not reversible. Of the 2 cell-types in the larval skin of salamanders, one degenerates and is replaced by the other, which survives. Homo- and heteroplastic grafts on larval hosts, or hosts recently metamorphosed, retain their markings and color. On older and fully grown hosts, the grafts remain unaltered only a short time after metamorphosis; the homoplastic grafts losing their markings and color, and turning black; the heteroplastic grafts degenerating completely.—*Author's summary (transl. by H. L. Wieman)*.

17407. **WILLIAMS, ROY G. A study of the growth of a portion of the spinal cord following its early isolation from the central nervous system in the chick embryo.** *Jour. Comp. Neurol.* 52(2): 255-270. 8 fig. 1931. —Isolation of the lumbar enlargement in chick embryos at 56 hrs. of incubation was accomplished by removing the 19th to the 23rd segments, placing a mechanical block in the defect, and cutting off the tail below the 29th segment. When such chicks hatched, although they became rapidly paralyzed in extension, the legs responded to stimulation. The isolated segment showed the total number of cells to be reduced by 41.4%, the gray matter by 13.1%, and the white matter by 43.9%. The size relationship, shape, and distribution of the cells or the shape of the gray matter were not significantly affected. —*Author (courtesy Wistar Bibl. Serv.)*.

17408. **WINDLE, WILLIAM F., and ALBERT M. GRIFFIN. Observations on embryonic and fetal movements of the cat.** *Jour. Comp. Neurol.* 52(1): 149-188. 1931.—A series of cat embryos and fetuses, with circulation intact, was examined after sufficient time had elapsed following decerebration of the mother cats to allow for recovery from the ether anesthetic. The development of motility was followed from its earliest manifestation as a slight ventrolateral flexion of the cervical region in 16-mm. embryos to a time shortly before birth. The movements of embryos and young fetuses are, to a large degree, massive and generalized. With a few exceptions, there seems to be a gradual evolution or individuation of the more discrete unit reflexes from the total patterns. In some cases, however, reflex movements seem to make their appearance with little or no relation to the primitive behavioral background. In general, functional motor differentiation proceeds cephalo-

caudally and proximodistally, and is followed similarly by the spread of sensory reception areas or reflexogenous zones. It is believed that the behavior patterns of postural and locomotor reactions can be traced back to the early part of the 4th fetal quarter. Those for the feeding response may appear at a slightly later time. The fundamental background of all the distinctly purposeful responses of the newborn kitten is, however, more primitive and antecedes the appearance of reflexes. No conclusions as to the mechanisms involved were made on the basis of this purely physiological study.—*Authors (courtesy Wistar Bibl. Serv.).*

17409. WINDLE, WILLIAM F. The neurofibrillar structure of the spinal cord of cat embryos correlated with the appearance of early somatic movements. *Jour. Comp. Neurol.* 53(1): 71-114. 3 pl., 3 fig. 1931.—A general survey has been made of those nervous elements in embryonic spinal cords that stain by the pyridine-silver and Bielschowsky methods. The specimens were previously examined physiologically and their somatic motility determined. In the premotile specimens (10-14 mm.) all elements necessary for primitive reflex pathways were present, but almost all the sensory neurones were unassociated by means of collaterals with the mantle-layer neuroblasts. Well-formed sensory collaterals appeared at about the time motility was first observed (16 mm.), and there is a direct relationship between their number and size and the regions in which movements appear. The first reflex arcs to become completed seem to be the ones that, at a later time, function in the first ventrolateral neck flexion. Further growth follows the cephalocaudal plan, as does the development of motility. The development of other structures in the spinal cord has been traced and, when possible, it has been correlated with the appearance of movement. The relationship between certain morphological spinal-cord patterns and the types of early reflex responses has been pointed out.—*Author (courtesy Wistar Bibl. Serv.).*

ANOMALIES, MONSTERS AND MARKED VARIATIONS IN DEVELOPMENT

17410. BERNER, O. En maskulin og en feminin pseudohermafrodit. [A male and a female pseudohermaphrodite.] *Norsk Mag. Laegevidensk.* 90(3): 217-232. 9 fig. 1929.—The present work is a summary of a general survey prepared for Hirsch's "Handbuch der inneren Sekretion." The author describes how the ovary in the "free-martin" is converted into a testicle during development and he describes the conditions, in ♂ pseudo-hermaphrodites, of the interstitial cells, which often are characterized by features of the opposite sex. The doctrine that the interstitial cells determine the ♂ sexual characteristics therefore appears to have little foundation. The author briefly describes a case of ♂ pseudo-hermaphrodism in a swine and gives details of a case of ♀ pseudo-hermaphrodism complicated by various other anomalies in a 4 wks. premature child. The uterus was lacking and the genitalia externa consisted of a tiny "peniculum" and a wrinkled fold of skin which was diagnosed as a scrotum.—*Author's summary.*

17411. BOHÊME, P., et M. RIVALLAND. Les malformations congénitales de la valvule de Bauhin (rétrécissements et sténoses). [Congenital strictures of the ileocecal valve.] *Rev. Chir.* 48(7): 455-475. 1930.—Reports of 5 cases.

17412. BÓKAY, JOHANN von. Über Diphallie. *Jahrb. Kinderheilk.* 127(3/4): 127-136. 7 fig. 1930.—The author describes a case of a double penis in a 3 mos. old child. This anomaly was associated with total lateral epispadias and extraverted urinary bladder. He also discussed 8 cases of diphallus from the literature.

17413. BURG, ETE. Zur Frage der menschlichen Gürtelplacenta, im Zusammenhang mit dem pseudointermediären Blutkreislauf der einfachen und normalen Placenta. *Zentralbl. Gynäkol.* 54(7): 420-425. 6 fig. 1930.—The authors studied sections and x-ray films of injected human annular placentae. They found 2 complete circulations present and a 3rd partially developed which anastomosed with these.

17414. CLARK, H. C. Renal anomalies disclosed by autopsy. (4215 consecutive autopsies.) *United Fruit Co., Med. Dept. 18th Ann. Rept.* 271-285. 1929.—A congenital absence of a kidney was found twice in the series. Extreme congenital atrophy of one kidney, almost to the point of its absence, in 4 cases; marked congenital atrophy (a fibro-cystic mass of small size) in 10 additional cases and 6 extreme cases of congenital cystic kidneys forming large masses give a total of 22 cases; the change was limited to the right side in 8 cases, to the left side in 9 cases, and was bilateral in the others. "Horseshoe kidney" occurred 7 times, or about once in 600 cases. There is usually a marked malposition of the horseshoe or fused kidney to a position low in the abdomen over the psoas muscle groups or in the pelvis. Congenital dystopia of a kidney, either in a unilateral or its bilateral fused state, occurred 15 times. A low position in the right iliac fossa or over the right sacro-iliac joint was observed in 6 cases; and in 6 more cases, in a corresponding position, on the left side. The location 3 times was over the median line in the lumbar region or over the promontory of the sacrum. Thus there was 1 case in every 281 individuals showing a low malposition of one or both organs. No accessory kidney was encountered. The number of kidneys was reduced to 1, by fusion in 7 individuals and by congenital absence in 2 cases. Multiple ureters (unilateral or bilateral), going as far as the pelvic brim or sometimes as far as the bladder wall before fusion to empty as one normal channel, were found in 10 cases, and complete doubling of the ureter in 8 cases. Complete absence of a ureter was recorded in 2 cases; and extreme atrophy of a ureter in 8 more cases. Short ureters were associated with all cases of renal dystopia. In all, 40 cases presented some form of variation. The renal pelvis was frequently divided; and a given branch of the ureter would, therefore, drain only a fractional part of the kidney. About 1 in every 100 cases had some form of ureteral variation. Variations in number or origin of the renal arteries were noted in 40 cases but this by no means represents all that were present. There were 25 variations in veins found but these were practically associated with cases of renal dystopia. Anomalies were slightly more frequent on the left side than the right side; while in about $\frac{1}{5}$ of the series some form of a variation was bilateral. Some developmental defect in the system was found in 1.47% of cases. Race did not appear to be an important factor in the incidence of the anomalies. Nearly all the cases in the series were males and, therefore, little can be said as to sex incidence. 53 cases were in ♂♂ and 9 cases in ♀♀. Most of the individuals lived a normal length of time or died of disease or accident totally unrelated to the anomaly.—*From author's summary.*

17415. COBURG, HERMANN. Über angeborene Obliteration der grossen Gallenwege. *Frankfurter Zeitschr. Path.* 40(2): 281-297. 1930.—In a child 7 mos. old, the gall-bladder was absent and the bile ducts obliterated.

17416. DANFORTH, C. H. Developmental anomalies in a special strain of mice. *Amer. Jour. Anat.* 45(2): 275-287. 4 fig. 1930.—By selection there has been developed a strain of mice which gives a high percentage of young showing varying degrees of posterior duplication. The abnormal specimens vary from non-viable Y-shaped individuals, which are completely double posteriorly, to those with only a slight degree of doubling in the external genitalia. The prevailing type, the development of which has been traced from about the 10th day of gestation, presents a characteristic ontogeny differing widely from the normal in later stages, but which is apparently due to a very slight initial deviation. Associated with an early excess of tissue in the region of the future perineum and lower anterior abdominal wall there are 2 ventrolateral outpouchings of the cloaca, instead of a single median one. This is followed by the development of 2 distal parts of the urogenital tract. The rectum is usually single, the bladder commonly

somewhat double. There are 4 kidneys and occasionally 4 gonads. Two of the kidneys remain in the pelvis and fuse. More or less defective extra legs develop between the external genital openings. The type of symmetry is of especial interest and seems to depend on a direct influence (analogous to the "organizer" effect) of one part on another.—*Author (courtesy Wistar Bibl. Serv.).*

17417. **DIETRICH, A. Angeborene Knochenbrüchigkeit (Osteogenesis imperfekta) mit Besserung (durch Vigantol?).** *Virchow's Arch. Path. Anat. u. Physiol.* 275: 397-407. 3 fig. 1930.—The microscopic anatomy of the bones of a child of 10½ mos. is described. This infant had very fragile bones and an imperfectly formed skull. Administration of vigantol (Vitamin D) did not change the P or Ca of its blood, but apparently promoted bone growth, as determined clinically. Death was due to bronchopneumonia. There were some indications of enchondrial ossification in the joints and ribs, and some perichondrial bone formation.

17418. **DOLL, EDGAR A., and DOUGLAS P. MURPHY. A case of microcephaly following embryonic roentgen irradiation.** *Amer. Jour. Psychiatry* 9(5): 871-878. 1930.—Murphy had previously published studies on 74 full-term children irradiated in utero, of whom 25 (33%) were defective at birth, 17 being microcephalic. He here, with Doll, reports the case of a microcephalous child, irradiated before birth, born of superior parents and with 2 brothers and a sister above the average in mentality.

17419. **DRECHSEL, J. Anomalie des Recessus umbilicalis mit Linkslage der Gallenblase.** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 91 (5/6): 638-643. 2 fig. 1930.

17420. **DRECHSEL, J. Mesenterium commune mit Lageanomalie des Dünndarms und normaler Lage des Kolons (Hernia mesenterico-parietalis dextra).** *Zeitschr. Ges. Anat. Abt. 1, Zeitschr. Anat. u. Entwicklungsgesch.* 91(5/6): 644-656. 4 fig. 1930.

17421. **EPSTEIN, SAMUEL H., and PAUL I. YAKOVLEV. A case of decerebrate rigidity with autopsy.** *Jour. Neurol. and Psychopath.* 10(40): 295-304. 9 fig. 1930.—A ♂ child, 8 yrs. and 3 mos. old at death, had exhibited the clinical condition of decerebrate rigidity with tonic neck-reflexes of Magnus and de Kleijn, extensor rigidity, pseudo-affective reactions (hyperacusis), and tonic fits. Pathological study of the central nervous system revealed microcephaly and microgyria, agenesis and aplasia with secondary degeneration of the spinal tracts, diffuse gliosis, and degenerative lesions in the red nucleus and thalamus.—*Authors' summary.*

17422. **FAIRBANKS, H. A. T. Congenital absence of crucial ligaments, etc. Result after fascial graft.** *Proc. Roy. Soc. Med.* 23(3): 257-259. 2 fig. 1930.

17423. **FISCHER, WALTHER. Über eine Cyste in der rechten Pleurahöhle.** *Virchow's Arch. Path. Anat. u. Physiol.* 275: 711-716. 4 fig. 1930.—This cyst was found in a baby 6 mos. old. It had the characteristic coats of the alimentary canal and appeared to be derived from the stomach anlage.

17424. **GORDON, IRENE. Zwei bemerkenswerte Teratome des Mediastinums. [Two noteworthy teratomata of the mediastinum.]** *Frankfurter Zeitschr. Path.* 40(2): 224-228. 1930.

17425. **GUIOU, NORMAN M. Congenital pyloric stenosis in an adult.** *Canadian Med. Assoc. Jour.* 22(1): 82. 1930.

17426. **HARRIS, H. A. Cystic ovary in a babe aged two months.** *Jour. Anat.* 64(3): 303-307. 3 fig. 1930.—Histological appearance of a cystic ovary with large unilocular cysts and atretic follicles. The question of the permeability of the placenta to maternal hormones is considered in the light of the possible result of placental infarction which normally occurs from the 5th month of pregnancy.—*H. A. Harris.*

17427. **HOFBAUER, J. Decidual formation on the peritoneal surface of the gravid uterus.** *Amer. Jour. Obstetr. & Gynecol.* 17(5): 603-612. 8 fig. 1929.—The author reports the finding of macroscopically evident deciduae on the posterior surface of the uterus in 15 out of 23 eclamptic patients at term. Similar areas were found in the inferior portion of the omentum near the pelvis (here the cells have a rich glycogen content and a tendency to vacuolize), in the mesenteriolum of the appendix, and also beneath the germinal epithelium of the ovary. Histologically these ectopic deciduae were characterized by great variation in the shape, size, and number of the component cells, which were grouped into layers, masses, or sheaths around blood vessels. The individual cells were spindle shaped, with dark oval nuclei and scanty cytoplasm. The peritoneal mesothelium seemed never to be involved in their formation. The formation of deciduae, both ectopic and normal, seems to be dependent on the presence of some principle which instigates the differentiation in the above tissues which are all from the same embryonic source and, therefore, presumably capable of a similar differentiation. This differentiation is: (1) of connective tissue cells (mesenchymal in potentialities) into decidual cells and sometimes into smooth muscle and (2) of uterine epithelium, peritoneal epithelium, and germinal epithelium of the ovary (the latter two ectopic) into decidual gland-like structures. The author's observations support the theory that the activating principle is a derivative of the anterior lobe of the hypophysis. It is suggested that the anterior lobe may exert an influence on the formation and function of the corpus luteum and upon ovarian function. Furthermore the author suggests that, due to the similarity of distribution and histogenesis, both ectopic deciduae and endometriosis may be considered from a common point of view. While implantation is accepted as the cause in certain cases of endometriosis, the author thinks that it is highly probable that a reflux of menstrual blood through the tubes into the pelvic cavity may be the etiologic element involved in many cases of endometriosis.—*From abstr. by H. Jordon.*

17428. **HOSOI, KIYOSHI. Teratoma and teratoid tumors of the brain.** *Arch. Path.* 9(6): 1207-1219. 4 fig. 1930.—The case here reported, showed derivatives of the 3 primitive germ layers. Clinically, the patient showed dwarfism, kyphosis, scoliosis, hirsutism, marked hydrocephalus and moronic feeblemindedness. He was never able to walk. The tumor probably originated from some misplaced tissue in the cerebellum.—*Author's summary.*

17429. **HOUCK, JOSEPH WILLIAM. Hydrocephalus in lower animals. Congenital occurrence in a calf and an albino rat.** *Anat. Rec.* 45(1): 83-106. 6 fig. 1930.—In the first case, a calf, killed at the age of 2 mos., the brain had been exceedingly disfigured in paradoxical relation to a history of normal behavior. Microscopic sections showed a minimal destruction of nerve elements, but an expansion and stratification of cells and fibers. Dilatation of the lateral ventricles was extreme, and the point of obstruction was in the 3rd ventricle; several factors may have been involved, as hydrocephalus constitutes a vicious circle. The pineal body was completely obliterated, and this fact is offered as further evidence of the functional unimportance of this structure. The hypophysis cerebri was flattened and the anterior lobe showed the signs of acromegaly. Other signs of acromegaly were noted. The posterior lobe was atrophied, and a peculiar cellular growth was found in the pars intermedia. The second case is a white rat, which died an agonal death at the age of 25 days. Pronounced signs of nervous derangement were noted before death. The brain was a miniature model of the hydrocephalic calf brain. The head and brain of the calf are described in detail and the general features of internal hydrocephalus are reviewed.—*Author (courtesy Wistar Bibl. Serv.).*

17430. **JANSEN, MURK. The large brain, the wide pelvic girdle and the outstanding number of hip anomalies in man. (Coxa vara, Coxa fracta, Coxa plana, Coxa valga, Slipping epiphysis, Malum coxae)** *Jour. Bone & Joint Surg.* 11(3): 461-531. 3 pl., 62 fig. 1929.—The author traces the above named conditions to purely mechanical

causes. Their frequent coincidence with congenital hip dislocation either in the same individual or in the same family, establishes their mutual relationship. Le Damany has presented evidence that congenital dislocation of the hip is due to smallness of the fetal envelopes causing excessive flexion in the hip through which the femoral head is levered out of its socket. Shallow socket or thick socket floor and anteversion of the femoral neck are the constantly attending phenomena. The above mentioned conditions are regularly accompanied by a flat hipsocket, i.e., a socket with a too thick floor or by a wide one, i.e., a hipsocket in which the ischial part has swung mesially (ischium varum). Not infrequently ischium varum is attended by congenital coxa vara, the obvious sign that undue pressure has acted in the direction of the femoral axis at the same time causing the femoral neck to bend and the ischium to swing mesially. Both the flattened hipsocket (through thick socket floor) and the widened socket (through ischium varum)—in the non-dislocated cases—are in contact with the upper portion of the femoral head alone, the lower mesial portion leaving a gap mesially between femoral head and socket floor; and the result is that a couple of forces comes into action striving to raise the femoral neck. The effect of abnormal forces acting on bone substance depends caeteris paribus on the condition of the bone substance, a fact which is often overlooked. The effect of the abnormal couple of forces will be different in the rachitic, the knock-knee child, the overgrown and the normal subject. In the normal subject with flat or wide hipsocket, the femoral head and neck remain unaltered until adult age, when malum coxae or osteoarthritis will develop due to the mere incongruence of the joint surfaces. In all other cases the couple of forces brings about rotation of the femoral head due to retardation of growth on the lateral side, greatest in the rachitic, least in the overgrown. In the rachitic, moreover, the femoral neck is bent, i.e., in the soft bony tissue, the body-weight predominates over the couple of forces; while in the overgrown the couple of forces raises the femoral neck into the valgus position. In the knock-knee child the neck is neither bent into varus nor raised into valgus position, but the femoral head is rotated into the horizontal position. It shows mesial flattening (jockey-cap shape), whilst the neck develops "a chin" on the mesial side obviously due to its preponderant growth there (initial stage of coxa plana). If at this stage the mesial part of the femoral neck (i.e., the "chin") has not yet gained contact with the mesial part of the socket, the horizontal component of the acting muscle forces will cause mesial displacement of the neck under the head. Disturbance of circulation ensues both in head and in neck, resulting in death of the head and traumatic plasticity of the neck. The head, in being revived, sustains absorption of lime salts, initiating its flattening and fragmentation (fragmentation stage of coxa plana) which leads to congruity with the hipsocket, while the plastic neck is widened and shortened. During the development of these changes the growth disc assumes the characteristic curved course parallel to the socket line. With the total revival of the femoral head and the blending of the fragments, coxa plana reaches its final stage. Whereas congenital coxa vara is usually attended by ischium varum, coxa valga is mostly associated with thick socket floor and hence with anteversion of the femoral neck as is a rule with complete congenital dislocation of the hip. This anteversion combined with the approximately upright position of the neck is likely to cause the condition known as slipping epiphysis, in which the femoral head rotates with its upper part backward around a transverse axis. The characteristic sailor's gait in coxa valga, i.e., the rotation of the pelvis round a vertical axis, is the obvious sign that the femoral neck knocks against the posterior border of the hipsocket at each normal hyperextension of the leg during walking. Hence this point of contact acts as a fulcrum above which the femoral head is levered forward and friction of the femoral head is caused against the socketroof which gradually loosens the head and finally allows the femoral neck to slip forward without it (slipping epiphysis). Thus the pathogenesis of the outstanding number of hip deformities finds a natural mechanical explanation which has not been produced by any hypothesis or theory hitherto brought forward.—*M. Jansen.*

17431. **JUNGHANNS, HERBERT. Die Spondylolisthese im Röntgenbild.** *Fortschr. Geb. Röntgenstr.* 41(2): 239-245. 12 fig. 1930.—By means of x-ray films and photographs of anatomical preparations the anatomical picture of spondylolisthesis of the 4th and 5th lumbar vertebrae is described. In all of the author's 30 cases of spondylolisthesis, he found a gap between the intervertebral processes, which he, in agreement with other investigators, considers a congenital abnormality. Trauma which, because of the joint gap formation, strikes the least resistant part of the vertebral column, is the first cause of slipping of the vertebral body relatively to the upper joint processes, whilst the joint processes, below and behind the joint gap and the spinous processes, retain their old position and relationship to the joint. The forward movement of the vertebral body results in a series of secondary changes of the intervertebral disc below the vertebra and of the neighboring vertebrae, i.e., decrease in size of the intervertebral disc, formation of an S-shaped intervertebral disc, condensation of the related vertebral spongiosa, production of indentations and extrusions of the vertebral borders and enlargement of the lumbo-sacral angle—*Author's summary.*

17432. **KENNEDY, H. N., and A. W. SMITH. An abnormal coeliac artery in the dog.** *Vet. Rec.* [*London*] 10(32): 751. 2 col. fig. 1930.

17433. **KIAZIM ISMAIL. Syndrome d'hirsutisme déterminé par une tumeur surrénale.** *Presse Méd.* 38 (18): 302-303. 3 fig. 1930.—A 4 yr. old boy for a year before his death in convulsion, had begun to develop general adiposity, and abnormal hairiness of face and body. At necropsy the external genitals were found to have the development proper to the age of 14 or 15; the abdominal organs were transposed in position, and the heart was on the right. There was a malignant tumor of the suprarenal (cause of the hypertrichosis) of cortical origin, with metastases to the lungs.

17434. **KLEMOLA, VALTO. Ein Dicephalusfall beim Kalb mit einigen seltenen Gefässanomalien.** [English and Finnish summaries.] *Ann. Soc. Zool.-Bot. Fennicae, Vanamo* 8: 48-67. 1 pl., 7 fig. 1929.—Hypothetical explanations founded on the ontogenetic development are formulated by writer to explain certain interesting anomalies appearing in a dicephalous calf. A median raised row of ribs between the spines is present, and its occurrence is considered normal for such individuals. Mechanical and anatomical reasons are given for its origin. Each individual possesses a complete pair of lungs and a heart, but there is only one, common, aorta. The actual portal vein system is entirely lacking, a unique anomaly, according to the author. The paper contains a detailed description of the many anatomical adjustments that have been rendered necessary by these and other anomalies.

17435. **KNIEPKAMP, W. Zur Anatomie des angeborenen und des paralytischen Hackenfusses.** *Arch. Orthopäd. u. Unfall-Chir.* 27(4): 551-595. 27 fig. 1929.—This is a study of the skeleton of the foot and tarsal bones in congenital and paralytic talipes calcaneus. The author finds that the changes in the bones correspond to the evident deformity.—*A. Ehrenfried.*

17436. **KUBO, HISAO. Beitrag zur Kenntnis der amniogenen Missbildung mit besonderer Berücksichtigung der Entstehung der amniotischen Verwachsungen.** *Virchow's Arch. Path. Anat. u. Physiol.* 276(2): 241-258. 8 fig. 1930.—Three monsters are described. The first had a frog head, with amniotic growths coming from both the head and the upper and lower extremities. It had a bilateral cleft palate; the oral cavity was only partially developed. There was aplasia of the right adrenal, underdevelopment of the left adrenal, almost complete atelectasis of both lungs, an open foramen ovale and an open

ductus Botalli. The 2nd fetus had growths of amnion from the head, which connected with a strand from the umbilicus. The 3rd fetus was an acranius with exencephaly, growths of the amnion to the meninges, hypoplasia of both adrenals, syndactyly of the right hand and complete atelectasis of both lungs. Amnion attachments to the fetuses occurred very early, certainly during the 1st or 2nd month. The author believes that extensive amniotic growths, amniotic bands and small adhesions are due to a disturbance in the development of the amnion itself.

17437. LAFF, HERMAN I. Unilateral absence of sigmoid sinus. *Arch. Otolaryngol.* 11(2): 151-157. 6 fig. 1930.

17438. LEECH, CLIFTON B. Congenital complete heart block. Report of a case with an associated patent ductus arteriosus. *Amer. Jour. Dis. Children* 39(1): 131-140. 4 fig. 1930.

17439. LINK, K. H. Zur Kenntnis der Lageanomalien der männlichen Keimdrüsen, insbesondere der Dystopia testis transversa. [Anomalies of position of the male sex glands, especially transverse malposition of the testis.] *Zeitschr. Urol. Chir.* 29(3/4): 175-186. 1930.—A case in a 1½ yr. old boy.

17440. LÖFFLER, ERNST. Über ortsfremde Zellen und Geschwülste im Hinterlappen und im Stiel der Hypophyse. *Virchow's Arch. Path. Anat. u. Physiol.* 274 (2): 326-349. 11 fig. 1929.—In both the posterior lobe and the stalk of the hypophysis large epithelial cells often occur as strays from the undifferentiated epithelium of Rathke's pouch or from the anterior lobe process. These cells readily degenerate and form pigment; they frequently proliferate to form adenomata of the hypophysis. Both cells and adenomata (20 cases of which are here described) are known in literature under various names: protoplasma-rich glia, neurogenic structures, choristomata, etc.

17441. LUNDH, GÖSTA. On the problem of the interstitial cells of the testes and their influence upon internal secretion. *Acta Obstetr. et Gynecol. Scand.* 9 (1/4): 315-330. 10 fig. 1930.—A quantitative microanalysis has been made of the different tissue-elements in the testes from 3 cases of so-called ♂ pseudohermaphroditism with cryptorchidism and from a normal 18 yr. old individual killed by accident. Two of the testicond cases showed a considerable increase in the absolute weight of the interstitial cells or the interstitial tissue in toto, while in 1 case the weight was about the same as in the normal testicles. The most notable feature was the great difference in the quantity of interstitial cells in the 2 last cases. In the first of these, which presented typically ♀ secondary sex-characters, there was if anything a slight reduction in the quantity of interstitial cells (or interstitial tissue as a whole) as compared with the normal case. The seminiferous tubules, however, showed strikingly good development with well-developed supporting cells and distinct signs of spermatogenesis with formation of spermatogonia. In the last case, which exhibited typically ♂ secondary sex-characters, there was an extremely vigorous increase in the interstitial cells, while the seminiferous tubules were completely atrophic, no trace of either spermatogenesis or supporting cells being discernible.—*Author's summary.*

17442. LUNDH, GÖSTA, und HJALMAR SJÖVALL. Zwei neue Fälle von "männlichem Pseudohermaphrodismus." I. Eine approximative Berechnung der absoluten Menge der interstitiellen Zellen in den beiden kryptorchen Hoden. *Jahrb. Morph. u. Mikrosk. Anat. Abt. 2, Zeitschrift Mikr.-Anat. Forsch.* 19(4): 602-632. 22 fig. 1930.—See preceding abstract.

17443. MEAD, C. H. A quantitative study in human teratology. *Human Biol.* 2(1): 1-33. 1930.—An analytic study of 2 human monsters, one a simple monster with marked disproportions in external form, and one a typical example of "Janus" of cephalothoracopagus monosymmetros. The methods of analysis include: (a) a comparison of individual measurements of the abnormal specimens with means (and their probable errors) of groups of "normal" specimens of approximately the same body length; (b) comparison of observed values with "normal" values obtained by the use of empirical formulae for various bodily dimensions; (c) graphic analysis, through comparisons of body outlines (constructed by means of empirical formulae from the various observed dimensions) with body outlines (constructed by means of empirical formulae) of corresponding normal fetuses; (d) comparisons of abnormal and normal facial areas by planimetric methods. The study indicates that: The simple monster followed the "law" of developmental direction, but that there was a marked dissociation of rates of growth of the upper and lower parts of the body. Although the rates of growth of the extremities were abnormal, the relative growth rates of their several segments were normal. The relative rates of ponderal and lineal growth of the simple monster were dissociated. The growth of the double monster followed the "law" of developmental direction, and the growth gradients of its component parts were practically identical. "Fusion" had little effect upon the development of the components, except in the regions of conjunction, which were definitely retarded. There was a marked reduction in body-mass-for-length of the 2 components. This paper is presented as an experimental study of the application of modern analytic and graphic methods to human teratology.—*C. H. Mead.*

17444. MEYER, HELLMUTH. Linsenmyopie durch kongenitale Mikrophakie. [Myopia from congenital microphakia.] *Klin. Monatsbl. Augenheilk.* 84(1): 525-531. 1 fig. 1930.—A case of an extremely rare anomaly.

17445. MORGAN, LAWRENCE O., and HUGH S. GREGORY. Pathological changes in the region of the tuber cinereum in idiopathic epilepsy. *Amer. Jour Psychiatry* 9(5): 805-816. 1930.—After referring to epileptiform seizures produced in dogs by experimental brain lesions in the region of the tuber cinereum, fully reported elsewhere, the authors describe pathological findings in 21 brains, mostly from cases of idiopathic epilepsy. Summarized, these are: shrinkage of the tuber cinereum and cell loss in the gray substance of the 3rd ventricle (greatest), nucleus tuberis lateralis and nucleus tuberomammillaris (least), with some degree of cell degeneration in the remaining cells of the groups in all cases; no correlation between the nature of the cause of death and the amount of cell loss; hyperemia in all but 1 brain, apparently regional in the tuber cinereum or at least most intense there, but entirely absent in the 2 control cases and in the 1 epileptic brain mentioned. These findings confirm the results of the experiments on dogs as pointing to the tuber cinereum as related to the cause of epilepsy.—*From author summary.*

17446. RENANDER, AXEL. Anomalies roentgenologically observed of the cranio-vertebral region. *Acta Radiol.* 10(5): 502-513. 2 pl., 8 fig. 1929.—The author describes 3 cases, roentgenologically examined, of posterior spina bifida of the atlas and an anomaly of the cranio-vertebral region; the latter was found, during preparation of the specimen, to be a ligamentous assimilation between the left arch of the atlas and the occiput. In one case there was a combination with an auditory nerve neurinoma, considered by the author to be an interesting parallel with previously observed combinations of posterior spina bifida in the lumbosacral region and Recklinghausen's complex.—*Author's summary.*

17447. RENANDER, AXEL. Entwicklungsstörungen der Wirbel. Somatoschisis. Hemispondylus. *Acta Radiol.* 10(6): 588-597. 2 pl., 3 fig. 1929.—The author describes 2 cases of congenital irregularity in the development of the spinal column. One case presented a morphologic variation, with formation of a somatoschisis; in the other, the deviation was numerical as well as morphologic, resulting in a supernumerary hemispondylus with an accessory rib. The author explains the variations as the result of disturbed development of the spine in its membranous stages, with faulty formation of the nu-

cleus, combined, in the 2nd case, with a hemimetameric displacement of the latter.—*Author's summary.*

17448. SÁNTHA, KÁLMÁN v. Über das Verhalten des Kleinhirns in einem Falle von endogen-afamiliärer Idiotie. (Zur Differentialdiagnose der Marieschen und der sonstigen endogenen Kleinhirnerkrankungen, nebst Beitrag zur Lehre der Diplomyelie.) *Zeitschr. Ges. Neurol. u. Psychiatr.* 123(4/5): 717-793. 28 fig. 1930.—The author describes a case of endogenous, segmental degeneration of the cerebellum in an idiot with a double spinal cord. The author believes that the doubling was produced very early in embryonic life when the spinal cord was folded off from the skin ectoderm and instead of 1 neural layer as is normal, 2 layers were formed. The author separates idiocy into 2 groups, exogenous, which arises from some disturbances in placental circulation, and endogenous, which is always ectodermal and represents either a failure of the ectoderm to develop at all, or a development of the ectoderm in early embryonic life, followed by its degeneration in later embryonic life. Familial and non-familial idiocy could not be distinguished anatomically, but only from a knowledge of ancestry.

17449. SARVAAS, G. J. du MARCHIE. Über einen Fall von teratoider Neubildung der Hypophysengegend. *Frankfurter Zeitschr. Path.* 40(2): 210-223. 6 fig. 1930.—The tumor (in a 12 yr. old boy) contained connective tissue, pigment-containing glia, bone, cartilage, blood-vessels, fatty tissue and smooth muscle; it showed a slight tendency to organ formation, displaying brain tissue with glia and blood-vessel plexus, and an indication of a trachea with mucous glands and cartilage in the wall.

17450. SCHUMACHER, OSKAR. Weitgehende Asymmetrie des Sinus sphenoidalis. *Anat. Anz.* 68(18/21): 419-423. 1 fig. 1930.

17451. SHORE, L. R. A report on a specimen of fused pelvic kidney found in a Bantu of South Africa. *Jour. Anat.* 64(3): 344-352. 5 fig. 1930.—This rare specimen exhibited the conditions of multiplicity, fusion, and ectopia. The kidney was moulded on the promontory of the sacrum. Two ureters, but the rudiments of 4 kidney pelves, were present. The condition suggested an origin from: (1) a caudal and cranial duplication of the metanephros, (2) fusion of the upper and lower metanephric elements of each side, (3) fusion between the 2 upper metanephric elements in the mid-line of the body. The blood supply was from the middle sacral artery and the 2 internal iliac arteries. The paper concludes with some statistics of the occurrence of congenital abnormalities of the kidney in Bantu natives, Eurafricans and Europeans. It cannot be inferred that one race is more prone than another to congenital abnormalities of the kidney.—*L. R. Shore.*

17452. SOMMER, RENÉ. Zur nichttraumatischen Teilung der Kniescheibe (Patella partita). *Grun's Beitr. Klin. Chir.* 148(1): 1-26. 20 fig. 1929.—The author describes 3 types of split knee cap, that with small pieces in the external upper quadrant being the most common. Histologic study showed that the divided knee cap which had divisions in the upper external quadrant was the result of imperfect union of ossification centers. Other types of divided knee cap were associated with general faulty bone development but were often present in robust individuals. The author ascribes the formation of a split knee cap in an adult to a pseudo-arthrosis and not to osteochondritis desiccans.

17453. SONNTAG. Weiteres zur Fabella. *Deutsche Zeitschr. Chir.* 223(4/5): 359-367. 5 fig. 1930.—The author describes a case of median fabella from x-ray findings. He summarizes anomalies of the fabella in the literature of 1690 knee anomalies; bilateral fabella anomalies are 6-7 times more frequent than unilateral.

17454. SPESCHILOW, P. W. Über die Varietäten der Aortenbogenzweige. (Anormaler Ursprung der A. subclaviae dextrae.) *Zeitschr. Kreislaufforsch.* 22(2): 41-69. 4 fig. 1930.

17455. SPRONG, DAVID H. Jr., and NORMAN L. CUTLER. A case of human right aorta. *Anat. Rec.* 45(4): 365-375. 3 fig. 1930.—A case of right aorta in a white ♂, 50-60 yrs. old, is described. The heart is normal. The order in which the branches arise from the aortic arch is just the reverse of normal. The relative sizes of the right and left bronchi are reversed, and both right and left eparterial bronchi are present. The thoracic duct is on the left. There is no inversion of other structures. One hundred cases of right aorta, from the literature, are found to fall into 4 groups: (A) Situs inversus viscerum, 46%. (B) Right aorta, without inversion of other viscera: (*a*) Double aorta, 15%. (*b*) Right aorta, giving off left carotid, right carotid, right subclavian, and left subclavian, 26%. (*c*) Right aorta, giving off left innominate, right carotid, and right subclavian, 13%. A short discussion of the embryology is given, and it is suggested that mechanical factors during development may be responsible for the condition of right aorta.—*Author (courtesy Wistar Bibl. Serv.).*

17456. STIRLING, W. CALHOUN, and NORVELL BELT. Bilateral double kidney and ureters. *Jour. Urol.* 22(1): 93-98. 3 fig. 1929.

17457. UPDEGRAFF, C. E. Report of a case of terata katadidyma. *Amer. Jour. Obstet. & Gynecol.* 18(2): 265-266. 1929.—In twin ♀ fetuses joined above the umbilicus, bony fusion had occurred between the 2 thoraces and 2 frontal bones anteriorly. There was a single oesophagus. The stomach was single, having 2 cardiac pouches; there were 4 arms, 4 legs, but 1 umbilical cord.

17458. WEINGROW, SAMUEL M. Supernumerary distal phalanx of the thumb. Case report. *Amer. Jour. Roentgenol.* 23(2): 206-207. 1 fig. 1930.—A supernumerary distal phalanx was present on the left thumb, with a triple distal interphalangeal articulation, with adductive function sufficient to enable the patient to bring the 2 distal phalanges into partial opposition.

17459. WOLFF, GERHARD. Über einen Fall von kongenitaler Schulterluxation. [Case of congenital shoulder luxation.] *Zeitschr. Orthop. Chir.* 51(1/2): 199-209. 9 fig. 1929.

INVERTEBRATE EMBRYOLOGY AND HISTOLOGY

(See also in this issue Entries 15105, 15139, 15642, 15718, 15723, 15729, 15755, 15765, 17399, 17405, 17523, 17530, 17561, 17562, 17575, 17590, 17812, 17901)

17460. BUDDENBROCK, W. von. Beitrag zur Histologie und Physiologie der Raupenhäutung mit besonderer Berücksichtigung der Versonschen Drüsen. *Zeitschr. Wiss. Biol. Abt. A, Morph. u. Ökol. Tiere* 18(4): 701-725. 14 fig. 1930.—The so-called Verson's glands of Lepidoptera fall into 2 functionally sharply distinct portions: (a) the canal- and intermediate cells are skin-glands, which discharge their secretion to the exterior through an always visible duct, which passes through the cuticula to the exterior. The nature and use of the secretion are unknown. (b) the large inner gland cell has no outlet, and is to be considered an organ of internal secretion. Correspondingly, the inner cell precedes all other organs in its development between 2 molts. The discharge of the secretion vacuoles of the large gland cells takes place, not as has been supposed at the beginning, but only at the end of the molting process, after the formation of the new cuticula. The secretion of the molting fluid takes place not from special gland-cells, but from the epithelial cells themselves. The enlargement of the epidermal cells which are to secrete the new cuticula is caused, in the tracheae, by the pressure of the molting fluid, but on the hypodermis through the formation of temporary projections (rugosities) on the general surface.—*Author's summary (transl. by W. T. M. Forbes).*

17461. DAUTERT, E. Die Bildung der Keimblätter

von Paludina vivipara. *Zool. Jahrb. Abt. 2, Anat. u. Ontog. Tiere* 50(3): 433-496. 18 fig. 1929.—The egg cell of this ovoviviparous snail is remarkably small and contains little yolk. The first 4 blastomeres are equal and orient themselves crosswise. In the 8 cell stage, the difference in size between micromeres and macromeres is not great. In the 16 cell stage, the micromeres divide unequally but the macromeres divide equally, so that the cells of the second quartet are as large as the macromeres. Gastrulation is by invagination and takes place just after the 64 cell stage; the primitive ectoderm is derived from the first 3 quartets; and the blastopore becomes the anus. The mesoderm arises by proliferation from the anterior ectoderm below the velum; this region may be traced back to the second and, in part, to the third quartets. It is thus ectomesoderm and homologous with larval mesenchyme of many mollusks and annelids. On the other hand, teloblastic formation of mesoderm was not observed.—*H. B. Baker.*

17462. **EPURE, E., et V. POP. La structure de l'épithélium pulmonaire chez Helix pomatia L.** *Bul. Soc. Ştiinţe Cluj* [*Rumania*] 5(Fasc. 3, Part 2): 65-70. 1 pl. 1930.—The pulmonary epithelium of *H. pomatia* shows modifications analogous to those in vertebrate lungs. In both cases, the blood is restricted to capillaries and thus is separated from the intrapulmonary air by 2 cell layers, epithelium and capillary endothelium.—*H. B. Baker.*

17463. **LEOPOLDSEDER, FERDINAND. Entwicklung des Eies von Clepsine nach Entfernung des vegetativen Polplasmas.** *Zeitschr. Wiss. Zool.* 139(2/3): 201-248. 25 fig. 1931.—The egg of *Clepsine* [*Glossiphonia*] continues to segment normally after removal of the vegetative pole substance. A morphological but not a physiological mesodermal germ band is formed but is incapable of differentiation. All eggs die before the formation of the ectodermal germ band. These facts are in harmony with the results of Crampton on *Ilyanassa* and of Wilson on *Dentalium*. How the egg behaves after removal of the plasm of the animal pole is not yet clear.—*F. Leopoldseder* (*transl. by J. P. Moore*).

17464. **MURRAY, MARGARET R. In vitro studies of planarian parenchyma.** *Arch. Exp. Zellforsch. Bes. Gewebezücht.* (*Explantation*) 11(4): 656-668. 3 pl., 4 fig. 1931.—Planarian cells cultivated for several days in vitro become polarized and put out processes resembling those of nerve cells. Comparisons between such parenchyma cells and planarian nerve cells shows no sharp distinction between the two. It is suggested that in the regeneration of the cephalic structures of the planarian, the new nerve tissue may be derived from common parenchyma cells.—*Author's summary.*

17465. **PANNING, A. Über die Kristalloptik der Kalkkörper der Seewalzen.** *Zool. Jahrb. Abt. Allg. Zool. u. Physiol. Tiere* 49(2): 205-230. 13 fig. 1931.—The calcareous bodies of holothurians are lime-spar crystals, the chief axis of which corresponds either to the long, or to the transverse, axis of the calcareous body. In the first case, the meshwork is formed by repeated branching at 120°; in the second, at 90°. Both patterns are attributable to the laws of crystallization. By numerous examples, it is now proved that the form of the calcareous body has nothing to do with the fundamental structure, i.e., with type of branching and crystal orientation. Calcareous bodies built up in either of these fundamentally different arrangements are identical. The organic form is therefore independent of the crystalline. The following species were examined: *Holothuria arguinensis, H. impatiens, H. pardalis, H. poli, H. tubulosa, H. vagabunda.*—*A. Panning* (*transl. by J. H. Gerould*).

17466. **PFLUGFELDER, OTTO. Histogenetische und organogenetische Prozesse bei der Regeneration polychaeter Anneliden. 1. Regeneration des Vorderendes von Diopatra amboinensis Aud. et M. Edw.** *Zeitschr. Wiss. Zool.* 133(1/2): 121-210. 2 pl., 49 fig. 1929.—A description of *D. amboinensis*, including general morphology, anatomy, histology, habits. In the regeneration of the anterior end there are considered general features, histological details of the nervous system, muscles, coelom, and circulatory systems, regenerative organogeny of tentacles, parapodia, gills, origin of the sense cells and the free nerve endings. The author is interested in these phenomena from the causal-analytical standpoint and throughout considers the factors involved. Two formative groups of components are thought to influence the formation of tentacles, parapodia, and gills: (1) pressure of fluid (blood or coelomic fluid) combined with the pressure of accumulating cells; (2) formation of fibers which owe their origin to the first group but which from the first exert a directive pressure. Heredity as a causative explanation of regenerative phenomena is considered insufficient since in the last analysis this also must represent conditions that need explanation from a physical-chemical standpoint.—*F. H. Krecker.*

17467. **REITH, F. Zur experimentellen Analyse der Primitiventwicklung bei Insekten. (Versuche am Ei von Camponotus ligniperda.)** [**Hymenoptera. Formicidae.**] *Naturwissenschaften* 19(10): 398-399. 1931.—A brief study of the post-ovipositional development of the egg of *C. ligniperda.*

17468. **ROSS, L. S., and ROYAL R. TASSELL. Tracheation of grasshopper nerve ganglia.** *Jour. Comp. Neurol.* 52(2): 347-349. 2 pl. 1931.—The study of 4u sections of nerve ganglia of the grasshopper, prepared with the AOB method, demonstrates the passage of great numbers of tracheae and tracheoles through the punktsubstanz of the ganglia and of a very small number through the cytoplasm of an occasional cell. This is believed to be the first record of the presence of air passages within a nerve cell.—*Authors* (*courtesy Wistar Bibl. Serv.*).

17469. **RUNNSTRÖM, JOHN. Über Selbstdifferenzierung und Induktion bei dem Seeigelkeim.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 117: 123-145. 12 fig. 1929.—Studies were made on the development of the eggs of *Paracentrotus lividus, Psammechinus microtuberculatus* and *Sphaerechinus granularis* in seawater containing LiCl and KCl. The position of the larval processes appears to be independent of the skeleton, but without the skeleton the processes are barely indicated on the ciliated bands. There is apparently a primary induction, active in the uncleaved egg, and a secondary induction which is active much later. The primary skeleton, the triradiate rod arises independently of the ectoderm but the latter influences the later development into more complicated structures. —*E. Deichmann.*

17470. **SEIDEL, FRIEDRICH. Untersuchungen über das Bildungsprinzip der Keimanlage im Ei der Libelle Platycnemis pennipes I-V.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 119: 322-440. 62 fig. 1929.—This paper traverses much of the ground covered by 3 papers by the same author in Biol. Zentralbl. 1926, 1928, 1929, (for the first of which see B. A. 3 Entry 9912). While not all of the contents of the earlier papers are given in the present abstract, no attempt has been made to avoid all repetition. *Platycnemis pennipes* eggs are here studied as examples of non-determinative development for the analysis of determinative phenomena in insect embryos. Copulatory and egg-laying positions of the adult are described; the male holds the female during oviposition, which in the vicinity of Berlin occurs from June to August; 1 ♀ can lay 100-150 eggs in 1 hr. The normal development of the egg is described*. The egg is .9 × .2mm., bilaterally symmetrical, dorsal side almost flat, ventral curved. At the 64-nuclei stage of cleavage, nuclei begin to wander toward the egg-surface. The distance between nuclei in surface view can be used as a recognition mark of a given stage. Formation of the germ-band begins, at about the 650-nuclei stage, in the posterior half of the egg by wandering of nuclei from the anterior half. Two lateral nuclear fields are formed which later fuse on the dorsal surface from behind forward, but remain unfused

at the anterior end as the 2 head lobes. Emphasis is laid on observed variations, in extent, in time and in different lots of eggs, in the formation of these lateral fields*. The hind end of the germ-band sinks into the yolk, thus beginning the formation of the amnion, while the head lobes remain on the surface of the yolk. As sinking of the hind part into the yolk progresses, the point where the insinking occurs shifts forward. Revolution ("Wiederausrollung") of the embryo occurs after a break in the embryonic membranes and occupies 6 hrs. The embryo turns on its long axis 180° and moves so as to bring its ventral surface on the curved side of the egg. The chorion undergoes an alteration in size. The period of histological differentiation now succeeds; the chief external and internal organs are described; each eye at hatching possesses 7 facets, the number of which is increased at the moultings "der geschlüpften Imago" [error for "Larve" ?, p. 348]. The advantages and disadvantages of ligaturing eggs and burning parts of them for experimental purposes are discussed. The mortality in ligaturing is very great, amounting to about 50%. Fixation methods are given. Pages 350-373 form part II: Experiments proving the dependence of the different regions of the egg on each other. These are ligaturing the egg, already described in part in the author's paper of 1926 (B.A. 3, Entry: 9912) and its conclusions are reaffirmed. Part III (pp. 373-414) is the demonstration of a center in the egg on the activity of which the origin of the germ-band depends. Further experiments in ligaturing and in burning the hind pole are compared. Destruction, or exclusion by ligature, of more than about 96μ of the posterior end prevents formation of the germ-band, but the extra-embryonic blastoderm and yolk cleavage occur as in the anterior part of an uninjured egg. It is provisionally concluded that the formative center ("Bildungscentrum") is located at the hind end of the presumptive germ-band or extends from the posterior egg pole thence. This center retains its general situation from the 2-nuclei stage up to about that of 256-nuclei, that is, up to the early blastoderm stage. From experiments on eggs of greater age, chiefly by burning, and from various defective embryos so produced, it is deduced that in the late blastoderm stage, before the assembling of the nuclei to form the germ-band, removal of parts of the hind end of the egg no longer hinders formation of the germ-band and that, from this stage on, general body formation, i.e., of head from the fore part of the germ-band, of thorax from its middle part, of abdomen from its hind part, proceeds separately and in each part independently of the formative center located at the hind pole of the egg. These conclusions are strengthened by burning the anterior egg pole, at periods from 10½ to 40½ hrs. after the 4-nuclei stage, which does not hinder the formation of the germ-band, nor do lateral burnings have this result. In part IV (Cessation of the action of the formative center, pp. 414-426), graphs are presented showing that the curve which passes through eggs in which a germ-band is developed, after burning to graded distances from the hind end of the egg and at increasing lengths of time after the 4-nuclei stage, is an ascending curve; that this curve rises more slowly at a lower (17.9° C.) than at a higher (25° C.) temp.; that at lower temperatures complete embryos arise in later stages and after longer parts of the eggs have been burned than in earlier stages, while at medium and higher temperatures the length of the part burned (of an egg which can still give rise to a complete embryo) is approximately constant throughout the experiment. The conclusions drawn with respect to these results are: Without the formative center, origin of the germ-band is not possible. The ability of definite parts of the germ to assure by their presence the origin of a germ-band is transferred from the formative center at a definite time to parts lying ever farther forward. These parts acquire with this transfer, as far as the general form of the body is concerned, the possibility of carrying through the differentiation of the germ band independently of the formative center. In part V (Discussion of the formative principle of the germ-band, pp. 427-438), it is held that the experiments of incompletely ligaturing the egg leave such a microscopically small canal connecting anterior and posterior parts of the egg that no nucleus can pass through it, although its existence permits the origin of the germ-band which lies anterior to the ligature. The factors which can pass through this narrow canal are, therefore, not necessarily bound to nucleus or plasma. Destruction by burning of the formative center results in a diminution of the number of blastoderm nuclei, due to the absence of heterochronous nuclear divisions which normally give rise to the germ-band. Hence, without the action of the formative center, the differential increase in the cells necessary to the formation of the germ-band does not occur, nor does the assembling of the cells into the bilateral longitudinal fields. The cells do congregate, however, chiefly on the flat dorsal side. The formative center, therefore, does not give the impulse to cell movement as such, nor to the general direction of this movement, but a general disposition exists in the blastoderm cells to form the germ-band. Splitting of the egg-material in the blastoderm stage gives rise to dwarf double structures (Seidel, Biol. Zentralbl. 49, 1929); the hind end of one partner can lie far forward of that of the other. A special disposition of the parts of the germ for the formation of the germ band is, therefore, not present. Along with the independence in its mode of origin which the germ-band acquires in late blastoderm stages, it acquires also the ability of differentiation, but this is not true in every respect. Some of the experimental results obtained with *Platycnemis* are to be designated as true regulatory phenomena, others as alterations of the normal growth processes.—*P. P. Calvert.*

17471. TAYLOR, C. V. Polarity in normal and centrifuged eggs of Urechis caupo Fisher and MacGinitie. *Physiol. Zool.* 4(3): 423-460. 6 fig. 1931.—The eggs of this echiuroid worm are shed in the germinal vesicle stage and normally remain so until fertilized. They have no mark of polarity previous to polar-body formation. In normal and centrifuged eggs, the first cleavage plane is predictably defined by the position of the polar bodies and the sperm entrance point. Gastrulation is diametrically opposite the polar cells, irrespective of the stratification axis. A centrifugal force of 4800 × gravity was applied from 1 to 18 hrs. Stratified eggs are conveniently demarcated into hemispheres: the centrifugal hemisphere of hyaloplasm with clusters of red granules near the pole, and the centripetal, opaque hemisphere having yellow and brown strata and a polar, black cap. The germinal vesicle abuts against the yellow stratum, but the nucleolus is driven centrifugally. During development of centrifuged immature eggs: (*a*) the occurrence of polar cells on the hyaline hemisphere increases with prolonged centrifuging proportional to the displacement of hyaloplasm by strata in the opaque hemisphere; (*b*) the polar cells are rarely extruded from and sperm do not enter the region of the black cap; (*c*) the amphiaster is undeveloped or abnormal adjacent to the yellow stratum; (*d*) the cleavage plane advances far into the hyaline hemisphere before appearing in the opaque hemisphere; (*e*) if fertilization is long delayed, the stratified inclusions redisperse, the hyaloplasm recedes, and polar-body distribution approaches normal. The point of view adopted identifies the hyaline substratum as protoplasm to which are assigned the place and rôle of organic differentiation.—*Author* (*courtesy Wistar Bibl. Serv.*).

17472. TIRELLI, MARIO. Sbocco dei canali malpighiani nell'intestino medio. [Opening of the malpighian tubules in the mid-intestine.] *Boll. Mus. Zool. e Anat. Comp. Univ. Genova* 9(30): 1-18. 3 fig. 1929.—In the larvae of the *Cloëon dipteron*, the malpighian tubules open in the mid-intestine (not in the post-intestine, or between the mid- and post-intestine) directly, and certainly not far from the pylorus.—*M. Tirelli.*

17473. TIRELLI, M. Sbocco di tubi malpighiani nel

mesointestino. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 10(5/6): 278-281. 1 fig. 1929.—See preceding abstract.

17474. **WERMEL, JULIUS, (unter Mitwirkung von G. W. LOPASCHOV). Über den Einfluss der Regeneration und Überernährung auf die Siphonenlänge bei Ciona intestinalis L. Ein Beitrag zu Kammerers Experimenten.** *Zeitschr. Wiss. Biol. Abt. D, Roux' Arch. Entwicklungsmech. Organ.* 122(1): 22-47. 4 fig. 1930.—Regeneration without elongation of the siphons of the Murman race of *C. intestinalis* (v. *canina* Müll.) takes place in about a month after a single amputation; there is no elongation after 48 days of over-nutrition. With over-nutrition regeneration of both siphons, without elongation, occurs in 32 days. The author states that deviation in his results from those of other experimenters (Mingazzini, Loeb, Kammerer, Fox) may have been due to variations in the material and the experimental conditions such as: age and race of specimens, composition and amount of nutrition, temp., number of amputations of the siphons, etc. He believes that the statements of Fox are insufficient to refute Kammerer's claims. Relative length of the siphons alters with age, length decreasing; it also varies locally, as in 2 different parts of the Gulf of Kola the relative length of the siphons of *Ciona intestinalis* differs. From their nature, Kammerer's experiments can not be repeated in another place.—*From author's summary (transl. by J. A. Bauer).*

17475. **WOODS, FARRIS H. History of the germ cells in Sphaerium striatinum (Lam.).** *Jour. Morph. and Physiol.* 51(2): 545-591. 54 fig. 1931.—Study of living and sectioned material throughout the life cycle shows that the germ-cell history, from fertilized egg to sexual maturity, can be divided into the following 5 periods with definite limits: Original appearance during cleavage, period of inactivity, period of multiplication, maturation, and fertilization. Primordial germ cells of characteristic structure can be recognized just before gastrulation, when there is one large germ cell in the mass of mesoderm on either side of the bastocoel. After one division in each of these 2 cells, the 4 daughter cells remain inactive, while the remainder of the mesoderm differentiates, until division is resumed in the developing gonad. An indefinite number of gametes is produced. All are direct descendants of the 2 original primordial germ cells. Transformation of somatic cells into germ cells does not occur, nor do germ cells become somatic cells. Cell lineage shows the 2 primordial germ cells to be derived from the 3rd division of the paired mesoderm cells which have arisen by an equal division of the 4th micromere produced by cell D of the 4-cell stage. Details of meiosis have not been ascertained, because of the small size of the chromosomes, their large number, and the difficulty of fixation. Nothing forecasts which primordial germ cells will become ova and which spermatozoa.—*Author (courtesy Wistar Bibl. Serv.).*

PROTOZOA

D. H. WENRICH, *Editor*

(See also in this issue Entries (Physiol.) 15669, 15705, 15707, 15710, 15720; (Pharmacol.) 16041, 16066, 16080, 16083, 16168, 16191, 16199, 16208, 16209, 16236, 16276; (Pathol.) 16346, 16444; (Immunol.) 16561, 16562; (Parasitol.) 16565, 16568, 16576, 16578, 17579, 16582, 16584, 16585, 16588, 16589, 16591, 16594, 16595, 16596, 16599, 16601, 16603, 16604, 16606, 16607, 16608, 16612, 16613, 16614, 16619, 16621, 16622, 16623, 16626, 16627, 16630, 16633, 16634, 16635, 16636, 16637, 16639; (Bacteriol.) 16689, 16690, 16702; (Paleozool.) 17294, 18115)

17476. **ANDREJEWA, E. W. Zur Frage über die physikalisch-chemische Bestimmung der Korrelationen einiger physiologischer Prozesse bei Paramaecium caudatum.** *Arch. Protistenk.* 73(3): 346-360. 6 fig. 1931.—The rate of locomotion in *P. caudatum* is affected by electrolytes in the same proportions as collodion particles, hence is regarded by the author as dependent on the electric surface charge of the animal. The movement of Paramecium is shown by the method of Einstein not to be analogous to Brownian movement; the movement is a directed one, and is proportional to the rate of food vacuole formation and contractile vacuole rate.—*L. E. Noland.*

17477. **COLE, W. STORRS, and RUTH GILLESPIE. Some small foraminifera from the Meson formation of Mexico.** *Bull. Amer. Paleontol.* 15(57b): 1-15. 4 pl. 1930.—The material from the *Lepidocyclina gigas* v. *mexicana* zone of this formation yielded a considerable fauna of large and small foraminifera and a small brachiopod, *Argyrotheca wegemanni* Cole. The Meson formation is of Middle Oligocene age, the equivalent of the Antigua formation of Antigua; the Glendon formation of the Gulf States; the limestone of Cayman Brac; and the Moneague formation of Jamaica. The small foraminifera show many species common to this collection and the Vicksburg of the Gulf States. *Lenticulina* **cornellina*** (p. 7); *Marginulina* **mesonensis*** (p. 8); *Dentalina* **mesonensis*** (p. 8); *Lingulina* **mesonensis*** Cole (p. 9); *Nonion scaphus* v. **mesonensis*** (p. 10); *Uvigerina byramensis* v. **mesonensis*** (p. 11).—*J. A. Cushman.*

17478. **CUSHMAN, JOSEPH AUGUSTINE. The Foraminifera of the Atlantic Ocean. Part 8. Rotaliidae, Amphisteginidae, Calcarinidae, Cymbaloporettidae, Globorotaliidae, Anomalinidae, Planorbulinidae, Ruptertiidae and Homotremidae.** *U. S. Nation. Mus. Bull.* 104. pp. 1-144. 26 pl. 1931.—This last and final part of the foraminifera of the Atlantic Ocean considers the families cited above. All genera of these families are included whether they have living species in the Atlantic or not. The fauna including these various families is very different on the 2 sides of the Atlantic due probably to the fact that most of the species are attached forms in comparatively shallow water. Nearly all the species are illustrated and tables of distribution of the specimens studied are included. *Spirillina vivipara* v. **densepunctata*** (p. 4), Porto Rico; *Discorbis bertheloti* v. **floridensis*** (p. 17), 28 fathoms off Fowey Light, Florida; *D. globularis* v. **anglica*** (p. 23), from "Goldseeker" dredging, Moray Firth, 69 m.; *Lamarckina* **atlantica*** (p. 35), 22 fathoms off Fowey, Florida; *Anomalina coronata* v. **crassa*** (p. 105), "Albatross" station D2063, off eastern coast of the U. S. A., in 141 fathoms; *Anomalina* **flintii*** (p. 108), "Albatross" station, D2352, in 463 fathoms off western coast of Cuba; *Planulina* **caribaea*** (p. 112), Jamaica; *Cibicides pseudoungeriana* v. **io*** (p. 125), off Fowey Light, Florida, in 40 fathoms; *Carpenteria* **hassleri*** (p. 141), 100 fathoms off Barbados.—*J. A. Cushman.*

17479. **DANGEARD, LOUIS. Foraminifères enveloppants des oolithes et des pisolithes.** *Bull. Soc. Geol. France* 30(3/4): 173-190. 6 fig. 1930.—The occurrence of foraminifera on oolites from various horizons and localities is discussed, with especial reference to *Ophthalmidium* which has adapted itself to the ferruginous oolites of the Jurassic.—*W. Berry.*

17480. **HERON-ALLEN, E., and ARTHUR EARLAND. Some new Foraminifera from the south Atlantic. II.** *Jour. Roy. Microscop. Soc.* [*London*] 49(4): 324-334. 4 pl. 1929.—*Diffusilina* **papillata*** (p. 324) and *Tholosina vesicularis* v. **erecta*** (p. 325), off the Falkland Isls., 119 m.; **PROTOBOTELLINA** (Astrorhizidae), type, *P.* **cylindrica*** (p. 326), off the Falkland Isls., 150-300 m.; *Ammobaculites* **rostratus*** (p. 328), off South Georgia, 238-270 m., *Trochammina* **malovensis*** (p. 328), off the Falkland Isls.; *Ehrenbergina* **crassa*** (p. 329), off S. Georgia, 18-346 m.; *Globigerina* **cristata*** (p. 331), off Possession Isl., southeast Africa, depth 3170 m.; *Discorbis* **kempii*** (p. 332), off Falkland Isls.—*J. A. Cushman.*

17481. **IVANIĆ, MOMČILO. Zur Auffassung der Kernverhältnisse bei Stentor coeruleus und Stentor polymorphus, nebst Bemerkungen über einige Kernverhält-**

nisse bei Infusorien im allgemeinen. *Zool. Anz.* 66 (1/4): 55-64. 2 fig. 1926.—The author briefly describes what he calls a "palmella-stage" in the life history of *Stentor*, because of its resemblance to the stage of the same name in the flagellates. Although Stein described and figured a cyst stage in *Stentor*, no other investigator has ever seen one and the present author apparently believes that the palmella-stage corresponds to the cyst stage of Stein. The changes undergone by the animal while in the palmella-stage are similar to those which other infusoria experience when in the cyst. All cilia are lost, and the cytostome and other organelles associated with food-getting also disappear, to be later regenerated. The members of the macronuclear "rosary" coalesce and the micronuclei behave in similar fashion, so that a single conspicuous micronucleus is formed. Division of the latter by a sort of primitive mitosis initiates the division process, and the macronucleus follows suit, but amitotically. Sometimes two divisions occur so that 4 individuals are found in a single palmella-stage. A discussion of nuclear conditions observed by other investigators in other infusoria concludes the article.—*R. D. Manwell.*

17482. **KOFOID, CHARLES A., and ARTHUR S. CAMPBELL.** A conspectus of the marine and freshwater Ciliata belonging to the suborder Tintinnoinea, with descriptions of new species principally from the Agassiz expedition to the eastern tropical Pacific 1904-1905. *Univ. Calif. Publ. Zool.* 34: 1-403. 697 fig. 1929.—This is a monographic treatment of synonymy, morphology, classification, relationships, and general distribution of the families, genera, and spp. of the suborder Tintinnoinea. The material examined was collected at 129 record stations in the eastern tropical Pacific, and in daily collections by the senior author in a traverse of the Pacific and Indian Oceans during 1916. This conspectus gives a complete revision of all spp. of the Tintinnoinea in literature up to 1929, with a total of 1750 systematic names, including a bibliographical synonymy of each sp. A bibliography of 256 titles is included. A total of 51 genera and 703 spp. including *nomina nuda* are recognized. Each family and subfamily is given a brief diagnosis and its relationships are discussed. Each genus, whether old, emended, or new, is also diagnosed and its relationships are briefly indicated. Types are designated for all of the 51 genera. The new spp., those given new names, and those raised to new status from subspecific or other rank, are briefly described, their relationships being indicated, and type locality and general distribution being given. Every sp. is figured either from the authors' material, or from the type drawing. Biological data are briefly given. The new groups and forms include 1 suborder, 10 families, 8 subfamilies, 23 genera, and 276 spp. [Type dep. not given]. **TINTINNOINEA** (p. 8), n. suborder of Heterotrichida, including all the families treated in this paper. **TINTINNIDIDAE** (p. 9), erected for *Tintinnidium* Kent and *Leprotintinnus* Jörg. Codonellidae: *Tintinnopsis* **acuminata** (*T. beroidea* var. *a.* Daday) (p. 20); *T.* **amphora** (*T. lobiancoi* v. *fusiformis* Brandt, not *T. f.* Daday) (p. 21); *T.* **brasiliensis** (p. 29), off Brazil; *T.* **cochleata** (*Cyttarocylis helix* var. *c.* Brandt not *C. h.* var. *c.*) (p. 31); *T.* **coronata** (*T. davidoffi* v. *cylindrica* f. *annulata* Wailes, not *Tintinnus annulatus* Clap. & Lach.) (p. 32); *T.* **cylindrata** (*T. cylindrica* Daday, 1892, not *T. davidoffi* v. *cylindrica* Daday, 1887) (p. 33); *T.* **denticulata** (p. 34), off Brazil; *T.* **ecaudata** (p. 34), off Norway; *T.* **elongata** (*T. vosmaeri* var. *e.* Daday) (p. 34); *T.* **everta** (*T. baltica* v. *rotundata* Laack., not *T. beroidea* var. *r.* Jörg.) (p. 35); *T.* **fennica** (p. 35), Gulf of Bothnia (type), Baltic, Adriatic, and Bay of Panama; *T.* **gracilis** (p. 36), off Borneo; *T.* **levigata** (*T. sacculus* var. *p.* Brandt) (p. 42); *T.* **panamensis** (p. 43), Bay of Panama; *T.* **pistillum** (p. 44), Kiel Fiord (type) and Black Sea; *T.* **plagiostoma** (*T. beroidea* var. *p.* Daday) (p. 44); *T.* **rotundata** (*T. beroidea* var. *r.* Jörg.) (p. 46); *T.* **schotti** (*T. dadayi* var. *s.* Brandt) (p. 46); *T.* **spiralis** (*T. cylindrica* Meunier, not Daday, not Wright) (p. 47); *T.* **tocantinensis** (p. 48), off Brazil; *T.* **turgida** (p. 49), off Borneo (type), Arabian Sea, and off Brazil; *T.* **wailesi** (p. 50), Brit. Columbia, *Codonella* **acuta** (p. 52), Pacific; *C.* **acutula** (p. 52), Panamic area; *C.* **angusta** (p. 53), Atlantic; *C.* **apicata** (p. 53), Atlantic (type), Mediterranean, Indian and Pacific Oceans; *C.* **aspera** (p. 55), Mediterranean (type) and Pacific; *C.* **australis** (p. 56), Atlantic (type) and Pacific; *C.* **benguelensis** (p. 57), Atlantic (type) and Pacific; *C.* **cuspidata** (p. 58), Pacific; *C.* **dadayi** (p. 59), Mediterranean; *C.* **diomedae** (p. 59), Pacific (type) and Mediterranean; *C.* **elongata** (p. 59), Mediterranean (type), Atlantic, and Pacific; *C.* **inflata** (p. 61), off Somali Coast; *C.* **lariana** (*C. lacustris* var. *l.* Zacharias) (p. 61); *C.* **lata** (p. 62) and *C.* **mucronata** (p. 62), Pacific; *C.* **oceanica** (*C. cistellula* var. *o.* Brandt) (p. 63), emended description; *C.* **olla** (p. 63), Atlantic; *C.* **pacifica** (p. 64), Pacific; *C.* **poculum** (p. 64), Atlantic; *C.* **rapa** (p. 65), Pacific; *C.* **recta** (p. 65), *C.* **robusta** (p. 66) and *C.* **saccus** (p. 66), Atlantic; *C.* **tropica** (p. 67), Pacific. **CODONELLOPSIDAE** (p. 67), erected for *Codonellopsis* Jörg., *Stenosemella* Jörg., and *Laackmanniella*, n. gen.; *Stenosemella* **inflata** (p. 69), Brit. Columbia; *S.* **pacifica** (*Tintinnopsis punctata* f. *minor* Wailes, not *Codonella ventricosa* v. *minor* Fauré-Fremiet) (p. 70); *Codonellopsis* **americana** (p. 75), Pacific; *C.* **brasiliensis** (*Codonella ecaudata* var. *b.* Brandt) (p. 77); *C.* **californiensis** (p. 78), Pacific; *C.* **contracta** (p. 78), Pacific (type), off Bergen, and Mediterranean; *C.* **cordata** (p. 78), Pacific; *C.* **erythräensis** (*C. morchella* var. *e.* Brandt) (p. 79); *C.* **globosa** (p. 80), off Zanzibar; *C.* **indica** (p. 80), off Zanzibar (type) and off Borneo; *C.* **inflata** (p. 80), Pacific; *C.* **inornata** (*Codonella pusilla* var. *i.* Brandt) (p. 81); *C.* **lata** (p. 81), Black Sea; *C.* **longa** (p. 82), Pacific (type), Indian, and Mediterranean; *C.* **meridionalis** (p. 82), Pacific; *C.* **minor** (*Codonella orthoceras* var. *m.* Brandt) (p. 83); *C.* **obconica** (p. 84), off Zanzibar; *C.* **ovata** (*Codonella lagenula* var. *o.* Jörg.) (p. 85); *C.* **pacifica** (*Codonella orthoceras* var. *p.* Brandt) (p. 85), emended description; *C.* **parva** (p. 86), Pacific (type) and Atlantic; *C.* **pura** (*Codonella orthoceras* var. *p.* Brandt) (p. 86), emended description; *C.* **robusta** (p. 87), Pacific; *C.* **schabi** (*Codonella morchella* var. *s.* Brandt) (p. 87); *C.* **speciosa** (p. 88), Pacific (type), Mediterranean, and Atlantic; *C.* **tessellata** (*Codonella orthoceras* var. *t.* Brandt) (p. 88); *C.* **tropica** (p. 89), Pacific; *C.* **turbinella** (p. 89), Bay of Naples; *C.* **turgescens** (p. 90) and *C.* **turgida** (p. 90), Pacific; **LAACKMANNIELLA** (p. 90), resembling *Codonellopsis*, type *L.* **naviculaefera** (*Codonella n.* Laack.) (p. 91); *L.* **prolongata** (*Codonella p.* Laack.) (p. 91). **COXLIELLIDAE** (p. 91), near Codonellopsidae, erected for *Climacocylis* Jörg., *Coxliella* Bdt., and *Helicostomella* Jörg.; *Climacocylis* **digitula** (p. 92), Pacific; *C.* **elongata** (p. 93), Atlantic (type) and Pacific; *C.* **scalaroides** (p. 93), Pacific (type), Atlantic, and Mediterranean; **COXLIELLA** (p. 95), n. subg. of genus *Coxliella* Brandt, replacing the nomenclaturally inapplicable *Cochliella* Jörg.; *Coxliella* **cymatiocoides** (p. 96), Alaska; *C. decipiens* Jörg., emended description; *C.* **declivis** (p. 97), Pacific; *C.* **longa** (*Cyttarocylis* (?) *ampla* (?) var. *l.* Brandt) (p. 101); *C.* **meunieri** (*Amphorella cochleata* Meunier, not *Cyttarocylis helix* var. *c.* Brandt) (p. 101); *C.* **pelagica** (p. 102), Pacific; *Helicostomella*

111), Indian Ocean (type), Atlantic, and Pacific; *C.* **conica** (*C. cassis* var. *c.* Brandt) (p. 112); *C.* **longa** (p. 113), Atlantic (type), Indian, Pacific, and Mediterranean; *C.* **magna** (*C. cassis* var. *m.* Brandt) (p. 114); *C.* **mucronata** (p. 114), Pacific; *C.* **obtusa** (p. 115), Atlantic; *C.* **ricta** (p. 115), Atlantic (type), Pacific, and Indian Oceans; **FAVELLINEAE** (p. 116), erected for *Cymatocylis* Laack., *Favella* Jörg., *Parafavella* gen. nov., *Poroecus* Cleve, and *Protocymatocylis* gen. nov.; *Poroecus* **annulatus** (p. 117), Pacific; *P.* **apicatus** (p. 118), Pacific; *P.* **brandti** (*Cyttarocylis cylindrica* Brandt, not *C. denticulata* var. *8* Jörg.) (p. 118); *P.* **curtus** (p. 118), Pacific; **PROTOCYMATOCYLIS** (p. 119), type *P.* **subrotundata** (*Cymatocylis vanhöffeni* f. *s.* Laack.) (p. 120), for which an emended description is given; *P.* **conicoides** (*Cymatocylis vanhöffeni* f. *conica* Laack. not *C. flava* f. *conica* Laack.) (p. 119); *P.* **vas** (p. 120), Antarctic; *Cymatocylis* **affinoides** (*C. vanhöffeni* f. *affinis* Laack., not *C. affinis* Laack.) (p. 123); *C.* **brevicaudata** (*C. calyciformis* f. *b.* Laack.) (p. 125); *C.* **calycina** (*C. vanhöffeni* f. *c.* Laack.) (p. 127); *C.* **calyx** (p. 129), Antarctic; *C.* **conica** (*C. flava* f. *c.* Laack.) (p. 131), emended description; *C.* **contracta** (p. 131), Antarctic; *C.* **crassa** (*C. cristallina* f. *conica* Laack., not *C. flava* f. *c.* Laack.) (p. 132); *C.* **culcullus** (*C. cristallina* f. *cylindrica* Laack., not *C. vanhöffeni* f. *c.* Laack.) (p. 133); *C.* **cylindrella** (*C. flava* f. *cylindrica* Laack., not *C. vanhöffeni* f. *c.* Laack.) (p. 133); *C.* **cylindrica** (*C. vanhöffeni* f. *c.* Laack.) (p. 134), emended description; *C.* **cylindroides** (*C. calyciformis* f. *cylindrica* Laack., not *C. vanhöffeni* f. *c.* Laack.) (p. 134); *C.* **cylindrus** (*C. drygalskii* f. *cylindrica* Laack., not *C. vanhöffeni* f. *c.* Laack.) (p. 135); *C.* **digitabulum** (p. 135), *C.* **digitulus** (p. 136), *C.* **diminuta** (p. 136), *C.* **ecaudata** (p. 137) and *C.* **everta** (p. 137), Antarctic; *C.* **folliculus** (*C. nobilis* f. *subrotundata* Laack., not *C. vanhöffeni* f. *s.* Laack.) (p. 138); *C.* **gaussi** (*C. affinis* f. *ventricosa* Laack., not *C. vanhöffeni* f. *v.* Laack.) (p. 138); *C.* **glans** (p. 139), Antarctic; *C.* **incondita** (*C. cristallina* f. *simplex* Laack., not *C. nobilis* f. *s.* Laack.) (p. 139); *C.* **labiosa** (*C. cristallina* f. *ventricosa* Laack., not *C. vanhöffeni* f. *v.* Laack.) (p. 140); *C.* **meridiana** (*C. drygalskii* f. *ventricosa* Laack., not *C. vanhöffeni* f. *v.* Laack.) (p. 140); *C.* **minor** (*C. vanhöffeni* f. *m.* Laack.) (p. 141), emended description; *C.* **ovata** (*C. drygalskii* f. *ovata* Laack.) (p. 141); *C.* **robusta** (*C. vanhöffeni* f. *r.* Laack.) (p. 142); *C.* **scyphus** (*C. affinis* f. *cylindrica* Laack., not *C. vanhöffeni* f. *c.* Laack.) (p. 142); *C.* **simplex** (*C. nobilis* f. *s.* Laack.) (p. 143); *C.* **situla** (*C. drygalskii* f. *conica* Laack., not *C. flava* f. *c.* Laack.) (p. 143); *C.* **subconica** (p. 144), Antarctic; *C.* **tubulosa** (*C. drygalskii* f. *subrotundata* Laack., not *C. vanhöffeni* f. *s.* Laack.) (p. 144); *C.* **typica** (*C. flava* f. *t.* Laack.) (p. 145), emended description; *C.* **urnula** (*C. affinis* f. *u.* Laack.) (p. 145); *C.* **ventricosoides** (p. 146), Antarctic; *Favella* **attingata** (p. 150), off Norway (type), Mediterranean, and South Atlantic; *F.* **brevis** (*Cyttarocylis ehrenbergi* v. *claparedei* f. *curta* Laack., not *C. ehrenbergi* f. *c.* Laack.) (p. 151); *F.* **composita** (*F. azorica* var. *c.* Jörg.) (p. 151); *F.* **confessa** (p. 152), Alaska; *F.* **franciscana** (p. 154), Pacific; *F.* **helgolandica** (*Cyttarocylis ehrenbergi* v. *h.* Brandt) (p. 154); *F.* **infundibulum** (p. 155), Norway; *F.* **meunieri** (p. 155), North Sea; *F.* **panamensis** (p. 156), Pacific; **PARAFAVELLA** (p. 157), type *P.* **denticulata** (*Tintinnus denticulatus* Ehrbg.) (p. 163); *P.* **acuta** (*Cyttarocylis denticulata* v. *typica* f. *a.* Jörg.) (p. 158); *P.* **calycina** (*Cyttarocylis denticulata* var. *c.* Jörg.) (p. 159); *P.* **curvata** (*Cyttarocylis denticulata* v. *cylindrica* f. *edentata* Jörg., not *C. edentata* Brandt) (p. 161); *P.* **cylindrica** (*Cyttarocylis denticulata* var. *c.* Jörg.) (p. 162); *P.* **digitalis** (*Cyttarocylis denticulata* v. *subrotundata* f. *edentata* Jörg., not *C. e.* Brandt) (p. 163); *P.* **dilatata** (*Cyttarocylis denticulata* v. *subrotundata* f. *dilatata* Jörg.) (p. 163); *P.* **edentata** (*Cyttarocylis e.* Brandt) (p. 164); *P.* **elegans** (*Cyttarocylis e.* Ostenfeld) (p. 165); *P.* **gigantea** (*Cyttarocylis g.* Brandt) (p. 165); *P.* **greenlandica** (p. 166), West Greenland Current (type) and Irminger Sea; *P.* **hemifusus** (*Cyttarocylis h.* Meunier) (p. 166), emended description; *P.* **inflata** (p. 166), Barents Sea; *P.* **media** (*Cyttarocylis m.* Brandt) (p. 167); *P.* **obtusa** (*Tintinnus denticulatus* var. *o.* Aurivillius) (p. 167); *P.* **obtusangula** (*Cyttarocylis o.* Ostenfeld) (p. 168); *P.* **parumdentata** (*Cyttarocylis edentata* var. *p.* Brandt) (p. 168); *P.* **robusta** (*Cyttarocylis denticulata* var. *r.* Jörg.) (p. 169); *P.* **rotundata** (*Cyttarocylis denticulata* v. *cylindrica* f. *r.* Jörg.) (p. 169), emended description; *P.* **subedentata** (*Cyttarocylis denticulata* var. *s.* Jörg.) (p. 170), emended description; *P.* **subrotundata** (*Cyttarocylis denticulata* var. *s.* Jörg.) (p. 170); *P.* **subula** (p. 171), Arctic; *P.* **ventricosa** (*Cyttarocylis denticulata* v. *cylindrica* f. *ventricosa* Jörg.) (p. 171). **PTYCHOCYLIDAE** (p. 172), erected for *Epiplocylis* Jörg. and *Ptychocylis* Brandt; **EPICANCELLA** (p. 173), n. subg. of *Epiplocylis* Jörg., type, *Cyttarocylis nervosa* Cleve; **EPIPLOCYLIS** (p. 173), n. subg. of *Epiplocylis* Jörg., type *Cyttarocylis acuminata* Daday emended description; *Epiplocylis* **acuta** (p. 175), Pacific; *E.* **atlantica** (p. 176), Atlantic; *E.* **blanda** (*E. undella* var. *b.* Jörg.) (p. 176); *E.* **brandti** (p. 177), Atlantic; *E.* **constricta** (p. 177), *E.* **curta** (p. 178), *E.* **deflexa** (p. 178) and *E.* **exigua** (p. 178), Pacific; *E.* **exquisita** (p. 179), Indian Ocean (type), Pacific, and Atlantic; *E.* **freymadli** (*Ptychocylis reticulata* var. *f.* Brandt) (p. 179); *E.* **healdi** (p. 180), Pacific; *E.* **impensa** (p. 180), Indian Ocean (type), Atlantic, and Pacific; *E.* **inconspicuata** (p. 180), Atlantic (type) and Indian Oceans; *E.* **inflata** (p. 181), *E.* **laackmanni** (p. 181) and *E.* **labiosa** (p. 182), Atlantic; *E.* **lata** (p. 182), Pacific; *E.* **lineata** (p. 182), Indian Ocean; *E.* **obtusa** (p. 183) and *E.* **pacifica** (p. 184), Pacific; *E.* **ralumensis** (*Ptychocylis reticulata* var. *r.* Brandt) (p. 184); *E.* **sargassensis** (*Ptychocylis undella* var. *s.* Brandt) (p. 185), emended description; *Ptychocylis* **ostenfeldi** (p. 189), Atlantic; *P.* **wailesi** (p. 190), Brit. Columbia. **PETALOTRICHIDAE** (p. 190), erected for the following: 3 new subfamilies: **CRATERELLINEAE** (p. 190), erected for *Acanthostomella* Jörg. and *Craterella* n. gen.; *Acanthostomella* **conicoides** (p. 191), Pacific; *A.* **elongata** (p. 192), Arctic; *A.* **lata** (p. 192), *A.* **minutissima** (p. 193) and *A.* **obtusa** (p. 194), Pacific; **CRATERELLA** (p. 194), type *C.* **urceolata** (*Tintinnus urceolatus* Ostenfeld) (p. 196); *C.* **acuta** (p. 195), Ionian Sea; *C.* **armilla** (p. 195), Pacific; *C.* **obscura** (*Cyttarocylis o.* Brandt) (p. 196); *C.* **oxyura** (*Amphorella o.* Jörg.) (p. 196); *C.* **protuberans** (p. 196), Pacific; *C.* **torulata** (*Amphorella t.* Jörg.) (p. 196); **METACYLINEAE** (p. 197), n. subf., erected for *Metacylis* Jörg.; *M.* **conica** (p. 198), *M.* **corbula** (p. 199) and *M.* **lucasensis** (p. 199), Pacific; *M.* **mereschkowskii** (p. 200), Black Sea (type) and Atlantic; *M.* **pontica** (*Tintinnus mediterraneus* var. *p.* Mereschkowsky) (p. 200); *M.* **rossica** (p. 201), Black Sea; *M.* **vitreoides** (p. 201), Arctic; **PETALOTRICHINEAE** (p. 202), n. subf. erected for *Petalotricha* Kent; *P.* **foli** (p. 204), Pacific; *P.* **indica** (p. 204), Indian Ocean; *P.* **major** (*P. ampulla* var. *m.* Jörg.) (p. 204); *P.* **pacifica** (p. 205), Pacific; *P.* **serrata** (p. 205), Atlantic (type) and off Australia and New Zealand. **RHABDONELLIDAE** (p. 206), erected for *Protorhabdonella* Jörg., *Rhabdonella* Bdt., and *Rhabdonellopsis* n. gen.; *Protorhabdonella* **mira** (p. 207), Pacific; *P.* **striatura** (p. 208), Atlantic (type) and Pacific; *Rhabdonella* **aberrans** (p. 212), Pacific; *R.* **brandti** (*Ptychocylis amor* v. *cuspidata* Brandt, not *Tintinnus cuspidatus* Zacharias) (p. 213); *R.* **chavesi** (*Ptychocylis spiralis* var. *c.* Brandt) (p. 213); *R.* **chiliensis** (p. 214), Pacific; *R.* **conica** (p. 214), Atlantic (type), Pacific, and Mediterranean; *R.* **cornucopia** (p. 215) and *R.* **exilis** (p. 216), Pacific; *R.* **hydria** (*R. spiralis* v. *elongata* f. *h.* Jörg.) (p. 216); *R.* **indica** (*R. amor* var. *i.* Laack.) (p. 217); *R.* **inflata** (p. 217), Pacific (type) and Adriatic Sea; *R.* **lohmanni** (p. 218), *R.* **quantula** (p. 218) and *R.* **torta** (p. 220), Pacific; *R.* **valdestriata** (*Ptychocylis amor* var. *v.* Brandt) (p. 220); **RHABDONELLOPSIS** (p. 221), type *R.* **apophysata** (*Cyttarocylis hebe* var. *a.* Cleve) (p. 221); *R.* **composita** (*Pty-*

chocylis apophysata var. *c.* Brandt) (p. 222); *R.* intermedia (p. 223) and *R.* longicaulis (p. 223), Pacific; *R.* minima (p. 224), Atlantic (type), Mediterranean, Indian and Pacific Oceans; *R.* triton (*Cyttarocylis t.* Zacharias) (p. 224). **XYSTONELLIDAE** (p. 225), erected for *Parundella* Jörg., *Xystonella* Bdt., and *Xystonellopsis* Jörg.; *Parundella* acuta (p. 226), Pacific; *P.* attenuata (p. 226), Atlantic (type), Mediterranean, and Pacific; *P.* clavus (p. 228), *P.* difficilis (p. 228) and *P.* gigantea (p. 229), Pacific; *P.* grandis (p. 229), Atlantic; *P.* humerosa (p. 230), *P.* inflata (p. 230) and *P.* invaginata (p. 230), Pacific; *P.* lagena (p. 231), off Brit. Columbia; *P.* longa (*Undella aculeata* f. *l.* Jörg.) (p. 231); *P.* major (*Tintinnus translucens* var. *m.* Wailes) (p. 232); *P.* minor (*Tintinnus translucens* var. *m.* Wailes) (p. 232); *P.* praetenuis (p. 233) and *P.* spinosa (p. 233), Pacific; *P.* translucens (*Tintinnus t.* Wailes) (p. 233); *Xystonella* clavata (*X. longicauda* var. *c.* Jörg.) (p. 235); *X.* lohmanni (*Cyttarocylis acus* var. *l.* Brandt) (p. 236); *X.* minuscula (p. 237), *Xystonellopsis* abbreviata (p. 239), *X.* acuminata (p. 239), *X.* clevei (p. 243), *X.* conicacauda (p. 243), *X.* constricta (p. 243) and *X.* crassispinosa (p. 244), Pacific; *X.* cyclas (p. 244), Atlantic (type) and Pacific; *X.* dahli (*Undella ? heros* var. *d.* Brandt) (p. 245); *X.* epigrus (p. 246), Pacific; *X.* gaussi (*Undella heros* var. *g.* Laack.) (p. 246); *X.* heroica (p. 247), Pacific; *X.* inaequalis (p. 247), Atlantic (type) and Pacific; *X.* krämeri (*Undella ? heros* var. *k.* Brandt) (p. 248); *X.* laticincta (p. 248), Pacific; *X.* mascarensis (p. 249), Indian Ocean; *X.* pinnata (p. 249), Pacific. **UNDELLIDAE** (p. 251), erected for *Amplectella* n. gen., *Amplectellopsis* n. gen., *Cricundella* n. gen., *Proplectella* n. gen., *Undella* Daday, and *Undellopsis* n. gen.; **AMPLECTELLA** (p. 251), type *A.* collaria (*Undella c.* Brandt) (p. 253); *A.* ampla (p. 252), Pacific (type) and Atlantic; *A.* insignis (*Undella collaria* var. *i.* Brandt) (p. 253); *A.* monocollaria (*Undella m.* Laack.) (p. 253); *A.* occidentalis (p. 254), *A.* praeacuta (p. 254) and *A.* quadricollaria (p. 254), Pacific; **AMPLECTELLOPSIS** (p. 255), type *A.* biedermanni (p. 256), Pacific; *A.* angularis (p. 255), Pacific; **CRICUNDELLA** (p. 256), type *C.* tridivisa (*Undella t.* Brandt) (p. 258); *C.* quadricincta (p. 257) and *C.* quadridivisa (p. 257), Pacific; *Undella* attenuata (*U. hyalina* f. *a.* Jörg.) (p. 260), emended description; *U.* bulla (p. 260) and *U.* californiensis (p. 261), Pacific; *U.* declivis (p. 261) and *U.* dilatata (p. 262), Atlantic; *U.* hyalinella (p. 263), *U.* ostenfeldi (p. 264), *U.* parva (p. 264), *U.* peruana (p. 265), *U.* pistillum (p. 265) and *U.* turgida (p. 266), Pacific; **UNDELLOPSIS** (p. 266), type *U.* marsupialis (*Undella m.* Brandt) (p. 269); **UNDELLOPSIS** (p. 267), n. subg. of genus *Undellopsis; U.* cubitum (p. 268), *U.* entzi (p. 268) and *U.* insignata (p. 268), Pacific; *U.* lineata (p. 269), Atlantic; *U.* pacifica (p. 270), Pacific; *U.* subangulata (*Undella marsupialis* f. *s.* Jörg.) (p. 270); **UNDELLICRICOS** (p. 271), n. subg. of genus *Undellopsis*, type *U.* bicollaria (p. 271), Atlantic (type) and Pacific; *U.* anularius (p. 271, also p. 374) [*annularis*, erratum, p. 374], Pacific; *U.* tricollaria (*Undella t.* Laack.) (p. 272); *U.* umbilicata (p. 272), Pacific; **PROPLECTELLA** (p. 272), type *P.* claparèdei (*Tintinnus claparèdii* Entz, Sr.) (p. 276); *P.* acuta (*Undella subacuta* f. *a.* Jörg.) (p. 273); *P.* amphora (p. 273), Pacific; *P.* angustior (*Undella claparèdei* var. *a.* Jörg.) (p. 275); *P.* biangulata (p. 276), Pacific; *P.* columbiana (*Undella c.* Wailes) (p. 276); *P.* cuspidata (p. 277) and *P.* ellipsoida (p. 277), Pacific; *P.* fastigata (*Undella claparèdei* f. *f.* Jörg.) (p. 278), emended description; *P.* globosa (*Undella claparèdei* var. *g.* Brandt) (p. 278); *P.* grandis (*Undella claparèdei* var. *g.* Laack.) (p. 279); *P.* ostenfeldi (p. 279), Pacific; *P.* ovata (*Undella claparèdei* f. *o.* Jörg.) (p. 280); *P.* parva (p. 280), Pacific; *P.* pentagona (*Undella subacuta* var. *p.* Jörg.) (p. 281); *P.* perpusilla (p. 281) and *P.* praelonga (p. 282), Pacific; *P.* subacuta (*Undella s.* Cleve) (p. 282); *P.* subangulata (p. 282), Pacific; *P.* subcaudata (*Undella subacuta* var. *subcaudata* Jörg.) (p. 283); *P.* tenuis (p. 283), Atlantic; *P.* tumida (p. 284) and *P.* urna (p. 284), Pacific; Dictyocystidae: *Dictyocysta* ampla (p. 287), Mediterranean (type) and Pacific; *D.* californiensis (p. 288), Pacific; *D.* dilatata (*D. mitra* var. *d.* Brandt) (p. 288); *D.* duplex (*D. templum* var. *d.* Brandt) (p. 289); *D. elegans* Ehrenberg (=*D. templum* v. *disticha* Jörg., *D. elegans* f. *varians* Jörg.), emended description; *D.* extensa (p. 291), Atlantic; *D.* fenestrata (p. 291), Pacific; *D.* fundlandica (*D. lepida* var. *f.* Ehrenberg) (p. 291); *D.* grandis (*D. templum* var. *g.* Brandt) (p. 292); *D.* inaequalis (p. 293), *D.* lata (p. 293) and *D.* magna (p. 294), Atlantic; *D.* mexicana (p. 295), Pacific; *D.* minor (*D. mitra* var. *m.* Jörg.) (p. 295); *D. mülleri* Imhof, emended description; *D.* nidulus (p. 297), Atlantic; *D.* obtusa (*D. mitra* f. *o.* Jörg.) (p. 298); *D.* occidentalis (p. 298) and *D.* pacifica (p. 299), Pacific; *D.* polygonata (p. 299), Pacific (type) and Atlantic; *D.* reticulata (p. 300), Indian Ocean (type), Atlantic, and Pacific; *D.* speciosa (*D. elegans* var. *s.* Jörg.) (p. 300); *D.* spinosa (p. 301), Pacific. Tintinnidae: **AMPHORELLINEAE** (p. 303), n. subf. erected for *Amphorella* Daday and the following new genera: *Albatrossiella, Amphorellopsis, Bursaopsis, Canthariella, Dadayiella, Odontophorella, Steenstrupiella;* **BURSAOPSIS** (p. 303), type *B.* striata (*Amphorella s.* Daday) (p. 303); *B.* bursa (*Amphorella b.* Cleve) (p. 304); *B.* fergusonii (*Tintinnus f.* Ryder) (p. 304); *B.* obliqua (*Tintinnus obliquus* Cl. & Lach.) (p. 305); *B.* punctostriata (*Amphorella p.* Daday) (p. 305); *B.* quinquealata (*Tintinnus quinquealatus* Laack.) (p. 305); *B.* vitrea (*Tintinnus vitreus* Brandt) (p. 305); **CANTHARIELLA** (p. 305), type *C.* brevis (p. 306), Pacific; *C.* pyramidata (*Amphorella p.* Jörg.) (p. 306); *C.* septinaria (p. 307), Pacific; *C.* truncata (p. 307), Pacific; *Amphorella* brandti (*A. quadrilineata* var. *b.* Jörg.) (p. 309); *A.* calida (p. 309), Indian Ocean; *A.* infundibulum (p. 310), Atlantic; *A.* minor (*A. quadrilineata* var. *m.* Jörg.) (p. 310); **STEENSTRUPIELLA** (p. 311), type *S.* steenstrupii (*Tintinnus s.* Cl. & Lach.) (p. 314); *S.* entzi (p. 312), Mediterranean; *S.* gracilis (*Amphorella g.* Jörg.) (p. 313); *S.* intumescens (*Amphorella i.* Jörg.) (p. 313); *S.* robusta (p. 313), Pacific; **AMPHORELLOPSIS** (p. 314), type *A.* acuta (*Amphorella a.* Schmidt) (p. 315); *A.* acantharus (p. 315), *A.* laevis (p. 316) and *A.* quadrangula (p. 316), Pacific; *A.* tetragona (*Amphorella t.* Jörg.) (p. 316); *A.* tropica (p. 316) and *A.* turbinea (p. 317), Pacific; **ODONTOPHORELLA** (p. 317), type *O.* serrulata (p. 317), Pacific; **ALBATROSSIELLA** (p. 318), type *A.* filigera (*Undella f.* Laack.) (p. 318); *A.* agassizi (p. 318), Pacific; *A.* minutissima (*Amphorella m.* Meunier) (p. 318); **DADAYIELLA** (p. 319), type *D.* ganymedes (*Tintinnus g.* Entz, Sr.) (p. 321); *D.* acuta (*Amphorella ganymedes* v. *tenuicauda* f. *a.* Jörg.) (p. 320); *D.* bulbosa (*Tintinnus bulbosus* Brandt) (p. 320); *D.* curta (p. 320) and *D.* cuspis (p. 320), Pacific; *D.* jörgenseni (p. 321), English Channel; *D.* pachytoecus (*Amphorella p.* Jörg.) (p. 321); **STELIDIELLINEAE** (p. 321), erected for *Ormosella, Brandtiella,* and *Stelidiella;* **ORMOSELLA** (p. 322), type *O.* cornucopia (*Tintinnus conicus* Brandt, not Dixon & Joly) (p. 323); *O.* apsteini (p. 323), *O.* bresslaui (p. 323), *O.* haeckeli (p. 324), *O.* schmidti (p. 324) and *O.* schweyeri (p. 324), Pacific; *O.* trachelium (*Amphorella t.* Jörg.) (p. 324); **BRANDTIELLA** (p. 325), *B.* palliata (*Tintinnus palliatus* Brandt) (p. 325); **STELIDIELLA** (p. 326), type *S.* stelidium (*Tintinnus s.* Biedermann) (p. 327); *S.* fenestrata (p. 327), *S.* phialia (p. 327) and *S.* simplex (p. 327), Pacific; **TINTINNINEAE** (p. 327), n. subf. erected for *Epicranella, Daturella,* and *Salpingacantha,* n. genera, *Salpingella* Jörg., and *Tintinnus* Schrank; *Tintinnus* apertus (p. 331), Norway; *T.* at-

maculatus (*T. fraknoi* v. *maculata* Brandt) (p. 335); *T.* medius (p. 336), Pacific (type), Atlantic, and Indian Oceans; *T.* mirabilis (p. 336), Alaska; *T.* pacificus (p. 337), Pacific; *T.* pectinis (*T. serratus* Kofoid, not Möbius) (p. 337); *T.* perminutus (p. 337), Pacific (type) and Mediterranean; *T.* pinguis (p. 338) and *T.* procurrerens (p. 338), Pacific; *T.* rectus (*T. lusus-undae* var. *r.* Wailes) (p. 338); *T.* rugosus (p. 339), *T.* stramentus (p. 339), *T.* tenue (p. 339) and *T.* tubiformis (p. 340), Pacific; *T.* turgescens (p. 341), Pacific (type) and Atlantic; *T.* turris (p. 342), Alaska; **DATURELLA** (p. 342), type *D.* datura (*Tintinnus d.* Brandt) (p. 344); *D.* angusta (p. 344), Atlantic (type) and Mediterranean; *D.* emarginata (*Tintinnus emarginatus* Brandt) (p. 344); *D.* gaussi (p. 344), Atlantic; *D.* magna (p. 345), *D.* ora (p. 345), *D.* recta (p. 345), *D.* stramonium (p. 346) and *D.* striata (p. 346), Pacific; **RHABDOSELLA** (p. 347), n. subg. of *Salpingella*, type *S.* octogenata (p. 347), Pacific, including also *S.* cuneolata (p. 347), Pacific; **SALPINGELLA** (p. 349), n. subg. of *Salpingella*, type *Tintinnus acuminatus* Cl. & Lack., including also the following: *S. acuminatoides* Laack.); *S.* alata (p. 350), Atlantic; *S.* altiplicata (*Tintinnus acuminatus* v. *altiplicatus* Merkle) (p. 351); *S.* attenuata (*S. acuminata* ssp. *glockentögeri* var. *a.* Jörg.) (p. 351); *S.* costata (*Tintinnus costatus* Laack.) (p. 351); *S.* curta (p. 352), Baltic (type) and Pacific; *S. decurtata* Jörg.; *S.* expansa (p. 352) and *S.* faurei (p. 352), Pacific; *S.* glockentögeri (*Tintinnus acuminatus* var. *g.* Brandt) (p. 353); *S.* gracilis (p. 353) and *S.* jugosa (p. 353), Pacific; *S.* laackmanni (*Tintinnus acuminatoides* v. *secata* Laack., not *T. secatus* Brandt) (p. 353); *S.* lineata (*Tintinnus inquilinus* v. *lineatus* Entz, Sr.) (p. 354); *S.* minutissima (p. 354), Pacific; *S.* regulata (*Tintinnus regulatus* Brandt) (p. 354); *S.* ricta (p. 354), Pacific; *S.* rotundata (p. 354), Pacific; *S.* secata (*Tintinnus secatus* Brandt) (p. 355); *S.* subconica (p. 355), Pacific; **SALPINGACANTHA** (p. 355), type *S.* undata (*Tintinnus acuminatus* v. *undatus* Jörg.) (p. 358); *S.* ampla (p. 356), *S.* crenulata (p. 357), *S.* exilis (p. 357) and *S.* perca (p. 357), Pacific; *S.* simplex (p. 357), Atlantic; *S.* unguiculata (*Tintinnus undatus* v. *unguiculatus* Brandt) (p. 358); **EPICRANELLA** (p. 358), type *E.* prismatica (p. 359), Pacific; *E.* bella (p. 358), Pacific. The following new combinations are also included: *Leprotintinnus* neriticus (*Tintinnus n.* Campbell) (p. 17); *L.* nordqvisti (*Tintinnopsis n.* Brandt) (p. 17); *Tintinnopsis* bornandi (*Codonella b.* Daday) (p. 29); *Codonella* laticollis (*Cyttarocylis l.* Daday) (p. 62); *Stenosemella* avellana (*Tintinnopsis a.* Meunier) (p. 69); *S.* expansa (*Tintinnopsis e.* Wailes) (p. 69); *S.* nivalis (*Tintinnopsis n.* Meunier) (p. 69), emended description; *S.* oliva (*Tintinnopsis o.* Meunier) (p. 70); *S.* producta (*Tintinnopsis p.* Meunier) (p. 71); *S.* punctata (*Tintinnopsis p.*, partim, Wailes) (p. 71); *Codonellopsis* biedermanni (*Codonella b.* Brandt) (p. 75); *C.* brevicaudata (*Codonella b.* Brandt) (p. 77); *C.* bulbulus (*Tintinnopsis b.* Meunier) (p. 77); *C.* ecaudata (*Codonella e.* Brandt) (p. 79); *C.* gaussi (*Leprotintinnus g.* Laackmann) (p. 79); *C.* glacialis (*Leprotintinnus g.* Laack.) (p. 79); *C.* ostenfeldi (*Codonella o.* Schmidt) (p. 84); *C.* pusilla (*Codonella p.* Cleve) (p. 87); *Climacocylis* sipho (*Cyttarocylis s.* Brandt) (p. 94); *Coxliella* tubularis (*Amphorella t.* Meunier) (p. 102); *Helicostomella* fusiformis (*H. subulata* var. *f.* (Meunier) Jörg.) (p. 105); *H.* kiliensis (*H. subulata* var. *k.* Jörg.) (p. 105); *Cyttarocylis* acuminata (*Dictyocysta a.* (Ehrbg.) Brandt) (p. 109); *Cymatocylis* antarctica (*Amphorella a.* Cleve) (p. 123); *Favella* campanula (*F. azorica* var. *c.* Jörg.) (p. 151); *Epiplocylis* mucronata (*Tintinnus mucronatus* Zach.) (p. 183); *Ptychocylis* repanda (*Cyttarocylis r.* Wailes) (p. 189); *Acanthostomella* gracilis (*Tintinnus g.* Brandt) (p. 192); *Metacylis* annulata (*Amphorella a.* Meunier) (p. 197); *M.* annulifera (*Cyttarocylis a.* Ostenf. and Schmidt) (p. 198); *M.* jörgensenii (*Codonella j.* Cleve) (p. 199); *Protorhabdonella* ventricosa (*Cyttarocylis v.* Schmidt) (p. 209); *Rhabdonella* cuspidata (*Tintinnus cuspidatus* Zach.) (p. 215); *R.* hebe (*Cyttarocylis h.* Cleve) (p. 216); *Parundella* caudata (*Tintinnus caudatus* Ostenf.) (p. 228); *P.* lachmanni (*Undella l.* Daday) (p. 231); *P.* pellucida (*Undella p.* Jörg.) (p. 235); *Xystonellopsis* dicymatica (*Xystonella d.* Brandt) (p. 245); *X.* dilatata (*Xystonella d.* Brandt) (p. 246); *X.* hastata (*Tintinnus hastatus* Biederm.) (p. 247); *X.* heros (*Undella h.* Cleve) (p. 247); *X.* ornata (*Xystonella o.* Brandt) (p. 249); *X.* pulchra (*Cyttarocylis p.* Kofoid) (p. 250); *X.* tenuirostris (*Undella t.* Brandt) (p. 250); *X.* torta (*Cyttarocylis t.* Kofoid); *Undellopsis* marsupialis (*Undella m.* Brandt) (p. 269), emended description; *Amphorella* amphora (*Tintinnus a.* Clap. & Lachm.) (p. 309). There is a systematic index to families, subfamilies, genera, subgenera, spp., subspp., and forms. There is an errata list.

17483. KUDO, RICHARD R. Handbook of protozoology. 451p. Charles C. Thomas: Springfield, Illinois, 1931. Price $5.50.—Provides an authoritative, concise handbook of introductory information on the common and representative genera of all the groups of free-living and parasitic Protozoa. Three chapters outline the morphology, physiology, and reproduction. The remaining 30 chapters survey chiefly the taxonomy of the Protozoa by means of illustrations, keys, literature references, etc. Differentiation is carried down to species in the case of some of the more important forms.—*L. L. Woodruff.*

17484. LACORTE, J. G. Influence du pH dans les colorations par la méthode de Giemsa. *Compt. Rend. Soc. Biol.* 98(17): 1579-1580. 1928.—Optimum pH for staining of trypanosomes is given as 7.4, time 1 hr.

17485. LEPȘI, I. Despre Protozoare din apele sărate ale României. [Protozoa from the salt waters of Rumania.] *Intâil Congr. Nat. Naturalist. Romînîs* 1: 246-269. 4 fig. 1928(1930).—Twenty-one rhizopods, 30 flagellates, and 76 ciliates have been recorded.

17486. LIEBUS, A. Neue Beiträge zur Kenntnis der Eozänfauna des Krappfeldes in Kärnten. *Jahrb. Geol. Bundesanstalt Wien.* 77(3/4): 333-392. 3 pl., 4 fig. 1927.—The fossils of the Eocene deposits of the Krappfeld in Carinthia, have been the subject of numerous investigations. The present is the first published account of the rich microfauna of the gastropod marl. The bulk of the fossils found were foraminifera together with some Ostracoda, echinoderm spines, otoliths of fish and poorly preserved, distorted Gastropoda and bivalves. One hundred and ninety species of foraminifera were identified including *Frondicularia* carinthiaca* (p. 359); *Bulimina imbricata* v. procera* (p. 368); *Vaginulina* eocaena* (p. 361); *Plectofrondicularia* quadrilatera* (p. 367); *Sagrina* conulus* (p. 369); *Dimorphina* kahleri* (p. 371); *Ellipsodimorphina* complanata* (p. 372); *E.* cylindrica* (p. 372). The resemblance to certain foraminifera of the Cretaceous was very striking. The otoliths included 3 probably belonging to ganoids: *Otolithus* (*Berycidarum* ?) carinthiacus* (p. 381); *O.* (*Ganoidarum*) obovatus* (p. 383); *O.* (*Ganoidarum*) dentatus* (p. 384); *O.* (*Ganoidarum*) ovatus* (p. 384); *O.* (*Percidarum* ?) guttaringensis* (p. 385).—*A. Liebus* (*transl. by H. Sandon*).

17487. LOMBART, H. Un trypanosome non pathogène trouvé chez "Graphiurus murinus" au Katanga. *Ann. Soc. Belge Méd. Tropic.* 11(2): 209-212. 2 fig. 1931.—*Trypanosoma* graphiuri* (p. 209) is reported in the blood of the rodent *G. murinus*, in Katanga. It differs from *Trypanosoma lewisi* in the absence of a long fine point at the posterior extremity and in the median location of the nucleus. Inoculation of a rat and a mouse with infected heart blood gave negative results.

17488. LUDWIG, WILHELM. Über die Empfindlichkeitsgrenzen des Plasmas der Protozoen. *X^e Congres Internation. de Zool. à Budapest 1927.* Part I. p. 583-590. 1929.—In order to determine the effectiveness of extremely dilute solutions, attempts were made to influence the division rate of *Paramecium* with solutions of heavy metals, especially with silver nitrate solutions of potency 1-49. Carefully controlled experiments were several times repeated under parallel conditions, though always in

different watch glasses. The first set of these experiments in almost all potencies except those that were fatal, gave an increase in division rate; but these results were undoubtedly due to other causes as they were not again found, normal division being found in all dilutions except in the fatal potencies. A repetition of Junker's experiments on *Paramecium* failed to confirm his results, but showed a similar absence of effect of the most dilute solutions. Silver nitrate kills *Paramecium* in a dilution of 2,000,000 mol. per liter. *Paramecium* reacted to solutions of 10^{-8} g./ccm. ($=5.10^{-8}$ mol./1) usually temporarily, and in strongly hypotonic media were killed by 10x weaker solutions, so that the concentrations corresponding to the limit of sensitivity lie between 10^{-8} and 10^{-7} mol. in the liter. The phenomena occurring at the death of *Paramecium* in solutions of 10^{-1} to 10^{-7} were analyzed. Ten % silver solution fixes the cell instantaneously and rigidly because the pellicle becomes at once permeable and sieve-like, and the strong solution penetrates to the inside and coagulates the cell contents. In weaker solutions the firmness of the pellicle is destroyed and the cell contents tend to round out before death. In the weakest potencies, the water intake is increased and the contractile vacuoles are no longer able to compensate for this increase. Thus the internal pressure increases, the pellicle liquefies in places, and the death of the cell follows as a result.—*M. L. Austin.*

17489. MANGIN, L. Sur quelques peches planctoniques des mers de Chine et du Japon. *Bull. Mus. Nation. Hist. Nat. Paris* 1928(5): 371-380. 7 fig. 1928.—Several lists of dinoflagellates taken in Japanese waters. *Peridinium occanicum* v. **inaequipes*** (p. 376); *P.* **longispinum*** (p. 376); *P.* **obtusum*** (p. 377); *P.* **exiguipes*** (p. 377); *P.* **obliquum*** (p. 378); *P.* **obtusipes*** (p. 379); the diatom, *Coscinodiscus* **cylindricus*** (p. 379).

17490. MILLS, SYLVIA M. The effect of the H-Ion concentration on protozoa, as demonstrated by the rate of food vacuole formation in Colpidium. *Jour. Exp. Biol.* 8(1): 17-30. 1931.—The effect of the pH of the medium was determined quantitatively by counting the average number of food vacuoles formed per unit time when *Colpidium* was supplied with India ink. The rate of feeding was plotted against the pH of the medium; the curve rises steadily from pH 4.5 to a maximum at pH 6.0 and then falls gradually through the alkaline range; there is, in addition, a characteristic depression at pH 7.5-8.5. Methods for measuring the rate of movement of ciliates are described. The effect of changes in the pH of the medium on the movement of *Colpidium* corresponded very closely to the effect on the rate of food ingestion. It is suggested that changes in the rate of ciliary movement are largely responsible for changes in the rate of food ingestion. Mucus is shown to have a maximum viscosity at pH 8.0. It is suggested that the depression in the region of pH 8.0 seen in curves representing changes in the rate of feeding and movement with pH, indicate that the viscosity of the fluid in which the cilia are beating is one of the limiting factors in the rate of food ingestion.—*J. M. Robson.*

17491. PAULSEN, OVE. Études sur le microplancton de la mer d'Alboran. *Trab. Inst. Español Oceanogr.* No. 4. 1-108. 61 fig. 1930.—Plankton collections from the Mediterranean in the vicinity of Malaga are discussed. Bacillariales: 67 spp. are considered; *Thalassiosira* **hispanica*** (p. 7); *Schroederella schroederi** (Bergon) is distinct from *S. delicatula; Bacteriastrum hyalinum*; Chaetoceras rostratus*; C. convexicornis*; C. lorenzianus*; C. teres*; C. lauderi*; C. laciniosus*; C.* **diadema*** (*Syndendrium d.* Ehrenberg = *C. paradoxum* Cleve = *C. clevei* Schütt.) (p. 21); *C. wighami*; C. curvisetus*; C. pseudocurvisetus*; C. costatus**. Peridiniales: Prorocentraceae, 5 spp. are considered. Dinophysiaceae: 15 spp. are considered; *Phalacroma rotundatum*; Dinophysis sacculus*; D. caudata* v. *abbreviata**. Peridiniaceae: 86 spp. are considered; *Ceratocorys armata*; C.* **kofoidi*** (p. 36); *C.* **gourreti*** (p. 36); *Goniodoma sphaericum*; Goniaulax* sp.*; Spiraulax jolliffei*; Diplopsalis asymmetrica* (Mangin) (= *Diplopelta bomba* (Stein)). The genus *Peridinium* is divided into 2 subgenera. Subgenus *Archaeperidinium* contains section **AVELLANA** (p. 43), based on *P.* **abei** (p. 53), n. n. for *P. biconicum* Abé, *P. avellana, P. levanderi, P. minutum, P. quinquecorne* (?), *P. thorianum,* and *P. ventricum;* and section **EXCENTRICA** (p. 54), based on *P. excentricum* and *P. grenlandicum.* Subgenus **VEROPERIDINIUM** (p. 54) contains sections *Pellucida, Humilia, Piriformia, Tabulata, Divergentia, Oceanica, Conica,* and **PARADIVERGENTIA** (p. 55), based on *P. areolatum, P. spinosum,* and *P. solidicorne. P.* (*A.*) **schilleri*** (p. 56) belongs to section *Pellucida,* near *P. pallidum**. *P. diabolus**. *P.* **simulum*** (p. 58), n. n. for *P. globulus* Broch is in section *Humilia. P. globulus*; P. quarnerense*; P. mite*; P. oviforme*; P. longicollum*; P. crassipes*; P. oceanicum*; P. claudicans*; P. grande*; P.* **marielebourae*** (p. 69) n. n. for *P. obtusum* Fauré-Fremiet, is in section *Conica. P. leonis*; P. subinerme*; P. punctulatum*; P. biconicum** Dangeard; *Ceratium praelongum*; C. furca*; C. tripos*; C. pulchellum*; C. symmetricum*; C. declinatum* v. *majus*; C. concilians*; C. karstenii*; C. ranipes*; C. macroceros*; C. massiliense*; C. protuberans*; C. carriense*; C. contrarium*; C. horridum*; C.* **tenuissimum*** (*C. horridum buceros* f. *tenuissimum* (Kof.)) (p. 93); *C.* **denticulatum*** (*C. horridum buceros* v. *denticulatum* Jörgensen) (p. 93). In addition the material collected included 1 Silicoflagellata, 1 Flagellata, 1 Chlorophyceae, 14 Tintinnidae. The bibliography contains 141 references.

17492. PETERS, FRITZ. Eine einfache Methode zur Betäubung von Rädertieren, Paramaecien usw. in ausgestrecktem Zustande. *Zool. Anz.* 87(1/2): 18-20. 1930.—The use of vapor of pyroligneous acid for narcotizing various microorganisms without killing or permanently injuring them, is described. The method is said to be rapid and easy to use; the acid is merely brought into the immediate vicinity of the water containing the organisms. The author gives a table showing exposure times and duration of narcotization for different rotifers. *Paramecium, Stylonychia,* and *Volvox* were narcotized with like results.—*G. H. Ball.*

17493. PINTO, CESAR. Synonymie de quelques espèces du genre Eimeria (Emeridia, Sporozoa). *Compt. Rend. Soc. Biol.* 98(17): 1564-1565. 1928.—*Eimeria falciformis* (Eimer, 1870) (= *Pfeifferella schubergi* (Labbe 1896)); *E.* **schaudinniana** n.n. (*Coccidium schubergi* Schaudinn), *E.* **labbeana** n.n. (*Coccidium pfeifferi* Labbe), *E.* **stankovitchi** n.n. (*Goussia legeri* Stankovitch 1920).

17494. PINTO, CESAR. Classification des Sporozoaires de la sous-classe Eimeridia. *Compt. Rend. Soc. Biol.* 98(17): 1571-1573. 1928.—A revision of the classification of Léger (1911) in which the order Coccidiomorpha Dof. is raised to a subclass and renamed **EIMERIDIA** (p. 1571) to contain 2 orders. The suborder Coccidiida Labbé is raised to an order and renamed **EIMERIIDA** (p. 1571); containing one superfamily **EIMERIOIDEA** (p. 1572), and 11 families: Eimeriidae, containing *Eimeria, Bananella, Crystallospora, Jarrina,* and *Mitrocystis;* Isosporidae [claimed as new, but already proposed by Minchin in 1903] for *Isospora* A. Schn. (= *Diplospora* Labbé); Caryosporidae containing only *Caryospora;* **BARROUSSIIDAE** (p. 1572), containing *Barroussia, Echinospora, Urobarrouxia,* and *Merocystis;* Caryotrophidae, containing only *Caryotropha;* **MYRIOSPORIDAE** (p. 1572), based on *Myriospora;* Angeiocystidae, containing only *Angeiocystis;* Cryptosporidiidae, containing only *Cryptosporidium;* Cyclosporidae, containing only *Cyclospora;* **PFEIFFERINELLIDAE** (p. 1572), containing only *Pfeifferinella;* and Aggregatidae containing only *Aggregata.* Order Adeleida contains one superfamily **ADELEOIDEA** (p. 1572) and 6 families: Adeleidae containing *Adelea* and *Adelina;* **KLOSSIIDAE,** containing *Klossia, Orcheobius,* and *Cariniella;* **CHAGASELLIDAE** (p. 1573), based on *Chagasella;* Klossiellidae, containing *Klossiella;* Dobellidae, containing only *Dobellia;* and Legerellidae,

containing only *Legerella*. *Diaspora* Léger, *Pseudoklossia* Léger and *Selysina* Duboscq are not placed.

17495. **PRINGSHEIM, E. G. Untersuchungen an Paramaecium bursaria über die Symbiosefrage.** *Congrès Internation. Xe Zool. à Budapest 1927*. Part 2. pp. 906-907. 1929.—*Paramecium bursaria*, if it contains zoochlorellae, maintains itself and even multiplies in medium containing no formed food. In very crowded cultures, in the light, oxygen used by paramecium is derived from the symbionts. The value of the relation to the algae is uncertain, but it has not been possible to cultivate them separately from the paramecia, whereas the latter can be cultivated alone.—*G. Alexander.*

17496. **RAY, HARENDRA NATH. Studies on some Sporozoa in polychaete worms. 1. Gregarines of the genus Selenidium.** *Parasitology* 22(3): 370-396. 4 pl., 3 fig. 1930.—Results are given of detailed studies of the parasites found at Plymouth, England. The main facts in Brasil's (1907) account of the intracellular schizogony in *Selenidium caullery*i* from *Protula tubularia* are confirmed. Intracellular schizogony is described in *S. mesnili* Brasil from *Myxicola infundibulum*, and early stages in sporogony of this and the preceding species are described for the first time. The life histories of Caullery and Mesnil's 2 unnamed spp. of *Selenidium* (*S. spionis* (Koll.) and *S.* foliatum (p. 382)) were exhaustively studied. No schizogonic phase was seen in either. The gametocysts, described for the first time, develop fully only after escape into the sea. The gametocysts of *S. spionis* are ovoid, 108$\mu \times 60\mu$, and contain spores with 4 sporozoites; those of *S. foliatum* are spherical, 70μ in diam., and their spores contain 8 sporozoites. Precocious association is observed in *S. foliatum:* The 2 associates are of very different sizes; the larger is 230-250$\mu \times$ 40-50μ, the smaller 40-50$\mu \times$15-30μ, and when stained intra vitam with neutral red, the cytoplasm of the shorter of the 2 behaves differently from that of the longer and shows innumerable pink granules. New or hitherto little known spp. of *Selenidium* are recorded, including: *S.* plicatum* (p. 387), in *Cirratulus cirratus; S.* branchiommatis* (p. 388) and *S.* alleni* (p. 388), in *Branchiomma vesiculosum; S.* brasili* (p. 390), from intestine of *Pomatoceros triqueter; S. sabellae*, from the digestive tube of *Sabella pavonina; S. terebellae* from the gut of *Terebella lapidoria*. A discussion of the value of the diagnostic characters of the genus follows. It is suggested that *Selenidium* requires drastic revision and will probably have to be dismembered. The occurrence of characteristic chromatin bodies in the posterior end of all gregarines examined, is stressed; these bodies have apparently hitherto escaped the attention of most students.—*H. N. Ray.*

17497. **RAY, HARENDRA NATH. Studies on some Sporozoa in polychaete worms. II. Dorisiella scolelepidis, n. gen., n. sp.** *Parasitology* 22(4): 471-480. 2 pl., 1930.—The organism dealt with here is the first gut-inhabiting organism remotely resembling Coccidia that has ever been described in detail from an annelid worm. The chief characters are: Chromatic granules present at the anterior end at all stages; 2 types of schizogony, with merozoites arranged "en barillet"; the macrogametocytes are migratory; no oocyst is developed round the zygote; two spores are formed, each containing 8 sporozoites. **DORISIELLA,** type *D.* **scolelepidis*** (p. 478), in the epithelial cells of the gut of *Scolelepis fuliginosa* Clpde.—*H. N. Ray.*

17498. **ROSKIN, GR. Neue Flagellatenarten.** *Arch. Protistenk.* 73(2): 203-205. 5 fig. 1931.—*Acinetactis* **polymorpha*** (p. 203); *Anisonema* **obliquum*** (p. 203); *Urceolus* **ovatus*** (p. 204); *Actinomonas* **radiosa*** (p. 204); *Codonosiga* **ornata*** (p. 205); all from the Moscow region.—*L. E. Noland.*

17499. **SILVESTRI, A. Nummuliti, Operculina e Planorbullina di Derna nella Cirenaica.** *Mem. Pont. Accad. Sci. Nuovi Lincei Ser.* 2. 11: 263-278. 1 pl., 3 fig. 1928.—Describes and pictures the following Eocene (Lutetian) foraminifera: *Nummulites atacica*, N. laevigata*, *Operculina pyramidum*, *Planorbulina nodosa**. Bibliography.—*F. Anderegg.*

17500. **VALKANOV, A. Beitrag zur Morphologie und Karyologie der Microcometes paludosa Cienk.** *Arch. Protistenk.* 73(3): 367-370. 5 fig. 1931.—Cases formed by *M. paludosa* are homaxial when formed free from the substrate, monaxial when formed against the coverglass. There is no chromidial ring and the nucleus is central. The nucleolus disappears completely at cell division. The chromosomes arise on the net-knots of the outer part of the nucleus. Figures of metaphase and anaphase are given. Comparison is made with the closely related Microgromia.—*L. E. Noland.*

17501. **VAUGHAN, THOMAS WAYLAND. New species of Operculina and Discocyclina from the Ocala limestone.** *Florida Geol. Survey Ann. Rep.* 1926-1927: 155-162. 2 pl. 1928.—Discusses specific and varietal nomenclature, and lists and describes the following large foraminifera from the Eogene Ocala limestone of Florida and Georgia: *Operculina* **mariannensis*** (p. 158), *Discocyclina* (*Discocyclina*) **citrensis*** (p. 159), *D. bainbridgiensis**, and *Asterocyclina* **chipolensis*** (p. 161).—Bibliography.—*F. Anderegg.*

17502. **VAUGHAN, THOMAS WAYLAND. Descriptions of new species of Foraminifera of the genus Discocyclina from the Eocene of Mexico.** *Proc. U. S. Nation. Mus.* 76(3): 1-18. 7 pl. 1929.—Nine species and varieties referred to the genus *Discocyclina* are described and figured. A key to the various species is given as well as a review of numerous other species described from America. These species do not include the Mexican forms which belong to the subgenus *Asterocyclina* Gümbel. Types in Nat. Mus. *Discocyclina* **weaveri*** (p. 6), Chicontepec formation; *D.* **perpusilla*** (p. 9), Guayabal formation; *D.* **cushmani*** (p. 11); *D.* **zaragosensis*** (p. 13); *D.* **cloptoni*** (p. 14), Tepetate formation; *D.* **stephensoni*** (p. 16); *D.* **palenquensis*** (p. 17); *D. weaveri* v. **parvipapillata*** (p. 7), Chicontepec formation.—*J. A. Cushman.*

17503. **VLERK, I. M. van der. The genus Lepidocyclina in the Far East.** *Eclogae Geol. Helvetiae* 21(1): 182-211. 18 pl. 1928.—The subgenera of *Lepidocyclina* are discussed, including the new subg. **TRYBLIOLEPIDINA** (p. 183), type *L.* (*T.*) **orientalis** (*Lepidocyclina munieri* v. *o.*). Keys are given to the subgenera, and to the 50 species described and figured including *L.* (*Isolepidina*) **boetonensis*** (p. 191), E. Indies, Eocene. This species is the only *Isolepidina* known from the region. Three tables list in detail the various characters of the species.—*W. Berry.*

17504. **WEINECK, ERWIN. Die chemische Natur der Skelettsubstanzen bei den Ophryoscoleciden.** *Jenaische Zeitschr. Naturwiss.* 65(3): 739-751. 1 pl. 1931.—The outer skeleton, the pellicula, is of silicic acid, in the form of silica gel. The inner skeleton of plates is chemically complex. The alveolar walls are of a fairly resistant carbohydrate, apparently of the cellulose group. The alveolar content is of a less resistant carbohydrate, identified as the substance described as paraglycogen by Bütschli from the entoplasma of *Clepsidrina blattarum*. It is a nutritive material.—*Author's summary* (*transl.*).

17505. **WHITE, M. P. Some index Foraminifera of the Tampico Embayment area of Mexico.** *Jour. Paleontol.* 2(3 and 4): 177-215, 3 pl., 1 fig.; 280-317, 5 pl. 1928; 3(1): 30-58. 2 pls. 1929.—The Tampico Embayment area comprises the portion of the Gulf Coastal Plain extending from the Tamaulipas Mts. to a short distance south of the Panuco River. There is a warm belt of Tertiary sediments along the coast but the remainder is made up of Cretaceous sediments. Foraminifera are abundant and there are practically no other fossils. As the northern oil fields of Mexico are in this region the Foraminifera are of great importance as a means of correlation especially as outcrops are scarce and lithologic distinctions difficult to make. The Up. Cretaceous formations include the Velasco, the Mendez, the Papagallos, and the San Felipe in descending order. These

overlie the Tamaulipas limestone of the Lr. Cretaceous, from which most of the petroleum is derived. Several hundred species occur in the Up. Cretaceous formations but of these only 143 are included in the present study. Types of new species are in the Paleontological Coll. Columbia Univ. *Psammosphaera* **laevigata*** (p. 183); *Kalamopsis* **dubia*** (p. 185); *Globigerina* **angulata*** (p. 191); *G.* **belli*** (p. 192), Mendez formation; *G.* **mckannai*** (p. 194); *G.* **pseudotriloba*** (p. 194); *G.* **quadrata*** (p. 195), Mendez; *G.* **triangularis*** (p. 195); *G. velascoensis* v. **compressa*** (p. 196); *G.* **voluta*** (p. 197), Mendez; *Lenticulina* **velascoensis*** (p. 199); *Astacolus* **velascoensis*** (p. 202); *Frondicularia* **elongata*** (p. 205), Mendez; *Lagena aspera* v. **apiculata*** (p. 208); *Oolina simplex* v. **lacrima*** (p. 211); *Polymorphina* **mendezensis*** (p. 213); *Globotruncana canaliculata* v. **ventricosa*** (p. 284), Papagallos formation; *G.* **conica*** (p. 285) and *G. c.* var. **plicata*** (p. 285), Mendez; *Rotalia* **beccariiformis*** (p. 287); *R.* **cacalilaoensis*** (p. 288); *Gyroidina* **anomalinoides*** (p. 291); *G.* **beisseli*** (p. 291), Mendez; *G.* **comma*** (p. 292); *G.* **florealis*** (p. 293); *G.* **mendezensis*** (p. 293) and *G.* **minuta*** (p. 294), Mendez; *G.* **naranjoensis*** (p. 296); *G.* **simplex*** (p. 296) and *G.* **sparksi*** (p. 297), Mendez; *G.* **vortex*** (p. 297); *Cibicides* **naranjoensis*** (p. 298); *C.* **risseri*** (p. 298); *Planulina* **dayi*** (p. 300), Mendez; *Baculogypsina* (?) **gallowayi*** (p. 305); *B.* (?) **lenticulata*** (p. 306) and *B.* (?) **sphaerica*** (p. 306), San Felipe formation; *Trochamminoides* **irregularis*** (p. 307); *Verneuilina* **conica*** (p. 310); *V.* **rotunda*** (p. 310) and *Textularia* **nacataensis*** (p. 31), Mendez; *T. n.* var. **cyclostoma*** (p. 31); *Gümbelina* **ultimatumida*** (p. 39), *Pseudotextularia varians* v. **mendezensis*** (p. 41) and *P. v.* var. **textulariformis*** (p. 41), Mendez; *Bolivina* **primatumida*** (p. 44); *Bifarina* **nodosaria*** (p. 45); *Bulimina* **limbata*** (p. 48), *B.* **mendezensis*** (p. 49) and *Pleurostomella subnodosa* v. **gigantia*** (p. 53), Mendez; *Nodosarella* **striata*** (p. 54); *Pullenia* **coryelli*** (p. 56). Except where otherwise given, new forms are from the Velasco formation.—*J. A. Cushman.*

17506. WOODRING, W. P. Upper Eocene orbitoid Foraminifera from the western Santa Ynez Range, California, and their stratigraphic significance. *Trans. San Diego Soc. Nat. Hist.* 6(4): 145-170. 5 pl. 1930.—The limestone from a locality on the west side of Canada de Los Sauces on the South slope of the western Santa Ynez, about 2 miles Northwest of Sudden, contains well preserved specimens of *Discocyclina*. This limestone rests disconformably on a massive sandstone. The maximum thickness of this lens of limestone is 8 ft., the lower half consisting of a hard limestone made up principally of calcareous Algae, while the upper part is soft and marly with great numbers of foraminifera and few other organisms. The only other California locality where stellate orbitoids have been found is in the San Rafael Mts. *Discocyclina* **psila*** (p. 148); *Actinocyclina* **aster*** (p. 152); types in California Inst. Technology. In America these 2 genera have only been found in the Eocene. While the genus *Discocyclina* occurs in the Lower, Middle, and Upper Eocene, *Actinocyclina* in the eastern U. S. A. is recorded only from the Up. Eocene in the Ocala limestone of Florida, Georgia, and Alabama. It is also widespread in the West Indies, Central Amer., and northern S. America. In Europe it is also found in the Middle Eocene. From the American occurrences of *Actinocyclina* these beds of the West coast are evidently of Up. Eocene age. A number of pages of notes give the basis for correlation of these deposits with other West coast areas as well as those of greater distance.—*J. A. Cushman.*

PORIFERA

M. W. DE LAUBENFELS, *Editor*

(See also in B. A. 6(4): Entries 11247; 6(5): 14261, 14641; and in this issue 17284, 18114)

17507. ARNDT, WALTHER. Die Süsswasserschwämme des arktischen Gebietes. *Fauna Arctica* 6(1): 33-40. Gustav Fischer: Jena, 1931.—A list of 5 forms of *Spongilla* and *Ephydatia* with key.

17508. ARNDT, WALTHER. Unbekanntes von den Meeresschwämmen der deutschen Küsten. *Mikroskopie f. Naturfreunde* 7(5): 129-138. 8 fig.; (6): 161-170. 3 fig.; (7): 201-207. 1929.—Present information as to taxonomy, morphology and physiology of German sponges is reviewed in some detail. Much data is still lacking; for example, scarcely half the species probably occurring in German waters have yet been recorded, for most, the embryology and life history are not known, their diets and nutritions are not understood, and little is known about their diseases.—*M. W. de Laubenfels.*

17509. BRÖNDSTED, H. V. Die Kalkschwämme der Deutschen Südpolar-Expedition 1901-1903. *Drygalski's Deutsche Südpolar-Exped. 1901-1903 Zool.* 20(12): 1-47. 36 fig. W. de Gruyter & Co.: Berlin & Leipzig, 1931.—Of 52 spp. of Calcarea found in the Antarctic regions, 38 are peculiar to the region. The present report deals with 37 spp., many of which are illustrated. *Leucosolenia primordialis* v. **apicalis*** (p. 9); *L.* **hispida*** (p. 12); *L.* **aboralis*** (p. 15); *L.* **australis*** (p. 15); *L.* **solida*** (p. 17); *L.* **pilosella*** (p. 17); *Leucetta isoraphis* v. **apicalis** (p. 21); *L.* **gaussii*** (p. 21); *Sycetta* **antarctica*** (p. 23); *Tenthrenodes* **primitivus*** (p. 24); *Grantia* **transgrediens*** (p. 28); *G.* **vitiosa*** (p. 29); **JENKINA** (p. 32) (Grantiidae), near *Leucandra*, based on *J.* **cirrata** (*L. c.* Jenkin) (p. 33); *J.* **hiberna** (*L. h.* Jenkin) (p. 34); *J.* **articulata*** (p. 34); *J.* **glabra*** (p. 37); *Leucandra* **hentschelii*** (p. 40); *L.* **gausapata*** (p. 42); *L.* **comata*** (p. 43).

17510. BURTON, MAURICE. Additions to the sponge fauna of the Gulf of Manaar. *Ann. and Mag. Nat. Hist.* 5(30): 665-676. 3 fig. 1930.—A small collection of sponges presented to the British Mus. by the late Arthur Dendy included the following new spp.: *Chalina* **tenuiramosa** (p. 666); *Cladochalina* **thurstoni*** (p. 667); *Laxosuberites* **conulosus** (p. 669); **TERPIOSELLA** (p. 675), type *Ophlitaspongia fucoides* Bowerb., **LAXOSUBERELLA** (p. 675) (*Suberella* Burton). A revision of the genera of Polymastidae and Suberitidae is included.—*M. W. de Laubenfels.*

17511. TOPSENT, E. Phénomènes de styloprothèse chez des Poecilosclérines. *Arch. Zool. Exp. et Gén. Notes et Rev.* 68(1): 19-32. 14 fig. 1929.—Certain Poecilosclerine sponges can utilize projecting parts of the substratum to replace the normal vertical columns of megascleres of their own skeleton which also undergoes some other changes. Such skeletal changes are termed styloprothesis, and were observed in the Acarnidae and Clathriidae. Thus a specimen of *Acarnus tortilis* Topsent growing on *Geodia cydonium* had used the oxeas of the latter in place of its own vertical columns of styles. *Alcyonium opuntioides* Lamarck, *Spongia frondifera* Lam., and *Hymeniacidon cliftoni* Bowerb. are all believed to be individuals of one sp. modified by growth on algae. Examination of Lamarck's specimens shows the sponge to belong to a new genus of the Clathriidae, *Anomoclathria* (p. 21), type *A.* **opuntioides*** (*Alcyonium o.* Lamarck) (p. 25), which is fully diagnosed; also *Anomoclathria opuntioides* **fondifera*** (*Spongia f.* Lamarck) (p. 27). In the specimen of *A. opuntioides* growing on an alga, the normal framework of spongin fibers inclosing styles is replaced in areas by the algal filaments and the acanthostyles which normally project from the spongin columns are modified into acanthostrongyles. Such phenomena are probably common in sponges and illustrate the unreliability of the monactinal or diactinal form of spicules as a taxonomic character.—*L. H. Hyman.*

COELENTERATA AND CTENOPHORA

P. L. KRAMP, *Editor*

(See also in this issue Entries 15765, 15770, 17278, 17280, 17283, 17284, 17288, 17290, 17294, 17511, 17564, 18112, 18114)

17512. CARLGREN, OSKAR. Antarctic and Subantarctic Actiniaria. *Norske Vidensk. Akad. Oslo, Sci. Results of the Norwegian Antarctic Exp. 1927-1928 and 1928-1929.* No. 7. pp. 1-6. 1 fig. 1930.—A list of 7 spp., all known except *Anthoplcura* **kohli** (p. 4), Stewart Isl., type in Senckenberg Mus.

17513. HEMMANN, MAX. Die Graptolithen der Zone 16 vom Grobsdorfer Berg bei Ronneburg. *Beitr. Geol. Thüringen* 3(1-2): 120-122. 1 pl. 1931.—About 25 previously known spp. of *Monograptus* from this zone in Germany are listed. Also 3 new ones: *M.* mancki* (p. 121); *M.* grobsdorfiensis* (p. 122); *M.* paradoxus* (p. 122).

17514. HERITSCH, FRANZ. Eine Koralle aus der Grauwackenzone der Veitsch in Obersteiermark. *Sitzungsber. Akad. Wiss. Wien. Math. Nat. Kl. I Abt.* 139 (3/4): 155-160. 2 fig. 1930.—Description of *Campophyllum murchisoni* M.E.H. and demonstration of the Lower Carboniferous.—*F. Heritsch (transl.).*

17515. HICKSON, SYDNEY J. The genus Stereosoma. *Zool. Anz.* 90(7/8): 221-222. 1930.—*Stereosoma* Hickson, placed by other workers in the synonymy of various genera, is maintained as a distinct genus of the *Clavulariidae.*

17516. [ORLOV, IŪ. A.] ОРЛОВ, Ю. А. О некоторых новых верхне-силурийских фавозитах Ферганы. [Some new Upper Silurian Favosites in Ferghana, Turkestan.] Известия Главного Геолого-Разведочного Управления (*Bull. Geol. and Prospecting Service, USSR.*) 49(3): 121-127. 2 pl. 1930.—PARAFAVOSITES [Favositidae] (p. 122), erected for *P.* ferganensis* (p. 122), *P.* weberi* (p. 124), and *P.* sp.

17517. SMITH, STANLEY. The Calostylidae, Roemer: a family of rugose corals with perforate septa. *Ann. & Mag. Nat. Hist.* 5(27): 257-278. 3 pl. 1930.—This is the only group of perforate rugose corals yet described: Upper Valentian to Silurian. In development and arrangement of septa *Calostylis* Lindström belongs to the Tetracoralla. A number of intermediate forms relate *Helminthidium* Lind. to *Calostylis.* These two genera are discussed. *C.* roemeri* (p. 262), Pentamerous-beds, Valentian, Shropshire; *C.* togata* (p. 263) and *C.* aberrans* (p. 264), Purple Shales, Valentian, Shropshire. Types in Mus. Practical Geology. Descriptions are given of: *C. lindstromi*; C. denticulata*; C.* tomesi* (p. 269); *C. spongiosa*; C. parvula; Helminthidium mirum*.—*P. Kirtisinghe.*

17518. STIASNY, G. Die Madreporaria des Naturhistorischen Reichsmuseums in Leiden. I. Die Genera Porites, Goniopora, Alveopora, Montipora. *Zool. Mededeel.* [*Leiden*] 13(1/2): 22-52. 6 pl. 1930.—A review of the material in the collection, consisting of 16 spp. of Poritidae, 2 of Favositidae, and 23 of Acroporidae. The following are figured: *Porites levis; P. lanuginosa; P. mordax; Goniopora planulata; Alveopora reteporu; A. allingi; Montipora complanata; M. levis* v. arborescens (p. 39), Indian Ocean, type in Leiden Mus.; *M. spatula; M. hispida; M. informis; M. stellata; M. tuberosa;* and *M. crassifolia.*

17519. TEISSIER, GEORGES. Notes sur la faune marine de la région de Roscoff. I. Hydraires. Trachyméduses, Cirripèdes. *Trav. Stat. Biol. Roscoff* No. 8. 183-186. 1930.—Brief notes on life history and ecology of various spp. *Gonionemus murbachi* is new to France.

17520. TEISSIER, LISE, et GEORGES TEISSIER. Actinia fragacea Gosse est-elle une simple variété d'Actinia equina? *Trav. Stat. Biol. Roscoff* No. 8 190-192. 1930.—The writer holds that *A. fragacea* is distinct from *A. equina* on the basis of reproduction, the former being oviparous, the latter, viviparous; and also on the basis of habits, color, and morphological characters.

17521. THOMSON, J. ARTHUR, and NITA RENNET. Alcyonaria, Madreporaria, and Antipatharia. *Australasian Antarctic Exped. 1911-14, Sci. Repts. Ser. C. Zool. & Bot.* [*Sydney*] 9(3): 1-46. 7 pl. (2 col.). 1931.—This report deals with 31 Alcyonaria, 5 Madreporaria, and 2 Antipatharia. The geographic records mentioned below are new. *Clavularia cylindrica,* descriptive notes, Adelie Land; *C. rosea,* descriptive notes, Macquarie Isl.; *Alcyonium antarcticum**, descr. notes, Adelie Land; *Eunephthya racemosa**, not previously recorded from Antarctic; *Melitodes rugosa,* descr. notes, Tasmania; descriptive notes for *Primnoisis ambigua, P. antarctica, P. armata, P. fragilis, P. sparsa,* and *Ceratoisis delicatula**, Tasmania; ECHINISIS (p. 15), near *Peltastisis* [Isididae, Mopseinae], based on *E.* armata* (p. 15) (*Primnoisis a.* Kük.); *Mopsea* tenuis (p. 16), Tasmania; new distribution and descriptive notes for *Callozostron horridum, Primnoella antarctica, P. australasiae, P. distans,* and *Caligorgia ramosa,* Tasmania; *C. ventilabrum;* ASCOLEPIS (p. 20), near *Caligorgia,* based on *A.* splendens* (p. 20), Adelie Land, and *A.* spinosa* (p. 22), Antarctic; descriptive notes for *Thouarella longispinosa**, *T. striata,* and *T. variabilis**, Adelie Land; *Dicholaphis* delicatula* (p. 30), off Macquarie Isl.; *Astromuricea* formosa* (p. 31), locality unknown; *Leptogorgia sarmentosa,* descr. notes; *Scleroptilum* does not belong to the Kophobelemnonidae, but is close to *Chunella; S. grandiflorum,* new to Antarctic; descriptive notes for *Umbellula carpenteri**. The position of *Ainigmaptilon* and its type *A. hasselli** is discussed; *Caryophyllia clavus* and *C. inskipi**, descr. notes, near Antarctic; *C. vermiformis* and *Flabellum australe,* descr. notes near Tasmania; *F. transversale,* descr. notes, Antarctic; *Bathypathes patula,* Antarctic; *Euantipathes plana,* off Macquarie Isl. Depth records are given for all spp. collected.

PLATYHELMINTHES AND MESOZOA

H. W. STUNKARD, *Editor*

(See also in this issue Entries 16569, 16572, 16573, 16574, 16589, 16592, 16609, 16610, 16618, 16638, 16640, 16641, 17464, 18112, 18114)

17522. ÁBRAHÁM, AMBROSIUS, und GUSTAV MÖDLINGER. Die Planarien des Mátra-Gebirges. *Zool. Anz.* 90(3/4): 121-127. 1 fig. 1930.—*Planaria alpina* and *P. gonocephala* are 2 spp. found in springs and creeks. Egg cocoons of *P. alpina* were found in September, contrary to general opinion that they reproduce in winter only. In the springs of the higher peaks (926 m.) white specimens of *P. alpina* are common. In the springs of the highest peak of Kékesberg (1014 m.) no planarians are found. In the higher and colder springs *P. alpina* dominates, in lower and warmer springs, *P. gonocephala.* There were no intermediate *Polycelis cornuta,* as in Higher Tatra mountains. Approximate extremes of temperature for *P. alpina* are 6° and 13.5° C. and for *P. gonocephala,* 11° and 17.5° C. The vertical limits for *P. alpina* are 452-958 m. and for *P. gonocephala,* 325-785 m. *P. alpina* cannot be considered as fauna relicta.—*P. B. Šivickis.*

17523. AFRICA, CANDIDO M. The excretory system of Cercariaeum lintoni Miller 1926. *Jour. Parasitol.* 17 (1): 14-17. 2 fig. 1930.—The excretory system is described as consisting of 16 flame cells distributed in the pattern 2[(2+2)+(2+2)]. On each side, the anterior and posterior primary collecting tubes unite just posterior to the ventral sucker to form the common collecting tube which empties into the bladder. Rhythmic contraction and relaxation of the bladder took place at irregular intervals varying from 10 to 30 seconds. The mechanism by which it is emptied is described.—*O. R. McCoy.*

17524. BRESSLAU, ERNST, und ERICH REISINGER. Erster Cladus der Vermes Amera. Plathelminthes. In: *Kükenthal's Handbuch der Zoologie* 2 (No. 1, pt. 1): 34-51. 9 fig. 1928.—The writers divide the Plathelminthes into 2 subdivisions, Euplathelminthes and Rhynchocoela. The former contains the classes Turbellaria, Trematodes, and Cestodes. The Rhynchocoela contains only the class Nemertini. The article describes the general morphology, anatomy, and phylogeny of the group.

17525. FUHRMANN, OTTO. Zweite Klasse des Cladus Plathelminthes, Trematoda. In: *Kükenthal's Handbuch der Zoologie* 2 (No. 3, pt. 2): 1-128. 171 fig. 1928; (No. 7, pt. 2): 129-140. 4 fig. 1930.—A general morphological description of the Trematoda opens the treatment. Each order (Monogena and Digenea) is characterized and its morphology, anatomy, and taxonomy treated, with particular attention to the nervous, alimentary, excretory, and lymphatic systems, the sexual organs, embryology, life stages, host relations, phylogeny, etc. In the systematic treatment all groups are defined and the genera listed. Among the suborders of Monogena is recognized **MONOPISTHODISCINEA** (p. 26), containing the families Protogyrodactylidae, Gyrodactylidae, and Calceostomidae.

17526. FUHRMANN, OTTO. Dritte Klasse des Cladus Plathelminthes, Cestoidea. Erste Unterklasse der Cestoidea, Cestodaria Monticelli. 1. Ordnung der Unterklasse Cestodaria: Amphilinidea Poche. 2. Ordnung der Unterklasse Cestodaria: Gyrocotylidea. Zweite Unterklasse der Cestoidea, Cestoda. 1. Ordnung der Unterklasse Cestoda: Tetraphyllidea. 2. Ordnung der Unterklasse Diphyllidea. 3. Ordnung der Unterklasse der Cestoda: Tetrarhynchidea. 4. Ordnung der Unterklasse der Cestoda: Pseudophyllidea. 5. Ordnung der Unterklasse der Cestoda: Cyclophyllidea. In: *Kükenthal's Handbuch der Zoologie* 2 (No. 7, pt. 2): 141-256. 110 fig. 1930; (No. 11, pt. 2): 257-416. 150 fig. 1931.—The treatment of the Cestoidea is given in sections dealing with each subclass and order. The class is divided into subclasses Cestodaria and Cestoda. Orders and families are given, and in some cases, subfamilies, and the genera are listed. Each group is defined, its general morphology, anatomy, classification, and phylogeny discussed, and detailed comparative treatment given in most cases of the excretory, reproductive, and nervous systems, the life stages, sense organs, skin, musculature, etc. In the subclass Cestoda of the Cestoidea, the family Carophyllaeidae contains a new subfamily, **BOVIENINAE** (p. 332), with the genus **BOVIENIA** (p. 332), based on *B.* **serialis** (p. 309), n. comb., from *Clarias batrachus.* The bibliography contains 123 references.

17527. KOBAYASHI, HIDEKAZU. Studies on the development of Diphyllobothrium mansoni Cobbold 1882 (Joyeux, 1927). IV. Hatching of the egg, onchosphaera and discarding of the ciliated coat. V. On the first intermediate host, and development in the first intermediate host. *Taiwan Igakki Zasshi (Jour. Med. Assoc. Formosa)* **30**(2) (no. 311, Feb.): 15-16; (3): (No. 312, Mar.) 24-27. 1931.—IV. Hatching depends on both internal and external factors, including internal tension, tonicity of the medium, absence of fermentive agents, optimum temperature (26-35° C.) and mechanical agitation of the medium. Upon hatching, the ciliated embryo rises to a few mm. of the surface and swims about for 23 hrs. (the infective period). The swimming movement consists of free gliding, counter-clockwise rolling, and turn-table movements. During this period no galvanotaxis is detectable but phototaxis is appreciable. Shedding of the ciliated epithelial membrane is accomplished by injury to the inner side, due to rapid movement of the 3 pairs of hooks, and penetration outward through this injury.—V. The onchosphere developed to maturity in spp. of *Cyclops,* any of the 9 spp. of which, in the vicinity of Taihoku City, serve this purpose. The larvae when swallowed by the *Cyclops* make their way through the intestinal wall to the body cavity. Notable differences were experienced in the susceptibility to invasion from the larvae, ♂♂ being much more susceptible than ♀♀. Old *Cyclops* were not more resistant than young ones. On the whole *C. leuckarti* was the more successful experimental host.—*E. C. Faust.*

17528. MacCALLUM, G. A. Four new species of trematode worms of the subfamily Onchocotylinae. *Proc. U. S. Nation. Mus.* 79(26): 1-8. 1 pl., 1 fig. 1931.—*Acanthonchocotyle* **musteli*** (p. 2), from gills of *Mustelus canis; Squalonchocotyle* **squali*** (p. 3) and *S.* **acanthi*** (p. 5), on gills of spiny dogfish, *Squalis acanthias; S.* **sphyrnae*** (p. 6), from gills of hammerhead shark, *Sphyrna zygaena; S. vulgaris** was found on the gills of the dusky shark, *Carcharinus milberti; S. canis** was found on gills of *Carcharinus limbatus.* Localities not given.

17529. OLDHAM, J. N. On the arthropod intermediate hosts of Hymenolepis diminuta (Rudolphi 1819). *Jour. Helminthol.* 9(1): 21-28. 1931.—The larvae of the squirrel flea, *Ceratophyllus wickhami* Baker, were experimentally infected. The effect on the host was nil. A list, with critical comments, is given of the intermediate hosts of this cestode. It includes Myriopoda, Orthoptera, Dermaptera, Lepidoptera, Siphonaptera, and Coleoptera.—*F. J. Meggitt.*

17530. QUERNER, FRIEDRICH R. v. Zur Histologie des Exkretionsgefässsystems digenetischer Trematoden. I. Teil. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 1(4/5): 489-561. 32 fig. 1929.—The excretory system of 6 trematodes is described showing 3 main types of arrangement based on the kind of terminal region. *Fasciola hepatica** and *Fasciola gigantica** show a dorsal and a ventral network arising from a median stem which divides in front of the shell gland into 2 anterior canals which split again dichotomously to form dorsal and ventral branches. Peripheral longitudinal canals, capillaries, and terminal organs are absent. No urinary bladder is recognized. *Dicrocoelium lanceatum** shows the typical trematode protonephridial system. Very large terminal organs, arranged in symmetrical groups with the formula, 2(1+2+2+2+2+1) have cortical cells. Secondary tubules are much reduced. A short, unpaired, non-muscular terminal region is not considered to be a urinary bladder. A strong sphincter guards the excretory pore. *Sterrhurus fusiformis** Lühe possesses a typical urinary bladder with strong musculature and a strong sphincter around the excretory pore. *Paryphostomum radiatum** Dietz shows a pair of lobed main vessels and an unpaired, weakly muscular terminal region considered by the author as a urinary bladder. A sphincter is lacking. Very small and numerous terminal organs, without cortical cells, have a non-nucleated cap and resemble the funnel-shaped cells of *Schistosomum haematobium. Aspidogaster conchicola** possesses 2 typical, strongly muscular urinary bladders and 2 separate excretory pores. The 3 types of excretory systems described by the author are, (1) those with muscular urinary bladder, (2) those with distended terminal region without musculature, and (3) those without any histologically differentiated terminal region. The author discusses the relationships of these types and proposes the use of the term "Harnreservoir" for a terminal region serving as a storage bladder but possessing no musculature.—*C. H. Willey.*

17531. SCHULZ, R. ED., und A. A. SKWORZOW. Plagiorchis arvicolae n. sp. aus der Wasserratte. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 3(4): 765-774

3 fig. 1931.—**MULTIGLANDULARIS** (p. 771), subg. of *Plagiorchis*, type *P.* (*M.*) *multiglandularis* Semenov, also includes 18 other spp. (listed) of which one is new: *Plagiorchis* (*M.*) **arvicolae*** (p. 765), parasitic in the small intestine of the water rat, *Arvicola terrestris*, in U. S. S. R.

17532 SINITSIN, D. Studien über die Phylogenie der Trematoden. V. Revision of Harmostominae in the light of new facts from their morphology and life history. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 3(4): 786-835. 6 pl., 5 fig. 1931.—[Trematoda. Digenea]. The general morphology of the Harmostomidae is described, with special attention to the Ectosiphorea* and Entosiphonea* types. As there are no free-living miracidia in the life history of Harmostominae, the eggs of each sp. stand an equal chance of being fed on by any snail that feeds on decaying organic matter, but the parthenitae seem able to develop only in a specific host. The writer suggests that parasitism by trematodes in the liver of snails was the primary cause of spiral torsion in the Gastropoda. At four geological periods Gastropoda arose with deficient or cap-shaped shells, indicating that preceding their appearance there happened something that rid their ancestors of parasites. This may have been the extinction of the primary hosts, large groups of vertebrates having perished before each period of molluscan cap-shaped shells. The cercariae of Harmostomidae have no tail, and pass their adolescence in the same snail in which they developed. The cercaria of *Telorchis robustus** [Telorchidae] from the liver of *Polygyra thyroides* is described. It has adhesive glands on the tail. Maritae of this sp. were found in the turtle, *Testudo carolina*. A cercaria of *Telorchis* sp.* (?) from the land snail, *Gastrodonta ligera*, has glandular cells in a vesicular portion at the base of the tail. These telorchid cercariae seem to represent phases in the evolution of the tail of cercariae resulting from absence of water. The cercariae of *Leucochloridia* do not leave the body of their mother, but in the Harmostominae they do. In order to get from the liver to the kidney, where the adolescariae usually live, the cercariae leave the body of the snail and enter the kidney cavity. Other adolescariae live in the pericardium or in the salivary glands. Harmostomidae, redefined, is divided into subfamilies Harmostominae and Leucochloridiinae. The former is divided into tribes. Tribe **ENTOSIPHONEA** (p. 817), including *Harmostomum migrans*, parthenita* from liver of *Polygyra thyroides*, cercaria* and adolescaria* from kidney of same host, Virginia, marita* from *Didelphys virginiana*, Maryland; **ENTOSIPHONUS** (p. 820), type *E.* **thompsoni*** (p. 821), parthenita* from liver of *Gastrodonta suppressa*, adolescaria* from kidney of same host, marita* from small intestine of *Blarina brevicauda*. Tribe **ECTOSIPHONEA** (p. 817), including: **ECTOSIPHONUS** (p. 822), based on *E.* **rhomboideus*** (p. 823), parthenita* from liver and walls of respiratory cavity of *Gastrodonta ligera*, cercaria* from kidney, and adolescaria* from kidney and salivary glands of same host, District of Columbia; and *E.* **ovatus** (p. 825), adolescaria* from kidney of *Gastrodonta suppressa*, Virginia, marita* from small intestine of *Blarina brevicauda;* **PANOPISTUS** (p. 826), in tribe Ectosiphonea, based on *P.* **magnus** (p. 827), parthenita* from liver, cercaria* from liver and pericardium, and adolescaria* from pericardium of *Gastrodonta ligera*, Dist. Columbia; *P.* **oviformis*** (p. 829), cercaria* from liver of *Helicodiscus parallelus*, Virginia; and *P.* **pricei*** (p. 829), adolescaria* from pericardium of *Gastrodonta suppressa*, D. C., marita* from small intestine of *Blarina brevicauda*, Virginia. All types in U. S. Nat. Mus. *Postharmostomum*, *Glaphyrostomum*, *Hasstilesia*, and *Urotocus* are placed in Ectosiphonea. *Scaphiostomum* and *Itygonimus* are placed in Ectosiphonea. The bibliography contains 47 references.

17533. STEINBÖCK, OTTO. Beiträge zur Kenntnis der Turbellarienfauna Grönlands. I. Bothrioplanida und Tricladida. *Meddel. om Grönland* 74(6): 71-82. 1928 (1930).—A survey of the limited turbellarian fauna of Greenland, with philosophical notes on its probable origin, and criticisms of contemporary studies.—*C. A. Hannum.*

17535. STUNKARD, H. W., and C. H. ALVEY. The morphology of Zalophotrema hepaticum, with a review of the trematode family Fasciolidae. *Parasitology* 22 (3): 326-333. 1 pl. 1930.—Detailed description of *Z. hepaticum** from the liver of a California sea-lion, *Zalophus californianus*. Genera assigned to families Fasciolopsidae and Campulidae may be included in a single family. As *Fasciola* is the nomenclatorial type of the family to which it belongs, by the rules of nomenclature the family Fasciolidae is restored, with three subfamilies, Fasciolinae, Fasciolopsinae, and **CAMPULINAE** (p. 332), n. subf. n. for Brachycladiinae, based on *Campula* Cob. A new genus, **SYNTHESIUM** (p. 332) (Campulinae), is erected for *Distomum tursionis* Marchi.—*E. T. Boardman.*

17536. STUNKARD, HORACE W. Further observations on the occurrence of anal openings in digenetic trematodes. *Zeitschr. Wiss. Biol. Abt. F, Zeitschr. Parasitenk.* 3(4): 713-725. 7 fig. 1931.—Recent investigations have shown that the intestinal caeca communicate with the exterior in a large number of digenetic trematodes. The connection may be by way of the excretory vesicle; there may be a single, separate opening, or there may be two anal pores. Such a connection has developed independently in several different families, but is not uniformly present in all members of those families in which it occurs. The writer considers that Ozaki was unjustified in removing *Coitocaecum* from Opecoelidae, and suggests that this group should be referred as Opecoelinae to Allocreadiidae. *Bianium plicitum**, redescribed; *Acanthochasmus* **diploporus*** (p. 722), in small intestine of *Alligator mississippiensis*, has two anal pores on each side of the excretory pore.

NEMATHELMINTHES AND NEMATOMORPHA

M. C. HALL, *Editor*

B. G. CHITWOOD, *Associate Editor*

(See also in this issue Entries 15436, 15438, 15459, 16560, 16566, 16569, 16571, 16575, 16581, 16583, 16587, 16589, 16590, 16592, 16598, 16600, 16610, 16611, 16618, 16632, 16640, 16641, 16642, 17555, 18112)

17537. AGARWAL, MAHABIR PRASAD. A new nematode Procamallanus mehrii, n. sp. from a local siluroid fish—Wallago attu. *Allahabad Univ. Studies (Sci. Sect.)* 6(2): 59-64. 1 pl. 1930.

17538. CAMERON, THOMAS W. H. Observations on the life history of Aelurostrongylus abstrusus (Railliet), the lung worm of the cat. *Jour. Helminthol.* 5(2): 55-66. 2 fig. 1927.—This paper describes the larvae, their biology, and their transmission from cat to cat. The adults live in the lungs and lay eggs which hatch in situ. The resulting larvae have a characteristic undulating tail appendix and pass to the exterior in the droppings. They are unable to penetrate skin and must be swallowed by mice. In these they continue their development and come to be encysted in the connective tissue. When the mouse is eaten by a cat the larvae develop within 6 weeks into mature, egg-laying adults. Experiments, described in detail, show that direct transmission from cat to cat does not occur. It is suggested that the "cysts" observed by Leuckart in cats and attributed by him to *Ollulanus* (or to *Aelurostrongylus*) may be those of *Trichinella spiralis*, or, more probably,

Aelurostrongylus which had passed the pulmonary capillaries to other sites.—*T. W. H. Cameron.*

17539. **CHITWOOD, B. G.** Flagellate spermatozoa in a nematode (Trilobus longus). *Jour. Washington Acad. Sci.* 21(3): 41-42. 2 fig. 1931.

17541. **DIKMANS, G.** Two new species of nematode worms of the genus Ostertagia from the Virginia deer, with a note on Ostertagia lyrata. *Proc. U. S. Nation. Mus.* 79(6): 1-6. 2 pl., 1 fig. 1931.—*Ostertagia,* key to spp.; *O.* odocoilei* (p. 1) and *O.* mossi* (p. 2), Pennsylvania, from fourth stomach of the Virginia deer, *Odocoileus virginianus; Ostertagia lyrata** in fourth stomach of cattle in Louisiana.

17542. **DIKMANS, G.** Two new lungworms from North American ruminants and a note on the lungworms of sheep in the United States. *Proc. U. S. Nation. Mus.* 79(18): 1-4. 2 pl. 1931.—*Protostrongylus* stilesi* (p. 1), Colorado, from lungs of *Ovis canadensis; P.* macrotis* (p. 3), Wyoming, from bronchi of *Odocoileus h. hemionus.* A provisional key to spp. of *Protostrongylus* is given. Types in U. S. N. Mus.

17543. **DORIER, A.** Notes de faunistique. Quelques stations de Gordiacés en Dauphiné. *Ann. Univ. Grenoble, Sci.-Méd.* 6(1): 139-143. 1929.—Localities are given for *Gordius aquaticus* L., *Parachordodes violaceus* Baird, *P. gemmatus Villot,* and *P. alpestris* Villot.

17544. **FILIPJEV, I. N.** Les Nématodes libres de la baie de la Neva et de l'extrémité orientale du Golfe de Finlande. Part 2. *Arch. Hydrobiol.* 21(1): 1-64. 35 fig. 1930.—Figures and redescriptions are given of many known forms. *Plectus* amphidiscatus* (p. 15); *Chromadorella* izhorica* (p. 22); PUNCTODORA (p. 29) (Chromadoridae, Chromadorinae), type *P.* ratzeburgensis (*Chromadora r.* Linst.) (p. 29); ODONTONEMA (p. 35) (Chromadoridae, Chromadorinae), type *P.* guido-schneideri* (p. 36); *Monhystera* minuta* (p. 39); *M.* macramphis* (p. 42); *M.* izhorica* (p. 43); *Theristus setosus* v. izhorica* (p. 46). There is an extensive bibliography.—*B. G. Chitwood.*

17545. **FUCHS, GILBERT.** Diplogaster pini n. sp. *Zool. Anz.* 95(9/10): 227-233. 9 fig. 1931.—*Diplogaster* (*Fuchsia*) pini* (p. 227), associated with *Pissodes pini* under pine bark, Austria.

17546. **HARWOOD, P. D.** A new species of Oxysomatium (Nematoda) with some remarks on the genera Oxysomatium and Aplectana, and observations on the life history. *Jour. Parasitol.* 17(2): 61-73. 1 pl. 1930.—*Oxysomatium* variabilis* (p. 61), from *Bufo valliceps,* New York. Host list includes: *Triturus meridionalis, Ambystoma microstomum, Hyla squirella, Pseudacris triseriata, Rana areolata, R. palustris, R. sphenocephala, R. sylvatica, Gastrophryne areolata, Ophisaurus ventralis, Leiolopisma laterale, Heterodon contortrix, Storeria dekayi, Micrurus fulvius, Terrapene carolina* v. *triunguis,* and *T. ornata.* Locality records: Texas and New York. *Oxysomatium* Raill. & Henry (=*Aplectana* Raill. & Henry). Life history of *Oxysomatium* includes descriptions of the infective larva and the parasitic stages. Types in U. S. Nat. Mus.—*P. D. Harwood.*

17547. **HOBMAIER, ADELE, und MICHAEL HOBMAIER.** Ueber die Entwicklung des Lungenwurmes Synthetocaulus capillaris in Nackt-, Weg- und Schnirkelschnecken. *Münchener Tierärzt. Wochensch.* 80(36): 497-500. 4 fig. 1929.—The larva of *Synthetocaulus* undergoes no development until it enters a slug or snail host. In the following mollusks, *Agriolimax, Arion subfuscus, A. hortensis, A. circumscriptus, A. empiricorum, Fruticicola hispida, Monacha umbrosa, Cepaea hortensis, Helix pomatia, Cingulifera planospira,* and *Arianta arbustorum,* it undergoes two molts, becoming an infective third-stage larva with two sheaths over the third-stage cuticula. When snails containing infective larvae are swallowed by sheep the two sheaths are shed and the larvae undergo a development analogous to that described for *Metastrongylus,* maturing in the lungs.—*A. Hobmaier (transl. by C. A. Hannum).*

17548. **JOYEUX, CH., et J.-G. BAER.** Sur la présence du Nématode, Crassicauda crassicauda (Creplin, 1829) chez un Dauphin des côtes de la France. *Bull. Soc. Path. Exotique* 24(3): 198-203. 3 fig. 1931.—Fragments of the nematode *Crassicauda crassicauda,* found in the mammary gland of a dolphin, *Tursiops tursio* Fab., in the Gulf of Marseilles, included several ♀♀. Most of these specimens showed the deep constriction at the caudal end between vulva and anus, hitherto regarded as characteristic of the ♀. One ♀, however, presenting no trace of either eggs or spermatozoids in the uterus and therefore judged to be virgin, showed no trace of this constriction. Having observed that in copulation the ♂ wraps itself around the ♀ at this point, the authors conclude that the constriction is present only after copulation, and is the result of the pressure exerted by the ♂. The usual habitat of *C. crassicauda* is the urogenital connective tissue of cetaceans; but the mammary glands of the dolphin are near the vulva and therefore easily accessible to the parasite.

17549. **KREIS, HANS A.** Freilebende terrestrische Nematoden aus der Umgebung von Peking(China). *Zool. Anz.* 84(11/12): 283-294. 6 fig. 1929.—*Diplogaster* minor ♂* (p. 283); *Acrobeles* armatus ♀* (p. 285); *Rhabditis* elegans ♀* (p. 287); PSEUDORHABDITIS (p. 288), (Anguillulidae) near *Rhabditis,* based on *P.* labiatus ♀* (p. 288), and *P.* acuminatus ♀* (p. 290); *Tylenchus* browni* (p. 292).

17550. **MÜLLER, G. W.** Die systematische Stellung der Gordiaceen. *Zool. Anz.* 84(9/10): 241-243. 1929.—The author reviews recent works concerning the position of the Gordiacea, which have been separated from the Eunematoda because their gonads are said not to be continuous with their ducts. At certain earlier stages the writer finds that this difference does not exist. Therefore he concludes that the Gordiacea are morphologically not very different from the Nematoda.—*B. G. Chitwood.*

17551. **ORLOFF, I. W., und M. P. GNEDINA.** Ein neuer Nematode "Ostertagia dahurica nov. sp." aus dem Labmagen des Schafes. *Tierärztl. Rundschau* 37(41): 723-725. 5 fig. 1931.—*O.* dahurica* (p. 723), from fourth stomach of sheep, Dauria, Asiatic Russia.

17552. **SCHWARTZ, B., and J. E. ALICATA.** Two new species of nodular worms (Oesophagostomum) parasitic in the intestine of domestic swine. *Jour. Agric. Res.* 40(5): 517-522. 12 fig. 1930.—Detailed descriptions are given of two new nodular worms from the large intestine of domestic swine, *O.* brevicaudum* (p. 517) and *O.* georgianum* (p. 520), both taken at Moultrie, Georgia, the former in large numbers.—*W. A. Hooker (courtesy E. S. R.).*

17553. **SCHWARTZ, BENJAMIN, and JOSEPH E. ALICATA.** A Microfilaria from the blood of a wild rabbit. *Jour. Washington Acad. Sci.* 21(13): 298-301. 1 fig. 1931.—The larvae, taken from the blood of *Lepus washingtonii,* are assigned to the collective genus *Microfilaria.* It is possible that they are the immature forms of *Dirofilaria scapiceps.*

17554. **VOGEL, HANS.** Über Mikrofilaria demarquayi und die Mikrofilaria aus Tucuman in Argentinien. *Hamburg Univ. Abhandl. Gebiet Auslandsk.* 26: 573-584. 4 fig. 1927.—A detailed description is given of *M. demarquayi* and a comparison of that sp. with *M. loa, M. bancrofti,* and *M. verstans. Microfilaria* from Tucuman were studied, using the same fixatives. From various maximum, minimum, and average measurements it is concluded that *M. demarquayi* and *M. tucumana* are synonymous.—*B. G. Chitwood.*

ROTATORIA, GASTROTRICHA, ECHINODERA, AND CHAETOGNATHA

CHARLES H. BLAKE, *Editor*

(See also in this issue Entry 17492)

17555. GREY, B. B. Chaetognatha from the Society Islands. *Proc. Roy. Soc. Queensland* 42: 62-67. 12 fig. 1930(1931).—Nine spp. of *Sagitta* and one of *Pterosagitta* were collected in Papetoai Bay, Moorea Isl., including *Sagitta* oceania* (p. 63). A note is given on fertilization in *S. oceania* and *S. enflata*. Nematode parasites (*Camallanus trispinosus*) were found in *S. fridrici* and nematodes in *S. enflata* and *S. oceania*. *S. enflata* was observed to eat a specimen of *S. fridrici*.

17556. REMANE, ADOLF. Zweite Klasse des Cladus Plathelminthes [corrected to Nemathelminthes on errata slip]. Gastrotricha. In: *Kükenthal's Handbuch der Zoologie* 2(No. 5, pt. 4): 121-146. 30 fig.; (No. 6, pt. 4): 147-186. 49 fig. 1929.—A general treatment of the morphology, physiology, and classification, with very detailed comparative study of body form*, cuticular structures*, ciliation*, epidermis, musculature*, the Y-organs* and X-organs*, (fig. 133) nervous system*, sense organs*, alimentary system*, protonephridia*, sexual organs*, embryology*, growth, nourishment and excretion, geographic distribution, and phylogeny. The class is divided into 2 orders, and all groups are described. The order Macrodasyoidea contains the families Neodasyidae*, Lepidodasyidae*, Macrodasyidae*, **DACTYLOPODALIIDAE*** (p. 153, 176) (n. n. for Dactylopodellidae, with **DACTYLOPODALIA** (p. 123, 176) n. n. for *Dactylopodella* Remane; *Dactylopodalia* baltica (*Dactylopodella b.* Remane) (p. 136); *Dactylopodalia* typhle (*Dactylopodella t.* Remane) (p. 167)), Turbanellidae*, and Thaumastodermatidae*. The order Chaetonotoidea is divided into the families Xenotrichulidae*, Chaetonotidae*, Proichthydidae*, Dichaeturidae*, Neogosseidae*, and Dasydytidae*. The bibliography contains 72 titles. All included genera are listed under each family.

17557. REMANE, ADOLF. Dritte Klasse des Cladus Nemathelminthes. Kinorhyncha=Echinodera. In: *Kükenthal's Handbuch der Zoologie* 2(No. 6, pt. 4): 187-242. 50 fig. 1929; (No. 8, pt. 4): 243-248. 6 fig. 1930.—A general discussion of the morphology, physiology, and classification, largely based on Zelinka's monograph, with detailed comparative studies of body form*, segmentation*, epidermis*, anterior closing apparatus*, musculature*, nervous system*, sense organs*, mouth parts* and alimentary system*, excretory system*, sexual organs*, sexual dimorphism, embryology*, metamorphosis*, growth and habits, and geographic distribution. The group is considered a side branch from the same root as the Gastrotricha and Nematoda. Only one order, the Echinodera, is recognized, but it is divided into 3 suborders. The suborder Cyclorhagae contains tribe Nomosomata, with families Echinoderidae* and Centroderidae*, and tribe Xenosomata, with one family, Campyloderidae* (=Mesitoderidae). Suborder Conchorhagae contains only the **SEMNODERIDAE*** nom. nov. (p. 244) for Pentacontidae. Suborder Homalorhagae contains Trachydemidae and Pycnophyidae. The bibliography contains 29 references. Diagnoses of all genera and higher groups.

17558. WESENBERG-LUND, C. Erste Klasse des Cladus Nemathelminthes Rotatoria, Rotifera=Rädertierchen. In: *Kükenthal's Handbuch der Zoologie* 2 (No. 4, pt. 4): 8-18. 6 fig.; (No. 5, pt. 4): 19-120. 124 fig. 1929.—A monographic general description of the comparative morphology, with detailed description of the body wall*, foot glands*, trochal disc*, mastax*, nervous system*, intestinal canal*, excretory system*, musculature*, sense organs*, sexual organs*, cell structure*, sexual dimorphism, embryology and development, metamorphosis, nourishment, cyclomorphosis, polymorphism, growth, regeneration, bathymetric distribution, biocoenosis, parasitism, and phylogeny of the class. The class is divided into 6 orders. Order Notommatida contains suborder Notommatinae, with families Notommatidae* and Synchaetadae*. Suborder Rattulinae, with families Rattulidae* and Dinocharidae*; suborder Euchlaninae with Salpinadae*, Euchlanidae*, and Colurellidae*; suborder Anopodinae with Anopodidae*. Order Brachionida with Hydatinadae* and Brachionidae*. Order Asplanchniformes contains suborder Gastropodinae with Gastropodidae*, and Ploesomatidae*; suborder Asplanchninae with Harringiidae*, and Asplanchnadae*. Order Melicertacea contains Melicertidae*, Pedalionidae*, Pterodinadae*. The order Floscullariacea contains the Floscullariadae*, and Apsilidae*. Order Bdelloida contains the Adinetidae*, Philodinadae*, and Microdinadae*. The Seisonidae*, Trochosphaeridae*, and Microcodidae* are not fitted into the classification. Each of the above groups is defined. The bibliography contains 87 references. All included genera are listed under each family.

ANNELIDA

J. PERCY MOORE, *Editor*

(See also in this issue Entries 16460, 16592, 17284, 17463, 17466, 17471, 17575, 18112, 18114)

17559. BOARDMAN, W. Two new species of the genus Notoscolex (Oligochaeta) from Ulladulla, New South Wales. *Rec. Australian Mus.* 18(4): 161-166. 6 fig. 1931.—*Notoscolex* ulladullae* (p. 161) and *N.* attenuatus* (p. 163), types in Australian Mus.

17560. HERTER, KONRAD. Vergleichende bewegungsphysiologische Studien an deutschen Egeln. *Zeitschr. Wiss. Biol. Abt. C, Zeitschr. Vergleich Physiol.* 9 (2/3): 145-177. 15 fig. 1929.—Comparative studies were made on the movements of the following German leeches: *Piscicola geometra, Protoclepsis tesselata, Glossosiphonia complanata, G. heteroclita, Helobdella stagnalis,* and 2 species of *Herpobdella*. Movements of rest, respiration, brooding, coiling, diving, seeking, fright, food-procurement, crawling and swimming are described. Agreements and differences in the postures and movements of the different species are discussed and their relations to the manner of life of the leech explained.—*K. Herter (transl. by J. P. Moore).*

17561. LANGHAMMER, H. Teilungs- und Regenerations-Vorgänge bei Procerastea halleziana und ihre Beziehungen zu der Stolonisation von Autolytus prolifer. *Wiss. Meeresuntersuch., Abt. Helgoland* 17(1. paper 1): 5-44. 3 pl. 1928.—In *P. halleziana* from Helgoland, the division plane is situated in the great majority of cases on the 9th, 11th, 13th or, mostly, the 16th segment. On the full-grown worm constrictions at intervals give the impression that the whole body is built up not simply of ordinary equal segments but of groups of segments. From head to tail there are, after the first 7 segments, 3 groups of 2 each, 3 groups of 3, several groups of 4, and again several groups of 3 segments each. In division, the tail piece generally includes 20 segments. The shortest pieces able to regenerate consist of 5 segments. Division is not suppressed by stolonization. Tables of the regeneration of the different body regions are given and compared with the results of Allen, obtained in Plymouth. The grouping

of segments occurs also in *Autolytus* and *Pionosyllis stylifera*, in which it is indicated by constrictions of the intestine or pigment-concentrations. The author holds that grouping of segments is phylogenetically old because of: (a) Its connection with sexual maturity; and (b) its uniformity in different groups of syllids where the mode of stolonization is different (stolonization-mode being younger than grouping of segments). Epigamic propagation, in agreement with Malaquin, the author derives from schizogamic. The results in the main points are in agreement with the results of Allen in Plymouth on the same subject.—*A. Meyer.*

17562. LIVANOW, N. Die Organisation der Hirudineen und die Beziehungen dieser Gruppe zu den Oligochäten. *Ergebnisse u. Fortschritte Zool.* [*Jena*] 7(4): 378-484. 33 fig. 1931.—A review of the literature and a comparative study of the morphology and anatomy of the Hirudinea with special attention to the somite number*, the differentiation of the body regions*, mesenchymal structure*, musculature, coelom*, circulatory system*, alimentary system*, nephridial system*, nervous system*, sense organs*, sexual organs*, chromosome numbers, and the relations of the Acanthobdellea in Hirudinea to the Branchiobdellidae in Oligochaeta. The bibliography contains 207 references.

17563. UDE, H. Die Oligochäten der Arktis und ihre geographische Verbreitung. II. *Fauna Arctica* 6(1): 41-54. Gustav Fischer: Jena, 1931.—A list of Naididae, Enchytraeidae, Tubificidae, Lumbriculidae, and Lumbricidae, with distributional records.

BRACHIOPODA, BRYOZOA, PHORONIDEA

R. C. OSBURN, *Editor*

(See also in this issue Entries 17278, 17280, 17283, 17284, 17288, 17290, 17477, 18114, 18115)

BRACHIOPODA

17564. GIRTY, GEORGE H. The fauna of the middle Boone near Batesville, Arkansas. *U. S. Geol. Surv. Prof. Papers* 154B. 73-103. 4 pl. 1928.—This fauna is from the limestone near the middle of the Boone chert of the upper Boone of the same region, and also from the typical Boone. It comprises 45 spp. or varieties, almost all brachiopods, the spirifers being most abundant as to numbers, and the producti as to variety, but few corals, bryozoans and gastropods also occur. Lists of other Mississippian faunas of the region are given for comparison, and correlations of these beds with the standard section, particularly the Burlington and Keokuk, are discussed. The author gives short descriptions of a number of forms, 23 of which are figured. Brachiopoda: *Schizophoria* **compacta** (p. 81); *Chonetes* **miseri*** (p. 81); *C.* **batesvillensis*** (p. 82); *Pustula* **incrassata*** (p. 86); *Spirifer* **incertiformis*** (p. 88). Mollusca: *Platyceras* **oxynotum*** (p. 95). Brachiopod specimens are also described under the following "MS." names: *Schizophoria* **compacta** (p. 81), *Spirifer washingtonensis* v. **incomptus*** (p. 89), and *Reticularia setigera* v. **internascens*** (p. 91).

17565. GUGENBERGER, ODOMAR. Die Cardita-Schichten von Launsdorf in Mittelkärnten und ihre Fauna. I. Brachiopoden. *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. I. Abt.* 139(1/2): 43-131. 1 pl. 1930.—H. v. Gallenstein collected and prepared this rich Triassic fauna between 1906 and 1922 and published a preliminary study of it. Since his death, a detailed study of the 3000 brachiopods in the collection has been made by the author. The assemblage comes from 5 localities, is predominantly a microfauna, and includes 114 spp. in 19 genera. The systematic section includes descriptions and taxonomic notes. *Lingula* **rotunda*** (p. 47); *L.* **lacrimae*** (p. 48); *L.* **carinthiaca*** (p. 48); *Discina* **ovoides*** (p. 49); *Thecidea* **schafferi*** (p. 51); *T.* **kahleri*** (p. 51); *T.* **carinthiaca*** (p. 52); *Spiriferina* **carinthiaca*** (p. 54); *S. batiotica* Bittner, emended description; *S.* **gallensteini*** (p. 56); *Mentzelia mentzeli**, with table of 11 varieties; *Cyrtina* **multicostata*** (p. 64); *C.* **ampfereri*** (p. 66); *C.* **cassiformis*** (p. 68); *C. cyrtioides*, emended description; *Thecocyrtella* **pseudo-ampezzoana*** (p. 72); *Retzia* **toulae*** (p. 82); *R.* **launsdorfi*** (p. 84); *Amphiclina* **carinthiaca*** (p. 90); *A. intermedia* Bittner (=*A. haberfelneri* Bittner, *A. h.* var. *minor* Bittner, and *A. intermedia* var. *praeceps* [author?]); *A.* **amphiclinodontoides*** (p. 95); *Amphiclinodonta* **gallensteini*** (p. 96); *A.* **multidentata*** (p. 96); *A.* **kieslingeri*** (p. 97); *A.* **geyeri*** (p. 98); *A.* **arthaberi*** (p. 101); *A.* **elegantissima*** (p. 101); *A.* **primitiva*** (p. 103); *Thecospira* **gallensteini*** (p. 105); *Thecospirella loczyi* v. **amphitoma** (*Thecocyrtella a.* Gallenstein) (p. 110); *T. l.* var. **compressa*** (p. 110). An outline of the development of teeth in *Amphiclinodonta* is given. Bibliography of 71 titles.

17566. HAYASAKA, ICHIRÔ. On a new Carboniferous brachiopod fauna from the Ashio Mountains, Japan. *Proc. Imp. Acad.* [*Tokyo*] 2(10): 551-553. 1926.—The list of brachiopods from this locality is: *Productus punctatus* Martin, *Meekella eximia* f. **majuscula** (p. 552), *Orthotetes simensis* Tschernyschew, *Schizophoria resupinata* (Martin) Davidson, *Spirifer* aff. *rockymontanus* Marcou, and *Reticularia lineata* Martin.

17567. SCHUCHERT, CHARLES, and G. ARTHUR COOPER. Synopsis of the brachiopod genera of the suborders Orthoidea and Pentameroidea, with notes on the Telotremata. *Amer. Jour. Sci.* 22: 241-251. 1931.—A preliminary statement of results to be presented later in an extensive monograph. The following classification is offered, with description of new genera and species. Order Protremata.—**ORTHOIDEA** (p. 241) n. suborder: superfam. Orthacea containing 10 families, 5 of which are new, (1) **NISUSIIDAE** (p. 242) (*Nisusia, Jamesella*); (2) **PROTORTHIDAE** (p. 242) (*Protorthis, Loperia*); (3) Billingsellidae (*Billingsella*); (4) **EOORTHIDAE** (p. 242) with the subfams. **ORUSIINAE** (p. 242) (*Orusia*) and Eoorthinae (*Eoorthis, Otusia,* ? *Wimanella,* **BOHEMIELLA** (p. 242), type *Orthis romingeri* Barr., **OLIGOMYS** (p. 243), type *Orthis exporrecta* Linnar.); (5) Plectorthidae with 5 subfams., **FINKELNBURGIINAE** (p. 243) (*Finkelnburgia*), Plectorthinae (*Plectorthis, Hebertella, Mimella, Schizophorella, Doleroides*), **CYCLOCOELIINAE** (p. 243) (*Cyclocoelia*), Platystrophiinae (*Platystrophia, Mcewanella*), Orthostrophiinae (*Orthostrophia*); (6) Skenidiidae (*Skenidium,* **SKENIDIOIDES** (p. 243), type *S.* **billingsi** (p. 243), from Black River limestone of Paquette Rapids, Ontario, type in Yale Univ. Mus.); (7) Orthidae, divided into 6 subfams. all of which are new, **ORTHINAE** (p. 243) (*Orthis, Nicolella, Glossorthis,* **CYRTONOTELLA** (p. 243), type *Orthis semicircularis* (Eichwald), **PAURORTHIS** (p. 243), type *Orthambonites parva* Pander, **ARCHAEORTHIS** (p. 243), type *Orthis electra* Billings), **PRODUCTORTHINAE** (p. 243) (*Productorthis,* **PANDERINA** (p. 243), type *Productus abscissus* Pand.), **ANGUSTICARDINIINAE** (p. 243) (**ANGUSTICARDINIA** (p. 243), type *Porambonites recta* Pand.), **TAFFIINAE** (p. 243) (*Taffia, Eostrophomena*), **HESPERORTHINAE** (p. 243) (*Schizoramma,* **HESPERORTHIS** (p. 243), type *Orthis tricenaria* Conrad, **DOLERORTHIS** (p. 243), type *Orthis interplicata* Foerste), and **GLYPTORTHINAE** (p. 243) (*Glyptorthis, Eridorthis,* **PTYCHOPLEURELLA** (p. 243), type *Orthis bouchardi* Davidson); (8) **DINORTHIDAE** (p. 244) containing the following genera, *Dinorthis* (divided into 5 subgenera: *Dinorthis, Plaesiomys,* **PIONORTHIS** (p. 244), type *Orthis sola* Billings, **RETRORSIROSTRA** (p.

244), type *Orthis carleyi* Hall, and *Marionella* Bancroft), *Valcourea*, **MULTICOSTELLA** (p. 244), type *Orthis ? saffordi* Hall & Clarke, *Austinella, Palaeostrophomena*, **PLANIDORSA** (p. 244), type *P. bella* (p. 244); (9) Porambonitidae (*Porambonites, Noetlingia*); (10) **LYCOPHORIIDAE** (p. 245) (*Lycophoria*). Superfam. Clitambonacea, with families **DELTATRETIDAE** (p. 245) (*Deltatreta*), Clitambonitidae, divided into 3 subfamilies: Plectellinae (*Plectella, Ingria*), **CLITAMBONITINAE** (p. 245) (*Clitambonites, Vellamo, Orthisina, Hemipronites, Polytoechia*, **ESTLANDIA** (p. 245), type *Orthisina marginata* Pahlen, **PAHLENELLA** (p. 245), type *Orthis trigonula* Pahlen, **APOMATELLA** (p. 245), type *Orthisina ingrica* Pahlen), **GONAMBONITINAE** (p. 245) (*Gonambonites*). Superfam. **DALMANELLACEA** (p. 245) with families Dalmanellidae, *Dalmanella* (type *Orthis rogata* Sardeson), *Proschizophoria, Heterorthina*, **CARINIFERELLA** (p. 246) (type *Orthis carinata* Hall), **AULACELLA** (p. 246) (type *Orthis eifelensis* Schnur.), **LEVENEA** (p. 246) (type *Orthis subcarinata* Hall); **WATTSELLIDAE** (p. 246) with *Horderleyella, Wattsella, Idiorthis, Mendacella*, **PARMORTHIS** (p. 246) (type *Orthis elegantula* Dalman), **FASCICOSTELLA** (p. 246) (type *Orthis gervillei* Defrance); **BILOBITIDAE** (p. 246), with *Bilobites*; **MYSTROPHORIDAE** (p. 246), with *Mystrophora*, and ? *Kayserella*; Rhipidomellidae, with *Rhipidomella* containing the subg. **PERDITOCARDINIA** (p. 246) (type *Orthis dubia* Hall), *Thiemella*, and **PLATYORTHIS** (p. 246) (type *Orthis planoconvexa* Hall); **HETERORTHIDAE** (p. 246), with subfamilies **HETERORTHINAE** (p. 246) (*Heterorthis*) and Harknessellinae (*Harknessella, Reuschella, Smeathenella*); Schizophoriidae, with subfams. Schizophoriinae (*Pionodema, Schizophoria, Orthotichia*, **AULACOPHORIA** (p. 246), type *Orthis keyserlingiana* De Koninck), Enteletinae (*Enteletes, Enteletella, Enteletoides, Parenteletes*, **ENTELETINA** (p. 247), type *Enteletes latesinuatus* Waagen.), **ISORTHINAE** (p. 247) (*Isorthis*); **LINOPORELLIDAE** (p. 247), with **LINOPORELLA** (p. 247), type *Orthis punctata* Verneuil, ? *Orthotropia*. Suborder **PENTAMEROIDEA** (p. 247), superfam. **SYNTROPHIACEA** (p. 247), fam. **CLARKELLIDAE** (p. 247) with *Clarkella, Yangtzeella, Syntrophina*, and **SYNTROPHIOIDES** (p. 247), type *Billingsella harlanensis* Walcott; Syntrophiidae, with *Syntrophia*; **HUENELLIDAE** (p. 247), with *Huenella* and **HUENELLINA** (p. 247), type *Huenella triplicata* Walcott. Superfam. Pentameracea, fams. Camerellidae with *Camerella* Billings (syn. *Parastrophia*), *Anastrophia, Metacamerella*, ?*Branconia*, **RHYNCHOCAMARA** (p. 248), type *R.* plicata (p. 248), **PARASTROPHINELLA** (p. 248), type *Pentamerus reversus* Bills.; Stricklandiidae, with *Stricklandia*; Pentameridae, containing the subfams. Gypidulinae, with *Clorinda, Barrandella, Gypidula, Sieberella, Pentamerella* ?*Zdimir*, and **?LIOCOELIA** (p. 248), type *Pentamerus proximus* Barr., Pentamerinae with *Pentamerus, Capelliniella, Holorhynchus, Harpidium, Conchidium, Brooksina, Platymerella, Cymbidium, Virgiana*, **PENTAMEROIDES** (p. 248), type *Pentamerus oblongus subrectus* Hall & Clarke, **LISSOCOELINA** (p. 248), type *Pentamerus pergibbosus* Hall & Whitefield, **RHIPIDIUM** (p. 248), type *Pentamerus knappi* H. & W. Hall and Clarke's belief that the rhynchonellids probably arose in the orthids is confirmed, and the superfamily Rhynchonellacea is found to be apparently of polyphyletic origin, one of the lines of descent starting in the family Orthidae and another in the Plectorthidae; neither of these, however, is the main line that goes into *Camarotoechia*, which is as yet not known. The suggestion is made that the pentamerids had their beginning in the wide-hinged Syntrophiacea, some of which evolved into the Camerellidae; and the further suggestion is made that it was also in these camerellids that the spire-bearers arose. The Terebratulacea may have come out of camerellid-like shells, or out of early Spiriferacea. Two new terms are proposed for kinds of punctae: "endopunctae," for those of the internal shell layer; "exopunctae," for those that indent the external shell surface but do not pass through it.—*C. Schuchert.*

BRYOZOA

17568. CALVET, LOUIS. Bryozoaires provenant des campagnes scientifiques du Prince Albert Ier de Monaco. *Résultats Campagnes Sci. Albert Ier, Prince de Monaco, Fasc.* 83. 1-152. 2 pl. 1931.—Notes are given on the many species of Bryozoa collected during these expeditions, and also on 2 spp. of hemichordates belonging to the fam. Rhabdopleuridae. The following Bryozoa are reported and described in more detail: *Crisella* borgi* (p. 20), 16° 44′ N, 24° 44′ W.; *Diplosolen grimaldii**; *Scrupocellaria ? cervicornis* v. spinosa (p. 66) and *Hippoporina* bassleri (p. 84), Cape Verde Isls., *Cryptosula* cylindrica* (p. 85), Atlantic Ocean, 33° 47′ N, 14° 21′ W.; *Microporella* (?) flustroides* (p. 87), Azores; *Smittina avicularia**; *Jaculina* dichotoma* (p. 97), Azores; *Retepora cellulosa*; *R. rara*; *R. marsupiata*; *R.* alberti* (p. 103), Canary Isl.; *Reteporella* jullieni (p. 105) and *Schizellozoon* dentatum* (p. 107), Azores; *S. tessellatum* (Hincks) "var. nov."* described but not named; ?*Phylactella* vibraculata* (p. 113), Azores; *Holoporella pigmentaria* v. albida (p. 117), Cape Verde Isls.; *Schismopora* (*Cellepora*) coronopusoida* (p. 119), near Monaco.

17569. CORI, CARL J. Dritter Cladus der Vermes Amera, Kamptozoa. Allgemeines über den Cladus Kamptozoa. Erste und einzige Klasse des Cladus Kamptozoa. Kamptozoa = Bryozoa Entoprocta = Calyssozoa. In: *Kükenthal's Handbuch der Zoologie* 2 (No. 6, pt. 5): 1-64. 76 fig. 1929.—Entoprocta or Calyssozoa are taken from the Polyzoa or Bryozoa and made a cladus called **KAMPTOZOA** (p. 5), with a single class also called **KAMPTOZOA** (= Bryozoa Entoprocta = Calyssozoa) (p. 4). A general discussion of the morphology, physiology, and classification of the group. Detailed comparative descriptions are given of the calyx* ("Kelch"), tentacles*, stem*, stolon*, cell structures*, nephridium*, gonads*, parenchyma cells*, musculature*, embryology*, metamorphosis*, regeneration*, respiration, nourishment, locomotion, geographic distribution of *Pedicellina** and *Barentsia**, and phylogeny. The group is divided into solitary and colonial genera, but no order or family is specified. The 12 included genera are described and figured, and spp. listed. The bibliography contains 66 titles. Under each family, all included genera are listed.

17570. CORI, CARL I. Kamptozoa (Entoprocta). In: **GRIMPE, G., u. E. WAGLER. Die Tierwelt der Nord- u. Ostsee.** Lief. 19. Pt. IVa. Pp. 1-68. 65 fig. 1930.—The name Kamptozoa is substituted for Entoprocta [See preceding article in this issue.] and the group is removed from the Bryozoa and made part of the Vermes Amera. The species of the North and Baltic Seas are listed according to country. Although the general discussion of morphology and anatomy and also the illustrations are the same, the present article differs from the previous paper in that the genera are arranged in groups all in one family, Pedicellinidae. Under Loxosoma-typus is arranged *Loxosoma* and *Loxosomella*; under Pedicellina-typus, *Pedicellina*; under Myosoma-typus, *Myosoma, Chitaspis, Loxosomatoides*; under Barentsia-typus, *Barentsia* Hincks (= *Pedicellinopsis* Hincks); under Urnatella-typus, *Urnatella*. The genera *Ascopodaria, Gonypodaria*, and *Arthropodaria* are sunk under *Barentsia*. All species from the region under consideration are described and figured. The bibliography contains 90 references.

MOLLUSCA

H. A. PILSBRY, *Editor*
H. B. BAKER, *Associate Editor*
J. B. REESIDE, *Associate Editor*, Mesozoic and Paleozoic Mollusca

(See also in this issue Entries 16015, 16572, 16574, 16592, 16638, 16643, 17276, 17277, 17278, 17280, 17283, 17284, 17285, 17288, 17290, 17293, 17294, 17461, 17462, 17475, 17486, 17532, 17547, 17564, 18107, 18114, 18116)

17571. **ADENSAMER, W. Beitrag zur Molluskenfauna von Südwestafrika.** *Ann. Naturhist. Mus. Wien* 43: 387-399. 2 pl. 1929.—An enumeration, with conchological remarks and figures, of the terrestrial and fresh-water mollusks collected by V. Lebzelter in Damaraland and the Kalahari: *Dorcasia alexanderi* v. **glabra*** (p. 388), Damaraland, type in Vienna Mus.; *D. a.* var. *perspectiva, Ena damarensis**, *E. hottentota, Achatina damarensis, Isidora diaphana,* and *Pila occidentalis**.—*J. Bequaert.*

17572. **BAKER, H. BURRINGTON. Nearctic vitreine land snails.** *Proc. Acad. Nat. Sci. Philadelphia* 83: 85-117. 8 pl. 1931.—The comparative anatomy of the nearctic land snails of the vitreine Zonitidae is discussed. Under the genus *Pristiloma,* in the subgenus *Ogaridiscus,* notes are given on the anatomy of *P. subrupicola;* in subg. **PRISCOVITREA** (p. 88) on that of *Pristiloma chersinella* (type of subg.); in subg. **PRISCOVITREOPS** (p. 88) on *P. gabrielinum, P. nicholsoni* (type) and *P. johnsoni;* in subg. **PRISTINOIDES** (p. 89) on *P. lansingi* (type); in subg. **PRISTINOPSIS** (p. 89) on *P. idahoense* (type) and *P. arcticum;* and in *Pristiloma* s. s., on *P. stearnsi* and *P. pilsbryi.* Under the genus *Paravitrea,* in the subg. **PECTOVITREA** (p. 98), anatomical notes are given for *P. variabilis* (type) and *P. walkeri;* in subg. *Paravitreops* for *Paravitrea multidentata, P. lamellidens* and *P. clappi;* in *Paravitrea* s. s. for *P. andrewsi, P. capsella, P. pilsbryana, P.* **calcicola*** (p. 107) from Tennessee, and *P. placentula;* in subg. **PARMAVITREA** (p. 98) for *P.* **pontis*** (p. 108, type), Virginia; and in subg. **PETROVITREA** (p. 99) for *P. petrophila* (type). In the genus *Pilsbryna,* the anatomy of *P.* **castanea*** (p. 111), Tennessee, and that of *P. aurea* are described. For comparison, notes on the structure of the palearctic *Vitrea subrimata* (from Jugoslavia) are included. Keys to the genera, subgenera and species are presented. Types in Acad. Nat. Sci. Philadelphia. An anatomical description of *Retinella* (*Glyphyalops*) *pentadelphia* is appended.—*H. B. Baker.*

17573. **BARTSCH, PAUL. Descriptions of new marine mollusks from Panama, with a figure of the genotype of Engina.** *Proc. U. S. Nation. Mus.* 79(15): 1-10. 1 pl. 1931.—*Anachis* **tabogaensis*** (p. 1), Taboga Isl.; *A.* **dalli*** (p. 2); **EUDAPHNE** (p. 3) (Pleurotomidae), type *E.* **allemani*** (p. 3); *Daphnella clathrata* Gabb is referred to *Eudaphne; Mitra* (*Scabricola*) **marshalli*** (p. 4); *Rissoina* **allemani*** (p. 5); *Engina zonata** photo of type; *E.* **panamensis*** (p. 7); *E.* **tabogaensis*** (p. 8). Types in U. S. Nat. Mus.

17574. **BELLINI, RAFFAELLO. I molluschi del golfo di Napoli. (Studi precedenti, l'ambiente, enumerazione e sinonimia.)** *Ann. Mus. Zool. R. Univ. Napoli* 6(2): 1-87. 1929.—Records of occurrence and synonymy of many species with tables of bathymetric distribution.

17575. **BINARD, ALICE, et RAYMOND JEENER. Rapports morphologiques du système nerveux des mollusques avec celui des polychètes.** *Recueil Inst. Zool. Torley-Rousseau* [*Bruxelles*] 3(1): 5-16. 2 pl. 1930.—The researches of Storch upon the nervous system of the amphinomides throw new light upon the morphological similarity of mollusks and polychaetes. The 4 longitudinal cords of the Amphineura should be considered as homologous to the 4 nerve trunks of the amphinomides; the 2 lateral cords are lacking in the other classes of mollusks, their visceral commissure being a superadded element to the fundamental system of 4 simple cords.—*A. Binard.*

17576. **[BODYLEVSKIĬ, V. I.] БОДЫЛЕВСКИЙ, В. И. Развитие Cadoceras elatmae Nik. [The development of C. elatmae.]** [English summary.] Ежегодник Русского Палеонтологического Общества (*Ann. Soc. Paléont. Russie*) 5(1): 61-94. 2 pl., 1 fig. 1925(1926).—A study of the individual development of the shell was made by a mensuration determining the variation in chambers and its relation to the bifurcation of ribs. Adult specimens show the living chambers to attain a length about equal to ¾ of the whorl, and to be terminated by a constriction. A similar constriction also appears at what is considered the termination of the first living chamber. This is interpreted as marking a suspension of growth at the moment of transition from the embryonic to the postembryonic stage. The development of the suture line is described and figured. The author regards *Stephanoceras-Cadoceras-Quenstedticeras* as a genetic series.

17577. **BOYCOTT, A. E. A re-survey of the fresh-water Mollusca of the parish of Aldenham after ten years with special reference to the effect of drought.** *Trans. Hertfordshire Nat. Hist. Soc. and Field Club* 19(1): 1-25. Map, 4 fig. 1930.—The molluscan fauna of 98 ponds (84 of which are isolated) changed but little in 10 yrs. The total number found in ponds which are apt to dry up decreased, that in the non-drying ponds increased. Drying ponds contain fewer snails and plants than non-drying ponds. Evidence is given that small ponds slowly gain fresh species until they are "full," which is reached when 8-10 species are present. The mechanism of the drying of ponds is discussed in relation to weather conditions.—*A. E. Boycott.*

17578. **COCKERELL, T. D. A. Helix nucleata Turton.** *Nautilus* 40(1): 31. 1926.—A bibliographical note.

17579. **COEN, GIORGIO S. Gibbula (Forskaliopsis nov. sect.) bellinii n. sp. Nuovo gasteropodo marino di Capri.** *Ann. Mus. Zool. R. Univ. Napoli* 6(4): 1-2. 2 fig. 1930.—**FORSKALIOPSIS,** n. section in *Gibbula; G.* (*F.*) **bellinii** (p. 2).

17580. **COX, L. R. The fossil fauna of the Samana Range and some neighbouring areas: Part IV. Lower Albian Gastropoda and Lamellibranchia.** *Mem. Geol. Surv. India, Palaeont. Indica* 15: 39-49. 1 pl. 1930.—The author lists 6 Gastropoda and 4 Lamellibranchia, with synonymies, descriptions, taxonomic remarks, and figures of each. Only 2 of the forms are specifically determined.

17581. **GALLIEN, L. Présence d'un mollusque opisthobranche du genre Alderia Allman dans la baie de Sallenelles (côte du Calvados). Note préliminaire.** *Bull. Soc. Linn. Normandie* 1: 18-22. 1928(1929).—The species is described but not named, and ecological conditions are given.

17582. **GALLIEN, L. Sur deux espèces intéressantes de la faune des vases salées de Sallenelles.** *Bull. Soc. Linn. Normandie* 1: 31-32. 1928(1929).—Notes on *Limapontia depressa,* rediscovered, and *Ochthebius punctatus,* new to France.

17583. **GALLIEN, LOUIS. Étude de deux mollusques opisthobranches d'eau saumâtre.** *Bull. Soc. Linn. Normandie* 1: Trav. Orig. 162-190. 1928(1929).—*Alderia modesta* and *Limapontia depressa,* redescribed. The ecology, ethology, foods, reproduction, oviposition, development, and geographic distribution of these species are discussed.

17584. **GAMBETTA, LAURA. Malacofauna cirenaica. Una nuova specie di Helix.** *Ann. Mus. Civ. Storia Nat. Genova* 52: 236-238. 2 fig. 1925/1928.—*Helix* (*Cryptomphalus*) **antii*** (p. 236), Cyrenaica.

17585. **GOODRICH, CALVIN. Goniobases of the vicinity of Muscle Shoals.** *Occ. Papers Mus. Zoöl. Univ.*

Michigan No. 209. 1-25. 1930.—This paper discusses the status and relationships of 9 spp. and 2 subspp. of *Goniobasis,* which are recognized from the tributaries of the Tennessee River, between Jackson Co. and Franklin Co., Alabama. Extensive synonymies are collated from comparisons of the species described by earlier authors with the variation in extensive series of specimens. Six additional species are considered doubtful and 3 others are described as probably new.—*H. B. Baker.*

17586. **GUILLAUME, LOUIS.** Sur la présence de Cyclostoma elegans Müller dans la région littorale du Bessin. *Bull. Soc. Linn. Normandie* 1: 3-5. 1928(1929).

17587. **IREDALE, TOM.** Queensland molluscan notes, No. 1. *Mem. Queensland Mus.* 9(3): 261-297. 2 pl. 1929. —*Solemya* terraereginae* (p. 262); *Nuculana* caloundra* (p. 262). Arcidae: **IMPARILARCA,** type *I.* hubbardi* (p. 263); **BARRIMYSIA** (p. 263), type *Rochefortia excellens* Hedley; **FASTIMYSIA** (p. 264), type *R. viastellata* Hedley. Cardiidae: *Fragum* symbolicum (p. 264), new name for *Cardium hystrix* Rve.; *F.* perornatum (p. 264), n. n. for *C. imbricatum* Swby.; *F.* whitleyi* (p. 264); **PARDOSINIA,** type *P.* colorata* (p. 264); *P.* alma* (p. 265); **BONARTEMIS,** type *B.* stabilis* (p. 265); *Heteroglypta* hedleyi (p. 265), founded on Hedley's *Asaphis contraria* (Desh.) from New S. Wales; *H.* avecta (p. 266); *H.* pansa (p. 266), New Caledonia; *H.* saltatrix* (p. 266). Tellinidae: **QUIDNIPAGUS** (p. 266), type *Cochlea palatam* Martyn; **JACTELLINA** (p. 266), "types" *Tellina obliquaria* Desh. and (p. 293) *T. bougei* Swby.; **OBTELLINA** (p. 266), type *Tellina bougei* Swby.; **SALMACOMA,** type *S.* vappa* (p. 267). Mactridae: **TELEMACTRA** (p. 268), type *Mactra obesa* Rve.; **COLORIMACTRA** (p. 268), type *Mactra queenslandica* Smith; *C.* florens* (p. 268); **LUTROMACTRA** (p. 268), n. subg. of *Lutraria,* type *L.* impedita* (p. 268), n. n. for *L. elongata* Gray; *Standella* hubbardi* (p. 268); **MEROPESTA,** type *M.* meridana (p. 268) based on Hedley's *"Standella nicobarica"* from N. S. Wales; *Pharella* wardi* (p. 269); **MONTFORTISTA** (p. 269) n. subg. of *Montfortia,* type *M.* excentrica* (p. 269). Haliotidae: **SANHALIOTIS** (p. 270), type *Haliotis varia* L. from Philippines; *S. varia* aliena (p. 270), *S.* howensis (p. 270), Lord Howe I.; *S.* dissona* (p. 270). Trochidae: **LAETIFAUTOR** (p. 271), type *Calliostoma trepidum* Hedley; **CALTHALOTIA** (p. 271), type *Calliostoma arruense* Watson; **PULCHRASTELE** (p. 271), type *Astele septenarium* Melv. & Stand.; **CONOTALOPIA** (p. 271), type *Minolia henniana* Melv. & Stand.; **PARMINOLIA** (p. 271), "types" *Monilea apicina* Gld. and (p. 294) *Minolia agapeta* Melv. and Stand.; **VANITROCHUS** (p. 272), type *Solariella tragema* Melv. & Stand.; **VACEUCHELUS** (p. 272), type *Euchelus angulatus* Pease. Turbinidae: *Senectus* permundus (p. 272), n. n. for *Turbo concinnus* Philippi; *S.* necnivosus (p. 272), n. n. for *T. nivosus* Rve., from Philippines; *S.* perspeciosus (p. 272), n. n. for *Turbo speciosus* Rve., from New Holland; *S.* trossulus (p. 273), n. n. for *Turbo intercostalis* Philippi; **DENTARENE,** type *D.* sarcina (p. 274), n. n. for *Delphinula crenata* Kiener; *Dent.* munitus (p. 274), n. n. for *Del. muricata* Rve.; **GLOBARENE** (p. 274), type *Delphinula cidaris* Rve., with subsp. lenullus (p. 274). Phenacolepadidae: **CINNALEPETA** (p. 274), type *Phenacolepas cinnamomea* Gould; *C.* vagans (p. 275), New Caledonia; *C.* escensa (p. 275); **ZACALANTICA** (p. 275), type *P. linguaviverrae* Melv. & Stand.; **AMAPILEUS,** type *A.* immeritus* (p. 275); *Collisellina* bellatula* (p. 275); *C.* paropsis (p. 275); **PENEPATELLA,** type *P.* inquisitor* (p. 276); *P.* intraurea (p. 276), New Caledonia; *P.* arrecta* (p. 276); **TENPETASUS** (p. 277), type *Capulus liberatus* Pease from the Paumotus; **CAPULONIX** (p. 277), type *Patella calyptra* Martyn; **PILOSABIA** (p. 277), type *Pileopsis pilosus* Desh. Cerithiidae: *Cerithium* duffieldi (p. 278), n. n. for *C. granosum* Kiener; *C.* probleema (p. 278), n. n. for *C. lemniscatum* Q. & G.; *C.* sejunctum (p. 278), n. n. for *C. variegatum* Q. & G.; *C.* collacteum (p. 278), n. n. for *C. lacteum* Kiener; *C.* complexum (p. 278), n. n. for *C. taeniatum* Swby.; *C.* phylarchus (p. 278), n. n. for *C. sowerbyi* Kiener; *Clypeomorus* penthusarus (p. 278), n. n. for *Cerithium morus* Lam.; *Cerithidea* anticipata (p. 278), n. n. for *Cerithium kieneri* Hombr. & Jacq. Janthinidae: **VIOLETTA** (p. 279), type *Janthina globosa* Swains. Naticidae: **GENNAEOSINUM,** type *G.* peleum* (p. 279). Conidae: *Conus* circumactus (p. 281), n. n. for *Conus cinctus* Swains.; **TERENOLLA** (p. 282), type *Terebra pygmaea* Hinds. Cypraeidae: **XENUROTURRIS,** type *X.* legitima* (p. 285). Mitridae: **PULCHRITIMA** (p. 286), type *Mitra stigmataria* Gmelin; **ARENIMITRA** (p. 286), type *M. arenosa* Lam.; *A.* michaelis (p. 286), n. n. for *M. exasperata* Rve.; *Cylindromitra* fastidiosa* (p. 287), *C. crenulata* toleranda* (p. 287); **ACUTICYLINDRA** (p. 287), type *Voluta nucea* Gronow. Fusidae: **NIVITRITON** (p. 288), type *Triton antiquatus* Hinds. Nassariidae: **ALLANASSA** (p. 289), type *Nassa eximia* H. Adams from New Hebrides; **GRAPHICOMASSA** (p. 289), type *Colombella ligula* Duclos; **LAVESOPUS** (p. 289), type *C. spicula queenslandica* Hedley; **TRANSTRAFER,** type *T.* longmani* (p. 290). Obeliscidae: *Dolabella* andersoni (p. 292). Land shell: *Hadra* mortenseni* (p. 292). Almost none of these "new genera" is defined; most of them appear to be monotypic; and few of the inferred new combinations are actually used by the author.—*H. B. Baker.*

17588. **JAYET, AD.** La variation individuelle chez les Ammonites et la diagnose des espèces. Note préliminaire basée sur l'analyse d'Inflaticeras varicosum (Sowerby). *Abhandl. Schweizer. Paleont. Ges.* 49(Mem. 3): 1-11. 9 fig. 1929/1930.—A study of 300 specimens of the Lr. Cretaceous (Albian) ammonite *Inflaticeras varicosum* (Sowerby) from a 45 cm. bed at Perte du Rhône, France, with respect to variations in the cross-section, the number and inclination of the ribs, the suture, and the stages of development. Two varieties are recognized, multicostata* (p. 4) and crassicostata* (p. 4), and under each 6 unnamed variants of secondary order combining respectively thick, medium, or narrow cross-section with straight or with flexuous ribs. With this inclusive concept in mind the author examines various citations in the literature and proposes to suppress *Ammonites binus** Sowerby, *A. senequieri* D'Orbigny, *Brancoceras aegoceratoides* Steinmann, *Schloenbachia* (*Brancoceras*) *laferrei* Boule, Lemoine, and Thévenin, *Brancoceras orbignyi* Spath, *B. bucklandi* Spath, *B. helcion* (Reynès), *B. thisbe* (Reynès), *Hysteroceras choffati* Spath, *Brancoceras binodosum* Stieler as synonyms of *I. varicosum.* He rejects the genera *Hysteroceras* Hyatt, *Hystatoceras* Hyatt, *Brancoceras* Steinmann as included in *Inflaticeras* Stieler. The general conclusion is drawn that a sufficiently complete suite of individuals of an ammonite species will show variations that form a continuous series, which series must be considered to constitute the species. A species is not to be defined from a single specimen and the plan of designating a type specimen to represent the species is unsatisfactory because it leads to the designation as species of mere varietal forms.—*J. B. Reeside, Jr.*

17589. **JOUSSEAUME, [FELIX].** Cerithiidae de la Mer Rouge. *Jour. de Conch.* 74(4): 270-296. 3 fig. 1930. —These extracts from a manuscript left by Jousseaume (with anonymous notes) include emended descriptions, records and discussions of many species. *Cerithium* madreporicola* (p. 275); *C.* fallacies* (p. 278); *C.* proteum* (p. 283); *C.* sergentum (p. 284), n. n. for *C. lineatum* Tryon; *Colina* perimensis (p. 285), n. n. for *Cerithium taeniatum* Sow.; *Pirenella layardi,* vars. djiboutiensis and adenensis (p. 293); *P. cinerascens,* vars. lineolata (p. 293), nigro-cincta, luteo-annulata, and lutea (p. 294).—*H. B. Baker.*

17590. **JULLIEN, A.** Sur l'épithélium du manteau de la seiche. *Bull. Soc. Zool. France* 53: 82-87. 6 fig. 1928.—The different cells of the epithelium (ungranulated, granulated, and calciform) represent the evolutionary stages of the same cell, that of the striated level without granulations. As in the embryo, all these cells

undergo the mucous transformation; this mode of change resembles that of the striated level in the intestinal mucosa of the higher vertebrates.—*A. Jullien (transl. by S. A. Watson).*

17591. KÄNDLER, RUDOLF. Die Kultur der Auster. In: EMIL ABDERHALDEN. Handbuch der biologischen Arbeitsmethoden. Abt. IX. Methoden der Erforschung der Leistungen des tierischen Organismus. Teil 5, Heft 5. 599-716. 54 fig. Urban & Schwarzenberg: Berlin, 1930. —An extensive summary of literature on the biology and culture of: *Ostrea edulis* in France, Belgium, Holland, Great Britain, Denmark, Norway, Italy; *O. virginica* on the Atlantic coast of North America; *O. lurida* and *O. gigas* introduced from Japan, on the Pacific coast; and several species in Japan. A 12 page summary of knowledge of the biology and of the distribution of oysters lays emphasis upon temp. barriers and the importance of currents. Detailed account is given of the culture of *O. edulis* from Roman times, showing progressive depletion of all European natural oyster beds, reaching a climax in the heavy mortality of natural and planted oysters in France and England in 1920-21. Coincident with decrease in *O. edulis* has been invasion of the inferior Portuguese oyster, *O. angulata,* which now comprises bulk of oysters produced in France. Chief development of industry effected through use of brush and cement covered tiles for cultch and of artificial claires for fattening or producing Marennes greening. Most favorable conditions are now in Holland, where high water temp. and abundant food are found. Seed oysters are exported from Holland to neighboring countries. An important natural experiment occurred on the Danish west coast when the sea broke through into the Limfjord in 1825 followed by building up of numerous natural oyster banks. Save in Germany, where American methods are employed, European and Japanese oyster culture involves much hand labor and is costly. Natural beds in America greatly depleted, with subsequent development of private planting. Production of over a million tons in 1875 has decreased by two fifths. Chief enemies of oyster are: slipper limpet in England, the starfish, drill, mussel, mudworm, and drumfish in America. Chief differences between Old and New World methods of culture are: much hand labor and marketing oysters in the shell in Europe; large scale production with machine power and shucking of oysters in America, leaving the shells to provide cultch for obtaining spatfall. The final chapter on research emphasizes the studies of the development and of the food of oyster larvae carried on at Conway, Helgoland, and at Milford, Connecticut.—*T. C. Nelson.*

17592. [KHUDÍAEV, I.] ХУДЯЕВ, И. О некоторых верхнемезозийских ископаемых из района р. Оби. (Some upper Mesozoic fossils from the region of the river Ob.) [English summary.] Труды Ленинградского Общества Естествоиспытателей. Протоколы заседаний, научные статьи и сообщения (*Trav. Soc. Natur. Leningrad, Compt. Rend. Séanc.*) 59(1): 127-135. 1 pl., 3 fig. 1929.—A collection of fossils from the Beresovsky district, Tobolsk Province, Siberia, contains: *Blanfordia* **tobolica*** (p. 129), and *Ostrea leymerii* v. **sibirica** (p. 132), both apparently Neocomian. The collection, types included, is in the Geol. Cabinet, Leningrad Univ.

17593. KISHITANI, TEIJIRO. On the luminous organs of Watasenia scintillans. *Annot. Zool. Japonensis* 11(4): 353-361. 3 pl. 1928.—*W. scintillans* (Berry) possesses 3 kinds of luminous organs of different construction, all organs of intracellular luminescence. The existence of luminous symbiotic bacteria in the luminous organs can not be demonstrated either histologically or bacteriologically. It is as yet open to question whether the spindle-shaped granules and the rods may play an important rôle in the production of light or if they merely function as a reflector.—*Author's summary.*

17594. KURODA, J. T. Catalogue of the shell-bearing Mollusca of Amami-Oshima (Oshima, Ôsumi). [Text in Japanese.] 126p. Special Publ. Kagoshima-Ken Educational Investigation Comm.: Kagoshima, 1928.—Eleven hundred and forty-eight species and subspp. are recorded. —*S. S. Berry.*

17595. LAIS, R. Bemerkenswerte Gehäuse der Weinbergschnecke aus dem Naturalienkabinett der F. F. Sammlungen in Donaueschingen. [Noteworthy shells of the edible snail from the F. F. collections in Donaueschingen, Tübingen, Germany.] *Schr. Ver. Gesch. u. Naturgesch. Baar u. Angrenz. Landesteile Donaueschingen* No. 17. 274-288. 4 fig. 1928.

17596. LOMBARD, J. Céphalopodes et Lamellibranches crétacés du Congo Français. *Bull. Soc. Geol. France* 30 (5): 277-322. Map, 5 pl., 4 fig. 1930.—There are described 9 cephalopods, divided as follows: 3 *Pseudotissotia,* including *P.* **gabonensis*** (p. 289); 1 *Fagesia;* 1 *Peroniceras;* 2 *Gauthiericeras;* 1 *Barroisiceras;* 1 *Mortoniceras;* 14 lammellibranchs classed as follows: 1 *Arca;* 3 *Inoceramus;* 2 *Lima;* 2 *Plicatula;* 2 *Ostrea;* 2 *Alectryonia;* 1 *Meretrix;* 1 *Pholadomya.* The map shows the position of the Cretaceous beds.—*W. Berry.*

17597. MASSY, ANNE L. Mollusca (Pelecypoda, Scaphopoda, Gastropoda, Opisthobranchia) of the Irish Atlantic Slope, 50-1500 fathoms. *Proc. Roy. Irish Acad. Sect. B* 39(13): 232-342. Map. 1930.—A list is given of the molluscan fauna of the west coast of Ireland from 49° N. to 56° N. lat.; records to the E. of the Fastnet Light (9° 36′ W.) being excluded. The list is based mainly on the examination of collections made by the Irish Fishery Department's steamer "Helga" (records in full with depths and localities), but is supplemented by references to previous records; 313 species are enumerated of which 8 were taken alive, viz.: *Lima jeffreysi, Callocardia ? adamsi, Cochlodesma tenerum, Dentalium caudani, Puncturella granulata, Fissurella tanneri, Cocculina galeola, Volumitra groenlandica;* and 9, shells only, viz.: *Nuculana intermedia, Cuspidaria obesa* v. *glacialis, Acmaea rugosa, Gibbula hettematica, Pedicularia sicula, Epitonium tortilis, E. richardi, Triforis bigemma, Clathurella homeotata,* are additions to the British and Irish area. Known distribution, both recent and fossil, is summarized with, in many cases, notes on form and habitat and the views of specialists to whom critical species were submitted.—*G. P. Farran.*

17598. NAGAO, TAKUMI. On some Cretaceous fossils from the Islands of Amakusa, Kyûshû, Japan. *Jour. Fac. Sci. Hokkaido Imp. Univ. Ser. 4, Geol. & Mineral.* 1 (1): 1-25. Map, 2 pl. 1930.—Stratigraphic notes, with mention of spp. previously described from this locality, precede the systematic section. Himenoura group: *Nucula* **formosa*** (p. 14); *Glycimeris* **amakusensis*** (p. 15). Goshonoura group: *Glycimeris amakusensis* v. **solida*** (p. 16); *Trigonia* **pustulosa*** (p. 17); *Veniella* (?) **japonica*** (p. 21); *Cerithium* **pyramidaeforme*** (p. 23). Types in Inst. Geol. & Paleont., Tôhoku Imperial Univ., Sendai.

17599. NAGAO, TAKUMI. New discovery of Aptychus in two species of ammonites from the Upper Cretaceous of Japan. *Proc. Imp. Acad.* [*Tokyo*] 7(4): 165-168. 1 pl. 1931.—These forms from the Up. ammonites beds (Senonian) of Hokkaidô are the first aptychi to be described from Japan. *Striaptychus** (s. str.) sp. indet. found in a sp. of *Scaphites* or *Yezoites;* **SUBSTRIAPTYCHUS** (p. 166), "subtype" of *Striaptychus,* erected for *Striaptychus* (*Substriaptychus*) **yabei*** (p. 166), a name given to the aptychus of a new sp. to be described later as *Hamites* (*Polyptychoceras*) *yabei* Sasa & Nagao [Lytoceratidae].

17600. OLDHAM, C. Additions to the mollusca of Wicken Fen. *Nat. Hist. Wicken Fen* Pt. 3. 198-200. 1926.

17601. PÉRÉBASKINE, V. Sur la présence de Libycoceras ismaeli Zittel au Soudan français. *Bull. Soc. Geol. France* 30(3/4): 129-132. 1 pl., 1 fig. 1930.—Describes *Libycoceras ismaeli* v. **soudanense*** (p. 130) from 4 Soudan localities, probably Maestrichtian in age.—*W. Berry.*

17602. PFEFFER, GEORG. Äthiopische Helicaceen und ihre systematische Stellung. *Mitteil. Zool. Staatsinst. u.*

Zool. Mus. Hamburg 44: 243-278. 1931.—A general discussion of the sexual apparatus in the Helicacea (Eulotidae and Helicidea), differential characters between these families, and the characteristics of the African representatives of the group. Full descriptions of all species. **CONGOHELIX** (p. 272), near *Halolimnohelix*, based on *C.* sericata (*H. s.* Pilsbry) (p. 272); *C.* langi (*H. l.* Böttger) (p. 272); *C. l.* var. böttgeri (p. 272), Belgian Congo; *C.* zonata (*H. z.* Pilsbry) (p. 272); *C.* mollitesta (*H. m.* Pilsbry) (p. 272); *Halolimnohelix intensa* Pilsb., *H. rutshurensis* Pilsb., *H. hirsuta* Pilsb., and *H. mukulensis* Pilsb. are referred to *Urguessella*.

17603. **PING, C. Notes on a new Melania.** *Bull. Fan Memor. Inst. Biol.* 1(11): 207-211. 2 fig. 1930.—*M.* harbinensis* from Harbin, Manchuria, type in Fan Mem. Inst. Biol.

17604. **POLIŃSKI, WLADYSLAW. Limnološka ispitiwanja Balkanskog Poluostrva. 1. Reliktna fauna gasteropoda Ohridskog Jezera. [Relict gastropod fauna of Lake Ochrida.]** [French summary.] *Bull. Acad. Royal Serbe Sci. Arts, Beograde* 137(65): 131-182. 1929.—This fauna consists of 26 spp., most of which are known only from Lake Ochrida. Only a few spp. have affinities with the Balkan molluscan fauna. The endemic elements in the fauna represent the remains of a Pliocene freshwater and brackish-water fauna of Jugoslavian and Pannonian territories. With the exception of Lake Baikal, this is the only Palaearctic lake which has preserved intact to this day its archaic fauna of Tertiary Prosobranchiata and Pulmonata. Valvatidae: *Valvata* (*Cincinna*) stenotrema (p. 135) [spelled *strenotrema* here by typographical error]; *V.* (*Atropidina*) ochridana (p. 136); COSTOVALVATA (p. 137), n. subg. of *Valvata*, type *V.* (*C.*) hirsutecostata (p. 138), including also *V.* (*C.*) *rhabdota* Stur. Hydrobiidae: *Hydrobia* (*Hydrobia*) grochmalicki (p. 139); *Pseudamnicola sturanyi* redescribed. TRACHYOCHRIDIA (p. 142), n. subg. of *Micromelania*, type *M.* (*T.*) filocincta (p. 142); STANKOVIĆIA (p. 143), in subf. Baicaliinae, type *S.* baicaliiformis (p. 144); XESTOPYRGULA (p. 147), n. subg. of *Pyrgula*, type *P.* (*X.*) dybowskii (p. 148), including also *P. pfeiferi, P. barroisi, P. radići*, and *P. fuchsiana; P.* (*P.*) pavlovici (p. 151); *P.* (*P.*) wagneri (p. 152); BRACHYPYRGULA (p. 153), n. subg. of *Pyrgula*, type *P. bicarinata* Desmoul.; MICROPYRGULA (p. 154), n. subg. of *Pyrgula*, type *P.* (*M.*) stankovići (p. 154), including also *P. pyrenaica, P. darrieuxi*, and *P. hungarica;* NEOFOSSARULUS (p. 156), related to *Fossarulus*, type *N.* stankovići (p. 157). Limnaeidae: *Radix* relicta (p. 158). Planorbidae: CARINOGYRAULUS (p. 161), n. subg. of *Gyraulus*, type *G.* (*C.*) trapezoides (p. 162), including also *G. paradoxus* Stur., *G. lychnidicus* Hesse, and *G.* (*C.*) relictus (p. 164). Ancylidae: *Ancylus* tapirulus (p. 165); *Acroloxus* improvisus (p. 166). Types of new spp. in Polish Nat. Mus. Zool.

17605. **SAEZ, MATHILDE D. de. Orthoceras paleozoicos de San Juan.** *Notas Prelim. Mus. La Plata* 1(2): 241-254. 4 fig. 1931.—*O.* clarkei* (p. 243), *O.* cuyanus* (p. 244), *O.* cabrerai* (p. 246); SPIROPLEROCERAS (p. 251), type *S.* keideli* (p. 251); all Devonian. Other *Orthoceras* specimens are described but not named.

17606. **SEITZ, O., und R. RUTSCH. Die Gattung Amotapus Olsson, eine echte alttertiäre Mya (Raetomya) Linne.** *Eclogae Geol. Helvetiae* 23(2): 594-604. 1 pl., 2 fig. 1930.—The genus *Amotapus* Olsson 1928 is synonymous with *Raetomya* B. Newton 1919. *Raetomya* is proposed as a subgenus of *Mya* with 4 representatives in the Eocene, 1 from the Fayûm, Nigeria, and German South-West Africa, 1 from South-West Africa, 1 from Peru, and 1 *Mya* (*Raetomya*) *schweinfurthi* v. falconensis* (p. 602) from Venezuela.—*W. Berry.*

17607. **SPATH, L. F. On some Ammonoidea from the Lower Greensand.** *Ann. & Mag. Nat. Hist.* 5(29): 417-464. 4 pl. 1930.—Discusses stratigraphic occurrence, and describes the following spp. of Aptian (mid Lower Cretaceous) Ammonoidea from the south of England. Parahoplitidae: *Deshayesites* grandis* (p. 427), *D.* kiliani* (p. 429), *D.* topleyi* (p. 430), *D.* vectensis* (p. 430), *D.* punfieldensis* (p. 431); *Dufrenoyia* truncata* (p. 436); *Parahoplites* sussexensis* (p. 441). Cheloniceratidae: *Cheloniceras* perli* (p. 445), *C.* crassum* (p. 449). Ancyloceratidae: *Epancyloceras* hythense* (p. 455); *Tonohamites* proteus* (p. 461). There are notes on specimens of *Deshayesites deshayesi; D.* aff. *latilobatus; D. consobrinoides; D. consobrinus*; D. fissicostatus* (Phillips) (=*Hoplitides bodei* v. *tenuicostatus* v. Koenen); *D. bodei*, restricted; *D.* aff. *laeviusculus; Dufrenoyia furcata; D. lurensis*; Parahoplites nutfieldensis*; *P.* aff. *campichei; P. simmsi**, first illustration; *P.* cf. *multicostatus; Procheloniceras* cf. *albrechti-austriae; P.* cf. *pachystephanus; Cheloniceras hambrovi; C.* aff. *gottschei; C.* aff. *meyendorffi; C. cornuelianum; C. kiliani; C.* aff. *seminodosum; C. martini**; *C.* aff. *tschernyschewi; C.* aff. *subnodosocostatum; Ancyloceras matheronianum; A.* aff. *varians; Tropaeum bowerbanki; T. hillsi; T. gigas**; *T.* cf. *gracile; Ammonitoceras tovilense; Tonohamites decurrens;* and *Hamites? grandis**. —*C. H. Crickmay.*

17608. **TEGLAD, NELLIE MAY. The gastropod genus Galeodea in the Oligocene of Washington.** *Univ. California Publ., Bull. Dept. Geol. Sci.* 19(18): 397-434. 7 pl. 1931.—Specimens from the Oligocene and Miocene, hitherto referred to *Eudolium*, are all *Galeodea*. A phylogenetic series is traceable from Up. Eocene through Oligocene horizons to the Miocene spp., maximum development being in Oligocene. *Galeodea tri-tuberculata**, emended descr.; *G.* fax* (p. 410), Lincoln formation (Oligocene); *G.* rex* (p. 413), Blakeley formation (Oligocene); *G.* apta* (p. 415), Twin Rivers formation (Oligocene); and *G.* petrosa* (*Dolium petrosum* Conrad) (p. 418). Types of n. spp. in Univ. of California.

17609. **TORRE, CARLOS de la. New Cuban Urocoptidae.** *Proc. Acad. Nat. Sci. Philadelphia* 81: 443-447. 16 fig. 1929.—*Urocoptis* intusfalcata* Torre & Ramsden (p. 443), *U.* manzanillensis* (p. 444), *U.* nodulifera* (p. 444), *U.* cuestai* (p. 445), *U.* terebella* (p. 445), *U.* rocai* (p. 446), *Microceramus* bermudezi* (p. 446), all from Cuba, types in Acad. Nat. Sci., Philadelphia.

17610. **WAGNER, HANS. Diagnosen neuer Limaciden aus dem Naturhistorischen Museum in Wien.** *Zool. Anz.* 95(5/8): 194-202. 1931.—*Limax* (*L.*) scupicus (p. 194), Jugoslavia; *Lehmannia* (*L.*) *marginata* v. multilineata (p. 195) [locality not given]; *Agriolimax* steindachneri (p. 196), Turkey; *A.* brunneri (p. 197), Bulgaria; *A.* lăbămi (p. 198), Sardinia; *A.* rivanus (p. 199), Italy; *Milax* (*M.*) kusceri (p. 200), Jugoslavia; *M.* (*Subamalia*) scyrius (p. 201), Skyros, Greece; *M.* (*S.*) athenensis (p. 201), Greece.

17611. **YOKOYAMA, MATAJIRO. Pliocene shells from near Nanao, Noto.** *Imp. Geol. Surv. Japan Rept.* No. 104. 1-7. 6 pl. 1929.—*Pecten* (*Patinopecten?*) *kagamianus** Yok. (=*Pecten permirus* Yok.) redescribed; *P. notoensis** redescr.; *P.* (*Chlamys*) *hastatus* v. ingeniosa* (p. 5); *P.* (*C.*) crassivenius* (p. 6); *P.* sp.* Types in Geol. Mus. Imp. Univ. Tokyo.

17612. **YOKOYAMA, MATAJIRO. Pliocene shells from Tônohama, Tosa.** *Imp. Geol. Surv. Japan Rept.* 104. 9-17. 2 pl. 1929.—A report on 46 spp. of which the most important are: *Comus comatosaeformis**, new to Japan; *Pleurotoma carinata* v. *woodwardi**, new to Japan; *Fusus dualis**, emendation; *Dolium costatum**, descr. notes (this species is still living in central Japan and the Philippines); *Rostellaria fusus**, *Subemarginula cicatrosa**; *Dentalium* (*Fustiaria*) suzukii* (p. 14); *Corbula* tosana* (p. 15), *Crassatellites yagurai** Makiyama (=*C. oinouyei* Yok.); *Thracia pubescens**, *Arca philippiana**, and *Cucullaea concamerata**. Types of new spp. in Geol. Coll. Imp. Univ. Tokyo.

CRUSTACEA

MARY J. RATHBUN, *Editor*
WALDO L. SCHMITT, *Associate Editor*
CHANCEY JUDAY, H. A. PILSBRY, CLARENCE R. SHOEMAKER,
CHARLES B. WILSON, *Assistant Editors*

(See also in this issue Entries 15683, 15705, 15730, 16021, 16592, 16703, 17268, 17280, 17284, 17486, 17519, 18112, 18114, 18115)

17613. **BALDI, EDGARDO.** Il diaptomide trasimenico. Contributo al problema delle razze del vulgaris in Italia. [German summary.] *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(3/4) : 219-256. 13 fig. 1931.—On the races of *Diaptomus vulgaris** in Italy.

17614. **BLAKE, CHARLES H.** Two freshwater ostracods from North America. *Bull. Mus. Comp. Zool. Harvard Coll.* 72(7) : 281-292. 26 fig. 1931.—*Cyprinotus*, key to N. Amer. spp.; *C.* sulphureus* (p. 281), Utah; *Heterocypris* does not seem to warrant generic rank; *Cypriconcha* macra* (*Cypris grandis* Chambers, preocc.) (p. 288).

17615. **BRONSTEIN, Z. S.** Beiträge zur Kenntnis der Ostracodenfauna U. S. S. R. und Persiens. *Arch. Naturgesch. Abt. A* 91(9) : 1-30. 2 pl., 4 fig. 1925(1927).—Notes on materials collected in various sections, with the following new data: *Cyclocypris serena* ssp. brevisetosa* (p. 2), Vologodsk Province; *Cypridopsis elongata* v. orientalis* (p. 8), Moscow Prov.; *Eucypris inflata** redescribed; *E. clavata* v. parva* (p. 16) and *Potamocypris almasyi* v. angulata* (p. 17), Kuban Prov.; *Ilyocypris gibba*, description of ♂; descriptive remarks on *Cypris pubera* and *C. bispinosa*; *C.* maculosa* (p. 22), *Strandesia vavrai* v. persica* (p. 24) and *Herpetocypris* tarnogradsky* (p. 25), Persia; 10 spp. of Ostracoda are now known from Persia. The bibliography contains 42 references. Types in Zool. Mus. Moscow.

17616. **CANNON, H. GRAHAM.** Nebaliacea. *Discovery Repts. (Government Dependencies Falkland Isls.)* 3: 199-222. 1 pl., 7 fig. 1931.—Descriptive studies of *Nebaliopsis typica**, *Nebaliella extrema**, and *Nebalia longicornis*.

17617. **DOLLFUS, R.-PH.** Addendum à ma note sur le Sarcotaces verrucosus Olsson. *Bull. Mus. Nation. Hist. Nat.* 1(3) : 191-192. 1929.

17618. **ELSTER, H.-J.** Über einen Fundort von Diaptomus superbus Schmeil, nebst einigen Bemerkungen über die Farben der Copepoden. *Zool. Anz.* 96(9/10) : 245-251. 2 fig. 1931.—Ecological notes on *Diaptomus superbus, D. castor, Heterocope weismanni, H. saliens*, and *Chirocephalus grubei*, and the effect of temp. and other factors on color.

17619. **FLIPSE, H. J.** Einige Parthenopidae aus dem naturhistorischen Museum in Leiden. *Zool. Mededeel.* 14(1/2) : 89-96. 1931.—Notes on 10 spp. of *Lambrus* and 2 of *Parthenope* with full descriptions of *L.* (*Platylambrus*) *prensor* (Herbst), *L.* (*Pseudolambrus*) *beaumonti* (Alcock) and *Parthenope spinosissima* A. Milne Edwards.—*M. J. Rathbun.*

17620. **GLAESSNER, MARTIN F., and THOMAS H. WITHERS.** On London clay [Eocene] crabs of the family Raninidae. *Ann. and Mag. Nat. Hist.* 8(47) : 484-493. 2 pl., 1 fig. 1931.—*Laeviranina* glabra* (*Palaeocorystes g.* H. Woodward) (p. 485) and *L.* gottschei* (*Raninellopsis g.* J. Böhm) (p. 486) are redescribed and compared with other spp., and their systematic position is discussed. *L.* vaderensis (*Raninoides v.* Rathbun) (p. 491); *L.* lewisana (*R. lewisanus* Rathbun) (p. 491); *L.* washburnei (*R. w.* Rathbun) (p. 491); *L.* dickersoni (*R. d.* Rathbun) (p. 491).

17621. **[GUR'ĬANOVA, E.]** ГУРЬЯНОВА, Е. К фауне Crustacea-Malacostraca Баренцова, Белого и Карского морей. **[Crustacea-Malacostraca of the Barents, White, and Kara Seas.]** [English summary.] Труды Ленинградского Общества Естествоиспытателей. Протоколы заседаний, научные статьи и сообщения (*Trav. Soc. Natur. Léningrad, Compt. Rend. Séanc.*) 59(1) : 29-46. 7 fig. 1929.—An annotated list of the more interesting Isopoda, Amphipoda, and Decapoda found, including some forms new to the region.

17622. **HART, T. J.** Preliminary notes on the bionomics of the amphipod, Corophium volutator Pallas. *Jour. Marine Biol. Assoc. Unit. Kingdom* 16(3) : 761-789. 4 fig. 1930.—Collections of the estuarine amphipod *C. volutator* were made from widely separated localities, and, together with observations on living animals, showed that it can withstand great changes in salinity, but that its abundant occurrence is limited by the nature of the substratum. Coarse grey mud with little decaying matter and a pH well on the alkaline side, is required. The species is mainly a selective deposit feeder. Small particles of detritus are sifted out by the setae fringing the first gnathopods when the animal is crawling freely over the surface of the mud, and transferred to the mandibles by the maxillipeds. Within the burrow a method of suspension feeding is employed. Measurements and examination of the ♀♀ showed that the breeding period lasts from April to Sept., and several broods are hatched each yr. The last hatched broods mature slowly through the winter and begin breeding the following spring. During autumn and winter the mature individuals of the previous season die off. The morphology of the gut diverticula suggests that *Corophium* is a secondarily modified amphipod, probably derived as an early offshoot from the evolutional series which started from gammaridean stock and culminated in the degraded caprellids. A previously described variation has been attributed to the effect of the adoption of a less saline habitat. The Whitby collections do not bear this out, and suggest rather that it is in some way correlated with the higher rate of metabolism of the "summer stock." These reach maturity in about 2 mos., while the winter stock take 6. The proportion of variants is much higher in the summer stock.—*T. J. Hart.*

17623. **HESSE, ERICH.** Färbungsabweichungen bei Chirocephalus grubii Dyb. *Zool. Anz.* 96(1/2) : 38-40. 1931.—In Mark Brandenburg, albinotic phases occur, localized in certain pools and ditches. While chemical composition is a factor capable of influencing color, it seems that this particular color deviation is due chiefly to other factors. The albinotic phases persist in a given locality for upward of 6 years.

17624. **KIEFER, FRIEDRICH.** Neuseeländische Süsswassercopepoden. *Zool. Anz.* 96(11/12) : 273-282. 11 fig. 1931.—A report of the copepods found at 8 localities in New Zealand, and a description of *Gladioferens* gracilis* (p. 275); notes on *Eucyclops* (*Tropocyclops*) *prasinus*.

17625. **LEBOUR, MARIE V.** The larvae of the plymouth Galatheidae I. Munida banffica, Galathea strigosa and Galathea dispersa. *Jour. Marine Biol. Assoc. Unit. Kingdom* 17(1) : 175-187. 3 pl., 1 fig. 1930.—The larvae of these 3 species are described and figured, all having been hatched from the egg. The 2 genera *Munida* and *Galathea* are compared in their larval forms and the 3 species differentiated.—*M. V. Lebour.*

17626. **LOWNDES, A. G.** Some fresh-water Entomostraca of the Birmingham district [England]. *Ann. and Mag. Nat. Hist.* 8(48) : 561-577. 9 fig. 1931.—A list of 33 spp. of Copepoda, 38 Cladocera, and 28 Ostracoda, with general remarks. Ostracoda: descriptive data on *Candona neglecta**; *Cryptocandona vàvrai* and *Herpetocypris intermedia*, new to British Isles; *Ilyocypris* ambigua (p. 569). The spp. are listed according to localities.

17627. **MAKI, MOICHIRO.** On Pinnotheres parvulus, Stimpson. [In Japanese.] *Trans. Nat. Hist. Soc. Formosa* 21(116): 280-281. 1 fig. 1931.

17628. **MARKEWITSCH, A. P.** Parasitische Copepoden und Branchiuren des Aralsees, nebst systematischen Bemerkungen über die Gattung Ergasilus Nordmann. *Zool. Anz.* 96(5/6): 121-143. 8 fig. 1931.—Report of finding *Lamproglena pulchella* parasitic in *Scardinius erythrophthalmus; Ergasilus sieboldi** in 15 spp. of fishes; *Caligus lacustris* in 10 spp.; *Lernaeocera esocina* in *Cyprinus carpio* and *Esox lucius; Argulus foliaceus* in 9 spp. The genus *Ergasilus* is considered critically, with tables of measurements of the characters of 4 spp.

17629. **MARSH, C. DWIGHT.** On a collection of Copepoda made in El Salvador by Samuel F. Hildebrand and Fred J. Foster of the U. S. Bureau of Fisheries. *Jour. Washington Acad. Sci.* 21(10): 207-209. 1931.—Annotated list of 3 spp.

17630. **OAKLEY, C. L.** The Chondracanthidae (Crustacea: Copepoda); with a description of five new genera and one new species. *Parasitology* 22(2): 182-201. 8 fig. 1930.—The Chondracanthidae have been already divided by Leigh-Sharpe and Oakley into Chondracanthinae and Lernentominae, and the paper completes the account of the family by dealing with the former subfamily. A survey of the history, ecology, and morphology is given, and a discussion of the systematic position. Two new group names are proposed, the **CYCLOPIFORMES** (p. 185) and the **CALIGIFORMES** (p. 185). The former includes free-swimming forms and also Ergasilidae, Juanettiidae, Chondracanthidae, and Monstrillidae; the latter the Caligidae, Dichelesthiidae, Lernaeidae, Lernaeopodidae, Choniostomatidae and Herpyllobiidae. The Chondracanthinae include the following genera: *Chondracanthus* Delaroche (with 12 spp.), *C. zei** Delaroche; *C. lophii** Johnston; *C. merluccii** (Holten); *Acanthochondria* Oakley, 1927; *A. cornuta** (O. F. Müller); *A. clavata** (Bassett-Smith); *A. depressa** (T. Scott); *A. epachthes* (Wilson); *A. flurae** (Kröyer); *A. limandae** (Kröyer), *A.* **purpurea*** (p. 193), parasitic on *Eleginops maclovinus* from Falkland Isls.; *A. soleae* (Kröyer); **ACANTHOCHONDRITES** (p. 195), erected to include *A.* **annulatus*** (*Chondracanthus a.* Olsson) (p. 195); **CHONDRACANTHOPSIS** Wilson MS. (p. 196), type *C.* **nodosus*** (*Chondracanthus n.* Müller) (p. 196); **DISPHAEROCEPHALUS** (p. 196), erected to include *D.* **ornatus*** (*Chondracanthus o.* T. Scott) (p. 196); *Blias* Kröyer, type *B. prionoti* Kr.; **CHONDRACANTHODES** Wilson MS. (p. 199), type *C.* **deflexus** (p. 199) *Diocus* Kröyer, type *D. gobinus* (Müller); *Pseudochondracanthus*, Wilson, type *P. diceraus* Wilson; **TRIPHYLLACANTHUS** (p. 200), for *T.* **molestus** (Heller) new comb.—*R. Gurney.*

In his introductory remarks and historical review the author says: "An attempt has been made here to separate the genus *Chondracanthus* into its component genera, and for that purpose 5 new genera have been erected: *Acanthochondria* Oakley 1927, **ACANTHOCHONDRITES; CHONDRACANTHODES, CHONDRACANTHOPSIS,** and **DISPHAEROCEPHALUS.** The descriptions of Chondracanthodes and Chondracanthopsis were communicated to me in manuscript by Wilson."

17631. **QUEEN, JOHN.** Additional Brachyura and crab-like Anomura from Friday Harbor, Washington. *Publ. Puget Sound Biol. Sta.* 7: 393-400. 7 fig. 1930.—*Cryptolithodes sitchensis* Brandt, *Lopholithodes foraminatus* (Stimpson), *Munida quadrispina* Benedict, *Pugettia richii* Dana, and *Chionoecetes tanneri* Rathbun are reported, described, and figured.—*M. W. Smith.*

17632. **ROY, JEAN.** Mission saharienne Augiéras-Draper, 1927-1928. Copépodes et ostracodes. *Bull. Mus. Nation. Hist. Nat.* 1(6): 392-393. 1 fig. 1929.—Brief notes on 4 spp. of Copepoda, *Eucyclops nubicus**, and 1 sp. of Ostracoda.

17633. **STEPHENSEN, K.** On Lepidepecreella cymba (Goës), a gammarid amphipod from Spitzbergen. *Arkiv. Zool.* [*Stockholm*] 22A(2 No. 9): 1-6. 2 fig. 1931.—A redescription, with figures, of the type specimen (♀) of *Lysianassa cymba* Goës, from the Storfjord, in 10 m., clay. Type in Naturhist. Riksmuseum, Stockholm. The species is transferred to the genus *Lepidepecreella* Schellenberg, with which the genus *Paracyclocaris* Barnard, is also synonymous, according to the author. *Lepidepecreela* now includes 3 species: *L.* **cymba*** (*Lysianassa c.* Goës) (p. 1), *L. ctenophora* Schellenberg, and *L.* **bidens** (*Paracyclocaris b.* Barnard) (p. 6). It affords a new case of bipolarity among the genera of Amphipoda.—*W. M. Tattersall.*

17634. **TATTERSALL, W. M.** A terrestrial amphipod new to the fauna of Lancashire and Cheshire. *North Western Naturalist* 6(4): 224-225. 1931.—On *Talitrus alluaudi.*

17635. **WHITCOMB, LAWRENCE.** New information on Homalonotus trentonensis. *Bull. Geol. Soc. America* (*Proc. Paleontol. Soc.*) 41(2): 341-350. 2 pl. 1930.—Additional parts of this trilobite, never found before, were collected from the lower Trenton (Salona formation) Salona, Clinton Co., Pennsylvania. This has made possible a more complete description than has hitherto been published. *H. trentonensis** is particularly interesting because it is the oldest homalonotid known in N. America. The genus is placed in the subgenus *Brongniartella*. The history of the species is reviewed and a comparison made with the nearest related forms. *H. trentonensis* has been found only throughout the Trenton horizons of central Pennsylvania. It is most closely related to *H. bisulcatus* from the Up. Longville and Marshbrook beds in Wales. The 2 species are probably of about the same geologic age.—*G. A. Stewart.*

ENTOMOLOGY

GENERAL

ROYAL N. CHAPMAN, *Editor*

W. H. ROBINSON, *Associate Editor*

(See also in this issue Entries: (Evolution) 15135; (Preservation) 15145; (Collections) 15154, 15155; (Genetics) 15249, 15259, 15268, 15283, 15284, 15285, 15286, 15287, 15288, 15293, 15295, 15296, 15297, 15298, 15302; (Ecology) 15309, 15377, 15392, 15393; (Plant disease vectors) 15398, 15410, 15415, 15416, 15417, 15421, 15424; (Sense organs) 15953; (Animal disease vectors) 16565, 16576, 16579, 16580, 16588, 16601, 16604, 16605, 16606, 16620, 16637, 16647, 16648, 16649, 16650, 16652, 16653, 16654, 16663, 16687, 16710; (Parasites) 16581, 16585, 16594, 16615; (Plant pests) 16939, 16967; (Wax production) 17063; (Histology) 17460, 17467, 17468)

COLEOPTERA

ANDREW J. MUTCHLER, *Editor*

(See also in this issue Entries 16580, 16783, 16784, 16791, 16819, 16827, 16830, 16838, 16840, 16842, 16848, 18114, 18116)

17636. **ANDREWES, H. E.** Papers on Oriental Carabidae. XXV. *Ann. and Mag. Nat. Hist.* 7(42): 514-528. 1 fig. 1931.—Descriptions of new spp. from North India and synonymic notes. *Callistomimus* **gracilis** (p. 513); *Chlaenius* **omochlorus** (p. 514), type in Brit. Mus.; *Chydaeus* **planicollis*** (p. 515); *Hyparpalus* **indicus** (p. 516); *Anchomenus* **viator** (p. 517); *Brachinus* **pelpastes** (p. 518); *Holcoderus* **aeripennis** (p. 519) (the first sp. of this genus described from continental India); **AMBLOPS** (p. 520), allied to *Brachychila*, type *A.* **piceus** (p. 521); *Lionychus* **himalayicus** (p. 522); *Metabletus* **hastatus** (p. 523); *Tetragonoderus* **elegans** (p. 524); *Calleida* **pallipes** (p. 525); *Anchista* **nubila** (p. 526). All types in author's coll. except the 2nd. *Paropisthius davidis* Fairm. (=*Elaphrus d.* Fairm.); *Chlaenius hamatus* Dej. (=*C. macleayi* Andr.); *Anisodactylus karennius* Bates (=*Harpalus* (?) *k.* Bates); *Harpalus salinus* Dej. (=*Hypsinephus ellipticus* Bates); *Hypolithus acutangulus* Bates is probably identical with *H. javanus* Gory; *Trigonotoma verberifera* Schauf. (=*T. modesta* Heyne); *Dicranoncus pocillator* Bates (=*Monacanthonyx p.* Bates); *Dinopelma bouchardi* Pllde. (=*Hexagonia b.* Pllde.); *D. virens* Andr. (=*Hexagonia v.* Andr.); *Lachnothorax tokkia* Gestro (=*L. malayicus* Andr.); *Planetes ruficollis* Nietn. (=*P. immaculatus* Schaum).

17637. **BALTHASAR, VLADIMÍR.** Pseudopachydema caucasica nova species novi generis Pachydeminorum. (5. Beitrag zur Kenntnis der Scarabaeidae des palaearktischen Faunagebietes.) *Ent. Blätter* 26(1): 38-40. 1930.—Key to 7 genera of Pachydemini (Scarabaeidae) including **PSEUDOPACHYDEMA** (p. 39) for *P.* **caucasica** (p. 39), Caucasus.—*M. H. Hatch.*

17638. **BENDERITTER, E.** Rutélides du Congo Belge. *Rev. Zool. et Bot. Africaines* 20(1): 56-58. 1930.—*Anomala* **uvirae** (p. 56), **maculipyga, plurisulcata** (p. 57); *Adoretus maculatus* Bend., emended description.

17639. **BORCHMANN, F.** Ueber die von Herrn J. B. Corporaal in Ost-Sumatra gesammelten Lagriiden, Alleculiden, Meloiden und Othniiden. *Tijdschr. voor Ent.* 72(1): 1-39. 1929.—*Heterogria* **atra** ♀ (p. 7), Borneo; *Cerogria anisocera* v. **corporaali** (p. 8); *C.* **pulchella** ♂ (p. 8), type in author's coll.; **AULONOGRIA** (p. 9), resembling *Lagria*, type *A.* **rugosa** (*Lagria r.* Fairm.) (p. 10); *A.* **corporaali** (p. 11); *A.* **cyanea** (p. 12); *L. lemoides* Fairm., *L. concolor* Blanch., *L. coerulescens* Gyll., and *L. foveifrons* Bm., referred to this genus; *Sora* **opacicollis** (p. 13); *S.* **pulchella** ♂ (p. 14); *S.* **absumata** (p. 15), Java; *S.* **affinis** ♀ (p. 16); *Casn[onidea] atricolor* v. **erythrothorax** ♂ (p. 17), Borneo; *C.* **torridula** (p. 17); *C.* **corporaali** ♀ (p. 18); *C.* **nigra** (p. 19); *C.* **nigrocoerulea** (p. 20); *Borchmannia* **nigrifinis** ♂ (p. 21), Mindanao and Java; *Allecula* **pallipes** (p. 25); *A.* **solida** ♀ (p. 26) and *A.* **nana** (p. 27), in author's coll.; *A.* **caderans** (p. 28); *A.* **pupillicollis** (p. 30), in author's coll.; *Borboresthes* **picta** (p. 31); *B.* **brunnea** ♂ (p. 32); *B.* **pallicornis** ♀ (p. 32); *Asticostena* **basicornis** (p. 33), Java; *Cistelopsis* **marginata** (p. 35), in author's coll.; *C.* **fulva** (p. 35), in Deutsch. Ent. Inst. Dahlem; *Cteniopinus* **melanogaster** (p. 36), in author's coll.; *Cistelomorpha focaleata* v. **melaniventris** (p. 37); *Zonitoschema* **corporaali** (p. 38).

17640. **BRUCH, CARLOS.** Una especie nueva de Prionapterus Guér. (Coleóptero Priónido). *Rev. Soc. Ent. Argentina* 2(5): 203-208. 1 pl., 1 fig. 1929.—*P.* **breyeri*** (p. 205), Puerto Aguirre, Argentina.

17641. **BRUCH, CARLOS.** Histéridos huéspedes de Pheidole. *Rev. Soc. Ent. Argentina* 3(1): 1-12. 1 pl., 5 fig. 1930.—A collection made by Daguerre from ant colonies, about 190 km. south of Buenos Aires, included: **TERATOLISTER** (p. 1), near *Terapus, type T. daguerrei** (p. 4); *Terapus* **rufosetosus*** (p. 5), with *Pheidole cordiceps; Synoditinus herteli** Reichensp., described; new to Argentina, **PARASYNODITES** (p. 8), resembling *Mesynodites*, type *P.* **suturacava*** (p. 9); *Hetaeriosoma* **pheidoliphila*** (p. 10). All except one are myrmecophiles of *Pheidole strobeli* v. *misera* Sants.

17642. **BRUCH, CARLOS.** Coleópteros nuevos y poco conocidos. *Rev. Soc. Ent. Argentina* 3(1): 31-42. 3 pl., 4 fig. 1930.—**SANTIAGONIUS** (p. 31), (tribe Paederini), type *S.* **gomezi*** (p. 33); *Drilocephalus pallidipennis* Pic, discussed; *D.* **iliarensis*** (p. 35); *Terapus* **ogloblini*** (p. 37), (antedated by *T. mirificus* Reichensp., into whose synonymy it falls); **TERMITOLISTER** (p. 39), near *Trichoreninus*, type *T.* **köhleri*** (p. 41), from nest of *Cornitermes similes*. All new spp. from Argentina.

17643. **BURGEON, L.** Deux Craspedophorus africains nouveaux (Coléoptères Carabidae). *Rev. Zool. et Bot. Africaines* 19(2): 295-297. 1930.—*C.* **simplicicollis** (p. 295), Nyasaland, type presumably in Brit. Mus.; *C.* **imperialis** (Kolbe in litt.) (p. 296), Toga and Gold Coast.

17644. **CAMERON, MALCOLM.** New species of Staphylinidae from the Belgian Congo. [Continuation.] *Rev. Zool. et Bot. Africaines* 19(3/4): 405-421. 1930.—*Oxytelus* **simulans** (p. 405); *Astenus* **tricolor** (p. 406); **NOPROMAEA** (p. 406) (Aleocharinae), close to *Pronomaea*, type *N.* **trifida** (p. 407); *Pronomaea* **uelensis** (p. 408); *Gyrophaena* **schoutedeni** (p. 408); *Stenusa* **africana** (p. 408); *Homalota* **dentiventris** (p. 409); key to the spp. of *Demera* (*Dorylophila*); *Demera* (*Dorylophila*) **soror** (p. 410); *D.* (*Dorylophila*) **planipennis** (p. 411); *D.* (*Demerina*) **wasmanni** (p. 411); *D.* (*D.*) **planicollis** (p. 412); *D.* (*D.*) **laticeps** (p. 412); *D.* (*D.*) **longicollis** (p. 413); *D.* (**DEMERILLA**, n. subg.) (p. 413), erected to include *Demera* (*D.*) **rotundiceps** (p. 413); *D.* (*D.*) **falagrioides** (p. 414); and *D.* (*D.*) **germana** (p. 414); *Dorylopora* **abdominalis** (p. 414); *D.* **excisicollis** (p. 415); *D.* (**DORYLOCOSTA**, n. subg.) (p. 416); *D.* (*D.*) **intermedia** (p. 416); *Falagria* (*Anaulacaspis*) **dorylophila** (p. 416); *F.* (*A.*) **semiaspera** (p. 417); *Atheta* (*Acrotona*) **dorylophila** (p. 417); *A.* (*A.*) **urundensis** (p. 418); *A.* (*A.*) **burgeoni** (p. 418); *Astilbus* **dorylophilus** (p. 418), type in author's coll.; *Termitobia* **burgeoni** (p. 419); **TERMOZYRAS** (p. 420), resembling *Termitopaedia*, based on *T.* **politus** (p. 421).

17645. **CAMERON, MALCOLM.** Fauna Sumatrensis. (Bijdrage Nr. 67.) Staphylinidae (Col.). *Tijdschr. voor Ent.* 73(3/4): 325-348. 1930.—The present paper is a continuation from Ent. Mitteil. vol. 17, p. 110, 1928, and contains corrections to be applied to that paper, besides the following: *Apatetica javanica* v. **sumatrana** (p. 326); *Stenus* (s. str.) **brachycephalus** ♀ (p. 327); *S.* (*Hemistenus*) **simulans** (p. 327); *S.* (*H.*) **morosus** ♀ (p. 328); *S.* (*H.*) **singgalangensis** ♀ (p. 328); *S.* (*H.*) **pallidipes** (p. 328); *S.* (*H.*) **jacobsoni** (p. 329); *Edaphus* **mandibularis** (p. 330); *E.* **borneensis** (p. 331); *Pinophilus* **jacobsoni** (p. 331); *Paederus* **atriventris** (p. 332); biological notes by Edw. Jacobson on *P. fuscipes* Curt.; *Astenus* **marginellus** (p. 334), Malay Pen. (type); *A.* **guttalis** (p. 334) and v. **elytra immaculate** (p. 334); *A.* **serpentarius** (p. 335), Malay Pen. (type); *Stilicus* **seriatus** (p. 336), Malay Pen. (type); *Stilicoderus* **strigellus** ♀ (p. 336); *Psilotrachelus* **geniculatus** (p. 337); *Thinocharis* **affinis** (p. 338), Sumatra and Malay Pen. (type); *T.* **alternans** (p. 338); *T.* **sumatrensis** (p. 338); *Medon* **basipilosus** (p. 340); *M.* **vermiculatus** ♀ (p. 340); *M.* **rusticus** ♀ (p. 341); *M.* **singgalangensis** (p. 341); *M.* **leai** (p. 342), Malay Pen. (type); *M.* (*Hypomedon*) **latens** (p. 343); *M.* (*H.*) **inconspicuus** (p. 343); *M.* (*H.*) **terrestris** ♀ (p. 344); *M.* (*Isocheilus*)

magnus (p. 344); *M.* (*Charichirus*) elegans (p. 345); *Scopaeus* jacobsoni (p. 346); *S.* elegantulus (p. 346), Malay Pen. (type); *Pseudobium* (*Dysanabatium*) sumatrensis ♀ (p. 348). All from Sumatra; additional localities noted. Holotypes in Brit. Mus.

17646. **DONISTHORPE, HORACE.** Hydnobius spinipes, Gyll., a species of Coleoptera new to the British list. *Ent. Rec. and Jour. of Variation* 43(2): 33. 1931.

17647. **DONISTHORPE, HORACE.** Spermophagus sericeus Foucr., Ent. Paris, 1 112 (1758), a British insect. *Ent. Record and Jour. of Variation* 43(2): 33-34. 1931.—*S. sericeus* was first recorded as British in 1927, and then only by name. Author here gives a description, based upon comparison with specimens in the general coll. of Coleoptera of the Brit. Mus. The insect is found on the Continent, on *Convolvulus sepium*, etc., and *Crataegus*, and is widely distributed in Central Europe.

17648. **FALL, H. C.** The North American species of Hymenorus (Coleoptera: Alleculidae). *Trans. Amer. Ent. Soc.* 57(2): 161-247. 1931.—*Hymenorus*, key to 100 spp.; *H.* distinctus (p. 179), Mississippi (type), Alabama, and Florida; *H.* molestus ♂ (p. 182), Pennsylvania; *H.* arkansanus ♂ (p. 183), Arkansas; *H.* dubius ♂ (p. 184), Mississippi (type) and Alabama; *H.* caurinus ♂ (p. 185), Brit. Columbia; *H.* ulomoides (p. 187), California; *H.* sinuatus ♀ (p. 187), Brit. Columbia, and var. ebeninus (p. 188), California; *H.* macilentus (p. 188), New Mexico; *H.* atratus ♂ (p. 189), Arizona, type in California Acad. Sci.; *H.* illusus ♂ (p. 192), Alabama; *H.* bitumescens ♂ (p. 194), Arizona; *H.* protibialis (p. 196), California (type) and Arizona; *H.* cassus (p. 197), Lower California; *H.* irritus (p. 199), California (type) and Arizona; *H.* conformis (p. 199), Texas; *H.* vigilax ♂ (p. 200), type in Calif. Acad. Sci. and *H.* papagonis (p. 201), both Arizona; *H.* parvus (p. 203), Lower California; *H.* semirufus (p. 203), Florida; *H.* capensis ♂ (p. 205), Lower California; *H.* jacobinus (p. 206), California; *H.* digressus (p. 206), Arizona; *H.* montivagus (p. 207), California; *H.* inutilis (p. 208), Nevada (type), Utah, New Mexico, and Arizona; *H.* trivialis (p. 210), Lower California; *H.* fuscipennis ♂ (p. 211), Florida; *H. dorsalis* Schwarz (=*H. sabalensis* Blatch.); *H.* caducus (p. 213), Alabama (type) and Florida; *H.* thoracicus (p. 214), California (type) and Arizona; *H.* disparatus (p. 215) and *H.* oblivius (p. 216), Texas; *H.* alienus (p. 217), Arizona; *H.* idoneus ♂ (p. 218), Arizona; *H.* tritus (p. 219) and *H.* incertus ♀ (p. 220), Arizona; *H. punctatissimus* Leconte (=*H. macer* Casey); *H.* tenuistriatus (p. 226), Alabama (type) and North Carolina; *H. tenellus* Casey (=*H. elbertae* Blatch.); *H.* brevis (p. 230) and *H.* rufovalis (p. 230), Arizona; *H. deplanatus* Champ. (=*H. gemellus* Cas.); *H.* simiolus (p. 232), Texas; *H.* exilis (p. 233), Arizona; *H.* facetus ♀ (p. 234), Lower California; *H.* horrescens (p. 235), Texas (type) and New Mexico; *H.* milleporus ♀ (p. 236), Arizona, type in Calif. Acad. Sci.; *H.* nevadensis (p. 236), Nevada; *H.* significans ♂ (p. 237), Texas; *H.* conicicollis ♂ (p. 239), Georgia; *H.* quietus (p. 239), Missouri; *H.* texensis (p. 241), Texas; *H.* heteropygus ♀ (p. 241), Florida; *H.* inopiatus (p. 242), Florida (type) and Georgia; *H.* crinitus ♀ (p. 244) and *H.* liebecki ♂ (p. 245), Arizona; *H.* quadricollis ♂ (p. 246), Texas. Types, unless otherwise stated, in author's coll.

17649. **FRANCK, P.** Beitrag zur Coleopterenfauna von Nauheim. *Ent. Blätter* 26(2): 68-71; (3): 144. 1930.—List of 235 spp.—*M. H. Hatch.*

17650. **HAUSER, G.** Coptolabrus pustulifer var. szechwanensis G. H. (Col. Car.). *Ent. Rundschau* 48 (2): 21-22. 1931.—*C. p.* var. szechwanensis (p. 21), Szechuan, China.

17651. **HEINZE, ERICH.** Bemerkungen über einige afrikanische Criocerinen aus dem Dresdener Zoologischen Museum nebst Beschreibung einer neuen Bradylema und zweier neuen Lemen. *Ent. Blätter* 25(3): 143-148. 1929.—Annotated list of 10 African spp., including *Bradylema* nigrocoeruleipennis (p. 143), Tanganyika; *Hapsidolema dunbrodiensis* f. nigrosuturella (p. 145), Zanzibar; *Lema* rugosifrons (p. 145), Tanganyika; *L.* incomparabilis (p. 146), east Africa (Katona).—*M. H. Hatch.*

17652. **HELLER, K. M.** Faunistische und systematische Notizen über Käfer. *Ent. Blätter* 26(3): 105-107. 1930.—Notes on 33 spp., including description of *Dermatodes caesicollis* ♂; *Mecistocerus* maculicrus (*M. maculipes* Hllr., not Faust) (p. 107); *Ischiopsopha papua* Guér. and *amberbakiana*, referred to *Lomaptera*; *Dyscerus furcutus* Marsh., referred to *Pagiophloeus*; *Aoploninus posticatus* Marsh. (=*Timola posticata* Marsh., *A. biarcuatus* Hllr.); *Nechyrus philippinensis* Hllr. (=*N. destitutus* Hllr.); *Endymia philippinica* Hllr., referred to *Blepiarda*.—*M. H. Hatch.*

17653. **HEYMES, PETER.** Atheta (subg. Pseudohygroecia Bernh.) hubenthali nov. sp. [p. 148]. *Ent. Blätter* 25(3): 148-149. 1929.—*A.* (*P.*) hubenthali, Thüringia, type in Hubenthal coll.—*M. H. Hatch.*

17654. **HORN, WALTHER.** Zwei neue Cicindelinen von Borneo und Celebes. *Ent. Nachrichtenbl.* 5(1): 3-6. 1931.—*Cicindela* (*Thopeutica*) sphaericollis ♂ (p. 3), Celebes; *Therates schaumianus* ssp. flavo-ornata ♂ (p. 5), Borneo.

17655. **HORN, WALTHER.** Sur quelques espèces intéressantes du genre Odontochila appartenantes à la faune de l'Argentine. *Rev. Soc. Ent. Argentina* 2(2): 75-76. 1928.—*O. fulgens* ssp. rutilans (*O. rutilans* Klug,= *O. desmaresti* Cast.) (p. 76).

17656. **HUSTACHE, A.** Nouveaux Curculionides de l'Amérique du Sud. *Rev. Soc. Ent. Argentina* 2(5): 227-232. 1929.—CYRTOBAGOUS (p. 227), near *Ochetina*, type *C.* singularis (p. 228), Matto Grosso; *Neobagous* vulgatus (p. 228), Matto Grosso; *N.* setosus (p. 229), Argentina; BAGOIDELLUS (p. 229), type *B.* vernicatus (p. 230), Matto Grosso; ALLOSCOLYTROPROCTUS (p. 230) (only representative of the Campyloscelidae in South America), type *A.* peruanus (p. 231), Peru. Types in author's coll.

17657. **JEANNEL, R.** Coléoptères nouveaux de la troisième campagne organisée par l'Institut de Spéologie dans les Carpathes méridionales. *Bul. Soc. Ştiinţe Cluj* [*Rumania*] 5(fasc. 4, part 2): 134-141. 24 fig. 1931.—Twenty-two caverns of Oltenia, Rumania were explored. Spp. found include: *Duvalius* (*Duvaliotes*) nannus* (p. 135); *Sophrochaeta* (s. str.) longicornis* (p. 137); *S.* (s. str.) obtusa* ♀ (p. 138); *S.* (s. str.) *subaspera* ssp. arcticollis* (p. 139); *S.* (s. str.) *oltenica* ssp. densepuncta* (p. 140); *Tismanella* winkleriana* (p. 141). Types in author's coll.

17658. **KLEINE, R.** Neue Xylobanus-Arten aus Westafrika nebst Fundnotizen. *Rev. Zool. et Bot. Africaines* 19(2): 172-176. 1 pl. 1930.—*X.* pallidicolor* ♀ (p. 174), Cameroons, type in author's coll.; *X.* ugandanus* (p. 174), Uganda; *X.* camerunus* (p. 175), Cameroons.

17659. **KREKICH-STRASSOLDO, R. H.** Beiträge zur Kenntnis malayischer Anthiciden. *Tijdschr. voor Ent.* 71(1/2): 1-10. 9 fig. 1928; 73(3/4): 251-262. 11 fig. 1930.—*Formicomus* latior* (*F. bangi* v. *latior* Pic) (p. 1); *F.* oedipus* Pic (in litt.) (p. 3) and *F.* praecellens* (p. 4), Sumatra; *F. robustipes* ssp. conterminus (p. 6); *F.* (*Orthauchen*) fossulatus* (p. 7) and *F.* (*O.*) mülleri* (p. 8), Borneo. [Vol. 73:] *F.* (*O.*) rufulus* (p. 251); *F.* (*O.*) funebris* (p. 252); *F.* maturus* (p. 253), Sumatra; *F.* distinguendus* (p. 254); *F.* clemens* (p. 255); *Tomoderus* drescheri (p. 256); *Leptaleus* elaboratus (p. 257), Madoera Isl., Dutch E. Indies; *Anthicus* mollinus* (p. 258); *A.* indutus (p. 260); *A.* pilumnus (p. 261); *A.* insignicollis* (p. 261). All from Java unless otherwise indicated.

17660. **LAIDLAW, W. B. R.** The pine-cone weevil (Pissodes validirostris) in Britain; with a brief comparative account of the genus Pissodes. *Scottish Nat.* 1931(189): 79-84. 1 fig. 1931.—*P. validirostris**, which has only recently been recorded in Britain, attacks cones of Scotch and Austrian pines. Keys are given for the continental and British spp. of the genus.

17661. **LEBEDEV, A. G.** Catops roubali sp. n. *Ent.*

Blätter 26(4): 183-184. 1930.—*C.* (*Lasiocatops*) roubali (p. 183), central Asia.—*M. H. Hatch.*

17662. **LIEBKE, MAX.** Die afrikanischen Arten der Gattung Colliuris Degeer (Col. Car.). *Rev. Zool. et Bot. Africaines* 20(3): 280-301. 19 fig. 1931.—Descriptions of 6 new subgenera of *Colliuris*, with key, and annotated list of spp. (keys included). **LASIOCOLLIURIS** n. subg. (p. 284), type *C.* (*L.*) lunata (p. 294), South Somaliland; **NEOCOLLIURIS** n. subg. (p. 286), type *C.* (*N.*) *laportei* Chaudoir; *C.* (*N.*) flavipennis (p. 295), Tanganyika and Pemba Is.; **EUCOLLIURIS** n. subg. (p. 287), type *C.* (*E.*) *natalensis* Chaud.; *C.* (*E.*) cribrifrons (p. 298), northeast Rhodesia, type in author's coll.; **ARCHICOLLIURIS** n. subg. (p. 291), type *C.* (*A.*) *bimaculata* Kollar; *C.* (*A.*) burgeoni (p. 297), Belgian Congo, type in Belg. Congo Mus.; **ERECTOCOLLIURIS** n. subg. (p. 292), type *C.* (*E.*) *fairmairei** Gestro; **PROTOCOLLIURIS** n. subg. (p. 293), with *C.* (*P.*) *coerulans** Alld.; there are critical notes on *C.* (*Neocolliuris*) *laportei* Chaud. and *C.* (*Eucolliuris*) *olivieri* Buquet, besides general distributional notes.

17663. **MACHULKA, V.** Zwei neue palaearktische Scydmaeniden. *Ent. Nachrichtenbl.* 4(4): 83-84. 1930.—*Scydmoraphes* tarsalis (p. 83) and *Stenichnus* horni (p. 83), Italy.

17664. **MAMITZA, RICHARD.** Drei neue äthiopische Heteroceridae vom Musée du Congo Belge. *Rev. Zool. et Bot. Africaines* 19(3/4): 368-372. 4 fig. 1930.—*Heterocerus* (s. str.) denticulatus* (p. 368), *H.* (*Litorimus*) minusculus* (p. 369), *H.* (s. str.) evanescens* (p. 371), all from Belgian Congo.

17665. **MARCU, O.** Beitrag zur Kenntnis der Stridulationsorgane bei Ipiden. *Zool. Anz.* 92(9/10): 238-242. 4 fig. 1930.—The author describes these organs for a few spp. in *Hylesinus**, *Leperesinus**, and *Pteleobius**. In each case it is an elytro-dorsal stridulating organ, with the pars stridens resembling that of spp. of *Myelophilus*.

17666. **MARCU, O.** Ein neuer Beitrag zur Kenntnis der Stridulationsorgane bei Ipiden. *Zool. Anz.* 94(1/2): 32-37. 4 fig. 1931.—Description of stridulating organs in 12 genera of Ipidae.

17667. **MARELLI, CARLOS A.** Respuesta a dos objeciones sobre la identificación de las especies del género Goniopterus halladas en La Plata. [Reply to two objections on the identification of the spp. of Goniopterus found in La Plata.] *Rev. Soc. Ent. Argentina* 2(5): 277-281. 1929.—One of the spp. attacking eucalyptus is *Goniopterus gibberus* Bsd.; the other, *G. platensis* (Mar.) (=*G. marelli* Uyttenb.).

17668. **MIWA, YUSHIRO. H. Sauter's** Formosa-Ausbeute (Elateridae II). *Wiener Ent. Zeitung* 47(4): 205-208. 1931.—*Neotricophorus* carinicephalus (p. 205); *Agonischius* gracilis (p. 205); *Glyphonyx* arisanus (p. 206); *G.* brunneipennis (p. 206); *G.* kankaui (p. 206); *G.* sauteri (p. 207); *G.* castaneus (p. 207). Key is given to the Formosan *Glyphonyx*.

17669. **MURAYAMA, JŌZŌ.** Révisions des familles des Ipides et des Platypides de Corée. *Jour. Chosen Nat. Hist. Soc.* no. 11. 6-38. Map. 2 pl., 1 fig. 1930.—Previous work on this group in Korea is reviewed. Some of the beetles cause serious damage to the forests. The systematic account of 56 spp. includes local and general distribution, lists of plants attacked, economic status, and notes on taxonomy and life history. Keys to many of the spp. are given. *Scolytus* seulensis* (p. 9), attacking *Prunus yedoensis* and *Pirus anzu*; *Cryphalus* carpinivorus* (p. 14), attacking *Carpinus laxiflora*; *Xyleborus* seiryorensis ♀* (p. 25), attacking *Alnus japonica*; *X. monographus*, new to Korea. *Crossotarsus* koryoensis* (p. 28), attacking *Quercus serrata*, *Q. aliena*, and *Carpinus laxiflora*. New spp. are from Korea; types are in author's coll. Bibliography of 144 titles.

17670. **NEVERMANN, FERD.** Zwei neue Colydiiden aus Costa Rica (Col.). *Ent. Blätter* 26(3): 110-114. 2 fig. 1930.—*Ethelema* costaricensis* (p. 110); key to the 8 known spp. of *Discoloma*, including *D.* pygmaeum* (p. 112).—*M. H. Hatch.*

17671. **OCHS, GEORG.** Über einige neue und bemerkenswerte Gyriniden vorzüglich aus dem Dresdener Museum. *Ent. Blätter* 25(4): 197-200. 1929; 26(1): 14-18. 1930.—Bibliographical, distributional, and descriptive notes on 19 spp. of Gyrinidae including *Macrogyrus aenescens* ssp. abbreviatus (p. 197), Sumba, type in Leidener Mus.; *M. elongatus* ssp. laevis (p. 198), Queensland, type in British Mus.; **CYCLOMIMUS** n. subg. (p. 199) for *M. caledonicus* Fauv.; and **ORECTOMIMUS** n. subg. (p. 15) for *M. paradoxus* Rég.—*M. H. Hatch.*

17672. **ORCHYMONT, A. d'.** Über Hydraena (s. str.) angulosa Mulsant. *Ent. Blätter* 25(3): 140-143. 1 fig. 1929.—Detailed description and figure.—*M. H. Hatch.*

17673. **PIC, M.** Notizen und synonymische Bemerkungen über einige Cerambycidae. *Ent. Blätter* 24(3): 142-143. 1928.—Key to 3 spp. of *rubriola*-group of *Leptura*; *L. kingana* v. sexnotatipennis (p. 143) and septemnotata (p. 143); *Judolia erratica* ab. *volgensis* Plav. (=*J. e.* var. *hungarica* Pic); *Strangalia 12-guttata* ab. *10-guttata* Plav. (=*S. 12-g.* var. *suboliterata* Pic); *Plagionotus lugubris* v. lenkoranus (p. 143), Caucasus; *Rhaphuma manipurensis* v. parvereducta (*R. m.* var. *reducta* Plav., preoc.); *Demonax albomaculatus* v. *unicolor* Plav. (=var. *immaculatus* Pic); *Caloclytus 14-maculatus* v. gahani (p. 143).—*M. H. Hatch.*

17674. **PIC, M.** Nouveaux coléoptères de la République Argentine. *Rev. Soc. Ent. Argentina* 2(1): 49-52. 1928.—*Cryptorhopalum obscuriceps* v. bruchi (p. 49); **MIMOSCAPHOSOMA** (p. 49), n. subg. of *Scaphosoma*, type *S.* [*M.*] bruchi (p. 49); *Catorama* caudata (p. 49) and *C. argentina* v. longesulcata (p. 50), types in coll. Pic; *Dasytes bifurcatus* v. infurcatus (p. 50), type in coll. Bruch; *Attalus* bosqui (p. 50); *Belotus* weiseri (p. 50); *Ptilodactyla* irregularis (p. 51) and *Anaspis* disconotata (p. 51), types in coll. Bruch; *Anisostena* bicoloriceps (p. 51).

17675. **PIC, M.** Divers Coléoptères nouveaux de la République Argentine. *Rev. Soc. Ent. Argentina* 2(2): 99-102. 1928.—*Ptinus* rubricollis (p. 99); *Calymmaderus* argentinus (p. 99); *Emplectus* bruchi ♂ (p. 100); *Anthicus sericans* v. trireductus (p. 100); *A. catamarcanus* v. esteroensis (p. 100); *Nemognatha* weiseri and var. invittata (p. 100); *Stenispa* sulcatifrons (p. 101); ? *Charistena* elongaticeps (p. 101). Types in coll. Bruch.

17676. **PIC, M.** Coléoptères de l'Amérique Méridionale. *Rev. Soc. Ent. Argentina* 2(4): 183-184. 1929.—*Cephalolia* rufipes (p. 183), Brazil; *Allecula* bruchi (p. 183), var. saladosa (p. 184), and *Lygistopterus* griseolineatus (p. 184), Argentina.

17677. **PIC, M.** Nouveaux Coléoptères de diverses familles. *Rev. Soc. Ent. Argentina* 3(1): 43-46. 1930.—*Limnichoderus* breyeri (p. 42); *Scirtes adustus* v. diversenotatus (p. 43); *Belotus* concavicollis (p. 44); *Mordella* bruchi (p. 44); *M.* weiseri (p. 44); *Lobopoda* laterufa (p. 45); *Stenispa* parallela (p. 45); *Octotoma* daguerrei (p. 45). All from Argentina, types in coll. Bruch.

17678. **PIC, M.** Coléoptères nouveaux de la République Argentine. *Rev. Soc. Ent. Argentina* 3(1): 55-56. 1930.—*Ptilodactyla* griseosuturalis ♂ and var. rufescens (p. 55); *Eucinctus* argentinus (p. 55), type in coll. Bruch; *Microscapha* bruchi (p. 56); *Orchesia brasiliensis* v. pallidior (p. 56); *Bruchus* catamarcanus (p. 56), type in coll. Bruch.

17679. **PIC, M.** Scaphididae recueillis au Congo Belge par A. Collart. *Rev. Zool. et Bot. Africaines* 20(1): 87-89. 1930.—*Toxidium* collarti (p. 87); *Antongilium burgeoni* v. semibrunneum (p. 87); *Scaphosoma* rufithorax (p. 87); *S.* subconvexum and ssp. semialutaceum (p. 88); *S. schoutedeni* v. atropygum (p. 88); *S.* vicinum (p. 88); *S.* piceonotatum (p. 89).

17680. **PICARD, F.** Coléoptères: Cerambycidae. *Faune de France* 20: vii+166p. 71 fig. 1929.—The cerambycid fauna of France consists of about 235 spp. The general morphology of adults and larvae is discussed. A table of the tribal characteristics of the larvae (p. 8) distinguishes Lamiini, Prionini, Cerambycini, and Lepturini, and unites Asemini with Spondylini. In the tabl

of tribes of adults (p. 33) the Lepturini are united with the Cerambycini. Habits of the adults, such as copulation and oviposition, are discussed, as well as larval habits, pupation and duration of life cycles. 74 hymenopterous parasites are listed with their hosts. Faunal distribution is also dealt with. Descriptions are given of all spp., with distribution and host plants. Keys to genera, subg., and spp., and illustrations of representatives of most genera are given. *Brachytodes* Planet, a subg. of *Evodinus* Le Conte, is suppressed. *Neomarius gandolphi* Fairm., an Algerian sp., was captured at Nancy. *Pseudopoecilium* Planet, a subg. of *Callidium* F., is suppressed. The bibliography contains 226 references.

17681. PJATNITZKY, G. K. Ein neuer paläarktischer Arvenborkenkäfer aus Ostsibirien, Orthotomicus golovjankoi n. sp. *Ent. Blätter* 26(4): 179-182. 3 fig. 1930.—*O.* golovjankoi* (p. 179) and ab. quadridens (p. 182) on *Pinus korajensis* in eastern Siberia; *O. laricis* F.* and *O. suturalis*.—*M. H. Hatch.*

17682. REICHENSPERGER, A. Neue und bekannte Paussiden aus der Sammlung des Imperial Bureau of Entomology. *Ent. Blätter* 25(3): 129-132. 2 fig. 1929.—Annotated list of 16 spp. from Africa, including *Paussus* serratulus* (p. 130), Nigeria, and *P.* exiguus* (p. 131), Sudan.—*M. H. Hatch.*

17683. REICHENSPERGER, A. Subgenera von Paussus und die Gattung Hylotorus, sowie Beiträge zur Kenntnis afrikanischer und südamerikanischer Myrmekophilen (Pauss. Clavig. Hist.). *Ent. Blätter* 26(2): 71-85. 7 fig. 1930.—Discussion of *Paussus, Bathypaussus,* and *Hylotorus,* with a key to the 3 major divisions of the latter. *Carabidomemnus* hargreavesi* (p. 76), Uganda, type in Imp. Bur. Ent., London; *Paussus bayonii* Gestro and *P. scipio* are distinct species; *P.* suahelinus* (p. 79), east Africa; *Hylotorus* gracilis* (p. 81) and *Xenalluaudia* henningsi* (p. 82), Tanganyika, types in author's coll.; *Coelocraera* orientalis* (p. 83), Tanganyika; METASYNODITES n. subg. (p. 84), type *Mesynodites* (*Metasyndotes*) paschalis* (p. 84), Brazil.—*M. H. Hatch.*

17684. REICHENSPERGER, A. Neue Myrmekophilen nebst einigen Bemerkungen zu Bekannten. (Coleopt.: Pauss. Clavig. Hist.) *Tijdschr. voor Ent.* 70(3/4): 303-311. 4 fig. 1927.—*Paussus* corporaali* (p. 303) on *Pheidole* sp., Dutch E. Indies, type in Soc. "Natura artis Magistra," Amsterdam; *Theocerus* clermonti* (p. 306) on *Crematogaster schencki,* type in author's coll.; *Reninus* bruchi (p. 307) in nest of *Acromyrmex octospinosa* v. *pallida,* Pernambuco, type in author's coll. Notes on *Paussus curtisi* Westw. and some other spp. are given.

17685. REICHENSPERGER, AUGUST. Die Paussiden des belgischen Congogebietes. Supplem. 2. *Rev. Zool. et Bot. Africaines* 19(2): 177-180. 1 fig. 1930.—A supplement to previously published articles, containing brief notes and description of *Paussus* sankuruensis* (p. 178), type in Congo Mus.

17686. ROUBAL, J. Descriptiones duorum Coleopterorum novorum regionis palaearcticae. *Ent. Blätter* 25(4): 192-193. 1929.—Descriptions of *Agrilus kyselyi* Obnbg. and *Laena* lebedevi (p. 193), central Asia, type in author's coll.—*M. H. Hatch.*

17687. RÜSCHKAMP, F. Zur rheinischen Käferfauna V. *Ent. Blätter* 25(3): 150-157. 1929.—Annotated list of 101 spp. from Rhenish Prussia.—*M. H. Hatch.*

17688. RÜSCHKAMP, F. Zur rheinischen Käferfauna VI. *Ent. Blätter* 25(4): 172-180. 1929.—Annotated list of 72 spp. from Rhenish Prussia. Note on *Platypus cylindrus* F. and *P. cylindriformis*.—*M. H. Hatch.*

17689. SCHOLZ, M. F. R. Käfer aus Karlsbad in Böhmen, C. S. R. *Ent. Anzeiger* 11(3): 60-61. 1931.—Author adds about 89 spp. to a previous list, published in 1928.

17690. SICK, FR. Fünfter Beitrag zur Käferfauna Ostholsteins. [Coleoptera of eastern Holstein.] *Ent. Blätter* 26(3): 115-118. 1930.—Annotated list of 51 spp.—*M. H. Hatch.*

17691. STROHMEYER, H. Zwei neue Borkenkäfer aus Spanien. *Ent. Blätter* 25(4): 181-182. 2 fig. 1929.—*Pityogenes* herbellae (p. 181) and *Crypturgus* barbeyi (p. 182).—*M. H. Hatch.*

17692. THÉRY, A. Observations sur quelques Buprestidae du genre Halecia C. et G. et notes diverses suivies des descriptions de quelques Buprestides nouveaux. *Bull. and Ann. Soc. Ent. Belgique* 70(12): 289-304. 1930 (1931).—*Buprestis blanda* F. (=*Pelecosp elaphus elongatus* Thoms.), transferred from *Halecia* to *P.*; *Chrysochroa* crassicolis (p. 290), Philippines; *Halecia* nigriventris (p. 292), Mexico; *H.* demuthi ♂ (p. 293), ? Brazil; *H.* seraphini (p. 294), Guiana; *H.* stuarti (p. 295), Bolivia; *H.* cleteriformis (p. 296), *H. auropunctata* v. microsticta (p. 297), and *H.* (*Euplectalecia*) ribbei (p. 297), Colombia; *Actenodes chalybeitarsis* v. peruviana (p. 298), Peru [type depository not given]; *Meliboeus* purpureicollis (p. 299), Yunnan; *Sambus* coeruleipennis (p. 300), Philippines; *Nalanda* mac-namarai (p. 301), New Guinea; *Agrilus* mopsus ♀ (p. 303), Hong Kong. Types in author's coll. unless otherwise stated.

17693. UHMANN, E. Südamerikanische Hispinen aus dem Deutschen Entomologischen Institut Berlin-Dahlem. *Boll. Soc. Ent. Ital.* 63(4): 58-61. 1931.—*Sternostena* triangularis (p. 58), São Paulo; *Anophitis* replexa (p. 59), Dutch Guiana; *A.* maculata (p. 60), São Paulo; *Xenochalepus haematoderus,* new to Dutch Guiana. Six other spp. are listed with locality records. Types of new spp. are in Deutsch. Ent. Inst. Berlin-Dahlem.

17694. UHMANN, E. Die Hispa-Arten des Musée du Congo Belge. *Rev. Zool. & Bot. Africaines* 20(1): 61-86. 4 fig. 1930.—Structural details are given, keys (by color) to the spp. of *Hispa* and descriptions of: *H.* aereipennis (p. 68), *H.* marginata (p. 69), *H.* kapiriensis (p. 70), *H.* lulengaica (p. 71), *H.* kivuensis (p. 73), *H.* basongoana (p. 74), *H.* katentaniana and balli (p. 75), *H.* opacicollis* (p. 78), *H.* arebiana (p. 79), *H.* fallax (p. 80), and *H.* radiatilis (p. 83), all from Belgian Congo; *H.* (*Eutrichispa*) crispa* (p. 84), Kenya.

17695. UHMANN, E. Die Hispinen des Musée du Congo Belge. 2. Teil. Callispini und Lepthispini. (28. Beitrag zur Kenntnis der Hispinen (Col. Chrys.). *Rev. Zool. et Bot. Africaines* 20(3): 252-256. 1931.—Annotated list of 9 spp. including: *Callispa* schoutedeni (p. 253), *C.* similis (p. 254), *Lepthispa* similis (p. 255), and *L.* ruficollis (p. 255), all Belgian Congo.

17696. URBAN, C. Beiträge zur Naturgeschichte einiger Rüsselkäfer. III. *Ent. Blätter* 26(3): 97-104; (4): 171-179. 1930.—Notes on biology, larvae, etc., with bibliography, of *Rhamphus pulicarius, Gymnetron villosulum, G. beccabungae, G. antirrhini, G. collinum, Miarus graminis, M. campanulae, Cionus fraxini, Magdalis armigera,* and *Rhynchites pubescens* F.—*M. H. Hatch.*

17697. UYTTENBOOGAART, D. L. Contributions to the knowledge of the fauna of the Canary Islands. IX, X, XI, & XIII. *Tijdschr. voor. Ent.* 72(3/4): 341-355. 1 pl. 1929; 73(3/4): 275-278. 1930.—CANARIELLA (p. 341) (Tenebrionidae), between *Lachnogya* and *Netuschilia,* based on *C.* arenapta* (p. 343); *Melanochrus* blairi (p. 347); *Gonocephalum* (*Megadasus*) merensi (p. 348); *Codiosoma* lauri (p. 351); *Laparocerus* doramasensis ♀ (p. 352); *Cyphoscelis* (?) eliasenae (p. 353). Types in author's coll. [Vol. 73] *Corticaria* appenhageni (p. 275); *Phloeophagus piceus* v. appenhageni (p. 277); *Ceutorrhynchus* (s. str.) wollastoni (p. 278). Types in Appenhagen coll., Brit. Mus.

17698. WOLFRUM, PAUL. Choragus horni spec. nov. und Bemerkungen über palaearktische Arthribiden. *Ent. Blätter* 26(2): 88-91. 1930.—Taxonomic notes on about 23 spp. with description of *C. sheppardi* Kirby and *C.* horni (p. 89), Germany.—*M. H. Hatch.*

DIPTERA

E. T. CRESSON, JR., *Editor*, Brachycera

O. A. JOHANNSEN, *Editor*, Nemocera

(See also in this issue Entries 15392, 16576, 16579, 16604, 16605, 16779, 16791, 16839, 16842, 16845, 17786, 17882, 18112, 18116)

17699. **ALEXANDER, CHARLES P. Records and descriptions of neotropical crane-flies (Tipulidae, Diptera), 8 and 9.** *Jour. New York Ent. Soc.* 38(2): 109-120. 1930; 39(2): 109-122. 1931.—8.—*Limonia* (*Geranomyia*) neopentheres ♂ (p. 109), *L.* (*G.*) brevispinula ♂ (p. 110), and *L.* (*G.*) viridula ♂ (p. 110), Mexico; *L.* (*G.*) viridella ♂ (p. 111), Brit. Honduras; *L.* (*G.*) subvirescens (p. 112), Cuba; *Teucholabis* (*Teucholabis*) furva ♂ (p. 112), Guatemala; *T.* (*T.*) miniata (p. 114), Panama, type in Mus. Zool. Univ. of Michigan; *T.* (*T.*) submolesta ♂ (p. 115), Mexico; *Neoqnophomyia* panamensis (p. 116), Panama, type in Mus. Zool. Univ. of Michigan; *Gonomyia* (*Progonomyia*) patruelis ♂ (p. 117), Mexico; *G.* (*Lipophleps*) prolixistylus (p. 118), Brit. Honduras; *Erioptera* (*Mesocyphona*) whitei (p. 119), Guatemala. Types in author's coll. unless otherwise stated. 9.—*Limonia* (*Dicranomyia*) clavigera ♂ (p. 109), Chile; *L.* (*D.*) trinitatis ♀ (p. 110), Cuba; *Polymera* (*Polymerodes*) catharinae ♂ (p. 111), Santa Catharina, Brazil; *Shannonomyia* myersiana (p. 112), Jamaica; *S.* brevicula ♂ (p. 113), Cuba; *Atarba* (*A.*) bifurcula (p. 114), Brazil; *Aphrophila* carbonaria ♂ (p. 115) and *A.* multidentata ♀ (p. 116), Chile; *Trentepohlia* (*Paramongoma*) cubitalis ♀ (p. 116) and *Teucholabis* (*T.*) catharinensis (p. 117), Brazil; *T.* (*T.*) nigrosignata (p. 118), Cuba; *Gonomyia* (*Progonomyia*) quinqueplagiata ♂ (p. 119), Brazil; *G.* (*Lipophleps*) cubana ♂ (p. 120) and *G.* (*L.*) sandersi ♂ (p. 121), Cuba.

17700. **ALEXANDER, CHARLES P. New or little-known Tipulidae from the Philippines (Diptera), VIII.** *Philippine Jour. Sci.* 45(2): 263-296. 3 pl. 1931.—Studies of collections in central and northern Luzon are reported. A list of the generic and subgeneric Tipulidae groups known to occur in the Philippines is given, in which is indicated, for the first time, the occurrence of the following: *Limonia*, subgenera *Discobola* O. S., *Rhipidia* Meig., and *Doaneomyia* Alex.; *Pilaria* Sint.; *Limnophila*, subgenera *Ephelia* Schin. and *Dicranophragma* O. S.; and *Adelphomyia* Bergr. Some of these are discussed in the text. Novelties are: *Tipulodina* pampangensis ♀* (p. 265); *Scamboneura* O. S., key to the 11 Philippine spp.; *S.* subtransversa* (p. 267); *S.* primogenia* (p. 269); *S.* banahaoensis* (p. 270); first description of ♂ *S.* plumbea* Alex. taken at alt. of 8000 ft.; *Dolichopeza* (*Nesopeza*) haightensis ♂ (p. 272), alt. 8000 ft.; *Macgregoromyia* Alex., emended diagnosis with key to its 2 known spp.; *M.* brevisector* (p. 273), alt. 8000 ft.; *Limonia* (*Limonia*) ligayai* (p. 275), alt. 1500 to 8000 ft.; *L.* (*Libnotes*) neofamiliaris ♂* (p. 276); *L.* (*L.*) subfamiliaris ♂* (p. 277); *L.* (*L.*) perparvula ♂* (p. 278); *L.* (*L.*) elata ♂* (p. 279); *L.* (*Dicranomyia*) benguetensis ♂* (p. 280); *L.* (*Geranomyia*) bifidaria* (p. 281), alt. 8000 ft.; *L.* (*G.*) pleuropalloris* (p. 282); *L.* (*Doaneomyia*) pampangensis* (p. 283); *L. p.* subsp. maquilingia* (p. 284); *L.* (*Thrypticomyia*) octosetosa* (p. 284); *Helius* (*Eurhamphidia*) diacanthus* (p. 285), alt. 8000 ft.; *Adelphomyia* luzonensis ♀* (p. 286); *Epiphragma* subcrenulata ♀* (p. 287); *E.* cinereinota ♀* (p. 288), alt. about 8000 ft.; *Limnophila* (*Limnophila*) benguetana ♂* (p. 289), alt. about 8000 ft.; *L.* (*Dicranophragma*) pardalota ♀* (p. 291); *Toxorhina* (*Toxorhina*) montina* (p. 292); *T.* (*T.*) biceps ♂* (p. 292); and *Erioptera* (*Erioptera*) rubripes ♀* (p. 293). Types in author's coll.

17701. **BARNES, H. F. Gall midges (Cecidomyidae) whose larvae prevent seed production in grasses. (Gramineae).** *Bull. Ent. Res.* [*London*] 22(2): 199-203. 1931.—A list of 18 spp. in the genera *Lasioptera, Dasyneura, Contarinia, Stenodiplosis, Cecidomyia,* and *Itonida,* is given.

17702. **BARNES, H. F. A new predacious gall midge (Dipt., Cecidomyidae).** *Bull. Ent. Res.* [*London*] 22(2): 205-207. 2 fig. 1931.—TRIOMMATA (p. 205), near *Trisopsis,* type *T.* coccotroctes* (p. 206), Sierra Leone, predacious on mealy bug; types in Imp. Inst. Ent.

17703. **BEDFORD, H. W. The distribution of tsetse-flies in the Sudan.** *Bull. Ent. Res.* [*London*] 21(3): 413-415. 5 maps. 1930.—Notes on a new locality for *Glossina palpalis fuscipes,* a suspected region for *G. morsitans,* and the known distribution of tsetse-flies in the Sudan.

17704. **BROMLEY, S. W. New neotropical Andrenosoma.** *Trans. Amer. Ent. Soc.* 57(1): 129-134. 1931.—The author gives an emended diagnosis of *Andrenosoma* Rondani, and refers to this genus the Laphriinae hitherto placed in *Nusa* by American writers; *A.* minos ♂ (p. 130), Brazil and Ecuador; *A.* lupus ♂ (p. 130), Brazil; *A.* heros (p. 131), Dutch Guiana, *A.* subheros (p. 131), Brazil, and *A.* nigrum ♀ (p. 132), Ecuador, types in Hamburg Mus.; *A.* rufum ♂ (p. 132), Santo Domingo; *A.* batesi ♂ (p. 132), Brazil; *A.* currani ♂ (p. 133), Brazil, type in Hamburg Mus.; *A.* flamipennis (p. 133), British Guiana (type), Venezuela, and Brazil, type in Acad. Nat. Sci. Philadelphia. Unless otherwise stated, types are in British Mus.

17705. **BROOKE, WINIFRED M. A. Some observations on the life-history of Arthrocnodax wissmani Kieffer (Cecidomyidae: Diptera).** *Entomologist* [*London*] 64 (819): 180-182. 1 pl. 1931.—*A. wissmani* was found feeding on mites, *Phyllocoptes schlechtendali,* on the under side of apple leaves in England. The egg*, larval stages*, cocoon*, pupa*, and adult* are described.

17706. **COPELLO, ANDRÉS. Biología de Hermetia illuscens Latr. (La mosca de nuestras colmenas.) [Biology of H. illuscens, the fly of our beehives.]** *Rev. Soc. Ent. Argentina* 1(2): 23-26. 1 pl., 1 fig. 1926.—Descriptions of egg*, larva*, nymph, and imago*. The insect frequently lays its eggs in cracks on the front of beehives.

17707. **CRESSON, EZRA T. Jr. Notes on and descriptions of some Neotropical Neriidae and Micropezidae (Diptera).** *Trans. Amer. Ent. Soc.* 56(4): 307-362. 2 fig. 1930.—This paper is based on a study of 1115 specimens, representing 10 genera and 91 spp., from Panama, the West Indies, and South America. The following are described: *Odontoloxozus* longicornis (*Nerius l.* Coqu.,=*O. punctulatus* Enderl.) (p. 313); *Nerius* F. (=*Brachantichir* Enderl.,=*Cerantichir* End.); the name Taeniapterinae is adopted for the subfam. of Micropezidae called Calobatinae by Enderlein, and Tanypodinae by Frey, and its characteristics are given; *Rainieria,* characters discussed; *R.* baracoa (*Systellapha b.* Cresson) (p. 318); *R.* nebulosa (*Calobata n.* Loew) (p. 318); *R.* bracteata (*Calobata b.* v. d. Wulp) (p. 319); *R.* tritaeniolata (*Tanypoda t.* Enderl.) (p. 319); *R.* uda (p. 320), Honduras; *R.* pleuralis ♀ (p. 321), Colombia; *Systellapha* placida (*Calobata p.* Loew) (p. 323); *Cliobata* guttulipennis (*Scipopus g.* Enderl.) (p. 324); MITROMYIA (p. 329), (Micropezidae) allied to *Rainieria,* with *M.* conifer (p. 329), Costa Rica, type in U. S. Nat. Mus.; *Cardiacephala* triluminata (*Musca longipes* Fabr., not Scopoli) (p. 330); *Plocoscelus* myrmex (*Cardiacephala m.* Schiner) (p. 332); *P.* harenosus (p. 333), Colombia; *P.* schildi (p. 334), Peru, type in U. S. Nat. Mus.; *P.* modestus ♀ (p. 334), Guatemala; *P.* picinus ♀ (p. 334), Panama, type in Mus. Comp. Zool., Cambridge; *P.* townsendi (p. 335), Peru, type in U. S. Nat. Mus.; *P.* nigra (*Cardiacephala n.* Schiner) (p. 335); *Parasphen-*

frontalis (p. 336), Brit. Guiana, type in N. Y. Zool. Soc.; *Grallomyia* bonitoensis (p. 339), Brazil, type in U. S. Nat. Mus.; *G.* scutellata (p. 341) and *G.* buscki ♀ (p. 342), Panama, types in U. S. Nat. Mus.; *G.* ichneumonea (*Calobata i.* Brauer) (p. 344); *G.* lauta (p. 345), Panama, type in U. S. Nat. Mus.; *Ptilosphen* enderleini (p. 346), Peru, type in Cornell Univ., Ithaca; *P.* comis (p. 347), Brit. Guiana; *P.* mimicus (p. 348), Peru, type in U. S. Nat. Mus. *P.* gentilis (p. 348), Costa Rica, type in U. S. Nat. Mus.; *Taeniaptera lasciva* v. obliterata (p. 351), Ecuador, type in U. S. Nat. Mus.; *T.* angulata (*Calobata a.* Loew) (p. 351); *T.* munda (*Calobata m.* van der Wulp) (p. 352); *T.* platycnema (*Calobata p.* Loew), (p. 352); *T.* planitibia (*Grallomyia p.* Enderl.) (p. 353); TENTHES (p. 354), (Micropezidae) near *Taeniaptera*, with *T.* citatus ♀ (p. 355), Peru, type in Cornell Univ.; *Micropeza* ventralis (p. 356), Mexico, type in U. S. Nat. Mus.; *M.* verticalis (p. 357), Cuba, type in U. S. Nat. Mus.; *Metapobrachia* recta (*Micropeza r.* Cresson) (p. 360); *M.* subrecta (*Micropeza s.* Cresson) (p. 360); and *M.* sagittifer (*Micropeza s.* Cresson) (p. 360); *Cryogonus* formicarius (*Micropeza formicaria* Rondani, = *Cryogonus reedi* Cresson) (p. 362). Types are in Acad. Nat. Sci., Philadelphia, unless otherwise stated.

17708. **CURRAN, C. H.** New Diptera from North and Central America. *Amer. Mus. Novitates* No. 415. pp. 1-16. 1 fig. 1930.—Bombyliidae: key to spp. of the group genus *Exoprosopa* Macq. is given (with division into 3 groups), the following being new: *E.* clarki ♂ (p. 4), 6500 ft. alt., and *E.* lutzi ♂ (p. 5), Arizona; *E.* dodrina (p. 5), Colorado; *E.* texana ♂ (p. 6), Texas; *E.* mus ♂ (p. 7), Mexico; *E.* albifrons ♂ (p. 8), Arizona, 6500 ft. alt.; *E.* panamensis (p. 9), Panama; *E.* junta ♀ (p. 9), Colorado, 4100 ft. alt. All belong in group 2. Asilidae: *Cophura* pollinosa (p. 10), Arizona, alt. 4050 ft.; CEROTAINIOPS (p. 11), between *Cerotainia* and *Atomosia*, type *C.* rufiventris ♀* (p. 11), Arizona, alt. 3500 ft. *Mallophora*, table of spp., including: *M.* fautricoides ♂ (p. 13), California; *M.* bromleyi (p. 13). Syrphidae: *Syrphus* catalina ♀ (p. 14), Arizona; *Callostigma* hyalipennis ♀ (p. 15), Honduras; *Lycastrirhyncha* mexicana ♀ (p. 15), Mexico. Types in Amer. Mus. Nat. Hist.

17709. **CURRAN, C. H.** First supplement to the "Diptera of Porto Rico and the Virgin Islands." *Amer. Mus. Novitates* No. 456. 1-23. 4 fig. 1931.—Stratiomyidae (2): NEUROTA (p. 2), near *Aochletus*, type *N.* bicolor (*Sargus b.* Wiedem.) (p. 2). Tabanidae (6): A review of the spp. occurring in the islands, with keys to genera and to the spp. of *Tabanus*, including *T. stigma* Fab. (= *T. completus* Walk.), *T.* nervosus ♀* (p. 4), and *T. parvulus* Will. Bombyliidae (5): Key to genera known from the islands, and to the spp. of *Diplocampta*, including *D.* roederi* (p. 8). Asilidae: Key to the spp. of *Erax* known from Porto Rico, including *E. stylatus* Fab. (= *E. rufitibia* Macq.), and *E.* forbesi* (p. 10). Dolichopidae (1). Chloropidae (4), including *Oscinella* forbesi (p. 12). Asteiidae (1): Key to the 3 American genera and to the spp. of *Sigaloessa*, including *S.* insularis ♀ (p. 13). Ochthiphilidae (1). Milichiidae (1). Trypaneidae (5): Key to the genera known from region and to spp. of *Dyseuaresta* and *Plagiotoma*, including *P.* pura ♂ (p. 16). Ortalidae (4): Key to genera; *Euxesta* mitis ♀* (p. 17). Sapromyzidae (5): Keys to spp. of *Minettia* and *Pseudogriphoneura*, including *P.* vittifacies (p. 20). Micropezidae (4): Key to genera known from the Islands. Clusiidae (1). Sarcophagidae (2). Tachinidae (4), including *Epigrimyia* towsendi ♀ (p. 22). Types in Amer. Mus. Nat. Hist.

17710. **CURRAN, C. H.** Review of the species of Hoplacephala, Macquart (Sarcophagidae, Diptera). *Ann. and Mag. Nat. Hist.* 2(11): 417-427. 1928.—The synonymy of the genus is given, with one key for separation of the genera and subgenera, and one for the spp. *H.* lateralis ♂ (p. 422), Kenya Colony, and *H.* stannusi ♂ (p. 425), Nyasaland, types in Brit. Mus.; *H.* irvingi (p. 425), Cape Province, type in Munroe coll.

17711. **De MEILLON, BOTHA.** Notes on the larvae of some South African anophelines. *Bull. Ent. Res.* [*London*] 22(2): 237-243. 7 fig. 1931.—Studies on the larvae of *Anopheles natalensis**, *A. ardensis**, *A. gambiae**, *A. squamosus**, *A. cinereus**, *A. argenteolobatus**, *A. theileri**, and a variety* of the last.

17712. **EDWARDS, F. W.** Some suggestions on the classification of the genus Tipula (Diptera, Tipulidae). *Ann. and Mag. Nat. Hist.* 8(43): 73-82. 1931.—The writer uses the following diagnostic characters for the spp. of *Tipula:* length of radial sector, shape of discal cell, presence or absence of Macrotrichia on veins at tip of wing, presence or absence of hairs on the squama, number of tibial spurs, pubescence of thorax, and verticillate hairs of antennae. All generic names referred to *Tipula* are discussed. *Tipula* L., type *T. oleracea* L.; *Pterelachisus* Rond., type *P. bertei* Rond., is a subg. of *Tipula; Anomaloptera* Lioy, type *A. nigra* (L.), is made a subg. of *Tipula; Oreomyza* Pok., type *O. glacialis* Pok. should include the *varipennis-* and *marmorata*-groups, but belongs essentially to *Tipula* s. str.; *Tipulodina* End., type *T. magnicornis* End., is reduced to subgeneric rank under *Tipula; Trichotipula* Alex., type *T. oropezoides* Alex., is probably a valid subg. of *Tipula; Cinctotipula* Alex., type *C. algonquin* Alex., is sunk as a synonym of subg. *Trichotipula; Brithura* Edw., type *imperfecta* Brun. (= *B. conifrons* Edw.), is reduced to subgeneric rank under *Tipula; Nippotipula* Mats., type *N. nubifera* Coq., becomes a subg. of *Tipula; Formotipula* Mats., type *F. holoserica* Mats., is made a subg. of *Tipula; Yamatotipula* Mats., type *T. nova* Walk. (= *Y. nohirae* Mats.), provisionally is made a subg. of *Tipula; Platytipula* Mats., type *P. moiwana* Mats., is referred to *Tipula* s. str.; *Togotipula* Mats., type *T. pulverosa* Mats., provisionally is made a subg. of *Longurio; Odontotipula* Alex., type *O. unifasciata* LW., is a synonym of the subg. *Trichotipula* of *Tipula; Nesotipula* Alex., type *N. pribilovia* Alex., is a subg. of *Tipula; Acutipula* Alex., type *A. gaboonensis* Alex., is a subg. of *Tipula; Vestiplex* Bezzi, type *V. cisalpina* Riedel, is recognized as a subg. of *Tipula*, and is redefined to include the *arctica*-group; SCHUMMELIA (p. 80), n. subg. of *Tipula*, type *T. variicornis*, to include the *variicornis*-group and *continuata;* INDOTIPULA (p. 81), n. subg. of *Tipula*, type *T. walkeri* Brun. (= *tenuipes* Brun., *fulvipennis* Walk.); LUNATIPULA (p. 81), n. subg. of *Tipula*, type *T. lunata* L. (= *ochracea* Mg.); BELLARDINA (p. 82), n. subg. of *Tipula*, type *T. cravieri* Bell.

17713. **EDWARDS, F. W.** Mosquito notes.—VIII. *Bull. Ent. Res.* [*London*] 20(3): 321-343. 4 fig. 1929.—Various unconnected descriptive notes under 8 headings. I. Some varieties of African and Oriental *Anopheles—A. rufipes* Gough (= *A. watsoni* Edw.); *A. rufipes* v. ingrami (p. 322), Gold Coast, Nigeria; *A. theileri* vars. brohieri, Gold Coast, hancocki, Uganda, Nigeria, and seydeli, Belgian Congo (p. 322); *A. gigas* v. baileyi (p. 323), Tibet, W. China; *A. lindesaii* v. cameronensis (p. 323), Malay Peninsula; *A. hyrcanus* Pall., 5 varieties redefined. II. New and little-known African culicines—*Aëdes* (*Aëdimorphus*) phyllolabis* (p. 324), Belgian Congo; *Aëdomyia furfurea* (End.), distinct from *A. venustipes* Skuse and *A. africana* N-L.; key to spp. of *Aëdomyia; Culex* schwetzi* (p. 327), Belgian Congo; *Culex* philipi* (p. 327), Nigeria. III. Larvae and pupae of *Eretmapodites*. Descriptions of and separate keys for larvae and pupae of 6 or 7 spp.; *E. grahami* Theo. and *E. oidipodeios* Grah., described for first time. IV. Larva and pupa of *Mimomyia plumosa** Theo. Descriptions and figures, V. The larva and pupa of *Culex moucheti** Evans. Descriptions and figures. VI. New species collected by R. W. Paine in Fiji—*Rachionotomyia* rotumana (p. 337); *Culex* albinervis (p. 338). VII. Forms referred to the subg. *Skusea* of *Aëdes*.—Analysis of subgeneric characters and division into 5 subgenera—*Skusea*, with genotype *A. pembaensis* Theo.; DENDROSKUSEA, n. subg. (p. 341), type *A. micropterus* Giles; GEOKUSEA n. subg., type *A. fimbripes* Edw.; CANCRAËDES n.

subg. (p. 342), type *cancricomes* Edw.; **RHINOSKUSEA** n. subg. (p. 342), type *longirostris* Leic. VIII. The value of the squamal fringe as a generic character—with lists of genera possessing or wanting the fringe. Types of all new forms in the British Mus.—*C. J. Wainwright.*

17714. **EDWARDS, F. W.** Bibionidae, Scatopsidae, Cecidomyiidae, Culicidae, Thaumaleidae (Orphnephilidae), Anisopodidae (Rhyphidae). In: Diptera of Patagonia and South Chile based mainly on material in the British Museum (Natural History). Part 2, Fasc. 3. pp. 77-119. 3 pl., 3 fig. Brit. Mus. (Nat. Hist.): London, 1930.—(Bibionidae: Pleciinae.) Keys to genera and spp.; (Bibioninae) key to genera of subfamily; *Dilophus*, key to spp.; *D.* dorsalis (*Acanthocnemis d.* Phil.) (p. 81), redescribed; *D.* castanipes (*Acanthocnemis c.* Bigot) (p. 81), redescribed; *D.* flavihalter (p. 82), Argentina (type) and Chile; *D.* calcaratus (p. 83), Patagonia; *D.* patagonicus (p. 84), Patagonia; *D.* flavifemur ♀ (p. 85), Chile; *D.* gracilipes (p. 85), Patagonia, Tierra del Fuego; *D. antarcticus* (p. 86), redescribed; *D.* interruptus ♂ (p. 86), Mechuque I., Chile; *D.* tetracanthus (p. 87), Patagonia; *D.* luteus (p. 88), Chile. (Scatopsidae) family redefined; **ARAUCOSCELIS** (p. 90), new subg. of *Canthyloscelis*, type *C.* (*A.*) pectinata* (p. 90), Patagonia; *C.* (*A.*) pictipennis ♀ (p. 92); (Scatopsinae) discussion of wing venation; key to genera and spp.; *Scatopse notata* L., occurring in Chile and Tierra del Fuego, has apparently been recorded as *Scatopse carolina* Blanch. and *S. carbonaria* Phil.; *S. fuscipes* Mg., occurring in Chile, has apparently been recorded as *S. parvula* Blanch; *S.* setifera* (p. 95), Patagonia; *S.* tubifera* (p. 95), Chile; *S.* constricta* (p. 96), Chile; *Psectrosciara* fuscinervis ♂* (p. 97), Chile; *Ectaetia* cornuta* (p. 98), Chile. (Cecidomyiidae) 12 spp. listed from Chile. (Culicidae) characters of subfamily Dixinae discussed; 5 subgenera of *Dixa* recognized, of which *Paradixa* and *Dixa* are redefined, and subg. **NOTHODIXA** (p. 101), type *D. campbelli* Alex., is added; *D.* (*N.*) *chilensis* Alex. is also included; *D.* (*N.*) nitida* (p. 102), Patagonia; *D.* (*N.*) ensifera ♂* (p. 103), Chile; *D.* (*N.*) atrovittata* (p. 105), Patagonia and Chile. (Culicinae) only 11 spp. known from this region, of which the following are new geographic records,—*Culex dolosus*, Patagonia; *C. articularis*, Chile, Patagonia; *Aëdes albifasciatus*, Chile, Argentina. (Thaumaleidae, Orphnephilidae): *Austrothaumalea* chilensis* (p. 111), Chile; *A.* apicalis* (p. 113) and *A.* setipennis* (p. 113), Patagonia; *A.* nudipennis* (p. 114), Chile; *A.* halteralis ♂* (p. 114), Chile. (Anisopodidae, Rhyphidae) *Anisopus*, description of ♂ hypopygium (p. 116); *A. fuscipennis**, redescribed (p. 117); *A.* major* (p. 118), Patagonia; *A.* andinus* (p. 118), Chile (type), Patagonia. Types in Brit. Mus.

17715. **FREY, RICHARD.** Philippinische Dipteren. VII. Fam. Platystomidae. *Notulae Ent.* [*Helsingfors*] 10(2): 46-64. 1 pl. 1930.—A list is given of 61 spp., of which 38 were previously known, and 23 are here described, including: **XENASPOIDES** (p. 49), between *Xenaspis* and *Elassogaster*, type *X.* ichneumonea ♂* (p. 50); *X.* cyanea ♀* (p. 50); *Plagiostenopterina* (*Meringomeria*) pallidipes ♂ (p. 51); *Peronotrochus* inermis (p. 52); *Elassogaster* potens ♂ (p. 52), and simplex ♀ (p. 53); **PICROMETOPUS** (p. 53), type *P.* bicolor ♂ (p. 54); *Lamprogaster* amitina (p. 55), and obliqua (p. 56); *Pterogenia*, key to spp.; *P.* hamifera* (p. 58), boettcheri ♀ (p. 58), flavicornis (p. 59), and subcruciata* (p. 60); *Euprosopia* chalybea ♀* (p. 60), and nobilis ♀* (p. 61); *Xiria* clarissa ♀* (p. 62); **RHEGMATOSAGA** (p. 63), near *Rhabdochaeta*, type *R.* insignis ♂* (p. 63), in Imp. Bur. Ent., London.

17716. **GATER, B. A. R.** An improved method of mounting mosquito larvae. *Bull. Ent. Res.* [*London*] 19(4): 367-368. 1929.

17717. **GIBBINS, E. G.** A simple method of making permanent microscope mounts of mosquito larvae. *Bull. Ent. Res.* [*London*] 21(4): 429-430. 1 fig. 1930.

17718. **HERING, MARTIN.** Eine neue gallenerzeugende Agromyzide (Dipt.). *Zeitschr. Wissenschaftl. Insektenbiol.* 22(10): 319-326. 8 fig. 1927.—*Melanagromyza* cecidogena* (p. 325), Berlin-Frohnau, was reared from galls of *Salix aurita* L.

17719. **HOPKINS, G. H. E.** Larvae of Ethiopian mosquitoes. *Bull. Ent. Res.* [*London*] 22(1): 89-104. 15 fig. 1931.—Descriptions of the larvae of *Muscidus africanus**, *Aëdeomyia furfurea**, *Mimomyia mimomyiaformis**, *Culex hancocki**, *C. andersoni**, *C. ingrami* Edw. var.* *C. nebulosus**, and *C. cinereus**. Key to genera of Ethiopian mosquito larvae.

17720. **HULL, F. M.** Some new species of Syrphidae (Diptera) from North and South America. *Trans. Amer. Ent. Soc.* 56(2): 139-148. 1 pl. 1930.—*Syrphus* (*Epistrophe*) flavosignatus ♂* (p. 139), Brit. Columbia; *S.* (*E.*) monachus ♀* (p. 140), Greenland; *Baccha* tristis ♂* (p. 140) and *B.* nodosa ♂* (p. 141), Mexico; *Mesogramma* vitrescens ♂ (p. 142), Colombia; *Meromacrus* fucatus ♀ (p. 143), Dutch Guiana; **SENOCERIA** (p. 144), type *S.* spinifemorata ♂* (p. 145), Brazil; **CACOMYIA** (p. 146), type *C.* cressoni ♂* (p. 147), Mexico; *Volucella* chlorosa ♂ (p. 148), Mexico. Types in Acad. Nat. Sci., Philadelphia.

17721. **JOHNSON, CHARLES W.** Two new species of fungus gnats of the genus Apemon. *Psyche* 38(1): 22-24. 2 fig. 1931.—*Apemon* similis* (p. 22), New Hampshire, and *A.* manteri ♂* (p. 23), Connecticut, types in Boston Soc. Nat. Hist.

17722. **KRÖBER, O.** Die südamerikanischen Arten der Gattung Scione Wlk. (=Rhinotriclista End.) (Dipt.). *Stettiner Ent. Zeitung* 91(2): 141-174. 12 fig. 1930.—Though the author states that he unites *Scione* Wlk. and *Rhinotriclista* End. under the former name, he lists 16 spp. under *Scione* and 14 under *Rhinotriclista*, without preserving any definite sequence in the use of the names, *Scione* is used in the titles of all figures. A key to the ♀♀ is given. The systematic account of spp. includes synonymies, descriptions, and distributional records. *Rhinotriclista* rufipes ♀ (p. 147), Venezuela, type in author's coll.; *R.* immaculata ♀* (p. 149), Venezuela, type in London; *R.* nigripes ♀* (p. 152), Colombia, type in Halle; *Scione* fumipennis ♀* (p. 156), Bolivia (type, in Halle) and Peru; *S.* albohirta ♀ (p. 159), Peru, type in author's coll.; *S.* huancabambae ♀ (p. 160), Peru, type in author's coll.; *S.* obscurefemorata (p. 172), Colombia (type, in Berlin) and Peru.

17723. **KRÖBER, O.** Die Tribus Pangoniini der neotropischen Region. *Zool. Anz.* 89(7/10): 211-228. 10 fig. 1930.—Keys to 8 genera and numerous spp. are provided. The systematic list of spp. includes descriptions, taxonomic remarks, statements of distribution, citations of types, and figures. *Mycteromyia* robusta* (p. 219), locality unknown, type in Wien; **CAENOPANGONIA** (p. 221), erected for *C.* hirtipalpis* (Big.), n. comb. (p. 221); **LEPTOFIDENA** (p. 222), erected for *L.* beelzebul ♀* (p. 223), Argentina, type in Halle; *Lilaea* albifrons (Macq.), n. comb. (p. 224); *Laphriomyia* palliditarsis ♀* (p. 226) and *L. miniatistola* v. flavithorax ♀* (p. 228), Bolivia, types in Halle.

(p. 144); *A.* rotundicornis ♂ (p. 145); *A.* latipalpis ♀ (p. 145); *A.* dubia ♀ (p. 146); *A.* (*Pseudactia*) hirticeps ♂* (p. 146); **NEOPLECTOPS** (p. 147), resembling *Actia* and *Plectops*, type *N.* nudibasis ♂* (p. 147); *Hypochaetopsis* cinereofrons ♂* (p. 149). A few previously described spp. are also discussed.

17725. **MALLOCH, J. R.** Notes on Australian Diptera. XXIV. *Proc. Linn. Soc. N. S. Wales* 55(3): 303-353. 44 fig. 1930.—This paper completes the notes on Tachinidae, and includes keys to genera and spp. There are taxonomic remarks and locality and date records for previously known forms. New forms are from New South Wales unless otherwise stated. *Actia* (*Schizoceromyia*) invalida* (p. 305); **TARARACTIA** (p. 305), n. subg. of *Actia*, type *Actia* baldwini ♂* (p. 306), Queensland; *A.* (*A.*) *norma* Malloch, emended description; *A.* (*A.*) lata ♂ (p. 307); *A.* (*A.*) parviseta ♂ (p. 308); *A.* (*A.*) *darwini* Malloch, first description of ♀; *A.* (*A.*) brevis ♂ (p. 309); *A.* (*A.*) nigritula ♀ (p. 309), Queensland (type) and New South Wales; *A.* (*A.*) argentifrons ♂ (p. 309); *A.* (*A.*) plebeia* (p. 310); *Chaetophthalmus* Brauer & Berg. (=*Amphibolosia* Surcouf); *C.* biseriatus ♂ (p. 311); *Cylindromyia* nigricosta ♂* (p. 312); *C.* atratula* (p. 314); *C.* sydneyensis ♀* (p. 314); *C.* brunnea ♂* (p. 315), W. Australia; *C.* tricolor ♀ (p. 315); *Cuphocera* pilosa* (p. 316); *C.* setigera ♂* (p. 318); *C.* emmesia ♂* (p. 318), W. Australia; *Voria ruralis** Meigen, genus and sp. new to Australia (New South Wales); *Stomatomyia* micropalpis ♂* (p. 321); **VORINA** (p. 321), near *Hyleorus*, type *V.* setibasis* (p. 321); **MACROPIA** (p. 322), type *M.* rufiventris* (p. 322); *Hyalomyodes* australasiae ♂* (p. 325); **PHOROCEROSTOMA** (*Phorocerosoma* Malloch, not Towns.) (p. 326); *Euphasia picta** (Brauer & Berg.), emended description; **GERALDIA** (p. 327), type *G.* hirticeps (p. 328), W. Australia; **ACUCERA** (p. 328), resembling *Froggattimyia*, type *A.* montana (p. 328) [figured as *A. monticola*, p. 327]; **PILIMYIA** (p. 329), similar to *Zita*, type *P.* lasiophthalma ♂* (p. 329); **PYGIDIA** (p. 330), similar to *Zita*, type *P.* rufolateralis ♂* (p. 331); **DELTA** (p. 332), type *D.* australiensis* (p. 332), W. Australia; *D.* grisea (p. 333), W. Australia; *D.* opaca ♀ (p. 334); *D.* scutellata (p. 334), W. Australia; *D.* major (p. 334), New South Wales (type) and Queensland; **VORIELLA** (p. 335), near *Delta*, type *V. recedens* "n. sp." [nomen nudum]; *V.* uniseta* (p. 335); *V.* armiceps ♀* (p. 336), W. Australia; *V.* inconspicua ♀ (p. 336); *Myothyria* fergusoni* (p. 339), W. Australia; *M.* armata ♀ (p. 340); *Semisuturia* Malloch, reduced from generic to subgeneric rank, under *Doddiana* Curran; *D.* parviseta ♀ (p. 341); *D. pallens* Curran, emended description; *D.* flavifrons ♀ (p. 342), Queensland; *Quadra* dissimilis ♂ (p. 343); *Austrophorocera* Townsend, emended diagnosis; **APILIA** (p. 345), resembling *Phorocera*, type *A.* cilifera ♂ (p. 345) [figured as *A. setifera*, p. 346], Queensland; **VESPIVORA** (p. 347), related to *Frontina*, type *V.* nigriventris (p. 347), Queensland, parasitic on wasps; *Winthemia* diversa ♂ (p. 348); *W.* albicens ♂ (p. 349); **CALOPYGIDIA** (p. 349), similar to *Quadra*, type *C.* analis* (p. 350); *Sturmia* semirufa ♂ (p. 351), Queensland. One new sp. from New Zealand is described; *Protohystricia* huttoni ♂ (p. 352).

17726. **MELIS, ANTONIO.** Osservazioni anatomomorfologiche sulle larve del Dacus oleae Rossi e del Bibio hortulanus L. [Anatomical studies on fly larvae.] *Rivista Biol.* 10(3/4): 3-43. 8 fig. 1928.—Detailed external anatomy of larvae of *Dacus* and *Bibio*. Histology of external parts of respiratory system, with especial attention to structure and mechanism of the stigmata. —*R. A. Muttkowski.*

17727. **MUNRO, H. K.** New Trypetidae from South Africa (Dipt.). *Bull. Ent. Res.* [*London*] 20(4): 391-401. 1 pl. 1929.—*Dacus* (*Dacus*) stentor ♂* (p. 391), Transvaal; *D. brevistriga* Walk. (=*D. asclepiadens* Bez.); **NIPPIA** (p. 392), type *N.* alboscutellata ♀* (p. 393), Transvaal; *Perilampsis* amazuluana ♂* (p. 394), Zululand; *Pardalaspis* scaevolae* (p. 394), Durban, larvae infesting fruits of *Scaevola lobelia*; notes are given on the genus *Afreutreta* Bez.; **PARAFREUTRETA** (p. 396), related to *Afreutreta*, type *P.* conferta (*Camaromyia c.* Bez.) (p. 397); *P.* pretoriae ♂* (p. 397), Pretoria; *P.* bryanti ♀* (p. 398), Cape Province, reared from puparia in stem-galls on *Senecio longiflora*; *Trypanea* lignoptera* (p. 399); **INSIZWA** (p. 400), allied to *Euaresta* and *Euarestella*, type *I.* striatifrons* (p. 400), Natal, reared from puparia on flowers of *Gazania uniflora*.

17728. **PARENT, O.** Ergebnisse einer zoologischen Sammelreise nach Brasilien, insbesondere in das Amazonasgebiet, ausgeführt von Dr. H. Zerny. III. Teil. Diptera: Dolichopodidae. *Ann. Naturhist. Mus. Wien* 44: 5-26. 30 fig. 1930.—Descriptions of new spp. as follows: *Condylostylus* pectinator* (p. 6); *C.* ocellatus* (p. 8); *C.* lavatus ♂* (p. 10); *C.* luteicinctus ♀* (p. 11); *C.* bisetosus ♀* (p. 12); **CHEIROCERUS** (p. 13), type *C.* palmaticornis ♂* (p. 13); *Hercostomus* problematicus* (p. 14); *Paraclius*, key to spp.; *P.* excisicornis* (p. 16); *P.* parvulus* (p. 17); *Diaphorus*, key to spp.; *D.* amazonicus ♂* (p. 19); *D.* viduus ♀* (p. 20); *D.* pruinosus ♀* (p. 21); *Micromorphus* plebeius ♀* (p. 21); *Sympycnus*, key to spp.; *S.* albipalpus* (p. 22); *S.* latipes* (p. 23); *Chrysotus* grandicornis (*C. magnicornis* Duzee) (p. 26).

17729. **PATANÉ, CARLO.** Sulla distribuzione di "Stegomyia fasciata" in Cirenaica. Sua frequenza ed abitudini biologiche in Bengasi, nelle diverse stagioni. [Distribution of S. fasciata in Cyrenaica. Its prevalence and biological habits in Bengasi, during various seasons.] *Arch. Ital. Sci. Med. Coloniale* 8(5): 262-270. 1927.

17730 **PHILIP, CORNELIUS B.** Two new species of Uranotaenia (Culicidae) from Nigeria, with notes on the genus in the Ethiopian region. *Bull. Ent. Res.* [*London*] 22(2): 183-193. 2 fig. 1931.—*Uranotaenia*, keys to adults, larvae, and pupae of spp.; *U.* philonuxia* (p. 188); *U.* caliginosa (p. 190).

17731. **REICHENSPERGER, A.** Beitrag zur Kenntnis der Termitoxeniidae (Dipt.). *Zool. Anz.* 93(11/12): 289-306. 10 fig. 1931.—The author agrees with Schmitz in considering this family distinct from the *Phoridae*. He gives an emended diagnosis of the family. *Termitomyia* gracilis* (p. 294); **TERMITOSTROMA** (p. 297), resembling *Ptochomyia*, type *T.* schmitzi* (p. 299); **TERMITOSAGMA** (p. 302), resembling *Termitosphaera*, type *T.* henningsi* (p. 303). The new spp. are from Tanganyika, and occur as brood parasites in the nests of the termite *Amplitermes natalensis*.

17732. **REINHARD, H. J.** A synopsis of the genus Macromeigenia including the description of one new species. (Diptera: Tachinidae.) *Ent. News* 41(8): 261-264. 1930.—Key is given to the spp., including *M.* owenii ♂ (p. 263), Texas, type in U. S. Nation. Mus.

17733. **RICHARDS, O. W.** Systematic notes on the Borboridae (Diptera) with descriptions of new species of Leptocera (Limosina). *Ent. Month. Mag.* 65(783): 171-176. 2 figs. 1929.—A new subg., **PHILOCOPRELLA** (p. 172), of *Leptocera* Ol. is proposed, and the following new spp.; *Leptocera* (*Philocoprella*) arvernica ♂* (p. 172) *L.* cambrica (p. 174); *L.* (*Thoracochaeta*) penteseta ♀ (p. 174); *L.* collini (p. 175); and *L.* grenstedi (p. 175) ♀, with var. simplex (p. 175). All types in British Mus.—*H. M. Gilkey.*

17734. **RIEDEL, M. P.** Tachinidae. I. *Ent. Anzeiger* 10(14): 262-266. 1930.—This article begins the series of publications of certain parasites for "Verbandes Deutschsprachlicher Entomologen-Vereine." This society supports a "receiving station" to which breeders can send their material for determination and descriptions by experts. Author lists 10 spp. of Tachinidae, among which *Hadena rurea* is a new host of *Masicera pratensis*.

17735. **RIEDEL, M. P.** Die subalpine Fliegenfauna von Reinerz (Glatzer Gebirge, Schlesien). [The subalpine fly fauna of Reinerz, Glatz Mts., Silesia.] *Zeitschr. Wiss. Insektenbiol.* 25(3/5): 71-81. 1930.—A list of Diptera collected by the author in this region 1927-1929.

17736. **SÉGUY, E. Un nouveau Calliphorine de la Guyane française.** *Ann. Soc. Ent. France* 96(3/4): 262. 1927.—**PSEUDORMIA**, type *P.* **inflata**, in author's coll.

17737. **SÉGUY, E. Un Mydaide nouveau de l'Afrique Orientale Portugaise.** *Ann. Soc. Ent. France* 98(1/2): 110. 1929.—**HELEOMYDAS** (p. 110), type *H.* **lesnei** ♂.

17738. **SHANNON, RAYMOND C. Una nueva especie de Syrphidae: Quichuana rieseli.** *Rev. Soc. Ent. Argentina* 1(3): 5-6. 1927.—*Q.* rieseli ♀ (p. 5), Argentina, type in author's coll.

17739. **SMITH, R. O. A. The breeding of sandflies in nature and in the laboratory.** *Far East. Assoc. Trop. Med. Trans. 7th Congr. Brit. India* 3: 182-185. 1927 [1928].

17740. **[STACKELBERG, A. A.] ШТАКЕЛЬБЕРГ, А. А. К фауне Drosophilidae (Diptera) Ингрии. [Contribution to the Drosophilidae of Ingria, Russia.]** Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 24(1/2): 63-66. 1930.—Detailed locality records, with notes on general distribution, for 27 spp., 17 of which are reported from this region for the first time.

17741. **SZILÁDY, Z. New and Old World horseflies.** *Biologica Hungarica* 1(7): 1-30. 1 pl., 7 fig. 1926.—Oriental Tabanidae are treated on pp. 1-21. The author reviews recent literature and gives a key to the spp. of *Siridorhina*. *S.* **zernyi** ♀ (p. 2), Ceylon; *S.* **körösicsomana** (p. 3), India [type depository not given]; **PSYLOCHRYSOPS** (*Neochrysops* Szil., not Walton) (p. 3); *P.* **unizona** (p. 3), Borneo, type in Budapest Mus.; *Silvius* **piceus** ♀* (p. 4) and *S.* **ceylonicus** ♂ (p. 5), Ceylon; *Chasmiella* **polyzona** ♀* (p. 5), India; *Haematopota* **birói** (p. 5), India, type in Budapest Mus.; *H. b.* var. **montium** (p. 6), India [type dep. not given]; *H. unizonata* v. **matherani** ♀ (p. 6) and *H.* **flavicornis** ♀ (p. 6), India, types in Budapest Mus.; *H.* **atrata** ♀ (p. 7), China; *H.* **tenasserimi** ♀ (p. 7), Burma; *H. t.* var. **tonkiniana** ♀ (p. 8), Tonkin [type dep. not given]; *Lissimas* **moestus** ♂* (p. 8) and *Neobolbodimyia* **argentata** ♀* (p. 8), Celebes; **CALLOTABANUS**, n. subg. (p. 10), erected for "group II of Ricardo including the recently described spp. *Tabanus fulvicinctus* Ric., *T. quinquecinctus* Ric., *T. tonglai* Surc., and *T. insidiator* Aust. as well as group I of Ricardo, with exception of *T. bicallosus* Ric." The following emendations of names introduced by Schurmans are proposed: *Haematopota aequitibia* for *H. equitibia; Tabanus latifascia* for *T. latifascies; T. burmanensis* for *T. burmanense; T. aequecinctus* [sic] for *T. equicinctus; T. flavoscutellatus* for *T. flaviscutellatus; T. sumbavensis* for *T. soembavensis; T. aruensis* for *T. aroeensis, T. madurensis* for *T. madoerensis; T. fuscibarba* for *T. fuscibarbis; T. cylindricallus* for *T. cylindricallosus; T. flavovittatus* for *T. flavivittatus; T. flavopilosus* for *T. flavipilosus*. The following new names are proposed (p. 10) for preoccupied names of Schurmans: *Tabanus* **nigrinus** for *T. nigerrimus; T.* **bipustulatus** for *T. bipunctatus; T.* **fenestralis** for *T. fenestratus; T.* **frondosus** for *T. latifrons; T.* **schurmansi** for *T. ruficornis. Tabanus* **cyclops** ♀* (p. 10), locality unknown, type in Budapest Mus.; *T.* (*Callotabanus*) **sagittipalpis** ♀ (p. 11), East India; *T.* (*C.*) **tenasserimi** ♀* (p. 11), Burma; *T.* **széchenyianus** ♂ (p. 12), Tonkin, type in Budapest Mus.; *T.* **lóczyi** ♀* (p. 12), Java; *T.* **indifferens** ♀* (p. 12), India; *T. furunculigenus** Dol. and *T. cinnamoneus** Dol., emended descriptions; *T.* **acallus** ♀ (p. 14), India; *T.* **semirufus** ♂* (p. 14), Tonkin; *T. elongatus** Wied., emended descr.; *T.* **rubidoides** ♀ (p. 15), India, type in Budapest Mus.; *T.* **wallacei** ♀ (p. 15) and *T.* **decoratus** ♀ (p. 16), India; *T.* **invalidus** ♀* (p. 16), Singapore; *T. signifer* Walk., first description of ♀; *T. fuscomaculatus* v. **unisignatus** (p. 17), Celebes; *T. peculiaris* v. **kashmirianus** ♀ (p. 17), locality not given; *T.* **destructus** ♀ (p. 17), S. Asia; *T.* **pictiventris** ♀* (p. 17), Borneo; *T.* **rufimedius** ♀* (p. 18), Tonkin; *T. exoticus* v. **fulvipes** (p. 18), Shantung, type in Dahlem Mus.; *T.* **limbatus** ♀* (p. 18), locality unknown, type in Budapest Mus.; *T.* **infamis** (p. 19), Borneo; *T.* **lucifer** (p. 19), China, type in Budapest Mus.; *T. palpalis* v. **incertus** (p. 19), East India; *T.* **xanti*** ♀ (p. 19), Celebes; *T. angustilimbatus* v. **particolor** ♀ (p. 20), Ceylon; *T.* (*Therioplectes*) **latus** ♀ (p. 20), Burma; *T.* (*Therioplectes*) **altaianus** ♀ (p. 20), Siberia. Types of new spp. are, unless otherwise stated, in Vienna Mus. There are taxonomic remarks on several previously known spp., and new locality records for 13 additional spp. Central American Tabanidae are treated on pp. 21-27, all but one of the types being in the Dahlem Mus. *Lepidoselaga* **major** (p. 21), Cuba; *Styposelaga* **punctipennis** (*Silvius p.* Brun.) (p. 21); *Tabanus* **flavifrons*** (p. 22), Cuba; *T. townsendi** Johns., emended description; *T. yucatanus** Towns., emended descr.; *T.* **bellardii** ♀* (p. 23), Cuba; *T.* **floridanus** ♀* (p. 24), Florida; *T.* **cubanus** ♀ (p. 24) and *T.* **laevicallus** ♀* (p. 25), Cuba; **LOPHOTABANUS**, n. subg. (p. 25), provisionally proposed to include *Tabanus deflippii, T. albonotatus*, and the following 3 spp.: *T.* (*Lophotabanus*) **bifloccus** ♂* (p. 25) and *T.* (*L.*) **dorsifloccus** ♀* (p. 26), Cuba; *T.* (*L.*) **druyvesteijni*** (p. 26), Trinidad, Panama, and Dutch Guiana, type in Budapest Mus. A revision of the genus *Scione* Walk. (*Diclisa* Schin.) is given on pp. 27-30. An emended diagnosis of the genus is given, and there is a key to the spp. The types of the following are in the Budapest Mus.; *Scione* **minuta** (p. 28), Colombia; *S.* **picta** ♀ (p. 29), Bolivia; *S.* **crassa** ♀ (p. 29), Peru; *S.* **costaricana** ♀ (p. 29), Costa Rica; *S.* **punctata** ♀ (p. 29), Colombia; *S.* **aurea** ♀ (p. 30), Costa Rica. A little-known North American *Tabanus* is treated on p. 30. Although the habitat of *T. difficilis** Wied. has been recorded as unknown, the type, in the Vienna Mus., is from North America. An emended description is given.

17742. **VAN DUZEE, M. C. New species of Dolichopodidae from North America and the West Indies.** *Canadian Ent.* 62(4): 84-87. 1930.—*Thinophilus* **pruinosus** (p. 84), Colorado, type in author's coll.; *Chrusotus* **arkansensis** ♂ (p. 84), Arkansas, *Hercostomus* (*Gymnopternus*) **pallidiciliatus** (p. 85), Massachusetts, *Pelastoneurus* **seticauda** ♂ (p. 85), Missouri, and *Diaphorus* **parvulus** (p. 86), St. Vincent Is. (West Indies), types in Univ. Arkansas.

HEMIPTERA AND HOMOPTERA

H. H. KNIGHT, *Editor*, Hemiptera

Z. P. METCALF, *Editor*, Homoptera

(See also in this issue Entries 16790, 16791, 16793, 16831, 16838, 17063)

(6 spp.), and Aradoideae (1 sp.). Part III treats the Reduvioideae (6 spp.), Cimicoideae (13 spp.), Gerroideae (4 spp.), Notonectoideae (4 spp.), Corixoideae (1 sp.), Homoptera, Cicadoideae (30 spp.), and Fulgoroideae (13 spp.). Brief descriptions are given for all spp. considered, and mention is made of food plants.

17745. **VREURICK, G. Liste d'Hémiptères intéressants.** *Bull. et Ann. Soc. Ent. Belgique* 71(5): 99-100. 1931.—A list with collecting records of 31 spp. of Heteroptera and Homoptera from Belgium.

17746. **WNUKOWSKY, W. Beiträge zur Kenntnis der Rhynchoten-Fauna des Bezirks Omsk.** *Mitteil. Deutschen Ent. Ges.* 2(1): 9-16. 1931.—A record of 23 spp. of Homoptera and 50 spp. of Heteroptera.

HEMIPTERA

17747. **BERGEVIN, ERNEST de. Description d'une nouvelle espèce d'Alphocoris (Hémiptère Scutellerinae) provenant des chasses de M. de Peyerimhoff au Hoggar.** *Bull. Soc. Hist. Nat. Afrique du Nord* 22(5): 152-154. 1 fig. 1931.—*Alphocoris* **pachycephalus*** ♀ (p. 152), Algeria.

17748. **BLÖTE, H. C. Nederlandsche Hemiptera in 's Rijks Museum van Natuurlijke Historie. I. Mesoveliidae, Hebridae, Veliidae, Gerridae, Hydrometridae, Aradidae, Lygaeidae en Pyrrhocoridae.** *Zool. Mededeel.* [*Leiden*] 13(3/4): 241-258. 1930.—Collecting records of 1 Mesoveliidae, 2 Hebridae, 2 Veliidae, 8 Gerridae, 1 Hydrometridae, 4 Aradidae, 53 Lygaeidae, and 1 Pyrrhocoridae.

17749. **BLÖTE, H. C. Catalogue of the Pyrrhocoridae in 's Rijks Museum van Natuurlijke Historie.** *Zool Mededeel.* [*Leiden*] 14(1/2): 97-136. 6 fig. 1931.—A critical study of the material in the Leiden Mus. with all records, and with notes on Walker, Distant, and Fabricius types in the British Mus. The following new data are presented: *Acinocoris lunaris* Gmel. (=*A. includens* Walker); *Euryophthalmus* **fulvipes** (p. 98), Curaçao; *Physopelta* **parviceps*** (p. 100), Japan; *Dindymellus coimbatoriensis*, referred to *Iphita; Physopelta seria* Breddin, and perhaps *P. pilosa* Stål and *P. flavipes* Taeuber, referred to *Delecampius; D. typicus* Distant (=*Physopelta villosa* Bredd.); *Antilochus* **coloratus** (*Dysdercus c.* Walker) (p. 102); *A. c.* var. **scutifer** (*Antilochus s.* Walker) is not a synonym of *A. discifer* Stål; *A. d.* var. **rufifemoratus** (p. 103), Saleyer Is.; *Antilochus histrionicus* Stål is restricted to his var. *a; A.* **latiusculus** (p. 103), Timor, Wetter Is., Tenimber; *Ectatops ophthalmicus* v. **nigriventris** (p. 106), Timor; *E.* **simalurensis*** (p. 106), Simalur; **PSEUDINDRA** (p. 107), near *Aeschines*, erected for *Indra glebula* Bredd., *I. timarchula* Bredd., and *P.* **orthocephaloides** (*Indra o.* Bredd.); *Dindymus albicornis* v. **pulcher** (*D. p.* Stål) (p. 109); *D.* **atritarsis** (p. 109), Morotai; *D.* **brevis** (p. 109), Formosa; *D.* **costalis** (*Melamphaus c.* Walker) (p. 110); *D.* **flavipennis** (p. 110), New Guinea; *D.* **longicollis*** (p. 111), Nias; *D.* **obscurus** (p. 111), Java; *D. pyrochrous* v. **rufibasis** ♀ (p. 112), Gebeh; *D. rubiginosus* v. **subsanguineus** ♀ (p. 113), Nias; *D.* **seminiger** (p. 113), Sumatra, Tapanoeli; *D. s.* var. **univittatus** (p. 114), Sumatra; *D.* **triangulifer** (p. 114), Timor; *Scantius* **aethiopicus** (*Delecampium a.* Distant) (p. 116); *S.* **rhodesianus** (*D. r.* Dist.) (p. 117); *Dysdercus antennatus* Dist., referred to *Dindymus; Dysdercus* **brevis** (p. 117), São Paulo (Brazil) (type) and Peru; *Dysdercus cingulatus* F. (=*D. megalopygus* Bredd.); *D.* **collaris** (p. 119), Colombia; *D.* **columbicus** (p. 120), Colombia; *D. mundus* Walk. and *D. splendidus* Dist., referred as varieties of *D. concinnus* Stål; *D. crucifer* Stål (=*Dindymus simplex* Walker); *Dysdercus fulvoniger* de Geer (=*D. howardi* Ballou); *D.* **fuscofasciatus** (p. 121), Dutch Guiana; *D.* **honestus** (p. 122), Chapada (Brazil) (type, in Brit. Mus.) and Espirito Santo (Brazil); *D.* **imitator** (p. 123), Peru (type) and Bolivia; *D. i.* var. **pseudo-annulus** (p. 123), Bolivia (type) and Peru; *D. i.* var. **pseudoruficollis** (p. 124), Peru; *D.* **immarginatus** (p. 124), São Paulo (Brazil); *D.* **incarnatus*** (p. 124), Celebes; *D. incertus* v. **flavipenuis** [sic] (p. 126), Panama; *D.* **infuscatus** (p. 126), Dutch Guiana; *D.* **jacobsoni** ♂* (p. 127), Simaloer Is.; *D. mimus* v. **distanti** (p 128), Trinidad (type), Panama, and Bolivia; *D.* **pallidus** (p. 129), Venezuela; *D. poecilus* v. **parvisignatus** (p. 130), Sumatra, E. Indian Is., and Philippines; *D. ruficollis* v. **albomembranaceus** (p. 132), São Paulo (type), Para, Rio de Janeiro, and Espirito Santo; *D.* **transversalis** (p. 132), Wetter (type), Java, Bali, Timor and Key Isls. The article closes with a key to 19 spp. of *Dysdercus* allied to *D. ruficollis*. Except as indicated, types are in Leiden Mus.

17750. **CHINA, W. E. A new South African species of Rhagadotarsus, Bredd., representing a new subgenus (Hemiptera-Heteroptera, Gerridae).** *Ann. and Mag. Nat. Hist.* 8(46): 407-410. 1 fig. 1931.—**CAPRIVIA** (p. 408), n. subg. in *Rhagadotarsus*, type *R.* (*C.*) **hutchinsoni** ♂* (p. 408), South Africa.

17751. **GOURSAT, H. Description d'un Odontopus nouveau (Hem. Pyrrhocoridae) des collections du British Museum.** *Bull. Soc. Ent. France* 1931(10): 167-168. 1931. —*O.* somaliensis, British Somaliland.—*S. B. Fracker.*

17752. **PACK, H. J., and G. F. KNOWLTON. Notes on Utah Hemiptera.** *Canadian Ent.* 62(11): 248-250. 1930.—Collecting records of 5 Scutelleridae, 6 Cydnidae, and 25 Pentatomidae.

17753. **TORRE-BUENO, J. R. de la. On some New England Heteroptera.** *Bull. Brooklyn Ent. Soc.* 24(5): 310-313. 1929.—Collecting records of 36 spp. from Massachusetts and 9 spp. from Maine.

17754. **TORRE-BUENO, J. R. de la. On the Heteroptera collected by George P. Engelhardt in the south and west.** *Bull. Brooklyn Ent. Soc.* 25(2): 107-108. 1930.—Records of collections in Texas and Florida.

17755. **WALLEY, G. STUART. Notes and descriptions of species of Arctocorixa from Ontario and Quebec (Hemip., Corixidae).** *Canadian Ent.* 62(12): 280-286. 1 pl. 1930.—Collection records on 19 described spp. (with key) and the following: *Arctocorixa* **quebecensis*** (p. 281) and *A.* **transfigurata*** (p. 282), Quebec; *A.* **semilucida*** (p. 284), Ontario. Types in Canadian Natl. Coll.

HOMOPTERA

17756. **BEAMER, L. D., and R. H. BEAMER. Biological notes on some western cicadas.** *Jour. New York Ent. Soc.* 38(3): 291-305. 1930.—Notes on the songs, nesting habits, and general habitat of 31 spp. and varieties of Cicadidae in Kansas, New Mexico, Arizona, California, and Utah.

17757. **BUYS, JOHN L. Leafhoppers of Mt. Marcy and Mt. Macintyre, Essex Co., New York (Homoptera, Cicadellidae).** *Jour. New York Ent. Soc.* 39(2): 139-143. 1931.—Records of 19 leafhoppers from Mt. Marcy, and 13 spp. from Mt. Macintyre.

17758. **CHU, H. J. Notes on the life-history of Lycorma delicatula White in Nanking.** *Peking Soc. Nat. Hist. Bull.* 5(3): 33-35. 1931.—This lantern-fly occurs on *Ailanthus altissima* and *Melia azederach*. Brief notes are presented on the egg stage, nymphal habits, habitat, mating, and oviposition.

17759. **FRANSSEN, C. J. H. De Biologie en systematiek der Nederlandsche "zwarte bladluizen." [Biology and classification of the Dutch "black aphids."]** *Natuurhist. Maandblad* [*Limburg*] 17(4): 58-60; (5): 70-76; (6): 80-87. 5 fig. 1928.—The black aphids (*Aphis* spp.) in Holland are here divided into 5 groups, namely *fabae, acetosae, genistae, viciae,* and *laburni*. A key is given to these groups with notes on their biology, and the characters common to the spp. in each are enumerated. Two new spp. are described: *A.* **iridis*** (p. 76), Netherlands, on *Iris;* and *A.* **sarothamni*** (p. 86), Netherlands and England, on *Sarothamnus vulgaris.*—*C. J. H. Franssen.*

17760. **HOTTES, F. C. The name Cinara versus the name Lachnus.** *Proc. Biol. Soc. Washington* 43: 185-188. 1930.—*Cinara* Curtis has as its type *Aphis pini* L., whereas the type of *Lachnus* is *Aphis roboris* L. (=*L. fasciatus* Burm.); *Cinara* **fornacula** (p. 186), apterous viviparous ♀, Minnesota, on blue spruce (type), and Colo-

rado, type in coll. O. W. Oestlund; *Cinara nudus* Mordw. is not a synonym of *C. pini* L.; *Schizolachnus pineti* (Fabr.) (=*S. tomentosa* DeGeer).

17761. **KLYVER, F. D. Euphyllura arctostaphyli** Schwarz and Euphyllura neveipennis (Schwarz) (Homoptera: Chermidae). A difference in interpretation. *Proc. Ent. Soc. Washington* 32(9): 153-160. 1 pl. 1930.—*E. arctostaphyli** and *E. neveipennis** are distinct spp.

17762. **KUSNEZOV, VICTOR. Uebersicht der Gattungen des Tribus Orgeriaria (Homoptera-Cixiidae).** *Ent. Zeitschr., Frankfurt a/M* 44(4): 58-60. 1930.—A key to 13 genera of which **OTORGERIUS** (p. 59), **SPHENOCRATOIDES** (p. 59), **ANORGERIOPUS** (p. 59), and **SCHIZORGERIUS** (p. 60) are described as new. [No species names are given in the article as types for the new genera.]

17763. [**KUZNETSOV, VIKTOR.**] КУЗНЕЦОВ, ВИКТОР. Новый вид рода Zyginella P. Löw (Homoptera). [A new sp. of Zyginella.] Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 24(3/4): 197-198. 1 fig. 1930.—*Z. quercus* ♂* (p. 197), Crimea, from oak. Key is given to 4 spp. of the genus.

17764. **LAWSON, PAUL B. Genus Dikraneuroidea gen. n.** (Homoptera, Cicadellidae). *Bull. Brooklyn Ent. Soc.* 24(5): 307-309. 1 pl. 1929.—**DIKRANEUROIDEA** (p. 307), near *Dikraneura*, type *D.* beameri* (p. 307), Texas, type in Snow Entomological Coll., Univ. Kansas.

17765. **LAWSON, PAUL B. Concerning Scolops cockerelli,** (Homoptera, Fulgoridae). *Canadian Ent.* 62(6): 120-122. 1930.—*S. cockerelli* Fowler is distinct from *S. robustus* Ball. Description of ♀ *S. cockerelli* allotype, and a holomorphotype from Texas.

17766. **MAHDIHASSAN, S. The males of lac and pseudo-lac insects.** *Zeitschr. Wiss. Zool.* 138(3): 371-385. 18 fig. 1931.—*Tachardina lobata** and *T. silvestrii** are contrasted with *Lakshadia communis**.

17767. **MAHDIHASSAN, S. Das zweite Larvenstadium der weiblichen Lackschildlaus.** *Zool. Anz.* 94(11/12): 289-304. 16 fig. 1931.—The shellac industry of India amounts to 20 million dollars per annum. The 2nd larval stage of *Lackshadia communis* is described and figured, and illustrations are also given of the same stage of *L. nagoliensis* and *L. mysorensis*.

17768. **MARRINER, T. F. The Cumberland Aleurodes.** *Ent. Rec. & Jour. of Variation* 43(2): 21-23. 1931.—A list of 16 spp., with locality notes, distribution, and abundance.

17769. **MORDVILKO, A. Aphids of the subtribe Hormaphidina.** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(7): 168-172. 1930.—The subtribe Hormaphidina in tribe Vacunea, subfamily Callipterinae, apparently originated in far eastern Asia. These forms, when hibernating upon secondary hosts, usually assume a peculiar Aleyrodes-like form. The life cycle of several spp. is reviewed.

17770. **MORDVILKO, A. About the origin of heteroecy in plant lice.** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930 (10): 256-260. 1930.—The writer discusses the generational cycles of many genera of Aphidae. Heteroecy cannot take place in the tropics, if even the secondary hosts of the aphids, as well as the primary hosts, survived there, because in that zone the sexual generation disappears; consequently the fundatrices vanish also.

17771. **OSBORN, HERBERT. A new genus and three new species of South American Cicadellidae** (Homoptera). *Ann. Ent. Soc. Amer.* 22(3): 465-467. 1929.—Jassinae: **IDIOTETTIX** (p. 465), type *I. magnificus* (*Thamnotettix m.* Osb.), ♂ described (p. 465); *I.* boliviana (p. 466), Bolivia; *I.* fasciatus (p. 466) and *I.* brunneus (p. 467), Paraguay. Types in author's coll.—*M. W. Boesel.*

17772. **TAKAHASHI, R. Descriptions of some new Formosan Coccidae (Rhynchota).** *Bull. Ent. Res.* [*London*] 22(2): 211-220. 9 fig. 1931.—*Diaspis* gordoniae ♀* (p. 211), on twig of *Gordonia axillaris; Aulacaspis* robusta ♀* (p. 212), on branch of *Bladhia sieboldii; A.* murrayae ♀* (p. 212), on leaf of *Murraya exotica; Pinnaspis* lithocarpi (p. 214) ♀*, larva* on leaf of *Lithocarpus* sp.; *Tsukushiaspis* vermiformis (p. 215), ♀*, larva* on leaf of *Bambusa stenostachya, B.* sp., and *Dendrocalamus latiflorus; T.* phragmitis (p. 216), ♀* larva* on leaf of *Phragmites* sp.; *Parlatoria* machili ♀* (p. 218), on leaf of *Machilus* spp.; *Fiorinia* smilaceti (p. 218), ♀*, larva on leaf of *Smilax* sp.; *Aonidia* (*Greeniella*) lahoarei (p. 219), ♀* larva* on leaf of *Eugenia* sp. Types in Agric. Res. Inst., Formosa.

17773. **TAKAHASHI, R. Coccidae associated with the ant Cremastogaster rogenhoferi Mayr. in Formosa.** *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 2: 15-16. 1929.—The coccids living in association with this ant may be arranged in the following categories: (1) true myrmecophiles; these are protected always by this ant and can not live without the association, showing the most advanced stage of trophobiosis; (2) coccids which are almost always protected by this ant, but are sometimes found away from it; (3) coccids which are sometimes found in the tents, being often visited by this ant; (4) coccids which are sometimes visited by the ant, but are not found in the nests or tents; *Pseudococcus citri* Risso, *Ceroplastes rubens* Mask., etc., are illustrations of this type, the most primitive type of the association between the coccids and the ant; (5) coccids which are merely accidental in the nests or tents.

17774. **TAKAHASHI, RYOICHI. A new Mindarus from Japan (Aphididae).** *Trans. Nat. Hist. Soc. Formosa* 21(114): 137-139. 2 fig. 1931.—*M.* japonicus*, alate ♀ (p. 137), on *Abies*, from Okitsu, type in Dept. Agric. Res. Inst., Formosa. The author believes this genus to belong to the Mindarini tribe of the Agrioaphidinae.

HYMENOPTERA

C. F. W. MUESEBECK, *Editor*

(See also in this issue Entries 16779, 16781, 16786, 16790, 16792, 16802, 16837, 16838, 16839, 16842, 16847, 16849, 17467, 17641, 17773, 17860, 18114, 18116)

17775. **ARLE, R. Note sur quelques Béthylides [Hym.] capturés aux environs d'Auxerre (Yonne), avec la description d'une espèce nouvelle du genre Bethylus Latr.** *Bull. Soc. Ent. France* 1929(4): 61-63. 4 fig. 1929.—*B.* berlandi*, type in author's coll., *Epyris niger* Westw., *B. fulvicornis** Curtis and *Pseudisobrachium subcyaneum* Halid., were taken near Auzerre.—*S. B. Fracker.*

17776. **BENOIST, R. Hyménoptères mellifères des environs de Paris.** *Ann. Soc. Ent. France* 95(2/3): 210. 1926.—The author found near Paris: *Bombus cullumanus* ♀, *Andrena julliani, Rophites canus, Osmia tridantata,* and *O. antigae* v. laevior.

17777. **BENOIST, R. Étude sur la faune des Hyménoptères des Alpes Françaises.** *Ann. Soc. Ent. France* 97(3/4): 389-417. 1928.—A list of 348 spp. collected in 1921, 1923, and 1925, with localities.

17778. **BENOIST, R. Les Heriades de la faune Française. (Hym. Apidae).** *Ann. Soc. Ent. France* 98(1/2): 131-141. 1929.—The author points out the difference between the genera *Heriades* and *Osmia* and lists the 16 spp. of the former known to France, with descriptions, synonymy, and key.

17779. **BENOIST, R. Description d'une nouvelle espèce d'Osmie du Japon.** *Ann. Soc. Ent. France* 98(1/2): 142. 1929.—*Osmia* orientalis ♀, type in Paris Mus.

17780. **BENSON, R. B. A preliminary account of the sawflies of Wicken Fen.** *Nat. Hist. Wicken Fen Pt.* 4. 313-323. 1928.—130 spp. of Tenthredinoidea are recorded from Wicken Fen in England, and notes are given

on habits and abundance of many of these. The list is preceded by a discussion of feeding, mating, oviposition, parthenogenetic reproduction, and larval habits and development in Tenthredinoidea.

17781. **BLÜTHGEN, P.** Beiträge zur Synonymie der Bienengattung Halictus Latr. IV. *Deutsch. Ent. Zeitschr.* 1925(5): 385-419. 1926.—*Halictus biroi* Friese (=*H. carinatifrons* Strand, *H. anpingensis* Strand, *H. blepharophorus* Strand, *H. lativentris* Friese, *H. robbii* Cwfd.); *H. strandiellus* Ckll. (=*H. hornianus* Strand); *H. albescens* Smith (=*H. senescens* Sm., *H. javanensis* Strand, *H. amblypygus* Strand, *H. bengalensis* Cam.); *H. a.* ssp. **lahorensis** (*H. l. Cam.*,=*H. reepeni* Friese, *H. salsettensis* Ckll., *H. bryanti* Ckll.) (p. 401); *H. rubicundus* Christ. (=*H. lerouxi* Lep.); *H. marginatus* Brullé (=*H. vulgaris* Mor.); *H. equestris* Mor. (=*H. ferghanicus* Mor.); *H. carneiventris* Dours (=*H. coloratus* Mor.); *H. splendidulus* Vach. (=*H. proteus* Vach., *H. semiaerinus* Vach.); *H. propinquus* Smith (=*H. vicinus* Vach.); *H. fimbriatellus* Vach. (=*H. gutturosus* Vach.); *H. rufozonatus* Vach. is a variety of *H. amitinus* Vach.; *H. angustifrons* Vach. is a variety of *H. punctatissimus* Schck.; *H. platycestus* Dours (=*H. ägyptiellus* Strand); *H. minutissimus* K. (=*H. kosensis* Strand); *H. subopacus* Sm. (=*H. chinae* Strand, *H. baguionis* Cwfd.); *H. darjilingensis* Strand is a variety of *H. lucidiusculus* Vach.; *H. scitulus* Smith (=*H. japonicola* Strand); *H. aerarius* Sm. (=*H. alexoides* Strand, *H. nikkoensis* Ckll., *H. eruditus* Ckll.); *H. cattulus* Vach. (=*H. nalandicus* Strand, *H. centrophorus* Strand, *H. philippinensis* Ashm.); *H. cattulus* v. **micado** (*H. m.* Strand,=*H. philippinensis* v. *nigritarsellus* Ckll.) (p. 407); *H. deliensis* Strand (=*H. eschscholtzi* Ckll., *H. flavipes* Sm.); *H. japonicus* Dalla Torre (=*H. kankaucharis* Strand); *H. horni* Strand, referred to *Nomioides; H. hoffmanni* Strand (=*H. investigator* Strand); *H. intricatus* Vach. (=*H. thoracicus* Friese); *H. liodomus* Vach. (=*H. scopipes* Friese); *H. kalutarae* Ckll. (=*H. amplicollis* Friese); *H. ceylonicus* Cam. (=*H. submicans* Friese); *H.* **niveohirtus** (*H. nitidiusculus niveohirtus* Friese) (p. 402); *Nomia chalybaea* Friese (1909), referred to *Halictus*, preoccupying *Halictus chalybaeus* Friese (1910); *H. concinnus* Brullé (=*H. microcardia* Perez); *H. opacus* Perez, variety of *H. interruptus* Panz.; *H. transitorius* Schenck (=*H. planulus* Perez, *H. uncinus* Vach.); *H. longirostris* Mor. (=*H. prognathus* Perez); *H. rostratus* Eversm. (=*H. chlapowskii* Vach.); *H. alexis* Cam. (=*H. pinguis* Vach.); *H. fertoni*, var. of *H. morbillosus* Kriechb.; *H. matheranensis* Cam. (=*H. nasicensis* Ckll.); *H. occidens* Smith (=*H. recognitus* Ckll.); *H. obscuratus* Mor. (=*H. bentoni* Ckll.); *H. pollinosus* Sich. (=*H. cariniventris* ssp. *flavotectus* Ckll.); *H.* **sublustrans** (*H. thoracicus* ssp. *s.* Ckll.) (p. 407); *H. latitarsis* Friese (=*H. mcgregori* Ckll.); *H. oligostictus*, variety of *H. xystonotus* Vach.; *H. upinensis* Mor. (=*H. tacitus* Ckll.); *H.* **merescens** (*H. thoracicus* var. *m.* Ckll.) (p. 409); *H. feai* Vach. (=*H. carianus* Cam.); *H. himalayensis* Bingh. (=*H. indicus* Cam.); *H. bimaculatus* Dours (=*H. perezi* Alfk.); *H.* **mediterraneus** (p. 413); *H. interruptus* Panz. (=*H. trispinosus* Alfk.); *H. balticus* Blüthg. is an aberration of *H. morio* F.; *H. cephalicus* Mor. (=*H. conjungens* Blüthg.); *H. neuter* Blüthg. is a variety of *H. cephalicus* Mor.; *H. pici* Pér. (=*H. festai* Grib.); *H. tumulorum* L. (=*H. flavipes* Fabr.); *H.* **perkinsi** (p. 417); *H. leucozonius* Schrk. (=*H. deiphobus* Bingh.); *Trincostoma* **patricium** (*H. patricius* Strand) (p. 419).

17782. **CLARK, J.** New Formicidae, with notes on some little-known species. *Proc. Roy. Soc. Victoria* 43 (1): 2-25. 1 pl. 1930.—*Eusphinctus* (*Nothosphinctus*) **brunnicornis*** ♀ (p. 2), *Phyracaces* **clarus*** ♀ ♀ ♂ (p. 3), *P.* **flammeus*** ♀ ♀ (p. 4) and *P.* **flavescens*** ♀ ♀ (p. 5), W. Australia; *Acanthoponera* **nigra** ♀ (p. 6) and *Euponera* (*Trachymesopus*) **pachynoda*** ♀ (p. 7), Victoria; **EUBOTHROPONERA** (p. 8), near *Bothroponera*, type *E.* **dentinodis*** ♀ (p. 9), W. Australia; *E.* **micans*** ♀ (p. 10) and *E.* **bicolor*** ♀ (p. 11), W. Australia; *Polyrhachis* (*Chariomyrma*) **opalescens*** ♀ (p. 11), New Hebrides; *P.* (*Hedomyrma*) **kershawi*** ♀ (p. 12) and *P.* (*Myrmhopla*) **glabrinotum*** ♀ (p. 13), Queensland; *P.* (*M.*) *barnardi* Clark, first description of ♀; *P.* (*Campomyrma*) **gravis*** ♀ (p. 15), central Australia; *P.* (*C.*) **flavibasis*** ♀ ♀ (p. 16), N. So. Wales. The author presents the results of a reexamination of the ants of the Horn Expedition, which had been dealt with by W. F. Kirby and by Froggatt in 1896. *Calomyrmex purpureus* v. *cremophilus* Wheeler (listed by Kirby as *Camponotus impavidus* Forel), ♀ and ♂ described; *Camponotus* (*Tanaemyrmex*) **spenceri** (*C. reticulatus* Kirby, not Roger) (p. 18), ♀ redescribed; *C. denticulatus* Kirby, ♀ redescribed; *C. horni* Kirby, ♀ redescribed; *Iridomyrmex* **flavipes** (*Hypoclinea f.* Kirby,=*Iridomyrmex rostrinotus* Forel) (p. 21); *Bothroponera denticulata* Kirby, ♀ redescribed; *Melophorus bagoti* Lubbock (=*Camponotus cowlei* Frogg.); *Camponotus midas* Frogg., ♀ and ♀ redescribed.

17783. **COCKERELL, T. D. A.** Descriptions and records of bees. CXXIV. *Ann. and Mag. Nat. Hist.* 6(31): 48-57. 1930.—*Megachile felderi* Radosz. (=*M. monticola*); *Ctenoplectra* **kelloggi** ♂ (p. 49); *Parevaspis basalis* ssp. **chinensis** (p. 50); *Coelioxys taiwanensis* ssp. **kelloggi** (p. 50); *Habropoda* **percarinata** ♂ (p. 51); *H.* **nubilipennis** ♀ (p. 52); *Anthophora tsushimensis*, new to China; *A.* **mesopyrrha** (p. 53); *Panurginus* **ogloblini** ♀ (p. 54), Argentina; *Halictus albescens* ssp. **convolvuli** (p. 55), Siam. Unless otherwise stated specimens are from Fukien, China.

17784. **COCKERELL, T. D. A.** African bees of the family Megachilidae (Anthidiinae, Serapista and Lithurgus), mainly from Liberia and the Belgian Congo. (Hymenoptera, Apoidea.) *Rev. Zool. et Bot. Africaines* 19(1): 43-55. 1930.—*Anthidium* **michaelis** (p. 47); *Pachyanthidium cordatum* ssp. **katangense** (p. 47); *P.* (**MICRANTHIDIUM** n. subg.) (p. 45), type *P.* (*M.*) *truncatum* (Smith); *P.* (*M.*) **subtruncatum** (p. 49); *P.* (*M.*) **microdontum** (p. 49); *P.* (*M.*) **xanthostomum** (p. 51); *P.* (*M.*) **libericum** (p. 51), Liberia; *P. truncatum* v. **ferricorne** (p. 52); *P.* (*M.*) **cupripes** (p. 52), Liberia; *P.* (**TRICHANTHIDIUM** n. subg.) (p. 52), with *P.* (*T.*) **occipitale** (p. 52); *Serapista* **aethiops** (p. 54), S. Africa, and *S. denticulata* ssp. **pernigra** (p. 54), types of both in author's coll. Keys are given to spp. of *Pachyanthidium* and *Serapista*; types are in Congo Mus. unless otherwise stated.

17785. **DONISTHORPE, H. St. J. K.** British ants: their life history and classification. 2nd. ed. ix+436pp. 18 pl., 93 fig. Geo. Routledge & Sons, Ltd.: London, 1927. Pr. 25s.

17786. **ELLINGER, TAGE, and HANS SACHTLEBEN.** Notes on the central European parasites of Pyrausta nubilalis Hb. *Internat. Corn Borer Invest. Sci. Repts.* 1927-1928. 109-134. 2 pl., 4 fig. International Live Stock Exposition: Chicago, 1928.—The central European valley resembles the Mississippi valley in climate and agriculture, and the same parasites might be expected to occur in both regions. The list of parasites includes: (Hymenoptera) *Limnerium* **alkae*** (p. 113), Hungary, type in Biologische Reichsanst. Forst- und Landw., Berlin-Dahlem; (Ichneumonidae) **INAREOLATA** (*Dioctes* Foerst. not Ménétr.) (p. 116), with *I.* **punctoria*** (*Dioctes p.* (Rom.)) (p. 116); *Microgaster tibialis* Nees; *Microbracon brevicornis** Wesmael (=*M. vernalis* Szé.); *Eulophus viridulus** Thomson, emended description; (Diptera) *Lydella senilis** Meigen. Distributional, systematic and morphological notes are given for each sp. listed.

17787. **FISCHER, CARLOS R.** Notas biologicas sobre o Crabro tabanicida Fischer 1929 e considerações concernentes ás motucas. [C. tabanicida and discussion of tabanids.] *Arch. Inst. Biol.* [*São Paulo*] 2: 141-162. 3 pl. (1 col.) 1929.—Brood cells of *Crabro tabanicida* from insect burrow in a dead branch of *Enterolobium timbouva* contained various spp. of *Acanthocera, Neotabanus, Dichelacera,* and *Poecilosoma.* The individual cells, separated from one another by a wall of frass,

contained each 2-3 flies, with one larva of the wasp. All the flies had been placed with the apex of the wings towards the entrance, showing that they had been pulled into the burrow head first. Paralyzing of the victims is evidently effected by a sting in the 2nd abdominal segment, along the median line on the dorsal side. More than two-thirds of the flies found in the cells were ♂♂. Historic data on the transmission of diseases by tabanids are given. Artificial control of tabanids the author believes to be impracticable; he favors, rather, control by natural enemies, of which he cites a number. —*C. Zeimet.*

17788. **GUIGLIA, D. Una nuova specie africana del genere Scolia.** *Ann. Mus. Civ. Storia Nat. Genova* 52: 314-317. 1925/1928.—*Scolia* (*Discolia*) feae (p. 314), Portuguese Guinea, type in Mus. Civ. Storia Nat. Genova.

17789. HARTTIG, GUSTAV. **Die mir bekannt gewordenen Diphlebusarten. (Hym.)** *Stettiner Ent. Zeitung* 91(2): 227-232. 1930.—New key to the ♀♀ and ♂♂ of 4 spp., with descriptive remarks.—*C. T. Brandhorst.*

17790. **HOFFMEYER, E. B. Aus Samen gezüchtete Callimomidae. (Callimomidenstudien I.)** *Ent. Meddel.* [*Copenhagen*] 16(6): 323-334. 14 fig. 1929.—The present study is based on an article by Herm. Borries, published in "Tidsskrift for Skovvaesen" vol. 7, Ser. B, in 1895, which, on account of being written in Danish, seems to have remained practically unknown. The author reared a number of specimens obtained from seeds, and describes old and new spp. as follows: *Megastigmus aculeatus* v. nigroflavus* (p. 324), Japan, from *Rosa multiflora*; *M.* seitneri ♀* (p. 327), Denmark, from *Larix decidua*; *M. suspectus* Borr. (=*M. piceae* Seitn.); *M.* rafni ♀* (p. 331), central U. S. A., from *Abies concolor*; *Callimome* seminum ♀ (p. 332) and *Monodontomerus* masii ♀* (p. 332), probably from *Acer campestris* of southern Europe; *Callimome* africanum (*Torymus chlorocopes* Masi) (p. 333); *C.* huberi (*C. tarsale* Huber, not *C. tarsalis* Walker) (p. 333); *C.* kiefferi (*Torymus lasiopterae* Kieffer) (p. 334); *C.* littoralis (*Torymus saphirinus* Boheman) (p. 334); *C.* philippii (*Misocampus laetus* Philippi, not Walker) (p. 334); *C.* rosarum (*Torymus druparum* Mayr, not Boh.) (p. 334); *C.* ruschkai (*Torymus tubicola* Ruschka) (p. 334); *Podagrion* quinquis (*P. quinquedentatum* Schrot., not Ashm.) (p. 334); *Blastophaga* queenslandica (*B. insularis* Girault, not Ashm.) (p. 334). Types of new spp. in author's coll.

17791. **LAIDLAW, W. B. R. Description of a new Indian Sphex.** *Ent. Month. Mag.* 65(785): 232-233. 1 pl. 1929.—*S.* namkumiensis ♀* (p. 232), Bengal, type in Royal Scottish Mus.—*H. M. Gilkey.*

17792. **MALAISE, RENÉ. Växtsteklar-Tenthredinidae. 5.** In: **Insektfaunan inom Abisko Nationalpark. II. Studies under the leadership of Yngve Sjöstedt.** *K. Svenska Vetenskapsakad. Skrifter i Naturskyddsärenden* No. 17. pp. 54-68. 1931.—A list of some 130 spp., with distributional notes. *Emphytus calliblepharus* is new to Sweden.

17793. **MANN, W. M. Notes on Cuban ants of the genus Macromischa (Hymenoptera: Formicidae).** *Proc. Ent. Soc. Washington* 31(8): 161-166. 3 fig. 1929.—*Macromischa pastinifera*, redescribed, new to Cuba; *M. porphyritis*, dealated ♀, ♀*, worker*, notes on nests; *M.* (s. str.) creightoni (p. 163) ♀*, dealated ♀; *M. versicolor*, dealated ♀*.

17794. **MASI, L. Res Ligusticae. LIX. Sul genere Simopterus Förster (Hymen. Chalcididae).** *Ann. Mus. Civ. Storia Nat. Genova* 52: 318-323. 1 fig. 1925/1928.—*Simopterus* is recharacterized; *S.* solaris ♀* (p. 320), Italy, type in Mus. Civ. Genova.

17795. **MENOZZI, C. Una nuova specie di formica del genere Aphaenogaster Mayr del Nord America.** *Boll. Lab. Zool. Gen. e Agraria* [*Portici*] 22: 282-284. 1 fig. 1928/1929.—*A.* (*Deromyrma*) silvestrii* (p. 282), Florida.

17796. **MORLEY, CLAUDE. New Oxyura from Britain.** *Entomologist* [*London*] 64(812): 14-16. 1931.—The following names are validated by description or designation, although first used in a catalog of British Proctotrypidae (Trans. Suffolk Naturalists' Soc. vol. 1, 1929.): CARABIPHAGUS (p. 14), type *Proctotrypes laevifrons* Förster; *Paramesius* spinulosus (*P. spinosus* Kieff., not Ashm.); *Labolips* anommati ♀, *Loxotropa* morleii ♀, type in author's coll.; *Dicopus* cervus, all from England.

17797. **MUESEBECK, C. F. W. Descriptions of a new genus and eight new species of ichneumon-flies, with taxonomic notes.** *Proc. U. S. Nation. Mus.* 79(16): 1-16. 1 fig. 1931.—*Microgaster* Latr. (=*Xanthomicrogaster* Cameron); *Microplitis* Foerst. (=*Dapsilotoma* Cameron); *Apanteles* Foerster (=*Xestapanteles* Cam.); *A.* paralechiae (p. 2), Massachusetts, parasite of *Paralechia pinifoliella*; *A.* depressariae (p. 3), Maine (type) and Massachusetts, parasite of *Depressaria heracliana*; *A.* schaffneri ♀ (p. 4), Pennsylvania, parasite of Cochlidiidae; *A.* halisidotae (p. 5), Maine (type), New York, New Hampshire, and Massachusetts, parasite of *Halisidota maculata*; *A.* cingiliae (p. 6), Massachusetts, parasite of *Cingilia catenaria*; PAROLIGONEURUS (p. 7) (Microgasterinae) near *Oligoneurus*, type *P.* johnsoni ♀* (p. 8), Massachusetts; *Snellenius* Westw., transferred to the Microgasterinae; *S.* philippinensis (*Microplitis p.* Ashm.) (p. 10); *Dirrhope*, note; *Neoneurus* Hal. (=*Ecclites* Foerst.); *Rhinoplus*, notes; *Opius* Wesmael (=*Psyttalia* Walker); *O.* fuscipennis (*Rhinoplus f.* Szep.) (p. 11); *O.* fulvus (*R. f.* Brues) (p. 11); *O.* gahani (*O. fuscipennis* Gahan, not Szep.) (p. 11); *O.* walkeri (p. 12) (*Psyttalia testacea* Walker, not *O. t.* Wesm.); *Heratemis* Walk., redescribed; *Xiphozele* Cam. (=*Cerotopia* End.); *Helorimorpha* Schmied. (=*Scipolabia* End.); *H.* enderleini (*Scipolabia reticulata* End., not *H. r.* (Cam.)); *Rogas* Nees (=*Nebartha* Walk.); *Yelicones* Cam. (=*Rhopalotoma* Cam.); *Euscelinus* is referred to the Dorycitinae; *Microbracon* rhyacioniae (p. 15), South Dakota, parasite of *Rhyacionia* on *Pinus ponderosa*; *M.* cryptorhynchi (p. 16), Massachusetts, parasite of *Cryptorhynchus lapathi*. Types in U. S. Nat. Mus.

17798. **NEVINSON, E. B. Hymenoptera Aculeata.** *Nat. Hist. Wicken Fen* Pt. 3. 253-254. 1926.—93 spp., belonging to the Mutilloidea, Sphecoidea, Vespoidea, and Apoidea, are recorded from Wicken and Burrell Fens, England.

17799. **PARKER, H. L., et W. R. THOMPSON. Contribution à la biologie des Chalcidiens entomophages.** *Ann. Soc. Ent. France* 97(3/4): 425-465. 1928.—The biology of 12 spp. of parasitic chalcid-flies is presented, studied in the neighborhood of Hyères, France. Four of these parasites, *Callimome* sp., *Pseudocatolaccus asphondyliae*, *Oxymorpha intermedia*, and *Eurytoma dentata*, live in the galls of *Asphondylia sarothamni* and *A. calycotomae* on broom, *Calycotome spinosa*. *Mormoniella brevicornis* was reared from *Sarcophaga*, *Lucilia*, *Calliphora*, and *Musca*; the ♀♀ greatly outnumber the ♂♂. *Spalangia nigra* was reared from the puparia of *Musca domestica* and was bred in the laboratory also in *Sarcophaga* puparia. *Copidosoma thompsoni* is a polyembryonic parasite in the caterpillars of *Nothrix senticitella* living on juniper (*Juniperus phoenicae*). Occasional asexual larvae, considered to be simply monstrosities, occur in this sp. *Copidosoma boucheanum*, also a polyembryonic sp., was reared from the caterpillars of *Gelechia pinguinella*, living on *Populus nigra*. Four or five asexual larvae are found in each parasitized host. *Microterys ferrugineus* was reared from *Kermococcus roboris*. The mating and feeding habits and the egg of this parasite are described. *Solenotus* sp. is parasitic on the larvae of *Agromyza* mining in the leaves of alfalfa. From 1 to 7 *Solenotus* larvae in all stages of development may be found on one host, but the sp. is not truly gregarious. The larvae are not cannibalistic and 5 or 6 may reach maturity on the same host. *Tetrastichus* sp. was reared from the ootheca of *Loboptera decipiens*. It lives externally on the larva of *Zeuxevania splendidula*, which is a primary parasite in the ootheca. Its mating and egg-laying habits are described. The biology of *Melittobia acasta* is treated

catalaunalis; Microgaster vacillatrix Wilkinson, parasite of *Filodes costiventralis*. Types in Brit. Mus.

17821. **WILKINSON, D. S. Five new species of Spathius (Hym. Bracon.).** *Bull. Ent. Res.* [*London*] 22 (2): 259-265. 5 fig. 1931.—*S.* **cavillator** ♀* (p. 259), *S.* **elaboratus*** (p. 260), *S.* **festinans*** (p. 261), and *S.* **generosus*** (p. 263), India; *S.* **piperis*** (p. 264), Banka, Dutch East Indies, parasite of *Lophobaris piperis*. Types in Brit. Mus.

17822. **WILKINSON, D. S. Four new species of Ichneumonoidea.** *Bull. Ent. Res.* [*London*] 22(3): 393-397. 1 pl. 1931.—*Glypta* **leucotretae** (p. 393), Southern Rhodesia, on *Argyroploce leucotreta; Mesobracon* **psolopterus*** (p. 394), Sierra Leone, on coffee branch borer; *M. nigriceps*, wing*; *Camptothlipsis*, key to 4 spp.; *C.* **furtifica** (p. 395), India, on *Dichomeris evidantis; C.* **antigastrae** (p. 396), Anglo-Egyptian Sudan, on *Antigastra catalaunalis; Apanteles taragamae*, in Ceylon, on *Margaronia indica*. Types in Brit. Mus.

17823. **WOLCOTT, GEORGE N. Informe del jefe de la seccion de entomologia.** [Report of the entomological section.] *Mem. Est. Exp. Agric. Soc. Nacion. Agra.* [*Peru*] 1929 (1a): 31-62. 12 fig. 1929.—The author discusses insect pests of sugar cane, cotton, and citrus. The following are described, in English: *Ipobracon* (*Iphiaulax*) **rimac*** (p. 36), and *I.* **abancay** (p. 38), on young cane.

MACROLEPIDOPTERA

J. McDUNNOUGH, *Editor*

(See also in this issue Entries 15953, 16779, 16824, 16837, 16847, 18116)

17824. **BALDUF, W. V. The life history of Achatodes zeae Harris (Lepidoptera: Noctuidae).** *Proc. Ent. Soc. Washington* 31(9): 169-177. 1 fig. 1929.—Notes are given on the habits of the larvae, pupation, pupal period, mating and oviposition. The favored food is the elder, *Sambucus*. The larva feeds on the pith of the stem. The pupal period requires 18-35 days. The eggs are laid in masses, and the total fecundity approaches 500.

17825. **BALDUF, W. V. The oviposition habits of Feltia subgothica Haw. (Noctuidae, Lep.)** *Proc. Ent. Soc. Washington* 33(4): 81-88. 1931.—*F. subgothica* Haw. (=*F. ducens* Walk.) oviposits in the flowerets of *Helianthus* spp., usually in the anther tubes. The egg stage lasts for about 10 days in September. The young larvae feed in the floweret for several days. During the first instar they leave the flower and become cutworms.

17826. **BREYER, ALBERTO. Callicore candrena Godt var. nov. maldonadoi.** *Rev. Soc. Ent. Argentina* 1(5): 1-2. 1 pl. 1927.—From Argentina, type in author's coll.

17827. **CALDWELL, JOHN. A list of butterflies occurring in Fukien Province, China.** *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 2: 22-24. 1929.—206 spp. are listed.

17828. **CHAPPELL, A. V. Biological notes on New Zealand Lepidoptera.** *Trans. and Proc. New Zealand Inst.* 60(2): 259-264. 1929.—A life history of *Selidosema modica* on *Hebe leiophylla* with descriptions of stages and notes on habits. The extremely limited distribution is connected with the nearly flightless ♀. Briefer life histories, with description of larva and notes on pupa and cocoon of *Scoparia illota* on *Cyclophorus serpens, Hybernia indocilis* on lupine and *Discaria, Leucania purdii* on *Astelia grandis*. In captivity *S. modica* will eat other spp. of *Hebe*, and *L. purdii* will eat *Cordyline*.—*W. T. M. Forbes*.

17829. **CLARK, AUSTIN H. Notes on some local butterflies.** *Proc. Ent. Soc. Washington* 32(5): 80-82. 1930.—Observations on the time of appearance, haunts, and activities of *Brenthis myrina, Poanes massasoit, P. zabulon, P. hobomok, Hesperia leonardus, Cercyonis alope, Satyrodes eurydice, Megisto cymela, Dryas cybele, Euphydryas phaëton, Erynnis juvenalis, E. icelus, Eurymus eurytheme, E. philodice*, and *Atrytonopsis hianna*.

17830. **CLARK, BENJAMIN P. Descriptions of seven new Sphingidae and a note on one other.** *Proc. New England Zool. Club.* 12: 77-83. 1931.—*Sphinx luscitiosa* ssp. **borealis** ♂ (p. 77), Ontario; *Neogene* **pictus** ♀ (p. 78), Paraguay; *Protambulyx strigilis* ssp. **portoricensis** ♀ (p. 79), Porto Rico; *Aleuron neglectum* ssp. **paraguayana** (p. 79), Paraguay; *Panacra* **hollandiae** ♂ (p. 80), Dutch New Guinea; *Xylophanes* **kaempferi** ♀ (p. 81), Paraguay; *X.* **katharinae** ♀ (p. 82), Mexico; *Chlaenogramma undata undata*, recorded from Tucuman, Argentina.

17831. **DJAKONOV, A. M. Eine neue Erannis- (Hibernia) Art aus dem Ussuri-Gebiet (Lepidoptera, Geometridae).** Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23(1/2): 107-110. 2 fig. 1929.—*E.* **golda*** (p. 107), Maritime Province, Siberia.

17832. **EVANS, W. H. Lepidoptera-Rhopalocera obtained by Mme. J. Visser-Hooft of The Hague (Holland) during an exploration of previously unknown country in the western Karakorum, N. W. India.** *Tijdschr. voor Ent.* 70(2): 158-162. 1927.—The collection consisted of 27 spp. belonging to 6 families, of which an annotated list is here supplied.

17833. **HALL, ARTHUR. A revision of the genus Phyciodes Hubn. (Lepidoptera Nymphalidae).** *Bull. Hill Mus.* [*London*] 2(2, suppl.): 1-20. 3 pl. (2 col.); (3, suppl.): 21-44. 1928; 3(1, suppl.): 45-94; (2, suppl.): 95-146; (3, suppl.): 147-170. 1929; 4(1, suppl.): 171-204. 1930.—A monographic revision of *Phyciodes* which is divided by key into groups, 20 in *Phyciodes* s. str., and 16 in *Eresia*, which is treated as a section. Complete descriptions are given, with distributional data for each sp. *P. erysice* ssp. **etesiae*** (p. 160), French Guiana, type in Brit. Mus. [The following, designated as new on the plates, were described in the Entomologist (61 (1): 11-13. 1928): *P. tissoides* ♂*, *P. ithra* f. *rufocincta* ♀*, *P. etia* f. *selenoides* ♂*, *P. fontus* ♂*, *P. ithomioides* ssp. *cissia* ♂*, *P. mundina* f. *peraea* ♂*, *P. epione* f. *elenae* ♂*, *P. polinella**, *P. sepultus* ♂*.] *P. phaon* ssp. **maya** ♂ (p. 41), Guatemala, type in author's coll.; *P. mylitta* ssp. **mexicana** (p. 44), Mexico, type in Brit. Mus.; *P. vesta* ssp. **vestalis** (p. 52), Guatemala, type in author's coll.; *P. nazaria* ♂*; *P.* **rima** (p. 11, 205) [in error as *"Prima"* (p. 79)], Surinam, type in Tring Mus.; *P. orthia* ♀*; *P. frisia* ssp. **dubia** (p. 85), Venezuela (type in Brit. Mus.), Colombia, Panama (?); *P. ptolyca ptolyca* ♂*; *P. p.* ssp. **amator** (p. 92) and *P. sitalces* ssp. **saltator** ♂ (p. 96), Mexico, types in Brit. Mus.; *P. dracaena dracaena* ♂*, *P. orticas zamora* ♂*, and *P. acesas acesas* ♂*; *P. catula catula* ab. **fulvocincta** ♀ (p. 117), Peru-Bolivian boundary, type in Brit. Mus.; *P. notus notus* ♂*; *P. n.* form **pullopicta** (p. 124), Peru, type in Tring Mus.; *P. sepultus* ♂*, and *P. morena* ♂*; *P. ofella* ssp. **guaya** ♂ (p. 135), Ecuador, type in author's coll.; *P. carme carme* ♂*; *P. clio* ssp. **estebana** (p. 146), Venezuela, type in Brit. Mus.; *P. c.* ssp. **reducta** (p. 146), Ecuador, Colombia, type in Brit. Mus.; *P. nauplia* ssp. **extensa** (p. 148), Matto Grosso, Brazil, type in Brit. Mus.; *P. letitia nigra* f. **leucophaeoides** ♀ (p. 151), Peru, type in author's coll.; *P. pelonia* f. **hewitsonii** ♀ (p. 164), Ecuador, type in Brit. Mus.; *P. casiphia* ♀* and *P. eutropia mimas* ♂*; *P. margaretha* ssp. **manto** ♂ (p. 185), Colombia, type in Brit. Mus.; *P. moesta m.* form *cerquita* ♂*; *P. mundina* f. **callianira** ♂ (p. 200), Peru, Bolivia, type in author's coll.; *P. callianthina* ♀*; *P. eutropia* ssp. **confirmans** ♂ (p. 205), Costa Rica, type in Brit. Mus.; *P. cyneas* G. & S. and *P. cynisca* G. & S., referred to *Melitaea; Gnathotriche exclamationis* f. **elaea** (*Phyciodes e.* Hew.) (p. 204); *G. e.* form **eleates** (*P. eleates* Weym.) (p. 204); *G. e.* form **vanessoides** (*P.*

vanessoides Röb.) (p. 204); *Vila eueidiformis* ♀ (= *P. metharmoides* Fassl). The genital armature of 33 spp. is illustrated.

17834. HALL, ARTHUR. Some new forms of Nymphalinae (Rhopalocera) from tropical America. *Entomologist* 61(776): 11-13. 1928.—*Phyciodes ithra* ssp. **rufocincta** (p. 11), Argentina, type in author's coll.; *P.* **tissoides** (p. 11), Ecuador, type in Brit. Mus.; *P.* **fontus** ♂ (p. 11), Brit. Guiana, type in Hill Mus., Witley; *P. teletusa* ssp. **signata** (p. 11), Argentina, type in author's coll.; *P. etia* ssp. **selenoides** (p. 11) and *P.* **sepultus** ♂ (p. 12), Peru, types in Brit. Mus.; *P.* **polinella** ♀ (p. 12), Minas Geraes, Brazil, type in Tring Mus.; *P. laias* ssp. **lycus** ♂ (p. 12), type in author's coll., *P. ithomioides* ssp. **cissia** ♂ (p. 12), type in Brit. Mus., and *P. epione* ssp. **elenae** ♂ (p. 13), type in author's coll., all Colombia; *P. mundina* f. **peraea** ♂ (p. 13), Ecuador, type in Hill Mus.; *Vila* **semistalachtis** ♂ (p. 13), Colombia, *Didonis biblis* ssp. **pacifica** ♂ (p. 13), Ecuador, and *Eunica sophonisba* ssp. **mossi** (p. 13), Para, Brazil, types in author's coll.

17835. HALL, ARTHUR. New forms of Nymphalidae (Rhopalocera) in the collection of the British Museum. II. *Entomologist* 63(806): 156-160. 1930.—*Dynamine* **gillotti** ♀ (p. 156), Costa Rica; *Euptoieta claudia* ssp. **perdistincta** ♂ (p. 157), Peru; *Limenitis amphyssa* ssp. **chinensis** ♂ (p. 157), Szechwan (type), Korea; *L. homeyeri* ssp. **meridionalis** (p. 157), *L. albomaculata* ssp. **albidior** (p. 157), and *L. sinensium* ssp. **minor** ♂ (p. 158), Yunnan; *Lebadea martha* ssp. **moorei** (p. 158) and *L. m.* ssp. *m.* form **laxata** (p. 158), Sikkim; *Neptis philyra* ssp. **melior** (p. 158), Yunnan; *N. incongrua* ssp. **batesii** (p. 158), Nigeria (5500 ft.); *Euthalia pratti* ssp. **occidentalis** (p. 159), Szechwan; *E. undosa* ssp. **rickettsi** ♂ (p. 159), Fukien; *E. thibetana* ssp. **insulae** (p. 159), Formosa; *E. japis* ssp. **baweana** (p. 159), Bawean Isl., Java; *Dichorragia nesseus* ssp. **rileyi** ♂ (p. 160), Yunnan; *Helcyra hemina* ssp. **borneensis** ♂ (p. 160), Borneo; *H. chionippe* ssp. **austeni** ♀ (p. 160), Batjan Isl., E. Indies.

17836. HARRIS, LUCIEN Jr. A list of the butterflies of Georgia. *Trans. Georgia Nat. Club* 1(1): 1-27. Map, 1 pl. 1931.—The list contains 165 spp. with notes. *Eurema jucunda* ab. **fusca** ♀ (p. 11), Georgia, type presumably in Emory Univ. Mus.

17837. HEYDEMANN, F. Zur Morphologie, Biologie und Zucht von Dystroma (Cidaria) truncata Hfn. und citrata L. *Internat. Ent. Zeitschr.* 23(21): 249-260; (22): 261-266. 3 pl., 1 fig. 1929.—From morphological and biological considerations *truncata* and *citrata* must be regarded as widely separated and distinct spp. Hybrid-eggs are sterile. The different structure of the genitalia of *citrata* ♂♂ makes copulation mechanically impossible with *truncata* ♀♀; the reciprocal is conceivable, but no hybrids were found in over 800 ♂♂ and ♀♀ examined. One ♀ seen had the maculation of the fore-wing as in *citrata*, but genitalic examination proved it to be a *truncata* ♀.—*A. G. Richards, Jr.*

17838. HOLLAND, W. J. Notes on some American butterflies mainly relating to classification and nomenclature. Part 3. (Cont'd from 20 (1): 55.) *Ann. Carnegie Mus.* 20(2): 255-264. 1931.—*Anthanassa* Scudder should have as its type *Eresia frisia* Poey (*A. cincta* "Edw." Scudder). *Argynnis cybele* v. **krautwurmi** ♀ (p. 256), Michigan; *A. irene* Bdv. (=*A. luski* B. & McD.); *Ascia monuste* v. **crameri** (p. 256); **SPALGINAE** (p. 257), new subf. of Lycaenidae, based on *Spalgis* and *Feniseca*. The type of *Hesperia* Fabr. must be *H. malvae* (L.) as designated by Cuvier; that of *Erynnis* Schrank, *E. comma* as fixed by Scudder (1875). *Pamphila* Fabr. (=*Pamphilidia* Lindsey, *Carterocephalus* Lederer) has as type *P. palaemon*. *Megathymus* **leussleri** (p. 262), Nebraska, probable host *Yucca glauca*. Types in Carnegie Mus.

17839. HOLLAND, W. J. The butterfly book. A popular and scientific manual, describing and depicting all the butterflies of the United States and Canada. New & thoroughly revised ed. xii+424p. 77 col. pl., 199 fig. Doubleday, Doran & Company, Inc.: Garden City, York, 1931.

17840. HUGGINS, H. C. Collecting in the Aran Is *Entomologist* 61(777): 43-44. 1928.—On common thorn were found larvae of *Abraxas grossulariata* ing an extraordinary degree of melanism, whic veloped into a distinct race without signs of mel The Aran race of *Lasiocampa quercus* is distinct. showers the rocks were covered with swarms of of *Setina irrorella* and *Lithosia complanula*. No were seen in flight.

17841. JÓRGENSEN, PEDRO. Sobre unas oru la familia Lymantriidae. [Some caterpillars family Lymantriidae.] *Rev. Soc. Ent. Argentina* 31-34. 1928.—Descriptions of the caterpillars of *comes, Thagona tibialis, Sarsina violascens, P minor,* and *Rolepa innotabilis,* with notes on food and distribution.

17842. KÖHLER, P. Un nuevo Saturnido arg Mesoleuca bruchi spec. nov. *Rev. Soc. Ent. Arg* 3(3): 149-150. 1 pl. 1930.—Type in Breyer coll.

17843. KÖHLER, PAUL. Apuntes biológicos s género Antarctia (ex coll. Breyer). [Biological n the genus Antarctia.] *Rev. Soc. Ent. Argentina* 27-30. 1926.—The author describes the eggs, cater and cocoons of *Antarctia vulpina, A. persimilis, fusca.* Keys are given to distinguish the imago *vulpina* from that of *A. brunnea,* and of *A. fusc* that of *A. persimilis.*

17844. [KUZNETSOV, N. ÏA.] КУЗНЕЦОВ, **Цикл развития и морфология Malacodea T в сравнении с европейскими видами Operophth** К вопросу о микроптеризме. **[Life cycle an phology of Malacodea in comparison with E Operophthera spp. The question of micropt** [English summary.] Русское Энтомологическо зрение (*Rev. Russe d'Ent.*) 23(1/2): 11-31. 4 pl 1929.—New information is presented on the bio the larva of *Malacodea regelaria* on *Picea exc* the pupa* and morphology of the adult*, especi the micropterism* of the winter moths. Th mentary and perfect wings and ♂ and ♀ genit compared with those of *Operophthera boreata** *brumata**.

17845. MARTIN, LLOYD M., and CHARI INGHAM. An annotated list of the diurnal Lepi of Huntington Lake region, Fresno County, Ca *Bull. Southern California Acad. Sci.* 29(3): Map, 1 fig. 1930.—A list of 83 forms, with dates, and altitude records, and notes on habits.

17846. M[USGRAVE], A. The Waterhouse col Butterflies. *Australian Mus. Mag.* 4(4): 111-11 trait. 1930.—An account of a coll. of abou Australian butterflies presented by G. A. Water the Australian Mus.

17847. NORDSTRÖM, FRITHIOF. Über D citrata L. *Internat. Ent. Zeitschr.* 24(40): 413- 1931.—Settlement of the priority of *Dysstroma* (=*immanata* auct.). The types of *Dysstroma notata** F., *strigulata** F., and *variata** Thnbg graphed for the first time and their place as *citrata* L. established.—*F. Nordström.*

17848. PARKES, W. RANDALL, et al. N observations. *Entomologist* 63(805): 136-137. 1 —W. RANDALL PARKES describes a gynand of *Gonepteryx rhamni.* **H. D. FORD** (p. 137) 2 aberrations* of *Melitaea aurinia.* **R. M. A.** (p. 137) describes an aberration* of *Argynni syne.* **N. D. R[ILEY]** (p. 137) illustrates *P fulvalis**, *prunalis**, *crocealis**, and *lutealis**.

17849. ROCCI, UBALDO. Osservazioni le logiche. *Boll. Soc. Ent. Ital.* 63(6/7): 90-9 Notes on *Iphiclides podalirius* f. *pseudopers ergane,* and *Coenonympha oedipus; Cuculli millae* f. *calendulae,* larvae taken on *Santolin cyparissus; Ephesia nymphaea* f. **benacensis** Italy; *Phytometra accentifera* f. **atra** (p. 9

Acrolepia assectella f. **obscurella** (p. 98), Italy; observations on *Phytometra zosimi* and *Hypopta caestrum*.

17850. SIBILLE, JULIAN, et al. **Aberrations de Lépidoptères.** (Continuation.) *Lambillionea* 27(9/10): 73-74; (11): 90; (12): 98. 1927. 28(2): 11-12; (6): 57-60; (8/9): 78; (11): 101-103; (12): 117-118. 1928. 29(1): 2; (2): 17; (3): 34; (5): 65-66; (6): 73-74; (8/9): 98; (10): 110-111; (11): 123. 1929. 30(2): 18-19. 1 pl.; (4): 54. 1 pl.; (5): 70. 1 pl.; (7): 102; (8/9): 122; (12): 178-180. 1930.—Under the heading of "Aberrations of Lepidoptera," various authors have described new aberrations. (Vol. 27) SIBILLE, JULIAN: *Erebia medusa* ab. **semigrisea** ♂ (p. 73), France; *Papilio machaon* ab. **circinatus** ♀ (p. 74) (locality not given); *Pieris napi* ab. **grisea** ♀ (p. 74) and *Malacosoma neustria* ab. **bicolor** ♂ (p. 74), Belgium; *Agrotis primulae* ab. **havana** (p. 74) (loc. not given); *Erebia aethiops* ab. **purpurea** ♀ (p. 74) and *Phragmatobia fuliginosa* ab. **clara** (p. 74), Belgium. **CH. CABEAU:** *Vanessa urticae* ab. **pseudoconnexa** (p. 90), Belgium. **MEZGER:** *Papilio machaon* ab. **biadaperta** (p. 98), Holland. (Vol. 28) CH. CABEAU: *Melitaea aurinia* abs. **deficiens** ♂ **and transversa** (p. 11), "Hockai"; *Argynnis ino* ab. **minor** ♂ (p. 11), *Satyrus semele* ab. **fulvina** ♀ (p. 11), and *Hipocrita jacobaeae* abs. **nigrana** ♀ **and pallens** ♂ (p. 12), Belgium. **F. DERENNE:** *Opisthograptis luteolata* ab. **poskini** (p. 57), Belgium. **HUBERT DEBAUCHE:** *Gonepteryx rhamni* ab. **roseotincta** ♀ (p. 58), Belgium; *Pararge aegeria* v. *egerides* ab. **eutaeniata** (p. 58), "Cortenberg." MEZGER: *Papilio podalirius* ab. **heterotaeniatus** (p. 58), Germany; *Amorpha populi* ab. **flavomaculata** ♀ (p. 59), Holland; *Trachea atriplicis* ab. **epixanthana** ♂ (p. 59) and *Parnassius apollo* ab. **derennei** (p. 59), France; *Samia cynthia* v. **viridis** (p. 60), New York. F. DERENNE: *Erastria fasciana* ab. **ochrea** (p. 78), Belgium. CH. CABEAU: *Melitaea aurinia* ab. **leucophana** ♂ (p. 78) and *Pieris napi* ab. **interjuncta** ♀ (p. 101), Belgium. MEZGER: *Samia cynthia* abs. **bicolorata** (p. 102), **punctata,** and **fenestrella** (p. 103) (loc. not given). **VAN MELLAERTS:** *Craniophora ligustri* ab. **obscura** ♂ (p. 117) and *Abraxas marginata* ab. **semialbata** ♀ (p. 117), Belgium. **F. BRAUN:** *Colias croceus* ab. **fischerii** (p. 117), Belgium; *C. c.* var. *helice* ab. **flavomaculata** (p. 117), France (?). (Vol. 29) **J. CULOT:** *Ematurga atomaria* ab. **mariscolore** (p. 2), Switzerland. F. DERENNE: *Diacrisia mendica* ab. **sabulosa** ♀ (p. 17) and *D. lubricipeda* ab. **unipuncta** ♂ (p. 34), Belgium. H. DEBAUCHE: *Samia cynthia* ab. (or var.) **andrewesi** (p. 65), India; *Vanessa urticae* ab. **flavofasciata** ♂ (p. 66), Belgium; *Anarta myrtilli* ab. **ochrea** ♀ (p. 66) and *Cabera pusaria* ab. **linearia** ♀ (p. 66), "Cortenberg." MEZGER: *Papilio hospiton* ab. **rufopunctata** ♀ (p. 73), Sardinia. F. DERENNE. *Parastichtis monoglypha* ab. **inversa** ♂ (p. 74), Belgium. CH. CABEAU: *Argynnis paphia* ab. **fontainei** (p. 98), Belgium; *Apatura ilia* ab. **subiliades** ♂ (p. 110), Belgium; *A. i.* form *clytie* ab. **deficiens** ♂ (p. 110), Belgium. VAN MELLAERTS: *Colias palaeno* v. *europome belga* ab. **striata** ♂ (p. 123) and *Argynnis lathonia* ab. **pupillata** (p. 123), Belgium; *Melitaea aurelia* ab. **cinerea** (p. 123), "Buzenol." (Vol. 30) CH. CABEAU: *Apatura ilia* ab. **interfracta** ♂* (p. 18), Belgium; *Argynnis selene* abs. **medionigrans*** **and vanescens*** (p. 54), "Botassart-sous-Ucimont" and Belgium; *A. ino* ab. **basinigrans*** (p. 70), Belgium. MEZGER: *Pieris manni* v. est. *rossii* abs. **nigropunctata** ♀ Italy and France, and **binigrata** ♂ Spain and Italy (p. 102). CH. CABEAU: *Melitaea cinxia* ab. **jubilaris** (p. 122) and *Argynnis dia* ab. **posteronubilata** (p. 122), Belgium; *A. aphirape* f. *haverkampfi* ab. **melanira** ♀ (p. 178) and *A. pales* f. *arsilache* ab. **alba** ♀ (p. 178), "Hockai"; *A. aglaja* ab. **ovalis** ♂ (p. 179), "Warchenne." MEZGER: *Papilio machaon* ab. **cellacircinata** ♂ (p. 179), Ural; *Leucochloe daplidice* ab. **conjugata** ♀ (p. 179), France.

17851. [SOKOLOV, G. N.] СОКОЛОВ, Г. Н. **Строение мужского копулятивного аппарата у рода Parnassius Latr. [Structure of male genitalia in the genus Parnassius.]** [German summary.] Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23(1/2): 60-75. 4 pl. 1929.—The genitalia are described and figured for *Doritis eversmanni, D. mnemosyne, D. stubbendorfi, D. nordmanni, Parnassius apollo, P. nomion, P. nomius, P. discobolus, P. delius, P. apollonius, P. davidis, Koramius delphius, Tadumia tenedius,* and *Kailasius charltonius.*

17852. STEMPFFER, H. Contribution à l'étude de quelques espèces du genre Lycaeides Hubner. *Ann. Soc. Ent. France* 100(1/2): 121-132. 3 pl. 1931.—A critical comparative study of ♂ genitalia and tibiae of: *Lycaeides argyrognomon** and forms *croatica**, *armoricana**, and *bellieri**; *L. insularis** and forms *ligurica**, *euergetes**, and *dschagatai**; *L. cleobis**; *L. melissa**; *L. argus** and forms *carinthiaca**, *cleomenes**, *orientalis**, and *hypochiona**.

17853. STRAND, EMBRIK. Kritische Bemerkungen zu einer neuen Arbeit über afrikanische Teracolus-Arten (Lepidoptera). *Latvijas Univ. Raksti. Ser. 1.* (*Acta Univ. Latviensis*) No. 9. 253-264. 1931.—Critical remarks on C. le Doux's article "Beiträge zur Kenntnis der afrikanischen Teracoliden (Lep. Rhop.)." (Mitt. Zool. Mus. Berlin 15(1): 1-11. 1929.) [See B. A. 6(1): entry 2671.]

17854. TAMS, W. H. T. African Lasiocampidae: a correction, and the description of a new species of Pachypasa. *Ann. and Mag. Nat. Hist.* 8(43): 36-37. 1931.—*P. chaerocampoides* Holland ♂* is distinct from *P. lineata* Auriv.; *P.* papyri* (p. 36), Uganda, type in Brit. Mus.

17855. TOSAWA, NOBUYOSHI. On two new examples of aberrant forms of Papilio sarpedon Linnaeus. [In English and Japanese.] *Trans. Kansai Ent. Soc.* 1. p. (1)-(2). 1 pl. 1930.—*P. sarpedon nipponus* ab. **suzukii** ♂* (p. 1) and *P. s. sarpedonides* ab. **hankyensis** (p. 2), Japan.

17856. TOXOPEUS, L. J. Beschreibung einiger Schmetterlinge (Riodinidae und Lycaenidae) von Pulu Weh bei Sumatra. (Lycaenidae Australasiae V.) *Tijdschr. voor Ent.* 72(3/4): 204-214. 1929.—*Abisara echerius* ssp. **oenobarus** ♀ (p. 205); *Zizina otis* sspp. **parasangra** (p. 206), **kuli** and **annetta** (p. 207); *Acytolepis puspa* ssp. **vandeldeni** (p. 207); *Castalius ethion* ssp. **wehensis** (p. 209); *Nacaduba ancyra* ssp. **hyperpseustis** ♂ (p. 210); *Lampides celeno* ssp. **carolina** (p. 210); *Gerydus biggsi* ssp. **extraneus** ♂ (p. 211); *Amblypodia apidamus* sspp. **anthracophila** ♀ (p. 212), **astrophila** and **ambigua** (p. 212); *Cheritra freja* ssp. **sabanga** (p. 213); *Loxura atymnus* ssp. **intermedius** (p. 214).

17857. TURNER, A. JEFFERIS. Revision of Australian Oenochromidae (Lepidoptera). II. *Proc. Linnean Soc. N. S. Wales* 55(2): 1-40. 1930.—New forms are from W. Australia unless otherwise noted. **BRADYCTENA** (p. 1), near *Dichromodes*, based on *B.* **trychnoptila** (*Dichromodes t.* Turn.); **PHRIXOCOMES** (p. 1), near *Dichromodes*, type *P.* **ptilomacra** (*D. p.* Low) (p. 2); key to spp.; *P.* **nexistriga** (*D. steropias* ab. *n.* Warr.) (p. 2); *P.* **steropias** (*D. s.* Meyr.) (p. 2); *Dichromodes*, key to 58 spp.; *D.* **galactica** ♂ (p. 6), type in coll. G. M. Goldfinch; *D. ainaria* Gn. (=*D. diasemaria* Gm.); *D.* **laetabilis** (p. 7), N. S. Wales, type in Goldfinch coll.; *D.* **aesia** ♂ (p. 8); *D. phaeostropha* Turn. (=*D. obtusata* v. *longidens* Prout); *D.* **oriphoetes** (p. 12), N. S. Wales, type in Goldfinch coll.; *D.* **denticulata** (p. 12), type in author's coll.; *D.* **emplecta** (p. 15), type in W. B. Barnard coll.; *D.* **rostrata** ♀ (p. 15) and *D.* **lissophrica** ♂ (p. 16), types in author's coll.; *D.* **lygrodes** ♀ (p. 18), S. Australia, type in S. Australian Mus.; *D.* **leptogramma** ♀ (p. 18), type in author's coll.; *D.* **limosa** ♂ (p. 19), Queensland, N. S. Wales; *D.* **leptozona** (p. 19), ♂ type in Barnard coll., ♀ in Goldfinch coll.; *D.* **icelodes** (p. 20), N. S. Wales, type in Goldfinch coll.: *D.* **mesodonta** (p. 22); **SYMPHYLISTIS** (p. 25), in *Dichromodes* group, type *S.* **leptocyma** (p. 26), type in Lyell coll.; *Dinophalus* Prout (=*Ophiographa* Prout, *Lissocraspeda* Prout), key to 10 spp.; *D.* **idiocrana** (p. 27), Queensland, N. W. Australia; *D.* **lechriomita** ♂ (p. 29), central Australia, type in S. Australian Mus.; *D.* **cyanorrhaea** (*Hypographa c.* Low) (p. 27); *D.* **eremaea** (*H. e.* Low) (p. 28); *D.* **pygmaea** (*Lissocraspeda p.* Prout) (p. 28); *D.* **serpentaria** (*H. s.* Gn.,=*Eutelia*

undulifera Walk.) (p. 28); *D.* macrophyes (*Ophiographa m.* Prout) (p. 29); *D.* postmarginata (*O. p.* Prout) (p. 30); *D.* dilutaria (*H. d.* Warr.) (p. 30); *D.* drakei (*O. d.* Prout) (p. 31); *Lissomma*, key to spp.; *L.* incongrua (*Agrotis i.* Walk.) (p. 32); *L.* ampycteria (p. 33), type in Goldfinch coll.; *L.* hiracopis (*Hypographa h.* Meyr.=*H. bathroscma* Prout) (p. 33); *L.* atmoscia (*H. a.* Meyr.) (p. 33); *L.* macrodonta (p. 34), S. Australia (type in S. Australian Mus.) and W. Australia; **ENCHOCRANA** (p. 34), near *Dinophalus*, type *E.* lacista ♀ (p. 34), type in author's coll.; *Hypographa*, key to spp.; *H.* epiodes ♂ (p. 35), type in Goldfinch coll.; **MACROCTENIA** (p. 38), near *Monoctenia*, based on *M.* epaeneta ♂ (p. 38), type in Lyell coll.; *Monoctenia*, key to spp.; *M.* postcarneata (*Oenochroma p.* Prout); *M. eximia* Low (=*M. calladelpha* Low); *M. falernaria* Gn. (=*Monoctenia fratenaria* Gn.); *Phallaria ophiusaria* Gn. (=*Oenochroma quaternaria* H. Sch.).

17858. **VERITY, RUGGERO.** Distinzione, nomenclatura e nuove località italiane delle Gegenes nostrodamus F. e pumilio Hoffm. [Distinctions, nomenclature and new Italian localities of G. nostrodamus and G. pumilio.] *Boll. Soc. Ent. Ital.* 63(6/7): 106-112. 3 fig. 1931.—*G. nostrodamus** r. pumilionimima (p. 111), Tuscany and Spain; *G. pumilio**.

17859. **WAGNER, FRITZ.** Dritter (IV.) Beitrag zur Lepidopteren-Fauna Inner-Anatoliens. *Internat. Ent. Zeitschr.* 24(45): 467-474. 1 pl.; (46): 475-485; (47): 487-493. 1931.—An annotated list of spp. is given, 83 being new to central Anatolia, 11 new to Asia Minor, and the following new to science: *Chilades trochilus* ab. supraradiata (p. 472); *Agrotis multangula* ssp. subdissoluta* (p. 474); *A. renigera* ssp. caerulescens (p. 475); *A. vallesiaca* ssp. griseotincta* (p. 476); *Mamestra leucophaea* ab. nigra (p. 476); *Dianthoecia* mayeri (p. 477); *D. tephroleuca* ssp. asiatica (p. 478); *D. gueneei* staudingeri* (p. 479); *Lithocampa* millierei (p. 481); *Cucullia argentina* ssp. grisescens (p. 482); *Hypena antiqualis* ssp. anatolica (p. 484); *Glossotrophia diffinaria* ab. ochrearia (p. 485); *Scodiona conspersaria* ssp. osmanica* (p. 490); *Dyspessa ulula* ab. nigrita* (p. 492).

17860. **WILD, OLIVER H.** Notes on the peculiarities of some Lepidoptera and Hymenoptera from the Inner and Outer Hebrides. *Scottish Nat.* 1931(190): 113-119. 1 col. pl. 1931.—Notes and colored illustrations of: *Argynnis aglaia scotica**; *Epinephele ianira* f. *splendida* (?)* on Canna; *Cidaria concinnata* ssp. oressigena* (Donovan i. litt.) (p. 116), South Uist Isl. and Ireland; *Aporophyla lutulenta* v. *luneburgensis**; *Bombus jonellus* v. hebridensis* (p. 118), Outer Hebrides, type in Royal Scottish Mus.

17861. **WILEMAN, A. E., and R. J. WEST.** Descriptions of new species of Japanese, Formosan and Philippine Noctuidae (Heterocera). *Entomologist* 63(801): 35-38; (802): 62-65; (804): 108-110; (806): 161-163. 1930.—All types are in Brit. Mus. *Enargia* flavata ♂ (p. 35), Hokkaido, Japan; *Pechipogo* discolor ♂ (p. 35), *Mixomelia* arcuata (p. 36), and *M.* angulata ♀ (p. 36), Philippines; *Simplicia* simplicissima ♂ (p. 37), Formosa; *Lysimelia* luzonica ♂ (p. 37) and *Hydrillodes* semiluna (p. 62), Luzon, Philippines; *Bomolocha* nikkensis ♀ (p. 62) and *Hypena* innocua ♂ (p. 63), Honshu, Japan; *H.* variegata ♀ (p. 64), Luzon; *Ophiuche* yoshinalis (p. 64), Honshu; *O.* hokkaidalis ♀ (p. 108), Hokkaido; *O.* interrupta ♀ (p. 108), *Rhynchina* lithinata ♂ (p. 109), *Anoratha* albitibiata ♀ (p. 109), and *Luceria* indigna ♀ (p. 110), all from Luzon; *Hypenagonia* subsuffusata ♀ (p. 161), Formosa; *H.* albiocellata (p. 161), Palawan (type), Mindanao, and Luzon; *Aethalina* plumosa ♂ (p. 162) and *Dichromia* lipara ♂ (p. 163), Luzon.

17862. **WILLIAMS, ROSWELL C. Jr., and ERNEST L. BELL.** Hesperiidae of the Forbes Expedition to Dutch and British Guiana (Lepidoptera). *Trans. Amer. Ent. Soc.* 57(2): 249-287. 34 fig. (11 col.) 1931.—Records are given for 145 spp. and forms, including: *Phocides palemon* ab. gunderi ♂ (p. 251), British Guiana; *Cogia* freudiae ♂* (p. 256), *Entheus* mina* (p. 260), *Atrytone* barbara* (p. 271), and *Euroto* saramacca ♂* (p. 276), Dutch Guiana; *E.* potaro ♂* (p. 277) and *Vehilius* forbesi ♂* (p. 280), British Guiana; *Phanus* godmani ♂* (p. 286), Costa Rica. Types in Acad. Nat. Sci. Phila. The ♂ genitalia are described and illustrated for the above and *Polites dictynna**, *Prenes eugeon**, *Telemiades amphion**, *T. ceramina**, *Lignyostola crinisus**, *Hyalothyrus nitocris**, *Grynopsis coeleste**, *Phanus vitreus**, *P. marshalli**, *Entheus priassus**, *E. gentius**, *Pythonides jovianus**, *P. lerina**, *Achlyodes busirus* f. *negro**, *Gorgythion begga**, *Paramimus scurra* f. *evanescens**, *Charidia lucaria**, *Chiomara punctum**, *Catia ophites**, *Cobalus virbius**, *Phanes almoda**, *P. rezia**, *Phlebodes fartuga**, *P. reticulata**, *Vettius laurea**, and *Thracides hermesia.**

17863. **WOOD, A. A.** A new bait trap for noctuid moths. *Canadian Ent.* 63(7): 149-150. 1931.—Description of a trap in which the bait used was: New Orleans molasses, 1 pint; fermented apple juice, 2 ounces; essence of pear, 10 drops; essence of lavender, 10 drops; essence of anise, 2 drops.

MICROLEPIDOPTERA

CARL HEINRICH, *Editor*

(See also in this issue Entries 15302, 15953, 16782, 16785, 16791, 16792, 16799, 16802, 16814, 16829, 16837, 16849, 17827, 17828, 17839, 17848, 17849, 17859, 18116)

17864. **BALDUF, W. V.** The cycles and habits of Phlyctaenia tertialis (Guenee) (Lepidoptera, Pyralidae). *Proc. Ent. Soc. Washington* 32(2): 31-36. 1930.—Descriptions of egg, larva, pupa and adult, hibernation of larvae and construction of hibernaculum. Data on spring emergence, 1st and 2nd generations, in Illinois and Ohio. The preferred host is the elder, *Sambucus*, the larvae attacking under cover of webbed or rolled leaves.

17865. **BUSCK, AUGUST.** Two new Peruvian Microlepidoptera of economic importance (Gelechiidae and Oecophoridae). *Proc. Ent. Soc. Washington* 33(3): 59-63. 1 pl. 1931.—Gelechiidae: *Gnorimoschema* tuberosella* (p. 59), bred from stalks and tubers of potato, *Solanum tuberosum*. Oecophoridae: *Eucleodora* cocae* (p. 60) does considerable damage to the leaves of coca (*Erytroxylon coca*) amounting to 60% of the harvest in the height of the season. Genitalia, ♂ and ♀, are figured. Types in U. S. Nat. Mus. *Gnorimoschema* (=*Phthorimaea*).

17866. **DUFRANE, ABEL.** Microlépidoptères nouveaux pour la faune belge. *Lambillionea* 30(11): 158-161. 193(
—*Eucosma nisella* abs. *baeberana, rhombifasciana,* an(
siliceana are new to Belgium; *E. n.* ab. brunneana (1
161).

17867. **FILIPJEV, N.** Lepidopterologische Notize(
XIII. Ein neuer Weintraubenschädling aus der Gattun
Ephestia Gn. *Deutsche Ent. Zeitschr. "Iris"* 45(2): 7(
73. 9 fig. 1931.—*Ephestia* vitivora* (p. 70), Transcaucasi
type in Zool. Mus., Leningrad, larvae injurious to grap(
the ♂ and ♀ genitalia* are compared with those of
*elutella**. *Lithocolletis* populi ([*L.*] *populiella* Filip
not Chamb.) (p. 73).

17868. **FORBES, W. T. M., and M. D. LEONAR**
A new leaf-miner of cotton in Porto Rico (Nepticu
gossypii new species). *Jour. Dept. Agric. Porto Rico*
(3): 151-157. 2 pl. 1930.—*N.* gossypii (p. 151), eg
larva*, pupa*, adult*, and leaf mines on cotton* (
scribed; attacks *Gossypium barbadense*. The leaf mi
is widely distributed and infestation is heavy.

17869. **GERASIMOV, A.** Zur Lepidopterenfauna

Mittelasien. III. Neue Lithocolletis. *Ent. Zeitschr.* [*Frankfurt a/M.*] 45(9): 125-132. 5 fig. 1931.—*Lithocolletis* **malella*** (p. 125), leaf miner on *Pirus malus, P. communis, Cydonia vulgaris,* and *Crataegus; L. corylifoliella* ssp. **turanica*** (p. 127), leaf miner on *Cydonia vulgaris* and *Pirus malus; L.* **fainae*** (p. 128), leaf miner on *Salix* and *Populus nigra* (?); *L. connexella* ssp. **asiatica** (p. 130), from *Salix,* Bokhara (type) and Yeniseisk [Siberia]; *L.* **pruinosella*** (p. 130), leaf miner on *Populus pruinosa, P. euphratica,* and *Salix* sp., Bokhara and Khiva. All are from Turkestan, except as noted. Types in author's coll. All figures are of ♂ genitalia.

17870. **JOANNIS, J. de. Bradyrrhoa trapezella Dup. et Bradyrrhoa cinerella Dup. sont des espèces distinctes [Lep. Pyralidae].** *Bull. Soc. Ent. France* 1929(4): 67-73. 1929.—The differences between the 2 spp. are presented in an extended tabular comparison.—*S. B. Fracker.*

17871. **MEER MOHR, J. C. van der. Ein Hypophrictoides-Fund aus Nord-Sumatra.** *Misc. Zool. Sumatrana* 56. 1-2. 1 pl. 1931.—*H. dolichoderella* is myrmecophilous, associated with *Dolichoderus bituberculatus,* and lives in a house* built of frass and excrement, of the shape of an hour glass.

17872. **MEYRICK, EDWARD. Exotic Microlepidoptera.** 3(19): 577-608. August, 1930; 3(20): 609-640. September, 1930. To be obtained from author: Thornhanger, Marlborough, Wilts, England. Pr. 3s. each.—*Hypercallia* **euthyrsa** ♂ (p. 577), Ecuador; *Theatrocopia* Wals., earlier merged by the author in *Cryptolechia,* is now considered distinct after examination of specimens of the type sp. *roseoviridis; Orygocera* **propycnota** ♂ (p. 577), Madagascar; *Epiphractis* **superciliaris** ♀ (p. 577), Sierra Leone; *Cryptolechia* **percnocoma** ♀ (p. 578) and *C.* **sciodeta** ♀ (p. 578), Brazil; *C.* **orthrarcha** ♀ (p. 578), Algeria; **METALLOCRATES** (p. 579), (Blastobasidae) "a development of *Pigritia,*" type *M.* **transformata** ♂ (p. 579), Brazil; *Phyllocnistis synglypta* Meyr., larvae mining leaves of *Terminalia tomentosa; Epicephala* **orientalis** (*Acrocercops orientalis* Stainton,= *A. austeropa* Meyr.); *Acrocercops* **lithochrysa** ♀ (p. 580), Uganda; *A.* **thrylodes** (p. 580), Bombay, larvae mining leaf of *Carissa carandas; A.* **serriformis** (p. 580), Java, larvae mining leaves of *Ricinus communis; Acrocercops astaurota* Meyr., emended description on basis of specimens from Japan, bred from larvae mining in bark of pear tree (*Pyrus communis*); *A.* **lithochalca** ♂ (p. 581), Sikkim; *A.* **astiopa** ♀ (p. 581), Bihar, larvae mining leaves of *Polyalthia longifolia; A.* **crypsigrapha** ♂ (p. 581), Burma; *Gracilaria platycosma* Meyr., bred from larvae rolling leaves of *Litsea glutinosa; G.* **palaearcha** ♀ (p. 582), Fiji; *G.* **citrochrysa** ♂ (p. 582), Bihar, Pusa, bred from cocoons on surface of leaves of *Putranjiva roxburghii; Lithocolletis* **fasciformis** (p. 582), Bihar, bred from larvae mining leaves of *Polygonum glabrum; Epicephala* **scythropis** ♂ (p. 583), Upper Burma, bred from galls on *Phyllanthus; Scoparia* **tricitra** ♀ (p. 583), Dutch New Guinea; *Hypochalcia fuliginella* Dup. (=*H. ghiliani* Staud.); *Aegeria* **astyarcha** ♂ (p. 584), Uganda; **ISOCYLINDRA** (p. 584), (Aegeriidae) based on *I.* **melitosoma** ♂ (p. 584), Uganda; *Paranthrene* **cyanogama** (p. 584), Malaya, bred from larvae boring stem of *Uncaria gambier; Aschistophleps lampropoda* Hamps., notes; *Stathmopoda* **pyrrhogramma** ♀ (p. 585), Cameroons; *Lamprotеucha cassiteris* Meyr., notes; *Tinaegeria* **nephelozyga** ♂ (p. 586), Brazil; *Eretmocera* **homalocrossa** ♂ (p. 586), Uganda; **HIEROPHANES** (p. 586), (Heliodinidae) near *Crembalastis,* based on *H.* **chrysocrana** ♀ (p. 586), Uganda; **GYMNOGELASTIS** (p. 587), (Heliodinidae) type *G.* **miranda** (*Melodryas m.* Meyr.) (p. 587); *G.* **lilitha** ♂ (p. 587), Sudest I.; *Amphithera* **tyriochalca** ♂ (p. 587) and *Meridarchis* **niphoptila** ♂ (p. 588), New Guinea; *M.* **picroscopa** ♂ (p. 588), *M.* **heptaspila** ♀ (p. 589), and *Bondia* **xylinarcha** ♀ (p. 589), British New Guinea; *Copromorpha* **cryptochlora** ♂ (p. 590) and *C.* **mesobactris** (p. 590), Comoro I.; *C.* **myrmecias** ♀ (p. 590), Bihar, bred from larvae boring top-shoots of *Ficus bengalensis; Phalonia* **geniculata** ♂ (p. 591), Assam; *Phtheochroa* **deltochlaena** (p. 591), Bolivia; *Zelleria* **loranthivora** (p. 591), Bihar, bred from larvae boring and feeding on flower-buds of *Loranthus; Nosymna* **macrorrhyncha** ♂ (p. 592), British New Guinea; **BALANOPTICA** (p. 592), (Hyponomeutidae) allied to *Melodryas,* based on *B.* **orbicularis** (*Cyme o.* Feld.) (p. 592), Sumatra; *Melodryas doris* Meyr., ♀ described; *Anaphantis* **zonotorna** (*Melodryas z.* Meyr.) (p. 593); **ASTOXENA** (p. 593), (Hyponomeutidae) allied to *Mieza,* type *A.* **clotho** ♂ (p. 593), French Guiana; *Anticrates* **agrippina** ♀ (p. 594), Celebes; *A.* **magocosma** (p. 594), Dutch New Guinea; *Lactura* **apoplectica** ♂ (p. 594), Solomon I.; *L.* **oroglypta** ♀ (p. 595) *L. coleoxantha* Meyr., ♀ described, and *L.* **erythrodesma** ♂ (p. 595), British New Guinea; *L.* **infervescens** ♀ (p. 596), Trobriand I.; *L.* **rubriflora** ♂ (p. 596) and *L.* **eurypercna** ♂ (p. 597), British New Guinea; *Gymnogramma* **tabulatrix** ♂ (p. 597), Madagascar; **CARMENTINA** (p. 597), (Hyponomeutidae) somewhat related to *Anaphantis,* type *C.* **iridesma** ♀ (p. 598), Solomon I.; **PSEGMATICA** (p. 598), (Eucosmidae) "apparently an abnormal member of the *Eucosma* group," type *P.* **pachnostola** ♂ (p. 598), Fiji; *Acroclita trimelaena* Meyr., emendation; *A.* **ioxanthas** ♂ (p. 599), Cameroons; *Eucosma* **tolerans** ♂ (p. 599), Tibet; *E.* **cremastropis** (p. 599), Uganda, bred from seeds of *Podocarpus; E.* **ioplintha** (p. 600), Sudan, bred "from galls on talh"; **AGRIOPHANES** (p. 600) (Eucosmidae) near *Helictophanes,* type *A.* **pycnostrota** ♀ (p. 600), Madras; *Proschistis* **iricolor** ♀ (p. 601), Dutch New Guinea; *Articolla* **piratodes** ♂ (p. 601), British New Guinea; *Argyroploce* **brevisecta** ♂ (p. 601), Benin; *A.* **thermopetra** ♂ (p. 602), Cameroons; *A.* **atricapsis** ♀ (p. 602), Nigeria; *A.* **tornophanes** ♀ (p. 603), Solomon I.; *A.* **platymolybdis** ♀ (p. 603), Cameroons; *A.* **molybdachtha** ♀ (p. 603), Ivory Coast; *A.* **atmochlora** (p. 603), Java, bred from larvae rolling leaves of *Cinnamomum camphora; A. purpurissitana* Kenn., bred from larvae in spun leaves of *Litsea glutinosa; Laspeyresia* **staphiditis** (p. 604), Bihar, bred from larvae boring twigs of *Bauhinia purpurea; L.* **spumans** ♂ (p. 605), Cameroons; *L.* **aeolornis** ♀ (p. 605), Bismarck I.; *Homona* **capnobathra** ♂ (p. 605), Madagascar; *Pseudatteria* **igniflora** ♀ (p. 606), Bolivia; *P.* **symplacota** ♀ (p. 606), Ecuador; *P.* **orgias** ♀ (p. 607) and *P.* **xanthocapna** ♂ (p. 607), Colombia; *P.* **myriocosma** ♀ (p. 608), Bolivia; *Tortrix* **eurymenes** ♀ (p. 608), Dutch New Guinea; *T.* **oriphanes** ♂ (p. 608), Peru; *T.* **apochranta** ♂ (p. 609), Brazil; *T.* **endopyrrha** ♂ (p. 609), Uganda; *Xenothictis* **atriflora** ♂ (p. 609), Fiji; *Eulia* **homosacta** ♂ (p. 610) and *Paraptila* **hydrochoa** ♂ (p. 610), Ecuador; *Schoenotenes* **octosticta** ♂ (p. 610), British New Guinea; **LOPHOPRORA** (p. 611), (Tortricidae) allied to *Spatalistis,* type *L.* **cyanostacta** ♂ (p. 611), British New Guinea; *Spatalistis* **droserantha** ♀ (p. 611), Assam; *Sparganothis* **elimata** ♂ (p. 611), Ecuador; *Argyrotoxa* **venatrix** ♂ (p. 612) and *A.* **erythrocyma** ♀ (p. 612), Cameroons; *Peronea* **ulmicola** ♀ (p. 612) and *P.* **tephromorpha** ♂ (p. 613), Manchuria, bred from larvae rolling leaf of *Ulmus;* **ANTIGRAPTIS** (p. 613), (Tortricidae) allied to *Peronea* and *Mictoneura,* type *A.* **hemicrates** ♀ (p. 613), Dutch New Guinea; *Cacoecia* **concavata** ♂ (p. 614), Peru; *Macrobathra* **neurocoma** ♂ (p. 614), Cameroons; *M.* **antimeloda** ♂ (p. 614), Madagascar; *Promalactis* **isothea** (p. 615), Madras; **ALOMENARCHA** (p. 615), (Oecophoridae) "a development of *Dasycera,*" type *A.* **phalarista** (p. 615), Silhet; *Cyphothyris ophryodes* Meyr., emendation; *Allotalanta* **ochthotoma** (p. 616) and *A.* **tephroclystis** ♂ (p. 616), Cameroons; *Piloprepes* **phthoromima** ♂ (p. 617), British New Guinea; **PYROPHRACTIS** (p. 617) (Oecophoridae), allied to *Machimia,* type *P.* **isotherma** ♀ (p. 617), British New Guinea; **EPIMORYCTIS** (p. 618), (Oecophoridae) "a development of *Machimia,*" type *E.* **percnorma** ♂ (p. 618), Brazil; *Machimia* **elaphodes** ♂ (p. 618), Bolivia; *Syscalma* **prymnaea** (p. 619), British New Guinea; *Barantola panarista* Turn. and *B. pulcherrima* Walk.,

notes on New Guinea specimens; *Scorpiopsis* **exanthistis** ♂ (p. 619), British New Guinea; *S.* **diplaneta** ♂ (p. 619), British and Dutch New Guinea; *S.* **rhodoglauca** ♂ (p. 620), Queensland; *Octasphales* **niphadosticha** ♀ (p. 620), British New Guinea; *Depressaria* **nyctalopis** ♀ (p. 621), Comoro I.; *Hypercallia* **deflorescens** (p. 621), Sikkim; *Diocosma* **rhodopola** ♂ (p. 621), Kenya; *Calliphractis phyllograpta* Meyr., ♂ described, *Orygocera* **liliacea** ♂ (p. 622), and *O.* **amphichelota** ♂ (p. 622), Cameroons; *O.* (?) **magdalena** ♀ (p. 622), Madagascar; *Melconoma* **nephospora** ♂ (p. 623), Sikkim; *Periacma* **delophanta** ♀ (p. 623), Madras; **CRITOXENA** (p. 623), (Oecophoridae) allied to *Scalideutis*, type *C.* **agraphopis** ♀ (p. 624), India Central Provinces; **CATOLBISTIS** (p. 624), (Lampronidae) type *C.* **thrasymedes** ♂ (p. 624), Uganda; *Nemotois* **xanthophracta** ♂ (p. 624), Bombay; *N. ischnodesma* Meyr., ♂ described, Burma; *N.* **porphyraspis** ♀ (p. 625), Kenya; *Coleophora* **summivola** ♂ (p. 625), *C.* **nivifera** ♂ (p. 625), and *Epermenia* **sublimicola** (p. 626), Tibet; *E.* **parasitica** ♂ (p. 626), Java. A generic and specific index concludes the volume.

17873. SUIRE, JEAN. Une espèce nouvelle de Coléophore. Coleophora joannisella, n. sp., et ses premiers états. *Bull. Soc. Ent. France* 1930 (2) : 25-29. 1 fig. 1930. —*C. joannisella** (p. 27), Herault, reared on *Dorycnium suffructicosum*.—*S. B. Fracker.*

17874. THORPE, W. H. Further notes on biological races in Hyponomeuta padella (Linn.). *Proc. Linnean Soc. London* No. 142. 27-28. 1929/30 (1931).—*H. padella* splits up into distinct races, one on apple, one on *Crataegus oxyacantha*, and one on *Prunus spinosa.*

NEUROPTEROIDS

F. M. CARPENTER, *Editor*

(See also in B. A. 6(5): Entries 14670, 14677; and in this issue 17470, 17472, 17473, 18116)

17875. [ARTOBOLEVSKII, G. V.] АРТОБОЛЕВСКИЙ, Г. В. Стрекозы Дагестана. [Odonata of Daghestan.] Русское Энтомологическое Обозрение (*Rev. Russe d'Ent.*) 23 (3/4) : 225-240. 1929.—An annotated list of 32 spp. is given. Geographic distribution of 57 spp. in Daghestan, Kuban, central Ciscaucasia, and the former Stavropol government is added.

17876. BARTENEF, A. N. Über die Aberrationen von Libellula quadrimaculata L. (Odonata). *Zool. Anz.* 87 (7/8) : 191-198. 1930.—A series of 87 specimens (8 ♂♂, 79 ♀♀) from the marshes of Atchuyev on the Sea of Azov belonged to the aberration *praenubila*, except 4 of each sex of the typical form and 2 ♀♀ of ab. **contacta** (p. 192), descriptions of which are given. The new aberration is a transitional form between ab. *praenubila* and ab. *dittrichi*. A detailed analysis of the variations in wing pattern of ab. *praenubila* showed certain correlations between the length and breadth of the spots. *Praenubila* is an atavistic form which is disappearing. A key is given for separating the 5 aberrations of *L. quadrimaculata* as recognized by the author. This is followed by a list of 11 additional spp. received from the above mentioned locality.—*E. M. Walker.*

17877. BIRD, R. D. The nymph of Enallagma basidens Calvert (Odonata: Agrionidae). *Ent. News* 42 (10) : 276-277. 3 fig. 1931.

17878. CARPENTER, F. M. Revision of the Nearctic Mecoptera. *Bull. Mus. Comp. Zool. Harvard Coll.* 72 (6) : 205-277. 8 pl., 6 fig. 1931.—Key is given to 4 N. Amer. families. Each sp. is described, with synonymy, distribution, and such biological data as are known. Panorpidae: **BRACHYPANORPA** (p. 209), type *B.* **carolinensis*** (*Panorpodes c.* Banks) (p. 211), key to spp.; *B.* **oregonensis*** (*P. o.* MacLachlan) (p. 211); *B.* **montana** (p. 212), Oregon, 8-9000 ft.; *Panorpa*, a review of the generic characteristics, biological and morphological, keys to ♂♂ and ♀♀ of spp. including *Panorpa* **mirabilis*** (p. 229), New Jersey (type, in U. S. Nat. Mus.), New York, Pennsylvania, Michigan; *P.* **longicornis*** (p. 231), Tennessee (type) and N. Carolina; *P.* **modesta*** (p. 233), Michigan; *P.* **eloborata*** (p. 239), Virginia (type), New York, Connecticut, New Jersey, Pennsylvania, Maryland, N. Carolina, S. Carolina, and Ohio; *P.* **robusta*** (p. 240), S. Carolina; *P.* **isolata*** (p. 241), Georgia (type), N. Carolina, Tennessee, and S. Carolina; *P.* **neglecta*** (p. 242), Alabama; *P.* **braueri*** (p. 242), Arkansas; *P.* **speciosa** ♂* (p. 243), Illinois (type, in Field Mus.) and Minnesota; *P.* **dubitans** ♂* (p. 243), Indiana, type in Field Mus.; *P.* **decorata*** (p. 245), Pennsylvania; *P.* **anomala*** (p. 245), Kansas; *P.* **dissimilis*** (p. 246), Virginia (type), New Jersey, and New York; *P.* **proximata*** (p. 247), Arkansas; *P.* **gracilis*** (p. 247), N. Carolina; *P.* **sigmoides*** (p. 250), Indiana (type, in Illinois State Nat. Hist. Mus.) and Illinois; *P.* **chelata*** (p. 251), Massachusetts (type), Connecticut, New York, N. Carolina, Georgia, Michigan, and Illinois; *P.* **acuta*** (p. 253), Tennessee (type), New Hampshire, Massachusetts, Connecticut, New York, New Jersey, West Virginia, N. Carolina; *P.* **submaculosa*** (p. 255), Michigan (type, in Mus. of Zool. Univ. Mich.) and New York. *Bittacus*, key to spp.; *Apterobittacus*, redescribed; *Boreus*, key to spp. The bibliography contains 58 references. The types, unless otherwise designated, are in the Mus. Comp. Zool.

17879. DALLMAN, A. A. Dragon-flies in the outer Hebrides. *North Western Naturalist* 6 (4) : 229. 1931.—List, in which *Sympetrum scoticum* and *Agrion puella* are additions.

17880. DESPAX, R. Observation relative à l'action de la lumière sur la métamorphose des Trichoptères. *Bull. Soc. Ent. France* 1928 (9) : 154-156. 1928.—Light does not hinder the emergence of the adults of *Limnophilus bipunctatus* as it does those of *Stenophylax luctuosus*.—*S. B. Fracker.*

17881. GORTER, F. J. Köcherbauversuche an Trichopterenlarven. *Zeitschr. Wiss. Biol. Abt. A. Zeitschr. Morph. u. Ökol. Tiere* 20 (2/3) : 443-532. 1931.—Case-building was examined in 11 species of Limnophilidae and in 2 spp. of Leptoceridae. If removed from their cases, the larvae usually build new ones. Based on these experiments, the following data were obtained: (1) The larvae (except those of *Enoicyla pusilla*, which live on land) first made a provisional sheath and then added a permanent one; (2) almost every species used more than half of the kinds of material provided for the building of their provisional and definitive cases; and (3) there developed a gradual selective preference for certain materials, as previously noted by Bierens de Haan. For the larvae of *Limnophilus flavicornis, L. rhombicus*, and *Anabolia nervosa* average series of preferences were drawn up, one for the provisional and one for the permanent structures, and they were also compared.—*F. J. Gorter.*

17882. HUBAULT, Ét. A propos de l'action de la lumière sur la métamorphose des Trichoptères. *Bull. Soc. Ent. France* 1928 (12) : 198-199. 1928.—Negative phototropism is not closely correlated with torrenticolous habits in Diptera and Trichoptera.—*S. B. Fracker.*

17883. LACROIX, J. L. Notes sur les Chrysopides. *Bull. Soc. Ent. France* 1931 (11) : 173-174. 1931.—*Chrysopa vulgaris* Schn. is apparently distinct from *C. carnea* Steph.—*S. B. Fracker.*

17884. LESTAGE, J. A. Les pseudo Hexagenia de la faune éthopienne. (Ephemeroptera.) *Bull. et Ann. Soc. Ent. Belgique* 71 (1/2) : 39-40. 1931.—There is only 1 ephemerid in the Ethiopian region, *Eatonica schouteden* Nav. (=*Hexagenia illustrus* Eaton, *H. fulva* Esben Petersen, *H. reticulata* Nav., *Ephemera nimia* Nav.).

17885. LESTAGE, J. A. Contribution à l'étude de Ephéméroptères VIII. Les Ephéméroptères du Chili

Bull. et Ann. Soc. Ent. Belgique 71(1/2): 41-60. 5 fig. 1931.—A key to the genera found in Chile, with descriptive catalogue of the 21 spp., including: **CHILOPORTER** (p. 50), type *C.* **eatoni** (p. 50), based on a larva described by Eaton. The Chilean fauna is confined to the Siphlonuridae, Leptophlebiidae, Baetidae, and Polymitarcidae.

17886. LESTAGE, J. A. Les Ephéméroptères de la Belgique. 4e note: A propos de certains éléments nordiques signalés dans la faune hollandaise. *Bull. et Ann. Soc. Ent. Belgique* 71(3/4): 85-91. 1931.—Notes on *Ephemerella torrentium, Ordella incus, O. moesta, Cloeon inscriptum, C. proetextum, Procloeon bifidum, Baetis wallengreni,* and *Siphlurella linnoeana.*

17887. LESTAGE, J. A. Note à propos de l'homonymie de deux Éphéméroptères. *Bull. et Ann. Soc. Ent. Belgique* 71(6/8): 119. 1931.—*Brachycercus* **idei** (*Eurycoenis pallida* Ide). *Eurycoenis* is isogenotypic with *Brachycercus.*

17888. LONGFIELD, CYNTHIA. A list of the Odonata of British Somaliland and a description of a new species of the genus Enallagma. *Entomologist* [*London*] 64 (823): 274-278. 2 fig. 1931.—A list of 11 Libellulidae, 3 Aeshnidae, 4 Agrionidae, including *Enallagma* **somalicum** ♂ (p. 277); type in Brit. Mus.

17889. LUCAS, W. J. Notes on the British Neuroptera and Mecoptera in 1930. *Entomologist* [*London*] 64(822): 243-244. 1931.—Collecting notes on 2 spp. of Sialidae, 2 Rhaphidiidae, 4 Coniopterygidae, 1 Sisyridae, 10 Hemerobiidae, 5 Chrysopidae, and 2 Panorpidae.

17890. LUCAS, WILLIAM JOHN. The aquatic (naiad) stage of the British dragonflies (Paraneuroptera). (Ray Soc. Ser. No. 117) 132p. 35 pl. (12 col.), 30 fig. 1930. Pr. 25 s.—The book gives a general account of a dragonfly naiad and its life-story, followed by identification tables, and descriptions of the British species. Of these (42 in number) 32 are figured, magnified, in colors or sepia (with details), each on a separate plate. The rest, except *Sympetrum vulgatum* Linn., *S. jonscolombei* Selys, and *Ischnura pumilio* Charp., are illustrated in the text.—*W. J. Lucas.*

17891. McDUNNOUGH, J. The eastern North American species of the genus Ephemerella and their nymphs (Ephemeroptera). *Canadian Ent.* 63(8): 187-197. 1 pl.; (9): 201-216. 3 pl. 1931.—*Ephemerella,* key to spp. of nymphs; *E. dorothea,* nymph*; *E. subvaria,* nymph*; *E. rotunda* ♂*, nymph*; *E. invaria,* nymph*; *E. aurivilii,* nymph*; *E. septentrionalis,* first description of nymph*, subimago and ♀, and ♂ redescribed; *E. needhami,* ♀ first description, ♂ is redescribed, subimago, nymph*; *E. deficiens,* nymph*; *E. sordida* ♂*, nymph*; *E. serrata,* nymph*; *E. serratoides,* ♂ genitalia*, nymph*; *E. simplex,* ♂ genitalia*, nymph*; *E. attenuata* ♂ genitalia*, nymph*; *E. margarita,* nymph*; *E. lata,* ♂ genitalia*, nymph*; *E. cornutella,* ♂ genitalia*, nymph*; *E. cornuta,* ♂ genitalia*, nymph*, and redescription of subimago; *E. tuberculata,* nymph*, first description of subimago, ♂* and ♀; *E. fuscata,* ♂ genitalia*, nymph*.

17892. MILNE, LORUS J. Three new Canadian Prophryganea. (Phryganeidae, Trichoptera.) *Canadian Ent.* 63(10): 228-232. 2 pl. 1931.—*Phryganea* **sayi** (*P. interrupta* Say preocc.) (p. 228); *Prophryganea* **macdunnoughi** ♂* (p. 230), Alberta; *P.* **deflata** ♂* (p. 230), Saskatchewan; *P.* **bradorata*** (p. 230), Quebec (type), Manitoba, Alberta, and Saskatchewan. The ♂ genitalia for all 3, and the ♀ genitalia of *P. bradorata,* and 2 undetermined spp. are figured. Types in Canadian Nat. Coll.

17893. MOSELY, MARTIN E. The Trichoptera of the British Isles. In: **Contrib. á l'étude du peuplement des îles Britanniques; Mem. Soc. Biogéogr.** 3. Pp 67-75. 1930.—A list with notes on distribution.

17894. NAVÁS, LONGIN[OS]. Insectes névroptères et voisins de Barbarie. Huitième série. *Bull. Soc. Hist. Nat. Afrique du Nord* 20(8): 227-230. 3 fig. 1929.—A record of 13 spp. including.—Neuroptera: *Macronemurus* **hedigeri** ♂* (p. 227), Morocco, type in Bâle. Mus. *Plecoptera, Isoperla* **lecerfi*** (p. 229) and *Nemura* **talboti*** (p. 230), Algeria, types in Paris Mus.

17895. NAVÁS, LONGINOS. Insectos del Brasil. 4.ª serie. *Rev. Mus. Paulista* [*São Paulo*] 17(1): 455-458. 3 fig. 1931.—Neuroptera, Ascalaphidae: A record of *Ululodes cajennensis* from Argentina. Ephemeroptera, Polymitarcidae: *Compsurus* **longicauda** ♂* (p. 455), Brazil; *C.* **pfeineri** ♂* (p. 457), Argentina. Trichoptera, Calamoceridae: *Phylloicus* **obliquus** ♀* (p. 458), Minas Geraes, Brazil. Types in Deutsch. Ent. Mus. Berlin-Dahlem.

17896. NEVIN, F. REESE. Larval development of Sympetrum vicinum (Odonata: Libellulidae; Sympetrini). *Trans. Amer. Ent. Soc.* 55(2): 79-102. 1929.—Eggs of *S. vicinum* collected on Oct. 1, 1927 began hatching Nov. 28. Each larva was kept in a stender dish at about 21 C. and fed first with *Paramecium caudatum,* stylonychias, a few vorticellas and later with ostracods, copepods including *Cyclops* and *Diaptomus, Daphnia, Hyallela* and small mayfly and stonefly nymphs. Four individuals passing the 3rd instar, lived through the 11th and transformed or died during transformation. Length of instars varied from 2 days to nearly a month. No correlation exists between individuals in length of instars except in the 1st and last which were longer. Adults appeared more than a month earlier than before recorded. A growth curve for one larva is included. Each exuvia and dead larva was preserved in alcohol for study. Constant characters were: Movable hook, long and slender; hair-like setae on vertex and ventral surface of 9th abdominal segment; antennae and legs brown-banded, the shade varying individually and in different instars; abdomen in later instars noticeably flattened on ventral surface. The following changes in characters were noted: The horns on vertex increased in length in first 2 instars, but disappeared after the 8th or 9th; antennae, at first 3-segmented, become 7-jointed in 7th instar; the width of mentum is at first greater than the length, later it is equal to it; lateral setae increase from 1 to 9; no mental setae in first, but 11 in last; denticles appear on mandibles in later instars; the proximal mandibular teeth increase in number; wing-pads are discernible in 5th instar and cover 5 or 6 abdominal segments in 11th instar; tarsal joints increase from 1 in first 3 instars to 3 in the 7th; the lateral spines on segment 9 appear in 5th instar, on both 8th and 9th after the 6th instar; lateral spines are brown tipped in last 2 instars; lateral keels are present on segment 7 in 7th instar and from 4 to 7 in 9th. Dorsal hooks appear on segments 6, 7, and 8 in 5th instar and on 4-8 inclusive in 7th and following instars.—*F. R. Nevin.*

17897. PAULIUK, I. Topographie und Funktion des Kopulationsapparates von Lestes sponsa Hansem. (Odonata). *Verhandl. u. Mitt. Siebenbürg. Ver. Naturwiss. Hermannstadt* 78(I. Wiss. Teil): 41-62. 4 pl. 1928.—A detailed study of the morphology of the penis and other genital structures is presented in description and figures.—*B. E. Montgomery.*

17898. RIS, F. Drei Notizen über ostasiatische Agrioniden (Odonata). *Arkiv. Zool.* [*Stockholm*] 21A(14, No. 31): 1-32. 11 fig. 1930.—*Mortonagrion* **simile*** (p. 7), Sumatra; *M.* **amoenum** (*Agriocnemis amoena* Ris) (p. 12); *Archibasis melanocyana* ♂*, *A. mimetes* ♂*, *Platycnemis foliacea* ♂* and *P. phyllopoda* ♂* are redescribed; *P.* **ulmifolia*** (p. 26). A key to spp. of *Mortonagrion* is included.—*F. M. Carpenter.*

17899. ŠÁMAL, JAROMÍR. Ein Versuch der Revision der südamerikanischen Gattung Diamphipnoa Gerstaecker (Perl.). *Stettiner Ent. Zeitung* 92(2): 266-274. 13 fig. 1931.—Plecoptera: *Diamphipnoa* rediagnosed, key to spp.; *D. virescentipennis,* egg*, ♂*, ♀*, redescribed; *D. annulata* (Brauer) (=*D. lichenalis* Gerstaecker), ♂* ♀*, redescribed.

17900. TILLYARD, R. J. On a collection of stoneflies (order Perlaria) from South Africa. *Ann. South African Mus.* 30(1): 109-130. 13 fig. 1931.—Nemouridae (=Leuctridae); the author places *Leuctra* in the subfam. Nemourinae, and does not consider it worthy of subfamily or family rank. Notes on venational nomen-

clature in the order are given. Perlidae: *Ochthopetina transvaalensis**, descriptive notes. Nemouridae: **APHANICERCA** (p. 117), type *A.* capensis* (p. 119); *A.* denticulata* (p. 121); **APHANICERCELLA** (p. 124), new subg. in *Aphanicerca*, type *A.* (*Aphanicercella*) barnardi* (p. 122); **DESMONEMOURA** (p. 126), near *Aphanicerca*, type *D.* pulchellum* (p. 126). All from Cape Province, types in S. African Mus. Two unidentified larvae* are briefly described.

17901. **TILLYARD, R. J. The larva of Hemiphlebia mirabilis Selys (Odonata).** *Proc. Linnean Soc. New South Wales* 53(3): 193-206. 13 fig. 1928.—This minute dragonfly is confined to Australia, where it is known from only 2 localities: Port Denison (Bowen), Queensland, and Alexandra, Victoria. A sketch of previous work published upon it is given. In November 1927, the hitherto unknown larva was found in a backwater of the Goulburn River, near Alexandra. Its limited distribution in this area is suggested as due to the periodical droughts drying up all the rest of the high backwaters except at a rather deep hole between the clumps of reeds and this serves as a reservoir for the larvae when no other water is available. Most of the 50, dark brown, sluggish larvae obtained were clinging closely to the lower, dirty brownish portions of the stems of *Myriophyllum* and to the bases of the stems of reeds and submerged grasses. A detailed description of the exterior (including the larval wing-tracheation), rectum, and gizzard* is given, followed by a general discussion of the larval characters. Characters held to be unique within the Odonata are the trifid hypopharynx, presence of both glossae and paraglossae, incomplete wing-tracheation and the origin of tracheae Sc, R1 and Rs+M from a short common stalk. Characters shared with the Synlestidae, Lestidae, Epallagidae, Polythoridae and Coenagriidae (Agrioninae of de Selys) are listed. Conclusions are that the larva of *Hemiphlebia* is an exceedingly archaic type, probably by far the most archaic larval type of Odonata still existing; it shows a closer relationship with the larval forms of the Plectoptera than might reasonably be expected, indicating a common ancestor very far back; it shows a very close relationship with the Synlestidae and Lestidae, and is properly to be placed close to these 2 families in any scheme of classification. The erection of the family Hemiphlebiidae (Kennedy 1920) appears to be more than justified on the larval characters alone, and the family may legitimately be regarded as a remnant of an exceedingly early type of Zygoptera and not really very far removed from the original types (now lost) which gave origin to all the greater groups of Odonata.—*P. P. Calvert.*

ORTHOPTEROIDEA

A. N. CAUDELL, *Editor*

(See also in this issue Entries 16795, 16796, 16805, 16842, 17468)

17902. **CHOPARD, L. La faune des Orthoptères des montagnes des Etats-Unis et ses rapports avec la faune paléarctique.** In: **Peuplement des Hautes Montagnes.** *Mem. Soc. Biogéogr.* [*Paris*] 2: 142-149. 1928.—Orthopteroid families are very unequally distributed in the mountains of the U. S. A. Forficulidae, Mantidae, and Gryllidae are absent. Practically all the American forms are found among the acridians and phasgonurids. *Anabrus coloradus* occurs at 13,000 ft., rarely descending to 6000 ft. Other high mountain spp. are named. The European mountain fauna is very similarly distributed.

17903. **COSTA LIMA, A. da. Sobre dois Mantideos pouco conhecidos. [Two little known mantids.]** *Inst. Oswaldo Cruz, Suppl. Mem.* 12. p. 295-296. 1 pl. 1929.—Data on *Eumusonia livida** and *Acanthops erosa**, from Brazil.

17904. **EISENTRAUT, B. M. Beitrag zur Frage der Farbanpassung der Orthopteren and die Färbung der Umgebung. I. Die Farbvariationen von Oedipoda coeruluscens und ihre Beziehung zur Bodenfarbe. [Color-adaptation in Orthoptera and coloring of environment. I. Color-variations in O. coeruluscens and their relation to soil-coloring.]** *Zeitschr. Wiss. Biol. Abt. A. Morphol. u. Ökol. Tiere* 7(4): 609-642. 1 col. pl., 1 fig. 1927.

17905. **GRASSÉ, PIERRE P. Étude ecologique et biogéographique sur les Orthoptères français.** *Bull. Biol. France et Belgique* 63(4): 489-539. 1929.—The term "association" as used by ecologists is considered an unhappy one as it implies finality. The term "group" is suggested, and defined as a collection of species, more or less stable, meeting the same exigencies in the same medium. Morse Researches on N. Amer. Acrididae (1904), distinguished 2 sorts of acridiens, the "geophiles" (earth-lovers), and the "phytophiles" (leaf-lovers), and for each of these created the "open-fields" forms, and the "woods" forms, divided in turn into the "xerophiles" and "hygrophiles," (favoring dryness or moisture). Vestal's groups (1913) are somewhat the same. The author submits the following: Sylvicoles, pratincoles, saxicoles and arénicoles, dwellers in woods, meadows, rocky ground, and sandy soil. The species dominating in the sylvicole group depends upon the type of woods dominating the area, whether leafy (oaks etc.) or pines; that dominating in the pratincole group depends upon whether the prairies are dry, swampy, cut over, or pasturage; that dominating the saxicole depends upon the composition of the dry area, whether fallen land, land meager of vegetation, disintegrated debris, denuded land, etc.; and that dominating the arénicole depends upon the condition of the area, dry dunes, salty sand, hazards to ovipositing, etc. In the formation of groups certain physical features have a preponderant influence, —humidity, evaporation, wind (by favoring evaporation), underbrush (by conserving moisture), temperature, limits of light, nature of soil (with reference to whether it retains or gives up heat and moisture readily, thus favoring or disfavoring ovipositing). The "group" is only exceptionally dependent upon a determined vegetation (only as this creates a favorable atmosphere, or climatic condition). Localities having different plant associations but having in common certain characteristics of humidity, light, temp., movements of the air, etc. become suitable for analogous groups of Orthoptera. "Groups" make and unmake themselves perpetually according to the causes effective in establishing them and the season of the year. The ensemble of a group is not permanent. It has however a biological value in giving an idea of the characteristic of the medium. The influence of radiation, terrestrial magnetism, etc. is unknown and baffling. The faculty of accommodation differs in species, some being tolerant to much wider limits of change than others. The composition of the French orthopteran fauna and geographic affinities of species are discussed.—*I. McCracken.*

17906. **GRASSÉ, PIERRE P. Supplément au Catalogue des Orthoptères de la Dordogne.** *Bull. Soc. Ent. France* **1928**(10): 165-168. 1928.—Six species and 2 varieties captured at Perigord are newly added to the Dordogne list.—*S. B. Fracker.*

17907. **HEBARD, MORGAN. The Orthoptera of Kansas.** *Proc. Acad. Nat. Sci. Philadelphia* **83**: 119-227. 2 Maps, 2 fig. 1931.—A complete list (with detailed data of localities and dates) includes 197 spp., 12 subspp., of 89 genera. *Melanoplus* beameri* (p. 175). *Oligonicella scudderi* (Saussure) (=*Oligonyx bollianus* Saussure); *Diapheromera persimilis* Caudell (=*D. dolichocephala* Brunner); *D. femorata* (Say) (=*Bacunculus laevissimus* Brunner); *Arphia conspersa* Scudder (=*A. frigida* Scudder and *A. infernalis* Sauss.); *A. xanthoptera* (Burmeister) (=*A. crepusculum* Sauss.); *Trimerotropis*

citrina Scudder (=*T. rubripes* Rehn); *T. pistrinaria* Saussure (=*T. bruneri* McNeill); *Melanoplus inconspicuus* Caudell (=*M. latens* Morse); *Pterophylla camellifolia* (Fabr.) (=*Cyrtophyllus intermedius* Caudell); *Ceuthophilus divergens* Scudder (=*C. caecus* Blatchley); *C. silvestris* Brunner (=*C. marshalli* Caudell). A table of the distribution of the Great Plains species, compiled from this and the author's previous lists is included.—*L. P. Rockwood.*

17908. HENRY, G. M. New Ceylonese Mantidae. *Ceylon. Jour. Sci. Sect. B, Zool. and Geol. Spolia Zeylanica* 16: 123-128. 2 pl. 1931.—Iridopteryginae: **MUSCIMANTIS** (p. 123), type *M.* **montanus*** (p. 124). Caliridinae: *Aetaella* **pluvisilvae*** (p. 126).—*T. B. Fletcher.*

17909. KEY, K. H. L. Preliminary ecological notes on the Acridiidae of the Cape Peninsula. *So. African Jour. Sci.* 27: 406-413. 1 pl. 1930.—A general discussion of the unprofitableness of describing the nature of the egg-pods of Acridiidae without specifying the type of soil from which they were collected, is followed by special treatment of the following species with regard to ecology, seasonal distribution, oviposition, nymphs, habits, parasites, etc.: *Paratettix* sp., *Tettiella* spp.*, *Penichrotes meridionalis, Acrida turrita, A. acuminata* [corrected to *propinqua*], *Aiolopus thalassinus, Anaeolopus socius, Paracomacris deceptor, Zacompsa temporalis, Morphacris costata, Heteropternis pudica, Conistica saucia, Pycnodictya obscura, Oedaleus nigrofasciatus*, Acrotylus crassus, A. deustus*, A. patruelis, A. angulatus, Devylderia coryphistoides, Porthetis carinata, Pyrgomorpha capensis, Phymateus morbillosus, Acanthacris ruficornis lineata, Euprepocnemis calceata, Catantops conscitus, Euryphymus haematopus, Calliptamicus semiroseus, Aphanaulacris perficita*, Betiscoides* spp.*—*K. H. L. Key.*

17910. KING, HAROLD H. The desert locust, Schistocerca gregaria, Forsk. *Wellcome Trop. Res. Lab., Ent. Sect. Bull.* 30. 1-12. Map. 1930.—There are 3 spp. of gregarious migratory locusts in the Sudan: *Locusta migratoria, Anacridium moestum* v. *melanorhodon,* and *Schistocerca gregaria.* The first, or European locust, is occasionally met with on the Red Sea littoral during the winter months; the second is a tree locust. Neither of these is a major pest. The last is a periodic plague locust, and ranges from the Punjab to Senegal and southward to Tanganyika and South West Africa. It has solitary, transient, and gregarian forms, which may give rise one to the other under suitable conditions, not yet understood. Complete development requires about 45 days. In migrating they fly at such heights and to such great distances that it is not always easy to locate their origin. Various control measures are discussed, but the favored method is the use of poisoned baits.

17911. REMY, P. Observations sur les moeurs de quelques Orthoptères cavernicoles. *Ann. Sci. Nat. Zool.* 14 (2): 263-274. 1931.—Phasgonuridae: Notes on the habits of the cave-dwelling spp., *Troglophilus cavicola, T. neglectus, Dolichopoda linderi, Tachycines cuenoti,* and *Diestrammena* sp. Examinations were made of the digestive tubes of several specimens of each to determine the nature of the food. They were all found to be zoophagous and phytophagous, feeding on plant matter, fungi, and insects.

17912. SALFI, MARIO. Su Rhacocleis parvula Costa. Descrizione del tipo e note critiche sul genere. [R. parvula. Description of the type and critique of the genus.] *Ann. Mus. Zool. R. Univ. Napoli* 5 (14): 1-5. 1 pl. 1926.

17913. SJÖSTEDT, YNGVE. Acrididen aus dem Museum in Canberra. (The Federal Capital Territory, Australia.) *Arkiv Zool.* [*Stockholm*] 22A (2 No. 7): 1-11. 4 fig. 1931.—A collection belonging to the Canberra Mus. contained, Oedipodidae: *Oedaleus australis* v. **plana** (p. 2), Australia. Pyrgomorphidae: *Desmoptera* **insularis*** (p. 3), Queensland. Acridiidae: **GENURELLIA** (p. 4), erected for *G.* **cylindrica*** (p. 6), N. S. Wales; *Peakesia* **fuscomaculata*** (p. 6), Black Mt., and N. S. Wales, ♀ is compared with *P. coeruleipes* and ♂ with *P. brunnea; P. f.* var. **striata** (p. 8), Black Mt. and N. S. Wales; *Epallia* **exigua** ♀ (p. 8), Queensland; **LAGOONIA** (p. 8), near *Peruana,* erected for *L.* **scabronotum** ♂* (p. 10), N. Australia; *Valanga* **eximia** (p. 10) and *V. nigricornis* ssp. **australiensis** ♂ (p. 11), Queensland. First description of ♀ *Euophistes variegatus* Sjöst.

17914. SJÖSTEDT, YNGVE. Acridiodea aus Kongo und anderen Teilen von Afrika. *Arkiv Zool.* [*Stockholm*] 22A (3, No. 15): 1-64. 9 pl., 2 fig. 1931.—This paper is based on the study of material in the Riksmuseum, Stockholm, chiefly that sent by Lundgren and Stenström. Truxalidae: *Acrida acuminata* v. **histrionica** (p. 2), Congo; *Cannula tesselata* f. **reducta** (p. 4); *C. linearis* f. **macroptera** ♀ (p. 4), Tanganyika; *Parga xanthoptera* f. **musanae** ♀ (p. 4); *P. x.* form **brazzavillei** ♀* (p. 5), *Amphicremna scalata** Kar., emended description; *Machaeridia* **congonica** ♀* (p. 6); *M.* **fragilis*** (p. 7); *Wilverthia* **lundgreni** ♀* (p. 8); *Calephorus compressicornis* v. **camerunensis** (p. 9), Cameroons; *Rodunia deceptor* f. **kilimana** (p. 10); *Diablepia* **stenströmi*** (p. 10); *Cymochta* **congoensis** (p. 12); **PLAGIACRIS** (p. 13), near *Pamacris,* erected for *P.* **bimaculata*** (p. 14); *Chirista compta* v. **auripennis** (p. 14); *Pseudochirista temporalis* ssp. **fasciata*** (p. 15); *Aulacobothrus* **brazzavillei*** (p. 15). Oedipodidae: First descr. of ♂ *Heteropternis kilimandjarica* Sjöst., with f. **flavida** (p. 17). Acrididae: *Hemiacris* **azurea** ♀* (p. 20); **EUBOCOANA** (p. 21), near *Mazaca* and *Barombia,* erected for *E.* **tristis** ♀* (p. 21); *Dibastica modesta* Giglio-Tos first descr. of ♂; *Tristria* **musanae** (p. 23); **KINKALIDIA** (p. 25), near *Gowdeya,* erected for *K.* **robusta** ♀* (p. 26); *Bocagella* **curvula** ♀* (p. 26); *Pteropera* **biloloca*** (p. 28), Cameroons; *Catantops notatus* Karsch (=*C. minimus* Karmy); *C.* **interveniens*** (p. 31); *C.* **pulcher** ♂* (p. 39), Tanganyika; *C.* **somalicus*** (p. 40), Somaliland ("Alessandra"); *C. madimbanus* Giglio-Tos ♂, first descr.; **VITTICATANTOPS** n. subg. (p. 43) is erected to include 13 spp. of *Catantops* including *C.* **dubiosus*** (p. 47), Tanganyika, Ukami, Cameroons; *C.* **zigzag*** (p. 47); *C.* **loveni*** (p. 48), Brit. E. Africa; *C.* **kilimensis*** (p. 49), Kilimanjaro; *C.* **coerulescens*** (p. 49); *C.* **momboensis** ♂* (p. 50), Tanganyika; *C.* **allessandricus** ♀* (p. 51), Somaliland; *Staurocleis* **occidentalis*** (p. 52), Gold Coast; *Caloptenopsis* **congoensis*** (p. 54), with var. **simplex** ♀ (p. 56); *C. speciosa* Sjöst. and *angusticosta* Karsch are maintained as valid spp.; *C.* **corallipes** ♀* (p. 57); *C.* **brazzavillei*** (p. 57); *Tylotropidius* **congoensis*** (p. 58), "Congo"; *T. gracilipes* v. **longipennis** (p. 59); *Ogmothela* **rammei** (p. 61), Tanganyika, with key to spp. of *Ogmothela.* Except where otherwise given, new forms are from French Congo.

17915. UVAROV, B. P. Five new species of the genus Batrachotetrix Sauss. (Orthoptera, Acrididae). *Ann. and Mag. Nat. Hist.* 8 (48): 586-592. 4 fig. 1931.—*B.* **tectinota** ♀* (p. 586), *B.* **turneri*** (p. 587), *B.* **nana*** (p. 589), *B.* **braini** ♂* (p. 590), *B.* **hemiptera*** (p. 591), all from Cape Province; types in Brit. Mus.

17916. UVAROV, B. P. Orthoptera collected by Professor T. D. A. Cockerell in Morocco. *Bull. Soc. Sci. Nat. Maroc* 10 (7/9): 210-214. 4 fig. 1930.—Records of 2 Mantidae, including *Ameles* **maroccana** ♀* (p. 210); 1 Gryllidae; 2 Tettigonidae, including *Steropleurus* **cockerelli*** (p. 211); and 10 Acrididae, including *Sphingonotus* **maroccanus*** (p. 212). Types in Brit. Mus.

PROCHORDATA

(See also in this issue Entries 17474, 17568, 18114)

17917. **ÄRNBÄCK-CHRISTIE-LINDE, A.** Notes on Cnemidocarpa mortenseni Hartm. and Molgula kiaeri Hartm. *Arkiv Zool.* [*Stockholm*] 22A(3, No. 11): 1-10. 1 pl., 2 fig. 1931.—New studies of the external* and internal* structure of these two rare tunicates, which were taken in Trondhjem Fjord, Norway.

17918. **ÄRNBÄCK-CHRISTIE-LINDE, A.** A new styelid tunicate from the Bohuslän coast. *Arkiv Zool.* [*Stockholm*] 22A(3, No. 12): 1-6. 1 pl. 1931.—*Cnemidocarpa devia** (p. 1), Sweden, type in Stockholm Riksmus.

17919. **HORST, C. J. van der.** Quelques observations anatomiques sur l'entéropneuste Glandiceps talaboti (Marion). *Bull. Soc. Sci. Nat. Maroc* 9(1/6): 16-35. 24 fig. 1929.—Only the anterior part of the body was available to Spengel for his description of the species, and the older descriptions are inadequate. Therefore in this article special attention has been paid to the anatomy of the posterior part of the body and of the intestine in particular. The species was dredged at several stations on the west coast of Morocco.—*C. J. van der Horst.*

17920. **JOHN, C. C.** Cephalodiscus. *Discovery Repts.* (*Government Dependencies Falkland Isls.*) 3: 223-260. 6 pl., 7 fig. 1931.—Enteropneusta: descriptive studies of *Cephalodiscus hodgsoni**, *C. nigrescens**, *C. densus**, *C.* (*Orthoecus*) fumosus* (p. 238), Clarence Isl.; **ACOELOTHECIA** (p. 241), subg. in *Cephalodiscus*, based on *C.* kempi* (p. 241), Falkland Isls. The internal anatomy, orientation of organs, proboscis, collar cavities, organs, musculature, vascular system, and nervous system of the groups are discussed. Diagnoses of all known spp. are given in brief, with a bibliography.

17921. **OKA, ASAJIRO.** On the local varieties of the edible ascidian of Japan (Cynthia roretzi v. Drasche). *Proc. Imp. Acad.* [*Tokyo*] 2(6): 292-294. 1 fig. 1926.

17922. **OKA, ASAJIRO.** Ueber eine neue Species von Ecteinascidia aus Formosa. *Proc. Imp. Acad.* [*Tokyo*] 7(4): 173-175. 3 fig. 1931.—*E.* formosana* (p. 173), type in Imperial Biol. Lab.

17923. **WILLEY, ARTHUR.** Glossobalanus berkeleyi, a new enteropneust from the west coast. *Trans. Roy. Soc. Canada, Sect. 5* 25: 19-28. 8 fig. 1931.—*G.* berkeleyi* (p. 19), British Columbia. While the enteropneusts are related to *Amphioxus* by their gill-clefts, the hemichordates are as far removed from the euchordates as they are from the coelenterates, to which they are related specifically by the common possession of chordoid tissue.

CYCLOSTOMATA, ELASMOBRANCHII, AND PISCES

BARTON WARREN EVERMANN, *Editor*
H. WALTON CLARK, *Associate Editor*

(See also in this issue Entries 15132, 15257, 15258, 15391, 15649, 15705, 15725, 15860, 15908, 15958, 15992, 16065, 16257, 16590, 16592, 17280, 17295, 17318, 17320, 17323, 17330, 17370, 17379, 17381, 17386, 17486, 17528, 17537, 17628, 17957, 18018, 18068, 18113, 18114, 18117)

17924. **ALLEN, MORROW J.** A new record of the cusk eel, Otophidium welshi Nichols and Breeder. *Copeia* 1931(1): 28. 1931.—Off the Louisiana coast.

17925. **AMEMIYA, IKUSAKU, and HIROSI NAKAMURA.** On the sexual dimorphism exhibited in rigor mortis in a fish, Hypomesus olidus (Pallas). *Japanese Jour. Zool.* 3(5): 299-303. 7 fig. 1931.—Description of the sexual difference which becomes apparent only in rigor mortis is given. The males have their mouths wide open (often abnormally wide), the ♀♀ entirely or nearly closed. The fins of the ♂ are more erect and more stretched than in the ♀. The whole musculature of the ♂ is stiffer than that of the ♀. The dimorphism is intimately related to the spawning season and observable only in fishes with fully developed gonads; in the growth period it is not apparent. The dimorphism may be due to the different grades either of the tonus or the development of muscles relating to the opening of the mouth and the erecting of the fins and their antagonists. —*I. A. Amemiya.*

17926. **AMEMIYA, IKUSAKU, and SABURO MURAYAMA.** Some remarks on the existence of developing embryos in the body of an oviparous cyprinodont, Oryzias latipes (Temminck et Schlegel). *Proc. Imp. Acad.* [*Tokyo*] 7(4): 176-178. 1 fig. 1931.—Fertilization and egg development normally occur outside of the body. Very rarely internal fertilization takes place and embryogenesis proceeds to some extent within the parent body. Several features with respect to habit and behavior in spawning and the nature of the egg seem to indicate that the fish, although normally oviparous, is transitional between oviparous and viviparous cyprinodonts. As the fish is much used for genetic studies, the attention of geneticists is called to these facts lest the internal embryos be overlooked.—*I. Amemiya.*

17927. **AWERINZEW, S., und NATHALIE SSYTSCH-AWERINZEWA.** Über Clupeiden des Kaspischen Meeres. *Zool. Anz.* 85(3/4): 99-105. 1929.—One month in the spring of 1929 was spent in the study of migrations and races of the 8 spp. of *Caspialosa* (closely related to *Alosa*) recognized from the northern and middle parts of the Caspian Sea. Brief statements of the distribution and places of spawning are given for the several species. Results are given of the study of 500 specimens for specific and racial characters. Vertebrae counts, particularly the caudal vertebrae, and scale counts in certain sections of the body were found useful in distinguishing species and races.—*S. F. Hildebrand.*

17928. **[BELÍAEV, V.] БЕЛЯЕВ, В.** Abramis sapa bergi subs. nova. Подвид белоглазки из южного Каспия. [A new subsp. of A. sapa from the southern Caspian.] [English summary.] Известия Бакинской Ихтиологической Лаборатории (*Bull. Baku Ichthyol. Lab.*) 2(2): 80-98. 1929.—*A. s.* bergi (p. 80). For spawning, it ascends the rivers (chiefly the Kura, in Transcaucasia) during the winter, at water temp. of 5°-10°. The annual catch of the fisheries is 1 to 2 million fish.

17929. **BORODIN, N. A.** Atlantic deep-sea fishes. *Bull. Mus. Comp. Zool. Harvard Coll.* 72(3): 55-89. 5 pl., 1 fig. 1931.—An annotated list of about 63 spp. obtained by C. O. Iselin and associates during 2 cruises in the N. Atlantic in 1928 and 1929, chiefly at depths of 900-1500 m. Descriptive, taxonomic, and distributional notes are given. Alepocephalidae: *Aleposomus cyaneus** Zug., emended description. Maurolicidae: *Ichthyococcus ovatus** (Cocco), emended description; *Zaphotias* J. & E., emended diagnosis. Myctophidae: *Lampanyctus niger* (Günther) (=*Nannobrachium macdonaldi* Goode & Bean). Odontostomatidae: *Odontostomus balbo* atlanticus (p. 78), type in Mus. Comp. Zoöl. Bibliography.

17930. **BUEN, FERNANDO de.** Sur une collection de Gobiinae provenant du Maroc. Essai de synopsis des espèces de l'Europe. *Bull. Soc. Sci. Nat. Maroc* 10(7/9): 120-147. 12 fig. 1930.—*Lesueuria sanzoi**, *Gobius cobitis*, *G. paganellus**, and *G. niger* are recorded from French Morocco.—The author reviews the Gobiinae of Europe and N. Africa, giving keys to the genera, subgenera, and spp. Iljin's genera *Engrauligobius*, *Bubyr*, and *Knipowitschia* are reduced to subgeneric rank under *Pomatoschistus* Gill; **NINNIA** (p. 130), n. subg. of *Pomatoschistus*, type *Gobius canestrini** Ninni; **ILJINIA** (p.

130), n. subg. of *Pomatoschistus,* type *Gobius microps** Kröyer; **ZEBRUS** (p. 135), n. subg. of *Gobius,* type *G. zebrus** Risso; **CHROMOGOBIUS** (p. 135), n. subg. of *Gobius,* type *G. quadrivittatus* Steind.; **MACROGOBIUS** (p. 135), n. subg. of *Gobius,* type *G. cobitis* Pallas. Extensive bibliography.

17931. BULMAN, O. M. B. On the general morphology of the anaspid, Lasanius Traquair. *Ann. and Mag. Nat. Hist.* 6(33): 354-362. 4 fig. 1930.—The bases of the post-cephalic rods were inclined forward to conform with the V-ing of the myotomes; the extremities of the basal plates of these rods, the ascending processes of which likely had an inclination of about 45°, were probably connected by a ligament or cartilage. The ventral surface probably became more flattened from the anterior end of the trunk to the postulated anal fin, the body in the posterior region being in all likelihood extremely flattened. The caudal peduncle was probably lenticular in section. The branchial ossicles, the ascending spines of which were possibly spaced parallel to one another and myoseptal in position, appear to have been united in life by ligaments or cartilage. The branchial band was probably inclined at about 45°. The post-cephalic rods lying behind the branchial region and apparently homologous with the pectoral girdle of more advanced forms, functioned primarily as means of protection of the branchial region from the musculature, and at the same time perhaps gave support secondarily to the "pectoral fin," which was probably not capable of movement. The caudal fin rays were relatively broad and not rigid; there was some widening distally but no increase in number by interpolation. The present reconstruction of *Lasanius* shows a body somewhat similar to that of the Osteostraci. Evidence of scales is imperfect.—*J. H. Wales.*

17932. BULMAN, O. M. B. Note on Palaeospondylus gunni Traquair. *Ann. and Mag. Nat. Hist.* 8(44): 179-190. 1 pl., 5 fig. 1931.—Detailed description of skeleton with drawings of material and reconstructions. The present investigation agrees mainly with Stensiö that *Palaeospondylus* has advanced along the pteraspidomorph line toward *Myxine* further than hitherto suspected. Posterior situation of gill-pouches, probably a rasping tongue, marked reduction of dermal ossification, and probably 2 semicircular canals are noteworthy characters of this organism. Possibly the resemblance between the Devonian *Palaeospondylus* and living myxinoids is due somewhat to adaptive convergence and not that *Palaeospondylus* stands in the direct line of descent of modern forms.—*J. H. Wales.*

17933. CHU, YUANTING T. Index piscium sinensium. *Biol. Bull. St. John's Univ.* [*Shanghai*] 1. i-iv+1-291. 1931.—This work aims to bring together the widely scattered data on the fishes of China. It includes 1533 spp. and subspp., representing 213 families and 592 genera. There is a brief synonymy for most of the forms, and descriptive and taxonomic notes are given for some of them. Distributional data are supplied, with references to the authorities for the records. Cyprinidae: *Opsariichthys bidens* Gunther (=*O. chekianensis* Shaw); *Culter dabryi* Blkr. is removed from the synonymy of *C. recurviceps* (Rich.). An extensive bibliography and an index to technical names are added.

17934. FOWLER, HENRY W. A synopsis of the fishes of China. Part II concluded. The herrings and related fishes. *Hong Kong Naturalist* 2(3): 198-208. 8 fig. 1931. —The present part treats 17 spp. of Engraulidae.

17935. FOWLER, HENRY W. A small collection of fishes from Singapore. *Proc. Acad. Nat. Sci. Philadelphia* 83: 443-448. 1 fig. 1931.—A list of 52 spp., with locality records, descriptive notes, and Malay names of some spp. Sciaenidae: *Johnius* **birtwistlei*** (p. 446), from market, Singapore, type in Acad. Nat. Sci. Philadelphia.

17936. GAETANI, D. de. Uova, sviluppo embrionale e stadi post-embrionali negli Sparidi. 1. Oblata melanura Cuv. [Eggs, embryonal development and postembryonal stages in Sparidi.] *R. Comitato Talassografico Italiano, Mem.* 183. 18p. 1 pl. 1931.—*O. melanura**, description of developmental stages.

17937. GREELEY, J. R. Fishes of the Lake Champlain watershed. *New York State Dept. Conserv. Suppl. to 19th Ann. Rept.* p. 44-87. 16 col. pl., 5 fig. 1929(1930). —Data are given on distribution of species, relative numbers and economic importance of each, life histories, commercial fishes, bait fishes. Tables give native species with date of first recording, introduced species, and species found by survey. A chart shows details of distribution of both native and artificially planted fishes. The author discusses the causes of the remarkable differences between the native fish fauna of various parts of the watershed, probably due to: (1) diverse conditions of environment; (2) existing barriers; (3) prehistoric barriers and water connections (footnote, p. 56, refers to accounts of post-glacial history of the region); (4) influence of sea invasion (responsible for landlocking e.g., *Osmerus* and *Petromyzon*); (5) the greater uplift at the north, which brought about the close of the marine stage, acting as a dam to the lake and sending its waters back into river valleys. There is danger of destroying the natural balance in these waters by unwise artificial stocking and by over-destruction of the three "vermin fish" (the ling, gar, and bowfin) of the region. The author suggests advisable measures of fish protection, particularly by safeguarding natural reproduction by protection of spawning grounds, and by special stocking policy. Annotated list of 78 spp. in 33 fams. is given.—*F. LaMonte.*

17938. GREENE, C. WILLARD. The smelts of Lake Champlain, with supplementary material from the Finger Lakes, the Saranac chain, and the Cold Spring Harbor hatchery, Long Island, New York. *New York State Dept. Conserv. Suppl. to 19th Ann. Rept.* p. 105-129. 1 pl., 3 fig. 1929(1930).—This study of the smelts of Lake Champlain is directed toward ascertaining the biological relationships between the smelts and other members of the fauna of Lake Champlain. It considers the constituents of the smelt population which is comprised of 2 races, one small, growing to approximately 7½ inches, and one large, growing to approximately 14 in. There were no observations of the actual spawning of the smelts of the lake but some correlative observations are discussed. The distribution of adult, yearling, and young smelts is treated with reference to position in the lake as a whole, depths, and habits. The food of each race is analyzed with reference to indications of relationships between the races and to the other fauna of the lake. A list is given of the other fishes of Lake Champlain which use smelts as food. Comparative material of the smelts of Canandaigua and Owasco lakes of the Finger Lakes and of the smelt of the Saranac chain of lakes is discussed at appropriate places throughout the study. Certain recommendations with references to conservation and stocking policies are made upon the basis of the study.—*Author's summary.*

17939. HORNYOLD, A. GANDOLFI. Recherches sur le sexe et l'âge de la petite anguille jaune en Anjou. *Bull. Soc. Zool. France* 54: 214-245. Map. 1929.—The proportion of the sexes differs in different localities. Tables give localities, length, weight, sex, scale zones, otolith zones, distances from the sea (maximum 177 km.). Female yellow eels reach a length of 1 m. and weight of several kilograms; the ♂♂ rarely surpass 45 cm. and a weight of 150 gr.—*F. LaMonte.*

17940. HUNTER, W. A. The romance of fish life. 164p. 17 pl., 13 fig. Macmillan Co.: New York, 1931. Pr. $1.50.—This is a series of 4 popular lectures on types of sea fish, age determination by scales and ear-bones, life history of the eel; habits, migrations, spawning, and life history of the Atlantic salmon; the operations and catches of the steam trawlers, herring drifters, long liners, and the cockle, mussel, oyster, shrimp, and prawn fisheries. The final chapter deals with the animal life on the sea floor, the plankton, and methods of marine exploration.—*C. A. Kofoid.*

17941. MAST, H. Die Ursachen des Rückganges der Fischerei im untern Lech von Augsburg an. *Ber. Naturwiss. Ver. Schwaben u. Neuburg* 46: 11-23. 1929.—The

fresh-waters of the lower Lech River may be divided, from their source downward, into (1) The territory of the trout (*Trutta fario*); (2) that of the grayling (*Thymallus thymallus*); (3) of the barbel, all characterized by strong current and reasonably low summer temp. Then come the stretches of sluggish water with carp, tench, pickerel, pike-perch; and finally the estuary and the sea. In waters fed by alpine snows in summer, the first 3 divisions extend further down, so that in spite of the distance from its source the Lech drainage near Augsburg falls within the territory of the barbel, and in addition contains *Salmo hucho*, the grayling, and occasional trout as resident species. Of greater fishery importance, however, was *Chondrostoma nasus*, which annually ascended these streams from the Danube in swarms, en route to its spawning grounds. The various steps are followed by which the waters near Augsburg have been dammed, or confined artificially, or polluted, and it is pointed out how these changes were detrimental to their fish life. Nevertheless *Chondrostoma* continued to run up stream in numbers each spring, until shut off from its last possible spawning ground. Then it abruptly ceased to appear.—*J. T. Nichols.*

17942. **MYERS, GEORGE SPRAGUE. The killifish of San Ignacio and the stickleback of San Ramon, Lower California.** *Proc. California Acad. Sci.* 19(9): 95-104. 1 fig. 1930.—*Fundulus lima* Vaillant from San Ignacio, is compared with *F. parvipinnis parvipinnis* and *F. p. brevis* and found to be distinct. One difference is the extraordinary development of the scale ctenii in breeding ♂ lima. *Gasterosteus aculeatus* (L.) is recorded from the Santo Domingo River, Lr. California. Vertebrae counts indicate that the supposed difference between the Santa Ana River form (*G. santae-anae* Regan) and other California sticklebacks is without foundation.—*J. H. Wales.*

17943. **NORMAN, J. R. Notes on flatfishes (Heterosomata). III. Collections from China, Japan, and the Hawaiian Islands.** *Ann. and Mag. Nat. Hist.* 8(48): 597-604. 1931.—Bothidae: *Pseudorhombus* Bleeker (= *Spinirhombus* Oshima); *Spinirhombus taiwanus* Oshima, *Pseudorhombus misakius* Jordan & Starks, and *P. formosanus* Oshima are probably identical with *P. cinnamoneus* (Temminck & Schlegel), and *S. levisquamis* Oshima with *P. javanicus* (Bleeker); *Pseudorhombus malayanus* Bleeker is considered distinct from *P. oligodon* (Bleeker); *P. pentophthalmus* Günther (=*P. ocellifer* Regan); *Taeniopsetta radula* Gilbert is considered distinct from *T. ocellata* (Günther); *Anticitharus* Günther is no more than a subgenus of *Arnoglossus* Bleeker (=*Caulopsetta* Gill); *Psettina* Hubbs (=*Crossolepis* Norman); *P. iijimae* Jordan & Starks (=*Arnoglossus profundus* Weber); *Crossorhombus azureus* (Alcock) (=*Scaeops kobensis* Jordan & Starks, *Platophrys microstoma* Weber); **PARABOTHUS** (p. 600), near *Bothus*, type *P.* **polylepis** (*Arnoglossus p.* Alcock) (p. 601), including also *P.* **coarctatus** (Gilbert), n. comb. (p. 601), *P.* **chlorospilus** (Gilbert), n. comb. (p. 601), and *P.* (?) **violaceus** (Franz), n. comb. (p. 601); *Chascanopsetta lugubris* Alcock (=*Trachypterophrys raptator* Franz); *Laeops* Günther (=*Scianectes* [author?], *Lambdopsetta* [author?]). Pleuronectidae: *Poecilopsetta* Günther (=*Paralimanda* Breder); a key is given to the 7 spp. of *Samariscus*, including *S.* **glossa** (*Plagiopsetta g.* Franz) (p. 603). Critical notes are given on a number of other spp.

17944. **PÉRARD, CH. Le Congre caoutchouc. (Contribution à l'étude du métabolisme des graisses chez les poissons.)** *Bull. Biol. France et Belgique* 64(2): 205-210. 1930.—The flesh of *Conger vulgaris* Cuv. brought to the Paris markets for sale assumed the consistency of rubber during the months Jan. to March. This was due to an increase in the water content and a decrease in the fat. At the same time the fat content of the ovaries increased considerably. Since it is probable that this is the migratory season for this species, the fat was mobilized to the ovary to supply sustenance for the tremendous numbers of eggs soon to be laid; part of the fat was used for the energy demands of the individual. This indicates that the reproductive part of the life cycle closely resembles that of the salmon.—*W. Goldfarb.*

17945. **[PROKHOROVA, K. P.] ПРОХОРОВА, К. П. Возраст и темп роста сырка [(Coregonus peled (G)] озер низовья реки Оби. [Age and rate of growth of C. peled from the lakes of the lower Ob region.]** [English summary.] Труды Сибирской Научной Рыбохозяйственной Станции (*Rept. Siber. Sci. Sta. Fisheries* [*Krasnoyarsk*]) 5(1): 59-77. 1 fig. 1930.—Study was made of 230 *C. peled* from Lake Syrkovoe. During the spring flood of 1922, when this lake communicated with the Ob, all but the young generation left the lake. Thus fishes caught in 1928 were mainly 6+ yrs. old, with some of their offspring dating from 1925-26. As no communication with the river has existed since 1922, the presence of the younger age group in the lake shows that the sp. spawns there. No appreciable difference existed between length and weight of ♂♂ and ♀♀. As compared with *C. peled* from the rivers the growth was retarded; in *C. peled* from "taiga" and tundra lakes no such retardation was found.

17946. **RABINERSON, A. Beiträge zur Kenntnis der russischen Formen von Clupea harengus L.** *Zool. Jahrb. Abt. Syst. Ökol. u. Geogr. Tiere* 58(3): 287-338. 1929.—All races of herring known from Russian waters are reviewed. Three subspp. are recognized, namely, *Clupea harengus harengus*, from the Murman coast, *C. h. membras* from the Gulf of Finland, and *C. h. pallasi* from the Pacific Ocean (including the N. Amer. coast), Cheskayæ Bay, the Arctic Ocean, and the White Sea. No new races of *C. h. harengus* were found on the Murman coast. To determine the races there, the fish would have to be studied in connection with specimens from Norway. Two races of *C. h. membras*, a big eyed and a small eyed one, were noted in the Baltic Sea, but their real significance is not clear. *C. h. pallasi*, the fish inhabiting the Gulf of Peter the Great, constitutes a distinct race, and the author regards it as highly probable that in the Far East a northern and a southern race exist. The herring in the White Sea are divisible into 2 races: Large sea herring and fjord herring. No determination was reached relative to the races in the Bay of Cheskayæ. Proportional measurement was virtually useless in identifying subspp. and races, and the classification is based largely on vertebra counts and duration of the growth period, the latter being determined from scale studies.—*S. F. Hildebrand.*

17947. **RACHMANOWA, S. Über Pleuronectes platessa des Barentsmeeres. II.** *Zool. Anz.* 85(5/8): 139-149. 1929.—The specimens on which the study is based were collected in 1927 and 1928 in the Barents Sea in the vicinity of the Murman Coast and in the different gulfs of the Murman Coast. Large plaice were taken principally in the open sea, and they became scarcer as the shore was approached. Small plaice were common on the shores and in the bays. The number of vertebrae and fin rays (dorsal and anal) shows that the plaice of the western part of Barents Sea constitute a distinct race. The O-class shows a large variation in size, due probably to a long spawning season and possibly to other factors not understood. In the II and III year classes, a difference in size is apparent according to place of capture, the fish having grown faster in some localities than others. After assuming the asymmetrical form when the fish come to occupy the bottom, the plaice of the O, I, II, and III year classes (sufficient material for the older classes is lacking) stay in the same place, or at most move about within one gulf or bay. The older plates probably migrate toward the open sea. In the II year class ♂♂ and ♀♀ are of equal size, in the III, IV, and V classes the ♂♂ are larger, but later the ♀♀ overtake the ♂♂ and the indications are that ♂♂ never reach as high an age as some ♀♀ (12 to 18 yrs.). The specimens taken in 1928 are smaller than those taken in the same localities in 1927. Slower growth appears to have taken place in 1928 on account of a pre-

vailing lower temp. of the water. Sexual maturity is reached in 4 yrs. in some individuals in 5 and 6 yrs. in others. Males carry ripe sexual products longer than ♀♀. The principal spawning season extends from April to May, but in some localities it is later than in others, ripe fish having been taken as late as Sept. 1.—*S. F. Hildebrand.*

17948. **RANZI, SILVIO. Stadi giovanili di Sparidi del Golfo di Napoli.** [Juvenile stages of Sparidae of the Gulf of Naples.] *Pubbl. Staz. Zool. Napoli* 10(3): 407-416. 1930.—Distinguishing characters are given for the young of 15 spp., at lengths varying from 5 to 31 mm.

17949. **RUSSELL, F. S. The seasonal abundance and distribution of the pelagic young of teleostean fishes caught in the ring-trawl in offshore waters in the Plymouth area.** *Jour. Marine Biol. Assoc.* 16(3): 707-722. 1930.—The seasonal abundance of the post-larval stages of teleostean fishes in the waters of the English Channel of Plymouth is given, based on collections made by 2 metre stramin ring-trawl over a period of 6 years. The average monthly abundance is given for the following spp.: *Clupea harengus, C. sprattus, Sardina pilchardus, Gadus pollachius, G. merlangus, G. minutus, G. luscus, G. callarias, Onos* sp., *Molva molva, Merluccius merluccius, Raniceps raninus, Capros aper, Zeus faber, Arnoglossus* sp., *Rhombus* sp., *Scophthalmus norvegicus, S. unimaculatus, Zeugopterus punctatus, Pleuronectes limanda, P. flesus, P. microcephalus, Solea vulgaris, S. variegata, S. lutea, Serranus cabrilla, Caranx trachurus, Mullus surmuletus, Ammodytes tobianus, A. lanceolatus, Cepola rubescens, Callionymus* sp., *Labrus bergylta, L. mixtus, Ctenolabrus rupestris, Crenilabrus melops, Centrolabrus exoletus, Trachinus vipera, T. draco, Scomber scomber, Gobius* sp., *Lebetus scorpioides, Blennius ocellaris, B. pholis, B. gattorugine, Chirolophis galerita, Agonus cataphractus, Trigla* sp., *Cottus bubalis, Liparis montagui, Lepadogaster bimaculatus, Lophius piscatorius,* and *Belone vulgaris.* A full bibliography of the literature on post-larval fishes in the Plymouth area is given.—*F. S. Russell.*

17950. **SCHECHTEL, EDWARD. Pokarm powietrzny u pstraga (Trutta fario L.). [Aerial feeding in trout (T. fario).]** [With German summary.] *Roczniki Nauk i Leśnych (Polish Agric. & Forest. Ann.)* 18(1): 85-99. 1 fig. 1927.—Trout get much more of their food from the air than has been commonly supposed.

17951. **SMEDLEY, N. Notes on elasmobranch eggs.** *Bull. Raffles Mus.* 5. [63]-[66]. 3 fig. 1931.—Up to 50 mm., the embryo* of *Chiloscyllium indicum* lies along the upper margin of the egg-case*, with head pointing to anterior end. At 90 mm. the body is curled, and the ventral surface is apposed to the left wall of the case. At 95 mm. the head points to the posterior end, but just before hatching the head is again anterior.

17952. **SPENCE, REGINALD, and S. H. PRATER. The fish supply of the west coast of India, part II.** [Continuation.] *Jour. Bombay Nat. Hist. Soc.* 35(1): 77-88. 5 pl. 1931.—Discusses estuary and inshore fishing and fishing grounds, giving common and scientific names, and brief notes on the habits, value, etc., of numerous species of the region, 19 of which are figured on the plates.—*Evermann and Clark.*

17953. **[SVIDERSKAĬA, A. K.] СВИДЕРСКАЯ, А. К. Возраст и темп роста окуня [Perca fluviatilis (L.)] озера Убинского. [Age and rate of growth of P. fluviatilis from Lake Ubinsk (Western Siberia).]** [English summary.] Труды Сибирской Научной Рыбохозяйственной Станции (*Rept. Siber. Sci. Sta. Fisheries [Krasnoyarsk]*) 5(1): 153-186. 1 fig. 1930.—Study was made of 410 specimens. The rate of growth is greater in the ♀♀; in both sexes it is most rapid in the 2nd year. Among those 2-3 yrs. old were found individuals of a considerably larger race. The smaller race lives in shallower places. Both races are mixed in early life, but separate on attaining sexual maturity. The growth of the smaller race is retarded, and that of the larger race accelerated, as compared with the growth of perch in other waters.

17954. **TANAKA, SHIGEHO. On the distribution of fishes in Japanese waters.** *Jour. Fac. Sci. Imp. Univ. Tokyo, Sect. 4: Zool.* 3(1): 1-90. 3 pl. (2 col.). 1931.—This paper is restricted to the fish fauna of Hokkaido, Hondo, Shikoku, and Kiushiu. The author first discusses a number of examples of variation according to individual, age, sex, season, and locality. Colored plates show 3 color varieties of *Branchiostegus japonicus* and the sexual variation of *Xanthichthys lineopunctatus.* Local variations of *Pterogobius elapoides* are also illustrated. A northern and a southern marine faunal area are delimited; they meet on the Pacific side (where they are strongly differentiated) at Inuba Cape near Chosi, and on the Japan Sea side (where they are weakly differentiated) in the vicinity of Hamada. Not a few fresh-water fishes enter estuarine water, and thus attain a wide distribution. Three fresh-water faunal areas are distinguished: southern Japan, northern Hondo, and Hokkaido. The boundary between the last two is Blakiston's Line. None of the fresh-water spp. are peculiar to Japan. Special comment is made on the fish fauna of the following peculiar areas: Ariake and Yatsushiro Sounds, Inland Sea, Toyama Bay, and Lake Biwa. Extensive lists are given of the fishes of each of the larger faunal areas, and there are also separate lists of the spp. that are common to 2 or more of these areas. Many synonyms are mentioned in these lists. There is an extensive bibliography.

17955. **TREMBLEY, F. J. The gar-pike of Lake Champlain.** *New York State Dept. Conserv. Suppl. to 19th Ann. Rept.* p. 139-145. 3 fig. 1929(1930).—One summer's observation indicated that the gar-pike in Lake Champlain feeds entirely on fish. The species eaten were those common in the weed bed habitat of the gar, viz., perch, sunfish, golden shiners and other minnows. It is suggested that in the absence of gar-pike such species as perch and sunfish might increase to the detriment of game species. Carp were rare when gar occurred. Further work is necessary before a decision can be reached as to the influence of gar-pike on the lake fisheries.—*J. R. Dymond.*

AMPHIBIA AND REPTILIA

G. K. NOBLE, *Editor,* Amphibia

KARL PATTERSON SCHMIDT, *Editor,* Reptilia

(See also in this issue Entries 15262, 15901, 16142, 16592, 17271, 17307, 17311, 17324, 17331, 17337, 17355, 17390, 17396, 17397, 17398, 17406, 18068, 18114, 18117)

GENERAL

17956. **CRAWFORD, STANTON C. Field keys to the lizards and amphibians of British Guiana.** *Ann. Carnegie Museum* 21(1): 11-42. 1931.—The diagnosis of 52 lizard species of the families Gekkonidae, Iguanidae, Teiidae, Amphisbaenidae and Scincidae, and 61 amphibian species of the families Pipidae, Bufonidae, Hylidae, Brachycephalidae, Ranidae, Brevicipitidae, and Coeciliidae believed to occur in the colony. The presence in the colony of *Hyla marmorata* and *Ceratophrys cornuta* is confirmed.—*S. C. Crawford.*

17957. **HARPER, FRANCIS. Notes on fishes, amphibians, and reptiles of Randolph County, Georgia.** *Copeia* 1930(4): 152-154. 1930.—Annotated list of 2 fishes, 10 amphibians, and 8 reptiles.

17958. **MERTENS, ROBERT. Die Amphibien und**

Reptilien der Inseln Bali, Lombok, Sumbawa und Flores. (Beiträge zur Fauna der Kleinen Sunda-Inseln, 1.) *Abhandl. Senckenbergischen Naturforsch. Ges.* 42(3): 117-344. Maps, 10 pl. 1930.—Following a short description of the journey, a list of the fauna and a historical survey of herpetological work in the region of these islands are given. A more detailed discussion is given of the geographical distribution of the Lester-Sunda Amphibia and Reptilia, which belong chiefly to the Indo-Oriental forms but are connected with Papuo-Australian; there is also an endemic element. The herpetological fauna of Bali is not identical with that of Java; Bali from the herpetological standpoint should be placed among the Indo-Australian transition fauna. Also the ecological relations of Amphibia and Reptilia are described: steppe and forest forms, vertical distribution, passive dispersal. The section on evolution takes up the effect of isolation, discontinuous species formation, convergent mutations, etc. Ninety forms are described mostly from material collected by the author, with especial attention to the distinguishing characters, variability, distribution, and habits. *Draco volans* reticulatus (*D. reticulatus* Günther) (p. 249); a length of 3004 mm. is recorded for the largest hitherto known example of *Varanus komodensis*; Sphenomorphus f. florensis* (Weber) (=*S. f. nitidus* Dunn); Java is designated as the type locality of *Python molurus* bivittatus* (*P. bivittatus* Schlegel) (p. 287). Extensive bibliography.—*R. Mertens (transl. by A. M. Boring).*

17959. **PARKER, H. W. Some reptiles and amphibians from S. E. Arabia.** *Ann. and Mag. Nat. Hist.* 8(47): 514-522. 1931.—This is a report on collections made by Bertram Thomas in his crossing of the Rub'al Khali Desert in 1930-31. Two very distinct faunas are represented: that of the forested mountains and valleys inland from Dhufar (Qara Mt. region), and that of the arid, steppe-fringed Rub'al Khali. The first fauna resembles that of the savannah provinces of N. E. Africa, whereas the reptiles of the barren desert are extremely specialized and of decidedly Palaearctic affinities. Not a single reptilian sp. is common to the 2 faunas. From the Qara Mts. and the Dhufar littoral 5 lizards, 8 snakes, and 1 toad are recorded, including: *Pristurus carteri* tuberculatus (p. 515), *Coluber* thomasi (p. 516), and *Bufo* dhufarensis (p. 518); types in Brit. Mus. From the desert 12 lizards and 3 snakes are recorded.

AMPHIBIA

17960. **ANGEL, F. Matériaux de la mission G. Petit à Madagascar: Description de trois batraciens nouveaux appartenant aux genres Mantidactylus et Gephyromantis.** *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(6): 358-362. 1929. —*Mantidactylus* mocquardi (p. 359); *M.* laevis (p. 360); *Gephyromantis* methueni (p. 361). All from Madagascar; types in Paris Mus.

17961. **NAUMOV, GEORG P. Zur Frage der Färbung einiger Salientia während der Brunstzeit.** *Zool. Anz.* 87(1/2): 39-42. 1930.—Seasonal changes and sex difference in the pigmentation of *Bufo viridis, Rana temporaria,* and *R. arvalis.—A. Walton.*

17962. **POPE, CLIFFORD H. Notes on amphibians from Fukien, Hainan, and other parts of China.** *Bull. Amer. Mus. Nat. Hist.* 61(8): 397-610. Map, 39 fig. 1931. —This is a complete list of the Chinese amphibians in the collection of the Amer. Mus. of Nat. Hist. including extensive notes on life histories and habitat preferences based on field observations made by the author. Various adaptations to life in torrential streams are described and discussed. Full summaries of the former contributions to the herpetology of Fukien Province and the Island of Hainan are given. Keys for the identification of anuran larvae are included. Certain species are synonymized as follows: *Tylototriton verrucosus* Anderson (=*T. asperrimus* Unterstein); *Pachytriton brevipes* (Sauvage) (=*Molge labiatum* Unterst.); *Ooeidozyga lima* (Gravenhorst) (=*Osteosternum amoyense* Wu); *Rana spinosa* David (=*R. courtoisi* Angel, *R. dubois-reymondi* Vogt); *R. adenopleura* Boulenger (=*R. caldwelli* Schmidt); *R. andersonii* Boulenger (=*R. melli* Vogt); *Polypedates dennysi* (Blanford) (=*P. feyi* Chen). The following larval forms are described for the first time: *Hynobius chinensis*; Hyla chinensis*; H. sanchiangensis*; H. simplex*; Rana adenopleura*; R. asiatica*; R. guentheri*; R. latouchii*; R. montivaga*; R. nigromaculata mongolia*; R. n. reinhardtii*; R. plancyi*; R.* (sp. ?)*; *Polypedates dennysi*; P. oxycephalus*; P.* (sp. ?)*; *Philautus doriae*; Kaloula borealis**. Three larvae, though reported for the first time, are not described because of their similarity to known forms: *Megophrys kuatunensis; Bufo bankorensis; Polypedates leucomystax megacephalus.—C. H. Pope.*

17963. **STEJNEGER, LEONHARD. Two new tailless amphibians from western China.** *Proc. Biol. Soc. Washington* 39: 53-54. 1926.—*Megophrys* minor (p. 53) and *Rana* jugans (p. 53), both from Szechwan; types in U. S. Nat. Mus.

17964. **TOIT, C. A. du, and D. A. SCHOONEES. The bearing of cranial morphology upon Noble's dictum that Heleophryne is merely a toothed bufonid.** *S. African Jour. Sci.* 27: 439-441. 1930.—The results of an exhaustive investigation of the skulls of *Bufo* and *Heleophryne* were compared with view to verifying Noble's dictum. The conclusions are that with respect to the cranial morphology there is no convincing evidence in support of Noble's pronouncement. From present available data, the authors are not yet prepared to refer *Heleophryne* to any particular family of the Anura.—*J. van de Erve.*

17965. **WALKER, CHARLES F. Description of a new salamander from North Carolina.** *Proc. Junior Soc. Nat. Sci.* [*Cincinnati*] *Memorial Number.* 4 unnumbered pp. 1931.—*Plethodon* welleri, type in U. S. Nat. Mus.

17966. **WELLER, W. H. Notes on Aneides aeneus Cope and Packard.** *Proc. Junior Soc. Nat. Sci.* [*Cincinnati*] 1(1): [2-3]. 1930.—First record from Great Smoky Mts., Tennessee.

17967. **WELLER, W. H. Notes on amphibians collected in Carter Co., Ky., by the Junior Society of Natural Sciences.** *Proc. Junior Soc. Nat. Sci.* [*Cincinnati*] 1 (5/6): [6-9]. 1930.—Observations on 10 spp., including *Pseudotriton* duryi (p.[9]), Kentucky.

17968. **WELLER, W. H. Corrections to herpetological notices.** *Proc. Junior Soc. Nat. Sci.* [*Cincinnati*] 2(1): 7-9. 1931.—*Gyrinophilus* duryi (*Pseudotriton d.* Weller) (p. 8); *Desmognathus fuscus imitator* Dunn (=*D. aureatagulus* Weller).

17969. **WELLER, W. H. A preliminary list of the salamanders of the Great Smoky Mts. of North Carolina and Tennessee.** *Proc. Junior Soc. Nat. Sci.* [*Cincinnati*] 2(1): 21-32. 1931.—Annotated list of 12 spp., with descriptive and taxonomic notes and habitat records.

REPTILIA

17970. **BARBOUR, THOMAS. A new North American lizard.** *Copeia* 1931(3): 87-89. 1931.—*Anolis* stejnegeri (p. 88), Florida, type in Mus. Comp. Zool.

17971. **BURT, CHARLES E. On the occurrence of a throat-fan in the sand lizard, Uma notata Baird, with notes on the adaptive specializations of the form.** *Copeia* 1931(1): 15-16. 1 fig. 1931.—Apparently first record of a throat-fan in the genus *Uma.* Adaptive specialization for life in sandy deserts is shown in body form and coloration.

17972. **COCHRAN, DORIS M. A new lizard from Haiti (Sphaerodactylus stejnegeri).** *Copeia* 1931(3): 89-91. 1931.—*S.* stejnegeri p. (90), Haiti (type, in U. S. Nat. Mus.) and Santo Domingo.

17973. **COCHRAN, DORIS M. New Bahaman reptiles.** *Jour. Washington Acad. Sci.* 21(3): 39-41. 1931.—*Leiocephalus* inaguae (p. 40); *L. carinatus* punctatus (p. 40); *Cyclura carinata* bartschi (p. 40); *Anolis leucophaeus* mariguanae (p. 40). Types in U. S. Nat. Mus.

17974. **HAUGHTON, S. H., and L. D. BOONSTRA. Pareiasaurian studies. Part 1. An attempt at a classification of the Pareiasauria based on skull features.** *Ann. South African Mus.* 28(1): 79-87. 1929.—[For parts 3 and 4, see B. A. 4(10): entries 26206 and 26207.] Clas-

sification based on shape of skull top, shape of snout, nature of cheek, shape of jaw, teeth. Division A, teeth with few cusps irregularly arranged. Subdivision Aa, interorbital width less than tabular. *Bradysaurus* Watson, broad rounded snout, shallow cheek, 6 cusps on tooth, *B. baini* (Seeley), *B.* **seeleyi** (p. 82), *B.* **vawderbyli** (p. 82); these and following types are from S. Africa, *Tapinocephalus* Zone (Middle Permian), unless otherwise noted, and in S. African Mus. **BRADYSUCHUS** (p. 82), snout pointed, cheek deep, cusps unknown, *B.* **whaitsi** (*Pareiasaurus w.* Broom) (p. 82). Subdivision Ab, interorbital width= tabular. **NOCHELESAURUS** (p. 83), snout rather pointed, cheek deep, teeth massive, 6-8 cusps, *N.* **strubeni** (*Pareiasaurus s.* Broom) (p. 83), *N.* **alexanderi** (p. 83). **DOLICHOPAREIA** (p. 83), snout very pointed, cheek deep, *D.* **angusta** (p. 83). Subdivision Ac, interorbital width greater than tabular. **KOALEMASAURUS** (p. 84), orbit in front half of skull, *K.* **acutirostris** (*Pareiasaurus a.* Broom) (p. 84). **BRACHYPAREIA** (p. 84), orbit not in anterior half, cheek broad, low, *B.* **rogersi** (*Pareiasaurus r.* Broom) (p. 84), *B.* **watsoni** (p. 84). **PLATYOROPHA** (p. 84), orbit not in anterior half, cheek narrow, deep, *P.* **broomi** (p. 85). Division B, teeth with 9 cusps irregularly arranged, interorbital width= tabular, *Embrithosaurus* Watson, with *E. schwarzi* Watson. Division C, 9 or more cusps arranged regularly. Subdivision Ca, top of skull narrow, *Anthodon* Owen with *A. serrarius* Owen. Subdivision Cb, top broad, *Pareiasaurus* Owen, skull pointed, cheeks very deep, ilium strongly inclined forward, ischium short, *P. serridens* Owen; *P. russowi* Seeley probably a synonym. *Pareiasuchus* Broom & Haughton, snout rounded, cheek deep and rugose, ilium as above, ischium long, *P. peringueyi* B. & H., *P.* **nasicornis** (p. 86), type from Graaff Reinet (Up. Permian). Subdivision Cc, skull unknown, genus *Propappus* Seeley, ilium not much inclined forward, ischium short. *P. omocratus* Seeley, *P. parvus* Haughton.—*A. S. Romer.*

17975. KLAUBER, LAURENCE M. A new subspecies of the California boa, with notes on the genus Lichanura. *Trans. San Diego Soc. Nat. Hist.* 6(20): 305-318. Map, 1 pl. 1931.—*Lichanura roseofusca* **gracia*** (p. 307), California (type) and Arizona. A detailed comparison is made with *L. r. roseofusca** and *L. trivirgata*. There are notes on synonymy, color, habits, habitat, and distribution, and a key.

17976. KLAUBER, LAURENCE M. A new species of Xantusia from Arizona, with a synopsis of the genus. *Trans. San Diego Soc. Nat. Hist.* 7(1): 1-14. Map, 1 pl. 1931.—*X.* **arizonae*** (p. 3), type in author's coll., the genus being new to Arizona. A synopsis and a key are given for the 5 spp. of this genus, with locality records and notes on habits.

17977. LOVERIDGE, ARTHUR. A new snake of the genus Typhlops from the Belgian Congo. *Copeia* 1931 (3): 92-93. 2 fig. 1931.—*T.* **stejnegeri*** (p. 92), type in U. S. Nat. Mus.

17978. PATTERSON, BRYAN. Occurrence of the alligatoroid genus Allognathosuchus in the Lower Oligocene. *Field Mus. Nat. Hist. Publ.* (297), *Geol. Ser.* 4(6): 223-226. 1 pl. 1931.—*Allognathosuchus* **riggsi** (p. 223), based on mandible* from *Titanotherium* beds, S. Dakota; type in Feld Mus. *Allognathosuchus* is regarded as nearer to *Alligator* than to *Caimanoidea*, the last 2 genera not being especially close.

17979. PENDLEBURY, H. M. A "flying" snake. *Bull. Raffles Mus.* 5. [75]. 1931.—In the Federated Malay States a snake of undetermined sp. was seen to move through the air from near the top of a tall tree at an angle of about 45° to the ground, traveling a distance of about 100 ft. in roughly 7 seconds. The tail was lashed vigorously during the descent, and the snake alighted under complete control.

17980. ROSS, ROLAND CASE. Behavior of the rubber snake. *Copeia* 1931 (1): 7-8 1931.—In Calaveras County, California, *Charina b. bottae* is usually active in summer from about 5 to 8 P.M., and during the morning up to 8 A.M. It retires into the ground in the evening at 52°-50° F. It readily climbs trees with rough bark. In captivity it feeds on young mice.

17981. TAYLOR, EDWARD H. Notes on two specimens of the rare snake Ficimia cana and the description of a new species of Ficimia from Texas. *Copeia* 1931 (1): 4-7. 1931.—Redescription of *F. cana* (Cope), with notes on habits in New Mexico. *F.* **streckeri** (p. 5), Texas, type in Kansas Univ. Mus.

AVES

LUDLOW GRISCOM, *Editor*

(See also in this issue section Economic Ornithology; and Entries 15136, 15913, 16884, 17295, 17329, 18068, 18110, 18112, 18113, 18114, 18117)

GENERAL AND POPULAR

17982. AIKEN, C. E. H. An ancient bird skin. *Auk* 47(1): 101. 1930.—Perfectly preserved skin of a mountain bluebird found among cliff-dweller relics in Utah.

17983. ASHBROOK, FRANK G. The blue book of birds of America: A bird guide containing the following orders of birds: Goatsuckers, swifts, etc., perching birds —including the tyrant flycatchers, larks, crows and jays, starlings, Icteridae, and finches. 96p. Col. illus. Whitman Publ. Co.: Racine, Wisconsin, 1931.

17984. ASHBROOK, FRANK G. The green book of birds of America: A bird guide containing the orders of perching birds including tanagers, swallows, waxwings, shrikes, vireos, warblers, pipits, dippers, mimic thrushes, wrens, nuthatches and creepers, titmice, wren tits, kinglets, gnatcatchers, and thrushes. 95p. Col. illus. Whitman Publ. Co.: Racine, Wisconsin, 1931.

17985. ASHBROOK, FRANK G. The red book of birds of America: A bird guide containing diving birds, swimmers, herons, storks, ibises, marsh dwellers, shore birds, pigeons and doves, birds of prey, cuckoos and woodpeckers. 96p. Col. illus. Whitman Publ. Co.: Racine, Wisconsin, 1931.

17986. BIERENS de HAAN, J. A. Der psychologische Wert der Sprache bei den Vögeln. [The psychological value of language in birds.] *Proc. Internat. Ornithol. Congr.* 7: 186-196. 1930 (1931).

17987. DICE, LEE R. Methods of indicating relative abundance of birds. *Auk* 47(1): 22-24. 1930.—The author suggests a method of keeping lists by half-hours in the field and by habitats, so that the percentage abundance of the various species can be computed.

17988. HOWELL, ARTHUR H. Florida bird life. 579p. 72 maps, 58 pl. (37 col.) Florida Department of Game and Fresh Water Fish: Tallahassee, 1932. Pr. $6.00.—This is a thorough and comprehensive work on the birds of Florida. While based largely upon the author's field work during the past 14 yrs. in behalf of the U. S. Biol. Survey, it takes into account the work of the numerous other ornithologists who have visited the state. Their field activities and their publications are reviewed in some detail in an introductory chapter on the history of Florida ornithology. A list is added of 82 birds originally described from the state. A chapter on the history of bird protection in Florida is contributed by ROBERT W. WILLIAMS. Ten physiographic regions of the state (flatwoods, high pineland, hammocks, sand scrub, swamp, Everglades, salt marshes, sea beaches, prairies, and the keys) are briefly described, with remarks on bird species characteristic of each. Two life

zones (Lower Austral and Tropical) are recognized and mapped. The former, occupying most of the state, is divided into a Floridian fauna, which includes most of the peninsula, and a Louisianian fauna, which includes the northwestern and northern parts of the state, from Gainesville and Jacksonville northward. The Tropical Zone is limited to the keys and a coastal strip extending north to Jupiter. Characteristic birds, mammals, trees, and shrubs of each life zone and fauna are listed. The greater part of the book (pp. 73-472) is devoted to accounts of the 362 species and 61 additional subspecies of birds that have been authentically recorded from the state; 12 additional species, recorded on insufficient evidence, are briefly discussed in a hypothetical list. Each account includes the technical and common names, recognition marks, general range, distribution in Florida, haunts and habits, and food. A vast amount of authoritative information on Florida birds is thus assembled, the previous literature being freely drawn upon. Maps show the distribution of many of the species and subspecies within the state. Of 58 plates, 37 in color by Francis L. Jacques portray about 174 species and subspecies with naturalistic backgrounds; most of the remainder are photographic illustrations of nests and haunts. An exhaustive bibliography of about 1400 titles and an index are added.

17989. **HUBER, WHARTON.** A method of salting and preparing water bird skins. *Auk* 47(3): 409-411. 1 pl. 1930.

17990. **LAMBRECHT, K.** Fortschritte der Palaeoornithologie. *Proc. Internat. Ornithol. Congr.* 7: 73-99. 1930 (1931).—Review.

17991. **LONGSTREET, R. J.** Notes on speed of flight of certain water birds. *Auk* 47(3): 428-429. 1930.—Data on 12 species, with speeds varying from 18 to 41 miles per hour.

SYSTEMATIC

17992. **AIKEN, C. E. H.** A bobwhite × California quail hybrid. *Auk* 47(1): 80-81. 1930.

17993. **BALDWIN, S. PRENTISS, HARRY C. OBERHOLSER, and LEONARD G. WORLEY.** Measurements of birds. *Sci. Publ. Cleveland Mus. Nat. Hist.* 2: i-ix+1-165. 151 fig. 1931.—To supply the lack of a comprehensive manual on the subject, the authors have worked out as accurately as possible a satisfactory system of external measurements for living birds, birds in the flesh, and museum specimens. They describe about 176 measurements with the aim of leading to some recognized standard and consequent uniformity. Where 2 or more methods have been commonly used for the same measurement, the preferred method is indicated. An illustrative figure accompanies the description of nearly every measurement. An appended bibliography of 90 titles includes such publications as contain some separate explanation of the methods of taking measurements of birds; and a digest of the measurements treated in each of these publications is added. Index.

17994. **BANGS, OUTRAM.** The screech owls of eastern North America. *Auk* 47(3): 403-404. 1930.—The author gives a synopsis of the characters and distribution of the 3 subspecies which he recognizes: *Otus asio naevius* (Gm.), *O. a. asio* (L.), and *O. a. floridanus* (Ridgway). The last is resurrected from the synonymy of the second.

17995. **BOWEN, W. WEDGWOOD.** Geographical variation in Trachyphonus margaritatus. *Proc. Acad. Nat. Sci. Philadelphia* 84: 9-10. 1932.—Four subspecies are briefly reviewed, including *T. m.* **berberensis** (p. 10), Anglo-Egyptian Sudan; type in Acad. Nat. Sci. Philadelphia.

17996. **CARRIKER, M. A. Jr.** Additional new birds from Peru with a synopsis of the races of Hylophylax naevia. *Proc. Acad. Nat. Sci. Philadelphia* 84: 1-7. 1932.—*Upucerthia* **aricomae** (p. 1); *U. excelsior* and *U. aricomae* are considered more closely allied to *Cinclodes* than to *Upucerthia; Phleocryptes melanops* **juninensis** (p. 2). The author presents a systematic review of 7 races of *Hylophylax naevia; H. n. consobrina* Todd is removed from the synonymy of *H. n. naevia* (Gm.); *H. n.* **peruviana** (p. 4); *H. n.* **inexpectata** (p. 6); *H. n. theresae* (Des Murs) (=*H. n. intermedia* Carriker). Types of new forms in Acad. Nat. Sci. Philadelphia.

17997. **CHAPMAN, FRANK M.** A new race of Phibalura flavirostris from Bolivia. *Auk* 47(1): 87-88. 1930.—*P. f.* **boliviana** (p. 88), type in Am. Mus. Nat. Hist.

17998. **FRIEDMANN, HERBERT.** A barbet new to science from Kenya Colony. *Auk* 47(1): 85-86. 1930.—*Pogoniulus bilineatus* **alius** (p. 86), type in *U. S. Nat. Mus.*

17999. **FRIEDMANN, HERBERT.** A lark new to science from north-central Kenya Colony. *Auk* 47(3): 418-419. 1930.—*Mirafra* **candida** (p. 418), type in U. S. Nat. Mus.

18000. **GRISCOM, LUDLOW.** New name for Caprimulgus ridgwayi minor. *Auk* 47(1): 85. 1930.—*Caprimulgus ridgwayi* **troglodytes** (*C. r. minor* Griscom, preocc.).

18001. **HOWELL, ARTHUR H.** Description of a new subspecies of the prairie warbler, with remarks on two other unrecognized Florida races. *Auk* 47(1): 41-43. 1930.—*Dendroica discolor* **paludicola** (p. 41), Florida, type in U. S. Nat. Mus.; *Dendroica pinus florida* (Maynard) and *Sitta pusilla caniceps* Bangs are recognized as distinct subspecies.

18002. **KRABBE, TH. N.** To formodede bastarder mellem de to grönlandske ederfuglearter. [Two supposed hybrids between the two Greenland species of eider.] *Vidensk. Meddel. Dansk Naturhist. For. Köbenhavn* 80: 543-555. 3 pl. (1 col.). 1926(1925).—The author describes 2 specimens*, apparently ♂♂, showing characters intermediate between those of *Somateria mollissima borealis* and *S. spectabilis*. They are illustrated by a colored plate. The author discusses the possibility of their being ♀♀ that have assumed the plumage of the ♂ as a consequence of possessing abnormal genitalia. He concludes that they are probably ♂ hybrids between the 2 species mentioned.

18003. **MAY, JOHN B.** Simultaneous loss of primaries in prenuptial molt of loon. *Auk* 47(3): 412-414. 1930.—*Gavia immer* and *G. lumme* [Gaviidae] lose all the primaries simultaneously in the prenuptial molt.

18004. **PETERS, JAMES L.** The identity of the toucans described by Linnaeus in the 10th and 12th editions of the Systema Naturae. *Auk* 47(3): 405-408. 1930.—The status of 4 names in the 10th ed. and of 7 names in the 12th ed. is discussed. *Ramphastos piperivorus* L., *R. picatus* L., and *R. piscivorus* L. are unrecognizable; *R. tucanus* L. (=*R. monilis* P. L. S. Mull.).

18005. **SCHÖNWETTER, M.** Fossile Vogeleischalen. *Novitates Zool.* [*Tring*] 35(2): 192-203. 1929.—A number of shells and fragments, mainly specimens at Tring, are described, including: *Struthio camelus,* from a Nubian grave; *S. chersonensis,* 2 eggs from China resembling the type from the Black Sea; *S. indicus*?, Indian fragments pertaining to an extinct species, not *S. molybdophanes; S. camelus,* fragments from El-Meksa, Sahara; *Psammornis rothschildi,* Saharan fragments; *Aepyornis,* 5 complete shells from Madagascar, in which 4 species are to be distinguished; *Dinornis,* of 3 species, the shell similar to that of *Rhea,* not *Apteryx.* Mongolian fragments in the Brit. Mus. are comparable to eggs of *Struthio camelus spatzi* of W. Africa. The Mongolian "dinosaur" eggs probably do not pertain to that group; the eggs are too large for the small supposed parents; their superficial granulation is not found in recent reptiles. A table of measurements is given for fossil eggs of *Aepyornis, Psammornis, Struthio,* and *Dinornis;* those of living ratites, certain crocodilians, and the Gobi "dinosaur" eggs are included for comparison.—*A. S. Romer.*

18006. **SNYDER, L. L.** Sexual differentiation in the plumage of the black-bellied plover. *Auk* 47(1): 79-80. 1930.—*Squatarola squatarola* seems to be in a primary stage of sex differentiation.

18007. STRESEMANN, ERWIN. Welche Paradiesvogelarten der Literatur sind hybriden Ursprungs? *Novitates Zool.* [*Tring*] 36(1): 6-15. 1930.—The suspicion that certain rare birds of paradise are hybrids has been confirmed by recent explorations in New Guinea, for these rarities have not turned up again among the other specimens collected. The author concludes, from an examination of material in the Tring, British, Leiden, and other museums, that 18 species and 8 genera of the literature are of hybrid origin, and must be removed from the lists of existing species. The hybrid nature of some of these birds had been suggested by previous authors. Differences in the offspring of certain parent species are accounted for by reciprocal crossing. *Rhipidornis gulielmi-tertii* (A. B. Meyer), *Cicinnurus lyogyrus* Currie, and *C. goodfellowi* Og. Grant = *Diphyllodes magnificus* (Penn.) × *Cicinnurus regius* (L.); *Neoparadisea ruysi* van Oort = *Paradisaea m. minor* Shaw × *Diphyllodes m. magnificus* (Penn.); *Paradisaea maria* Rchw. = *P. apoda augustae-victoriae* Cab. × *P. guilelmi* Cab.; *P. duivenbodei* Menegaux = *P. minor finschi* A. B. Meyer (?) × *P. guilelmi* Cab.; *Janthothorax mirabilis* (Rchw.) = *Paradisaea minor* Shaw × *Seleucides nigricans* (Shaw); *J. bensbachi* Büttikofer = *Paradisaea minor* Shaw × *Ptilorhis magnifica* (Vieill.); *Heteroptilorhis mantoui* (Oustalet) = *Ptilorhis magnifica* (Vieill.) × *Seleucides nigricans* (Shaw); *Paryphephorus duivenbodei* (A. B. Meyer) = *Ptilorhis magnifica* (Vieill.) × *Lophorina superba* (Penn.); *Lamprothorax wilhelminae* A. B. Meyer = *Lophorina superba* (Penn.) × *Diphyllodes magnificus* (Penn.); *Parotia duivenbodei* Rothschild = *Lophorina superba* (Penn.) × *Parotia sefilata* (Penn.); *Loborhamphus ptilorhis* Sharpe = *Parotia sefilata* (Penn.) × *Paradigalla carunculata* Less.; *L. nobilis* Rothschild = *Paradigalla carunculata* Less. × *Lophorina superba* (Penn.); *Pseudastrapia lobata* Rothschild = *Paradigalla carunculata* Less. × *Epimachus fastosus* (Herm.); *P. ellioti* (Ward) and *Epimachus astrapioides* Rothschild = *Epimachus fastosus* (Herm.) × *Astrapia nigra* (Gmel.); *Ptilonorhynchus rawnsleyi* (Diggles) = *P. violaceus* Vieill. × *Sericulus chrysocephalus* Lewin; *Paradisea mixta* Rothschild = *Paradisaea minor finschi* A. B. Meyer × *P. apoda augustae-victoriae* Cab. Apparently birds of paradise hybridize more commonly than most other Passeres, though allowance must be made for the enormous number of skins handled by the feather trade and scrutinized for oddities. This state of affairs may be correlated with the possible fact that the ♂♂ take no part in nesting duties. All the described hybrids have been ♂♂; the ♀♀ are not utilized commercially. In crossings, blue-green iridescence × dull black, or dull black × dull black, may result in violet iridescence. In "Notes on the preceding article of Dr. Stresemann," [L. W.] ROTHSCHILD (pp. 16-17) suggests that some of the hybrids may be secondary rather than reciprocal. He also discusses the status of *Paradisaea apoda granti* North.

LIFE HISTORY

18008. ALLARD, H. A. Duck hawk and the evening incoming of the starlings at Washington, D. C. *Auk* 47 (1): 82-83. 1930.—Duck hawk making unsuccessful attacks on flocks of starlings.

18009. BROOKS, W. SPRAGUE. Nest and eggs of Pisobia ruficollis (Pall.). *Auk* 47(1): 76-77. 1930.—Description of 2 nests and sets of egg from Providence Bay, Siberia.

18010. BULL, D. BERNARD. Nesting of Trudeau's tern and description of the young. *Auk* 47(3): 335-337. 1930.—In Argentina *Sterna trudeaui* nests in colonies on aquatic vegetation in lagoons. Food, eggs, and downy young are described.

18012. [DANILOVICH, A. P.] ДАНИЛОВИЧ, А. П. **Некоторые наблюдения над гнездованием обыкновенной чайки (Chroicocephalus ridibundus (L.)). [Nesting of Chroicocephalus ridibundus.]** Гидробиологический Журнал С. С. С. Р. (*Hydrobiol. Zeitschr. U. S. S. R.*) 9(4/6): 145-147. 1930.—On the Dnieper this species is found in small and scattered colonies. The earliest migrants arrive generally in late March; the main migration in 1927 took place on April 1. Eggs are laid in the 2nd half of May. Nests are of 2 types, with or without dry grass lining. The color of the eggs varies greatly.

18013. [DANILOVICH, A. P.] ДАНИЛОВИЧ, А. П. Дополнения к моим "Биологическим наблюдениям над ремезом (Remiza p. pendulina L.)" [Additional observations on Remiza p. pendulina.] Гидробиологический Журнал С. С. С. Р. (*Hydrobiol. Zeitschr. U. S. S. R.*) 9(4/6): 147-150. 1930.—Two nests are described. Near Kiev the first spring migrants are generally seen in late April. The main fall migration occurs in September. With the destruction of alder and willow growths, the species is becoming rare in this locality.

18014. DECKER, F. R., and J. HOOPER BOWLES. The prairie falcon in the state of Washington. *Auk* 47(1): 25-31. 1 pl. 1930.—*Falco mexicanus* nests on cliffs* of varying heights. It commonly uses the old nests of the western redtail and the raven and seems to gather no material of its own for nesting. Its relations with the raven are friendly; with other birds of prey, hostile. During the nesting season it feeds on cottontail and jack rabbits; during the winter, on birds. Nesting behavior, voice, and eggs are described.

18015. GILLESPIE, JOHN A. A spring flight of broad-winged hawks. *Auk* 47(1): 83-84. 1930.—About 75 *Buteo p. platypterus* moving SE., in Pennsylvania on April 21, apparently to escape a threatening rainstorm.

18016. KELSO, LEON. Weight increase of a young sparrow. *Oölogist* 49(2): 17. 1932.—Weight records for *Melospiza m. melodia*.

18017. KOHLER, LOUIS S. Two abnormal sets in 1931. *Oölogist* 18. 1932.—Notes on killdeer and catbird sets.

18018. McADOO, WILLIAM. An osprey tragedy. *Auk* 47(1): 81-82. 1930.—An osprey in Maine, struggling with a large fish it had captured, fell from a height of 60 ft. into the water and was drowned.

18019. MILLER, RICHARD F. Pennsylvania and New Jersey nesting dates for 1931. *Oölogist* 49(2): 14-16. 1932.

18020. NICE, MARGARET M. Five song sparrows raised with a cowbird. *Auk* 47(3): 419-420. 1930.—Five *Melospiza melodia melodia* and 1 *Molothrus a. ater* successfully reared in same nest.

18021. NICE, MARGARET MORSE. A study of a nesting of black-throated blue warblers. *Auk* 47(3): 338-345. 1930.—This study of a family of *Dendroica c. caerulescens* was made in Massachusetts. Four different types of songs by the ♂ are described. The ♀ brooded the young for periods varying mostly from 2 to 20 minutes. The ♂ and the ♀ fed the young with almost equal frequency, at an average of once every 5.6 minutes. Food included small green caterpillars, white grubs, white moths, and a crane-fly. Development of the young and their activities on the last day in the nest are described.

18022. OKADA, Y. K. Distribution and food of Japanese ptarmigan. *Bull. Biogeogr. Soc. Japan* 1(1): Japanese 14-24. 1 map, 1 pl., 1 fig.; English summary 25-26. 1929.—*Lagopus mutus japonicus* is limited to the central part of Hondo, where it has been reported from 60 mts. From examination of its food and from reports, it seems never to descend below timber-line. Its food consists chiefly of leaves, and next of fruits. Over 20 spp. of plants (chiefly Ericaceae) have been determined in its food. The most important sp. is *Empetrum nigrum**. The cones of *Pinus pumila** are eaten to some extent in winter.

18023. PICKENS, A. L. Favorite colors of hummingbirds. *Auk* 47(3): 346-352. 1930.—In 2 areas in the eastern United States practically all red flowers and a majority of orange flowers showed an approximately tubular flower, the form preferred by hummingbirds. Of 110 species of flowers which hummingbirds were seen to visit, 45 were red, 19 purple, and 15 orange. Birds of this tropical family may naturally be expected to

look for intensely colored flowers. Red, orange, and purple are conspicuous by daylight, and more or less invisible by night. Yellow, green, and blue flowers are inconspicuous by day. Red, in sharpest contrast to green, is probably a favorite flower color with hummingbirds everywhere.

18024. **POOLE, EARL L. Winter nesting of the barn owl.** *Auk* 47(1): 84. 1930.—*Tyto alba pratincola* nesting in Oct. and Jan. in Pennsylvania.

18025. **PRILL, A. G. History of an Oregon ruffed grouse, Bonasa umbellus.** *Oölogist* 49(2): 16-17. 1932.

18026. **RENSHAW, GRAHAM. The Mauritius dodo.** *Jour. Soc. Preserv. Fauna Empire* 15. 14-20. 2 pl. 1931.—History of the extinct *Raphus cucullatus*, with notes on restorations.

18027. **SEMPLE, JOHN B. Red-headed woodpeckers in migratory flight.** *Auk* 47(1): 84-85. 1930.—Numbers of *Melanerpes erythrocephalus* apparently crossing Lake Erie from Ontario to Ohio on Sept. 16.

18028. **SHAVER, JESSE M., and GLADYS WALKER. A preliminary study of the effects of temperature on the time of ending of the evening song of the mockingbird.** *Auk* 47(3): 385-396. 2 fig. 1930.—Field observations were made of the time of ending of the evening song of *Mimus p. polyglottos* and temperature at Nashville, Tennessee, from October 23, 1928, to April 30, 1929, a total of 65 evenings—mainly in February, March, and April—being spent in this way. The time of ending of the evening song is highly correlated with the time of sunset, the correlation being .94 ± .01. Perfect correlation would be 1.00. There is little relation between the temperature at the time of song ending and the time of ending of the evening song. The coefficient of correlation here is .27 ± .10. Maximum, minimum, mean, and normal temperatures were also found to be correlated with the time of ending of the evening song in this order: .41, .52, .49, and .81. This last correlation indicates the importance of average temperature on this activity. On the average the mockingbird sings later on warm days and stops earlier on cold days. There is no particular virtue in any one of these temperature groups over the others unless it be that of normal temperature. The correlations of song ending with maximum, minimum, and mean temperatures and with the temperature at the time of song ending are largely expressions of their correlations with normal temperature. This was indicated by eliminating the influence of normal temperature mathematically by the method of partial correlations. Neither small nor large changes in mean temperature from the preceding day are related to changes in time of ending of the song. With changes of 5° F. or more, the coefficient of correlation is .11; with all changes it is .12. The deviations of the temperature at the time of the ending of the mockingbird's evening song from the daily mean temperatures has no significant correlation with the time of ending of this song for r (coefficient of correlation) = −.11.—*Author's summary.*

18029. **SHELLEY, LEWIS O. Companionate feeding activities of a spotted sandpiper and a red-winged blackbird.** *Auk* 47(1): 78-79. 1930.—On a number of occasions an *Actitis macularia* was seen to collect caddis-fly larvae from a pool, bring them to the shore, and allow an *Agelaius phoeniceus* to eat some of them.

18030. **SUGDEN, JOHN W. White pelicans killed by lightning.** *Auk* 47(1): 72-73. 1930.—A soaring flock of 27 *Pelecanus erythrorhynchos* in Utah mostly or wholly destroyed by lightning.

18031. **WILSON, ETTA S. Interesting case of albinism.** *Auk* 47(3): 419. 1930.—Colors and habits of an albinistic *Quiscalus quiscula aeneus* [Icteridae] described.

18032. **WOOD, HAROLD B. Efficiency of propagation of barn swallows.** *Auk* 47(1): 89-90. 1930.—On an island in Rhode Island only 50 nestlings were raised from 92 eggs in 27 nests.

LOCAL AND FAUNISTIC

18033. **BALL, STANLEY C. Sharp-tailed sandpiper in California.** *Auk* 47(3): 417. 1930.—Earliest North American record (1870) of *Pisobia acuminata.*

18034. **BLAKE, EMMET R. The first appearance and breeding of the starling in South Carolina.** *Auk* 47(1): 87. 1930.—First state record in September, 1919.

18035. **BLINCOE, BEN. J. Leach's petrel in Ohio.** *Auk* 47(1): 72. 1930.—First state record of *Oceanodroma leucorhoa.*

18036. **BRADY, ETHEL W. Evening grosbeak in Delaware.** *Auk* 47(3): 420. 1930.—First state record for *Hesperiphona vespertina.*

18037. **BRODKORB, PIERCE. Notes from Illinois.** *Auk* 47(1): 97-98. 1930.—Notes on 8 forms, including first state records of *Hylocichla guttata sequoiensis.*

18038. **BURLEIGH, THOMAS D. Notes on the bird life of northwestern Washington.** [Conclusion.] *Auk* 47(1): 48-63. 1930.—This part of the annotated list treats about 56 species, special attention being given to nesting habits. *Passerella i. iliaca* is recorded as new to the state.

18039. **DANFORTH, STUART T. Notes on the birds of St. Martin and St. Eustatius.** *Auk* 47(1): 44-47. 1930.—A brief description is given of these islands in the Leeward Group of the Lesser Antilles, concerning whose avifauna very little has been previously published. The author presents an annotated list of 38 species observed during a few days in December. Practically all of the records from St. Martin represent additions to its known avifauna. Notes on food and some local names are included.

18040. **DU MONT, PHILIP A. The distribution westward of Seiurus noveboracensis noveboracensis.** *Auk* 47(1): 91-93. 1930.—Specimens recorded from Missouri, Illinois, Iowa, Wisconsin, and Minnesota.

18041. **DU MONT, PHILIP A. Rare Connecticut birds in sanctuary collection.** *Auk* 47(1): 93-94. 1930.—*Somateria mollissima borealis* and *Bubo virginianus heterocnemis,* first and second records, respectively, for Connecticut.

18042. **FLEMING, J. H. Ontario bird notes.** *Auk* 47(1): 64-71. 1930.—Notes on 37 species of unusual or otherwise interesting occurrence. *Olor columbianus* now occurs each spring on Lake Erie in numbers up to 2000; some have died from heavy intestinal infestation with a liver fluke.

18043. **GREENE, EARLE R. White pelican (Pelecanus erythrorhynchos) in Georgia.** *Auk* 47(3): 415-416. 1930.

18044. **GROMME, OWEN J. Bahama pintail in Wisconsin.** *Auk* 47(1): 73. 1930.—First state record of *Anas bahamensis.*

18045. **HACHISUKA, M. U. Avifaunal distribution in the Alps.** *Bull. Biogeogr. Soc. Japan* 1(1): Japanese 5-8; English translation 9-13. 1929.—The author lists 11 distinctly Alpine birds. Among those of northern derivation are Tetraonidae, *Lophophanes cristata, Anthus spinoletta, Turdus torquatus,* and *Acanthis linaria;* of oriental derivation, *Prunella collaris, Montifringilla nivalis, Pyrrhocorax graculus,* and *Tichodroma muraria.* The lowest boundary of the Alpine region is fixed at 394 m. near Geneva.

18046. **HASBROUCK, EDWIN M. Capture of blue goose near Richmond, Virginia.** *Auk* 47(3): 416. 1930.—*Chen Caerulescens.*

18047. **HEILFURTH, FRITZ. Two North American migrants on Las Tres Marias.** *Auk* 47(3): 423. 1930.—*Zonotrichia leucophrys gambeli* and *Circus hudsonius* on these Pacific islands of Mexico.

18048. **HOLLAND, H. M. Starlings in Knox County, Ill.** *Oölogist* 18. 1932.—Observation dates.

18049. **HÖRRING, R. Fuglene ved de danske Fyr i 1923. 41de aarsberetning om danske fugle. [The birds at the Danish lighthouses in 1923. 41st yearly report on Danish birds.]** *Vidensk. Meddel. Dansk Naturhist. For. Köbenhavn* **80: 453-516. 1926 (1925).**—This is a report on about 4600 migrating birds, killed by striking

Danish lighthouses and lightships at night in 1923. They belong to 72 species. Those most numerously represented are *Turdus iliacus,* 882; *Sturnus vulgaris,* 857; *Turdus musicus,* 475; *Alauda arvensis,* 419; and *Erithacus rubecula,* 106. A detailed list of species is given, with dates and localities. A separate list gives the nights on which the birds struck, the weather conditions prevailing at the time, and the species involved. A few data from the Faeroes are included.

18050. **HOWELL, ARTHUR H. Five additions to the birds to Florida.** *Auk* 47(1): 96-97. 1930.—*Stercorarius pomarinus, Larus leucopterus, Puffinus gravis* (first actual specimen), *Lobipes Lobatus,* and *Plectrophenax n. nivalis.*

18051. **HUDSON, GEORGE E. Two and a half years of bird migration at Clemson College, S. C.** *Auk* 47(3): 397-402. 1930.—Migration tables show the extreme dates of arrival and departure of about 100 species. A list of 50 permanent residents is also given.

18052. **JAQUES, F. L. Water birds observed on the Arctic Ocean and the Bering Sea, in 1928.** *Auk* 47(3): 353-366. map. 1930.—An annotated list of about 80 species observed from April to October during a voyage from British Columbia to the vicinity of Herald Isl. and return. *Numenius tahitiensis,* whose breeding grounds were previously unknown, appeared to be nesting near Teller, Alaska.

18053. **JEWETT, STANLEY G. Upland plover (Bartramia longicauda) in Oregon.** *Auk* 47(1): 78. 1930.—First definite state record.

18054. **LONGSTREET, R. J. Further water bird notes from the Florida east coast.** *Auk* 47(1): 95-96. 1930.—Notes on 12 species, most of them of unusual occurrence. For *Aegialitis meloda* a habit is recorded of reaching forward with either foot and beating the sand with rapid strokes, as the bird comes to a stop after a short run.

18055. **REHN, JAMES A. G. An unpublished letter of John K. Townsend.** *Auk* 47(1): 101-102. 1930.—Written in 1834 and containing notes on various birds of Missouri.

18056. **SHIPLEY, DONALD D. The broad-winged hawk in Connecticut in winter.** *Auk* 47(3): 417. 1930.—Specimen taken in January.

18057. **SMYTH, THOMAS. The dickcissel (Spiza americana) in South Carolina.** *Auk* 47(3): 421-422. 1930.—A colony of 50 near Columbia in 1928; only 1 found there in 1929.

18058. **STONE, WITMER. Townsend's Oregon Tubinares.** *Auk* 47(3): 414-415. 1930.—The yellow-nosed albatross, the sooty albatross, the giant fulmar, and the slender-filled fulmar have been kept in the North American "Check-List" for nearly 100 years on the basis of their alleged capture off the mouth of the Columbia River by John K. Townsend. Probably they came actually from the South Pacific and should be dropped from the North American list.

18059. **TAKATSUKASA, N. Geographical distribution of parrots (Order Psittaci) in Asia.** *Bull. Biogeogr. Soc. Japan* 1(2): Japanese 37-45; English summary p. 46. 1929.—The Asiatic range of the Psittaci extends north to Tibet, Yunnan, and Fokien, south to the East Indies, and west to Afghanistan. The distribution of the 3 families and 16 genera confirms the separation of the Oriental and the Australasian Regions. The Philippines are included in the latter region; they have one endemic genus, *Bolbopsittacus,* and a number of geographical spp., not races. The Lesser Sunda Isls. have numerous genera and spp. in common with New Guinea. The distribution of various genera and spp. is shown in tables.—*From author's summary.*

18060. **TOWNSEND, CHARLES W. Birds seen in the Nile valley.** *Bull. Essex Co. Ornithol. Club* 9. 5-9. 1927.

18061. **URNER, CHARLES A. The shore-bird flight of 1929 on the New Jersey coast.** *Auk* 47(3): 424-427. 1930.—Numerical records of 28 species observed during spring and fall migrations, and comparisons with numbers in 1928. The semipalmated sandpiper outnumbered all other species together.

18062. **WEYDEMEYER, WINTON. Four new birds for Montana.** *Auk* 47(1): 98-99. 1930.—Sight records of *Aegialitis semipalmata, Cypseloides niger borealis, Selasphorus alleni,* and *Dendroica fusca.*

18063. **YAMASHINA, YOSHIMARO. The avifaunal distribution of North Japan.** *Bull. Biogeogr. Soc. Japan* 1(2): Japanese 57-64. 1 col. pl.; English summary 65-66. 1929.—The territory north of the Blakiston Line (between Hondo and Hokkaido) is discussed. The avifauna of the Kurils includes 231 spp. and subspp. Hokkaido has 63 forms not found in the Kurils; the latter have 30 forms not found in Hokkaido. A line of zoogeographical demarcation can therefore be drawn between Hokkaido and Kunashiri. Eight forms are distributed throughout Kamchatka to Hokkaido. Two subspp. have a restricted range in the Kurils. Nineteen forms are common to the Kurils and Hokkaido. From Shinshiku Isl. northward, Kamchatkan spp. prevail. The group of islands from Kunashiri to Uruppu is suggested as the southern Kuril region. The northern Kuril group is again divided between Karumukotan and Onnekotan Isls. The primary line, between Uruppu and Shirihoi, joins with the Soya Line, between Hokkaido and Saghalin. Nine spp. migrating to northern Hondo do not cross the Blakiston Line. Hokkaido has 21 summer visitors not found in Saghalin. Two winter visitors to Saghalin are not known from Hokkaido. The Soya Line is by no means less important than the Blakiston Line. There is a colored plate of *Falcipennis falcipennis.*

18064. **ANONYMOUS. Annotated list of birds observed during 1927 by the Essex County [Massachusetts] Ornithological Club.** *Bull. Essex Co. Ornithol. Club* 9. 40-53. 1927.

MAMMALIA

GERRIT S. MILLER, *Editor*

REMINGTON KELLOGG, *Associate Editor*

(See also in this issue Entries 15120, 15136, 15261, 15303, 15926, 16456, 16719, 16873, 17295, 17326, 17327, 17338, 17385, 17434, 18110, 18113, 18117)

18065. **ADLERBERG, G. Preliminary synopsis of Russian and Mongolian wild boars.** Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(4): 91-96. 3 fig. 1930.—On the basis of material in the Zool. Mus. of the Russian Academy of Sciences, the author recognizes 5 subspp. of *Sus scrofa* as occurring from W. Europe to the Sea of Japan, within Russian and Mongolian boundaries: *S. s. scrofa*,* W. Europe; *S. s. attila,* Hungary to Persia; *S. s. nigripes,* Turkestan and Afghanistan; *S. s.* **raddeanus*** (p. 95), Mongolia (type in Russ. Acad. Sci.) and Transbaikalia; *S. s.* **continentalis** (*S. leucomystax c.* Nehring) (p. 96), Amur. Basin.

18066. **ALLEN, GLOVER M. Primates and pangolins from the Asiatic expeditions.** *Amer. Mus. Novitates* 429. 1-7. 1930.—A systematic account of 7 spp., based on material from South China in the American Museum, and consisting chiefly of distributional records and taxonomic discussion. Primates: *Macaca mulatta* (Zimmermann) (=*Macacus lasiotus* Gray, *Inuus sancti-*

johannis Swinhoe, *Pithecus littoralis* Elliot, *P. brevicaudus* Elliot); *Lyssodes speciosus melli* (Matschie) (=*Macacus arctoides esau* Matschie, *Pithecus pullus* Howell); *Pithecus obscurus* barbei (*Presbytis b.* Blyth) (p. 4); and *Hylobates hoolock*, first records for China (Yunnan). Nomarthra: *Manis pentadactyla* dalmanni (*M. d.* Sundevall=*Pholidotus kreyenbergi* Matschie) (p. 6); *M. pentadactyla* pusilla (*M. pusilla* J. A. Allen) (p. 7).

18067. **ALLEN, GLOVER M.** Pigs and deer from the Asiatic expeditions. *Amer. Mus. Novitates* 430. 1-19. 1930.—A systematic account of 3 Suidae and 15 Cervidae, based on material in the American Mus. from China and Mongolia. It consists chiefly of distributional records and taxonomic discussion. *Sus scrofa* ussuricus (*S. u.* Heude,=*S. gigas* Heude, *S. leucomystax continentalis* Nehring) (p. 2); *S. scrofa* chirodontus (*S. c.* Heude, =*S. paludosus* Heude) (p. 5); *Capreolus capreolus* bedfordi (*C. b.* Thomas,=*C. melanotis* Miller) (p. 5); *Elaphodus cephalophus michianus* (Swinhoe) (=*E. michianus fociensis* Lydekker); *Muntiacus muntjak* nigripes (p. 11), Hainan, type in Am. Mus. Nat. Hist.; *M. reevesi* (Ogilby) (=*Cervulus lacrymans* Milne-Edwards, *C. sclateri* Swinhoe, *Muntiacus lacrymans teesdalei* Lydekker, *Cervulus reevesi pingshiangicus* Hilzh., *C. sinensis* Hilzh.); *Rusa unicolor dejeani* Pousarg., emended description; *Cervus canadensis asiaticus* Lydekker (=*C. c. baicalensis* Lydekker); *C. c.* kansuensis (*C. k.* Pocock) (p. 17).

18068. **BAILEY, VERNON.** Animal life of Yellowstone National Park. 241p. Map. 3 col. pl., 67 fig. Charles C. Thomas: Springfield, Illinois, 1930. Pr. $4.00.—The abundance and tameness of protected animals in this area afford unusual opportunities for intimate studies. The author's own observations have been supplemented by reports of other naturalists. The following life zones are briefly described, with a map showing their extent in the park region: Transition (up to about 7000 ft.); Canadian (about 7000 to 8500 ft.); Hudsonian (about 8500 to 9500 ft.); and Arctic-Alpine (above 9000-10,000 ft.). Characteristic plants, mammals, and birds of each zone are mentioned. The greater part of the book is devoted to accounts of 66 spp. and subspp. of mammals, with extensive notes on such topics as local distribution, general habits, food, breeding, enemies, and economic status. The accounts of the larger game animals are especially full and well illustrated. The wild herd of bison perhaps represents a generally unrecognized mountain form distinct from the plains form. Mountain lions, wolves, and coyotes are kept reduced in numbers. The birds are more briefly treated, with notes on the habits and seasonal status of about 209 forms. A few remarks on fishes, amphibians, reptiles, and invertebrates are added. There are colored plates of grizzly bear, bald eagle, and 3 spp. of rosy finches. An index is supplied.

18069. **BORISĬAK, A., and E. BELĬAEVA.** Trilophodon (Serridentinus?) inopinatus n. sp. from the Jilancik beds of the Turgai region. Известия Академии Наук СССР., Отделение Физико-Математических Наук (*Bull. Acad. Sci. URSS., Cl. Sci. Phys.-Math.*) 1928(3): 241-252. 2 pl. 1928.—*T.* inopinatus* (p. 241) is based upon jaws, teeth, vertebrae, and limb bones. It is regarded as allied to the group recently separated as *Serridentinus* Osborn, and is referred to as *S.* inopinatus, n. comb. (p. 252). At the beginning of the Miocene the mastodons exhibited a much greater diversity of forms in Asia than in Europe. Their dispersal from North Africa, the original center of their Lower Tertiary development, was effected through Asia, with subsequent radiation to Europe and N. Amer.

18070. **[BORISĬAK, A. A.]** БОРИСЯК, А. А. Ursus spelaeus rossicus nov. n. [In Russian.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(5): 102-104. 1930.—*U. spelaeus* rossicus* (p. 102), North Caucasus, Quaternary.

18071. **BURRELL, HARRY.** Miscellaneous notes on monotremes. *Australian Zool.* 6(4): 387-392. 1931.—Consideration of characters other than teeth, in discussing the phylogeny of the monotremes, is advocated.—*H. Burrell.*

18072. **BURT, WILLIAM HENRY.** Machaerodus catocopis Cope from the Pliocene of Texas. *Univ. California Publ., Bull. Dept. Geol. Sci.* 20(7): 261-292. 8 pl. 1931.—Emended description of this sp.* based on well preserved jaws and teeth, and hitherto unknown limb and foot bones. Generic distinctions of *Machaerodus, Megantherеon,* and *Smilodon* are tabulated and discussed, as well as relationships with other machaerodonts.

18073. **DAVIES, GLYN.** An unusual sex-ratio in red deer. *Nature* [*London*] 127(3194): 94. 1931.—Of the 19 embryos of which the sex was determinable (taken from hinds shot by stalkers in Scotland, at least 17 of them being ♀♀ which had not borne a calf the preceding season) 18 were ♂.

18074. **DEGERBÖL, M., og N. L. NIELSEN.** Biologiske iagttagelser over og maalinger af hvidhvalen (Delphinapterus leucas (Pall.)) og dens fostre. [Biological observations and measurements of the white whale and its fetus.] *Meddel. om Grönland* 77(3): 117-144. 5 fig. 1930.—Apparently the fetus increases in length from Nov. to April, consequently most of the young are born at about this latter month, most probably in March-May. As a rule only one young at a time is born every second or most likely only every third year. In a single instance, however, three young were born at a time. For the major part of their first year the young seem to be toothless. At the end of the second or the beginning of the third year most of the teeth have worked through the gum. Apparently growth increases quickly during the two first years, about 1 m. per year, then slowly for a rather long time. The average total length of adult animals is in the males 4½ m., in the females a little below 4 m. The largest male measured 572 cm., the largest female 474 cm. In this respect the white whale is in contrast to the large whalebone whales, blue whales, and fin whales, the females of these species being on an average larger than the males. As regards the occurrence of the white whale at West Greenland, a shifting has taken place in recent years in the dates of their autumn and spring passage. For the last 3 years the whale has arrived at Sukkertoppen in the middle of Nov., formerly in the middle of Oct., and left in Jan.; formerly it did not leave until April or the beginning of May. Evidently this is no isolated phenomenon, but must be regarded as corresponding to the recent shifting in the life of other animals (cf. the abundant cod-fishing).—*From author's English summary.*

18075. **ENDERS, ROBERT KENDALL.** Some factors influencing the distribution of mammals in Ohio. *Occ. Papers Mus. Zool. Univ. Michigan* 212. 1-27. 1930.—A study of the relationship between the physiographic provinces and the distribution of mammals in Ohio. Typical habitats in each of these provinces are described with lists of the mammals taken. The distribution of the forest types is only indirectly correlated with physiographic provinces, and there are no significant differences between the mammal communities. Nor is the use of the physiographic provinces adequate to determine the distribution of the mammals of Ohio.—*C. F. Jackson.*

18076. **FLEROV, C.** The white muzzle deer (Cervus albirostris Przew.) as the representative of a new genus Przewalskium. Доклады Академии Наук СССР., Сер. А (*Compt. Rend. Acad. Sci. URSS., Sér. A*) 1930(5): 115-120. 1 fig. 1930.—PRZEWALSKIUM [Cervidae] (p. 115), type *P.* albirostre* (*Cervus albirostris* Przewalski) (p. 120). A detailed description of the sp. is added.

18077. **[FLEROV, K. K.]** ФЛЕРОВ, К. К. Пищуха Северного Урала (Ochotona from the northern Ural.] Ежегодник Зоологического Музея Академии Наук СССР. (*Ann. Mus. Zool. Acad. Sci. URSS.*) 28(1): 138-144. 1 pl., 3 fig. 1927.—*O. hyperborea* uralensis* (p. 139). Skulls are also figured.

18078. **FLORERICKE, KURT.** Wisent und Elch: Zwei urige Recken. 78p. 15 fig. Franckh'sche Verlagshandl. Stuttgart, 1930.—The wisent is described and compared with aurochs and bison. The author discusses primitive

and recent distribution of wisent and elk (Alces), including American moose; historical factors affecting fluctuations in numbers since earliest records; present status throughout the range; hunting methods; food habits; life history; and present needs for their conservation. Various geographic races are discussed.—*O. J. Murie.*

18079. GOLDMAN, E. A. The coyote-archpredator. *Jour. Mammalogy* 11(3): 325-335. 1930.—In recent years coyotes have considerably increased their range in North America. Their depredations lead to serious loss of domestic stock and damage to game and fur-bearing animals. By carrying rabies they are a menace in several western states, to human life as well as to live stock. They do not suffice to control the excessive increase of injurious rodents, and their value in the elimination of unfit individuals of wild spp. valuable to man may be greatly exaggerated. Poisoning, though objectionable, is the most effective known method of control.—*L. R. Dice.*

18080. [GROMOVA, V. I.] ГРОМОВА, В. И. О типе Bison priscus Bojanus. [The type of Bison priscus.] Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1930(17): 459-462. 1 fig. 1930.—Bojanus' name was based upon 5 specimens from various localities. The author designates as type a specimen* in the Zool. Mus. Russian Acad. Sci. (the first on Bojanus' list), thereby rejecting Hilzheimer's selection of the Lombard specimen in the Pavia Mus. The former specimen was brought by Gmelin from the Lena region of Siberia, not the Anadyr region, as Bojanus and others have supposed. A complete redescription is given.

18081. HALL, E. RAYMOND, and HANDEL T. MARTIN. A skull of Nothocyon from the John Day Oligocene. *Bull. Univ. Kansas, Sci. Bull.* 19(2): 283-285. 1 pl. 1930.—Description of specimen of *N. lemur** (Cope) from Oregon, including associated upper and lower teeth; also critical notes on several other spp. of *Nothocyon.*

18082. HALL, E. RAYMOND. A new subspecies of Peromyscus, from San José Island, Lower California, Mexico. *Proc. Biol. Soc. Washington* 44: 87-88. 1931.—*P. eremicus* **cinereus** (p. 87), type in Mus. Vert. Zool., Univ. of California.

18083. HARMER, SIDNEY F. The false killer dolphin. *Nature* [*London*] 127(3193): 60. 1931.—The author doubts that *Pseudorca crassidens* is on the verge of extinction, and quotes various records of occurrence in widely separated regions.

18084. HELBING, H. Carnivoren aus der miocänen Molasse der Schweiz. *Eclogae Geol. Helvetiae* 21(1): 232-244. 13 fig. 1928.—Discusses and figures 5 carnivorous teeth from the Swiss Miocene.—*W. Berry.*

18085. HELBING, H. Carnivoren aus dem Miocän von Ravensburg und Georgensgmünd. *Eclogae Geol. Helvetiae* 21(2): 377-385. 5 fig. 1928.—Brings together the description of 4 carnivores from the Miocene Molasse of Switzerland.—*W. Berry.*

18086. HEPTNER, W. G. Notizen über die Gerbillinae (Mammalia, Muridae) IV. Über die Benennung der transkaukasischen Wüstenmäuse der meridianus-erythrourus-Gruppe. *Zool. Anz.* 94(9/10): 273-276. 1931.—The desert mouse from the Transcaucasus has been known as *Meriones caucasicus* Brandt but this name is now described for the first time as *M.* **caucasius** (p. 275) (Heptner ex Brandt), Transcaucasia (type) and Persia. Type in Zool. Mus. Univ. Moscow.

18087. KEELER, CLYDE E. The laboratory mouse. Its origin, heredity, and culture. 81p. 36 fig. Harvard Univ. Press: Cambridge, 1931.—A brief statement of the geographical distribution of the mouse is followed by an account of the antiquity of the fancy mouse. Dominant spotting, albinism, and waltzing all were recorded before the present era; other breeds were distinguished much later. Since in the classical literature the same word, *Mus,* was used for both the mouse and the rat, it is possible to determine which is meant only from indirect evidence. Some 24 breeds of mice are described briefly and a table is given of 27 varieties, giving for each the fanciers' term, the scientific term, and the genetic formula. The genetics of normal and abnormal inheritance are considered, and a chapter given on the laboratory breeding and care of mice. 21 life-size figures, in black and white, indicate the habit and coat color in the several breeds.—*H. H. Donaldson.*

18088. LEUTHARDT, F. Neue Funde von Resten grosser Huftiere aus dem Diluvium der Umgebung von Liestal. *Eclogae Geol. Helvetiae* 22(2): 162-165. 1929.—Describes the new finds of *Cervus claphus Linné* and *Bison priscus* H. v. Meyers.—*W. Berry.*

18089. MACPHAIL, J. G. S. The Bandala method of hunting elephant on foot. *Sudan Notes & Rec.* 13(2): 279-283. 1930.—The habits of elephants are discussed.—*W. W. Bowen.*

18090. MERTENS, ROBERT. Zwei neue Palmenroller von den Kleinen Sunda-Inseln. *Zool. Anz.* 84 (11/12): 333-336. 1929.—*Paradoxurus hermaphroditus* **rindjanicus** (p. 333), Lombok; *P. h.* **lehmanni** (p. 334), Sumbawa (type) and Flores. Types in Senckenberg Mus.

18091. MUNRO, T. M. Musquash in Scotland. *Scottish Nat.* 1931(189): 65-70. 1931.—The author reviews the spread and destructive activity of the American *Ondatra zibethica* in Central Europe. It is also likely to become a pest in Scotland, where it has been introduced.

18092. PEARSON, JOSEPH. The false killer dolphin. *Nature* [*London*] 127(3201): 340. 1931.—*Pseudorca crassidens* is regarded as a subantarctic form occasionally wandering northward in large schools into the Pacific, Atlantic, and Indian Oceans.

18093. PILGRIM, GUY E., and N. K. N. AIYENGAR. The lower canine of an Indian species of Cono(h)yus. *Rec. Geol. Surv. India* 61(2): 196-205. 1 pl. 1928.

18094. SCHMIDTGEN, O., und W. WAGNER. Eine altpaläolithische Jagdstelle bei Wallertheim in Rheinhessen. *Notizbl. Ver. Erdkunde Hessischen Geol. Landesanstalt Darmstadt.* 5(11): 58-89. 1928(1929).—The hunting site can be correlated with the terraces of Meadow Brook and associated loesses, with their loam zones, and the conclusion drawn that man in the close of the first glacial advance of the last (Würm) ice invasion was a hunter. The animal remains give a comprehensive picture of the fauna in the Rheinhessen steppe. There are bison, wolf, deer, horse, rhinoceros, pig, elephants, etc. Especially important is *Bison priscus* making up about 80% of all the animals of the chase present. Young animals dominate. Furthermore, there occur primitive tools of bone, the oldest yet discovered, which had been fashioned for skinning, cutting meat, and skin-dressing. Also there are stone tools of melaphyre and quartzite, similar to those of Mousterian age found in the terraces of Wiesback. The locality seems to have been a sort of bog where the steppe animals came to drink.—*O. Schmidtgen (transl. by B. Willard).*

18095. SCHOUTEDEN, H. Les Gorilles Congolais. *Rev. Zool. et Bot. Africaines* 19(2): 298-302. 1930.—The author reviews the distribution of the 5 races of *Gorilla* known in the Belgian Congo, pointing out that the range of each corresponds to that of some other primate. *G. gorilla gorilla* is definitely recorded from Mayumbe, though very rare there. The provenance of specimens of *G. g. uellensis* from the Uele region is maintained as authentic. *G. g. rex-pygmaeorum* is widely distributed in the great forest of eastern Congo. *G. g. graueri* and *G. g. beringei* are briefly discussed.

18096. SCHWARZ, ERNST. Ein neuer Galago vom Albert-See. *Rev. Zool. et Bot. Africaines* 19(3/4): 391-392. 1930.—*G. senegalensis* **inustus** (p. 391), Uganda, type in Congo Mus.

18097. SEREBRENNIKOV, M. Synopsis of Russian squirrels (Sciurus, Rodentia). Доклады Академии Наук СССР., Сер. А. (*Compt. Rend. Acad. Sci. URSS., Sér. A.*) 1928(20/21): 421-426. 1928.—This systematic account of 9 subspp. and 1 natio of *Sciurus vulgaris* and 1 subsp. of *S. anomalus* includes the original reference, citation of type (when known), type locality, distribution, diagnosis, and measurements of each. *S. vulgaris* **nadymen-**

sis (p. 422), Siberia; *S. v. martensi* natio altaicus (p. 422), Altai Mts. Types in Zool. Mus. Acad. Sci., USSR. Critical notes are given on *S. calotus* Auct.

18098. **SETON, HENRY.** A new Heptodon from the Wind River of Wyoming. *Proc. New England Zool. Club* 12: 45-48. 1931.—*Heptodon* brownorum (p. 45), Lambdotherium zone, on Muddy Creek, in the Wind River Basin. Type in Mus. Comp. Zool., Cambridge.

18099. **SHERWOOD, WILLIAM E.** The ways of Spilogale. *Nature Mag.* 17(4): 224. 2 fig. 1931.—Popular account of habits of the spotted skunk*, including standing and walking on its forelegs.

18100. **SHORTRIDGE, G. C.** Felis (Microfelis) nigripes thomasi subsp. nov. *Rec. Albany Mus.* [*Grahamstown*] 4(1): 119-121. 1 pl. 1931.—From Cape Province, type in Albany Mus.

18101. **SMITH, G. ELLIOT.** Validity of the genus Sinanthropus. *Nature* [*London*] 127(3200): 304-305. 1931.—*Sinanthropus* is maintained as distinct from *Pithecanthropus*.

18102. **SNYDER, L. L.** A faunal investigation of King Township, York County, Ontario. II. The mammals of King Township. *Trans. Roy Canadian Inst.* 17 (2): 173-181. 1930.—An account of 30 spp., with notes on habitats, habits, and measurements.

18103. **STANDING, H. F.** Rapport sur les ossements sub-fossiles provenant d'Ampasambasimba. *Bull. Acad. Malgache* 4: 95-100. 2 pl. 1905-06(1928).—The following are from Madagascar: *Mesopropithecus pithecoides**, genus and sp. listed here as new but published in 1908; *Archaeolemur platyrrhinus**, spp. listed here as new but published in 1908: *Hapalemur* gallieni (p. 99). A. *Chirogaleus* sp. is also described.

18104. **STEHLIN, H. G.** Bemerkung über die Hirsche von Steinheim am Aalbuch. [Notes on the stags (Cervinae) of Steinheim am Aalbuch, Württemberg.] *Eclogae Geol. Helvetiae* 21(1): 245-256. 7 fig. 1928.—Discussion of *Euprox furcatus** Hensel and *Hetroprox Larteti** Fihol.—*W. Berry.*

18105. **STEHLIN, H. G.** Ueber eine Altpleistocäne Säugetierfauna von der Insel Pianosa. *Eclogae Geol. Helvetiae* 21(2): 433-460. 14 fig. 1928.—Enumerates 6 new finds of mammals from this locality.—*W. Berry.*

18106. **STEHLIN, H. G.** Bemerkungen zur Vordergebissformel der Rhinocerotiden. *Eclogae Geol. Helvetiae* 23(2): 644-648. 3 fig. 1930.—A new specimen of *Engyodon* sp. is figured from the lower Stampien of Puy-Laurens (Tarn).—*W. Berry.*

18107. **STEHLIN, H. G.** Die Säugetierfauna von Leffe (Prov. Bergamo). *Eclogae Geol. Helvetiae* 23(2): 648-681. 9 fig. 1930.—Describes 10 different mammals from the lignite complex (Pliocene or very early Pleistocene) of Leffe. 10 spp. of Mollusca and 10 spp. of fossil plants are listed which indicate that the lignite is early Pleistocene.—*W. Berry.*

18108. **STOLTE, HANS-ADAM.** Mus spicilegus und der "Formenkreis" des Mus musculus L. Bemerkungen zu einer Arbeit von E. Mohr und G. Dunker: Vom "Formenkreis" des Mus musculus L. *Zool. Anz.* 90(7/8): 206-208. 1930.—*Mus spicilegus* is rather strictly nocturnal, and is free from the odor of *Mus musculus*. It has displaced the latter in certain places near the Baltic Sea. Cold may have the effect of hindering the relative growth of the tail. The 2 forms should be differentiated on biological rather than on morphological grounds. *M. spicilegus* is considered a good sp.

18109. **YOUNG, CHUNG-CHIEN.** Fossile Nagetiere aus Nord-China. *Palaeontologia Sinica Ser. C* 5(3): 1-82. 3 pl. 1927.—Pleistocene or subfossil remains are described of: *Spermophilus* cfr. *mongolicus; Cricetulus* cfr. *songarus; Mus* cfr. *plumbeus; M.* cfr. *rattus; Arvicola brandti; A.* cfr. *strauchi; Siphneus fontanieri; Hystrix* cfr. *subcristata; Lepus* cfr. *oiostolus; L. tolai; Ochotona daurica*. Pliocene and Upper-Miocene spp. described are:? *Tamias* wimani* (p. 8); *Castor* zdanskyi* (p. 10); *Dipoides majori** Schlos., emended description; **PARALACTAGA** (p. 13) (Dipodidae), near *Alactaga*, type *P.* anderssoni* (p. 15); *P.* major* (p. 17); **PROTALACTAGA** (p. 18), type *P.* grabaui* (p. 19); **PLESIODIPUS** (p. 20), type *P.* leei* (p. 23); *Cricetulus* grangeri* (p. 26); **PARACRICETULUS** (p. 30), type *P.* schaubi* (p. 30); *Gerbillus* matthewi* (p. 37); *Siphneus* tingi* (p. 45); *Rhizomys* schlosseri* (p. 49); *R. troglodytes** Matt. & Grang.; *Lepus* wongi* (p. 59); *L.* aff. *annectens** Schlosser *Caprolagus* brachypus* (p. 63). Their geologic range, distribution, and origin are discussed and a comparison is made with the fossil rodents of Mongolia.—*A. Schreuder.*

SYSTEMATIC ZOOLOGY

(GENERAL)

(See also in this issue Entries 15117, 15135, 15162)

18110. **BOURBON, SIXTE de, et GAËTAN de BOURBON.** Résumé des recherches zoologiques de la mission Alger-Tchad. *Bull. Mus. Nation. Hist. Nat.* [*Paris*] 1(5): 283-291. 1 map. 1929.—Brief descriptions of the regions of Hoggar, Aïr, Chad, and middle Niger, with general remarks on their fauna (especially mammals and birds). The massif of Aïr forms the approximate boundary between the Palaearctic and the Ethiopian regions. The fauna of the middle Niger is very similar to that of Chad.

18111. **GESTRO, R., e D. VINCIGUERRA.** La fauna. In: Resultati Scientifici della Missione alla Oasi di Giarabùb (1926-1927). *Fasc. 4. Notiz. Geogr.-Fis. e Biol.* 531-549. R. Soc. Geogr. Ital.: 1931.—A résumé of the results of faunal studies in this region, with discussion of its faunal affinities and with remarks on the animal groups represented. A bibliography lists the separate papers already published on the various groups.

18112. **GHIGI, A., et al.** Materiali zoologici raccolti dalla spedizione Albertini nello Svalbard Nord-Orientale. II. Elenco delle specie animali raccolte. *Boll. Zool. Unione Zool. Italiana* 2(4): 129-134. 1931.—The annotated list includes: birds determined by A. GHIGI; chironomids determined by M. GOETGHEBUER; Collembola, determined by E. CAROLI; aracnids, determined by L. di CAPORIACCO; amphipod crustacea determined by A. VECCHI; Oligochetes, determined by U. PIERANTONI; Nemathelminthes, determined by D. BRIGHENTI; Platyhelminthes, determined by D. BRIGHENTI; and Siphomedusal, determined by V. NEPPI.

18113. **KEMP, STANLEY, and A. L. NELSON.** The South Sandwich Islands. *Discovery Repts.* (*Government Dependencies Falkland Isls.*) 3: 135-190. 15 maps, 13 pl., 16 fig. 1931.—This report, while primarily geographical and geological, includes some brief notes on the fauna (chiefly seals, whales, sea birds, fishes, and marine invertebrates) and on the vegetation (algae). Information previously available on these islands was very scanty.

18114. **LUEDERWALDT, HERMANN.** Resultados de uma excursão scientifica á Ilha de São Sebastião no littoral do Estado de São Paulo, e em 1925. *Rev. Mus. Paulista* [*São Paulo*] 16: 1-75. 5 photographs. 1929.—In Sept. and Oct. of 1925, the author and Dr. Waldo Schmidt studied the fauna of the mountainous Island of St. Sebastian which is extensively covered with a primeval forest. The rich fauna of the island is closely related to that of the adjacent mainland of Brazil. Some comparisons of the author's study of this region is made with von Thering's report (1897) showing changes which have taken place and comparing the fauna of the mainland and island. One vertebrate, a rodent, *Mesomys thomasi;* a worm-like amphibian, *Siphonops insulanus*

R. v. Ihg.; and a beetle, *Hepadrinus luederwaldti* Geb. (Tenebrionidae), are 3 distinct forms not found on the continent. Three species, the woodpeckers *Colaptes campestris* Vieill. and *Furnarius rufus-badius* Licht., and the leaf-cutting ant, *Atta sexdens,* have migrated to the island since the preceding survey by von Thering. Thirty-two spp. of mammals, 22 of which inhabit the island, were recorded and observed. *Didelphyus marsupialis aurita* abundant on the mainland, is entirely absent from the island, the smaller opossums and rodents constituting the island Mammalia. The avian fauna, due to the narrow channel separating the mainland and island, is the same; 120 spp. of birds of which 30 are found on the island were recorded and observed. Fourteen spp. of reptiles of which 8 occur on the island were recorded and observed. Of the 12 spp. of amphibia found on the island only 1 Hylidae was taken. Among the insular fresh water fish, representatives of the Loricaridae, Callichthydae, Trichomysteridae, Siluridae, Cyprinodontidae, and Gymnotidae occur. A species of *Amphioxus* is very abundant on the slimy sand banks of the strand. About 108 species of insects were recorded of which only a few were taken on the island. Eleven spp. of spiders and millipeds are recorded, 3 of the former occurring on the island. Fifty-nine species live in fresh water and 8 spp. of mangrove crabs were found on the island, but *Uca morocoani* Latr. mentioned by v. Thering was not found. Mollusks are very abundant. Von Thering recorded 129 spp., the author collected 177 species. Out of 12 terrestrial or freshwater spp. 7 are on the island. One earthworm (*Eudrilus eugeniae* Kimb.), several land planarians, and 10 spp. of marine worms are recorded from the island. Twenty-three spp. of echinoderms were collected, among them *Encope emarginata* Les., and the parasite *Dissodactylus encopei* Rathb. Twenty-three spp. of Coelenterata were collected including many *Physalia, Velella, Porpita,* fewer Cubomedusae, Cerianthiidae, Actinea, Gorgoniidae. *Mussa hartti* Verrill and *Lophelia* are not rare. Coral beds are lacking. Five determined species of ascidians are recorded, *Phallusia nigra* Lav., being very abundant. About 8 spp. of marine Bryozoa were found. Sponges are very abundant. Land plants from the mainland and from the island were observed and recorded, also about 20 spp. of algae were collected; these will be reported on later.—*H. Luederwaldt (transl. by C. J. Shirk).*

18115. **WARTHIN, ALDRED S. Jr. Micropaleontology of the Wetumka, Wewoka, and Holdenville formations [Oklahoma].** *Oklahoma Geol. Surv. Bull.* 53. 1-94. 7 pl., 1 map. 1930.—This paper aims to describe most of the common microscopic fossils of a portion of the geologic column large enough to be useful in determining the ranges of the fossil species, and to include all the groups of animals which seem to be valuable in making age determinations of the strata. The author considers "microscopic" fossils those which either whole or in readily recognizable fragments will pass through a sieve having meshes 2.5 mm. square. Foraminifera, Miliolidae: **RECTOCORNUSPIRA** (p. 15), related to *Cornuspira,* type *R.* **lituiformis*** (p. 16), Pennsylvanian, Lr. Wewoka formation, also *R.* **calcarina*** (*Lituotuba c.* Waters) (p. 17), *R.* **holdenvillana*** (p. 17), Mineral Wells formation, and those species referred to *Ammodiscus* and *Lituotuba* by Moreman (*Jour. Paleont.* 4: 58-59. 1930). A key to the Carboniferous spp. of *Rectocornuspira* is given. Endothyridae: *Endothyra* **rotaliformis*** (p. 20), Up. Wetumka formation; *Bradyina* Möller (=*Glyphostomella* Cushman & Waters); *Tetrataxis corona* v. **pauperata*** (p. 26), Holdenville formation, Homer limestone member. Nodosinellidae: *Nodosinella* ? **fittsi*** (p. 27), Lr. Wewoka formation; *N.*? **delicatula*** (p. 28), Holdenville formation, Sasakwa limestone member; *Monogenerina* **grandis*** (p. 29), Oologah limestone. Bryozoa, Fenestellidae: *Fenestella* **sasakwaensis*** (p. 36), Holdenville formation, Sasakwa limestone member. Acanthocladiidae: *Septopora* ? **elliptica*** (p. 39), Wewoka formation. Rhabdomesontidae: *Rhabdomeson* **magnum*** (p. 40), Holdenville formation; *Streblotrypa* **multipora*** (p. 42), Wewoka formation. Cystodictyonidae: *Prismopora* **lobata*** (p. 43), Wewoka formation. Gastropoda. Bellerophontidae: **EUPHEMITES** (*Euphemus* McCoy, preocc.) (p. 44). Pyramidellidae: *Loxonema* **zygopleuroides*** (p. 48), *Zygopleura* **trimera*** (p. 50), *Z.* **obsoleta*** (p. 51), *Hemizyga* **nodosa*** (p. 51) and *Orthonema* **strigatum*** (p. 53), Holdenville formation. Cerithiidae: *Aclisina stevensana* v. **gibbosa*** (p. 54), Holdenville formation. Ostracoda, Aparchitidae: *Paraparchites* **latidorsatus*** (p. 55), Lr. Wewoka formation; *P.* **cuneatus*** (p. 56), Holdenville formation. Beyrichiidae: *Hollinella,* the first generic name applied to the binodate forms, originally included only those with incomplete frills. As this name was, however, the first to apply to even a stage of these forms, it must be used for the entire group, and later names for that group become synonyms. **CORNIGELLA** (p. 59), resembling *Maurgella,* type *C.* **minuta*** (p. 59), Up. Wetumka formation; *Beyrichia tuberculospinosa* Jones & Kirkby (p. 59) should also be referred to this genus. Kloedenellidae: *Jonesina* **ampla*** (p. 61), Holdenville formation; *J.* **acuneata*** (p. 61), Wetumka formation; *Kirkbyina* **laevis*** (p. 62), Wewoka formation. Kirkbyidae: *Amphissites* **wewokanus*** (p. 65), Wewoka formation. Glyptopleuridae: *Glyptopleurina*? **minuta*** (p. 67), Holdenville formation. Bairdiidae: *Bairdia* (s. str.) **peracuta*** (p. 71), and *B.* (*Bairdianella*) **sasakwaensis*** (p. 73), Holdenville formation; *Bythocypris* **rotunda*** (p. 74) and *Healdia* **bythocyproidea*** (p. 76), Wewoka formation; *H.* **elegans*** (p. 76), Wetumka formation. Cytherellidae: *Cytherella* **wewokana*** (p. 77), Wewoka formation. Types in Columbia Univ. Paleontol. coll.

18116. **WERNER, F., et al. Wissenschaftliche Ergebnisse einer zoologischen Forschungsreise nach Westalgerien und Marokko. III. Teil. Verschiedene kleinere Publikationen.** *Akad. Wiss. Wien Math.-Naturwiss. Kl. Sitzungsber. I. Abt.* 139(1/2): 1-18. 3 pl. 1930.—Following a brief introduction by F. Werner, illustrated by typical scenes, the spp. collected, with data, are recorded by the following authors: W. ADENSAMER, 25 spp. of Gastropoda: ROMAN PUSCHNIG, 3 spp. of Odonata; HANS ZERNY, 1 Neuroptera, 1 Embidaria, 1 Corrodentia; HANS REBEL, 17 Lepidoptera; O. KROEBER, 3 Tabanidae and Therevidae; PIUS SACK, 4 Syrphidae; E. LINDNER, 2 Stratiomyidae; VILLENEUVE, 8 Muscidae; MAX BEIER, 85 Coleoptera in various families; ADRIAN SCHUSTER, 67 Tenebrionidae and 24 Scarabaeidae; J. D. ALFKEN, 31 Apidae; J. C. BRADLEY, 3 Scoliidae; A. v. SCHULTHESS, 6 Vespidae; H. BISCHOFF, 3 Mutillidae; BRUNO FINZI, 24 Formicidae; KARL ATTEMS, 10 Chilopoda and Myriapoda; ED. REIMOSER, 25 Araneida.

18117. **WETTSTEIN, OTTO. Beiträge zur Wirbeltierfauna der kroatischen Gebirge.** *Ann. Naturhist. Mus. Wien* 42: 1-45. 1928.—This is a report on collections and observations made in June in the region of the Kapela and Velebit Mts. of Croatia, whose vertebrate fauna had scarcely been investigated previously. The introduction includes a description of the author's itinerary, with notes on the topography, vegetation, and general fauna. The region is marked by a general scarcity or lack of surface water. The mts. rise to about 1500-1700 m. The region is characterized by a mixture of Alpine and Balkan spp., together with some endemic spp. The systematic list of 2 fishes, 10 amphibians, 11 reptiles, 55 birds, and 28 mammals includes locality records and descriptive and taxonomic notes. In the museum at Zagreb the author noted 2 immature *Fratercula arctica* (Alcidae), taken near Fiume in July and August, and indicating a breeding station in the Adriatic. *Nyctalus maximus,* new to Croatia; *Glis glis italicus* Barr.-Hamilt. (=*G. g. postus* Montagu).

BIOLOGICAL ABSTRACTS

Editor-in-Chief, J. R. SCHRAMM; Associate Editors, FREDERICK V. RAND and MARY JONES FISHER; Assistant Editors, PERCY G. STILES, JOHN E. FLYNN, and FRANCIS HARPER

VOLUME 6 | AUGUST-SEPTEMBER, 1932 | NUMBERS 8-9
Entries 18118-21136

GENERAL BIOLOGY

A. H. GRAVES, *Editor,* Plant

C. A. KOFOID, *Editor,* Animal

(See also in this issue Entries 18141, 18285, 18588, 18995, 18996, 20246, 20334, 20655)

GENERAL

18118. **ANDERSON, EDGAR.** Internal factors affecting discontinuity between species. *Amer. Naturalist* 65 (697): 144-148. 1931.—The probable effect of certain characteristics on the nature of species is examined. Polyploidy, vegetative reproduction, and physiological isolation are cited and illustrated. It is concluded that the exact nature of species may be expected to vary from genus to genus and from family to family.—*E. Anderson.*

18119. **PARIJA, P.** Law of modifications. *Jour. Indian Bot. Soc.* 10 (1): 63-71. 1931.—"If an organism, an organ or even a cell is subjected to a stress, physical or chemical, the organism, the organ or the cell changes in such a way that the effect of the imposed stress is nullified." In support of this thesis, various modifications in response to light, moisture, temp., O supply, pressure, and external concentration of salts are cited.—*W. Dudgeon.*

PLANT

18120. **AJREKAR, S. L.** Some observations on the teaching of botany. *Jour. Indian Bot. Soc.* 9 (1): 66-74. 1930.—In India, teaching staffs are generally deficient and overworked, and authorities give too little attention to the needs of the botany department. There is little time or incentive for research, though some of the newer universities are remedying these defects. Students generally require financial aid to enable them to continue in universities for research. In teaching, too much attention is given to routine preparation for examinations, neglecting the broader aspects and interrelationships of the subject. Constructive suggestions are made for improvement.—*W. Dudgeon.*

18121. **BORZA, AL.** Grădina botanică şcolară. [Use of botanic gardens in teaching.] *Intâiul Congr. Nat. Naturalişt. Românía* 1: 421-437. 7 fig., 1 map. 1928 (1930).

18122. **BULLER, A. H. R.** Practical botany. viii + 275p. Longman's Green & Co.: London, 1929. Pr. 6s.

18123. **COSANDEY, F.** Création d'un jardin botanique à Sainte-Croix (Jura). *Bull. Soc. Vaudoise Sci. Nat.* 57 (226): 249-251. 1931.

18124. **DU PUY, WILLIAM A.** Our plant friends and foes. 277p. Illus. John C. Winston Co.: Philadelphia, 1930. Pr. $1.

18125. **GUNDERSEN, ALFRED.** Report on a trip to England and Northern Europe. *Brooklyn Bot. Gard. Rec.* 20 (1): 25-32. 1931.—This administrative report contains notes on the 5th Internat. Bot. Congress in Cambridge [England]; and on botanic gardens, school gardens, colony gardens, and museums in Norway, Sweden, Leningrad, and Berlin.—*C. S. Gager.*

18126. **JANCHEN, ERWIN.** Die internationale botanische Nomenklatur auf dem Botanikerkongress zu Cambridge (England). *Verhandl. Zool.-Bot. Ges. Wien* 80 (1/2): 75-83. 1930.—A discussion of activities and proposals in regard to International Rules.

18127. **JENNINGS, O. E.** Areas of biological interest in western Pennsylvania deserving preservation. *Proc. Pennsylvania Acad. Sci.* 4: 30-32. 1930.—Brief descriptions of 5 areas, with notes on some of the more interesting plants.

18128. **JUMELLE, HENRI.** Catalogue descriptif des collections botaniques du Musée Colonial de Marseille. Indochine (céréales, plantes féculentes, légumes, fruits). *Ann. Mus. Colonial Marseille* 8 (4): 1-63. 1930.—A list is given of 240 specimens (69 refer to rice) with some general notes, followed by a discussion of the chemical composition of *Diospyros kaki* and *Litchi chinensis.*—*O. A. Stevens.*

18129. **KAZIMOUR, JOSEF.** Zemědělské museum v zemědělské vědě a praksi. [Agricultural museums in theory and practice.] *Věstník Československého Zem. Mus.* 4 (3): 297-300: summaries in French p. 397, English p. 403, German p. 408. 1931.—The author emphasizes the importance of such museums, advocates their widespread organization, and describes those existing in Czechoslovakia.

18130. **LAWRENCE, WILLIAM E.** A laboratory manual for the study of general botany prepared for use at the Oregon State College. [4th ed.] 226p. Illus. State College Press: Corvallis, Oregon, 1930.

18131. **METCALF, FRANKLIN P.** An embryo botanical garden. *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 1: 31-38. 1928.—It is planned to develop a botanical garden on the grounds of Fukien Christian Univ. Progress of the plantings with future plans are here noted.

18132. **METCALF, FRANKLIN P.** The herbarium at Fukien Christian University. *Nat. Hist. Soc. Fukien Christian Univ. Foochow, China* 2: 26-27. 1929.—The herbarium now consists of about 75,000 sheets with about 14,000 numbers. It is planned to have here the most complete collection of Fukien plants.

18133. **REGEL, CONSTANTIN.** Der botanische Garten der Neuzeit. [The botanical garden of the present day.] *Rept. & Proc. Internat. Hort. Congr. London* 9: 405-409. 1930.—A critique of present day botanical gardens, with an outline of the functions they should serve, especially in relation to horticulture.

18134. **SAMPAIO, A. J. de.** A nomenclatura botanica e o methodo de typos. *Bol. Mus. Nacional (Rio de Janeiro)* 6 (3): 1-29. 1930.—A brief review is given of the history of nomenclature since the Paris Congress in 1867, with notes on the American Code and the Type-basis Code, and accounts of the appointment of the International Committee on Nomenclature at the Ithaca

Congress in 1926, and of the literature on nomenclature following this. Then are discussed the method of types and the literature bearing upon this. The codes of 1867, 1905, and 1910 are compared article by article and the differences noted. Several recent articles on nomenclature are reviewed. A "Permanent Committee or Bureau of Nomenclature and Typification," a complete and detailed iconography of types, and an International Assoc. of Botanists for carrying out these matters, are advocated. A bibliography from 1843 to 1930 is appended. —*A. S. Hitchcock.*

18135. **WEHMER, C. Die Pflanzenstoffe, botanisch-systematisch bearbeitet. Bestandteile und Zusammensetzung der einzelnen Pflanzen und deren Produkte. Phanerogamen.** [Plant substances, botanically systematized. Elements and structure of individual plants and their products. Phanerogams.] [2nd ed.] Band 1. 640p. Gustav Fischer: Jena. [1929?] Pr. 45 M.

EVOLUTION

(See also in B. A. 6(6-7): Entries 15135, 15179, 15182, 15268, 15288, 16756, 16762, 17275, 17289, 17327, 17958; and in this issue 18118, 18144, 18148, 20193, 20374, 20566)

18136. **GUYÉNOT, E. La variation et l'evolution. Vol. II. L'evolution. ("Encyclopédie Scientifique.")** 414p. 5 fig. Gaston Doin et Cie: Paris, 1930. Pr. 32 fr.—A critical review. The parts, with their respective chapters, are as follows: (1) Can non-congenital variations become hereditary?—the problem of acquired characters, in experience; induced mutations. (2) Selection and evolution: selection, natural and experimental; variation in unicellular organisms. (3) The mechanism of evolution: the evolutionary value of mutations; the appearance of new forms by mutation; mutations and the origin of species; adaptation and evolution by mutations. (4) The difficulties of mutationism: evolution by mutations, and the documents of paleontology; the morphogenetic problem and evolution; the philosophy of mutationism. There is a bibliography (23p.), and an index.

18137. **HRDLICKA, ALES. Organic evolution. Its problem and perplexities.** *Science* 71(1835): 230-233. 1930.—An address.

18138. **KEITH, ARTHUR. New discoveries relating to the antiquity of man.** 512p. 188 illus. W. W. Norton & Co., Inc.: New York, 1931. Pr. $5.—This treatise may be viewed as a supplement to the author's "Antiquity of Man." It represents the continuation of studies and views on Ancient Man, extending particularly to the most recent discoveries. The volume in the main deals with: The Taungs skull and brain; Ancient man in So. Africa; The Galilee skull; Other finds in Palestine, Babylonia, Egypt; The Peking man; The Ehringsdorf skull; The Mammoth hunters of Moravia; and The London skull.—*A. Hrdlička.*

18139. **RITCHIE, JAMES. Scotland's testimony to the march of evolution.** *Scottish Nat.* 1930(186): 161-169. 1930.—Three lines of evidence are adduced to show that the present day fauna of Scotland illustrates the characteristic processes of evolution. Changes in the balance of life,—decrease of some species, increase of others—illustrate the accommodation or failure to accommodate of living things to changing conditions. The development of national races of domestic animals, Clydesdale horses, Ayrshire cattle, Cheviot sheep, etc., illustrates the plasticity of living things, and leads to enquiry as to whether the wild fauna has shown similar change of characters. Of the 159 birds which breed in Scotland, 32 show characters which distinguish them from the continental stock from which they sprang; also of 56 Scottish mammals, 30 now differ from their ancestral forms. These changes towards or to new species are of recent development, for Scotland was colonized by a typical section of the European fauna only after the passing away of the ice-fields of the Glacial Period, which made a complete break between the present and all earlier faunas.—*J. Ritchie.*

18140. **ROSA, D. L'ologénèse, nouvelle théorie de l'évolution et de la distribution géographique des êtres vivants.** 368p. Alcan: Paris, 1931.—The author contends that "evolution is accomplished by following dichotomously branching lines, and that each species is predetermined in the preceding species as the individual is predetermined in the egg." Neither natural selection nor the influence of the environment can be considered as true causes of evolution. Like Nägeli, Rosa attributes evolution mainly to internal causes which effect a dichotomous branching at various stages of development through the endogenous doubling of determinants. Natural selection as an evolutionary factor is not wholly discarded, but relegated to a secondary rôle, the fundamental cause of adaptation being "the internal harmony of the idioplasm."—*S. J. Holmes.*

18141. **TRETJAKOFF, D. Ursprung der Chordaten.** *Zeitschr. Wiss. Zool.* 134(4): 558-640. 7 fig. 1929.—A critical review of the Annelid theory of the phylogeny of the vertebrates leads to the adoption of one designated as the pre-annelid theory. The discovery of gastrulae in chordate development led Sedgwick to derive all segmented animals from Coelenterates. Hubrecht also pointed out phylogenetic continuities between Actinians and Chordates, but Assehton's view of gastrulation is preferred to that of Hubrecht and Keibel who deny the comparability of this process in vertebrates and invertebrates. The vertebrate gastrula is radially symmetrical, two-layered and has a true archenteron, with or without a blastopore. The hind parts of the body of a *Balanoglossus*-like animal are formed during development by a one-sided proliferation of the dorsal lip of the blastopore. The gastraea and other stages are recapitulations of ancestral characteristics. The differentiation of the nervous system and excretory organs of *Amphioxus* indicate relationship with the Ctenophores. Vertebrate phylogeny begins with the Ctenophores and shows the following steps: (1.) A Ctenophore-like animal with gelatinous tissue and a Ctenophore enteron. A stomodaeal opening serves as anus while a mouth and a tentacle are formed at the opposite pole. Coelomic cavities are formed from the stomach and the paddles change to protonephridia. There is no notochord. (2.) In the Prechordate stage a rudimentary notochord appears, and 5 coelomic sacs part from the stomach, the mouth is ventral in position between the proboscis and the 2nd neck metamere, the coelomoducts and protonephridia are unchanged, but new openings, the gill openings, appear in the posterior segment. Such an organization exists in rudimentary form at present in the Enteropneusta, Pterobranchiates and Echinoderms. Of these specialized side branches of the chordate stem, only the first two have a notochord. (3.) The Primitive Acraniates are distinguished by a reduction of the first 2 metameres, and the secondary segmentation of the 3rd which leads to the segmentation of the coelom, excretory organs and nerves. Reduction of the 2nd metamere brings the mouth immediately in front of the gill slits, which are intersegmental. The gelatinous tissue which was reduced in the Prechordates to a subepidermal layer is still present and becomes more rigid locally to form the gill skeleton and the rays of the unpaired fins. The medullary plate and the seismic organs of the first 2 stages are retained but the olfactory organ has become independent, and lateral line and individual intraepithelial sense organs are present. The enteric musculature yields the gill or visceral muscles, while the secondary coelomic cavities

(somites) give rise to the myotome musculature which displaces the mesenchymal. Ventrally the coelomic segments transform into splanchnocoele and enteric musculature. Coelomoducts and protonephridia are at the points of contact between the myotomes and splanchnotomes, the latter fusing to form the abdominal coelom. The rudiments of such an organization are retained in *Amphioxus* and in Tunicates. The former has lost the seismic organs but develops a peribranchial (atrial) cavity, while larval Ascidians retain both otolith and optic organs within the neural tube. (4.) The Protocraniates, whose characters are found in Cyclostomes and Gnathostomes, were fish-like with 7 gill slits. The first 5 gills and first 2 myotomes became obliterated, and the posterior gill gave rise to 5 new gills, which were displaced caudad, and a neobranchial region was formed. Hyalin-cartilage is present in the gills, neural vertebral arches and fins, while a gelatinous sub-epidermal layer also remains. Three primitive brain vesicles were formed and changes in sense organs occurred. The spinal nerves of the ventral (hypobranchial) parts of the myotomes fuse to form a hypobranchial nerve strand which is the origin of the later hypoglossal. From the Protocraniates were evolved the Cyclostomes, Ostracoderms and Gnathostomes.—*R. G. Schmieder.*

18142. **WEATHERALL, R.** Mortality among plants and its bearing on natural selection. *Nature [London]* 128(3218): 33-34. 1931.—A discussion of the relation between mortality of plants at various stages of development, and natural selection.

18143. **WRIGHT, SEWALL.** Evolution in Mendelian populations. *Genetics* 16: 97-159. 21 fig. 1931.—An investigation of the probability array for gene frequencies in populations of limited size under recurrent, reversible, or irreversible mutation, selection and immigration. Using q for the extent to which a series of allelomorphs is represented by a particular gene, v, and u for mutation rates to and from the gene respectively, m for the exchange of population with other populations with gene frequency q_m, s for the selective advantage of the gene over its combined allelomorphs and N for the effective size of breeding stock in the population, the most probable change in gene frequence may be written $\Delta q = v(1-q) - uq - m(q-q_m) + sq(1-q)$. The positions of equilibrium in this case (and in others involving other modes of selection) are presented. Gene frequency fluctuates about the position of equilibrium in a distribution curve which depends on the relations between population number and the various pressures. Assuming genic selection,

$$y = Ce^{4Nsq}q^{4N[mq_m+v]-1}(1-q)^{4N[m(1-q_m)+u]-1}.$$

The effect of gene frequency on Fisher's dominance ratio and hence correlation between relatives is discussed. In a large population in which gene frequencies are always close to their equilibrium points, any change in condition (other than population number) is followed by an approach toward the new equilibria at rates given by the Δq's. Great reduction in population number is followed by decrease in heterozygosis at the rate $1/8N_m + 1/8N_f$ where N_m and N_f are the effective numbers of males and females respectively. The effects of change in size of population and of intensity of selection on the mean and variance of characters is discussed. There are critical points in the neighborhood of $4Nu=1$ and $4NS=1$. The type and rate of evolution depend on the balance among the evolutionary pressures. In too small a population there is nearly complete fixation, little variability, little effect of even drastic selection and thus a static condition, modified occasionally by chance fixation of mutations, leading to degeneration and extinction. In too large a freely interbreeding population, there may be maximum variability but such a close approach to complete equilibrium of all gene frequencies that there is no evolution under constant conditions. Change in severity of selection shifts gene frequencies, reversibly, to new equilibria. Very slow irreversible evolutionary advance may be expected from the effects of qualitatively changing conditions and from the attainment of novel, favorable mutations in extended multiple series of allelomorphs. In a population of intermediate size (relative to the critical values of the coefficients), there is a continual random shifting of gene frequencies and a consequent shifting of the selection coefficients (since selection plays upon the gene systems as wholes, not on individual genes). This leads to a relatively rapid, continuing irreversible nonadaptive series of changes even under uniform conditions. The rate, however, is limited by mutation rate. Finally, in a large population, subdivided into partially isolated local races of small size, there is a continually shifting differentiation among the latter, intensified by local differences in selection but occurring under uniform conditions. This tends to bring about an indefinitely continuing irreversible, adaptive and relatively rapid evolution of the species through the results of intergroup competition.—*S. Wright.*

GENETICS

ORLAND E. WHITE, *Editor,* Plant

SEWALL WRIGHT, *Editor,* Animal

(See also in this issue Entries 18118, 18143, 18271, 18330, 18443, 19014, 19057, 19178, 19396, 19447, 19463, 19541, 19722, 19743, 19760, 19765, 19779, 19846, 19864, 19942, 19975, 19982, 20011, 20028, 20029, 20036, 20037, 20058, 20119, 20124, 20126, 20131, 20170, 20263, 20484, 20493, 20566, 21043)

GENERAL

18144. **HALDANE, J. B. S.** A note on Fisher's theory of the origin of dominance and on a correlation between dominance and linkage. *Amer. Naturalist* 64(690): 87-90. 1930.—The writer cites Fisher's suggestion that a mutant gene usually produces at first a marked effect on the heterozygote, i.e., it is dominant or partially so. Since, however, the action of the new dominant is likely to be unfavorable to survival, its dominant behavior is a disability, and natural selection tends to eliminate it. This is brought about, according to Fisher, by prolonged selection of modifying genes which change the dominant to a recessive. Haldane, on the basis of statistical evidence, believes this explanation improbable. He considers it likely that genes are of the nature of catalysts, as held by Goldschmidt, and that most observable mutations therefore involve a reduction in activity of the gene concerned. On this assumption, he shows that it is advantageous for a species to possess wild-type genes with a double margin of safety. Then if a mutation (i.e., a reduction in catalytic activity) occurs in one member of a pair, the other member can still do its work adequately. If this is true, then allelomorphs having this excess catalytic power will be favored by natural selection when in the heterozygous state with one of the above mentioned types of mutation. It is this sort of selection rather than Fisher's selection of modifying genes which is thought the more probable explanation of the dominance of the wild-type. Finally a theory of dominance must explain why in certain cases there are many more dominant mutants than recessives, and why this condition is correlated with a very small number of linkage groups as compared with the number of chromosomal pairs. Haldane believes this relationship is perhaps explainable by assuming that the dominant mutants are due not to single gene changes, but to the

translocation or duplication of whole sections of chromosomes. He thinks the cytological work of Carothers on Orthoptera tends to support this view.—*R. S. McEwen.*

PLANT

18145. ÅKERMAN, Å. Om möjligheten att genom förädling uppdraga vetesorter med bättre kvalitet. [The possibilities of breeding new wheat varieties of better quality.] *Sveriges Utsädesför. Tidskr.* 41(6): 347-359. 1931.—According to examples from Swedish wheat breeding and analyses and baking tests made at Svalöf and elsewhere, the baking quality of wheat is an heritable character and can be combined with high yield and other valuable characters.—*G. Nilsson-Leissner.*

18146. ANDERSON, E. G., and R. A. EMERSON. Inheritance and linkage relations of chocolate pericarp in maize. *Amer. Naturalist* 65(698): 253-257. 1931.—Chocolate pericarp color is due to a grayish brown pigment unlike other pericarp pigments in maize. It is inherited as a simple dominant. Tests with genes from the 9 known linkage groups gave no indication of linkage. The gene *Ch* is therefore believed to represent the remaining linkage group.—*E. G. Anderson.*

18147. ANDERSON, EDGAR, and BRENHILDA SCHAFER. Species hybrids in Aquilegia. *Ann. Botany* 45(180): 639-646. 4 fig. 1931.—A morphological analysis of 8 first generation species hybrids in *Aquilegia* revealed a general dominance of wide over narrow petals and of medium length spurs over long or very short spurs. The following chromosome counts were made from root tips: *A. flabellata* Hort. 14(2*n*); *A. chrysantha*, Gray 16(2*n*); *A. vulgaris* var. "China Blue" 16(2*n*). —*E. Anderson.*

18148. BLAKESLEE, ALBERT F. Extra chromosomes, a source of variations in the Jimson weed. *Ann. Rept. Smithsonian Inst.* 1930: 431-450. 13 pl., 6 fig. 1931.—In this summary of the types due to extra chromosomes that have been discovered in *Datura*, both earlier publications and new data have been used. A list is given of primary and secondary ($2n+1$) types together with genes which have been located in them. A table summarizes in 32 classes the number of different chromosomal forms actually identified (about 150) and gives the number theoretically possible in each class. Emphasis is placed upon compensating types in which 2 different composite chromosomes compensate to form the equivalent in chromosomal material of a whole normal chromosome, leaving the remaining non-compensating parts of the 2 composite chromosomes extra to bring about morphological changes in the plant affected. Single and double compensating types may be synthesized from tertiary (composite) chromosomes resulting from radiation treatment. Similarly pure-breeding types may be obtained with extra chromosomal material.—*A. F. Blakeslee.*

18149. DANN, BERNHARD. Über die Befruchtungsverhältnisse der Bastardluzerne (Medicago media), anderer Medicago-Arten und Steinklee (Melilotus). *Zeitschr. Zücht. Reihe A. Pflanzenzücht.* 15(4): 366-418. 5 fig. 1930.—This work is, in part, a continuation of that of Helmbold. The original group of selected plants of *M. media* was increased vegetatively and by seeds from guarded and unguarded plants. In the guarded plants, flowers were self-pollinated, others cross pollinated plus pollen from the same plant. Detailed results are given for 2 years in pairs: 1 of the pair from self-pollinated and the other from (potentially) cross-pollinated parents. These results deal with the 3 characters: (1) % seed setting under (a) self-pollinated and (b) cross-pollinated conditions; (2) pod number per fertile cluster; and (3) total relative seed weight. Measuring the results by a comparison of curves, seed-producing capacity followed closely a similar classification of the same parents by Helmbold. Sister plants from cuttings of plants derived by self-pollination and by cross-pollination from the original selects were compared as to the following characters: (1) seed setting in % from self- and cross-pollination, (2) pods per head, (3) seeds per pod, (4) seed weight per plant, (5) plant weight, (6) calculated % of (4), and (7) sterile heads in % of fertile heads. Judgment was formed from these characters as to quality of seed production of the original plants. The conclusions were in line with Helmbold's. Cross pollinated plants gave a uniformly higher seed setting % than self-pollinated. Inheritance of seed setting was followed through 2 generations from 16 original selections under the 4 possible conditions of self (or cross), following cross (or self) pollination. Seed weights obtained after natural pollination gave a better measure of such inheritance than after artificial pollination. Out of the 90 cases where a decision as to the actuality of inheritance was possible, 58% indicated positive reaction, while 42% were either negative or undecided. Seed and plant weights; counts of racemes per plant, number of pods per head and seeds per pod; and calculation of sterile florets in % of fertile, were taken on 294 plants. Only raw data are presented. Seed yield was directly proportional to plant weight, number of flower clusters and number of seeds per pod. Best seed production may be looked for in a heterozygous population properly selected.—In *Melilotus alba* a poor to fairly good setting of seed resulted in unworked guarded plants; no seed resulted in similar plants of *M. officinalis*. 22 species of *Medicago* (alfalfa excluded) were given 2 treatments: 1 series was guarded and left untouched, the other artificially self-pollinated and isolated. Seed production was excellent in both cases. A very large number of interspecific *Medicago* crosses were attempted, and also with *Melilotus*. The extremely few harvested pods probably contained selfed seed.—*L. R. Waldron.*

18150. DARROW, GEO. M. A productive thornless sport from the Evergreen blackberry. *Jour. Heredity* 22 (12): 404-406. 2 fig. 1931.—This sport of *Rubus laciniatus* is apparently a chimera. Several others are noted. The thornless tissue in all of them is evidently sterile, genetically, and productivity results only when the superficial layer of thornless tissue is very thin.—*L. M. Dickerson.*

18151. FERGUSON, MARGARET C. To determine genetical ratios when selfing organisms heterozygous for two or more factors. *Amer. Naturalist* 66(702): 91-93. 1932.

18152. HAGIWARA, TOKIO. The genetics of flower colours in Pharbitis nil. *Jour. Coll. Agric. Imp. Univ. Tokyo* 11(3): 241-262. 1 col. pl. 1931.—So far as studied, the flower color series in Japanese morning glory include blue, purple, magenta, red, slate, gray, plum, drab, terra-cotta I, terra-cotta II, vinaceous I, vinaceous II, white and yellow; and they may be classified under the 3 groups, pure color, broken color and white. Pure color, bright in hue, contains blue, purple, magenta and red. Broken color, dull in hue, contains 8 colors under 2 classes, each of which includes 4 dull hues, corresponding to 4 normal pure colors. That is, one class, broken color I (dusky), contains slate, plum, terra-cotta I and terra-cotta II; the other, broken color II (duskish), contains gray, drab, vinaceous I and vinaceous II. In both broken color groups, however, 2 dull hues which correspond to magenta and red are so slightly different that their classification is difficult in some cases, especially in broken color II. These colors are due to anthocyanins in the cells of the corollas, while the white group has no anthocyanin in the corollas, except flower tubes, in which sometimes a full amount of anthocyanin occurs. 64 crossings determined the 4 genes—purple (pr) (formerly b), magenta (m_g) (formerly p), dusky (d_y) (formerly k^2, d_y^1) and duskish (d_k) (formerly k^2; d_y^2) which are active only with the co-existence of the other 3 complementary genes, C_a (formerly C^a), C and R, for the development of the flower color. The genetic constitution for 12 colors is as follows: In pure color group, blue ($P_rM_gD_yD_k$), purple ($p_rM_gD_yD_k$), magenta ($P_rm_gD_yD_k$), and red ($p_rm_gD_yD_k$); in broken color I, slate ($P_rM_gd_yD_k$), plum ($p_rM_gd_yD_k$), terra-cotta I ($P_rm_gd_yD_k$), and terra-cotta II ($p_rm_gd_yD_k$); and in broken color II, gray ($P_rM_gD_yd_k$, $P_rM_gd_yd_k$), drab

(*prMgDydk*, *prMgdydk*), vinaceous I (*Prmgdydk*, *PrmgDydk*) and vinaceous II (*prmgDydk*, *prmgdydk*).—*Author's summary.*

18153. KADAM, B. S., and B. NAZARETH. Inheritance of awn colour in wheat. *Indian Jour. Agric. Sci.* 1(6): 663-670. 1931.—In a cross between a black awned wheat, K.K.568 (*Triticum dicoccum*) and B. 103 (*T. durum*) with red awns, the F_1 showed complete dominance of black awn. In F_2 besides the parental awn colors, a new type with white awns appeared. The F_2 ratio was 12 black: 3 red: 1 white. In F_3 white awned plants bred true; the red awned plants segregated into 3 red: 1 white or gave entirely red awned progeny. The F_2 black awned lot consisted of plants: (1) breeding true, (2) splitting into 3 black: 1 white, (3) segregating into 3 black: 1 red, and (4) throwing all the 3 colors in the proportion of 12 black: 3 red: 1 white. Thus the black and red colors are due to 2 independent dominant genes, designated as *B* and *R*, respectively. *B* is epistatic to *R* and modifies the usual digenic ratio. White awns are due to recombination of recessives in F_2.—*B. S. Kadam.*

18154. LEHMANN, ERNST, und JULIUS SCHWEMMLE. Genetische Untersuchungen in der Gattung Epilobium. *Bibliotheca Botanica* Heft 95. 1-156. 18 pl., 106 fig. 1927.—The purpose of the investigations is to study the genetic conditions existing in a genus closely allied to *Oenothera*. Part I deals with reciprocal hybrids. Most reciprocal hybrids in *Epilobium* are similar, unless *E. parviflorum* or *E. hirsutum* is used as the ♀ parent. In these cases the hybrid is either not obtained or else is extremely reduced and almost always sterile. Plants of the same species from different localities (*E. roseum*, B. G. and *E. roseum*, F. A.) are crossed with *E. parviflorum* as the ♂ parent, and the hybrids obtained are found to differ in degree of fertility and reduction of flower parts. *E. roseum*, B. G. × *parviflorum* is sterile while *roseum*, F. A. × *parviflorum* is fertile. The F_1 crossed with *parviflorum* as ♂ parent also shows different degrees of fertility. When the cytoplasm of the F_1 plant has been received from *roseum*, B. G., there are more sterile than fertile plants resulting from the F_1 cross with *parviflorum*, whereas when *roseum*, F. A. is the ♀ parent of the F_1, there are more fertile than sterile plants resulting from the cross with *parviflorum*. In both these cases the nuclear combinations are the same but the cytoplasm is different. *E. roseum*, B. G. crossed with *roseum*, F. A. gives fertile offspring in both directions. Therefore there cannot be a factor in the cytoplasm of *roseum*, B. G. which causes complete sterility, but the shift towards sterile in the ratio 1 fertile: 1 sterile must be due to the influence of the cytoplasm of *roseum*, B. G. This is best explained by use of the following symbols: if it is assumed that there is an *I*-factor (inhibiting factor) in the nucleus of *roseum*, B. G. which is stronger than that in the nucleus of *roseum*, F. A., then the nuclear composition of the two *roseum* strains would be I_1I_1 and I_2I_2, where I_1 is a stronger inhibiting factor than I_2 and the corresponding cytoplasms would have corresponding degrees for inhibiting—albeit of lesser intensity than the inhibiting factors in the nuclei. Then let *pp* equal the nuclear composition of *E. parviflorum*, and let I_1p be a sterile plant and I_2p a fertile plant. Then $I_1I_1 \times I_2I_2$ gives I_1I_2, and $I_2I_2 \times I_1I_1$ gives I_2I_1, both fertile plants; but $I_1I_2 \times pp$ gives I_1p, a sterile plant, and I_2p, a fertile plant in an expected ratio of 1 fertile: 1 sterile. But since the cytoplasm of I_1I_2 has been received from I_1I_1, its egg cells will be composed of cytoplasm with a greater inhibiting effect and there will be more sterile plants than fertile from the cross $I_1I_2 \times pp$. Similarly $I_2I_1 \times pp$ gives I_2p, a fertile plant, and I_1p, a sterile plant, but since the cytoplasm of I_2I_1 has been received from I_2I_2 it will form egg cells with cytoplasm of a lesser inhibiting effect and there will be more fertile than sterile plants from the cross $I_2I_1 \times pp$. $I_2I_2 \times pp$ would then give all fertile plants and $I_1I_1 \times pp$ would give all sterile. In vegetative characters alone matrocliny is shown. Large flower size and dark leaf color are dominant in interspecific crosses. Probably these laws may be applied to all reciprocal crosses in the genus *Epilobium*. Part II deals with the F_2—F_5 of the cross *E. montanum* × *E. parviflorum*. Many characters show Mendelian inheritance, some being of a very complex factorial nature. From the F_3 on, exceedingly uniform strains occur which give the impression of new species. The low fertility of some would seem to point to what are called "hybrid species," as in *Oenothera*. Such uniform strains arising from a widely segregating F_2 may be due to elimination of either zygotic or gametic lethals. It is strange that the strains have become uniform so quickly, however, since *Epilobium* possesses 18 haploid chromosomes which would permit a great many combination possibilities. Part III deals with a *gigas* form from *montanum* × *parviflorum*, isolated from the F_3 arising from the F_2 *"formosum"* strain. Pollen grains show extra germ pores, the nuclei are twice the size of the parent species, but the chromosome number is only 18 for the haploid. Seeds were not obtained from the original *gigas* but backcrosses were made showing offspring of varying forms. Irregular pollen formation, characterized especially by extra germ pores, accompanies *gigas* characters.—*M. S. Cave.*

18155. MALHOTRA, R. C. The sex ratio in Asparagus officinalis L. and its artificial modification. *Jour. Genetics* 23(2): 157-172. 5 fig. 1930.—In the varieties Mary Washington and Palmetto, grown in California, there was a lower % of staminate plants than pistillate. Plants grown from seed and from 1-5 year-old beds averaged about 29 ± 3% staminate and 65 ± 5% pistillate plants. Mary Washington, considered the more desirable variety, usually had the lower % of staminate plants. Because staminate plants yield better than pistillate, it is desirable to increase the % of staminate plants grown in the field. The lower % of staminate plants was shown to be due to lack of a proper amount of volatile oils in the pollen before pollination. From pollinations made on plants of the Mary Washington variety with pollen which was allowed to stand 6, 12, and 24 hrs. before using, proportionately lower percentages of staminate plants were obtained. By using pollen sprayed with an extract of the volatile oil, the percentage of staminate plants of the same variety was increased 26 ± 1%.—*M. C. Gillis.*

18156. MARSDEN-JONES, E. M., and W. B. TURRILL. Flower mutations in the primrose. I. Origins and genetics. *New Phytologist* 30(4): 284-297. 33 fig. 1931.—In *Primula vulgaris* different plants show (a) enations on the corolla lobes, (b) hypogynous organs of varied structure, etc. It is shown that both enations and metamorphosed organs are recessive to the normal and that segregation occurs in F_2. Breeding results suggest that an allelomorph of one gene is responsible for suppression of normal stamens and occurrence of a wide range of metamorphosed organs. Figures are given for heterostyly.—*G. S. Avery, Jr.*

18157. NEETHLING, J. H. Will the inhibitor (dwarfness) throw new light on the "multiple factor hypothesis" of quantitative characters? *So. African Jour. Sci.* 26: 170-183. 1929.—This paper reports a genetic study of "dwarfness" in wheat and its interpretation as related to the multiple factor hypothesis. Dwarf segregates appeared in F_2 from a cross of Normal × Normal. Dwarfness is due to the interaction of an inhibitor *"II"* with factors for normal height (*B B*, B_1B_1, etc.) carried by the opposite parent. When height factors (*A A*, A_1A_1, etc.) carried by the same parent in which the *"I"* factor is located are present, normal height is attained. It is concluded that only 1 pair of factors of the *A A* sort are present and possibly 2 factor pairs *B B* and B_1B_1, which are affected by the inhibitor, *I I*. This interpretation of the inheritance of a quantitative character is contrasted with the general conception afforded by the multiple factor hypothesis.—*M. C. Gillis.*

18158. OSTENDORF, F. W. Polyfyllie bij Hevea brasiliensis. [Polyphylly in Hevea.] *Arch. Rubbercult. Nederlandsch-Indië* 14(6): 251-259. [English summary.]

3 pl. 1930.—Polyphylly is not uncommon in several clones of *Hevea*. Lateral and median splitting of side leaflets occurs in most of the cases. The occurrence of leaves with 6 leaflets is a distinct phenomenon close to fasciation. Improved food conditions and heredity are responsible for most of these abnormalities.—*L. S. Moyer.*

18159. PARTHASARATHY, N. A note on Oryza sativa var. (plena) Prain. *Madras Agric. Jour.* 19(7): 290-294. 1 pl. 1931.—Characteristic of this variety are 2-4 and rarely 5 pistils in each spikelet instead of 1, usual in common rices. The number of developed rice kernels is 1-3 in each developed paddy grain. Normally, only the rice formed from the developed ovule adjacent to the flowering glume germinates; the others, though viable, are suppressed by the palea. The seedlings from these rices attain equality of growth after the first fortnight from sowing, though the seedlings from single rice have a higher rate at the start. The inheritance of multipistillate nature is a simple recessive. This variety may have originated from cultivated rice by mutation, as the evolutionary tendencies in cultivated rices show a change towards close aggregation and simplification of floral parts, resulting in suppression of intervening glumes and leading to doubling of pistils. This advance is not advantageous in this variety, as it is handicapped by the successive suppression of normal growth of seeds other than the first.—*N. Parthasarathy.*

18160. SINNOTT, EDMOND W. The independence of genetic factors governing size and shape in the fruit of Cucurbita pepo. *Jour. Heredity* 22(12): 381-387. 3 fig. 1931.—Sharp segregation in F_2 of fruit shapes into $\frac{3}{4}$ disks and $\frac{1}{4}$ spheres occurred after crossing pure lines. F_2 spheres are significantly larger than parental spheres, F_2 disks significantly smaller than parental disks, and the F_2 spheres and disks essentially equal in size. The variability in weight of the F_2 is significantly higher than that of the F_1. A single factor for shape and a series of multiple factors for weight are suggested, the factors for controlling shape being independent of and different in character from those controlling total size or volume. Particular dimensions of the fruit are regarded as resultants of the interaction of the factors for shape and volume.—*L. M. Dickerson.*

18161. TSCHERMAK, ERICH. Über die praktische Verwertbarkeit der Weizen-Roggenbastarde. *Deutsche Landwirtsch. Presse* 58(3): 29-30. 1 fig. 1931.—Bokhara wheat × rye hybrids were made and F_1 was backcrossed to both parents. In either backcross, segregation gave fully fertile wheatlike types, F_1-like plants, and, in rare cases, an almost sterile rye-like type. By twice backcrossing to rye, sterility increased, with fewer rye-like types. It was possible to combine the hairiness of neck and drought resistance of rye in fertile hybrids. H. von Berg found 42 chromosomes in these intermediate types. They are resistant to brown leaf rust of rye and susceptible to black stem rust of wheat. Certain hybrid strains are satisfactory for yield and baking quality and may replace rye on the less fertile rye soils.—*H. E. Brewbaker.*

18162. WARREN, ERNEST. A statistical study of certain interspecific plant hybrids and backcrosses. *Ann. Natal Mus.* 6(3): 363-414. 8 pl. (1 col.) 1931.—This paper deals primarily with the relationship of the F_2 of a hybrid daisy (*Venidium wyleyi* (♀) × *Arctotis stachadifolia* var. *grandis* (♂)) to the grandparental species. Typical segregation could not be detected in any of the characters studied, but a definite bias towards one or the other grandparent was frequent. When this bias is strong a condition of segregation is approached, and when weak a perfect blending of characters results. For comparison of the different generations, "coefficients of divergence" were employed. For any character, the coefficient of divergence from one of the parents is the ratio of the difference of the offspring from that parent to the difference between the 2 parents. The mean of the summation of these coefficients for a series of characters is a measure of the general relationship of the offspring to the parents, and in this way a series of hybrids may be compared on a numerical basis.—*E. Warren.*

18163. WATKINS, A. E., and F. M. CORY. Genetic and cytological studies in wheat. V. *Jour. Genetics* 25 55-90. 1931.—Analysis of *T. vulgare* ($x=21$) × *T. turgidum* ($x=14$) is continued. The factors *R* and *r* for rough and smooth chaff, *Re* and *re* for red and white chaff, *W* and *w* for waxy and waxless foliage, *B* and *b* for beardless and bearded, *K* and *k* for keeled and rounded glume and other characters, are carried by paired chromosomes. All gave regular 1:1 ratios when F_1 ♀ was back-crossed, and none had any effect on pollen sterility or grain germination. *K* and *B* are linked, and *Re* and *W* could not be tested together, but at least 3 different chromosomes must be involved. Allosyndesis is the rule for this particular hybrid, but autosyndesis occurs occasionally. If the fully fertile F_1 ♀ is backcrossed, the parental types are regained in a high % of cases, showing that at least 11 and perhaps 12 of the chromosomes of the 2 species are closely similar. Inheritance of waxy and waxless foliage was followed in detail. Factors involved are *W* and *w*, carried by paired chromosomes, and W^1 by an unpaired chromosome; *vulgare* = $(ww)\,W^1W^1$, *turgidum* = (WW), $F_1 = (Ww)\,W^1$. *W* and *w* pair regularly and W^1 is only occasionally paired. If F_1 pollen is used on *turgidum*, we obtain (1) well filled grains, with 28 chromosome embryos, and (2) wrinkled grains with embryos containing 29-35 chromosomes. Plants obtained from (1) are either (WW) or (Ww) and therefore breed true or give 3:1 ratios. The heterozygous plants obtained from (2) are either (Ww) or $(Ww)\,W^1$ and therefore give ratios of about 5:1 as well as 3:1. From $(Ww)\,W^1$ we obtain the new type $(ww)\,W^1$, which gives about 1 waxy:2 waxless. If all the progeny of $(Ww)\,W^1$ are followed, they are found to give true waxy, 3:1, 5:1, 1:2, and true waxless families in about the expected proportions 3:4:2:1:2. Although waxless plants are derived as a matter of course when the F_1 is crossed back to *turgidum* and the progeny bred, when F_1 is crossed back to *vulgare* we obtain as a rule only waxy plants which breed true to waxy. This is because it is only rarely that plants lacking both W^1 chromosomes are produced. A few such waxless plants were found, and these, as expected, were dwarf and sterile. Fertile waxless *vulgare*-like plants occur occasionally as a result of W^1 pairing with *w* in a plant of the constitution $(ww)\,W^1$ instead of remaining unpaired; such plants occur to the extent of about 0.3%. A few families gave aberrant results, sometimes in consequence of natural crossing. Inheritance in this pentaploid wheat hybrid, however, follows principles already worked out.—*A. E. Watkins.*

ANIMAL (EXCEPT MAN)

18164. ANDERSON, RUTH. The multiple somatic effects of the bar gene in Drosophila melanogaster. *Amer. Naturalist* 65(701): 558-564. 1 fig. 1930.—To determine the extent to which the entire organism is affected by a single gene change, the unit factor for "bar" eye was chosen. A study was made of full-eyed reversions and ultra-bar mutants in 2 strains, one with straight bristles and one in which the bristles were forked. 100 flies were counted and measured in each of the 6 strains used. The environmental conditions were kept constant and a uniform temp. of 27° was used throughout the experiment. The primary effect of the bar gene is a reduction in facet number to approximately 16% of the number in the full-eyed type. Ultra-bar again reduces the number to about 16% of that found in bar. In addition to the reduction in facet number, there is a graded decrease in size of the flies of bar and ultra-bar stocks as compared to the full. This size difference is most noticeable in the head width, thoracic length, wing length, circumocular hairs and median ocellus. A difference of the same order but to a lesser degree is found in wing width and halter length. In contrast to the decrease in size, the number of rows of acrostical hairs is increased slightly and that of the ocellar bristles to a marked

degree. The observations made on the straight-bristled stock are correlated with those of the forked strain. On the whole, forked-strain flies are somewhat smaller than straight-bristled, the only exception is a slight excess in forked ultra over straight in halter length of ♂♂ and thoracic length of both sexes. The most pronounced difference between the 2 strains is the reduction of circumocular hairs in the forked strain.—*R. Anderson.*

18165. DUNKER, H. Genetik der Wellensittiche. *Züchter* 2(5): 136-147. 6 fig. 1930.—This brings together and up to date all of the author's data, including those of cooperators, on inheritance of color and pattern in the Australian grass parakeet or Budgerigar, *Mellopsittacus undulatus*. About 4000 birds are considered, 1700 of which were raised by the author. Two pairs of factors account for the 4 chief color types: green, blue, yellow, and white. When *F* is present, yellow color is present in the periderm of the feather, absent with *f*. An oxidizing factor *O* causes melanin formation in the central pith. These 2 pairs are independent and not sex-linked. The *O* is the highest of a series of 4 allelomorphs which regulate the pattern by producing grey effects, the lowest showing ghost pattern. The brown factor *B* changes the melanin and has only half the effect in the heterozygote. *B* is linked with *F* and gave 15.5% crossing over with 695 progeny.—*B. L. Warwick.*

18166. GOLDSCHMIDT, RICHARD. Analysis of intersexuality in the gipsy moth. *Quarterly Rev. Biol.* 6(2): 125-142. 1931.—Article summarizes conclusions from 20 yrs. of work. Intersexuality in these moths depends chiefly on general sex genes, of which M for maleness is in the X chromosome (Z of many authors), and F for femaleness is maternally inherited (probably through the Y, or W, chromosome, though this involves assumption that F exerts its whole initial influence before the reduction division). Many multiple allelomorphs of F and M, differing in strength, have been found in different races of moths. Within a single pure race, F and M correspond in strength and produce only normal ♂♂ (FMM) and ♀♀ (FM). When weak and strong races are crossed in certain ways, bringing about indecisive ratios of F to M or F to MM, intersexes are produced, in varying degrees of intermediacy up to complete sex reversal in both directions. Sex-reversal ♂♂ have been shown by their progeny to be of XY genetic composition. Corresponding proof that sex-reversal ♀♀ are XX has not been obtained, owing to the poor viability and sterility of such ♀♀. Several autosomal factors modifying intersexuality have been found. Intersex starts its development as of the sex denoted by its chromosomes, but changes sooner or later to opposite sex development. When this turning point occurs depends on relative strengths of F and M; early occurrence produces high degree, late occurrence low degree, of intersexuality. Embryonic development confirms this view, in general, since, with the exception of antennae, the organs differentiated early are changed little in the intersexes, those differentiated late are changed much. Strength of genes is held to be due to quantity; alternative theories of plus and minus modifiers are rejected. —*A. F. Shull.*

18167. GREEN, C. V. Genetic linkage in size inheritance—a reply. *Amer. Naturalist* 66(702): 87-91. 1932.—Castle's extra-chromosomal interpretation of the association in heredity between quantitative characters and a qualitative, brown coat color, in a mouse interspecific cross, which was observed by the author and interpreted as genetic linkage, is considered. Castle's assumptions that the recessive qualitative characters tend to remain together in their parental association and that whatever causes them to go together also causes the larger size of the recessive parent to go with them, are not substantiated by the data. F_2 and back-cross animals show only free assortment, thus weakening his 1st assumption, while the validity of the 2nd is diminished since triple recessive animals (larger parent type) are no larger than those with the recessive gene for brown coat color in other combinations. It is still believed that genetic linkage offers the best explanation for the observations.—*C. V. Green.*

18168. HACHLOV, V. Über die Genetik der Hunde. *Züchter* 2(9): 261-263. 1 fig. 1930.—The genes *B* for coffee brown and *Q* for marbling are linked. This is based on the results of crossing short-haired marbled × pointer, and mating the F_1 with the different types. Eighty progeny were studied.—*B. L. Warwick.*

18169. HANSON, FRANK BLAIR, FLORENCE HEYS, and ELIZABETH STANTON. The effects of increasing x-ray voltages on the production of lethal mutations in Drosophila melanogaster. *Amer. Naturalist* 65(697): 134-143. 1931.—The mutation rate increases with the increase of x-ray voltages from 40-99KV. The secondary β-rays are responsible for the mutations.—*C. V. Beers.*

18170. HERTWIG, PAULA. Was wissen wir über die Vererbung der Nutzeigenschaften bei den Haushühnern? *Züchter* 2(2): 44-50. 1930.—A review of the knowledge of inheritance of egg production, broodiness, early maturity, winter pause, autumnal molt, egg size, hatchability, body weight and rate of feathering.—*B. L. Warwick.*

18171. HOLLEBEN, HEINRICH von. Vererbungsversuche an reziproken Kreuzungen mit Karakul-, Merino-Fleisch- und Hampshire-Down-Schafen unter besonderer Berücksichtigung des postembryonalen Zustandes bis zum Alter von 45 Tagen. *Wiss. Arch. Landwirtsch. Abt. B. Arch. Tierernähr. u. Tierzucht.* 6(1): 98-150. 26 fig. 1931.—In the main, the findings of Adametz on inheritance of color characters in Karakuls have been substantiated. In crosses of Karakuls and Hampshires, the F_1 as well as the progeny of both back crosses show a loss of coat color with advancing age. The grade of wool appears to behave in the main as a monohybrid. In Karakul-Merino crosses, the finer grades are obtained more frequently in F_1 than in the Karakul-Hampshire crosses. The results of Adametz relating to inheritance of color pattern were confirmed in Karakul-Merino crosses. Hampshires appear to carry no factor for formation of white spots. The appearance of kinkiness in back crosses with Merinos and Hampshires indicates an incomplete dominance of Karakul kinkiness. In the genetic sense, there is no linkage between pigment and kinkiness. However, the deposition of pigment favors the development of curliness, a relationship presumably associated with physiology of development.—*H. von Holleben (transl. by A. H. Kuhlman).*

18172. KOLLER, P. On pigment formation in the D-black rabbit. *Jour. Genetics [Cambridge]* 22(1): 103-107. 1930.—It has been shown by various workers that melanic pigment in animals and plants is due to the action of an oxidase, tyrosinase, on a colorless chromogen. Onslow ('15) working with tyrosinase and peroxide was able to demonstrate that chemical differences exist corresponding to the differences in genetic behavior between the dominant and recessive white of rabbits, the dominant white being due to an inhibitor of color, and the recessive to a deficiency in the color producing mechanism. The present investigator attacked the same problem, using dioxyphenylalanine ("Dopa") as a reagent, and testing the effect not only on the coat colors studied by Onslow, but also on certain others, notably dominant black. An extract was obtained from pulped skins of the types to be tested, and a similar extract was also made of skin presumed to contain an inhibitor of color, such as that from the white belly of an agouti. In each case the extract of the skin to be treated had added to it, Dopa alone, Dopa plus water as a control, and Dopa plus extract from skin containing the inhibitor. Under these conditions extracts of white skin, both dominant and recessive, showed no pigment at any time. Extracts of agouti and of recessive black and chocolate showed pigment on addition of Dopa, but it vanished when extract of inhibitor also was added. The color produced by

dominant black plus Dopa, however, did not disappear upon addition of extract of inhibitor. It is held that these results support the conclusion arrived at on genetic grounds, that dominant white of agoutis results from an inhibitor, and that dominant black is caused by an inhibitor of this inhibitor.—*R. S. McEwen.*

18173. **KOSSWIG, CURT.** Die Bedeutung des Y-Chromosoms im Tierreich. *Züchter* 2(9): 263-269. 4 fig. 1930.

18174. **LOEB, LEO, and HELEN DEAN KING.** Individuality differentials in strains of inbred rats. *Arch. of Path.* 12(2): 203-221. 1931.—In these experiments, which represent a continuation of former investigations, the authors used tissues from strains A and B, inbred through 60-67 generations by matings of brother and sister rats. The results of transplantation of tissues from strain A to strain B corresponded to the results of ordinary homoiotransplantation. Transplantation between different litters within inbred strain A likewise gave results very similar to those obtained in homoiotransplantation, and this was true of grafts of thyroid gland, as well as of those of cartilage. Transplantation between different litters within inbred strain B gave better results, but even these results remained far behind those obtained in ordinary syngenesiotransplantation from brother to brother. As was to be expected, transplantation to different litters in group (A × B) F_4 or F_5 led to marked homoioreactions. Transplantation from (A × B) F_4 to one of parent strains or vice versa gave results corresponding to or approaching homoioreactions; but in accordance with expectation the results were somewhat better in transplantation from parent to hybrids than in the reciprocal transplantation. However, it is doubtful whether this difference is sufficiently great to be of significance. Multiple simultaneous transplantations in brothers of inbred strain B, under conditions of approximate identity of the individuality differentials of hosts and donor, confirm our former conclusion that a deficit in internal secretion of the thyroid gland is not necessary for the preservation of the thyroid transplant. Much more unfavorable results than in transplantation within the same litter in strains A and B were obtained in brother to brother transplantation in (A × B) F_4 hybrids. On the other hand, the results here were somewhat better than in ordinary homoiotransplantation. It is concluded that, notwithstanding continued inbreeding in strain A and strain B, a condition approaching a homozygous genetic constitution within the same strain has not been attained. On the contrary, the results indicate much more marked heterozygous constitutions after inbreeding in rats through from 60 to 70 generations than Loeb and Wright found in guinea pigs after inbreeding of these through a much smaller number of generations. There is, however, some indication that a slight advance toward greater similarity of the individuality differentials within the same strain has been made since the first transplantations, in which animals belonging to generations 30 to 47 were used.—*L. Loeb.*

18175. **McPHEE, HUGH C., E. Z. RUSSEL, and JOHN ZELLER.** An inbreeding experiment with Poland China swine. *Jour. Heredity* 22(12): 393-403. 3 fig. 1931.—An attempt to establish an inbred strain of Poland China swine by brother-sister matings failed in F_2 due to a decrease in fertility and high mortality. In the 1st inbred generation, litter size did not significantly decrease, but average birth weight and % of pigs reared to 70 days of age were less than in control stock. In the 2nd generation, litter size and the vigor of the pigs were greatly reduced. The % of still-births was slightly higher among inbred than among control stock. The % of ♂♂ was greater also. A recessive gene for dilution of black coat color to sepia, apparently linked with white spotting, was indicated. Other characters inherited but not demonstrated in detail are cleft palate, scrotal hernia, and the ridgeling. There is no basis for assuming that the results of this experiment are typical of the entire Poland China breed.—*Authors' summary.*

18176. **NACHTSHEIM, HANS.** Eine Methode zur Prüfung der Lebensdauer genotypisch verschiedener Spermien bei Drosophila. *Zeitschr. Indukt. Abstam. -u. Vererb. Supplementb.* 2: 1143-1147. 1928.—Experiments were conducted on ♀♀ of *Drosophila melanogaster, D. simulans,* and *D. obscura,* to determine how far sperm from successive matings become mixed in the spermatheca of the ♀. A ♀ with a given recessive character was mated successively with ♂♂ carrying either the dominant or recessive allelomorph of the same character. She was transferred to a different jar each day so that the progeny resulting from the eggs laid each day might be counted. After the 2nd pairing, offspring showed that only sperm of the 2nd ♂ were used in fertilizing eggs up to a certain time, when apparently most of the sperm of the 2nd ♂ were exhausted. Sperm of the 1st ♂ were again used at this time, indicating that there is no mixing of different sorts of sperm, but that those of the 2nd ♂ are apparently packed on top of those of the 1st. This is also a method of testing the effect of age of sperm on the offspring.—*K. Jeffers.*

18177. **OGURA, SABURO.** A new case of linkage in silkworms with special reference to multiple allelomorphs. *Proc. Third Pan-Pacific Sci. Congress, Tokyo* 1: 1159-1163. 1926(1928).—Silkworms commonly moult 4 times during their larval stage but certain races moult 5 and others 3 times. The number of moults is conditioned by multiple allelomorphs. T^3—3 moults. T^4—4 moults and T^5—5 moults. The factor for flesh colored cocoons, *F,* was found to be linked with the moulting factor *T* with about 11.2% of crossing over.—*G. F. Sprague.*

18178. **PATTERSON, J. T.** A mutable miniature gene in Drosophila melanogaster. *Amer. Naturalist* 65 (696): 86-88. 1931.—A single miniature ♂ was found among 3,678 offspring of virgin non-miniature ♀♀ treated with x-rays. A miniature stock from this ♂ gave considerable reversion to wild-type in the first 2, but less in later, generations. The reverted wild-type show no return to miniature, nor is there indication of reversion in somatic cells. Breeding tests show this to be allelomorphic to true miniature.—*W. P. Spencer.*

18179. **PATTERSON, J. T.** Somatic segregation produced by x-rays in Drosophila melanogaster. *Proc. Nation. Acad. Sci. [Washington]* 16(2): 109-111. 1930.—Evidence is presented showing that true somatic segregation can be induced in *Drosophila* by means of x-rays. Proof is given that under the conditions of the experiment actual segregation of the chromosomes takes place among somatic cells.—*J. T. Patterson.*

18180. **RICHTER, JOHANNES.** Züchterische Versuche über die Erblichkeit des Kropfes bei Hunden. *Zeitschr. Zücht. B. Tierzücht u. Züchtungsbiol. einschl. Tierernähr.* 21(3): 483-503. 16 fig. 1931.—By mating full brother with sister in dogs and occasionally father with daughter, an attempt has been made to bring to light the hereditary nature of goitre. The original material was 2 ♂♂ with sporadic colloidal goitre developing at birth or during the first weeks. 14 litters resulted from 2 trial series. The clinical observations of the resulting 84 F_1 and F_2 individuals, of which 71 were dissected and histologically examined, showed neither a dominant nor a recessive hereditary factor for goitre. The course and result of these biological breeding experiments on dogs do not support the opinions of many authors (Reehold, etc.) as to the hereditary nature of goitre. The decisive factor for the origin of goitre is in the environment. If hereditary factors play any part, this would probably be inheritance of disposition.—*Author's summary (transl. by J. A. Bauer).*

18181. **SAWIN, PAUL B.** Hereditary variation of the chinchilla rabbit. *Jour. Heredity* 23(1): 39-46. 5 fig. 1932.—Dark chinchilla (ch^s), light chinchilla (ch^l) and pale chinchilla (ch^l) are 3 allelomorphs of albinism in the rabbit in which yellow pigment is characteristically absent. In dark chinchilla, black pigment appears intense; is dominant to the less intense brownish black shades of light and pale chinchilla and to albinism; is unaffected by influences of temperature and fades

almost imperceptibly. The eye of this allelomorph is blue, but may be modified to gray or "pseudo-brown" by modifying genes which produce pigment in the front wall of the iris. Light and pale chinchilla are incompletely dominant to albinism; are subject to the influences of temperature, and fade with the advancing age of a hair-generation. The eye color of these allelomorphs resembles the brown of full colored rabbits, and, like it, is subject to the same iris modifying genes as is dark chinchilla, varying from light brown to intense brownish black. Brown-eyed dark chinchillas may be heterozygous for light or pale chinchilla—a combination which breeds true for neither coat nor eye color—or they may be modified blue or "pseudo-brown," in which case they are more likely to breed true. They may be due, also, to a combination of these constitutions.—*Author's abstract.*

18182. **SCHMIDT, HERBERT. Geschlechtsumwandlungen bei tropischen Zierfischen.** *Züchter* 2(10): 297-305. 8 fig. 1930.—Changes from ♀ to ♂ are described in the viviparous fishes *Xiphophorus helleri, Mollienisia velefera, Heterandria formosa,* and in *Belta splendens, Macropodus viridi-auratus,* and *Trichogaster labiosus,* and in species hybrids having *Xiphophorus helleri* as one parent. Females known to have produced young changed to ♂♂ in secondary sexual characters and proved fertile when individually mated with virgin ♀♀. Observed progeny from mating transformed animals (♀ to ♂) to normal females gave more ♀♀ than ♂♂ (in *Xiphophorus helleri* 24 ♂♂ to 31 ♀♀ and in *Macropodus viridi-auratus* 74 ♂♂ to 197 ♀♀), suggesting that the ♀ sex carries XY in these species, assuming that YY is lethal.—*B. L. Warwick.*

18183. **STERN, CURT. Konversionstheorie und Austauschtheorie.** *Biol. Zentralbl.* 50(10): 608-624. 1930.—This is a critical review of Winkler's "Konversionstheorie," which attempts to explain recombination of linked characters as due to gene mutations (Conversions), $A \rightarrow a$ or $a \rightarrow A$, which are supposed to occur when allelomorphs are in heterozygous condition. Comparisons made between Winkler's theory and the crossing-over theory indicate that both theories can account equally well for simple cases of recombinations but that complicated cases could better be explained by crossing-over theory. Conversion theory fails to account properly for cases where deficiencies and translocations are involved.—*M. Demerec.*

18184. **STERN, CURT, und K. SEKIGUTI. Analyse eines Mosaikindividuums bei Drosophila melanogaster.** *Biol. Zentralbl.* 51(4): 194-199. 1 fig. 1931.—In the progeny from a Stubble ♀ × Curly haplo-IV ♂ cross a ♂ was found which was mosaic as follows: entire head and left half of thorax had Stubble and haplo-IV bristles, left wing was normal; right half of thorax and entire abdomen was haplo-IV with non-Stubble bristles, right wing was Curly. The mosaic ♂ developed from a binucleated egg, one of whose nuclei contained the Stubble chromosome, the other was normal; this egg was fertilized by 2 non-IV-but-Y-bearing spermatozoa, one of which contained the Curly, the other the non-Curly chromosome. The ♂ was sterile.—*A. H. Hersh.*

18185. **VAN ATTA, ELVENE W. Dominant eye-colors in Drosophila.** *Amer. Naturalist* 66(702): 93-95. 1932.—Produced by x-raying.

18186. **WHITING, P. W. Diploid mosaics in Habrobracon.** *Amer. Naturalist* 66(702): 75-81. 1932.—In *Drosophila* the majority of mosaics are caused by chromosome elimination. In *Habrobracon* haploid mosaic ♂♂ develop from binucleate eggs from virgin heterozygous ♀♀, haplo-diploids (gynandromorphs) from binucleate eggs in which 1 nucleus is fertilized. 70 of the former, 78 of the latter have been found. Only 3 diploid mosaics, 2 ♀♀ and 1 biparental ♂, have been previously reported. Four new diploid mosaics, 1 ♀ and 3 ♂♂, are described. All 3 ♀♀ proved fertile; the 2 ♂♂ tested were sterile as expected for biparental ♂♂. Diploid mosaics are explained by chromosome elimination. In the new mosaic ♀, a chromosome was lost carrying 2 linked genes, dominant allelomorphs to "cantaloup," and to "long." Causes of relative frequencies of different types of mosaics and reasons for considering these as diploid are discussed. Like other mosaics, these diploids showed asymmetry in wild type traits. Two biparental ♂♂ showed correlative gene effect, modification of eye color in orange series.—*P. W. Whiting.*

18187. **WHITING, P. W., and EDWARD J. WENSTRUP. Fertile gynandromorphs in Habrobracon.** *Jour. Heredity* 23(1): 31-38. 10 fig. 1932.—Mosaic ♂♂ are found occasionally among segregating haploid ♂ offspring of heterozygous virgin females. The explanation is egg binuclearity. The two oötid nuclei with post reduction of genes undergo parthenogenetic cleavage. Gynandromorphs develop from binucleate eggs in which one nucleus is fertilized. Thus male parts are haploid and matroclinous; female parts, diploid and biparental. Reproductive instincts are determined by the head and hence most gynandromorphs are sterile, for there is lack of agreement between sex of head and of gonads. Six cases are reported with instincts, head and gonads in agreement. Two with vigorous ♂ instincts were nevertheless unable to mate. Two functioned as ♂, the progeny showing that their testes were matroclinous. Two functioned as ♀, the progeny showing that their ovaries were diploid and biparental.—*Author's abstract.*

18188. **WHITING, P. W., and ANNA R. WHITING. Genetic studies on the parasitic wasp, Habrobracon juglandis (Ashm.). The linkage relations of long antennae, by PAUL R. DAVID. Linkage of factors for eye color, by C. H. BOSTIAN. A factor for fused antennae and tarsi, by NEITA C. BOSTIAN. Selection for biparental males, by D. R. CHARLES. The genetic composition of piparental males, by MAGNHILD M. TORVIK. A microscopic study of the effects of x-rays on the ovarioles, by EDWARD Mc CRADY, Jr.** *Proc. Pennsylvania Acad. Sci.* 4: 79-91. 1930.—Traits caused by various mutant factors are described and linkage relationships are reported. Ratios of ♂♂ among biparental offspring is increased by selection and decreases with increasing age of the mother. Biparental ♂♂ are diploid for loci thus far studied. X-radiation of adult ♀♀ has greatest effect on most actively dividing cells, causing degeneration of ovaries and sterility.—*P. W. Whiting.*

MAN

18189. **BALDWIN, MARION, and P. H. EWERT. A study of motor activity in three pairs of identical twins.** *Pedagogical Seminary and Jour. Genetic Psychol.* 38 (1/4): 458-466. 1930.—Three pairs of twins were identified as identical by a combination of criteria developed previously by a number of investigators. The performances of twins in motor and intelligence tests were found to be more similar than those of non-twins. Representatives of different pairs differed more than twin mates in individual performance in tapping and card-sorting tests. Results suggest that certain motor tests, such as tapping and card-sorting, are valuable for twin-identification.—*Authors' summary.*

18190. **BANKER, HOWARD J. Distribution of school success in families.** *Jour. Heredity* 22(12): 373-379. 1931.—The author has developed a formula for indicating the relative success of students in their school work, as derived from school records covering the accomplishments of more than one generation in the same school, and has compiled tables from various sources showing that such data, whether from high school or college records, give evidence that the greater the school ability of the parents, the greater the school ability of the children. Specific exceptions are noted. The author believes that the data, if involving genetic factors, are not capable of Mendelian interpretation.—*Author's abstract.*

18191. **BLUHM, AGNES. Immunitätsforschung und Vererbungswissenschaft. [Immunity and heredity.]** *Zeitschr. Hyg. u. Infektionskrankh.* 112(2): 246-253. 1931.

18192. **CLARKE, A. E., and D. G. REVELL. Monozygotic triplets in man.** *Jour. Heredity* 21(4): 146-156.

4 fig. 1930.—In each of these 2 sets of triplets the individuals are closely similar in a number of physical characters, including friction skin patterns, and in many physiological and psychological characteristics. Cross-resemblance was observed in the friction skin patterns. Each set had a common placenta at birth.—*A. E. Clarke.*

18193. CURTIUS, F., und R. STREMPEL. Gleichzeitiges Vorkommen von Morbus Recklinghausen und Epidermolysis bullosa traumatica hereditaria dystrophica in einer Familie. *Dermatol. Zeitschr.* 51(6): 401-416. 1928.—Clinical history of a family of 6 children of whom the mother and some other maternal relatives have epidermolysis bullosa hereditaria dystrophica and the father had the brown pigment spots of Recklinghausen's disease. One son has e.b.h.d., another son has R's disease, and the 4 remaining children have the characteristics of both. In the cases of R's disease, the tumors have not developed because of the youth of the patients, or the disease is of the abortive, "forme fruste" type. While the simple form of epidermolysis bullosa frequently shows dominant inheritance through a series of generations, typical dominant inheritance of the dystrophic type through 3 generations has rarely been noted. The R's disease also shows dominant inheritance in this case. As is frequently the case in R's disease, the affected children show other abnormal characteristics such as lymphocytosis, leucopenia, and skeletal anomalies.—*M. L. Earle.*

18194. DAVENPORT, C. B. Heredity of human eye color. *Bibliogr. Genetica* [*Gravenhage*] 3: 443-460. 1927.

18195. DAVENPORT, C. B. Hearing in children when both parents have otosclerosis. *Trans. Amer. Laryngol. Rhinol. and Otol. Soc. Inc.* 7p. 1930.—An examination of 6 pedigrees in which two otosclerotics marry and have offspring. There are 19 grown children of whom 18 have otosclerosis. One more, who died at 63 years, had normal hearing. Suggestion that a simple Mendelian recessive may be responsible for otosclerosis.—*C. B. Davenport.*

18196. ELLIS, R. W. B. Four cases of Fragilitas ossium and blue sclerotics. *Proc. Roy. Soc. Med.* 24 (8): 1054-1057. 3 fig. 1931.—Case reports with family trees.

18197. ELLIS, R. W. B. Heterochromia of irides and hair. *Proc. Roy. Soc. Med.* 24(8): 1057-1058. 1931.—The subject had 1 brown and 1 green-blue iris, and a patch of black hair on 1 side of the scalp, the hair on the other side being fair. The pedigree suggests that the father and mother are heterozygous for eye color.

18198. GILLETTE, C. P. An inheritable defect of the human hand. *Jour. Heredity* 22(6): 189-190. 2 fig. 1931.—A short-fingered condition is described which is the result of a shortening of the metacarpal bone of the fourth finger, rendering this digit approximately the same length as the fifth finger. The inheritance is traced through 3 generations and is apparently due to a single dominant gene.—*L. M. Dickerson.*

18199. GOULD, HARLEY N., and BEATRICE DAVIS. Size of family in stocks supplying students to Newcomb College. *Jour. Heredity* 21(12): 489-494. 1 fig. 1930.—A statistical study based upon the families of which 250 students were members, the parents of these families, and 1535 families of the parents' sibs, reveal that the parental generation represented an increase of the stocks; but beginning with the filial generation, a decline in the stock is apparent in spite of a reduced death rate.—*L. M. Dickerson.*

18200. GREULICH, WILLIAM WALTER. The sex ratio among human stillbirths. *Science* 74(1906): 53-54. 1931.—The average numbers of ♂♂ per 100 ♀♀ among 50,810 stillbirths reported in a selected area of the United States during 1926, 1927, and 1928 were as follows: Less than 4 months gestation, 357.48; 4 months, 223.14; 5 months, 139.36; 6 months, 128.91; 7 months, 116.60; 8 months, 125.26; 9 months, 137.43; 10 months or more, 150.13. Total average, 135.83 ♂♂ per 100 ♀♀. Errors in diagnosing the sex probably account for a part of the great excess of ♂♂ in the first age group, though its true masculinity is considered to be greater than that of the next older group. The excess of ♂♂ at conception is definitely greater than at birth.—*W. W. Greulich.*

18201. GRÜNTHAL, E. Klinisch-genealogischer Nachweis von Erblichkeit bei Pickscher Krankheit. *Zeitschr. Ges. Neurol. u. Psych.* 136(3/4): 464-482. 1931.—The author reports 3 cases of Pick's atrophy of the frontal lobe in 2 sisters (4th generation) and the son of the younger, beginning about the 40th year in each. The family (6 generation tree given) had a number of psychopathic and subnormal members.

18202. HENNINGER, HERBERT. Zur Kasuistik der Exostosis Cartilaginea multiplex hereditaria. *Deutsche Zeitschr. Chir.* 232(8/10): 666-673. 4 fig. 1931.—The author describes 4 patients whose family showed hereditary multiple cartilaginous exostoses in 7 of 13 members in 3 generations. He attributes the trouble to a faulty anlage of the chondro-osteogenic tissue, not to endocrine dysfunctions.

18203. HUSKINS, LEONARD C. On the inheritance of an anomaly of human dentition. *Jour. Heredity* 21 (6): 279-282. 1 fig. 1930.—The anomaly described fluctuates in its degree of expression and of recessiveness. In its extreme form it is the absence of the 2 center incisors of both jaws from both sets of teeth. Its transmission agrees with that of an X-chromosome factor.—*L. C. Huskins.*

18204. JAKOBOWICZ, MELA. Über eine Exostotikerfamilie. *Zeitschr. Konstitutionsl.* 13(6): 699-703. 1928. —A typical case of hereditary deforming chondrodysplasia, with a characteristic family tree.—7 affected out of a total of 11 in 3 generations. The affection is an anomaly of the germ-plasm. "Some progenitor implanted this developmental deformity as an autogenous plasm variation, and it became fixed by transmission."—*A. Ehrenfried.*

18205. JENKINS, R. L. Twin and triplet birth ratios, a further study of the interrelations of frequencies of plural births. *Jour. Heredity* 20(10): 485-494. 6 fig. 1929.—With a given proportion of dizygotic twins (a) and of monozygotic twins (b) in a population, the proportion of the 3 types of triplets (trizygotic, dizygotic and monozygotic) should be as $a^2:2ab:b^2$ on the theory that the 2 kinds of twinning are unrelated phenomena. The data do not confirm this although the total proportion of triplets is approximately the square of that of total twins, as expected. If, however, both dizygotic and monozygotic twinning may (in part) trace to a common factor, viz., a tendency of the egg to double production whether before reduction or after fertilization, the data can be explained. Corrections are made for the differential distribution of twins and triplets according to age of mothers.—*S. Wright.*

18206. KLEIN, EDM. J. Der Wert des Mittelgutes. Eine Betrachtung über Genetik und Volkstum. *Arch. Trimestr. Inst. Grand-Ducal Luxembourg Sec. Sci. Nat. Phys. & Math.* 11: 53-63. 1929.—A popular lecture on the value of the people in the central quartiles (Mittelgut) of a population of farmers. While continuous selection occurs as the more intelligent and the less efficient physically go to the cities, the farm population will never cease to produce these types because of its complex heterogeneous constitution.—*O. W. Richards.*

18207. KOMAI, TAKU, and GORO FUKUOKA. A set of dichorionic identical triplets. *Jour. Heredity* 22(8): 232-243. 7 fig. 1931.—A set of Japanese girl triplets 11 years old, examined physically and psychologically, show such close similarity to one another that they are almost certainly monozygotic. The afterbirth, which has been preserved, however testifies clearly that they are dichorionic.—*Author's abstract.*

18208. KRANZ, HEINRICH. Zur Frage des erblichen Zusammentreffens von Exostosen und Rachitis. *Arch. Rass- u. Ges. Biol.* 25(3): 292-294. 1931.—Pedigrees of 2 families in which rickets and exostoses appeared in varying degrees with great frequency. The most severe

rickets accompanied the most pronounced exostoses.—*P. Popenoe.*

18209. **LAMBERT, ROBERT K., and CLYDE E. McDANNALD.** Hereditary high hyperopia. *Amer. Jour. Ophthalmol.* 14(1): 46-48. 1 fig. 1931.—The authors report 5 cases (Italians, mother and 4 of 7 children) of high hyperopia complicated by convergent strabismus, in 3 by nystagmus and in 4 by optic pseudoneuritis as well; nothing warranted the presumption of microphthalmos. No history of abnormality appeared in the history for 4 generations on either side, nor were the parents related.

18210. **LEVIT, S. G., and N. N. MALKOVA. A new mutation in man, hemophilia-a.** *Jour. Heredity* 21(2): 73-77. 1 fig. 1930.—Seven generations of a family involving 72 individuals were studied. The name hemophilia-*a* (autosomal) is proposed tentatively. The defect apparently is a dominant, autosomal gene mutation, apparently operative through some defect in the capillary walls. Coagulative properties of the blood are always normal. Violent hemorrhages are caused by rupture of tissues and take place spontaneously through mucous membranes.—*L. M. Dickerson.*

18211. **MACKLIN, M. T. The relation of the mode of inheritance to the severity of an inherited disease.** *Human Biol.* 4(1): 69-79. 1932.—Inherited diseases may not be uniform in their mode of inheritance in different families. Severe types of the disease, especially those occurring at an early age, are usually recessive in their transmission. If severe, and dominant in inheritance, the age of onset is past adult life. The mild forms of the disease tend to exhibit the dominant rather than the recessive mode of inheritance, and occur at a later period of life. Age of onset, extent and severity of disease appear to be heritable factors, and tend to be alike for siblings, although differing from the same factors in other families. —*M. T. Macklin.*

18212. **MAXWELL, ALINE, and R. R. HUESTIS. Student test-score rank and family size.** *Jour. Heredity* 21(5): 211-215. 1930.—Information as to family size supplied by 707 university students was checked by their parents and arranged in occupational groups. The average number of children per family was $3.31 \pm .05$, and only one group, farmers and foresters, deviated materially from this average. Small negative coefficients of correlation between student test score rank and family size were found in two individual groups and in the whole population. Differences between the birth rates of different occupations and between the average mental test ability of families of different size were smaller than those usually reported by eugenic investigators.—*A. Maxwell and R. R. Huestis.*

18213. **MERRITT-HAWKES, O. A. The Leunbach family, a Danish family with American Indian blood.** *Jour. Heredity* 20(10): 469-479. 5 fig. 1929.—The inheritance of several physical characters is traced through 5 generations from an Indian × White cross. Many of the Indian characteristics appear to be dominant and persist even in the 5th generation.—*L. M. Dickerson.*

18214. **MIROLLI, ANGELO. La elefantiasi familiare delle gengive. [Familial elephantiasis of the gums.]** *Arch. Ital. Chir.* 29(4): 401-416. 7 fig. 1931.—The family tree of the patient shows all 4 generations and 12 of the 29 members more or less affected with chronic hypertrophic gingivitis.

18215. **NEWMAN, H. H. Differences between conjoined twins in relation to a general theory of twinning.** *Jour. Heredity* 22(7): 200-215. 9 fig. 1931.—A study of several sets of Siamese twins shows that the components are distinctly less similar in head size, facial characters, palm and sole patterns, etc., than are separate identical twins. If conjoined twins are the product of a relatively late fission of the blastoderm after the 2 halves of the embryo have been irreversibly differentiated in right and left directions, the more extensive asymmetry reversal, mirror-imaging, in conjoined as compared with separate monozygotic twins, as well as their greater differences in all sorts of bodily characters, are accounted for. A special study of the palm and sole patterns of conjoined twins helps to confirm the above theory.—*H. H. Newman.*

18216. **NEWMAN, H. H. Mental and physical traits of identical twins reared apart. Case IV.** *Jour. Heredity* 23(1): 3-18. 7 fig. 1932.—This 4th case in the present series differs from all previous cases in that the twins differ equally strongly, physically, mentally and temperamentally. Previous cases have exhibited very close correspondence in at least one of these respects. In pair IV, one girl was reared on a prosperous farm, the other in a small town, where she lived mainly a sedentary life. The town girl had gone through high school and had studied music extensively; the farm girl had finished the 8th grade in country school. The farm girl was very superior physically and somewhat more normal temperamentally, but much inferior in I. Q. and mental age. A brief summary of the first 4 cases is given. The most striking feature of the study so far is that the average differences in I. Q. and mental age of the 4 cases of identical twins reared apart is somewhat greater than the average of fifty pairs of fraternal twins reared together. The bearing of this on the heredity-environment controversy is discussed.—*Author's abstract.*

18217. **OREL, HERBERT. Die Vererbung der Ichthyosis congenita und der Ichthyosis vulgaris.** *Zeitschr. Kinderheilk.* 47(3/4): 312-340. 2 fig. 1929.—Following discussion of the differentiation between the types of common ichthyosis and the 3 types (Riecke) of the more severe congenital ichthyosis, the author analyzes the mode of inheritance in many reported cases of both forms of the disease, illustrating the discussion with a series of family charts. While there are cases on record which may be considered transitional, the 2 forms of the disease are genotypically unlike and are distinct anomalies. The author describes an ichthyotic family in which the mode of inheritance is doubtful, and discusses the family histories of 7 cases which he has worked out with exactness. Owing to wide variations in manifestation and to the small number of generations reported, the mode of inheritance of common ichthyosis has not been definitely determined. In the majority of cases it shows the dominant, often the irregular dominant, type of heredity; and there is also a sex-linked recessive type. It is even possible that it may sometimes be transmitted as a simple recessive. Consanguinity of the parents in cases of common ichthyosis is not more frequent than in the general average of the population. Inheritance of congenital ichthyosis is recessive in type, with frequent consanguinity of the parents and occurrence of the disease in more than 1 child in a family. All cases should be carefully classified with reference to family history and type of inheritance. —*M. L. Earle.*

18218. **PALMA, MODESTO DALLA. Sulla eosinofilia famigliare. [Familial eosinophilia.]** *Policlinico (Sez. Med.)* 38(12): 605-619. 1 pl. 1931.—In a family of 65 members for 3 generations there were 33 cases of eosinophilia (13 members of the family not examined).

18219. **PERLEY, ARTHUR E. Two cases of brachydactylia.** *Radiology* 17(5): 1056-1058. 3 fig. 1931.—In one instance, the short distal phalanges on the thumbs had been hereditary on the paternal side for several generations; in the other, bilateral brachydactylia in the 5th metacarpals was present in the patient, mother, and great grandmother.

18220. **PITTARD, EUGÈNE. La répartition du cancer dans les Iles Britanniques. Rapports possibles entre le cancer et la race.** *Bull. et Mém. Soc. Anthrop. Paris* 10: 74-76. 1929.

18221. **POPENOE, PAUL. The inheritance of artistic talents.** *Jour. Heredity* 20(9): 415-423. 1929.—Historical data and the results of intelligence tests are cited to show: that exceptional intelligence develops early, especially ability in musical expression and composition; that art runs in families; and exceptional ability as a performer is not so closely correlated with general intelligence as is creative ability.—*L. M. Dickerson.*

18222. POPENOE, PAUL. Feeblemindedness today. *Jour. Heredity* 21(10): 421-431. 2 fig. 1930.—A critical review of several recent publications. In a few instances, specific survey data are cited in evaluating certain quoted statements. The problem of the feebleminded is crystallized in 5 questions. The answering of these questions, with adequate evidence, must be regarded as the minimum basis upon which an eugenic solution of the problem can be based.—*L. M. Dickerson.*

18223. POPENOE, PAUL. Anthropology and eugenics. *Jour. Heredity* 22(9): 277-280. 1931.—A critical review of value to anyone interested in a bibliography of recent German publications in these allied fields; covers 17 titles.—*L. M. Dickerson.*

18224. POPENOE, PAUL, and KATE BROUSSEAU. Huntington's chorea. *Jour. Heredity* 21(3): 113-118. 1 fig. 1930.—A pedigree covering parts of 4 generations agrees with earlier studies that Huntington's chorea behaves as a simple Mendelian dominant. The organic basis and eugenic aspects of the affection are discussed. —*P. Popenoe.*

18225. RIFE, DAVID C., and L. H. SNYDER. Studies in human inheritance VI. A genetic refutation of the principles of "behavioristic" psychology. *Human Biol.* 3(4): 547-559. 1931.—A study of the families of those inmates of institutions for the feeble-minded who possess some marked special ability, in drawing, music, etc., showed that the special ability usually appeared in the patient's family, as did the feeble-mindedness, though not in the same individuals. In the patients under discussion, both traits were inherited coincidentally, the special ability manifesting itself because of the genetic make-up of the individual and in spite of the absence of normal intelligence or of training. This would seem to be a specific refutation of the principles of "behavioristic" psychology.—*L. H. Snyder.*

18226. ROLLINS, WELD A. The fertility of college graduates. *Jour. Heredity* 20(9): 425-427. 1 fig. 1929.—The average number of children born to men who graduated from college between 1658 and 1880 was invariably about ⅓ less than the average number of children born to wives in the general community. The % of childless marriages was more than twice as great in the college group during 1826-1880. An inference drawn is that the differential will not be self correcting, and that the process, taken in connection with immigration, will gradually change the physical inheritance and the family and group tradition of the nation.—*W. A. Rollins.*

18227. ROLLINS, WELD A. The fertility of college graduates II. A comparison of the average number of children born to college graduates with the average number of children born to their brothers and male cousins. *Jour. Heredity* 20(11): 535-539. 1 fig. 1929.—An examination of 6 New England genealogies disclosed that 160 college graduates averaged 2.61 children born per man; 146 brothers, 3.11; and 331 cousins, who like the brothers were not college graduates, 3.33. The period covered was 1790 to 1870, those born within that time being taken. The fertility of all 3 groups lessened during the period, but that of the cousins decreased least, and that of the brothers most. Throughout the period, the cousins on the average always married first, brothers next, graduates last.—*W. A. Rollins.*

18228. ROLLINS, WELD A. The effect of immigration on the birth rate of the natives. *Jour. Heredity* 21(9): 387-401. 5 fig. 1930.—Statistical studies comparing "college graduate" and "colonial stock" groups with the trend of immigration show that as immigration into the U. S. A. has increased, the birth rate of the native groups has decreased, the "college graduate" group showing the most marked decline.—*L. M. Dickerson.*

18229. ROSSMAN, JOSEPH. Heredity and invention. *Jour. Heredity* 21(12): 507-512. 1930.—A statistical study based on questionnaire data from over 700 inventors. The transmission of inventive ability involves numerous factors. Economic and geographic conditions and social ideals, rather than hereditary abilities, may be the chief causes for the decided differences in geographic distribution of inventiveness.—*L. M. Dickerson.*

18230. RUDIN, E. Praktische Ergebnisse der psychiatrischen Erblichkeitsforschung. *Naturwissenschaften* 18 (13): 273-280. 1930.—Discussion of the difficulties of investigation and of the possibilities of practical application of the conclusions reached.

18231. SCHMIDT-BÄUMLER, HEINRICH. Familiäres Cylindrom. Ein Beitrag zur Frage der geschlechtsbegrenzten Vererbung. *Arch. Dermatol. u. Syph.* 163(1): 114-125. 5 fig. 1931.—In one family of 20 living members, 6 women had multiple symmetric nodules, 1 boy a single large node. In 3 (boy and 2 sisters) there were cylindromata; clinical similarity indicates that the other tumors in this family are the same. The familial grouping was hereditary, and dominant sex-linked descent seemed probable, indicating close relationship with the clinically similar epithelioma Brooke.—*Author's summary (transl.).*

18232. SCHREIBER, G. Finger-prints in monozygotic twins. *Jour. Heredity* 21(9): 403-406. 2 fig. 1930.—The finger prints of a pair of twins, their 3 brothers and the parents, are compared as to type. Reversed symmetry is found between the twins, emphasized by a congenital abnormality of the thumbs. The resemblances between the twins are greater than between the other individuals and parallelled by greater anatomical resemblances.—*L. M. Dickerson.*

18233. SCHULTZ, A. H. The hereditary tendency to eliminate the upper lateral incisors. *Human Biol.* 4(1): 34-40. 1932.—Marked reductions in the size of the upper lateral incisors, including the complete congenital lack of these teeth, are fairly common in the higher races of man. Such variations in size, leading toward the elimination of these incisors, are of a hereditary nature. It is not a particular variation, however, but the tendency to vary in the direction of a reduction, which is inherited. By various pedigrees it is shown that this tendency is not genetically alike in all cases, but can be inherited in quite different manners in different families.—*A. H. Schultz.*

18234. SIEMENS, HERMANN WERNER. Das Problem der Erbgleichheit bei den eineiigen Zwillingen. *Virchow's Arch. Path. Anat. u. Physiol.* 264(2): 323-346. 14 fig. 1927.—Reasons for the author's belief in the hereditary similarity of single-egg twins are given. The arguments of Levens, Mathes, and Newman concerning hereditary differences are reviewed.—*E. E. Jones.*

18235. THOMSEN, OLUF, und JOHS. CLAUSEN. Das Vorkommen von Landsteiners "Immunreceptoren" M und N in der Dänischen Bevölkerung. *Hereditas* 15 (2): 213-218. 1931.—Landsteiner and Levine have demonstrated the existence of 3 till then unknown erythrocyte receptors, M, N, and P. For these receptors, agglutinin is not found in the serum of man. The receptors can be demonstrated only by the help of absolutely pure immune sera. An examination was made of 442 healthy subjects and 135 patients suffering from different diseases. The total material contained 74.6% M, 70.1% N, and 44.6% MN. The grouping by M and N was independent of the groups of the main system O, A, B, and AB. No case was found in which both M and N were lacking. Data on the offspring from various parent combinations of M, N and MN agree with the view of Landsteiner and Levine that M and N are allelomorphic factors. The combination of the two systems of grouping gives extended possibilities for use in paternity cases. —*H. Wexelsen.*

18236. WAGONER, GEORGE, and BERNARD N. E. COHN. Osteochondritis dissecans. A résumé of the theories of etiology and the consideration of heredity as an etiologic factor. *Arch. Surg.* 23(1): 1-25. 7 fig. 1931.—Osteochondritis dissecans occurred in 3 men of one family, son, father, and paternal uncle, and in 2 brothers, bilaterally in one.

18237. WELLISCH, S. Die Massenerscheinung der Blutgruppen. *Zeitschr. Rassenphysiol.* 4(1): 27-31. 1931. —The author considers, from a mathematical viewpoint,

how large a population should be studied in order to yield representative results.—*P. Levine.*

18238. **WELLISCH, S. Über die Genauigkeit der Kinderverteilung bei Ehen mit bekannter Aufspaltung.** *Zeitschr. Rassenphysiol.* 4(1): 32-36. 1931.—The author studied the incidence of the children in groups A and B, coming from matings O × AB. In his material, compiled from numerous papers, the deviation from the theory, as calculated by a formula derived by the author, is but 1/18 as large as the standard deviation. This result is to be expected from the Bernstein theory. Wellisch attempted to apply the same method to the study of the union O × A. The results from a statistical viewpoint were not satisfactory when he included only families with at least one child of group O and one child of group A. On omitting from the data the material of some investigators, there was close approximation to the expected values. Satisfactory results were obtained in an analysis of all matings O × A, A × O, O × B, B × O, with at least one child of group O and one of group A or B, and also in the matings O × A when no families whatever were omitted.—*P. Levine.*

18239. **WILLOUGHBY, RAYMOND R. Cross-cousin marriages and population stabilization.** *Pedagogical Seminary and Jour. Genetic Psychol.* 35(1): 129-131. 1928.—Using his method of hypothetical populations of individuals of known genetic constitution, "bred" by dice throws to simulate the chance contacts of gametes, the author examined the operation of the cross-cousin marriage system (occasionally met in primitive groups) with reference to its tendency to render the population homozygous. Five factors were assumed, of which one was already stabilized at the beginning of the experiment; the remaining 4 were rendered homozygous in 40 generations, during which the average value for the population described a rough sine curve and reached stability at a level somewhat higher than the initial one.—*R. R. Willoughby.*

18240. **WILLOUGHBY, RAYMOND R. A method for approximating genetic constitutions.** *Pedagogical Seminary and Jour. Genetic Psychol.* 35(1): 131-134. 1928. —A hypothetical system of multiple cumulative factors, compiled as realistically as possible, is assumed. In a real family in which quantitative measures of the trait under consideration are available for each individual, constitutions from the hypothetical system tallying in total value with the observed measures are tentatively assigned each parent. All possible constitutions for offspring of the hypothetical parents are then compared as to their total value with the observed values for the real children of the real parents, and (1) if possible, appropriate constitutions are assigned to these children and the process continued to their mates and children, or (2) the absence of any appropriate values among the possible constitutions necessitates selection of another possibility for either or both parents, whereupon the process is repeated until a set of constitutions consistent with the facts is derived.—*R. R. Willoughby.*

18241. **WILLOUGHBY, RAYMOND R. What is a genetic stock?** *Pedagogical Seminary and Jour. Genetic Psychol.* 35(4): 619-623. 1928.—After a consideration of the difficulties inherent in assigning satisfactory meaning to the term, the definition is suggested that the stock of a given individual comprises those individuals having (on a probability basis) at least one somatic chromosome in common with him. A list and a diagram are given of the degrees of relationship which would be included in a normal stock under this definition; and possible advantages from the use of the concept are suggested.—*R. R. Willoughby.*

18242. **WILLOUGHBY, RAYMOND R. Longevity in a human stock.** *Pedagogical Seminary and Jour. Genetic Psychol.* 35(4): 624-626. 1928.—To illustrate the author's concept of stock, the longevity of a related group is studied level by level, and the results stated in terms of the weighted average of these.—*R. R. Willoughby.*

18243. **WILLOUGHBY, RAYMOND R. The fecundity of the name-males over ten generations of a descendant human pedigree.** *Pedagogical Seminary and Jour. Genetic Psychol.* 36(1): 178-182. 1929.—The average fertility per ♂ is almost constant or possibly shows a slight rise from generations III to VI (covering approximately the 18th century, in America), but breaks sharply to generation IX (about 1870); between highest and lowest generations, the difference between averages is about 4 children. The variability also decreases markedly after generation V.—*R. R. Willoughby.*

18244. **WILLOUGHBY, RAYMOND R. The dying professor. A study in faculty family size.** *Jour. Heredity* 21(6): 273. 1930.—A statistical study of the size of faculty families in a small New England university. A per member maximum of 1.65 or 1.70 child is estimated for the group.—*L. M. Dickerson.*

18245. **WILSON, PAUL T. A study of like-sexed twins. III. Twinning among relatives.** *Jour. Heredity* 21(8): 371-374. 1930.—Among the relatives of 198 pairs of like-sexed twins, 300 cases of twinning were located (about equally divided among the relatives of the identical and the fraternal pairs, and about equal on maternal and paternal sides). In the case of the parents and grandparents, it was possible to determine the %-incidence of twins; this was not reliably different from the % in the general population. This may be attributable to a low fecundity of twins rather than to the absence of an heritable tendency.—*P. T. Wilson.*

18246. **YUAN, I-CHIN. The influence of heredity upon the duration of life in man based on a Chinese genealogy from 1365 to 1914.** *Human Biol.* 4(1): 41-68. 1932.—A statistical study of 20 generations of a Chinese family, analyzing the age at death of sons according to the duration of life of their parents. Parents were divided into three groups according as their age at death was 20-49 years, 50-69, 70 and over. It was found by a study of the survivorship curves of their sons and their average duration of life that there was a progression in the length of life of sons in the same order as that of their parents. The same progression was found, but less marked, according as either parent was considered without regard to the other, or when the life duration of both parents occurred in the different combinations possible with these three age groups.—*M. Merrell.*

ECOLOGY

W. C. ALLEE, *Editor,* Animal

GEO. D. FULLER, *Editor,* Plant

CHANCEY JUDAY, *Editor,* Plankton

(See also in this issue: [GENERAL AND ANIMAL ECOLOGY]: (General) 18586, 18592; (Light) 18584, 18585, 18608; (Temperature) 18662; (pH) 18583; (Atmospheric pressure) 19088; (Climate) 19009, 19241, 19242, 19291, 19523; (Aestivation) 18587; (Geotropism) 18589; (Protozoa) 20505, 20524, 20549; (Arachnida) 20663, 20664, 20673; (Insecta) 18567, 18582, 18594, 18602, 19631, 19638, 19651, 19670, 19672, 19678, 19680, 19685, 19686, 19693, 19699, 20648, 20777, 20809, 20829, 20856, 20862, 20932; (Mollusca) 19659, 20607; (Pisces) 18590, 18599, 18605, 18872, 19496, 19498, 20971, 20982, 20985; (Amphibia) 19498; (Reptilia) 18603, 21002, 19497, 21012; (Aves) 18818, 21031, 21032, 21033, 21062, 21073, 21080, 21081, 21098; (Mammalia) 18607, 18759, 18918, 21109, 21130, 21131. [PLANT ECOLOGY]: (General) 18124; (Water balance) 18370; (Photosynthesis) 18390; (Latex) 18402, 18403; (Gums and resins related to climate) 18406; (Alkaloids related to climate) 18408; (Symbiosis of algae and bacteria) 18440; (Symbiosis of trees and lianas) 18443; (Germination of seeds) 18451, 18453, 18456, 19804; (Light relations) 18458, 18459; (Vegetation zones) 19786; (Xerophytism) 19795; (Soil acidity) 19793, 19798, 19910; (Competition) 19833; (Climatic zones) 19866; (Burning of grassland) 19874; (Soil and vegetation) 19887, 19923; (Peat auger) 19904; (Morocco forests) 20064; (Lichens, ecology of) 20153; (West-Indian vegetation) 20175; (Cypress, orchids of) 20193; (Phlox, ecology of) 20265; (Ireland, vegetation of) 20267; (China, vegetation of) 20270; (Sudan, vegetation of) 20272; (Massachusetts, vegetation of) 20275; (Arizona, vegetation of) 20285; (California, vegetation of) 20282; (Yucatan, vegetation of) 20295; (Galapagos, vegetation of) 20297)

GENERAL

18247. ROBBINS, C. R. An economic aspect of regional survey. *Jour. Ecol.* 19(1): 25-33. 3 pl. 1931.—The advantages of cooperation in the preparation of maps are stated and directions are given for the formation of useful biologic maps. It is suggested that aerial photography be supplemented by data from soil scientists, surveyors, foresters, and botanists. The result would be maps useful for many purposes and produced with the greatest possible economy of time and effort. —*G. D. Fuller.*

ANIMAL

18248. THURSBY-PELHAM, D. E. Fluctuations in the abundance of the various year-classes of food fishes. IX. Fluctuations in the age-composition of the Plaice stock in the southern North Sea during the period 1923 to 1928. *Conseil Perm. Internat. Explor. Mer Rapp. et Proc. Verb. Réunions* 65: 67-81. 14 fig. 1930.—Judging from age interpretation of some 18,000 otoliths taken from plaice collected in the southern North Sea by the research vessel "George Bligh" of the Ministry of Agric. and Fisheries during 1923-1928, the plaice of yr.-classes spawned in 1920, 1921, 1922, and 1925 were abundant, while plaice of the 1923 and 1924 classes were scarce. Examination of otoliths from market plaice at Lowestoft in Oct., 1926 and Dec., 1927 and 1928 confirms this when tabulated according to the number and wt. caught per 100 hrs. trawling. A yr.-class reaches its maximum in landings as the IV-group and thereafter undergoes very rapid reduction by numbers; less rapid by wt.—*O. E. Sette.*

PLANT

18249. AIKMAN, J. M. The effect of physical factors on the development of woodland and prairie associations in Iowa. *Proc. Iowa Acad. Sci.* 37: 209. 1930(1931). —Abstract.

18250. ATKINS, W. R. G., and H. H. POOLE. Photo-electric measurements of illumination in relation to plant distribution. 4. Changes in the colour composition of daylight in the open and in shaded situations. *Sci. Proc. Roy. Dublin Soc.* 20(1/7): 13-48. 6 fig. 1931.—A portable outfit for the photo-electric measurement of light color in the open and in woodlands is described. Measurements were made by the use of portable micro-ammeters in positions with good illumination, but in the more shaded situations it was necessary to use a very sensitive neon lamp device (described by J. H. J. Poole), combined with a (General Electric) thin film caesium vacuum cell, type CMV6. The infra red sensitivity of the cell was suppressed by a heat absorbing filter, so that a wave-length sensitivity curve approximately horizontal was obtained. A color factor method is described whereby the color of the light may be measured in terms of daylight from a grey sky or any other chosen source. Light in woods was very poor in blue, relatively rich in green, close to sunlight in content of orange red, and very much richer than either skylight, daylight, or sunlight in the deep red, probably due to the great transparency of chlorophyll for the deep red. Visual observations made with a spectroscope of the light in shaded positions showed a maximum in the green. Measurements are recorded of the sensitivity of direct sunlight and diffused skylight for the different portions of the spectrum. Values of the daylight factor in shaded sites have heretofore been given for blue light only; to obtain the value for any other color, that for blue must be multiplied by the appropriate color factor.—*W. R. G. Atkins.*

18251. BRAUN-BLANQUET, J. Aperçu des groupements végétaux du Bas-Languedoc. *Comm. Stat. Géobot. Internat. Méditerranéenne et Alpine* 9. 1931.—For the first time the plant communities of the Bas-Languedoc region, France, are enumerated and classified on the principle of sociological progression, which also brings out clearly their genetic relationship.—*F. R. Bharucha.*

18252. BROCKMANN-JEROSCH, H. Die Vegetation der Schweiz. Beiträge zur geobotanischen Landesaufnahme. 12. Publ. by the "Pflanzengeogr. Komm. Schweiz. Naturforsch. Ges." Lief. 1. p. 1-160, 1925; Lief. 2. p. 161-288. 1927; Lief. 3. p. 289-384, 1928; Lief. 4. p. 385-499. 1929. 8 pl. 7 charts, 3 col. maps. Verlag Hans Huber, Bern. Price, 9 Fr. each Lief.—Soil and climatic factors are examined successively, in their effects on vegetation. The pedological doctrines of Wiegner and Richard Lang (i.e., fully matured soils are all alike, regardless of type of parent rock and that they are determined wholly by climate) are subscribed to. There are, however, many apparent exceptions to this rule in Swiss soils because of their relative immaturity (moraines, talus, etc.), and because of factors retarding development (permanently frozen soils). On the conifer-forested heights the soils are bleached (podsols); above, on the peaks, permanently frozen soils. Swamps produce raw humus; locally sheltered spots, beneath overhangs, crusted soils. "Aclimatic" soils are formed through influence of plants and man (culture, domestic animals, tourist activities). Annual precipitation varies from less than 60 cm. to over 300 (locally, as at the Mönchsjoch, to 400). The

mean annual rainfall for all Switzerland is 156.27 cm. Maxima occur in different parts of the country in all mo. from June to Dec. Run off amounts to 72.7% of precipitation in the Jura; to 59.8% in the "Mittelland"; and 42.4-82.2% in the Alps. The mean for north central Europe is 28%. Evaporation losses are, of course, the complements of the run offs. The proportion of snowfall in total precipitation varies from about 10% in the Mittelland to 30% at 1000 m., 60% at 2000 m., and 100% at 3500 m. Snow harms vegetation by (1) loading, bending, and breaking trees; (2) slowly creeping in masses, bending over and decorticating shrubs and trees, uprooting smaller plants, and sometimes plowing away the soil itself; and (3) forming avalanches. The latter often follow the same paths year after year, preventing the development of more than the initial stages in succession. Snow lying on the ground prevents as great temp. fluctuations as would otherwise take place. Seed germinate, and perennial plants grow and even blossom under snow, through which a litle light penetrates. Thaw-water on frozen ground under snow usually runs off; on unfrozen ground it sinks in, causing leaching which ends in podsolization. Effects of hoarfrost and dew are minor. Hail is frequent and often highly destructive; hail maxima occur in July. Lightning apparently selects tree sp.: for 1 beech damaged there are 6 firs, 37 pines, and 60 oaks. Temp. varies greatly. The many lakes exert a modifying influence on temp. extremes in the valleys which they dominate. Descending warm winds (Föhn) result from warming of high-pressure areas at greater elevations. Plants on lee sides of mountains, protected from winds and often banked under snow, grow taller and straighter, and at greater elevations, than corresponding sp. on windward sides. At alpine and subalpine elevations plants must be prepared to face frost and snow in any mo.; hence must be able to produce new growth-points if these are frozen, or to endure low temp. with existing growth-points and flowers. Some sp. survive and flower below 40° C. Some sp. can carry on photosynthesis at as low as 16°; lichens can function at 20°. High temp. extremes express themselves in sun-scald damage to tree trunks, occasional severe droughts, and in endurances demanded of rock vegetation, on surfaces that reach as high as 52° C. Winds from the west and southwest are prevalent; from the north-to-east quarter there are winds during only 17% of the time. The number of periods of calm are related inversely to altitude. Winds influence vegetation mostly through other factors: precipitation, evaporation, etc.; but they also have striking effects in producing "Krummholz" and other forms of wind-shaped trees, as well as polster-plants and other alpine vegetation.—*F. Thone.*

18253. CAIN, STANLEY A., RAY C. FRIESNER, and JOHN E. POTZGER. A comparison of strip and quadrat analyses of the woody plants on a central Indiana river bluff. *Butler Univ. Bot. Studies* 1 (paper 10): 157-171. 1930.—This paper, which takes up the question of distribution of woody plants on hills along White River in Morgan Co., Indiana, deals especially with a comparison of the accuracy of strip transect and quadrat method in ascertaining the relative abundance and frequency of distribution of woody plants, and the transition from one sp. to another from the bottom to the top of the bluffs.—*J. E. Potzger.*

18254. CAIN, STANLEY A., and RAY C. FRIESNER. Certain aspects of the H-ion concentration of the soils of a central Indiana river bluff. *Butler Univ. Bot. Studies* 1 (paper 11): 172-175. 1930.—Samples were taken of surface and subsoil at 25 ft. intervals from the bank of a river over a 250-ft. ridge to ascertain whether or not acidity of soil would increase with altitude. While the slopes were more acid than the flood plain no direct correlation between altitude and acidity was shown. In 90% of the samples the subsoil was more acid than the surface soil by an average of approximately 0.8 of a pH. For all samples the average reaction of the surface soil was pH 5.9 and for subsoil 5.1.—*J. E. Potzger.*

18255. CAMBAGE, R. H. The origin and development of portion of the Australian flora. *Rept. Australasian Assoc. Advanc. Sci.* 19: 1-29. 1928 (1929).—There appear to be more genera common to Africa and the eastern half of Australia only, than to Africa and the western half of Australia only, so that evidence of a direct land connection between these 2 countries in late geological time is meagre. Many genera which are common to Africa and Australia have reached these countries from the same source in the north, and have then developed in response to environment. From available evidence it would seem that, at least since Cretaceous time, the northern hemisphere has had a greater land mass than the southern, and, as a result, there has been more room for plant-development in the north. Probably the Pleistocene and even earlier cold periods have been instrumental in permitting many genera to pulsate across the tropics from temperate northern regions, and in the process, and after arrival in the south, there has been much radiation, development, and evolution. Although there probably has been more migration to Australia from the north, there is evidence in some cases of secondary radiation from the south, especially in *Eucalyptus*. It seems undoubted that some genera common to Australia and New Zealand have reached both countries from the north, some sp. coming down the east coast of Australia, while others have gone by way of New Caledonia and adjoining islands to New Zealand. There appears to be more evidence in favour of a former land connection between Antarctica and So. America, and perhaps also between Antarctica, New Zealand, and Australia, than between Antarctica and Africa. Except for a land connection between Northeastern Australia and islands to the north, perhaps as late as the Pliocene or Pleistocene, Australia has long been isolated from the rest of the world. It is likely that the following large genera, among others, have originated in Australia, and developed there chiefly: *Eucalyptus, Melaleuca,* Phyllodineous *Acacia, Pultenaea, Daviesia, Grevillea, Persoonia, Hakea, Banksia, Dryandra, Goodenia, Candollea, Boronia.* These genera are represented by upwards of 1800 spp. and are almost wholly Australian. Studies of the many changes which have taken place in the history of the world's flora, of its adaptability to environment, its response to changes of climate and soil, its ability to overcome many adverse conditions, all combine to show that creation not only embodied the initial giving of life, but also provided inherent power and initiative for the necessary development and evolution required for the persistence of that life, in harmony with its varying surroundings and dominating influences.—*Author's summary.*

18256. CHESTERS, CHAS. G. C. On the peat deposits of Moine Mhor. *Jour. Ecol.* 19 (1): 46-59. 8 fig. 1931.—The peat over the 50 ft. raised beach which surrounds the head of Loch Crinan, in Argyllshire, Scotland, and that of the neighboring moorland was found to contain no remains of salt marsh vegetation. Many fragments of moorland plants were identified and pollens of *Betula* and *Alnus* were relatively abundant, while *Pinus* pollen had a low frequency. Everything suggests that the peat is of recent origin, the earliest layers dating back to sub-atlantic times.—*G. D. Fuller.*

18258. CRAW, J. R. Hydrogen-ion reaction of native Indiana fern soils. *Proc. Indiana Acad. Sci.* 39: 111-113. 1929 (1930).—The pH range of the soil in the natural habitats of 27 common ferns showed considerable variation. *Osmunda cinnamomea, Pteris aquilina, Aspidium cristatum,* and a few others, seemed restricted to soil of pH 4.3-4.7; *Aspidium goldianum* occupied soil of 7.0-7.3. The others ranged between these extremes.

18259. DÄNIKER, A. U. Neu-Caledonien, Land und Vegetation. *Vierteljahrsschr. Naturforsch. Ges. Zürich* 74 (1/2): 170-197. 4 fig. 1929.—This large sub-tropical mountainous island of the So. Pacific ocean, rising to over 1600 m., is described geologically and physically. Its mesophile relatively hygrophile forest is described in 9 associations with characteristic spp.—*J. P. Young.*

18260. FIRBAS, F. Pflanzensoziologie. *Natur und Museum* 62(2): 33-42. 5 fig. 1932.—A general statement of the scope and principles of plant sociology.

18261. GOULD, CHAS. N. Petroleum and surface vegetation. *Proc. Oklahoma Acad. Sci.* 10: 110-114. 1930. —A common belief exists among laymen, that surface vegetation often indicates mineral and oil conditions below ground. These beliefs are for the most part not supported by facts since any correlation between the geology and surface vegetation is only coincidental.—*F. P. Sipe.*

18262. HAGERUP, O. Étude des types biologiques de Raunkiaer dans la flore autour de Tombouctou. *Kgl. Danske Videnskab. Selskab. Biol. Meddel.* 9(4): 5-116. 5 pl. 1930.—In Timbucto the vegetation is dependent on summer rainfall which lasts from June until Aug. The seed of all spp. germinate in July at the height of the rainy season. The young plants grow in such numbers and with such rapidity that in a few days the barren sand is clothed with green. In some spp., seed is formed 8-10 days after the mother plant has germinated. By Aug. 1, when there are intervals of a week between rains, the vegetation begins to die, and by the last of Aug. the ephemeral vegetation is dead. Some trees, shrubs, semi-shrubby plants, and a few herbaceous plants survive until the next rainy season especially in the more favored places. During the winter, the drought is as intense as in the Sahara and the humidity of the air is reduced to a minimum. The temp. of the air and the upper layers of the soil is extreme. Many of the spp. which survive this period have a long primary root which extends down to the layers of soil which are relatively cool and moist. Many have bladders filled with water or sticky glandular hairs; or are tomentose, leathery, or reduced in size. Even the best protected spp. are subjected to great loss of water. The biological spectrum of Raunkiaer for Timbucto shows a higher % of chamaephytes and therophytes than the normal. Tall trees are lacking. Small trees and shrubs and hemicryptophytes are fewer than normal. Semi-shrubby chamaephytes are particularly well adapted to this region, since the body of the plant is lifted above the extreme heat of the surface of the soil and is yet not high enough to be subjected to the desiccating effect of strong winds. Semi-shrubby chamaephytes make up 36% of the flora, in contrast to the Sahara where therophytes predominate. The flora of Timbucto is most closely related to that of regions east and south since seed are scattered by the winds, which come from these directions. The Sahara is a barrier to plants from the north. All spp. seed plants found near here are described.—*B. Ennis.*

18263. HEIL, HANS. Altrheinvegetation. *Vegetationsbilder* 20(2): Pl. 7-12. 1929.—A number of aquatic plant communities are illustrated and briefly described. Among the spp. depicted are *Nuphar luteum, Trapa natans, Ranunculus divaricatus, Limnanthemum nymphaeoides, Polygonum amphibium, Nymphaea alba,* and *Ceratophyllum demersum.*—*G. D. Fuller.*

18264. JENNINGS, O. E. Further notes on the plant geography of western Pennsylvania. *Proc. Pennsylvania Acad. Sci.* 3: 42. 1929.—Abstract.

18265. KOCH, HANNS. Paläobotanische Untersuchungen einiger Moore des Münsterlandes. *Beih. Bot. Centralbl. Abt. 2.* 46(1): 1-70. Map, 8 fig. 1929.—The bogs of western and northern Münsterland are mostly raised, and their development to the present stage has been conditioned by the large deposits of material received on account of the geographical location. Their origin was mostly due to the sand-clay substratum becoming swampy. Their raised bog character is recognizable by the peat strata (represented by the Sphagnetum and lenses of Eriophoro-Callunetum); and where difficulties are encountered in this they can be recognized by the surface configuration and the recent vegetation. Pollen analysis indicates that the bogs originated at different periods, some being even preboreal. The stratigraphy gave no indication of a change of climate in post-glacial time. A subatlantic dry stage in the sense of Gams and Nordhagen was identified. The comparison of the pollen spectrum of these bogs with that of other mid-European bogs indicates clearly the forest succession: (1) birch stage—decreasing % of *Salix*, increase of pine, and entrance of hazel (Preboreal); (2) pine stage—rational boundary of hazel pollen, decrease of the birch curve, entrance of alder (Preboreal); (3) pine-hazel stage—common entrance of *Ulmus, Tilia,* and *Quercus,* culmination of pine and hazel, spread of the mixed oak forest and alder (Boreal); (4) mixed oak forest and hazel stage—maximum for alder, culmination of linden, secondary increase of hazel, entrance of beech and a little later of hornbeam, rational boundary of beech pollen, falling of the hazel curve (Atlantic); and (5) beech period—maximum of hornbeam and beech, secondary increase of pine in the most recent portion (Subboreal and subatlantic).—*G. B. Rigg.*

18266. KUJALA, VILJO. Beobachtungen über die Waldvegetation auf Lehmboden bei Mustila in Elimäki (Süd-Finnland). [Forest vegetation on loam soils near Mustila in Elimäki, southern Finland.] *Metsatieteellisen Tutkimuslaitoksen Julkaisuja* 13: 3-16. 1929.

18267. LEACH, W. The vegetation of the Longmyde. *Jour. Ecol.* 19(1): 34-45. 7 fig. 1931.—A description is given of the vegetation of a hill area in Shropshire, England, where the 2 main communities are oak forest, with *Quercus robur* on the better and *Q. sessiliflora* on the drier, shallower soils; and a heath dominated by *Calluna.* In spots the forest has been replaced by bracken, *Pteris aquilina,* and by grassland.—*G. D. Fuller.*

18268. PALLMAN, H. Zusammenhang zwischen der aktuellen Azidität, dem Gesamthumus und dem Gehalte an dispergierbarem Humus. *Comm. Stat. Internat. Méditerranéenne et Alpine* 9. 1931.—It is not the absolute quantity of organic matter in the soil that determines its acidity but the amount of colloidal humus. A close relationship exists between the dispersed (colloidal) humus and the soil acidity of various plant associations.—*F. R. Bharucha.*

18269. SCHRÖTER, C., (with assistance of C. A. BACKER). Exkursionen in Ost-Java (Idjen-Plateau und Weliran). *Beibl. Vierteljahrschr. Naturforsch. Ges. Zürich* 73(15): 554-600. 3 pl. 7 fig. 1928.—Excursions were made from Pasuruan to the Idjen-Plateau and from Malang to the Weliran volcano, studying the mangrove, the savanna of East Java, caused by the drought of the period of east-monsoon, the secondary rain forest, the *Casuarina* forest, the tussock-grass vegetation of *Themeda gigantea,* the crater and solfatara vegetation, and the "Alpine" vegetation of the summit. In Java there is no true Alpine flora, because the trees reach the highest mountains. A detailed description is given of the climate of the summit of Mount Pangerango.—*C. Schröter.*

18270. STRATMANN, GUSTAV. Der Hümmling. (Beiträge zu seiner Natur und Besiedlung.) *Veröffentl. Naturwiss. Ver. Osnabrück* 21: 169-276. 3 maps, 8 pl. 1928(1929).—In this paper on the glacial geology of the region, discussions are included of the original moor vegetation, succession in interglacial and postglacial periods, climate, and changes in the landscape produced by man.

18271. TURESSON, GØTE. The geographical distribution of the alpine ecotype of some Eurasiatic plants. *Hereditas* 15(3): 329-346. 3 fig. 1931.—Seedling generations of transplant series of *Solidago virgaurea, Bupleurum longifolium,* and *Polygonum bistorta* from the East-Altai Mts. have been grown together with material from the Alps and Carpathians. In Altai, alpine ecotypes of these sp. are found, but not in Europe. The Altai alpine types are higher and somewhat later than the alpine types in Scandinavia. Correspondingly, the Altai lowland ecotypes are taller than the European. The great height of the Altai alpine type is due, therefore, to the fact that it is differentiated out of the very tall lowland Altai type. In order that a sp. may extend into the alpine regions, populations in the lower regions must contain types from which alpine ecotypes may dif-

ferentiate. The lack of alpine ecotypes of these sp. in the Alps and Carpathians is due probably to the fact that the sp. in these areas do not contain such biotypes. The irregular distribution of alpine ecotypes is probably usually due to an irregular distribution of the biotypes necessary for the differentiation of such ecotypes and not to differences in environment in the different alpine regions as often inferred.—*H. Wexelsen.*

18272. WARDLAW, C. W. Observations on the dominance of pteridophytes on some St. Lucia soils. *Jour. Ecol.* 19(1): 60-63. 2 pl. 1931.—On this island of the British West Indies, areas of tropical rain forest had been cut over and reduced to banana plantations, and these plantations abandoned in 1926. In 1929 erosion had caused soil deterioration, and a vegetation quite unlike the original forest was overtopping the few surviving bananas. In this new plant community the tree fern, *Cyathea*, was dominant while the steeper slopes and the faces of road cuttings were covered almost entirely by *Gleichenia*, *Lygodium*, and *Lycopodium cernuum*. In the adjacent undisturbed rain forest, the tree ferns are occasional rather than abundant.—*G. D. Fuller.*

18273. WELCH, WINONA H. Forest and prairie, Benton County, Indiana. *Proc. Indiana Acad. Sci.* 39: 67-72. Map. 1929(1930).—Prior to cultivation there was a prairie type of vegetation, with *Andropogon furcatus* dominating in the uplands and *Spartina michauxiana* in the lowlands. The prairie grasses have now almost disappeared; 8 native groves, which have developed in moist habitats protected from the annual prairie fires, mark the westward extension of the forest into the prairie. A list is given of 56 spp. of woody plants in the groves, which are diminishing on account of pasturing and clearing.

18274. WIINSTEDT, KNUD. Bundvegetationen i Danmarks nordligste bøgeskove. [Underbrush vegetation in northern Danish beech-woods.] *Bot. Tidsskr. [Copenhagen]* 41(2): 81-99. 1930.—Complete lists of plants from the 10 most northern beech-woods of Denmark show that several spp. common in other places are very rare here. Probably some sp. do not occur on account of the bad conditions of the ground; other spp. may not yet have finished their migration towards the north.—*J. Iversen.*

18275. WOULFF, E. Sur l'origine de la flore de la Crimée. *Compt. Rend. Som. Séances Soc. Biogéogr.* 69. 71-77. 1932.—The entire Crimean flora was not derived by migration as many suppose; Crimea possessed an aboriginal flora, part of which survives. Mediterranean spp. (relics of an ancient flora) exist; this suggests an ancient connection between the Crimea and the Mediterranean region. The paucity of endemic spp. indicates that this union was interrupted at a comparatively late geological period; and the richness of the Crimean flora in recent endemics suggests that its insular position is geologically recent. Connections seem to have existed (1) with Asia Minor, and thus with Transcaucasia and the northern part of the Balkan Peninsula; (2) with the northern part of the Balkan Peninsula, via the Dobrudja and the Tarhoukut-Sarytch headlands; and (3) with southern Russia by the Isthmus of Pérékop or by a broader connection. These conclusions are supported by zoology. The Crimea is regarded as a fragment of a mountainous region embracing, in the Pliocene (or later), the central part of the Black Sea and forming a northward continuation of what is today Asia Minor. Probably the Pontic continent was not a plateau, but a chain of parallel ranges, a continuation of the chains which traverse present-day Crimea and form an extension to the mountain chains of Asia Minor. The flora of Crimea and of the eastern part of the Mediterranean formed a unity, but, being in the northern limits of its diffusion, Crimea is relatively poor in these spp. This continent was united, throughout its geological history, with southern Russia, via Dobrudja and the region of the Sea of Azof, and this union persisted until the Pliocene. Migration and spp. formation took place during this union. Towards the end of the Tertiary and at the beginning of the Quaternary, the central part of this continent sank, leaving the Crimea geographically a peninsula and biologically an island.

18276. WRIGHT, ALBERT HAZEN, and ANNA ALLEN WRIGHT. The habitats and composition of the vegetation of Okefinokee Swamp, Georgia. *Ecol. Monogr.* 2(2): 109-123. 74 fig. 1932.—The Okefinokee swamp in southeastern Georgia is in the Sabalian or Lower Austral life zone or alluvial lower county. The region is 102-150 ft. above sea level. The non-frost season is 186-307 days; highest temp. is 85-106°, and lowest, 40-58° F. Local habitat terms and their present-day equivalents and previous classifications are explained. 2,000 sheets of plants were collected with habitat data. Each habitat treatment consists of: ecologic synonymy (1737-1860); discussion; journal notes; and lists of plants, catalogued as trees, shrubs, vines, ferns, grasses, and herbs. The local common names are generally given. The habitats considered are: shallow marshes or prairies; open lakes; wooded swamps or cypress bays; cypress heads; cypress ponds; runs; water-courses; branch swamps; river swamps; rich woods; hammocks; old fields; cleared and cultivated fields, roadsides and railroads; moist pine barrens; savannas; intermediate pine barrens; dry pine barrens; sand scrub; sand hills and ridges; marginal bogs; fern bogs; Sugar House; and Camp Cornelia.

PLANKTON

18277. AKEHURST, S. C. Observations on pond life, with special reference to the possible causation of swarming of phytoplankton. *Jour. Roy. Microscop. Soc.* 51 (3): 237-265. 7 fig. 1931.—The phytoplankton are divided into 2 main groups according to food reserves, roughly starch and oil, and an association between them, is demonstrated. A succession of genera is shown of the same, and between different, classes in the oil and starch groups, due to action and interaction—inhibition and stimulation of growth—by autotoxins (excretion products). Toxic effects do not occur between an "oil" and a "starch." Swarming (increase and decrease) of genera of the 2 groups is due to the available quantity of the accessory food. The toxin of the oil group becomes an accessory food of the starch group, and conversely. Inhibition by autotoxin is necessary to avoid the tendency towards permanent supremacy of the dominants in each of the classes. While maintenance of chemical (essential foods) and physical conditions is necessary to allow normal algal development, swarming of the phytoplankton is due to the available quantity of accessory foods. The exchange of excretion products is maintained at all temp. within limits possible for algal growth on stones, land, and in water. At depths beyond the illuminated areas the non-motile algae, Bacillariales and Myxophyceae, and some Isokontae, may continue their activities by changing the method of nutrition from that of holophytes to saprophytes after the manner of the subterranean algae. Variation of oxidation of accessory food reduces or increases swarming. Oxidation is definite in fast-running, less so in moderately-moving, and absent in calm waters; the swarming of phytoplankton is also governed by the prevalence of these conditions.—*Author's summary.*

18278. ALSTERBERG, GUSTAF. Über das aktuelle und absolute O_2-Defizit der Seen im Sommer. *Bot. Notiser* 1929(5/6): 354-376. 3 fig. 1929.—The usual method of computing the excess or deficiency of dissolved O at different depths in lakes is to compare the amount actually found at the various depths with the quantity required to saturate the water at the observed temp. Here a 2nd method is proposed, viz., the absolute deficit, which is the deficit based upon the amount of O required to saturate a liter of water at 4° C. at sea level.—*C. Juday.*

18279. ANCONA, U. d', e LUISA VOLTERRA-d'ANCONA. Osservazioni preliminari sulle modificazioni idrobiologiche avvenute nel Lago di Nemi durante e in seguito ai lavori di abbassamento esseguiti per il ricupero

delle navi Romane. [Hydrobiological modifications due to lowering the level of Lake Nemi (Italy)]. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis. Mat. e Nat.* 13(3): 217-223. 1931.—The lowering of the lake level by 15 m. has exposed more shelving shores than before. These have become overgrown by abundant littoral vegetation, consisting chiefly of *Myriophyllum spicatum* mixed with *Lemna*. Organic material abounds near the edge and the conditions in the lake have changed from an oligotrophic to an almost eutrophic type. An observable increase in the phyto- and zoo-plankton and modifications in the constitution of the latter are possibly due to this change. *Daphnia cucullata*, artificially introduced in 1914, has become even more abundant than the indigenous *D. longispina*.—*U. d'Ancona (transl. by P. M. Jenkin)*.

18280. ATKINS, W. R. G. Seasonal variations in the phosphate and silicate content of sea-water in relation to the phytoplankton crop. V. November 1927 to April 1929, compared with earlier years from 1923. *Jour. Marine Biol. Assoc. Unit. Kingdom* 16(3): 821-852. 12 fig. 1930.—The phosphate content of sea water at Station E1 in the English Channel off Plymouth varies from 48 mgm. P_2O_5 per m.^{3} down to 0 mgm. For the whole water column surface to 70 m. maximum values during the last yrs. were 36 mgm. in winter, the minimum value for the column being 8 mgm. in June. For the 7 yrs. the maximum for the whole column was 37 mgm. and the lowest maximum 31 mgm. The absolute minimum for the water column was 5 mgm. in Aug. 1925. The surface as well as the deeper water may act as a region of phosphate regeneration. As much as 6 or 7 weeks' difference may occur in the date of the spring diatom outburst. Differences in the seasonal productivity of the various yrs. was marked. Phytoplankton production, as measured by phosphate consumption, proceeds by a series of outbursts. There is general agreement between the curve for seasonal variation in phosphates and silicates but the latter never reaches zero. The July minimum was about 33 mgm. of silica per m.^{3} which is very near the detectable limit. The winter maxima (320-220 mgm.) appear to differ more than the phosphate maxima. In April 1929 a sudden fall in phosphate concentration was accompanied by a remarkably rich phytoplankton outburst. Every sample of water bottled from 0 to 70 m. contained lumps of *Phaeocystis*, as well as the diatom *Lauderia borealis* in abundance. *Rhizosolenia stolterfothii, chaetoceros, decipiens*, and *Nitzschia delicatissima* were plentiful; 12 other sp. of diatoms were found, and 4 peridinians. The productivity order of the yrs. is in general the order of spring sunshine. The variations in the clearness of the water also affect submarine illumination. Such variation may cause an 8-fold variation in the upper 20 m., much the same as is found between winter and spring.—*W. R. G. Atkins.*

18281. BACHMANN, H. Hydrobiologische Untersuchungen am Rotsee. *Zeitschr. Hydrologie* 5(3/4): 39-81. 8 pl. 1931.—This Swiss lake is decidedly eutrophic, i.e., it is rich in dissolved substances and is correspondingly rich in phytoplankton. This condition is caused by drainage and sewage from Lucerne. The constant change of chemical conditions results in a constant change of the phytoplankton. The most abundant spp. of phytoplankton, forming water bloom, are lacking or at least very rare in the other Swiss lakes. This lake exhibits a typical stratification of the plankton, the seasonal and vertical distributions of which are tabulated.—*From author's summary.*

18282. BALDENSPERGER, AUGUSTE. La faune et la flore planctonique des étangs du Hautrhin et des régions voisines. III. Notes hydrobiologiques d'après les pêches faites en 1927 et 1928. *Bull. Soc. Hist. Nat. Colmar* 21: 169-296. 6 pl. 1929.—A list is given of the phyto- and zoo-plankton found in 51 localities 1927-1928. The plates show the seasonal variations in form of some of the organisms.—*C. Juday.*

18283. BALDI, EDGARDO. Prime ricerche sulla fauna del lago del Piano (Val Menaggina). [Fauna of Lake Piano.] *Arch. Zool. Ital.* 15: 97-125. 6 fig. 1931.—This lake basin may be the relict of an oriental quaternary arm of Lake Lugano. Notes are given on the temp. of the waters. The zooplankton totals about 130 Entomostraca and Rotifera per liter. The study of the distribution reveals the influence of the frozen crust on the plankton distribution. Study is reported of some forms of Entomostraca, especially of *Leptodora, Daphnia*, and *Bosmina*, the representatives of which show some interesting characters of adaptation to particular conditions of the relict basin.—*E. Baldi.*

18284. [BERG, L. S.] БЕРГ, Л. С. Гидрологические исследования на Иссык-куле в 1928 году. [Hydrological investigations in Lake Issyk-Kul' (Turkestan) in 1928.] Известия Государственного Гидрологического Института (*Bull. Inst. Hydrol.*) 1930(28): 9-24. Map, 1 fig. 1930.—Plankton of the pelagic part is poor in number of spp. (7) and Cladocera are totally absent. Five more spp. are found in littoral waters. *Peridinium borgei* is abundant in fresh-water coves in the eastern part of the lake. The presence of *Hydrobia ventrosa*, a European sp., is a riddle. A list of 11 spp. of fishes is given.

18285. BOSSOLASCO, MARIO. Questioni fotogrammetriche di aerolimnologia. *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(5/6): 333-341. 4 pl. 1931.—This is principally a discussion of the extended range of application of aerial photographic methods in limnology, with notes on the practical accomplishment of such surveys. The advantage, if not the necessity, of perpendicular photographs in the lake district is pointed out, and the significance of terrestrial refraction in light is discussed.—*C. Juday.*

18286. BRUNELLI, G. L'eutrofismo da stagnazione nei laghi artificiali. *Atti R. Accad. Naz. Lincei Rend. Cl. Sci. Fis Mat. e Nat.* 11(5): 495-497. 1930.—A general account is given of the eutrophic conditions in 2 artificial lakes. *Microcystis* was the dominant plankton organism in one and *Ceratium* in the other, with *Anabaena* and *Melosira* of 2nd importance.—*C. Juday.*

18287. GOTTSCHALL, RUSSELL Y. Preliminary report on the phytoplankton and pollution in Presque Isle Bay, Lake Erie. *Proc. Pennsylvania Acad. Sci.* 4: 69-79. 3 maps, 1 fig. 1930.—The phytoplankton of Presque Isle Bay and the waters of Lake Erie just outside is very abundant, both as to genera and numbers. The lowest number was 30,000 per liter in July; this is sufficient to support a very large fish population. These waters are contaminated with sewage from the city of Erie. The lowest number of bacteria per cc. was 60, the highest 150,000. No evidence of anaerobic respiration has been found, or an O content so low that it would not support life. The lowest O content was 41% of saturation in Sept.; the highest, complete saturation, in Jan.—*Author's conclusions.*

18288. GRAN, H. H., und BIRGITHE RUUD. Untersuchungen über die im Meerwasser gelösten organischen Stoffe und ihr Verhältnis zur Planktonproduktion. [Organic substances dissolved in sea water, and their relation to plankton production.] *Skrifter Norske Videnskaps-Akad. Oslo* 1926: 3-14. 1927.

18289. HAUSMAN, LEON A. The Norton animalcule collector. *Trans. Amer. Microsc. Soc.* 49(2): 184-185. 1 fig. 1930.—A device for collecting minute aquatic forms.

18290. HOWLAND, LUCY J. A four years' investigation of a Hertfordshire pond. *New Phytologist* 30(4): 221-265. 7 fig. 1931.—The succession of algae (1925-1929) showed the spring phase dominated by *Microspora stagnorum* and *Tribonema bombycinum*, with *Vaucheria* and *Oedogonium* following later. Termination of the spring phase is ascribed to abundant growth of phanerogamic aquatics which shut off light and use much of the available salts. Marked correlation was found between salt conc. and water level. Sterile *Mougeotia* was the only member of the Zygnemales present in autumn; never an autumn phase of *Spirogyra*. *Anabaena catenula* appeared every summer, though other Cyanophyceae were

18299. **STEUER, ADOLF. Neuere Arbeiten über tlantisches Hochseeleben.** *Internat. Rev. Ges. Hydroiol. u. Hydrograph.* 25(5/6): 468-474. 2 maps, 2 fig. 931.—A review of recent literature points to the relaion between the spread of phosphate and the disribution of plankton, high-sea birds, and whales in the tlantic Ocean.—*A. Steuer (transl.).*

18300. **STRÖM, KAARE MÜNSTER. New hydroraphic apparatus.** *Internat. Rev. Ges. Hydrobiol. u. Iydrograph.* 25(3/4): 266-271. 3 fig. 1931.—Description f a new apparatus* for collecting plankton, which an be hermetically sealed before drawing up.

18301. **VARGA, L. Allgemeine limnobiologische Charkteristik des Ferto (Neusiedlersee).** *Congrès Internation. Ye Zool. à Budapest 1927* 2: 1438-1446. Map. 1929.—his lake has an area of 330 sq. km., but is very shalow, the mean depth being only about 1 m.; maximum lepth is 3 m. The temp. ranges from a minimum of)° in winter to a maximum of 32° in summer; temp. changes closely follow those of air. The water was alkaline. The lake supports a large crop of emergent as well as submerged aquatic plants and also a large crop of plankton; there is an abundant population of fish. —*C. Juday.*

18302. **VLÈS, F. F., et M. GEX. Technique de dosage électrométrique des chlorures, et son application à la mesure de l'eau de mer. [Electrometric determination of Cl and its application to determinations in sea water.]** *Arch. Phys. Biol.* 8(Suppl. 5): 1-12. 2 fig. 1930.

18303. **WAWRZYNIAK, FRANCISZEK. Mifroflora denna Jeziora Lednicy. [Phytobenthos of Lake Lednica, Poland.]** [With German summary.] *Kosmos [Lwów]* 55 (3/4): 712-722. 1930(1931).—Forms of phytobenthos found in this lake (listed) include 2 Schizomycetes, 13 Schizophyceae, 19 Chlorophyceae, 9 Conjugatae, 2 Flagellatae, 2 Peridinieae, and 111 Bacillarieae. The predominant sp. are *Tabellaria fenestrata* var. *asterionelloides, Chroococcus limneticus* var. *distans,* and *Staurastrum polymorphum.*

18304. **WORTHINGTON, E. B. Vertical movements of fresh-water macroplankton.** *Internat. Rev. Ges. Hydrobiol. u. Hydrograph.* 25(5/6): 394-436. 8 fig. 1931.—Work was carried out by means of vertically hauled closing nets on the Victoria Nyanza and Lake Lucerne in order to test the hypotheses of F. S. Russell with regard to the vertical plankton movements in the English Channel. In Lake Lucerne the total depth (105 m.) was divided into 8 stages and series of hauls were repeated at hourly intervals for 26 hrs. Most sp. start their descent at dawn and reach their lowest level (50-60 m.) before noon. Then the slow upward movement starts, accelerates at dusk, and continues for 2-3 hrs. after complete darkness. There is a difference between the behaviour of young and old individuals of certain sp., showing that in growing up the individuals become less susceptible to light and so can remain longer at the surface. The speed of descent and ascent was calculated for each sp.: the young of *Daphnia longispina* were quickest with a descent of 1 m. in 3.1 min. and ascent of 1 m. in 4-3 sec. The migrations of the Victoria Nyanza are much the same as those of Lake Lucerne. The results do not fall in altogether with Russell's suggestion that each sp. has an optimum degree of illumination in which it will stay when possible, and to which it will migrate. An alternative hypothesis is suggested, depending on the simple interaction of geotropism and heliotropism, the organisms being regarded as under the influence of these 2 forces. Those sp. which are susceptible to light descend into the lower layers during the morning; after mid-day they are free to move upward slowly, but it is not until dusk that negative geotropism has full sway and the organisms start their main upward movement. Most sp. are filter feeders depending on the nanno-plankton which is must abundant in the upper layers. It is suggested therefore that hunger is the ulterior reason why they seek the upper layers. Thus those spp. which are less susceptible to light such as *Diaphanosoma* and the adults of *Bosmina* have an advantage in that they can spend much more of their time in their food regions.—*E. B. Worthington.*

PHYTOPATHOLOGY

FREEMAN WEISS, *Editor*

W. A. WHITNEY, *Associate Editor*

(See also in this issue Entries 18158, 18161, 18375, 18383, 18439, 18443, 18462, 18465, 19493, 19508, 19648, 19656, 19793, 19809, 19818, 19943, 19949, 19977, 19980, 20000, 20025, 20029, 20031, 20041, 20096, 20135, 20138, 20146, 20213, 20266, 20797, 20800)

DISEASES CAUSED BY FUNGI

18305. **[BAUM-CHUMAKOVA, E.]** БАУМ-ЧУМАКОВА, Е. Горькая гниль яблок, вызываемая Glomerella cingulata. **[Bitter rot of apples (G. cingulata).]** [With English summary.] Болезни Растений [*Bolezni Rastenii*] 19(1/2): 55-69. 1930.—Brief report of the distribution and economic importance of this fungus in USSR.

18306. **BONNE, KURT. Untersuchungen über den Steinbrand des Weizens.** *Angewandte Bot.* 13(3): 169-208. 4 fig. 1931.—The author holds that in bunt experiments, the use of the standard deviation is not warranted because fluctuations may not be chance, but systematic, errors; the latter are not measured by the standard deviation. Hot-air and hot-water treatment of wheat seed delayed germination, and in seed inoculated after treatment the percentage of bunt in the crop was less than in inoculated but otherwise untreated seeds. No relationship could be detected between speed of growth of resistant and susceptible varieties and the reaction to bunt. Collections of bunt from different sources differed in pathogenicity on spring and winter wheats, but equally marked were differences induced by bunt from different varieties which had been inoculated with the same original collection.—*W. K. Smith.*

18307. **BUISMAN, CHRISTINE. Three species of Botryodiplodia (Sacc.) on elm trees in the United States.** *Jour. Arnold Arboretum* 12(4): 289-296. 2 pl., 1 fig. 1931. —In studying a die-back of *Ulmus* the author finds that 3 fungi may occur on diseased twigs: *Botryodiplodia malorum, B. ulmicola** n. comb. (*Sphaeropsis ulmicola* Ell. & Ev.), and *B. hypodermia* the first 2 on *U. americana,* the 3rd on *U. foliacea* var. *suberosa.* Inoculation with *B. hypodermia* caused a canker on *U. americana.*—*A. Rehder.*

18308. **DUFRÉNOY, J. Récent travaux relatifs au Glomerella cingulata (Stonem.) Spaulding et von Schr. et à sa forme conidienne: Colletotrichum gloéosporioides.** *Ann. Cryptogamie Exotique* 2(1): 82-84. 1 fig. 1929.—In Florida *C. gloeosporioides* was isolated from the inner wood of branches of *Citrus* with withered leaves. Examination of blighted branches showed the presence of yellow spots in the wood in which the vessels were filled with mycelium.—*L. C. Cash.*

18309. **FOISTER, C. E. A note on a rare parasitic fungus on Myrica gale L.—Ovularia destructiva (Phil. & Plow.) Massee.** *Trans. and Proc. Bot. Soc. Edinburgh* 30(3): 244-245. 1929/1930.—First record on twigs for Scotland. [Earlier Scotch records on leaves are cited.]

18310. **HARRIS, R. V. Raspberry cane spot: its diagnosis and control.** *Jour. Pomol. and Hort. Sci.* 9(2): 73-99. 6 pl. 1931.—The symptoms of this disease (anthracnose of *Rubus* spp. in America) as they occur on canes of the red raspberry in Great Britain are described. The isolation of the pathogen in pure culture, inoculation to establish its pathogenicity, and salient points in its

Notes on the abundance of 30 kinds of galls on 3 local oaks.—*L. H. Weld.*

18324. ROSS, J. The gall of Andricus seminationis. *London Naturalist* 1930: 137-138. 1931.—In Epping Forest in 1929 and 1930, fresh galls on catkins appeared over a period of 5 mo. Dry weather seemed to retard their appearance and growth.—*L. H. Weld.*

18325. TRIFFITT, MARJORIE J. Observations on the life-cycle of Heterodera schachtii. *Jour. Helminthol.* 8 (4): 185-196. 1930.—Early in the year 8-9 weeks were required for the formation of brown cysts on potato roots, less than 6 towards the end. After August all females on exposure to light turned brown in 24 hr., in May-June in 1-7 days. Results were confirmed by a strain on mangolds. Observations on both showed that larvae were produced only from brown cysts; experiments and observations showed that normally only 1 generation is produced each yr. Progressive liberation of larvae from soil cysts may result in successive infections. Root excretion is necessary for hatching. Eggs in overwintered cysts are capable of hatching the following yr.—*F. J. Meggitt.*

18326. TRIFFITT, MARJORIE J. On the pathogenicity of Heterodera schachtii to potatoes and mangolds. *Jour. Helminthol.* 9(1): 1-16. 2 pl., 4 fig. 1931.—The effect, as shown by 3 yr. observations on artificially infected plots, is more marked on mangolds than on potatoes, due to the less extensive root system. Experiments proved that, in the early stages, parasitised potatoes weigh considerably less than normal. Transpiration is hindered in the mangold but in the potato is unchecked owing to the addition of lateral roots. Root secretions have no pathogenic effect on the growth of potatoes. Internally the attack in potatoes and mangolds causes the formation from parenchymatous cells of giant multinucleate syncytia which spread into the interior and, coalescing, block the vascular bundles and considerably reduce their efficiency, the result being more marked in mangolds. In both healthy and attacked tissues of parasitised potatoes occurs an undetermined species of fungus. Probably other factors are responsible for the production of disease symptoms in the presence of *H. schachtii,* operating by producing conditions unsuitable for plant growth, thus checking the output of compensatory roots and preventing the plant from recovering from the original effects of the eelworm attack.—*F. J. Meggitt.*

18327. TRIFFITT, MARJORIE J. Note on a fungus parasite associated with Heterodera schachtii infections on potatoes. *Jour. Helminthol.* 9(2): 47-48. 1931.—*Colletotrichum atramentarium* is recorded as being associated with "potato sickness."—*F. J. Meggitt.*

18328. TRIFFITT, MARJORIE J. On the eelworm Heterodera schachtii attacking peas in Britain. *Jour. Helminthol.* 9(3): 175-178. 1931.—Peas were found infested by this nema near Cardiff, Worcester, and Evesham. The plants were also attacked by *Fusarium martii* var. *pisi.*—*F. J. Meggitt.*

18329. ULBRICH, E. Bericht über die Frühjahrshauptversammlung des botanischen Vereins, am 1. und 2. Juni 1929 in Eberswalde. *Verhandl. Bot. Ver. Prov. Brandenburg* 72(2): 140-146. 1930.—This report contains a list of plant galls collected.

DISEASE RESISTANCE AND PARASITISM

18330. DIETZ, S. M. The varietal response and inheritance of resistance in barley to Erysiphe graminis hordei P. F. 4. *Iowa State Coll. Jour. Sci.* 5(1): 25-33. 1 pl. 1930.—The response of 90 pure line varieties of barley was determined. Goldfoil C.I. 928, Unnamed C.I. 96, Hanna C.I. 906 and Duplex C.I. 2433 were highly resistant. 44 varieties were very susceptible, and the other 42 intermediate. Susceptibility seems to be due to a single pair of factors as shown by the close approximation to a 3:1 ratio in the F_2 and verified by the F_3 progeny tests.—*Author's summary.*

18331. DUFRÉNOY, J. La lutte contre la maladie des châtaigniers. *Ann. Épiphyties* 16(1): 25-49. Map, 5 pl., 15 fig. 1930.—Control of the ink disease of chestnut, caused by *Blepharospora (Phytophthora) cambivora,* is best achieved by the introduction of resistant Japanese varieties of *Castanea crenata* and *C. mollissima.* The fungus is unable to become established in these species, quickly dying out after being walled off by callus. Resistance may be due to the presence within the walls of toxic phenolic compounds which the resistant species produce.—*L. J. Klotz.*

18332. DUFRENOY, JEAN, et TH. FRÉMONT. Influence de la température sur les réactions du maïs à l'infection fusarienne. *Phytopath. Zeitschr.* 4(1): 37-41. 5 fig. 1931.—Infection experiments on maize were made with *Fusarium graminearum (Gibberella saubinetii)* in chambers at 7° and 20°C. At 7° the plants are rapidly attacked. The cells of the leaves or leaf sheaths surrounded by the fungus live for some time but the cytoplasm (normally forming a continuous envelope around a large central vacuole) becomes spongy, forming cytoplasmic strands that divide the vacuole into many smaller vacuoles. This densely vacuolar region near the nucleus takes stains with great intensity and is homologous with the "inclusion bodies" of mosaic diseases. No phenolic compounds are formed at this temp. either in the cells affected by the fungus or the neighboring cells. At 20° the fungus is not able to penetrate. Where the fungus attempts such a penetration, the vacuole of the host cell divides into fragments; but in this case phenolic compounds, which are precipitated by some stains and fixers, accumulate in one vacuole. This accumulation of phenolic compounds is believed to be a fundamental phenomenon in disease resistance. The development of lignified thickenings of the walls of certain cells is regarded as an epiphenomenon. The presence of phenolic compounds has been found in potatoes resistant to *Phytophthora infestans,* in chestnuts resistant to *P. cambivora,* and beans resistant to *Colletotrichum lindemuthianum,* but absent in susceptible beans. Phenolic compounds are found also in cells surrounding the lesion on plants which show localized parasitic infection.—*F. M. Blodgett.*

18333. McCLINTOCK, J. A. The source of apple seed in relation to pests on seedlings. *Proc. Amer. Soc. Hort. Sci.* 27: 120-123. 1930(1931).—Seedlings of many American cultivated varieties, as well as cider varieties from France, Italy, and Germany, are resistant to cedar-rust but are rather susceptible to blotch, fire blight, apple leafhopper, and woolly aphis. Seedlings of native wild southern crab apples are very susceptible to cedar rust, but resistant to blotch, fire blight and leafhopper and are immune to woolly aphis. Seedlings of *Pyrus baccata* and other cultivated crabs are resistant to cedar rust, but are intermediate between cultivated and native crabs in their resistance to other pests.—*Author's abstract.*

18334. [SUKHORUKOV, K.] СУХОРУКОВ, К. Энзиматическая активность растительного организма и некоторые явления физиологического иммунитета. [Enzymatic activity of the vegetative organism and some phenomena of physiological immunity.] [English summary.] Журнал Опытной Агрономии Юго-Востока (*Jour. Agric. Sci. S. E. U. S. S. R.*) 8(2): 237-266. 1930.—A study was made of the internal condition in *Helianthus, Artemisia,* and *Xanthium* in various stages of disease. It was found that immunity to rust in the sunflower is closely associated with the activity of peroxidase. The immune form showed a lower enzymic activity. Other enzymes, such as catalase and proteases, apparently play a very minor rôle in the immunization of plants. The activity of proteases is higher in the parasite than in the tissues of the host.—*L. J. Pessin.*

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES AND SPRAYING)

18335. GALLETTI, A. CURINI. Sul probabile metabolismo del solfato ferroso impartito al terreno per curare la clorosi della vite. [Probable action of $FeSO_4$ added to soil to cure grape chlorosis.] *Rivist. Patol. Veg.* 21 (7/8): 197-207. 1931.—Small amounts of dilute acid

18364. [KRASSOVSKAĬA, I. V.] КРАСОВСКАЯ, И. В. Влияние реакции среды на поглощение воды и солей табаком в водных культурах. [Absorption of water and salts by the tobacco plant in relation to pH.] Труды Детскосельской Акклиматизационной Станции при Ленинградском Сельско-Хозяйственном Институте (*Bull. Sta. Acclim. Leningrad Agric. Inst. Detskoe Selo*) 4: 31-54. 1927.—The plants were cultivated at pH 5.5-8.7. The reaction of the solution was measured by the H ion electrode and colorimetrically; and the solutions were changed every 2-4 days. The absorption of salts (measured by the Kohlrausch method of electrical conductivity) was highest in the acid solutions, lowest in the alkaline, with the neutral solution intermediate. When plants were transferred to an alkaline medium the decrease in absorption preceded the decrease in growth rate of the leaf area. The differences in the influence of different reactions on the absorption of salts disappeared gradually with the period of flowering, and at this time there might even occur a certain increase in absorption of salts and rate of growth in alkaline solutions in comparison with plants grown in acid solutions. No quantitative or qualitative difference could be observed in the effect of the 2 acid reactions (pH=5.5 and 6.1) or of the 2 alkaline ones (pH=7.8 and 8.7). The intensity or rate of water absorption (or transpiration) was highest with acid reaction, lowest with alkaline. The differences were greatest at the time of the most energetic growth. At the period of flowering these differences disappeared, just as with the process of salt absorption. The plants from the acid solutions gave the highest yield; those from the neutral, the lowest.—*From author's summary.*

18365. **LEPESCHKIN, W. W. Light and the permeability of protoplasm.** *Amer. Jour. Bot.* 17(10): 953-970. 1930.—Results of earlier experiments showing that the permeability of protoplasm increases in light and decreases in the dark were confirmed. The rate of accumulation of aniline dye in the cell sap was employed as a measure of relative permeability, using as experimental material entire leaves of *Elodoea densa* and *E. canadensis*, which were immersed in the dye solution for limited periods. For comparison of tints developed by the test leaves, a standard set of leaves taken from the same plant and subjected to treatment for various periods was used. The effect of light on absorption of dyes is due to its action in increasing permeability. The absorptive power of the cell sap and the adsorption of dye on the cell wall or in dead protoplasm are not affected by light. The effect of light on permeability is strictly limited to the illuminated plant parts. Change in permeability is conditioned by the amount of the light energy and not by the manner in which the energy is received by the plant. In direct sunlight the maximal influence on permeability can be obtained with 10% of the full intensity, and further increase in intensity is without definite effect. Ultraviolet rays are most active and violet, blue, green, and red rays progressively less active in influencing permeability.—*W. W. Garner.*

18366. **MAGISTRIS, HUGO, und PAUL SCHÄFER. Zur Biochemie und Physiologie organischer Phosphorverbindungen in Pflanze und Tier. V. Über die Beeinflussung des Austrittes von wasserlöslichen Pflanzenphosphatiden durch Licht und Temperatur. VI. Über die Beeinflussung des Austrittes von wasserlöslichen Pflanzenphosphatiden durch Salze, Säuren und Alkalien.** *Beitr. Biol. Pflanzen* 18(1): 116-160. 1930.—The effect of light, temp., salts, acids, and bases upon the rate at which organically-bound P compounds diffuse from plant tissue into the surrounding liquid was determined. When pea seed or disks of tissue from peeled turnips were sterilized and covered with a layer of distilled water in a shallow dish the rate at which organic P diffused into the liquid was greater in light than in darkness. Two sources of illumination were used: 600-watt light (at 20 cm.) and a quartz lamp (at 40 cm.). With tissue which was illuminated first and then placed in darkness the exosmosis was greater than with non-illuminated tissue, but the differences became progressively smaller with time. Increase in temp. increased the rate at which P diffused from the tissue. For the salt-effect, peas, beans, oats, rutabaga, and beets were used at concentrations of $N/1$, $N/50$, and $N/100$. Mg^{++} and ions of the alkali series favored, while ions of the alkaline earths retarded, exosmosis of P compounds. For the anions the order of effectiveness for increasing exosmosis was: nitrate, chloride, bromide and iodide, acetate and thiocyanate, citrate, tartrate. Exosmosis was always greater in solutions of acids and bases than in water.—*F. E. Denny.*

18367. [WALTHER, O. A.] ВАЛЬТЕР, О. А. Почему мы изучаем отношение культурного растения к истинной реакции среды. [Why do we study the influence of pH on cultivated plants?] Труды Детско-Сельской Акклиматизационной Станции при Ленинградском Сельско-Хозяйственном Институте (*Bull. Sta. Acclim. Leningrad Agric. Inst. Detskoe Selo*) 4: 1-10. 6 fig. 1927.—This is a brief outline of some recent publications on the agricultural value of pH-studies and of the principal problems investigated by the Physiological Section of the Station for Plant Acclimatisation 1923-1926.

WATER RELATIONS, SAP MOVEMENT

18368. **CLEMENTS, HARRY F. The upward movement of inorganic solutes in plants.** *Res. Studies State Coll. Washington* 2(3): 91-106. 1 pl., 4 fig. 1930.—Chemical and anatomical studies are reported on translocation activities of *Vitis vinifera*, *Rubus occidentalis*, *R. idaeus* var. *strigosus* (Cuthbert), *R. neglectus* (Columbian), *Pyrus malus*, *Prunus americana*, and *P. persica*. When the stems of the grape, raspberries, and plum were girdled to the xylem, the upward movement of ash constituents and nitrates continued, indicating that the major movement of mineral materials moving upward in the plant took place in the xylem. The conclusions of Curtis and Auchter are criticized.—*H. F. Clements.*

18369. **DASTUR, R. H. The relation between water content and photosynthesis: a reply to a criticism.** *Jour. Indian Bot. Soc.* 6(3/4): 222-225. 1927.—The author defends his use of surface area instead of thickness of leaves in calculating water content, because variations in thickness were well within the margin of experimental error; also the inclusion of water of imbibition in calculating water content, for it is at least of indirect importance in photosynthesis. Recalculation of results shows that even when correction is made for water of imbibition, the author's original conclusions regarding the relation between water content and rate of photosynthesis are sustained (except in 3 cases).—*W. Dudgeon.*

18370. **INAMDAR, R. S., and B. M. DABRAL. Experiments on transpiration. I. The daily water balance of plants in arid regions.** *Jour. Indian Bot. Soc.* 9(1): 1-30. 5 fig. 1930.—Actual transpiration was compared with evaporation from a free water surface at Benares in May and June, the hottest and driest period of the yr. Experiments are recorded in detail for *Ficus elastica*, *Gossypium herbaceum*, and *Jasminum* sp. Concordant results were obtained, but are not reported in detail, for *Aralia* sp., *Codiaeum* sp., *Acalypha* sp., *Ficus religiosa*, and *Bryophyllum*. *F. elastica* and *Gossypium* showed practically constant rates of loss on different days, in spite of considerable fluctuation in evaporating capacity of the air. *Jasminum* plants showed similar constancy, when exposed to full sunlight or kept in shade, and when exposed for successive periods to sunlight and returned to shade after each exposure. When exposed to progressively severe evaporating conditions on successive days, they reached their maximum daily transpiration rate when the evaporating power of the air was about 37% of the maximum evaporating power of full sunlight; further increase in evaporating capacity of the atmosphere produced little or no increase in transpirational water loss. It is concluded that "the daily loss of water per unit area of evaporating surface (of the plant) re-

the mother's mouth, with its tail, hind legs and fore paws curled about the neck of the mother."—*L. R. Dice.*

24132. **SVIHLA, ARTHUR, and RUTH DOWELL SVIHLA.** Mink feeding on clams. *Murrelet* 12(1): 22. 1931.—Observation on *Mustela vison energumenos* feeding on salt water clams.

24133. **Von BLOEKER, JACK C. Jr.** An albino kangaroo rat. *Jour. Mammalogy* 11(2): 237. 1930.—Record of albino *Dipodomys heermanni tularensis.*—*L. R. Dice.*

24134. **WINECOFF, THOS. E.** Least weasel in Pennsylvania. *Jour. Mammalogy* 11(3): 312-313. 1930.—Records of *Mustela allegheniensis.*—*L. R. Dice.*

24135. **ZETEK, JAMES.** The water opossum—Chironectes panamensis Goldman. *Jour. Mammalogy* 11(4): 470-471. 1 pl. 1930.—Photographs and notes on habits of specimens taken in Canal Zone.—*L. R. Dice.*

number of young is usually 2, but sometimes is 1. The young are nearly naked at birth, and eyes and ears are closed.—*L. R. Dice.*

26155. SIMPSON, GEORGE GAYLORD. The dentition of Ornithorhynchus as evidence of its affinities. *Amer. Mus. Novitates* 390. 15p. 2 fig. 1929.—Discusses the morphology of the temporary *Ornithorhynchus* dentition. The evidence in favor of its being developed by concrescence, from a tuberculosectorial pattern, from a microleptid, a multituberculate, a triconodont, or a reptile, are discussed. Of all the mammalian stocks that might have given rise to *Ornithorhynchus* the only one that is not exceedingly improbably ancestral is the Triconodontia, and here the evidence is entirely neutral. Hence, independent derivation from a theromorph reptile seems plausible.—*A. E. Wood.*

26156. SIMPSON, GEORGE GAYLORD. Holmesina septentrionalis, extinct giant armadillo of Florida. *Amer. Mus. Novitates* 442. 1-10. 5 fig. 1930.—Chlamytheriinae: **HOLMESINA** (p. 3), related to *Kraglievichia* and *Chlamytherium*, type *H.* **septentrionalis*** (*Glyptodon s.* Leidy) (p. 3). The neotype here described consists of mandible*, maxilla* and premaxilla*, from the Pleistocene.

26157. STEGEMAN, LeROY C. Notes on Synaptomys cooperi cooperi in Washtenaw County, Michigan. *Jour. Mammalogy* 11(4) : 460-466. 2 fig. 1930.—In the colony studied runways* were most common in a June-grass meadow. Nests of dry grass were found, in spring, above ground and alongside of runways. A few short burrows also were found. Nine ♀♀ and 33 ♂♂ were trapped. The number of young per litter varied from 2 to 4, being born in April and May.—*L. R. Dice.*

26158. STILES, C. W., and C. E. BAKER. The type-species of the South American canine genera Cerdocyon, Cercodocyon, Lycalopex, and Pseudalopex. *Jour. Mammalogy* 11(2) : 226-227. 1930.—*Canis magellanicus* Gray, 1837 (Straits of Magellan), is designated as type of *Cerdocyon* Ham. Smith, 1839; of *Lycalopex* Burmeister, 1854; of *Pseudalopex* Burmeister, 1856 (these 2 considered by Allen as synonyms of *Cerdocyon*), and of *Cercodocyon* Allen, 1905 (misprint for *Cerdocyon*).—*L. R. Dice.*